



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Wireless-N ADSL2+ Gateway

Model: WAG160N

Trade Name: Linksys

Issued to

Cisco-Linksys LLC
121 Theory Drive
Irvine, CA 92617

Issued by



Compliance Certification Services Inc.
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1. TEST RESULT CERTIFICATION

Applicant: Cisco-Linksys LLC
 121 Theory Drive
 Irvine, CA 92617

Equipment Under Test: Wireless-N ADSL2+ Gateway

Trade Name: Linksys

Model Number: WAG160N

Date of Test: November 27 ~ December 25, 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:

Reviewed by:

Rex Lai
 Section Manager
 Compliance Certification Services Inc.

Amanda Wu
 Section Manager
 Compliance Certification Services Inc.



2. EUT DESCRIPTION

Product	Wireless-N ADSL2+ Gateway											
Trade Name	Linksys											
Model Number	WAG160N											
Model Discrepancy	All the above models are identical except the model designation and the difference of color for its external appearance. Please refer to the external photos for reference.											
Power Adapter	<ol style="list-style-type: none"> 1. LEADER / Model: MU12-2120100-A1 I/P: 100-240V, 50-60Hz, 0.5A O/P: 12V, 1.0A 2. SINO-AMERICAN / Mode: SA110C-12S-I I/P: 100-240V, 50-60Hz, 0.3A O/P: 12V, 1A, 12W 3. LEADER / Model: MT12-4120100-A1 I/P: 120V, 60Hz, 0.3A O/P: 12V, 1A 4. OEM / Model: AD12V/1A-SW I/P: 100-240V, 0.5A, 50-60Hz O/P: +12V, 1.0A MAX 5. EnerTronix / Model: LS120V10AE I/P: 100V-240V, 0.5A, 50-60Hz O/P: 12V, 1.0A MAX 											
Frequency Range	2412 ~ 2462 MHz											
Transmit Power	IEEE 802.11b mode: 23.90 dBm IEEE 802.11g mode: 22.80 dBm draft 802.11n Standard-20 MHz Channel mode: 22.39 dBm draft 802.11n Wide-40 MHz Channel mode: 18.97 dBm											
Modulation Technique	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)											
Number of Channels	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											
Antenna Specification	PIFA Antenna: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%;">Left</th> <th style="width: 25%;">Right</th> </tr> </thead> <tbody> <tr> <td>Wha Yu</td> <td>2.9 dBi</td> <td>2.9 dBi</td> </tr> <tr> <td>GALTRONICS</td> <td>2.1 dBi</td> <td>2.1 dBi</td> </tr> </tbody> </table> <p>Antenna Calculation for CDD Mode: Wha Yu: $2.9\text{dBi} + 10 \log (2) = 5.91 \text{ dBi}$ (Numeric gain: 3.89) GALTRONICS: $2.1\text{dBi} + 10 \log (2) = 5.11 \text{ dBi}$ (Numeric gain: 3.24)</p>				Left	Right	Wha Yu	2.9 dBi	2.9 dBi	GALTRONICS	2.1 dBi	2.1 dBi
	Left	Right										
Wha Yu	2.9 dBi	2.9 dBi										
GALTRONICS	2.1 dBi	2.1 dBi										

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: **Q87-WAG160N** 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
¹ 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	(²)
13.36 - 13.41	322 - 335.4		

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² 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: WAG160N) comes with four types of power adapter (MU12-2120100-A1 / SA110C-12GS-I / MT12-4120100-A1 / AD12V/1A-SW / LS120V10AE) for sale. After the preliminary test, the power adapter LS120V10AE was found to emit the worst emissions and therefore had been tested under operating condition.

The EUT (model: WAG160N) comes with two different antennas (Wha Yu & GALTRONICS) for sale. After the preliminary test, the antenna with trade name Wha Yu was found to eliminate 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

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.*

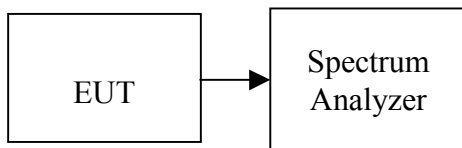
7. FCC PART 15.247 REQUIREMENTS

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	9920	>500	PASS
Mid	2437	10080		PASS
High	2462	10170		PASS

Test mode: IEEE 802.11b mode / Chain 1

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	10830	>500	PASS
Mid	2437	10080		PASS
High	2462	9830		PASS

Test mode: IEEE 802.11g mode / Chain 0

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	16580	>500	PASS
Mid	2437	16330		PASS
High	2462	16500		PASS

Test mode: IEEE 802.11g mode / Chain 1

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	16420	>500	PASS
Mid	2437	16420		PASS
High	2462	16500		PASS



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

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	17500	>500	PASS
Mid	2437	17670		PASS
High	2462	17750		PASS

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

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	17750	>500	PASS
Mid	2437	17750		PASS
High	2462	17750		PASS

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

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	36420	>500	PASS
Mid	2437	36420		PASS
High	2452	36420		PASS

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

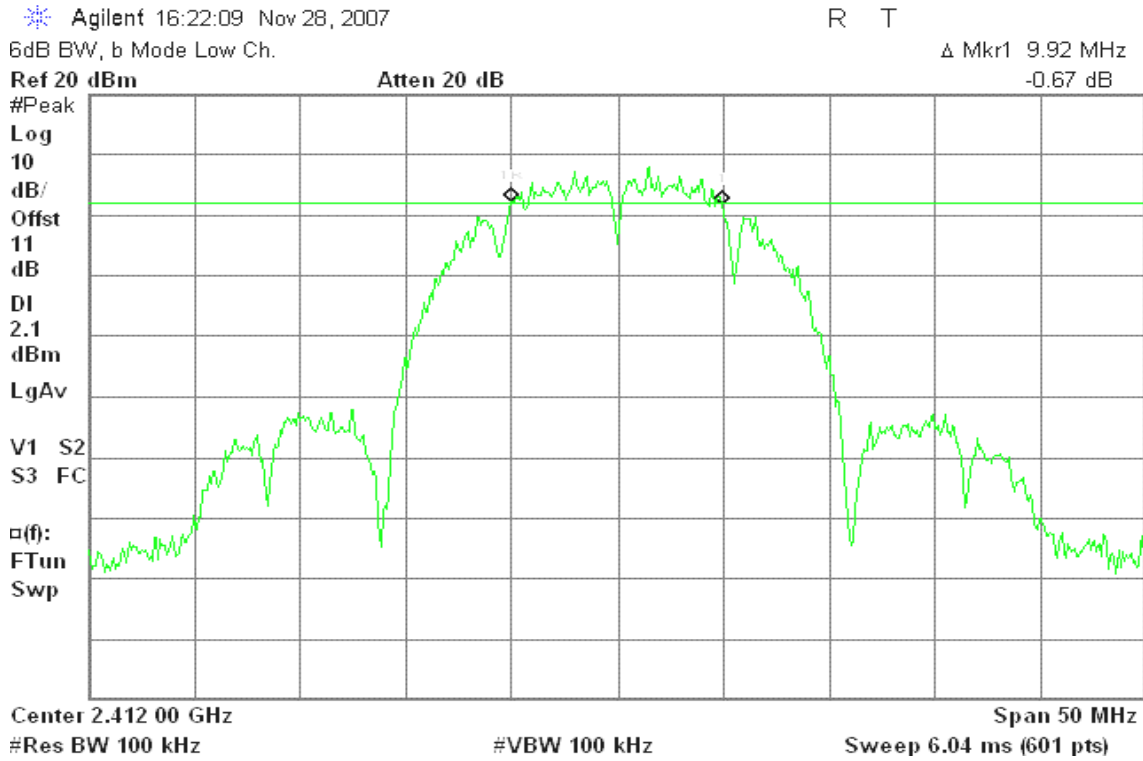
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	36080	>500	PASS
Mid	2437	36250		PASS
High	2452	36420		PASS



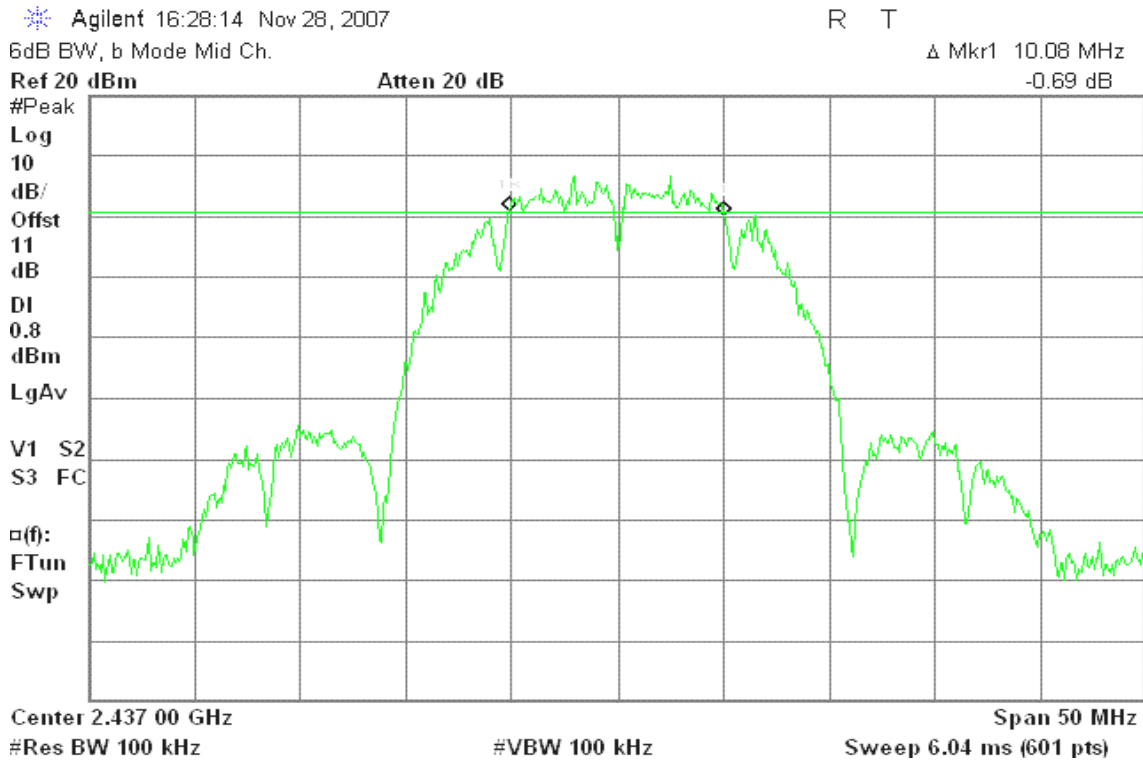
Test Plot

IEEE 802.11b mode / Chain 0

6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)





6dB Bandwidth (CH High)

Agilent 16:32:54 Nov 28, 2007

R T

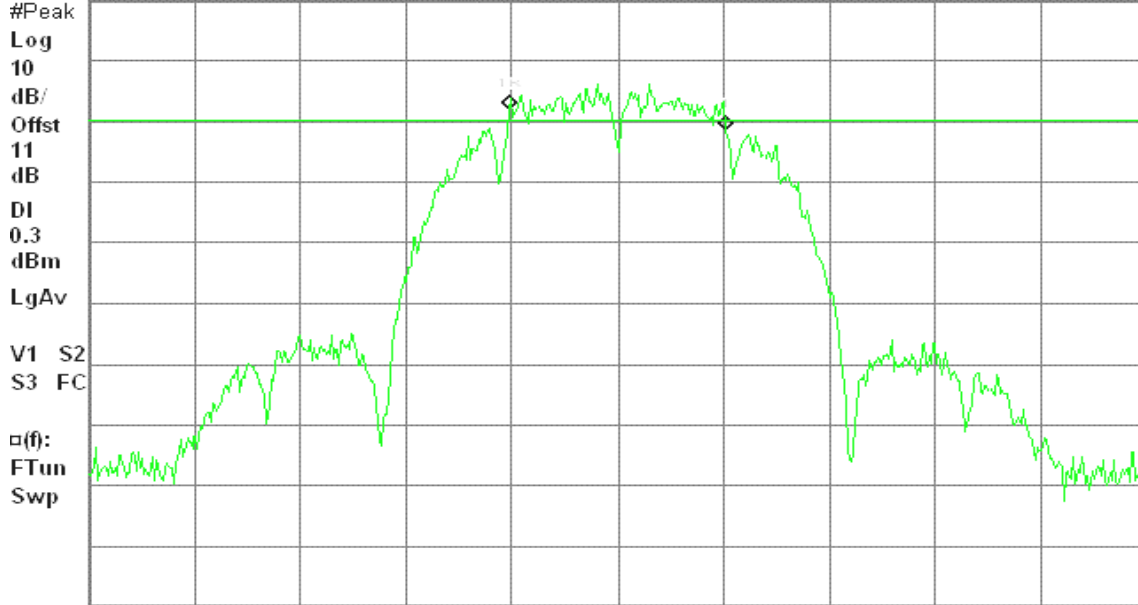
6dB BW, b Mode High Ch.

Δ Mkr1 10.17 MHz

Ref 20 dBm

Atten 20 dB

-3.34 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 20:26:29 Dec 25, 2007

R T

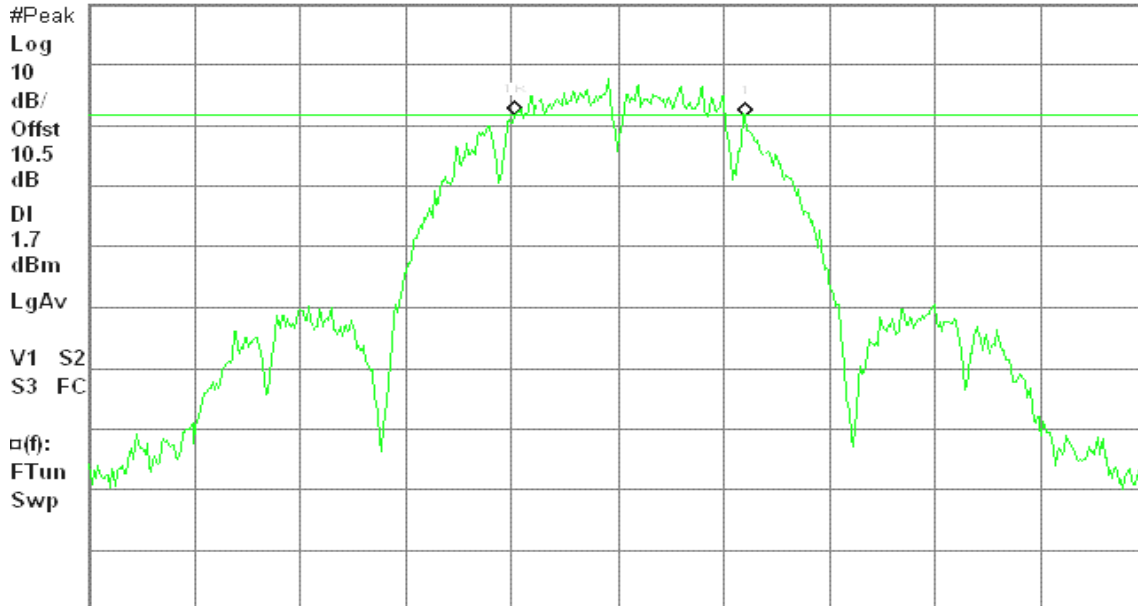
6dB BW, b Mode Low Ch.

Δ Mkr1 10.83 MHz

Ref 20 dBm

Atten 20 dB

-0.28 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 20:31:47 Dec 25, 2007

R T

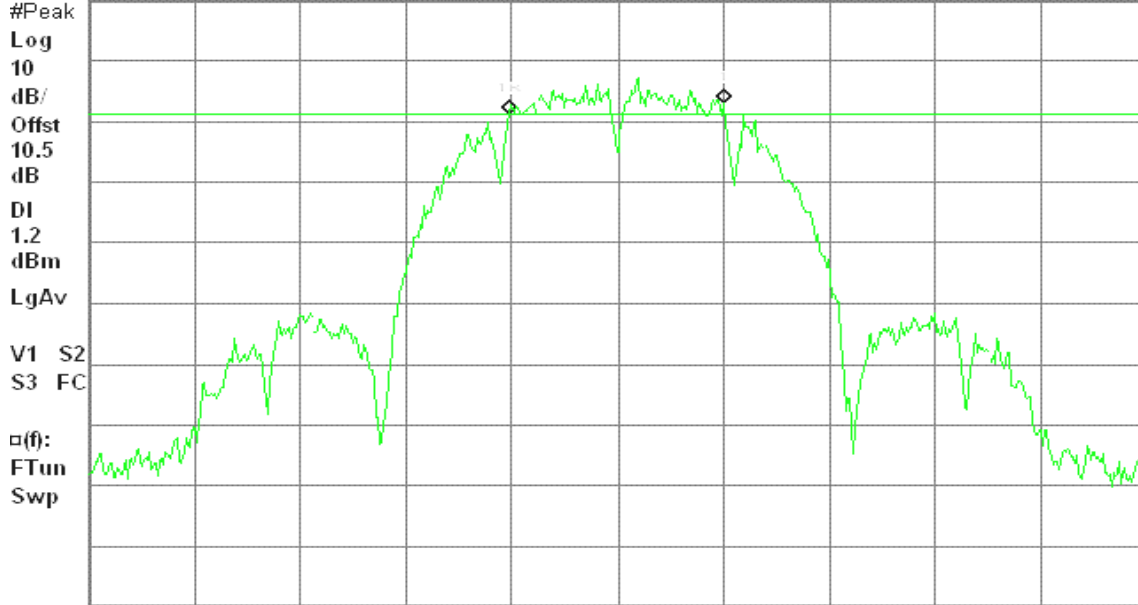
6dB BW, b Mode Mid Ch.

Δ Mkr1 10.08 MHz

Ref 20 dBm

Atten 20 dB

1.84 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 20:36:38 Dec 25, 2007

R T

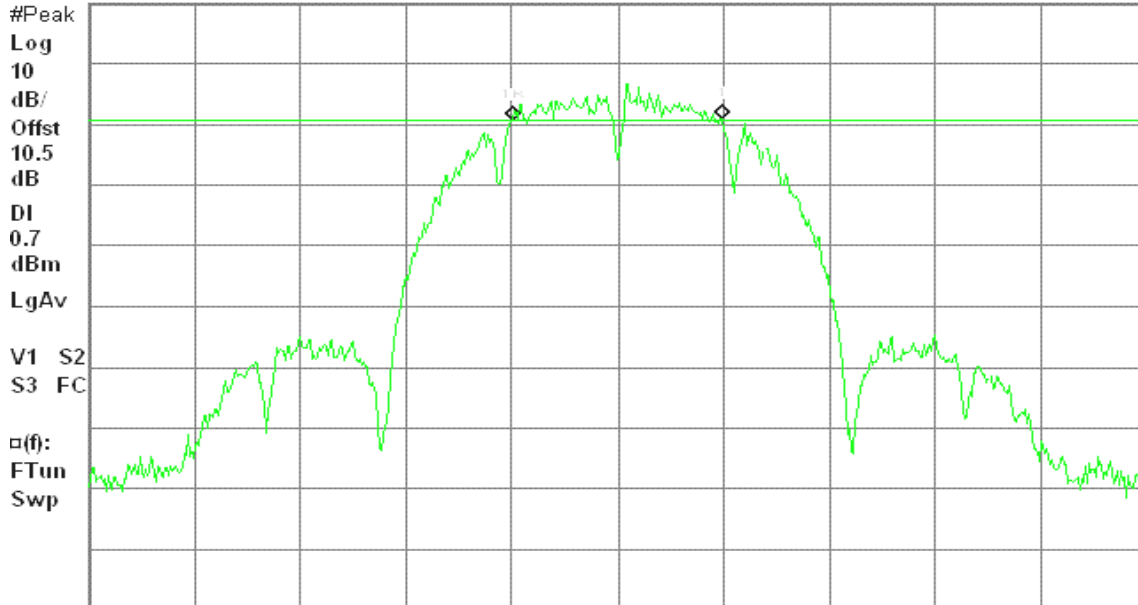
6dB BW, b Mode High Ch.

Δ Mkr1 9.83 MHz

Ref 20 dBm

Atten 20 dB

0.16 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 16:47:01 Nov 28, 2007

R T

6dB BW, g Mode Low Ch.

Δ Mkr1 16.58 MHz

Ref 20 dBm

Atten 20 dB

0.74 dB

#Peak

Log

10

dB/

Offst

11

dB

DI

-4.9

dBm

LgAv

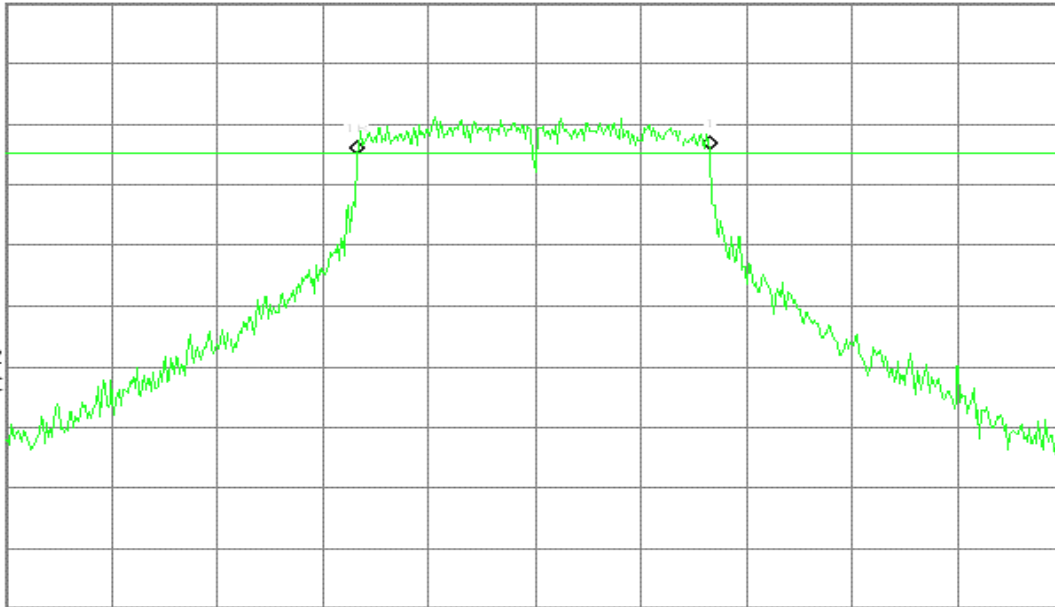
V1 S2

S3 FC

α(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 08:20:59 Nov 29, 2007

R L

6dB BW, g Mode Mid Ch.

Δ Mkr1 16.33 MHz

Ref 20 dBm

Atten 20 dB

-0.36 dB

#Peak

Log

10

dB/

Offst

11

dB

DI

-1.8

dBm

LgAv

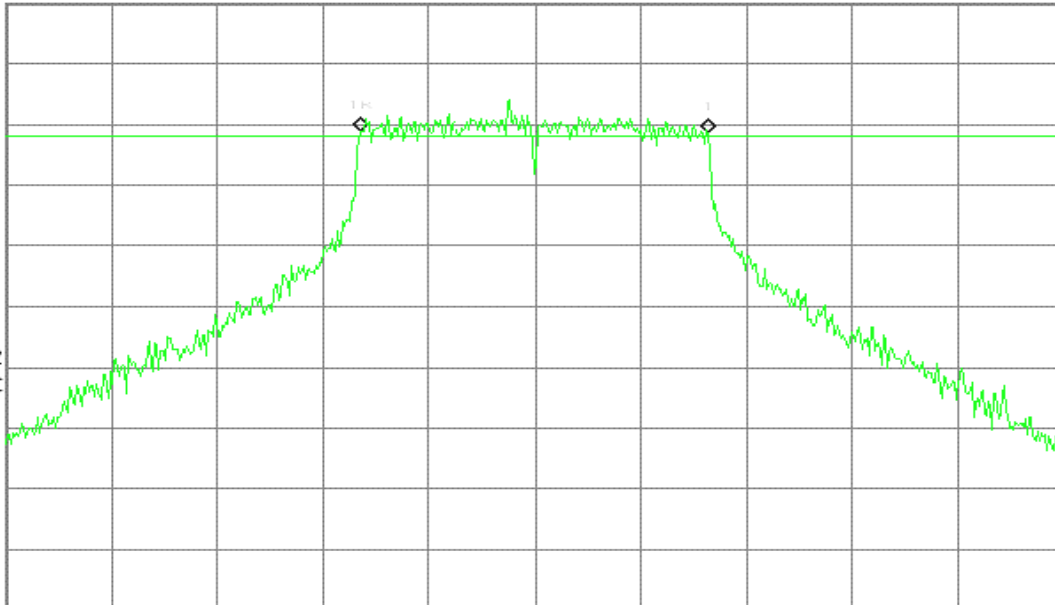
V1 S2

S3 FC

α(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 08:26:48 Nov 29, 2007

R T

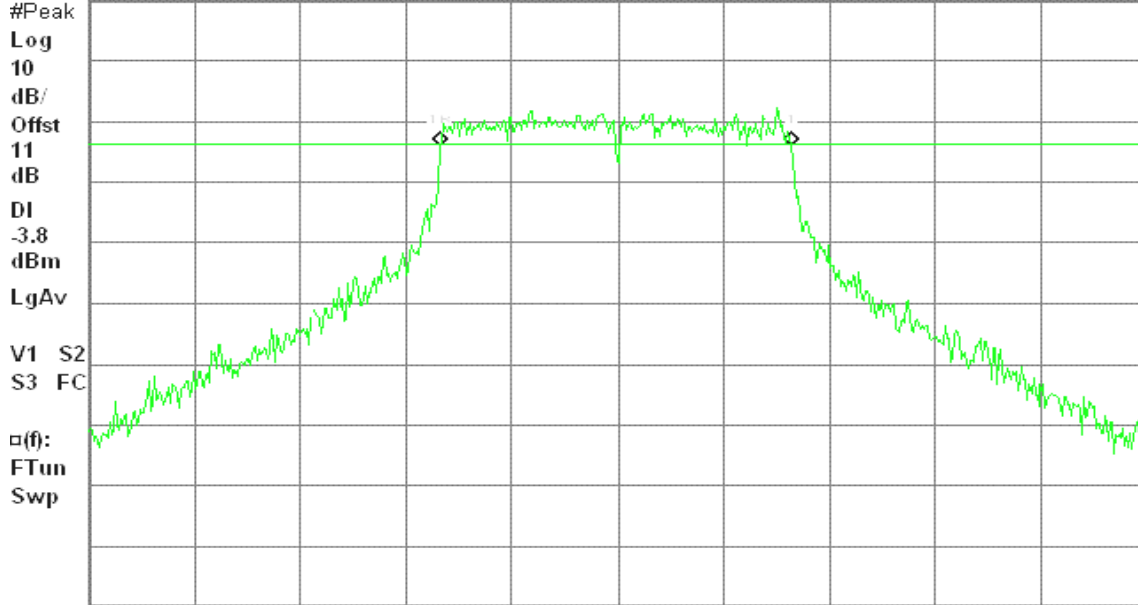
6dB BW, g Mode High Ch.

