FCC 47 CFR PART 15 SUBPART E

TEST REPORT

For

WLAN Module

Model:
WiFi Link 6200

Trade Name: Getac

Issued to

Getac Technology Corp.
No.1,R&D Road 2 , Hsinchu Science Based Industrial Park ,
Hsinchu , Taiwan

Issued by

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

Testing Laboratory
1309

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1. TEST RESULT CERTIFICATION

Applicant: Getac Technology Corp.
No.1,R&D Road 2 , Hsinchu Science Based Industrial Park ,Hsinchu , Taiwan

Equipment Under Test: WLAN Module

Trade Name: Getac

Model: WiFi Link 6200

Date of Test: July 26 ~ September 13, 2010

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

We hereby certify that:

Compliance Certification Services Inc. tested the above equipment. 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 conducted and radiated emission limits of FCC Rules Part 15.407.

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

Approved by:

Rex Lai
Section Manager
Compliance Certification Services Inc.

Reviewed by:

Gina Lo
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

<table>
<tr><td>Product</td><td colspan="4">WLAN Module</td></tr>
<tr><td>Trade Name</td><td colspan="4">Getac</td></tr>
<tr><td>Model Number</td><td colspan="4">WiFi Link 6200</td></tr>
<tr><td>Model Discrepancy</td><td colspan="4">N/A</td></tr>
<tr><td>Power Supply</td><td colspan="4">Powered from host device</td></tr>
<tr><td>Operating Frequency Range & Number of Channels</td><td colspan="4">
<table>
<tr><th></th><th>Mode</th><th>Frequency Range (MHz)</th><th>Number of Channels</th></tr>
<tr><td rowspan="3">UNII Band I</td><td>IEEE 802.11a</td><td>5180 – 5240</td><td>4 Channels</td></tr>
<tr><td>draft 802.11n Standard-20 MHz</td><td>5180 – 5240</td><td>4 Channels</td></tr>
<tr><td>draft 802.11n Wide-40 MHz</td><td>5190 ~ 5230</td><td>2 Channels</td></tr>
<tr><td rowspan="3">UNII Band II</td><td>IEEE 802.11a</td><td>5260 - 5320</td><td>4 Channels</td></tr>
<tr><td>draft 802.11n Standard-20 MHz</td><td>5260 - 5320</td><td>4 Channels</td></tr>
<tr><td>draft 802.11n Wide-40 MHz</td><td>5270 - 5310</td><td>2 Channels</td></tr>
<tr><td rowspan="3">UNII Band III</td><td>IEEE 802.11a</td><td>5500 - 5700</td><td>11 Channels</td></tr>
<tr><td>draft 802.11n Standard-20 MHz</td><td>5500 – 5700</td><td>11 Channels</td></tr>
<tr><td>draft 802.11n Wide-40 MHz</td><td>5510 - 5670</td><td>5 Channels</td></tr>
</table>
</td></tr>
<tr><td>Transmit Power</td><td colspan="4">IEEE 802.11a mode / 5180 ~ 5240MHz: 14.05 dBm
draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz: 12.71 dBm
draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz: 15.73 dBm
IEEE 802.11a mode / 5260 ~ 5320MHz: 17.25 dBm
draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz: 19.00 dBm
draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz: 19.33 dBm
IEEE 802.11a mode / 5500 ~ 5700MHz: 17.47 dBm
draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz: 19.75 dBm
draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz: 20.02 dBm</td></tr>
<tr><td>Modulation Technique</td><td colspan="4">OFDM (QPSK, BPSK, 16-QAM, 64-QAM)</td></tr>
<tr><td>Transmit Data Rate</td><td colspan="4">IEEE 802.11a mode: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
draft 802.11n Standard-20 MHz Channel mode: OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps)
draft 802.11n Wide-40 MHz Channel mode: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps)</td></tr>
<tr><td>Antenna Specification</td><td colspan="4">UNII Band I
IEEE 802.11a: Gain: 2.41dBi
MIMO: 2.41 dBi + 10 log (2) = 5.42 dBi (Numeric gain: 3.48)
UNII Band II:
IEEE 802.11a: Gain: 1.86
MIMO: 1.86 dBi + 10 log (2) = 4.87dBi (Numeric gain: 3.07)
UNII Band III:
IEEE 802.11a: Gain: 3.48
MIMO: 3.48 dBi + 10 log (2) = 6.49 dBi (Numeric gain: 4.46)</td></tr>
<tr><td>Antenna Designation</td><td colspan="4">PIFA Antenna</td></tr>
<tr><td>Notes</td><td colspan="4">Add portable category for the platform. The platform information is list as below. Since the module and the antenna are the same. We assess the conducted output power and the radiated emission to meet the standard. According to conducted output power, then to test the radiated emission for model V100-X, V200-X. After verification, the worst case is V100-2X.
Product name: Notebook Computer
Model: V100-2X, V100-X, V200-X
All the specification and layout are identical except they come with different model numbers and panel size for marketing purposes.</td></tr>
</table>

Operation Frequency:

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)	
CHANNEL	**MHz**
36	5180
38	5190
40	5200
44	5220
46	5230
48	5240
52	5260
54	5270
56	5280
60	5300
62	5310
64	5320
100	5500
102	5510
104	5520
108	5540
110	5550
112	5560
116	5580
118	5590
120	5600
124	5620
126	5630
128	5640
132	5660
134	5670
136	5680
140	5700
149	5745

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: **MAU040** filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.*

3. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 Radiated testing was performed at an antenna to EUT distance 3 meters.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed for RF field strength measurement to meet the Commissions requirement, and is operated in a manner intended to generate the maximum emission in a continuous normal application.

3.2 EUT EXERCISE

The EUT is operated in the engineering mode to fix the Tx frequency for the purposes of measurement.

According to its specifications, the EUT must comply with the requirements of Section 15.407 under the FCC Rules Part 15 Subpart E.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is positioned at 0.8 m above the ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4, the conducted emission from the EUT is measured in the frequency range between 0.15 MHz and 30MHz, using the CISPR Quasi-Peak detector mode.

Radiated Emissions

The EUT is placed on the turntable, which is 0.8 m above the ground plane. The turntable is then rotated for 360 degrees to determine the proper orientation for the maximum emission level. The EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission level. And, each emission is to be maximized by changing the horizontal and vertical polarization of the receiving antenna. 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: WiFi Link 6200) had been tested under operating condition.

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

The EUT comes with one battery and one power adapter for sale. After the preliminary test, the EUT with power adapter was found to emit the worst emissions and therefore had been tested under standby condition.

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

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

IEEE 802.11a mode / 5180 ~ 5240MHz:

Channel Low (5180MHz), Channel Mid (5220MHz) and Channel High (5240MHz) with 6Mbps data rate were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz:

Channel Low (5180MHz), Channel Mid (5220MHz) and Channel High (5240MHz) with 6.5Mbps data rate were chosen for full testing.

draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz:

Channel Low (5190MHz) and Channel High (5230MHz) with 13.5Mbps data rate were chosen for full testing.

IEEE 802.11a mode / 5260 ~ 5320MHz:

Channel Low (5260MHz), Channel Mid (5280MHz) and Channel High (5320MHz) with 6Mbps data rate were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz:

Channel Low (5260MHz), Channel Mid (5280MHz) and Channel High (5320MHz) with 6.5Mbps data rate were chosen for full testing.

draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz:

Channel Low (5270MHz) and Channel High (5310MHz) with 13.5Mbps data rate were chosen for full testing.

IEEE 802.11a mode / 5500 ~ 5700MHz:

Channel Low (5500MHz), Channel Mid (5600MHz) and Channel High (5700MHz) with 6Mbps data rate were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz:

Channel Low (5500MHz), Channel Mid (5600MHz) and Channel High (5700MHz) with 6.5Mbps data rate were chosen for full testing.

draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz:

Channel Low (5510MHz), Channel Mid (5590MHz) and Channel High (5670MHz) 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 and Loop Antenna is scheduled for calibration once three years.*

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY43360131	03/03/2011

3M Semi Anechoic Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	10/26/2010
EMI Test Receiver	R&S	ESCI	100064	02/04/2011
Pre-Amplifier	Mini-Circults	ZFL-1000LN	SF350700823	01/13/2011
Pre-Amplifier	MITEQ	AFS44-00102650-42-10P-44	1415367	11/20/2010
Bilog Antenna	Sunol Sciences	JB3	A030105	09/11/2010
Horn Antenna	EMCO	3117	00055165	12/07/2010
Loop Antenna	EMCO	6502	8905/2356	06/10/2013
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Site NSA	CCS	N/A	N/A	12/31/2010
Test S/W	EZ-EMC (CCS-3A1RE)			

Powerline Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
L.I.S.N	SCHWARZBECK	NSLK 8127	8127-465	08/12/2011
L.I.S.N	SCHWARZBECK	NSLK 8127	8127-473	03/22/2011
EMI Test Receiver	ROHDE & SCHWARZ	ESHS 30	838550/003	01/28/2011
Pulse Limit	ROHDE & SCHWARZ	ESH3-Z2	100117	09/17/2010
N Type Coaxial Cable	BELDEN	8268 M17/164	003	07/09/2011
I.S.N.	SCHAFFNER	T800	24313	05/04/2011
Ferrite Clamp	SCHAFFNER	KEMA801	15937	05/04/2011
Current Probe	SCHAFFNER	SMZ11	14802	N.C.R.

Dynamic Frequency Selection				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Rohde&Schwarz	FSEK 30	100264	04/08/2011
Signal Generator	Agilent	E8267C	US42340162	04/08/2011

4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/- 1. 7468
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0606
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9979
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5790
3M Semi Anechoic Chamber / 8G~18G	+/- 2.5928
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7212
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9520

***Remark**: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.*

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

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

☒ No.989-1, Wenshan Rd., Qionglin Township, Hsinchu County 307, Taiwan (R.O.C.)
Tel: +886-3-5921698

***Remark**: The powerline conducted emissions items was tested at Compliance Certification Services Inc. (Hsinchu Lab.) The test equipments were listed in page 10 and the test data, please refer page 199-200.*

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

5.2 EQUIPMENT

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

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

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

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

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method –47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	TAF Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	Canada IC 2324G-1 IC 2324G-2

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

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

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

6.2 SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	Serial No.	FCC ID
1	GPS Simulator	HWAJEAT	GPS-101	EN001	---
2	8960 Series 10 Wireless Communication test set	Agilent	E5515C	GB44051665	---
3	ADVANCED HYBRID SYSTEM	Panasonic	KX-TA308	---	---
4	Notebook PC	Lenovo ideaPad	S10e_4068-RZ1	L3CEV2D	HFS-FL
5	Notebook PC	HP	nx6130	CNU543274R	CNTWM3B2200BGA
6	Bluetooth Headset	Motorola	H17	SJYN029A	IHDP6KE1
7	Modem	ZyXEL	Omni 56K	S1Z4107727	1880MNI56K
8	LED Monitor	ViewSonic	VS12085	R18082200389	DoC
9	Headset/Microphone	ERGOTECH	ET-E203	4719405008042	---
10	E-SATA External hard	VANTEC	NexStar CX	---	---
11	Flash disk	Transcend	CompactFlash512MB	1561433338	---
12	Flash disk	Sayho	PR1014(256M)	104720	---
13	SD Crad	SanDisk	---	---	---
14	Smart Card	HOME RUN CARD	---	---	---
15	PCMCIA Card (CF Adapter)	Billionton	1211004-0040	00082900065	---
16	CF Card	iEi	ICF1000	ICF-10001-128MB	---

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.*

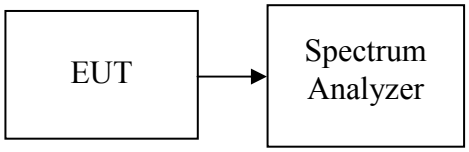
7. FCC PART 15 REQUIREMENTS

7.1 26 DB EMISSION BANDWIDTH

LIMIT

According to §15.303(c), for purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Compliance with the emissions limits is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

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 > 1%EBW, VBW > RBW, Span >26dB bandwidth, and Sweep = auto.
4. Mark the peak frequency and –26dB (upper and lower) frequency.
5. Repeat until all the rest channels were investigated.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5180	17.8778
Mid	5220	17.6860
High	5240	18.1167

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5180	17.7481
Mid	5220	17.7106
High	5240	17.7362

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5180	17.7229
Mid	5220	17.7124
High	5240	17.7051

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5190	35.2575
High	5230	35.0965

Test mode: draft 802.11n Wide-40 MHz Channel mode/ 5190 ~ 5230MHz / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5190	35.1716
High	5230	35.0385

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5260	26.7455
Mid	5280	25.9677
High	5320	24.8279

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5260	22.9213
Mid	5280	21.2566
High	5320	20.7527

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5260	19.9704
Mid	5280	19.0482
High	5320	18.5639

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5270	35.0599
High	5310	35.0841

Test mode: draft 802.11n Wide-40 MHz Channel mode/ 5270 ~ 5310MHz / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5270	35.8777
High	5310	35.1158

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5500	21.3457
Mid	5600	21.2108
High	5700	23.8520

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5500	19.1300
Mid	5600	20.7282
High	5700	21.5958

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5500	18.5349
Mid	5600	20.0124
High	5700	21.4706

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5510	35.6595
Mid	5590	35.6675
High	5670	35.7511

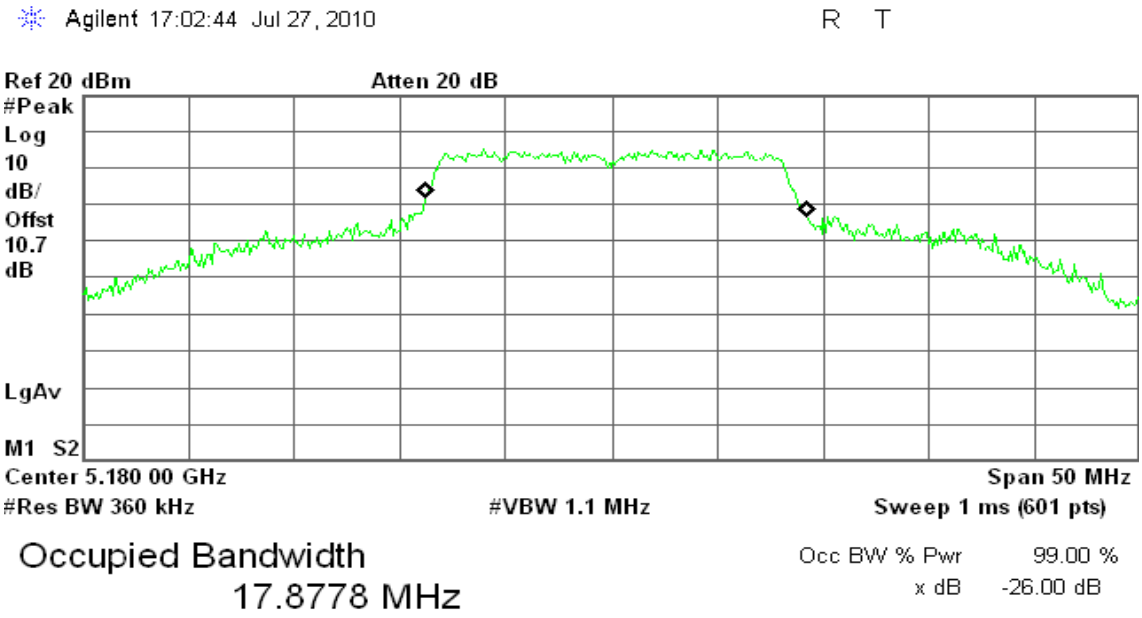
Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5510	35.6344
Mid	5590	35.7386
High	5670	36.0224

Test Plot

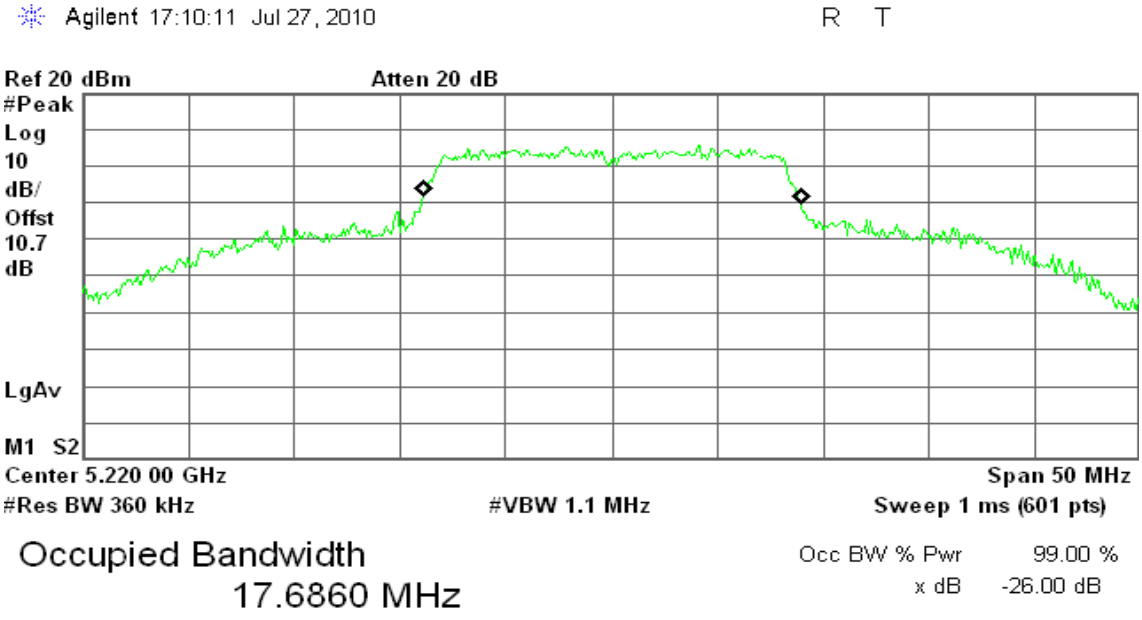
IEEE 802.11a mode / 5180 ~ 5240MHz

CH Low



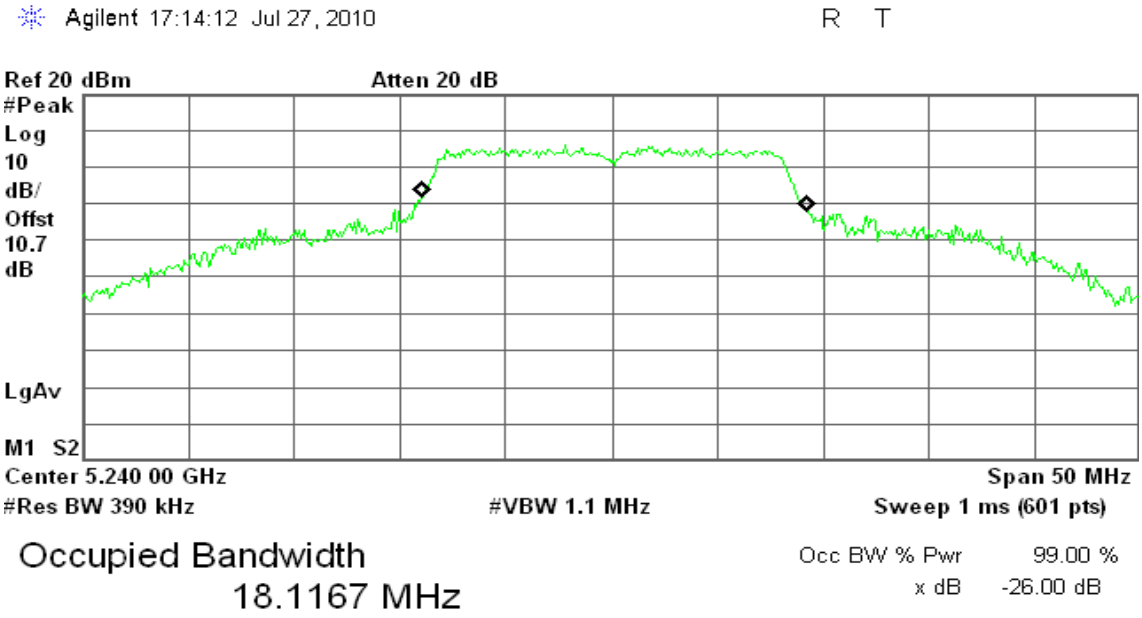
Transmit Freq Error	198.653 kHz
x dB Bandwidth	35.440 MHz

CH Mid



Transmit Freq Error	41.596 kHz
x dB Bandwidth	34.251 MHz

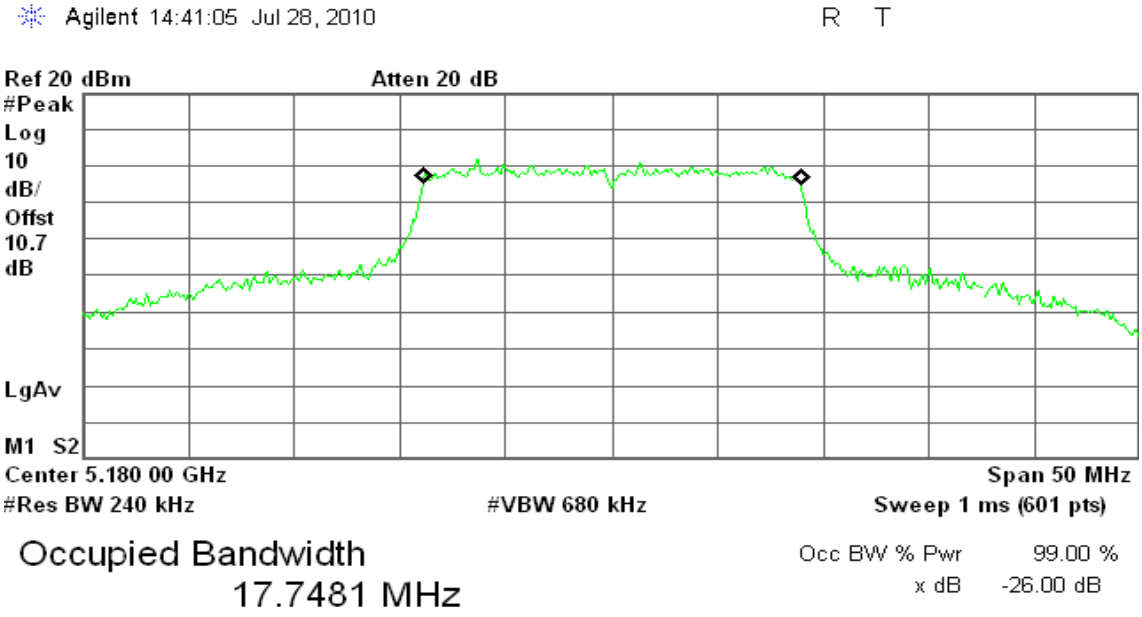
CH High



Transmit Freq Error	140.472 kHz
x dB Bandwidth	36.030 MHz

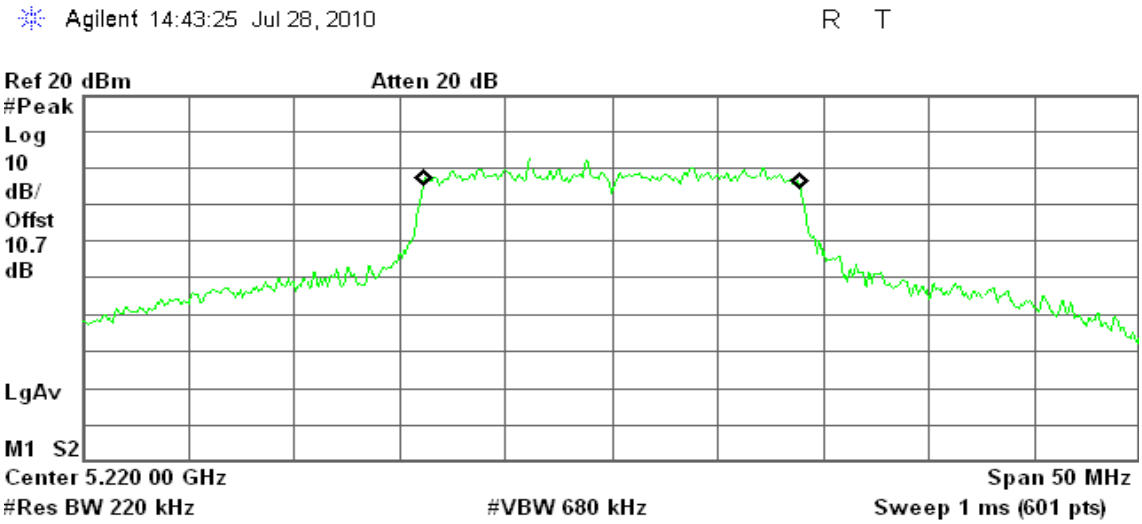
draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 0

CH Low



Transmit Freq Error	17.688 kHz
x dB Bandwidth	20.499 MHz

CH Mid

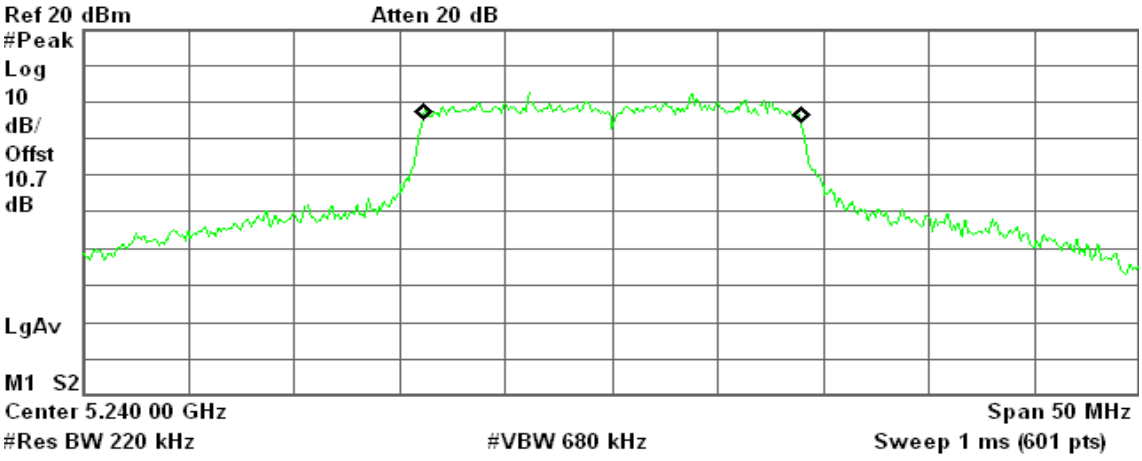


Occupied Bandwidth
17.7106 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	12.438 kHz
x dB Bandwidth	20.044 MHz

CH High



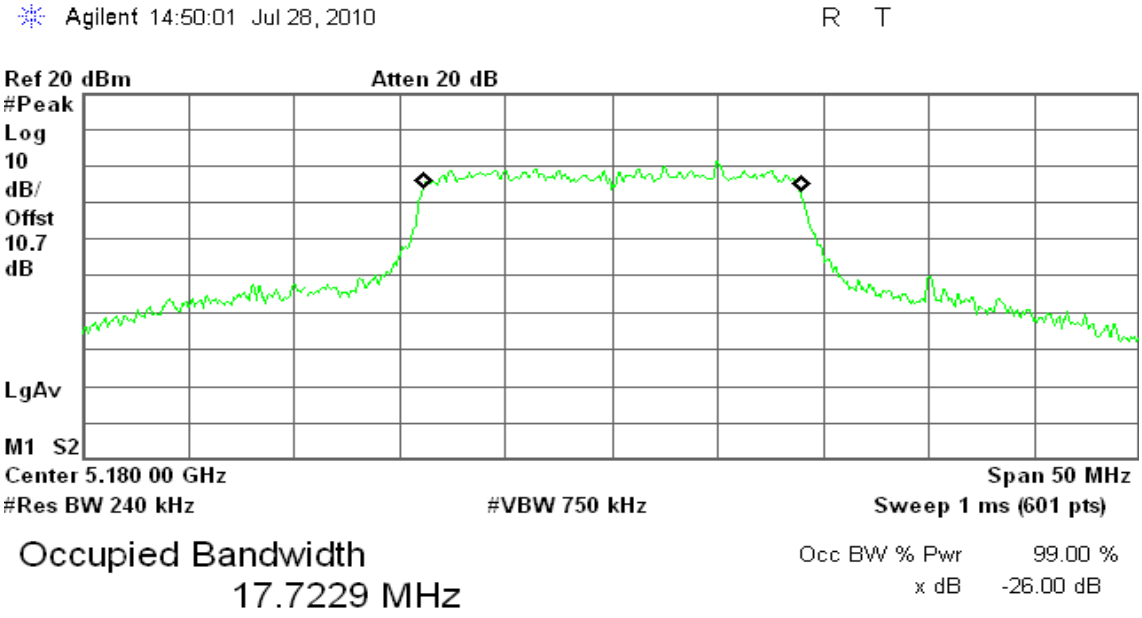
Occupied Bandwidth
17.7362 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	13.032 kHz
x dB Bandwidth	19.958 MHz

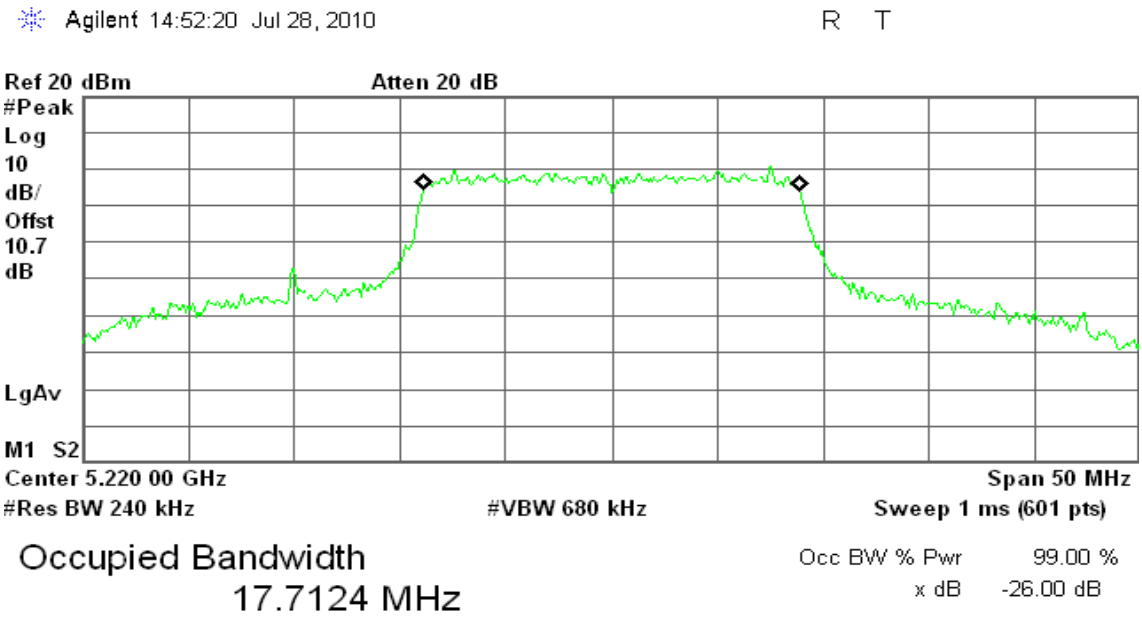
draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1

CH Low



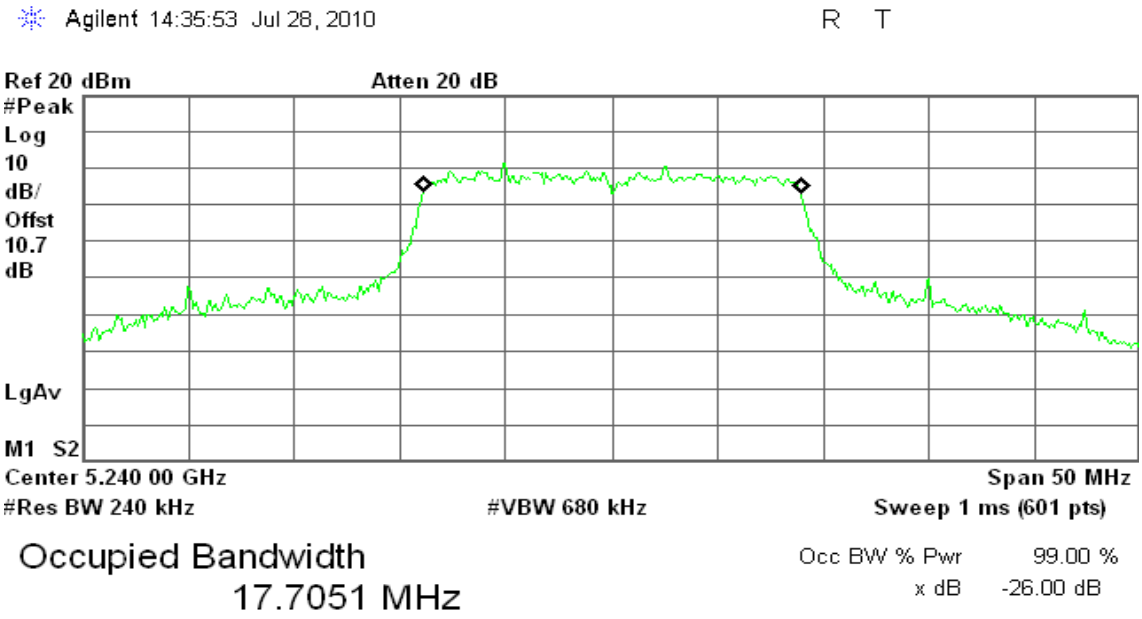
Transmit Freq Error	14.632 kHz
x dB Bandwidth	19.966 MHz

CH Mid



Transmit Freq Error	16.057 kHz
x dB Bandwidth	19.974 MHz

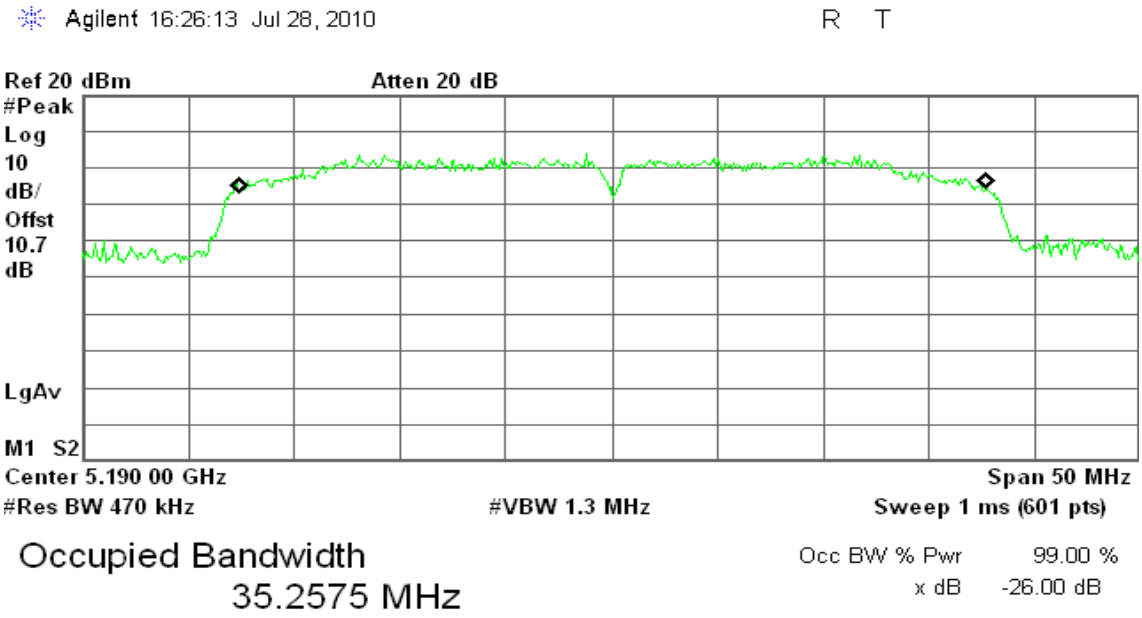
CH High



Transmit Freq Error	25.611 kHz
x dB Bandwidth	19.779 MHz

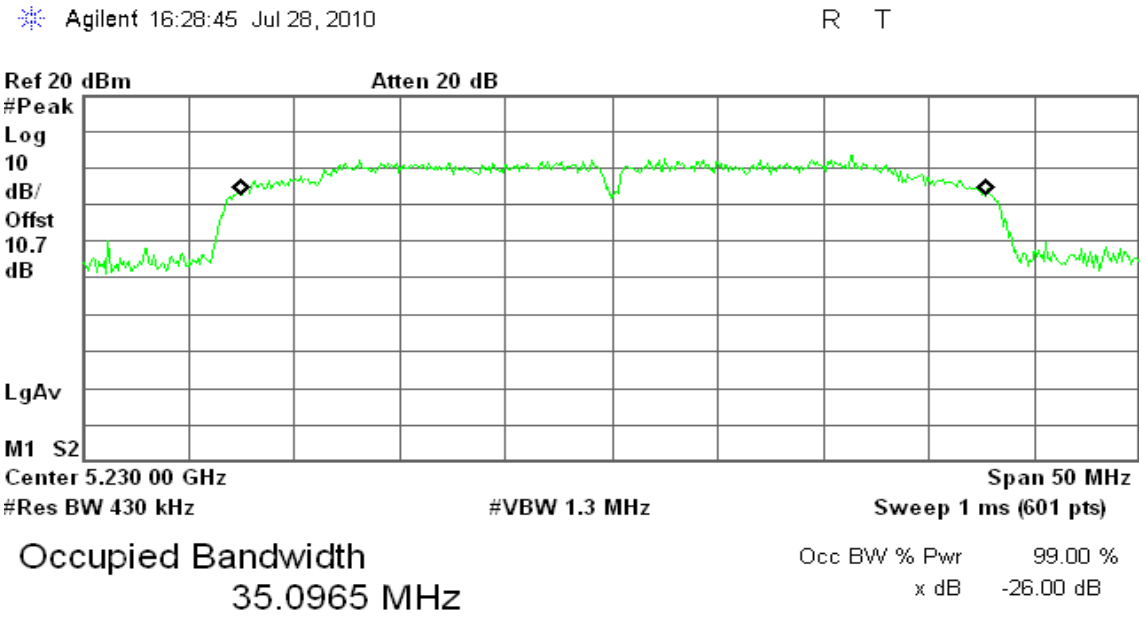
draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 0

CH Low



Transmit Freq Error	51.163 kHz
x dB Bandwidth	49.303 MHz

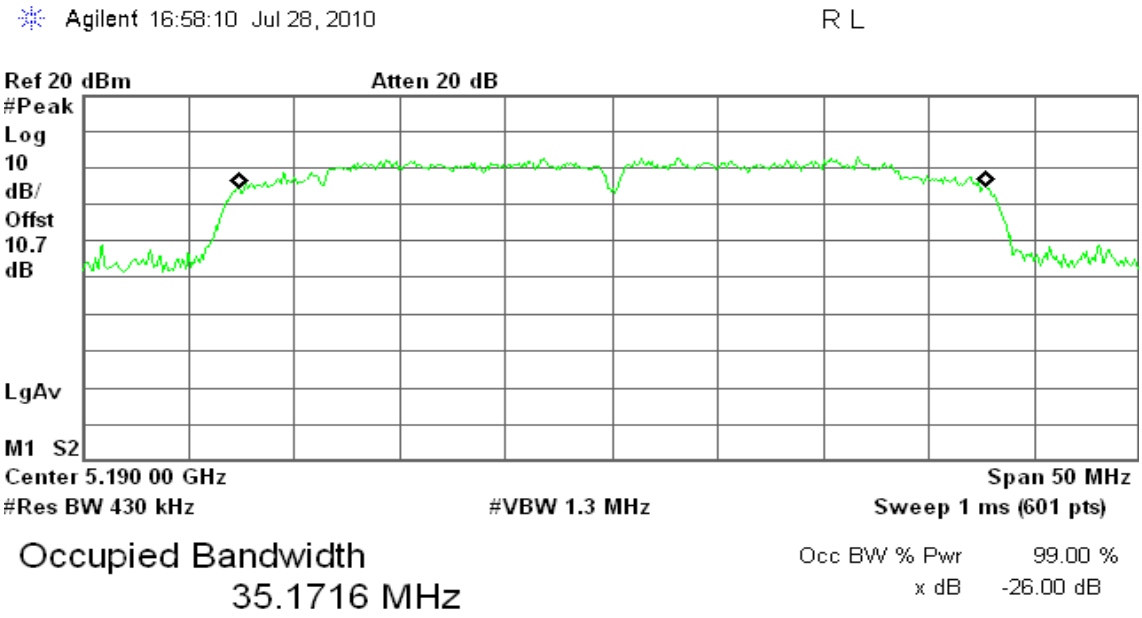
CH High



Transmit Freq Error 79.975 kHz
x dB Bandwidth 47.967 MHz

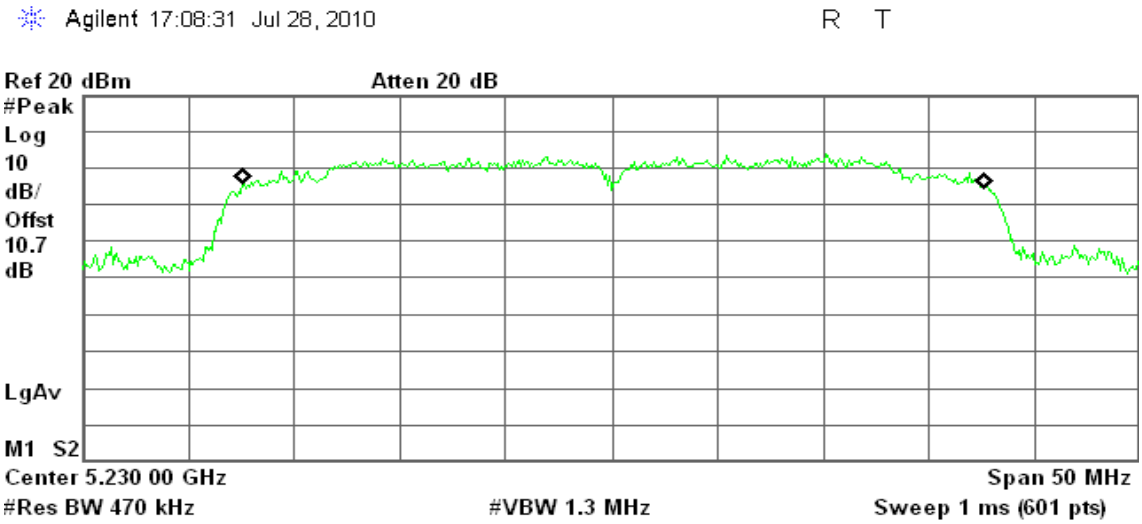
draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 1

CH Low



Transmit Freq Error 41.972 kHz
x dB Bandwidth 47.807 MHz

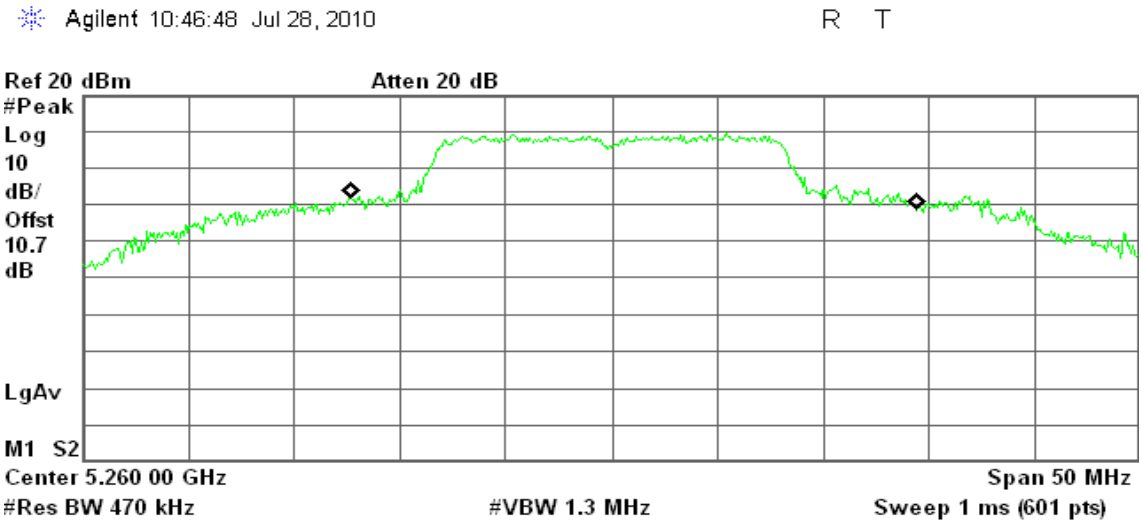
CH High



Transmit Freq Error	103.485 kHz
x dB Bandwidth	46.795 MHz

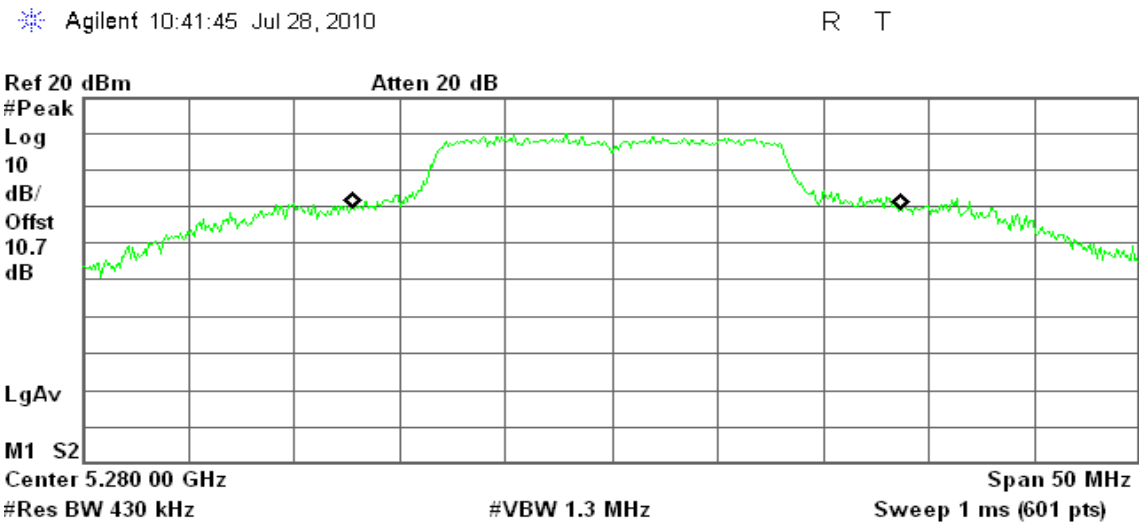
IEEE 802.11a mode / 5260 ~ 5320MHz

CH Low



Transmit Freq Error	1.034 MHz
x dB Bandwidth	40.339 MHz

CH Mid

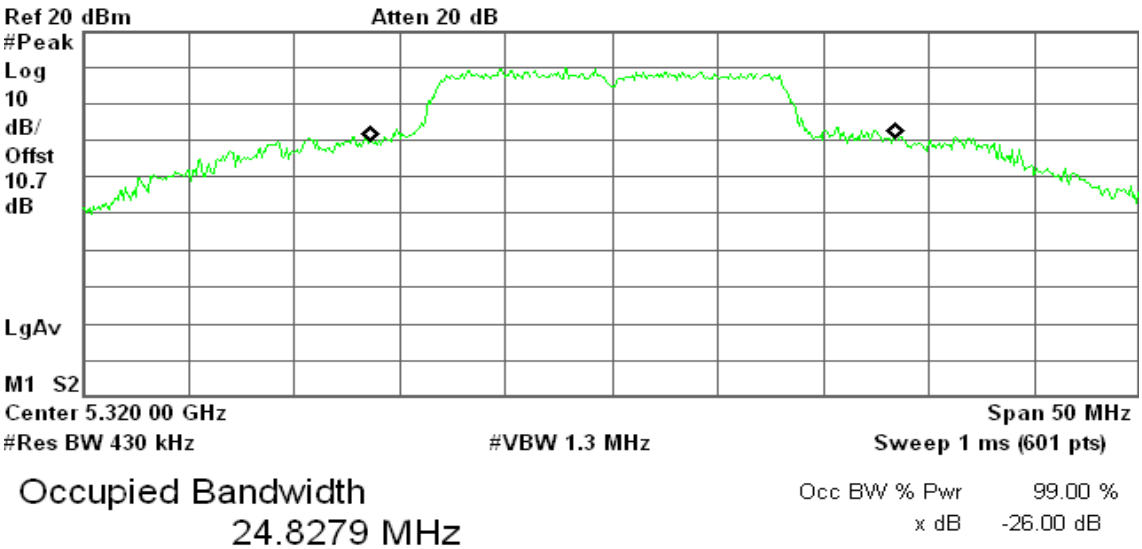


Occupied Bandwidth
25.9677 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 720.370 kHz
x dB Bandwidth 40.034 MHz

CH High



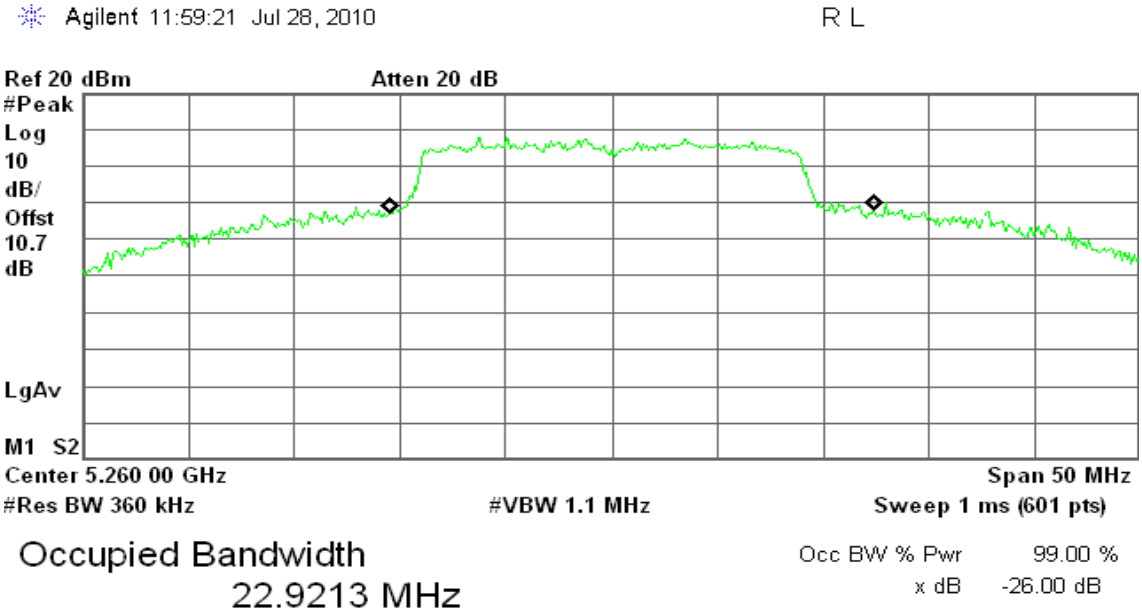
Occupied Bandwidth
24.8279 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 963.460 kHz
x dB Bandwidth 38.964 MHz

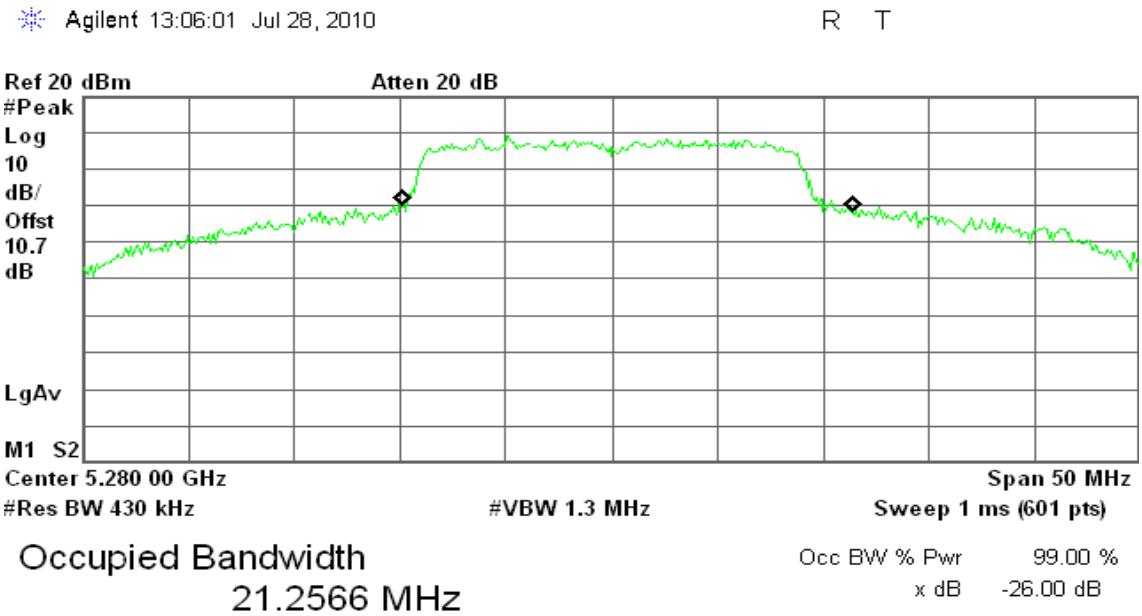
draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

CH Low



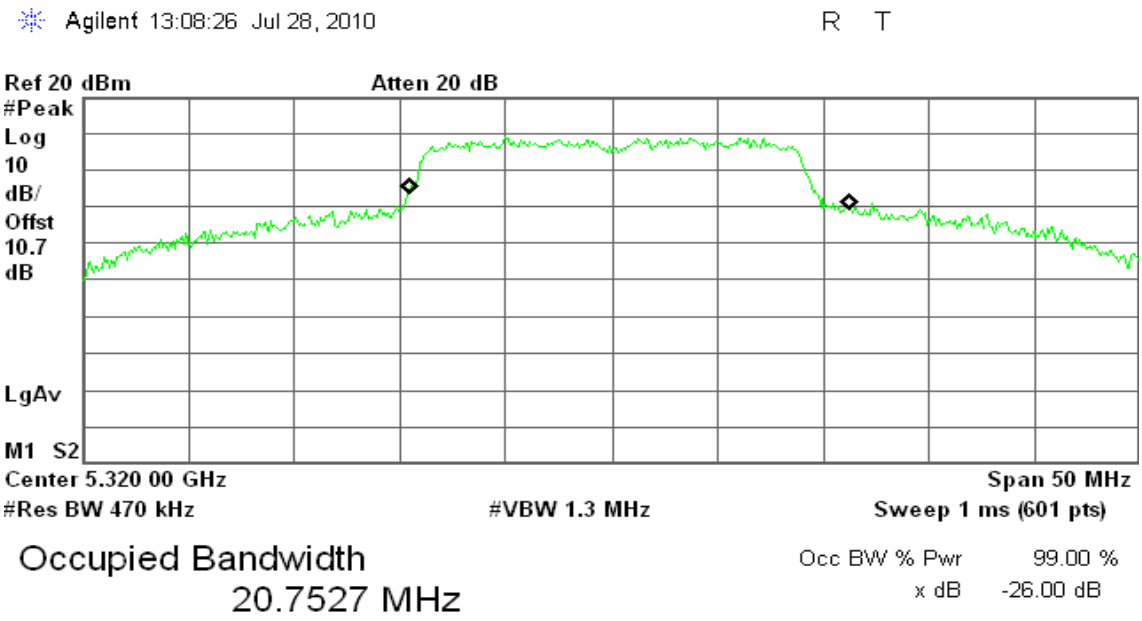
Transmit Freq Error	958.336 kHz
x dB Bandwidth	40.581 MHz

CH Mid



Transmit Freq Error	765.915 kHz
x dB Bandwidth	40.005 MHz

CH High



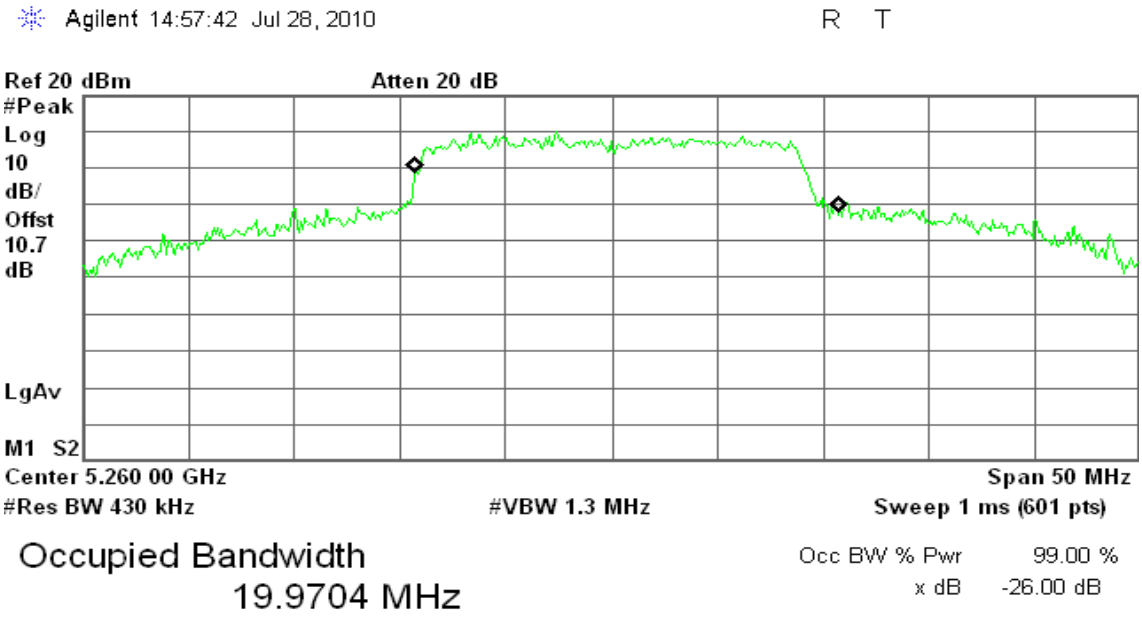
Occupied Bandwidth
20.7527 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 842.560 kHz
x dB Bandwidth 40.614 MHz

draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

CH Low

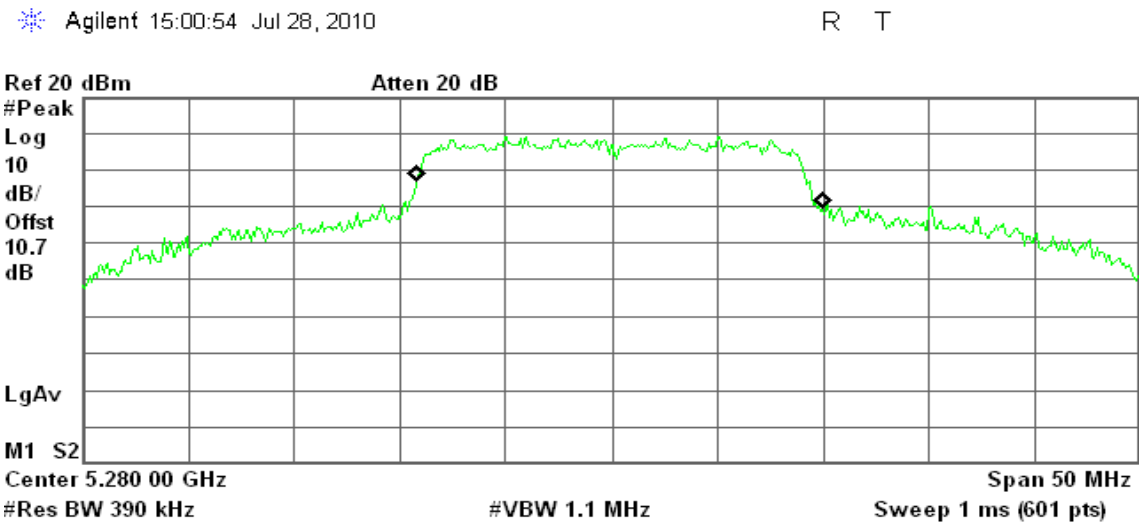


Occupied Bandwidth
19.9704 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 734.151 kHz
x dB Bandwidth 37.116 MHz

