FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

802.11b/g /n (1*TX+2*RX) USB Dongle

Trade Name / Model:
LanReady / WUB1900R,
AirLink101 / AWLL6077,
Bluestork / BS-WN-USB,
LanReady / AWS1902FR,
LanReady / AWS1905FR,
LanReady / AWM1908FR,
LanReady / AMS1908FR,
LanReady / AWS1910FR,
LanReady / AWM1910PR

Issued to

LanReady Technologies Inc.
3F, No.116, Sinhu 2nd Rd., Neihu District,
Taipei City 114, Taiwan (R.O.C.)

Issued by

Compliance Certification Services Inc.
No. 11, Wu-Gong 6th Rd., Wugu Industrial Park,
Taipei Hsien 248, Taiwan (R.O.C.)
http://www.ccsemc.com.tw
service@tw.ccsemc.com

Testing Laboratory
1309

TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION

Applicant: LanReady Technologies Inc.
3F, No.116, Sinhu 2nd Rd., Neihu District,
Taipei City 114, Taiwan (R.O.C.)

Equipment Under Test: 802.11b/g /n (1*TX+2*RX) USB Dongle

Trade Name / Model Number: LanReady / WUB1900R,
AirLink101 / AWLL6077,
Bluestork / BS-WN-USB,
LanReady / AWS1902FR,
LanReady / AWS1905FR,
LanReady / AWM1908FR,
LanReady / AMS1908FR,
LanReady / AWS1910FR,
LanReady / AWM1910PR

Date of Test: September 26 ~ October 7, 2008

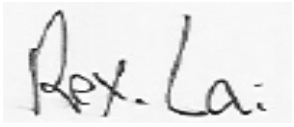
APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

We hereby certify that:

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

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

Approved by:



Rex Lai
Section Manager
Compliance Certification Services Inc.

Reviewed by:

Amanda Wu
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

<table>
<tr><td>Product</td><td>802.11b/g /n (1*TX+2*RX) USB Dongle</td></tr>
<tr><td>Trade Name /
Model Number</td><td>LanReady / WUB1900R,
AirLink101 / AWLL6077,
Bluestork / BS-WN-USB,
LanReady / AWS1902FR,
LanReady / AWS1905FR,
LanReady / AWM1908FR,
LanReady / AMS1908FR,
LanReady / AWS1910FR,
LanReady / AWM1910PR</td></tr>
<tr><td>Model Discrepancy</td><td>
<table>
<tr><th>Trade Name</th><th>Model Number</th><th>Difference</th></tr>
<tr><td>LanReady</td><td>WUB1900R</td><td>PCB Antenna</td></tr>
<tr><td>AirLink101</td><td>AWLL6077</td><td>PCB Antenna</td></tr>
<tr><td>Bluestork</td><td>BS-WN-USB</td><td>PCB Antenna</td></tr>
<tr><td>LanReady</td><td>AWS1902FR</td><td>USB extend Cable + Dongle
+2.52dBi Omni Antenna</td></tr>
<tr><td>LanReady</td><td>AWS1905FR</td><td>USB extend Cable + Dongle
+5.02dBi Omni Antenna</td></tr>
<tr><td>LanReady</td><td>AWM1908FR</td><td>USB extend Cable + Dongle
+7.04dBi Omni Antenna</td></tr>
<tr><td>LanReady</td><td>AMS1908FR</td><td>USB extend Cable + Dongle
+7.04dBi Omni Antenna</td></tr>
<tr><td>LanReady</td><td>AWS1910FR</td><td>USB extend Cable + Dongle
+9.09dBi Omni Antenna</td></tr>
<tr><td>LanReady</td><td>AWM1910PR</td><td>USB extend Cable + Dongle
+9.12dBi Patch Antenna</td></tr>
</table>
</td></tr>
<tr><td>Power Supply</td><td>Powered from host device.</td></tr>
<tr><td>Frequency Range</td><td>2412 ~ 2462 MHz</td></tr>
<tr><td>Transmit Power</td><td>PCB Antenna / Gain: 1 dBi
IEEE 802.11b mode: 19.22 dBm
IEEE 802.11g mode: 19.91dBm
draft 802.11n Standard-20 MHz Channel mode: 19.66 dBm
draft 802.11n Wide-40 MHz Channel mode: 17.80 dBm
Patch Antenna / Gain: 9.12 dBi
IEEE 802.11b mode: 13.78 dBm
IEEE 802.11g mode: 14.03 dBm
draft 802.11n Standard-20 MHz Channel mode: 13.32 dBm
draft 802.11n Wide-40 MHz Channel mode: 14.31 dBm</td></tr>
</table>

Modulation Technique	IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mpbs) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mpbs) 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	1. PCB Antenna / Gain: 1 dBi 2. Patch Antenna / Gain: 9.12 dBi 3. Dipole Antenna / Gain: 9.09 dBi 4. Dipole Antenna / Gain: 7.04 dBi 5. Dipole Antenna / Gain: 7.04 dBi 6. Dipole Antenna / Gain: 5.02 dBi 7. Dipole Antenna / Gain: 2.52dBi

Remark:

1. *The sample selected for test was production product and was provided by manufacturer.*
2. *This submittal(s) (test report) is intended for FCC ID: **SCD030009** 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: WUB1900R, AWS1910FR, AWM1910PR) had been tested under operating condition.

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	02/24/2009

3M Semi Anechoic Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	09/10/2009
Test Receiver	Rohde&Schwarz	ESCI	100064	11/13/2008
Switch Controller	TRC	Switch Controller	SC94050010	05/03/2009
4 Port Switch	TRC	4 Port Switch	SC94050020	05/03/2009
Horn Antenna	EMCO	3115	9903-5761	01/11/2009
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/28/2009
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 MRA: TW1039 IC: 2324G-1/-2	10/17/2010 11/04/2010
Test S/W	LABVIEW (V 6.1)			

Remark: *The measurement uncertainty is less than +/- 3.7046dB (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	11/19/2009
TWO-LINE V-NETWORK 9kHz-30MHz	SCHAFFNER	NNB41	03/10013	06/11/2009
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	04/09/2009
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.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan

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

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	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1309) to perform FCC Part 15/18 measurements	FCC MRA: TW1309
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method –47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	IC 2324G-1 IC 2324G-2

** 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	DELL	PP05L	7T390 A03	E2K5HCKT	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2.	Super a/g 108Mbps Wireless Lan Router (Remote)	PLANEX	BLW-04SAG	40DDA0421	SJ9-BLW54SAG	N/A	Unshielded, 1.8m

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.*

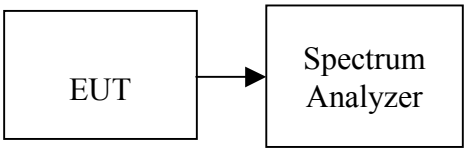
7. FCC PART 15.247 REQUIREMENTS

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

PCB Antenna / Gain: 1 dBi

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	9.92	>500	PASS
Mid	2437	9.08		PASS
High	2462	8.42		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.50	>500	PASS
Mid	2437	16.50		PASS
High	2462	16.50		PASS

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

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	17.67	>500	PASS
Mid	2437	17.67		PASS
High	2462	17.75		PASS

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

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	36.42	>500	PASS
Mid	2437	36.50		PASS
High	2452	36.42		PASS

Patch Antenna / Gain: 9.12 dBi, Dipole Antenna / Gain: 9.09 dBi

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	8.42	>500	PASS
Mid	2437	8.00		PASS
High	2462	9.83		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.50	>500	PASS
Mid	2437	16.33		PASS
High	2462	16.50		PASS

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

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	17.67	>500	PASS
Mid	2437	17.67		PASS
High	2462	17.67		PASS

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

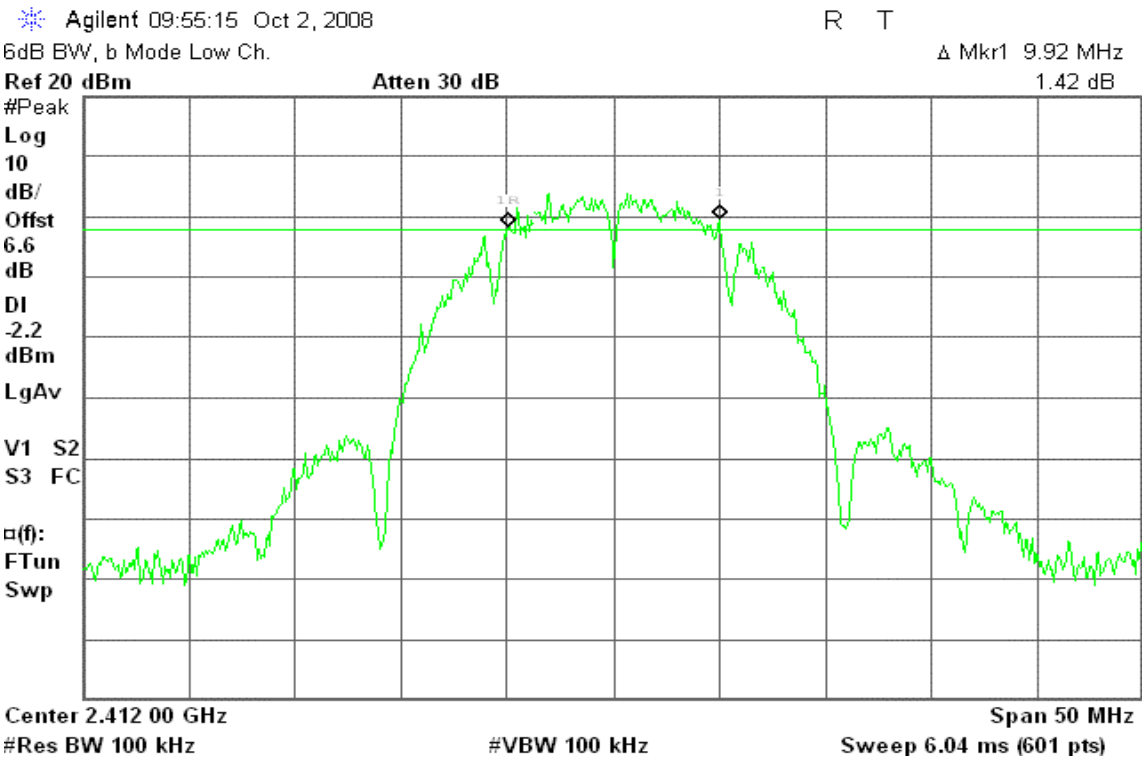
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	36.50	>500	PASS
Mid	2437	36.50		PASS
High	2452	34.42		PASS

Test Plot

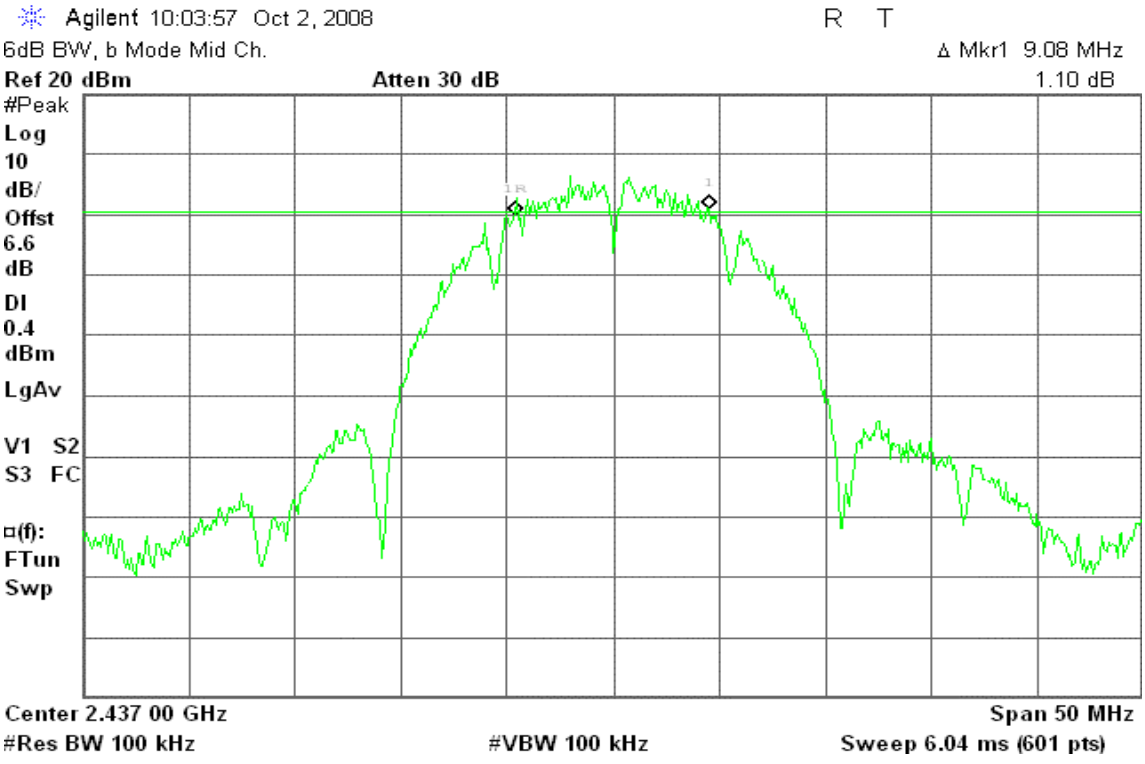
PCB Antenna / Gain: 1 dBi

IEEE 802.11b mode

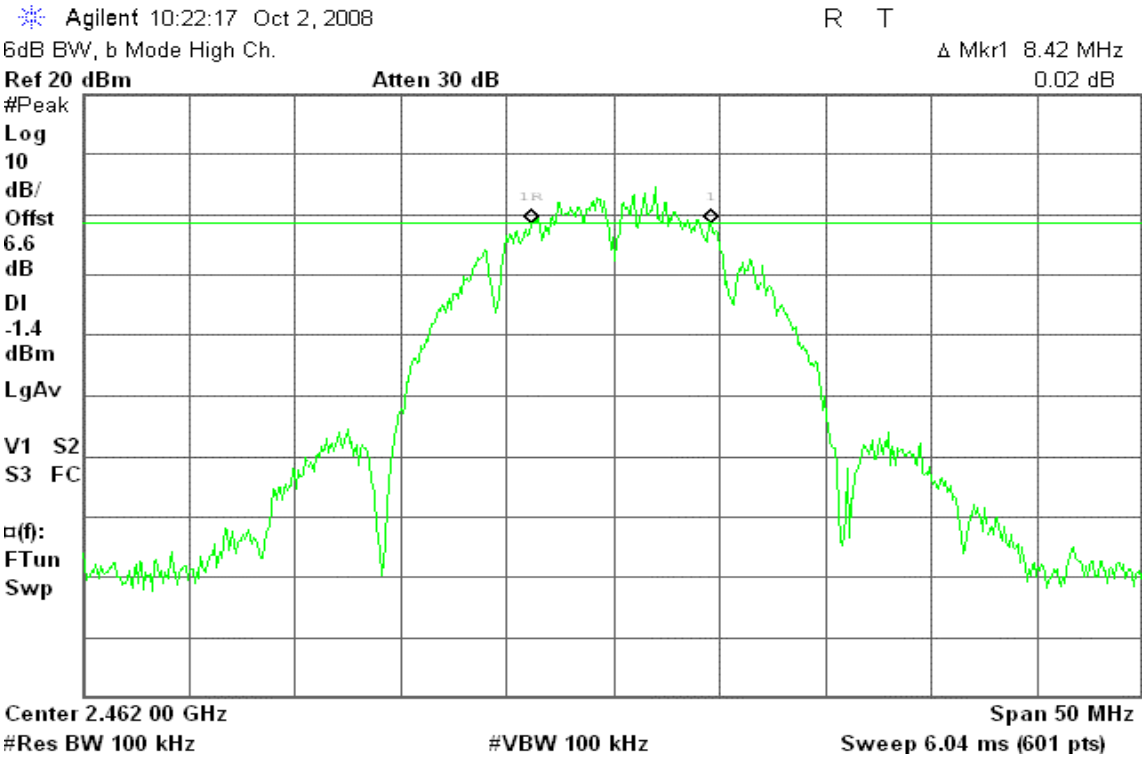
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

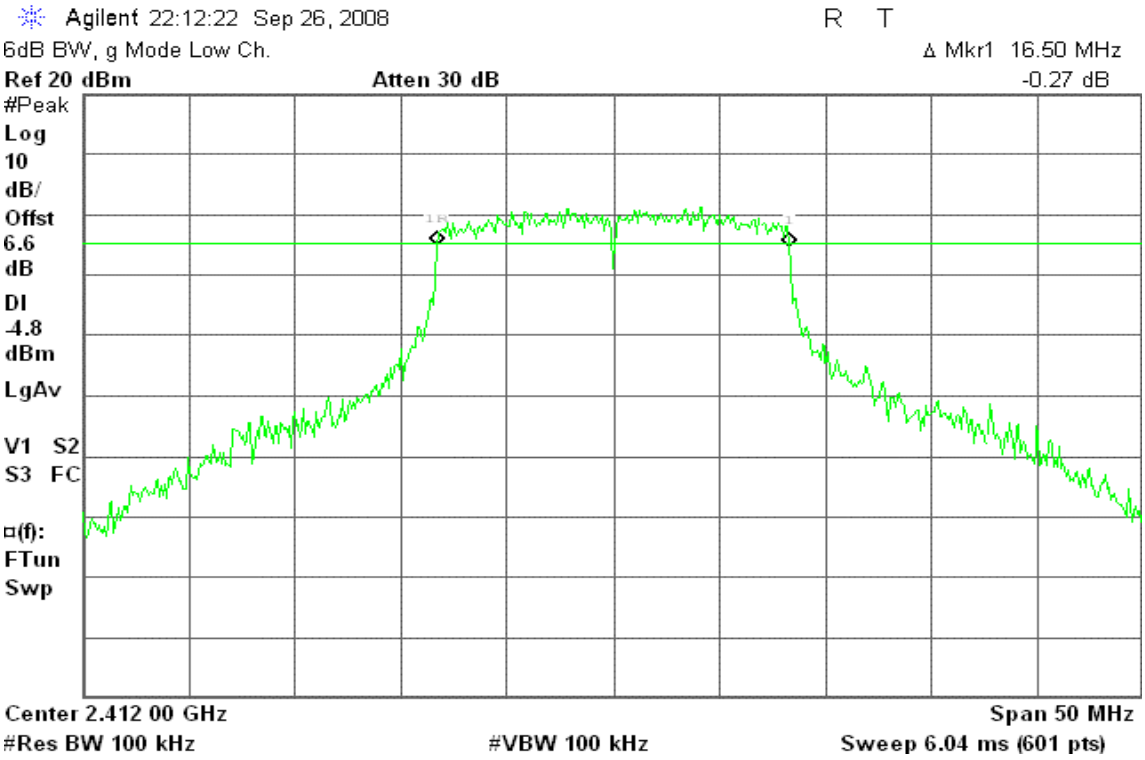


6dB Bandwidth (CH High)

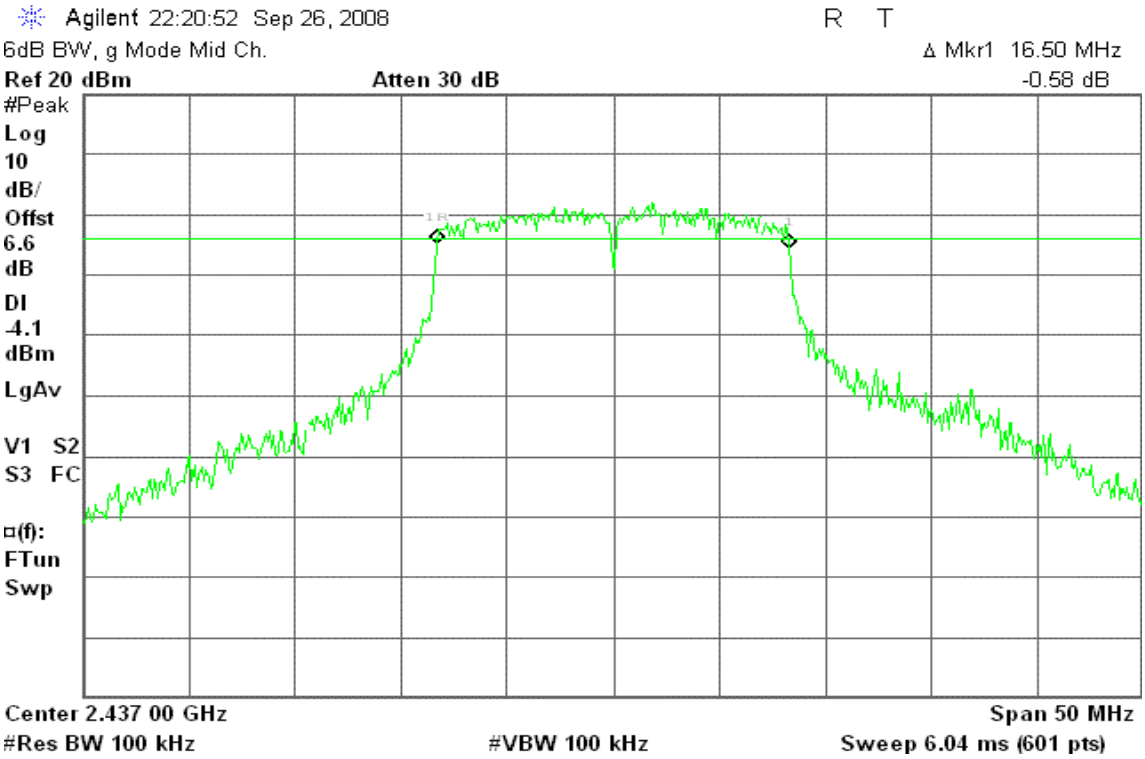


IEEE 802.11g mode

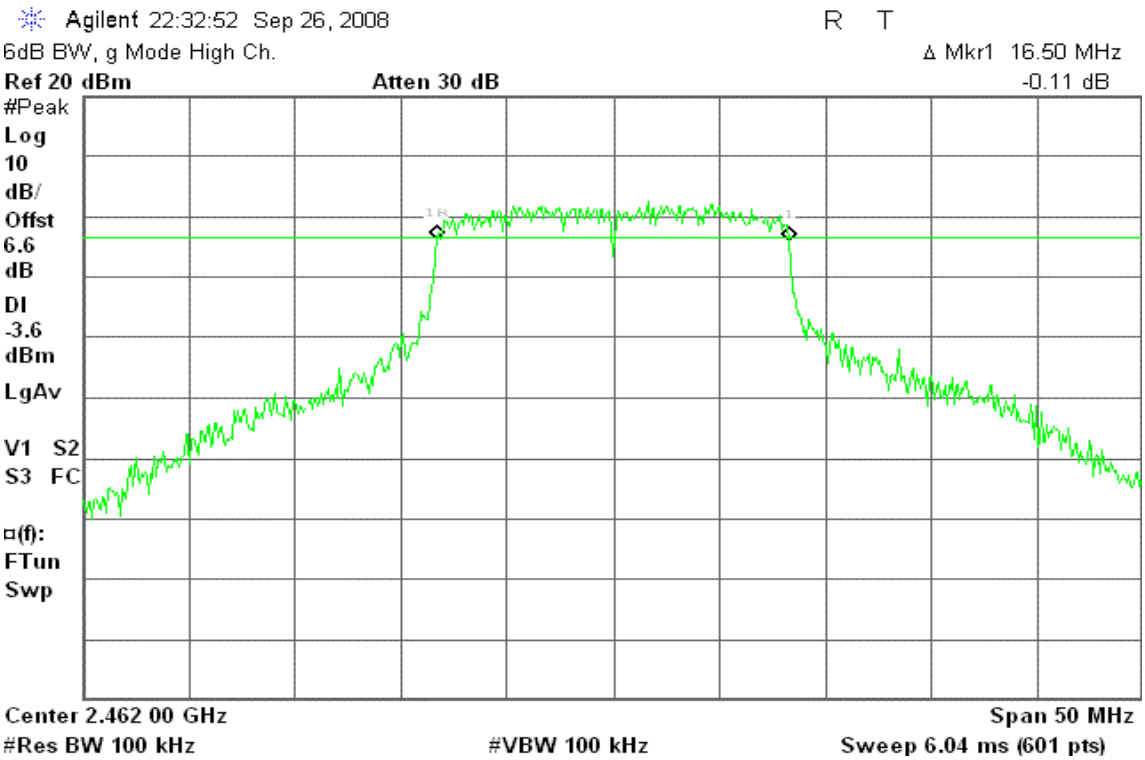
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

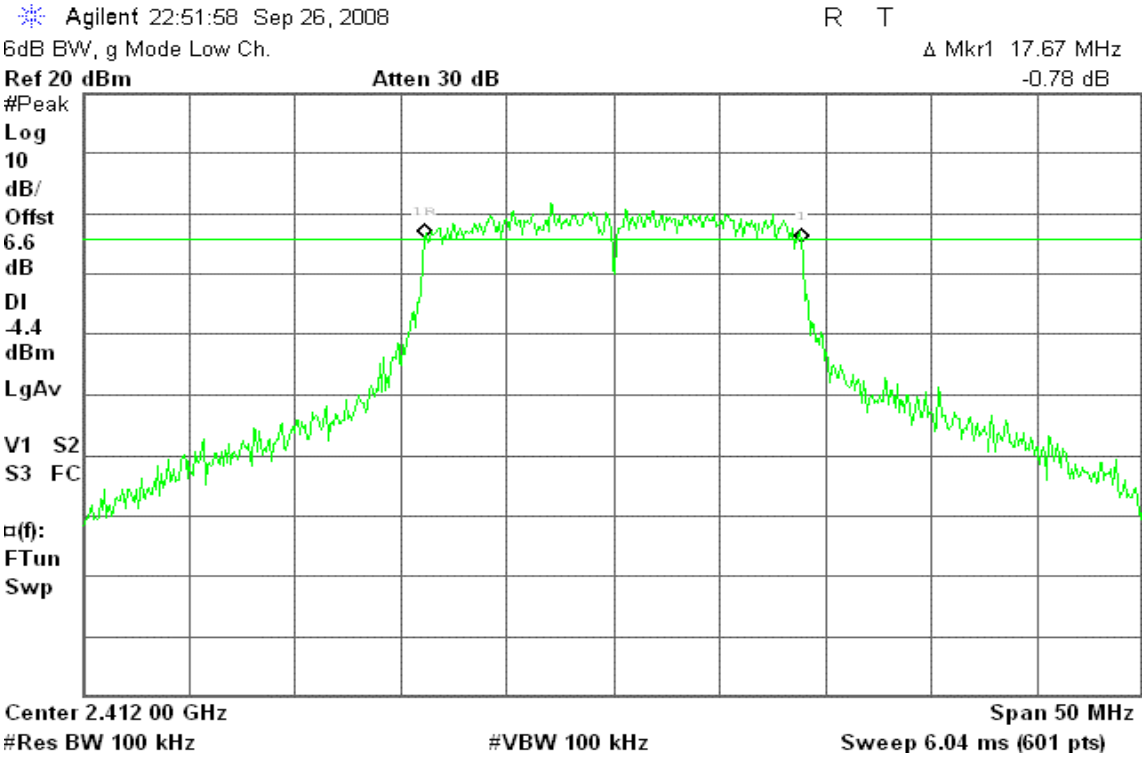


6dB Bandwidth (CH High)

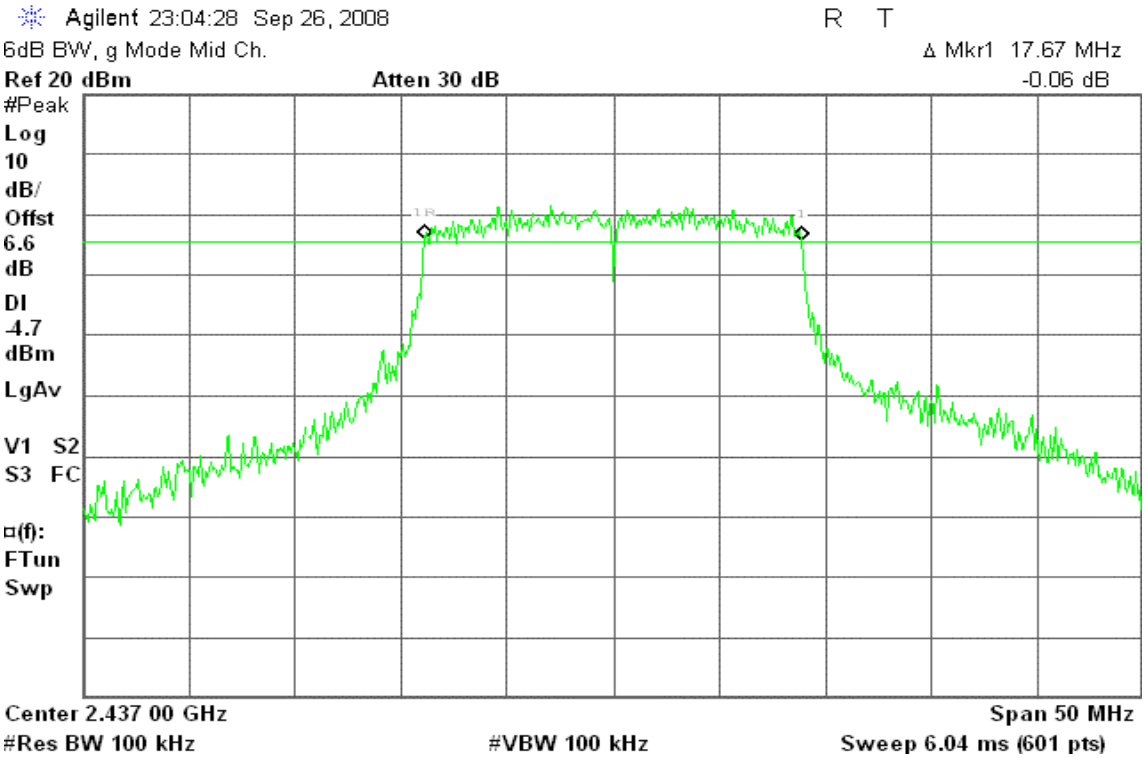


draft 802.11n Standard-20 MHz Channel mode

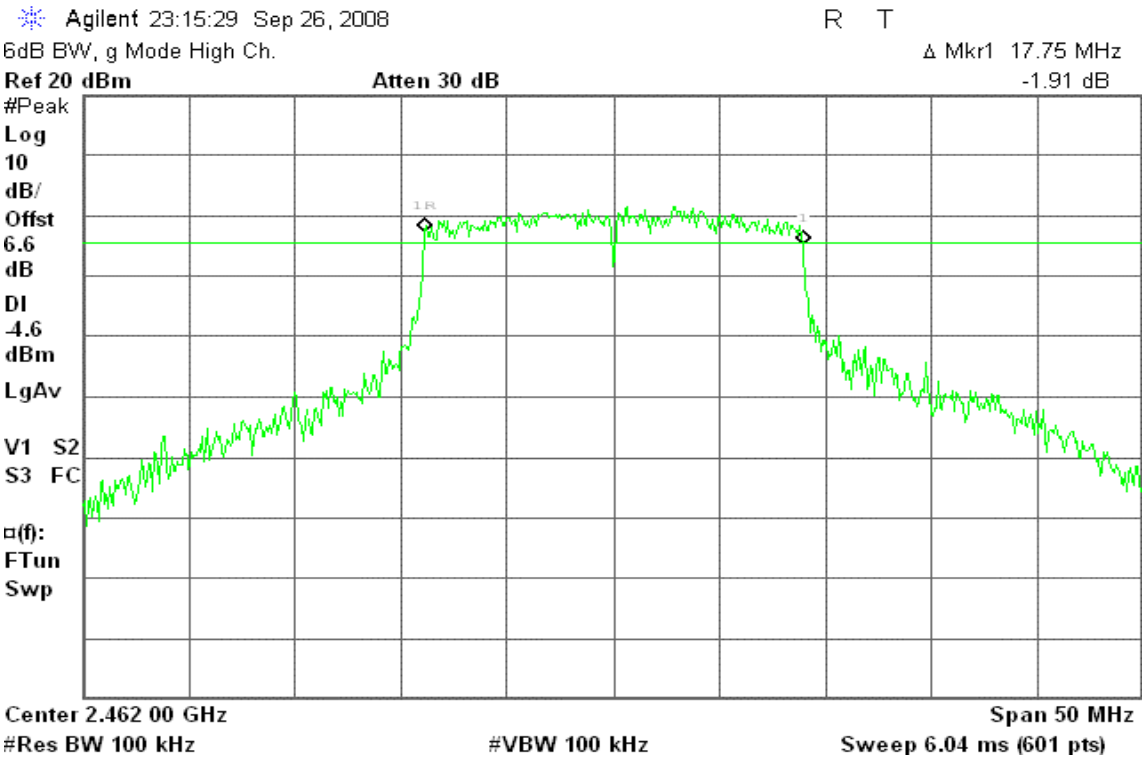
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

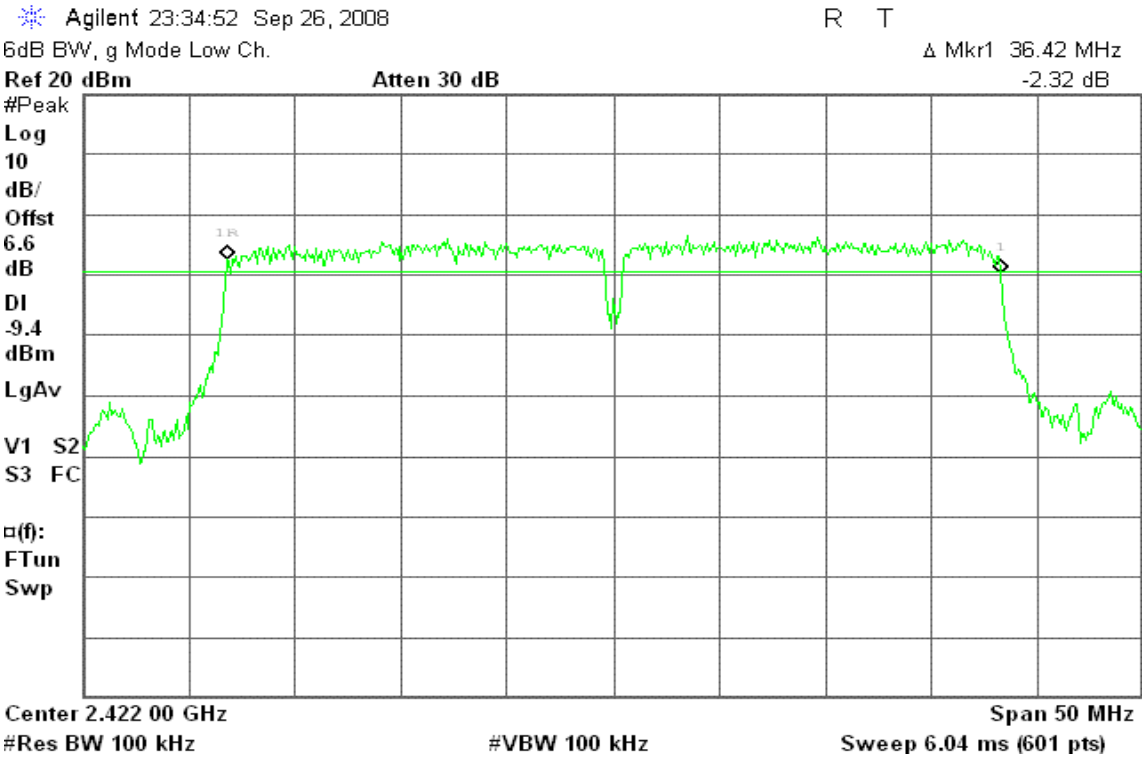


6dB Bandwidth (CH High)

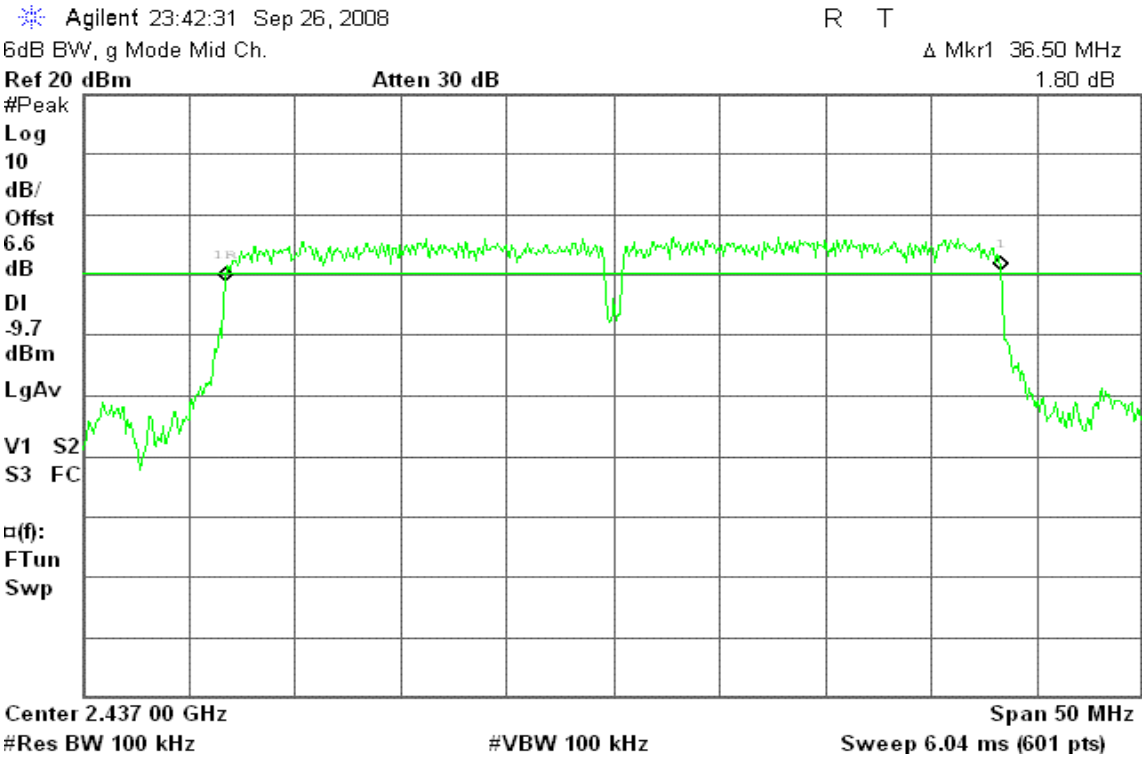


draft 802.11n Wide-40 MHz Channel mode

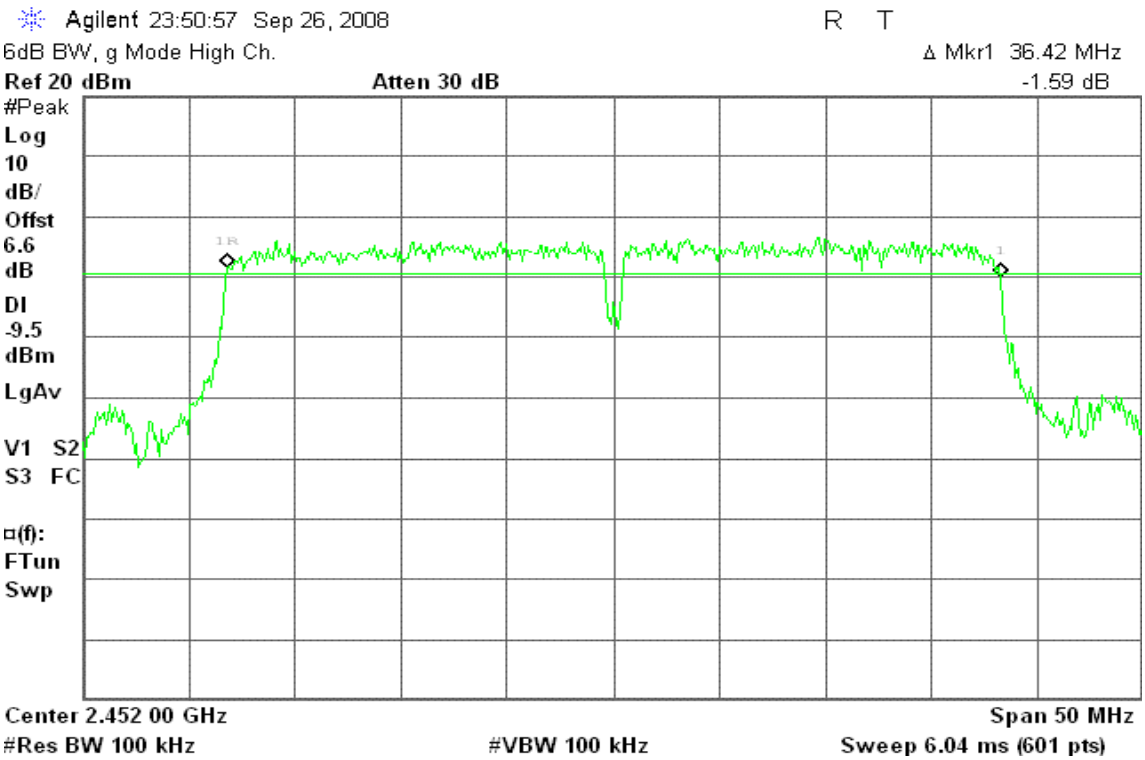
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



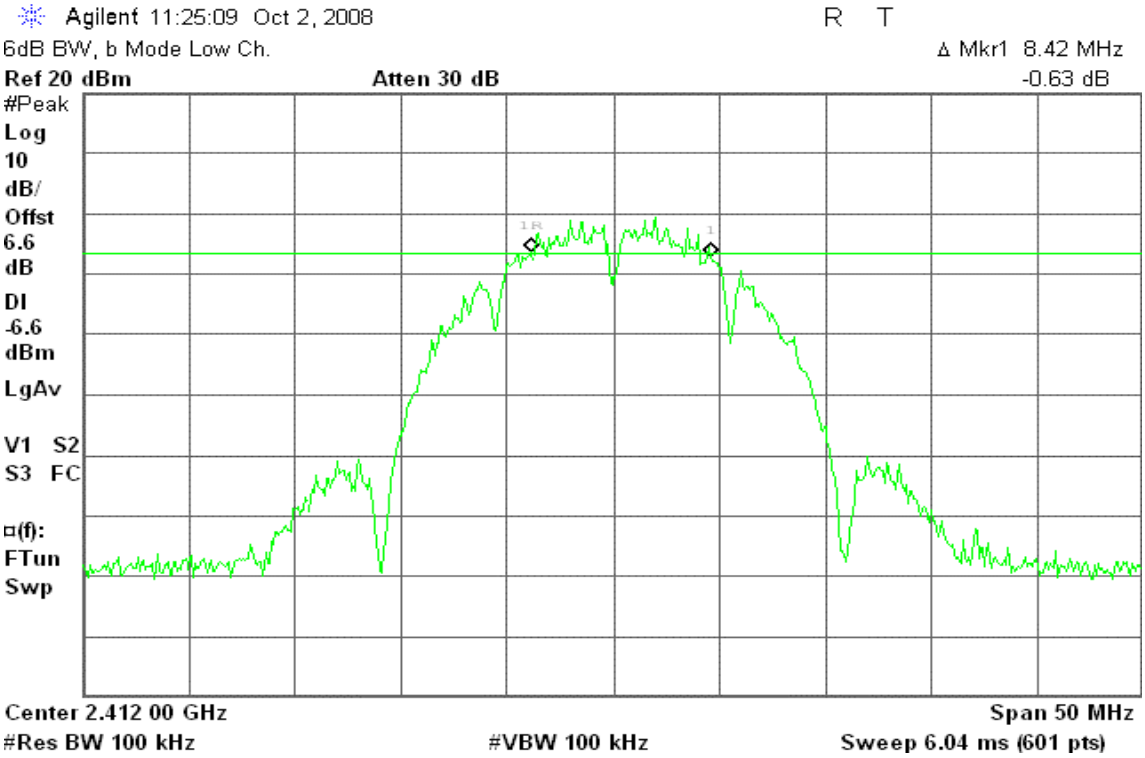
6dB Bandwidth (CH High)



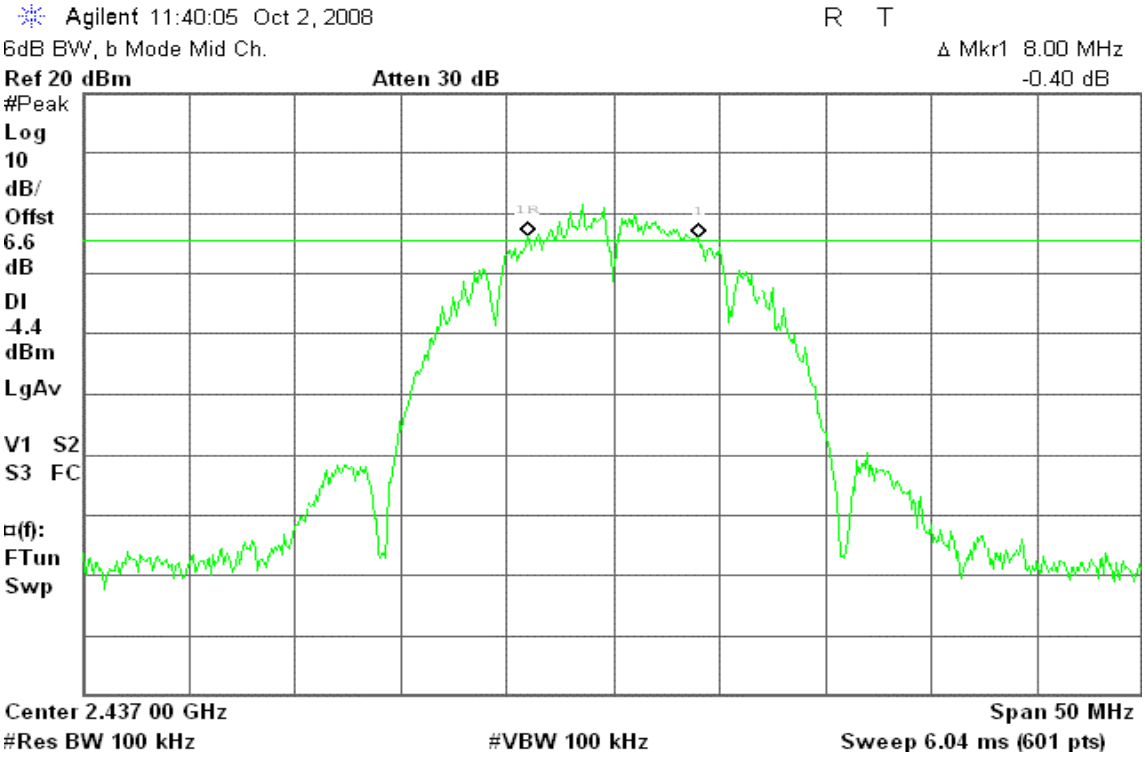
Patch Antenna / Gain: 9.12 dBi, Dipole Antenna / Gain: 9.09 dBi

IEEE 802.11b mode

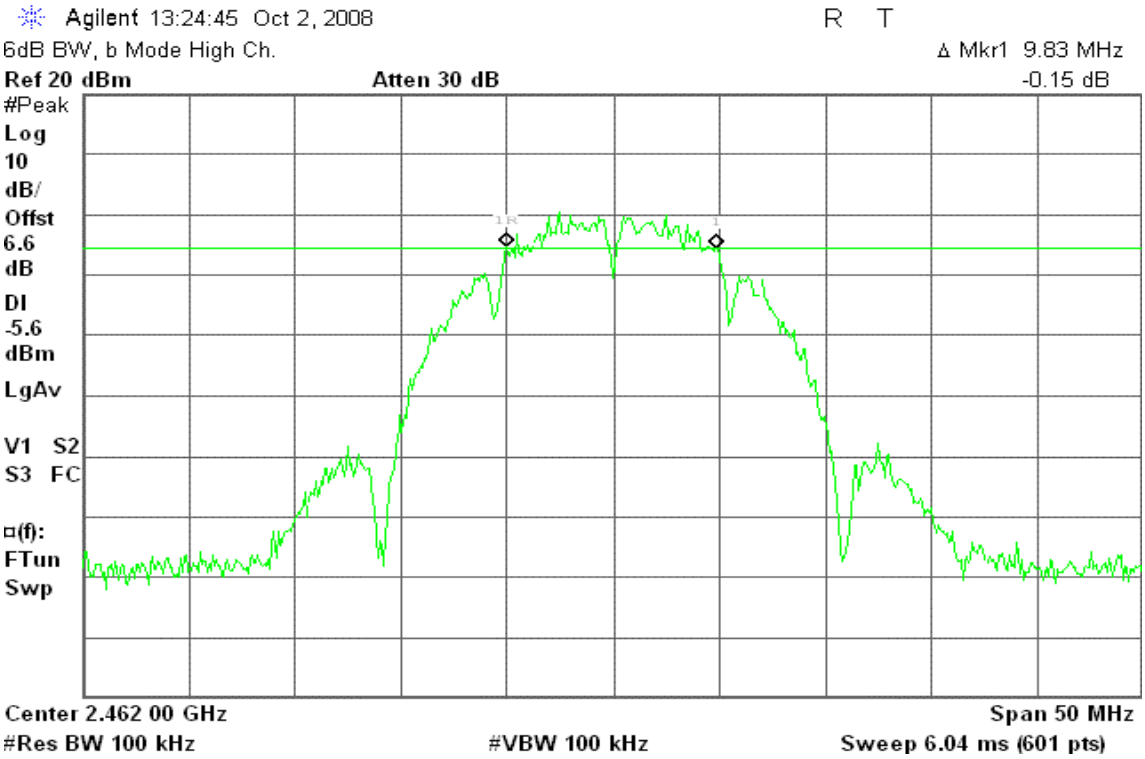
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

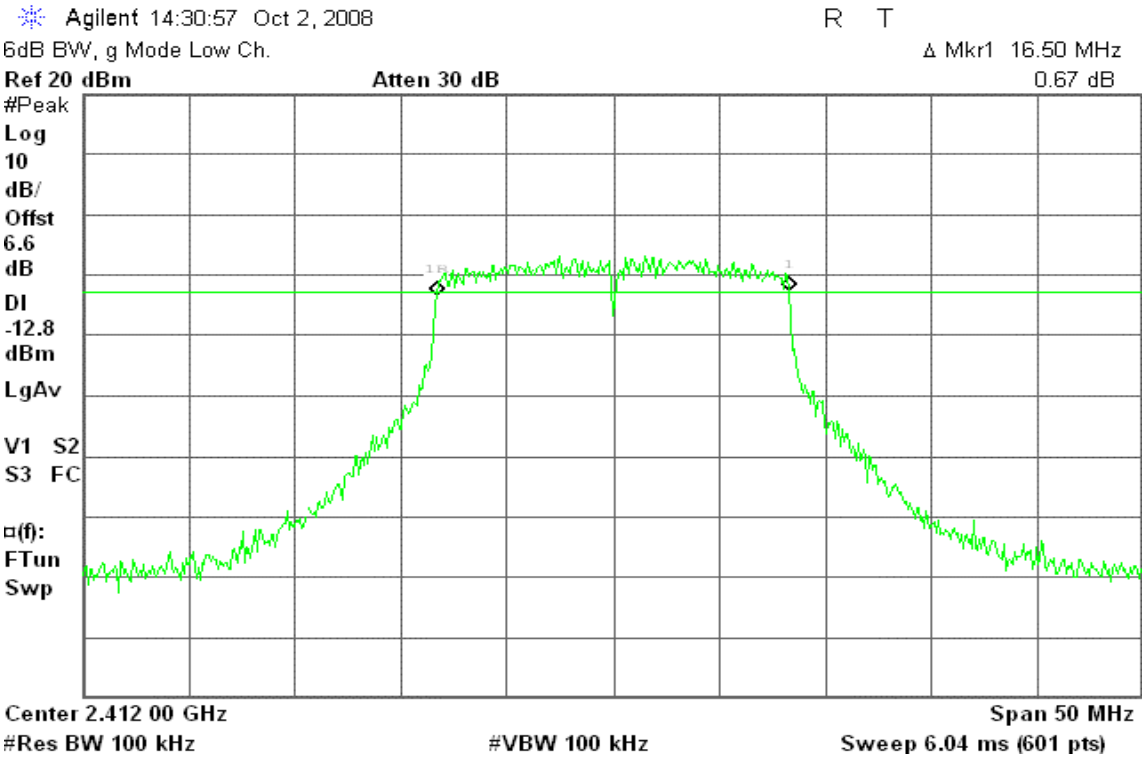


6dB Bandwidth (CH High)

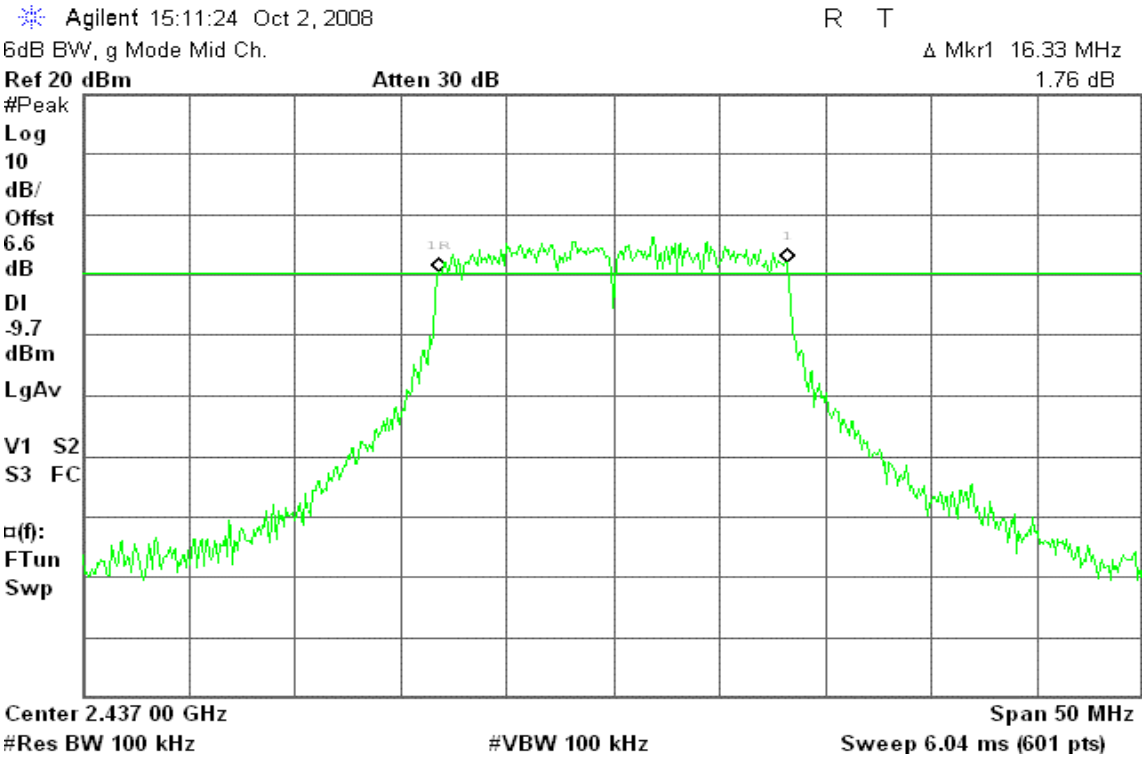


IEEE 802.11g mode

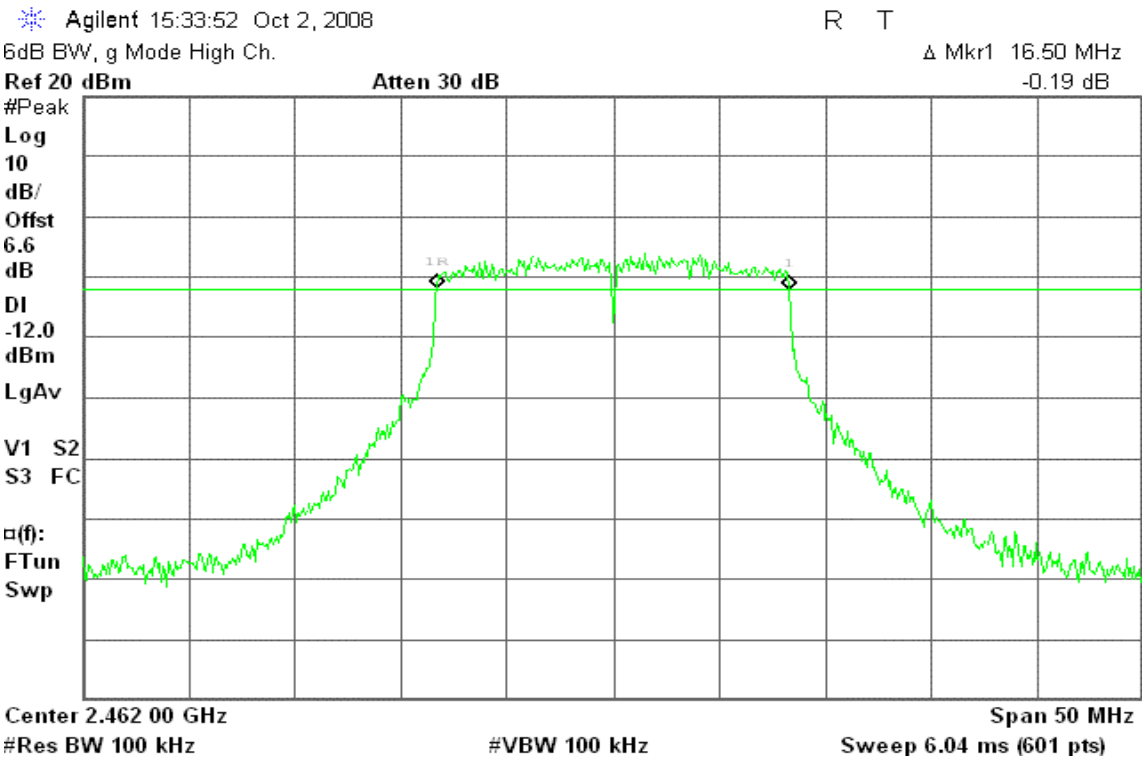
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

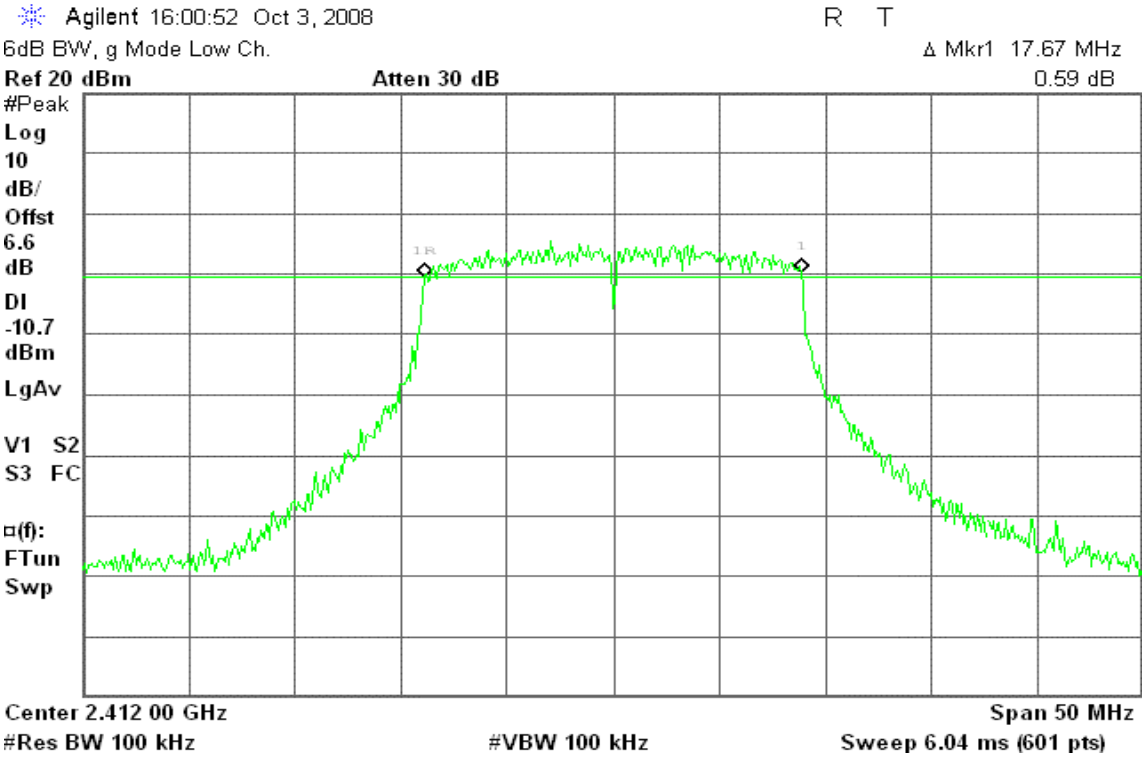


6dB Bandwidth (CH High)

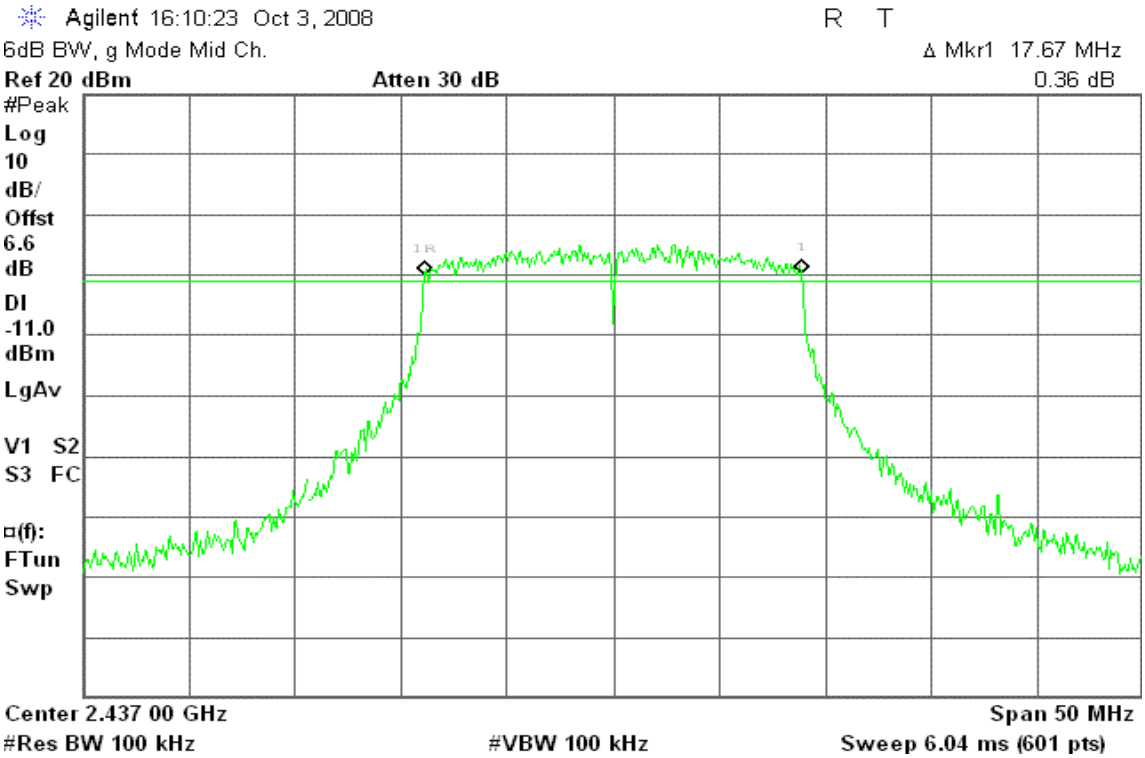


draft 802.11n Standard-20 MHz Channel mode

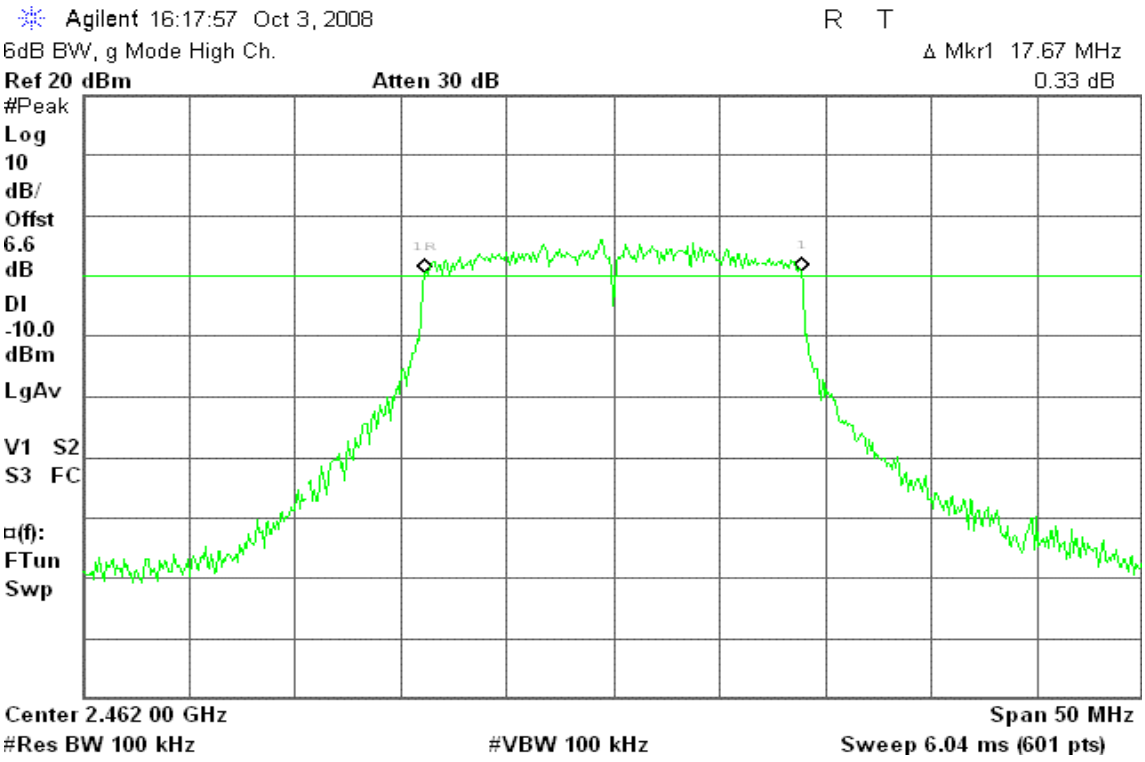
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

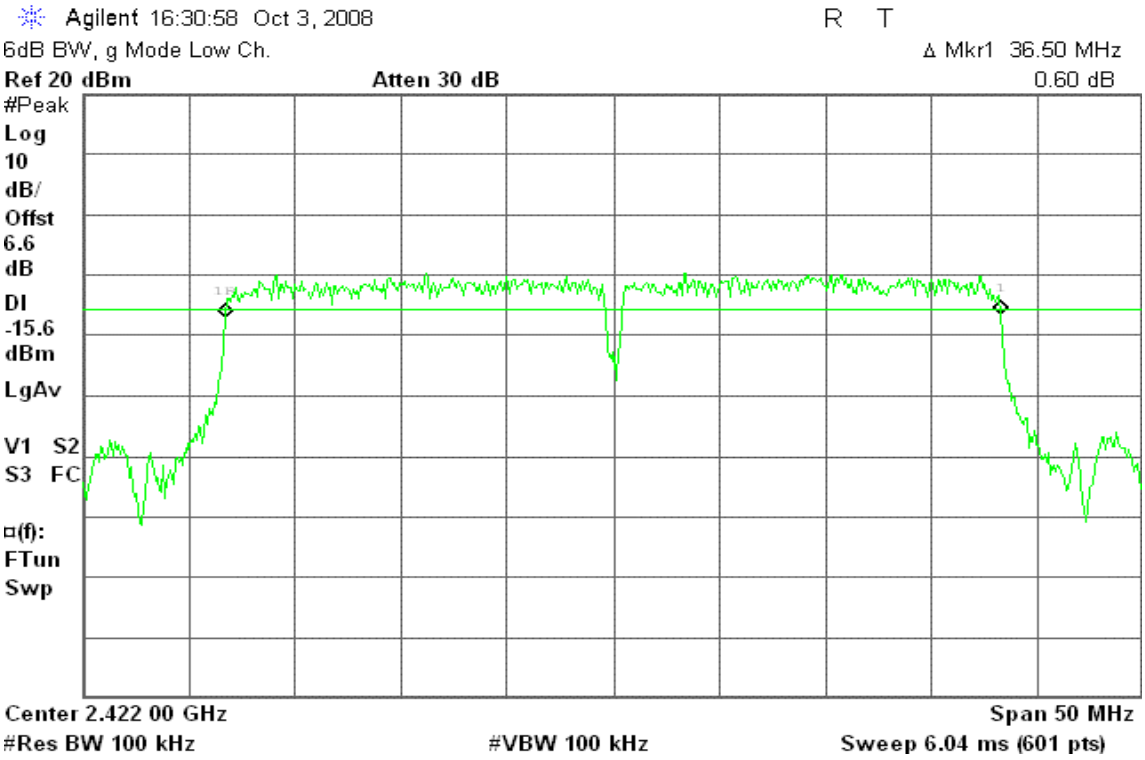


6dB Bandwidth (CH High)

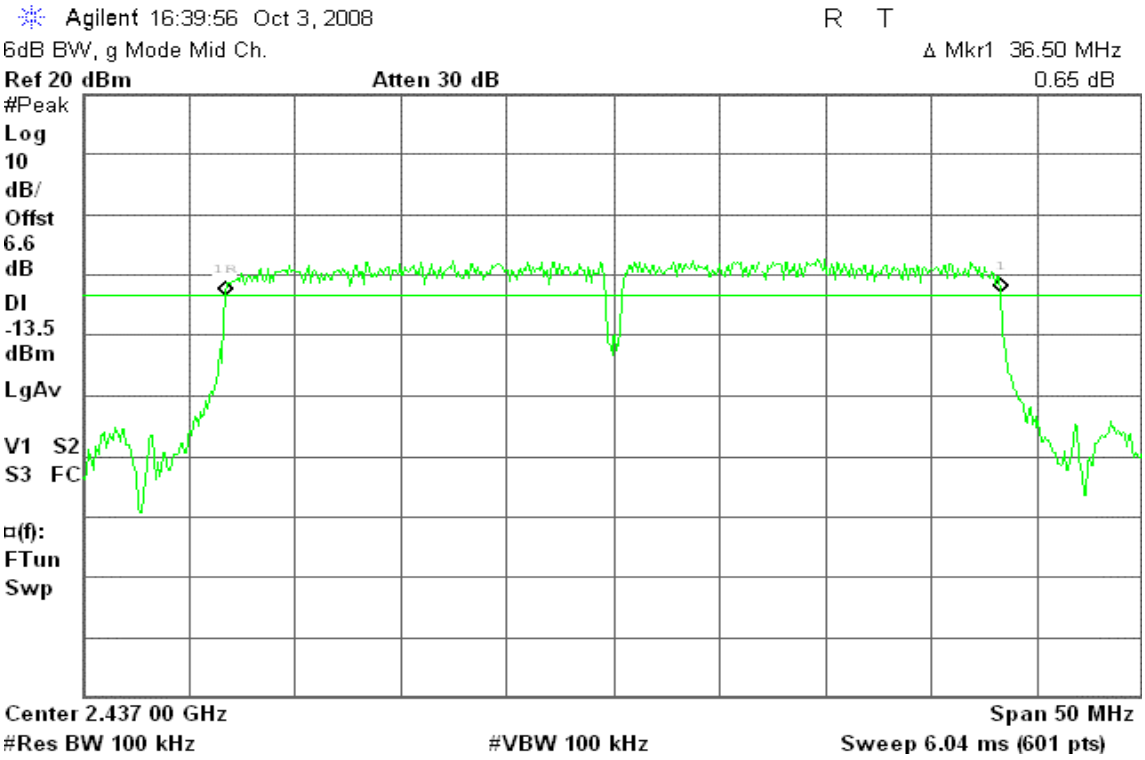


draft 802.11n Wide-40 MHz Channel mode

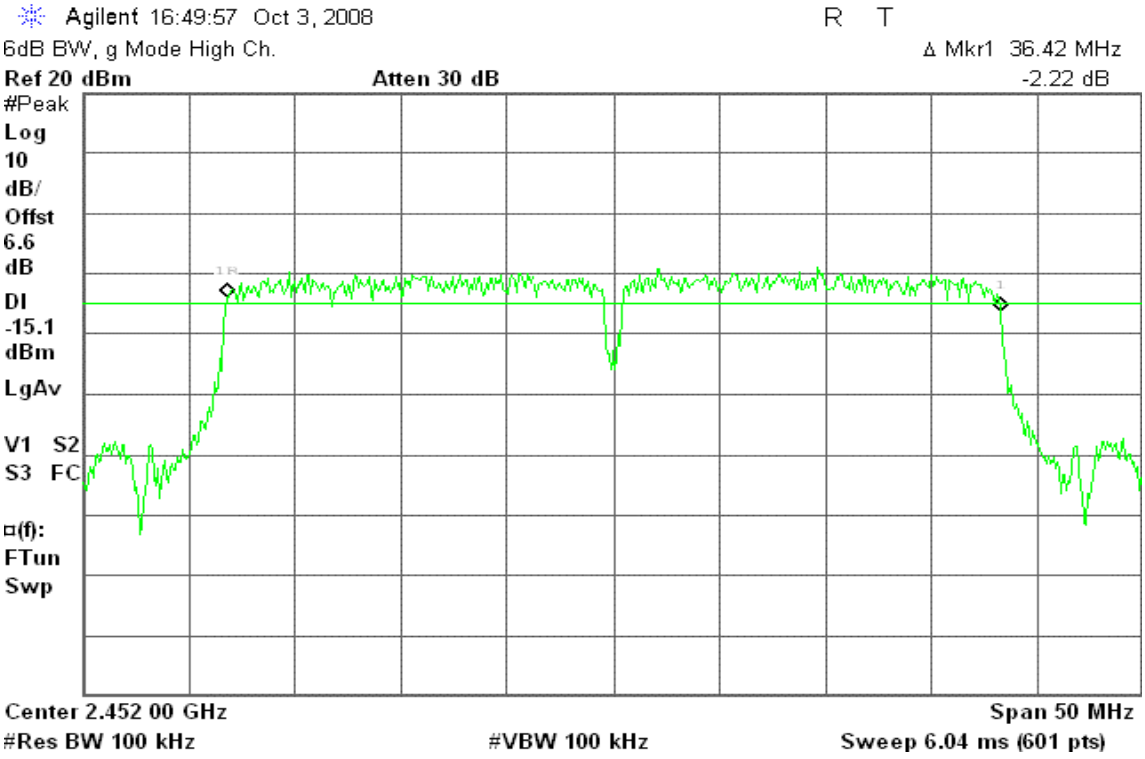
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



6dB Bandwidth (CH High)



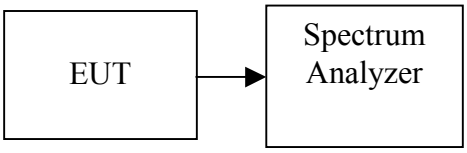
7.2 PEAK POWER

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. Peak power is measured using the spectrum analyzer's internal channel power integration function.
2. Power is integrated over a bandwidth greater than or equal to the 99% bandwidth.

