FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Wireless 802.11N DUAL BAND MINI PCI MODULE

Model: WM821-M-LS

Trade Name: Linksys

Issued to

Cisco-Linksys LLC
121 Theory Drive
Irvine, CA 92617(USA)

Issued by

Compliance Certification Services Inc.
No. 81-1, Lane 210, Bade Rd. 2, Luchu Hsiang,
Taoyuan Hsien, (338) Taiwan, R.O.C.
http://www.ccsemc.com.tw
service@tw.ccsemc.com

ACCREDITED
TESTING CERT #0824.01

Testing Laboratory
0363

TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION 4
2. SUMMARY OF TEST RESULTS 5
3. EUT DESCRIPTION 6
4. TEST METHODOLOGY 8
4.1 EUT CONFIGURATION 8
4.2 EUT EXERCISE 8
4.3 GENERAL TEST PROCEDURES 8
4.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS 9
4.5 DESCRIPTION OF TEST MODES 10
5. INSTRUMENT CALIBRATION 12
5.1 MEASURING INSTRUMENT CALIBRATION 12
5.2 MEASUREMENT EQUIPMENT USED 12
6. FACILITIES AND ACCREDITATIONS 13
6.1 FACILITIES 13
6.2 EQUIPMENT 13
6.3 TABLE OF ACCREDITATIONS AND LISTINGS 14
7. SETUP OF EQUIPMENT UNDER TEST 15
7.1 SETUP CONFIGURATION OF EUT 15
7.2 SUPPORT EQUIPMENT 15
8. FCC PART 15.247 REQUIREMENTS 16
8.1 6DB BANDWIDTH 16
8.1.1 LIMIT 16
8.1.2 TEST PROCEDURE 16
8.1.3 TEST RESULTS 17
8.2 PEAK POWER 39
8.2.1 LIMIT 39
8.2.2 TEST PROCEDURE 39
8.2.3 TEST RESULTS 40
8.3 AVERAGE POWER 61
8.3.1 LIMIT 61
8.3.2 TEST PROCEDURE 61
8.3.3 TEST RESULTS 62

8.4 BAND EDGES MEASUREMENT 82
8.4.1 LIMIT..... 82
8.4.2 TEST PROCEDURE..... 82
8.4.3 TEST RESULTS..... 82
8.5 PEAK POWER SPECTRAL DENSITY 115
8.5.1 LIMIT..... 115
8.5.2 TEST PROCEDURE..... 115
8.5.3 TEST RESULTS..... 116
8.6 SPURIOUS EMISSIONS 145
8.6.1 CONDUCTED MEASUREMENT..... 145
8.6.1.1 LIMIT..... 145
8.6.1.2 TEST PROCEDURE..... 145
8.6.1.3 TEST RESULTS..... 145
8.6.2 RADIATED EMISSIONS 167
8.6.2.1 LIMIT - ABOVE 1 GHZ 167
8.6.2.2 TEST PROCEDURE..... 168
8.6.2.3 TEST RESULTS..... 169
8.6.2.4 LIMIT - BELOW 1 GHZ..... 209
8.6.2.5 TEST PROCEDURE..... 210
8.6.2.6 TEST RESULTS..... 211
8.7 POWERLINE CONDUCTED EMISSIONS 213
8.7.1 LIMIT..... 213
8.7.2 TEST PROCEDURE..... 213
8.7.3 TEST RESULTS..... 214
APPENDIX I RADIO FREQUENCY EXPOSURE..... 218
APPENDIX II PHOTOGRAPHS OF TEST SETUP..... 222

1. TEST RESULT CERTIFICATION

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

Equipment Under Test: Wireless 802.11N DUAL BAND MINI PCI MODULE

Trade Name: Linksys

Model: WM821-M-LS

Date of Test: October 2 ~ 17, 2007

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart C	No non-compliance noted
Deviation from Applicable Standard	
N/A	

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. SUMMARY OF TEST RESULTS

THE EUT has been tested according to the following specifications:

Applied Standard: FCC Part 15, Subpart C			
Standard Paragraph	**Test Parameter**	**Result**	**Remark**
8.1 15.247(a)(2)	6dB Bandwidth	Pass	Meet the requirement of limit.
8.2 15.247(b)	Peak Power	Pass	Meet the requirement of limit.
8.3	Average Power	Pass	None, for reporting purposes only.
8.4 15.247(d)	Band Edges Measurement	Pass	Meet the requirement of limit.
8.5 15.247(e)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
8.6.1 15.247(d)	Conducted Measurement	Pass	Meet the requirement of limit.
8.6.2.1 15.247(d)	Radiated Emissions	Pass	Dipole Antenna: Above 1 GHz: Minimum passing margin is –0.28dB at 2640.00 MHz PCB Antenna: Above 1 GHz: Minimum passing margin is –0.23dB at 4925.00 MHz
8.6.2.4 15.247(d)	Radiated Emissions	Pass	Dipole Antenna: Below 1 GHz: Minimum passing margin is –7.54dB at 165.80 MHz PCB Antenna: Below 1 GHz: Minimum passing margin is –7.30dB at 165.80 MHz
8.7 15.207	Powerline Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is – 8.962dB at 0.198MHz.

3. EUT DESCRIPTION

Product	Wireless 802.11N DUAL BAND MINI PCI MODULE
Trade Name	Linksys
Model Number	WM821-M-LS
Model Discrepancy	N/A
Power Supply	Powered from host device.
Frequency Range	2.4GHz: 2400 ~ 2483.5MHz 5.0GHz: 5150 ~ 5250MHz, 5250 ~ 5350MHz, 5470 ~ 5725MHz, 5725 ~ 5850MHz
Number of Channels	IEEE 802.11a mode: 8 Channels for 5150 – 5350MHz draft 802.11n Standard-20 MHz Channel mode : 4 Channels draft 802.11n Wide-40 MHz Channel mode: 3 Channels IEEE 802.11a mode: 11channels for 5470 ~ 5725 MHz IEEE 802.11a mode: 5 Channels for 5725 - 5850 MHz draft 802.11n Standard-20 MHz Channel mode : 5 Channels draft 802.11n Wide-40 MHz Channel mode: 2 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
Modulation Technique	IEEE 802.11a: OFDM draft 802.11n Standard-20 MHz Channel mode: OFDM draft 802.11n Wide-40 MHz Channel mode: OFDM IEEE 802.11b mode: DSSS IEEE 802.11g mode: OFDM draft 802.11n Standard-20 MHz Channel mode: OFDM draft 802.11n Wide-40 MHz Channel mode: OFDM
Data Rate	IEEE 802.11a: DTS: 1, 2, 5.5, 11Mbps / UNII 6, 9, 12, 18, 24, 36, 48, 54 Mbps draft 802.11n Standard-20 MHz Channel mode: 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: 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 IEEE 802.11b mode: 1, 2, 5.5, 11 Mpbs IEEE 802.11g mode: 6, 9, 12, 18, 24, 36, 48, 54 Mpbs draft 802.11n Standard-20 MHz Channel mode: 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: 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
Transmit Power	IEEE 802.11a mode for DTS: 16.41 dBm draft 802.11n Standard-20 MHz Channel mode: 17.53 dBm draft 802.11n Wide-40 MHz Channel mode: 17.38 dBm IEEE 802.11a mode for UNII: 12.11 dBm draft 802.11n Standard-20 MHz Channel mode: 13.77 dBm draft 802.11n Wide-40 MHz Channel mode: 13.48 dBm IEEE 802.11b mode: 20.99 dBm IEEE 802.11g mode: 17.88 dBm draft 802.11n Standard-20 MHz Channel mode: 21.94 dBm draft 802.11n Wide-40 MHz Channel mode: 23.11 dBm

Antenna Specification	Dipole Antenna / 2.4GHz: Gain: 1.8 dBi, 5.0GHz: 1.3 dB PCB Antenna / 2.4GHz: Gain: 1.8 dBi (excluding cable loss: 0.7 dB) for 25cm cable 1.8 dBi (excluding cable loss: 0.9 dB) for 30cm cable 1.8 dBi (excluding cable loss: 1.3dB) for 45cm cable 5.0GHz: Gain: 1.8 dBi (excluding cable loss: 1.1 dB) for 25cm cable 1.8 dBi (excluding cable loss: 1.3 dB) for 30cm cable 1.8 dBi (excluding cable loss: 2 dB) for 45cm cable
Antenna and cable	1. Dipole antenna + 18cm cable + 10cm cable 2. Dipole antenna + 20cm cable + 10cm cable 3. Dipole antenna + 10cm cable + 10cm cable + 10cm cable 4. Dipole antenna + 24cm cable + 31.5cm cable + 24cm cable 5. PCB antenna + 30cm cable + 25cm cable + 45cm cable

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-WM821M** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.*
3. *The frequency bands used in this EUT are listed as follows:*

Frequency Band (MHz)	2400 ~ 2483.5	5150 ~ 5250	5250 ~ 5350	5470 ~ 5725	5725 ~ 5850
802.11b	Yes				
802.11g	Yes				
802.11a		Yes	Yes	Yes	Yes
802.11n(20MHz)	Yes	Yes			Yes
802.11n(40MHz)	Yes	Yes			Yes

4. 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.

4.1 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.

4.2 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.

4.3 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.

4.4 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 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[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.

4.5 DESCRIPTION OF TEST MODES

The EUT (model: WM821-M-LS) had been tested under operating condition.

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

This EUT comes with 2 sets of antennae (Dipole antenna and PCB antenna) for sale.

- The Dipole antenna is with 5 different lengths of cables: 18cm and 10cm and 20cm and 24cm and 31.5cm and 24cm and 30cm.
- The PCB antenna is with 3 different lengths of cables: 30cm and 25cm and 45cm.

The EUT is a 2x3 configuration spatial MIMO (2Tx & 3Rx) without beam forming function but with cyclic delay diversity function that operate in double TX chains and triple RX chains. The 2x3 configuration is implemented with two outside TX & RX chains (Chain 1 and the middle RX chain (chain 0).

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 802.11a mode:
Channel Low(5745MHz), Channel Mid(5785MHz) and Channel High(5825MHz) with 6Mbps data rate were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode:
Channel Low(5745MHz), Channel Mid(5785MHz) and Channel High(5825MHz) with 6.5Mbps data rate were chosen for full testing.

draft 802.11n Wide-40 MHz Channel mode:
Channel Low(5755MHz) and Channel High(5795MHz) with 13.5Mbps data rate were chosen for full testing.

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.

The following test modes were scanned during the preliminary test as per client request:

Mode 1: Dipole antenna + 18cm cable + 10cm cable

Mode 2: Dipole antenna + 20cm cable + 10cm cable

Mode 3: Dipole antenna + 10cm cable + 10cm cable + 10cm cable

Mode 4: Dipole antenna + 24cm cable + 31.5cm cable + 24cm cable

Mode 5: PCB antenna + 30cm cable + 25cm cable + 45cm cable

After the preliminary scan, the following test mode was found to produce the highest emission level.

Mode 2, 5

5. INSTRUMENT CALIBRATION

5.1 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.

5.2 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	08/01/2008
Test Receiver	Rohde&Schwarz	ESCI	100064	11/13/2007
Switch Controller	TRC	Switch Controller	SC94050010	05/04/2008
4 Port Switch	TRC	4 Port Switch	SC94050020	05/04/2008
Horn-Antenna	TRC	HA-0502	06	06/05/2008
Horn-Antenna	TRC	HA-0801	04	06/20/2008
Horn-Antenna	TRC	HA-1201A	01	07/09/2008
Horn-Antenna	TRC	HA-1301A	01	07/17/2008
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	10/31/2007
TWO-LINE V-NETWORK 9kHz-30MHz	SCHAFFNER	NNB41	03/10013	06/12/2008
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	04/01/2008
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.*

6. FACILITIES AND ACCREDITATIONS

6.1 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.

6.2 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.”

6.3 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	ACCREDITED TESTING CERT #0824.01
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	Testing Laboratory 0363
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.*

7. SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

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

7.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	Notebook PC	ASUS	M5200AE	5BN0AG019631	PD9WM3B2100	N/A	AC I/P: Unshielded, 1.8m with a core DC O/P: Unshielded, 1.8m
2.	LCD Monitor	LG	L1740PQ	503KGXA2K858	BEJL17NU	Unshielded, 1.8m with 2 cores	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
3.	USB Keyboard	Dell	Sk-8115	N/A	FCC DoC	Shielded, 1.8m	N/A
4.	USB Mouse	Dell	MO56UO	408031121	FCC DoC	Shielded, 1.8m	N/A

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.*

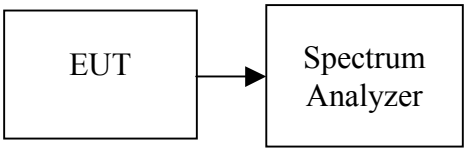
8. FCC PART 15.247 REQUIREMENTS

8.1 6dB BANDWIDTH

8.1.1 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



8.1.2 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 = 100kHz, 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.

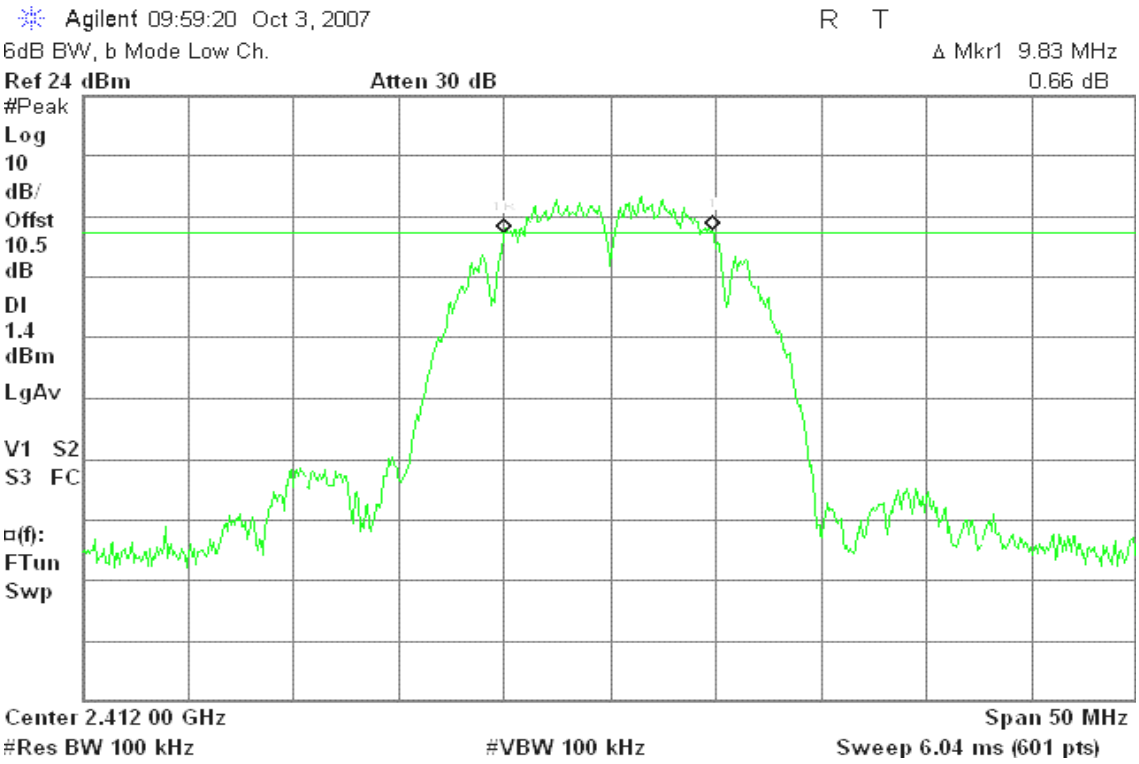
8.1.3 TEST RESULTS

No non-compliance noted

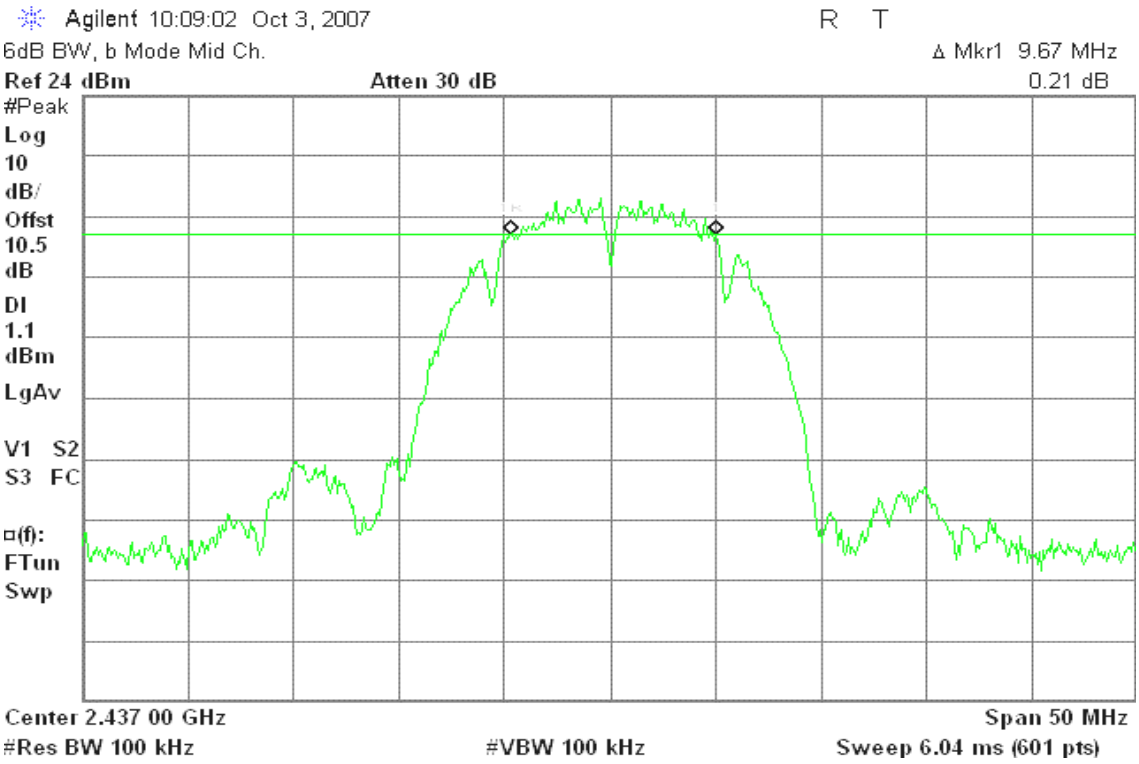
Test Data

Test mode: IEEE 802.11b mode				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Result**
Low	2412	9.83	>500	PASS
Mid	2437	9.67		PASS
High	2462	9.67		PASS

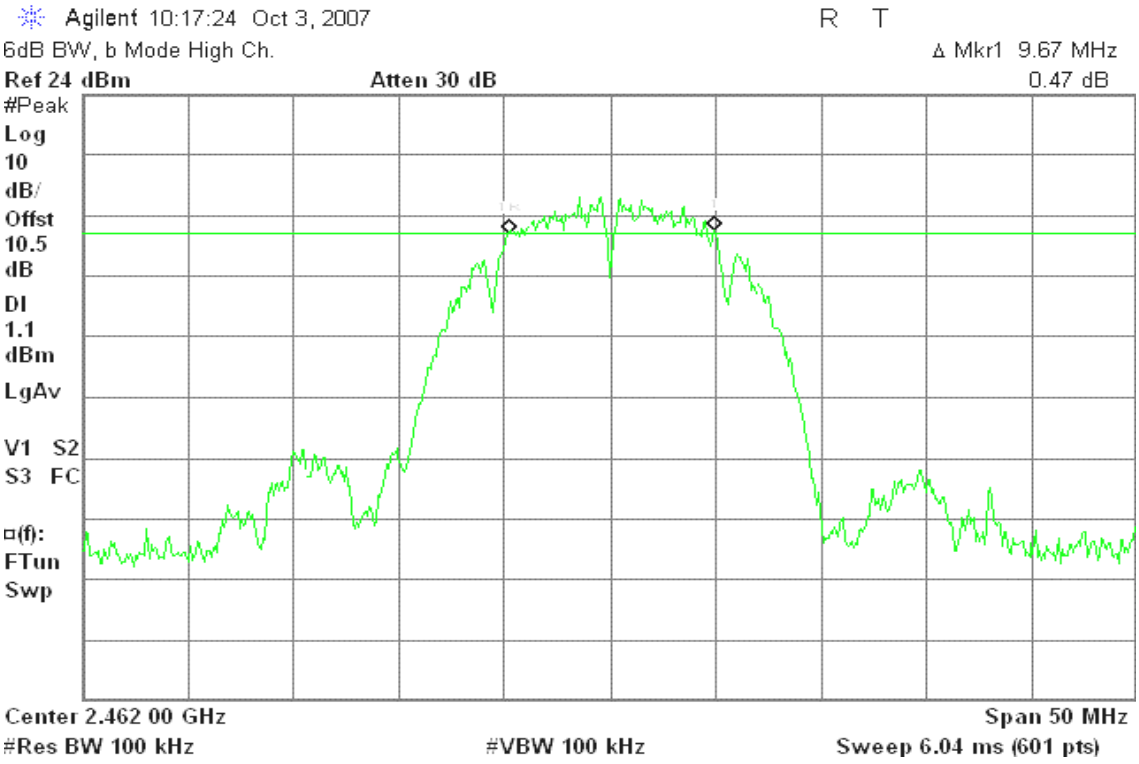
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



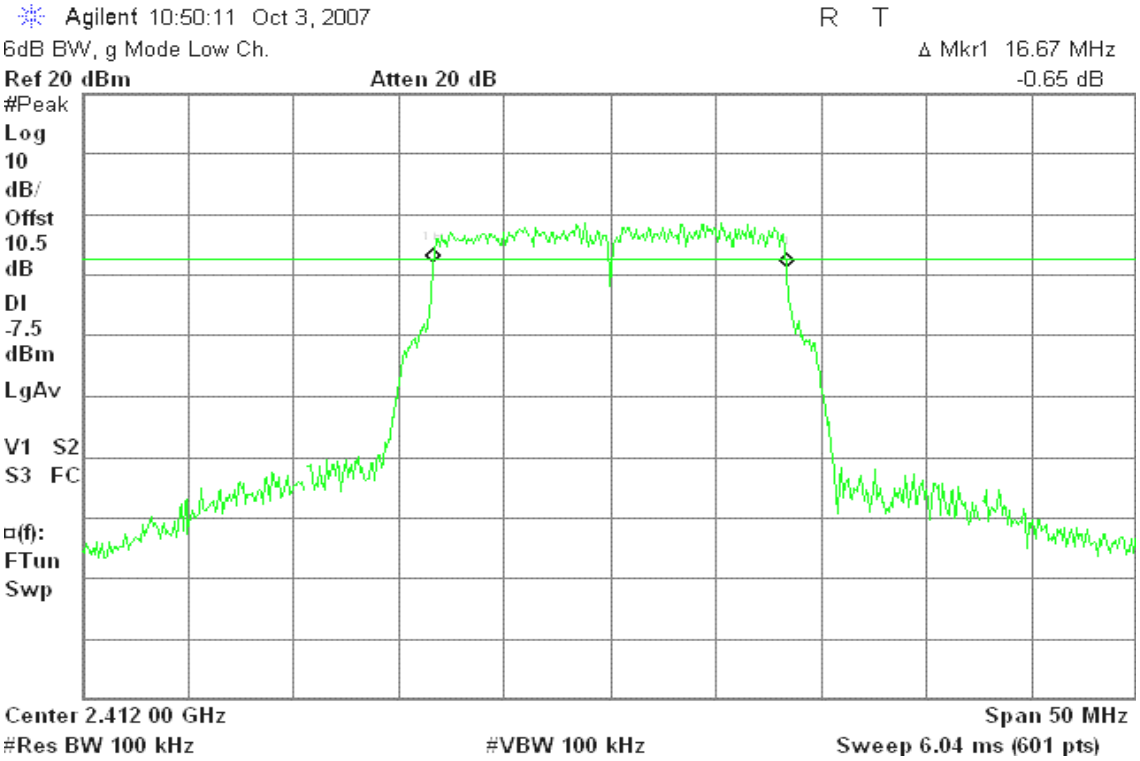
6dB Bandwidth (CH High)



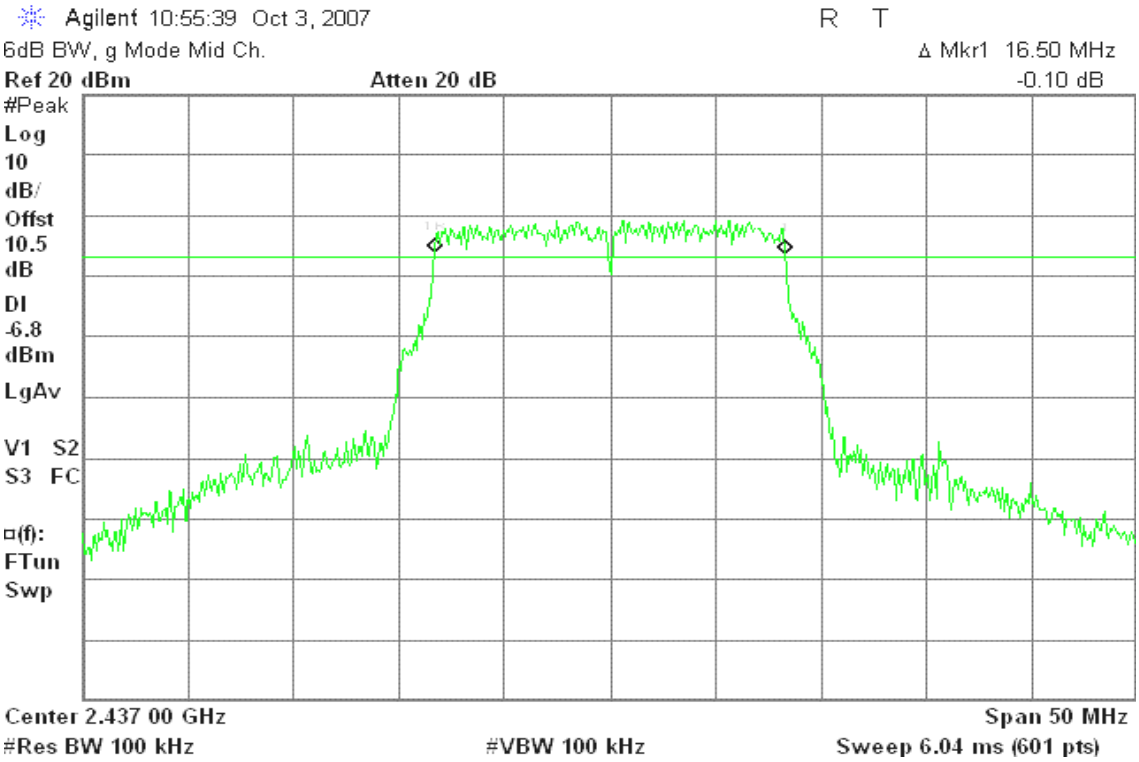
Test Data

Test mode: IEEE 802.11g mode				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Result**
Low	2412	16.67	>500	PASS
Mid	2437	16.50		PASS
High	2462	16.50		PASS

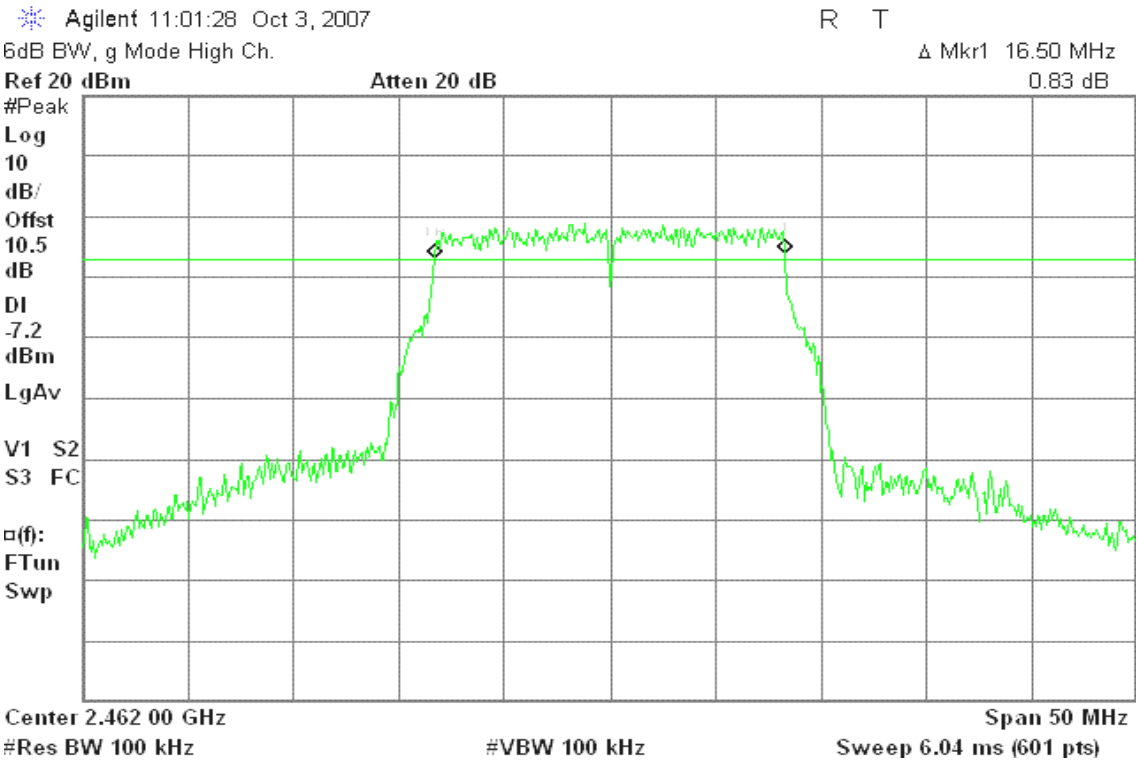
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



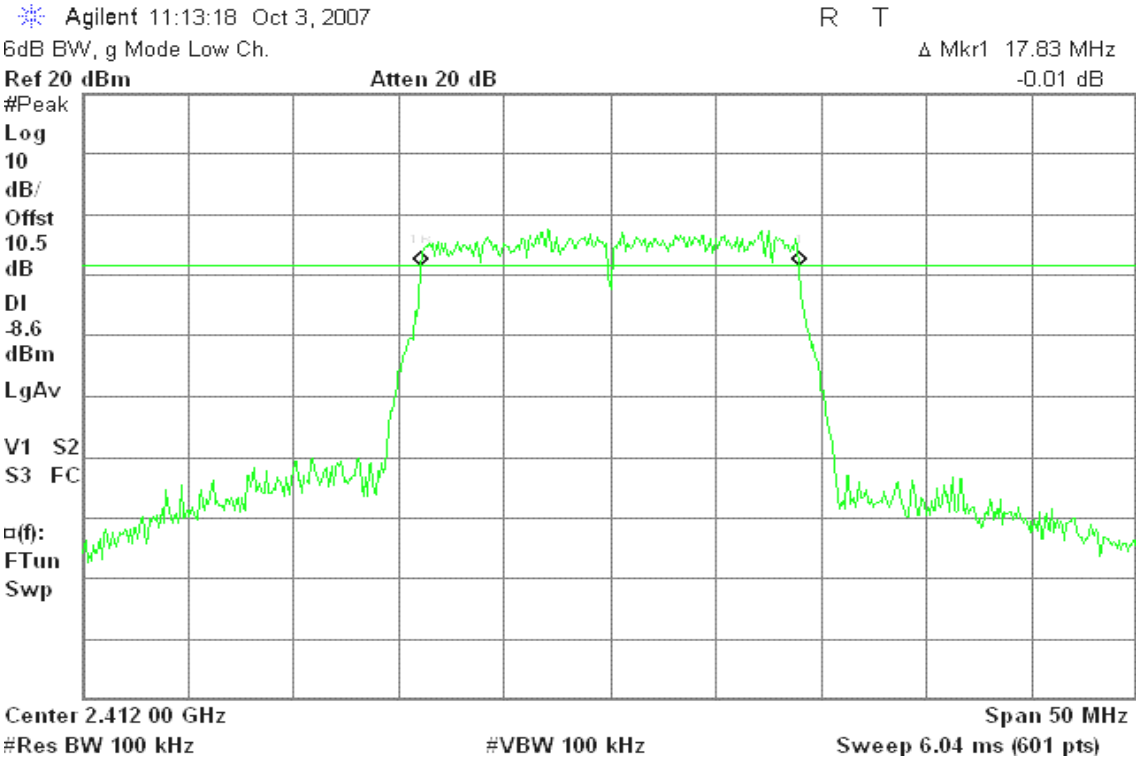
6dB Bandwidth (CH High)



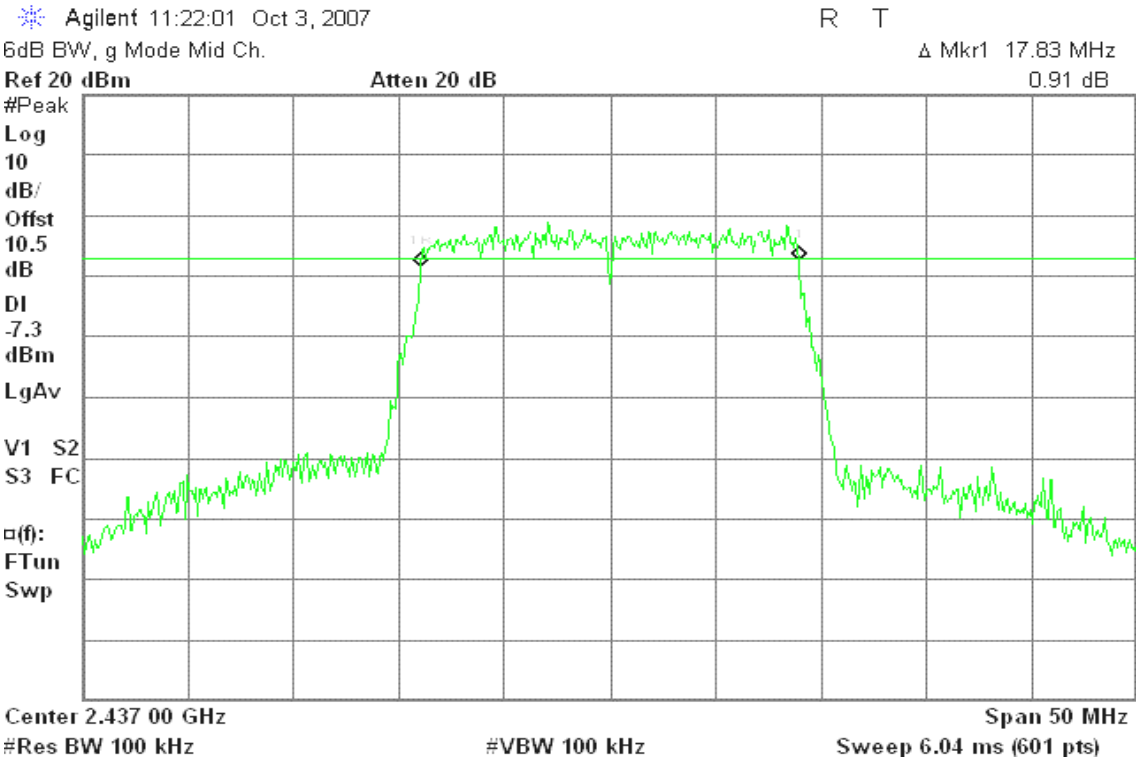
Test Data

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Result**
Low	2412	17.83	>500	PASS
Mid	2437	17.83		PASS
High	2462	17.83		PASS

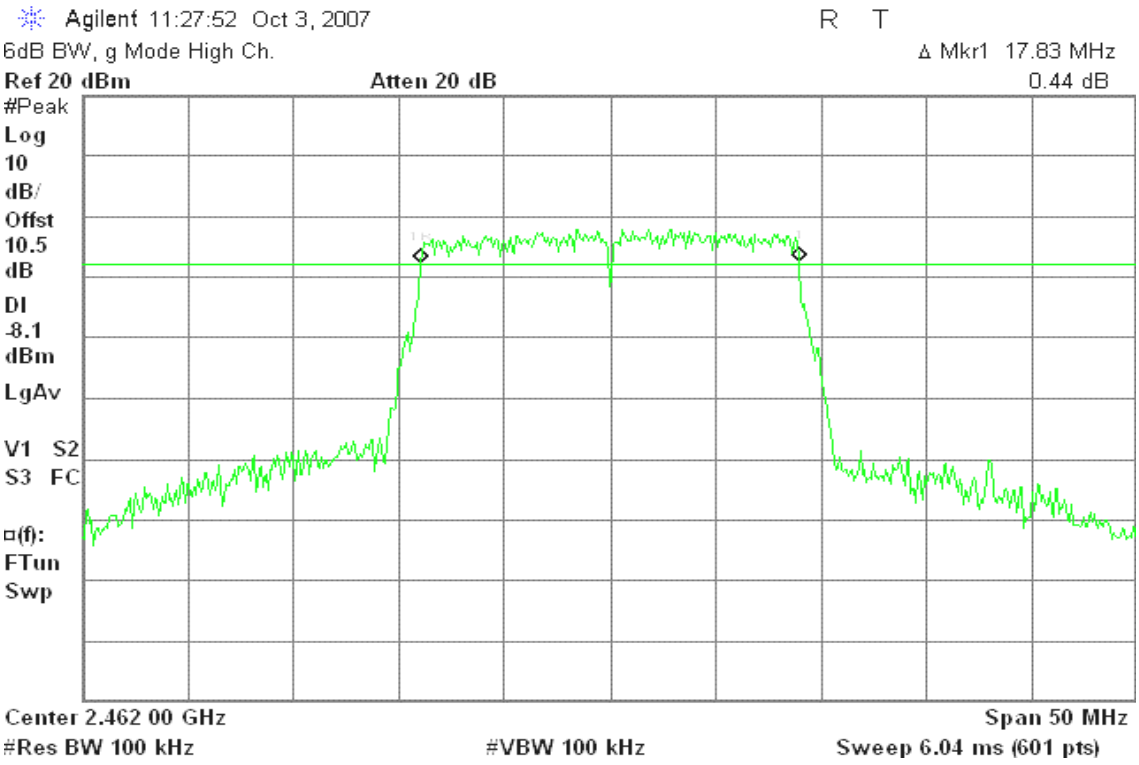
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



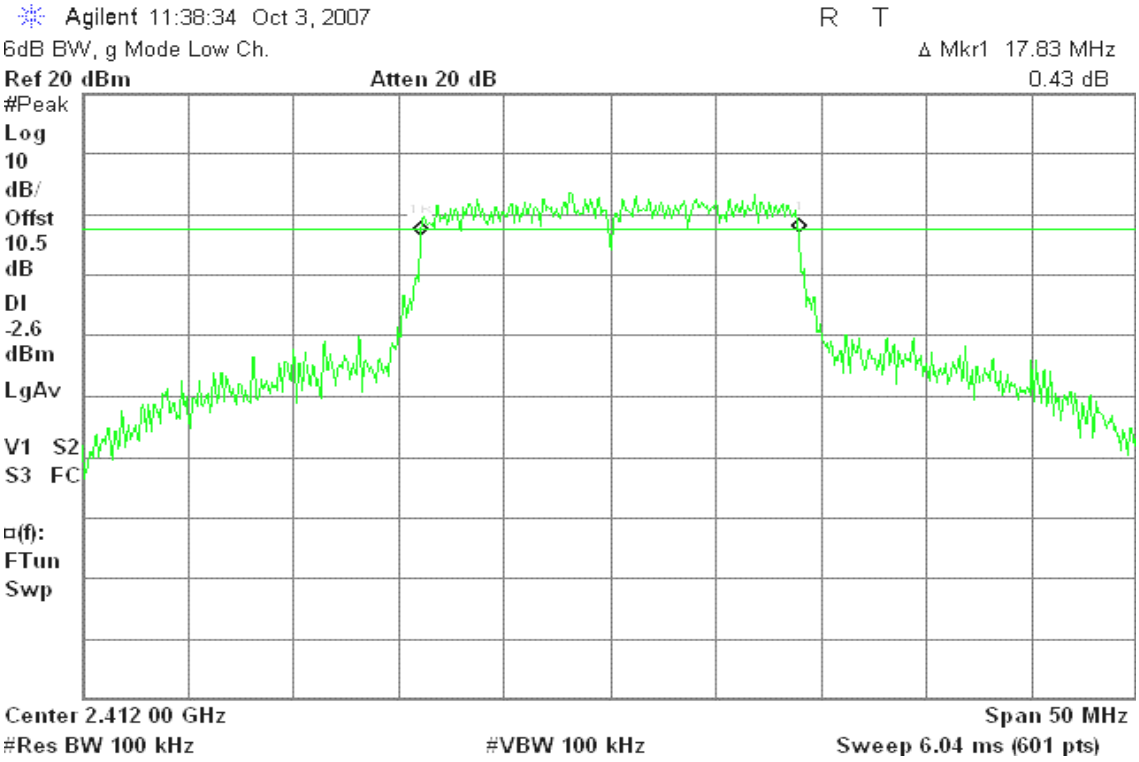
6dB Bandwidth (CH High)



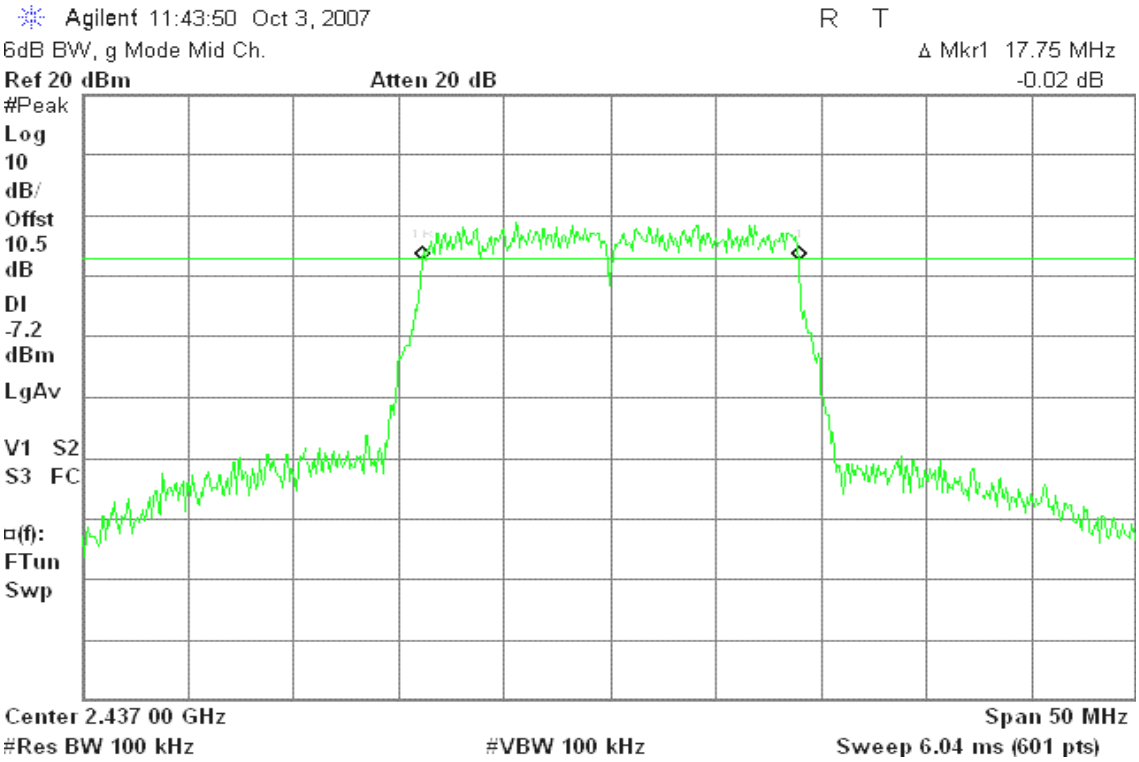
Test Data

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Result**
Low	2412	17.83	>500	PASS
Mid	2437	17.75		PASS
High	2462	17.75		PASS

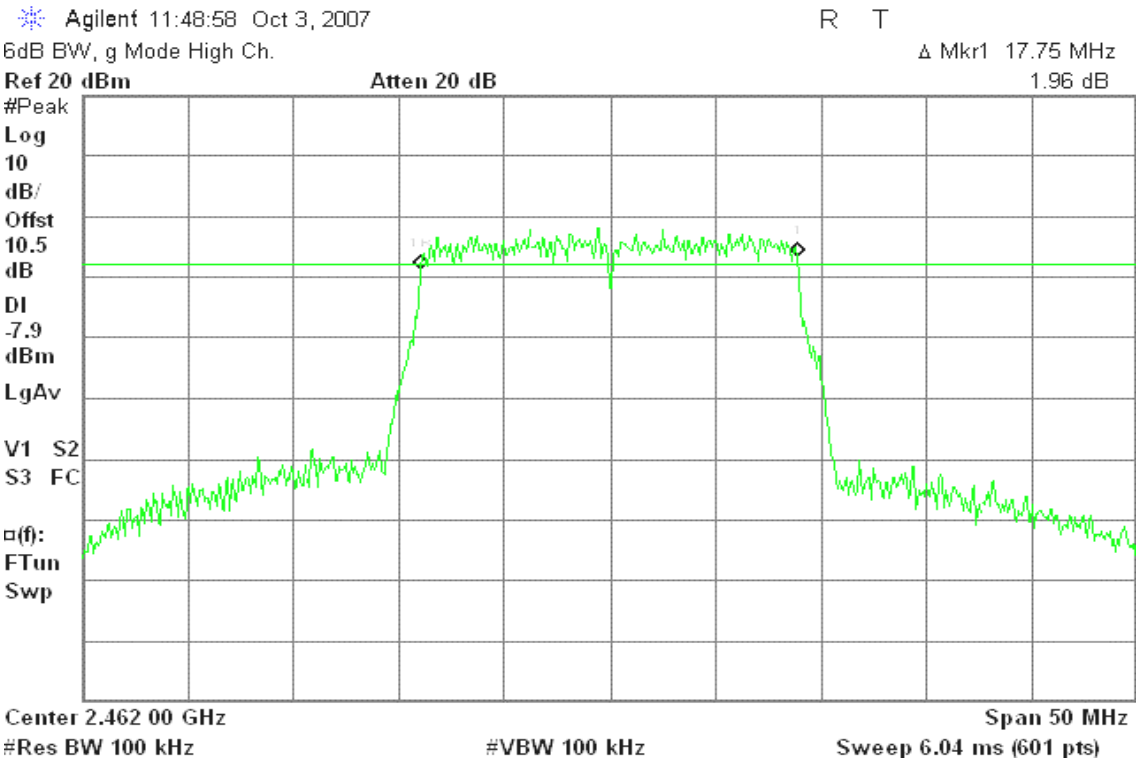
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



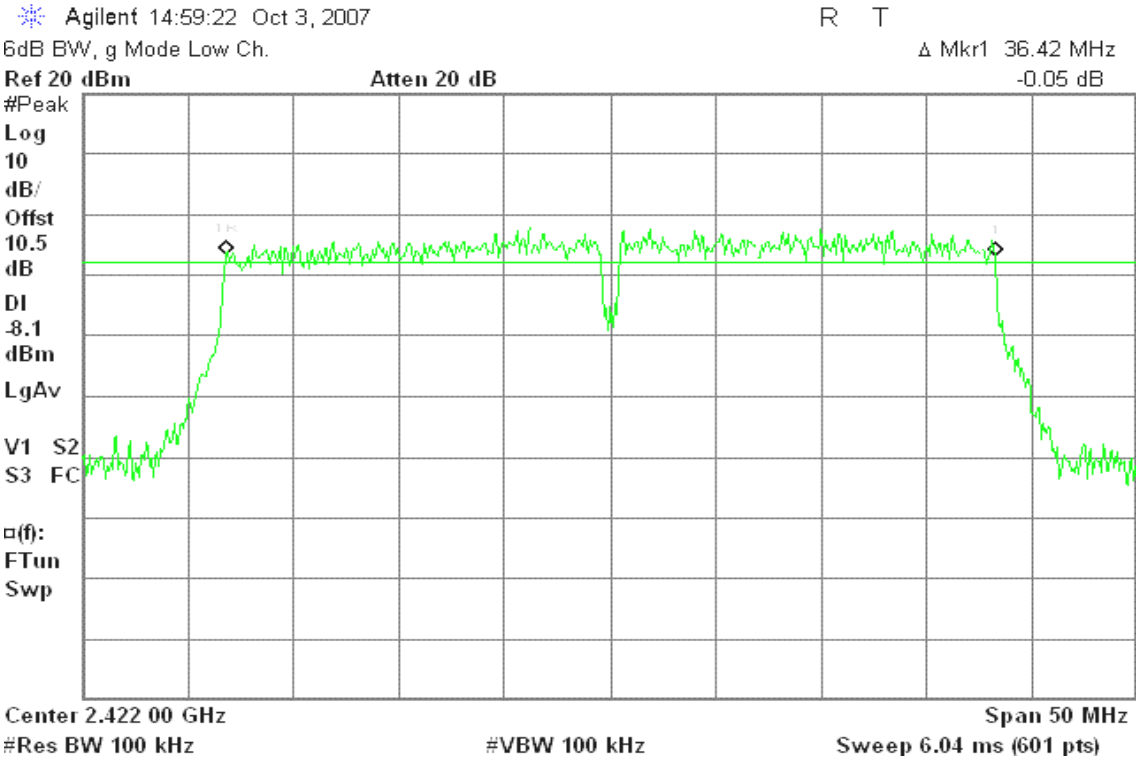
6dB Bandwidth (CH High)



