



## FCC 47 CFR PART 15 SUBPART C

### TEST REPORT

For

**N Wireless Router**

**Model: F5D8233-4**

**Trade Name: Belkin**

*Issued to*

**Belkin International Inc.**  
501 West Walnut Street, Compton CA 90220, USA

*Issued by*



**Compliance Certification Services Inc.**  
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# 1. TEST RESULT CERTIFICATION

**Applicant:** Belkin International Inc.  
501 West Walnut Street, Compton CA 90220, USA

**Equipment Under Test:** N Wireless Router

**Trade Name:** Belkin

**Model Number:** F5D8233-4

**Date of Test:** December 7 ~ 27, 2007

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

### We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

\_\_\_\_\_  
Rex Lai  
Section Manager  
Compliance Certification Services Inc.

Reviewed by:

\_\_\_\_\_  
Amanda Wu  
Section Manager  
Compliance Certification Services Inc.



## 2. EUT DESCRIPTION

<b>Product</b>	N Wireless Router
<b>Trade Name</b>	Belkin
<b>Model Number</b>	F5D8233-4
<b>Model Discrepancy</b>	N/A
<b>Power Adapter</b>	<ol style="list-style-type: none"> <li>1. DVE Model: DSA-15P-12 US 120120 I/P: 100-240V, 50-60Hz, 0.5A O/P: 12V, 1.0A</li> <li>2. SINO-AMERICAN Mode: SA110C-12S-I I/P: 100-240V, 50-60Hz O/P: 12V, 1A, 12W</li> <li>3. LEADER Model: MU12-2120100-A1 I/P: 100-240V, 50-60Hz, 0.5A O/P: 12V, 1A</li> </ol>
<b>Frequency Range</b>	2412 ~ 2462 MHz
<b>Transmit Power</b>	IEEE 802.11b mode: 21.86 dBm IEEE 802.11g mode: 23.49 dBm draft 802.11n Standard-20 MHz Channel mode: 18.95 dBm draft 802.11n Wide-40 MHz Channel mode: 15.89 dBm
<b>Modulation Technique</b>	IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps) draft 802.11n Standard-20 MHz Channel mode: OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps) draft 802.11n Wide-40 MHz Channel mode: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps)
<b>Number of Channels</b>	IEEE 802.11b/g mode: 11 Channels draft 802.11n Standard-20 MHz Channel mode: 11 Channels draft 802.11n Wide-40 MHz Channel mode: 7 Channels
<b>Antenna Specification</b>	Dipole Antenna / Gain: 1.8 dBi Antenna Calculation for CDD Mode: $1.8 \text{ dBi} + 10 \log (2) = 4.81 \text{ dBi}$ (Numeric gain: 3.03)

### Remark:

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **K7SF5D82334D** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



### **3. TEST METHODOLOGY**

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

#### **3.1 EUT CONFIGURATION**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

#### **3.2 EUT EXERCISE**

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

#### **3.3 GENERAL TEST PROCEDURES**

##### **Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

##### **Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.



### 3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41	322 - 335.4		

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



### 3.5 DESCRIPTION OF TEST MODES

The EUT (model: F5D8233-4) comes with three types of power adapter (DSA-15P-12 US 120120 / SA110C-12S-I / MU12-2120100-A1) for sale. After the preliminary test, the power adapter SA110C-12S-I was found to emit the worst emissions and therefore had been tested under operating condition.

The EUT is a 2x2 configuration spatial MIMO (2Tx & 2Rx) without beam forming function but with cyclic delay diversity function that operate in double TX chains and double RX chains. The 2x2 configuration is implemented with two outside TX & RX chains (Chain 0 and 1).

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

**IEEE 802.11b mode:**

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate and cyclic delay diversity were chosen for full testing.

**IEEE 802.11g mode:**

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate and cyclic delay diversity were chosen for full testing.

**draft 802.11n Standard-20 MHz Channel mode:**

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

**draft 802.11n Wide-40 MHz Channel mode:**

Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.



## 4. INSTRUMENT CALIBRATION

### 4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

### 4.2 MEASUREMENT EQUIPMENT USED

#### Equipment Used for Emissions Measurement

*Remark: Each piece of equipment is scheduled for calibration once a year.*

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360131	01/30/2008

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	09/11/2008
Test Receiver	Rohde&Schwarz	ESCI	100064	11/13/2008
Switch Controller	TRC	Switch Controller	SC94050010	05/04/2008
4 Port Switch	TRC	4 Port Switch	SC94050020	05/04/2008
Horn Antenna	EMCO	3115	9903-5761	01/12/2008
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/29/2008
Turn Table	Max-Full	MFT-120S	T120S940302	N.C.R.
Antenna Tower	Max-Full	MFA-430	A440940302	N.C.R.
Controller	Max-Full	MF-CM886	CC-C-1F-13	N.C.R.
Site NSA	CCS	N/A	FCC: 965860 IC: IC 6106	09/25/2008
Test S/W	LABVIEW (V 6.1)			

*Remark: The measurement uncertainty is less than +/-2.0065dB (30MHz ~ 1GHz), +/-3.0958dB (Above 1GHz) which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

Powerline Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI TEST RECEIVER 9kHz-30MHz	ROHDE & SCHWARZ	ESHS30	828144/003	10/31/2008
TWO-LINE V-NETWORK 9kHz-30MHz	SCHAFFNER	NNB41	03/10013	06/12/2008
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	03/19/2008
Test S/W	LABVIEW (V 6.1)			

*Remark: The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*



## 5. FACILITIES AND ACCREDITATIONS

### 5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan

Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### 5.2 EQUIPMENT

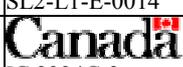
Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### 5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	EN 55011, EN 55014-1/2, CISPR 11, CISPR 14-1/2, EN 55022, EN 55015, CISPR 22, CISPR 15, AS/NZS 3548, VCCI V3 (2001), CFR 47, FCC Part 15/18, CNS 13783-1, CNS 13439, CNS 13438, CNS 13803, CNS 14115, EN 55024, IEC 801-2, IEC 801-3, IEC 801-4, IEC/EN 61000-3-2, IEC/EN 61000-3-3, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 50081-1/ EN 61000-6-3, EN 50081-2/EN 61000-6-4, EN 50081-2/EN 61000-6-1: 2001	
USA	FCC	3/10 meter Open Area Test Sites (93105, 90471) / 3M Semi Anechoic Chamber (965860) to perform FCC Part 15/18 measurements	 93105, 90471 965860
Japan	VCCI	3/10 meter Open Area Test Sites to perform conducted/radiated measurements	 R-393/1066/725/879 C-402/747/912
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, EN 60601-1-2, EN 300 328, EN 300 422-2, EN 301 419-1, EN 301 489-01/03/07/08/09/17, EN 301 419-2/3, EN 300 454-2, EN 301 357-2	 ELA 124a ELA 124b ELA 124c
Taiwan	TAF	EN 300 328, EN 300 220-1, EN 300 220-2, EN 300 220-3, 47 CFR FCC Part 15 Subpart C, EN 61000-3-2, EN 61000-3-3, CNS 13439, CNS 13783-1, CNS 14115, CNS 13438, AS/NZS CISPR 22, CNS 13022-1, IEC 61000-4-2/3/4/5/6/8/11, CNS 13022-2/3	
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	 SL2-IS-E-0014 SL2-IN-E-0014 SL2-A1-E-0014 SL2-R1-E-0014 SL2-R2-E-0014 SL2-L1-E-0014
Canada	Industry Canada	3/10 meter Open Area Test Sites (IC 2324C-3, IC 2324C-5) / 3M Semi Anechoic Chamber (IC 6106)	 IC 2324C-3 IC 2324C-5 IC 6106

\* No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.



## 6. SETUP OF EQUIPMENT UNDER TEST

### 6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

### 6.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	Notebook PC (Remote)	IBM	2672 (X31)	99KPZYN	WLAN: ANO20030400LEG Bluetooth: ANO20020100MTN	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2.	Notebook PC (Remote)	Sony	PCG-6GFP	00045-578-554-578	WLAN: ETC094LPD0155 Bluetooth: ETC094LPD0156	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
3.	Notebook PC (Remote)	Sony	VGN-S44TP	28198080 8100339	WLAN: ETC094LPD0155 Bluetooth: ETC094LPD0156	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
4.	Notebook PC (Remote)	ASUS	M5200AE	5BN0AG019631	PD9WM3B2100	N/A	AC I/P: Unshielded, 1.8m with a core DC O/P: Unshielded, 1.8m
5.	Notebook PC (Remote)	TOSHIBA	Satellite 1110	Y2382109	FCC DoC	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core

**Remark:**

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

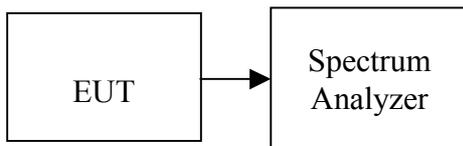
## 7. FCC PART 15.247 REQUIREMENTS

### 7.1 6DB BANDWIDTH

#### LIMIT

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

#### Test Configuration



#### TEST PROCEDURE

1. Place the EUT on the table and set it in the 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 = 100 kHz, VBW = RBW, Span = 50 MHz, Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.



### **TEST RESULTS**

*No non-compliance noted*

#### **Test Data**

##### **Test mode: IEEE 802.11b mode / Chain 0**

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	11250	>500	PASS
Mid	2437	12500		PASS
High	2462	12000		PASS

##### **Test mode: IEEE 802.11b mode / Chain 1**

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	12250	>500	PASS
Mid	2437	11330		PASS
High	2462	12170		PASS

##### **Test mode: IEEE 802.11g mode/ Chain 0**

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	16420	>500	PASS
Mid	2437	16330		PASS
High	2462	16250		PASS

##### **Test mode: IEEE 802.11g mode / Chain 1**

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	16330	>500	PASS
Mid	2437	16330		PASS
High	2462	16330		PASS

**Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0**

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	16670	>500	PASS
Mid	2437	16670		PASS
High	2462	16920		PASS

**Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1**

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	17080	>500	PASS
Mid	2437	17500		PASS
High	2462	17830		PASS

**Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0**

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	35170	>500	PASS
Mid	2437	34500		PASS
High	2452	33420		PASS

**Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1**

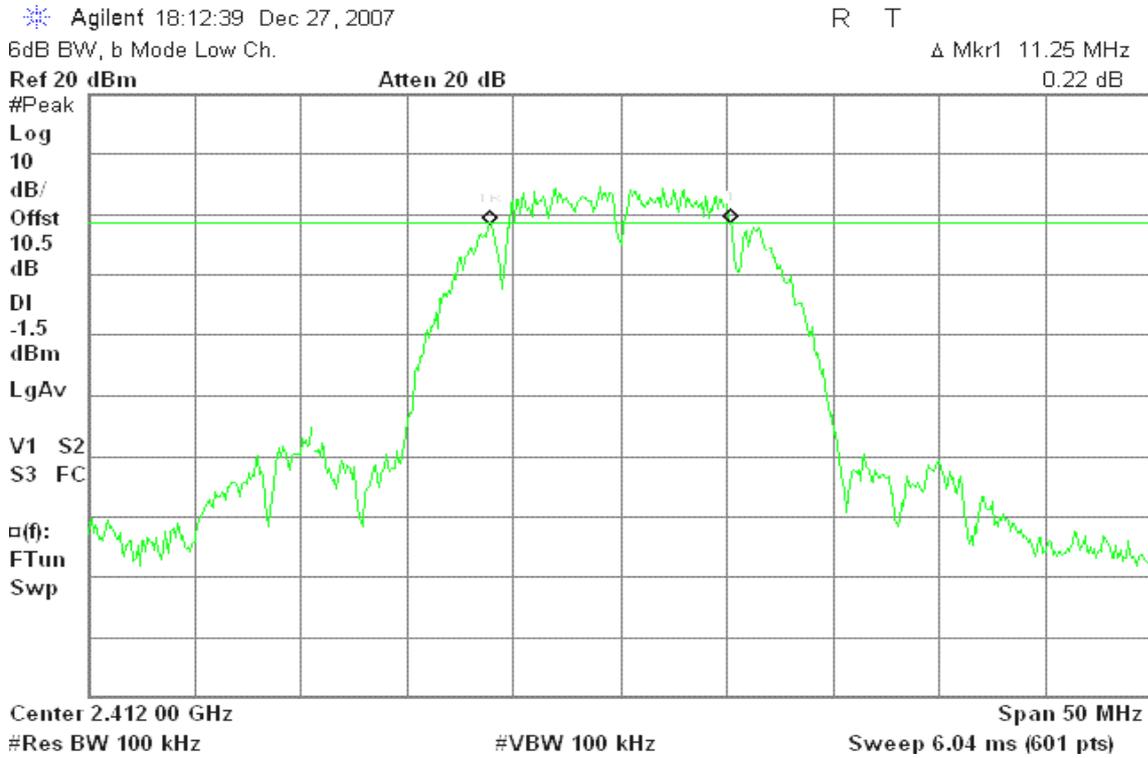
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	34250	>500	PASS
Mid	2437	35170		PASS
High	2452	33420		PASS



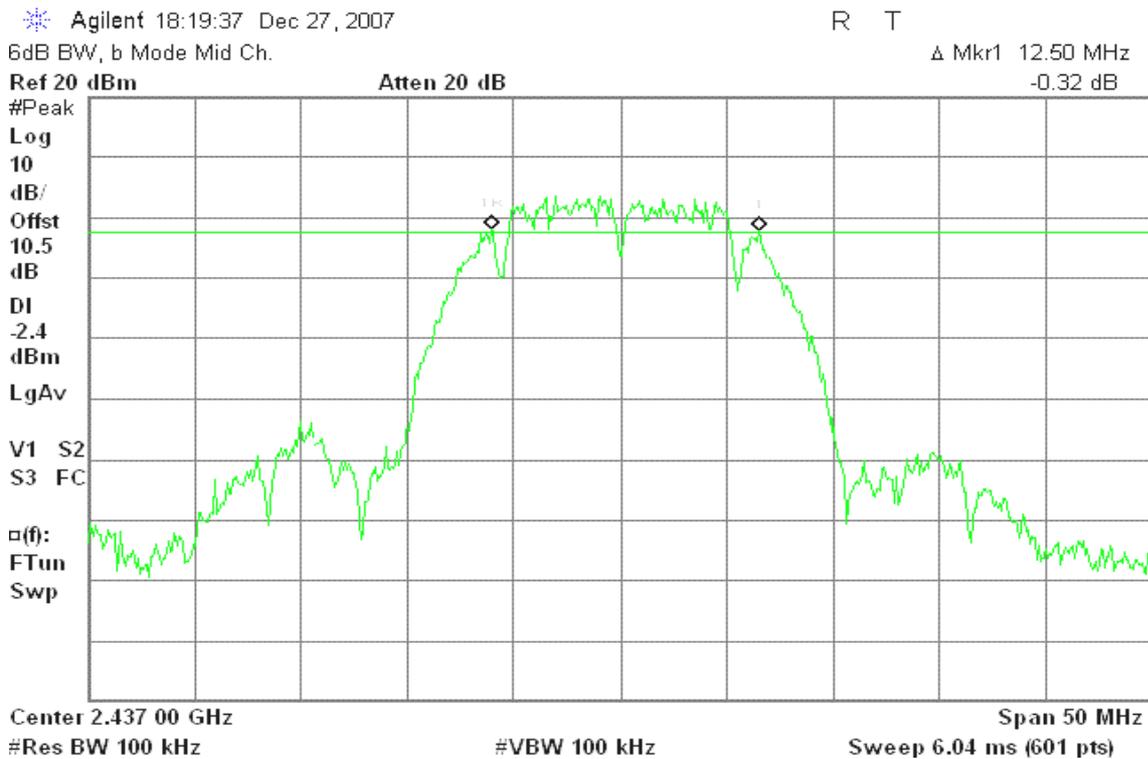
### Test Plot

### IEEE 802.11b mode/ Chain 0

### 6dB Bandwidth (CH Low)



### 6dB Bandwidth (CH Mid)





### 6dB Bandwidth (CH High)

Agilent 18:26:11 Dec 27, 2007

R T

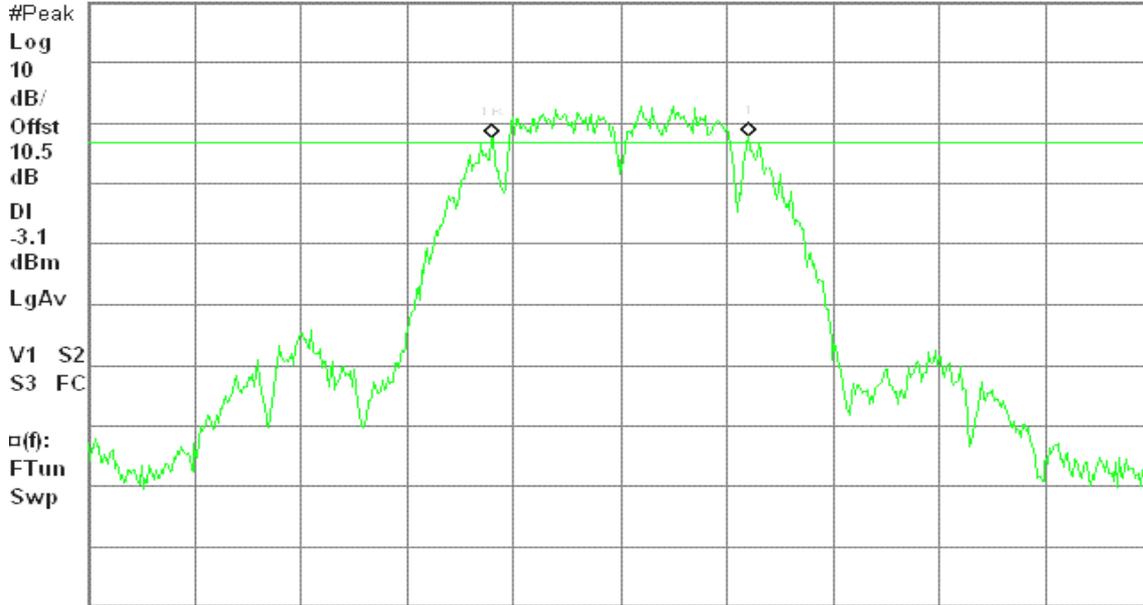
6dB BW, b Mode High Ch.

Δ Mkr1 12.00 MHz

Ref 20 dBm

Atten 20 dB

0.31 dB



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

### IEEE 802.11b mode / Chain 1

### 6dB Bandwidth (CH Low)

Agilent 18:44:40 Dec 27, 2007

R T

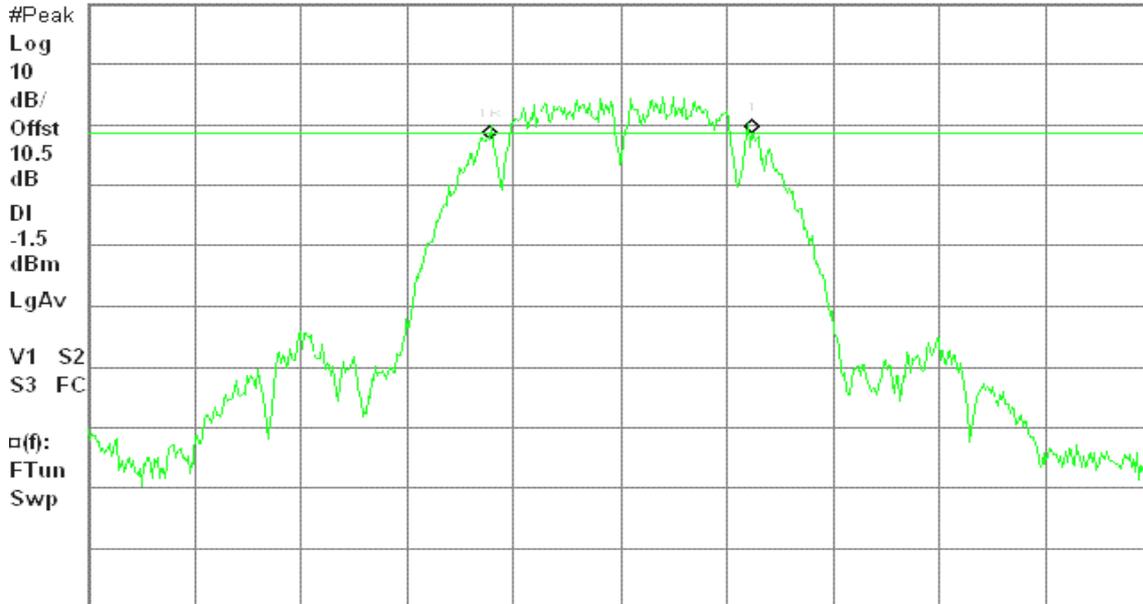
6dB BW, b Mode Low Ch.

Δ Mkr1 12.25 MHz

Ref 20 dBm

Atten 20 dB

1.12 dB



Center 2.412 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



### 6dB Bandwidth (CH Mid)

Agilent 18:38:17 Dec 27, 2007

R T

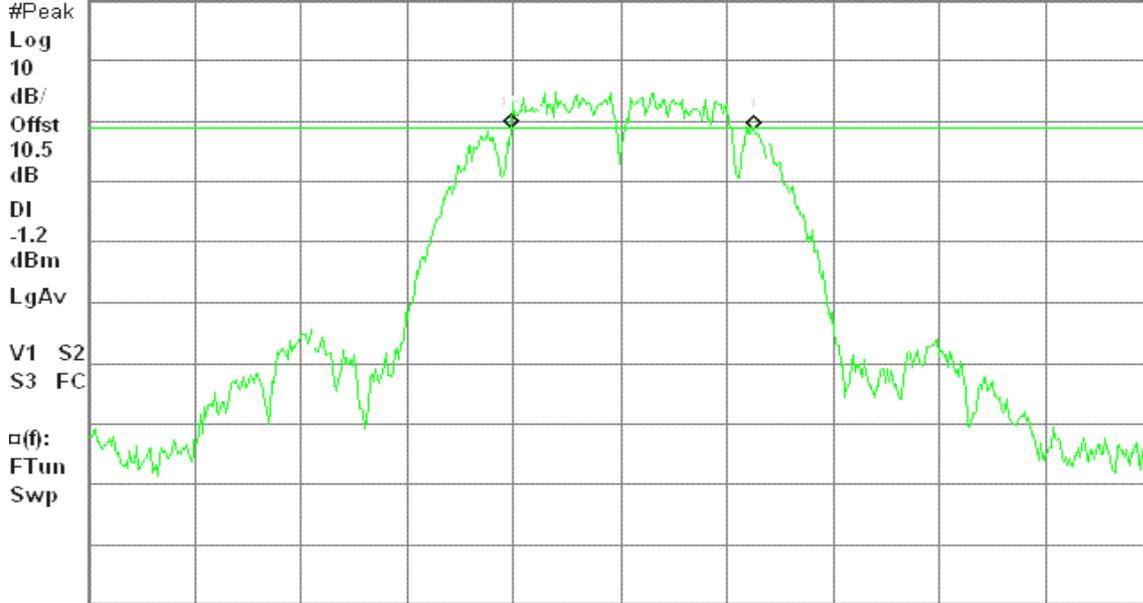
6dB BW, b Mode Mid Ch.

Δ Mkr1 11.33 MHz

Ref 20 dBm

Atten 20 dB

-0.34 dB



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

### 6dB Bandwidth (CH High)

Agilent 18:32:08 Dec 27, 2007

R T

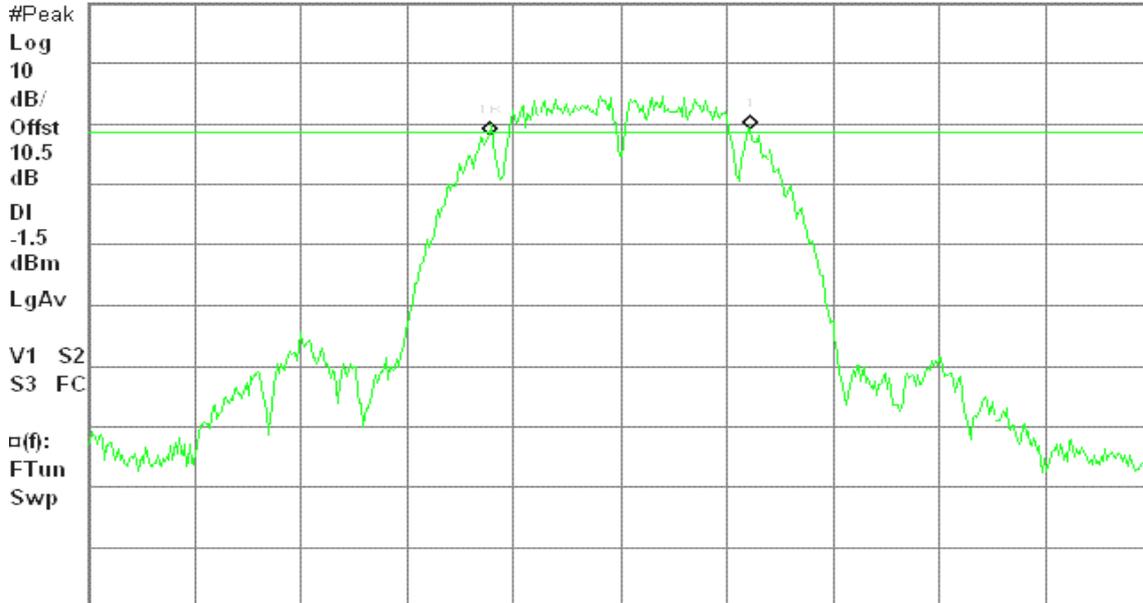
6dB BW, b Mode High Ch.

Δ Mkr1 12.17 MHz

Ref 20 dBm

Atten 20 dB

0.99 dB



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



### IEEE 802.11g mode/ Chain 0

#### 6dB Bandwidth (CH Low)

Agilent 19:13:25 Dec 27, 2007

R T

6dB BW, g Mode Low Ch.

Δ Mkr1 16.42 MHz

Ref 20 dBm

Atten 20 dB

3.21 dB

#Peak

Log

10

dB/

Offst

10.5

dB

DI

-5.5

dBm

LgAv

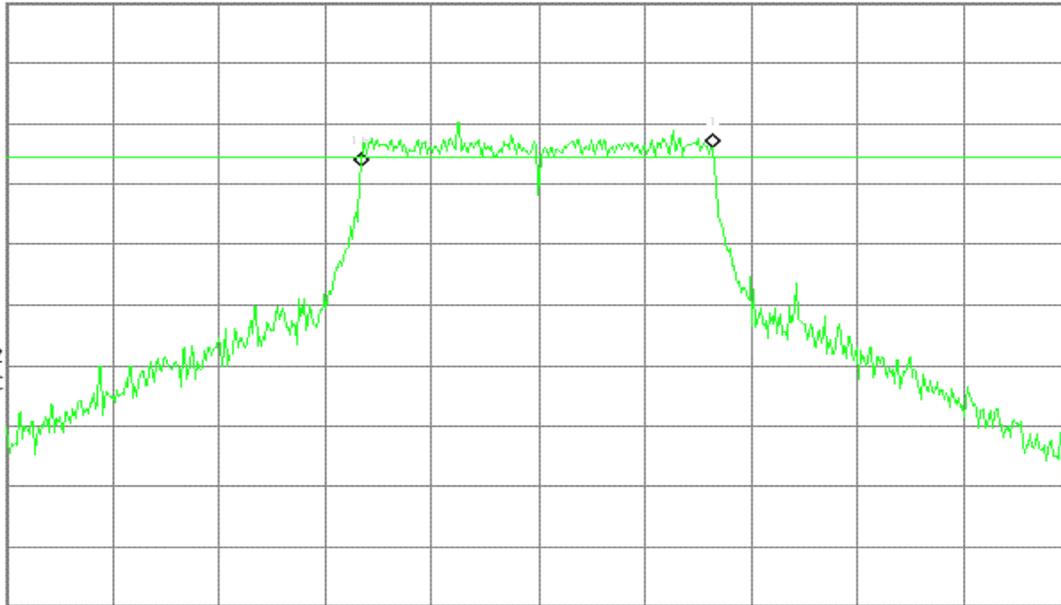
V1 S2

S3 FC

□(f):

FTun

Swp



Center 2.412 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

#### 6dB Bandwidth (CH Mid)

Agilent 19:20:38 Dec 27, 2007

R T

6dB BW, g Mode Mid Ch.

Δ Mkr1 16.33 MHz

Ref 20 dBm

Atten 20 dB

-0.02 dB

#Peak

Log

10

dB/

Offst

10.5

dB

DI

-0.7

dBm

LgAv

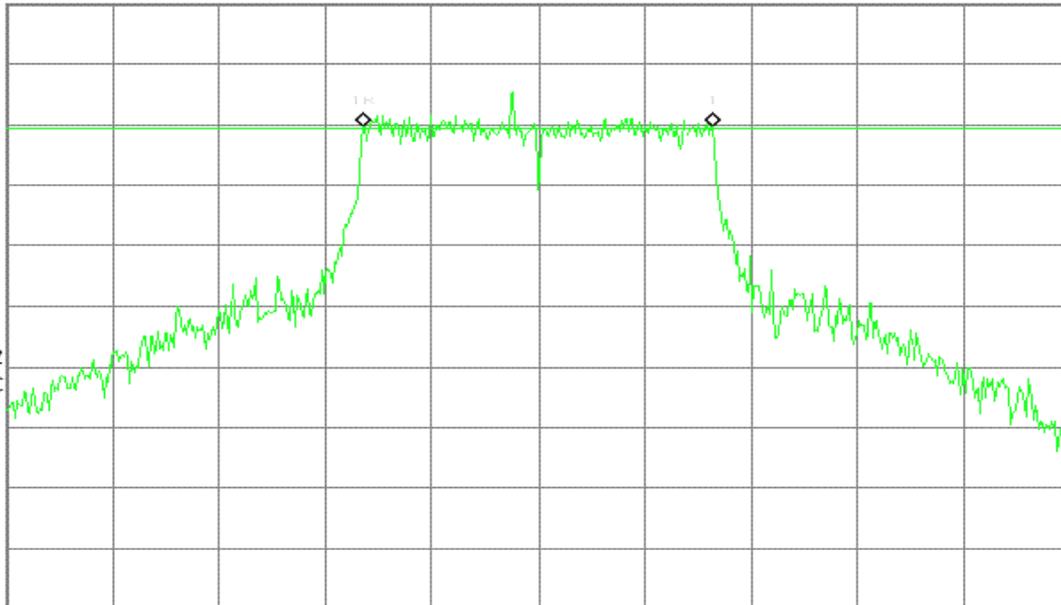
V1 S2

S3 FC

□(f):

FTun

Swp



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



### 6dB Bandwidth (CH High)

Agilent 19:26:35 Dec 27, 2007

R T

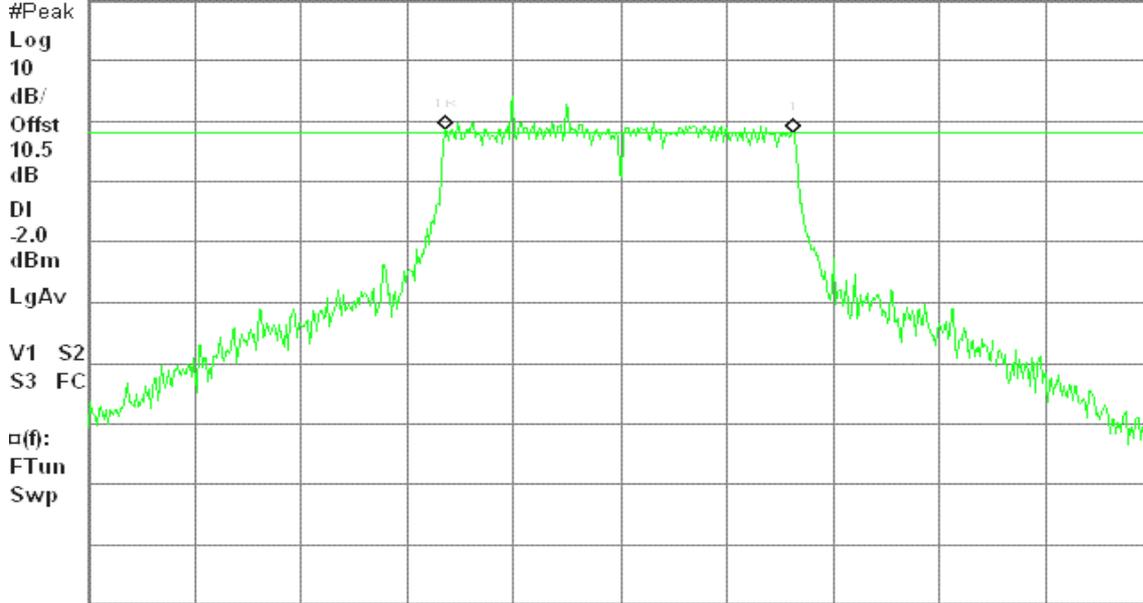
6dB BW, g Mode High Ch.

Δ Mkr1 16.25 MHz

Ref 20 dBm

Atten 20 dB

-0.50 dB



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

### IEEE 802.11g mode / Chain 1

### 6dB Bandwidth (CH Low)

Agilent 18:50:18 Dec 27, 2007

R T

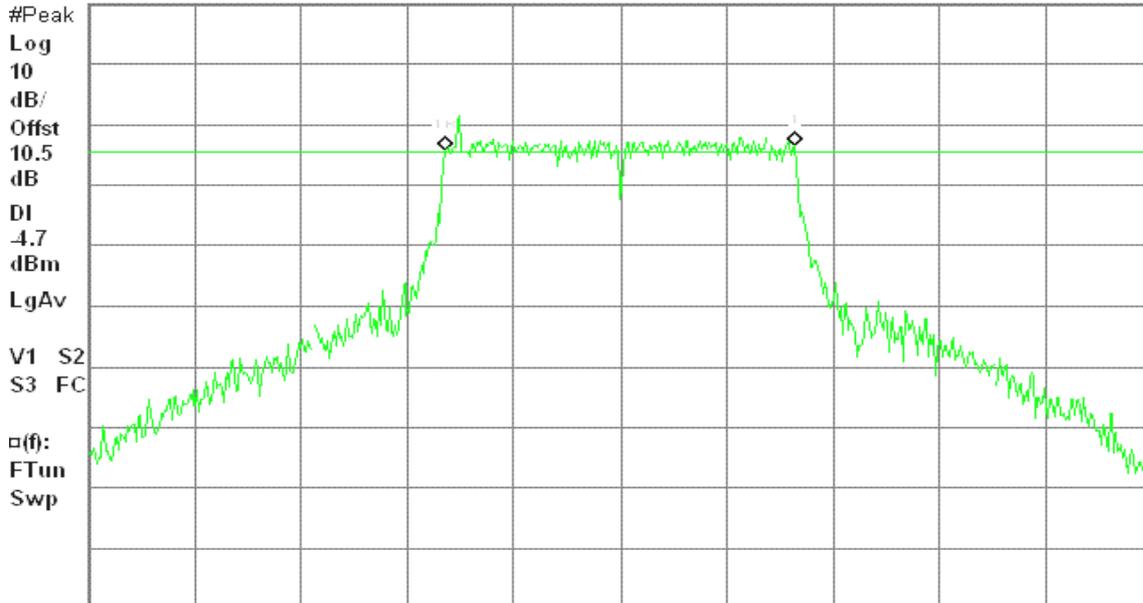
6dB BW, g Mode Low Ch.

Δ Mkr1 16.33 MHz

Ref 20 dBm

Atten 20 dB

0.75 dB



Center 2.412 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



### 6dB Bandwidth (CH Mid)

Agilent 18:57:19 Dec 27, 2007

R T

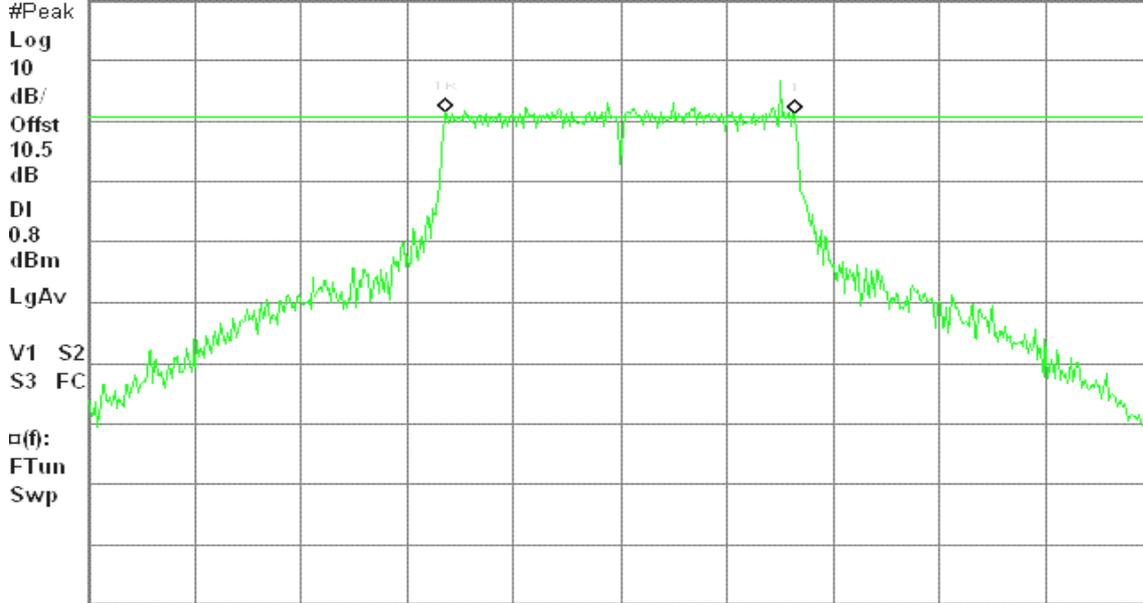
6dB BW, g Mode Mid Ch.

Δ Mkr1 16.33 MHz

Ref 20 dBm

Atten 20 dB

-0.28 dB



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

### 6dB Bandwidth (CH High)

Agilent 19:04:12 Dec 27, 2007

R T

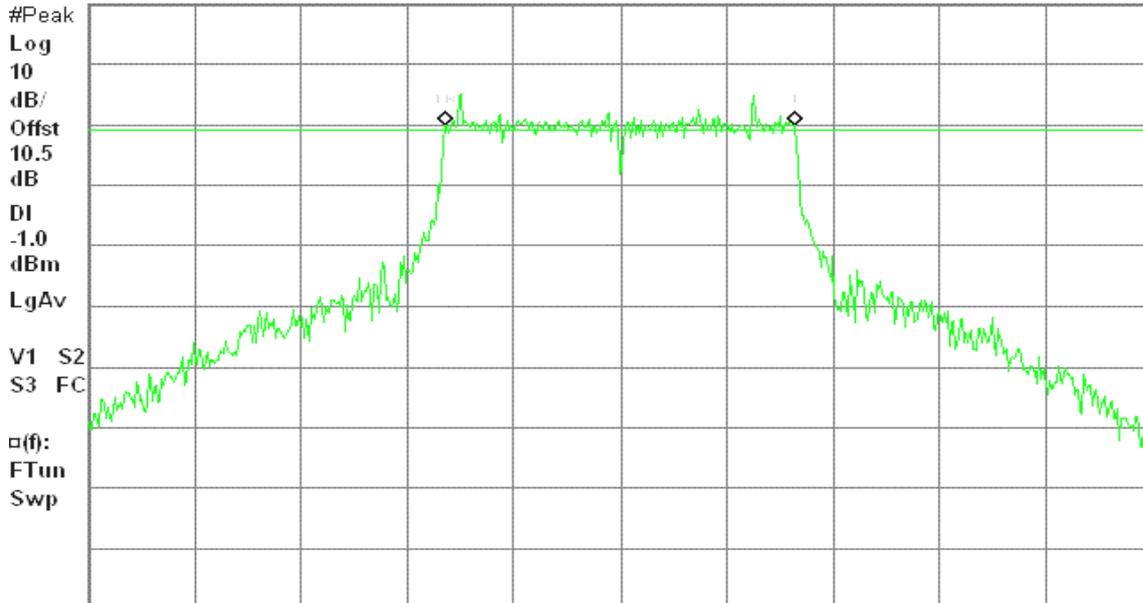
6dB BW, g Mode High Ch.

Δ Mkr1 16.33 MHz

Ref 20 dBm

Atten 20 dB

0.07 dB



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

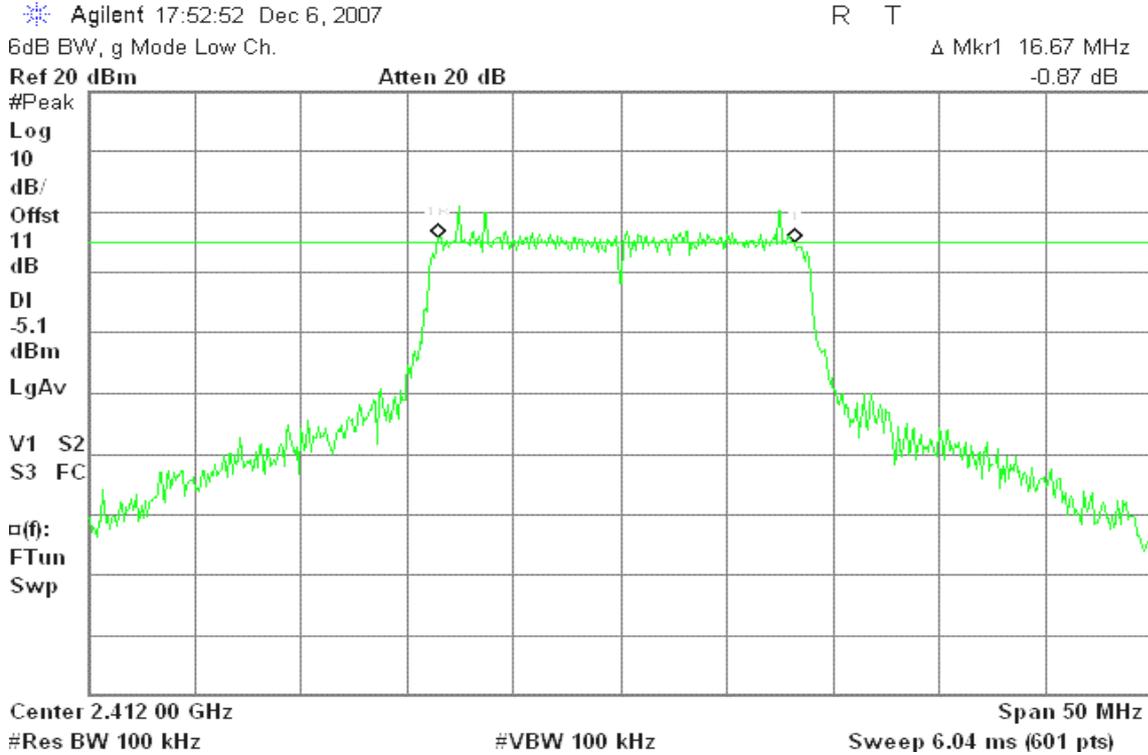
#VBW 100 kHz

Sweep 6.04 ms (601 pts)

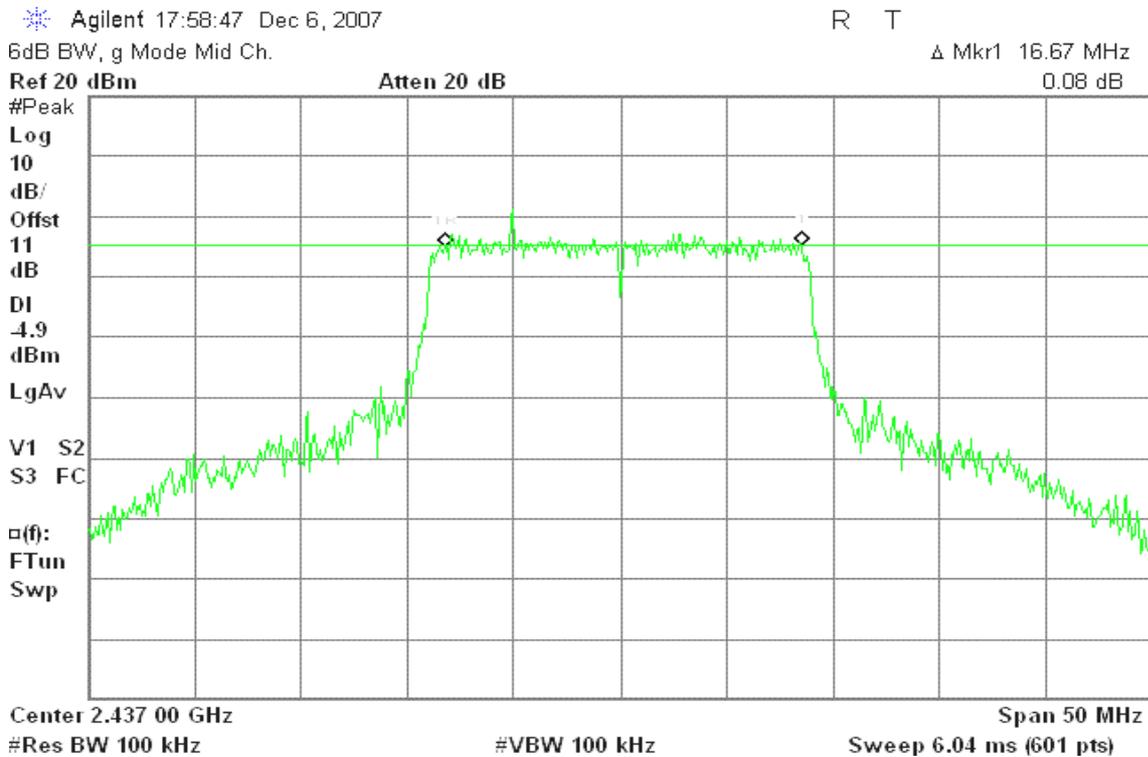


**draft 802.11n Standard-20 MHz Channel mode / Chain 0**

**6dB Bandwidth (CH Low)**



**6dB Bandwidth (CH Mid)**





### 6dB Bandwidth (CH High)

Agilent 18:04:25 Dec 6, 2007

R T

6dB BW, g Mode High Ch.

Δ Mkr1 16.92 MHz

Ref 20 dBm

Atten 20 dB

0.71 dB

#Peak

Log

10

dB/

Offst

11

dB

DI

-6.3

dBm

LgAv

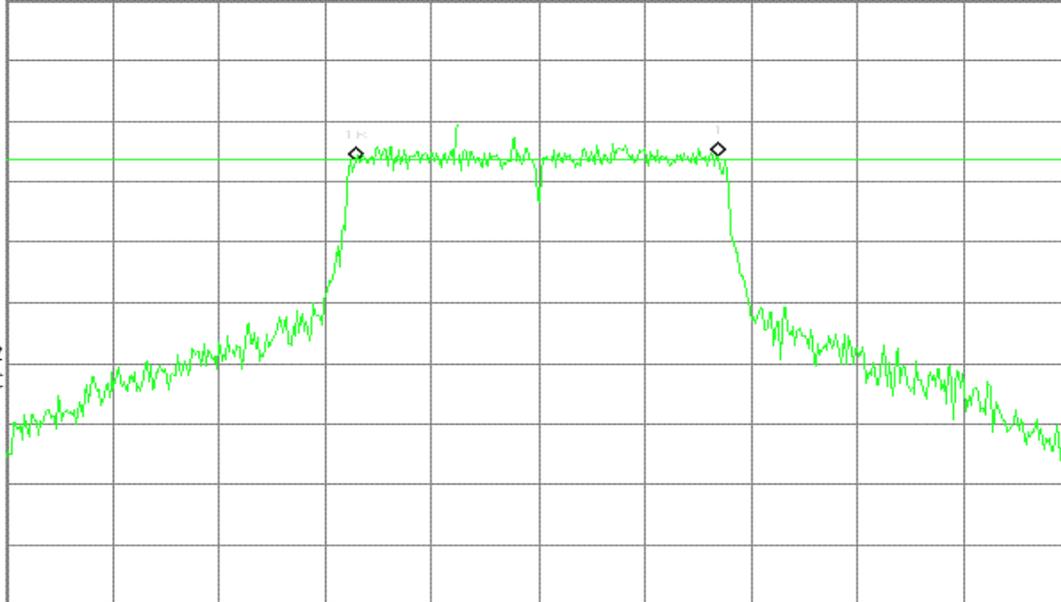
V1 S2

S3 FC

□(f):

FTun

Swp



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

### draft 802.11n Standard-20 MHz Channel mode / Chain 1

### 6dB Bandwidth (CH Low)

Agilent 18:35:29 Dec 6, 2007

R T

6dB BW, g Mode Low Ch.

Δ Mkr1 17.08 MHz

Ref 20 dBm

Atten 20 dB

-0.06 dB

#Peak

Log

10

dB/

Offst

11

dB

DI

-5.4

dBm

LgAv

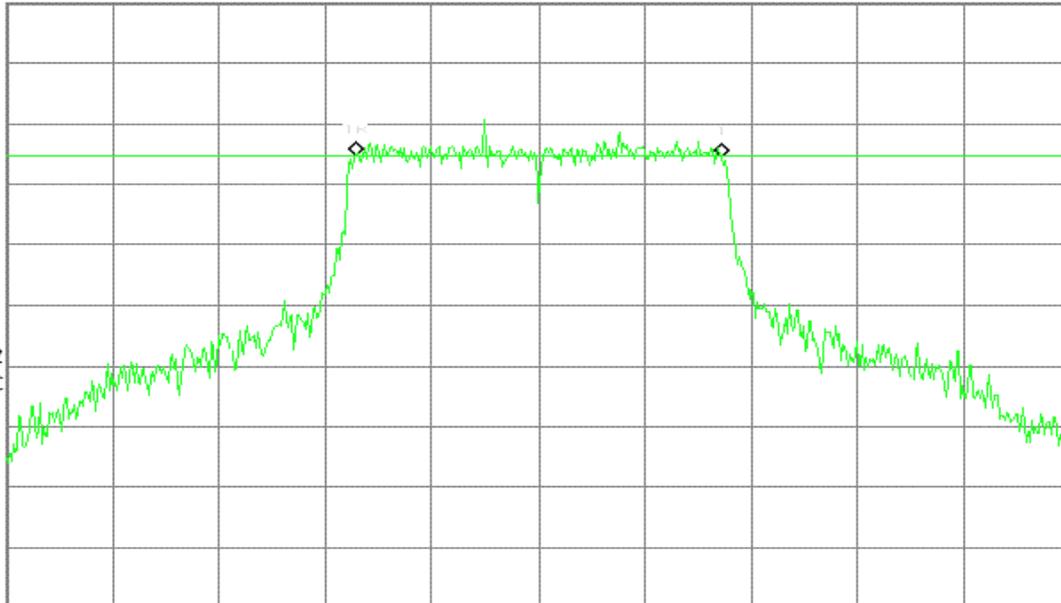
V1 S2

S3 FC

□(f):

FTun

Swp



Center 2.442 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



### 6dB Bandwidth (CH Mid)

Agilent 18:27:38 Dec 6, 2007

R T

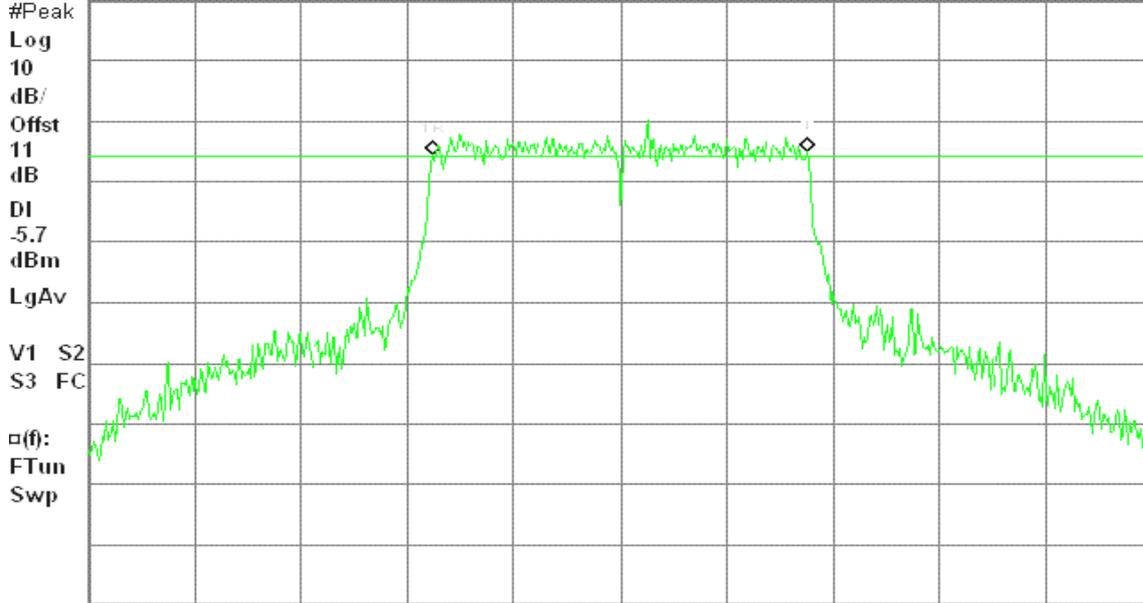
6dB BW, g Mode Mid Ch.