TEST RESULTS

No non-compliance noted

Test Data

PCB Antenna / Gain: 1 dBi

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	17.17	0.0521	1.00	PASS
Mid	2437	19.22	0.0836		PASS
High	2462	16.60	0.0457		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	18.65	0.0733	1.00	PASS
Mid	2437	19.15	0.0822		PASS
High	2462	19.91	0.0979		PASS

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

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	18.70	0.0741	1.00	PASS
Mid	2437	19.16	0.0824		PASS
High	2462	19.66	0.0925		PASS

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

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	17.17	0.0521	1.00	PASS
Mid	2437	17.80	0.0603		PASS
High	2452	17.34	0.0542		PASS

Patch Antenna / Gain: 9.12 dBi, Dipole Antenna / Gain: 9.09 dBi

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	11.86	0.0153	0.488	PASS
Mid	2437	13.45	0.0221		PASS
High	2462	13.78	0.0239		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	10.90	0.0123	0.488	PASS
Mid	2437	14.03	0.0253		PASS
High	2462	11.62	0.0145		PASS

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

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	12.84	0.0192	0.488	PASS
Mid	2437	13.32	0.0215		PASS
High	2462	13.13	0.0206		PASS

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

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	11.44	0.0139	0.488	PASS
Mid	2437	14.31	0.0270		PASS
High	2452	12.02	0.0159		PASS

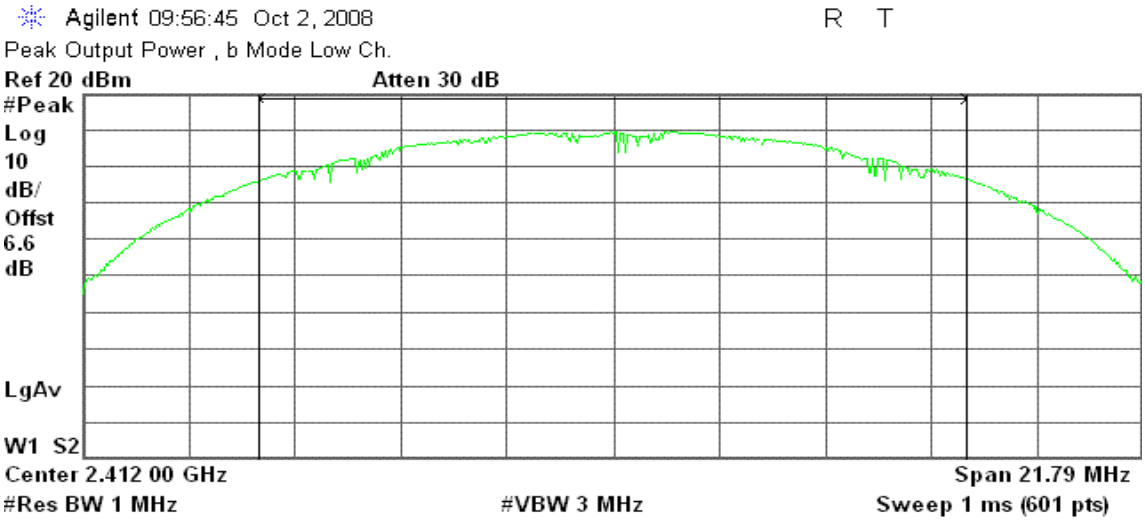
***Remark**: The maximum antenna gain is 9.12dBi; therefore the reduction due to antenna gain is 3.12dB, so the limit is 26.88dBm*

Test Plot

PCB Antenna / Gain: 1 dBi

IEEE 802.11b mode

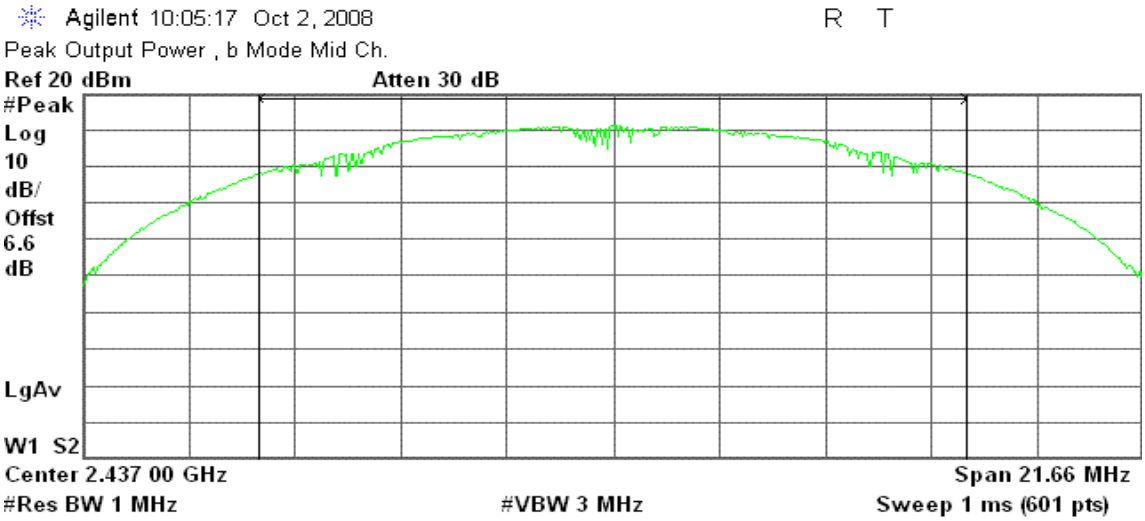
Peak Power (CH Low)



Channel Power
17.71 dBm / 14.5270 MHz

Power Spectral Density
-53.92 dBm/Hz

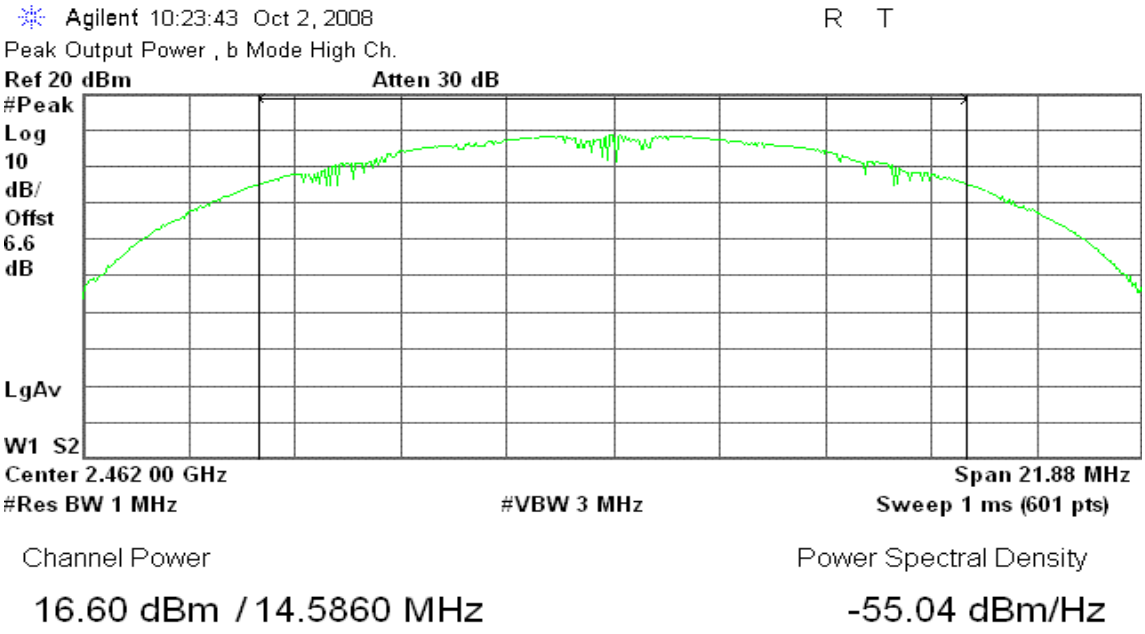
Peak Power (CH Mid)



Channel Power
19.22 dBm / 14.4370 MHz

Power Spectral Density
-52.38 dBm/Hz

Peak Power (CH High)

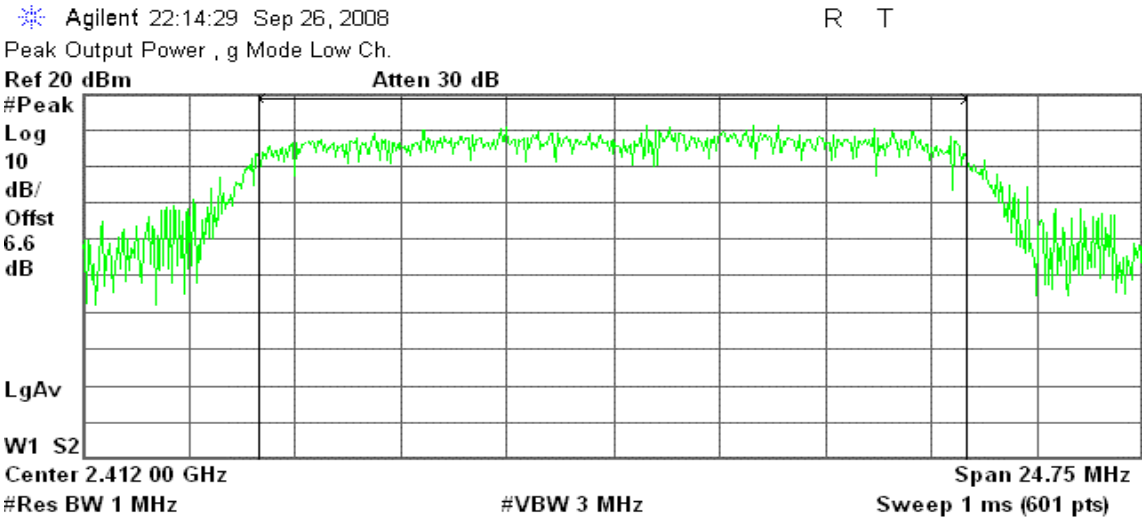


Channel Power
16.60 dBm / 14.5860 MHz

Power Spectral Density
-55.04 dBm/Hz

IEEE 802.11g mode

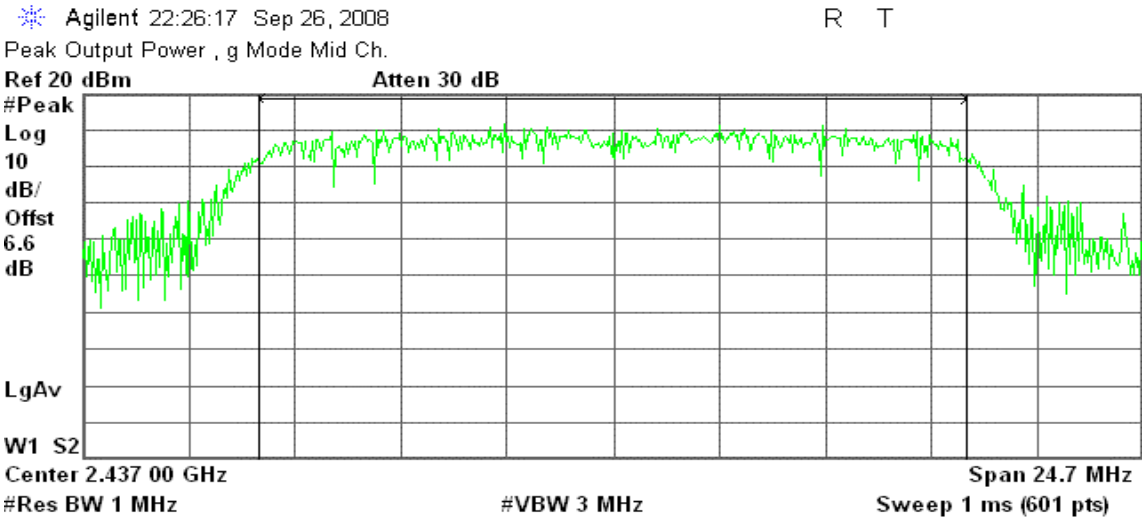
Peak Power (CH Low)



Channel Power
18.65 dBm / 16.5020 MHz

Power Spectral Density
-53.53 dBm/Hz

Peak Power (CH Mid)



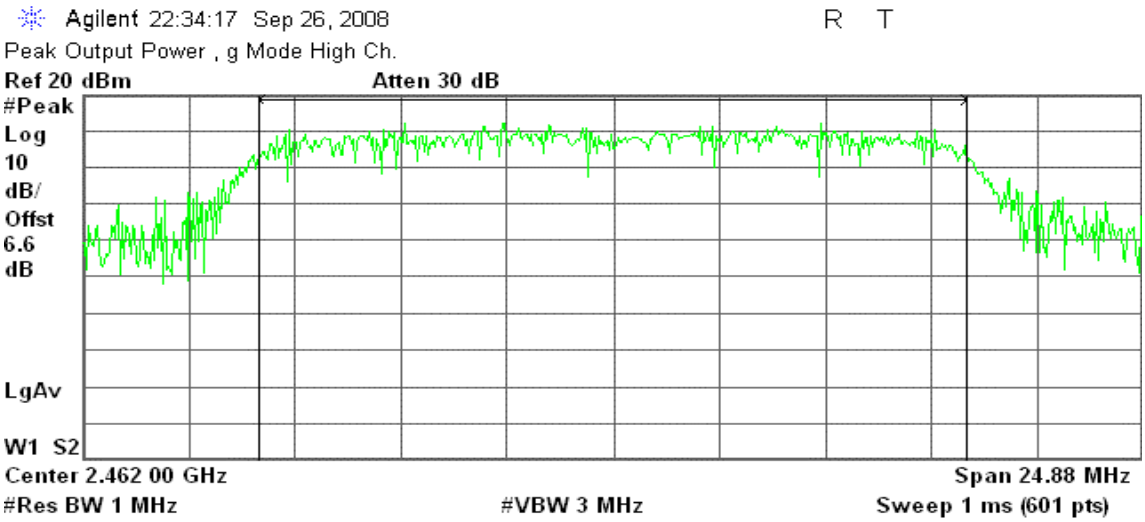
Channel Power

19.15 dBm / 16.4660 MHz

Power Spectral Density

-53.01 dBm/Hz

Peak Power (CH High)



Channel Power

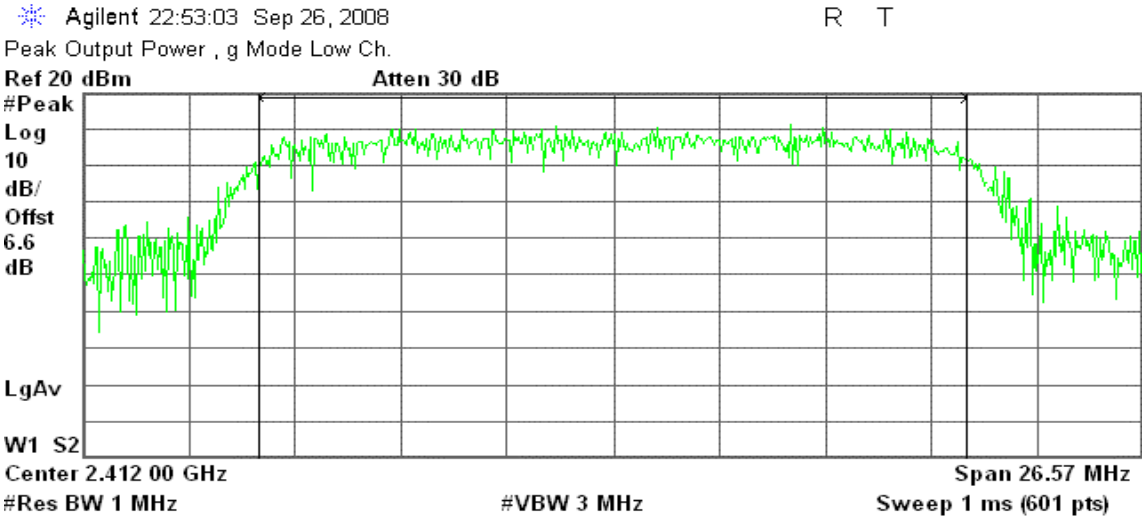
19.91 dBm / 16.5860 MHz

Power Spectral Density

-52.28 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode

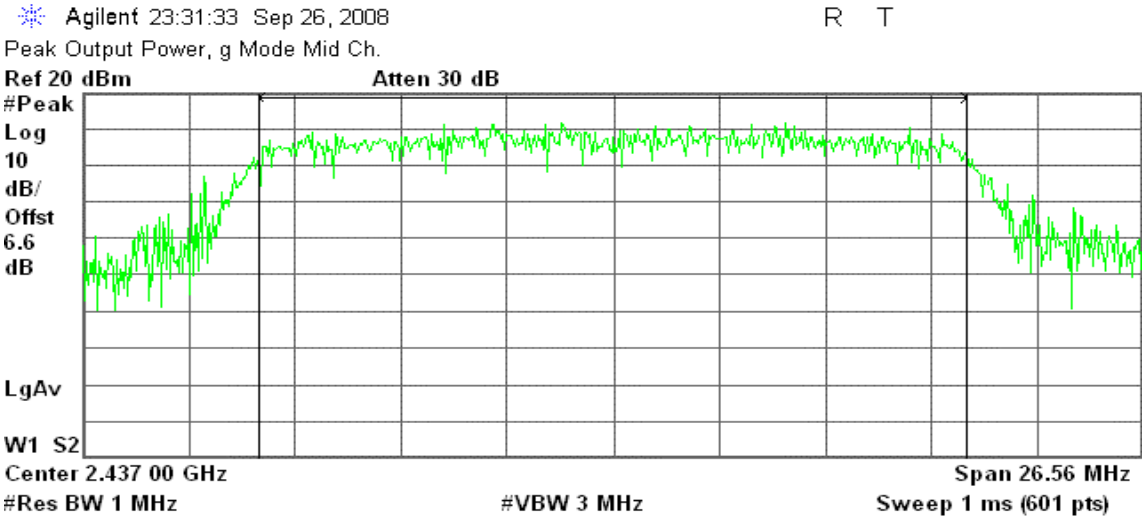
Peak Power (CH Low)



Channel Power
18.70 dBm / 17.7160 MHz

Power Spectral Density
-53.78 dBm/Hz

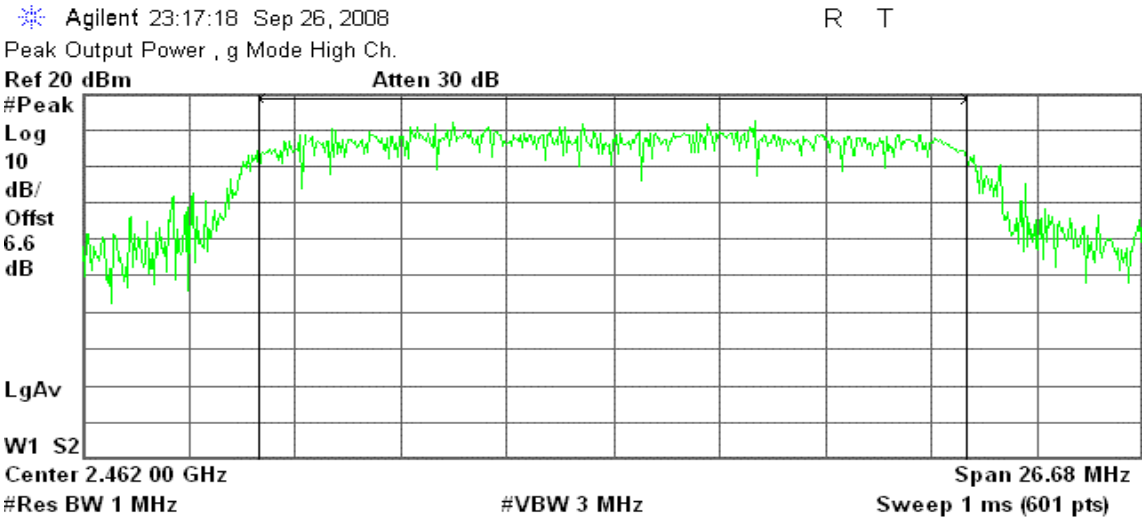
Peak Power (CH Mid)



Channel Power
19.16 dBm / 17.7060 MHz

Power Spectral Density
-53.32 dBm/Hz

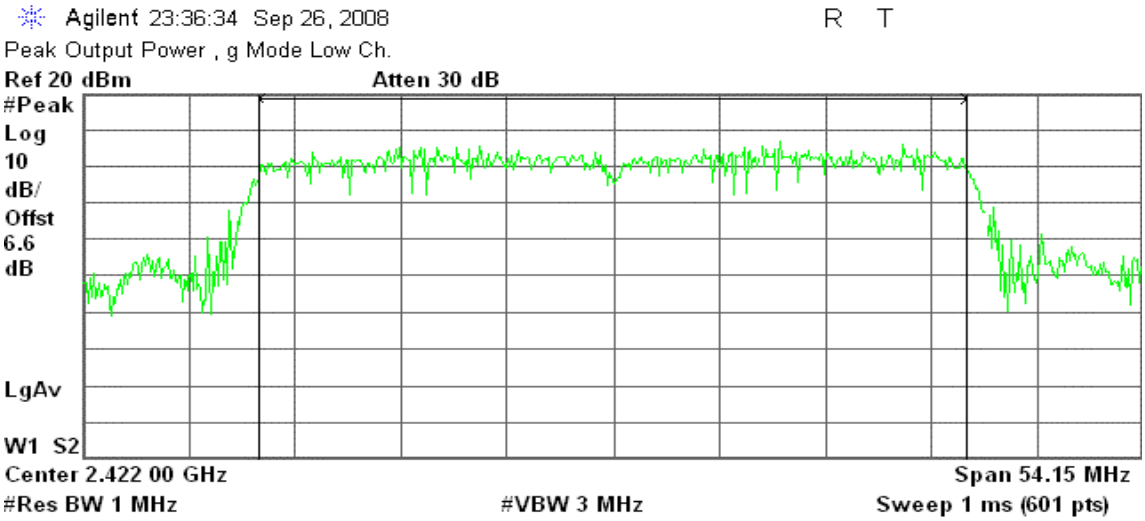
Peak Power (CH High)



Channel Power	Power Spectral Density
19.66 dBm / 17.7860 MHz	-52.84 dBm/Hz

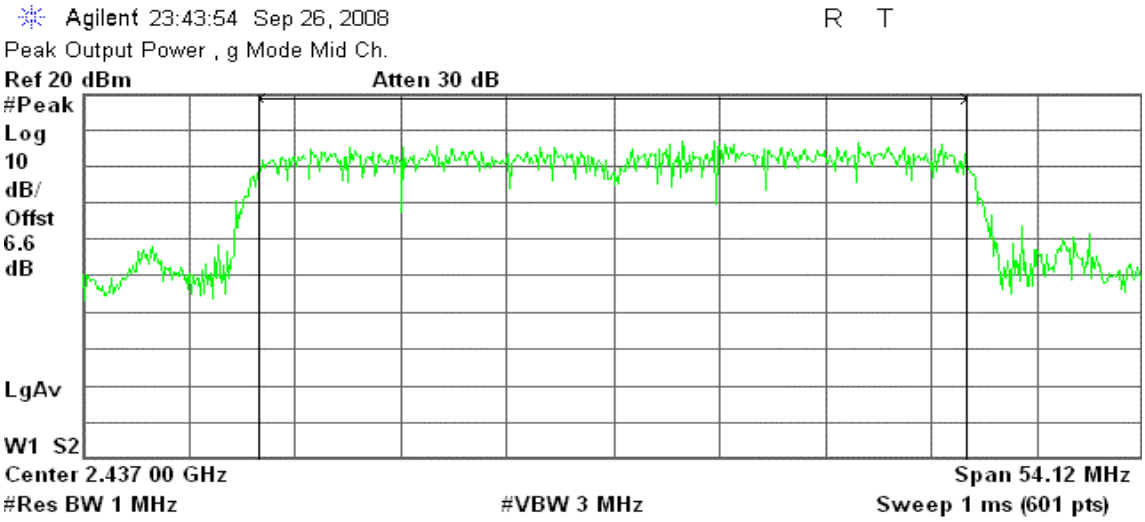
draft 802.11n Wide-40 MHz Channel mode

Peak Power (CH Low)



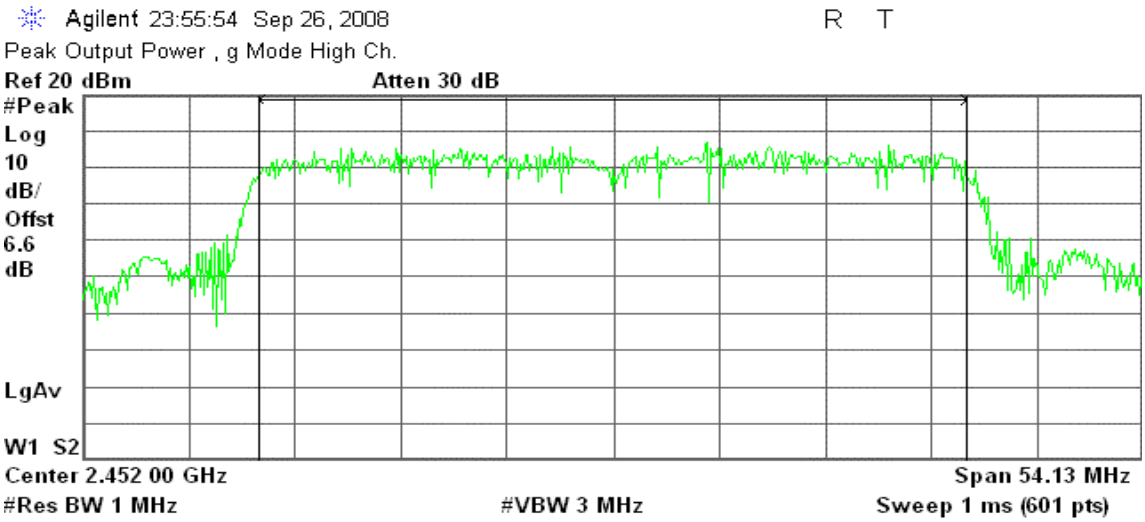
Channel Power	Power Spectral Density
17.17 dBm / 36.0980 MHz	-58.40 dBm/Hz

Peak Power (CH Mid)



Channel Power	Power Spectral Density
17.80 dBm / 36.0770 MHz	-57.78 dBm/Hz

Peak Power (CH High)

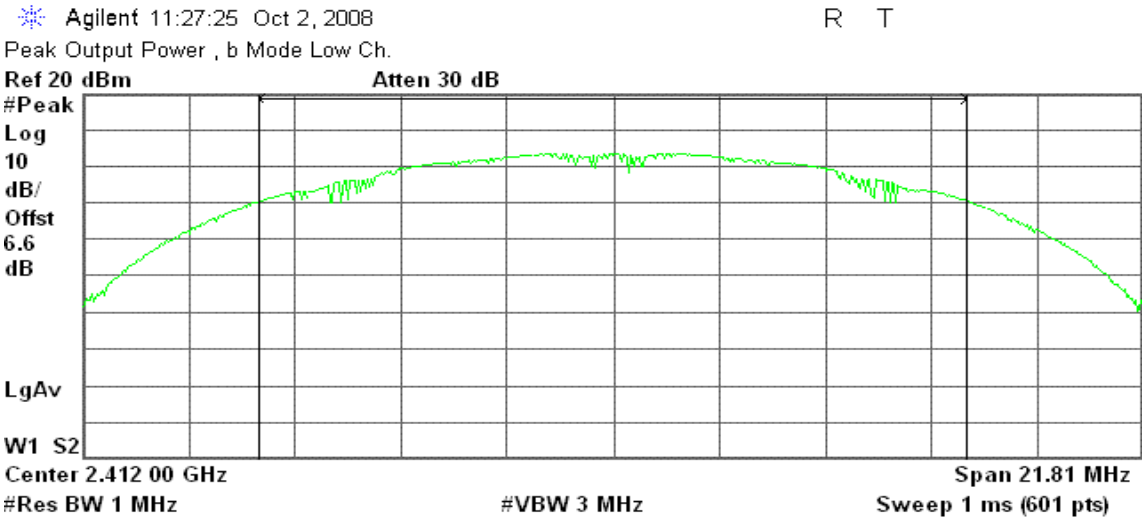


Channel Power	Power Spectral Density
17.34 dBm / 36.0850 MHz	-58.23 dBm/Hz

Patch Antenna / Gain: 9.12 dBi, Dipole Antenna / Gain: 9.09 dBi

IEEE 802.11b mode

Peak Power (CH Low)



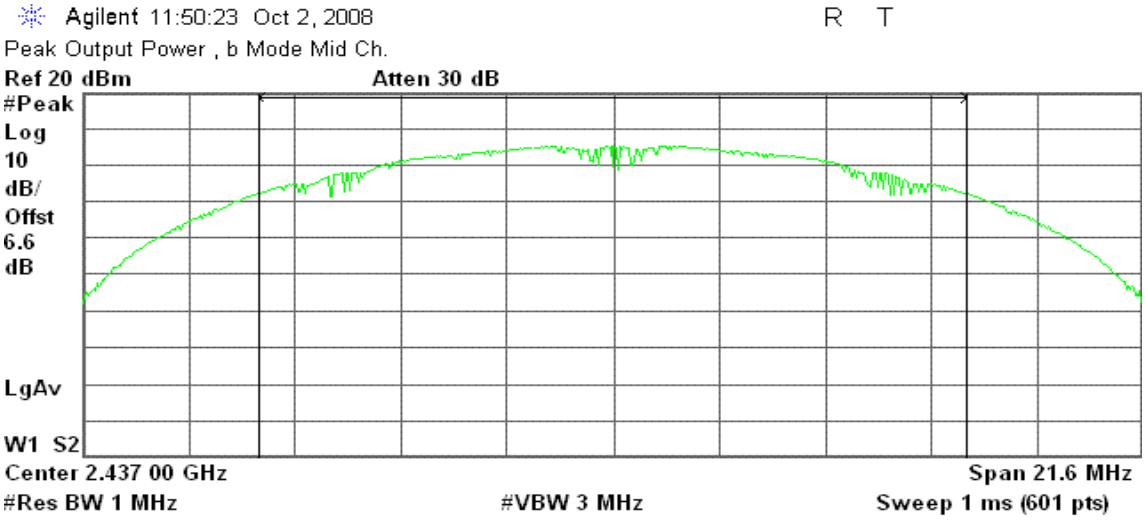
Channel Power

11.86 dBm / 14.5420 MHz

Power Spectral Density

-59.77 dBm/Hz

Peak Power (CH Mid)



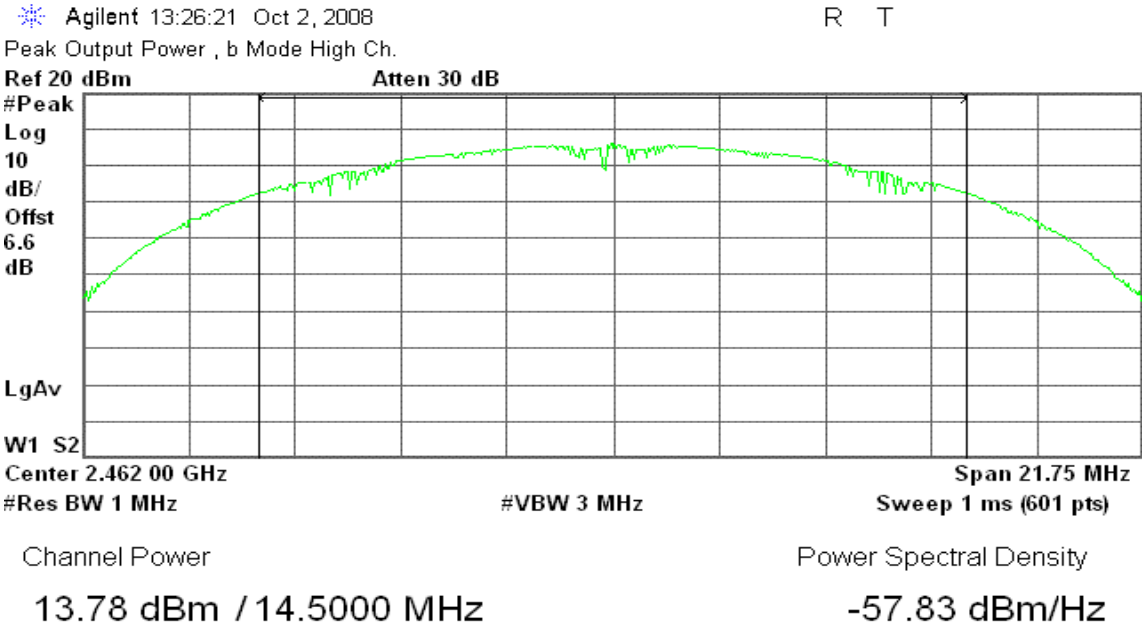
Channel Power

13.45 dBm / 14.3970 MHz

Power Spectral Density

-58.13 dBm/Hz

Peak Power (CH High)

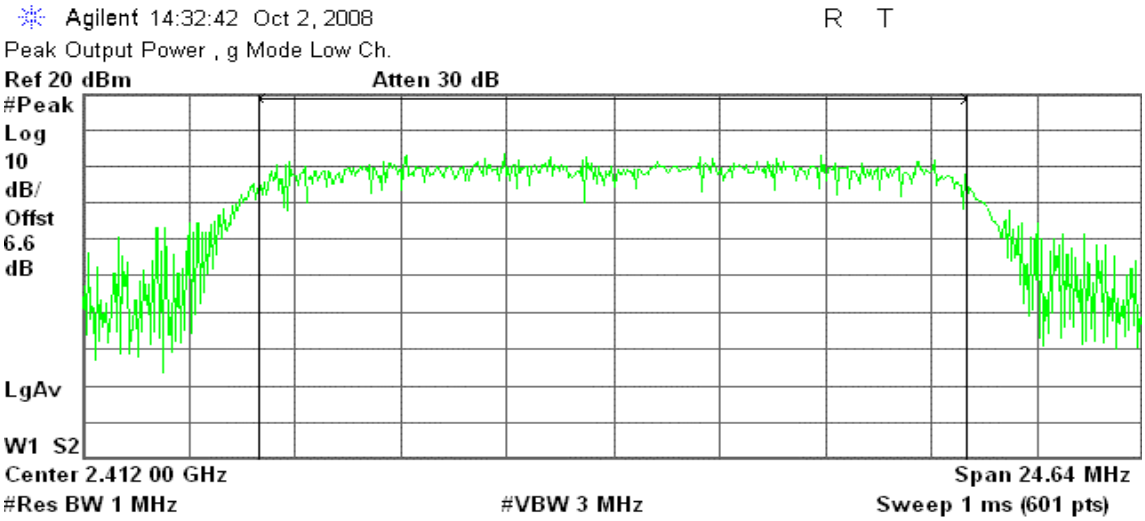


Channel Power
13.78 dBm / 14.5000 MHz

Power Spectral Density
-57.83 dBm/Hz

IEEE 802.11g mode

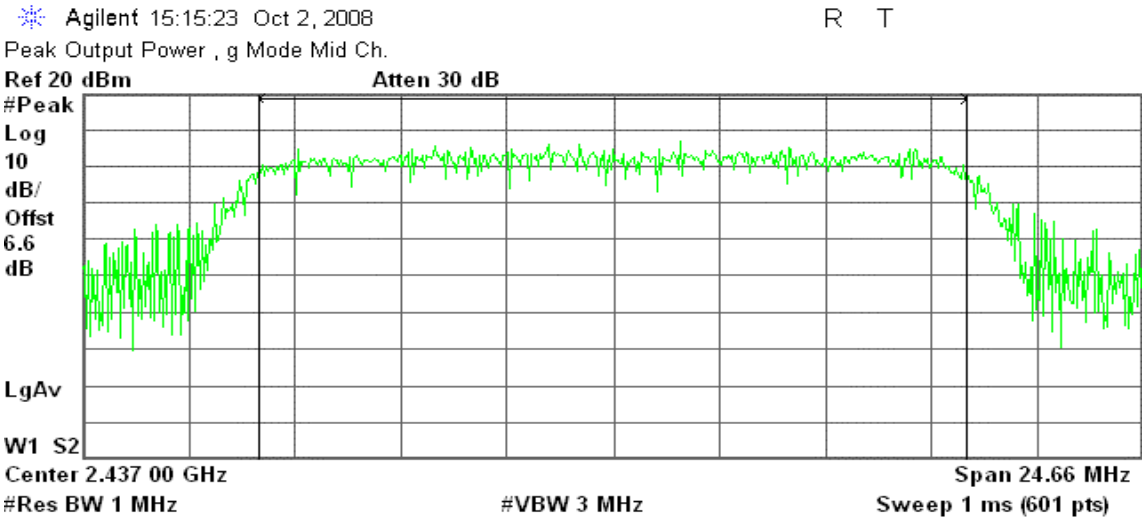
Peak Power (CH Low)



Channel Power
10.90 dBm / 16.4250 MHz

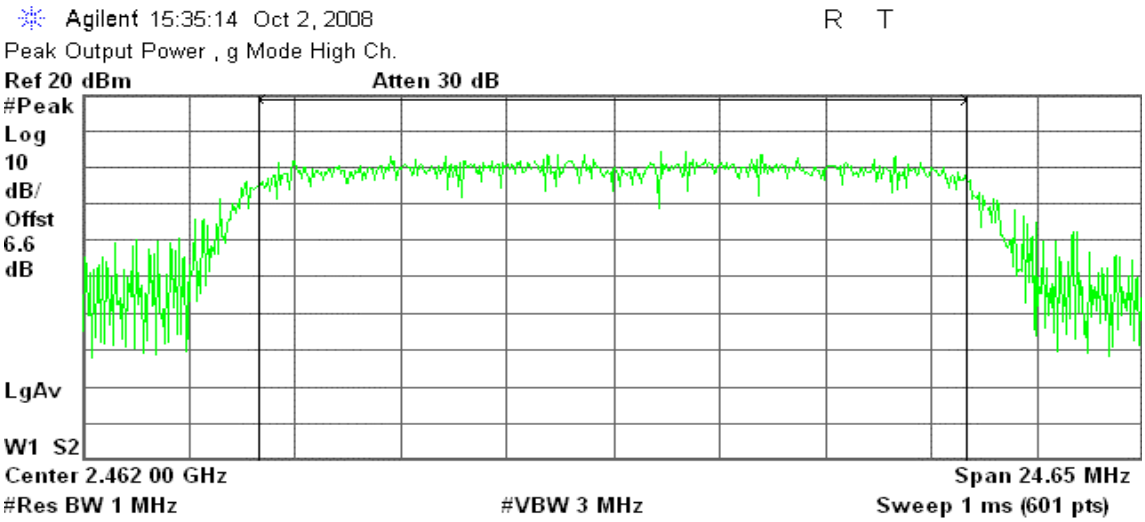
Power Spectral Density
-61.25 dBm/Hz

Peak Power (CH Mid)



Channel Power	Power Spectral Density
14.03 dBm / 16.4420 MHz	-58.13 dBm/Hz

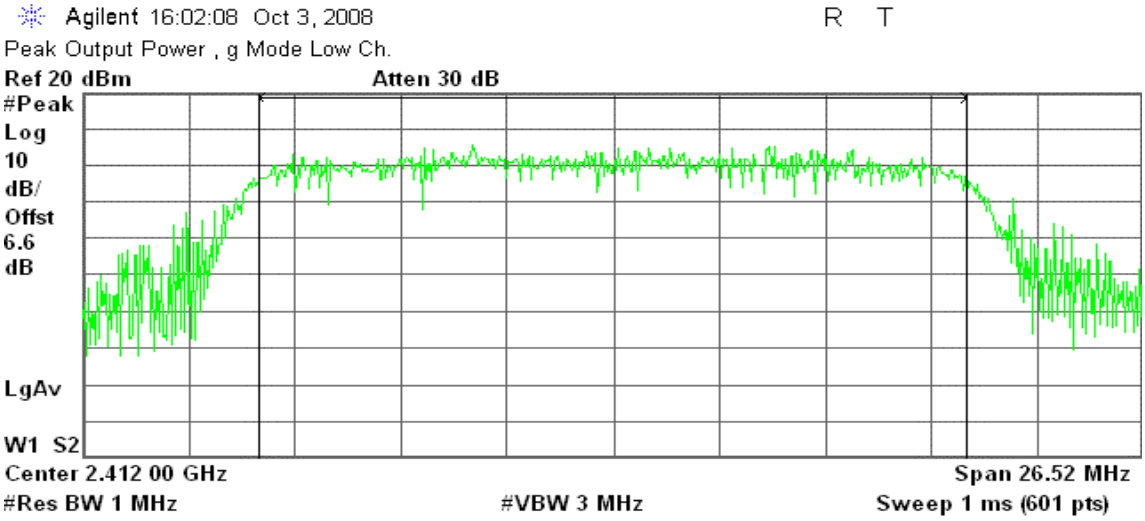
Peak Power (CH High)



Channel Power	Power Spectral Density
11.62 dBm / 16.4350 MHz	-60.54 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode

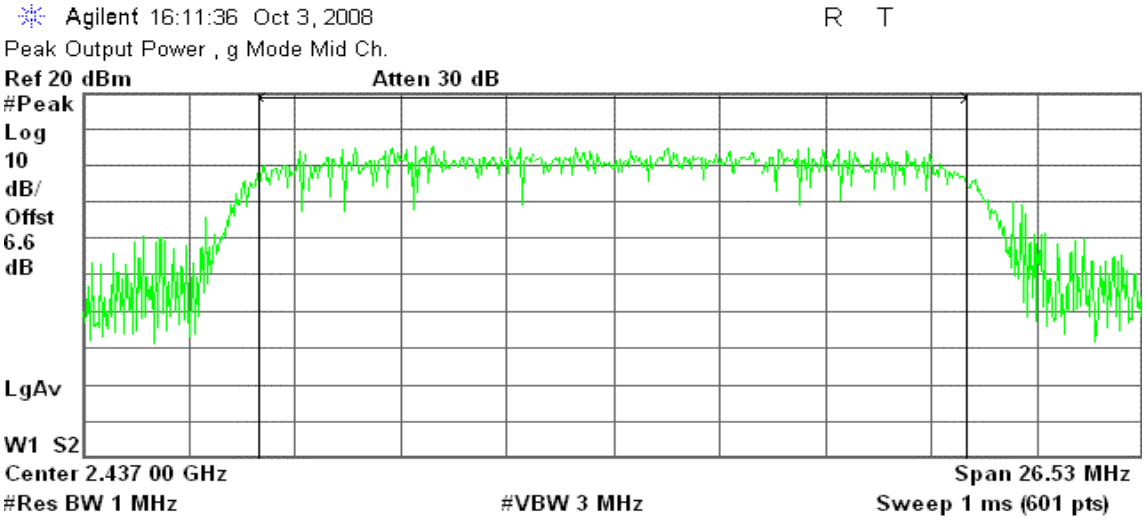
Peak Power (CH Low)



Channel Power
12.84 dBm / 17.6800 MHz

Power Spectral Density
-59.63 dBm/Hz

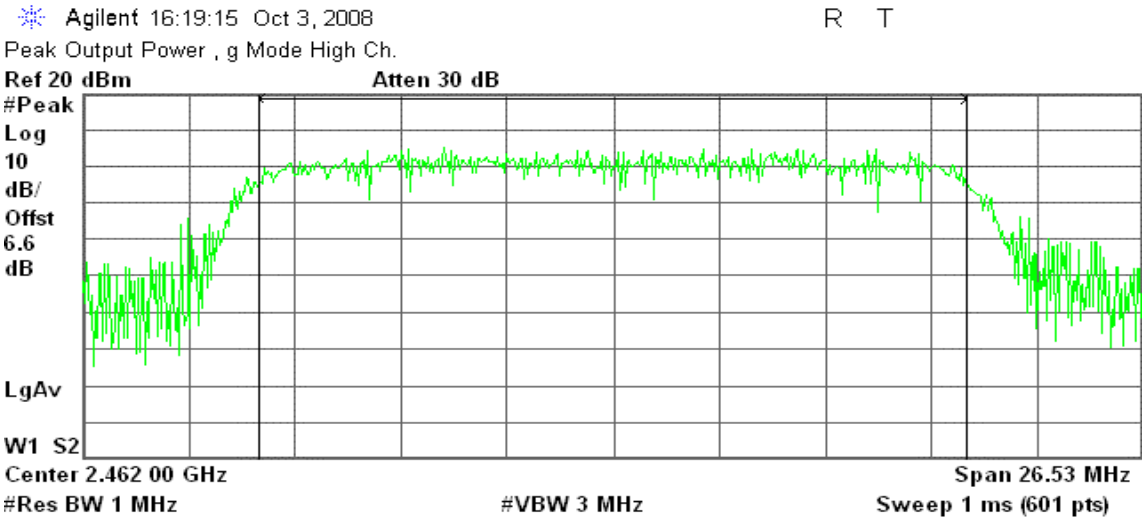
Peak Power (CH Mid)



Channel Power
13.32 dBm / 17.6880 MHz

Power Spectral Density
-59.16 dBm/Hz

Peak Power (CH High)

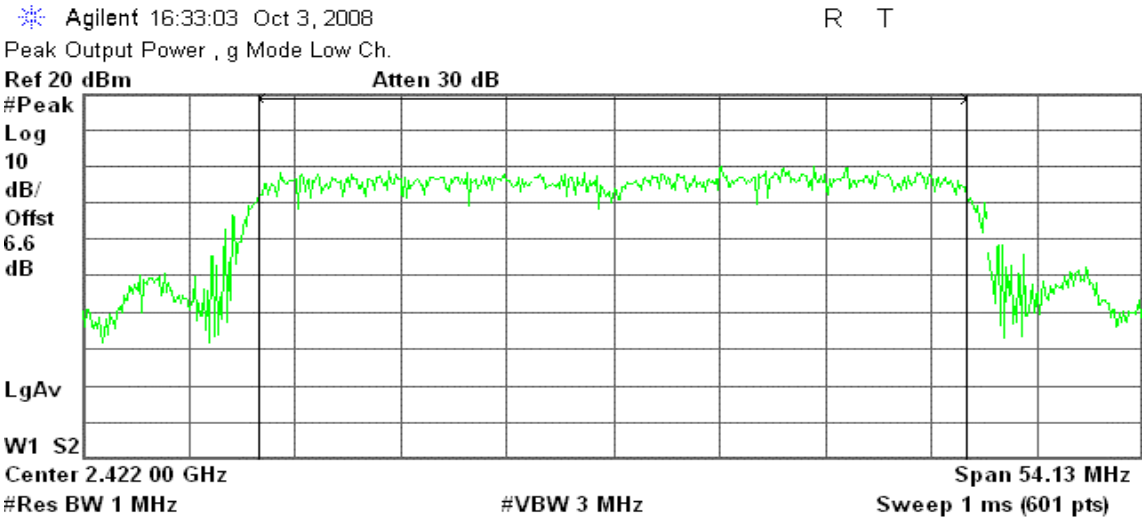


Channel Power
13.13 dBm / 17.6860 MHz

Power Spectral Density
-59.34 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode

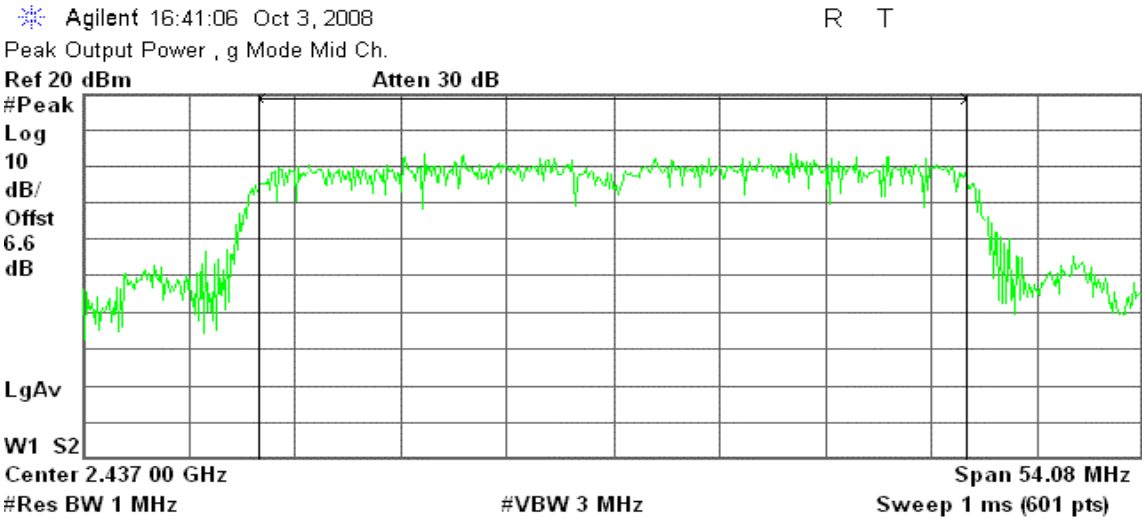
Peak Power (CH Low)



Channel Power
11.44 dBm / 36.0870 MHz

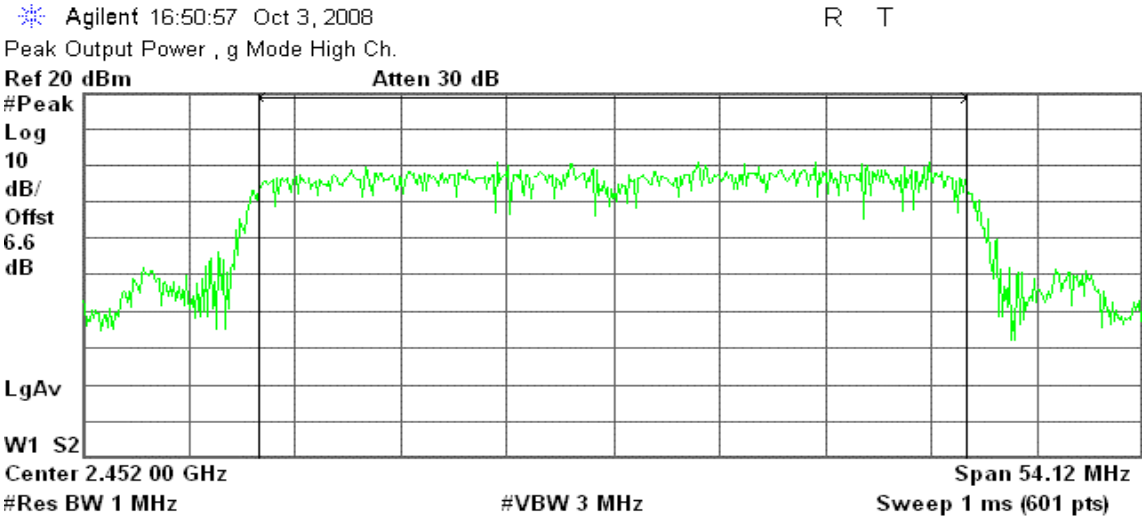
Power Spectral Density
-64.14 dBm/Hz

Peak Power (CH Mid)



Channel Power	Power Spectral Density
14.31 dBm / 36.0550 MHz	-61.26 dBm/Hz

Peak Power (CH High)



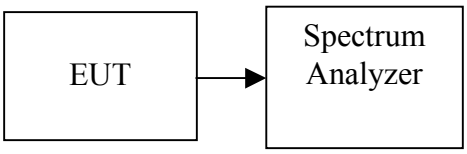
Channel Power	Power Spectral Density
12.02 dBm / 36.0770 MHz	-63.55 dBm/Hz

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

PCB Antenna / Gain: 1 dBi

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	15.05
Mid	2437	16.68
High	2462	14.11

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	15.43
Mid	2437	16.05
High	2462	16.56

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

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	14.96
Mid	2437	15.29
High	2462	16.10

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

Channel	Frequency (MHz)	Average Power (dBm)
Low	2422	13.58
Mid	2437	14.44
High	2452	13.93

Patch Antenna / Gain: 9.12 dBi, Dipole Antenna / Gain: 9.09 dBi

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	9.22
Mid	2437	11.33
High	2462	11.16

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	7.67
Mid	2437	10.63
High	2462	8.13

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

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	9.34
Mid	2437	9.90
High	2462	9.87

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

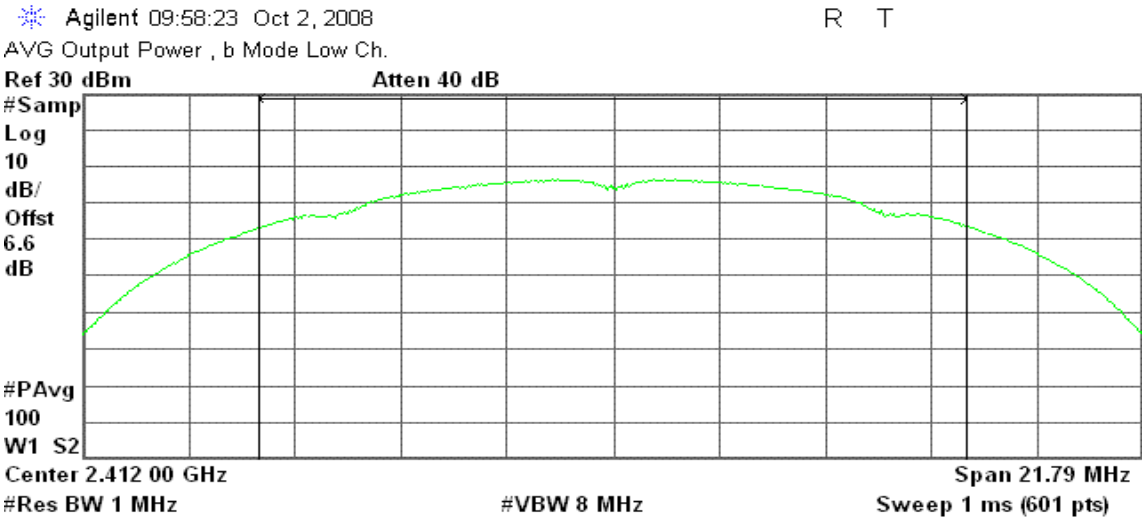
Channel	Frequency (MHz)	Average Power (dBm)
Low	2422	8.27
Mid	2437	11.16
High	2452	8.33

Test Plot

PCB Antenna / Gain: 1 dBi

IEEE 802.11b mode

Average Power (CH Low)



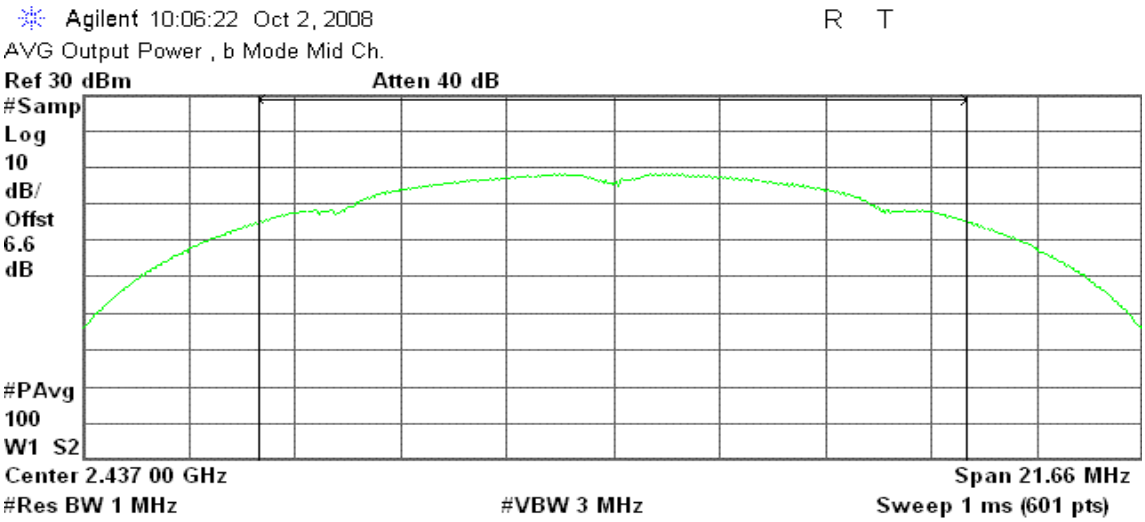
Channel Power

15.05 dBm / 14.5270 MHz

Power Spectral Density

-56.58 dBm/Hz

Average Power (CH Mid)



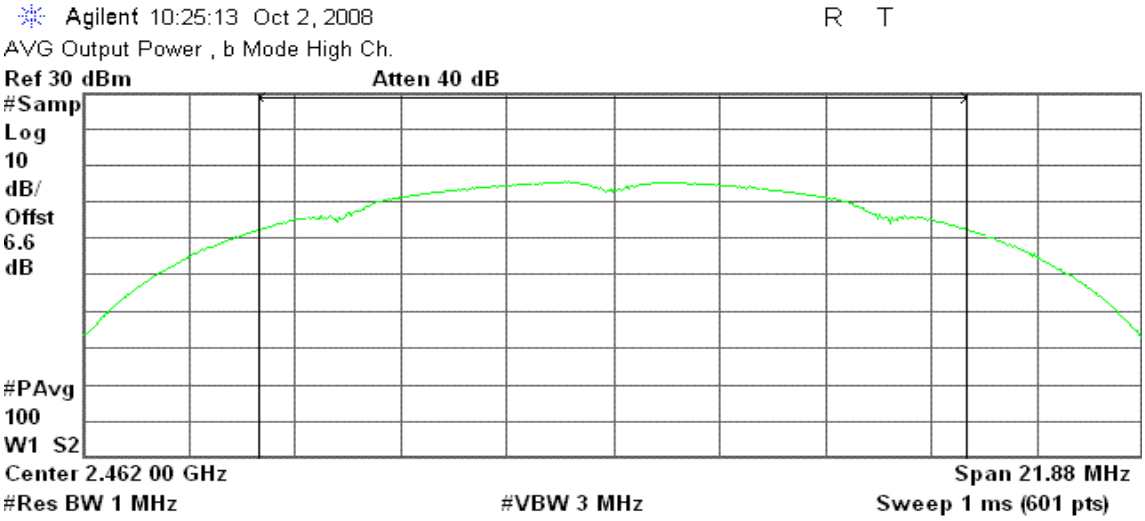
Channel Power

16.68 dBm / 14.4370 MHz

Power Spectral Density

-54.91 dBm/Hz

Average Power (CH High)



Channel Power

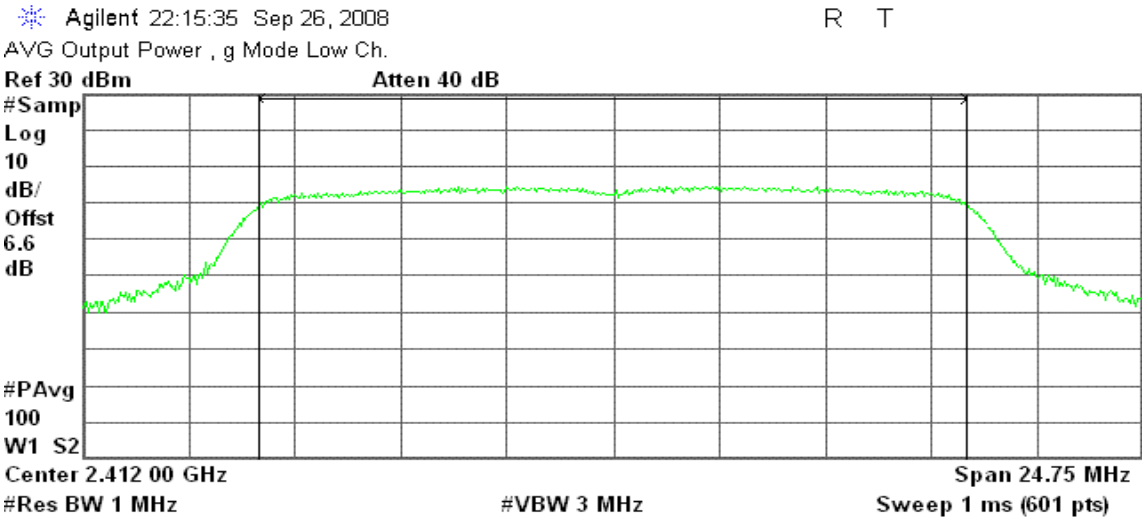
14.11 dBm / 14.5860 MHz

Power Spectral Density

-57.53 dBm/Hz

IEEE 802.11g mode

Average Power (CH Low)



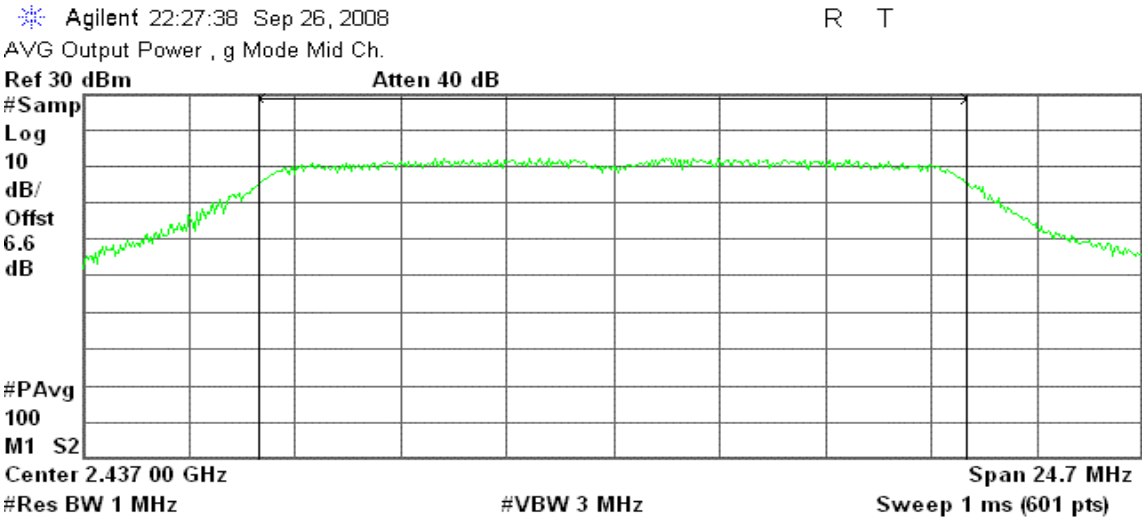
Channel Power

15.43 dBm / 16.5020 MHz

Power Spectral Density

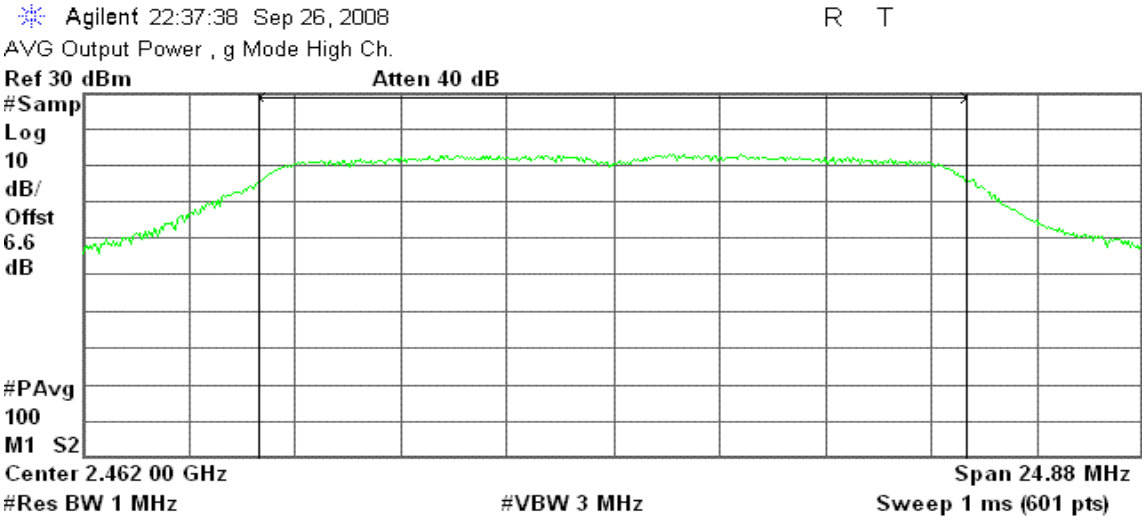
-56.74 dBm/Hz

Average Power (CH Mid)



Channel Power	Power Spectral Density
16.05 dBm / 16.4660 MHz	-56.11 dBm/Hz

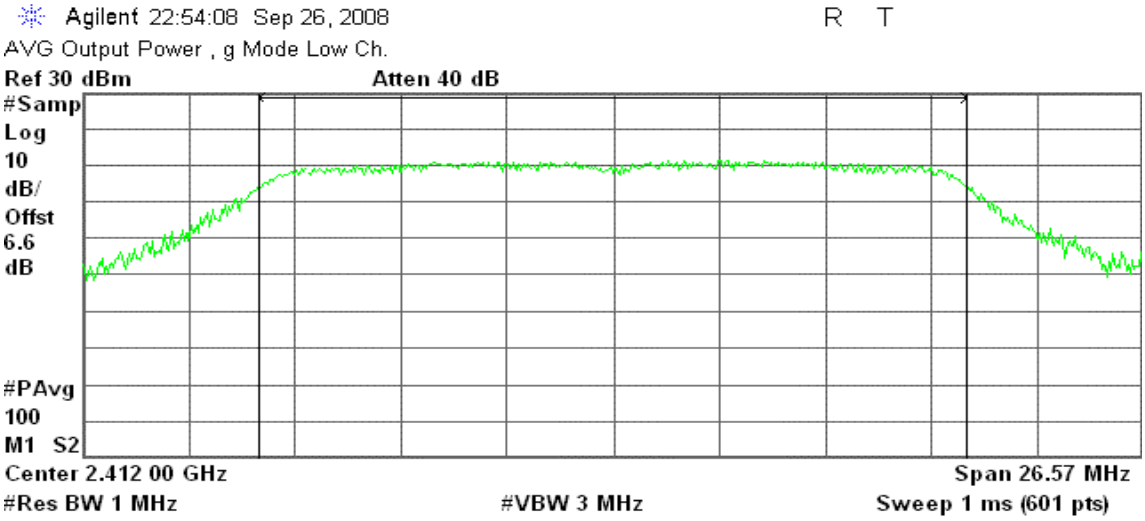
Average Power (CH High)



Channel Power	Power Spectral Density
16.56 dBm / 16.5860 MHz	-55.64 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode

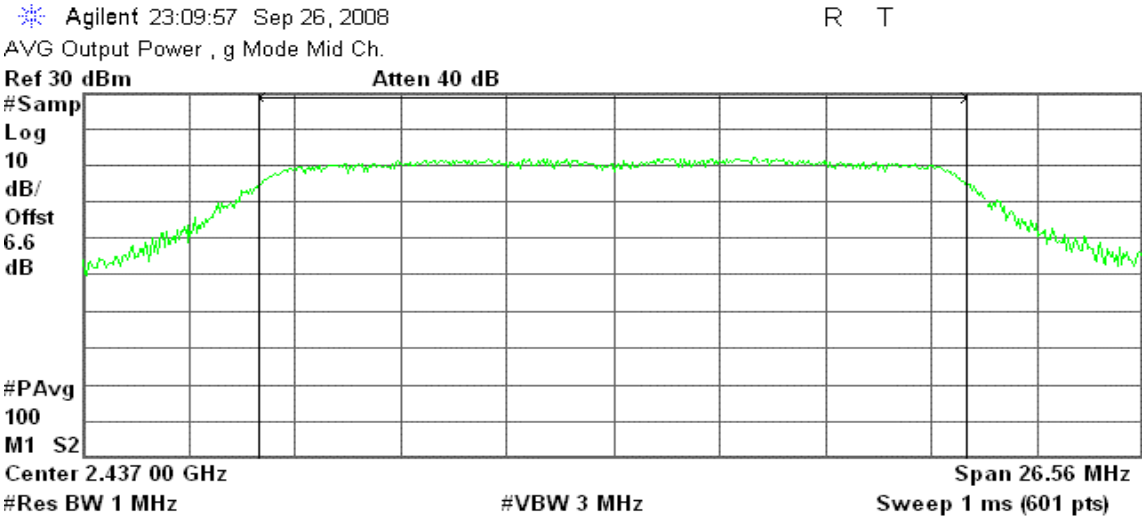
Average Power (CH Low)



Channel Power
14.96 dBm / 17.7160 MHz

Power Spectral Density
-57.53 dBm/Hz

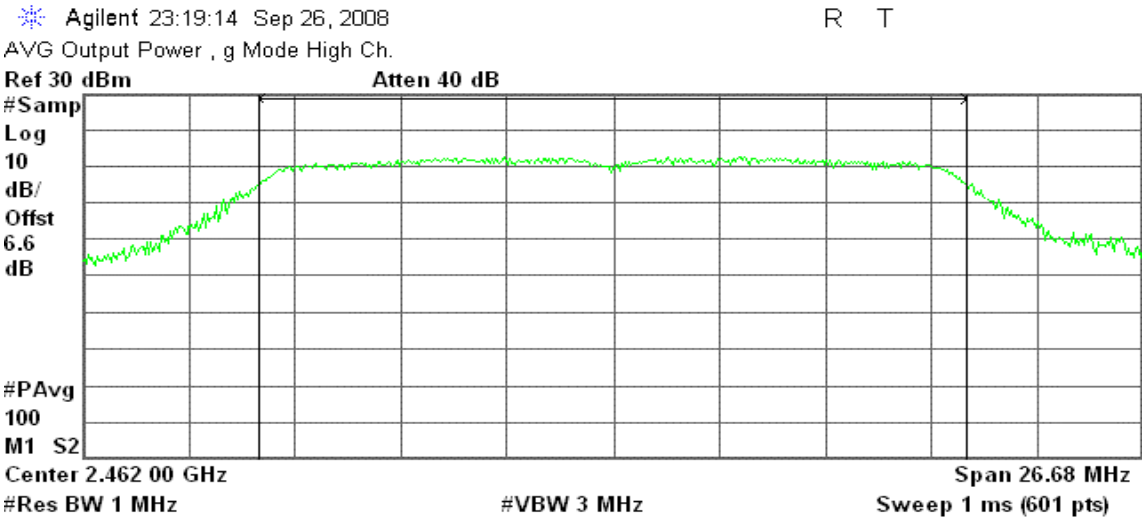
Average Power (CH Mid)



Channel Power
15.29 dBm / 17.7060 MHz

Power Spectral Density
-57.19 dBm/Hz

Average Power (CH High)

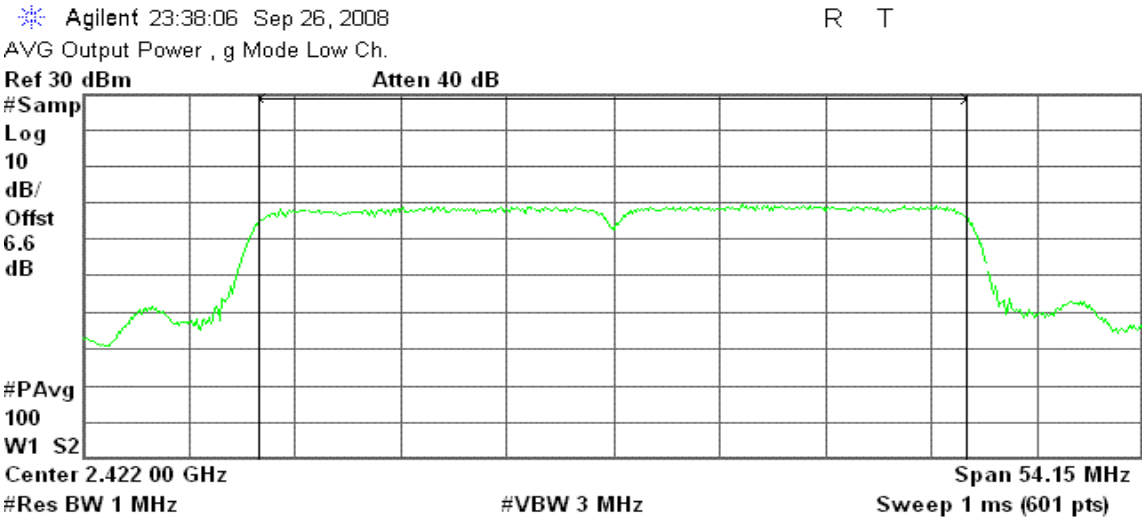


Channel Power
16.10 dBm / 17.7860 MHz

Power Spectral Density
-56.40 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode

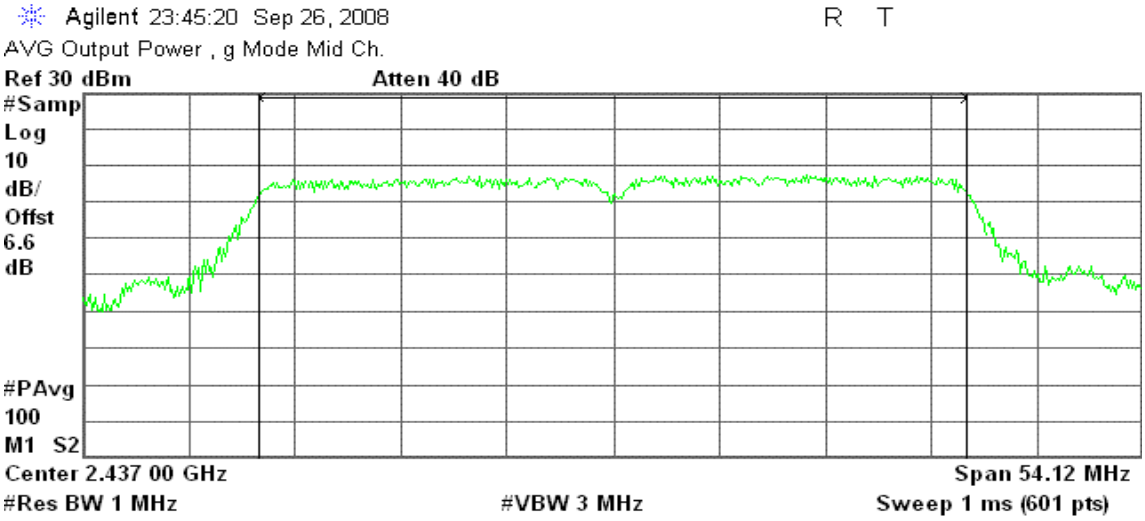
Average Power (CH Low)



Channel Power
13.58 dBm / 36.0980 MHz

Power Spectral Density
-61.99 dBm/Hz

Average Power (CH Mid)



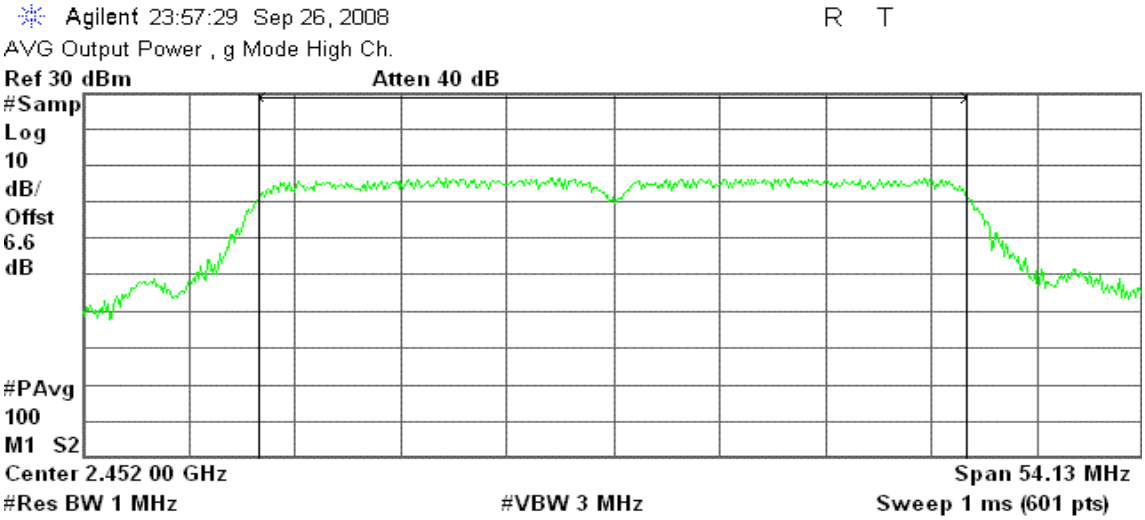
Channel Power

14.44 dBm / 36.0770 MHz

Power Spectral Density

-61.13 dBm/Hz

Average Power (CH High)



Channel Power

13.93 dBm / 36.0850 MHz

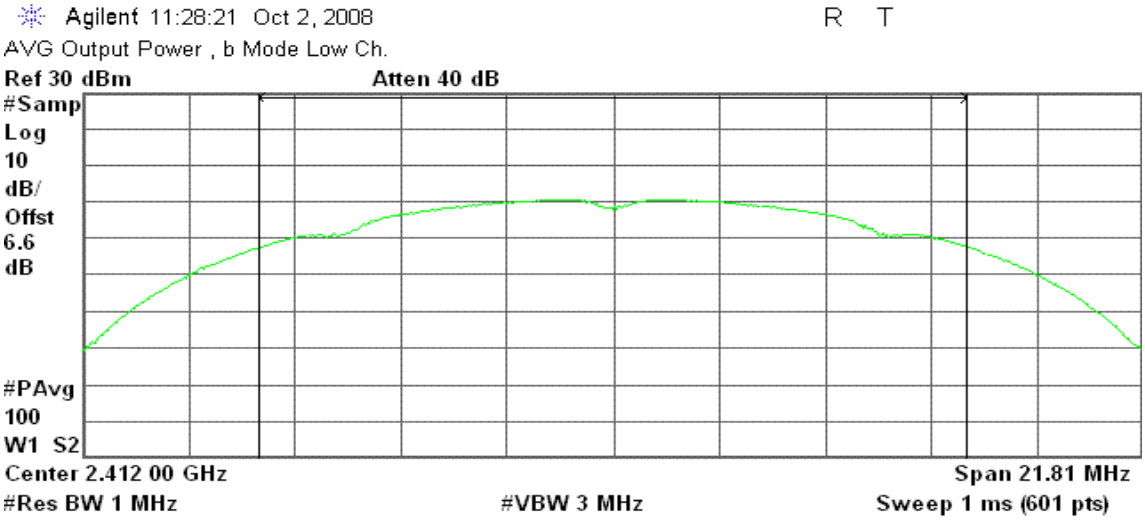
Power Spectral Density

-61.64 dBm/Hz

Patch Antenna / Gain: 9.12 dBi, Dipole Antenna / Gain: 9.09 dBi

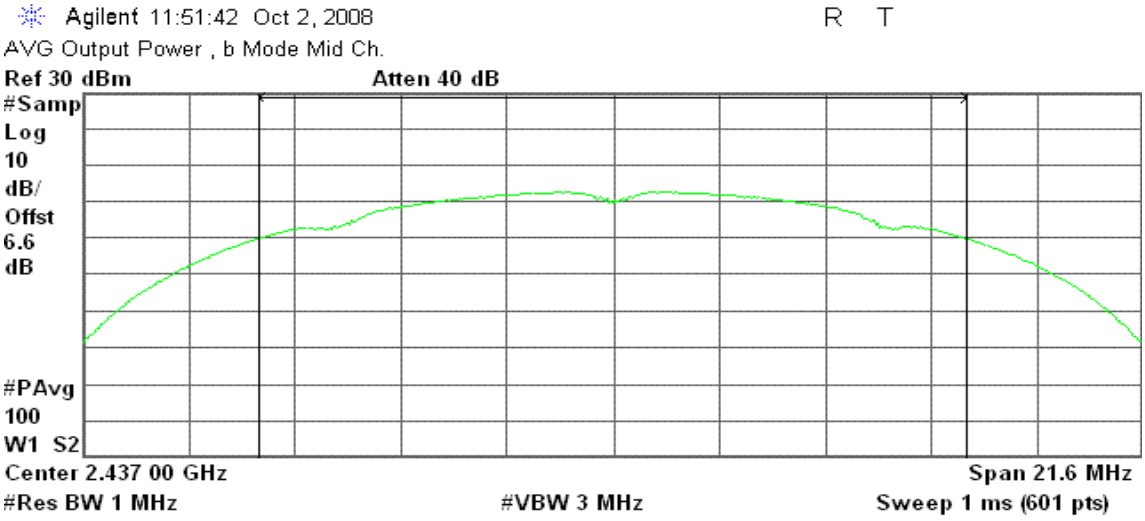
IEEE 802.11b mode

Average Power (CH Low)