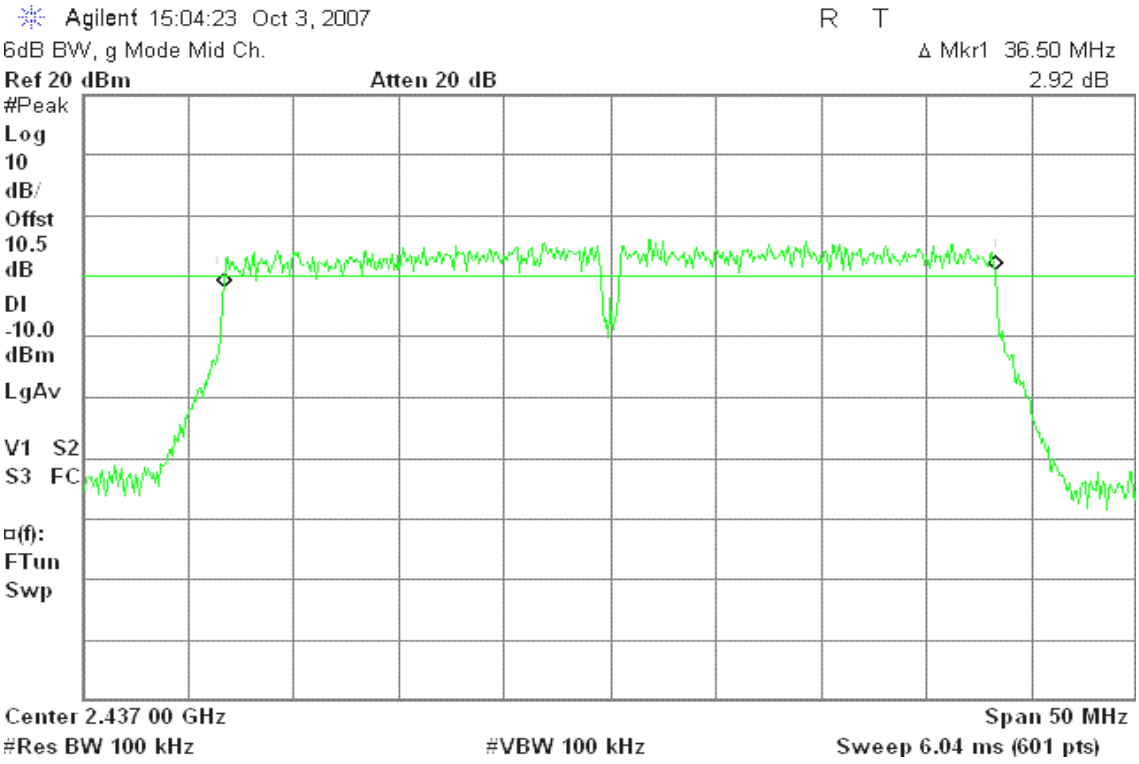
Test Data

Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Result**
Low	2422	36.42	>500	PASS
Mid	2437	36.50		PASS
High	2452	36.33		PASS

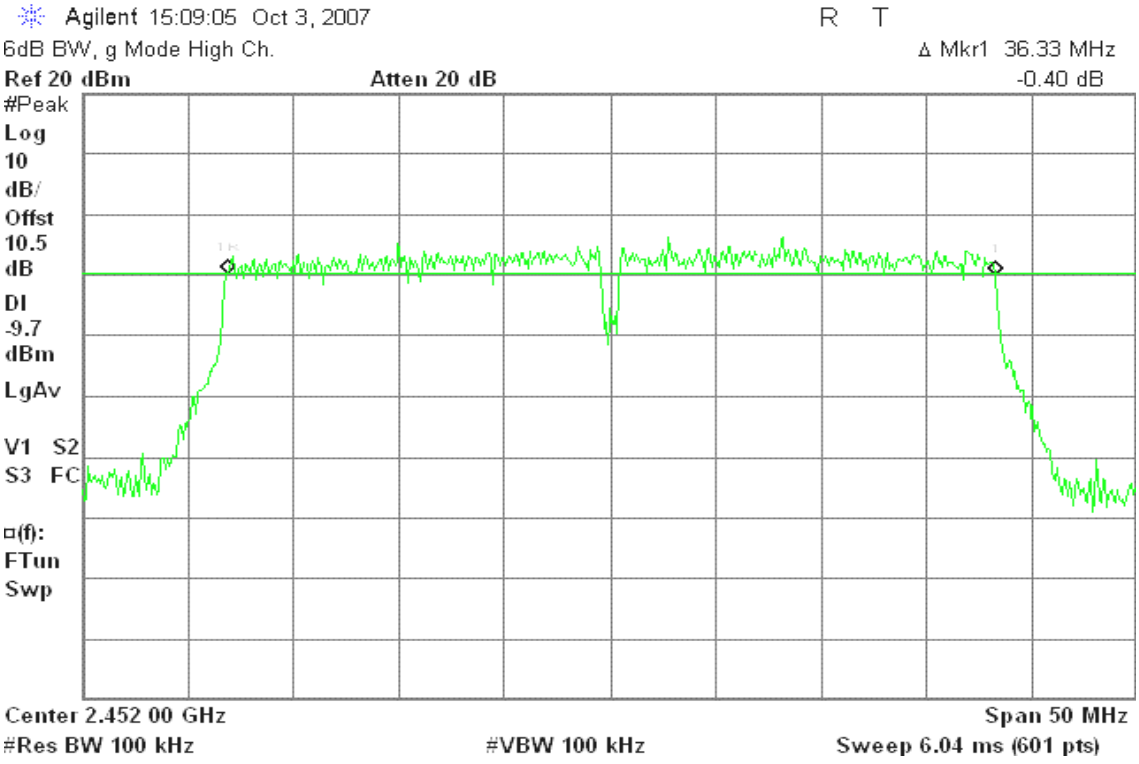
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



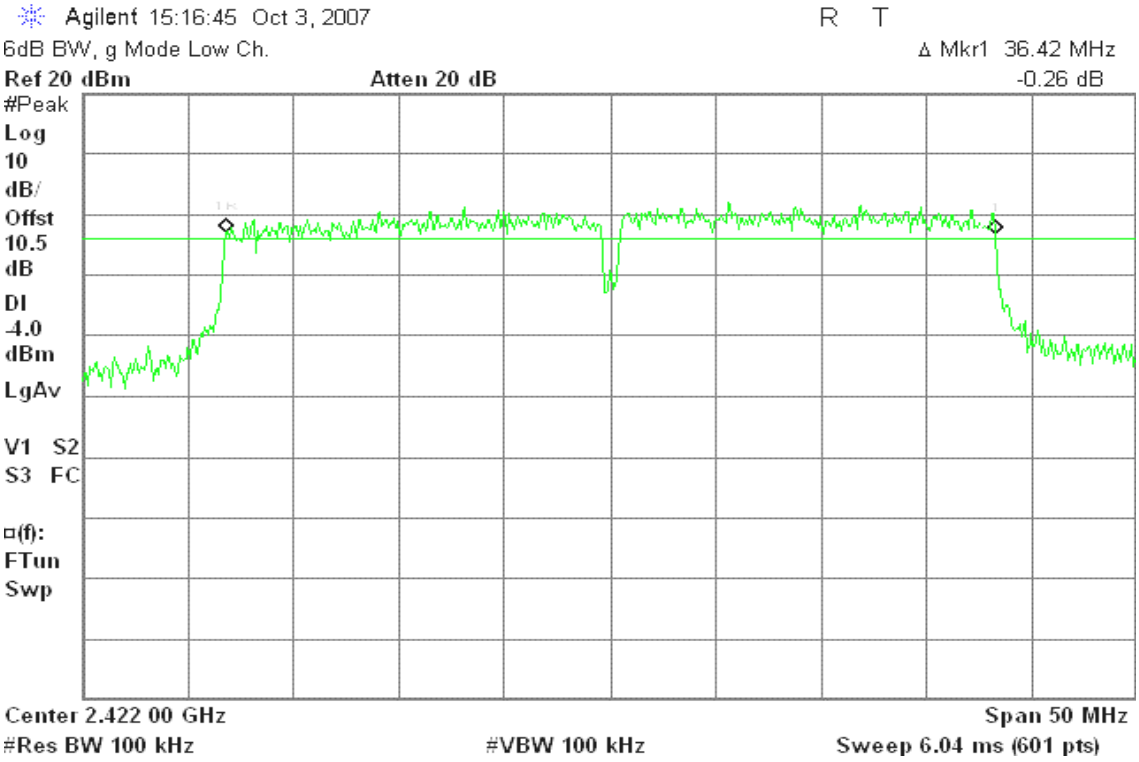
6dB Bandwidth (CH High)



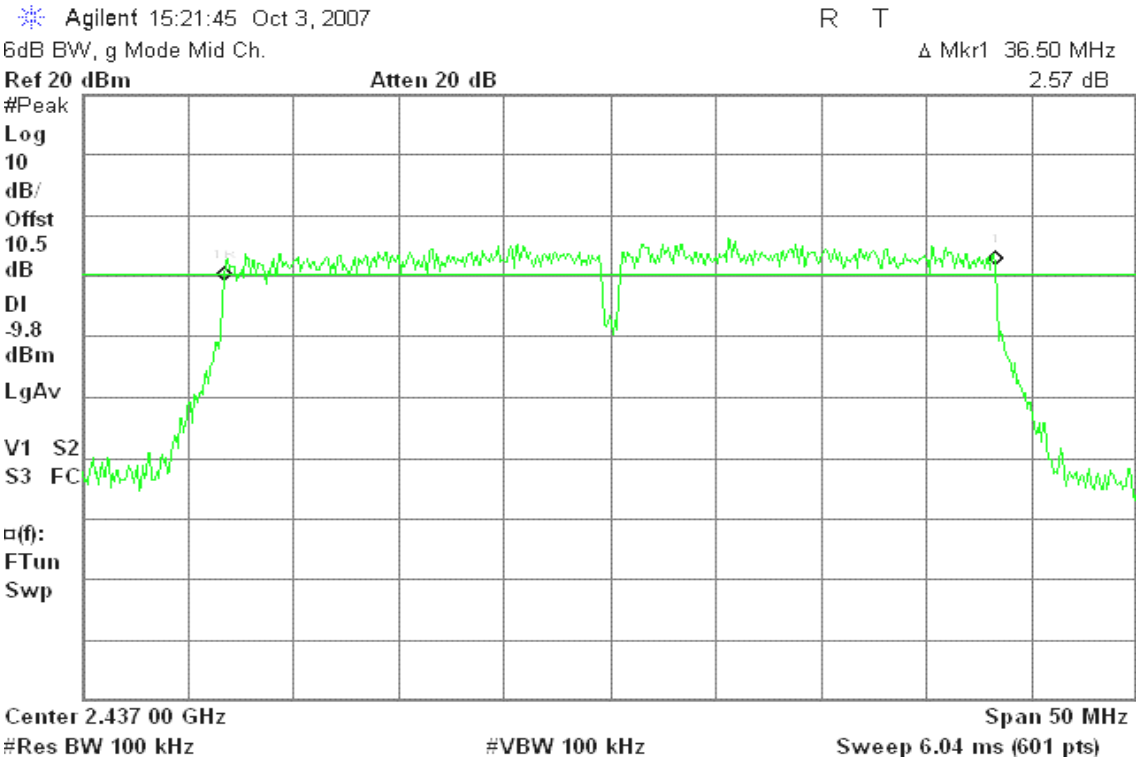
Test Data

Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Result**
Low	2422	36.42	>500	PASS
Mid	2437	36.50		PASS
High	2452	36.42		PASS

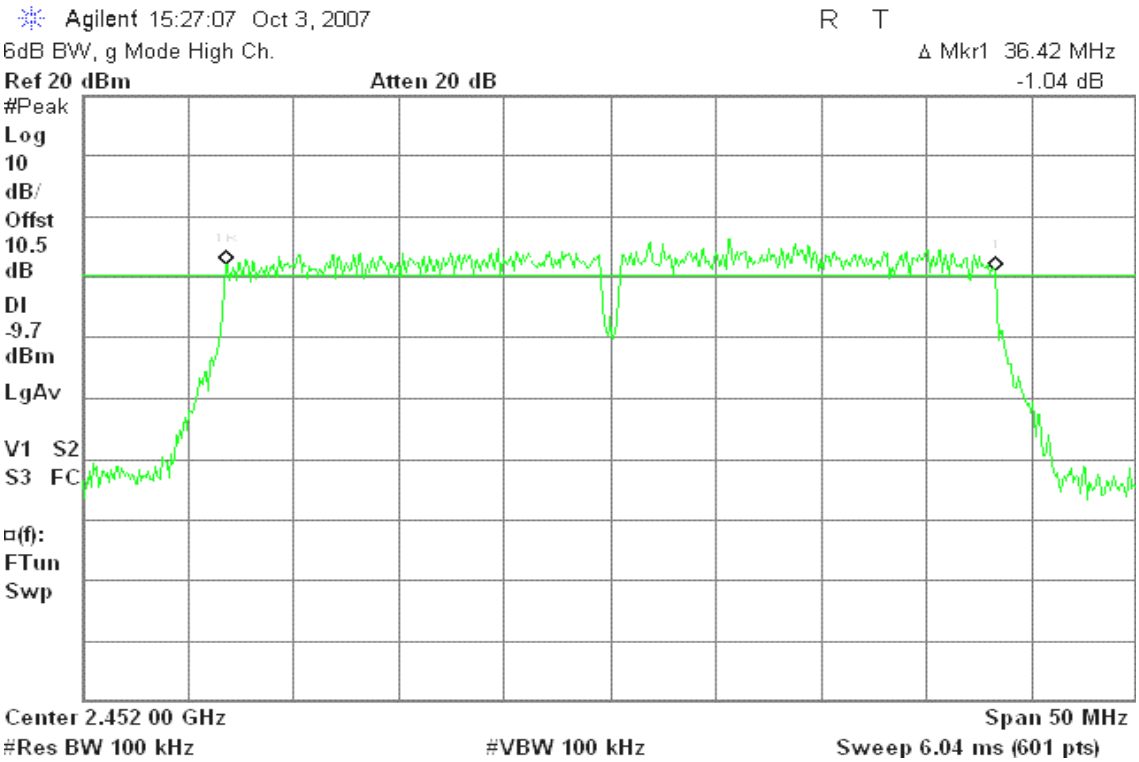
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



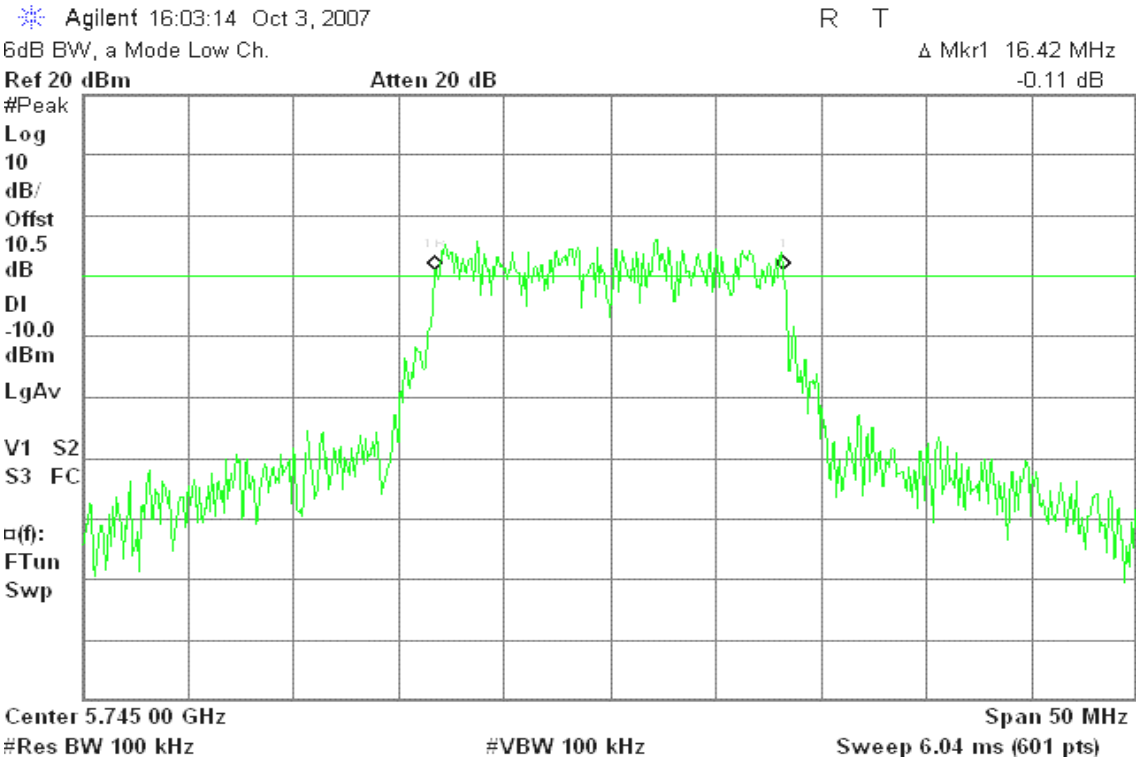
6dB Bandwidth (CH High)



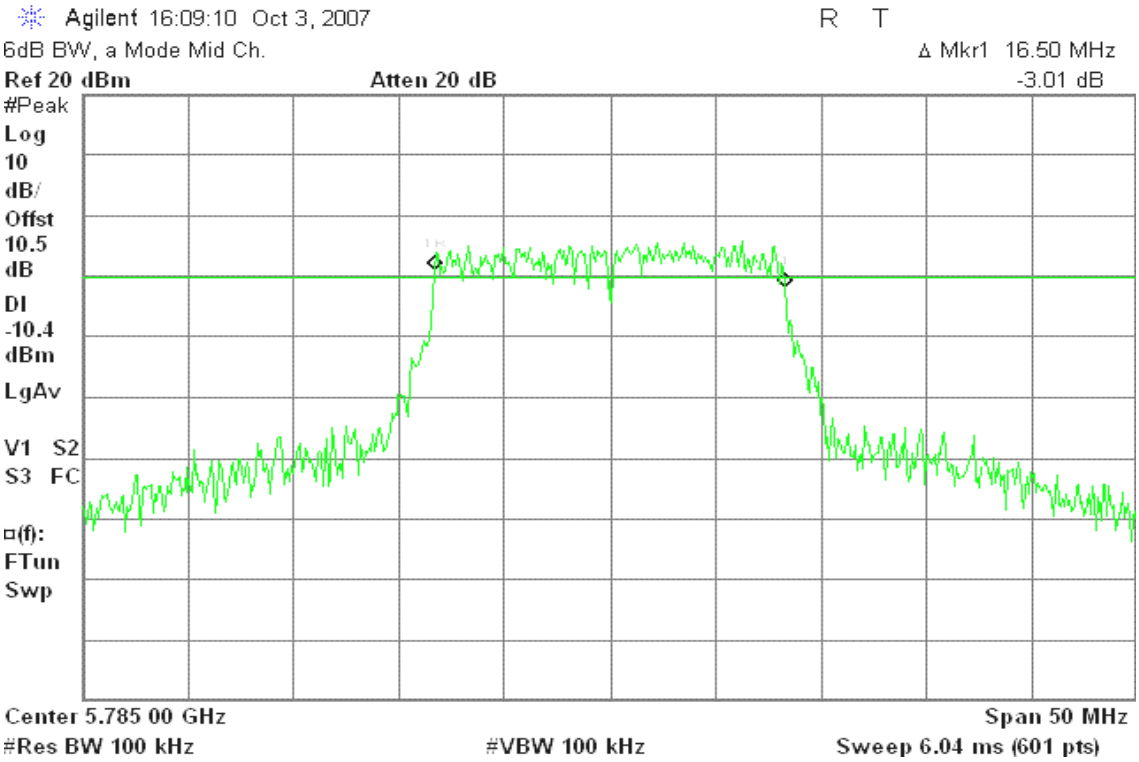
Test Data

Test mode: IEEE 802.11a mode				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Test Result**
Low	5745	14.42	>500	PASS
Mid	5785	16.50		PASS
High	5825	16.50		PASS

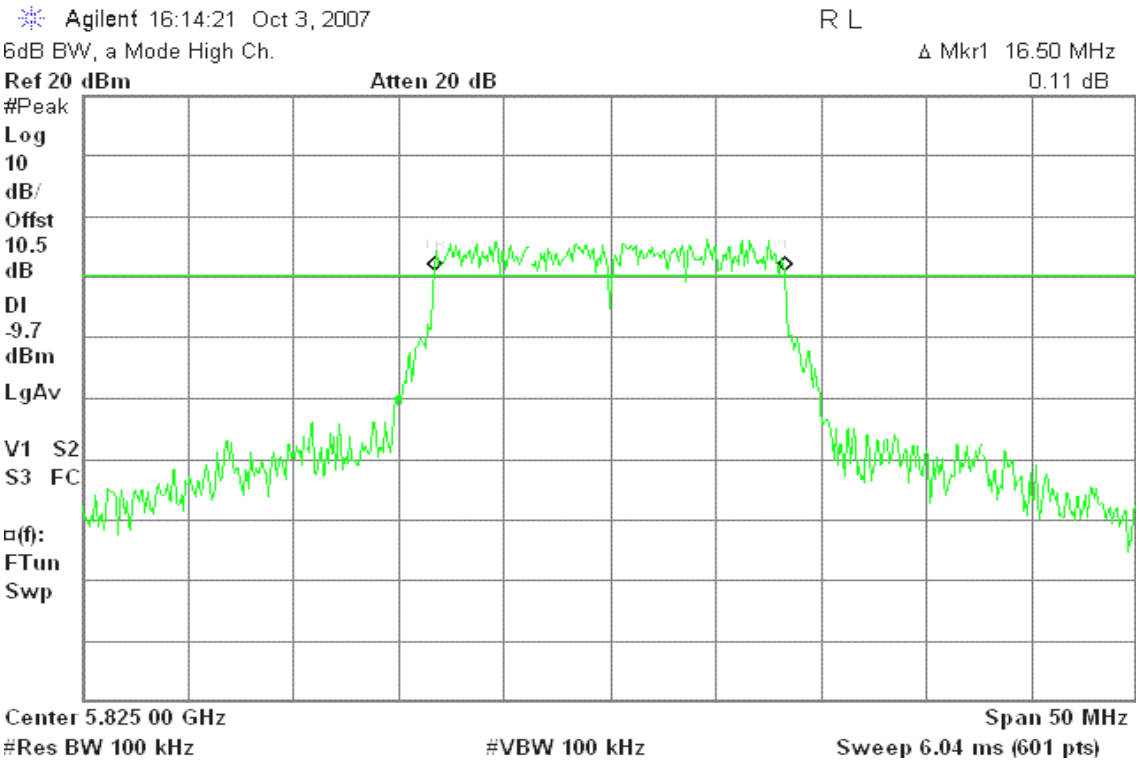
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



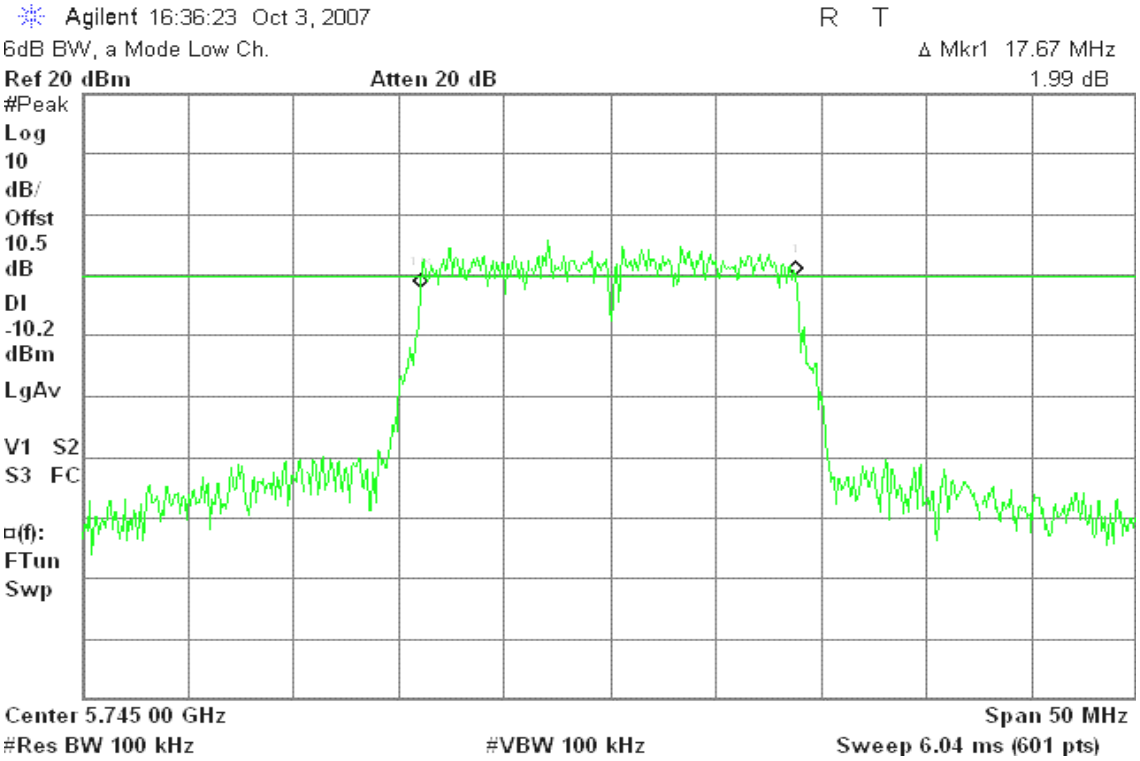
6dB Bandwidth (CH High)



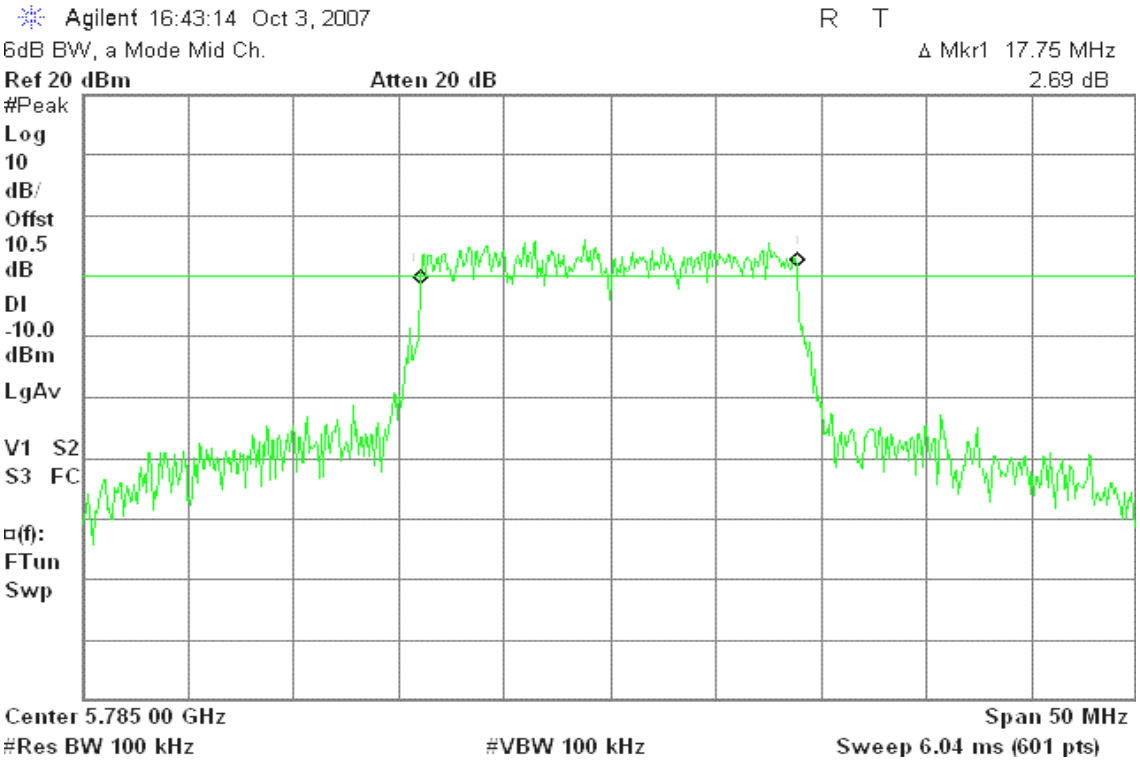
Test Data

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Result**
Low	5745	17.67	>500	PASS
Mid	5785	17.75		PASS
High	5825	17.75		PASS

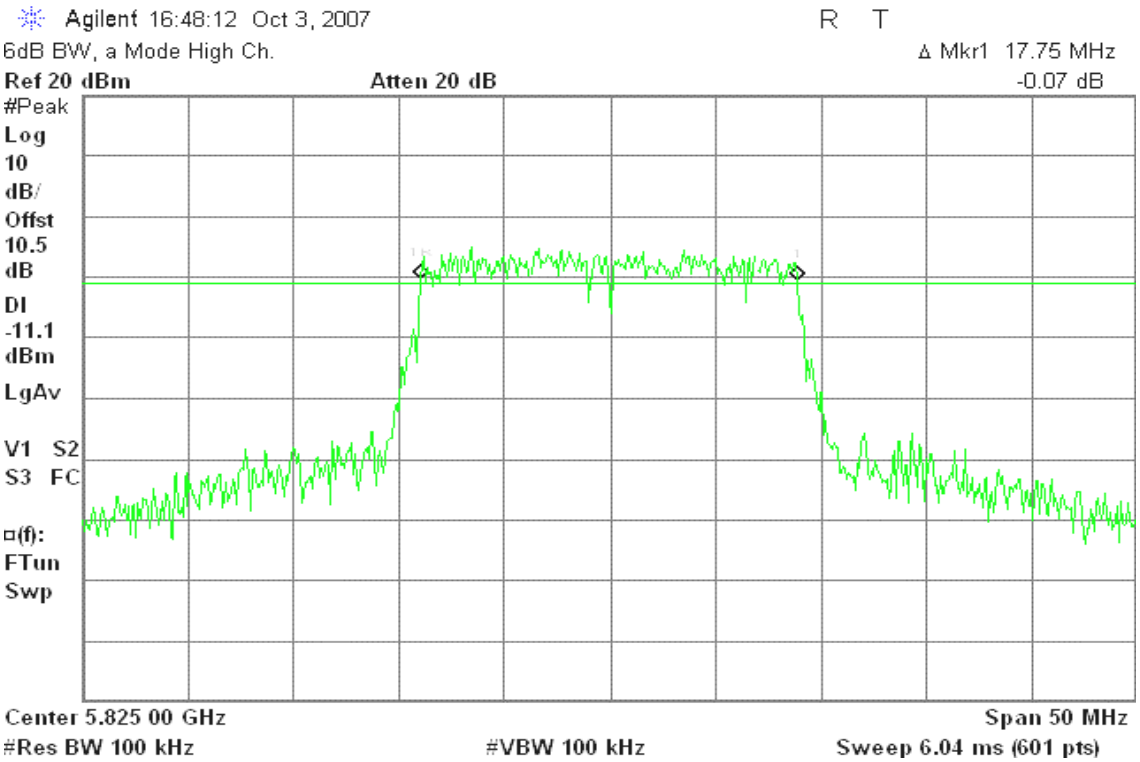
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



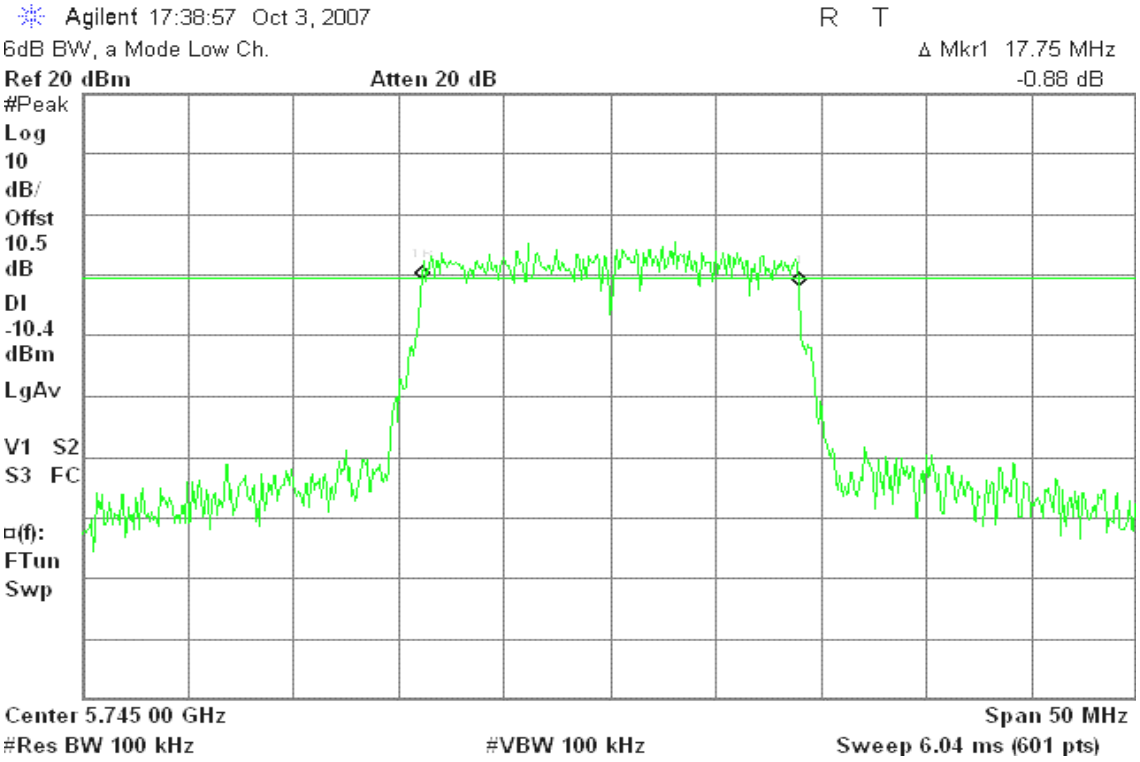
6dB Bandwidth (CH High)



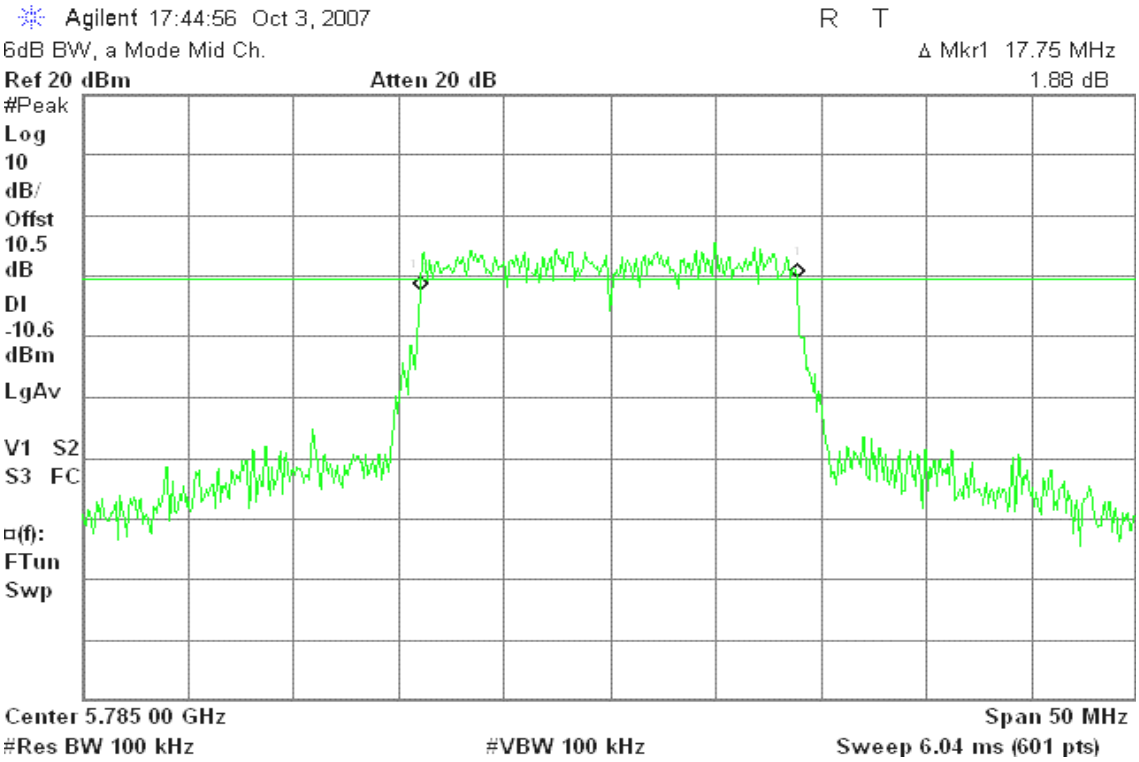
Test Data

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Result**
Low	5745	17.75	>500	PASS
Mid	5785	17.75		PASS
High	5825	17.75		PASS

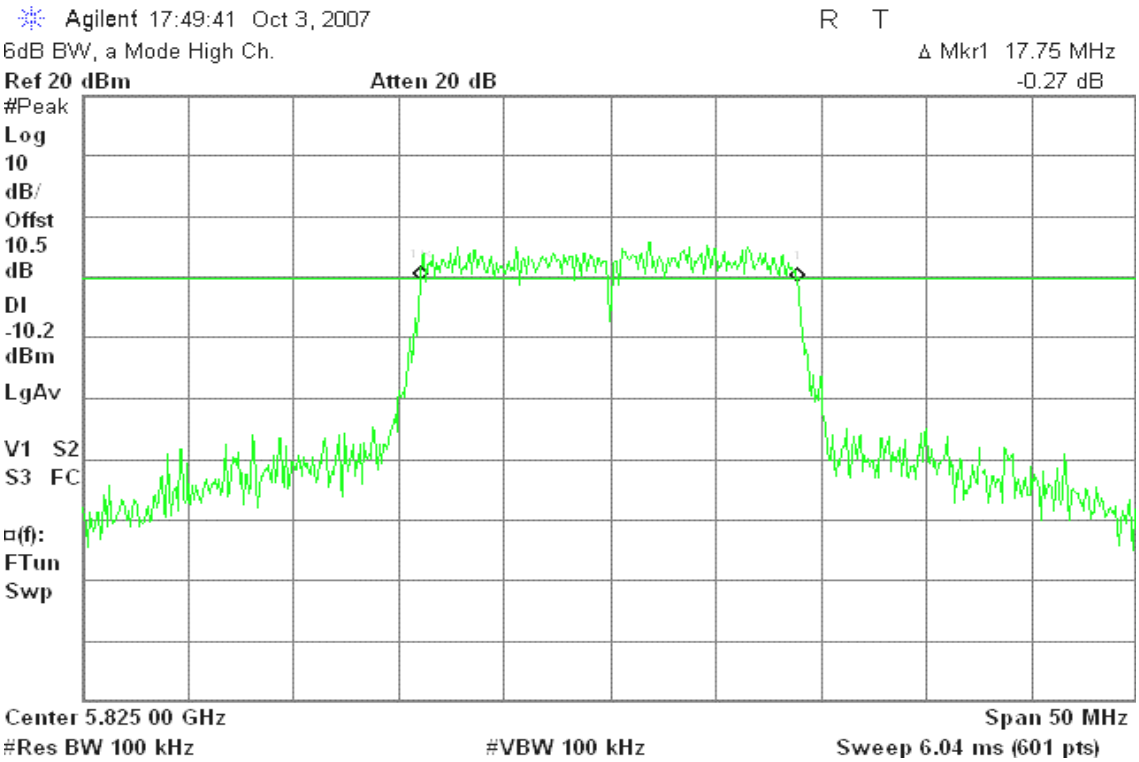
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



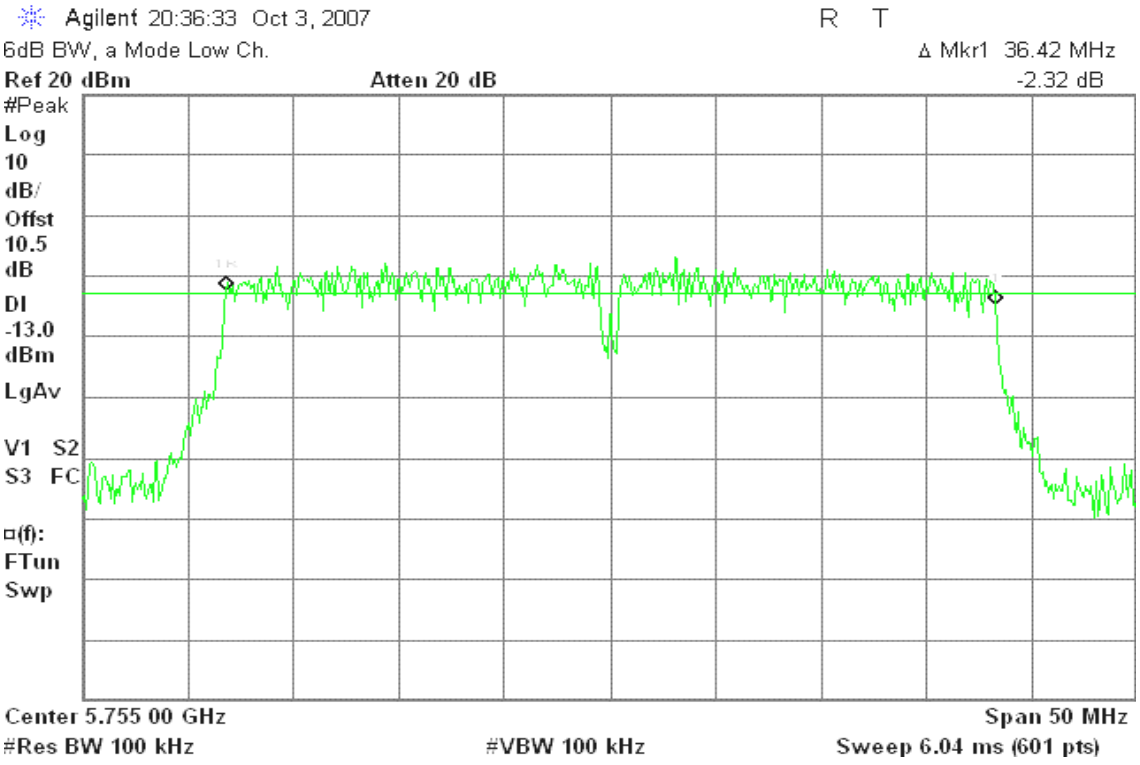
6dB Bandwidth (CH High)



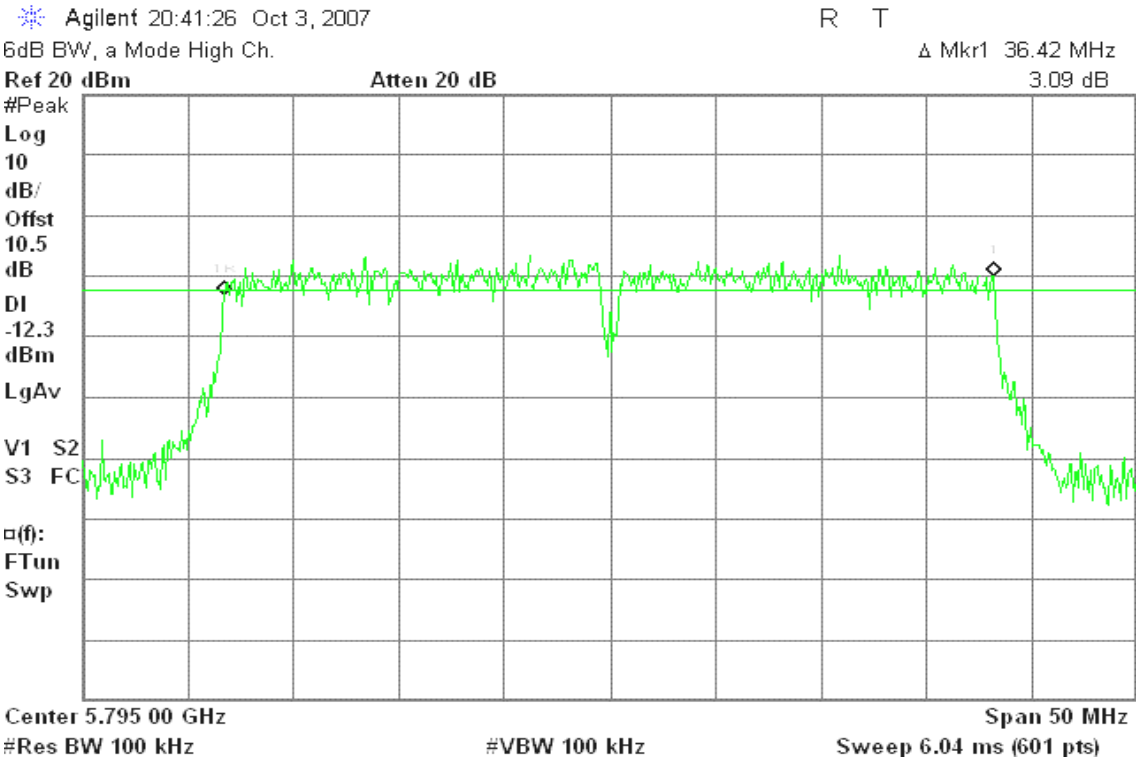
Test Data

Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Result**
Low	5755	36.42	>500	PASS
High	5795	36.42		PASS

6dB Bandwidth (CH Low)



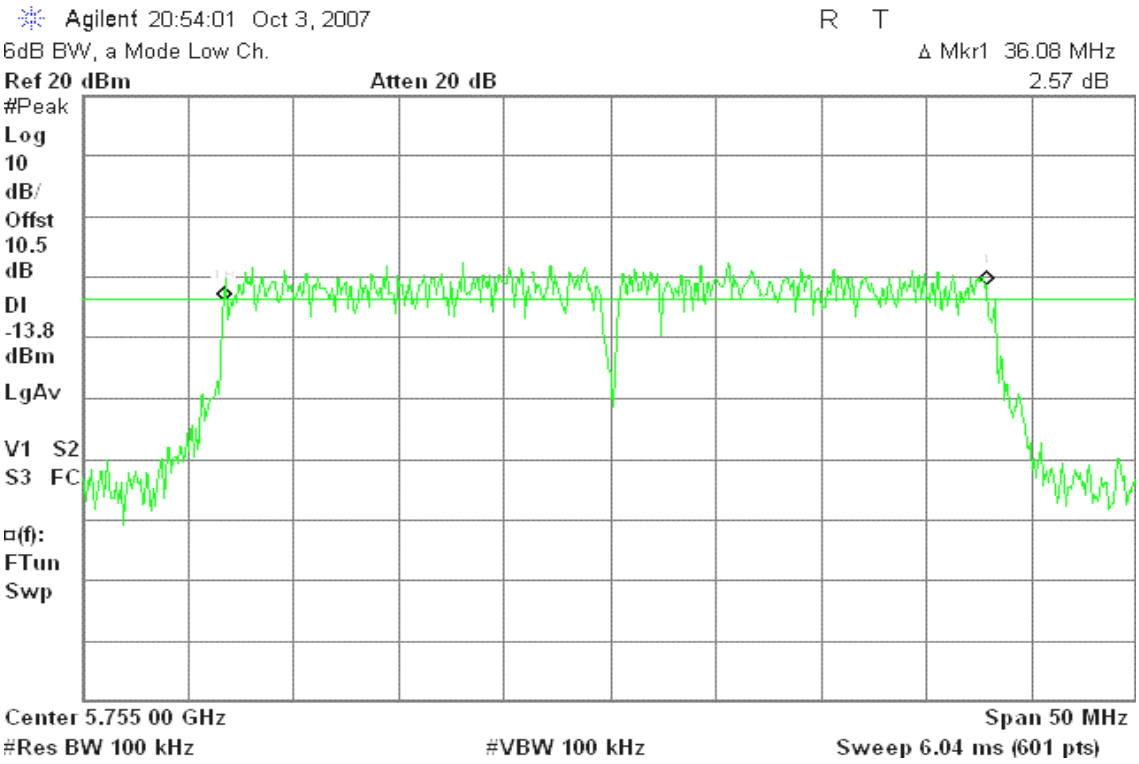
6dB Bandwidth (CH High)



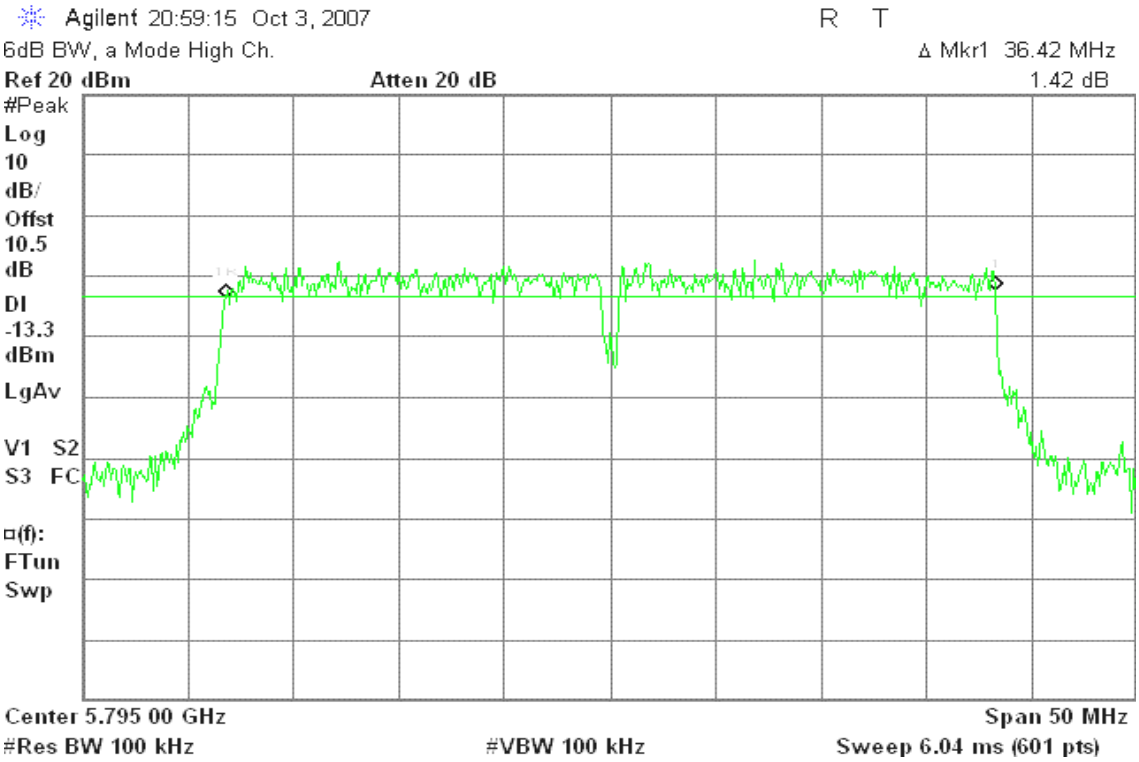
Test Data

Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1				
Channel	**Frequency (MHz)**	**Bandwidth (MHz)**	**Limit (kHz)**	**Result**
Low	5755	36.08	>500	PASS
High	5795	36.42		PASS

6dB Bandwidth (CH Low)



6dB Bandwidth (CH High)



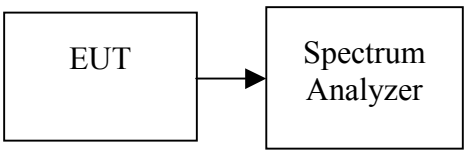
8.2 PEAK POWER

8.2.1 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



8.2.2 TEST PROCEDURE

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

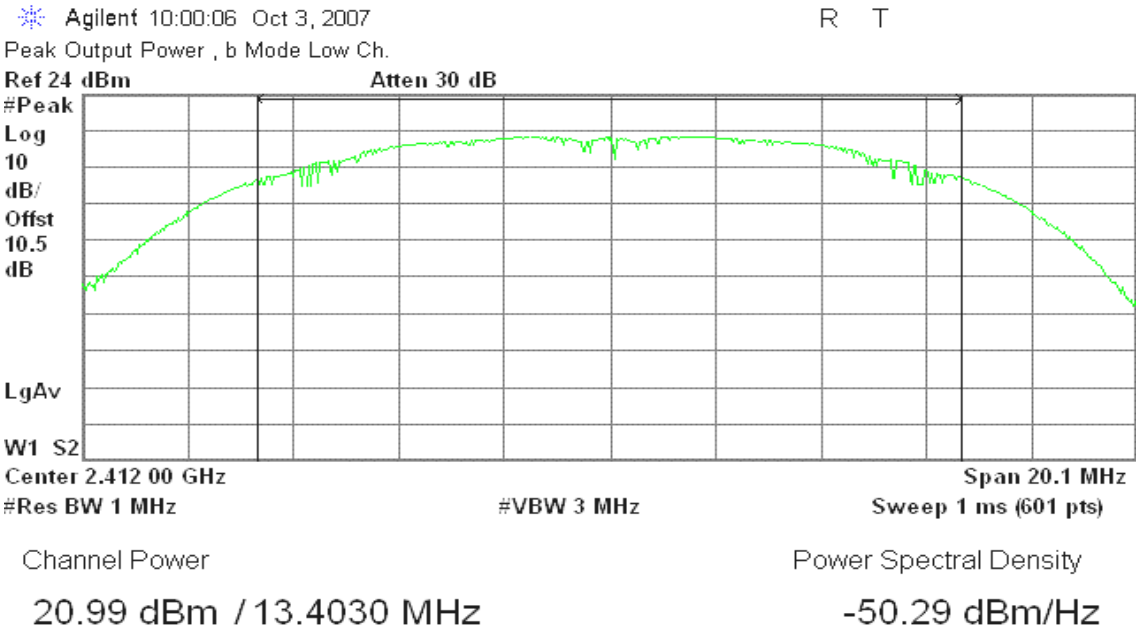
8.2.3 TEST RESULTS

No non-compliance noted.

