FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

N1 Vision Router v2

Model: F5D8232-4 v2000

Trade Name: Belkin

Issued to

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

Issued by

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

ACCREDITED
TESTING CERT #0824.01

TAF
Testing Laboratory
0363

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1. TEST RESULT CERTIFICATION

Applicant:	Belkin International, Inc. 501 West Walnut Street, Compton CA 90220, USA
Equipment Under Test:	N1 Vision Router v2
Trade Name:	Belkin
Model Number:	F5D8232-4 v2000
Date of Test:	April 22 ~ May 21, 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

Product	N1 Vision Router v2
Trade Name	Belkin
Model Number	F5D8232-4 v2000
Model Discrepancy	N/A
Power Adapter	1. LEADER / Model: MT12-Y120100-A1 I/P: 100-120V, 60Hz, 0.3A O/P: 12V, 1A 2. DVE / Mode: DSA-12G-12 AUS 120120 I/P: 100-120V, 50-60Hz, 0.3A O/P: 12V, 1A 3. DVE / Model: DSA-12R-12 AUS 120120 I/P: 100-120V, 50-60Hz, 0.3A O/P: 12V, 1A
Frequency Range	2412 ~ 2462 MHz
Transmit Power	IEEE 802.11b mode: 14.46 dBm IEEE 802.11g mode: 17.86 dBm draft 802.11n Standard-20 MHz Channel mode: 16.28 dBm draft 802.11n Wide-40 MHz Channel mode: 18.69 dBm
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	Omni-directional Antenna / Gain: 1.8dBi

Remark:

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *This submittal(s) (test report) is intended for FCC ID: **K7SF5D8232-4V2** 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: F5D8232-4 v2000) comes with three types of power adapter (MT12-Y120100-A1/ DSA-12G-12 AUS 120120 / DSA-12R-12 AUS 120120) for sale. After the preliminary test, the power adapter DSA-12G-12 AUS 120120 was found to emit the worst emissions and therefore had been tested under operating condition.

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

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

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

IEEE 802.11b mode:
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate and cyclic delay diversity were chosen for full testing.

IEEE 802.11g mode:
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate and cyclic delay diversity were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode:
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

draft 802.11n Wide-40 MHz Channel mode:
Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.

4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

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

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

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

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY43360131	01/29/2009

3M Semi Anechoic Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	09/11/2008
Test Receiver	Rohde&Schwarz	ESCI	100064	11/30/2008
Switch Controller	TRC	Switch Controller	SC94050010	05/04/2009
4 Port Switch	TRC	4 Port Switch	SC94050020	05/04/2009
Horn-Antenna	TRC	HA-0502	06	06/05/2008
Horn-Antenna	TRC	HA-0801	04	06/20/2008
Horn-Antenna	TRC	HA-1201A	01	08/12/2008
Horn-Antenna	TRC	HA-1301A	01	08/12/2008
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: 965860 IC: IC 6106	09/25/2008
Test S/W	LABVIEW (V 6.1)			

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

Powerline Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI TEST RECEIVER 9kHz-30MHz	ROHDE & SCHWARZ	ESHS30	828144/003	10/31/2008
TWO-LINE V-NETWORK 9kHz-30MHz	SCHAFFNER	NNB41	03/10013	06/12/2008
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	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.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☒ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

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

5.2 EQUIPMENT

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

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

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

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

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	EN 55011, EN 55014-1/2, CISPR 11, CISPR 14-1/2, EN 55022, EN 55015, CISPR 22, CISPR 15, AS/NZS 3548, VCCI V3 (2001), CFR 47, FCC Part 15/18, CNS 13783-1, CNS 13439, CNS 13438, CNS 13803, CNS 14115, EN 55024, IEC 801-2, IEC 801-3, IEC 801-4, IEC/EN 61000-3-2, IEC/EN 61000-3-3, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 50081-1/ EN 61000-6-3, EN 50081-2/EN 61000-6-4, EN 50081-2/EN 61000-6-1: 2001	ACCREDITED TESTING CERT #0824.01
USA	FCC	3/10 meter Open Area Test Sites (93105, 90471) / 3M Semi Anechoic Chamber (965860) to perform FCC Part 15/18 measurements	93105, 90471 965860
Japan	VCCI	3/10 meter Open Area Test Sites to perform conducted/radiated measurements	R-393/1066/725/879 C-402/747/912
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, EN 60601-1-2, EN 300 328, EN 300 422-2, EN 301 419-1, EN 301 489-01/03/07/08/09/17, EN 301 419-2/3, EN 300 454-2, EN 301 357-2	ELA 124a ELA 124b ELA 124c
Taiwan	TAF	EN 300 328, EN 300 220-1, EN 300 220-2, EN 300 220-3, 47 CFR FCC Part 15 Subpart C, EN 61000-3-2, EN 61000-3-3, CNS 13439, CNS 13783-1, CNS 14115, CNS 13438, AS/NZS CISPR 22, CNS 13022-1, IEC 61000-4-2/3/4/5/6/8/11, CNS 13022-2/3	Testing Laboratory 0363
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 SL2-IN-E-0014 SL2-A1-E-0014 SL2-R1-E-0014 SL2-R2-E-0014 SL2-L1-E-0014
Canada	Industry Canada	3/10 meter Open Area Test Sites (IC 2324C-3, IC 2324C-5) / 3M Semi Anechoic Chamber (IC 6106)	IC 2324C-3 IC 2324C-5 IC 6106

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

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	PP10L	50XP51J	FCC DoC	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2.	Notebook PC (Remote)	IBM	2672 (X31)	9985H9M	WLAN: ANO20030400LEG Bluetooth: ANO20020100MTN	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core

Remark:

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

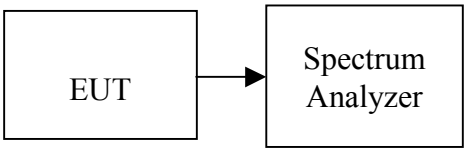
7. FCC PART 15.247 REQUIREMENTS

7.1 6DB BANDWIDTH

LIMIT

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

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 100 kHz, VBW = RBW, Span = 50 MHz, Sweep = auto.
4. Mark the peak frequency and –6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

TEST RESULTS

No non-compliance noted.

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	12420	>500	PASS
Mid	2437	12250		PASS
High	2462	12330		PASS

Test mode: IEEE 802.11g mode

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

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

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

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

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

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

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	36420	>500	PASS
Mid	2437	36500		PASS
High	2452	36330		PASS

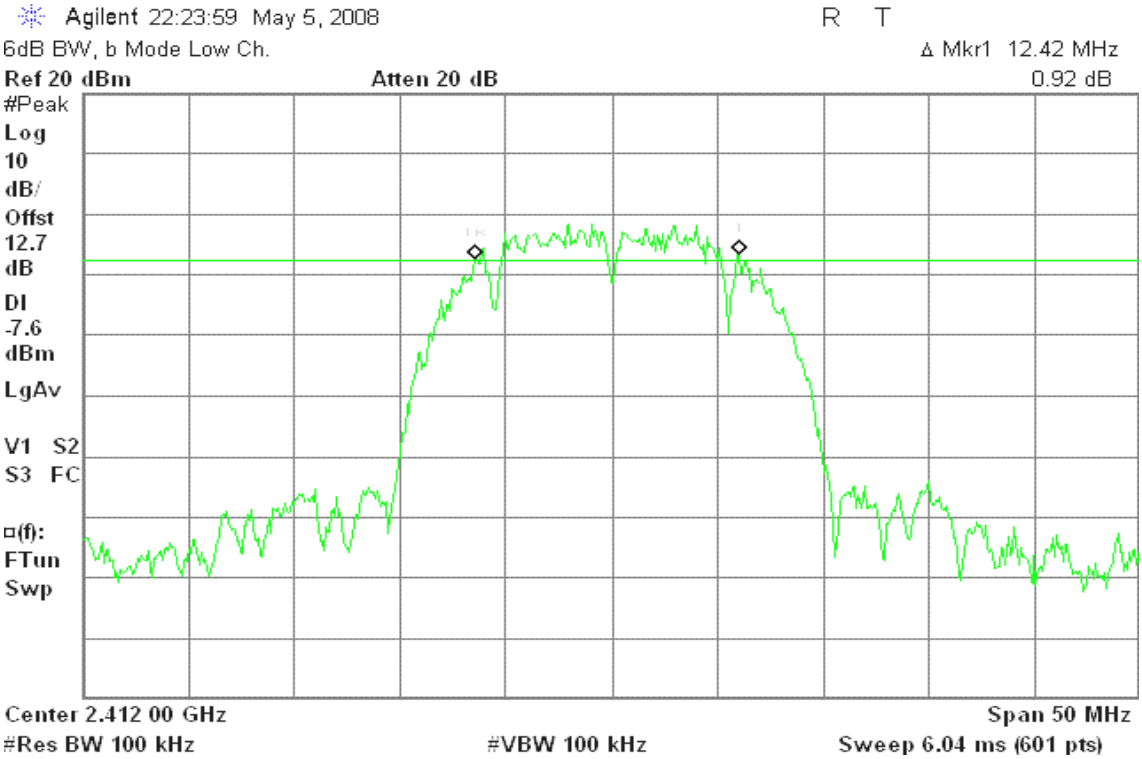
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	36330	>500	PASS
Mid	2437	36330		PASS
High	2452	36420		PASS

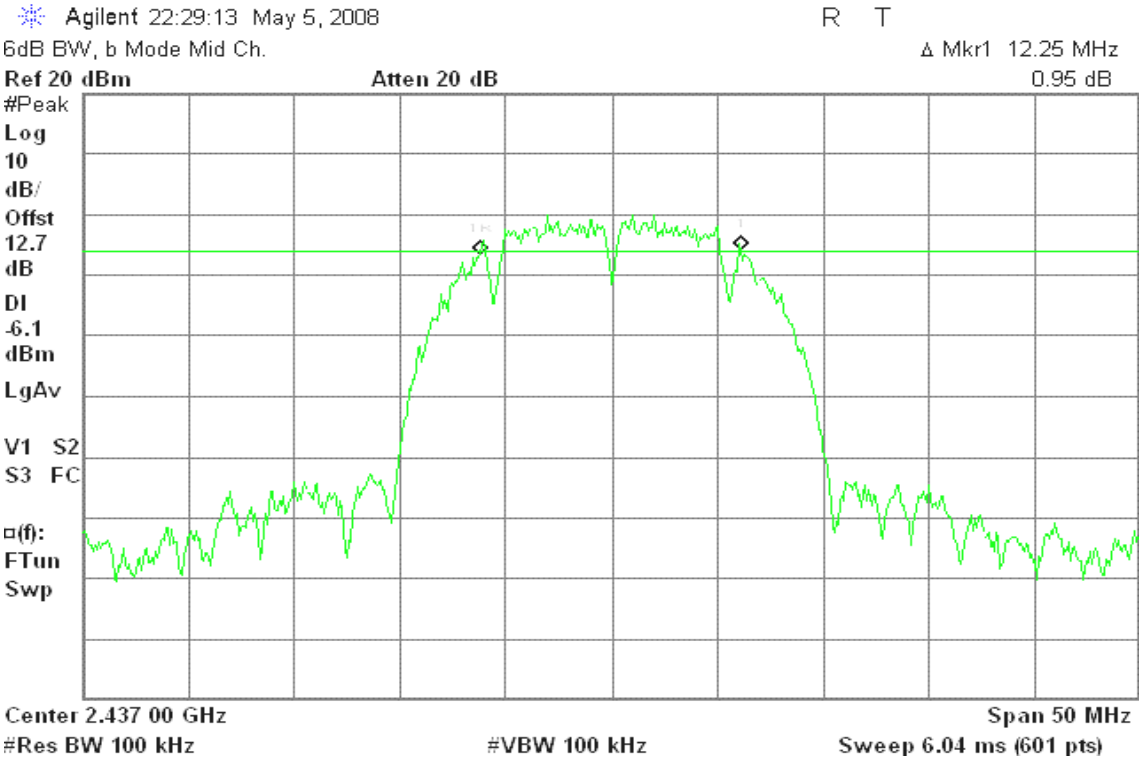
Test Plot

IEEE 802.11b mode

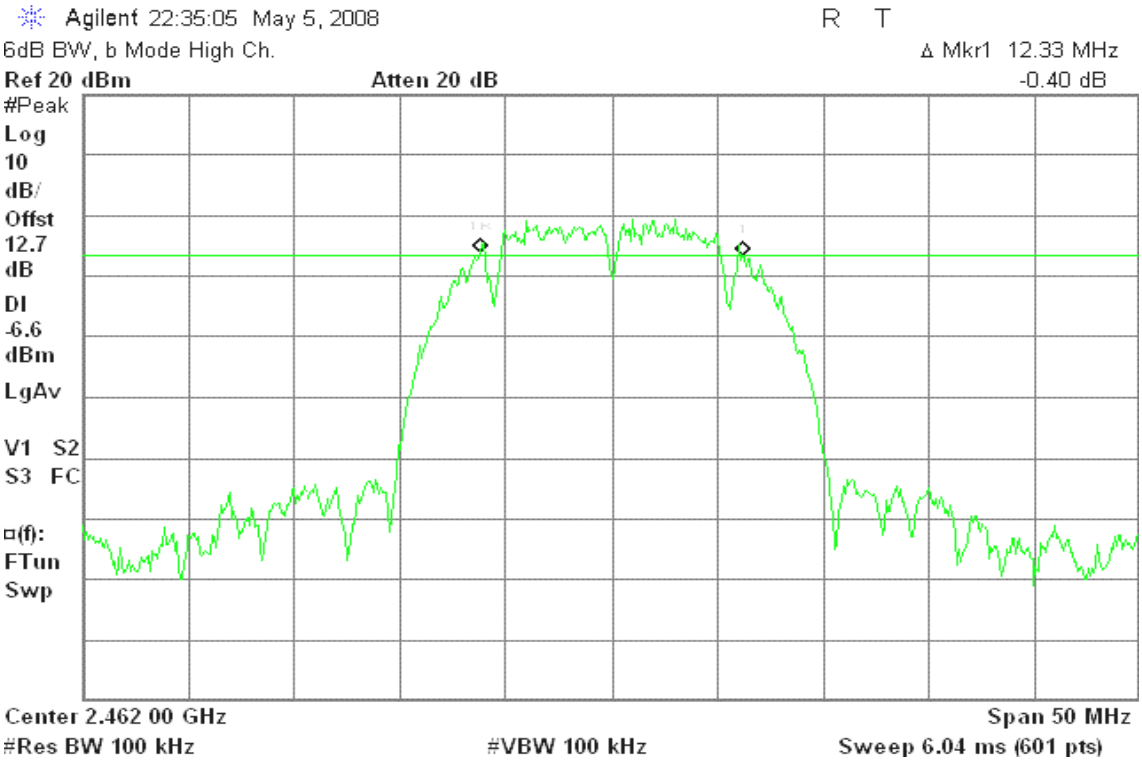
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

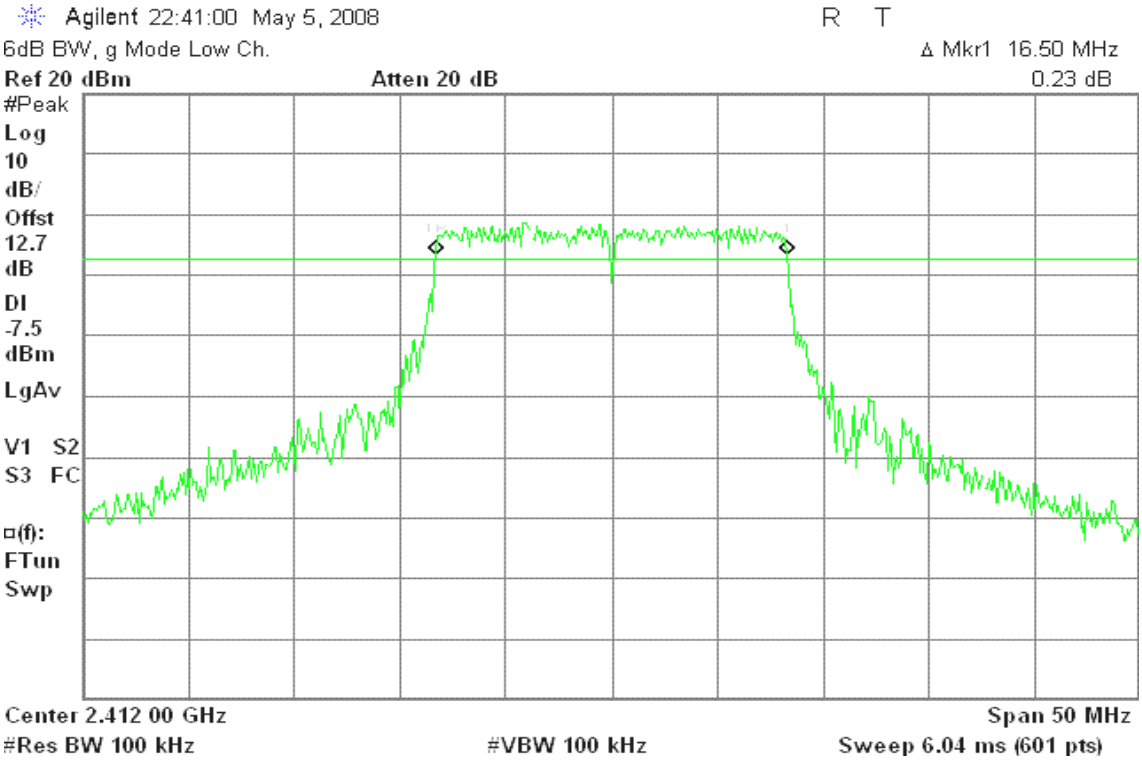


6dB Bandwidth (CH High)

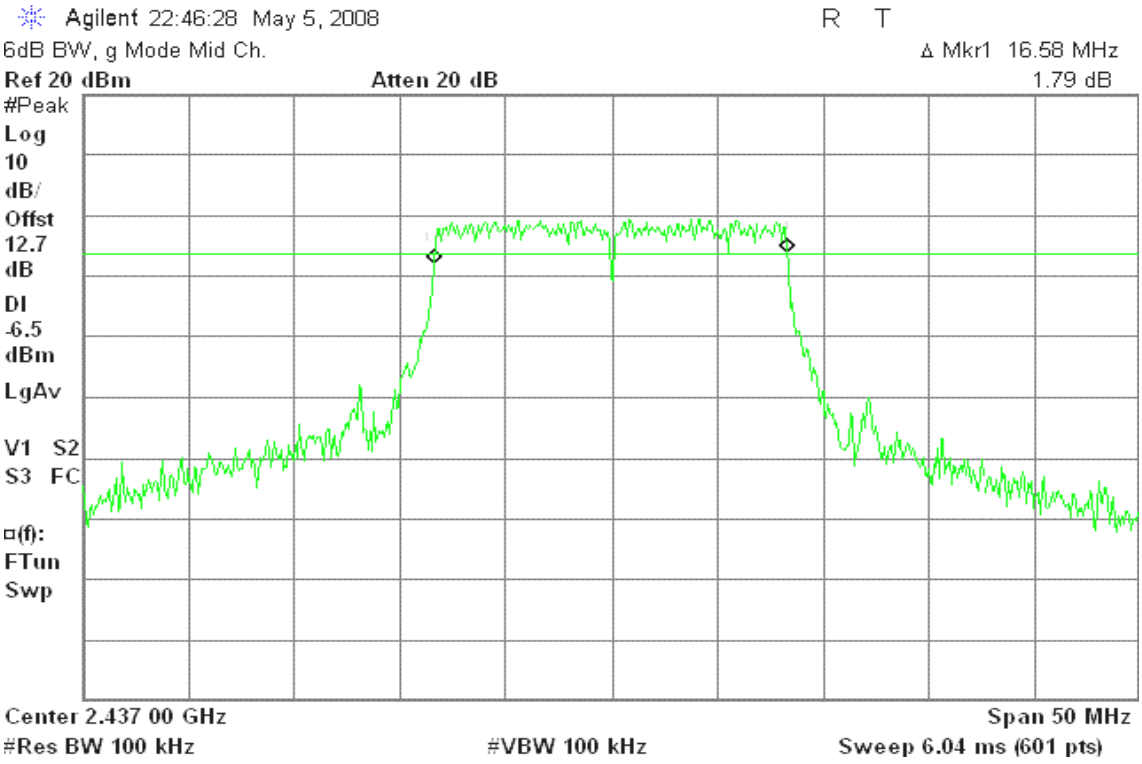


IEEE 802.11g mode

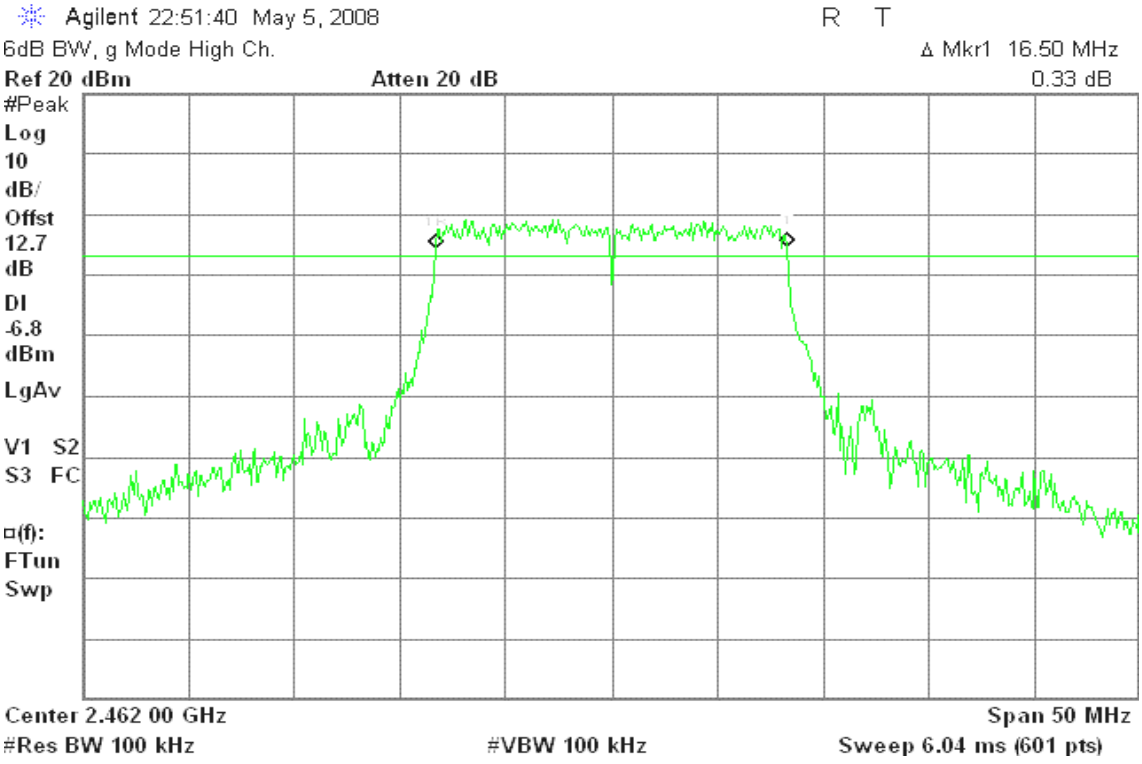
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

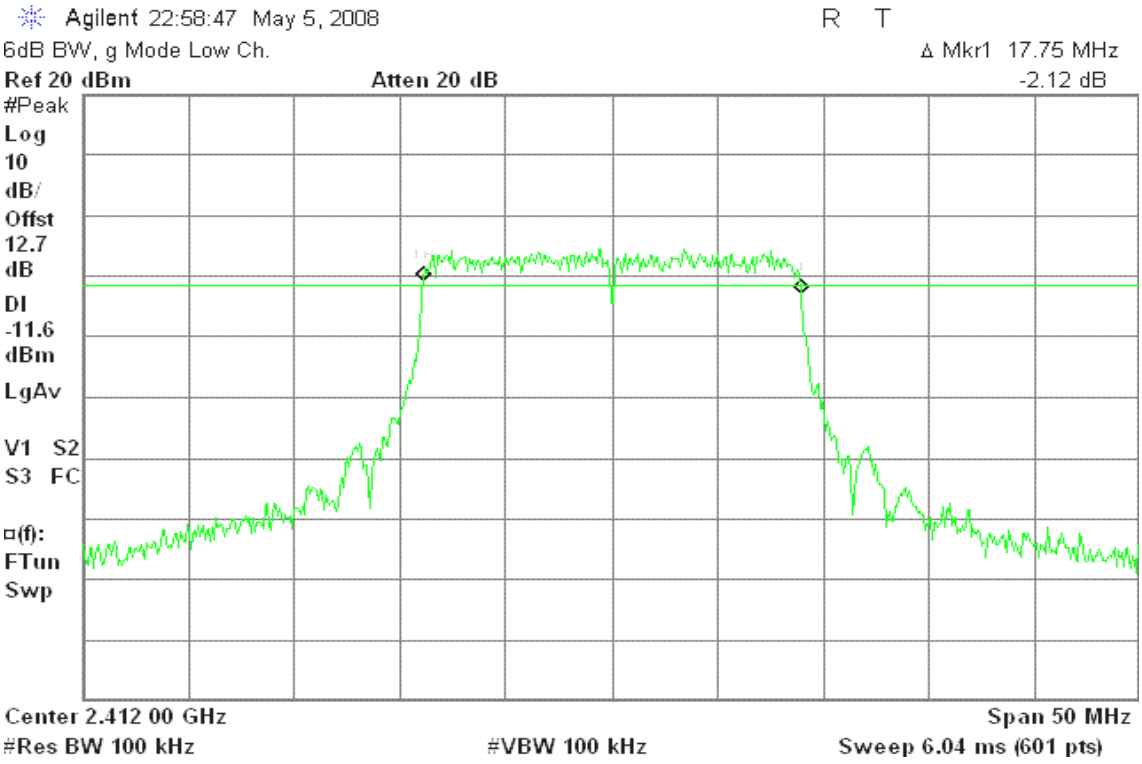


6dB Bandwidth (CH High)

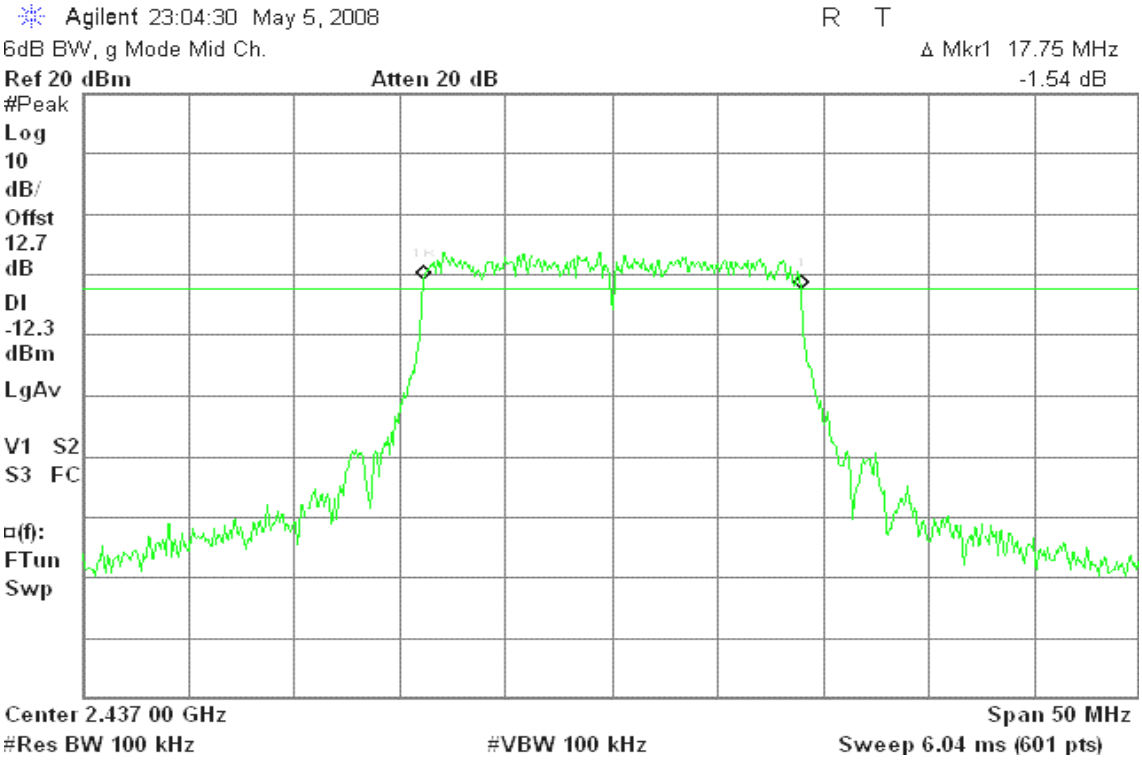


draft 802.11n Standard-20 MHz Channel mode / Chain 0

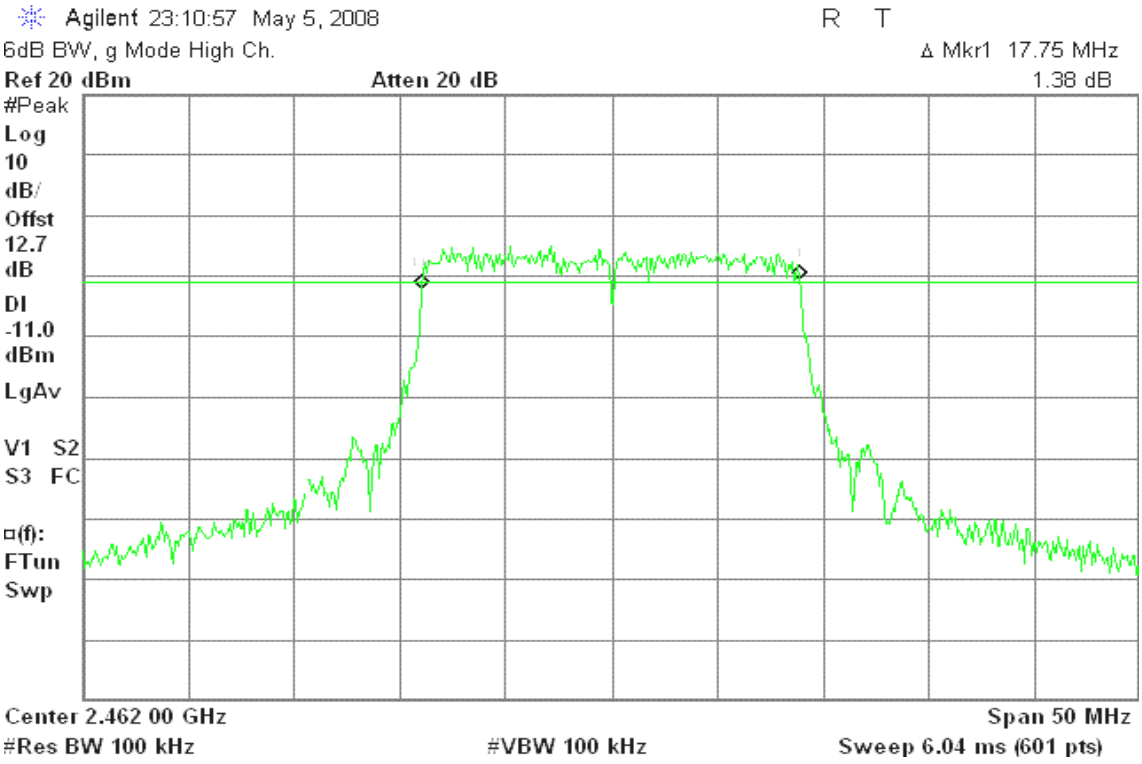
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

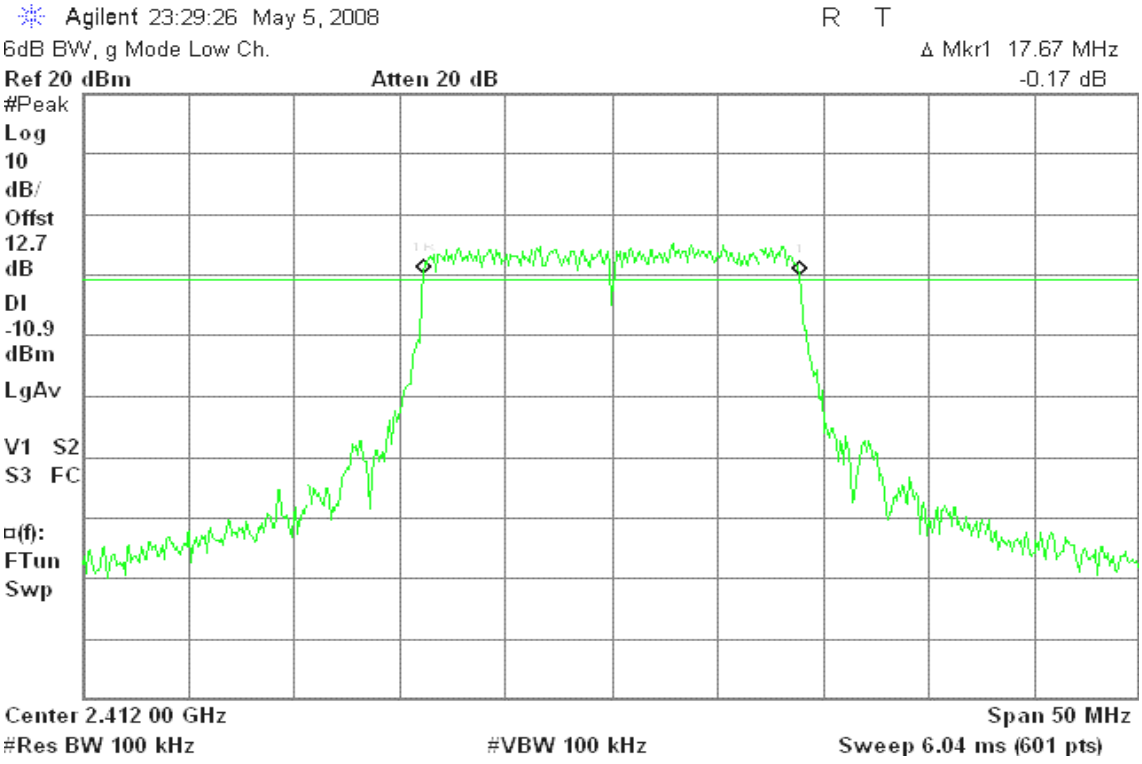


6dB Bandwidth (CH High)

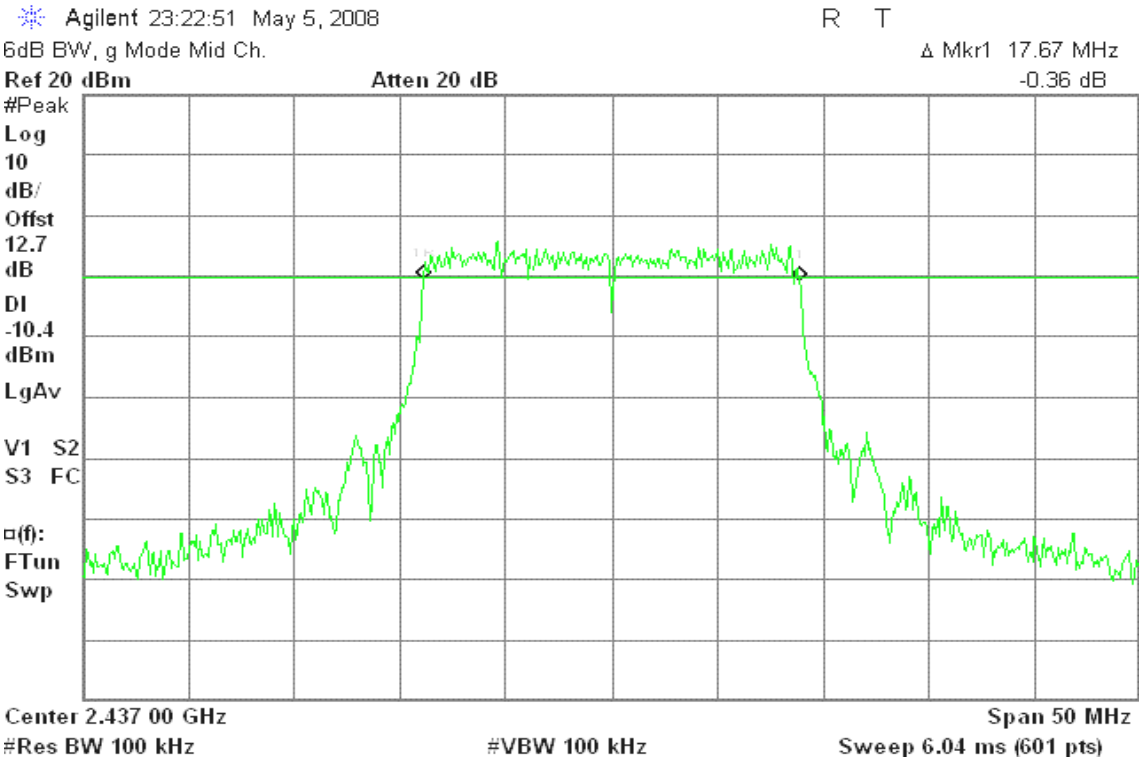


draft 802.11n Standard-20 MHz Channel mode / Chain 1

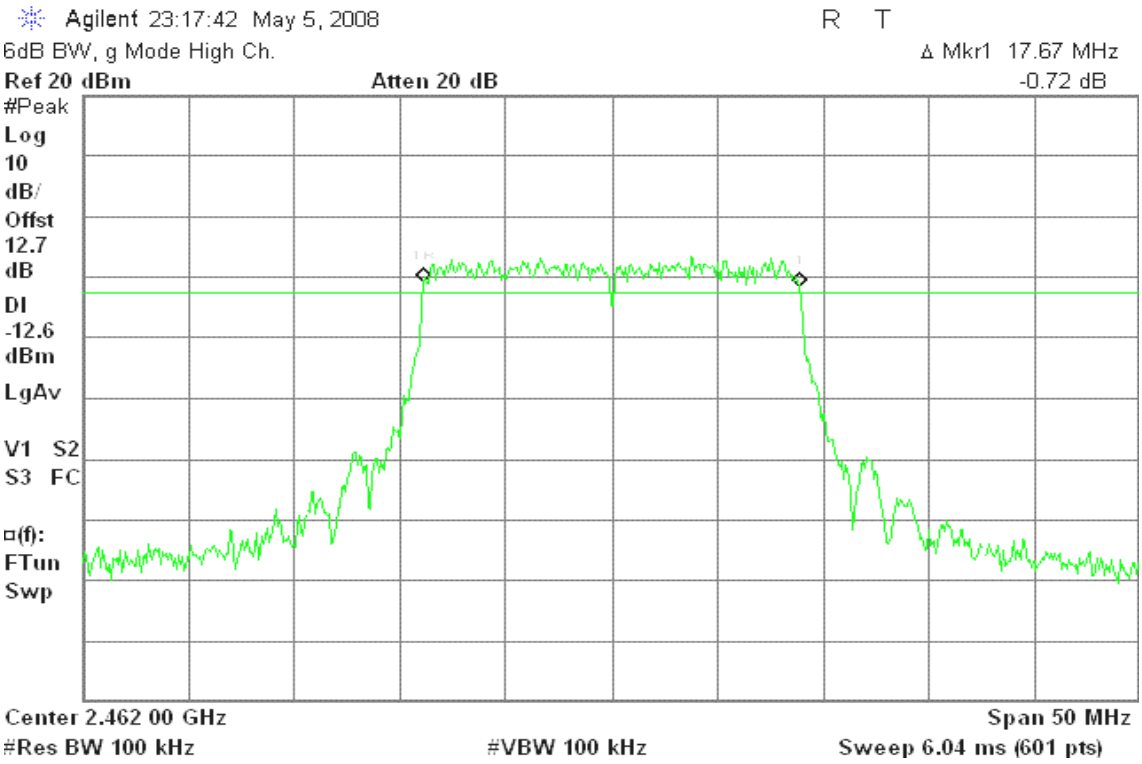
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

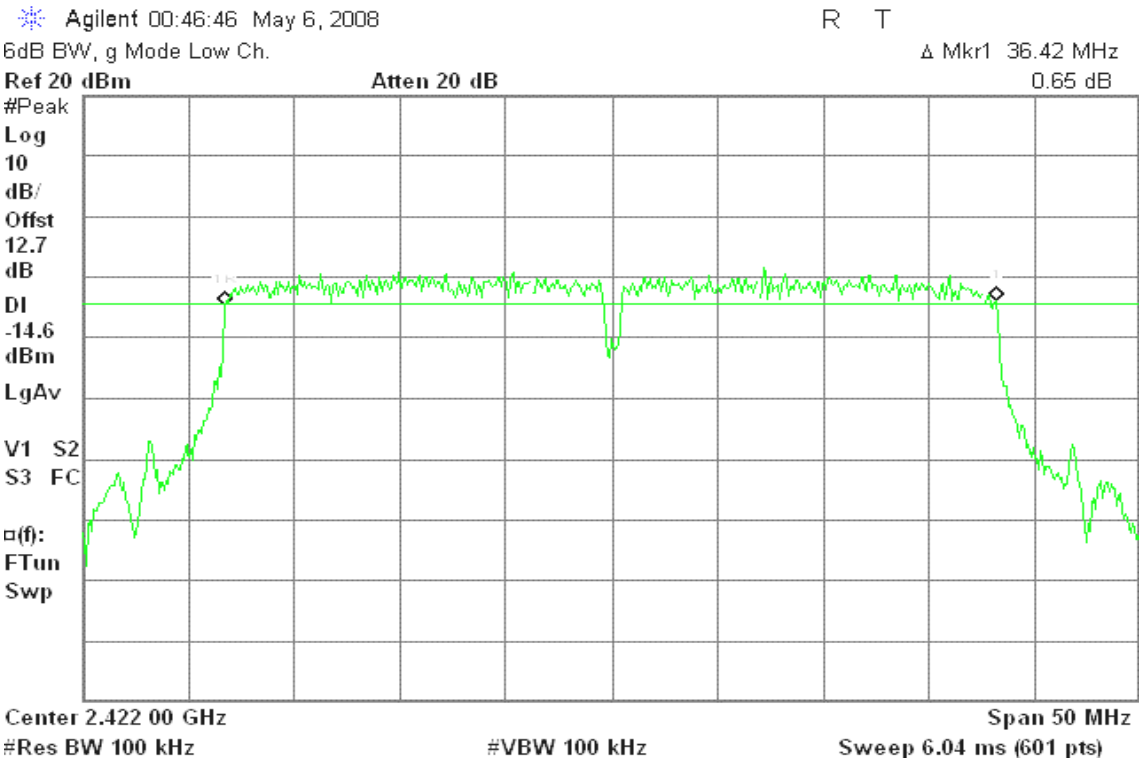


6dB Bandwidth (CH High)

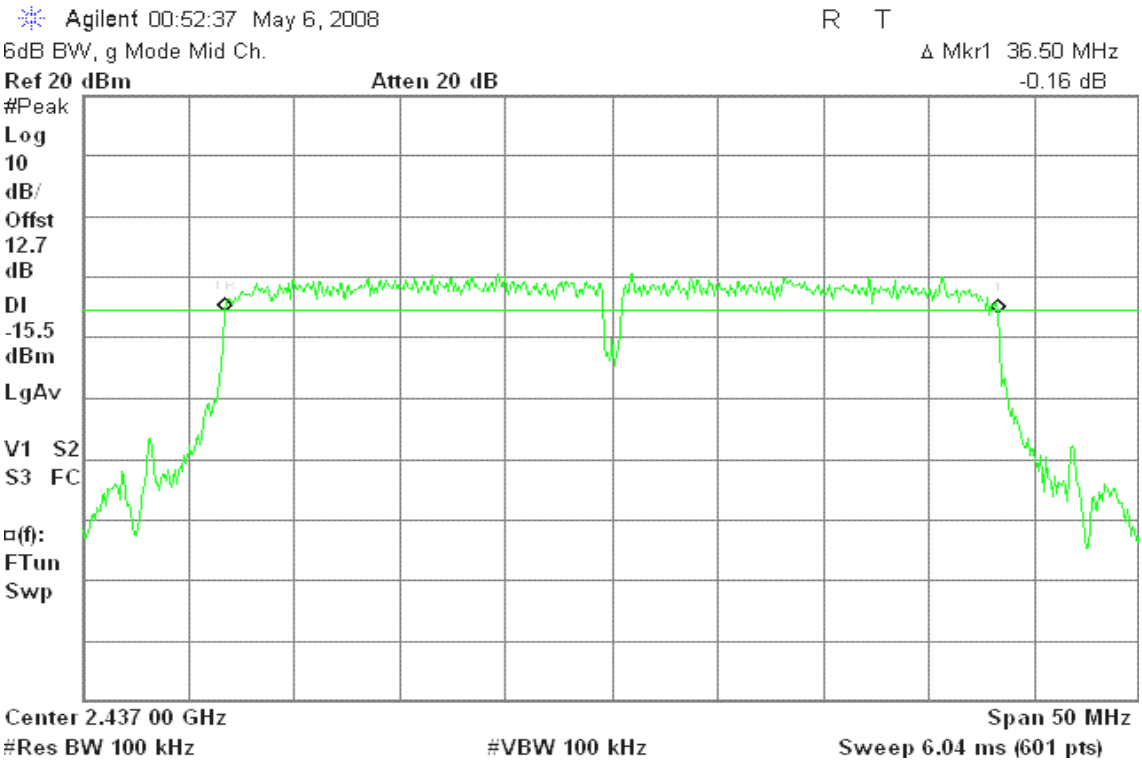


draft 802.11n Wide-40 MHz Channel mode / Chain 0

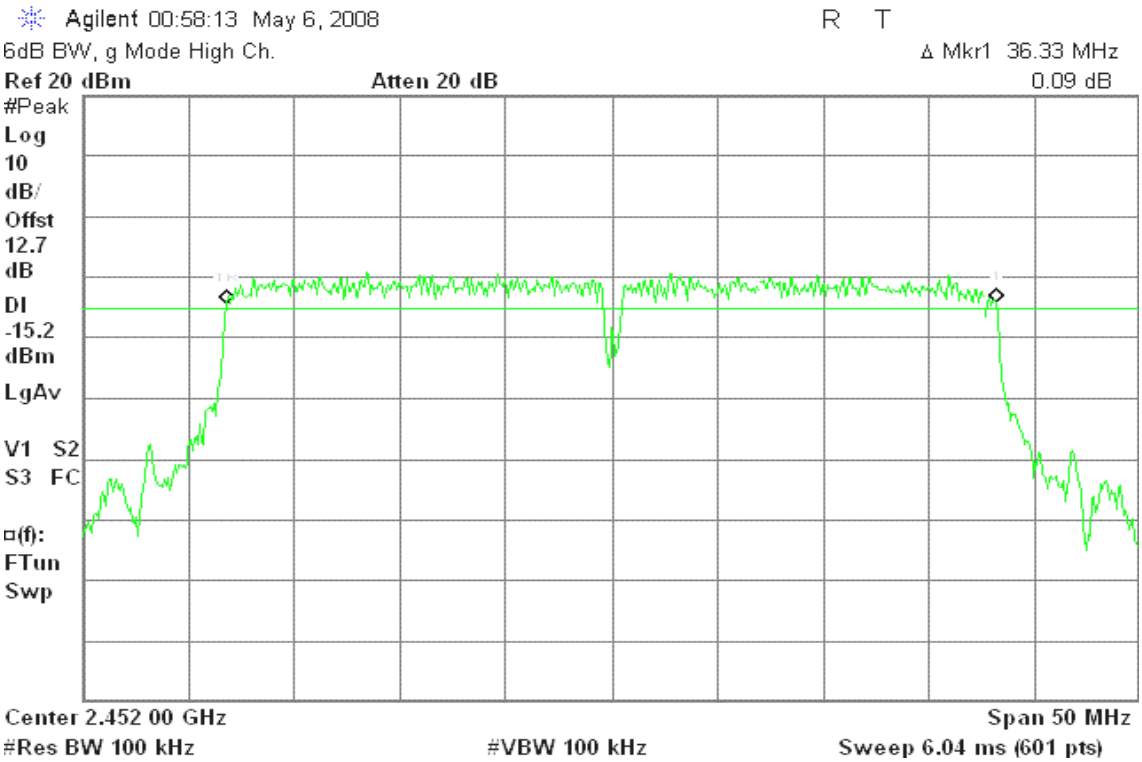
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)

