



**SGS-CSTC Standards Technical  
Services (Shanghai) Co., Ltd.**

588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666  
Fax: +86 (0) 21 6191 5678  
ee.shanghai@sgs.com

Report No.: SHEM120600076408  
Page: 1 of 75

## **TEST REPORT**

**Application No.:** SHEM1206000764RF  
**Applicant:** Hansong (Nanjing) Technology Ltd.  
**Equipment Under Test (EUT):**  
**NOTE:** The following sample(s) submitted was/were identified on behalf of the client as  
**EUT Name:** Two channel power amplifier  
**Brand Name:** Audio Pro  
**Model No:** AIR ONE  
**FCC ID:** XCO-AIRONE  
**IC:** 7756A-AIRONE  
**Standards:** 47 CFR FCC Part 15 Subpart C (Section 15.247):2011  
RSS-210 Issue 8 (December 2010)  
RSS-Gen Issue 3 (December 2010)  
**Date of Receipt:** June 13, 2012  
**Date of Test:** June 19, 2012 to August 28, 2012  
**Date of Issue:** September 12, 2012  
**Test Result :** **PASS \***

In the configuration tested, the EUT complied with the standards specified above.

E&E Section Head  
SGS-CSTC(Shanghai) Co., Ltd.

E&E EMC Engineer  
SGS-CSTC(Shanghai) Co., Ltd.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only



## 2 Test Summary

TEST ITEM	FCC REFERENCE	IC REFERENCE	Test Procedure	RESULT
Minimum 6dB Bandwidth	15.247(a)(2)	RSS-210 Issue 8 Annex 8	ANSI C63.10,2009 Clause 6.9	PASS
Maximum peak output power	15.247(b)	RSS-210 Issue 8 Annex 8	ANSI C63.10,2009 Clause 6.10.2	PASS
Power spectrum density	15.247(e)	RSS-210 Issue 8 Annex 8	ANSI C63.10,2009 Clause 6.11	PASS
Conducted Spurious Emission (30MHz to 25GHz)	Section 15.207 &15.247(d)	RSS-210 Issue 8 Annex 8.5	---	PASS
Radiated Spurious Emission (30MHz to 25GHz)	Section 15.209 &15.247(d)	RSS-210 Issue 8 Annex 8.5	ANSI C63.4,2003 Clause 6.12	PASS
Radiated Emission BandEdge	15.247(d)	---	ANSI C63.10,2009 Clause 6.9	PASS
Occupied bandwidth	---	RSS-Gen Issue 3 Clause 4.6.1	RSS-Gen Issue 3 Clause 4.6.1	Tested

The EUT contain only one Receiver (RX),



### 3 Contents

	Page
<b>1 COVER PAGE .....</b>	<b>1</b>
<b>2 TEST SUMMARY .....</b>	<b>2</b>
<b>3 CONTENTS .....</b>	<b>3</b>
<b>4 GENERAL INFORMATION .....</b>	<b>4</b>
4.1 CLIENT INFORMATION .....	4
4.2 GENERAL DESCRIPTION OF EUT (EQUIPMENT UNDER TEST) .....	4
4.3 DETAILS OF E.U.T. ....	4
4.4 OTHER INFORMATION REQUESTED BY THE CUSTOMER .....	5
4.5 STANDARDS APPLICABLE FOR TESTING .....	5
4.6 TEST LOCATION .....	6
4.7 TEST FACILITY .....	6
<b>5 TEST INSTRUMENTS .....</b>	<b>7</b>
<b>6 TEST PROCEDURE &amp; MEASUREMENT DATA .....</b>	<b>9</b>
6.1 E.U.T. OPERATION .....	9
6.2 6dB BANDWIDTH .....	9
6.3 PEAK OUTPUT POWER MEASUREMENT .....	17
6.4 PEAK POWER SPECTRAL DENSITY .....	25
6.5 CONDUCTED SPURIOUS EMISSION TEST .....	32
6.6 SPURIOUS RADIATED EMISSION TEST .....	43
6.7 RADIATED EMISSION BAND EDGE .....	50
6.8 OCCUPIED BANDWIDTH TEST .....	68



## 4 General Information

### 4.1 Client Information

<b>Applicant :</b>	Hansong (Nanjing) Technology Ltd.
<b>Applicant Address:</b>	8th Kanping Road, Jiangning Economy and Technology Development Zone, Nanjing, 211106, China
<b>Manufacturer:</b>	Hansong (Nanjing) Technology Ltd.
<b>Manufacturer Address:</b>	8th Kanping Road, Jiangning Economy and Technology Development Zone, Nanjing, 211106, China

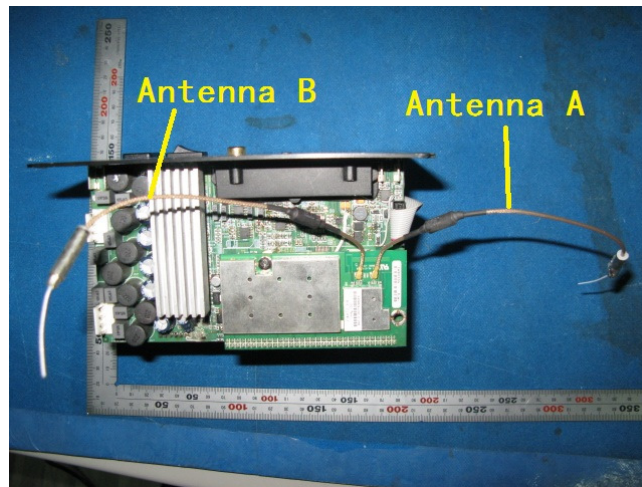
### 4.2 General Description of EUT (Equipment Under Test)

Product Name:	Two channel power amplifier
Model No.(EUT):	AIR ONE
Add Model No.:	N/A
Trade Mark:	Audio Pro

### 4.3 Details of E.U.T.

#### Technical Specifications:

Modulation Technique:	<input checked="" type="checkbox"/> 802.11b: DSSS <input checked="" type="checkbox"/> 802.11g: OFDM
Modulation Type:	<input checked="" type="checkbox"/> 802.11b: DSSS(CCK, DQPSK, DBPSK) <input checked="" type="checkbox"/> 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)
Frequency Range / Channel Number:	<input checked="" type="checkbox"/> 802.11b/g: 2412-2462MHz / 11 Channels
Data Rate:	<input checked="" type="checkbox"/> 802.11b: 1Mbps, 2Mbps, 5.5Mbps, 11Mbps, <input checked="" type="checkbox"/> 802.11g: 6Mbps, 9Mbps, 12Mbps, 18Mbps, 36Mbps, 48Mbps, 54Mbps
Equipment classification:	<input checked="" type="checkbox"/> equipment for fixed use
Antenna Type:	Double Integral antenna Remark: the two antennas is not working at the same time. The antennas define like below figure.
Antenna Gain:	2.0 dBi



**Power Supply:**

Rated Input:	115-230VAC, 50/60Hz
Power Cable:	2 wires
	1.5m

**4.4 Other Information Requested by the Customer**

None.

**4.5 Standards Applicable for Testing**

The standard used were FCC PART 15 Subpart C: 2011, ANSI C63.10: 2009. RSS-210 Issue 8, RSS-Gen Issue 3.



#### **4.6 Test Location**

Tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.  
No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

#### **4.7 Test Facility**

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2015-02-22.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868 and C-4336 respectively. Date of Registration: 2012-05-29. Date of Expiry: 2015-05-28.



## 5 Test Instruments

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2012-03-15	2013-03-14
2	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2012-03-15	2013-03-14
3	Horn Antenna	Rohde & Schwarz	HF906	100284	2012-03-15	2013-03-14
4	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2012-03-15	2013-03-14
5	Ultra broadband antenna	Rohde & Schwarz	HL562	100227	2012-03-15	2013-03-14
4	Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170 373	2012-03-15	2013-03-14
7	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY—2009P	--	2011-10-15	2012-10-14
8	CLAMP METER	FLUKE	316	86080010	2012-03-15	2013-03-14
9	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2012-01-16	2013-01-14
10	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT1800.0/ 2000.0-0.2/40- 5SSK	11	2012-03-15	2013-03-14
11	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT800.0/8 80.0-0.2/40- 5SSK	9	2012-03-15	2013-03-14
12	High pass Filter	FSCW	HP 12/2800- 5AA2	19A45-02	2012-04-07	2013-04-06
13	Low noise amplifier	TESEQ	LNA6900	70133	2012-04-07	2013-04-06
14	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2012-04-13	2013-04-12



15	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127-490	2012-03-15	2013-03-14
----	---	-------------	----------	----------	------------	------------



## 6 Test Procedure & Measurement Data

### 6.1 E.U.T. Operation

**Input voltage:** 115-230V AC 50/60Hz

**Operating Environment:**

Temperature: 20.0 -25.0 °C

Humidity: 35-75 % RH

Atmospheric Pressure: 992 -1020 mbar

**EUT Operation:** The EUT has been tested under operating condition.

Test program was used to control the EUT for staying in continuous transmitting mode is programmed.

### 6.2 6dB Bandwidth

**Test Requirement:** FCC Part15 247(a)(2)

**Test date:** August. 23.2012

**Standard Applicable:** According to section 15.247(a)(2),and Systems using digital modulationg techniques may operate in the 902-928MHz,2400-2483.5MHz,and 5725-5850MHz bands.The minimum 6dB bandwidth shall be at least 500KHz.

**Measurement Procedure:**

1. Place the EUT on the table 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 the spectrum analyzer.
3. Set the spectrum analyzer as RBW=300KHz, VBW =3\* RBW, Span=30/ 50MHz, Sweep=auto
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat above procedures until all frequency measured were complete.

**Measurement Result:**

**Test Data for Antenna A**

**Test mode: 802.11b**

CH	Frequency (MHz)	Bandwidth (MHz)	Limit Bandwidth (KHz)	Result
Low	2412	12.00	500	PASS
Mid	2437	13.12	500	PASS
High	2462	11.86	500	PASS

**Test Data for Antenna A**

**Test mode: 802.11g**

CH	Frequency (MHz)	Bandwidth (MHz)	Limit Bandwidth (KHz)	Result
Low	2412	16.40	500	PASS
Mid	2437	16.64	500	PASS
High	2462	16.48	500	PASS



Test Data for Antenna B

Test mode: 802.11b

CH	Frequency (MHz)	Bandwidth (MHz)	Limit Bandwidth (KHz)	Result
Low	2412	12.00	500	PASS
Mid	2437	12.08	500	PASS
High	2462	9.92	500	PASS

Test Data for Antenna B

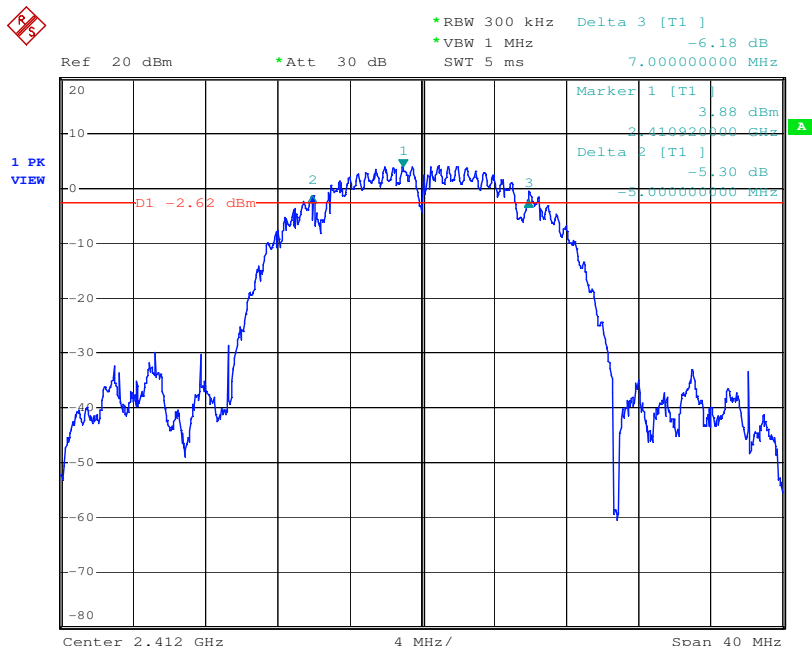
Test mode: 802.11g

CH	Frequency (MHz)	Bandwidth (MHz)	Limit Bandwidth (KHz)	Result
Low	2412	16.48	500	PASS
Mid	2437	16.56	500	PASS
High	2462	16.48	500	PASS

Test Plots:

Lowest Channel for Antenna A

Test mode: 802.11b

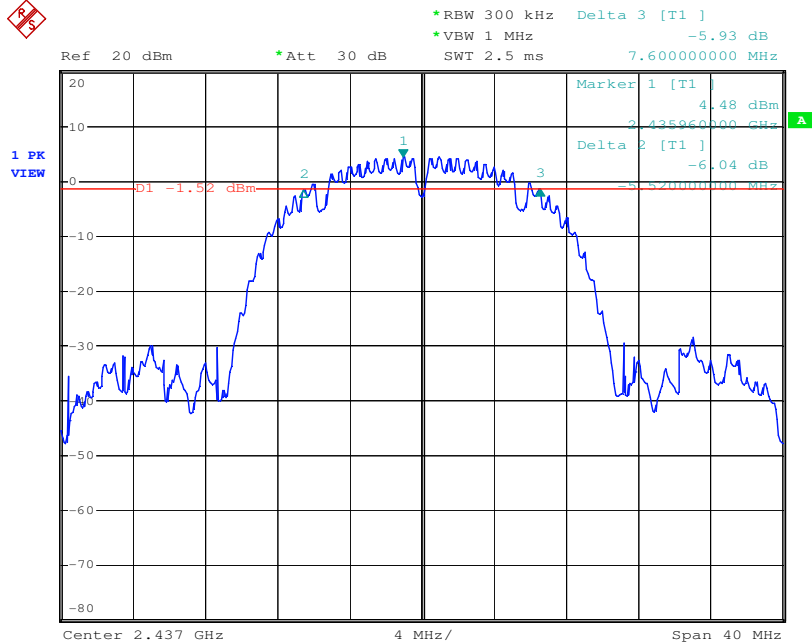


Date: 1.JAN.2000 00:24:12



Middle Channel for Antenna A

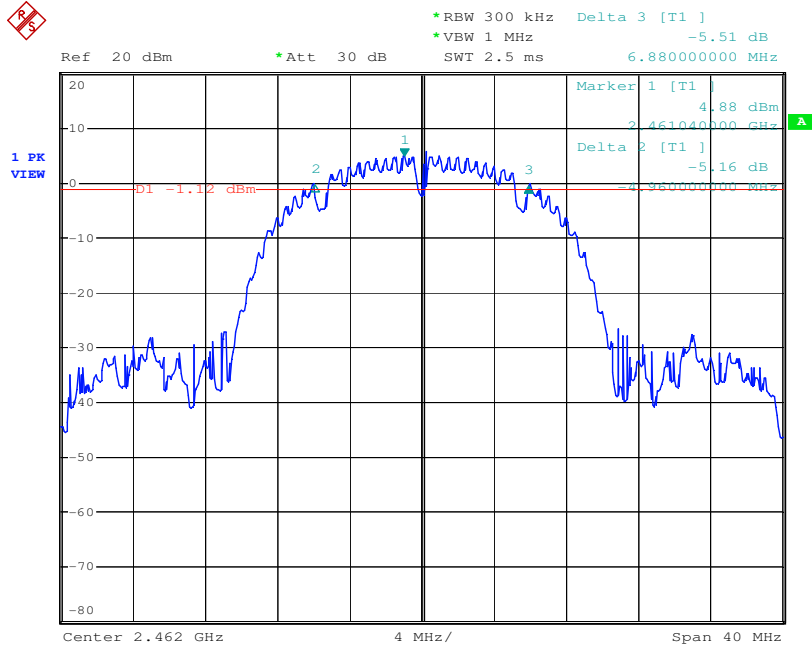
Test mode: 802.11b



Date: 20.AUG.2012 16:15:24

Highest Channel for Antenna A

Test mode: 802.11b

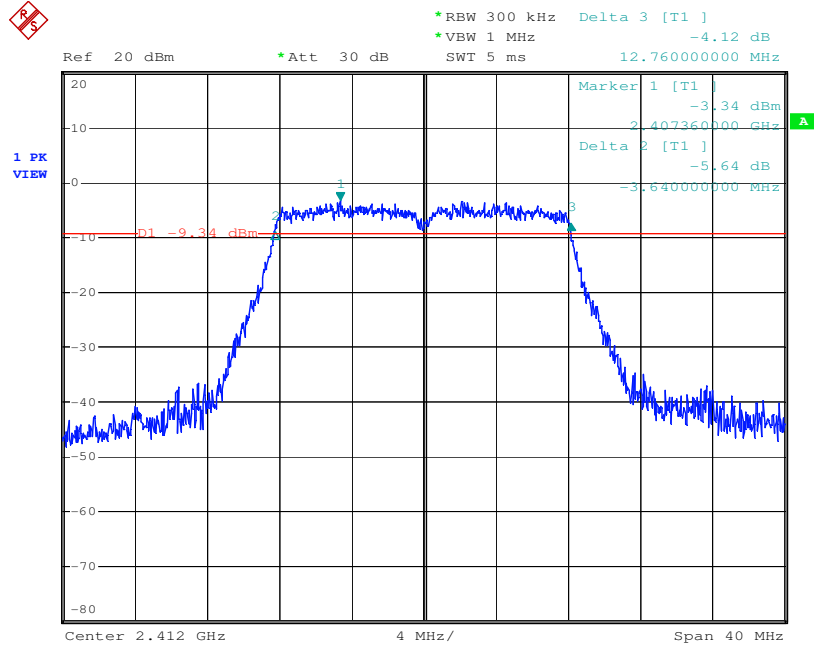


Date: 20.AUG.2012 16:52:05



Lowest Channel for Antenna A

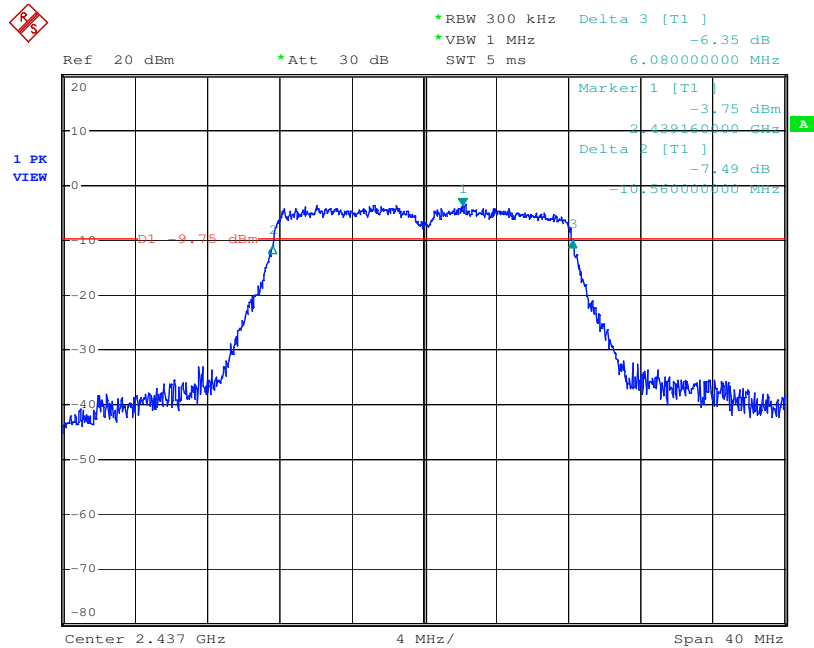
Test mode: 802.11g



Date: 1.JAN.2000 18:01:52

Middle Channel for Antenna A

Test mode: 802.11g

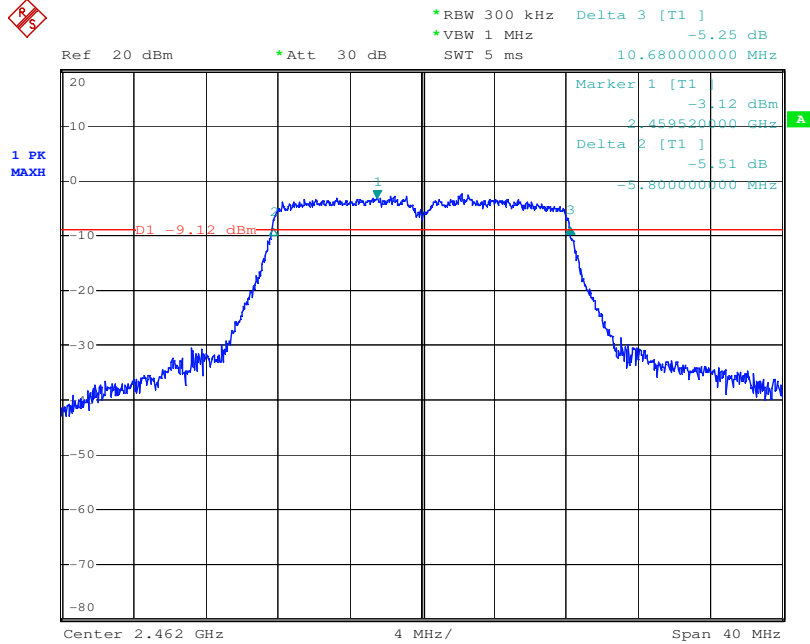


Date: 1.JAN.2000 20:32:55



Highest Channel for Antenna A

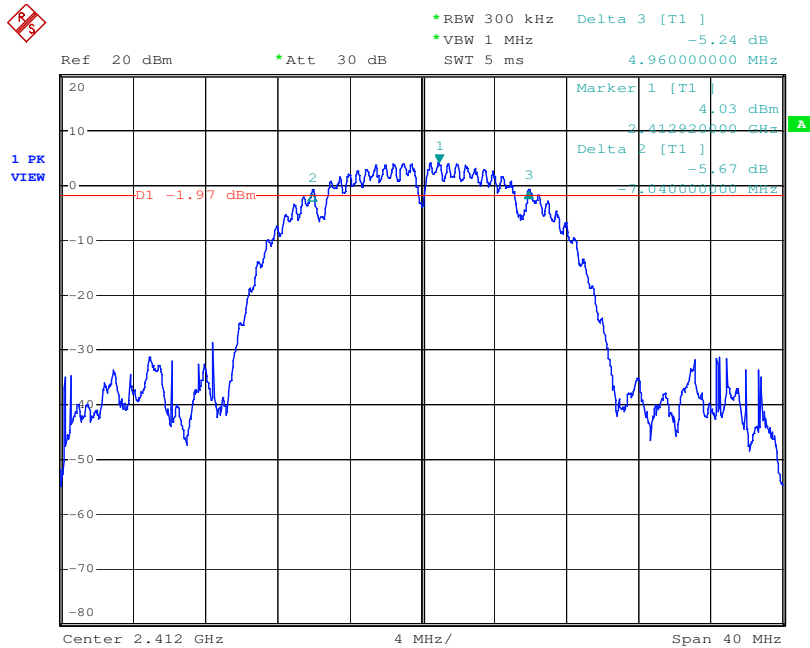
Test mode: 802.11g



Date: 1.JAN.2000 18:55:30

Lowest Channel for Antenna B

Test mode: 802.11b

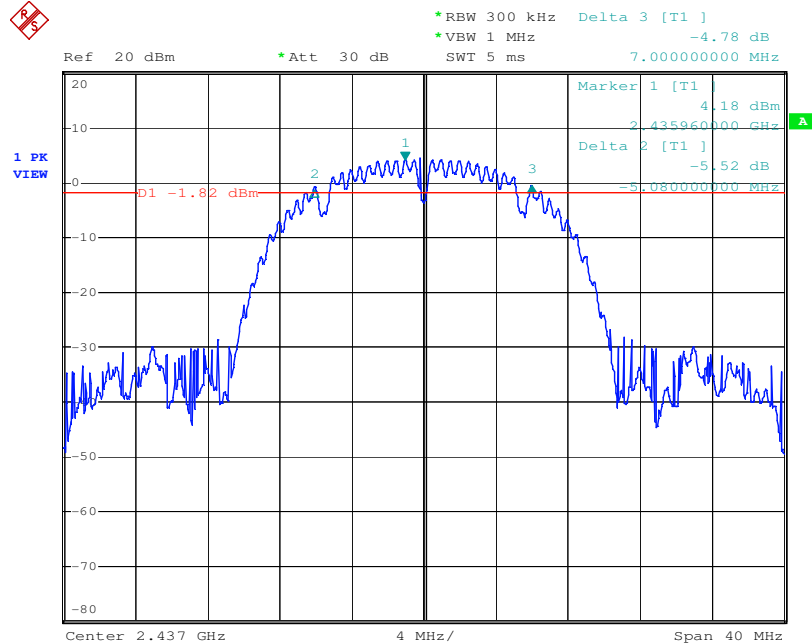


Date: 1.JAN.2000 00:26:38



Middle Channel for Antenna B

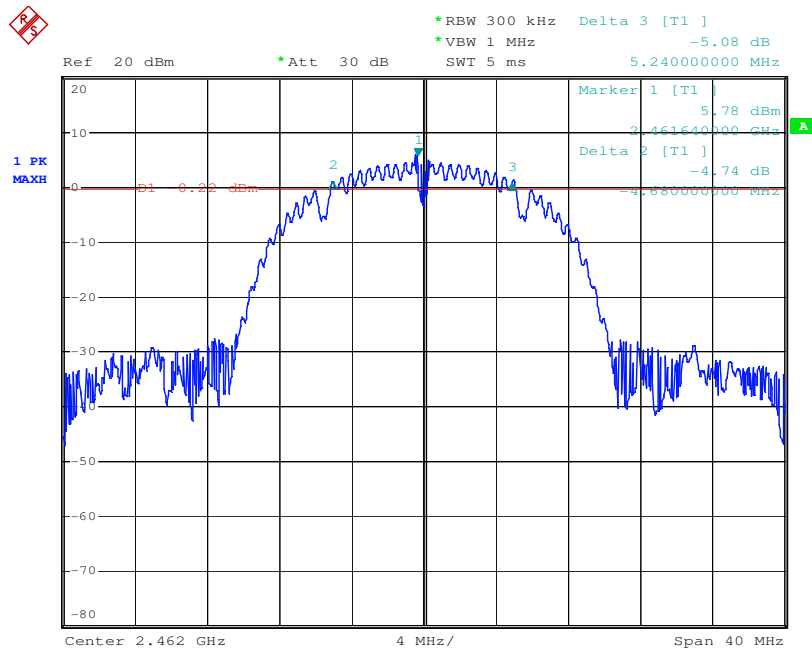
Test mode: 802.11b



Date: 1.JAN.2000 00:46:55

Highest Channel for Antenna B

Test mode: 802.11b

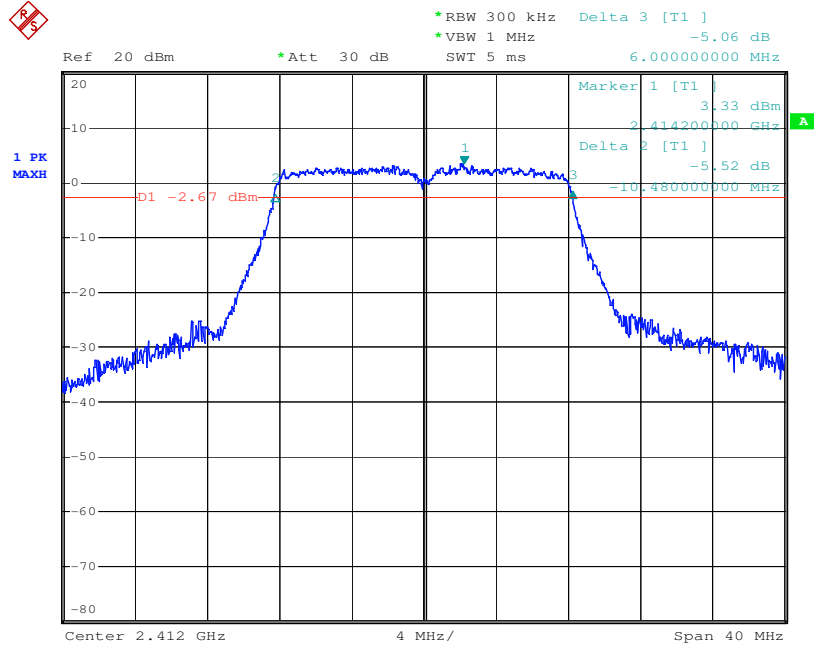


Date: 1.JAN.2000 00:57:25



Lowest Channel for Antenna B

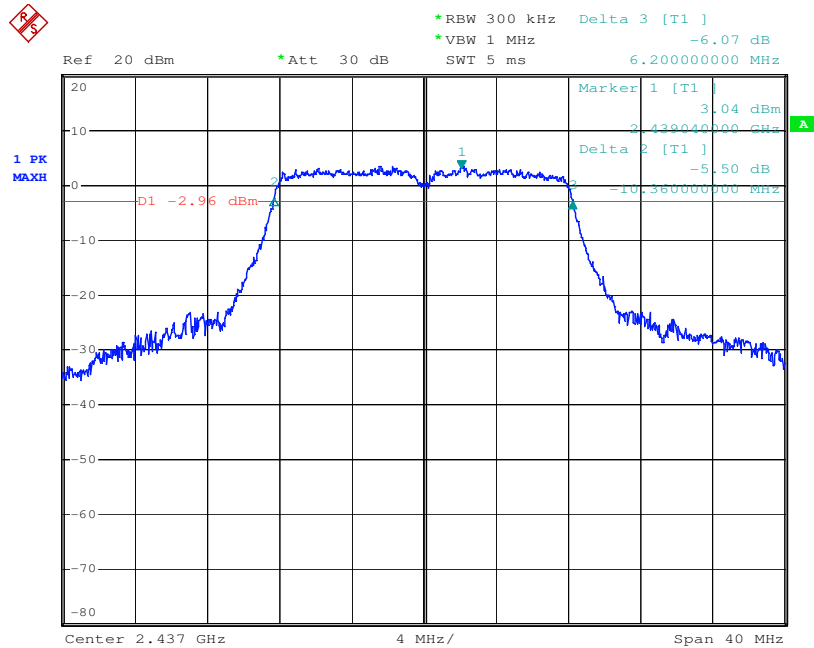
Test mode: 802.11g



Date: 1.JAN.2000 01:51:54

Middle Channel for Antenna B

Test mode: 802.11g

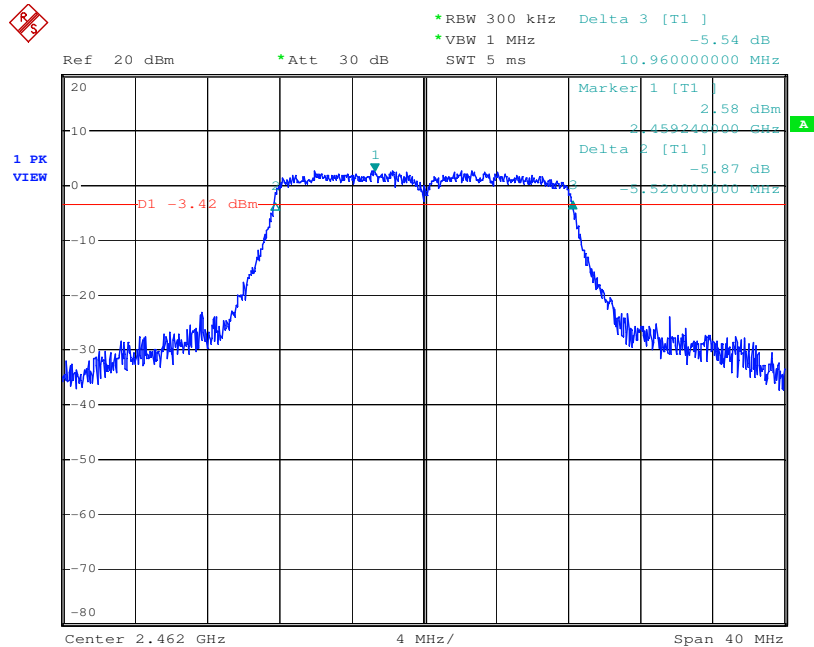


Date: 1.JAN.2000 02:04:32



Highest Channel for Antenna B

Test mode: 802.11g



Date: 1.JAN.2000 01:16:13





### 6.3 Peak Output Power Measurement

- Test Requirement:** FCC Part 15 15.247(a)(2),(b)
- Test date** August. 22, 2012
- Standard Applicable:** According to section 15.247(a)(2),(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.
- Measuremet Produre**
1. Place the EUT on the table and set it in transmitting mode.
  2. Remove the antenna from the EUT and then connect a low loss RF calbe from the antenna port to the spectrum.
  3. Set the occur band to the entire emission 26dB bandwidth of the signal.
  4. Record the max.channel power reading
- Repeat above procedures until all the frequency measured were complete.