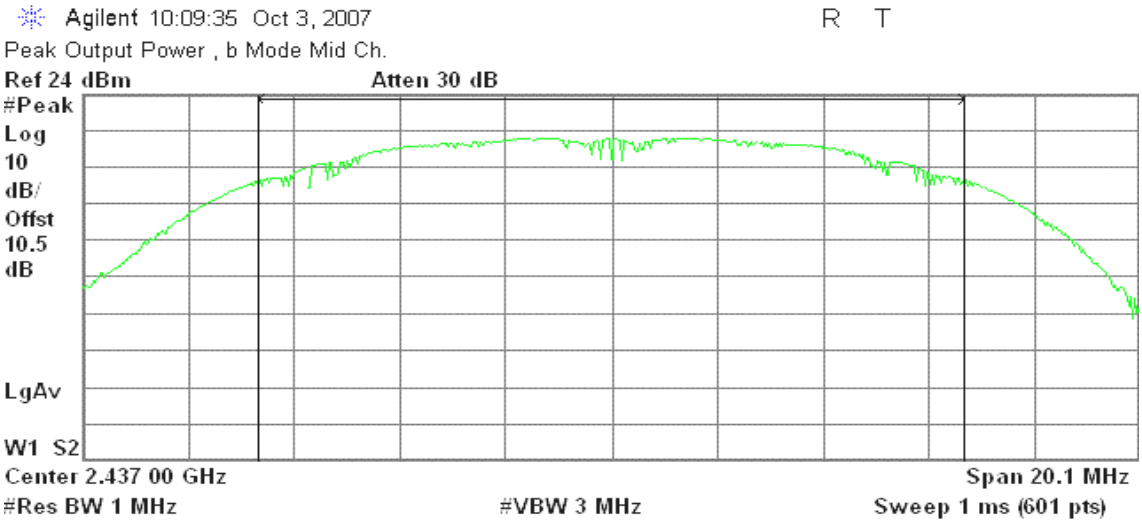
Test Data

Test mode: IEEE 802.11b mode					
Channel	**Frequency (MHz)**	**Output Power (dBm)**	**Output Power (W)**	**Limit (W)**	**Result**
Low	2412	20.99	0.1256	1.00	PASS
Mid	2437	20.45	0.1109		PASS
High	2462	20.50	0.1122		PASS

Peak Power (CH Low)



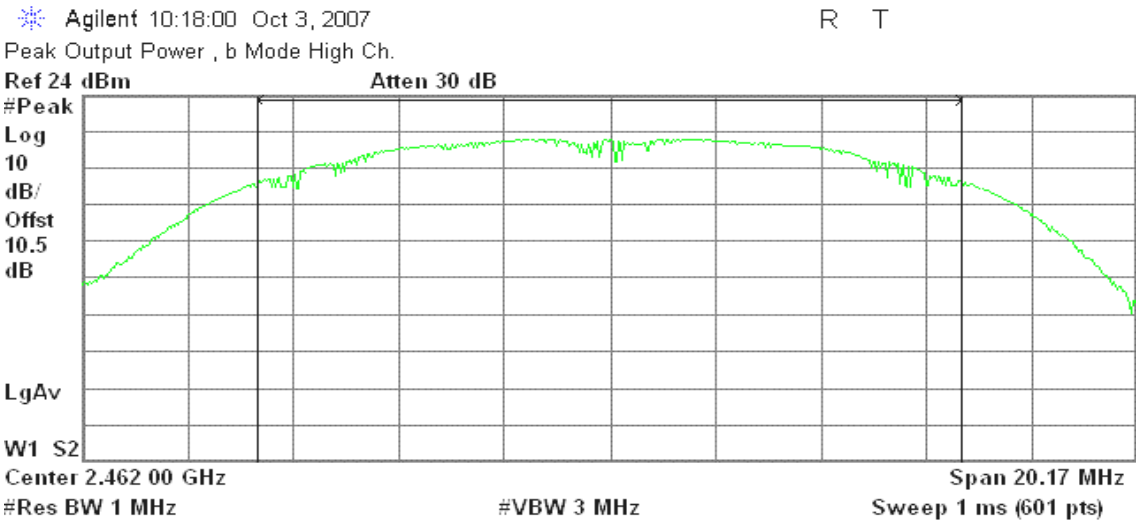
Peak Power (CH Mid)



Channel Power
20.45 dBm / 13.3990 MHz

Power Spectral Density
-50.82 dBm/Hz

Peak Power (CH High)



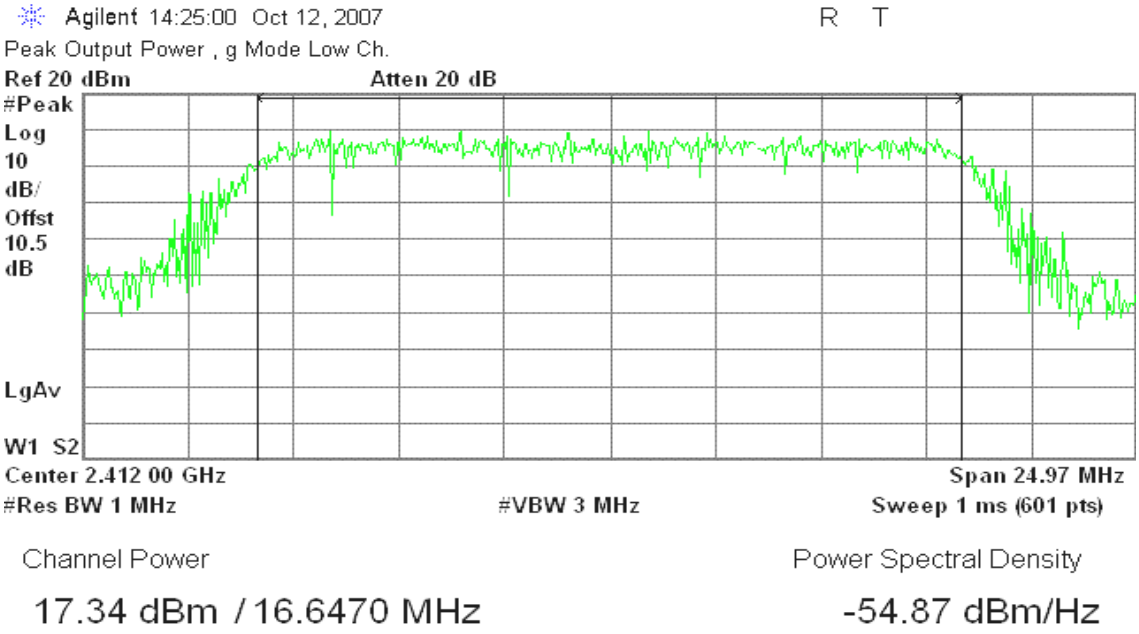
Channel Power
20.50 dBm / 13.4480 MHz

Power Spectral Density
-50.78 dBm/Hz

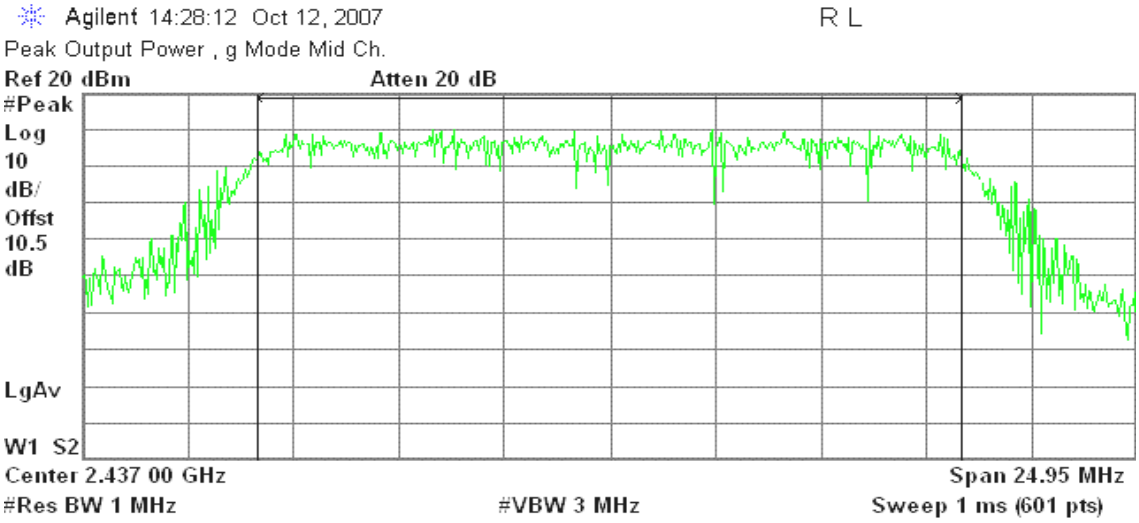
Test Data

Test mode: IEEE 802.11g mode					
Channel	**Frequency (MHz)**	**Output Power (dBm)**	**Output Power (W)**	**Limit (W)**	**Result**
Low	2412	17.34	0.0542	1.00	PASS
Mid	2437	17.88	0.0614		PASS
High	2462	17.58	0.0573		PASS

Peak Power (CH Low)



Peak Power (CH Mid)



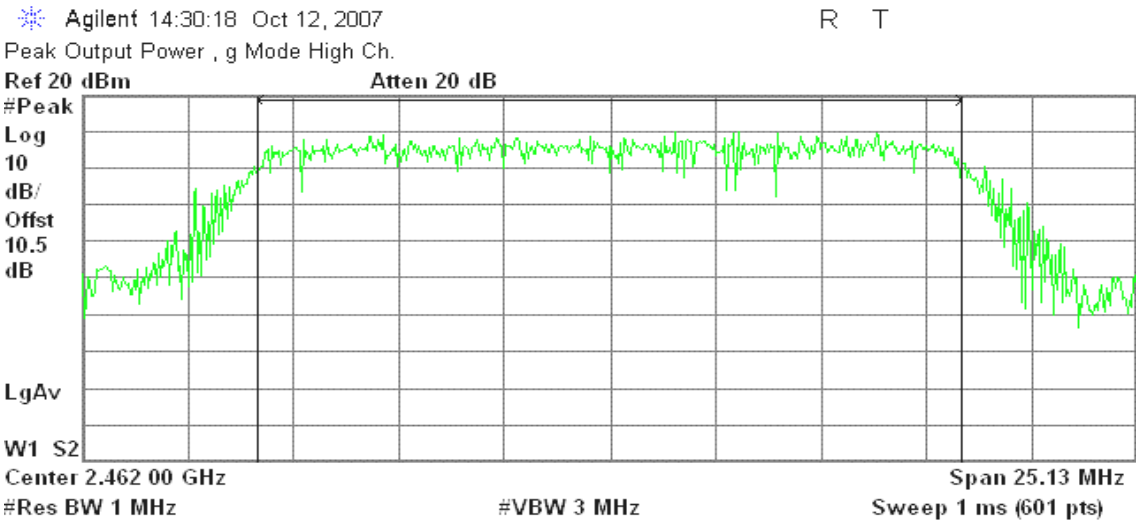
Channel Power

17.88 dBm / 16.6360 MHz

Power Spectral Density

-54.33 dBm/Hz

Peak Power (CH High)



Channel Power

17.58 dBm / 16.7540 MHz

Power Spectral Density

-54.66 dBm/Hz

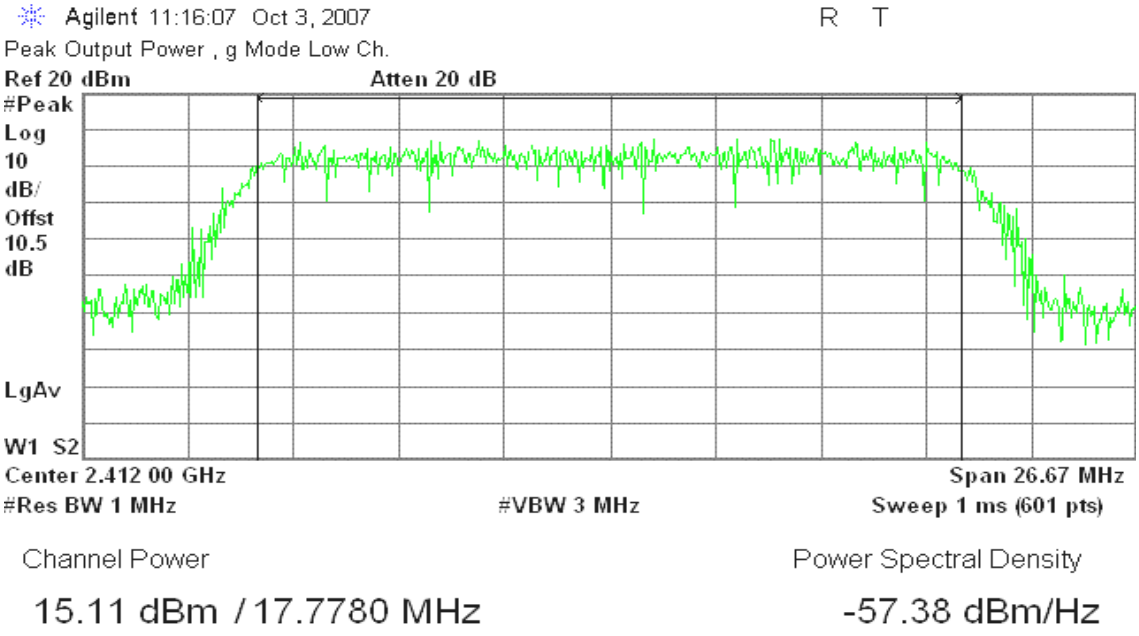
Test Data

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	15.11	20.93	21.94	0.1563	1.00	PASS
Mid	2437	16.19	16.49	19.35	0.0862		PASS
High	2462	16.49	15.36	18.97	0.0789		PASS

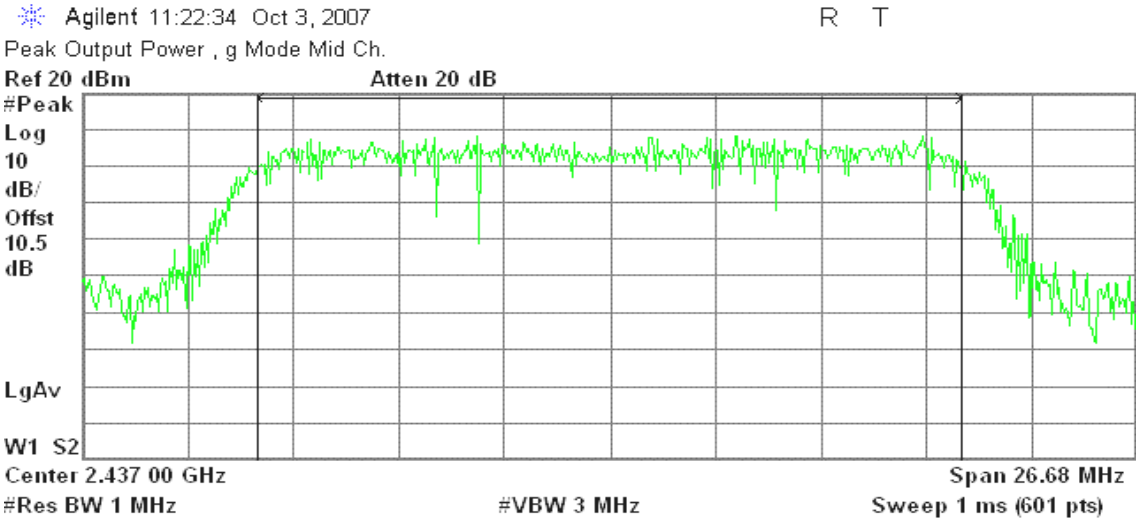
Remark: *Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000)+ Chain 1 (10^(Output Power /10)/1000)*

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

Peak Power (CH Low)



Peak Power (CH Mid)



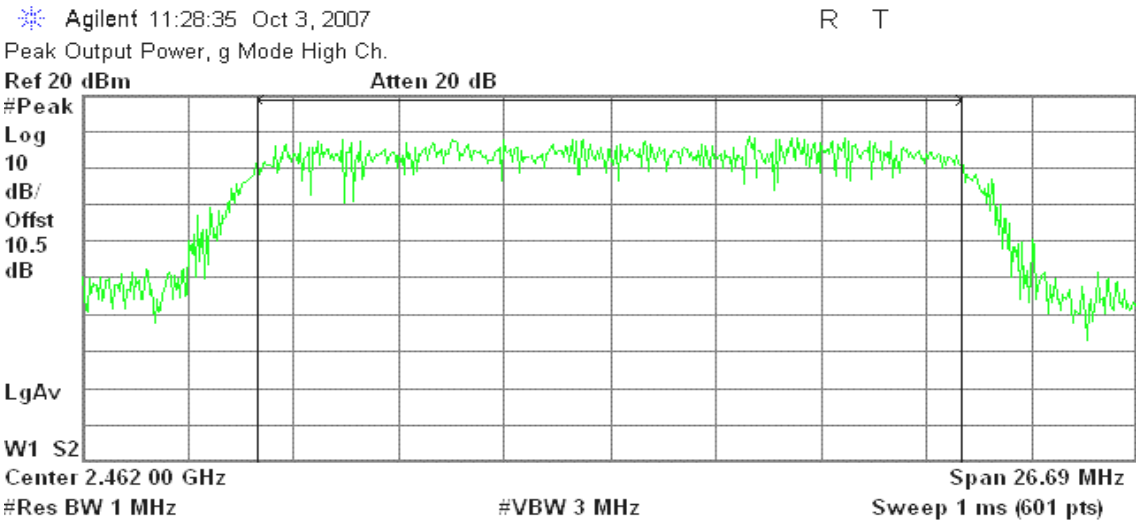
Channel Power

16.19 dBm / 17.7900 MHz

Power Spectral Density

-56.31 dBm/Hz

Peak Power (CH High)



Channel Power

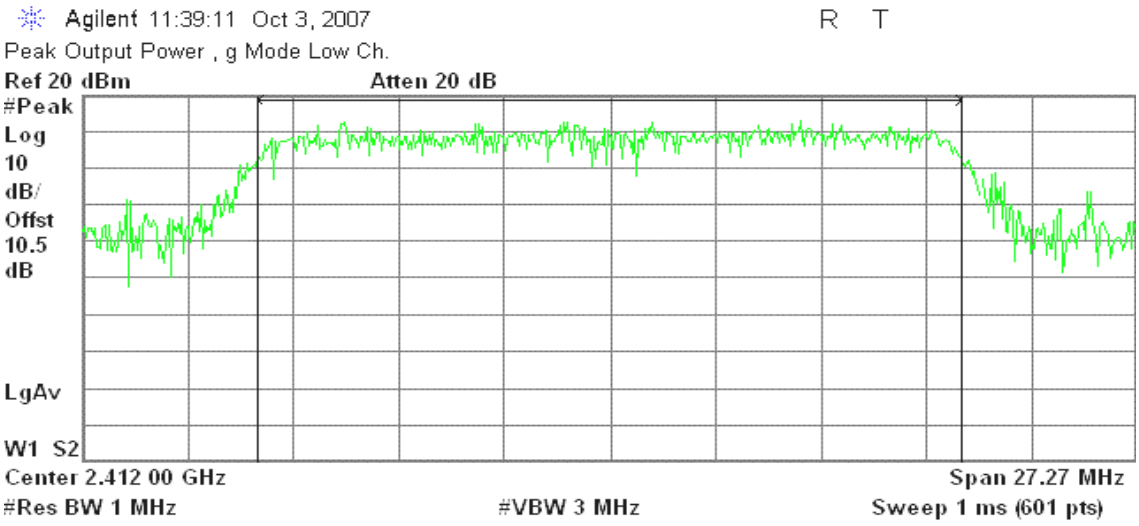
16.49 dBm / 17.7910 MHz

Power Spectral Density

-56.01 dBm/Hz

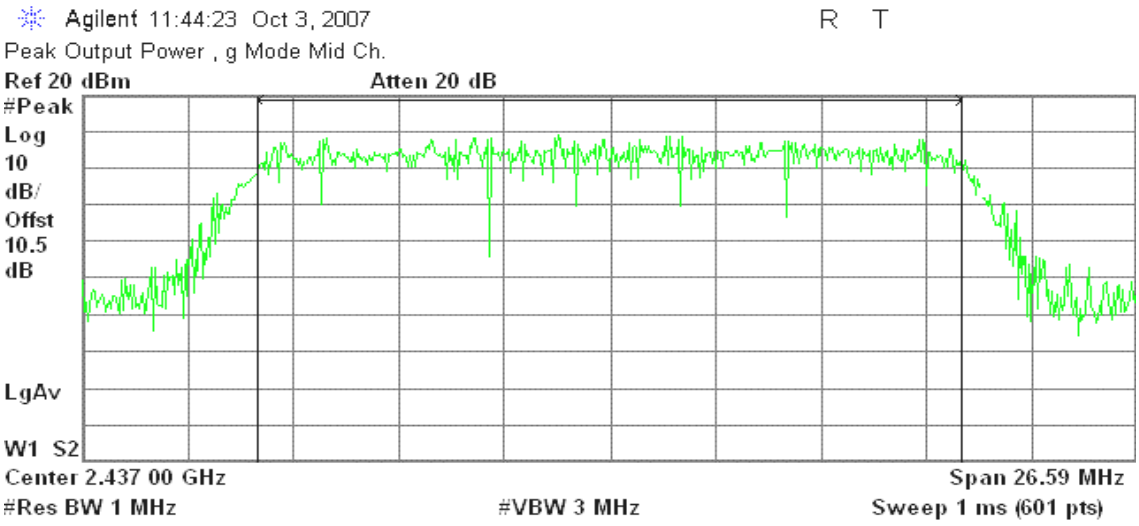
draft 802.11n Standard-20 MHz Channel mode / Chain 1

Peak Power (CH Low)



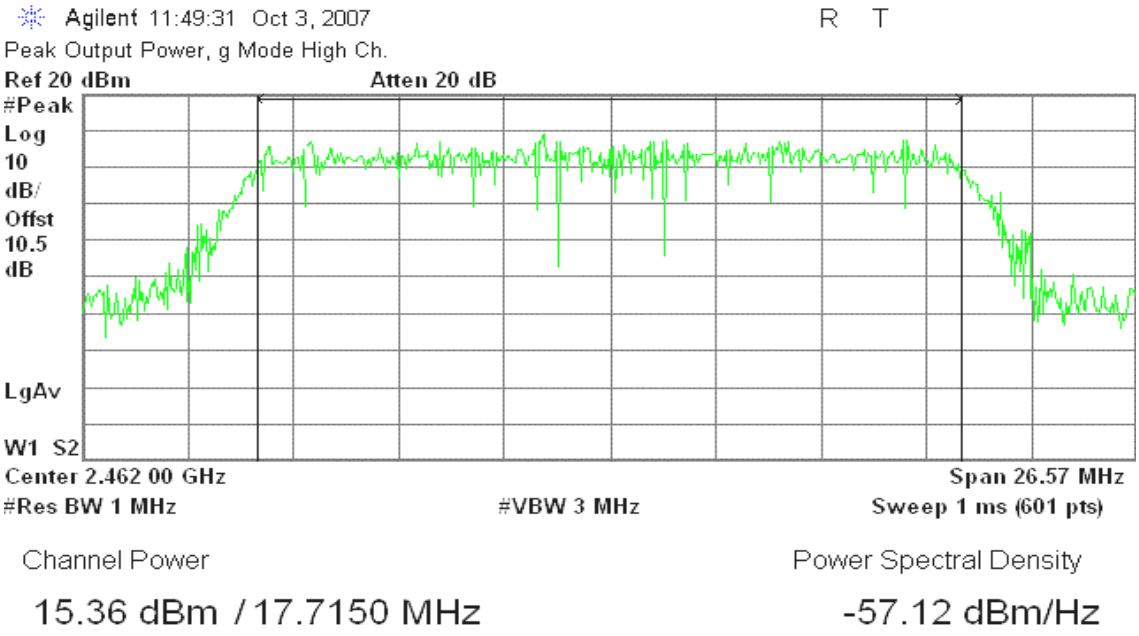
Channel Power	Power Spectral Density
20.93 dBm / 18.1780 MHz	-51.67 dBm/Hz

Peak Power (CH Mid)



Channel Power	Power Spectral Density
16.49 dBm / 17.7250 MHz	-55.99 dBm/Hz

Peak Power (CH High)



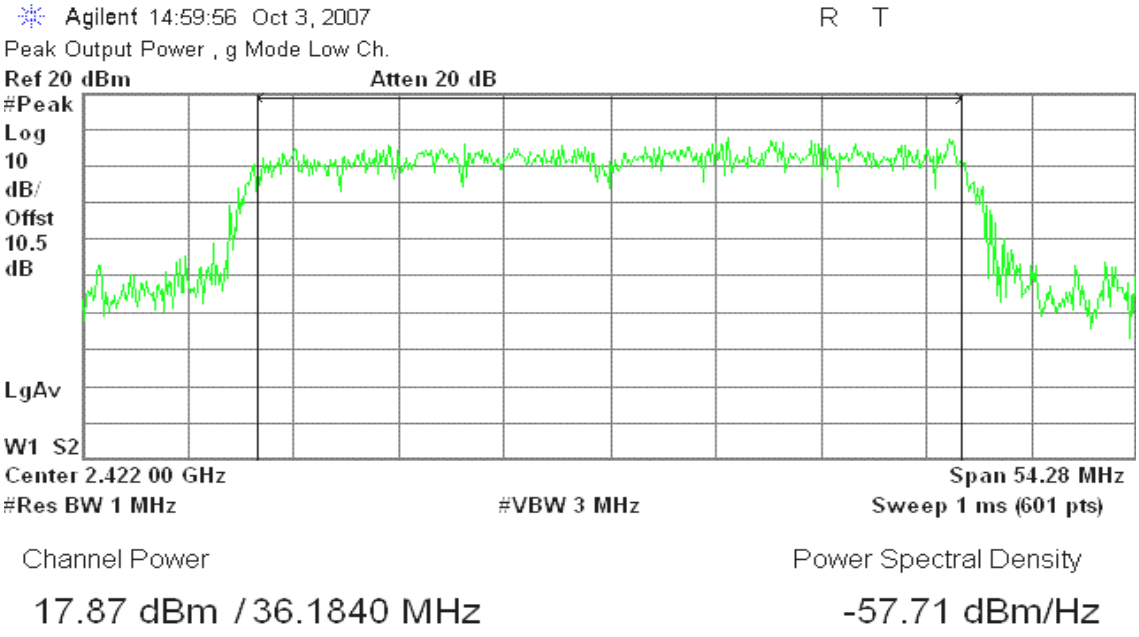
Test Data

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	17.87	21.56	23.11	0.2045	1.00	PASS
Mid	2437	16.13	15.99	19.07	0.0807		PASS
High	2452	15.52	15.63	18.59	0.0722		PASS

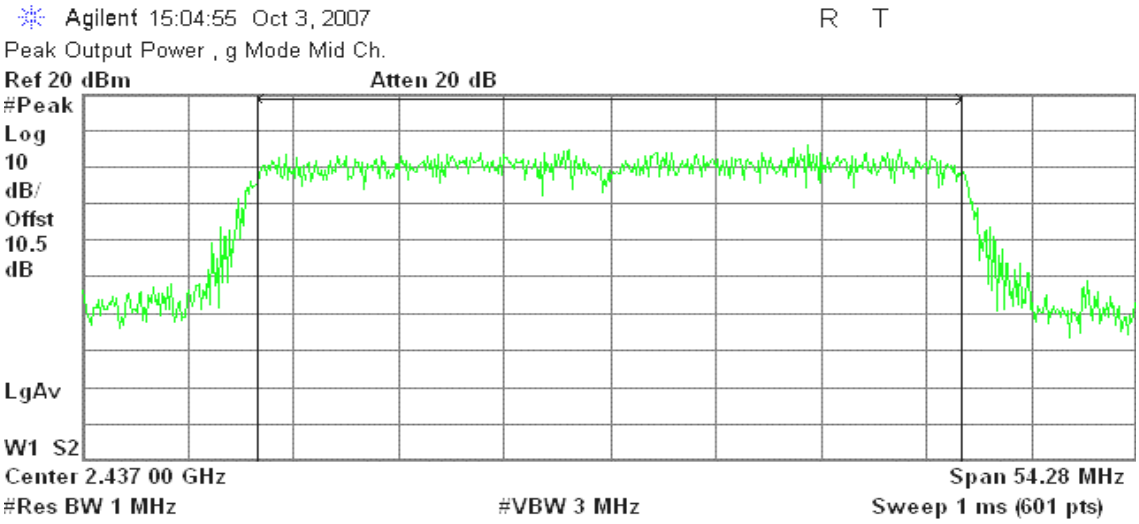
Remark: *Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000)+ Chain 1 (10^(Output Power /10)/1000)*

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

Peak Power (CH Low)



Peak Power (CH Mid)



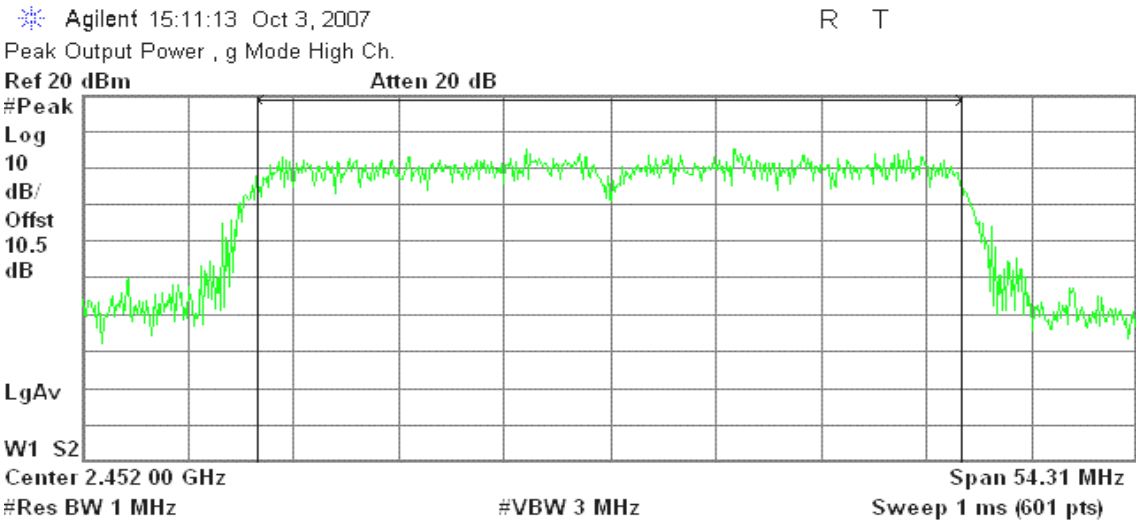
Channel Power

16.13 dBm / 36.1840 MHz

Power Spectral Density

-59.46 dBm/Hz

Peak Power (CH High)



Channel Power

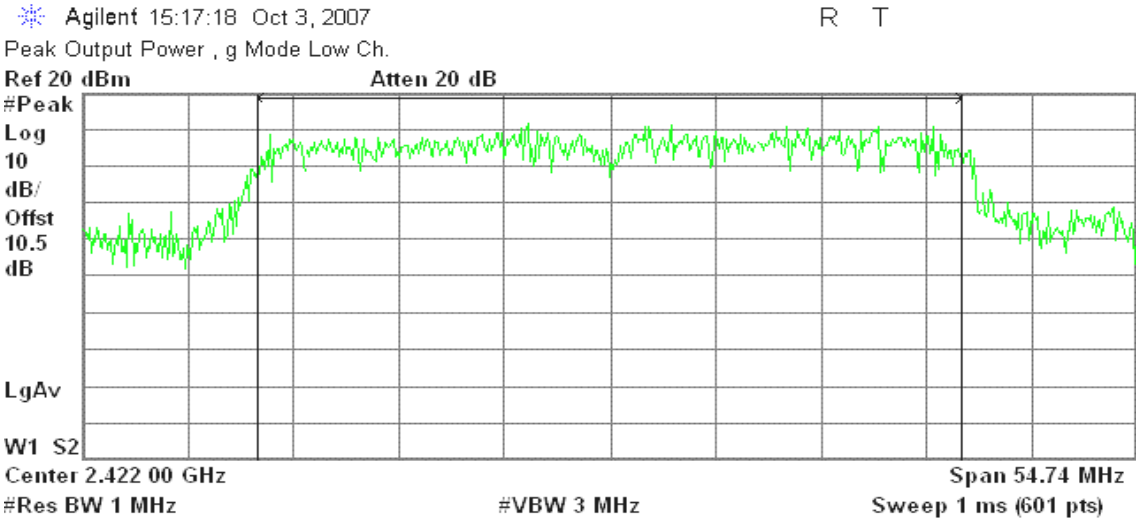
15.52 dBm / 36.2080 MHz

Power Spectral Density

-60.07 dBm/Hz

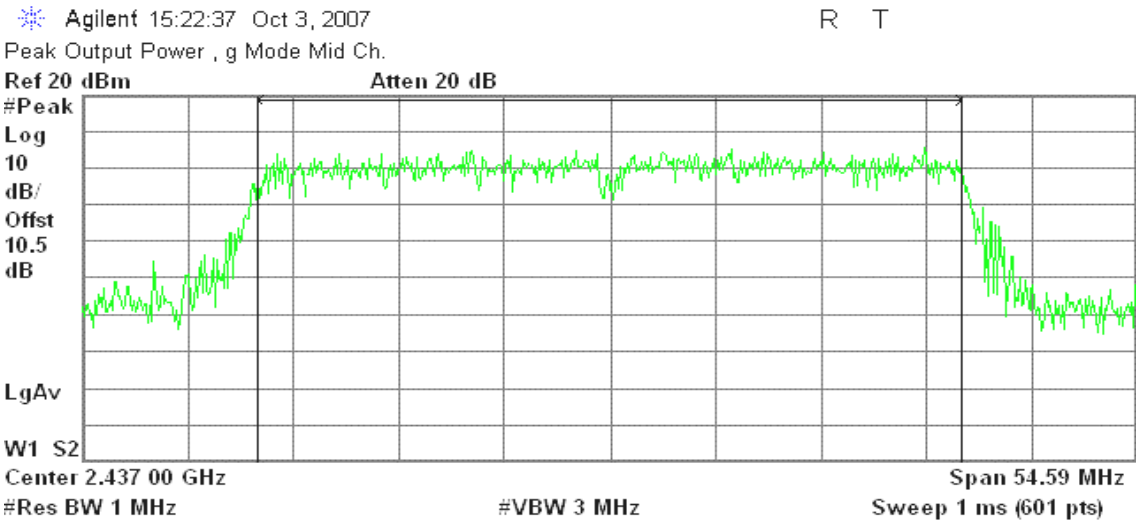
draft 802.11n Wide-40 MHz Channel mode / Chain 1

Peak Power (CH Low)



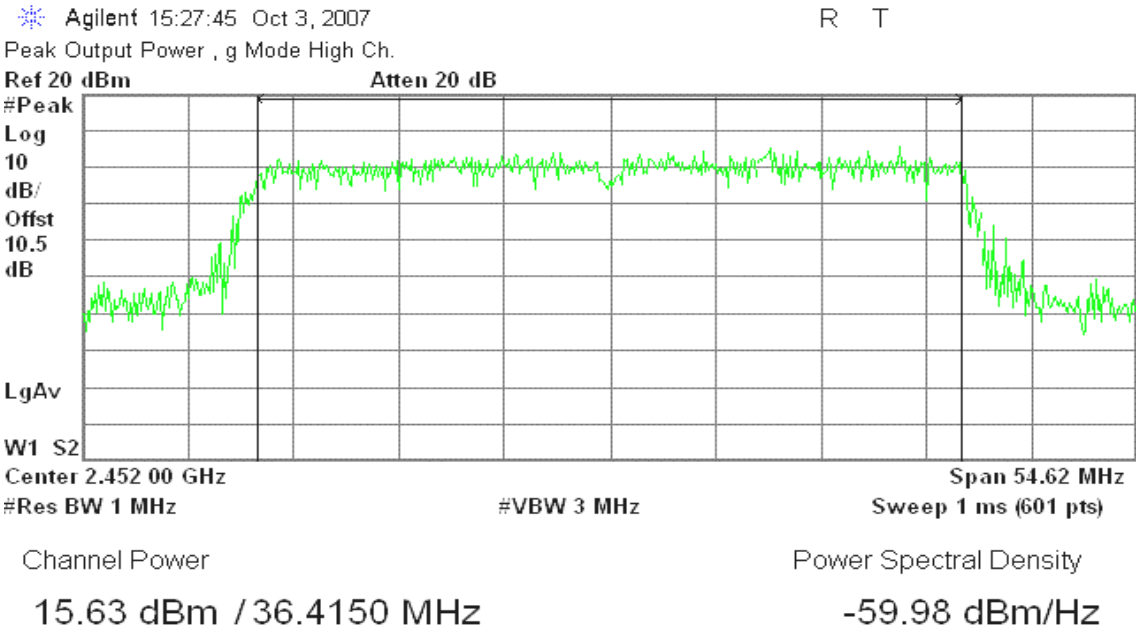
Channel Power	Power Spectral Density
21.56 dBm / 36.4940 MHz	-54.06 dBm/Hz

Peak Power (CH Mid)



Channel Power	Power Spectral Density
15.99 dBm / 36.3940 MHz	-59.62 dBm/Hz

Peak Power (CH High)



Channel Power

15.63 dBm / 36.4150 MHz

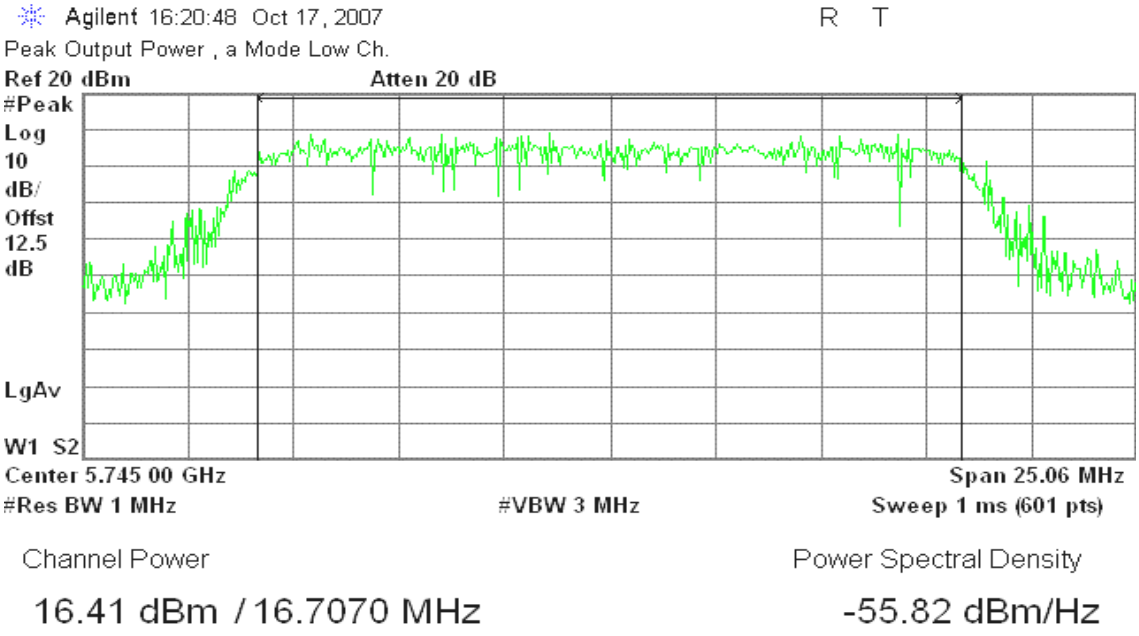
Power Spectral Density

-59.98 dBm/Hz

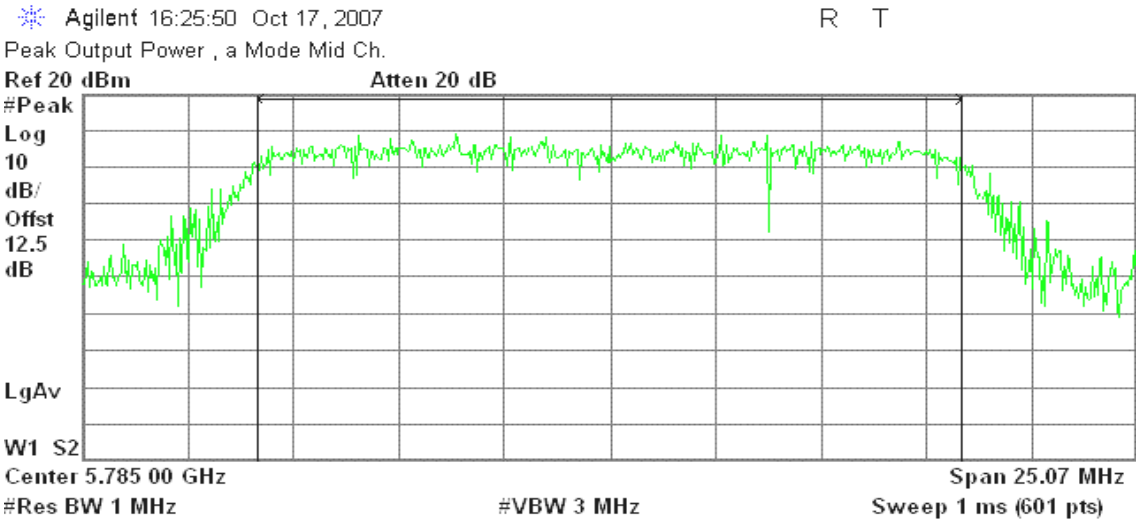
Test Data

Test mode: IEEE 802.11a mode					
Channel	**Frequency (MHz)**	**Output Power (dBm)**	**Output Power (W)**	**Limit (W)**	**Result**
Low	5745	16.41	0.04375	1.00	PASS
Mid	5785	16.30	0.04266		PASS
High	5825	16.16	0.04130		PASS

Peak Power (CH Low)



Peak Power (CH Mid)



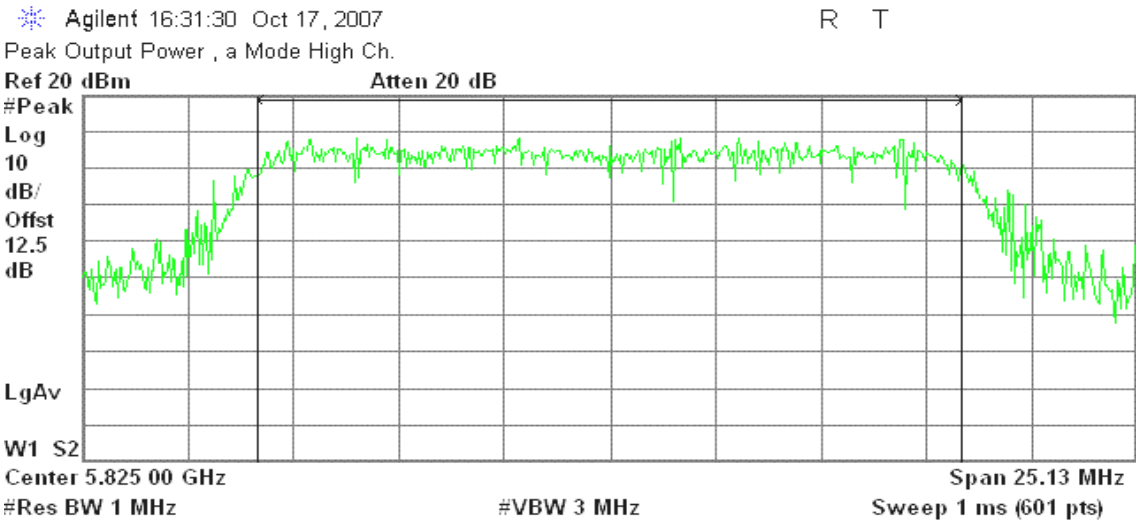
Channel Power

16.30 dBm / 16.7160 MHz

Power Spectral Density

-55.93 dBm/Hz

Peak Power (CH High)



Channel Power

16.16 dBm / 16.7540 MHz

Power Spectral Density

-56.08 dBm/Hz

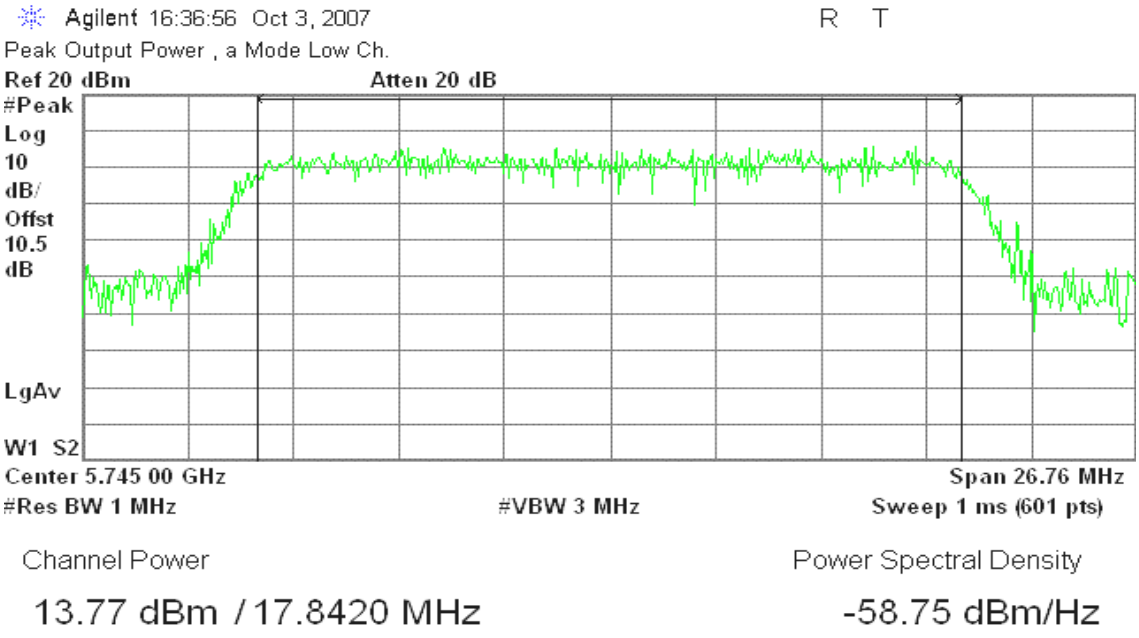
Test Data

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	5745	13.77	13.93	16.86	0.0485	1.00	PASS
Mid	5785	15.18	13.74	17.53	0.0566		PASS
High	5825	14.24	14.46	17.36	0.0545		PASS

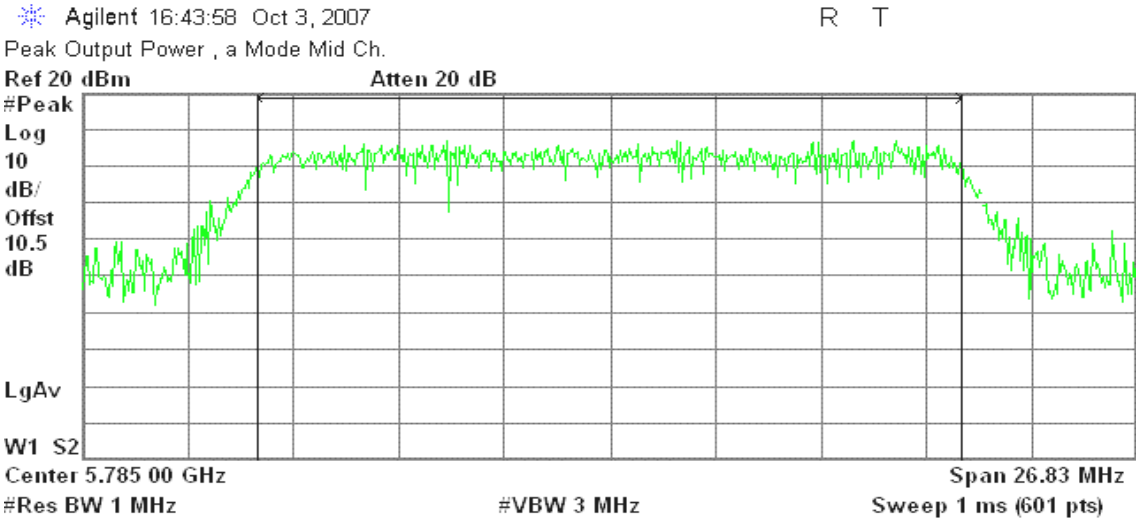
Remark: *Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000)+ Chain 1 (10^(Output Power /10)/1000)*

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

Peak Power (CH Low)



Peak Power (CH Mid)