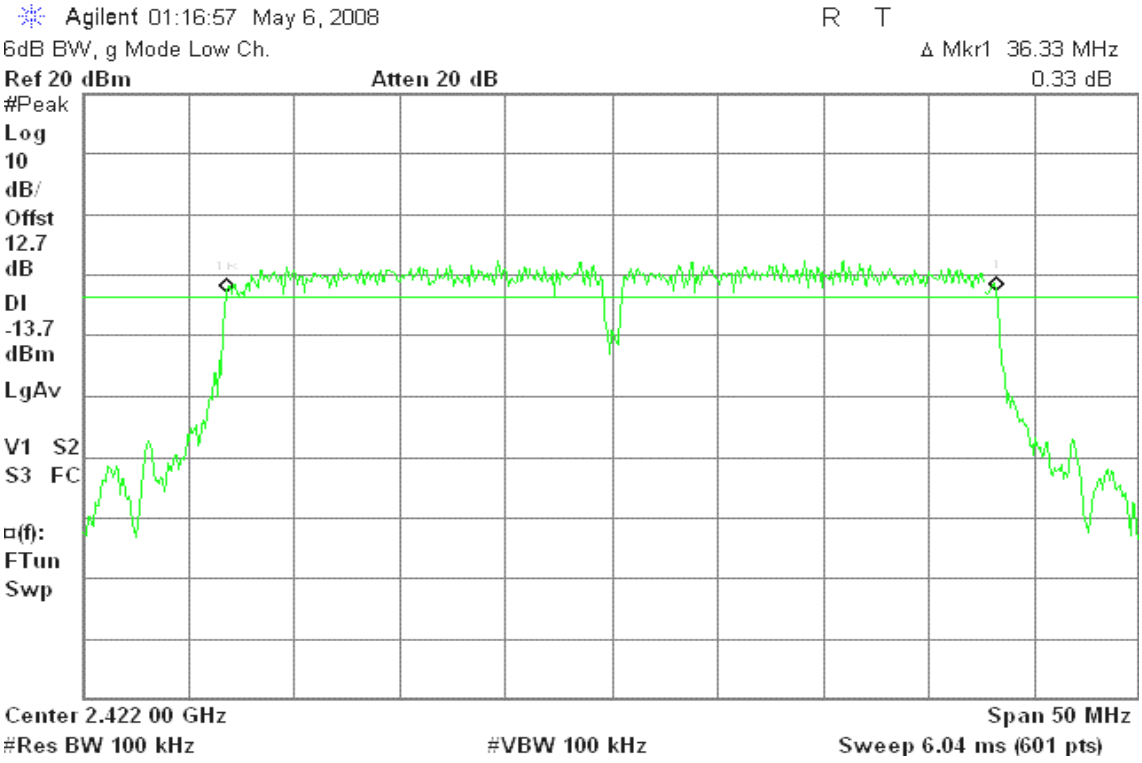


6dB Bandwidth (CH High)

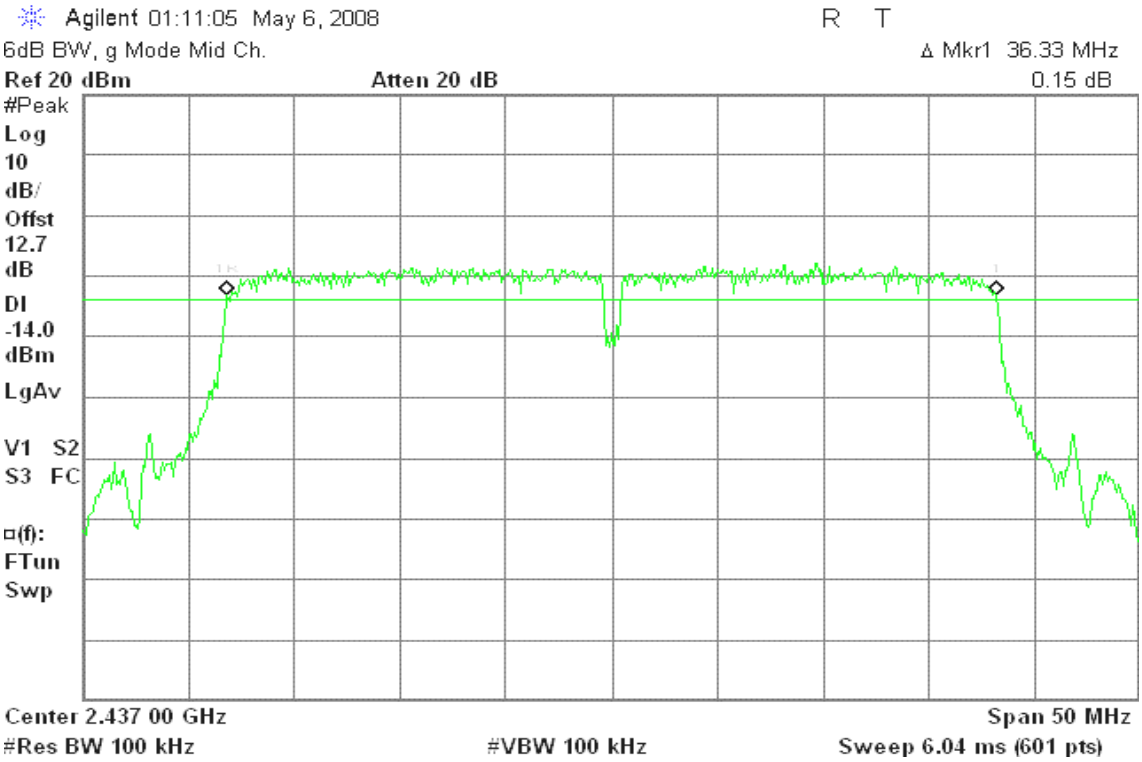


draft 802.11n Wide-40 MHz Channel mode / Chain 1

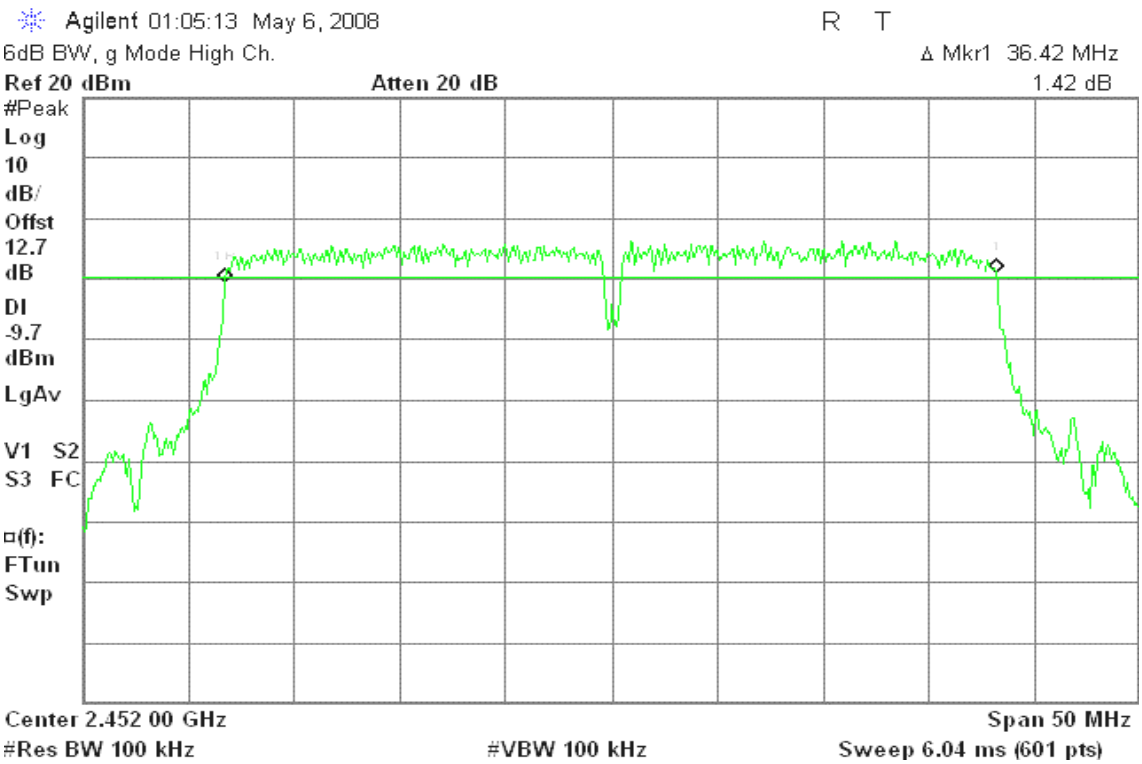
6dB Bandwidth (CH Low)



6dB Bandwidth (CH Mid)



6dB Bandwidth (CH High)



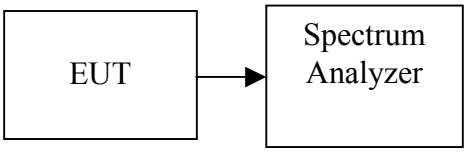
7.2 PEAK POWER

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. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 1 MHz, VBW >= 3 MHz. in “Channel Power ” measurement.
4. Record the max reading.
5. Repeat the above procedure until the measurements for all frequencies are completed.

TEST RESULTS

No non-compliance noted.

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	13.38	0.0218	1.00	PASS
Mid	2437	14.46	0.0279		PASS
High	2462	14.31	0.0270		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	16.65	0.0462	1.00	PASS
Mid	2437	17.86	0.0611		PASS
High	2462	17.57	0.0571		PASS

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

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	12.67	13.8	16.28	0.0425	1.00	PASS
Mid	2437	12.07	13.87	16.07	0.0405		PASS
High	2462	13.18	11.84	15.57	0.0361		PASS

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

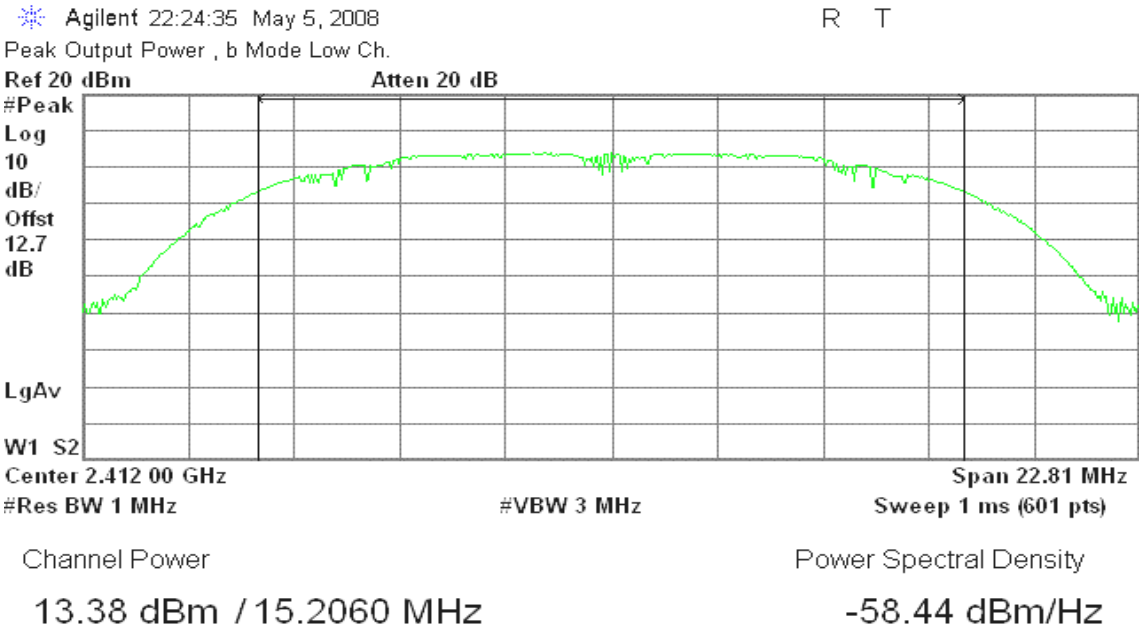
Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	12.11	13.53	15.89	0.0388	1.00	PASS
Mid	2437	11.86	13.12	15.55	0.0359		PASS
High	2452	11.76	17.71	18.69	0.0740		PASS

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

Test Plot

IEEE 802.11b mode

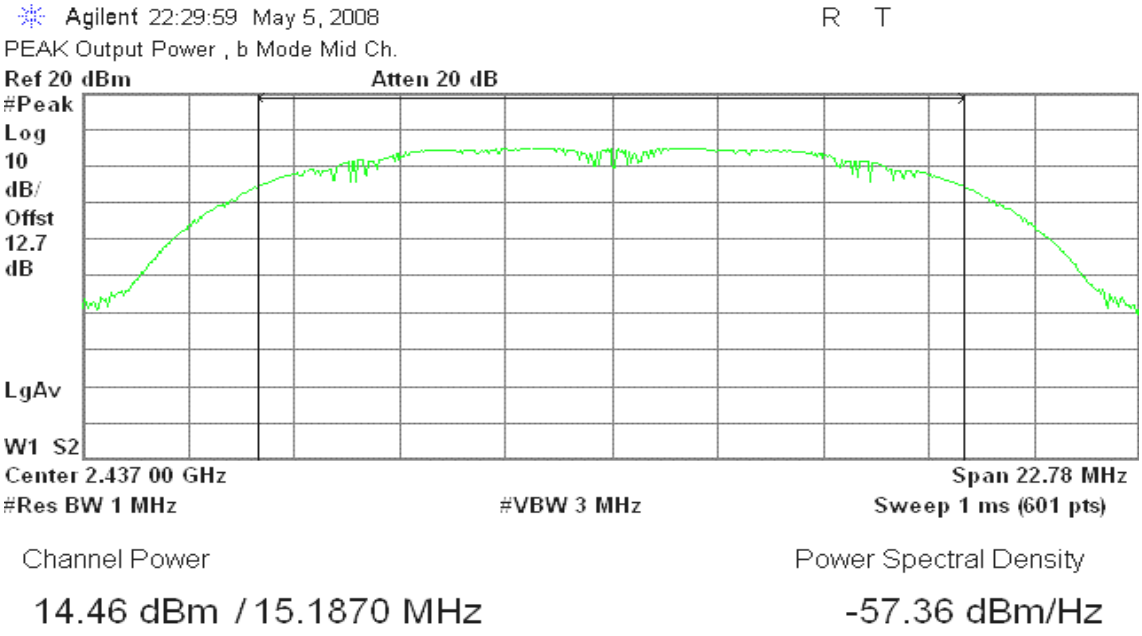
Peak Power (CH Low)



Channel Power
13.38 dBm / 15.2060 MHz

Power Spectral Density
-58.44 dBm/Hz

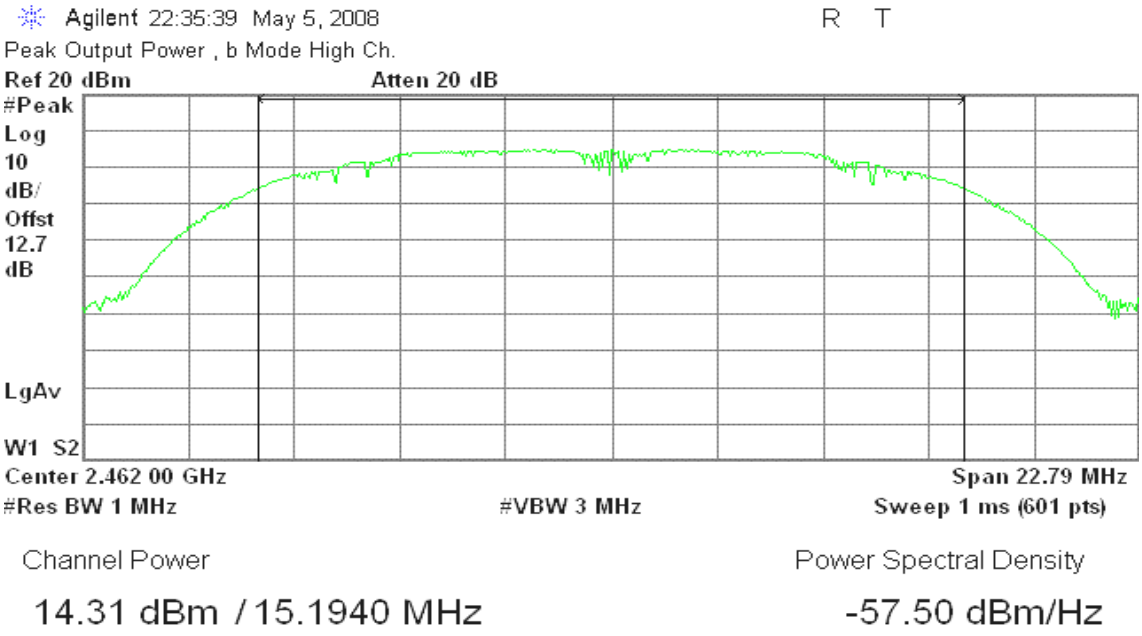
Peak Power (CH Mid)



Channel Power
14.46 dBm / 15.1870 MHz

Power Spectral Density
-57.36 dBm/Hz

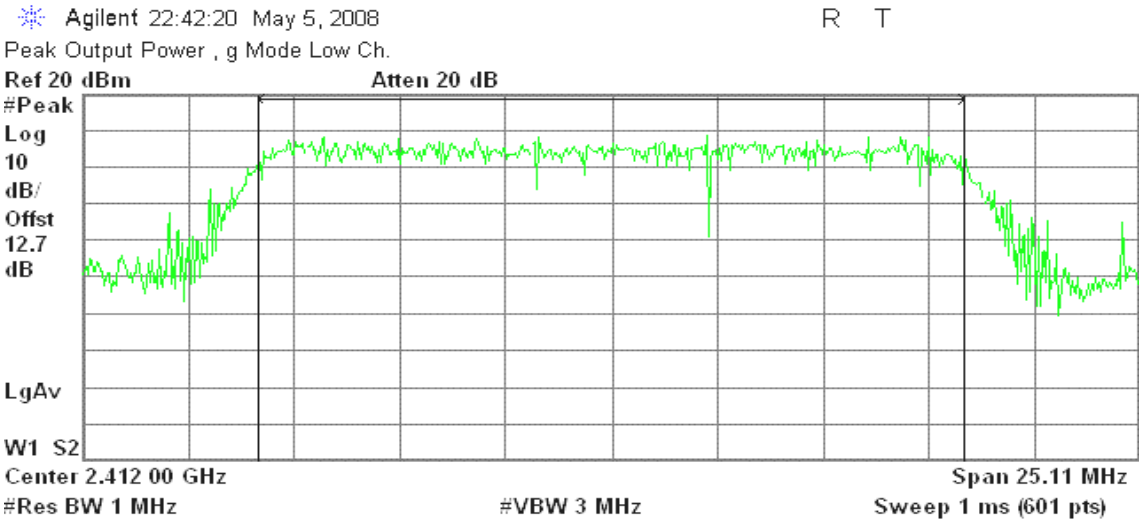
Peak Power (CH High)



Channel Power	Power Spectral Density
14.31 dBm / 15.1940 MHz	-57.50 dBm/Hz

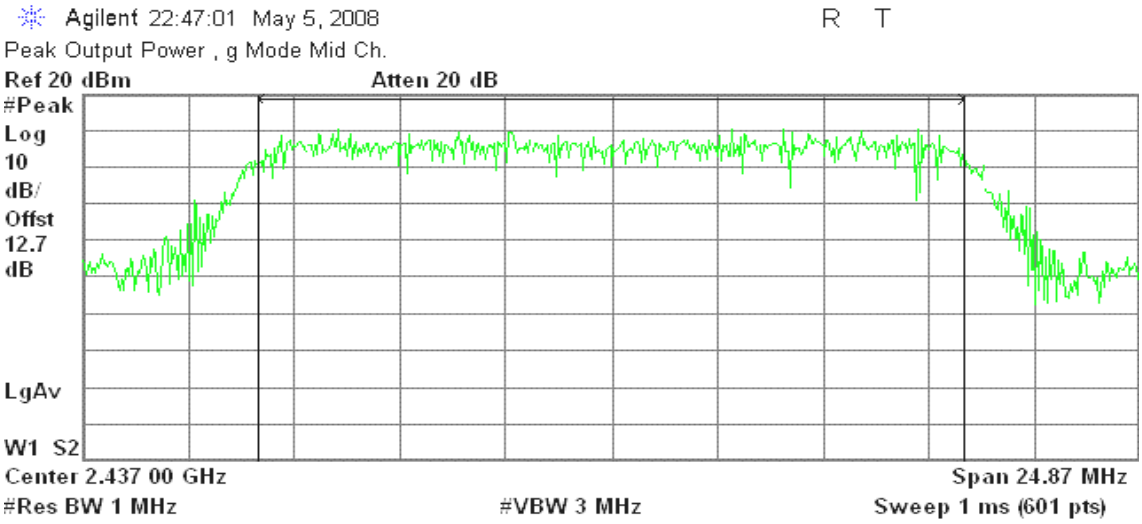
IEEE 802.11g mode

Peak Power (CH Low)



Channel Power	Power Spectral Density
16.65 dBm / 16.7430 MHz	-55.59 dBm/Hz

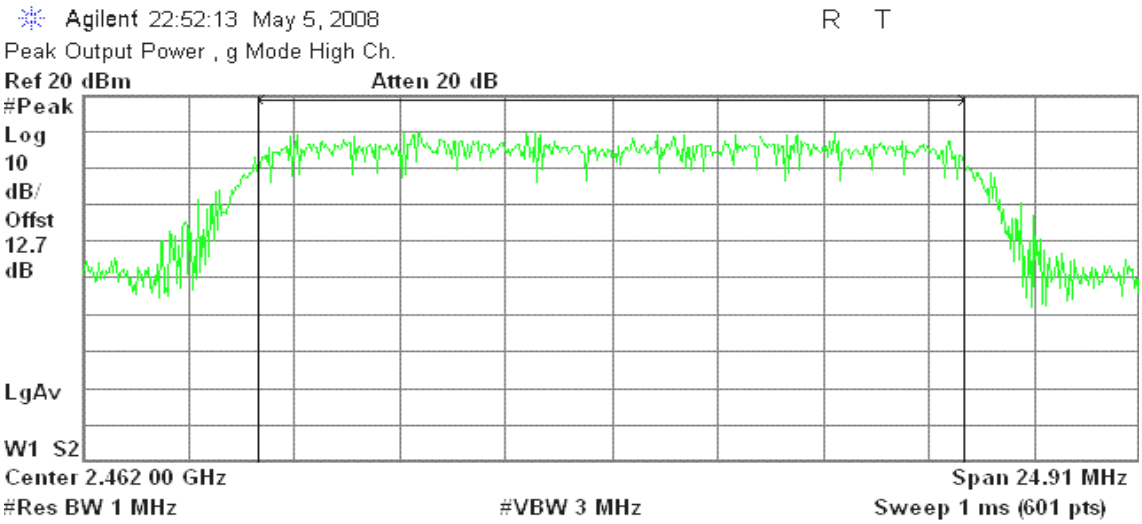
Peak Power (CH Mid)



Channel Power
17.86 dBm / 16.5790 MHz

Power Spectral Density
-54.33 dBm/Hz

Peak Power (CH High)

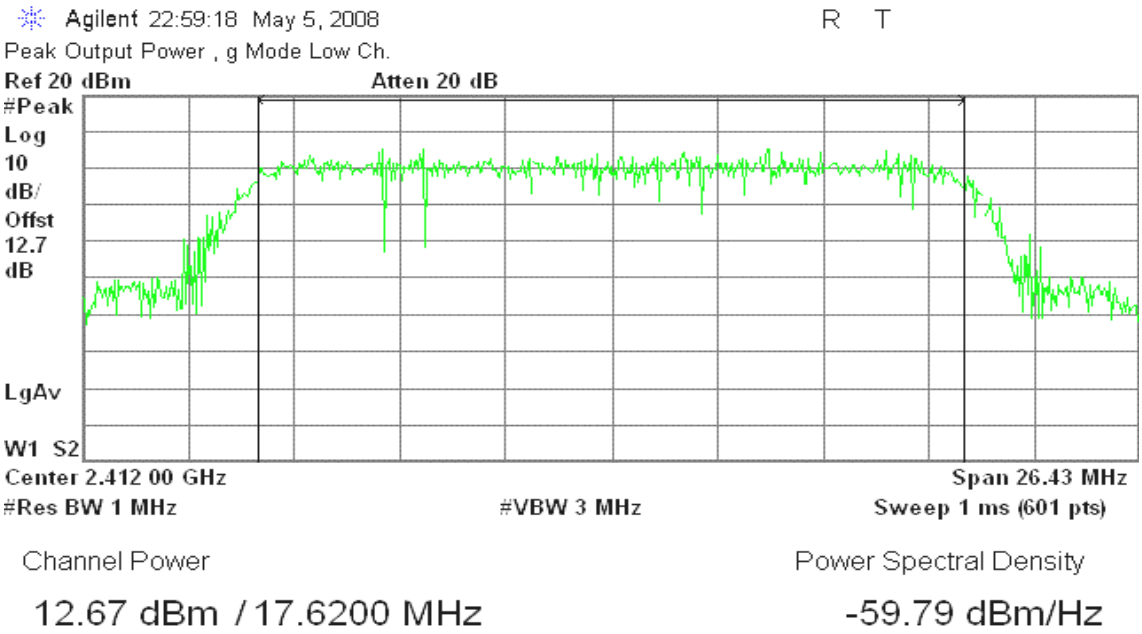


Channel Power
17.57 dBm / 16.6050 MHz

Power Spectral Density
-54.63 dBm/Hz

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

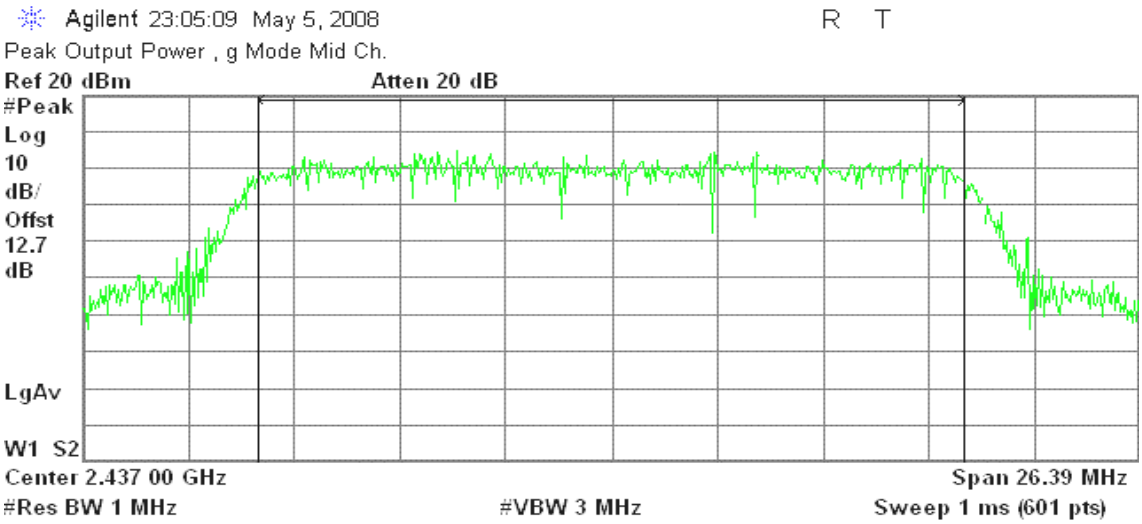
Peak Power (CH Low)



Channel Power
12.67 dBm / 17.6200 MHz

Power Spectral Density
-59.79 dBm/Hz

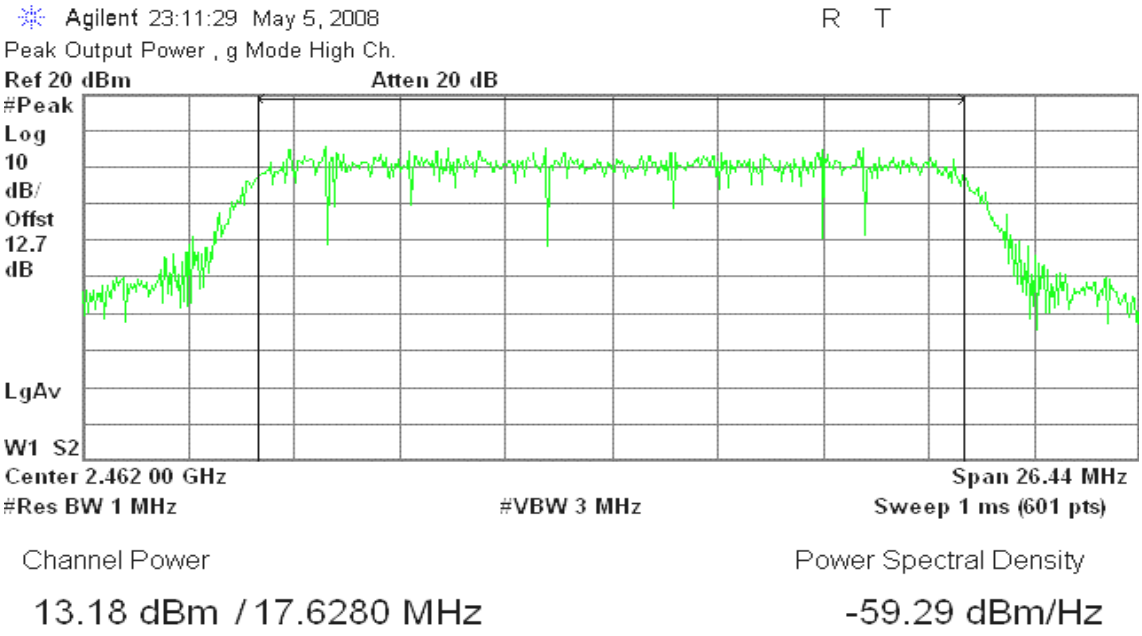
Peak Power (CH Mid)



Channel Power
12.07 dBm / 17.5940 MHz

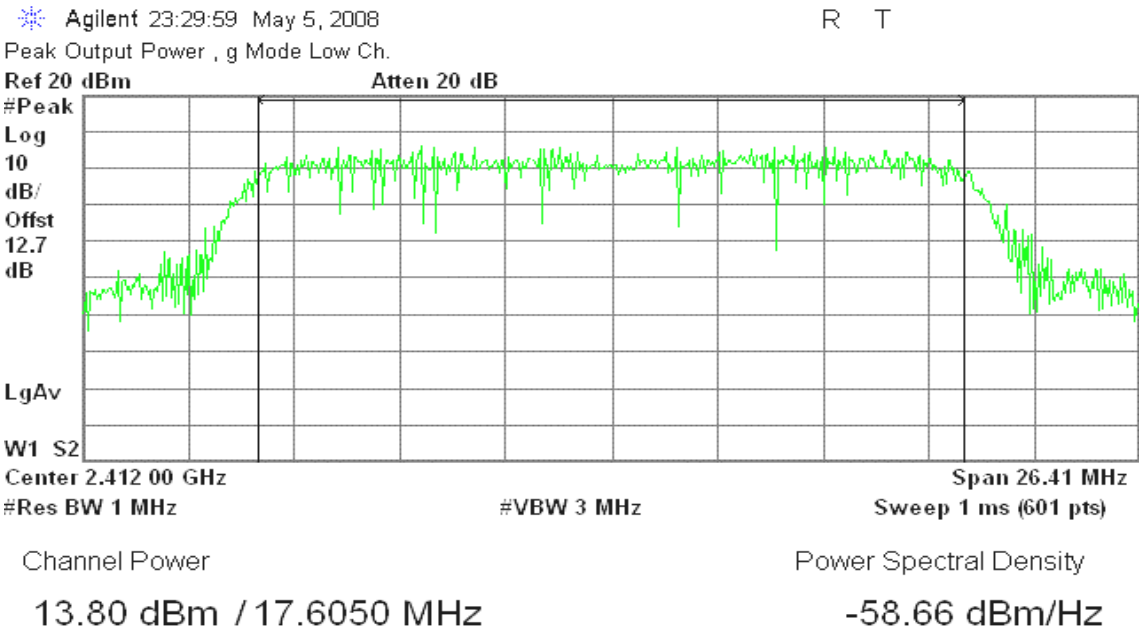
Power Spectral Density
-60.39 dBm/Hz

Peak Power (CH High)

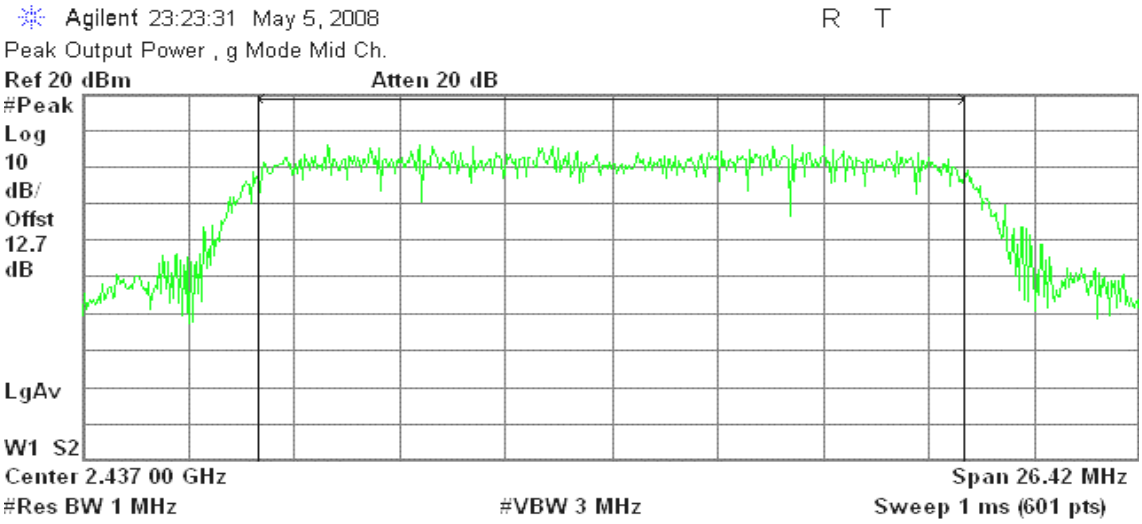


draft 802.11n Standard-20 MHz Channel mode / Chain 1

Peak Power (CH Low)



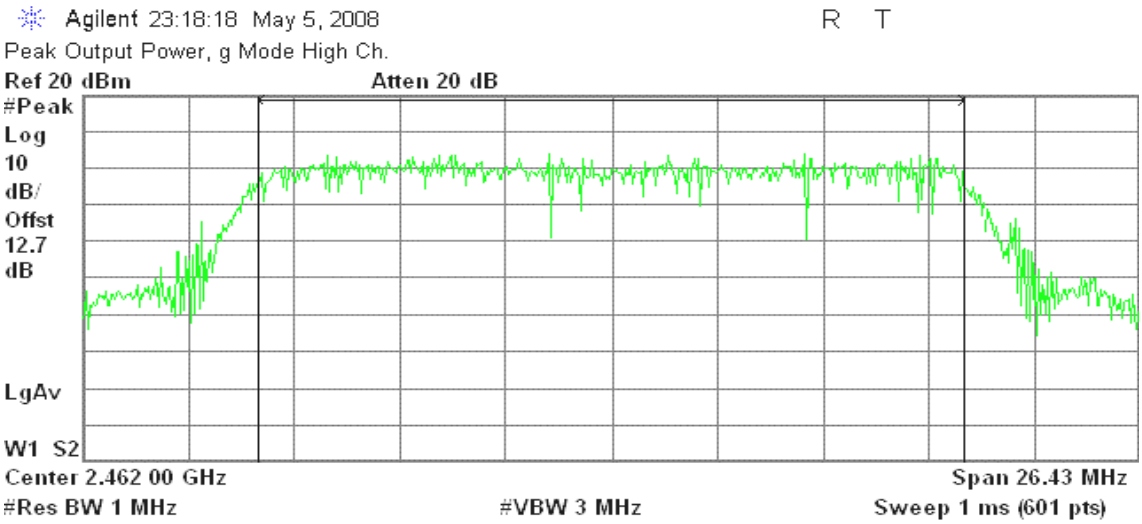
Peak Power (CH Mid)



Channel Power
13.87 dBm / 17.6120 MHz

Power Spectral Density
-58.59 dBm/Hz

Peak Power (CH High)

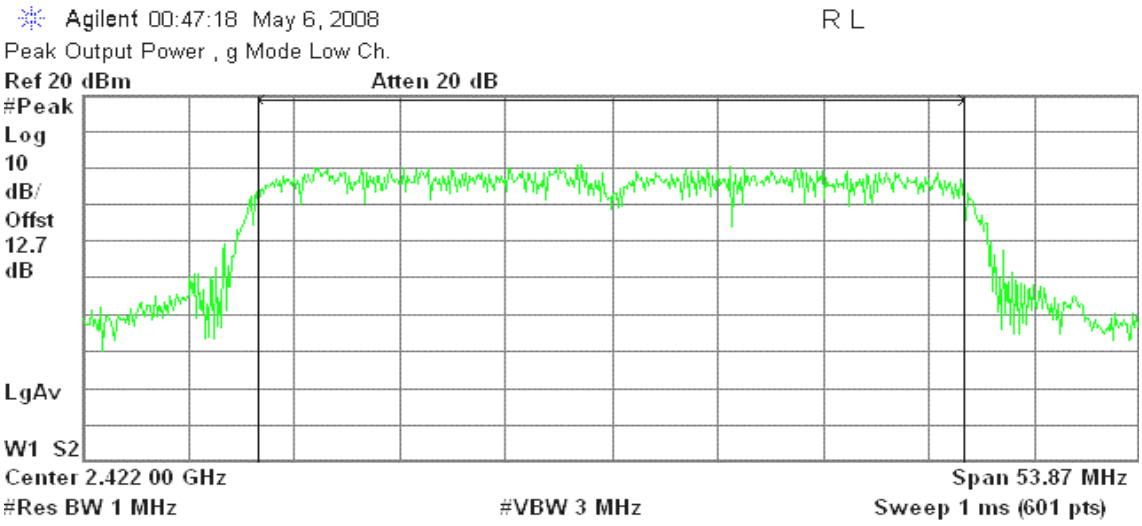


Channel Power
11.84 dBm / 17.6180 MHz

Power Spectral Density
-60.62 dBm/Hz

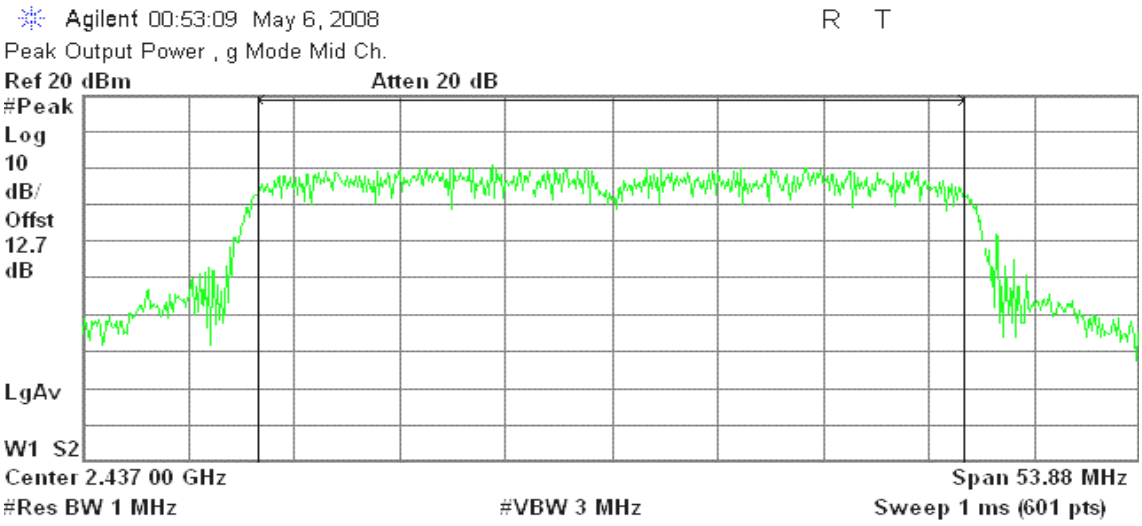
draft 802.11n Wide-40 MHz Channel mode / Chain 0

Peak Power (CH Low)



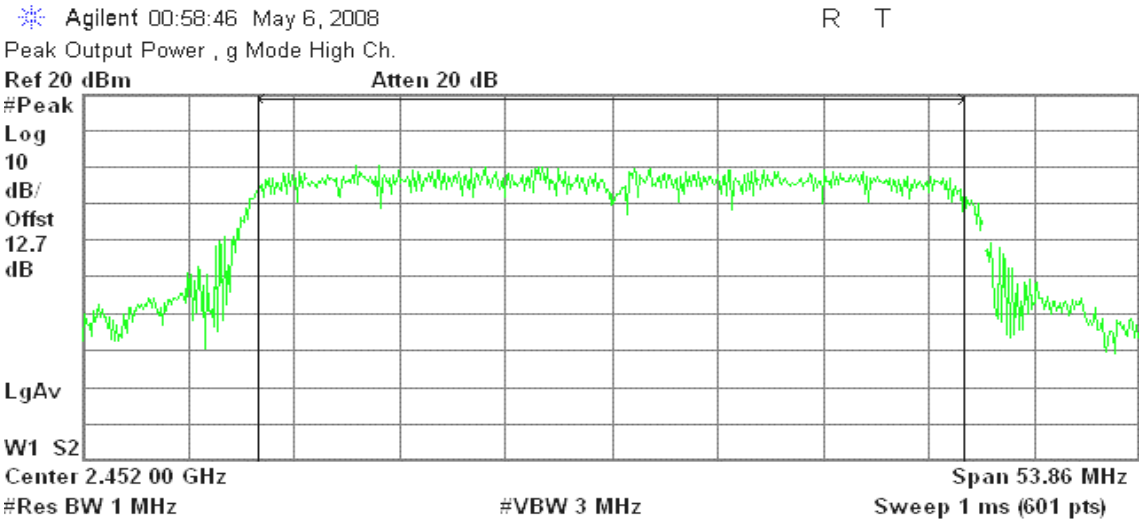
Channel Power	Power Spectral Density
12.11 dBm / 35.9120 MHz	-63.44 dBm/Hz

Peak Power (CH Mid)



Channel Power	Power Spectral Density
11.86 dBm / 35.9180 MHz	-63.69 dBm/Hz

Peak Power (CH High)

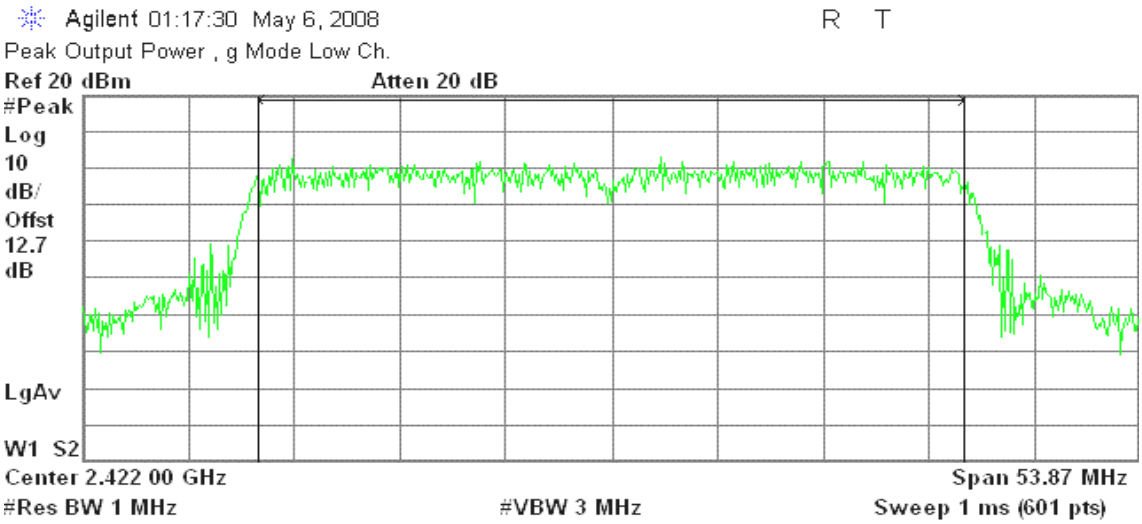


Channel Power
11.76 dBm / 35.9090 MHz

Power Spectral Density
-63.79 dBm/Hz

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

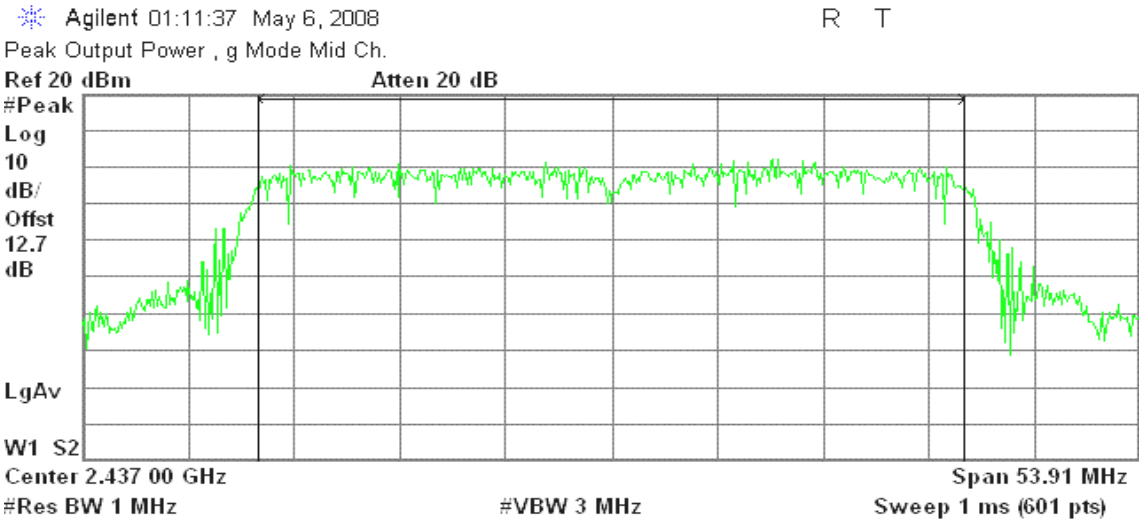
Peak Power (CH Low)



Channel Power
13.53 dBm / 35.9130 MHz

Power Spectral Density
-62.03 dBm/Hz

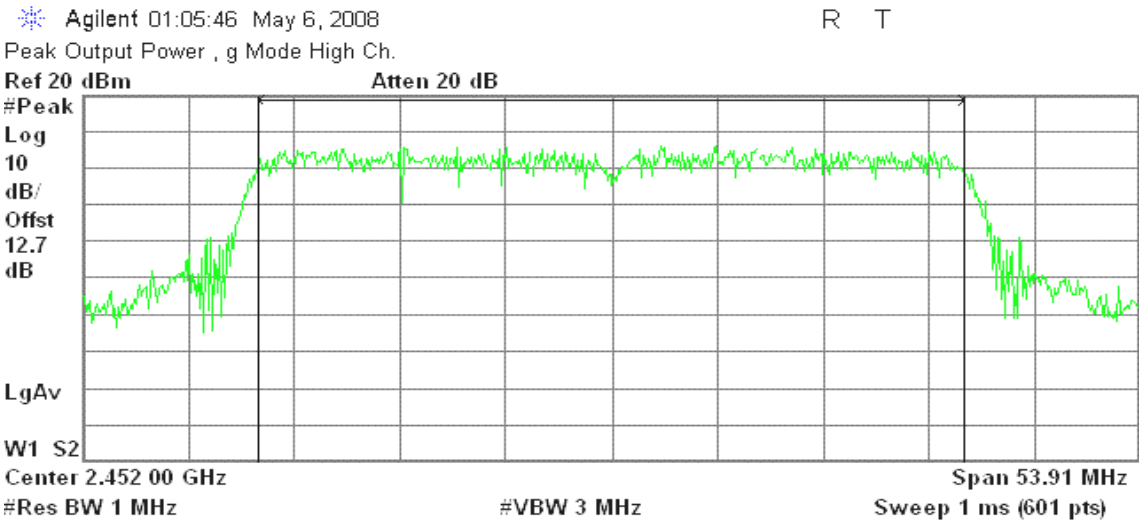
Peak Power (CH Mid)



Channel Power
13.12 dBm / 35.9380 MHz

Power Spectral Density
-62.44 dBm/Hz

Peak Power (CH High)



Channel Power
17.71 dBm / 35.9410 MHz

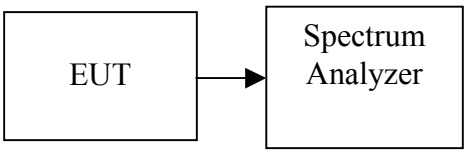
Power Spectral Density
-57.84 dBm/Hz

7.3 AVERAGE POWER

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

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

TEST RESULTS

No non-compliance noted.