Δ Mkr1 17.50 MHz

Ref 20 dBm

Atten 20 dB

0.47 dB



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

### 6dB Bandwidth (CH High)

Agilent 18:20:14 Dec 6, 2007

R T

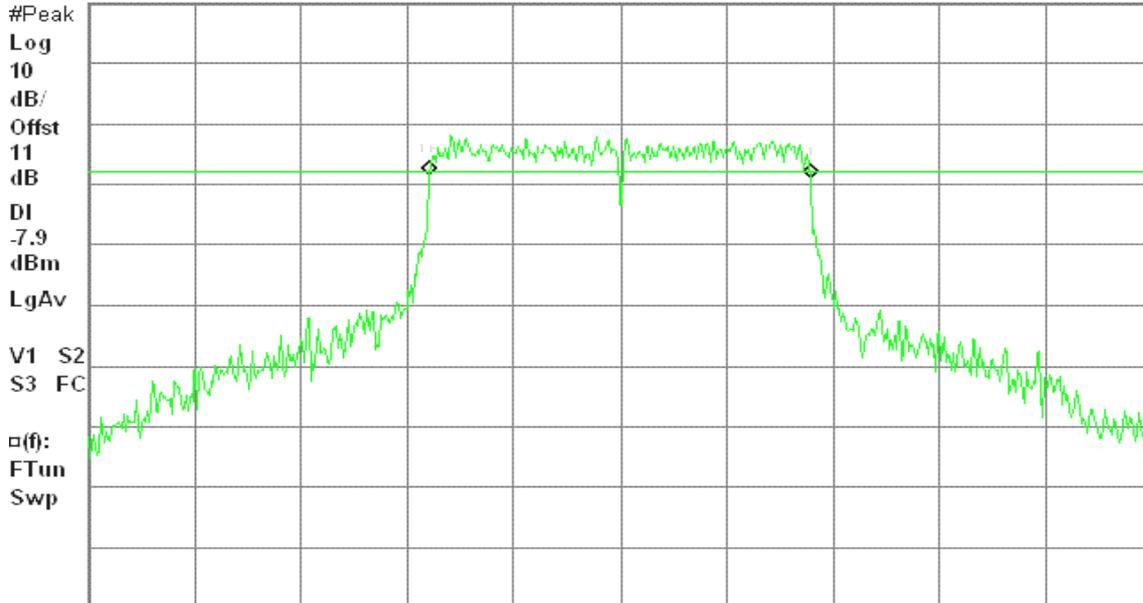
6dB BW, g Mode High Ch.

Δ Mkr1 17.83 MHz

Ref 20 dBm

Atten 20 dB

-0.49 dB



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



### draft 802.11n Wide-40 MHz Channel mode / Chain 0

#### 6dB Bandwidth (CH Low)

Agilent 19:06:58 Dec 6, 2007

R T

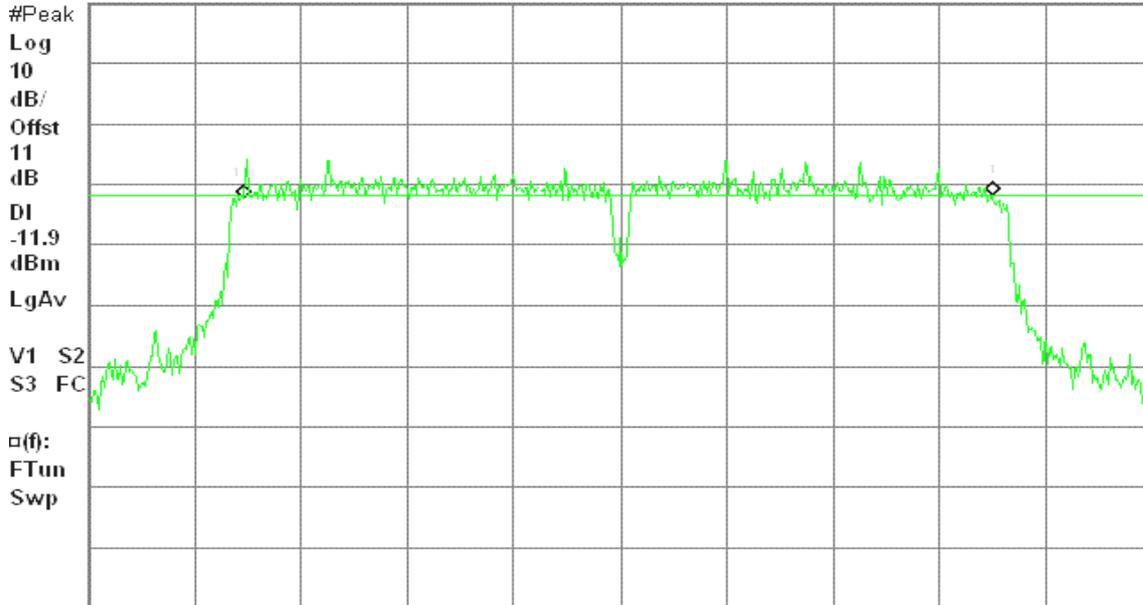
6dB BW, g Mode Low Ch.

Δ Mkr1 35.17 MHz

Ref 20 dBm

Atten 20 dB

0.44 dB



Center 2.422 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

#### 6dB Bandwidth (CH Mid)

Agilent 19:24:57 Dec 6, 2007

R T

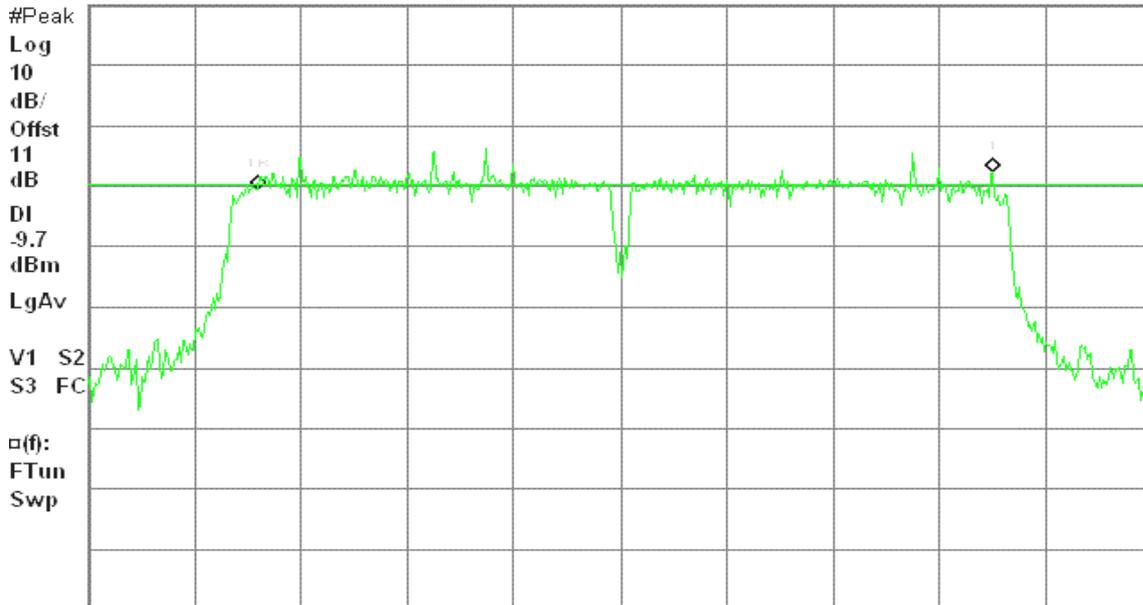
6dB BW, g Mode Mid Ch.

Δ Mkr1 34.50 MHz

Ref 20 dBm

Atten 20 dB

2.83 dB



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



### 6dB Bandwidth (CH High)

Agilent 19:46:10 Dec 6, 2007

R T

6dB BW, g Mode High Ch.

Δ Mkr1 33.42 MHz

Ref 20 dBm

Atten 20 dB

0.65 dB

#Peak

Log

10

dB/

Offst

11

dB

DI

-10.7

dBm

LgAv

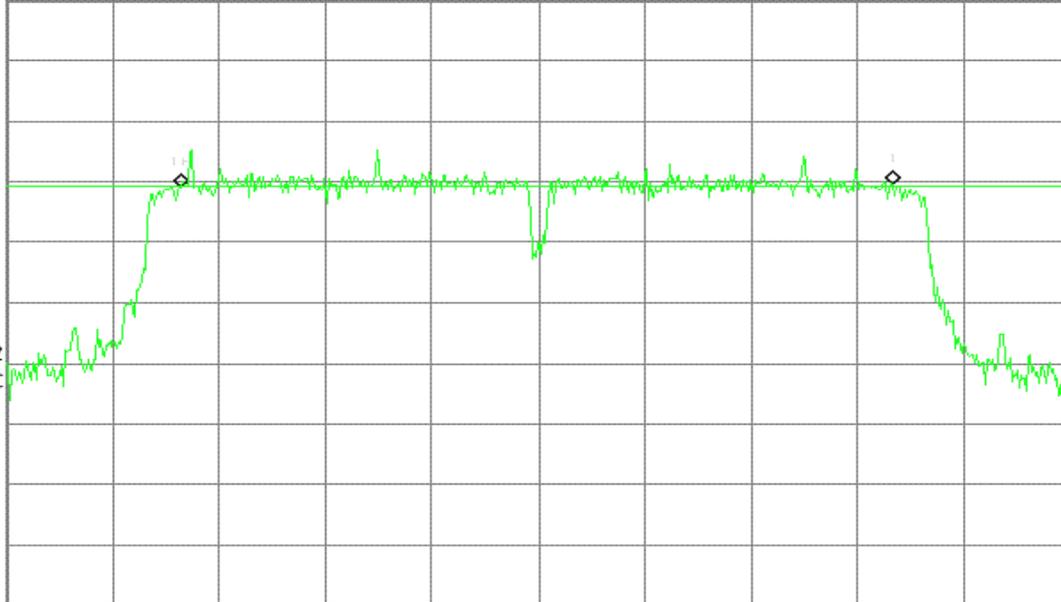
V1 S2

S3 FC

□(f):

FTun

Swp



Center 2.452 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

### draft 802.11n Wide-40 MHz Channel mode / Chain 1

### 6dB Bandwidth (CH Low)

Agilent 19:13:41 Dec 6, 2007

R T

6dB BW, g Mode Low Ch.

Δ Mkr1 34.25 MHz

Ref 20 dBm

Atten 20 dB

-2.22 dB

#Peak

Log

10

dB/

Offst

11

dB

DI

-10.2

dBm

LgAv

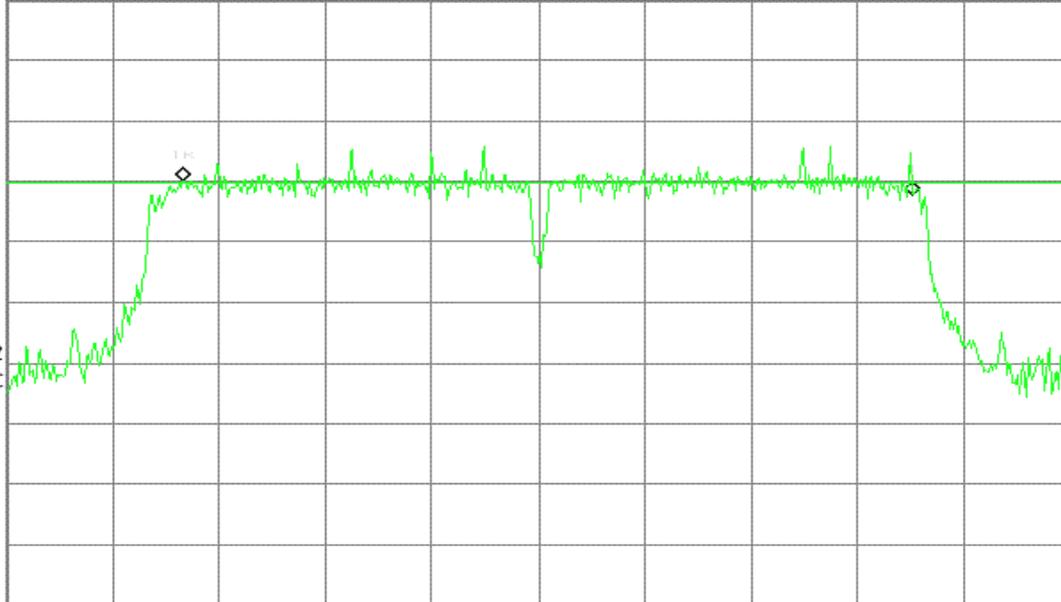
V1 S2

S3 FC

□(f):

FTun

Swp



Center 2.422 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



### 6dB Bandwidth (CH Mid)

Agilent 19:29:55 Dec 6, 2007

R T

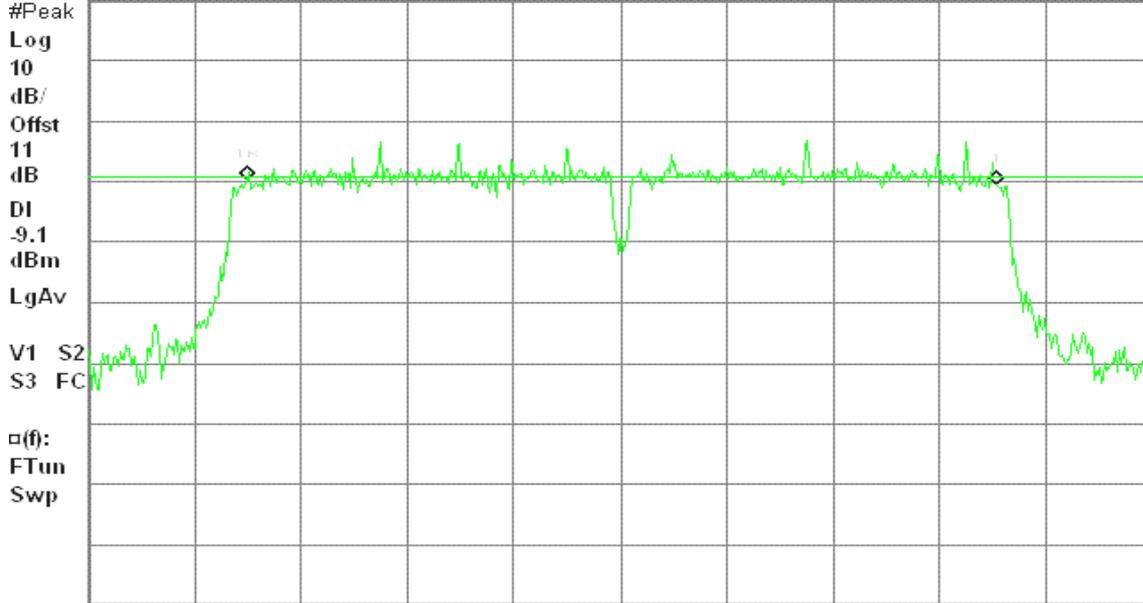
6dB BW, g Mode Mid Ch.

Δ Mkr1 35.17 MHz

Ref 20 dBm

Atten 20 dB

-1.03 dB



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

### 6dB Bandwidth (CH High)

Agilent 19:41:38 Dec 6, 2007

R T

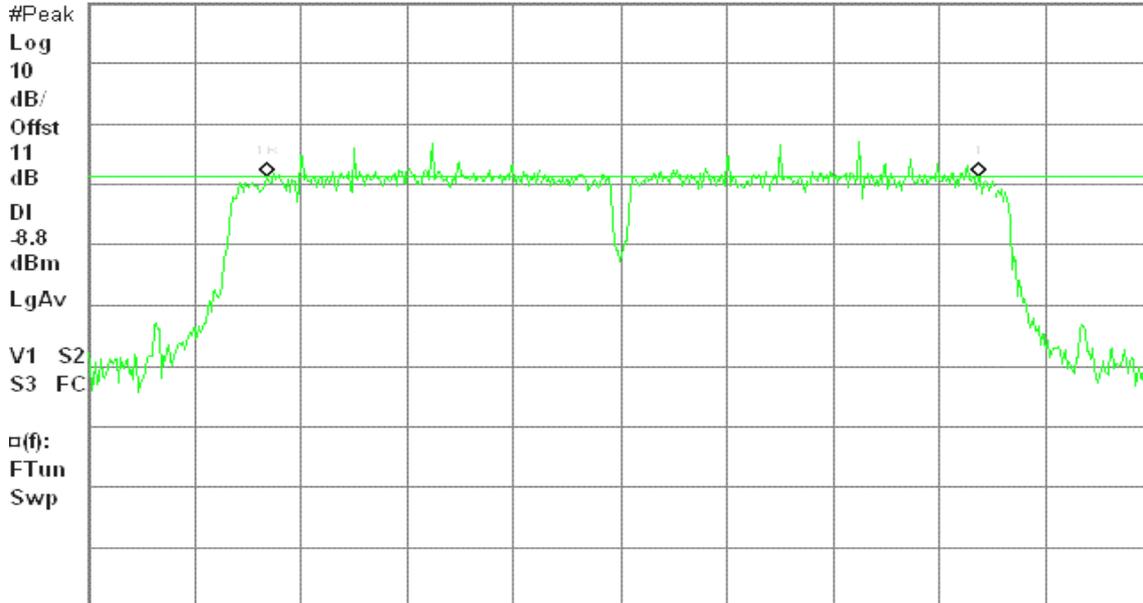
6dB BW, g Mode High Ch.

Δ Mkr1 33.42 MHz

Ref 20 dBm

Atten 20 dB

-0.15 dB



Center 2.452 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

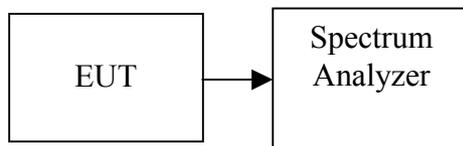
## 7.2 PEAK POWER

### LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

1. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
2. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### Test Configuration



### TEST 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 = 1 MHz, VBW  $\geq$  3 MHz. in “Channel Power ” measurement.
4. Record the max reading.
5. Repeat the above procedure until the measurements for all frequencies are completed.

**TEST RESULTS***No non-compliance noted***Test Data****Test mode: IEEE 802.11b mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	18.79	18.90	21.86	0.1533	1.00	PASS
Mid	2437	18.16	19.32	21.79	0.1510		PASS
High	2462	17.38	18.92	21.23	0.1327		PASS

**Test mode: IEEE 802.11g mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	16.15	16.42	19.30	0.0851	1.00	PASS
Mid	2437	20.05	20.87	23.49	0.2233		PASS
High	2462	18.30	19.94	22.21	0.1662		PASS

**Test mode: draft 802.11n Standard-20 MHz Channel mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	15.47	15.81	18.65	0.0733	1.00	PASS
Mid	2437	15.49	16.35	18.95	0.0785		PASS
High	2462	14.74	16.32	18.61	0.0726		PASS

**Test mode: draft 802.11n Wide-40 MHz Channel mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	11.35	12.07	14.74	0.0298	1.00	PASS
Mid	2437	12.20	13.47	15.89	0.0388		PASS
High	2452	11.58	12.84	15.27	0.0337		PASS

**Remark:** Total Output Power (w) = Chain 0 (10<sup>^(Output Power /10)</sup>/1000)+ Chain 0 (10<sup>^(Output Power /10)</sup>/1000)



**Test Plot**

**IEEE 802.11b mode/ Chain 0**

**Peak Power (CH Low)**

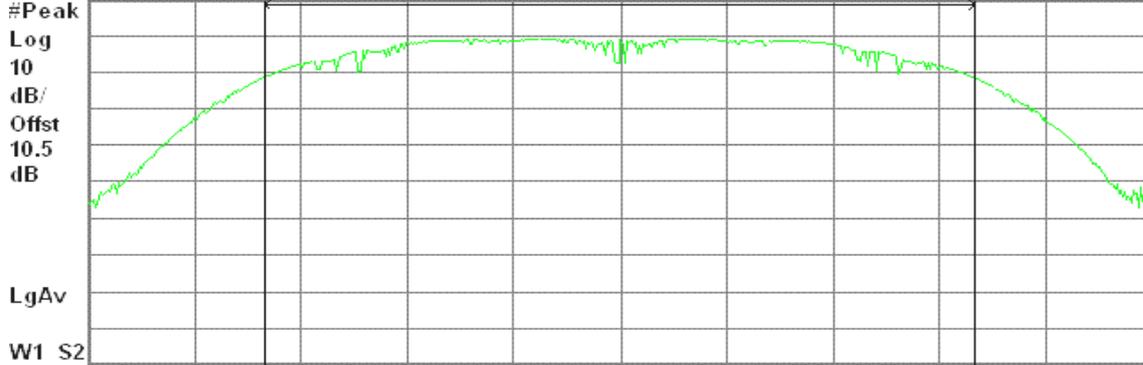
Agilent 18:13:19 Dec 27, 2007

R T

Peak Output Power , b Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 22.43 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

18.79 dBm / 14.9500 MHz

-52.95 dBm/Hz

**Peak Power (CH Mid)**

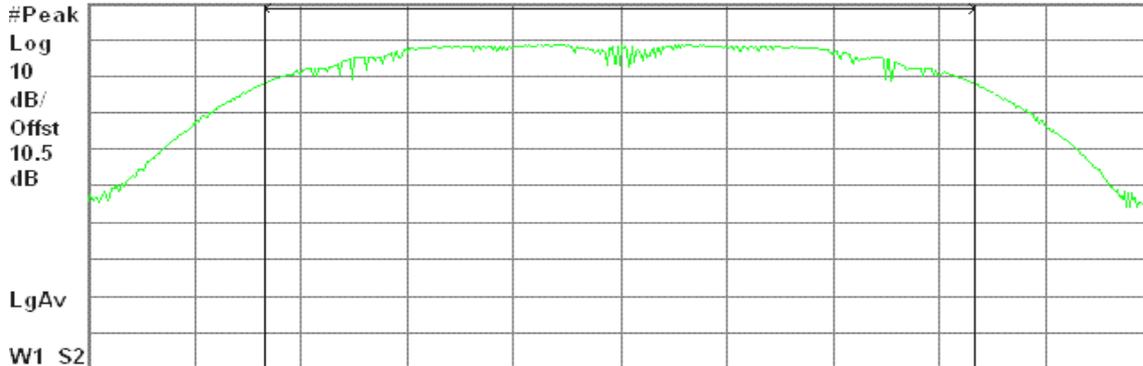
Agilent 18:20:17 Dec 27, 2007

R T

Peak Output Power , b Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 22.38 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

18.16 dBm / 14.9180 MHz

-53.57 dBm/Hz



### Peak Power (CH High)

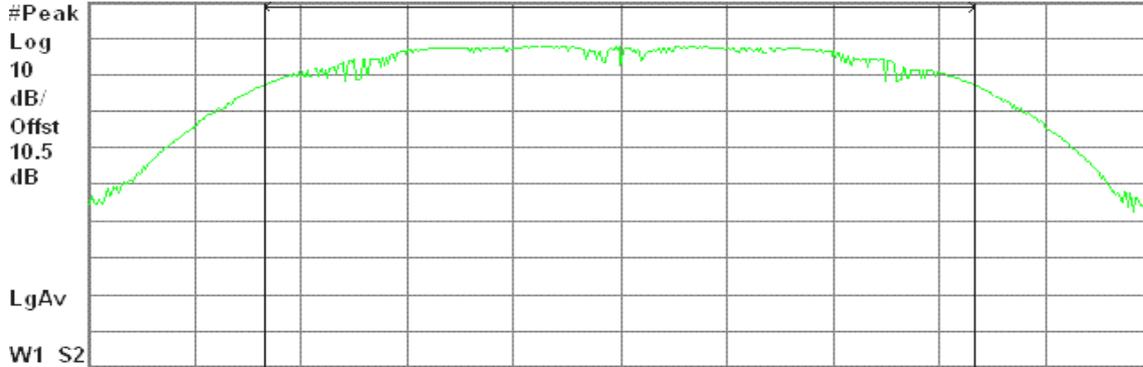
Agilent 18:26:46 Dec 27, 2007

R T

Peak Output Power , b Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 22.42 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

17.38 dBm / 14.9470 MHz

-54.37 dBm/Hz

### IEEE 802.11b mode / Chain 1

#### Peak Power (CH Low)

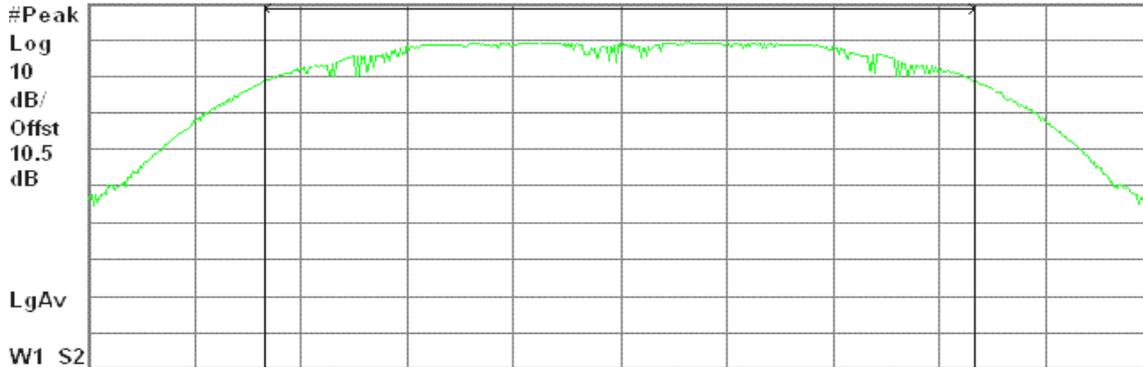
Agilent 18:45:14 Dec 27, 2007

R T

Peak Output Power , b Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 22.4 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

18.90 dBm / 14.9360 MHz

-52.85 dBm/Hz



### Peak Power (CH Mid)

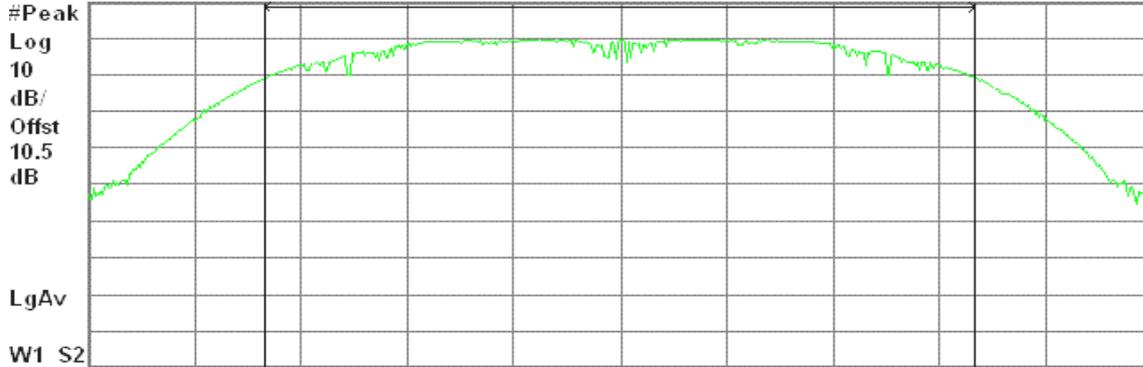
Agilent 18:40:01 Dec 27, 2007

R T

Peak Output Power, b Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 22.4 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.32 dBm / 14.9330 MHz

-52.42 dBm/Hz

### Peak Power (CH High)

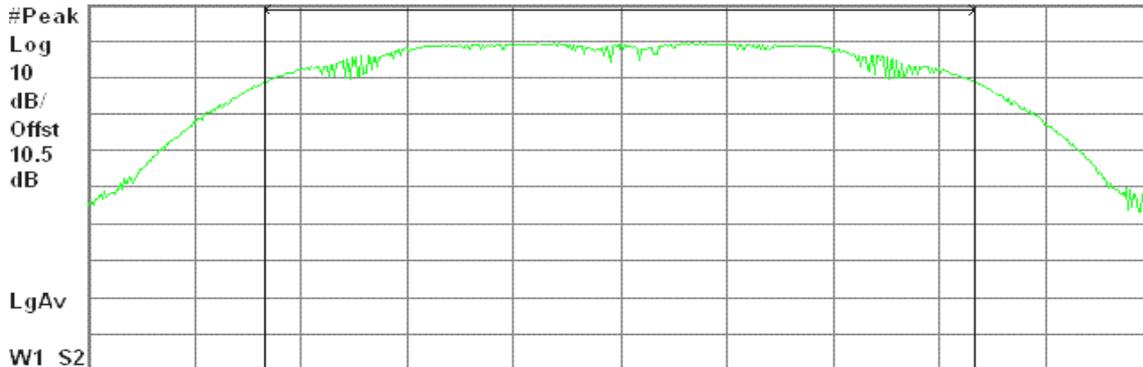
Agilent 18:32:43 Dec 27, 2007

R T

Peak Output Power, b Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 22.39 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

18.92 dBm / 14.9260 MHz

-52.81 dBm/Hz



### IEEE 802.11g mode / Chain 0

#### Peak Power (CH Low)

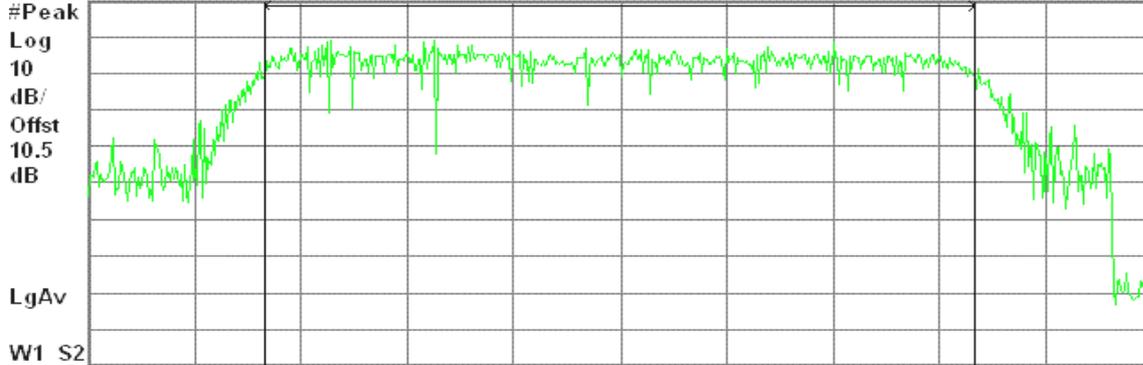
Agilent 19:14:03 Dec 27, 2007

R T

Peak Output Power, g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 24.95 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.15 dBm / 16.6300 MHz

-56.06 dBm/Hz

#### Peak Power (CH Mid)

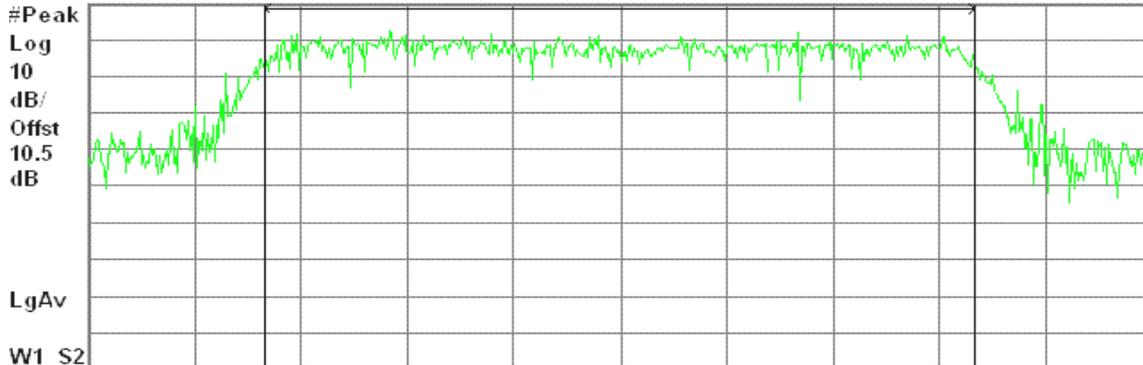
Agilent 19:21:13 Dec 27, 2007

R T

Peak Output Power, g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 25.05 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

20.05 dBm / 16.7000 MHz

-52.17 dBm/Hz



### Peak Power (CH High)

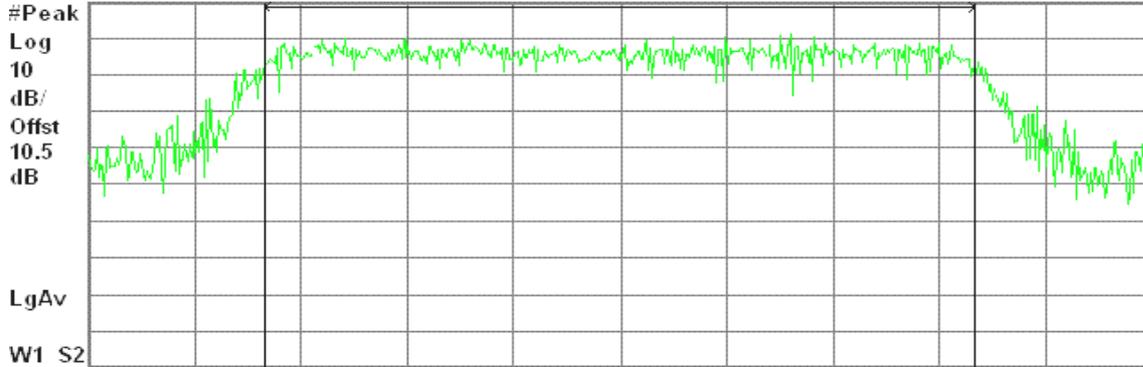
Agilent 19:27:11 Dec 27, 2007

R T

Peak Output Power , g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 24.99 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

18.30 dBm / 16.6610 MHz

-53.92 dBm/Hz

### IEEE 802.11g mode / Chain 1

#### Peak Power (CH Low)

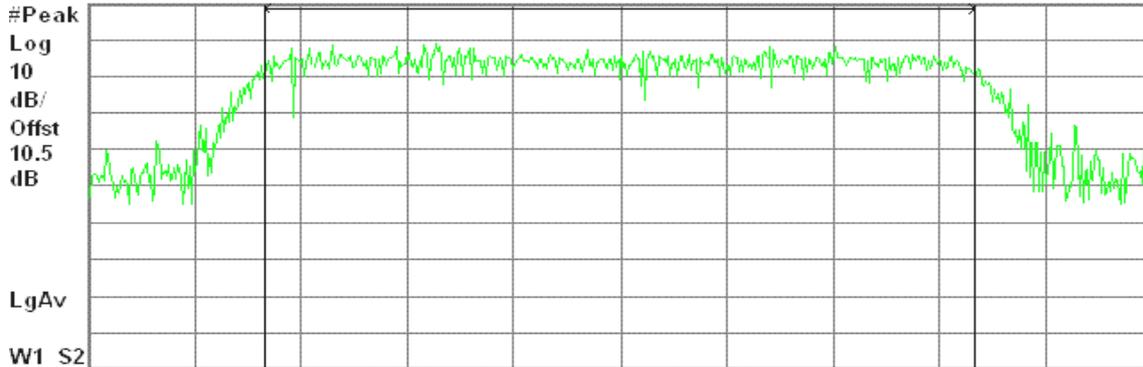
Agilent 18:51:16 Dec 27, 2007

R T

Peak Output Power , g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 24.77 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.42 dBm / 16.5160 MHz

-55.76 dBm/Hz



### Peak Power (CH Mid)

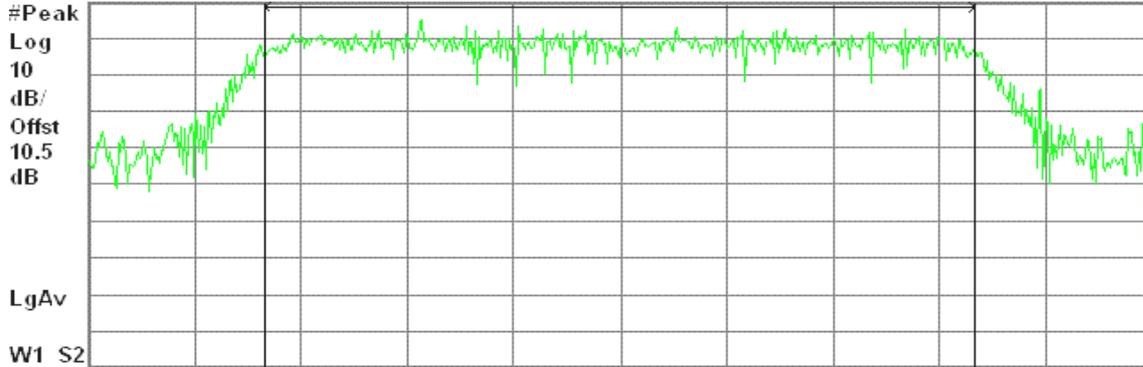
Agilent 18:57:59 Dec 27, 2007

R T

Peak Output Power, g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 24.77 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

20.87 dBm / 16.5120 MHz

-51.31 dBm/Hz

### Peak Power (CH High)

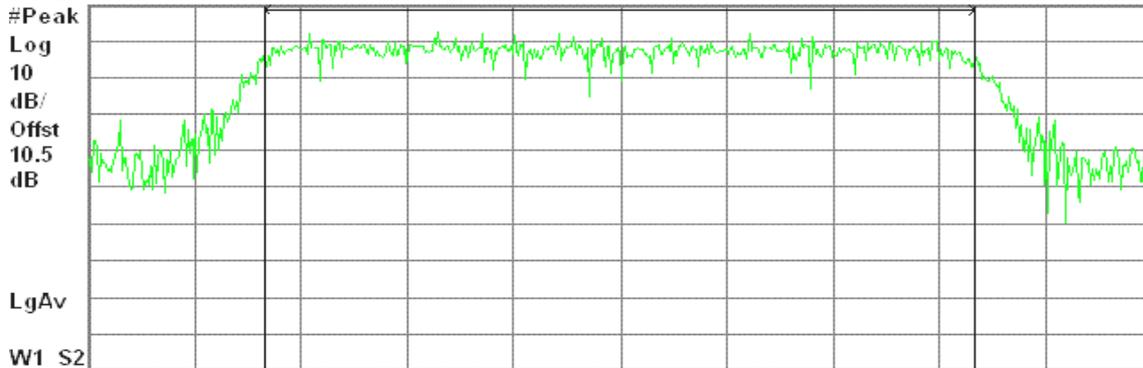
Agilent 19:05:11 Dec 27, 2007

R T

Peak Output Power, g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 24.93 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.94 dBm / 16.6220 MHz

-52.26 dBm/Hz



**draft 802.11n Standard-20 MHz Channel mode / Chain 0**

**Peak Power (CH Low)**

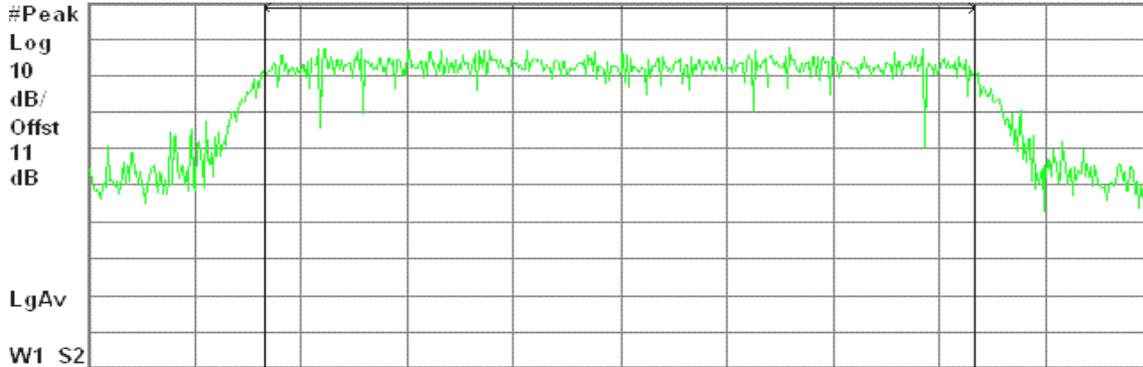
Agilent 17:54:00 Dec 6, 2007

R T

Peak Output Power , g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Channel Power

15.47 dBm / 17.6310 MHz

Power Spectral Density

-57.00 dBm/Hz

**Peak Power (CH Mid)**

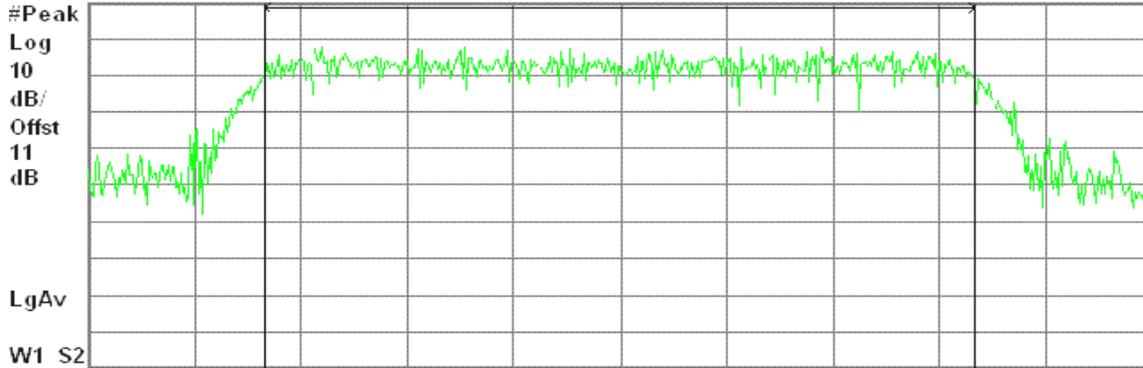
Agilent 17:59:23 Dec 6, 2007

R T

Peak Output Power , g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Channel Power

15.49 dBm / 17.6110 MHz

Power Spectral Density

-56.97 dBm/Hz



### Peak Power (CH High)

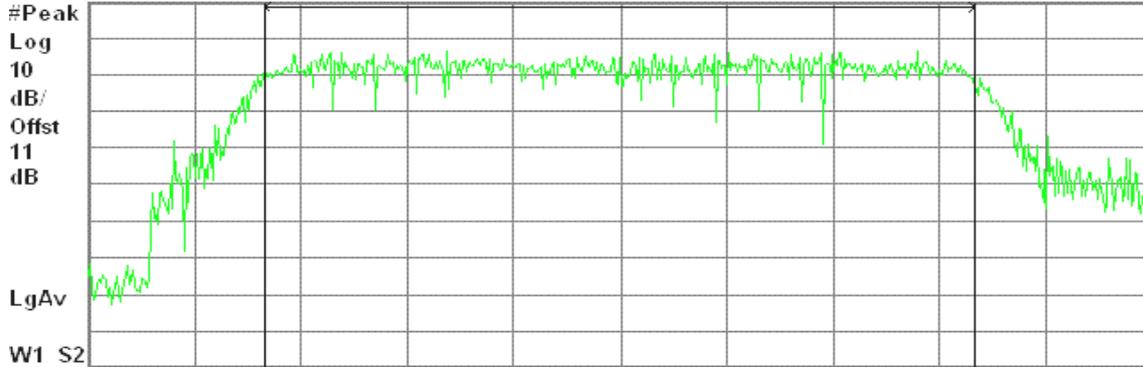
Agilent 18:05:05 Dec 6, 2007

R T

Peak Output Power , g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 26.45 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

14.74 dBm / 17.6330 MHz

-57.73 dBm/Hz

### draft 802.11n Standard-20 MHz Channel mode / Chain 1

#### Peak Power (CH Low)

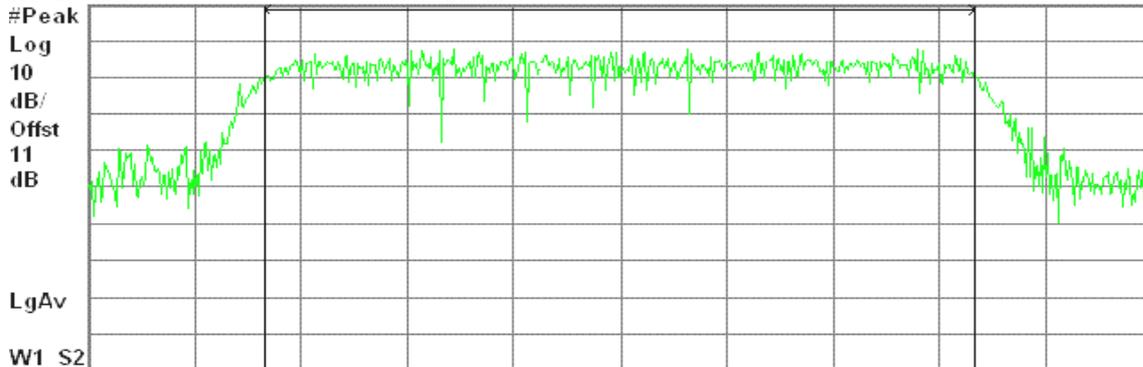
Agilent 18:36:06 Dec 6, 2007

R T

Peak Output Power , g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 26.45 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

15.81 dBm / 17.6350 MHz

-56.65 dBm/Hz



### Peak Power (CH Mid)

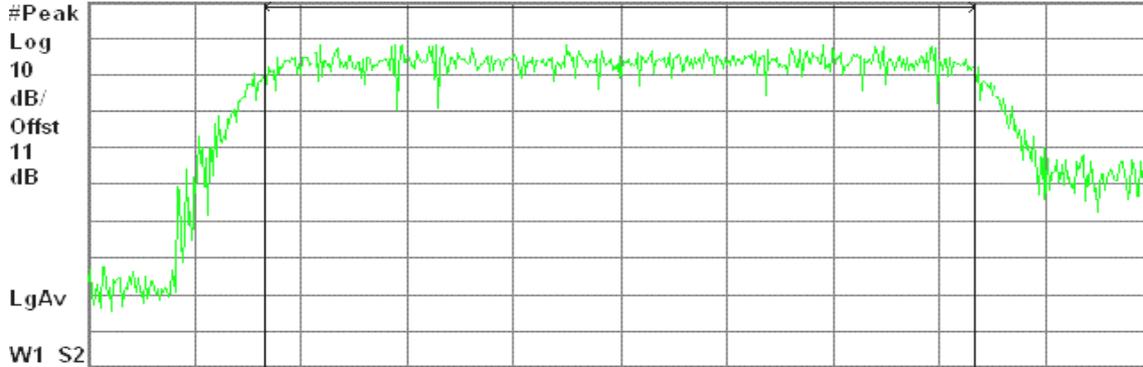
Agilent 18:28:16 Dec 6, 2007

R T

Peak Output Power , g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 26.35 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.35 dBm / 17.5680 MHz

-56.10 dBm/Hz

### Peak Power (CH High)

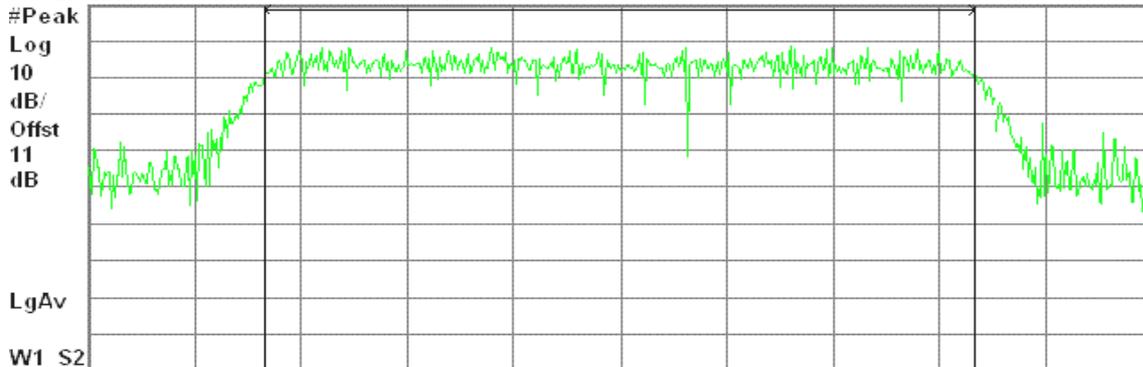
Agilent 18:20:55 Dec 6, 2007

R L

Peak Output Power , g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 26.49 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.32 dBm / 17.6580 MHz

-56.14 dBm/Hz



### draft 802.11n Wide-40 MHz Channel mode / Chain 0

#### Peak Power (CH Low)

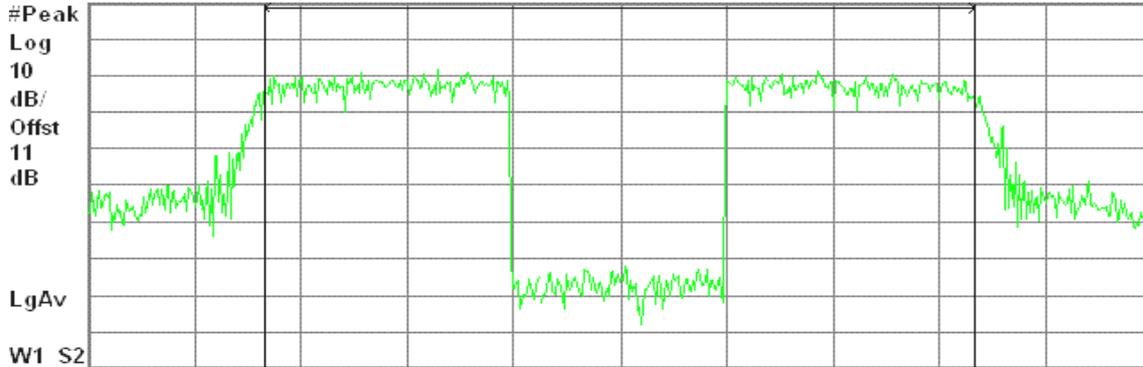
Agilent 19:08:00 Dec 6, 2007

R T

Peak Output Power , g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.422 00 GHz

Span 54 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

11.35 dBm / 36.0010 MHz

-64.21 dBm/Hz

#### Peak Power (CH Mid)

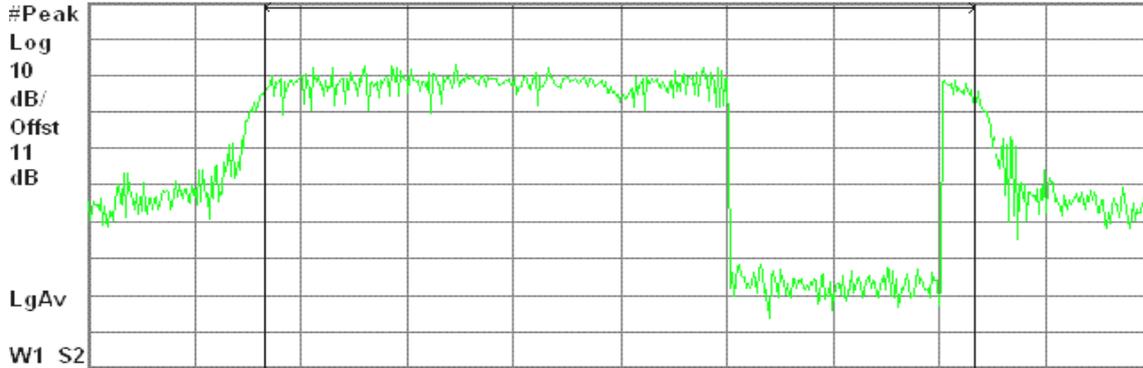
Agilent 19:25:36 Dec 6, 2007

R T

Peak Output Power , g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 53.96 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.20 dBm / 35.9750 MHz

-63.36 dBm/Hz



### Peak Power (CH High)

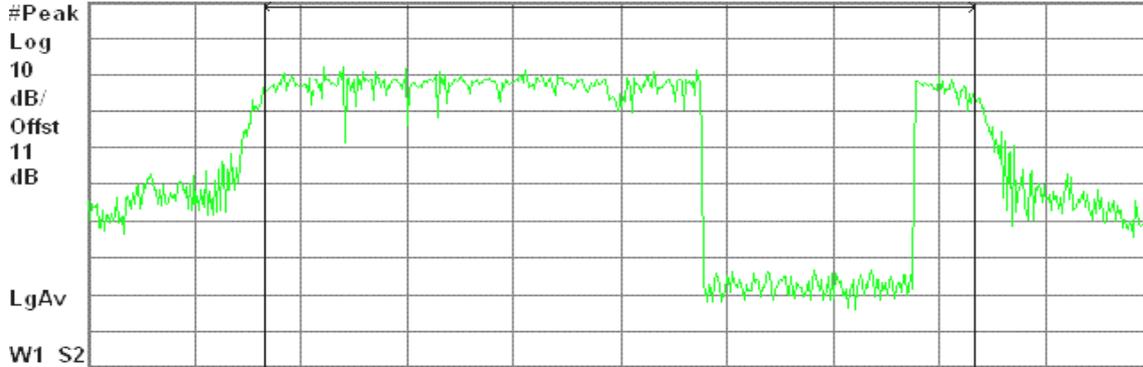
Agilent 19:46:55 Dec 6, 2007

R T

Peak Output Power , g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.452 00 GHz

Span 54.03 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

11.58 dBm / 36.0200 MHz

-63.99 dBm/Hz

### draft 802.11n Wide-40 MHz Channel mode / Chain 1

#### Peak Power (CH Low)

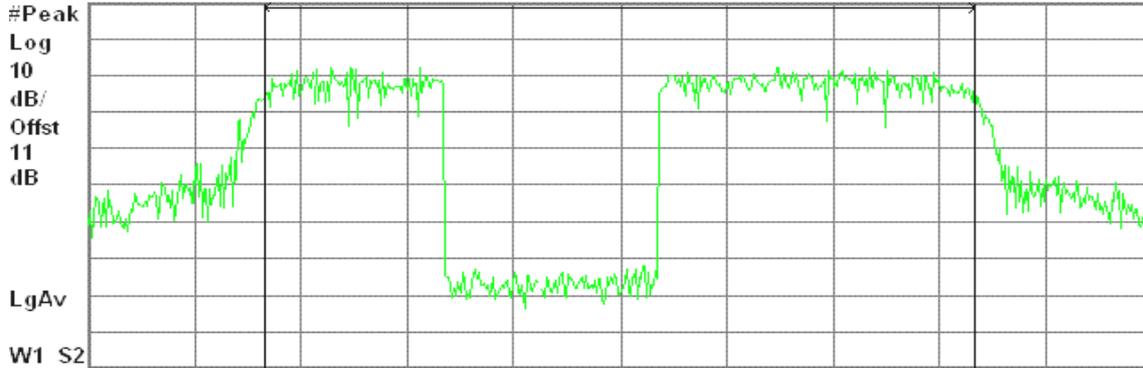
Agilent 19:14:26 Dec 6, 2007

R T

Peak Output Power , g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.422 00 GHz

Span 54.06 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.07 dBm / 36.0400 MHz

-63.50 dBm/Hz



### Peak Power (CH Mid)

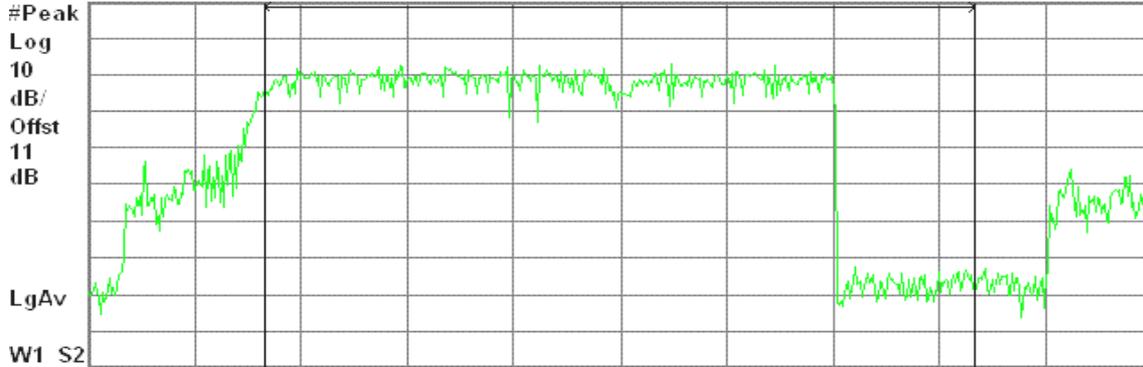
Agilent 19:30:36 Dec 6, 2007

R T

Peak Output Power , g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 54 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

13.47 dBm / 36.0020 MHz

-62.10 dBm/Hz

### Peak Power (CH High)

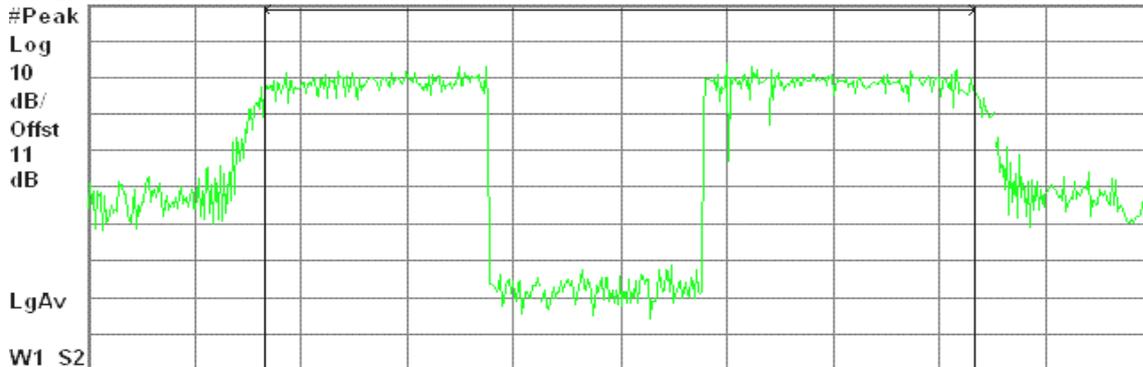
Agilent 19:42:19 Dec 6, 2007

R T

Peak Output Power , g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.452 00 GHz

Span 53.94 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.84 dBm / 35.9580 MHz

-62.72 dBm/Hz

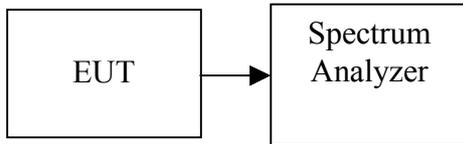


## 7.3 AVERAGE POWER

### LIMIT

None; for reporting purposes only.