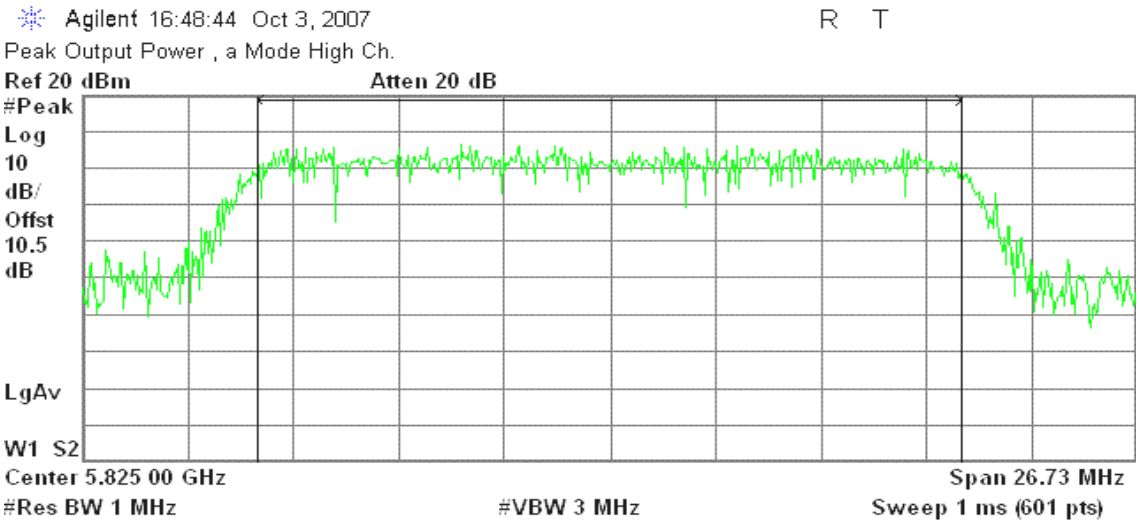
Channel Power

15.18 dBm / 17.8860 MHz

Power Spectral Density

-57.34 dBm/Hz

Peak Power (CH High)



Channel Power

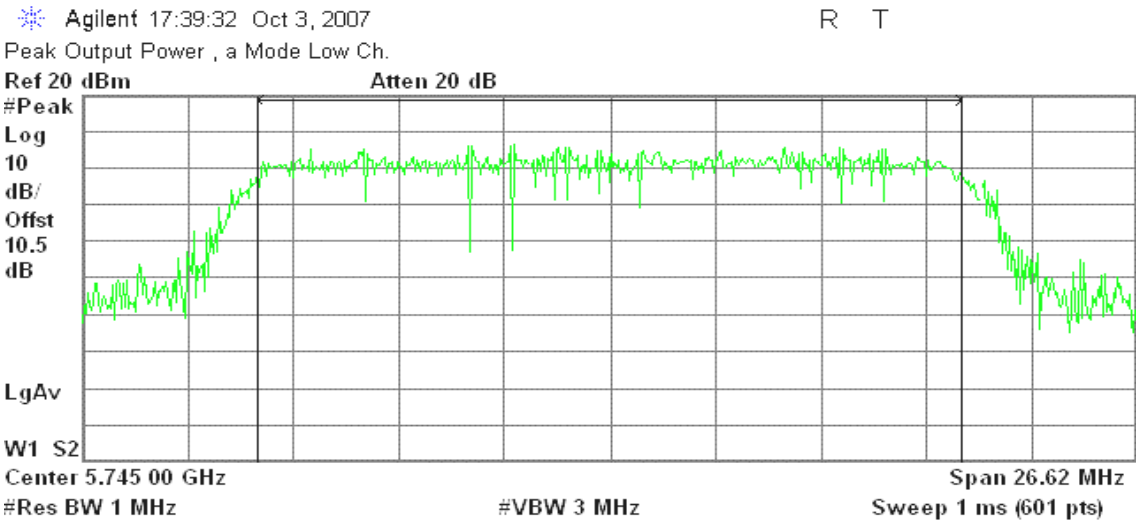
14.24 dBm / 17.8210 MHz

Power Spectral Density

-58.27 dBm/Hz

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

Peak Power (CH Low)



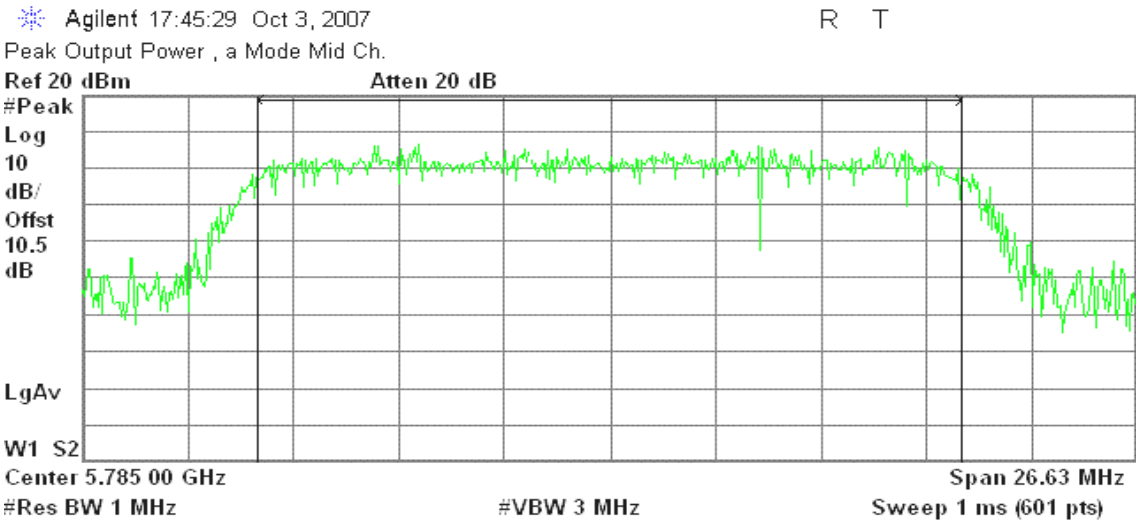
Channel Power

13.93 dBm / 17.7480 MHz

Power Spectral Density

-58.56 dBm/Hz

Peak Power (CH Mid)



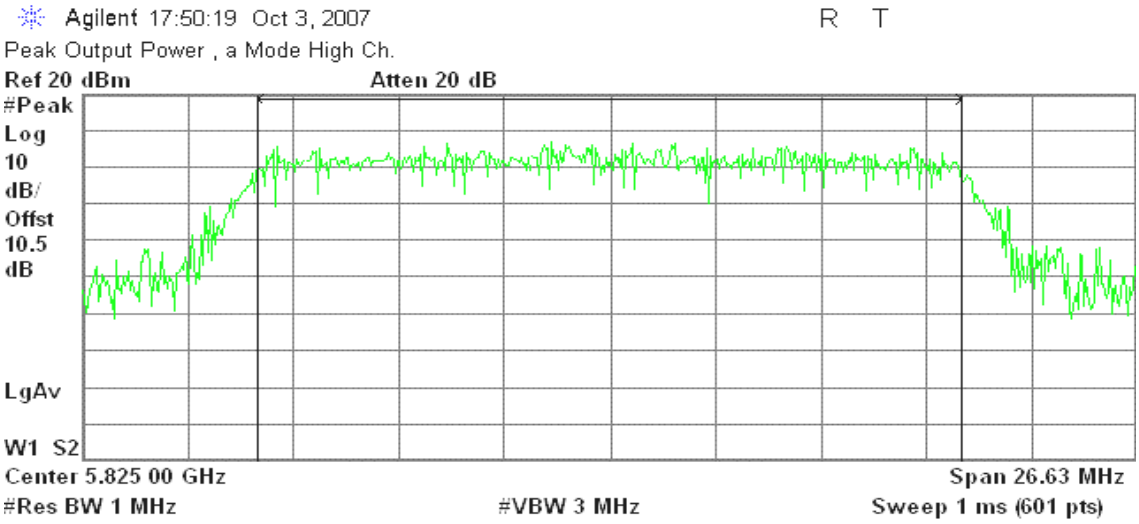
Channel Power

13.74 dBm / 17.7560 MHz

Power Spectral Density

-58.76 dBm/Hz

Peak Power (CH High)



Channel Power

14.46 dBm / 17.7560 MHz

Power Spectral Density

-58.03 dBm/Hz

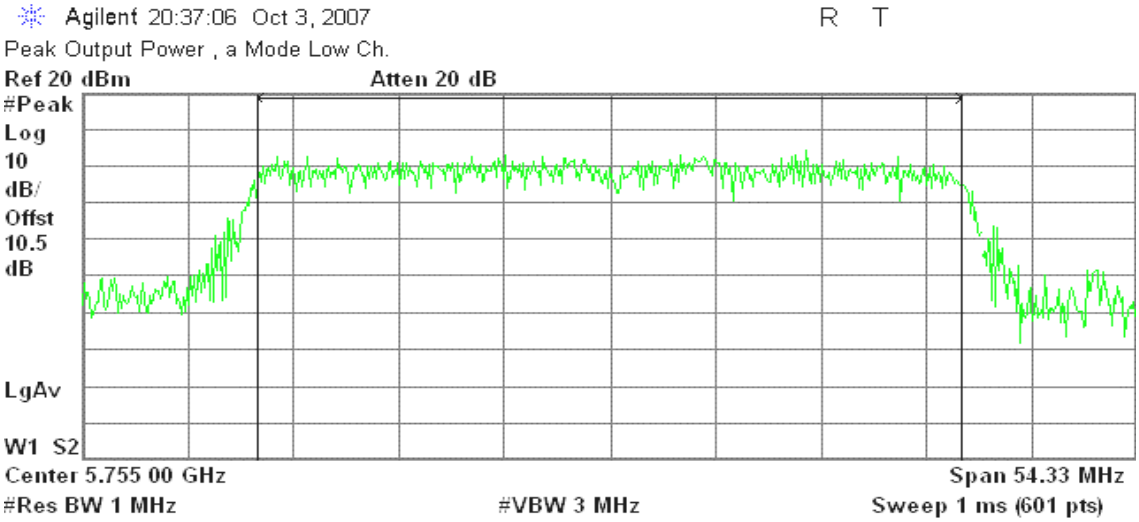
Test Data

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	5755	14.37	14.37	17.38	0.0547	1.00	PASS
High	5795	14.21	13.79	17.02	0.0503		PASS

Remark: *Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000)+ Chain 1 (10^(Output Power /10)/1000)*

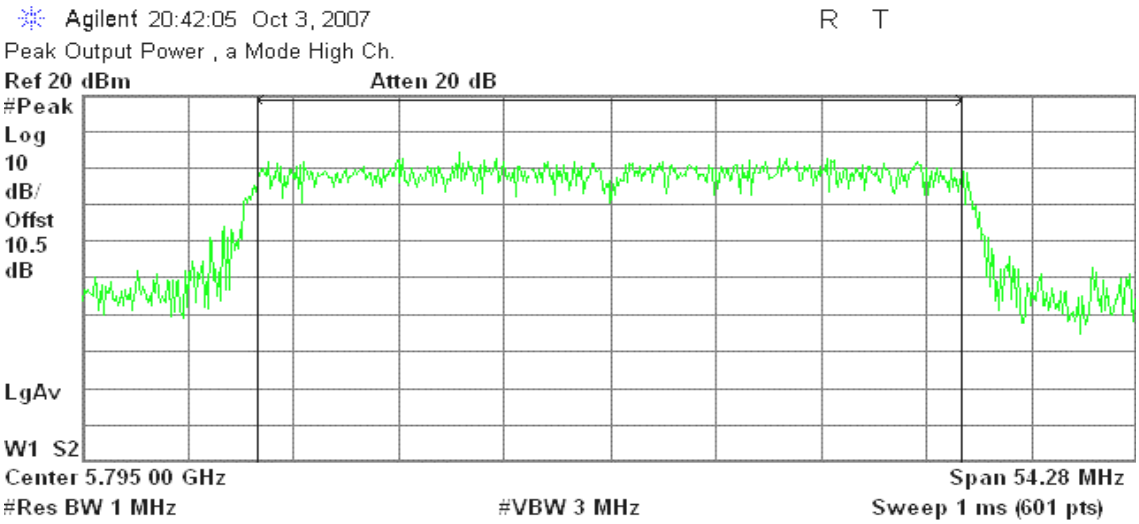
draft 802.11n Wide-40 MHz Channel mode / Chain 0

Peak Power (CH Low)



Channel Power	Power Spectral Density
14.37 dBm / 36.2200 MHz	-61.22 dBm/Hz

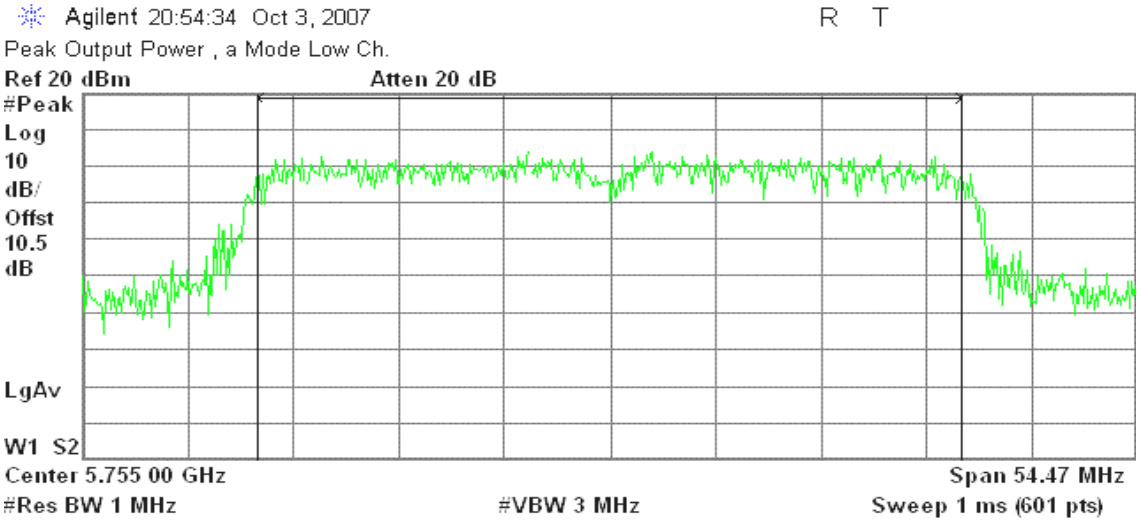
Peak Power (CH High)



Channel Power	Power Spectral Density
14.21 dBm / 36.1890 MHz	-61.37 dBm/Hz

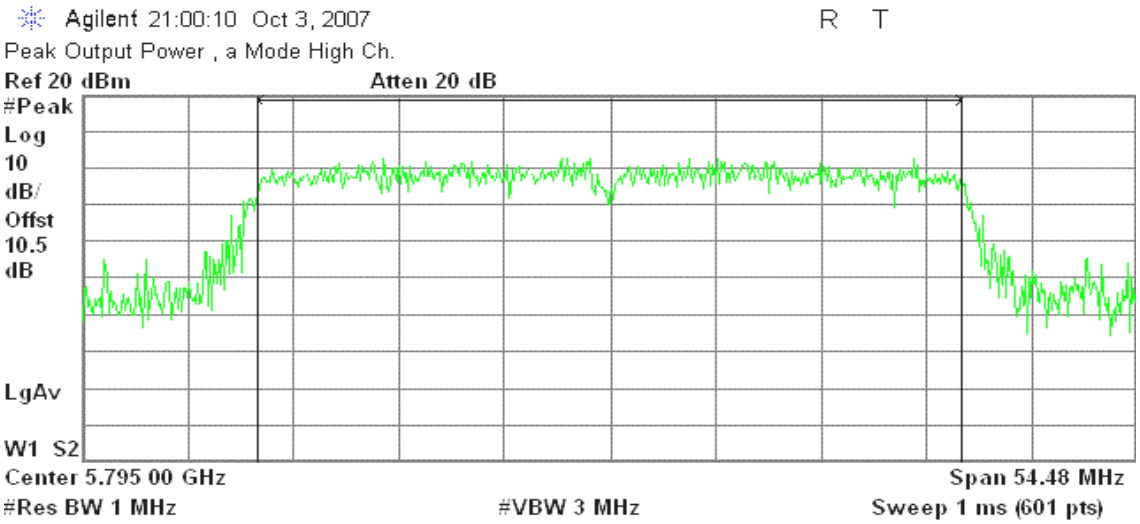
draft 802.11n Wide-40 MHz Channel mode / Chain 1

Peak Power (CH Low)



Channel Power	Power Spectral Density
14.37 dBm / 36.3160 MHz	-61.23 dBm/Hz

Peak Power (CH High)



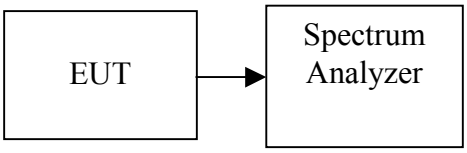
Channel Power	Power Spectral Density
13.79 dBm / 36.3170 MHz	-61.81 dBm/Hz

8.3 AVERAGE POWER

8.3.1 LIMIT

None; for reporting purposes only.

Test Configuration



8.3.2 TEST PROCEDURE

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

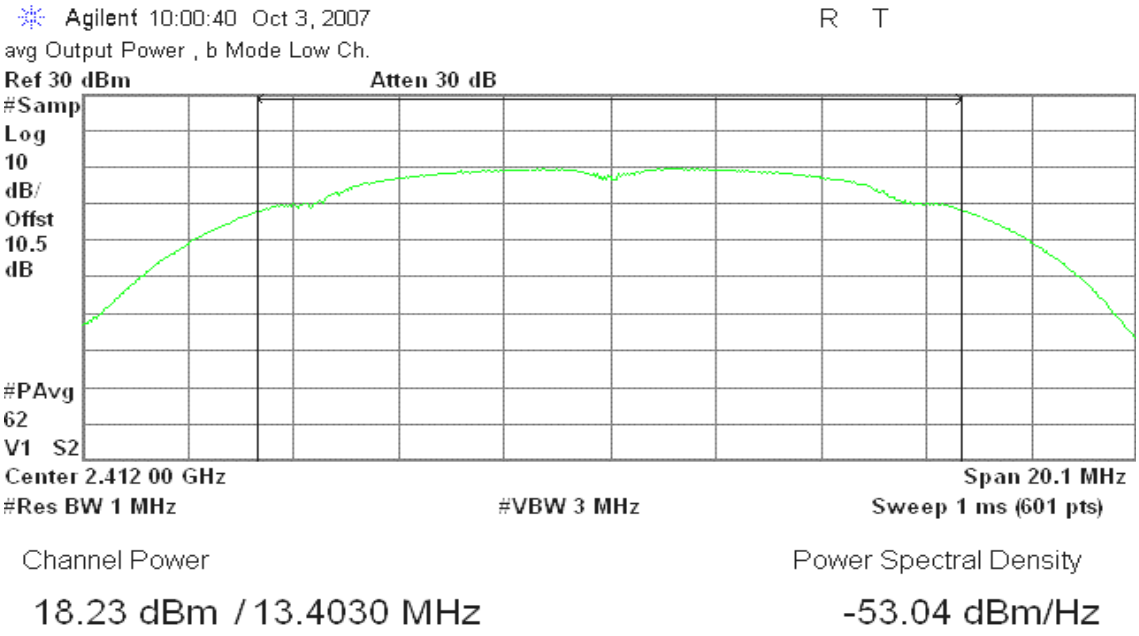
8.3.3 TEST RESULTS

No non-compliance noted.

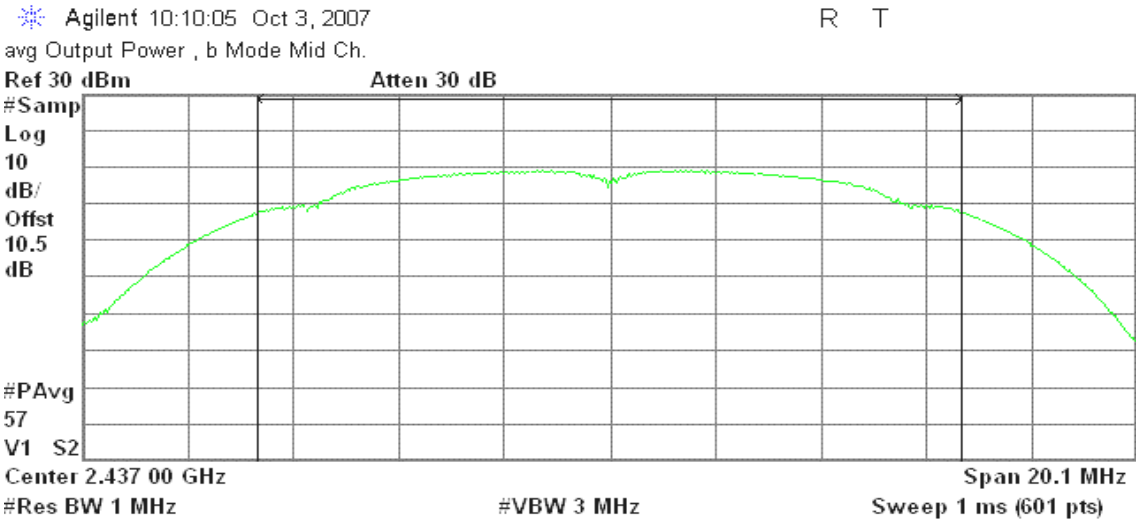
Test Data

Test mode: IEEE 802.11b mode			
Channel	**Frequency (MHz)**	**Output Power (dBm)**	**Output Power (W)**
Low	2412	18.23	0.0665
Mid	2437	17.79	0.0601
High	2462	17.90	0.0617

Average Power (CH Low)



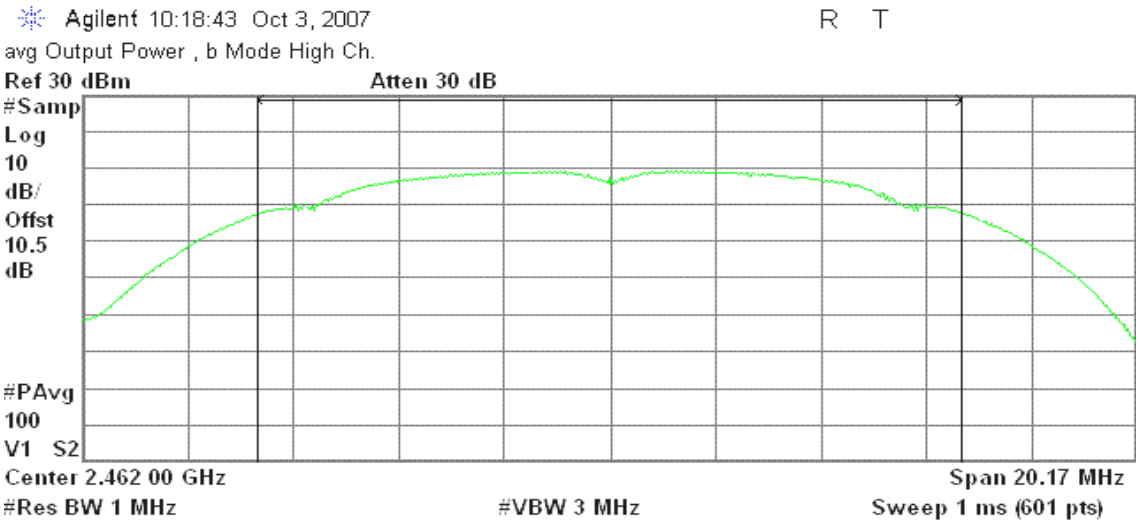
Average Power (CH Mid)



Channel Power
17.79 dBm / 13.3990 MHz

Power Spectral Density
-53.48 dBm/Hz

Average Power (CH High)



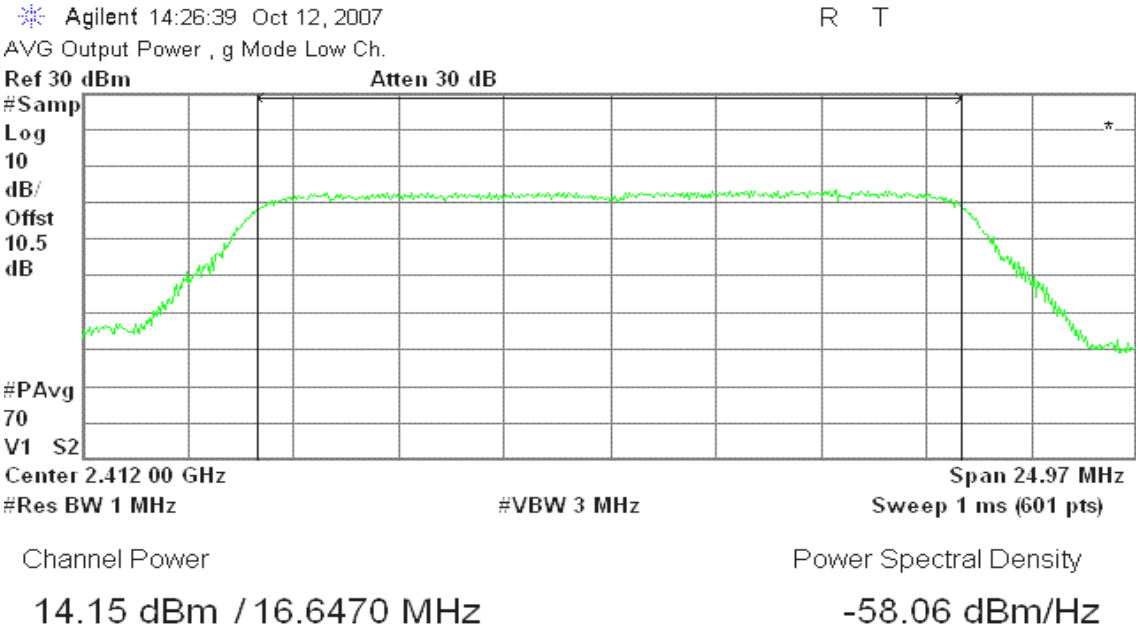
Channel Power
17.90 dBm / 13.4480 MHz

Power Spectral Density
-53.39 dBm/Hz

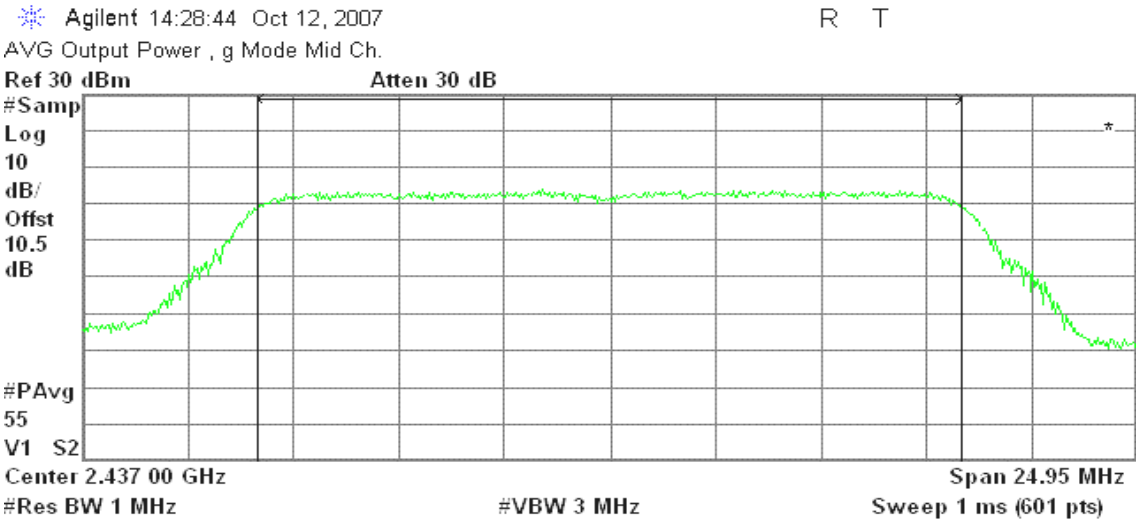
Test Data

Test mode: IEEE 802.11g mode			
Channel	**Frequency (MHz)**	**Output Power (dBm)**	**Output Power (W)**
Low	2412	14.15	0.0260
Mid	2437	14.58	0.0287
High	2462	13.94	0.0248

Average Power (CH Low)



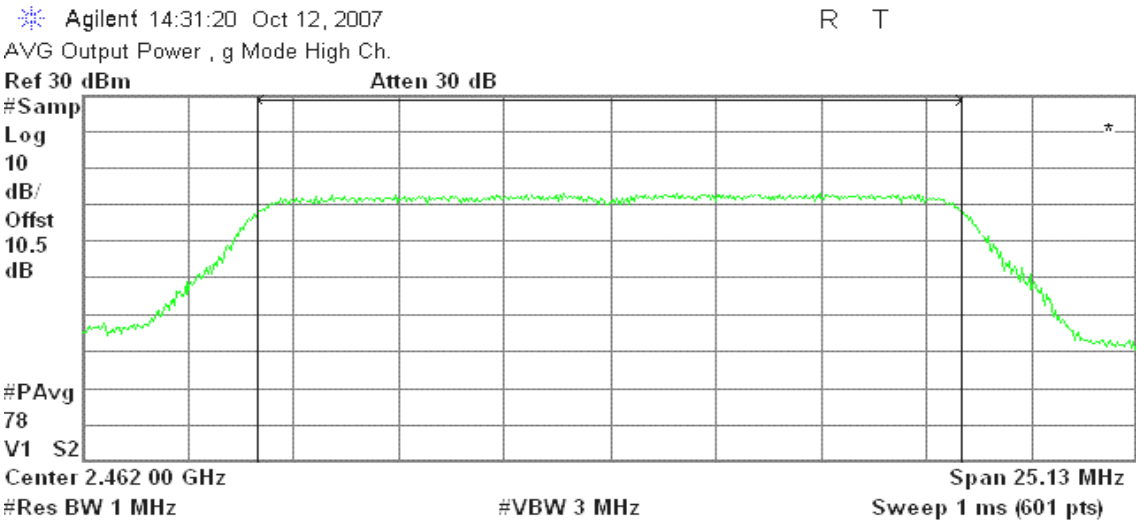
Average Power (CH Mid)



Channel Power
14.58 dBm / 16.6360 MHz

Power Spectral Density
-57.64 dBm/Hz

Average Power (CH High)



Channel Power
13.94 dBm / 16.7540 MHz

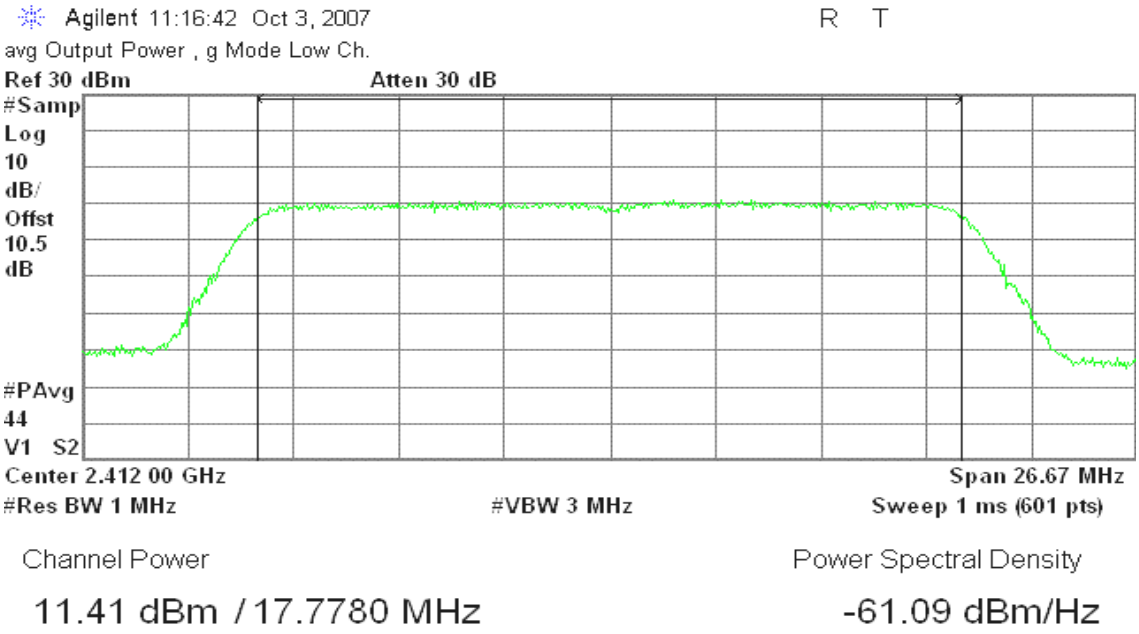
Power Spectral Density
-58.30 dBm/Hz

Test Data

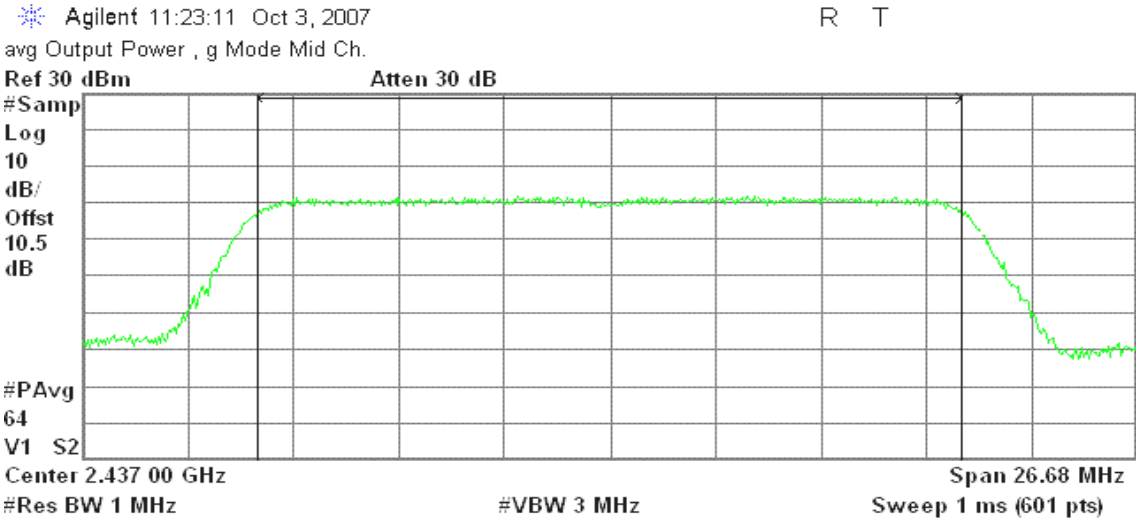
Test mode: draft 802.11n Standard-20 MHz Channel mode					
Channel	**Frequency (MHz)**	**Chain 0 Output Power (dBm)**	**Chain 1 Output Power (dBm)**	**Output Power (dBm)**	**Output Power (W)**
Low	2412	11.41	14.46	16.21	0.0418
Mid	2437	12.61	12.31	15.47	0.0353
High	2462	12.7	11.62	15.20	0.0331

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

Average Power (CH Low)



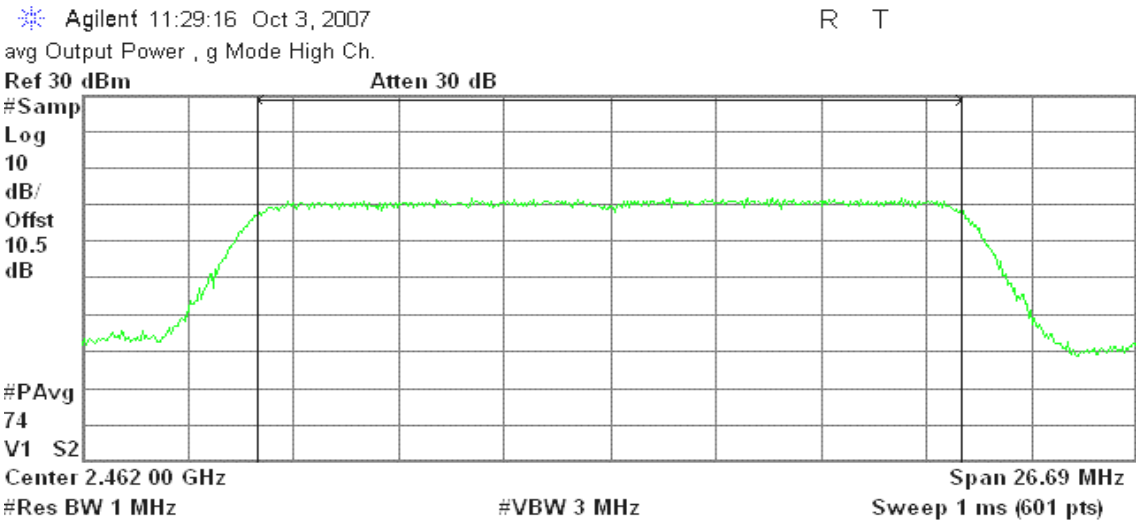
Average Power (CH Mid)



Channel Power
12.61 dBm / 17.7900 MHz

Power Spectral Density
-59.89 dBm/Hz

Average Power (CH High)

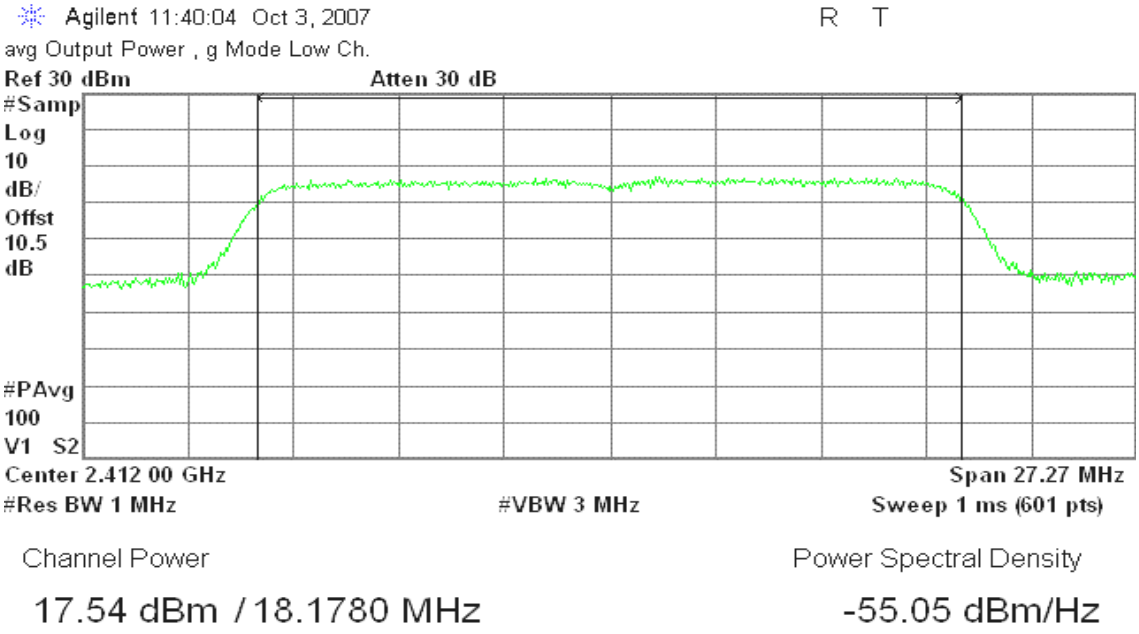


Channel Power
12.70 dBm / 17.7910 MHz

Power Spectral Density
-59.80 dBm/Hz

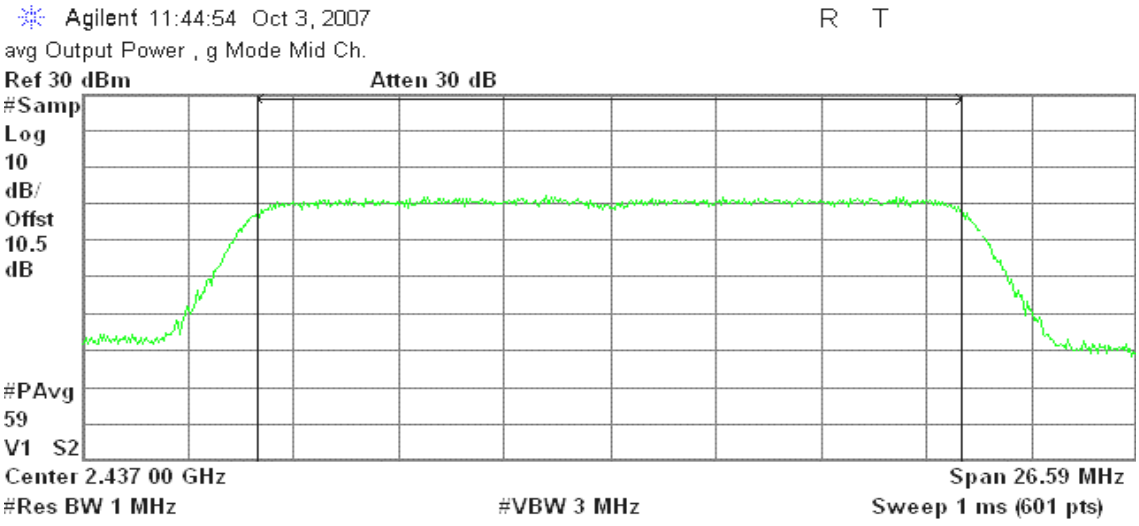
draft 802.11n Standard-20 MHz Channel mode / Chain 1

Average Power (CH Low)



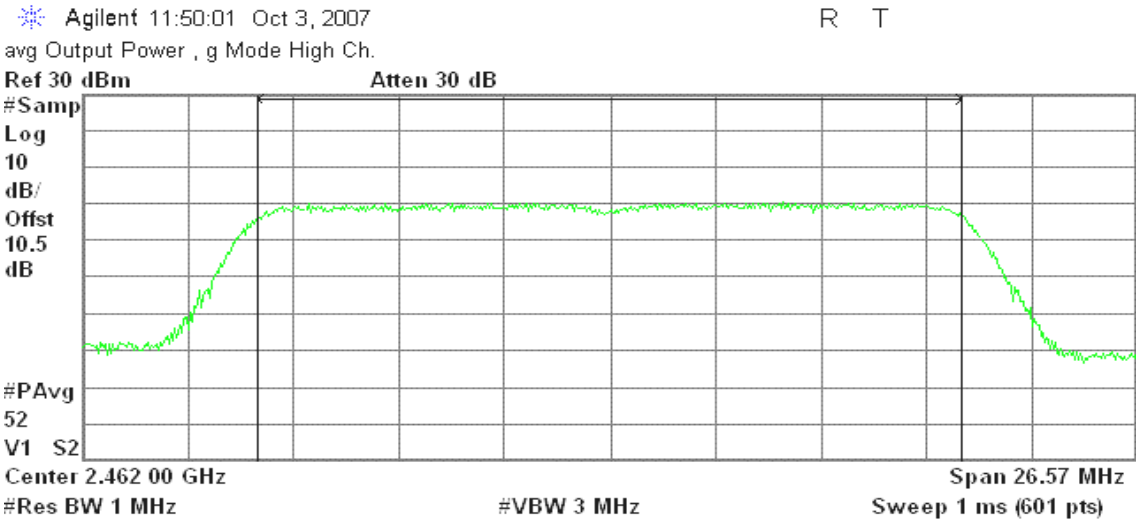
Channel Power	Power Spectral Density
17.54 dBm / 18.1780 MHz	-55.05 dBm/Hz

Average Power (CH Mid)



Channel Power	Power Spectral Density
12.39 dBm / 17.7250 MHz	-60.10 dBm/Hz

Average Power (CH High)



Channel Power

11.32 dBm / 17.7150 MHz

Power Spectral Density

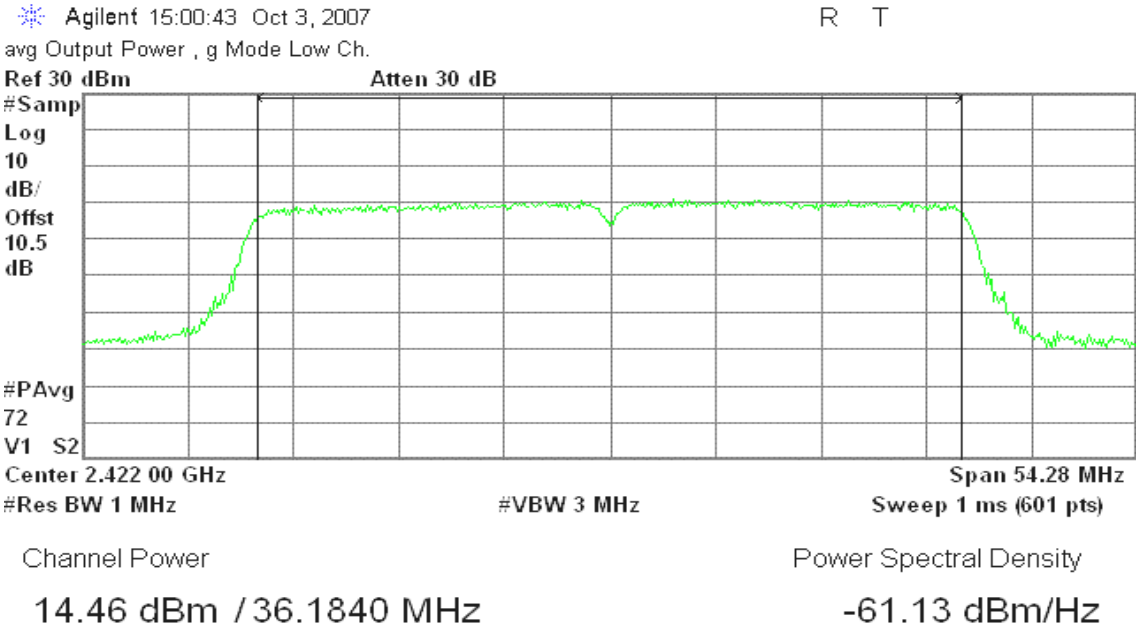
-61.17 dBm/Hz

Test Data

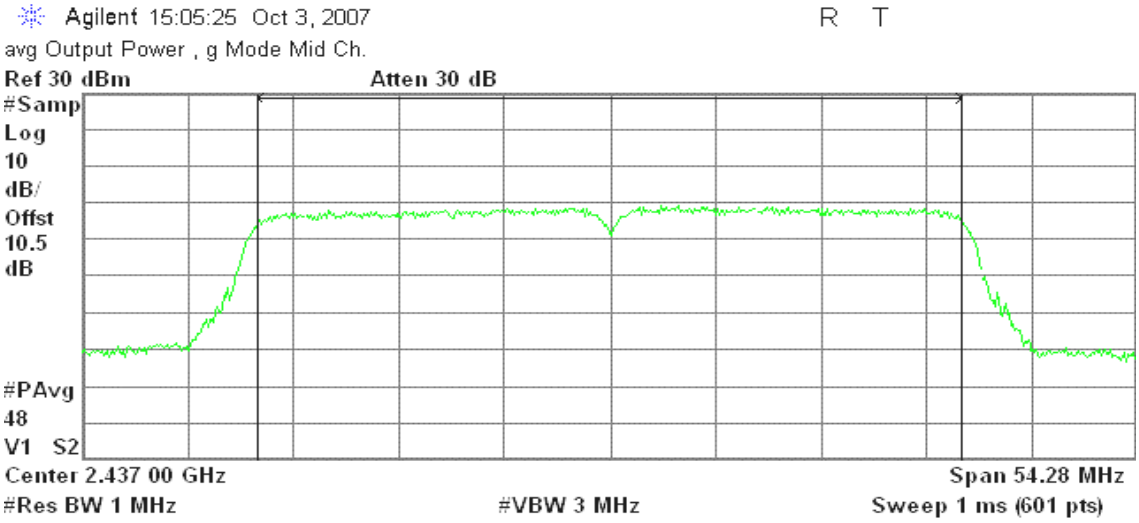
Test mode: draft 802.11n Wide-40 MHz Channel mode					
Channel	**Frequency (MHz)**	**Chain 0 Output Power (dBm)**	**Chain 1 Output Power (dBm)**	**Output Power (dBm)**	**Output Power (W)**
Low	2422	14.46	18.39	19.87	0.0969
Mid	2437	12.31	12.18	15.26	0.0335
High	2452	11.62	12.37	15.02	0.0318

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

Average Power (CH Low)



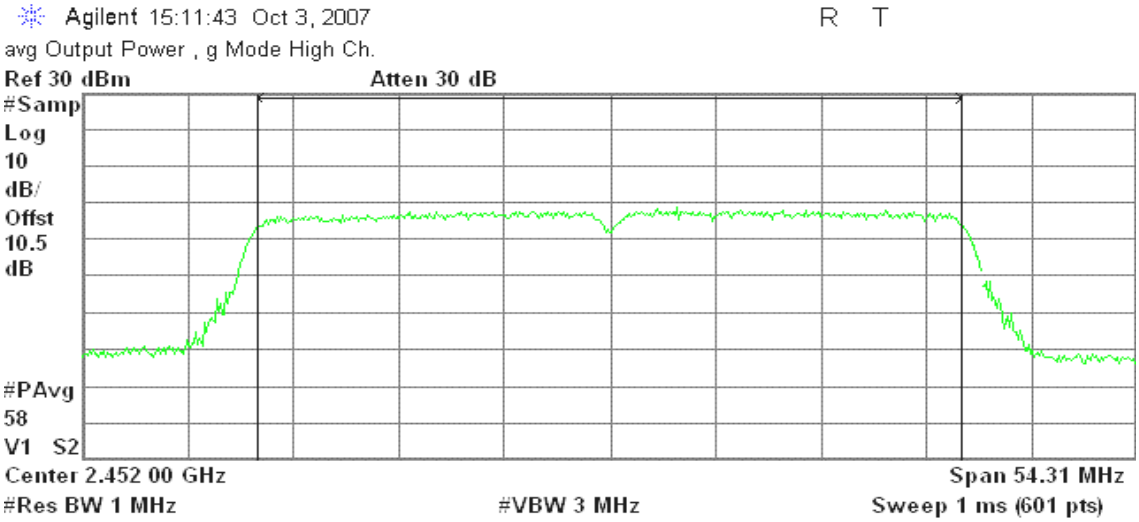
Average Power (CH Mid)



Channel Power
12.31 dBm / 36.1840 MHz

Power Spectral Density
-63.27 dBm/Hz

Average Power (CH High)

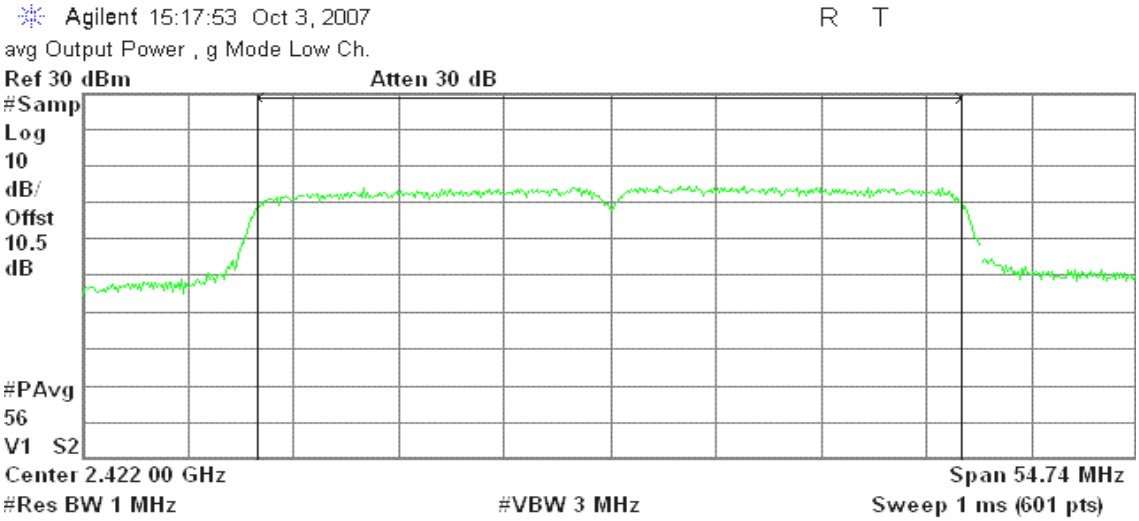


Channel Power
11.62 dBm / 36.2080 MHz

Power Spectral Density
-63.97 dBm/Hz

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

Average Power (CH Low)