CH Mid

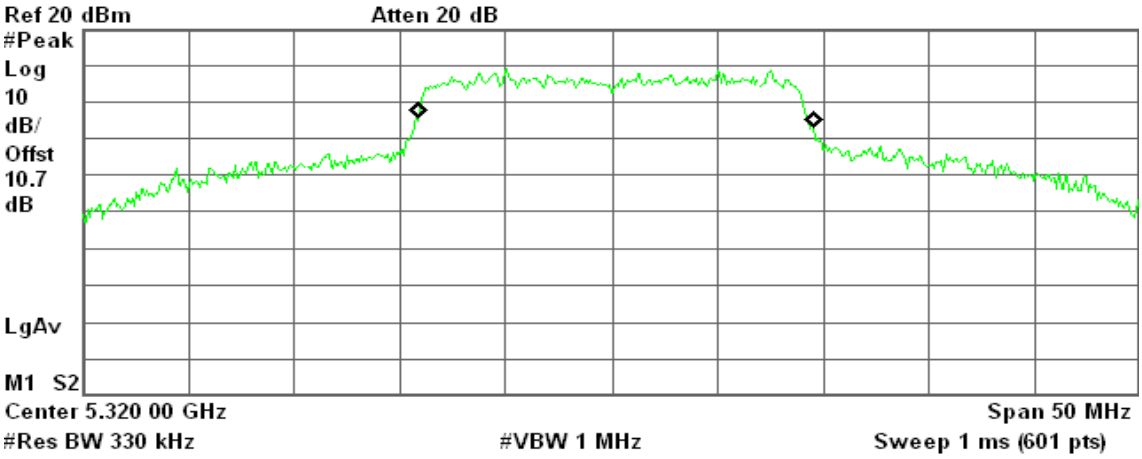


Occupied Bandwidth
19.0482 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 389.039 kHz
x dB Bandwidth 37.598 MHz

CH High



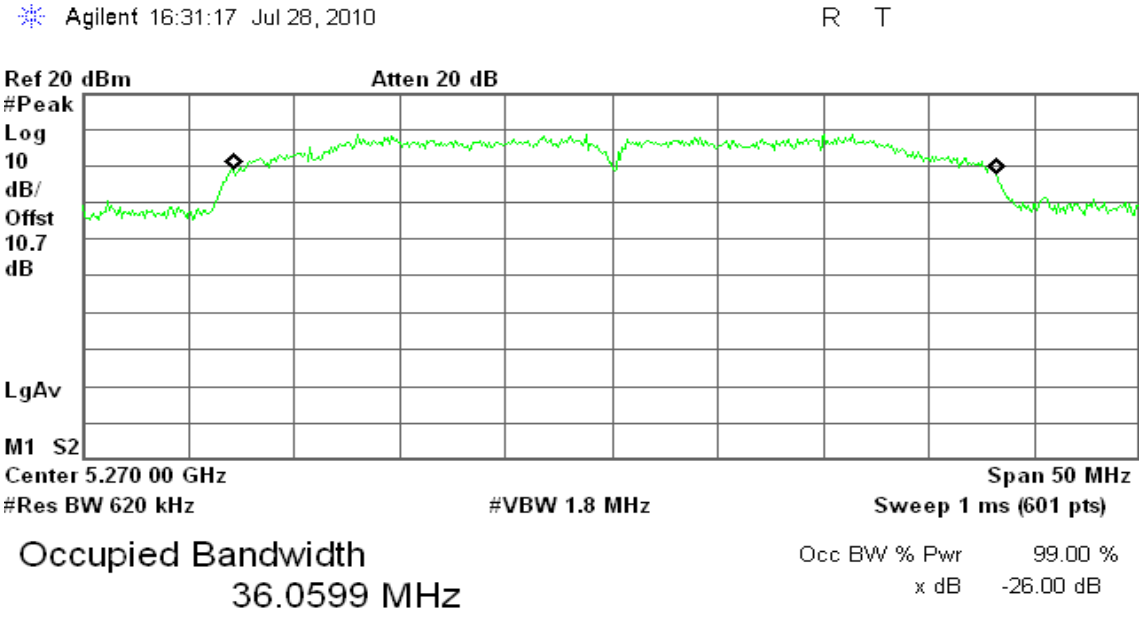
Occupied Bandwidth
18.5639 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 230.887 kHz
x dB Bandwidth 35.759 MHz

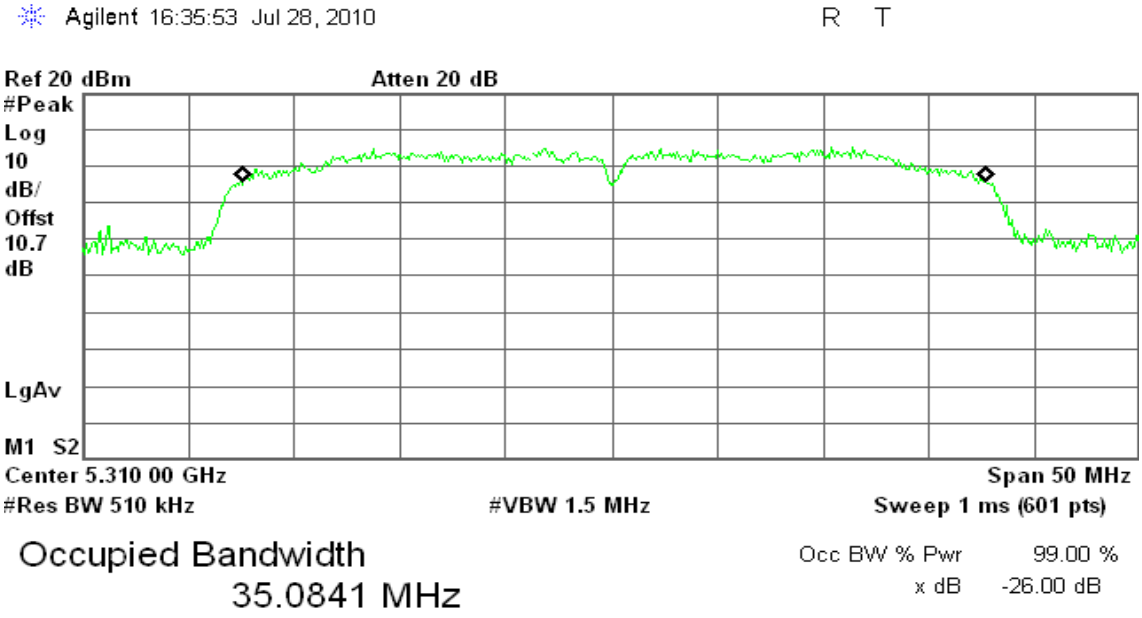
draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 0

CH Low



Transmit Freq Error	157.081 kHz
x dB Bandwidth	50.000 MHz

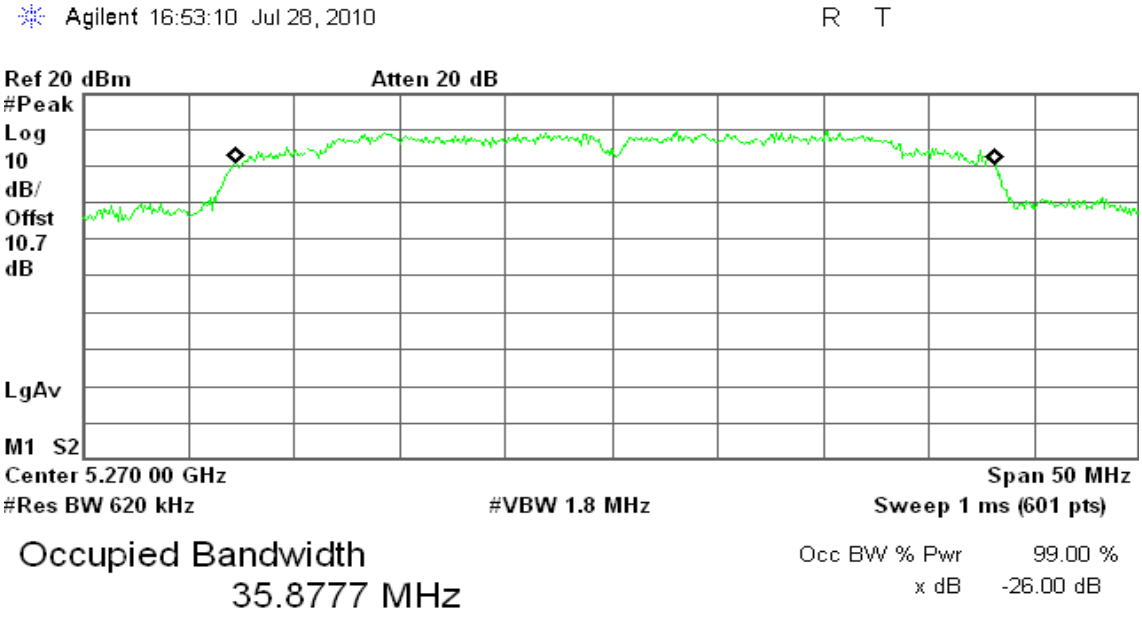
CH High



Transmit Freq Error	85.921 kHz
x dB Bandwidth	49.272 MHz

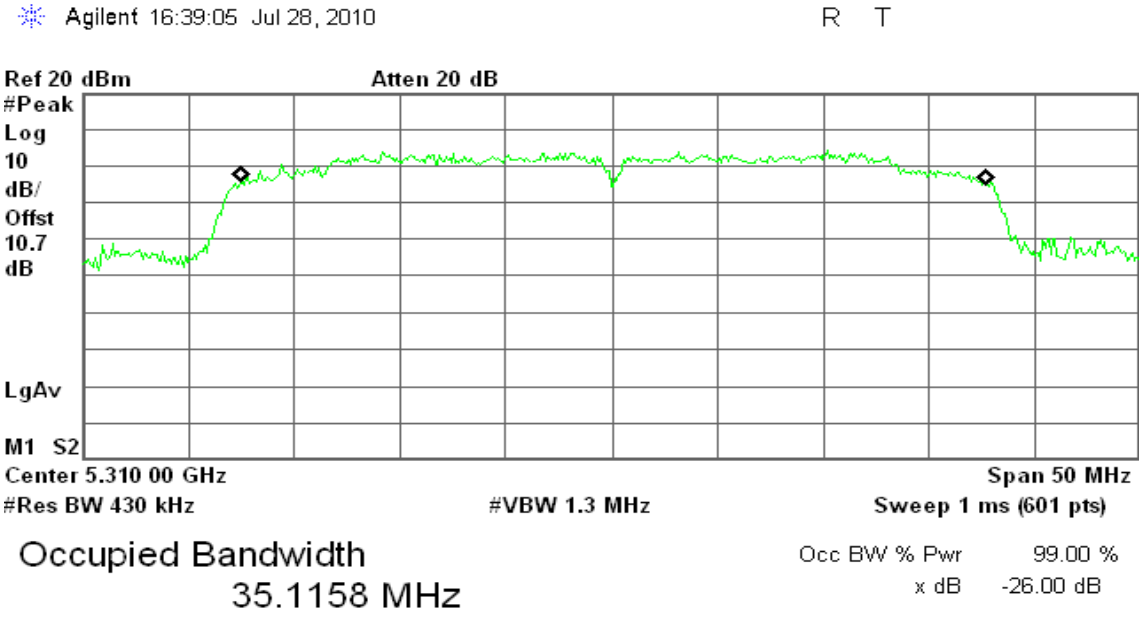
draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 1

CH Low



Transmit Freq Error	162.486 kHz
x dB Bandwidth	50.000 MHz

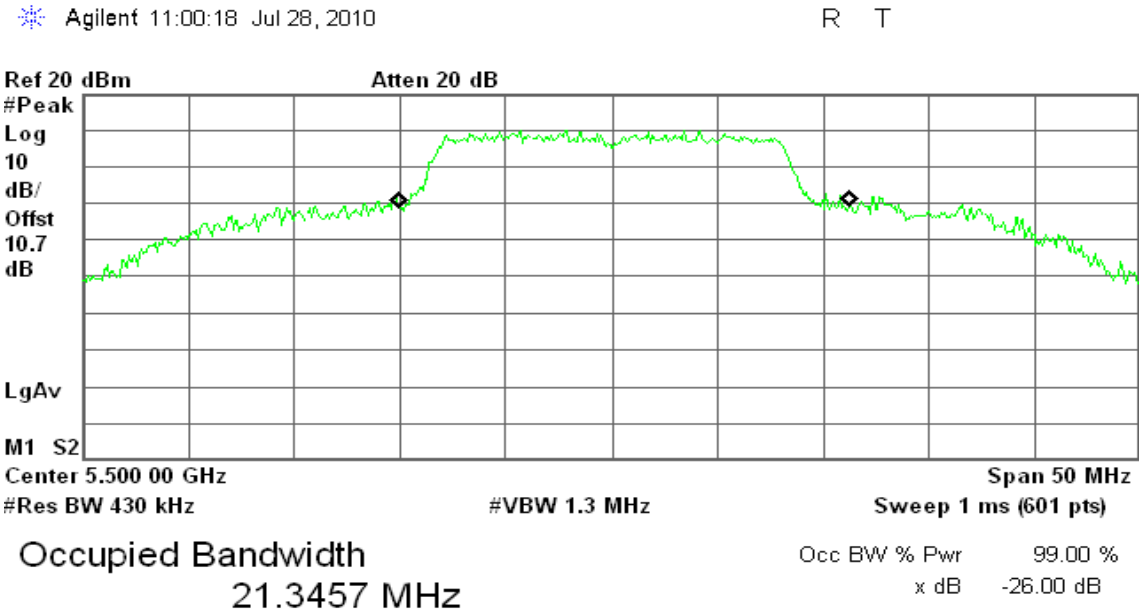
CH High



Transmit Freq Error	79.564 kHz
x dB Bandwidth	47.455 MHz

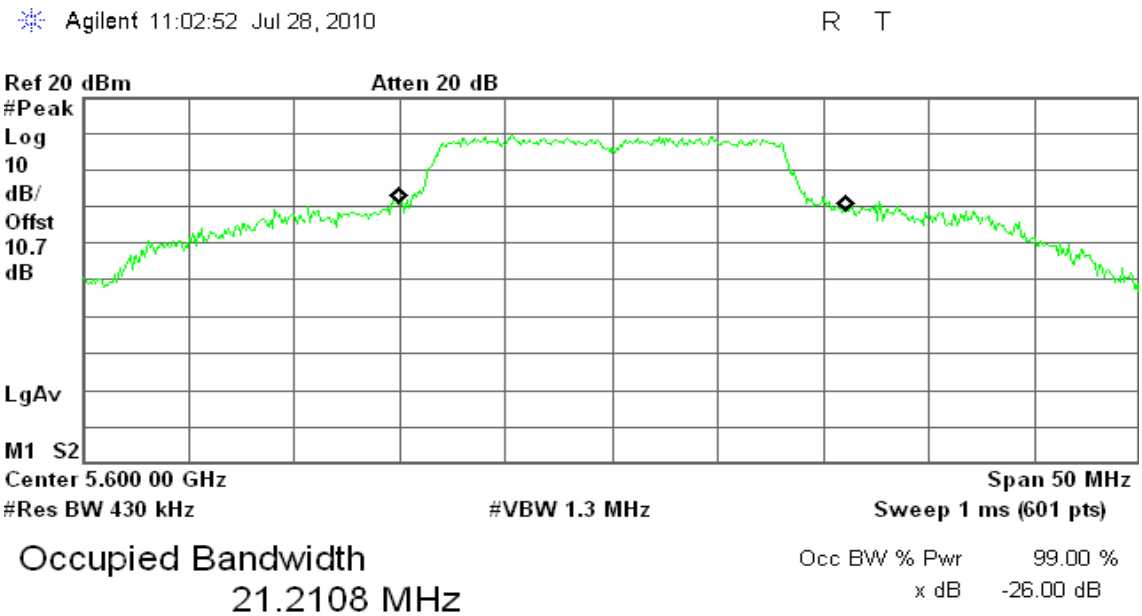
Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

CH Low



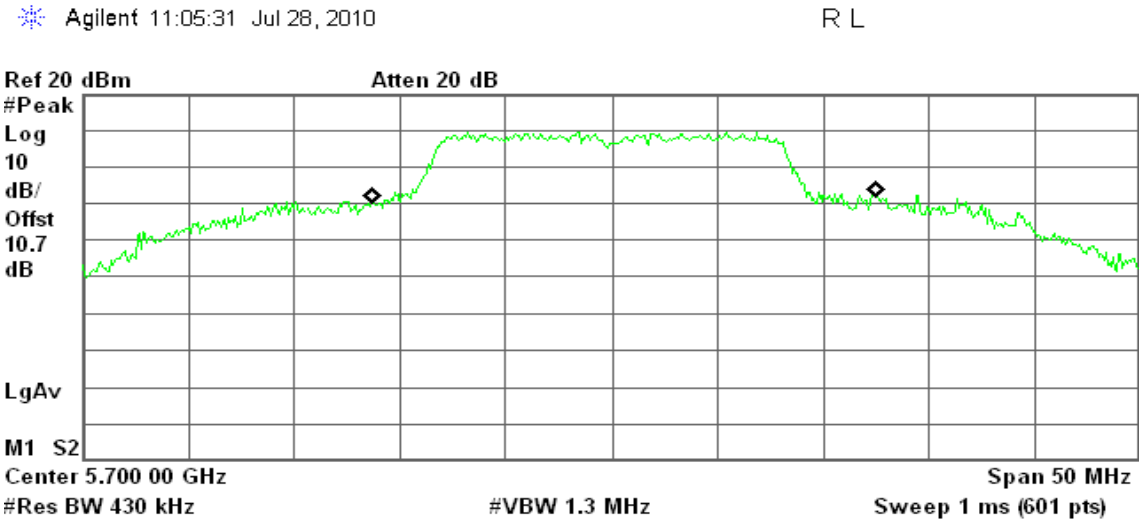
Transmit Freq Error	595.998 kHz
x dB Bandwidth	38.753 MHz

CH Mid



Transmit Freq Error	501.155 kHz
x dB Bandwidth	38.673 MHz

CH High



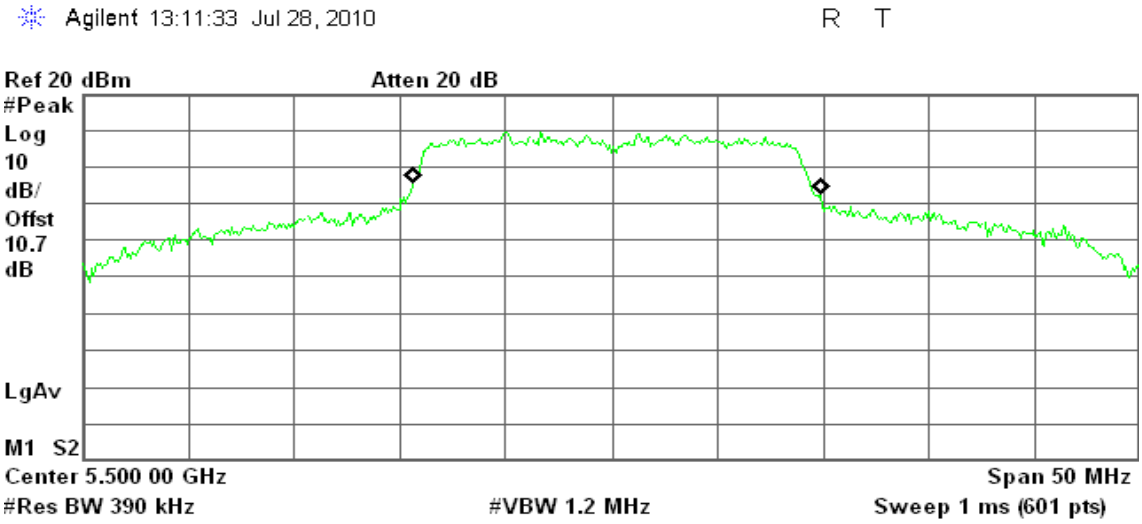
Occupied Bandwidth
23.8520 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 560.056 kHz
x dB Bandwidth 39.608 MHz

draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 0

CH Low

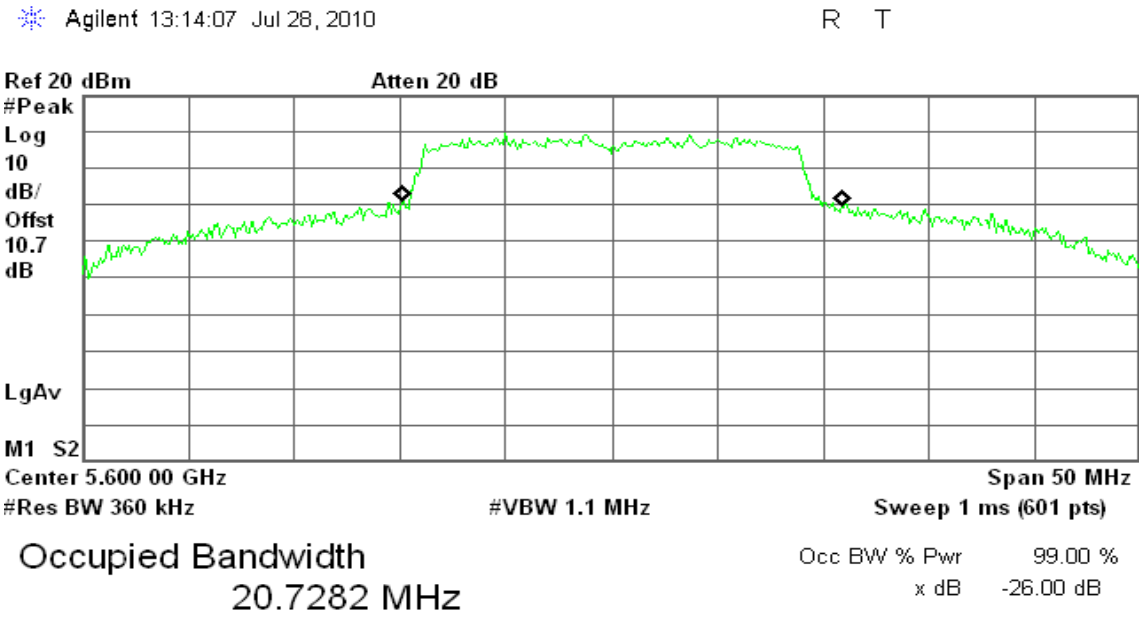


Occupied Bandwidth
19.1300 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 261.389 kHz
x dB Bandwidth 38.856 MHz

CH Mid

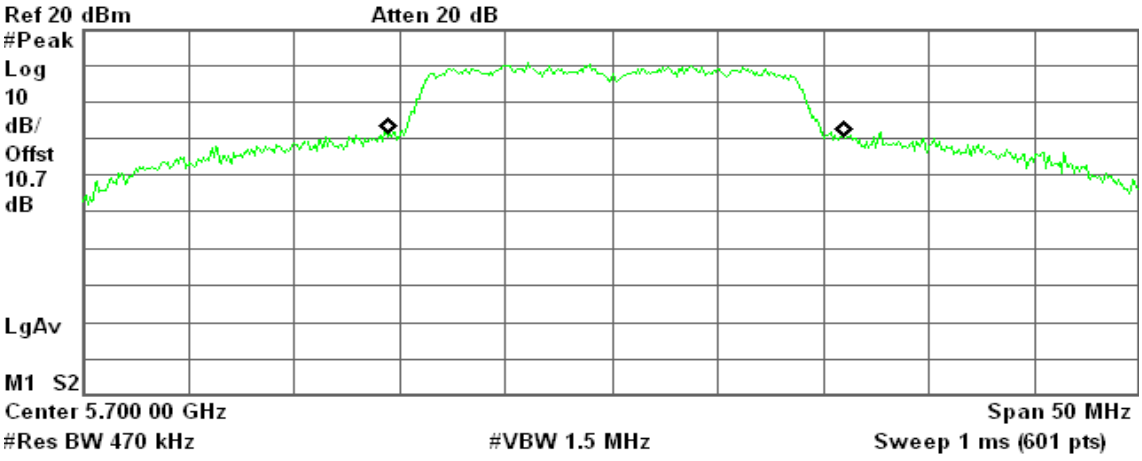


Occupied Bandwidth
20.7282 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	572.183 kHz
x dB Bandwidth	39.594 MHz

CH High



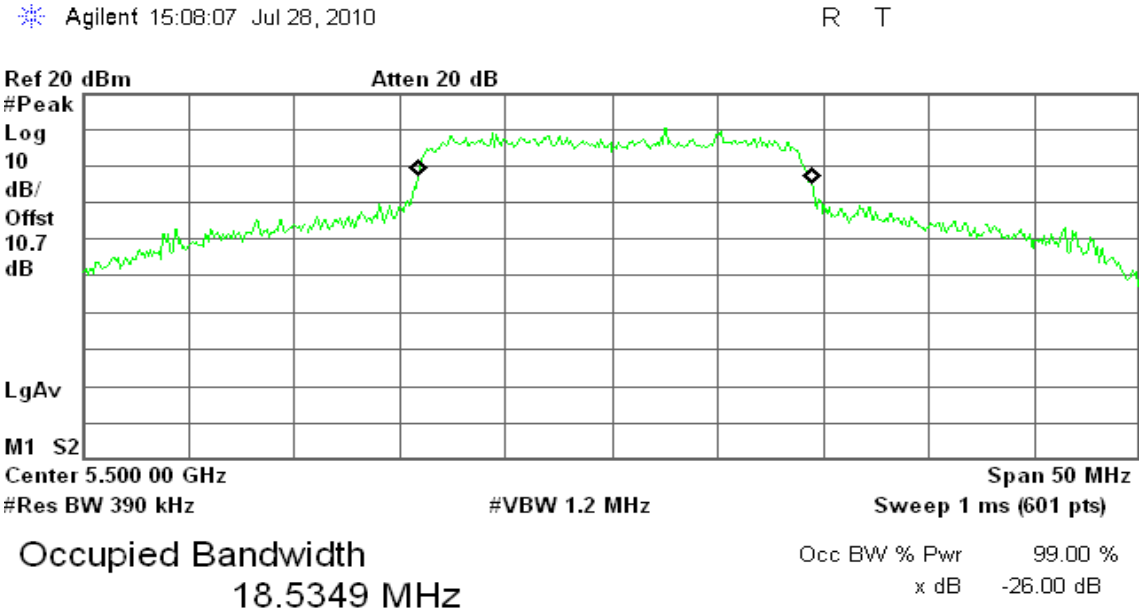
Occupied Bandwidth
21.5958 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	173.510 kHz
x dB Bandwidth	41.938 MHz

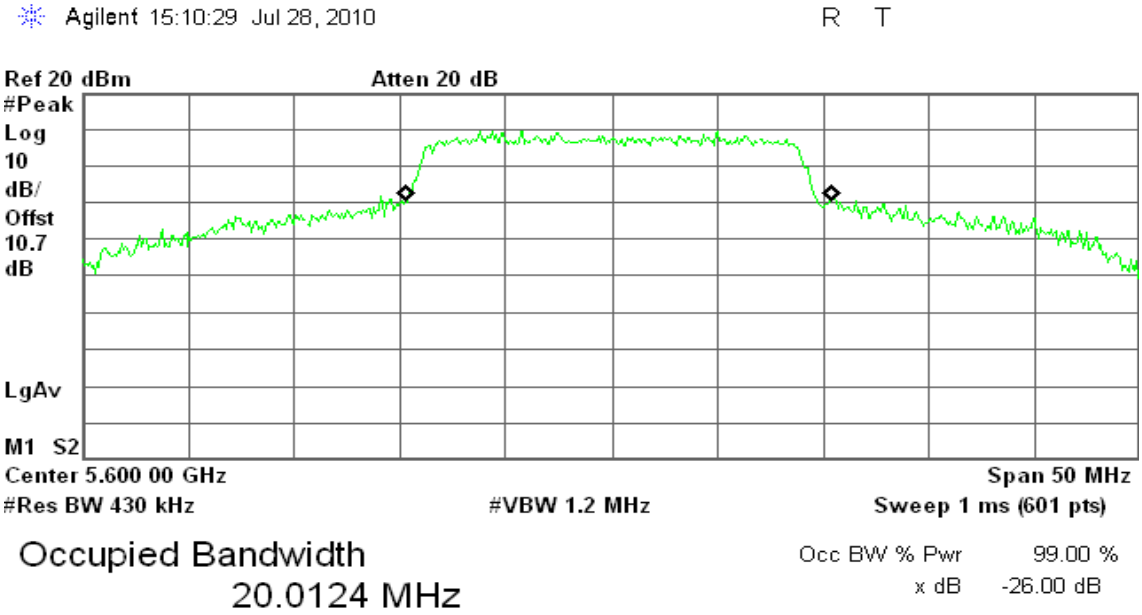
draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 1

CH Low



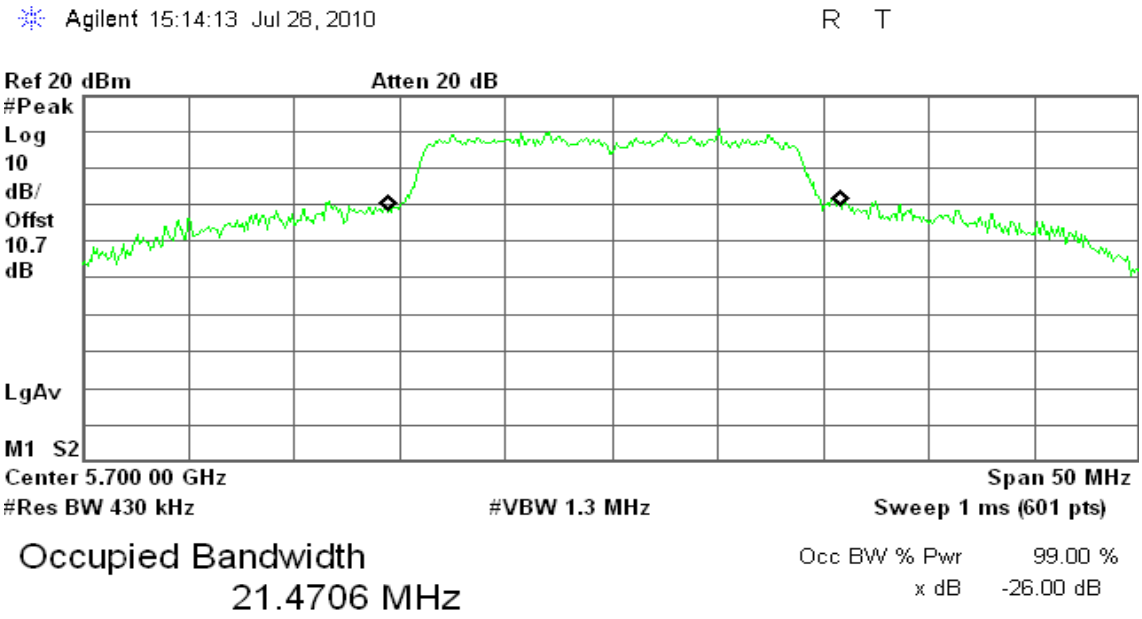
Transmit Freq Error	175.665 kHz
x dB Bandwidth	33.594 MHz

CH Mid



Transmit Freq Error	377.655 kHz
x dB Bandwidth	38.351 MHz

CH High



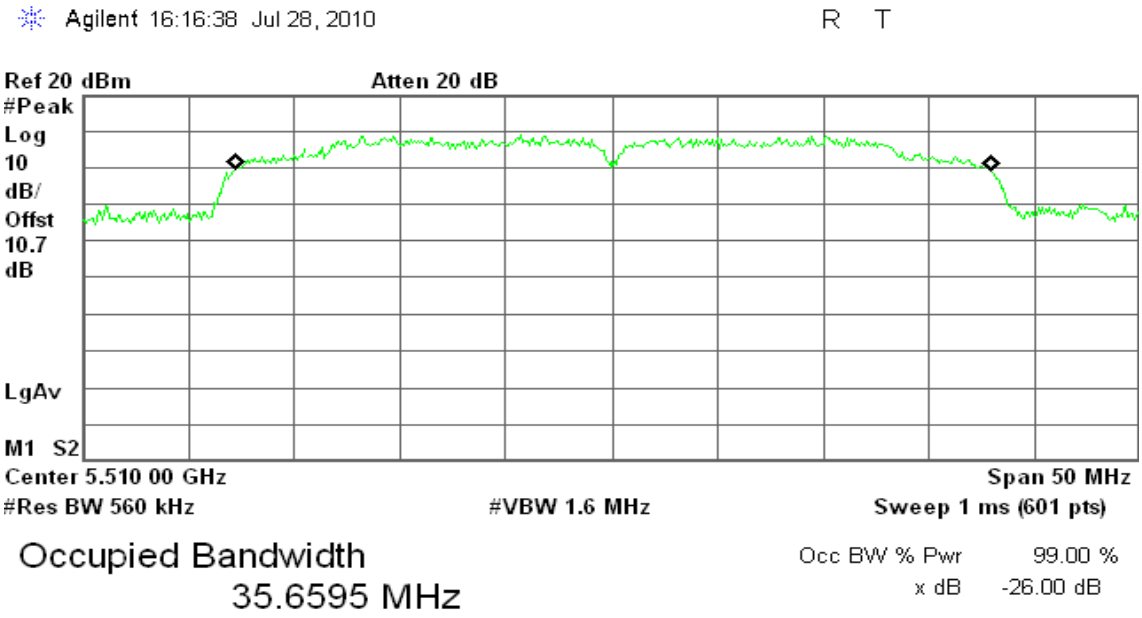
Occupied Bandwidth
21.4706 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 125.914 kHz
x dB Bandwidth 41.039 MHz

draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 0

CH Low

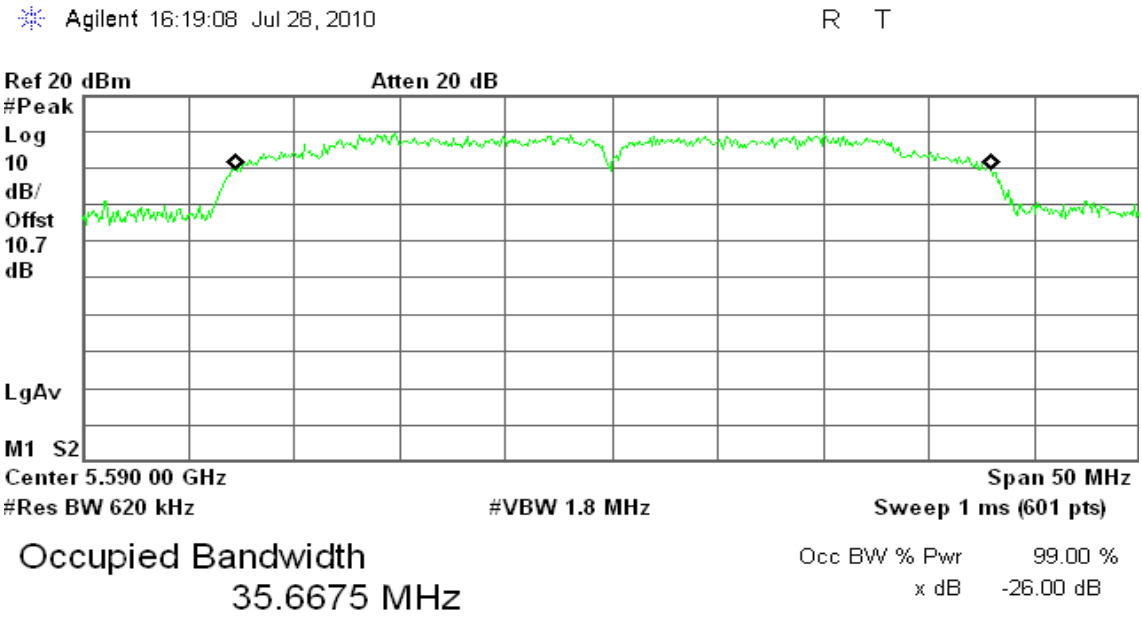


Occupied Bandwidth
35.6595 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 80.524 kHz
x dB Bandwidth 50.000 MHz

CH Mid

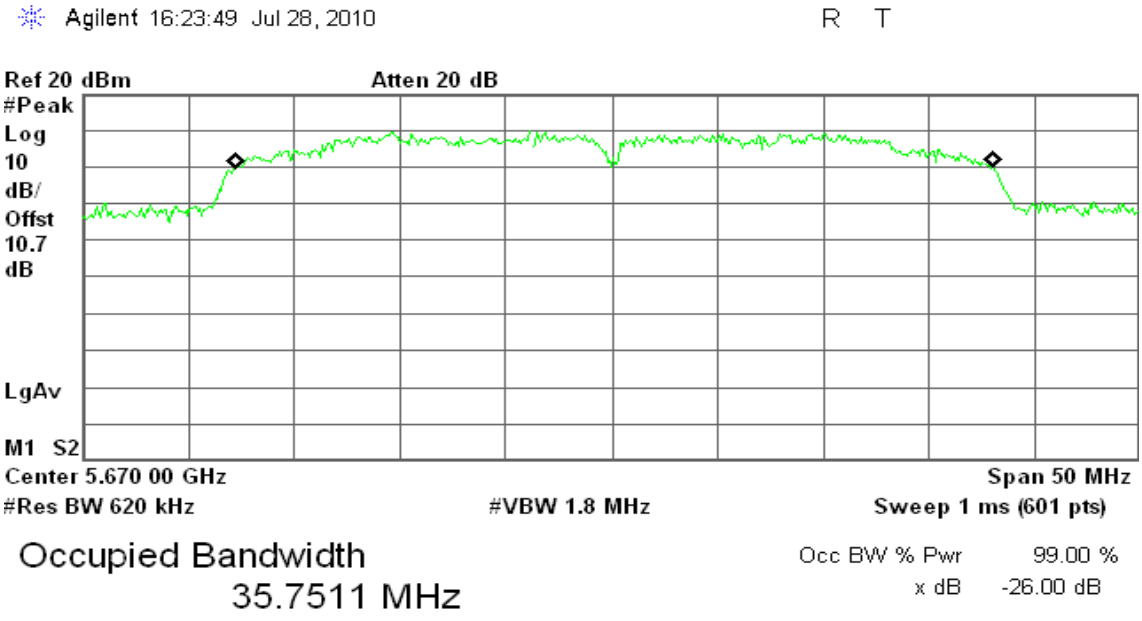


Occupied Bandwidth
35.6675 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 103.218 kHz
x dB Bandwidth 50.000 MHz

CH High



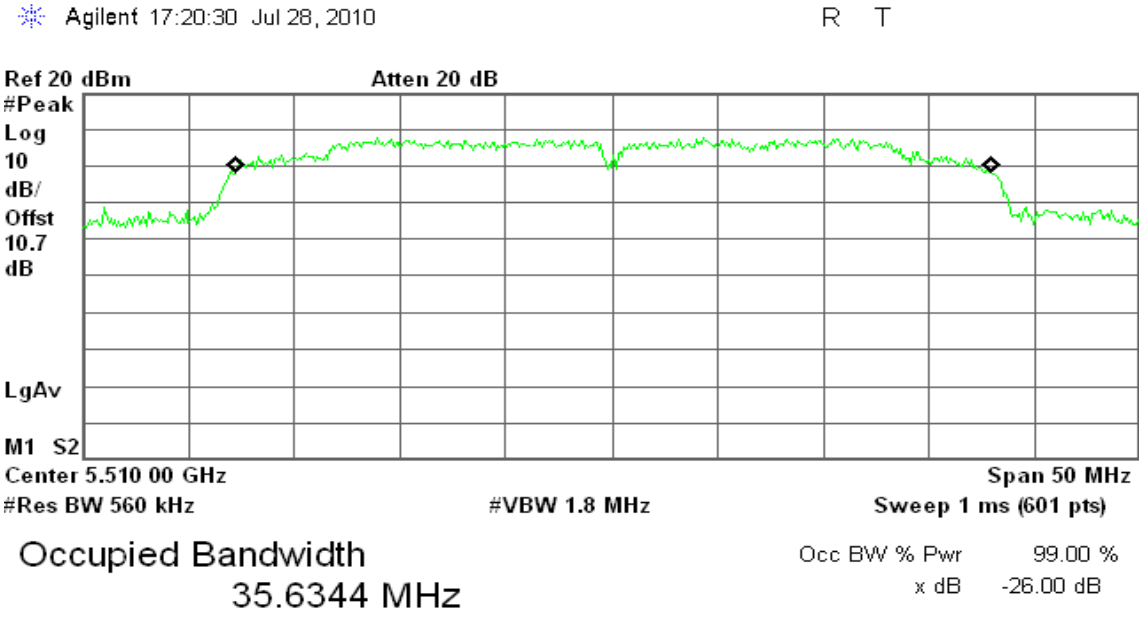
Occupied Bandwidth
35.7511 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 96.287 kHz
x dB Bandwidth 50.000 MHz

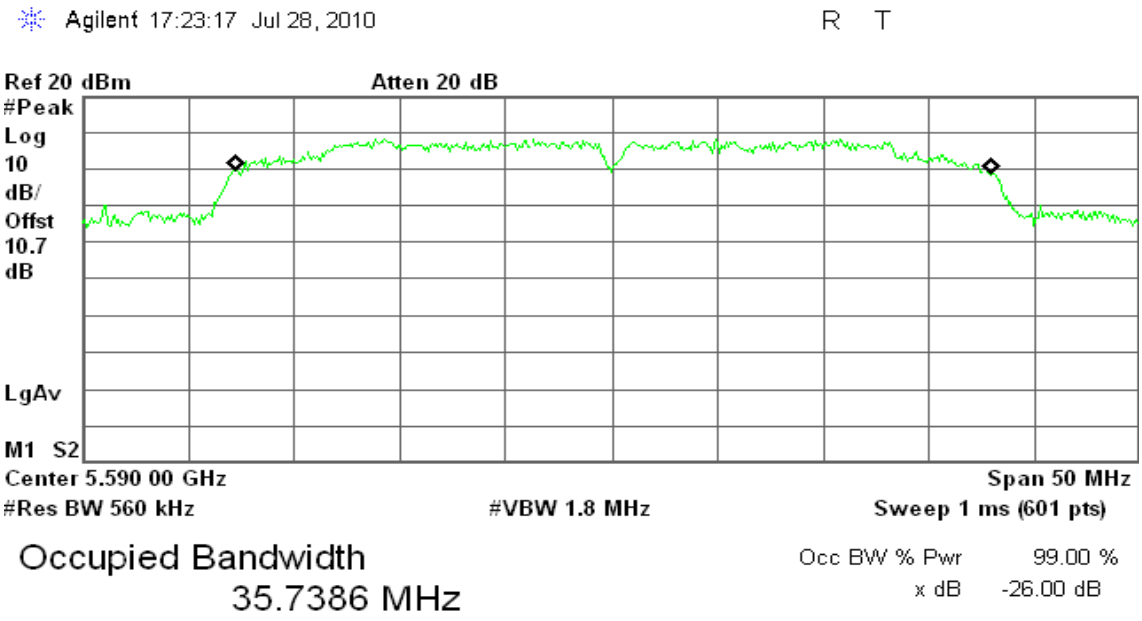
draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 1

CH Low



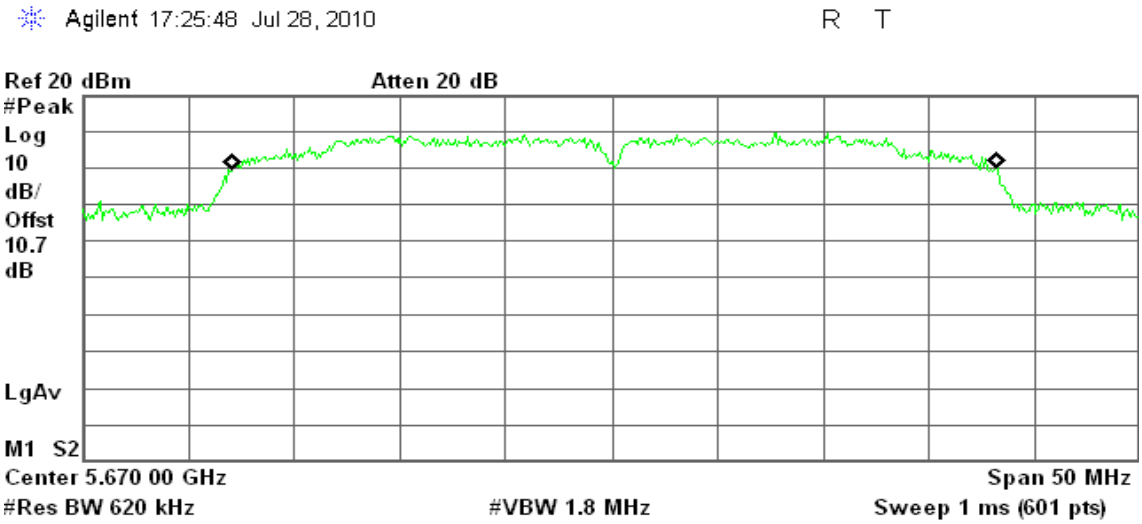
Transmit Freq Error	95.471 kHz
x dB Bandwidth	50.000 MHz

CH Mid



Transmit Freq Error	80.828 kHz
x dB Bandwidth	50.000 MHz

CH High


Agilent 17:25:48 Jul 28, 2010
R T
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.7
dB
LgAv
M1 S2
Center 5.670 00 GHz
Span 50 MHz
#Res BW 620 kHz
#VBW 1.8 MHz
Sweep 1 ms (601 pts)
Occupied Bandwidth
36.0224 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 119.512 kHz
x dB Bandwidth 50.000 MHz

7.2 MAXIMUM CONDUCTED OUTPUT POWER

LIMIT

According to §15.407(a),

(1) For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

The peak power shall not exceed the limit as follow:

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5180	17.8778	12.52314	16.5231	17.00
Mid	5220	17.686	12.47630	16.4763	17.00
High	5240	18.1167	12.58079	16.5808	17.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Chain 0 26 dB Bandwidth (B) (MHz)	Chain 1 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5180	17.7481	17.7229	12.49152	16.4915	17.00
Mid	5220	17.7106	17.7124	12.48277	16.4828	17.00
High	5240	17.7362	17.7051	12.48861	16.4886	17.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Chain 0 26 dB Bandwidth (B) (MHz)	Chain 1 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5190	35.2575	35.1716	15.47252	19.4725	17.00
High	5230	35.0965	35.0385	15.45264	19.4526	17.00

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5260	26.7455	14.27251	18.2725	24.00
Mid	5280	25.9677	14.14433	18.1443	24.00
High	5320	24.8279	13.94940	17.9494	24.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Chain 0 26 dB Bandwidth (B) (MHz)	Chain 1 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5260	22.9213	19.9704	13.60239	17.6024	24.00
Mid	5280	21.2566	19.0482	13.27494	17.2749	24.00
High	5320	20.7527	18.5639	13.17075	17.1707	24.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Chain 0 26 dB Bandwidth (B) (MHz)	Chain 1 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5270	35.0599	35.8777	15.54825	19.5482	24.00
High	5310	35.0841	35.1158	15.45503	19.4550	24.00

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5500	21.3457	13.29310	17.2931	24.00
Mid	5600	21.2108	13.26557	17.2656	24.00
High	5700	23.852	13.77525	17.7752	24.00

Test mode: draft 802.11n Standard-20 MHz Channel mode/ 5500 ~ 5700MHz

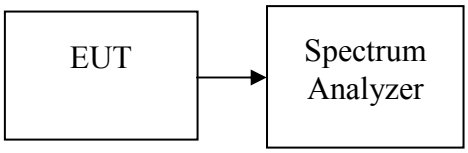
Channel	Frequency (MHz)	Chain 0 26 dB Bandwidth (B) (MHz)	Chain 1 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5500	19.1300	18.5349	12.81715	16.8171	24.00
Mid	5600	20.7282	20.0124	13.16562	17.1656	24.00
High	5700	21.5958	21.4706	13.34369	17.3437	24.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	Chain 0 26 dB Bandwidth (B) (MHz)	Chain 1 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5510	35.6595	35.6344	15.52175	19.5218	24.00
Mid	5590	35.6675	35.7386	15.53138	19.5314	24.00
High	5670	35.7511	36.0224	15.56573	19.5657	24.00

Test Configuration

The EUT was connected to a spectrum analyzer through a 50Ω RF cable.



TEST PROCEDURE

Set span to encompass the entire emission bandwidth (EBW) of the signal.

Set RBW = 1 MHz / Set VBW = 3 MHz.

Use sample detector mode if bin width (i.e., span/number of points in spectrum display) < 0.5 RBW. Otherwise use peak detector mode. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to "free run".·Trace average 100 traces in power averaging mode. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.

TEST RESULTS

No non-compliance noted

Test Data

For V-100-2X

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	13.20	17.00
Mid	5220	13.71	17.00
High	5240	14.05	17.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	9.66	9.54	12.61	17.00
Mid	5220	9.88	8.95	12.45	17.00
High	5240	10.25	9.06	12.71	17.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5190	12.38	13.03	15.73	17.00
High	5230	12.13	11.48	14.83	17.00

Remark:

1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000))

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	16.48	24.00
Mid	5280	17.23	24.00
High	5320	17.25	24.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	15.45	16.07	18.78	24.00
Mid	5280	15.68	16.23	18.97	24.00
High	5320	15.15	16.70	19.00	24.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5270	15.56	16.96	19.33	24.00
High	5310	12.76	13.06	15.92	24.00

Remark:

1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000))

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	17.23	24.00
Mid	5600	16.96	24.00
High	5700	17.47	24.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	16.15	16.46	19.32	23.00
Mid	5600	16.29	16.61	19.46	23.00
High	5700	16.46	17.01	19.75	23.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5510	16.96	16.08	19.55	23.00
Mid	5590	17.22	16.52	19.89	23.00
High	5670	17.21	16.79	20.02	23.00

Remark:

1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000)

2. The maximum antenna gain is 6.49dBi; therefore the reduction due to antenna gain is 1dB, so the limit is 23dBm.

For V-100-X

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	13.52	17.00
Mid	5220	13.75	17.00
High	5240	13.96	17.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	9.52	9.51	12.53	17.00
Mid	5220	9.79	9.01	12.43	17.00
High	5240	10.36	9.12	12.79	17.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5190	12.46	13.19	15.85	17.00
High	5230	12.03	11.3	14.69	17.00

Remark:

1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000))

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	16.42	24.00
Mid	5280	17.3	24.00
High	5320	17.16	24.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	15.5	16.03	18.78	24.00
Mid	5280	15.6	16.29	18.97	24.00
High	5320	15.2	16.75	19.05	24.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5270	15.53	16.98	19.33	24.00
High	5310	12.9	13.16	16.04	24.00

Remark:

1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000))

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	17.2	24.00
Mid	5600	17.05	24.00
High	5700	17.39	24.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	16.1	16.45	19.29	23.00
Mid	5600	16.32	16.59	19.47	23.00
High	5700	16.53	17.19	19.88	23.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5510	16.85	16.02	19.47	23.00
Mid	5590	17.36	17.02	20.20	23.00
High	5670	17.39	16.96	20.19	23.00

Remark:

1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000)

2. The maximum antenna gain is 6.49dBi; therefore the reduction due to antenna gain is 1dB, so the limit is 23dBm.

For V-200-X

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	13.18	17.00
Mid	5220	13.86	17.00
High	5240	14.1	17.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	9.75	9.62	12.70	17.00
Mid	5220	9.94	9.04	12.52	17.00
High	5240	10.39	9.22	12.85	17.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5190	12.34	13.1	15.75	17.00
High	5230	12.09	11.38	14.76	17.00

Remark:

1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000))

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	16.35	24.00
Mid	5280	17.25	24.00
High	5320	17.2	24.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	15.39	16.12	18.78	24.00
Mid	5280	15.65	16.21	18.95	24.00
High	5320	15.2	16.59	18.96	24.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5270	15.62	16.89	19.31	24.00
High	5310	12.69	13.17	15.95	24.00

Remark:

1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000))

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	17.2	24.00
Mid	5600	16.82	24.00
High	5700	17.32	24.00

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	16.82	16.45	19.65	23.00
Mid	5600	16.19	16.69	19.46	23.00
High	5700	16.41	17.23	19.85	23.00

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5510	17.09	16.29	19.72	23.00
Mid	5590	17.53	19.78	21.81	23.00
High	5670	17.39	20.2	22.03	23.00

Remark:

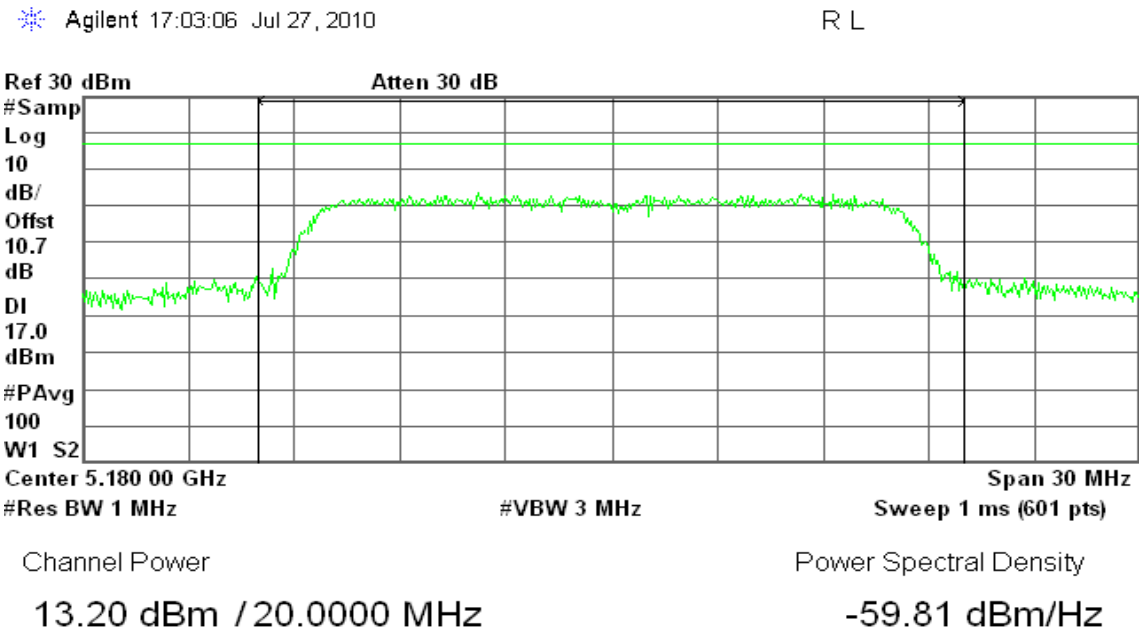
1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000)

