FCC 47 CFR PART 15 SUBPART E

TEST REPORT

For

LifeBook S Series

Model: S7220

Trade Name: Fujitsu

Issued to

Fujitsu Limited
1-1, Kamikodanaka 4-chome, Nakahara-ku,
Kawasaki, 211-8588, Japan

Issued by

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Testing Laboratory
1309

ACCREDITED
TESTING CERT #0824.01

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1. TEST RESULT CERTIFICATION

Applicant:	Fujitsu Limited 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki, 211-8588, Japan
Equipment Under Test:	LifeBook S Series
Trade Name:	Fujitsu
Model:	S7220
Date of Test:	July 19 ~ August 4, 2008

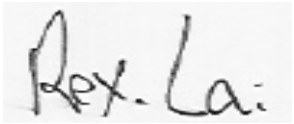
APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart E	No non-compliance noted

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.

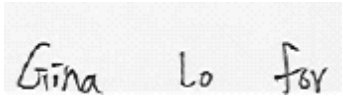
The test results of this report relate only to the tested sample identified in this report.

Approved by:



Rex Lai
Section Manager
Compliance Certification Services Inc.

Reviewed by:



Amanda Wu
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	LifeBook S Series
Trade Name	Fujitsu
Model Number	S7220
Model Discrepancy	N/A
Power Supply	1. Brand Name: Sanken Model: SED110P2-19.0 I/P: 100-240V, 1.35-0.6A, 50-60Hz O/P: 19V, 5.27A 2. Brand Name: FUJITSU Model: SED100P2-19.0 I/P: 100-240V, 1.2-0.6A, 50-60Hz O/P: 19V, 4.22A 3. Brand Name: DELTA Model: ADP80NBA I/P: 100-240V, 1.2A, 50-60Hz O/P: 19V, 4.22A 4. Li-ion Battery: Brand Name: FUJITSU Model: CP345705-01 Rating: 10.8V, 5800 mAh
Frequency Range	5.18~5.24 GHz / 5.26~5.32 GHz / 5.50~5.70 GHz
Transmit Power	IEEE 802.11a mode / 5180 ~ 5240MHz: 15.22 dBm draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz: 15.37 dBm draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz: 16.63 dBm IEEE 802.11a mode / 5260 ~ 5320MHz: 16.86 dBm draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz: 20.93 dBm draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz: 20.08 dBm Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz: 17.38 dBm draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz: 20.58 dBm draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz: 18.66 dBm
Modulation Technique	OFDM (QPSK, BPSK, 16-QAM, 64-QAM)
Transmit Data Rate	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)
Number of Channels	IEEE 802.11a mode: 8 Channels draft 802.11n Standard-20 MHz Channel mode: 8 Channels draft 802.11n Wide-40 MHz Channel mode: 7 Channels
Antenna Specification	Gain: 0.18 dBi
Antenna Designation	PIFA Antenna

Operation Frequency:

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)	
CHANNEL	**MHz**
36	5180
40	5200
44	5220
48	5240
52	5260
56	5280
60	5300
64	5320

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: **EJE-WB0062**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.

3.1EUT 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.

3.2EUT 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.

3.3GENERAL 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.

3.4FCC 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.

3.5DESCRIPTION OF TEST MODES

The EUT (model: S7220) comes with three types of power adapter (Model: SED110P2-19.0 & SED100P2-19.0 & ADP80NBA) for sale. After the preliminary test, the EUT with power adapter (Model: SED110P2-19.0) was found to emit the worst emissions and therefore had been tested under operating condition.

The EUT is a 3x3 configuration spatial MIMO (3Tx & 3Rx) without beam forming function. The 3x3 configuration is implemented with three outside TX & RX chains (Chain 0, Chain 1and Chain 2).

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 6Mbps 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 6Mbps 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 6Mbps 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

4.1MEASURING 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.