### Test Configuration



### TEST PROCEDURE

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the average power detection.

**TEST RESULTS***No non-compliance noted***Test Data****Test mode: IEEE 802.11b mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	16.15	16.25	19.21	0.0834	1.00	PASS
Mid	2437	15.56	16.64	19.14	0.0821		PASS
High	2462	14.87	16.21	18.60	0.0725		PASS

**Test mode: IEEE 802.11g mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	13.04	13.06	16.06	0.0404	1.00	PASS
Mid	2437	16.54	15.56	19.09	0.0811		PASS
High	2462	14.81	15.20	18.02	0.0634		PASS

**Test mode: draft 802.11n Standard-20 MHz Channel mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	12.44	12.20	15.33	0.0341	1.00	PASS
Mid	2437	12.05	12.40	15.24	0.0334		PASS
High	2462	11.46	12.95	15.28	0.0337		PASS

**Test mode: draft 802.11n Wide-40 MHz Channel mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	8.92	9.93	12.46	0.0176	1.00	PASS
Mid	2437	10.10	10.73	13.44	0.0221		PASS
High	2452	9.76	10.40	13.10	0.0204		PASS



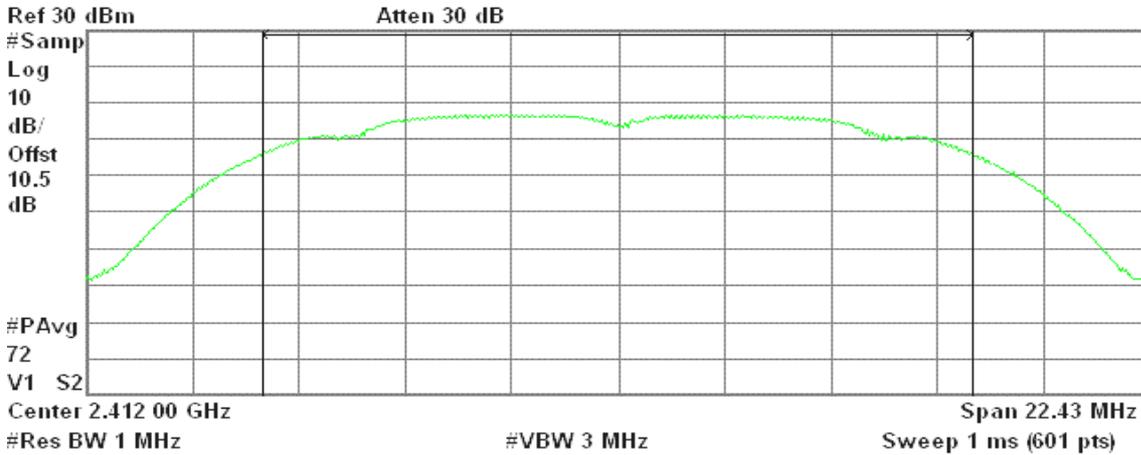
**Test Plot**

**IEEE 802.11b mode / Chain 0**

**Average Power (CH Low)**

Agilent 18:14:01 Dec 27, 2007  
avg Output Power, b Mode Low Ch.

R L



Channel Power

16.15 dBm / 14.9500 MHz

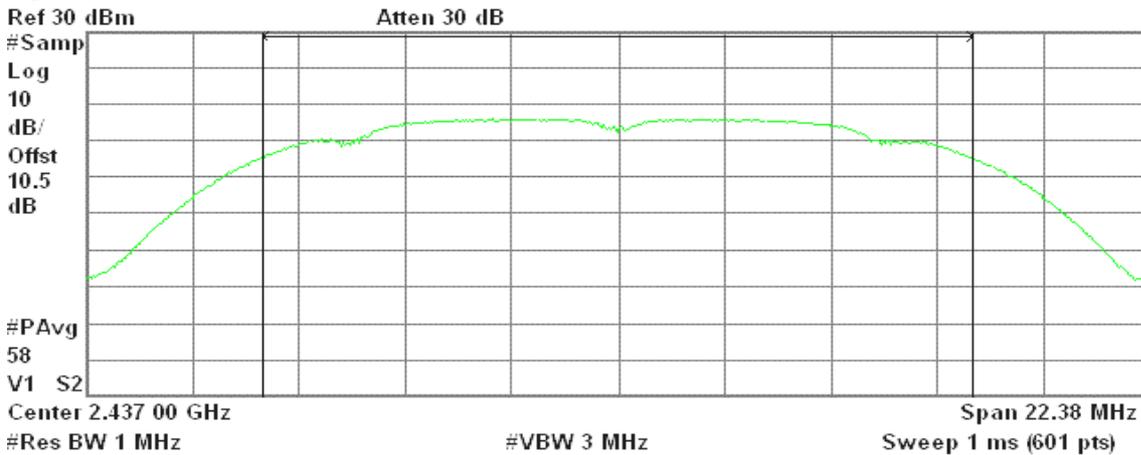
Power Spectral Density

-55.59 dBm/Hz

**Average Power (CH Mid)**

Agilent 18:20:55 Dec 27, 2007  
avg Output Power, b Mode Mid Ch.

R T



Channel Power

15.56 dBm / 14.9180 MHz

Power Spectral Density

-56.18 dBm/Hz



### Average Power (CH High)

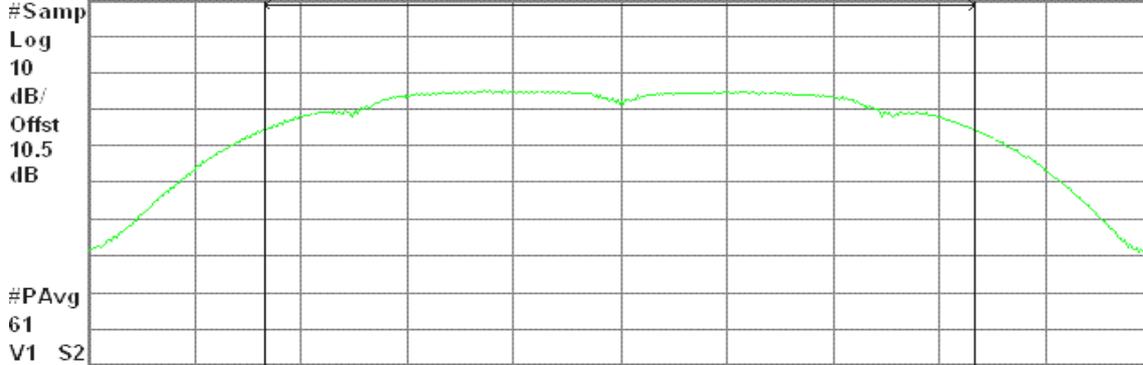
Agilent 18:27:25 Dec 27, 2007

R L

avg Output Power , b Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 22.42 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

14.87 dBm / 14.9470 MHz

-56.88 dBm/Hz

### IEEE 802.11b mode / Chain 1

### Average Power (CH Low)

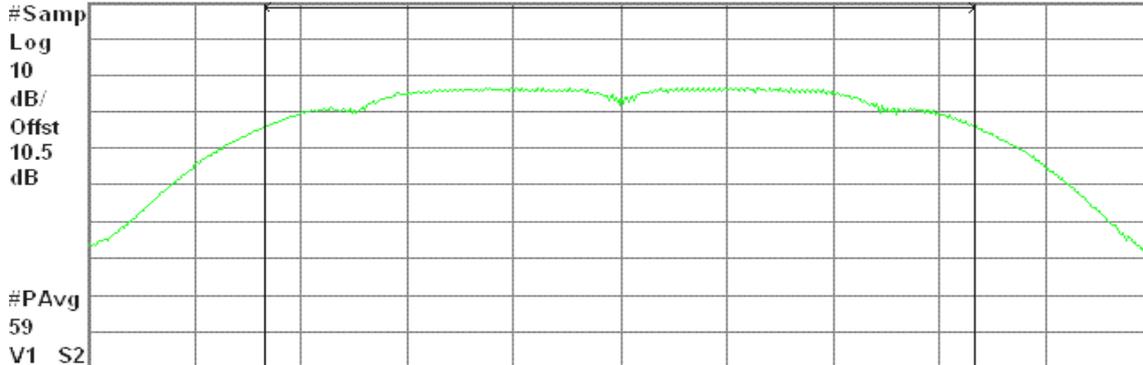
Agilent 18:45:45 Dec 27, 2007

R T

avg Output Power , b Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.412 00 GHz

Span 22.4 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.25 dBm / 14.9360 MHz

-55.49 dBm/Hz



### Average Power (CH Mid)

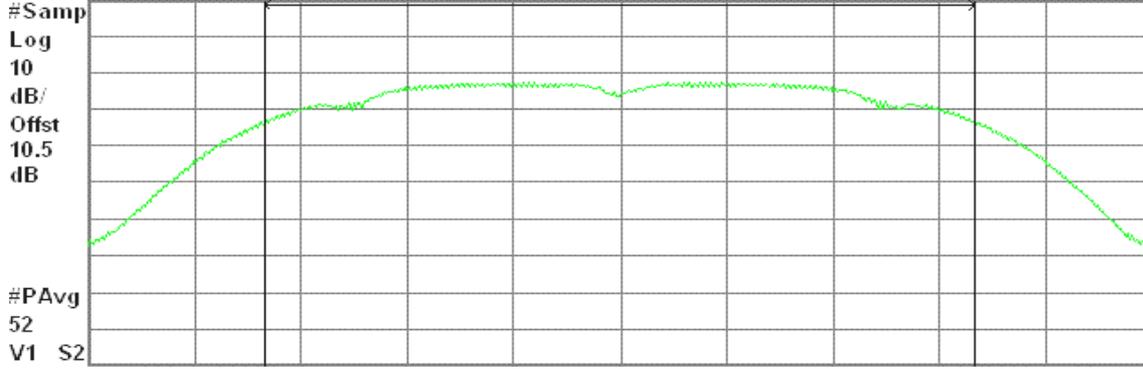
Agilent 18:40:32 Dec 27, 2007

R T

avg Output Power , b Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 22.4 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.64 dBm / 14.9330 MHz

-55.10 dBm/Hz

### Average Power (CH High)

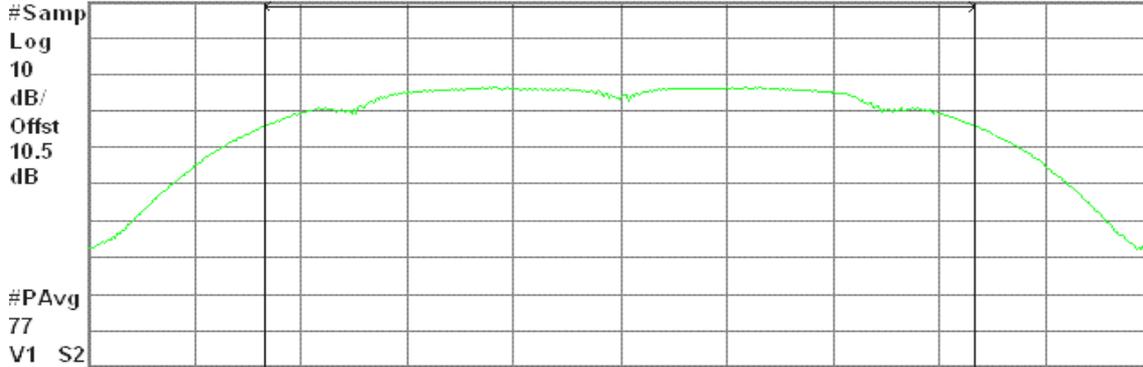
Agilent 18:33:20 Dec 27, 2007

R T

avg Output Power , b Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 22.39 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.21 dBm / 14.9260 MHz

-55.53 dBm/Hz



### IEEE 802.11g mode / Chain 0

#### Average Power (CH Low)

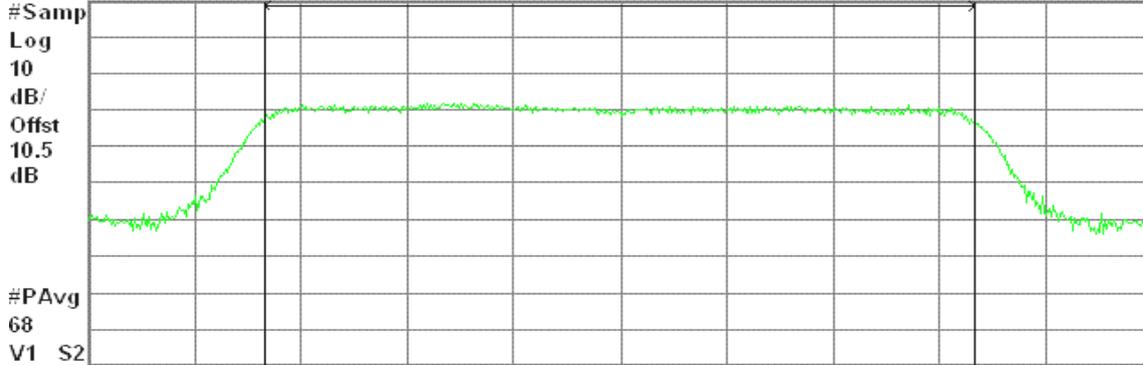
Agilent 19:15:12 Dec 27, 2007

R T

avg Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



#Samp

Log

10

dB/

Offst

10.5

dB

#PAvg

68

V1 S2

Center 2.412 00 GHz

Span 24.95 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

13.04 dBm / 16.6300 MHz

-59.17 dBm/Hz

#### Average Power (CH Mid)

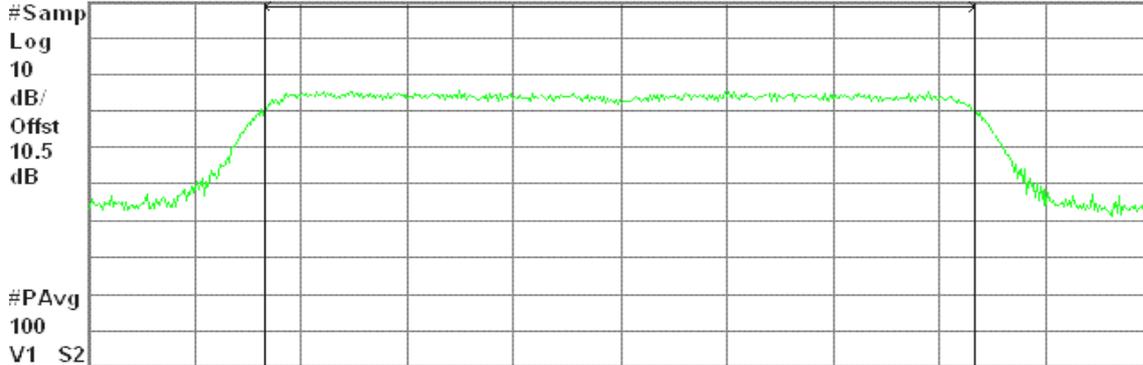
Agilent 19:22:04 Dec 27, 2007

R T

Peak Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



#Samp

Log

10

dB/

Offst

10.5

dB

#PAvg

100

V1 S2

Center 2.437 00 GHz

Span 25.05 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.54 dBm / 16.7000 MHz

-55.69 dBm/Hz



### Average Power (CH High)

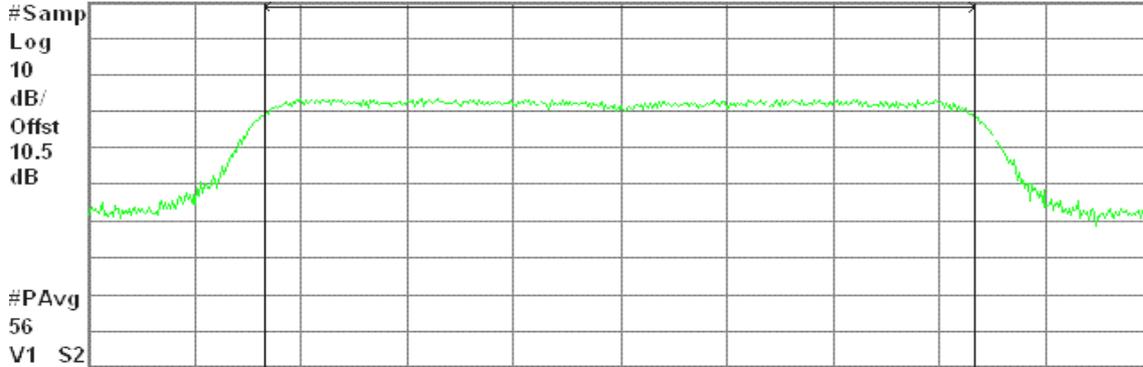
Agilent 19:27:50 Dec 27, 2007

R T

avg Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 24.99 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

14.81 dBm / 16.6610 MHz

-57.41 dBm/Hz

### IEEE 802.11g mode / Chain 1

#### Average Power (CH Low)

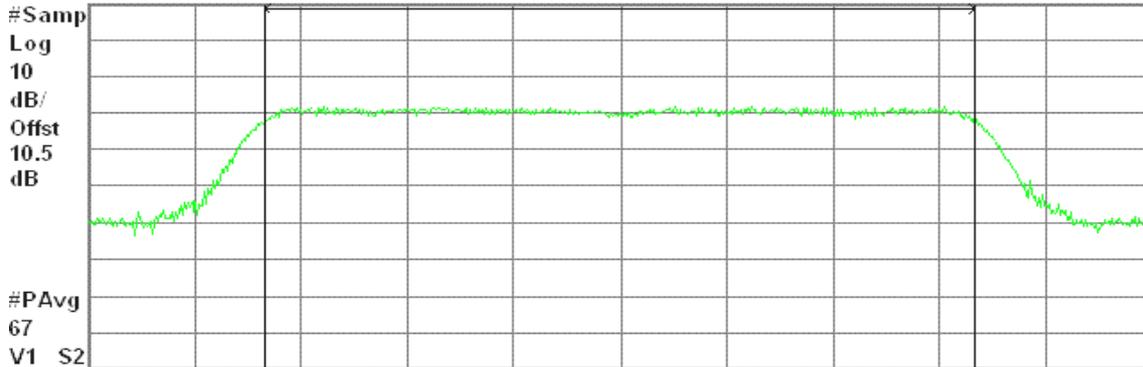
Agilent 18:52:02 Dec 27, 2007

R T

avg Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.412 00 GHz

Span 24.77 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

13.06 dBm / 16.5160 MHz

-59.12 dBm/Hz



### Average Power (CH Mid)

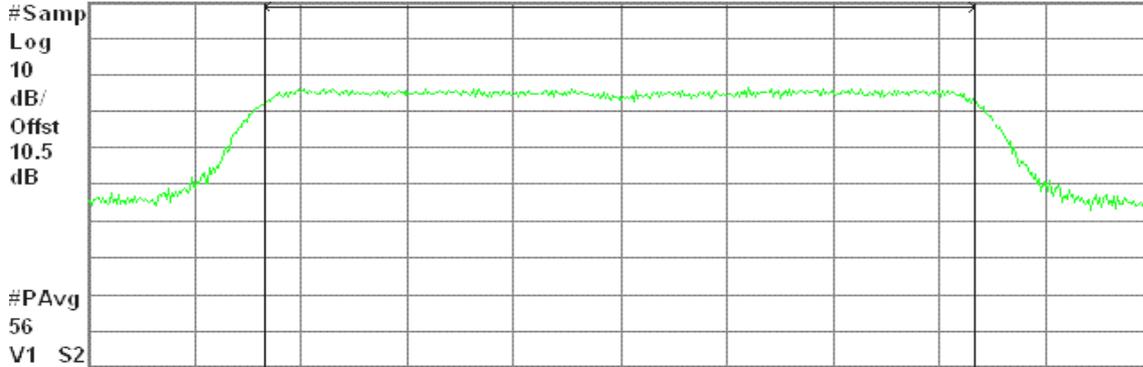
Agilent 18:59:35 Dec 27, 2007

R T

avg Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 24.77 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

15.56 dBm / 16.5120 MHz

-56.61 dBm/Hz

### Average Power (CH High)

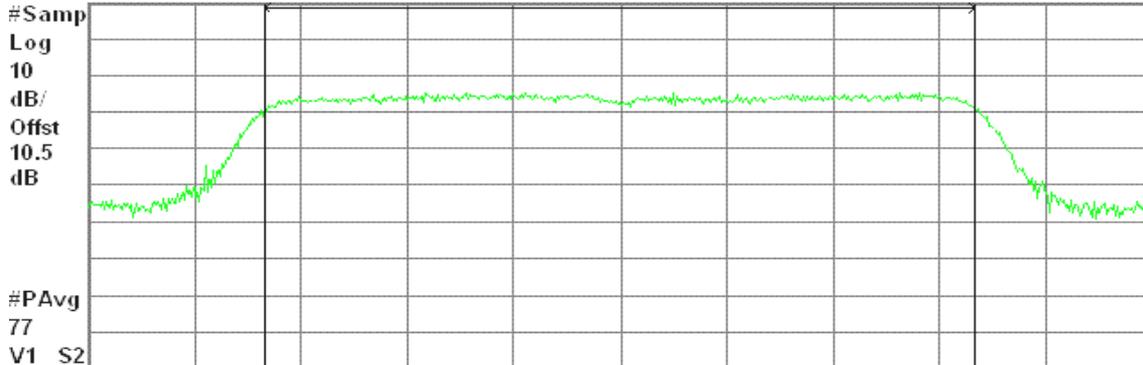
Agilent 19:06:12 Dec 27, 2007

R T

avg Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 24.93 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

15.20 dBm / 16.6220 MHz

-57.01 dBm/Hz



**draft 802.11n Standard-20 MHz Channel mode / Chain 0**

**Average Power (CH Low)**

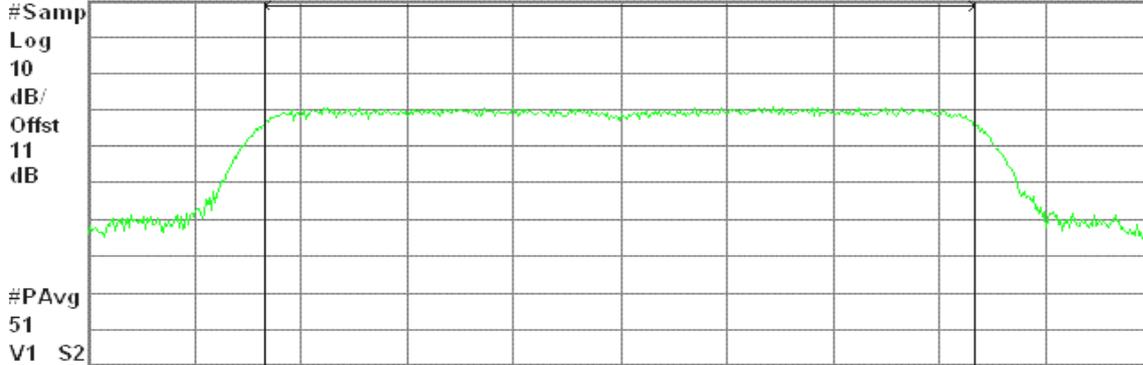
Agilent 17:54:34 Dec 6, 2007

R T

avg Output Power, g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.412 00 GHz

Span 26.45 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.44 dBm / 17.6310 MHz

-60.02 dBm/Hz

**Average Power (CH Mid)**

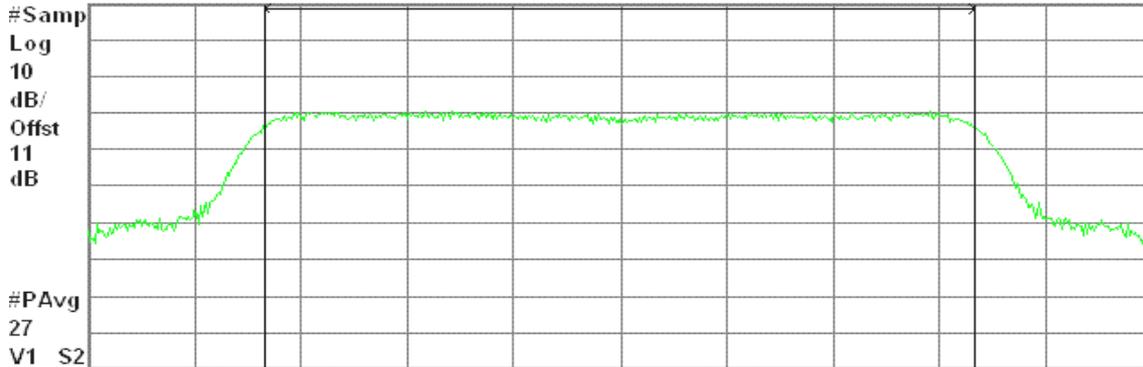
Agilent 18:00:04 Dec 6, 2007

R T

avg Output Power, g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 26.42 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.05 dBm / 17.6110 MHz

-60.41 dBm/Hz



### Average Power (CH High)

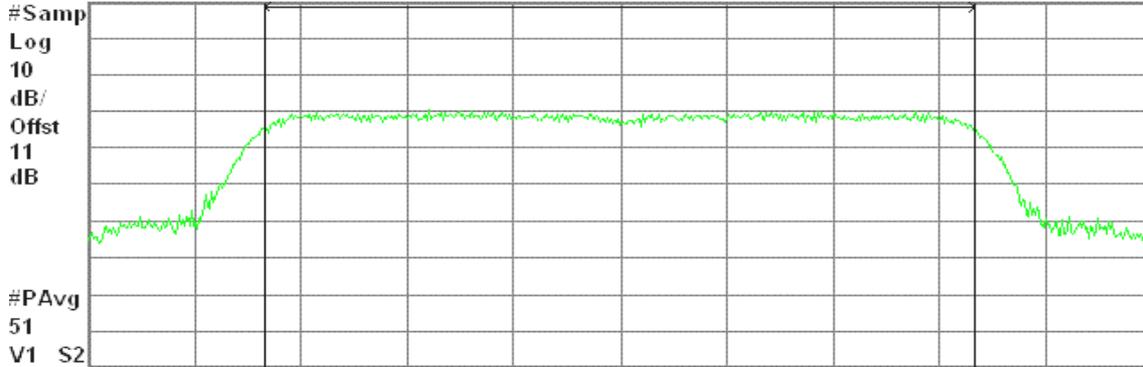
Agilent 18:05:36 Dec 6, 2007

R T

avg Output Power, g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 26.45 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

11.46 dBm / 17.6330 MHz

-61.00 dBm/Hz

### draft 802.11n Standard-20 MHz Channel mode / Chain 1

#### Average Power (CH Low)

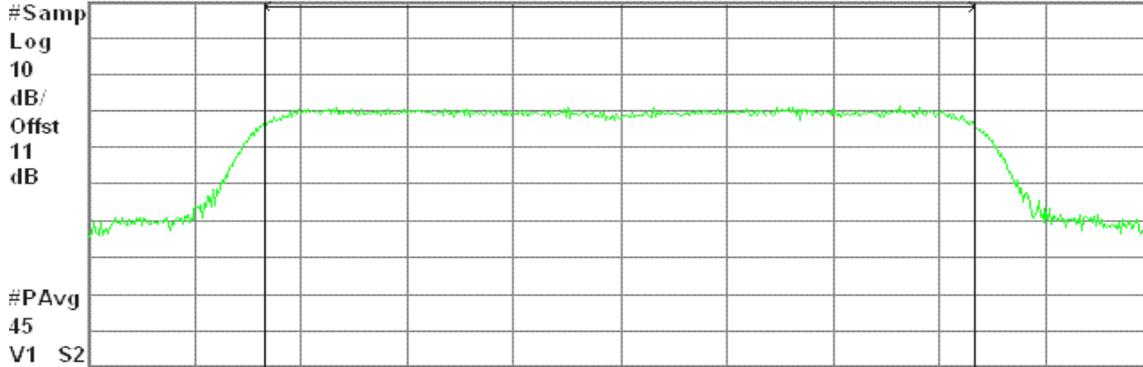
Agilent 18:36:43 Dec 6, 2007

R T

avg Output Power, g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.412 00 GHz

Span 26.45 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.20 dBm / 17.6350 MHz

-60.26 dBm/Hz



### Average Power (CH Mid)

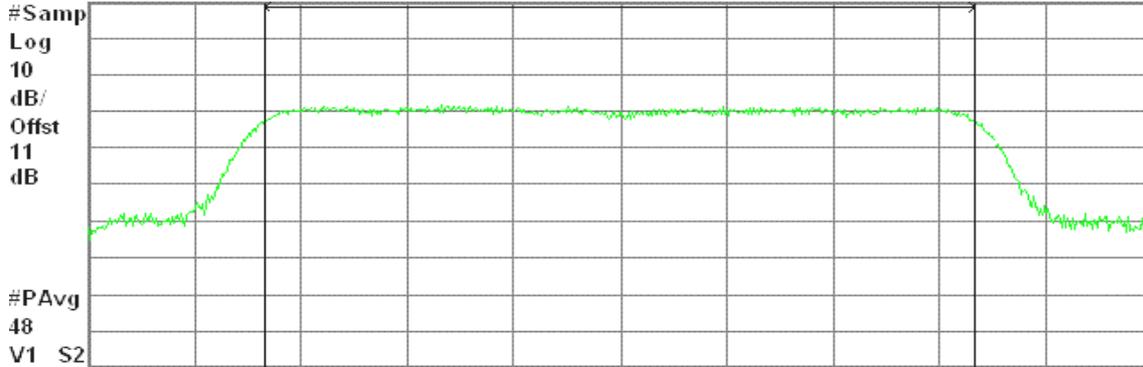
Agilent 18:29:20 Dec 6, 2007

R T

avg Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 26.35 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.40 dBm / 17.5680 MHz

-60.05 dBm/Hz

### Average Power (CH High)

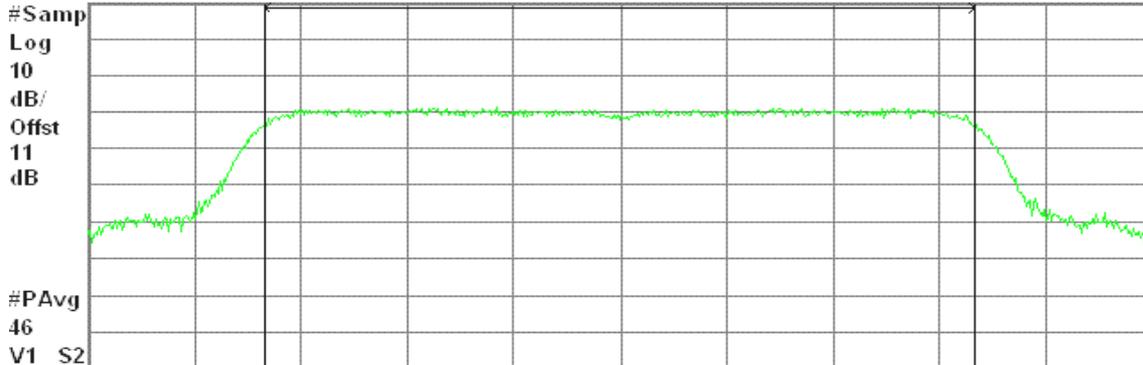
Agilent 18:21:36 Dec 6, 2007

R T

avg Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 26.49 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.95 dBm / 17.6580 MHz

-59.52 dBm/Hz



### draft 802.11n Wide-40 MHz Channel mode / Chain 0

#### Average Power (CH Low)

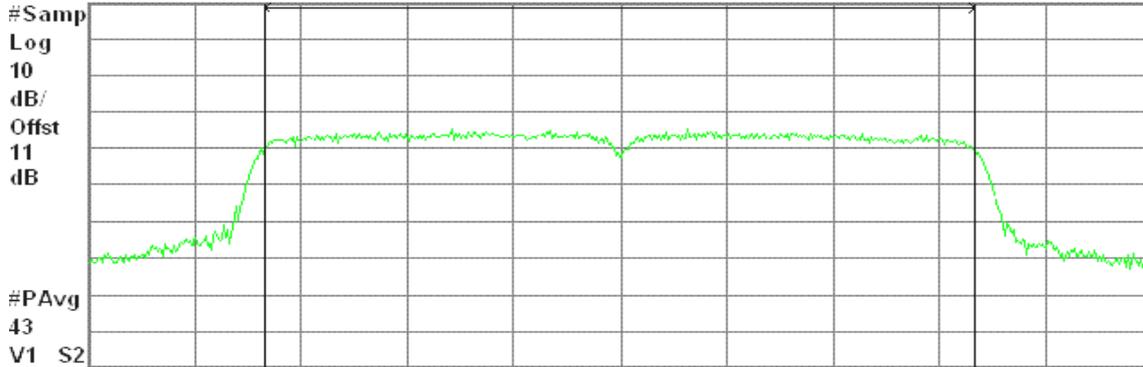
Agilent 19:08:49 Dec 6, 2007

R T

avg Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.422 00 GHz

Span 54 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

8.92 dBm / 36.0010 MHz

-66.64 dBm/Hz

#### Average Power (CH Mid)

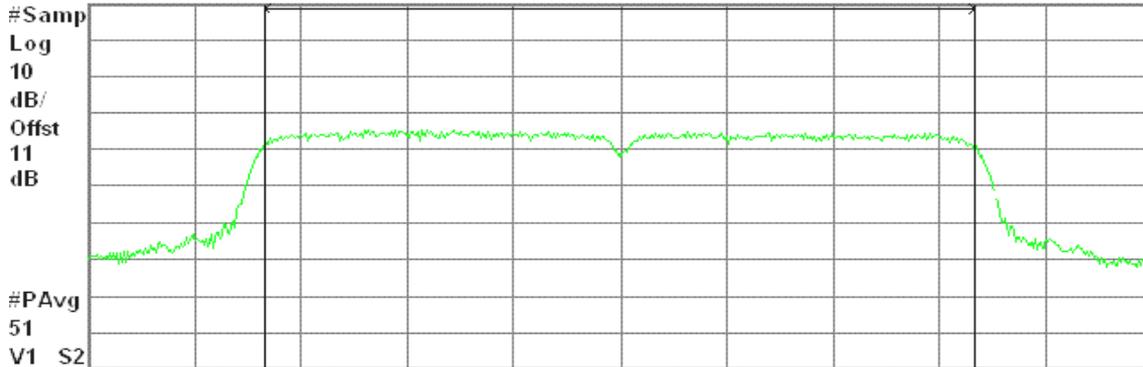
Agilent 19:26:19 Dec 6, 2007

R T

AVG Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 53.96 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

10.10 dBm / 35.9750 MHz

-65.46 dBm/Hz



### Average Power (CH High)

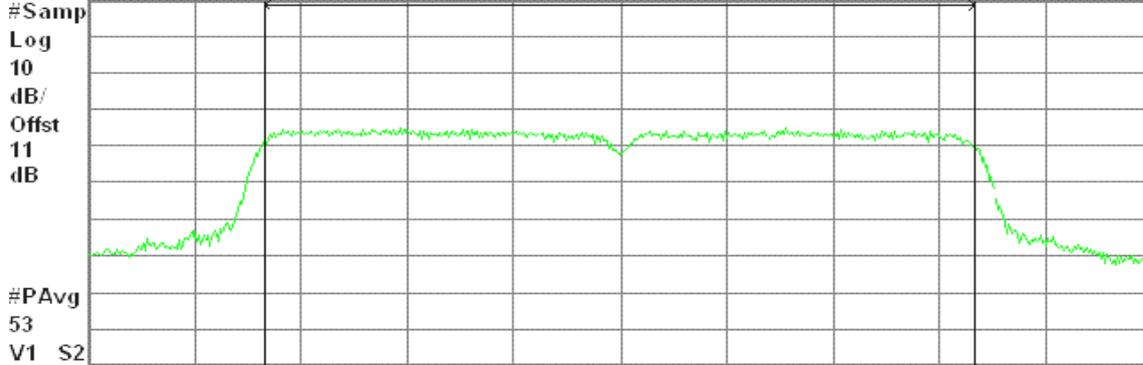
Agilent 19:47:41 Dec 6, 2007

R T

AVG Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.452 00 GHz

Span 54.03 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

9.76 dBm / 36.0200 MHz

-65.81 dBm/Hz

### draft 802.11n Wide-40 MHz Channel mode / Chain 1

### Average Power (CH Low)

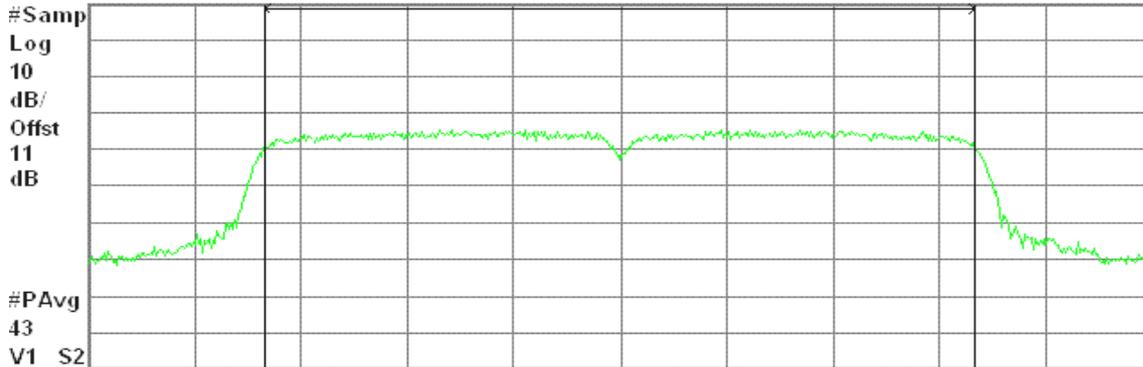
Agilent 19:14:55 Dec 6, 2007

R T

avg Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.422 00 GHz

Span 54.06 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

9.93 dBm / 36.0400 MHz

-65.64 dBm/Hz



### Average Power (CH Mid)

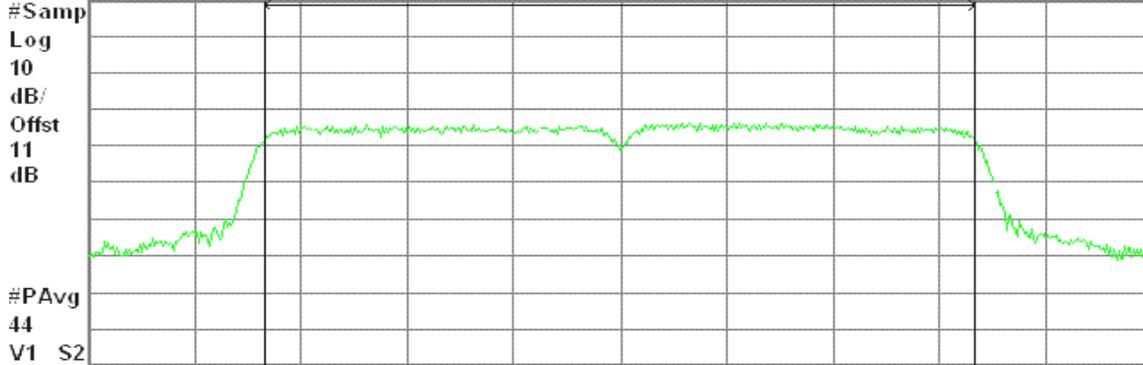
Agilent 19:31:09 Dec 6, 2007

R T

AVG Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 54 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

10.73 dBm / 36.0020 MHz

-64.83 dBm/Hz

### Average Power (CH High)

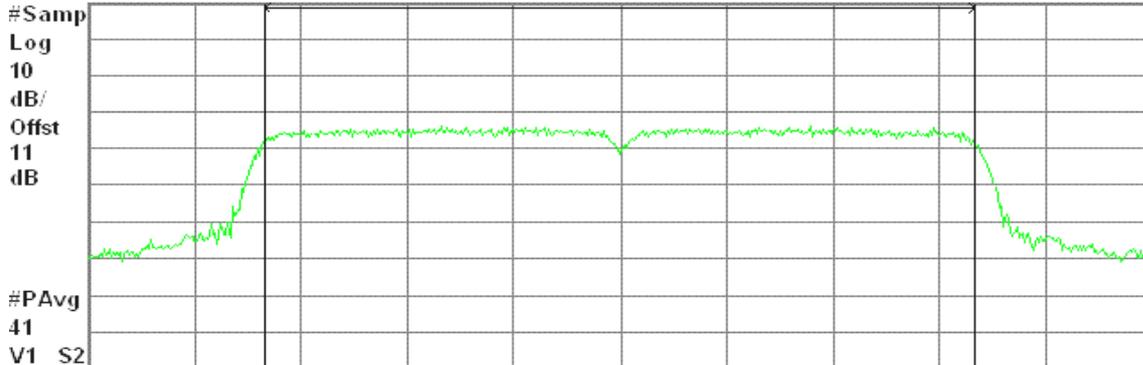
Agilent 19:42:57 Dec 6, 2007

R T

AVG Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.452 00 GHz

Span 53.94 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

10.40 dBm / 35.9580 MHz

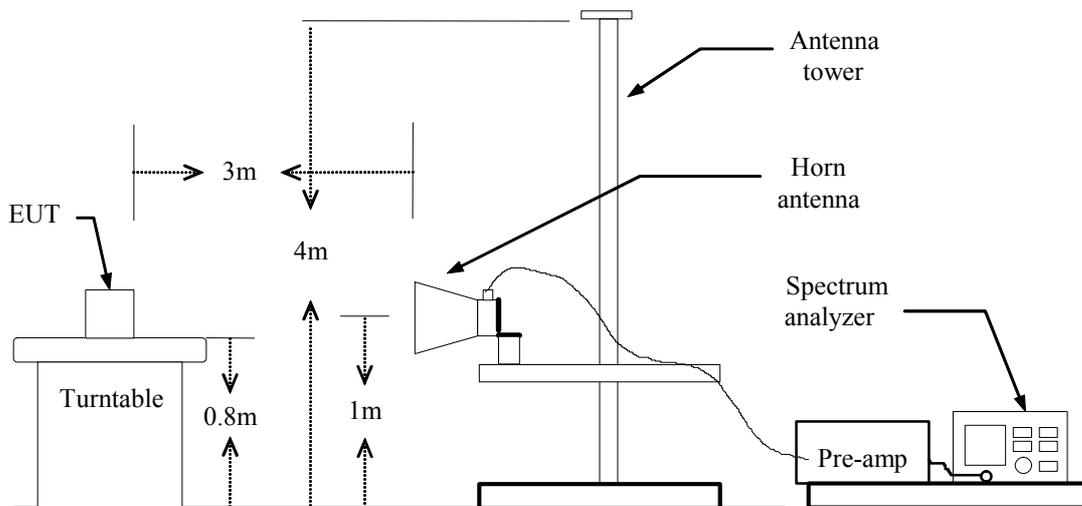
-65.15 dBm/Hz

## 7.4 BAND EDGES MEASUREMENT

### LIMIT

According to §15.247(d), in any 100 kHz 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 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. 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 Section 15.205(c)).

### Test Configuration



### TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
  - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
  - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

### TEST RESULTS

Refer to attach spectrum analyzer data chart.



### Band Edges (IEEE 802.11b mode / CH Low)

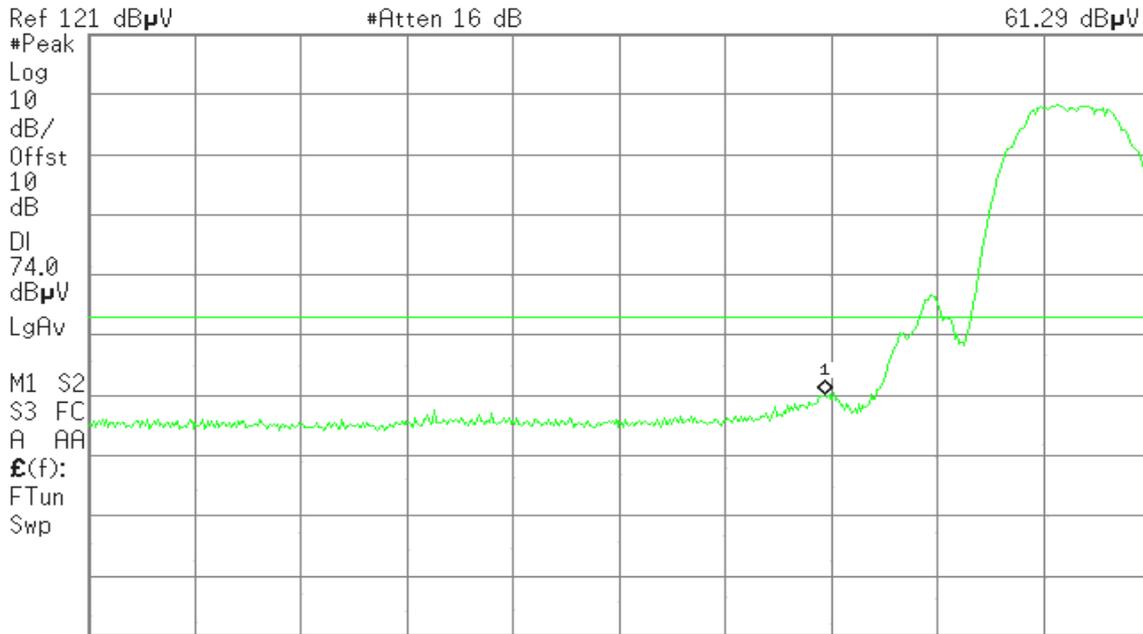
Detector mode: Peak

Polarity: Vertical

Agilent 16:52:47 Dec 27, 2007

R T

Mkr1 2.386 3 GHz  
61.29 dBμV



Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

#Sweep 100 ms (601 pts)

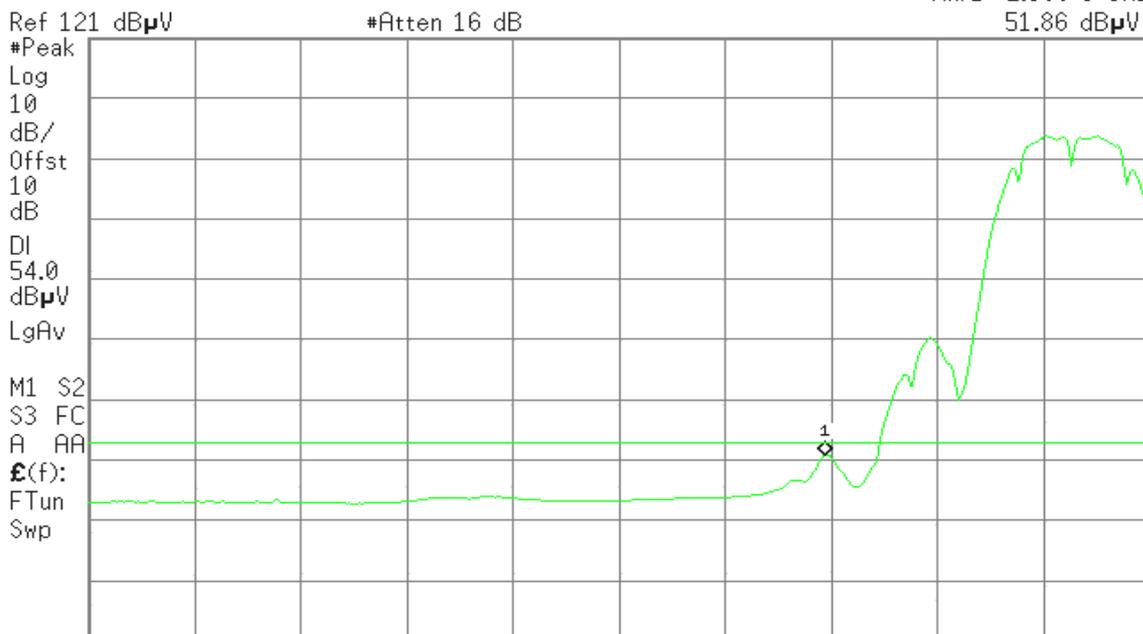
Detector mode: Average

Polarity: Vertical

Agilent 16:52:18 Dec 27, 2007

R T

Mkr1 2.386 3 GHz  
51.86 dBμV



Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)