#### Measurement Result:

Pre-scan under all rate at lowest channel 1 of Antenna A

Mode	802.11b							
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps				
Power (dBm)	17.09	16.92	16.86	16.82				
Mode	802.11g							
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Power (dBm)	13.89	13.77	13.74	13.72	13.69	13.65	13.63	13.60



**Test Data for Antenna A**

**Test mode: 802.11b**

CH	Frequency (MHz)	Reading Peak Power (dBm)	Cable Loss (dB)	Output Peak Power (dBm)	Output Peak Power (mW)	Peak Power Limit (dBm)	Result
Low	2412	17.09	0.5	17.59	57.41	30	PASS
Mid	2437	16.91	0.5	17.41	55.08	30	PASS
High	2462	18.18	0.5	18.68	73.79	30	PASS

**Test Data for Antenna A**

**Test mode: 802.11g**

CH	Frequency (MHz)	Reading Peak Power (dBm)	Cable Loss (dB)	Output Peak Power (dBm)	Output Peak Power (mW)	Peak Power Limit (dBm)	Result
Low	2412	13.89	0.5	14.39	27.48	30	PASS
Mid	2437	13.10	0.5	13.60	22.91	30	PASS
High	2462	13.30	0.5	13.80	23.99	30	PASS

**Test Data for Antenna B**

**Test mode: 802.11b**

CH	Frequency (MHz)	Reading Peak Power (dBm)	Cable Loss (dB)	Output Peak Power (dBm)	Output Peak Power (mW)	Peak Power Limit (dBm)	Result
Low	2412	16.93	0.5	17.43	55.34	30	PASS
Mid	2437	16.92	0.5	17.42	55.21	30	PASS
High	2462	17.20	0.5	17.70	58.88	30	PASS

**Test Data for Antenna B**

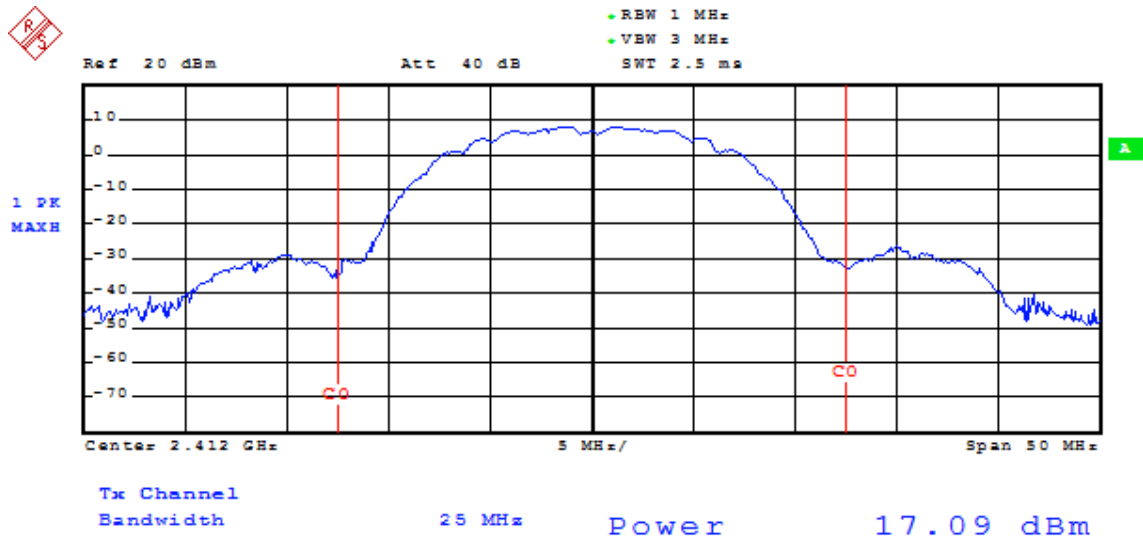
**Test mode: 802.11g**

CH	Frequency (MHz)	Reading Peak Power (dBm)	Cable Loss (dB)	Output Peak Power (dBm)	Output Peak Power (mW)	Peak Power Limit (dBm)	Result
Low	2412	19.43	0.5	19.93	98.40	30	PASS
Mid	2437	19.33	0.5	19.83	96.16	30	PASS
High	2462	19.34	0.5	19.84	96.38	30	PASS



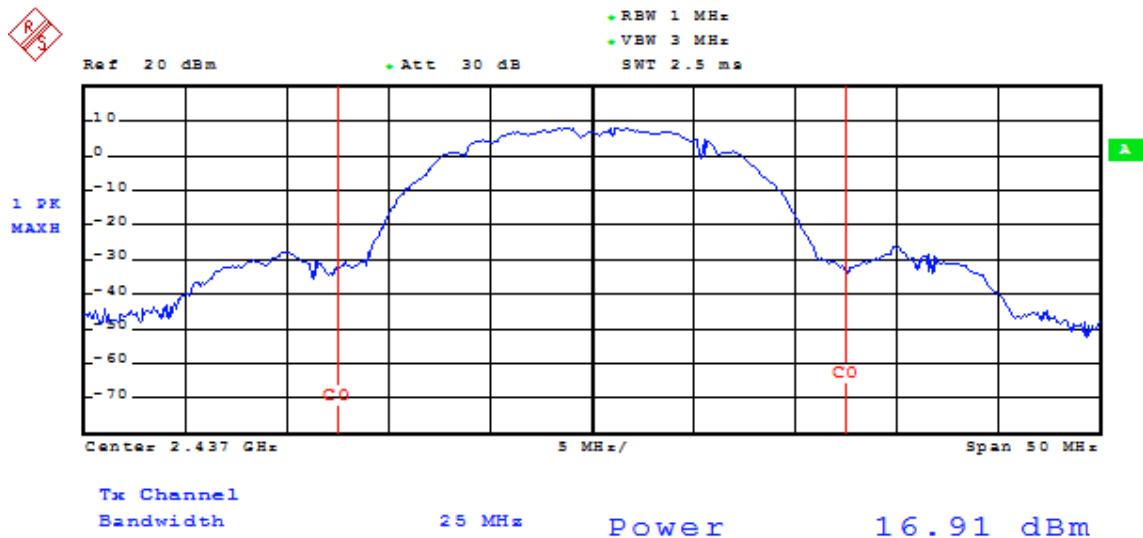
Low Channel for Antenna A

Test mode: 802.11b



Mid Channel for Antenna A

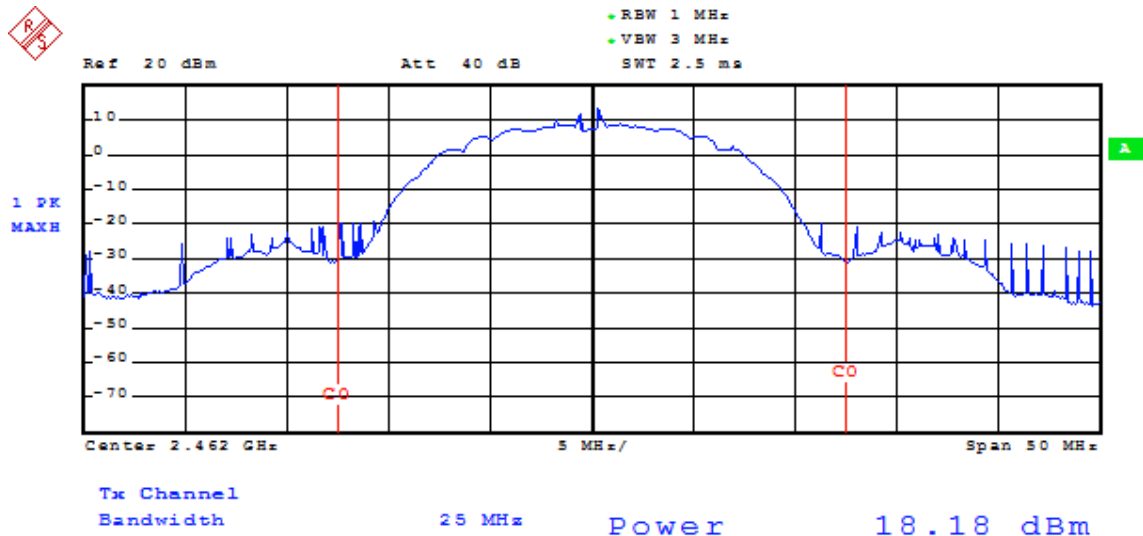
Test mode: 802.11b





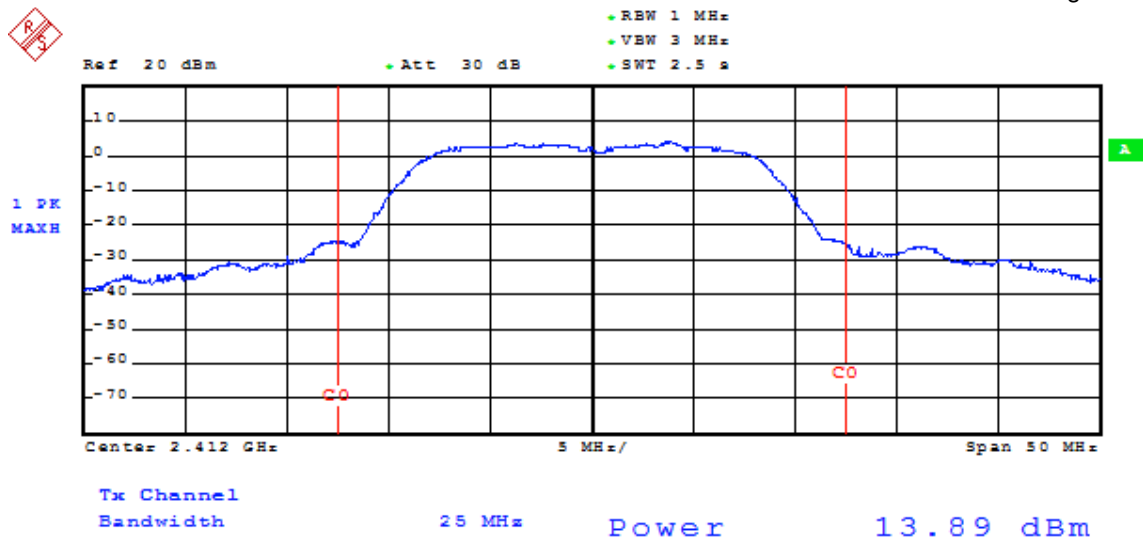
High Channel for Antenna A

Test mode: 802.11b



Low Channel for Antenna A

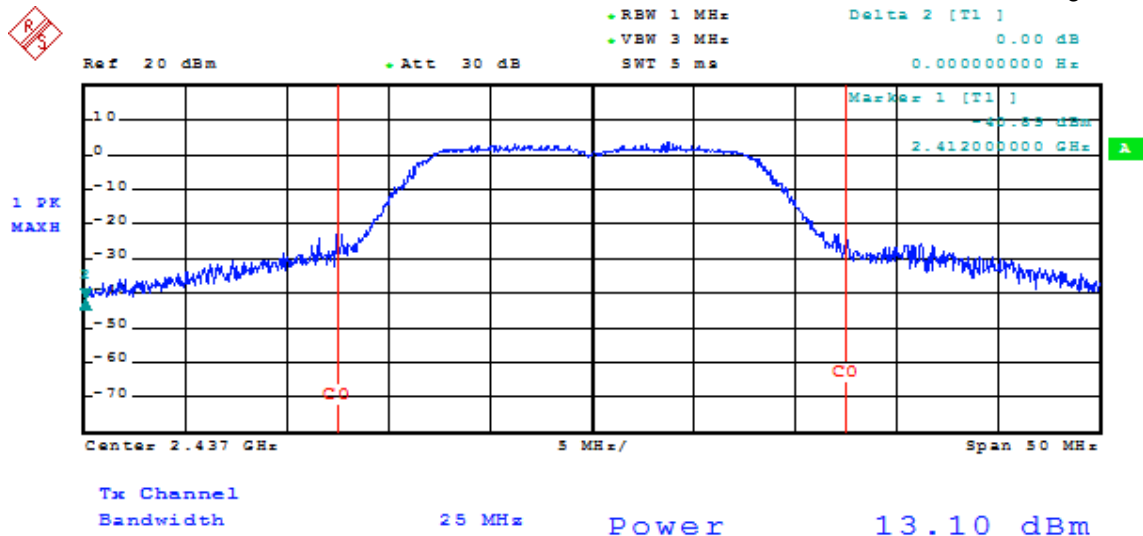
Test mode: 802.11g





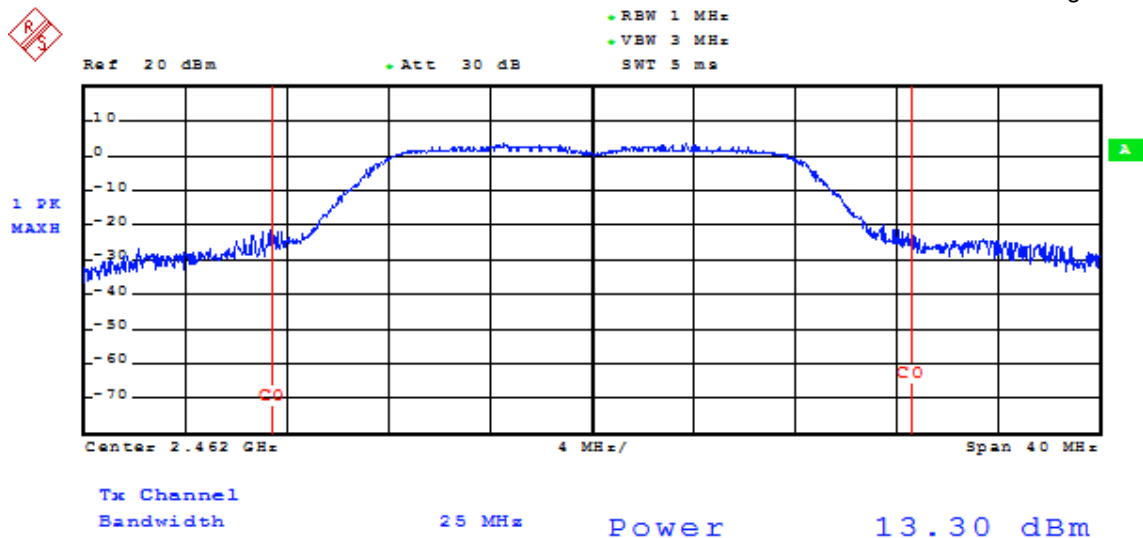
Mid Channel for Antenna A

Test mode: 802.11g



High Channel for Antenna A

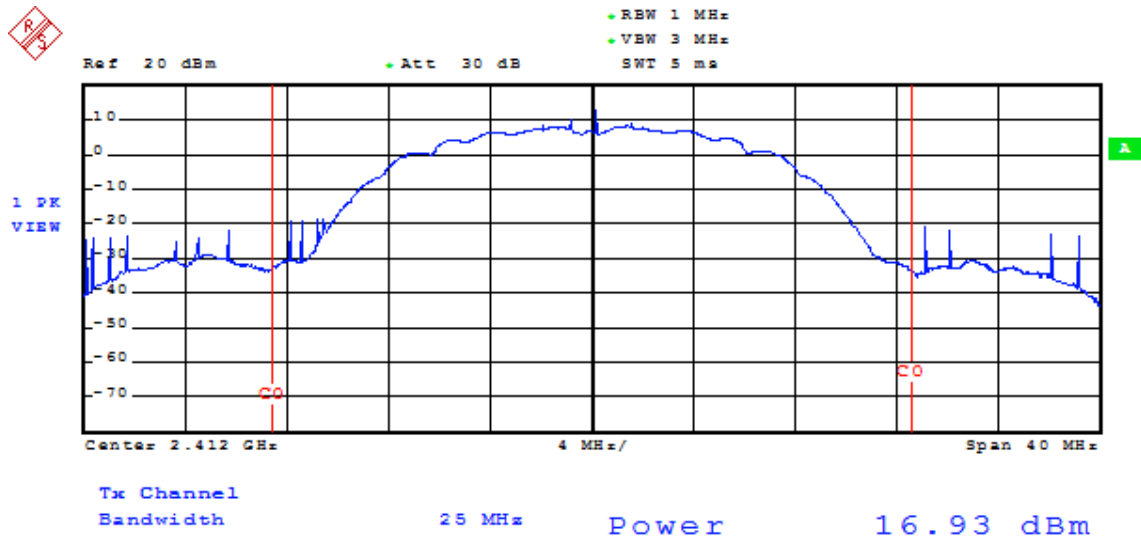
Test mode: 802.11g





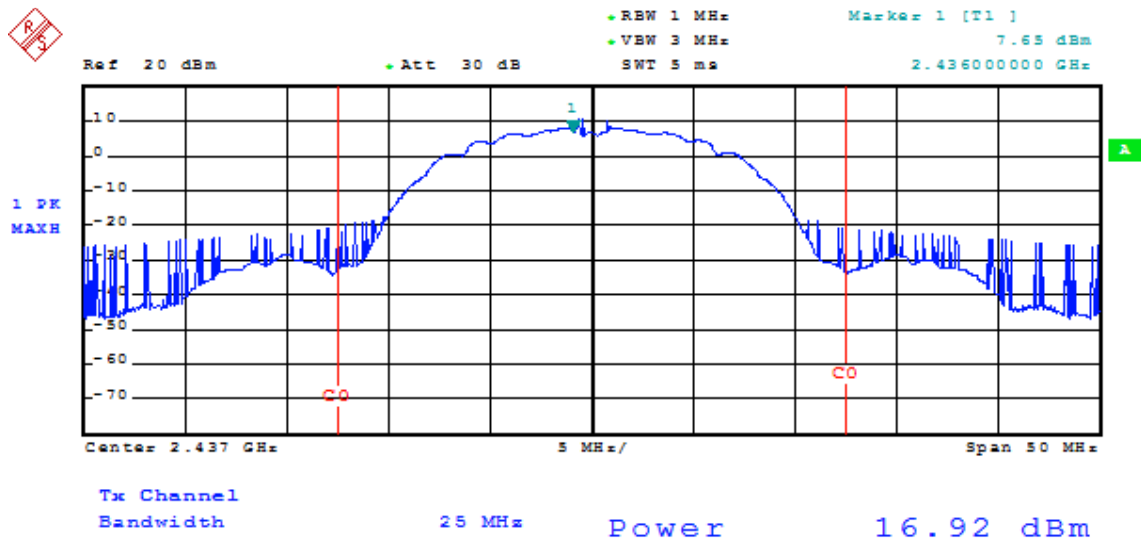
Low Channel for Antenna B

Test mode: 802.11b



Mid Channel for Antenna B

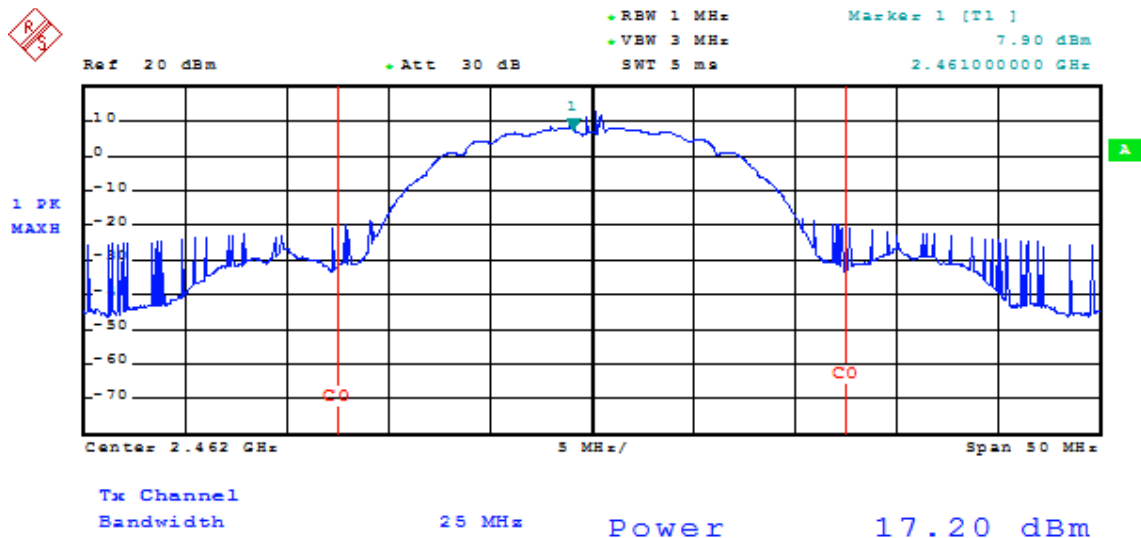
Test mode: 802.11b





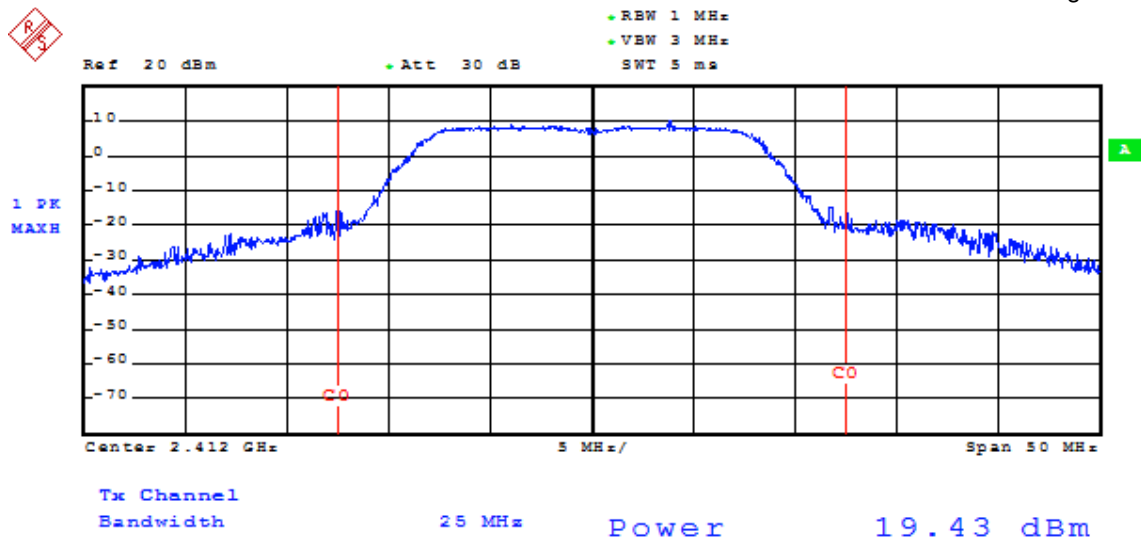
High Channel for Antenna B

Test mode: 802.11b



Low Channel for Antenna B

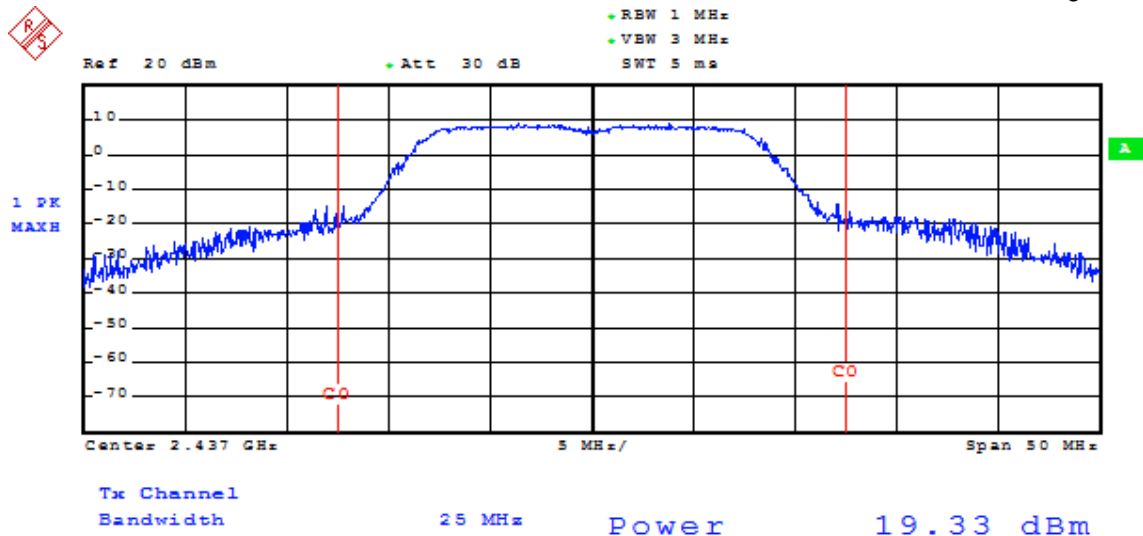
Test mode: 802.11g





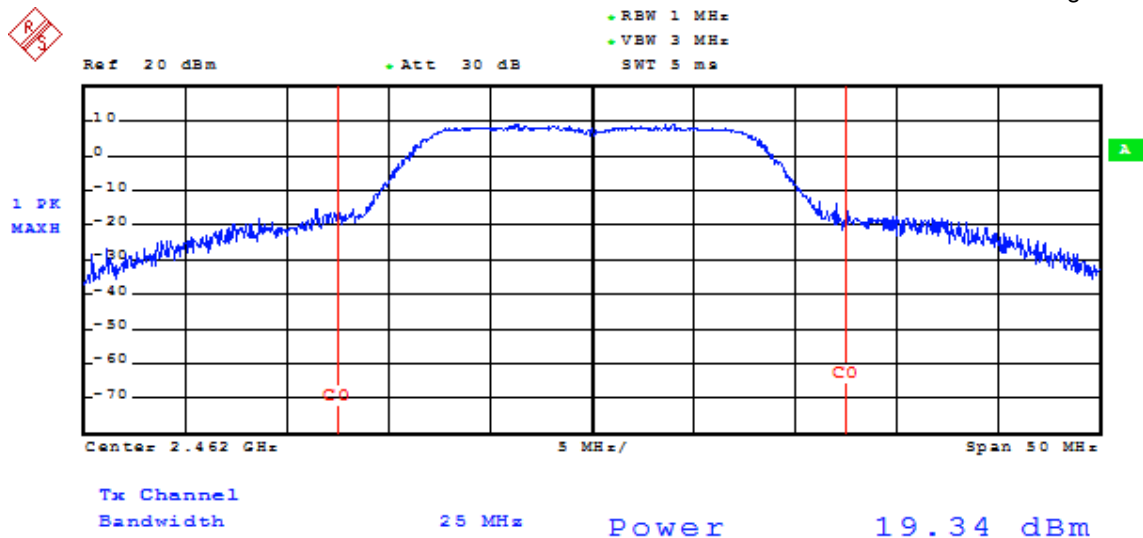
Mid Channel for Antenna B

Test mode: 802.11g



High Channel for Antenna B

Test mode: 802.11g





## 6.4 Peak Power Spectral Density

**Test Requirement:** FCC Part15 247(e)

**Test date:** August 20, 2012

**Standard Applicable:** According to section 15.247(e), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dB in any 3KHz band during any time in terval 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 powr spectral density.