Δ Mkr1 16.50 MHz

Ref 20 dBm

Atten 20 dB

-0.22 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 19:59:59 Dec 25, 2007

R T

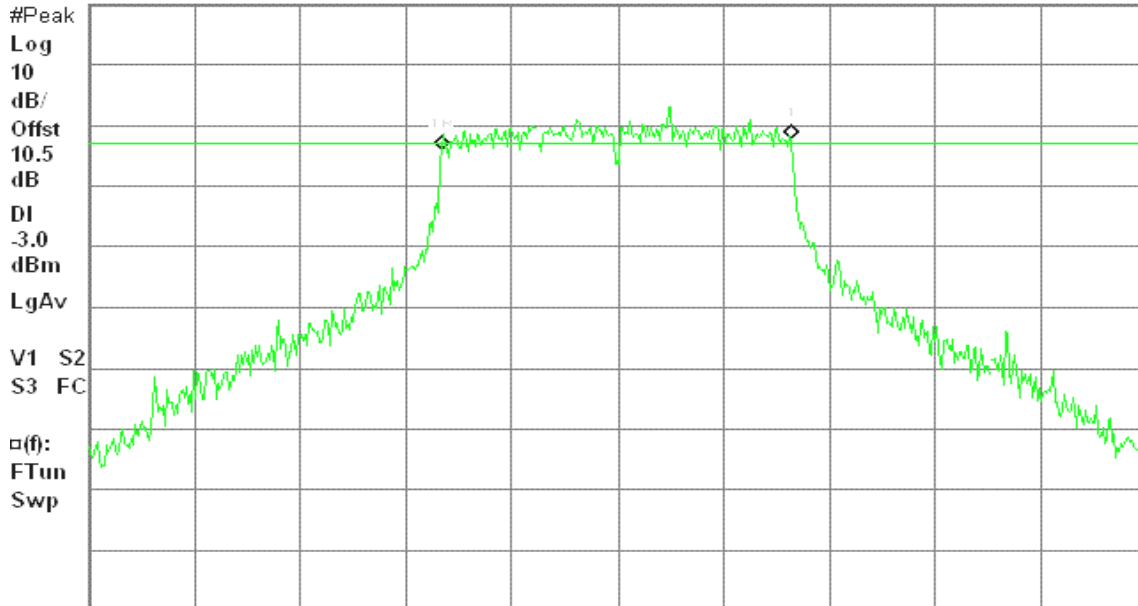
6dB BW, g Mode Low Ch.

Δ Mkr1 16.42 MHz

Ref 20 dBm

Atten 20 dB

1.76 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 20:08:07 Dec 25, 2007

R T

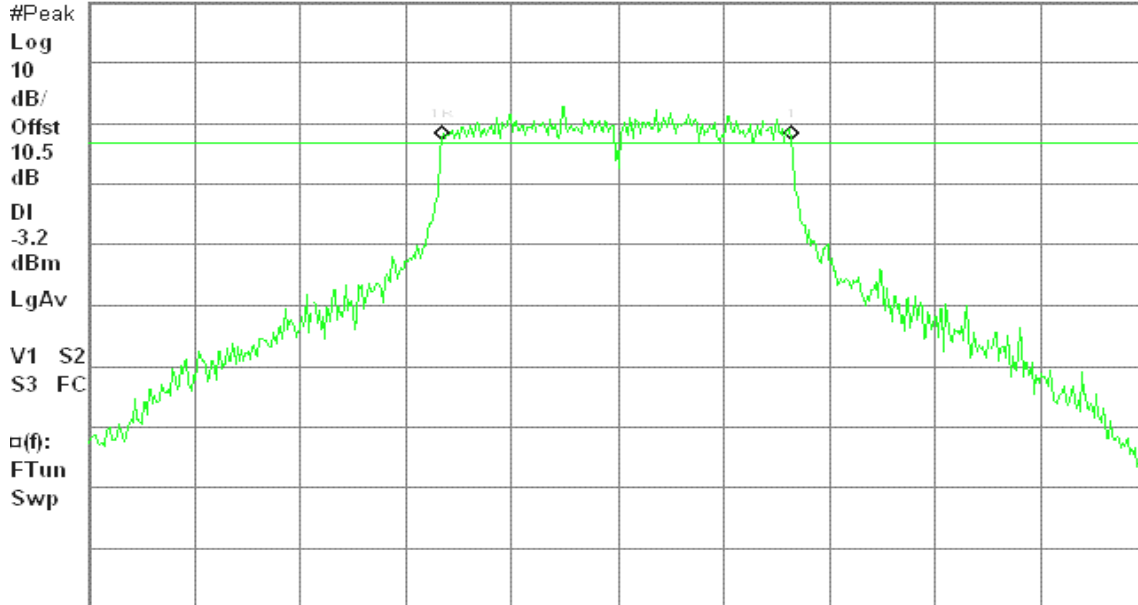
6dB BW, g Mode Mid Ch.

Δ Mkr1 16.42 MHz

Ref 20 dBm

Atten 20 dB

-0.02 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 20:13:17 Dec 25, 2007

R T

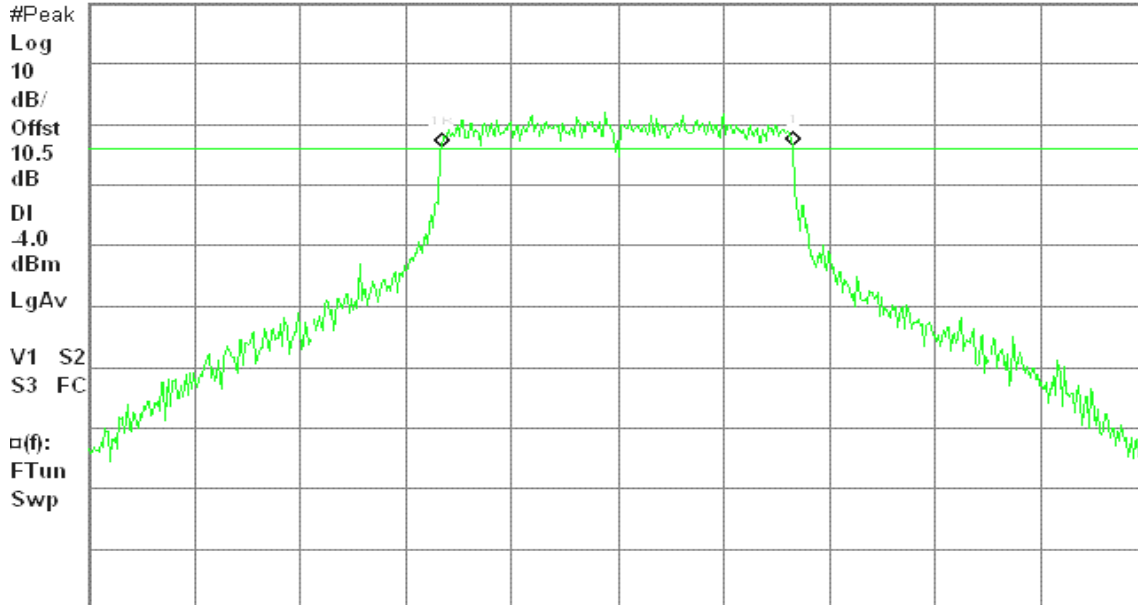
6dB BW, g Mode High Ch.

Δ Mkr1 16.50 MHz

Ref 20 dBm

Atten 20 dB

0.20 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)

Agilent 12:35:26 Nov 29, 2007

R T

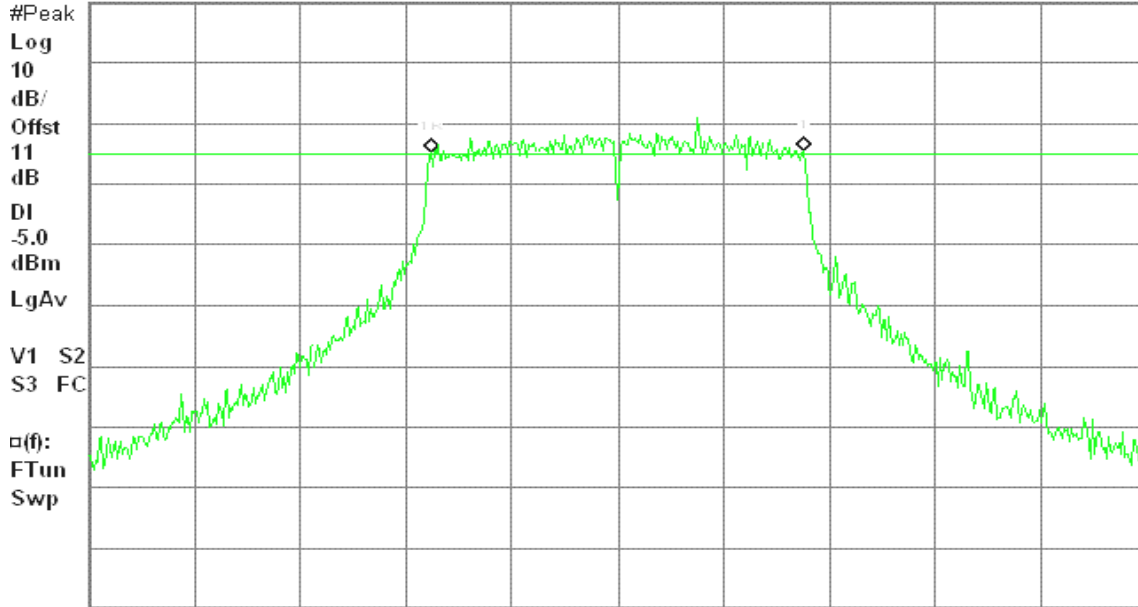
6dB BW, g Mode Low Ch.

Δ Mkr1 17.50 MHz

Ref 20 dBm

Atten 20 dB

0.30 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 12:29:33 Nov 29, 2007

R L

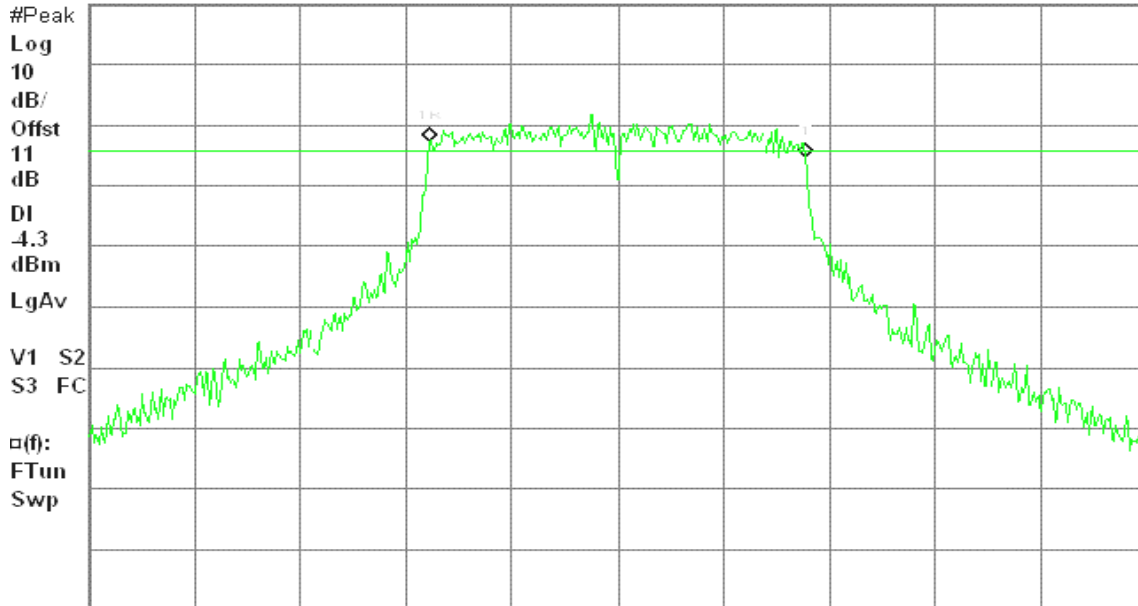
6dB BW, g Mode Mid Ch.

Δ Mkr1 17.67 MHz

Ref 20 dBm

Atten 20 dB

-2.65 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 12:24:25 Nov 29, 2007

R T

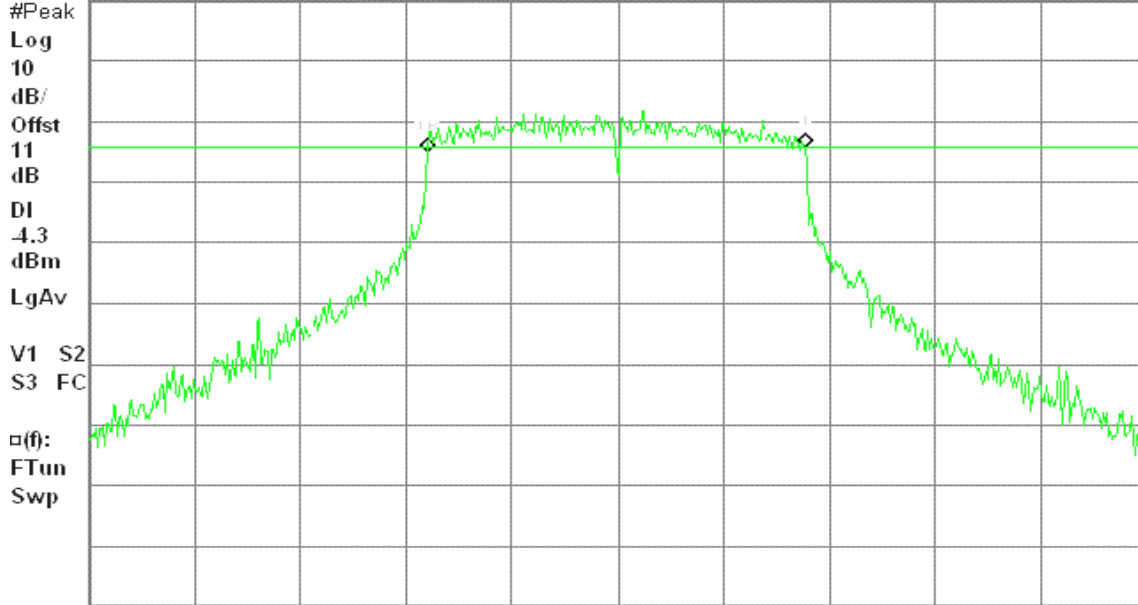
6dB BW, g Mode High Ch.

Δ Mkr1 17.75 MHz

Ref 20 dBm

Atten 20 dB

0.66 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 1

6dB Bandwidth (CH Low)

Agilent 10:09:39 Nov 29, 2007

R T

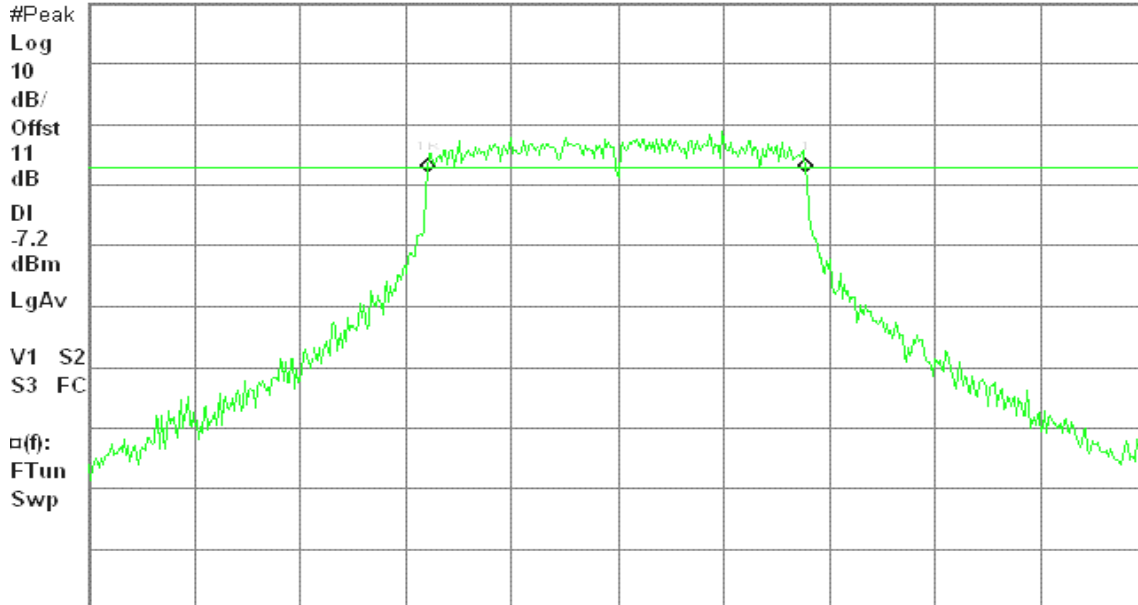
6dB BW, g Mode Low Ch.

Δ Mkr1 17.75 MHz

Ref 20 dBm

Atten 20 dB

-0.17 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 12:12:09 Nov 29, 2007

R L

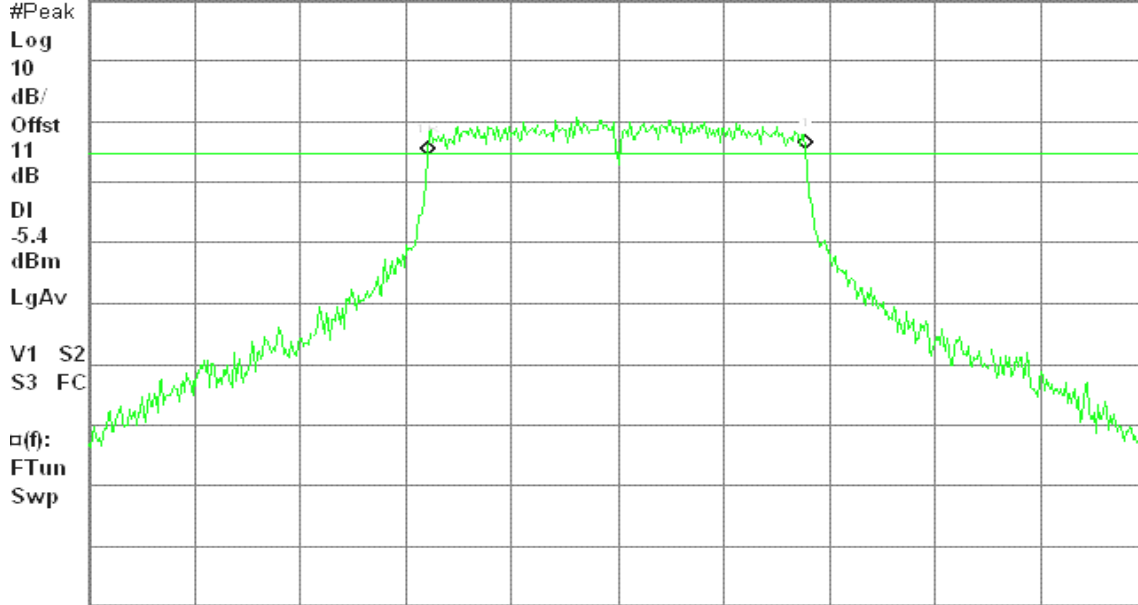
6dB BW, g Mode Mid Ch.

Δ Mkr1 17.75 MHz

Ref 20 dBm

Atten 20 dB

1.02 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 12:17:13 Nov 29, 2007

R T

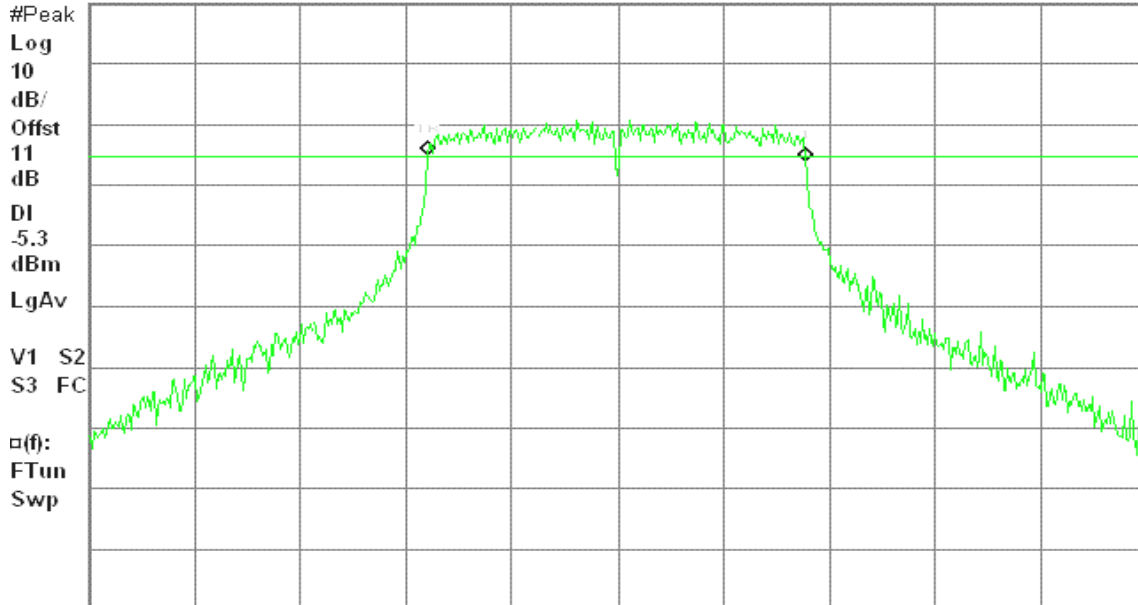
6dB BW, g Mode High Ch.

Δ Mkr1 17.75 MHz

Ref 20 dBm

Atten 20 dB

-0.89 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 09:34:27 Nov 29, 2007

R T

6dB BW, g Mode Low Ch.

Δ Mkr1 36.42 MHz

Ref 20 dBm

Atten 20 dB

2.37 dB

#Peak

Log

10

dB/

Offst

11

dB

DI

-11.3

dBm

LgAv

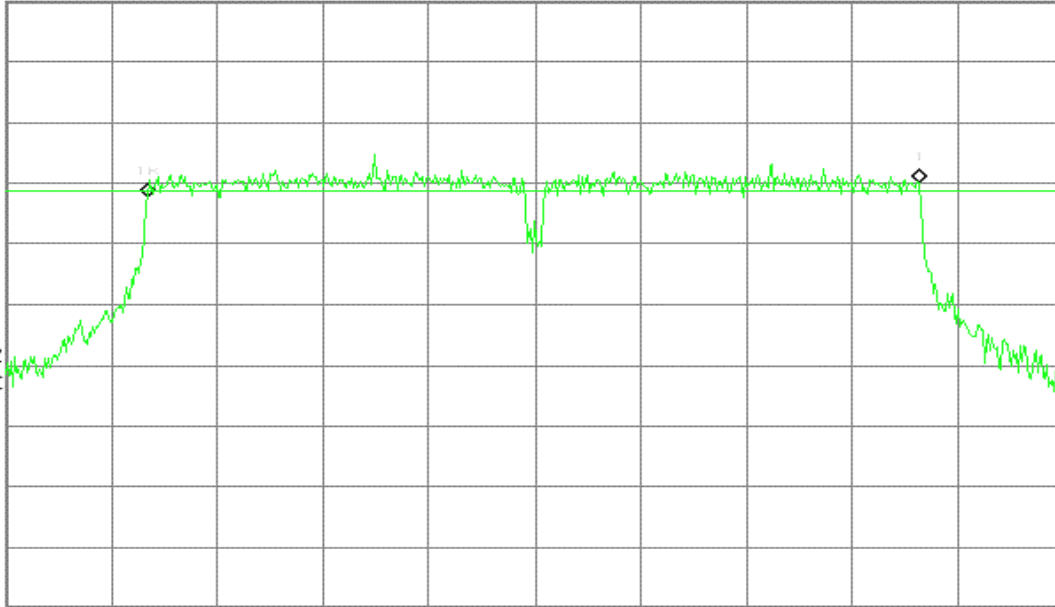
V1 S2

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 09:39:38 Nov 29, 2007

R T

6dB BW, g Mode Mid Ch.

Δ Mkr1 36.42 MHz

Ref 20 dBm

Atten 20 dB

1.31 dB

#Peak

Log

10

dB/

Offst

11

dB

DI

-9.1

dBm

LgAv

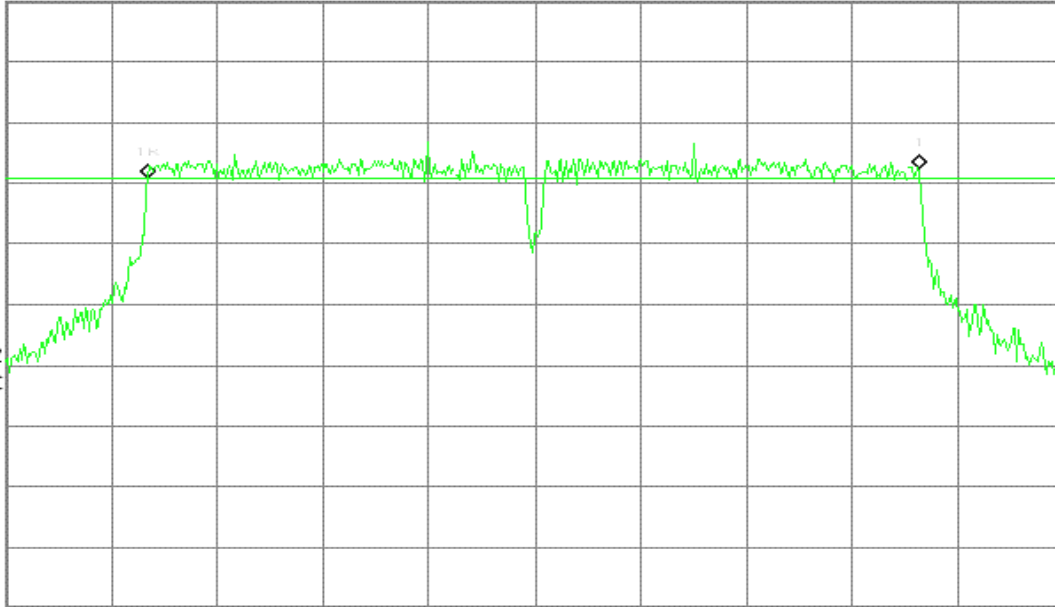
V1 S2

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 09:45:19 Nov 29, 2007

R T

6dB BW, g Mode High Ch.

Δ Mkr1 36.42 MHz

Ref 20 dBm

Atten 20 dB

0.31 dB

#Peak

Log

10

dB/

Offst

11

dB

DI

-8.9

dBm

LgAv

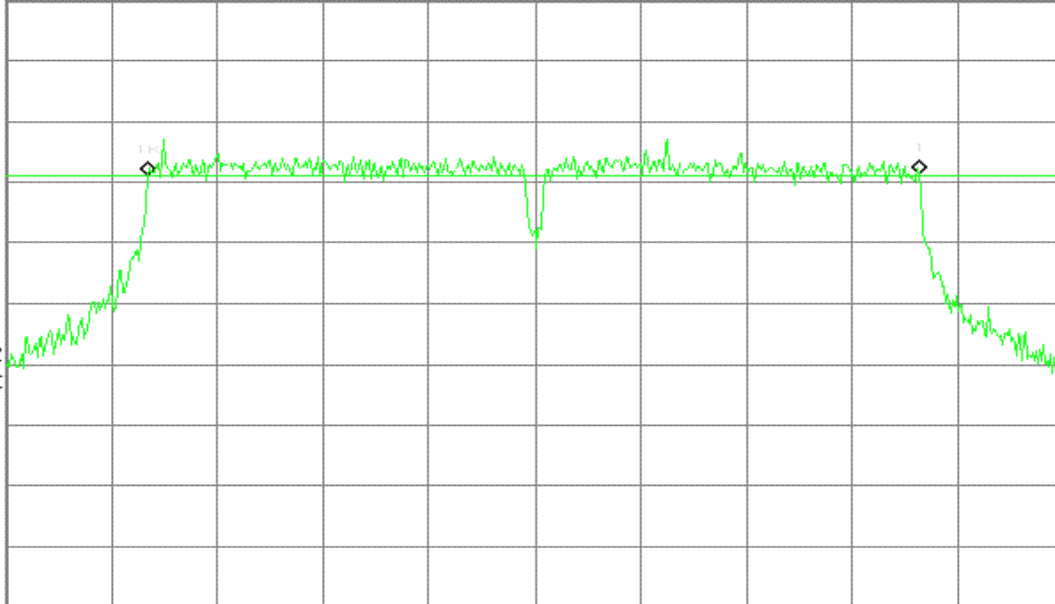
V1 S2

S3 FC

$\alpha(f)$:

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 10:02:55 Nov 29, 2007

R T

6dB BW, g Mode Low Ch.