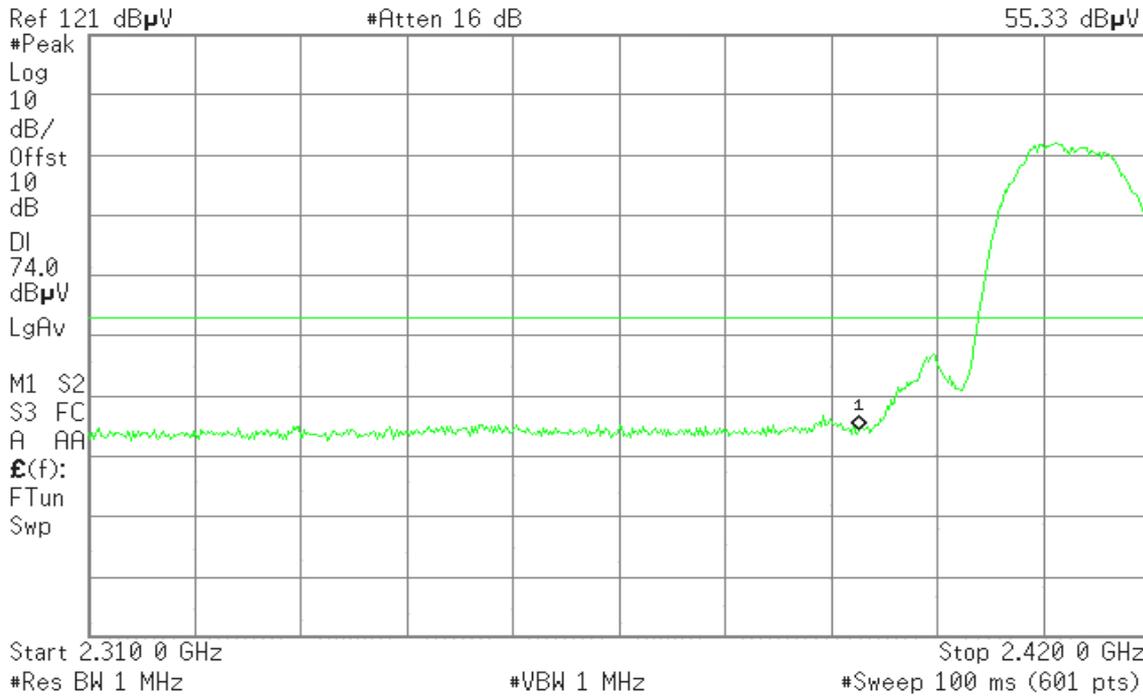
**Detector mode: Peak**

**Polarity: Horizontal**

Agilent 16:59:00 Dec 27, 2007

R T

Mkr1 2.390 0 GHz  
55.33 dBμV



**Detector mode: Average**

**Polarity: Horizontal**

Agilent 16:58:42 Dec 27, 2007

R T

Mkr1 2.390 0 GHz  
43.46 dBμV





### Band Edges (IEEE 802.11b mode / CH High)

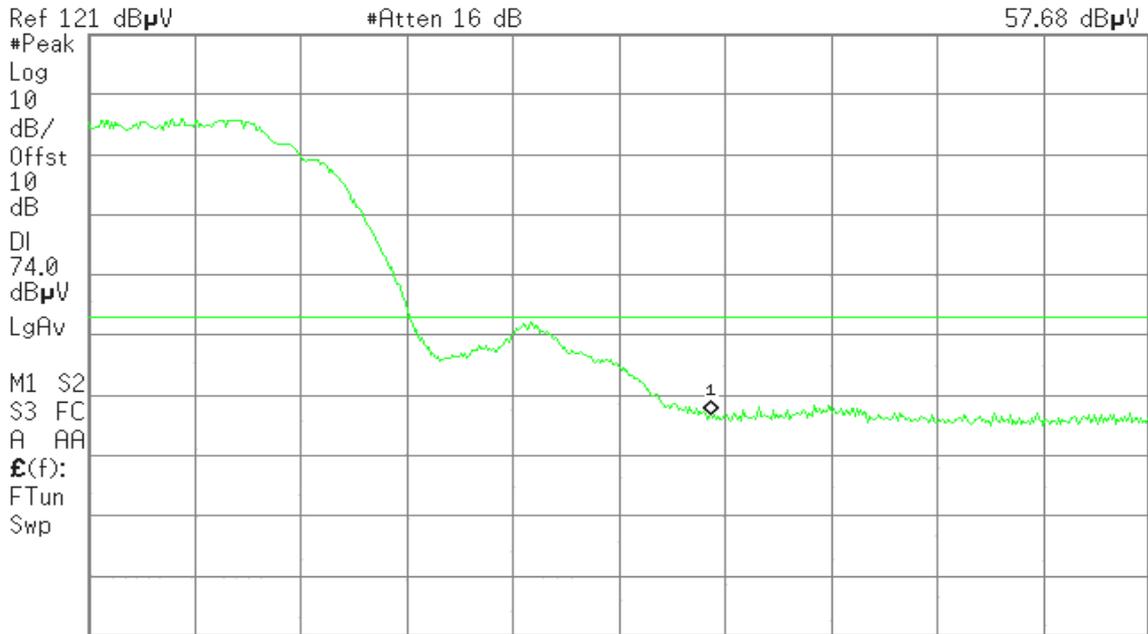
Detector mode: Peak

Polarity: Vertical

Agilent 16:38:59 Dec 27, 2007

R T

Mkr1 2.483 50 GHz  
57.68 dB $\mu$ V



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

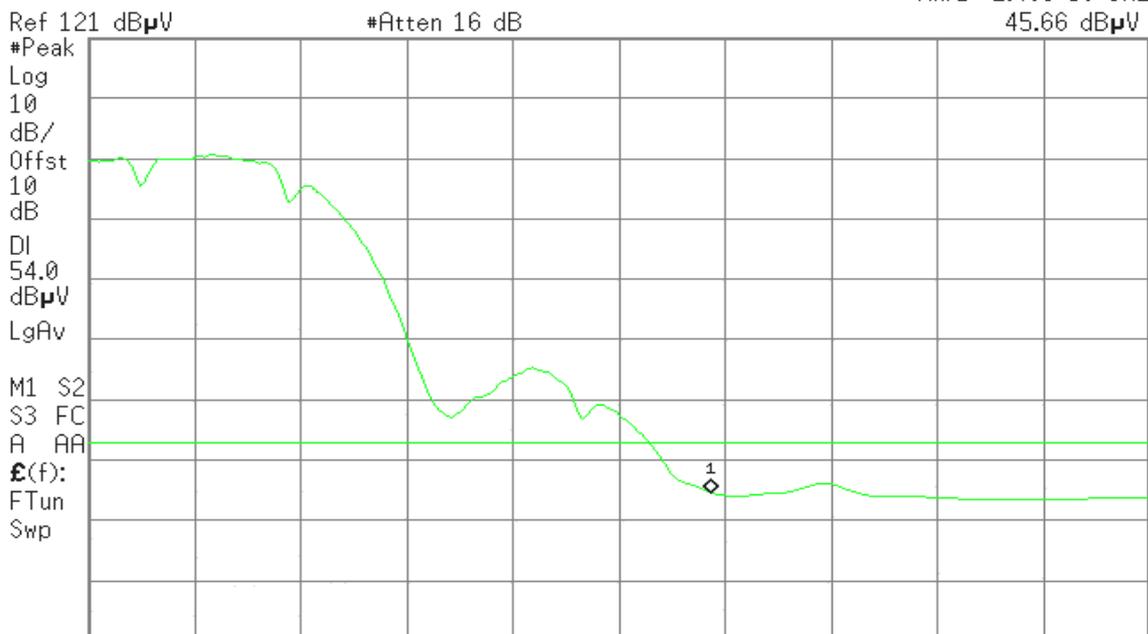
Detector mode: Average

Polarity: Vertical

Agilent 16:38:20 Dec 27, 2007

R T

Mkr1 2.483 50 GHz  
45.66 dB $\mu$ V



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.119 s (601 pts)



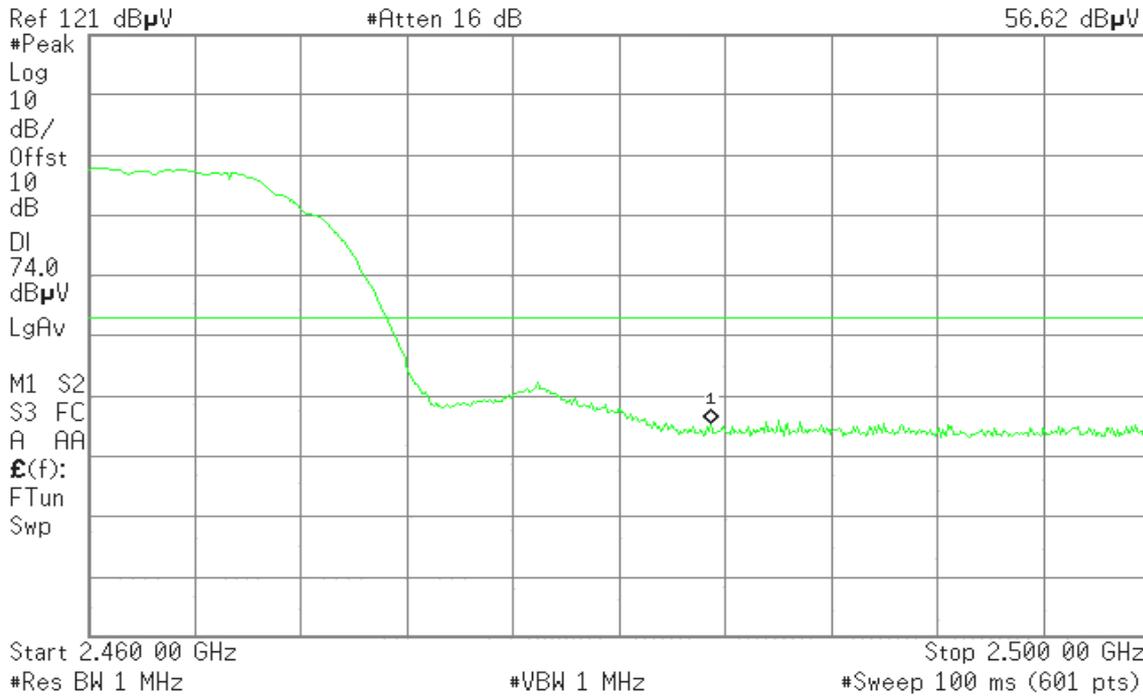
**Detector mode: Peak**

**Polarity: Horizontal**

Agilent 16:43:29 Dec 27, 2007

R T

Mkr1 2.483 50 GHz  
56.62 dBμV



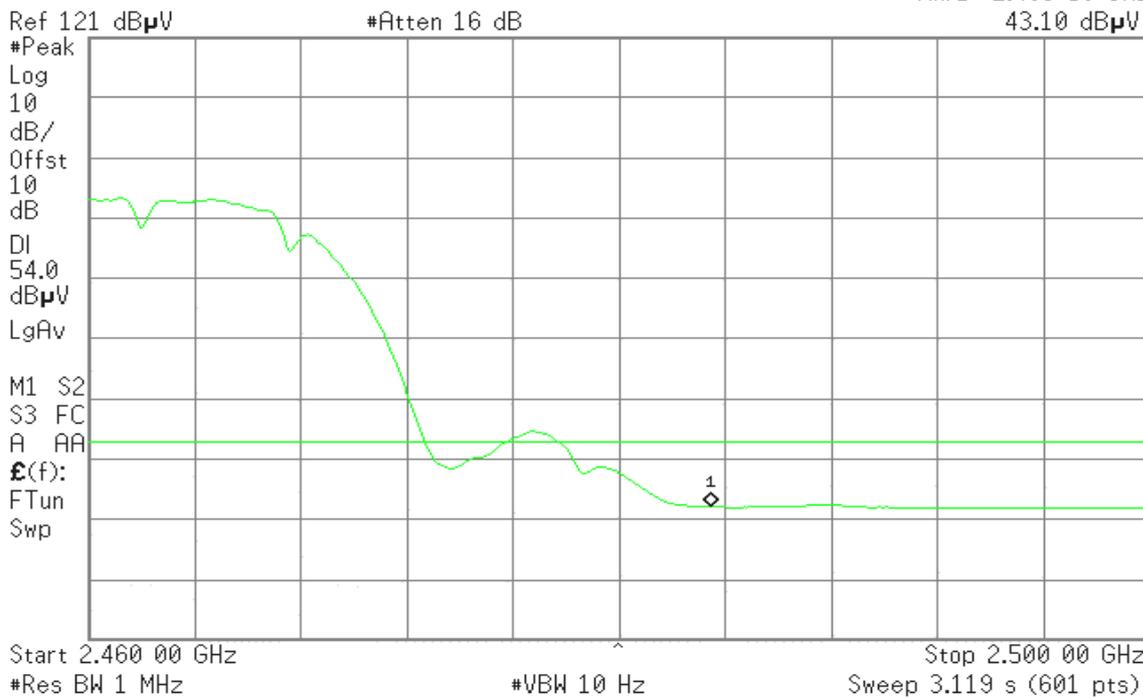
**Detector mode: Average**

**Polarity: Horizontal**

Agilent 16:44:02 Dec 27, 2007

R T

Mkr1 2.483 50 GHz  
43.10 dBμV





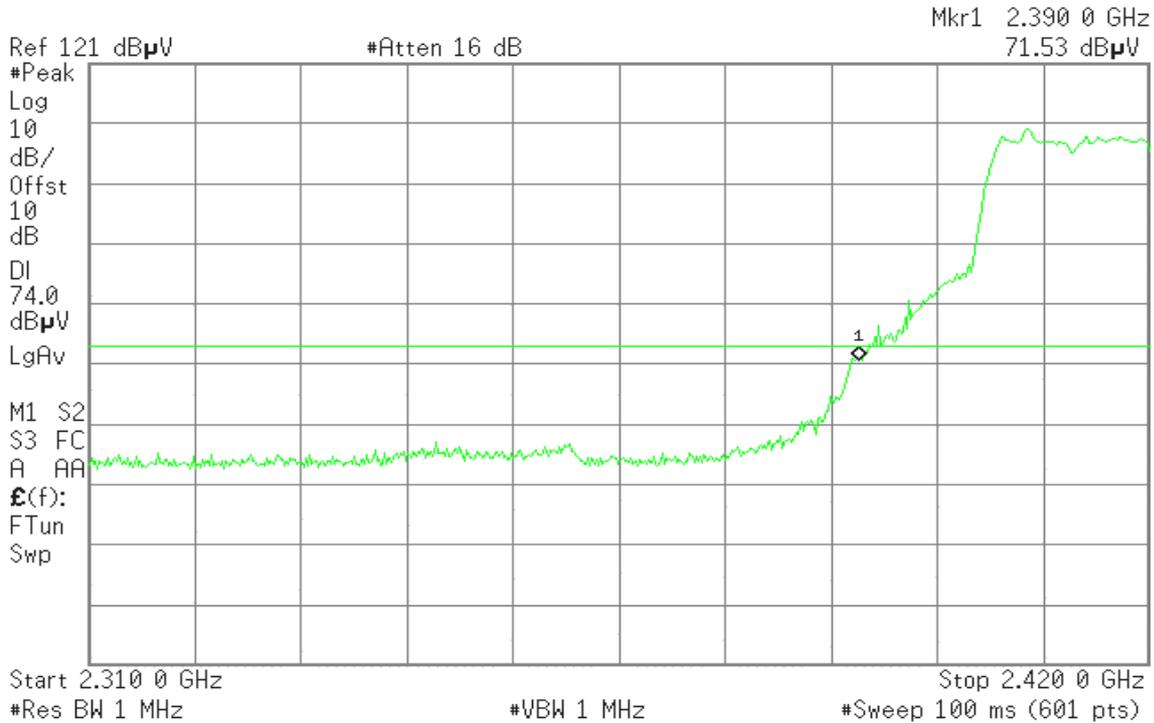
### Band Edges (IEEE 802.11g mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 17:13:43 Dec 27, 2007

R T

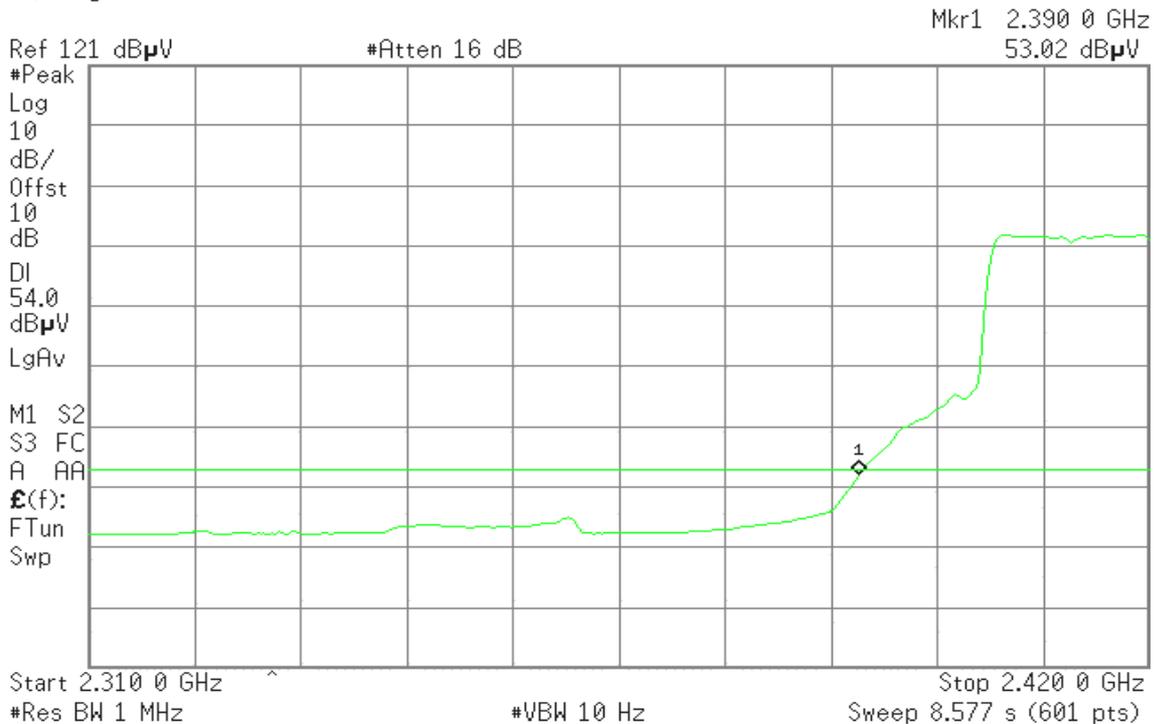


Detector mode: Average

Polarity: Vertical

Agilent 17:13:18 Dec 27, 2007

R T





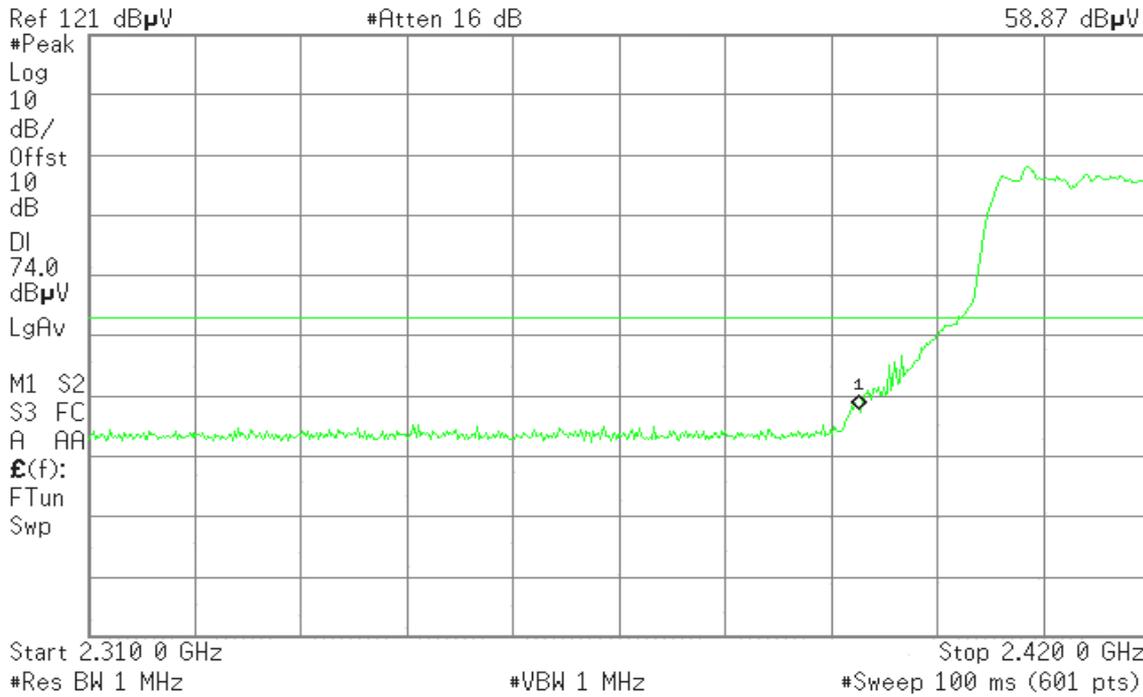
**Detector mode: Peak**

**Polarity: Horizontal**

Agilent 17:17:57 Dec 27, 2007

R T

Mkr1 2.390 0 GHz  
58.87 dBμV



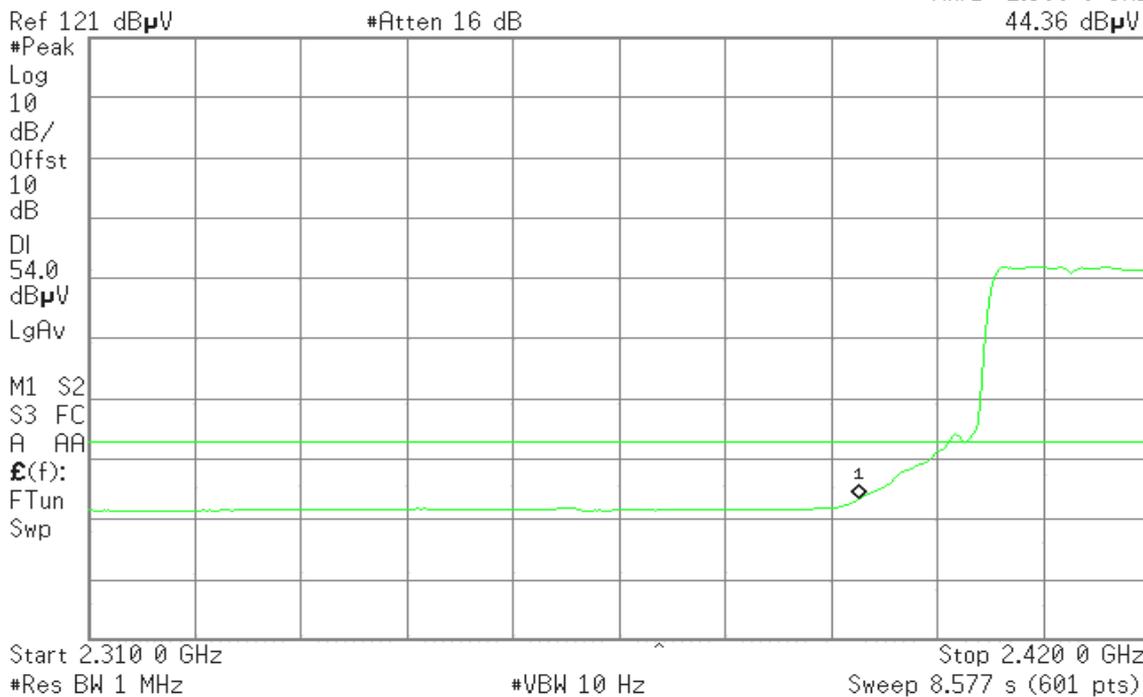
**Detector mode: Average**

**Polarity: Horizontal**

Agilent 17:18:26 Dec 27, 2007

R T

Mkr1 2.390 0 GHz  
44.36 dBμV





### Band Edges (IEEE 802.11g mode / CH High)

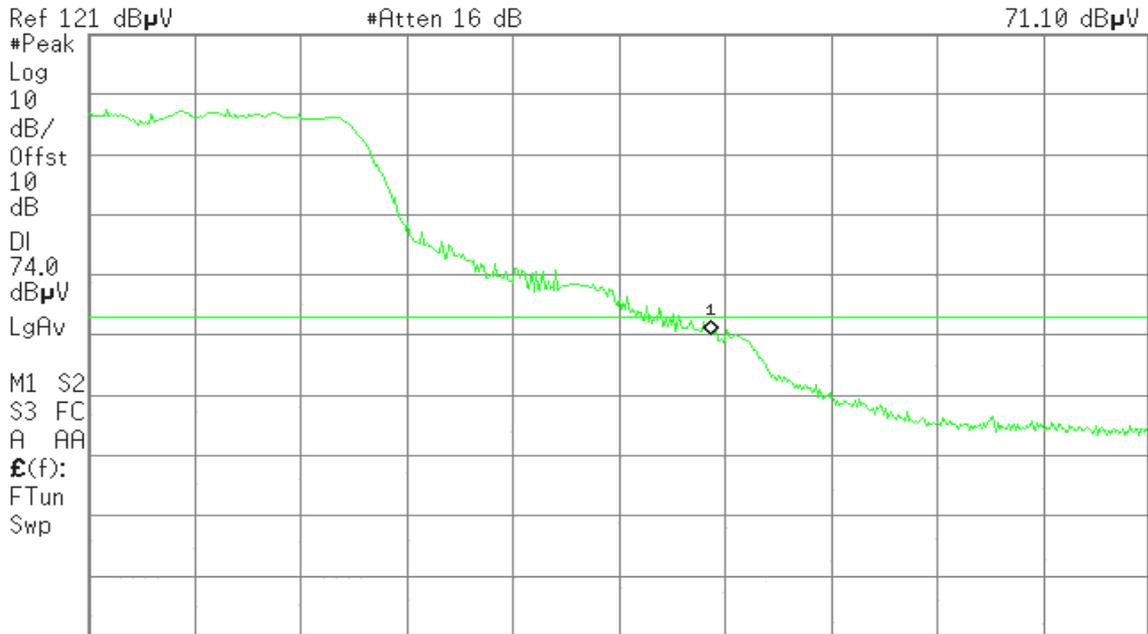
Detector mode: Peak

Polarity: Vertical

Agilent 16:32:33 Dec 27, 2007

R L

Mkr1 2.483 50 GHz  
71.10 dB $\mu$ V



Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

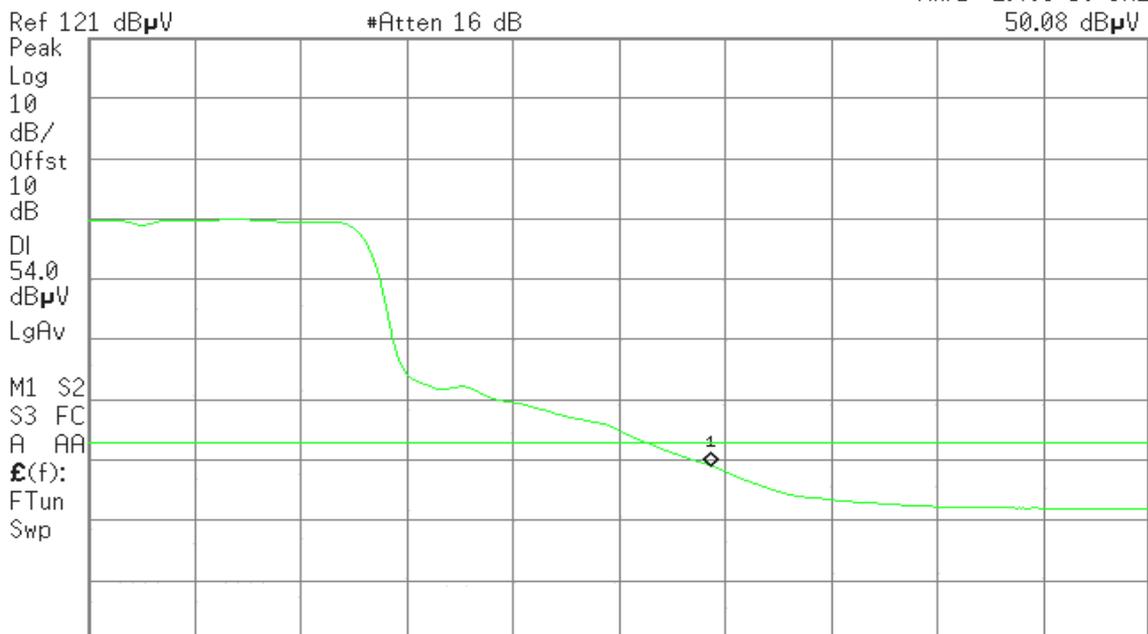
Detector mode: Average

Polarity: Vertical

Agilent 18:57:51 Dec 27, 2007

T

Mkr1 2.483 50 GHz  
50.08 dB $\mu$ V



Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

Sweep 3.119 s (601 pts)



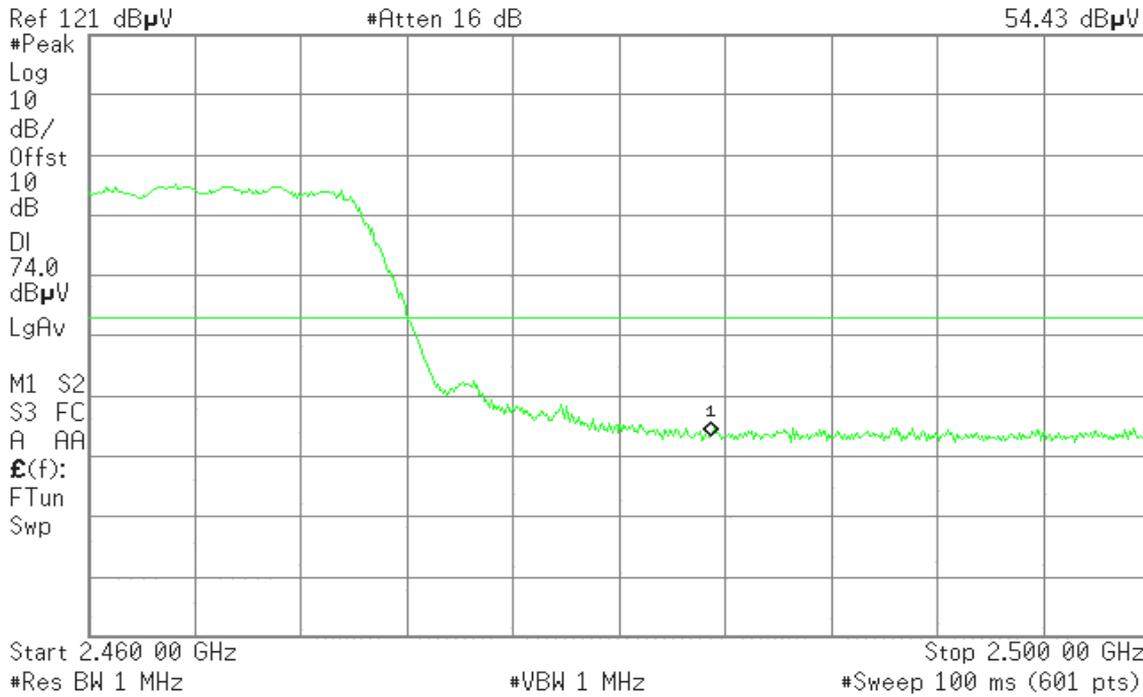
Detector mode: Peak

Polarity: Horizontal

Agilent 17:22:36 Dec 27, 2007

R T

Mkr1 2.483 50 GHz  
54.43 dBμV



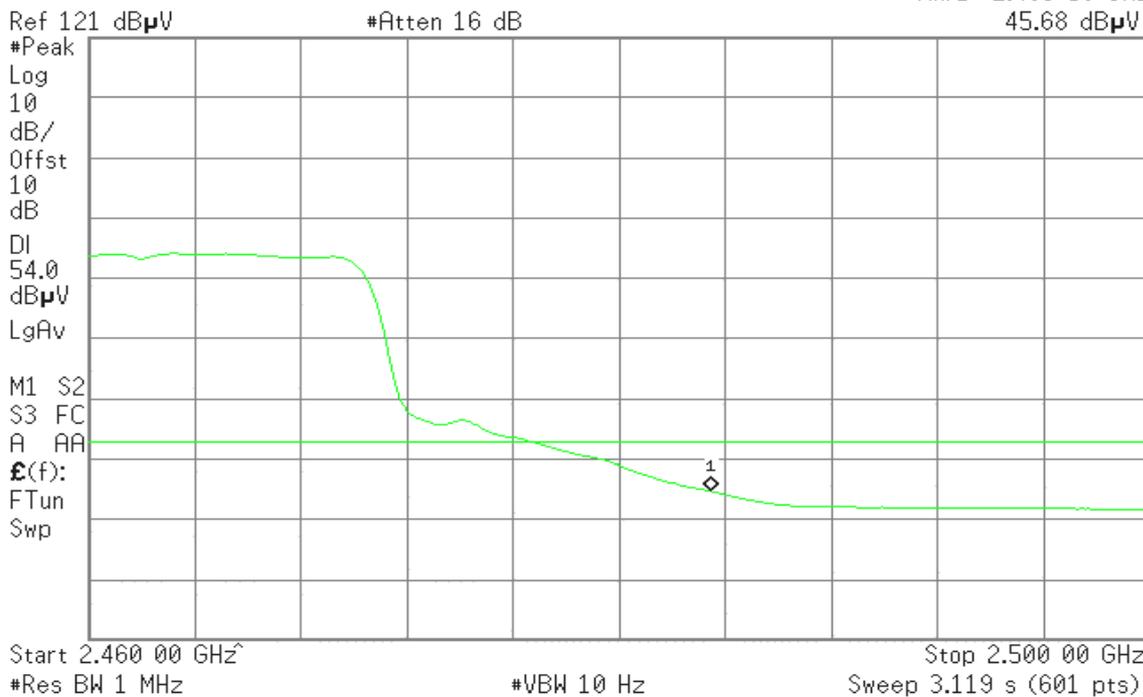
Detector mode: Average

Polarity: Horizontal

Agilent 17:23:23 Dec 27, 2007

R T

Mkr1 2.483 50 GHz  
45.68 dBμV





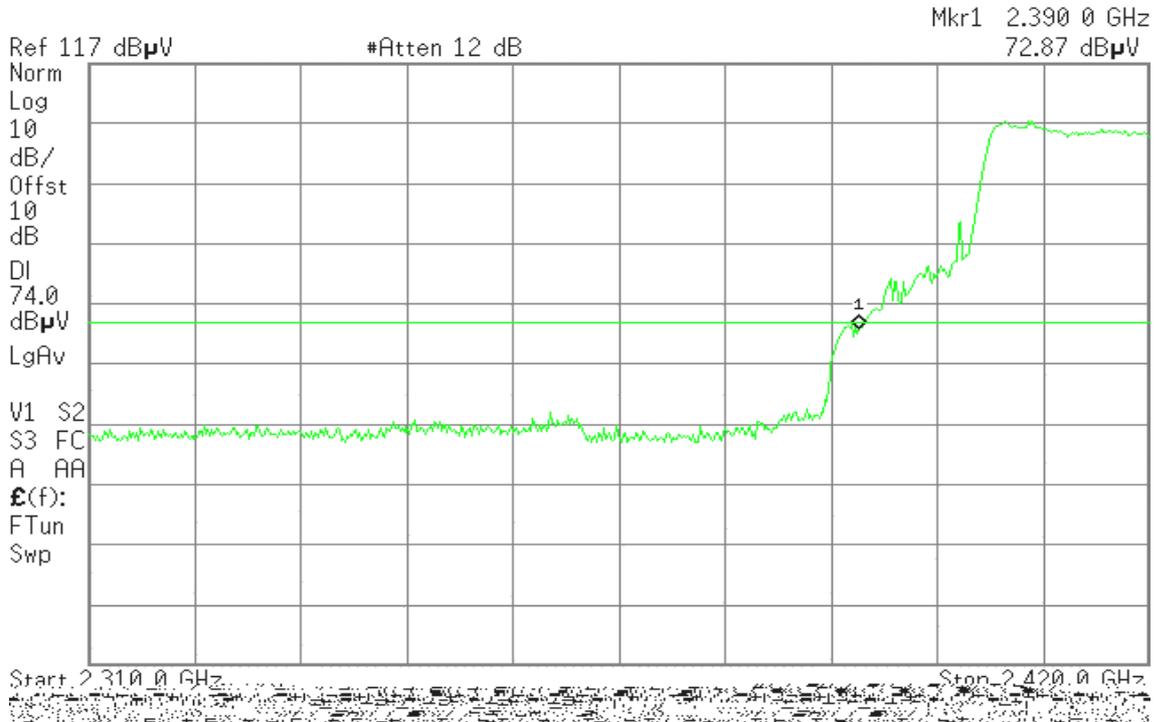
**Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH Low)**

**Detector mode: Peak**

**Polarity: Vertical**

\* Agilent 15:25:07 Dec 6, 2007

R T

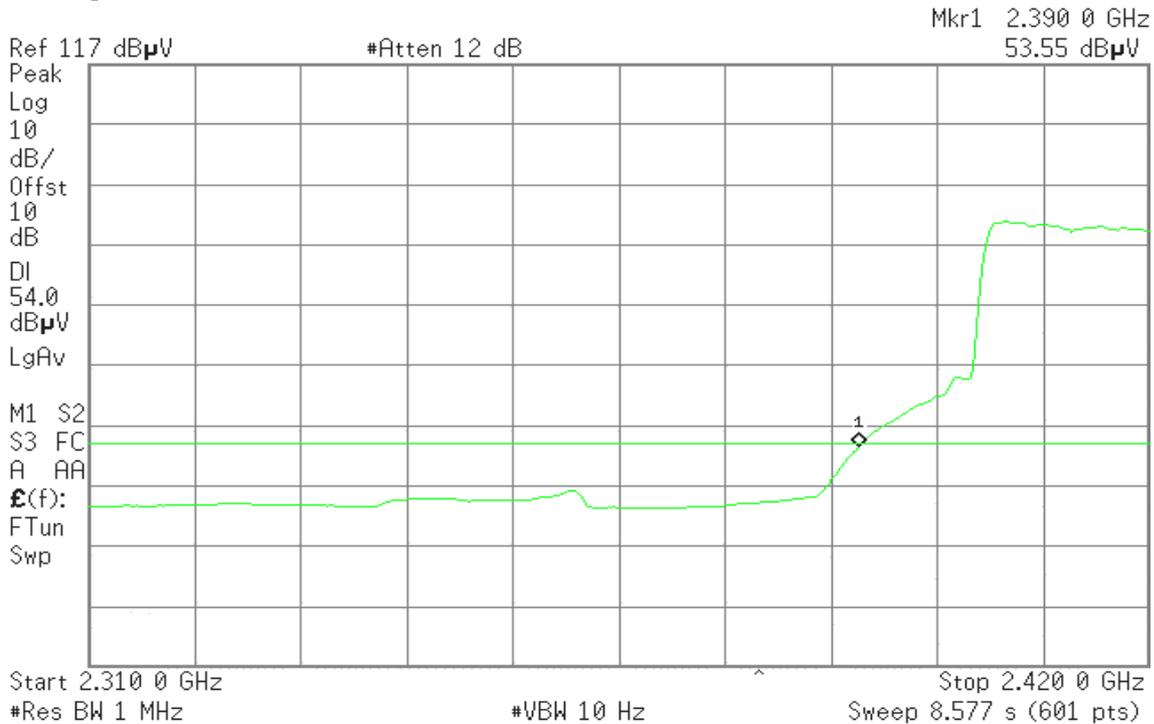


**Detector mode: Average**

**Polarity: Vertical**

\* Agilent 15:24:46 Dec 6, 2007

R T





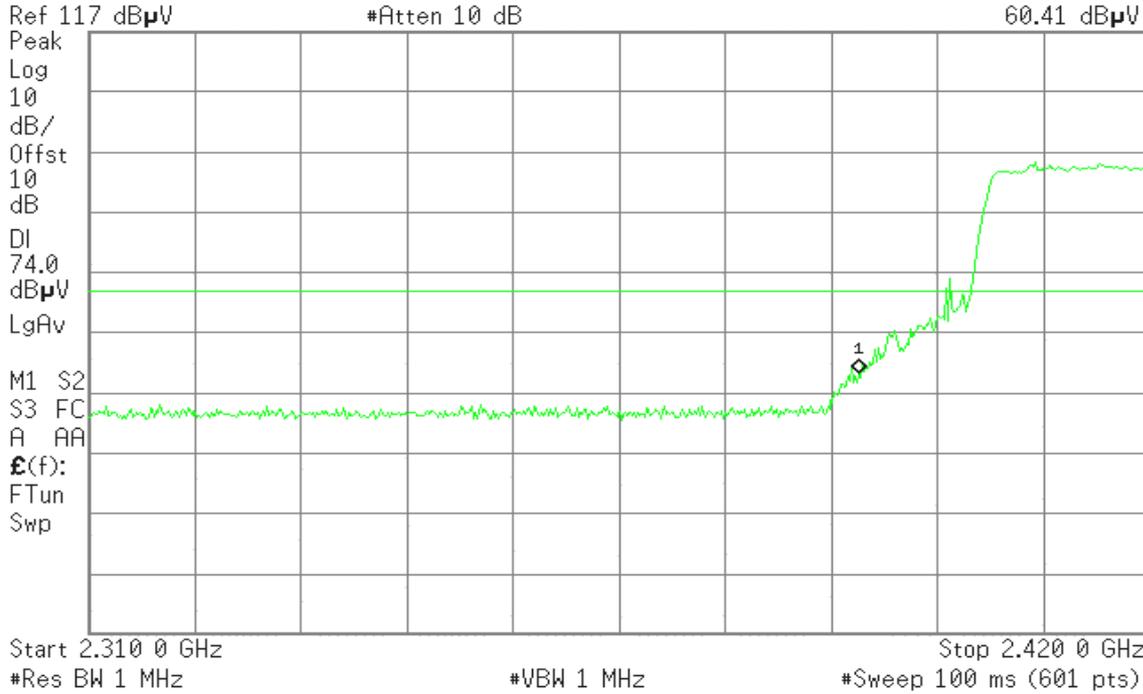
**Detector mode: Peak**

**Polarity: Horizontal**

Agilent 17:28:57 Dec 6, 2007

R T

Mkr1 2.390 0 GHz  
60.41 dBµV



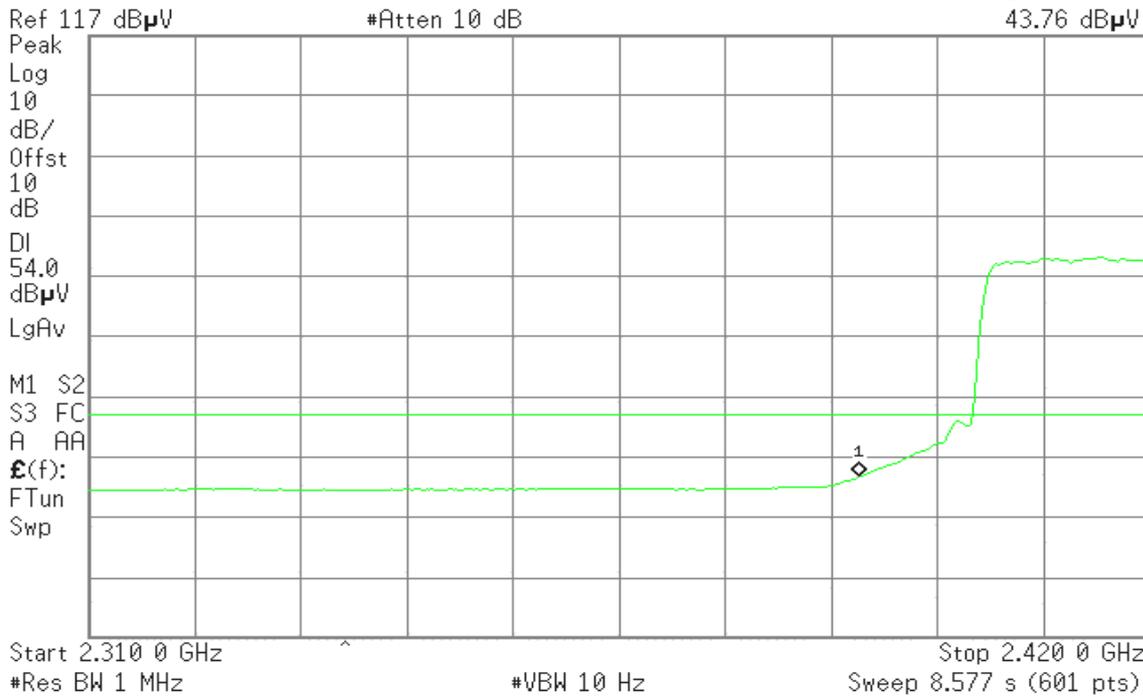
**Detector mode: Average**

**Polarity: Horizontal**

Agilent 17:29:15 Dec 6, 2007

R T

Mkr1 2.390 0 GHz  
43.76 dBµV





### Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH High)

Detector mode: Peak

Polarity: Vertical

Agilent 15:20:50 Dec 6, 2007

R T

Mkr1 2.483 50 GHz  
72.28 dBμV



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

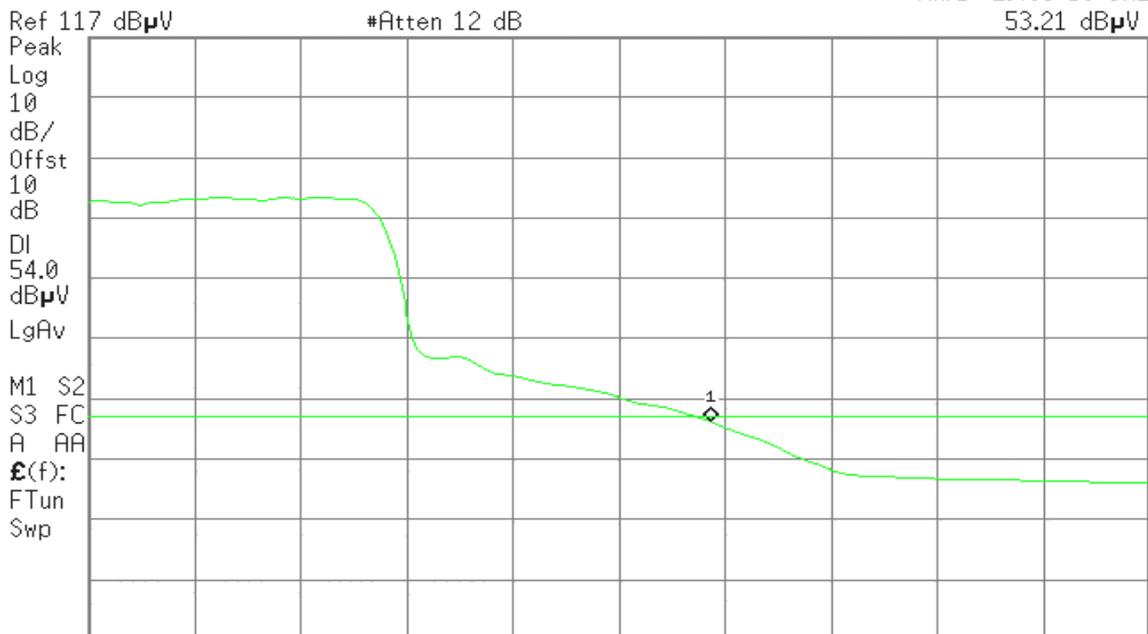
Detector mode: Average

Polarity: Vertical

Agilent 15:18:13 Dec 6, 2007

R T

Mkr1 2.483 50 GHz  
53.21 dBμV



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.119 s (601 pts)



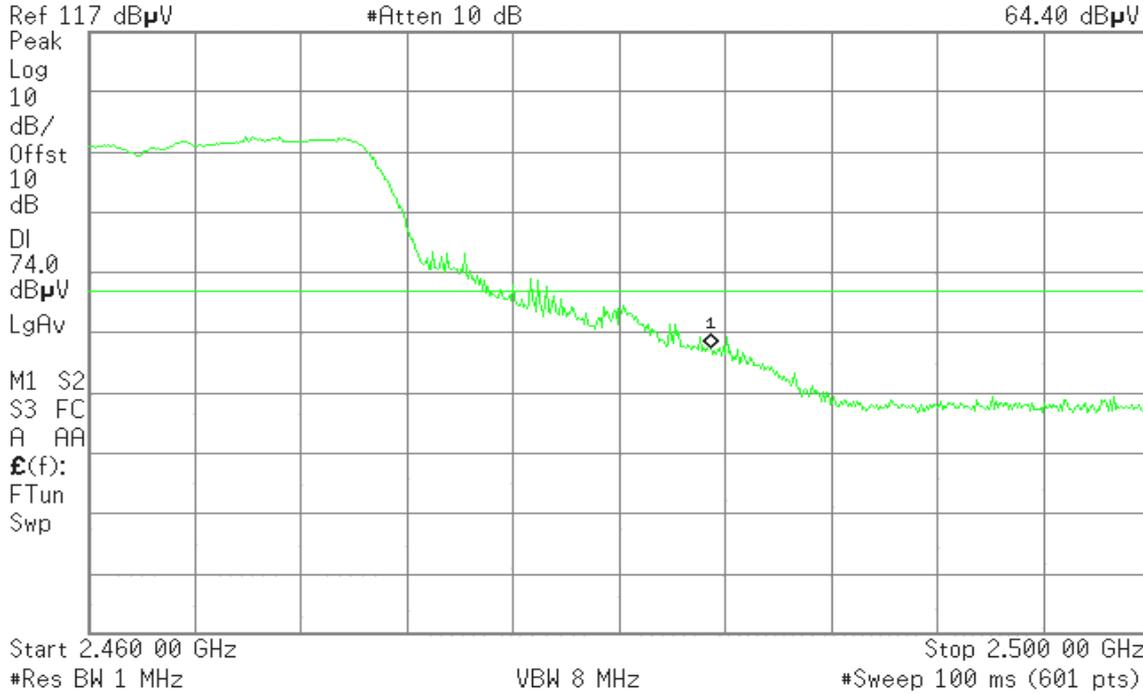
Detector mode: Peak

Polarity: Horizontal

Agilent 17:32:44 Dec 6, 2007

R T

Mkr1 2.483 50 GHz  
64.40 dBµV



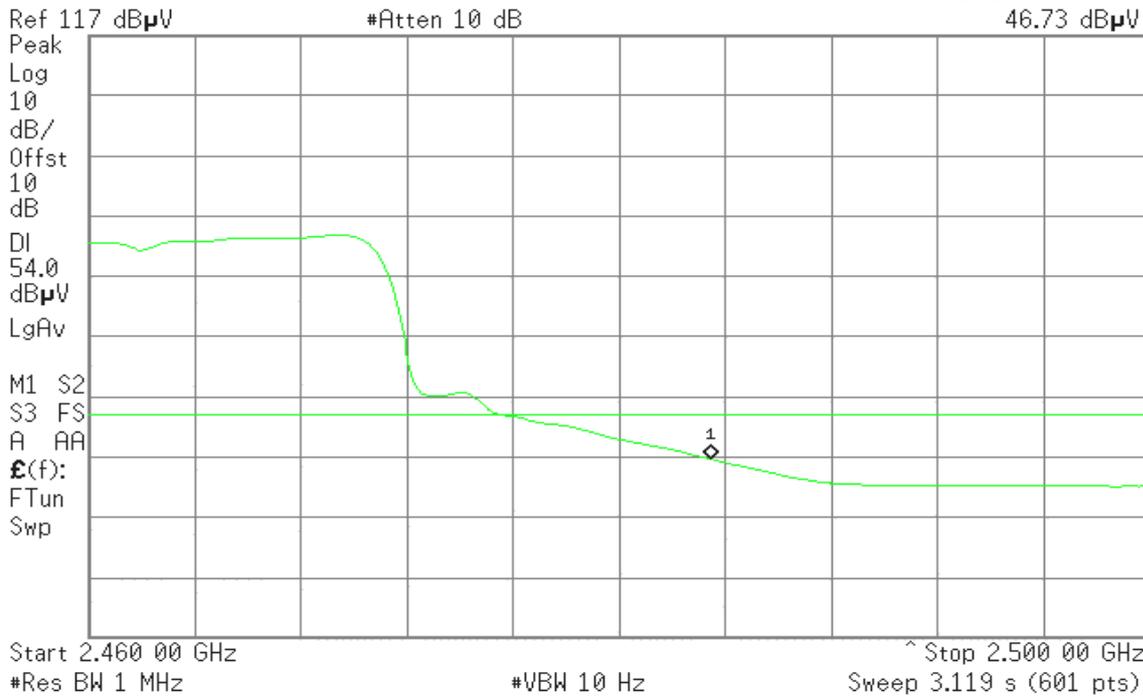
Detector mode: Average

Polarity: Horizontal

Agilent 17:32:19 Dec 6, 2007

R T

Mkr1 2.483 50 GHz  
46.73 dBµV





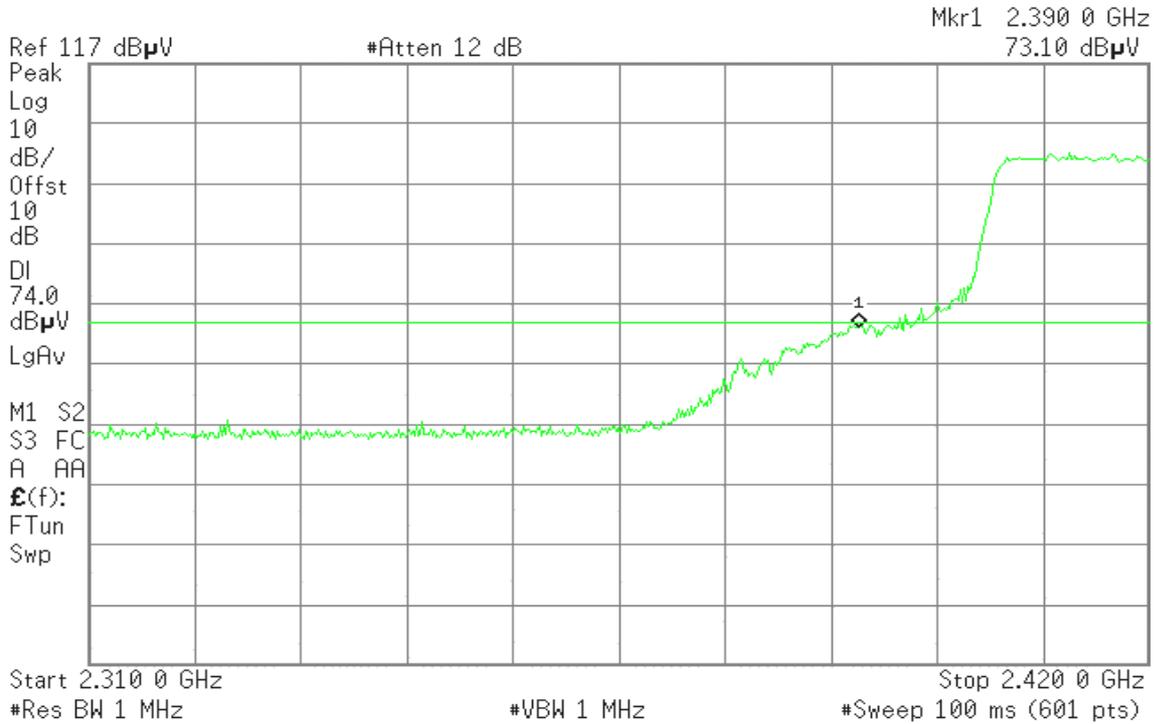
### Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 15:36:43 Dec 6, 2007