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	10.84	0.0121	1.00	PASS
Mid	2437	11.93	0.0156		PASS
High	2462	11.73	0.0149		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	13.47	0.0222	1.00	PASS
Mid	2437	14.39	0.0275		PASS
High	2462	14.12	0.0258		PASS

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

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	9.16	10.29	12.77	0.0189	1.00	PASS
Mid	2437	9.22	10.42	12.87	0.0194		PASS
High	2462	9.73	8.43	12.14	0.0164		PASS

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

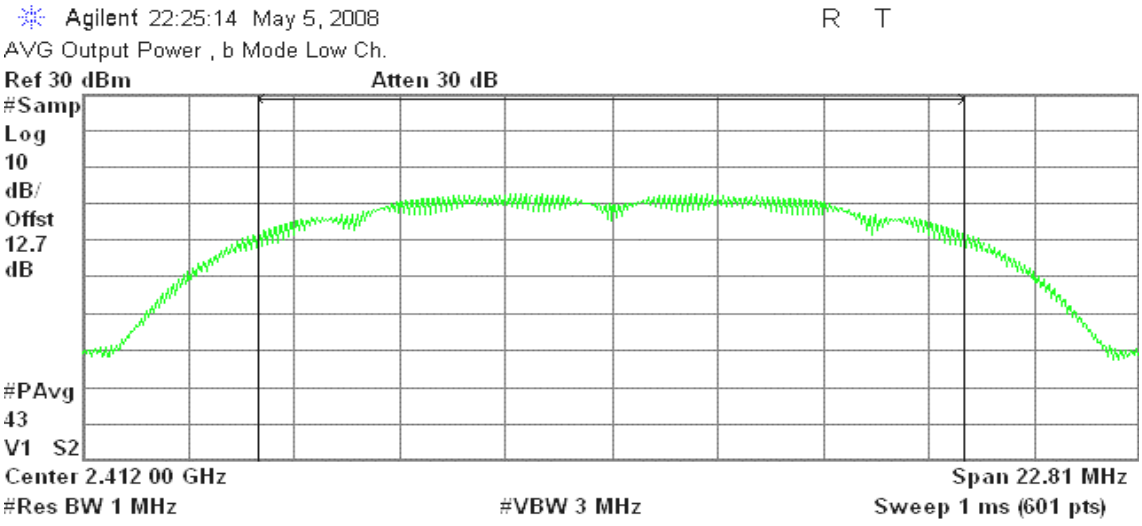
Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	8.7	9.69	12.23	0.0167	1.00	PASS
Mid	2437	8.3	9.71	12.07	0.0161		PASS
High	2452	8.27	14.33	15.29	0.0338		PASS

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

Test Plot

IEEE 802.11b mode

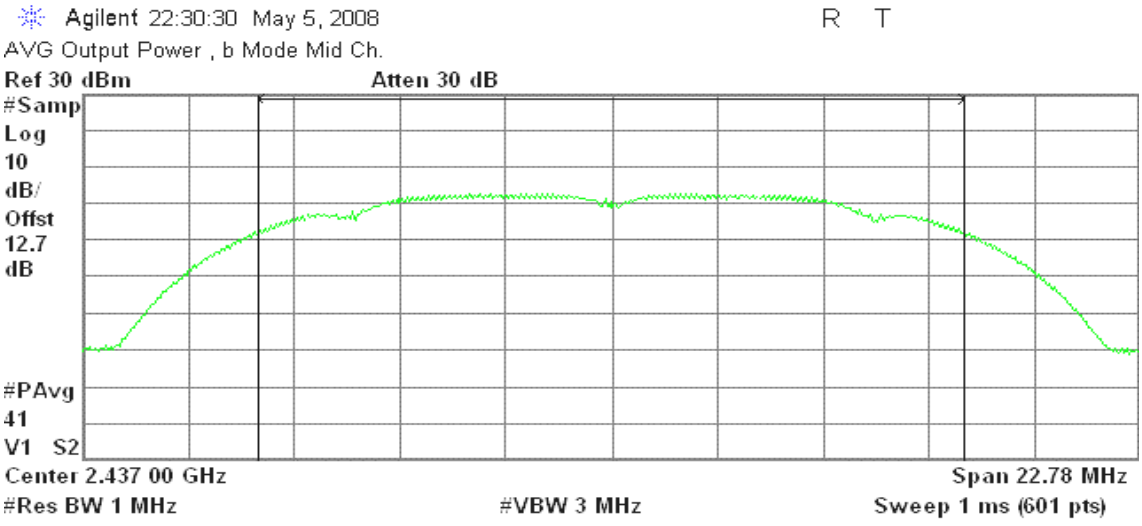
Average Power (CH Low)



Channel Power
10.84 dBm / 15.2060 MHz

Power Spectral Density
-60.98 dBm/Hz

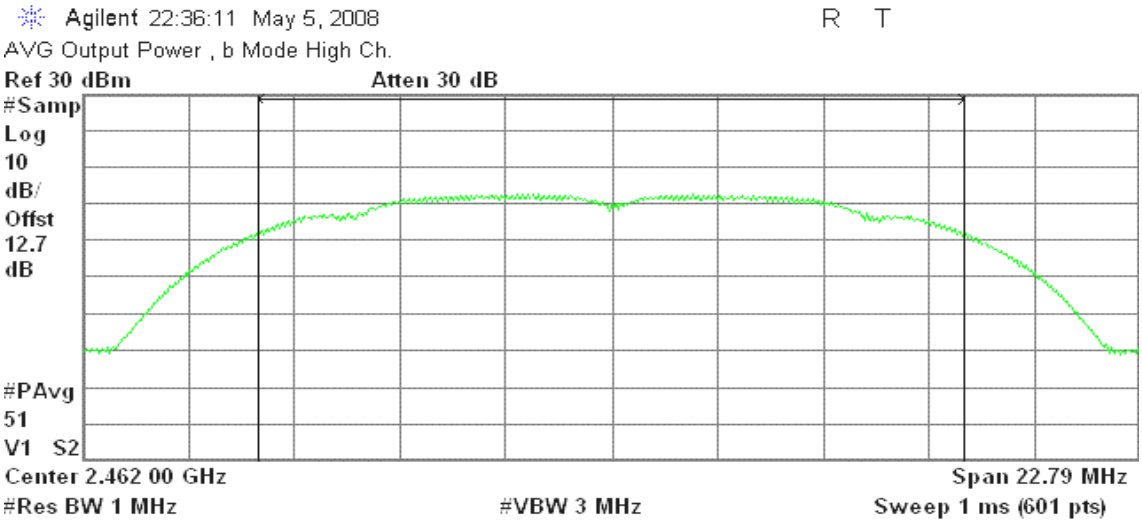
Average Power (CH Mid)



Channel Power
11.93 dBm / 15.1870 MHz

Power Spectral Density
-59.89 dBm/Hz

Average Power (CH High)

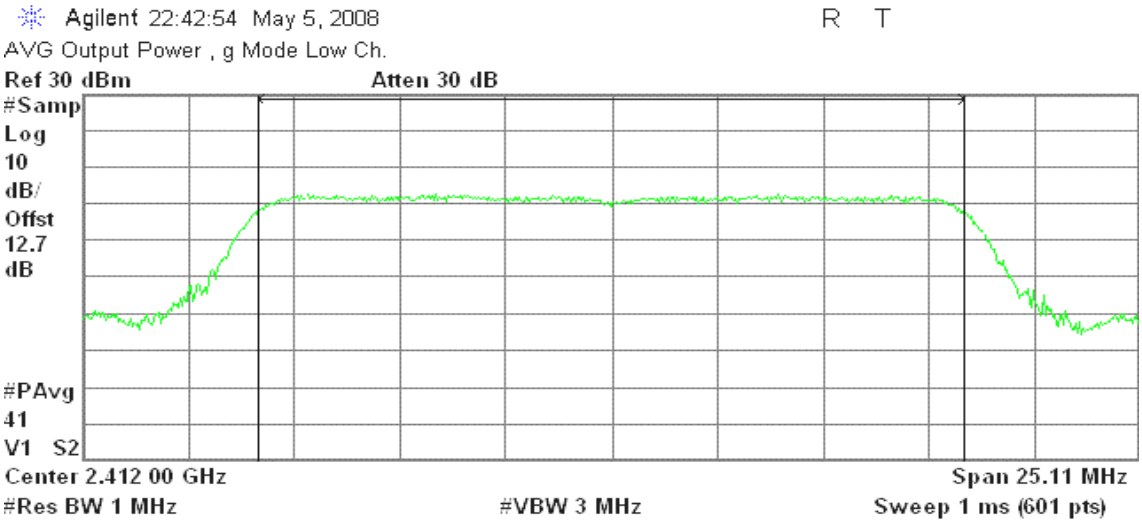


Channel Power
11.73 dBm / 15.1940 MHz

Power Spectral Density
-60.09 dBm/Hz

IEEE 802.11g mode

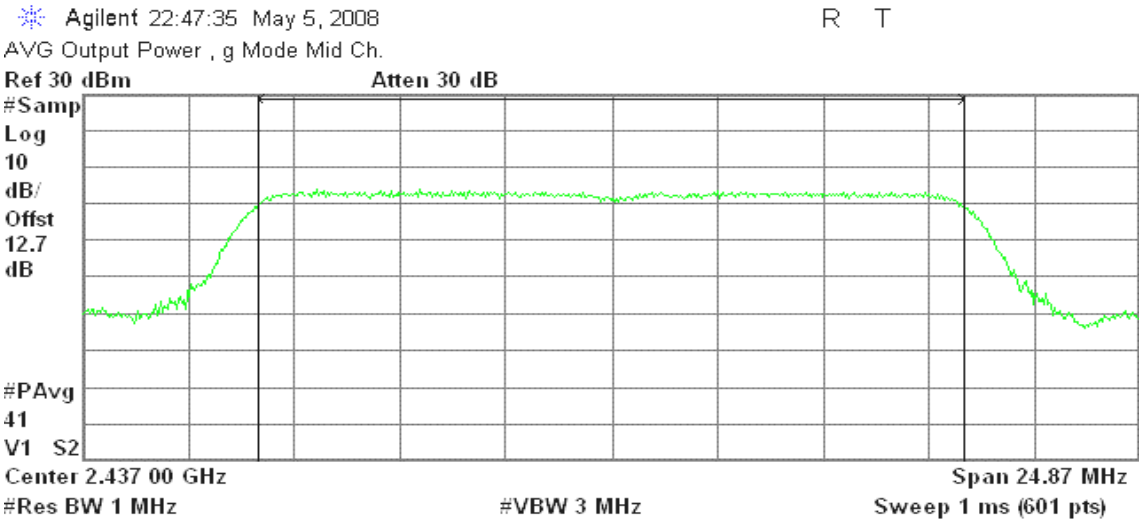
Average Power (CH Low)



Channel Power
13.47 dBm / 16.7430 MHz

Power Spectral Density
-58.77 dBm/Hz

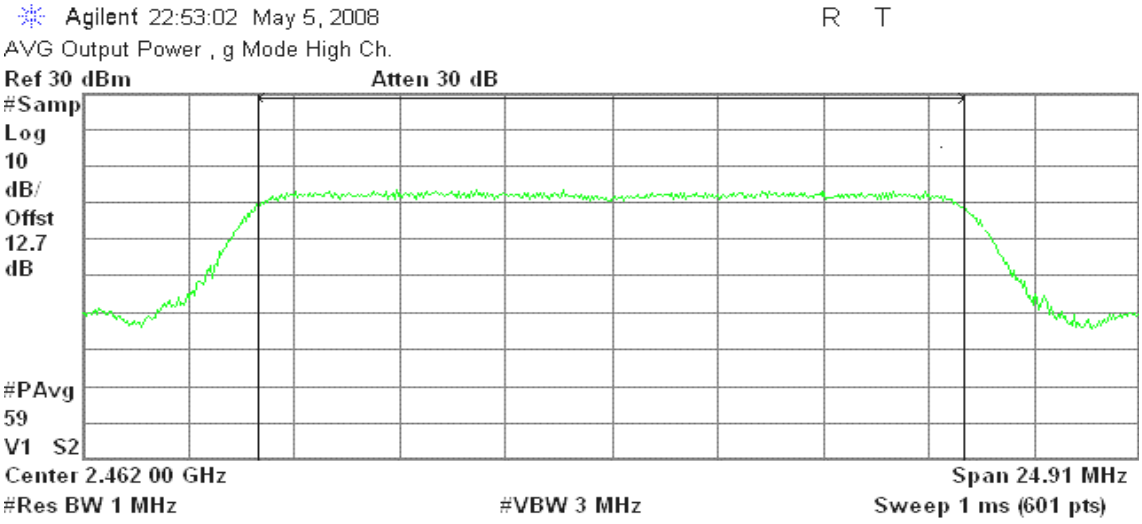
Average Power (CH Mid)



Channel Power
14.39 dBm / 16.5790 MHz

Power Spectral Density
-57.80 dBm/Hz

Average Power (CH High)

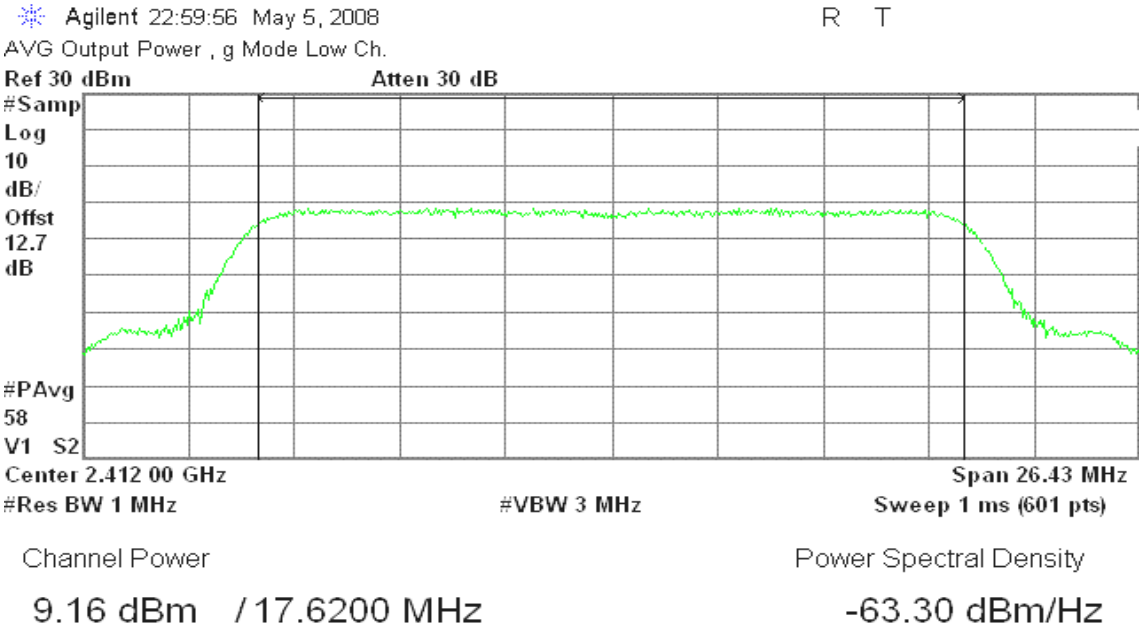


Channel Power
14.12 dBm / 16.6050 MHz

Power Spectral Density
-58.08 dBm/Hz

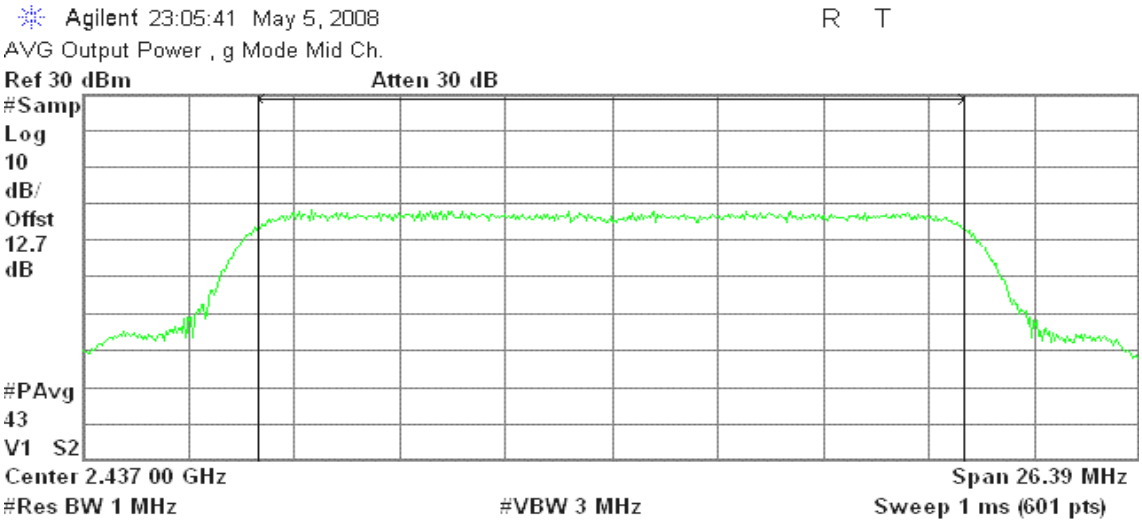
draft 802.11n Standard-20 MHz Channel mode / Chain 0

Average Power (CH Low)



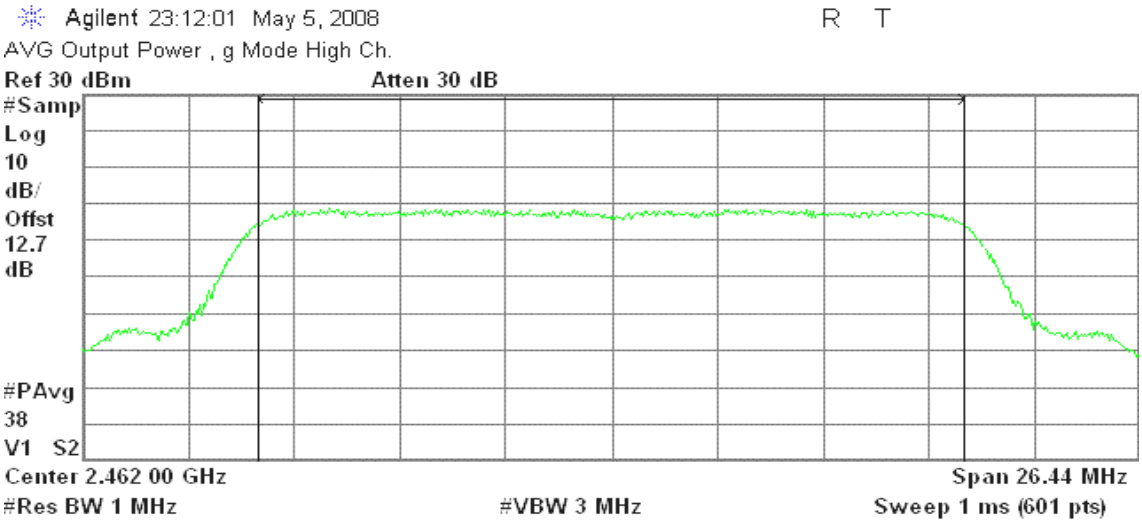
Channel Power	Power Spectral Density
9.16 dBm / 17.6200 MHz	-63.30 dBm/Hz

Average Power (CH Mid)



Channel Power	Power Spectral Density
9.22 dBm / 17.5940 MHz	-63.24 dBm/Hz

Average Power (CH High)

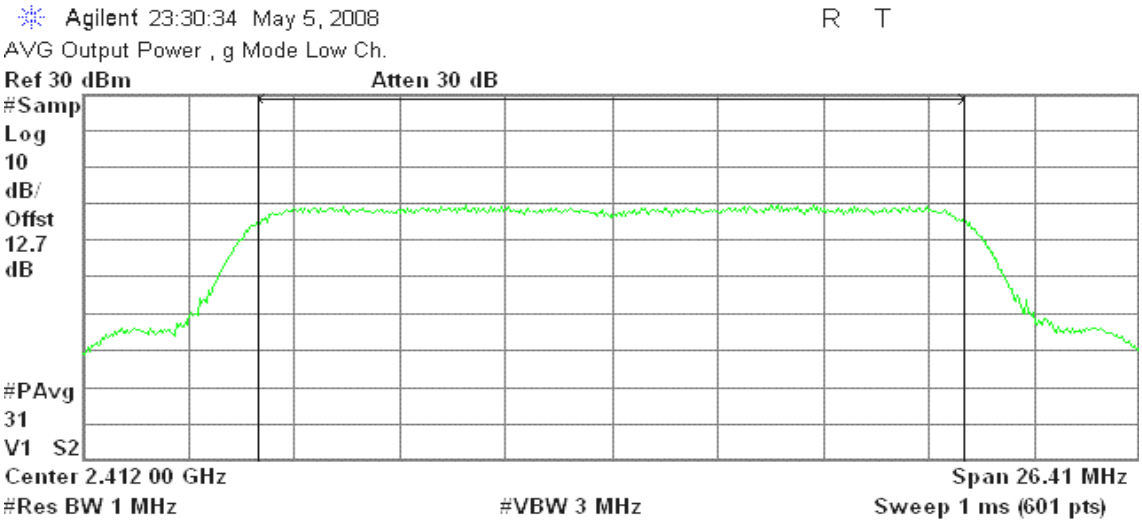


Channel Power
9.73 dBm / 17.6280 MHz

Power Spectral Density
-62.73 dBm/Hz

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

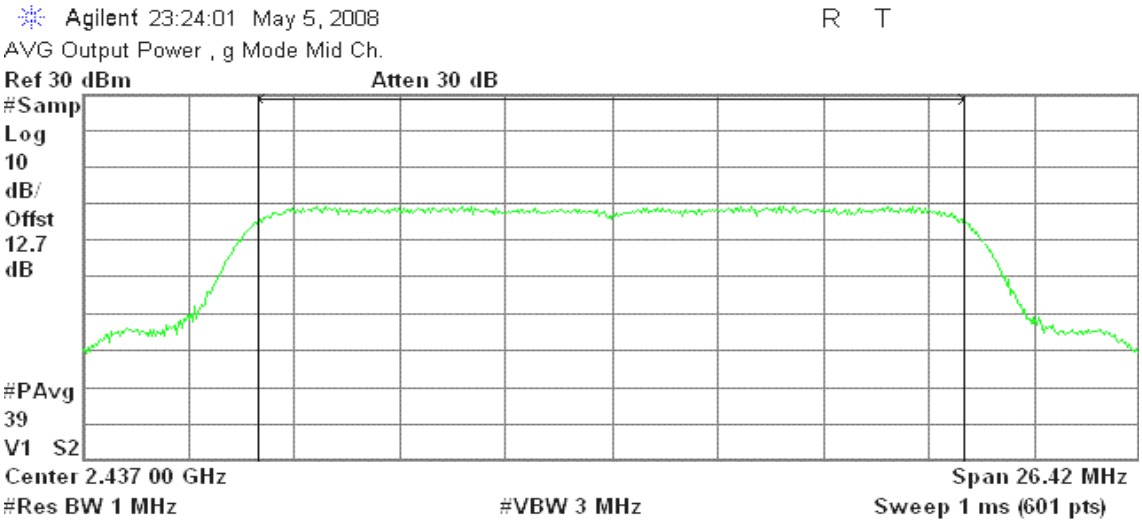
Average Power (CH Low)



Channel Power
10.29 dBm / 17.6050 MHz

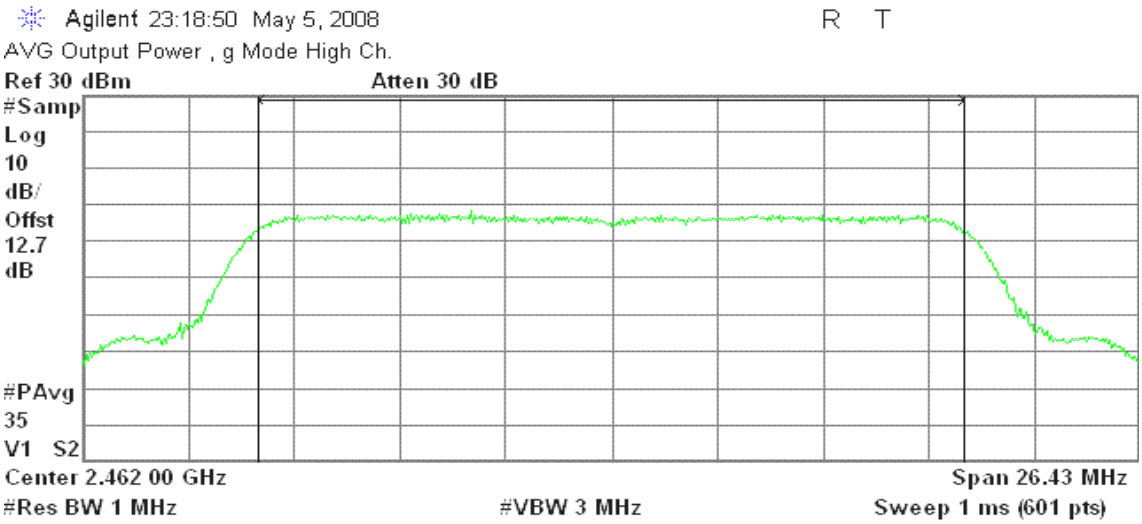
Power Spectral Density
-62.17 dBm/Hz

Average Power (CH Mid)



Channel Power	Power Spectral Density
10.42 dBm / 17.6120 MHz	-62.04 dBm/Hz

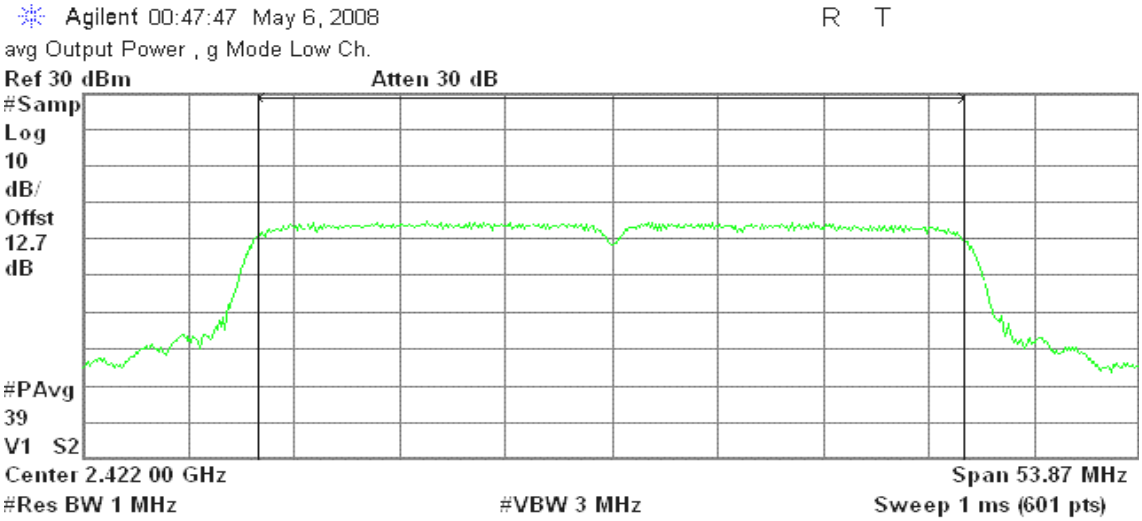
Average Power (CH High)



Channel Power	Power Spectral Density
8.43 dBm / 17.6180 MHz	-64.03 dBm/Hz

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

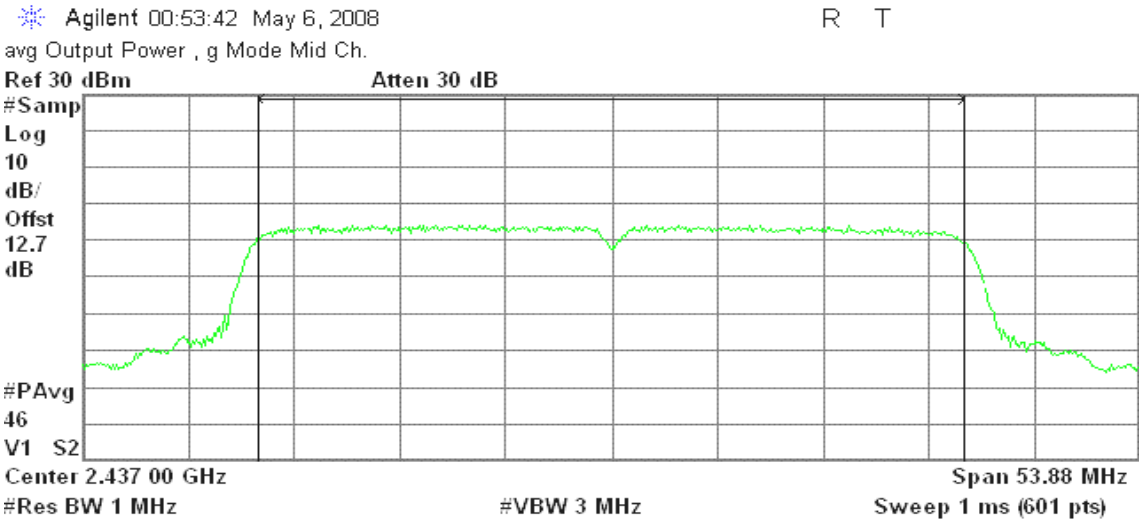
Average Power (CH Low)



Channel Power
8.70 dBm / 35.9120 MHz

Power Spectral Density
-66.86 dBm/Hz

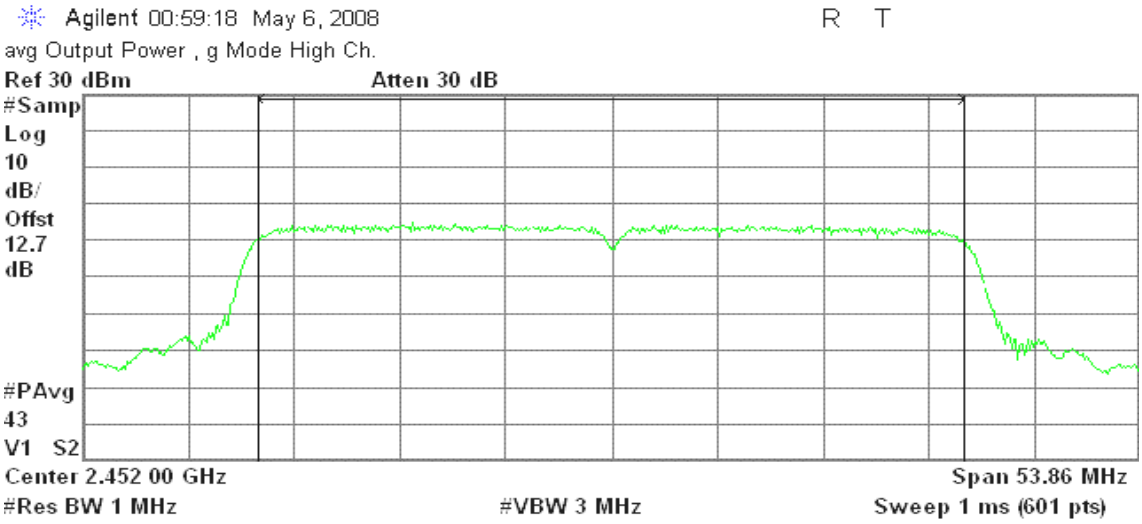
Average Power (CH Mid)



Channel Power
8.30 dBm / 35.9180 MHz

Power Spectral Density
-67.25 dBm/Hz

Average Power (CH High)

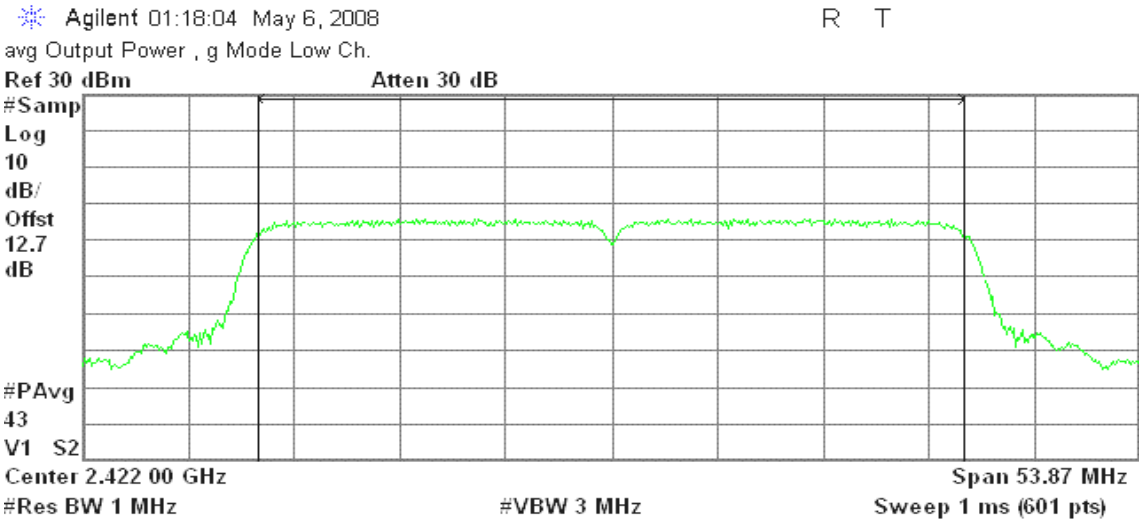


Channel Power
8.27 dBm / 35.9090 MHz

Power Spectral Density
-67.28 dBm/Hz

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

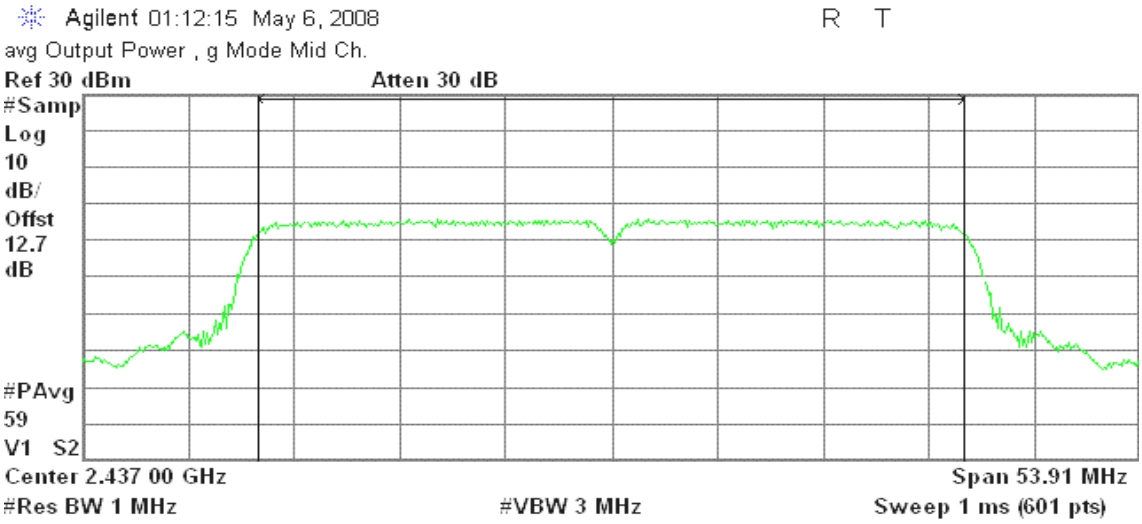
Average Power (CH Low)



Channel Power
9.69 dBm / 35.9130 MHz

Power Spectral Density
-65.86 dBm/Hz

Average Power (CH Mid)



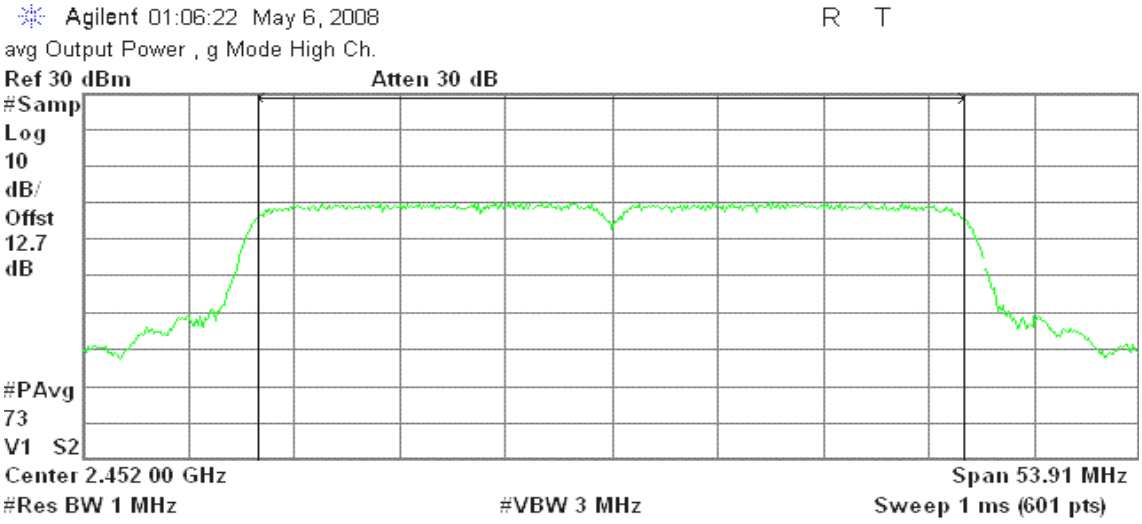
Channel Power

9.71 dBm / 35.9380 MHz

Power Spectral Density

-65.85 dBm/Hz

Average Power (CH High)



Channel Power

14.33 dBm / 35.9410 MHz

Power Spectral Density

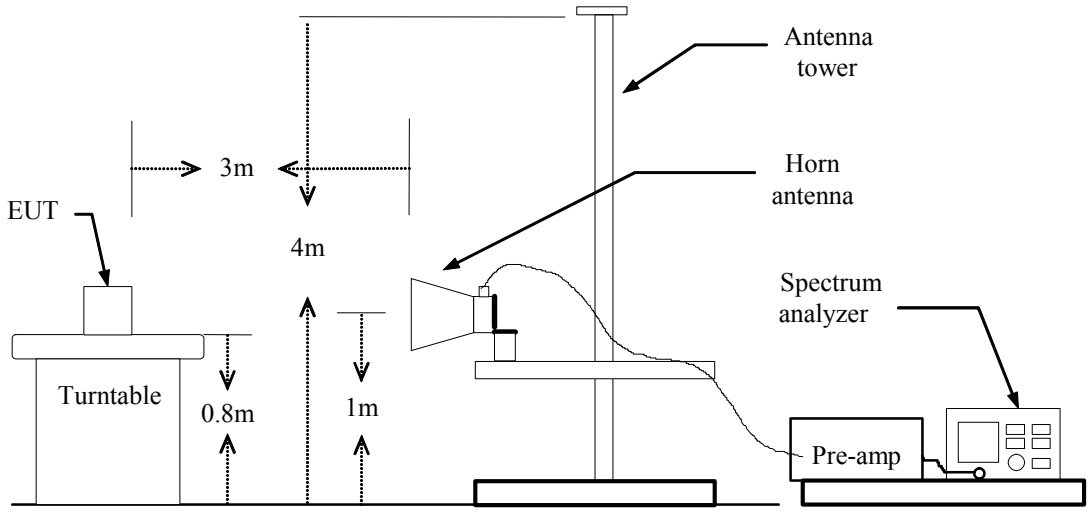
-61.22 dBm/Hz

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

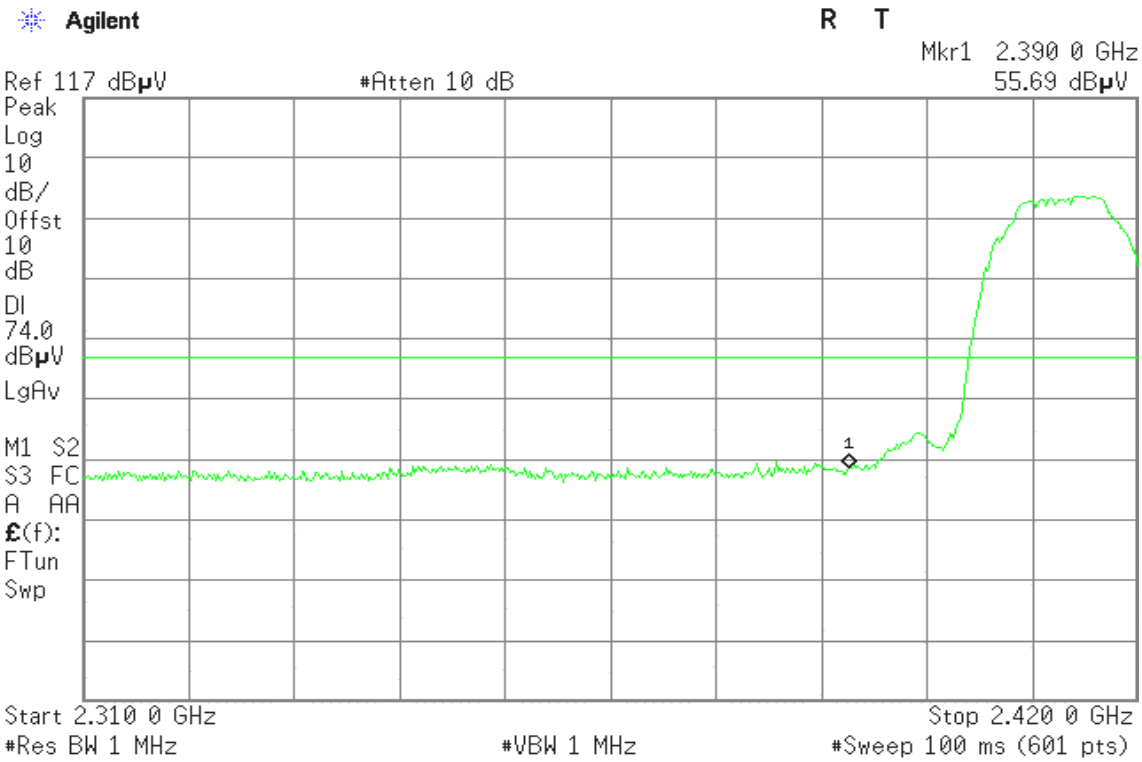
1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the 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

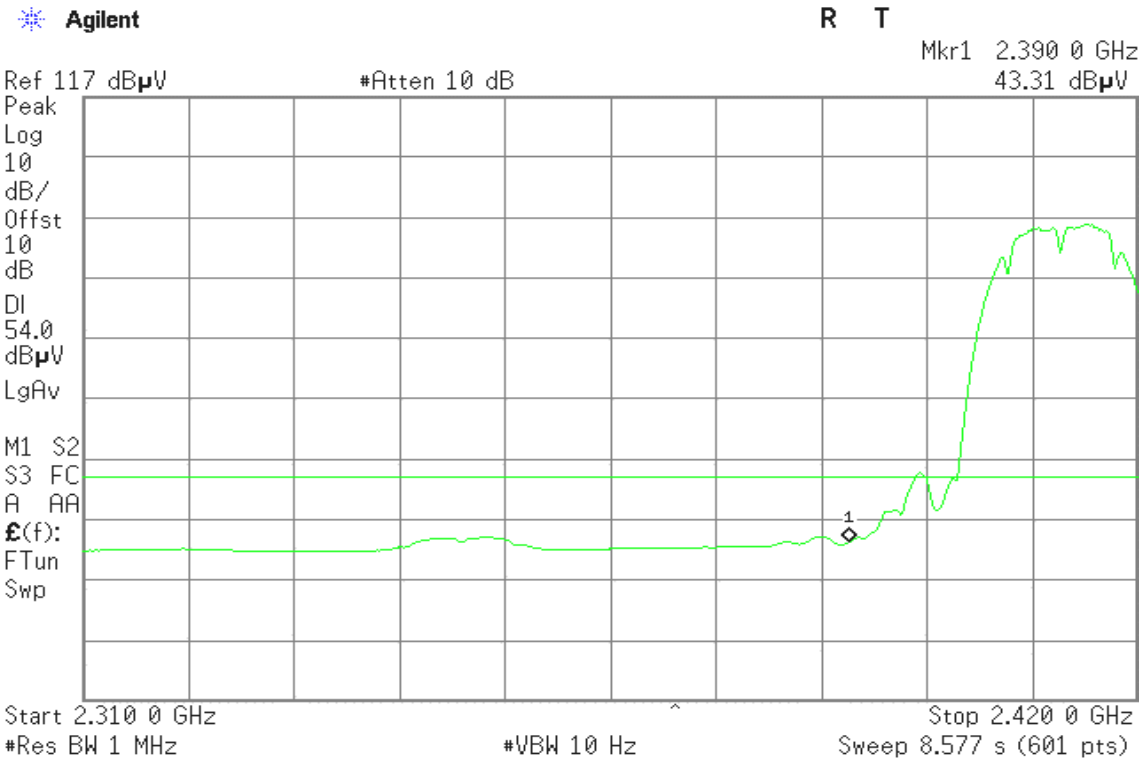
Refer to attach spectrum analyzer data chart.