4.2MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

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

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY43360131	02/24/2009

3M Semi Anechoic Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	09/11/2008
Test Receiver	Rohde&Schwarz	ESCI	100064	11/30/2008
Switch Controller	TRC	Switch Controller	SC94050010	05/03/2009
4 Port Switch	TRC	4 Port Switch	SC94050020	05/03/2009
Horn-Antenna	TRC	HA-0502	06	06/04/2009
Horn-Antenna	TRC	HA-0801	04	06/19/2009
Horn-Antenna	TRC	HA-1201A	01	08/12/2008
Horn-Antenna	TRC	HA-1301A	01	08/12/2008
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/28/2009
Turn Table	Max-Full	MFT-120S	T120S940302	N.C.R.
Antenna Tower	Max-Full	MFA-430	A440940302	N.C.R.
Controller	Max-Full	MF-CM886	CC-C-1F-13	N.C.R.
Site NSA	CCS	N/A	FCC: 965860 IC: IC 6106	09/25/2008
Test S/W	LABVIEW (V 6.1)			

Remark: *The measurement uncertainty is less than +/-3.7046dB (30MHz ~ 1GHz), +/-3.0958dB (Above 1GHz) which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

Powerline Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver 9kHz-30MHz	Rohde & Schwarz	ESHS30	828144/003	11/19/2008
Two-Line V-Network 9kHz-30MHz	Schaffner	NNB41	03/10013	06/11/2009
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	04/09/2009
Test S/W	LABVIEW (V 6.1)			

Remark: *The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

Dynamic Frequency Selection				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Rohde&Schwarz	FSEK 30	100264	04/15/2009
Signal Generator	Agilent	E8267C	US42340162	04/12/2009

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

☒ No. 11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan

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

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

5.2 EQUIPMENT

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

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

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

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

5.3TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	EN 55011, EN 55014-1/2, CISPR 11, CISPR 14-1/2, EN 55022, EN 55015, CISPR 22, CISPR 15, AS/NZS 3548, VCCI V3 (2001), CFR 47, FCC Part 15/18, CNS 13783-1, CNS 13439, CNS 13438, CNS 13803, CNS 14115, EN 55024, IEC 801-2, IEC 801-3, IEC 801-4, IEC/EN 61000-3-2, EIC/EN 61000-3-3, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 50081-1/ EN 61000-6-3, EN 50081-2/EN 61000-6-4, EN 50081-2/EN 61000-6-1: 2001	ACCREDITED TESTING CERT #0824.01
USA	FCC	3M Semi Anechoic Chamber (965860 and 898658) to perform FCC Part 15/18 measurements	965860, 898658
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 6106 & IC 6106A-2) to perform RSS 212 Issue 1	Canada IC 6106 IC 6106A-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

6.1SETUP CONFIGURATION OF EUT

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

6.2SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	LCD Monitor	Samsung	173P	DI17H4JXB04968Y	FCC DoC	Shielded, 1.8m with 2 cores	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2.	USB 2.0 External HDD	TeraSyS	F12-U	A0100214-2Bq0039	FCC DoC	Shielded, 1.8m	N/A
3.	USB 2.0 External HDD	TeraSyS	F12-U	A0100214-31d0014	FCC DoC	Shielded, 1.8m	N/A
4.	USB 2.0 External HDD	TeraSyS	F12-U	A0100214-31d0028	FCC DoC	Shielded, 1.8m	N/A
5.	Multimedia Earphone	Labtec	Axis-301	N/A	FCC DoC	Unshielded, 1.8m*2	N/A

Remark:

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

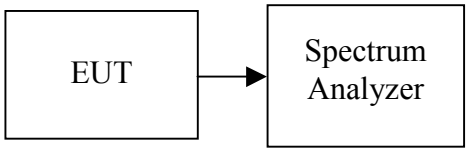
7. FCC PART 15 REQUIREMENTS

7.126 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 (B) (MHz)
Low	5180	20.538
Mid	5220	20.211
High	5240	20.015

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

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	19.563
Mid	5220	20.307
High	5240	20.587

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

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	20.709
Mid	5220	20.063
High	5240	20.369

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 2

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	20.098
Mid	5220	20.359
High	5240	20.779

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

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	38.628
High	5230	39.117

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

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	39.154
High	5230	38.921

Test mode: draft 802.11n Wide-40 MHz Channel mode/ 5190 ~ 5230MHz / Chain 2

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	38.893
High	5230	38.995

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

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5260	20.563
Mid	5280	20.873
High	5320	20.412

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

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	19.940
Mid	5260	20.489
High	5320	19.837

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

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	20.504
Mid	5260	20.522
High	5320	20.718

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 2

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	20.530
Mid	5260	20.434
High	5320	20.491