2. The maximum antenna gain is 6.49dBi; therefore the reduction due to antenna gain is 1dB, so the limit is 23dBm.

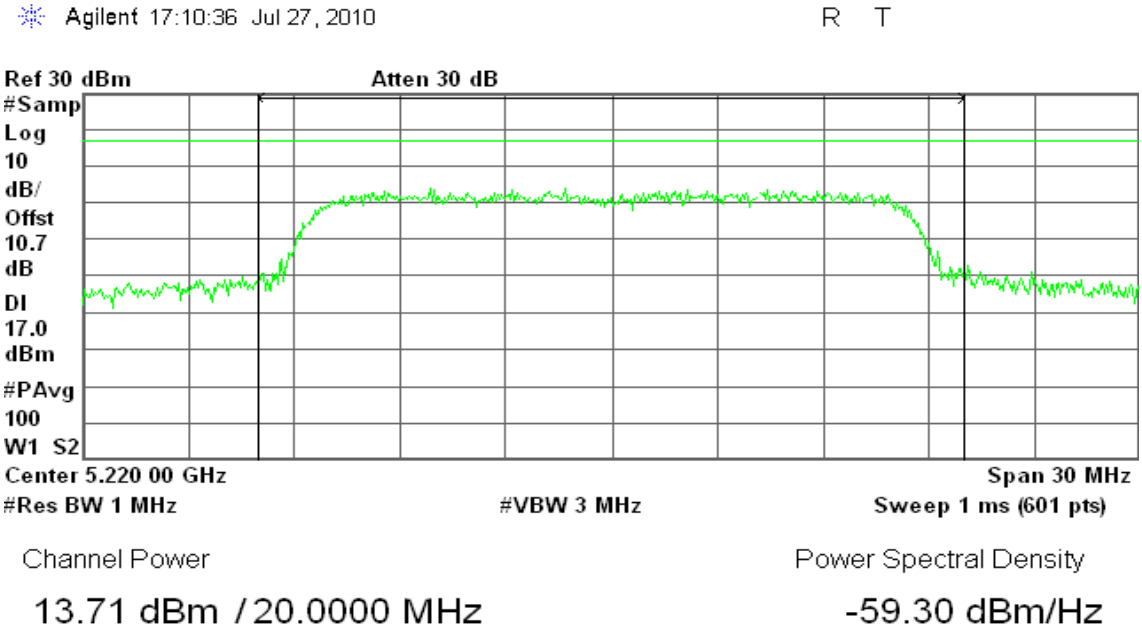
Test Plot

IEEE 802.11a mode / 5180 ~ 5240MHz

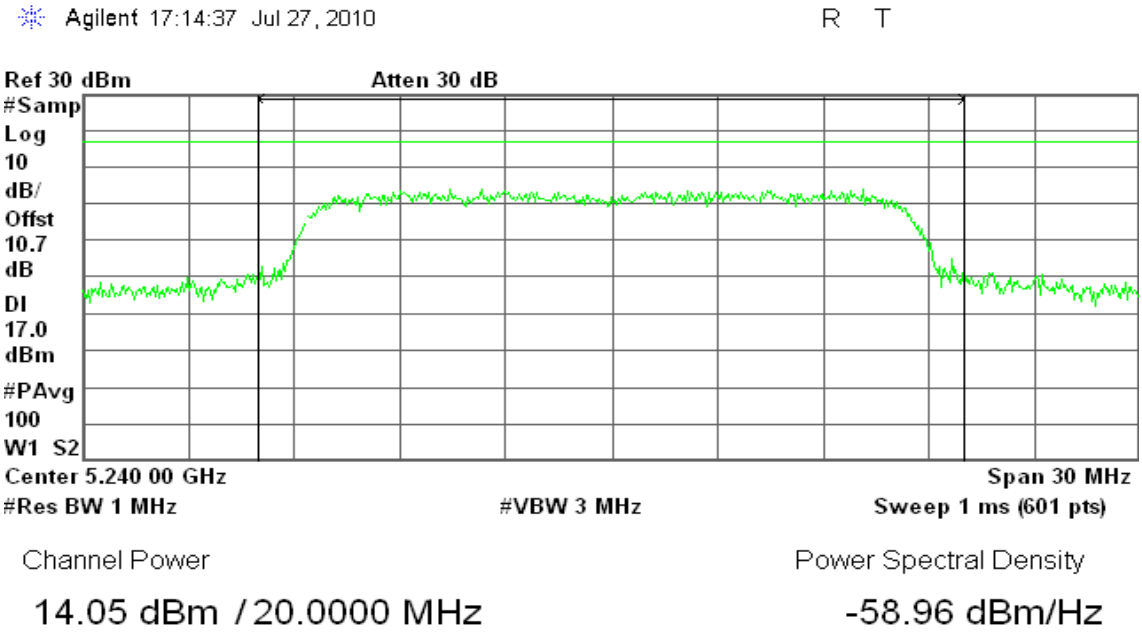
CH Low



CH Mid

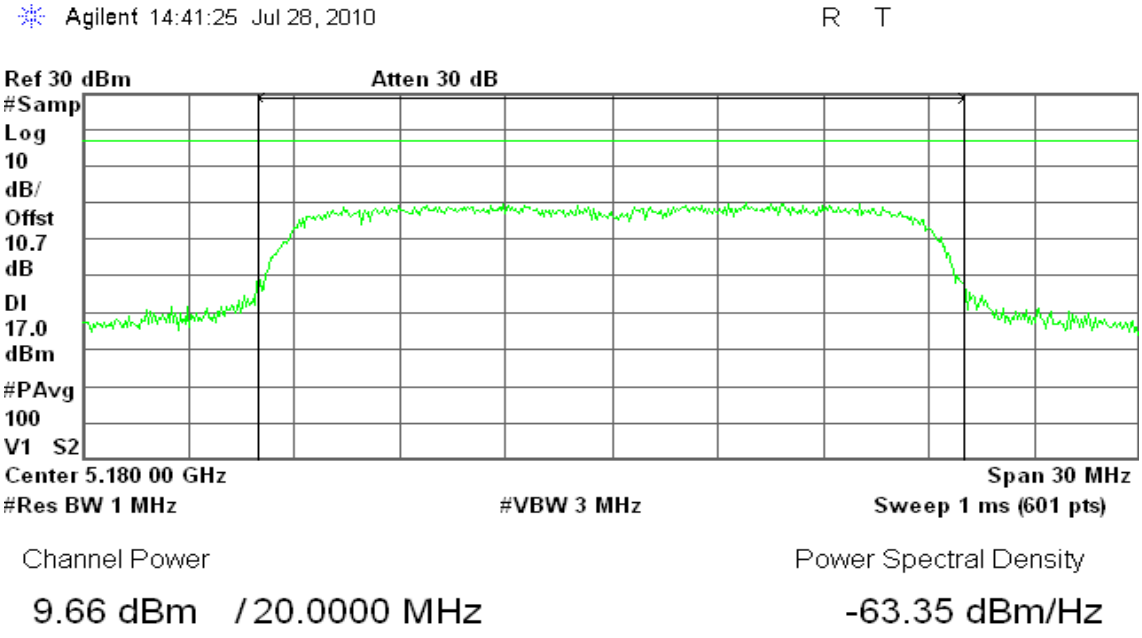


CH High

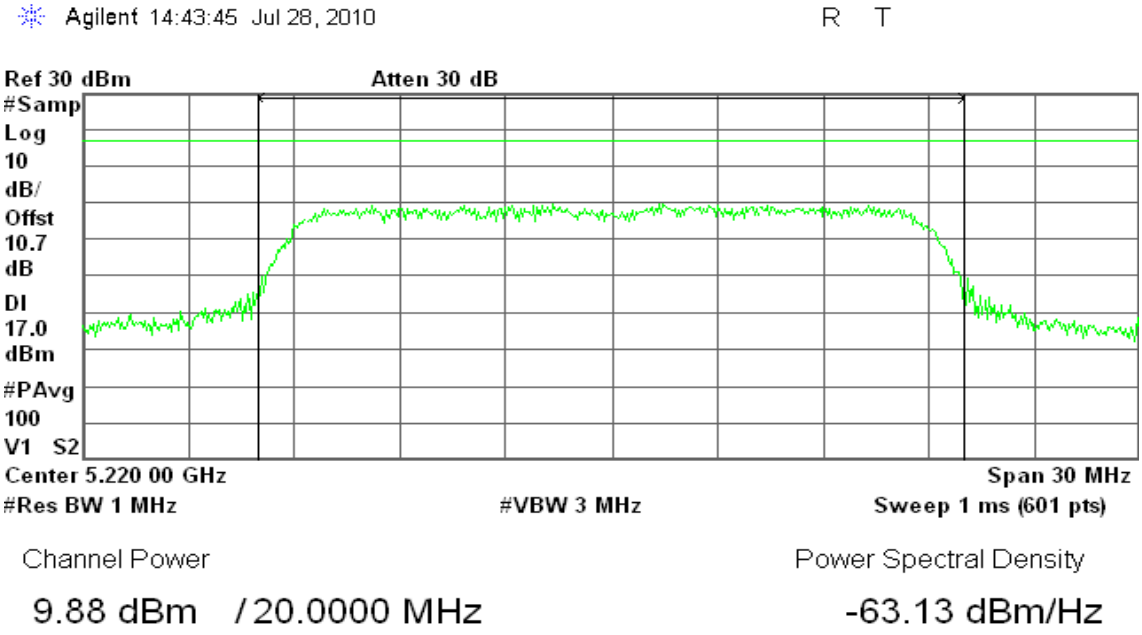


draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 0

CH Low



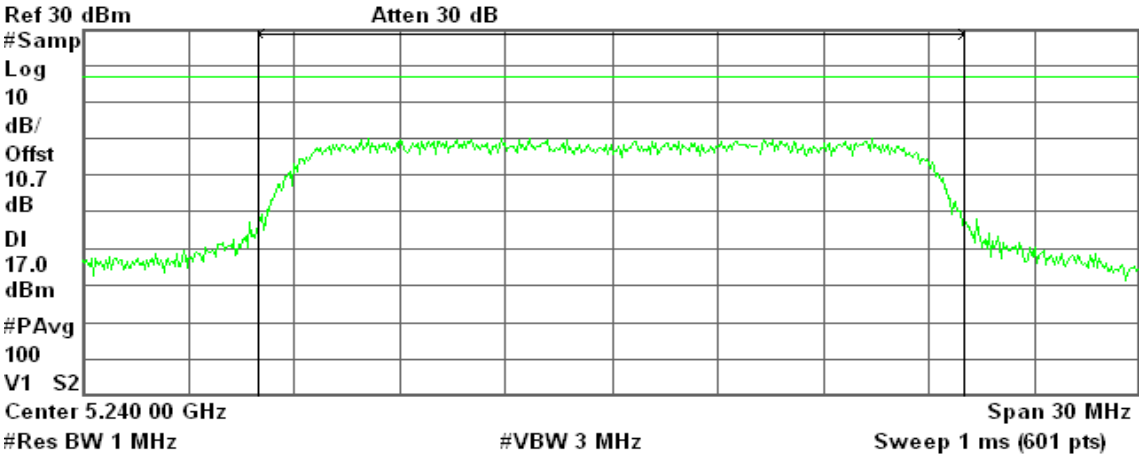
CH Mid



Channel Power
9.88 dBm /20.0000 MHz

Power Spectral Density
-63.13 dBm/Hz

CH High

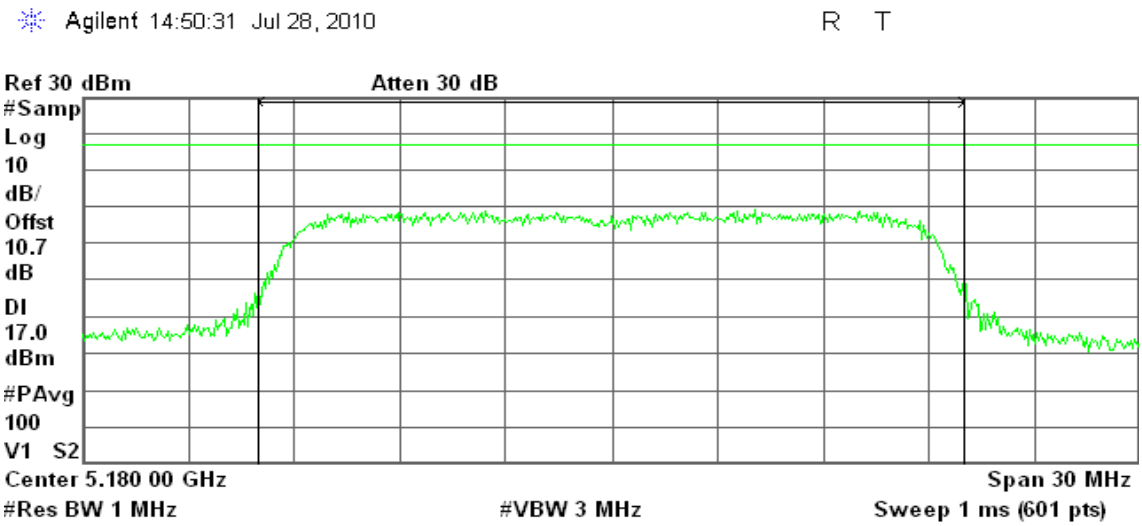


Channel Power
10.25 dBm /20.0000 MHz

Power Spectral Density
-62.77 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1

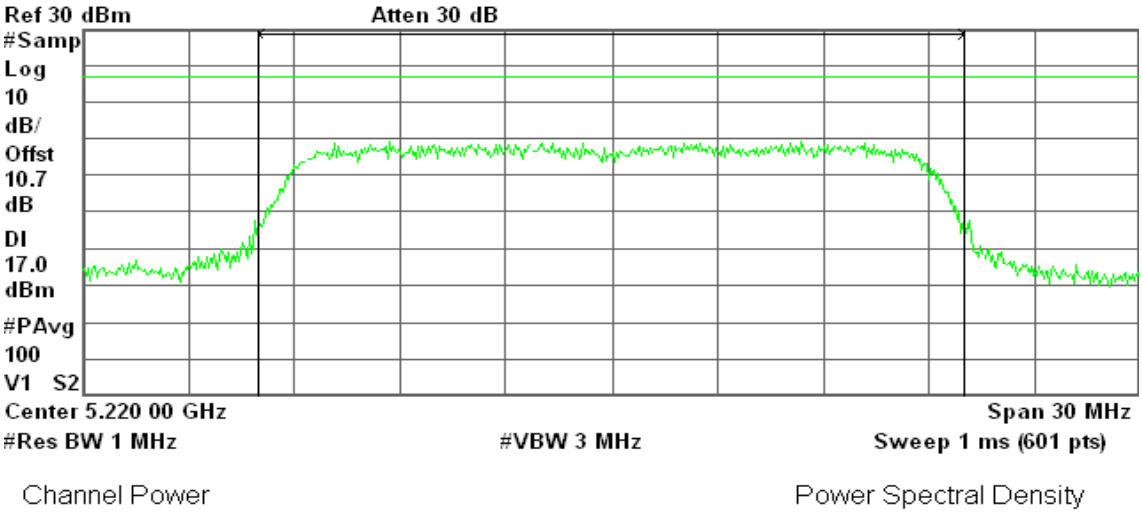
CH Low



Channel Power
9.54 dBm / 20.0000 MHz

Power Spectral Density
-63.47 dBm/Hz

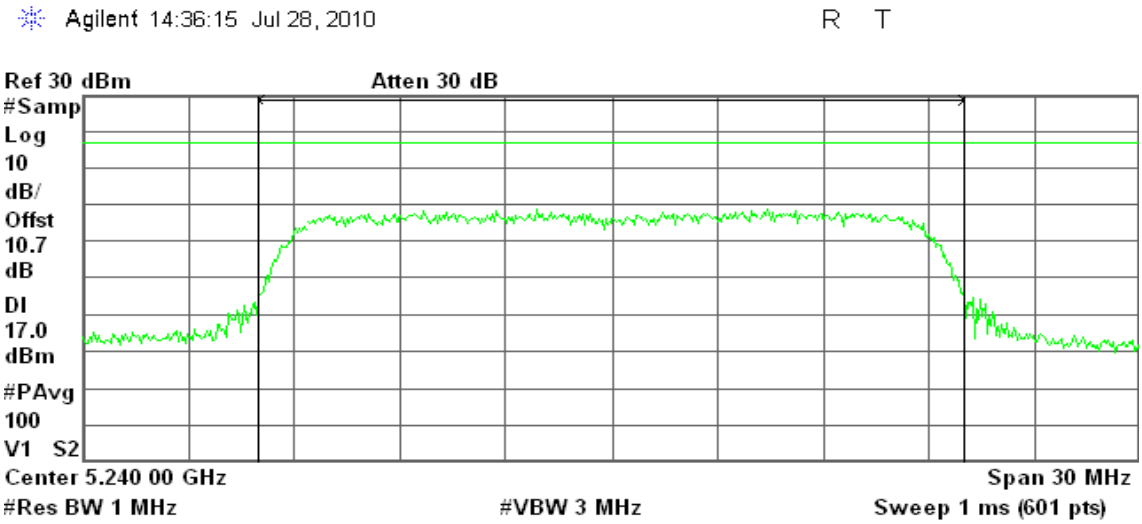
CH Mid



Channel Power
8.95 dBm / 20.0000 MHz

Power Spectral Density
-64.06 dBm/Hz

CH High

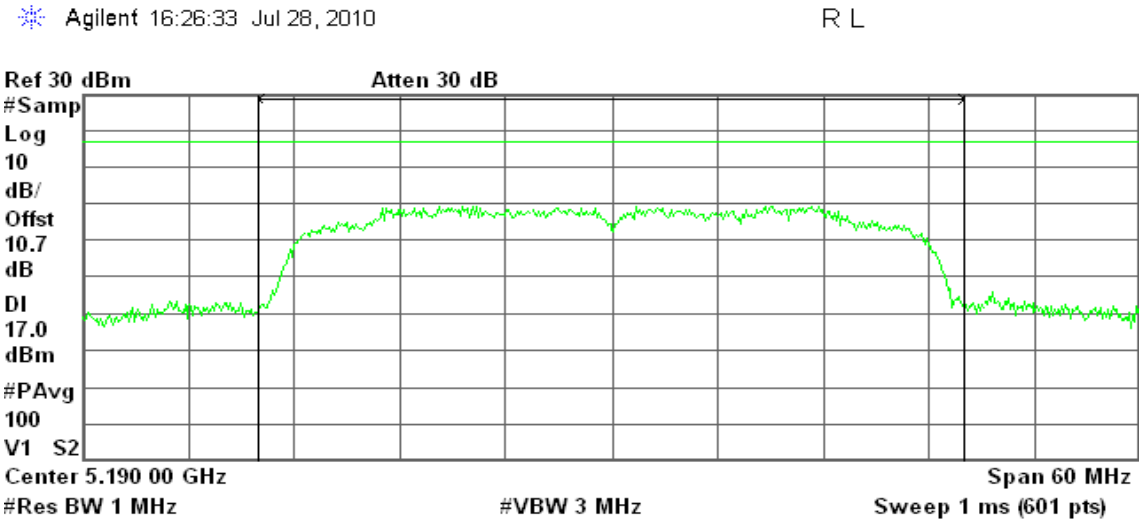


Channel Power
9.06 dBm /20.0000 MHz

Power Spectral Density
-63.95 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 0

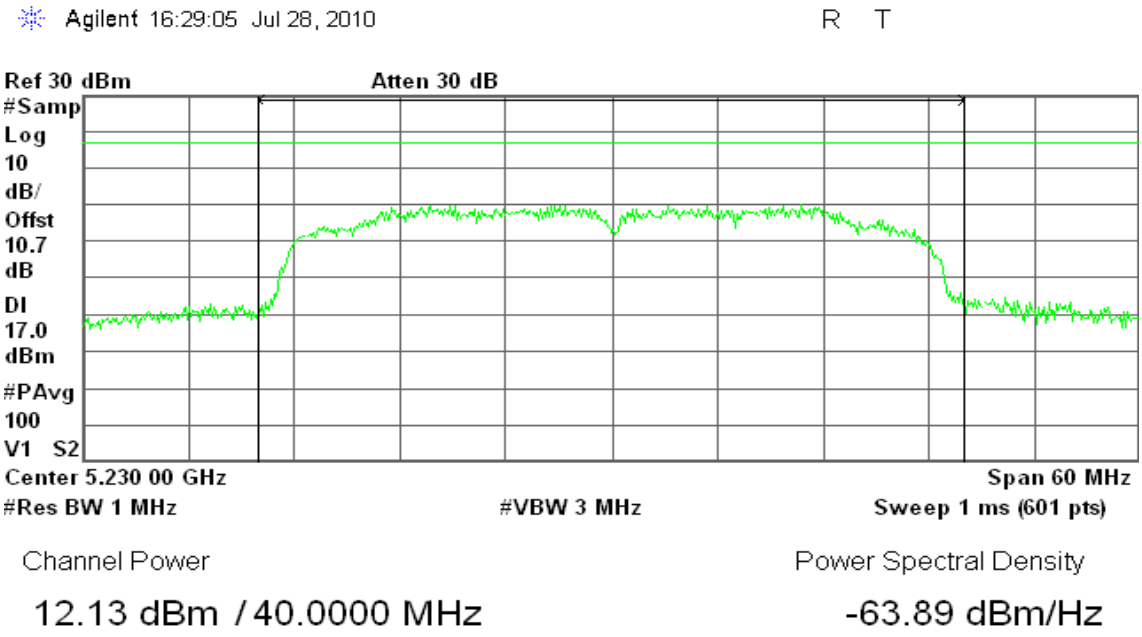
CH Low



Channel Power
12.38 dBm /40.0000 MHz

Power Spectral Density
-63.64 dBm/Hz

CH High

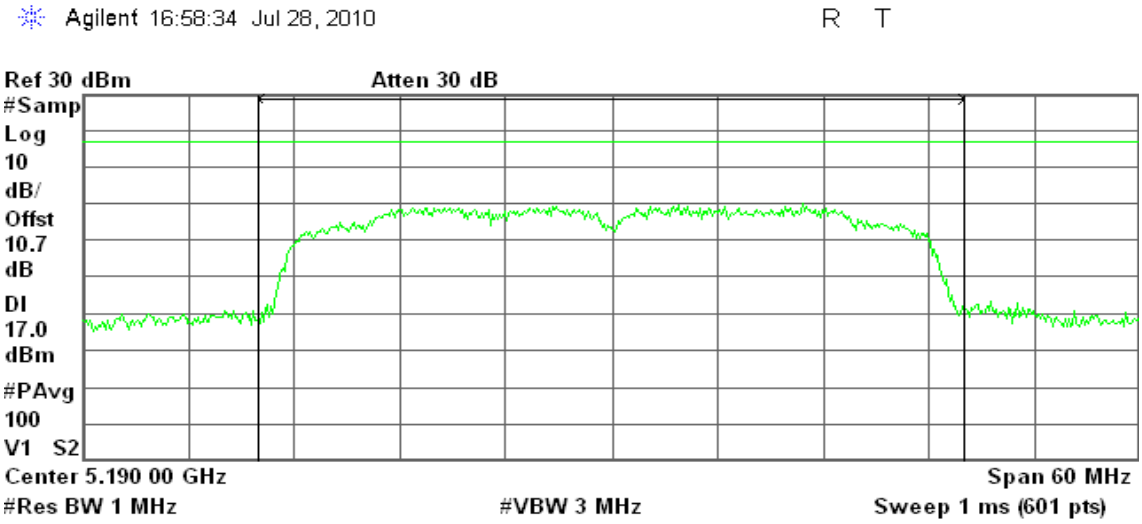


Channel Power
12.13 dBm / 40.0000 MHz

Power Spectral Density
-63.89 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 1

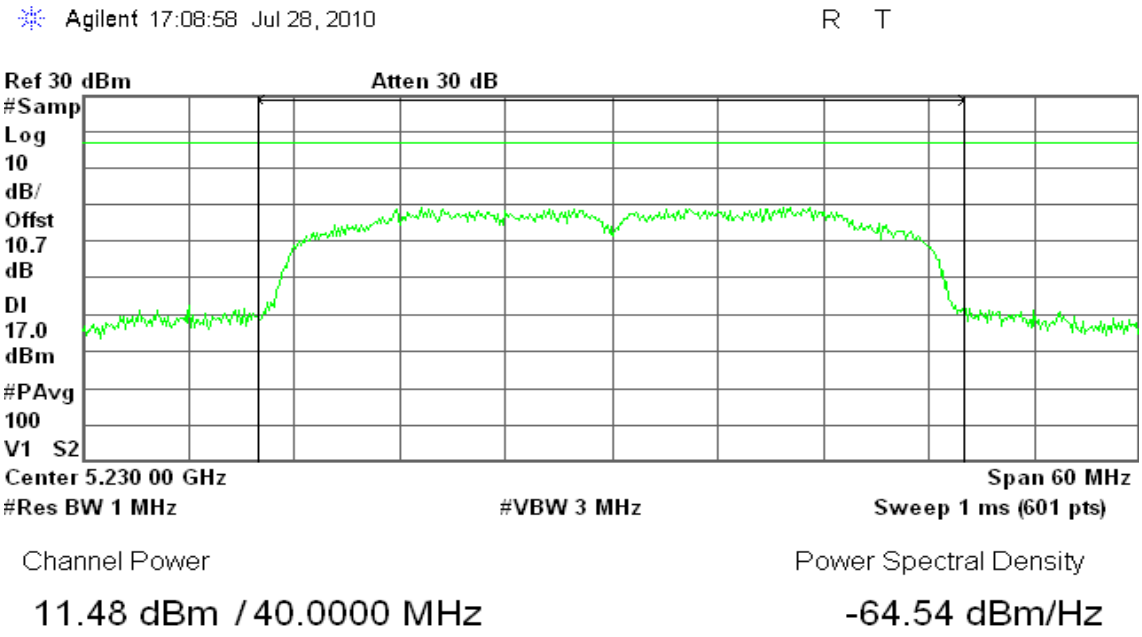
CH Low



Channel Power
13.03 dBm / 40.0000 MHz

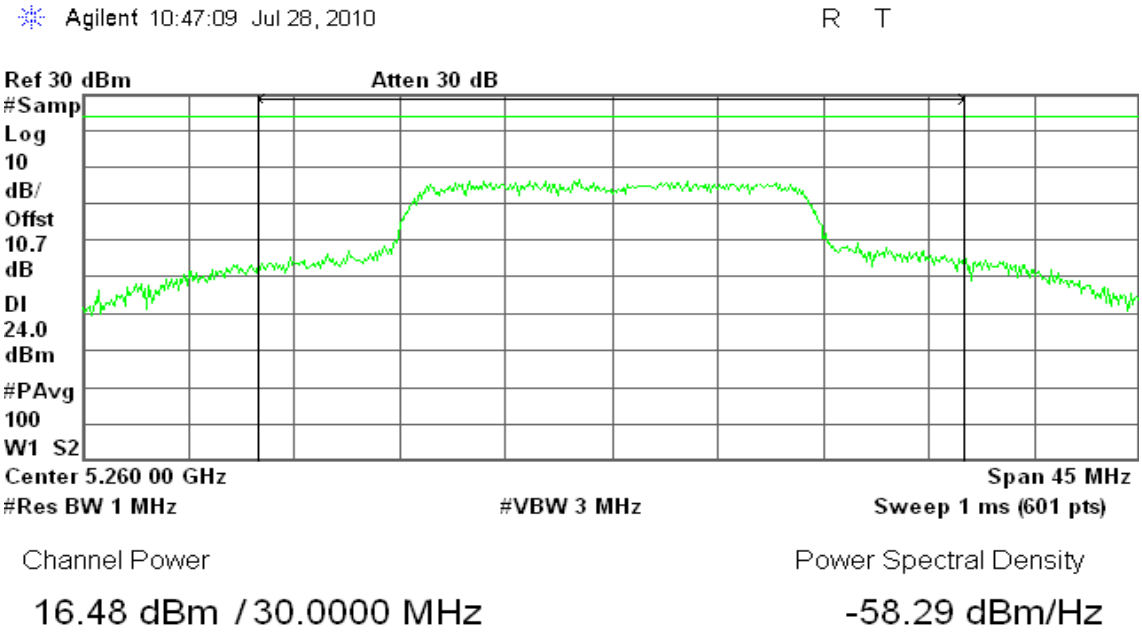
Power Spectral Density
-62.99 dBm/Hz

CH High

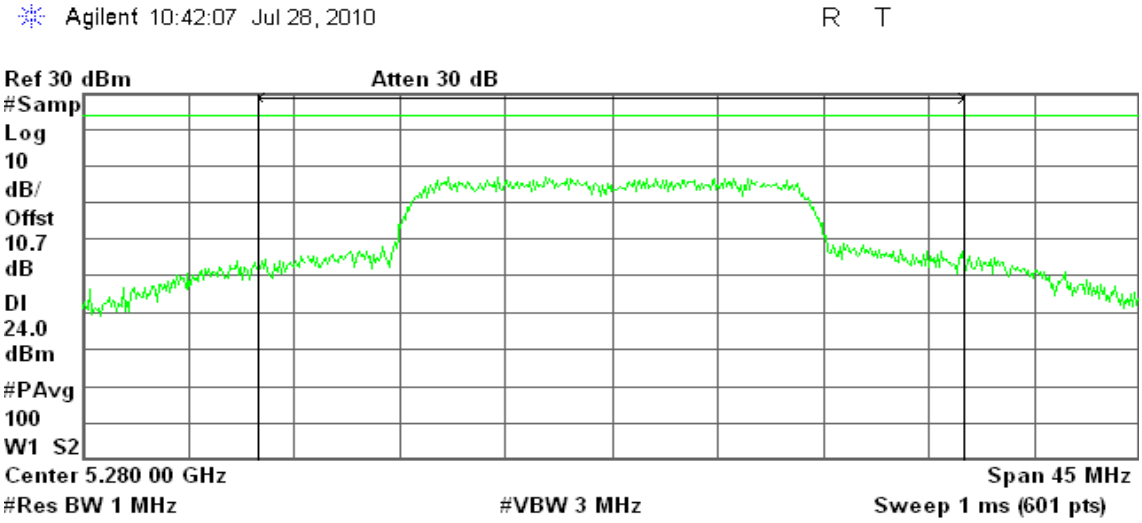


IEEE 802.11a mode / 5260 ~ 5320MHz

CH Low



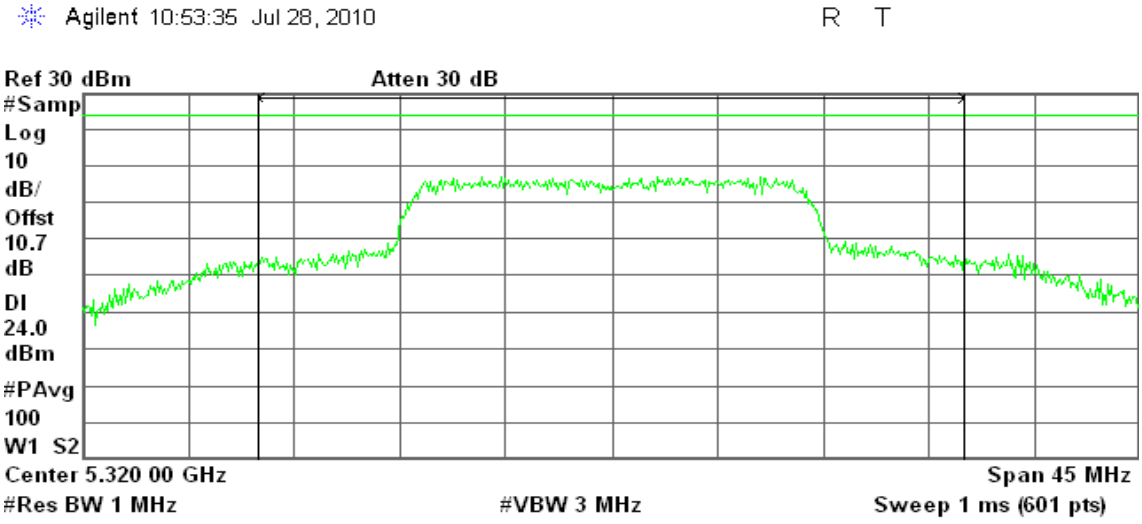
CH Mid



Channel Power
17.23 dBm / 30.0000 MHz

Power Spectral Density
-57.54 dBm/Hz

CH High

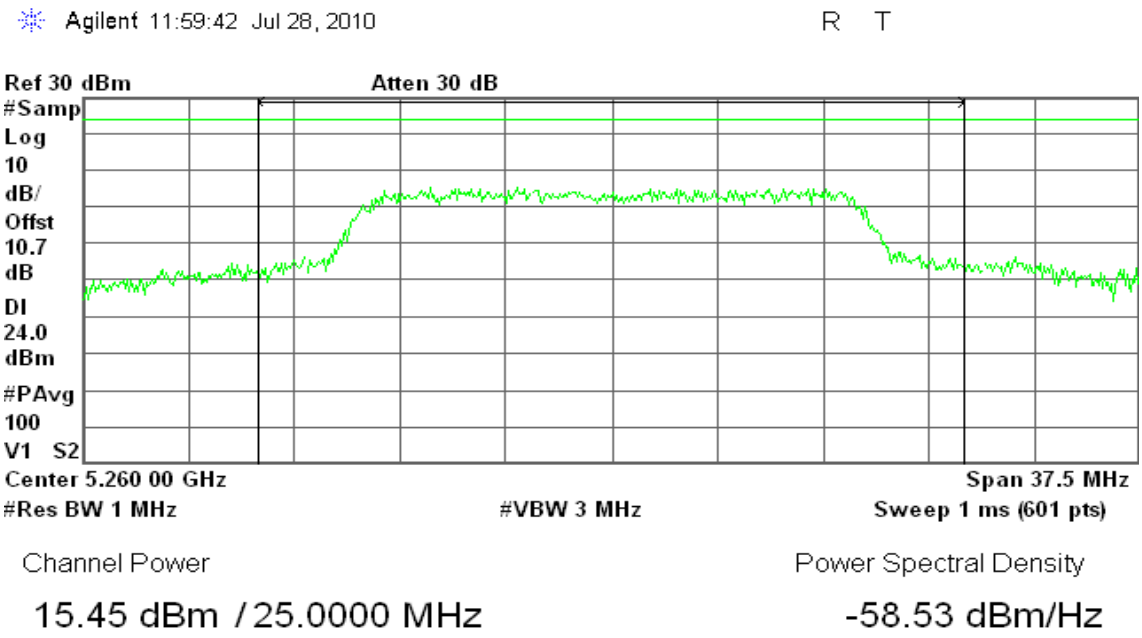


Channel Power
17.25 dBm / 30.0000 MHz

Power Spectral Density
-57.52 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

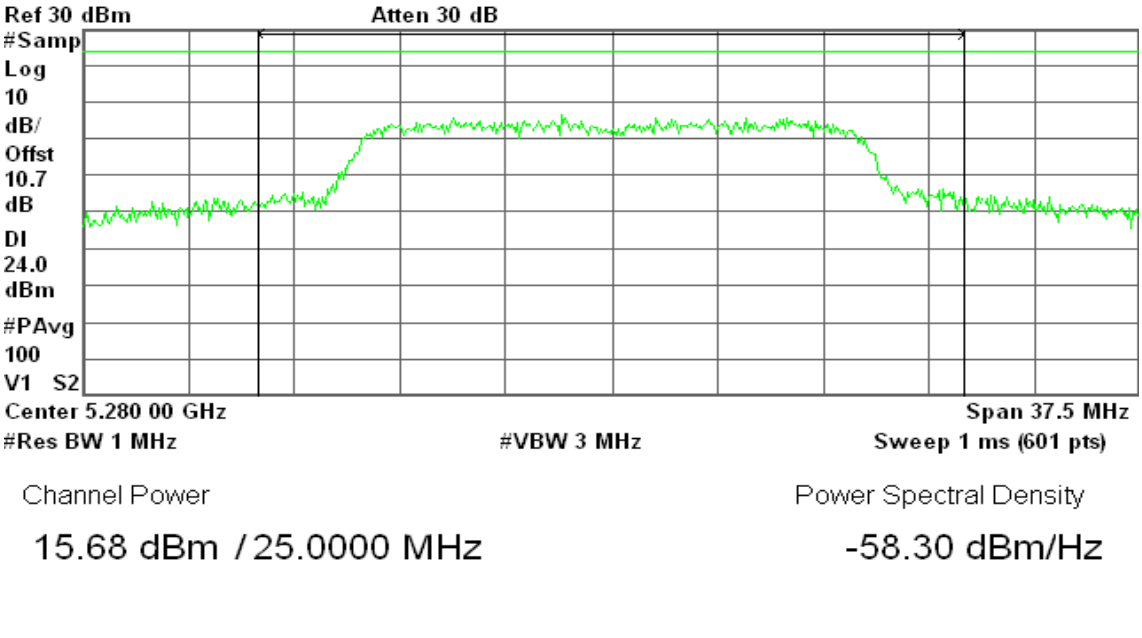
CH Low



Channel Power
15.45 dBm / 25.0000 MHz

Power Spectral Density
-58.53 dBm/Hz

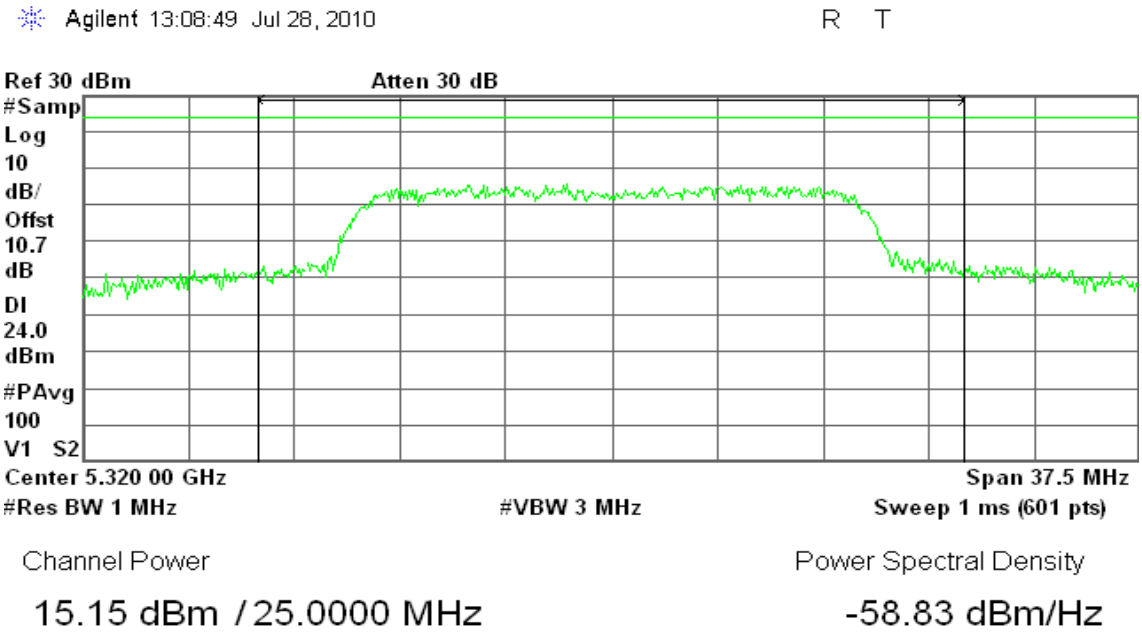
CH Mid



Channel Power
15.68 dBm / 25.0000 MHz

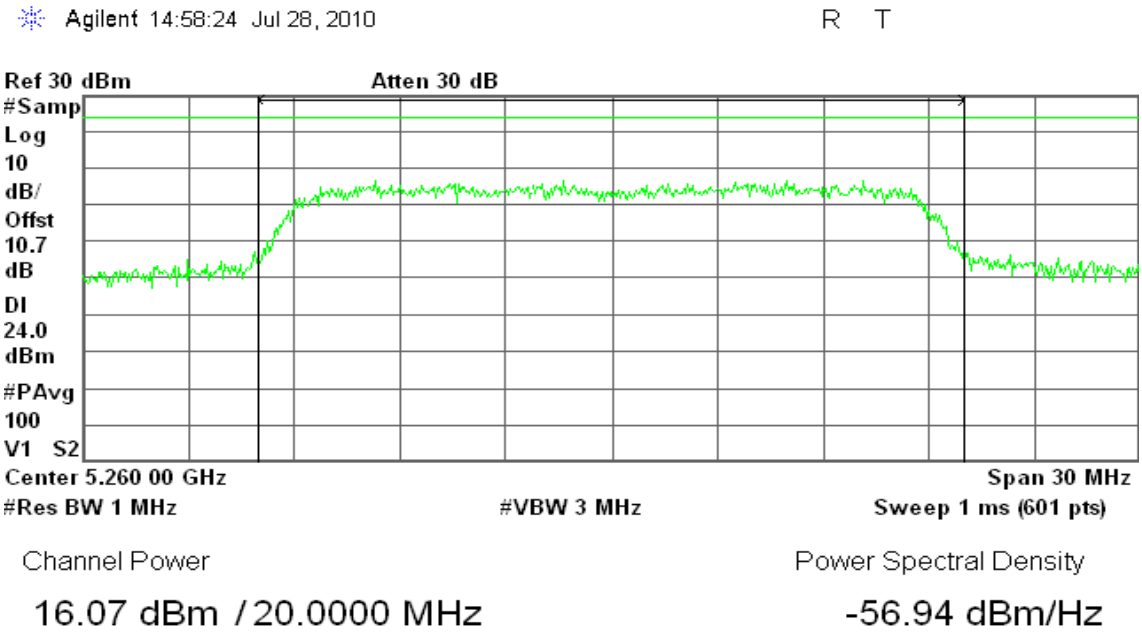
Power Spectral Density
-58.30 dBm/Hz

CH High

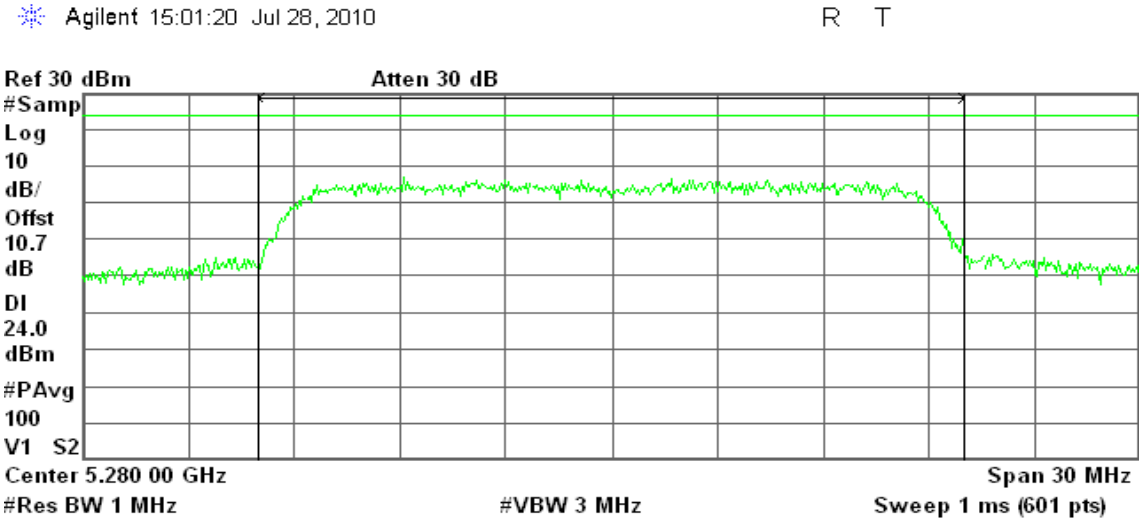


draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

CH Low



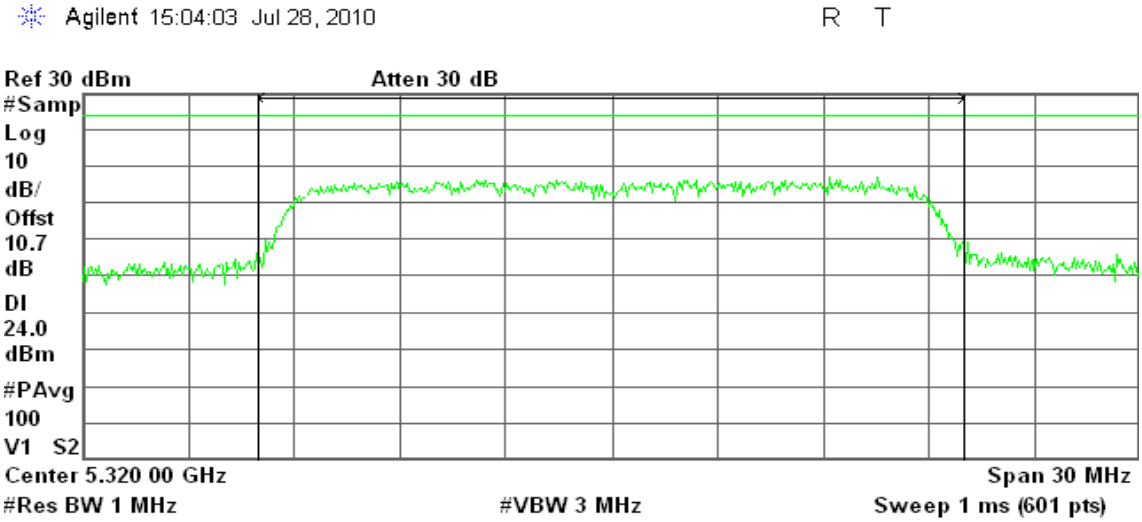
CH Mid



Channel Power
16.23 dBm / 20.0000 MHz

Power Spectral Density
-56.78 dBm/Hz

CH High

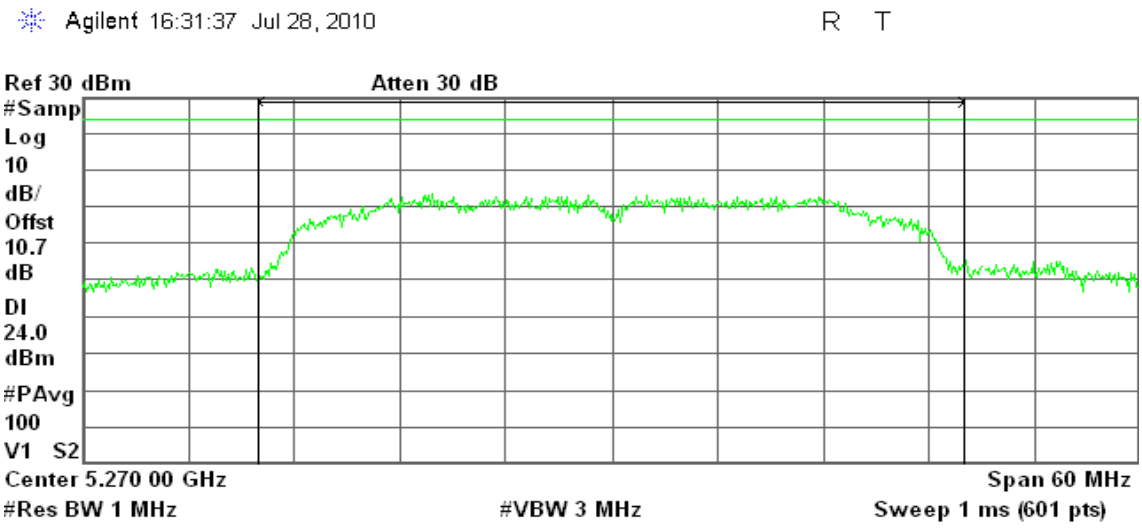


Channel Power
16.70 dBm / 20.0000 MHz

Power Spectral Density
-56.31 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 0

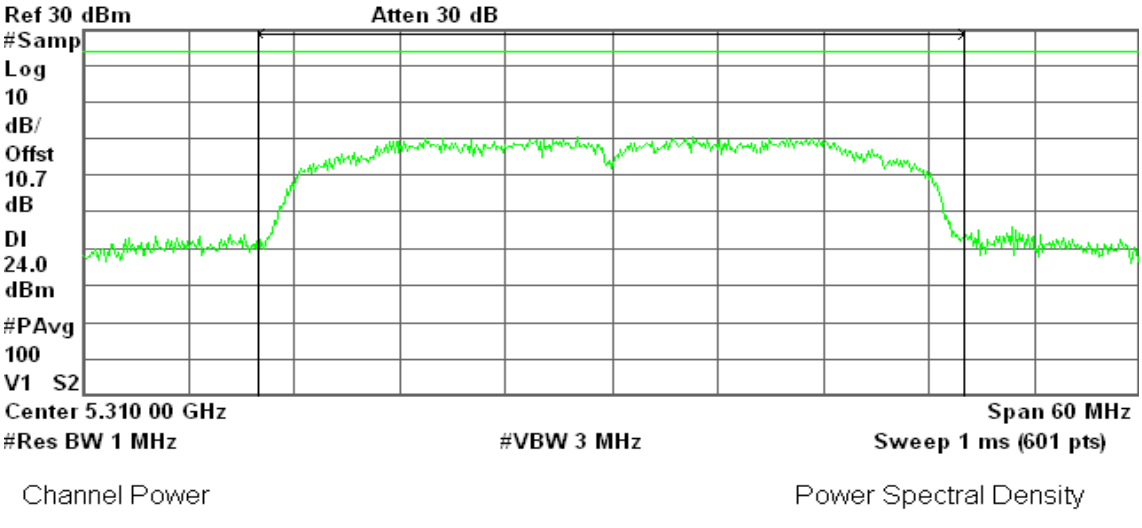
CH Low



Channel Power
15.56 dBm / 40.0000 MHz

Power Spectral Density
-60.46 dBm/Hz

CH High

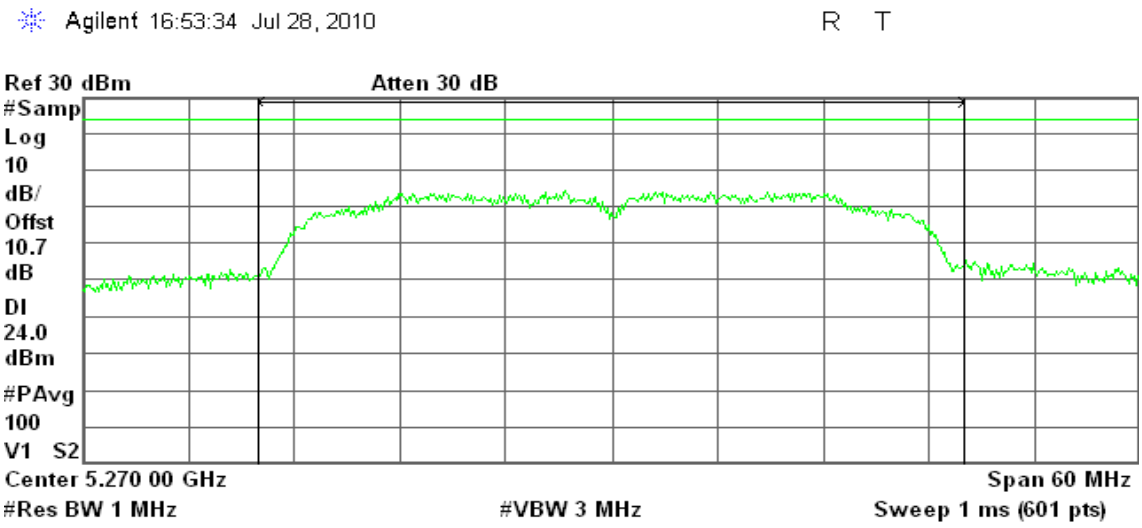


Channel Power
12.76 dBm / 40.0000 MHz

Power Spectral Density
-63.26 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 1

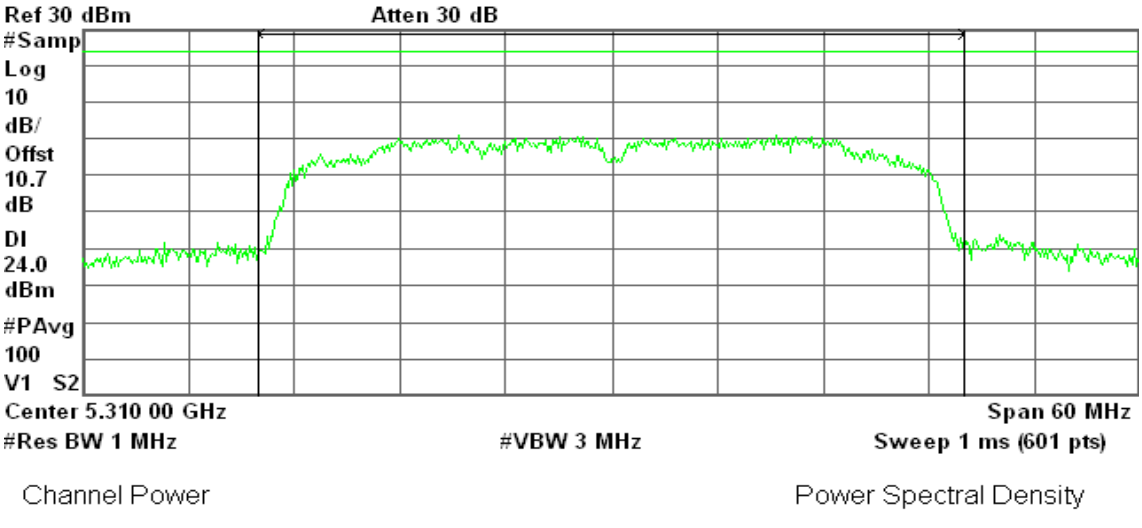
CH Low



Channel Power
16.96 dBm / 40.0000 MHz

Power Spectral Density
-59.07 dBm/Hz

CH High

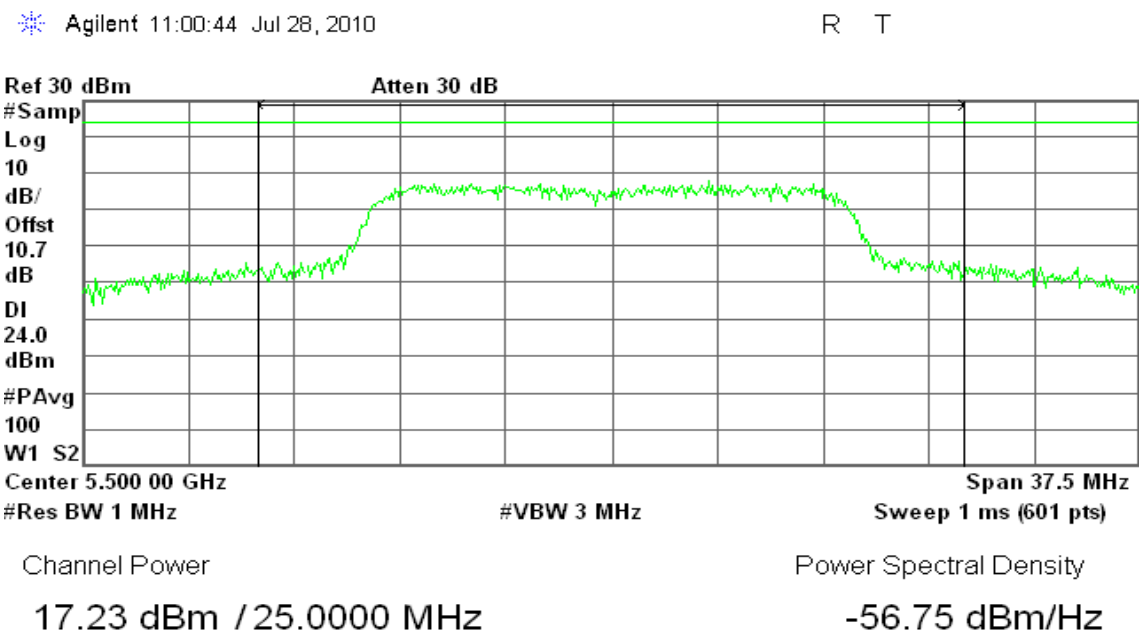


Channel Power
13.06 dBm / 40.0000 MHz

Power Spectral Density
-62.96 dBm/Hz

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

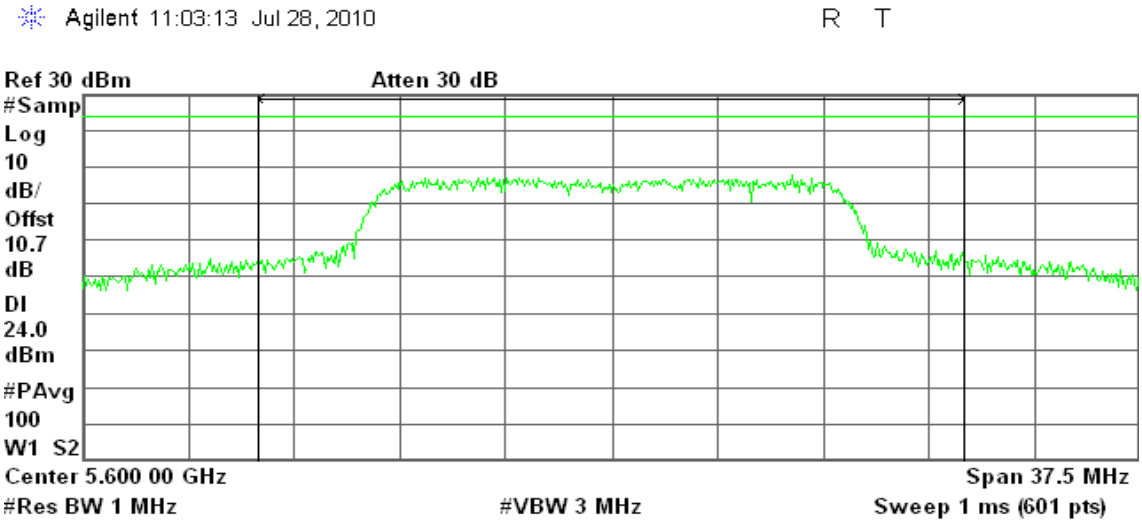
CH Low



Channel Power
17.23 dBm / 25.0000 MHz

Power Spectral Density
-56.75 dBm/Hz

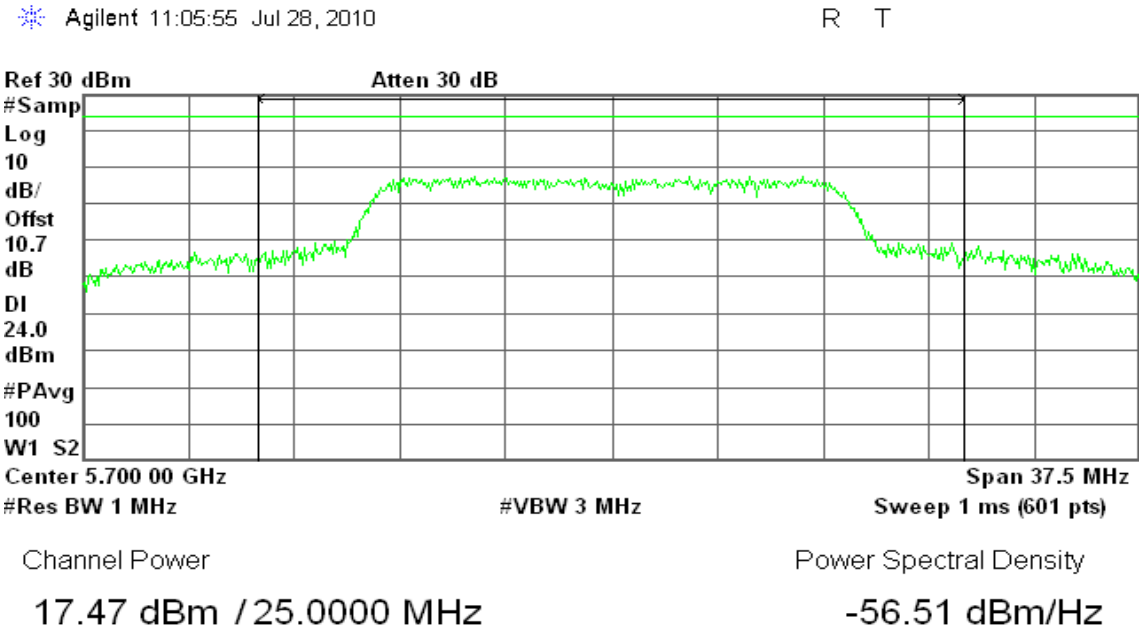
CH Mid



Channel Power
16.96 dBm / 25.0000 MHz

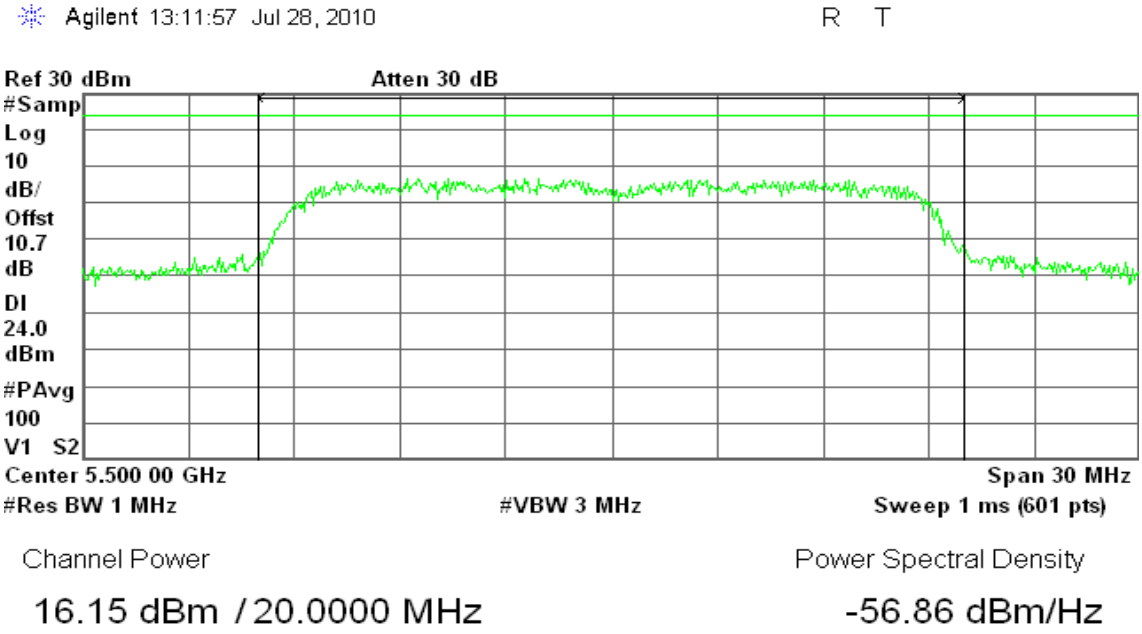
Power Spectral Density
-57.02 dBm/Hz

CH High

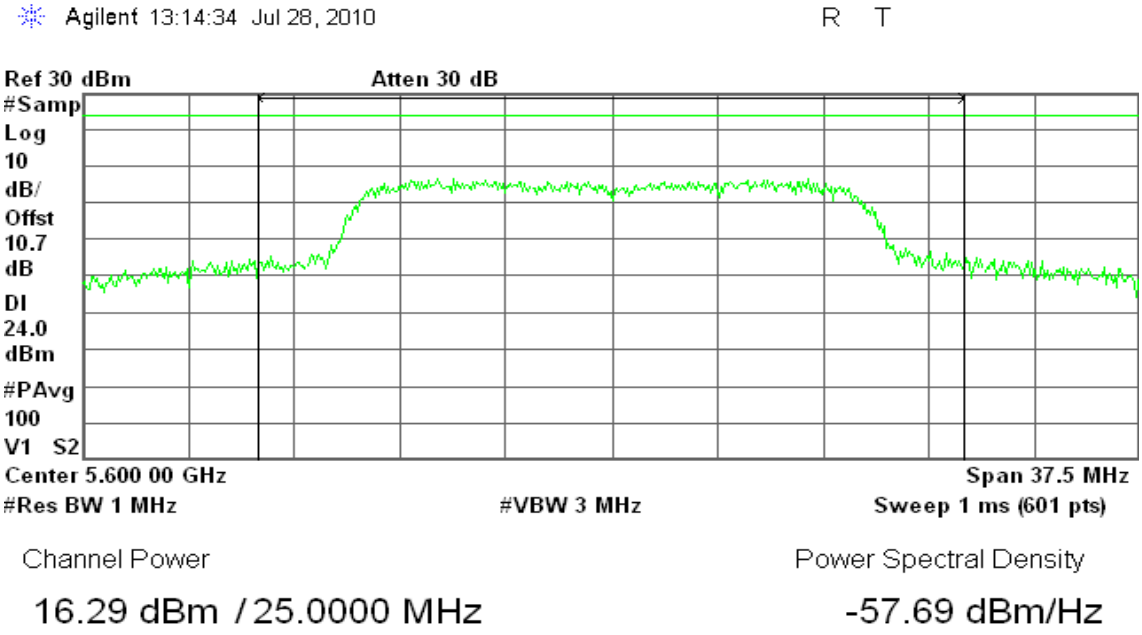


draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 0

CH Low



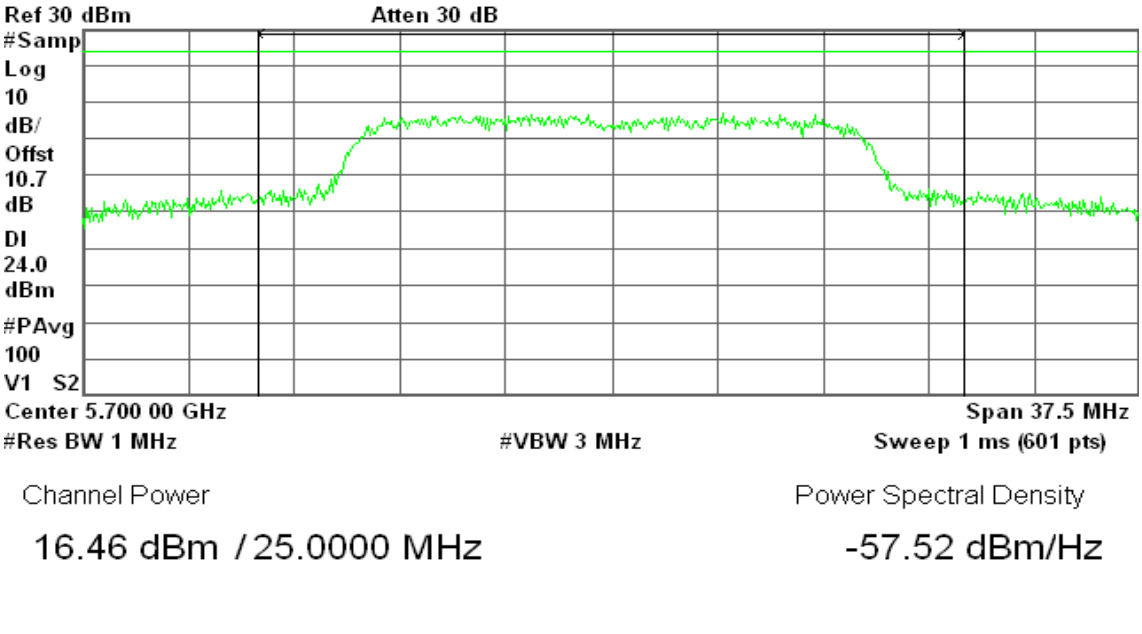
CH Mid



Channel Power
16.29 dBm / 25.0000 MHz

Power Spectral Density
-57.69 dBm/Hz

CH High

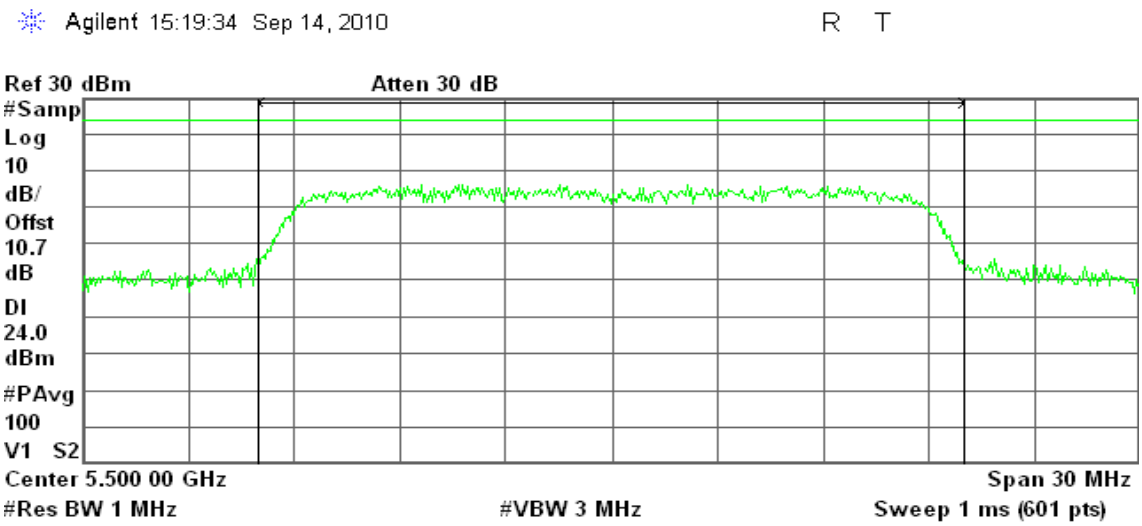


Channel Power
16.46 dBm / 25.0000 MHz

Power Spectral Density
-57.52 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 1