Δ Mkr1 36.08 MHz

Ref 20 dBm

Atten 20 dB

0.85 dB

#Peak

Log

10

dB/

Offst

11

dB

DI

-11.1

dBm

LgAv

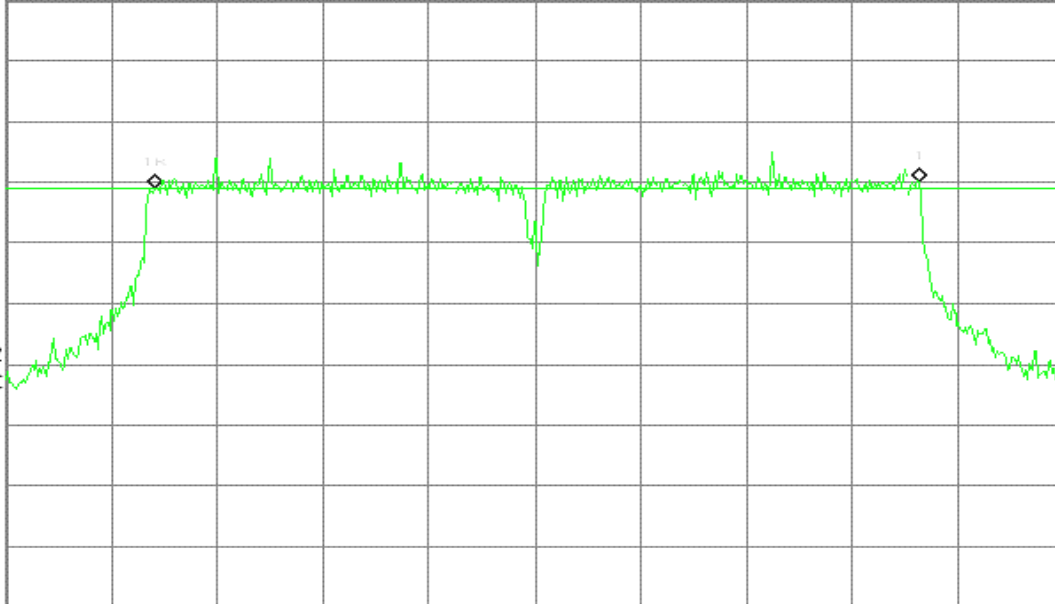
V1 S2

S3 FC

$\alpha(f)$:

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 09:57:17 Nov 29, 2007

R T

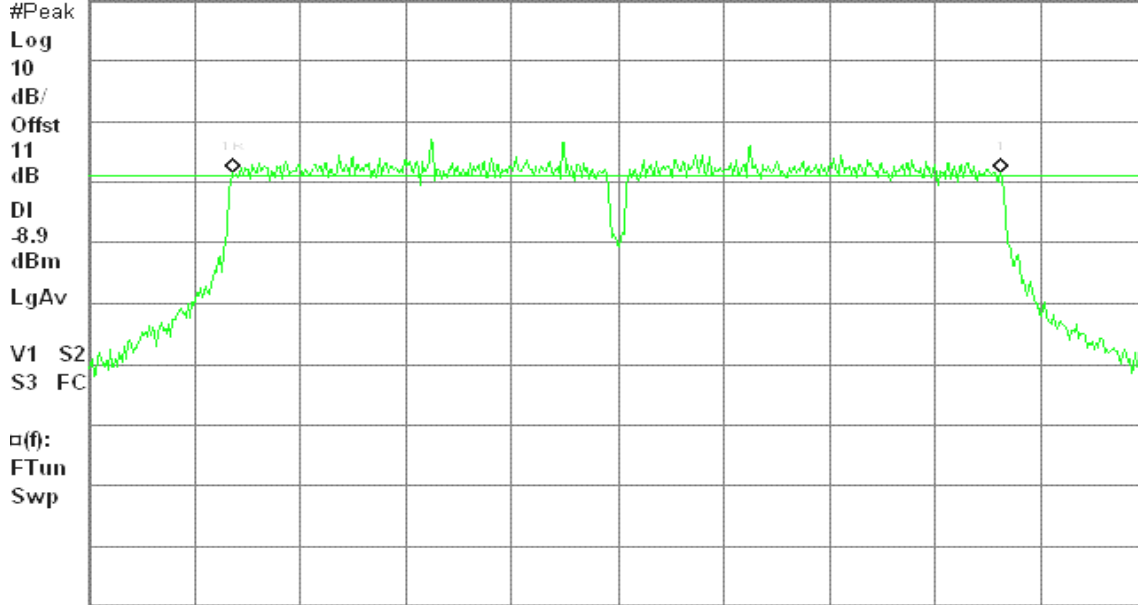
6dB BW, g Mode Mid Ch.

Δ Mkr1 36.25 MHz

Ref 20 dBm

Atten 20 dB

-0.08 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 09:52:15 Nov 29, 2007

R T

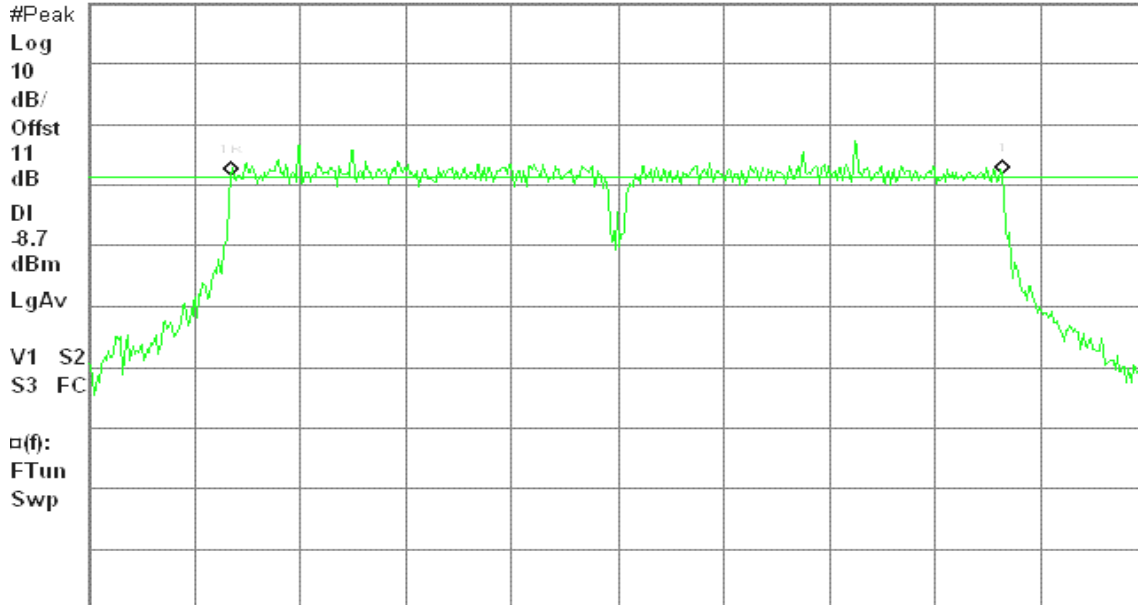
6dB BW, g Mode High Ch.

Δ Mkr1 36.42 MHz

Ref 20 dBm

Atten 20 dB

0.31 dB



Center 2.452 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

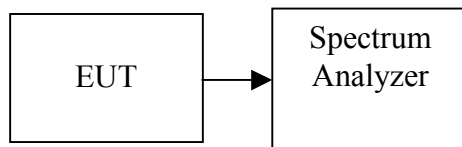
7.2 PEAK POWER

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	20.86	20.91	23.90	0.2452	1.00	PASS
Mid	2437	20.39	20.39	23.40	0.2188		PASS
High	2462	20.01	19.37	22.71	0.1867		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	19.44	19.03	22.25	0.1679	1.00	PASS
Mid	2437	19.78	19.77	22.79	0.1899		PASS
High	2462	19.54	20.03	22.80	0.1906		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	17.20	16.53	19.89	0.0975	1.00	PASS
Mid	2437	18.77	19.18	21.99	0.1581		PASS
High	2462	19.27	19.49	22.39	0.1734		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	14.06	13.06	16.60	0.0457	1.00	PASS
Mid	2437	15.84	15.64	18.75	0.0750		PASS
High	2452	16.19	15.72	18.97	0.0789		PASS

Remark: Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000)+ Chain 2 (10^(Output Power /10)/1000)



Test Plot

IEEE 802.11b mode / Chain 0

Peak Power (CH Low)

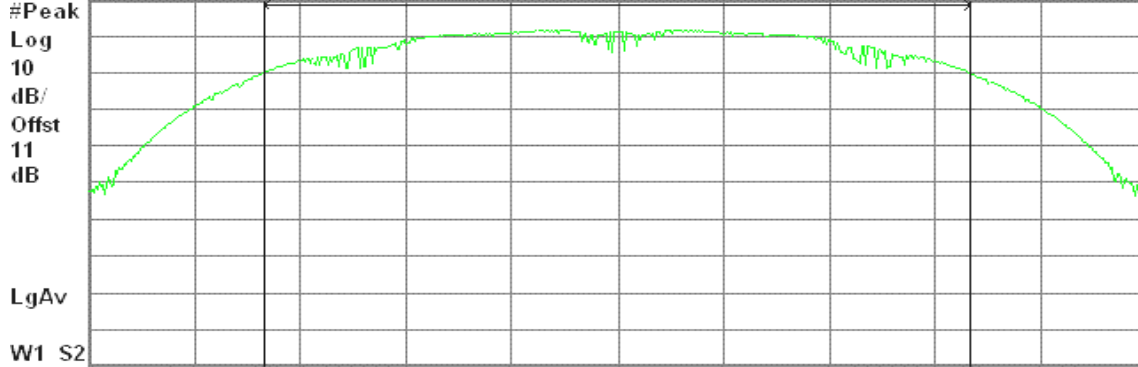
Agilent 16:22:55 Nov 28, 2007

R T

Peak Output Power , b Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 22.99 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

20.86 dBm / 15.3240 MHz

-51.00 dBm/Hz

Peak Power (CH Mid)

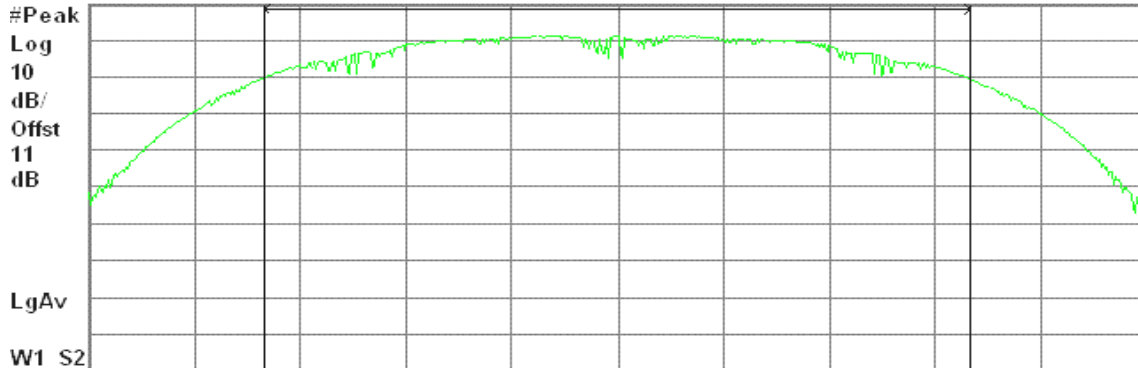
Agilent 16:28:48 Nov 28, 2007

R T

Peak Output Power , b Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 22.91 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

20.39 dBm / 15.2720 MHz

-51.45 dBm/Hz



Peak Power (CH High)

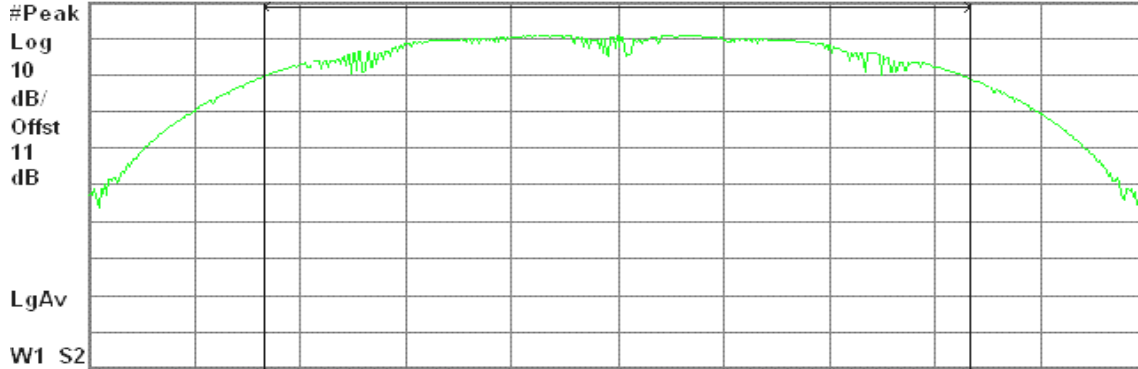
Agilent 16:33:38 Nov 28, 2007

R T

Peak Output Power, b Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 22.91 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

20.01 dBm / 15.2710 MHz

-51.82 dBm/Hz

IEEE 802.11b mode / Chain 1

Peak Power (CH Low)

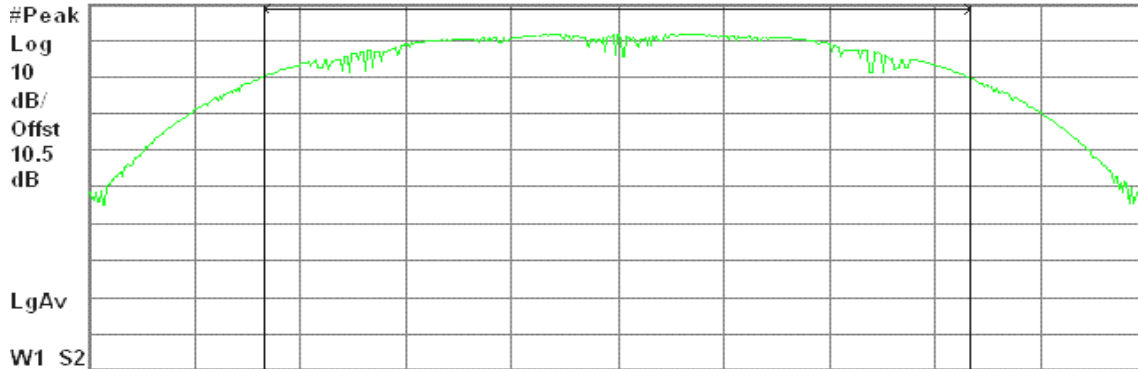
Agilent 20:27:11 Dec 25, 2007

R T

Peak Output Power, b Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 23.11 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

20.91 dBm / 15.4090 MHz

-50.96 dBm/Hz



Peak Power (CH Mid)

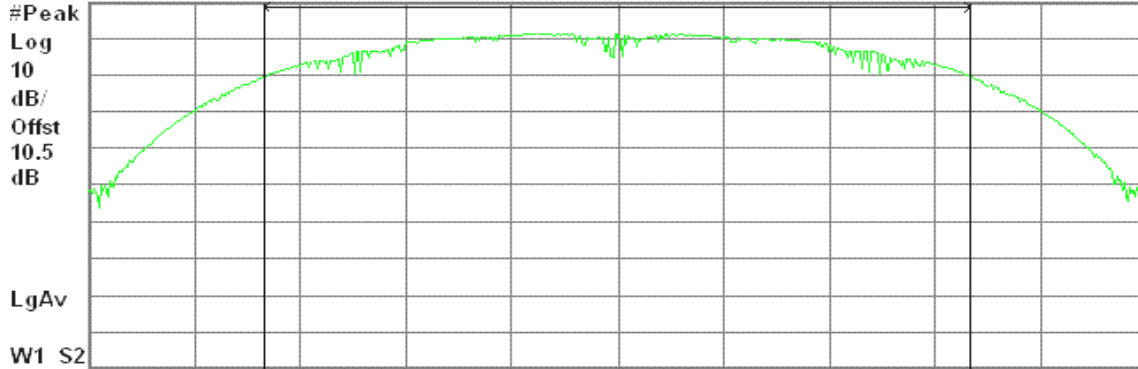
Agilent 20:32:29 Dec 25, 2007

R T

Peak Output Power, b Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 23.01 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

20.39 dBm / 15.3390 MHz

-51.47 dBm/Hz

Peak Power (CH High)

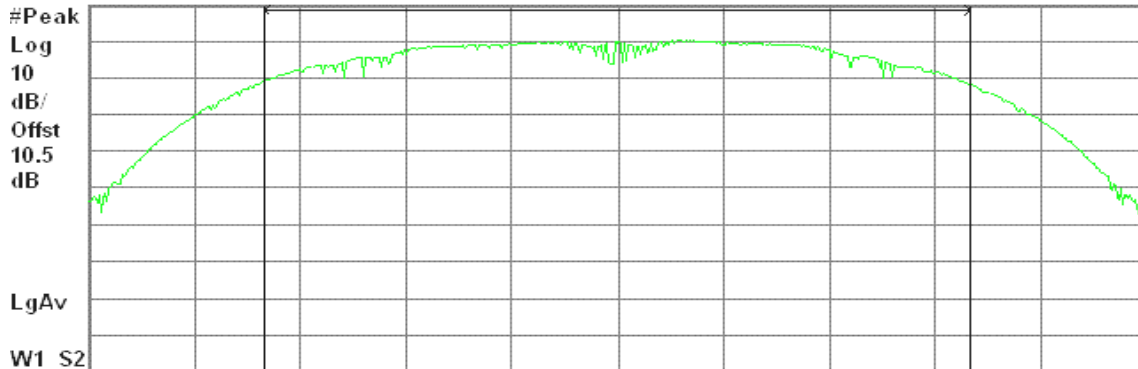
Agilent 20:37:20 Dec 25, 2007

R T

Peak Output Power, b Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 22.98 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.37 dBm / 15.3190 MHz

-52.48 dBm/Hz



IEEE 802.11g mode / Chain 0

Peak Power (CH Low)

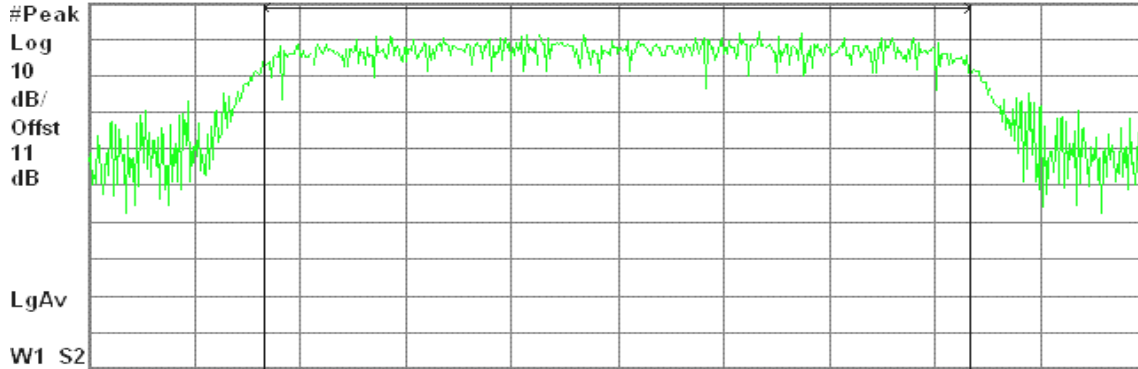
Agilent 16:47:38 Nov 28, 2007

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

19.44 dBm / 16.6330 MHz

-52.77 dBm/Hz

Peak Power (CH Mid)

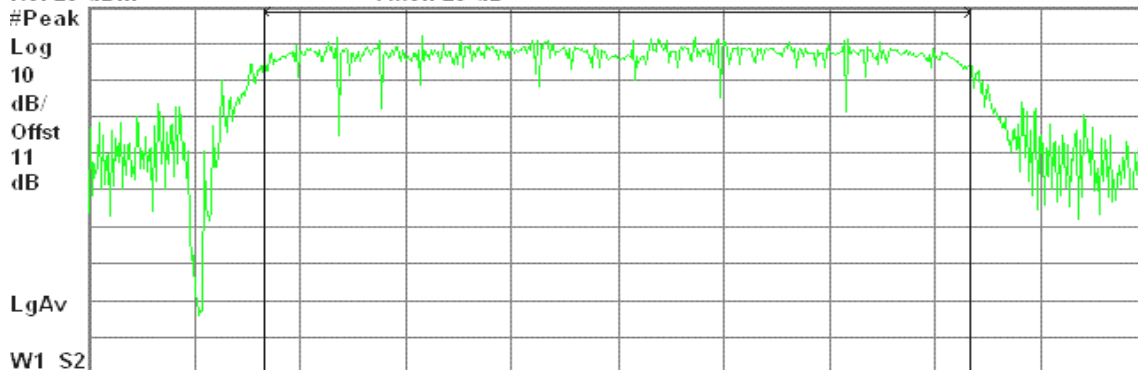
Agilent 08:22:35 Nov 29, 2007

R T

Peak Output Power , g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 25.03 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.78 dBm / 16.6890 MHz

-52.44 dBm/Hz



Peak Power (CH High)

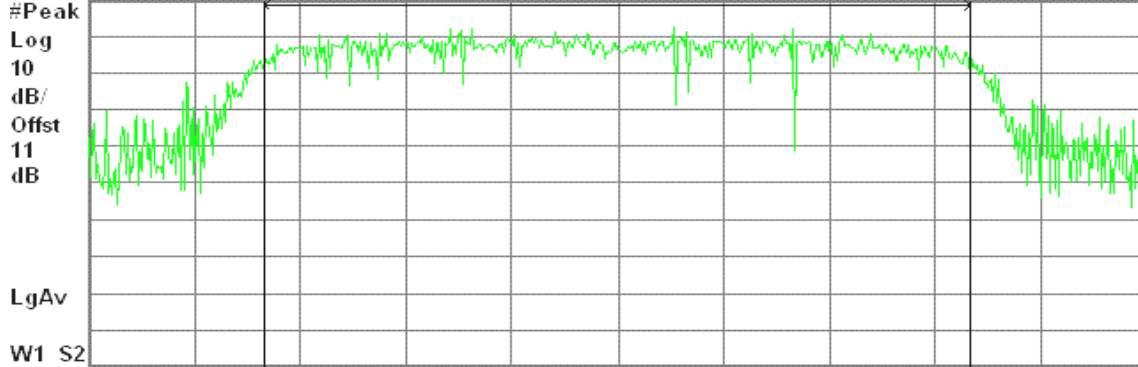
Agilent 08:27:26 Nov 29, 2007

R T

Peak Output Power, g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 24.94 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.54 dBm / 16.6270 MHz

-52.67 dBm/Hz

IEEE 802.11g mode / Chain 1

Peak Power (CH Low)

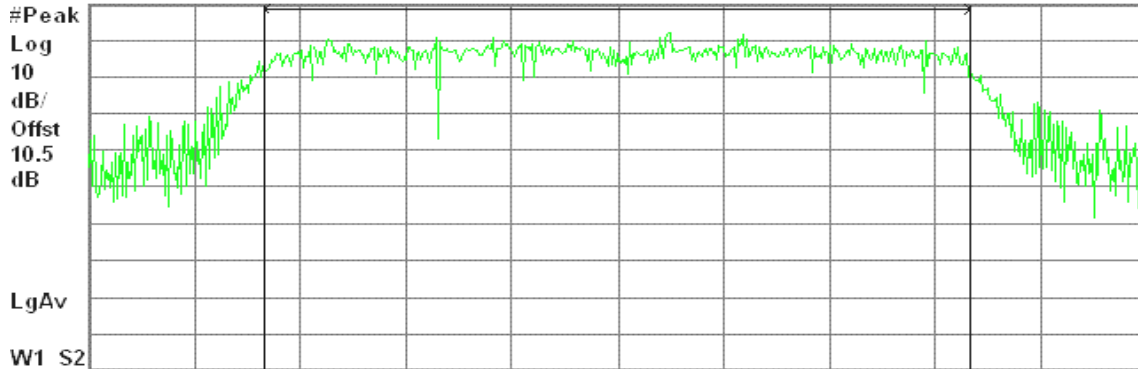
Agilent 20:00:57 Dec 25, 2007

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

19.03 dBm / 16.6350 MHz

-53.18 dBm/Hz



Peak Power (CH Mid)

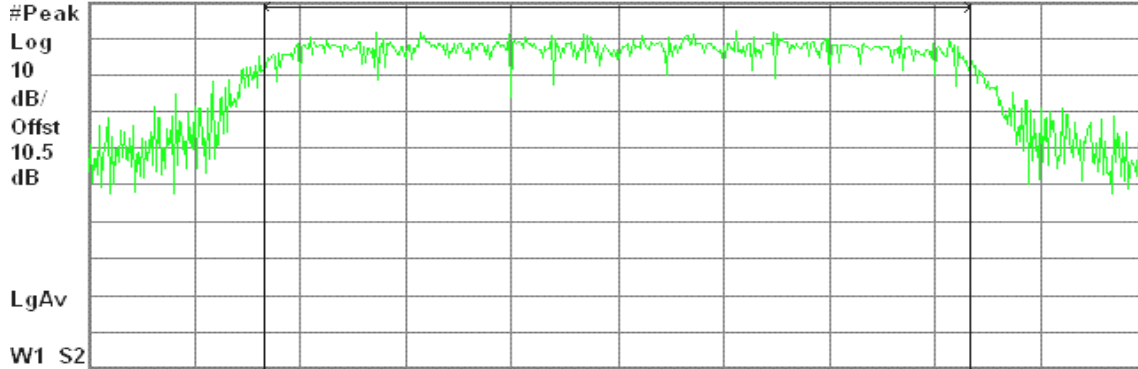
Agilent 20:08:46 Dec 25, 2007

R T

Peak Output Power, g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 24.95 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.77 dBm / 16.6310 MHz

-52.44 dBm/Hz

Peak Power (CH High)

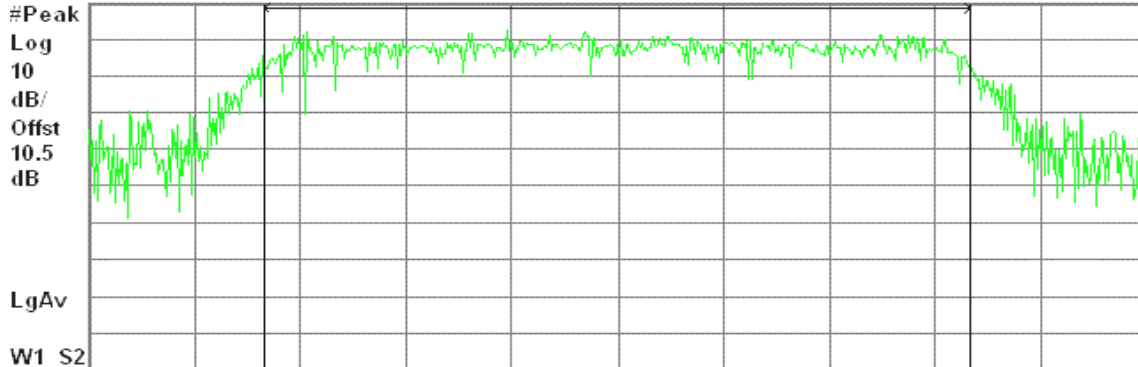
Agilent 20:14:04 Dec 25, 2007

R T

Peak Output Power, g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 24.95 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