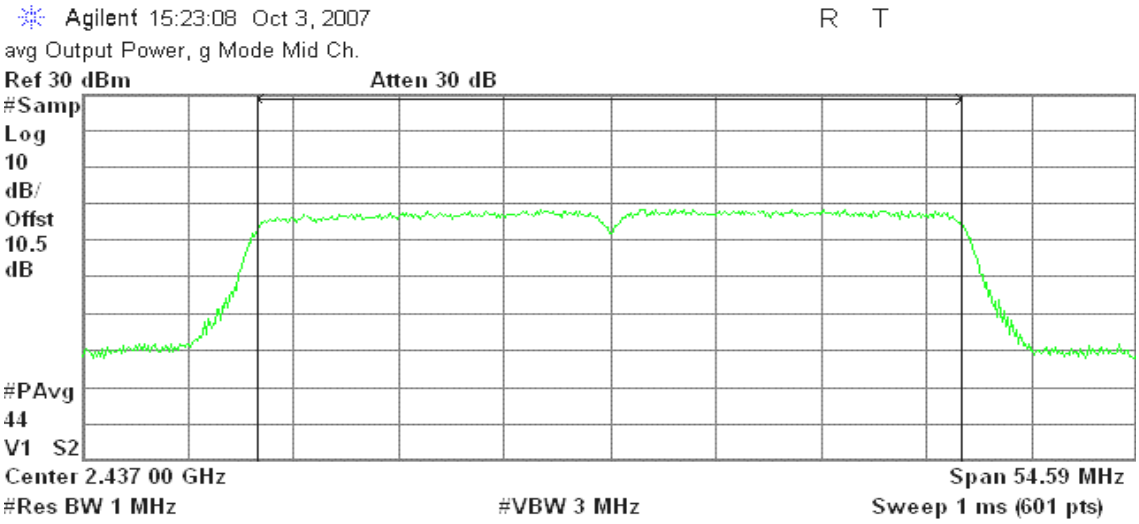
Channel Power

18.39 dBm / 36.4940 MHz

Power Spectral Density

-57.23 dBm/Hz

Average Power (CH Mid)



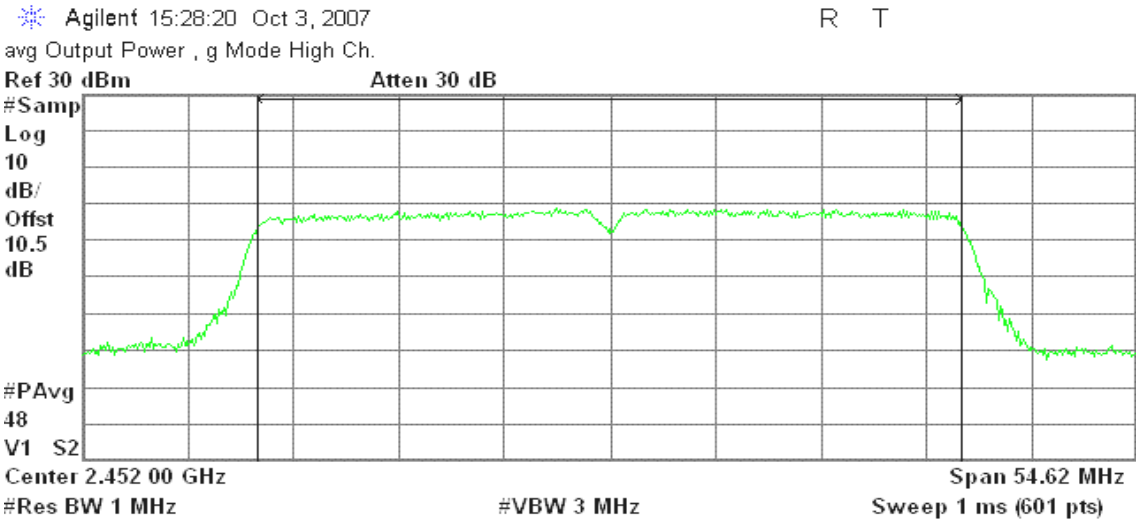
Channel Power

12.18 dBm / 36.3940 MHz

Power Spectral Density

-63.43 dBm/Hz

Average Power (CH High)



Channel Power

12.37 dBm / 36.4150 MHz

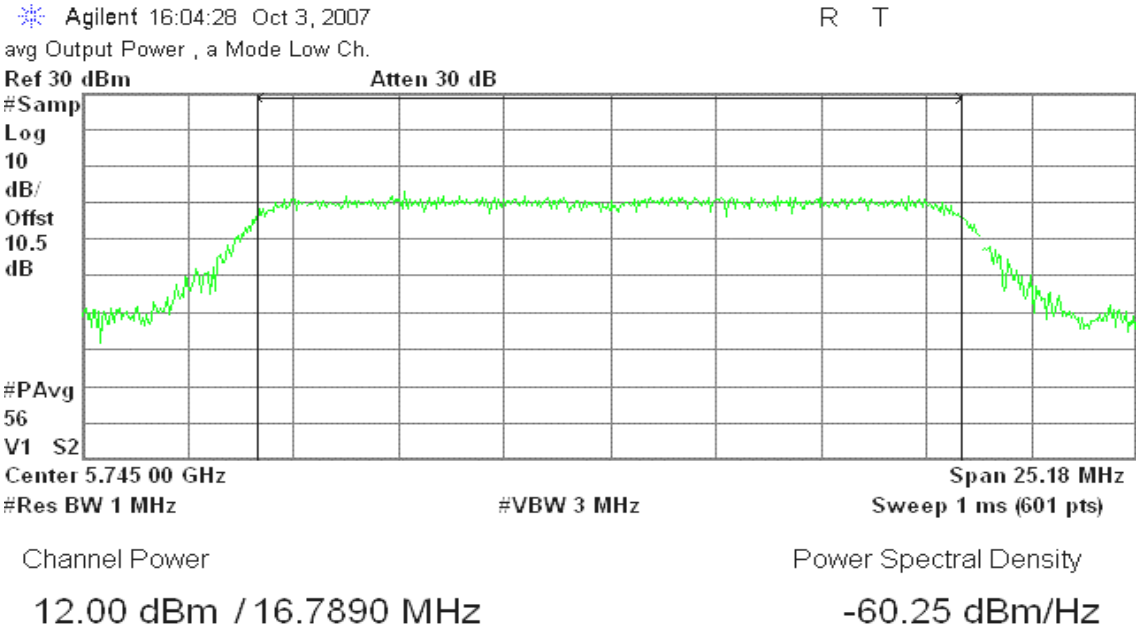
Power Spectral Density

-63.24 dBm/Hz

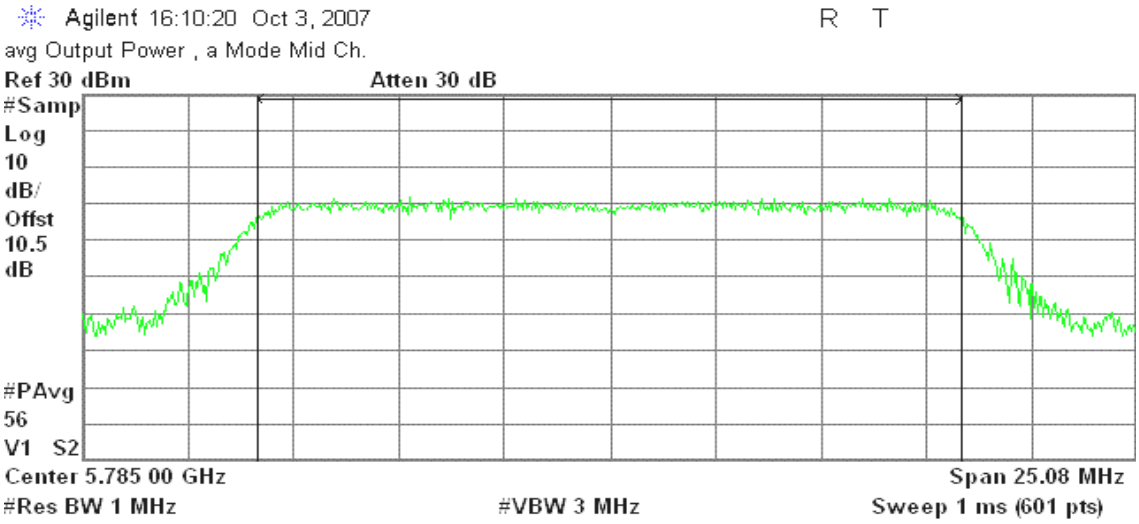
Test Data

Test mode: IEEE 802.11a mode			
Channel	**Frequency (MHz)**	**Output Power (dBm)**	**Output Power (W)**
Low	5745	12.00	0.0159
Mid	5785	11.16	0.0131
High	5825	11.14	0.0130

Average Power (CH Low)



Average Power (CH Mid)



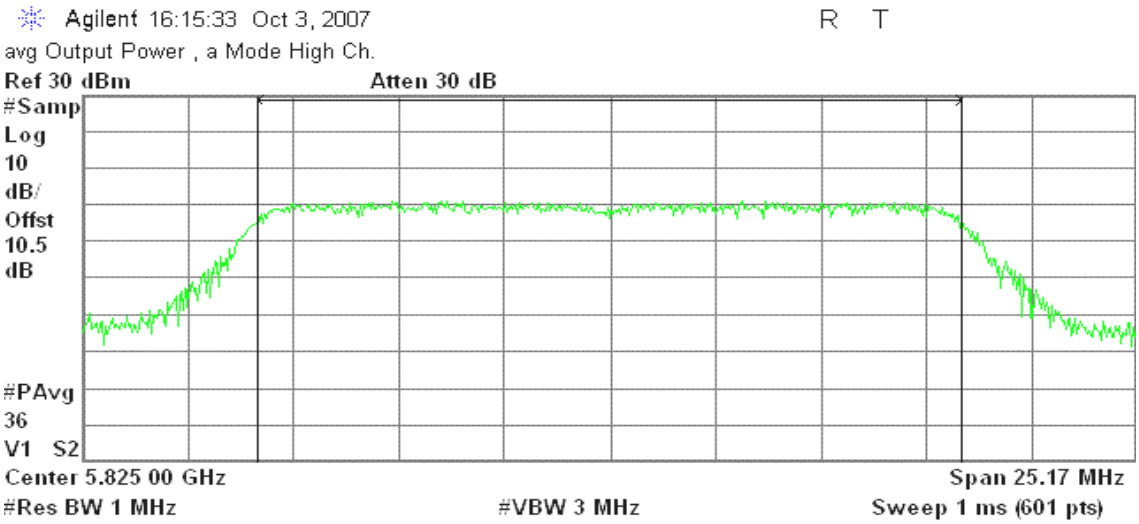
Channel Power

11.16 dBm / 16.7210 MHz

Power Spectral Density

-61.07 dBm/Hz

Average Power (CH High)



Channel Power

11.14 dBm / 16.7770 MHz

Power Spectral Density

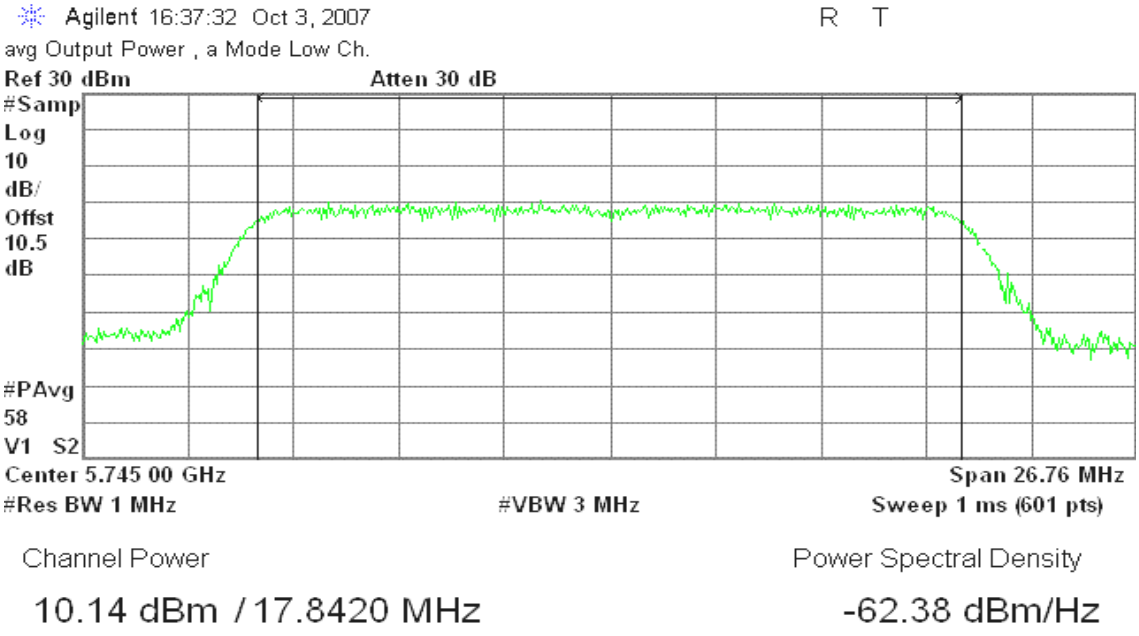
-61.11 dBm/Hz

Test Data

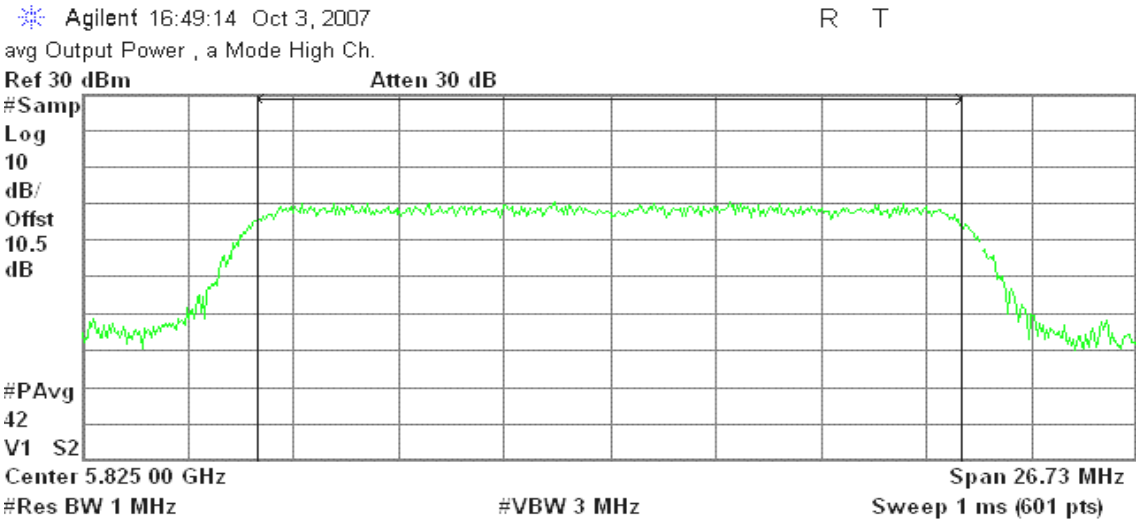
Test mode: draft 802.11n Standard-20 MHz Channel mode					
Channel	**Frequency (MHz)**	**Chain 0 Output Power (dBm)**	**Chain 1 Output Power (dBm)**	**Output Power (dBm)**	**Output Power (W)**
Low	5745	10.14	9.98	13.07	0.0203
Mid	5785	11.21	10.19	13.74	0.0237
High	5825	10.18	10.53	13.37	0.0217

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

Average Power (CH Low)



Average Power (CH High)

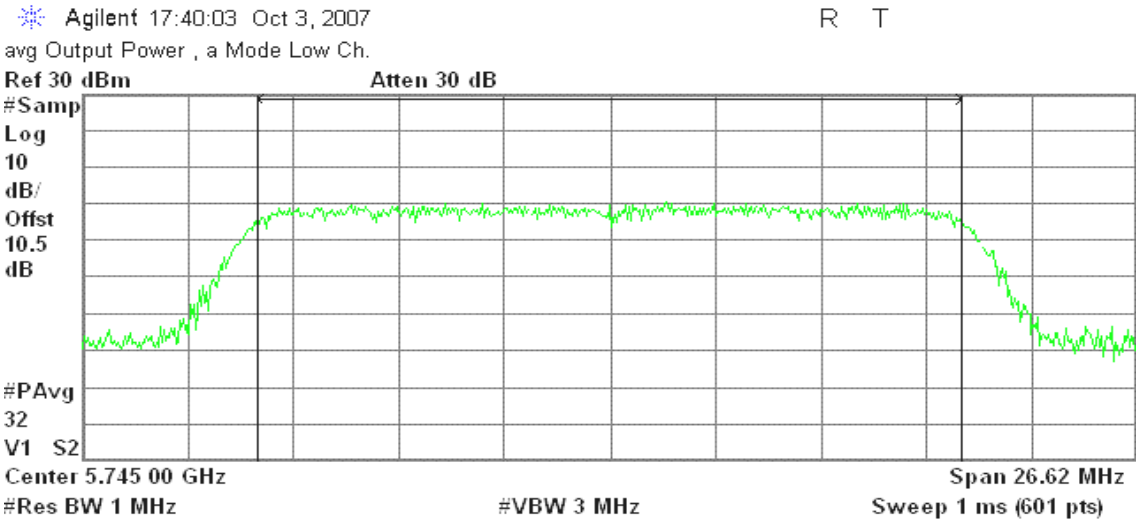


Channel Power
10.18 dBm / 17.8210 MHz

Power Spectral Density
-62.33 dBm/Hz

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

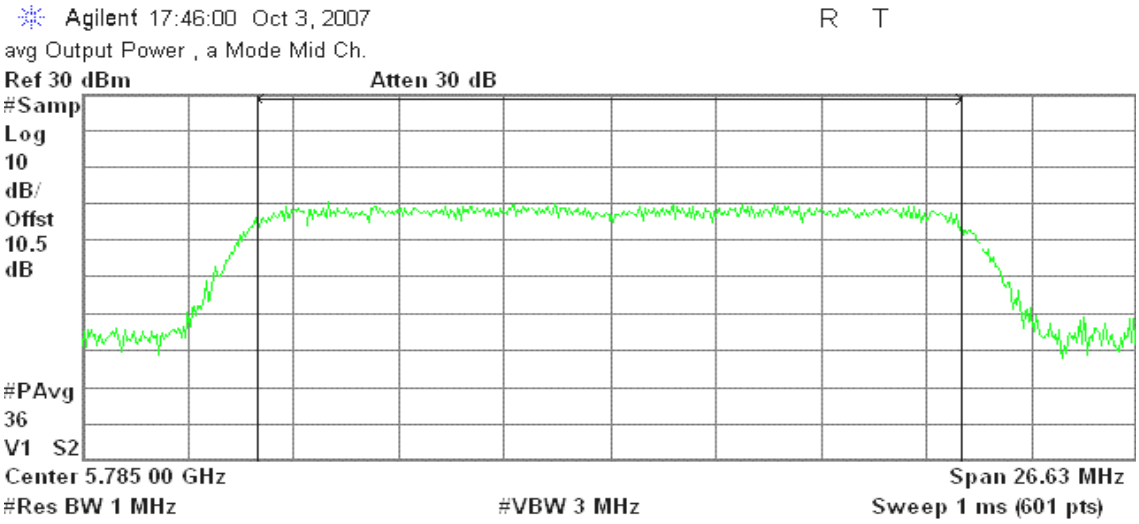
Average Power (CH Low)



Channel Power
9.98 dBm / 17.7480 MHz

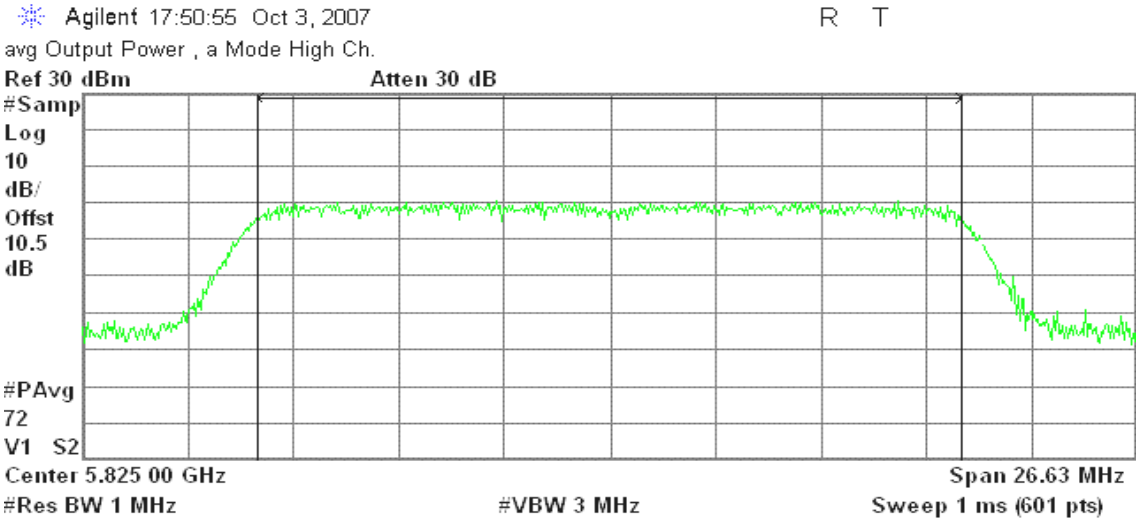
Power Spectral Density
-62.51 dBm/Hz

Average Power (CH Mid)



Channel Power	Power Spectral Density
10.19 dBm / 17.7560 MHz	-62.30 dBm/Hz

Average Power (CH High)



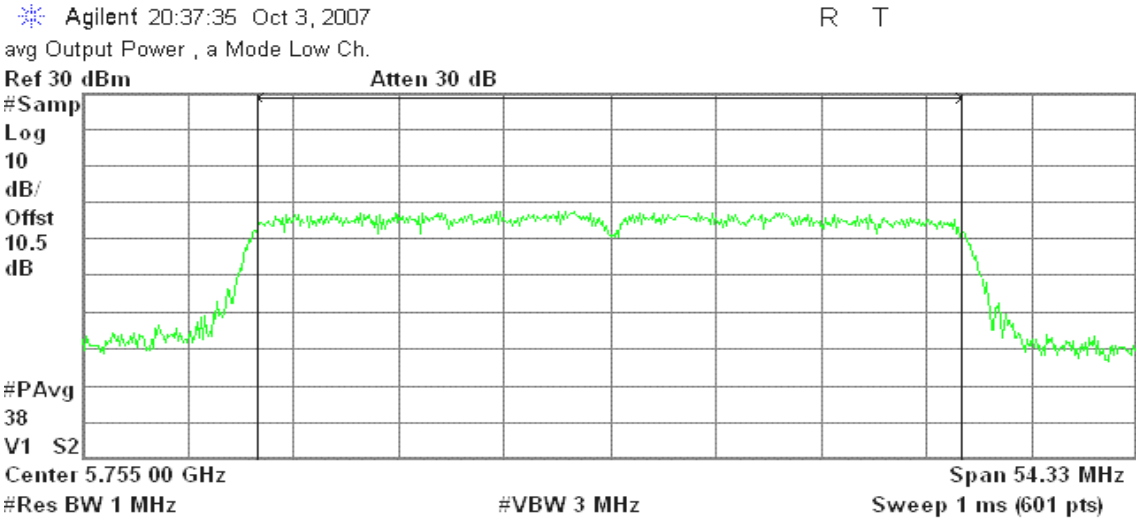
Channel Power	Power Spectral Density
10.53 dBm / 17.7560 MHz	-61.96 dBm/Hz

Test Data

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)**
Low	5755	10.59	10.25	13.43	0.0220
High	5795	10.69	10.42	13.57	0.0227

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

Average Power (CH Low)



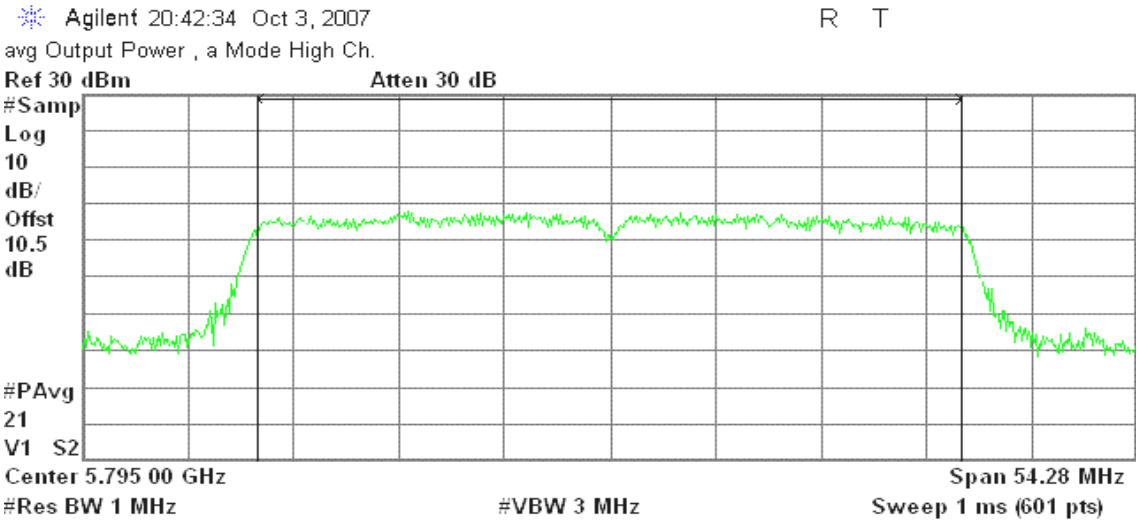
Channel Power

10.59 dBm / 36.2200 MHz

Power Spectral Density

-65.00 dBm/Hz

Average Power (CH High)



Channel Power

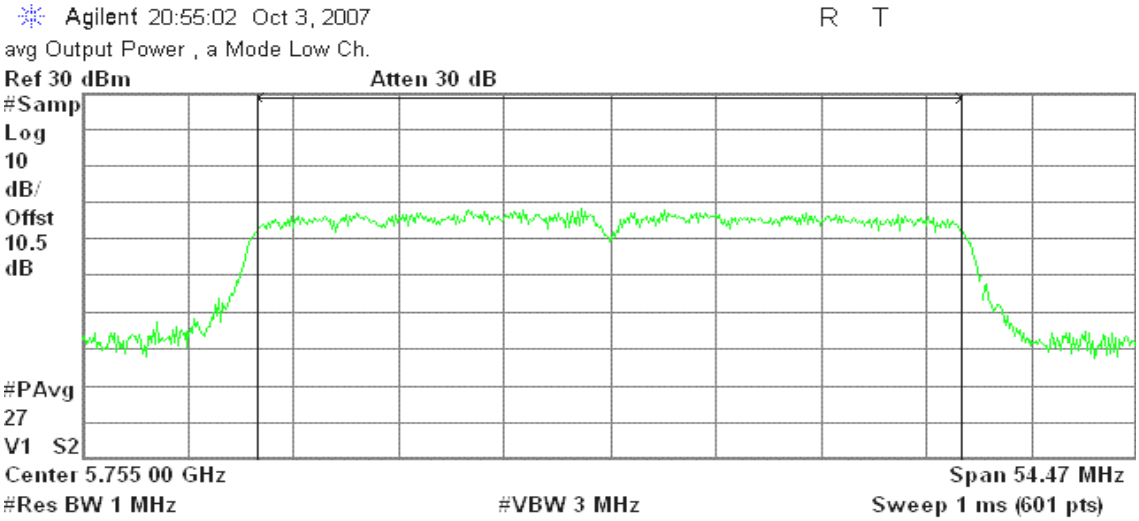
10.25 dBm / 36.1890 MHz

Power Spectral Density

-65.33 dBm/Hz

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

Average Power (CH Low)



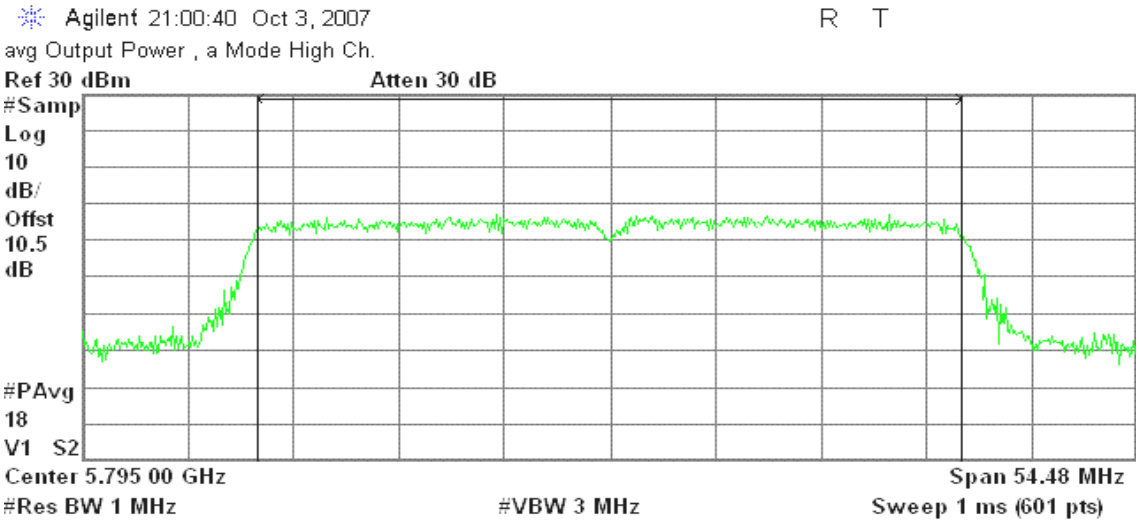
Channel Power

10.69 dBm / 36.3160 MHz

Power Spectral Density

-64.91 dBm/Hz

Average Power (CH High)



Channel Power

10.42 dBm / 36.3170 MHz

Power Spectral Density

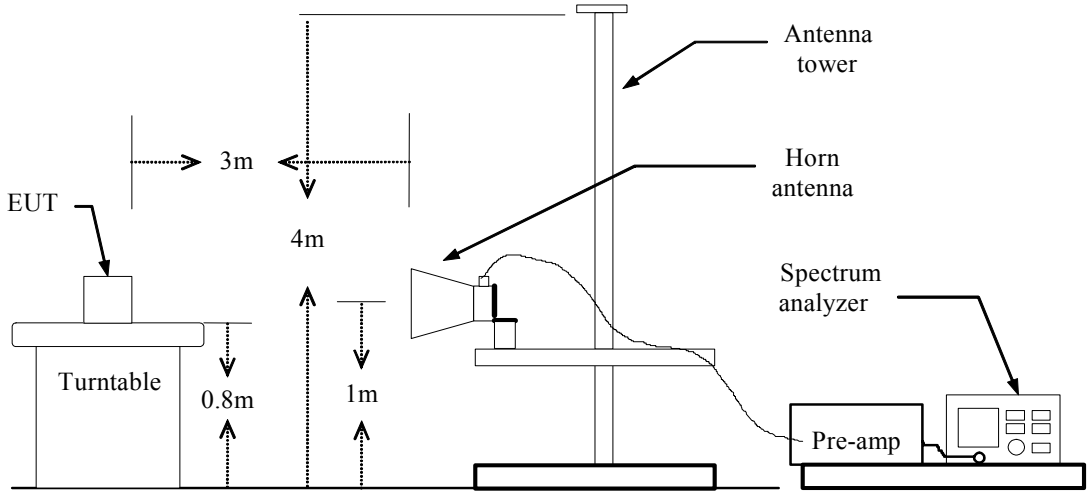
-65.19 dBm/Hz

8.4 BAND EDGES MEASUREMENT

8.4.1 LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 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



8.4.2 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.

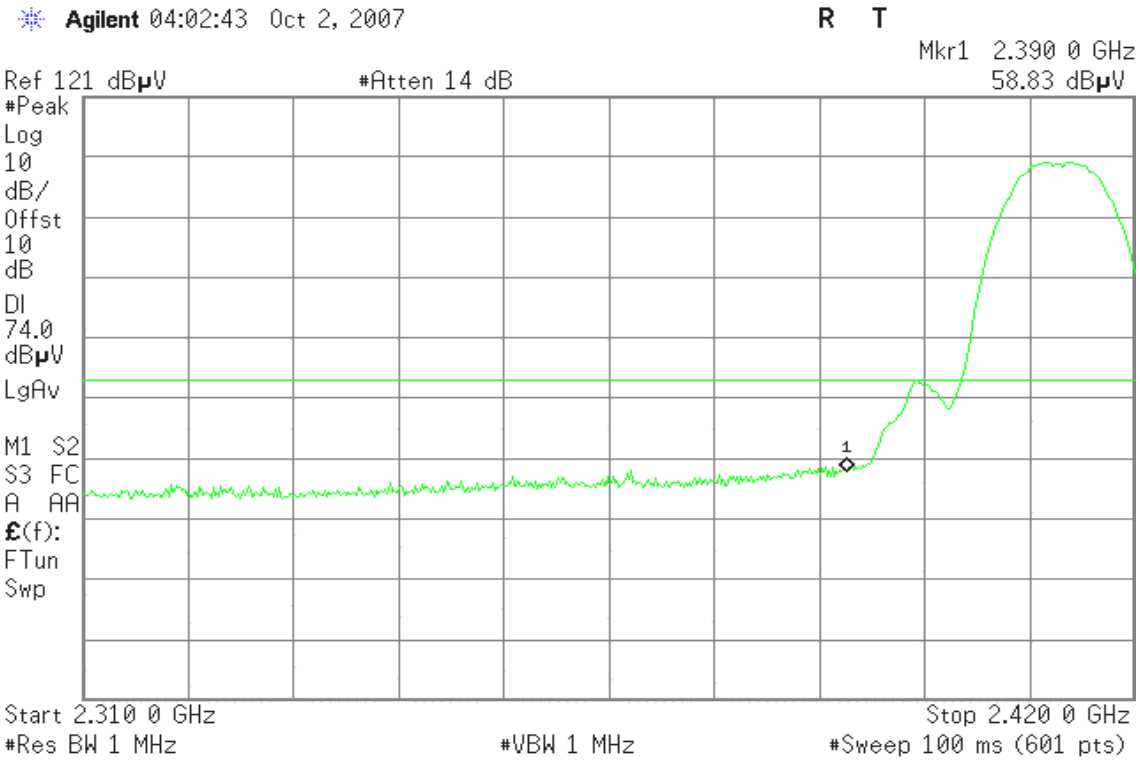
8.4.3 TEST RESULTS

Refer to attach spectrum analyzer data chart.

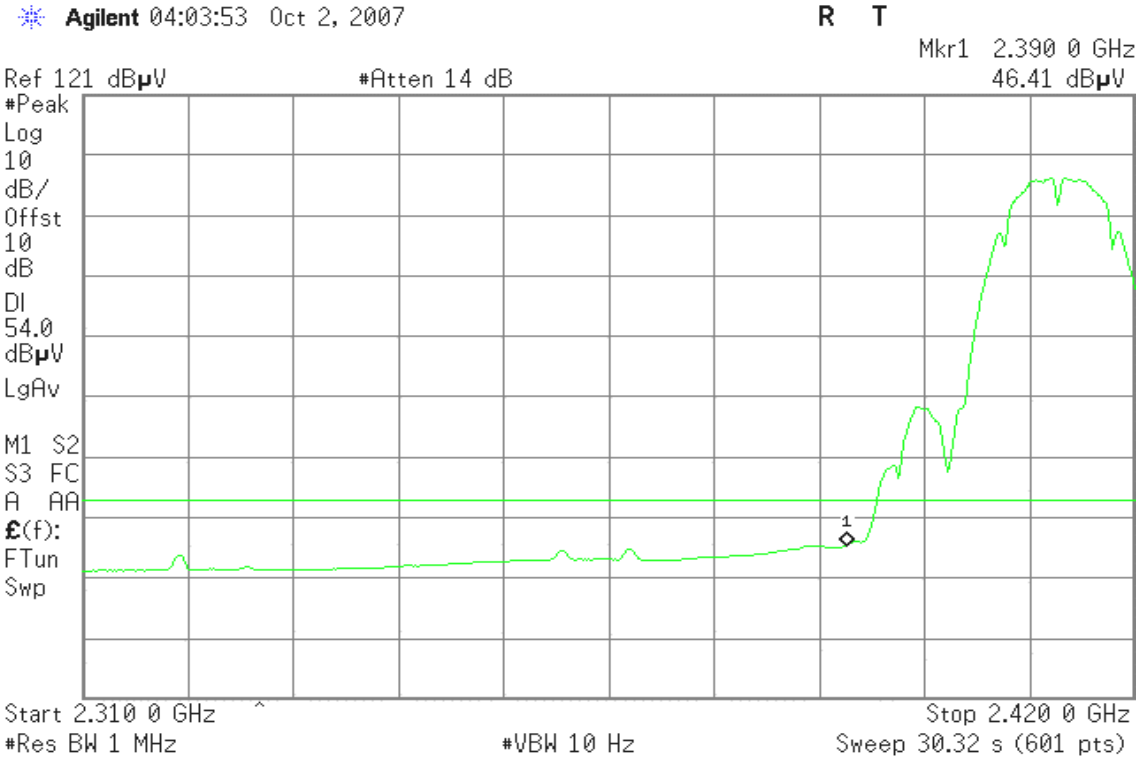
Mode 2

Band Edges (IEEE 802.11b mode/ CH Low)

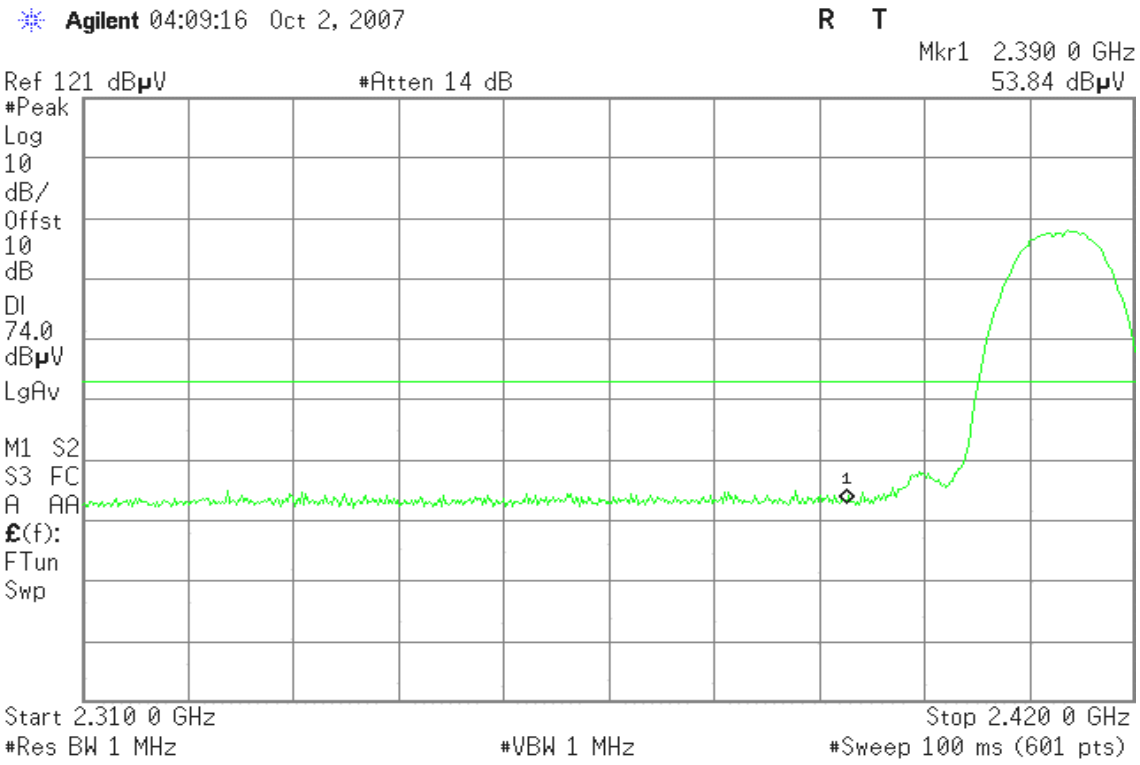
Detector mode: Peak **Polarity: Vertical**



Detector mode: Average **Polarity: Vertical**



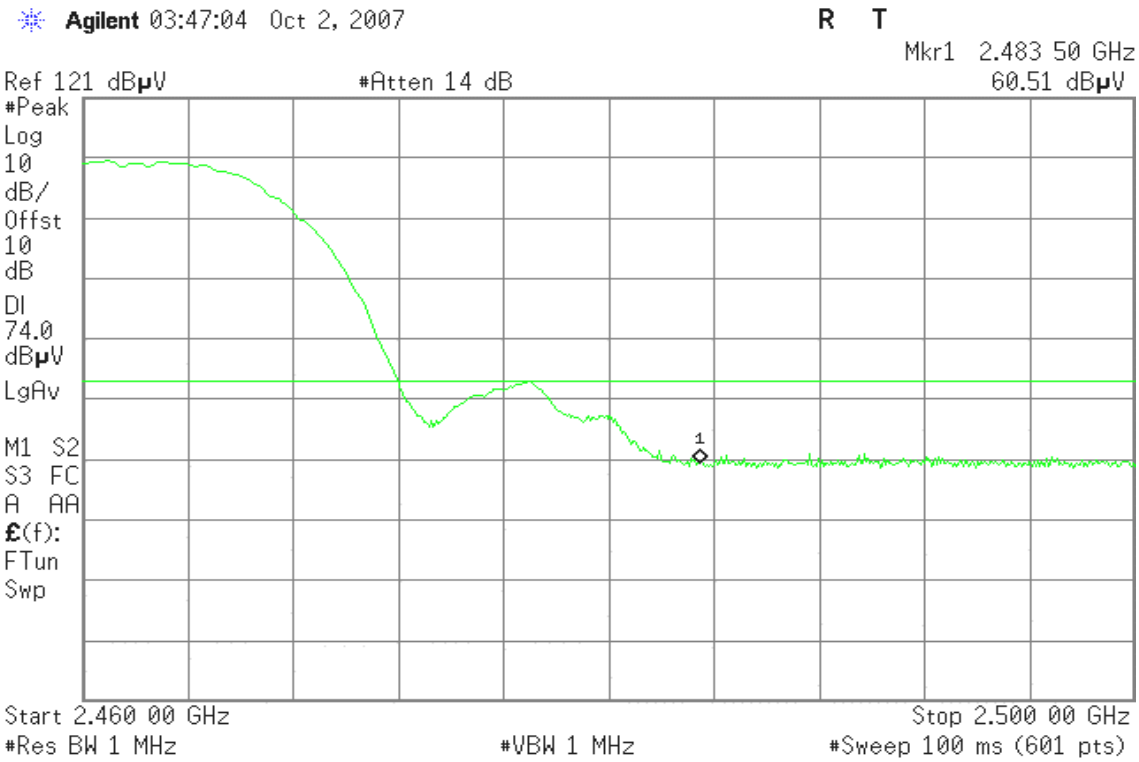
Detector mode: Peak **Polarity: Horizontal**



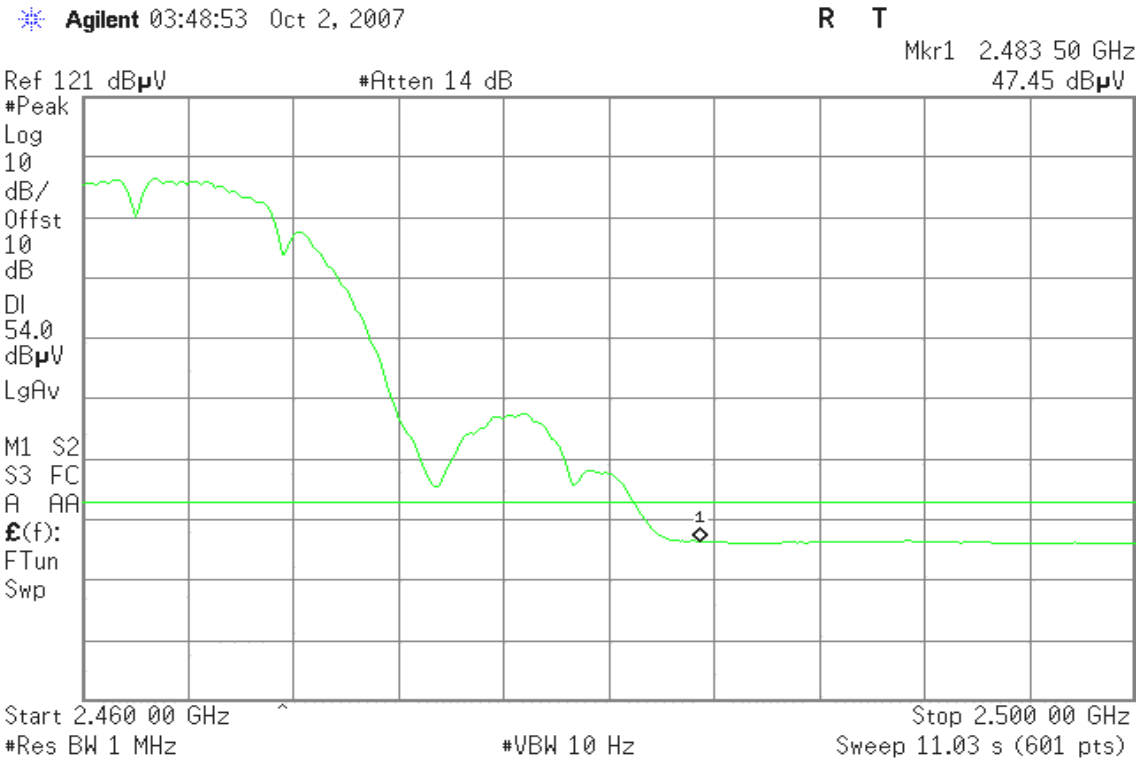
Detector mode: Average **Polarity: Horizontal**

Band Edges (IEEE 802.11b mode/ CH High)

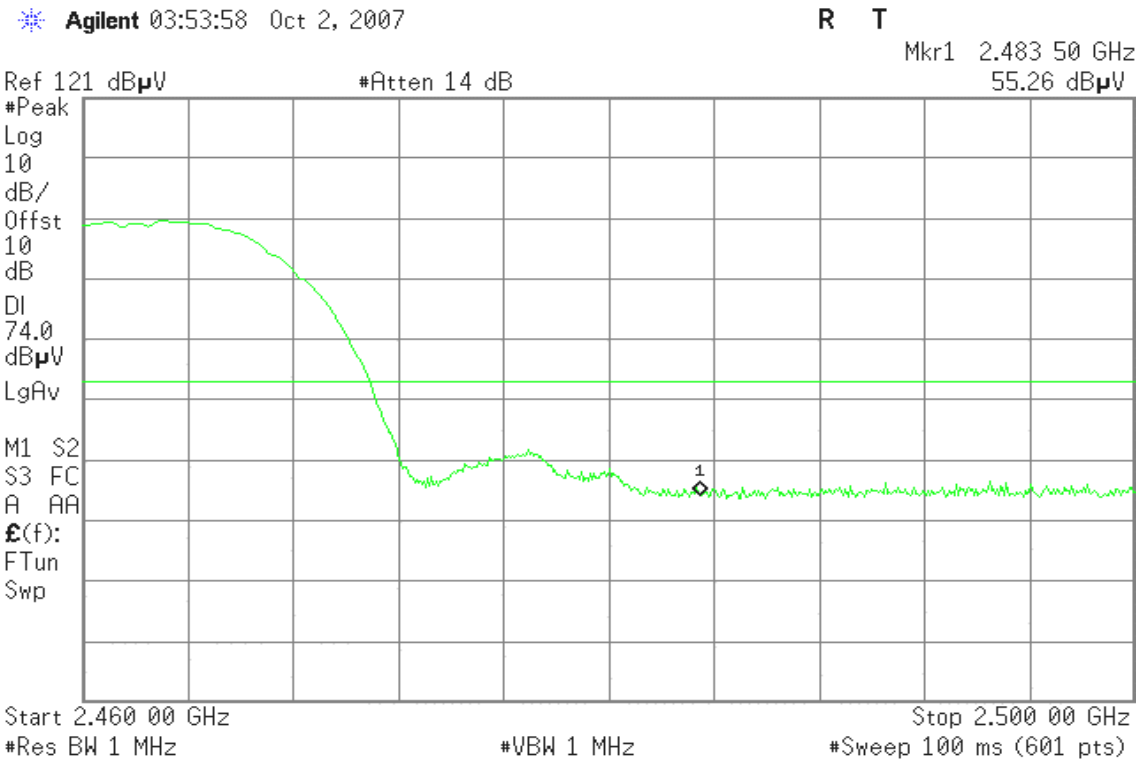
Detector mode: Peak Polarity: Vertical



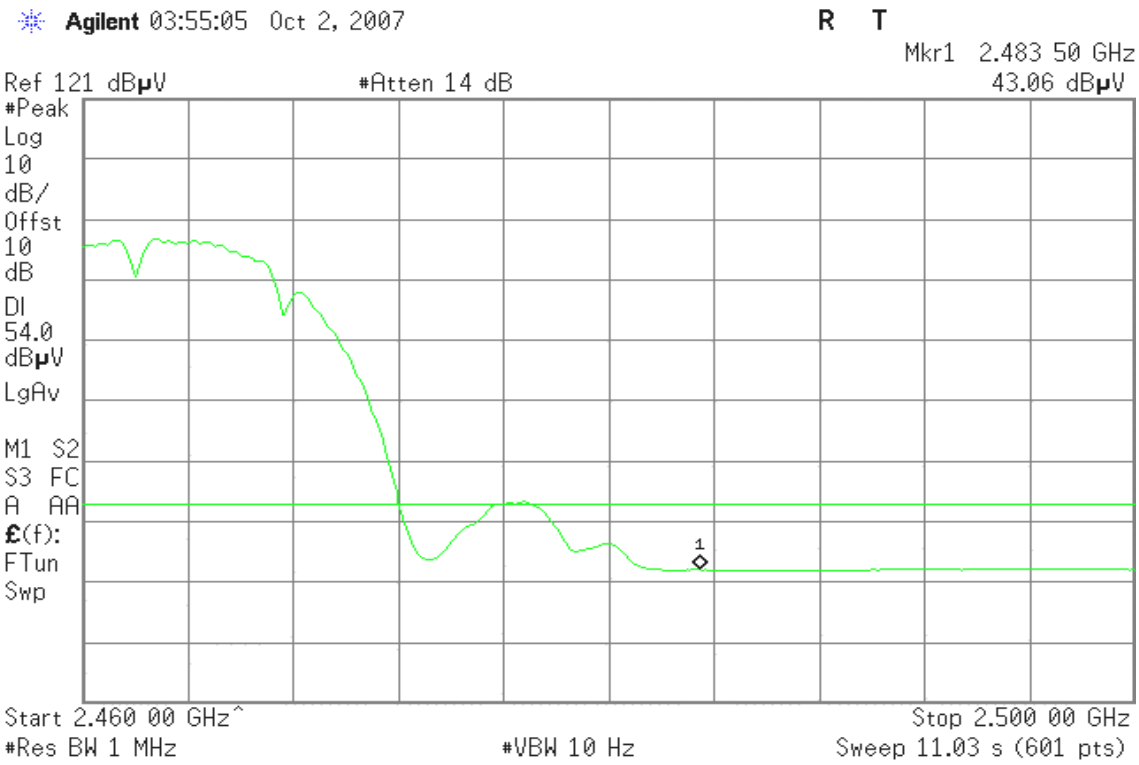
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