**Measurement Procedure:** The EUT was tested according ANSI C63.10,2009 Clause 6.11 for compliance to FCC 47CFR 15.247 requiremnts.

### Measurement Result:

#### Test Data for Antenna A

**Test mode: 802.11b**

CH	Frequency (MHz)	Reading (dBm)	Cable Loss (dB)	RF Power Density (dBm)	Limit (dBm)	Result
LOW	2411.45	-8.77	0.5	-8.27	8	PASS
MID	2435.45	-8.20	0.5	-7.70	8	PASS
HIGH	2460.63	-9.25	0.5	-8.75	8	PASS

#### Test Data for Antenna A

**Test mode: 802.11g**

CH	Frequency (MHz)	Reading (dBm)	Cable Loss (dB)	RF Power Density (dBm)	Limit (dBm)	Result
LOW	2415.66	-19.44	0.5	-18.94	8	PASS
MID	2433.22	-19.85	0.5	-19.35	8	PASS
HIGH	2466.02	-20.41	0.5	-19.91	8	PASS

#### Test Data for Antenna B

**Test mode: 802.11b**

CH	Frequency (MHz)	Reading (dBm)	Cable Loss (dB)	RF Power Density (dBm)	Limit (dBm)	Result
LOW	2412.95	-5.44	0.5	-4.94	8	PASS
MID	2434.95	-6.65	0.5	-6.15	8	PASS
HIGH	2461.45	-8.48	0.5	-7.98	8	PASS

#### Test Data for Antenna B

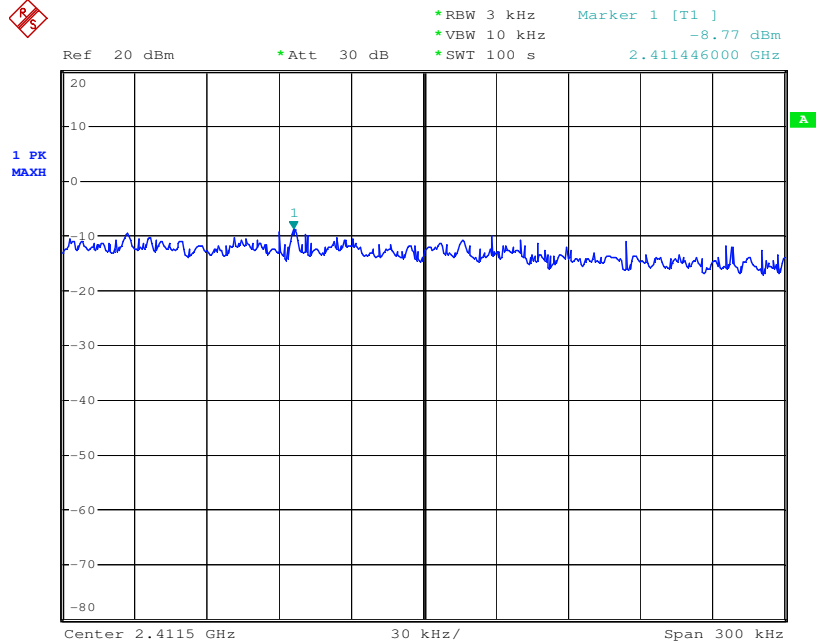
**Test mode: 802.11g**

CH	Frequency (MHz)	Reading (dBm)	Cable Loss (dB)	RF Power Density (dBm)	Limit (dBm)	Result
LOW	2415.70	-13.83	0.5	-13.33	8	PASS
MID	2433.51	-13.07	0.5	-12.57	8	PASS
HIGH	2464.70	-12.95	0.5	-12.45	8	PASS



Low Channel for Antenna A

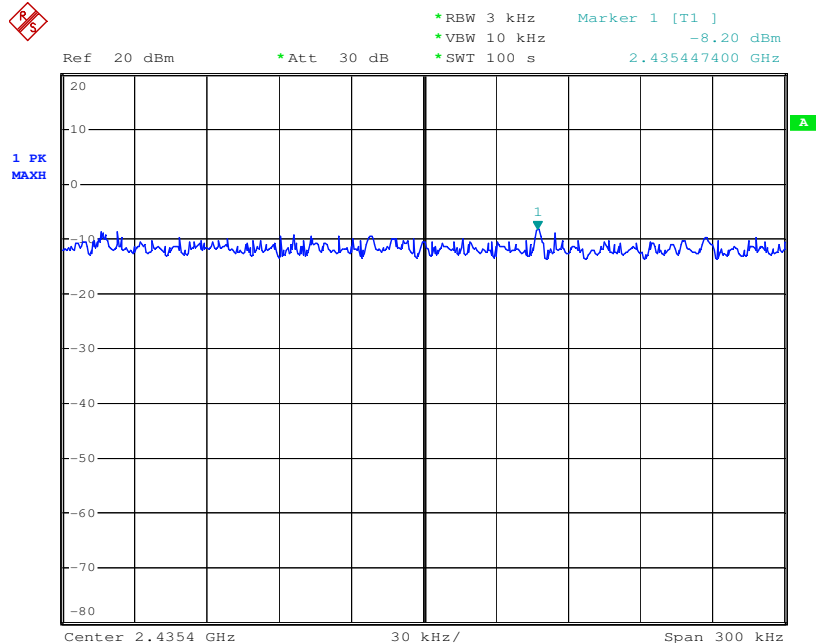
Test mode: 802.11b



Date: 20.AUG.2012 15:53:29

Mid Channel for Antenna A

Test mode: 802.11b

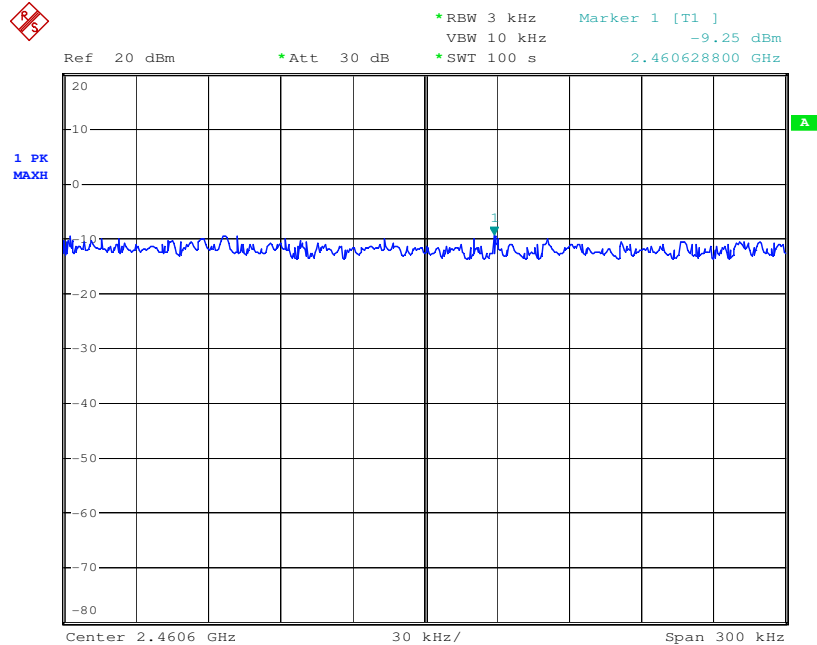


Date: 20.AUG.2012 16:37:07



High Channel for Antenna A

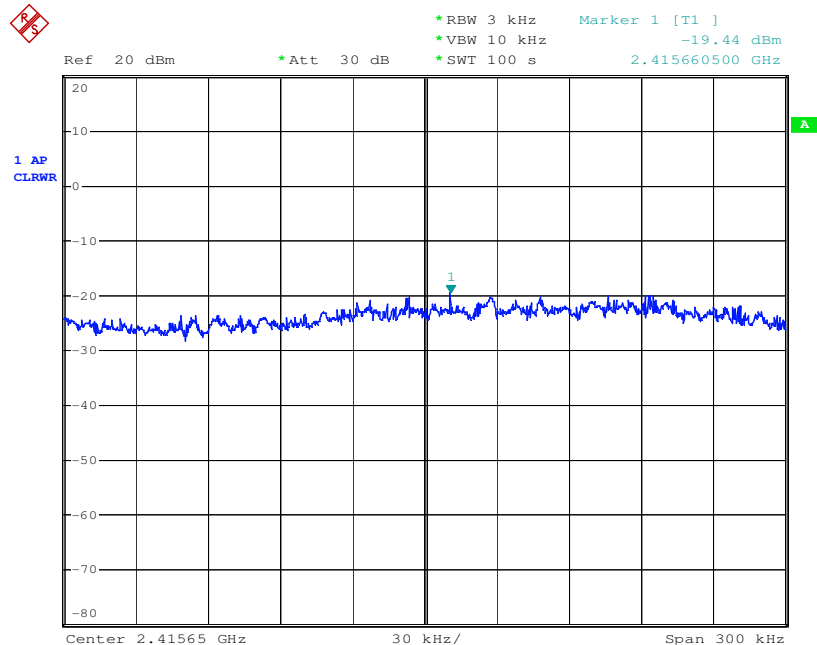
Test mode: 802.11b



Date: 20.AUG.2012 17:14:10

Low Channel for Antenna A

Test mode: 802.11g

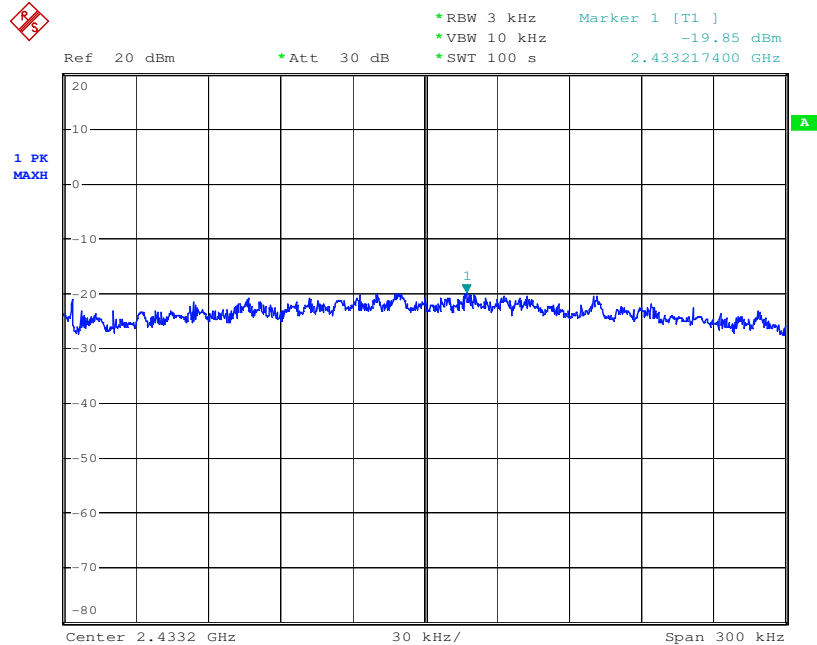


Date: 1.JAN.2000 18:35:52



Mid Channel for Antenna A

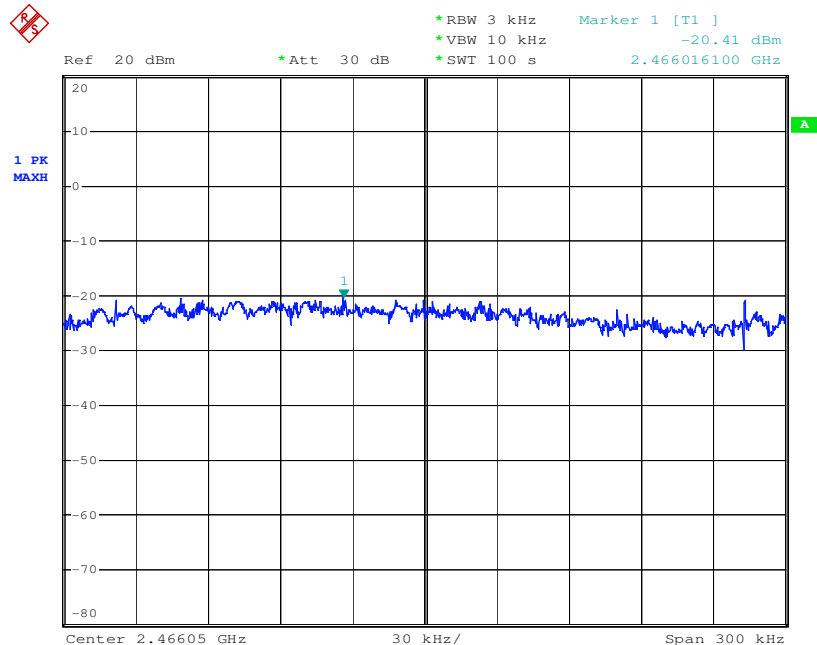
Test mode: 802.11g



Date: 1.JAN.2000 18:52:23

High Channel for Antenna A

Test mode: 802.11g

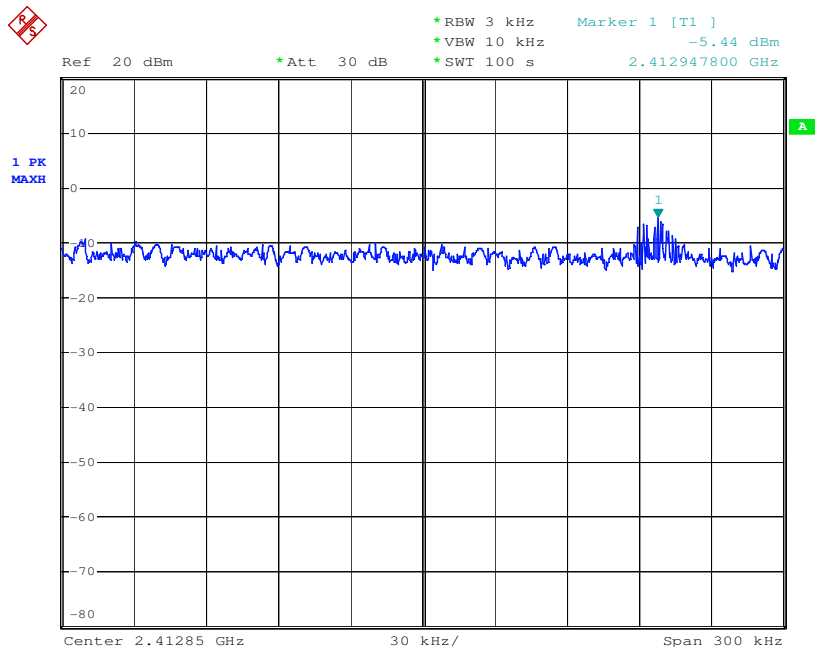


Date: 1.JAN.2000 19:03:57



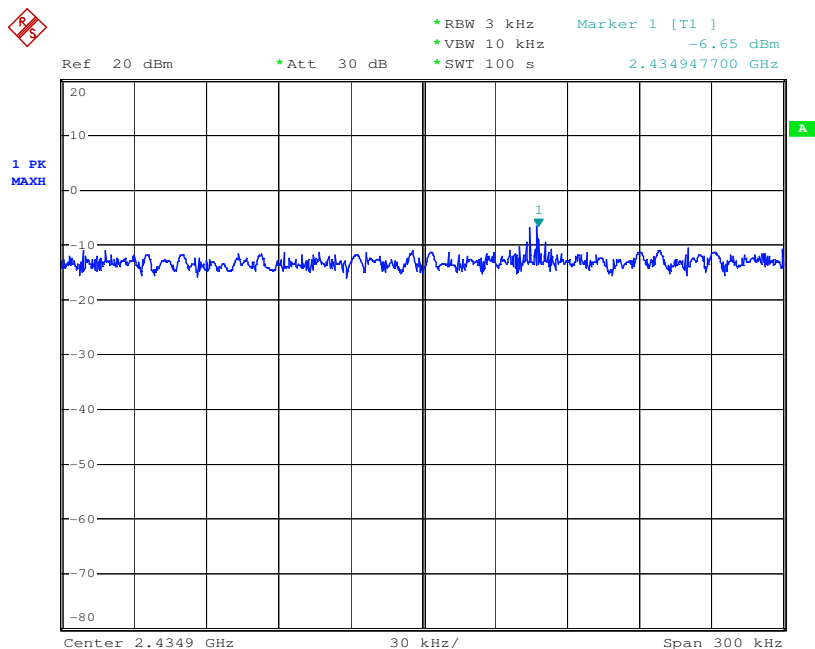
Low Channel for Antenna B

Test mode: 802.11b



Mid Channel for Antenna B

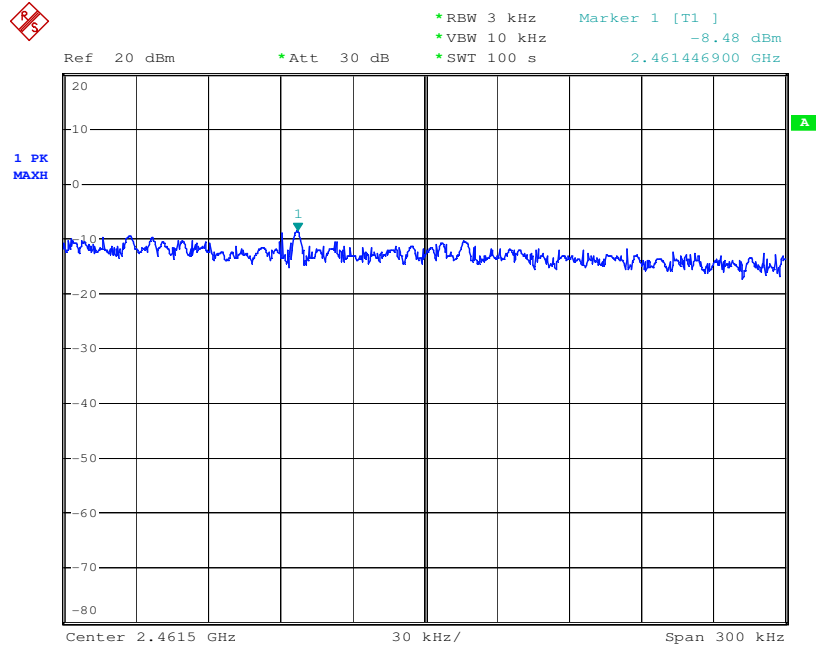
Test mode: 802.11b





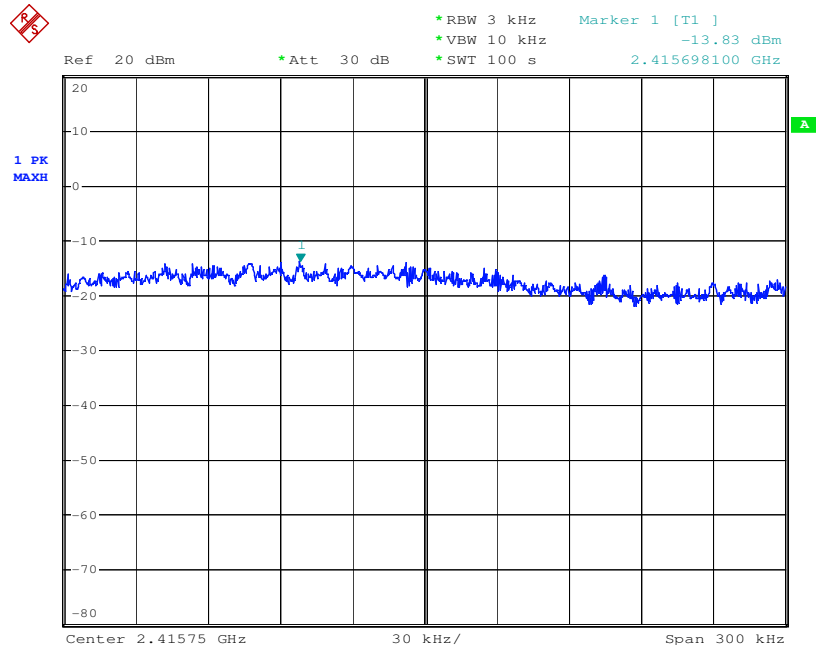
High Channel for Antenna B

Test mode: 802.11b



Low Channel for Antenna B

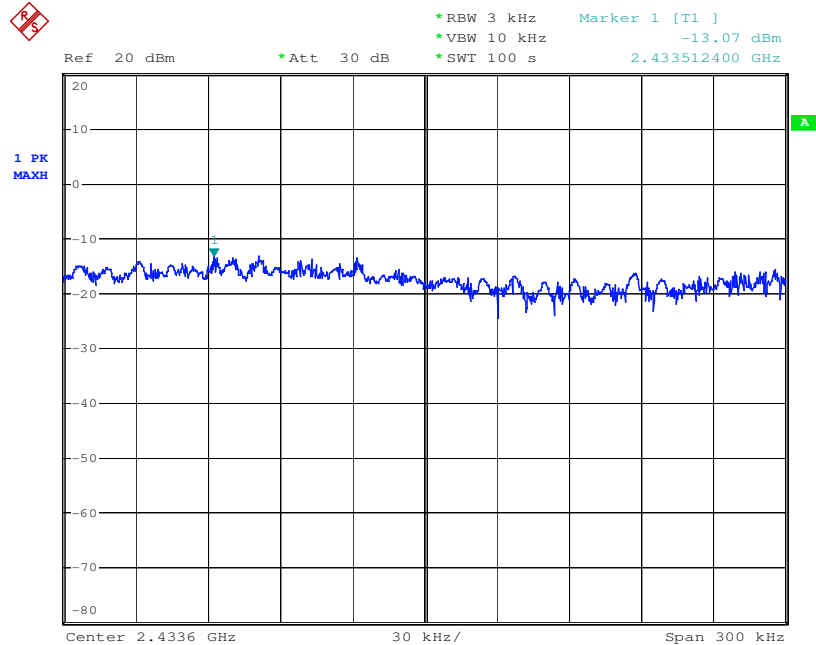
Test mode: 802.11g





Mid Channel for Antenna B

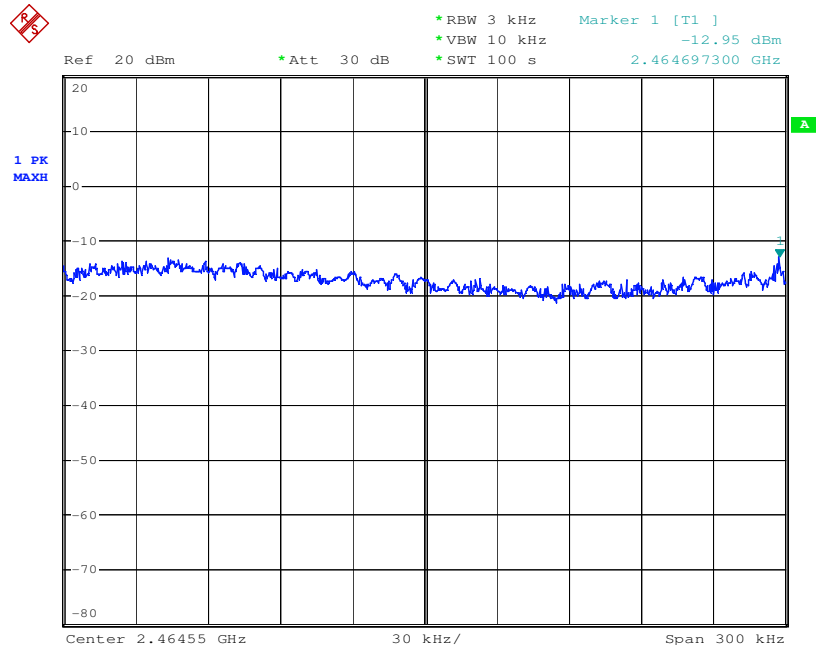
Test mode: 802.11g



Date: 1.JAN.2000 02:12:40

High Channel for Antenna B

Test mode: 802.11g



Date: 1.JAN.2000 01:15:00

## 6.5 Conducted Spurious Emission Test

**Test Requirement:** FCC Part15 247(c)

**Test date:** August. 20, 2012

**Standard Applicable:** According to section 15.247(c), in any 100KHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in section 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

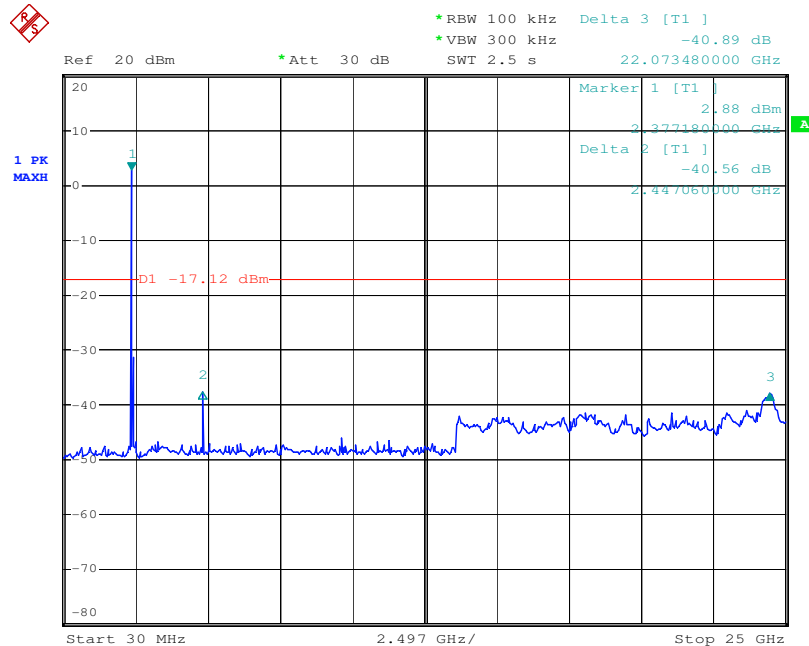
### Measurement Procedure:

1. Place the EUT on the table 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 the spectrum analyzer.
3. Set center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW=100KHz VBW=300KHz, Sweep = auto
6. Repeat above procedures until all frequency measured were complete.