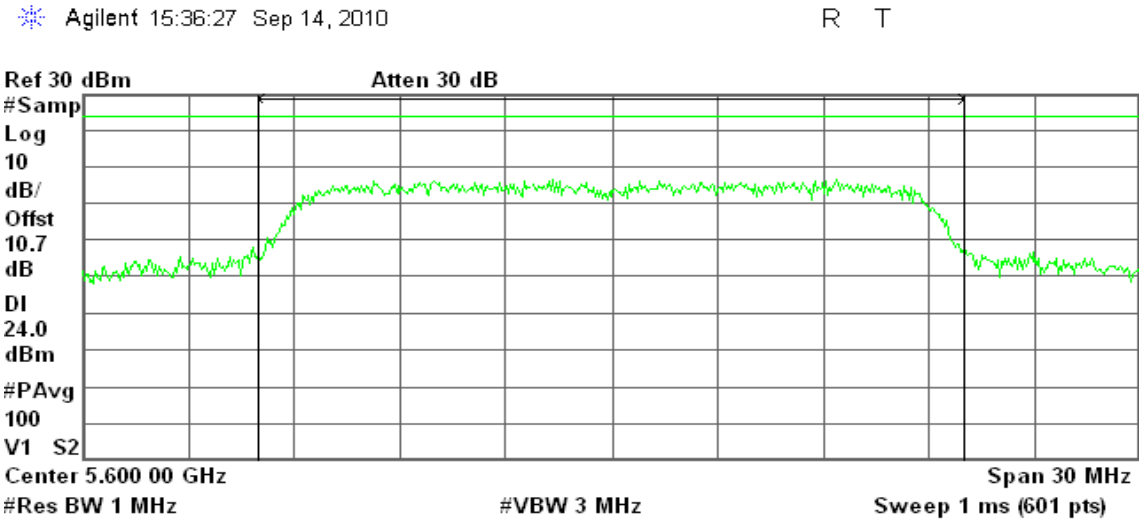
CH Low



Channel Power
16.46 dBm / 20.0000 MHz

Power Spectral Density
-56.60 dBm/Hz

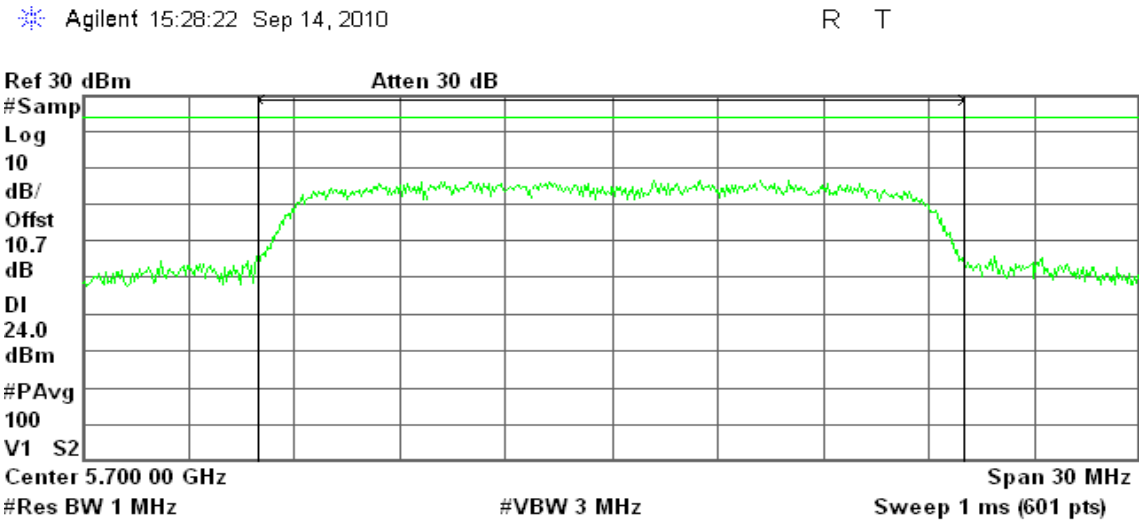
CH Mid



Channel Power
16.61 dBm / 20.0000 MHz

Power Spectral Density
-56.41 dBm/Hz

CH High

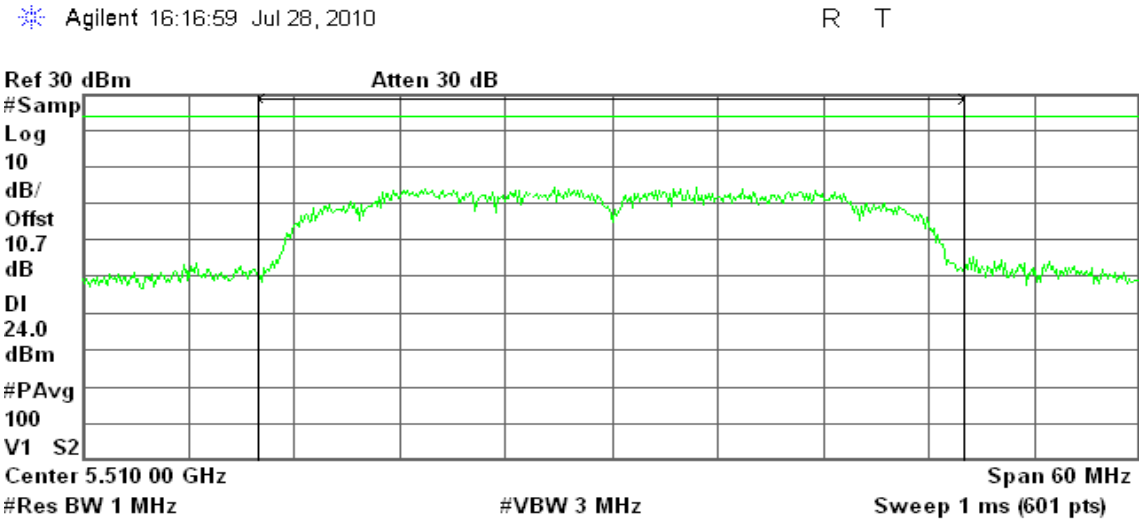


Channel Power
17.01 dBm / 20.0000 MHz

Power Spectral Density
-56.91 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 0

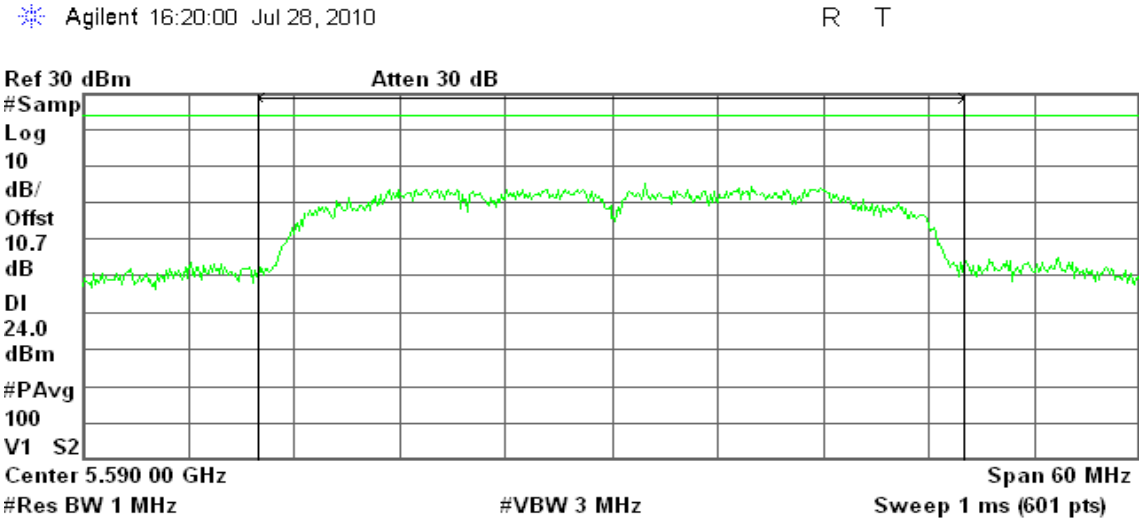
CH Low



Channel Power
16.96 dBm / 40.0000 MHz

Power Spectral Density
-59.06 dBm/Hz

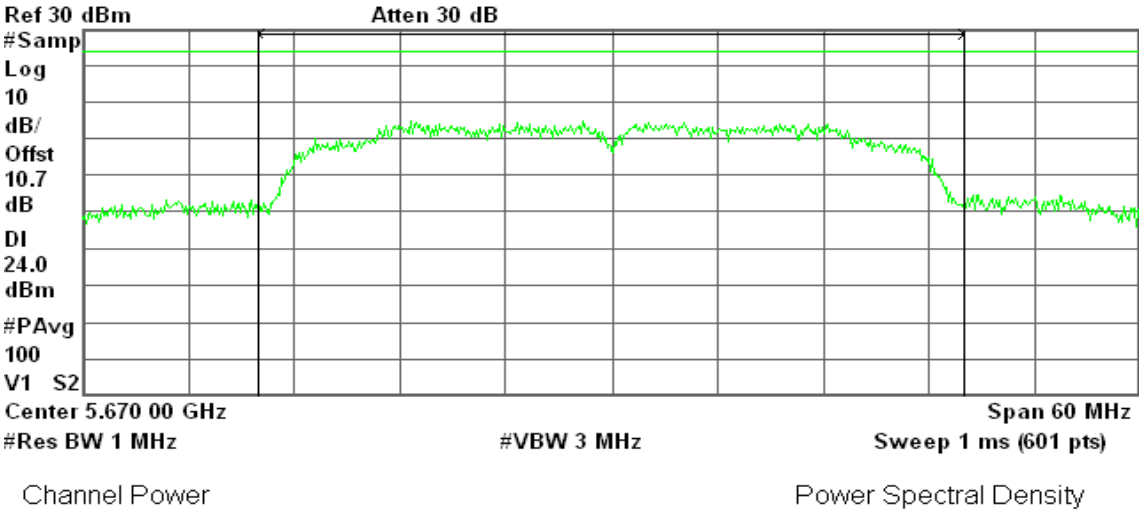
CH Mid



Channel Power
17.22 dBm / 40.0000 MHz

Power Spectral Density
-58.80 dBm/Hz

CH High

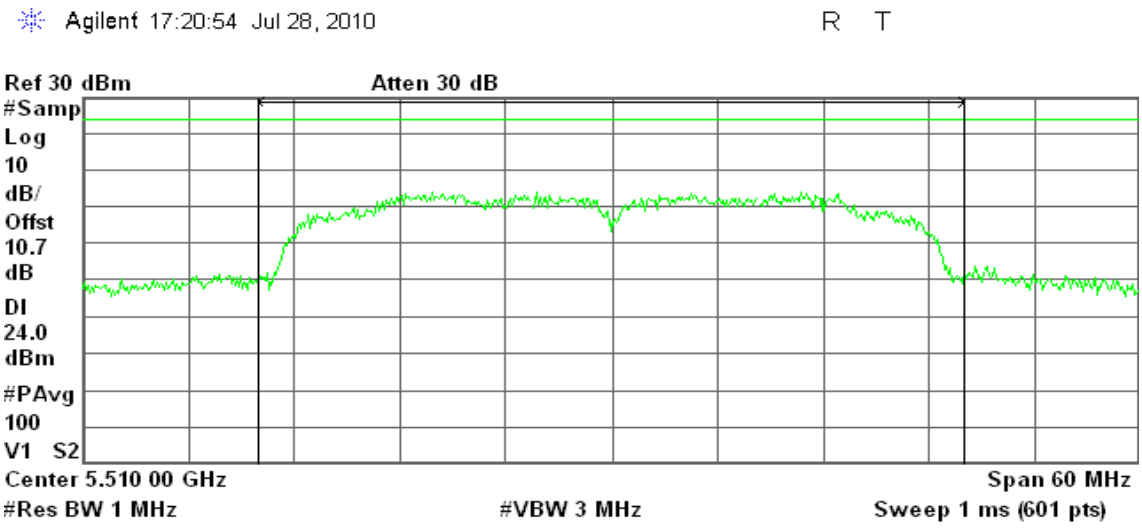


Channel Power
17.21 dBm / 40.0000 MHz

Power Spectral Density
-58.81 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 1

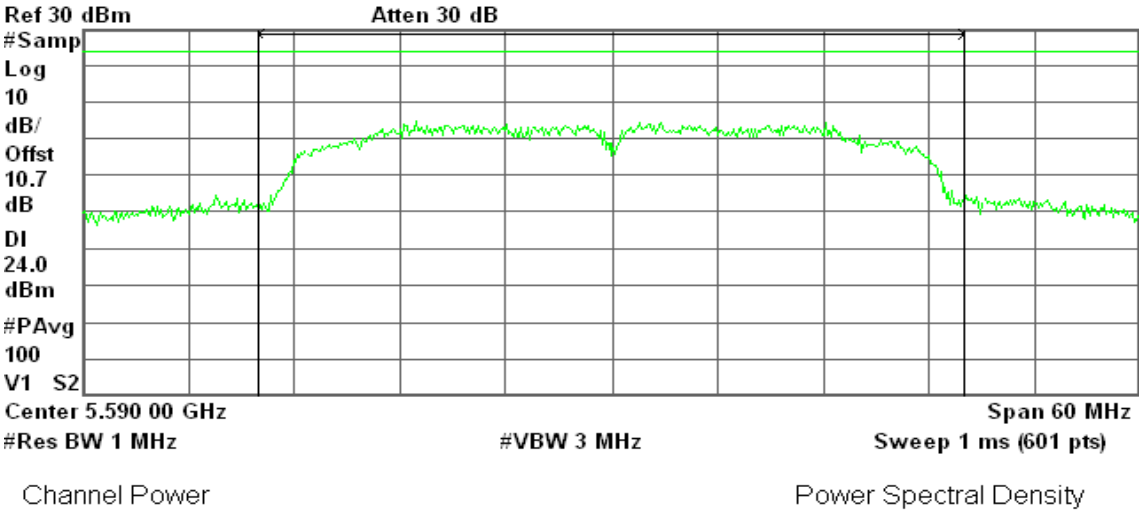
CH Low



Channel Power
16.08 dBm / 40.0000 MHz

Power Spectral Density
-59.94 dBm/Hz

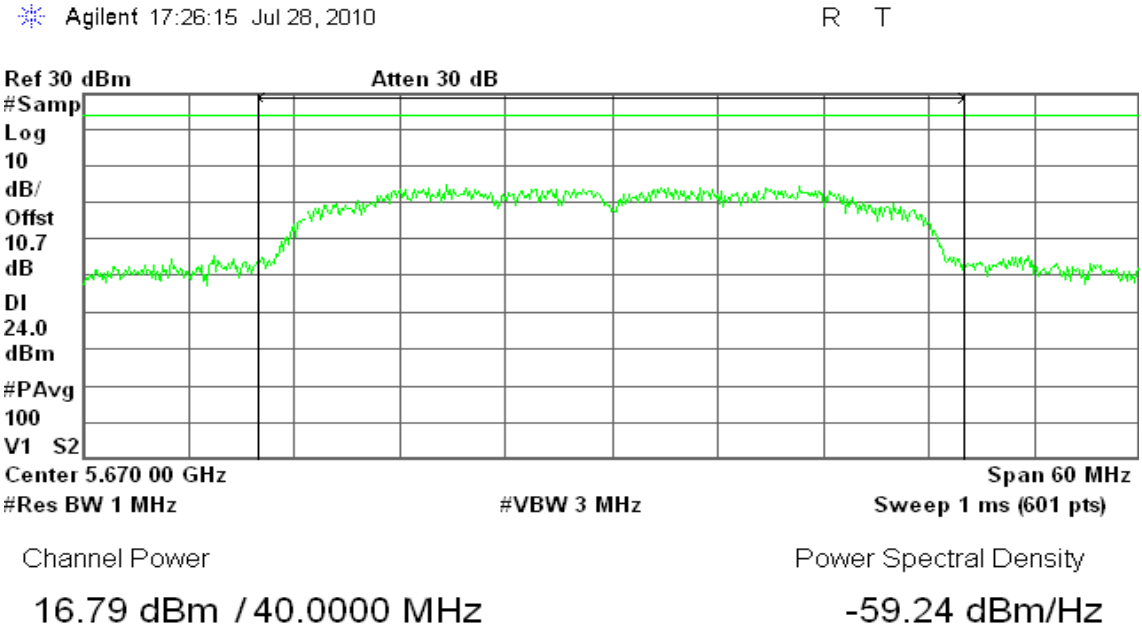
CH Mid



Channel Power
16.52 dBm / 40.0000 MHz

Power Spectral Density
-59.50 dBm/Hz

CH High

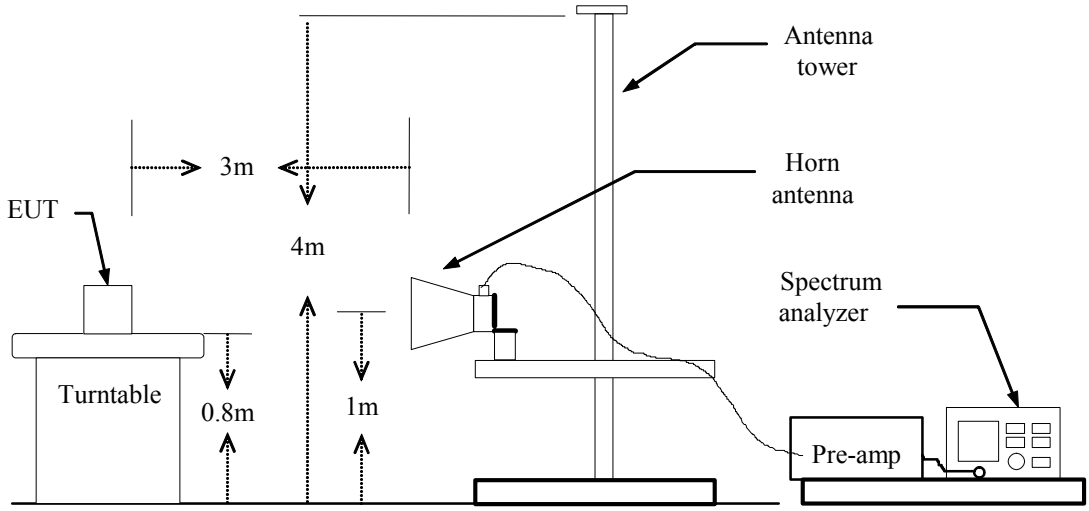

Agilent 17:26:15 Jul 28, 2010
R T
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10.7
dB
Dl
24.0
dBm
#PAvg
100
V1 S2
Center 5.670 00 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
16.79 dBm / 40.0000 MHz
Power Spectral Density
-59.24 dBm/Hz

7.3 BAND EDGES MEASUREMENT

LIMIT

According to §15.407(b),
(1) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
(2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

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.

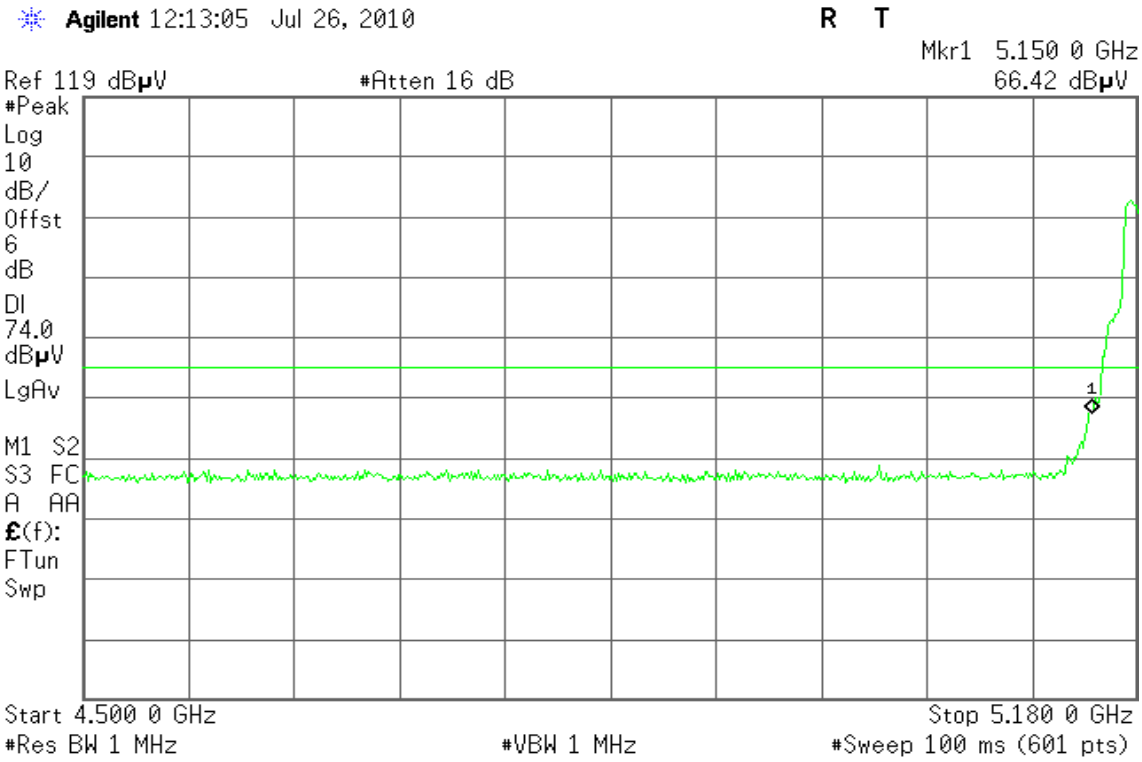
802.11a Mode

1. Operating Frequency: 5500-5700MHz
2. CH Low: 5500MHz, CH High: 5700MHz
3. 26dB bandwidth: CH Low: 21.3457MHz, CH High: 23.8520MHz

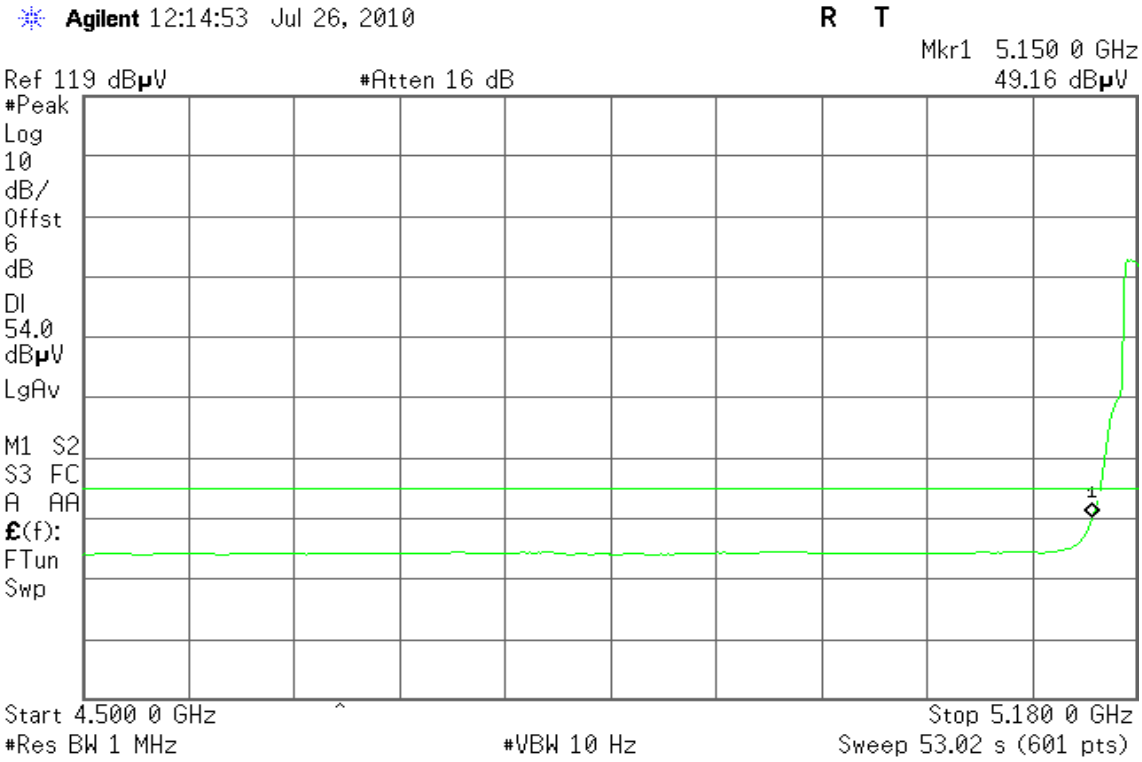
Because the mentioned conditions, the test is not applicable.

Band Edges (IEEE 802.11a mode / 5180 MHz)

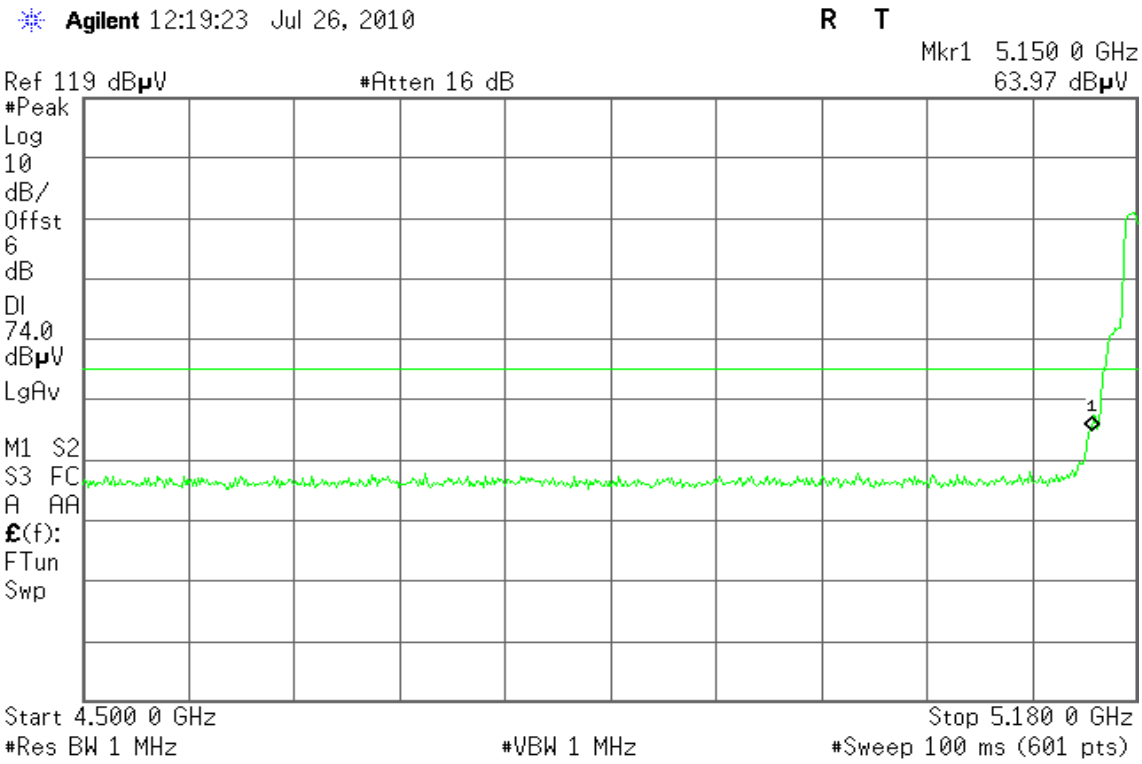
Detector mode: Peak **Polarity: Vertical**



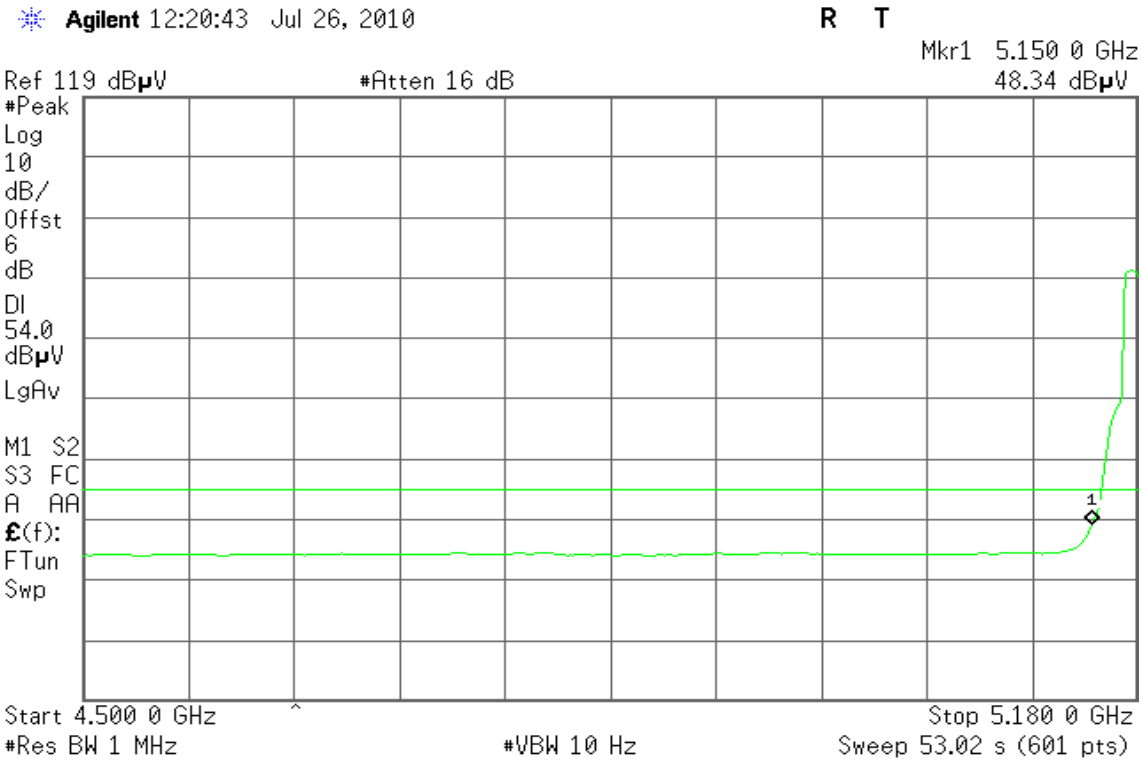
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

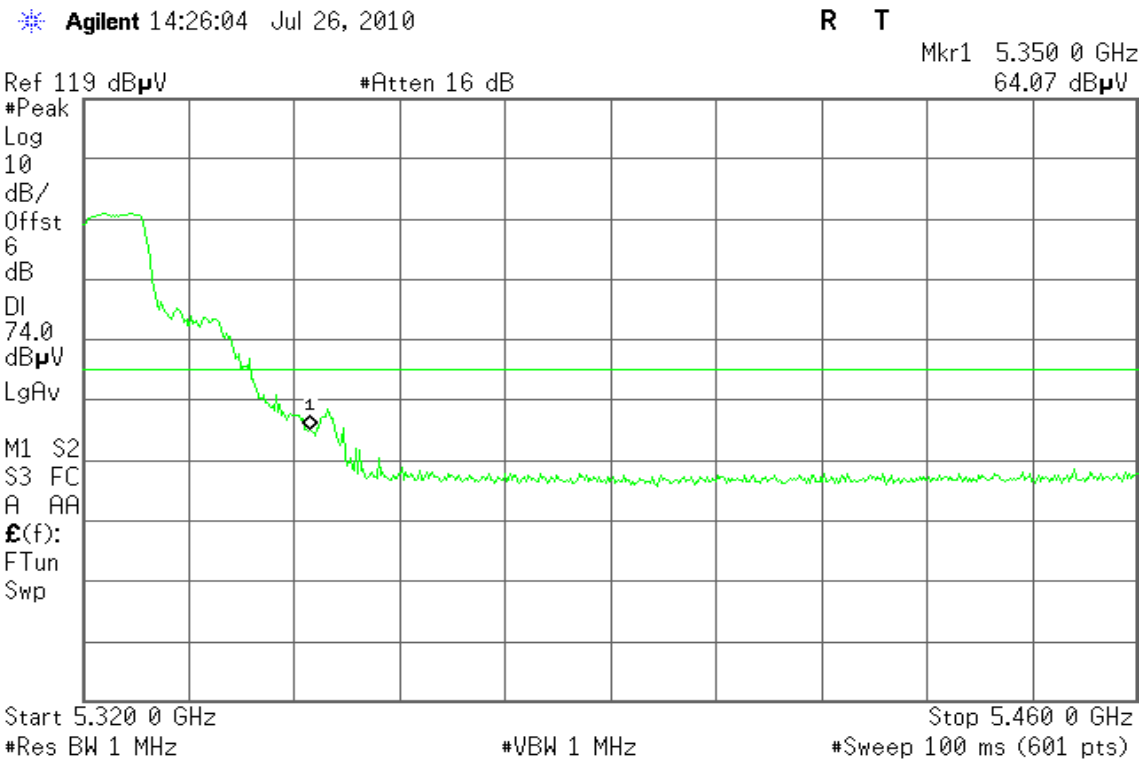


Detector mode: Average **Polarity: Horizontal**

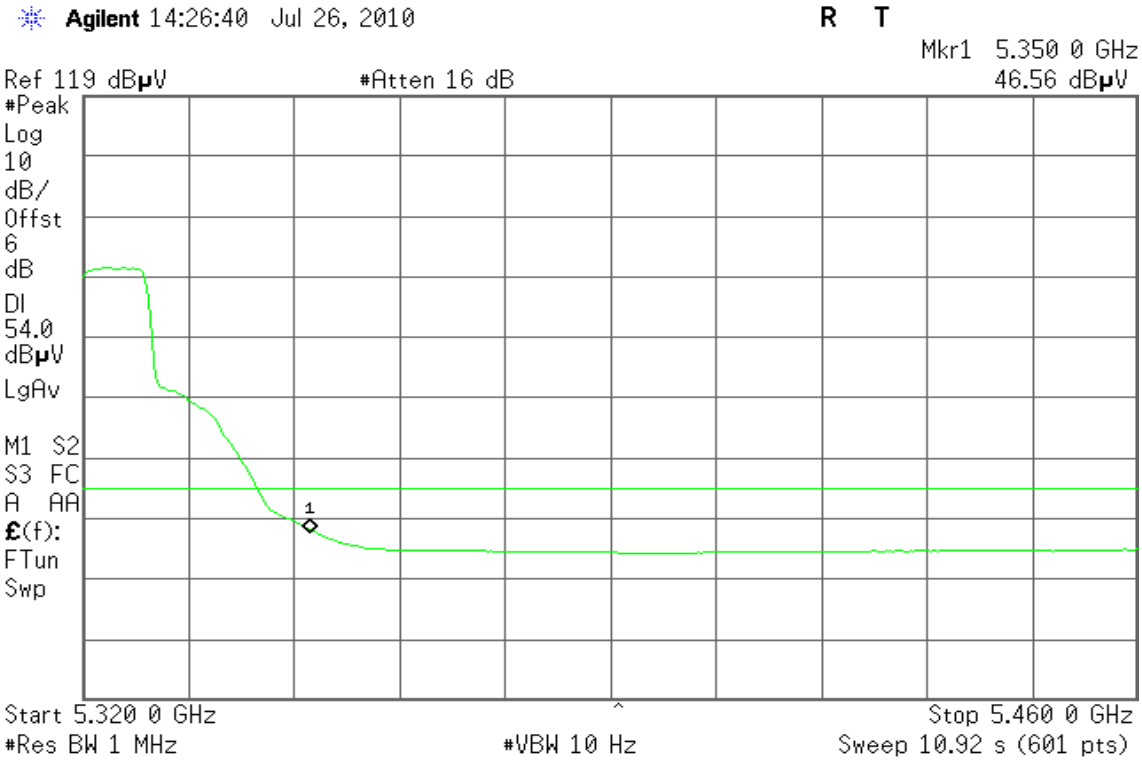


Band Edges (IEEE 802.11a mode / 5320 MHz)

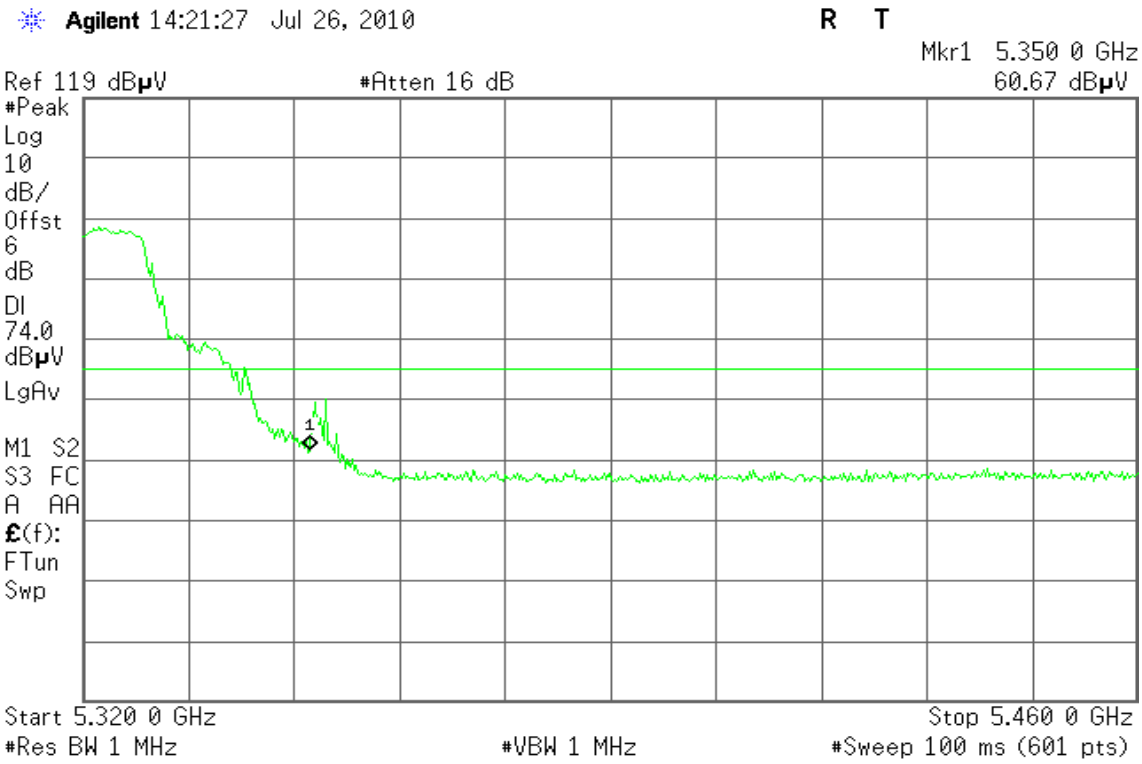
Detector mode: Peak **Polarity: Vertical**



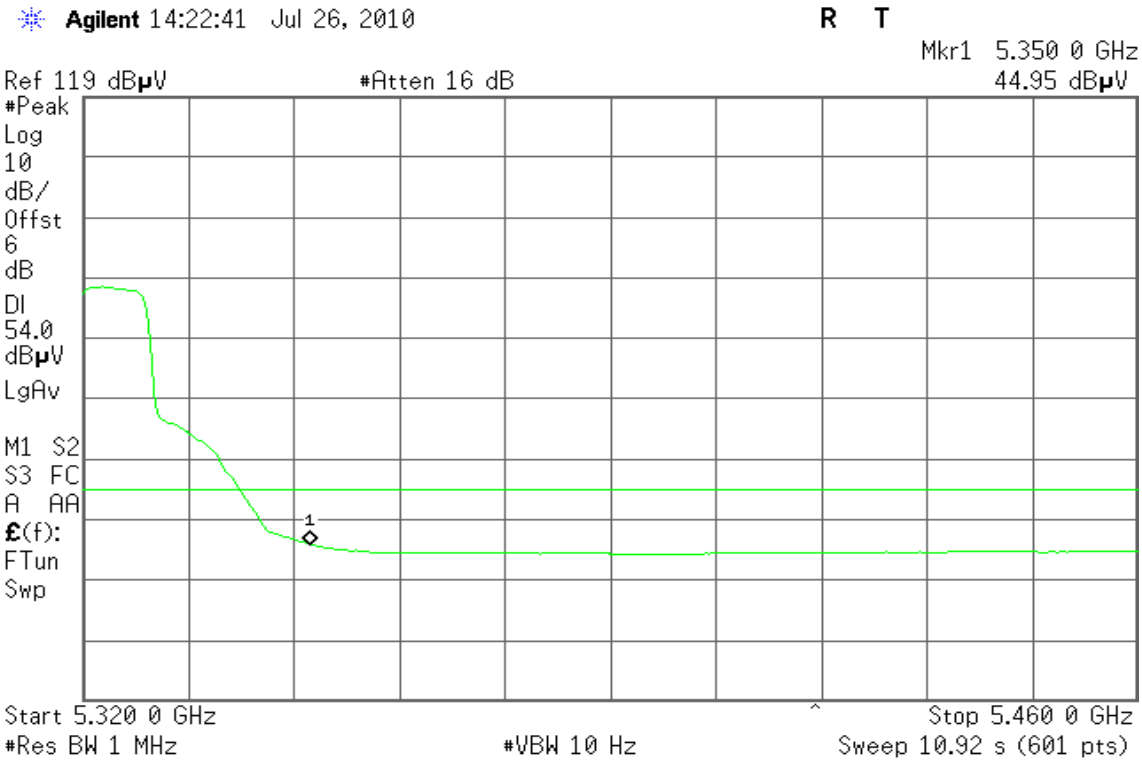
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

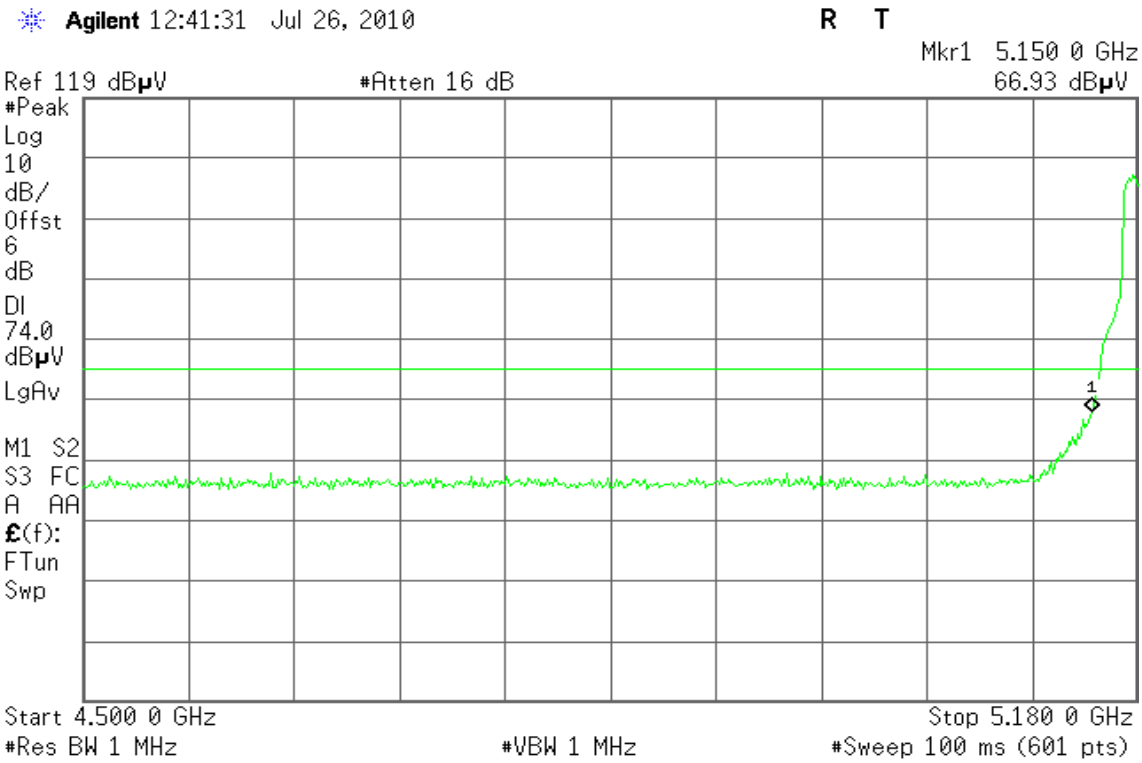


Detector mode: Average **Polarity: Horizontal**

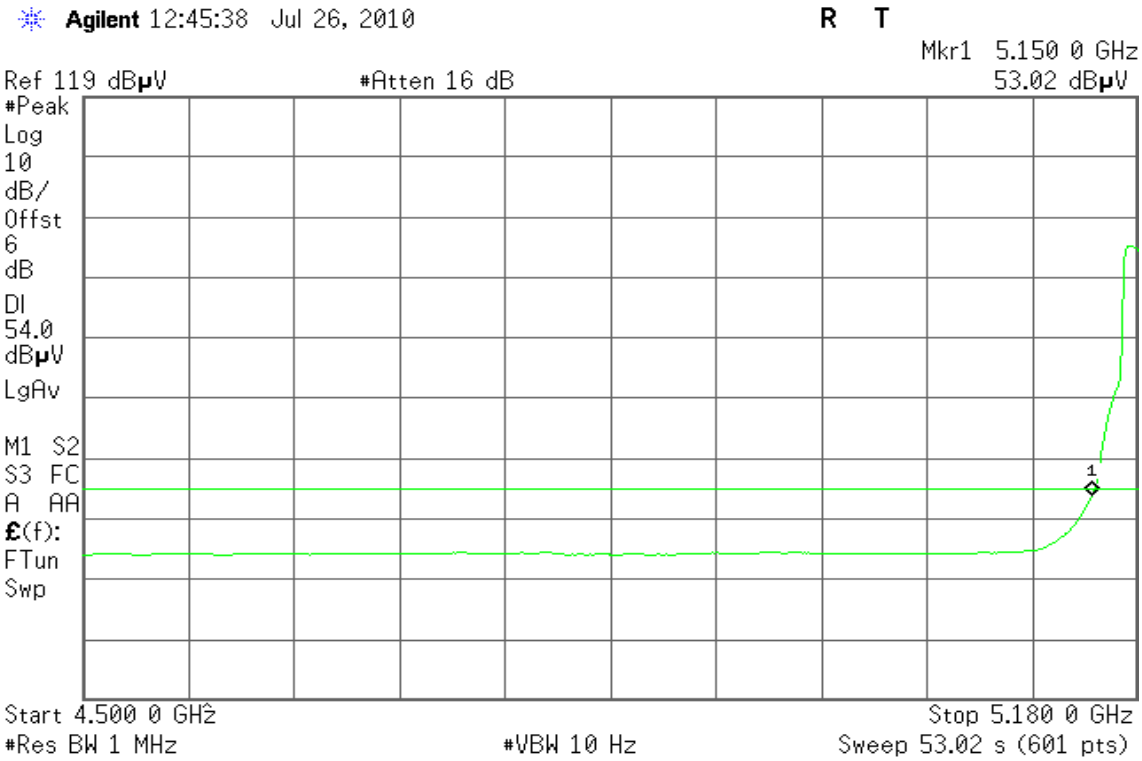


Band Edges (draft 802.11n Standard-20 MHz Channel mode / 5180 MHz)

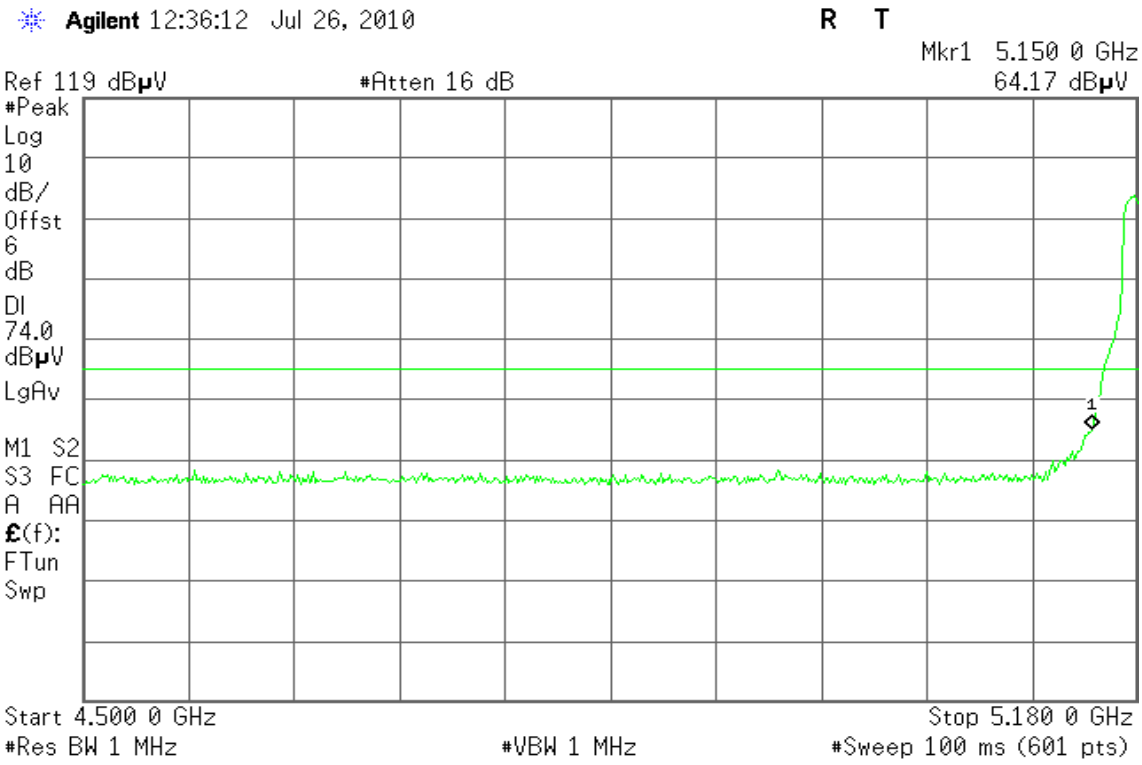
Detector mode: Peak **Polarity: Vertical**



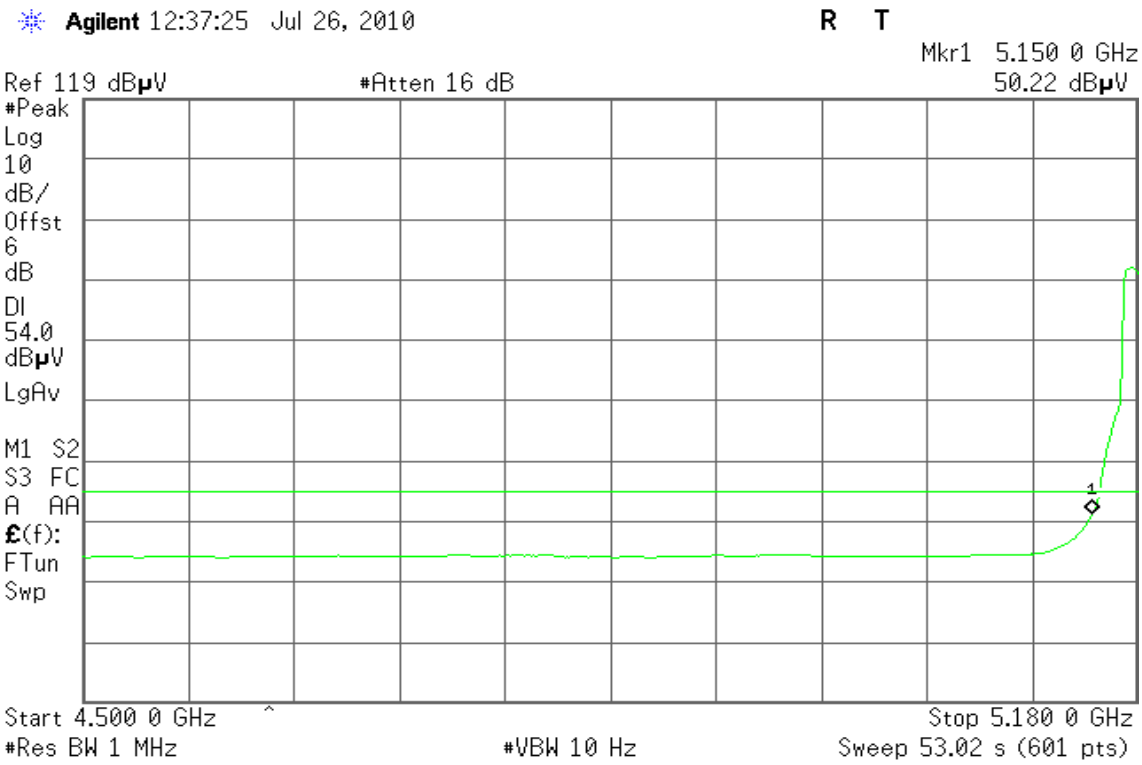
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