Band Edges (IEEE 802.11b mode / CH Low)

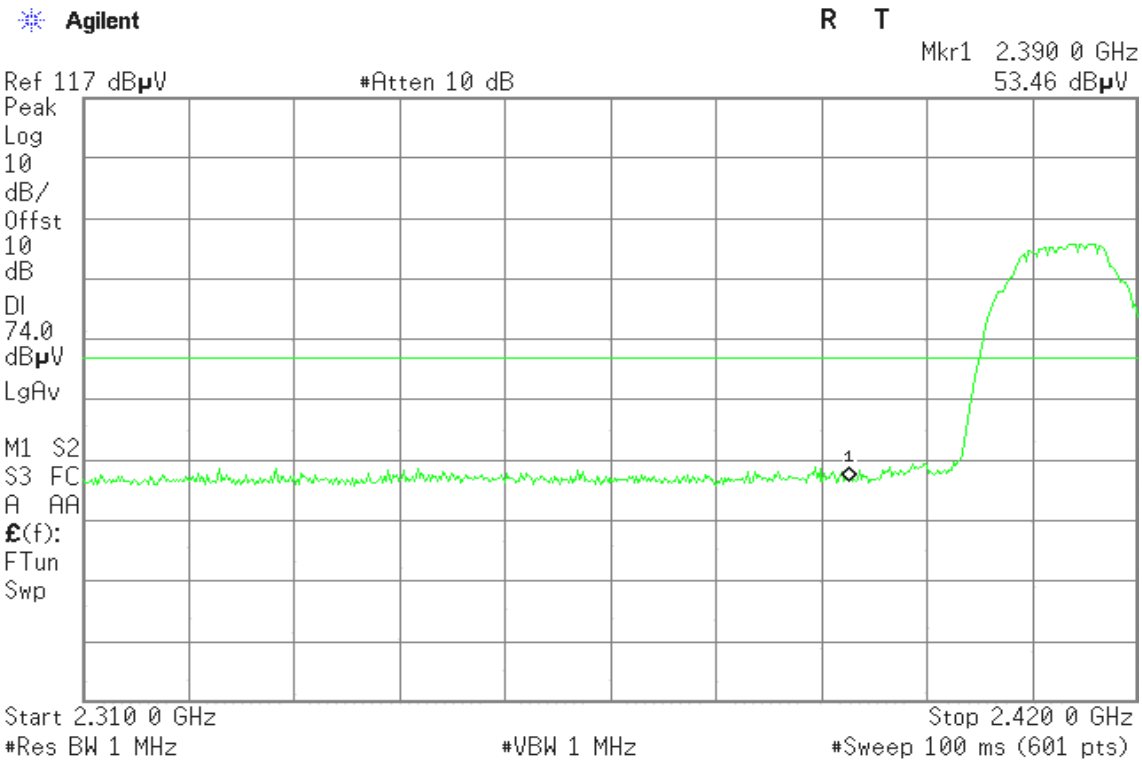
Detector mode: Peak Polarity: Vertical



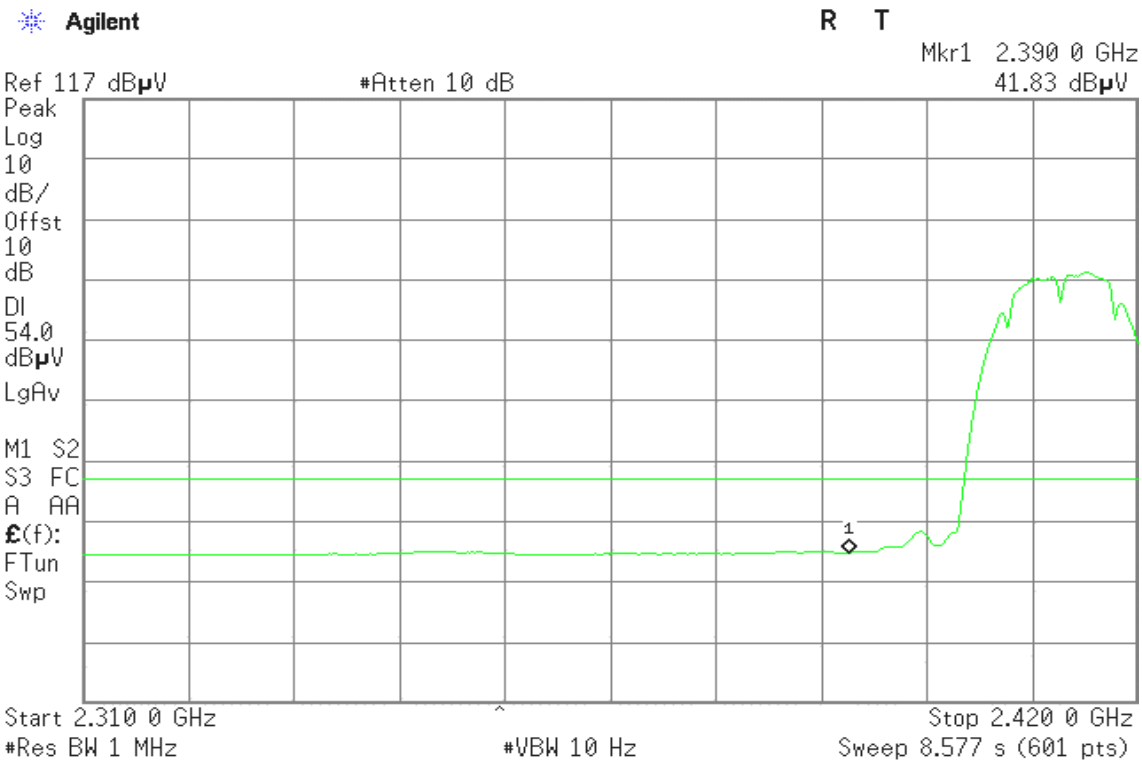
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

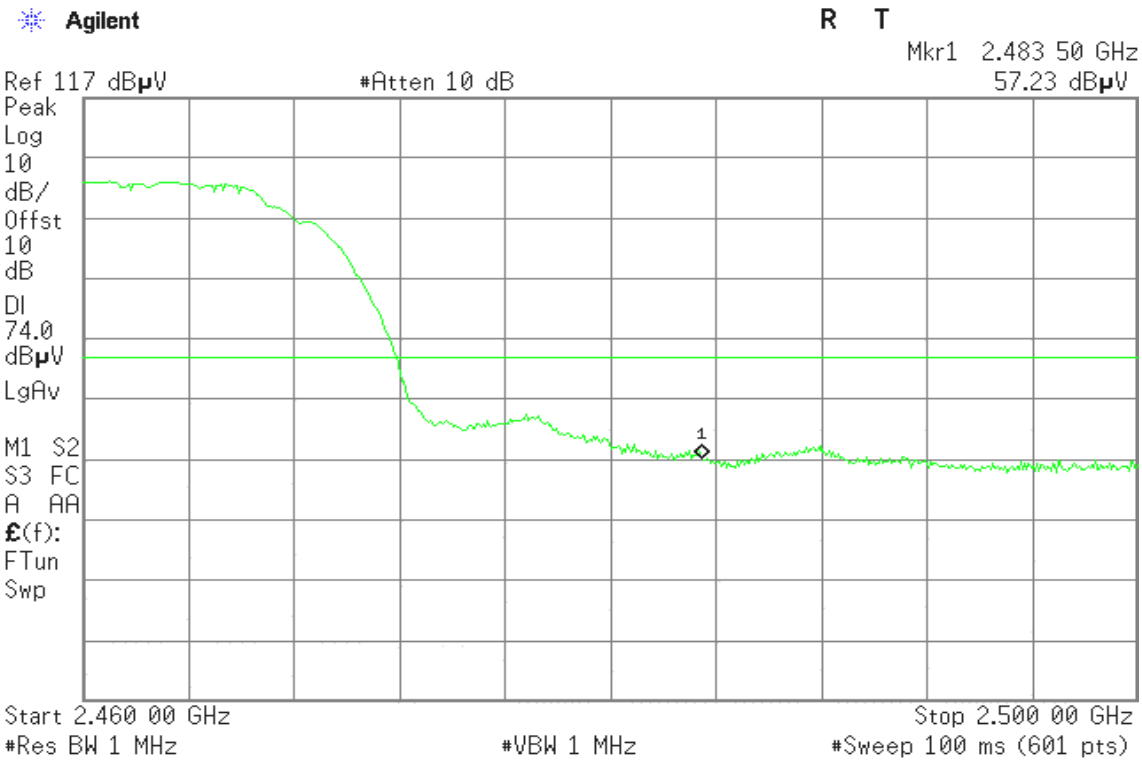


Detector mode: Average **Polarity: Horizontal**

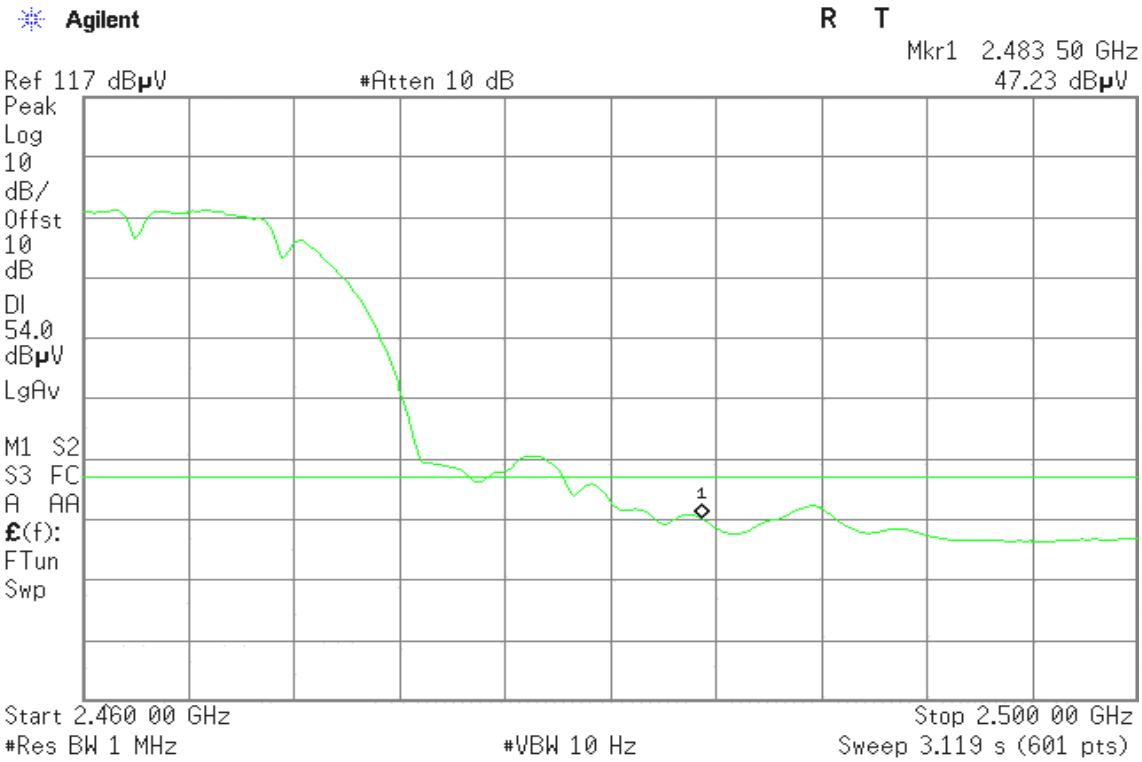


Band Edges (IEEE 802.11b mode / CH High)

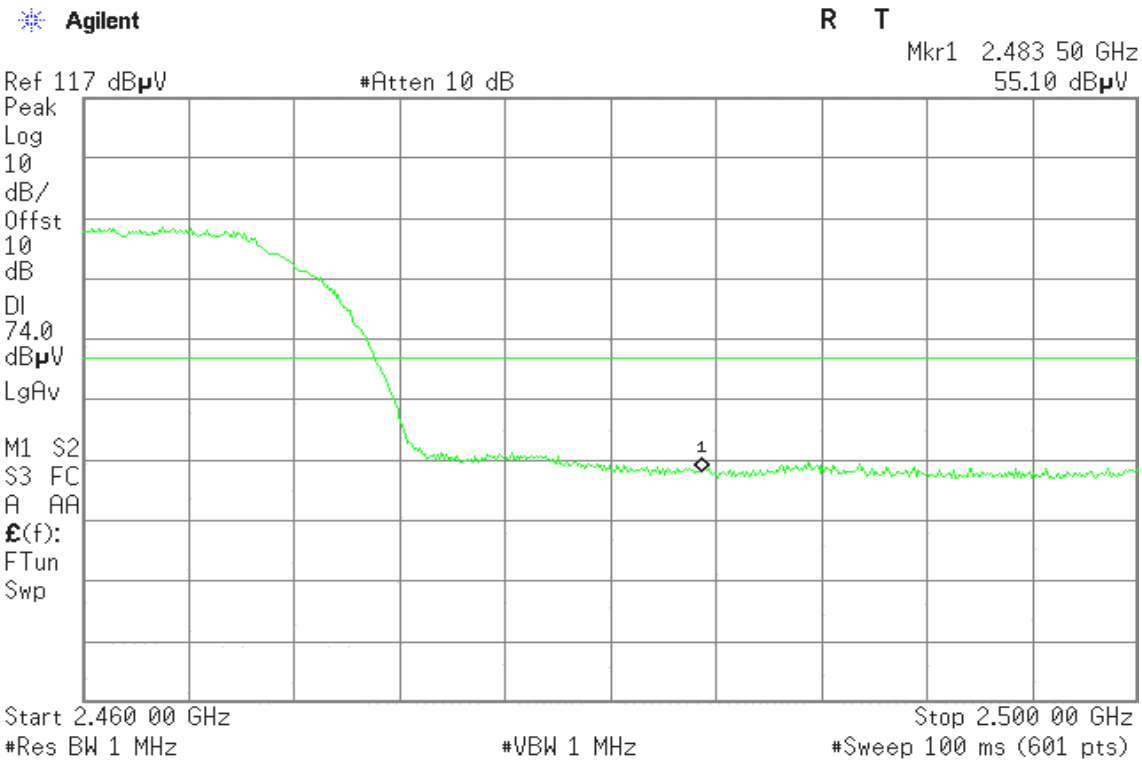
Detector mode: Peak Polarity: Vertical



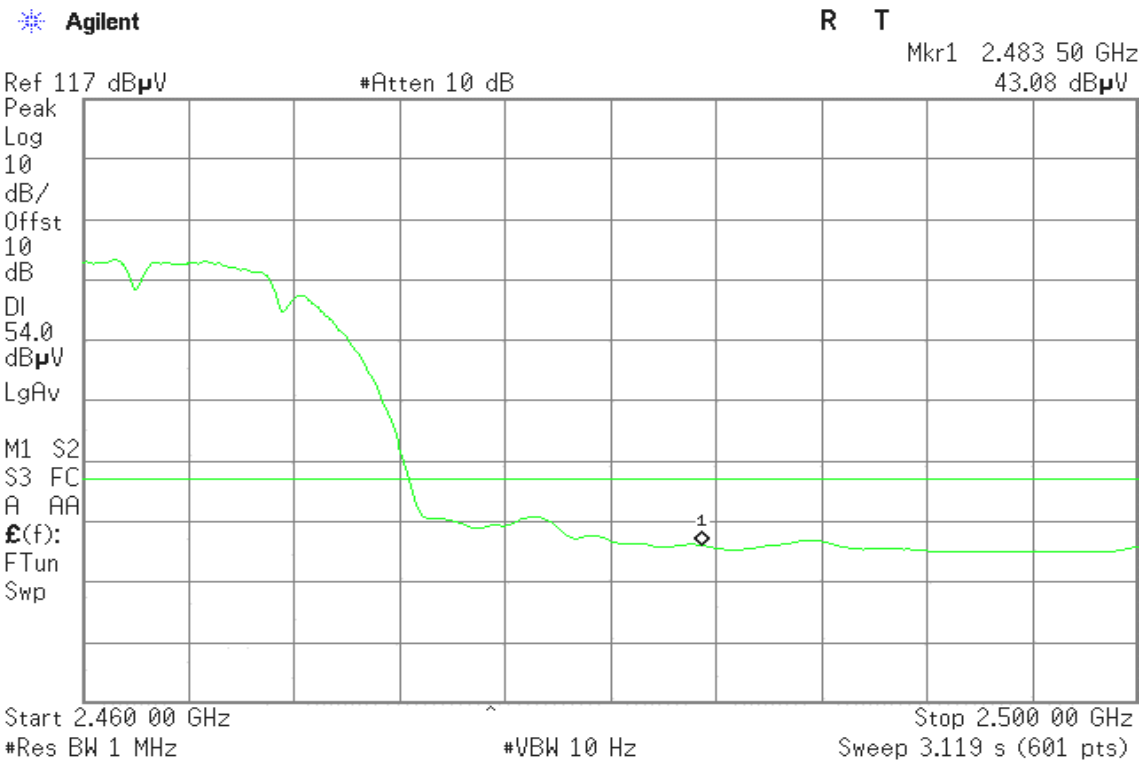
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

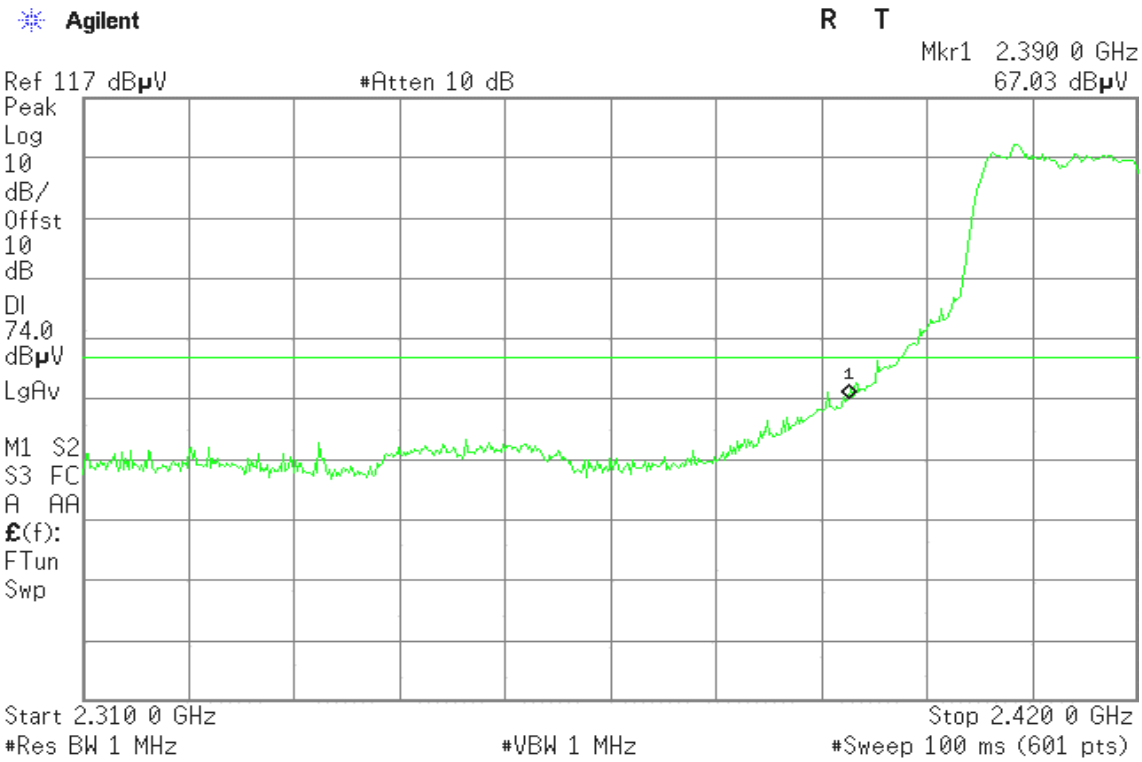


Detector mode: Average **Polarity: Horizontal**

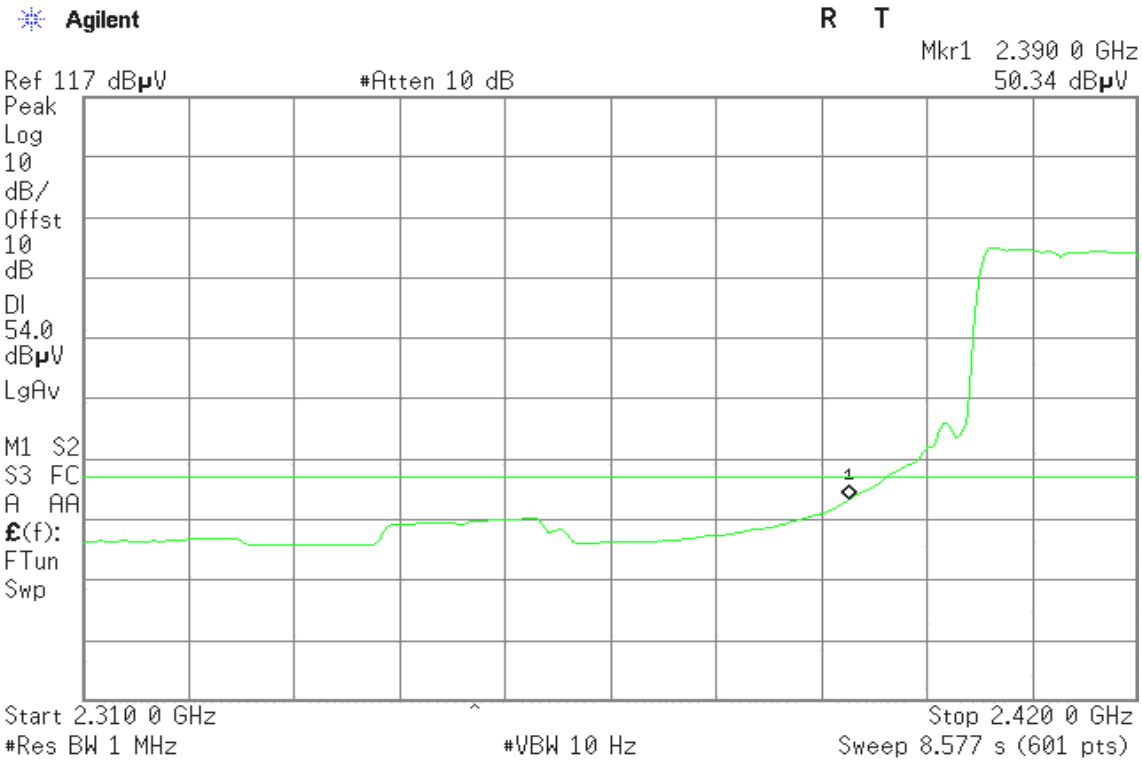


Band Edges (IEEE 802.11g mode / CH Low)

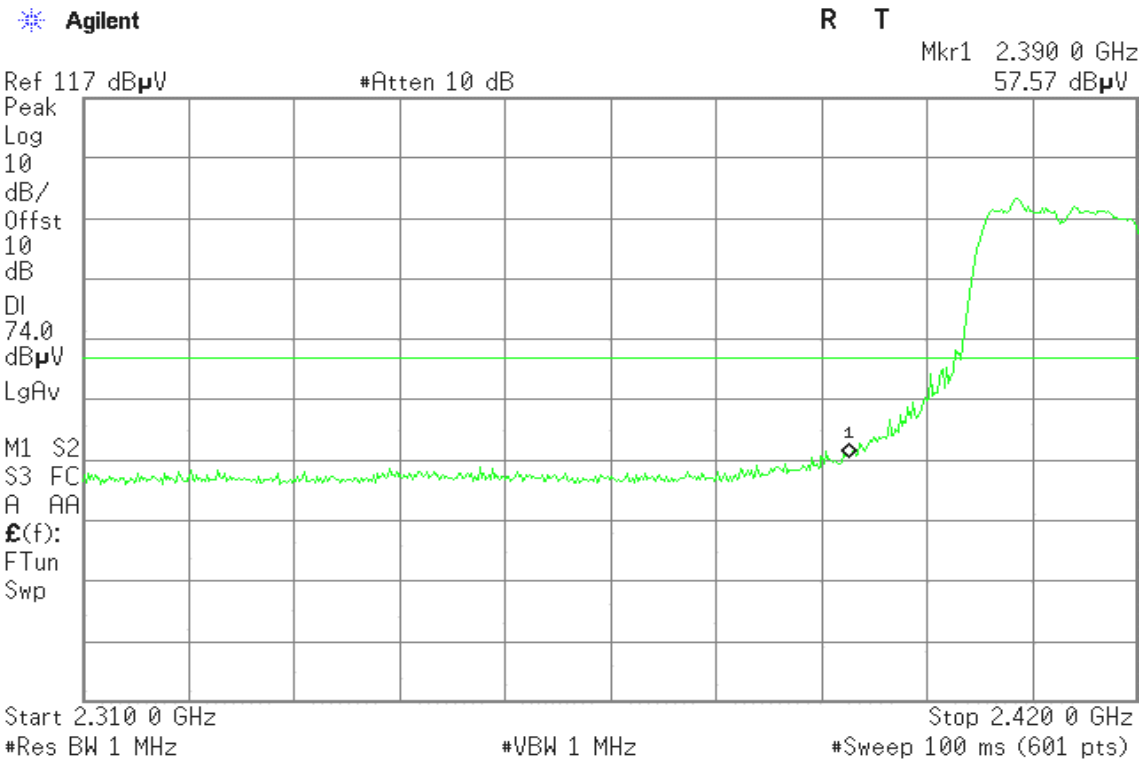
Detector mode: Peak **Polarity: Vertical**



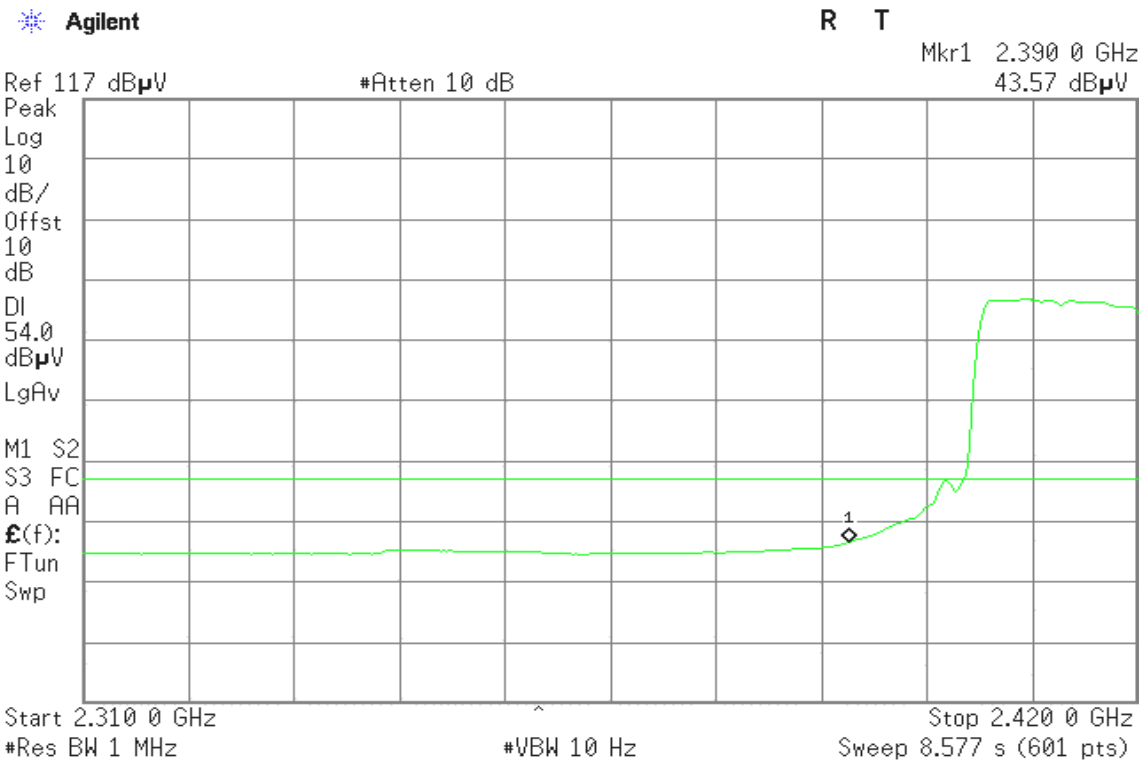
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

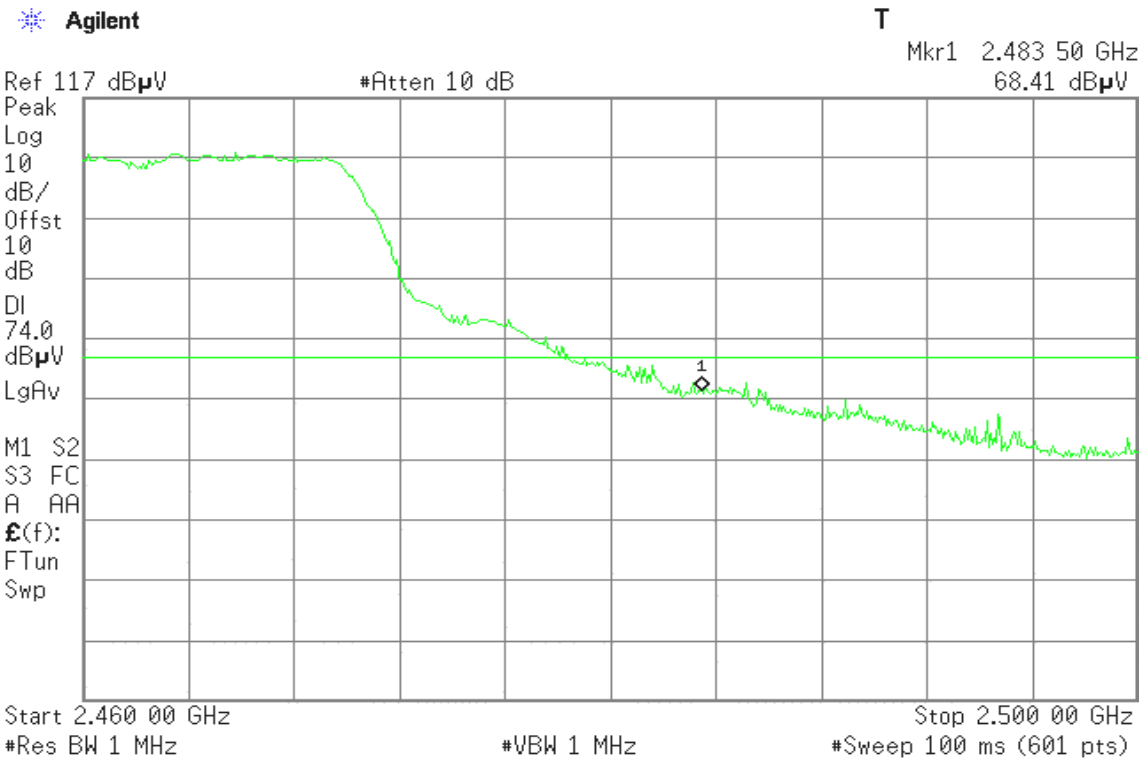


Detector mode: Average **Polarity: Horizontal**

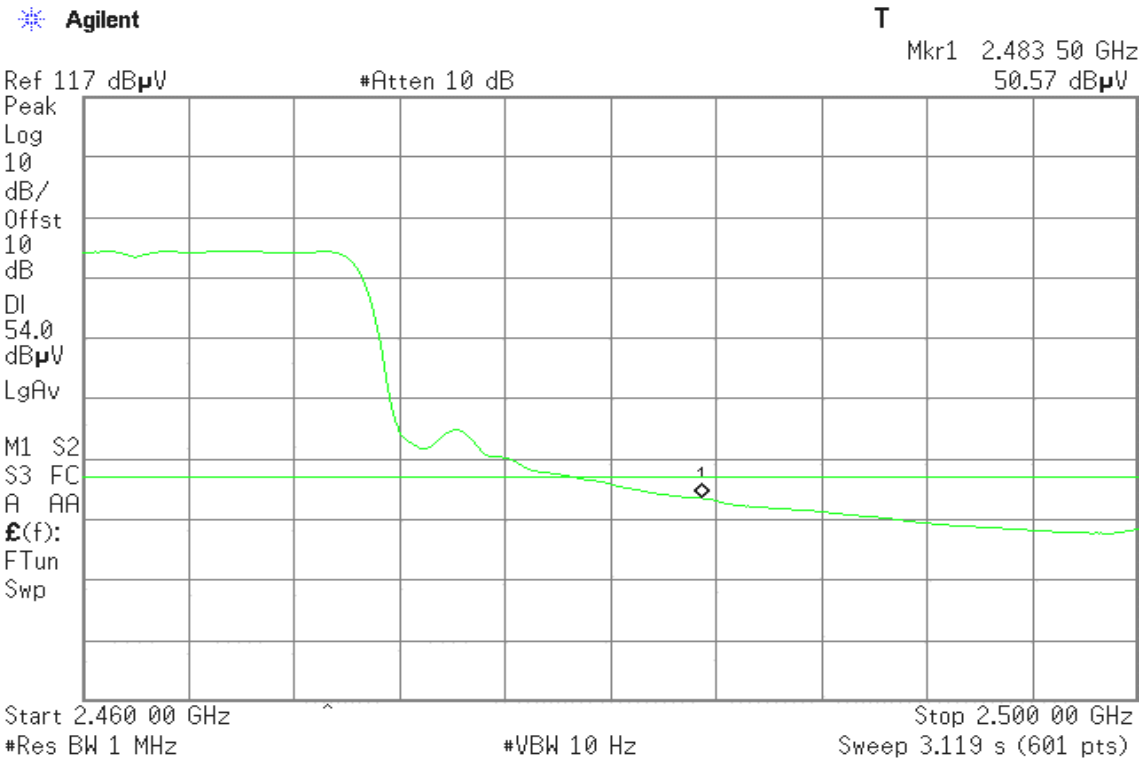


Band Edges (IEEE 802.11g mode / CH High)

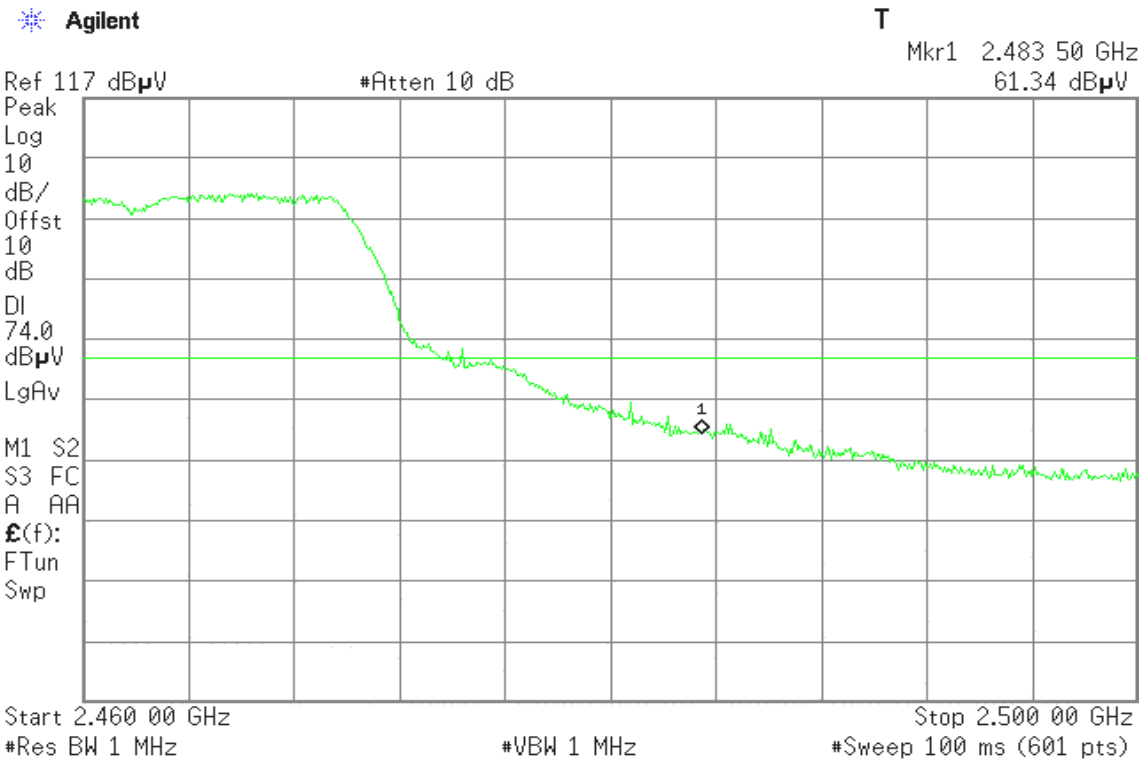
Detector mode: Peak Polarity: Vertical



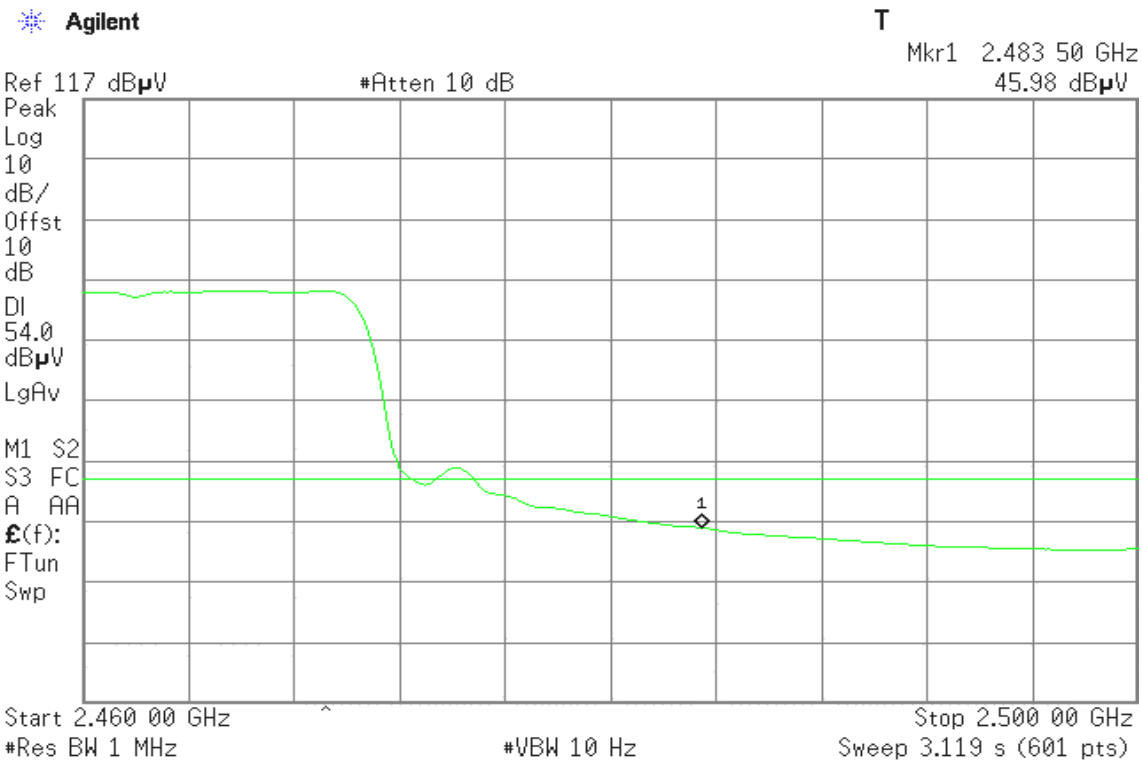
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**

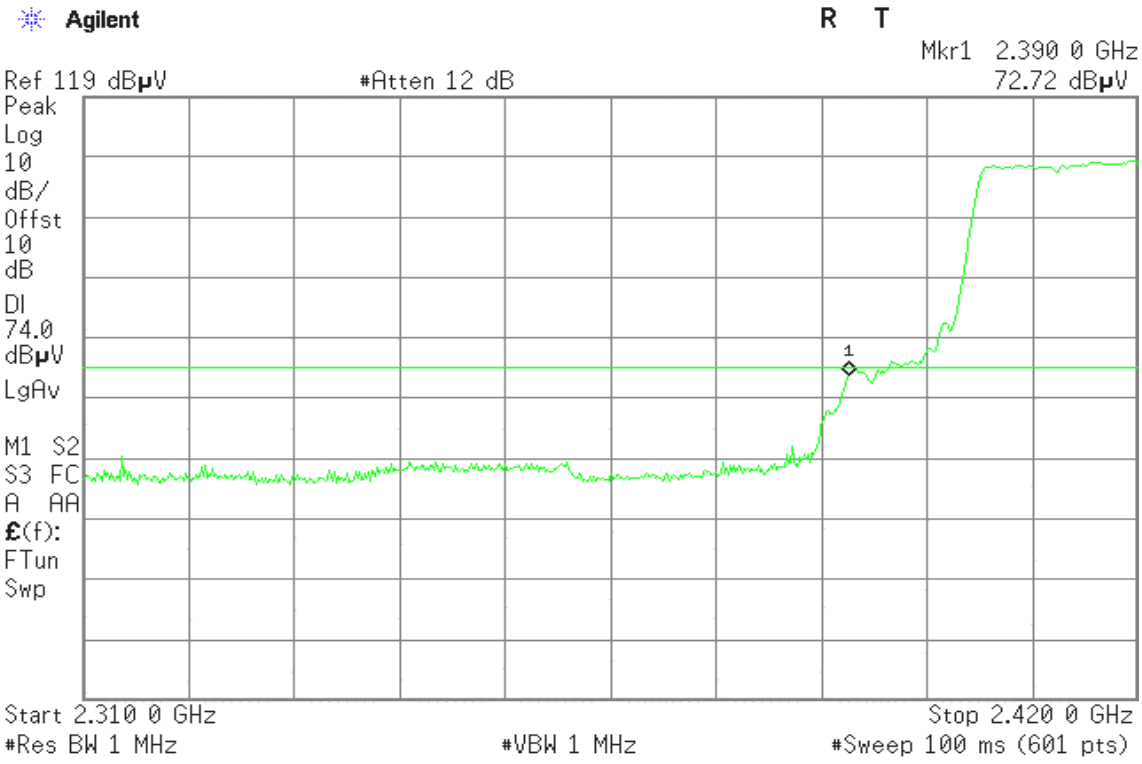


Detector mode: Average **Polarity: Horizontal**

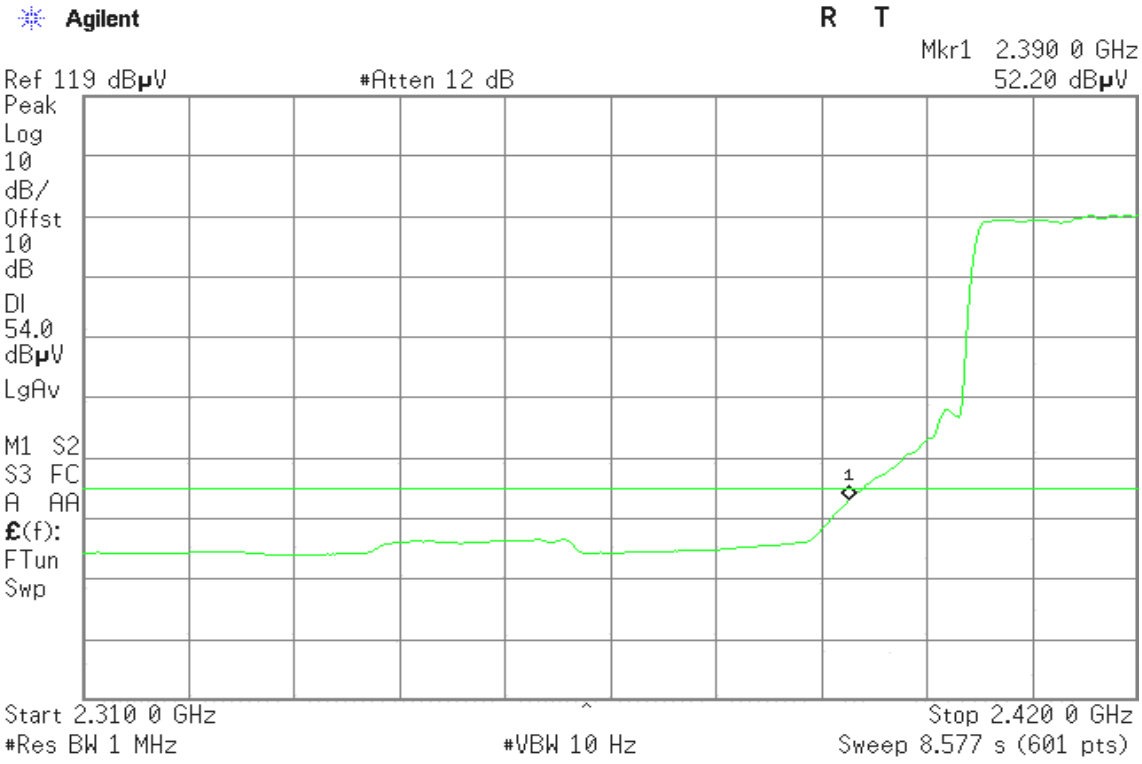


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH Low)

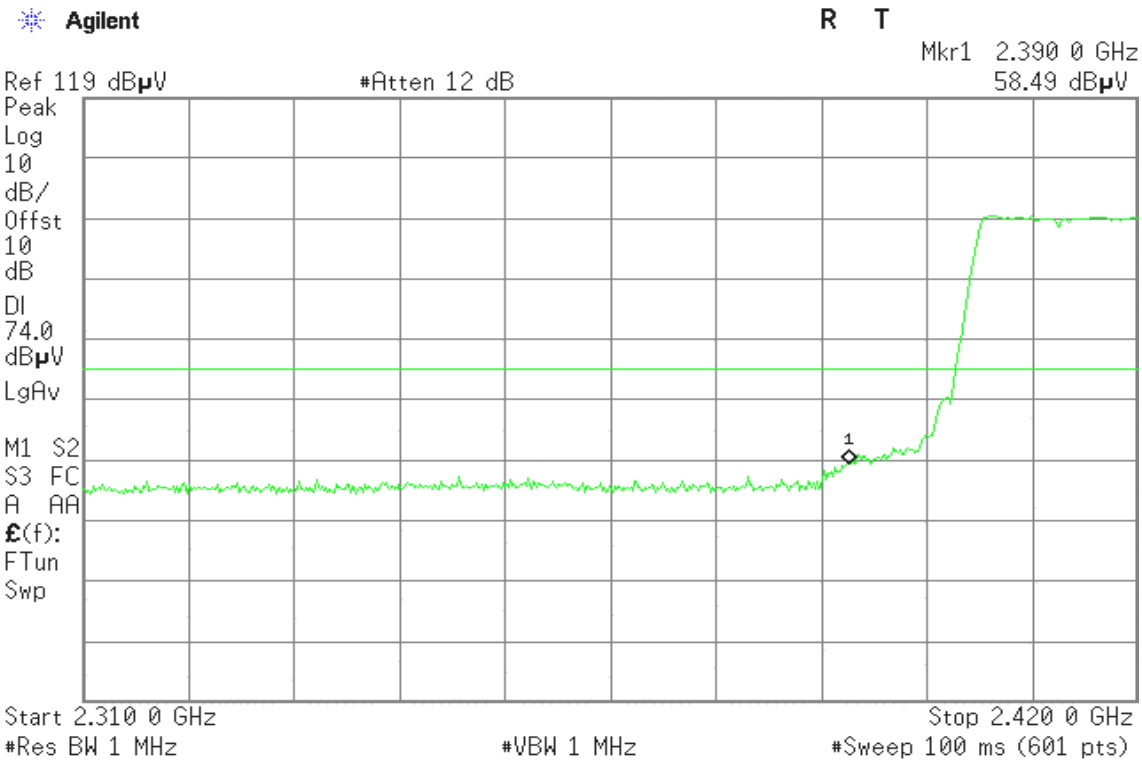
Detector mode: Peak **Polarity: Vertical**



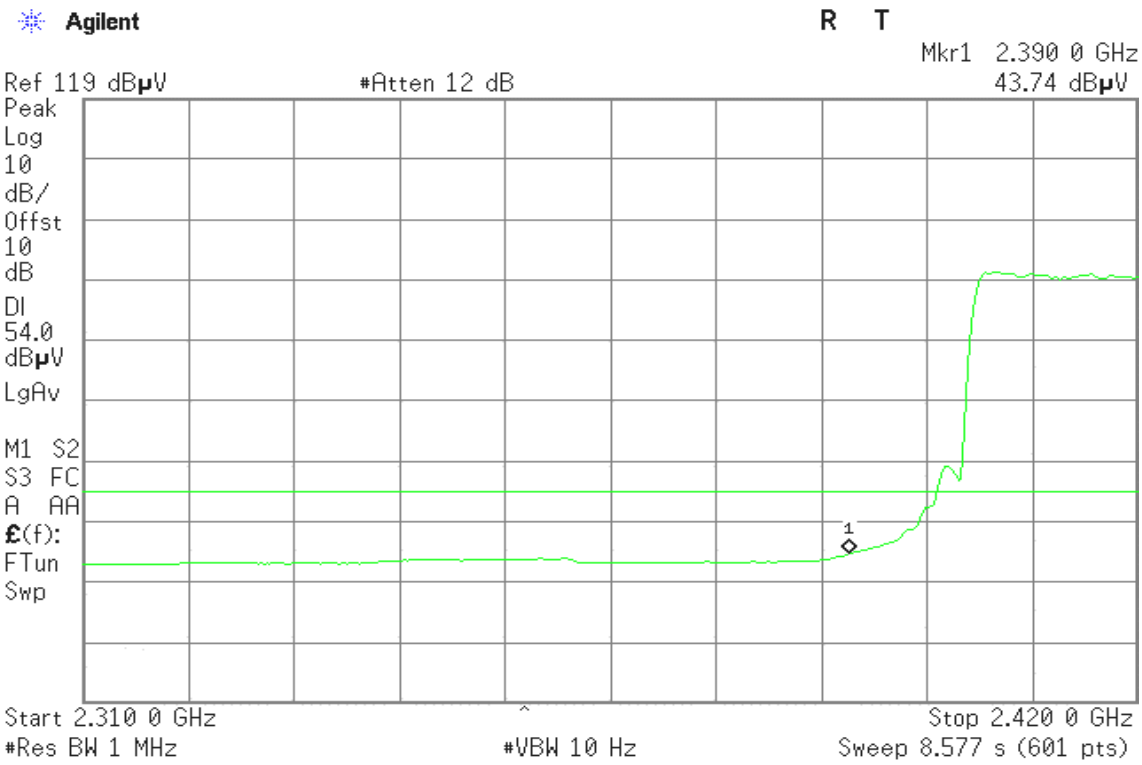
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