20.03 dBm / 16.6310 MHz

-52.18 dBm/Hz



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

Peak Power (CH Low)

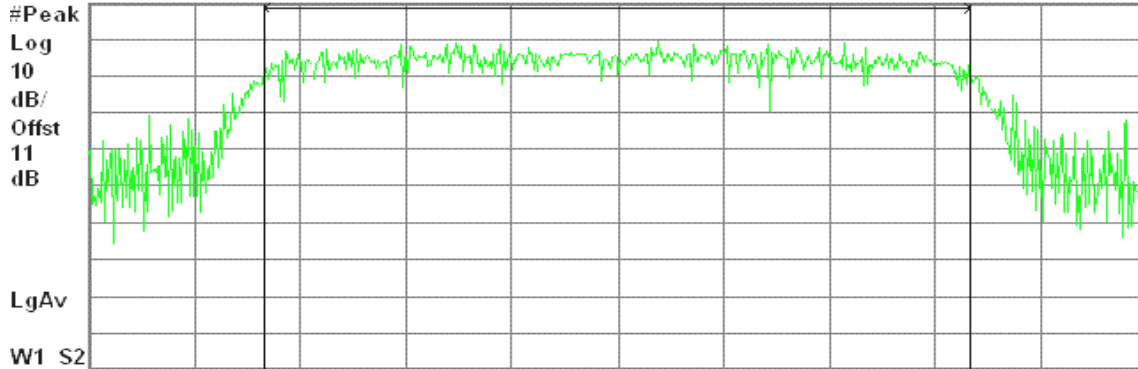
Agilent 12:36:06 Nov 29, 2007

R T

Peak Output Power , g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 26.67 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

17.20 dBm / 17.7830 MHz

-55.30 dBm/Hz

Peak Power (CH Mid)

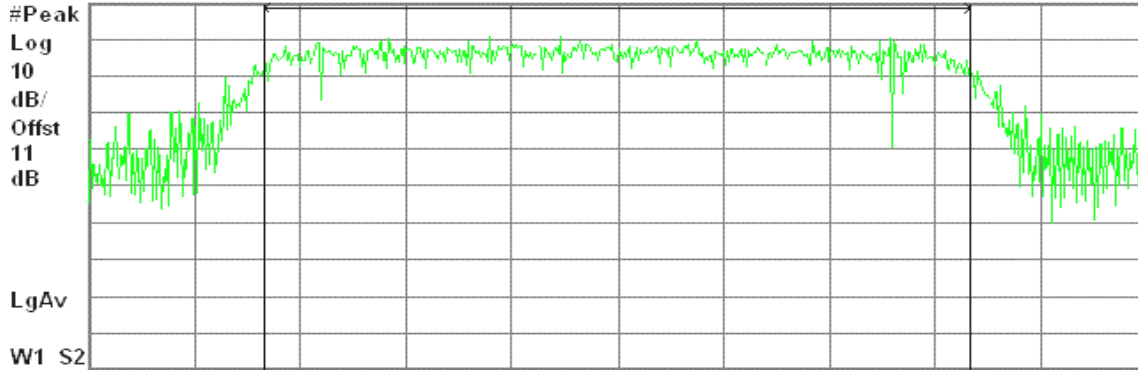
Agilent 12:30:26 Nov 29, 2007

R T

Peak Output Power , g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 26.75 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

18.77 dBm / 17.8350 MHz

-53.75 dBm/Hz



Peak Power (CH High)

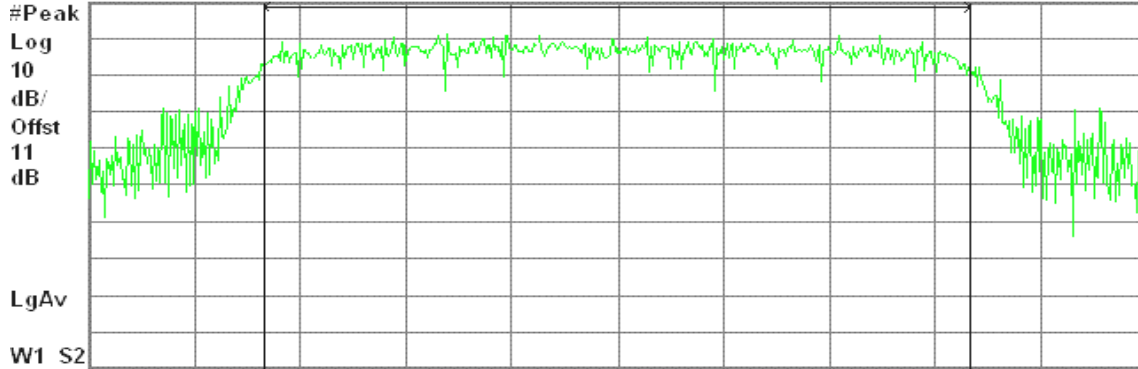
Agilent 12:25:05 Nov 29, 2007

R T

Peak Output Power , g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 26.72 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.27 dBm / 17.8140 MHz

-53.24 dBm/Hz

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

Peak Power (CH Low)

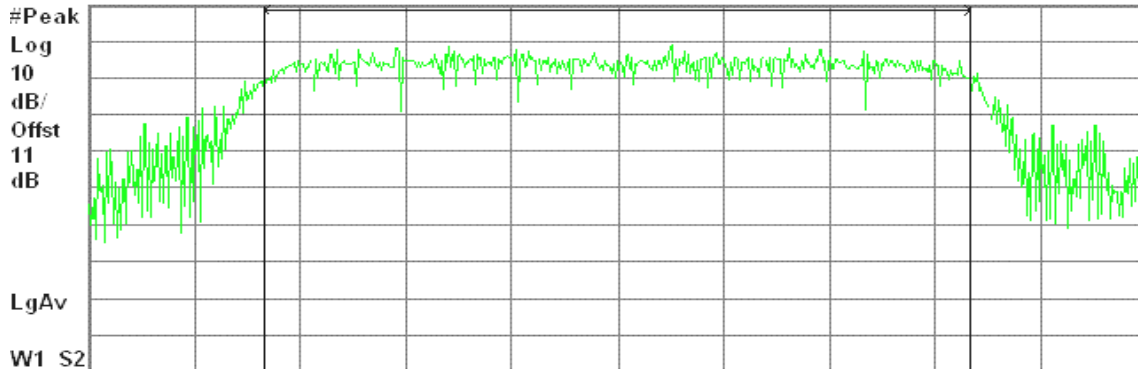
Agilent 10:10:22 Nov 29, 2007

R T

Peak Output Power , g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 26.69 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.53 dBm / 17.7910 MHz

-55.97 dBm/Hz



Peak Power (CH Mid)

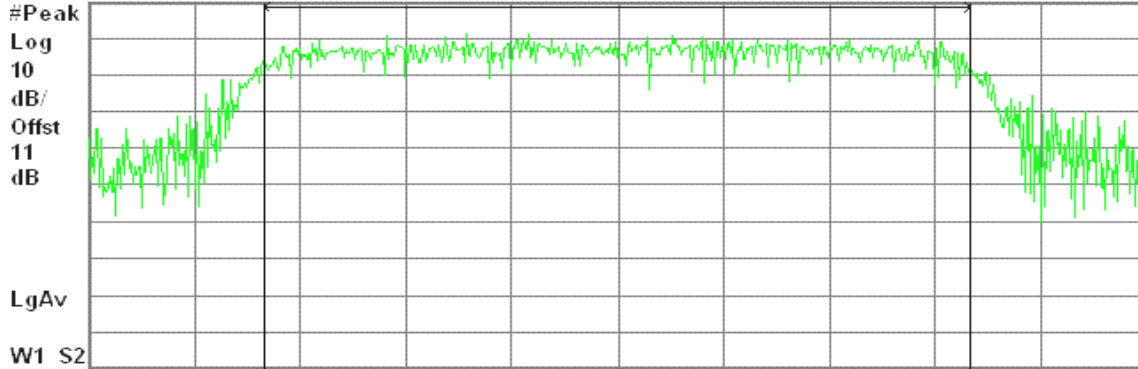
Agilent 12:12:47 Nov 29, 2007

R T

Peak Output Power , g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 26.75 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.18 dBm / 17.8330 MHz

-53.33 dBm/Hz

Peak Power (CH High)

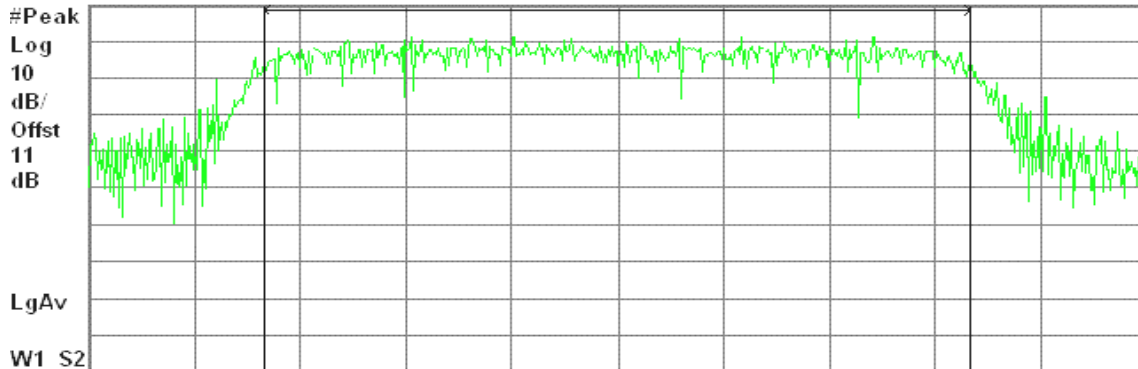
Agilent 12:18:04 Nov 29, 2007

R T

peak Output Power , g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 26.71 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.49 dBm / 17.8080 MHz

-53.02 dBm/Hz



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

Peak Power (CH Low)

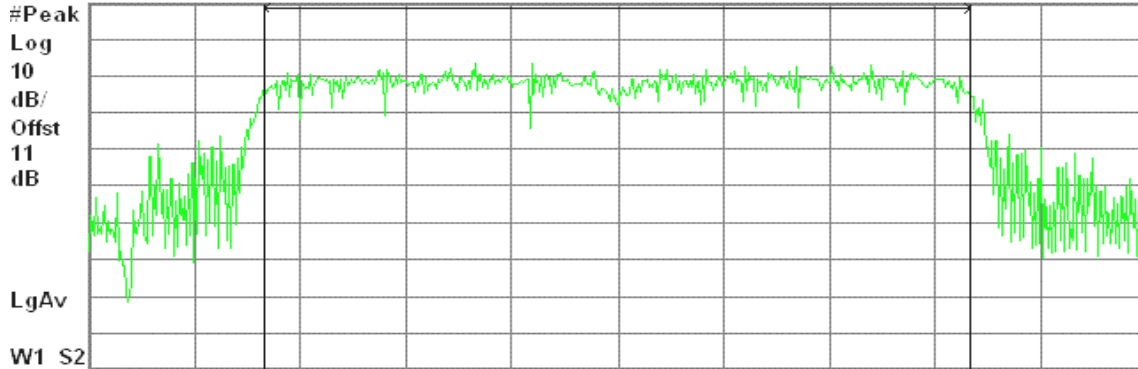
Agilent 09:35:17 Nov 29, 2007

R T

Peak Output Power , g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.422 00 GHz

Span 54.74 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

14.06 dBm / 36.4930 MHz

-61.56 dBm/Hz

Peak Power (CH Mid)

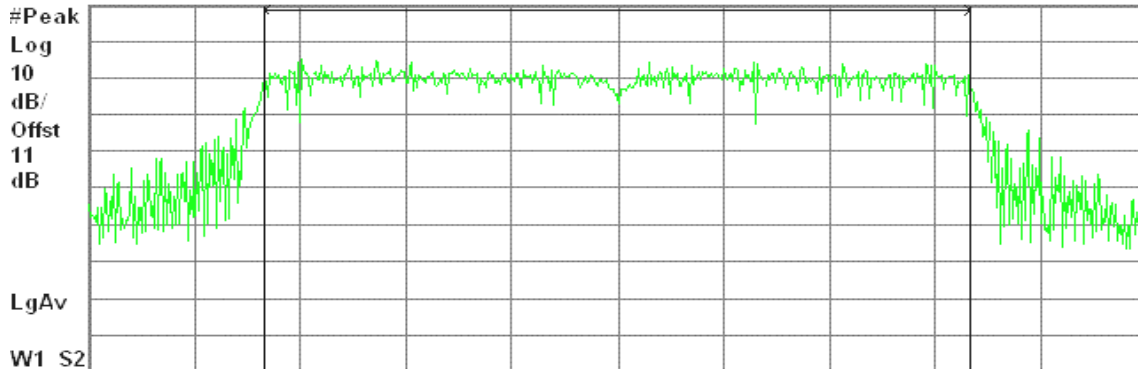
Agilent 09:40:19 Nov 29, 2007

R T

Peak Output Power , g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 54.85 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

15.84 dBm / 36.5660 MHz

-59.79 dBm/Hz



Peak Power (CH High)

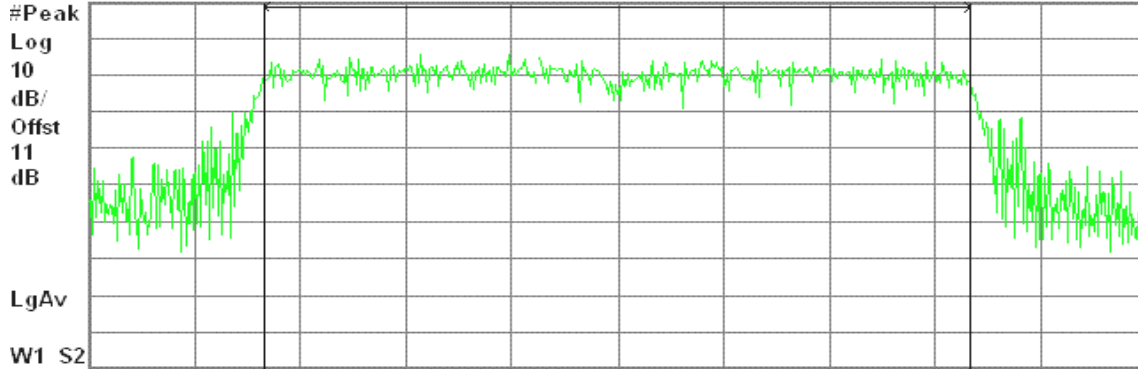
Agilent 09:46:06 Nov 29, 2007

R T

Peak Output Power , g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.452 00 GHz

Span 54.73 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.19 dBm / 36.4900 MHz

-59.43 dBm/Hz

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

Peak Power (CH Low)

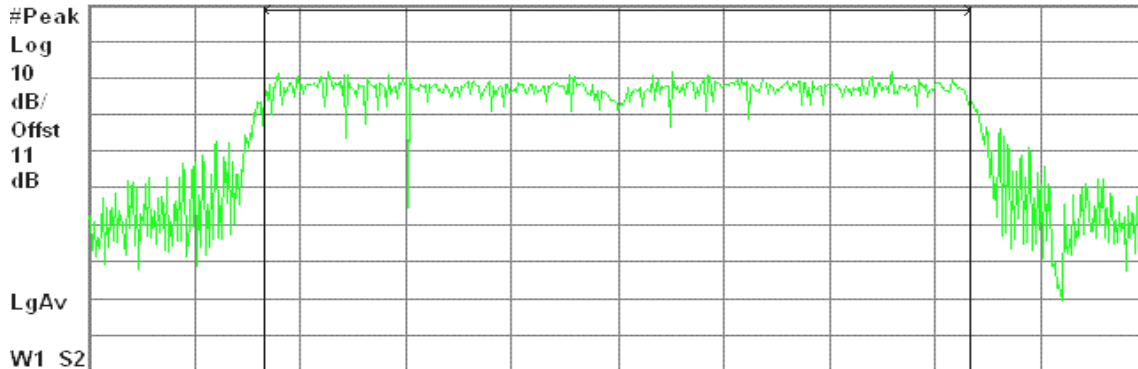
Agilent 10:03:53 Nov 29, 2007

R T

Peak Output Power , g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.422 00 GHz

Span 54.72 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

13.06 dBm / 36.4830 MHz

-62.56 dBm/Hz



Peak Power (CH Mid)

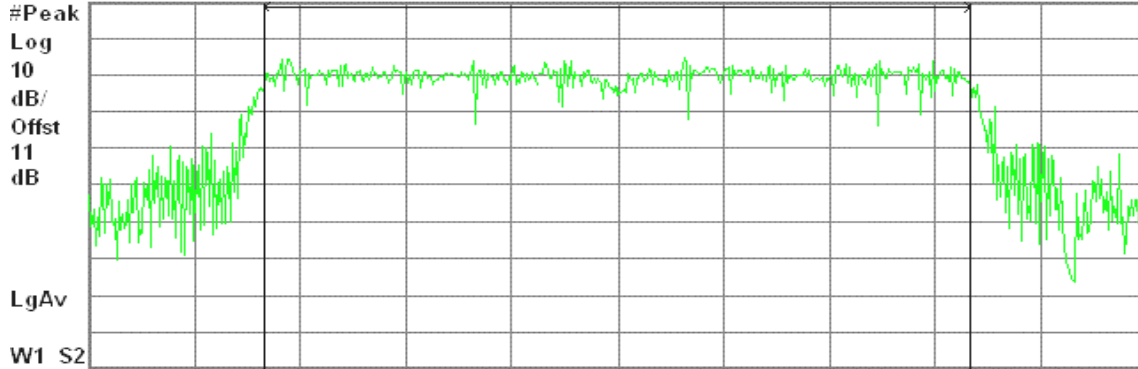
Agilent 09:58:09 Nov 29, 2007

R T

Peak Output Power , g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 54.71 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

15.64 dBm / 36.4710 MHz

-59.98 dBm/Hz

Peak Power (CH High)

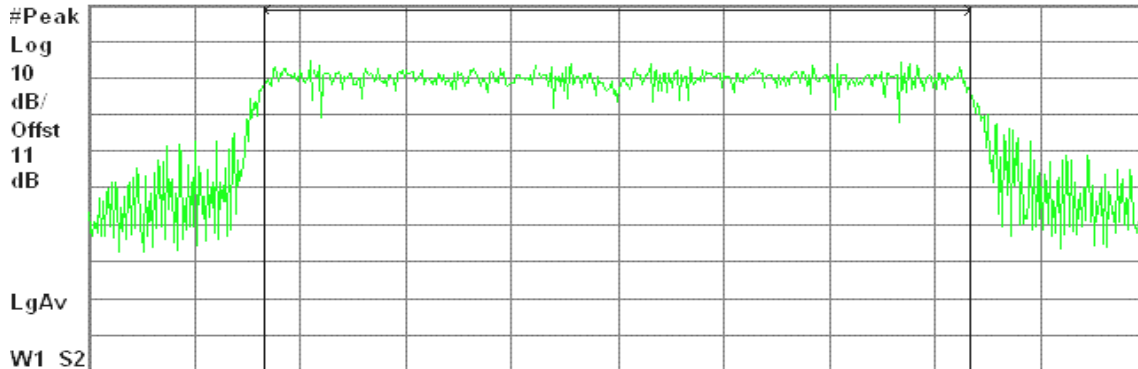
Agilent 09:53:06 Nov 29, 2007

R T

Peak Output Power , g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.452 00 GHz

Span 54.72 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

15.72 dBm / 36.4780 MHz

-59.90 dBm/Hz

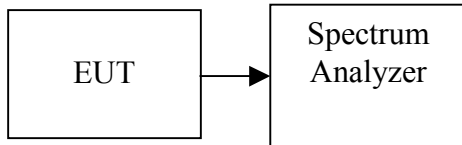


7.3 AVERAGE POWER

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	18.27	18.02	21.16	0.1305	1.00	PASS
Mid	2437	17.82	17.70	20.77	0.1194		PASS
High	2462	17.43	16.79	20.13	0.1031		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	15.66	15.56	18.62	0.0728	1.00	PASS
Mid	2437	16.40	16.15	19.29	0.0849		PASS
High	2462	16.40	16.46	19.44	0.0879		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	13.37	13.29	16.34	0.0431	1.00	PASS
Mid	2437	15.70	15.77	18.75	0.0749		PASS
High	2462	15.32	15.82	18.59	0.0722		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	10.33	9.67	13.02	0.0201	1.00	PASS
Mid	2437	12.18	12.26	15.23	0.0333		PASS
High	2452	12.80	12.22	15.53	0.0357		PASS



Test Plot

IEEE 802.11b mode / Chain 0

Average Power (CH Low)

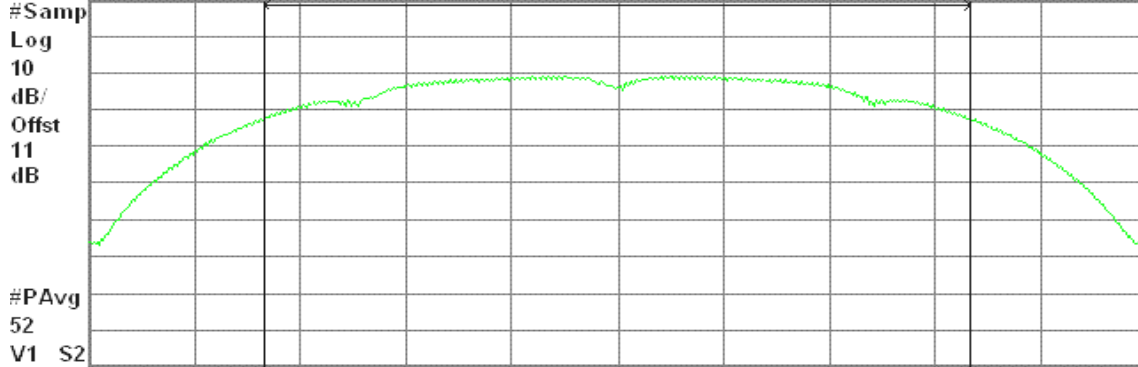
Agilent 16:23:27 Nov 28, 2007

R T

avg Output Power , b Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.412 00 GHz

Span 22.99 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

18.27 dBm / 15.3240 MHz

-53.58 dBm/Hz

Average Power (CH Mid)

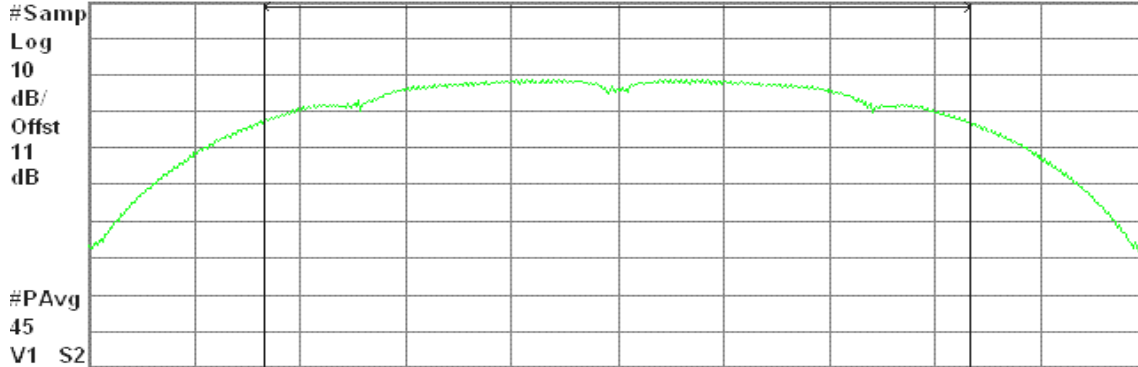
Agilent 16:29:18 Nov 28, 2007

R T

avg Output Power , b Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 22.91 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

17.82 dBm / 15.2720 MHz

-54.02 dBm/Hz



Average Power (CH High)

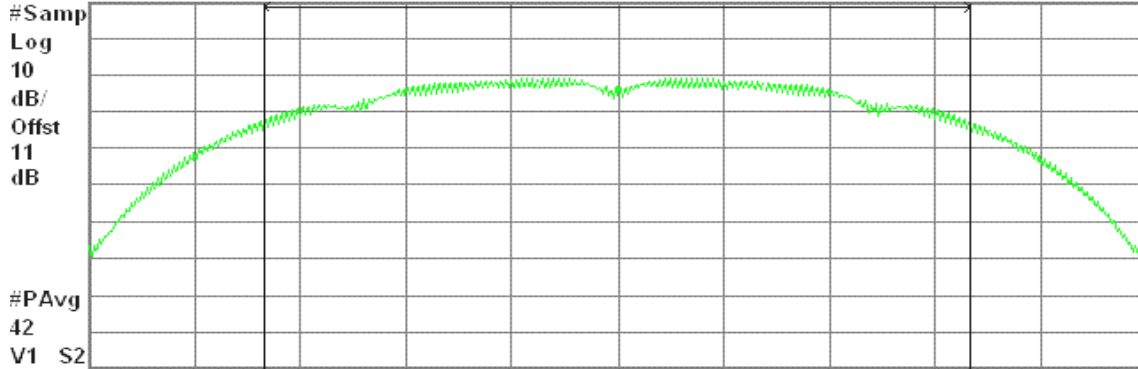
Agilent 16:34:08 Nov 28, 2007

R T

avg Output Power, b Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 22.91 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

17.43 dBm / 15.2710 MHz

-54.41 dBm/Hz

IEEE 802.11b mode / Chain 1

Average Power (CH Low)

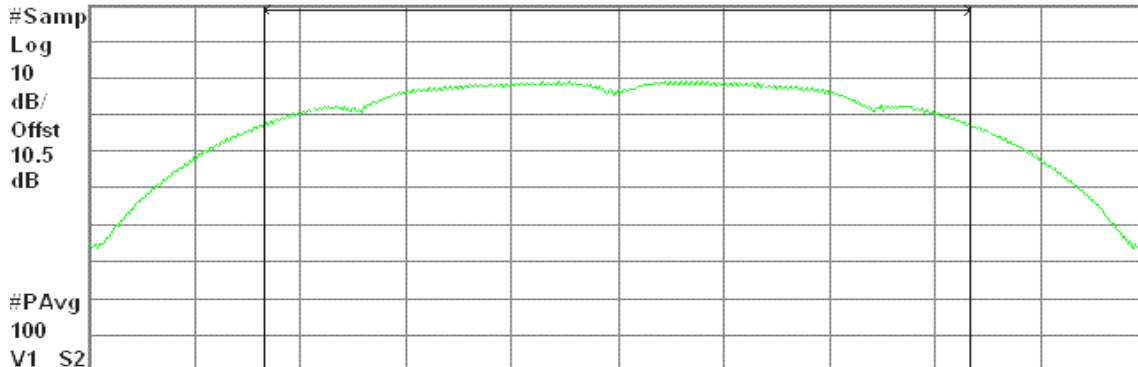
Agilent 20:28:09 Dec 25, 2007

R T

avg Output Power, b Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.412 00 GHz

Span 23.11 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

18.02 dBm / 15.4090 MHz

-53.86 dBm/Hz



Average Power (CH Mid)