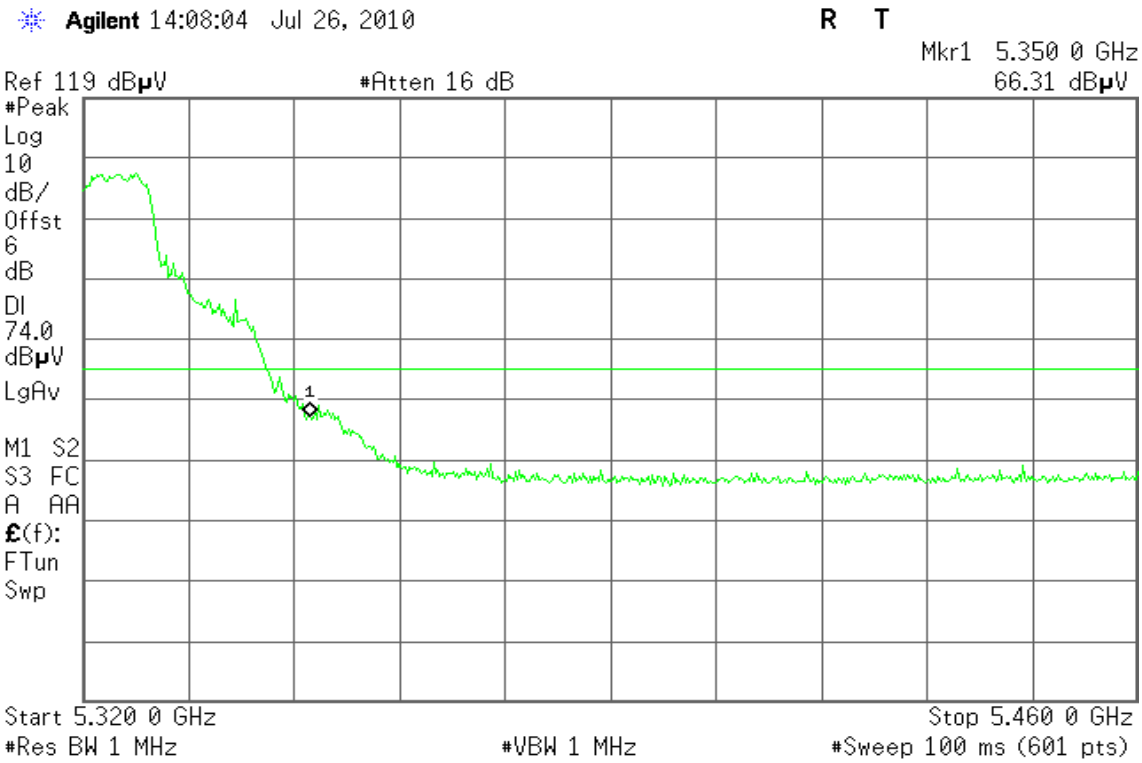


Detector mode: Average **Polarity: Horizontal**

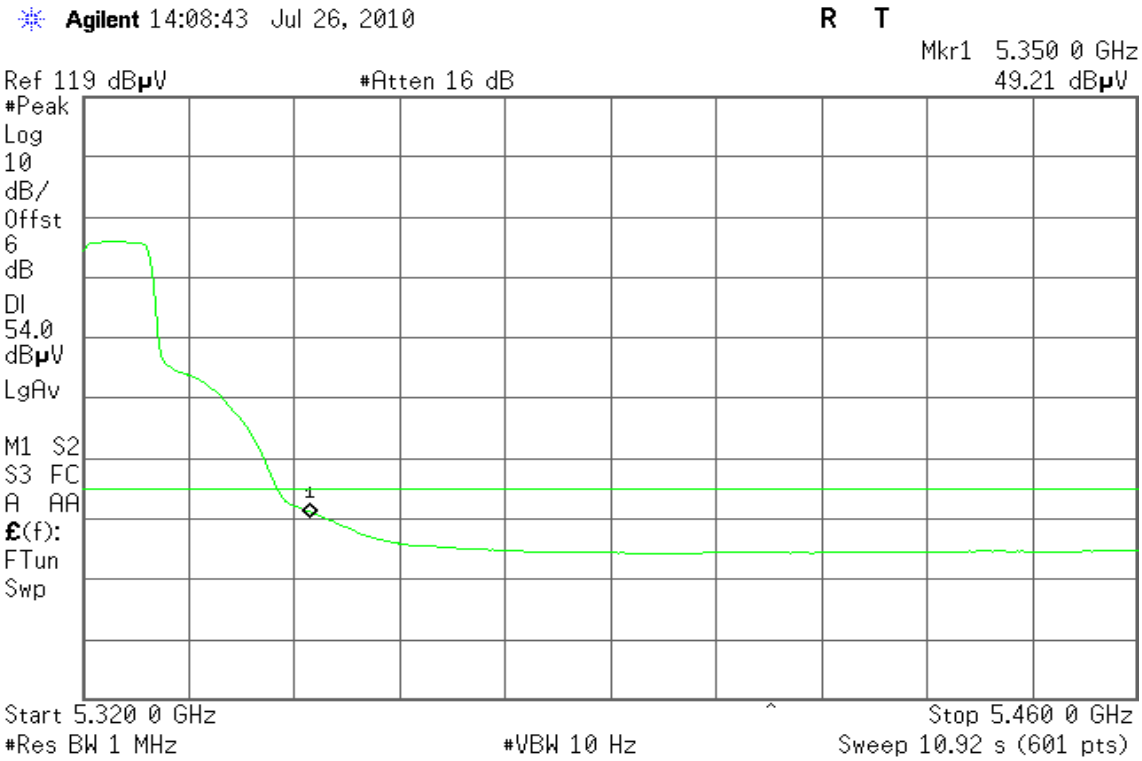


Band Edges (draft 802.11n Standard-20 MHz Channel mode / 5320 MHz)

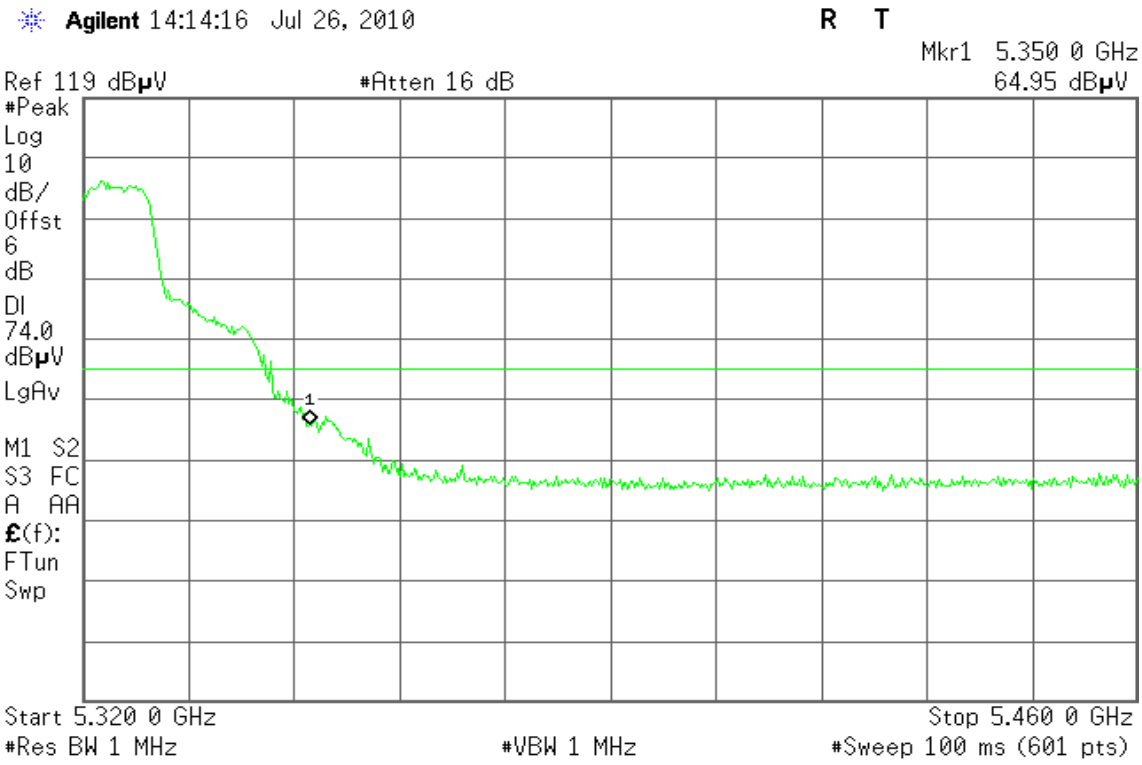
Detector mode: Peak **Polarity: Vertical**



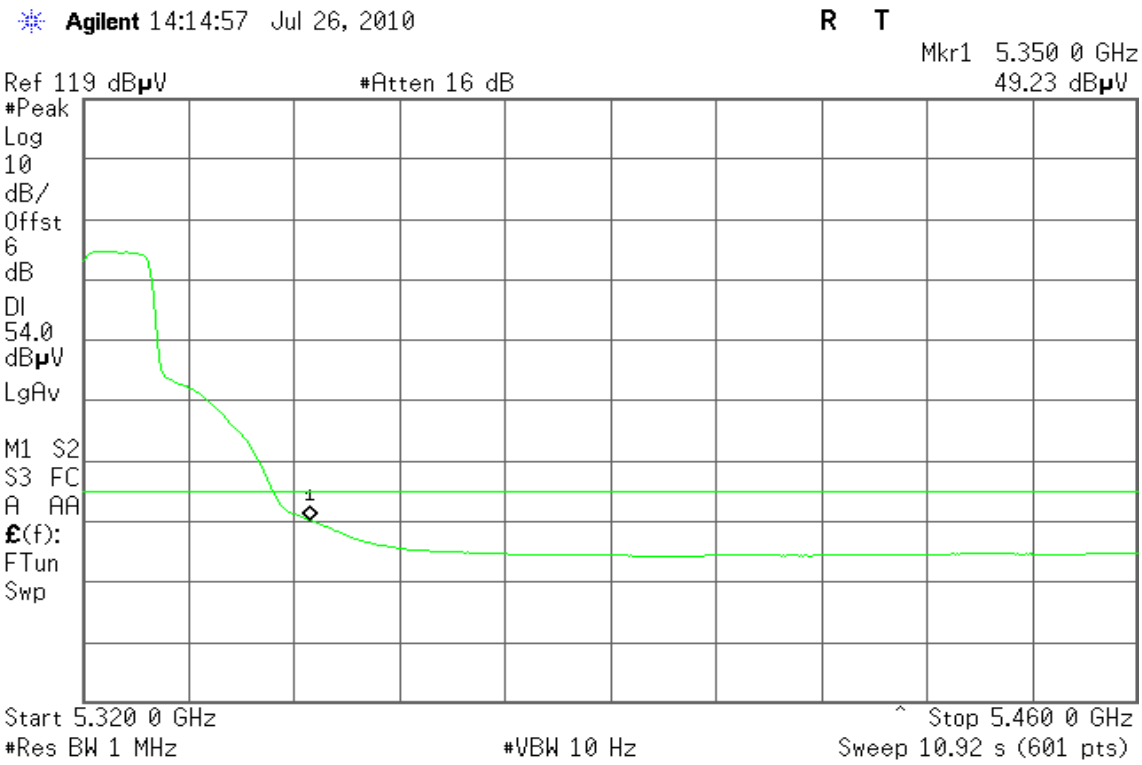
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

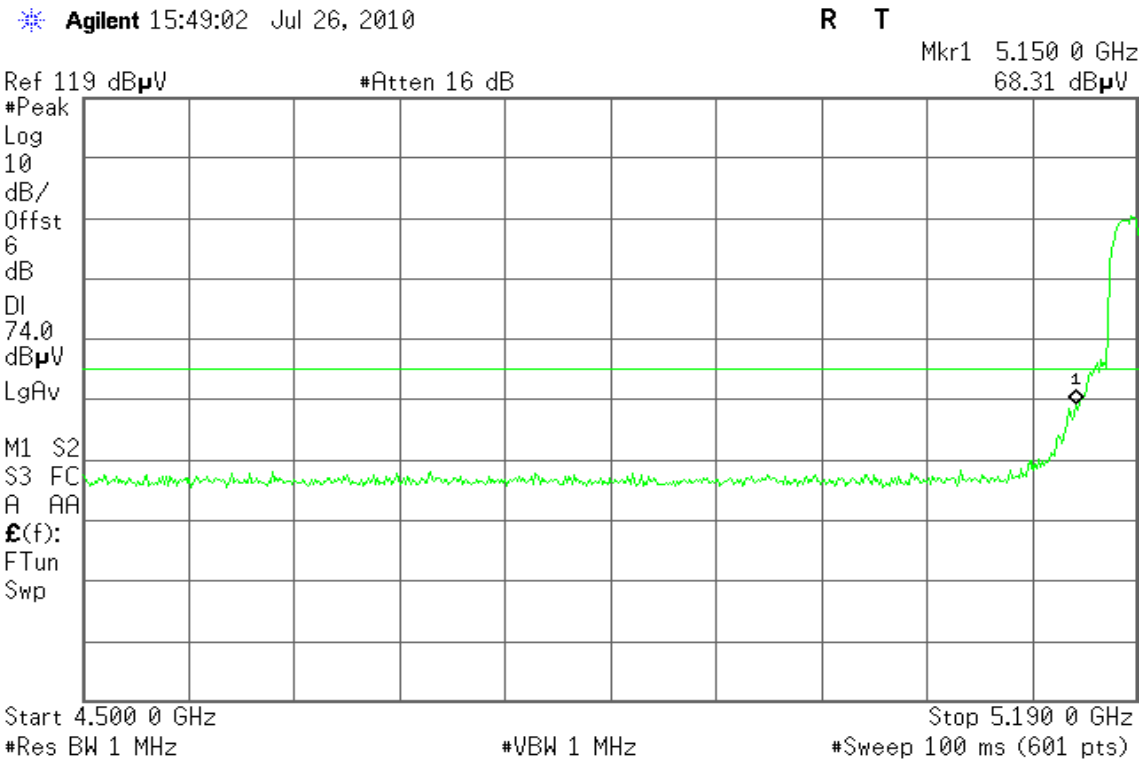


Detector mode: Average **Polarity: Horizontal**

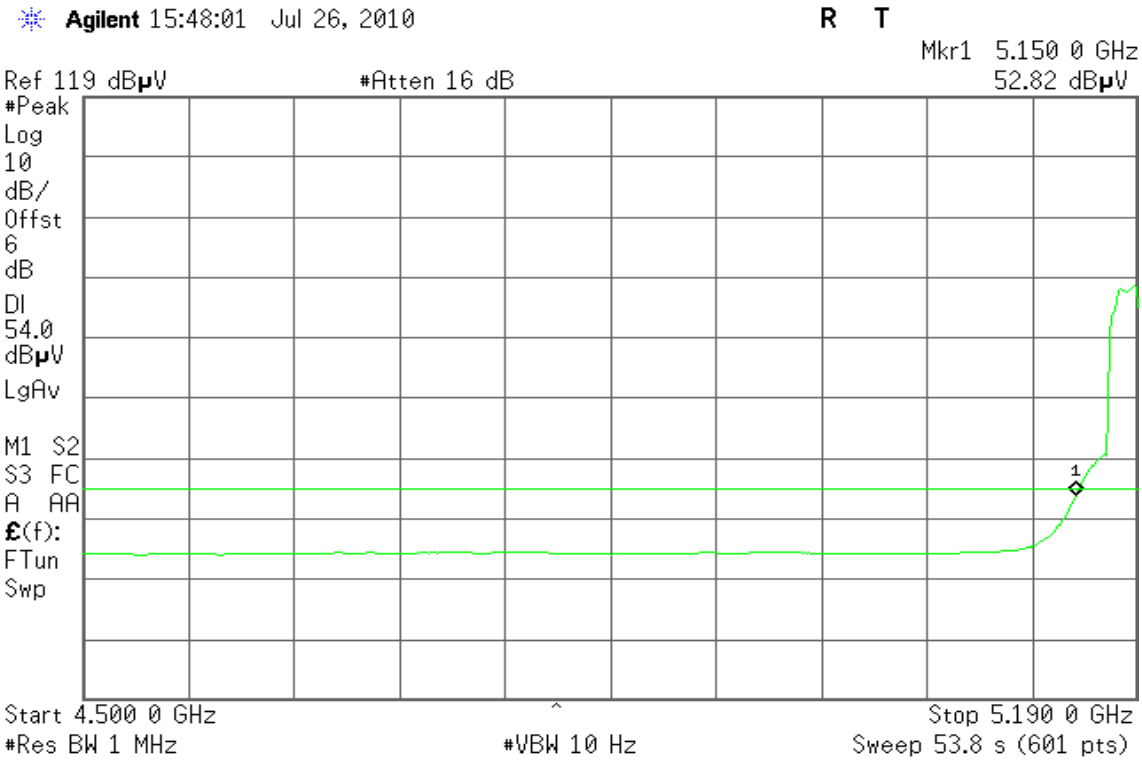


Band Edges (draft 802.11n Wide-40 MHz Channel mode / 5190 MHz)

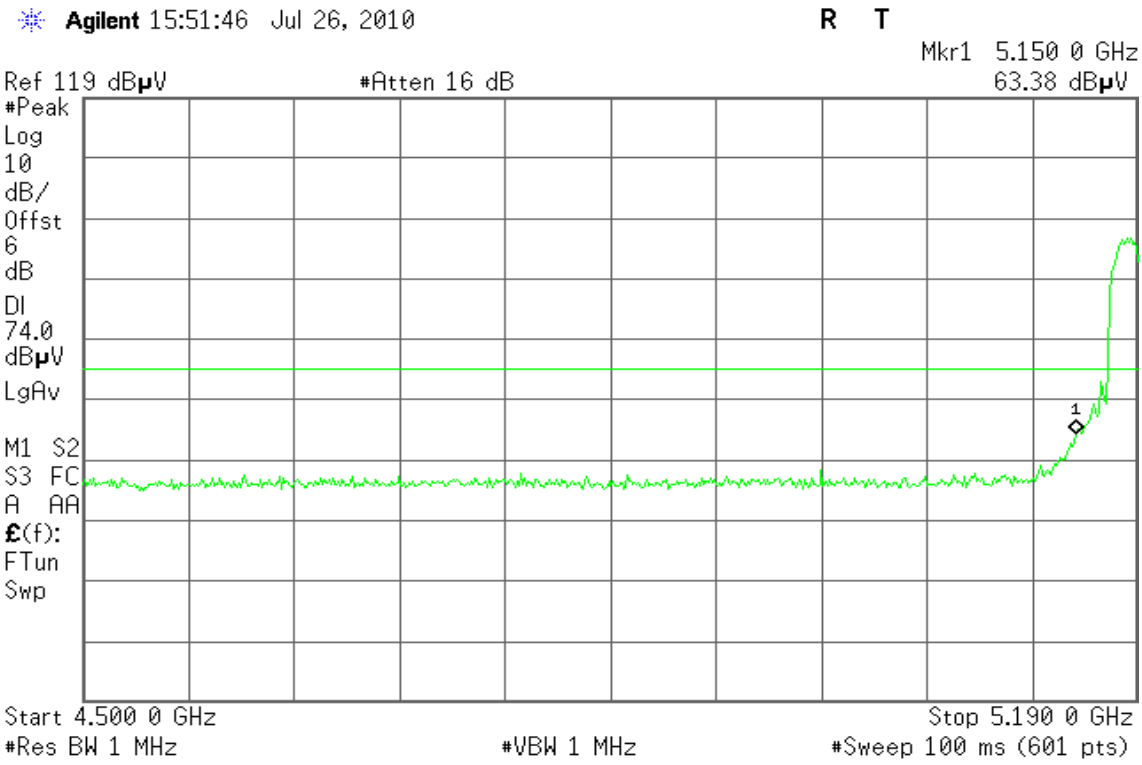
Detector mode: Peak **Polarity: Vertical**



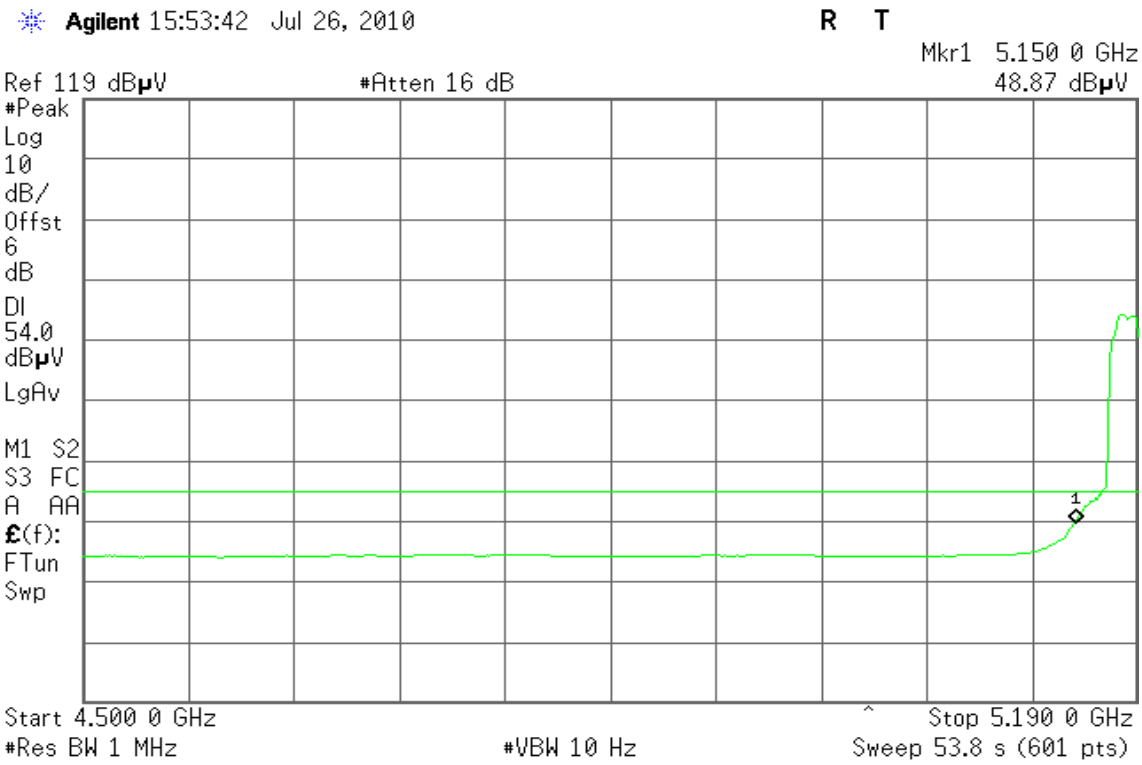
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

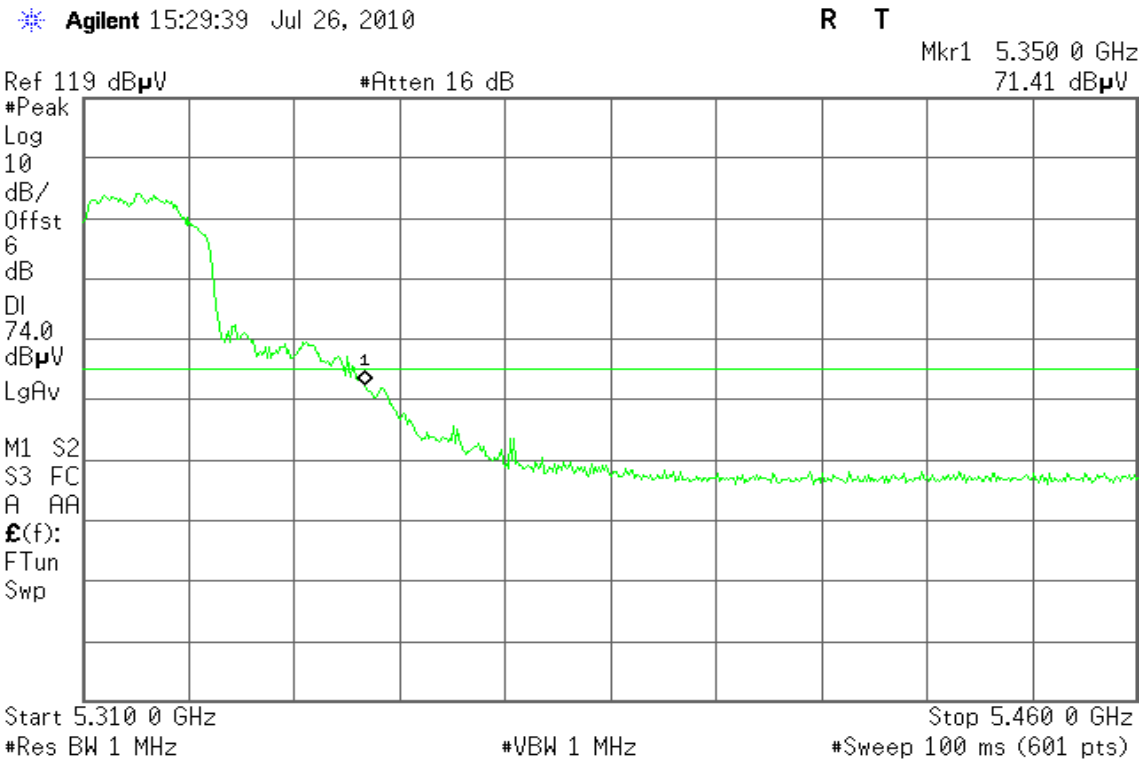


Detector mode: Average **Polarity: Horizontal**

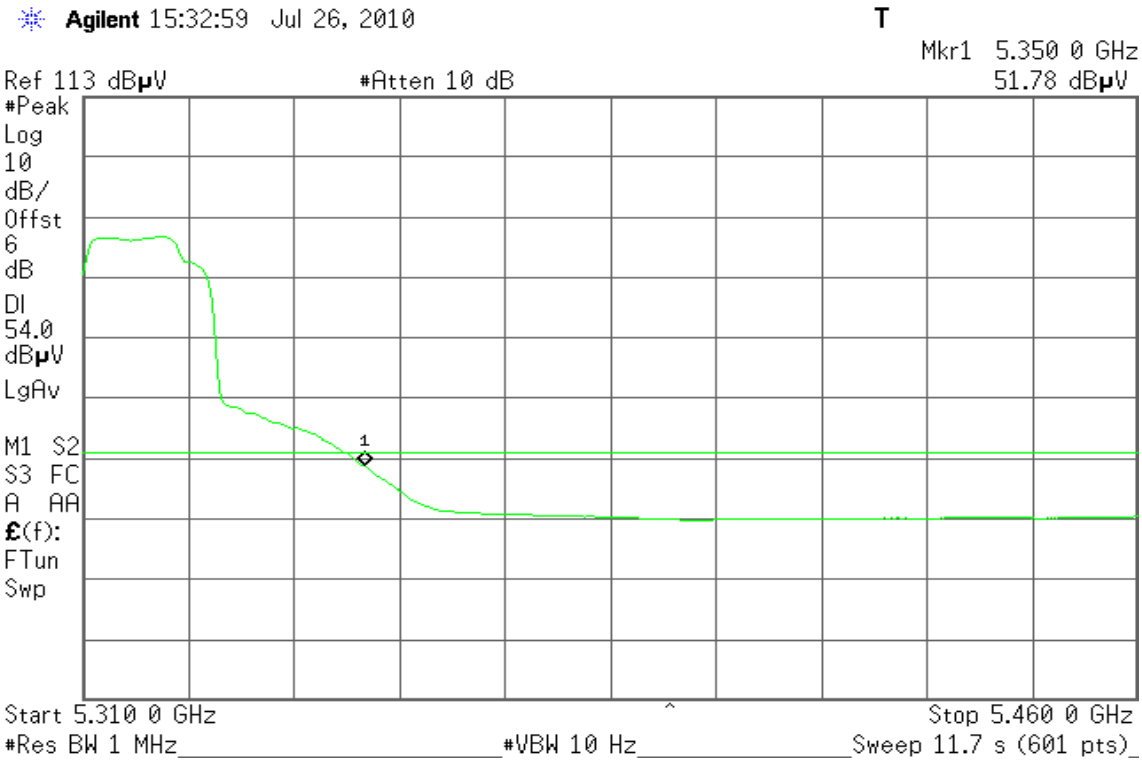


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH 5310 MHz)

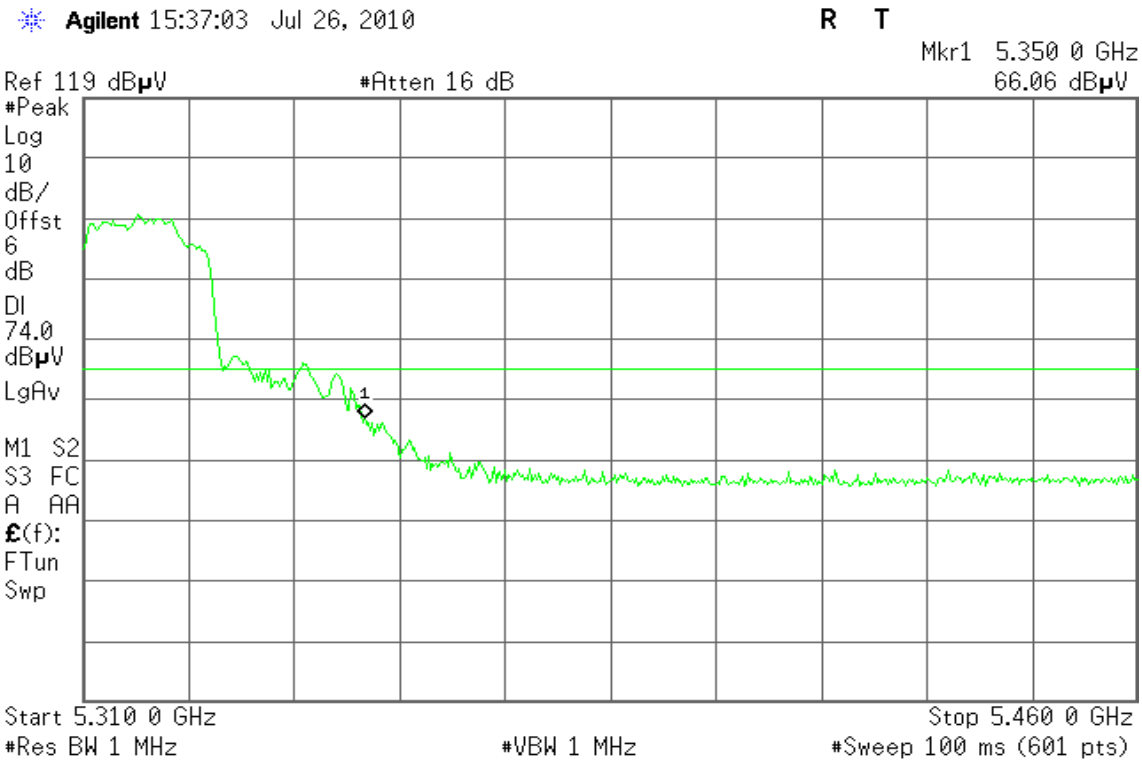
Detector mode: Peak **Polarity: Vertical**



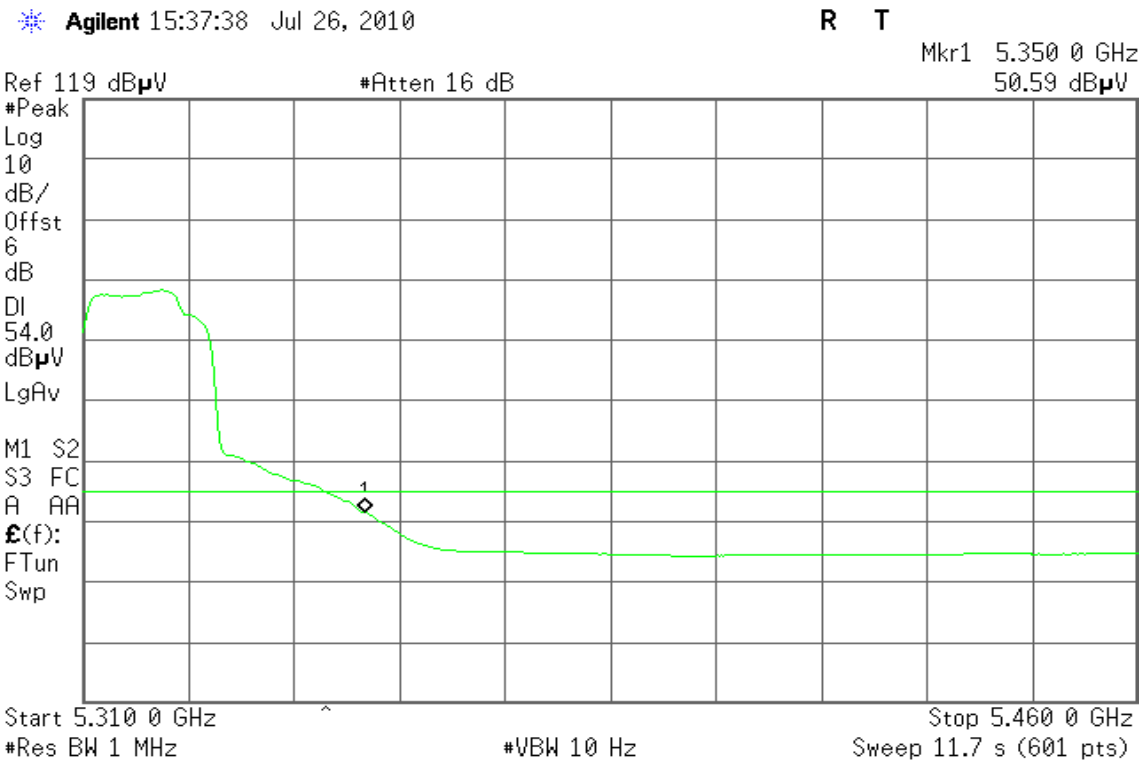
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**



7.4 PEAK POWER SPECTRAL DENSITY

LIMIT

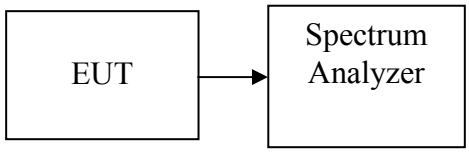
According to §15.407(a),

(1) For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.

(2) For the band 5.25-5.35 GHz and 5.47-5.725 GHz bands, the peak power spectral density shall not exceed 11dBm in any 1MHz band.

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

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 = 1MHz, VBW = 3MHz, Span = Sweep= AUTO
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 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5180	3.411	4.00	-0.589	PASS
Mid	5220	2.701	4.00	-1.299	PASS
High	5240	3.074	4.00	-0.926	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5180	0.112	-0.611	2.78	4.00	-0.22	PASS
Mid	5220	-0.213	-0.913	2.46	4.00	-0.54	PASS
High	5240	0.292	-1.204	2.62	4.00	-0.38	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5190	-0.540	-0.092	2.70	4.00	-0.30	PASS
High	5230	0.320	-0.702	2.85	4.00	-0.15	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz with combiner

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5180	2.155	4.00	-0.85	PASS
Mid	5220	1.983	4.00	-1.02	PASS
High	5240	2.653	4.00	-0.35	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz with combiner

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5190	2.802	4.00	-0.20	PASS
High	5230	2.581	4.00	-0.42	PASS

Remark:

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

Test mode: IEEE 802.11a mode/ 5260 ~ 5320MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	6.552	11.00	-4.45	PASS
Mid	5280	6.897	11.00	-4.10	PASS
High	5320	7.075	11.00	-3.93	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	5.518	6.710	9.17	11.00	-0.83	PASS
Mid	5280	6.338	7.207	9.80	11.00	-0.20	PASS
High	5320	5.858	7.170	9.57	11.00	-0.43	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5270	3.565	4.263	6.94	11.00	-3.06	PASS
High	5310	0.750	0.720	3.75	11.00	-6.25	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz MHz with combiner

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	9.446	11.00	-0.55	PASS
Mid	5280	8.585	11.00	-1.42	PASS
High	5320	8.858	11.00	-1.14	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz with combiner

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5270	6.903	11.00	-3.10	PASS
High	5310	7.098	11.00	-2.90	PASS

Remark:

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

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5500	7.703	11.00	-3.30	PASS
Mid	5600	7.821	11.00	-3.18	PASS
High	5700	7.680	11.00	-3.32	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5500	6.726	6.414	9.58	10.00	-0.42	PASS
Mid	5600	6.597	6.509	9.56	10.00	-0.44	PASS
High	5700	6.888	6.650	9.78	10.00	-0.22	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5510	4.383	4.019	7.22	10.00	-2.78	PASS
Mid	5590	5.366	4.922	8.16	10.00	-1.84	PASS
High	5670	5.049	4.598	7.84	10.00	-2.16	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz MHz with combiner

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5500	9.610	10.00	-0.39	PASS
Mid	5600	9.127	10.00	-0.87	PASS
High	5700	9.701	10.00	-0.30	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz with combiner

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5510	7.550	10.00	-2.45	PASS
Mid	5590	7.767	10.00	-2.23	PASS
High	5670	7.557	10.00	-2.44	PASS

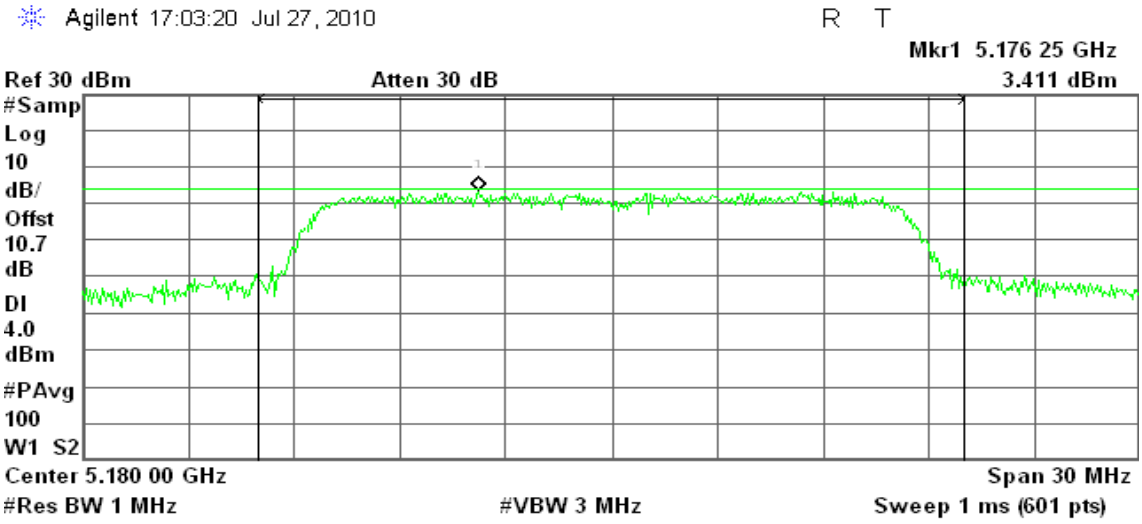
Remark:

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

2. The maximum antenna gain is 6.49dBi; therefore the reduction due to antenna gain is 1dB, so the limit is 10dBm.

Test Plot
IEEE 802.11a mode / 5180 ~ 5240MHz

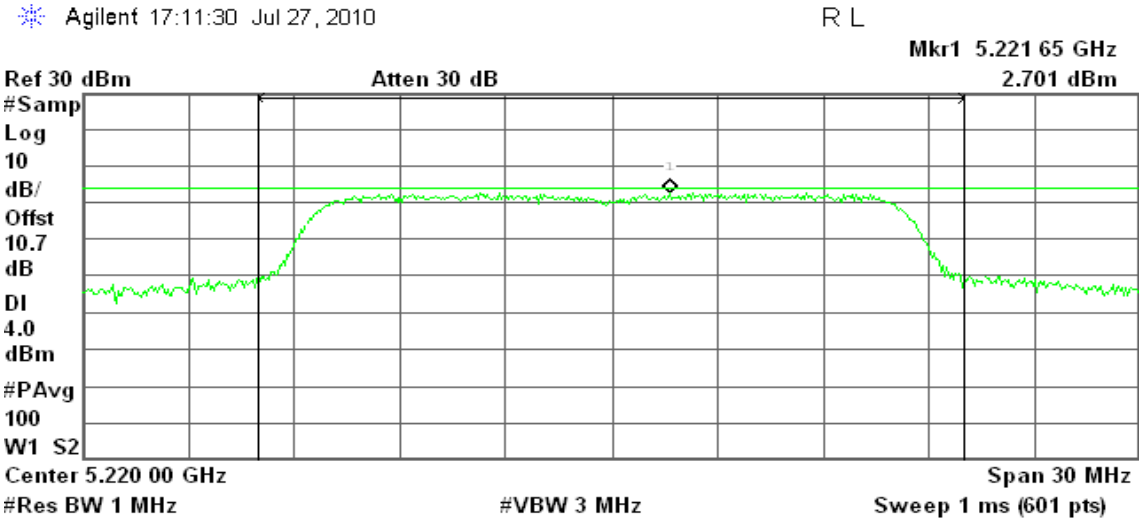
CH Low



Channel Power
13.19 dBm / 20.0000 MHz

Power Spectral Density
-59.82 dBm/Hz

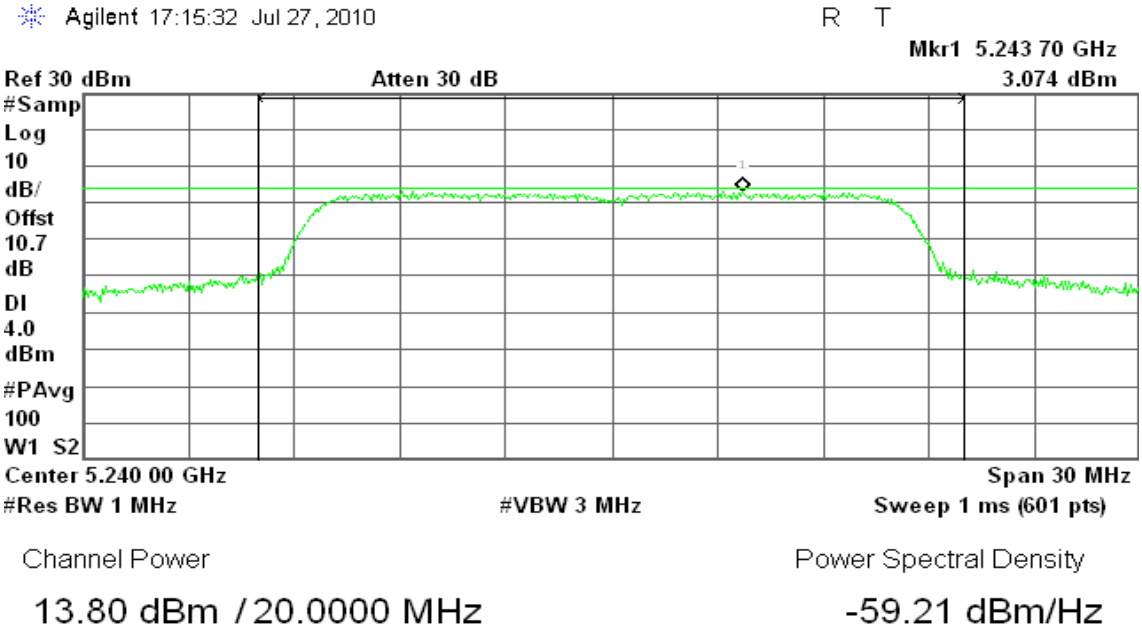
CH Mid



Channel Power
13.17 dBm / 20.0000 MHz

Power Spectral Density
-59.84 dBm/Hz

CH High

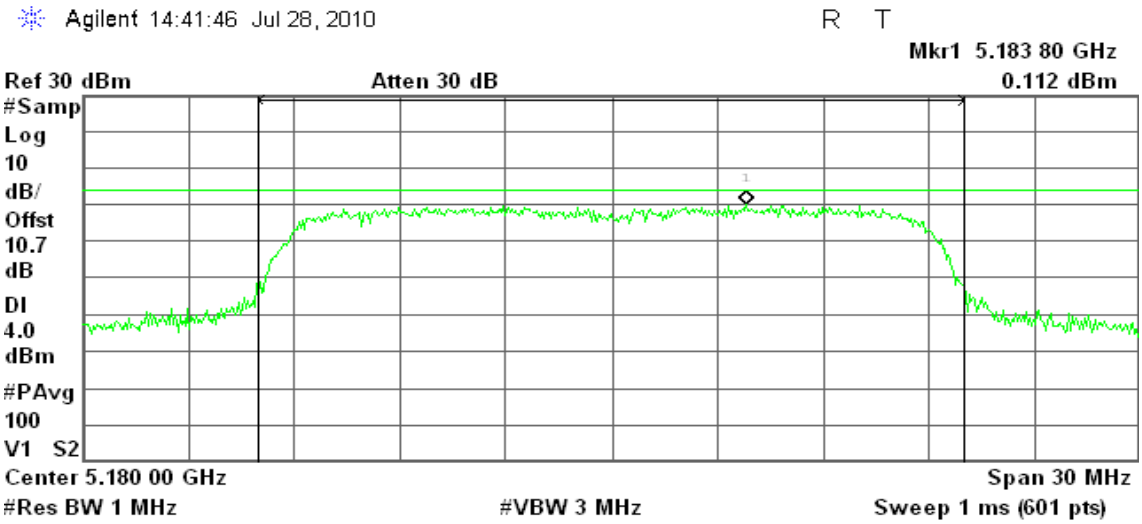


Channel Power
13.80 dBm / 20.0000 MHz

Power Spectral Density
-59.21 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 0

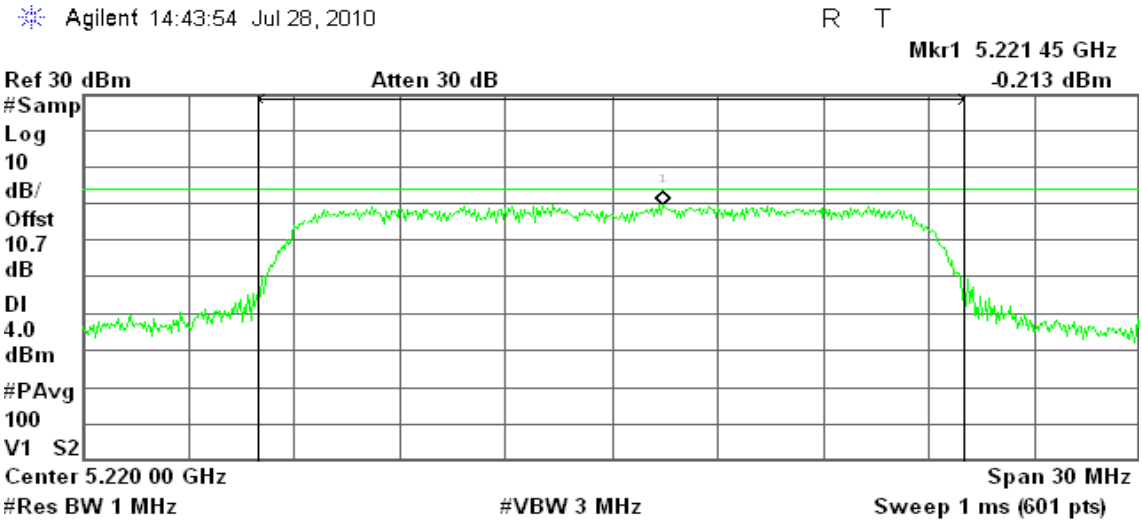
CH Low



Channel Power
10.14 dBm / 20.0000 MHz

Power Spectral Density
-62.87 dBm/Hz

CH Mid



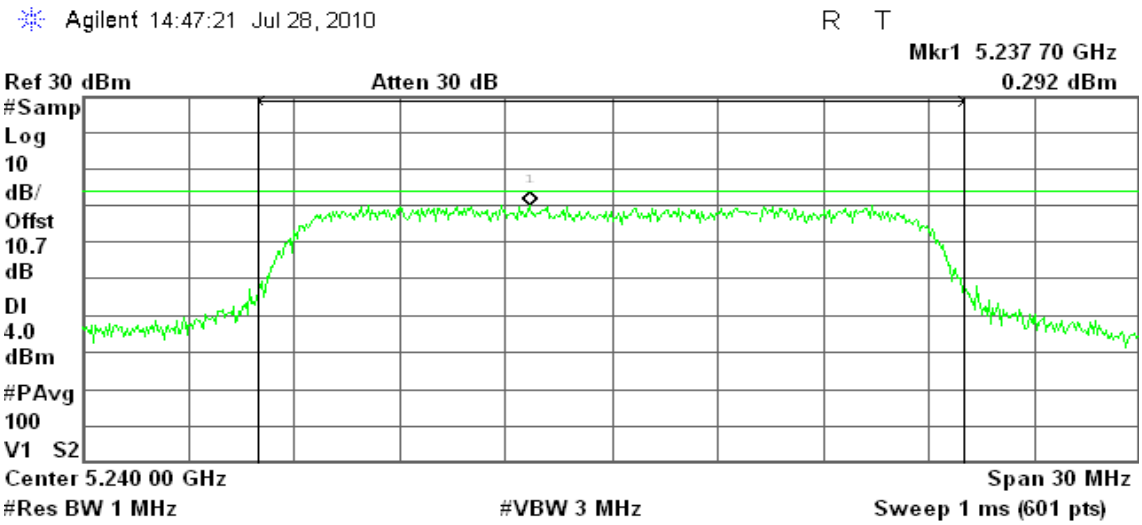
Channel Power

9.55 dBm /20.0000 MHz

Power Spectral Density

-63.46 dBm/Hz

CH High



Channel Power

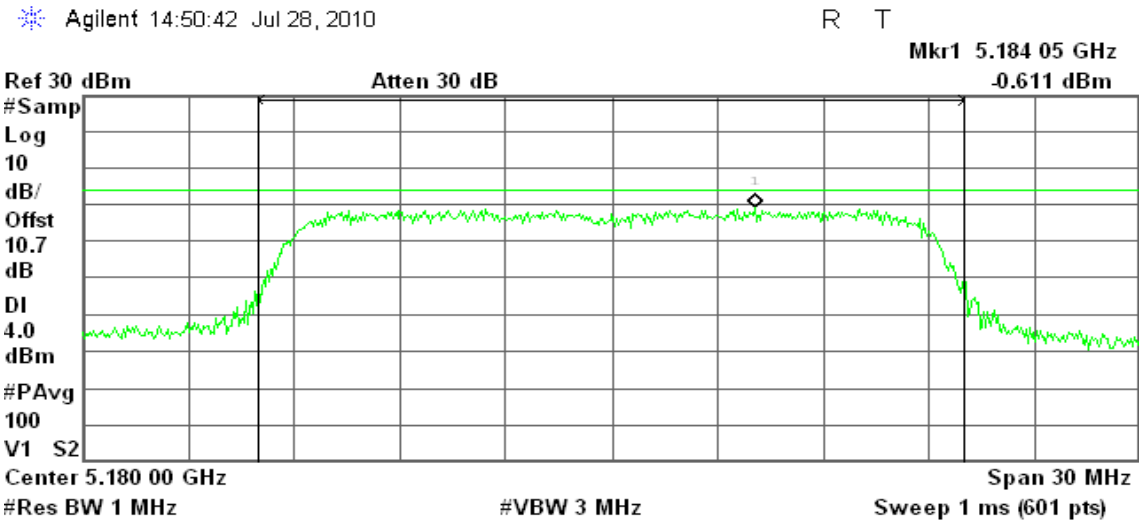
10.12 dBm /20.0000 MHz

Power Spectral Density

-62.89 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1

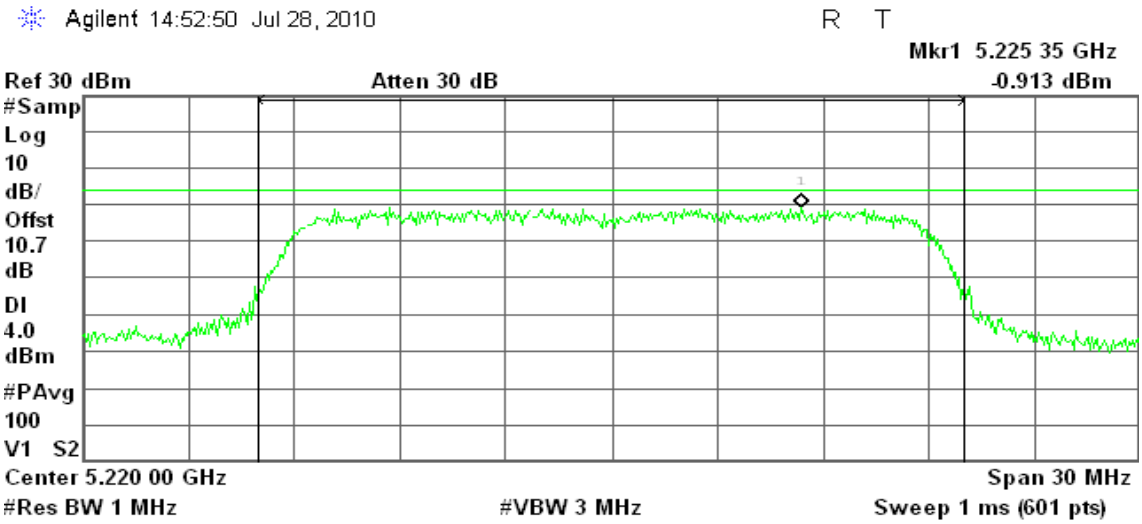
CH Low



Channel Power
9.24 dBm / 20.0000 MHz

Power Spectral Density
-63.77 dBm/Hz

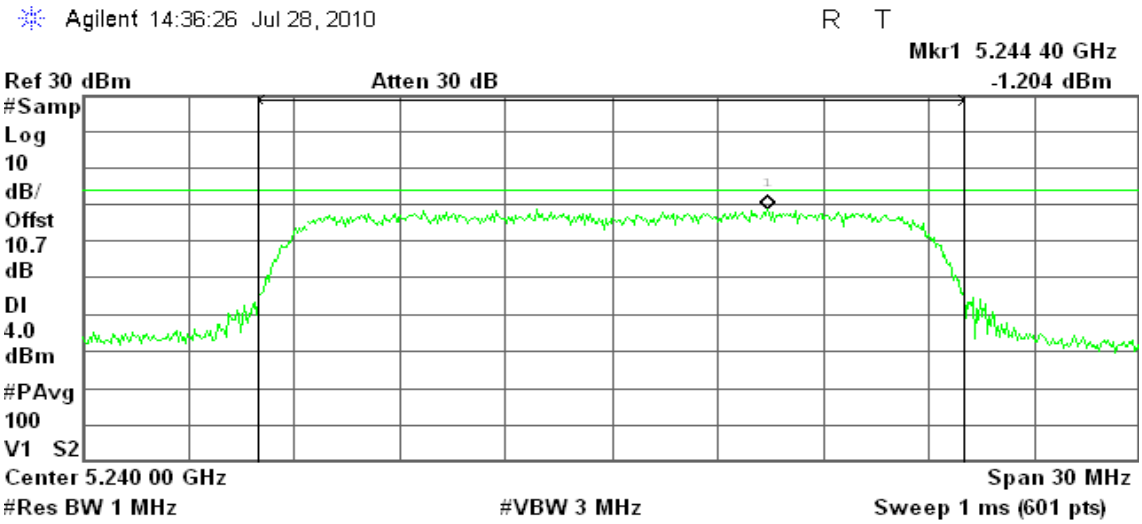
CH Mid



Channel Power
9.17 dBm / 20.0000 MHz

Power Spectral Density
-63.84 dBm/Hz

CH High

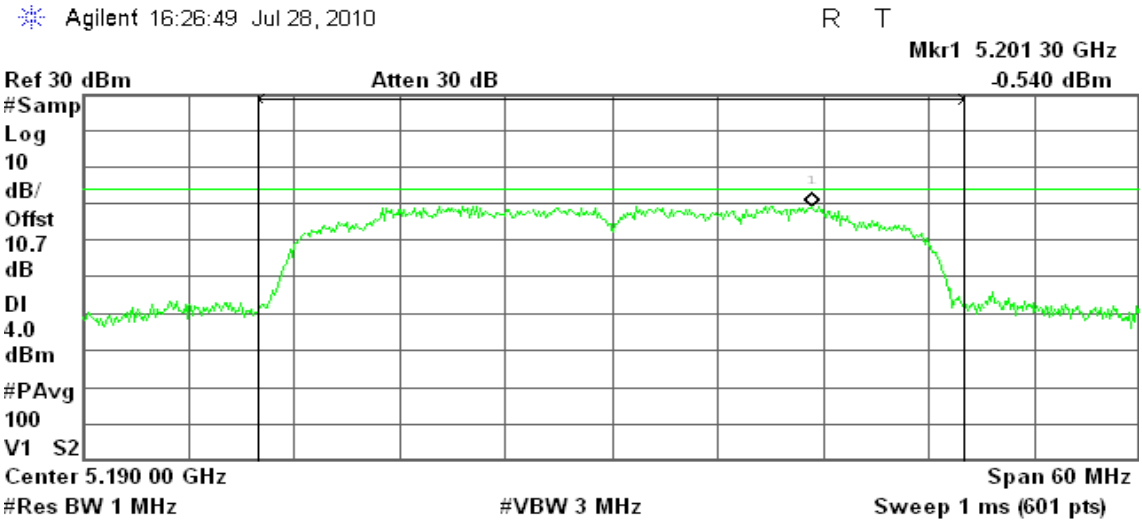


Channel Power
8.47 dBm /20.0000 MHz

Power Spectral Density
-64.54 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 0

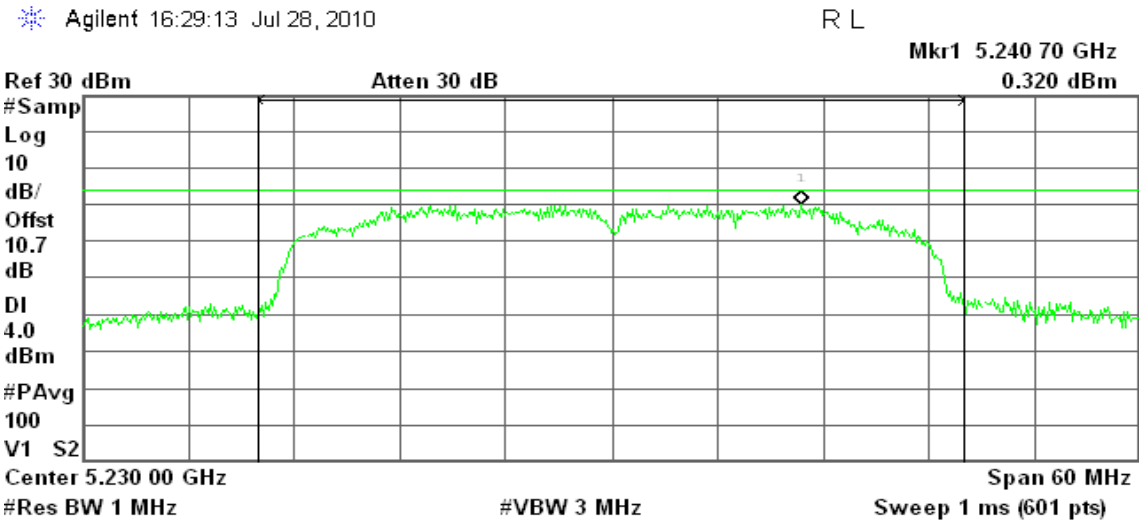
CH Low



Channel Power
12.07 dBm /40.0000 MHz

Power Spectral Density
-63.95 dBm/Hz

CH High

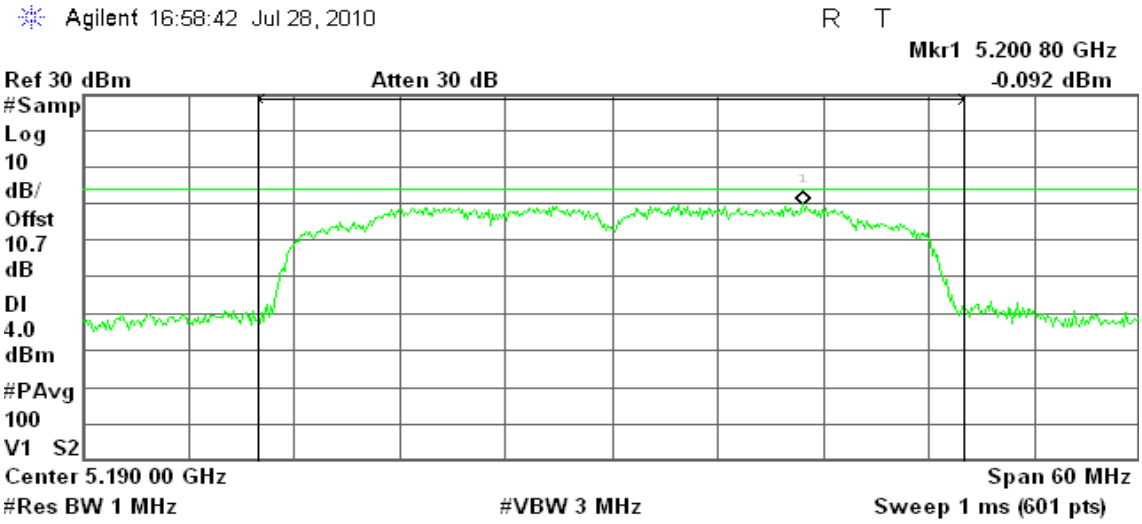


Channel Power
12.16 dBm / 40.0000 MHz

Power Spectral Density
-63.86 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 1