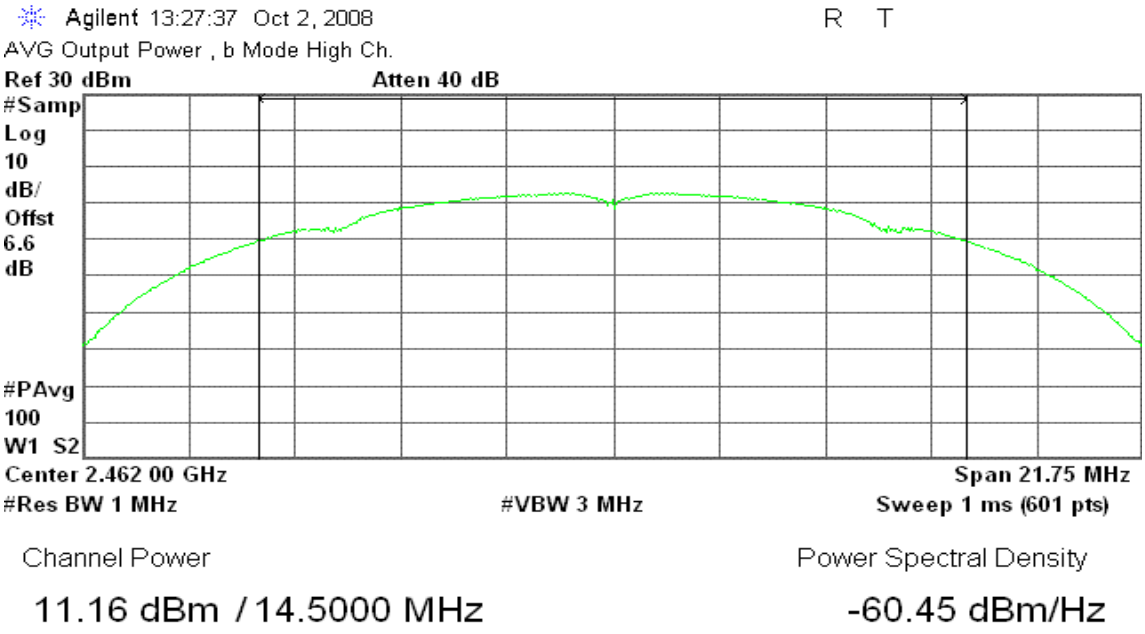
Channel Power	Power Spectral Density
9.22 dBm / 14.5420 MHz	-62.41 dBm/Hz

Average Power (CH Mid)



Channel Power	Power Spectral Density
11.33 dBm / 14.3970 MHz	-60.25 dBm/Hz

Average Power (CH High)

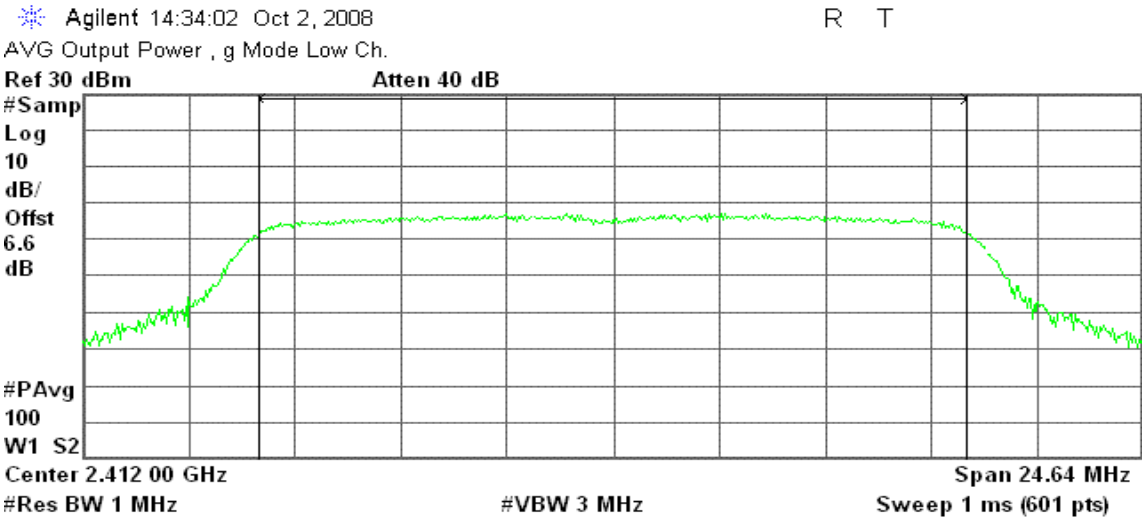


Channel Power
11.16 dBm / 14.5000 MHz

Power Spectral Density
-60.45 dBm/Hz

IEEE 802.11g mode

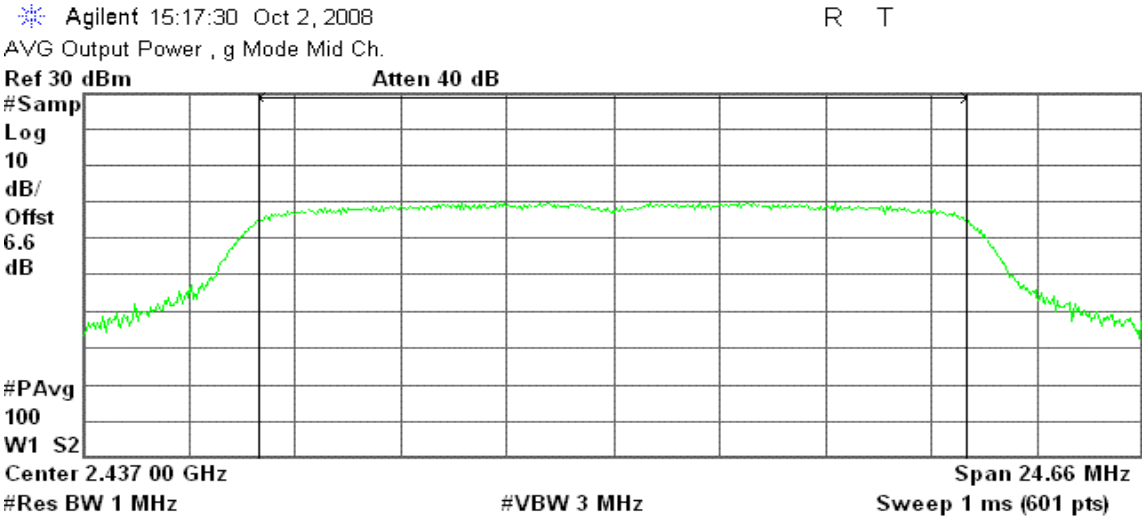
Average Power (CH Low)



Channel Power
7.67 dBm / 16.4250 MHz

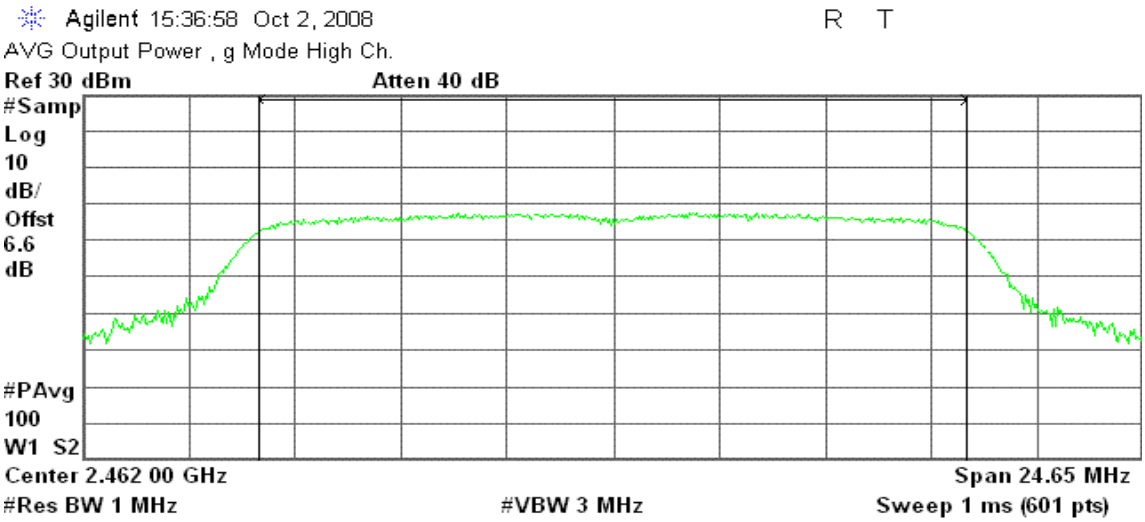
Power Spectral Density
-64.48 dBm/Hz

Average Power (CH Mid)



Channel Power	Power Spectral Density
10.63 dBm / 16.4420 MHz	-61.53 dBm/Hz

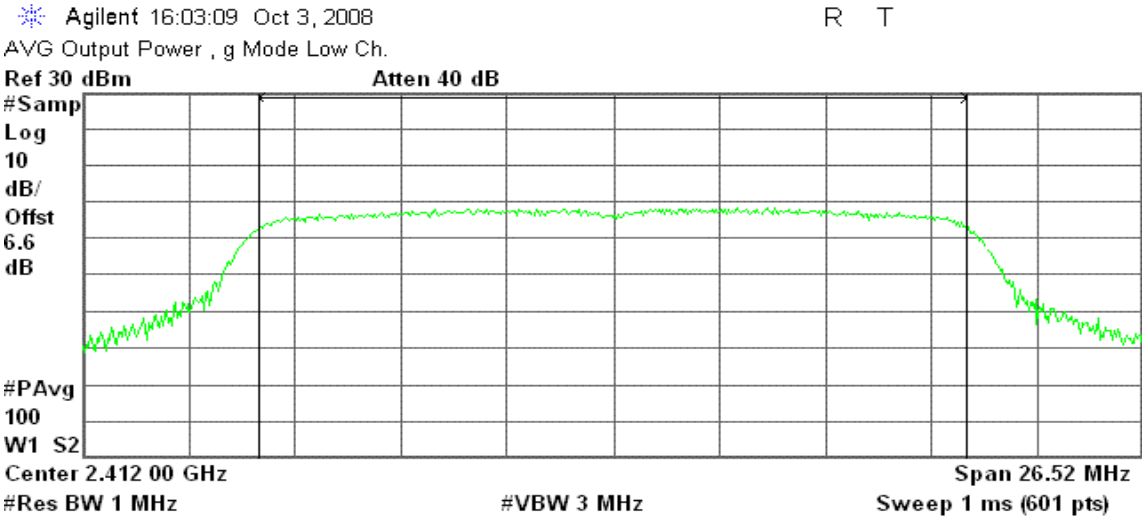
Average Power (CH High)



Channel Power	Power Spectral Density
8.13 dBm / 16.4350 MHz	-64.03 dBm/Hz

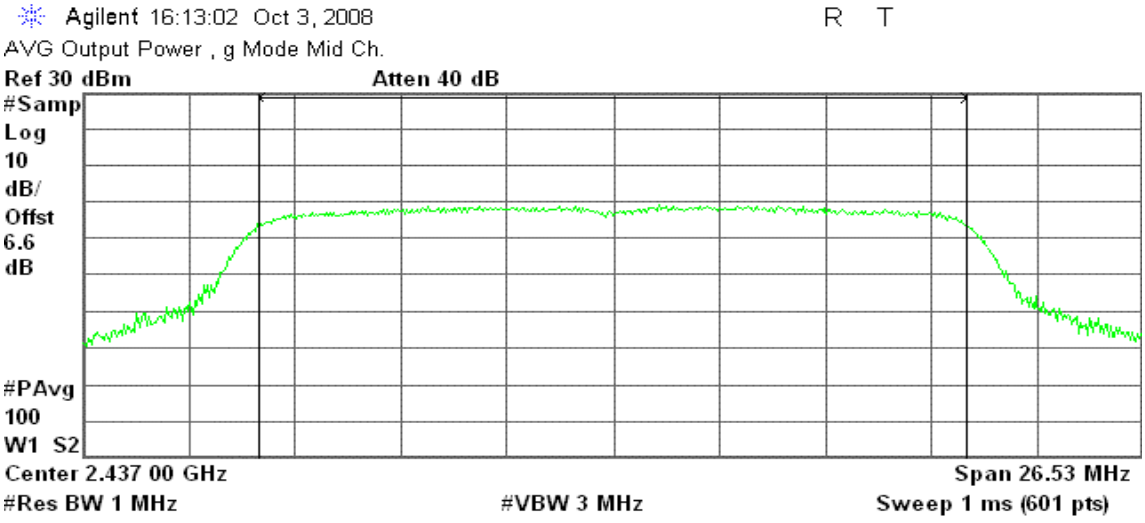
draft 802.11n Standard-20 MHz Channel mode

Average Power (CH Low)



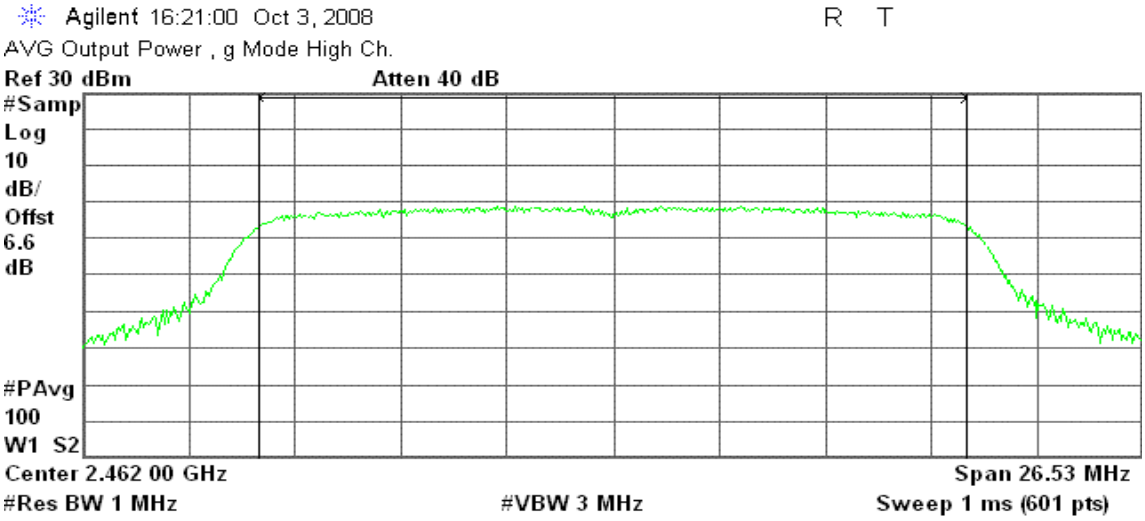
Channel Power	Power Spectral Density
9.34 dBm / 17.6800 MHz	-63.13 dBm/Hz

Average Power (CH Mid)



Channel Power	Power Spectral Density
9.90 dBm / 17.6880 MHz	-62.57 dBm/Hz

Average Power (CH High)

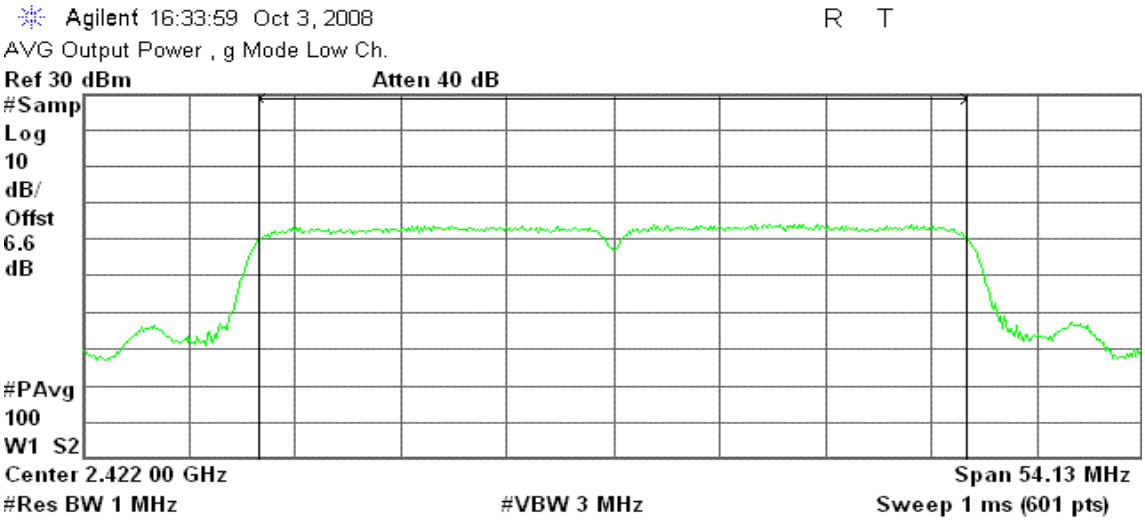


Channel Power
9.87 dBm / 17.6860 MHz

Power Spectral Density
-62.60 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode

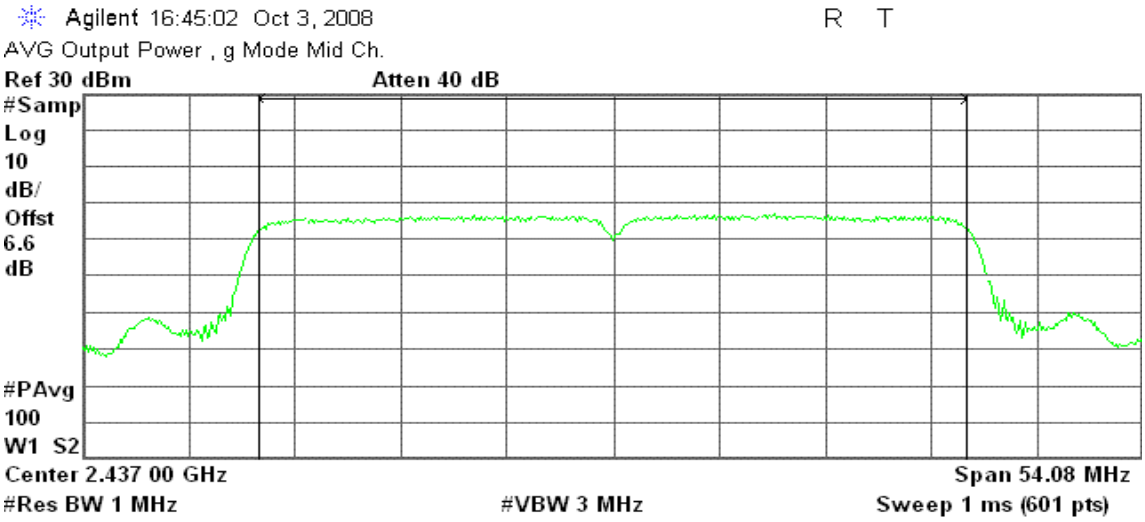
Average Power (CH Low)



Channel Power
8.27 dBm / 36.0870 MHz

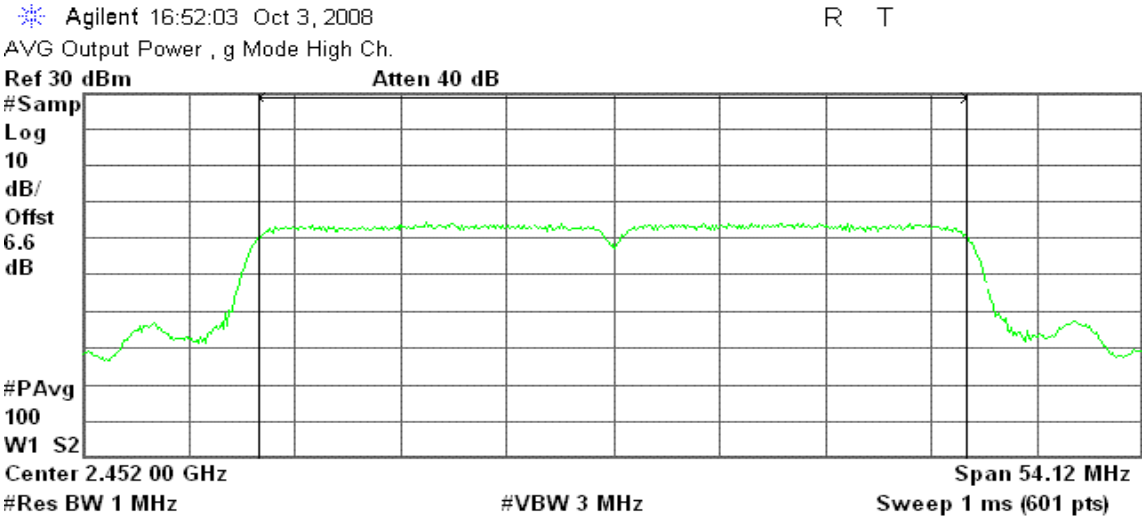
Power Spectral Density
-67.30 dBm/Hz

Average Power (CH Mid)



Channel Power	Power Spectral Density
11.16 dBm / 36.0550 MHz	-64.41 dBm/Hz

Average Power (CH High)



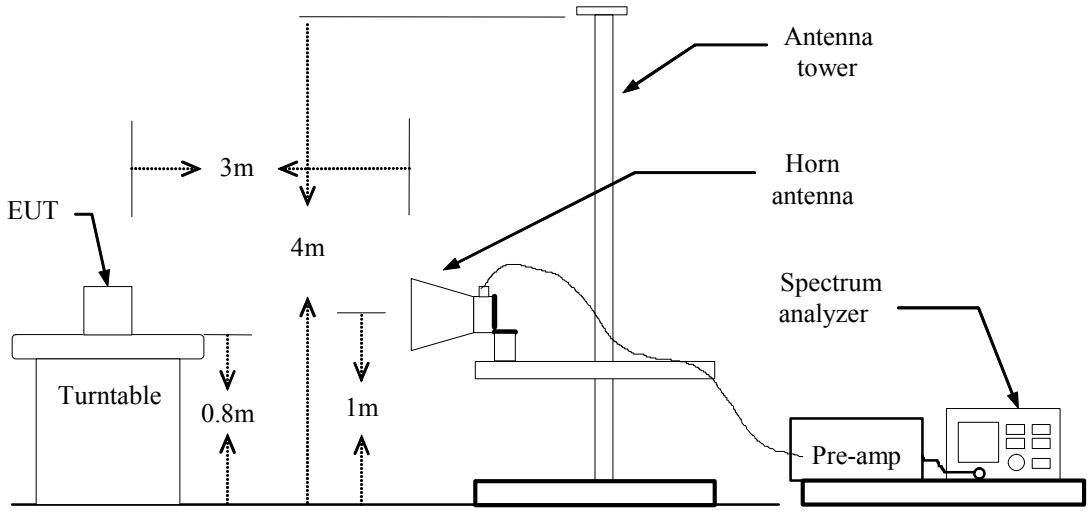
Channel Power	Power Spectral Density
8.33 dBm / 36.0770 MHz	-67.25 dBm/Hz

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 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



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.

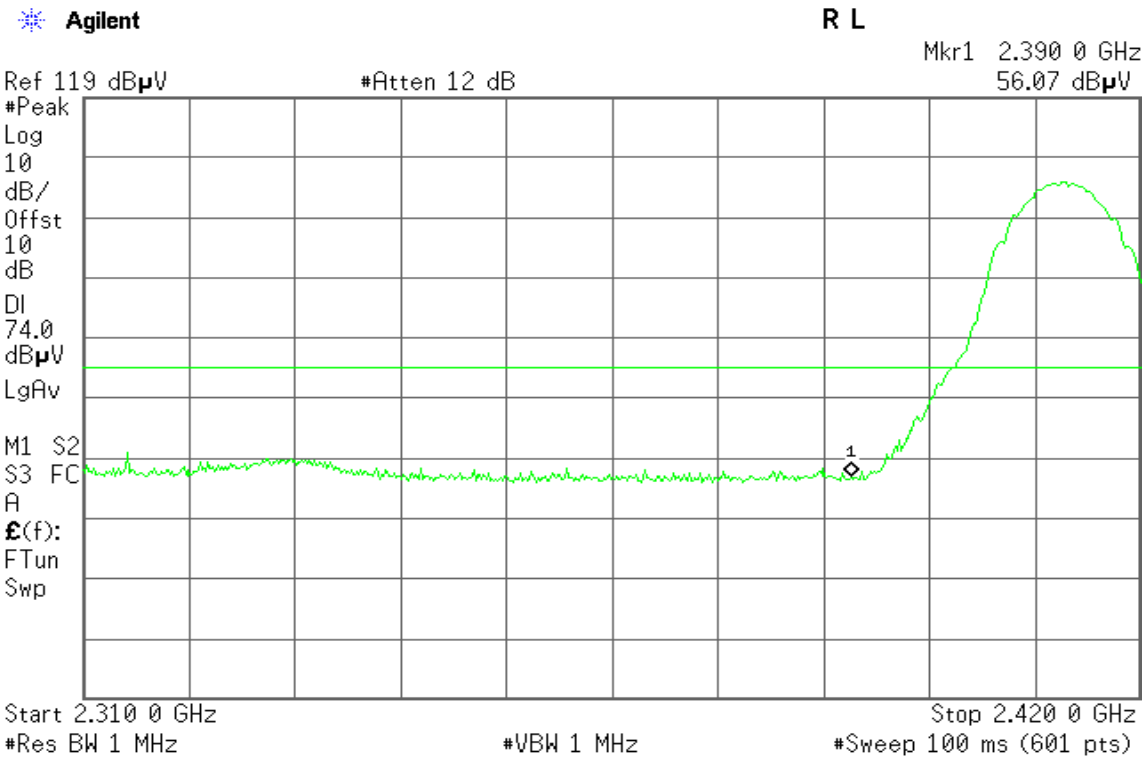
TEST RESULTS

Refer to attach spectrum analyzer data chart.

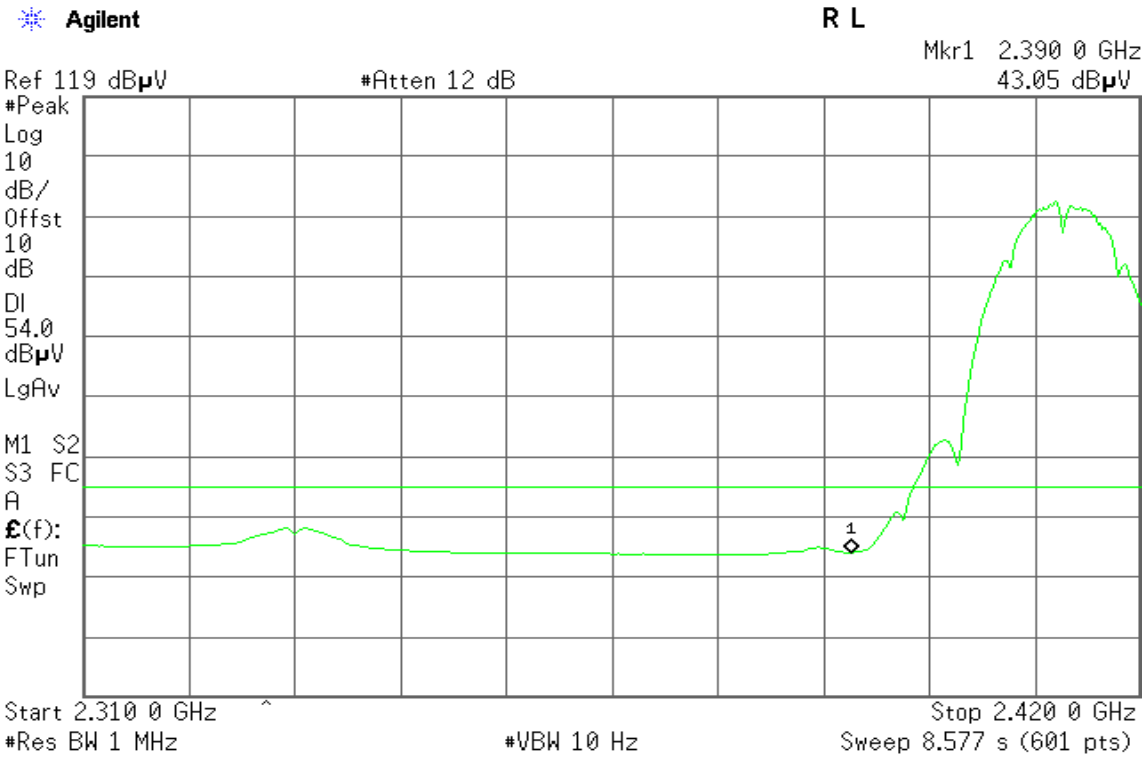
PCB Antenna / Gain: 1 dBi

Band Edges (IEEE 802.11b mode / CH Low)

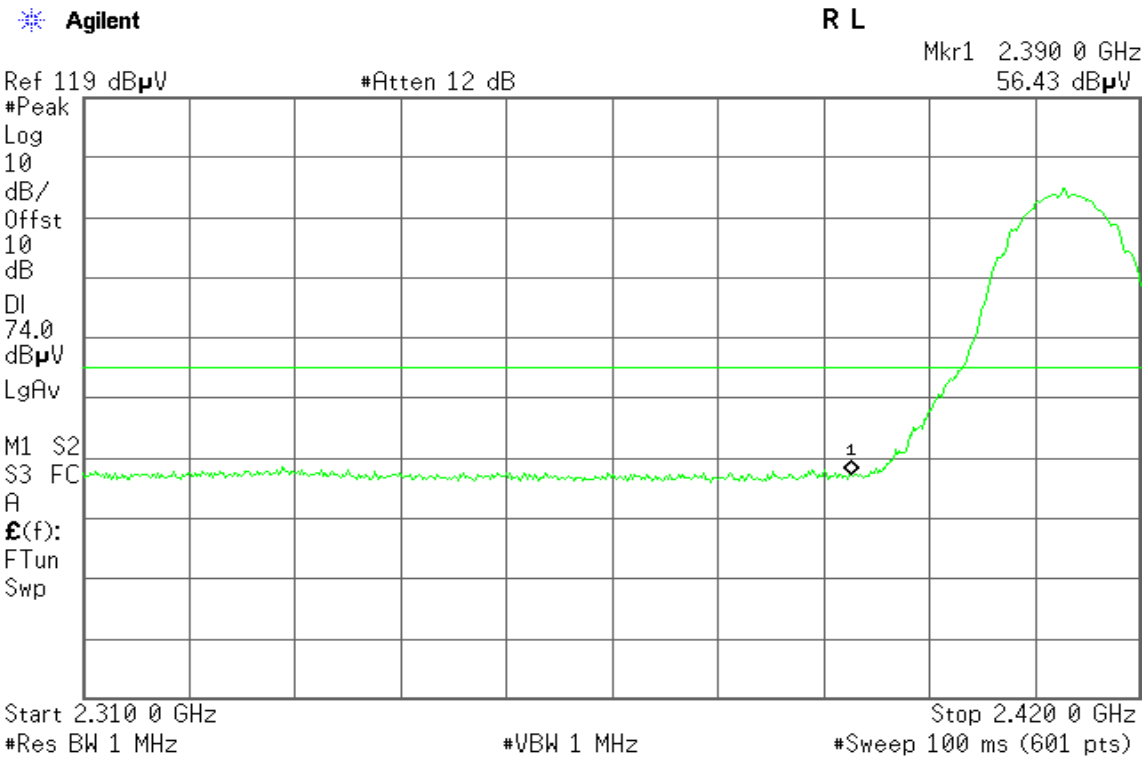
Detector mode: Peak **Polarity: Vertical**



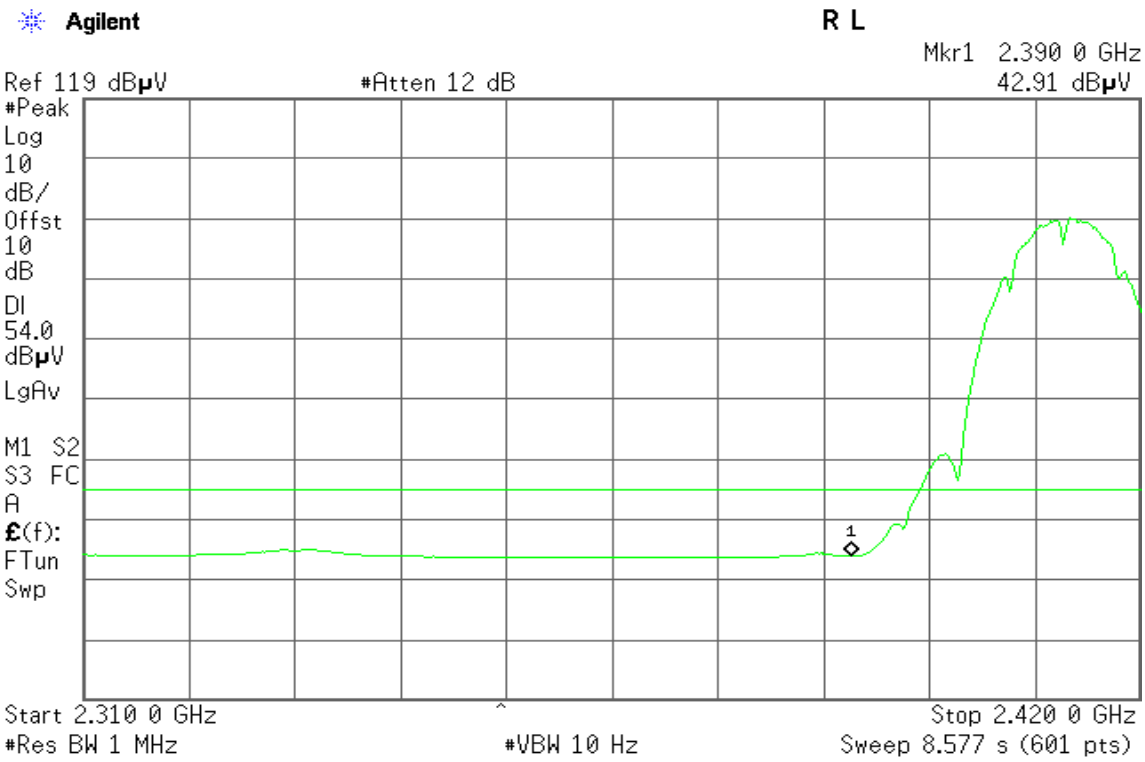
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

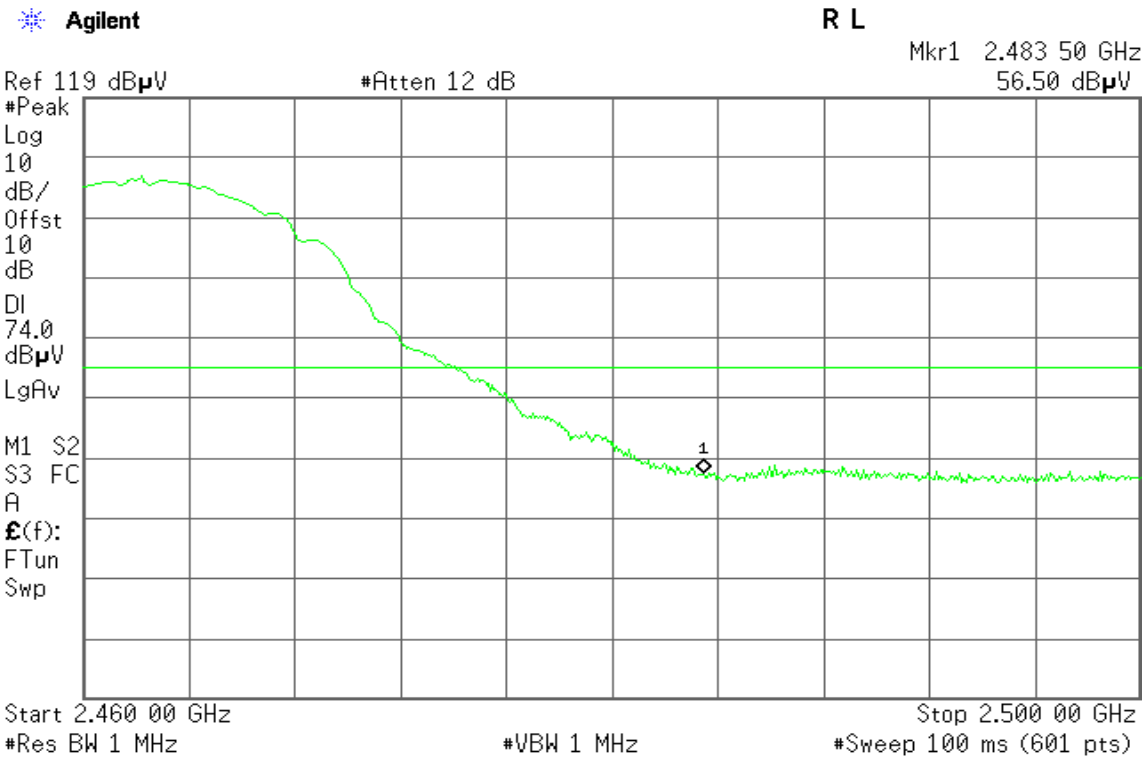


Detector mode: Average **Polarity: Horizontal**

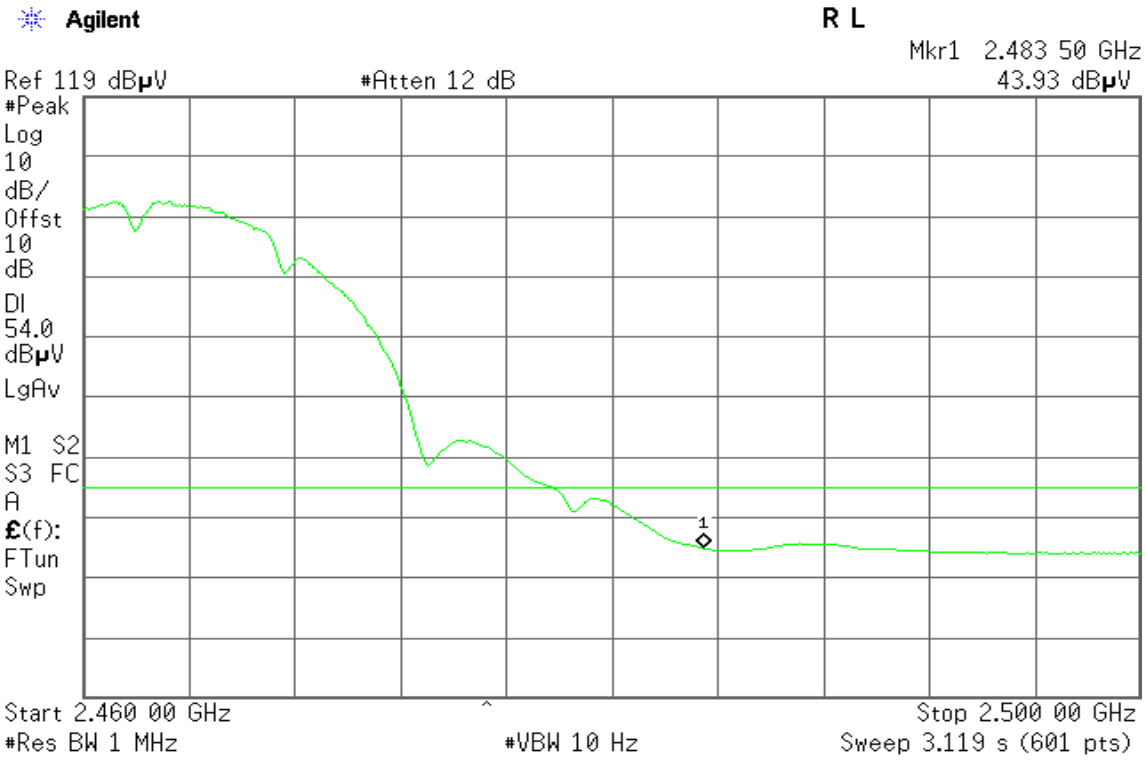


Band Edges (IEEE 802.11b mode / CH High)

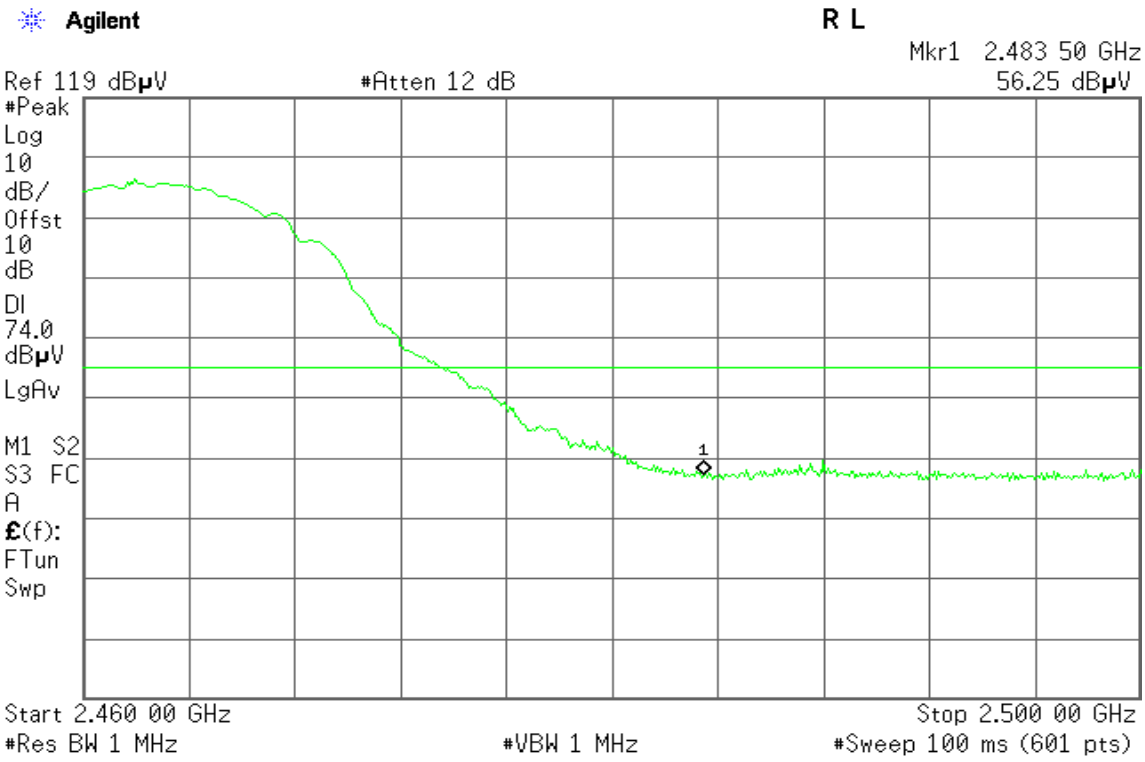
Detector mode: Peak Polarity: Vertical



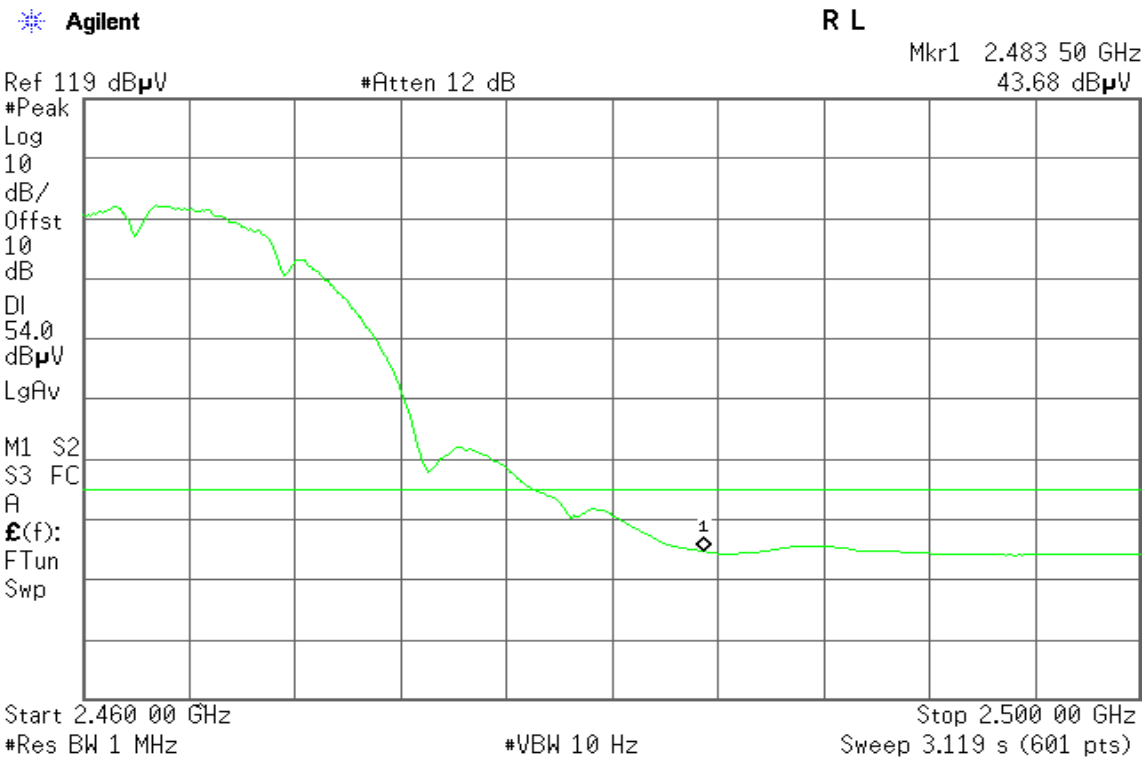
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

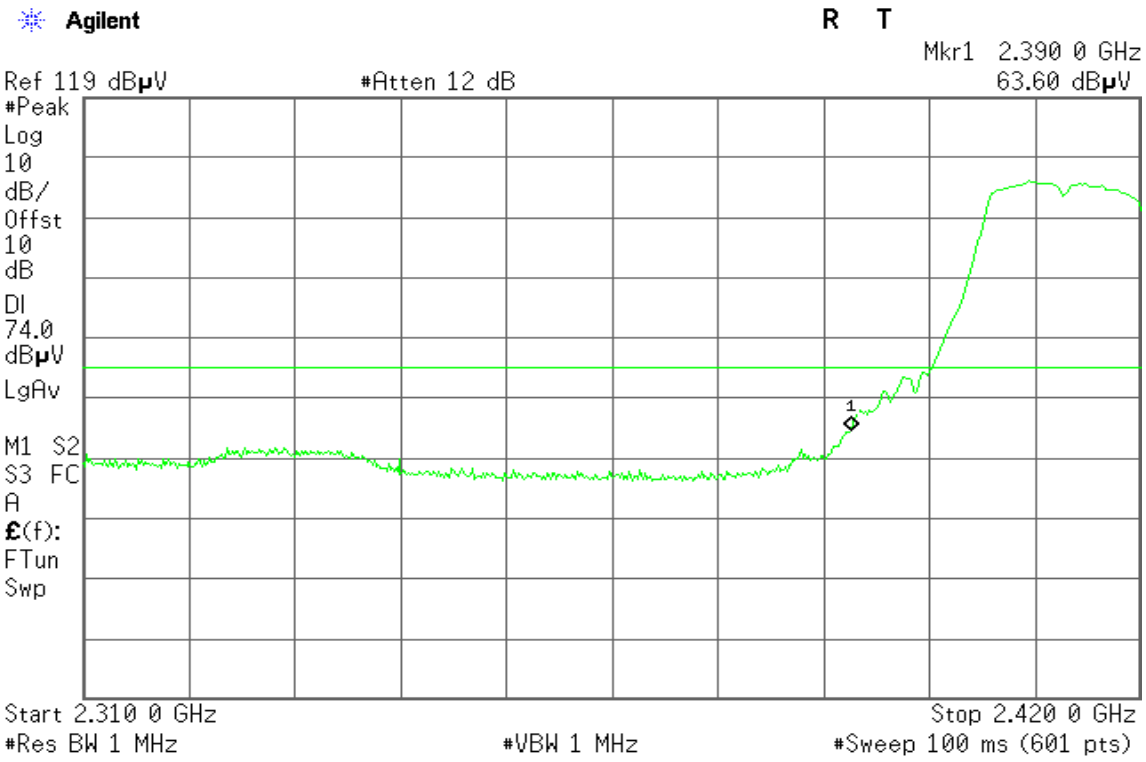


Detector mode: Average **Polarity: Horizontal**

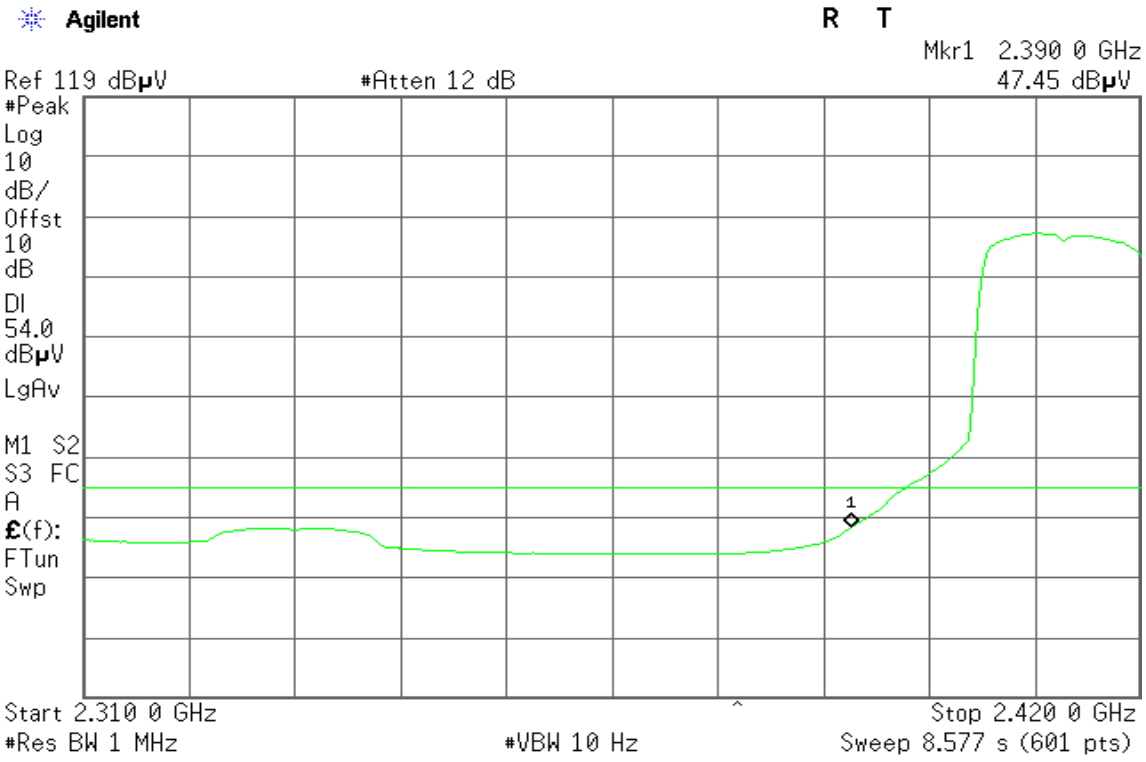


Band Edges (IEEE 802.11g mode / CH Low)

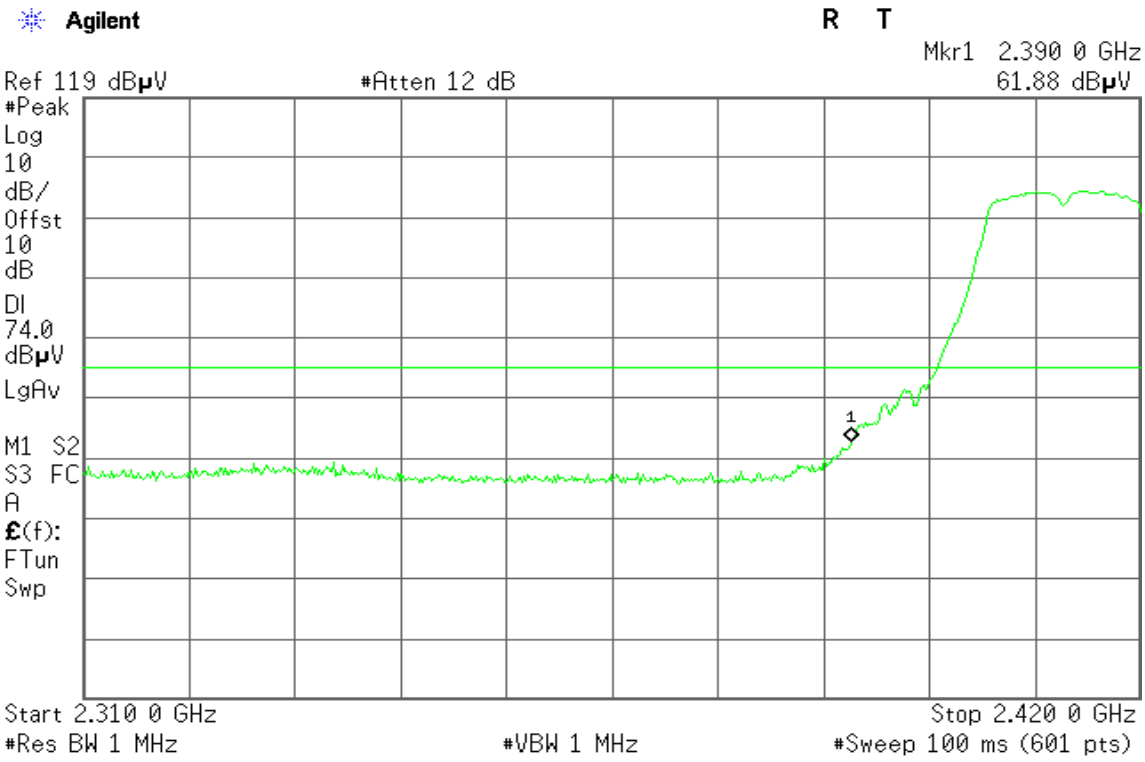
Detector mode: Peak Polarity: Vertical



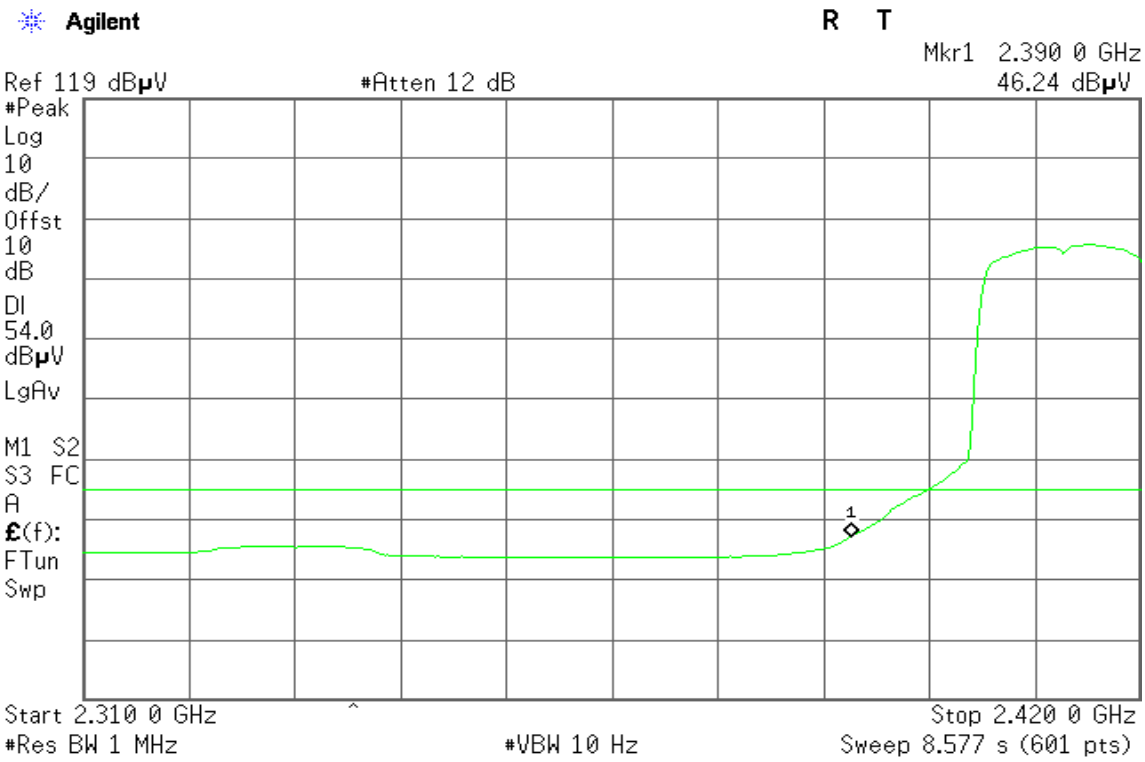
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

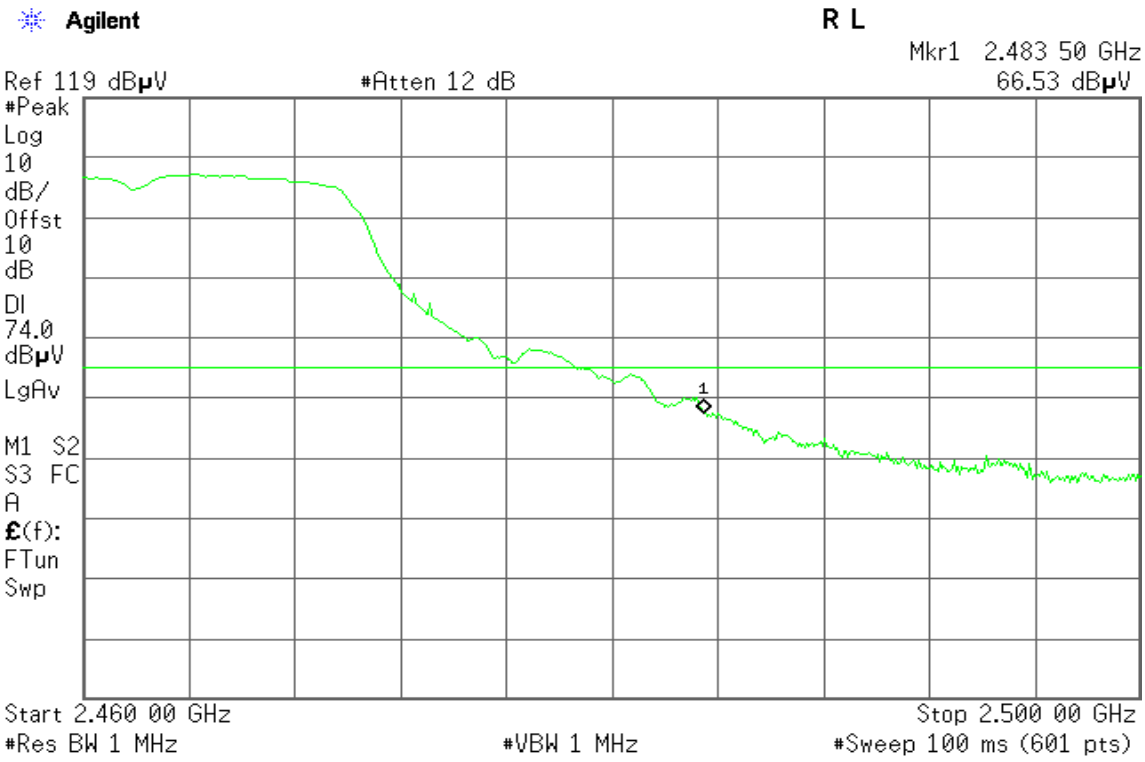


Detector mode: Average **Polarity: Horizontal**

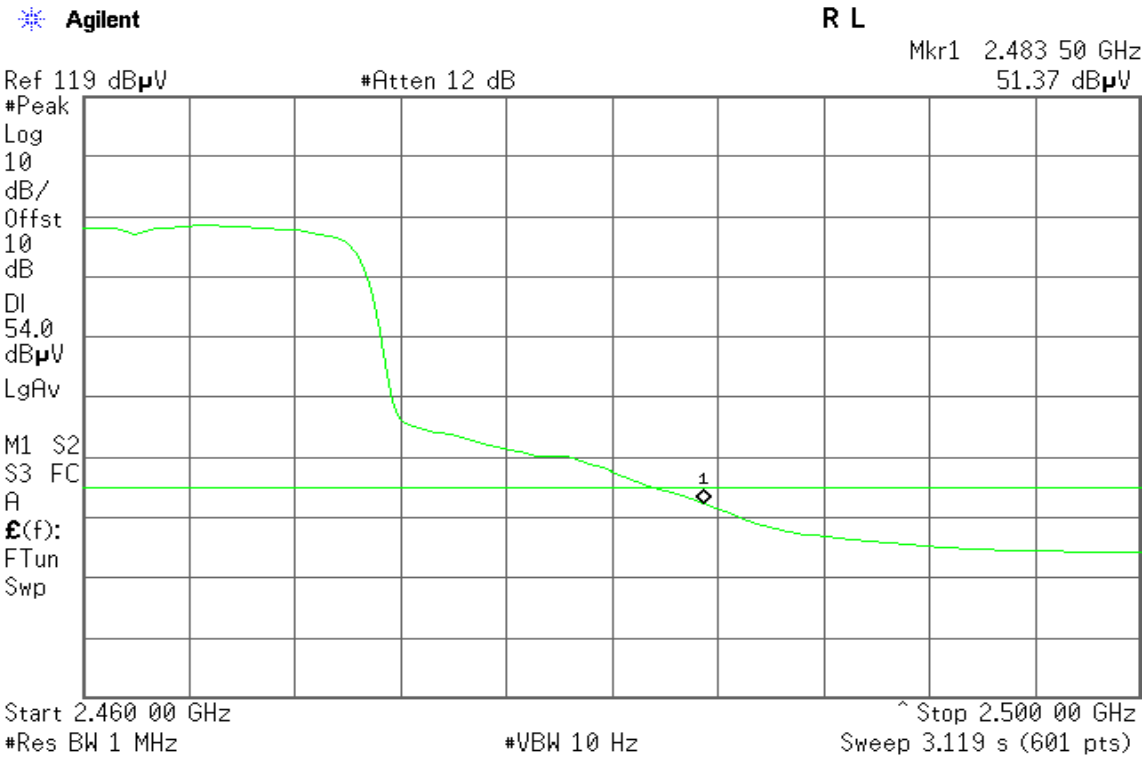


Band Edges (IEEE 802.11g mode / CH High)

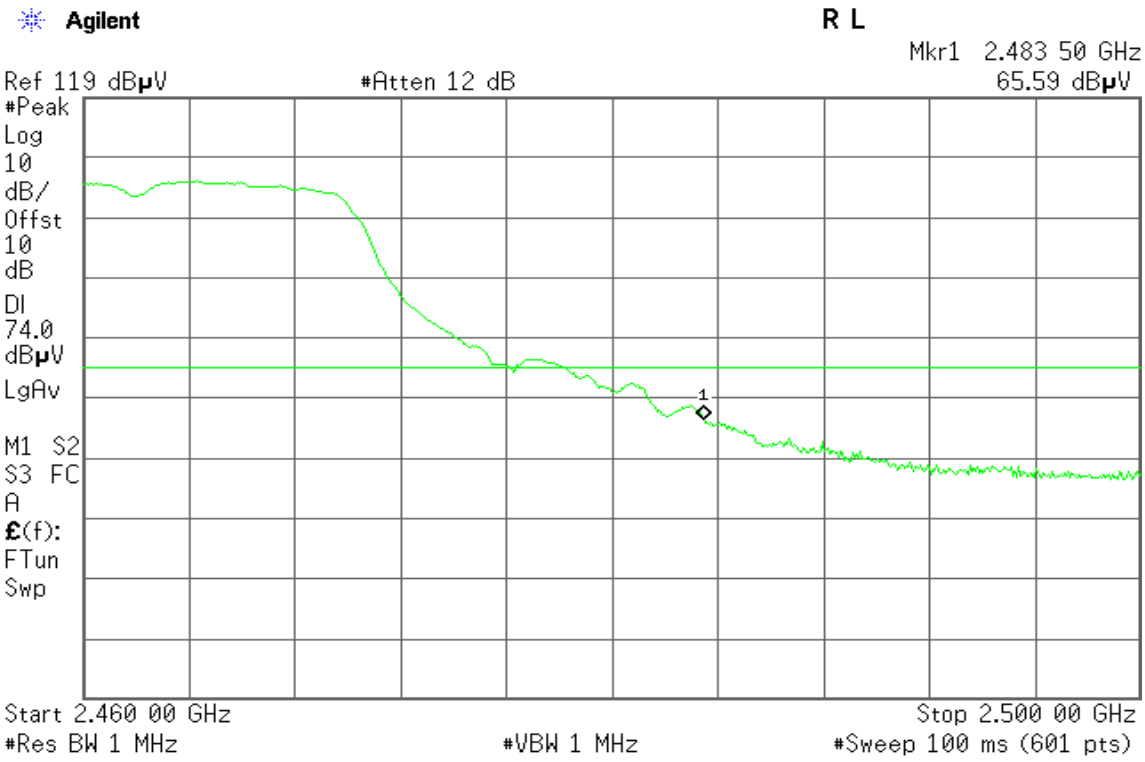
Detector mode: Peak Polarity: Vertical



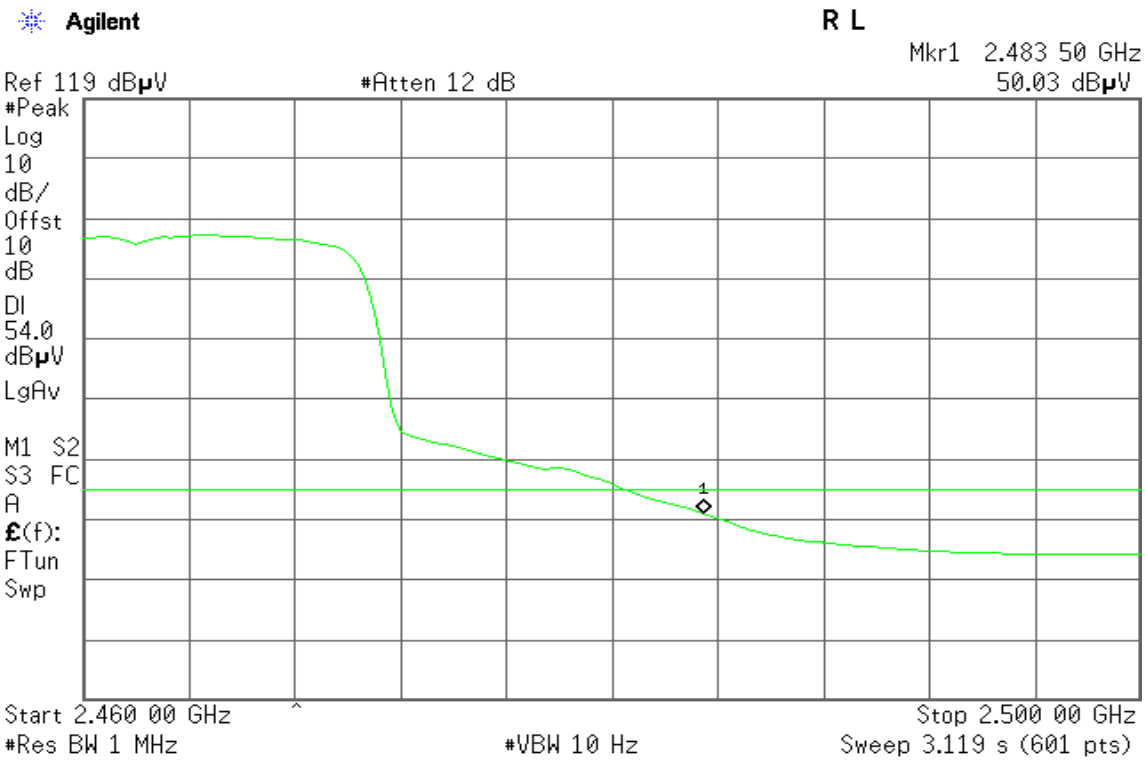
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

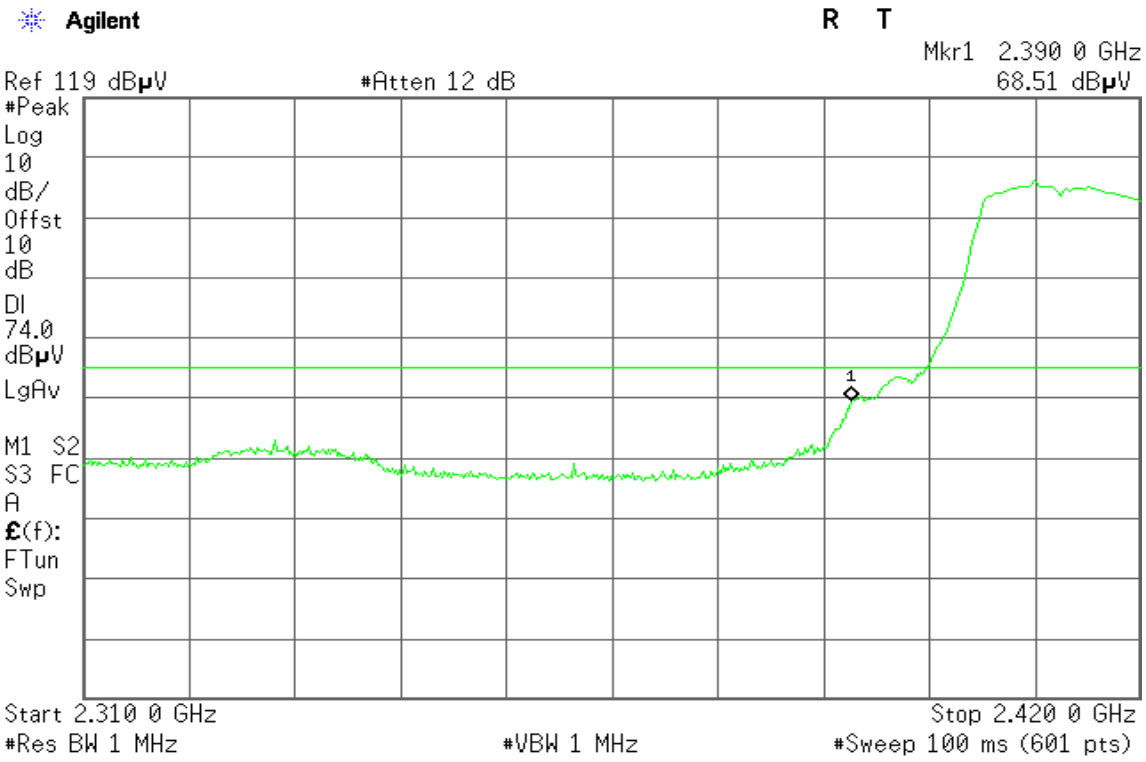


Detector mode: Average **Polarity: Horizontal**

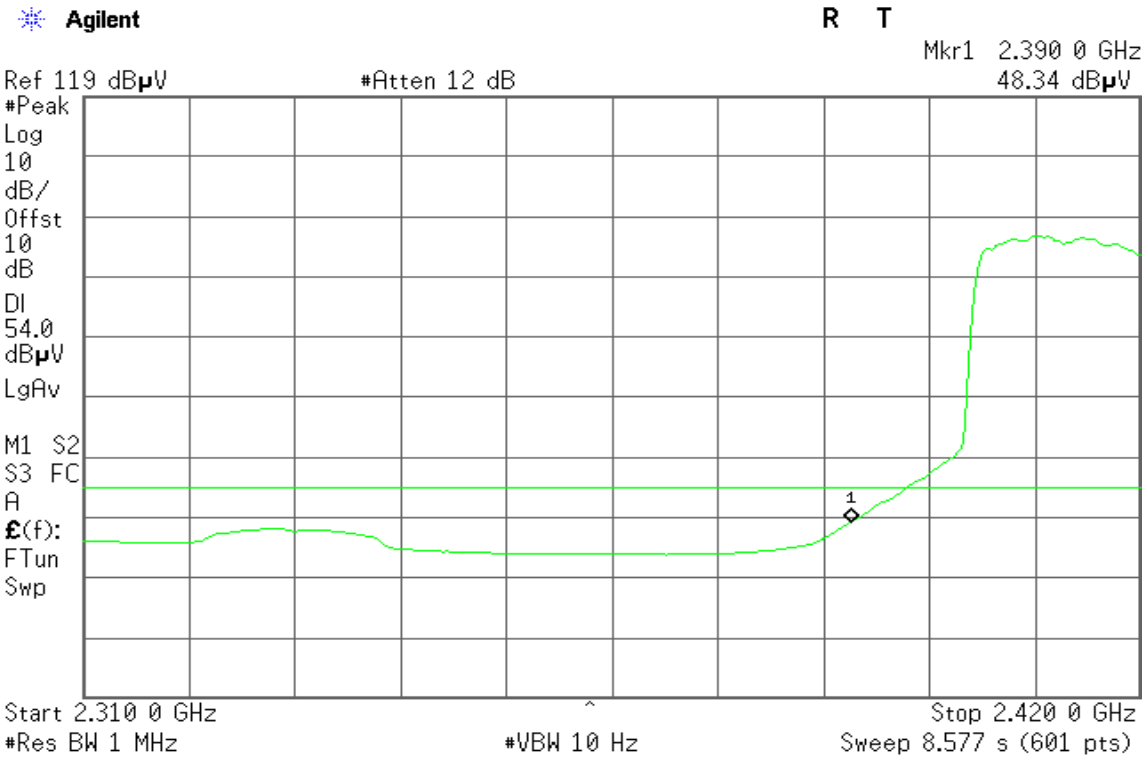


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH Low)

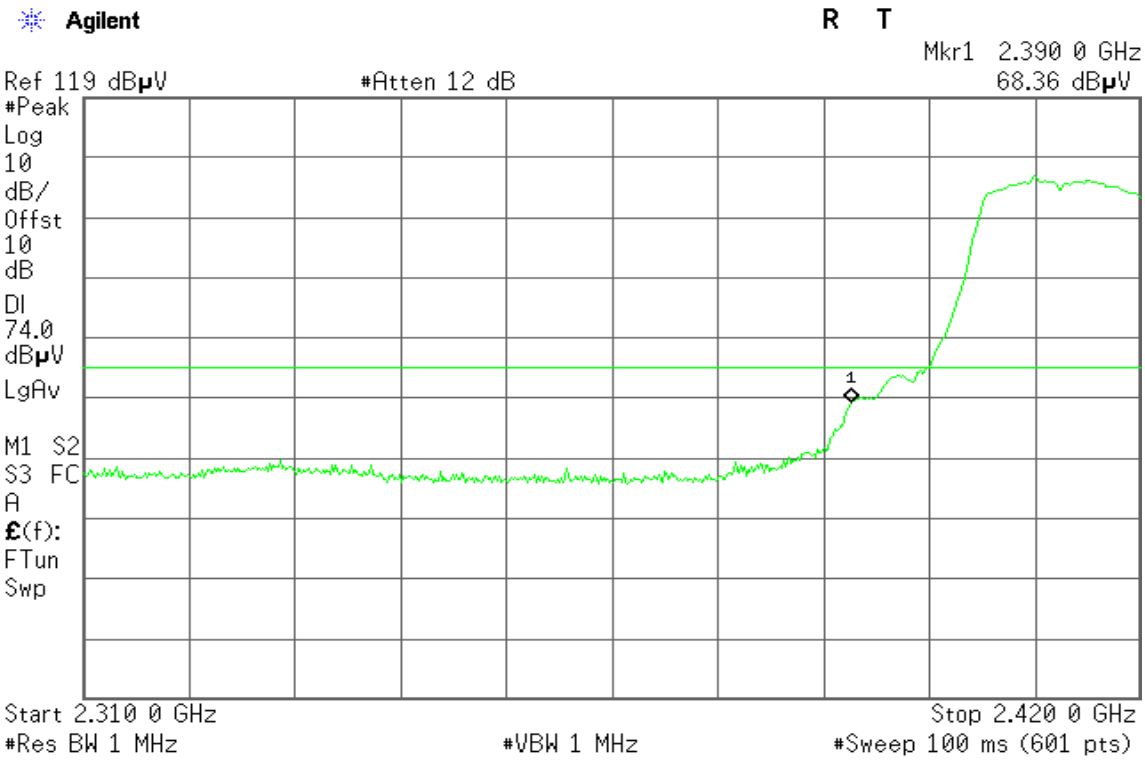
Detector mode: Peak **Polarity: Vertical**



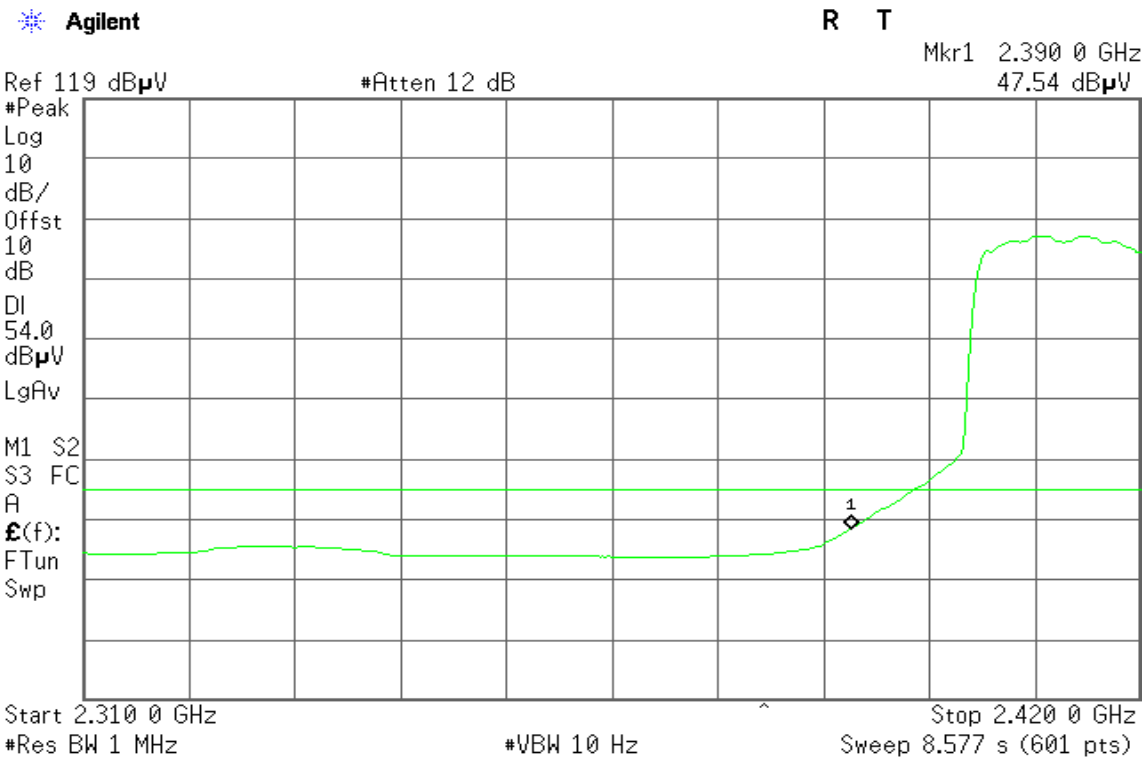
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