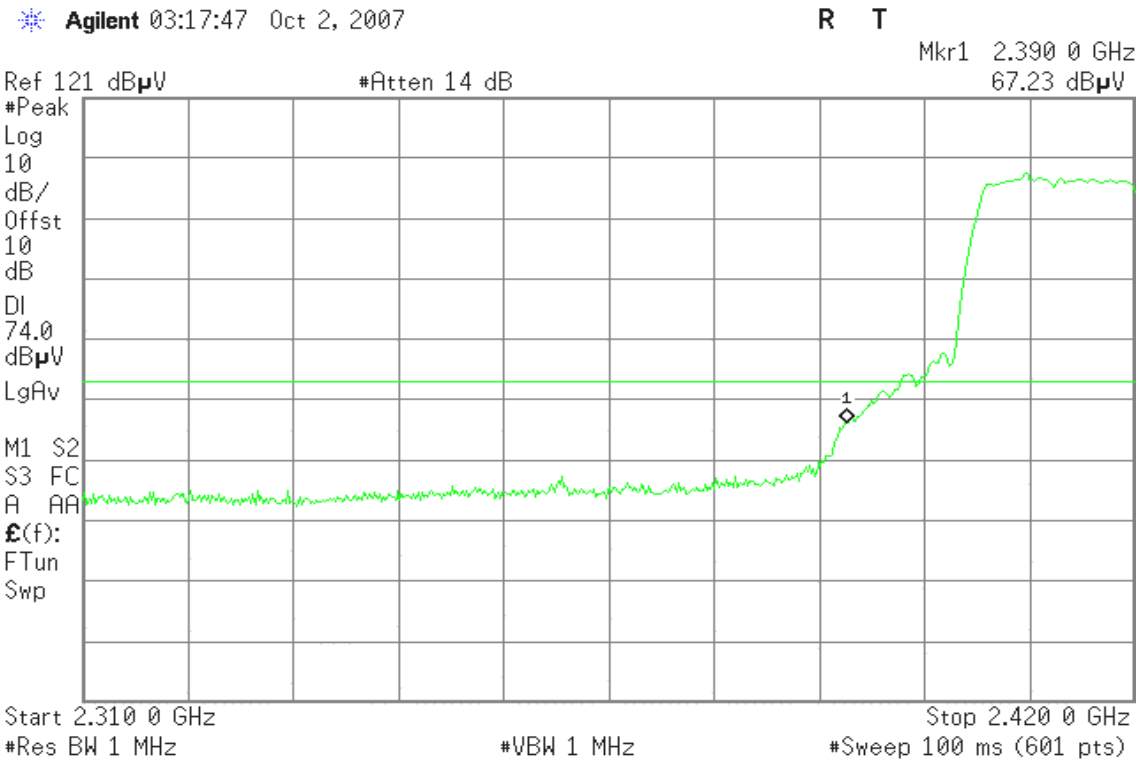


Detector mode: Average **Polarity: Horizontal**

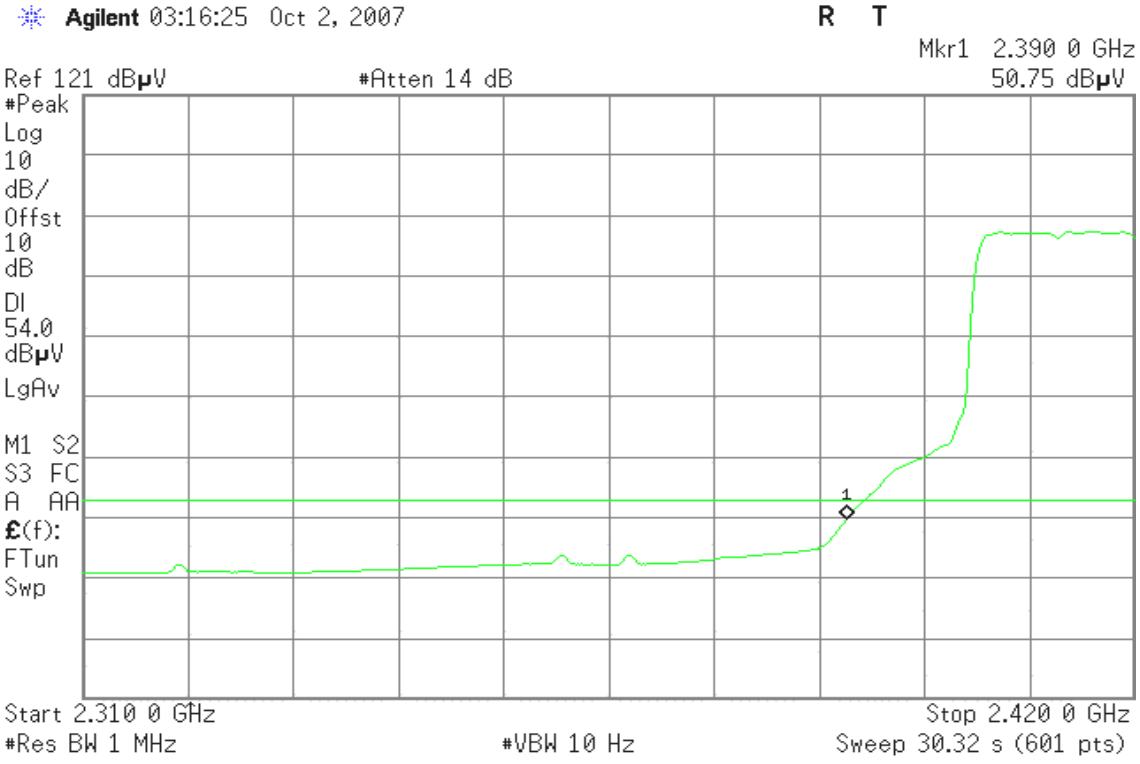


Band Edges (IEEE 802.11g mode / CH Low)

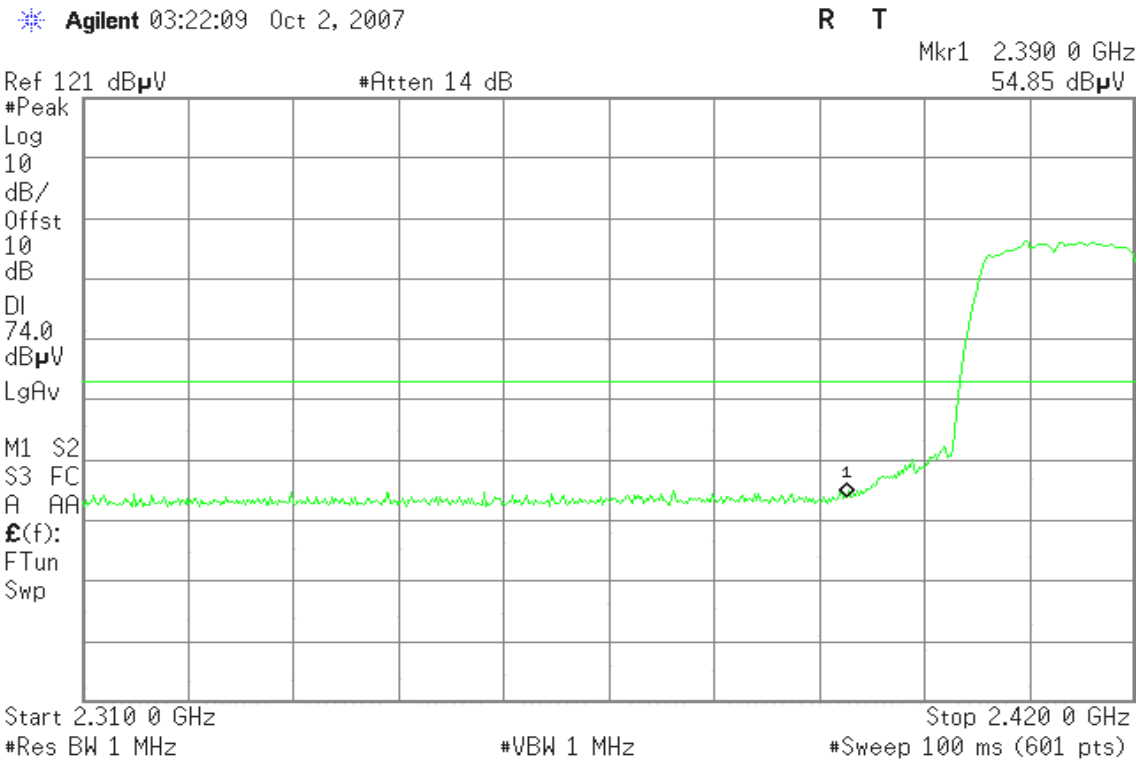
Detector mode: Peak **Polarity: Vertical**



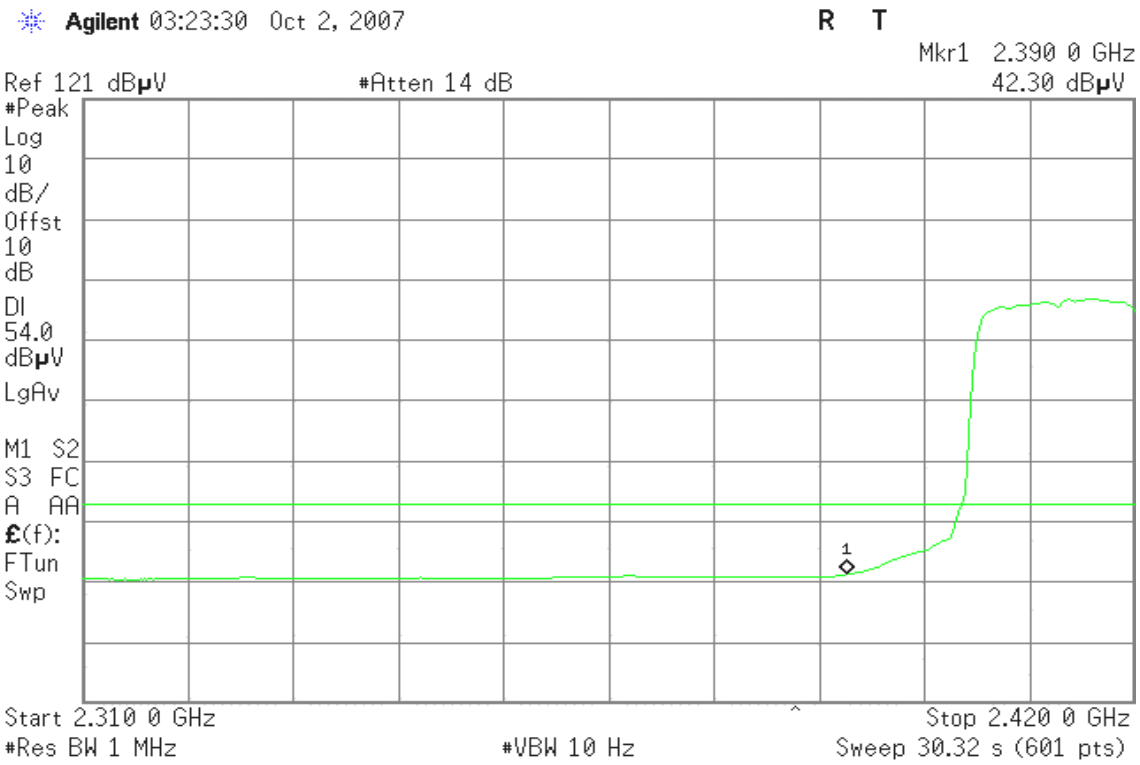
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

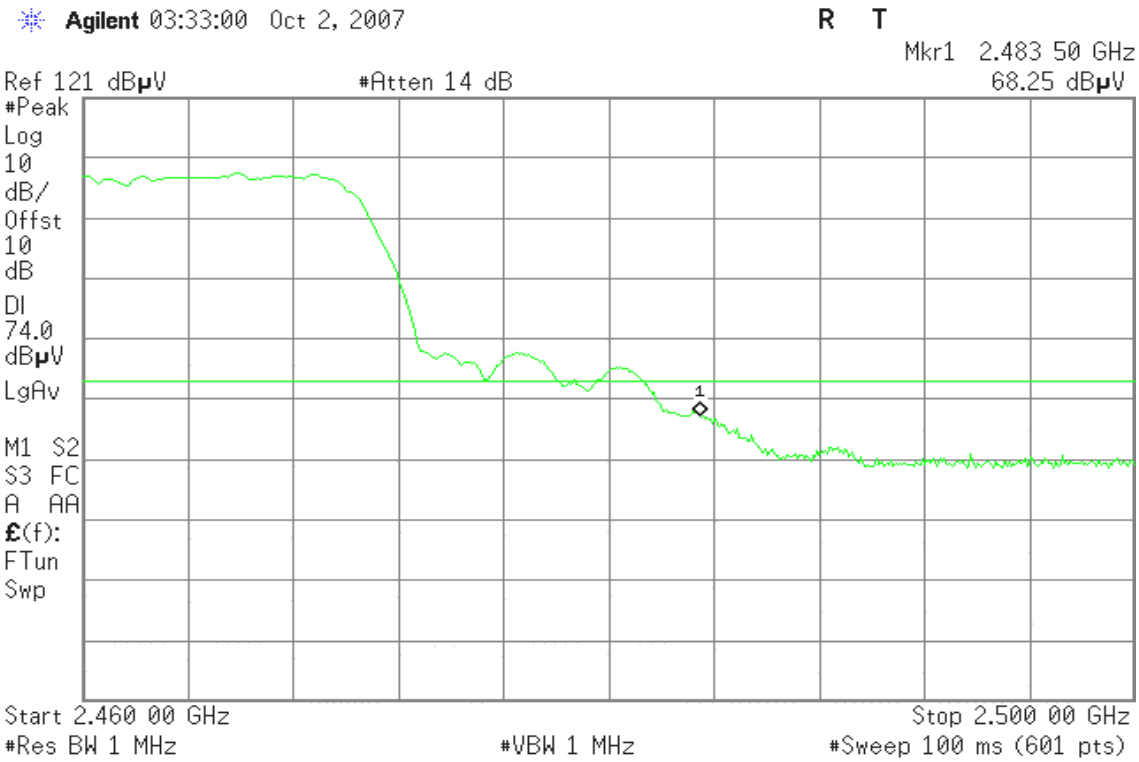


Detector mode: Average **Polarity: Horizontal**

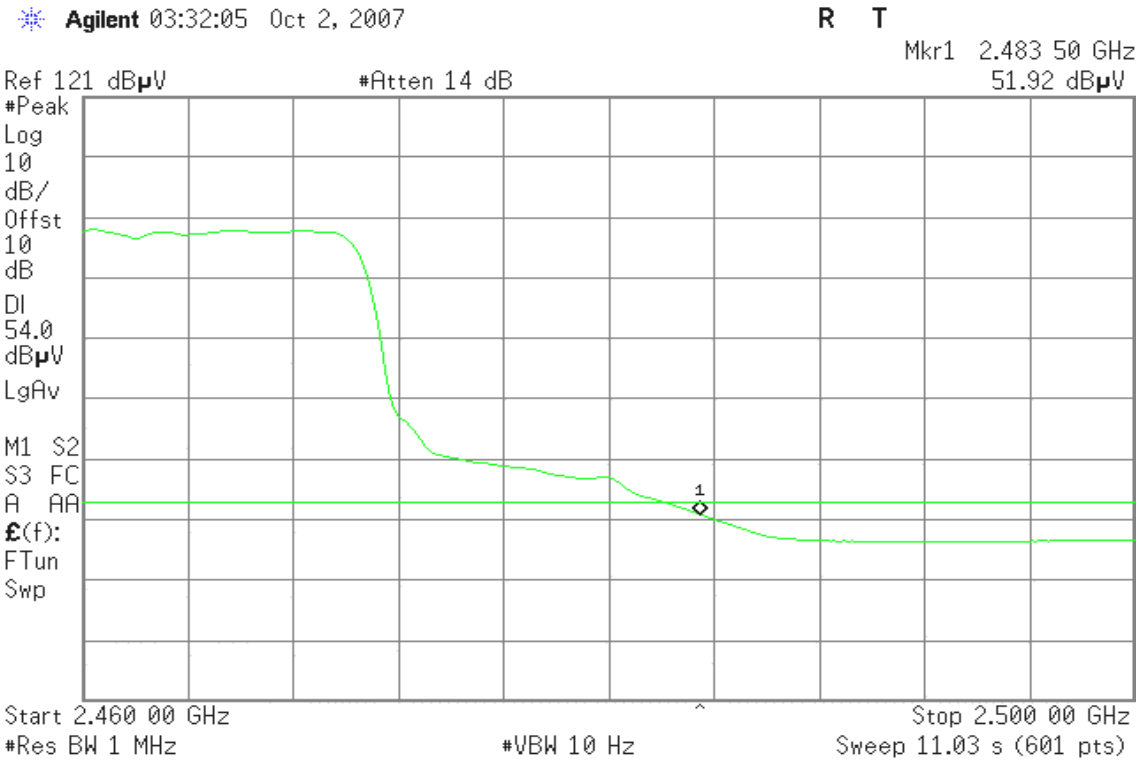


Band Edges (IEEE 802.11g mode / CH High)

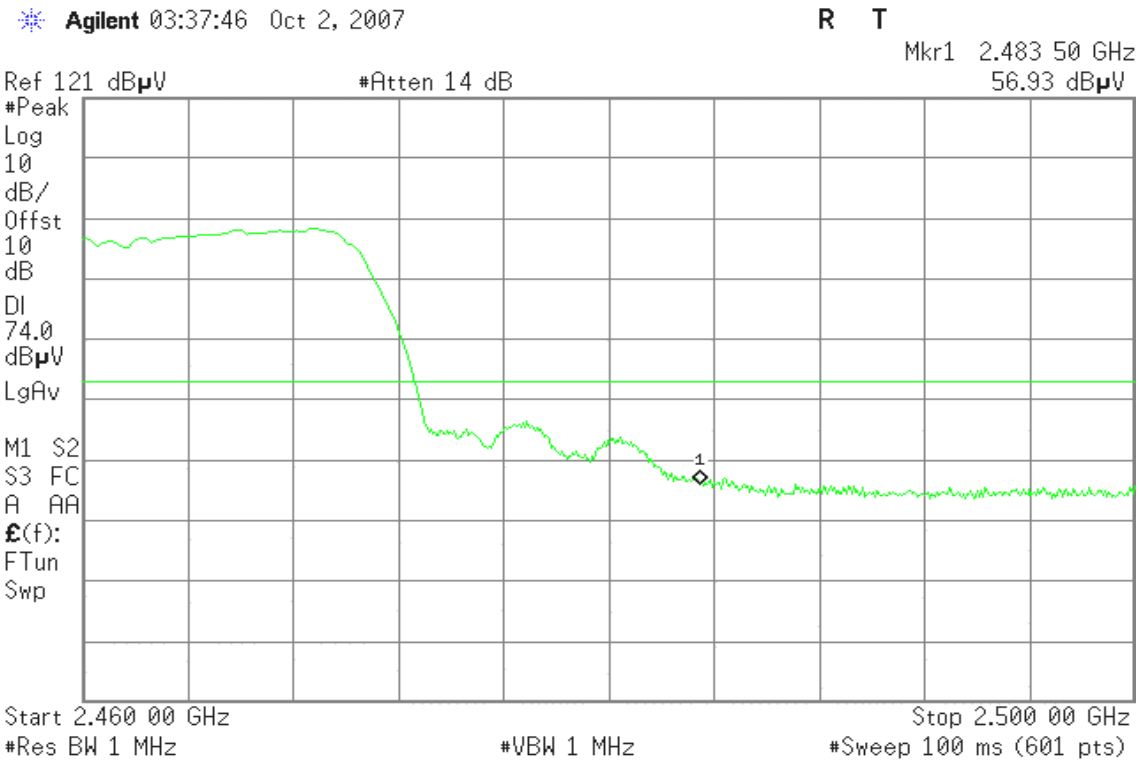
Detector mode: Peak Polarity: Vertical



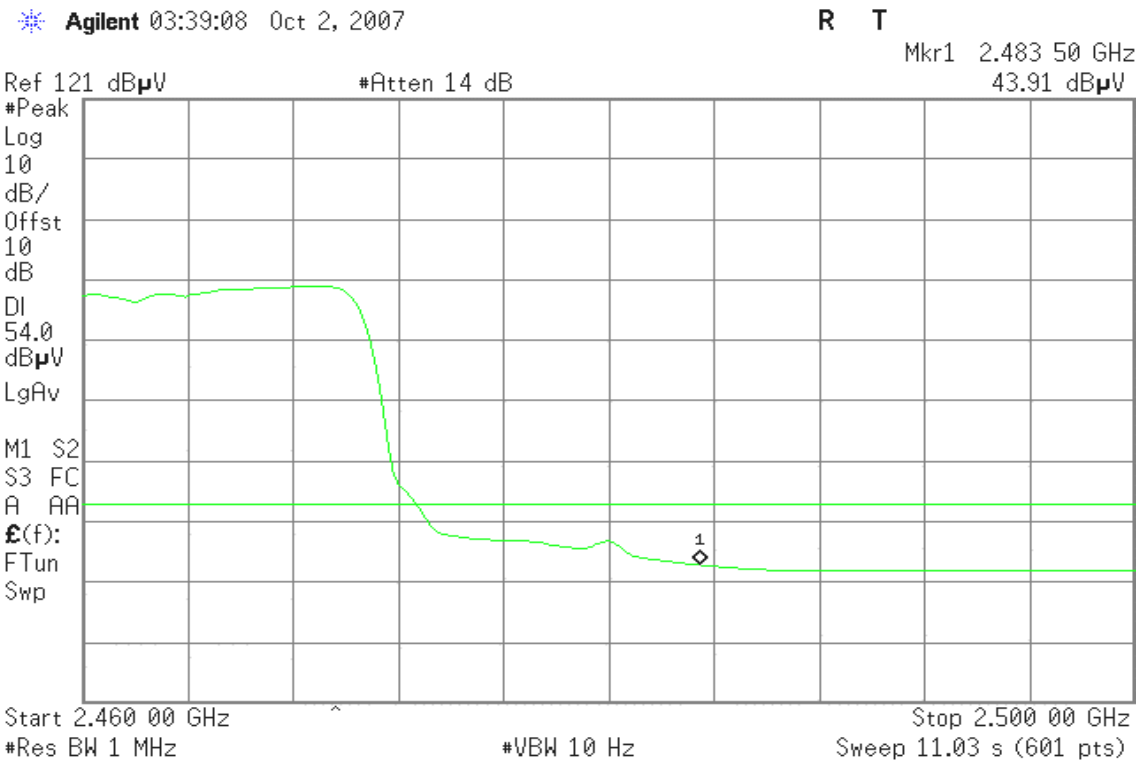
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

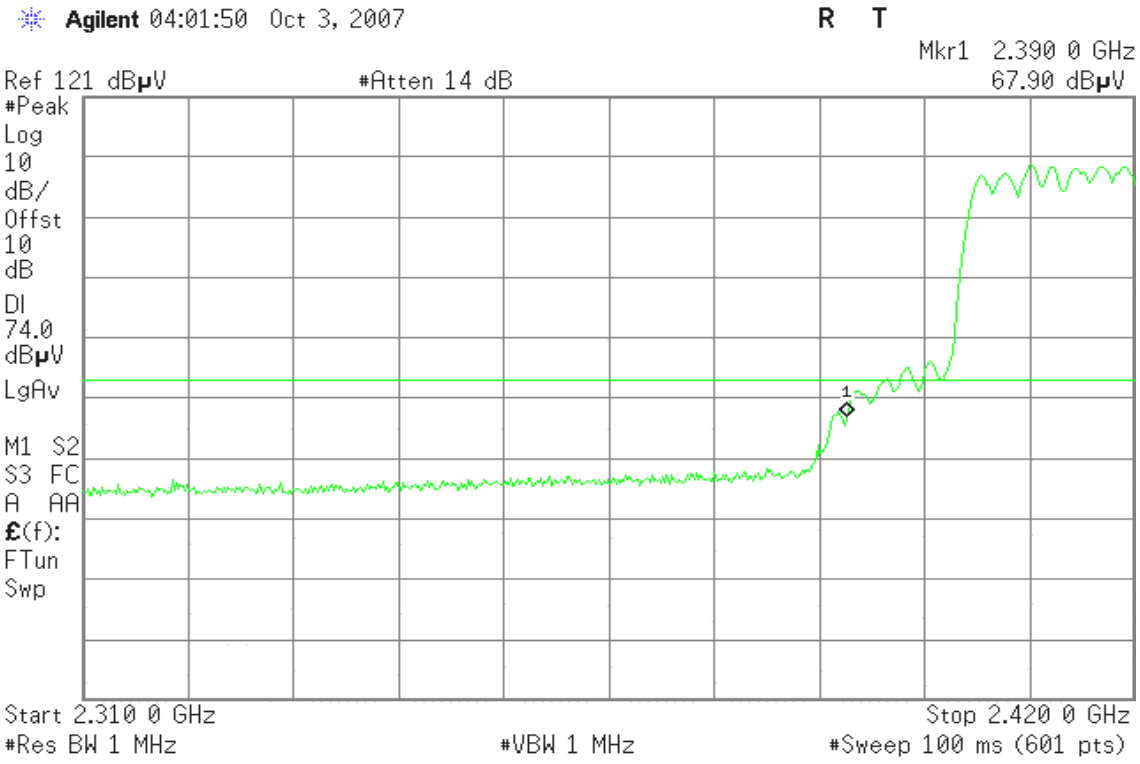


Detector mode: Average **Polarity: Horizontal**



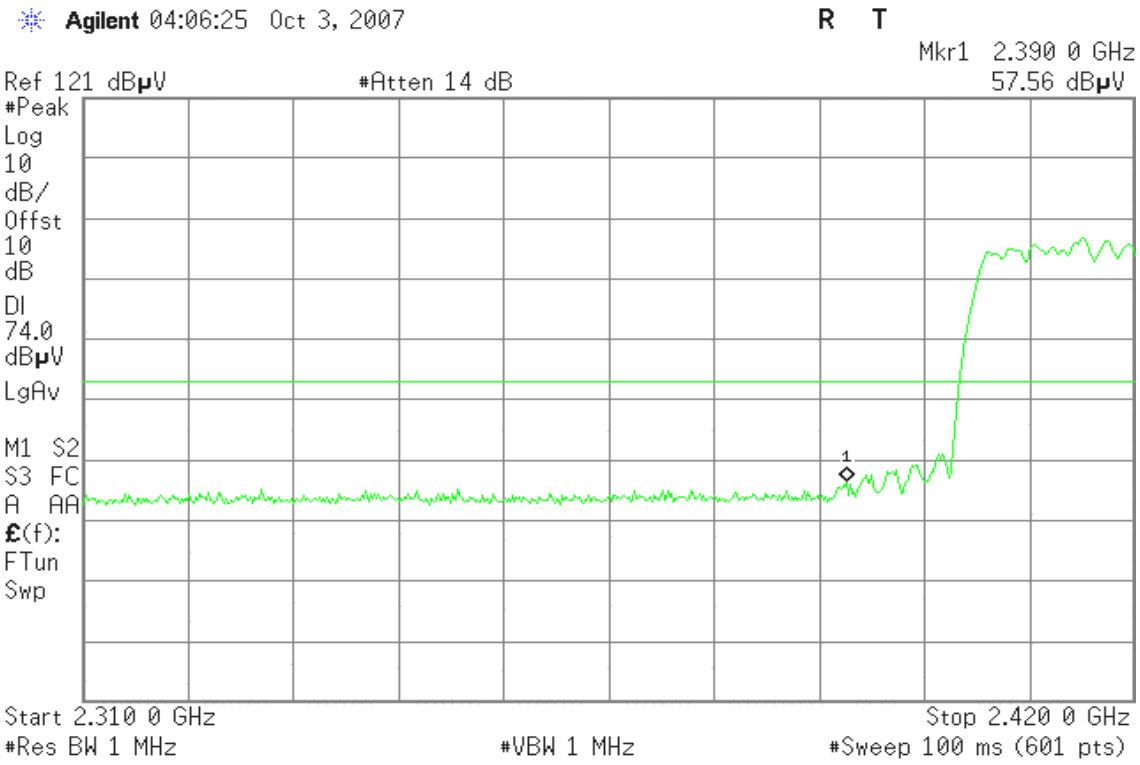
Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH Low)

Detector mode: Peak **Polarity: Vertical**

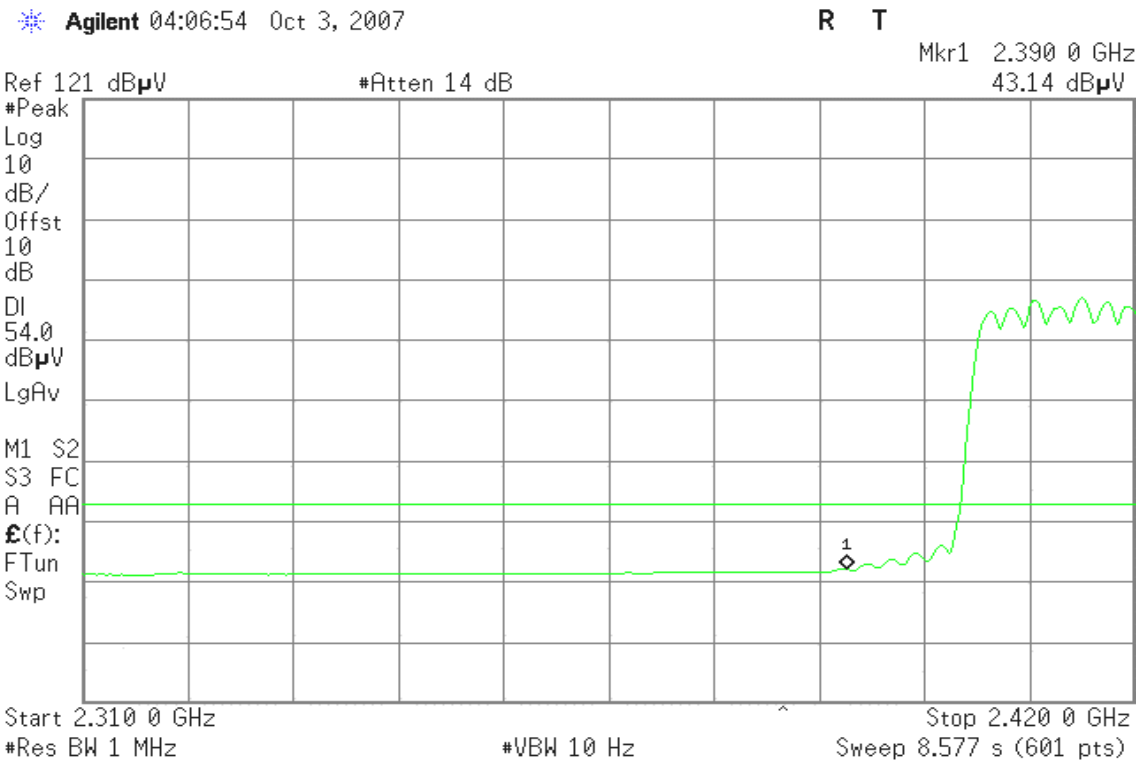


Detector mode: Average **Polarity: Vertical**

Detector mode: Peak **Polarity: Horizontal**

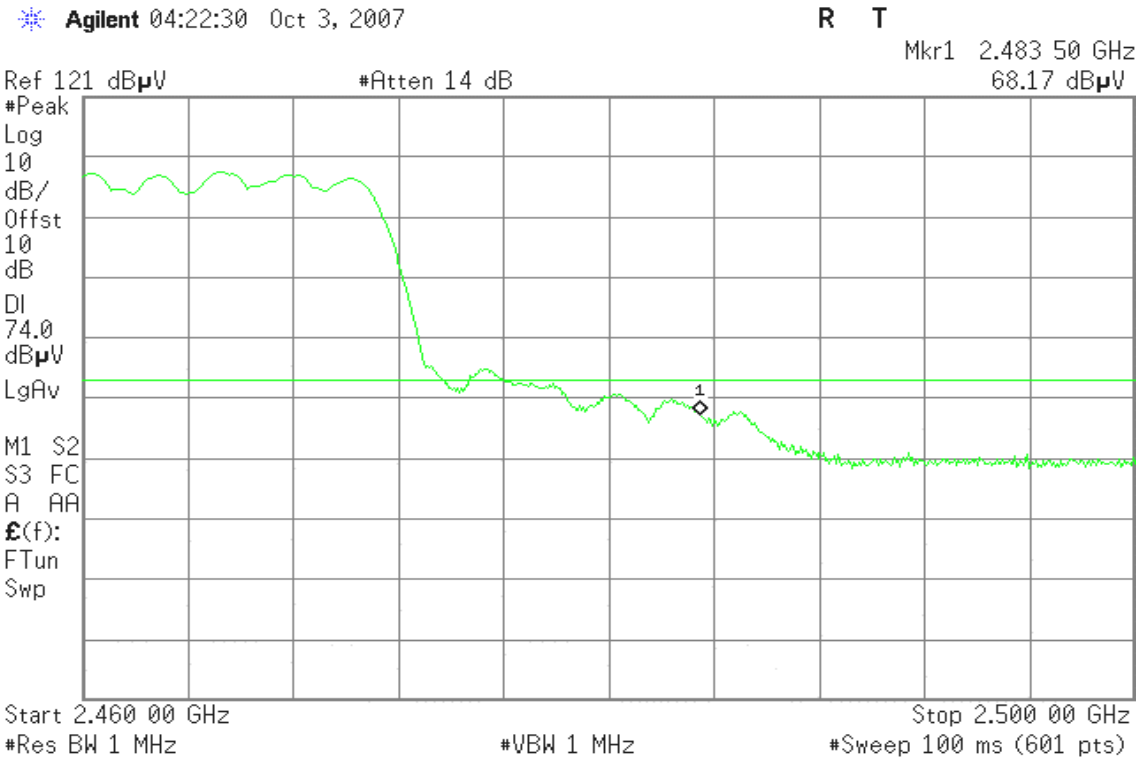


Detector mode: Average **Polarity: Horizontal**

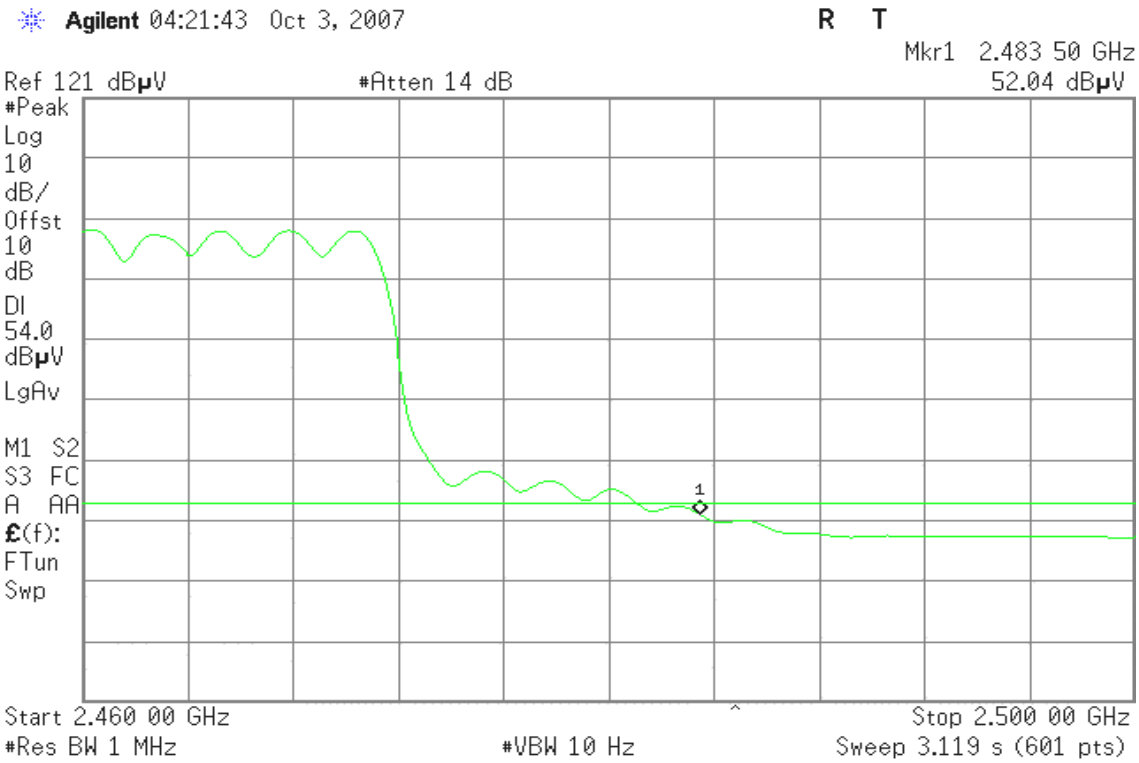


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH High)

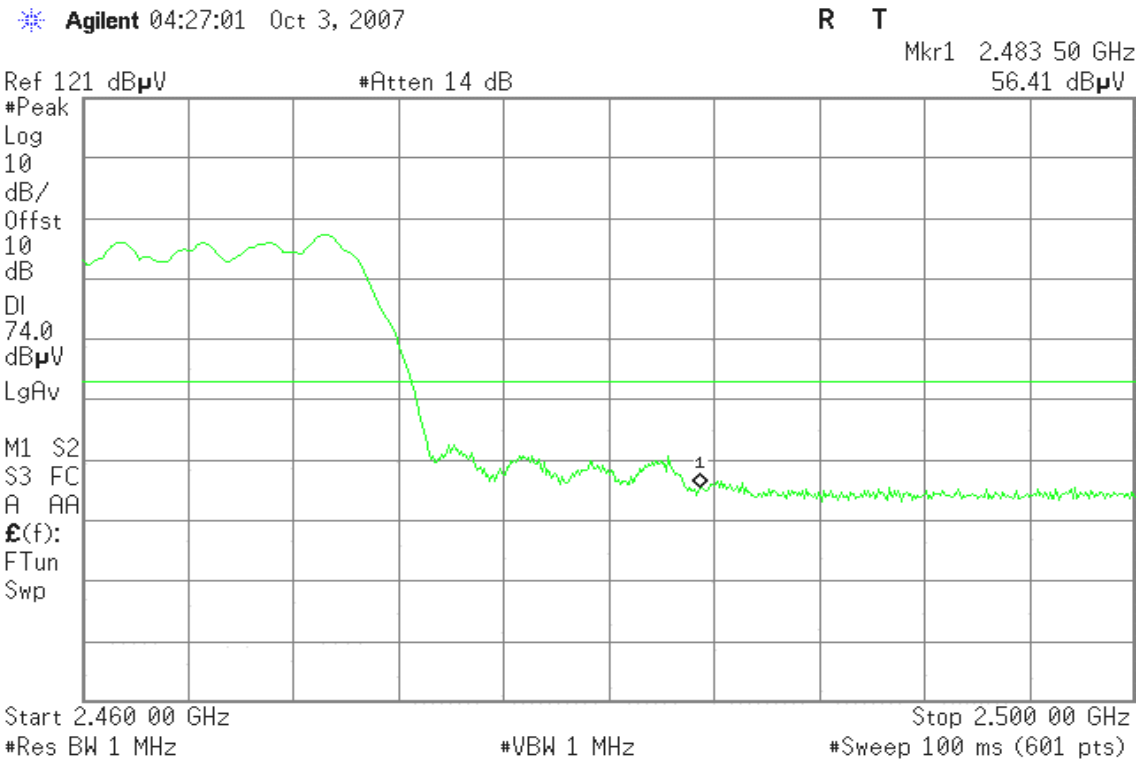
Detector mode: Peak **Polarity: Vertical**



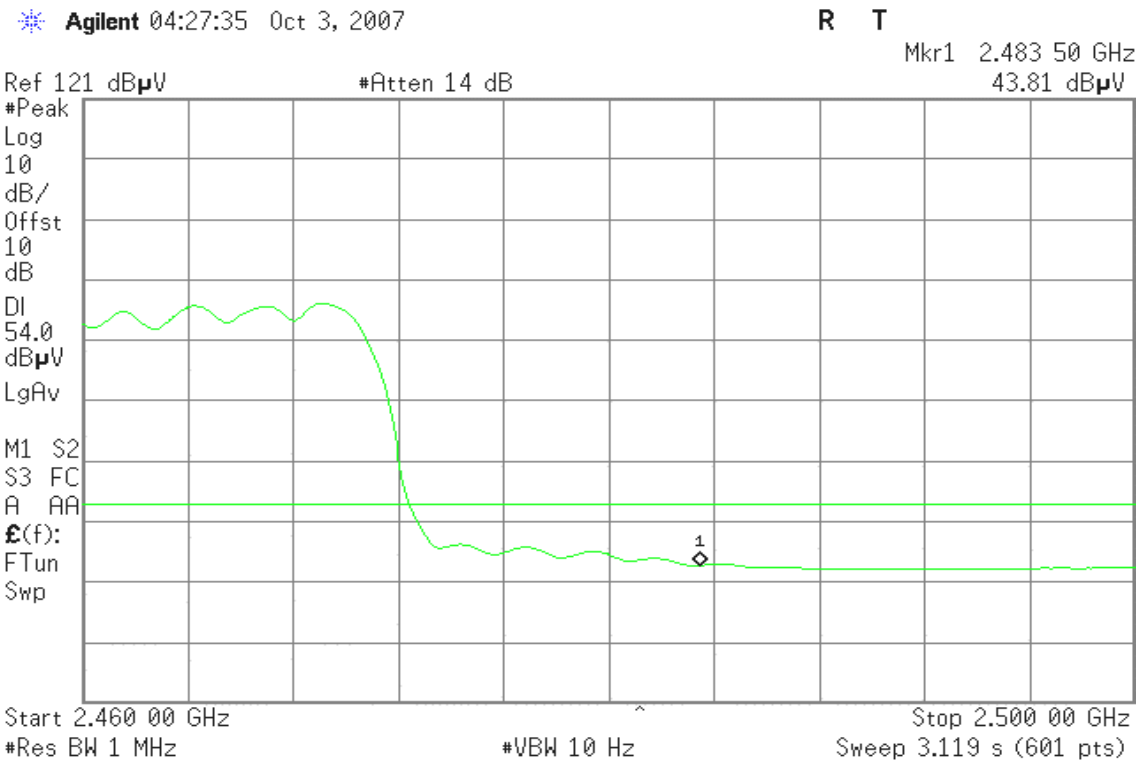
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

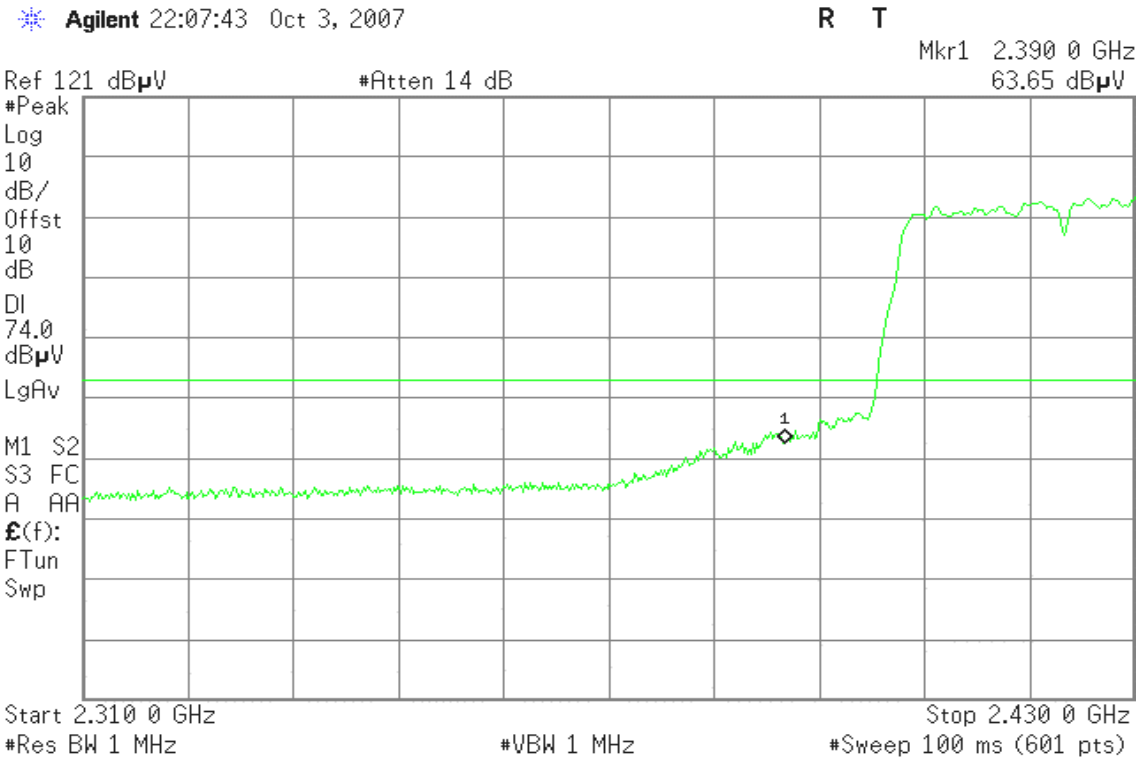


Detector mode: Average **Polarity: Horizontal**

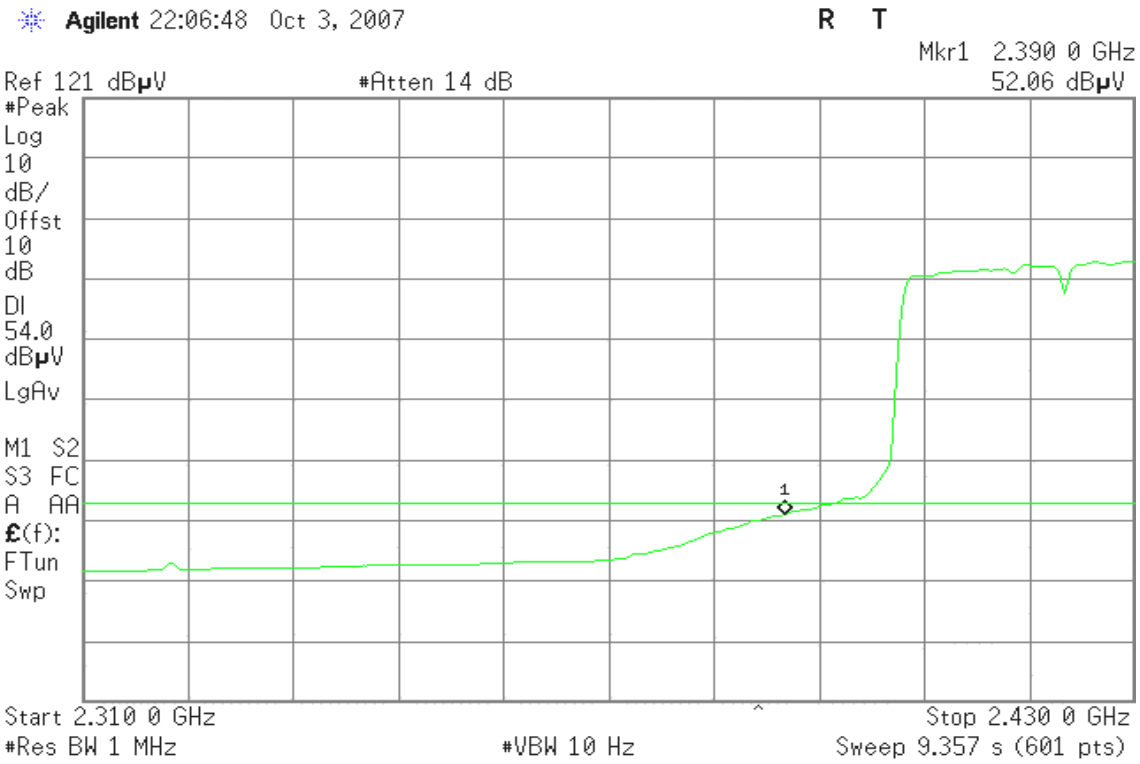


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH Low)

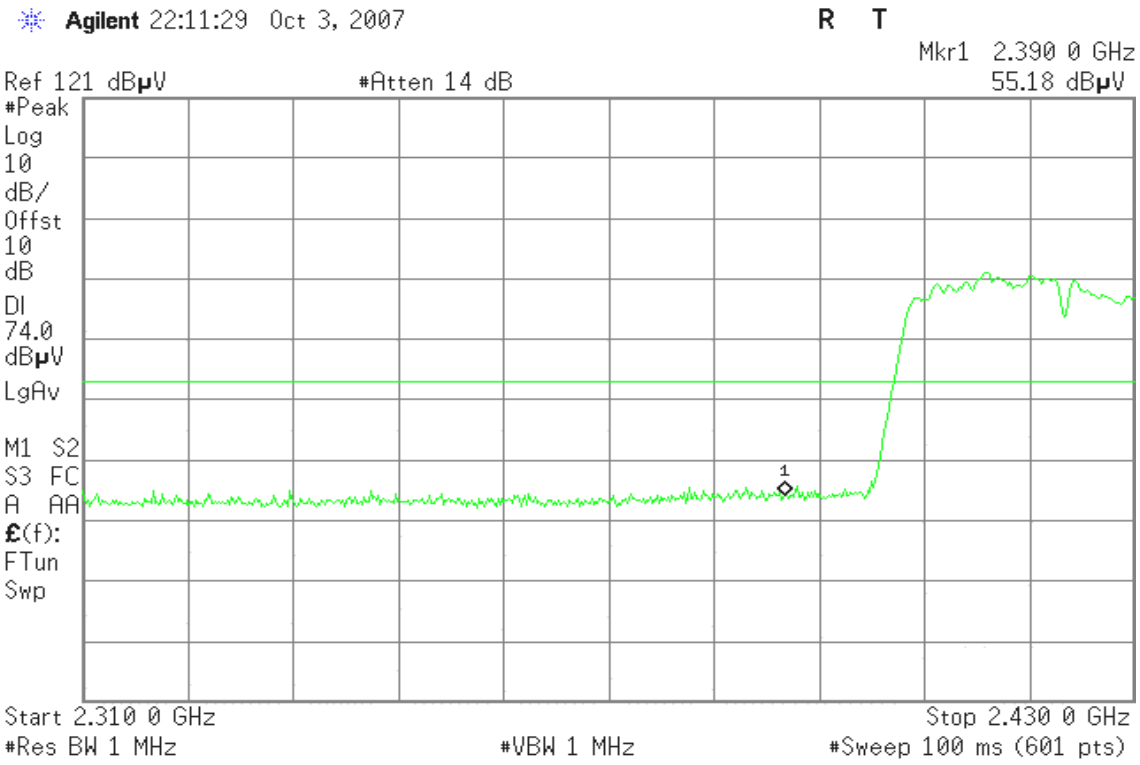
Detector mode: Peak **Polarity: Vertical**