R T

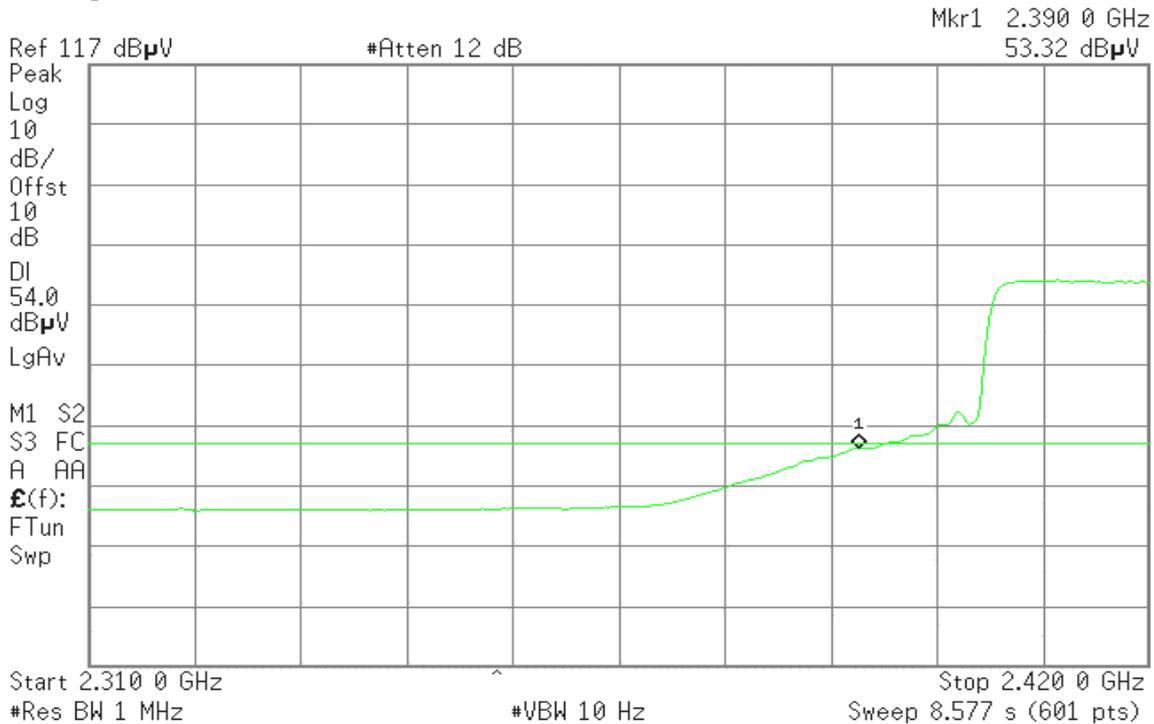


Detector mode: Average

Polarity: Vertical

Agilent 15:36:13 Dec 6, 2007

R T





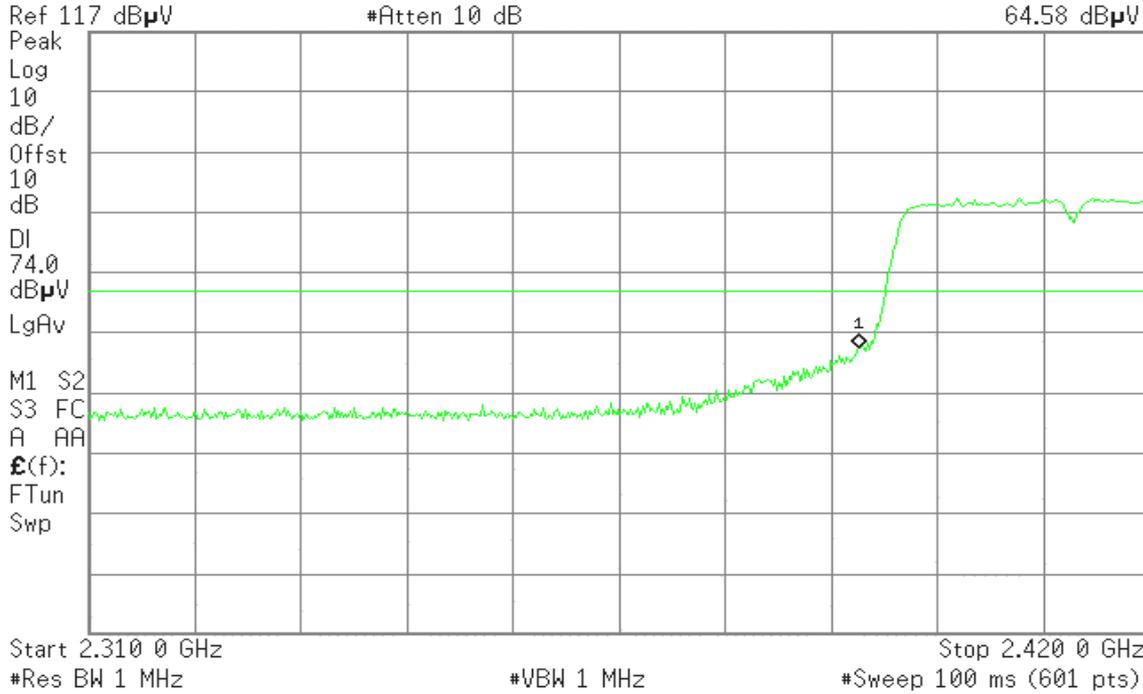
**Detector mode: Peak**

**Polarity: Horizontal**

Agilent 17:27:03 Dec 6, 2007

R T

Mkr1 2.390 0 GHz  
64.58 dB $\mu$ V



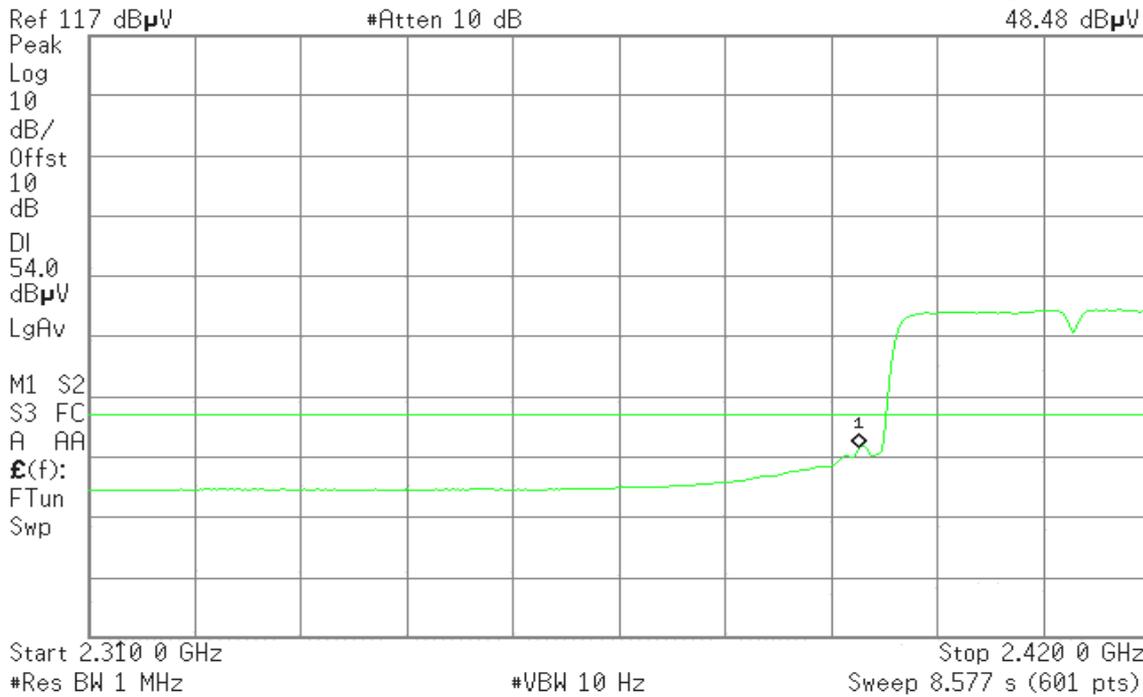
**Detector mode: Average**

**Polarity: Horizontal**

Agilent 17:26:47 Dec 6, 2007

R T

Mkr1 2.390 0 GHz  
48.48 dB $\mu$ V





### Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH High)

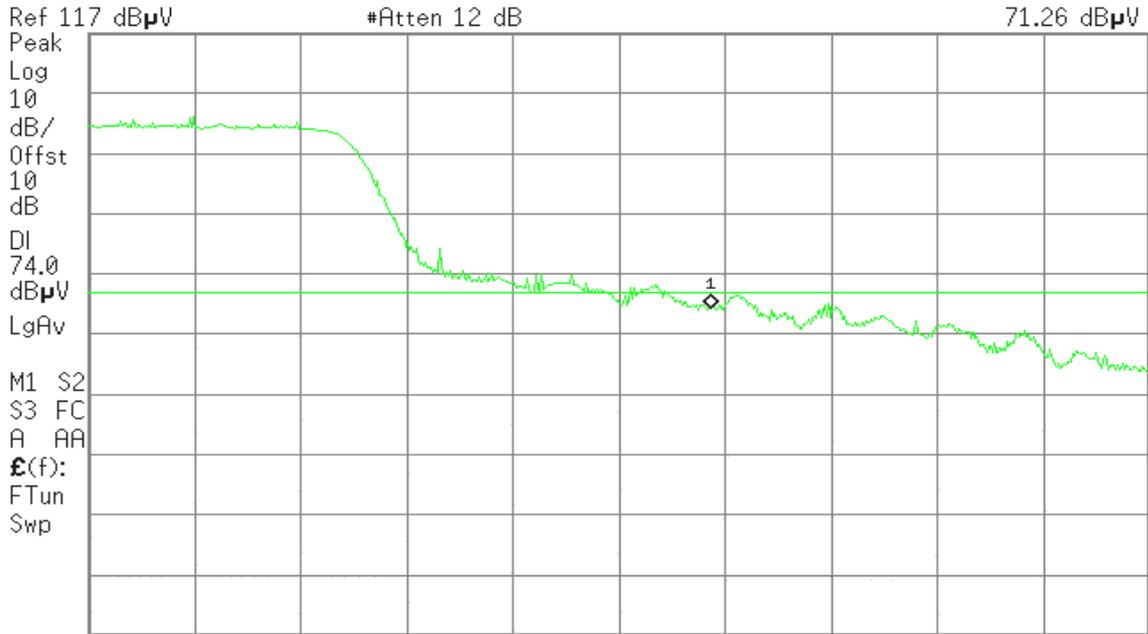
Detector mode: Peak

Polarity: Vertical

Agilent 15:41:48 Dec 6, 2007

R T

Mkr1 2.483 50 GHz  
71.26 dBμV



Start 2.460 00 GHz Stop 2.500 00 GHz  
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

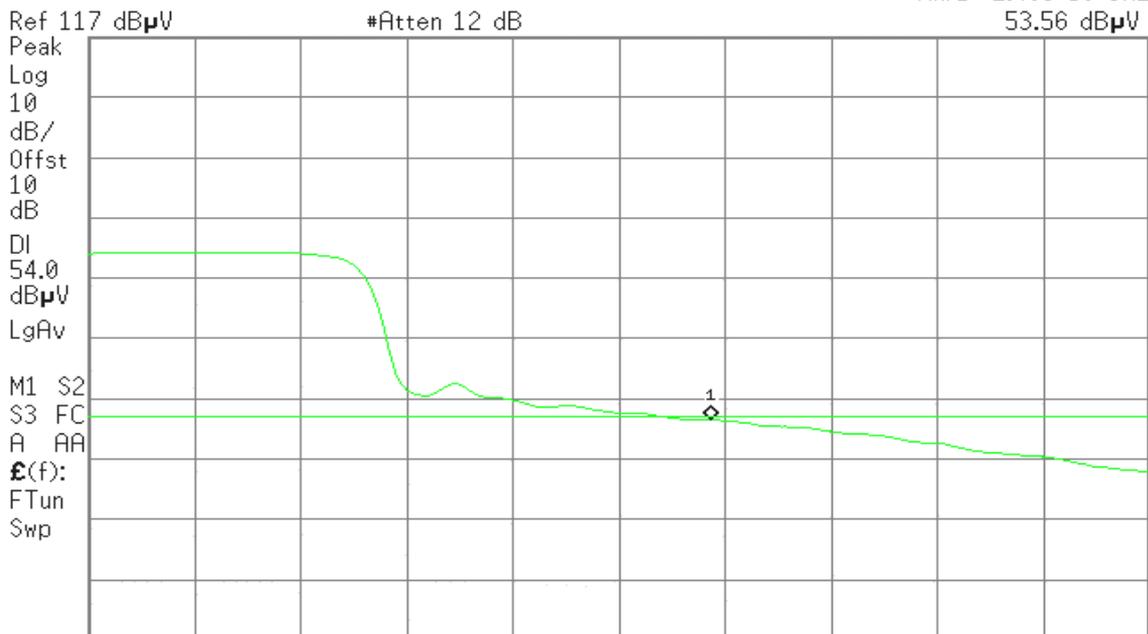
Detector mode: Average

Polarity: Vertical

Agilent 15:41:28 Dec 6, 2007

R T

Mkr1 2.483 50 GHz  
53.56 dBμV



Start 2.460 00 GHz Stop 2.500 00 GHz  
#Res BW 1 MHz #VBW 10 Hz Sweep 3.119 s (601 pts)



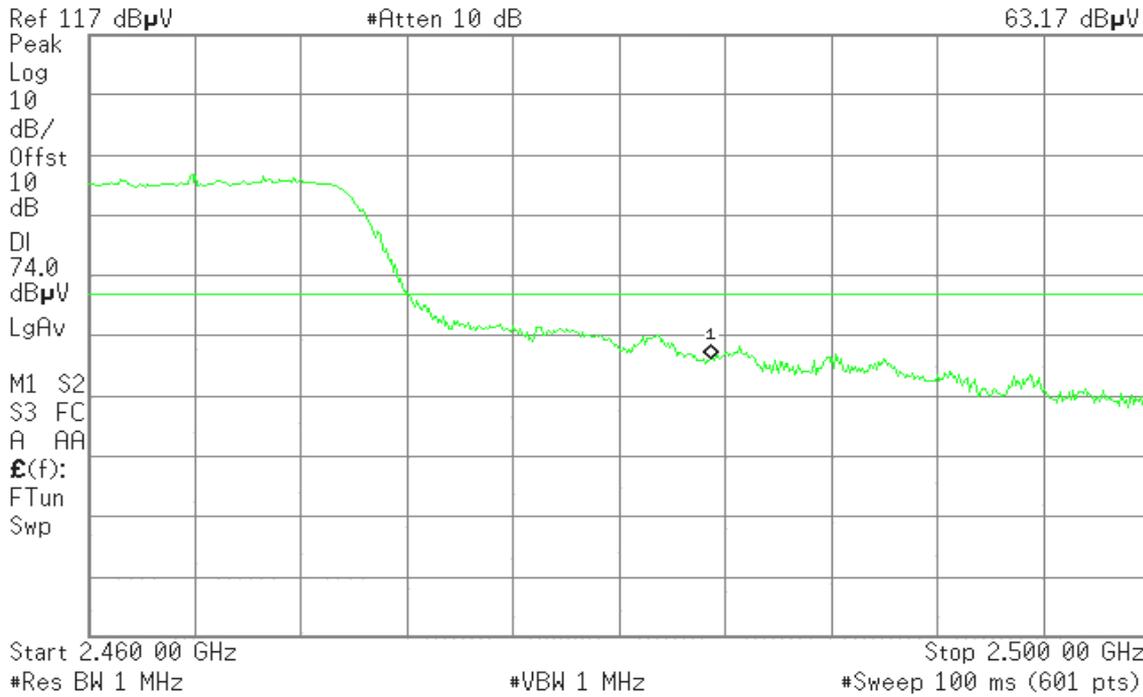
Detector mode: Peak

Polarity: Horizontal

Agilent 17:34:17 Dec 6, 2007

R T

Mkr1 2.483 50 GHz  
63.17 dBμV



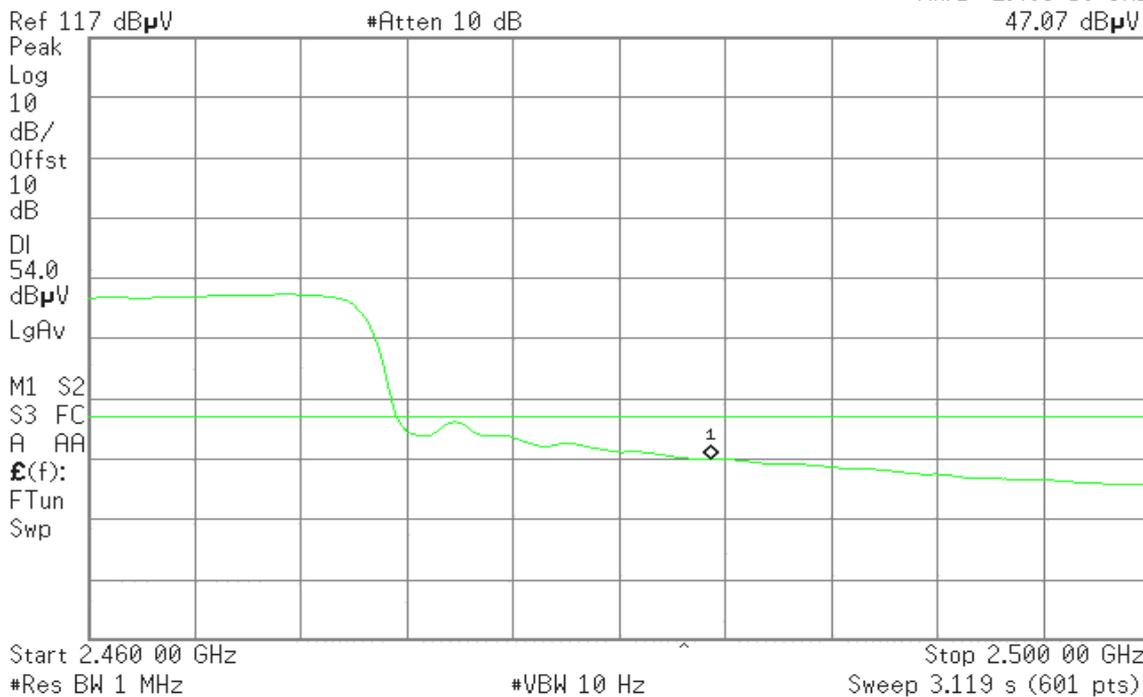
Detector mode: Average

Polarity: Horizontal

Agilent 17:34:40 Dec 6, 2007

R T

Mkr1 2.483 50 GHz  
47.07 dBμV

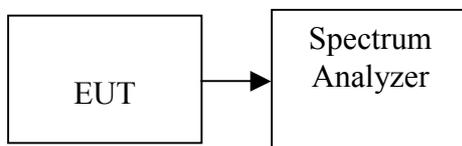


## 7.5 PEAK POWER SPECTRAL DENSITY

### LIMIT

1. According to §15.247(e), 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.
2. According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

### Test Configuration



### TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.  
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3 kHz, VBW = 10 kHz, Span = 300 kHz, Sweep time = 100 s
3. Record the max reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

**TEST RESULTS***No non-compliance noted***Test Data****Test mode: IEEE 802.11b mode**

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	1.36	2.35	4.89	8.00	PASS
Mid	2437	2.20	3.71	6.03		PASS
High	2462	2.68	2.88	5.79		PASS

**Test mode: IEEE 802.11g mode**

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-14.11	-12.64	-10.30	8.00	PASS
Mid	2437	-10.34	-9.05	-6.64		PASS
High	2462	-12.95	-10.36	-8.45		PASS

**Test mode: draft 802.11n Standard-20 MHz Channel mode**

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-14.49	-15.29	-11.86	8.00	PASS
Mid	2437	-15.56	-14.28	-11.86		PASS
High	2462	-16.63	-15.07	-12.77		PASS

**Test mode: draft 802.11n Wide-40 MHz Channel mode**

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Result
Low	2422	-21.15	-20.14	-17.61	8.00	PASS
Mid	2437	-20.49	-17.29	-15.59		PASS
High	2452	-18.73	-18.83	-15.77		PASS

**Remark:** Total PPSD (dBm) =  $10 * \text{LOG}(10^{(\text{Chain 0 PPSD} / 10)} + 10^{(\text{Chain 1 PPSD} / 10)})$



**Test mode: IEEE 802.11b mode with combiner**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	2.78	8.00	PASS
Mid	2437	3.36		PASS
High	2462	3.90		PASS

**Test mode: IEEE 802.11g mode with combiner**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-7.27	8.00	PASS
Mid	2437	-8.36		PASS
High	2462	-8.56		PASS

**Test mode: draft 802.11n Standard-20 MHz Channel mode with combiner**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-13.46	8.00	PASS
Mid	2437	-16.54		PASS
High	2462	-17.85		PASS

**Test mode: draft 802.11n Wide-40 MHz Channel mode with combiner**

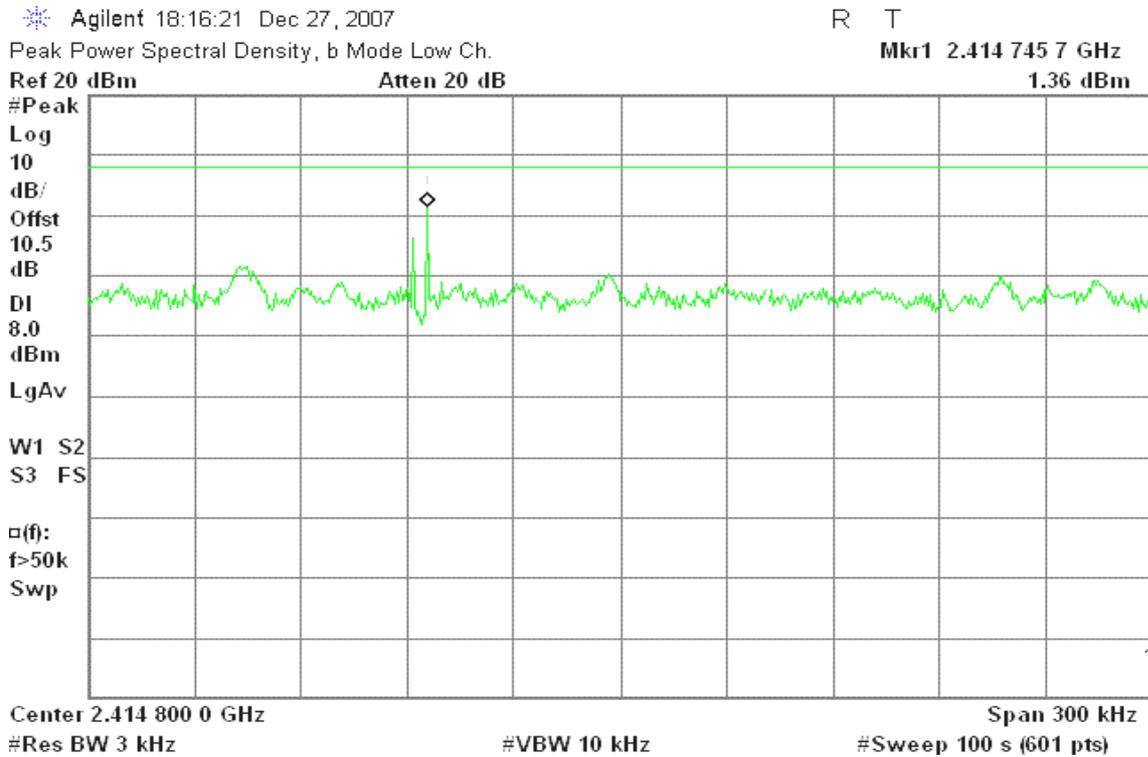
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-18.28	8.00	PASS
Mid	2437	-19.41		PASS
High	2462	-19.92		PASS



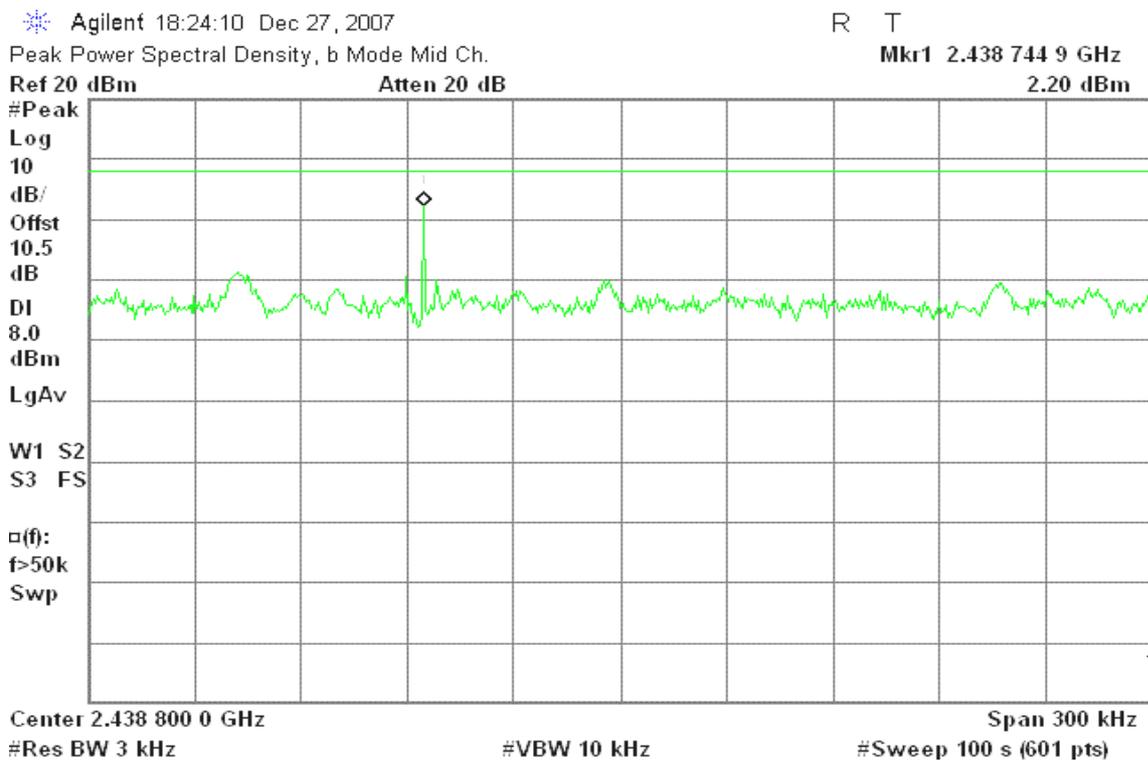
### Test Plot

### IEEE 802.11b mode / Chain 0

### PPSD (CH Low)



### PPSD (CH Mid)





### PPSD (CH High)

Agilent 18:29:45 Dec 27, 2007

R T

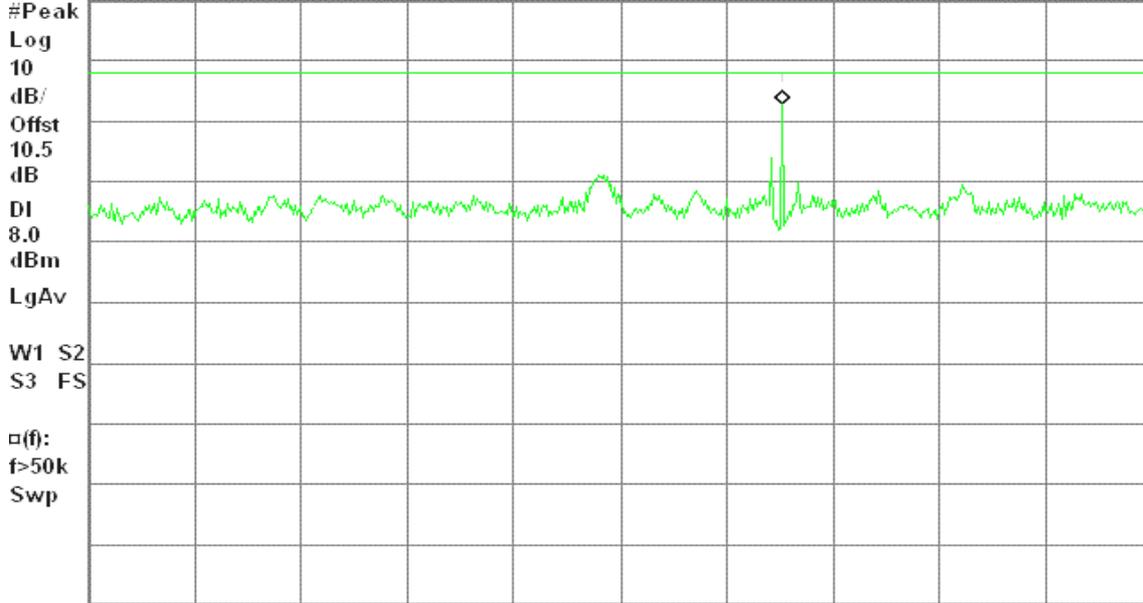
Peak Power Spectral Density, b Mode High Ch.

Mkr1 2.462 745 7 GHz

Ref 20 dBm

Atten 20 dB

2.68 dBm



Center 2.462 700 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### IEEE 802.11b mode / Chain 1

### PPSD (CH Low)

Agilent 18:48:13 Dec 27, 2007

R T

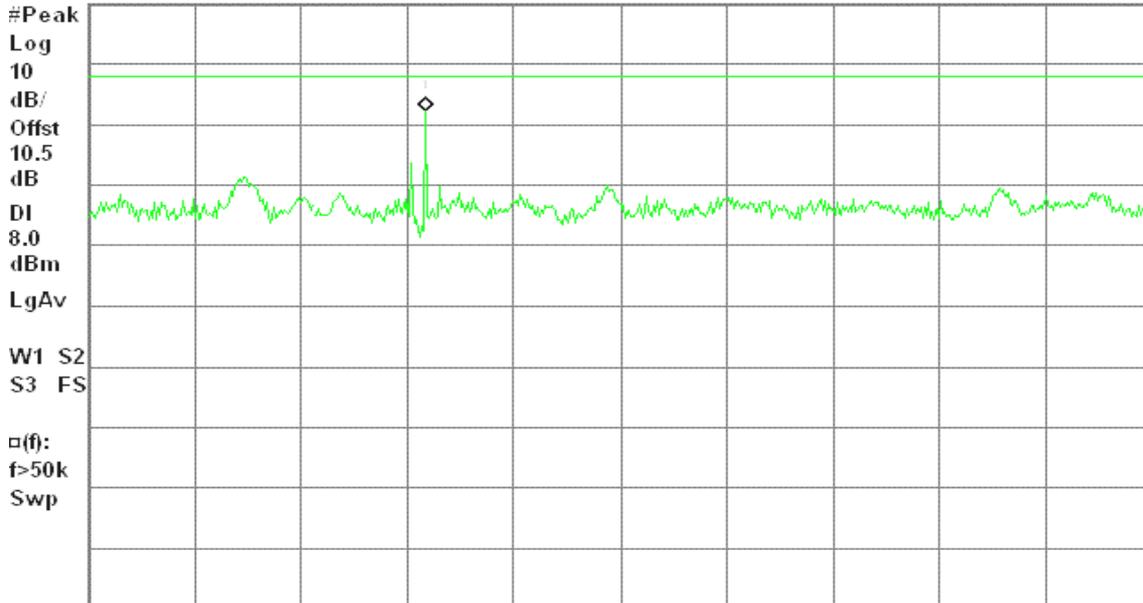
Peak Power Spectral Density, b Mode Low Ch.

Mkr1 2.409 745 2 GHz

Ref 20 dBm

Atten 20 dB

2.35 dBm



Center 2.409 800 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



### PPSD (CH Mid)

Agilent 18:43:13 Dec 27, 2007

R T

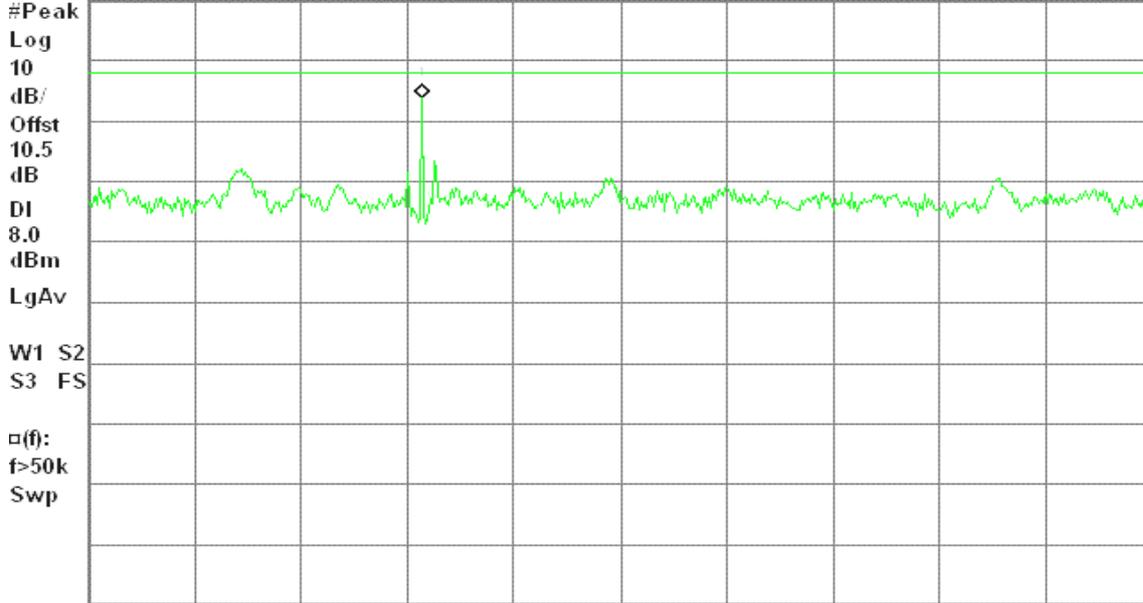
Peak Power Spectral Density, b Mode Mid Ch.

Mkr1 2.440 744 4 GHz

Ref 20 dBm

Atten 20 dB

3.71 dBm



Center 2.440 800 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### PPSD (CH High)

Agilent 18:35:49 Dec 27, 2007

R T

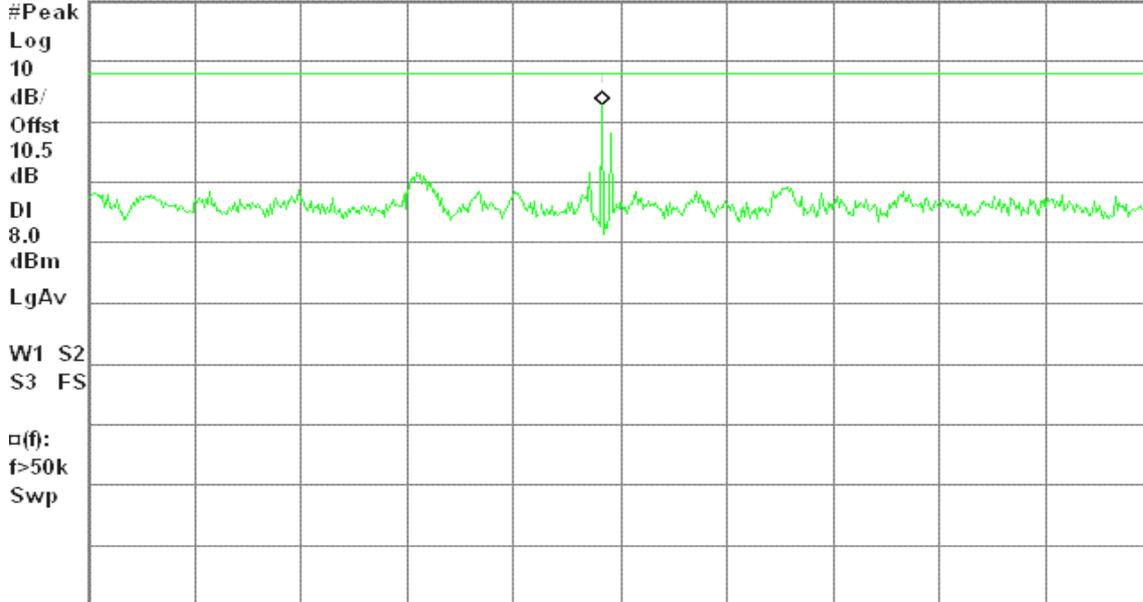
Peak Power Spectral Density, b Mode High Ch.

Mkr1 2.459 744 5 GHz

Ref 20 dBm

Atten 20 dB

2.88 dBm



Center 2.459 750 0 GHz

Span 300 kHz

#Res BW 3 kHz

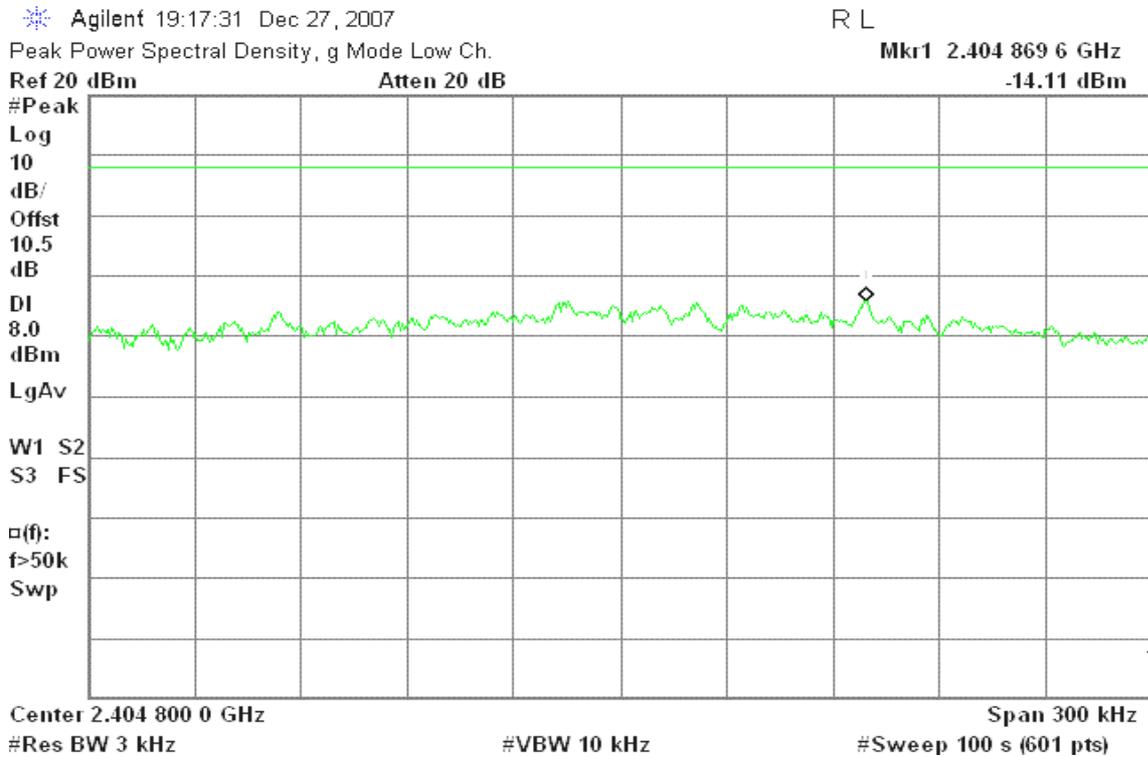
#VBW 10 kHz

#Sweep 100 s (601 pts)

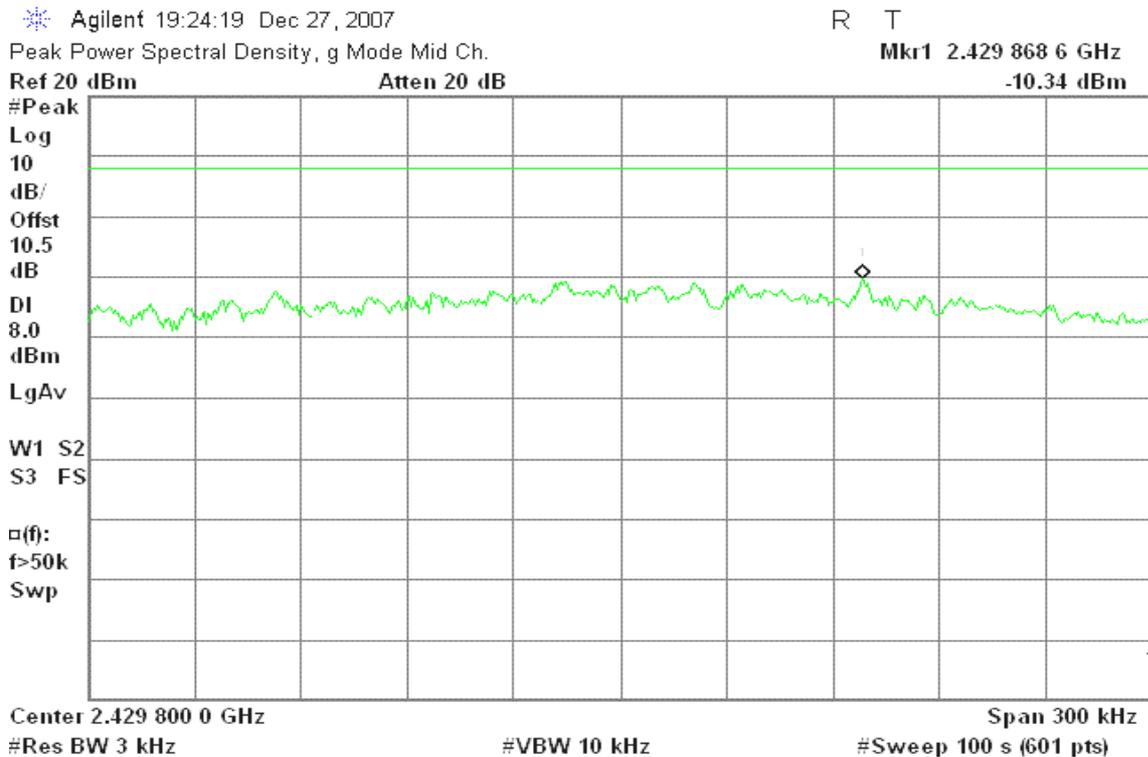


### IEEE 802.11g mode / Chain 0

#### PPSD (CH Low)



#### PPSD (CH Mid)





### PPSD (CH High)

Agilent 19:29:58 Dec 27, 2007

R T

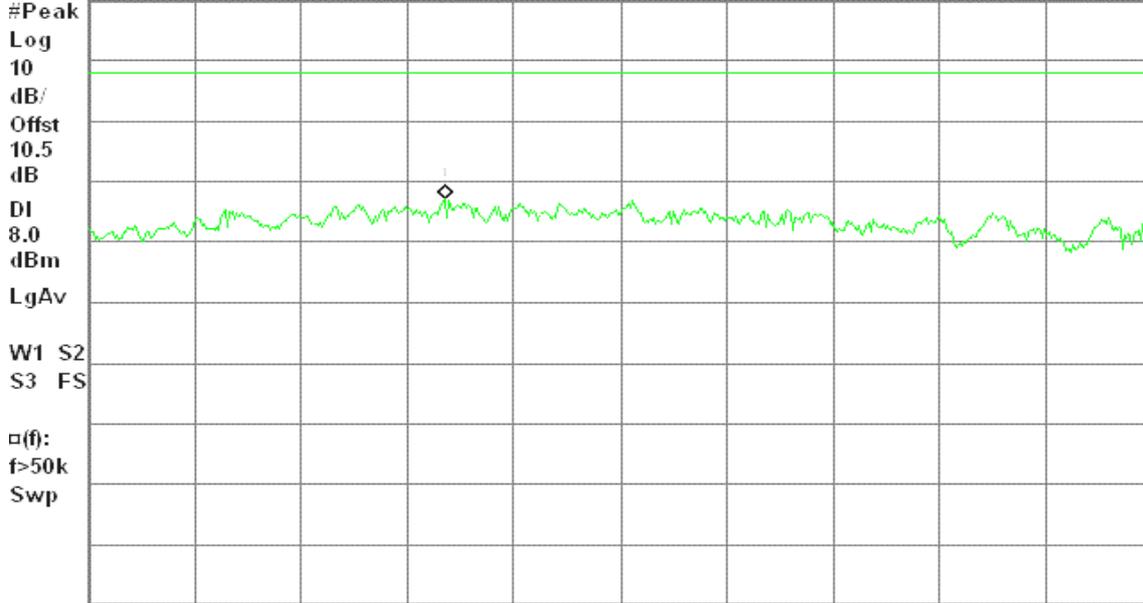
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.467 900 8 GHz

Ref 20 dBm

Atten 20 dB

-12.95 dBm



Center 2.467 950 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### IEEE 802.11g mode / Chain 1

### PPSD (CH Low)

Agilent 18:55:40 Dec 27, 2007

R T

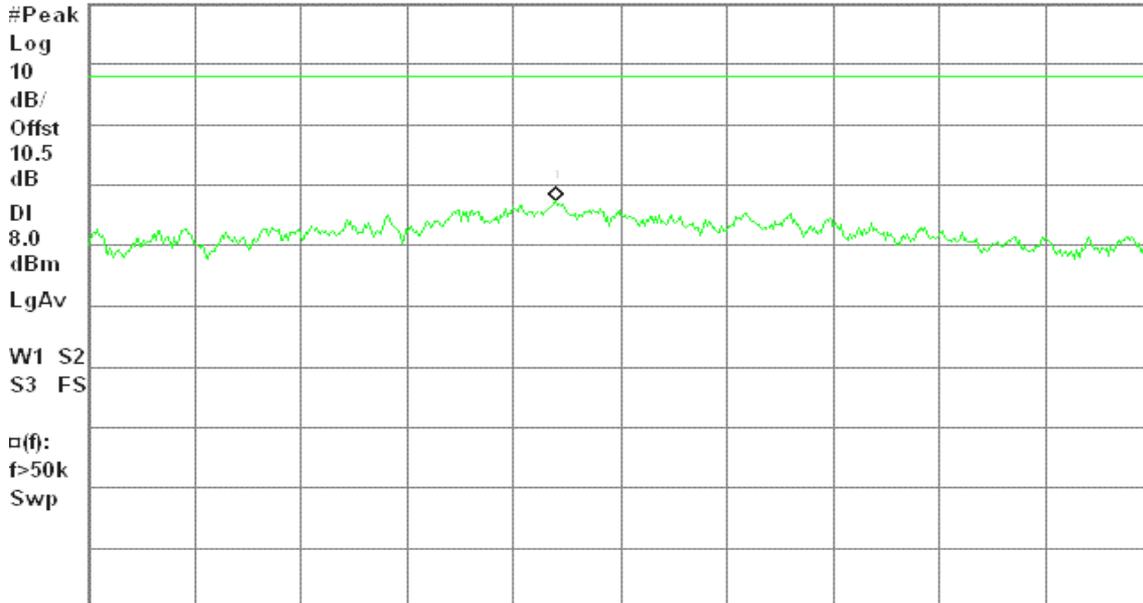
Peak Power Spectral Density, g Mode Low Ch.

Mkr1 2.419 481 9 GHz

Ref 20 dBm

Atten 20 dB

-12.64 dBm



Center 2.419 500 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



### PPSD (CH Mid)

Agilent 19:01:56 Dec 27, 2007

R T

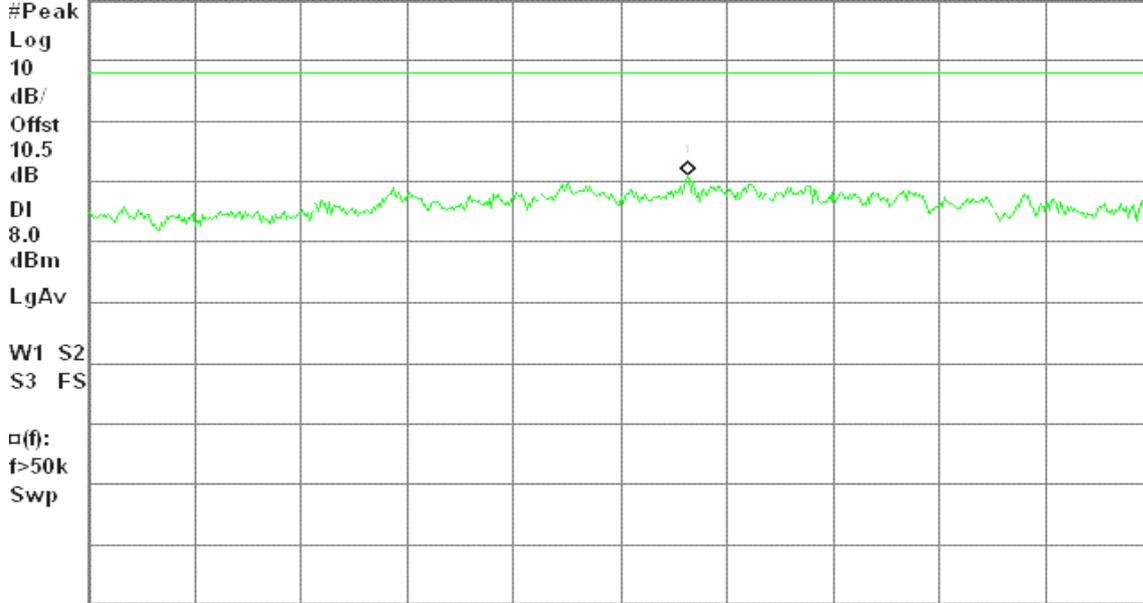
Peak Power Spectral Density, g Mode Mid Ch.

Mkr1 2.437 619 1 GHz

Ref 20 dBm

Atten 20 dB

-9.05 dBm



Center 2.437 600 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### PPSD (CH High)

Agilent 19:08:24 Dec 27, 2007

R T

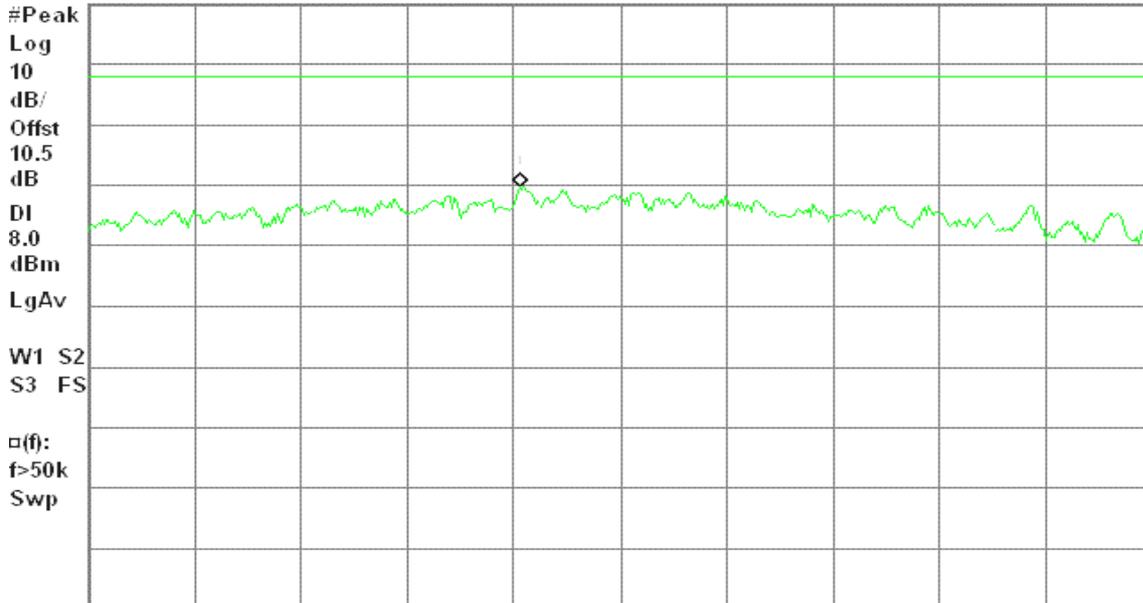
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.469 171 9 GHz

Ref 20 dBm

Atten 20 dB

-10.36 dBm



Center 2.469 200 0 GHz

Span 300 kHz

#Res BW 3 kHz

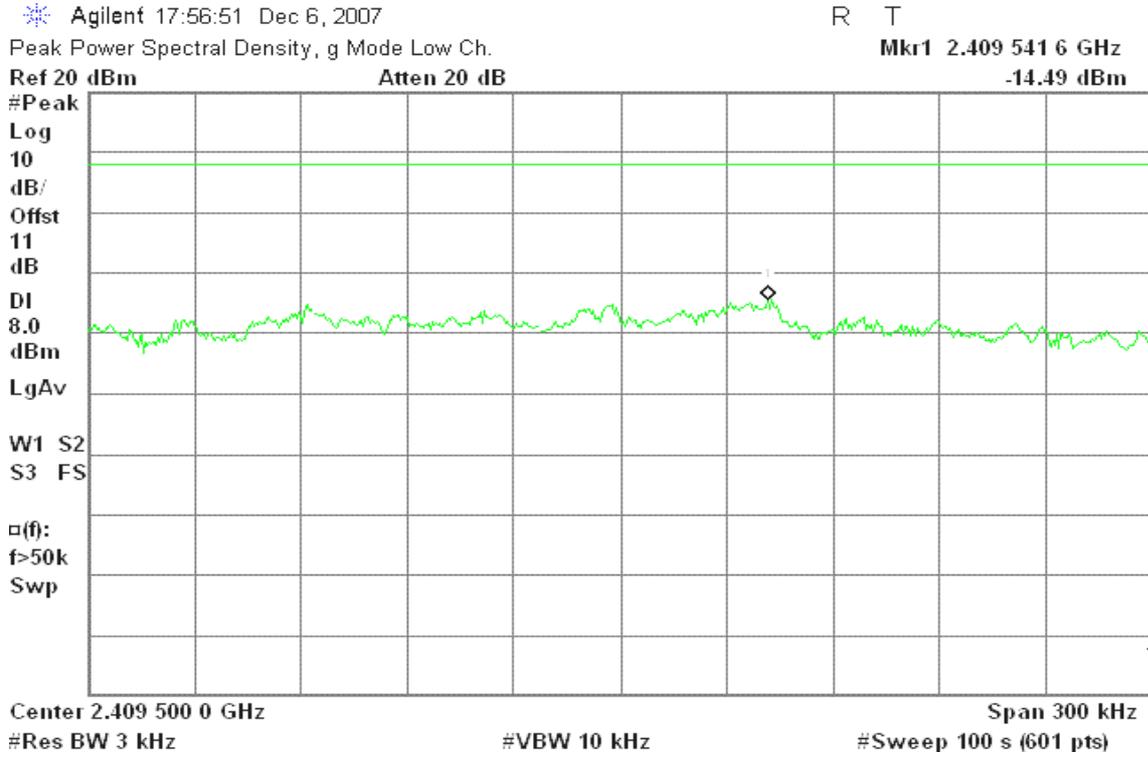
#VBW 10 kHz

#Sweep 100 s (601 pts)

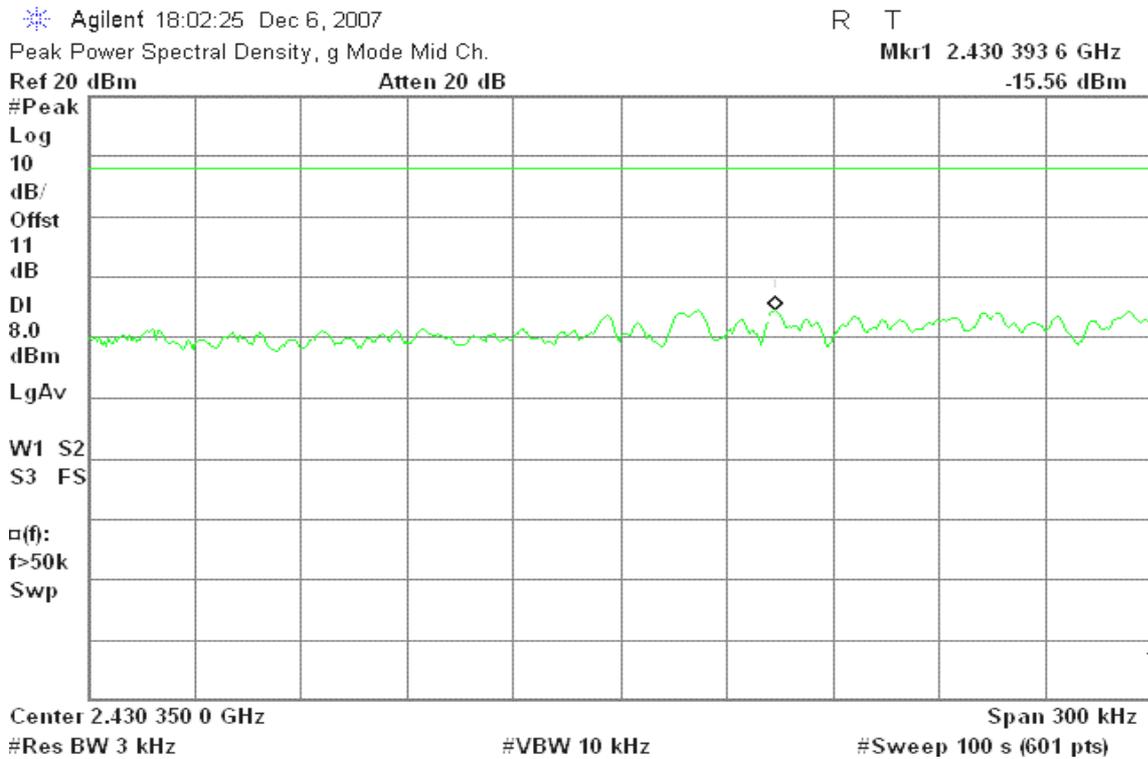


**draft 802.11n Standard-20 MHz Channel mode / Chain 0**

**PPSD (CH Low)**



**PPSD (CH Mid)**





### PPSD (CH High)

Agilent 18:16:28 Dec 6, 2007

R T

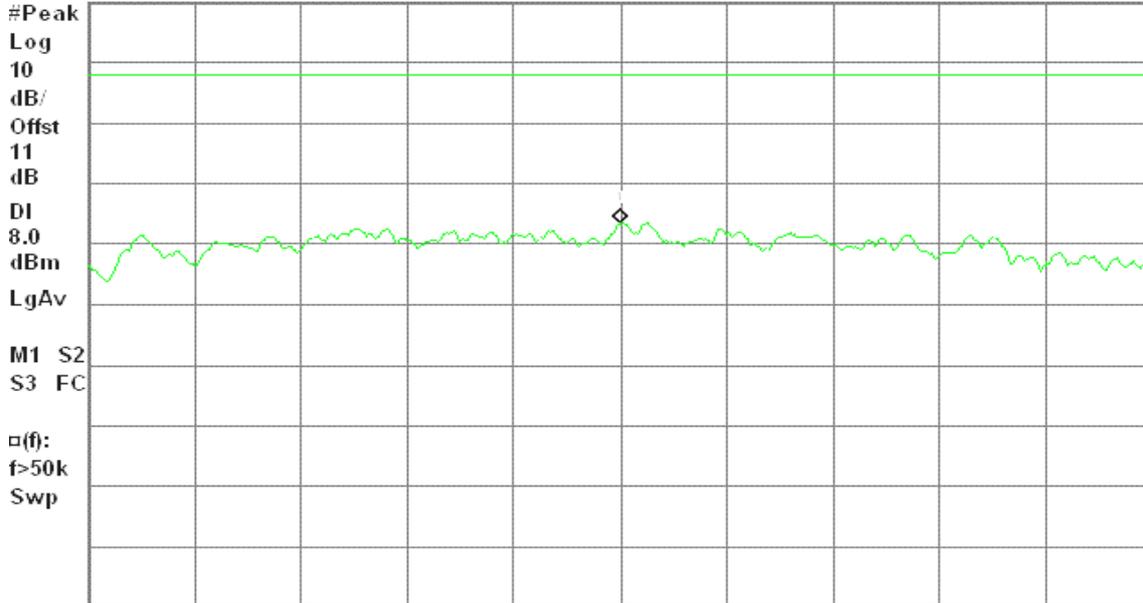
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.461 686 7 GHz

Ref 20 dBm

Atten 20 dB

-16.63 dBm



Center 2.461 686 7 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### draft 802.11n Standard-20 MHz Channel mode / Chain 1

### PPSD (CH Low)

Agilent 18:38:57 Dec 6, 2007

R T

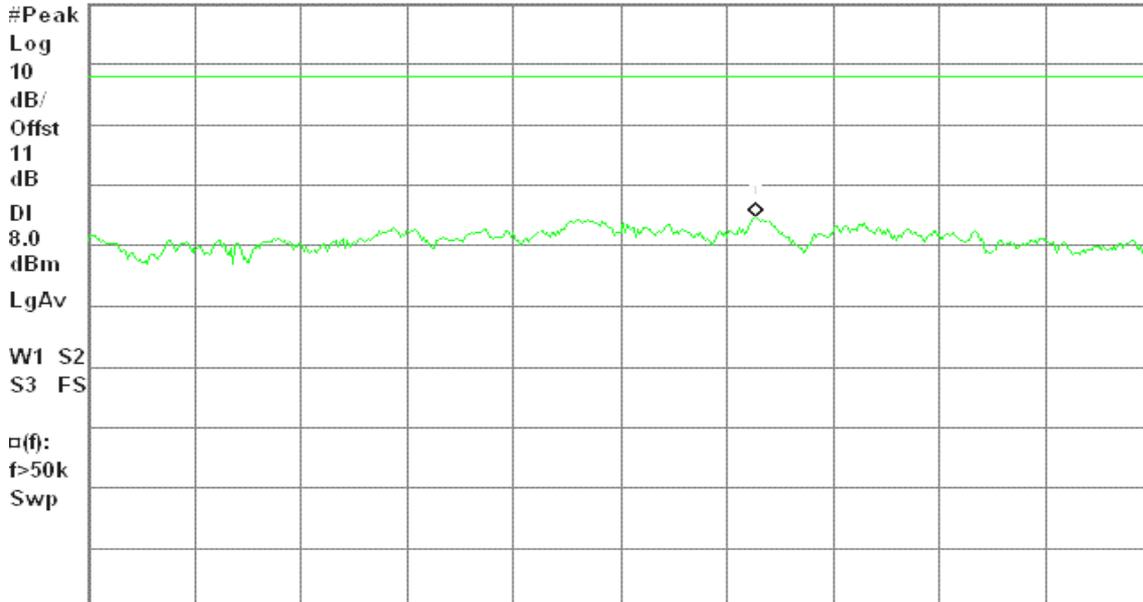
Peak Power Spectral Density, g Mode Low Ch.