## Measurement Result:

Low Channel for Antenna A

Test mode: 802.11b

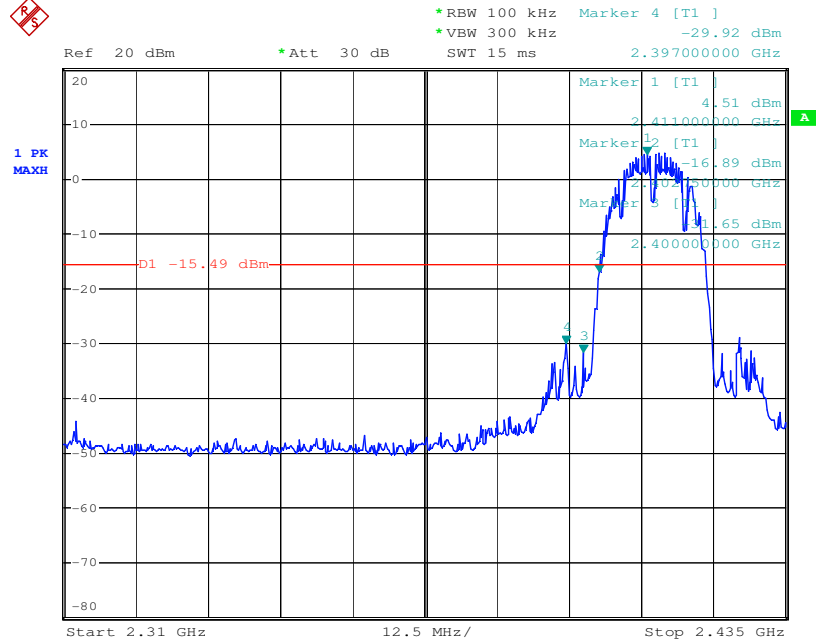


Date: 20.AUG.2012 15:44:34





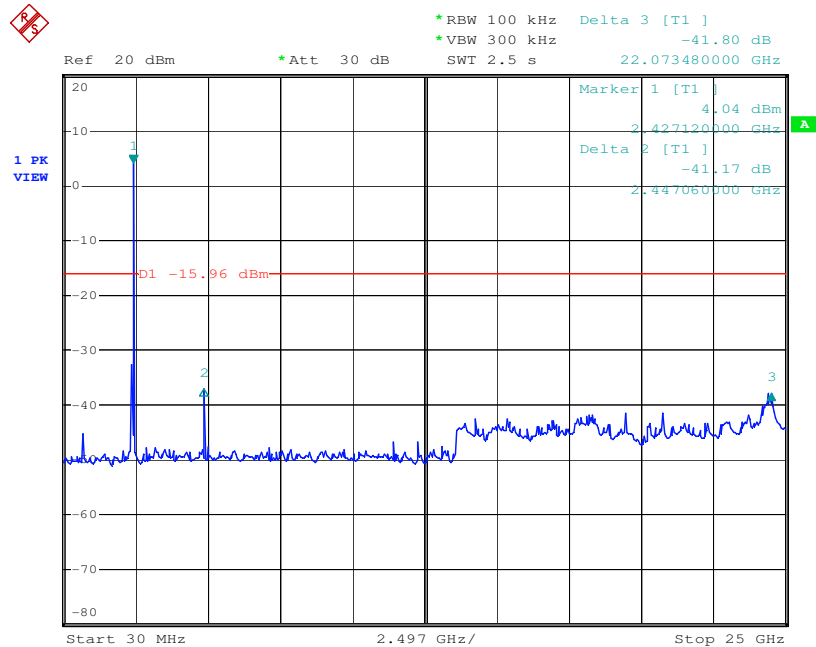
Band Edge (Conducted Mode)



Date: 20.AUG.2012 16:05:30

Middle Channel for Antenna A

Test mode: 802.11b

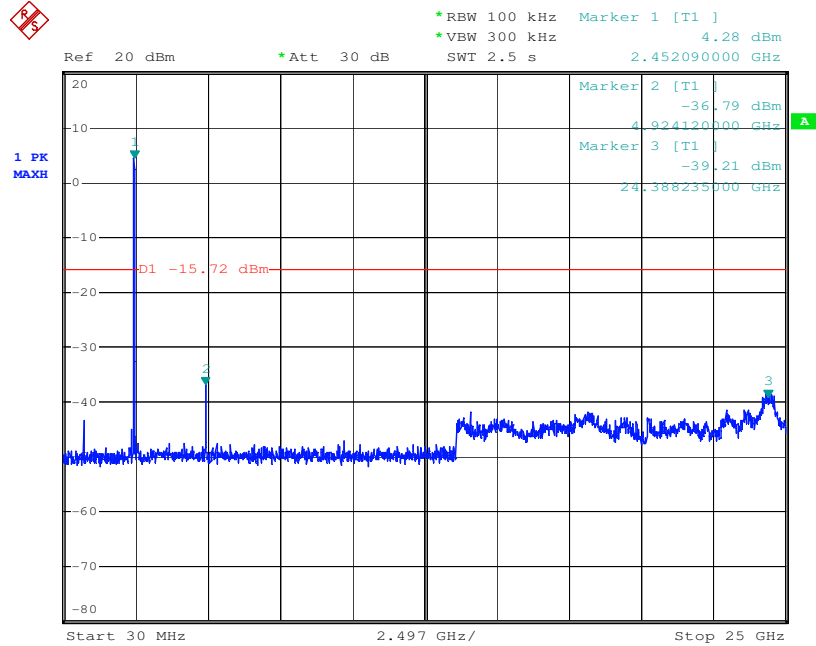


Date: 20.AUG.2012 16:25:43



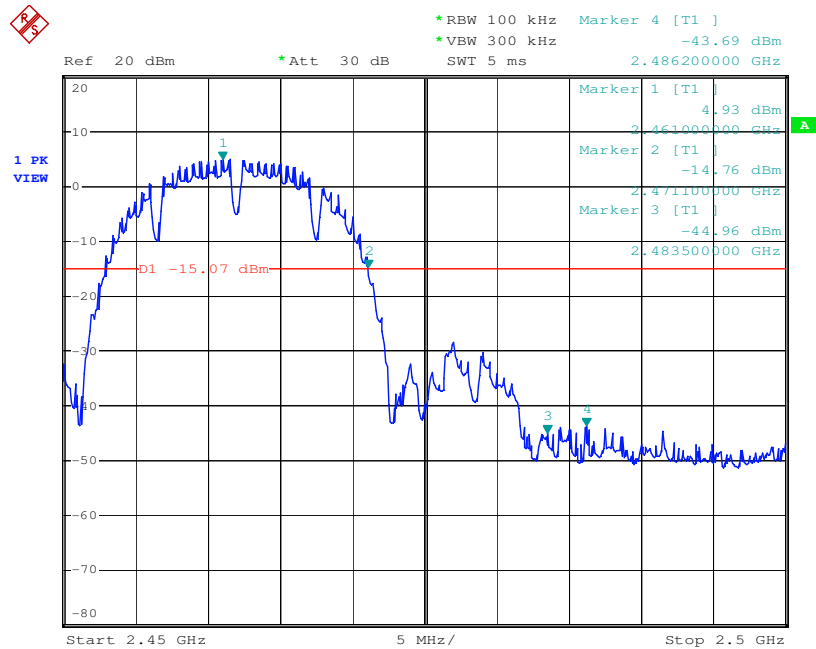
High Channel for Antenna A

Test mode: 802.11b



Date: 20.AUG.2012 17:47:13

Band Edge (Conducted Mode)

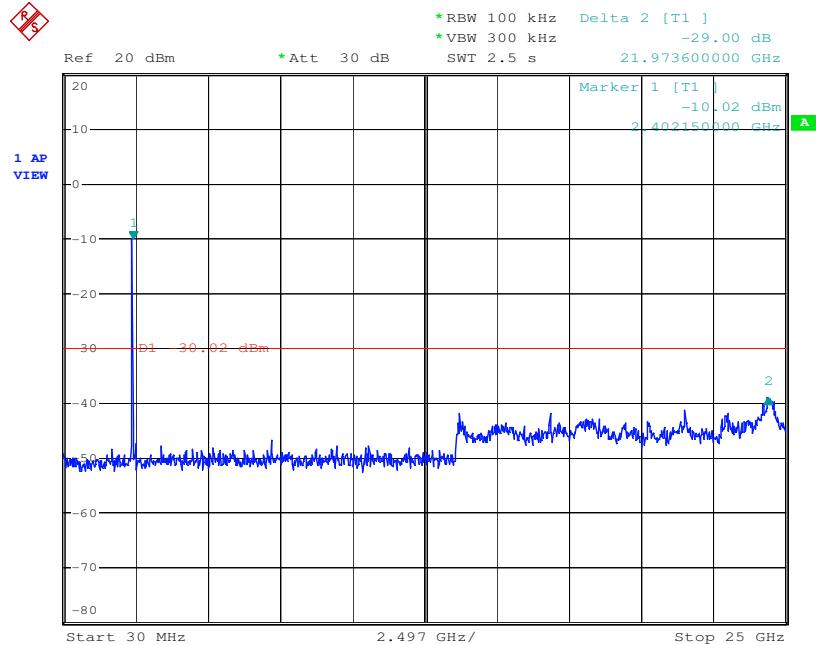


Date: 20.AUG.2012 17:01:05

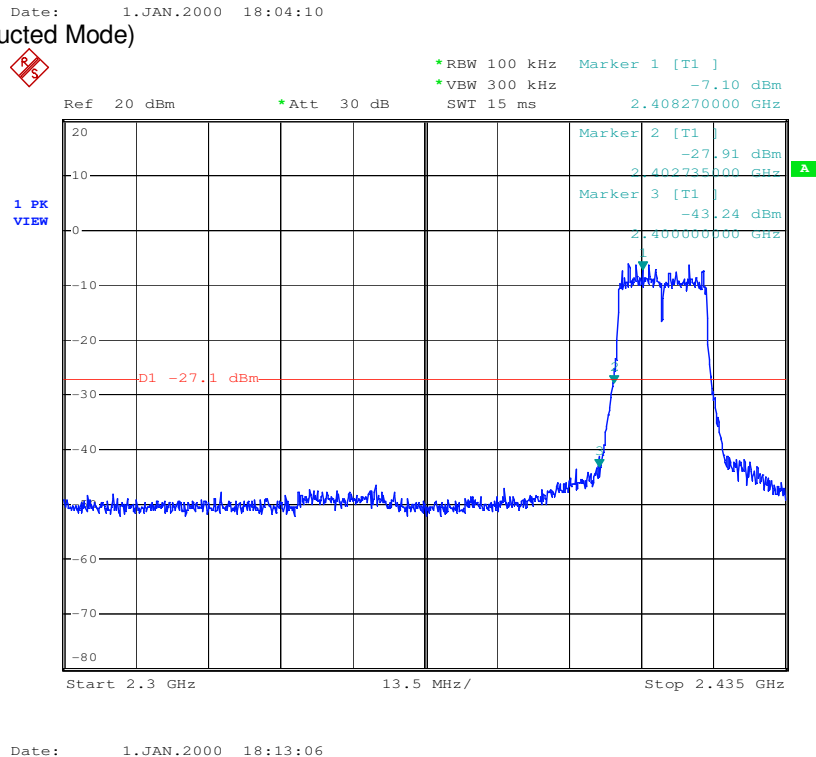


Low Channel for Antenna A

Test mode: 802.11g



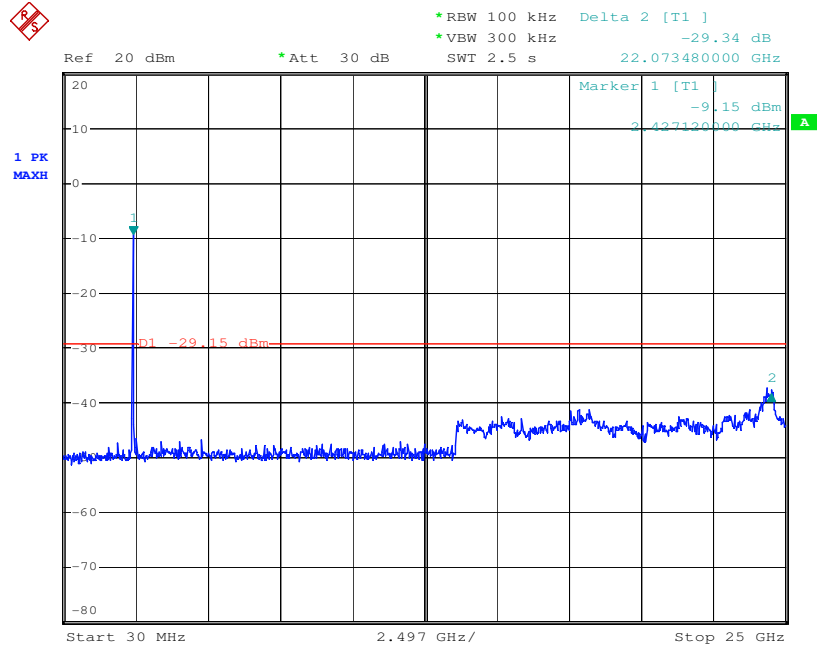
Band Edge (Conducted Mode)





Middle Channel for Antenna A

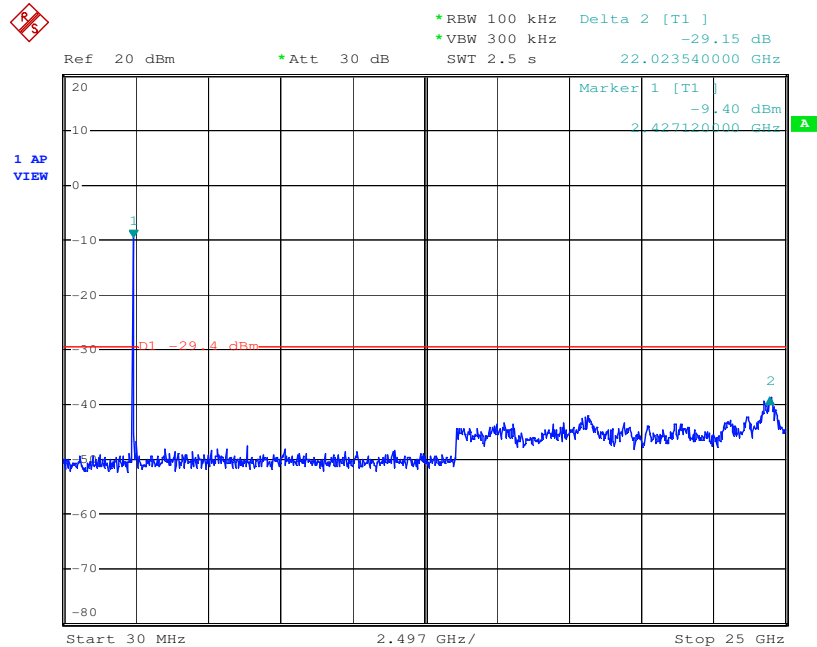
Test mode: 802.11g



Date: 1.JAN.2000 18:47:45

High Channel for Antenna A

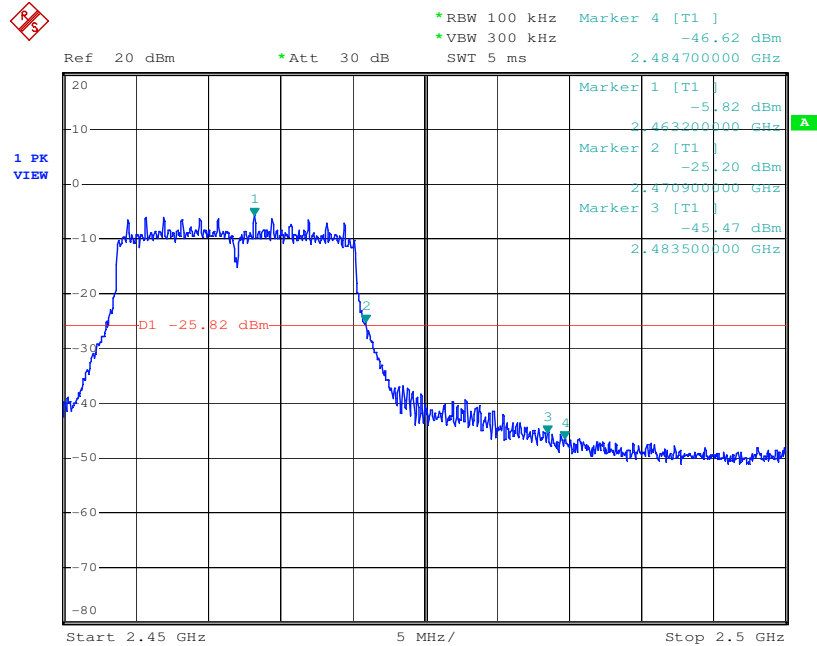
Test mode: 802.11g



Date: 1.JAN.2000 19:07:47



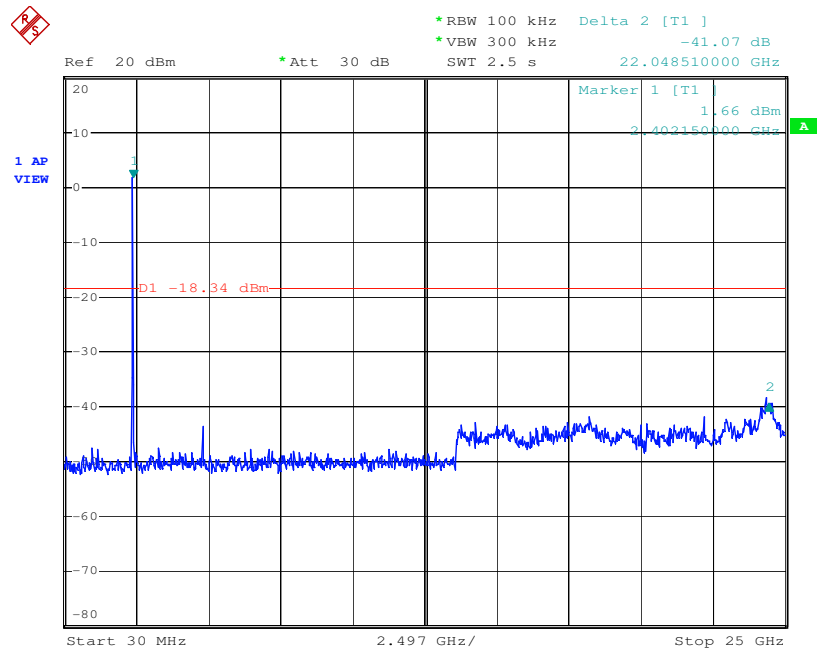
### Band Edge (Conducted Mode)



Date: 1.JAN.2000 19:14:22

### Low Channel for Antenna B

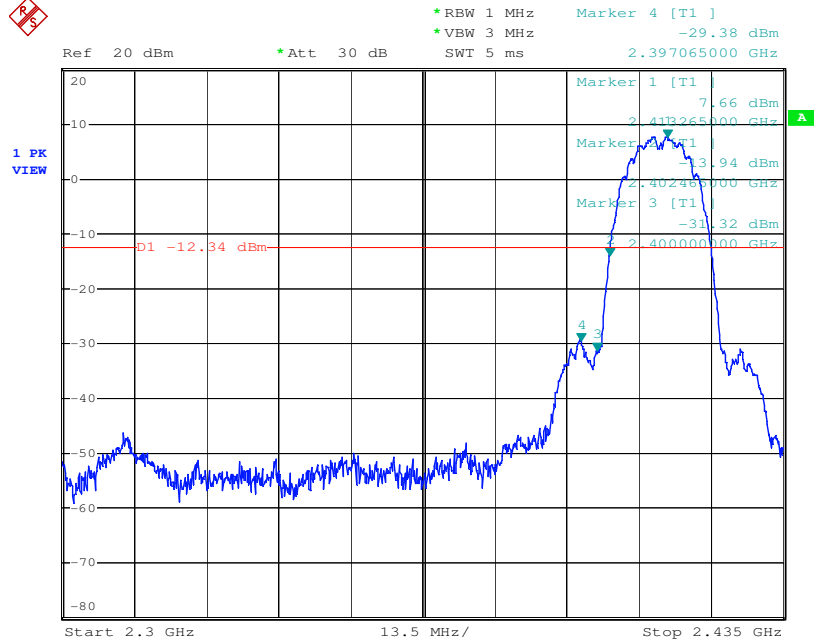
Test mode: 802.11b



Date: 1.JAN.2000 00:29:38



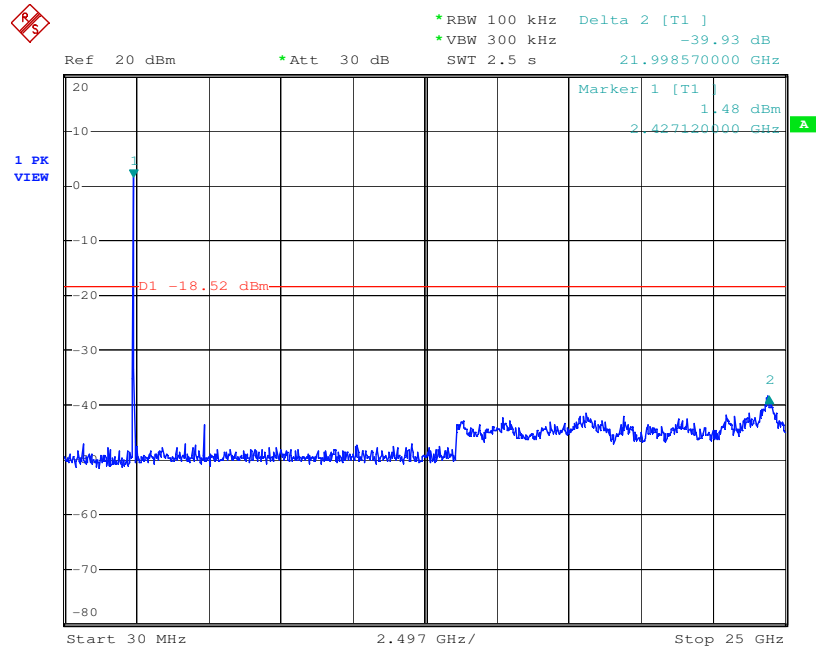
Band Edge (Conducted Mode)



Date: 1.JAN.2000 00:34:55

Middle Channel for Antenna B

Test mode: 802.11b

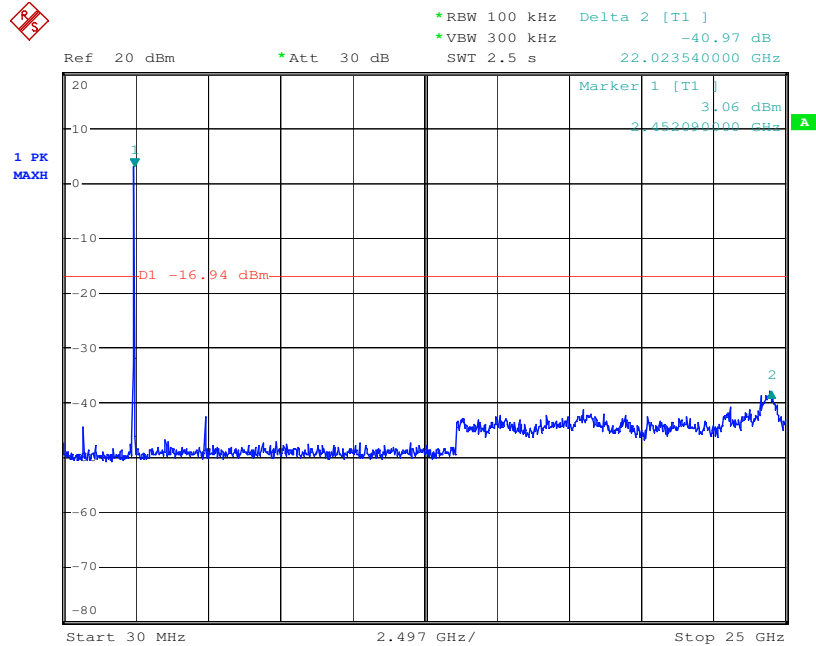


Date: 1.JAN.2000 00:50:32



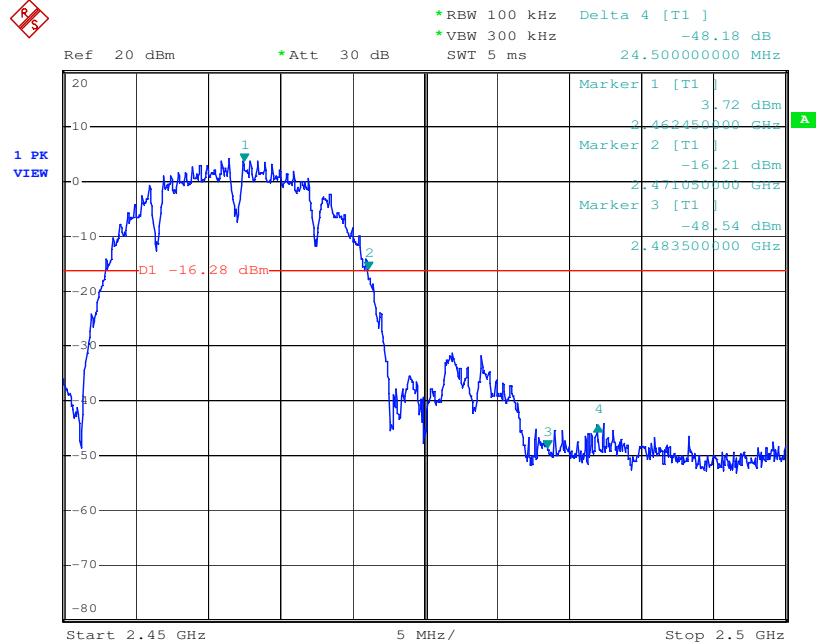
High Channel for Antenna B

Test mode: 802.11b



Date: 1.JAN.2000 01:03:38

Band Edge (Conducted Mode)

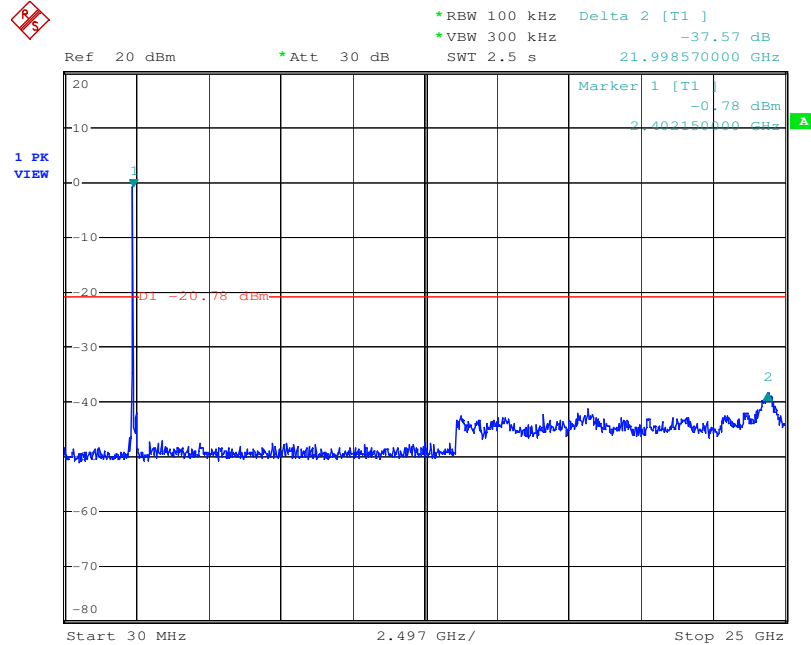


Date: 1.JAN.2000 01:01:57

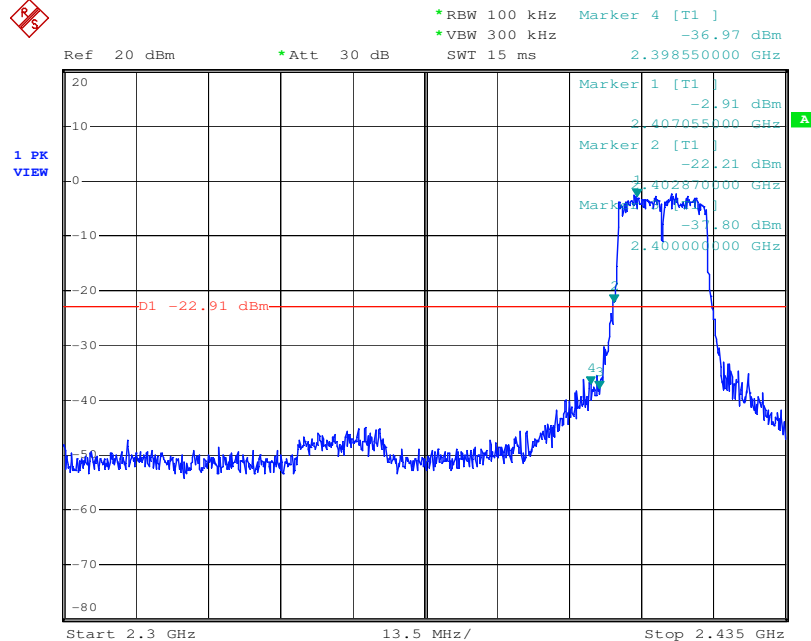


Low Channel for Antenna B

Test mode: 802.11g



Band Edge (Conducted Mode)