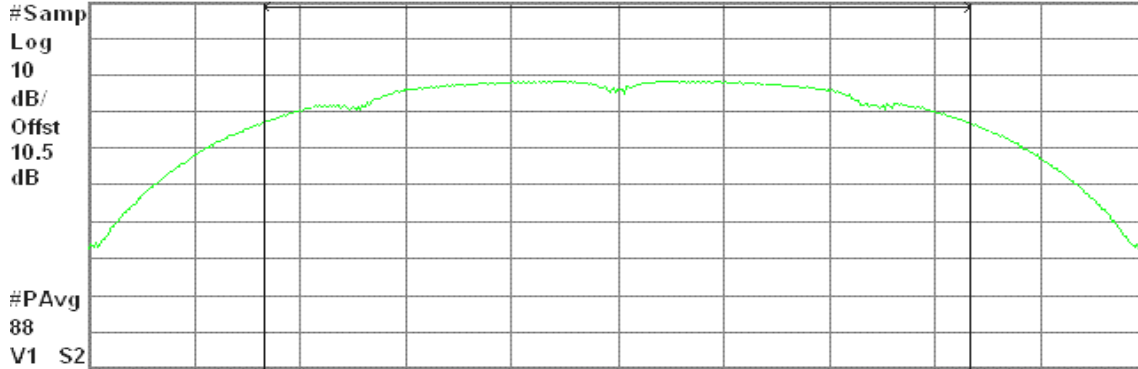
Agilent 20:33:08 Dec 25, 2007

R T

avg Output Power, b Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 23.01 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

17.70 dBm / 15.3390 MHz

-54.15 dBm/Hz

Average Power (CH High)

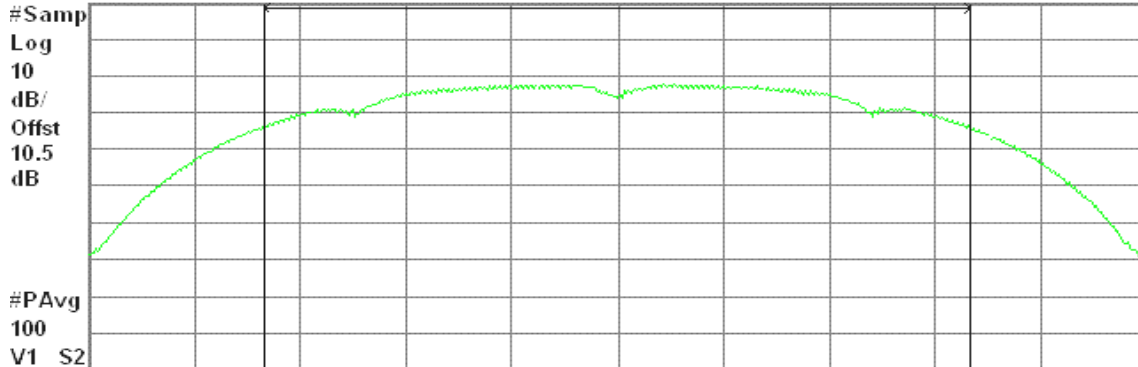
Agilent 20:38:32 Dec 25, 2007

R T

avg Output Power, b Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 22.98 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.79 dBm / 15.3190 MHz

-55.06 dBm/Hz



IEEE 802.11g mode / Chain 0

Average Power (CH Low)

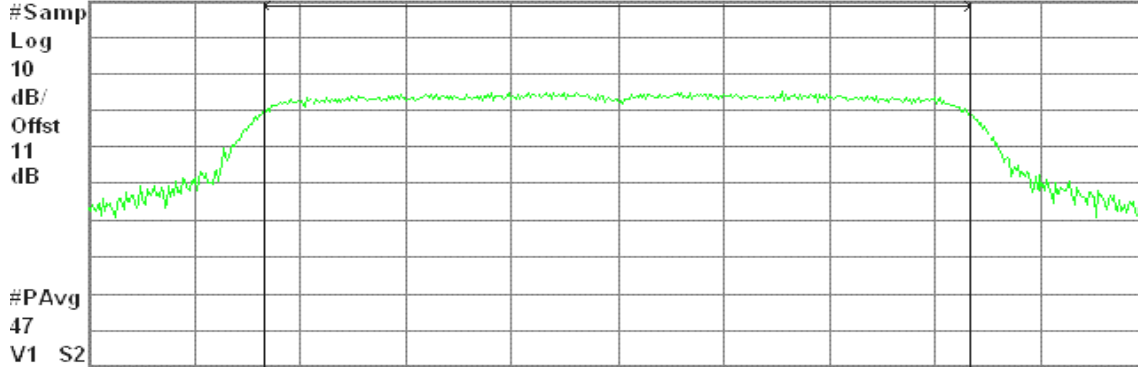
Agilent 16:48:13 Nov 28, 2007

R T

avg Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 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

15.66 dBm / 16.6330 MHz

-56.55 dBm/Hz

Average Power (CH Mid)

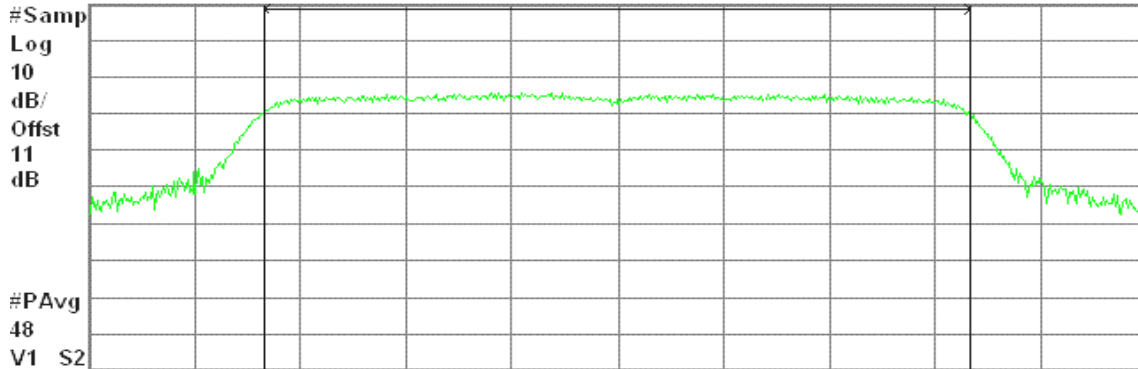
Agilent 08:23:07 Nov 29, 2007

R T

avg Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 25.03 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.40 dBm / 16.6890 MHz

-55.83 dBm/Hz



Average Power (CH High)

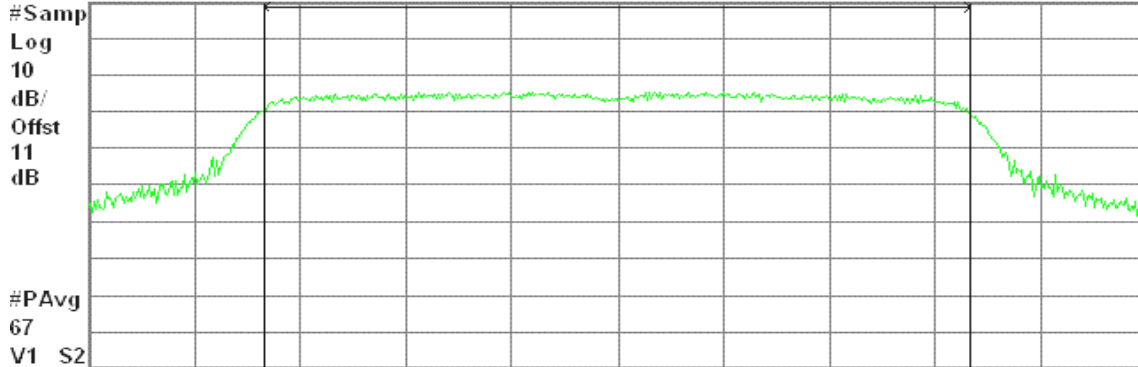
Agilent 08:28:03 Nov 29, 2007

R T

avg Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 24.94 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.40 dBm / 16.6270 MHz

-55.81 dBm/Hz

IEEE 802.11g mode / Chain 1

Average Power (CH Low)

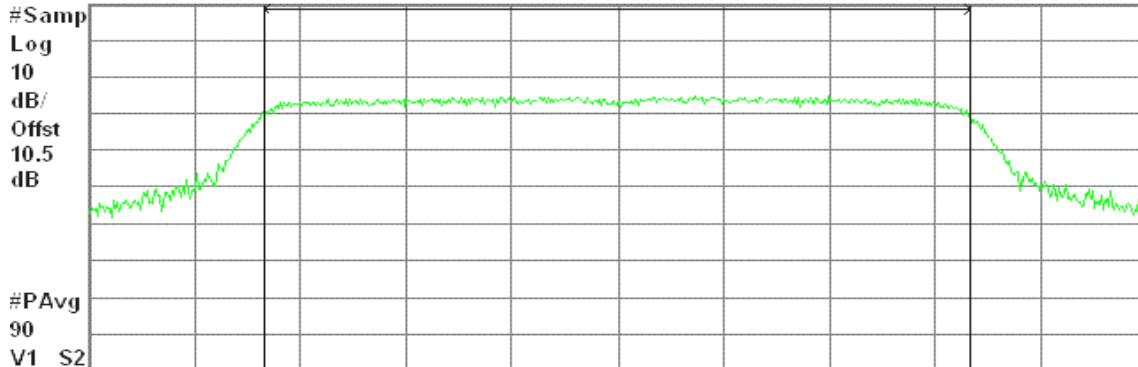
Agilent 20:07:00 Dec 25, 2007

R T

avg Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 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

15.56 dBm / 16.6350 MHz

-56.65 dBm/Hz



Average Power (CH Mid)

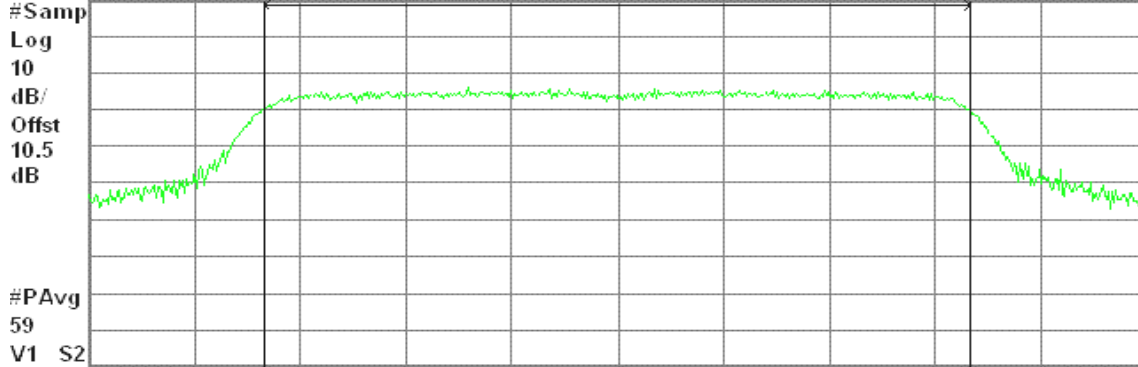
Agilent 20:09:21 Dec 25, 2007

R T

avg Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 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 / 16.6310 MHz

-56.06 dBm/Hz

Average Power (CH High)

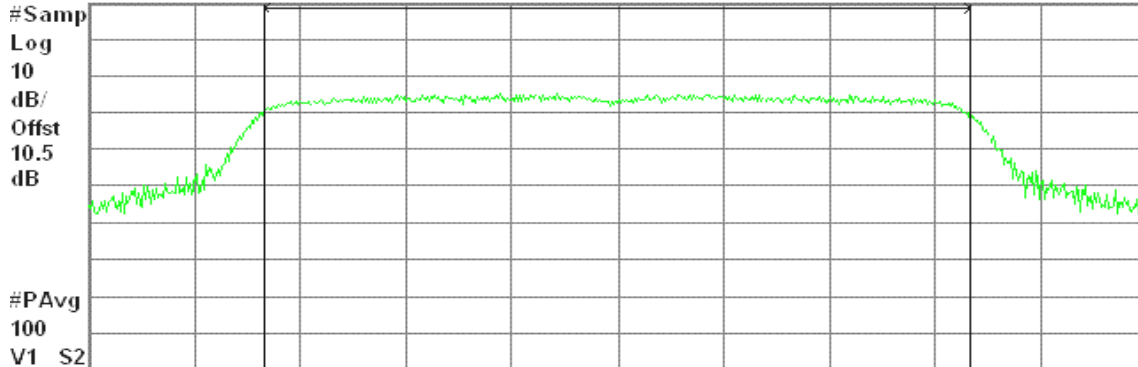
Agilent 09:45:23 Dec 26, 2007

R T

avg Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 24.95 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

16.46 dBm / 16.6310 MHz

-55.75 dBm/Hz



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

Average Power (CH Low)

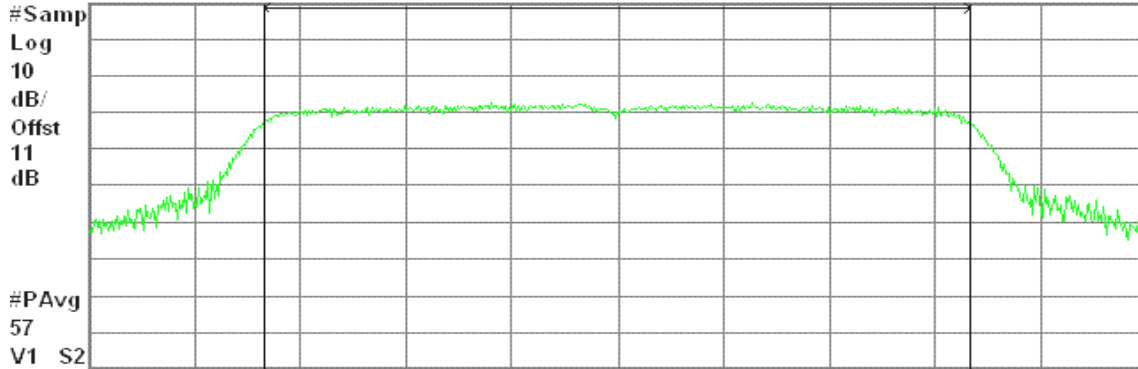
Agilent 12:37:20 Nov 29, 2007

R T

AVG Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.412 00 GHz

Span 26.67 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

13.37 dBm / 17.7830 MHz

-59.13 dBm/Hz

Average Power (CH Mid)

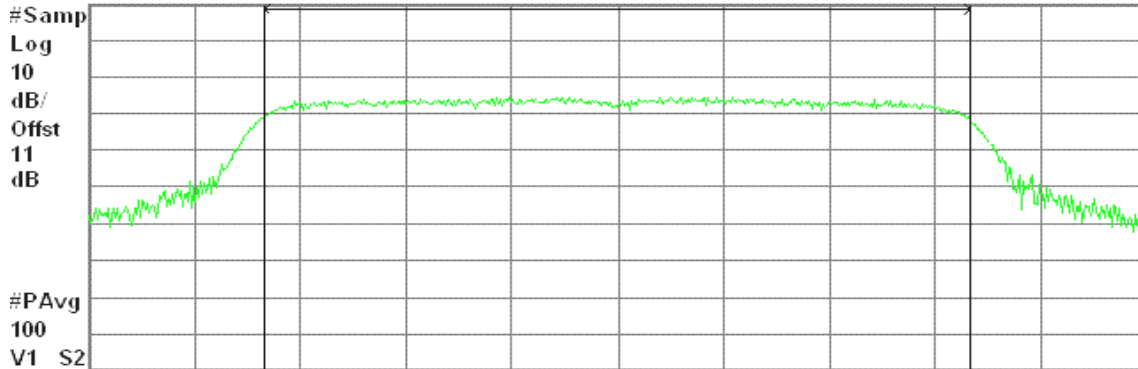
Agilent 12:31:35 Nov 29, 2007

R T

AVG Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 26.75 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

15.70 dBm / 17.8350 MHz

-56.81 dBm/Hz



Average Power (CH High)

Agilent 12:25:41 Nov 29, 2007

R T

AVG Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 26.72 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

15.32 dBm / 17.8140 MHz

-57.19 dBm/Hz

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

Average Power (CH Low)

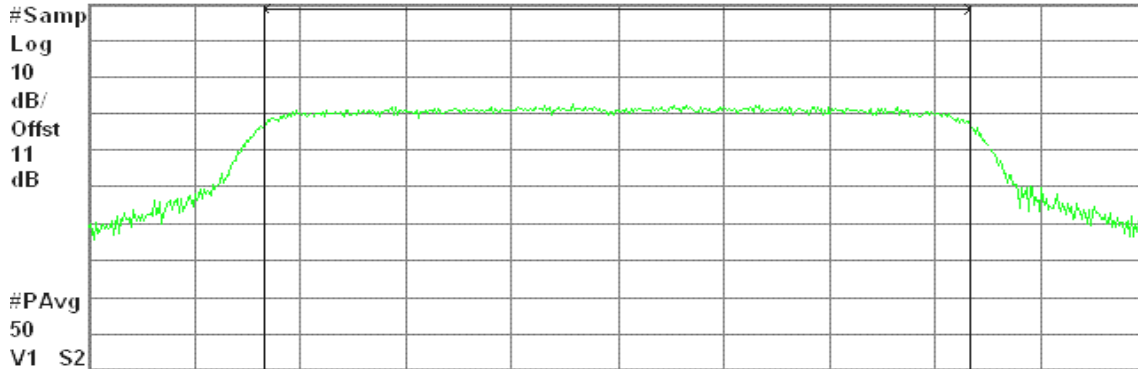
Agilent 10:11:01 Nov 29, 2007

R T

AVG Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.412 00 GHz

Span 26.69 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

13.29 dBm / 17.7910 MHz

-59.21 dBm/Hz



Average Power (CH Mid)

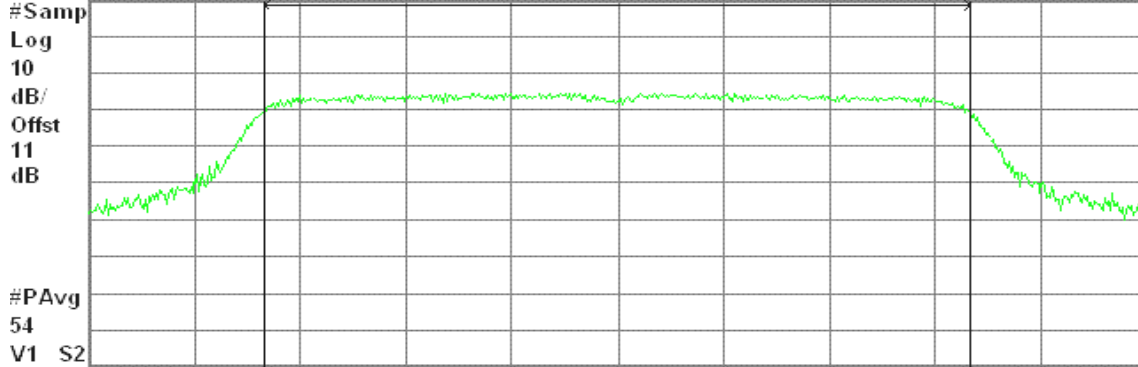
Agilent 12:13:37 Nov 29, 2007

R T

AVG Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 26.75 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

15.77 dBm / 17.8330 MHz

-56.74 dBm/Hz

Average Power (CH High)

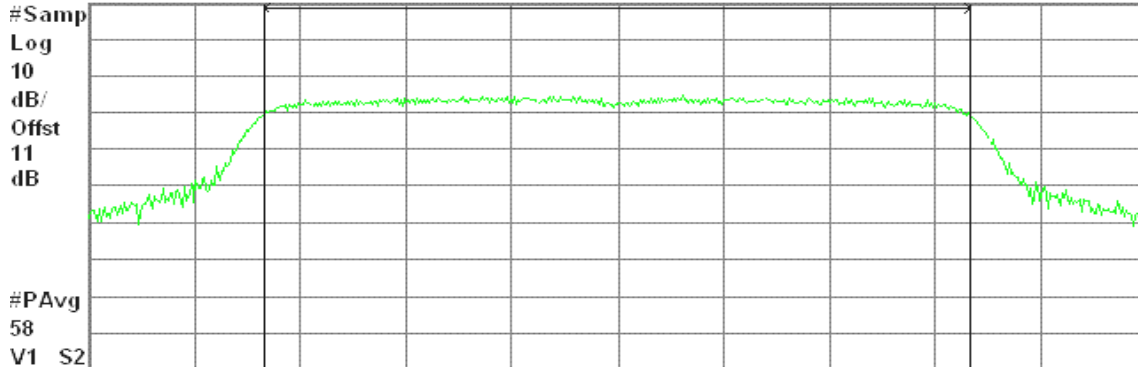
Agilent 12:19:02 Nov 29, 2007

R T

AVG Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 26.71 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

15.82 dBm / 17.8080 MHz

-56.68 dBm/Hz



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

Average Power (CH Low)

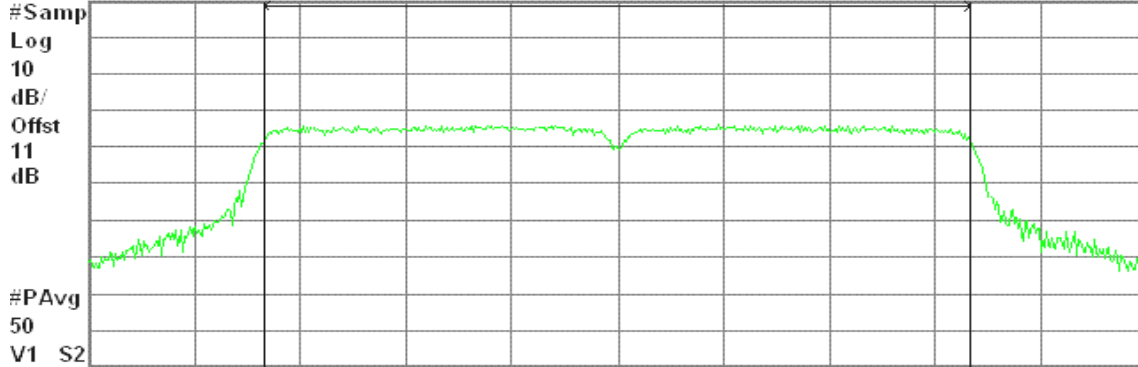
Agilent 09:35:58 Nov 29, 2007

R T

AVG Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.422 00 GHz

Span 54.74 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

10.33 dBm / 36.4930 MHz

-65.29 dBm/Hz

Average Power (CH Mid)

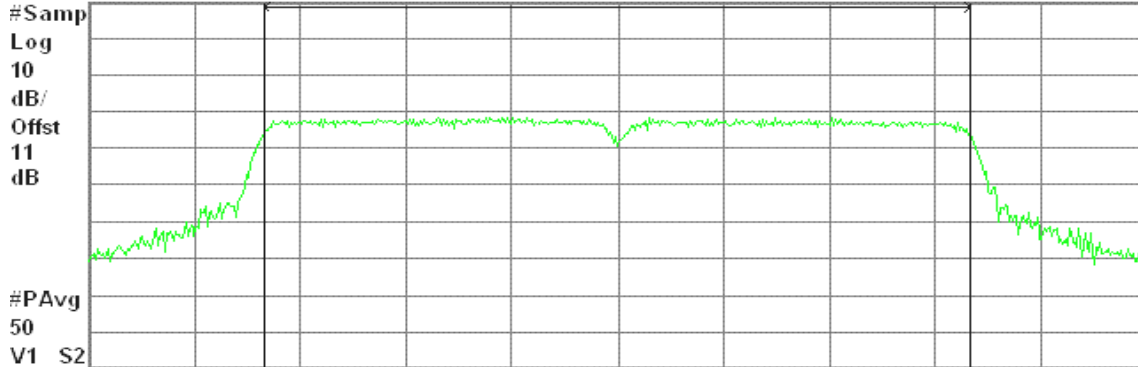
Agilent 09:41:06 Nov 29, 2007

R T

AVG Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 54.85 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.18 dBm / 36.5660 MHz

-63.45 dBm/Hz



Average Power (CH High)

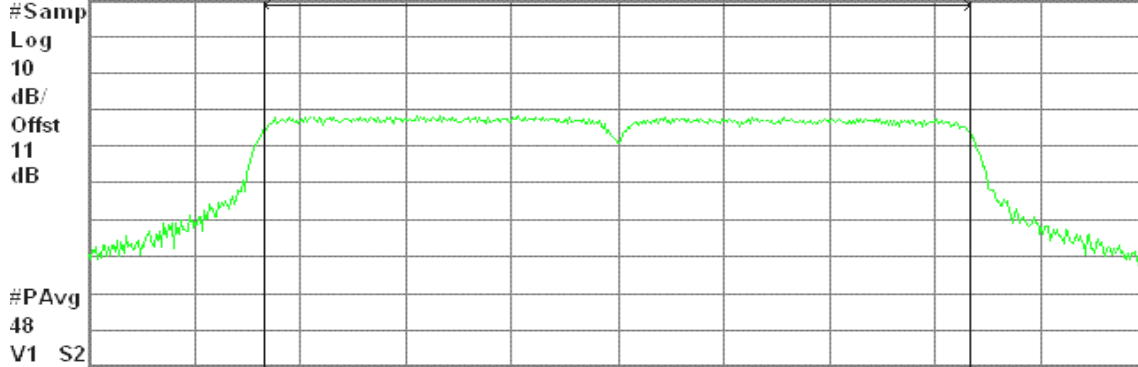
Agilent 09:46:52 Nov 29, 2007

R T

AVG Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.452 00 GHz

Span 54.73 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.80 dBm / 36.4900 MHz

-62.82 dBm/Hz

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

Average Power (CH Low)

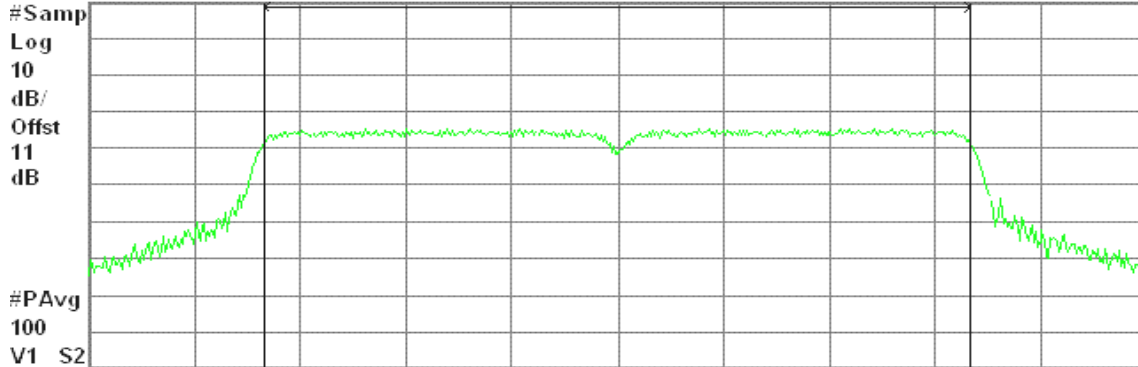
Agilent 10:04:43 Nov 29, 2007

R T

AVG Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.422 00 GHz

Span 54.72 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

9.67 dBm / 36.4830 MHz

-65.95 dBm/Hz



Average Power (CH Mid)