Mkr1 2.417 338 2 GHz

Ref 20 dBm

Atten 20 dB

-15.29 dBm



Center 2.417 300 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



### PPSD (CH Mid)

Agilent 18:33:42 Dec 6, 2007

R T

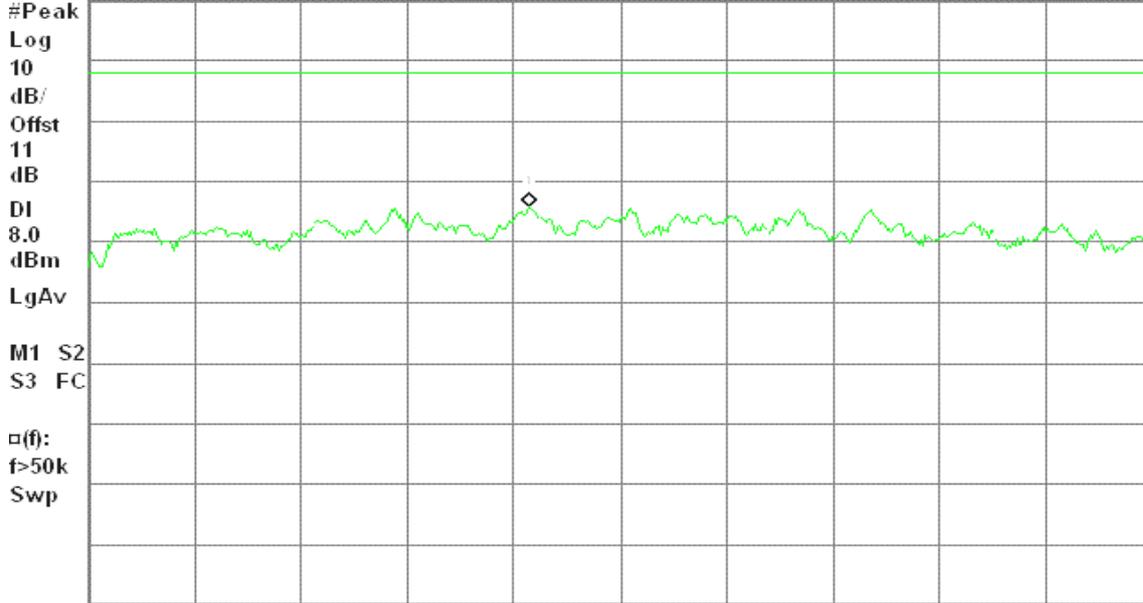
Peak Power Spectral Density, g Mode Mid Ch.

Mkr1 2.437 590 9 GHz

Ref 20 dBm

Atten 20 dB

-14.28 dBm



Center 2.437 616 5 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### PPSD (CH High)

Agilent 18:25:39 Dec 6, 2007

R T

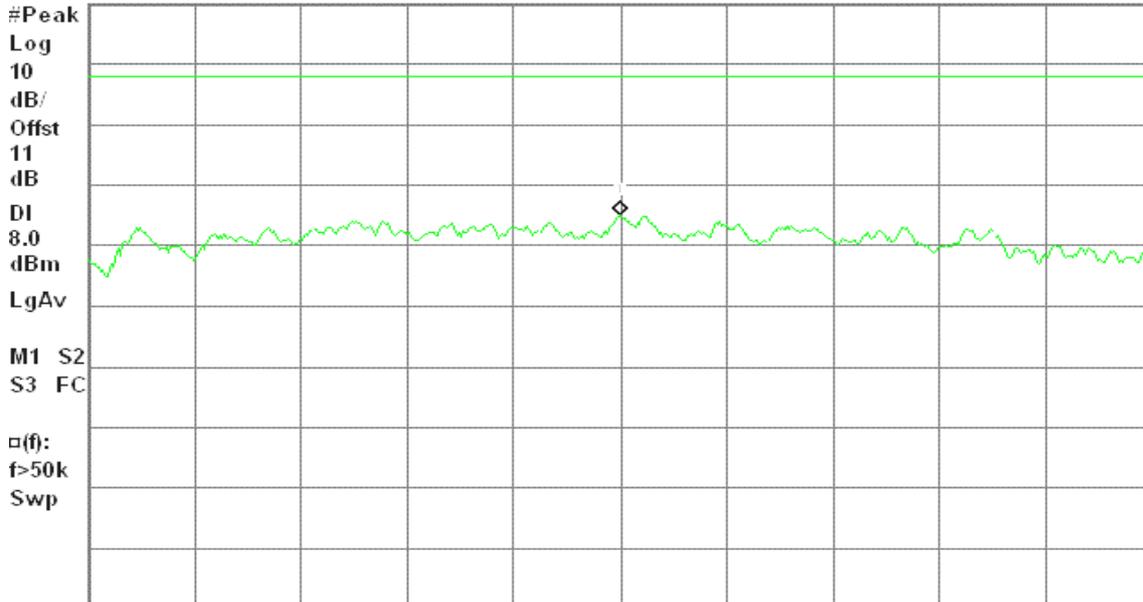
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.461 687 9 GHz

Ref 20 dBm

Atten 20 dB

-15.07 dBm



Center 2.461 688 4 GHz

Span 300 kHz

#Res BW 3 kHz

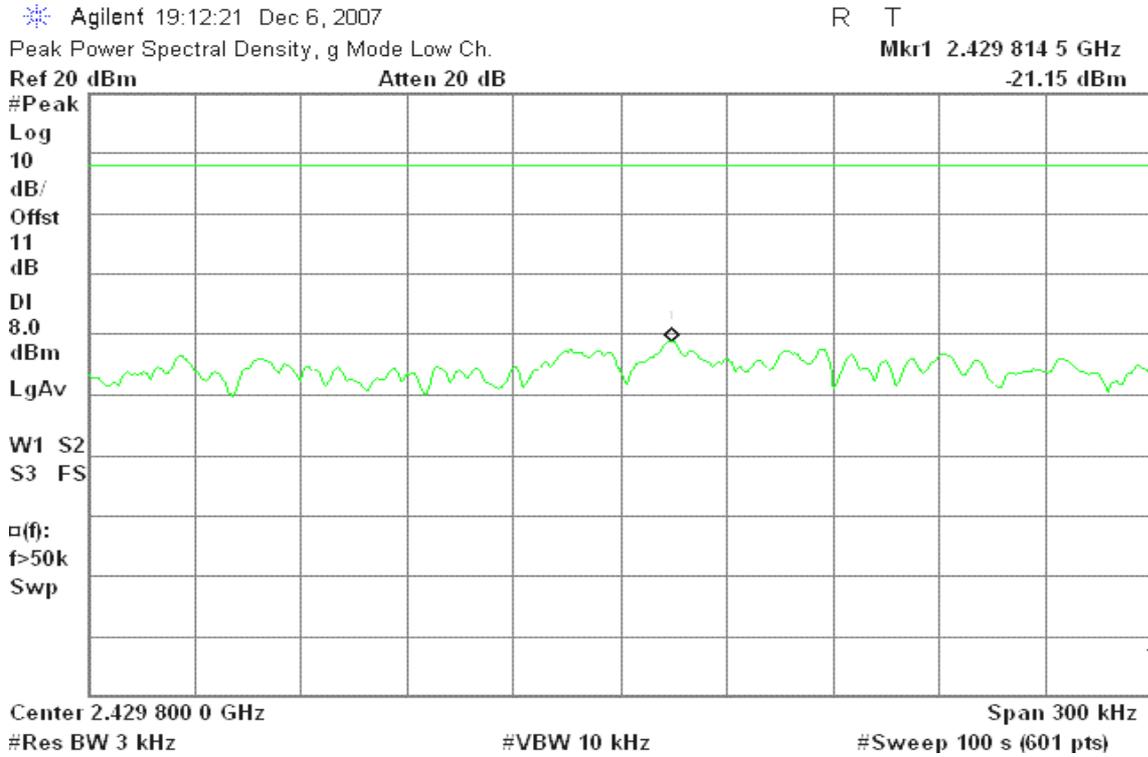
#VBW 10 kHz

#Sweep 100 s (601 pts)

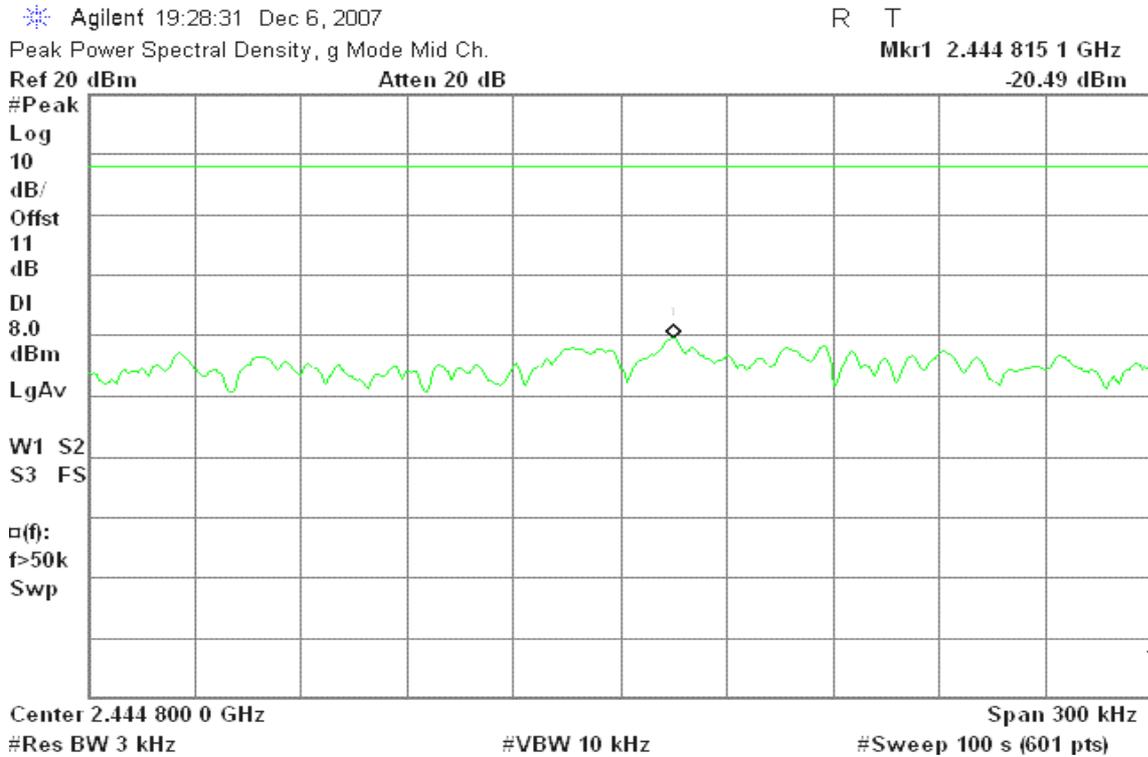


**draft 802.11n Wide-40 MHz Channel mode / Chain 0**

**PPSD (CH Low)**



**PPSD (CH Mid)**





### PPSD (CH High)

Agilent 19:49:49 Dec 6, 2007

R T

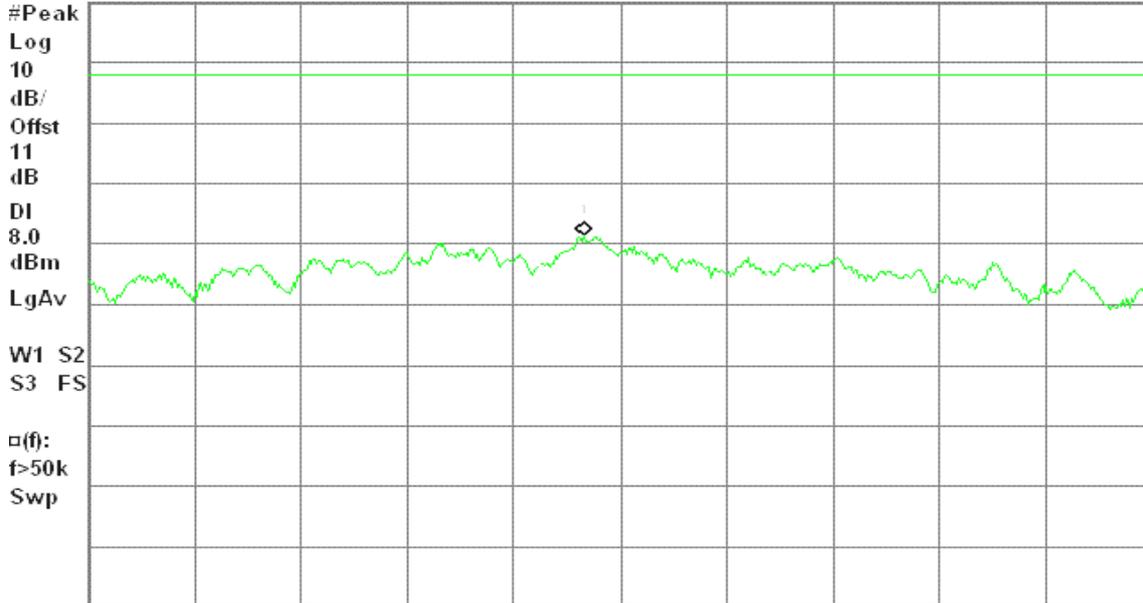
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.449 489 5 GHz

Ref 20 dBm

Atten 20 dB

-18.73 dBm



Center 2.449 500 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### draft 802.11n Wide-40 MHz Channel mode / Chain 1

### PPSD (CH Low)

Agilent 19:17:03 Dec 6, 2007

R T

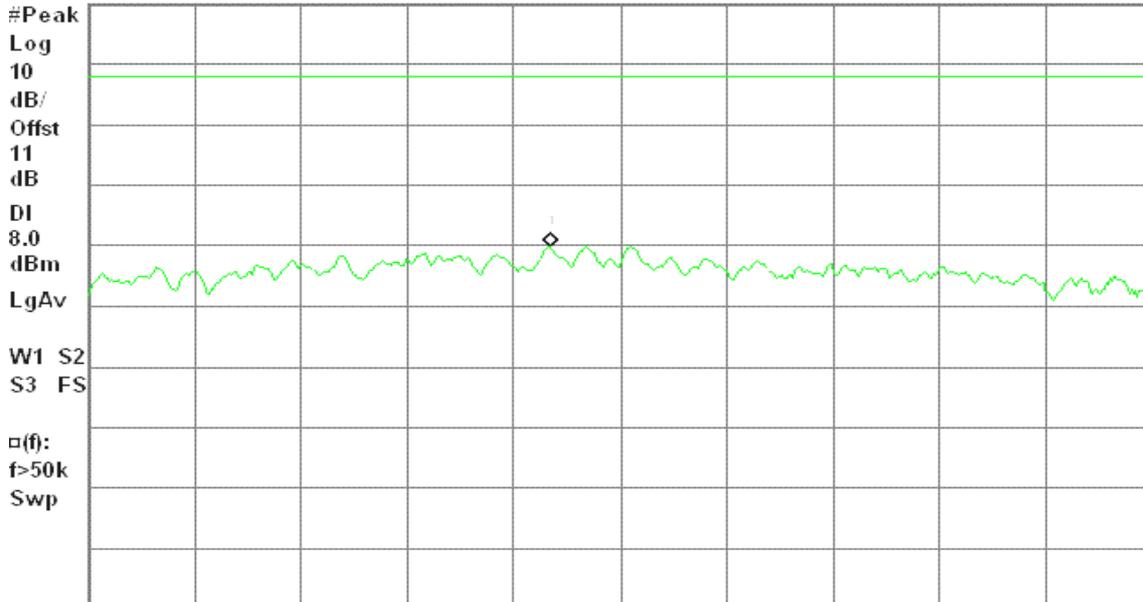
Peak Power Spectral Density, g Mode Low Ch.

Mkr1 2.431 680 4 GHz

Ref 20 dBm

Atten 20 dB

-20.14 dBm



Center 2.431 700 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



### PPSD (CH Mid)

Agilent 19:33:19 Dec 6, 2007

R T

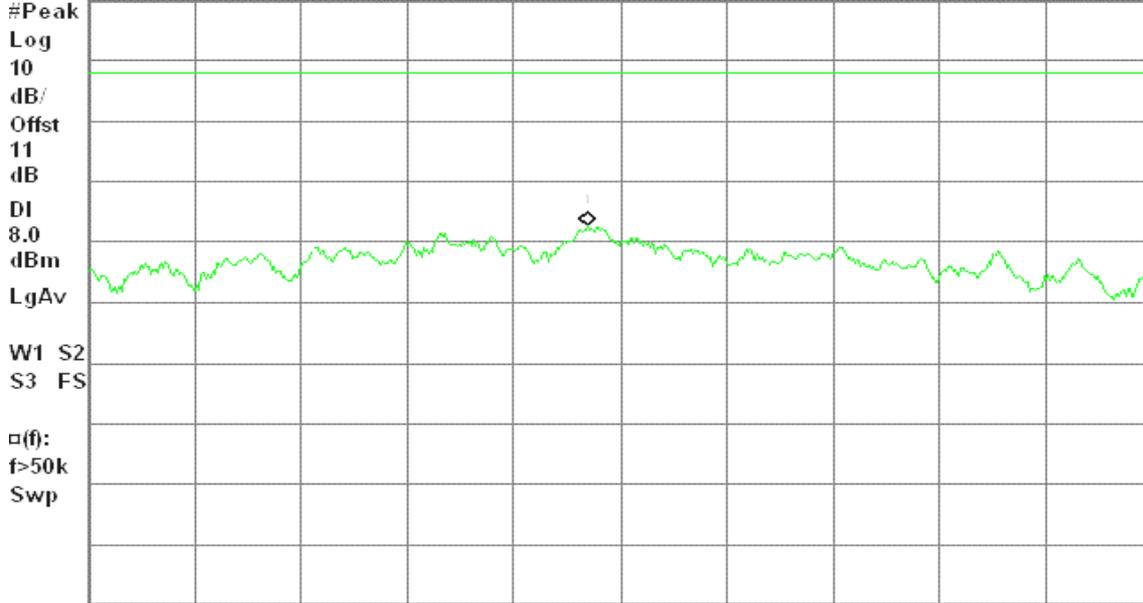
Peak Power Spectral Density, g Mode Mid Ch.

Mkr1 2.434 490 5 GHz

Ref 20 dBm

Atten 20 dB

-17.29 dBm



Center 2.434 500 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### PPSD (CH High)

Agilent 19:45:04 Dec 6, 2007

R T

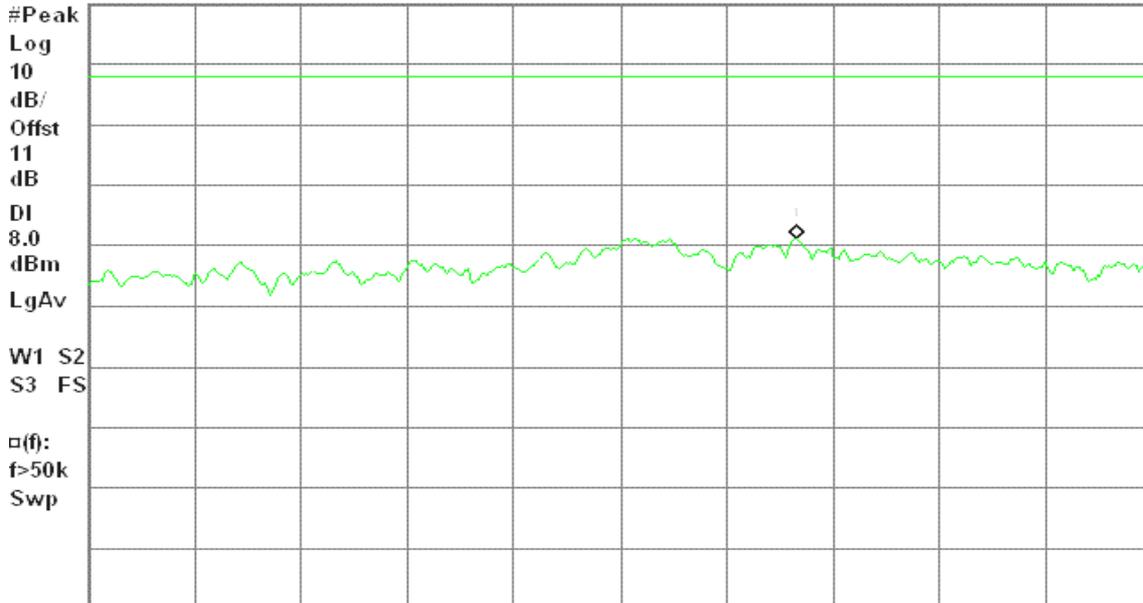
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.444 499 8 GHz

Ref 20 dBm

Atten 20 dB

-18.83 dBm



Center 2.444 450 0 GHz

Span 300 kHz

#Res BW 3 kHz

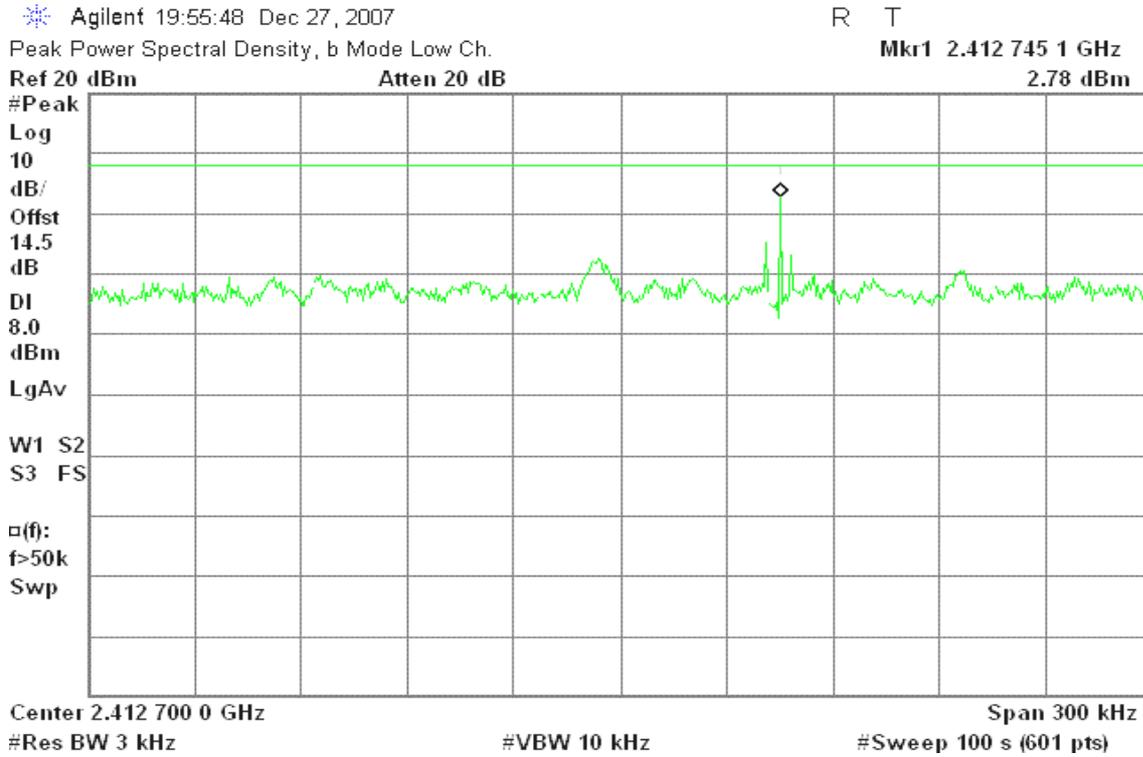
#VBW 10 kHz

#Sweep 100 s (601 pts)

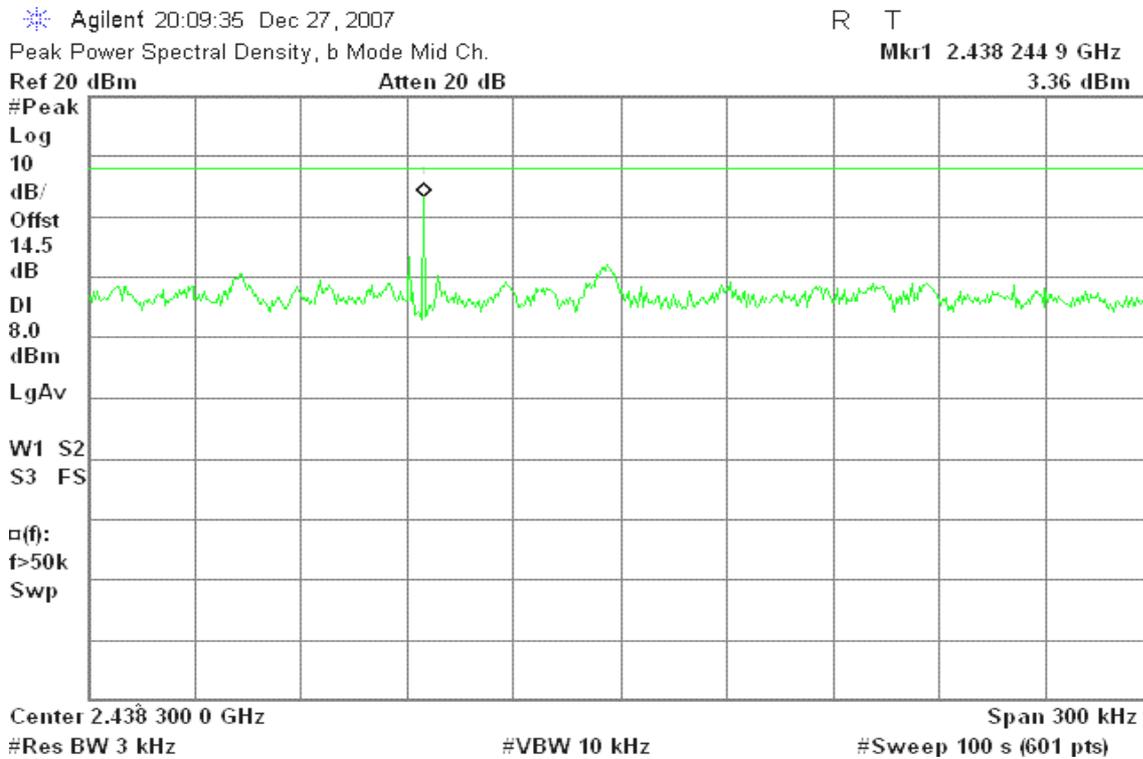


### IEEE 802.11b mode with combiner

#### PPSD (CH Low)



#### PPSD (CH Mid)

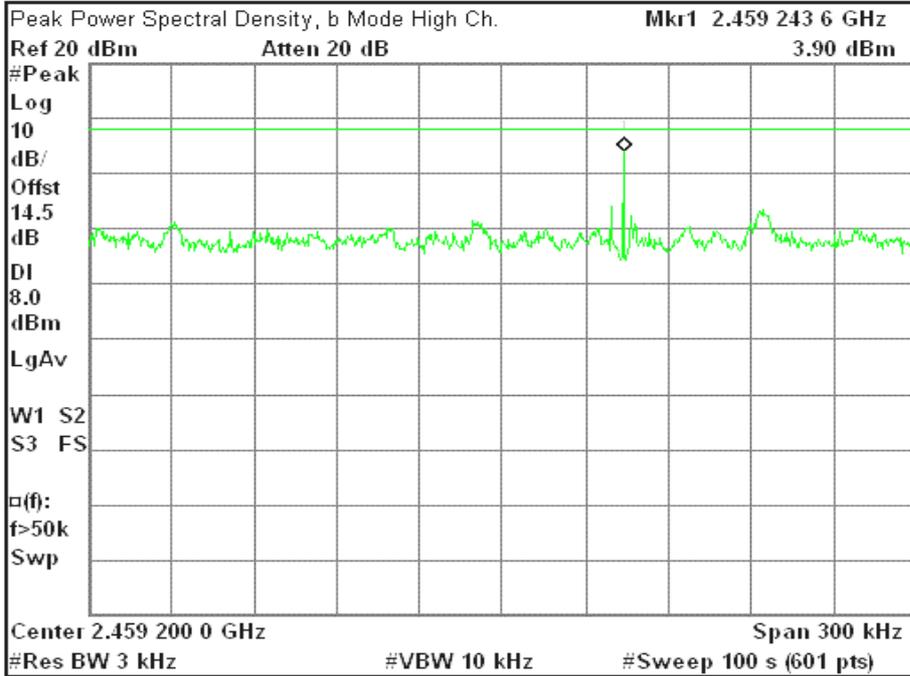




### PPSD (CH High)

Agilent 20:22:02 Dec 27, 2007

R T



Freq/Channel
Center Freq 2.45920000 GHz
Start Freq 2.45905000 GHz
Stop Freq 2.45935000 GHz
CF Step 30.0000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

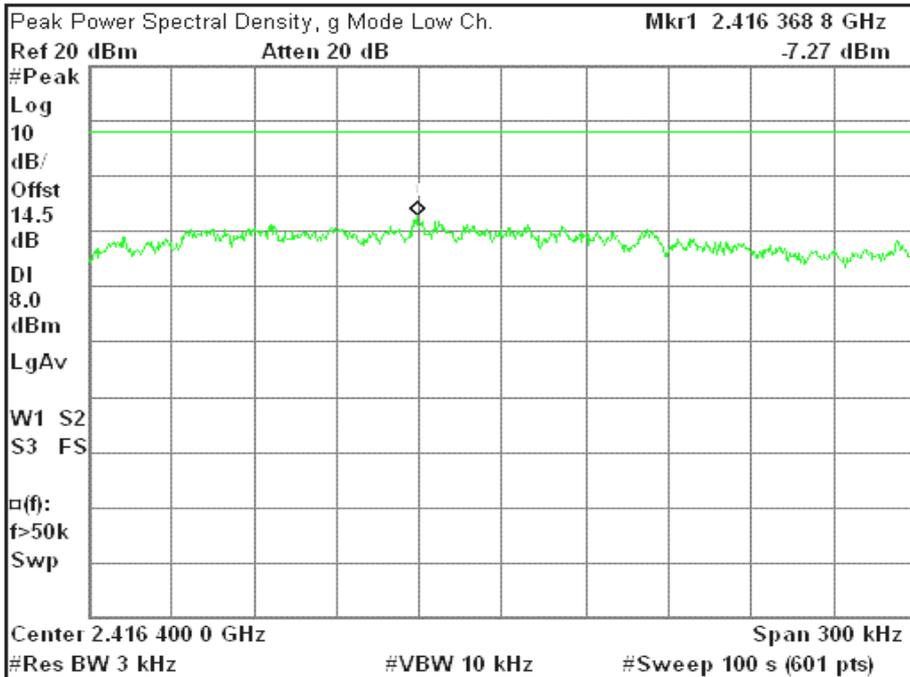
Copyright 2000-2006 Agilent Technologies

### IEEE 802.11g mode with combiner

### PPSD (CH Low)

Agilent 20:37:02 Dec 27, 2007

R T



Freq/Channel
Center Freq 2.41640000 GHz
Start Freq 2.41625000 GHz
Stop Freq 2.41655000 GHz
CF Step 30.0000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

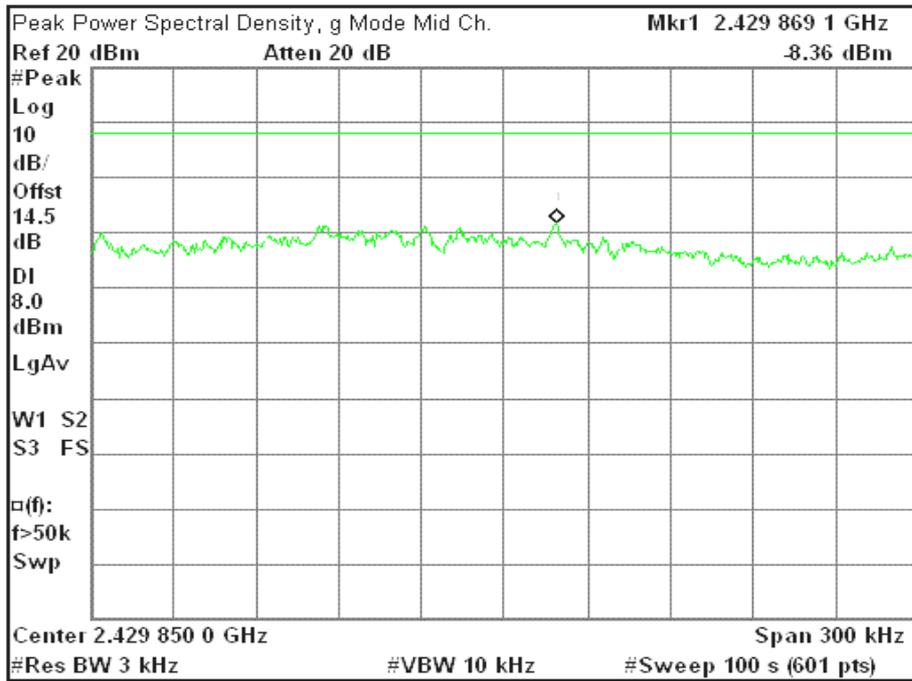
Copyright 2000-2006 Agilent Technologies



### PPSD (CH Mid)

Agilent 20:32:19 Dec 27, 2007

R T



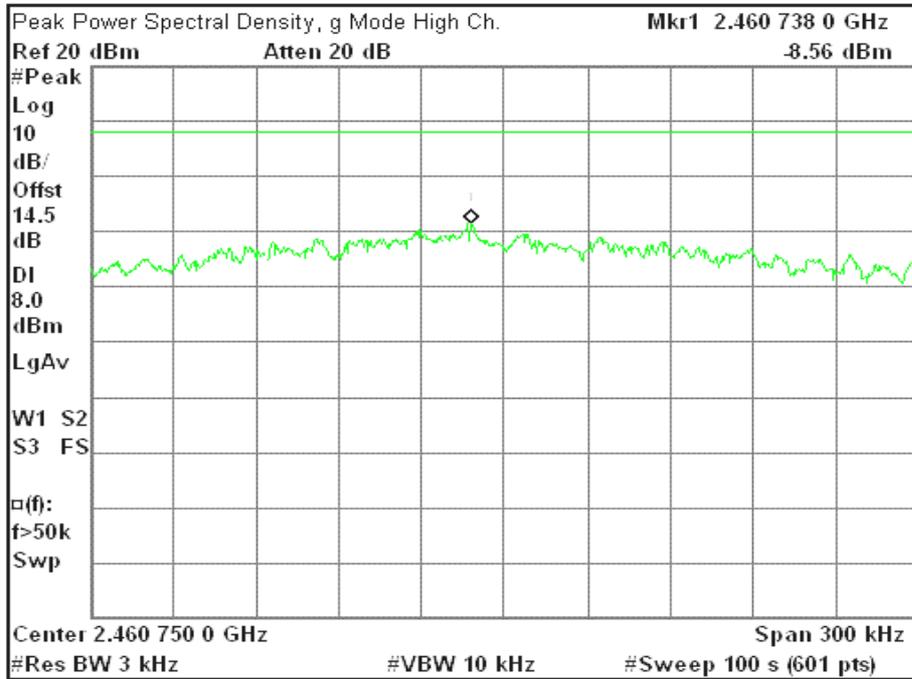
Freq/Channel	
Center Freq	2.42985000 GHz
Start Freq	2.42970000 GHz
Stop Freq	2.43000000 GHz
CF Step	30.0000000 kHz
Auto	Man
Freq Offset	0.00000000 Hz
Signal Track	Off
On	Off

Copyright 2000-2006 Agilent Technologies

### PPSD (CH High)

Agilent 20:27:29 Dec 27, 2007

R T



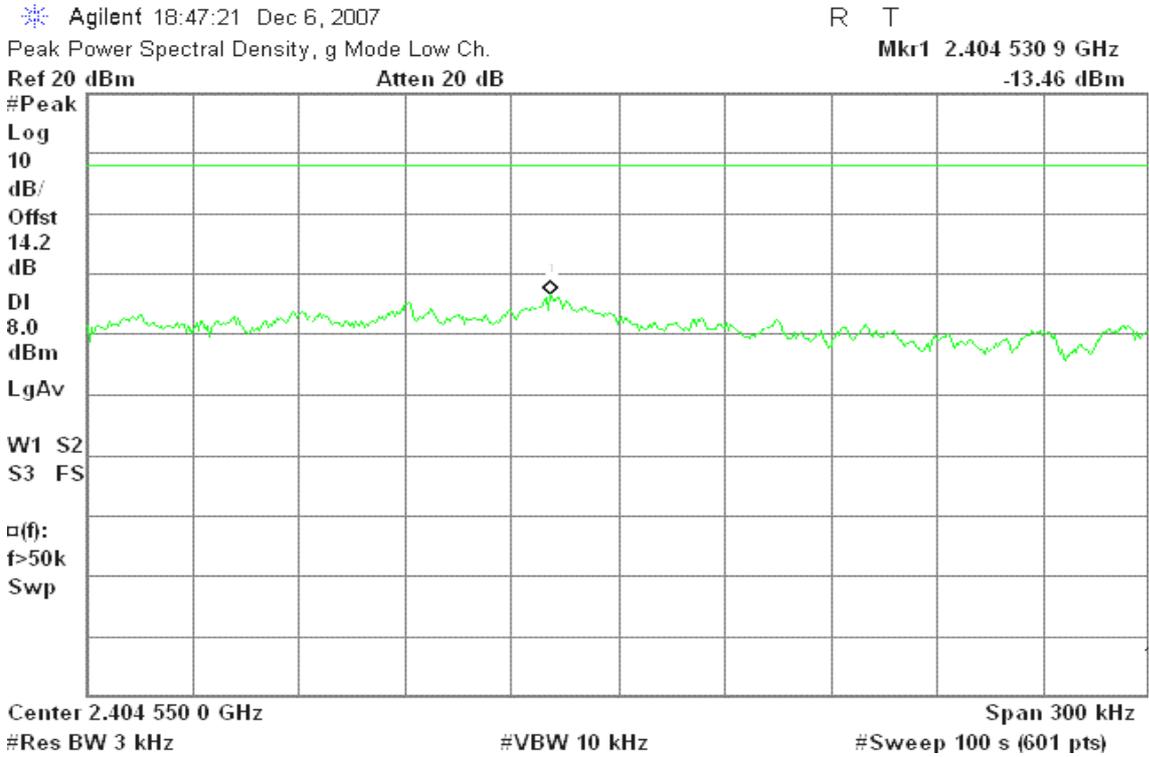
Freq/Channel	
Center Freq	2.46075000 GHz
Start Freq	2.46060000 GHz
Stop Freq	2.46090000 GHz
CF Step	30.0000000 kHz
Auto	Man
Freq Offset	0.00000000 Hz
Signal Track	Off
On	Off

Copyright 2000-2006 Agilent Technologies

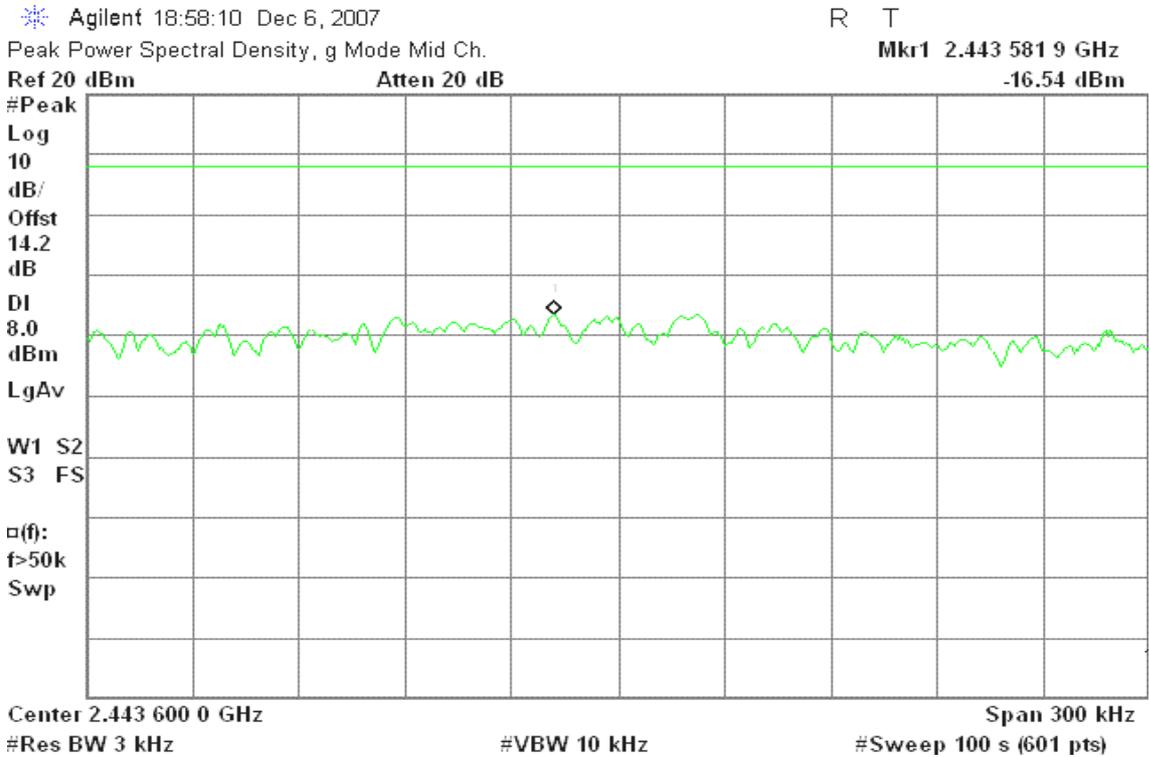


### draft 802.11n Standard-20 MHz Channel mode with combiner

#### PPSD (CH Low)



#### PPSD (CH Mid)





### PPSD (CH High)

Agilent 19:03:28 Dec 6, 2007

R T

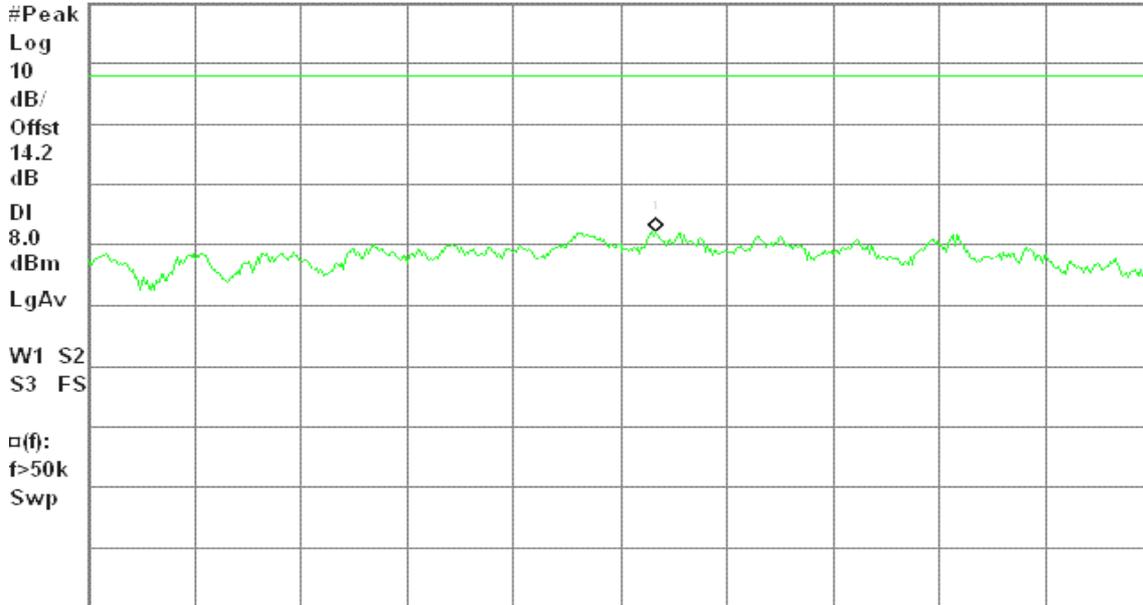
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.456 360 0 GHz

Ref 20 dBm

Atten 20 dB

-17.85 dBm



Center 2.456 350 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### draft 802.11n Wide-40 MHz Channel mode with combiner

### PPSD (CH Low)

Agilent 08:39:41 Dec 11, 2007

R T

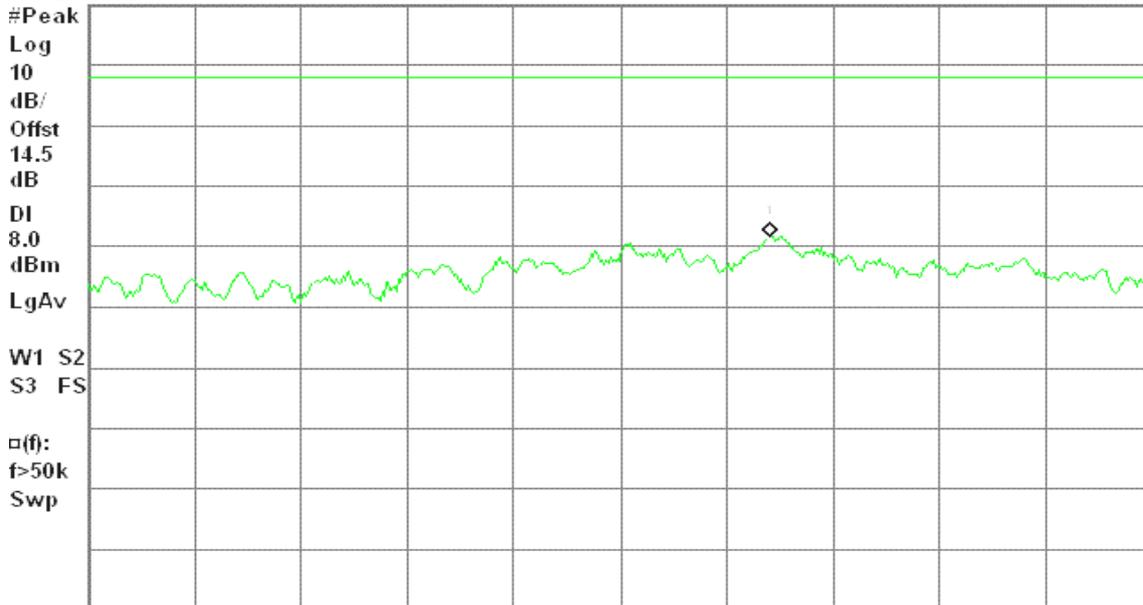
Peak Power Spectral Density, g Mode Low Ch.

Mkr1 2.419 492 2 GHz

Ref 20 dBm

Atten 20 dB

-18.28 dBm



Center 2.419 450 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



### PPSD (CH Mid)

Agilent 08:45:36 Dec 11, 2007

R T

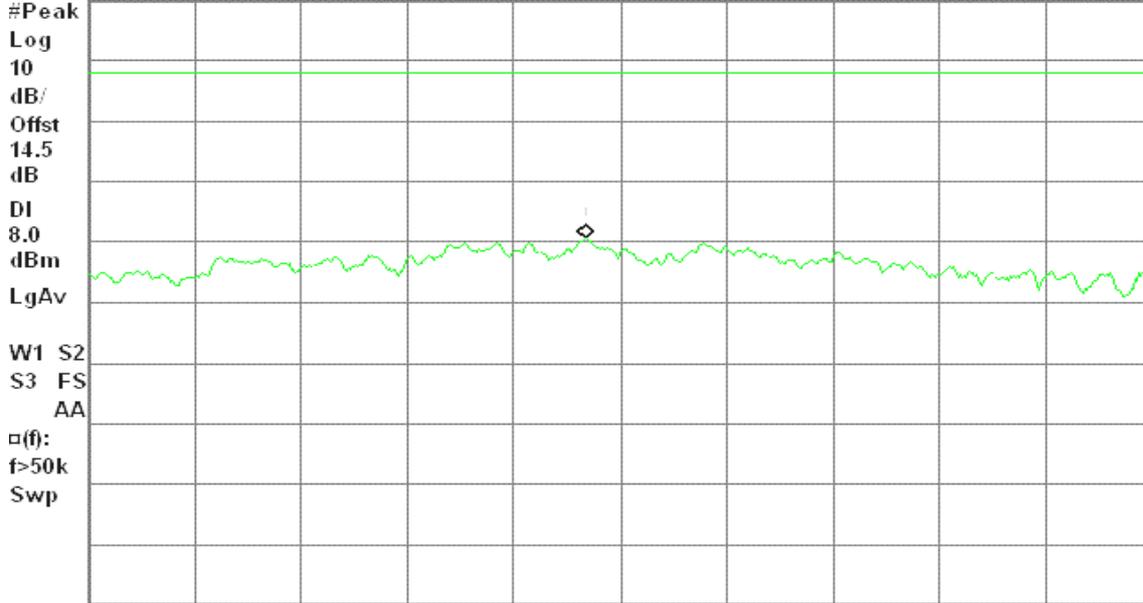
Peak Power Spectral Density, g Mode Mid Ch.