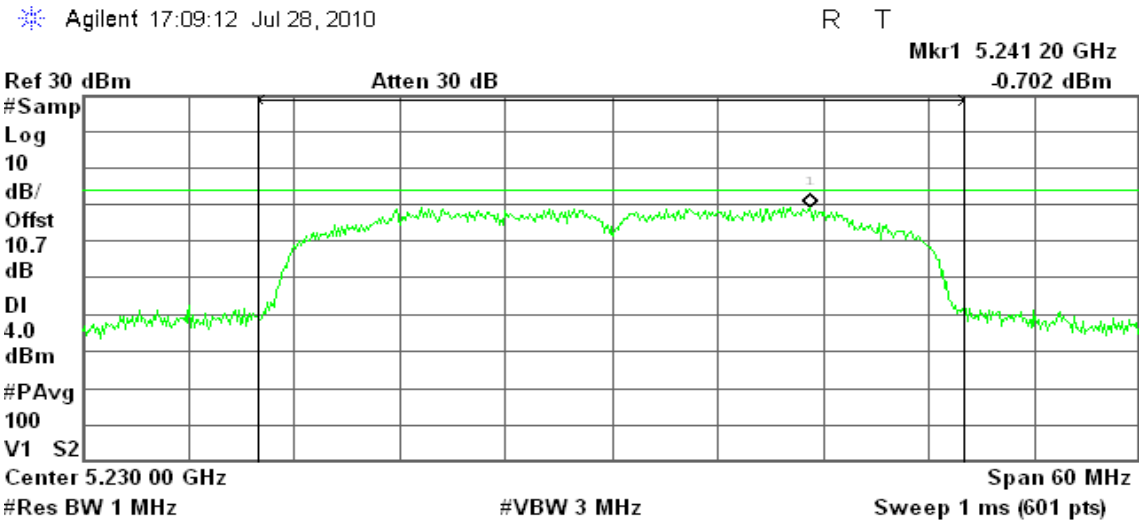
CH Low



Channel Power
12.88 dBm / 40.0000 MHz

Power Spectral Density
-63.14 dBm/Hz

CH High

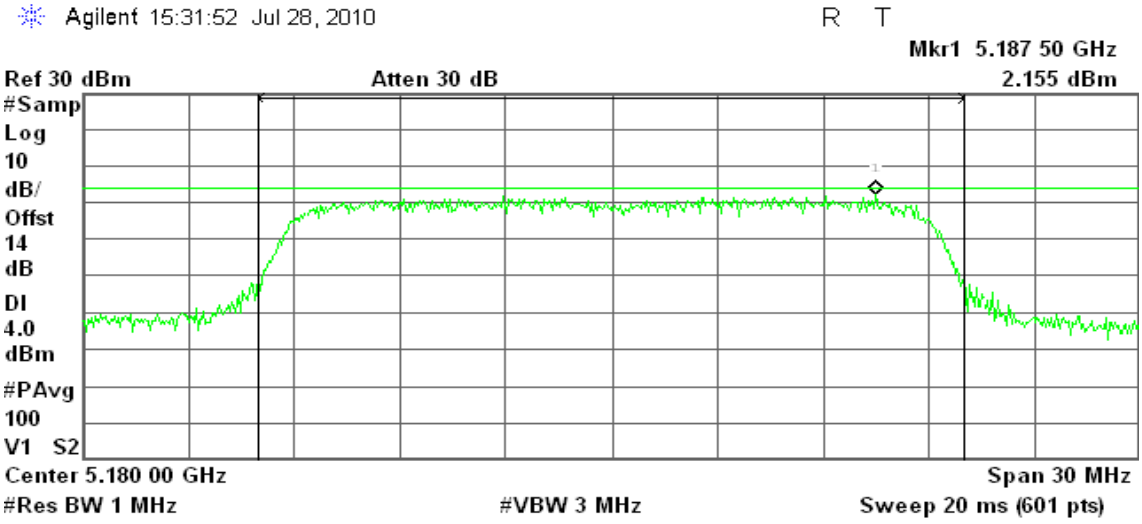


Channel Power
11.27 dBm / 40.0000 MHz

Power Spectral Density
-64.75 dBm/Hz

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz with combiner:

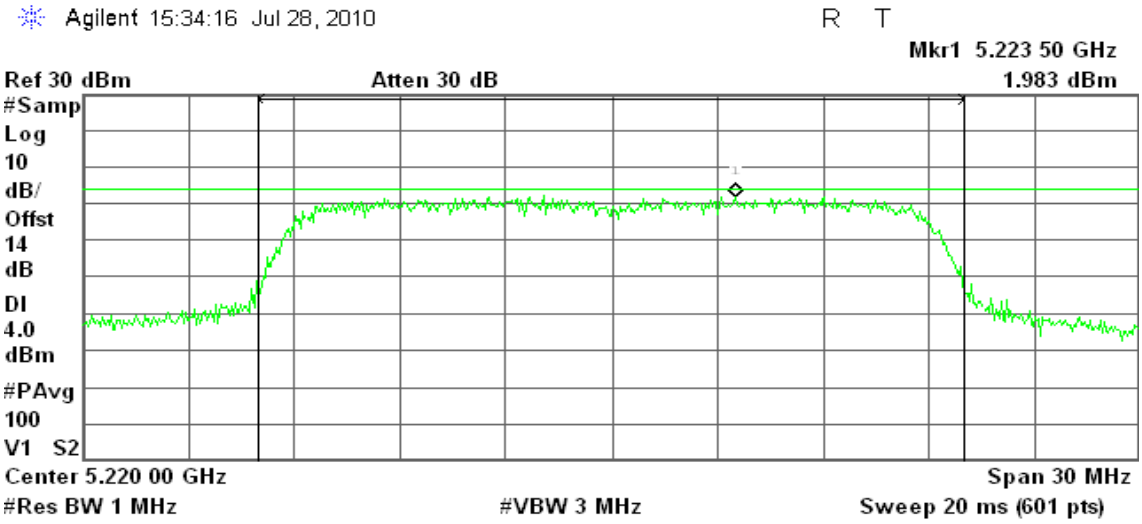
CH Low



Channel Power
11.86 dBm / 20.0000 MHz

Power Spectral Density
-61.15 dBm/Hz

CH Mid



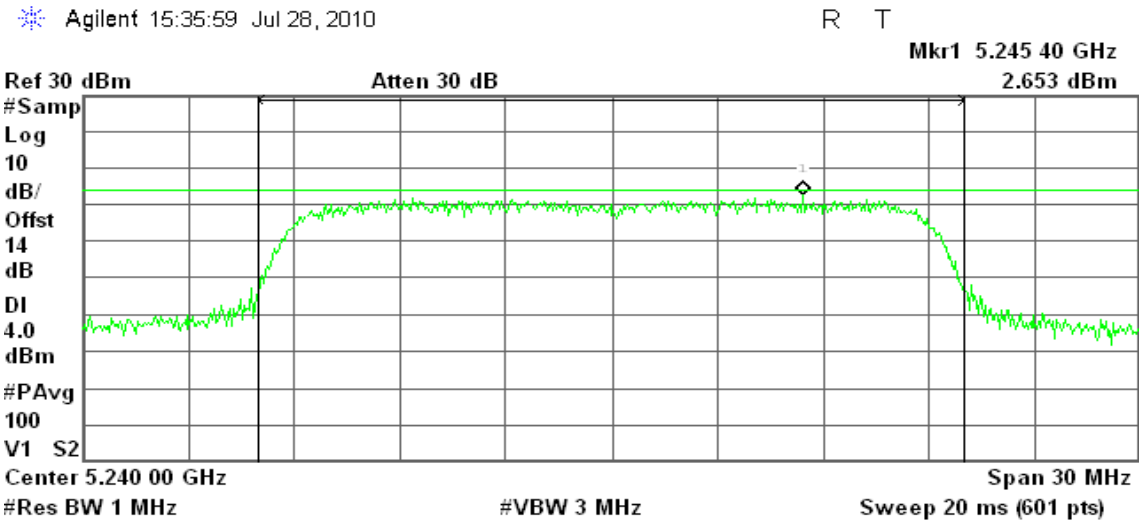
Channel Power

11.66 dBm / 20.0000 MHz

Power Spectral Density

-61.35 dBm/Hz

CH High



Channel Power

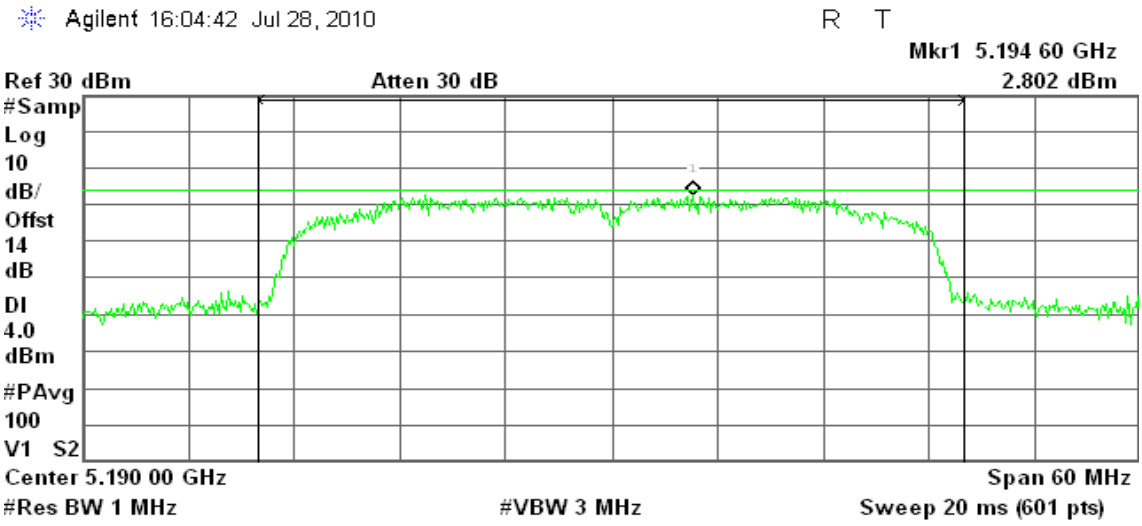
12.04 dBm / 20.0000 MHz

Power Spectral Density

-60.97 dBm/Hz

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz with combiner:

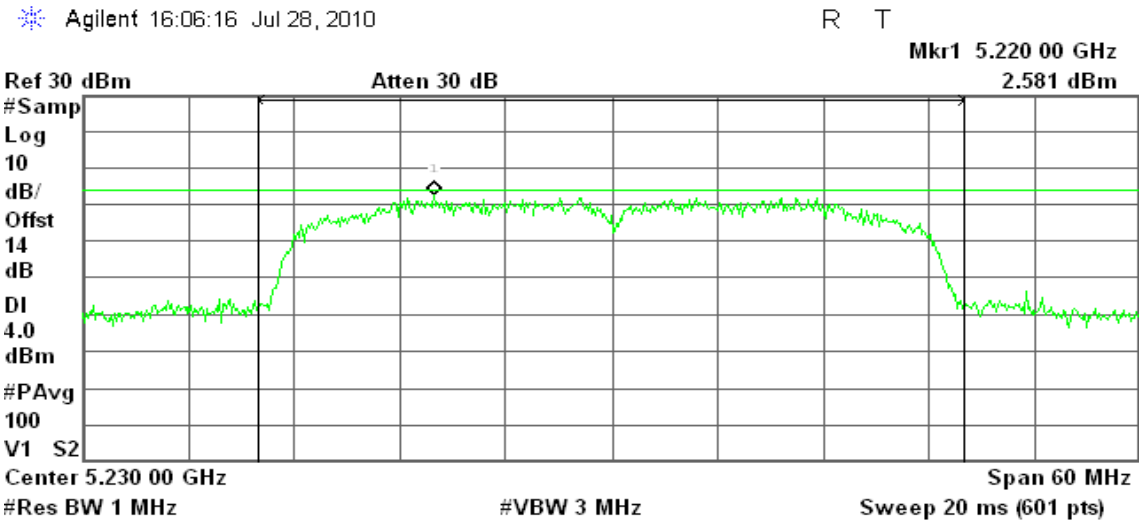
CH Low



Channel Power
14.83 dBm / 40.0000 MHz

Power Spectral Density
-61.19 dBm/Hz

CH High

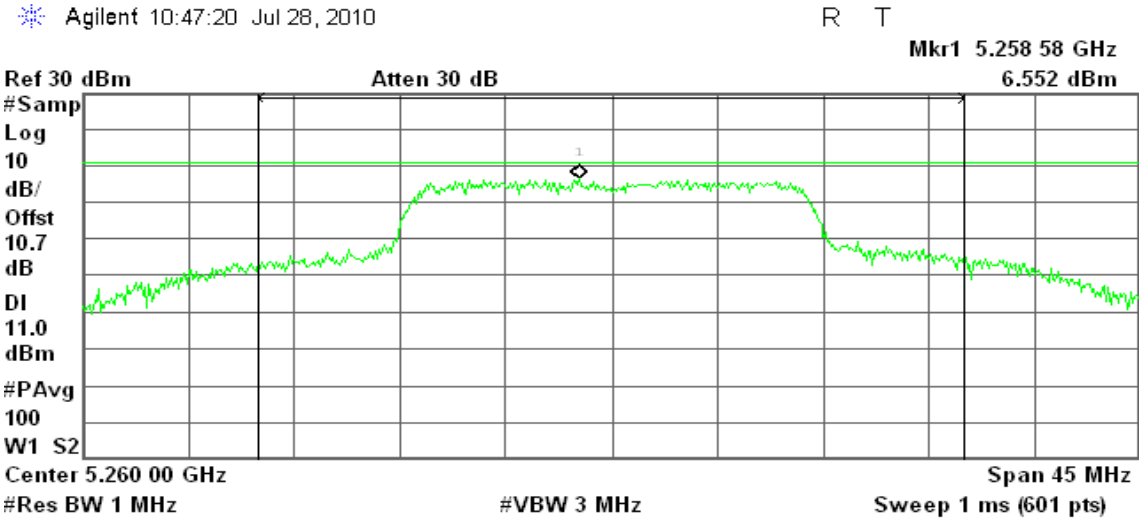


Channel Power
14.30 dBm / 40.0000 MHz

Power Spectral Density
-61.72 dBm/Hz

IEEE 802.11a mode / 5260 ~ 5320MHz

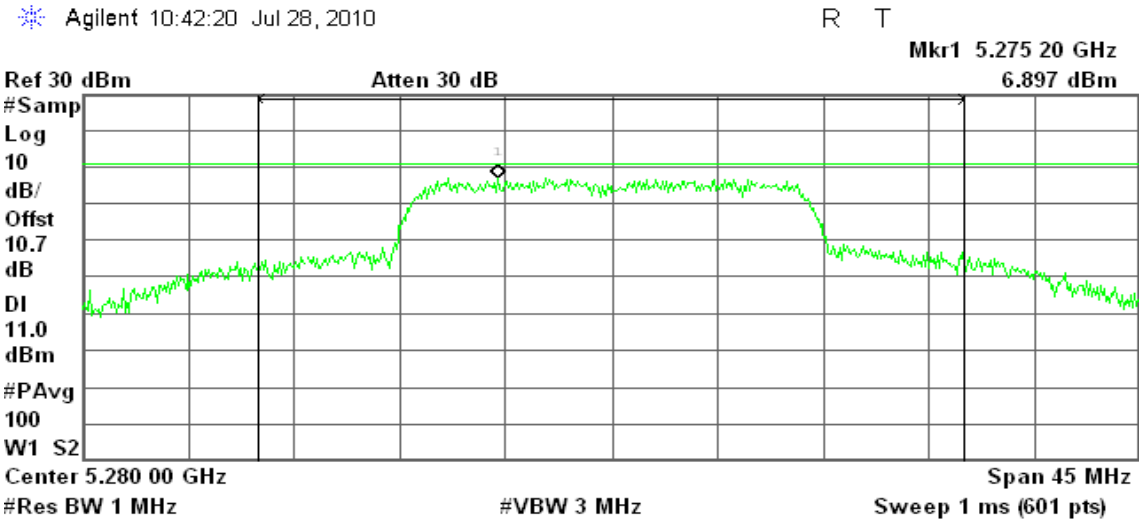
CH Low



Channel Power
16.46 dBm / 30.0000 MHz

Power Spectral Density
-58.31 dBm/Hz

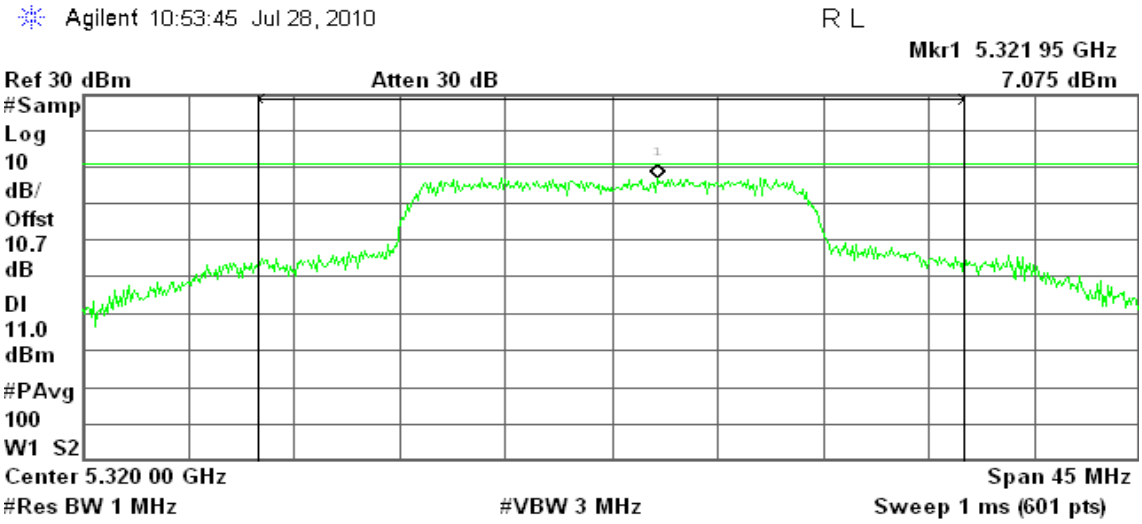
CH Mid



Channel Power
16.68 dBm / 30.0000 MHz

Power Spectral Density
-58.09 dBm/Hz

CH High

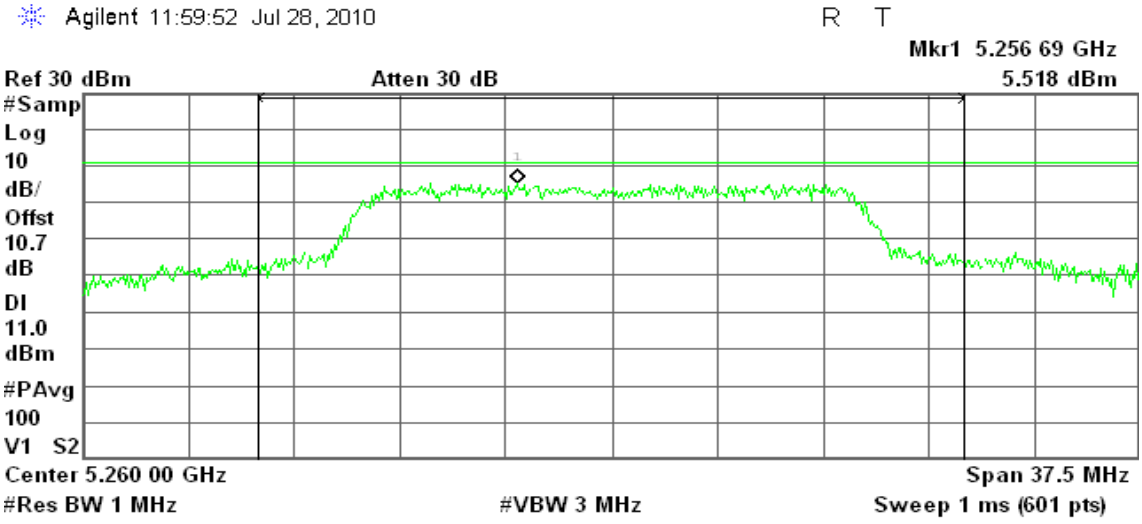


Channel Power
16.95 dBm / 30.0000 MHz

Power Spectral Density
-57.82 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

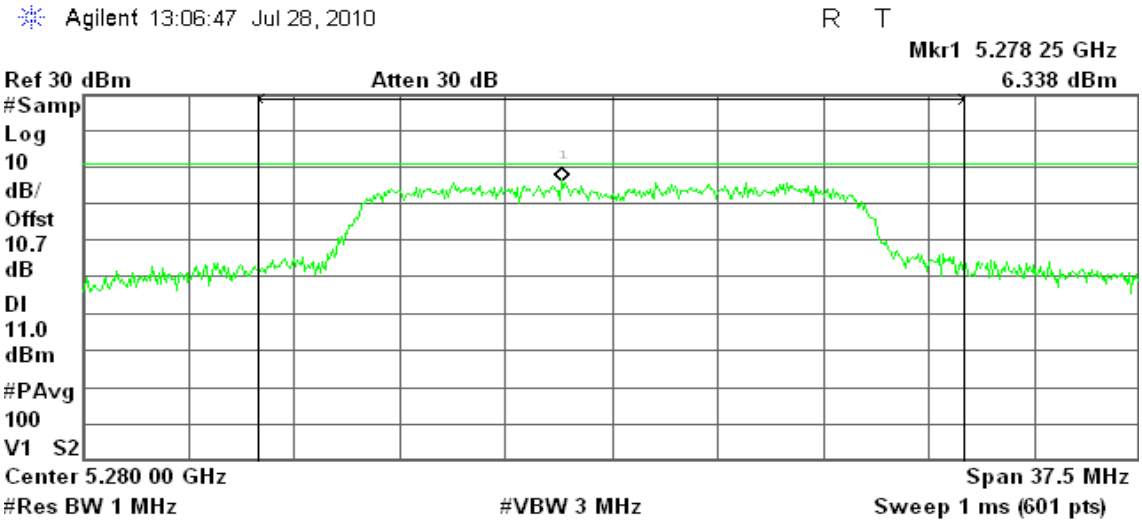
CH Low



Channel Power
15.50 dBm / 25.0000 MHz

Power Spectral Density
-58.48 dBm/Hz

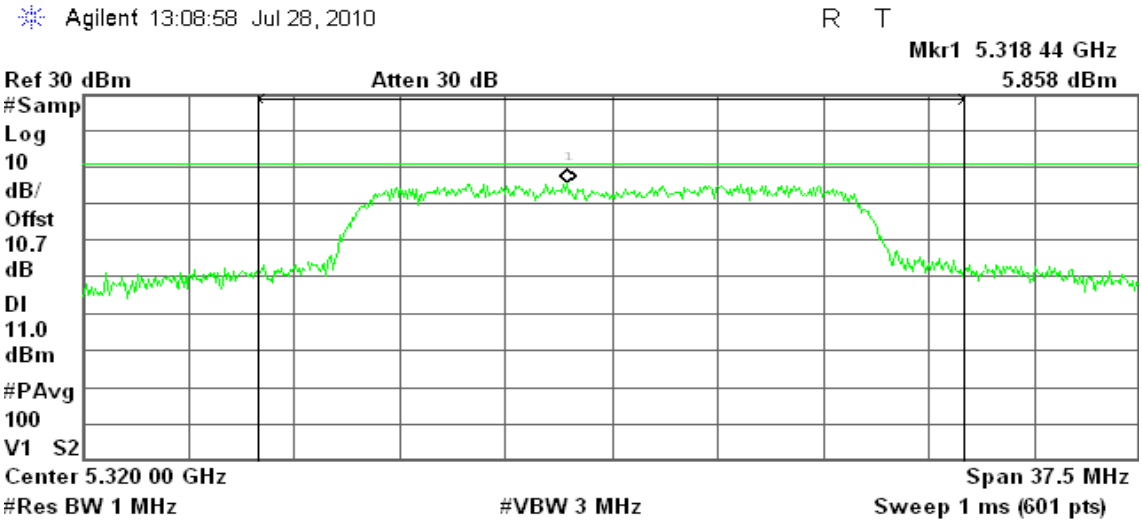
CH Mid



Channel Power
15.56 dBm / 25.0000 MHz

Power Spectral Density
-58.42 dBm/Hz

CH High

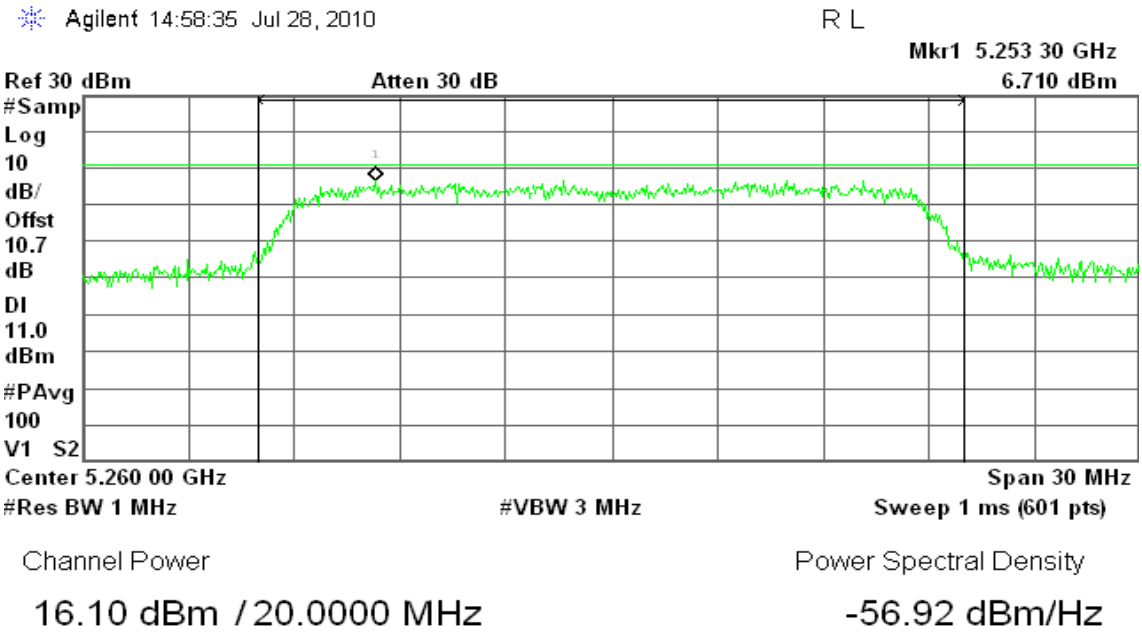


Channel Power
15.15 dBm / 25.0000 MHz

Power Spectral Density
-58.83 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

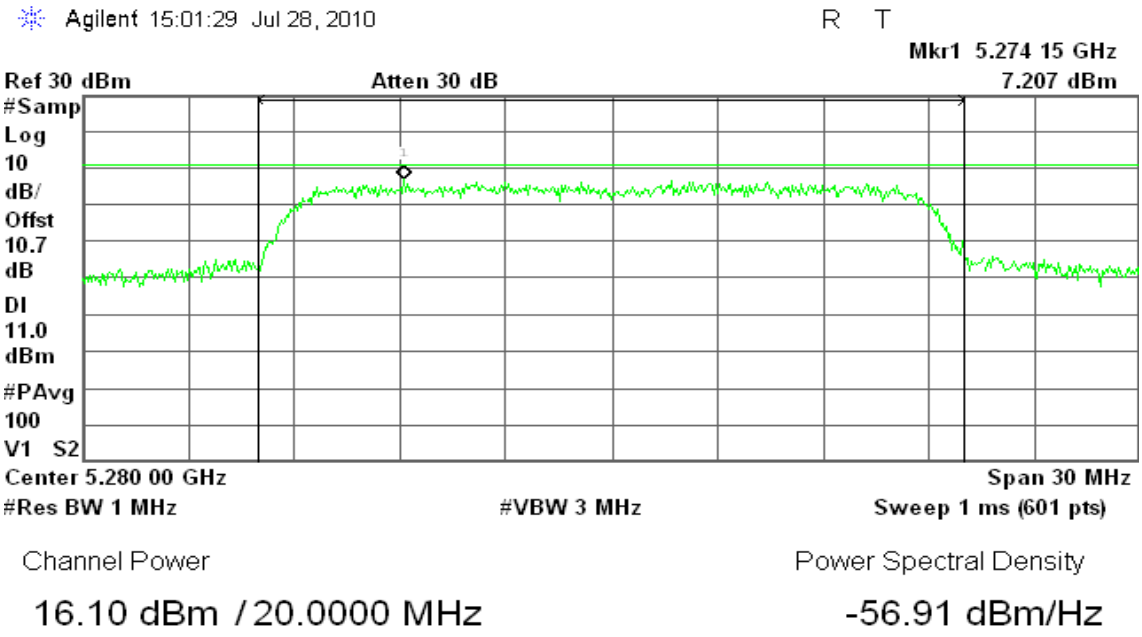
CH Low



Channel Power
16.10 dBm / 20.0000 MHz

Power Spectral Density
-56.92 dBm/Hz

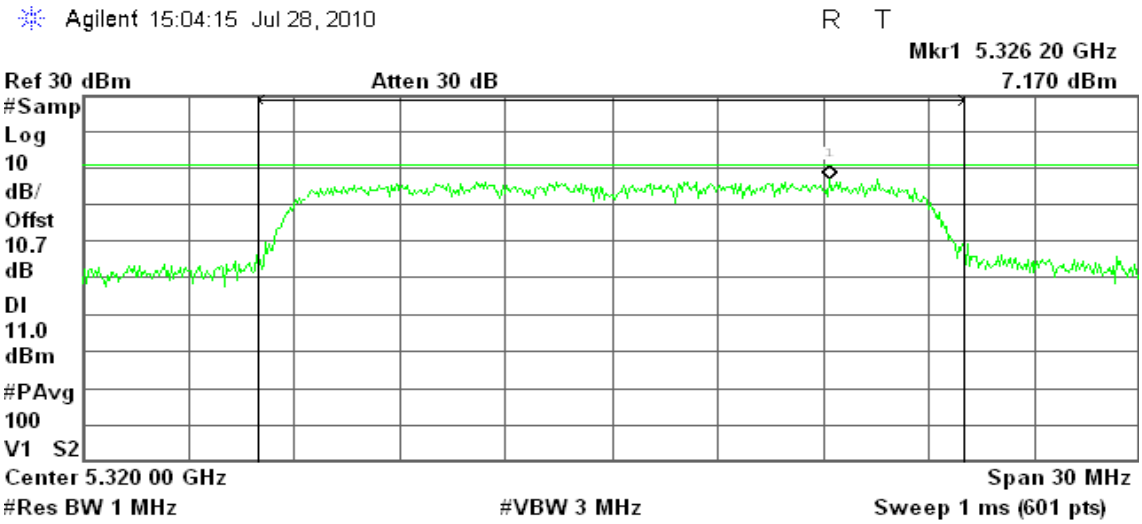
CH Mid



Channel Power
16.10 dBm / 20.0000 MHz

Power Spectral Density
-56.91 dBm/Hz

CH High

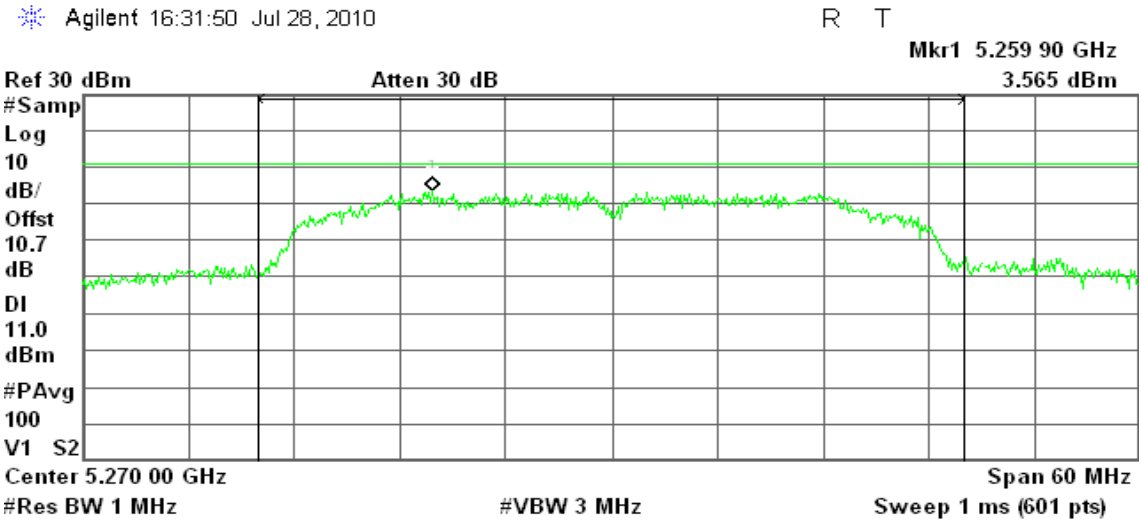


Channel Power
16.81 dBm / 20.0000 MHz

Power Spectral Density
-56.20 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 0

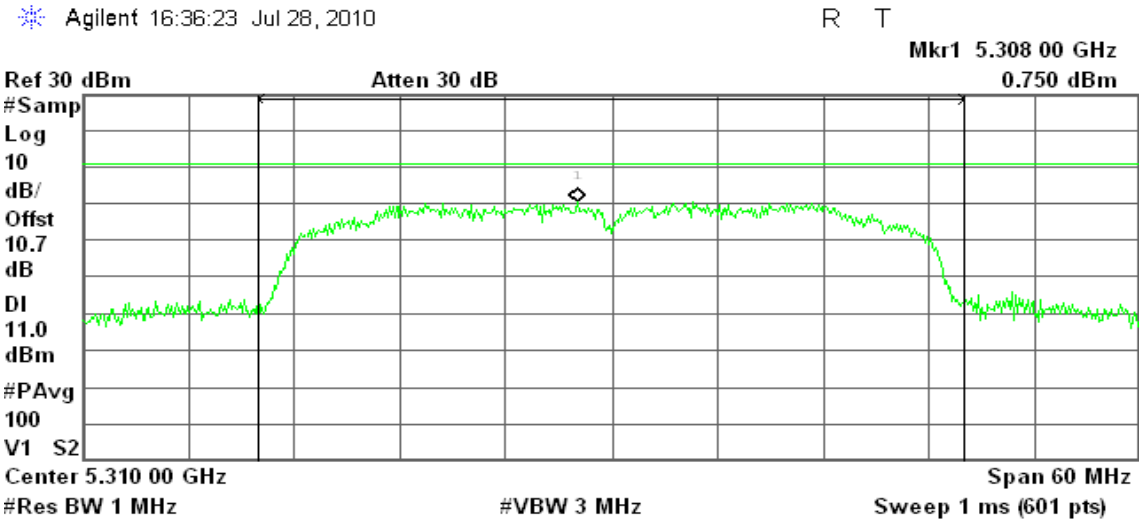
CH Low



Channel Power
15.67 dBm / 40.0000 MHz

Power Spectral Density
-60.35 dBm/Hz

CH High

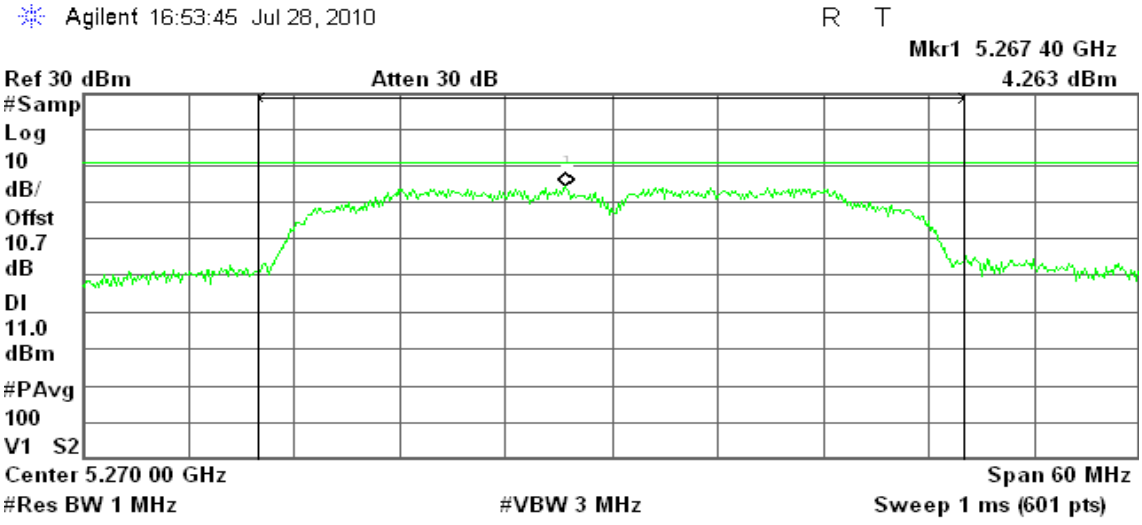


Channel Power
13.39 dBm / 40.0000 MHz

Power Spectral Density
-62.63 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 1

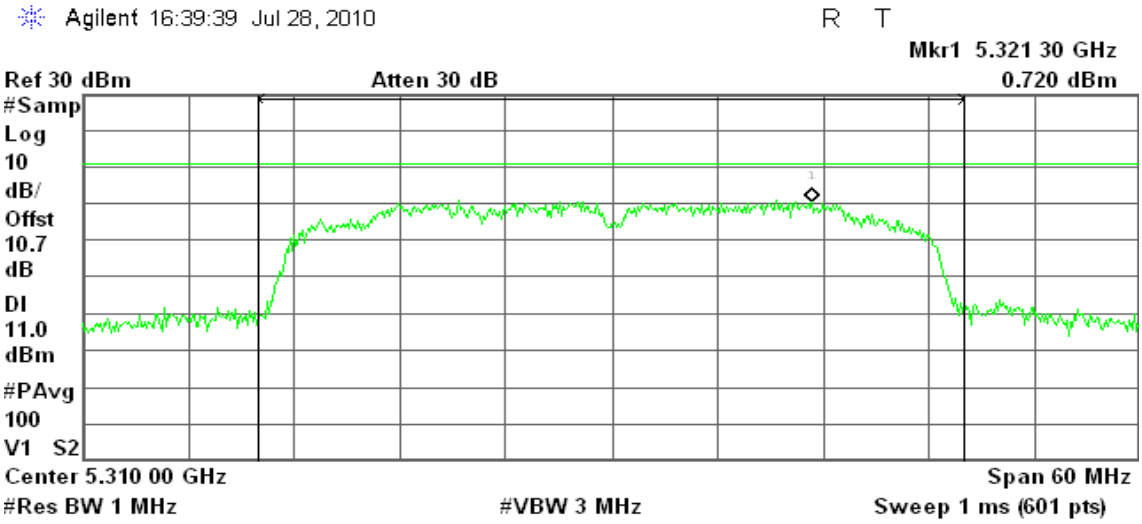
CH Low



Channel Power
16.68 dBm / 40.0000 MHz

Power Spectral Density
-59.34 dBm/Hz

CH High

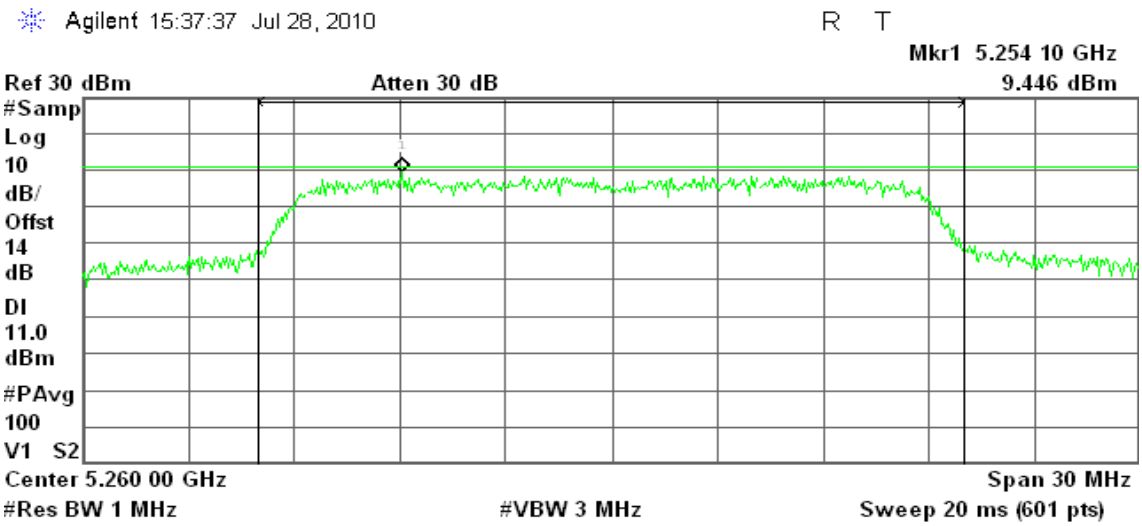


Channel Power
13.29 dBm / 40.0000 MHz

Power Spectral Density
-62.73 dBm/Hz

<u>Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz with combiner:</u>

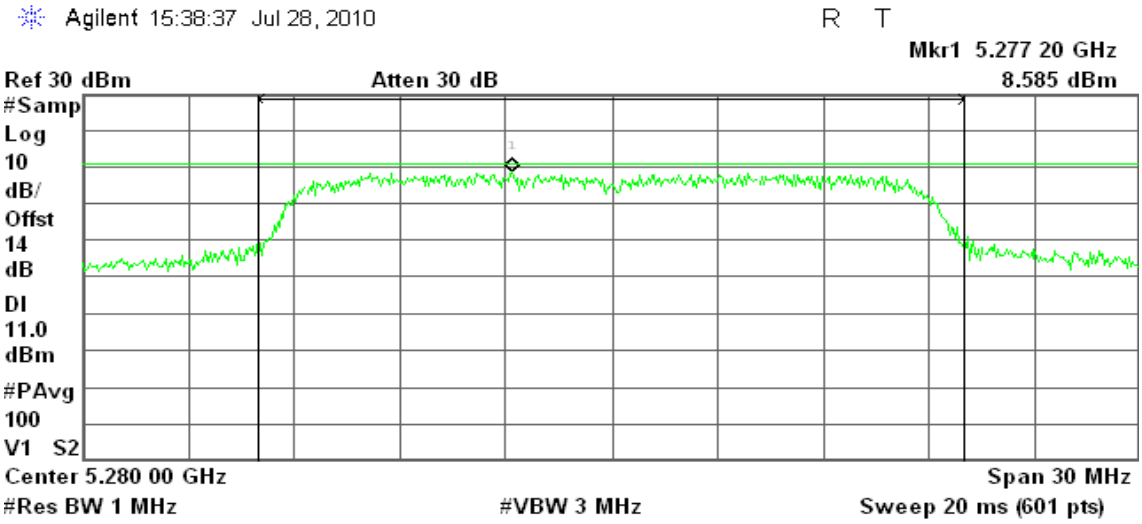
CH Low



Channel Power
18.34 dBm / 20.0000 MHz

Power Spectral Density
-54.67 dBm/Hz

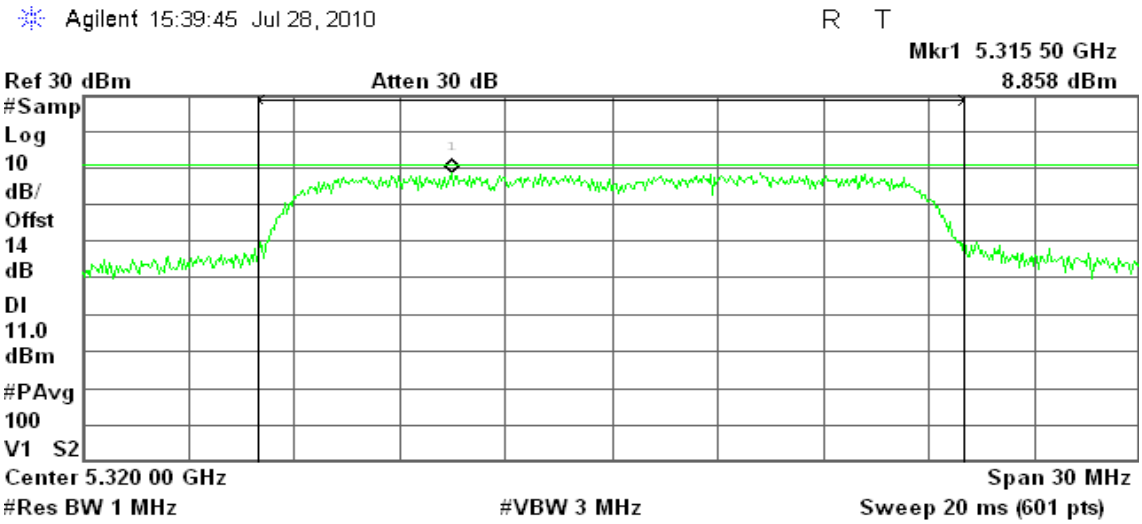
CH Mid



Channel Power
18.72 dBm / 20.0000 MHz

Power Spectral Density
-54.29 dBm/Hz

CH High

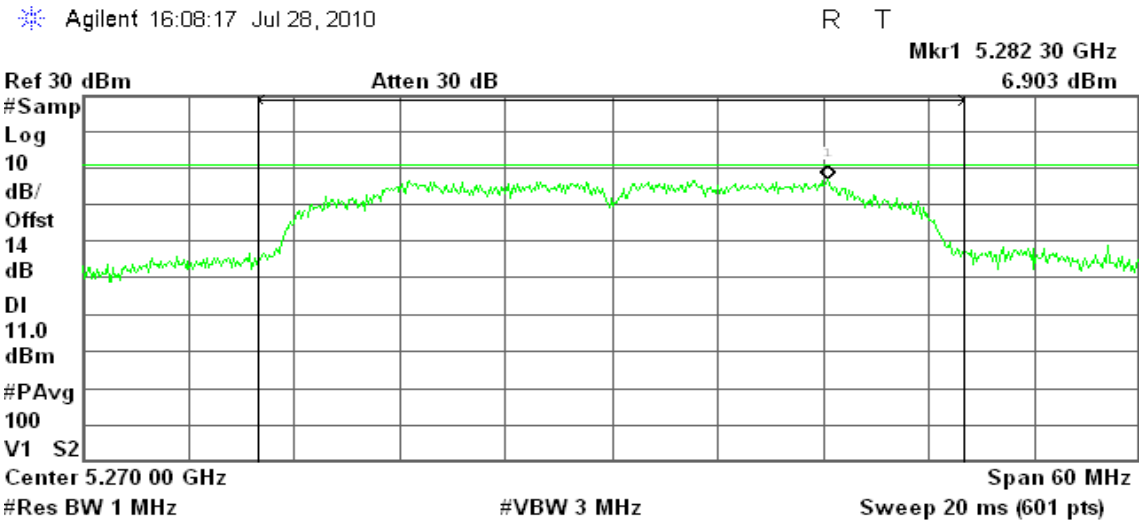


Channel Power
18.97 dBm / 20.0000 MHz

Power Spectral Density
-54.04 dBm/Hz

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

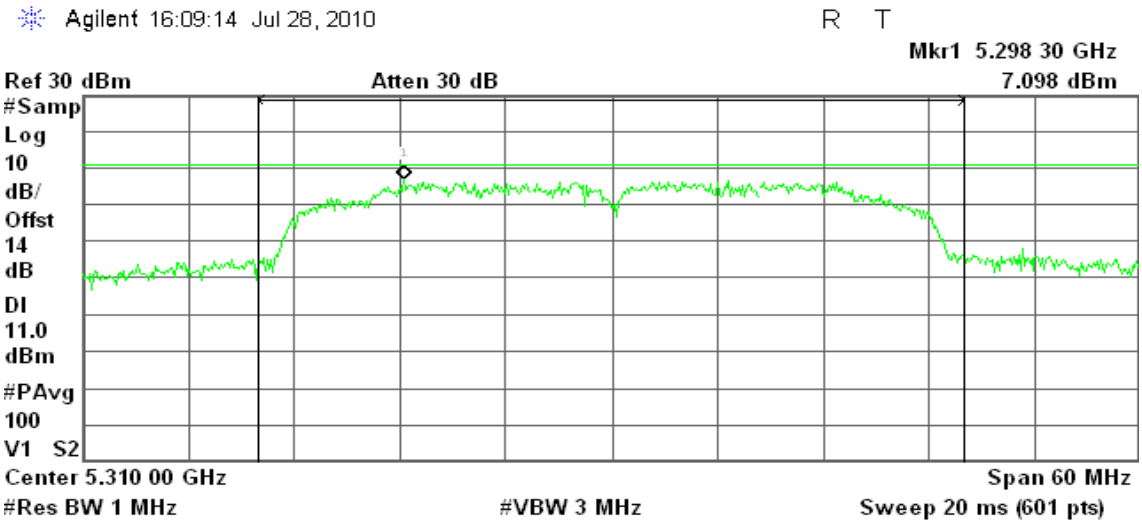
CH Low



Channel Power
18.90 dBm / 40.0000 MHz

Power Spectral Density
-57.12 dBm/Hz

CH High

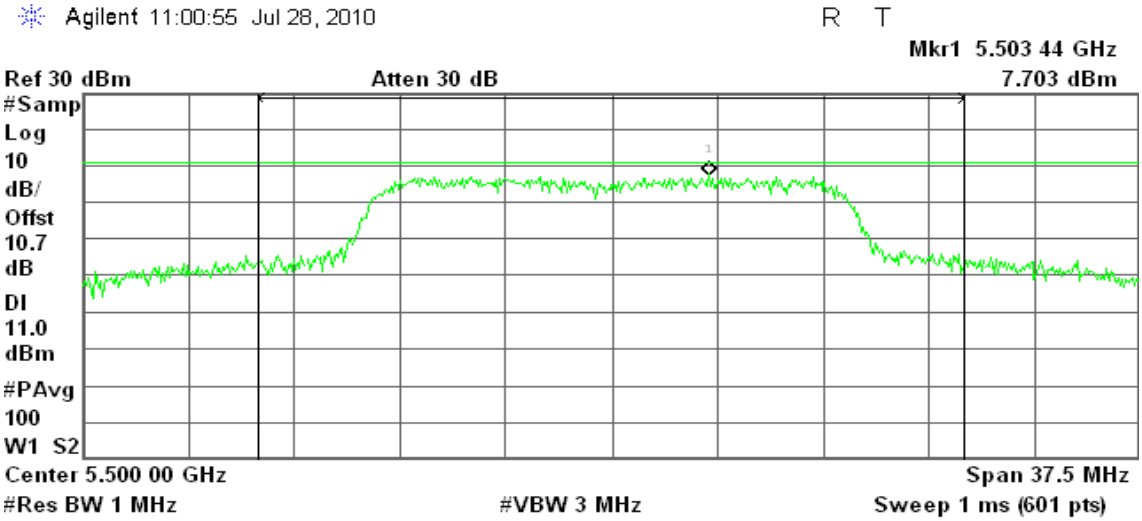


Channel Power
18.99 dBm / 40.0000 MHz

Power Spectral Density
-57.03 dBm/Hz

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

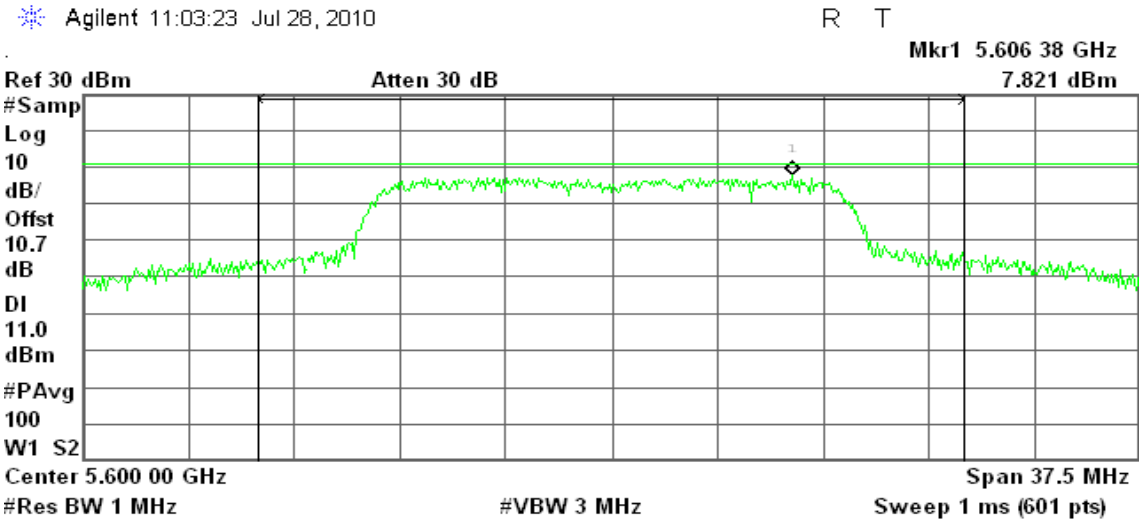
CH Low



Channel Power
17.29 dBm / 25.0000 MHz

Power Spectral Density
-56.69 dBm/Hz

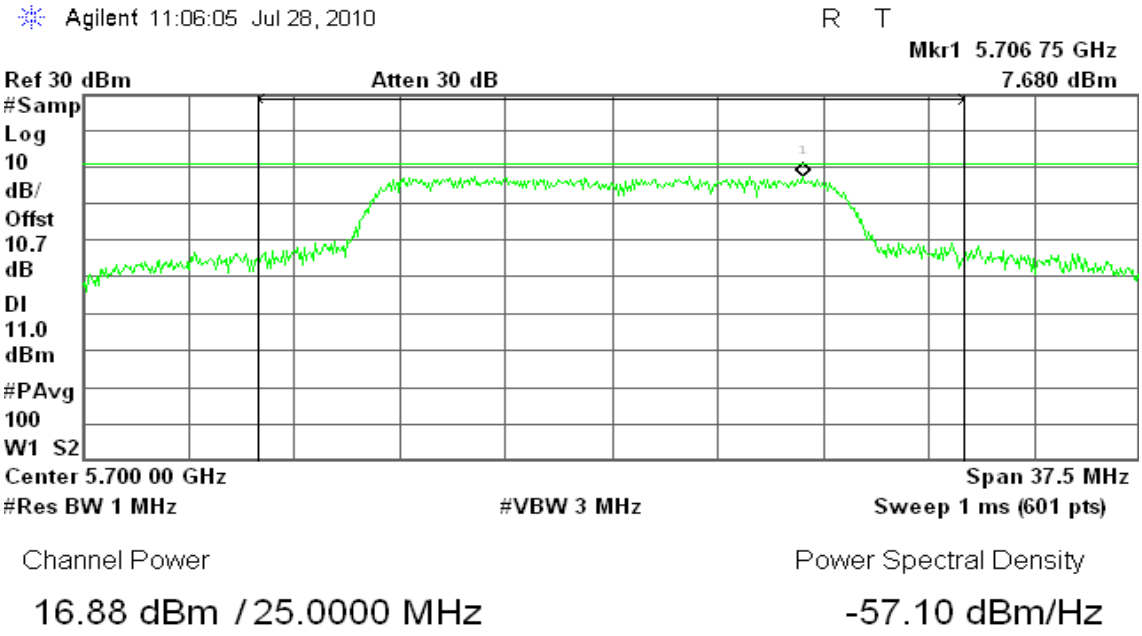
CH Mid



Channel Power
17.09 dBm / 25.0000 MHz

Power Spectral Density
-56.89 dBm/Hz

CH High

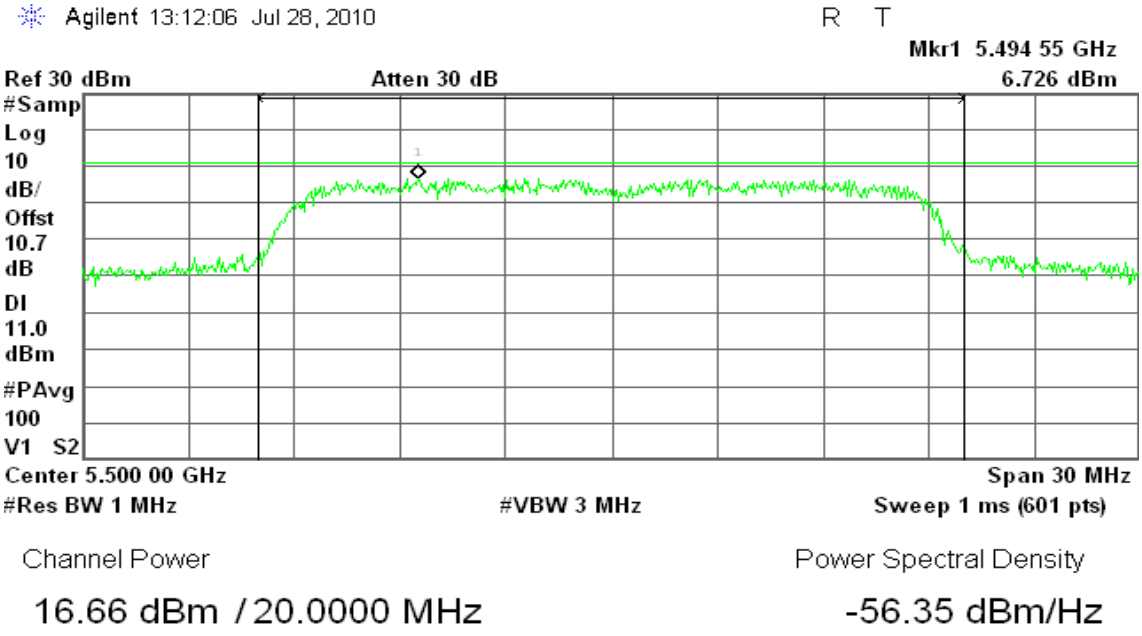


Channel Power
16.88 dBm / 25.0000 MHz

Power Spectral Density
-57.10 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 0