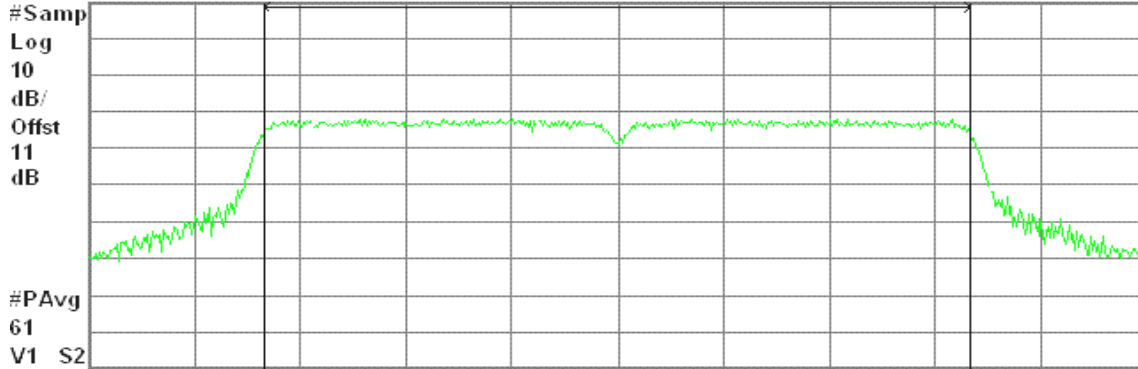
Agilent 09:58:49 Nov 29, 2007

R T

AVG Output Power , g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 54.71 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.26 dBm / 36.4710 MHz

-63.36 dBm/Hz

Average Power (CH High)

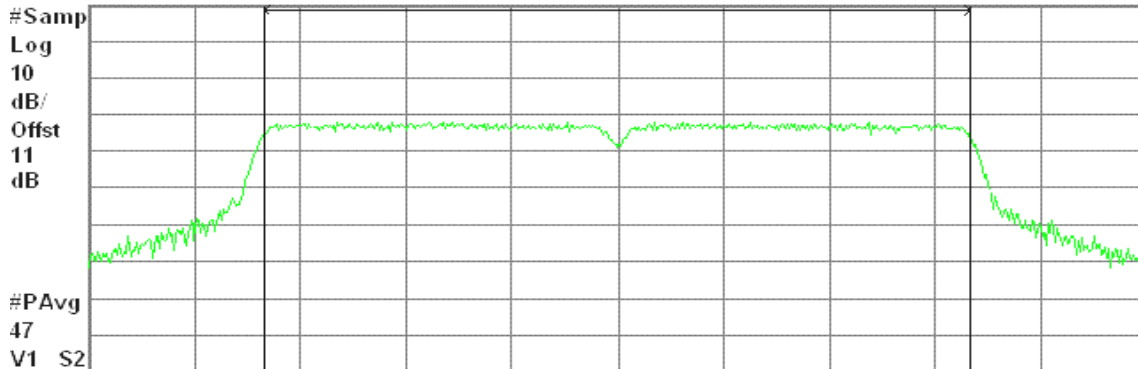
Agilent 09:53:43 Nov 29, 2007

R T

AVG Output Power , g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.452 00 GHz

Span 54.72 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.22 dBm / 36.4780 MHz

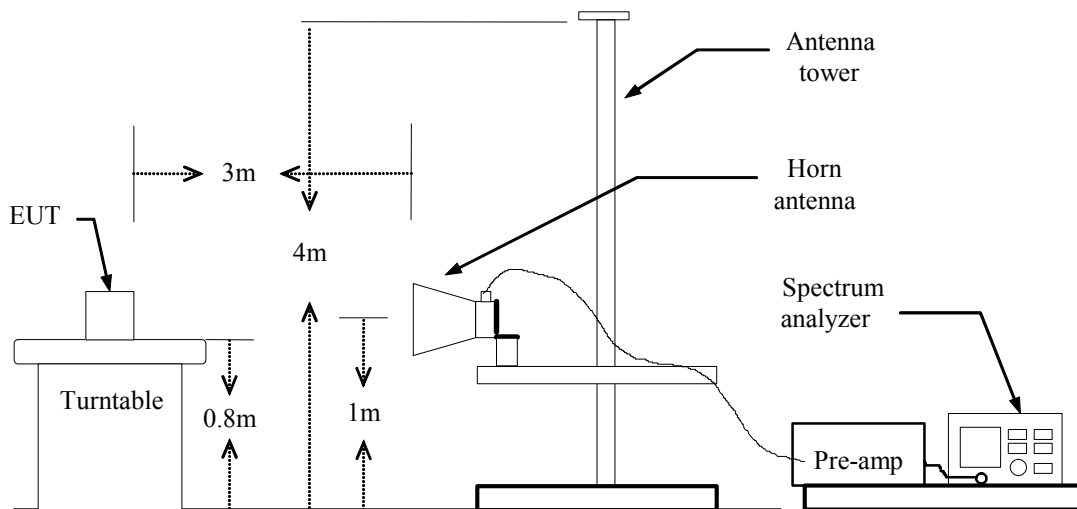
-63.40 dBm/Hz

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)

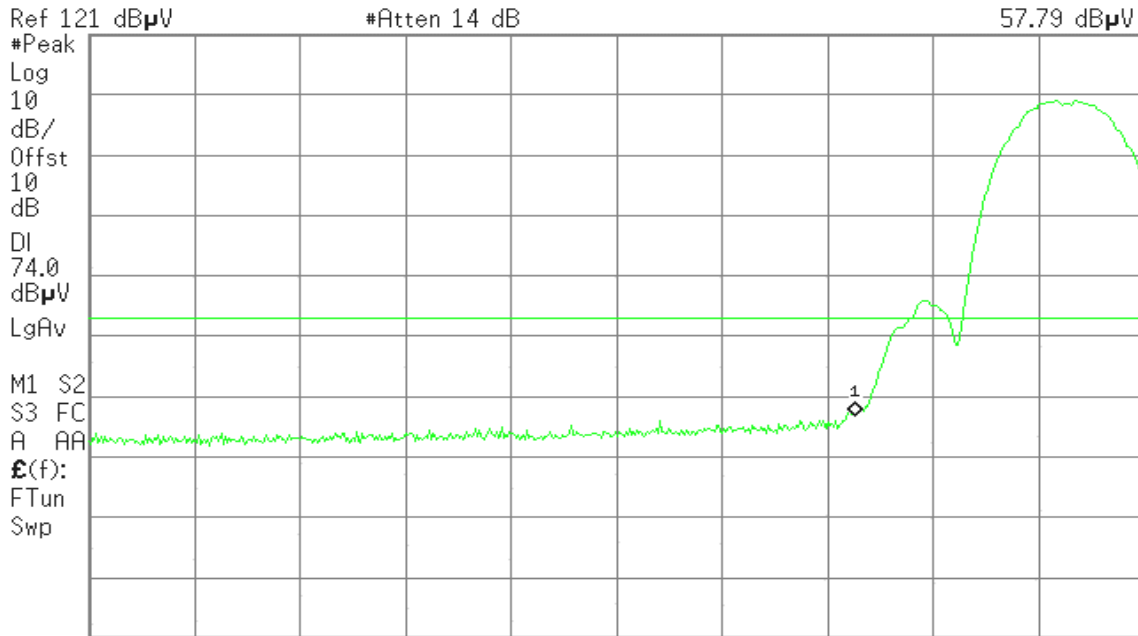
Detector mode: Peak

Polarity: Vertical

Agilent 17:30:30 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
57.79 dBμV



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

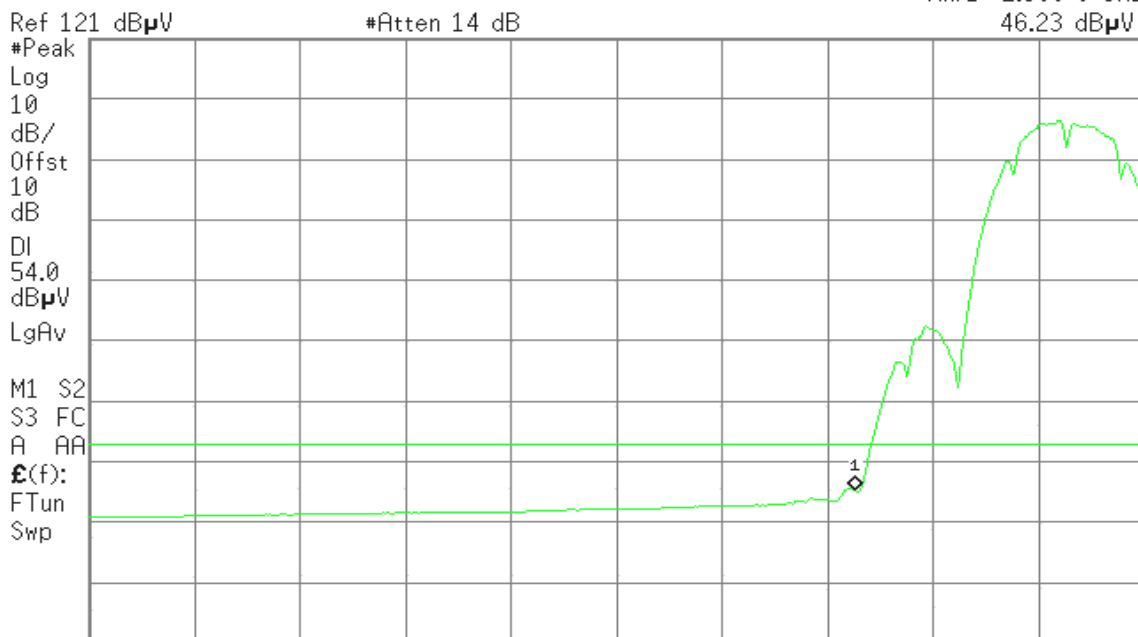
Detector mode: Average

Polarity: Vertical

Agilent 17:30:05 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
46.23 dBμV



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 8.577 s (601 pts)



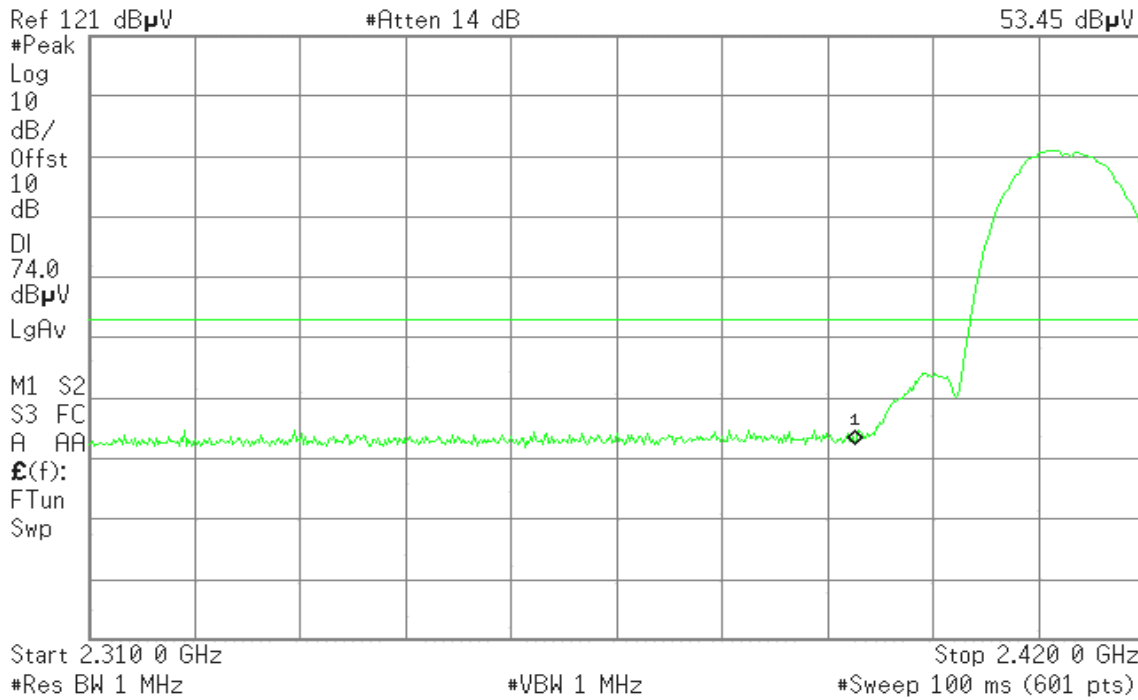
Detector mode: Peak

Polarity: Horizontal

Agilent 17:15:25 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
53.45 dB μ V



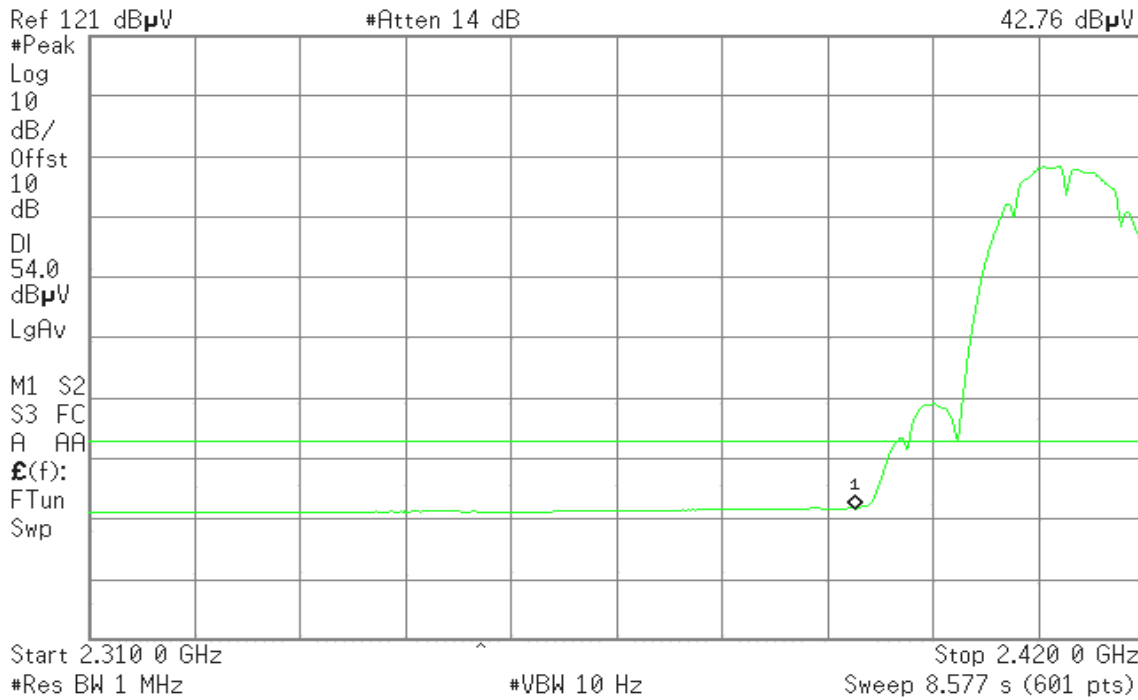
Detector mode: Average

Polarity: Horizontal

Agilent 17:15:46 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
42.76 dB μ V





Band Edges (IEEE 802.11b mode / CH High)

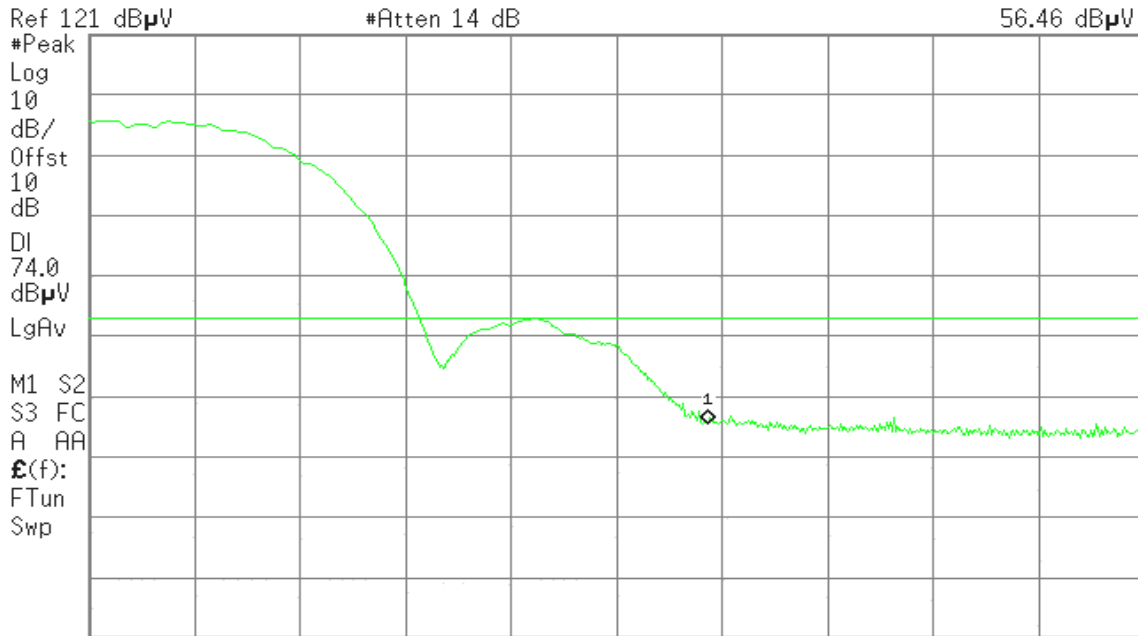
Detector mode: Peak

Polarity: Vertical

Agilent 17:22:17 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
56.46 dBμV



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

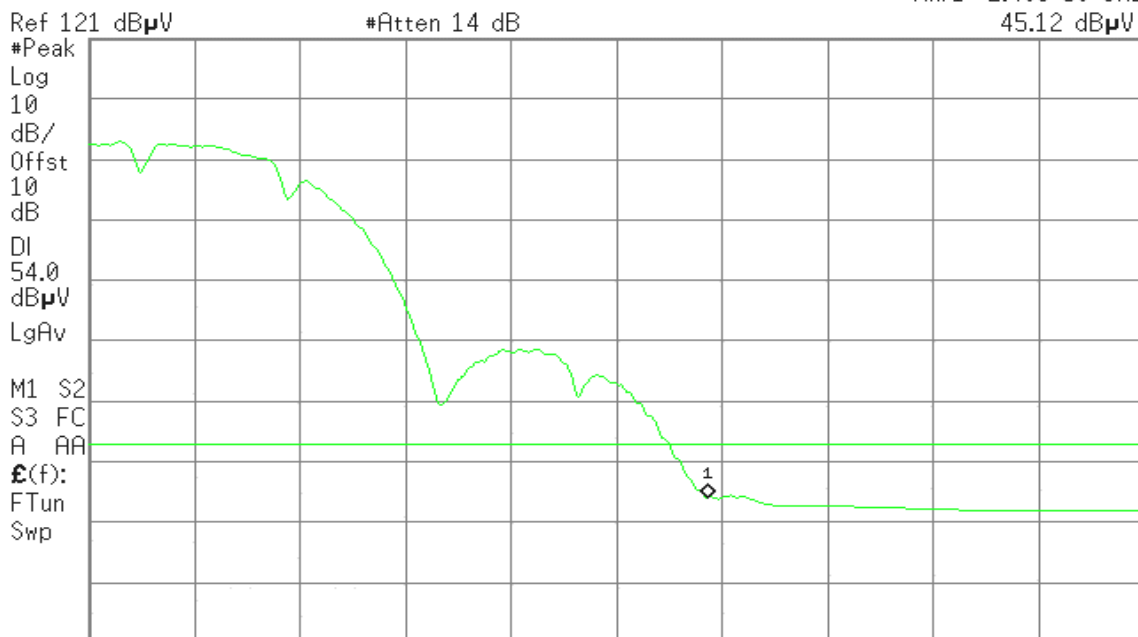
Detector mode: Average

Polarity: Vertical

Agilent 17:22:35 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
45.12 dBμV



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.119 s (601 pts)



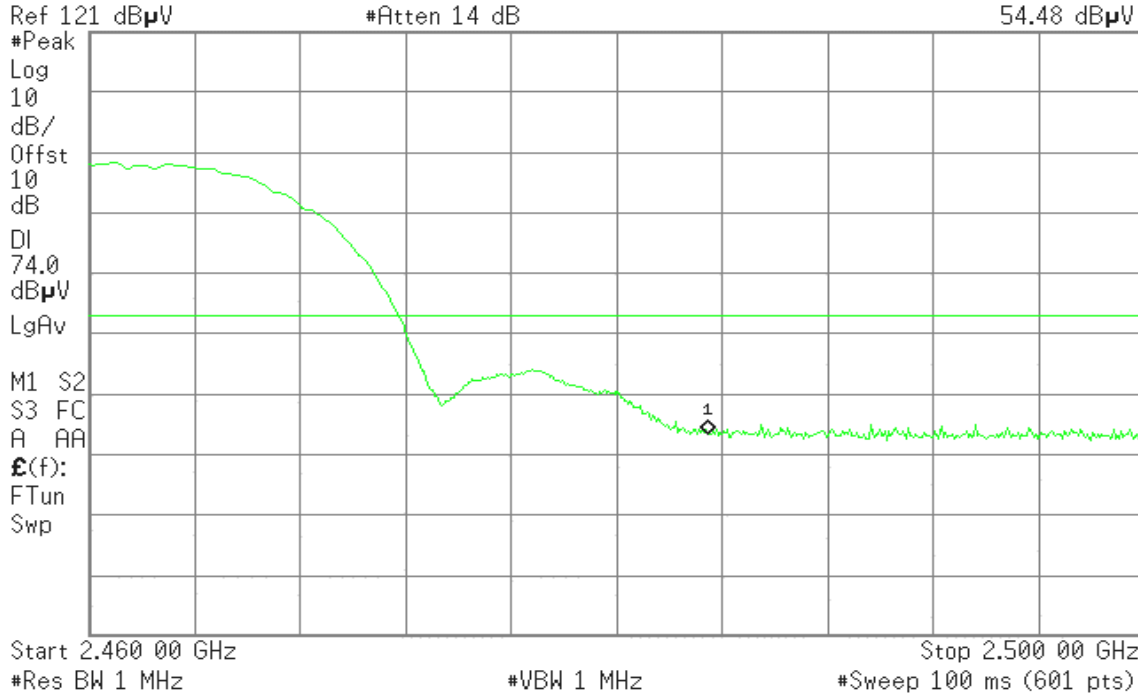
Detector mode: Peak

Polarity: Horizontal

Agilent 17:34:30 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
54.48 dBμV



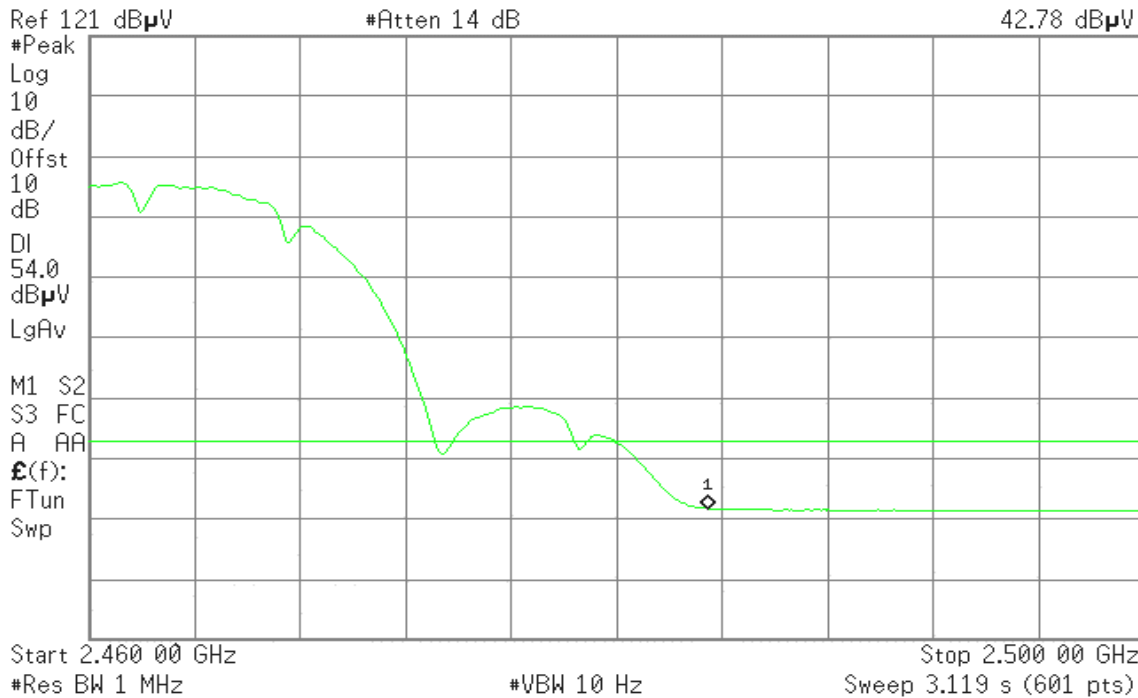
Detector mode: Average

Polarity: Horizontal

Agilent 17:34:43 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
42.78 dBμV





Band Edges (IEEE 802.11g mode / CH Low)

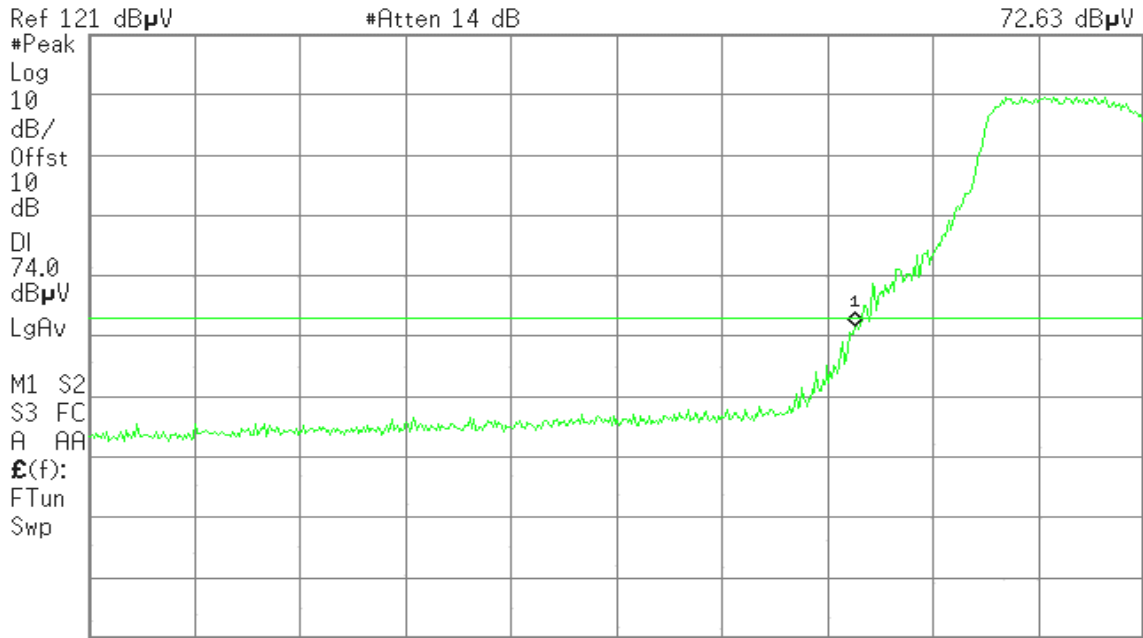
Detector mode: Peak

Polarity: Vertical

Agilent 17:08:37 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
72.63 dB μ V



Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

#Sweep 100 ms (601 pts)