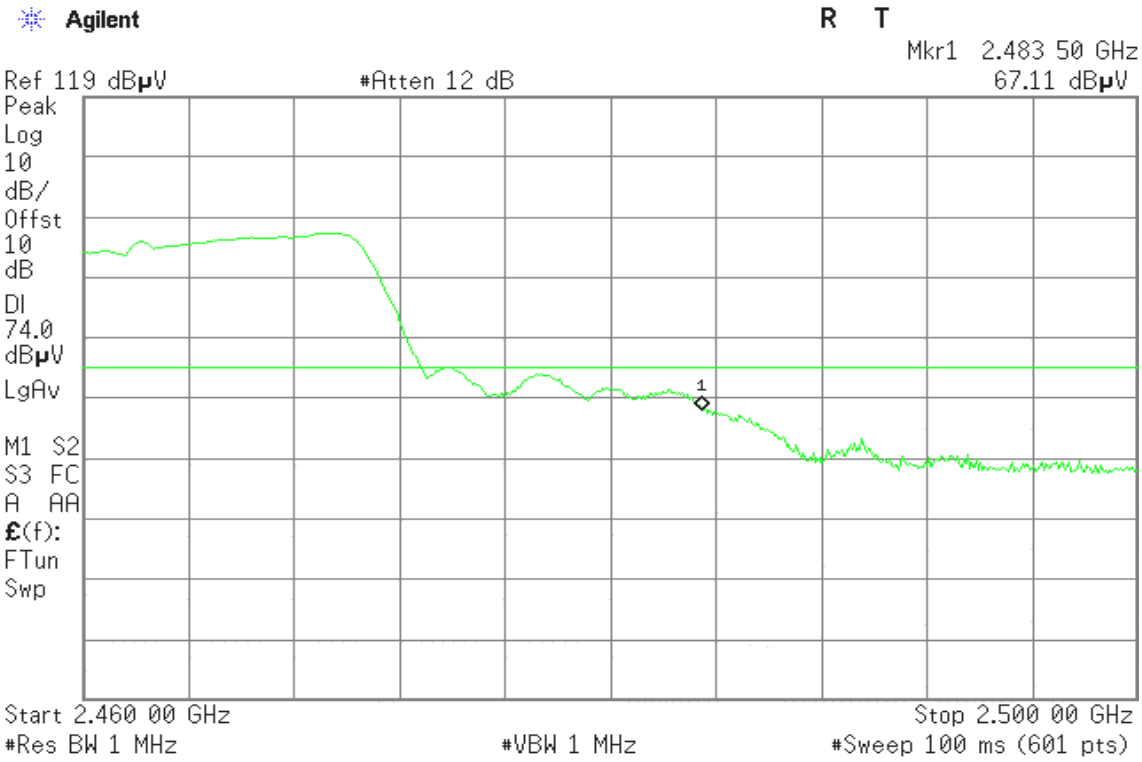


Detector mode: Average **Polarity: Horizontal**

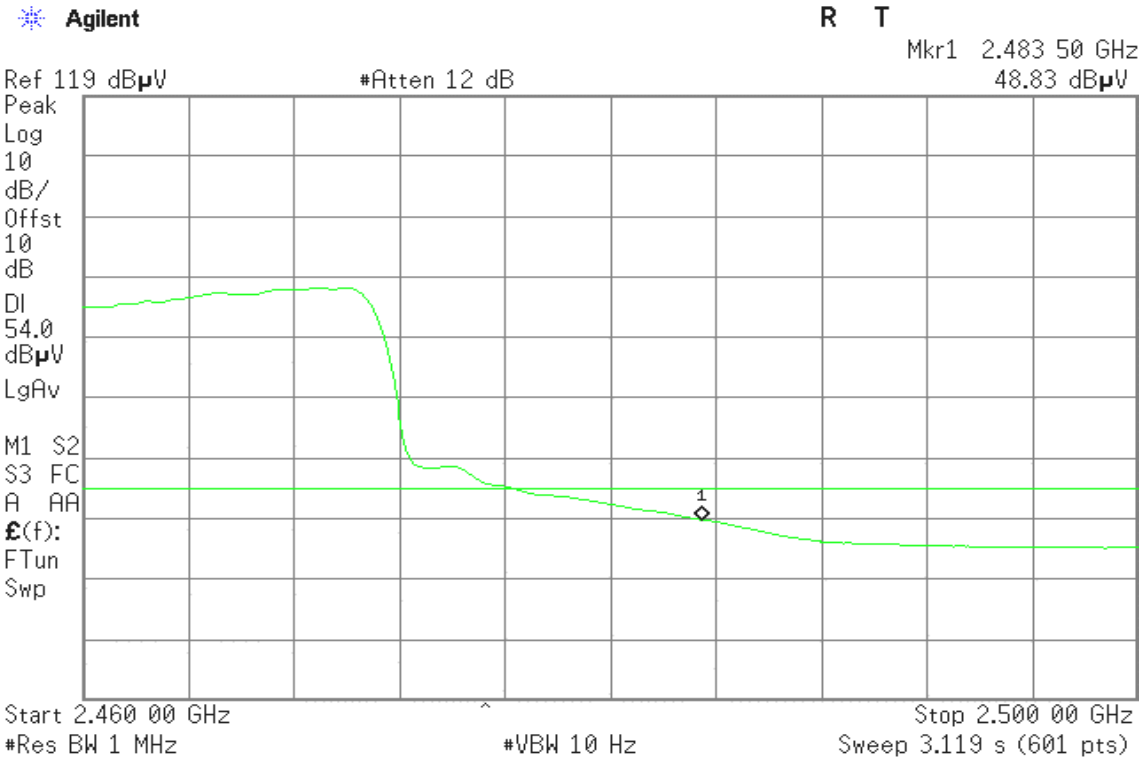


Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH High)

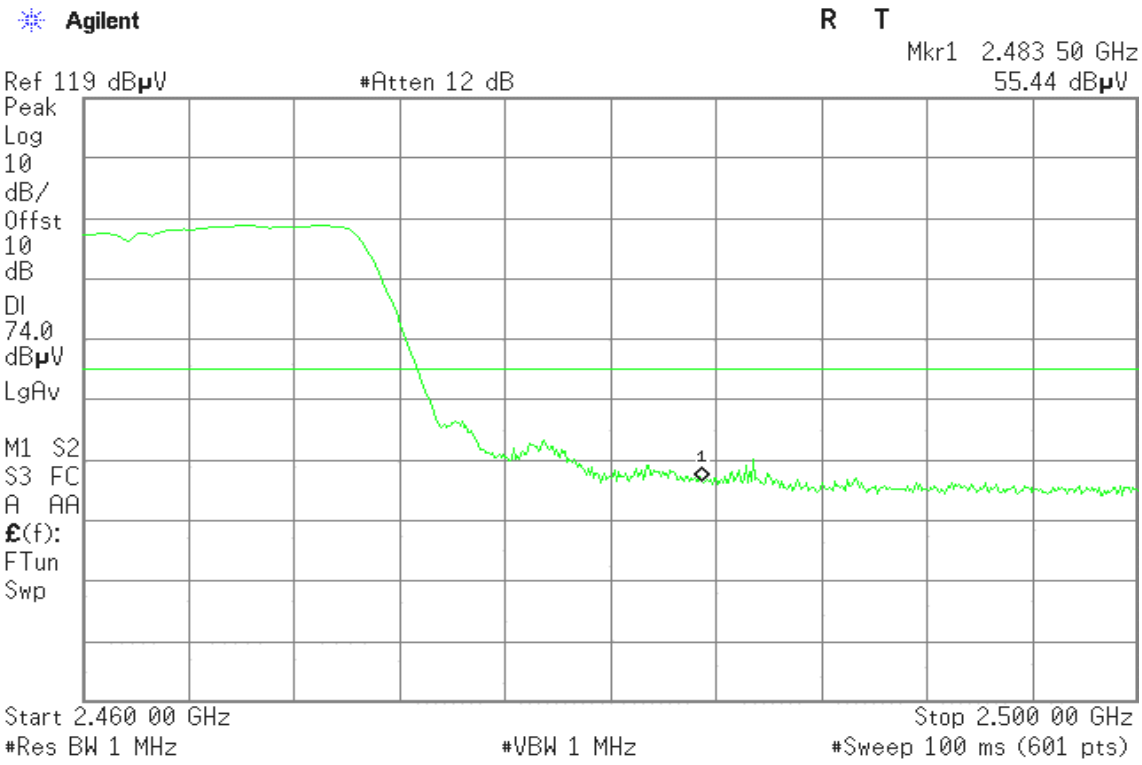
Detector mode: Peak **Polarity: Vertical**



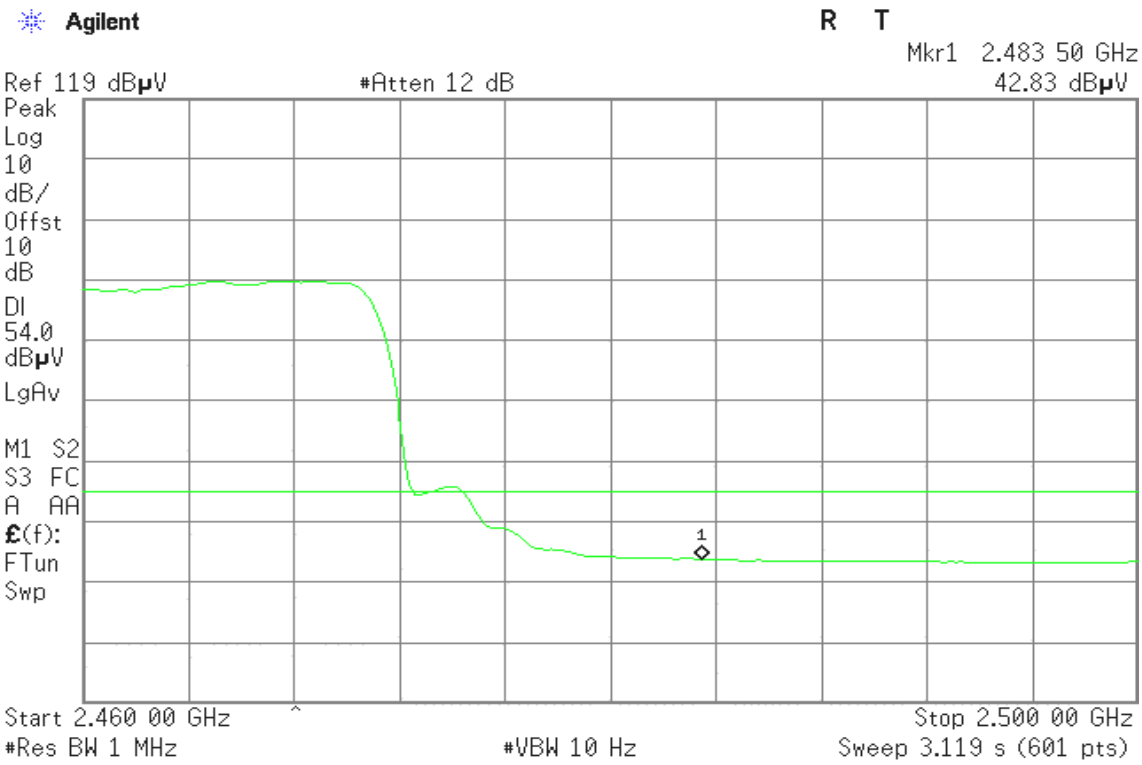
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

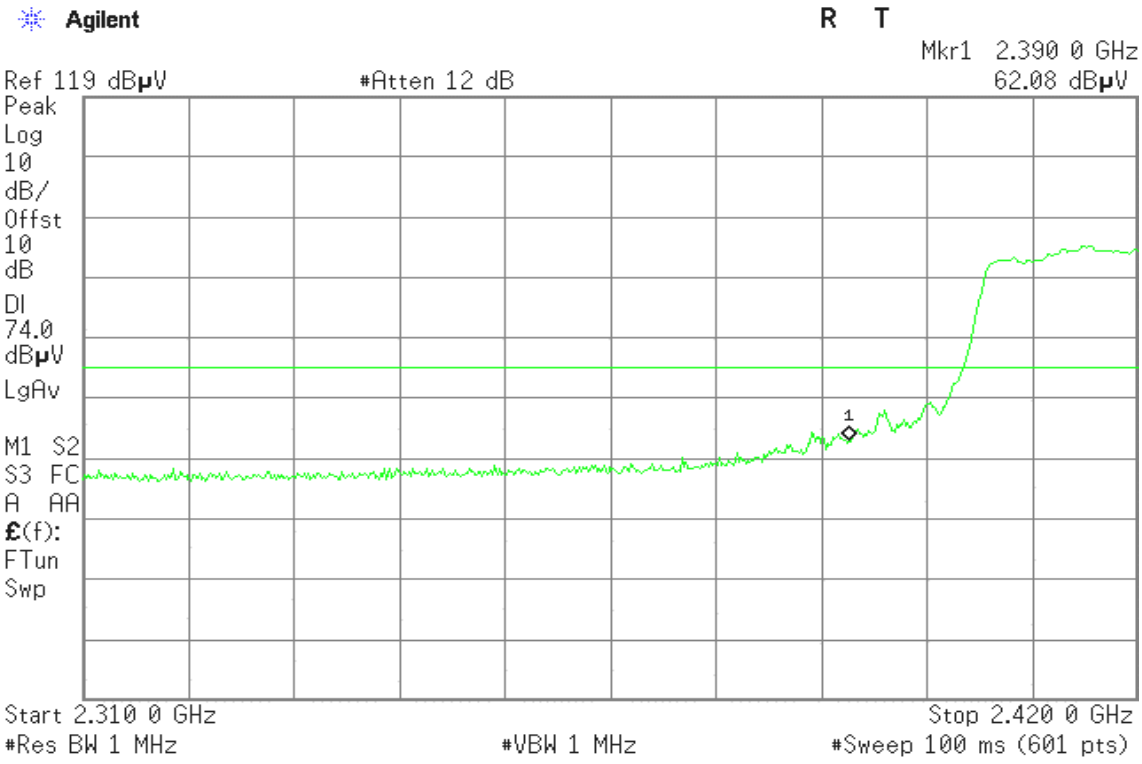


Detector mode: Average **Polarity: Horizontal**

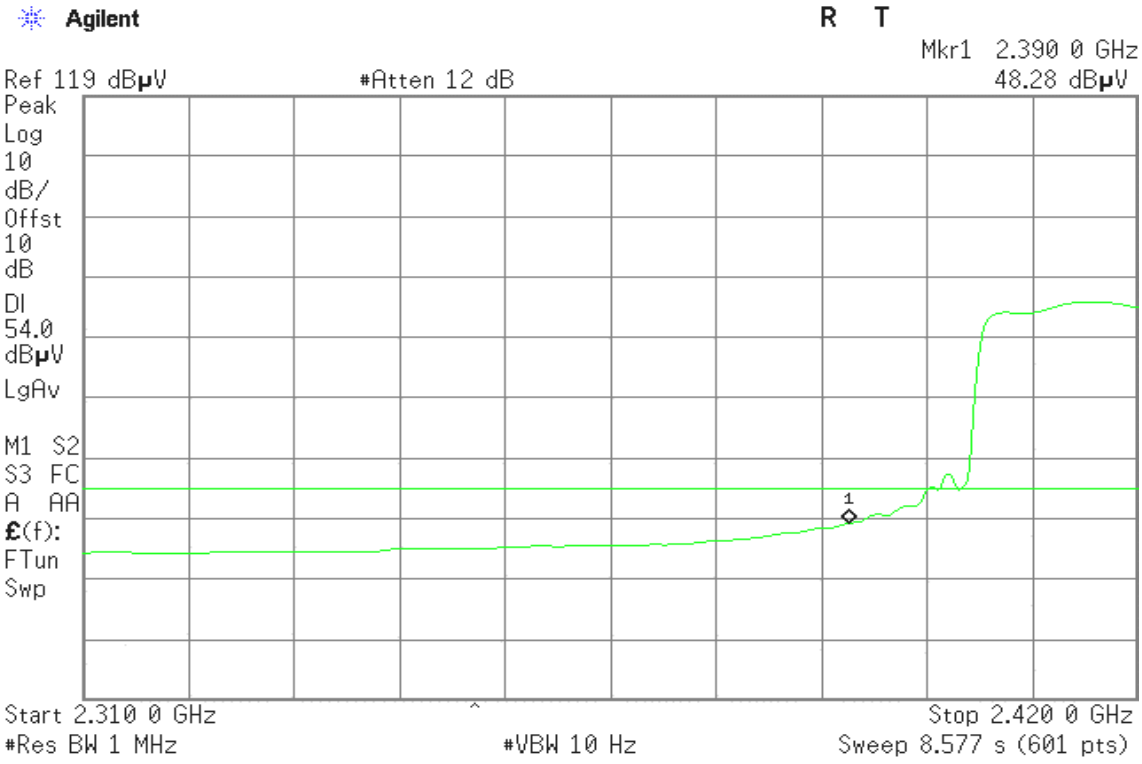


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH Low)

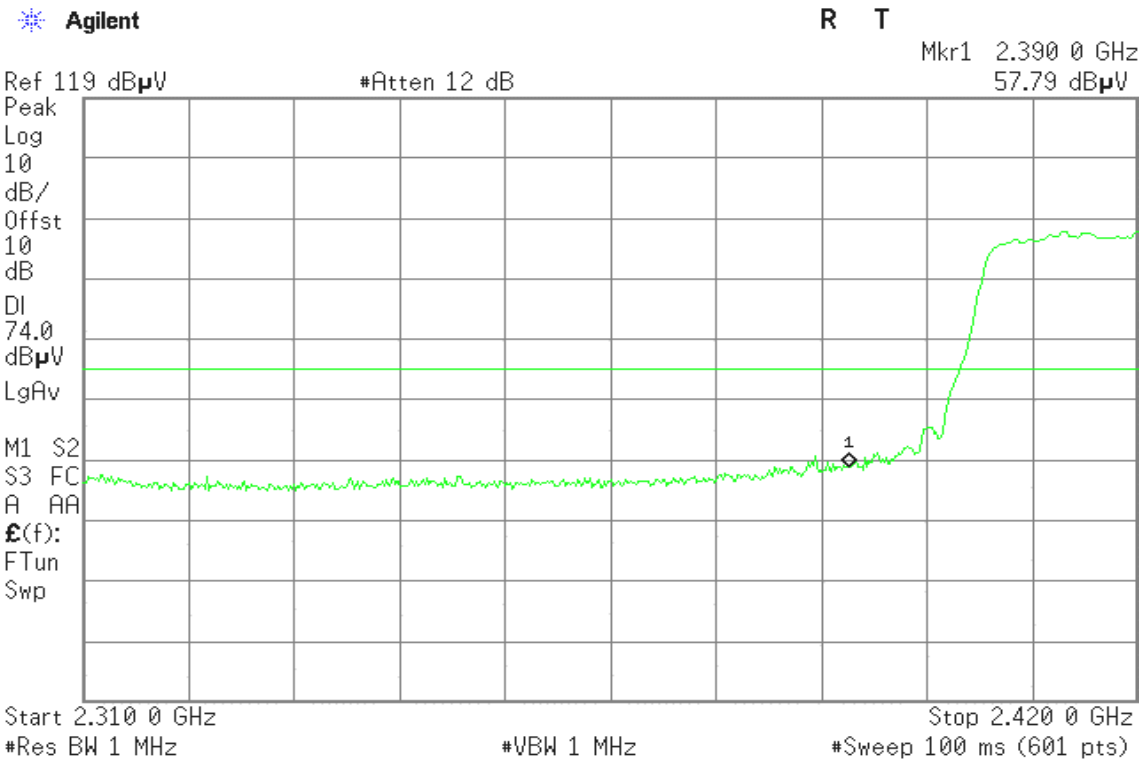
Detector mode: Peak **Polarity: Vertical**



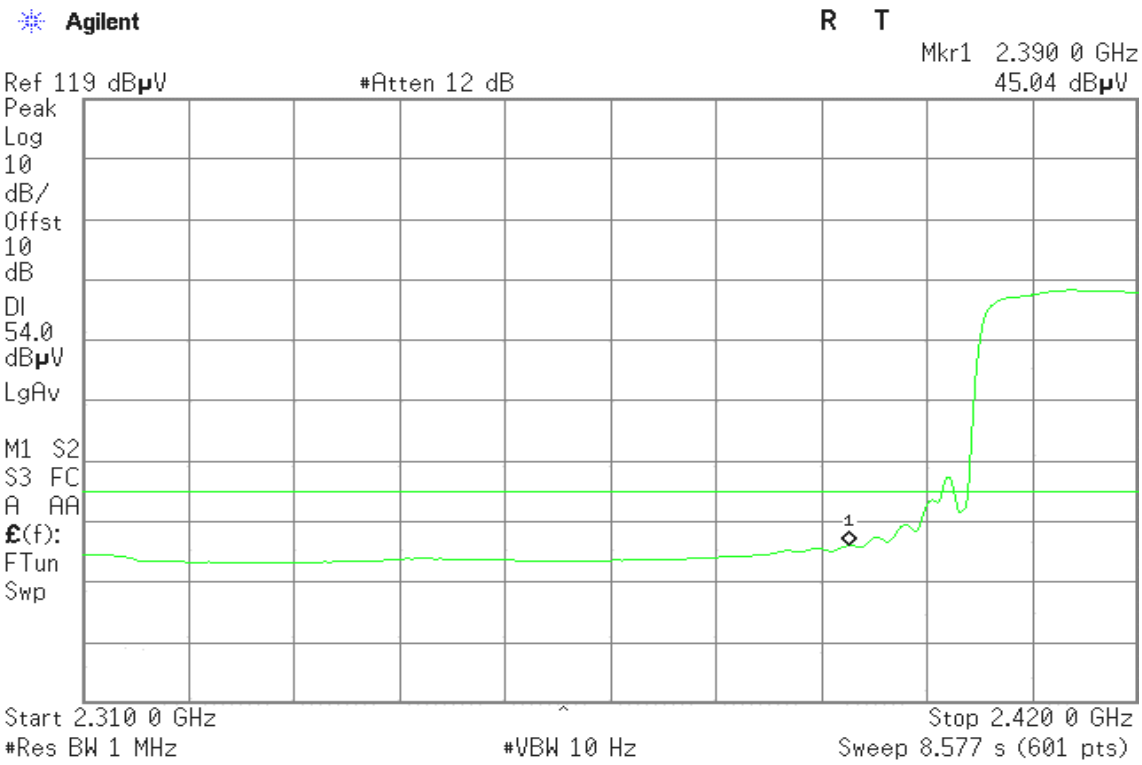
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

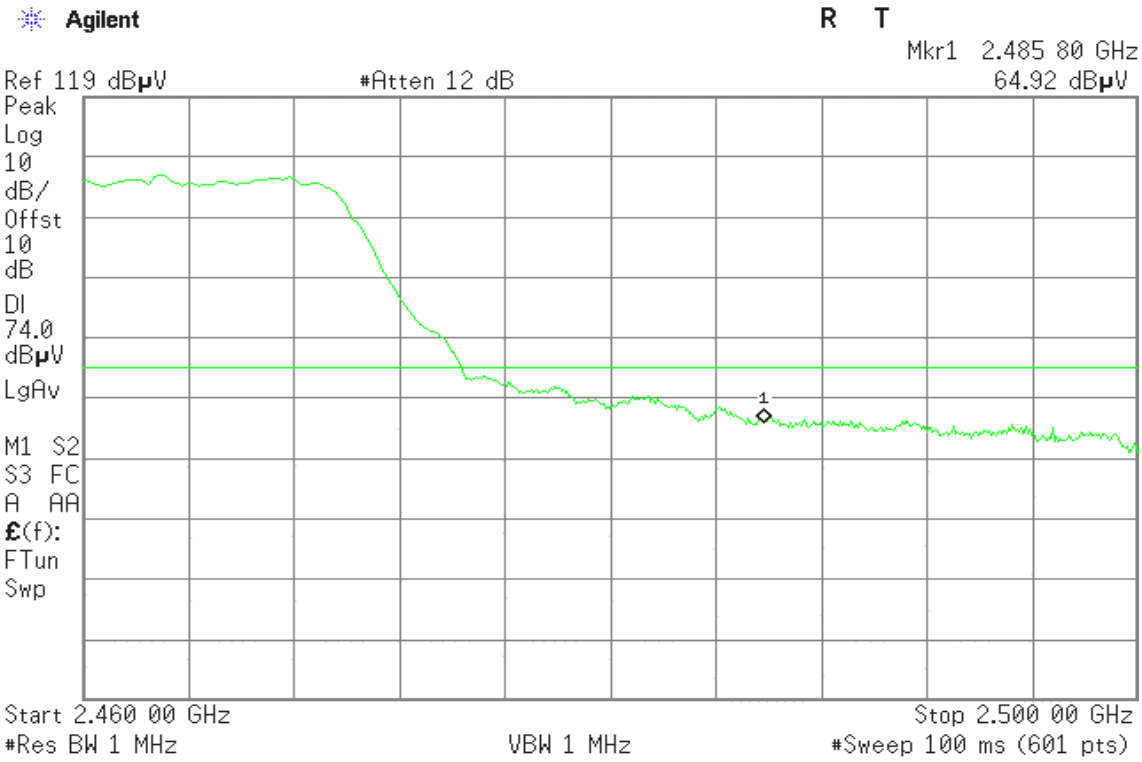


Detector mode: Average **Polarity: Horizontal**

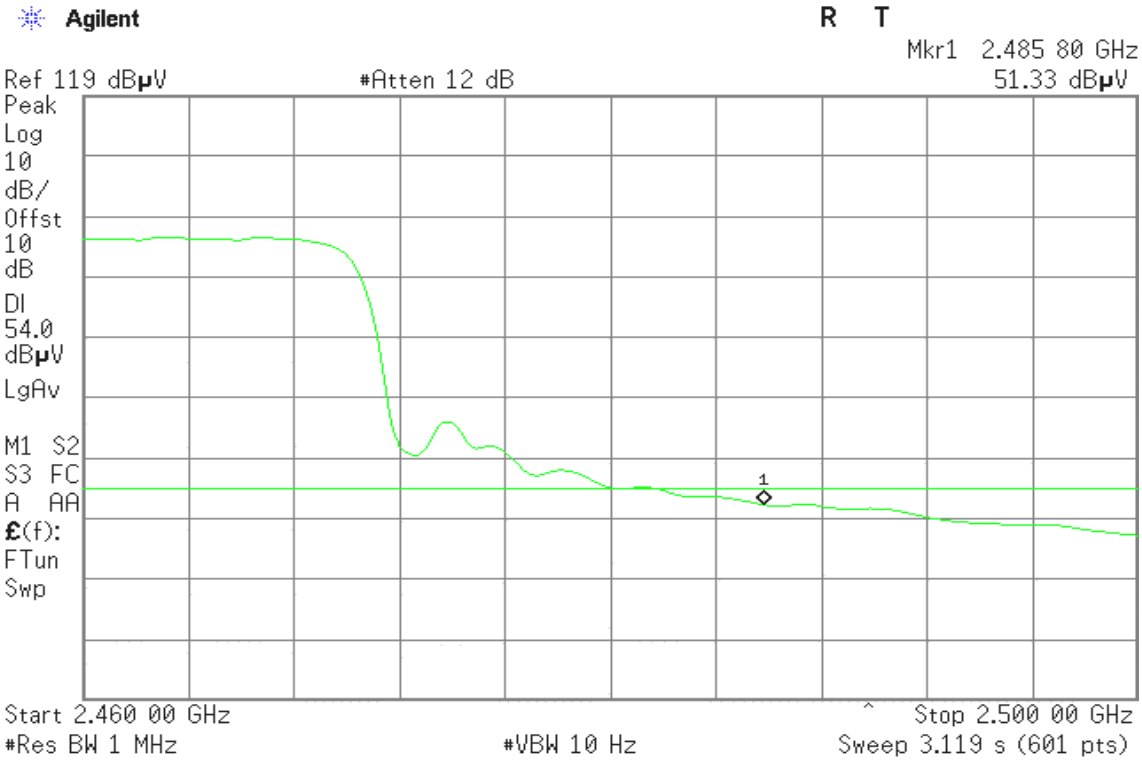


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH High)

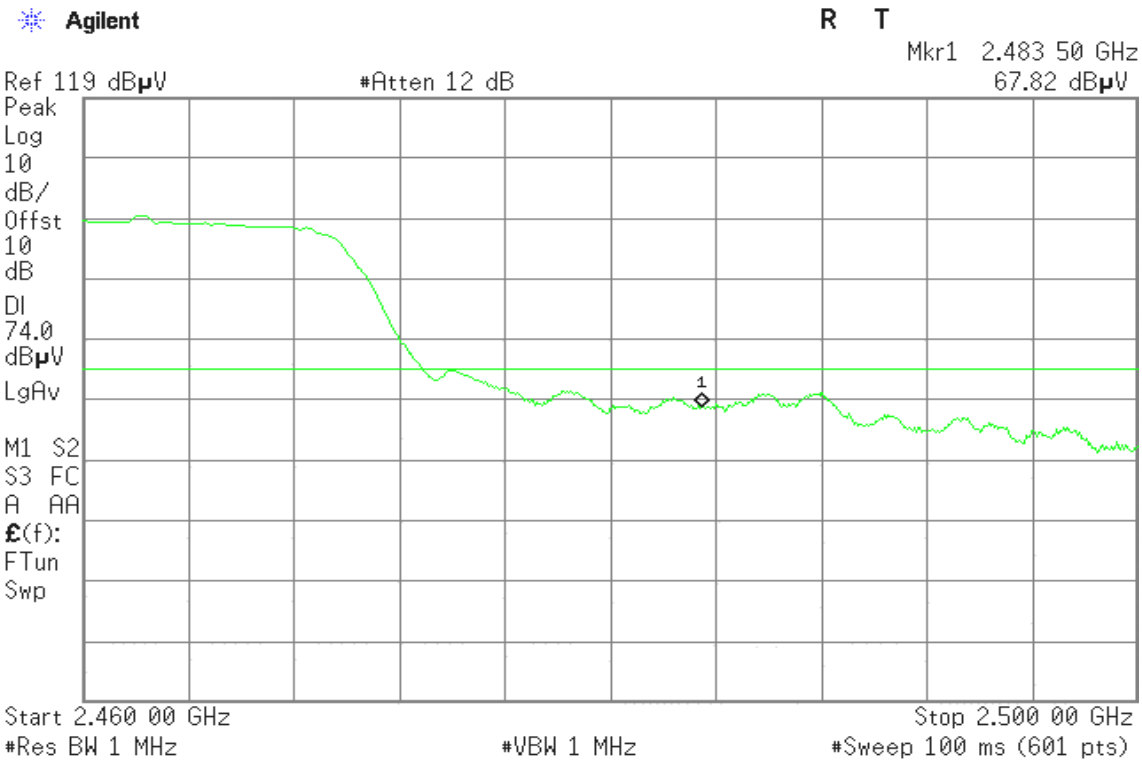
Detector mode: Peak **Polarity: Vertical**



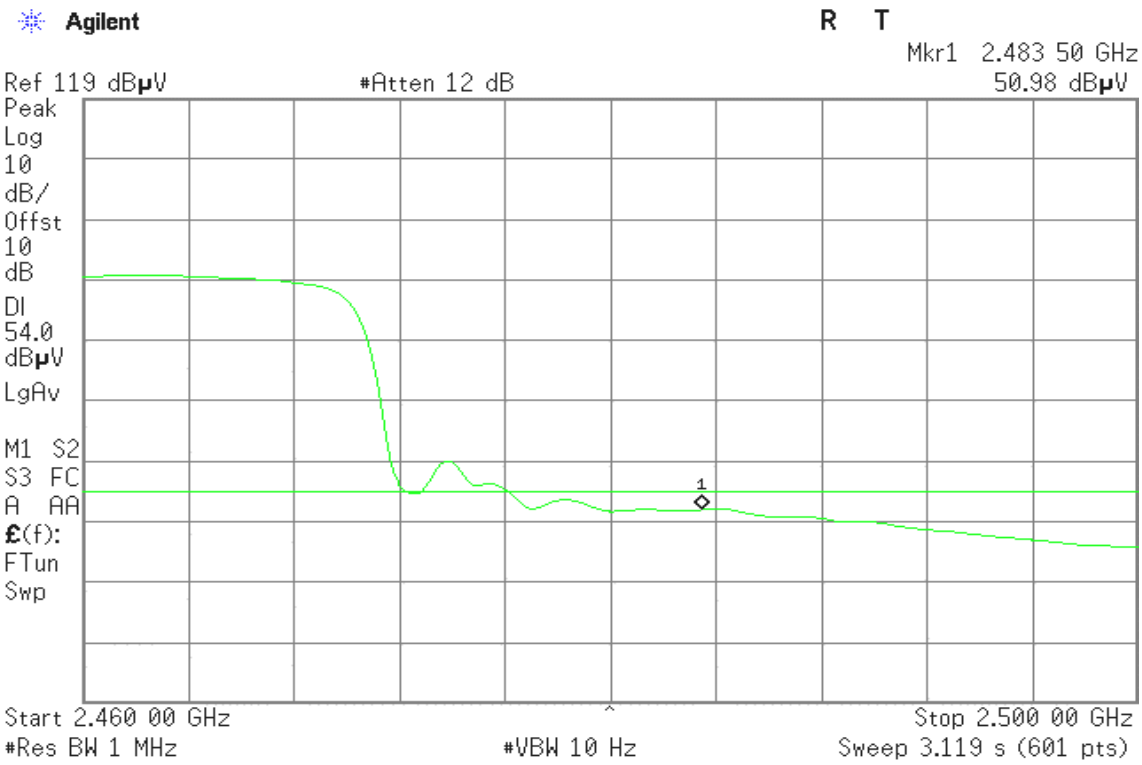
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**

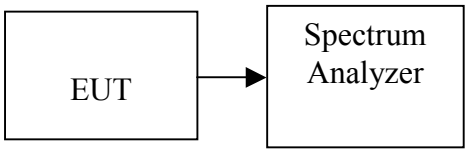


7.5 PEAK POWER SPECTRAL DENSITY

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

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-19.38	8.00	PASS
Mid	2437	-18.22		PASS
High	2462	-18.38		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-15.48	8.00	PASS
Mid	2437	-14.85		PASS
High	2462	-14.91		PASS

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

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-18.52	-18.72	-15.61	8.00	PASS
Mid	2437	-19.85	-18.12	-15.89		PASS
High	2462	-19.00	-19.99	-16.46		PASS

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

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Result
Low	2422	-21.00	-19.63	-17.25	8.00	PASS
Mid	2437	-23.25	-19.23	-17.78		PASS
High	2452	-21.02	-15.26	-14.24		PASS

Remark: *Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*

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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-15.50	8.00	PASS
Mid	2437	-13.02		PASS
High	2462	-17.93		PASS

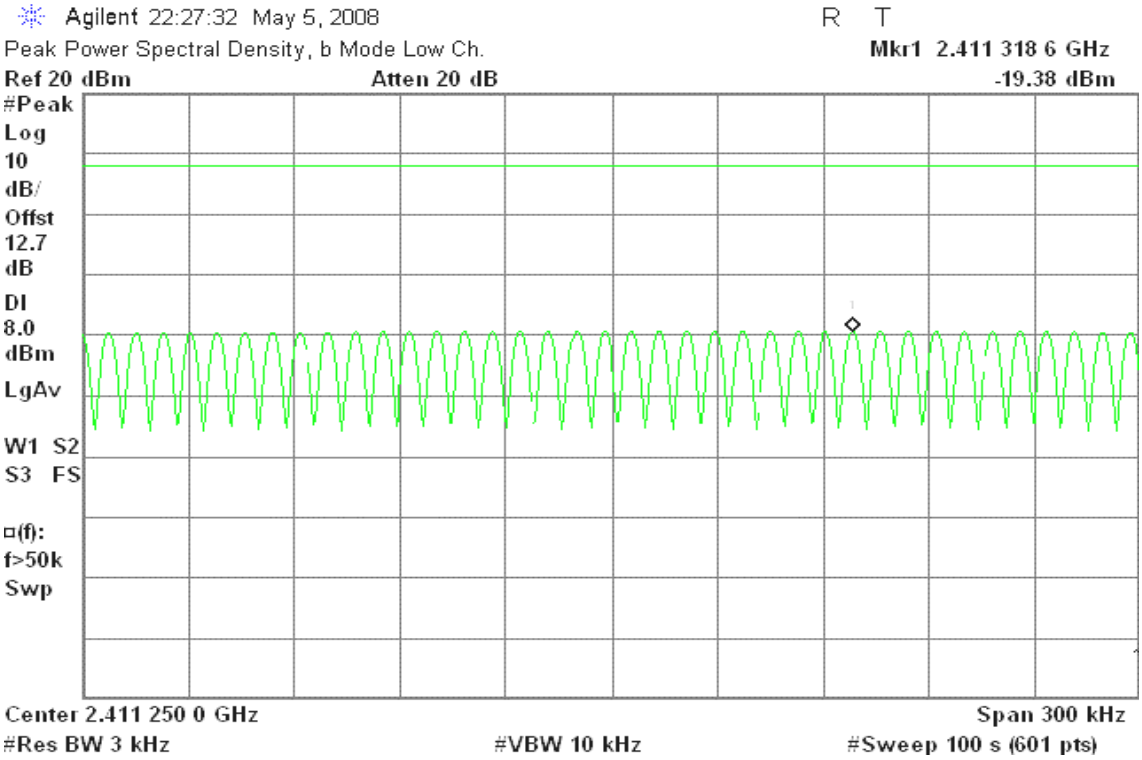
Test mode: draft 802.11n Wide-40 MHz Channel mode with combiner

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2422	-17.80	8.00	PASS
Mid	2437	-17.57		PASS
High	2452	-14.79		PASS

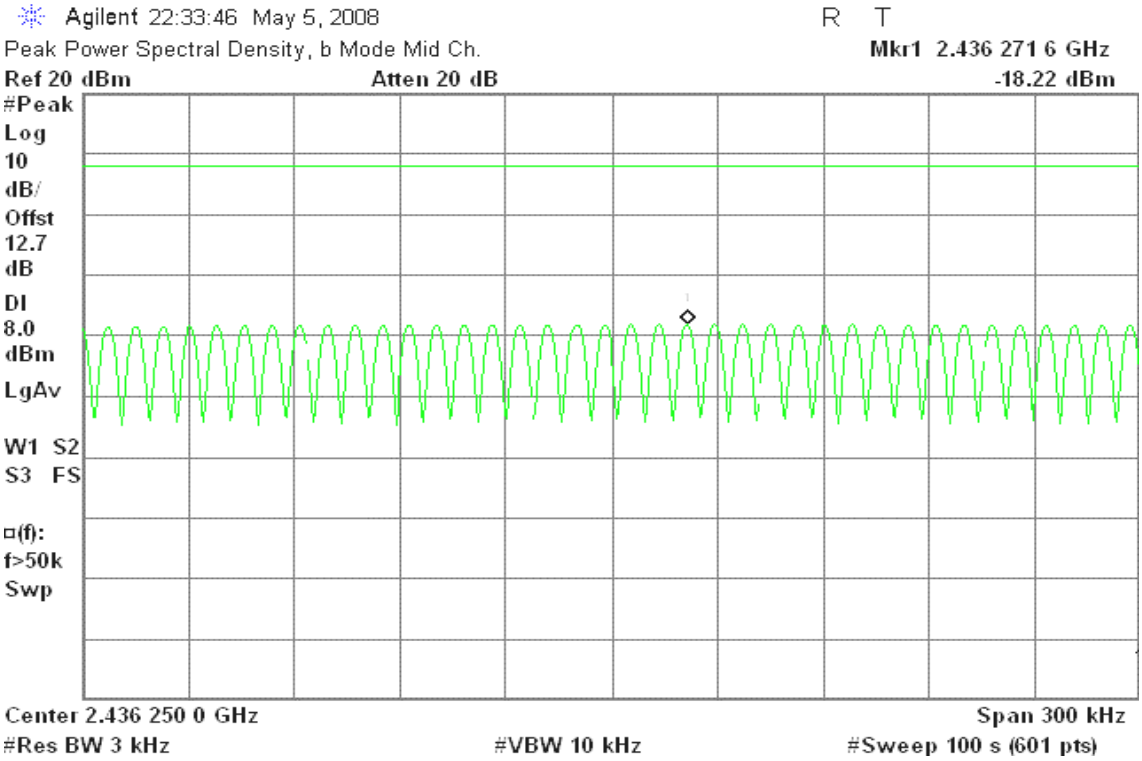
Test Plot

IEEE 802.11b mode

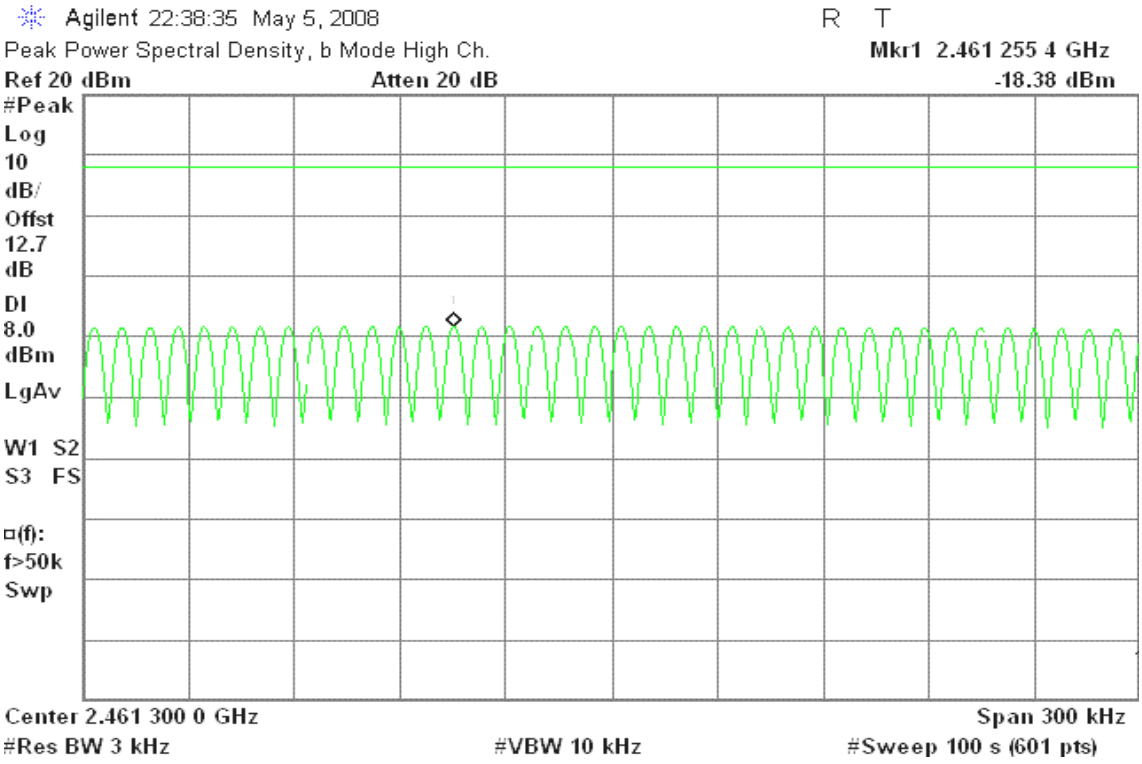
PPSD (CH Low)



PPSD (CH Mid)

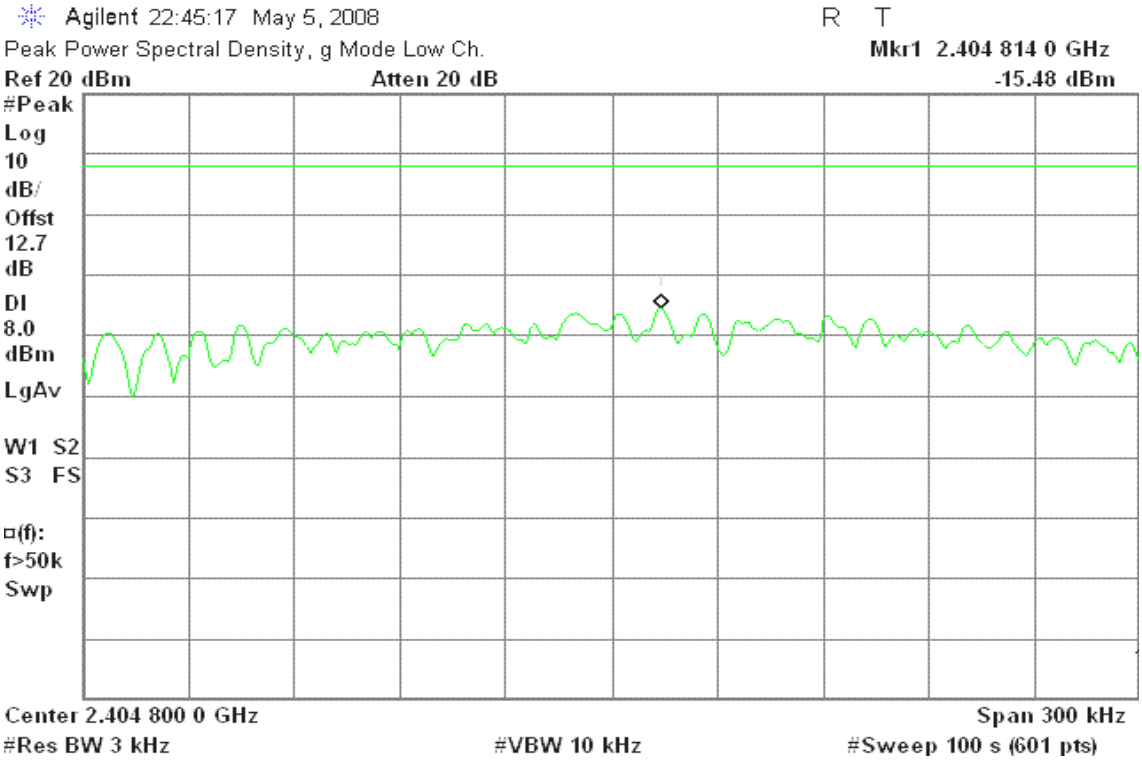


PPSD (CH High)

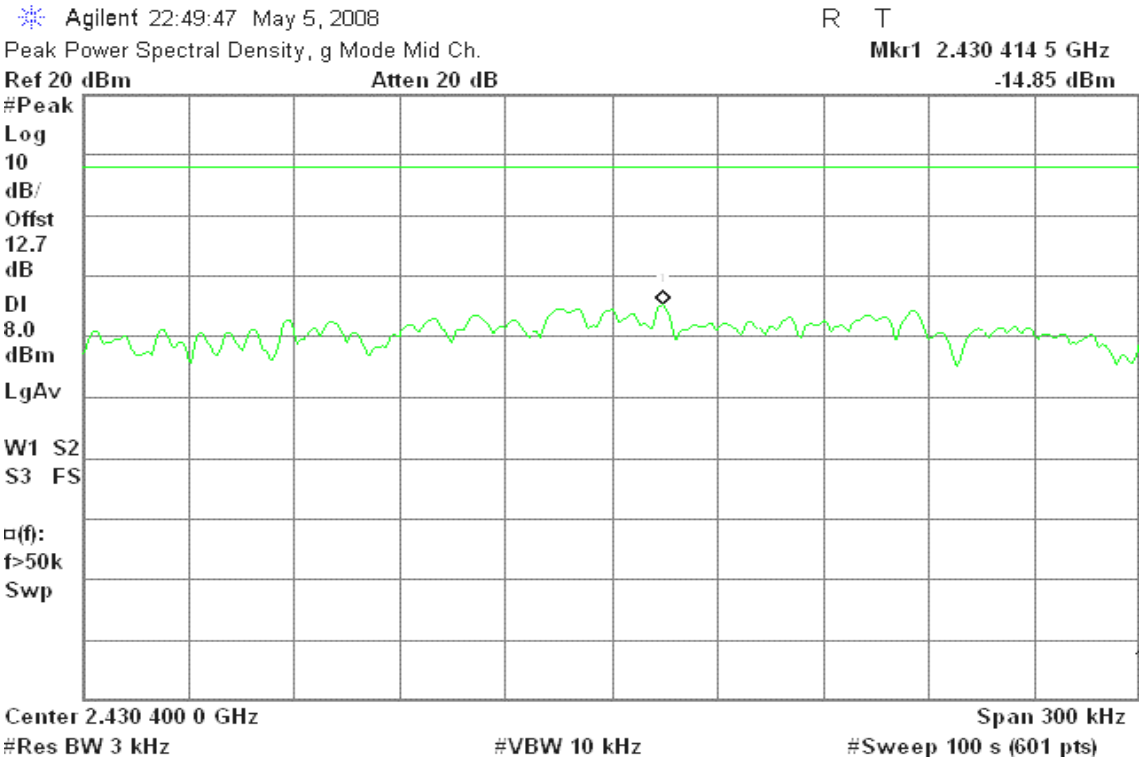


IEEE 802.11g mode

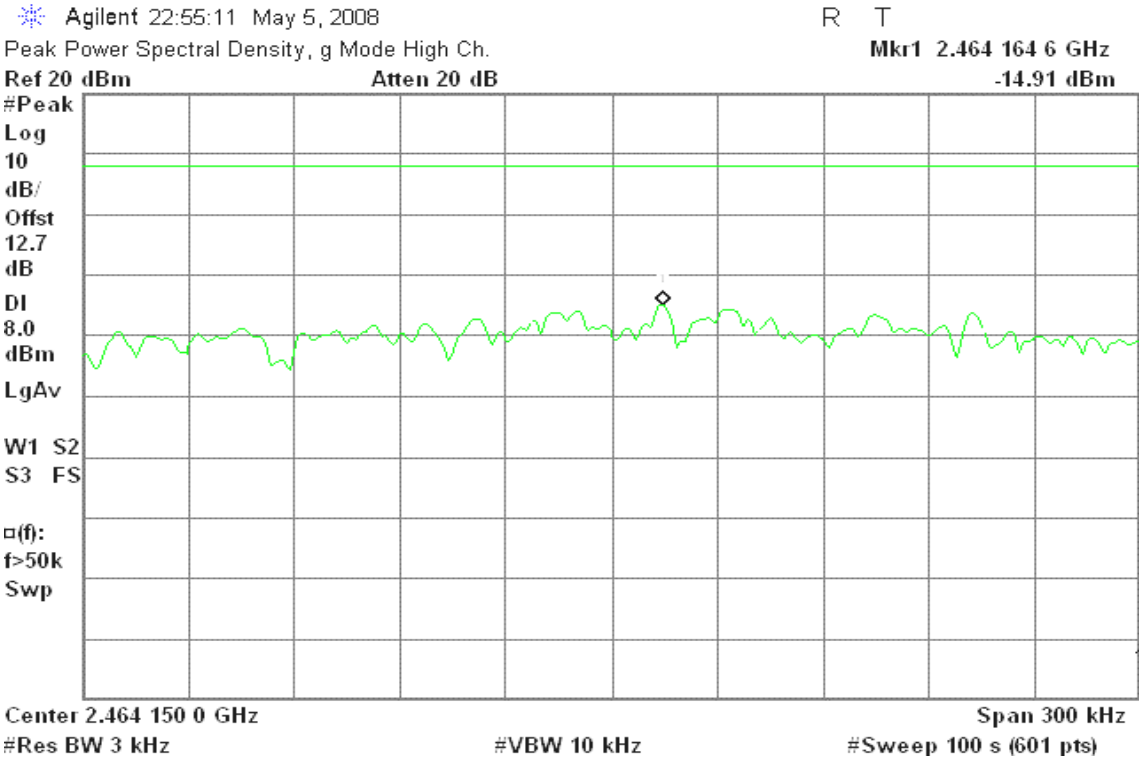
PPSD (CH Low)