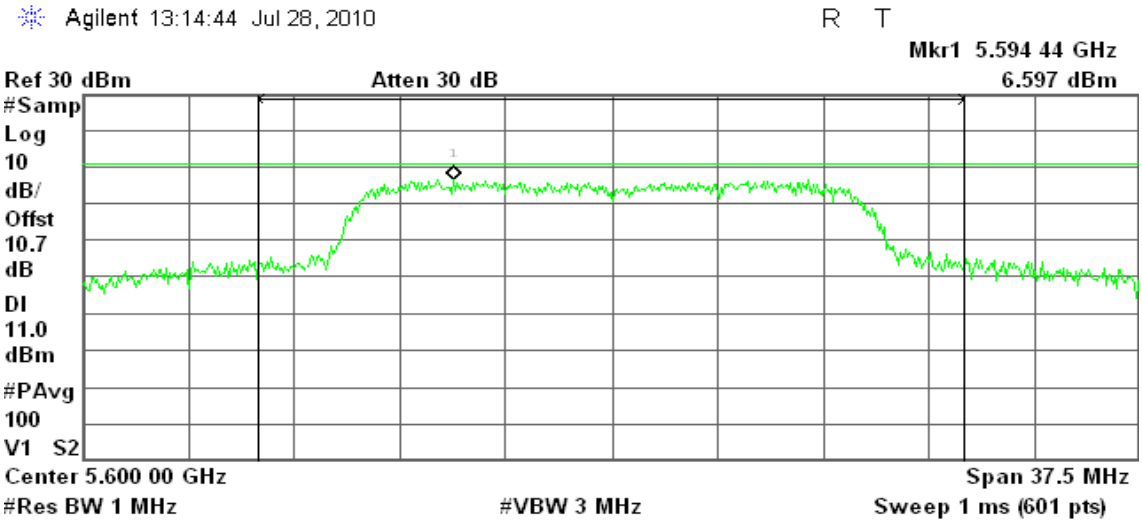
CH Low



Channel Power
16.66 dBm / 20.0000 MHz

Power Spectral Density
-56.35 dBm/Hz

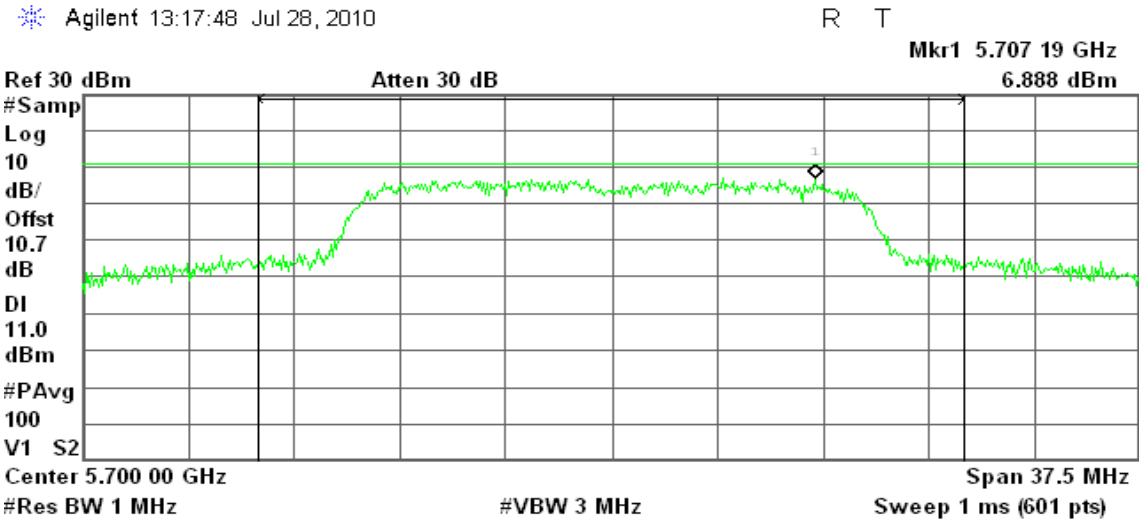
CH Mid



Channel Power
15.90 dBm / 25.0000 MHz

Power Spectral Density
-58.08 dBm/Hz

CH High

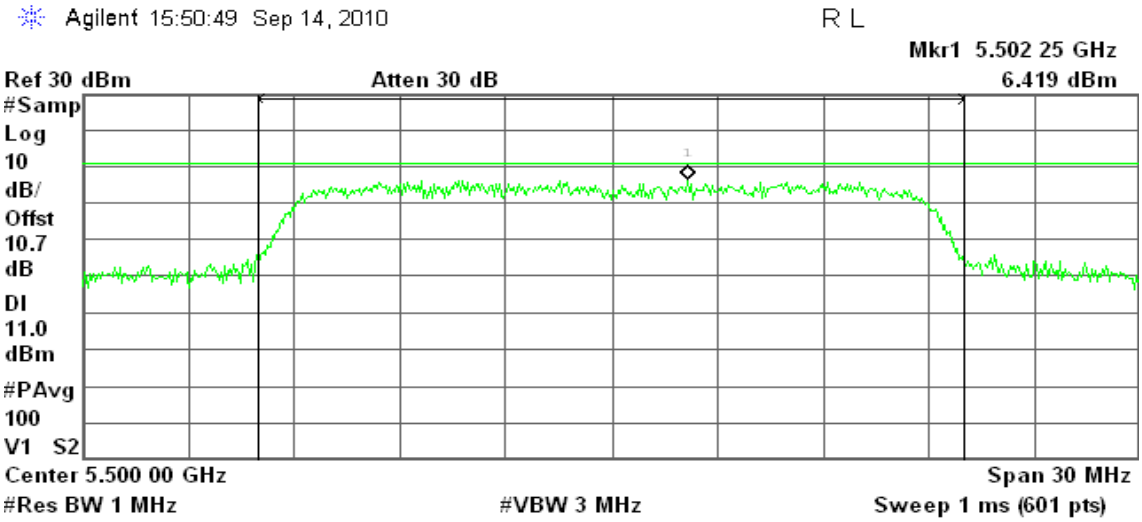


Channel Power
16.85 dBm / 25.0000 MHz

Power Spectral Density
-57.13 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 1

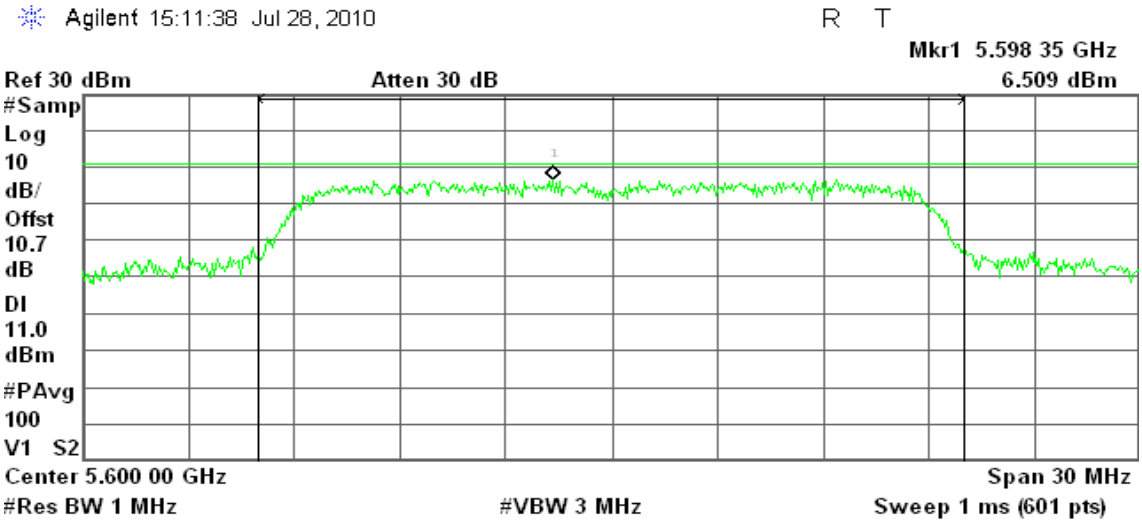
CH Low



Channel Power
15.70 dBm / 20.0000 MHz

Power Spectral Density
-57.27 dBm/Hz

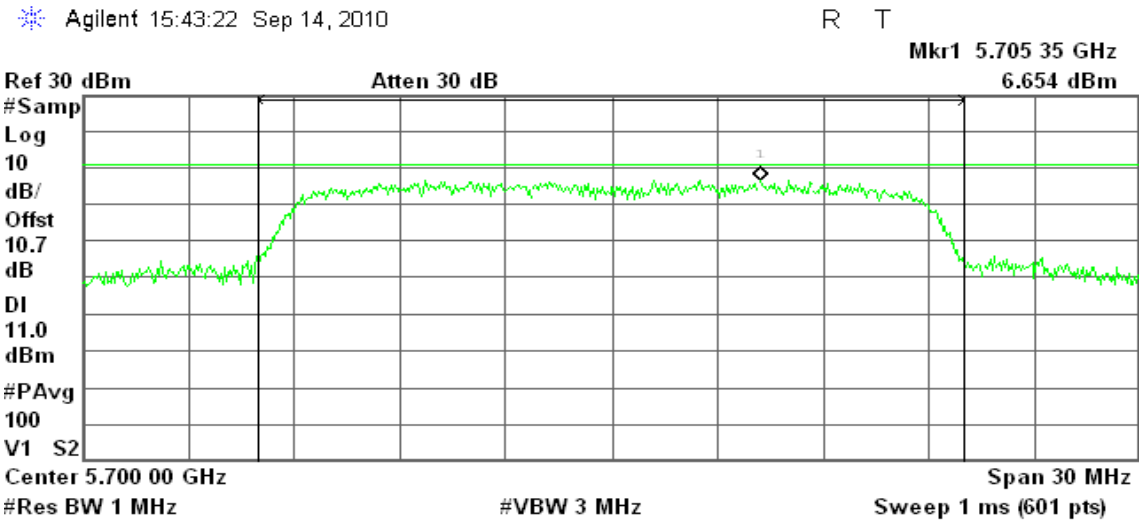
CH Mid



Channel Power
16.64 dBm / 20.0000 MHz

Power Spectral Density
-56.37 dBm/Hz

CH High

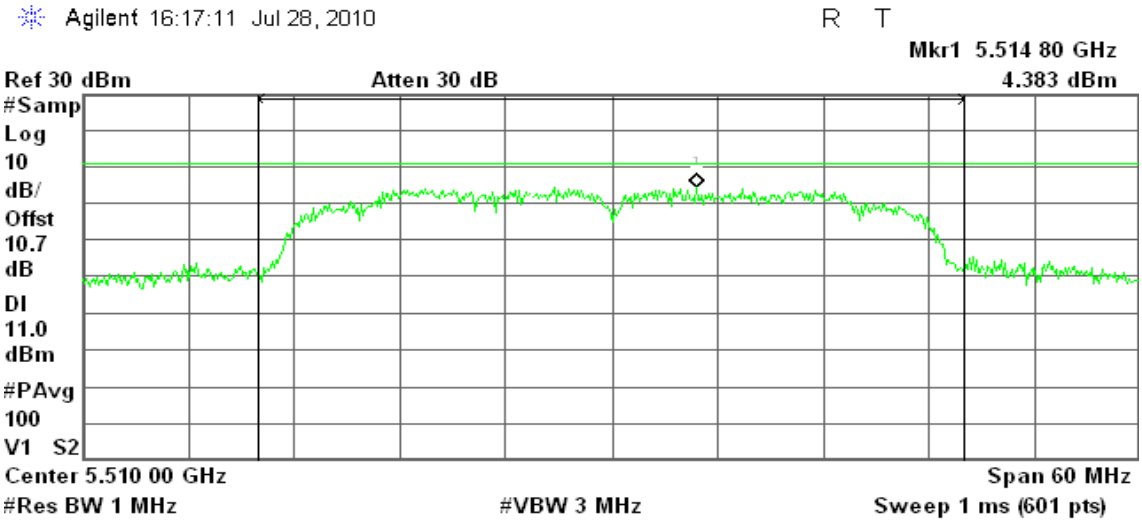


Channel Power
16.70 dBm / 20.0000 MHz

Power Spectral Density
-57.23 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 0

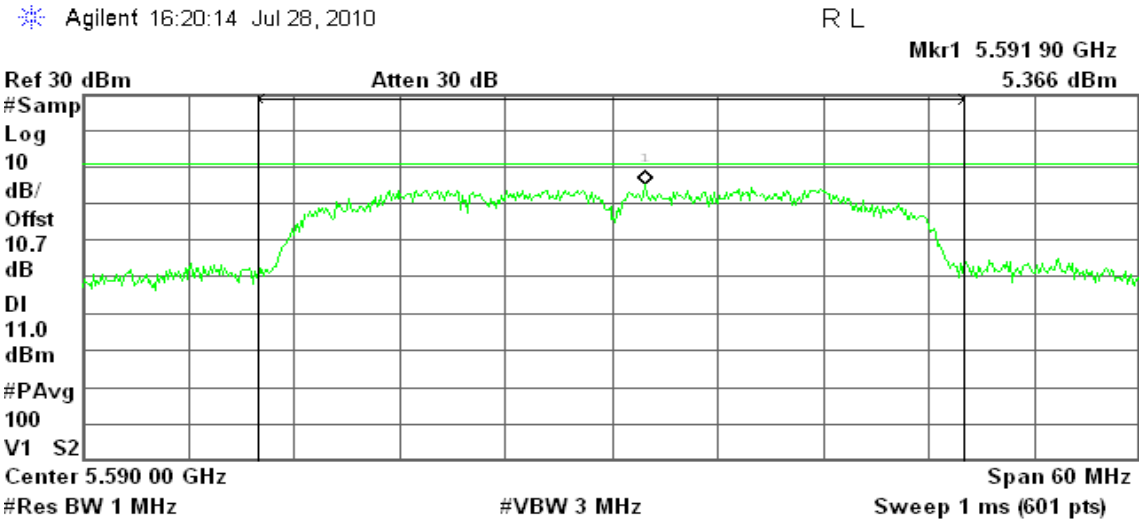
CH Low



Channel Power
16.69 dBm / 40.0000 MHz

Power Spectral Density
-59.33 dBm/Hz

CH Mid



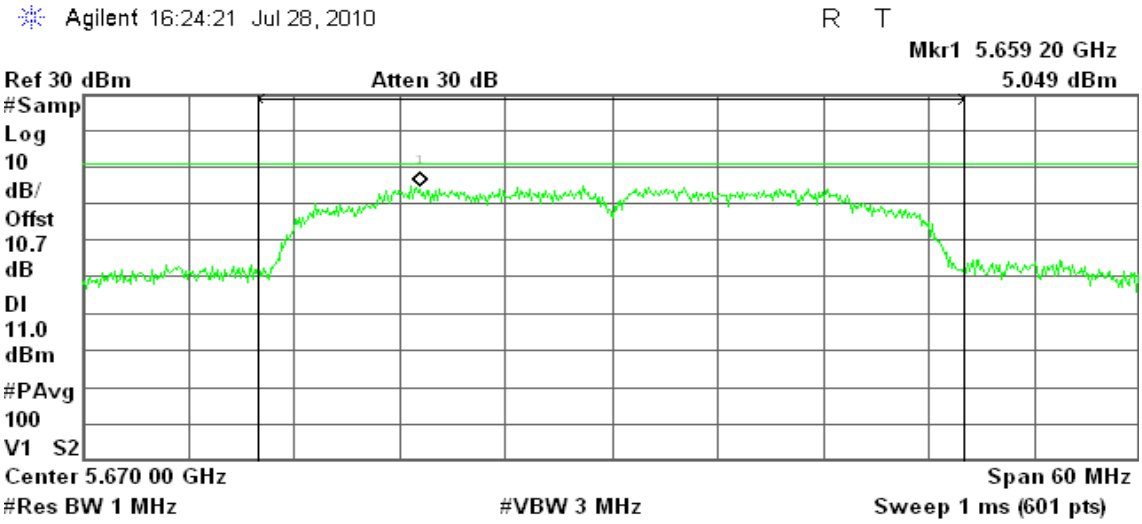
Channel Power

16.37 dBm / 40.0000 MHz

Power Spectral Density

-59.65 dBm/Hz

CH High



Channel Power

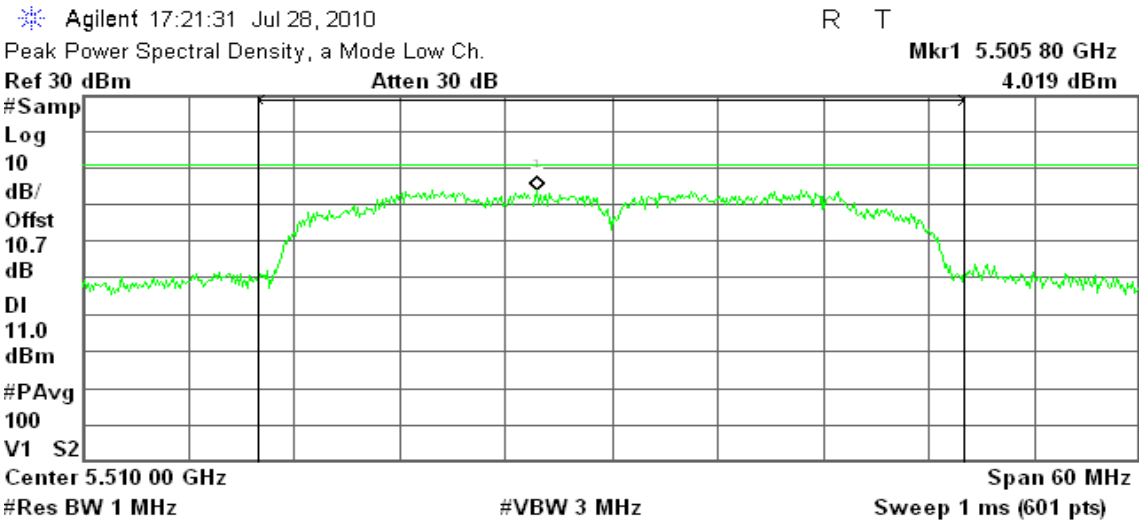
16.73 dBm / 40.0000 MHz

Power Spectral Density

-59.29 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 1

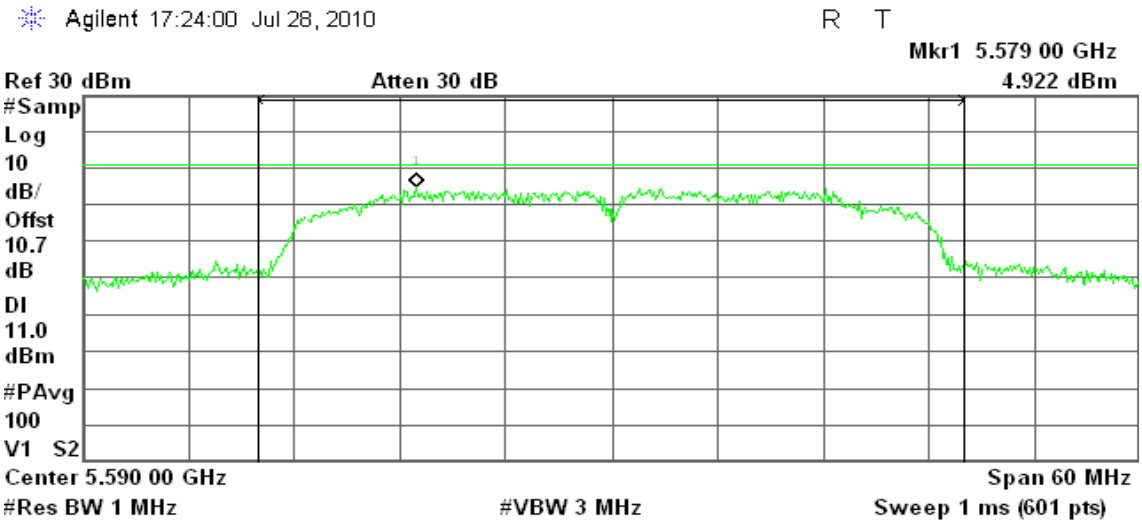
CH Low



Channel Power
16.37 dBm / 40.0000 MHz

Power Spectral Density
-59.66 dBm/Hz

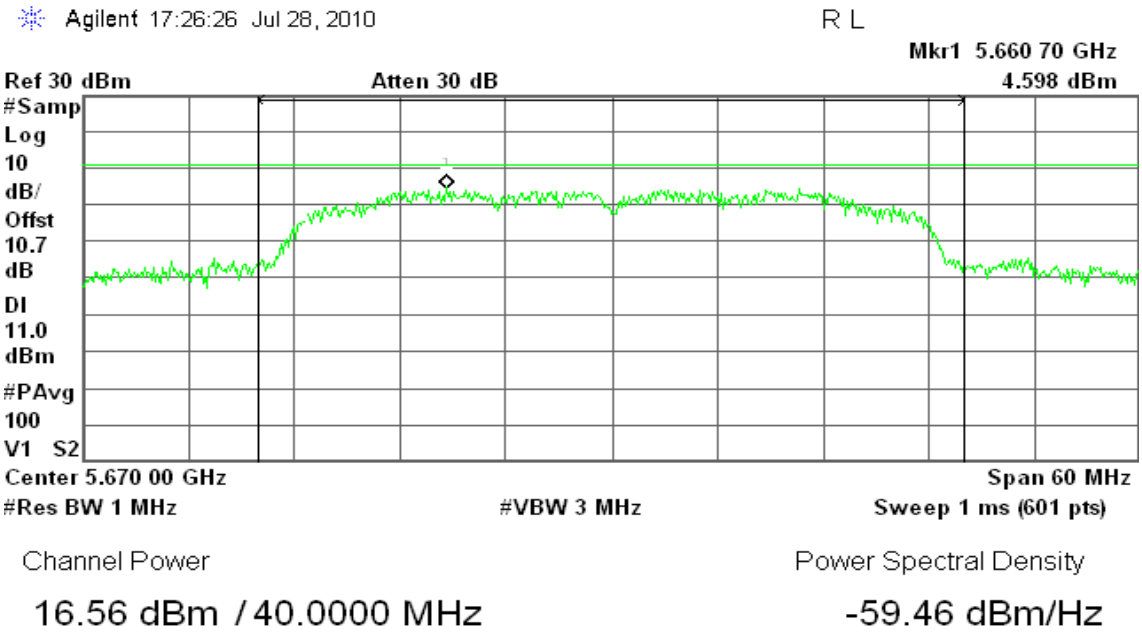
CH Mid



Channel Power
16.65 dBm / 40.0000 MHz

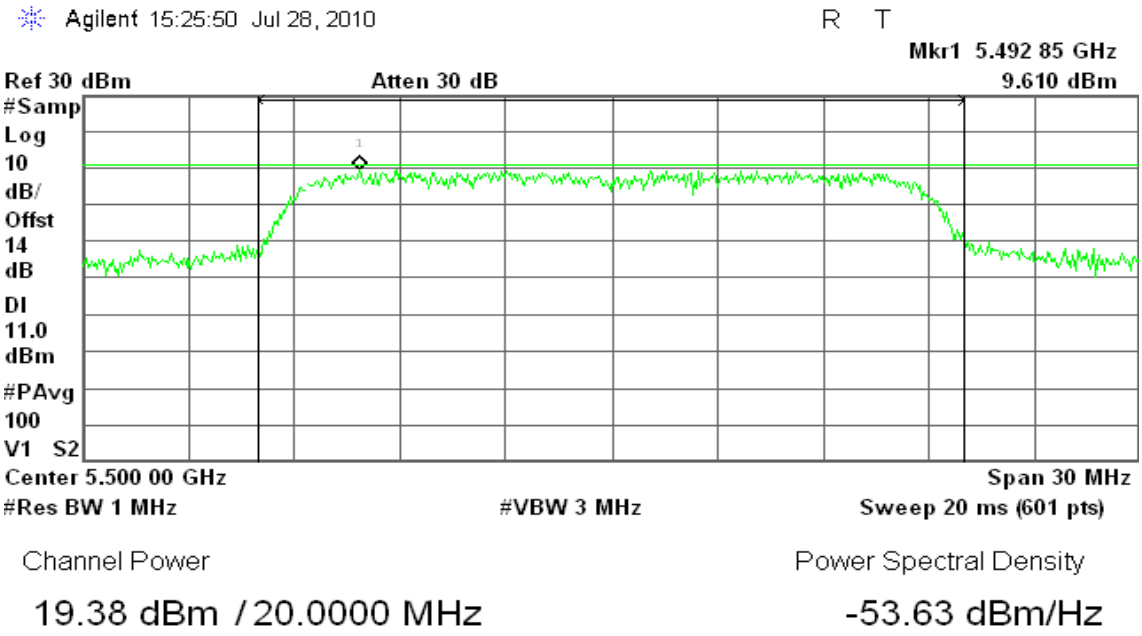
Power Spectral Density
-59.37 dBm/Hz

CH High

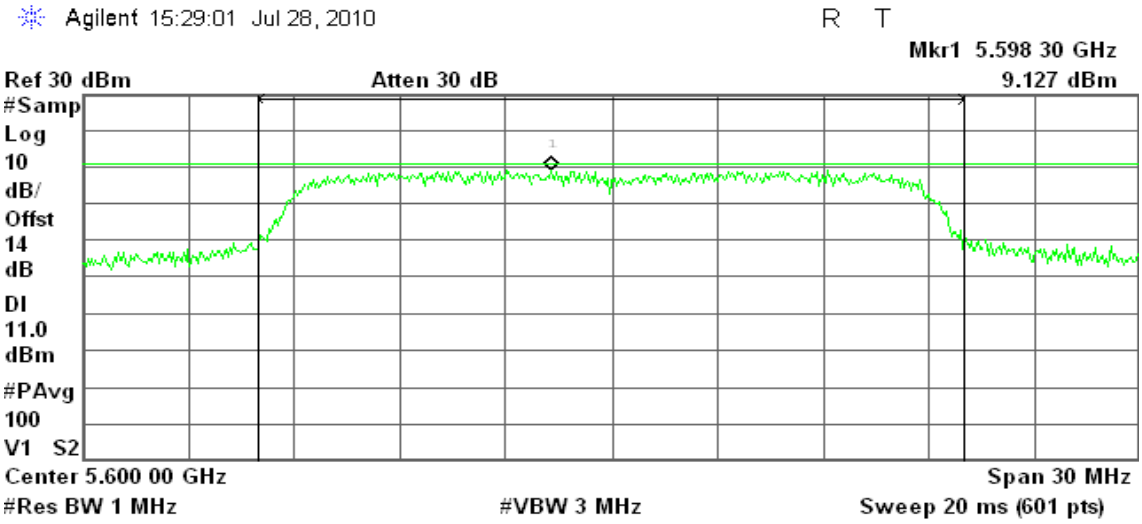


Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz with combiner:

CH Low



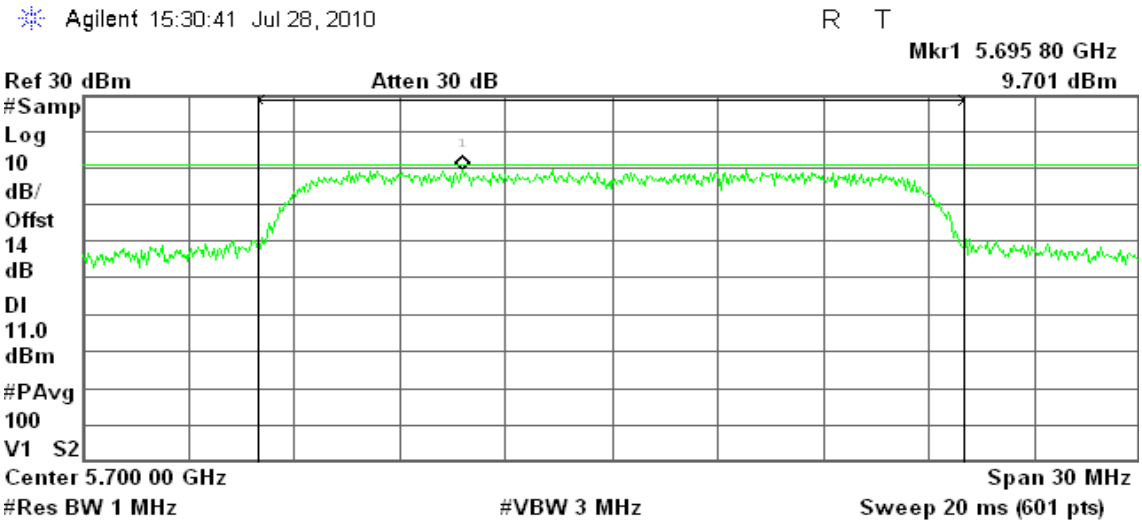
CH Mid



Channel Power
19.85 dBm / 20.0000 MHz

Power Spectral Density
-53.16 dBm/Hz

CH High

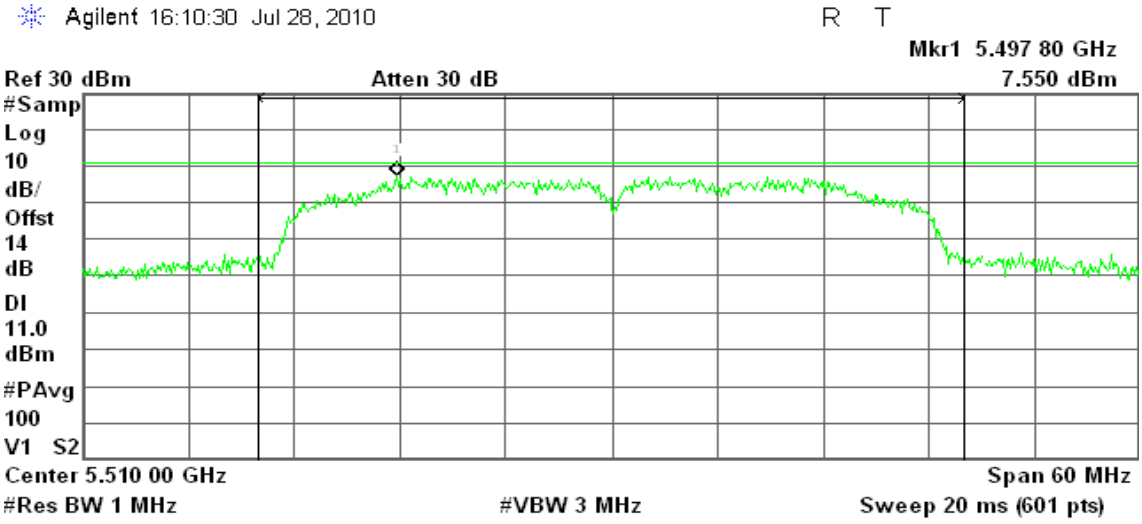


Channel Power
19.20 dBm / 20.0000 MHz

Power Spectral Density
-53.81 dBm/Hz

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz with combiner:

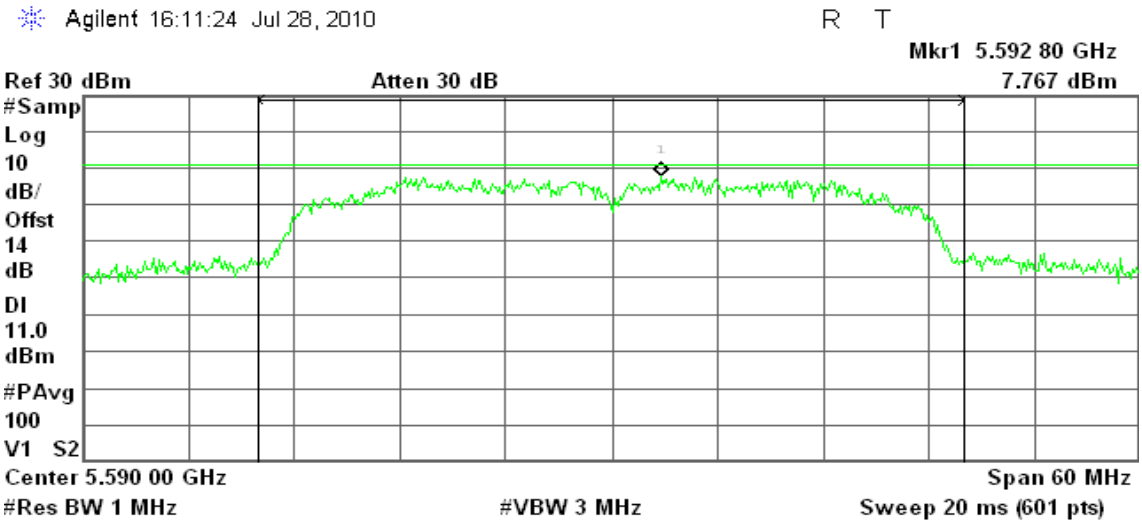
CH Low



Channel Power
19.96 dBm / 40.0000 MHz

Power Spectral Density
-56.06 dBm/Hz

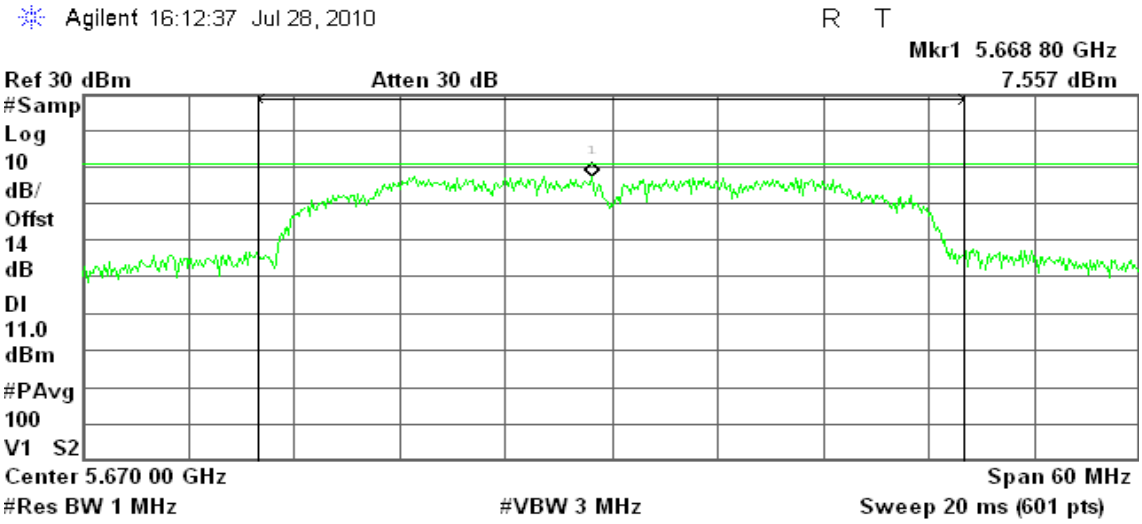
CH Mid



Channel Power
19.90 dBm / 40.0000 MHz

Power Spectral Density
-56.12 dBm/Hz

CH High



Channel Power

20.32 dBm / 40.0000 MHz

Power Spectral Density

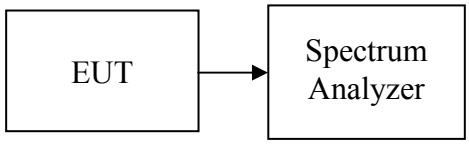
-55.71 dBm/Hz

7.5 PEAK EXCURSION

LIMIT

According to §15.407(a)(6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

Test Configuration



TEST PROCEDURE

The test is performed in accordance with <FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices> – Part 15, Subpart E, August 2002.

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 spectrum.
3. Trace A, Set RBW =1MHz, VBW = 3MHz, Span >26dB bandwidth, Max. hold. Trace B, Set RBW =1MHz, VBW = 3MHz, Span >26dB bandwidth, Setup sample detector and power average mode, to scan 100 times with Average.
4. Delta Mark trace A Maximum frequency and trace B same frequency.
5. Repeat the above procedure until measurements for all frequencies were complete.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	7.57	13.00	-5.43	PASS
Mid	5220	8.10	13.00	-4.90	PASS
High	5240	8.15	13.00	-4.85	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 0

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	9.86	13.00	-3.14	PASS
Mid	5220	9.93	13.00	-3.07	PASS
High	5240	10.77	13.00	-2.23	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	10.72	13.00	-2.28	PASS
Mid	5220	12.13	13.00	-0.87	PASS
High	5240	11.02	13.00	-1.98	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 0

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	11.72	13.00	-1.28	PASS
High	5230	7.57	13.00	-5.43	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	10.17	13.00	-2.83	PASS
High	5230	11.64	13.00	-1.36	PASS

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	9.74	13.00	-3.26	PASS
Mid	5280	9.65	13.00	-3.35	PASS
High	5320	7.38	13.00	-5.62	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	11.32	13.00	-1.68	PASS
Mid	5280	10.18	13.00	-2.82	PASS
High	5320	11.78	13.00	-1.22	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	11.34	13.00	-1.66	PASS
Mid	5280	10.58	13.00	-2.42	PASS
High	5320	11.59	13.00	-1.41	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 0

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5270	10.63	13.00	-2.37	PASS
High	5310	10.43	13.00	-2.57	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5270	11.22	13.00	-1.78	PASS
High	5310	11.39	13.00	-1.61	PASS

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	8.76	13.00	-4.24	PASS
Mid	5600	9.01	13.00	-3.99	PASS
High	5700	9.99	13.00	-3.01	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 0

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	10.93	13.00	-2.07	PASS
Mid	5600	10.68	13.00	-2.32	PASS
High	5700	8.95	13.00	-4.05	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	9.10	13.00	-3.90	PASS
Mid	5600	9.12	13.00	-3.88	PASS
High	5700	10.02	13.00	-2.98	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 0

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5510	9.40	13.00	-3.60	PASS
Mid	5590	10.63	13.00	-2.37	PASS
High	5670	9.18	13.00	-3.82	PASS

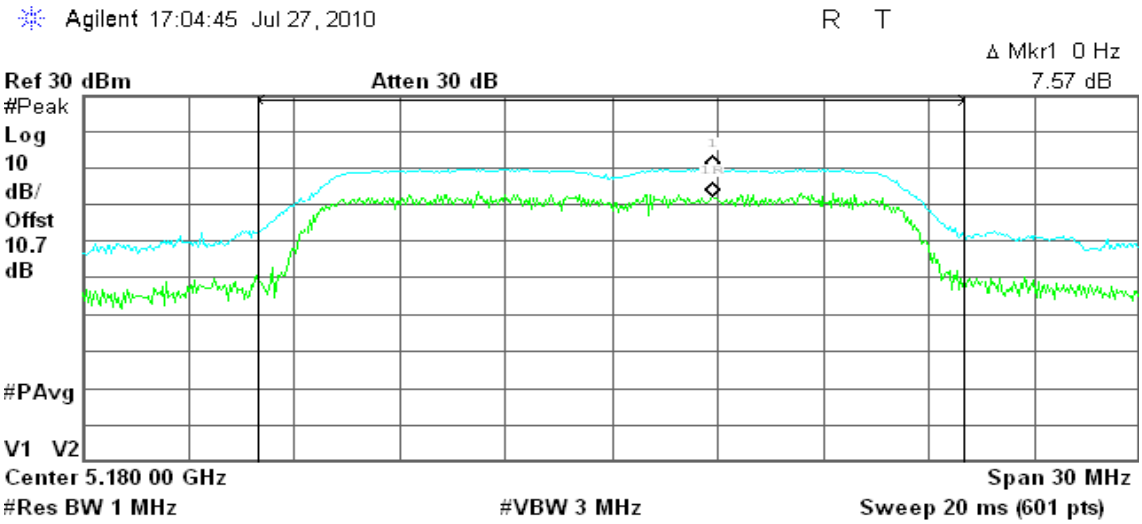
Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5510	9.31	13.00	-3.69	PASS
Mid	5590	8.98	13.00	-4.02	PASS
High	5670	7.49	13.00	-5.51	PASS

Test Plot

IEEE 802.11a mode / 5180 ~ 5240MHz

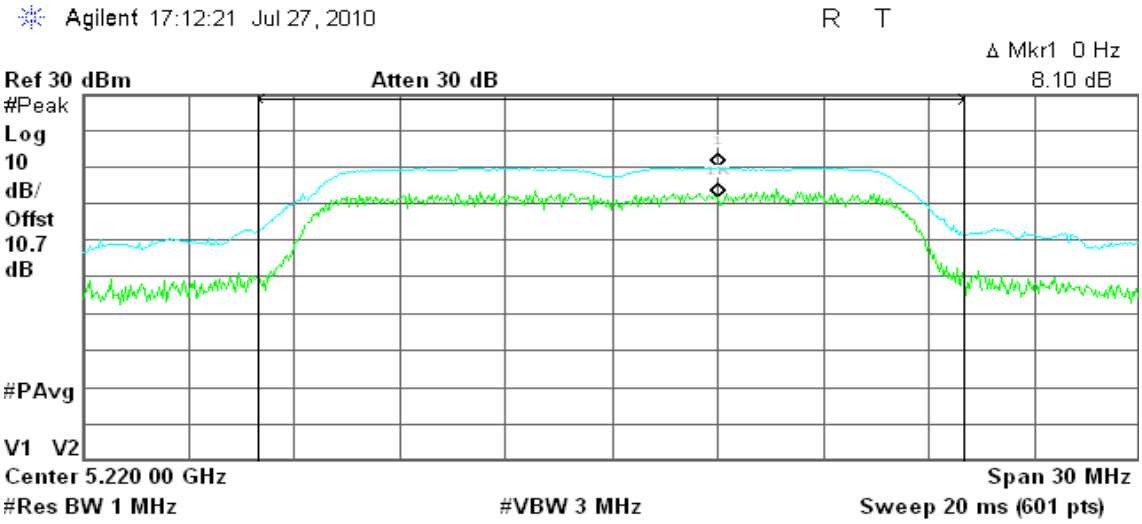
CH Low



Channel Power
19.21 dBm / 20.0000 MHz

Power Spectral Density
-53.80 dBm/Hz

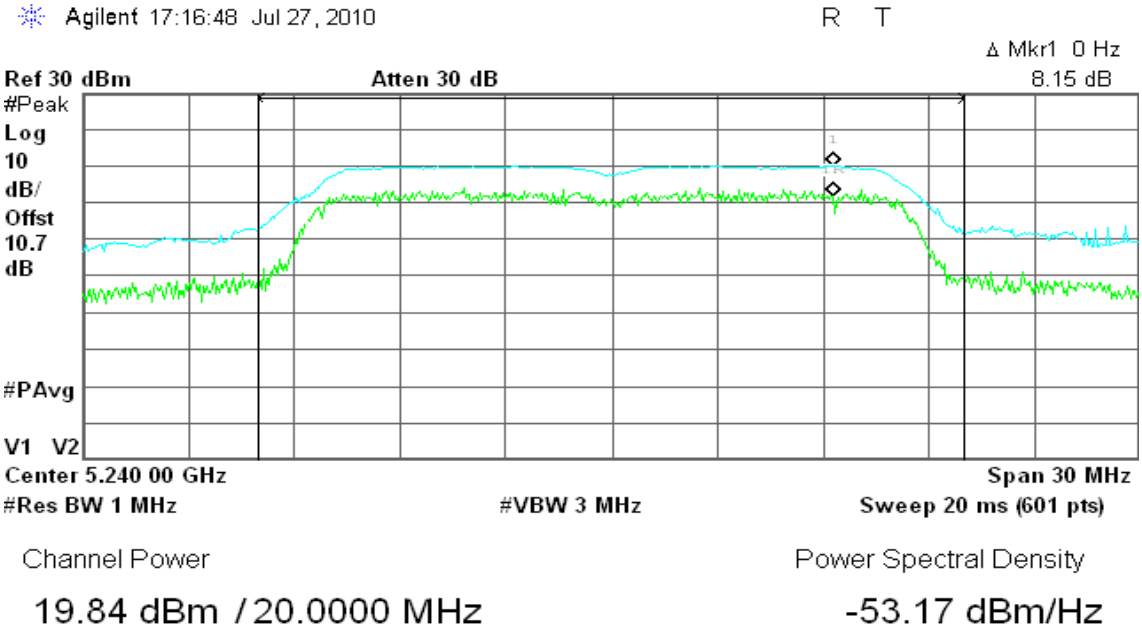
CH Mid



Channel Power
19.70 dBm / 20.0000 MHz

Power Spectral Density
-53.31 dBm/Hz

CH High

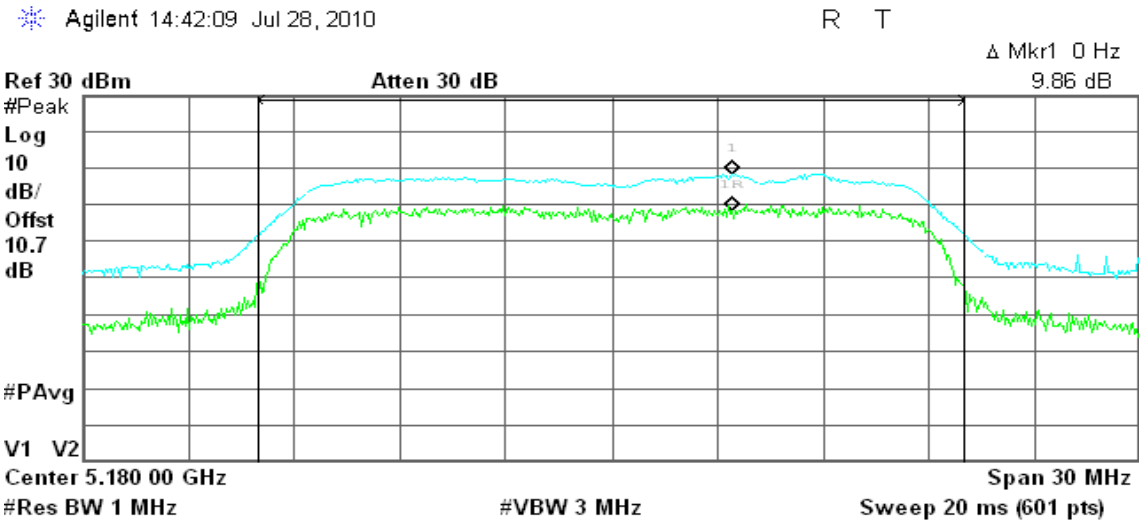


Channel Power
19.84 dBm / 20.0000 MHz

Power Spectral Density
-53.17 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 0

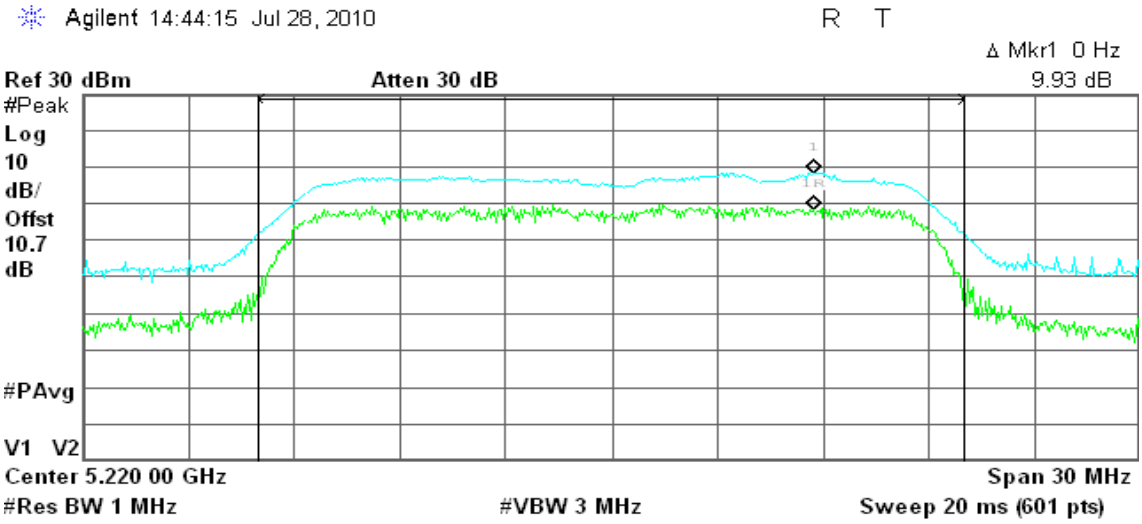
CH Low



Channel Power
16.82 dBm / 20.0000 MHz

Power Spectral Density
-56.19 dBm/Hz

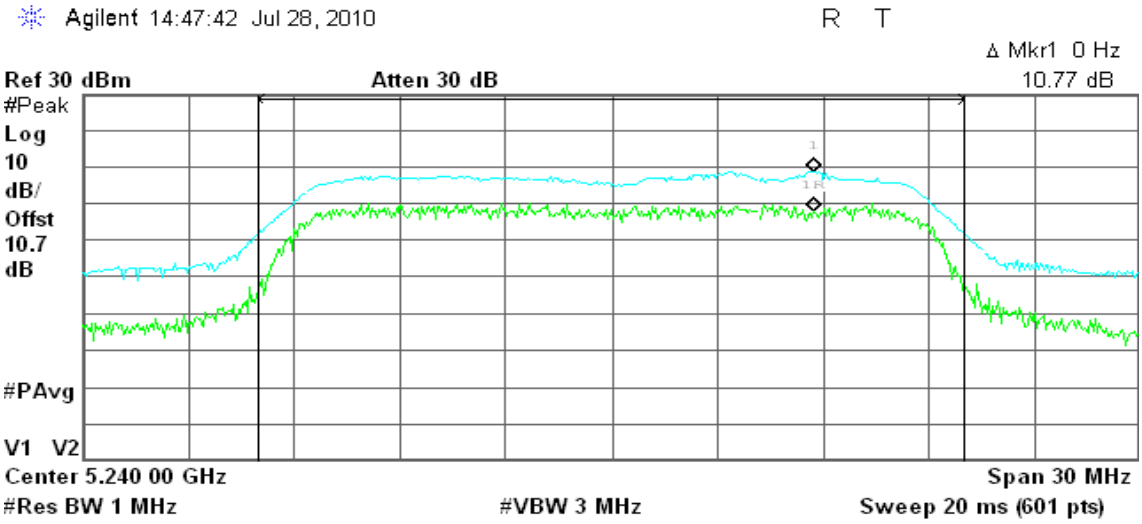
CH Mid



Channel Power
16.73 dBm / 20.0000 MHz

Power Spectral Density
-56.28 dBm/Hz

CH High

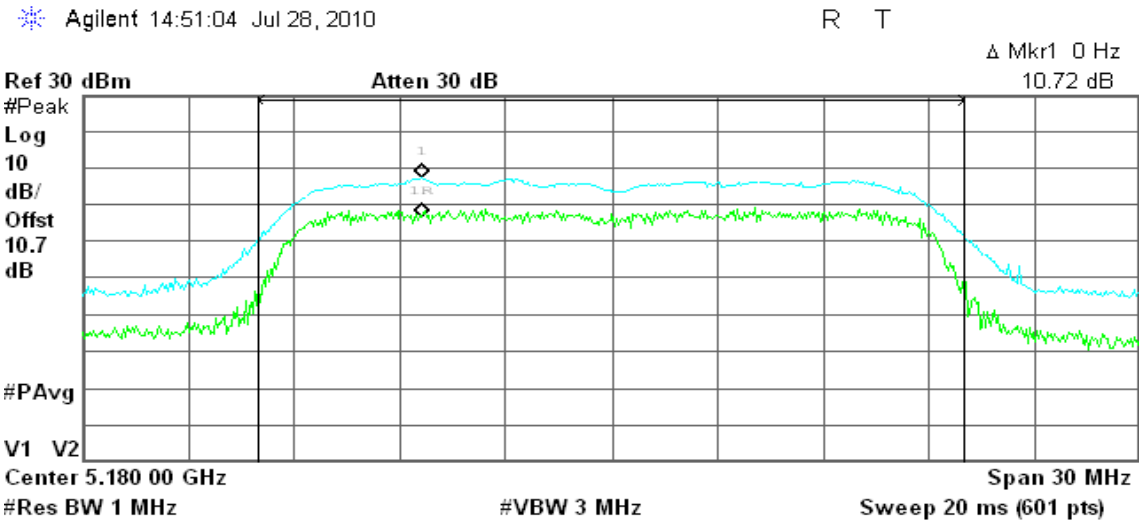


Channel Power
16.98 dBm / 20.0000 MHz

Power Spectral Density
-56.03 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1

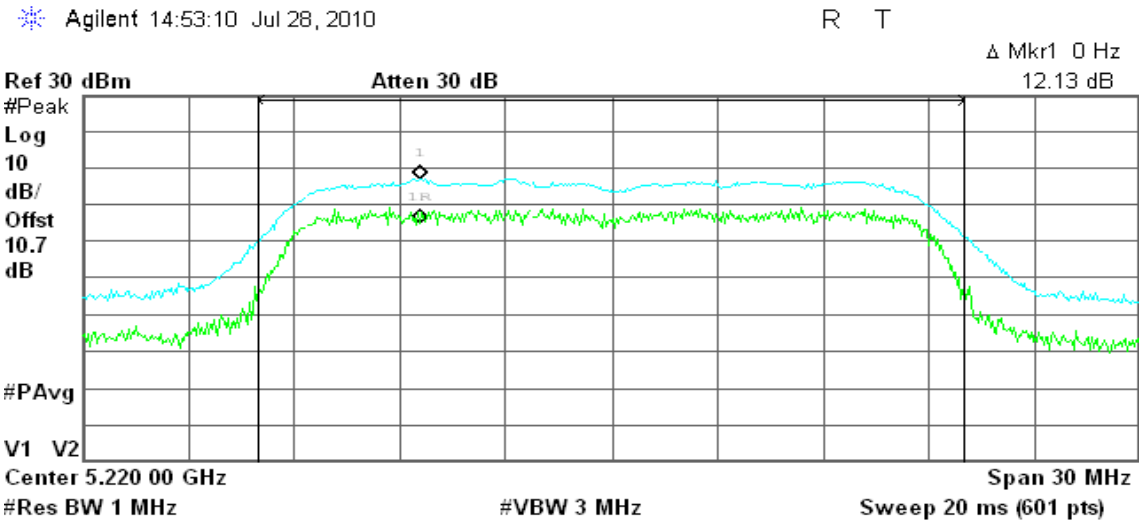
CH Low



Channel Power
15.96 dBm / 20.0000 MHz

Power Spectral Density
-57.05 dBm/Hz

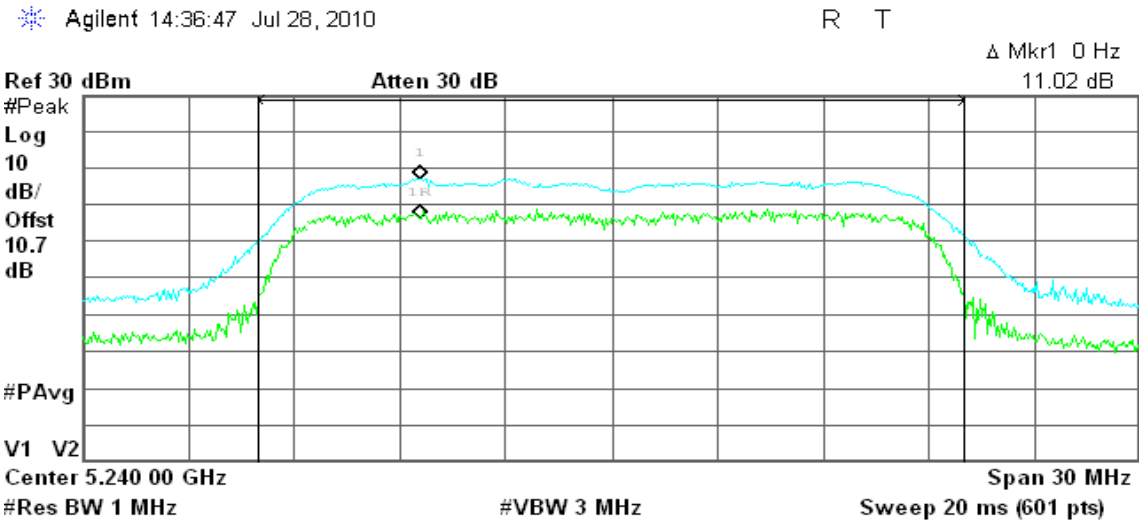
CH Mid



Channel Power
15.81 dBm / 20.0000 MHz

Power Spectral Density
-57.20 dBm/Hz

CH High

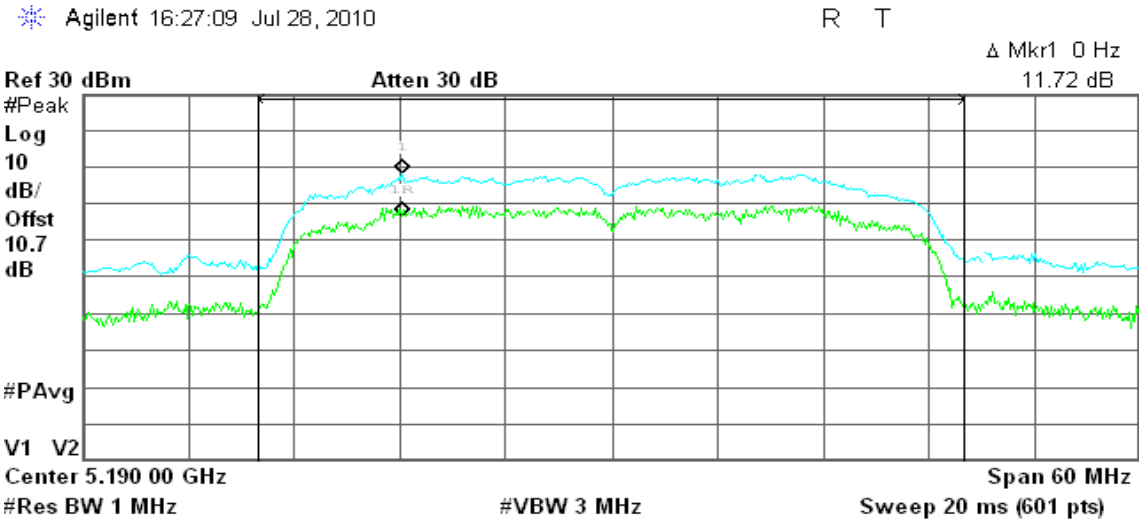


Channel Power
16.22 dBm / 20.0000 MHz

Power Spectral Density
-56.79 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 0

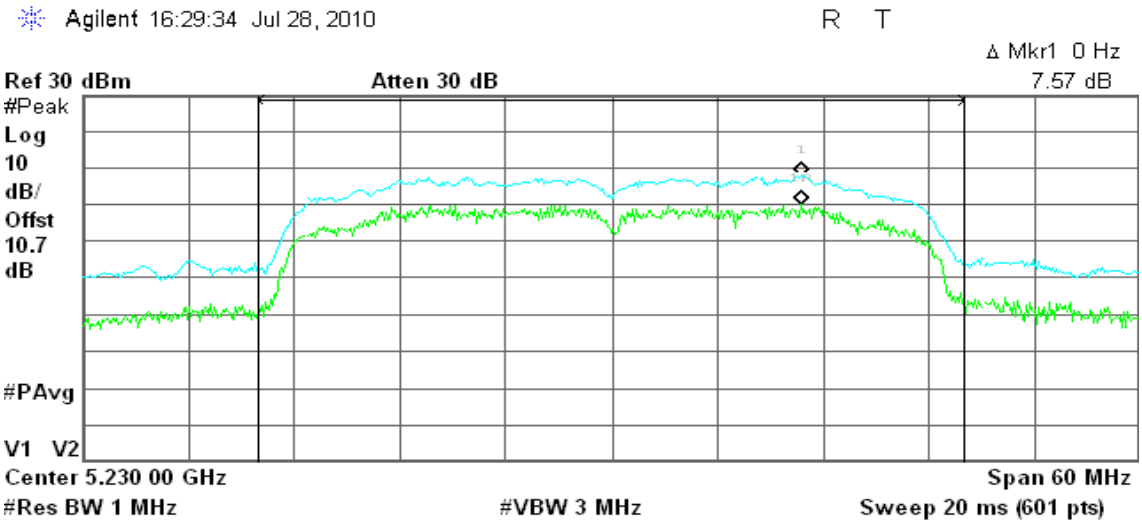
CH Low



Channel Power
18.90 dBm / 40.0000 MHz

Power Spectral Density
-57.12 dBm/Hz

CH High

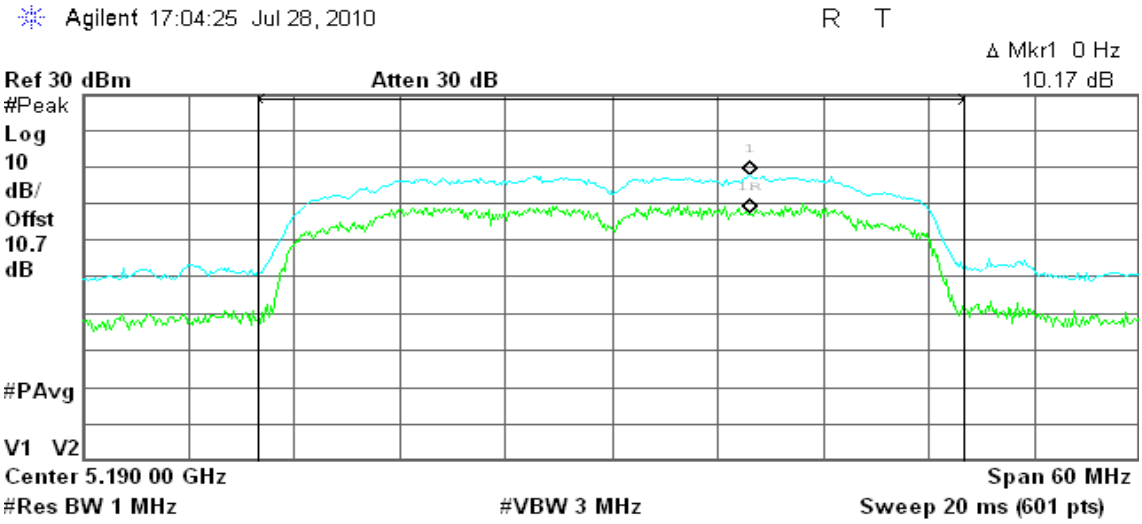


Channel Power
18.73 dBm / 40.0000 MHz

Power Spectral Density
-57.29 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 1