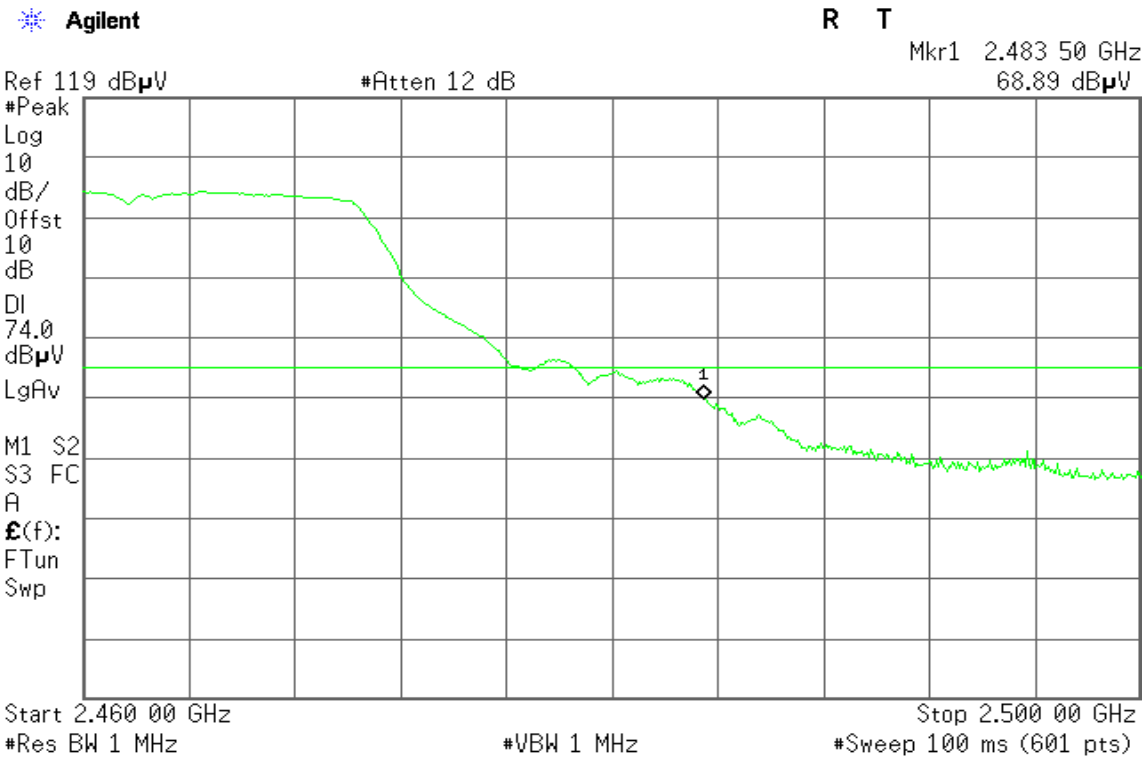


Detector mode: Average **Polarity: Horizontal**

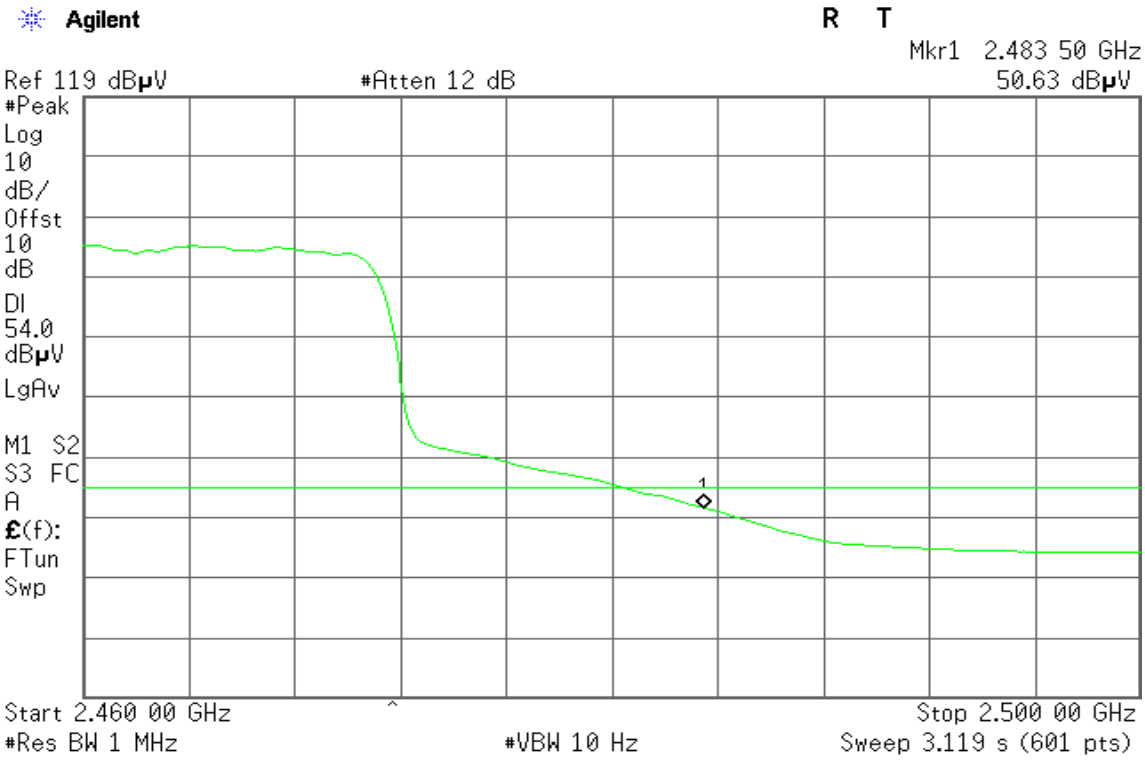


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH High)

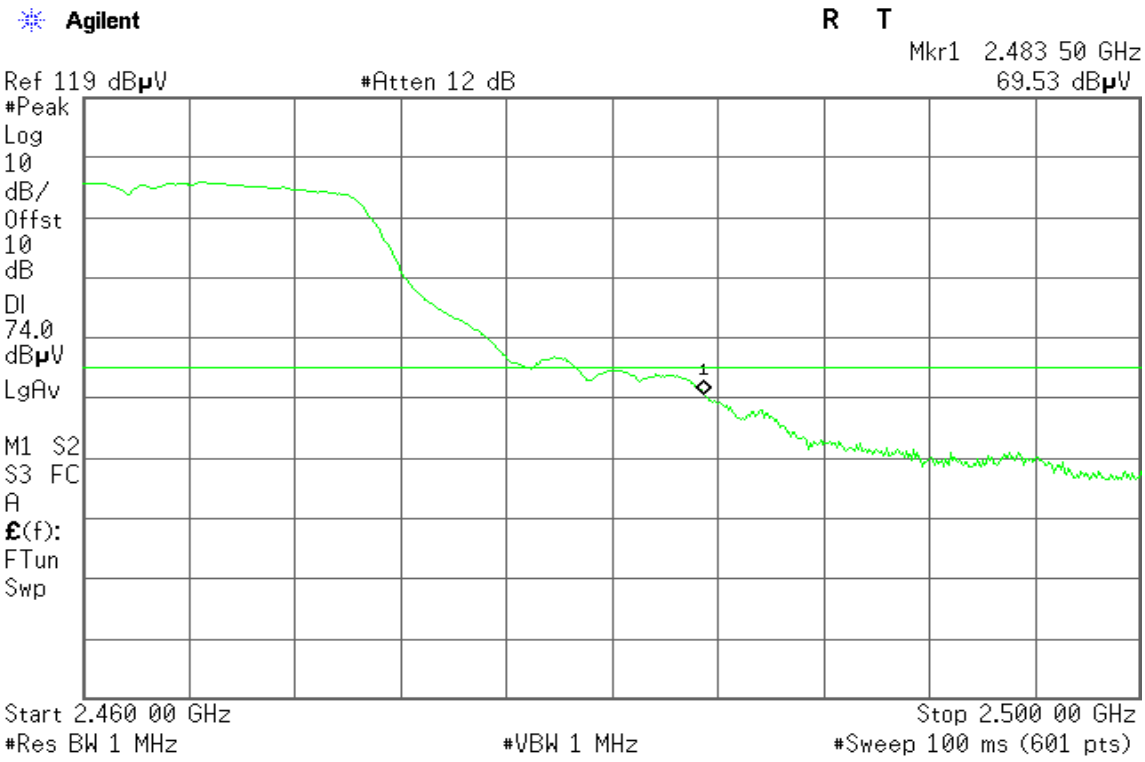
Detector mode: Peak **Polarity: Vertical**



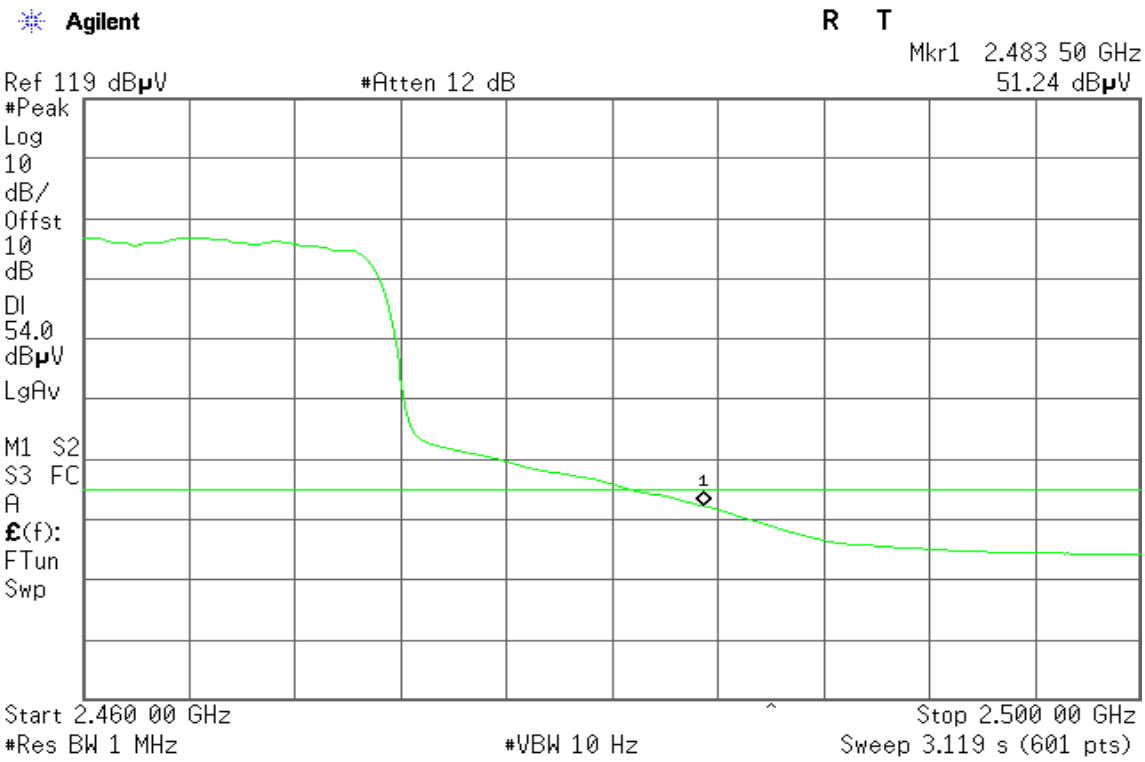
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

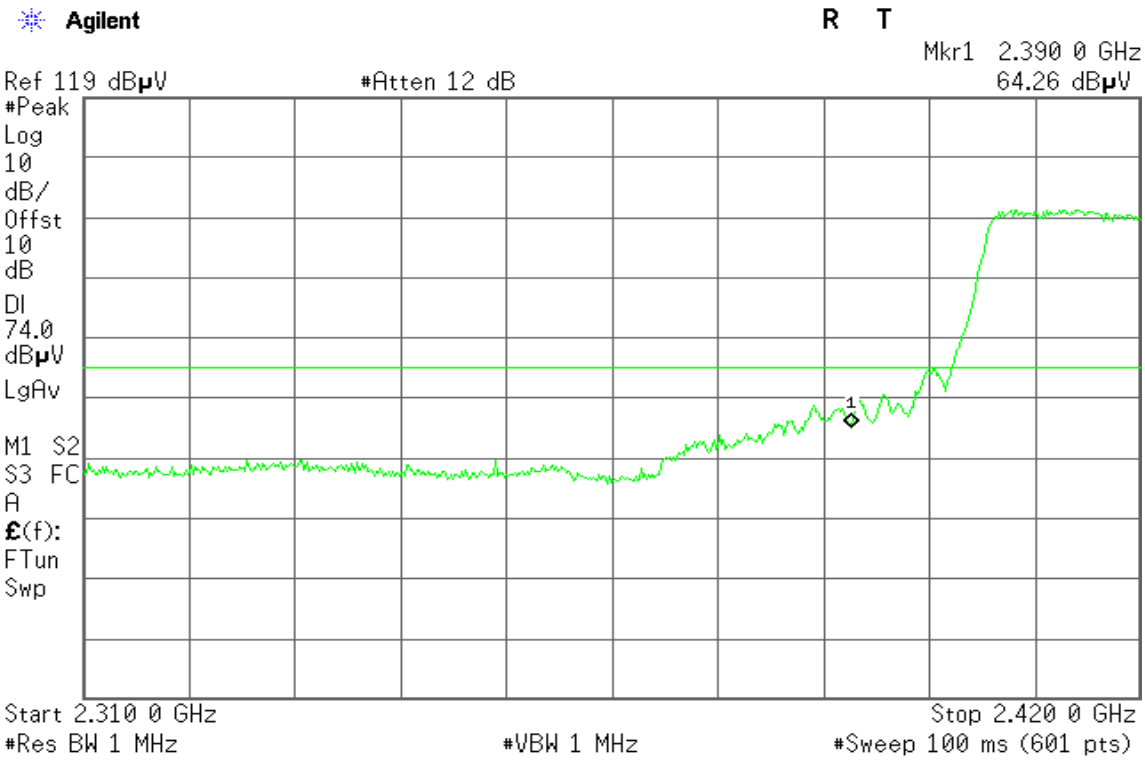


Detector mode: Average **Polarity: Horizontal**

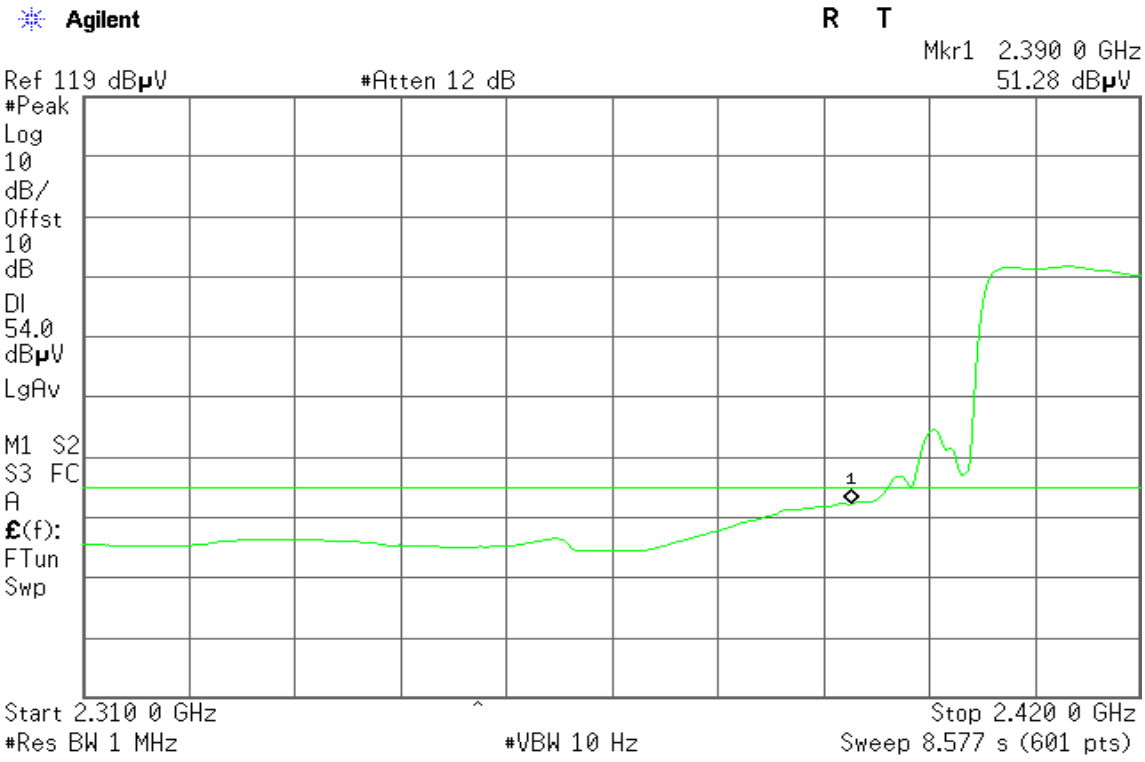


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH Low)

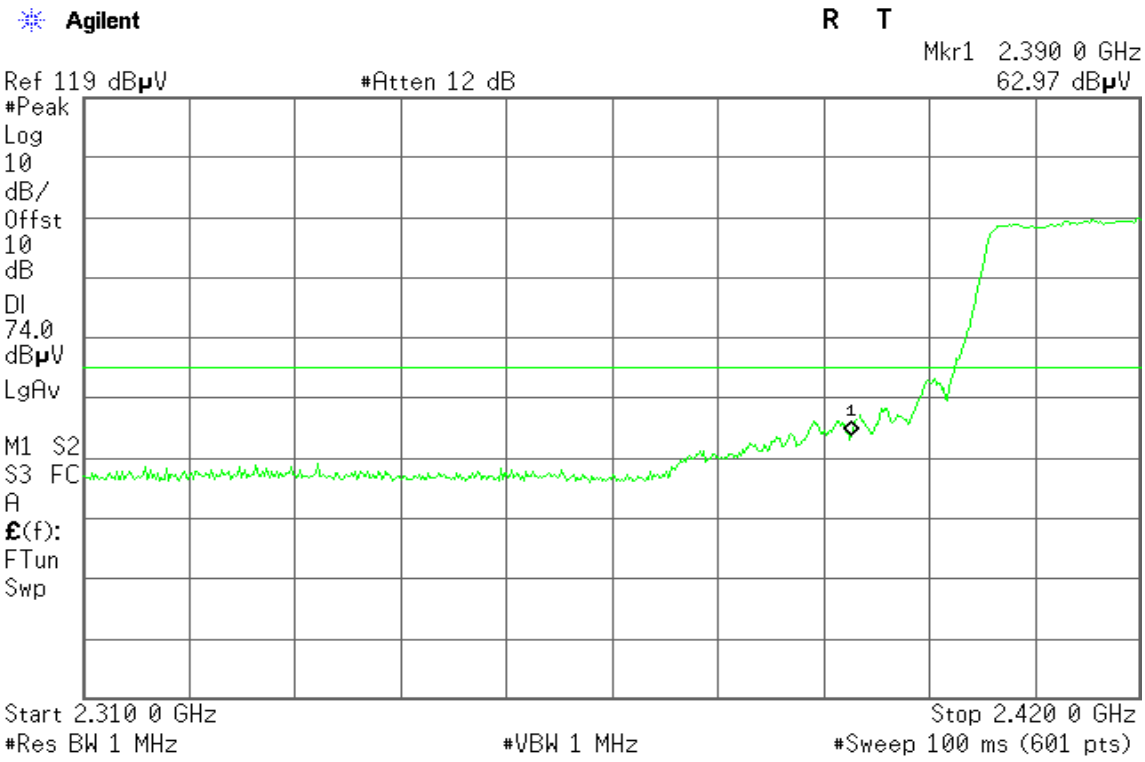
Detector mode: Peak **Polarity: Vertical**



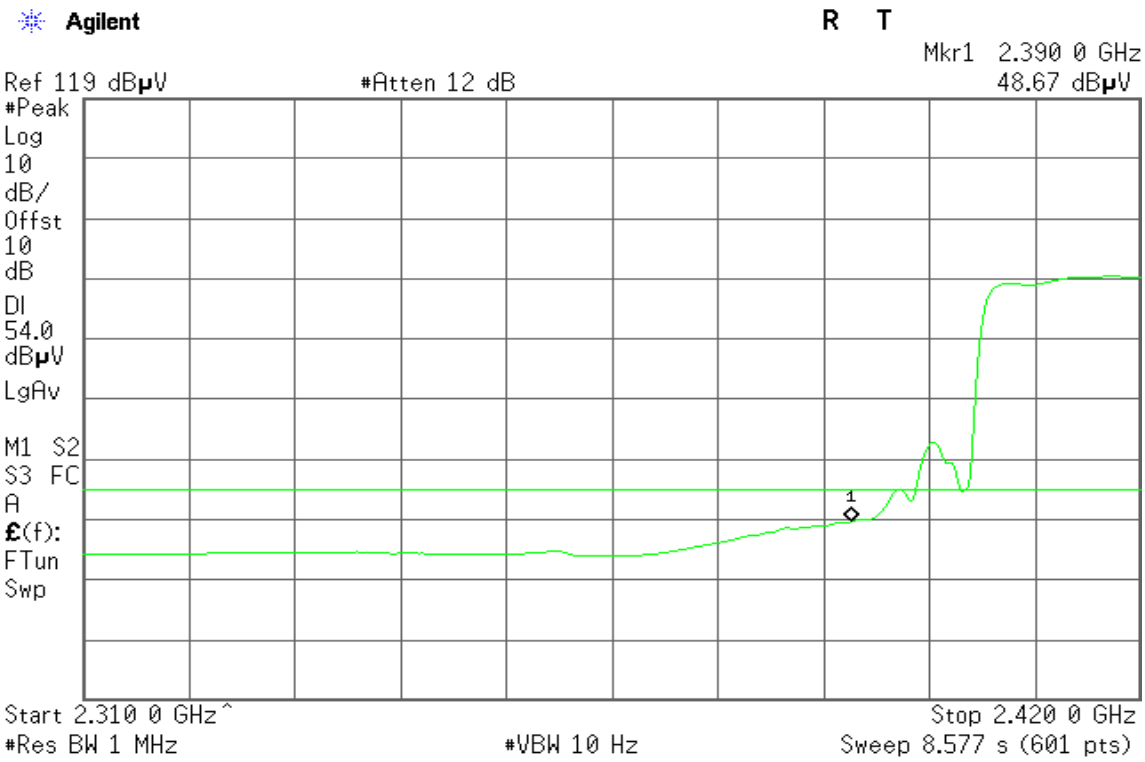
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

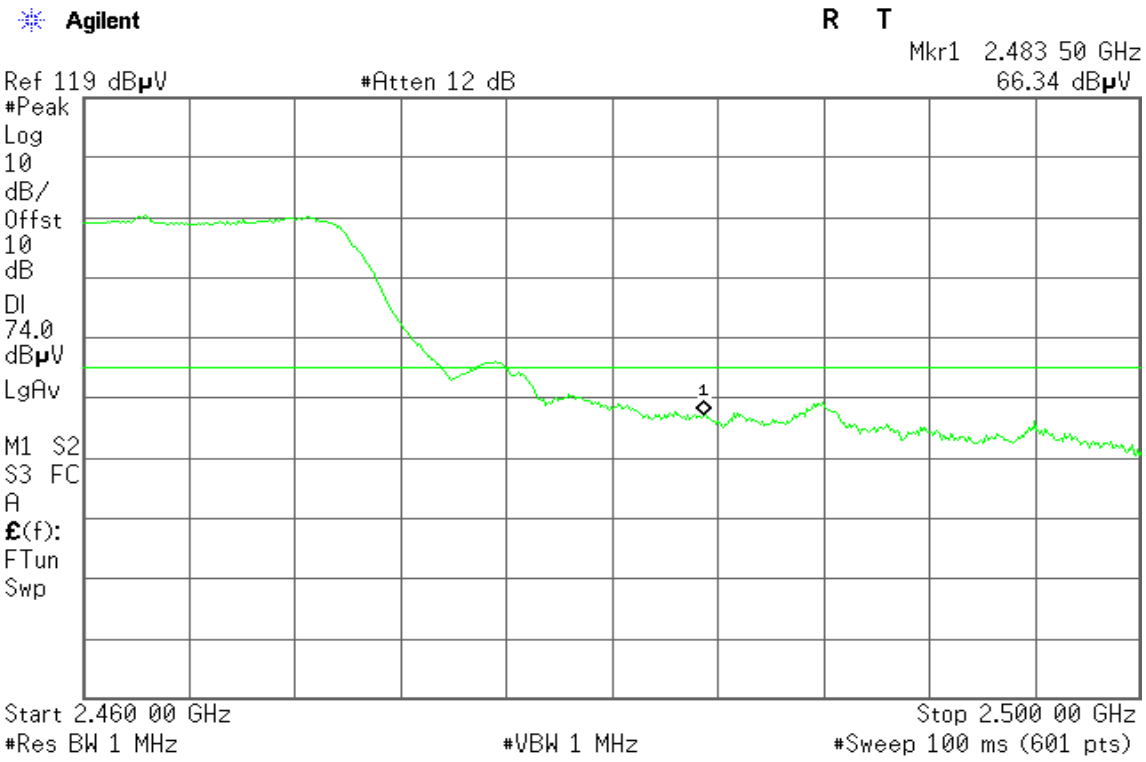


Detector mode: Average **Polarity: Horizontal**

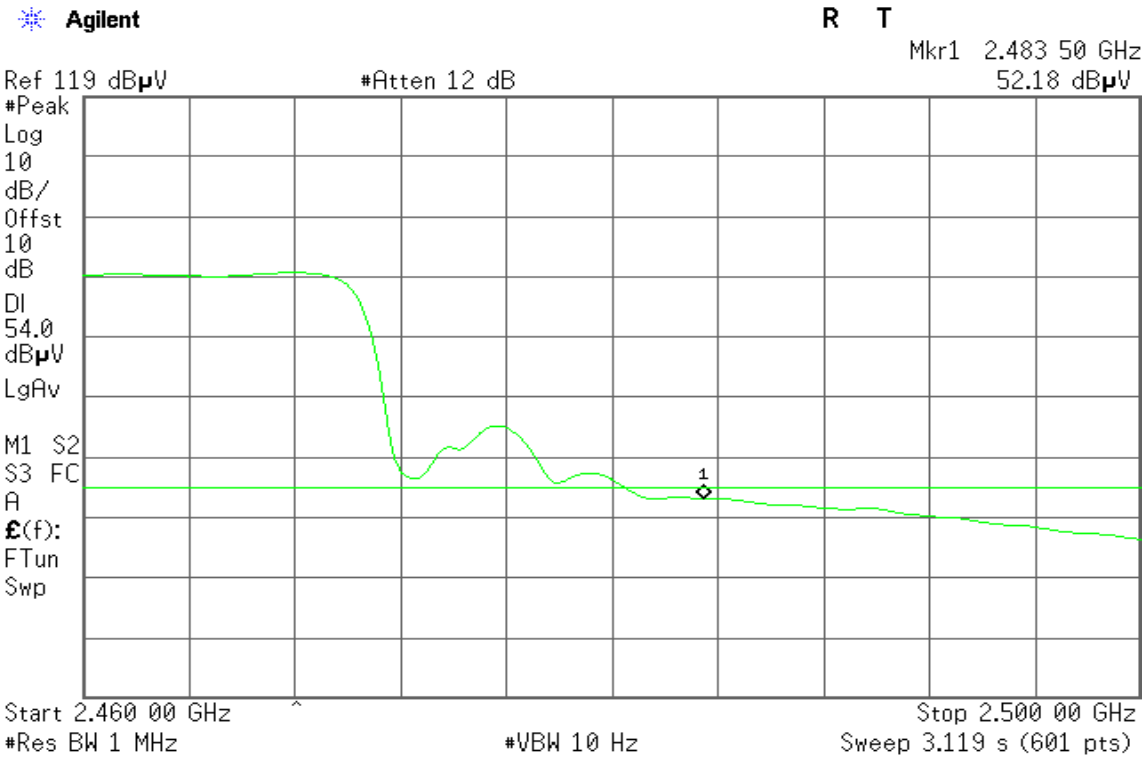


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH High)

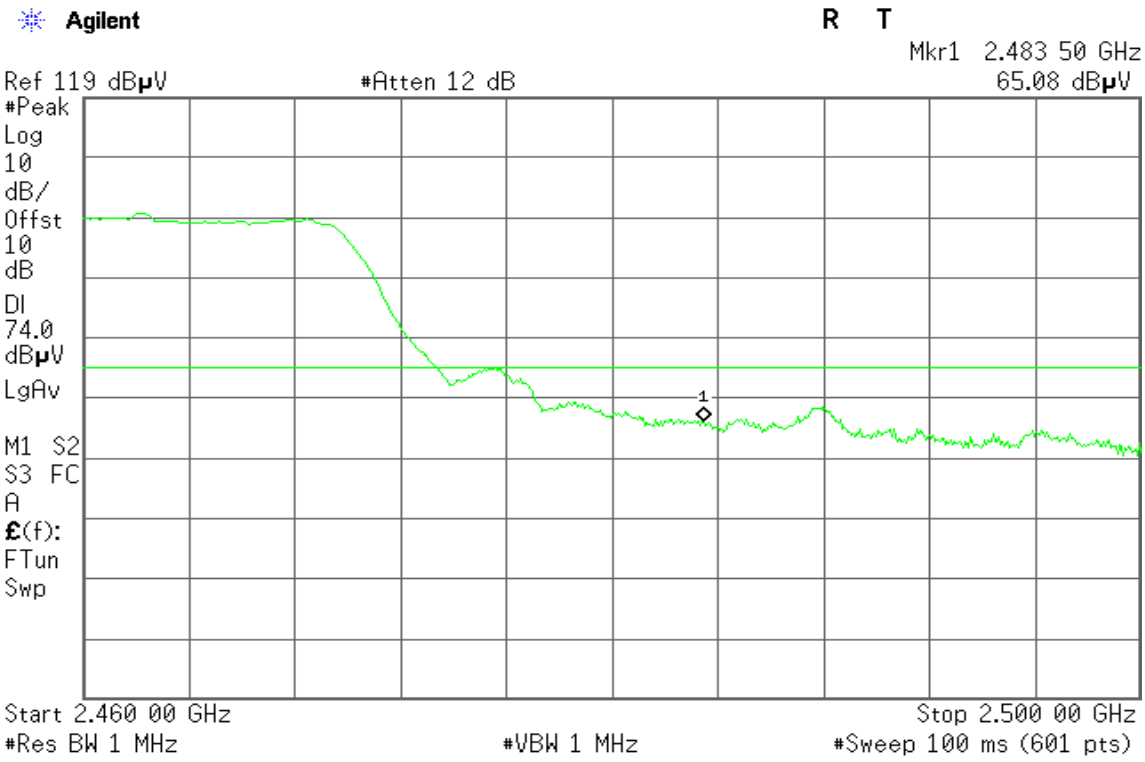
Detector mode: Peak Polarity: Vertical



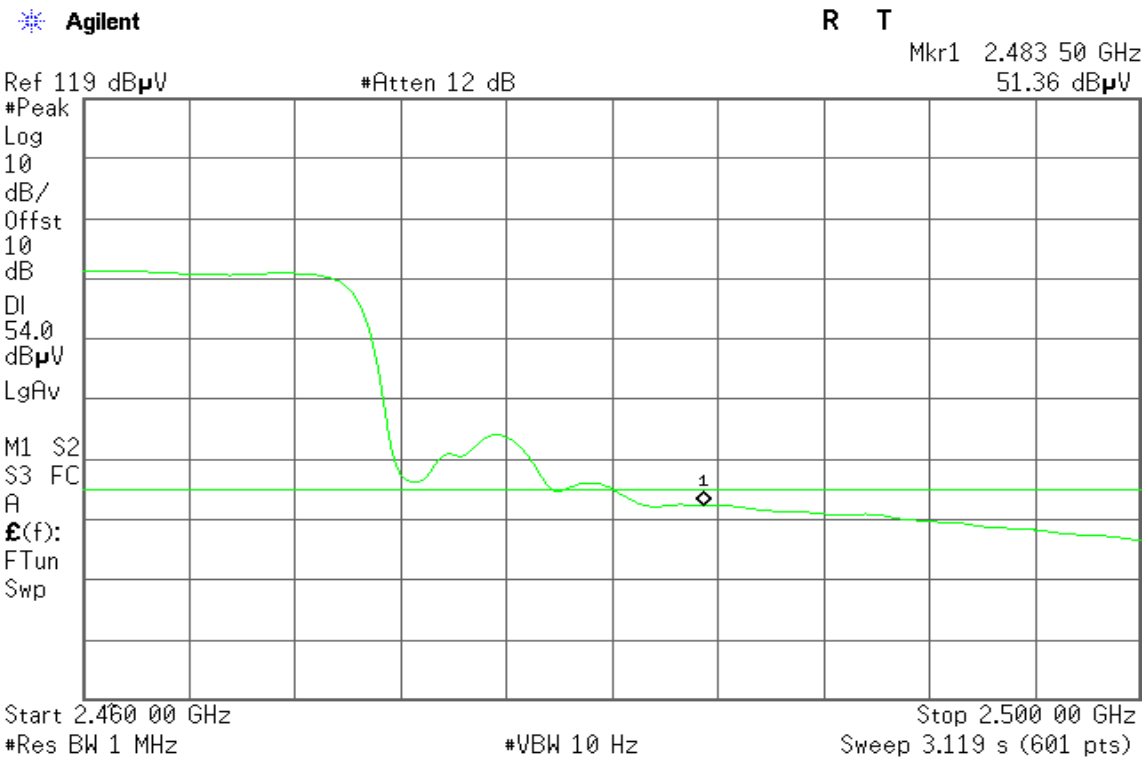
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**



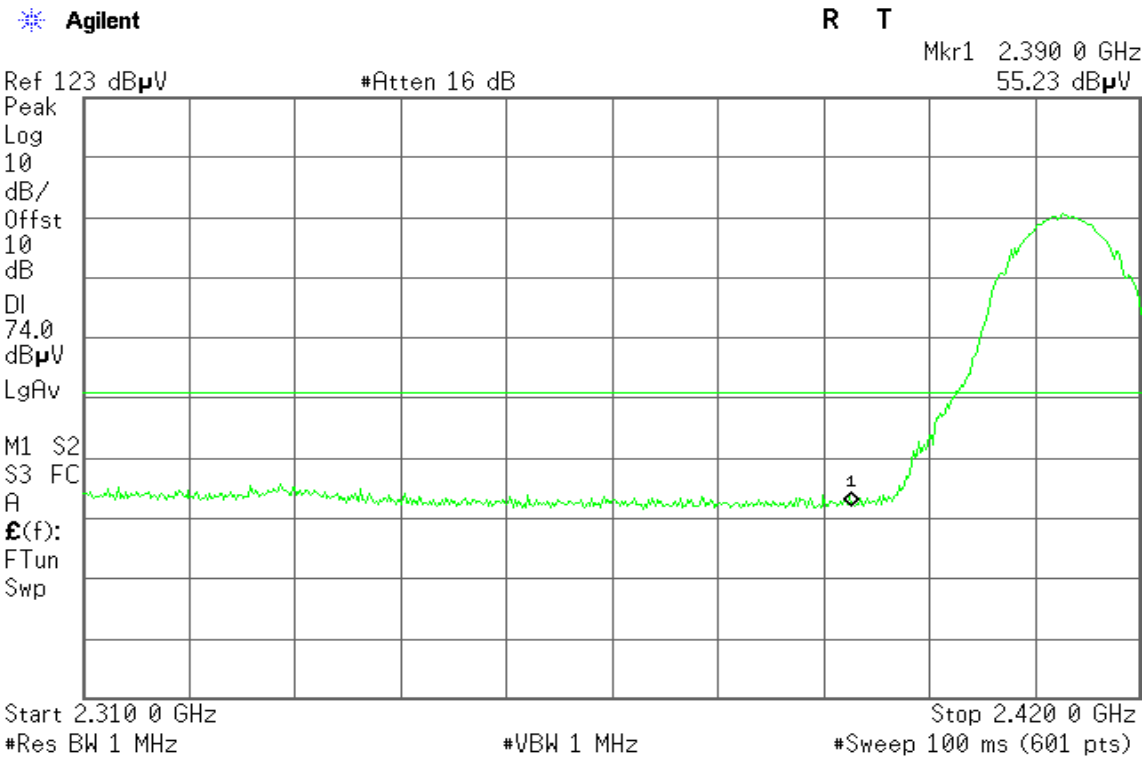
Detector mode: Average **Polarity: Horizontal**



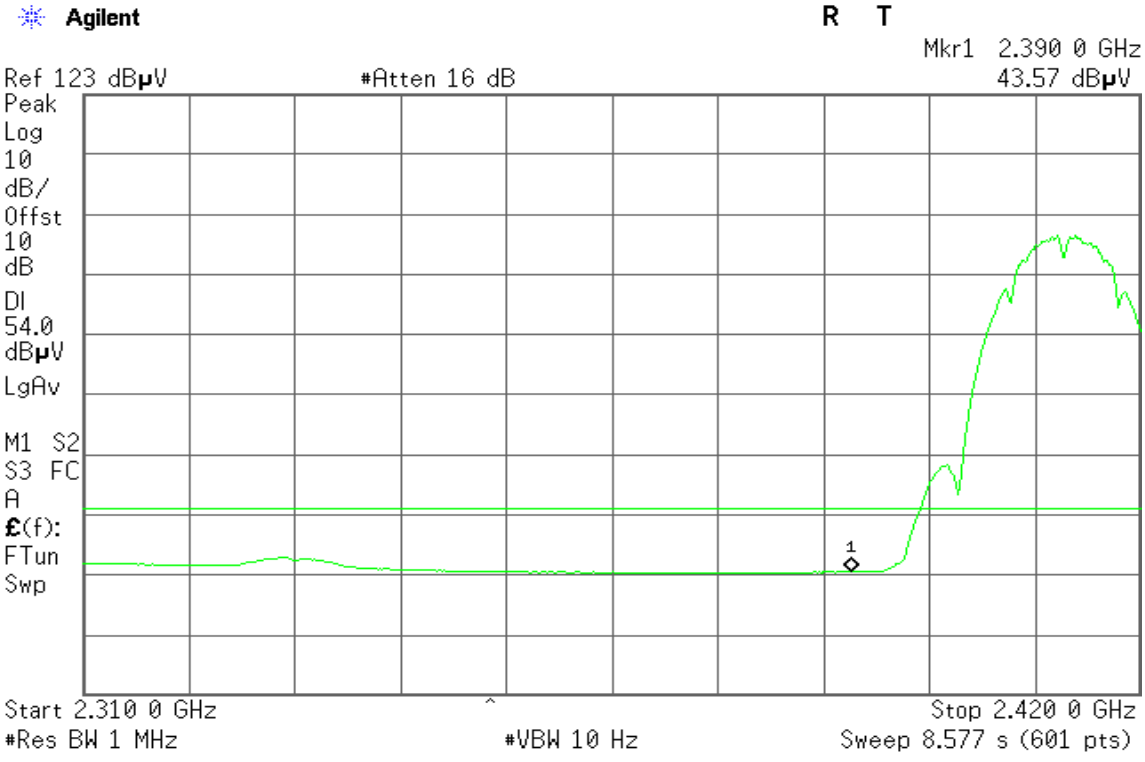
Patch Antenna / Gain: 9.12 dBi

Band Edges (IEEE 802.11b mode / CH Low)

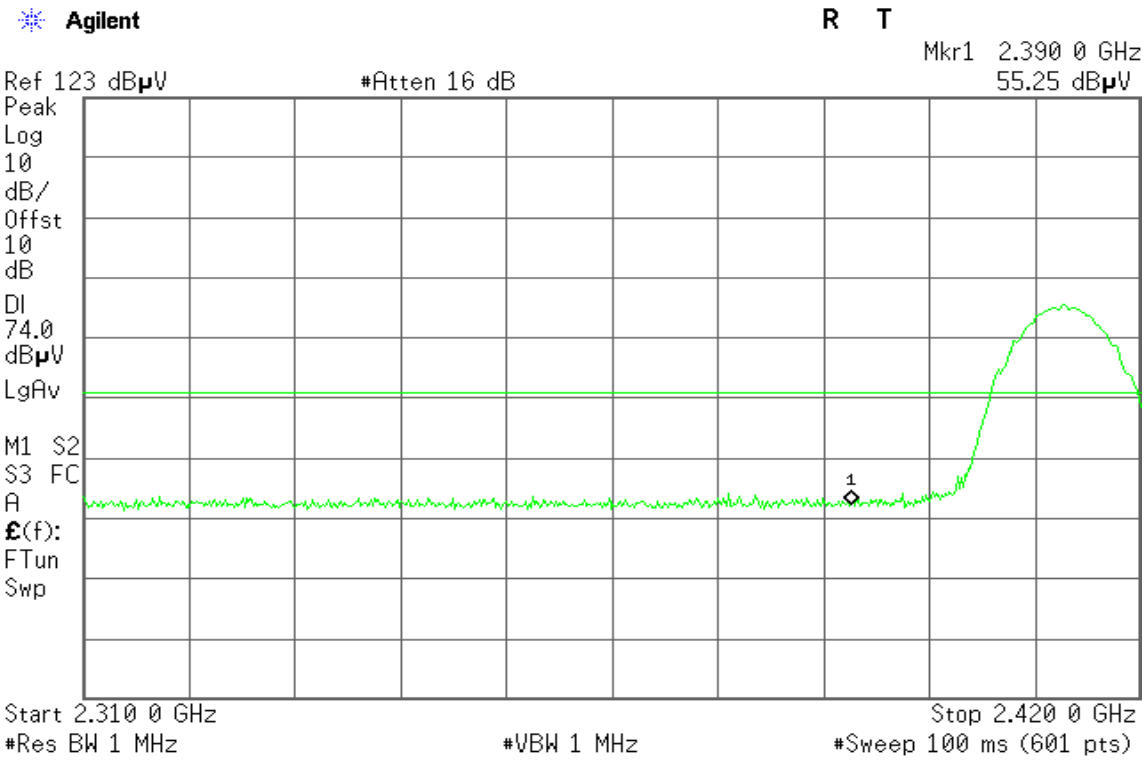
Detector mode: Peak **Polarity: Vertical**



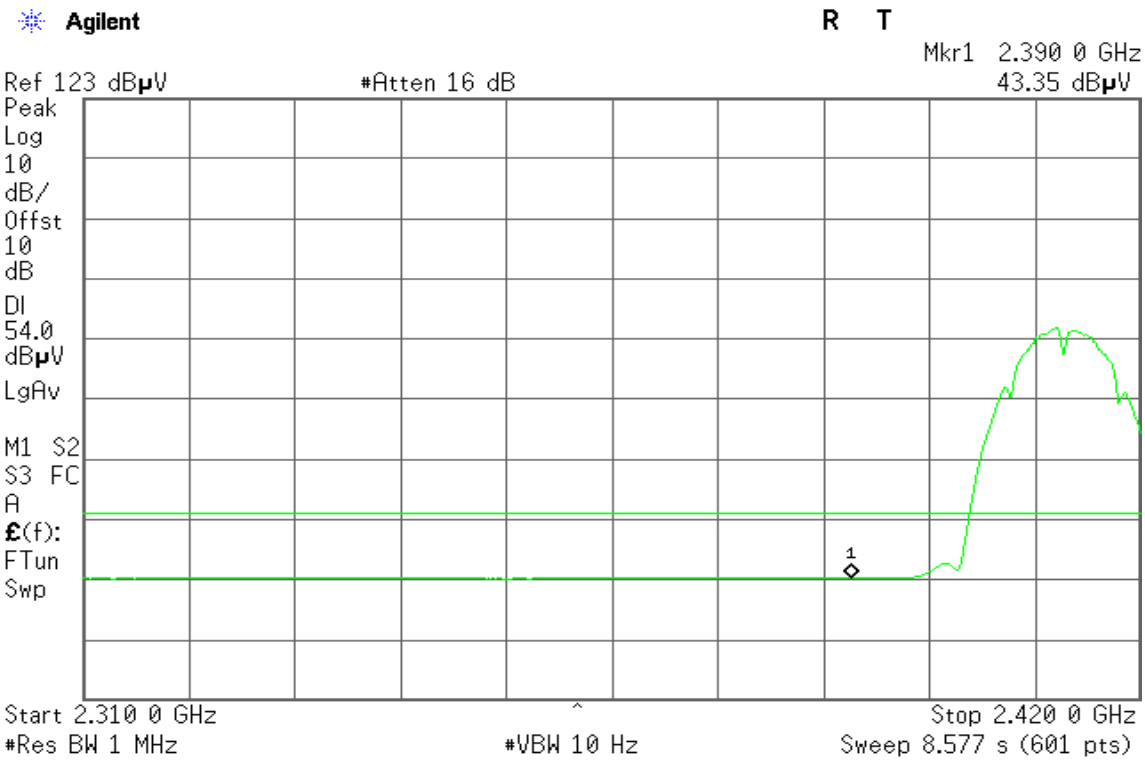
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

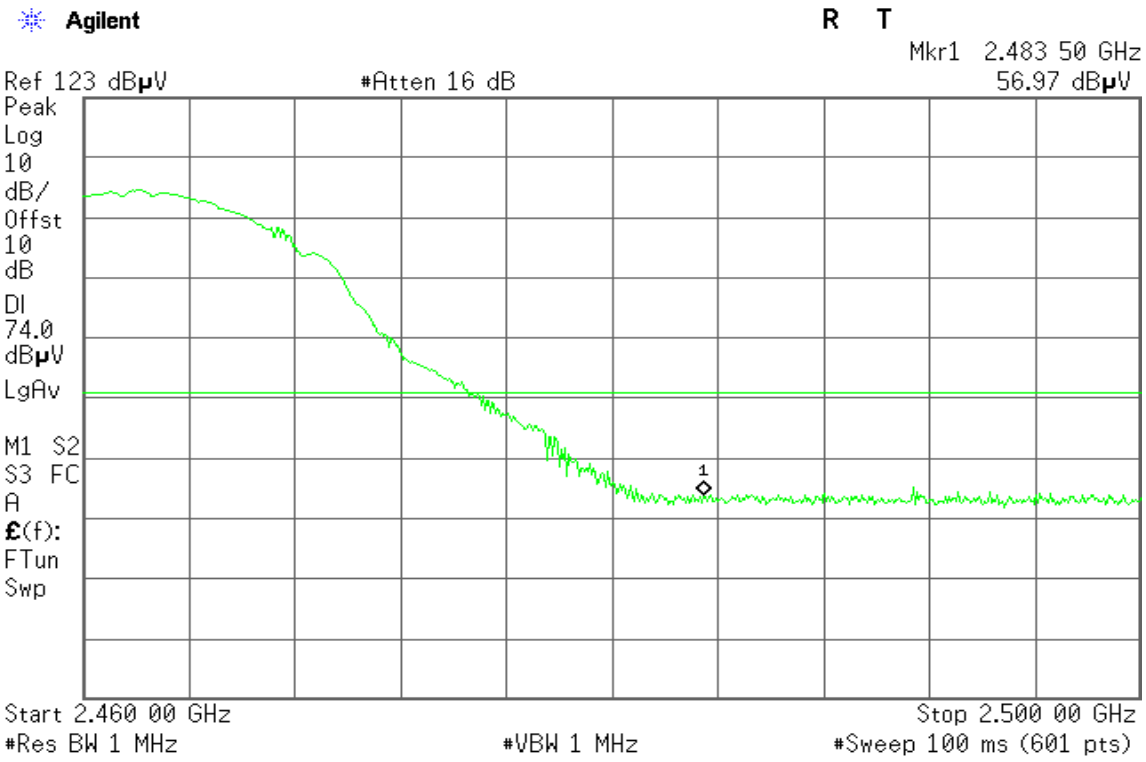


Detector mode: Average **Polarity: Horizontal**

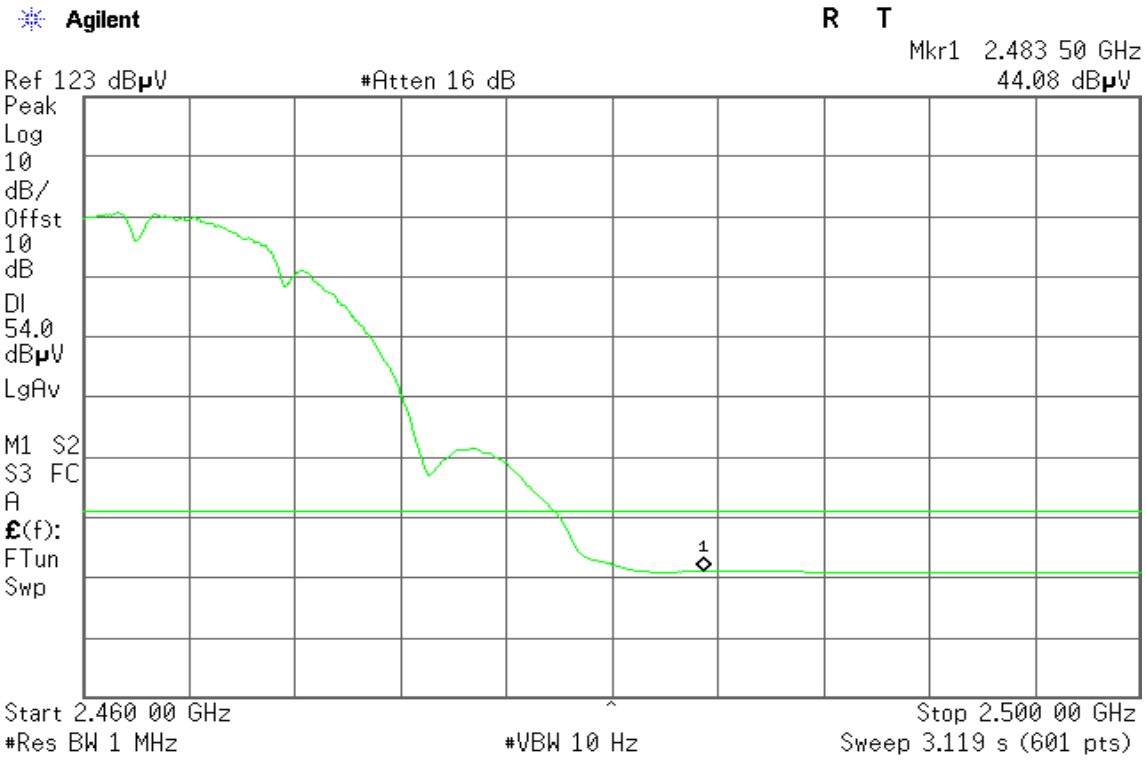


Band Edges (IEEE 802.11b mode / CH High)

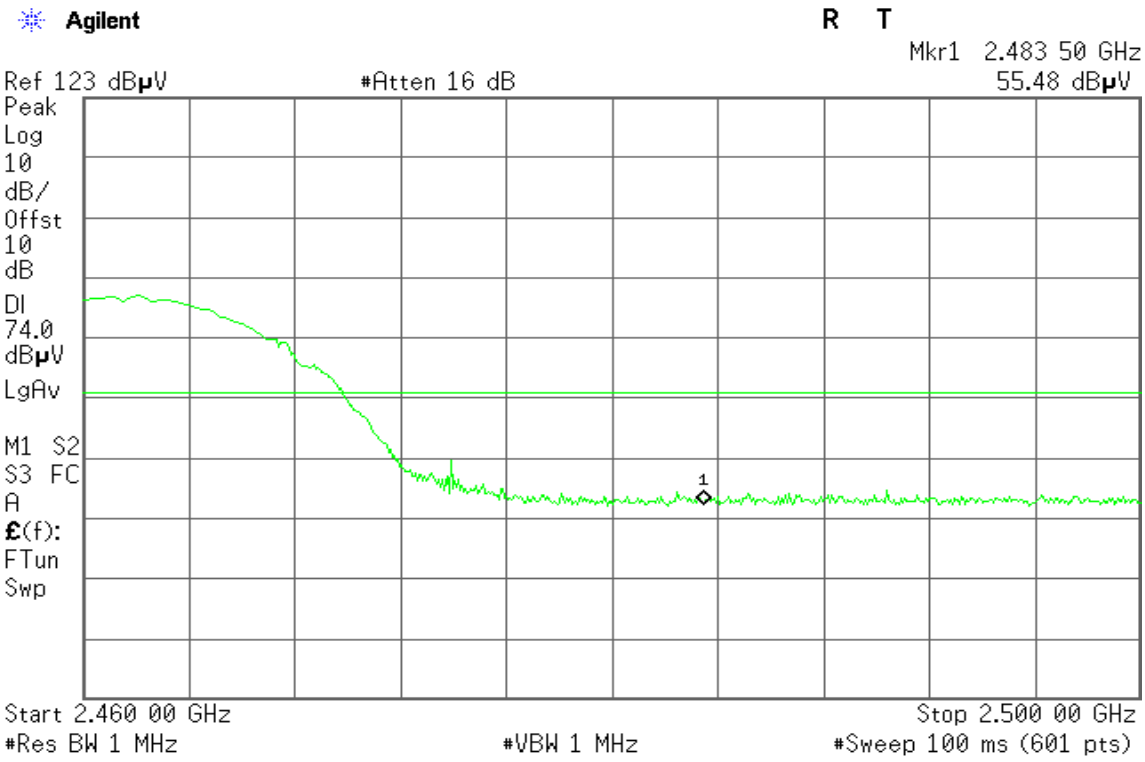
Detector mode: Peak Polarity: Vertical



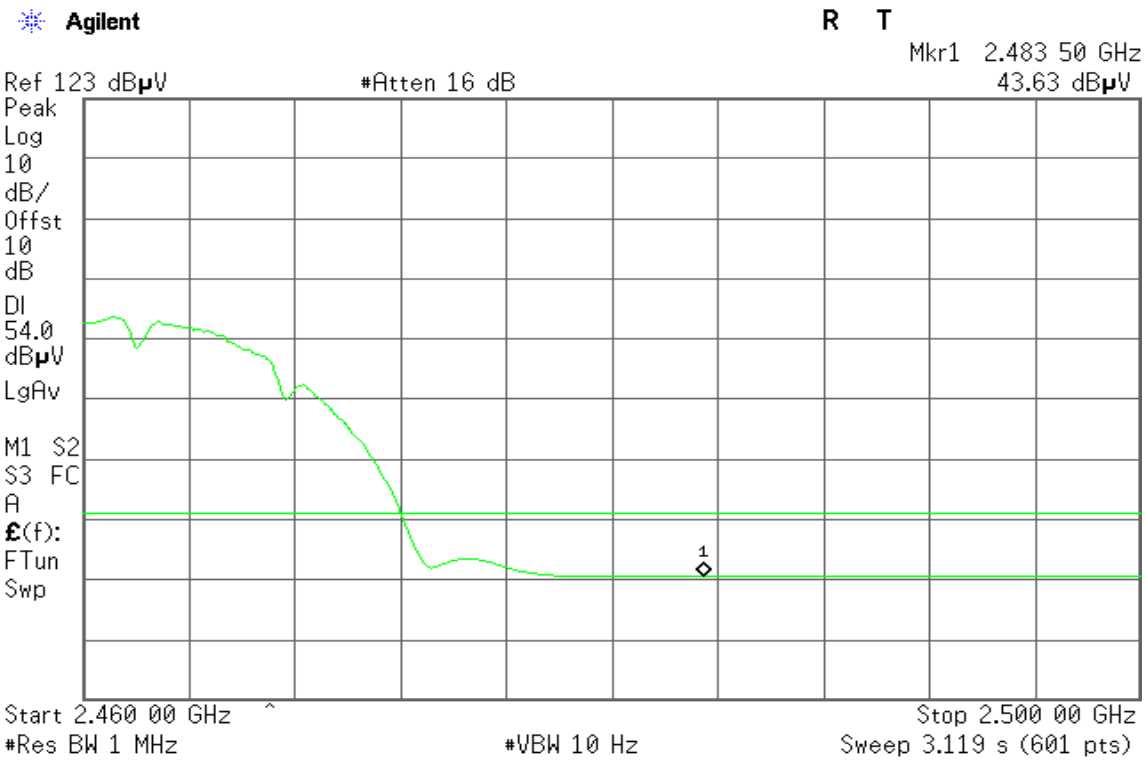
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

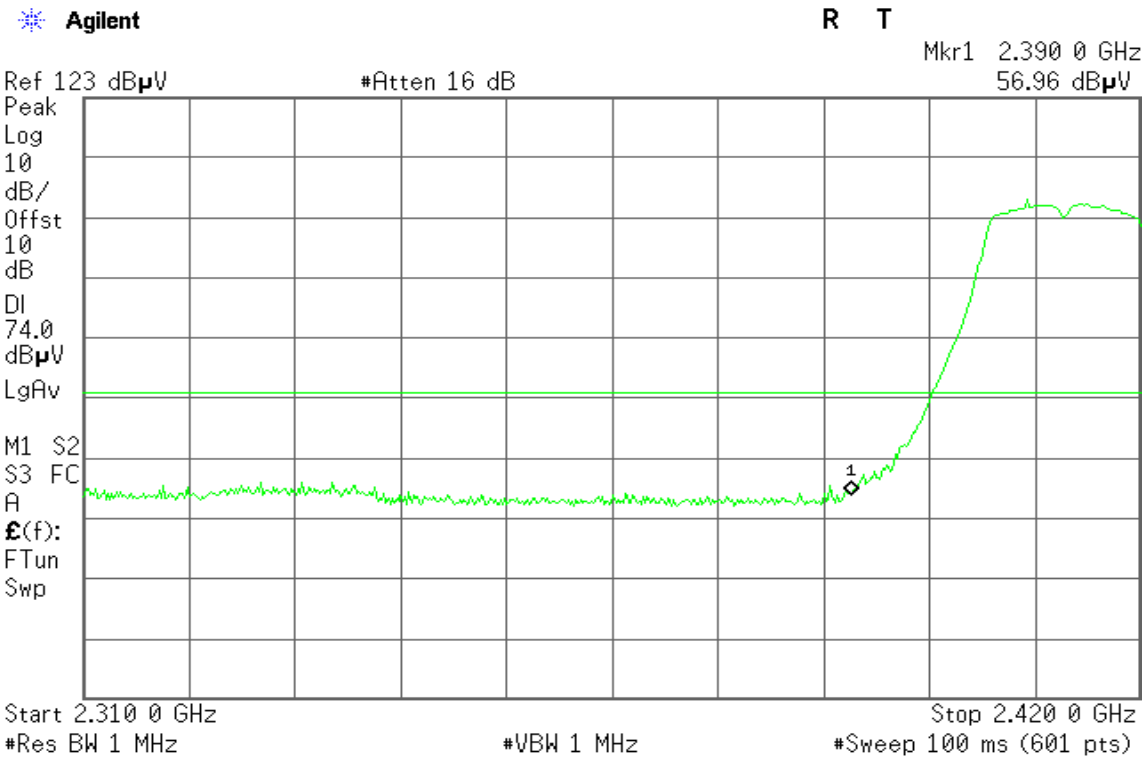


Detector mode: Average **Polarity: Horizontal**

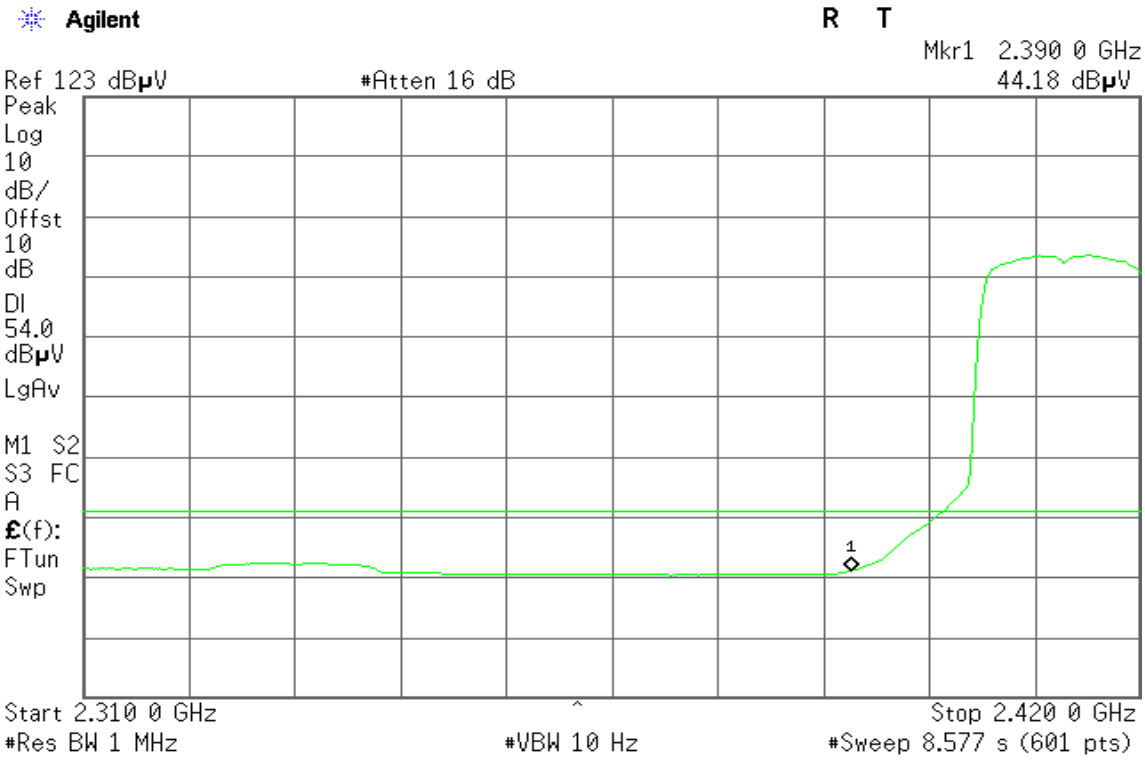


Band Edges (IEEE 802.11g mode / CH Low)

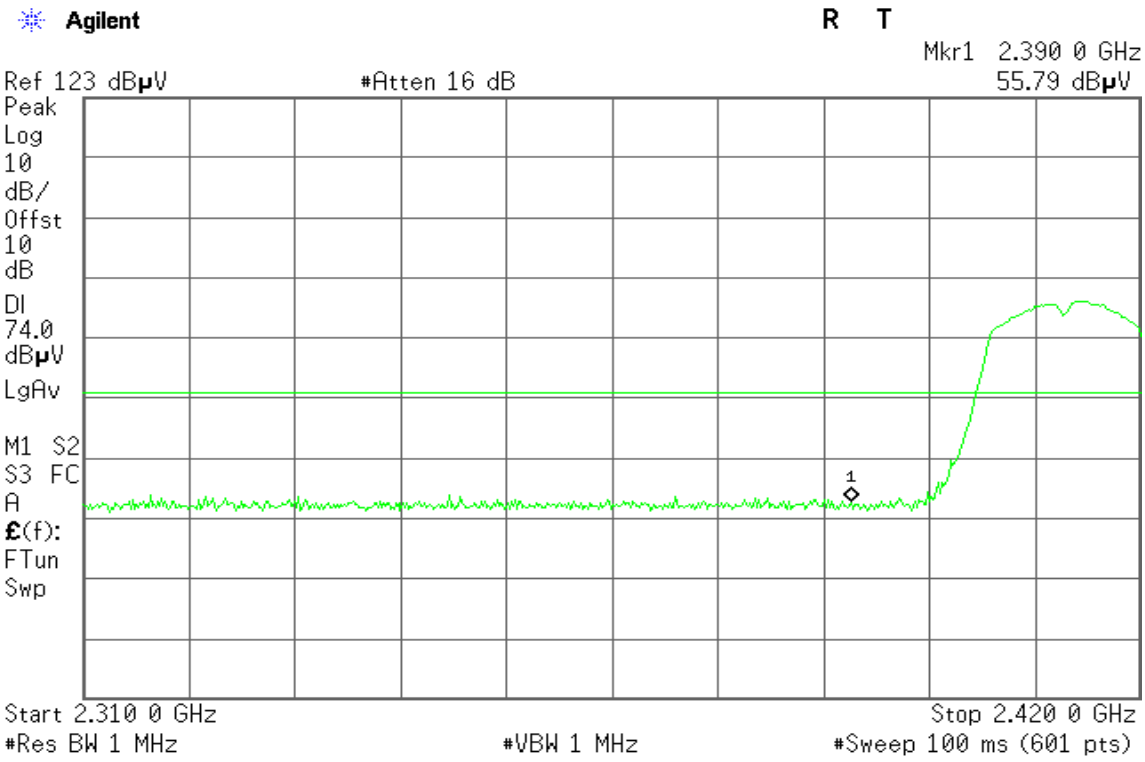
Detector mode: Peak Polarity: Vertical



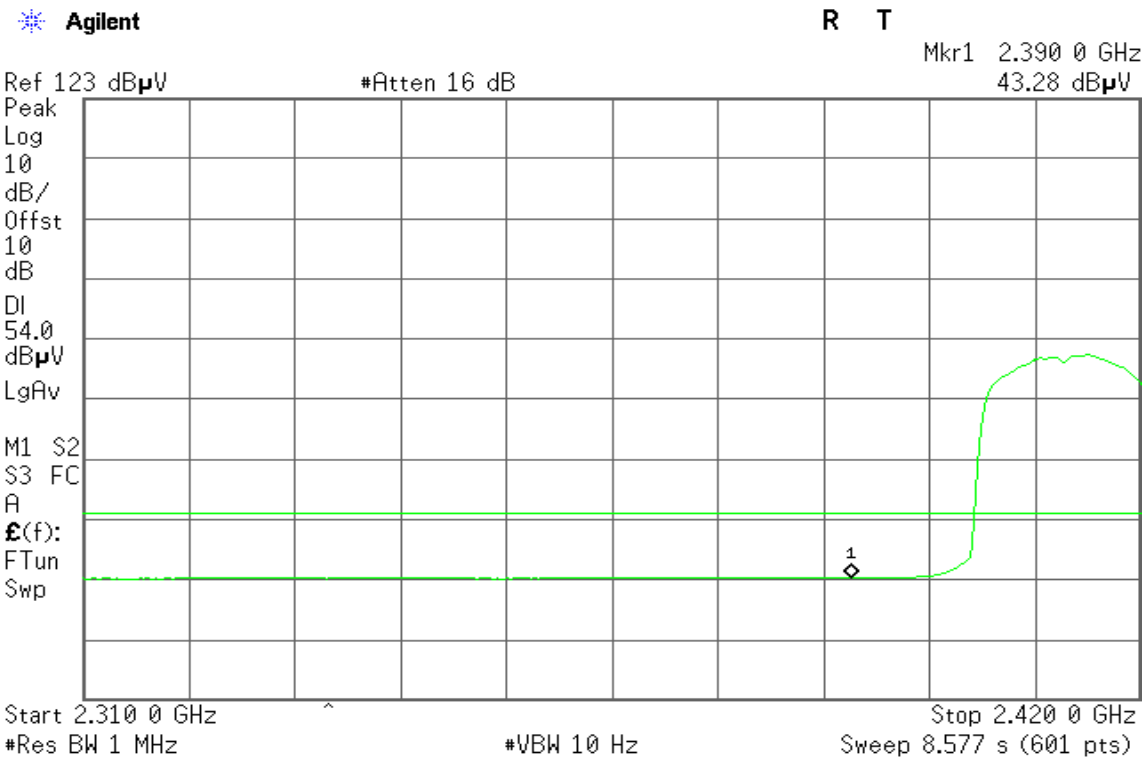
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

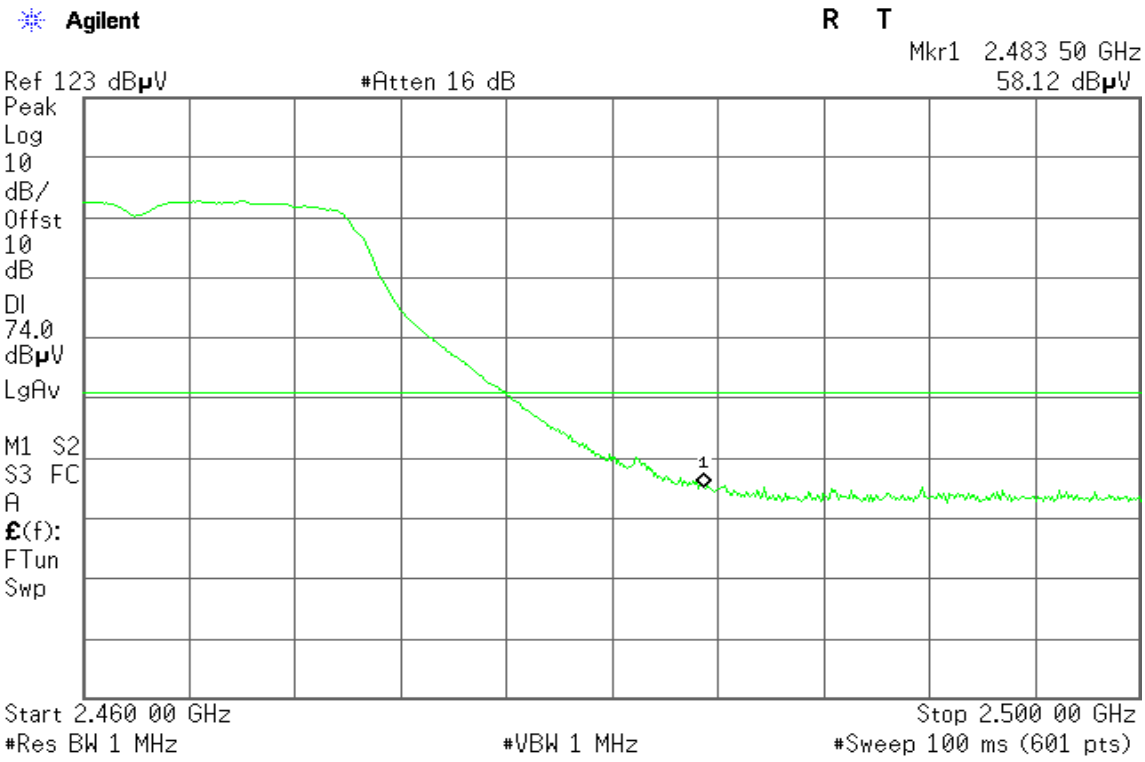


Detector mode: Average **Polarity: Horizontal**

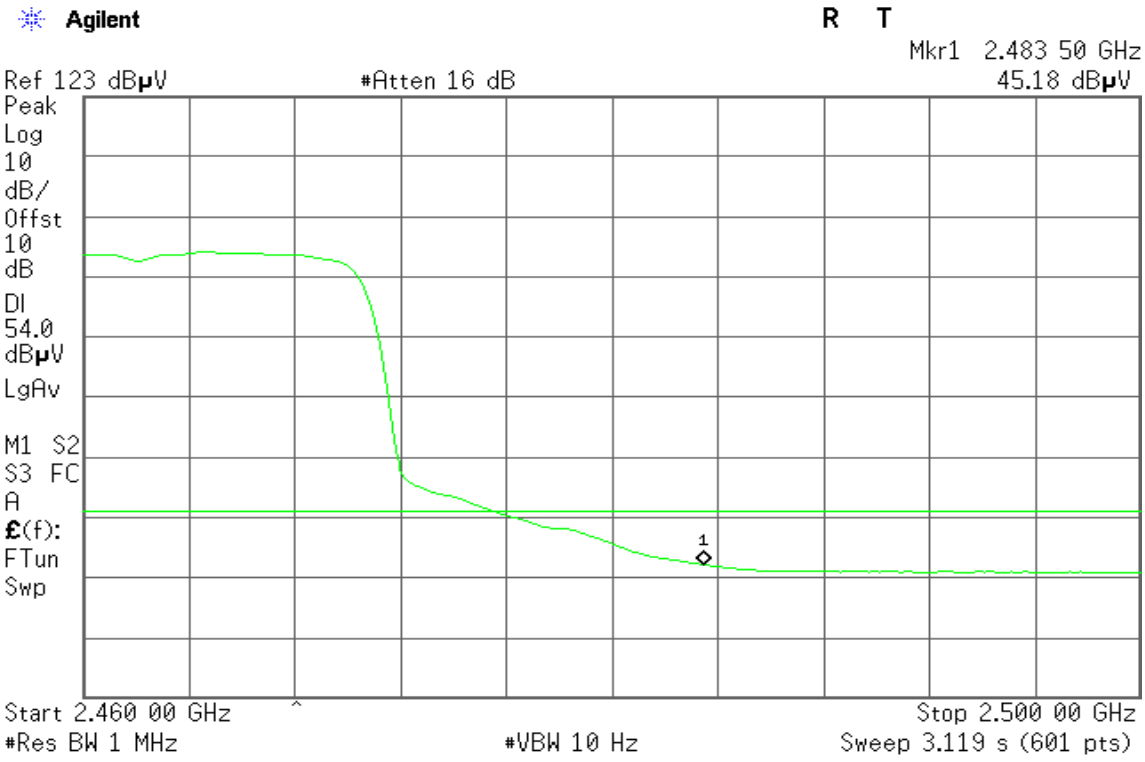


Band Edges (IEEE 802.11g mode / CH High)

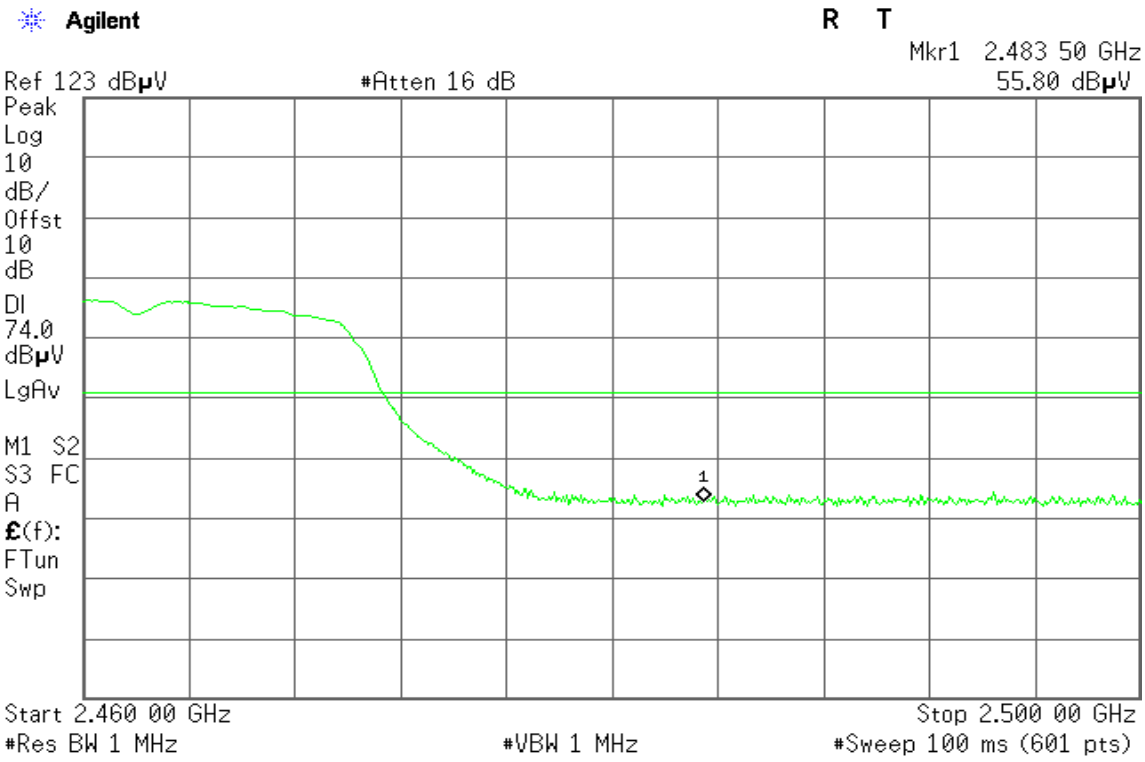
Detector mode: Peak Polarity: Vertical



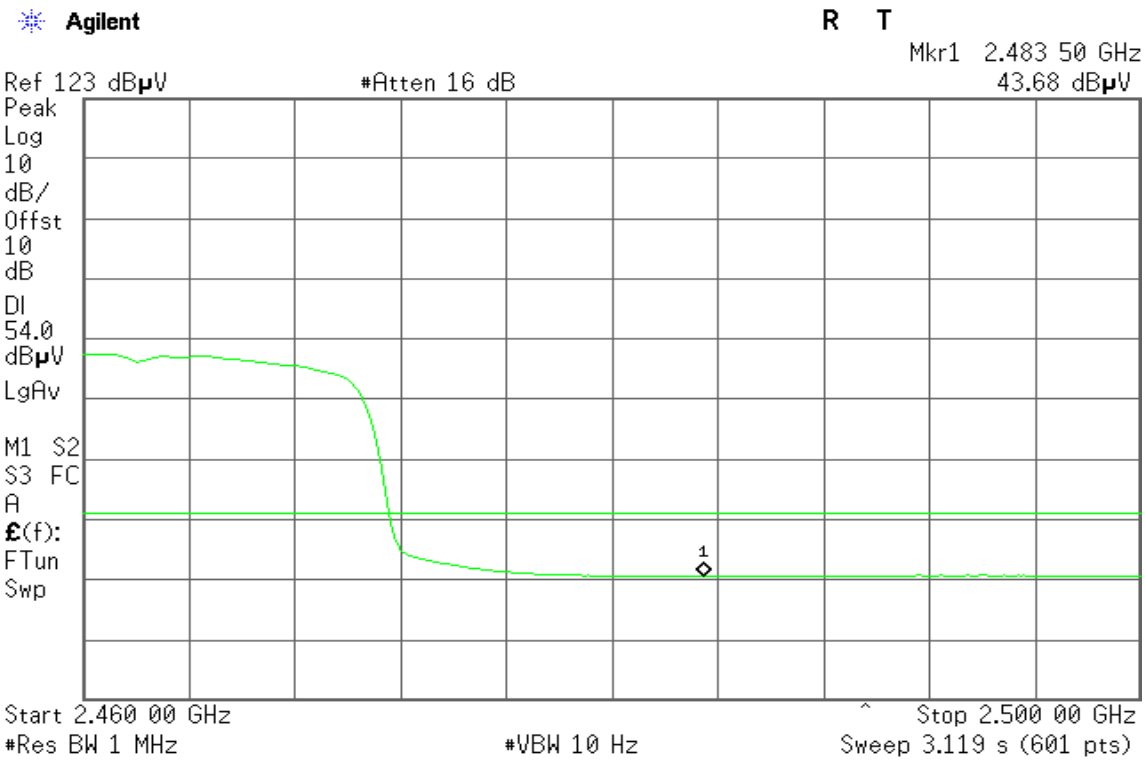
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