PPSD (CH Mid)

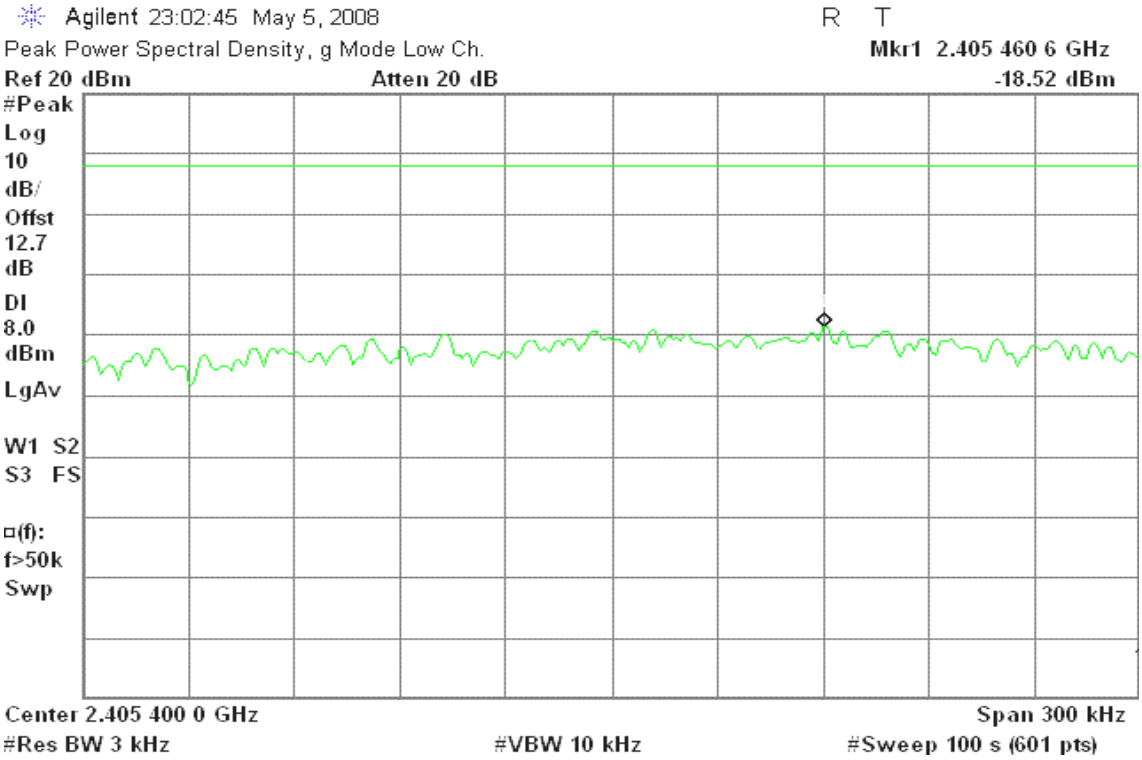


PPSD (CH High)

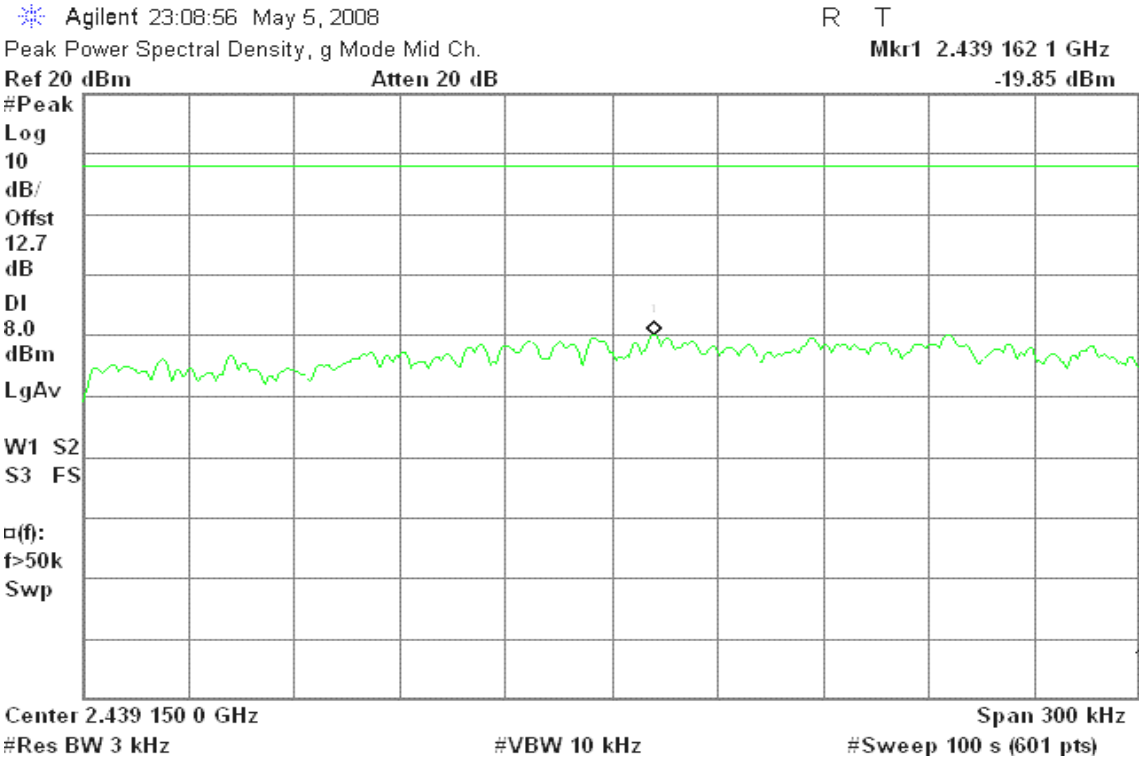


draft 802.11n Standard-20 MHz Channel mode / Chain 0

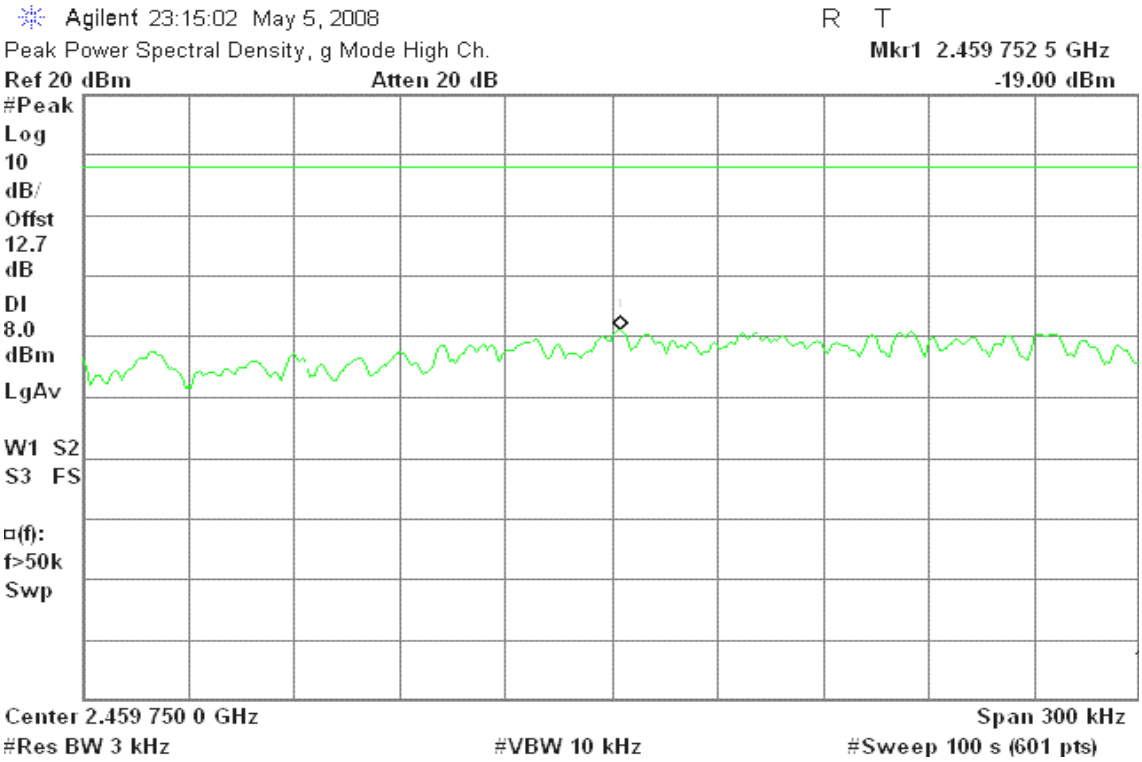
PPSD (CH Low)



PPSD (CH Mid)

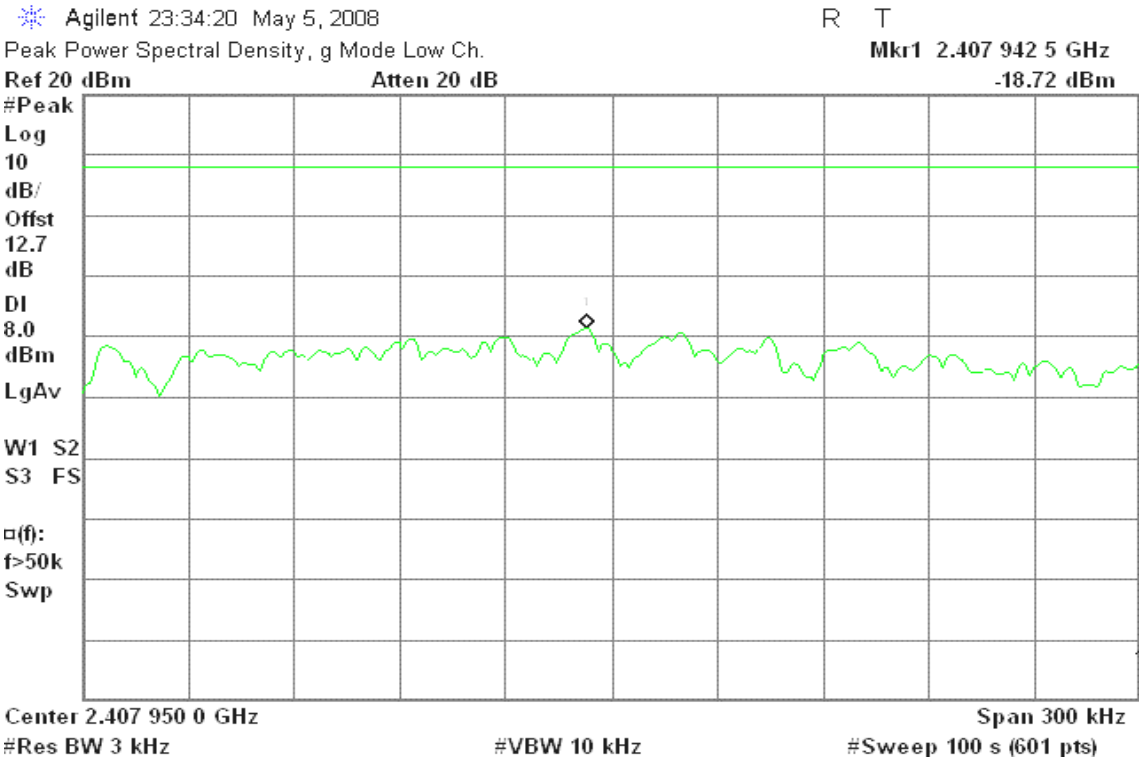


PPSD (CH High)

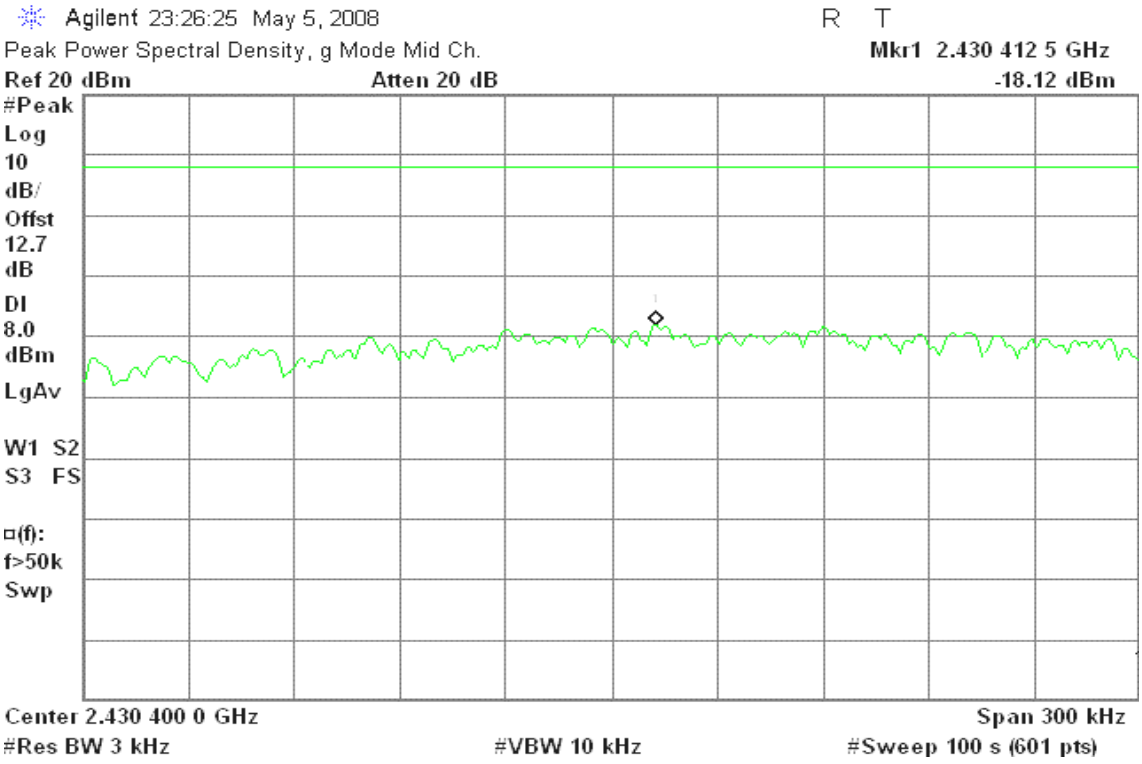


draft 802.11n Standard-20 MHz Channel mode / Chain 1

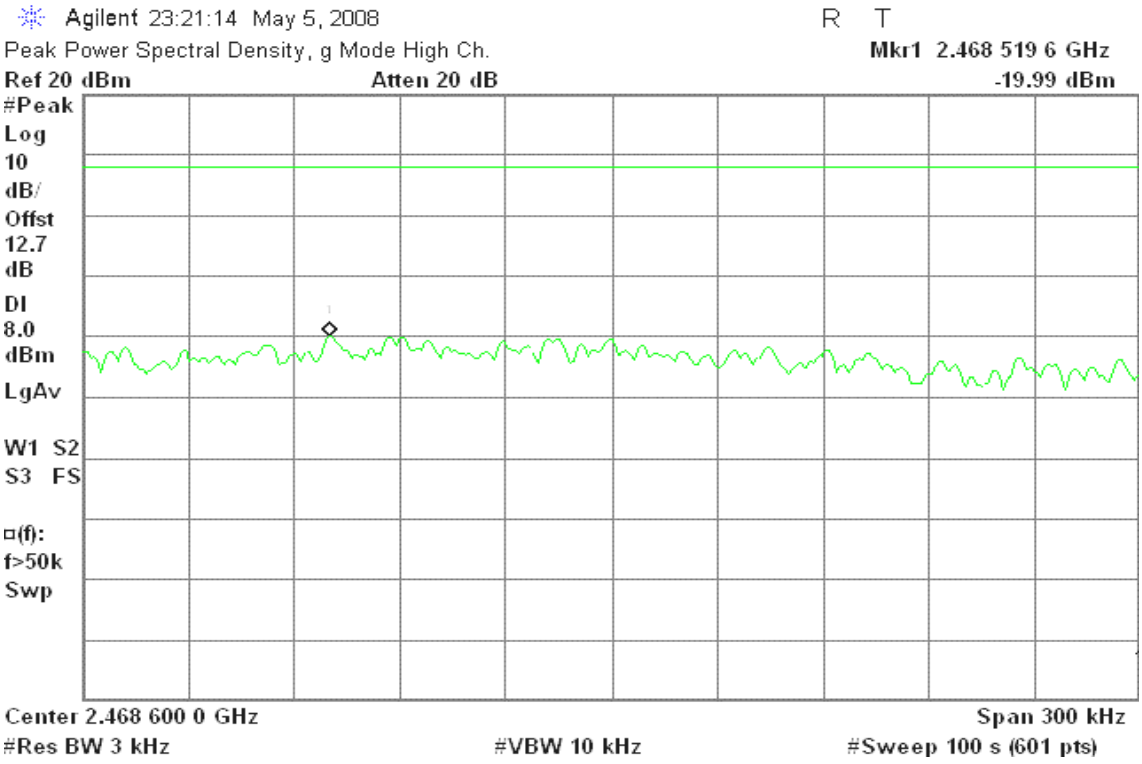
PPSD (CH Low)



PPSD (CH Mid)



PPSD (CH High)



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

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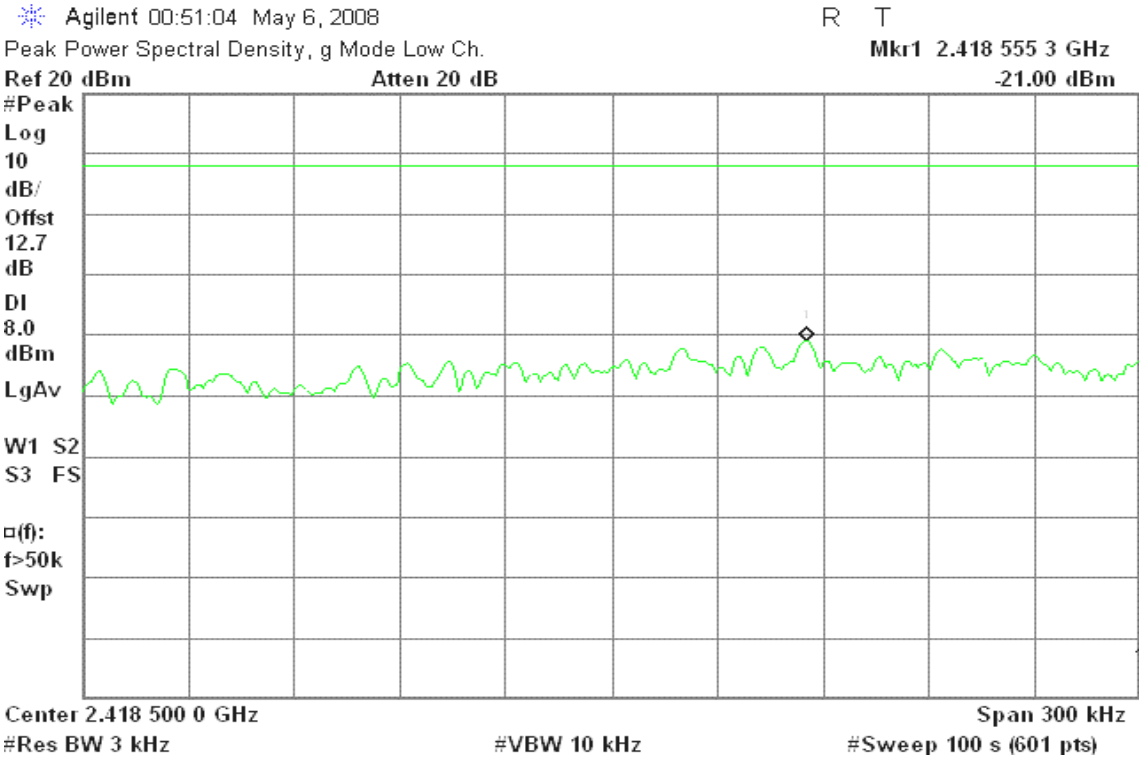

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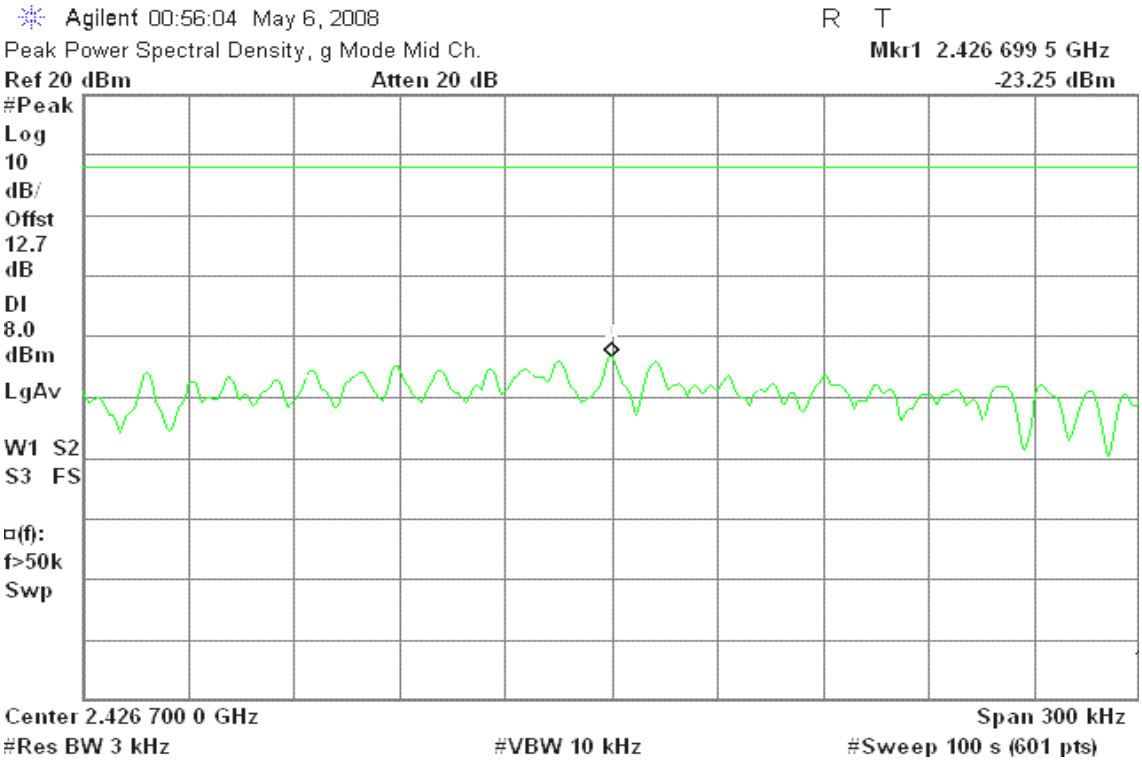
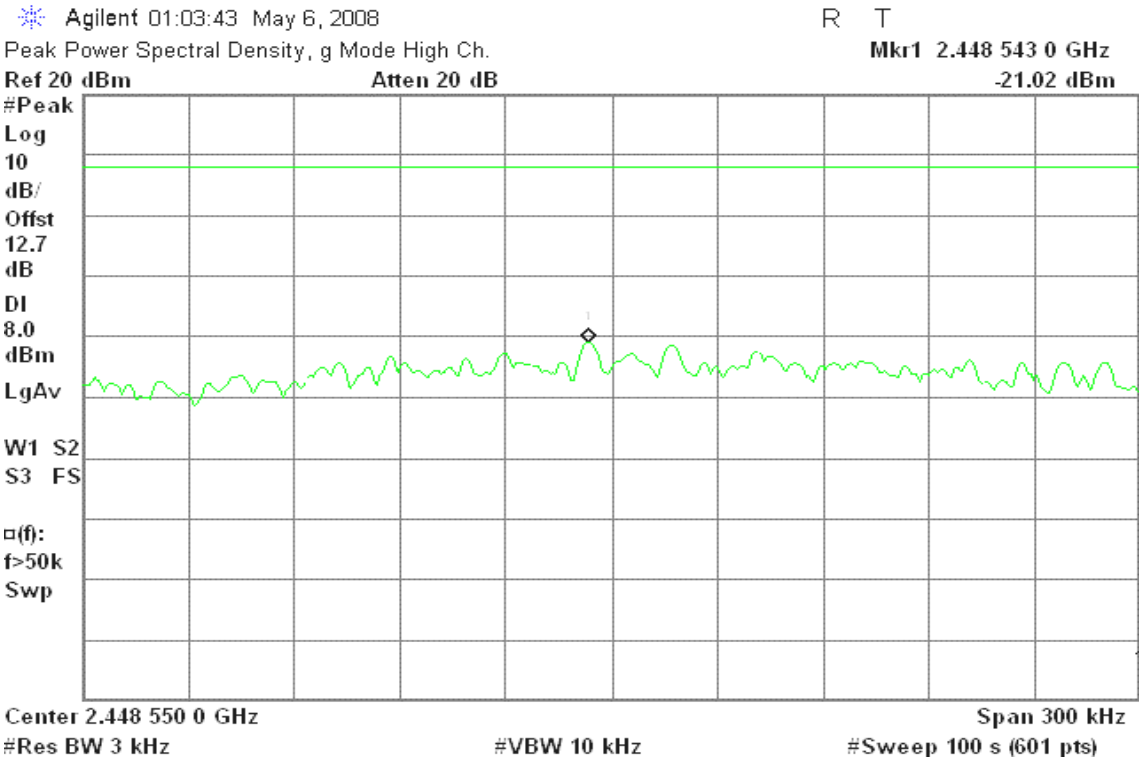
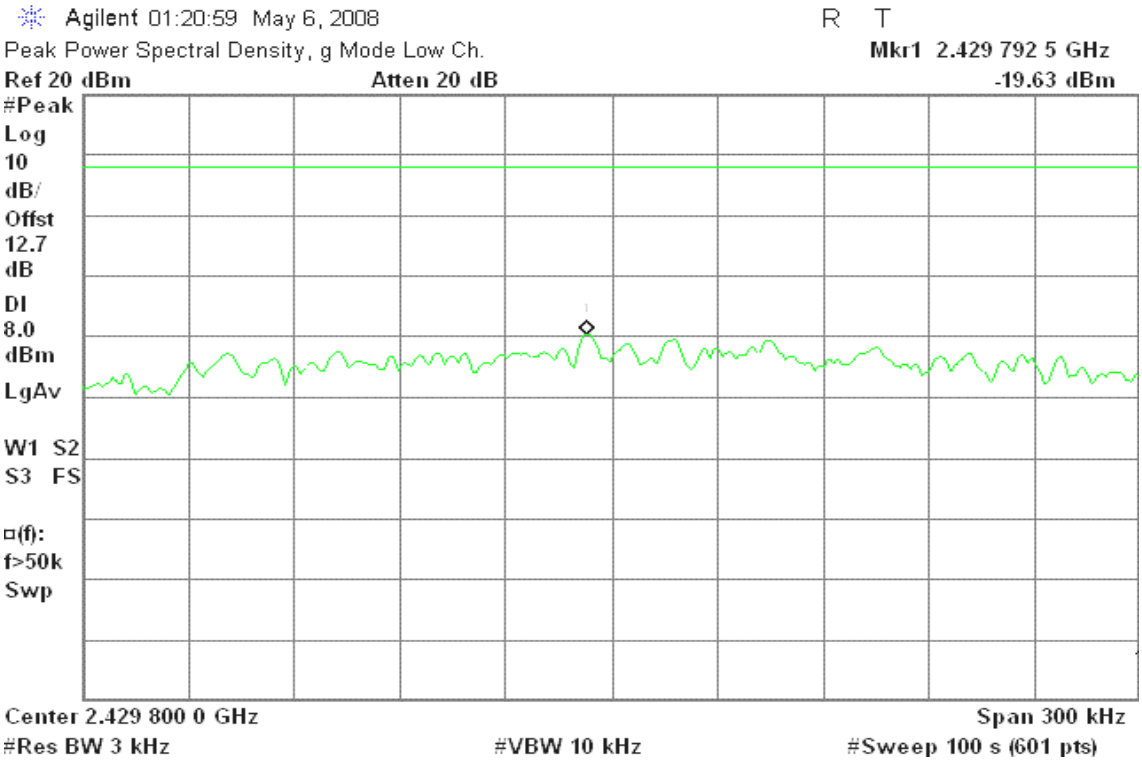


PPSD (CH High)



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

PPSD (CH Low)



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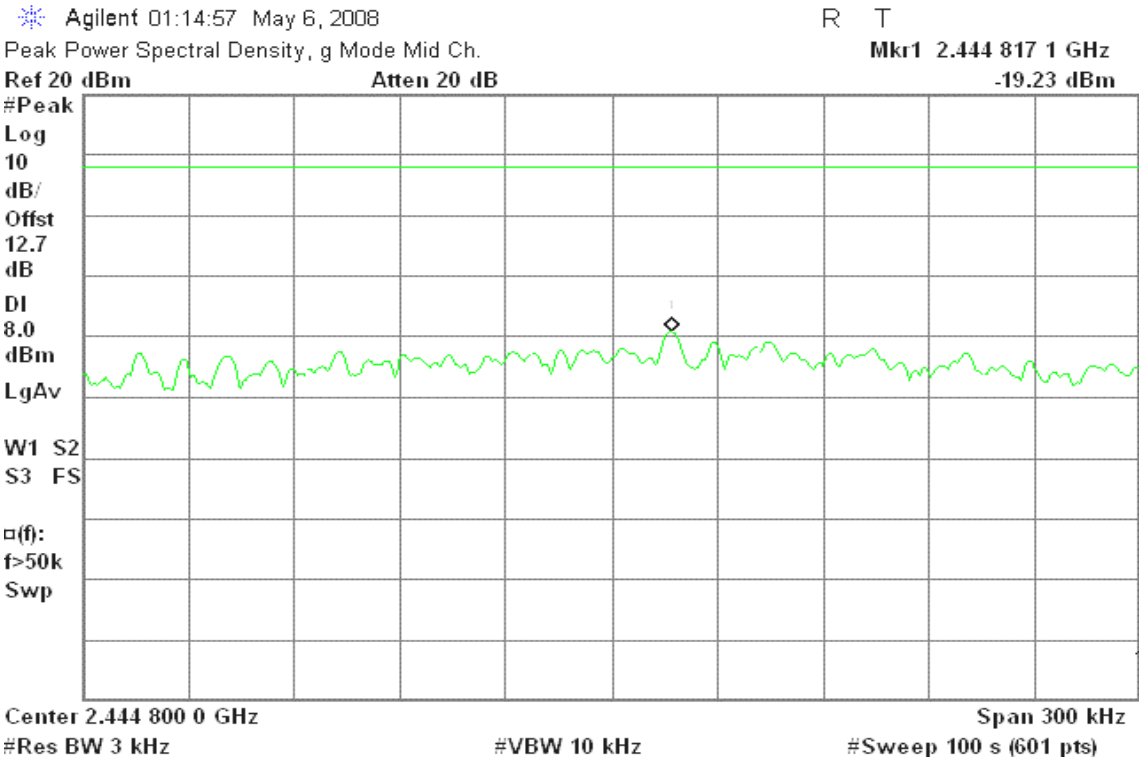
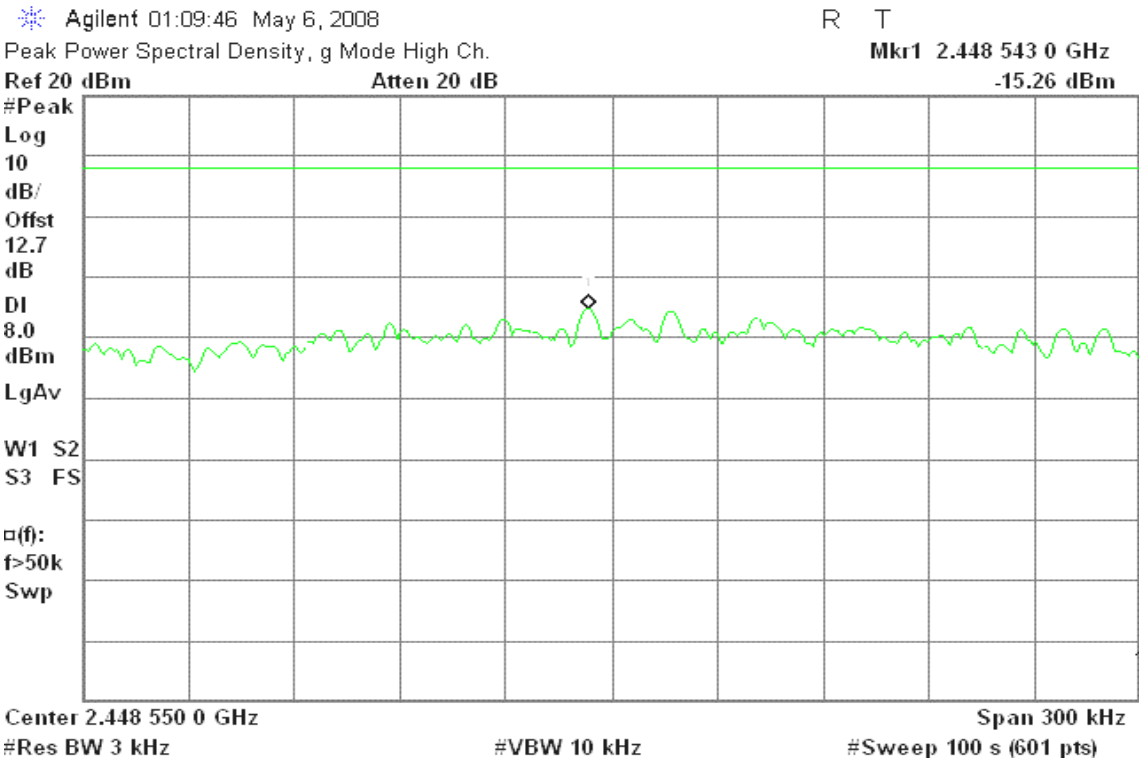
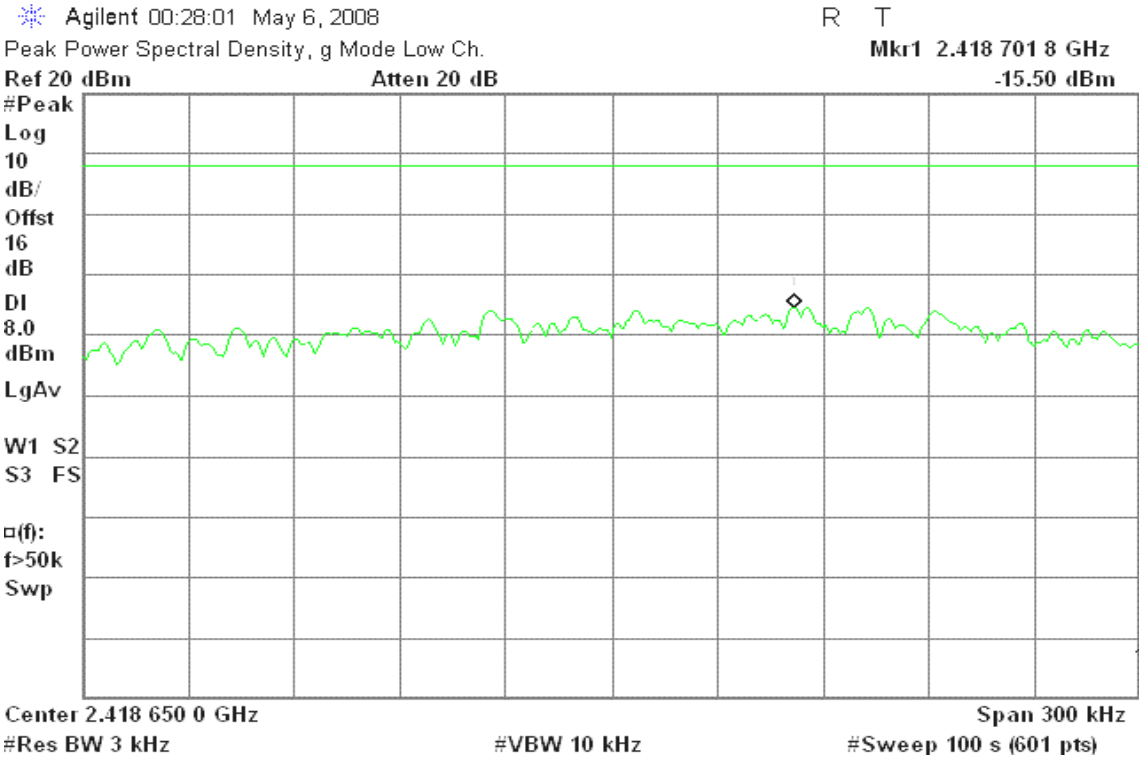


PPSD (CH High)

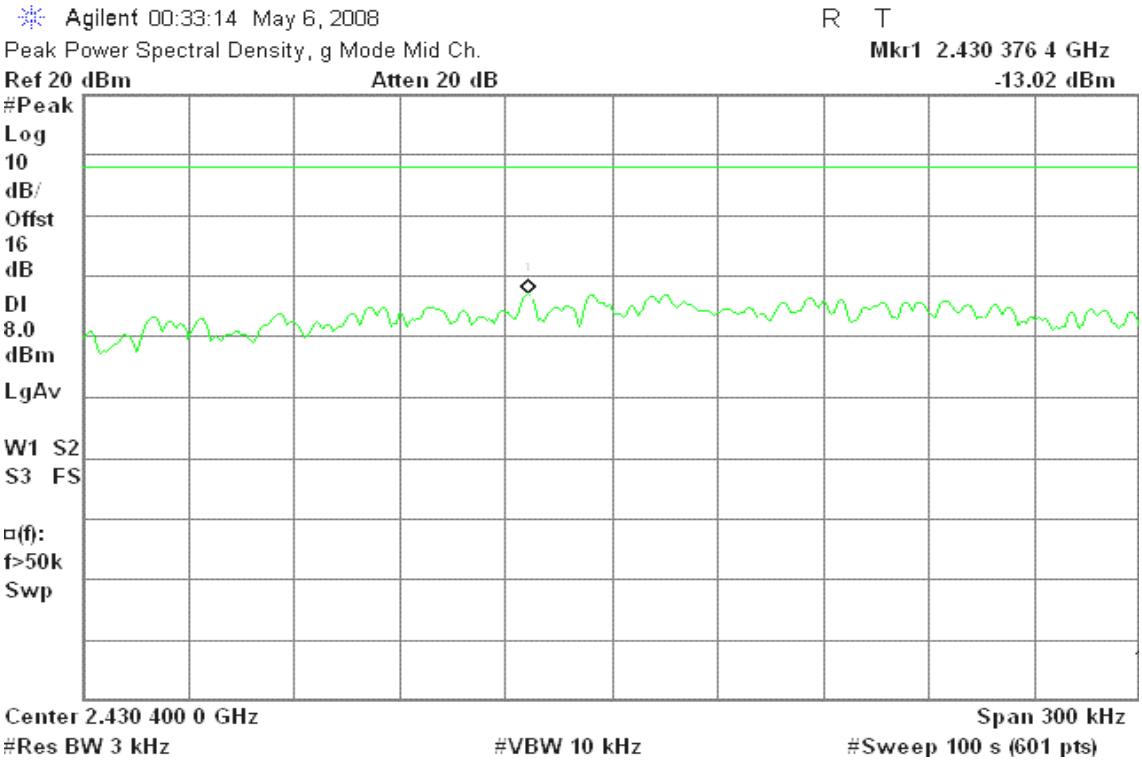


draft 802.11n Standard-20 MHz Channel mode with combiner

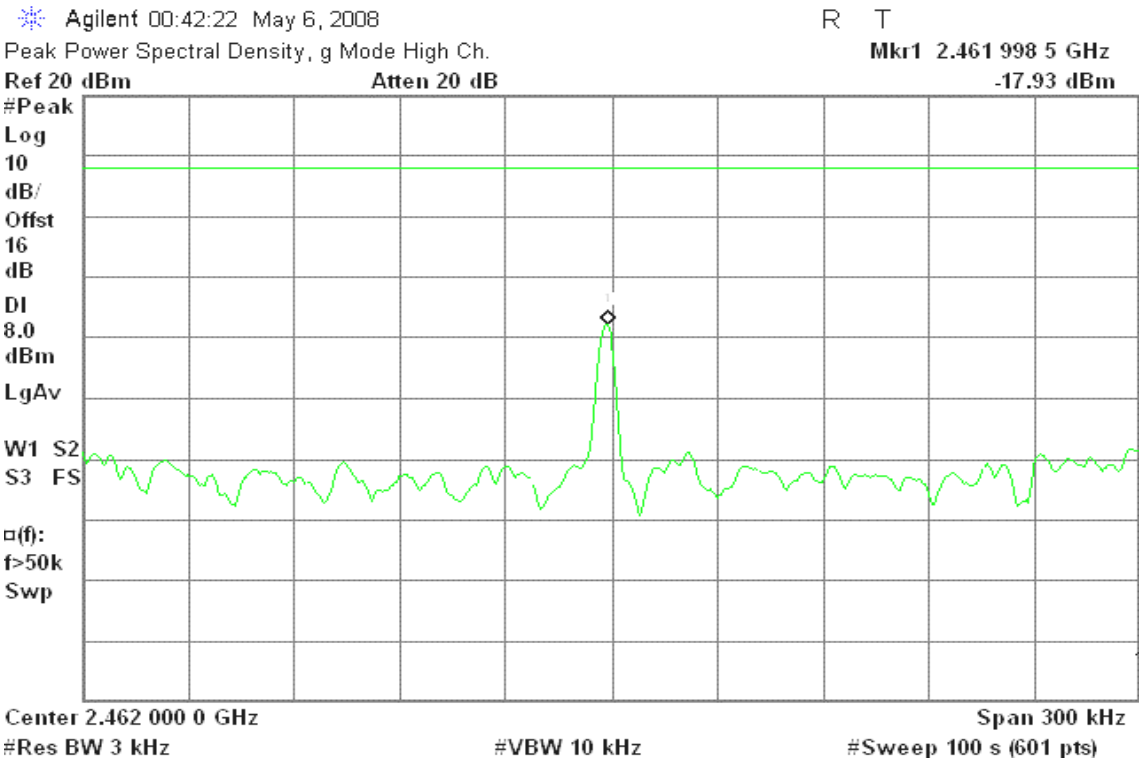
PPSD (CH Low)



PPSD (CH Mid)

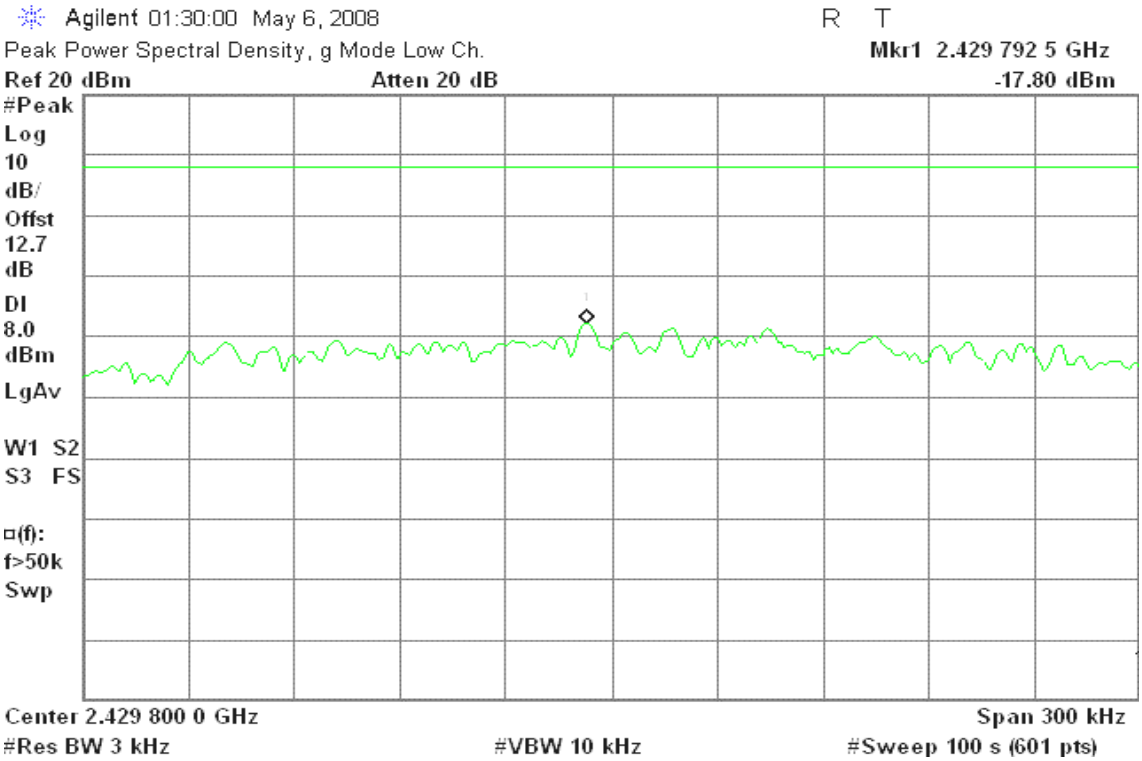


PPSD (CH High)

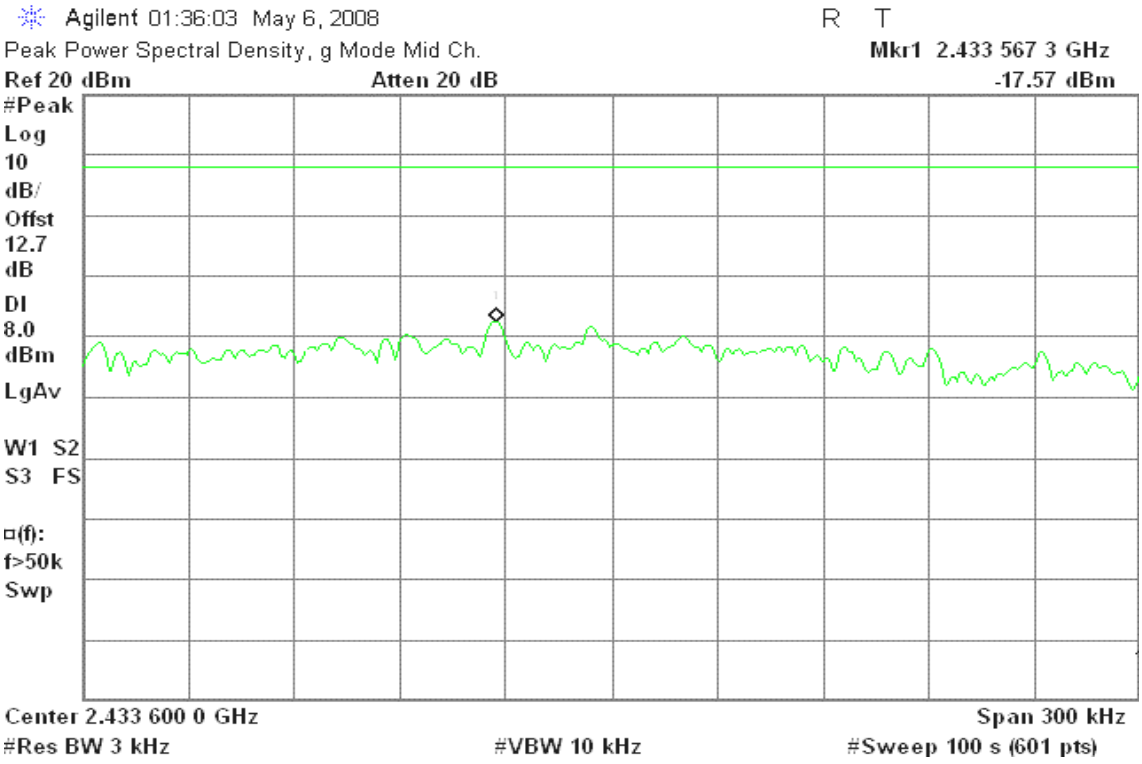


draft 802.11n Wide-40 MHz Channel mode with combiner

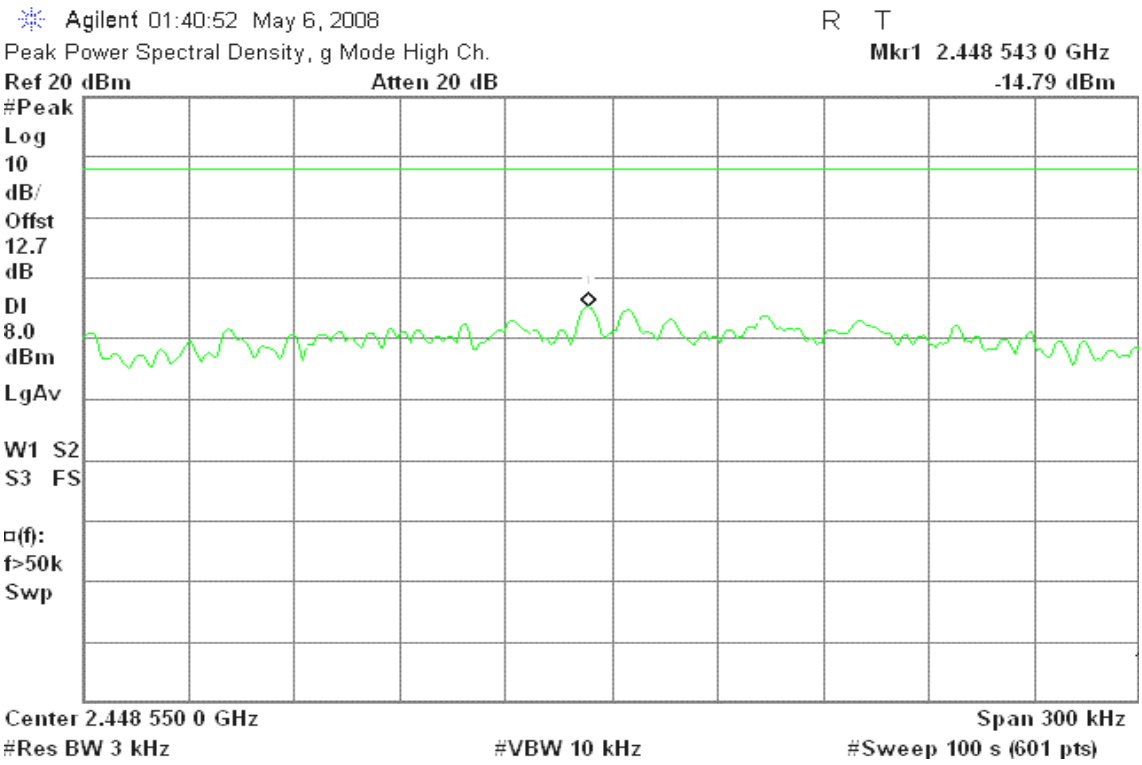
PPSD (CH Low)



PPSD (CH Mid)



PPSD (CH High)



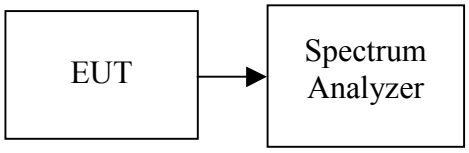
7.6 SPURIOUS EMISSIONS

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 13GHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

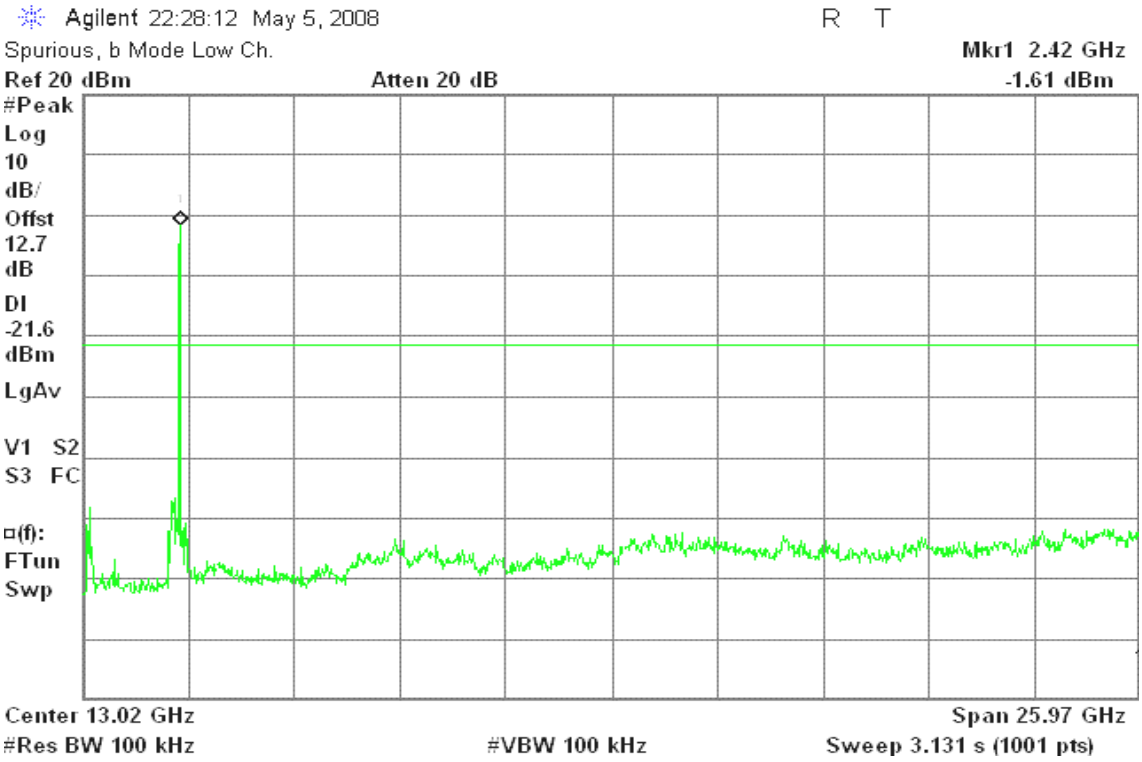
TEST RESULTS

No non-compliance noted.