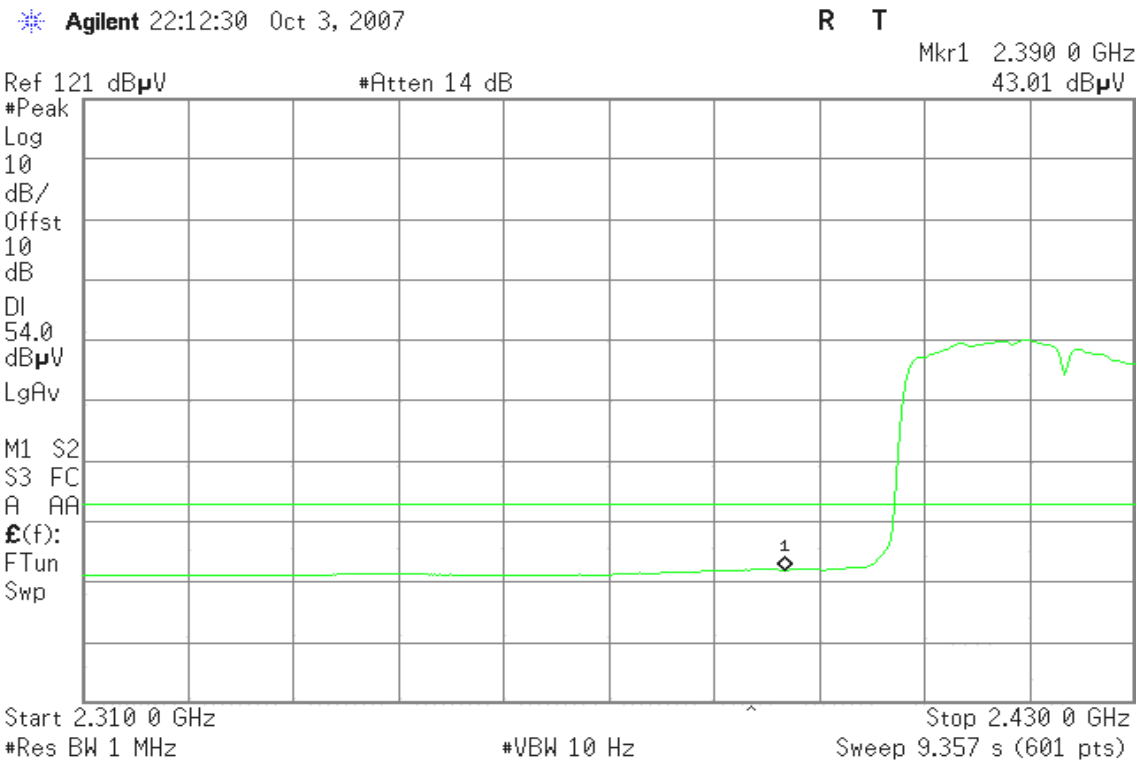
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

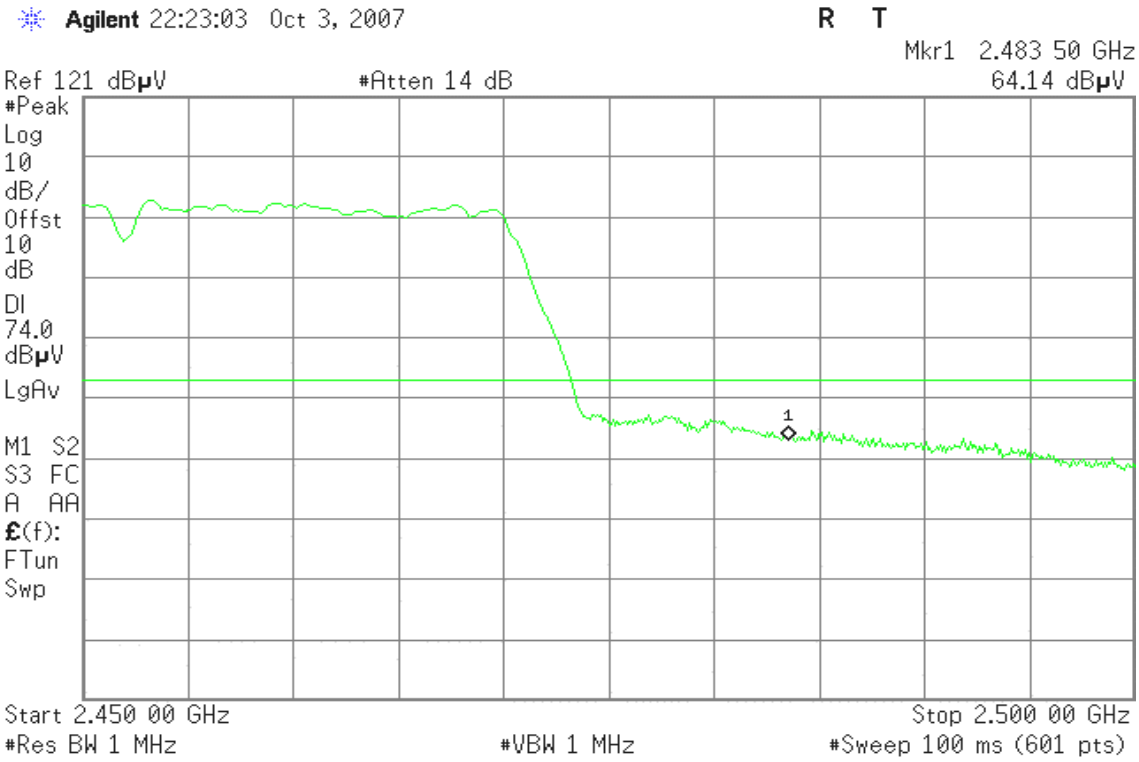


Detector mode: Average **Polarity: Horizontal**

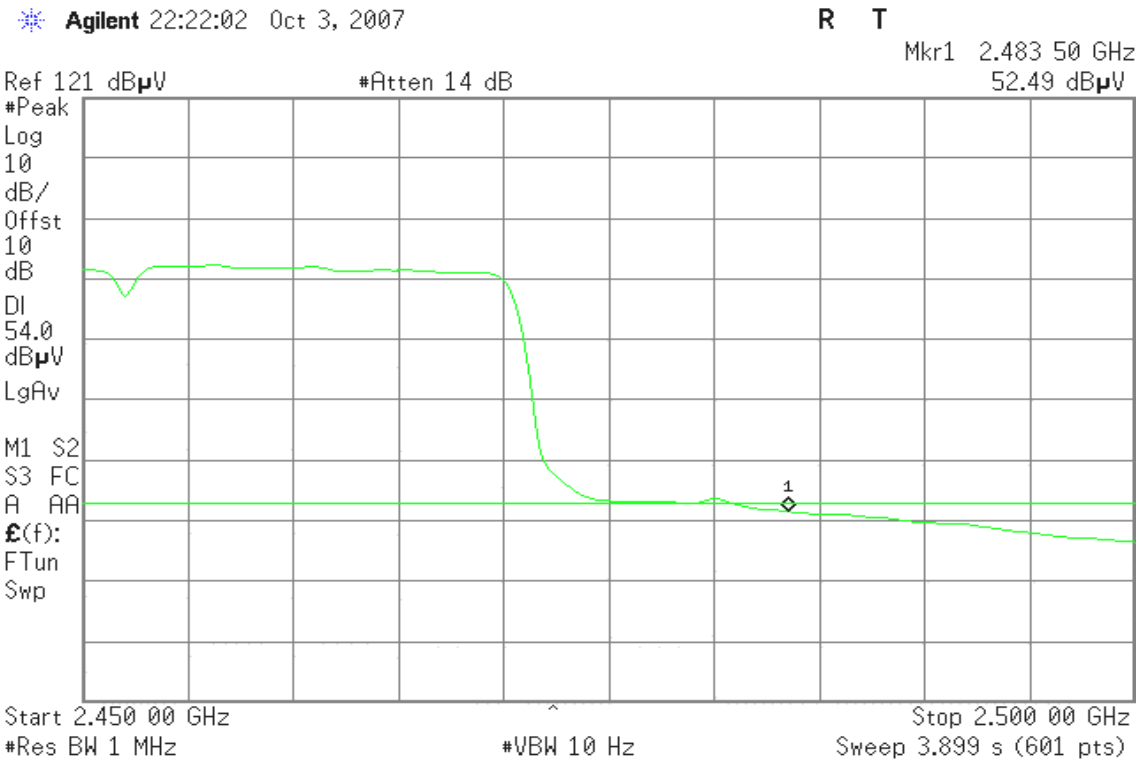


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH High)

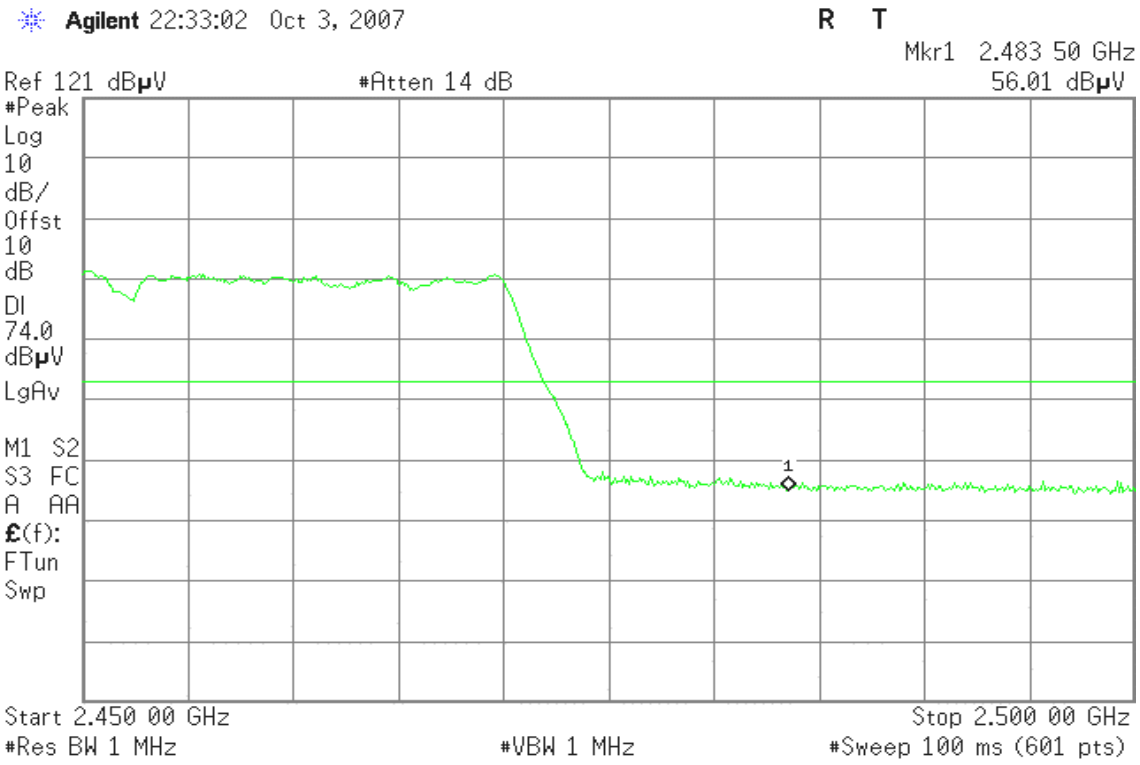
Detector mode: Peak **Polarity: Vertical**



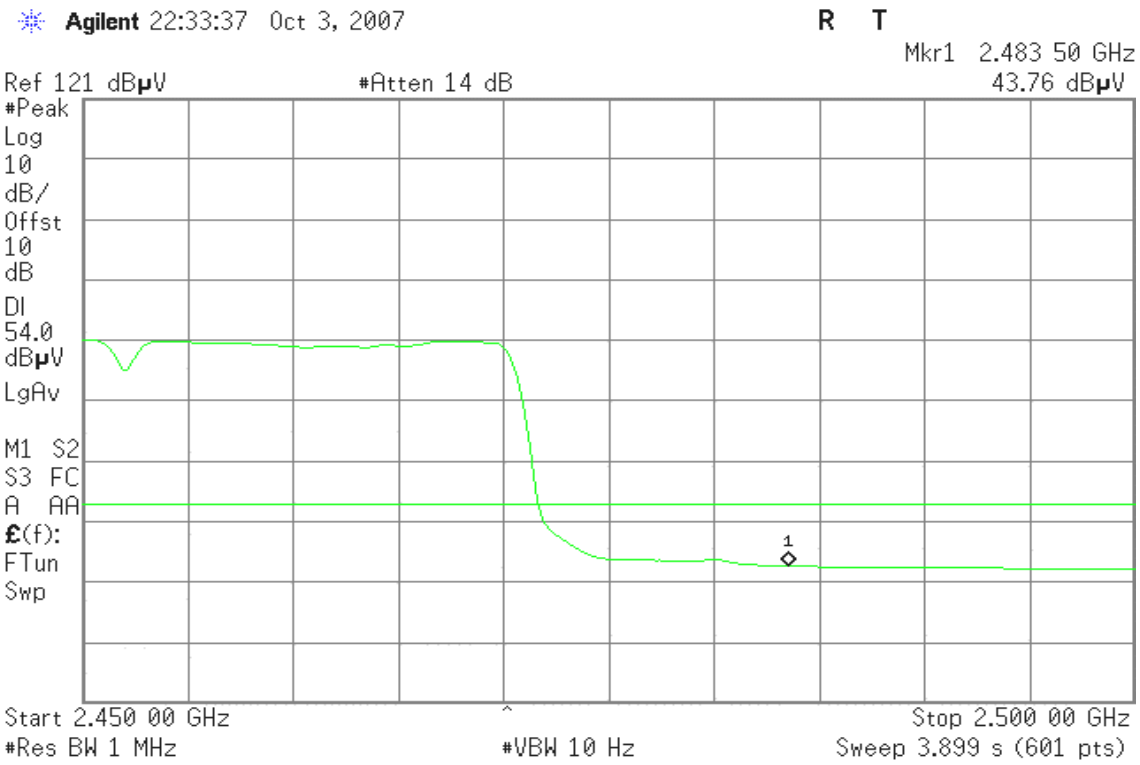
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**



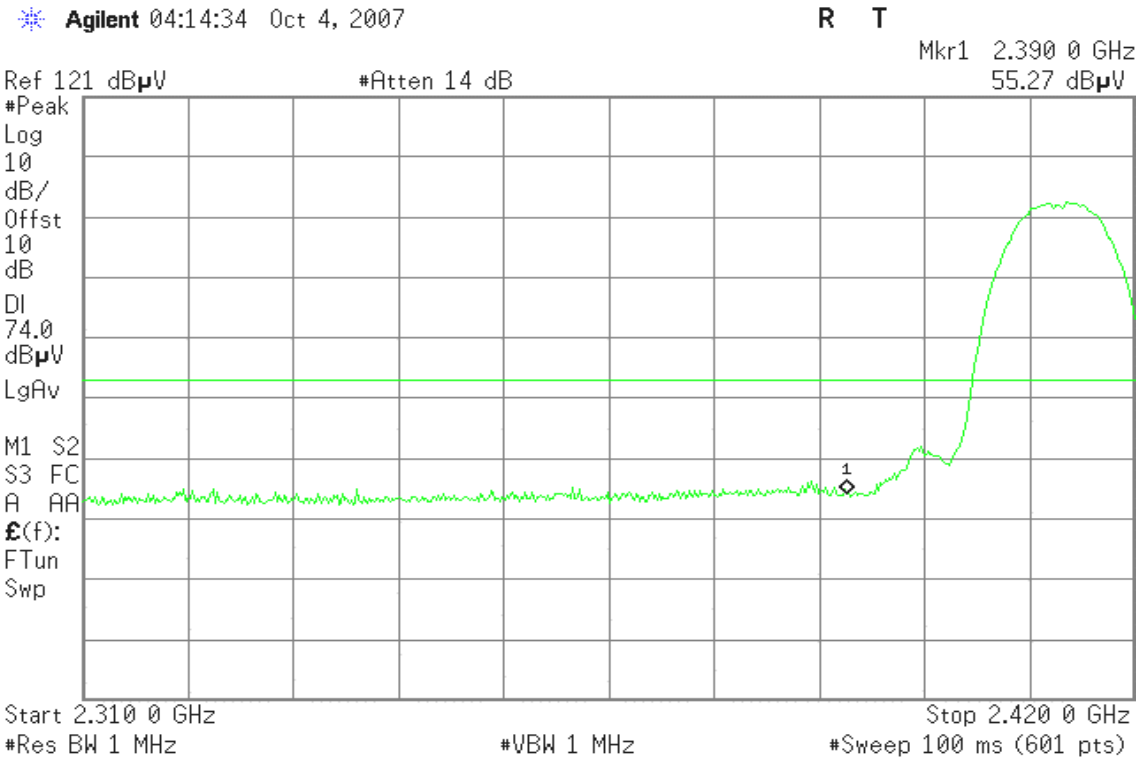
Detector mode: Average **Polarity: Horizontal**



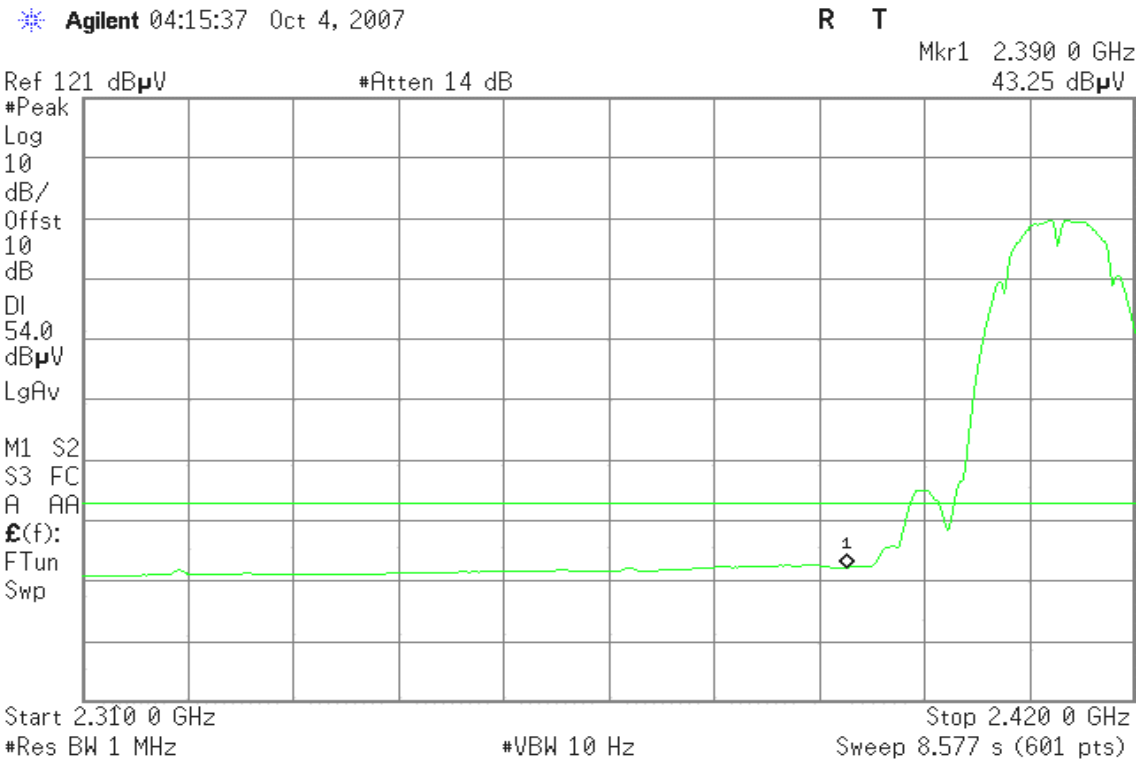
Mode 5

Band Edges (IEEE 802.11b mode / CH Low)

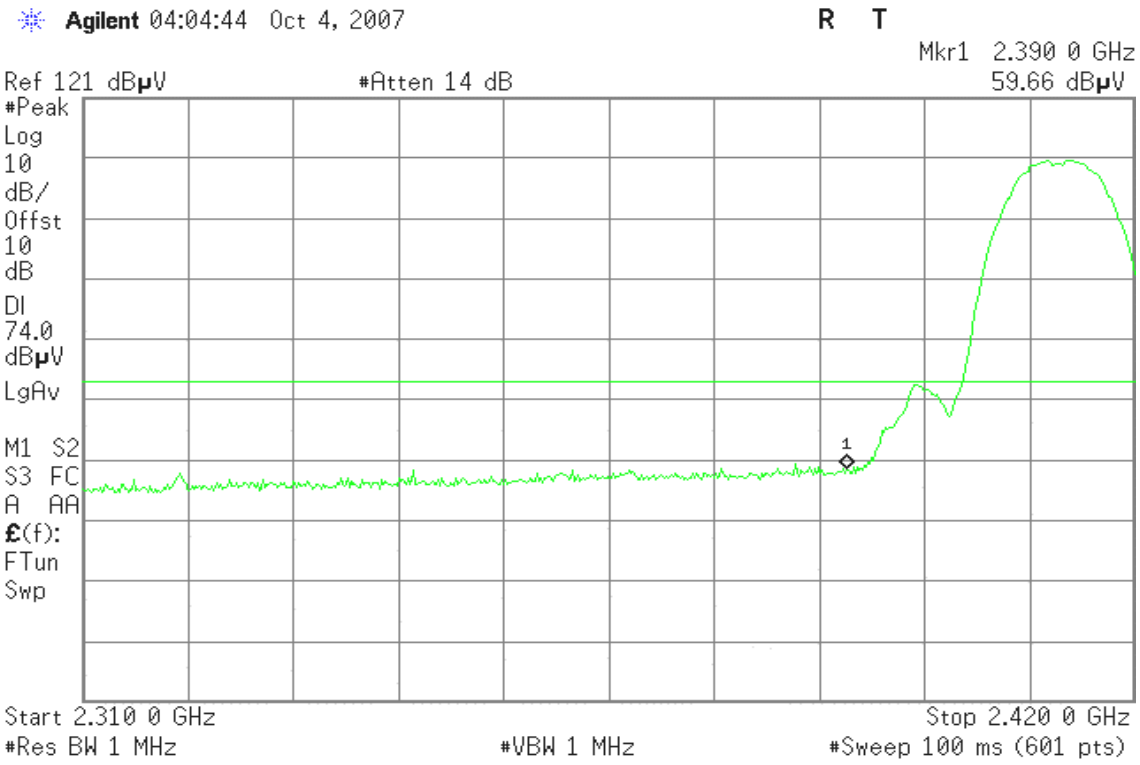
Detector mode: Peak **Polarity: Vertical**



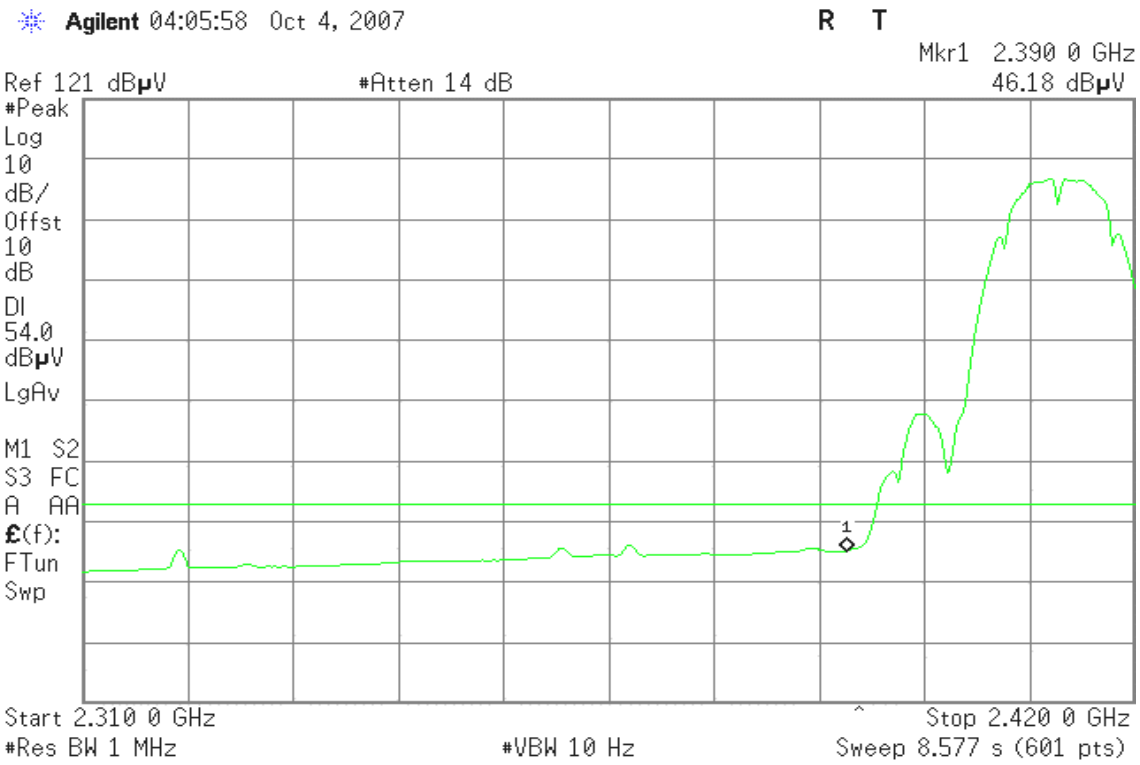
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

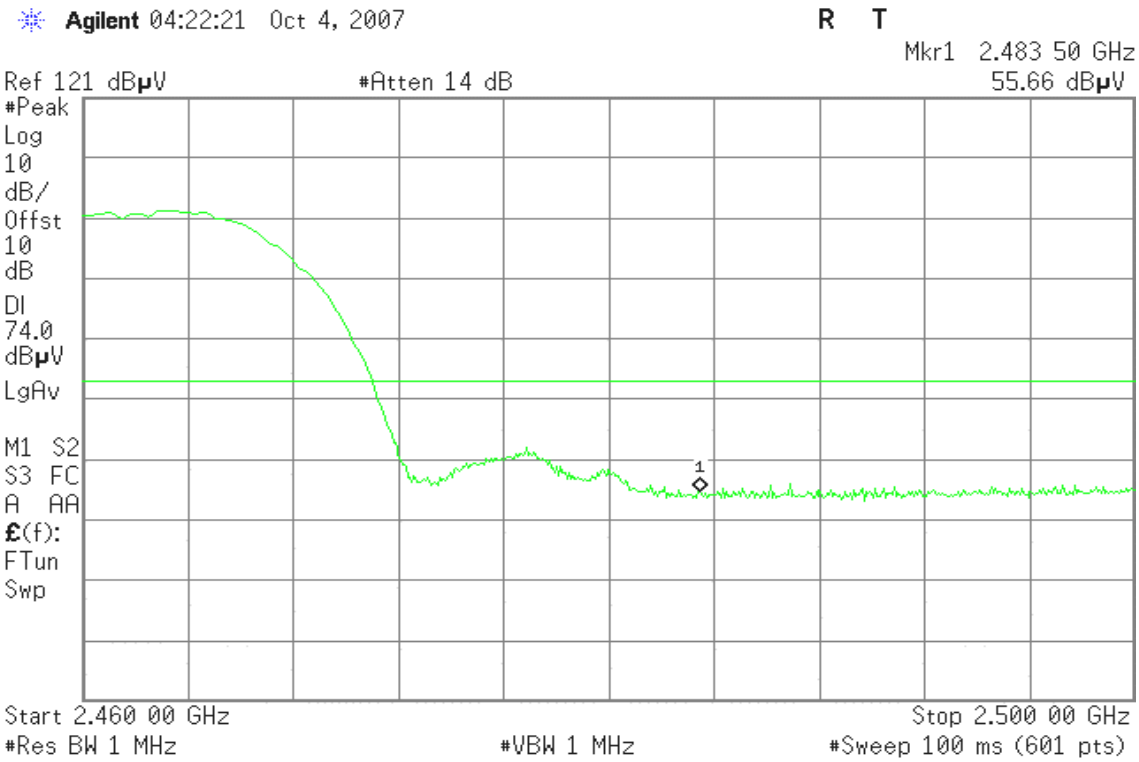


Detector mode: Average **Polarity: Horizontal**

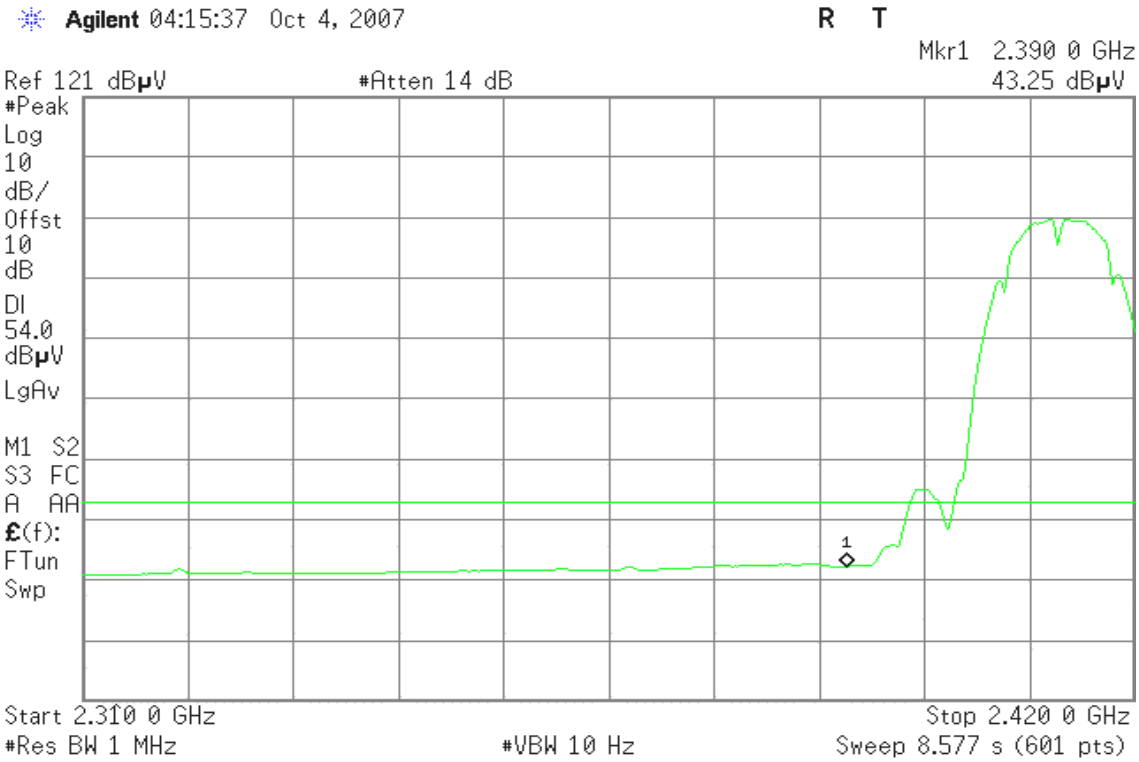


Band Edges (IEEE 802.11b mode / CH High)

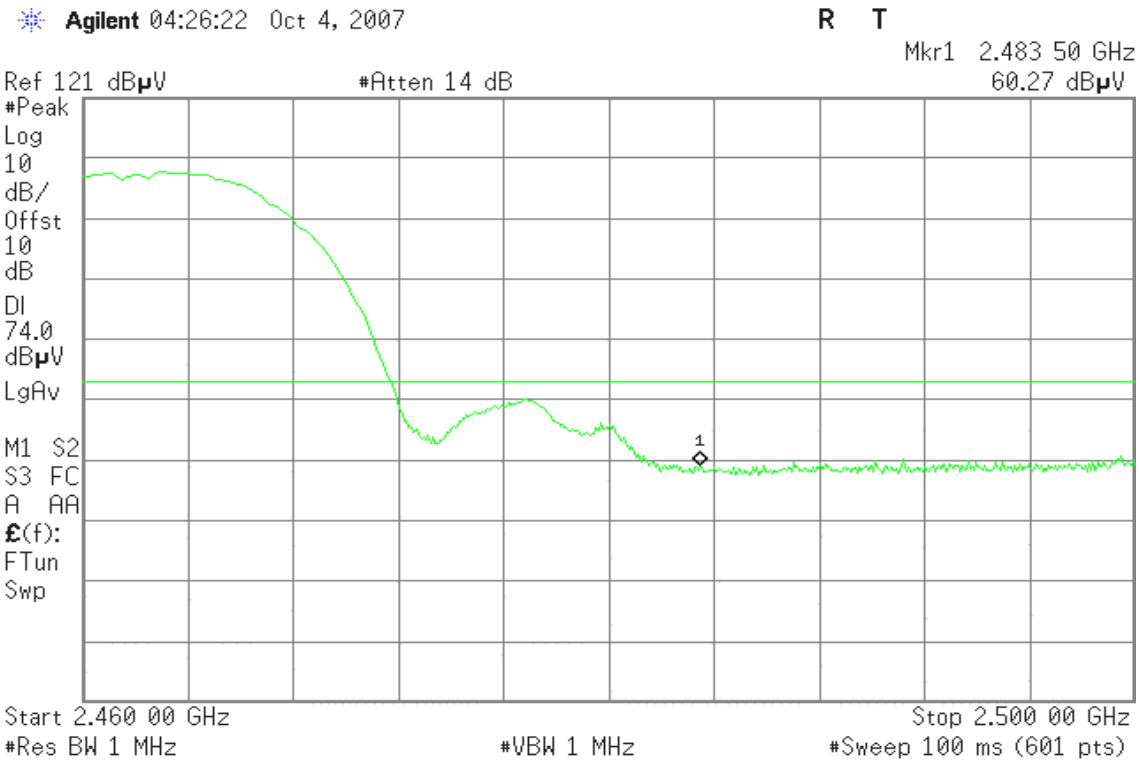
Detector mode: Peak Polarity: Vertical



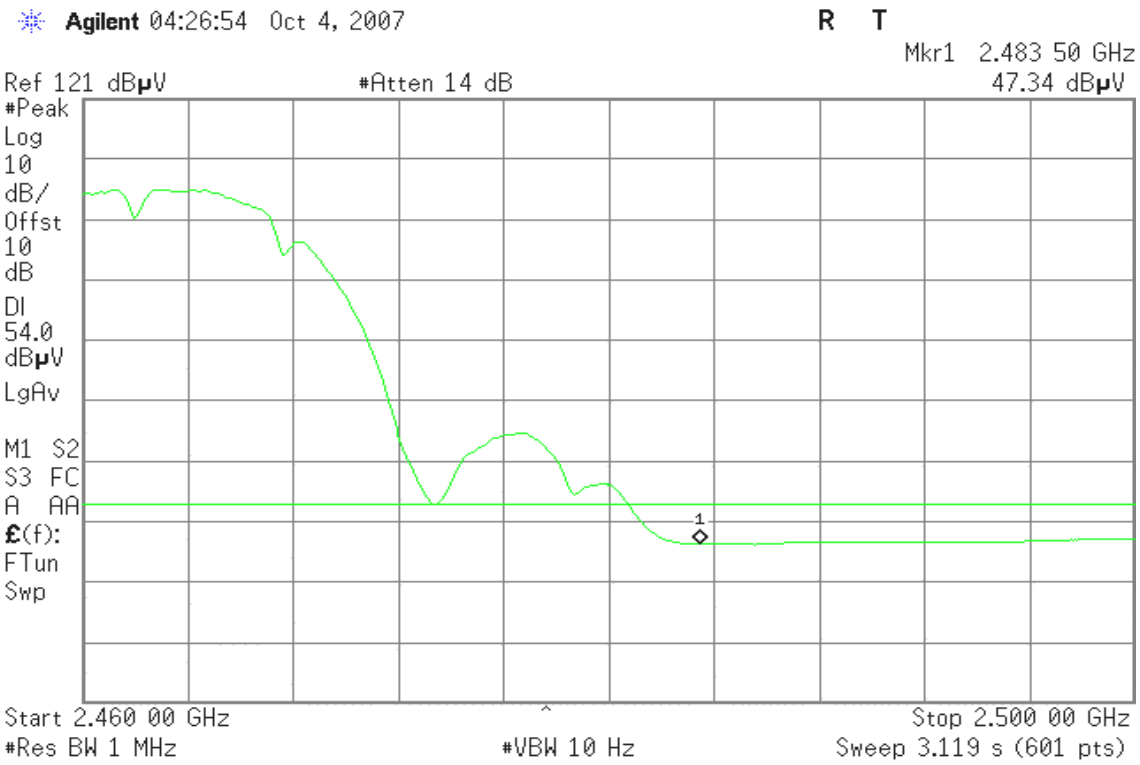
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

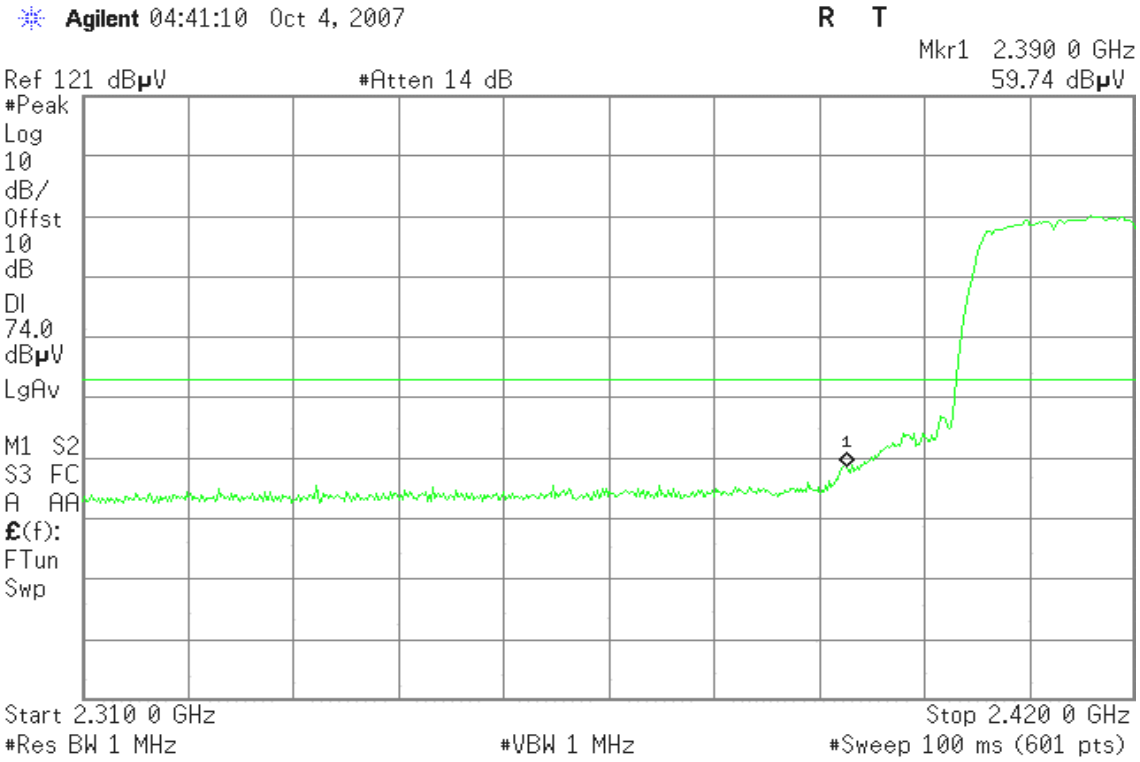


Detector mode: Average **Polarity: Horizontal**

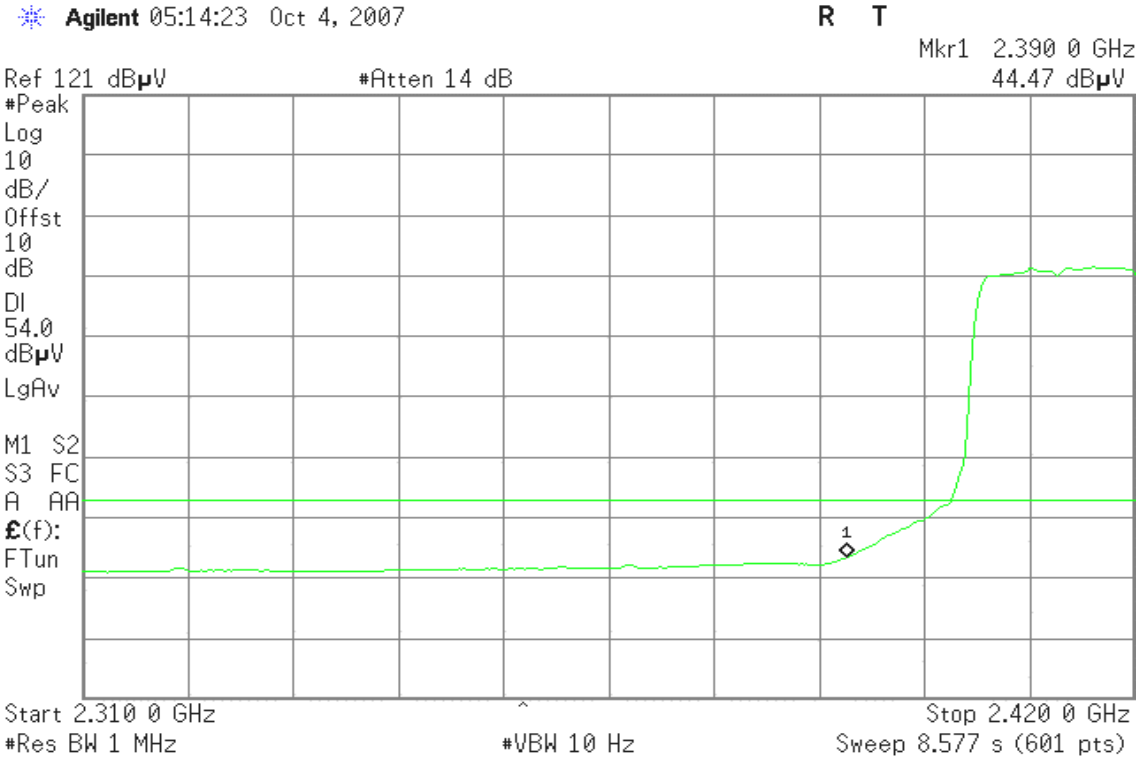


Band Edges (IEEE 802.11g mode / CH Low)

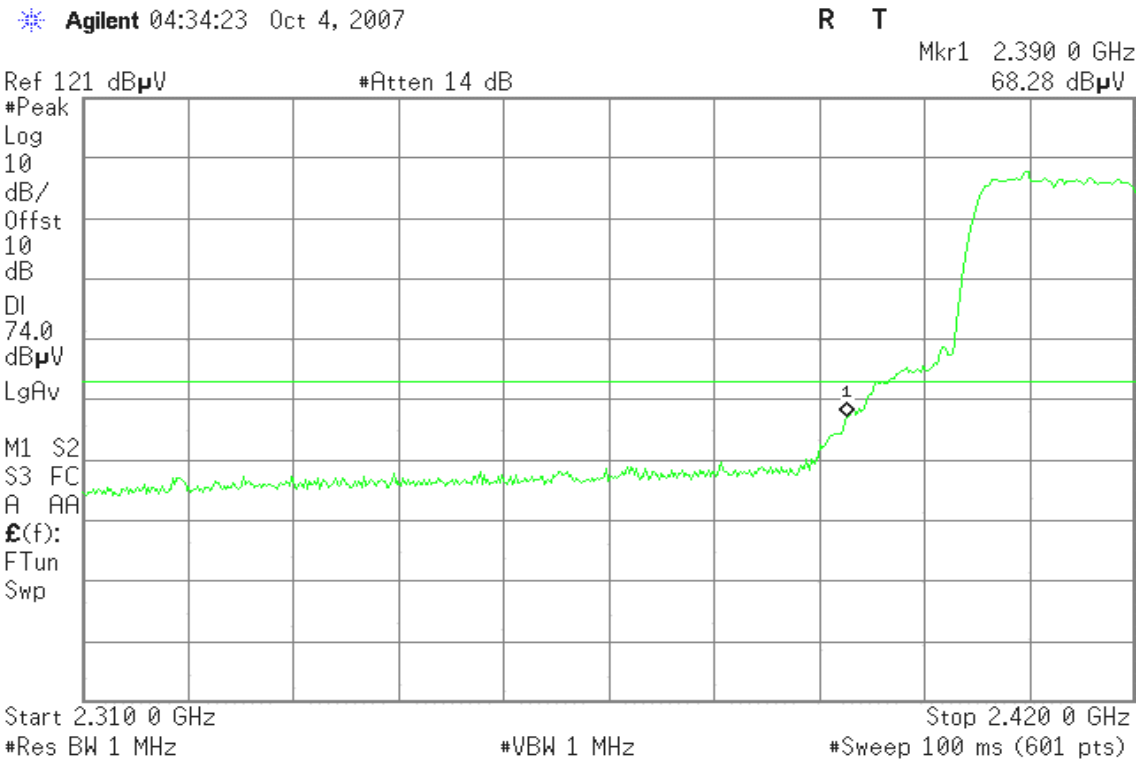
Detector mode: Peak **Polarity: Vertical**



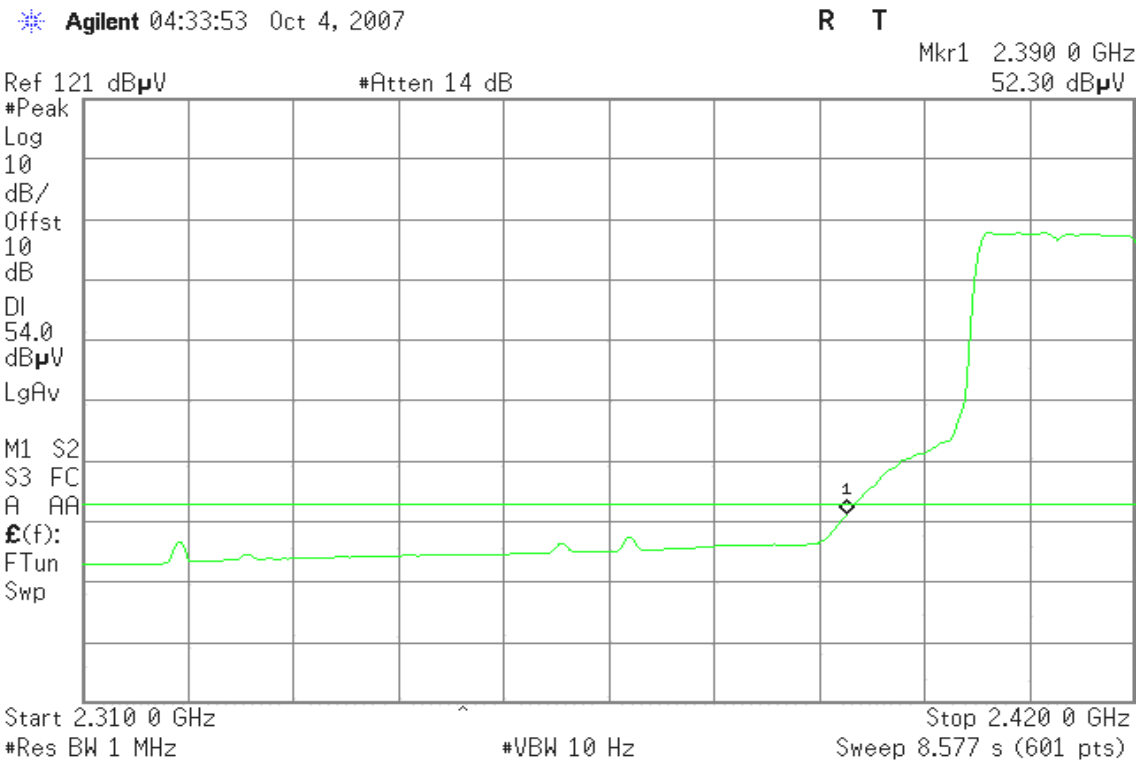
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