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

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	39.126
High	5310	38.895

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

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	38.533
High	5310	38.738

Test mode: draft 802.11n Wide-40 MHz Channel mode/ 5270 ~ 5310MHz / Chain 2

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	46.964
High	5310	39.120

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

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5500	21.863
Mid	5600	20.864
High	5700	20.852

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

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5500	20.438
Mid	5600	19.899
High	5700	21.446

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

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5500	20.669
Mid	5600	19.916
High	5700	20.385

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 2

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5500	20.455
Mid	5600	20.795
High	5700	21.067

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

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5510	39.468
Mid	5590	38.865
High	5670	38.607

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

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5510	38.656
Mid	5590	39.324
High	5670	38.676

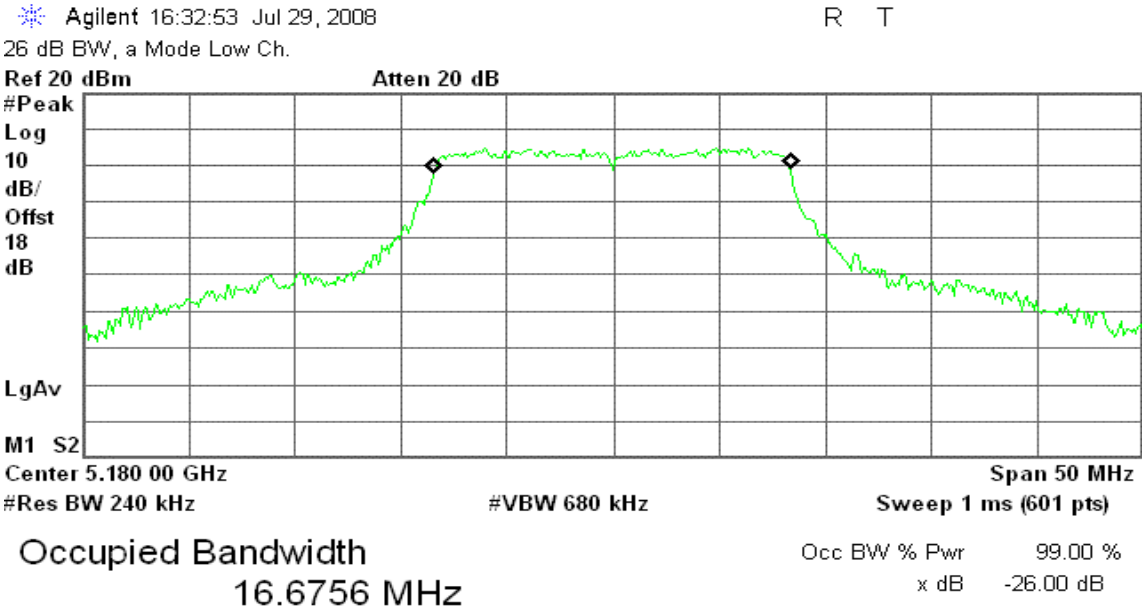
Test mode: draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 2

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5510	38.457
Mid	5590	39.157
High	5670	39.480