Mkr1 2.421 990 0 GHz

Ref 20 dBm

Atten 20 dB

-19.41 dBm



Center 2.422 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### PPSD (CH High)

Agilent 08:51:33 Dec 11, 2007

R T

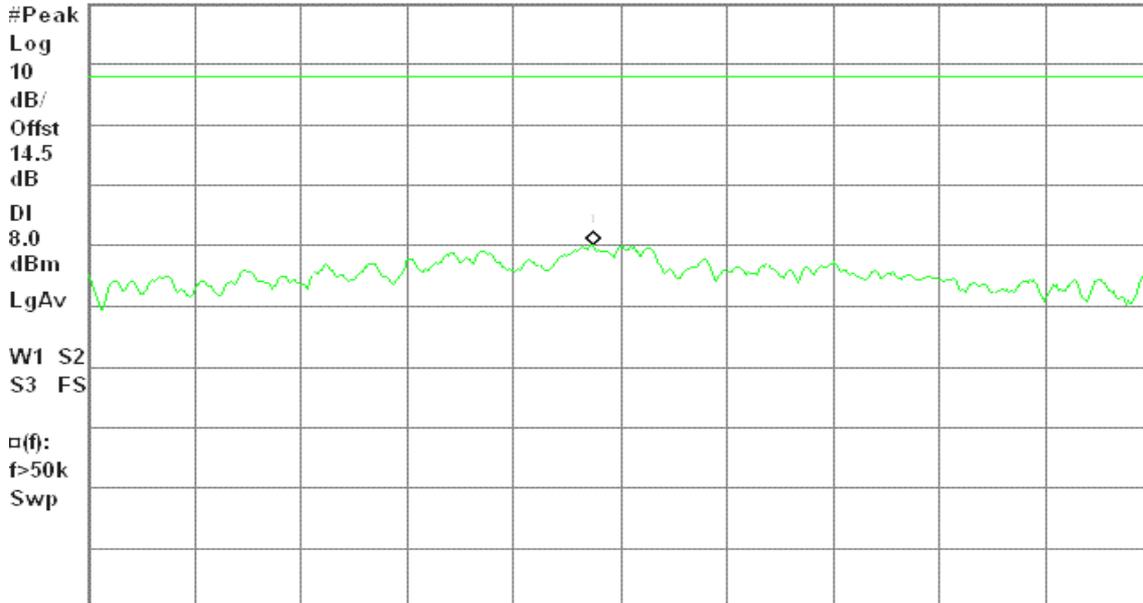
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.455 742 0 GHz

Ref 20 dBm

Atten 20 dB

-19.92 dBm



Center 2.455 750 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

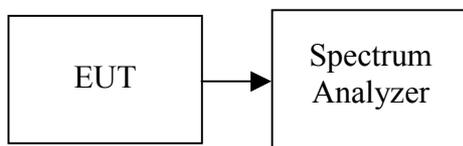
## 7.6 SPURIOUS EMISSIONS

### 7.6.1 Conducted Measurement

#### LIMIT

According to §15.247(d), in any 100 kHz 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 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. 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 Section 15.205(c)).

#### Test Configuration



#### TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

#### TEST RESULTS

*No non-compliance noted*



### Test Plot

### IEEE 802.11b mode / Chain 0

### CH Low

Agilent 18:17:52 Dec 27, 2007

R T

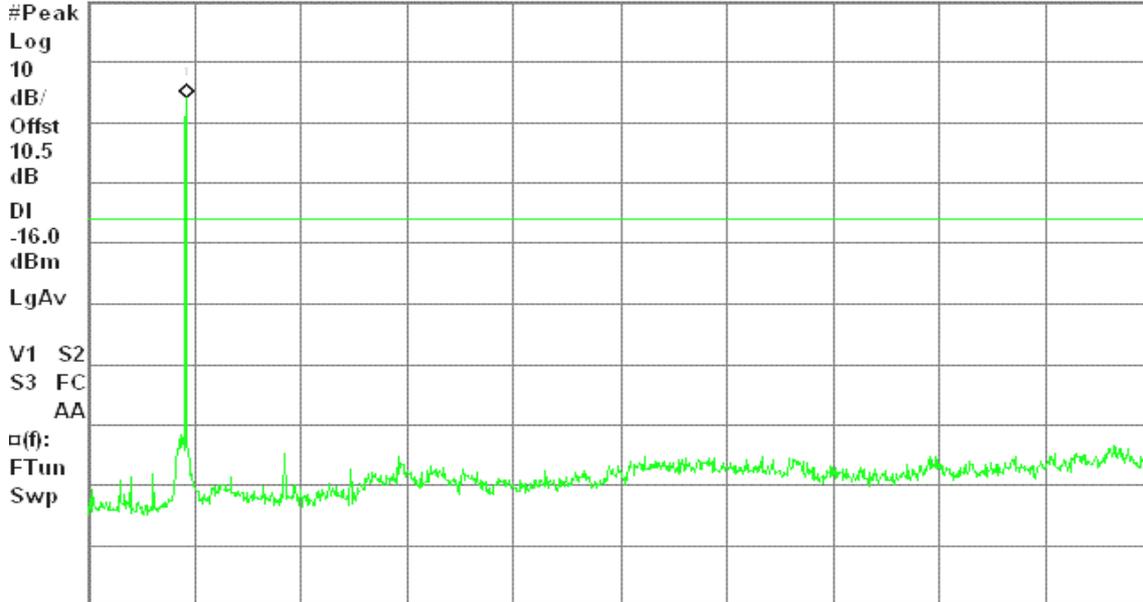
Spurious, b Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

4.01 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### CH Mid

Agilent 18:25:05 Dec 27, 2007

R T

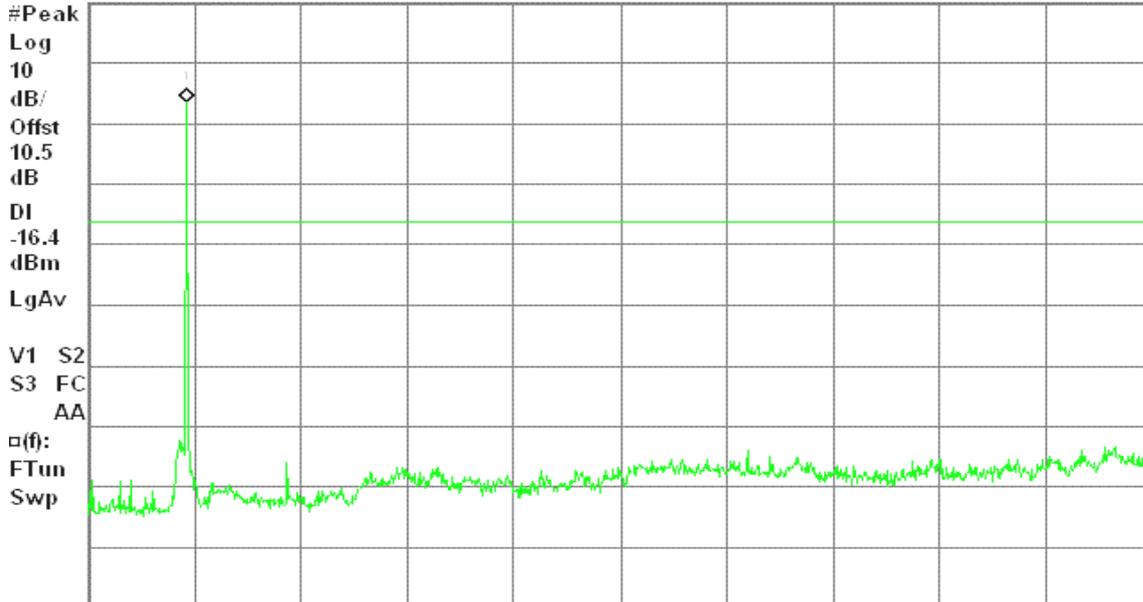
Spurious, b Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

3.63 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH High

Agilent 18:30:37 Dec 27, 2007

R T

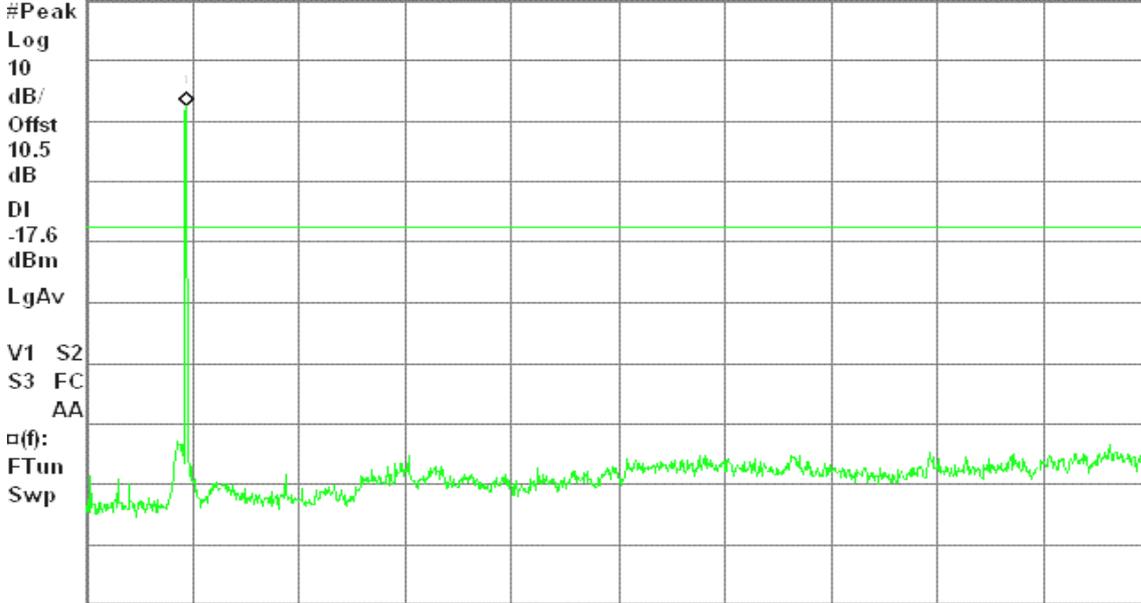
Spurious, b Mode High Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

2.42 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### IEEE 802.11b mode / Chain 1

### CH Low

Agilent 18:49:07 Dec 27, 2007

R T

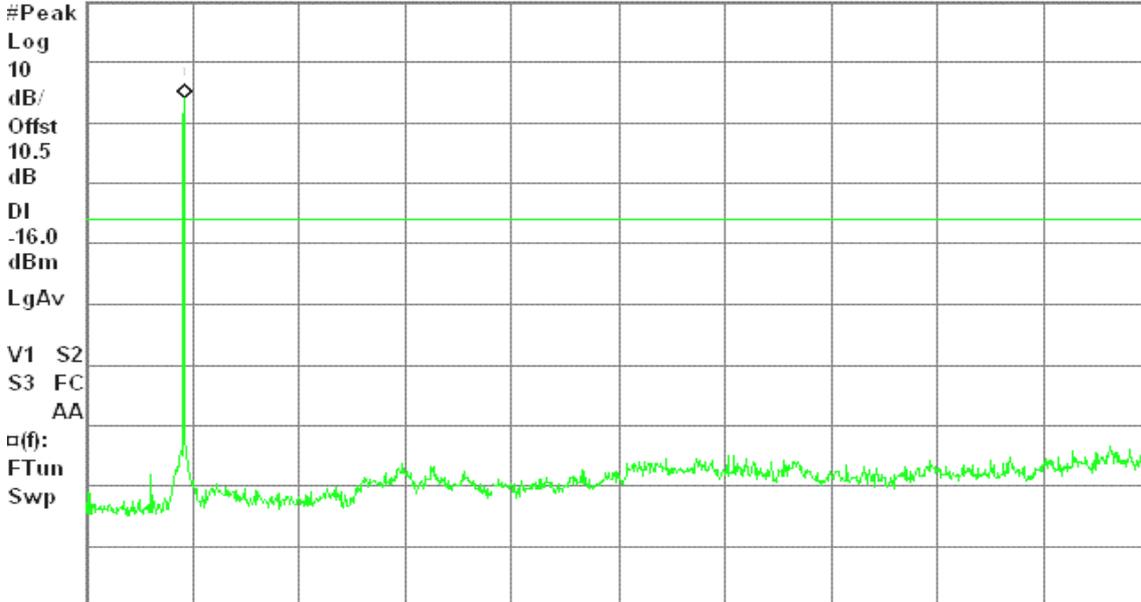
Spurious, b Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

3.99 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH Mid

Agilent 18:43:56 Dec 27, 2007

R T

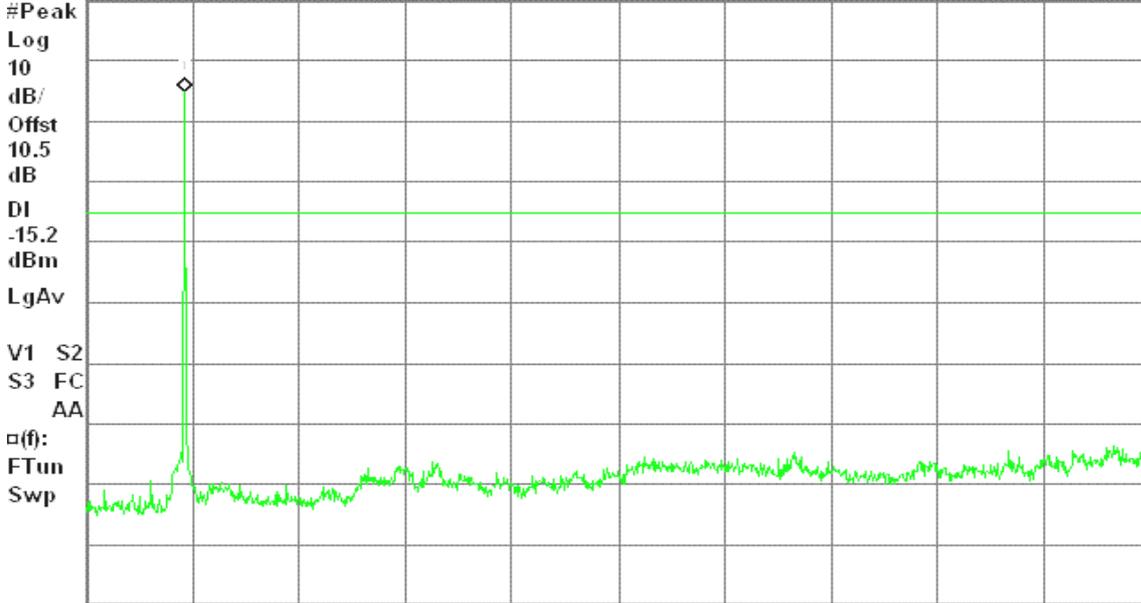
Spurious, b Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

4.82 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### CH High

Agilent 18:36:30 Dec 27, 2007

R T

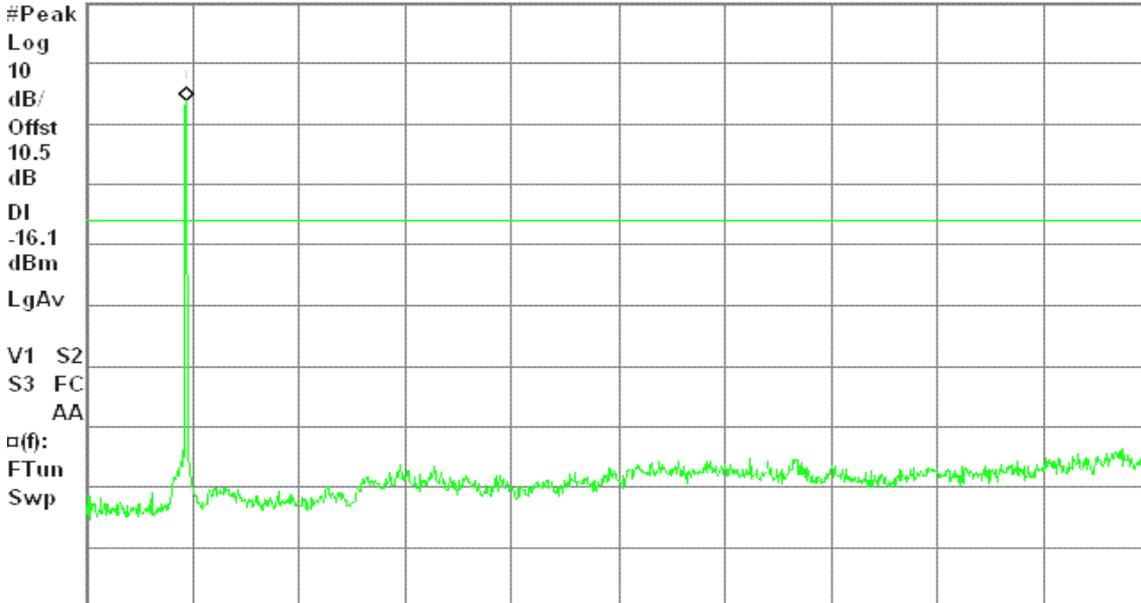
Spurious, b Mode High Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

3.88 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### IEEE 802.11g mode / Chain 0

#### CH Low

Agilent 19:19:52 Dec 27, 2007

R T

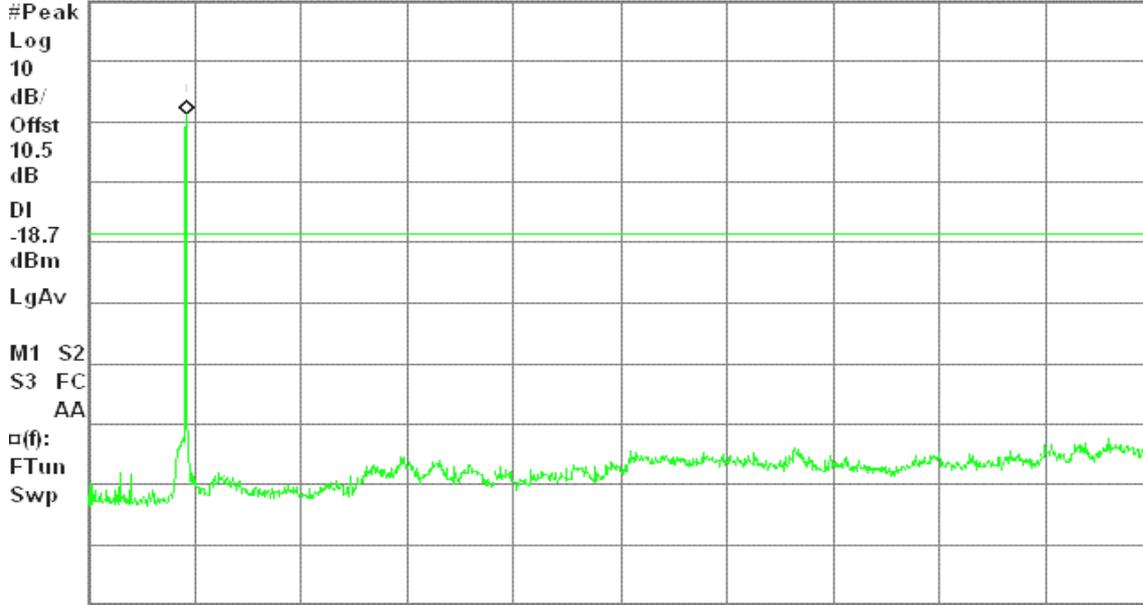
Spurious, g Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

1.33 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

#### CH Mid

Agilent 19:25:49 Dec 27, 2007

R T

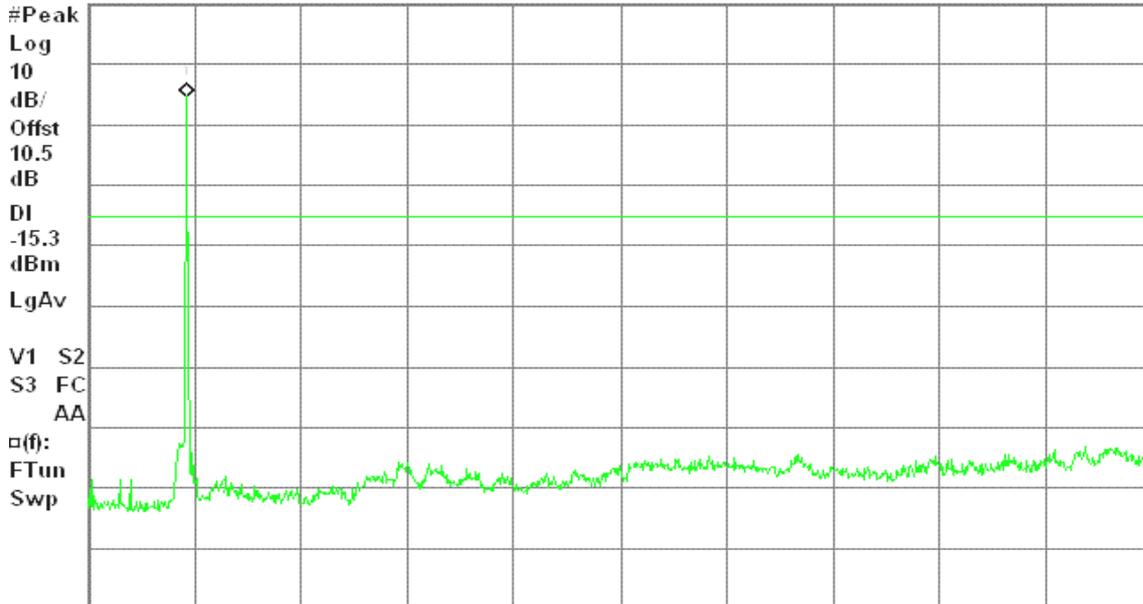
Spurious, g Mode Mid Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

4.71 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH High

Agilent 19:31:35 Dec 27, 2007

R T

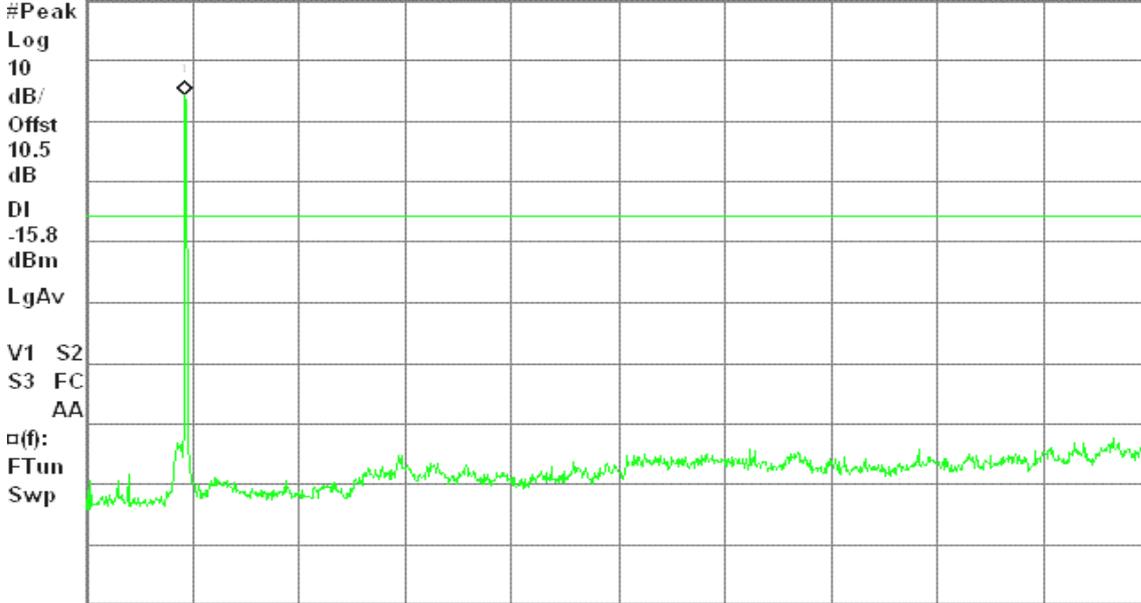
Spurious, g Mode High Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

4.21 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### IEEE 802.11g mode / Chain 1

### CH Low

Agilent 18:56:24 Dec 27, 2007

R T

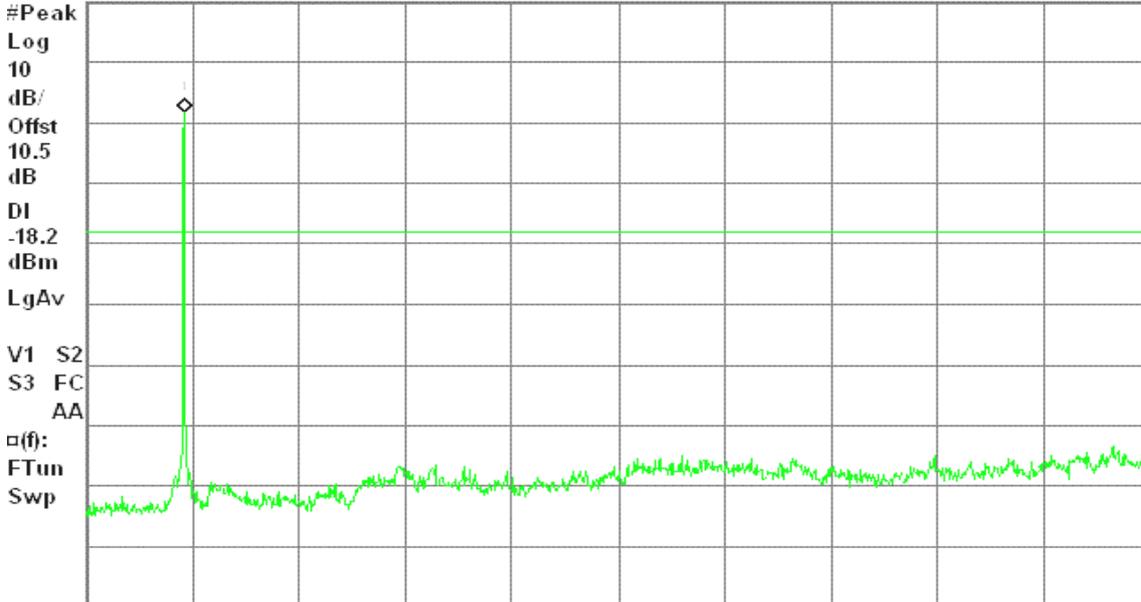
Spurious, g Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

1.80 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH Mid

Agilent 19:03:13 Dec 27, 2007

R T

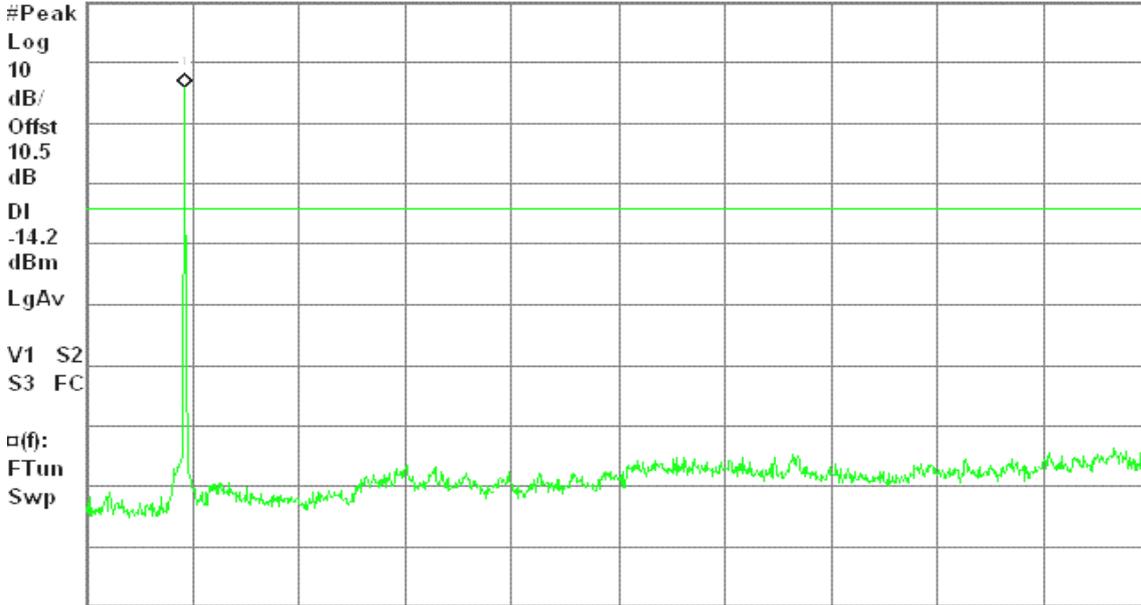
Spurious, g Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

5.82 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### CH High

Agilent 19:09:54 Dec 27, 2007

R T

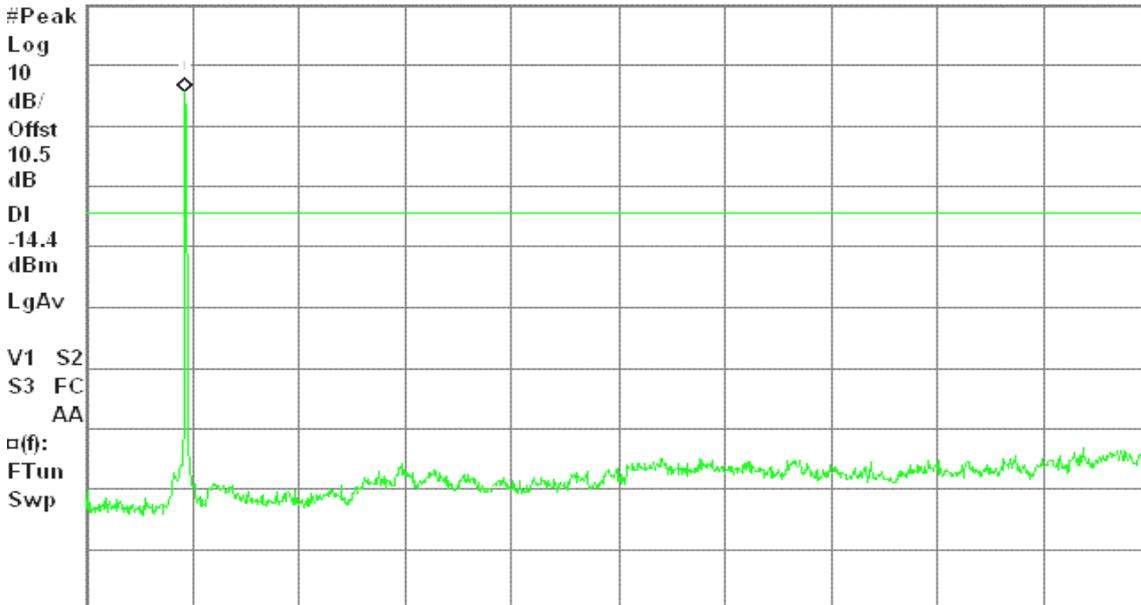
Spurious, g Mode High Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

5.63 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### draft 802.11n Standard-20 MHz Channel mode / Chain 0

#### CH Low

Agilent 17:57:30 Dec 6, 2007

R T

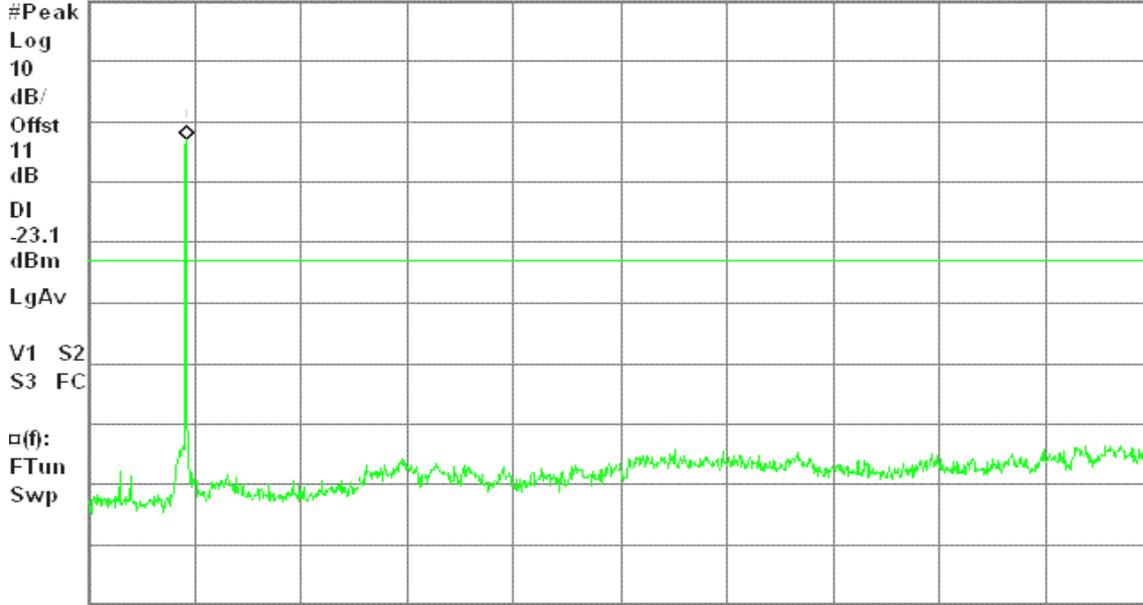
Spurious, g Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

-3.09 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

#### CH Mid

Agilent 18:03:20 Dec 6, 2007

R T

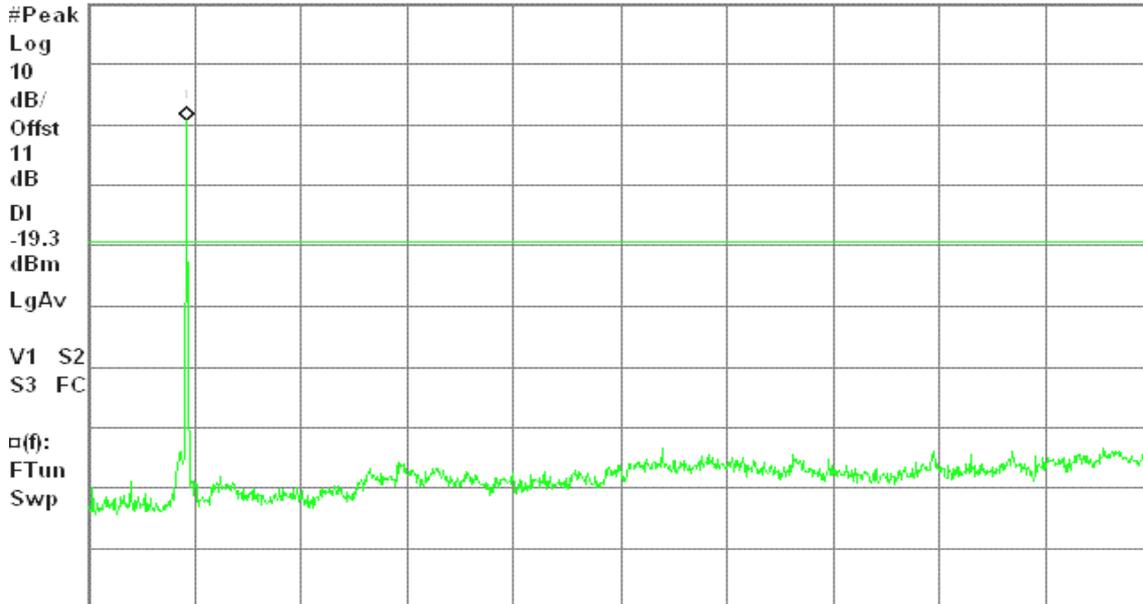
Spurious, g Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

0.66 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH High

Agilent 18:17:26 Dec 6, 2007

R T

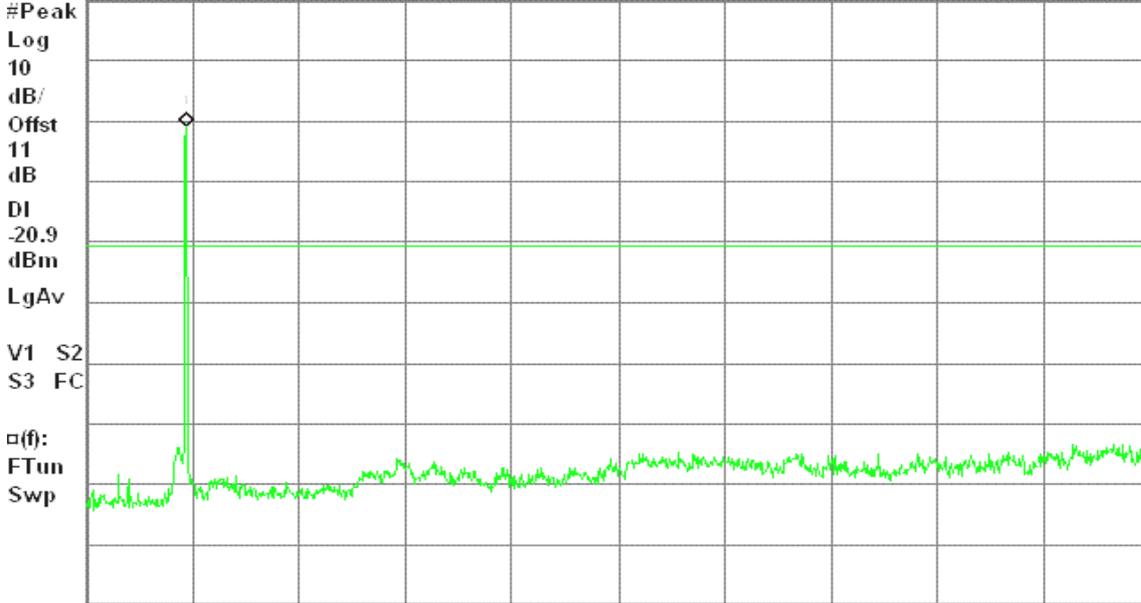
Spurious, g Mode High Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

-0.86 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### draft 802.11n Standard-20 MHz Channel mode / Chain 1

### CH Low

Agilent 18:39:44 Dec 6, 2007

R T

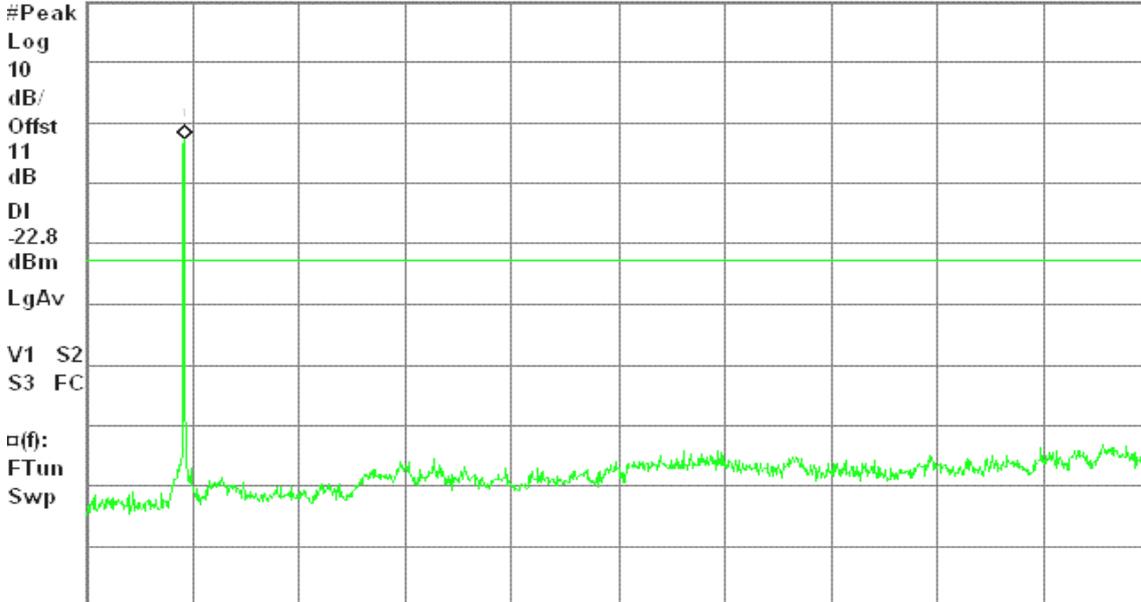
Spurious, g Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

-2.81 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH Mid

Agilent 18:34:36 Dec 6, 2007

R T

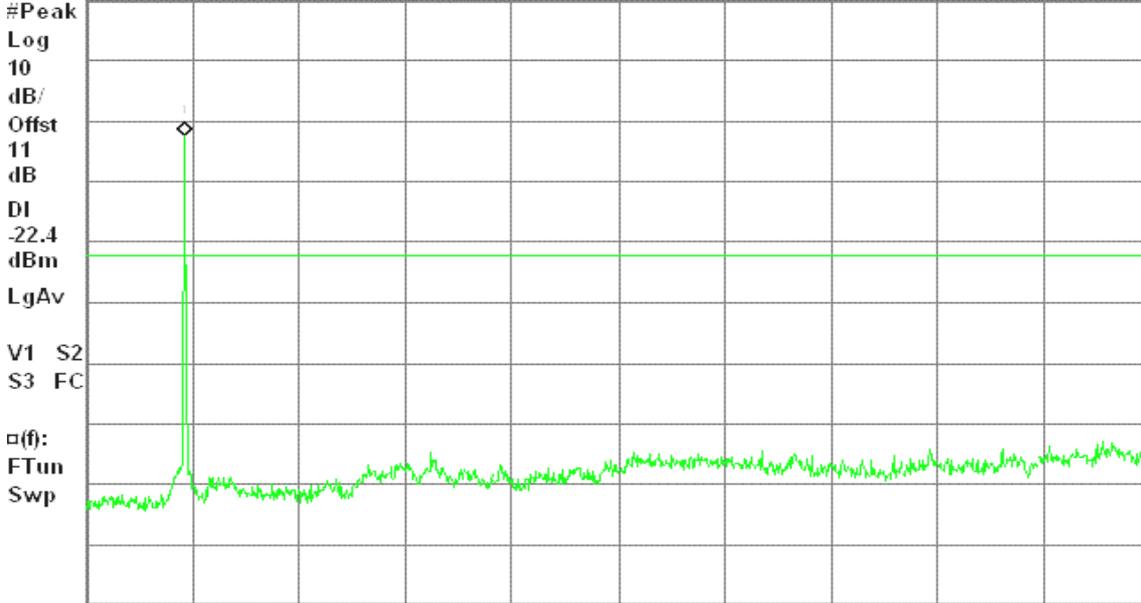
Spurious, g Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-2.42 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### CH High

Agilent 18:26:53 Dec 6, 2007

R T

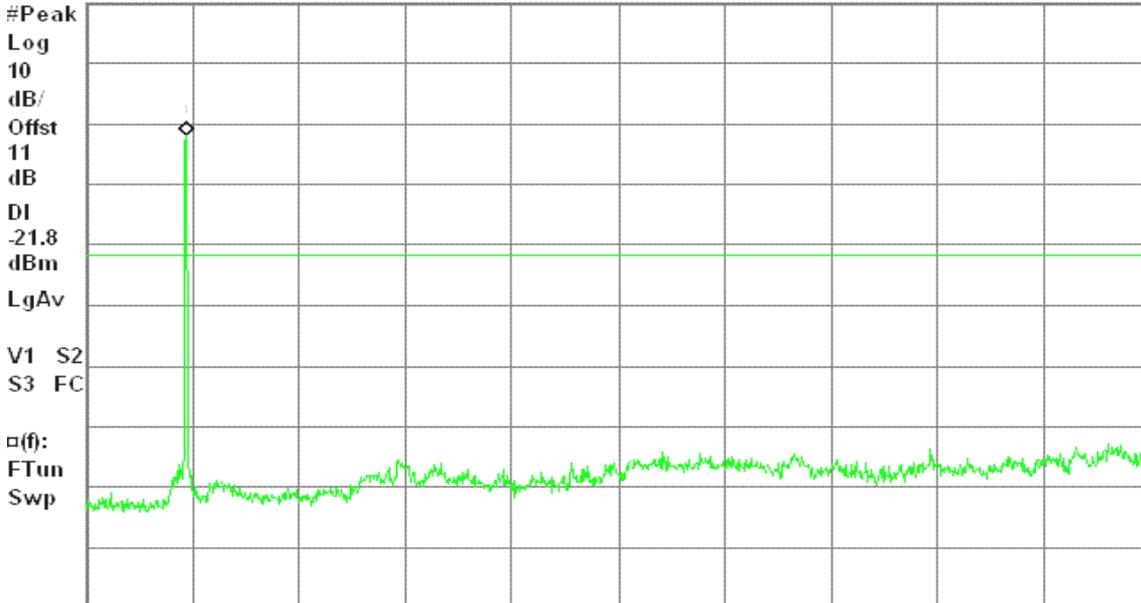
Spurious, g Mode High Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

-1.84 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



**draft 802.11n Wide-40 MHz Channel mode / Chain 0**

**CH Low**

Agilent 19:12:59 Dec 6, 2007

R T

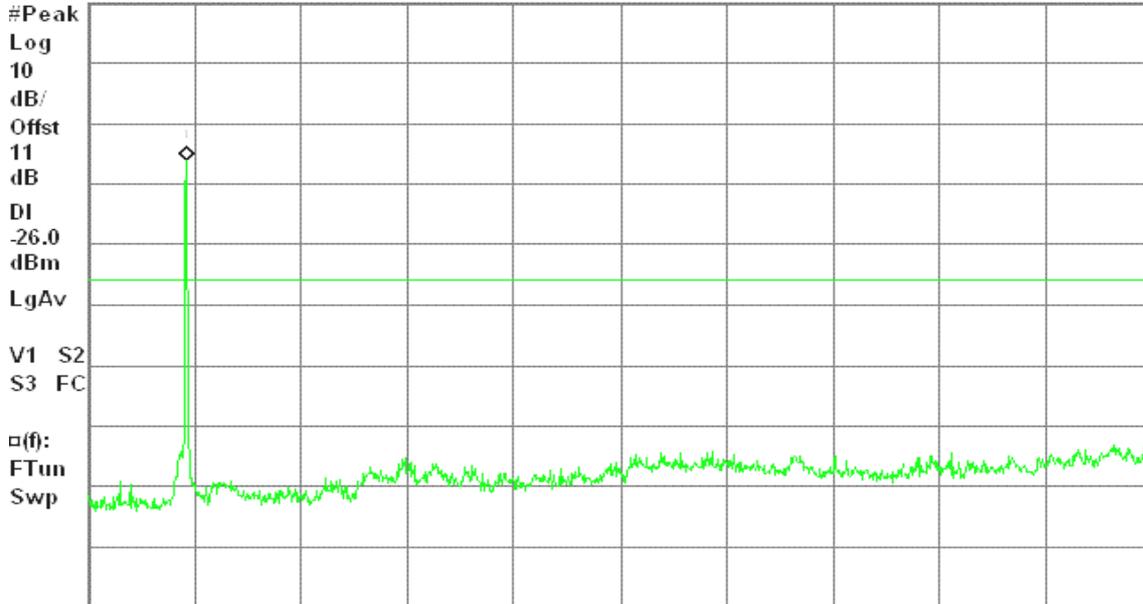
Spurious, g Mode Low Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-6.01 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

**CH Mid**

Agilent 19:29:12 Dec 6, 2007

R T

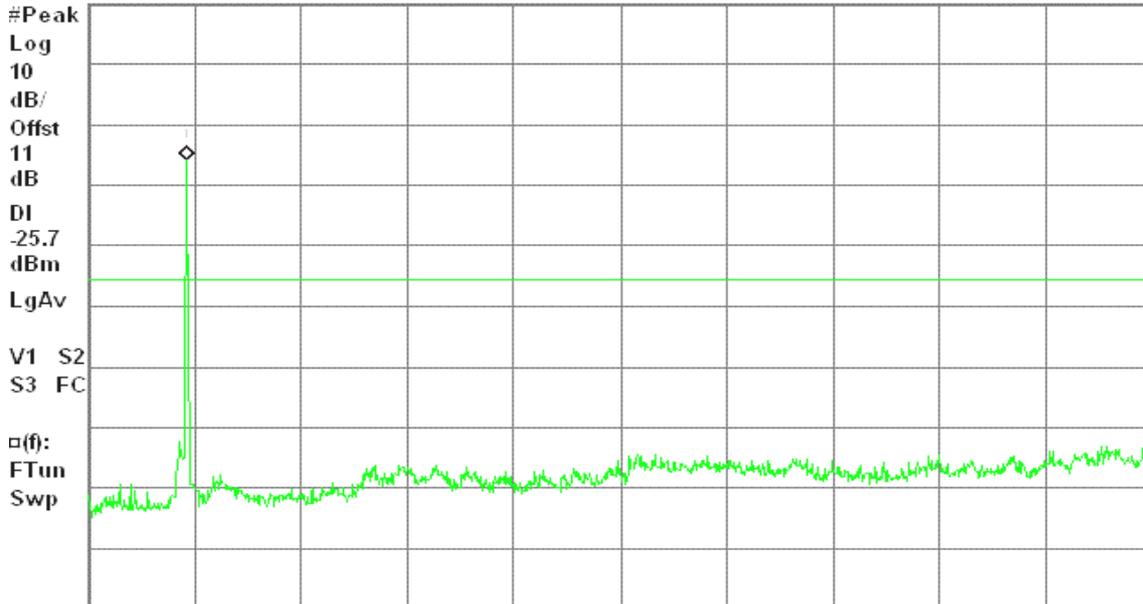
Spurious, g Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-5.73 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH High

Agilent 19:50:45 Dec 6, 2007

R T

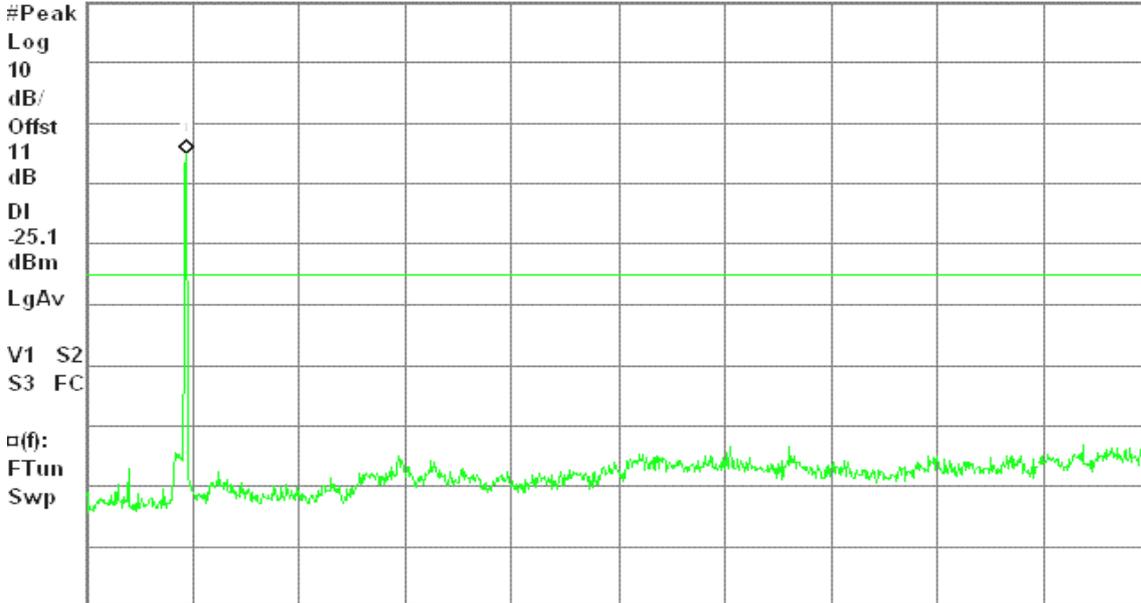
Spurious, g Mode High Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

-5.06 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### draft 802.11n Wide-40 MHz Channel mode / Chain 1

### CH Low

Agilent 19:17:41 Dec 6, 2007

R T

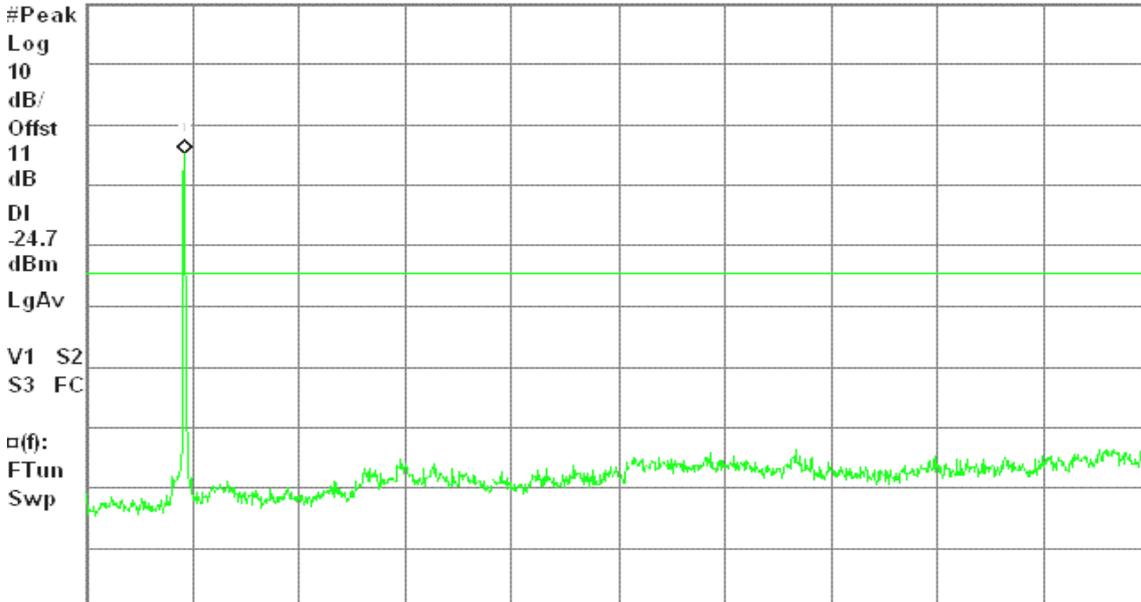
Spurious, g Mode Low Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-4.70 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH Mid