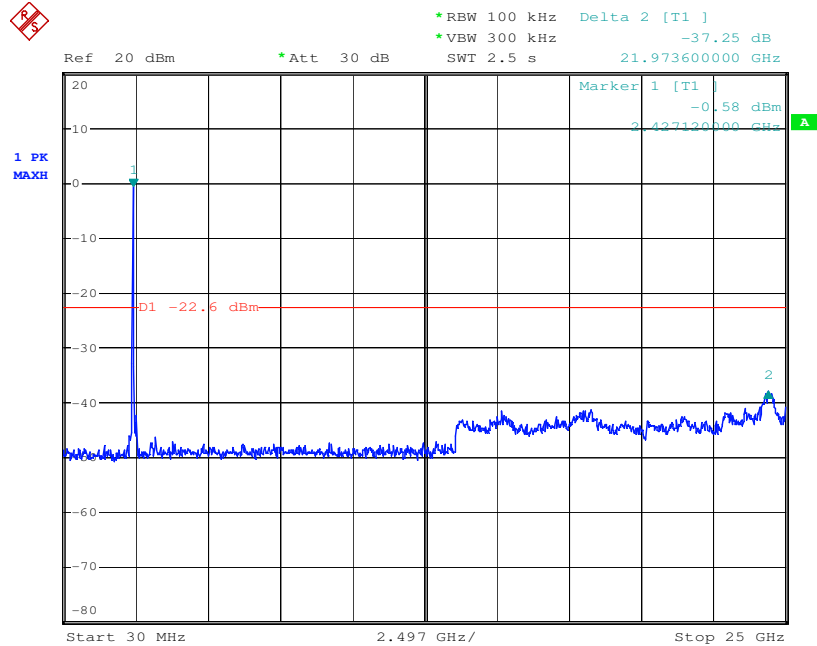
Date: 1.JAN.2000 01:55:51





Middle Channel for Antenna B

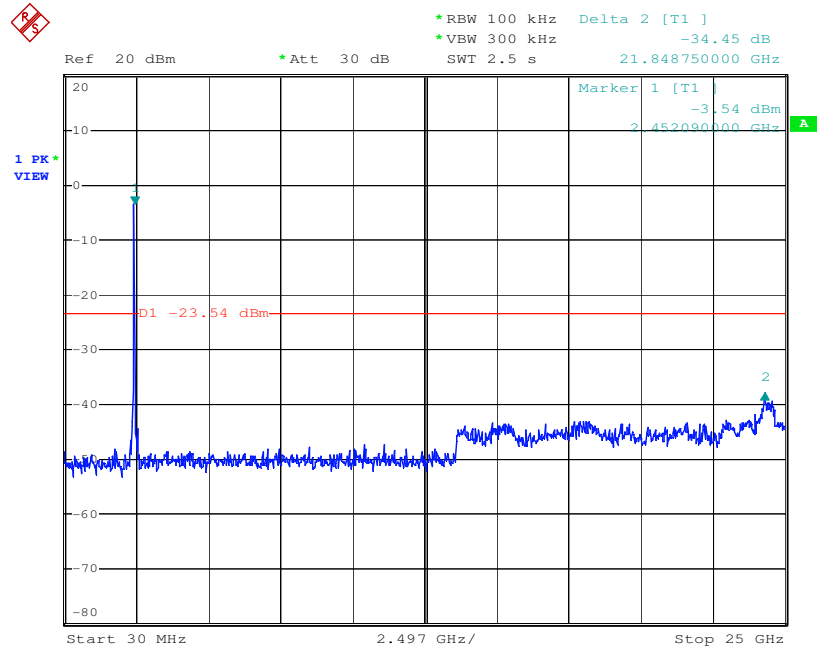
Test mode: 802.11g



Date: 1.JAN.2000 02:07:21

High Channel for Antenna B

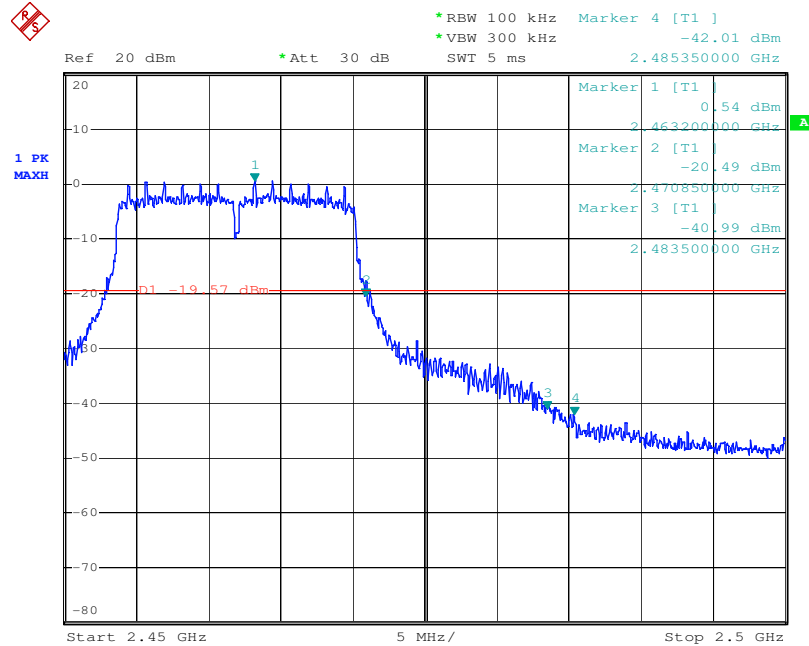
Test mode: 802.11g



Date: 1.JAN.2000 01:20:47



Band Edge (Conducted Mode)



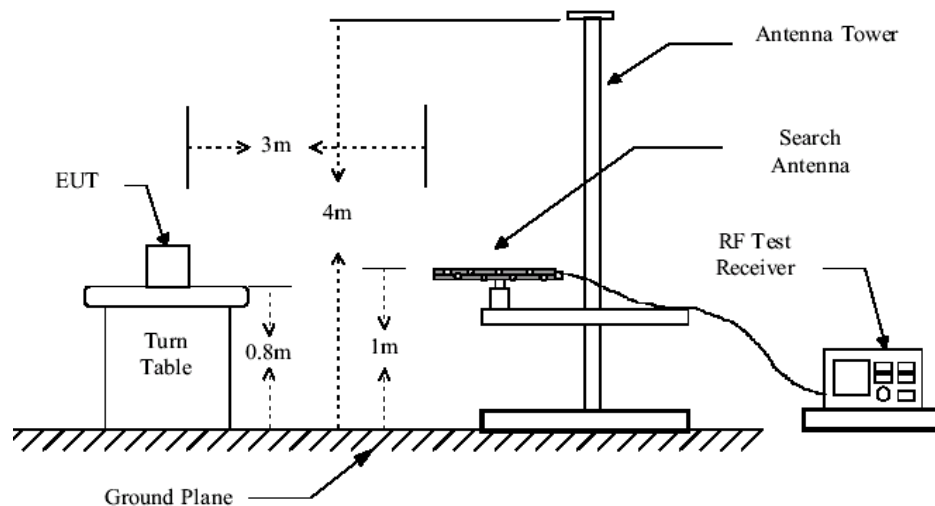
Date: 1.JAN.2000 01:25:15

## 6.6 Spurious Radiated Emission Test

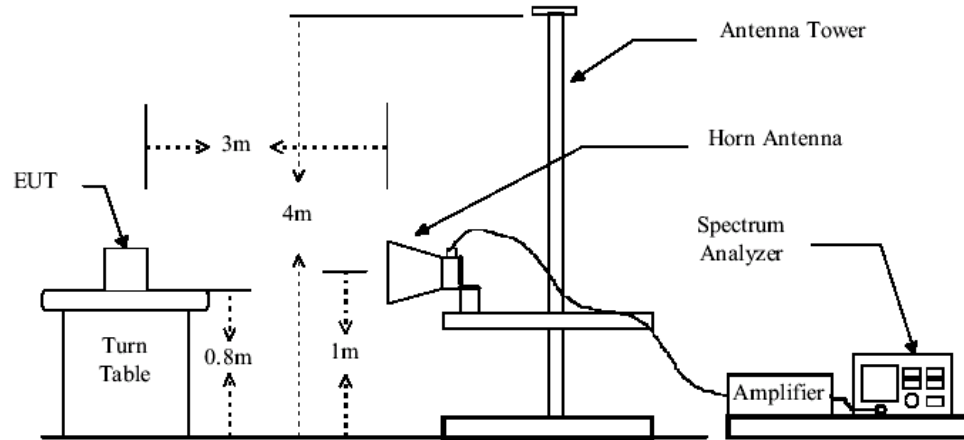
- Test Requirement:** FCC Part15 247(d) and FCC Part 15.209
- Test date:** July.29, 2012
- Standard Applicable:** According to section 15.247(c),all other emissions outside these bands shall not exceed the general radiated emission limits specified in section15.209(a).And according to section 15.33(a)(1),for an intentional radiator operates below 10GHz,the frequency range of measurements:to the tenth harmonic of the highest fundamental frequency or to 40GHz,which is lower.
- Measurement Procedure:**
1. The EUT was placed on a turn table which is 0.8m above ground plane.
  2. Pre-test 802.11b mode and 802.11g mode on antenna A and antenna B to find the worst status for 802.11b mode and 802.11g mode.
  3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
  4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.  
Test instrumentation resolution bandwidth 120 kHz and Quasi-Peak detector applies (30 MHz - 1000 MHz). 1MHz resolution bandwidth and Peak detector apply (1000 MHz – 25GHz )  
Above 1GHz  
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO  
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO.
  5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
  6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
  7. Repeat above procedures until all frequency measured were complete.

### Radiated Test Set-up:

#### Radiated Emission Test Set-up, Frequency Below 1000MHz



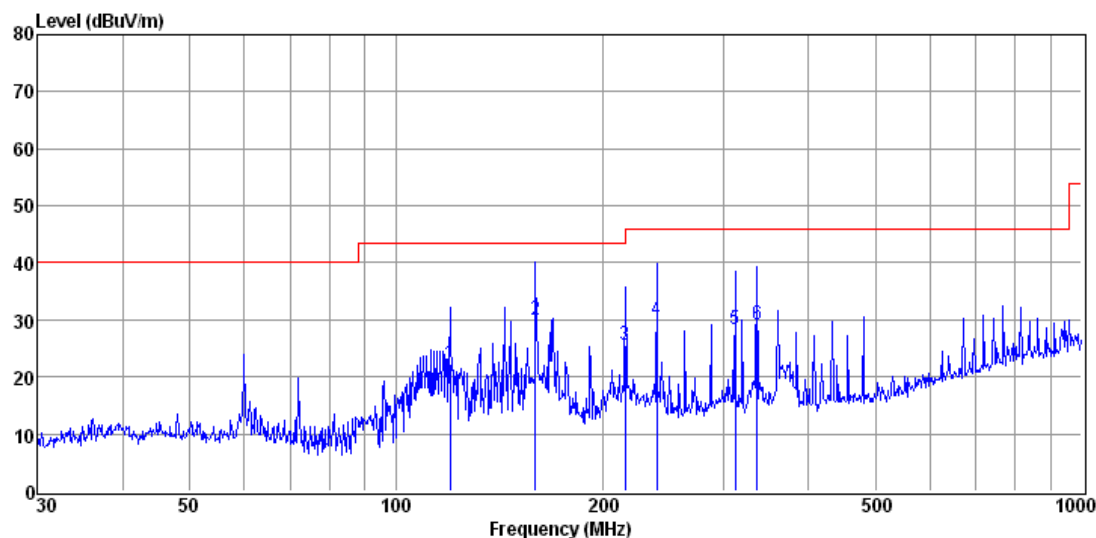
### Radiated Emission Test Set-up Frequency Over 1GHz



Low noise amplifier was used below 1GHz, High pass Filter was used above 1GHz.

**Below is the worst test results for 30MHz~1GHz band.**

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement Horizontal

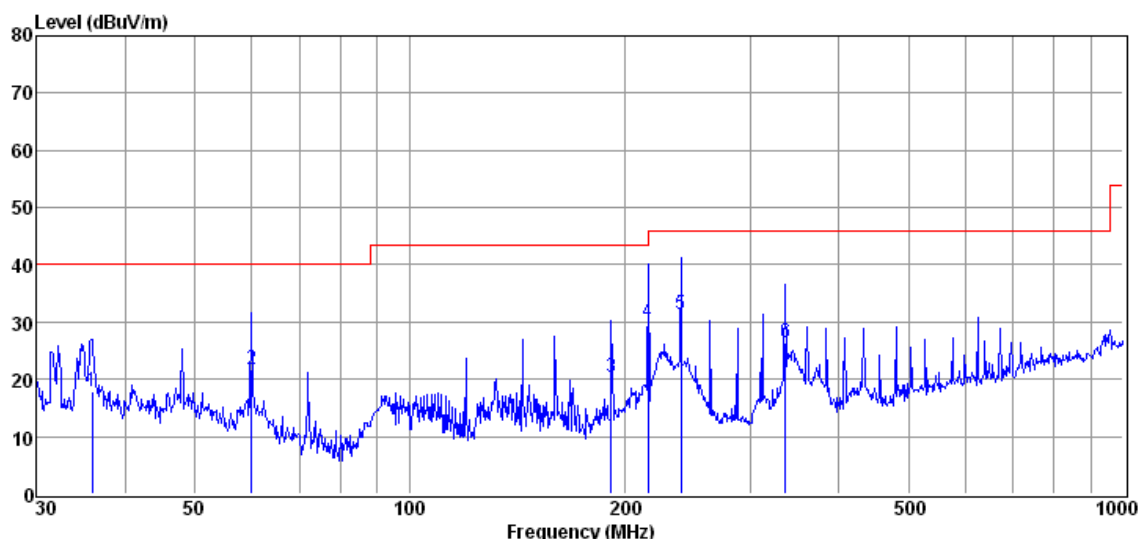


Freq. <sup>↕</sup>	Read <sup>↓</sup> Level <sup>↕</sup>	Antenna <sup>↓</sup> Factor <sup>↕</sup>	Preamplifier <sup>↓</sup> Factor <sup>↕</sup>	Cable <sup>↕</sup> Loss <sup>↕</sup>	Result <sup>↕</sup> Level <sup>↕</sup>	Limit <sup>↓</sup> Line <sup>↕</sup>	Over <sup>↓</sup> Limit <sup>↕</sup>	Detector <sup>↕</sup>
(MHz) <sub>↕</sub>	(dBμV) <sub>↕</sub>	(dB/m) <sub>↕</sub>	(dB) <sub>↕</sub>	(dB) <sub>↕</sub>	(dBμV/m) <sub>↕</sub>	(dBμV/m) <sub>↕</sub>	(dB) <sub>↕</sub>	↕
119.86 <sup>↕</sup>	34.58 <sup>↕</sup>	11.18 <sup>↕</sup>	24.70 <sup>↕</sup>	1.14 <sup>↕</sup>	22.20 <sup>↕</sup>	43.50 <sup>↕</sup>	-21.30 <sup>↕</sup>	QP <sup>↕</sup>
159.78 <sup>↕</sup>	40.87 <sup>↕</sup>	12.60 <sup>↕</sup>	24.70 <sup>↕</sup>	1.32 <sup>↕</sup>	30.09 <sup>↕</sup>	43.50 <sup>↕</sup>	-13.41 <sup>↕</sup>	QP <sup>↕</sup>
216.02 <sup>↕</sup>	39.55 <sup>↕</sup>	9.14 <sup>↕</sup>	24.60 <sup>↕</sup>	1.58 <sup>↕</sup>	25.67 <sup>↕</sup>	46.00 <sup>↕</sup>	-20.33 <sup>↕</sup>	QP <sup>↕</sup>
239.99 <sup>↕</sup>	42.26 <sup>↕</sup>	10.40 <sup>↕</sup>	24.50 <sup>↕</sup>	1.69 <sup>↕</sup>	29.85 <sup>↕</sup>	46.00 <sup>↕</sup>	-16.15 <sup>↕</sup>	QP <sup>↕</sup>
312.18 <sup>↕</sup>	38.20 <sup>↕</sup>	12.74 <sup>↕</sup>	24.50 <sup>↕</sup>	1.99 <sup>↕</sup>	28.43 <sup>↕</sup>	46.00 <sup>↕</sup>	-17.57 <sup>↕</sup>	QP <sup>↕</sup>
336.04 <sup>↕</sup>	38.33 <sup>↕</sup>	13.32 <sup>↕</sup>	24.50 <sup>↕</sup>	2.08 <sup>↕</sup>	29.23 <sup>↕</sup>	46.00 <sup>↕</sup>	-16.77 <sup>↕</sup>	QP <sup>↕</sup>

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - Preamplifier Factor<sup>↕</sup>

2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit<sup>↕</sup>

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement Vertical



Freq. <sup>↕</sup> (MHz). <sub>1</sub>	Read <sup>↓</sup> Level <sup>↕</sup> (dB <sub>μ</sub> V). <sub>1</sub>	Antenna <sup>↓</sup> Factor <sup>↕</sup> (dB/m). <sub>1</sub>	Preamp <sup>↓</sup> Factor <sup>↕</sup> (dB). <sub>1</sub>	Cable <sup>↕</sup> Loss <sup>↕</sup> (dB). <sub>1</sub>	Result <sup>↕</sup> Level <sup>↕</sup> (dB <sub>μ</sub> V/m). <sub>1</sub>	Limit <sup>↓</sup> Line <sup>↕</sup> (dB <sub>μ</sub> V/m). <sub>1</sub>	Over <sup>↓</sup> Limit <sup>↕</sup> (dB). <sub>1</sub>	Detector <sup>↕</sup> <sub>1</sub>
35.88 <sup>↕</sup>	29.62 <sup>↕</sup>	12.56 <sup>↕</sup>	24.70 <sup>↕</sup>	0.50 <sup>↕</sup>	17.98 <sup>↕</sup>	40.00 <sup>↕</sup>	-22.02 <sup>↕</sup>	QP <sup>↕</sup>
60.07 <sup>↕</sup>	33.37 <sup>↕</sup>	12.19 <sup>↕</sup>	24.70 <sup>↕</sup>	0.73 <sup>↕</sup>	21.59 <sup>↕</sup>	40.00 <sup>↕</sup>	-18.41 <sup>↕</sup>	QP <sup>↕</sup>
191.75 <sup>↕</sup>	33.78 <sup>↕</sup>	9.63 <sup>↕</sup>	24.60 <sup>↕</sup>	1.47 <sup>↕</sup>	20.28 <sup>↕</sup>	43.50 <sup>↕</sup>	-23.22 <sup>↕</sup>	QP <sup>↕</sup>
216.02 <sup>↕</sup>	43.98 <sup>↕</sup>	9.14 <sup>↕</sup>	24.60 <sup>↕</sup>	1.58 <sup>↕</sup>	30.10 <sup>↕</sup>	46.00 <sup>↕</sup>	-15.90 <sup>↕</sup>	QP <sup>↕</sup>
239.99 <sup>↕</sup>	43.76 <sup>↕</sup>	10.40 <sup>↕</sup>	24.50 <sup>↕</sup>	1.69 <sup>↕</sup>	31.35 <sup>↕</sup>	46.00 <sup>↕</sup>	-14.65 <sup>↕</sup>	QP <sup>↕</sup>
336.04 <sup>↕</sup>	35.59 <sup>↕</sup>	13.32 <sup>↕</sup>	24.50 <sup>↕</sup>	2.08 <sup>↕</sup>	26.49 <sup>↕</sup>	46.00 <sup>↕</sup>	-19.51 <sup>↕</sup>	QP <sup>↕</sup>

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - Preamp Factor<sup>↕</sup>  
2. If Peak Result comply with QP limit, QP Result is deemed to comply with QP limit<sup>↕</sup>



**Below is the worst test results for above 1GHz.**

**Operation Mode: 802.11b Low Channel**

1~25 GHz Harmonics & Spurious Emissions.

**Peak Measurement:**

Test mode: 802.11b

Antenna With A

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
4824.0	31.0	1.2	0.5	43.4	50.18	39.48	54	Vertical
7236.0	35.5	1.7	0.6	43.1	43.26	37.96	54	Vertical
9648.0	37.7	2.1	0.9	43.3	42.61	40.01	54	Vertical
4824.0	31.0	1.2	0.5	43.4	49.82	39.12	54	Horizontal
7236.0	35.5	1.7	0.6	43.1	41.32	36.02	54	Horizontal
9648.0	37.7	2.1	0.9	43.3	41.48	38.88	54	Horizontal

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor +Fiter–Preamplifier Factor

**Operation Mode: 802.11b Middle Channel**

1~25 GHz Harmonics & Spurious Emissions.

**Peak Measurement:**

Test mode: 802.11b

Antenna With A

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
4876.0	31.1	1.3	0.5	43.5	48.29	37.69	54	Vertical
7314.0	35.7	1.7	0.6	43.1	41.46	36.36	54	Vertical
9752.0	37.8	2.1	0.9	43.0	41.64	39.44	54	Vertical
4876.0	31.1	1.3	0.5	43.5	48.71	38.11	54	Horizontal
7314.0	35.7	1.7	0.6	43.1	44.58	39.48	54	Horizontal
9752.0	37.8	2.1	0.9	43.0	43.34	41.14	54	Horizontal

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor +Fiter–Preamplifier Factor



**Operation Mode: 802.11b High Channel**

1~25 GHz Harmonics & Spurious Emissions.

**Peak Measurement:**

Test mode: 802.11b

Antenna With A

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamplifier factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
4928.0	31.4	1.4	0.5	43.9	52.24	41.64	54	Vertical
7392.0	35.8	1.7	0.6	43.1	47.72	42.72	54	Vertical
9856.0	38.0	2.2	0.9	42.8	42.83	41.13	54	Vertical
4928.0	31.4	1.4	0.5	43.9	51.46	40.86	54	Horizontal
7392.0	35.8	1.7	0.6	43.1	46.19	41.19	54	Horizontal
9856.0	38.0	2.2	0.9	42.8	40.44	38.74	54	Horizontal

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor + Filter - Preamplifier Factor

**Operation Mode: 802.11g Low Channel**

1~25 GHz Harmonics & Spurious Emissions.

**Peak Measurement:**

Test mode: 802.11g

Antenna With B

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamplifier factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
4824.0	31.0	1.2	0.5	43.4	51.27	40.57	54	Vertical
7236.0	35.5	1.7	0.6	43.1	41.55	36.25	54	Vertical
9648.0	37.7	2.1	0.9	43.3	41.49	38.89	54	Vertical
4824.0	31.0	1.2	0.5	43.4	50.06	39.36	54	Horizontal
7236.0	35.5	1.7	0.6	43.1	43.44	38.14	54	Horizontal
9648.0	37.7	2.1	0.9	43.3	43.75	41.15	54	Horizontal

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor + Filter - Preamplifier Factor





**Operation Mode: 802.11g Middle Channel**

1~25 GHz Harmonics & Spurious Emissions.

**Peak Measurement:**

Test mode: 802.11g

Antenna With B

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamplifier factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
4876.0	31.1	1.3	0.5	43.5	48.79	38.19	54	Vertical
7314.0	35.7	1.7	0.6	43.1	43.88	38.78	54	Vertical
9752.0	37.8	2.1	0.9	43.0	42.08	39.88	54	Vertical
4876.0	31.1	1.3	0.5	43.5	46.29	35.69	54	Horizontal
7314.0	35.7	1.7	0.6	43.1	43.62	38.52	54	Horizontal
9752.0	37.8	2.1	0.9	43.0	42.78	40.58	54	Horizontal

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor + Filter - Preamplifier Factor

**Operation Mode: 802.11g High Channel**

1~25 GHz Harmonics & Spurious Emissions.

**Peak Measurement:**

Test mode: 802.11g

Antenna With B

Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Filter (dB)	Preamplifier factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	AV Limit (dBμV/m)	Antenna polarization
4928.0	31.4	1.4	0.5	43.9	48.24	37.64	54	Vertical
7392.0	35.8	1.7	0.6	43.1	46.57	41.57	54	Vertical
9856.0	38.0	2.2	0.9	42.8	44.47	42.77	54	Vertical
4928.0	31.4	1.4	0.5	43.9	50.83	40.23	54	Horizontal
7392.0	35.8	1.7	0.6	43.1	47.29	42.29	54	Horizontal
9856.0	38.0	2.2	0.9	42.8	45.18	43.48	54	Horizontal

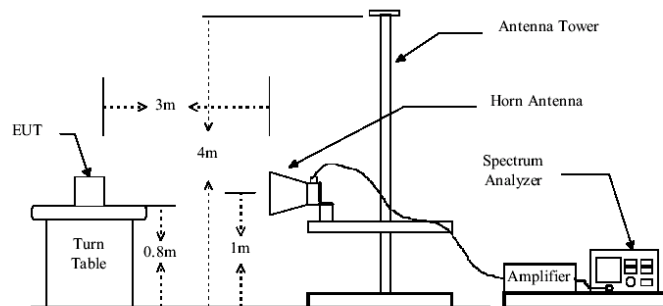
The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor + Filter - Preamplifier Factor

## 6.7 Radiated Emission Band Edge

- Test Requirement:** FCC Part15 247(c)
- Test date:** August.24.2012
- Standard Applicable:** According to section 15.247(c),in any 100KHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating,the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power,In addition,radiated emissions which fall in the restricted bands,as defined in section 15.205(a),must also comply with the radiated emission limits specified in 15.209(a).
- Measurement Distance:** 3m (Semi-Anechoic Chamber)
- Limit:**  
40.0 dBμV/m between 30MHz & 88MHz;  
43.5 dBμV/m between 88MHz & 216MHz;  
46.0 dBμV/m between 216MHz & 960MHz;  
AV 54.0 dBμV/m PK 74.0dBμV/m above 960MHz.
- Measurement Procedure:** The EUT was setup according to ANSI 63.10,2009 for compliance to FCC 47 CFR 15.247 requirements.The EUT is placed on a turn table which is 0.8 m above ground.The turn table is rotated 360 degrees to determine to the position of the maximum emission level.The EUT was positioned such that the distance from antenna to the EUT was 3 meters.The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level  
This is repeated for both horizontal and vertical polarization of the antenna.In order to find the maximum emission,all of the interface cables were manipulated according to ANSIC 63.10:2009 on radiated measurement.  
Spectrum analyzer parameters setting as shown below:  
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO  
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

### Radiated Emission Test Set-up Frequency Over 1GHz

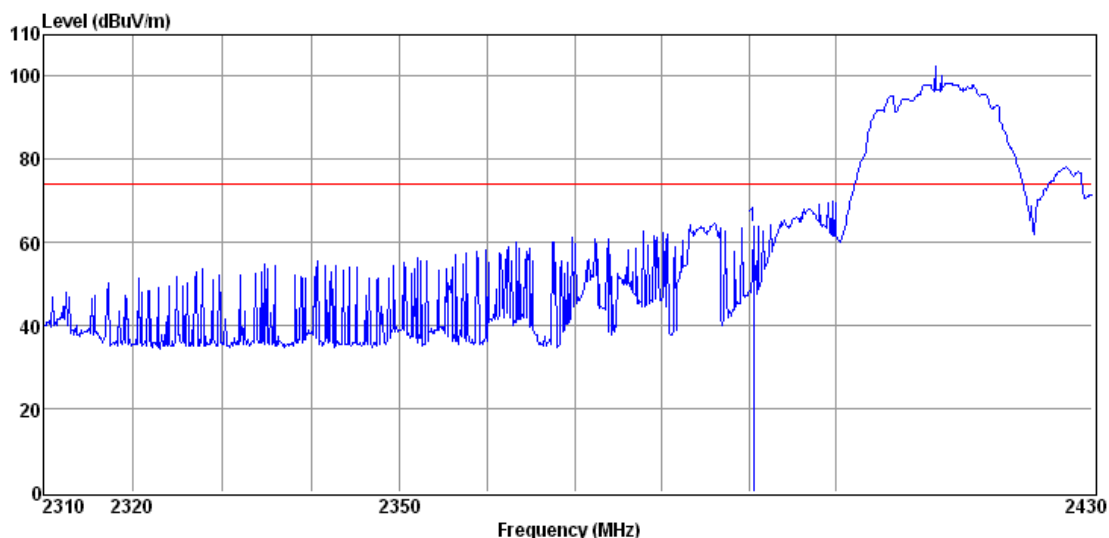


The field strength is calculated by adding the Antenna Factor, Preamplifier Factor & Cable Factor. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

**Radiated Bandedge Measurement Result:  
802.11b Low Channel for Antenna A**

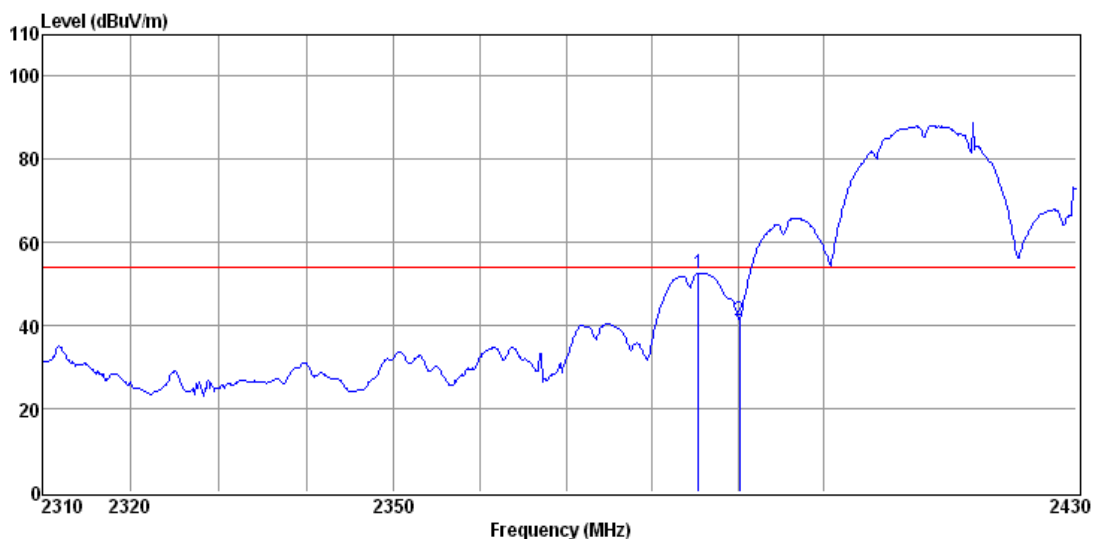
**Horizontal, Peak Detector:**



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2390.57	71.93	27.07	42.46	7.33	63.87	74.00	-10.13