Test Plot

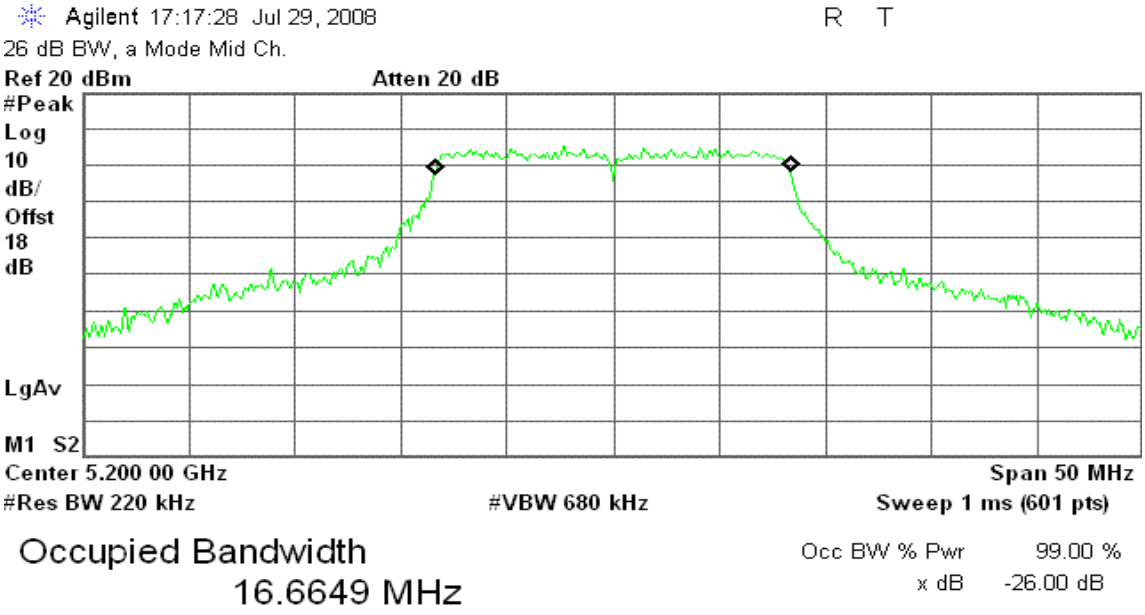
IEEE 802.11a mode / 5180 ~ 5240MHz

CH Low



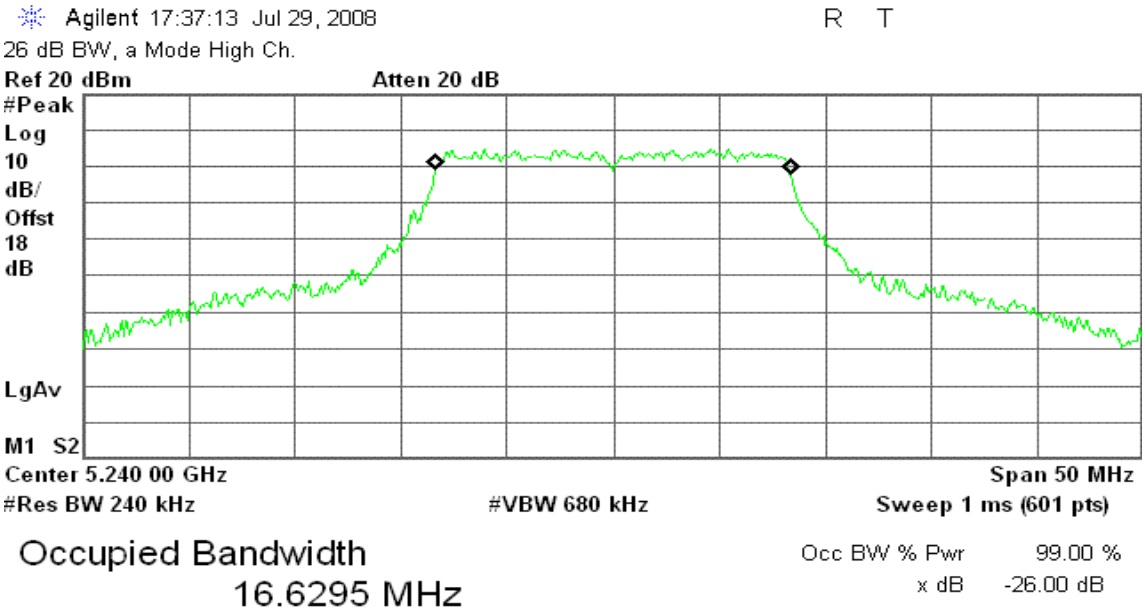
Transmit Freq Error	-42.314 kHz
x dB Bandwidth	20.538 MHz