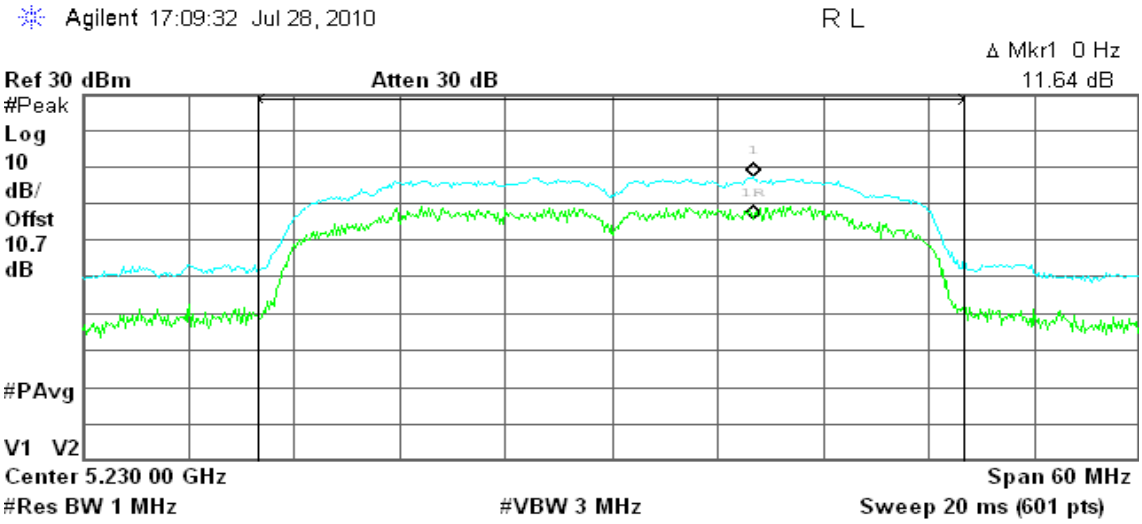
CH Low



Channel Power
19.18 dBm / 40.0000 MHz

Power Spectral Density
-56.84 dBm/Hz

CH High

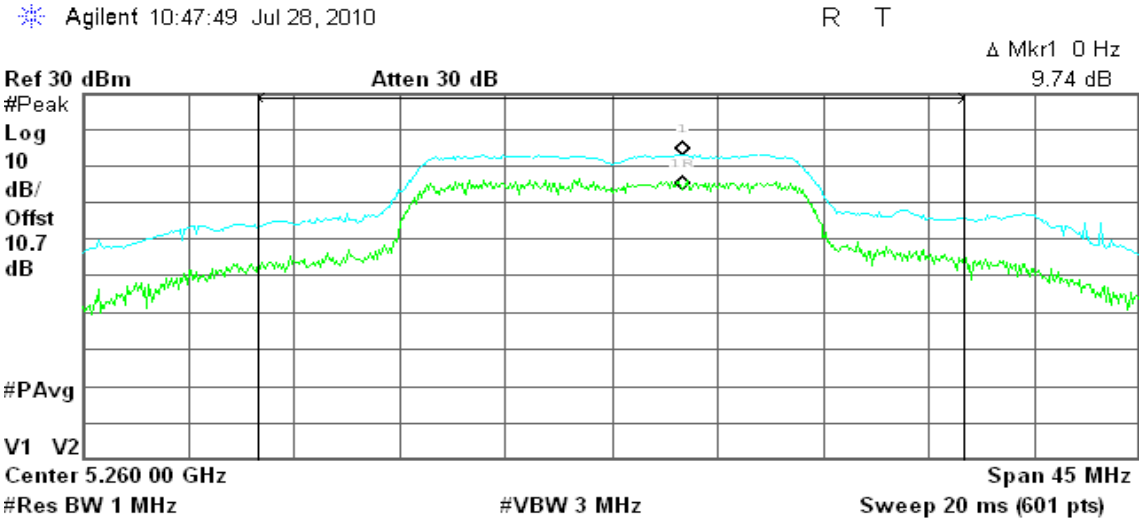


Channel Power
18.33 dBm / 40.0000 MHz

Power Spectral Density
-57.69 dBm/Hz

IEEE 802.11a mode / 5260 ~ 5320MHz

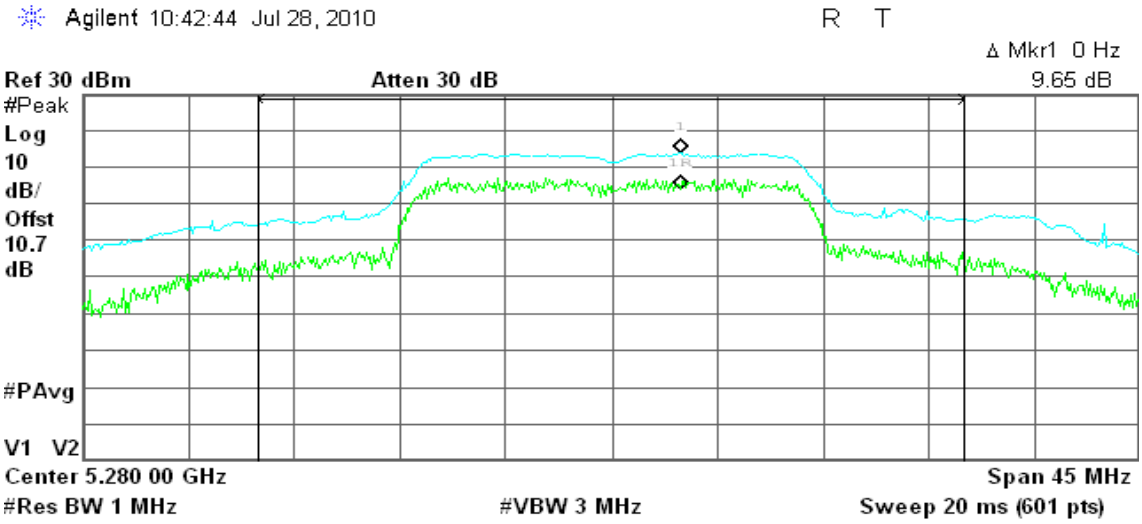
CH Low



Channel Power
22.81 dBm / 30.0000 MHz

Power Spectral Density
-51.96 dBm/Hz

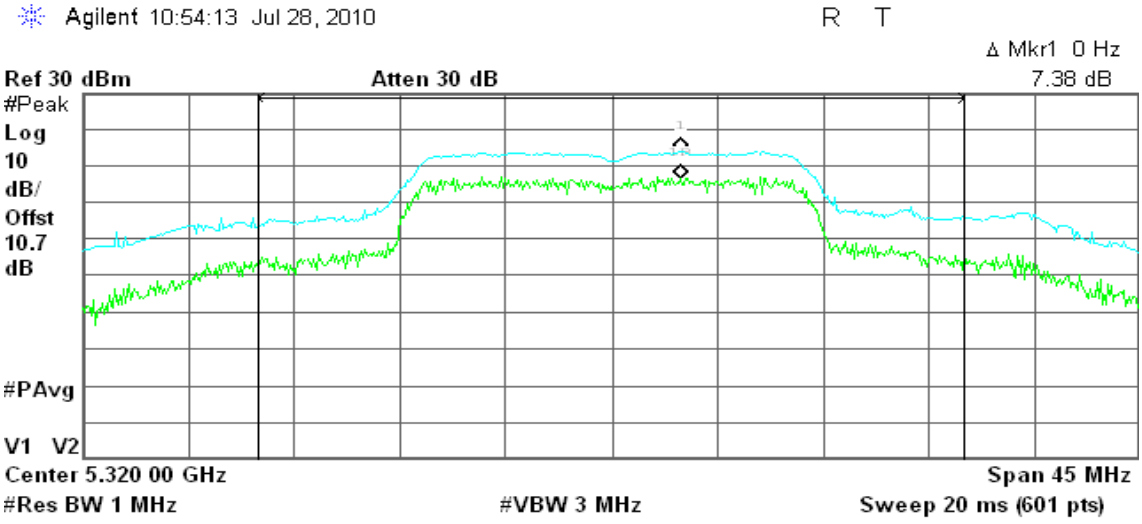
CH Mid



Channel Power
23.12 dBm / 30.0000 MHz

Power Spectral Density
-51.65 dBm/Hz

CH High

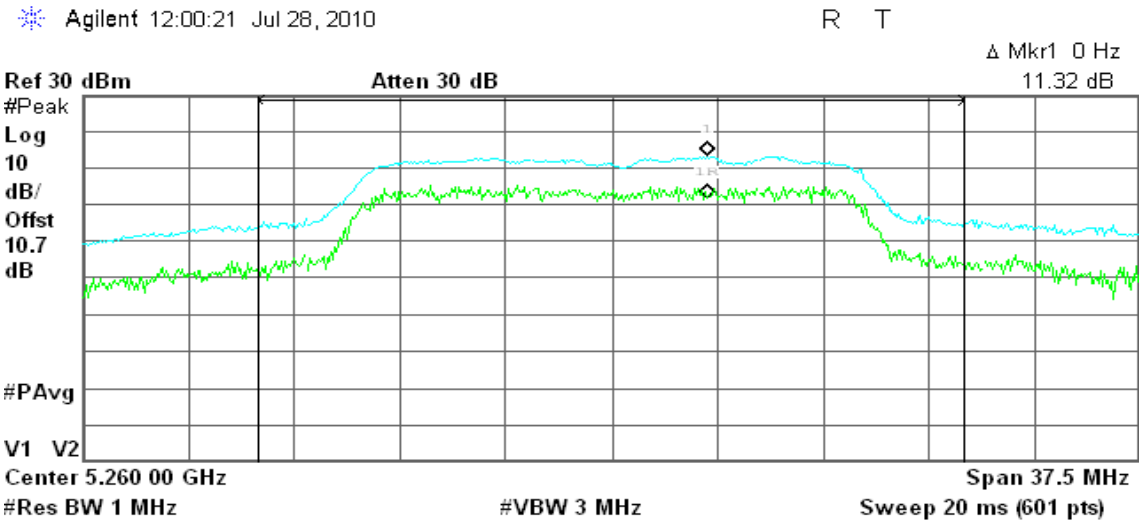


Channel Power
23.12 dBm / 30.0000 MHz

Power Spectral Density
-51.65 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

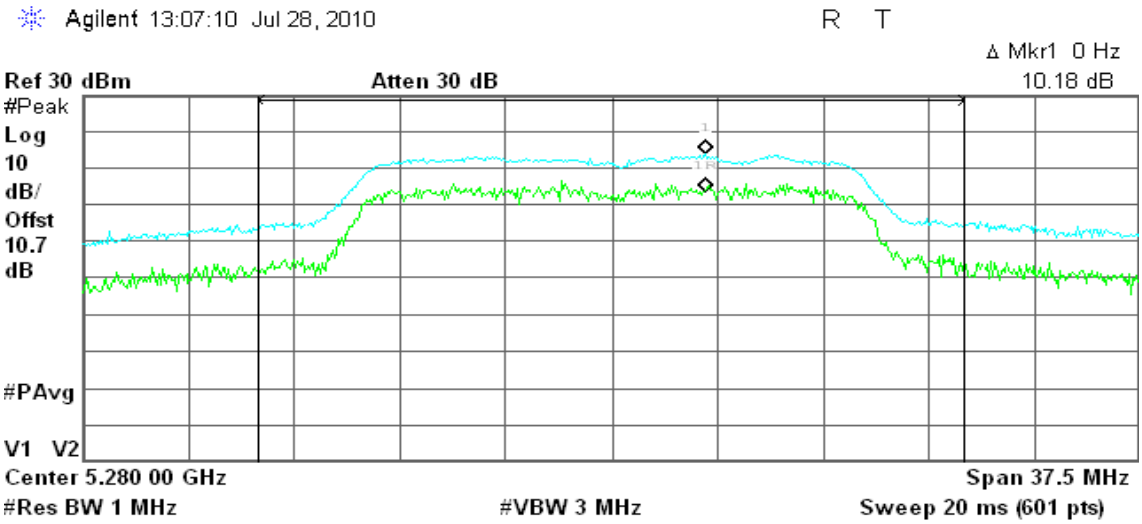
CH Low



Channel Power
21.86 dBm / 25.0000 MHz

Power Spectral Density
-52.12 dBm/Hz

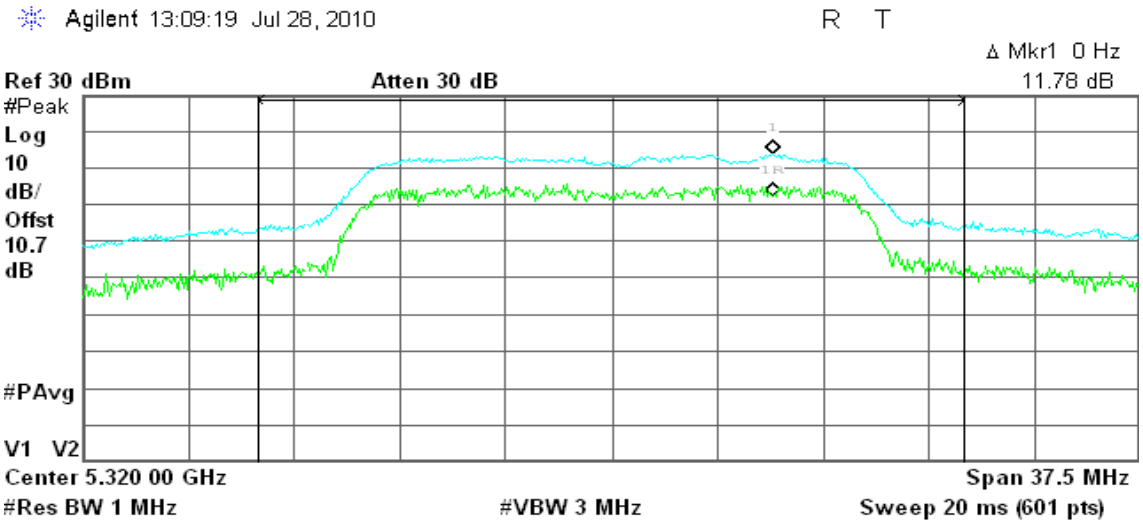
CH Mid



Channel Power
22.19 dBm / 25.0000 MHz

Power Spectral Density
-51.78 dBm/Hz

CH High

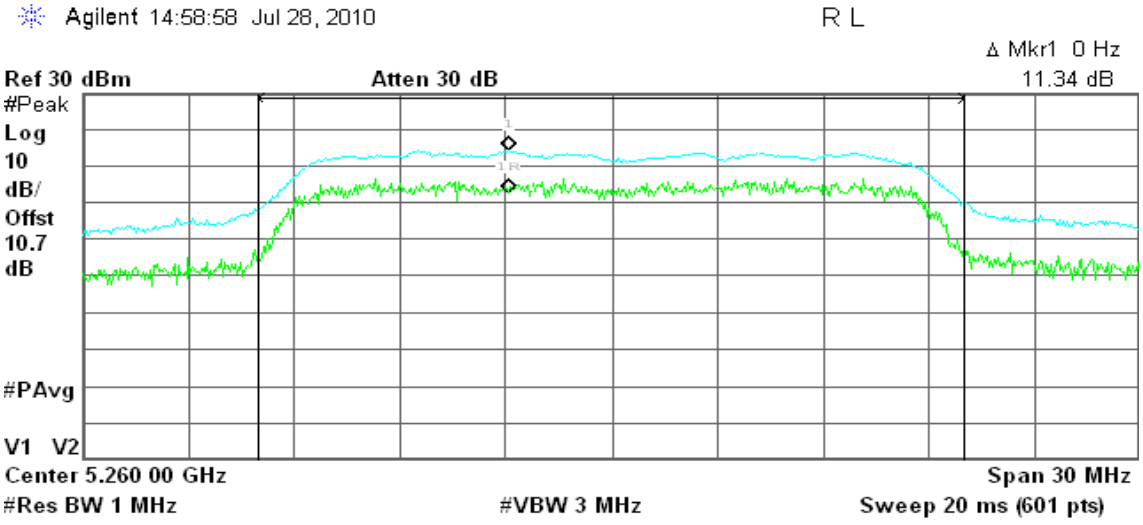


Channel Power
22.33 dBm / 25.0000 MHz

Power Spectral Density
-51.65 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

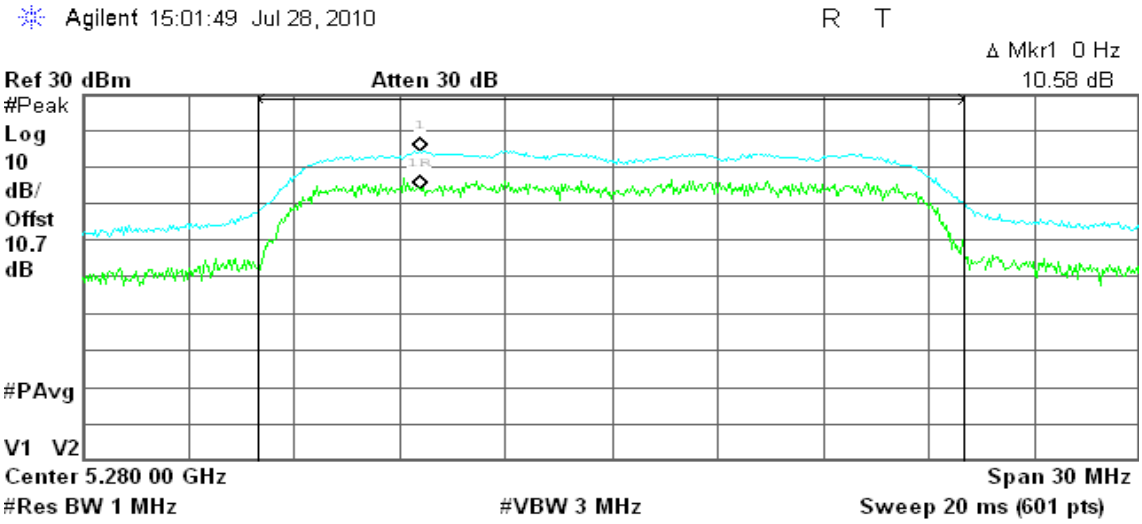
CH Low



Channel Power
23.02 dBm / 20.0000 MHz

Power Spectral Density
-49.99 dBm/Hz

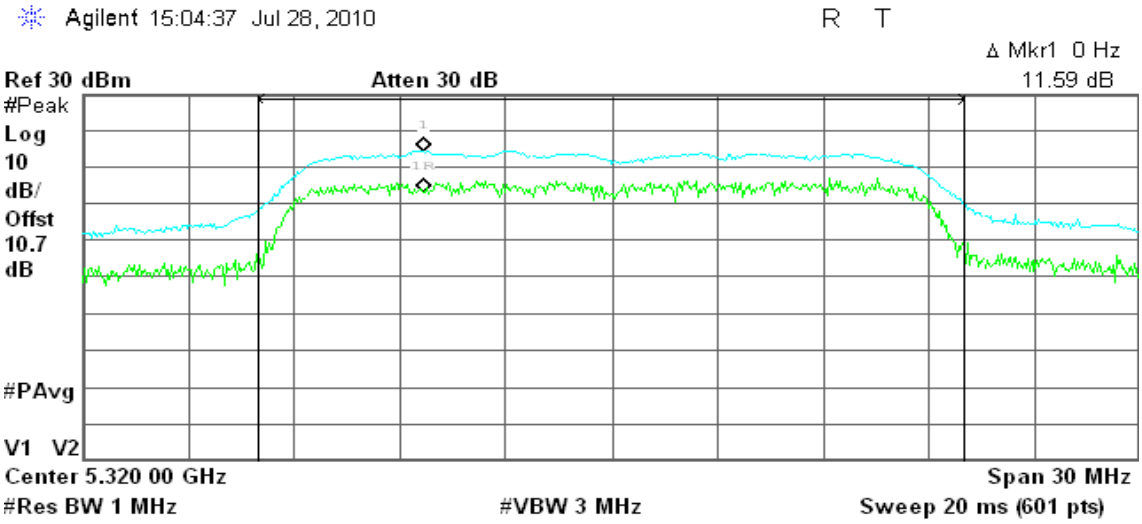
CH Mid



Channel Power
23.32 dBm / 20.0000 MHz

Power Spectral Density
-49.69 dBm/Hz

CH High

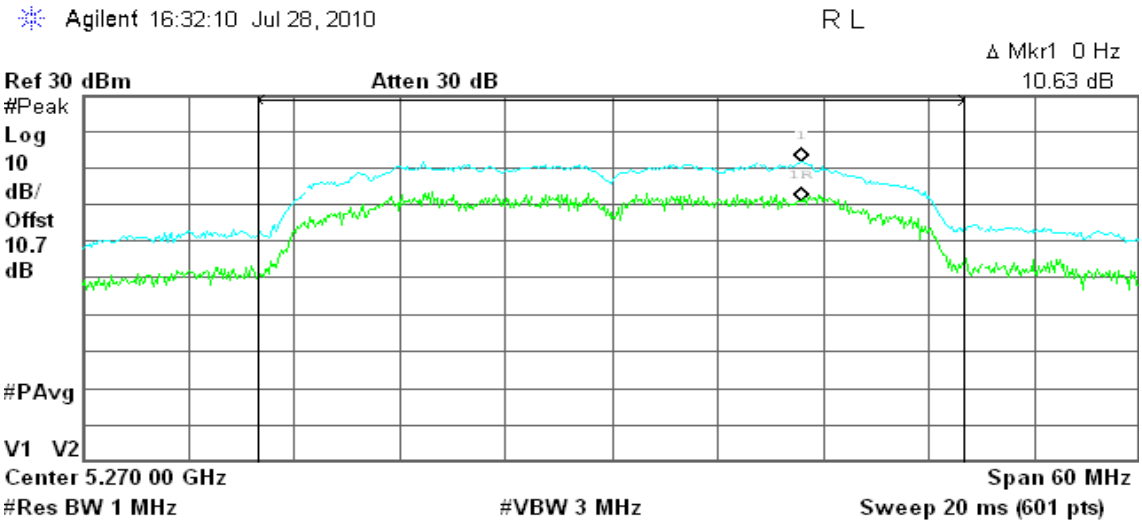


Channel Power
23.42 dBm / 20.0000 MHz

Power Spectral Density
-49.59 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 0

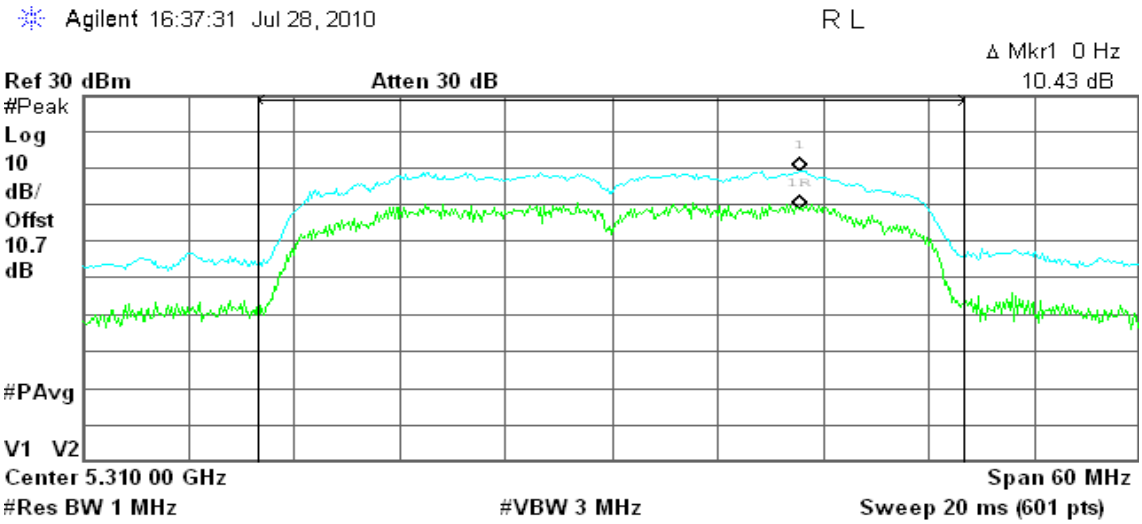
CH Low



Channel Power
22.53 dBm / 40.0000 MHz

Power Spectral Density
-53.49 dBm/Hz

CH High

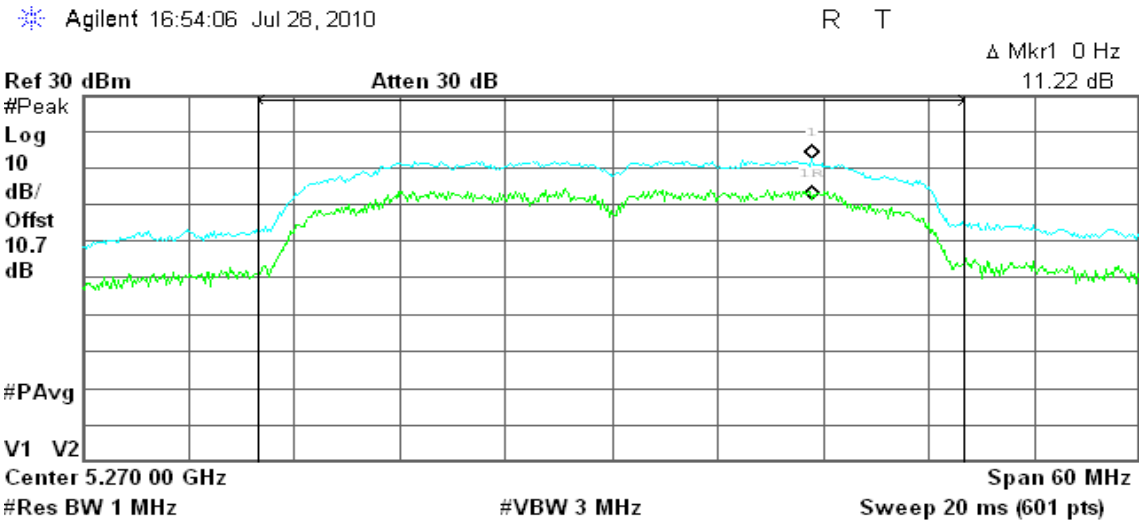


Channel Power
19.98 dBm / 40.0000 MHz

Power Spectral Density
-56.04 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 1

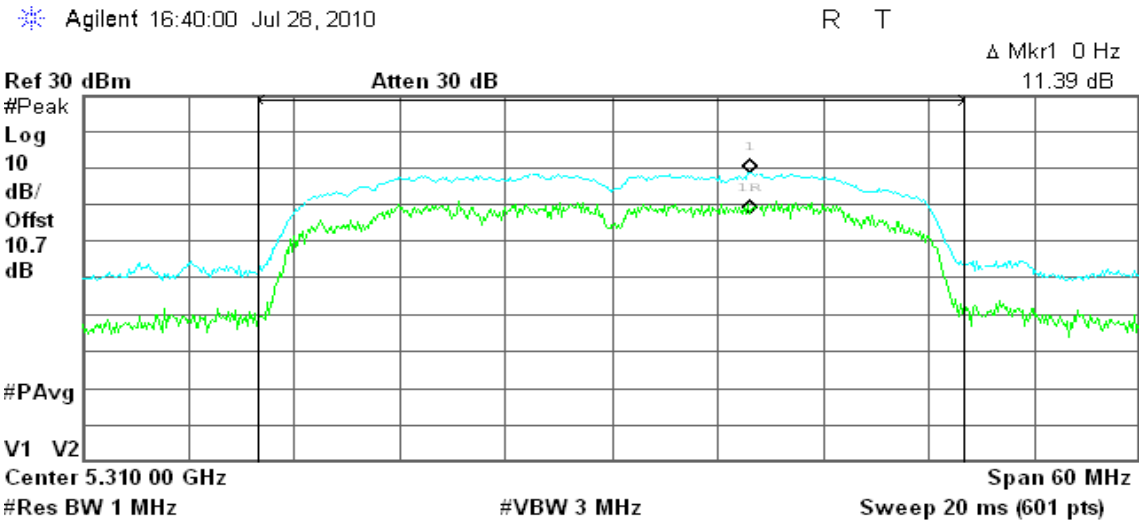
CH Low



Channel Power
23.77 dBm / 40.0000 MHz

Power Spectral Density
-52.25 dBm/Hz

CH High

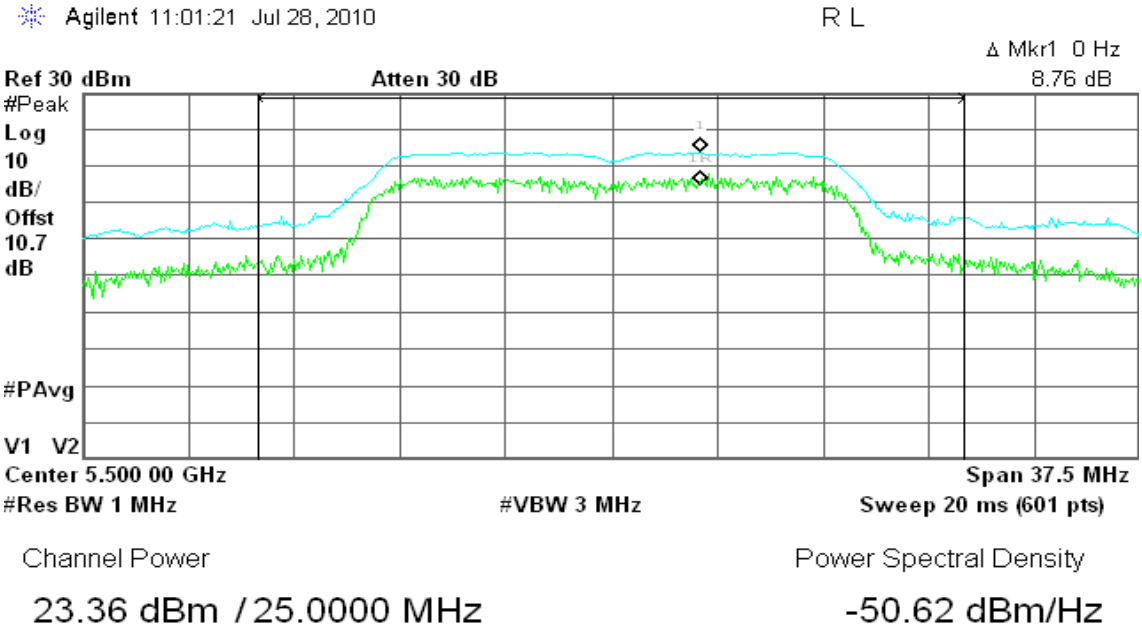


Channel Power
20.36 dBm / 40.0000 MHz

Power Spectral Density
-55.66 dBm/Hz

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

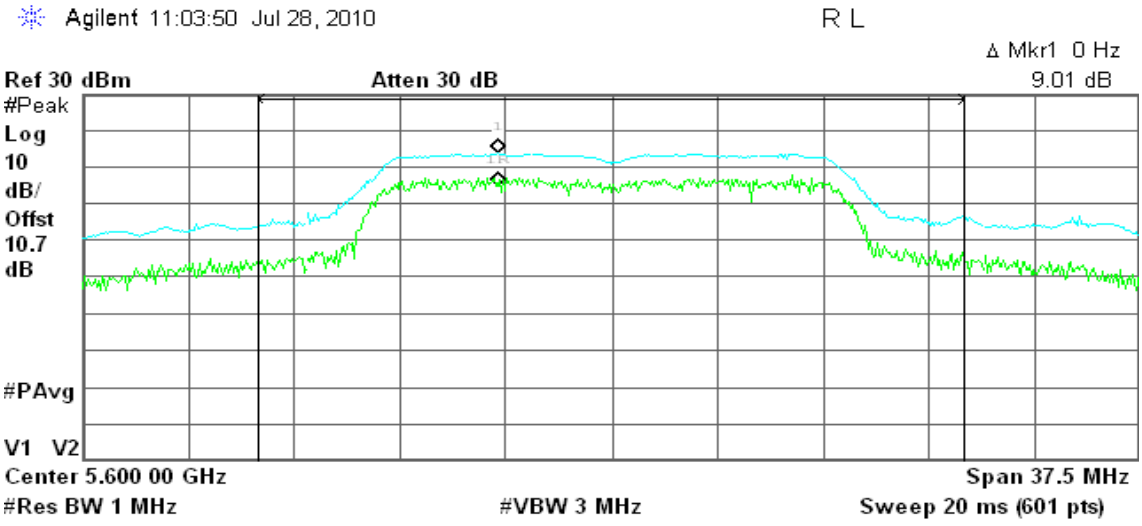
CH Low



Channel Power
23.36 dBm / 25.0000 MHz

Power Spectral Density
-50.62 dBm/Hz

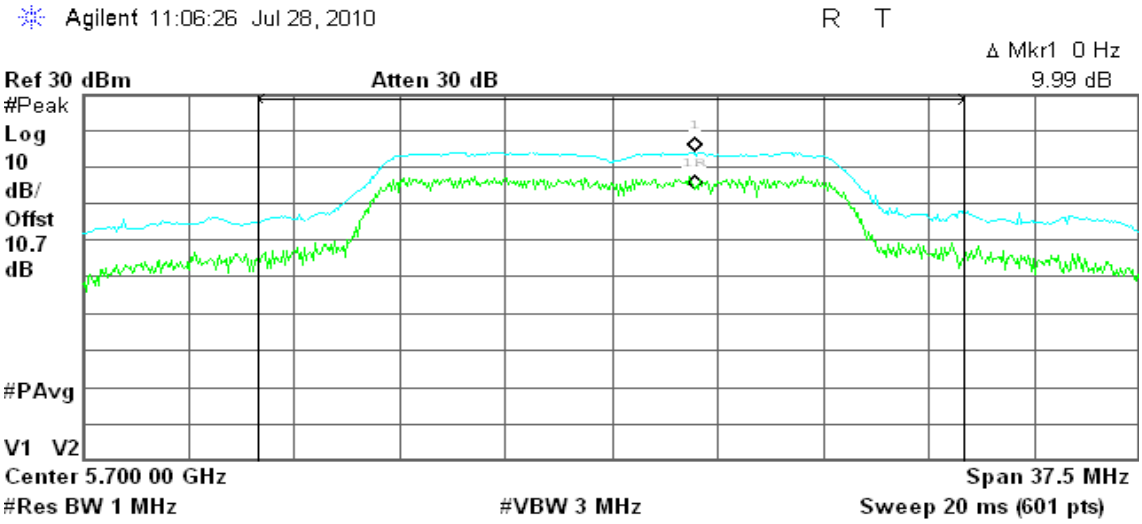
CH Mid



Channel Power
23.42 dBm / 25.0000 MHz

Power Spectral Density
-50.56 dBm/Hz

CH High

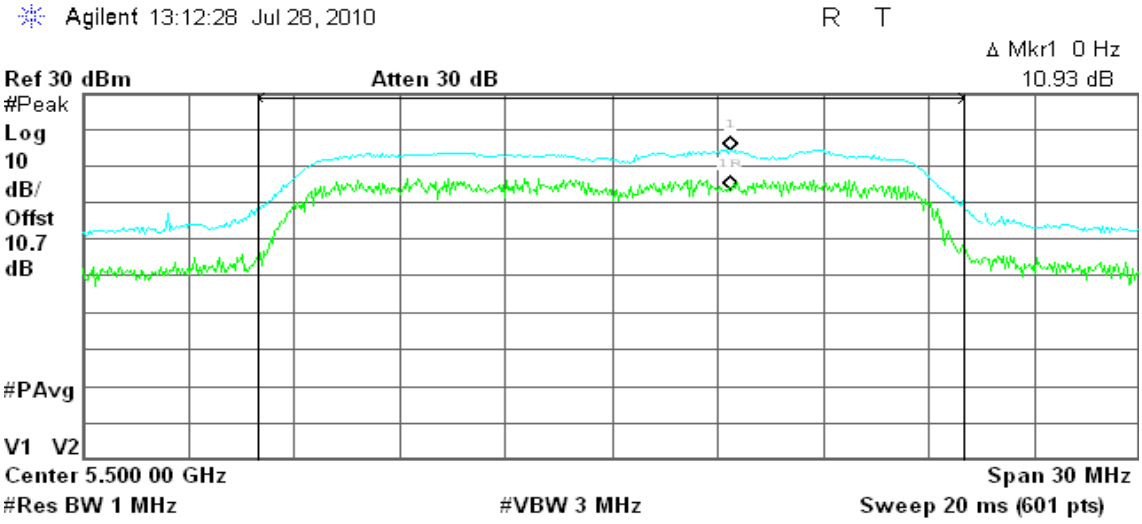


Channel Power
23.40 dBm / 25.0000 MHz

Power Spectral Density
-50.58 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 0

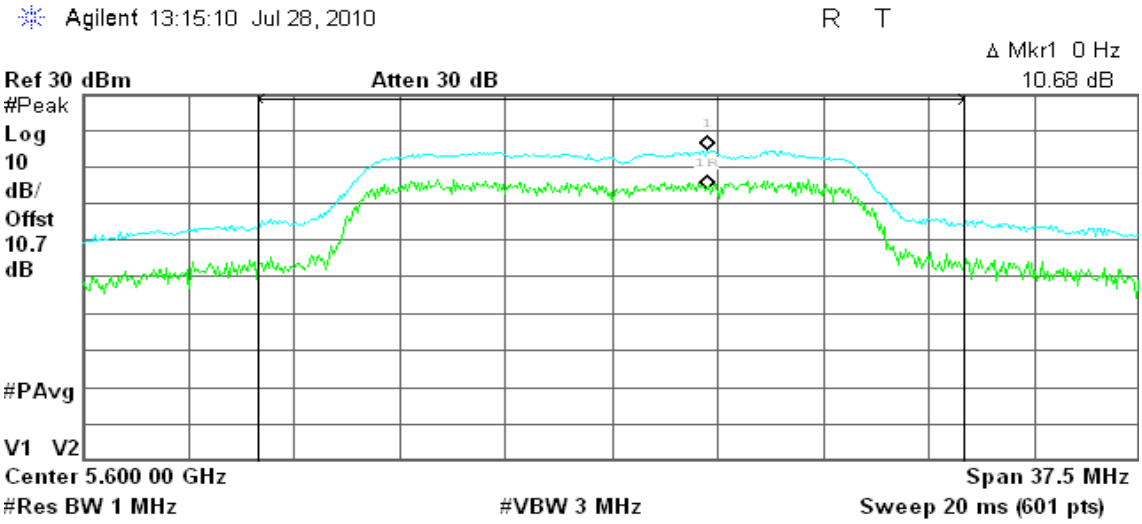
CH Low



Channel Power
22.97 dBm / 20.0000 MHz

Power Spectral Density
-50.04 dBm/Hz

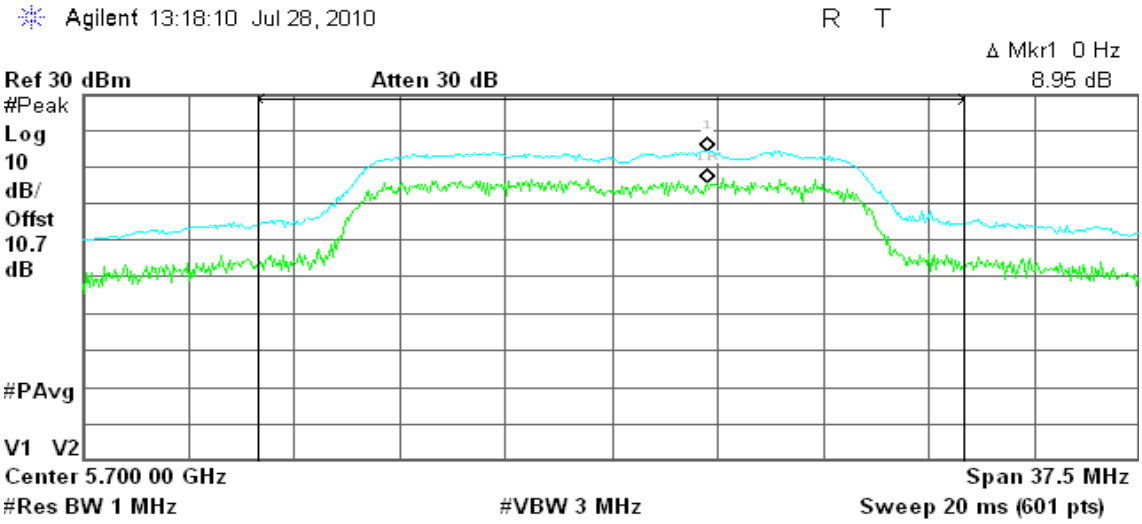
CH Mid



Channel Power
23.32 dBm / 25.0000 MHz

Power Spectral Density
-50.65 dBm/Hz

CH High

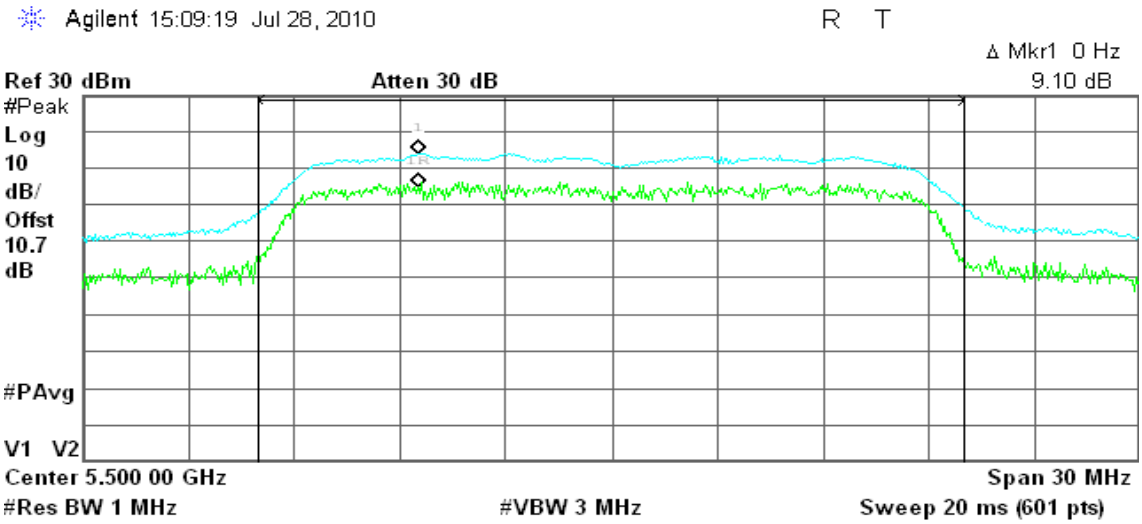


Channel Power
23.25 dBm / 25.0000 MHz

Power Spectral Density
-50.73 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 1

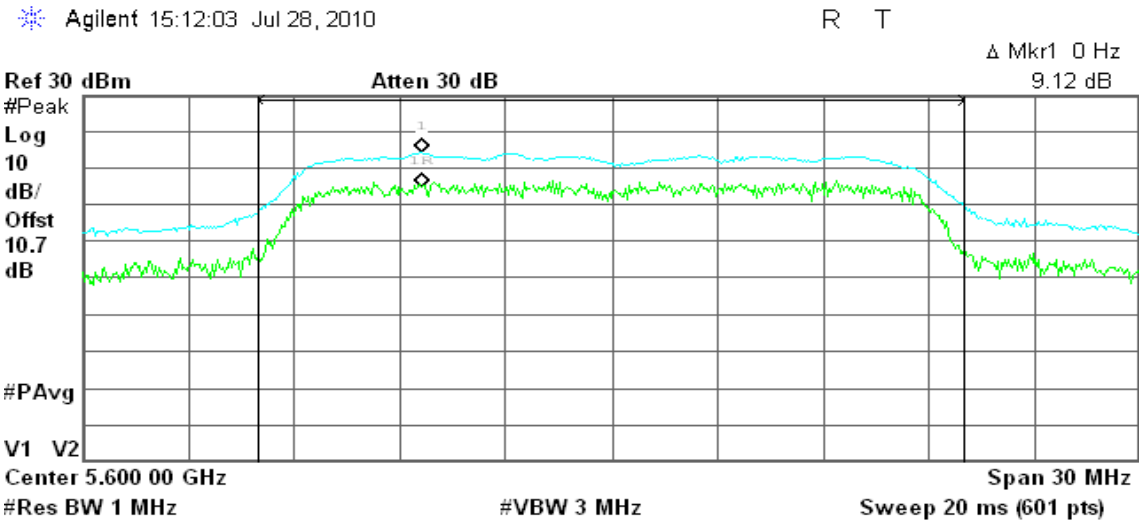
CH Low



Channel Power
22.48 dBm / 20.0000 MHz

Power Spectral Density
-50.53 dBm/Hz

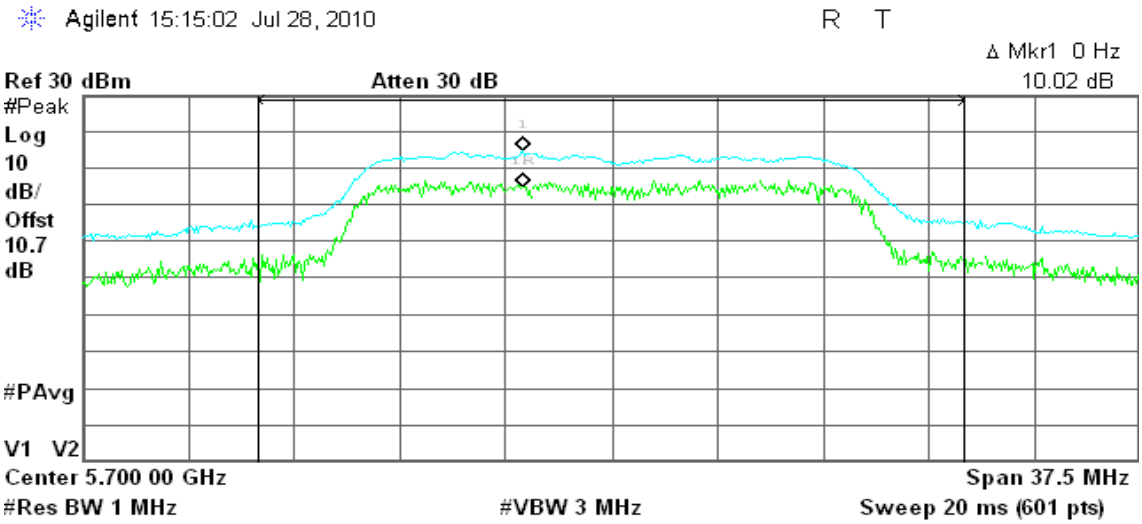
CH Mid



Channel Power
22.92 dBm / 20.0000 MHz

Power Spectral Density
-50.09 dBm/Hz

CH High

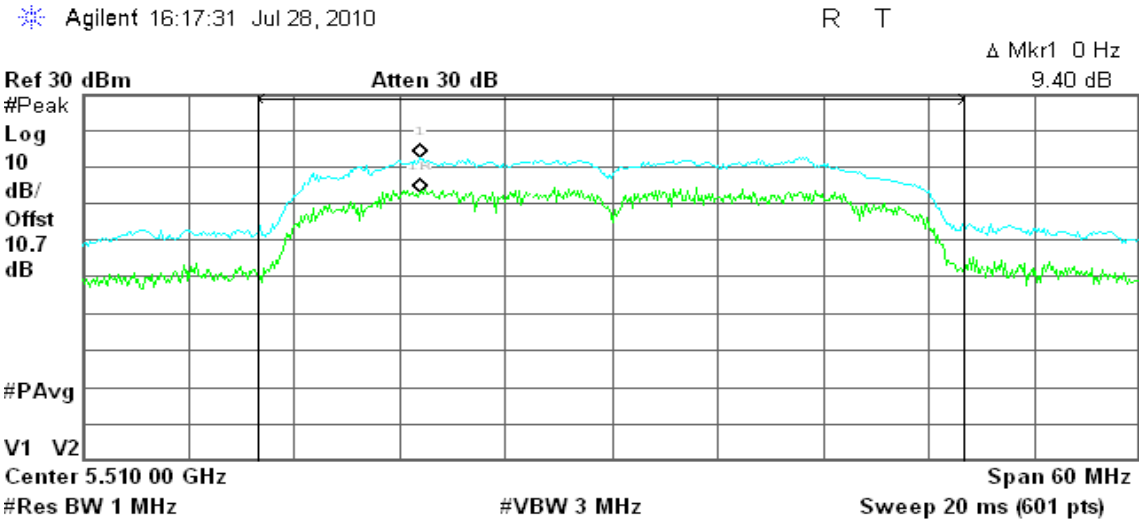


Channel Power
23.17 dBm / 25.0000 MHz

Power Spectral Density
-50.81 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 0

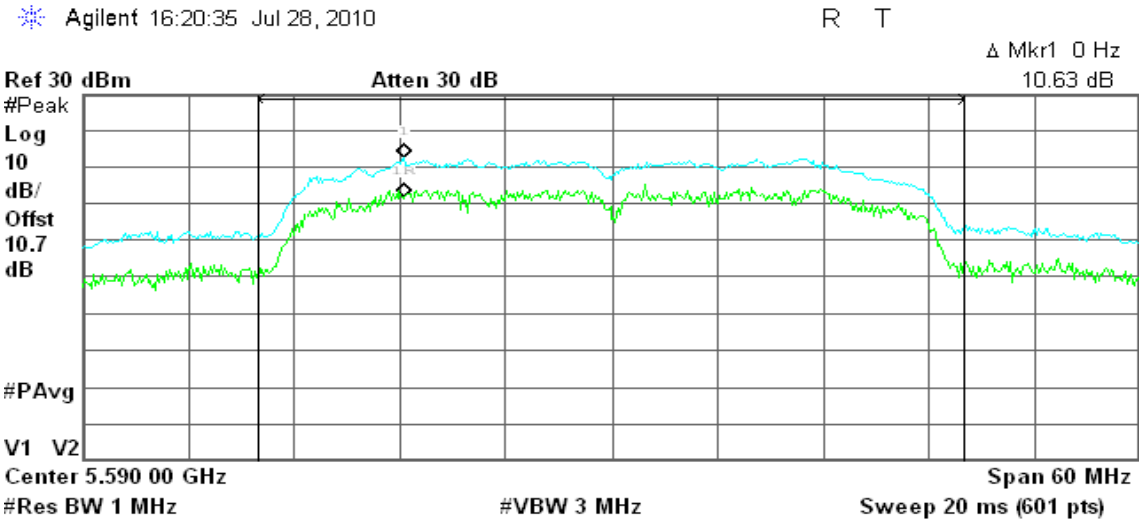
CH Low



Channel Power
23.31 dBm / 40.0000 MHz

Power Spectral Density
-52.71 dBm/Hz

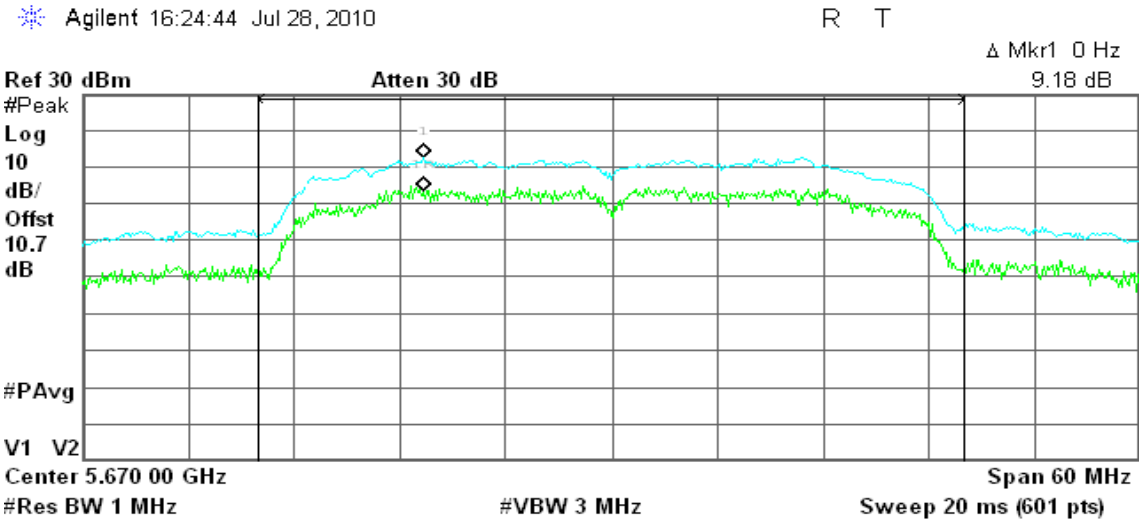
CH Mid



Channel Power
23.36 dBm / 40.0000 MHz

Power Spectral Density
-52.66 dBm/Hz

CH High

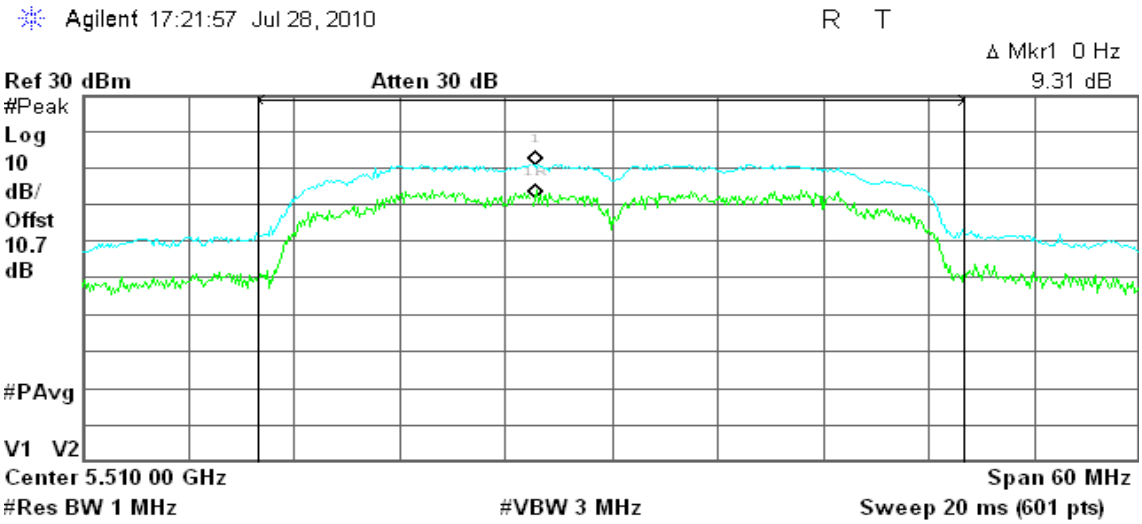


Channel Power
23.42 dBm / 40.0000 MHz

Power Spectral Density
-52.60 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 1

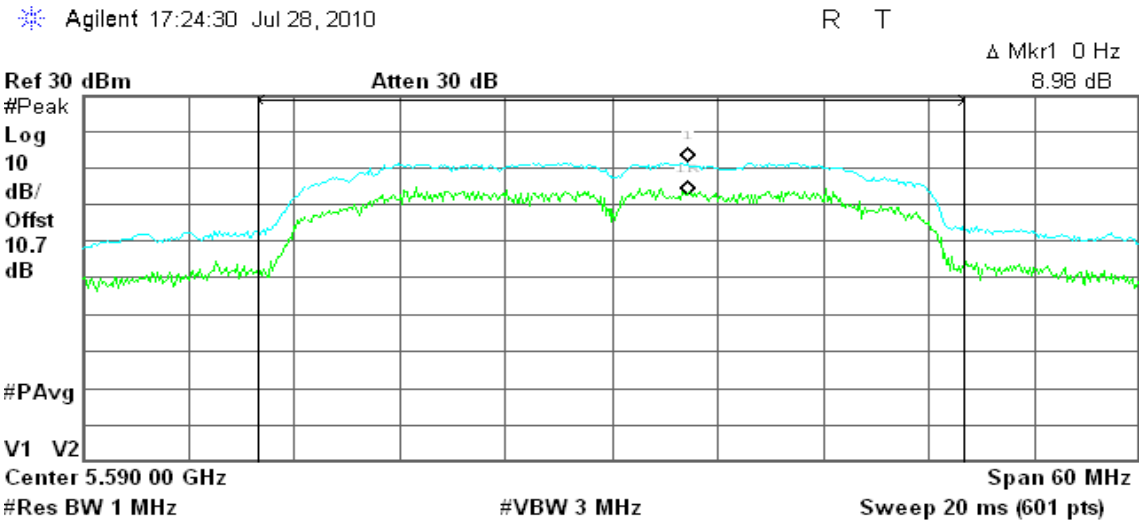
CH Low



Channel Power
22.74 dBm / 40.0000 MHz

Power Spectral Density
-53.28 dBm/Hz

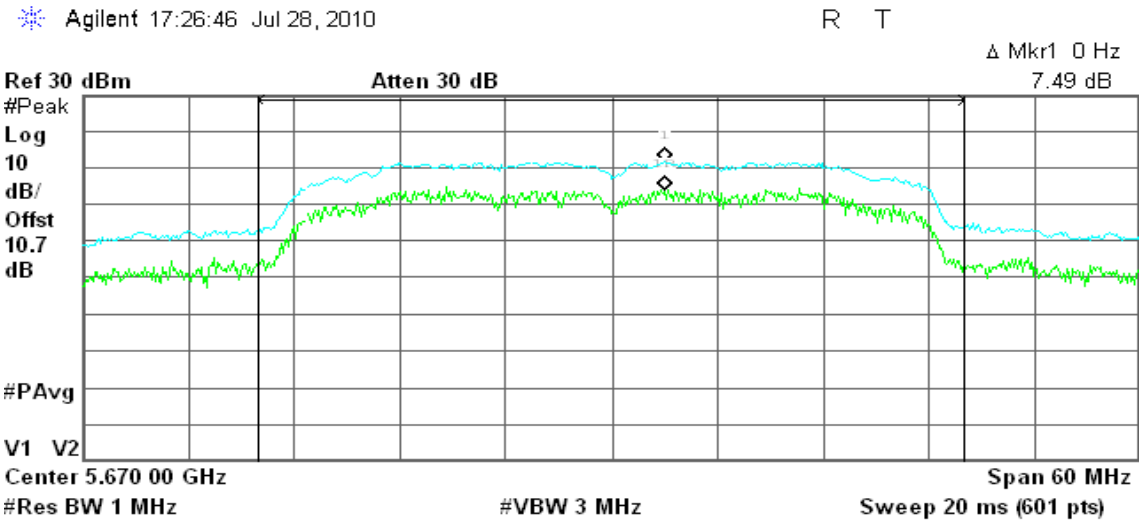
CH Mid



Channel Power
23.07 dBm / 40.0000 MHz

Power Spectral Density
-52.95 dBm/Hz

CH High



Channel Power

23.24 dBm / 40.0000 MHz

Power Spectral Density

-52.79 dBm/Hz