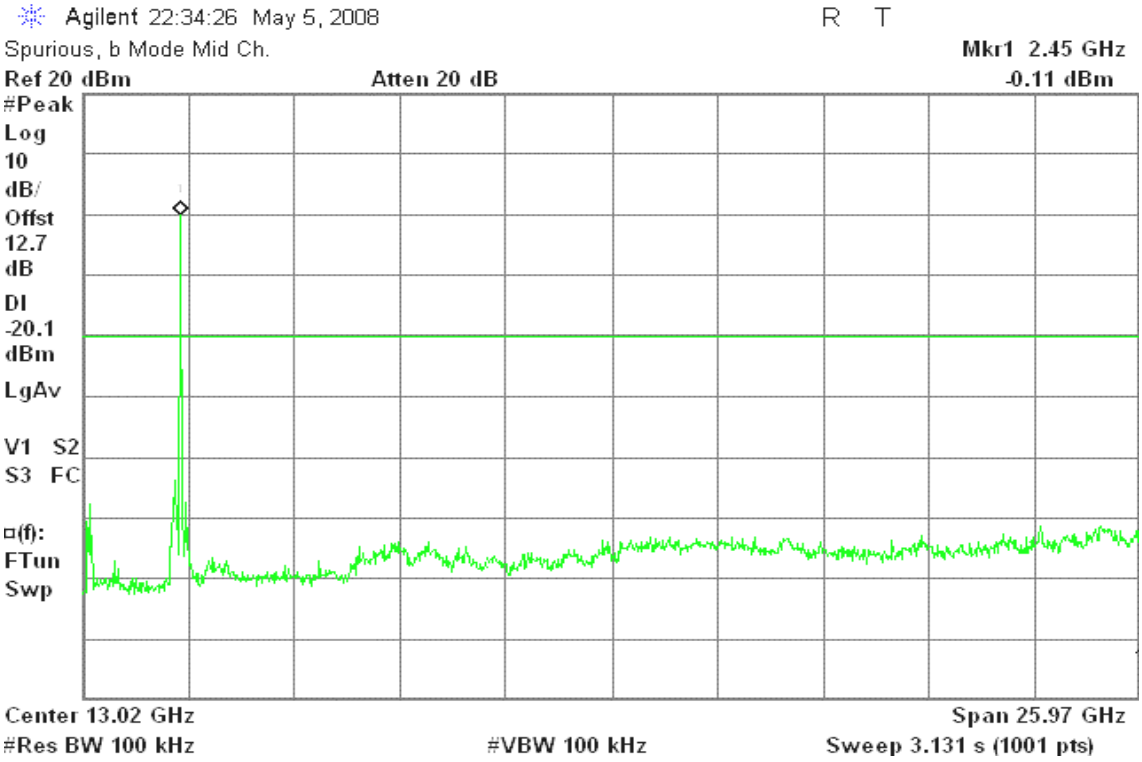
Test Plot

IEEE 802.11b mode

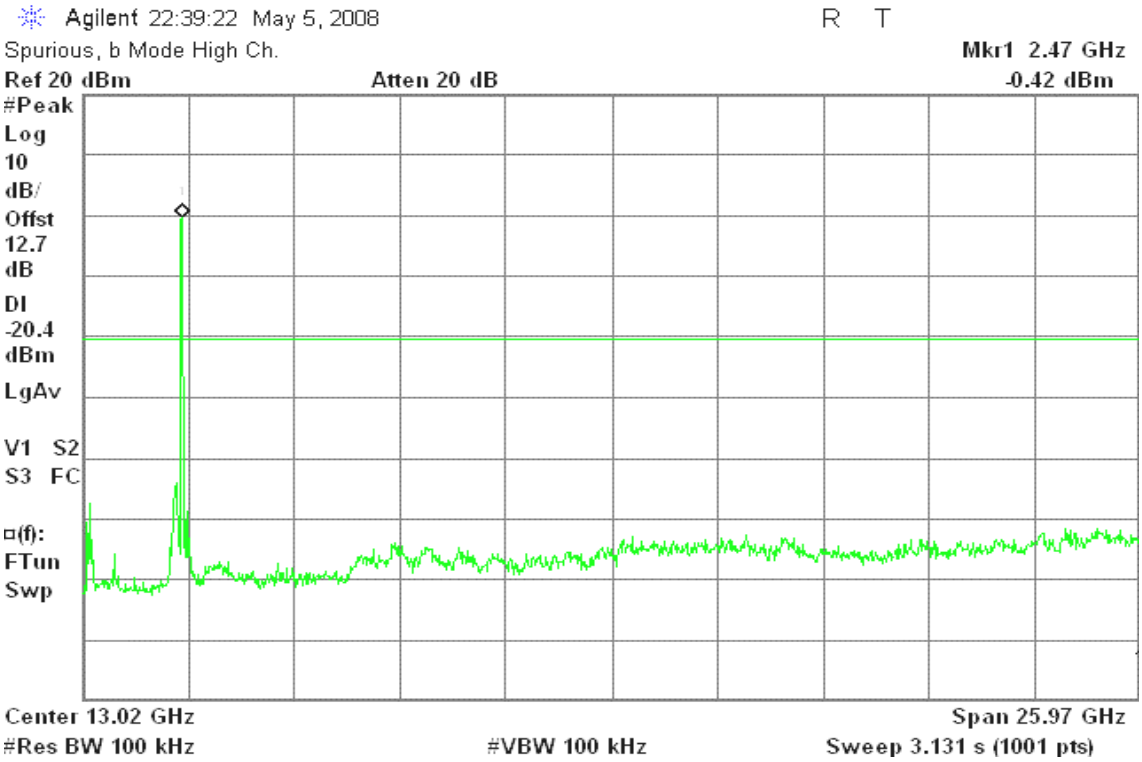
CH Low



CH Mid

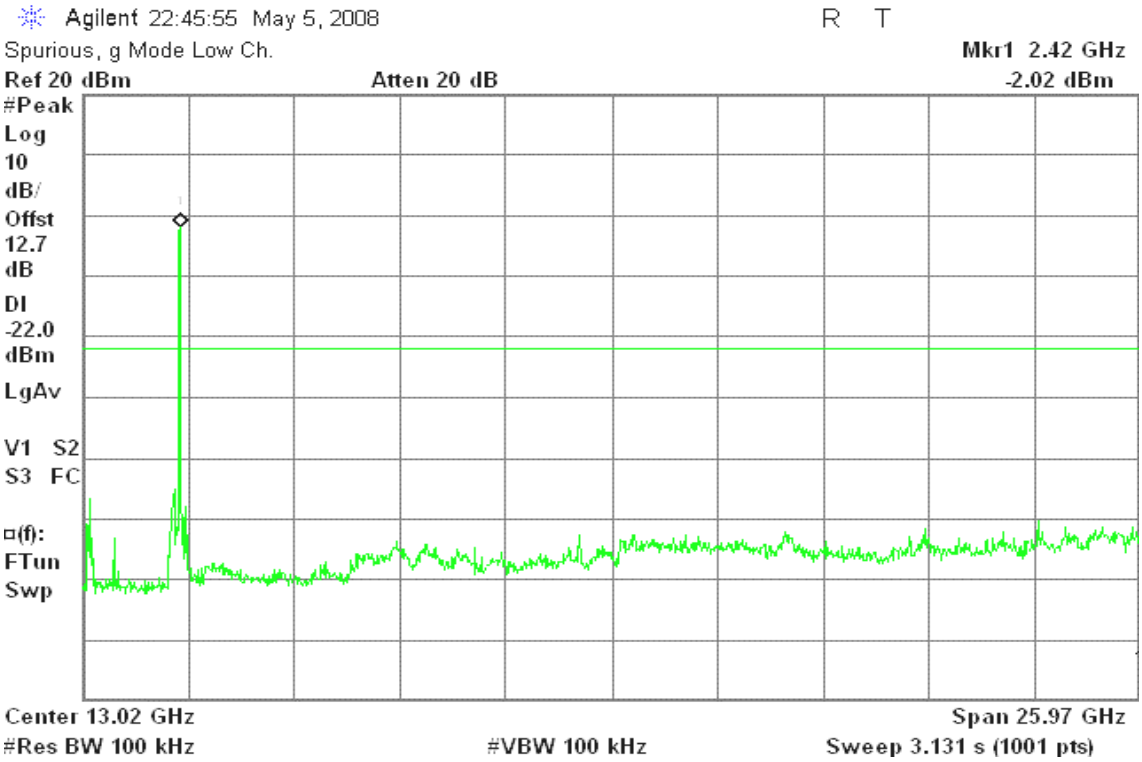


CH High

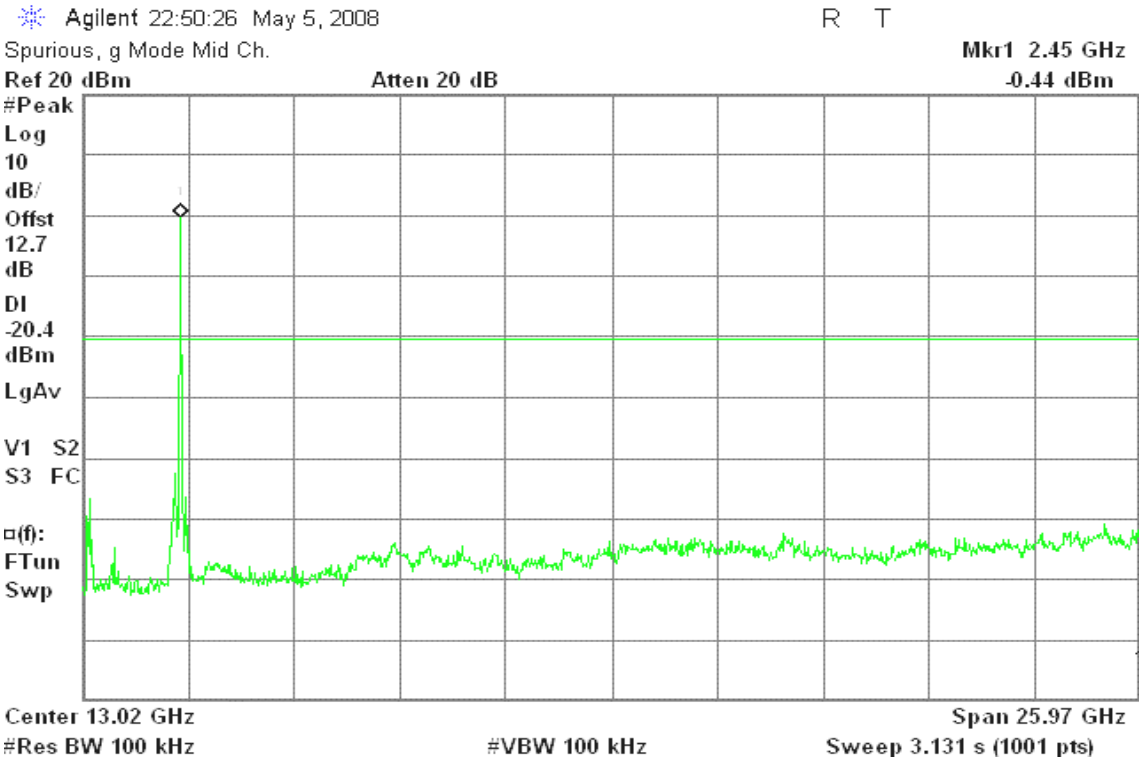


IEEE 802.11g mode

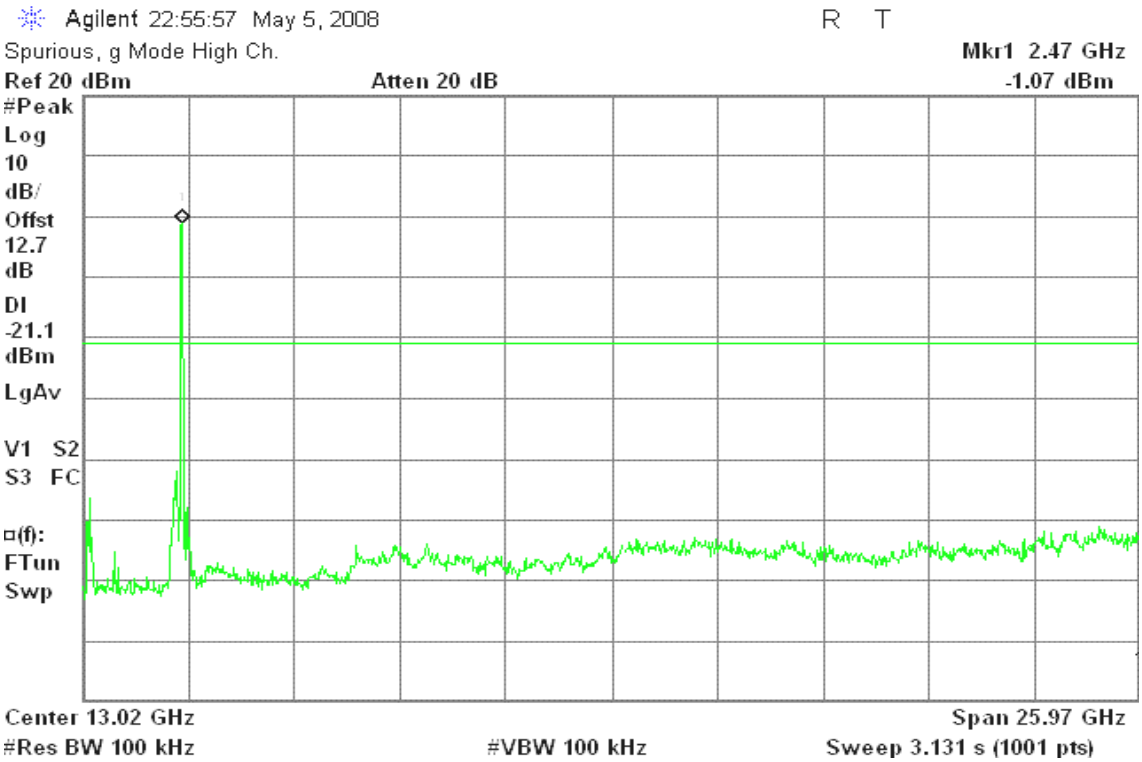
CH Low



CH Mid

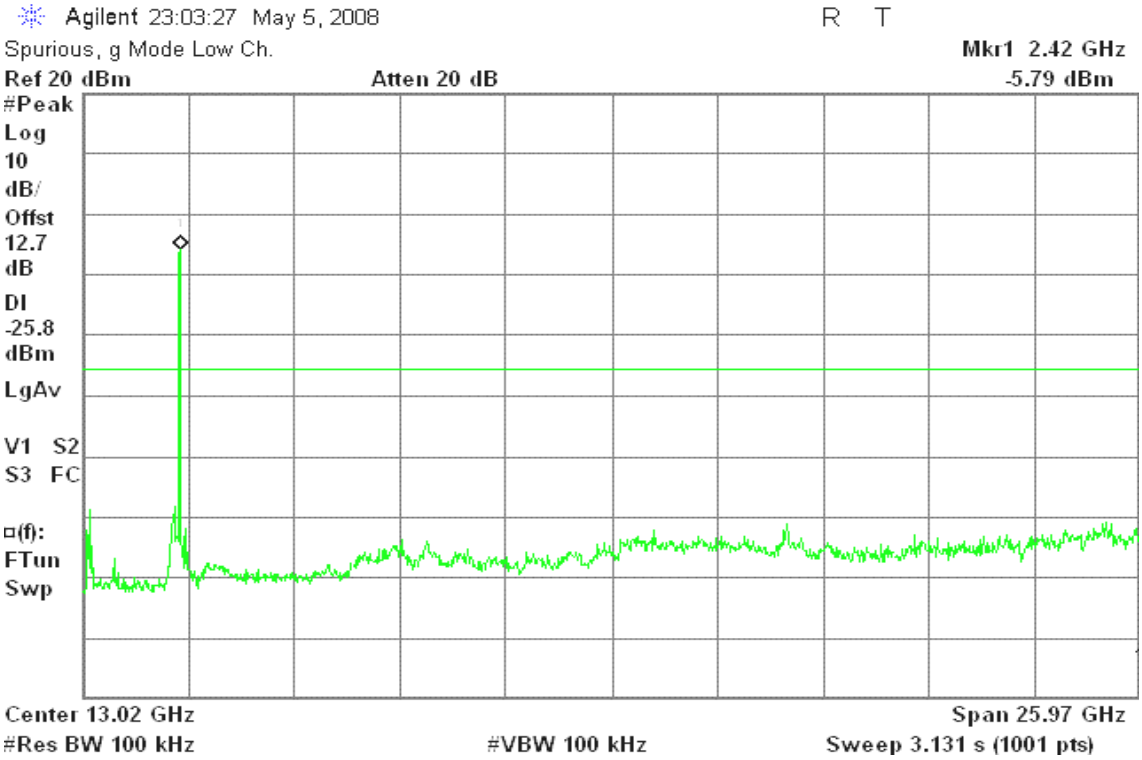


CH High

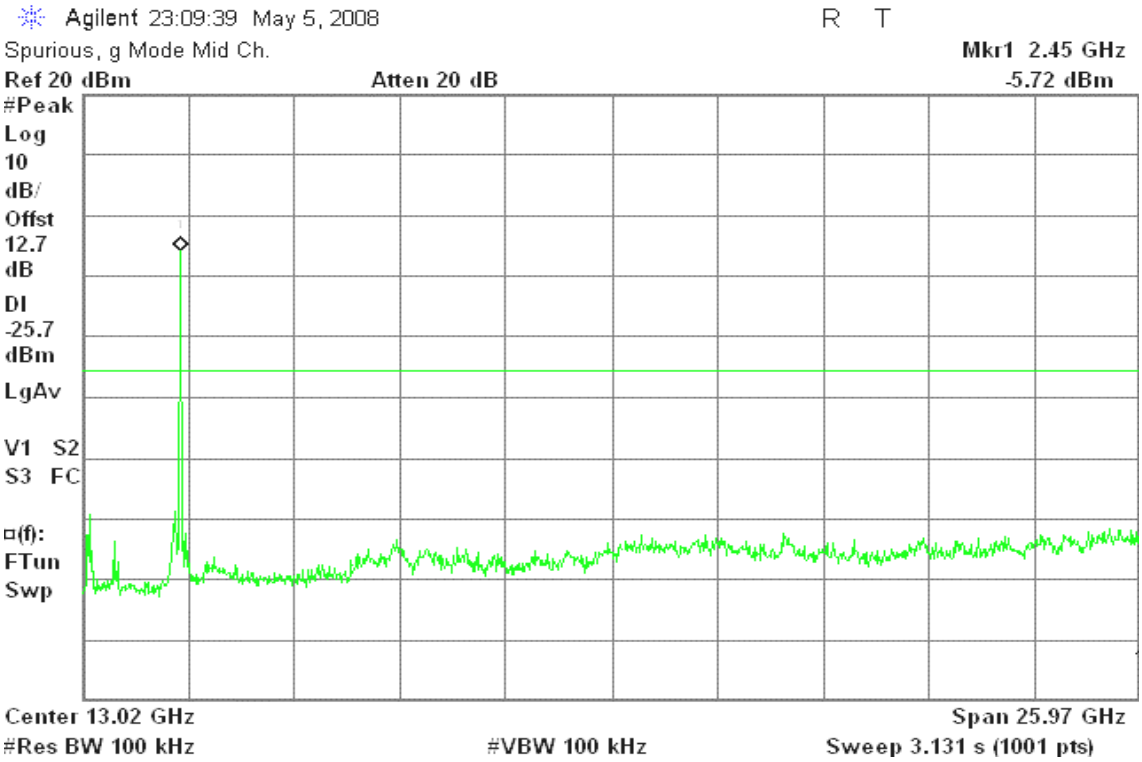


draft 802.11n Standard-20 MHz Channel mode / Chain 0

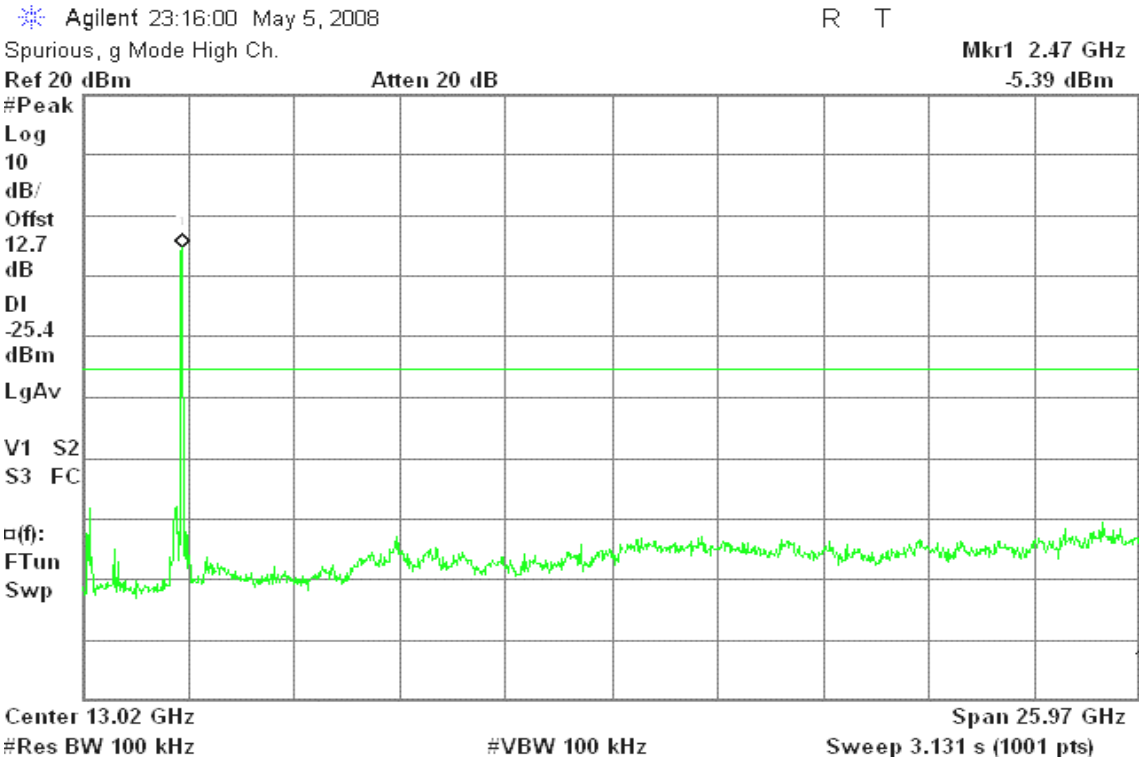
CH Low



CH Mid

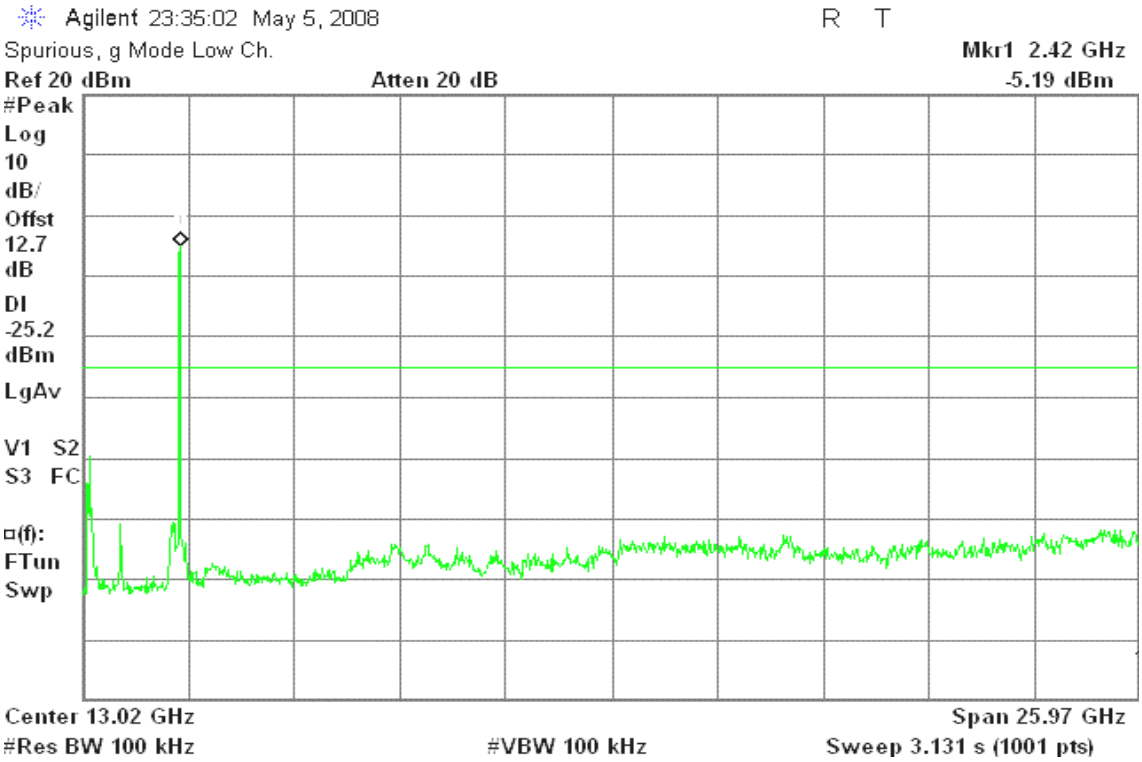


CH High

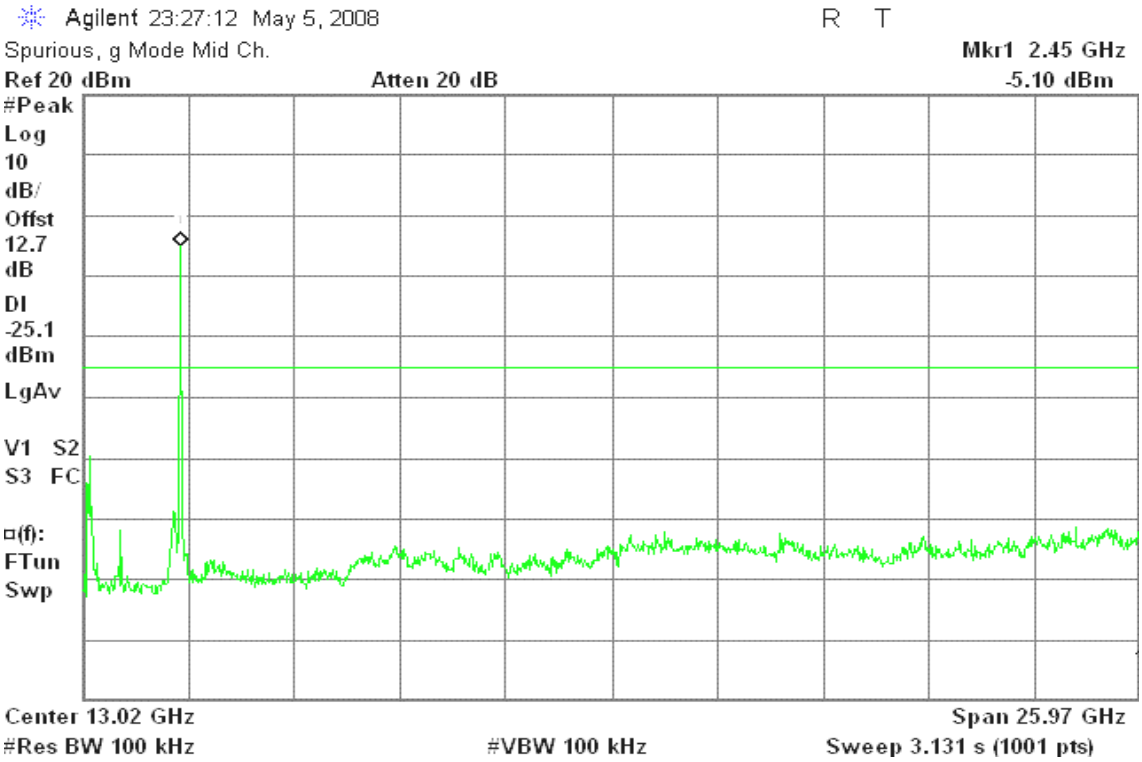


draft 802.11n Standard-20 MHz Channel mode / Chain 1

CH Low



CH Mid



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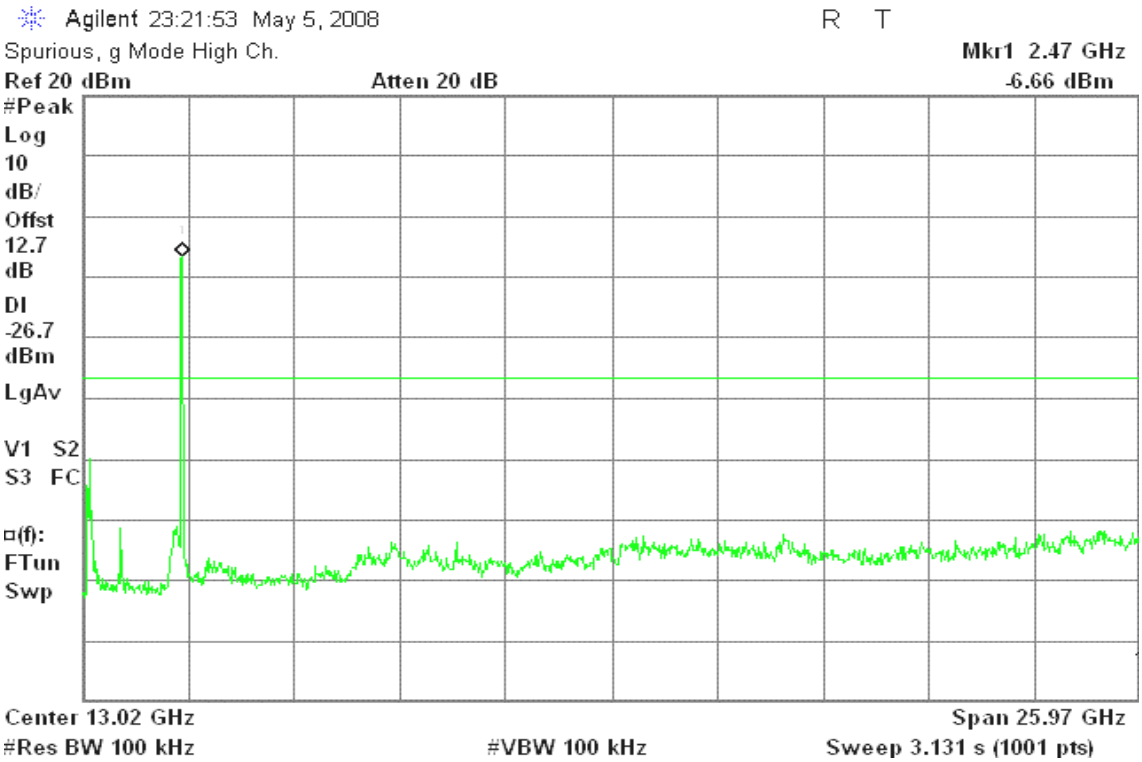
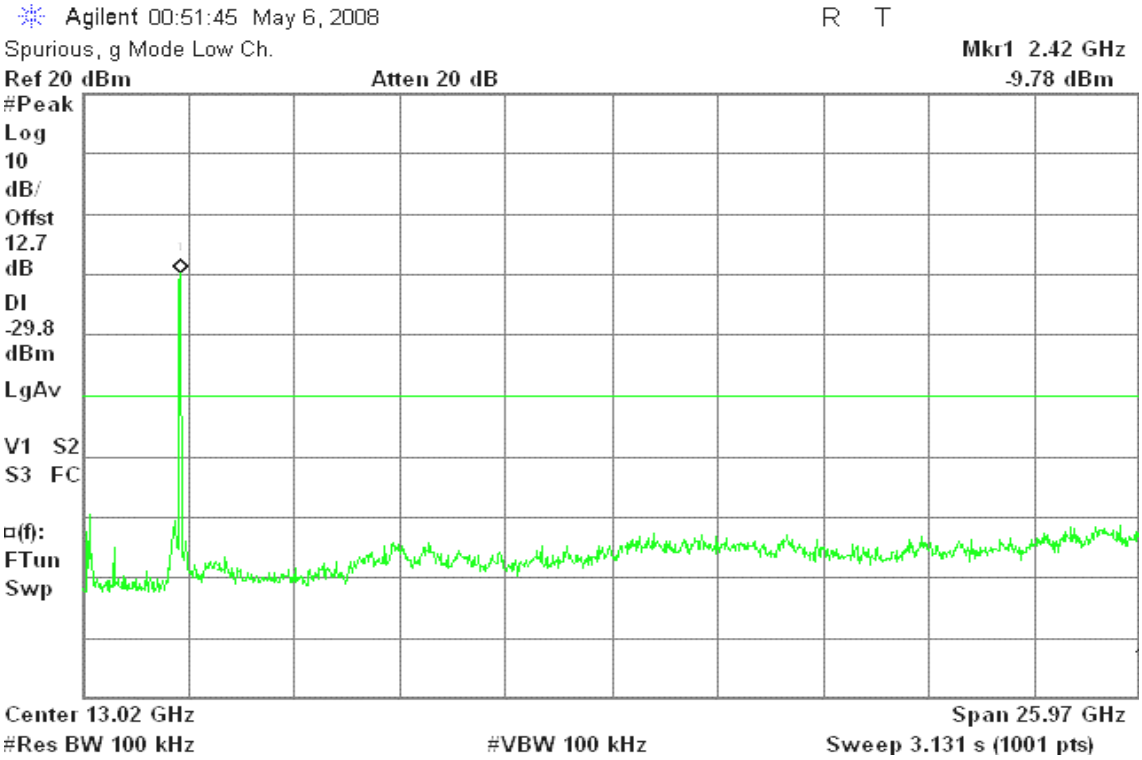
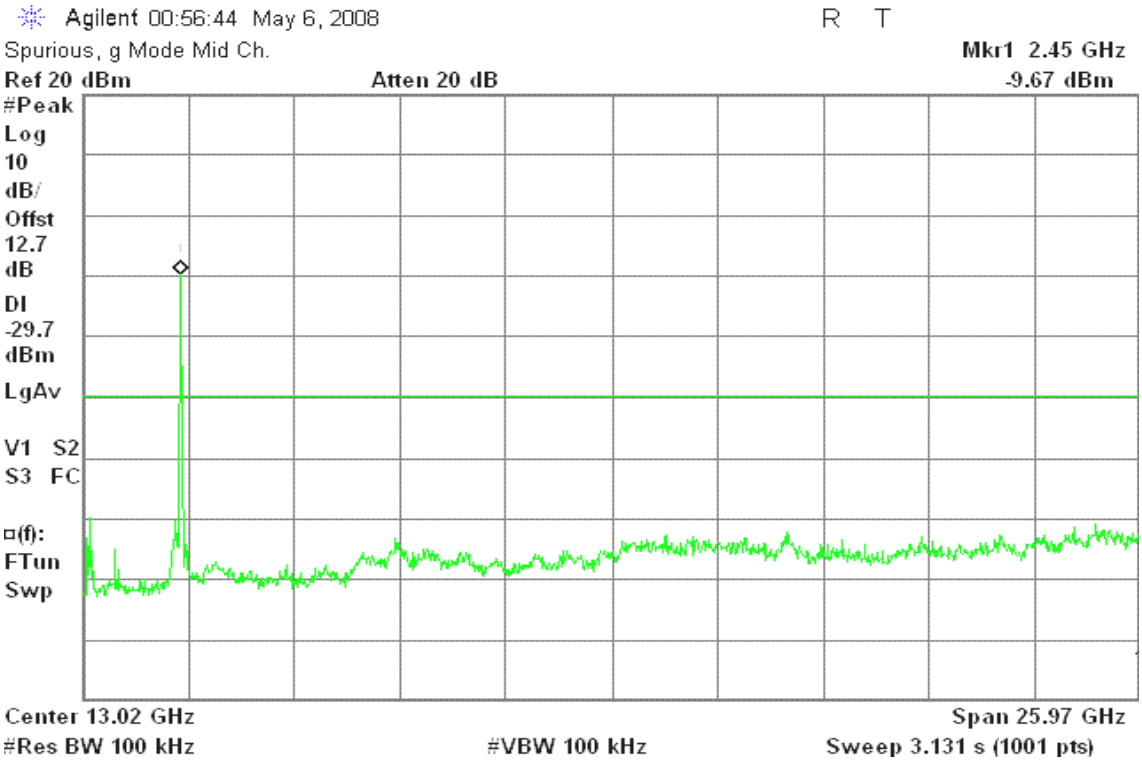