CH Mid



Transmit Freq Error	-37.043 kHz
x dB Bandwidth	20.211 MHz

CH High



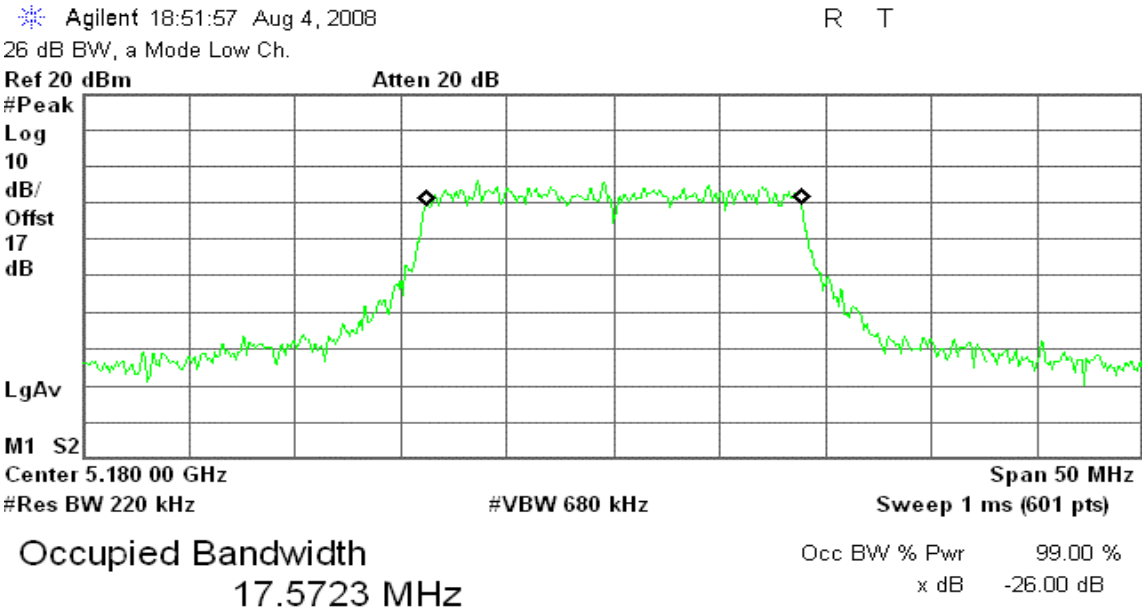
Occupied Bandwidth
16.6295 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -19.973 kHz
x dB Bandwidth 20.015 MHz

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

CH Low

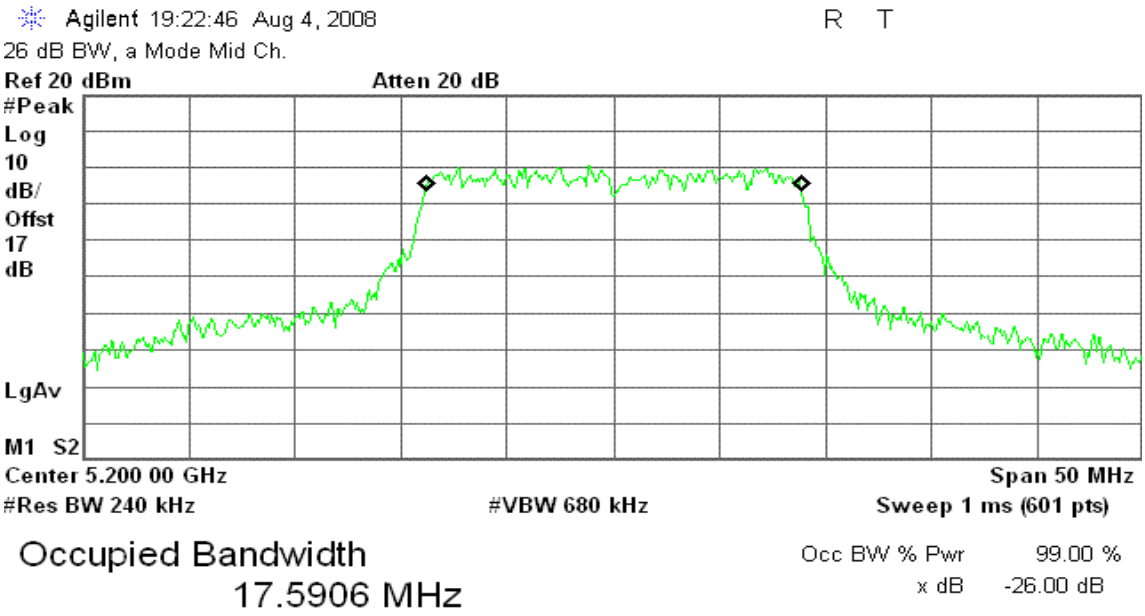


Occupied Bandwidth
17.5723 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 15.309 kHz
x dB Bandwidth 19.563 MHz