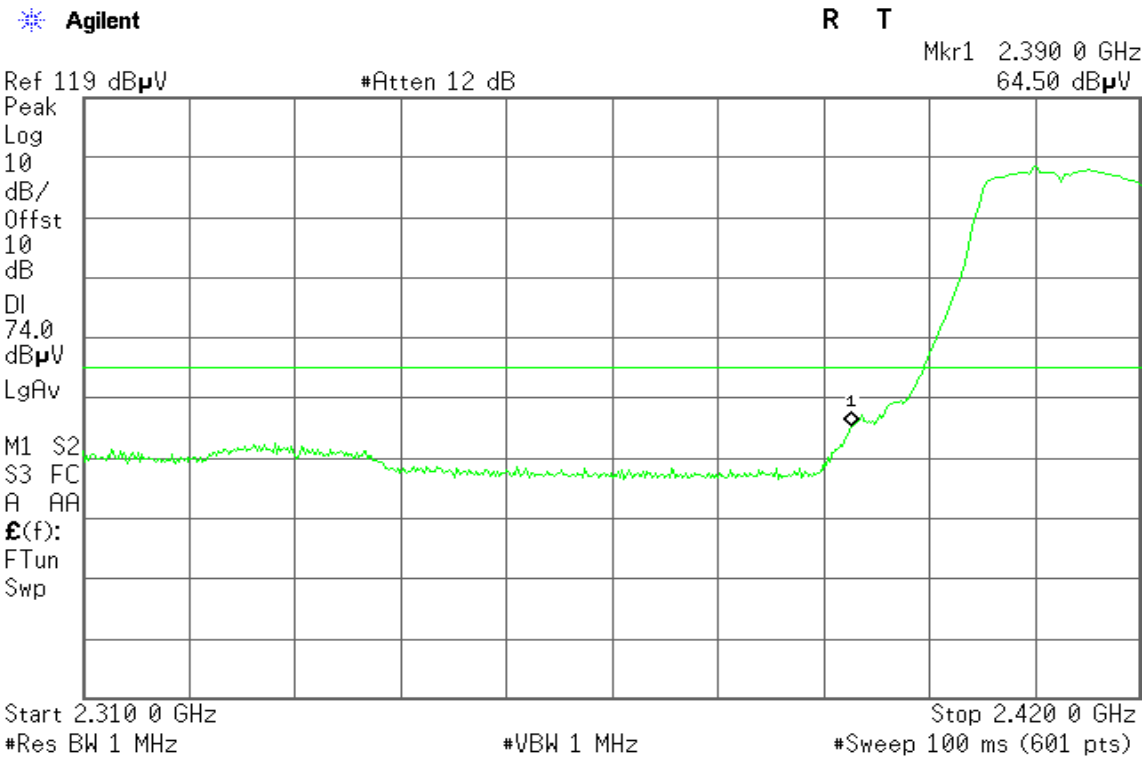


Detector mode: Average **Polarity: Horizontal**

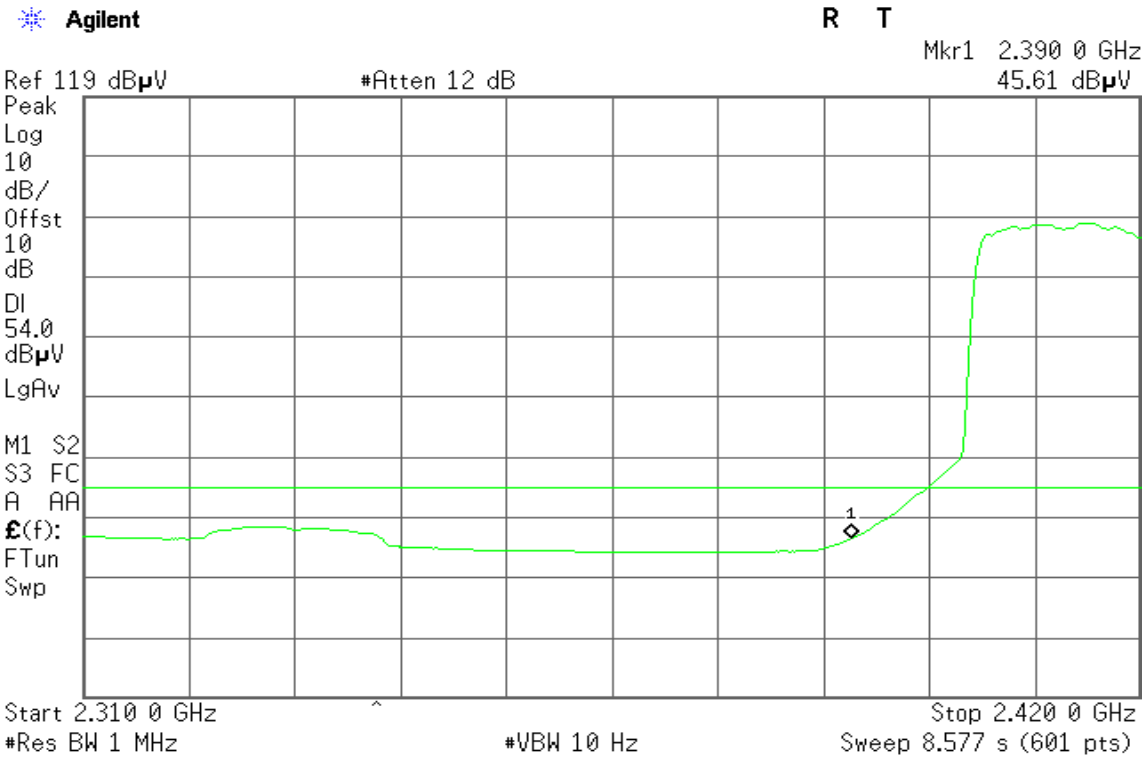


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH Low)

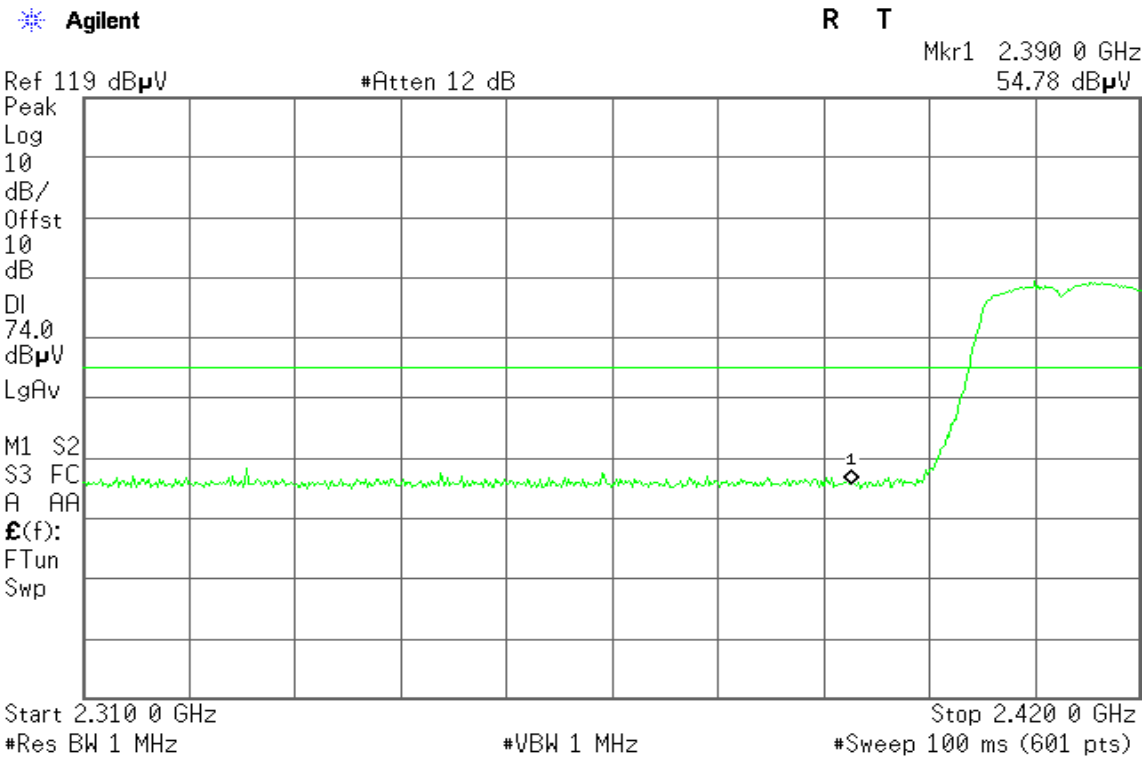
Detector mode: Peak **Polarity: Vertical**



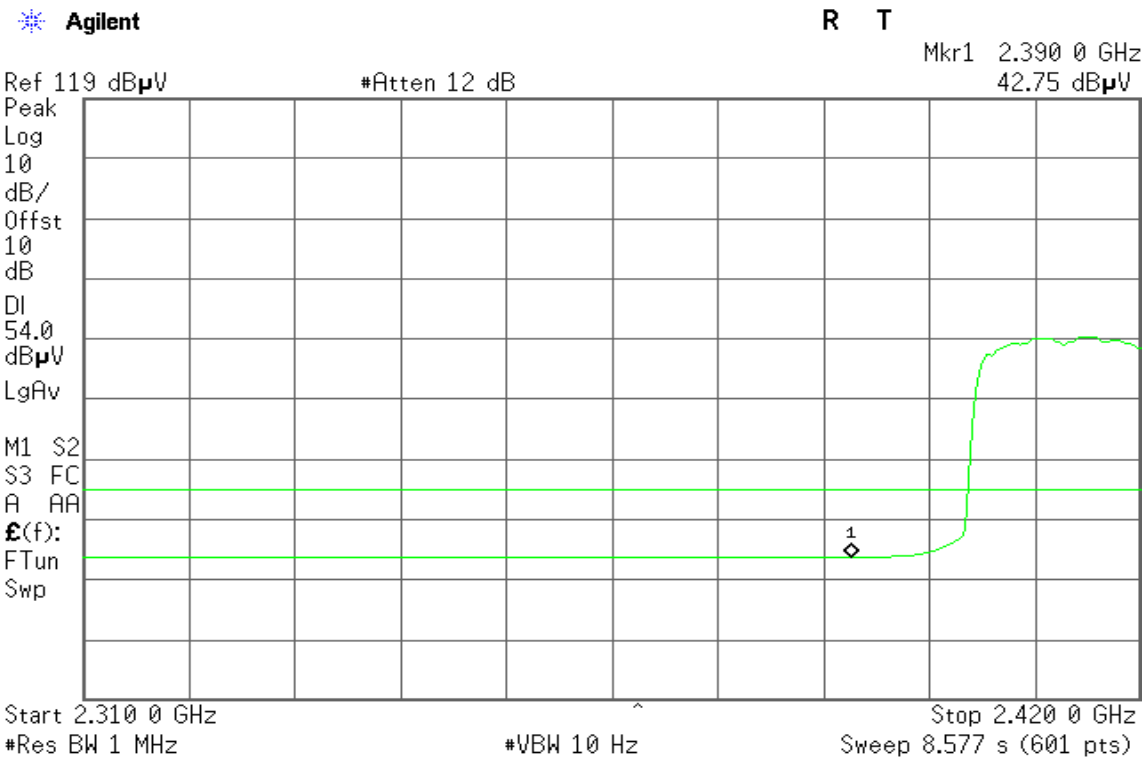
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

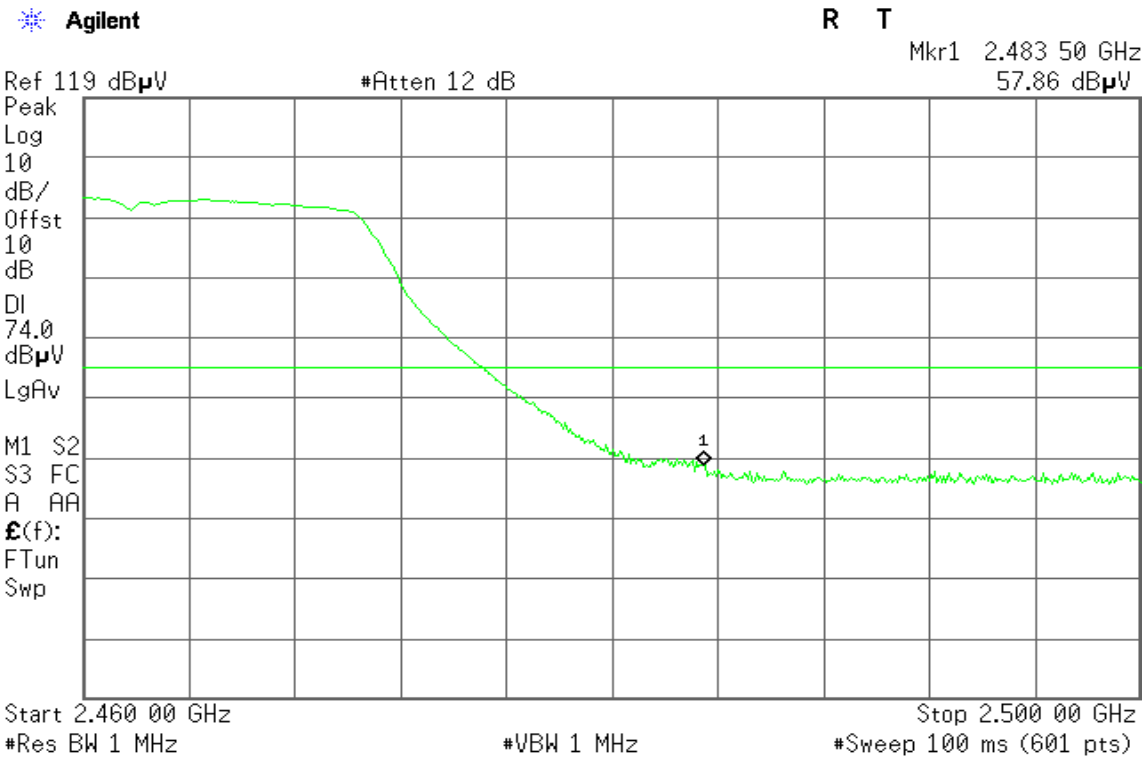


Detector mode: Average **Polarity: Horizontal**

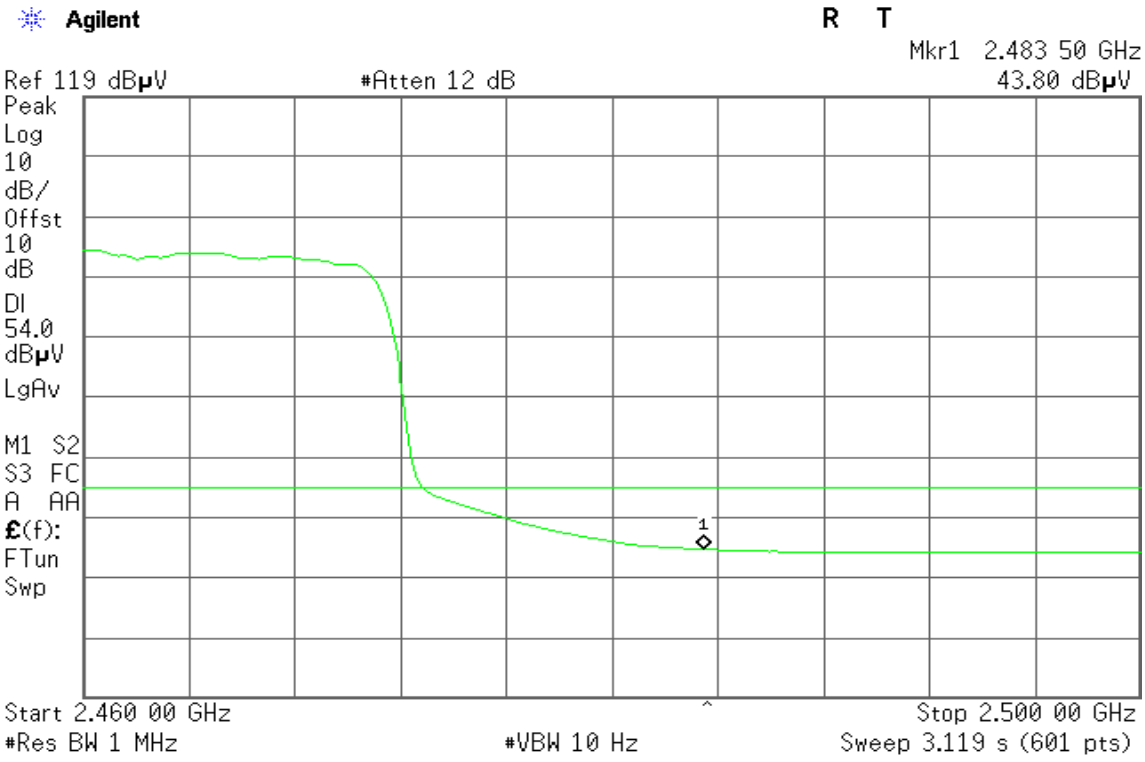


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH High)

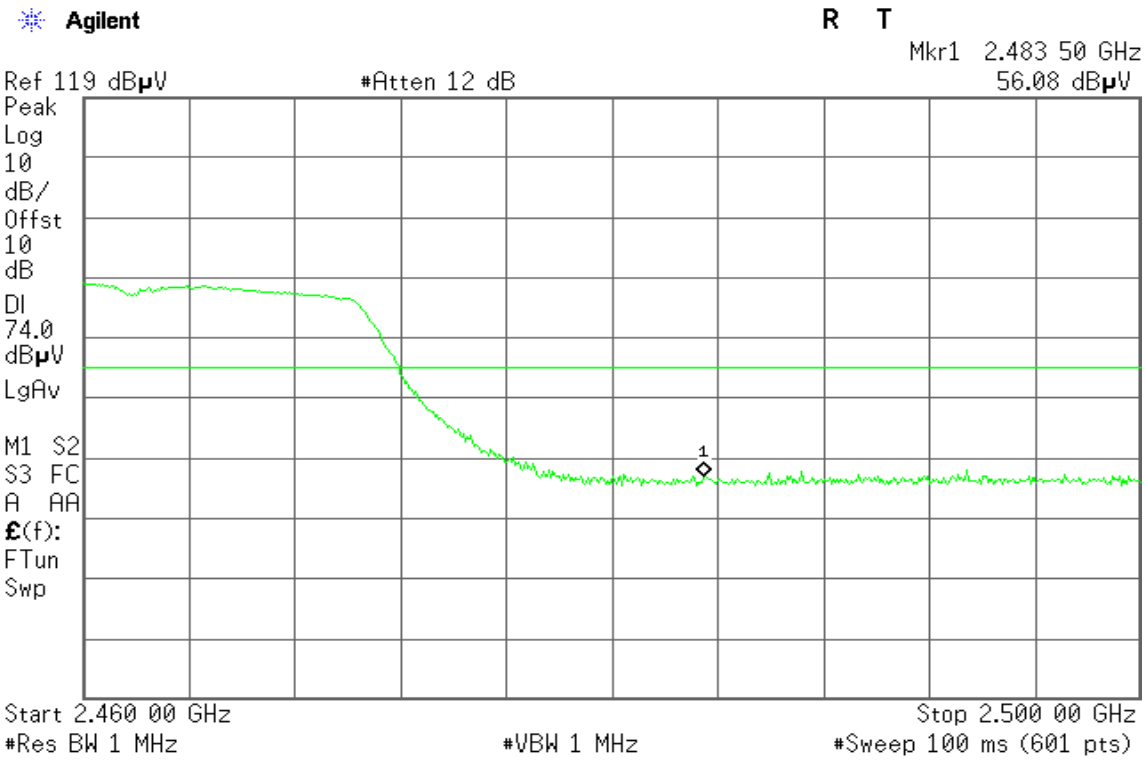
Detector mode: Peak Polarity: Vertical



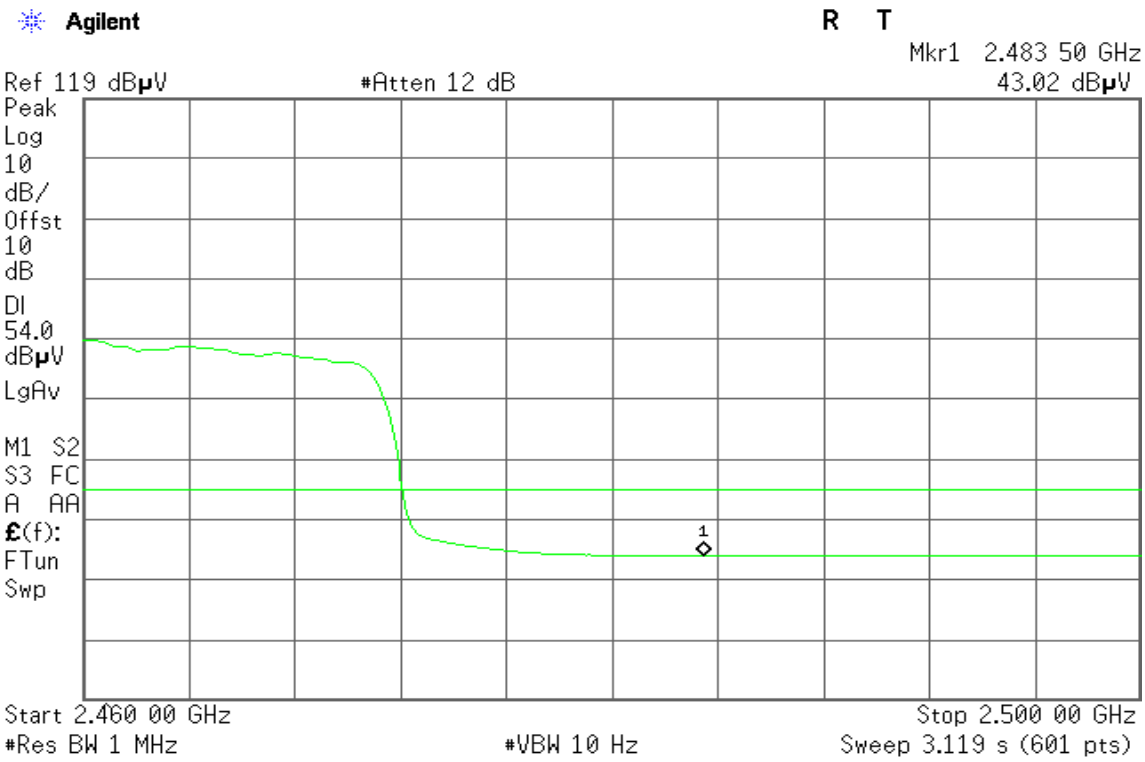
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

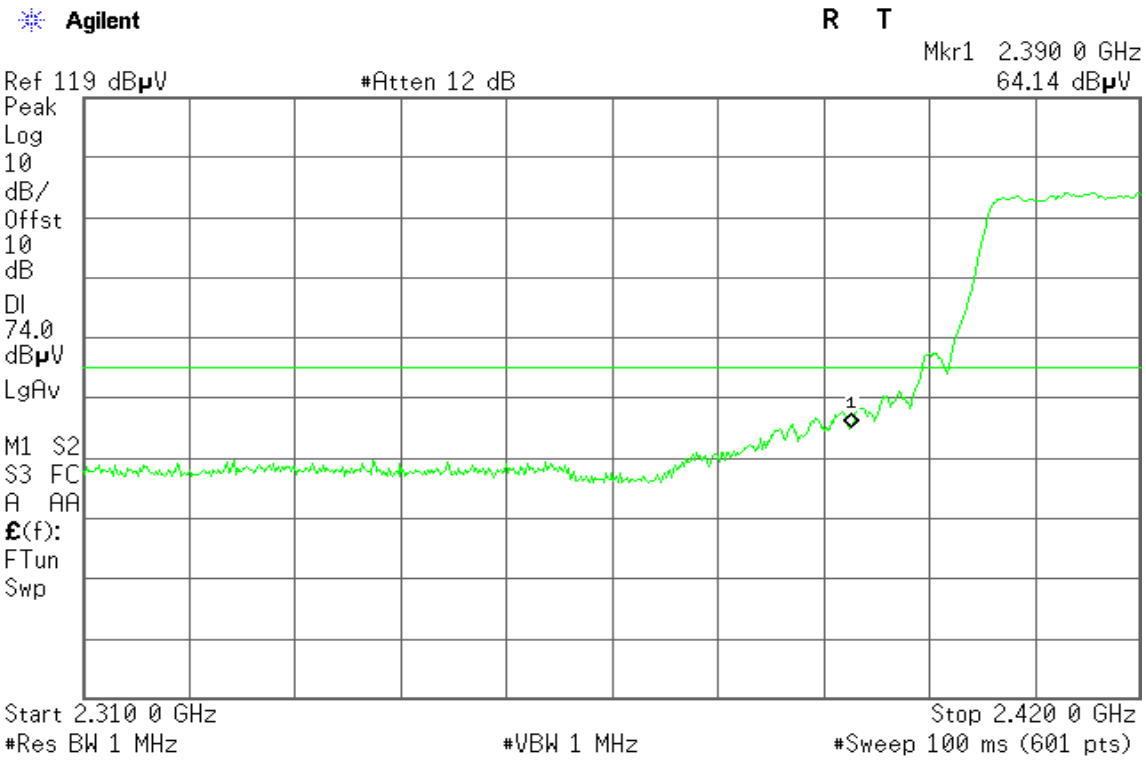


Detector mode: Average **Polarity: Horizontal**

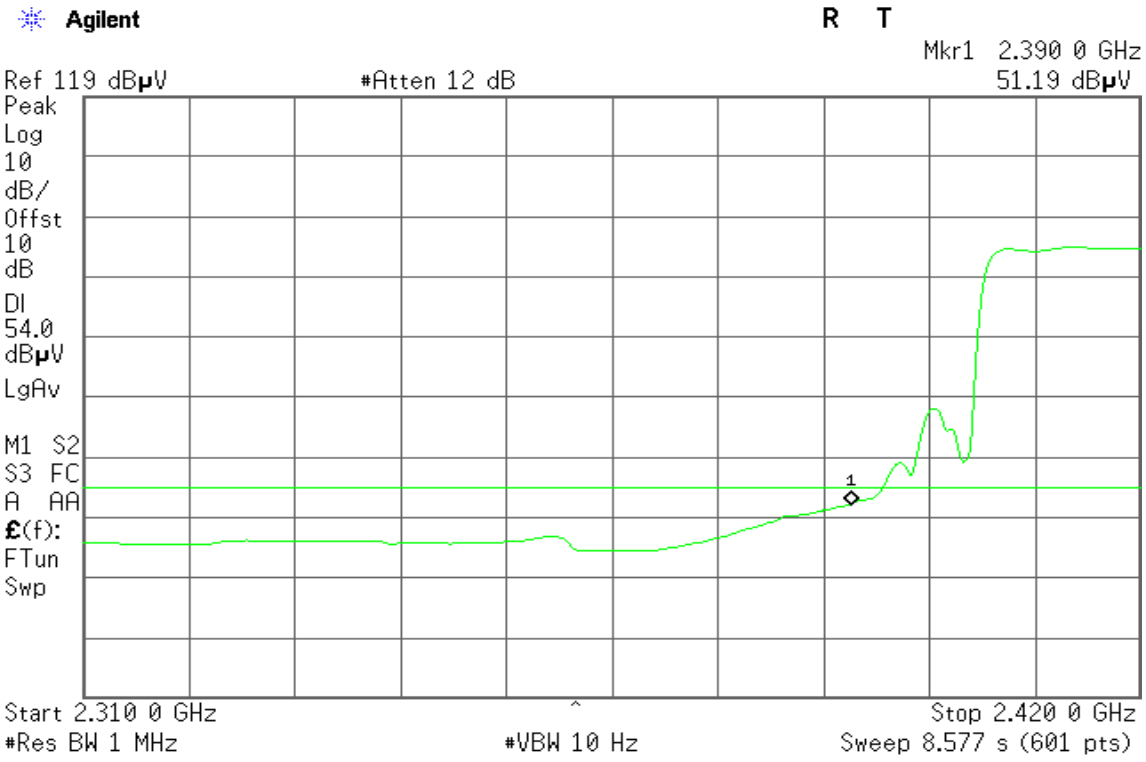


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH Low)

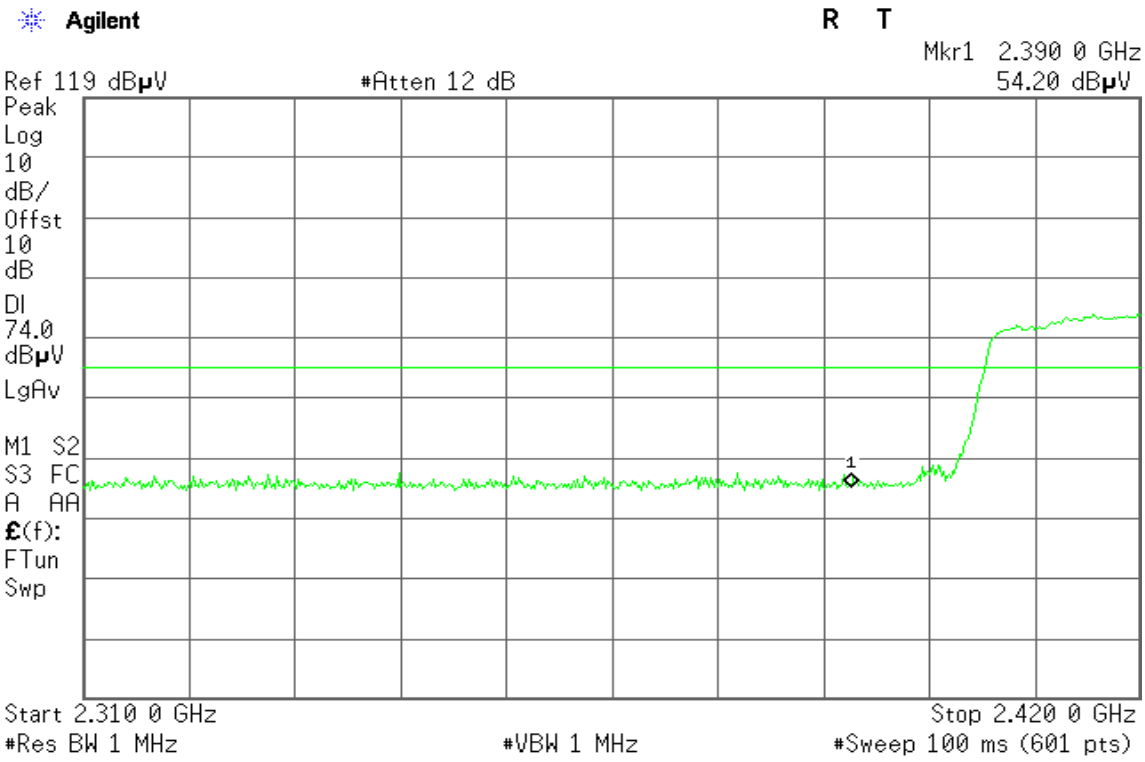
Detector mode: Peak **Polarity: Vertical**



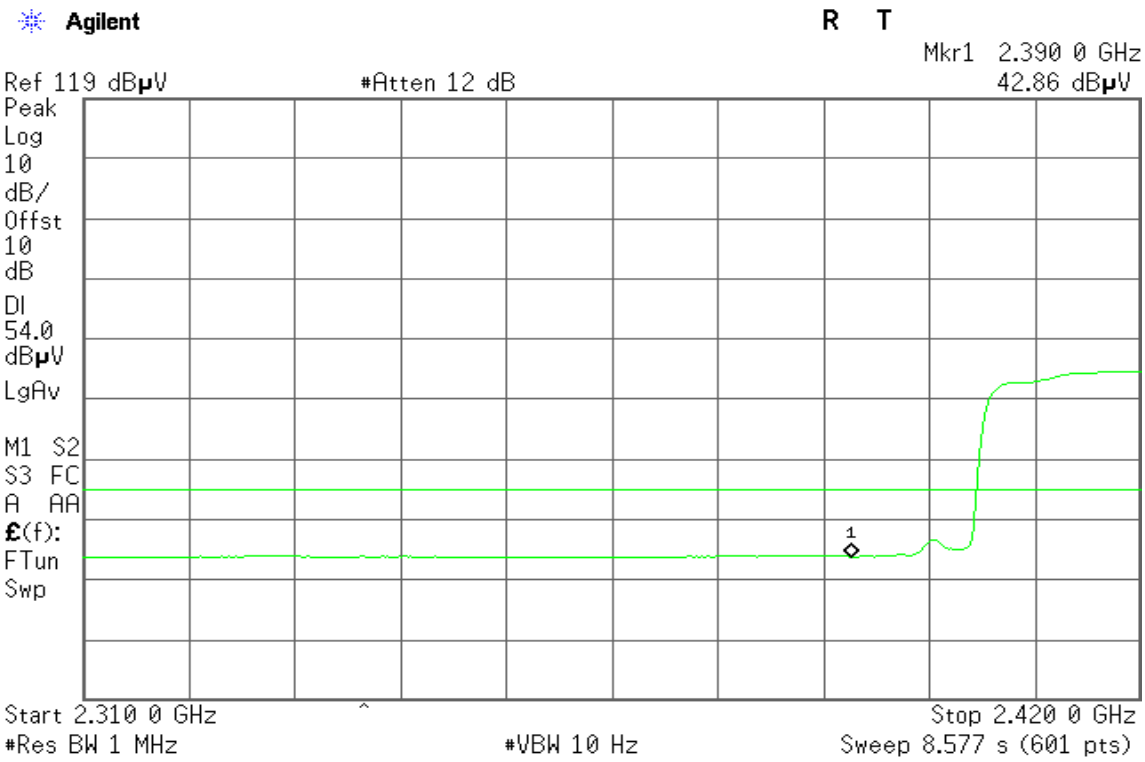
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

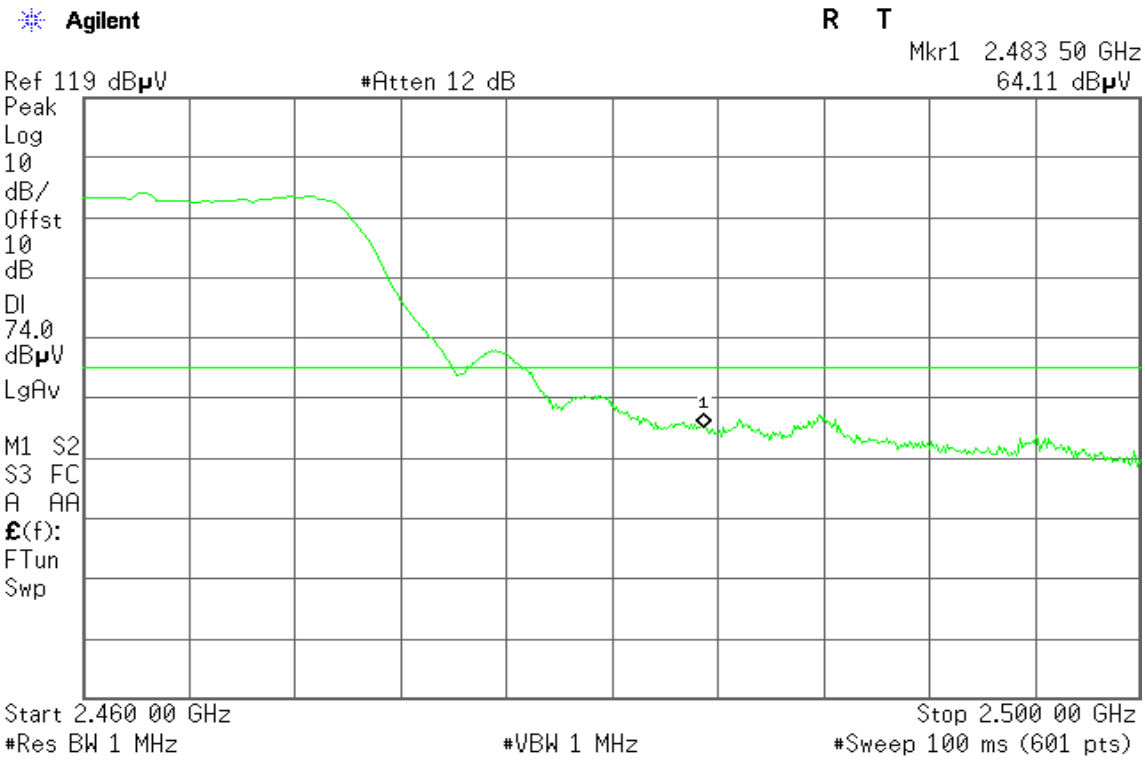


Detector mode: Average **Polarity: Horizontal**

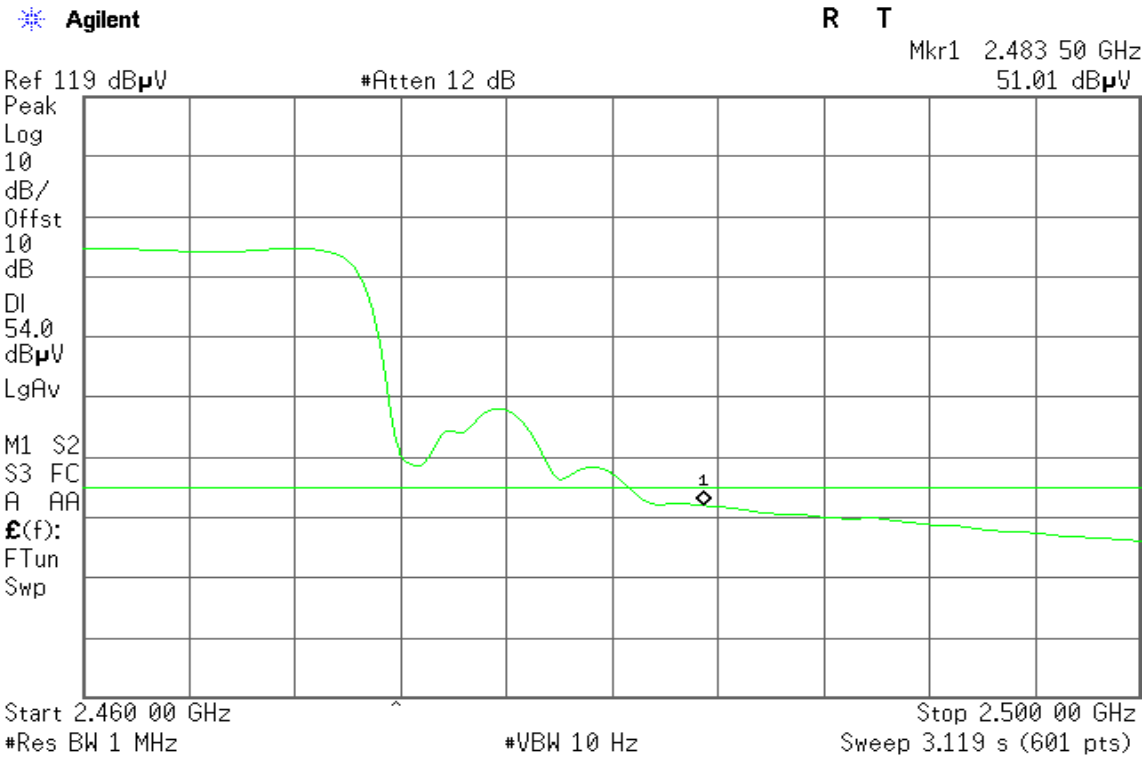


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH High)

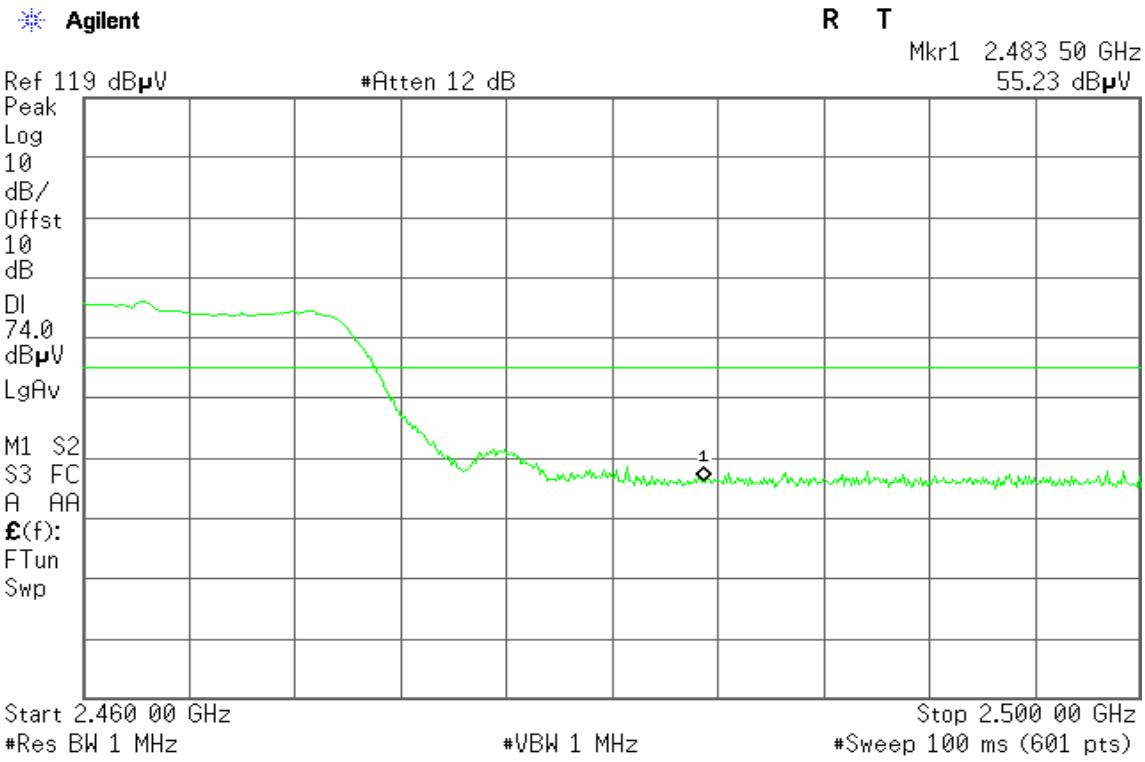
Detector mode: Peak Polarity: Vertical



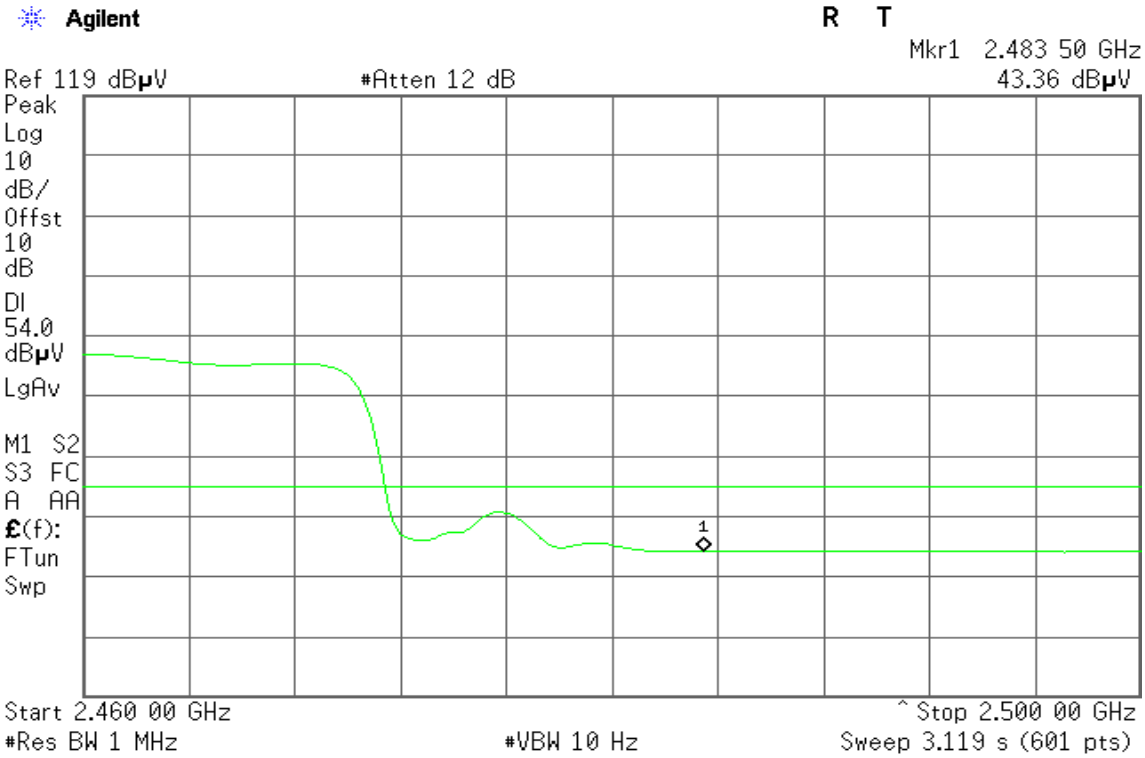
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**



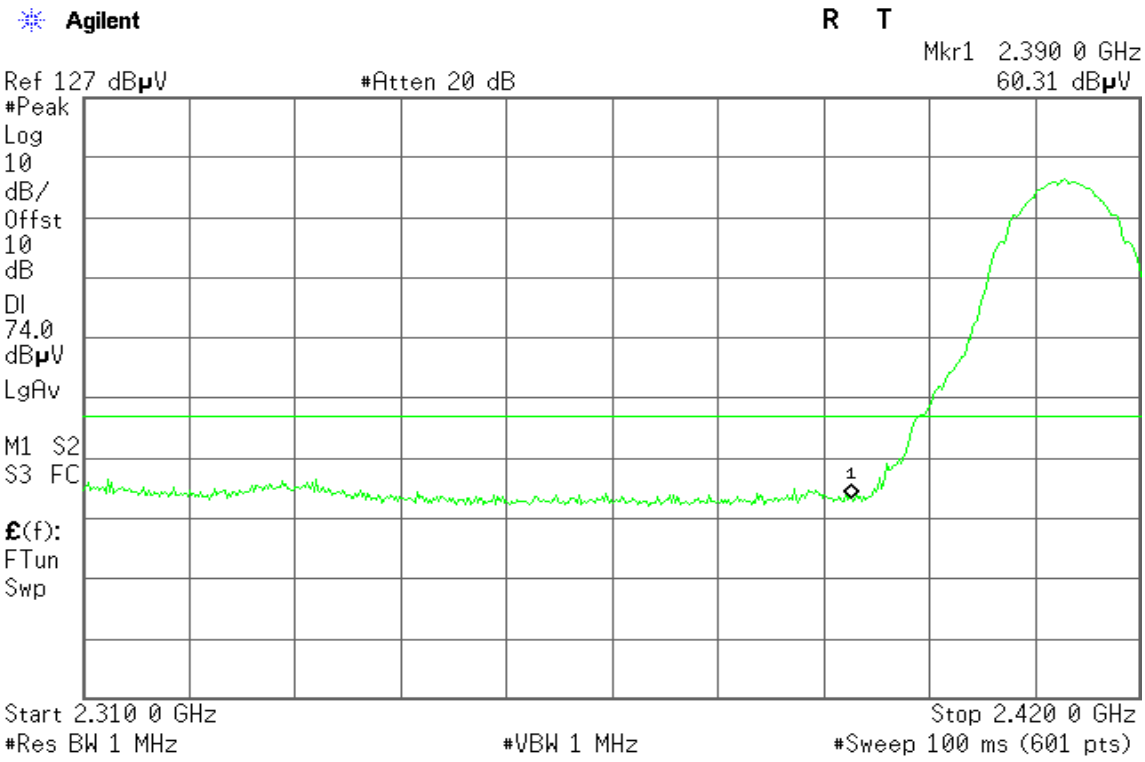
Detector mode: Average **Polarity: Horizontal**



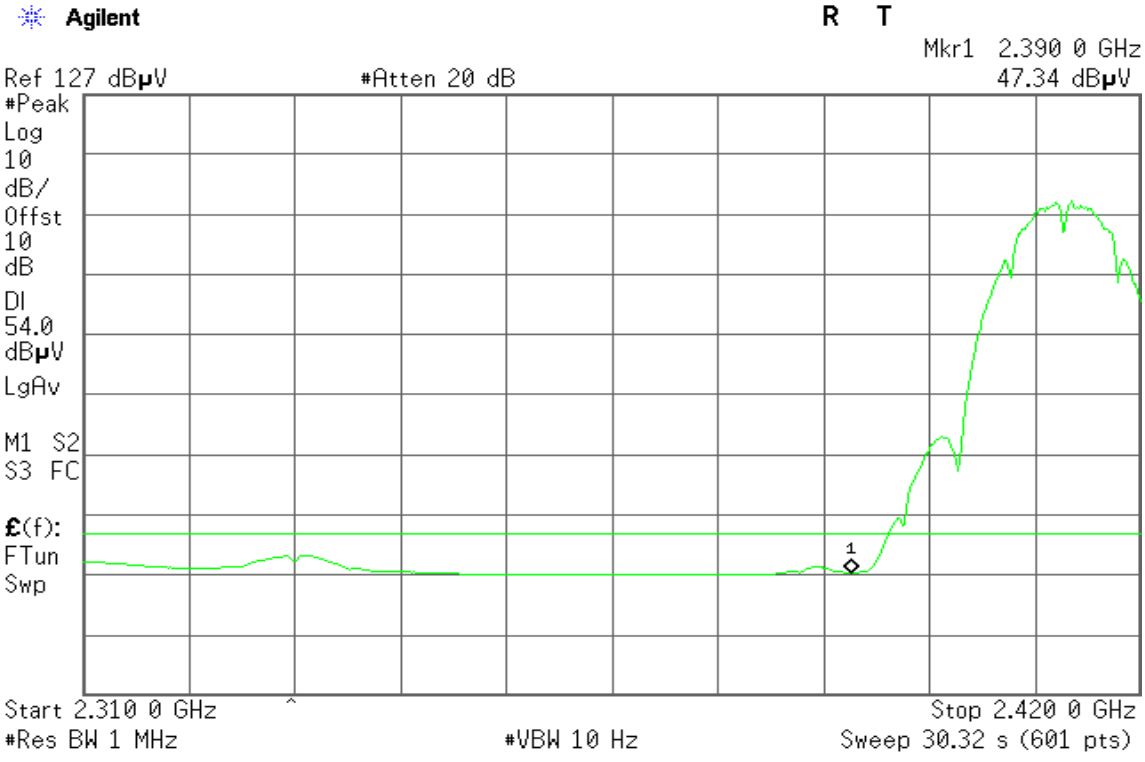
Dipole Antenna / Gain: 9.09 dBi

Band Edges (IEEE 802.11b mode / CH Low)

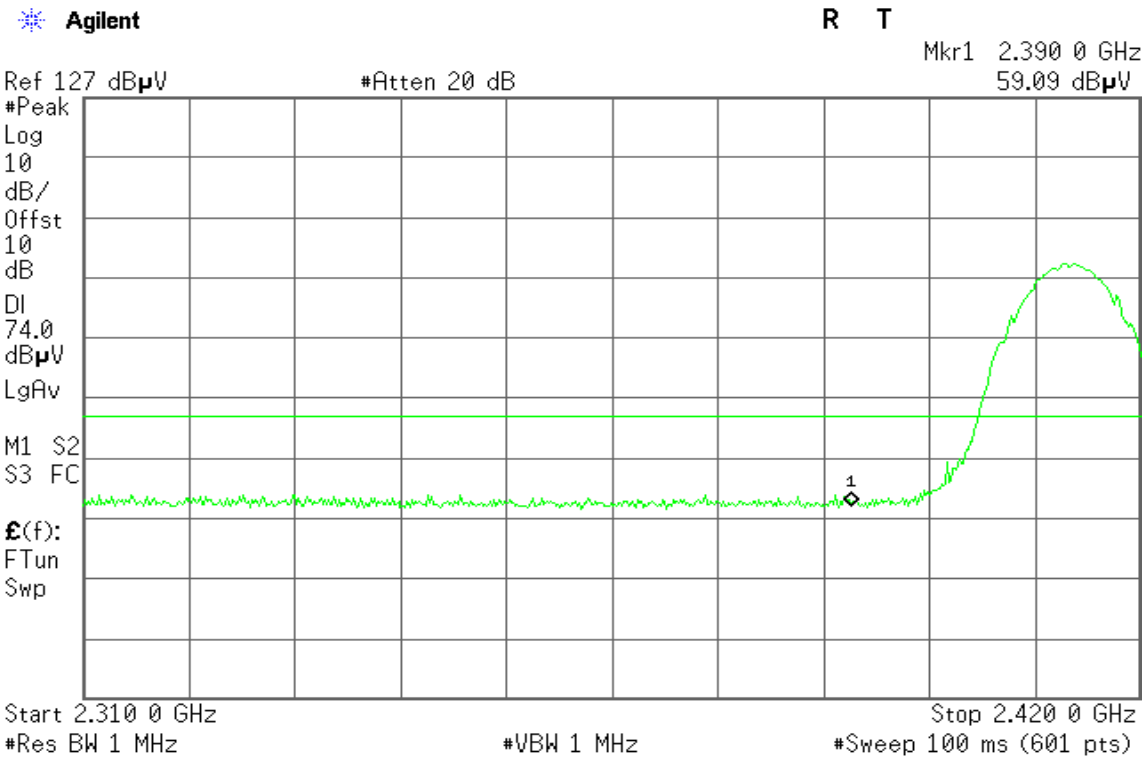
Detector mode: Peak **Polarity: Vertical**



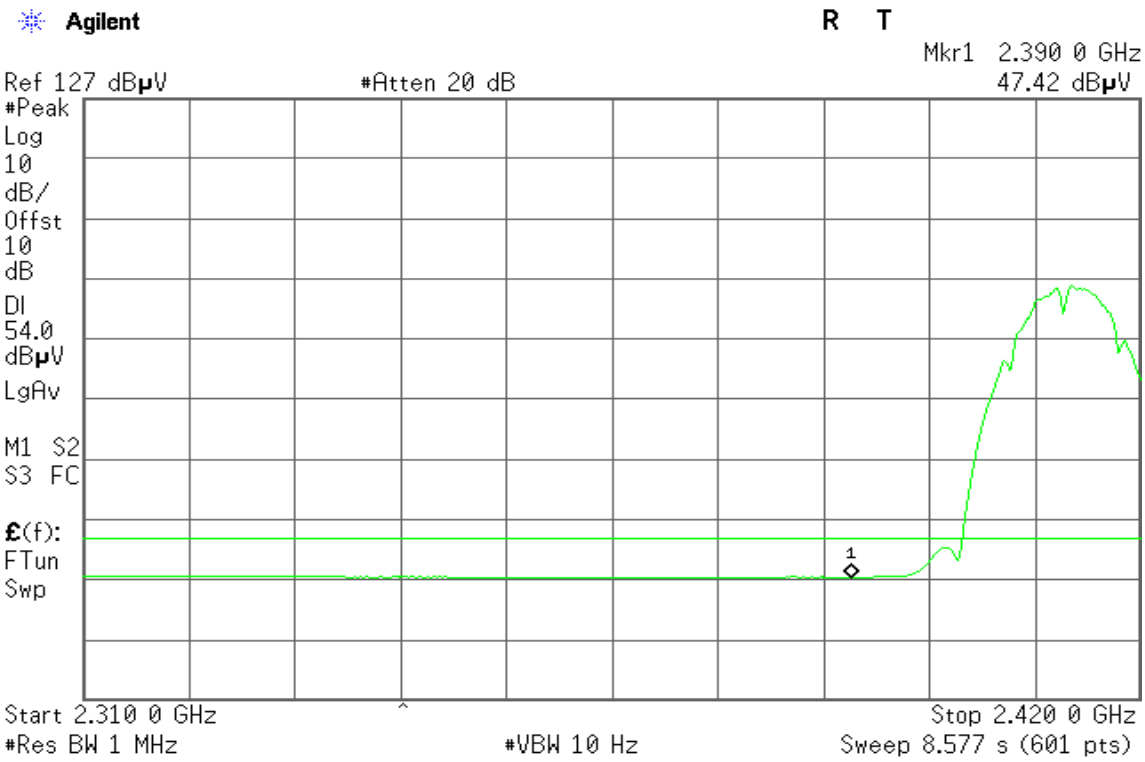
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

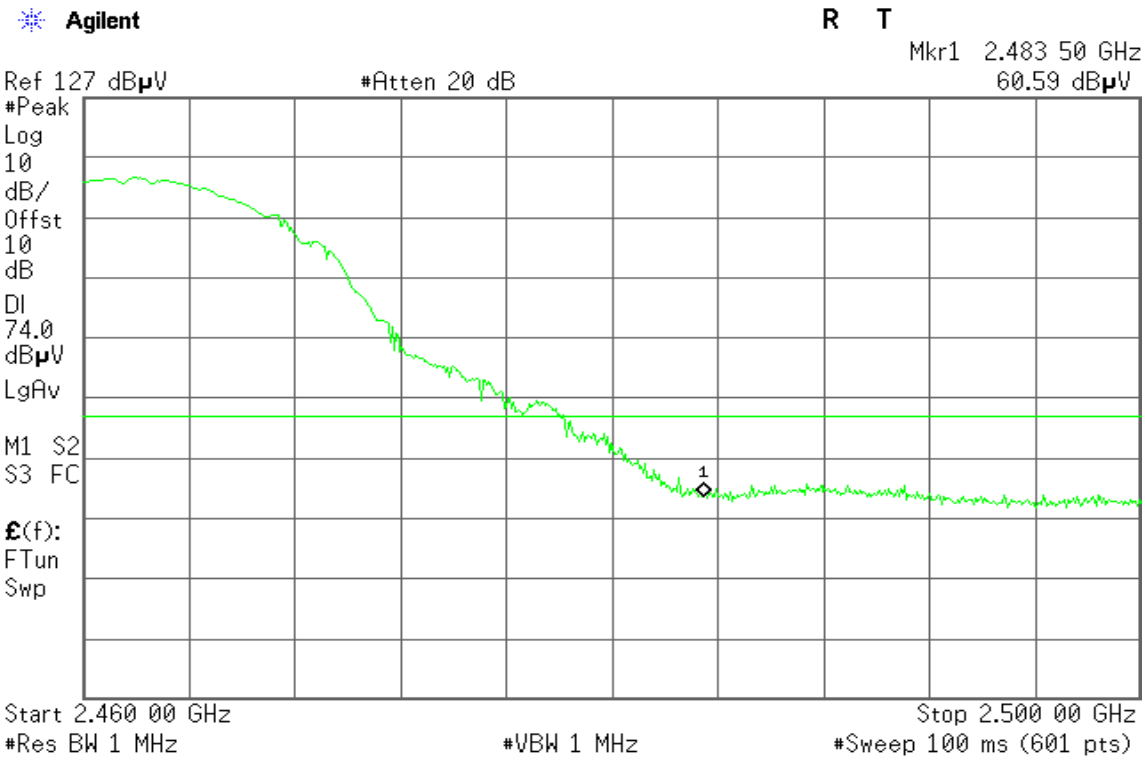


Detector mode: Average **Polarity: Horizontal**

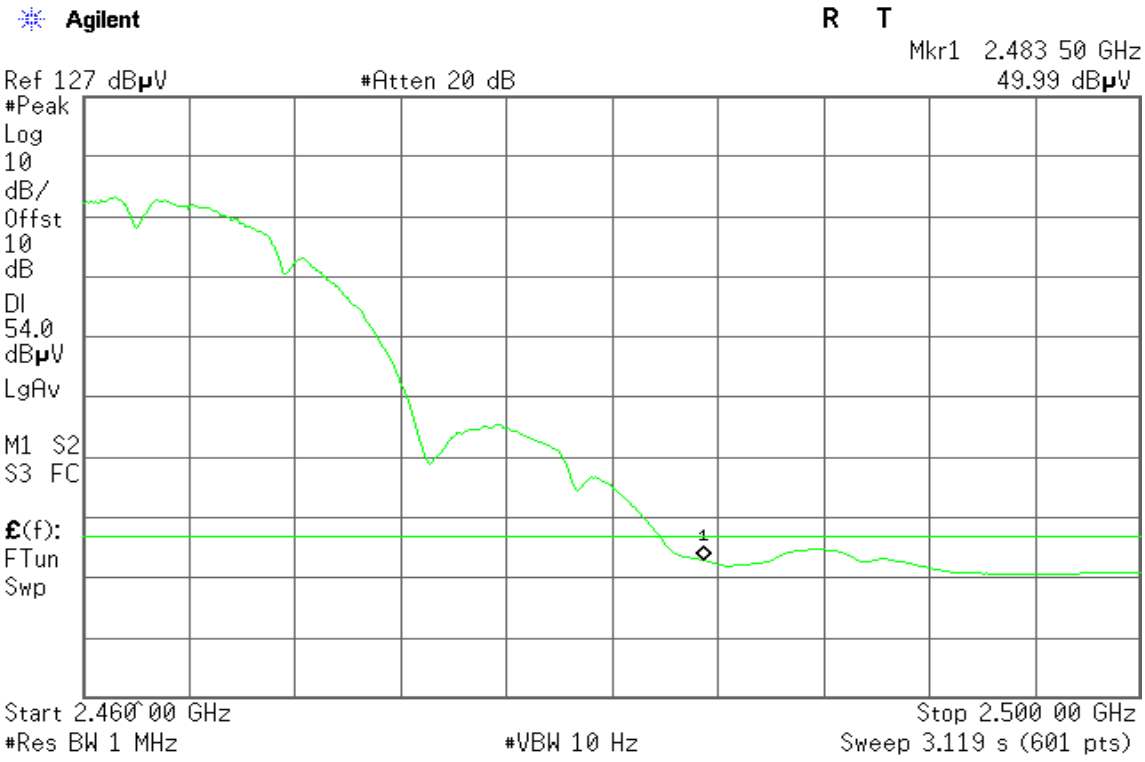


Band Edges (IEEE 802.11b mode / CH High)

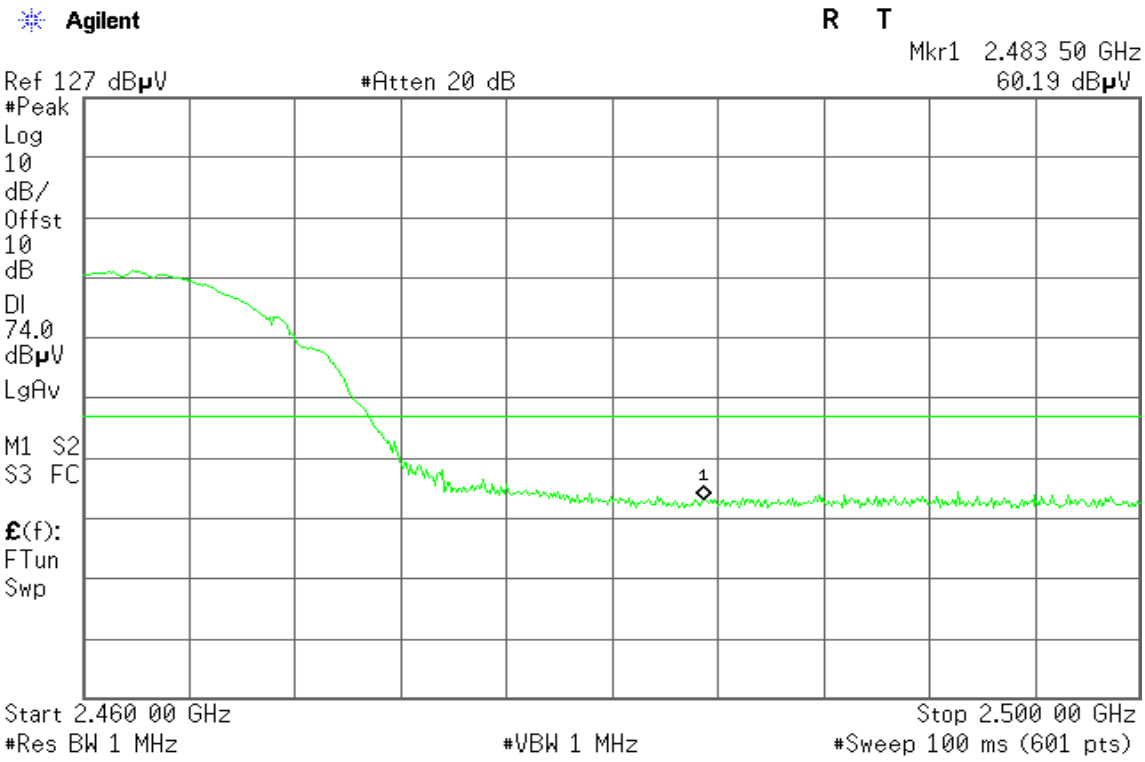
Detector mode: Peak Polarity: Vertical



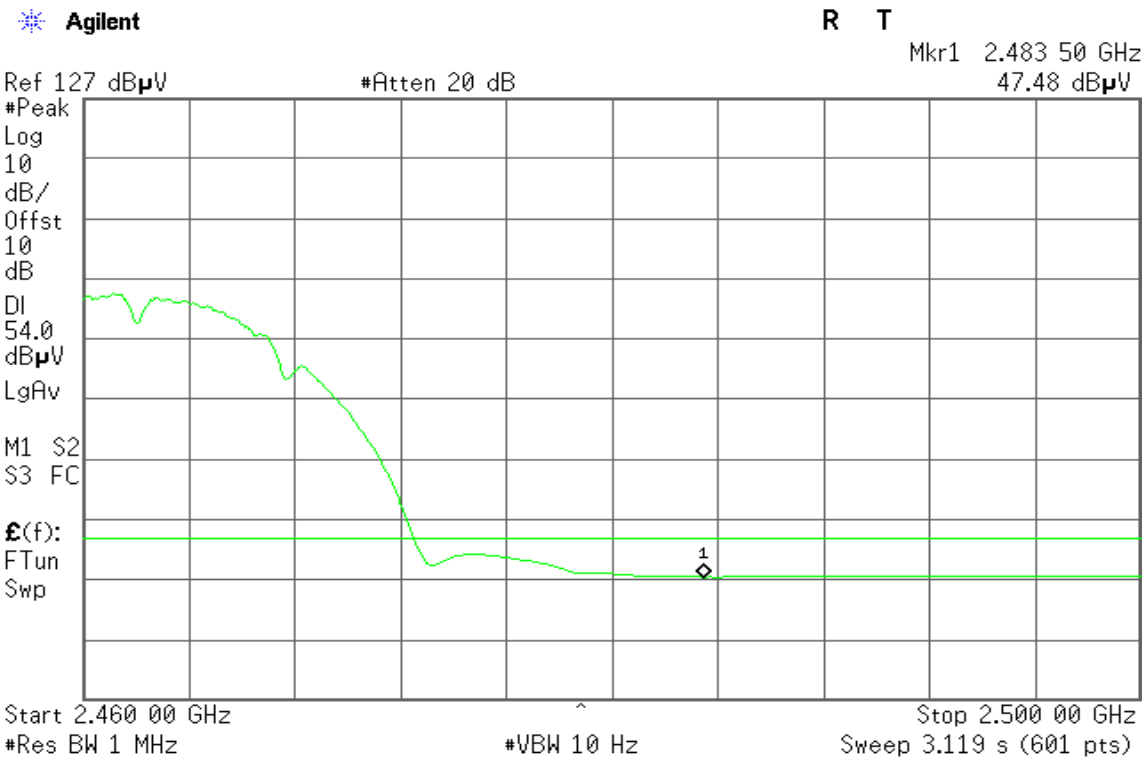
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

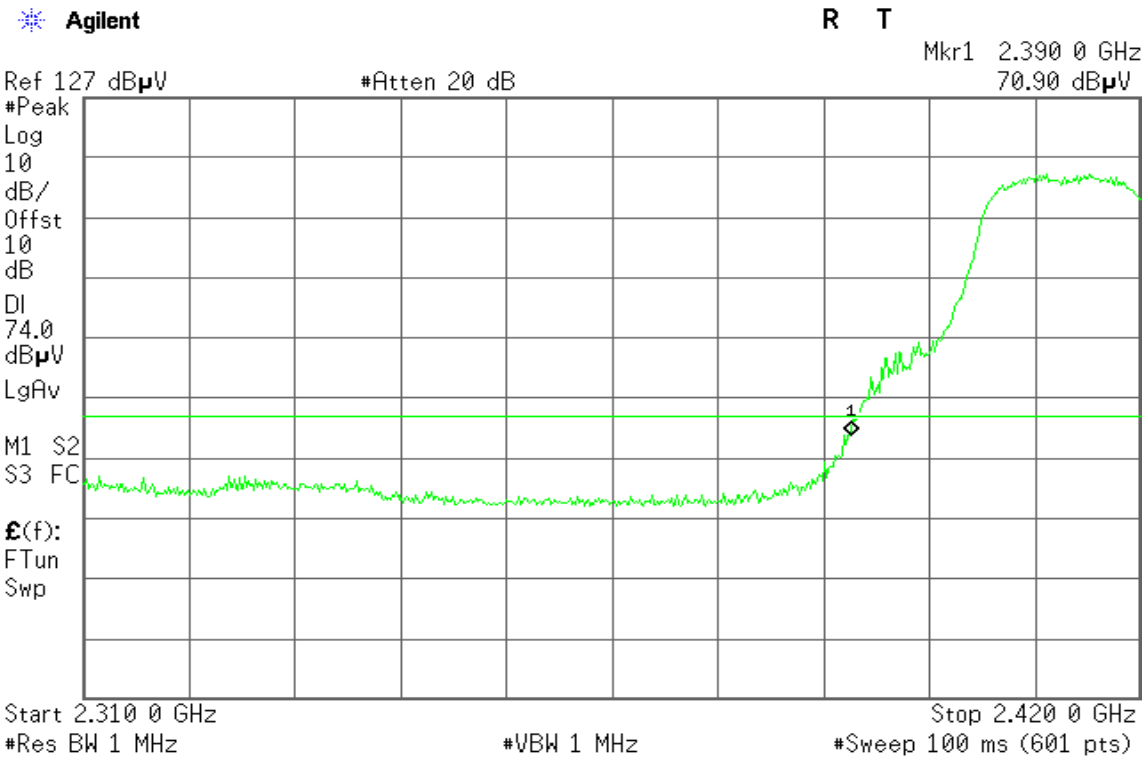


Detector mode: Average **Polarity: Horizontal**

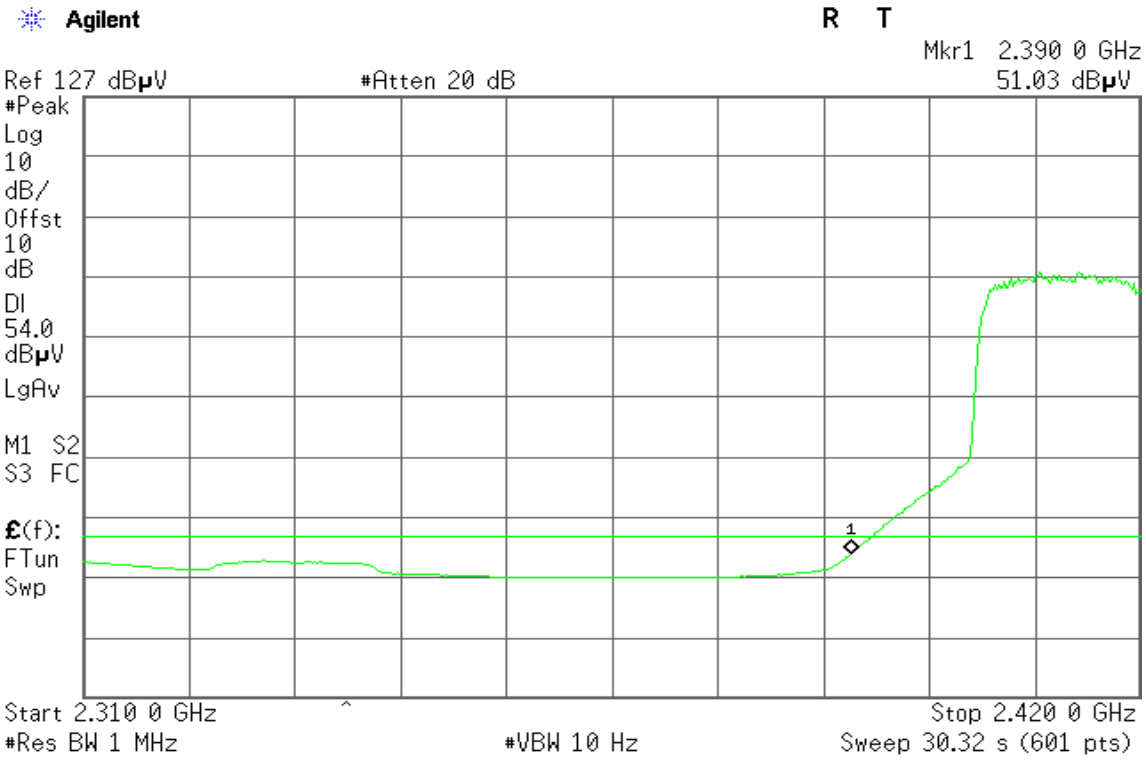


Band Edges (IEEE 802.11g mode / CH Low)

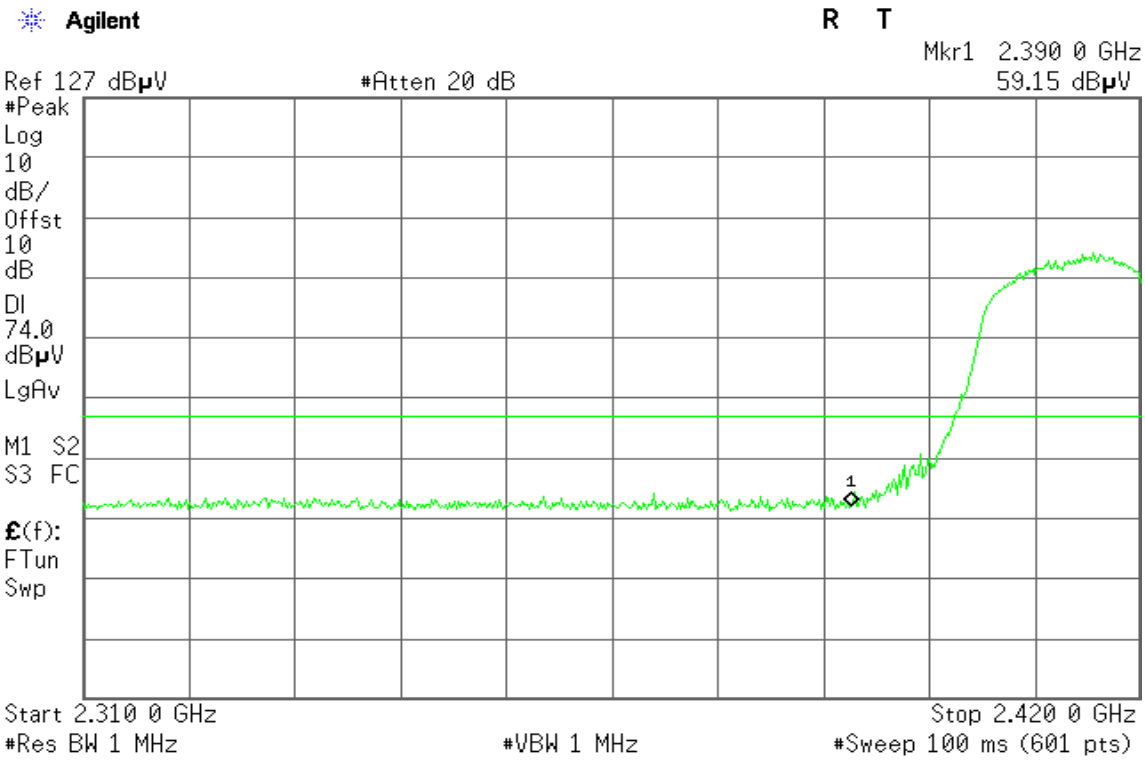
Detector mode: Peak **Polarity: Vertical**