draft 802.11n Wide-40 MHz Channel mode / Chain 0

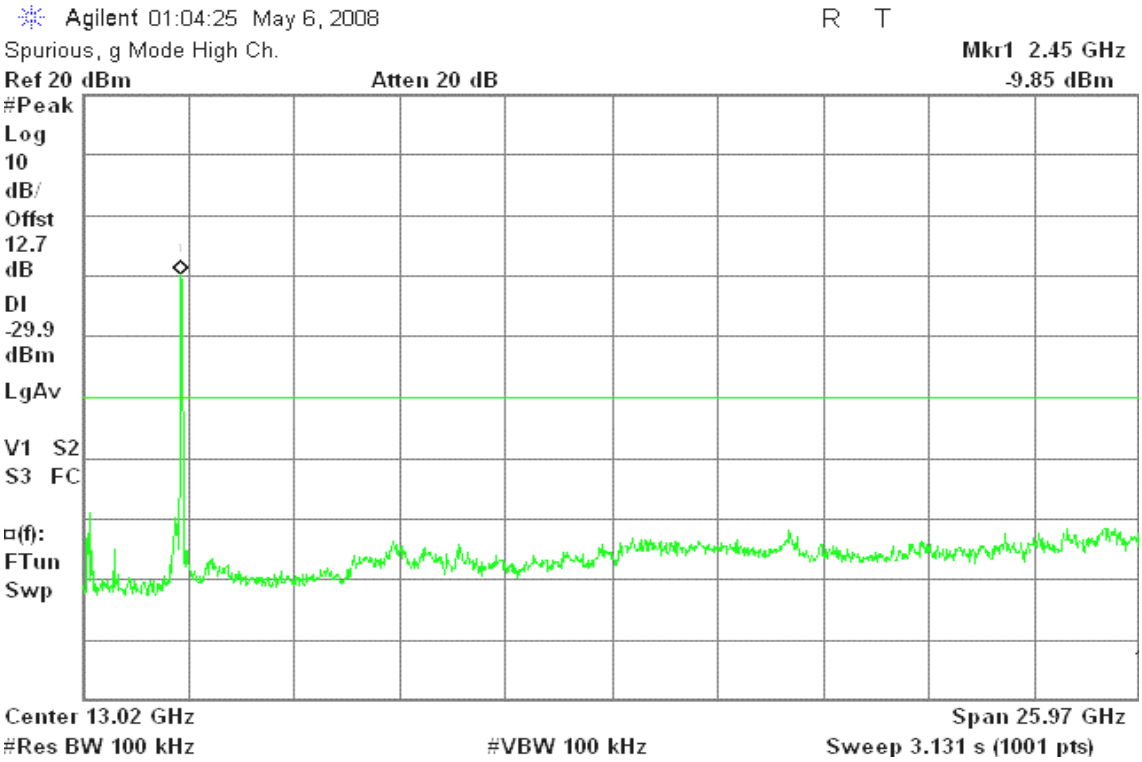
CH Low



CH Mid

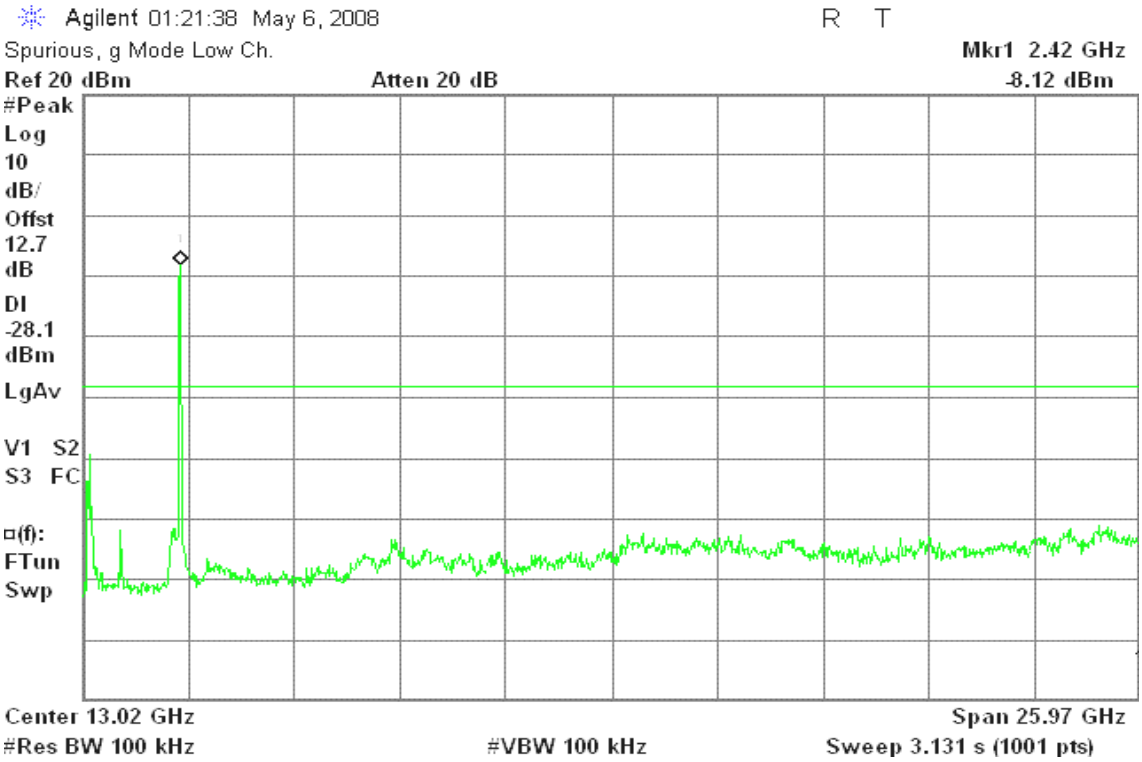


CH High

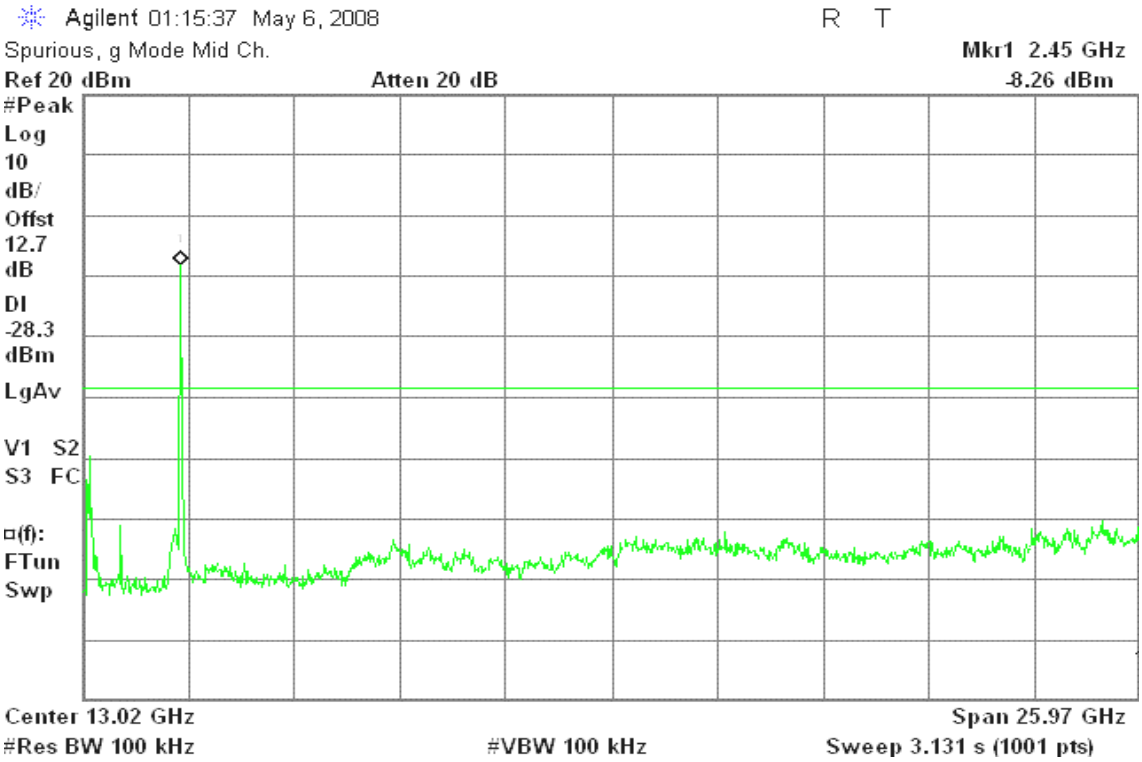


draft 802.11n Wide-40 MHz Channel mode / Chain 1

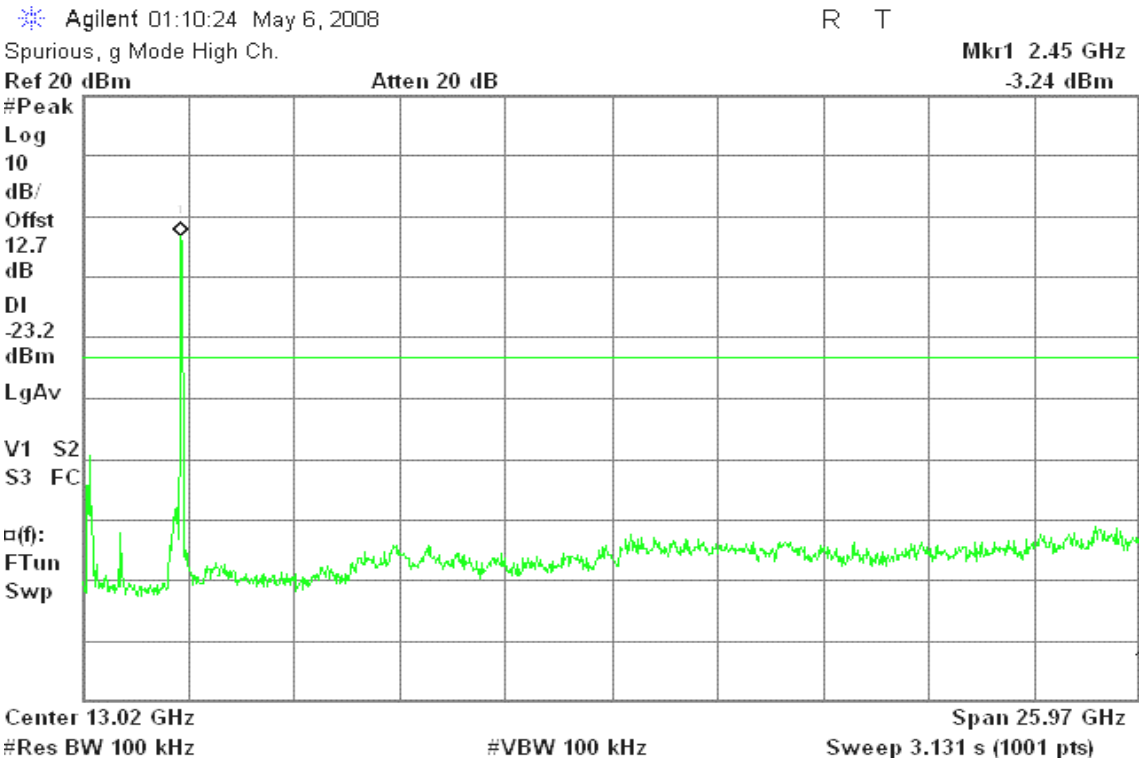
CH Low



CH Mid

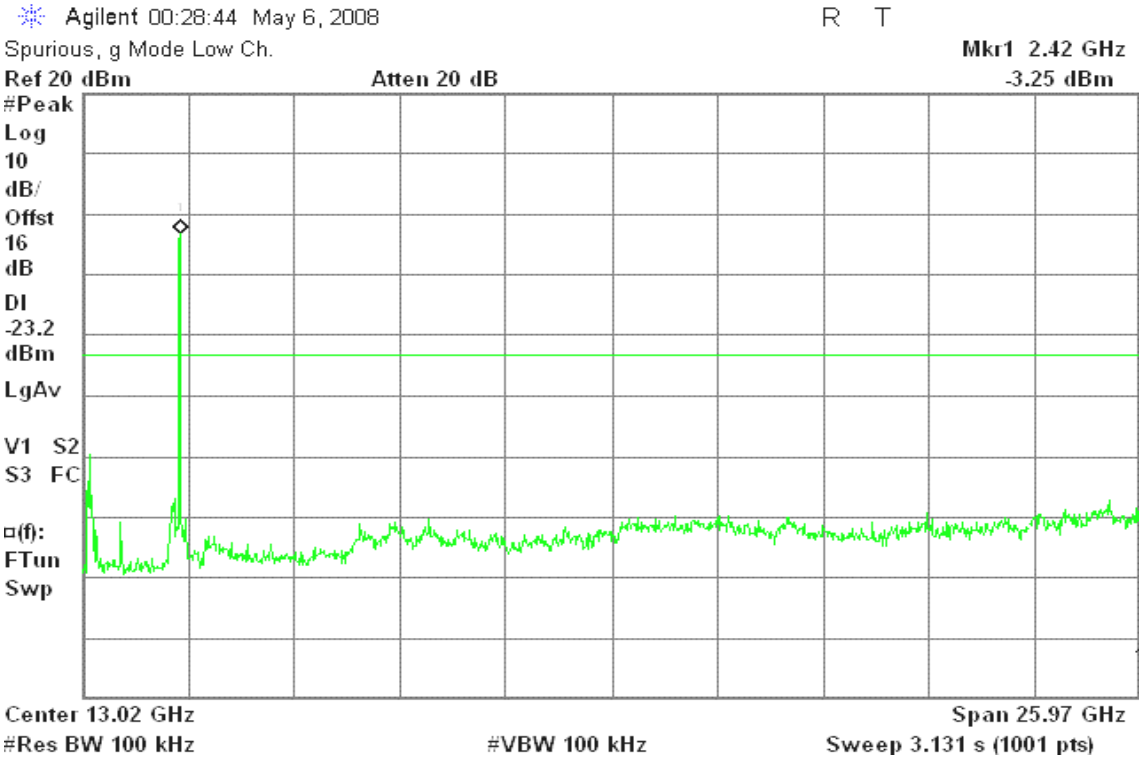


CH High

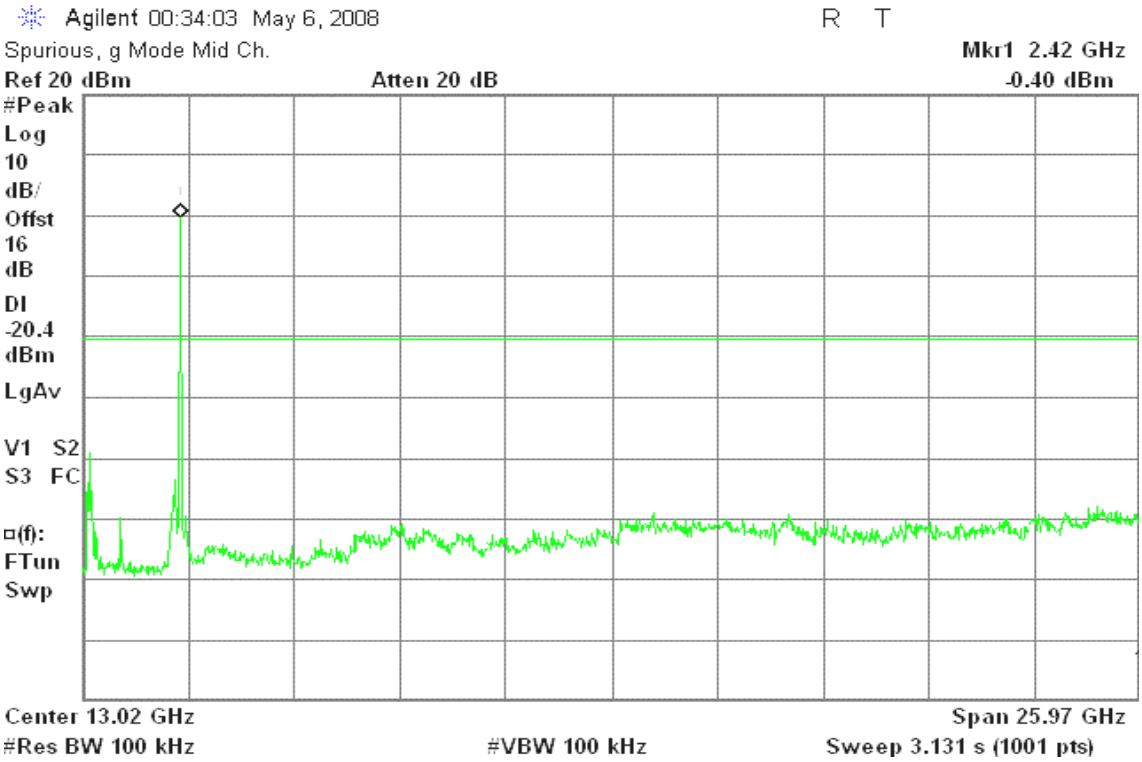


draft 802.11n Standard-20 MHz Channel mode with combiner

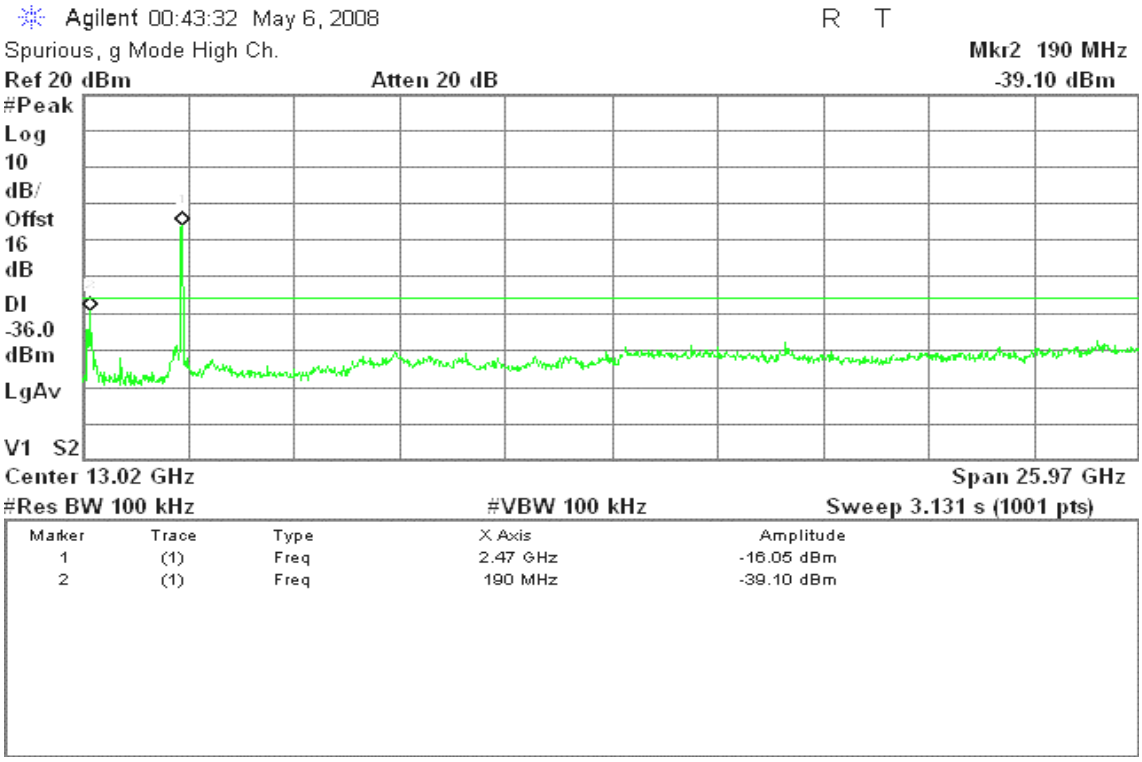
CH Low



CH Mid

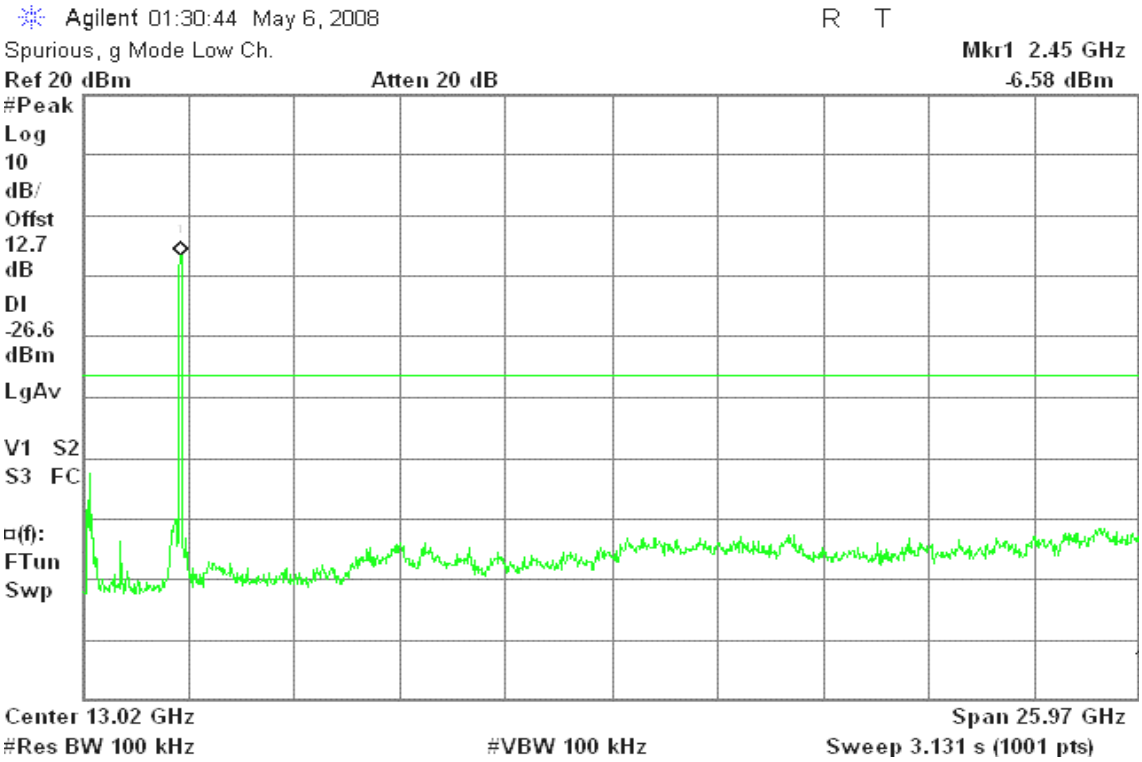


CH High

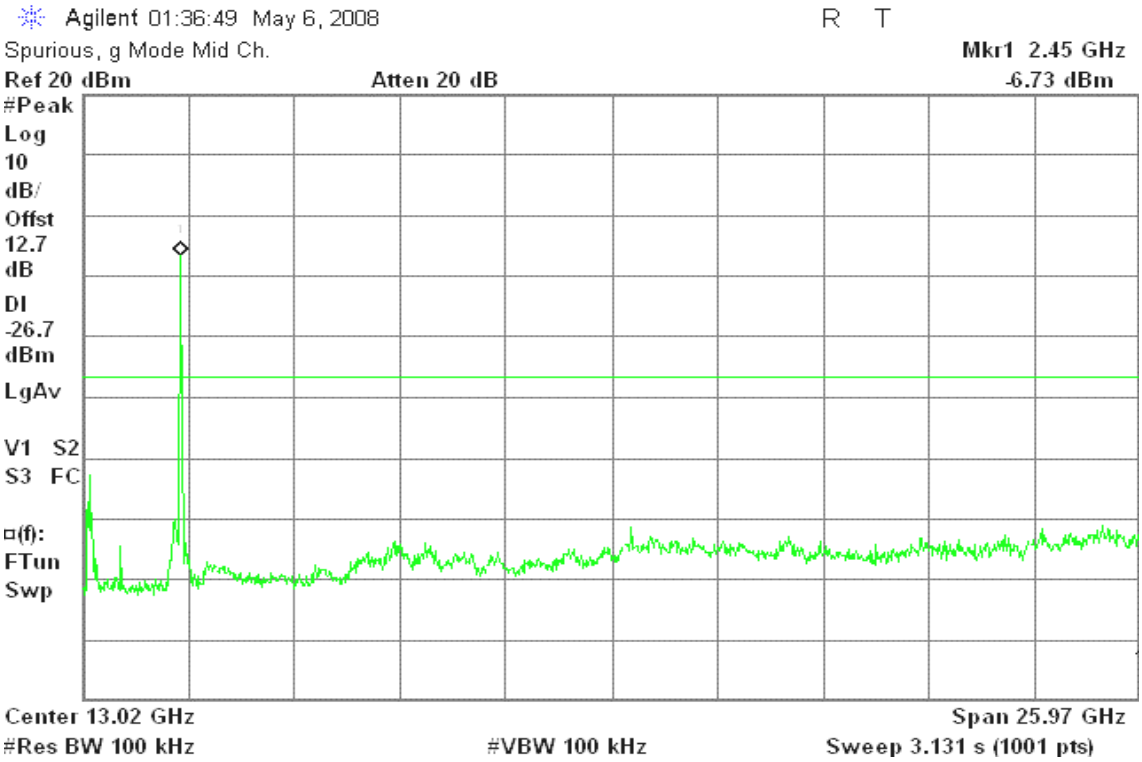


draft 802.11n Wide-40 MHz Channel mode with combiner

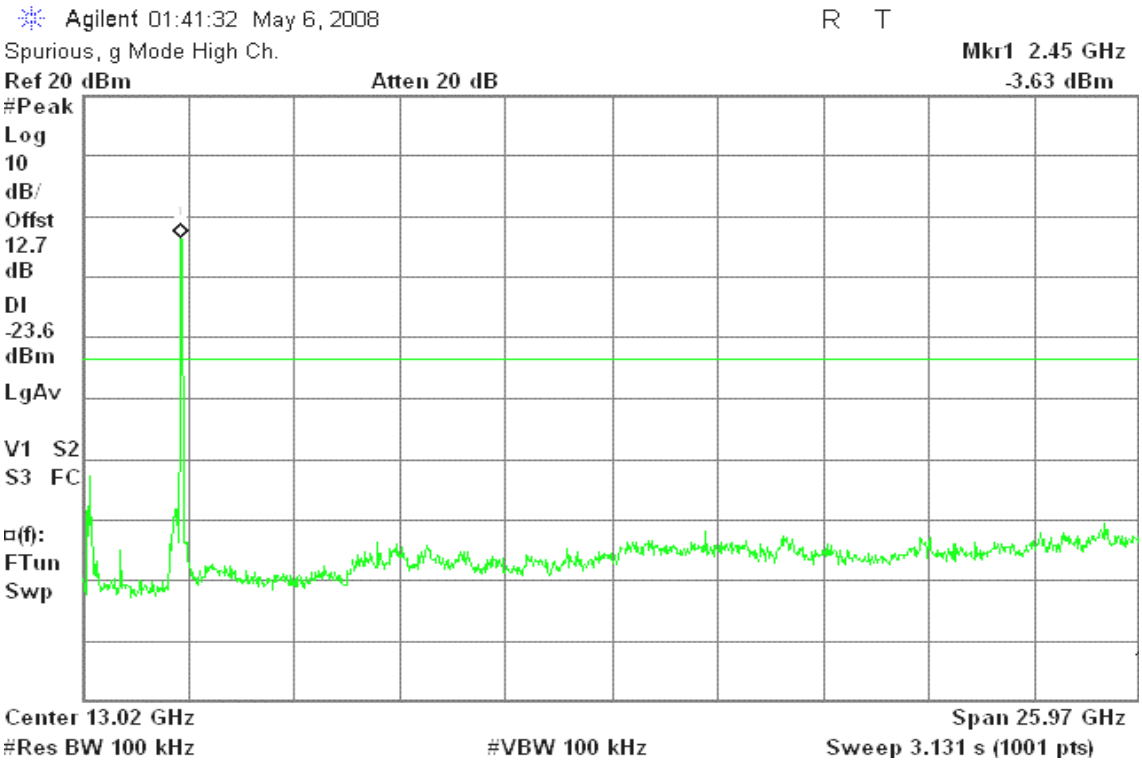
CH Low



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

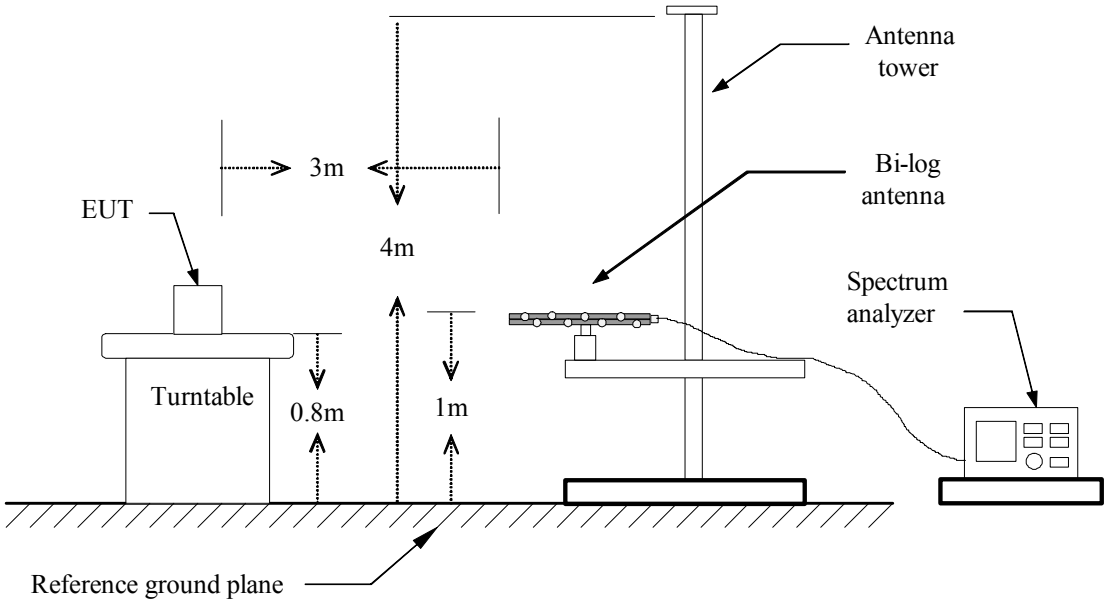
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

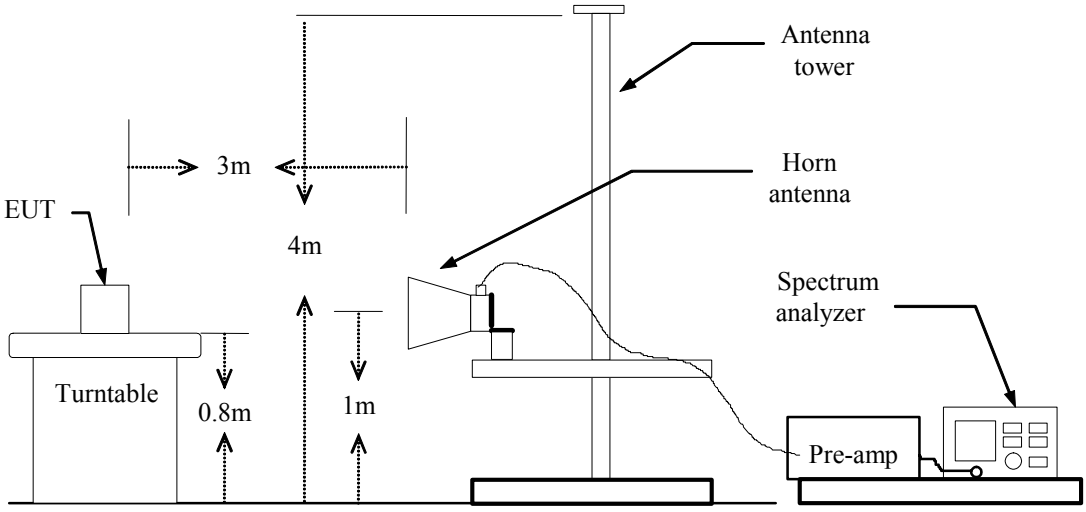
Frequency (MHz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

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.

TEST RESULTS

No non-compliance noted.

Below 1GHz

Operation Mode: Normal Link **Test Date:** May 2, 2008

Temperature: 25°C **Tested by:** Mimic Yang

Humidity: 55% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
249.87	V	54.17	-14.56	39.61	46.00	-6.39	Peak
374.35	V	51.74	-10.20	41.53	46.00	-4.47	Peak
532.78	V	46.57	-7.03	39.54	46.00	-6.46	Peak
624.93	V	45.91	-5.38	40.53	46.00	-5.47	Peak
799.53	V	41.28	-3.16	38.12	46.00	-7.88	Peak
875.52	V	41.72	-2.31	39.41	46.00	-6.59	Peak
133.47	H	49.73	-13.41	36.32	43.50	-7.18	Peak
249.87	H	56.59	-14.56	42.02	46.00	-3.98	Peak
374.35	H	50.75	-10.20	40.55	46.00	-5.45	Peak
532.78	H	45.67	-7.03	38.64	46.00	-7.36	Peak
875.52	H	44.90	-2.31	42.59	46.00	-3.41	Peak
933.72	H	42.07	-1.39	40.68	46.00	-5.32	Peak

Remark:

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

Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low **Test Date:** April 22, 2008

Temperature: 25°C **Tested by:** Mimic Yang

Humidity: 55 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2410.00	V	106.83	101.82	-3.98	102.85	97.84	Fundamental			
1066.67	V	65.54	59.12	-10.68	54.86	48.44	74.00	54.00	-5.56	AVG
1500.00	V	66.23	58.24	-9.97	56.26	48.27	74.00	54.00	-5.73	AVG
2223.33	V	66.75	53.86	-4.45	62.30	49.41	74.00	54.00	-4.59	AVG
2283.33	V	64.51	53.26	-4.30	60.21	48.96	74.00	54.00	-5.04	AVG
2540.00	V	67.72	55.74	-3.65	64.07	52.09	74.00	54.00	-1.91	AVG
6433.33	V	56.43	52.27	2.87	59.30	55.14	82.85	77.84	-22.70	20dBc
2413.33	H	97.46	92.48	-3.97	93.49	88.51	Fundamental			
1466.67	H	65.01	59.52	-10.03	54.98	49.49	74.00	54.00	-4.51	AVG
1500.00	H	64.84	57.05	-9.97	54.87	47.08	74.00	54.00	-6.92	AVG
1626.67	H	64.51	56.27	-8.72	55.79	47.55	73.49	68.51	-20.96	20dBc
3500.00	H	50.37	---	-1.82	48.56	---	74.00	54.00	-5.45	Peak
4108.33	H	50.24	---	-0.43	49.81	---	74.00	54.00	-4.19	Peak
6433.33	H	58.26	55.35	2.87	61.13	58.22	73.49	68.51	-10.29	20dBc

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*
7. *In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.*

Operation Mode: TX / IEEE 802.11b / CH Mid **Test Date:** April 22, 2008

Temperature: 25°C **Tested by:** Mimic Yang

Humidity: 55 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2440.00	V	107.19	102.52	-3.90	103.29	98.62	Fundamental			
1066.67	V	64.87	57.56	-10.68	54.19	46.88	74.00	54.00	-7.12	AVG
1500.00	V	65.12	57.61	-9.97	55.15	47.64	74.00	54.00	-6.36	AVG
2283.33	V	65.01	52.40	-4.30	60.71	48.10	74.00	54.00	-5.90	AVG
2306.67	V	65.01	54.40	-4.24	60.77	50.16	74.00	54.00	-3.84	AVG
4875.00	V	50.97	---	0.60	51.57	---	74.00	54.00	-2.43	Peak
6500.00	V	56.73	52.98	2.99	59.72	55.97	83.29	78.60	-22.63	20dBc
2436.67	H	98.31	93.79	-3.91	94.40	89.88	Fundamental			
1466.67	H	64.41	59.41	-10.03	54.38	49.38	74.00	54.00	-4.62	AVG
1500.00	H	64.71	57.12	-9.97	54.74	47.15	74.00	54.00	-6.85	AVG
1626.67	H	65.54	57.34	-8.72	56.82	48.62	74.00	54.00	-5.38	AVG
4875.00	H	50.53	---	0.60	51.13	---	74.00	54.00	-2.87	Peak
6500.00	H	56.61	53.06	2.99	59.60	56.05	74.40	69.88	-13.83	20dBc
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*
7. *In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.*

Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** April 22, 2008

Temperature: 25°C **Tested by:** Mimic Yang

Humidity: 55 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2460.00	V	107.69	102.17	-3.85	103.84	98.32	Fundamental			
1066.67	V	63.53	53.10	-10.68	52.85	42.42	74.00	54.00	-1.15	Peak
1500.00	V	66.23	59.10	-9.97	56.26	49.13	74.00	54.00	-4.87	AVG
2300.00	V	63.66	54.14	-4.25	59.41	49.89	74.00	54.00	-4.11	AVG
2333.33	V	64.60	52.14	-4.17	60.43	47.97	74.00	54.00	-6.03	AVG
2590.00	V	65.60	56.34	-3.52	62.08	52.82	74.00	54.00	-1.18	AVG
6566.67	V	55.97	52.17	3.12	59.09	55.29	83.84	78.32	-23.03	20dBc
2460.00	H	99.04	94.51	-3.85	95.19	90.66	Fundamental			
1466.67	H	64.50	58.34	-10.03	54.47	48.31	74.00	54.00	-5.69	AVG
1500.00	H	64.37	57.82	-9.97	54.40	47.85	74.00	54.00	-6.15	AVG
1626.67	H	65.00	54.71	-8.72	56.28	45.99	74.00	54.00	-8.01	AVG
3250.00	H	49.79	---	-2.13	47.66	---	74.00	54.00	-6.34	Peak
3500.00	H	49.27	---	-1.82	47.45	---	74.00	54.00	-6.55	Peak
6566.67	H	55.51	52.09	3.12	58.63	55.21	75.19	70.66	-15.45	20dBc

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*
7. *In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.*

Operation Mode: TX / IEEE 802.11g / CH Low **Test Date:** April 22, 2008

Temperature: 25°C **Tested by:** Mimic Yang

Humidity: 55 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1066.67	V	65.35	60.02	-10.68	54.67	49.34	74.00	54.00	-4.66	AVG
1500.00	V	64.15	57.52	-9.97	54.18	47.55	74.00	54.00	-6.45	AVG
2223.33	V	70.71	53.76	-4.45	66.26	49.31	74.00	54.00	-4.69	AVG
2286.67	V	68.09	54.33	-4.29	63.80	50.04	74.00	54.00	-3.96	AVG
3500.00	V	48.96	---	-1.82	47.15	---	74.00	54.00	-6.85	Peak
6433.33	V	54.36	49.98	2.87	57.23	52.85	74.00	54.00	-1.15	AVG
1466.67	H	64.37	58.79	-10.03	54.34	48.76	74.00	54.00	-5.24	AVG
1500.00	H	64.38	56.60	-9.97	54.41	46.63	74.00	54.00	-7.37	AVG
1626.67	H	64.68	56.08	-8.72	55.96	47.36	74.00	54.00	-6.64	AVG
2540.00	H	60.97	53.76	-3.65	57.32	50.11	74.00	54.00	-3.89	AVG
3500.00	H	49.82	---	-1.82	48.01	---	74.00	54.00	-5.99	Peak
6433.33	H	56.34	50.07	2.87	59.21	52.94	74.00	54.00	-1.06	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 802.11g / CH Mid **Test Date:** April 22, 2008

Temperature: 25°C **Tested by:** Mimic Yang

Humidity: 55 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1066.67	V	63.60	59.43	-10.68	52.92	48.75	74.00	54.00	-5.25	AVG
2276.67	V	67.28	53.50	-4.31	62.97	49.19	74.00	54.00	-4.81	AVG
2310.00	V	66.22	53.14	-4.23	61.99	48.91	74.00	54.00	-5.09	AVG
2593.33	V	66.33	51.93	-3.51	62.82	48.42	74.00	54.00	-5.58	AVG
3500.00	V	48.88	---	-1.82	47.06	---	74.00	54.00	-6.94	Peak
6500.00	V	55.73	49.10	2.99	58.72	52.09	74.00	54.00	-1.91	AVG
1376.67	H	61.37	---	-10.18	51.19	---	74.00	54.00	-2.81	Peak
1466.67	H	64.24	57.76	-10.03	54.21	47.73	74.00	54.00	-6.27	AVG
1500.00	H	64.64	55.35	-9.97	54.67	45.38	74.00	54.00	-8.62	AVG
3250.00	H	50.45	---	-2.13	48.32	---	74.00	54.00	-5.68	Peak
3500.00	H	49.55	---	-1.82	47.73	---	74.00	54.00	-6.27	Peak
6500.00	H	56.00	49.57	2.99	58.99	52.56	74.00	54.00	-1.44	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 802.11g / CH High **Test Date:** April 22, 2008

Temperature: 25°C **Tested by:** Mimic Yang

Humidity: 55 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1636.67	V	60.04	---	-8.62	51.43	---	74.00	54.00	-2.57	Peak
4925.00	V	47.39	---	0.65	48.04	---	74.00	54.00	-5.96	Peak
N/A										
1290.00	H	60.67	---	-10.32	50.35	---	74.00	54.00	-3.65	Peak
N/A										

Remark:

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

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH Low	**Test Date:**	May 2, 2008
Temperature:	25°C	**Tested by:**	Mimic Yang
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1066.67	V	63.17	58.16	-10.68	52.49	47.48	74.00	54.00	-1.51	Peak
1626.67	V	64.40	55.50	-8.72	55.68	46.78	74.00	54.00	-7.22	AVG
2230.00	V	64.51	53.16	-4.43	60.08	48.73	74.00	54.00	-5.27	AVG
2286.67	V	65.30	56.57	-4.29	61.02	52.28	74.00	54.00	-1.72	AVG
2540.00	V	65.10	51.77	-3.65	61.45	48.12	74.00	54.00	-5.88	AVG
3500.00	V	49.41	---	-1.82	47.59	---	74.00	54.00	-6.41	Peak
2406.67	H	99.93	90.28	-3.99	95.94	86.29	Fundamental			
1466.67	H	64.99	58.72	-10.03	54.96	48.69	74.00	54.00	-5.31	AVG
1623.33	H	63.15	55.90	-8.75	54.40	47.15	74.00	54.00	-6.85	AVG
3500.00	H	49.97	---	-1.82	48.15	---	74.00	54.00	-5.85	Peak
6433.33	H	61.49	59.10	2.87	64.36	61.97	75.94	66.29	-4.32	20dBc
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*
7. *In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.*

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH Mid	**Test Date:**	May 2, 2008
Temperature:	25°C	**Tested by:**	Mimic Yang
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2440.00	V	108.48	99.94	-3.90	104.58	96.04	Fundamental			
1066.67	V	65.14	56.88	-10.68	54.46	46.20	74.00	54.00	-7.80	AVG
2246.67	V	68.89	55.01	-4.39	64.50	50.62	74.00	54.00	-3.38	AVG
2310.00	V	69.03	57.01	-4.23	64.80	52.78	74.00	54.00	-1.22	AVG
2563.33	V	64.21	51.68	-3.59	60.62	48.09	74.00	54.00	-5.91	AVG
3500.00	V	51.14	---	-1.82	49.32	---	74.00	54.00	-4.68	Peak
6500.00	V	60.28	58.44	2.99	63.27	61.43	84.58	76.04	-14.61	20dBc
2440.00	H	100.57	90.92	-3.90	96.67	87.02	Fundamental			
1373.33	H	61.46	---	-10.18	51.27	---	74.00	54.00	-2.73	Peak
1466.67	H	62.10	---	-10.03	52.07	---	74.00	54.00	-1.93	Peak
1500.00	H	62.32	---	-9.97	52.35	---	74.00	54.00	-1.65	Peak
1626.67	H	62.73	55.35	-8.72	54.01	46.63	74.00	54.00	-7.37	AVG
3500.00	H	49.39	---	-1.82	47.58	---	74.00	54.00	-6.42	Peak
6500.00	H	59.72	56.41	2.99	62.71	59.40	76.67	67.02	-7.62	20dBc

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*
7. *In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.*

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	May 2, 2008
Temperature:	25°C	**Tested by:**	Mimic Yang
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1626.67	V	65.53	56.17	-8.72	56.81	47.45	74.00	54.00	-6.55	AVG
2276.67	V	69.04	53.95	-4.31	64.73	49.64	74.00	54.00	-4.36	AVG
2333.33	V	70.79	57.06	-4.17	66.62	52.89	74.00	54.00	-1.11	AVG
2590.00	V	65.97	53.60	-3.52	62.45	50.08	74.00	54.00	-3.92	AVG
2650.00	V	63.54	49.60	-3.36	60.18	46.24	74.00	54.00	-7.76	AVG
3500.00	V	49.02	---	-1.82	47.21	---	74.00	54.00	-6.79	Peak
2453.33	H	100.15	90.89	-3.87	96.28	87.02	Fundamental			
1623.33	H	64.66	56.10	-8.75	55.91	47.35	74.00	54.00	-6.65	AVG
2336.67	H	64.99	51.13	-4.16	60.83	46.97	74.00	54.00	-7.03	AVG
3500.00	H	50.07	---	-1.82	48.26	---	74.00	54.00	-5.74	Peak
5591.67	H	50.31	---	1.53	51.84	---	74.00	54.00	-2.16	Peak
6566.67	H	58.99	57.34	3.12	62.11	60.46	76.28	67.02	-6.56	20dBc
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*
7. *In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.*

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH Low	**Test Date:**	May 2, 2008
Temperature:	25°C	**Tested by:**	Mimic Yang
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1066.67	V	64.69	58.48	-10.68	54.01	47.80	74.00	54.00	-6.20	AVG
1500.00	V	64.10	56.41	-9.97	54.13	46.44	74.00	54.00	-7.56	AVG
1626.67	V	63.27	55.80	-8.72	54.55	47.08	74.00	54.00	-6.92	AVG
2210.00	V	66.09	51.53	-4.48	61.61	47.05	74.00	54.00	-6.95	AVG
2293.33	V	64.92	52.80	-4.27	60.65	48.53	74.00	54.00	-5.47	AVG
3500.00	V	50.10	---	-1.82	48.28	---	74.00	54.00	-5.72	Peak
2406.67	H	97.85	87.78	-3.99	93.86	83.79	Fundamental			
1066.67	H	61.09	---	-10.68	50.40	---	74.00	54.00	-3.60	Peak
1466.67	H	62.32	---	-10.03	52.29	---	74.00	54.00	-1.71	Peak
1500.00	H	61.95	---	-9.97	51.97	---	74.00	54.00	-2.03	Peak
1626.67	H	63.36	54.51	-8.72	54.64	45.79	74.00	54.00	-8.21	AVG
6458.33	H	60.89	57.45	2.91	63.80	60.36	73.86	63.76	-3.40	20dBc
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*
7. *In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.*

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH Mid	**Test Date:**	May 2, 2008
Temperature:	25°C	**Tested by:**	Mimic Yang
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2443.33	V	108.98	97.95	-3.90	105.08	94.05	Fundamental			
1066.67	V	65.32	58.40	-10.68	54.64	47.72	74.00	54.00	-6.28	AVG
1500.00	V	64.94	56.04	-9.97	54.97	46.07	74.00	54.00	-7.93	AVG
2243.33	V	66.74	53.11	-4.40	62.34	48.71	74.00	54.00	-5.29	AVG
2306.67	V	67.19	55.40	-4.24	62.95	51.16	74.00	54.00	-2.84	AVG
2573.33	V	62.64	50.78	-3.56	59.08	47.22	74.00	54.00	-6.78	AVG
6500.00	V	60.03	58.15	2.99	63.02	61.14	85.08	74.05	-13.85	20dBc
2430.00	H	98.92	87.74	-3.93	94.99	83.81	Fundamental			
1623.33	H	64.79	55.40	-8.75	56.04	46.65	74.00	54.00	-7.35	AVG
6500.00	H	60.35	58.83	2.99	63.34	61.82	74.99	63.81	-1.99	20dBc
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*
7. *In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.*

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH High	**Test Date:**	May 2, 2008
Temperature:	25°C	**Tested by:**	Mimic Yang
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2453.33	V	111.69	101.54	-3.87	107.82	97.67	Fundamental			
1066.67	V	64.87	58.62	-10.68	54.19	47.94	74.00	54.00	-6.06	AVG
1626.67	V	64.00	54.93	-8.72	55.28	46.21	74.00	54.00	-7.79	AVG
2273.33	V	72.00	55.33	-4.32	67.68	51.01	74.00	54.00	-2.99	AVG
2333.33	V	70.71	55.73	-4.17	66.54	51.56	74.00	54.00	-2.44	AVG
2590.00	V	63.45	50.83	-3.52	59.93	47.31	74.00	54.00	-6.69	AVG
6541.67	V	61.23	58.21	3.07	64.30	61.28	87.82	77.67	-16.39	20dBc
2453.33	H	102.36	90.67	-3.87	98.49	86.80	Fundamental			
1626.67	H	64.65	53.74	-8.72	55.93	45.02	74.00	54.00	-8.98	AVG
3500.00	H	50.22	---	-1.82	48.41	---	74.00	54.00	-5.59	Peak
6541.67	H	61.02	59.57	3.07	64.09	62.64	78.49	66.80	-4.16	20dBc
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*
7. *In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.*

7.8 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 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:**	May 21, 2008
Temperature:	22°C	**Tested by:**	Lawrence Lee
Humidity:	45% RH		

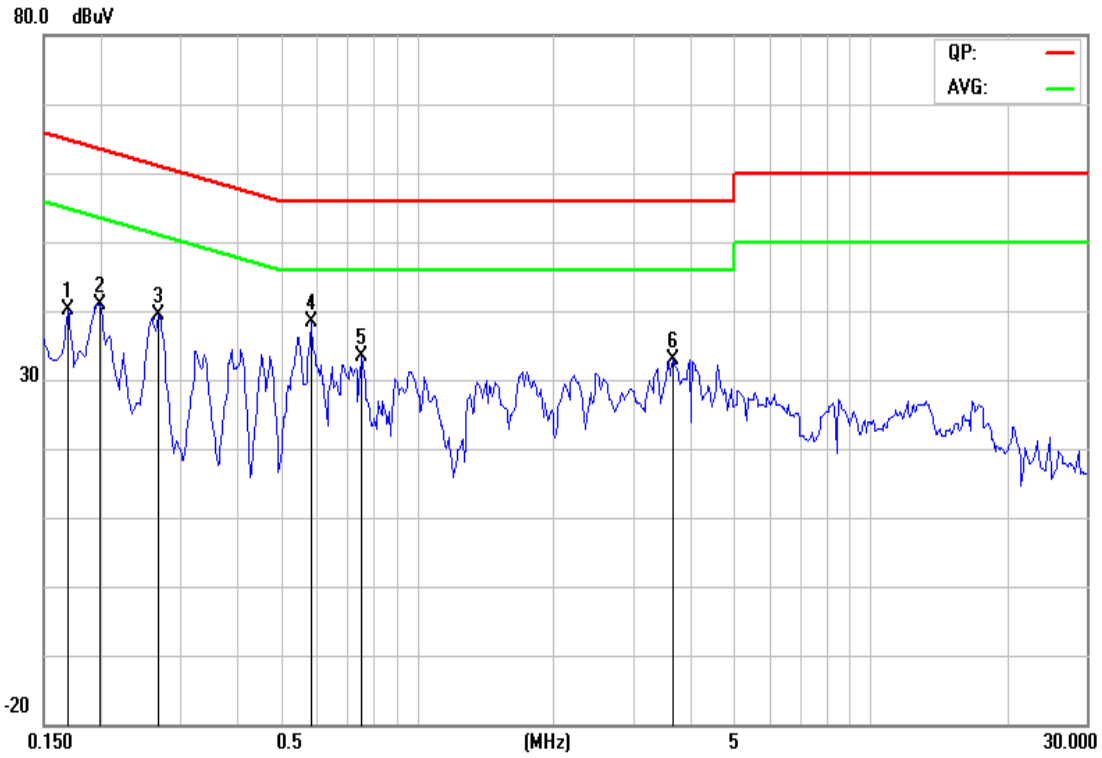
Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB/m)	QP Result (dBuV/m)	AV Result (dBuV/m)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.1700	33.22	23.72	0.18	33.40	23.90	64.96	54.96	-31.56	-31.06	L1
0.2000	39.04	35.84	0.16	39.20	36.00	63.61	53.61	-24.41	-17.61	L1
0.2700	37.27	34.87	0.13	37.40	35.00	61.12	51.12	-23.72	-16.12	L1
0.5850	36.47	33.67	0.03	36.50	33.70	56.00	46.00	-19.50	-12.30	L1
0.7551	31.17	28.17	0.03	31.20	28.20	56.00	46.00	-24.80	-17.80	L1
3.6704	27.26	23.46	0.14	27.40	23.60	56.00	46.00	-28.60	-22.40	L1
0.1701	33.32	24.52	0.18	33.50	24.70	64.96	54.96	-31.46	-30.26	L2
0.1999	38.65	33.55	0.15	38.80	33.70	63.61	53.61	-24.81	-19.91	L2
0.2600	36.07	33.27	0.13	36.20	33.40	61.43	51.43	-25.23	-18.03	L2
0.4736	37.06	35.56	0.04	37.10	35.60	56.45	46.45	-19.35	-10.85	L2
0.5850	37.47	33.97	0.03	37.50	34.00	56.00	46.00	-18.50	-12.00	L2
1.3750	29.77	25.47	0.03	29.80	25.50	56.00	46.00	-26.20	-20.50	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)