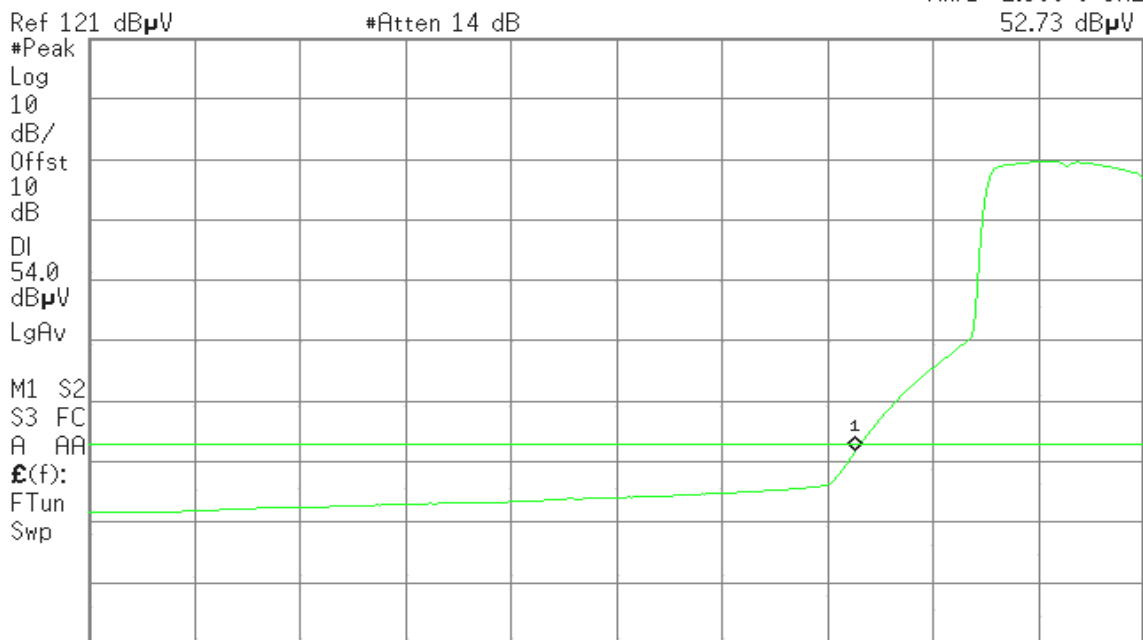
Detector mode: Average

Polarity: Vertical

Agilent 17:08:20 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
52.73 dB μ V



Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)



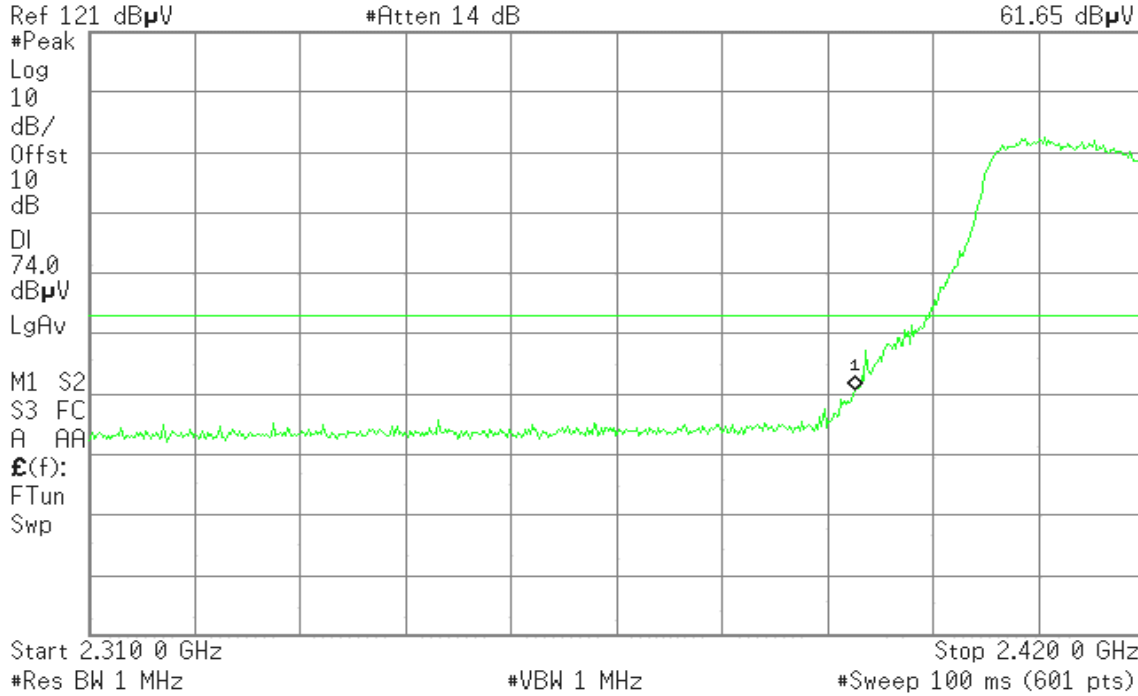
Detector mode: Peak

Polarity: Horizontal

Agilent 17:14:57 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
61.65 dBμV



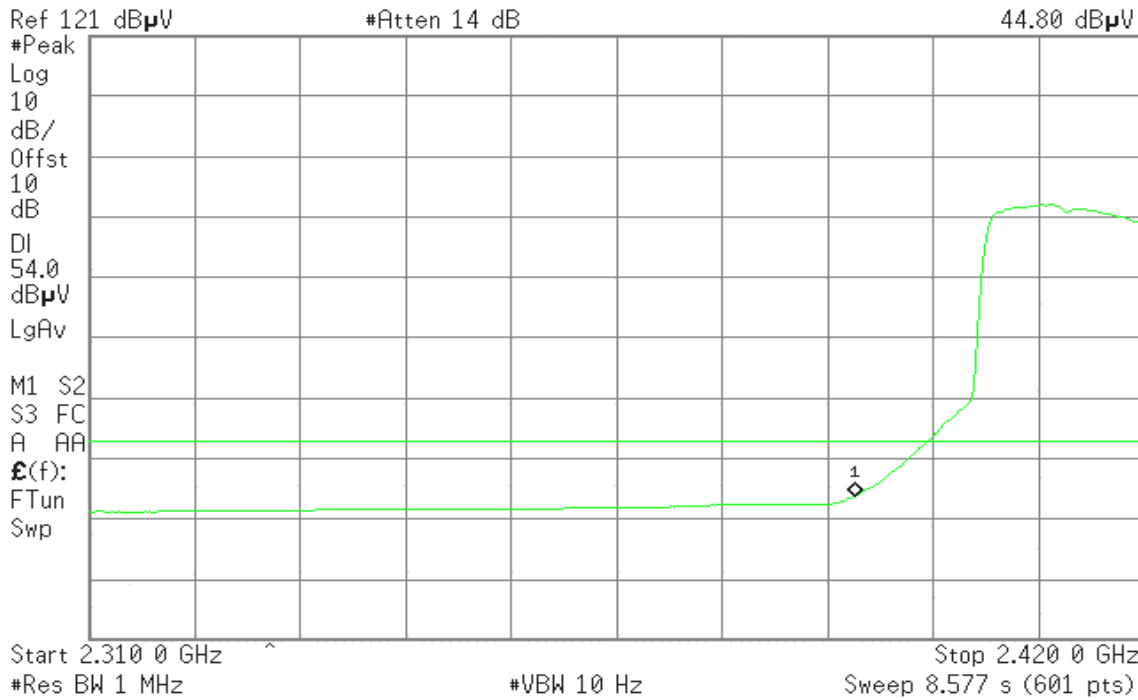
Detector mode: Average

Polarity: Horizontal

Agilent 17:14:38 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
44.80 dBμV





Band Edges (IEEE 802.11g mode / CH High)

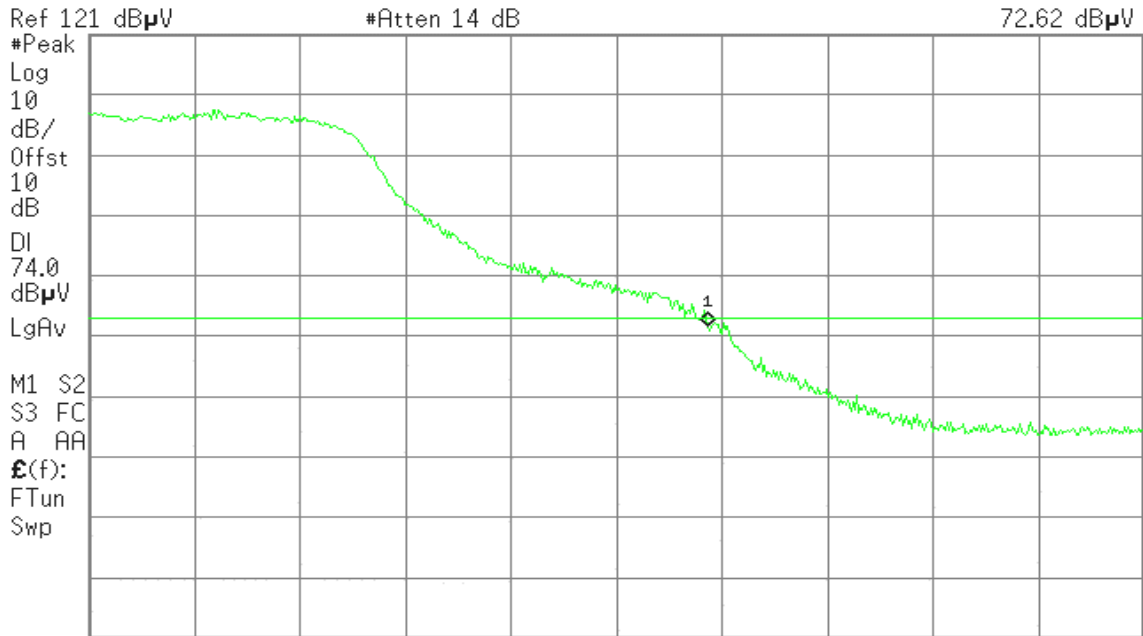
Detector mode: Peak

Polarity: Vertical

Agilent 17:23:50 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
72.62 dB μ V



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

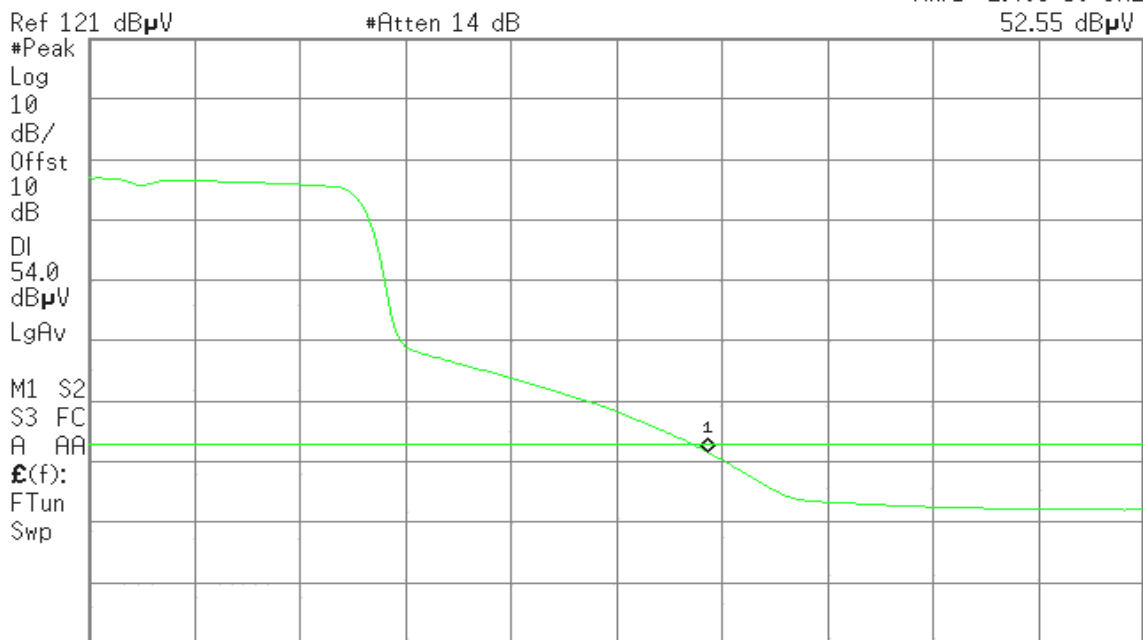
Detector mode: Average

Polarity: Vertical

Agilent 17:23:00 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
52.55 dB μ V



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.119 s (601 pts)



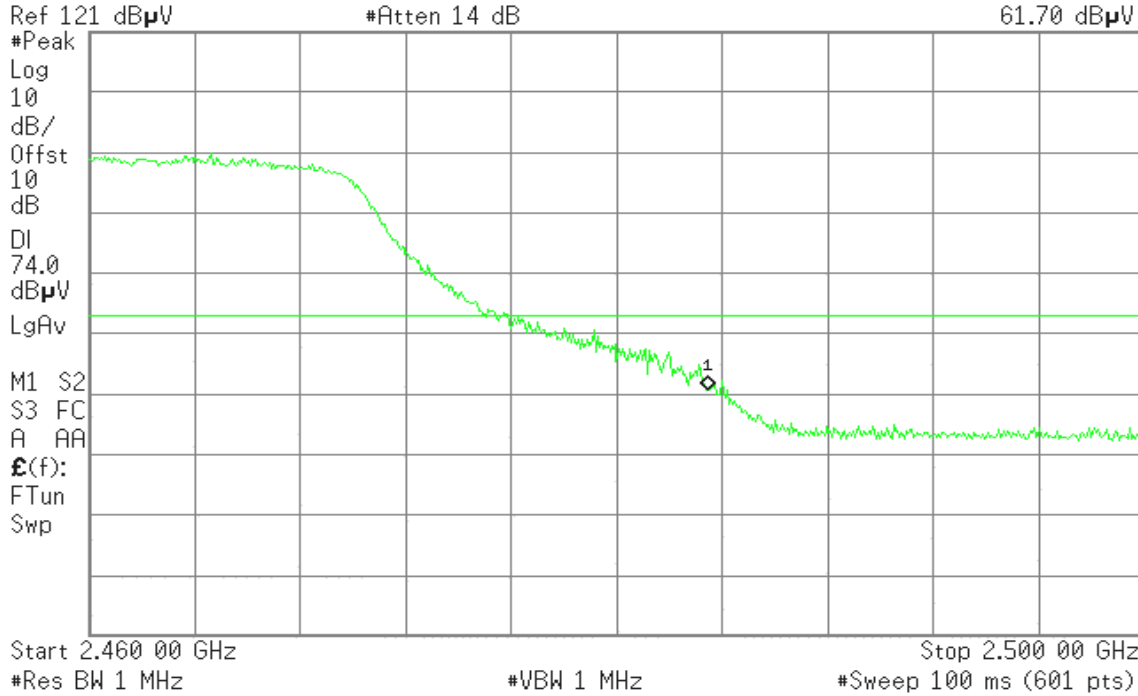
Detector mode: Peak

Polarity: Horizontal

Agilent 17:33:53 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
61.70 dBμV



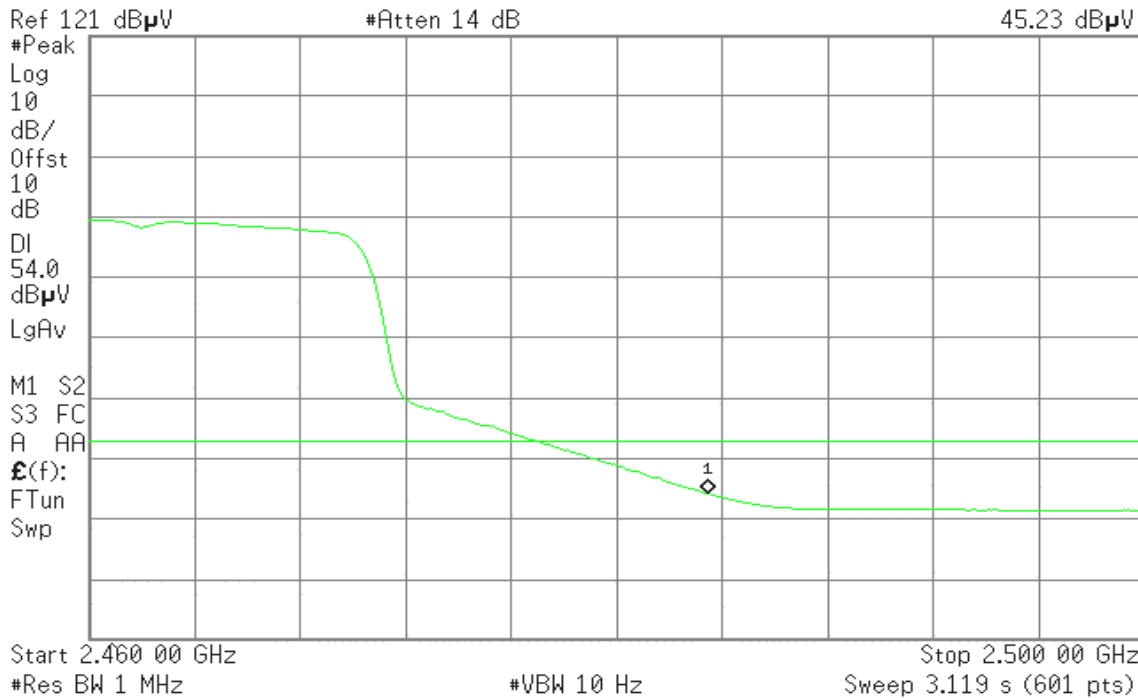
Detector mode: Average

Polarity: Horizontal

Agilent 17:33:37 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
45.23 dBμV





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

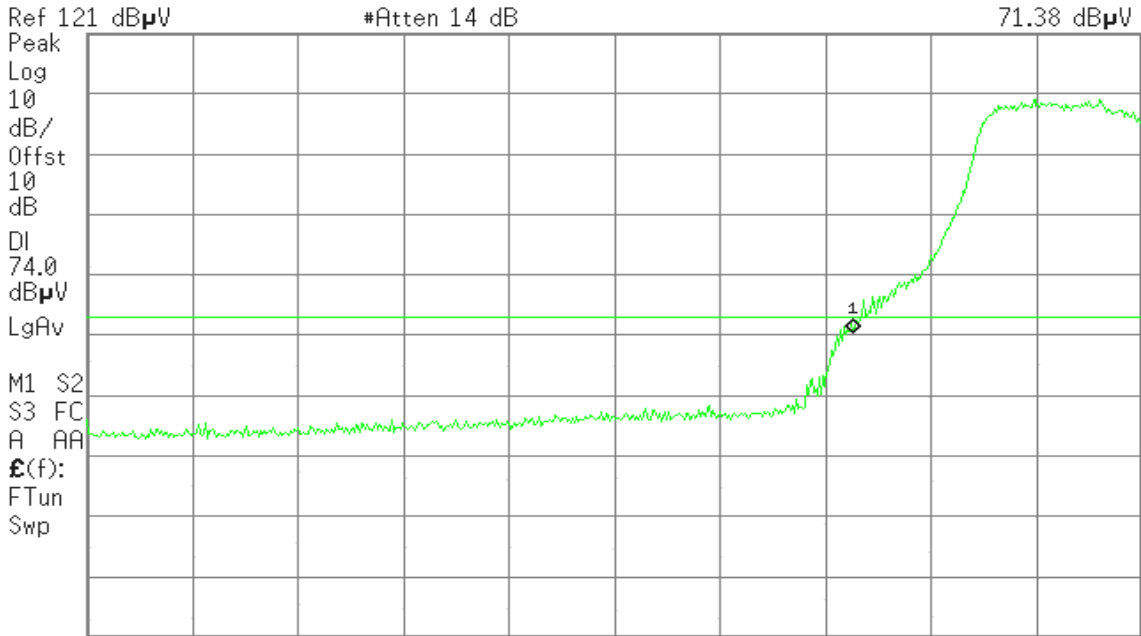
Detector mode: Peak

Polarity: Vertical

Agilent 18:56:04 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
71.38 dB μ V



Start 2.310 0 GHz #Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts) Stop 2.420 0 GHz

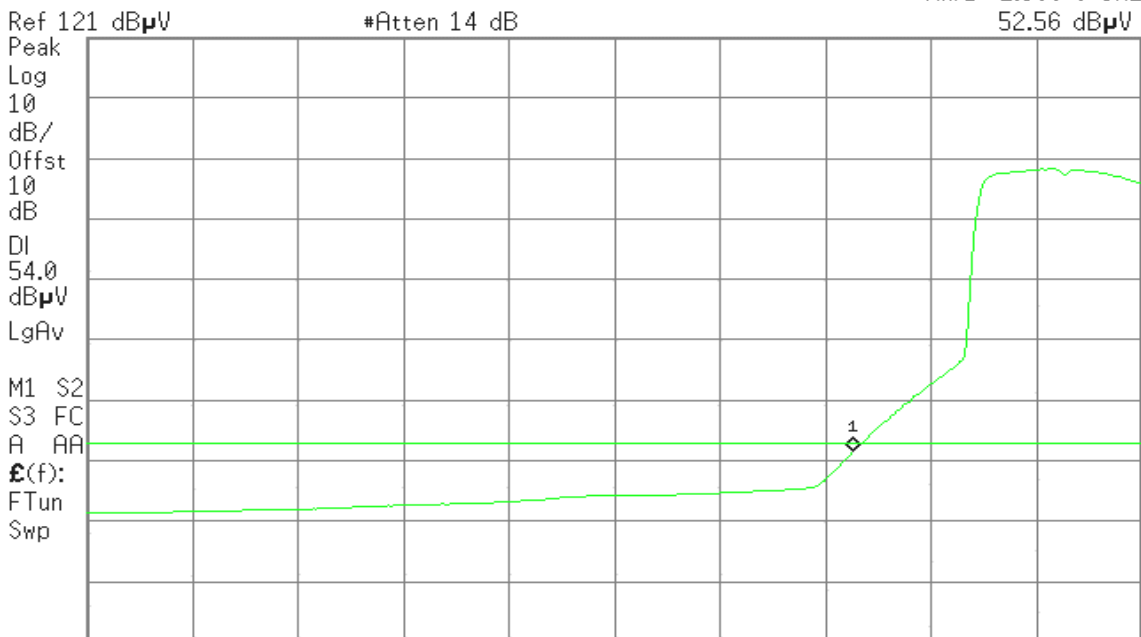
Detector mode: Average

Polarity: Vertical

Agilent 18:55:21 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
52.56 dB μ V



Start 2.310 0 GHz #Res BW 1 MHz #VBW 10 Hz Sweep 8.577 s (601 pts) Stop 2.420 0 GHz



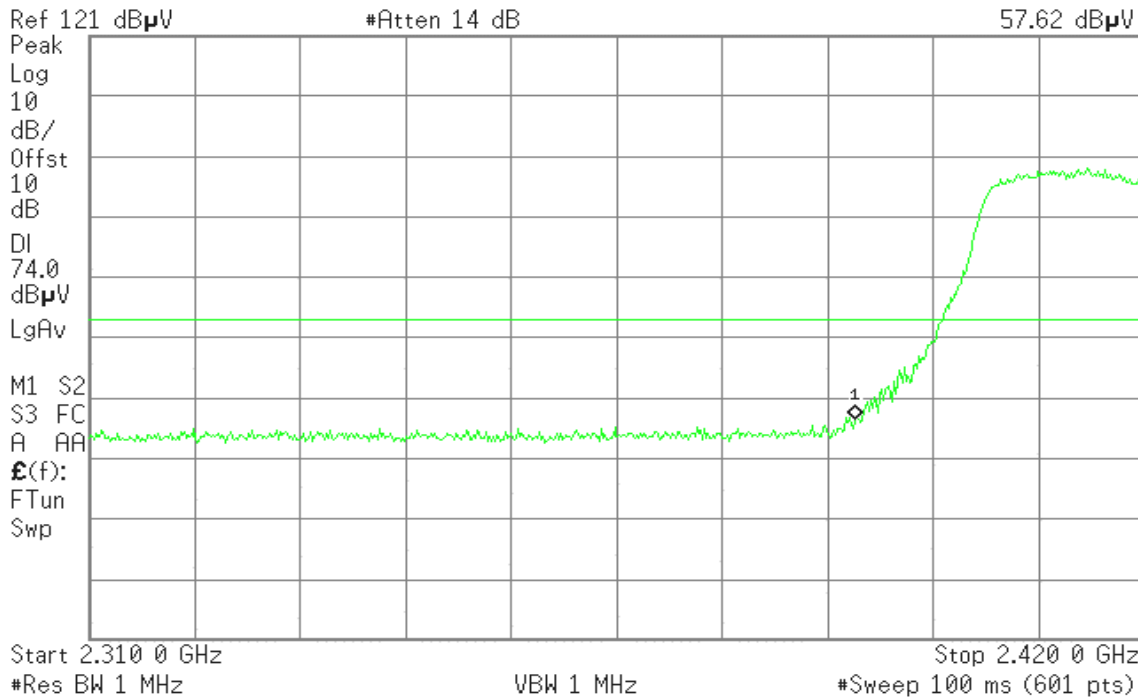
Detector mode: Peak

Polarity: Horizontal

* Agilent 18:59:03 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
57.62 dB μ V



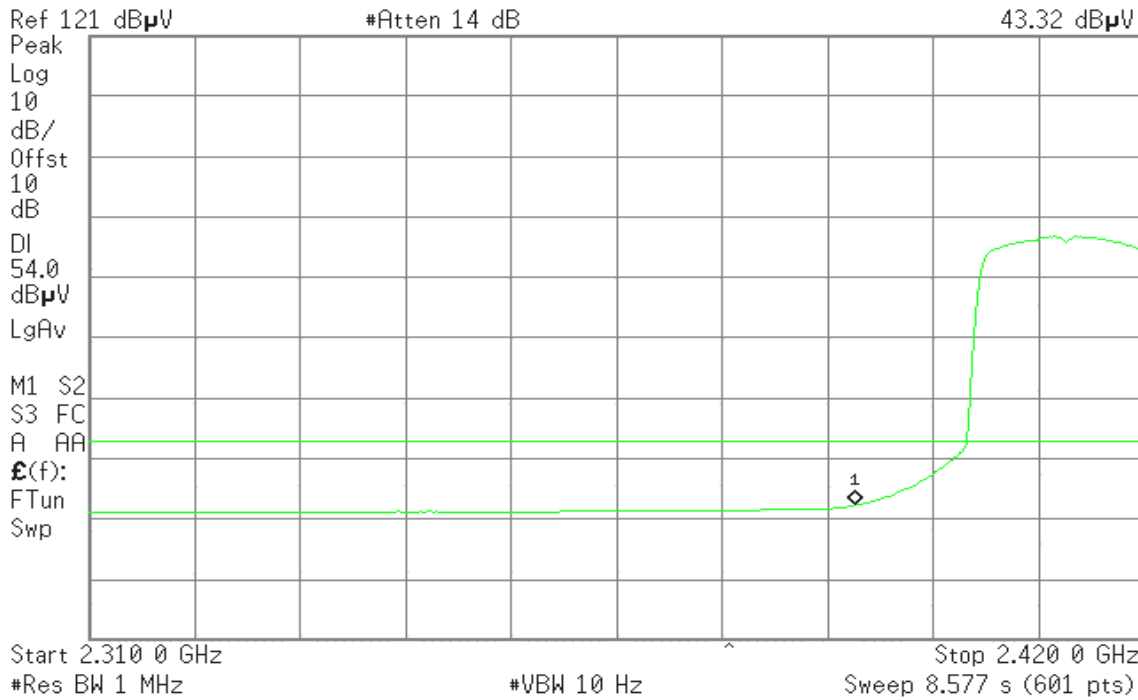
Detector mode: Average

Polarity: Horizontal

* Agilent 18:58:48 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
43.32 dB μ V