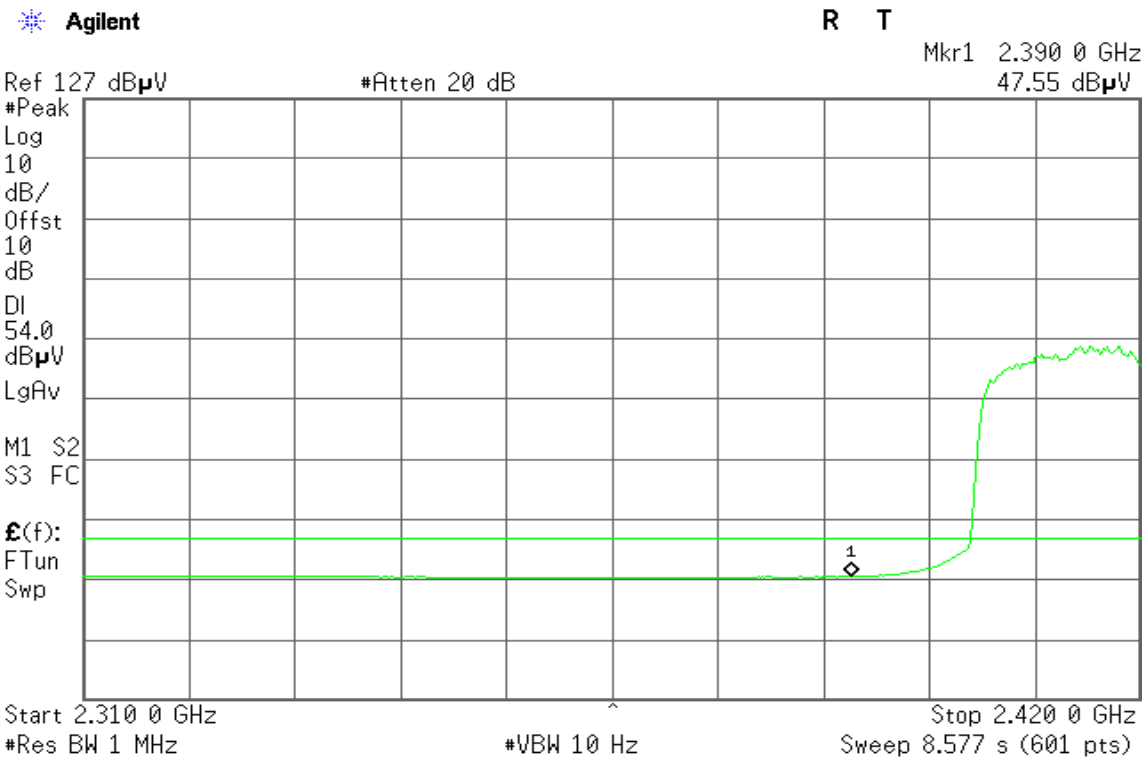
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

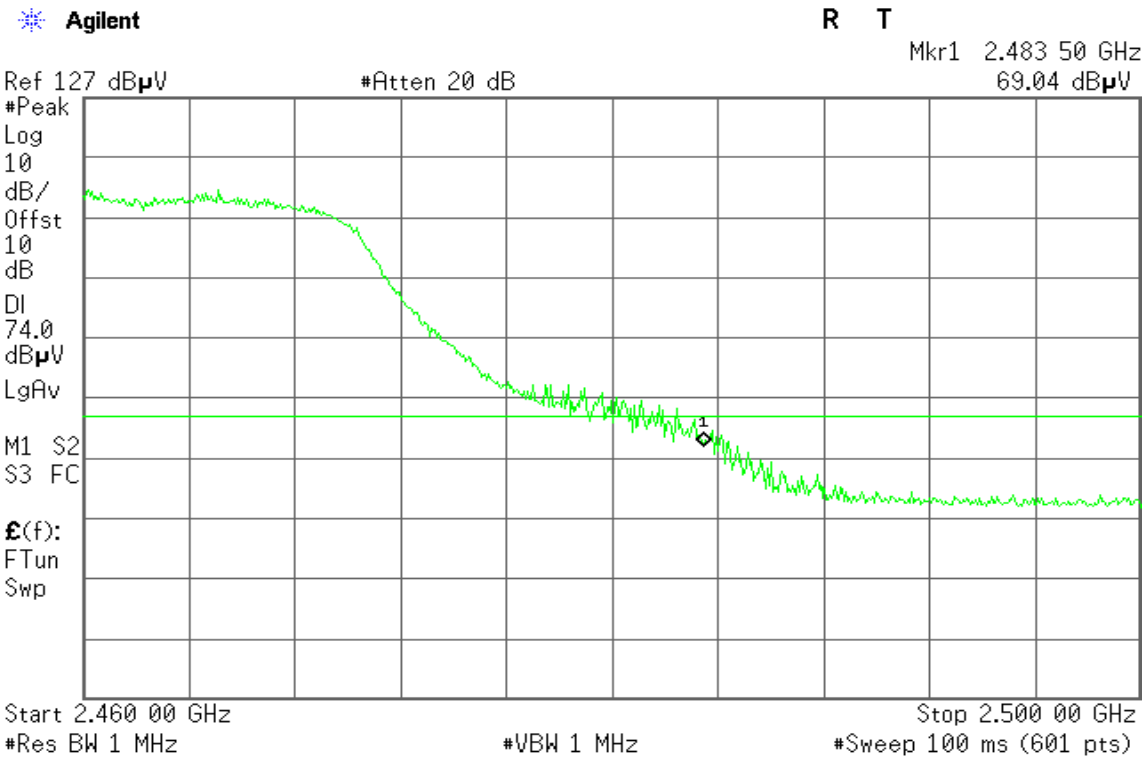


Detector mode: Average **Polarity: Horizontal**

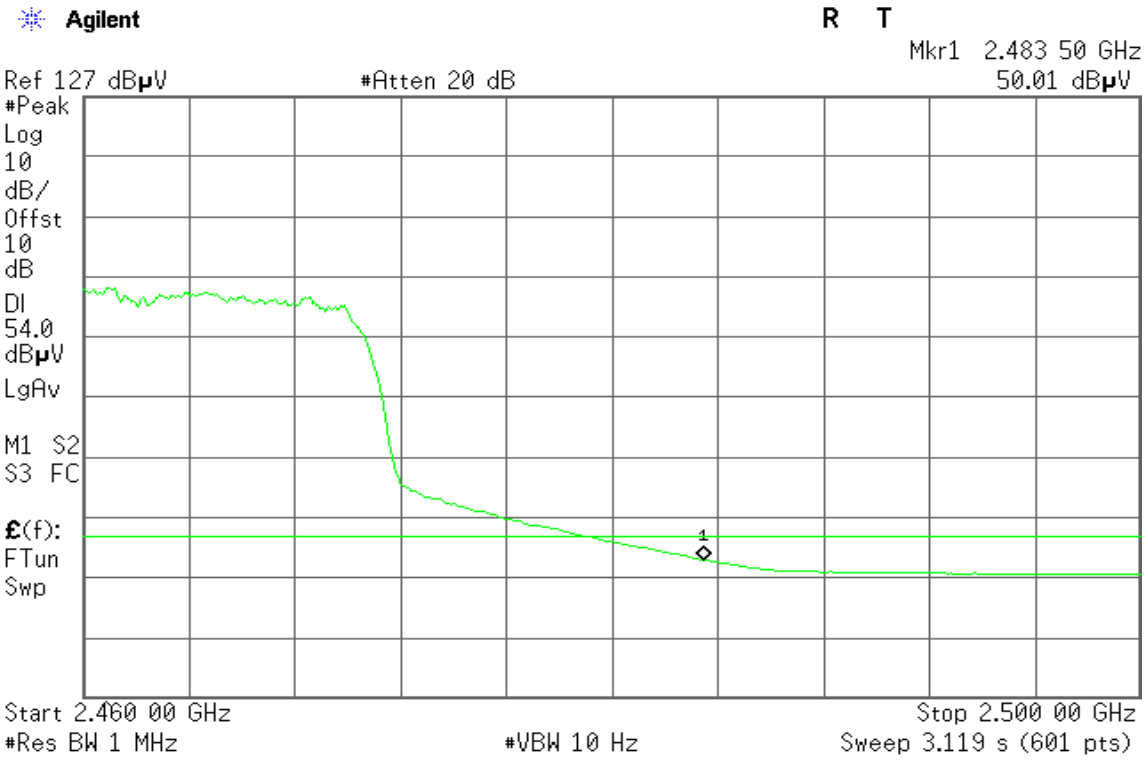


Band Edges (IEEE 802.11g mode / CH High)

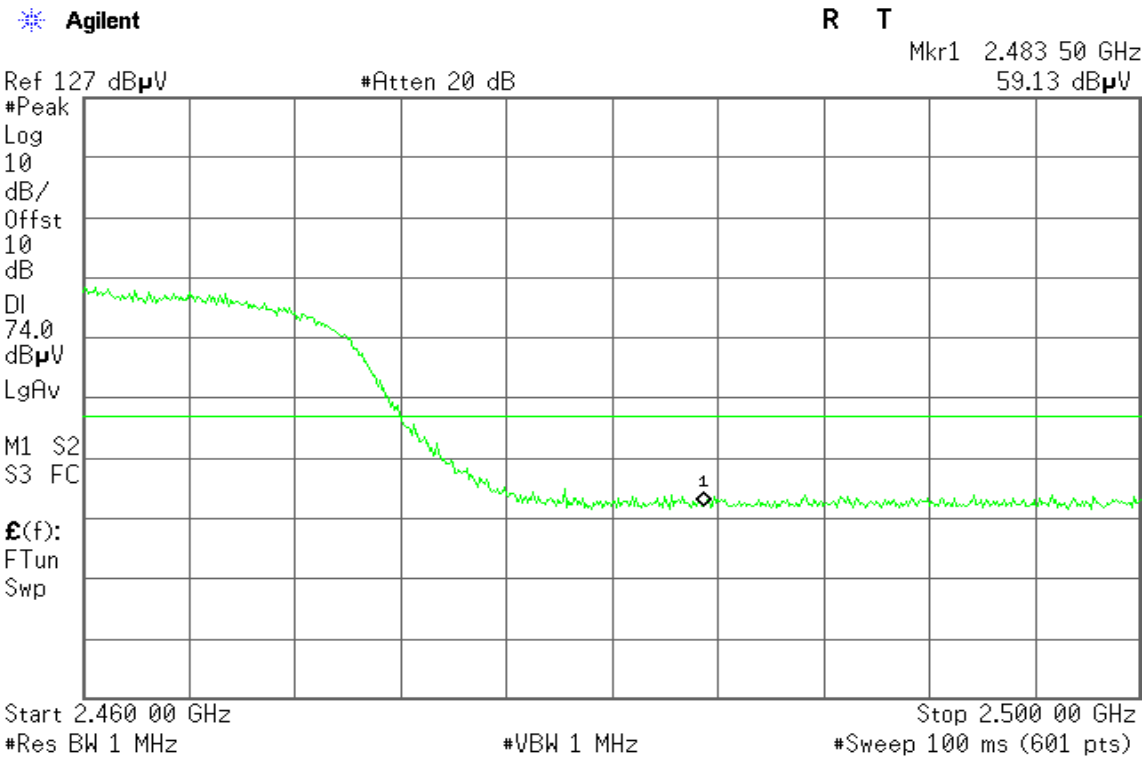
Detector mode: Peak Polarity: Vertical



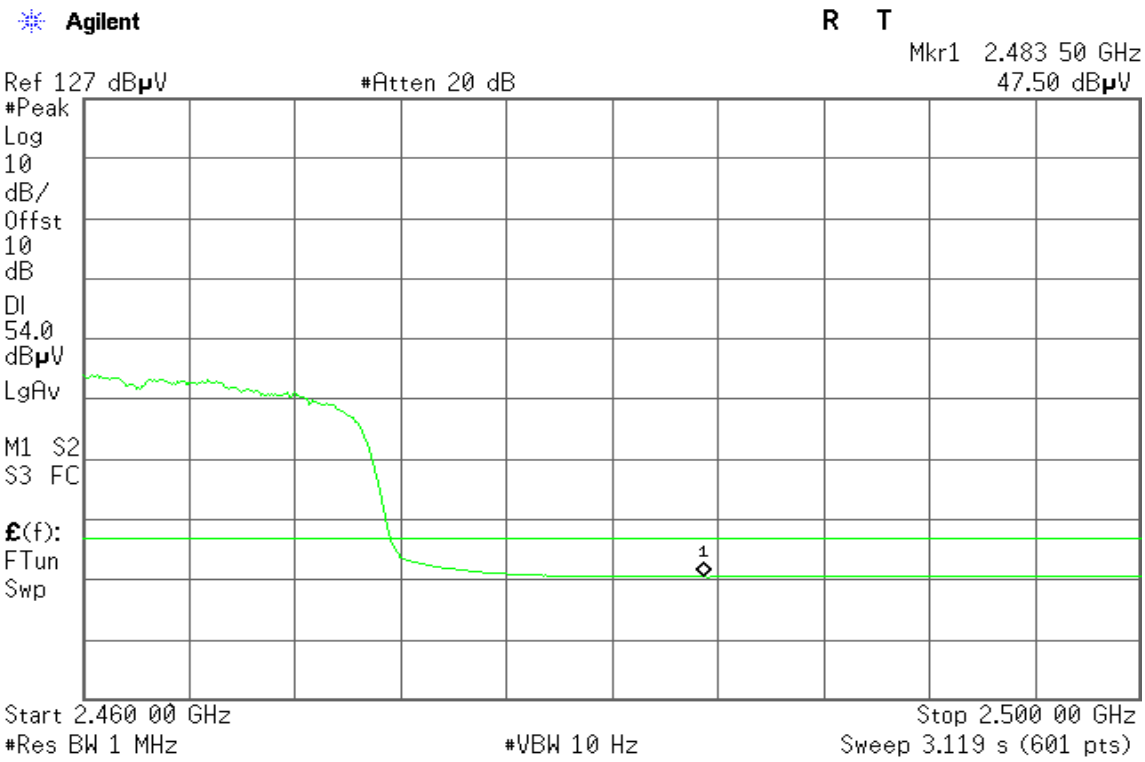
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

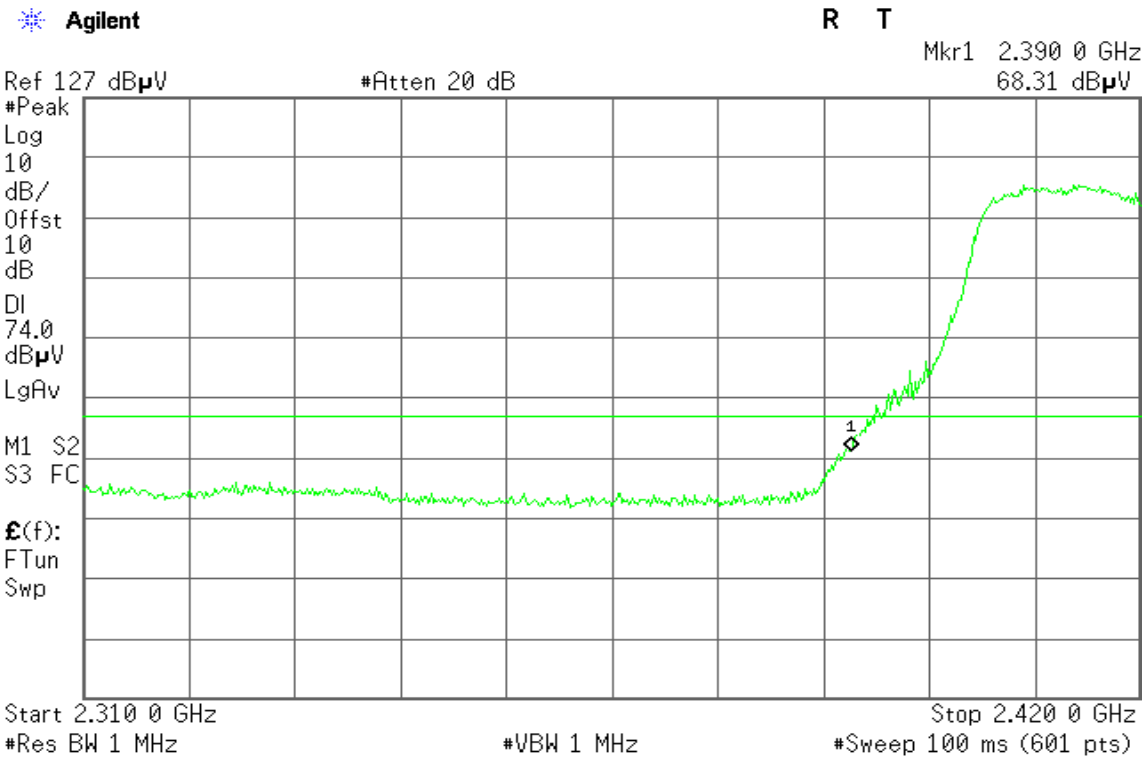


Detector mode: Average **Polarity: Horizontal**

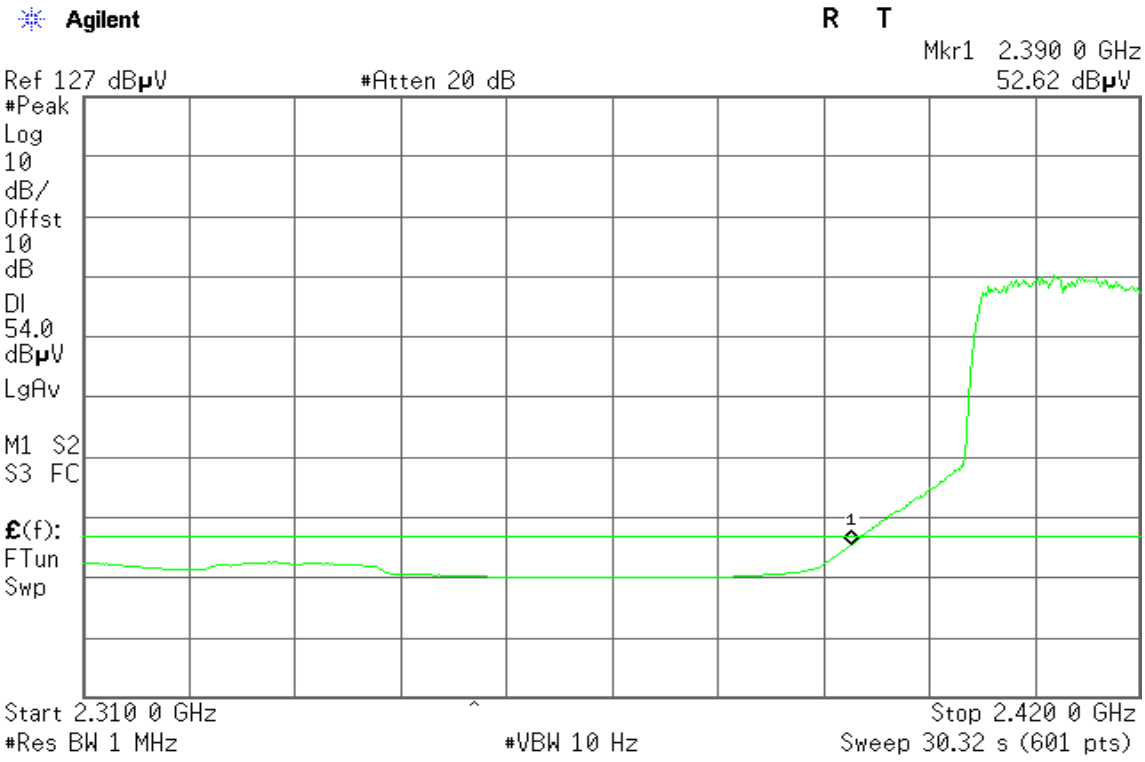


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH Low)

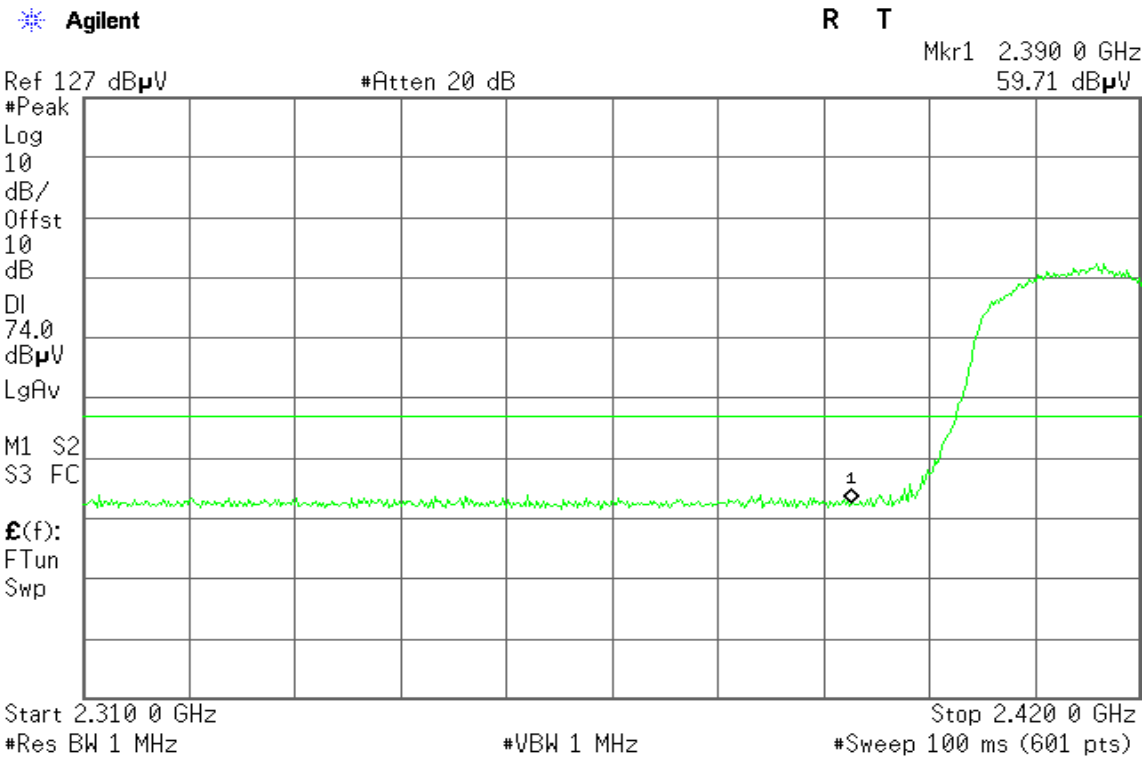
Detector mode: Peak **Polarity: Vertical**



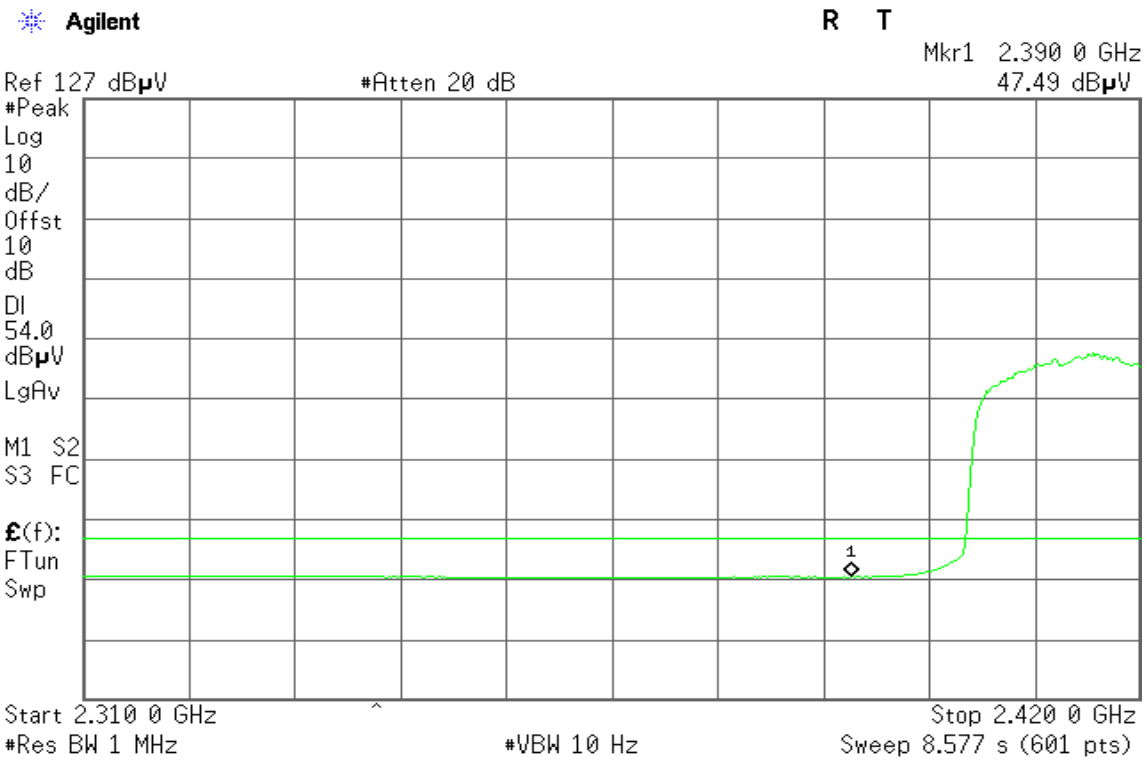
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

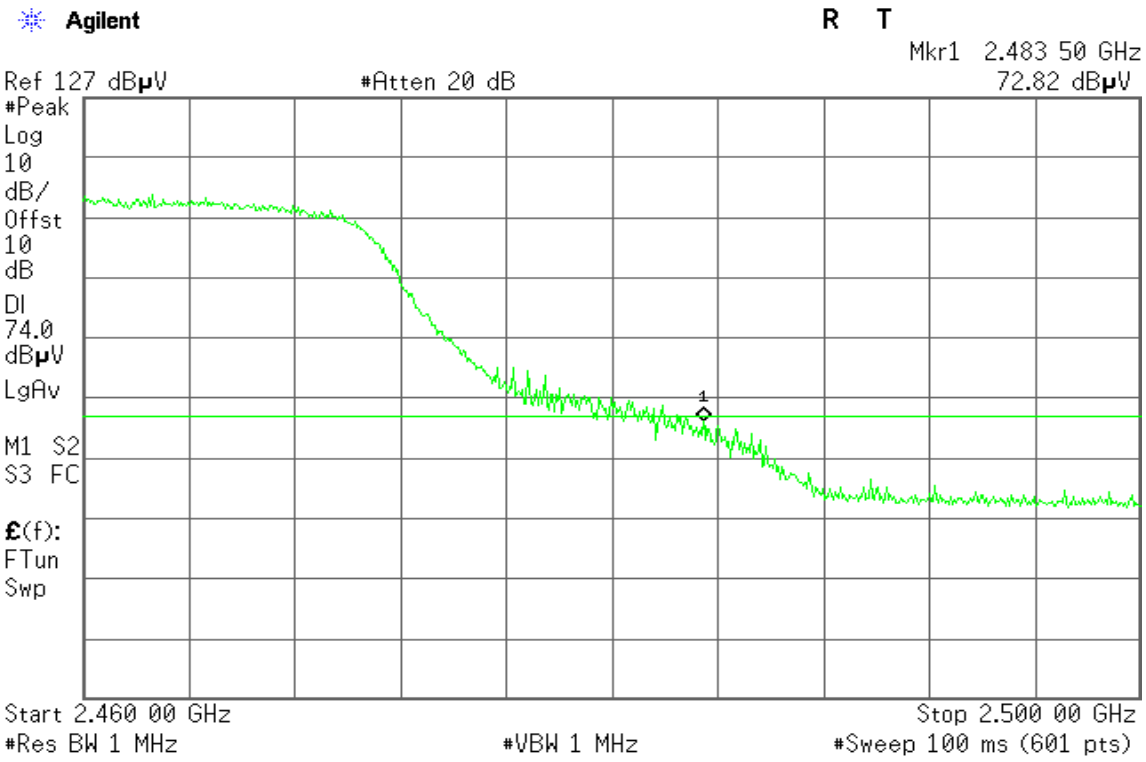


Detector mode: Average **Polarity: Horizontal**

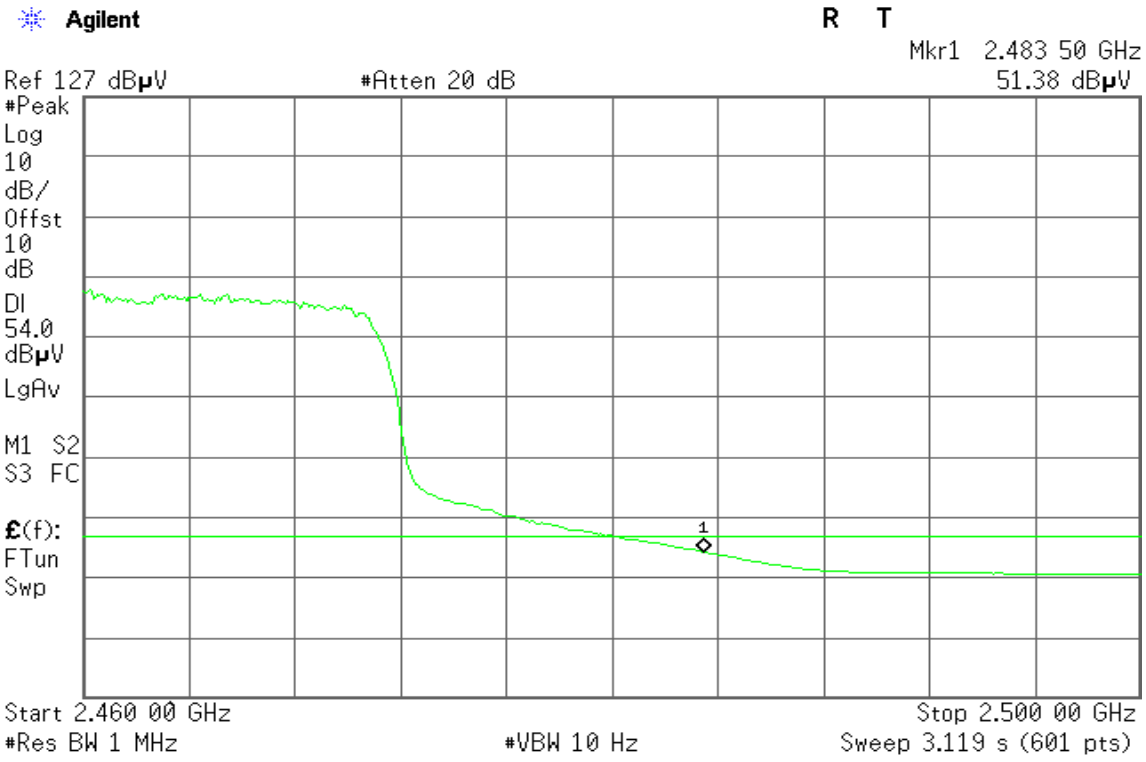


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH High)

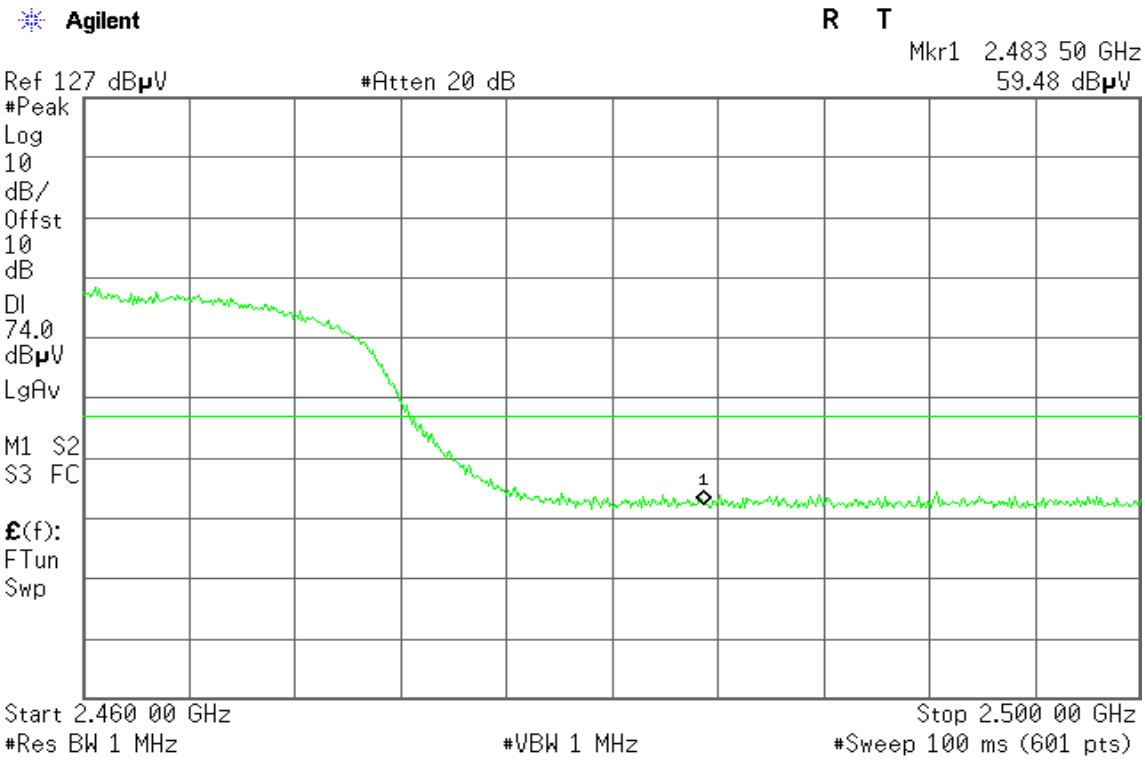
Detector mode: Peak Polarity: Vertical



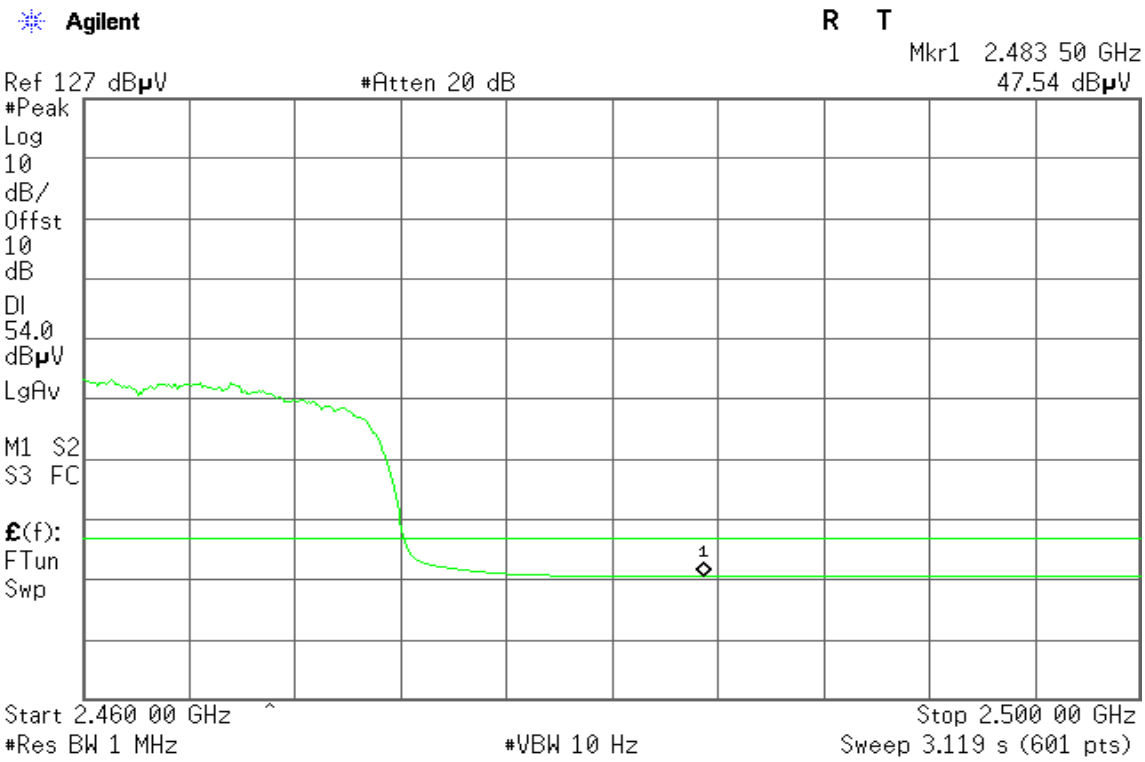
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

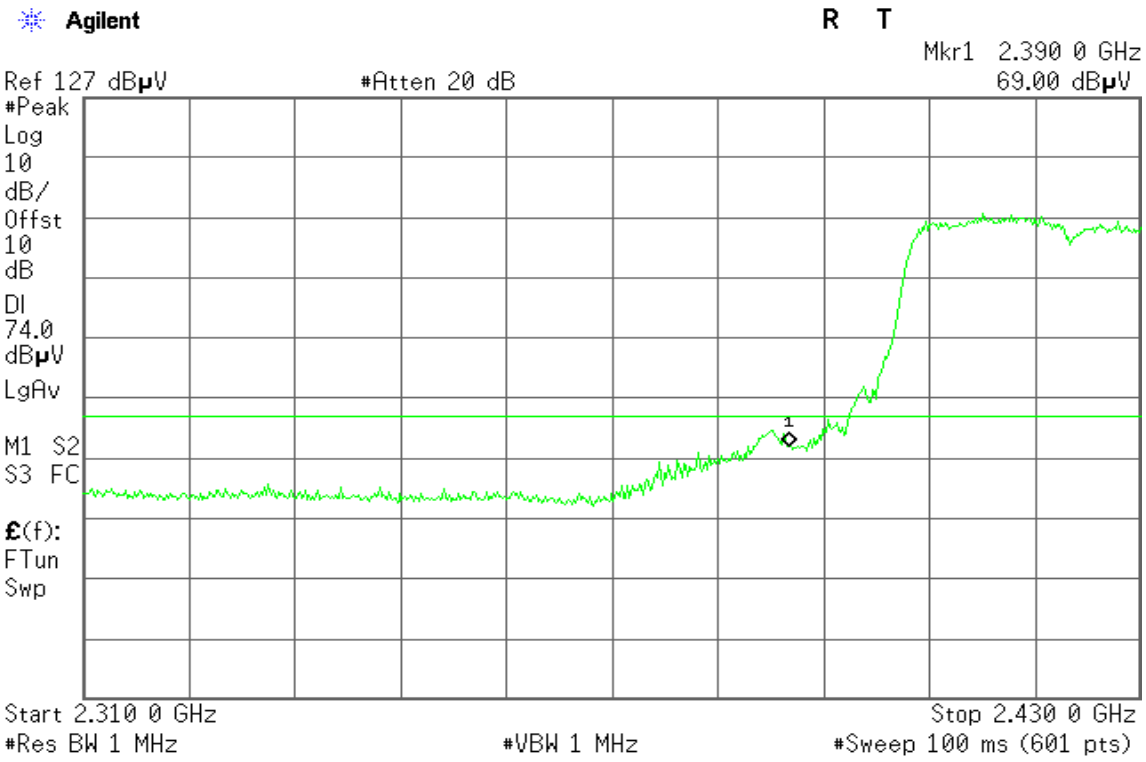


Detector mode: Average **Polarity: Horizontal**

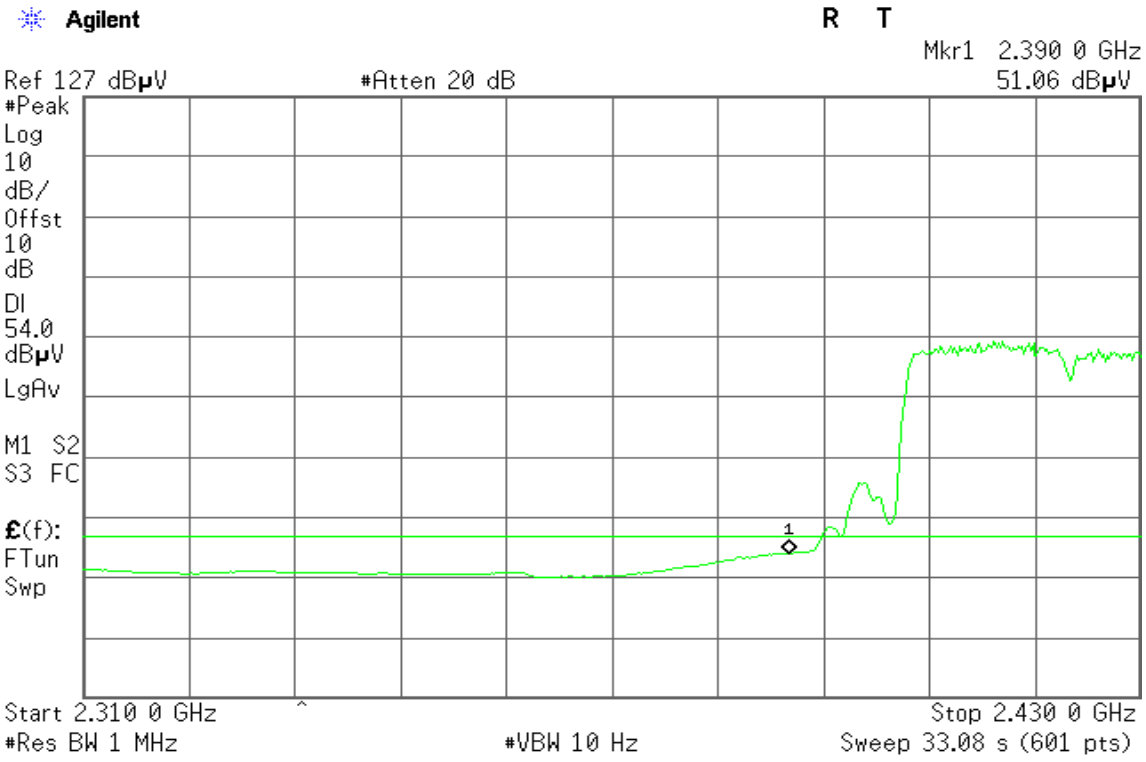


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH Low)

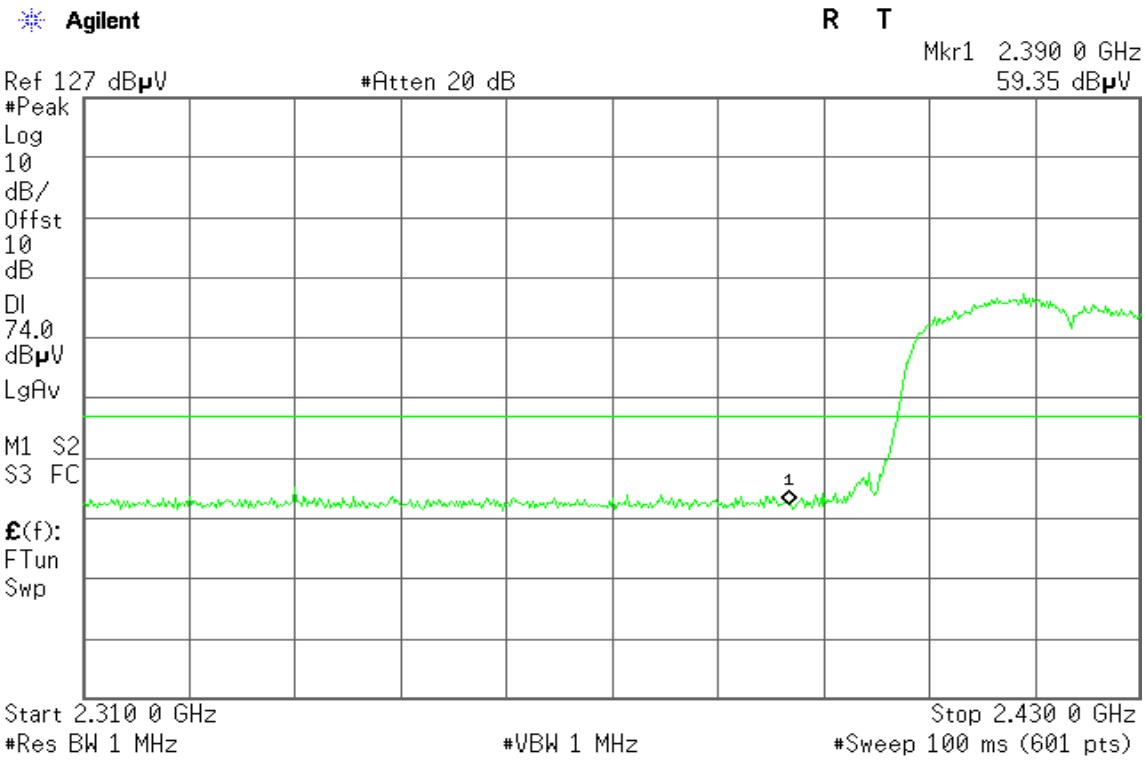
Detector mode: Peak **Polarity: Vertical**



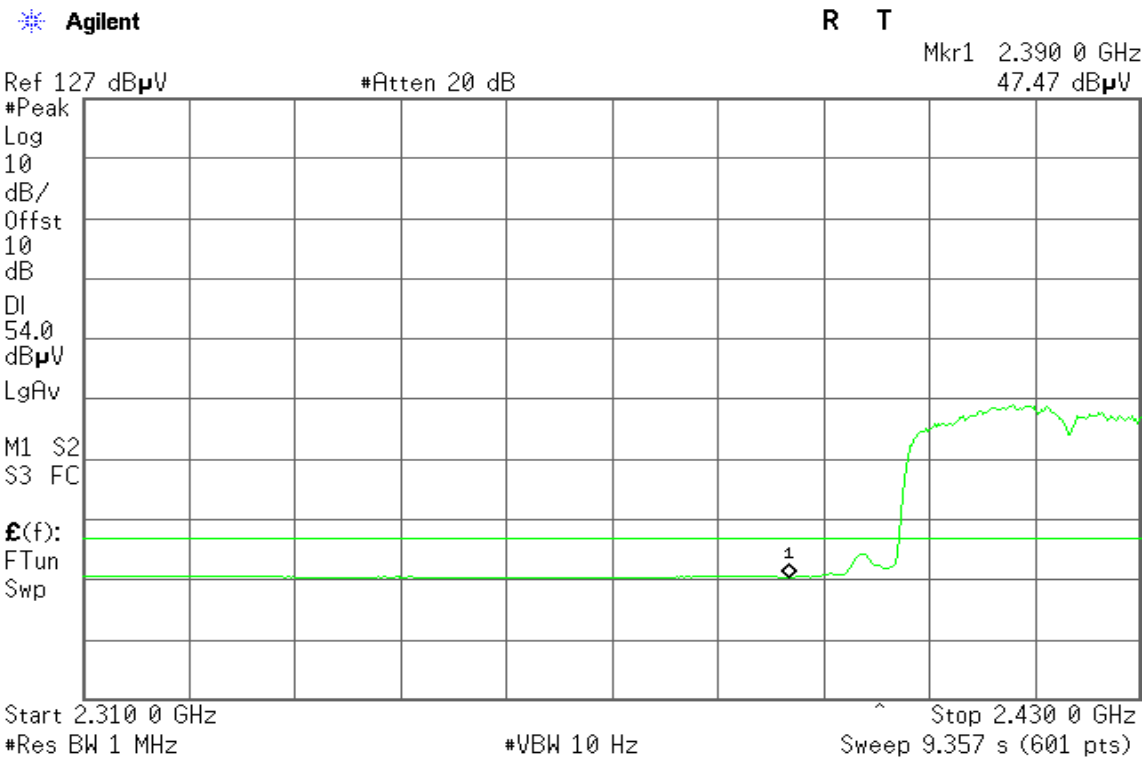
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

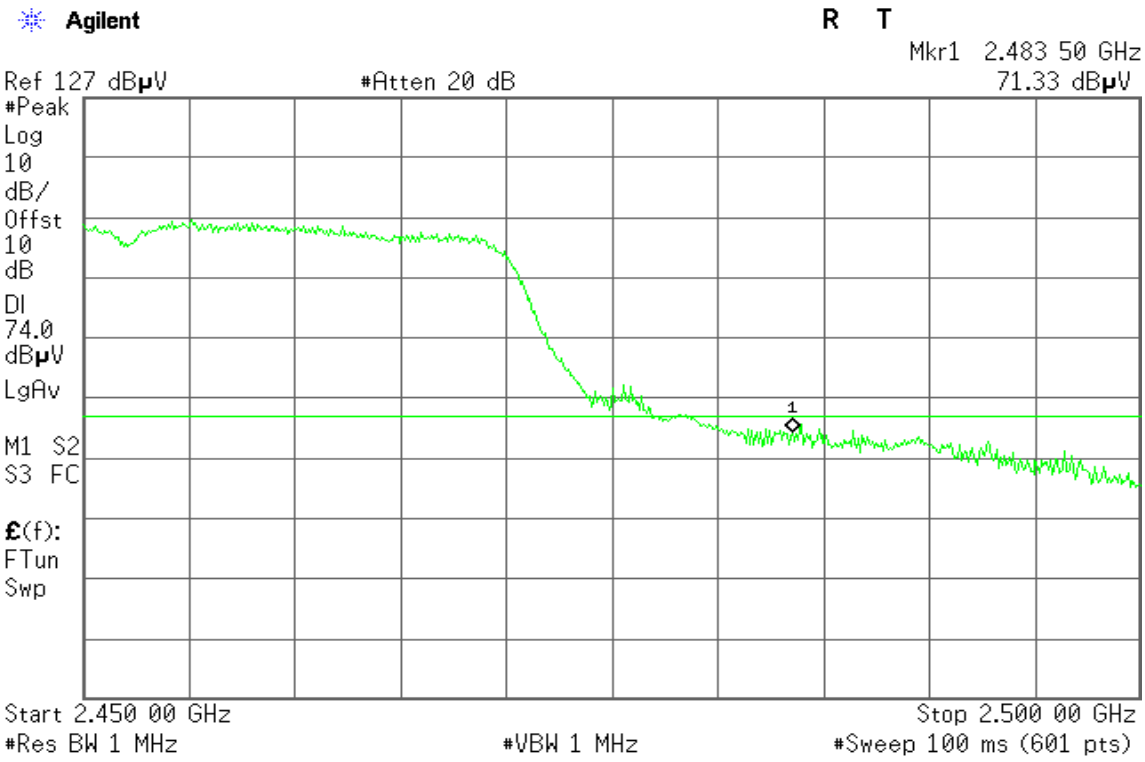


Detector mode: Average **Polarity: Horizontal**

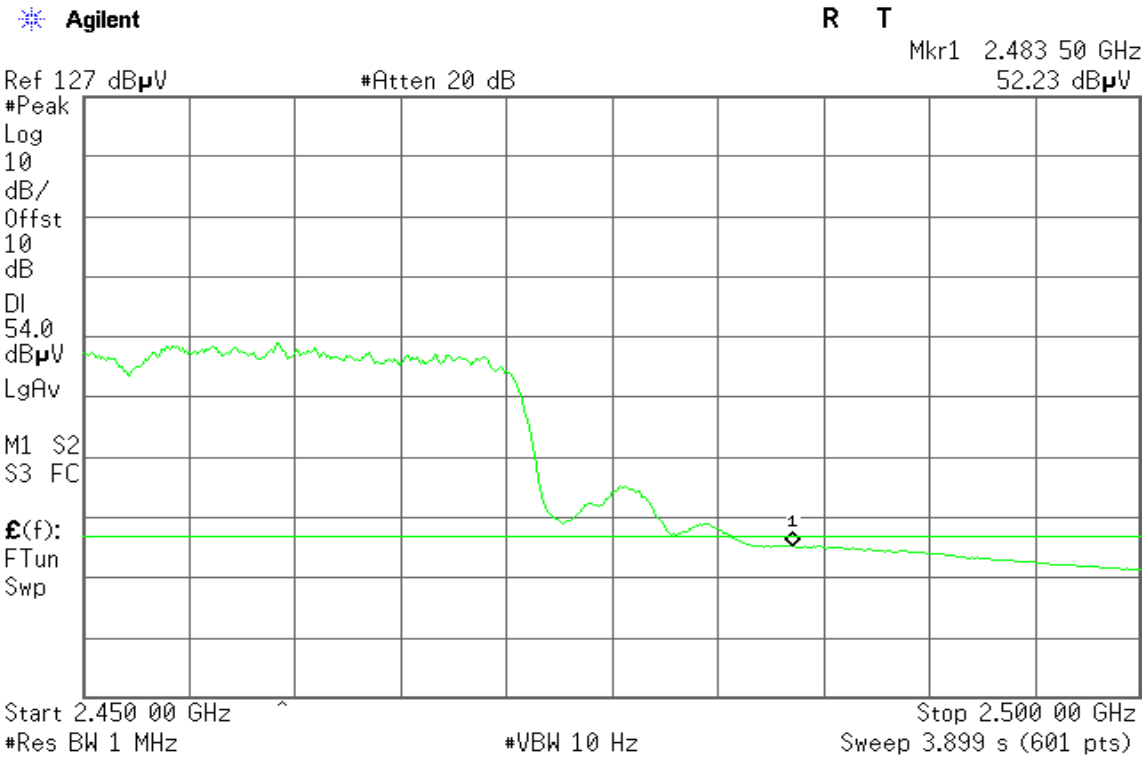


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH High)

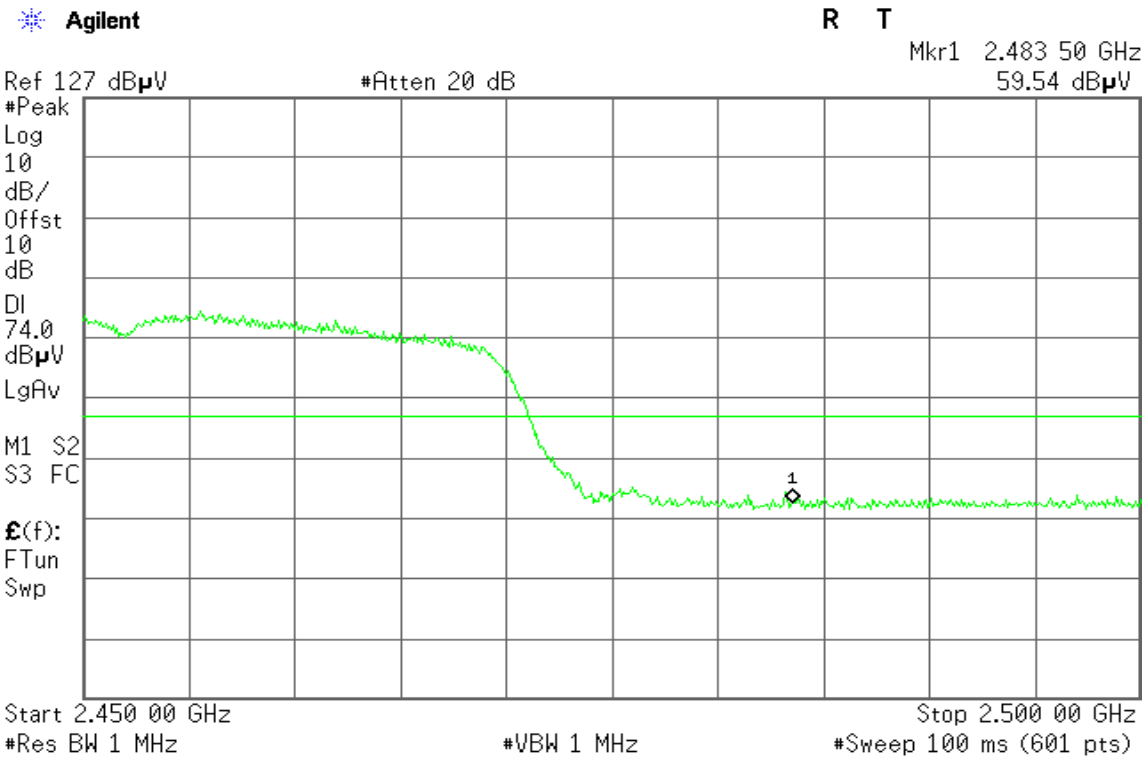
Detector mode: Peak **Polarity: Vertical**



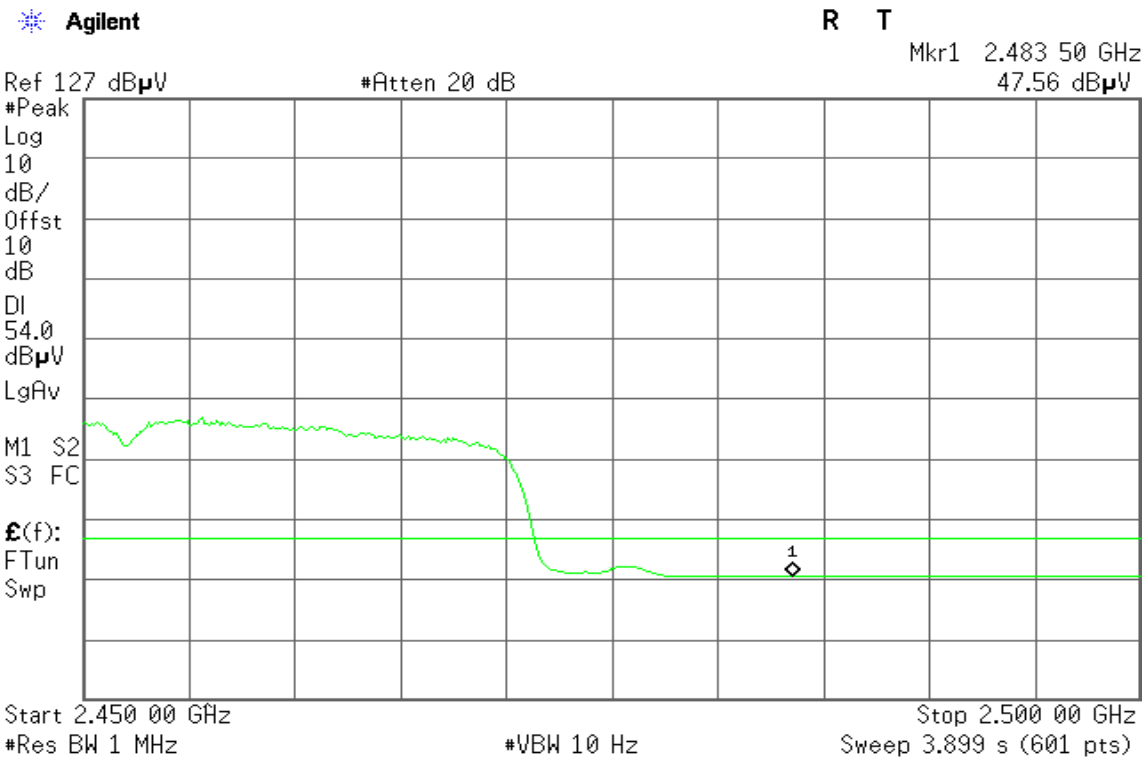
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**

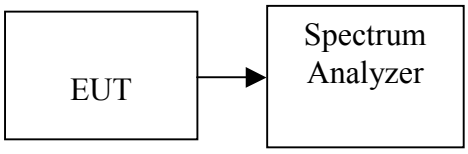


7.5 PEAK POWER SPECTRAL DENSITY

LIMIT

1. According to §15.247(e), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
2. According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

Test Configuration



TEST PROCEDURE

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

TEST RESULTS

No non-compliance noted

Test Data

PCB Antenna / Gain: 1 dBi

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-6.08	8.00	PASS
Mid	2437	-4.96		PASS
High	2462	-8.33		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-13.65	8.00	PASS
Mid	2437	-12.97		PASS
High	2462	-12.45		PASS

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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-12.21	8.00	PASS
Mid	2437	-12.52		PASS
High	2462	-11.16		PASS

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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2422	-15.71	8.00	PASS
Mid	2437	-14.47		PASS
High	2452	-14.92		PASS

Patch Antenna / Gain: 9.12 dBi, Dipole Antenna / Gain: 9.09 dBi

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-12.54	4.88	PASS
Mid	2437	-10.26		PASS
High	2462	-9.98		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-21.47	4.88	PASS
Mid	2437	-18.39		PASS
High	2462	-20.71		PASS

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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-18.14	4.88	PASS
Mid	2437	-17.52		PASS
High	2462	-17.81		PASS

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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2422	-20.80	4.88	PASS
Mid	2437	-18.26		PASS
High	2452	-20.68		PASS

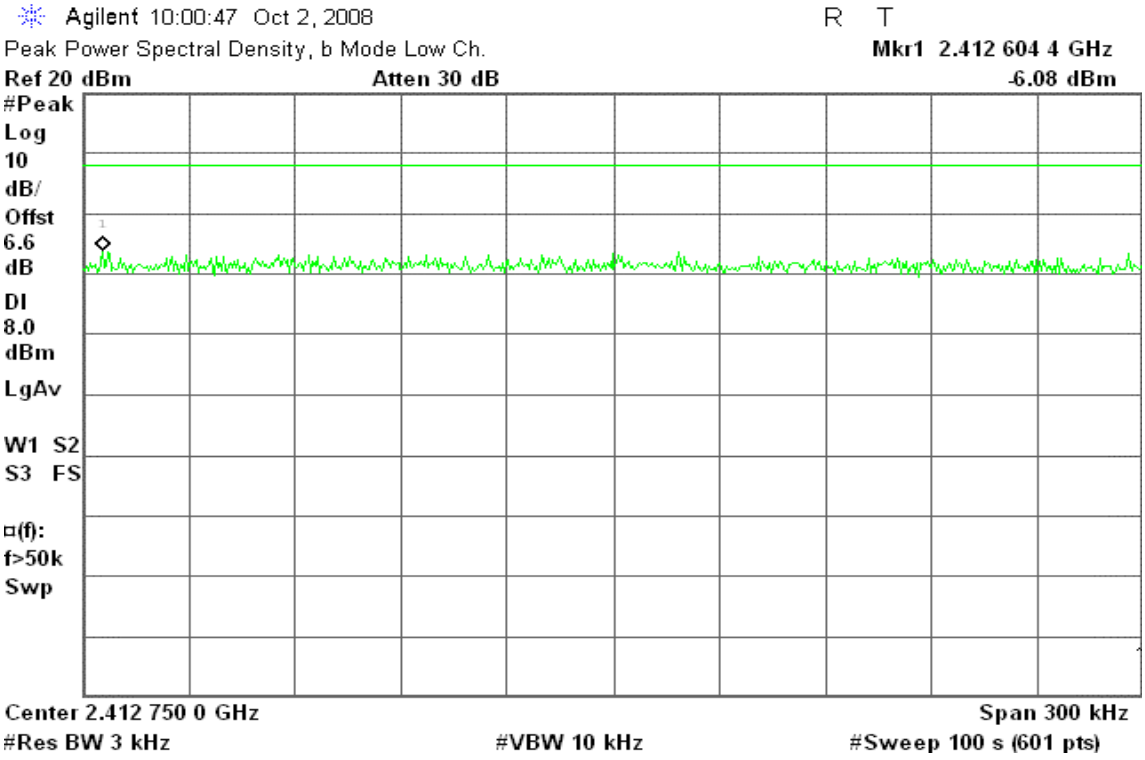
***Remark**: The maximum antenna gain is 9.12dBi; therefore the reduction due to antenna gain is 3.12dB, so the limit is 4.88dBm.*

Test Plot

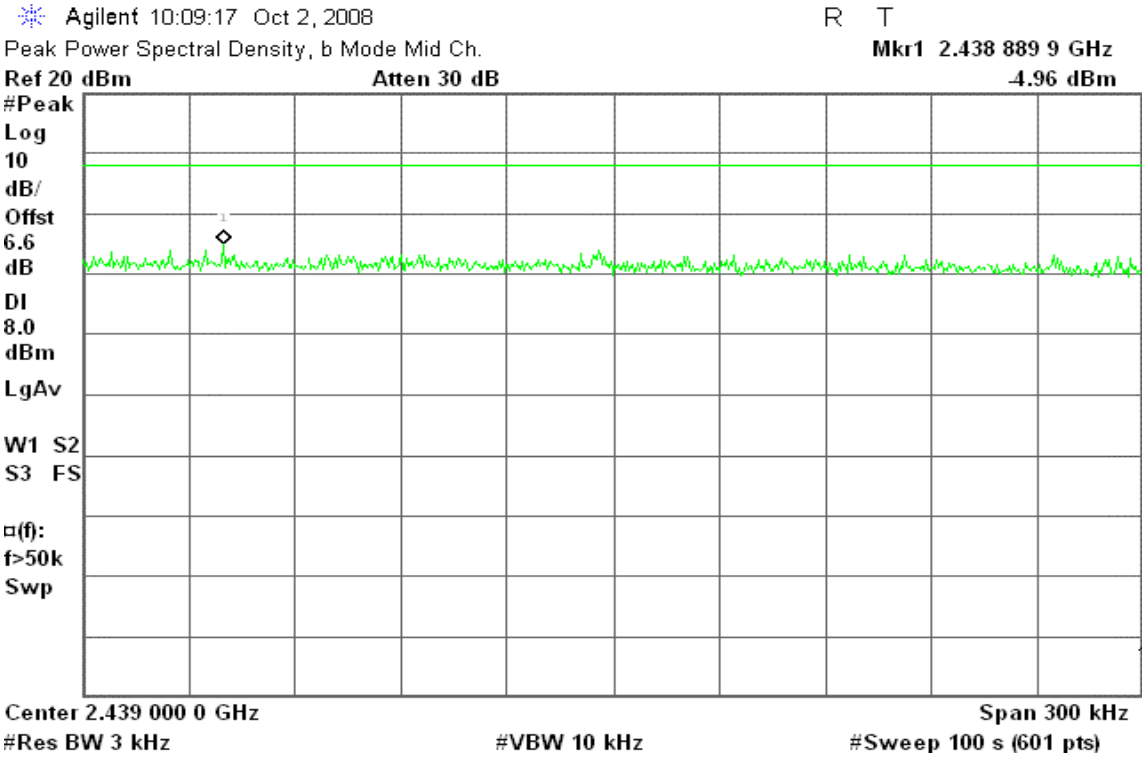
PCB Antenna / Gain: 1 dBi

IEEE 802.11b mode

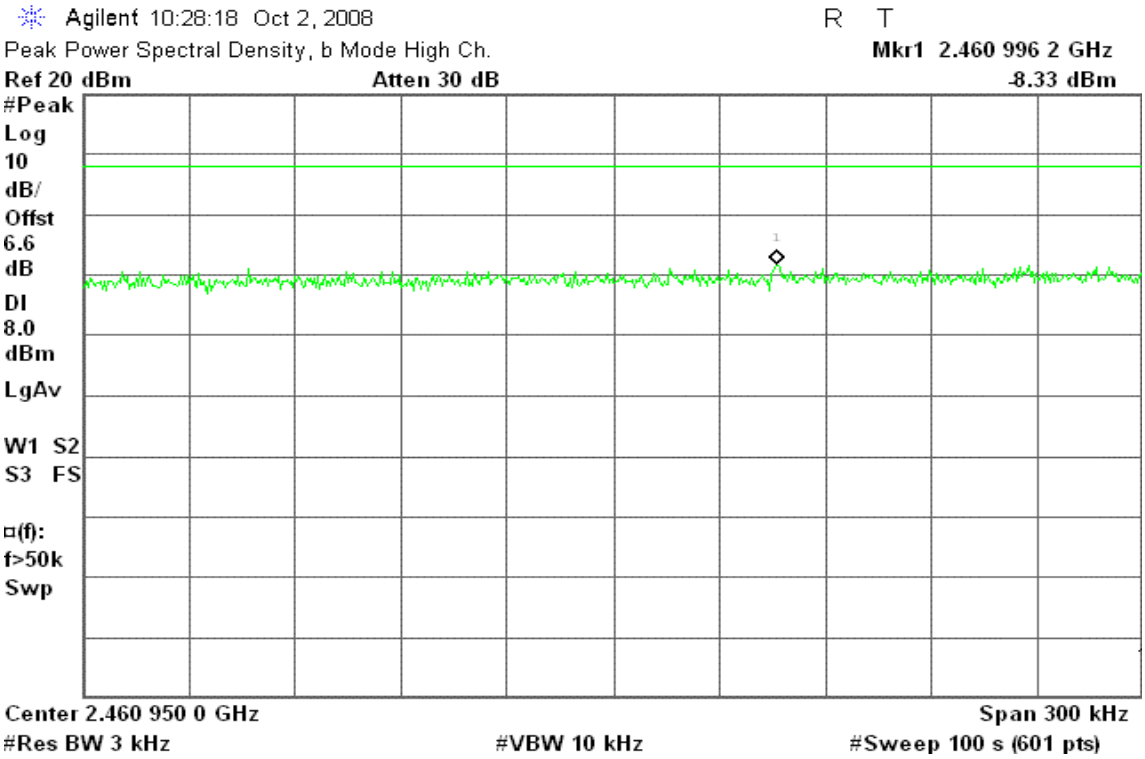
PPSD (CH Low)



PPSD (CH Mid)

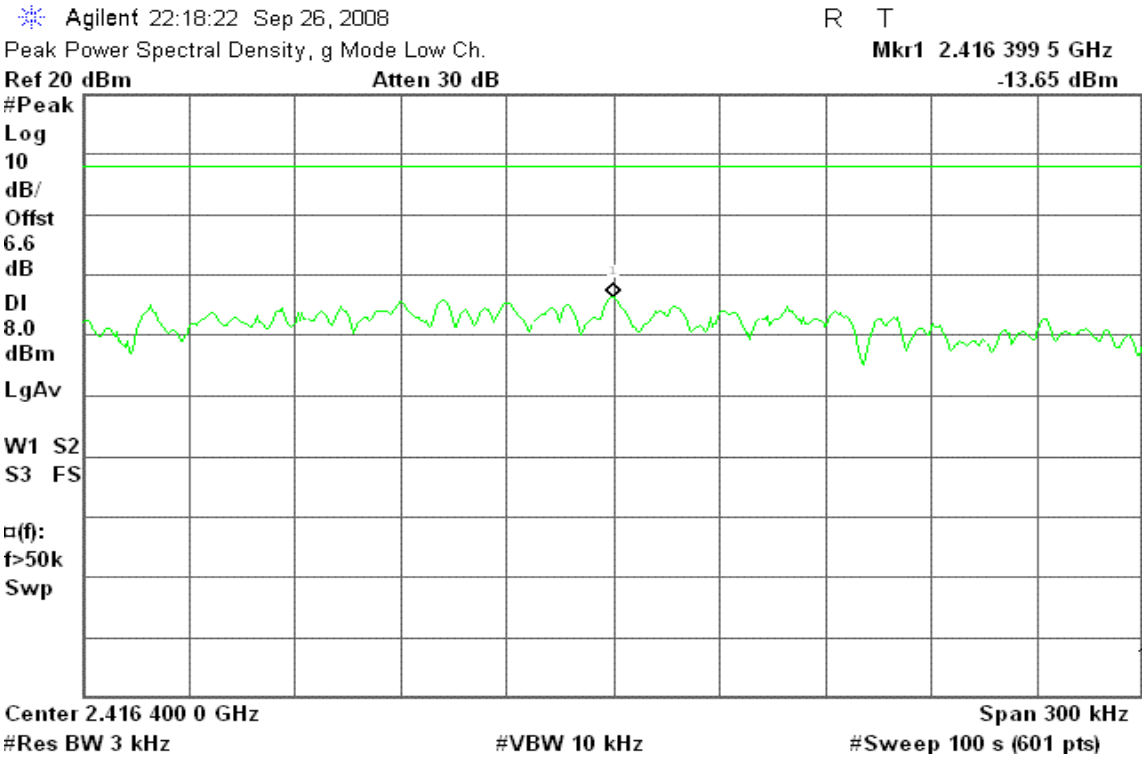


PPSD (CH High)

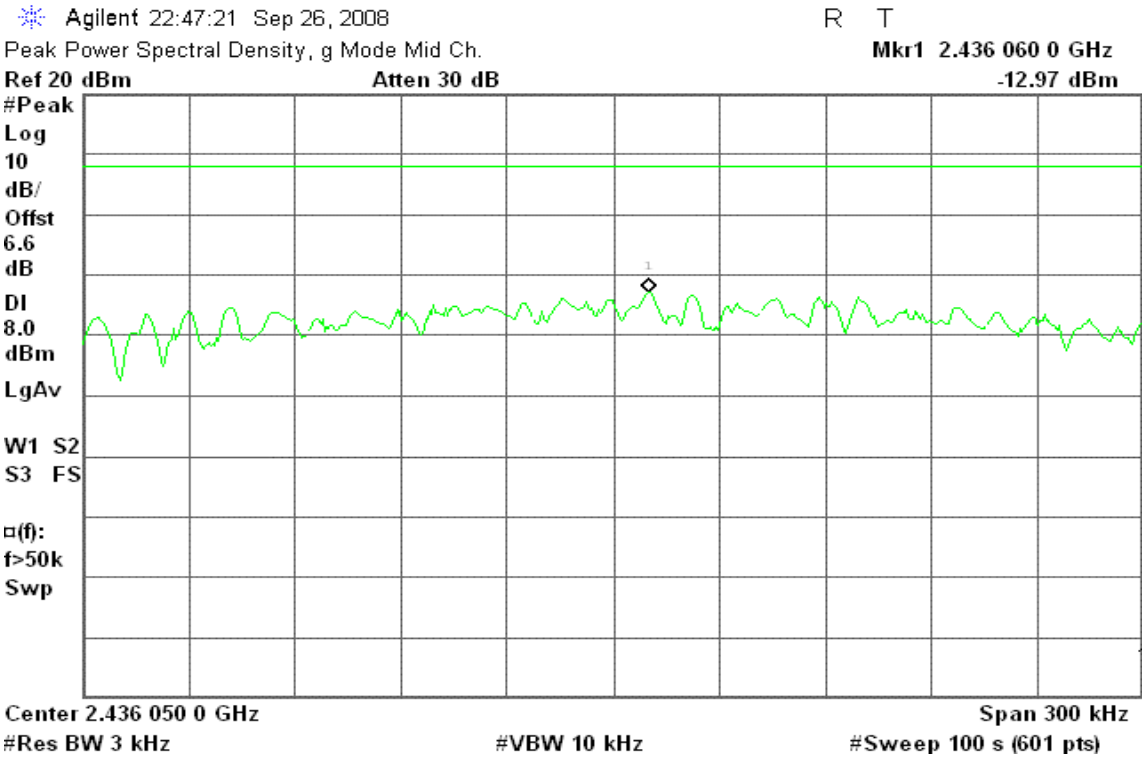


IEEE 802.11g mode

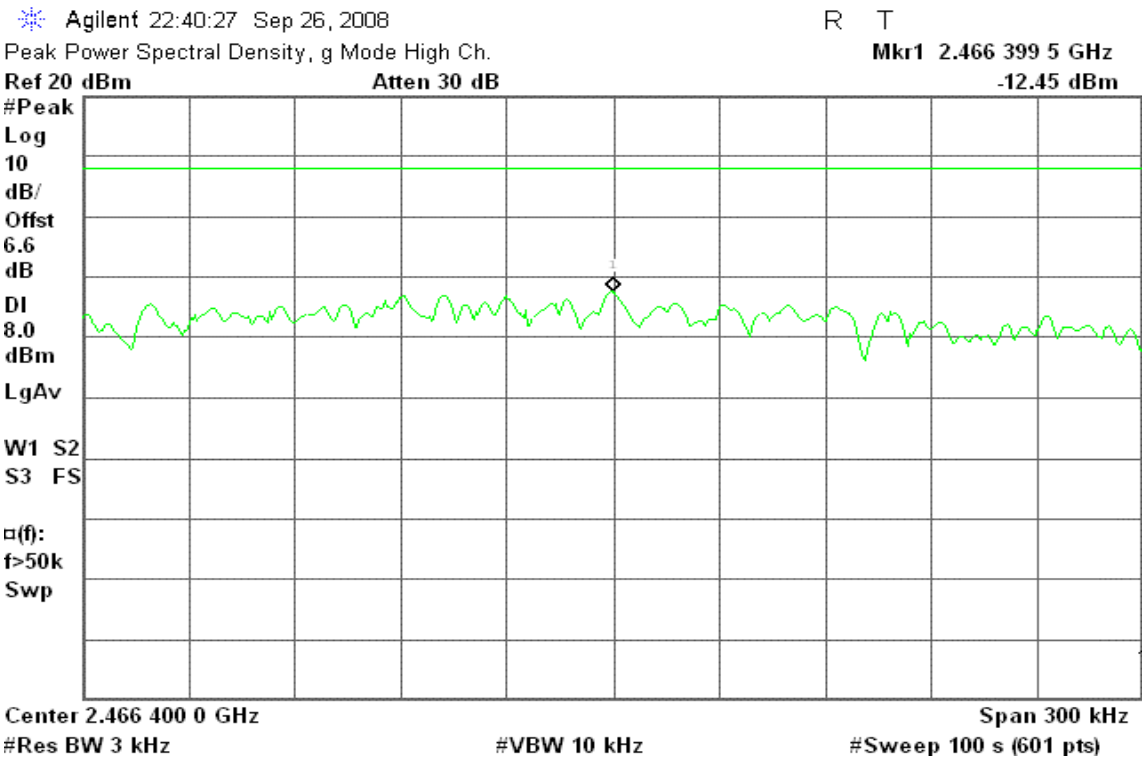
PPSD (CH Low)



PPSD (CH Mid)