Agilent 19:33:59 Dec 6, 2007

R T

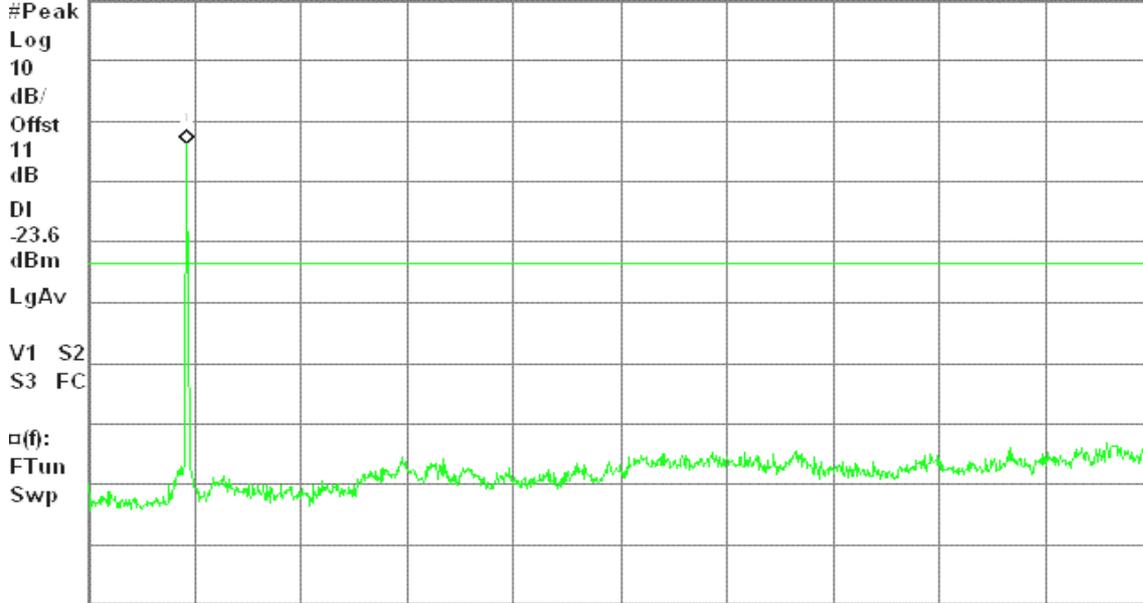
Spurious, g Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-3.64 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### CH High

Agilent 19:45:43 Dec 6, 2007

R T

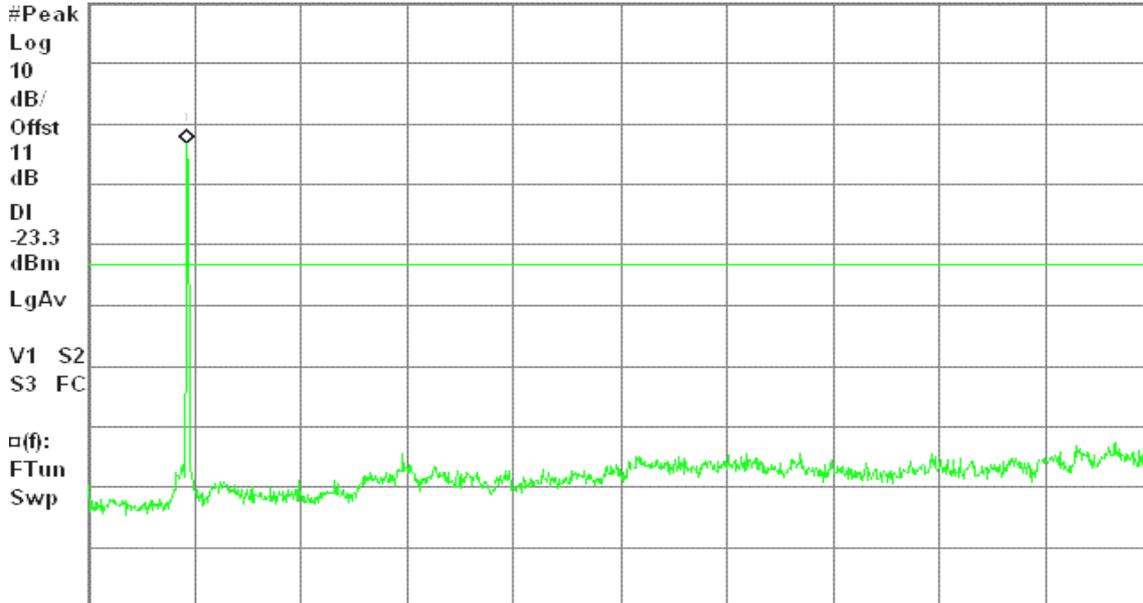
Spurious, g Mode High Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-3.27 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### IEEE 802.11b mode with combiner

#### CH Low

Agilent 19:57:09 Dec 27, 2007

R T

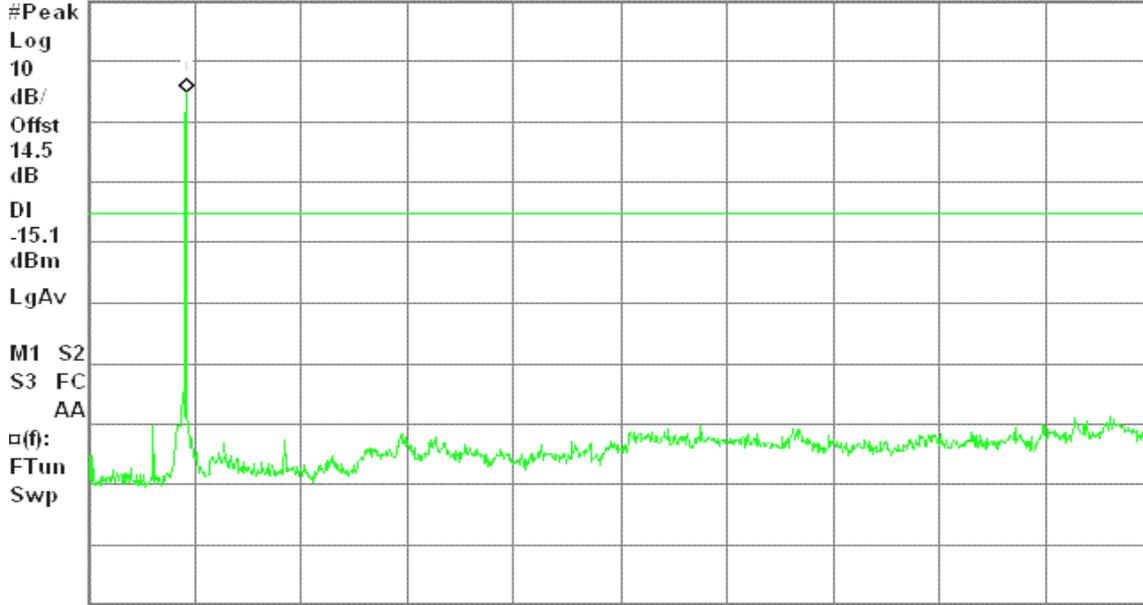
Spurious, b Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

4.87 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

#### CH Mid

Agilent 20:10:41 Dec 27, 2007

R T

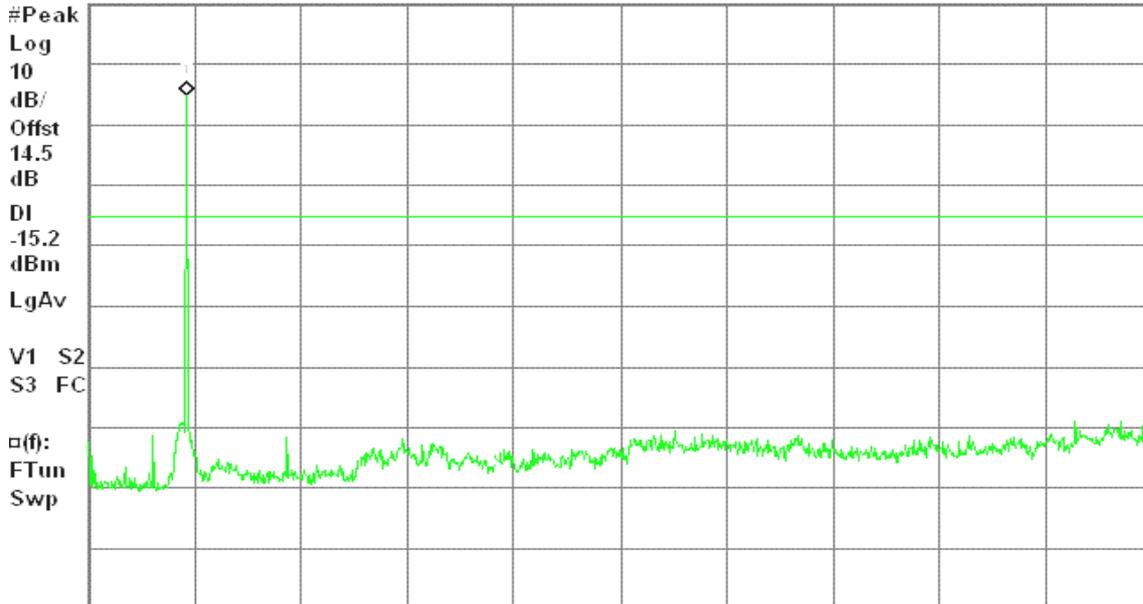
Spurious, b Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

4.78 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH High

Agilent 20:22:56 Dec 27, 2007

R T

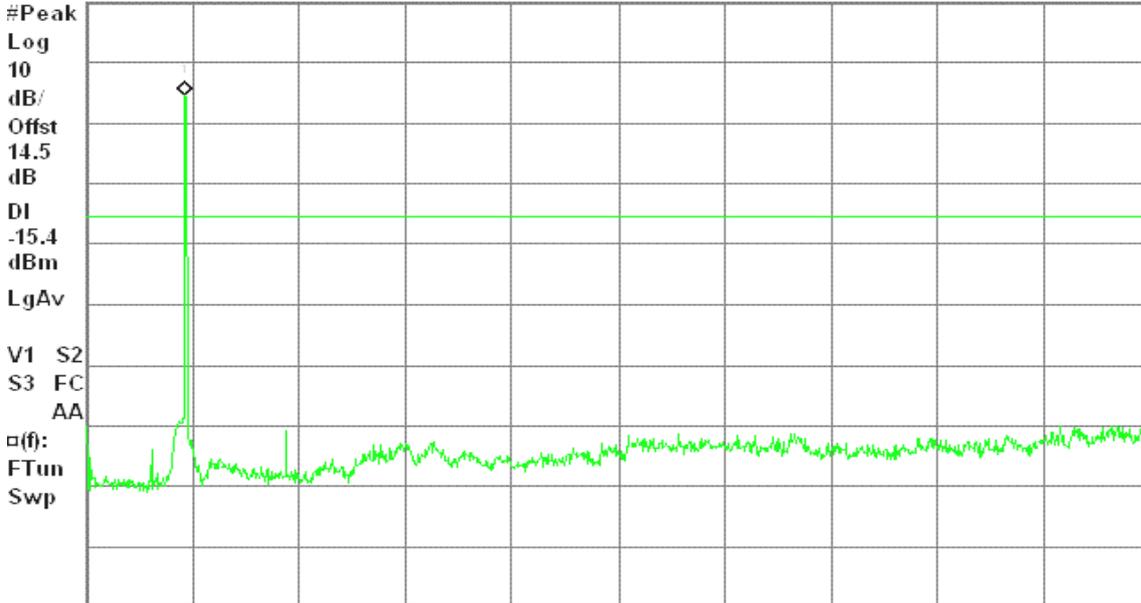
Spurious, b Mode High Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

4.60 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### IEEE 802.11g mode with combiner

### CH Low

Agilent 20:37:44 Dec 27, 2007

R T

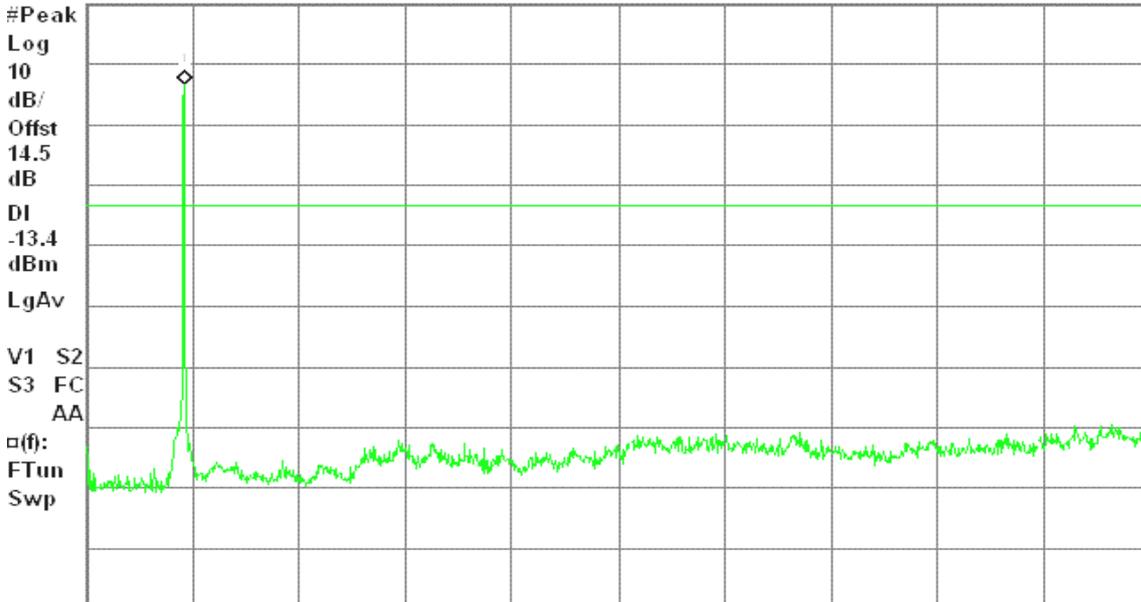
Spurious, g Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

6.59 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH Mid

Agilent 20:33:10 Dec 27, 2007

R T

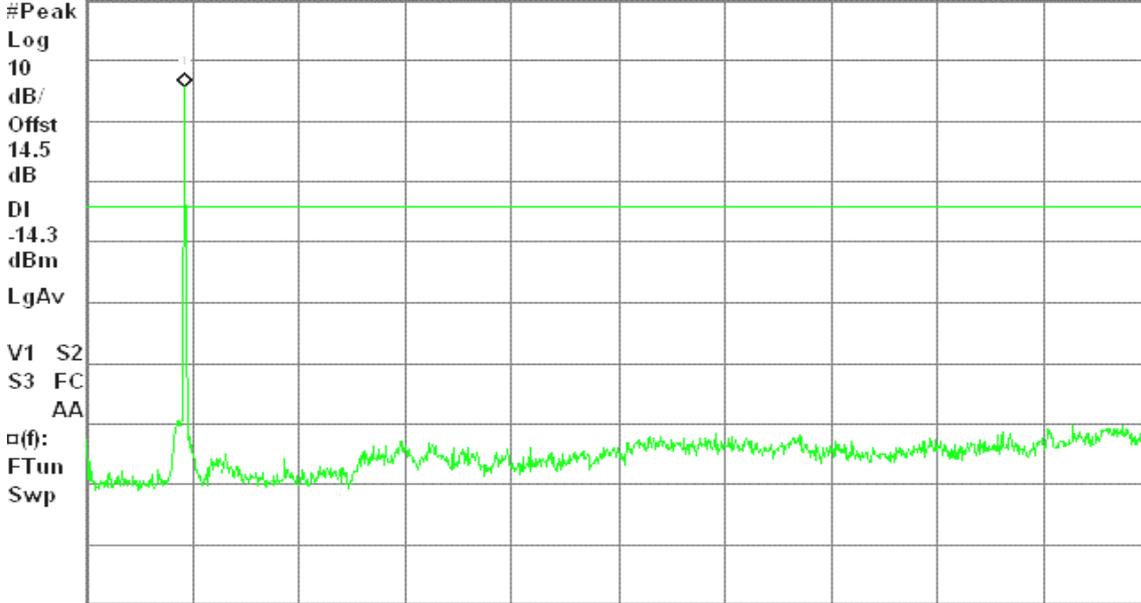
Spurious, g Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

5.73 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### CH High

Agilent 20:28:43 Dec 27, 2007

R T

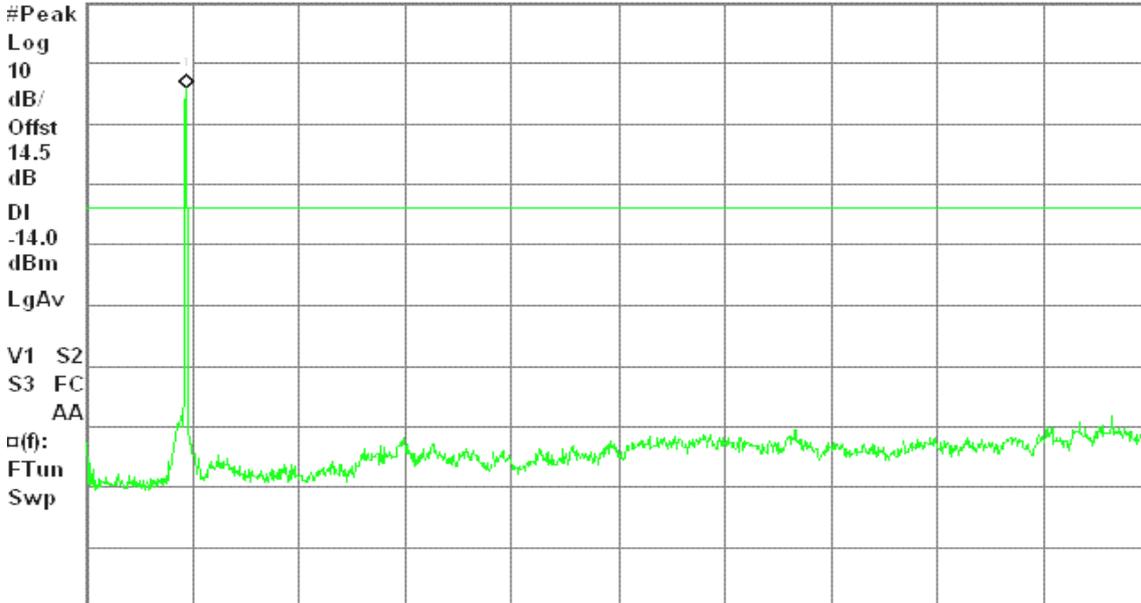
Spurious, g Mode High Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

5.92 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### draft 802.11n Standard-20 MHz Channel mode with combiner

#### CH Low

Agilent 18:48:01 Dec 6, 2007

R T

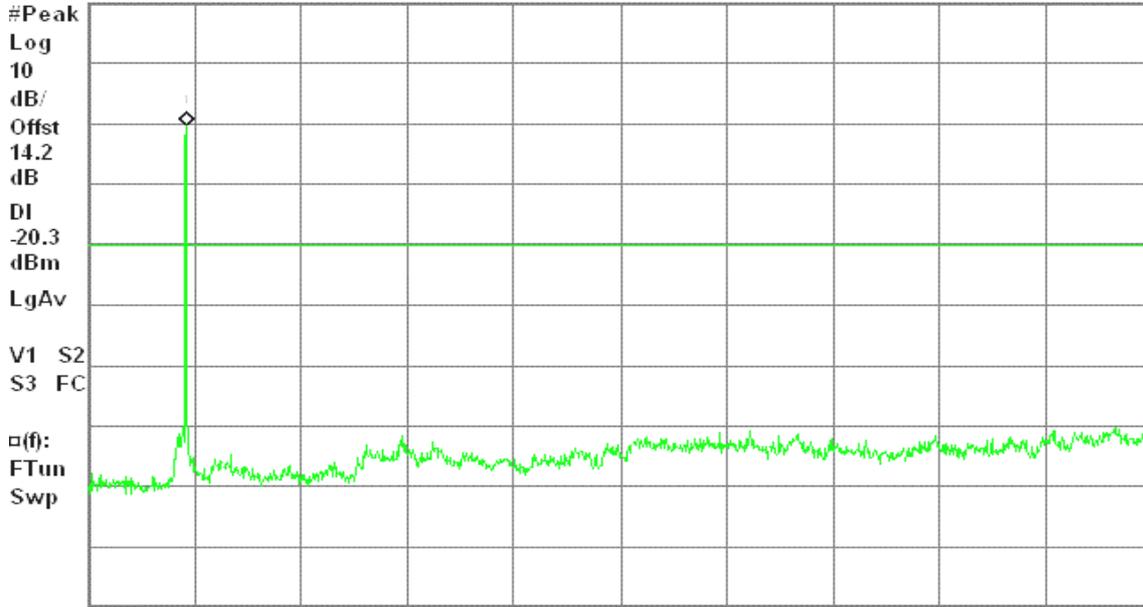
Spurious, g Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

-0.32 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

#### CH Mid

Agilent 18:58:52 Dec 6, 2007

R T

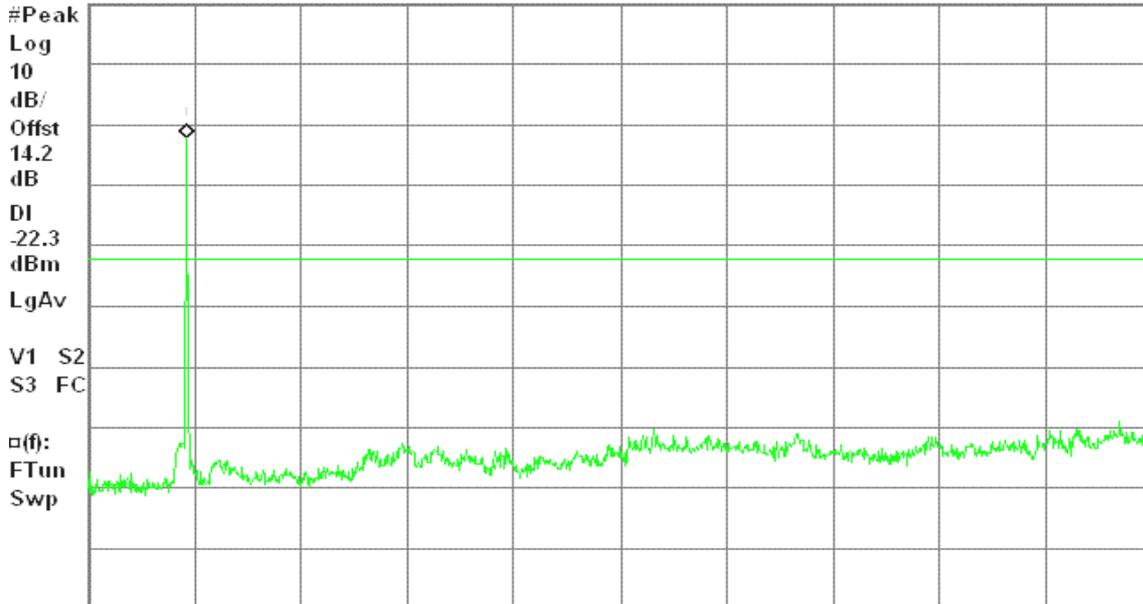
Spurious, g Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-2.28 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH High

Agilent 19:04:16 Dec 6, 2007

R T

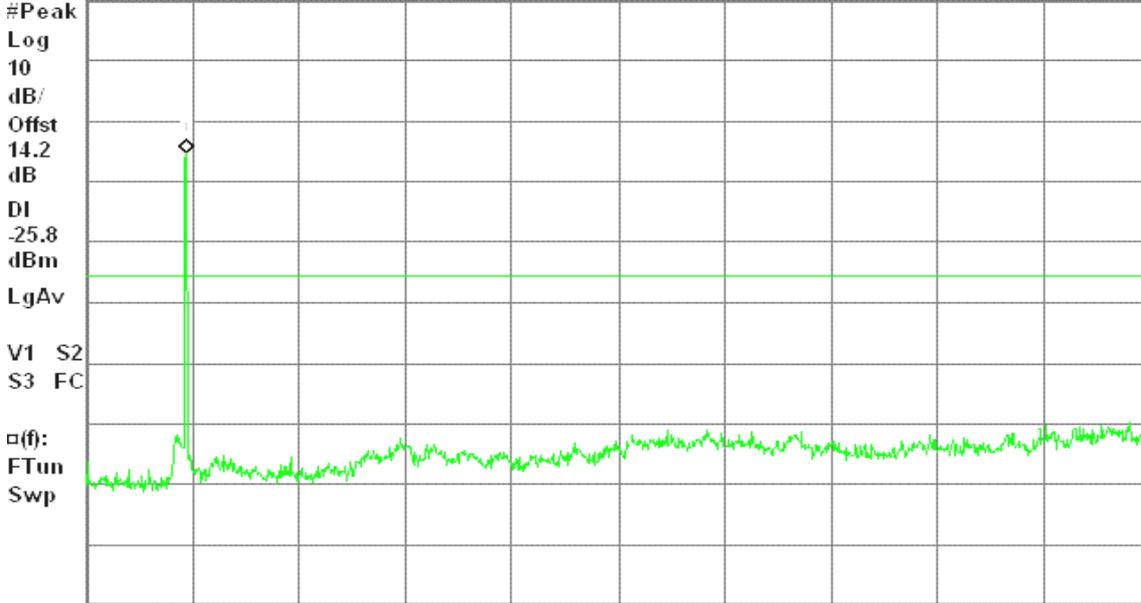
Spurious, g Mode High Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

-5.28 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### draft 802.11n Wide-40 MHz Channel mode with combiner

### CH Low

Agilent 08:40:35 Dec 11, 2007

R T

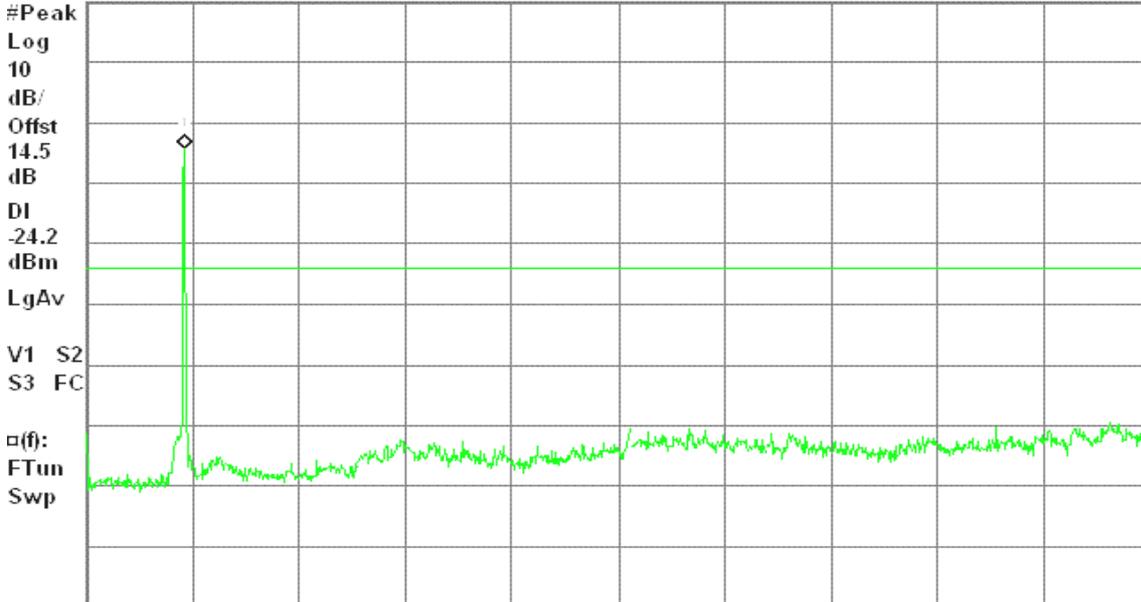
Spurious, g Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

-4.22 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH Mid

Agilent 08:46:17 Dec 11, 2007

R T

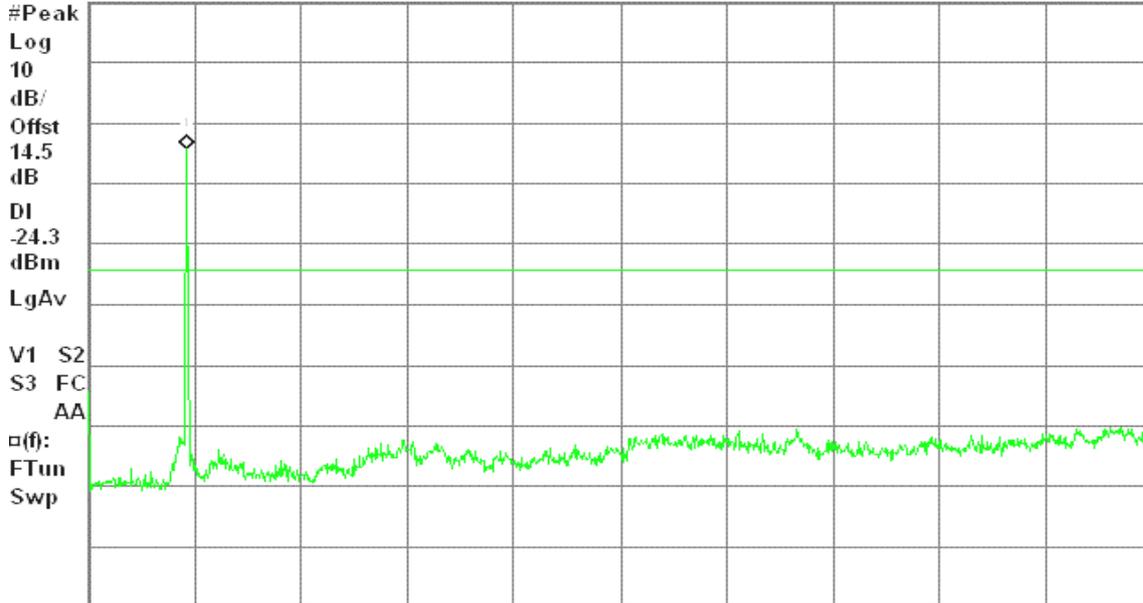
Spurious, g Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-4.29 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### CH High

Agilent 08:52:14 Dec 11, 2007

R T

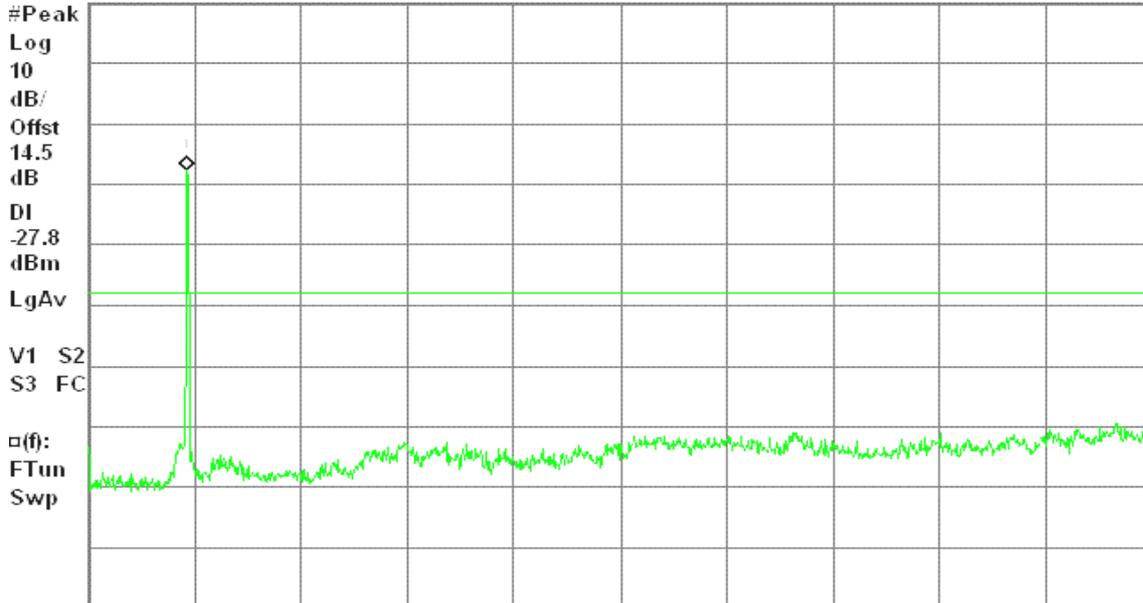
Spurious, g Mode High Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-7.80 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



## 7.7 RADIATED EMISSIONS

### LIMIT

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ( $\mu\text{V}/\text{m}$ )	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

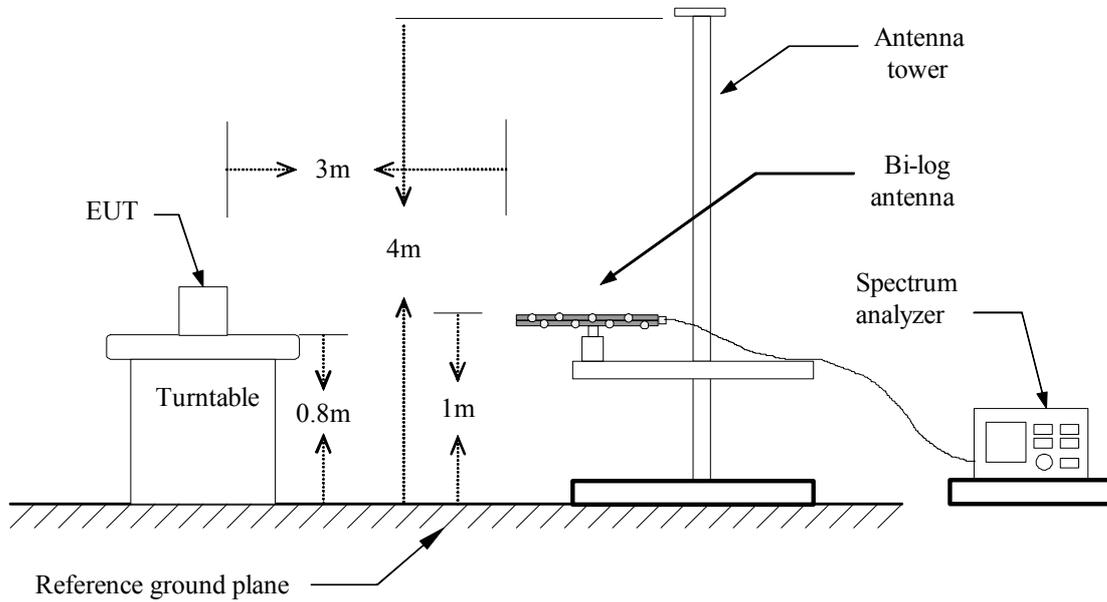
**Remark:** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

2. In the emission table above, the tighter limit applies at the band edges.

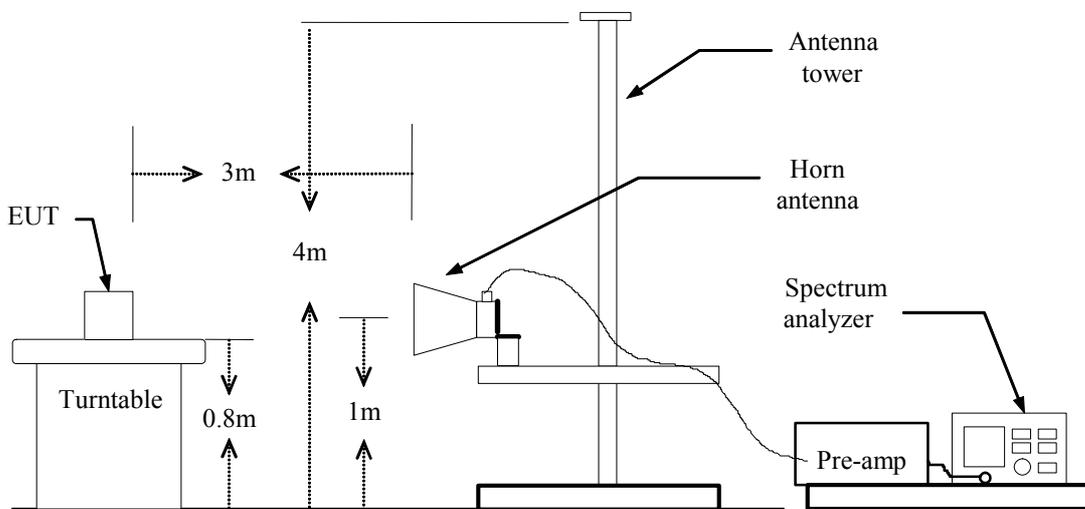
Frequency (MHz)	Field Strength ( $\mu\text{V}/\text{m}$ at 3-meter)	Field Strength (dB $\mu\text{V}/\text{m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

### Test Configuration

#### Below 1 GHz



#### Above 1 GHz





## **TEST PROCEDURE**

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:  
Below 1GHz:  
RBW=100kHz / VBW=300kHz / Sweep=AUTO  
Above 1GHz:  
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO  
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.



## TEST RESULTS

*No non-compliance noted*

### Below 1GHz

**Operation Mode:** Normal Link

**Test Date:** December 7, 2007

**Temperature:** 25°C

**Tested by:** Steven Young

**Humidity:** 55% RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
101.13	V	53.29	-16.48	36.81	43.50	-6.69	Peak
109.22	V	51.24	-14.22	37.02	43.50	-6.48	QP
125.38	V	49.33	-13.09	36.24	43.50	-7.26	Peak
235.32	V	51.83	-14.65	37.18	46.00	-8.82	Peak
266.03	V	48.63	-13.27	35.36	46.00	-10.64	Peak
400.22	V	43.32	-10.00	33.32	46.00	-12.68	Peak
133.47	H	43.46	-13.41	30.05	43.50	-13.45	Peak
240.17	H	51.30	-14.62	36.68	46.00	-9.32	Peak
266.03	H	47.02	-13.27	33.75	46.00	-12.25	Peak
500.45	H	41.76	-7.86	33.90	46.00	-12.10	Peak
532.78	H	42.18	-7.03	35.14	46.00	-10.86	Peak
799.53	H	36.47	-3.16	33.31	46.00	-12.69	Peak

### **Remark:**

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).*

**Above 1 GHz****Operation Mode:** TX / IEEE 802.11b / CH Low**Test Date:** December 27, 2007**Temperature:** 23°C**Tested by:** Wolf Huang**Humidity:** 56 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2412.00	V	106.43	103.84	-3.98	102.45	99.86	Fundamental			
1066.67	V	55.79	---	-10.68	45.11	---	74.00	54.00	-8.89	Peak
4825.00	V	49.69	---	0.55	50.24	---	74.00	54.00	-3.76	Peak
6433.33	V	56.28	55.17	2.87	59.15	58.04	82.45	79.86	-21.82	20dBC AVG Fundamental
N/A										
1466.67	H	56.21	---	-10.03	46.18	---	74.00	54.00	-7.82	Peak
4825.00	H	49.36	---	0.55	49.91	---	74.00	54.00	-4.09	Peak
6433.33	H	49.20	---	2.87	52.07	---	74.00	54.00	-1.93	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.

**Operation Mode:** TX / IEEE 802.11b / CH Mid**Test Date:** December 27, 2007**Temperature:** 23°C**Tested by:** Wolf Huang**Humidity:** 56 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2437.00	V	105.62	103.18	-3.90	101.72	99.28	Fundamental			
1066.67	V	55.43	---	-10.68	44.75	---	74.00	54.00	-9.25	Peak
6500.00	V	54.72	53.37	2.99	57.70	56.36	79.28	78.28	-21.92	20dB BC AVG Fundamental
N/A										
1466.67	H	56.15	---	-10.03	46.12	---	74.00	54.00	-7.88	Peak
3250.00	H	49.09	---	-2.13	46.96	---	74.00	54.00	-7.04	Peak
4875.00	H	49.23	---	0.60	49.84	---	74.00	54.00	-4.16	Peak
6500.00	H	50.19	---	2.99	53.18	---	74.00	54.00	-0.82	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.

**Operation Mode:** TX / IEEE 802.11b / CH High**Test Date:** December 27, 2007**Temperature:** 23°C**Tested by:** Wolf Huang**Humidity:** 56 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2462.00	V	104.94	102.03	-3.85	101.09	98.18	Fundamental			
4925.00	V	46.99	---	0.65	47.64	---	74.00	54.00	-6.36	Peak
6566.67	V	52.00	50.72	3.12	55.12	53.84	81.09	78.18	-24.34	20dB BC AVG Fundamental
N/A										
1466.67	H	55.96	---	-10.03	45.93	---	74.00	54.00	-8.07	Peak
3283.33	H	49.75	---	-2.09	47.67	---	74.00	54.00	-6.33	Peak
4925.00	H	51.48	---	0.65	52.13	---	74.00	54.00	-1.87	Peak
6566.67	H	47.27	---	3.12	50.39	---	74.00	54.00	-3.61	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.

**Operation Mode:** TX / IEEE 802.11g / CH Low**Test Date:** December 27, 2007**Temperature:** 23°C**Tested by:** Wolf Huang**Humidity:** 56 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2412.00	V	105.98	94.07	-4.00	101.98	90.07	Fundamental			
1066.67	V	55.92	---	-10.68	45.23	---	74.00	54.00	-8.77	Peak
6433.33	V	58.61	55.66	2.87	61.48	58.53	81.98	70.07	-11.54	20dB BC AVG Fundamental
N/A										
2412.00	H	97.16	86.08	-3.99	93.18	82.09	Fundamental			
1466.67	H	56.30	---	-10.03	46.27	---	74.00	54.00	-7.73	Peak
1713.33	H	60.83	---	-7.85	52.98	---	74.00	54.00	-1.02	Peak
6433.33	H	54.01	52.38	2.87	56.88	55.25	73.18	62.09	-6.84	20dB BC AVG Fundamental
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.

**Operation Mode:** TX / IEEE 802.11g / CH Mid**Test Date:** December 27, 2007**Temperature:** 23°C**Tested by:** Wolf Huang**Humidity:** 56 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2437.00	V	108.11	95.81	-3.90	104.21	91.91	Fundamental			
1066.67	V	55.61	---	-10.68	44.93	---	74.00	54.00	-9.07	Peak
1200.00	V	52.02	---	-10.46	41.55	---	74.00	54.00	-12.45	Peak
1466.67	V	51.10	---	-10.03	41.07	---	74.00	54.00	-12.93	Peak
4875.00	V	45.12	---	0.60	45.73	---	74.00	54.00	-8.27	Peak
6500.00	V	57.42	53.53	2.99	60.40	56.52	84.21	71.91	-15.39	20dB BC AVG Fundamental
1066.67	H	53.74	---	-10.68	43.06	---	74.00	54.00	-10.94	Peak
1466.67	H	55.50	---	-10.03	45.47	---	74.00	54.00	-8.53	Peak
3250.00	H	49.16	---	-2.13	47.03	---	74.00	54.00	-6.97	Peak
4883.33	H	45.50	---	0.61	46.11	---	74.00	54.00	-7.89	Peak
6500.00	H	52.26	48.22	2.99	55.25	51.21	74.00	54.00	-2.79	AVG
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.



Operation Mode: TX / IEEE 802.11g / CH High

Test Date: December 27, 2007

Temperature: 23°C

Tested by: Wolf Huang

Humidity: 56 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2462.00	V	109.07	93.88	-3.83	105.24	90.05	Fundamental			
6566.67	V	54.52	51.20	3.12	57.65	54.32	85.24	70.05	-15.735	20dB AVG Fundamental
N/A										
1066.67	H	53.51	---	-10.68	42.83	---	74.00	54.00	-11.17	Peak
1466.67	H	56.11	---	-10.03	46.08	---	74.00	54.00	-7.92	Peak
3283.33	H	50.50	---	-2.09	48.41	---	74.00	54.00	-5.59	Peak
4925.00	H	46.43	---	0.65	47.08	---	74.00	54.00	-6.92	Peak
6566.67	H	49.23	---	3.12	52.35	---	74.00	54.00	-1.65	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.



**Operation Mode:** TX / draft 802.11n Standard-20 MHz Channel mode / CH Low

**Test Date:** December 6, 2007

**Temperature:** 25°C

**Tested by:** Steven Young

**Humidity:** 55 % RH

**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2412.00	V	112.10	95.59	-4.00	108.10	91.59	Fundamental			
1650.00	V	60.37	---	-8.48	51.89	---	74.00	54.00	-2.11	Peak
3216.67	V	45.49	---	-2.17	43.32	---	74.00	54.00	-10.68	Peak
6433.33	V	60.87	57.18	2.87	63.74	60.05	88.10	71.59	-11.54	20dBC AVG Fundamental
N/A										
2412.00	H	103.80	88.25	-3.99	99.81	84.26	Fundamental			
1466.67	H	59.63	---	-10.03	49.61	---	74.00	54.00	-4.39	Peak
3216.67	H	46.20	---	-2.17	44.03	---	74.00	54.00	-9.97	Peak
6433.33	H	56.88	52.92	2.87	59.75	55.79	79.81	64.26	-8.47	20dBC AVG Fundamental
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.

**Operation Mode:** TX / draft 802.11n Standard-20 MHz Channel mode / CH Mid**Test Date:** December 6, 2007**Temperature:** 25°C**Tested by:** Steven Young**Humidity:** 55 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2437.00	V	111.53	94.90	-3.91	107.62	90.99	Fundamental			
1066.67	V	62.27	---	-10.68	51.59	---	74.00	54.00	-2.41	Peak
3250.00	V	44.42	---	-2.13	42.29	---	74.00	54.00	-11.71	Peak
6500.00	V	60.38	56.47	2.99	63.37	59.46	87.62	70.99	-11.53	20dBC AVG Fundamental
N/A										
2437.00	H	99.86	85.09	-3.90	95.96	81.19	Fundamental			
1466.67	H	60.38	---	-10.03	50.35	---	74.00	54.00	-3.65	Peak
3250.00	H	47.07	---	-2.13	44.94	---	74.00	54.00	-9.06	Peak
6500.00	H	56.74	51.94	2.99	59.73	54.93	75.96	61.19	-6.26	20dBC AVG Fundamental
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.

**Operation Mode:** TX / draft 802.11n Standard-20 MHz Channel mode / CH High**Test Date:** December 6, 2007**Temperature:** 25°C**Tested by:** Steven Young**Humidity:** 55 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2462.00	V	110.47	94.04	-3.86	106.61	90.18	Fundamental			
2303.33	V	60.69	49.28	-4.25	56.44	45.03	74.00	54.00	-8.97	AVG
3283.33	V	46.28	---	-2.09	44.19	---	74.00	54.00	-9.81	Peak
6566.67	V	57.90	53.58	3.12	61.02	56.70	86.61	70.18	-13.48	20dBC AVG Fundamental
N/A										
2462.00	H	102.69	87.45	-3.86	98.83	83.59	Fundamental			
1846.67	H	60.85	47.58	-6.53	54.32	41.05	74.00	54.00	-12.95	AVG
3283.33	H	48.16	---	-2.09	46.07	---	74.00	54.00	-7.93	Peak
6566.67	H	53.69	48.98	3.12	56.81	52.10	78.83	63.59	-11.49	20dBC AVG Fundamental
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.

**Operation Mode:** TX / draft 802.11n Wide-40 MHz Channel mode  
/ CH Low**Test Date:** December 6, 2007**Temperature:** 25°C**Tested by:** Steven Young**Humidity:** 55 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2422.00	V	106.40	85.36	-3.95	102.45	81.41	Fundamental			
1666.67	V	59.86	---	-8.32	51.54	---	74.00	54.00	-2.46	Peak
3233.33	V	45.21	---	-2.15	43.05	---	74.00	54.00	-10.95	Peak
6458.33	V	60.31	54.96	2.91	63.22	57.87	82.45	61.41	-3.54	20dBC AVG Fundamental
N/A										
2422.00	H	97.94	79.20	-3.95	93.99	75.25	Fundamental			
1723.33	H	58.88	---	-7.75	51.13	---	74.00	54.00	-2.87	Peak
3233.33	H	46.67	---	-2.15	44.52	---	74.00	54.00	-9.48	Peak
6458.33	H	55.79	49.67	2.91	58.70	52.58	73.99	55.25	-2.67	20dBC AVG Fundamental
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.



**Operation Mode:** TX / draft 802.11n Wide-40 MHz Channel mode / CH Mid **Test Date:** December 6, 2007  
**Temperature:** 25°C **Tested by:** Steven Young  
**Humidity:** 55 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2437.00	V	107.49	86.58	-3.93	103.56	82.65	Fundamental			
1513.33	V	60.01	---	-9.84	50.17	---	74.00	54.00	-3.83	Peak
3250.00	V	45.68	---	-2.13	43.55	---	74.00	54.00	-10.45	Peak
6500.00	V	58.72	53.32	2.99	61.71	56.31	83.56	62.65	-6.34	20dBC AVG Fundamental
N/A										
2437.00	H	98.78	79.67	-3.90	94.88	75.77	Fundamental			
1636.67	H	59.39	---	-8.62	50.77	---	74.00	54.00	-3.23	Peak
3250.00	H	47.13	---	-2.13	44.99	---	74.00	54.00	-9.01	Peak
6500.00	H	55.08	49.74	2.99	58.07	52.73	74.88	55.77	-3.04	20dBC AVG Fundamental
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.

**Operation Mode:** TX / draft 802.11n Wide-40 MHz Channel mode / CH High**Test Date:** December 6, 2007**Temperature:** 25°C**Tested by:** Steven Young**Humidity:** 55 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2452.00	V	107.63	86.40	-3.89	103.74	82.51	Fundamental			
1693.33	V	59.64	---	-8.05	51.59	---	74.00	54.00	-2.41	Peak
6433.33	V	60.42	54.62	2.87	63.29	57.49	83.74	62.51	-5.02	20dBC AVG Fundamental
N/A										
2452.00	H	98.88	80.08	-3.85	95.03	76.18	Fundamental			
1466.67	H	61.02	---	-10.03	50.99	---	74.00	54.00	-3.01	Peak
3216.67	H	46.27	---	-2.17	44.10	---	74.00	54.00	-9.90	Peak
6433.33	H	56.94	50.87	2.87	59.81	53.74	75.03	56.18	-2.44	20dBC AVG Fundamental
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).
7. 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.



## 7.8 POWERLINE CONDUCTED EMISSIONS

### LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

\* Decreases with the logarithm of the frequency.

### Test Configuration

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

### TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.



## TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

### Test Data

**Operation Mode:** Normal Link                      **Test Date:** December 17, 2007  
**Temperature:** 26°C                                      **Tested by:** Ivan Tsai  
**Humidity:** 45% RH

Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB/m)	QP Result (dBuV/m)	AV Result (dBuV/m)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.1550	34.25	10.65	0.15	34.40	10.80	55.73	65.73	-21.33	-54.93	L1
0.1750	30.87	13.67	0.13	31.00	13.80	54.72	64.72	-23.72	-50.92	L1
0.1950	40.89	33.79	0.11	41.00	33.90	53.82	63.82	-12.82	-29.92	L1
0.2600	32.61	28.71	0.09	32.70	28.80	51.43	61.43	-18.73	-32.63	L1
0.3950	30.06	26.96	0.04	30.10	27.00	47.96	57.96	-17.86	-30.96	L1
3.9400	30.33	19.83	0.07	30.40	19.90	46.00	56.00	-15.60	-36.10	L1
0.1750	31.57	9.67	0.13	31.70	9.80	54.72	64.72	-23.02	-54.92	L2
0.1950	39.19	33.89	0.11	39.30	34.00	53.82	63.82	-14.52	-29.82	L2
0.2600	32.62	28.52	0.08	32.70	28.60	51.43	61.43	-18.73	-32.83	L2
0.3450	34.45	30.95	0.05	34.50	31.00	49.08	59.08	-14.58	-28.08	L2
0.5250	35.10	31.80	0.00	35.10	31.80	46.00	56.00	-10.90	-24.20	L2
4.0600	25.13	17.23	0.07	25.20	17.30	46.00	56.00	-20.80	-38.70	L2

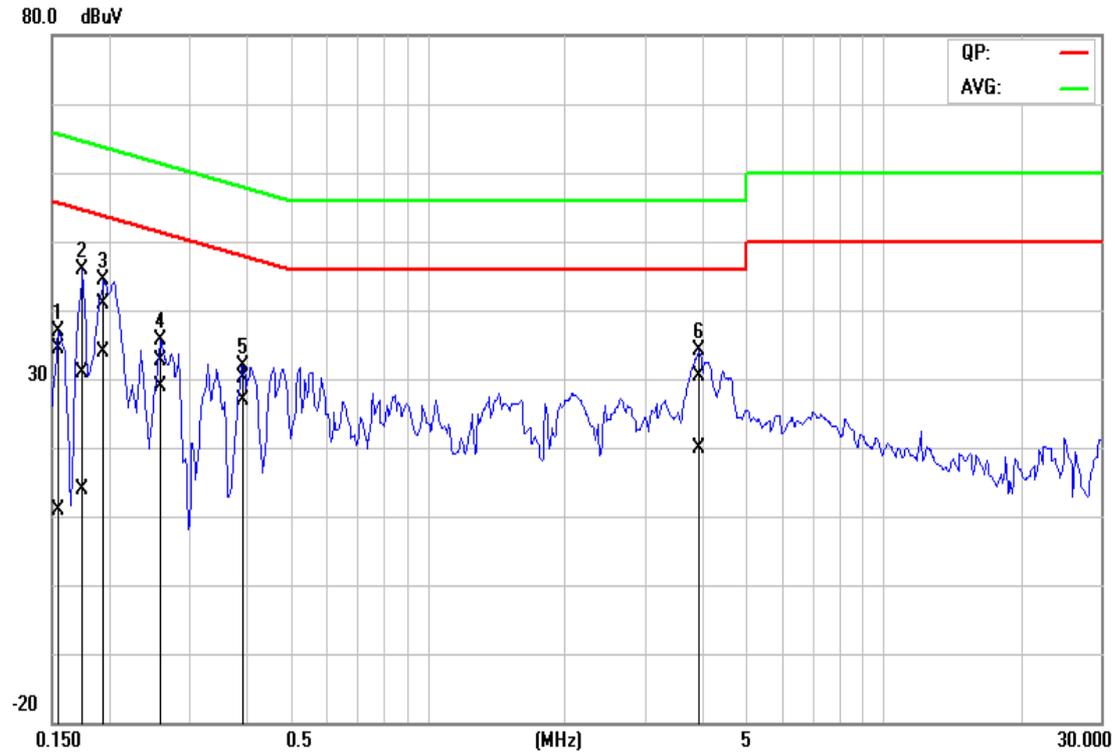
### **Remark:**

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10 kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9 kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)



### Test Plots

#### Conducted emissions (Line 1)



#### Conducted emissions (Line 2)