**802.11b Low Channel for Antenna A**

**Horizontal, Average Detector:**

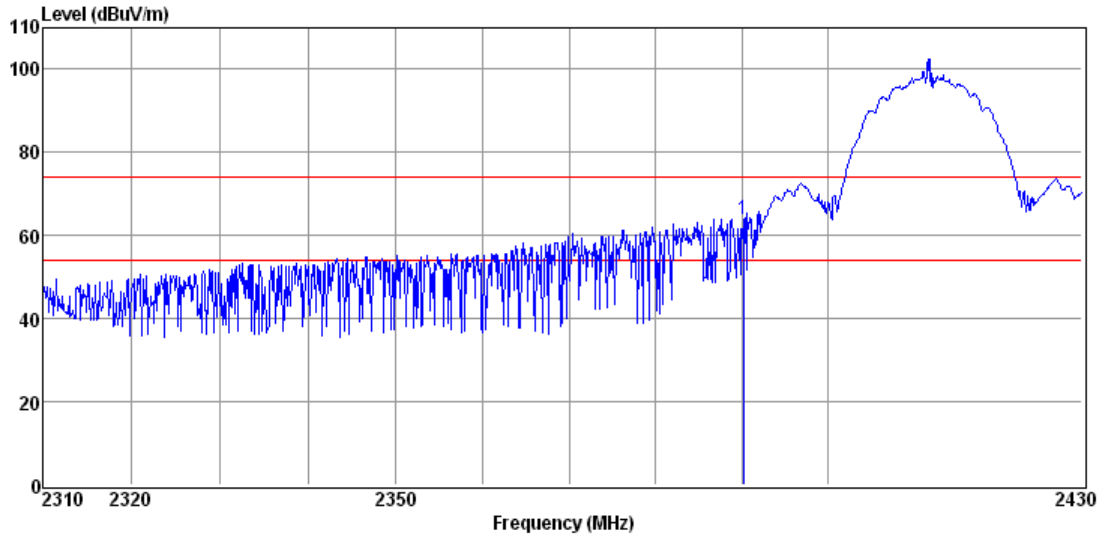


Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2385.37	60.67	27.06	42.45	7.33	52.61	54.00	-1.39



802.11b Low Channel for Antenna A

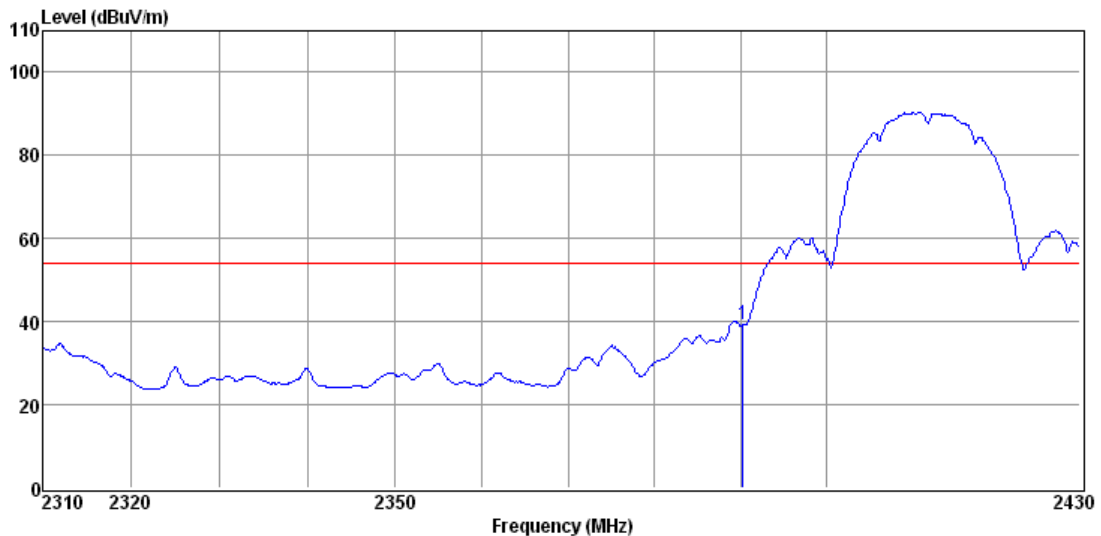
Vertical, Peak Detector:



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2390.21	71.76	27.07	42.46	7.33	63.70	74.00	-10.30

802.11b Low Channel for Antenna A

Vertical, Average Detector:

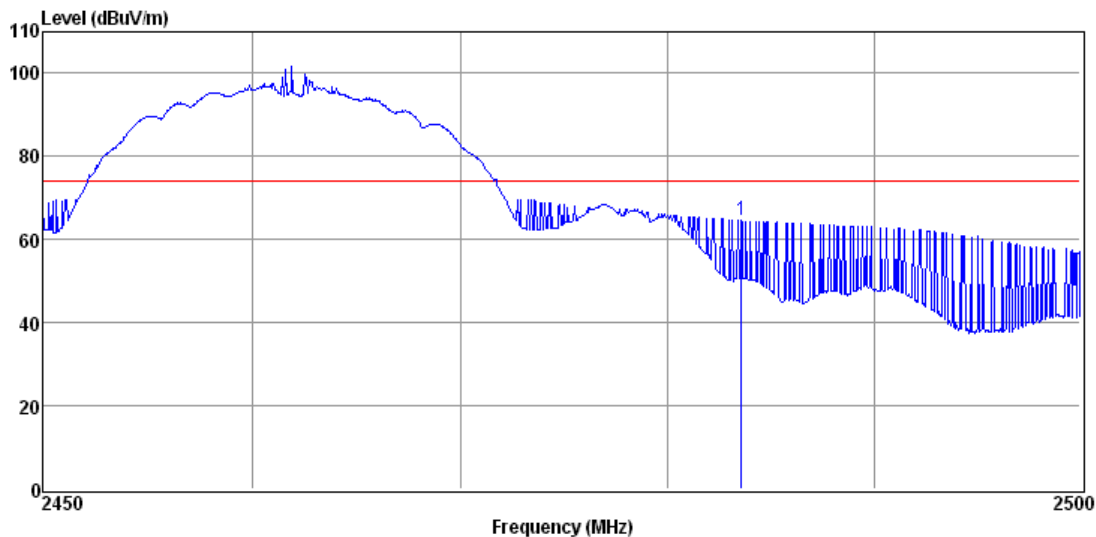


Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2390.33	47.26	27.07	42.46	7.33	39.20	54.00	-14.80



802.11b High Channel for Antenna A

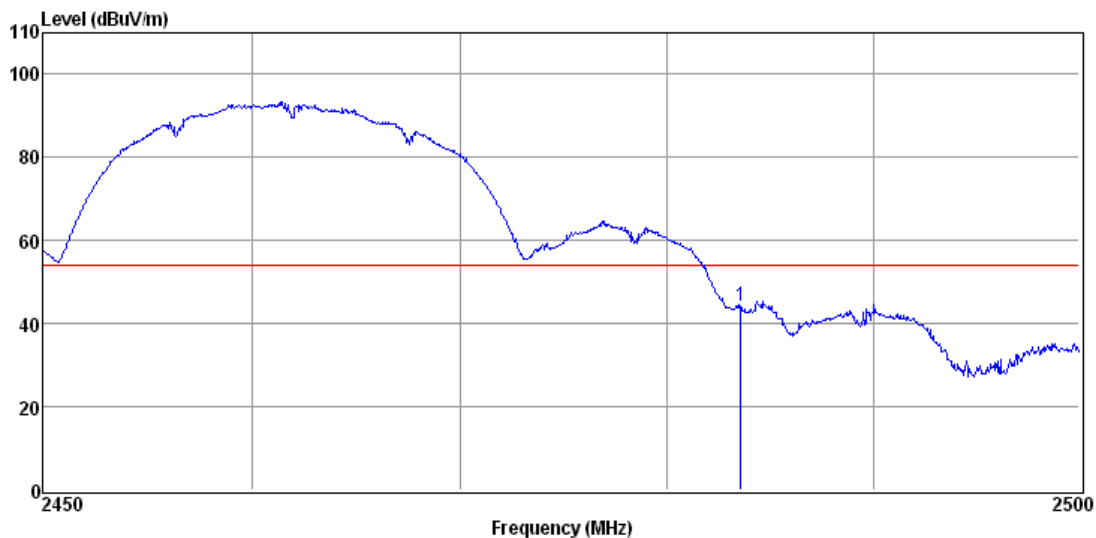
Horizontal, Peak Detector:



Frequency (MHz)	Reading (dBUV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBUV/m)	Peak Limit (dBUV/m)	Over Limit (dB)
2483.54	72.29	27.35	42.49	7.31	64.46	74.00	-9.54

802.11b High Channel for Antenna A

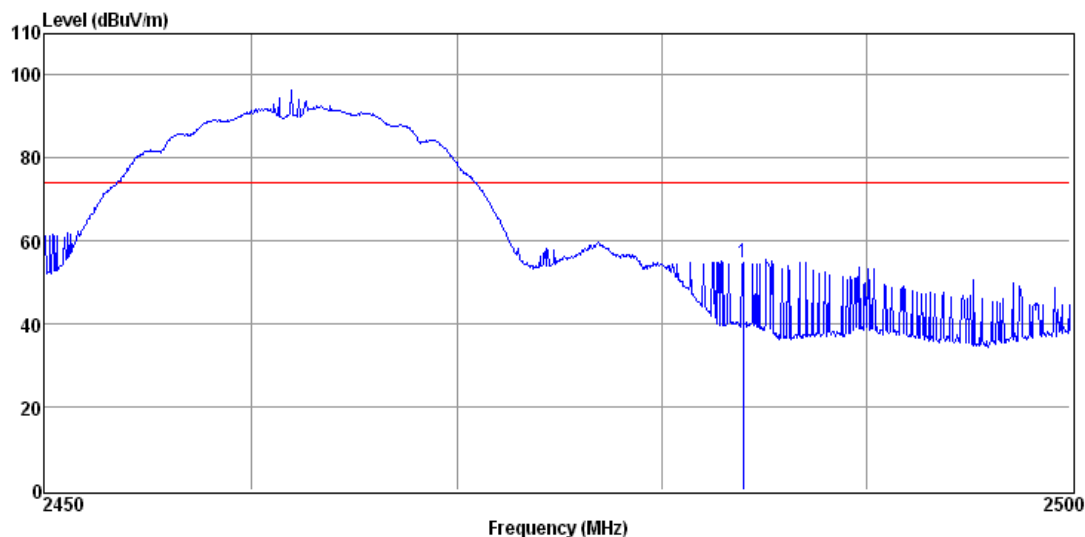
Horizontal, Average Detector:



Frequency (MHz)	Reading (dBUV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBUV/m)	AV Limit (dBUV/m)	Over Limit (dB)
2483.54	51.89	27.35	42.49	7.31	44.06	54.00	-9.94

**802.11b High Channel for Antenna A**

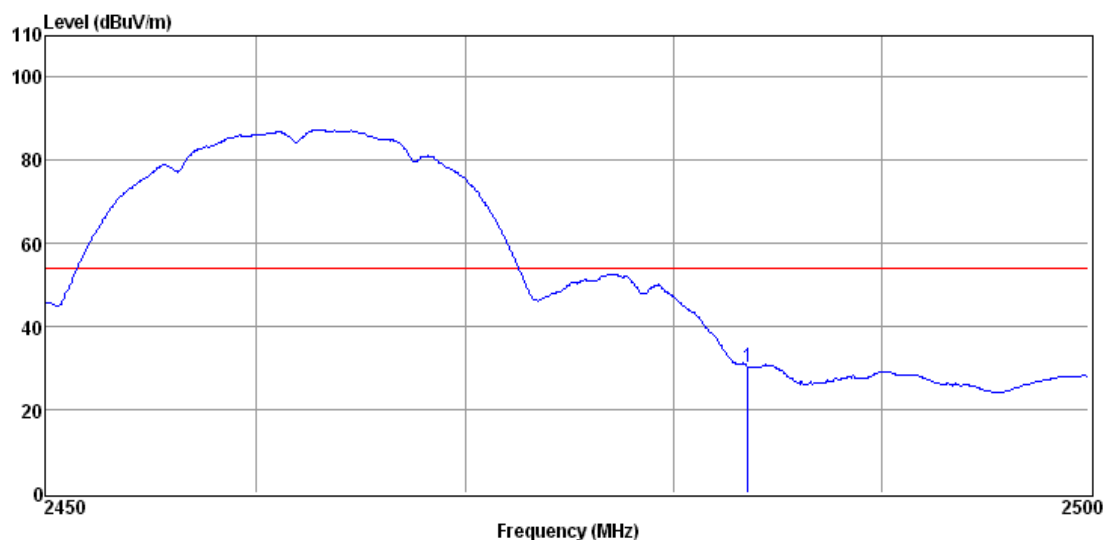
**Vertical, Peak Detector:**



Frequency (MHz)	Reading (dBUV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBUV/m)	Peak Limit (dBUV/m)	Over Limit (dB)
2483.94	62.74	27.35	42.49	7.31	54.91	74.00	-19.09

**802.11b High Channel for Antenna A**

**Vertical, Average Detector:**

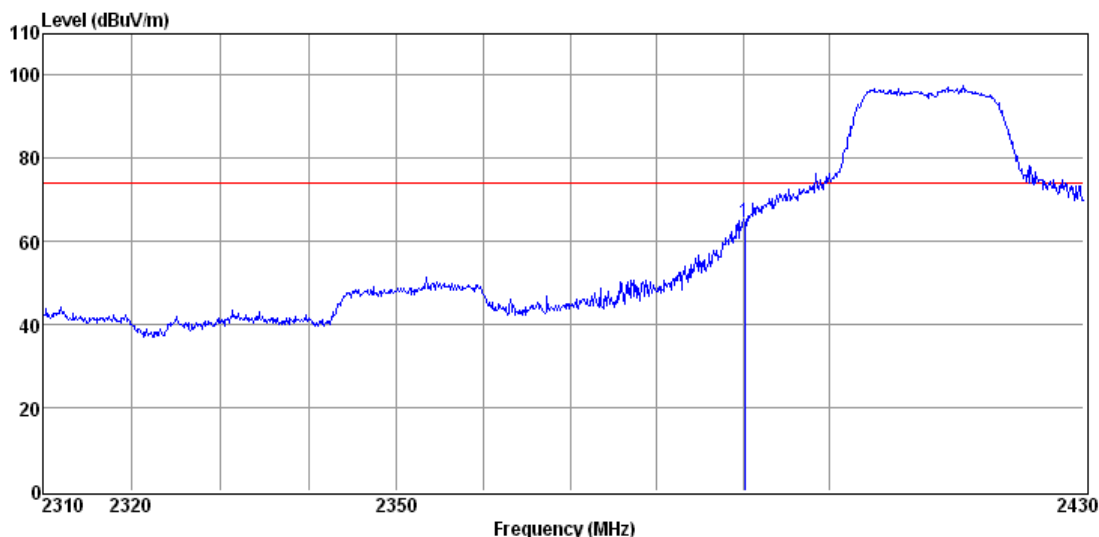


Frequency (MHz)	Reading (dBUV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBUV/m)	AV Limit (dBUV/m)	Over Limit (dB)
2483.54	38.18	27.35	42.49	7.31	30.35	54.00	-23.65

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

**802.11g Low Channel for Antenna A**

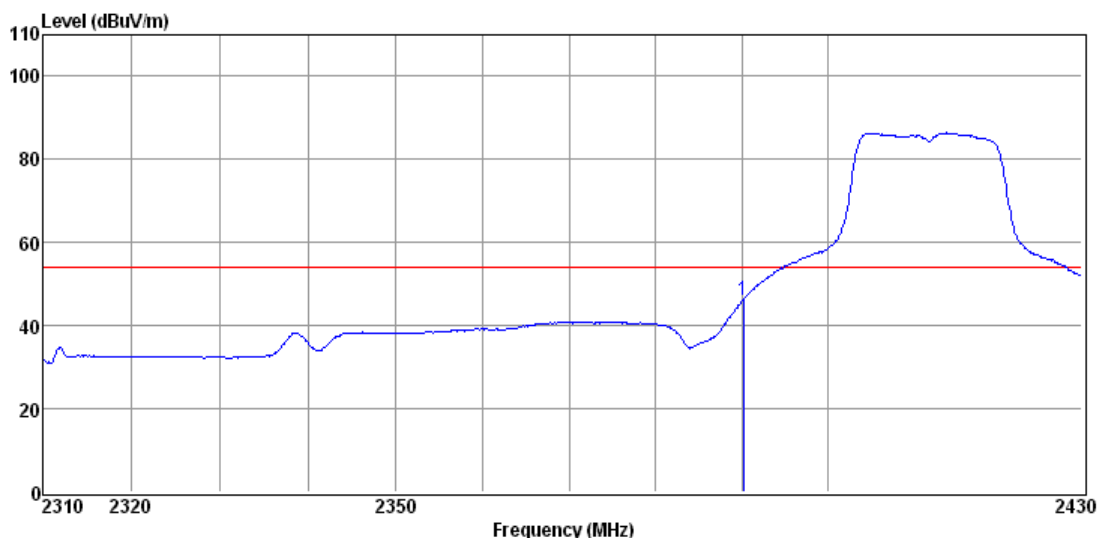
**Horizontal, Peak Detector:**



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2390.21	72.66	27.07	42.46	7.33	64.60	74.00	-9.40

**802.11g Low Channel for Antenna A**

**Horizontal, Average Detector:**

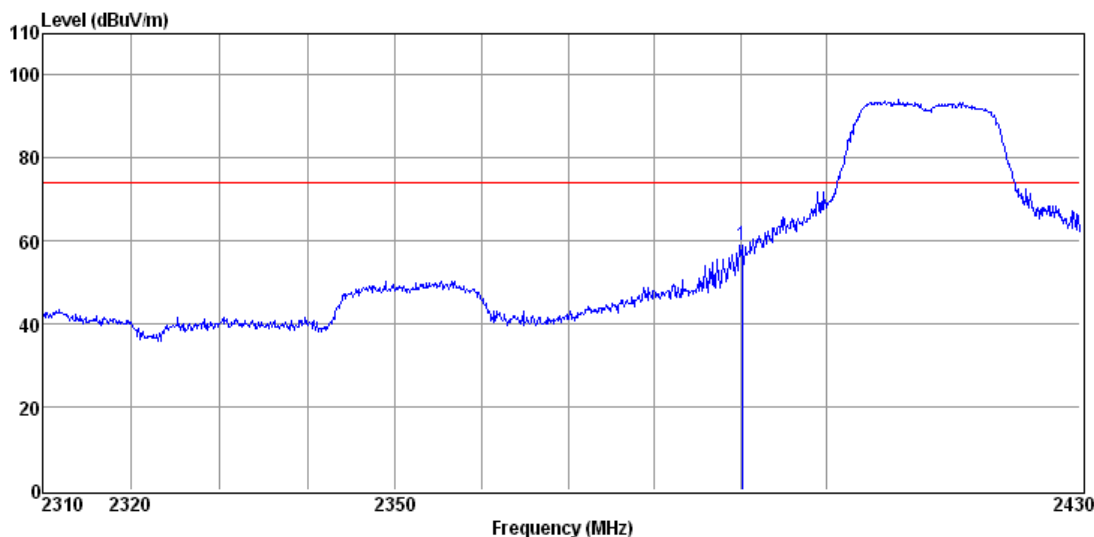


Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2390.21	54.36	27.07	42.46	7.33	46.30	54.00	-7.70



802.11g Low Channel for Antenna A

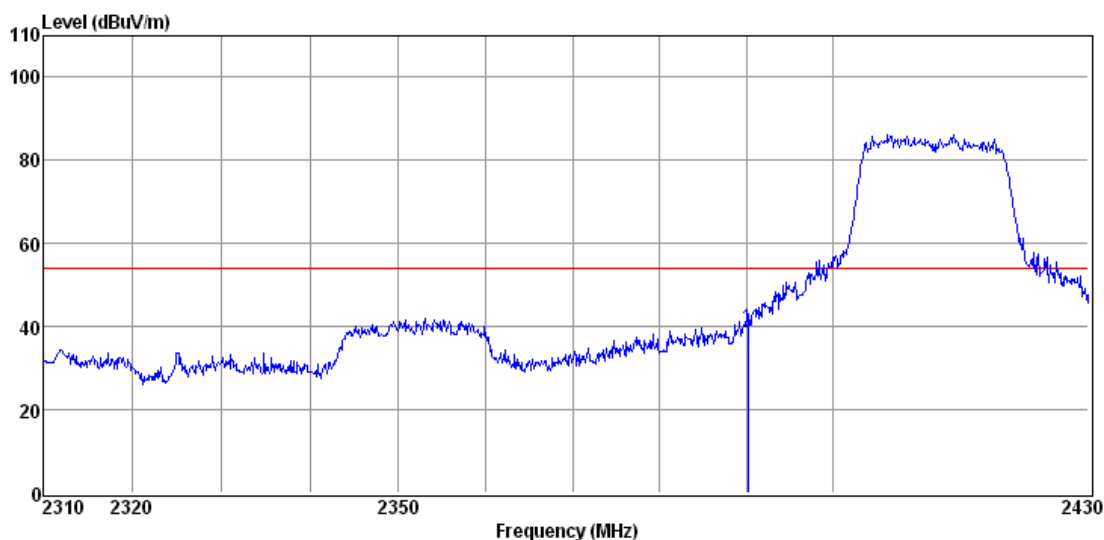
Vertical, Peak Detector:



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2390.21	66.87	27.07	42.46	7.33	58.81	74.00	-15.19

802.11g Low Channel for Antenna A

Vertical, Average Detector:



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2390.21	47.81	27.07	42.46	7.33	39.75	54.00	-14.25

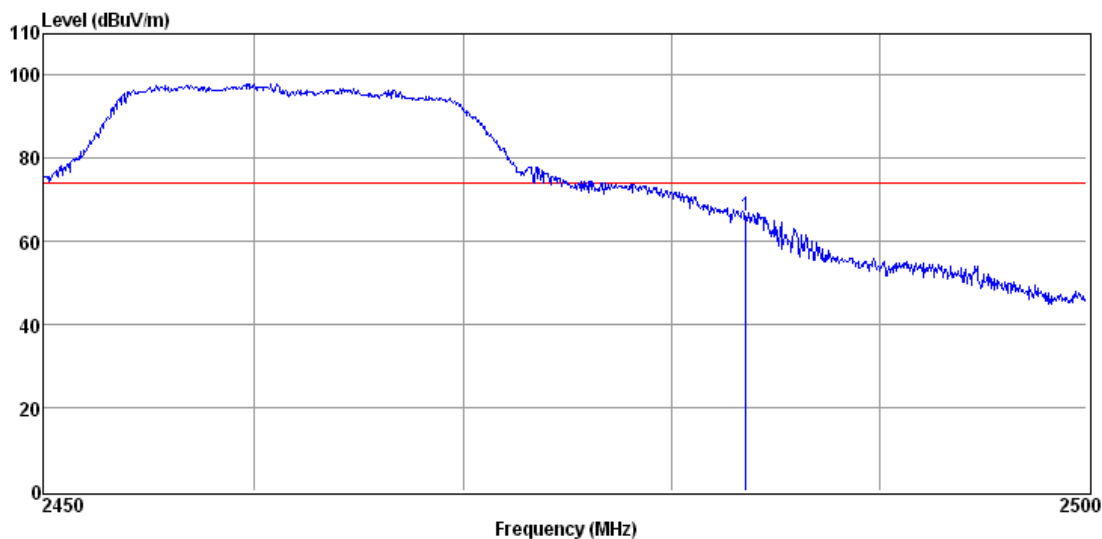
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only





802.11g High Channel for Antenna A

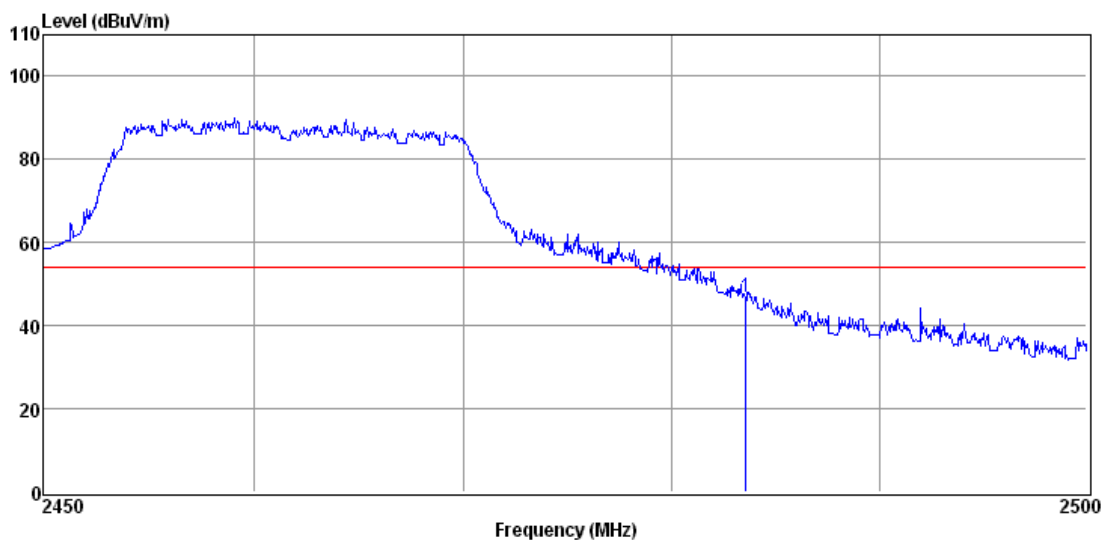
Horizontal, Peak Detector:



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2483.54	73.82	27.35	42.49	7.31	65.99	74.00	-8.01

802.11g High Channel for Antenna A

Horizontal, Average Detector:

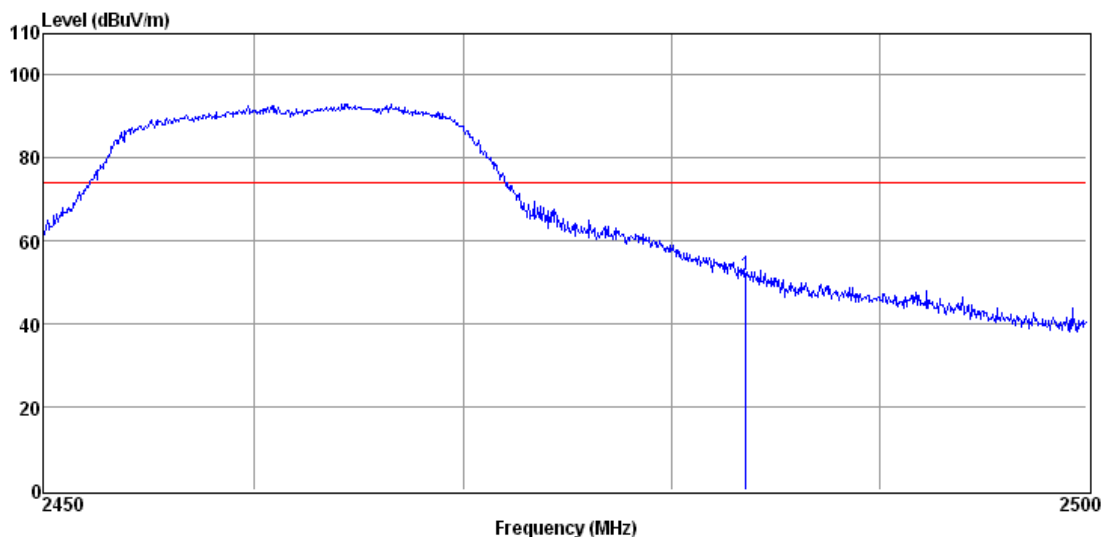


Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2483.54	54.62	27.35	42.49	7.31	46.79	54.00	-7.21



802.11g High Channel for Antenna A

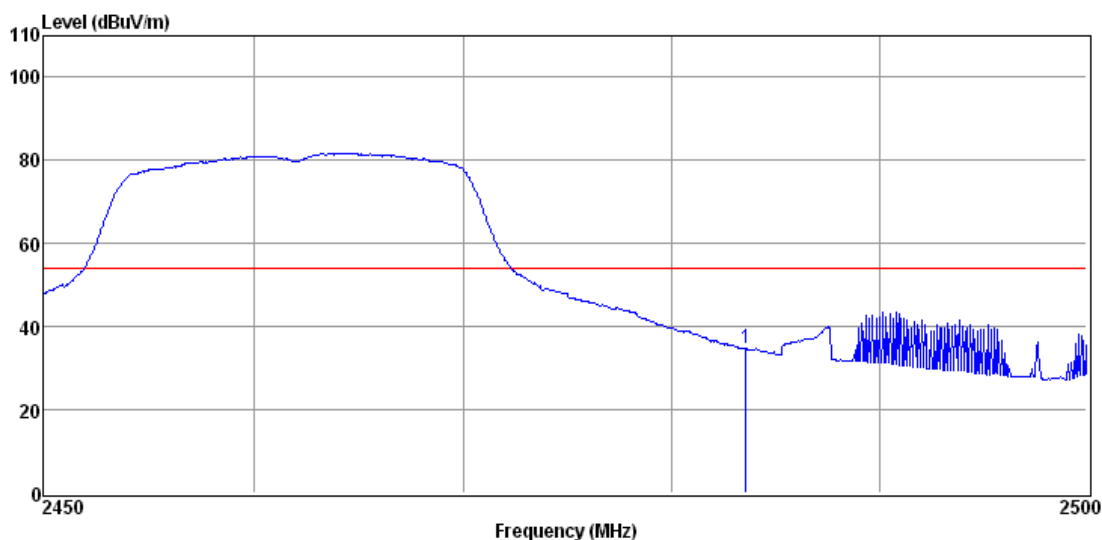
Vertical, Peak Detector:



Frequency (MHz)	Reading (dBUV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBUV/m)	Peak Limit (dBUV/m)	Over Limit (dB)
2483.54	59.60	27.35	42.49	7.31	51.77	74.00	-22.23

802.11g High Channel for Antenna A

Vertical, Average Detector:

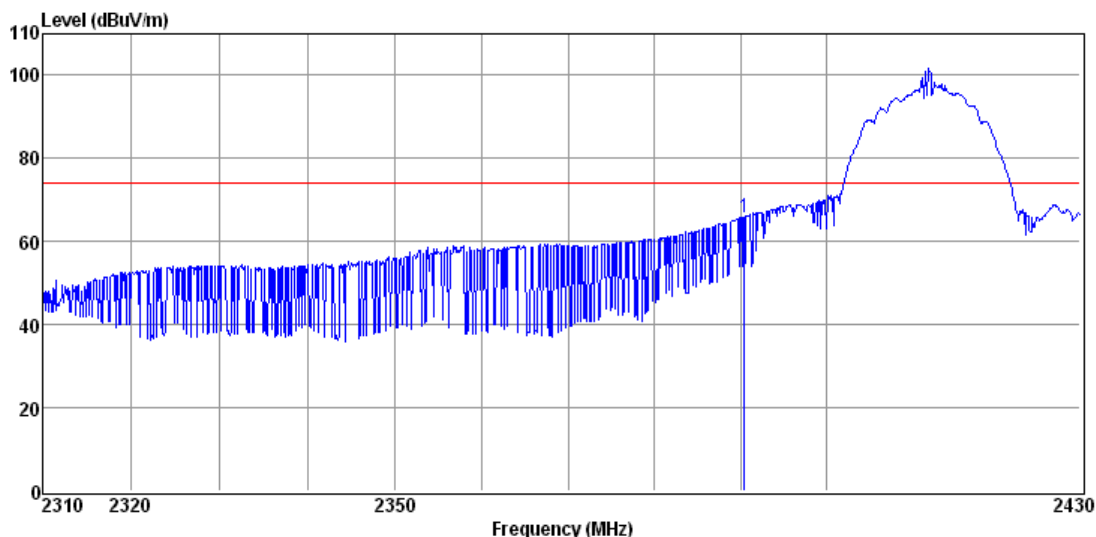


Frequency (MHz)	Reading (dBUV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBUV/m)	AV Limit (dBUV/m)	Over Limit (dB)
2483.54	42.50	27.35	42.49	7.31	34.67	54.00	-19.33

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

**802.11b Low Channel for Antenna B**

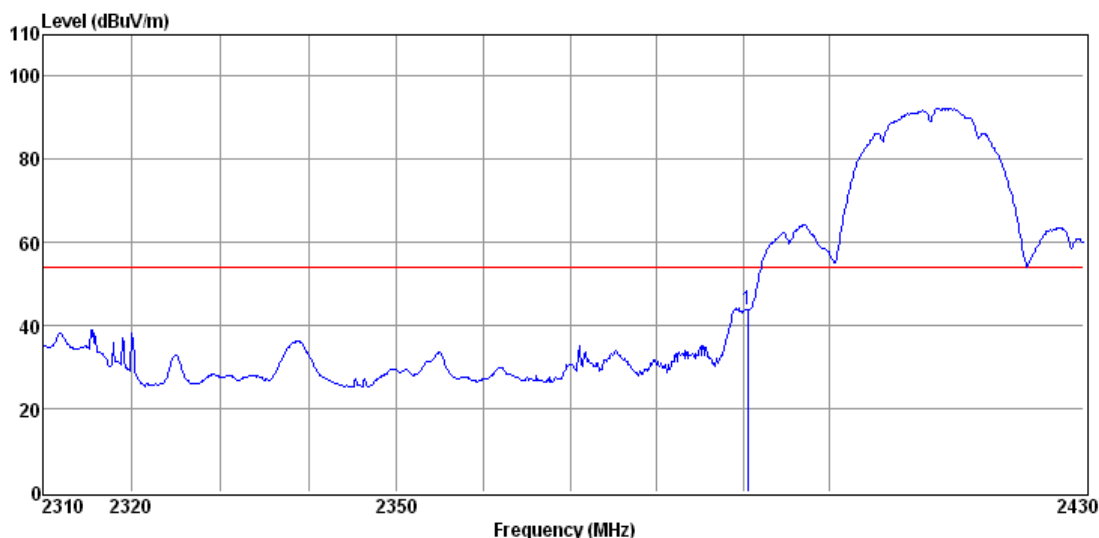
**Horizontal, Peak Detector:**



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2390.45	74.02	27.07	42.46	7.33	65.96	74.00	-8.04

**802.11b Low Channel for Antenna B**

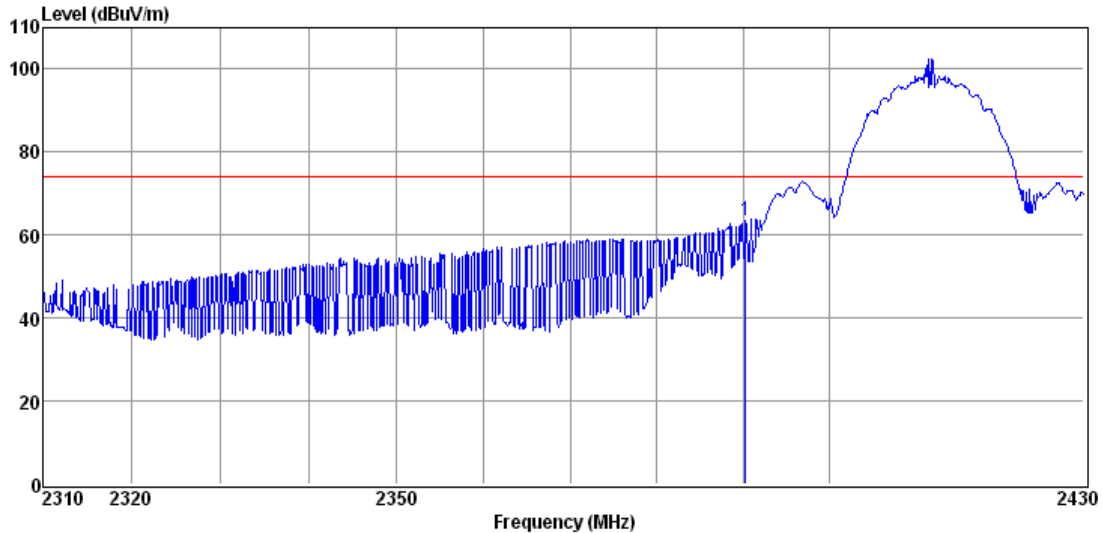
**Horizontal, Average Detector:**



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2390.57	52.07	27.07	42.46	7.33	44.01	54.00	-9.99

**802.11b Low Channel for Antenna B**

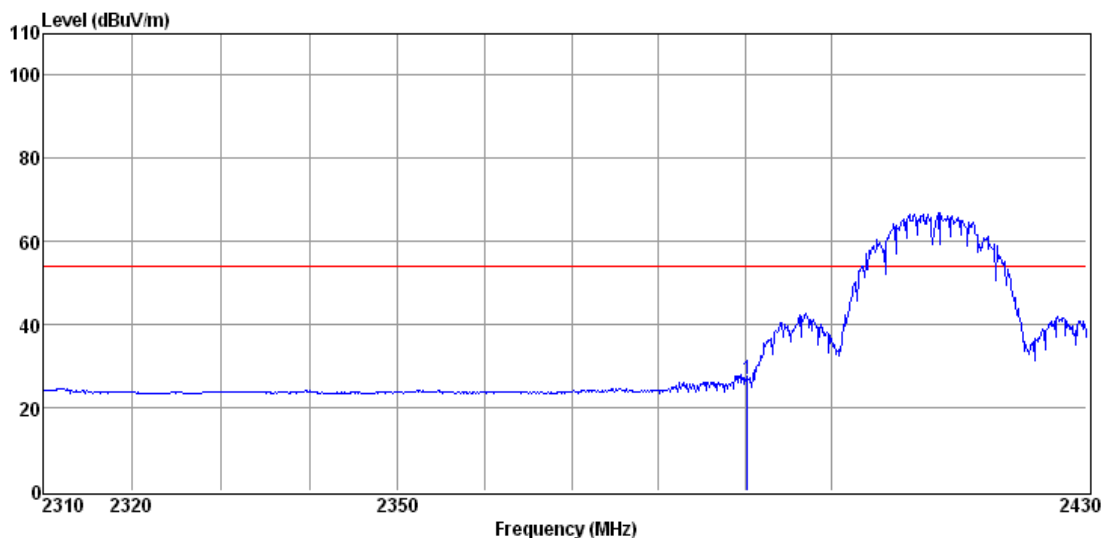
**Vertical, Peak Detector:**



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2390.33	71.48	27.07	42.46	7.33	63.42	74.00	-10.58

**802.11b Low Channel for Antenna B**

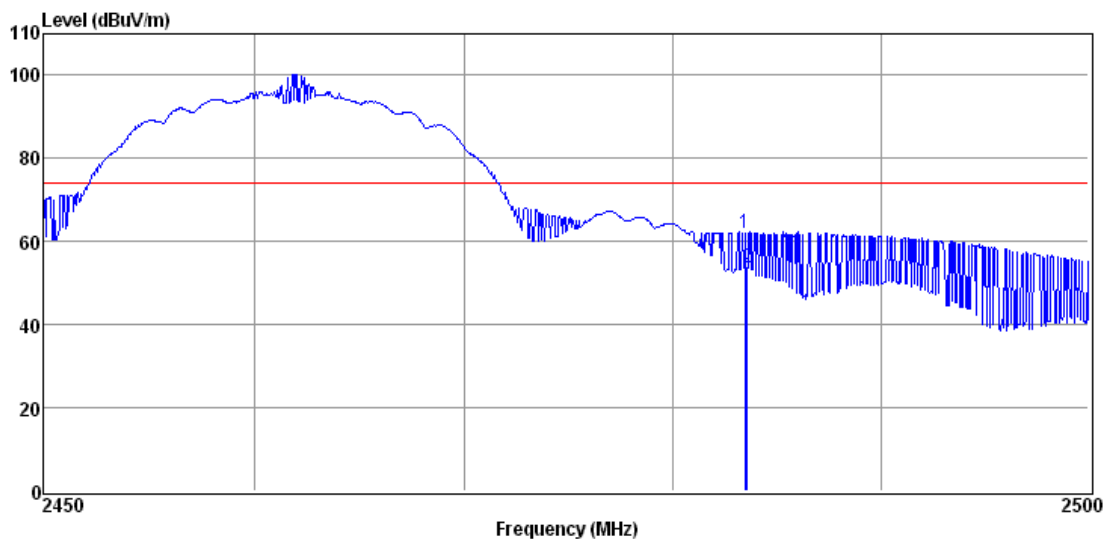
**Vertical, Average Detector:**



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2390.33	34.93	27.07	42.46	7.33	26.87	54.00	-27.13

**802.11b High Channel for Antenna B**

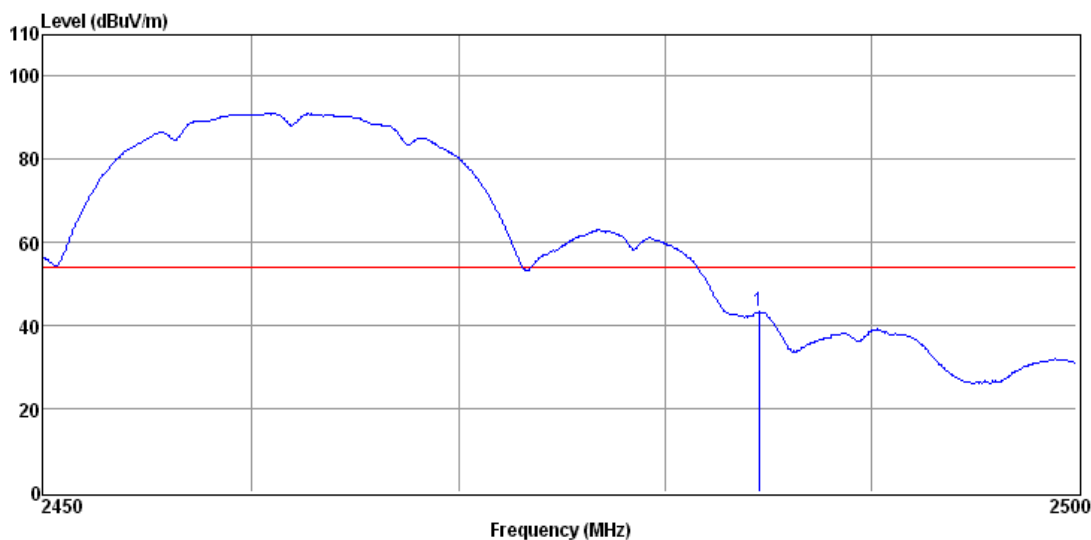
**Horizontal, Peak Detector:**



Frequency (MHz)	Reading (dBUV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBUV/m)	Peak Limit (dBUV/m)	Over Limit (dB)
2483.44	69.92	27.35	42.49	7.31	62.09	74.00	-11.91

**802.11b High Channel for Antenna B**

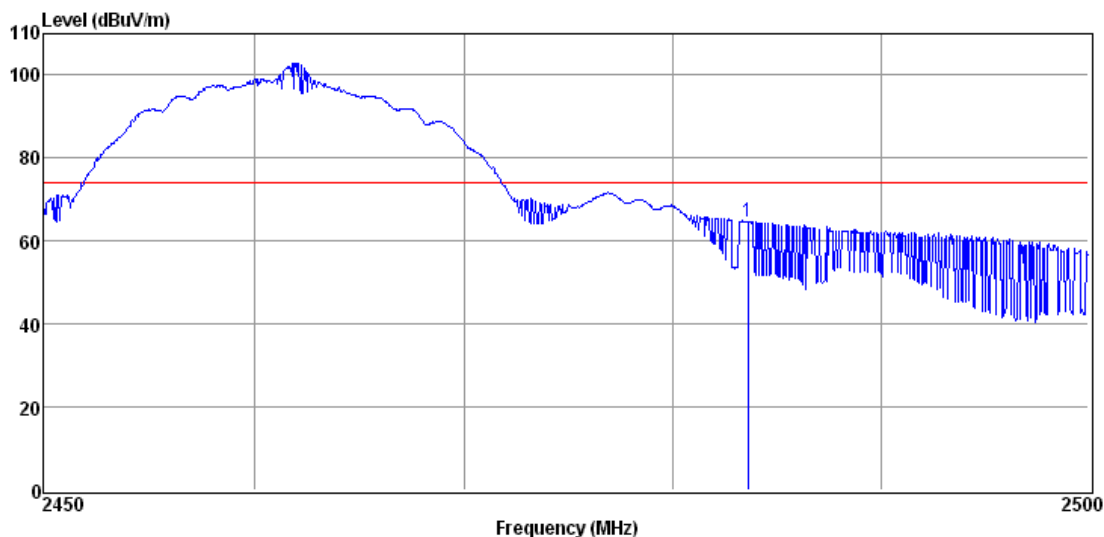
**Horizontal, Average Detector:**



Frequency (MHz)	Reading (dBUV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBUV/m)	AV Limit (dBUV/m)	Over Limit (dB)
2484.54	51.13	27.35	42.49	7.31	43.30	54.00	-10.70

**802.11b High Channel for Antenna B**

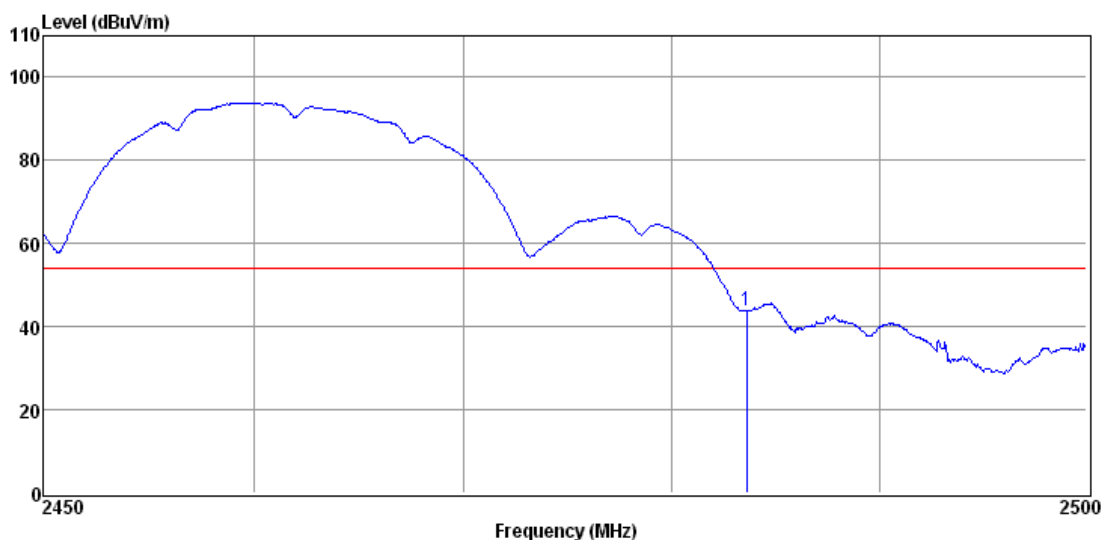
**Vertical, Peak Detector:**



Frequency (MHz)	Reading (dBUV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBUV/m)	Peak Limit (dBUV/m)	Over Limit (dB)
2483.59	72.44	27.35	42.49	7.31	64.61	74.00	-9.39

**802.11b High Channel for Antenna B**

**Vertical, Average Detector:**

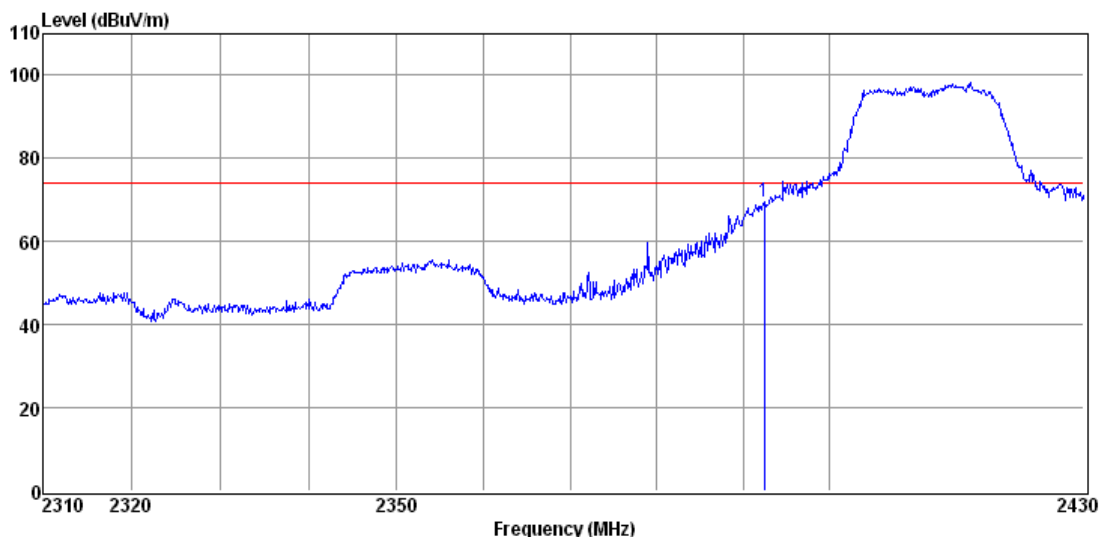


Frequency (MHz)	Reading (dBUV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBUV/m)	AV Limit (dBUV/m)	Over Limit (dB)
2483.59	51.68	27.35	42.49	7.31	43.85	54.00	-10.15



802.11g Low Channel for Antenna B

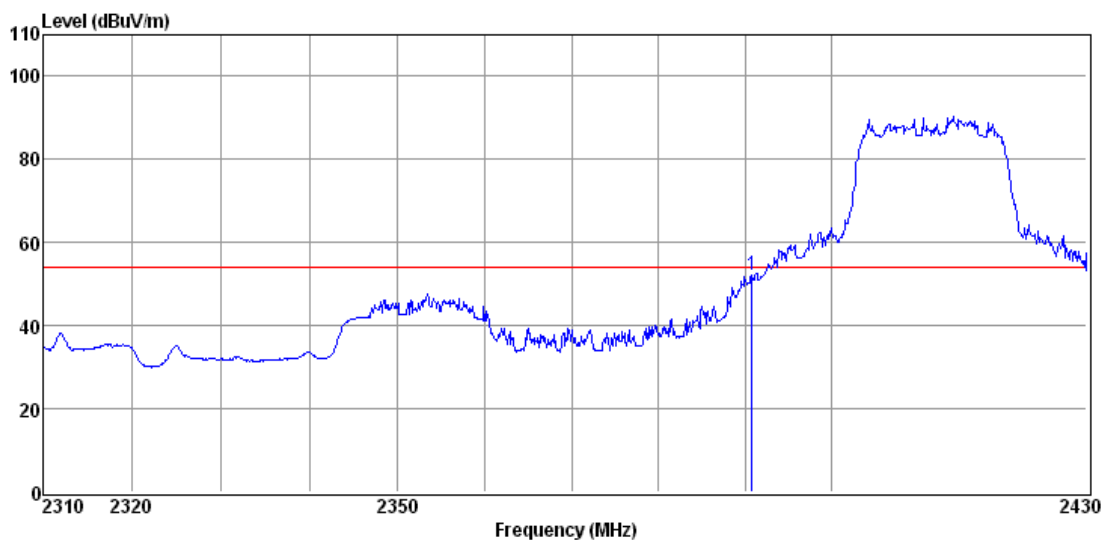
Horizontal, Peak Detector:



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2392.51	77.58	27.08	42.46	7.33	69.53	74.00	-4.47

802.11g Low Channel for Antenna B

Horizontal, Average Detector:

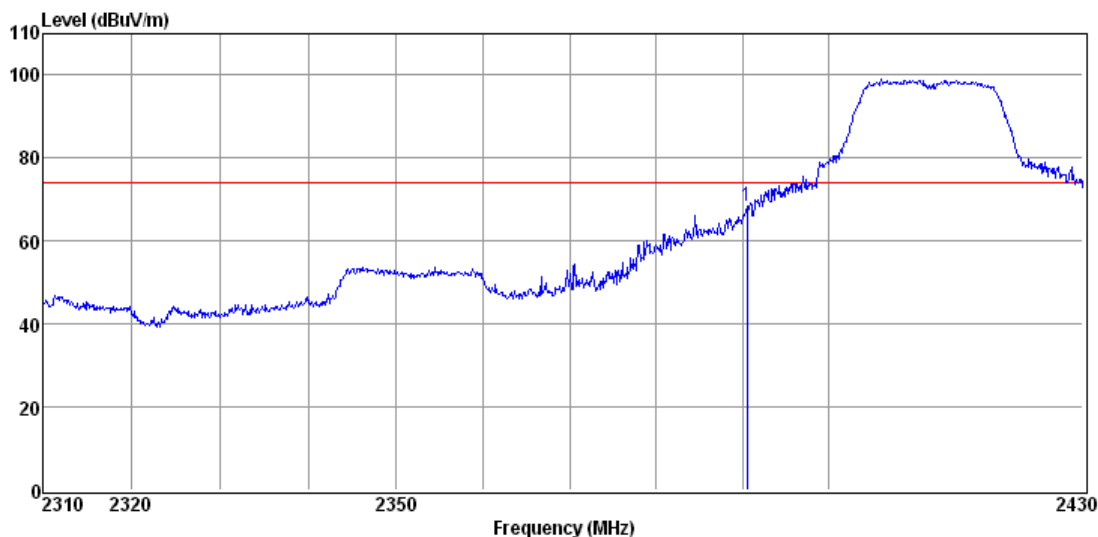


Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2390.82	60.30	27.07	42.46	7.33	52.24	54.00	-1.76



802.11g Low Channel for Antenna B

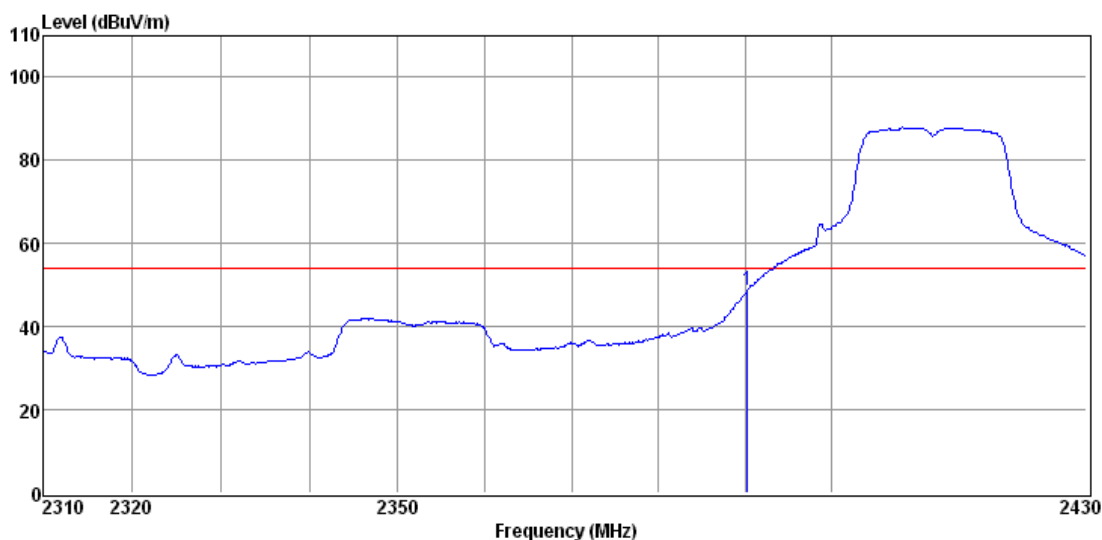
Vertical, Peak Detector:



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2390.57	76.45	27.07	42.46	7.33	68.39	74.00	-5.61

802.11g Low Channel for Antenna B

Vertical, Average Detector:



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2390.33	56.71	27.07	42.46	7.33	48.65	54.00	-5.35

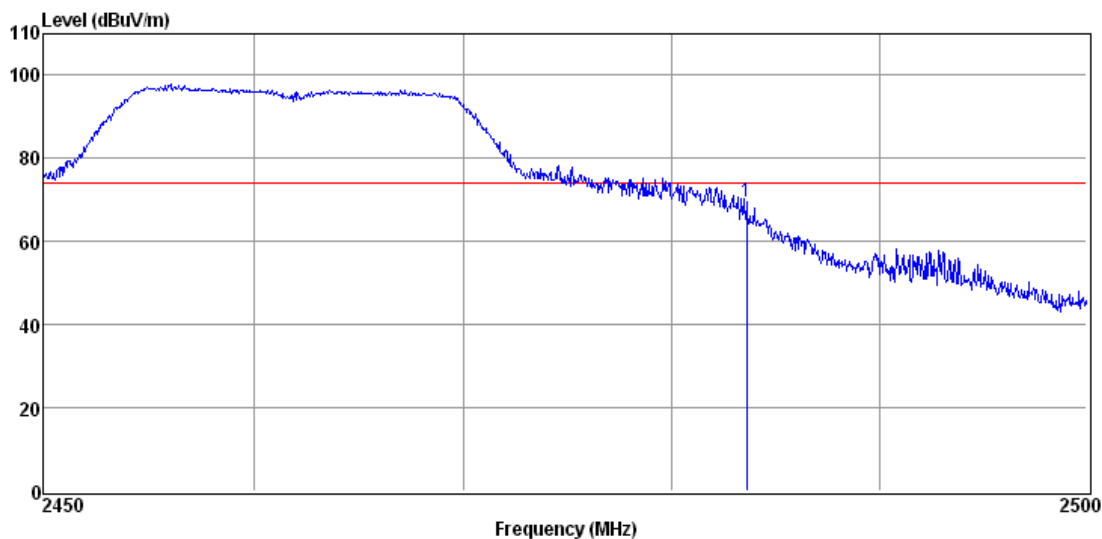
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.