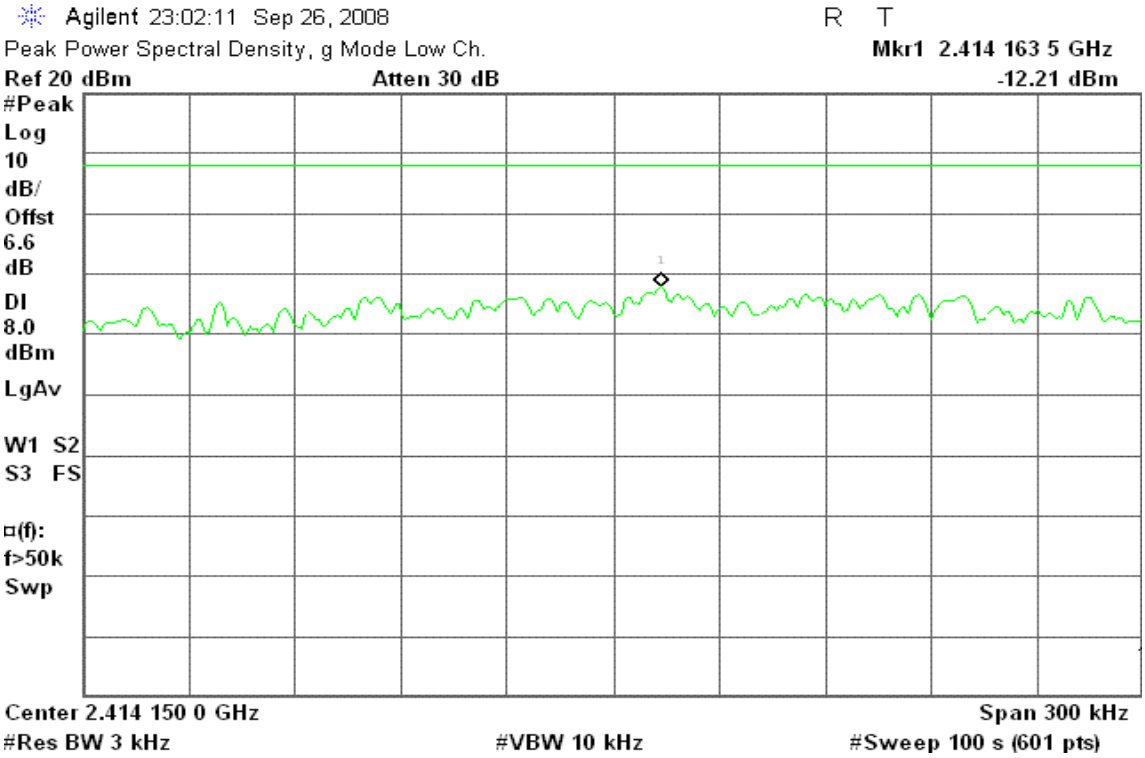


PPSD (CH High)

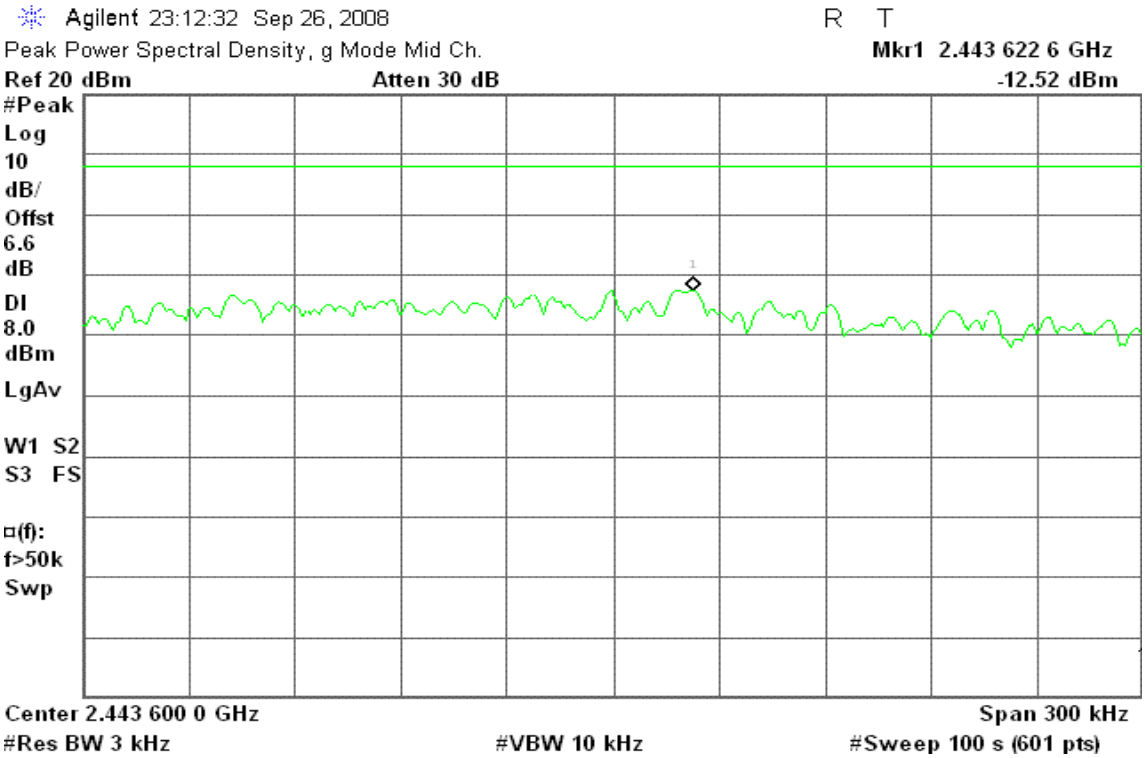


draft 802.11n Standard-20 MHz Channel mode

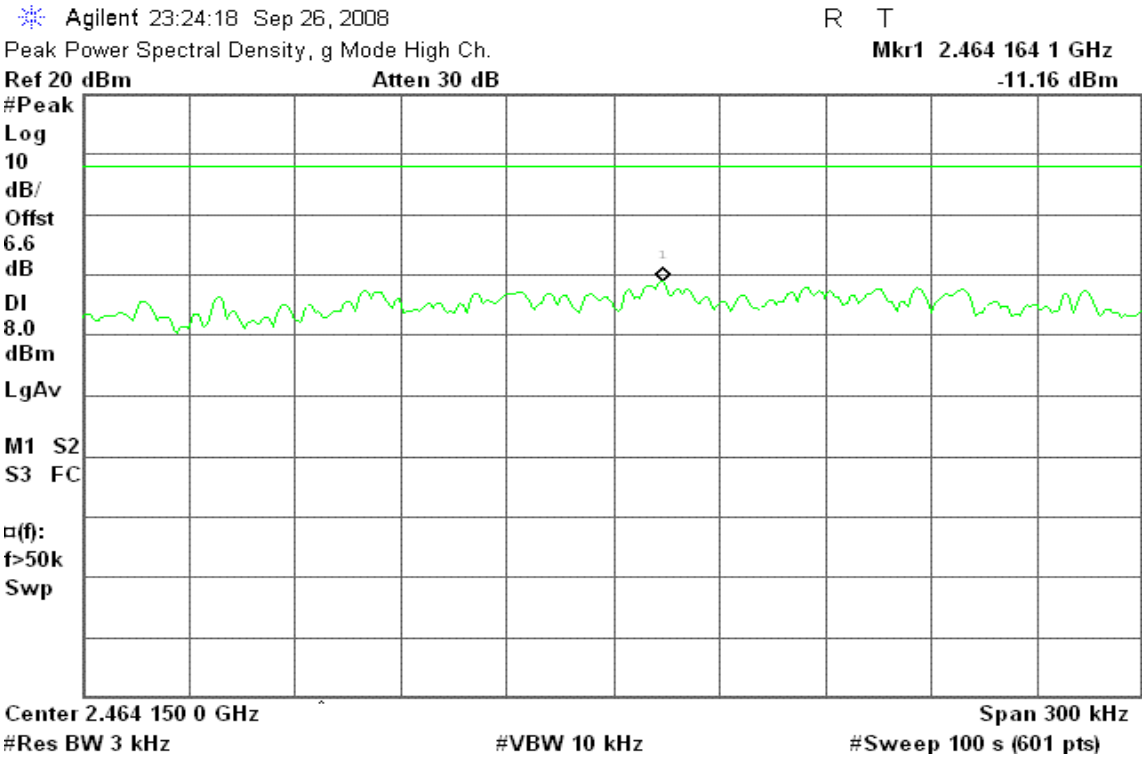
PPSD (CH Low)



PPSD (CH Mid)

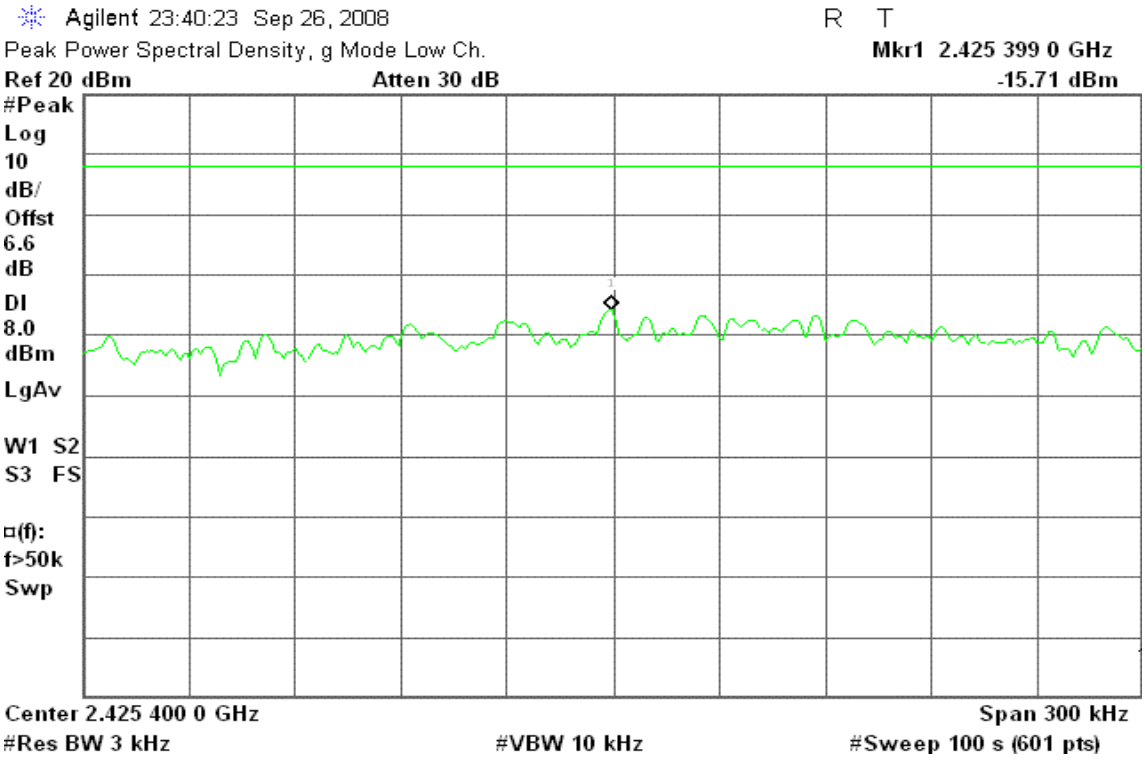


PPSD (CH High)

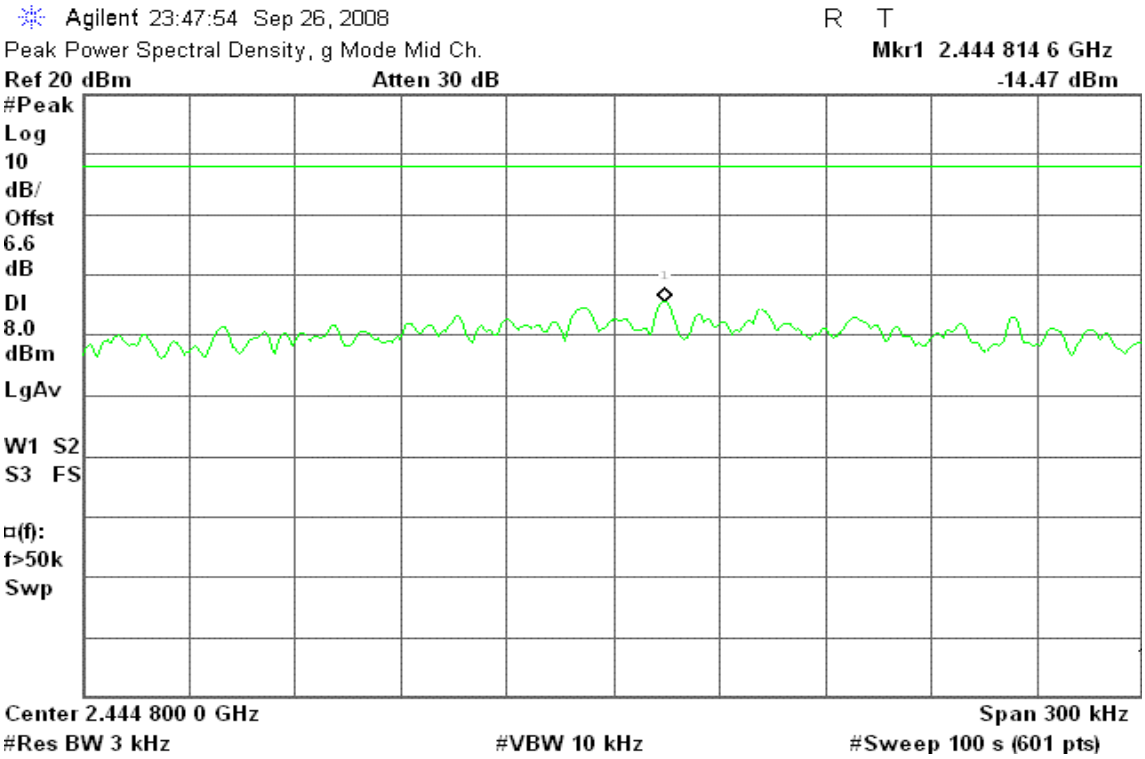


draft 802.11n Wide-40 MHz Channel mode

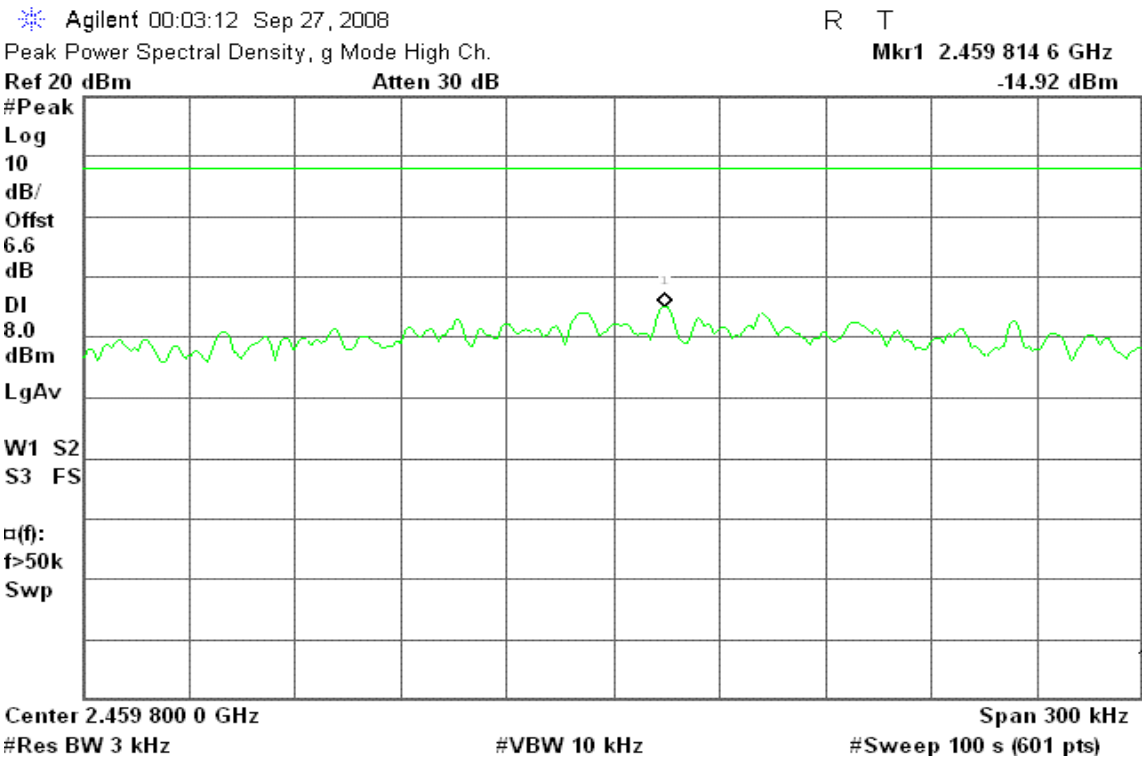
PPSD (CH Low)



PPSD (CH Mid)



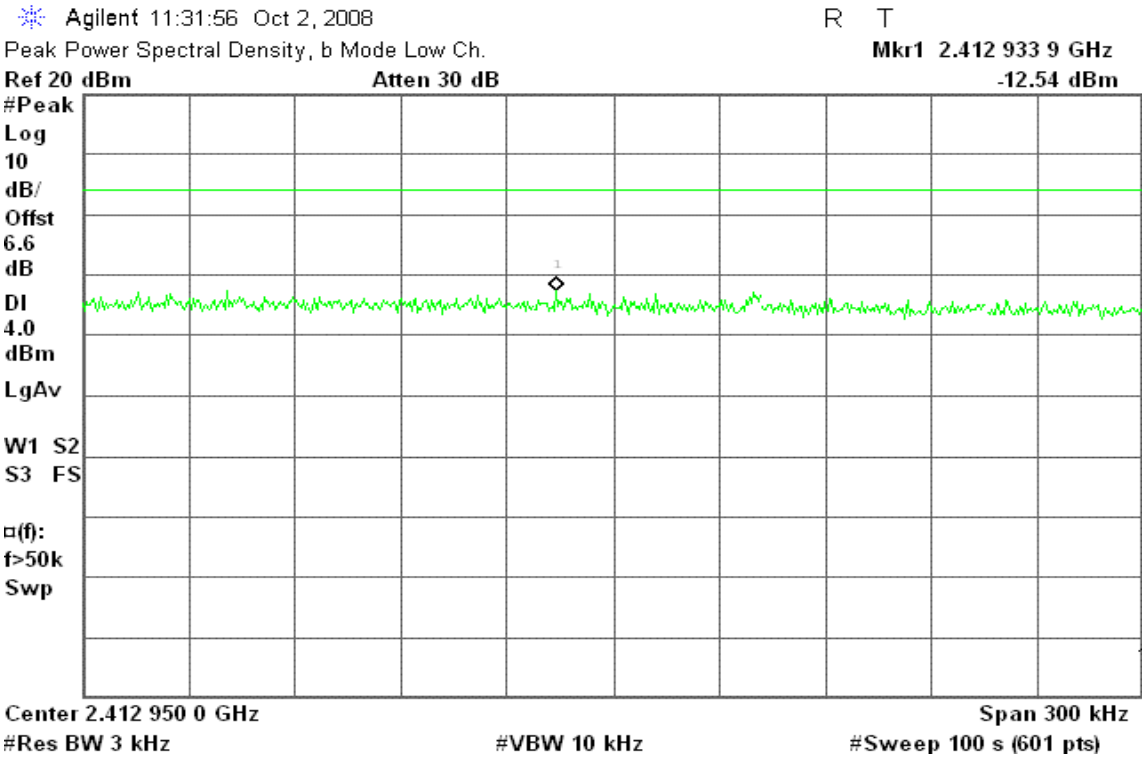
PPSD (CH High)



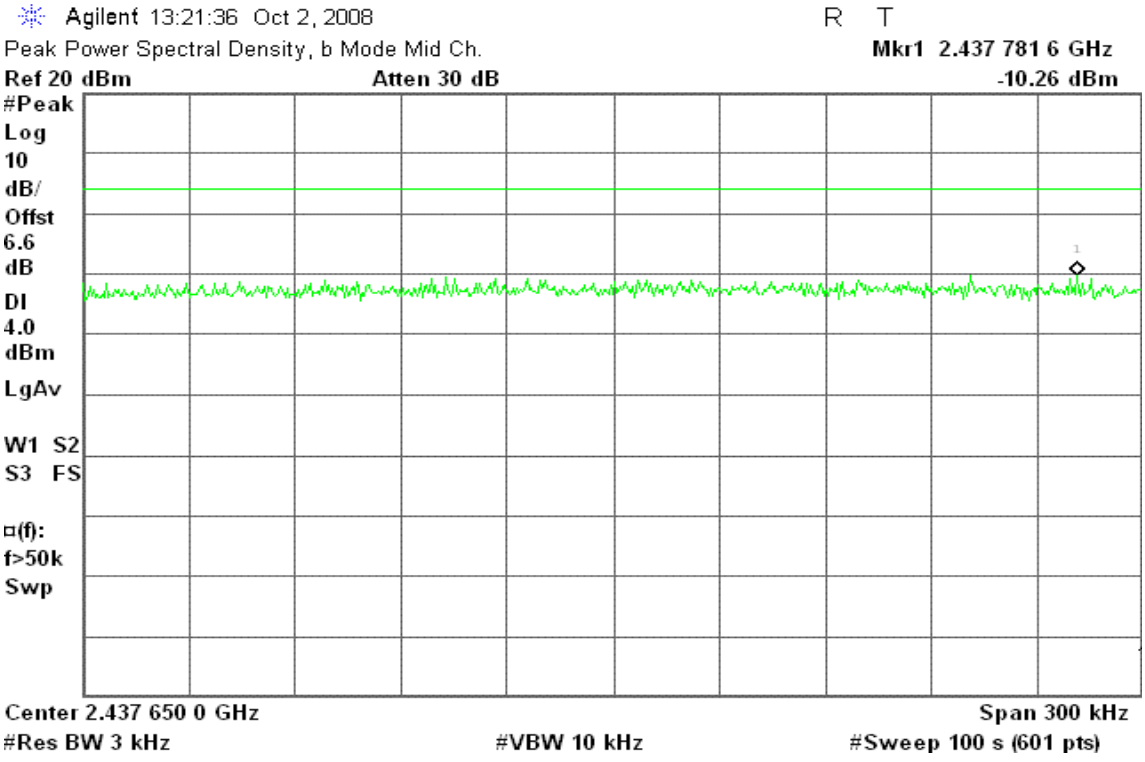
Patch Antenna / Gain: 9.12 dBi, Dipole Antenna / Gain: 9.09 dBi

IEEE 802.11b mode

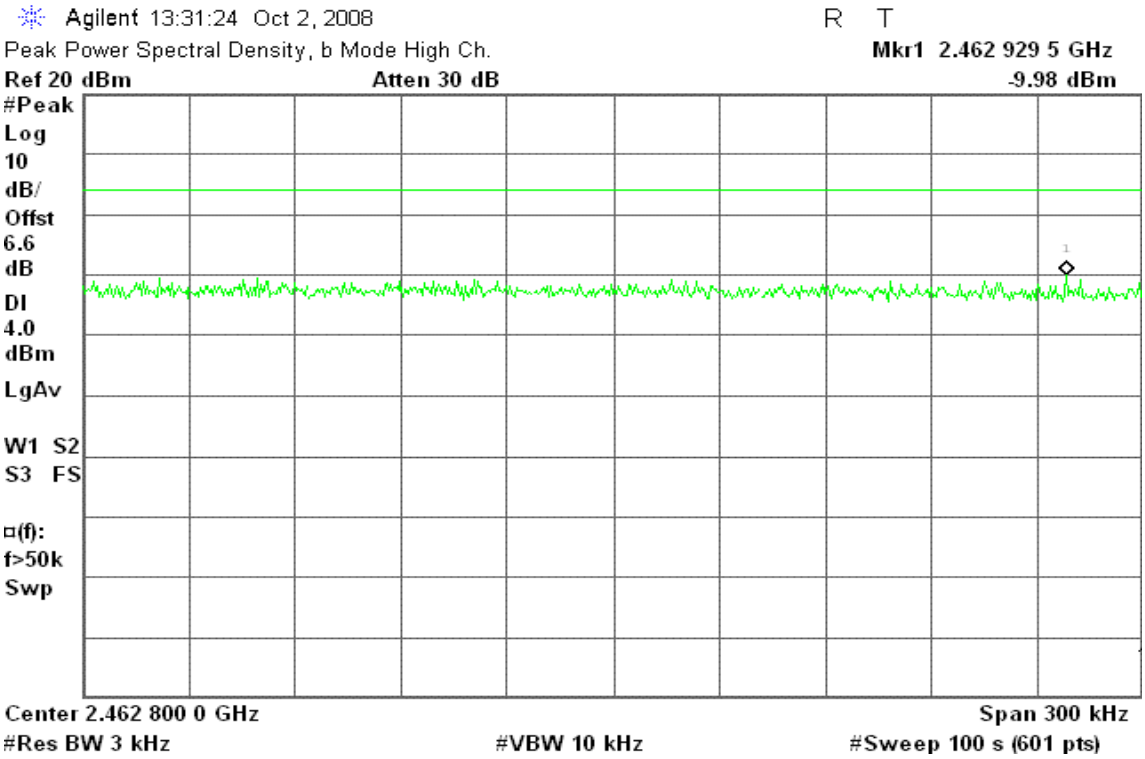
PPSD (CH Low)



PPSD (CH Mid)

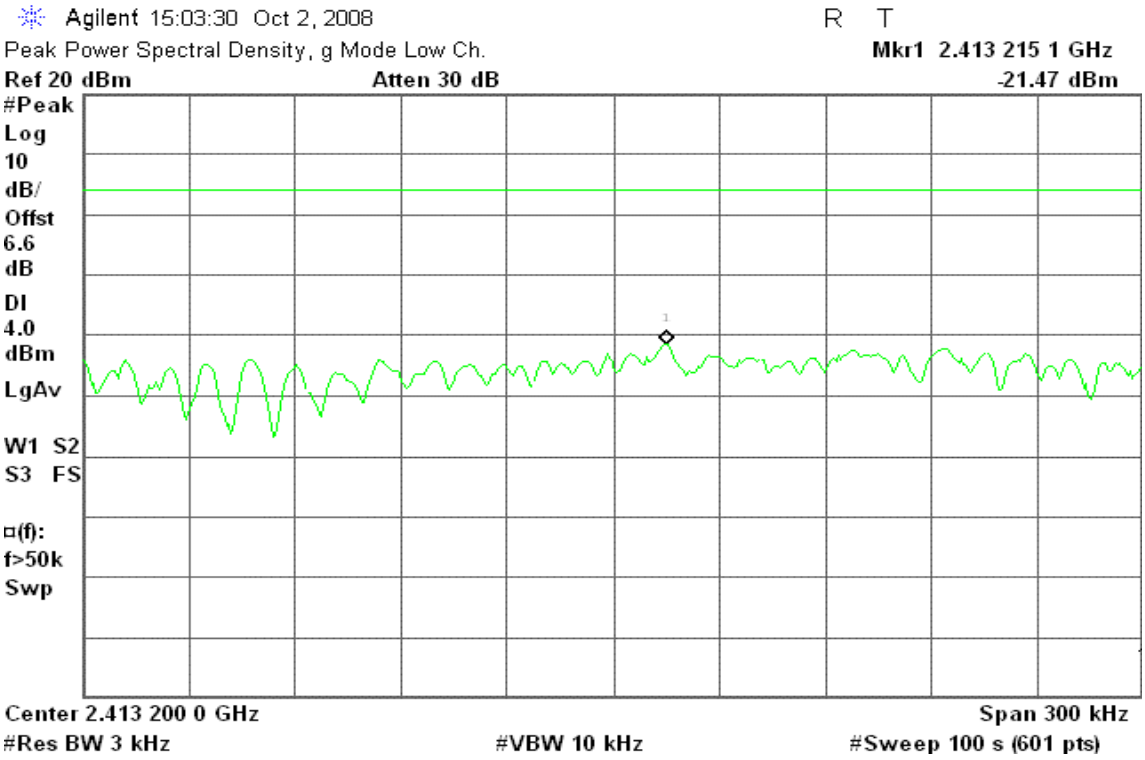


PPSD (CH High)

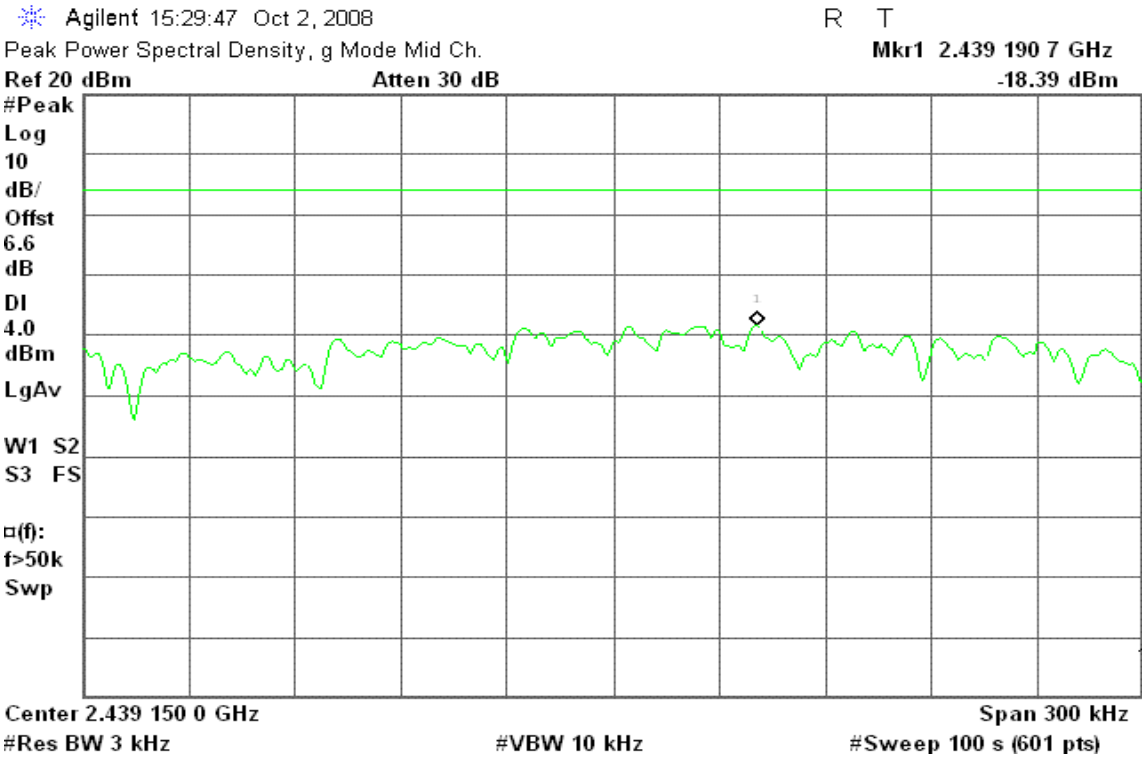


IEEE 802.11g mode

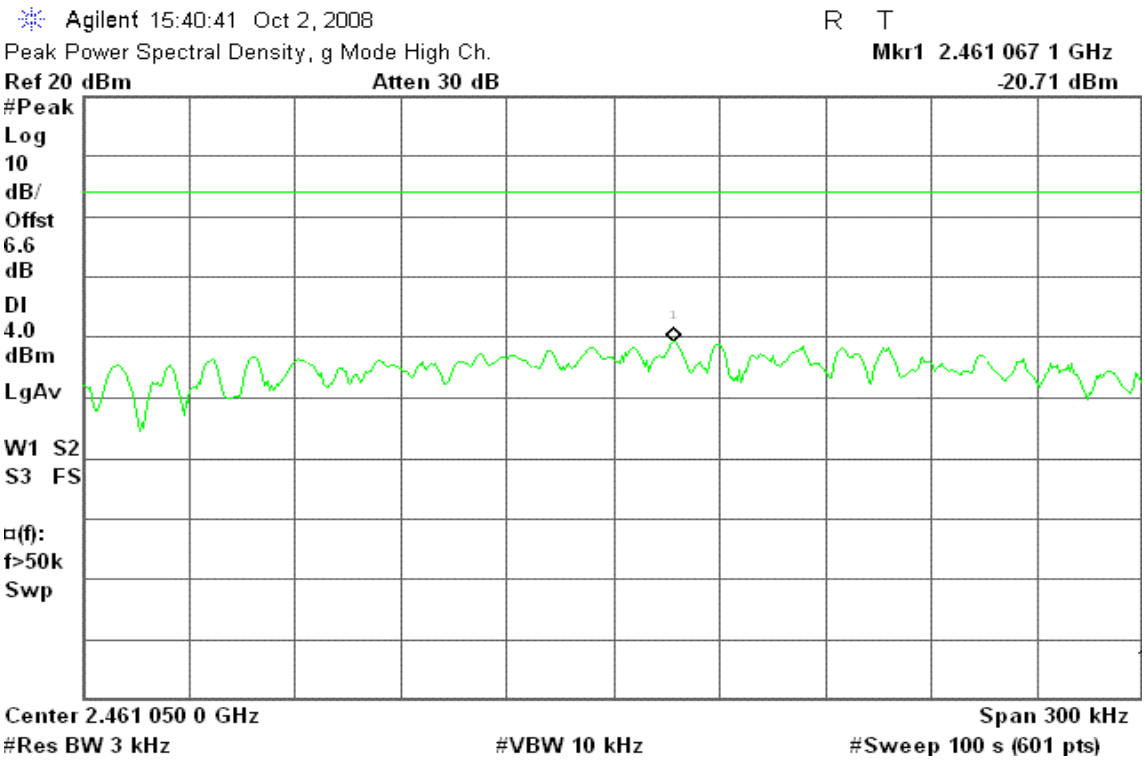
PPSD (CH Low)



PPSD (CH Mid)

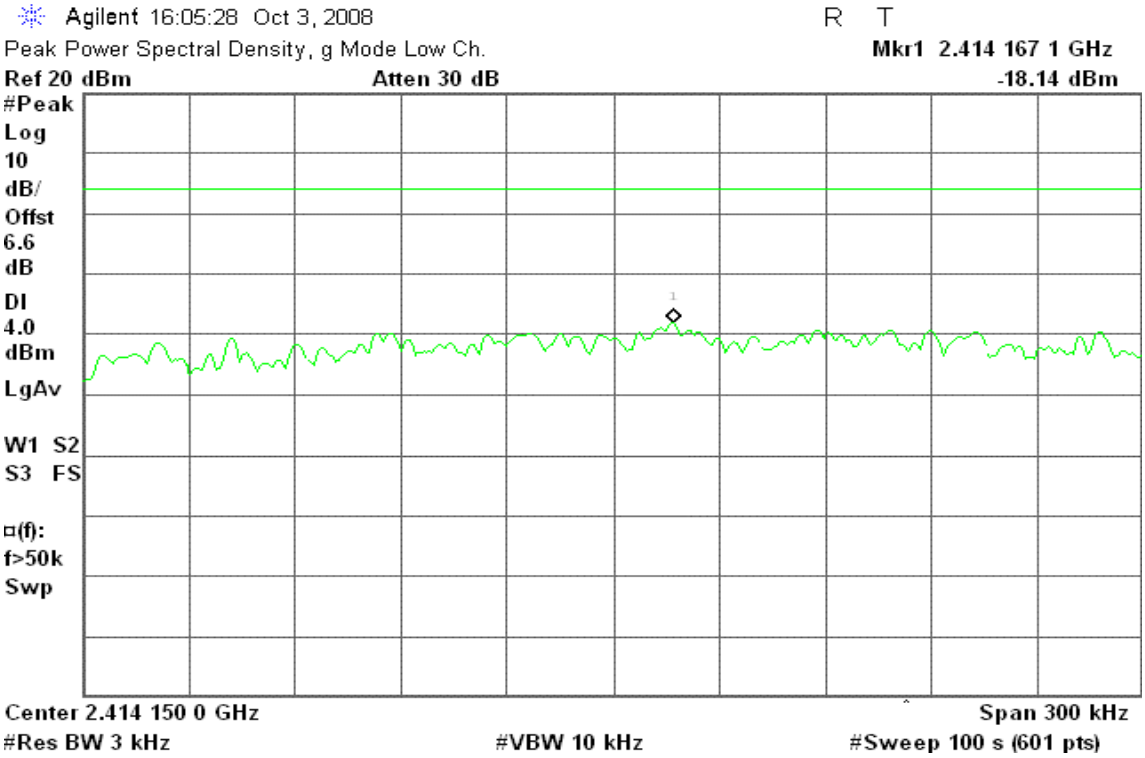


PPSD (CH High)

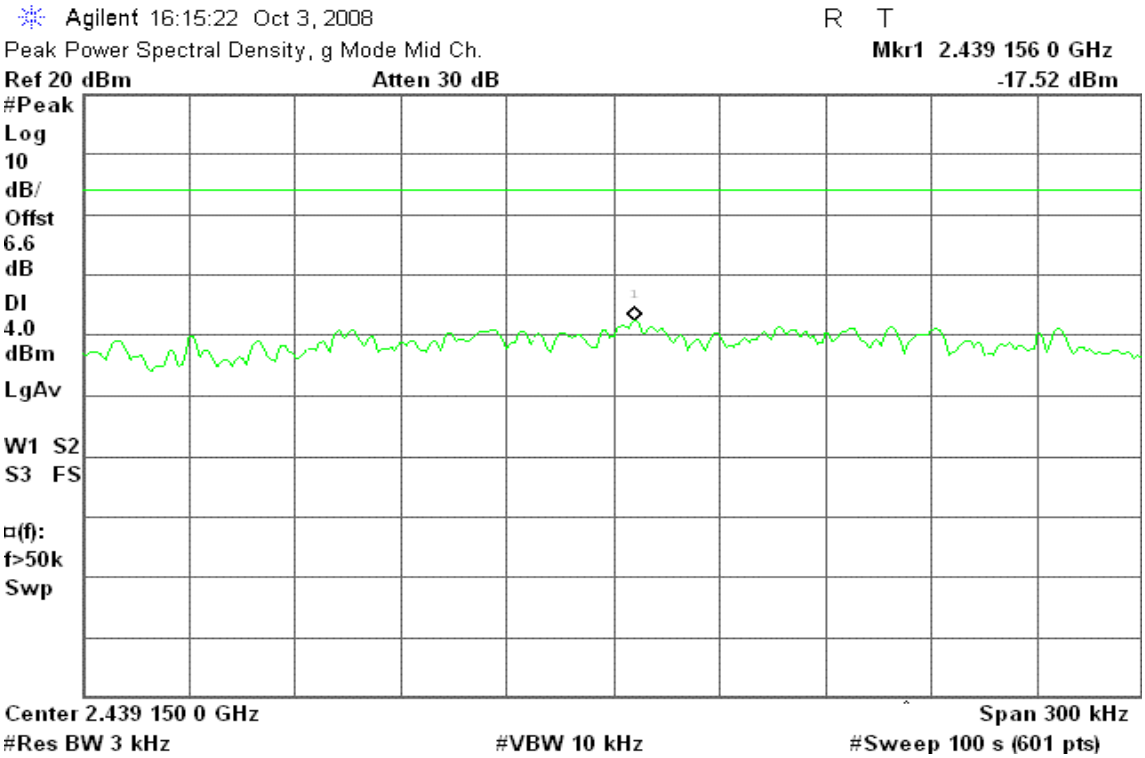


draft 802.11n Standard-20 MHz Channel mode

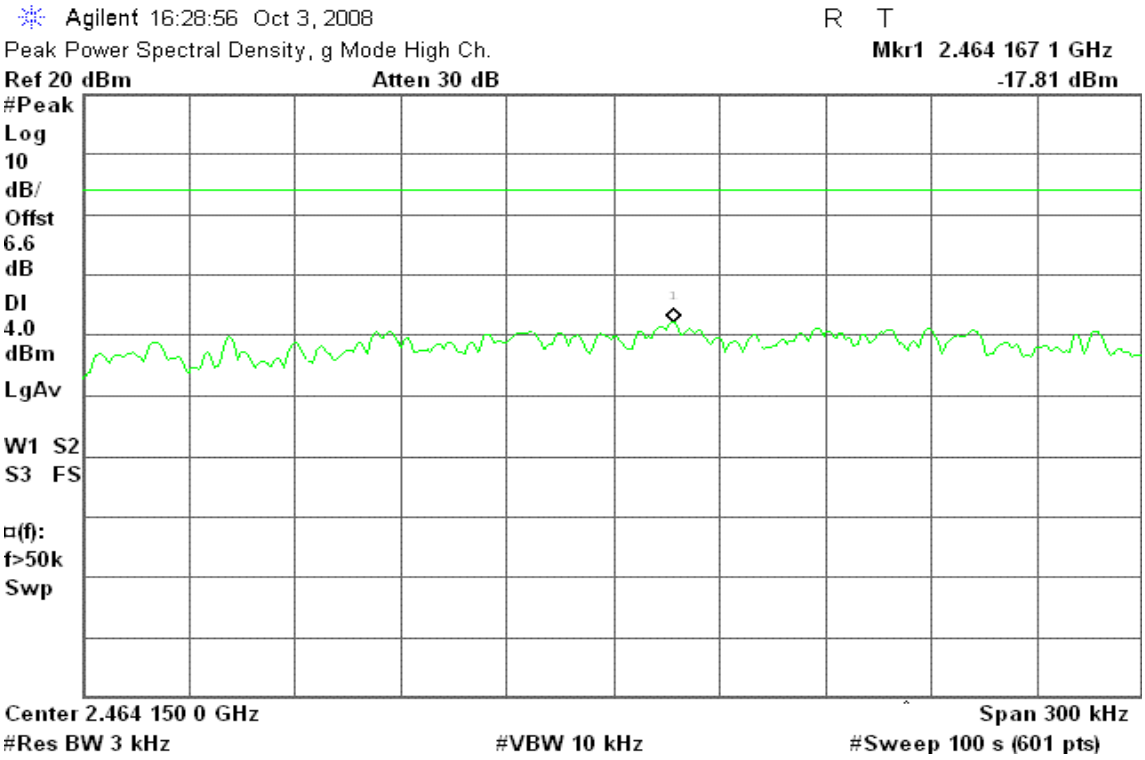
PPSD (CH Low)



PPSD (CH Mid)

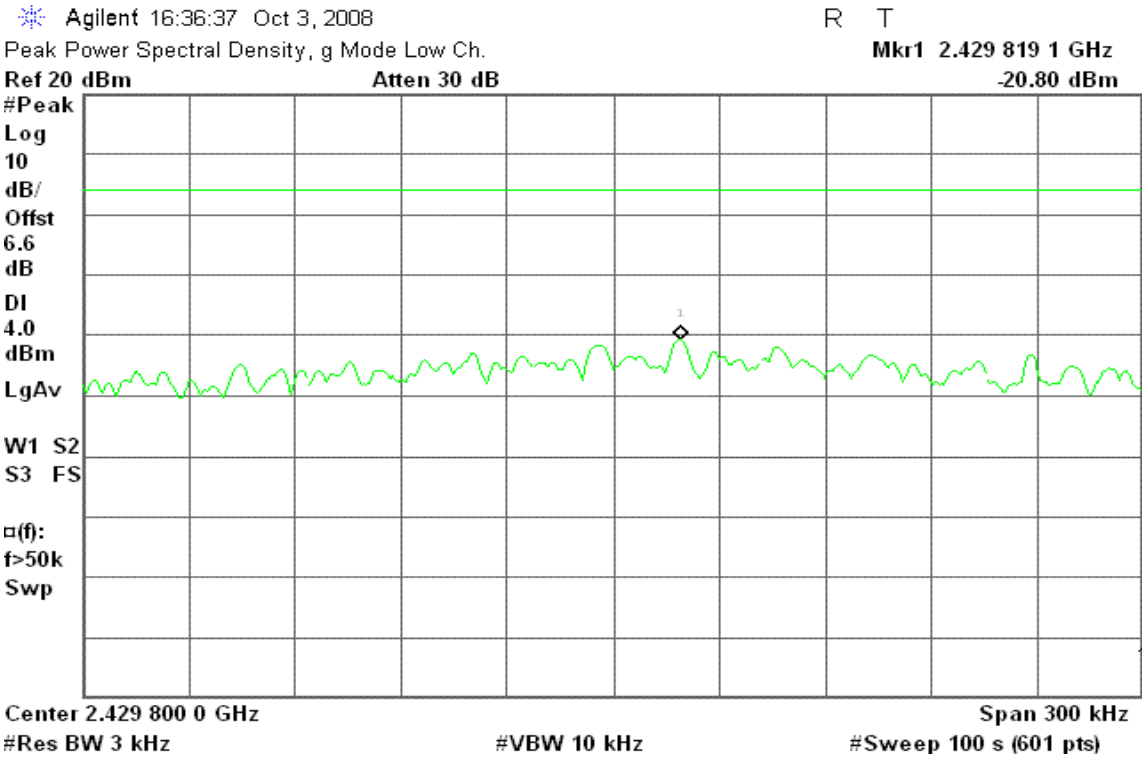


PPSD (CH High)

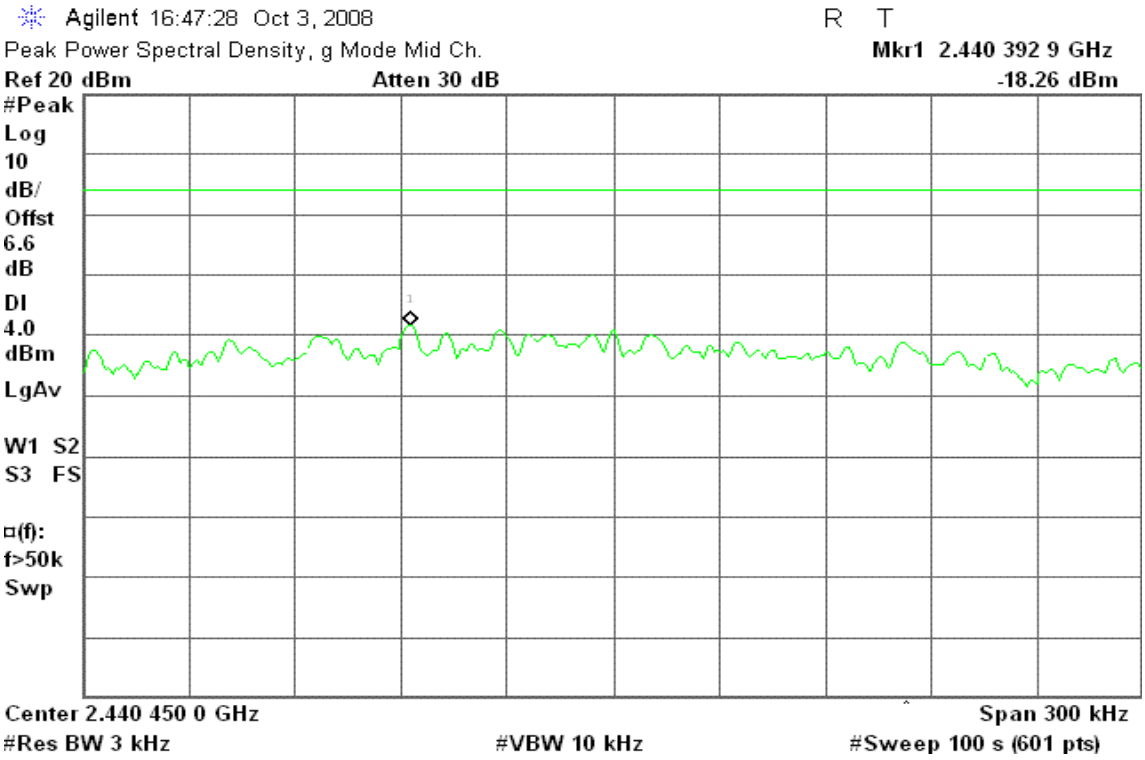


draft 802.11n Wide-40 MHz Channel mode

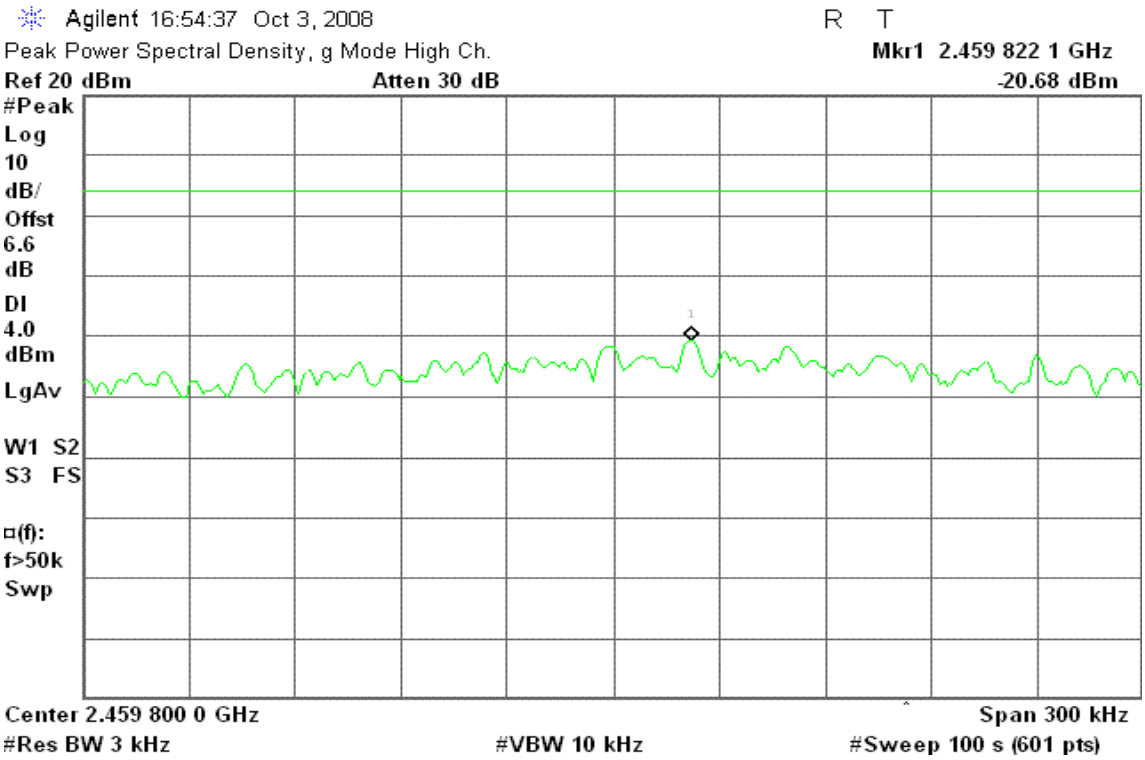
PPSD (CH Low)



PPSD (CH Mid)



PPSD (CH High)



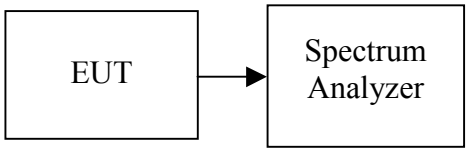
7.6 SPURIOUS EMISSIONS

7.6.1 Conducted Measurement

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator 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