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

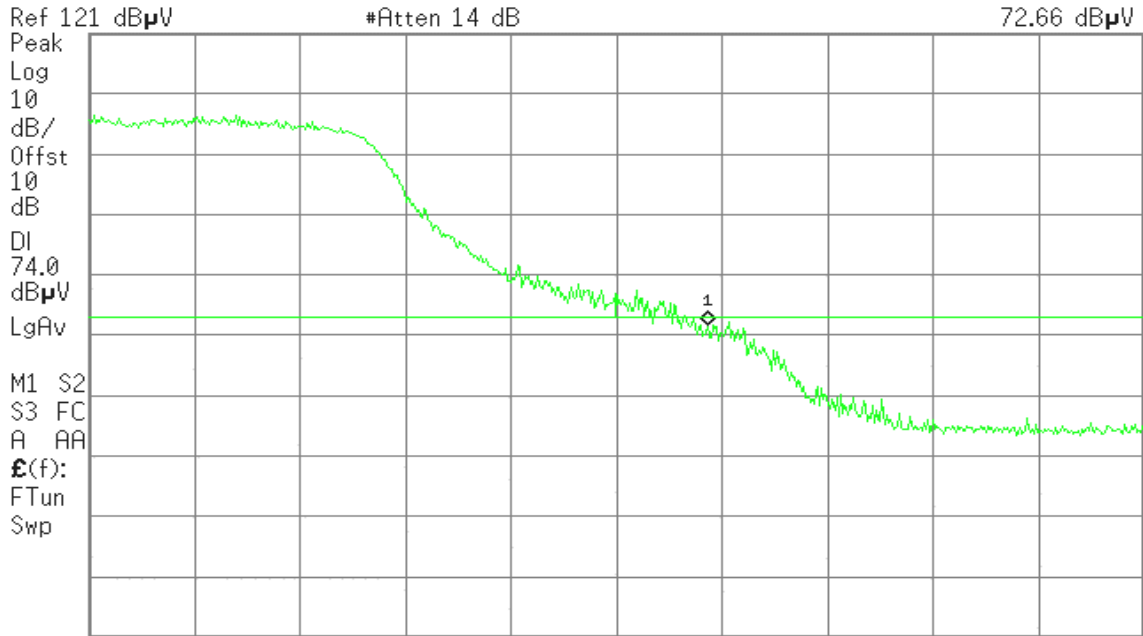
Detector mode: Peak

Polarity: Vertical

Agilent 19:26:53 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
72.66 dB μ V



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

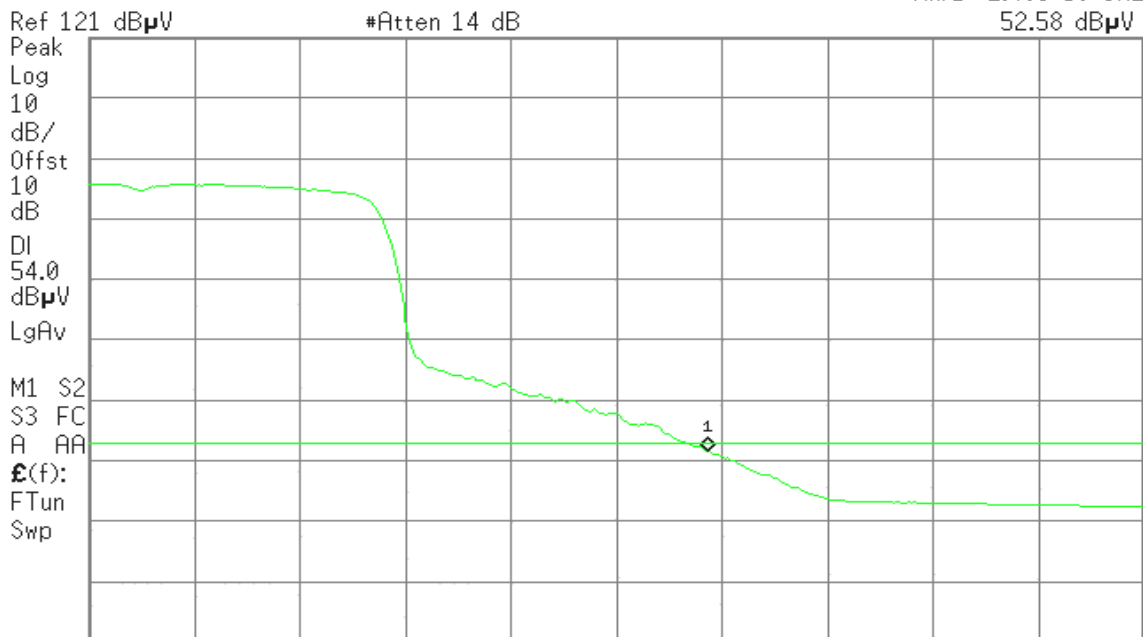
Detector mode: Average

Polarity: Vertical

Agilent 19:26:29 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
52.58 dB μ V



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



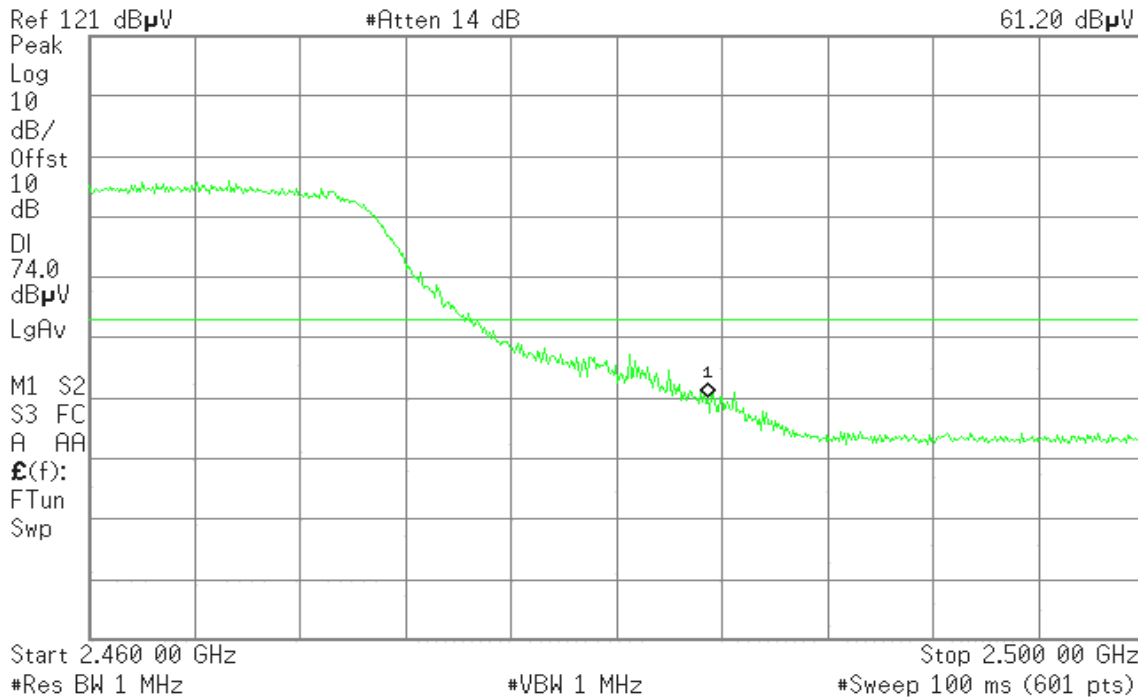
Detector mode: Peak

Polarity: Horizontal

Agilent 19:29:37 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
61.20 dBμV



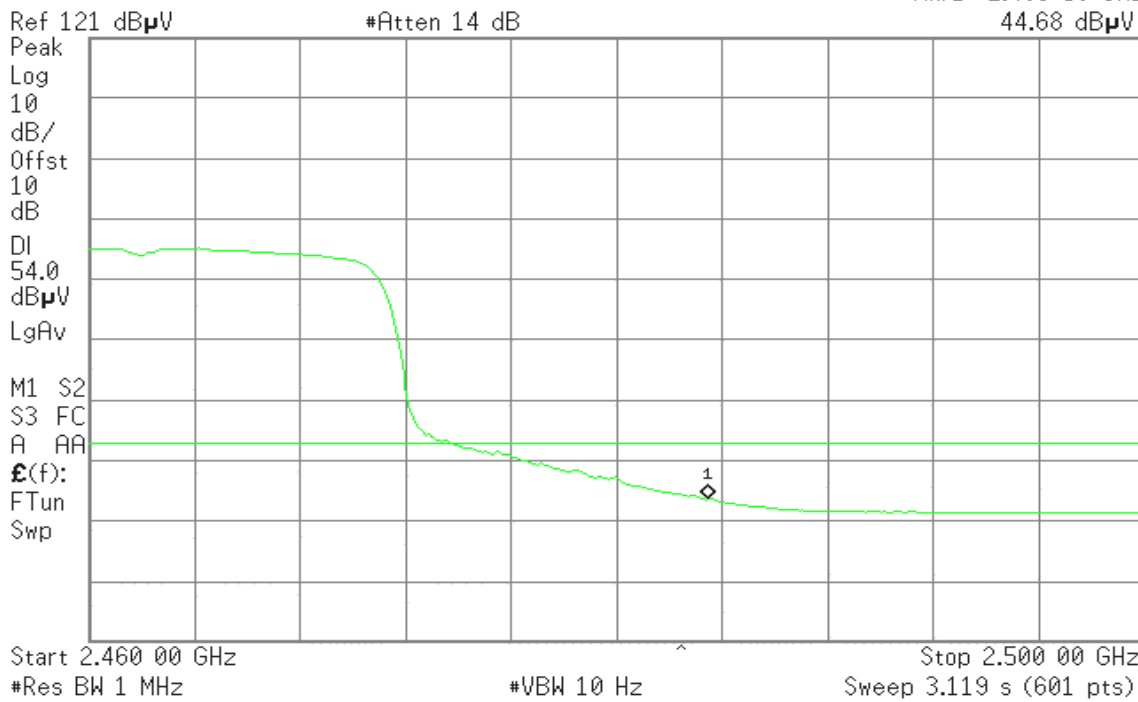
Detector mode: Average

Polarity: Horizontal

Agilent 19:29:19 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
44.68 dBμV





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

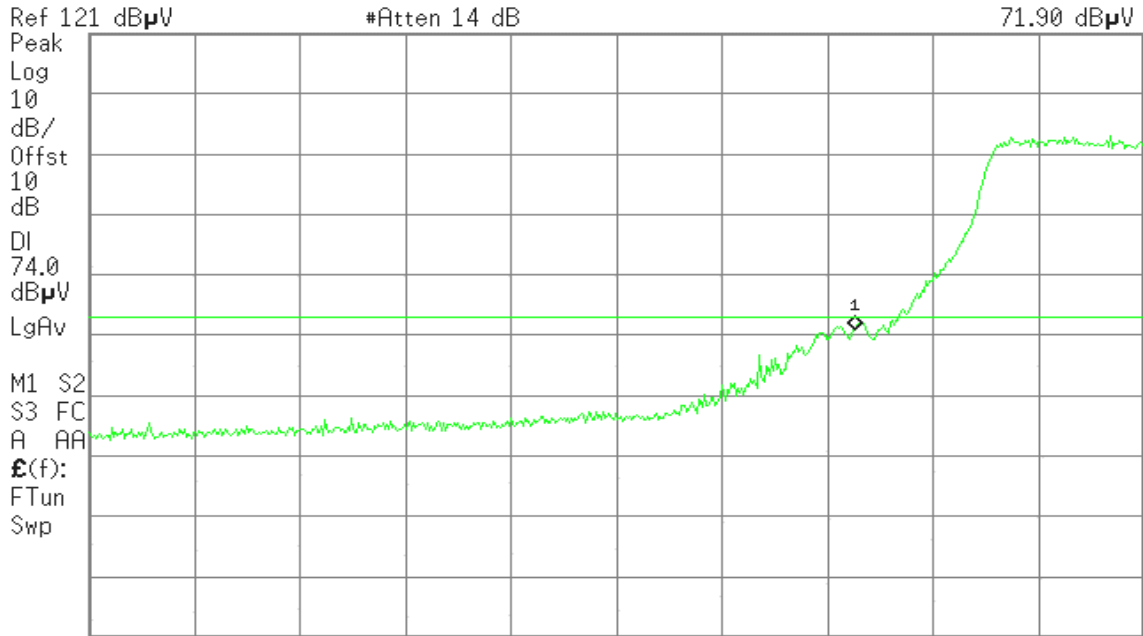
Detector mode: Peak

Polarity: Vertical

Agilent 19:06:30 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
71.90 dBμV



Start 2.310 0 GHz #Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts) Stop 2.420 0 GHz

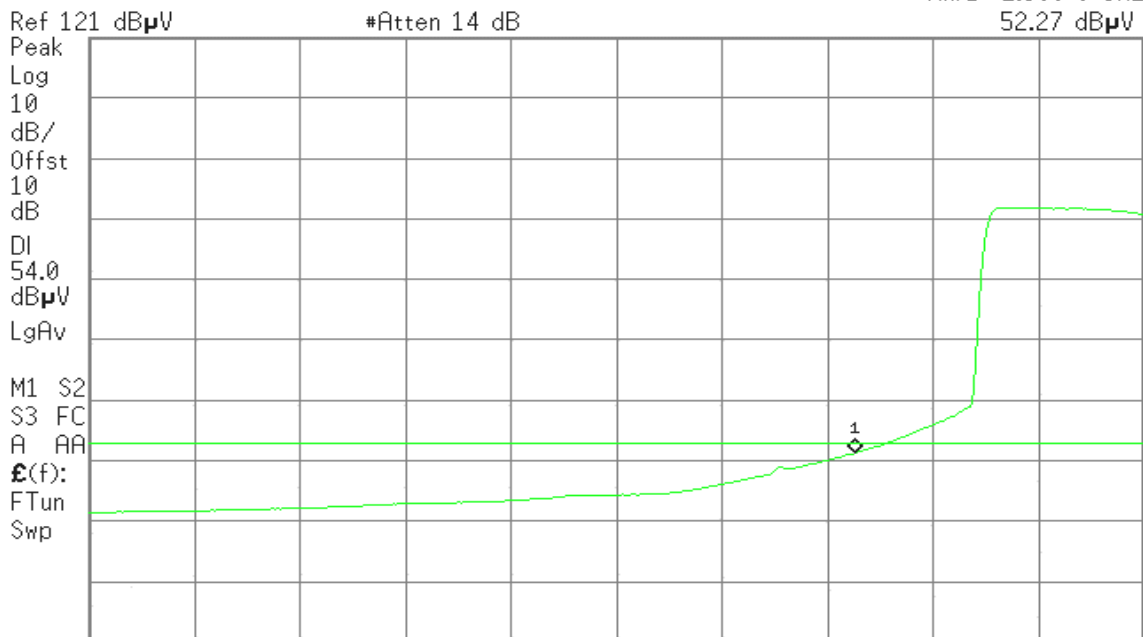
Detector mode: Average

Polarity: Vertical

Agilent 19:06:08 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
52.27 dBμV



Start 2.310 0 GHz #Res BW 1 MHz #VBW 10 Hz Sweep 8.577 s (601 pts) Stop 2.420 0 GHz



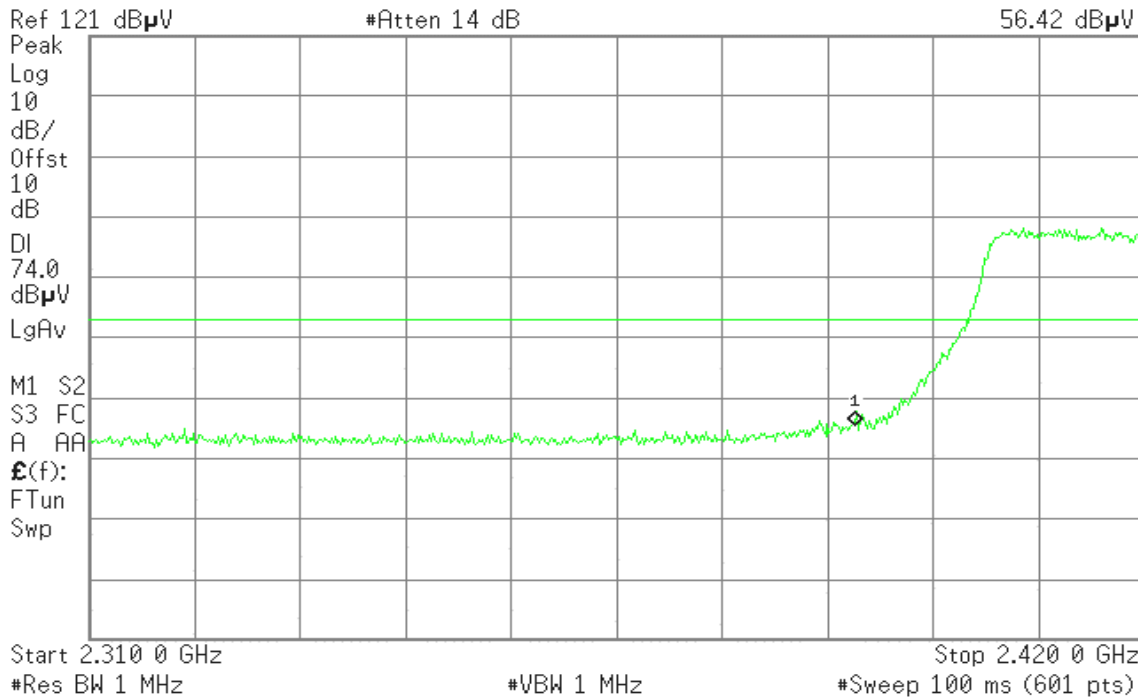
Detector mode: Peak

Polarity: Horizontal

Agilent 19:09:34 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
56.42 dBμV



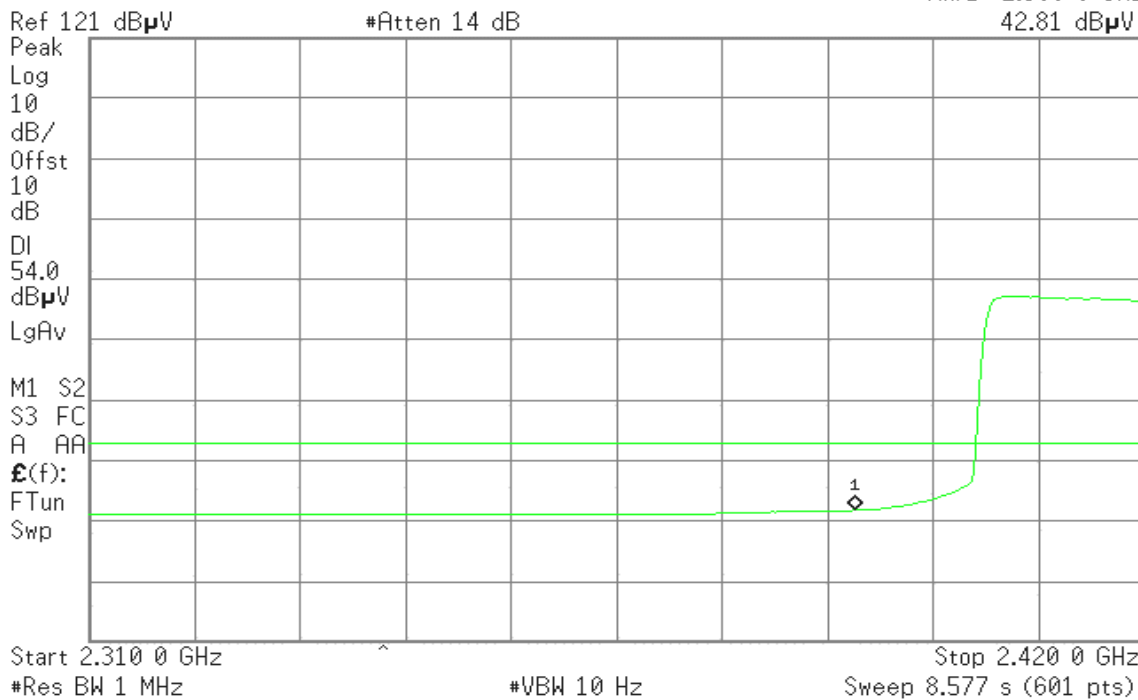
Detector mode: Average

Polarity: Horizontal

Agilent 19:09:53 Nov 27, 2007

R T

Mkr1 2.390 0 GHz
42.81 dBμV





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

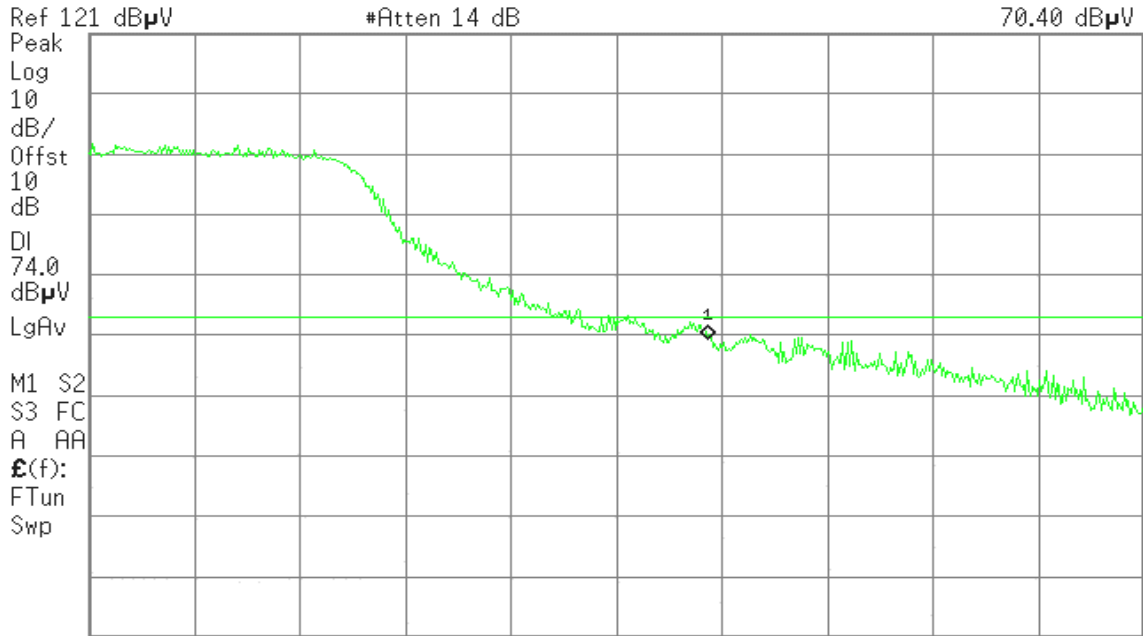
Detector mode: Peak

Polarity: Vertical

Agilent 19:15:43 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
70.40 dB μ V



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

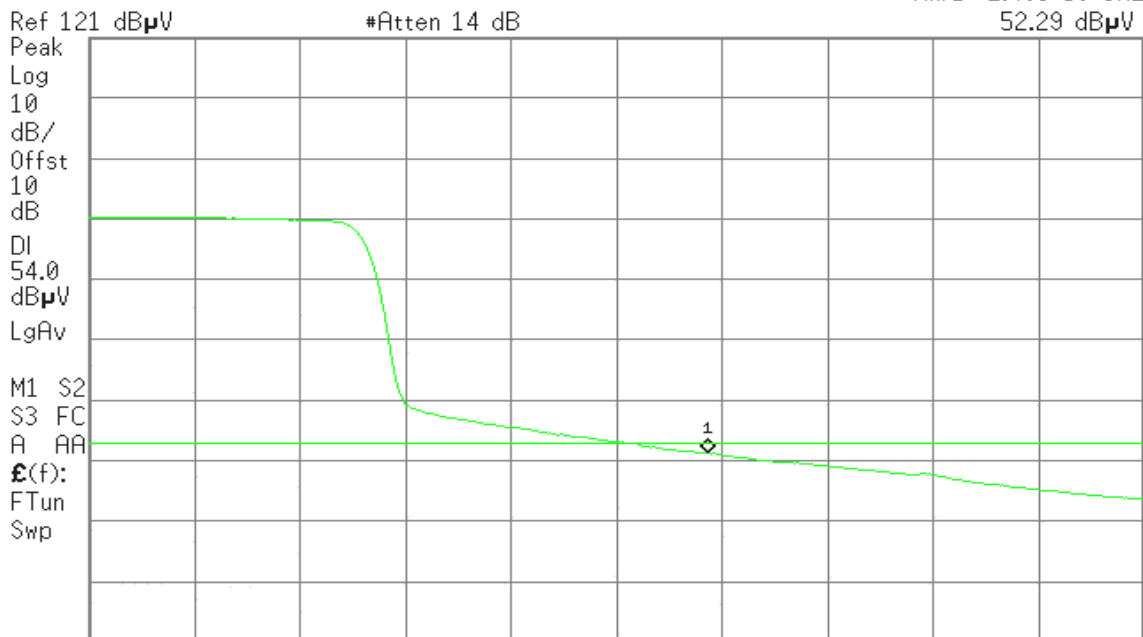
Detector mode: Average

Polarity: Vertical

Agilent 19:15:23 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
52.29 dB μ V



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.119 s (601 pts)



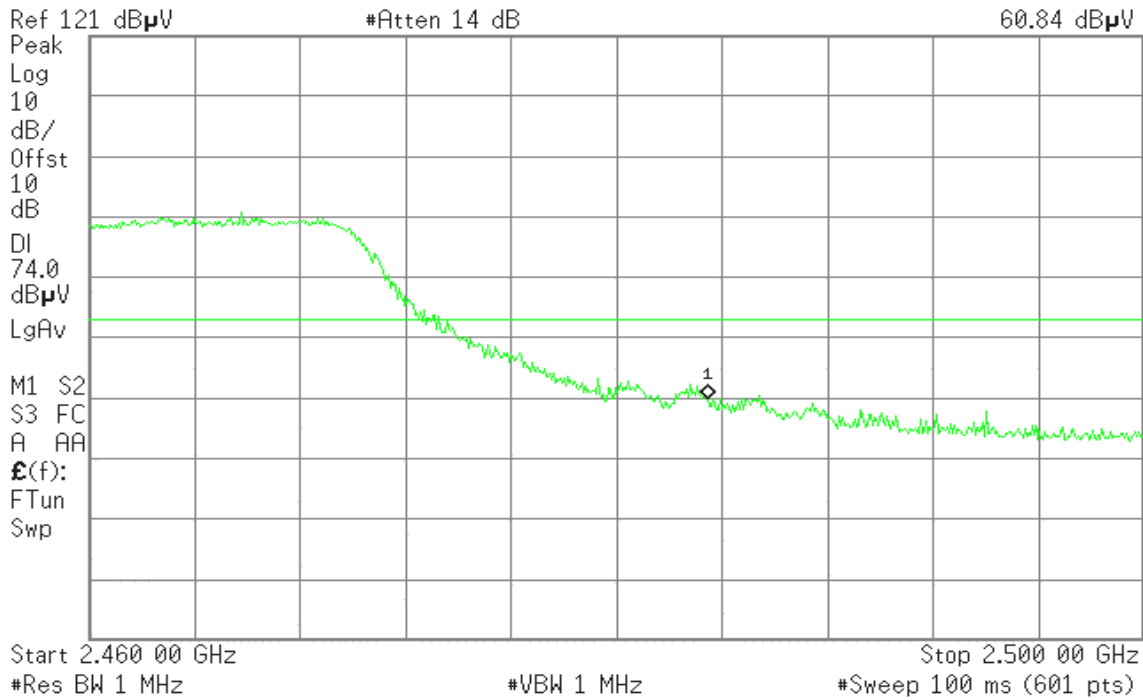
Detector mode: Peak

Polarity: Horizontal

Agilent 19:19:30 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
60.84 dBμV



Detector mode: Average

Polarity: Horizontal

Agilent 19:19:10 Nov 27, 2007

R T

Mkr1 2.483 50 GHz
44.59 dBμV