802.11g High Channel for Antenna B

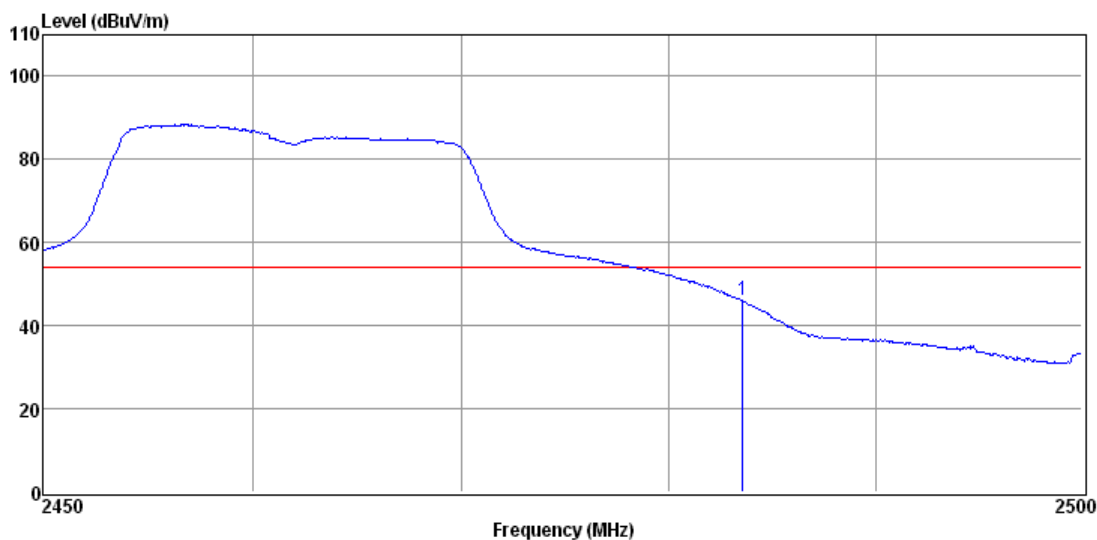
Horizontal, Peak Detector:



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2483.59	77.46	27.35	42.49	7.31	69.63	74.00	-4.37

802.11g High Channel for Antenna B

Horizontal, Average Detector:

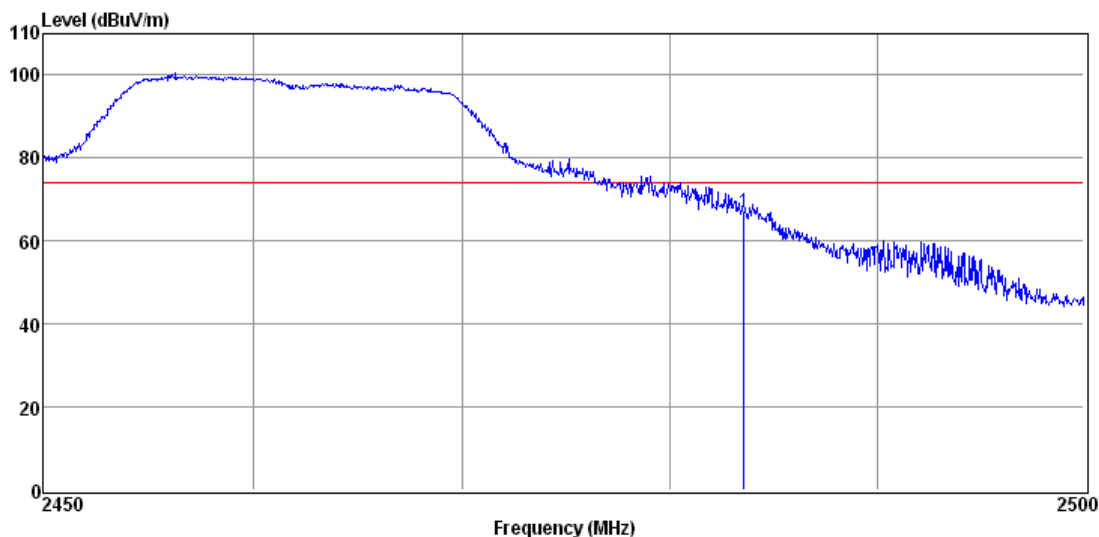


Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2483.54	53.90	27.35	42.49	7.31	46.07	54.00	-7.93



802.11g High Channel for Antenna B

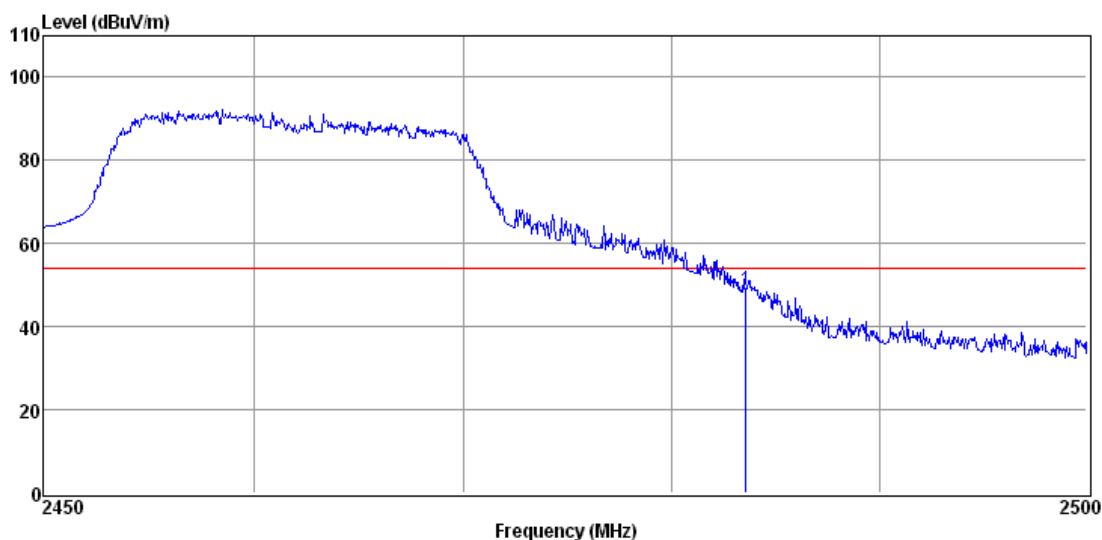
Vertical, Peak Detector:



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)
2483.54	74.86	27.35	42.49	7.31	67.03	74.00	-6.97

802.11g High Channel for Antenna B

Vertical, Average Detector:



Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	PreAmp (dB)	Cable Loss (dB)	AV Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)
2483.54	56.67	27.35	42.49	7.31	48.84	54.00	-5.16

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Remark: 1. No any other emission which fall in restricted bands can be detected and be reported.

All frequencies within the “Restricted bands” have been evaluated to compliance. Section 15.205 Restricted bands of operation.

## 6.8 Occupied Bandwidth Test

**Test Requirement:** RSS-Gen Issue 3 Clause 4.6.1

**Test date:** July. 31, 2012

**Standard Applicable** According to the section RSS-Gen Issue 3 Clause 4.6.1

**EUT Setup** The occupied bandwidth per RSS-Gen Issue 3 Clause 4.6.1 was measured using the Spectrum Analyzer with the resolutions set at 1% of the span, the video bandwidth greater than or equal to the resolution.

### Measurement Result:

#### Test Data for Antenna A

**Test mode: 802.11b**

Channel	Frequency (MHz)	Bandwidth (MHz)
LOW	2412	16.20
MID	2437	16.23
HIGH	2462	16.20

#### Test Data for Antenna A

**Test mode: 802.11g**

Channel	Frequency (MHz)	Bandwidth (MHz)
LOW	2412	16.74
MID	2437	16.74
HIGH	2462	16.74

#### Test Data for Antenna B

**Test mode: 802.11b**

Channel	Frequency (MHz)	Bandwidth (MHz)
LOW	2412	16.17
MID	2437	16.23
HIGH	2462	16.20

#### Test Data for Antenna B

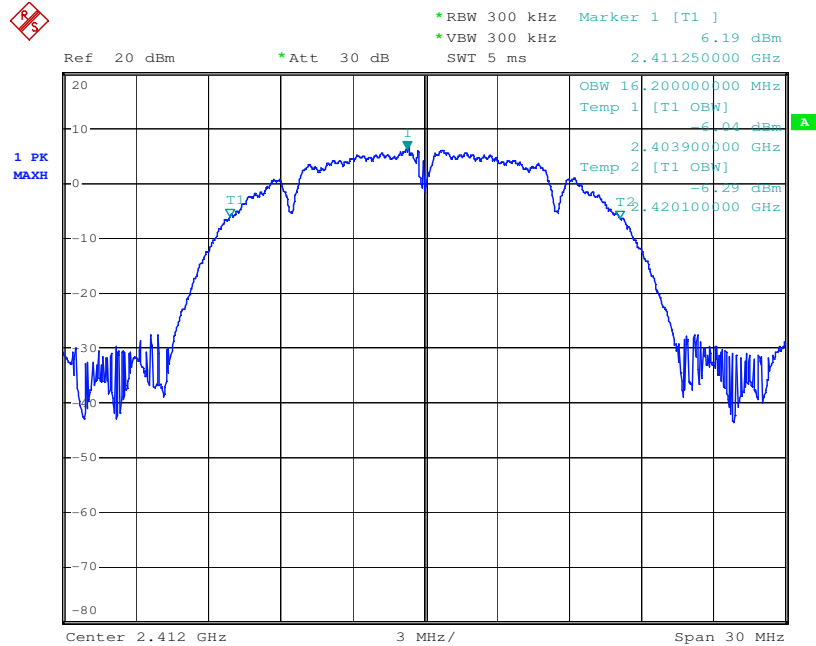
**Test mode: 802.11g**

Channel	Frequency (MHz)	Bandwidth (MHz)
LOW	2412	16.74
MID	2437	16.74
HIGH	2462	16.74

**Test Plots:**

**Low Channel for Antenna A**

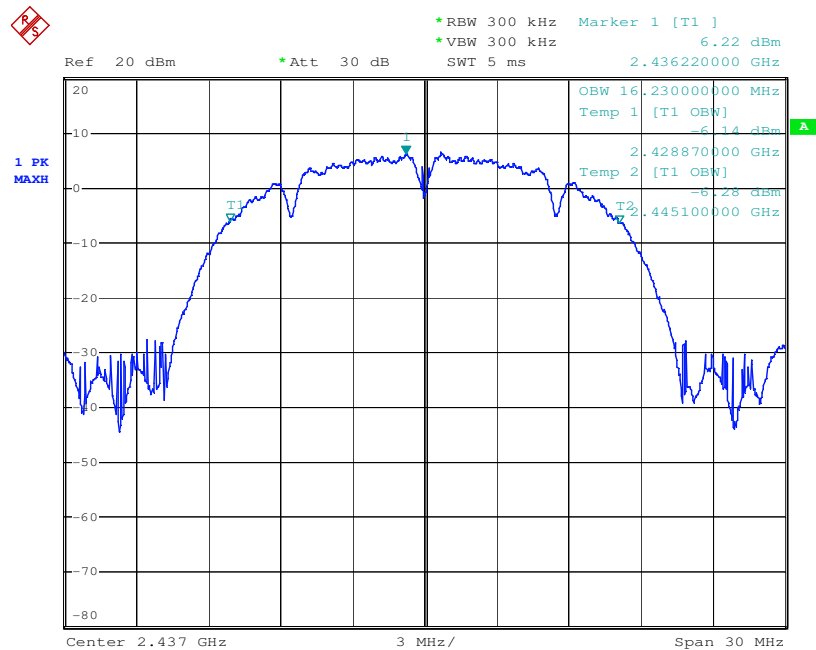
**Test mode: 802.11b**



Date: 29.NOV.2012 09:49:27

**Middle Channel for Antenna A**

**Test mode: 802.11b**

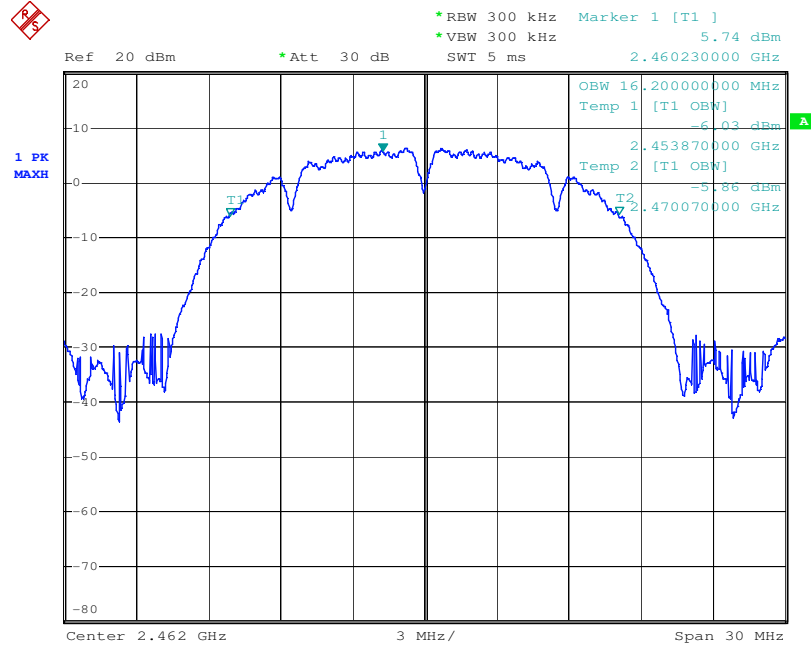


Date: 29.NOV.2012 09:50:16



High Channel for Antenna A

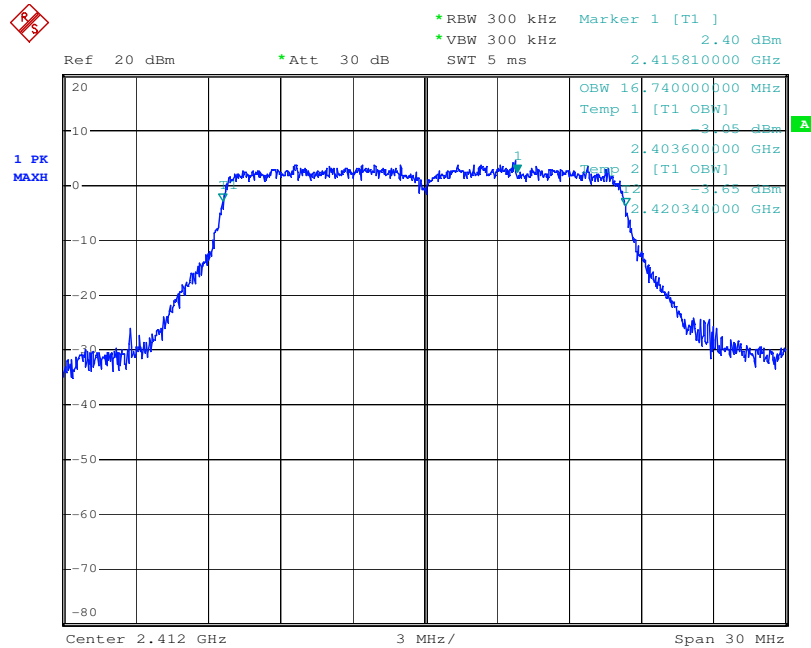
Test mode: 802.11b



Date: 29.NOV.2012 09:51:05

Low Channel for Antenna A

Test mode: 802.11g

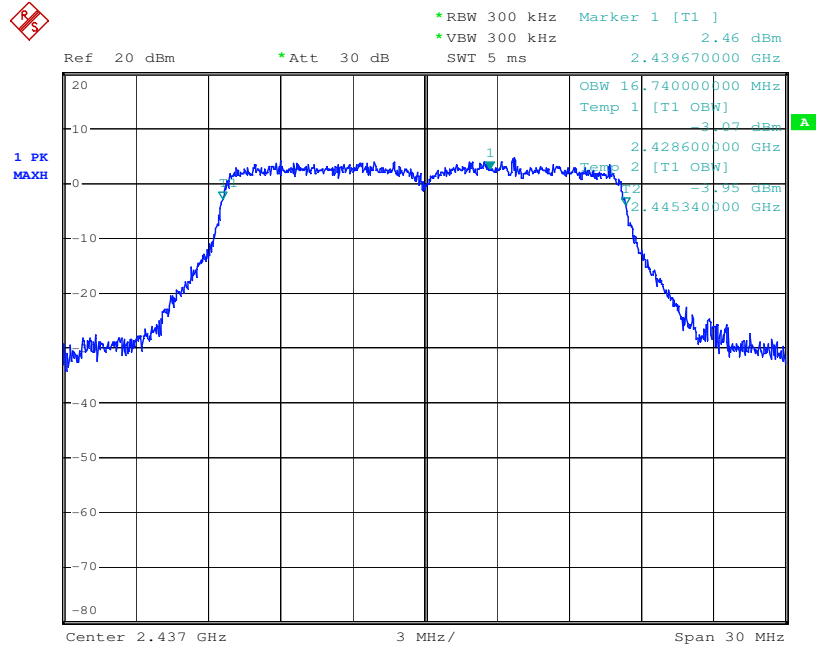


Date: 29.NOV.2012 09:53:45



Middle Channel for Antenna A

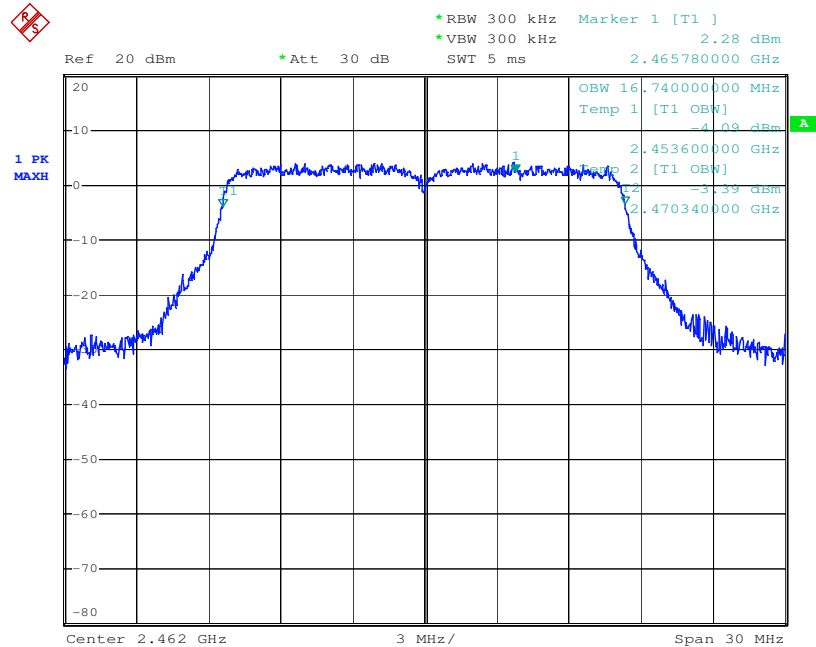
Test mode: 802.11g



Date: 29.NOV.2012 09:52:58

High Channel for Antenna A

Test mode: 802.11g

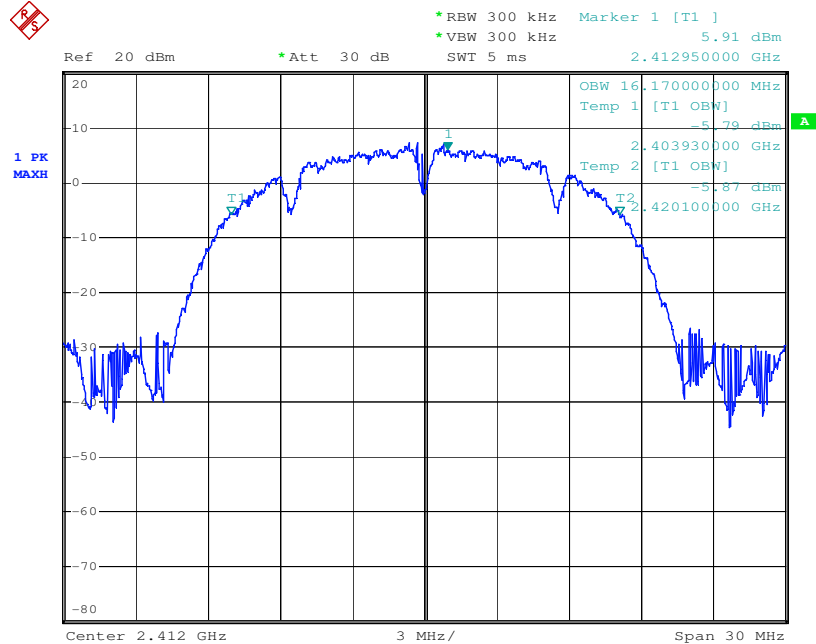


Date: 29.NOV.2012 09:52:03



Low Channel for Antenna B

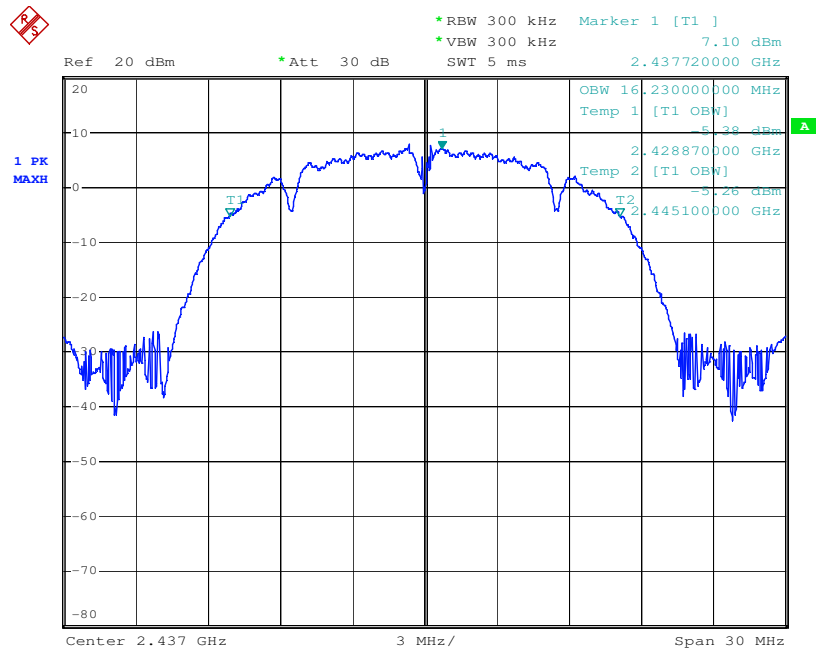
Test mode: 802.11b



Date: 29.NOV.2012 09:25:00

Middle Channel for Antenna B

Test mode: 802.11b



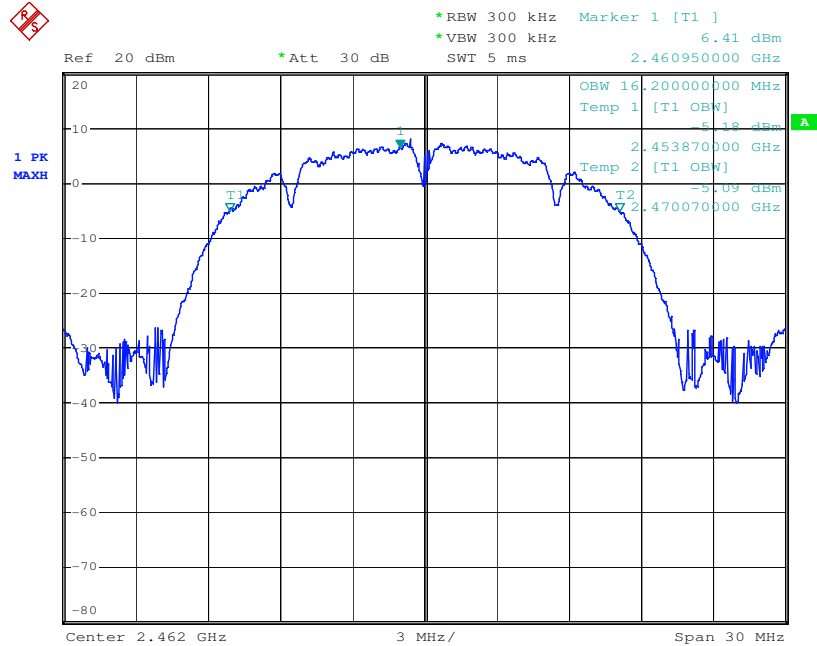
Date: 29.NOV.2012 09:39:59





High Channel for Antenna B

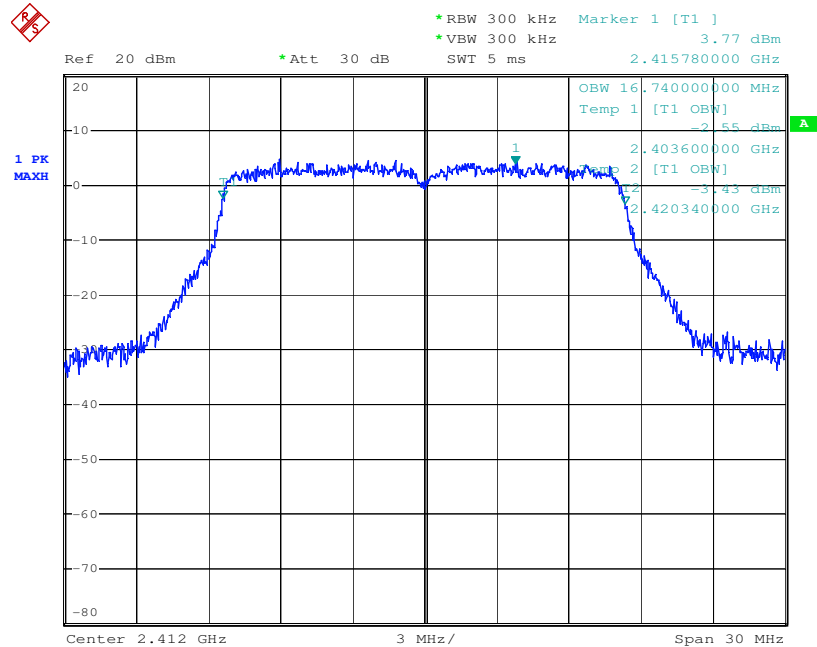
Test mode: 802.11b



Date: 29.NOV.2012 09:41:34

Low Channel for Antenna B

Test mode: 802.11g

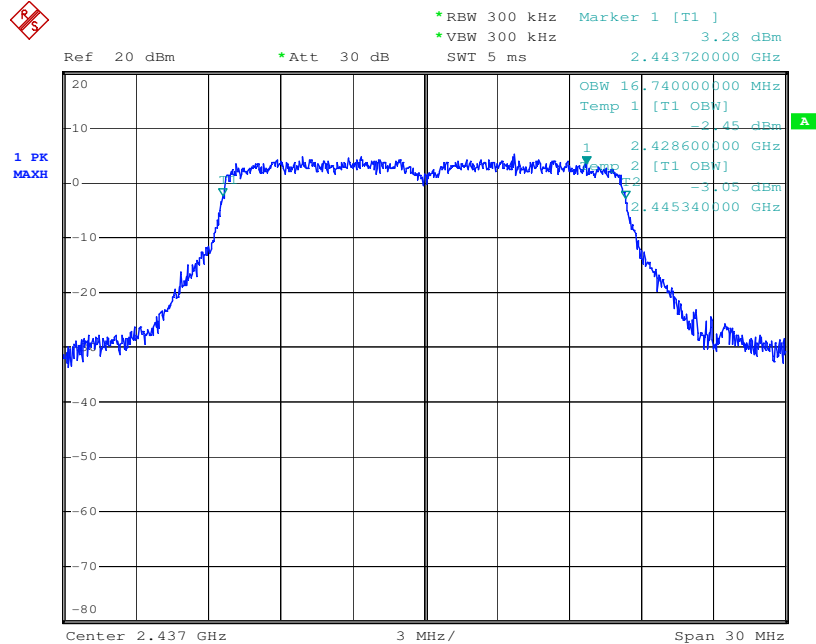


Date: 29.NOV.2012 09:44:50



Middle Channel for Antenna B

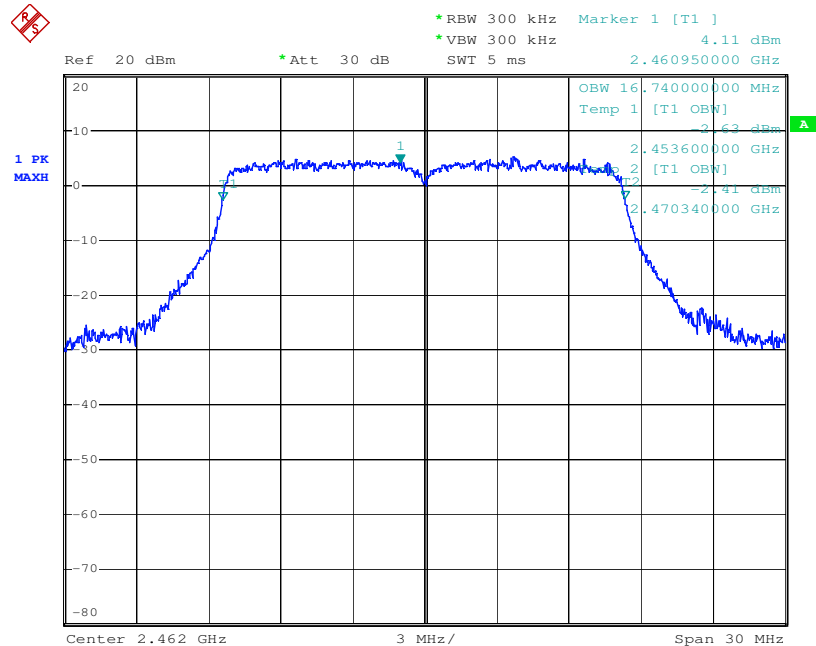
Test mode: 802.11g



Date: 29.NOV.2012 09:46:03

High Channel for Antenna B

Test mode: 802.11g



Date: 29.NOV.2012 09:42:50



## ***End of Report***