TEST PROCEDURE

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

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

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

TEST RESULTS

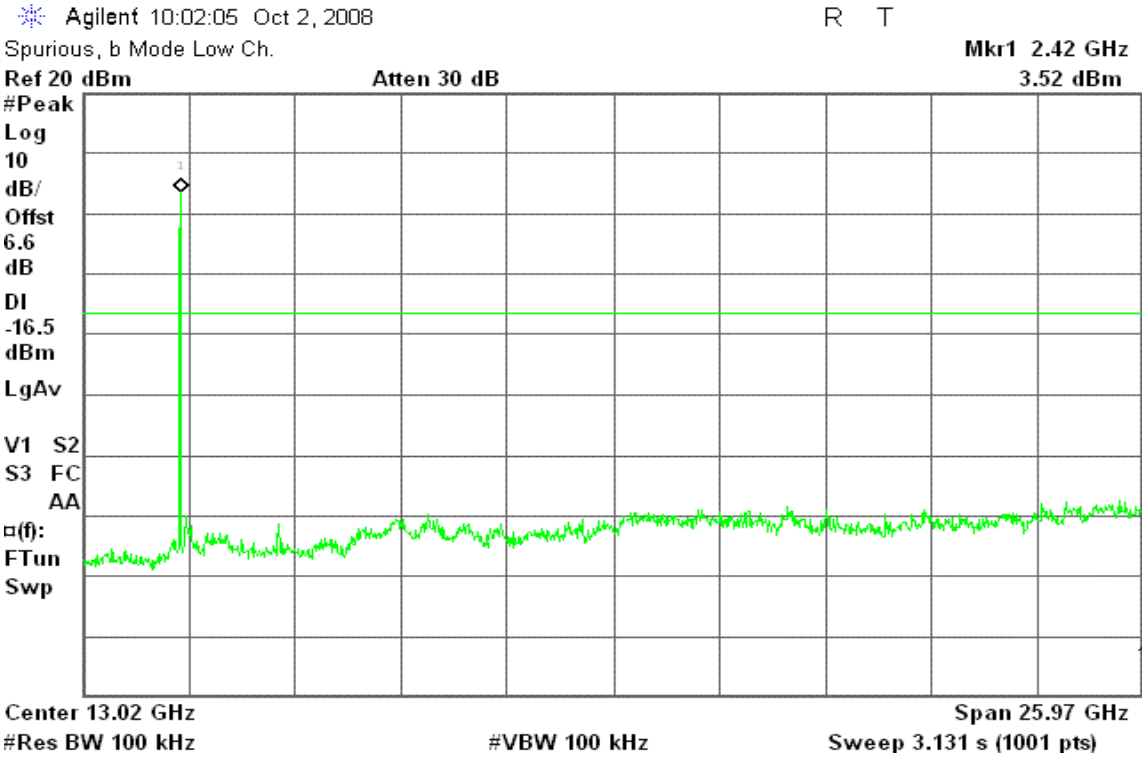
No non-compliance noted

Test Plot

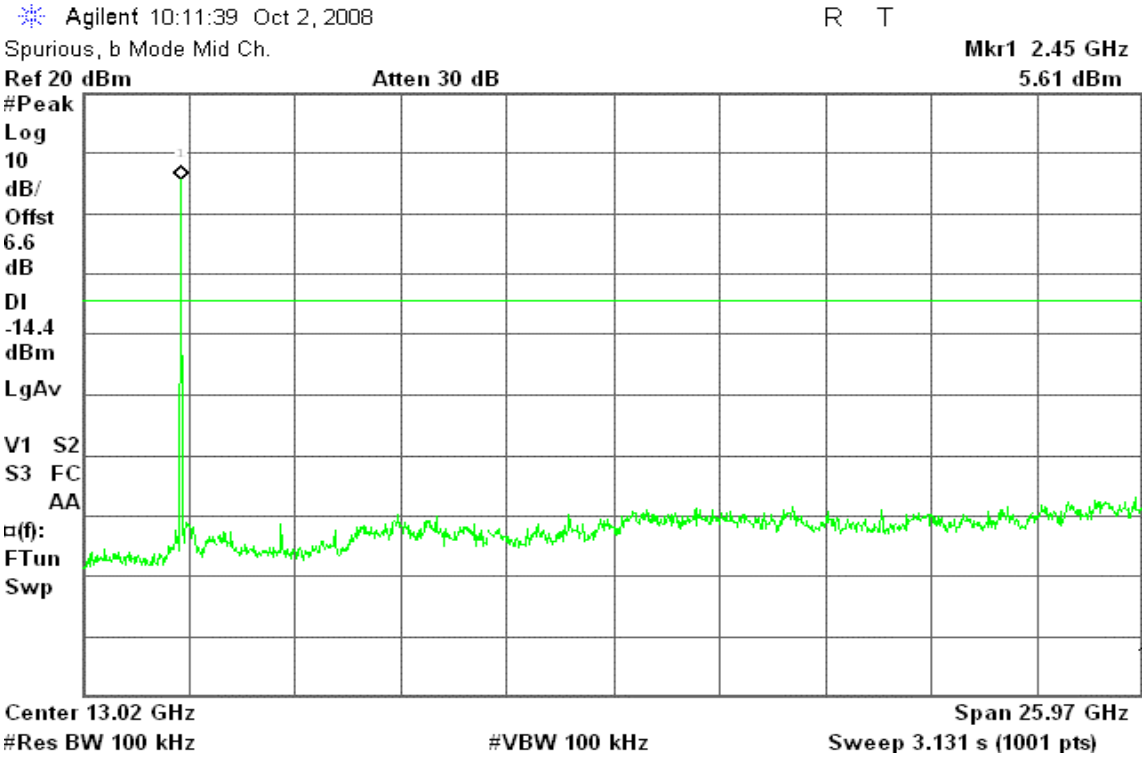
PCB Antenna / Gain: 1 dBi

IEEE 802.11b mode

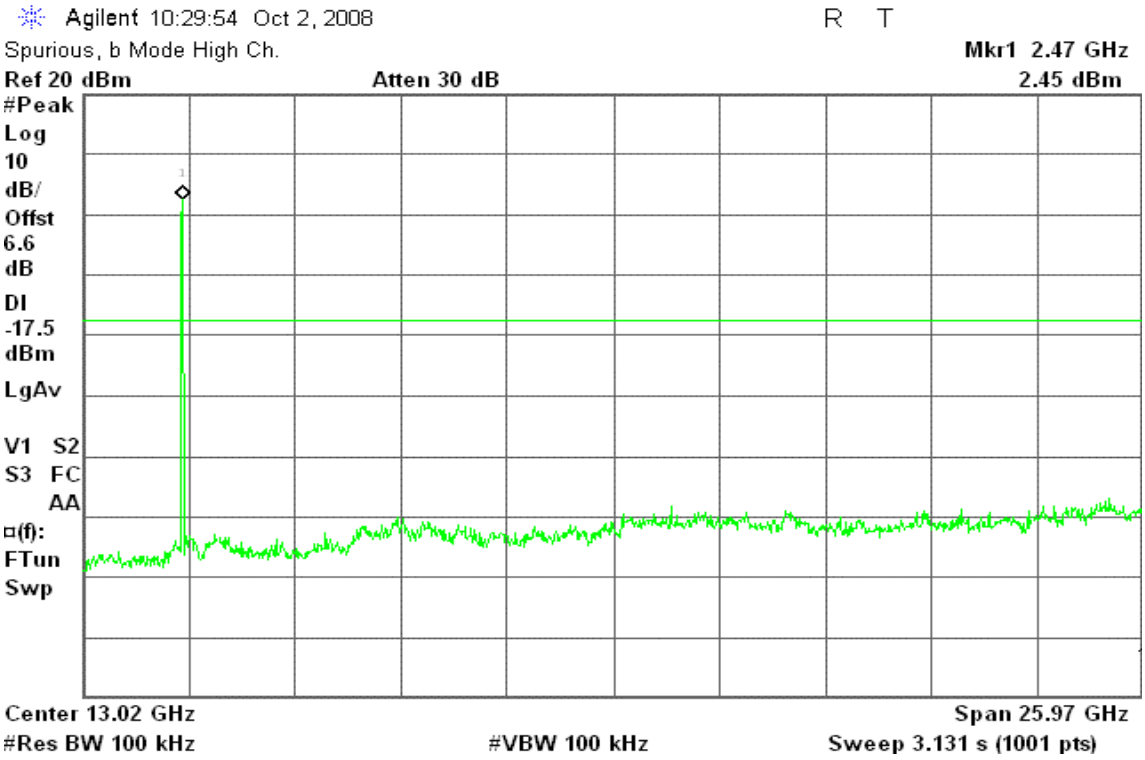
CH Low



CH Mid

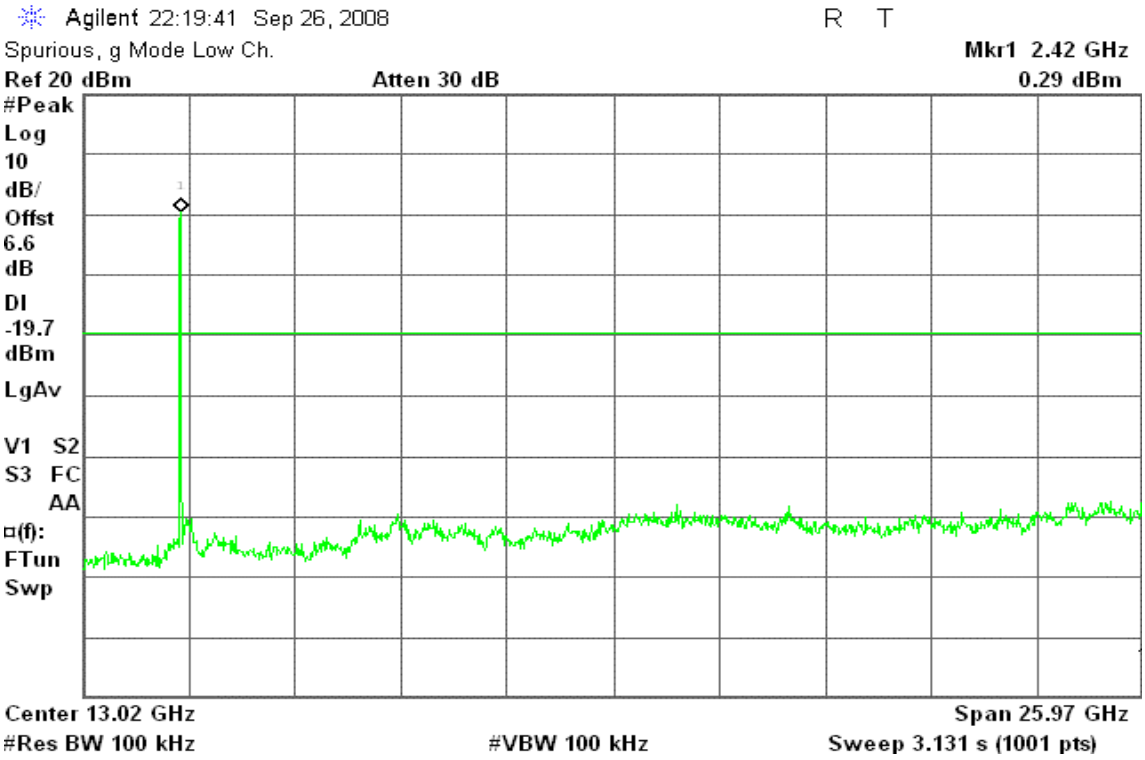


CH High

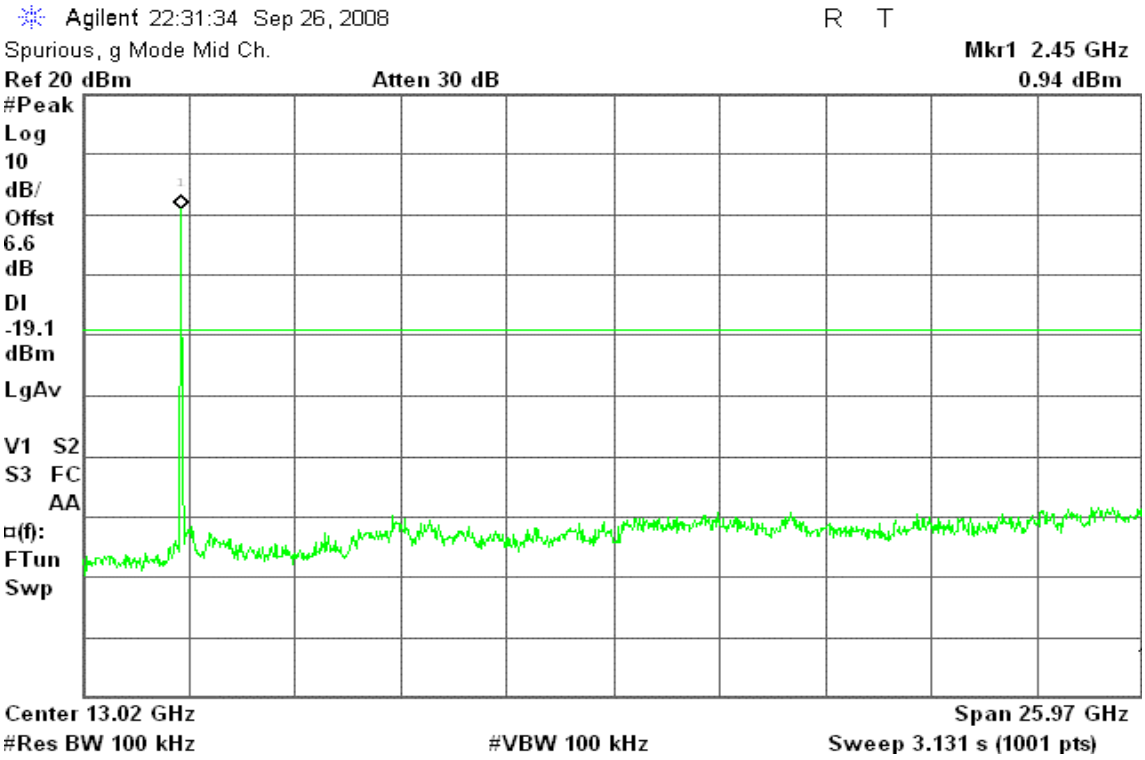


IEEE 802.11g mode

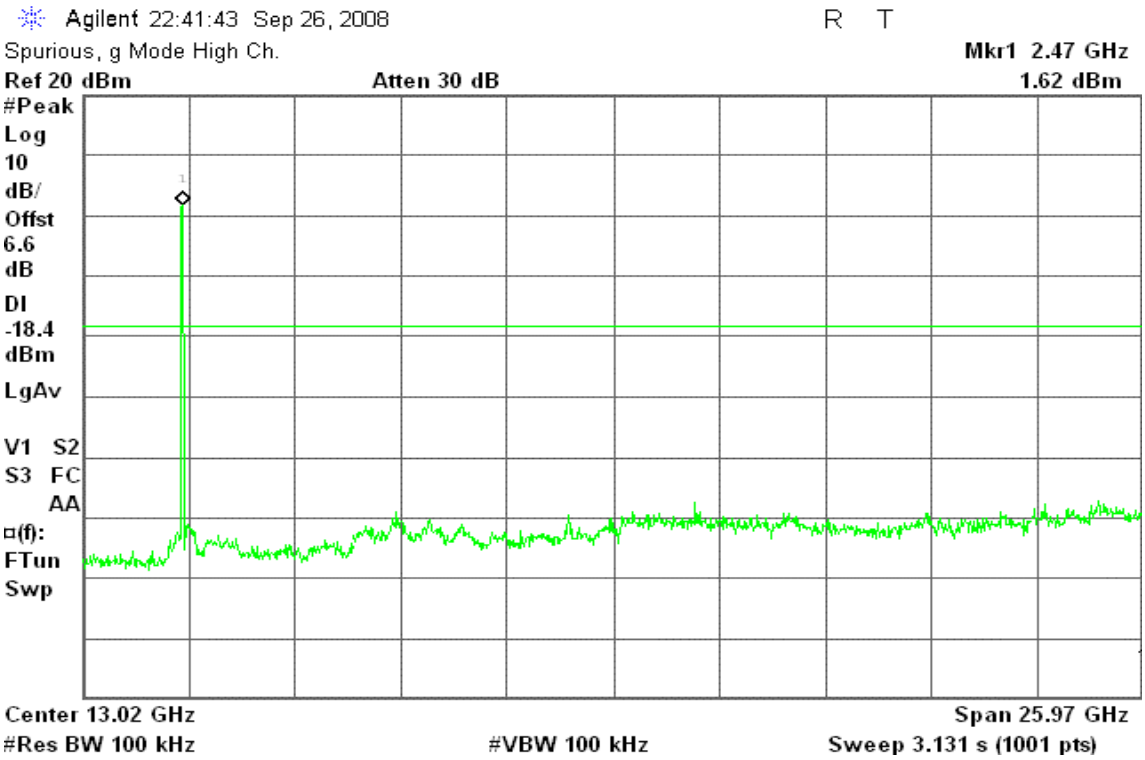
CH Low



CH Mid

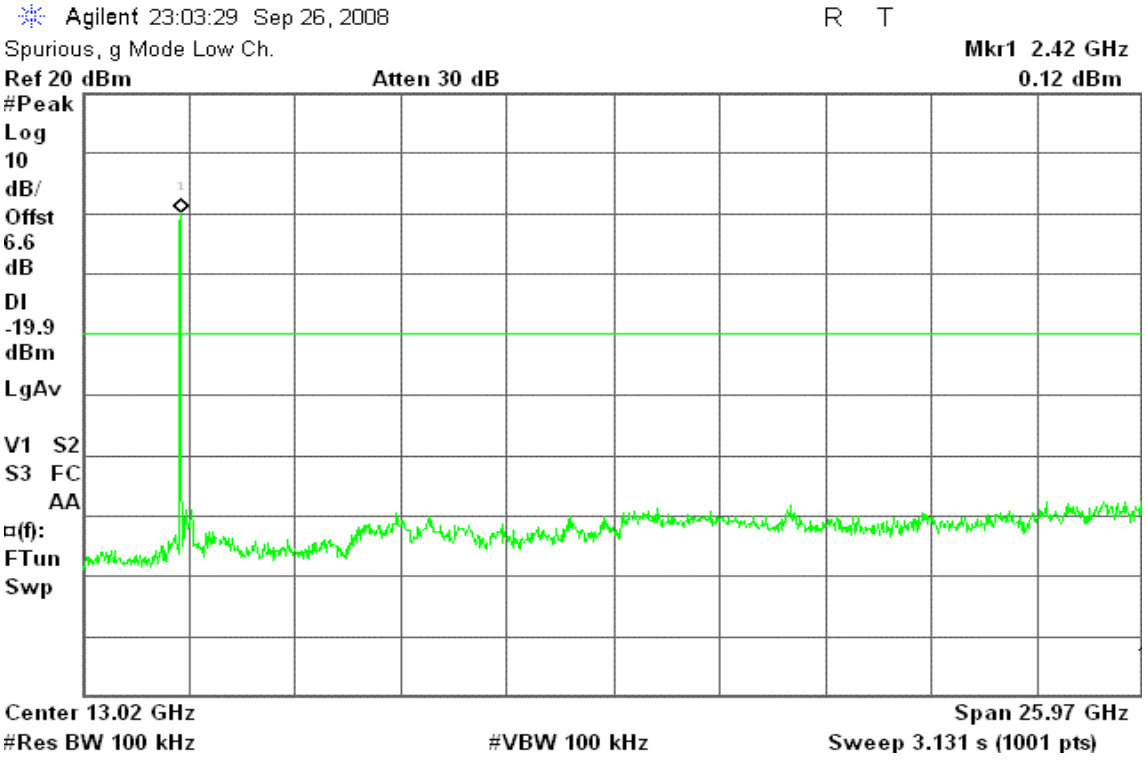


CH High

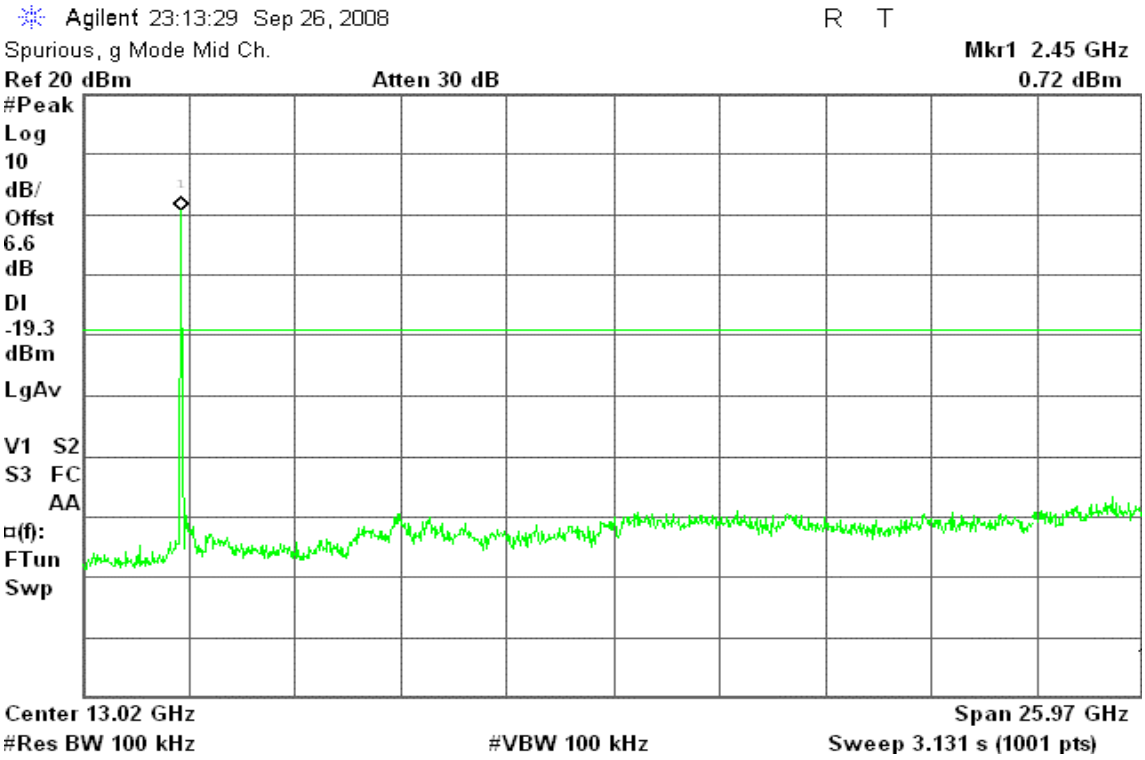


draft 802.11n Standard-20 MHz Channel mode

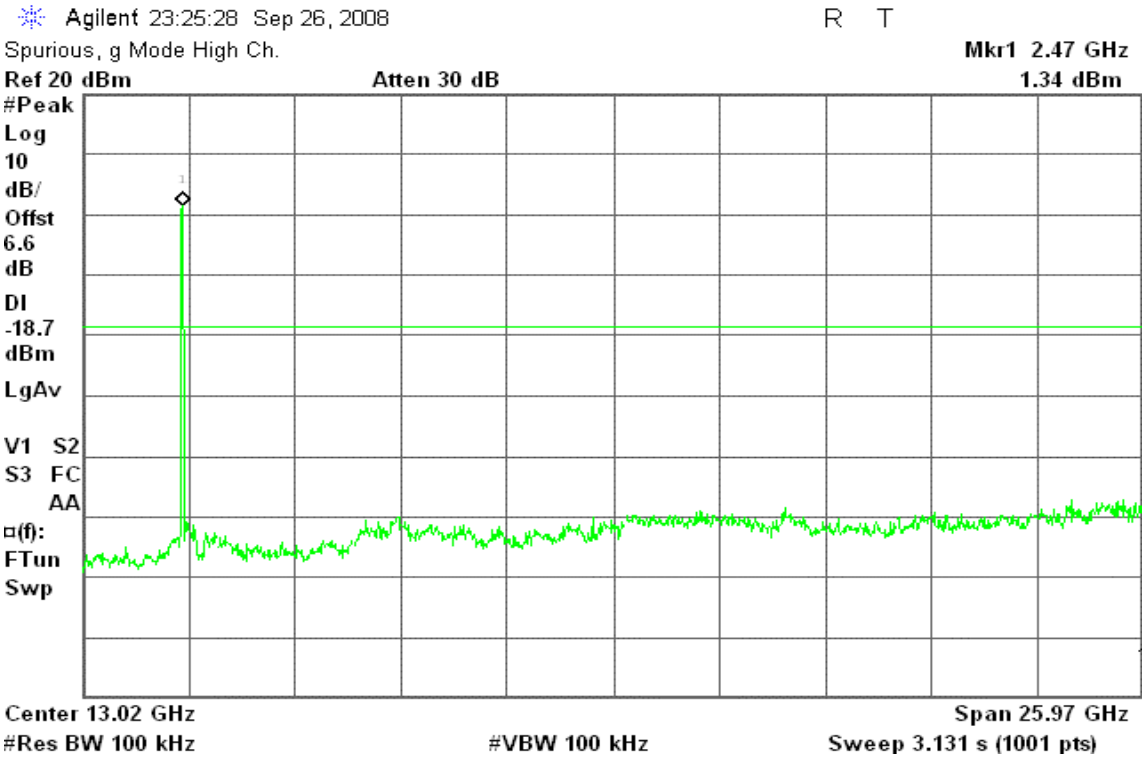
CH Low



CH Mid

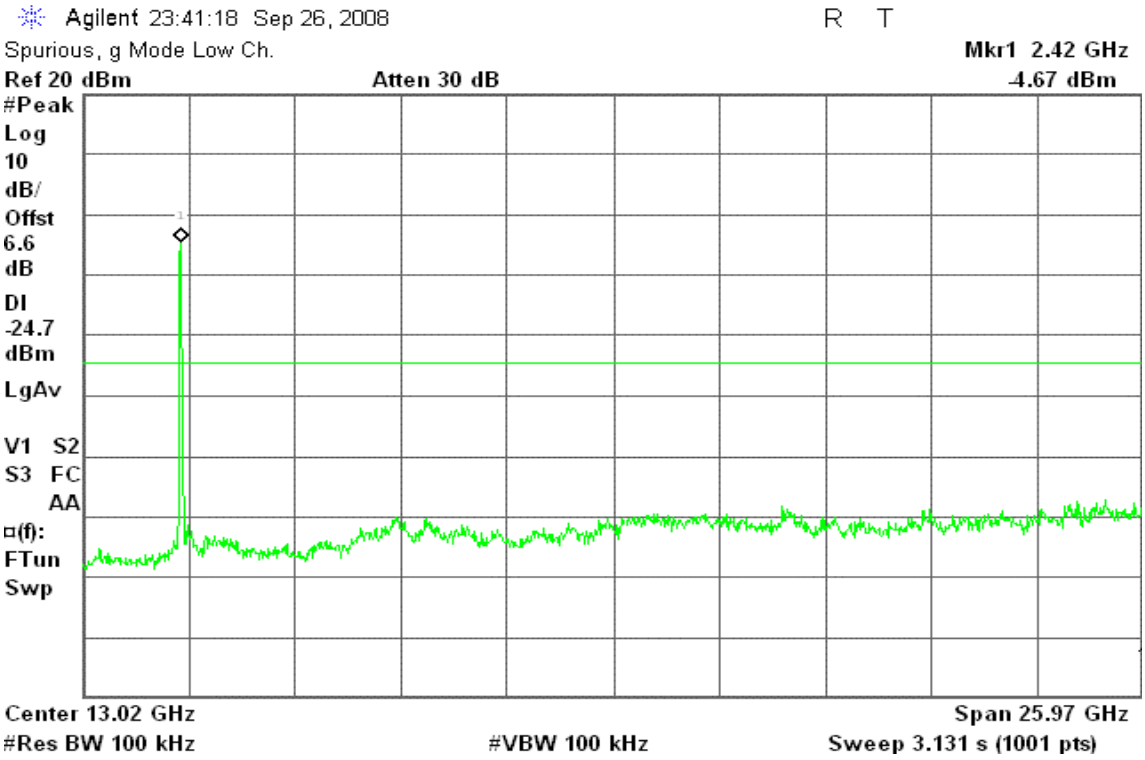


CH High

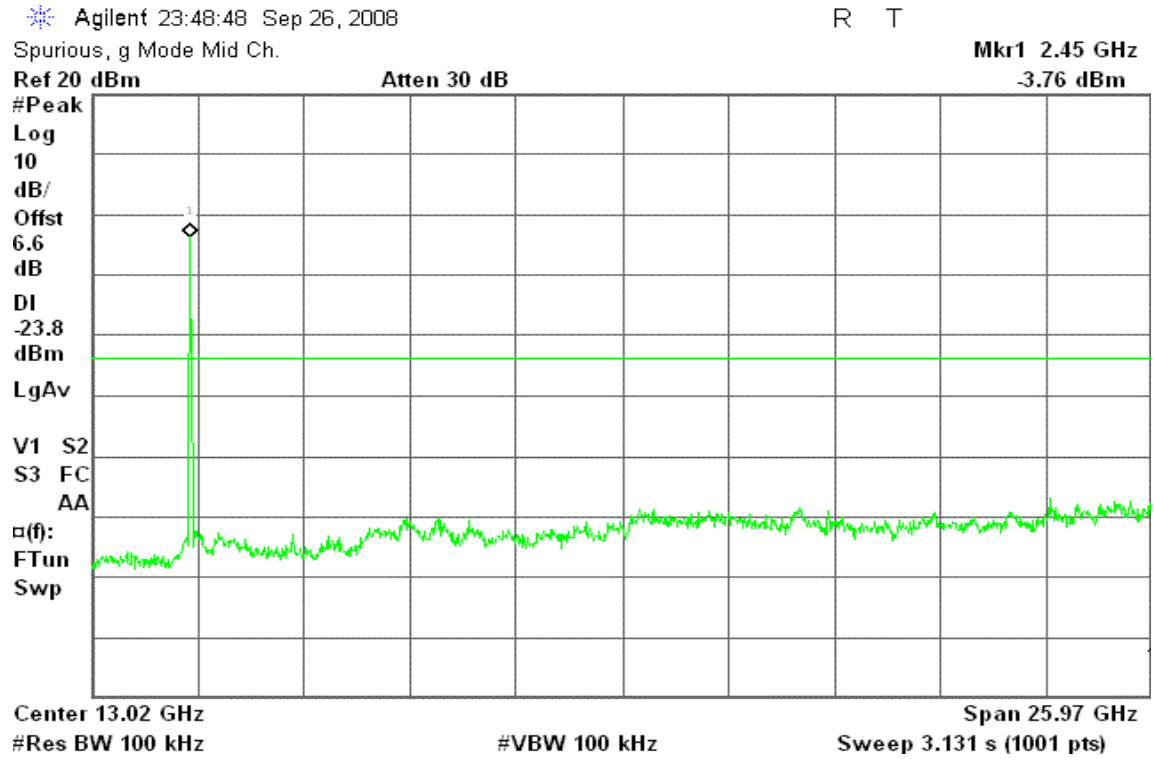


draft 802.11n Wide-40 MHz Channel mode

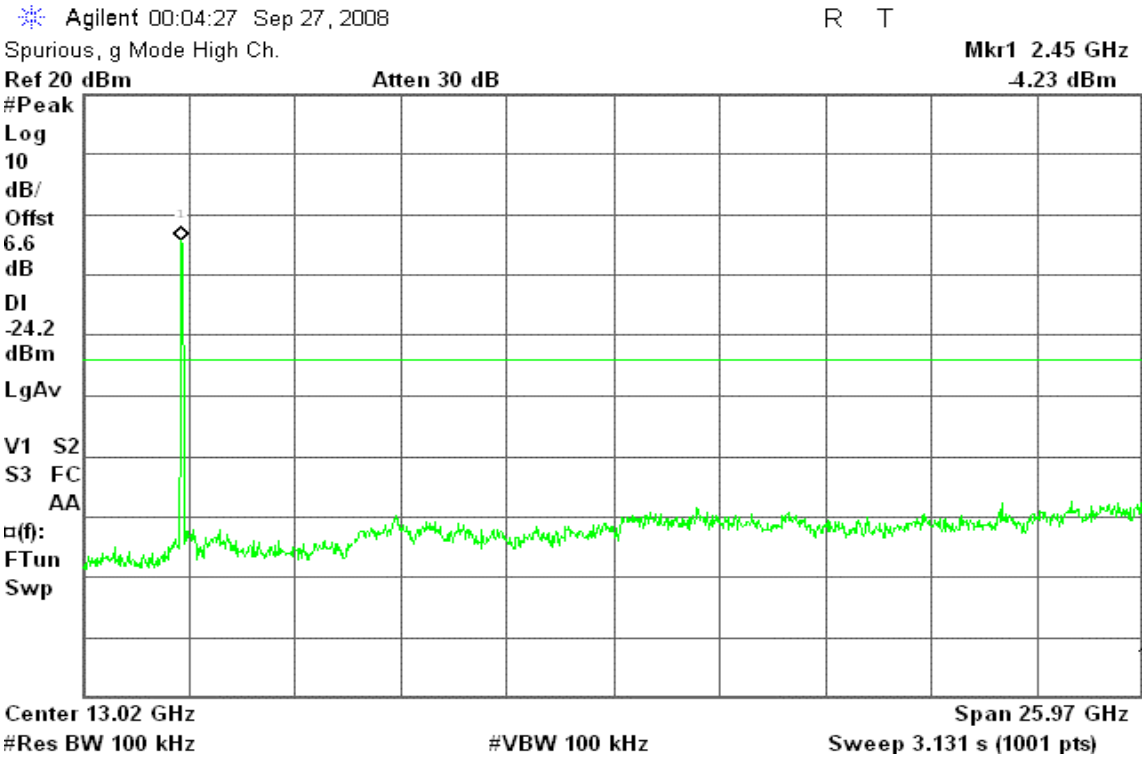
CH Low



CH Mid



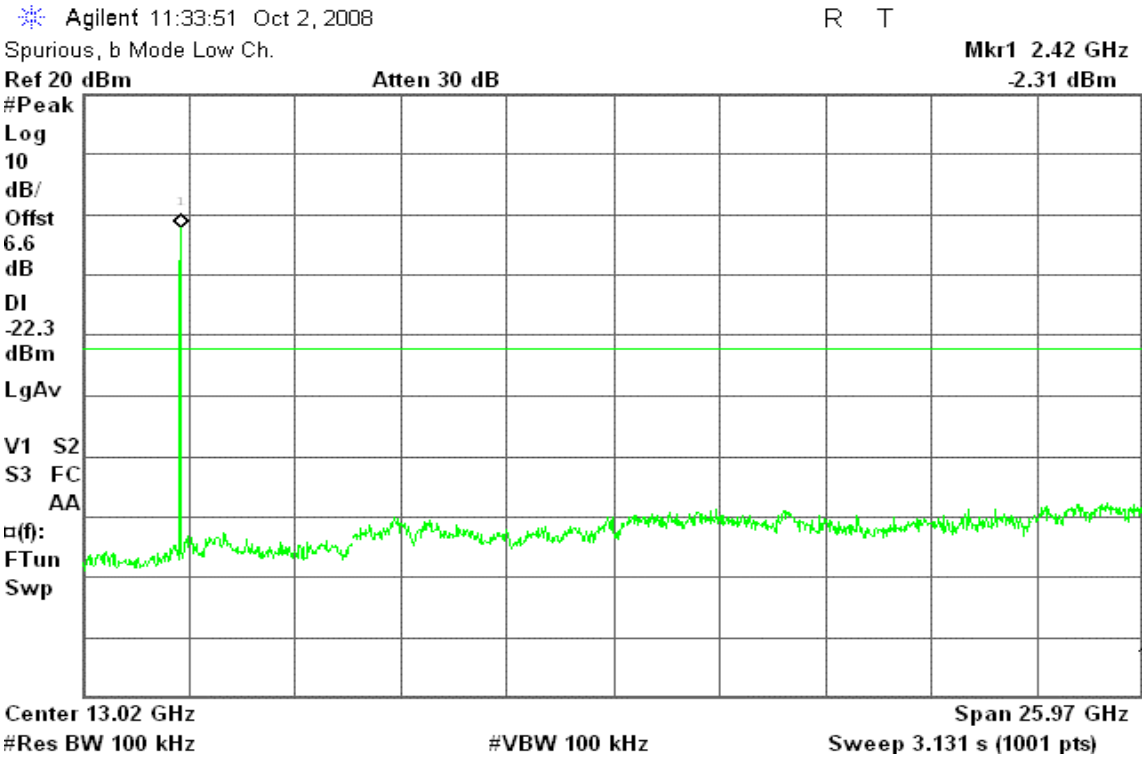
CH High



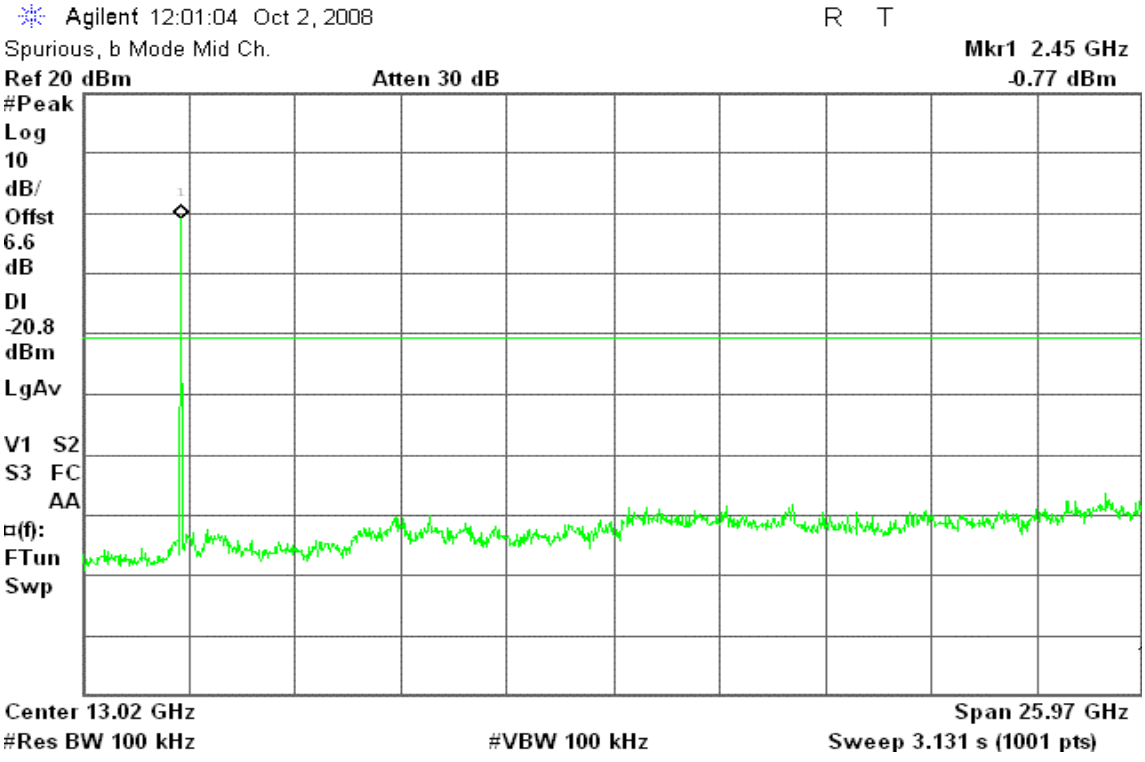
Patch Antenna / Gain: 9.12 dBi, Dipole Antenna / Gain: 9.09 dBi

IEEE 802.11b mode

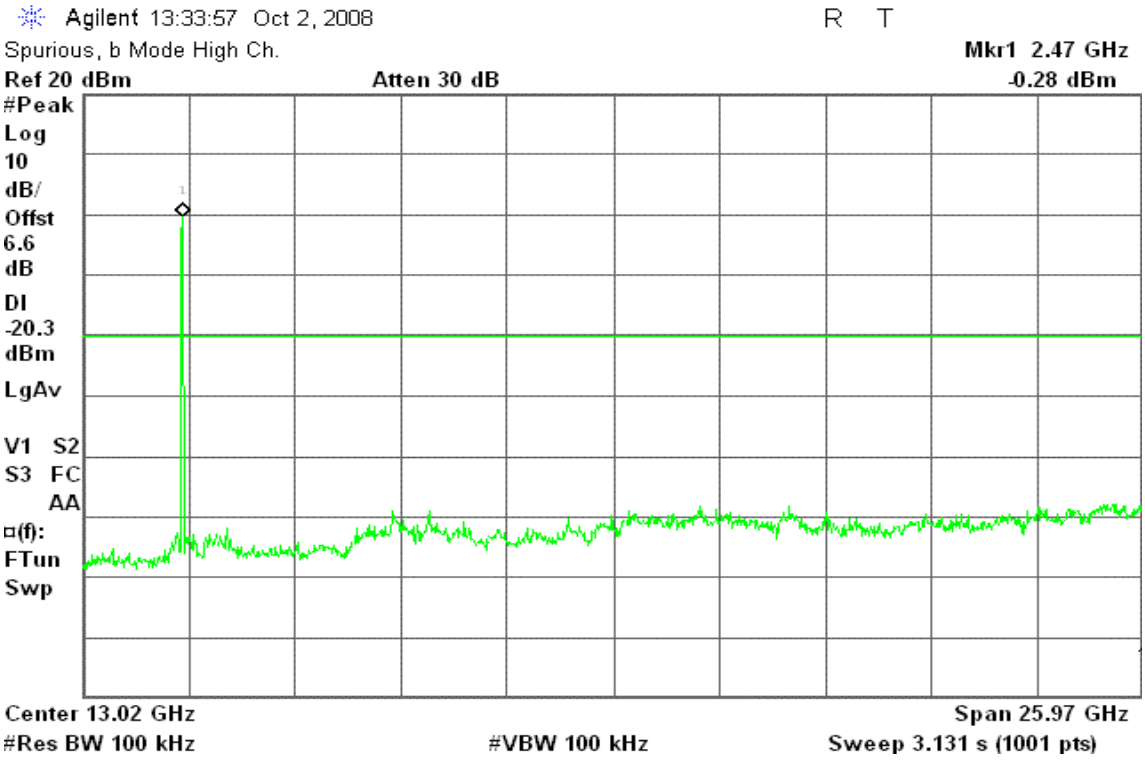
CH Low



CH Mid

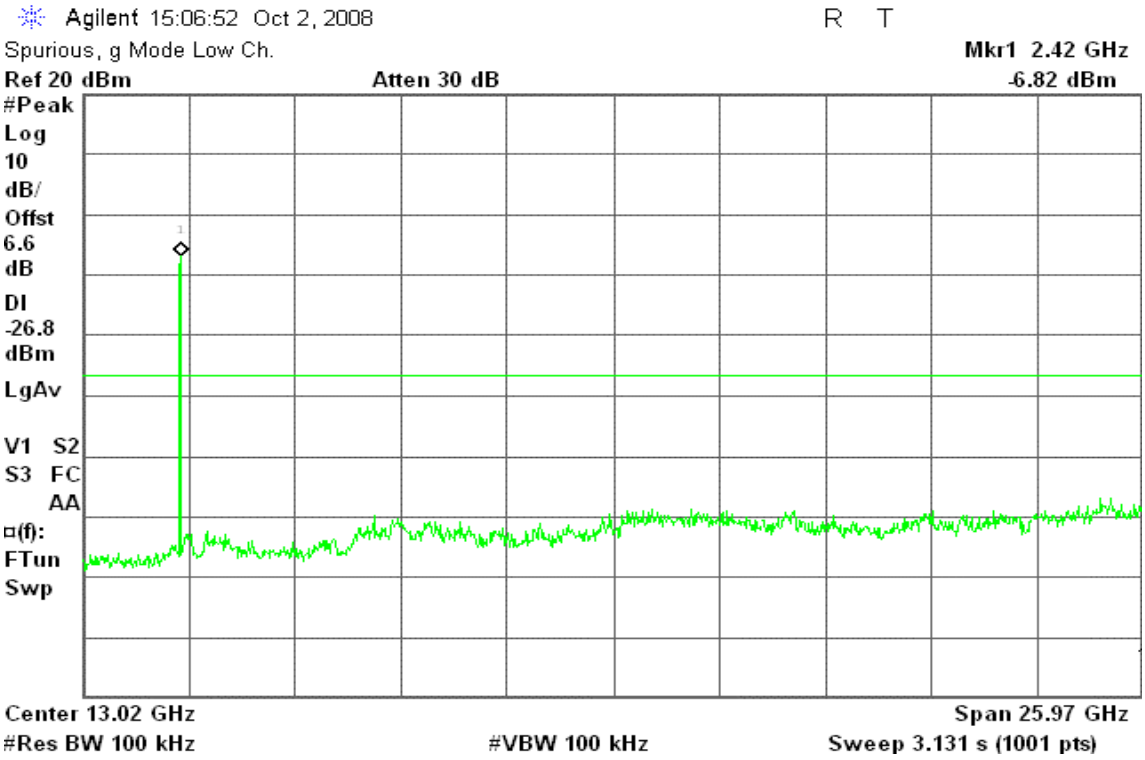


CH High

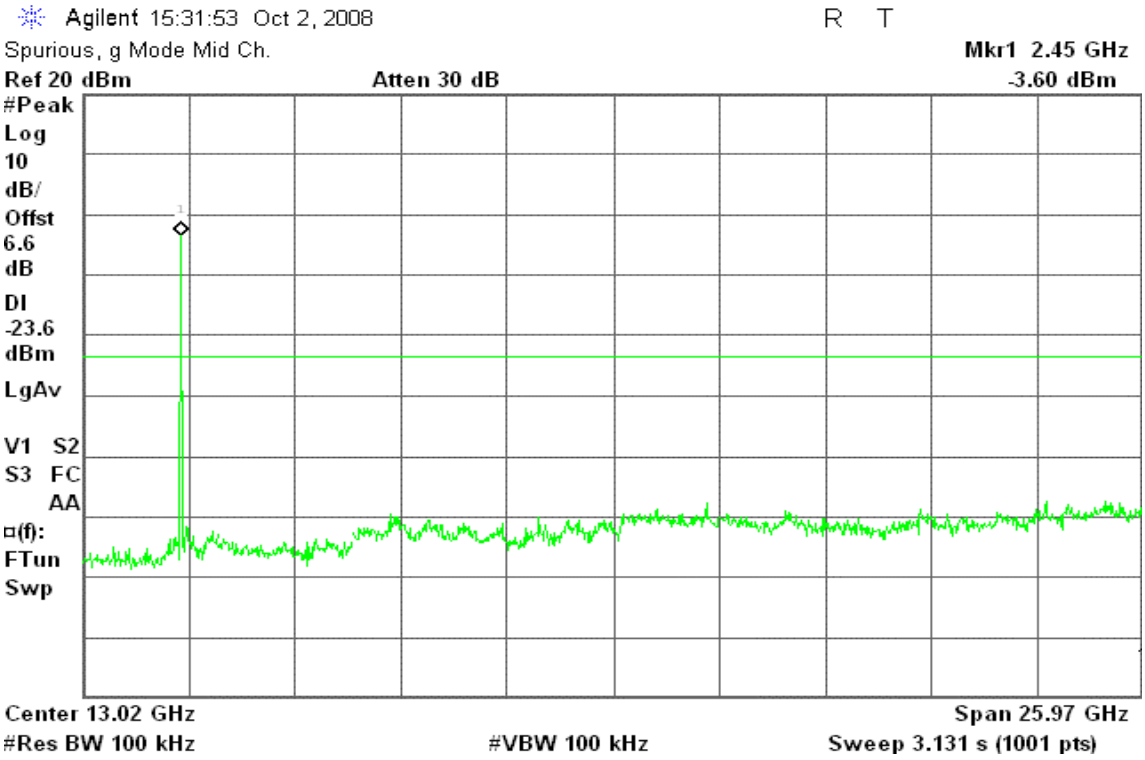


IEEE 802.11g mode

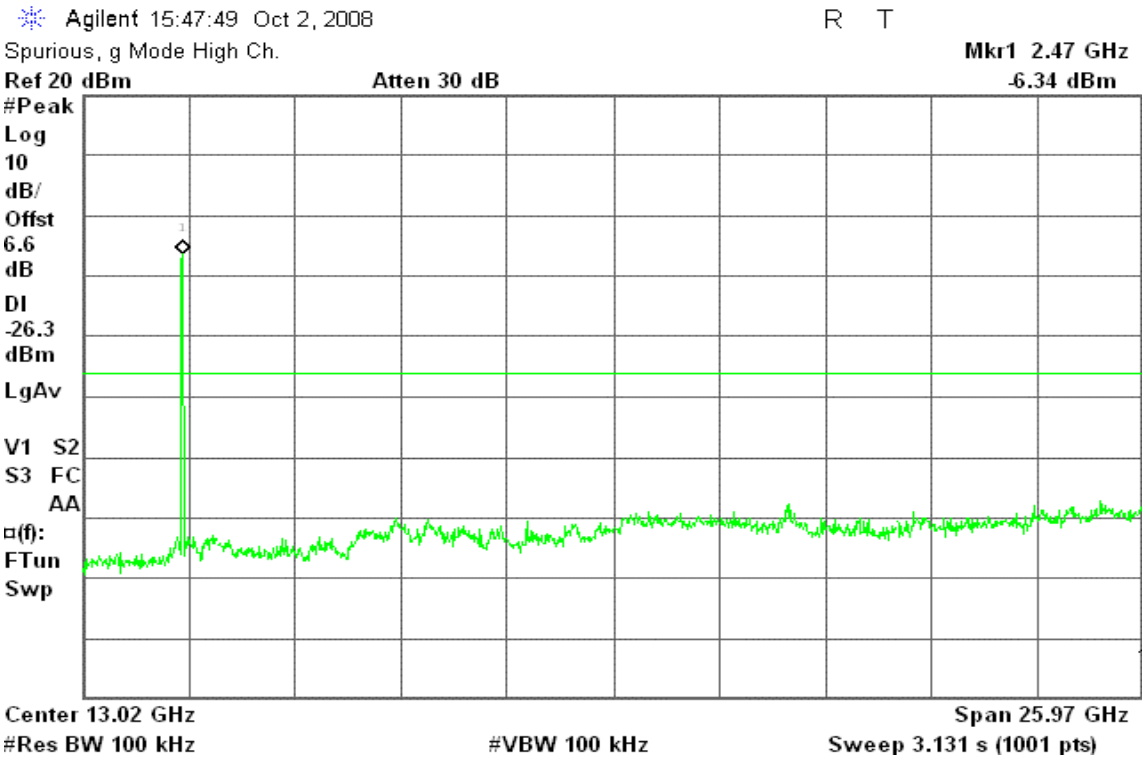
CH Low



CH Mid

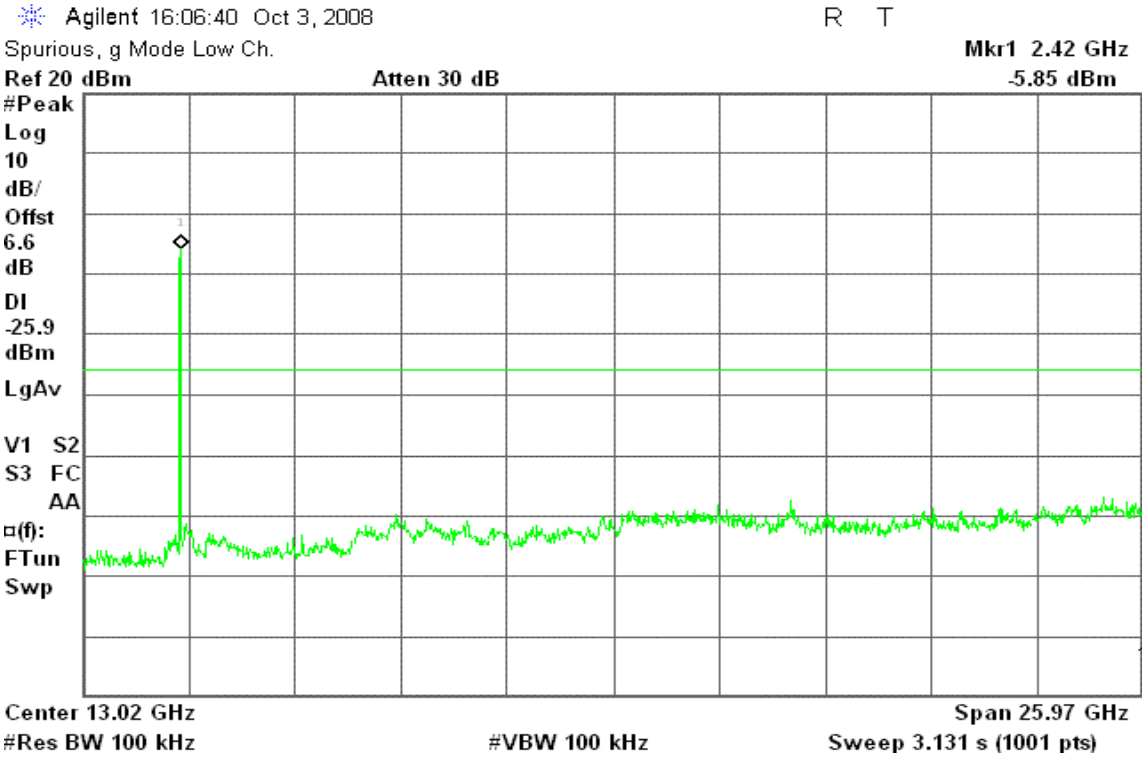


CH High

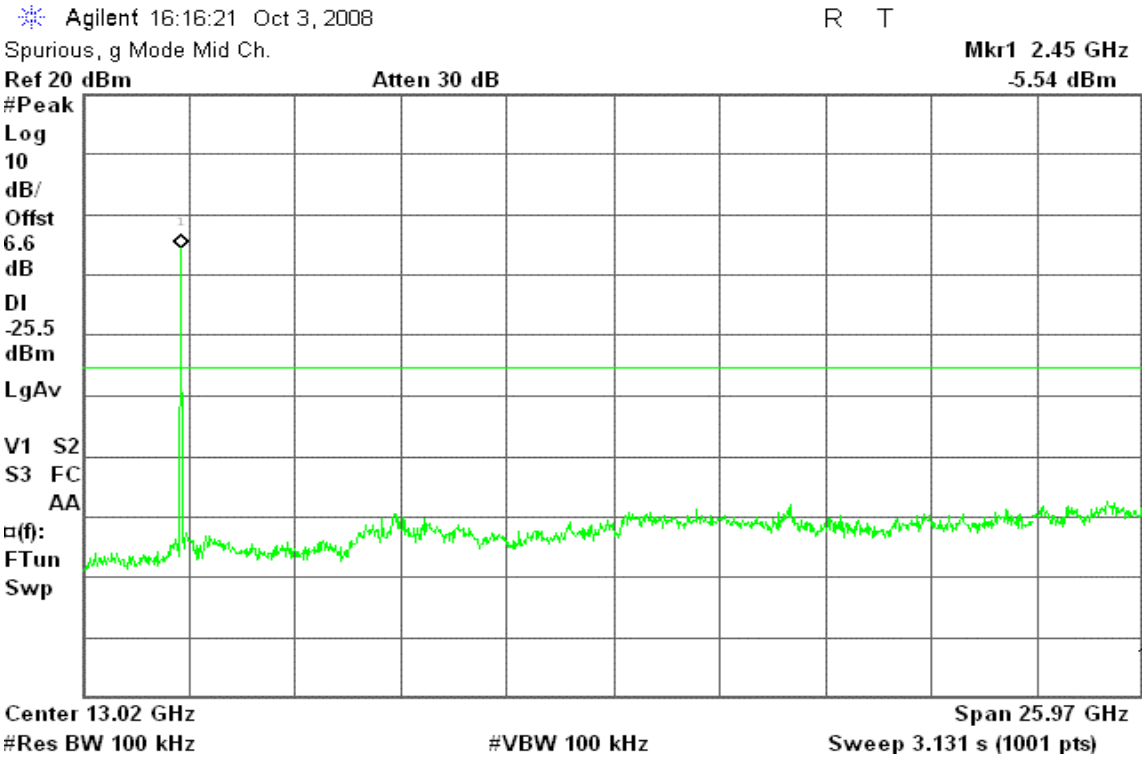


draft 802.11n Standard-20 MHz Channel mode

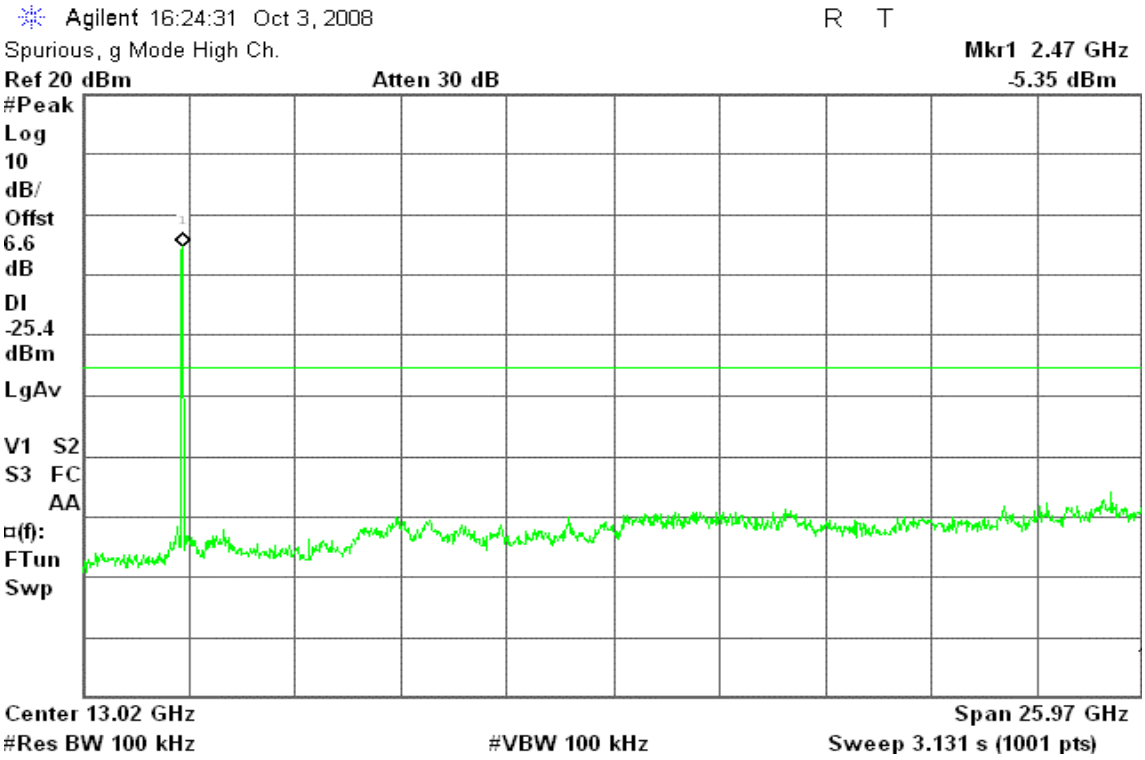
CH Low



CH Mid

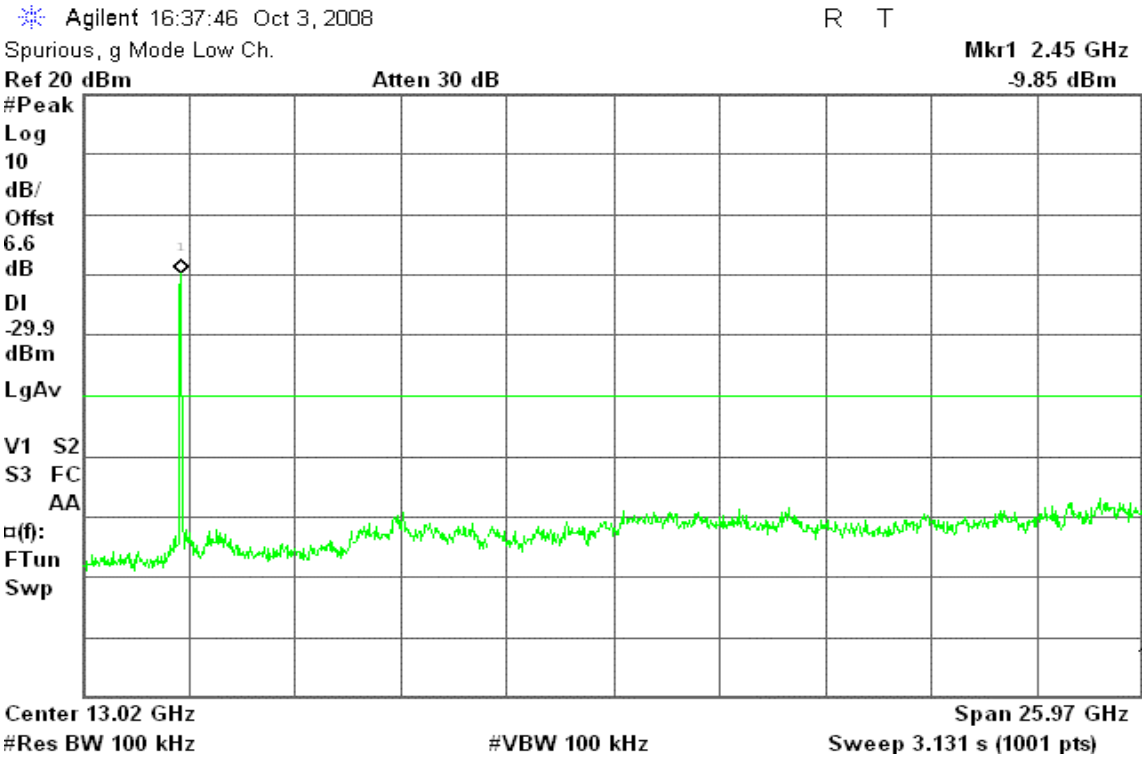


CH High

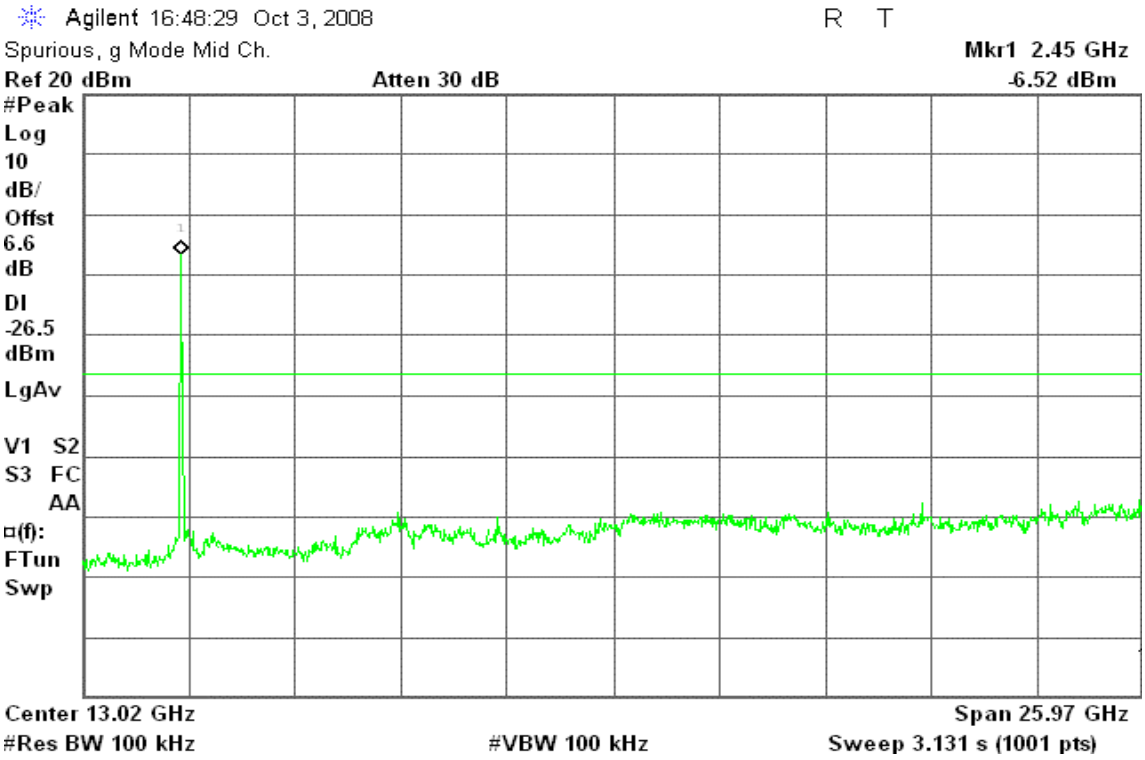


draft 802.11n Wide-40 MHz Channel mode

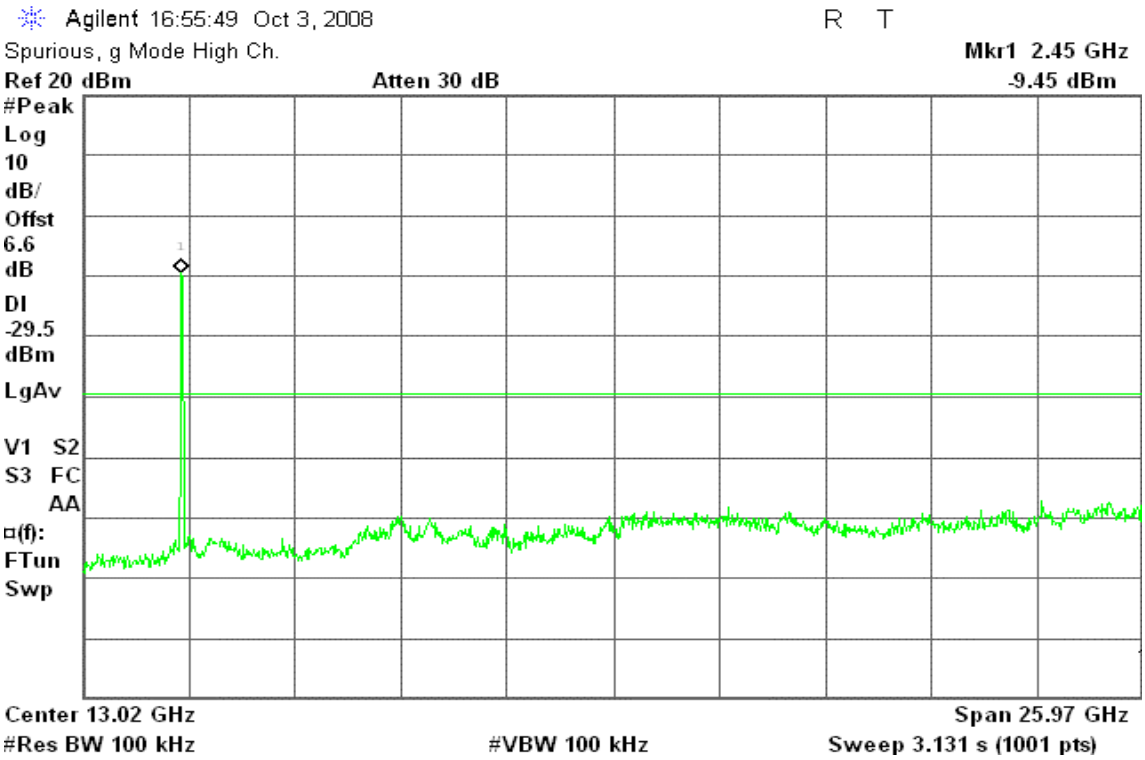
CH Low



CH Mid



CH High



7.7 RADIATED EMISSIONS

LIMIT

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

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

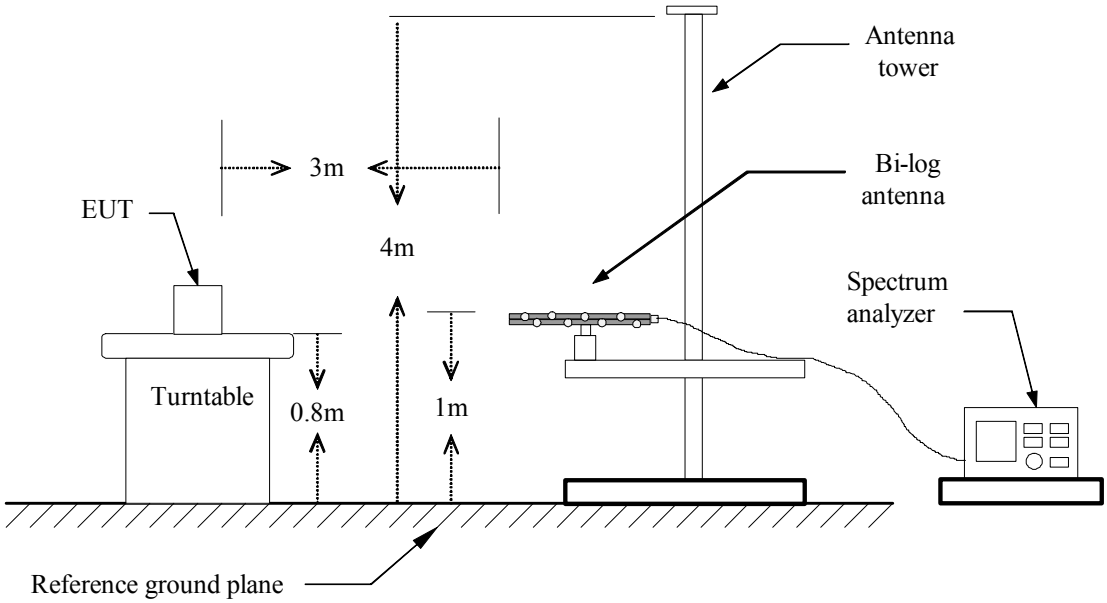
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

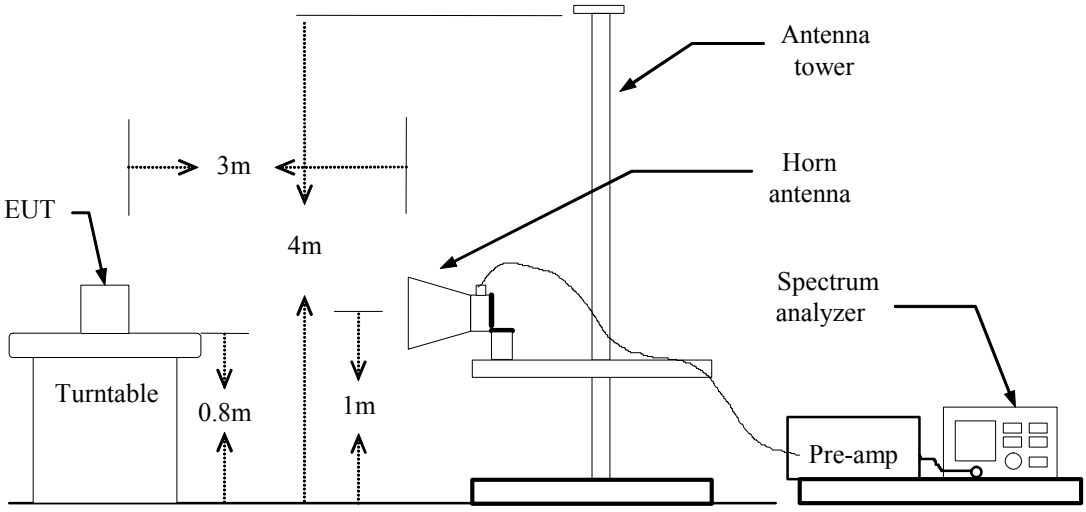
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

Below 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

   Below 1GHz:

   RBW=100kHz / VBW=300kHz / Sweep=AUTO

   Above 1GHz:

   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

Below 1GHz

PCB Antenna / Gain: 1 dBi

Operation Mode: Normal Link **Test Date:** September 26, 2008

Temperature: 23°C **Tested by:** Wolf Huang

Humidity: 53% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
130.23	V	38.34	-10.74	27.61	43.50	-15.89	Peak
165.80	V	43.07	-12.43	30.64	43.50	-12.86	Peak
432.55	V	35.95	-7.68	28.27	46.00	-17.73	Peak
497.22	V	38.61	-6.04	32.58	46.00	-13.42	Peak
566.73	V	37.59	-4.74	32.84	46.00	-13.16	Peak
631.40	V	32.12	-4.29	27.82	46.00	-18.18	Peak
177.12	H	38.54	-12.81	25.72	43.50	-17.78	Peak
298.37	H	38.49	-10.54	27.95	46.00	-18.05	Peak
566.73	H	33.37	-4.74	28.63	46.00	-17.37	Peak
697.68	H	31.05	-3.80	27.25	46.00	-18.75	Peak
799.53	H	31.89	-1.67	30.22	46.00	-15.78	Peak
912.70	H	35.88	-0.77	35.10	46.00	-10.90	Peak

Remark:

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

Patch Antenna / Gain: 9.12 dBi

Operation Mode: Normal Link **Test Date:** October 6, 2008

Temperature: 23°C **Tested by:** Mimic Yang

Humidity: 53% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
144.78	V	40.66	-9.19	31.47	43.50	-12.03	Peak
253.10	V	44.23	-9.62	34.62	46.00	-11.38	Peak
340.40	V	46.50	-7.96	38.54	46.00	-7.46	Peak
479.43	V	37.42	-4.74	32.68	46.00	-13.32	Peak
665.35	V	44.00	-2.20	41.80	46.00	-4.20	QP
839.95	V	34.30	0.18	34.47	46.00	-11.53	Peak
156.10	H	44.64	-9.97	34.67	43.50	-8.83	Peak
253.10	H	48.90	-9.62	39.28	46.00	-6.72	QP
266.03	H	48.90	-9.12	39.78	46.00	-6.22	QP
335.55	H	49.57	-8.04	41.53	46.00	-4.47	QP
366.27	H	48.12	-7.23	40.88	46.00	-5.12	Peak
665.35	H	39.91	-2.20	37.71	46.00	-8.29	Peak

Remark:

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

Dipole Antenna / Gain: 9.09 dBi

Operation Mode: Normal Link **Test Date:** October 6, 2008

Temperature: 23°C **Tested by:** Mimic Yang

Humidity: 53% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
47.78	V	44.08	-12.40	31.68	40.00	-8.32	Peak
159.33	V	50.30	-10.19	40.11	43.50	-3.39	QP
164.18	V	51.64	-10.39	41.25	43.50	-2.25	QP
248.25	V	48.65	-9.76	38.89	46.00	-7.11	QP
427.70	V	44.14	-5.80	38.34	46.00	-7.66	Peak
935.33	V	36.57	1.44	38.01	46.00	-7.99	Peak
165.80	H	49.68	-10.44	39.24	43.50	-4.26	Peak
206.22	H	49.07	-8.71	40.36	43.50	-3.14	QP
233.70	H	51.00	-9.92	41.08	46.00	-4.92	QP
246.63	H	51.59	-9.78	41.81	46.00	-4.19	QP
387.28	H	41.17	-6.49	34.67	46.00	-11.33	Peak
959.58	H	35.16	1.97	37.12	46.00	-8.88	Peak

Remark:

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

Above 1 GHz

PCB Antenna / Gain: 1 dBi

Operation Mode: TX / IEEE 802.11b / CH Low **Test Date:** September 30, 2008

Temperature: 23°C **Tested by:** Wolf Huang

Humidity: 44 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2286.67	V	58.59	47.62	-3.29	55.30	44.33	74.00	54.00	-9.67	AVG
2546.67	V	60.19	47.74	-2.51	57.68	45.23	74.00	54.00	-8.77	AVG
2603.33	V	59.97	48.01	-2.36	57.61	45.65	74.00	54.00	-8.35	AVG
4825.00	V	56.99	52.19	0.35	57.34	52.54	74.00	54.00	-1.46	AVG
N/A										
2603.33	H	62.02	48.22	-2.36	59.66	45.86	74.00	54.00	-8.14	AVG
2713.33	H	59.81	47.94	-2.07	57.74	45.87	74.00	54.00	-8.13	AVG
4825.00	H	55.36	50.54	0.35	55.71	50.89	74.00	54.00	-3.11	AVG
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11b / CH Mid **Test Date:** September 26, 2008

Temperature: 23°C **Tested by:** Wolf Huang

Humidity: 35 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2276.67	V	62.84	49.25	-3.32	59.52	45.93	74.00	54.00	-8.07	AVG
4875.00	V	57.49	51.97	0.24	57.73	52.21	74.00	54.00	-1.79	AVG
N/A										
2630.00	H	64.21	51.27	-2.29	61.92	48.98	74.00	54.00	-5.02	AVG
2740.00	H	62.63	49.85	-2.00	60.63	47.85	74.00	54.00	-6.15	AVG
4875.00	H	55.33	50.50	0.24	55.57	50.74	74.00	54.00	-3.26	AVG
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** September 30, 2008

Temperature: 23°C **Tested by:** Wolf Huang

Humidity: 35 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2330.00	V	61.69	48.21	-3.16	58.53	45.05	74.00	54.00	-8.95	AVG
4925.00	V	56.19	52.81	0.13	56.32	52.94	74.00	54.00	-1.06	AVG
N/A										
2266.67	H	61.23	48.25	-3.35	57.88	44.90	74.00	54.00	-9.10	AVG
2616.67	H	64.65	51.23	-2.32	62.33	48.91	74.00	54.00	-5.09	AVG
4925.00	H	52.36	49.20	0.13	52.49	49.33	74.00	54.00	-1.51	Peak
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11g / CH Low **Test Date:** September 26, 2008

Temperature: 23°C **Tested by:** Wolf Huang

Humidity: 35 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2253.33	V	61.89	42.78	-3.39	58.50	39.39	74.00	54.00	-14.61	AVG
2330.00	V	61.85	42.89	-3.16	58.69	39.73	74.00	54.00	-14.27	AVG
4816.67	V	49.73	---	0.37	50.09	---	74.00	54.00	-3.91	Peak
N/A										
2590.00	H	67.61	54.89	-2.39	65.22	52.50	74.00	54.00	-1.50	AVG
2690.00	H	68.80	55.62	-2.13	66.67	53.49	74.00	54.00	-0.51	AVG
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11g / CH Mid **Test Date:** September 26, 2008

Temperature: 23°C **Tested by:** Wolf Huang

Humidity: 35 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
4875.00	V	49.82	---	0.24	50.06	---	74.00	54.00	-3.94	Peak
N/A										
2590.00	H	65.62	52.68	-2.39	63.23	50.29	74.00	54.00	-3.71	AVG
2736.67	H	64.52	41.21	-2.01	62.51	39.20	74.00	54.00	-14.80	AVG
4875.00	H	49.49	---	0.24	49.73	---	74.00	54.00	-4.27	Peak
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11g / CH High **Test Date:** September 30, 2008

Temperature: 23°C **Tested by:** Wolf Huang

Humidity: 44 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2280.00	V	63.03	49.27	-3.31	59.72	45.96	74.00	54.00	-8.04	AVG
2583.33	V	62.79	49.25	-2.41	60.38	46.84	74.00	54.00	-7.16	AVG
N/A										
2296.67	H	62.67	46.98	-3.26	59.41	43.72	74.00	54.00	-10.28	AVG
2603.33	H	64.61	52.88	-2.36	62.25	50.52	74.00	54.00	-3.48	AVG
2700.00	H	64.89	52.65	-2.10	62.79	50.55	74.00	54.00	-3.45	AVG
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH Low	**Test Date:**	September 30, 2008
Temperature:	23°C	**Tested by:**	Wolf Huang
Humidity:	44 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2336.67	V	63.72	49.60	-3.14	60.58	46.46	74.00	54.00	-7.54	AVG
2536.67	V	65.74	51.18	-2.53	63.21	48.65	74.00	54.00	-5.35	AVG
4825.00	V	49.86	---	0.35	50.21	---	74.00	54.00	-3.79	Peak
N/A										
2293.33	H	64.77	50.10	-3.27	61.50	46.83	74.00	54.00	-7.17	AVG
2613.33	H	65.01	50.11	-2.33	62.68	47.78	74.00	54.00	-6.22	AVG
2650.00	H	64.68	49.94	-2.23	62.45	47.71	74.00	54.00	-6.29	AVG
2690.00	H	66.77	52.85	-2.13	64.64	50.72	74.00	54.00	-3.28	AVG
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH Mid	**Test Date:**	September 26, 2008
Temperature:	23°C	**Tested by:**	Wolf Huang
Humidity:	35 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
4875.00	V	49.76	---	0.24	50.00	---	74.00	54.00	-4.00	Peak
N/A										
2633.33	H	66.10	52.36	-2.28	63.82	50.08	74.00	54.00	-3.92	AVG
2723.33	H	64.21	52.16	-2.04	62.17	50.12	74.00	54.00	-3.88	AVG
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	September 26, 2008
Temperature:	23°C	**Tested by:**	Wolf Huang
Humidity:	35 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2333.33	V	64.83	50.11	-3.15	61.68	46.96	74.00	54.00	-7.04	AVG
N/A										
2300.00	H	61.95	49.12	-3.25	58.70	45.87	74.00	54.00	-8.13	AVG
2620.00	H	68.28	54.48	-2.31	65.97	52.17	74.00	54.00	-1.83	AVG
2756.67	H	65.71	53.36	-1.95	63.76	51.41	74.00	54.00	-2.59	AVG
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH Low	**Test Date:**	September 30, 2008
Temperature:	23°C	**Tested by:**	Wolf Huang
Humidity:	35 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
N/A										
2613.33	H	64.42	52.12	-2.33	62.09	49.79	74.00	54.00	-4.21	AVG
2713.33	H	64.72	52.27	-2.07	62.65	50.20	74.00	54.00	-3.80	AVG
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH Mid	**Test Date:**	September 26, 2008
Temperature:	23°C	**Tested by:**	Wolf Huang
Humidity:	35 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
N/A										
2630.00	H	64.58	52.18	-2.29	62.29	49.89	74.00	54.00	-4.11	AVG
2726.67	H	64.54	52.15	-2.03	62.51	50.12	74.00	54.00	-3.88	AVG
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH High	**Test Date:**	September 26, 2008
Temperature:	23°C	**Tested by:**	Wolf Huang
Humidity:	35 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
N/A										
2646.67	H	64.21	52.32	-2.24	61.97	50.08	74.00	54.00	-3.92	AVG
2740.00	H	64.11	52.45	-2.00	62.11	50.45	74.00	54.00	-3.55	AVG
N/A										

Remark:

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

Patch Antenna / Gain: 9.12 dBi

Operation Mode: TX / IEEE 802.11b / CH Low **Test Date:** October 1, 2008

Temperature: 23°C **Tested by:** Mimic Yang

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2230.00	V	62.11	49.02	-3.47	58.64	45.55	74.00	54.00	-8.45	AVG
2696.67	V	62.87	53.37	-2.11	60.76	51.26	74.00	54.00	-2.74	AVG
1353.33	H	59.37	---	-8.71	50.67	---	74.00	54.00	-3.33	Peak
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11b / CH Mid **Test Date:** October 1, 2008

Temperature: 23°C **Tested by:** Mimic Yang

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2216.67	V	63.14	51.07	-3.51	59.63	47.56	74.00	54.00	-6.44	AVG
2730.00	V	64.09	54.07	-2.02	62.07	52.05	74.00	54.00	-1.95	AVG
N/A										
1386.67	H	59.89	---	-8.63	51.26	---	74.00	54.00	-2.74	Peak
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** October 1, 2008

Temperature: 23°C **Tested by:** Mimic Yang

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2153.33	V	63.23	53.17	-3.70	59.53	49.47	74.00	54.00	-4.53	AVG
2346.67	V	62.56	50.59	-3.10	59.46	47.49	74.00	54.00	-6.51	AVG
2753.33	V	63.51	54.58	-1.96	61.55	52.62	74.00	54.00	-1.38	AVG
N/A										
1300.00	H	60.25	---	-8.83	51.42	---	74.00	54.00	-2.58	Peak
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11g / CH Low **Test Date:** October 1, 2008

Temperature: 23°C **Tested by:** Mimic Yang

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2126.67	V	66.41	53.78	-3.79	62.62	49.99	74.00	54.00	-4.01	AVG
2690.00	V	66.78	54.59	-2.13	64.65	52.46	74.00	54.00	-1.54	AVG
N/A										
1313.33	H	59.18	---	-8.80	50.37	---	74.00	54.00	-3.63	Peak
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11g / CH Mid **Test Date:** October 1, 2008

Temperature: 23°C **Tested by:** Mimic Yang

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2146.67	V	66.42	53.34	-3.72	62.70	49.62	74.00	54.00	-4.38	AVG
2743.33	V	64.93	54.54	-1.99	62.94	52.55	74.00	54.00	-1.45	AVG
N/A										
1263.33	H	59.03	---	-8.92	50.12	---	74.00	54.00	-3.88	Peak
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11g / CH High **Test Date:** October 1, 2008

Temperature: 23°C **Tested by:** Mimic Yang

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2176.67	V	65.76	54.36	-3.63	62.13	50.73	74.00	54.00	-3.27	AVG
2763.33	V	66.89	54.10	-1.93	64.96	52.17	74.00	54.00	-1.83	AVG
N/A										
1323.33	H	59.25	---	-8.78	50.47	---	74.00	54.00	-3.53	Peak
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH Low	**Test Date:**	October 2, 2008
Temperature:	23°C	**Tested by:**	Mimic Yang
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2130.00	V	65.42	53.32	-3.77	61.65	49.55	74.00	54.00	-4.45	AVG
2300.00	V	64.33	50.89	-3.25	61.08	47.64	74.00	54.00	-6.36	AVG
2700.00	V	68.13	54.99	-2.10	66.03	52.89	74.00	54.00	-1.11	AVG
N/A										
1380.00	H	59.69	---	-8.64	51.04	---	74.00	54.00	-2.96	Peak
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH Mid	**Test Date:**	October 2, 2008
Temperature:	23°C	**Tested by:**	Mimic Yang
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2146.67	V	65.29	52.25	-3.72	61.57	48.53	74.00	54.00	-5.47	AVG
2736.67	V	65.61	54.02	-2.01	63.60	52.01	74.00	54.00	-1.99	AVG
N/A										
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	October 2, 2008
Temperature:	23°C	**Tested by:**	Mimic Yang
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2170.00	V	66.65	55.55	-3.65	63.00	51.90	74.00	54.00	-2.10	AVG
2756.67	V	66.51	54.69	-1.95	64.56	52.74	74.00	54.00	-1.26	AVG
N/A										
1273.33	H	59.33	---	-8.90	50.43	---	74.00	54.00	-3.57	Peak
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH Low	**Test Date:**	October 3, 2008
Temperature:	23°C	**Tested by:**	Mimic Yang
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2133.33	V	64.58	52.35	-3.76	60.82	48.59	74.00	54.00	-5.41	AVG
2716.67	V	69.25	54.79	-2.06	67.19	52.73	74.00	54.00	-1.27	AVG
N/A										
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH Mid	**Test Date:**	October 3, 2008
Temperature:	23°C	**Tested by:**	Mimic Yang
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2163.33	V	64.45	52.25	-3.67	60.78	48.58	74.00	54.00	-5.42	AVG
2733.33	V	66.48	53.75	-2.01	64.47	51.74	74.00	54.00	-2.26	AVG
N/A										
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH High	**Test Date:**	October 3, 2008
Temperature:	23°C	**Tested by:**	Mimic Yang
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2160.00	V	66.02	54.28	-3.68	62.34	50.60	74.00	54.00	-3.40	AVG
2756.67	V	68.40	54.64	-1.95	66.45	52.69	74.00	54.00	-1.31	AVG
N/A										
1263.33	H	59.58	---	-8.92	50.66	---	74.00	54.00	-3.34	Peak
N/A										

Remark:

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

Dipole Antenna / Gain: 9.09 dBi

Operation Mode: TX / IEEE 802.11b / CH Low **Test Date:** October 3, 2008

Temperature: 23°C **Tested by:** Nan Tsai

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2243.33	V	64.00	51.88	-3.42	60.57	48.46	74.00	54.00	-5.54	AVG
2533.33	V	64.69	52.71	-2.54	62.15	50.17	74.00	54.00	-3.83	AVG
4825.00	V	54.30	52.48	0.35	54.64	52.83	74.00	54.00	-1.17	AVG
N/A										
2356.67	H	61.43	47.55	-3.07	58.36	44.48	74.00	54.00	-9.52	AVG

Remark:

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

Operation Mode: TX / IEEE 802.11b / CH Mid **Test Date:** October 3, 2008

Temperature: 23°C **Tested by:** Nan Tsai

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2280.00	V	65.88	55.90	-3.31	62.57	52.59	74.00	54.00	-1.41	AVG
2596.67	V	64.61	54.86	-2.37	62.23	52.49	74.00	54.00	-1.51	AVG
4875.00	V	56.02	53.57	0.24	56.26	53.81	74.00	54.00	-0.19	AVG
N/A										
4875.00	H	49.95	---	0.24	50.19	---	74.00	54.00	-3.81	Peak
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** October 3, 2008

Temperature: 23°C **Tested by:** Nan Tsai

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2310.00	V	65.35	55.60	-3.22	62.13	52.38	74.00	54.00	-1.62	AVG
2540.00	V	64.54	53.92	-2.52	62.01	51.40	74.00	54.00	-2.60	AVG
4925.00	V	56.77	53.42	0.13	56.90	53.55	74.00	54.00	-0.45	AVG
7383.33	V	49.94	44.05	2.93	52.87	46.98	74.00	54.00	-7.02	AVG
N/A										
2096.67	H	61.48	47.50	-3.88	57.60	43.62	74.00	54.00	-10.38	AVG
4925.00	H	50.67	---	0.13	50.80	---	74.00	54.00	-3.20	Peak
7383.33	H	49.44	41.91	2.93	52.37	44.84	74.00	54.00	-9.16	AVG
7616.67	H	49.70	35.55	3.20	52.90	38.75	74.00	54.00	-15.25	AVG
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11g / CH Low **Test Date:** October 3, 2008

Temperature: 23°C **Tested by:** Nan Tsai

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2256.67	V	67.76	54.20	-3.38	64.38	50.82	74.00	54.00	-3.18	AVG
2536.67	V	67.67	54.94	-2.53	65.14	52.41	74.00	54.00	-1.59	AVG
6716.67	V	50.16	36.47	2.30	52.46	38.77	74.00	54.00	-15.23	AVG
N/A										
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11g / CH Mid **Test Date:** October 3, 2008

Temperature: 23°C **Tested by:** Nan Tsai

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2250.00	V	65.72	52.35	-3.40	62.32	48.95	74.00	54.00	-5.05	AVG
2523.33	V	65.92	51.25	-2.57	63.36	48.68	74.00	54.00	-5.32	AVG
4866.67	V	51.56	39.51	0.26	51.82	39.77	74.00	54.00	-14.23	AVG
7316.67	V	48.59	36.18	2.95	51.54	39.13	74.00	54.00	-14.87	AVG
N/A										
N/A										

Remark:

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

Operation Mode: TX / IEEE 802.11g / CH High **Test Date:** October 3, 2008

Temperature: 23°C **Tested by:** Nan Tsai

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2300.00	V	66.60	53.58	-3.25	63.35	50.33	74.00	54.00	-3.67	AVG
2750.00	V	64.39	52.68	-1.97	62.42	50.71	74.00	54.00	-3.29	AVG
4916.67	V	51.66	37.83	0.15	51.80	37.98	74.00	54.00	-16.02	AVG
7391.67	V	50.53	37.09	2.93	53.46	40.02	74.00	54.00	-13.98	AVG
N/A										
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH Low	**Test Date:**	October 3, 2008
Temperature:	23°C	**Tested by:**	Nan Tsai
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2246.67	V	66.56	52.44	-3.41	63.15	49.03	74.00	54.00	-4.97	AVG
2563.33	V	66.67	53.17	-2.46	64.21	50.71	74.00	54.00	-3.29	AVG
N/A										
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH Mid	**Test Date:**	October 3, 2008
Temperature:	23°C	**Tested by:**	Nan Tsai
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2276.67	V	64.20	51.75	-3.32	60.87	48.43	74.00	54.00	-5.57	AVG
2596.67	V	64.34	51.12	-2.37	61.96	48.75	74.00	54.00	-5.25	AVG
4875.00	V	50.95	39.69	0.24	51.19	39.93	74.00	54.00	-14.07	AVG
N/A										
4116.67	H	48.76	---	0.85	49.61	---	74.00	54.00	-4.39	Peak
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	October 3, 2008
Temperature:	23°C	**Tested by:**	Nan Tsai
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2253.33	V	65.39	51.90	-3.39	61.99	48.51	74.00	54.00	-5.49	AVG
2543.33	V	64.19	51.47	-2.52	61.68	48.95	74.00	54.00	-5.05	AVG
N/A										
2960.00	H	61.20	46.87	-1.42	59.78	45.45	74.00	54.00	-8.55	AVG
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH Low	**Test Date:**	October 3, 2008
Temperature:	23°C	**Tested by:**	Nan Tsai
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2273.33	V	65.47	51.60	-3.33	62.14	48.27	74.00	54.00	-5.73	AVG
2553.33	V	66.20	51.09	-2.49	63.72	48.60	74.00	54.00	-5.40	AVG
N/A										
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH Mid	**Test Date:**	October 3, 2008
Temperature:	23°C	**Tested by:**	Nan Tsai
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2586.67	V	63.58	50.27	-2.40	61.18	47.87	74.00	54.00	-6.13	AVG
N/A										
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH High	**Test Date:**	October 3, 2008
Temperature:	23°C	**Tested by:**	Nan Tsai
Humidity:	53 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2280.00	V	64.08	51.45	-3.31	60.77	48.14	74.00	54.00	-5.86	AVG
2620.00	V	63.76	49.86	-2.31	61.45	47.55	74.00	54.00	-6.45	AVG
N/A										
N/A										

Remark:

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

7.8 POWERLINE CONDUCTED EMISSIONS

LIMIT

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

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

** Decreases with the logarithm of the frequency.*

Test Configuration

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

TEST PROCEDURE

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

TEST RESULTS

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

Test Data

Operation Mode:	Normal Link	**Test Date:**	October 7, 2008
Temperature:	22°C	**Tested by:**	Mark Yang
Humidity:	45% RH		

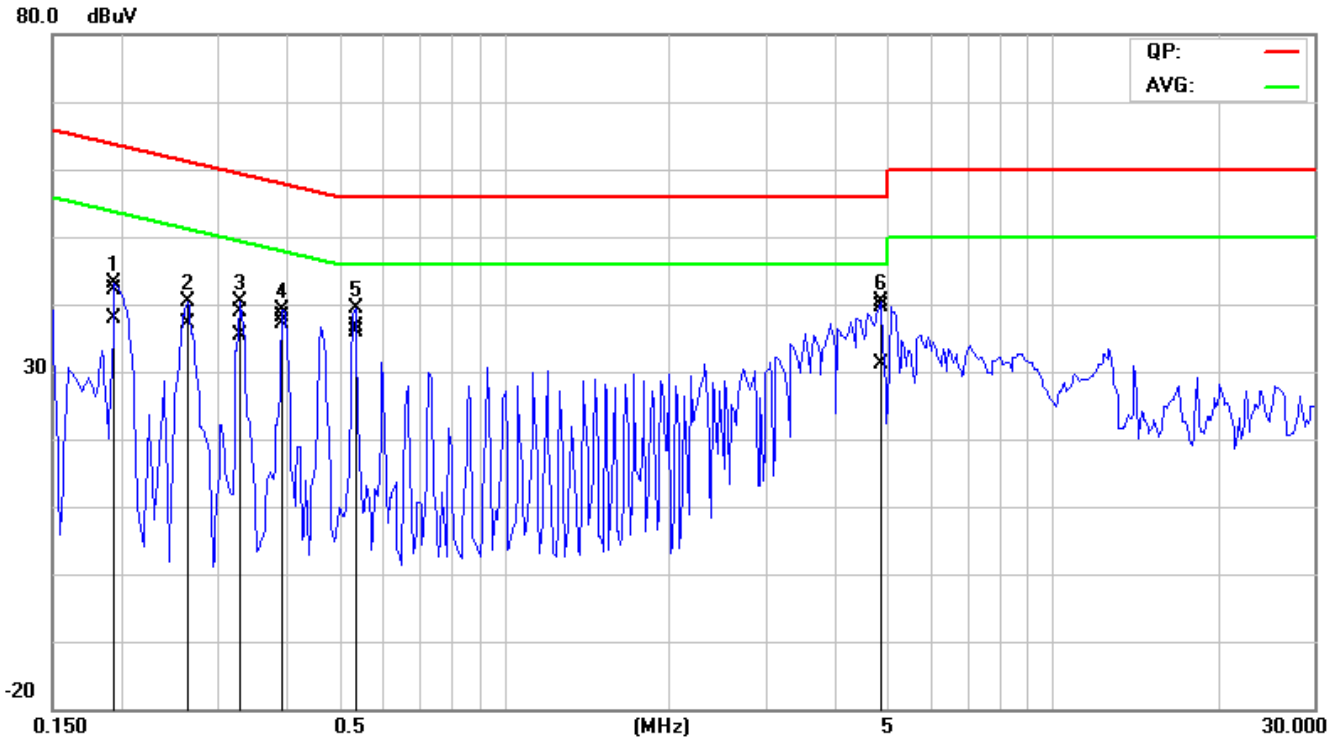
Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB/m)	QP Result (dBuV/m)	AV Result (dBuV/m)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.1950	41.95	37.85	0.15	42.10	38.00	63.82	53.82	-21.72	-15.82	L1
0.2650	40.18	37.08	0.12	40.30	37.20	61.27	51.27	-20.97	-14.07	L1
0.3300	38.70	35.20	0.10	38.80	35.30	59.45	49.45	-20.65	-14.15	L1
0.3950	38.03	37.03	0.07	38.10	37.10	57.96	47.96	-19.86	-10.86	L1
0.5350	36.57	35.77	0.03	36.60	35.80	56.00	46.00	-19.40	-10.20	L1
4.8650	39.47	30.97	0.23	39.70	31.20	56.00	46.00	-16.30	-14.80	L1
0.1950	43.35	38.25	0.15	43.50	38.40	63.82	53.82	-20.32	-15.42	L2
0.2600	34.67	30.27	0.13	34.80	30.40	61.43	51.43	-26.63	-21.03	L2
0.3300	38.80	35.40	0.10	38.90	35.50	59.45	49.45	-20.55	-13.95	L2
0.4000	37.63	36.93	0.07	37.70	37.00	57.85	47.85	-20.15	-10.85	L2
0.5300	36.37	35.57	0.03	36.40	35.60	56.00	46.00	-19.60	-10.40	L2
4.6700	38.88	31.88	0.22	39.10	32.10	56.00	46.00	-16.90	-13.90	L2

Remark:

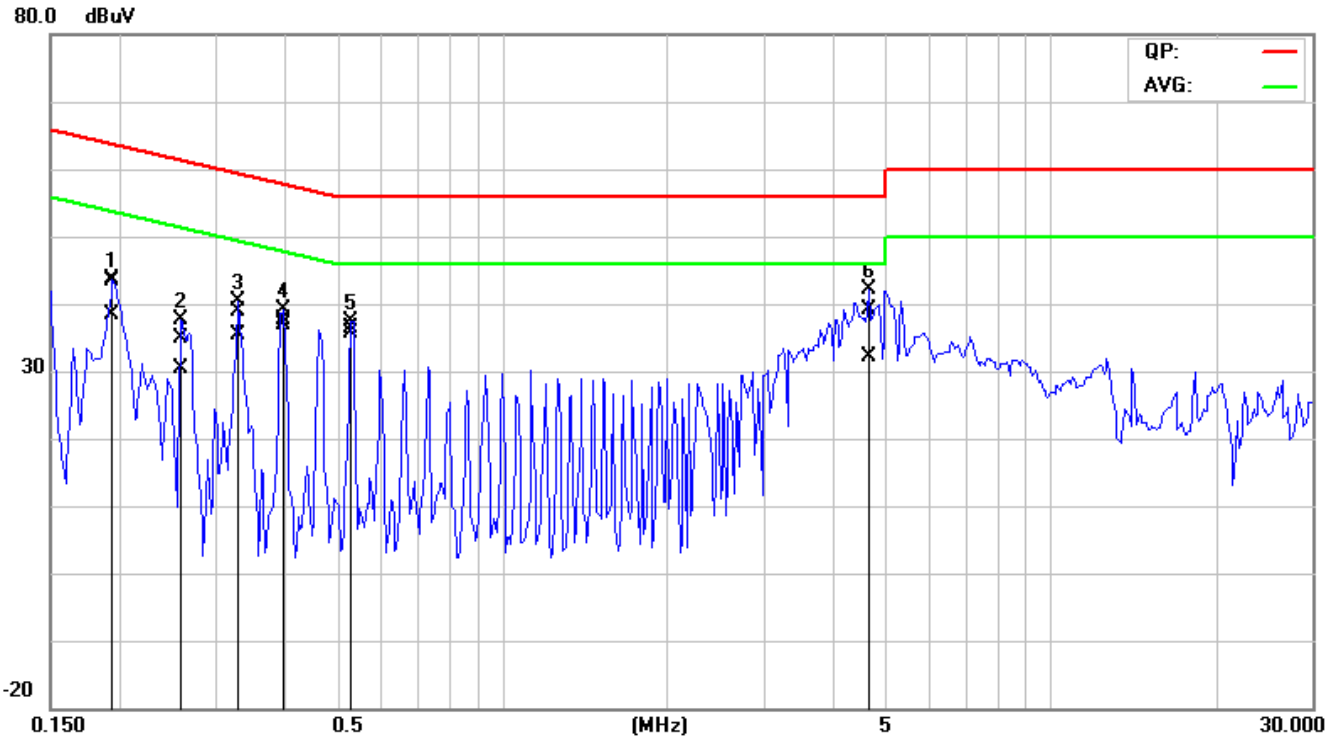
1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz and 30MHz was 10 kHz; the IF bandwidth of Test Receiver between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

Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)



APPENDIX I
RADIO FREQUENCY EXPOSURE

LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

EUT Specification

EUT	802.11b/g /n (1*TX+2*RX) USB Dongle
Frequency band (Operating)	☒ WLAN: 2.412GHz ~ 2.462GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5.825GHz ☐ Others
Device category	☒ Portable (<20cm separation) ☐ Mobile (>20cm separation) ☐ Others
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm^2) ☒ General Population/Uncontrolled exposure (S=1mW/cm^2)
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Max. output power	**PCB Antenna / Gain: 1 dBi** IEEE 802.11b mode: 19.22 dBm (83.56 mW) IEEE 802.11g mode: 19.91dBm (97.95 mW) draft 802.11n Standard-20 MHz Channel mode: 19.66 dBm (92.47 mW) draft 802.11n Wide-40 MHz Channel mode: 17.80 dBm (60.26 mW)
Antenna gain (Max)	PCB Antenna / Gain: 1 dBi (Numeric gain: 1.26)
Evaluation applied	☐ MPE Evaluation ☒ SAR Evaluation* ☐ N/A
Remark: *1. The maximum output power is 19.91dBm (97.95mW) at 2462MHz (with 1.26 numeric antenna gain.)* *2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.* *3. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm2 even if the calculation indicates that the power density would be larger.*	

TEST RESULTS

No non-compliance noted.

Remark: *Please refer to the separated SAR report.*

EUT Specification

EUT	802.11b/g /n (1*TX+2*RX) USB Dongle
Frequency band (Operating)	☒ WLAN: 2.412GHz ~ 2.462GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5.825GHz ☐ Others
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm^2) ☒ General Population/Uncontrolled exposure (S=1mW/cm^2)
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☒ Tx/Rx diversity
Max. output power	**Patch Antenna / Gain: 9.12 dBi, Dipole Antenna / Gain: 9.09 dBi** IEEE 802.11b mode: 13.78 dBm (23.88 mW) IEEE 802.11g mode: 14.03 dBm (25.29 mW) draft 802.11n Standard-20 MHz Channel mode: 13.32 dBm (21.48 mW) draft 802.11n Wide-40 MHz Channel mode: 14.31 dBm (26.98 mW)
Antenna gain (Max)	Patch Antenna / Gain: 9.12 dBi (Numeric gain: 8.17) Dipole Antenna / Gain: 9.09 dBi (Numeric gain: 8.11)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A
Remark: *4. The maximum output power is 14.31dBm (26.98mW) at 2437MHz (with 8.17numeric antenna gain.)* *5. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.* *6. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm2 even if the calculation indicates that the power density would be larger.*	

TEST RESULTS

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

Where *E = Field strength in Volts / meter*
P = Power in Watts
G = Numeric antenna gain
d = Distance in meters
S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$ ***Equation 1***

Where *d = Distance in cm*
P = Power in mW
G = Numeric antenna gain
S = Power density in mW / cm²

Maximum Permissible Exposure

EUT output power = 26.98mW

Numeric Antenna gain = 8.17

Substituting the MPE safe distance using d = 20 cm into Equation 1:

Yields

$$S = 0.000199 \times P \times G$$

Where *P = Power in mW*
G = Numeric antenna gain
S = Power density in mW / cm²

→ Power density = 0.0439 mW / cm²

(For mobile or fixed location transmitters, the maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.)