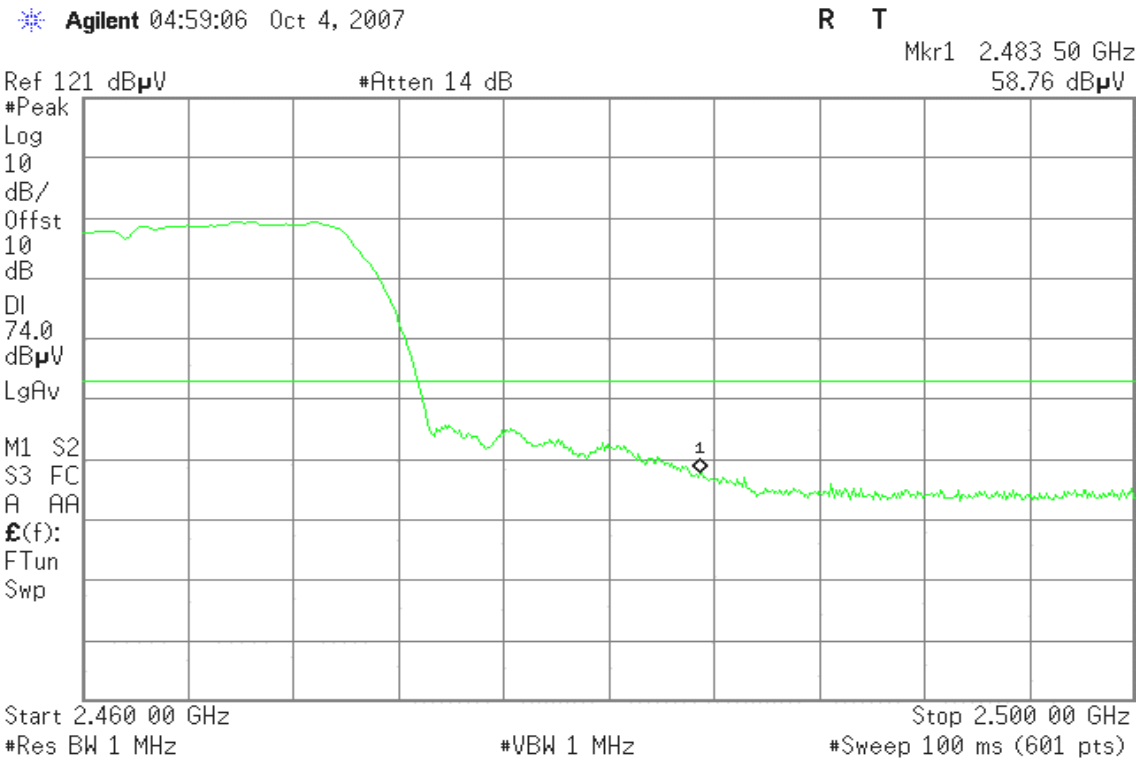


Detector mode: Average **Polarity: Horizontal**

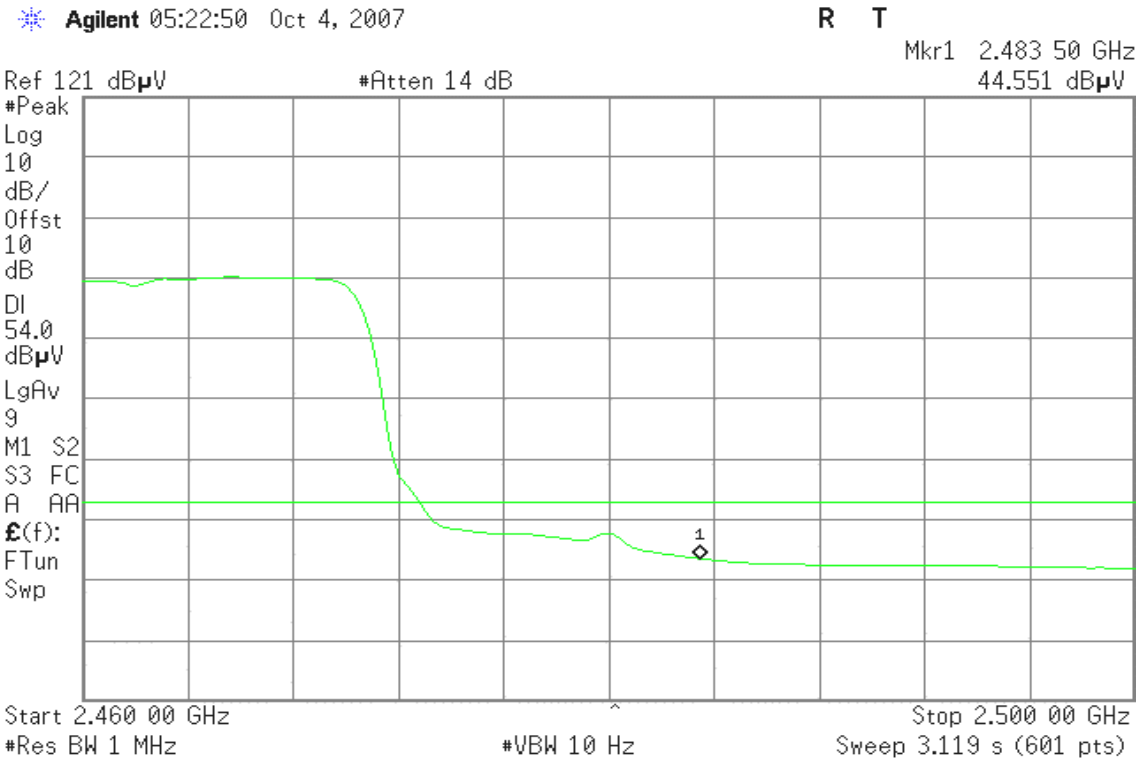


Band Edges (IEEE 802.11g mode / CH High)

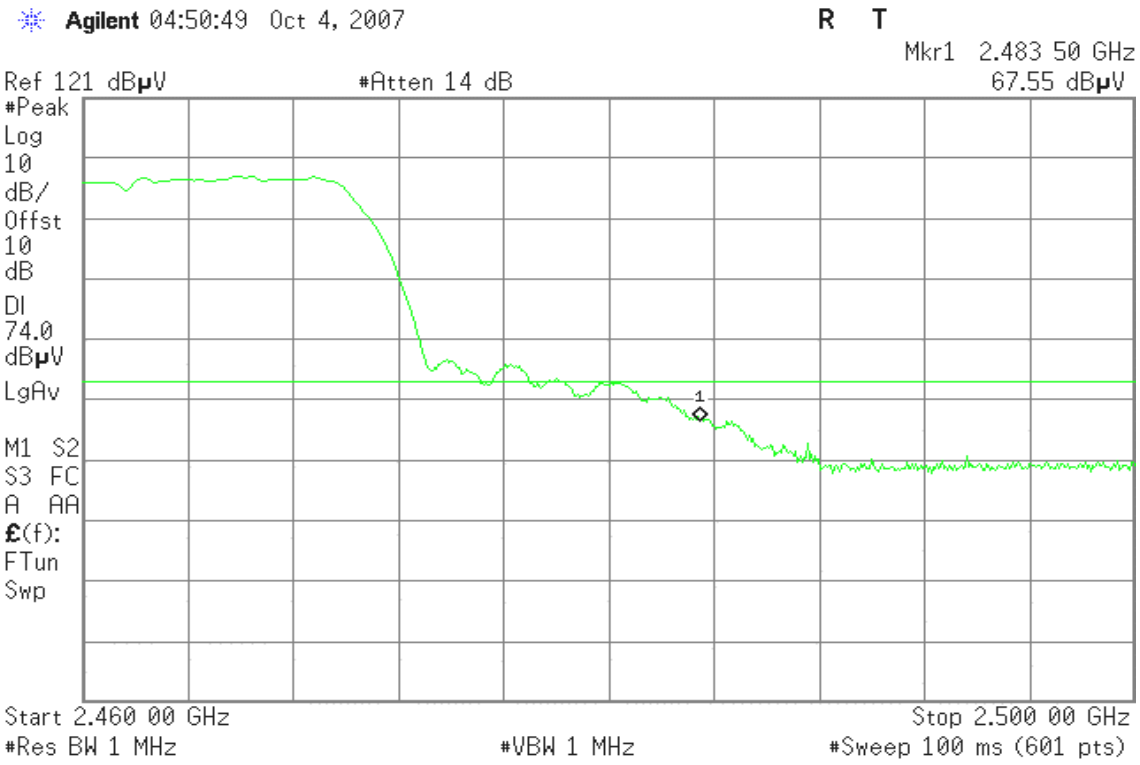
Detector mode: Peak Polarity: Vertical



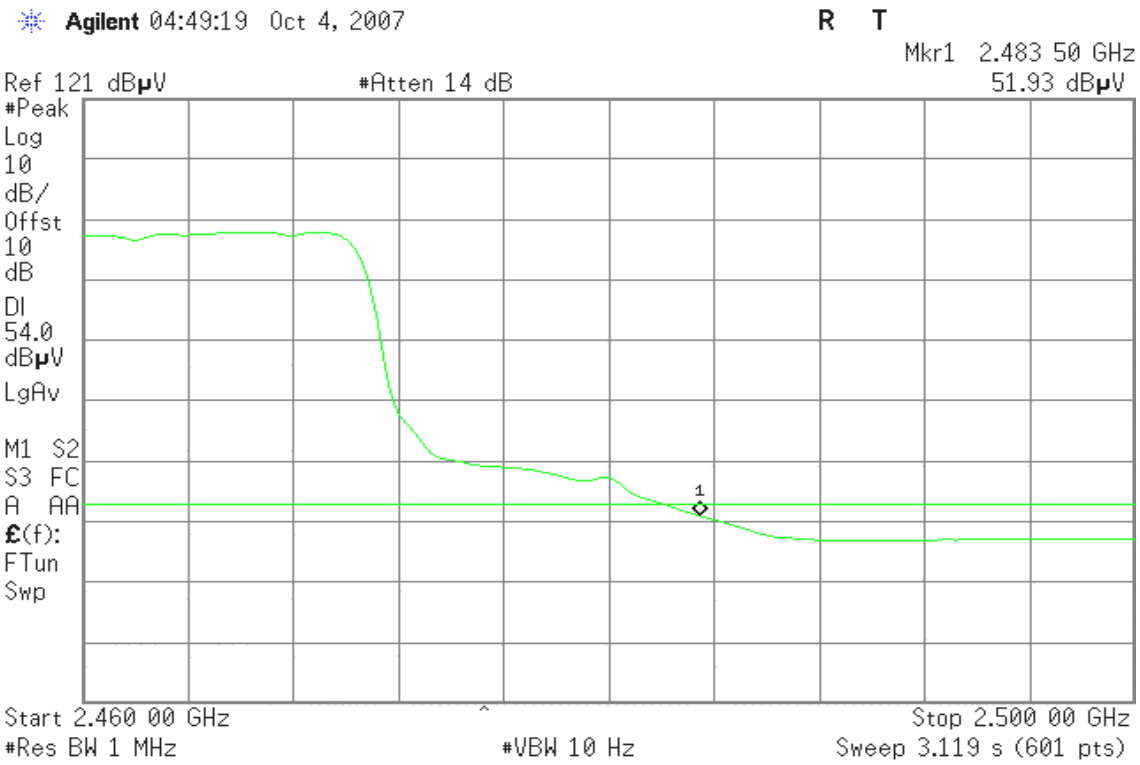
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

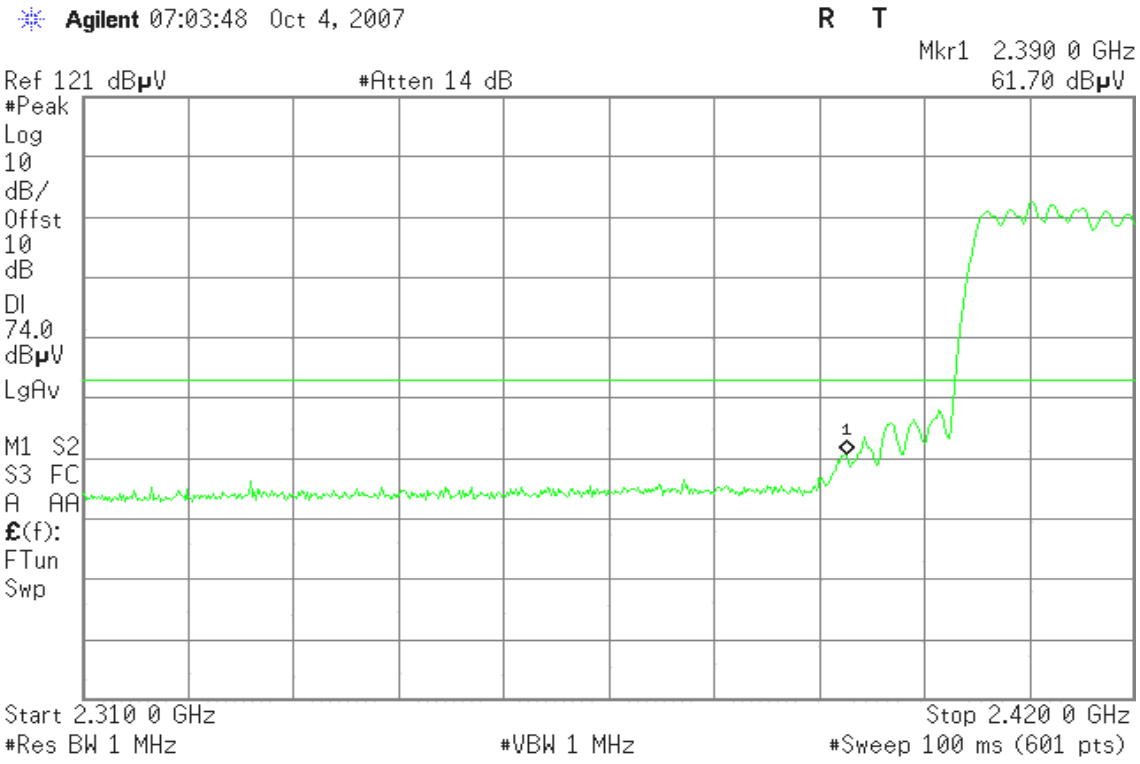


Detector mode: Average **Polarity: Horizontal**

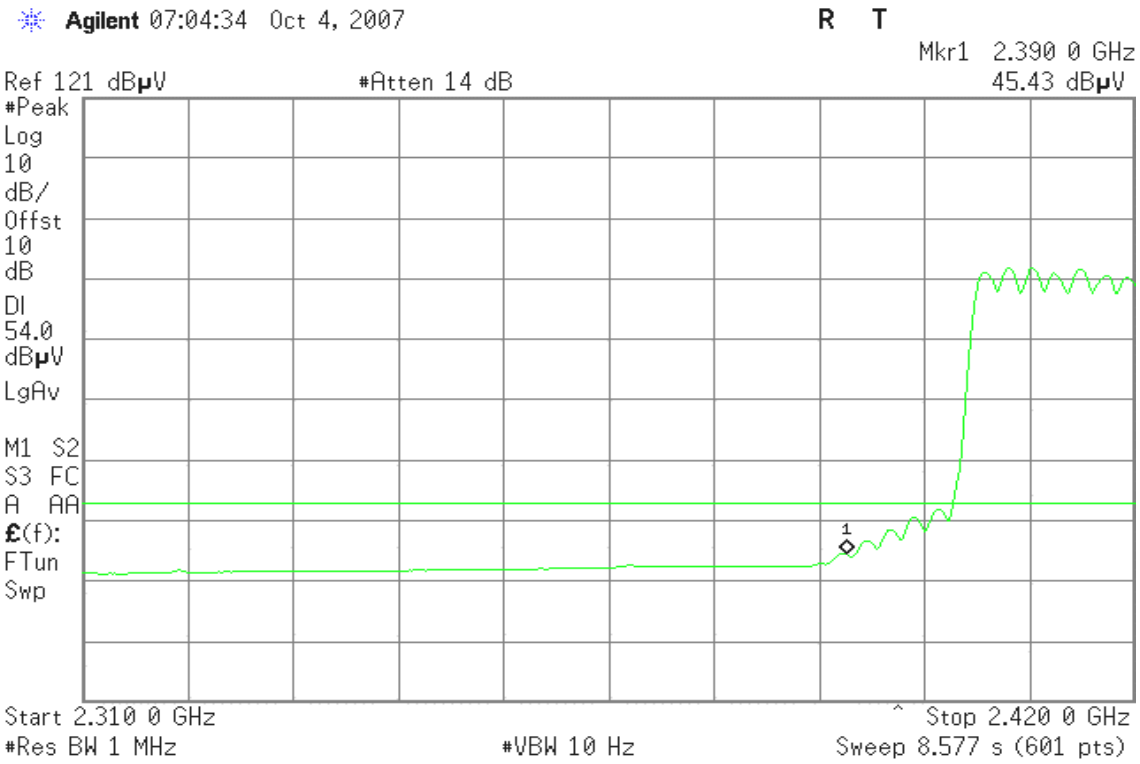


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH Low)

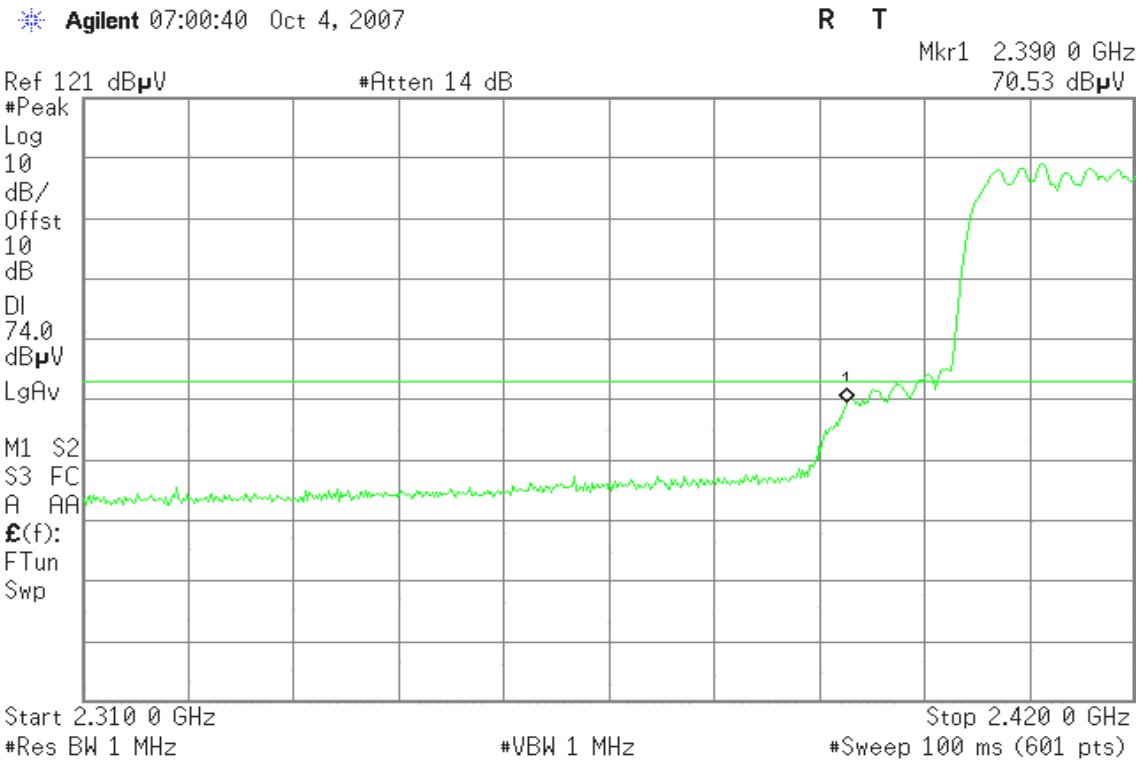
Detector mode: Peak **Polarity: Vertical**



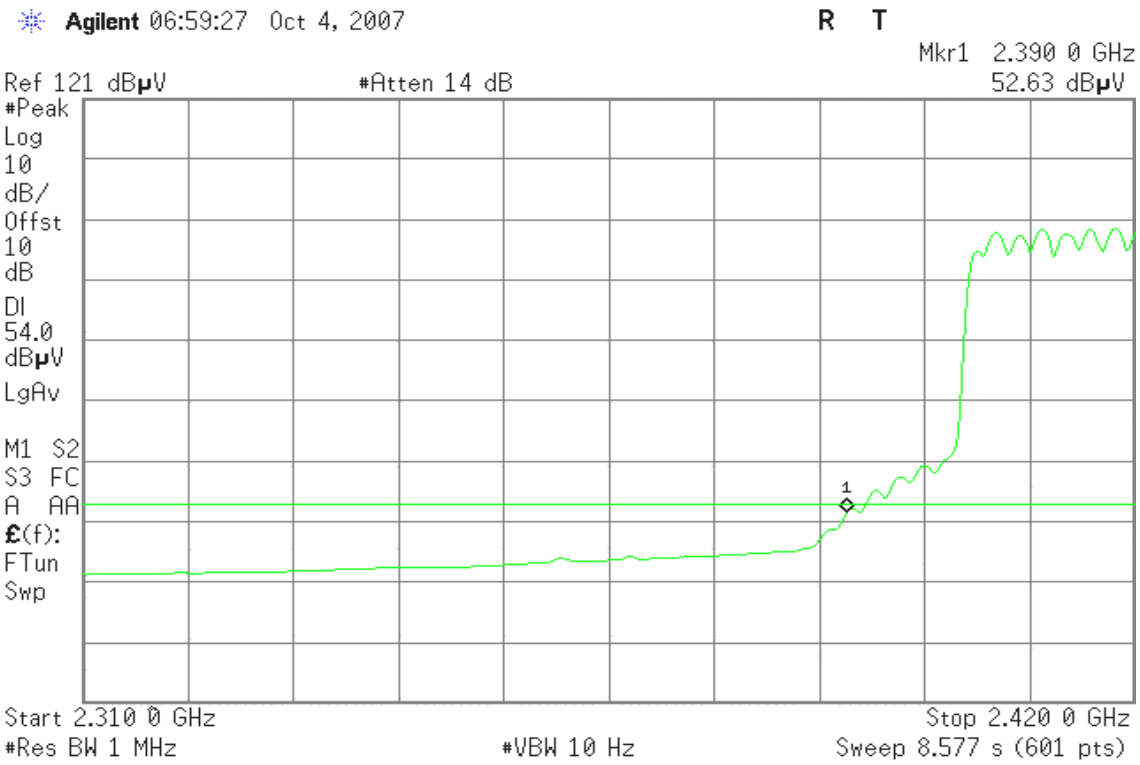
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

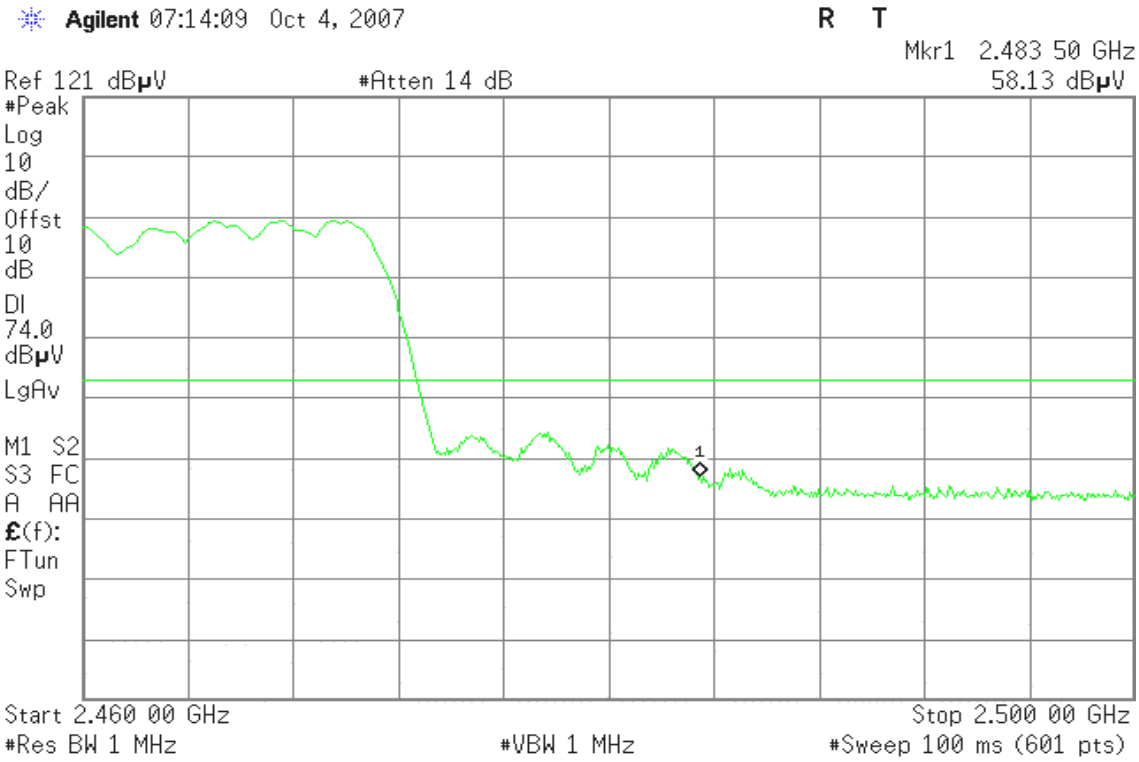


Detector mode: Average **Polarity: Horizontal**

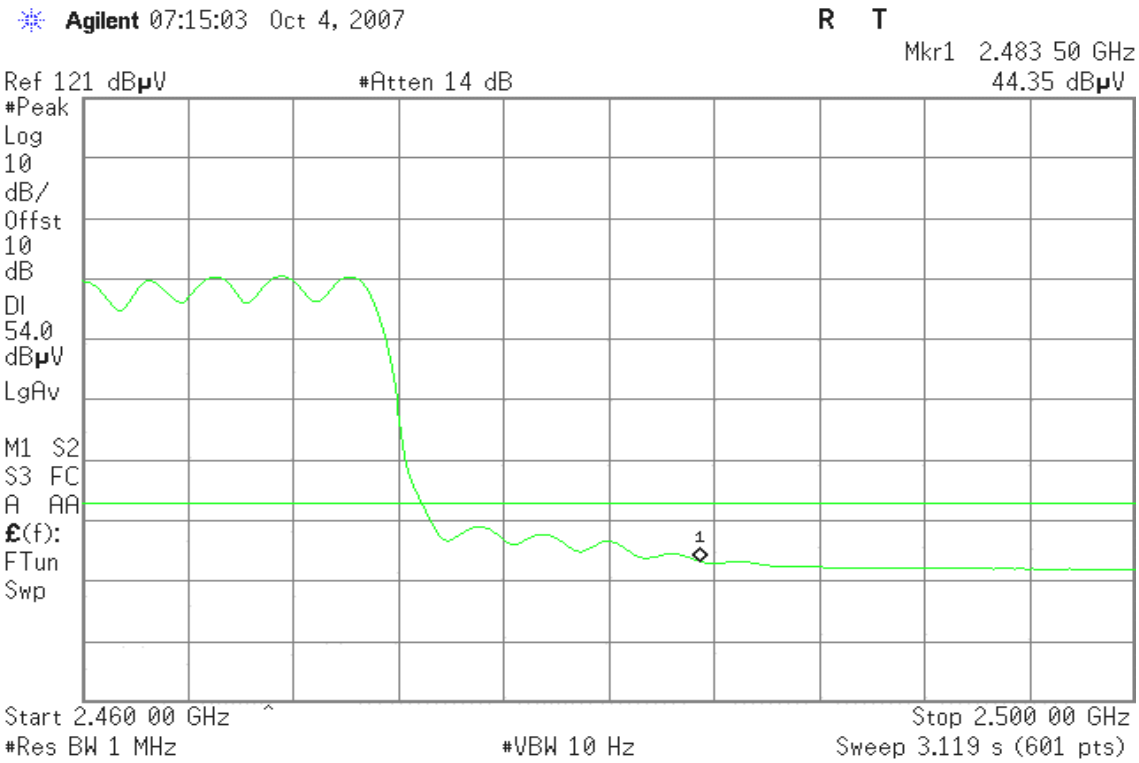


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH High)

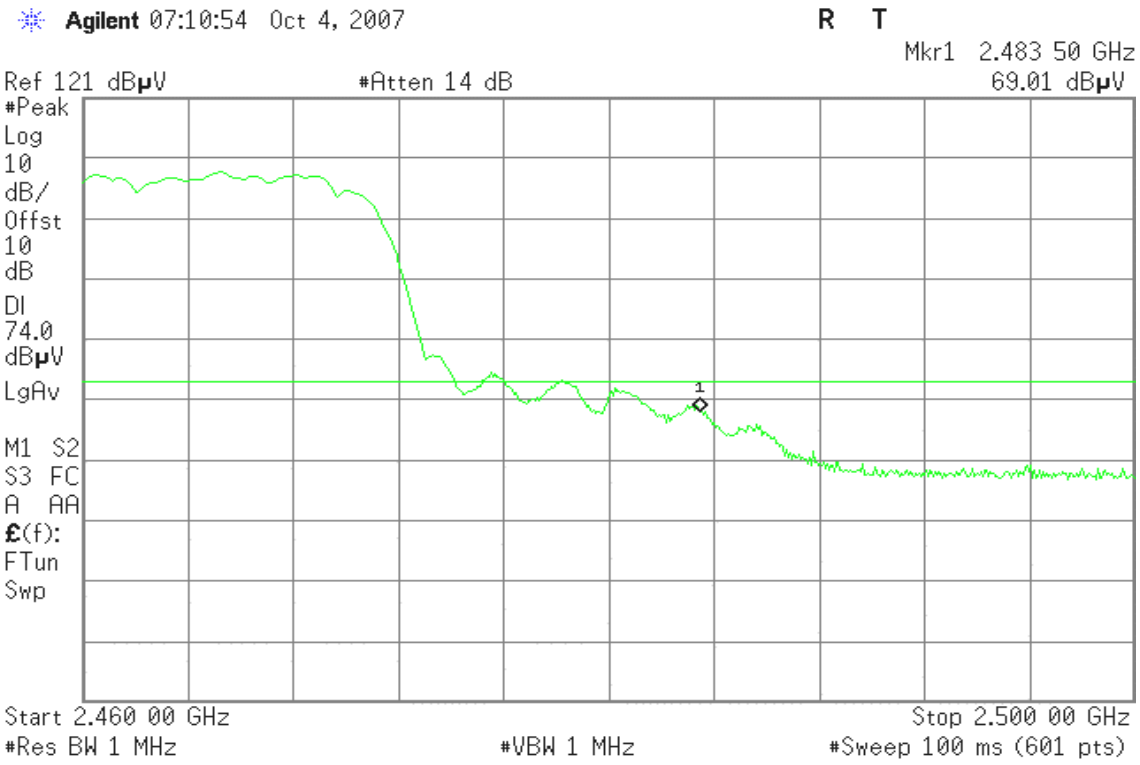
Detector mode: Peak **Polarity: Vertical**



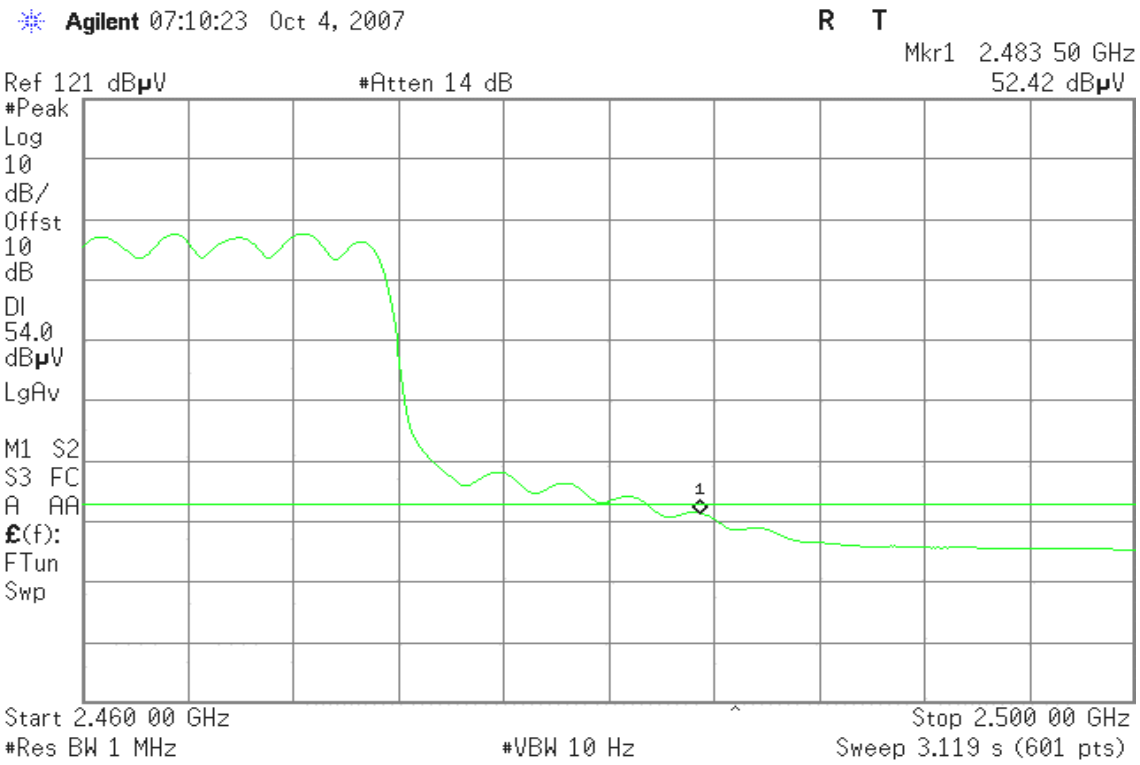
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

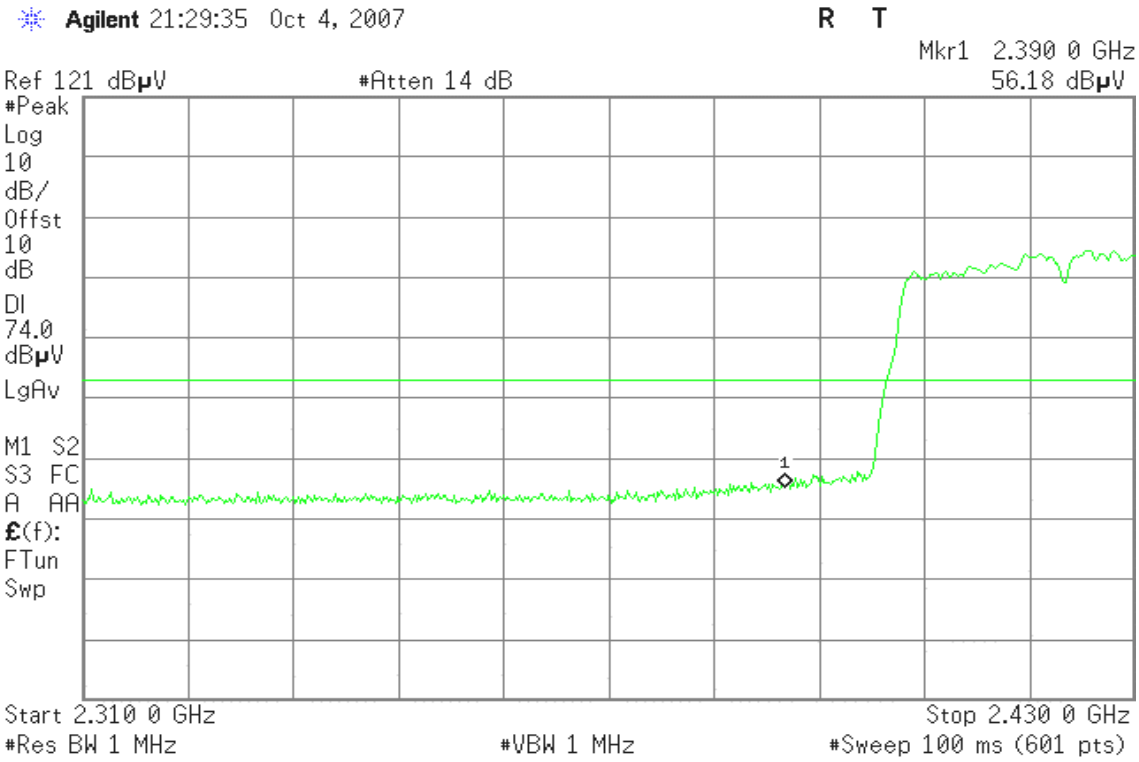


Detector mode: Average **Polarity: Horizontal**

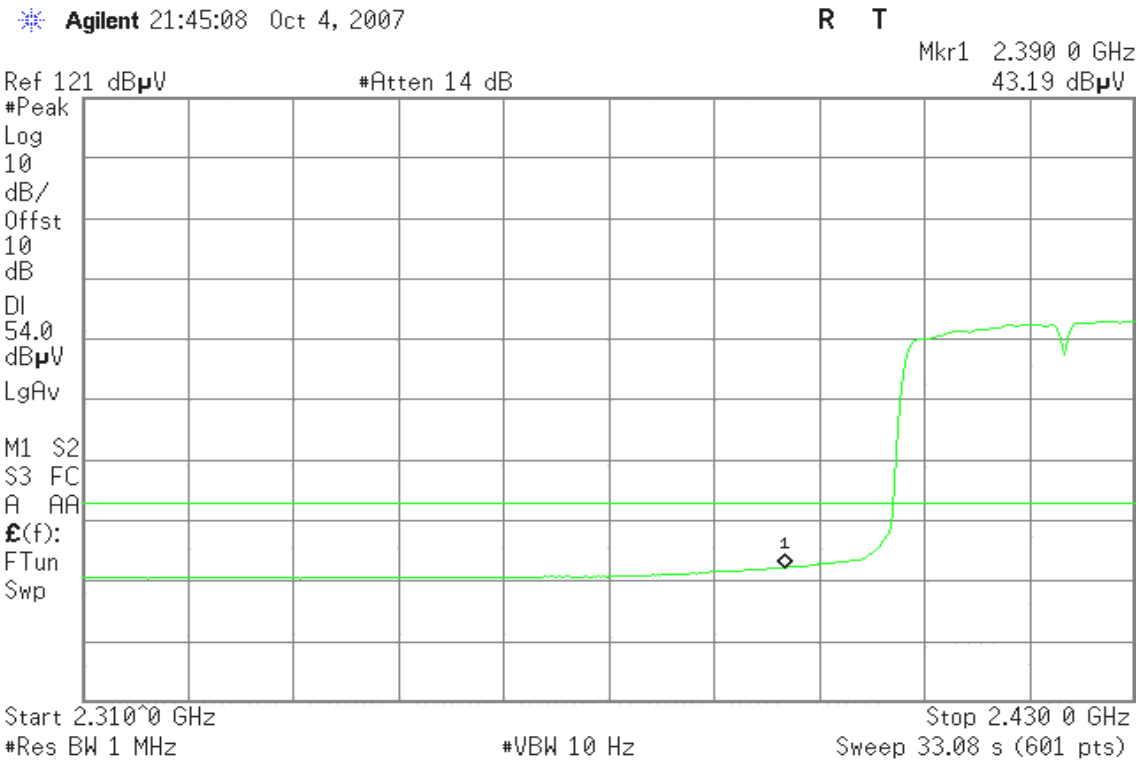


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH Low)

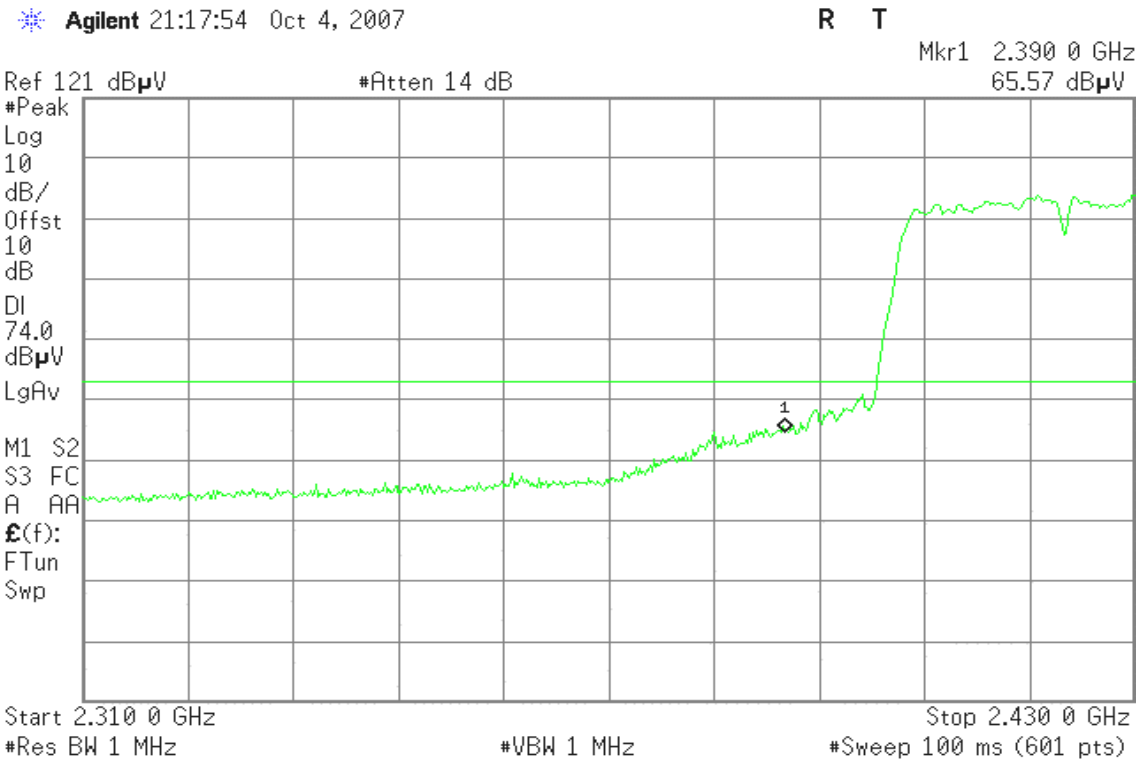
Detector mode: Peak **Polarity: Vertical**



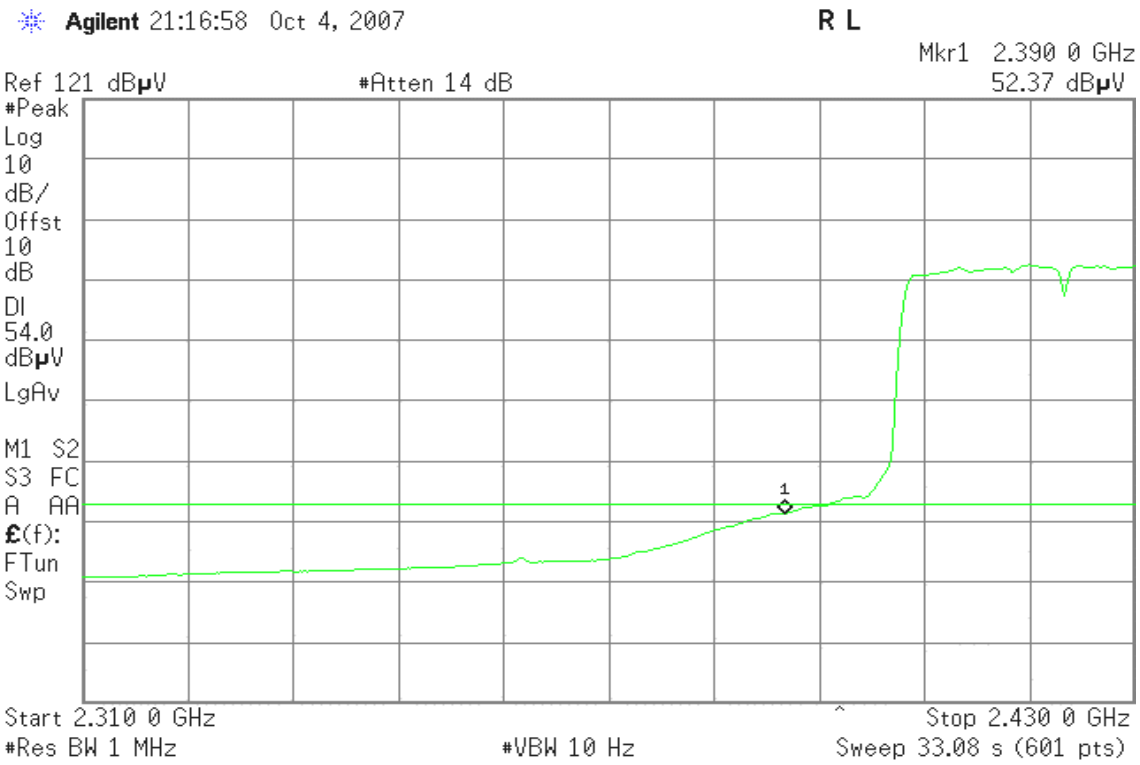
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

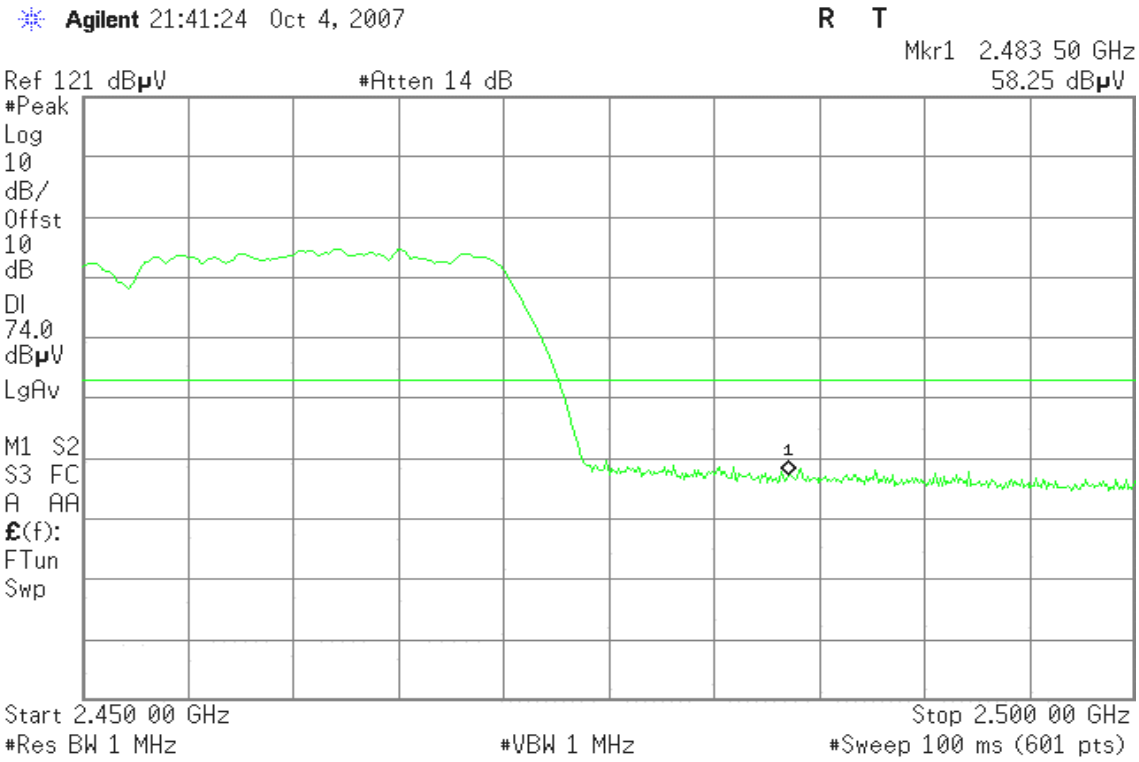


Detector mode: Average **Polarity: Horizontal**

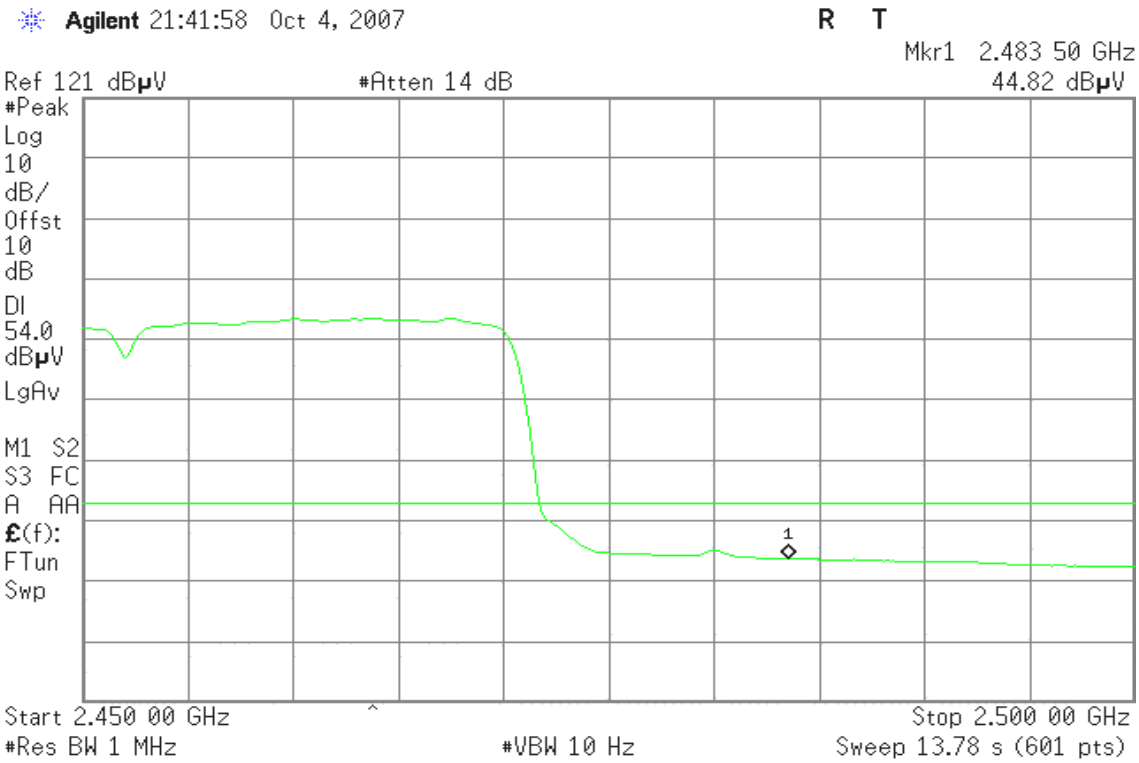


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH High)

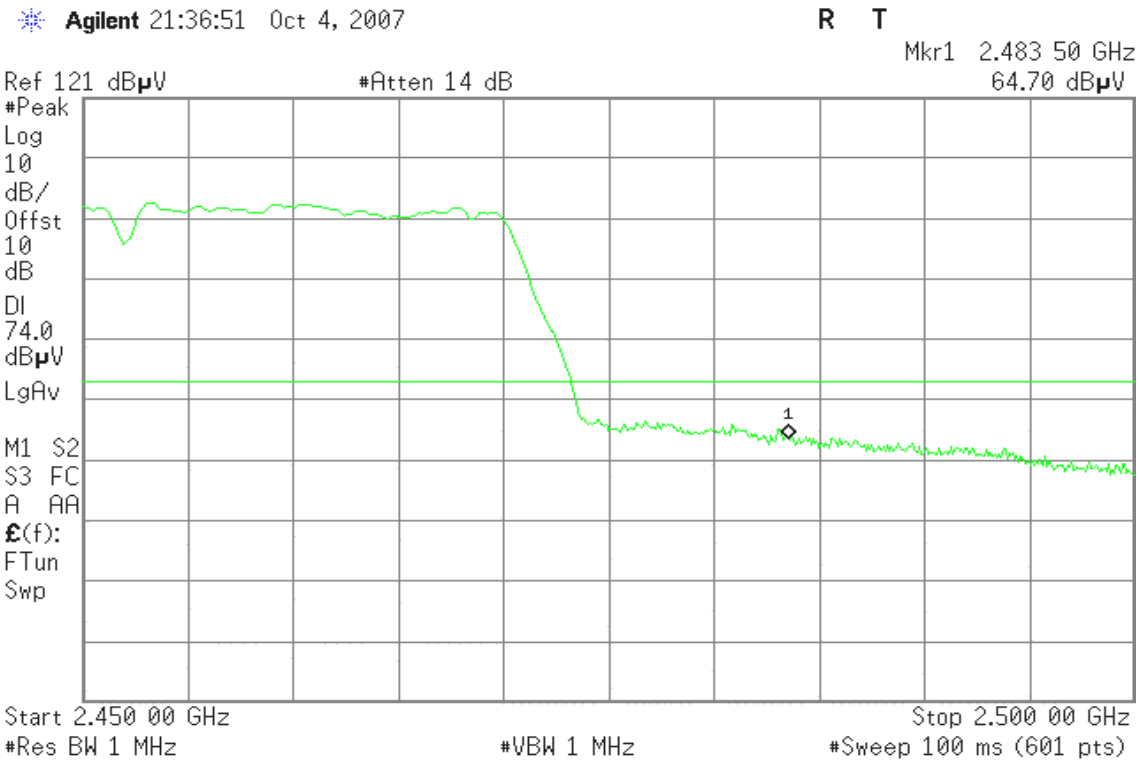
Detector mode: Peak **Polarity: Vertical**



Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**