CH Mid

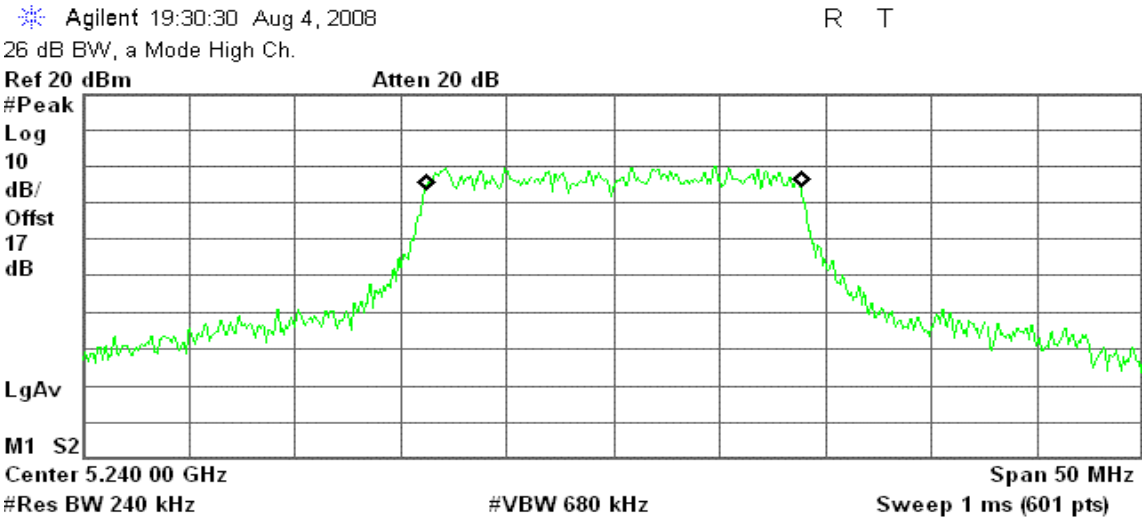


Occupied Bandwidth
17.5906 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 20.145 kHz
x dB Bandwidth 20.307 MHz

CH High



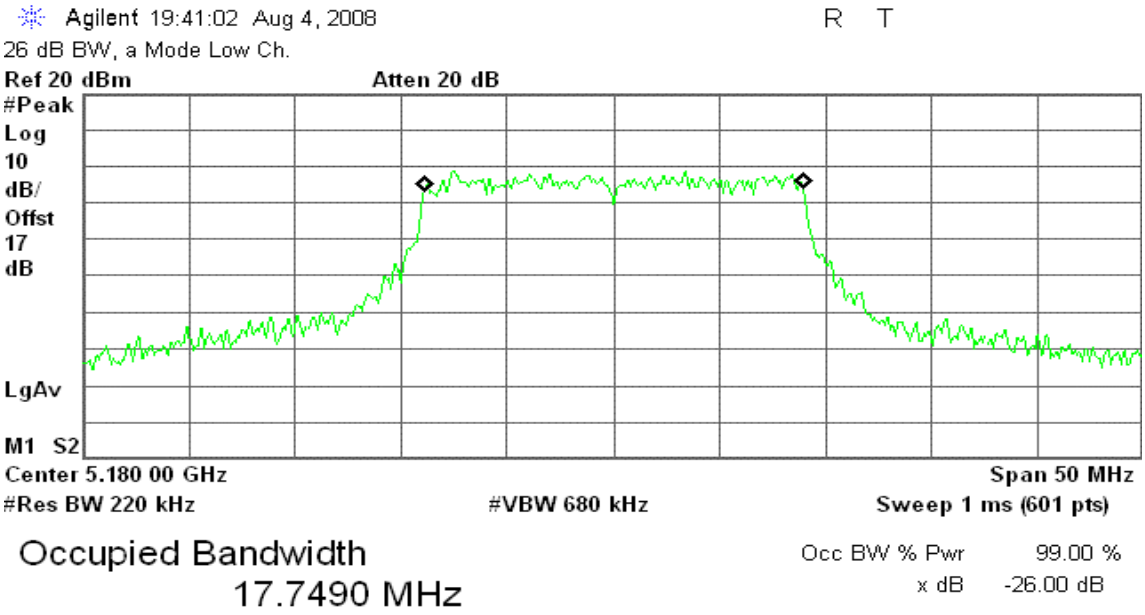
Occupied Bandwidth
17.5922 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 6.668 kHz
x dB Bandwidth 20.587 MHz

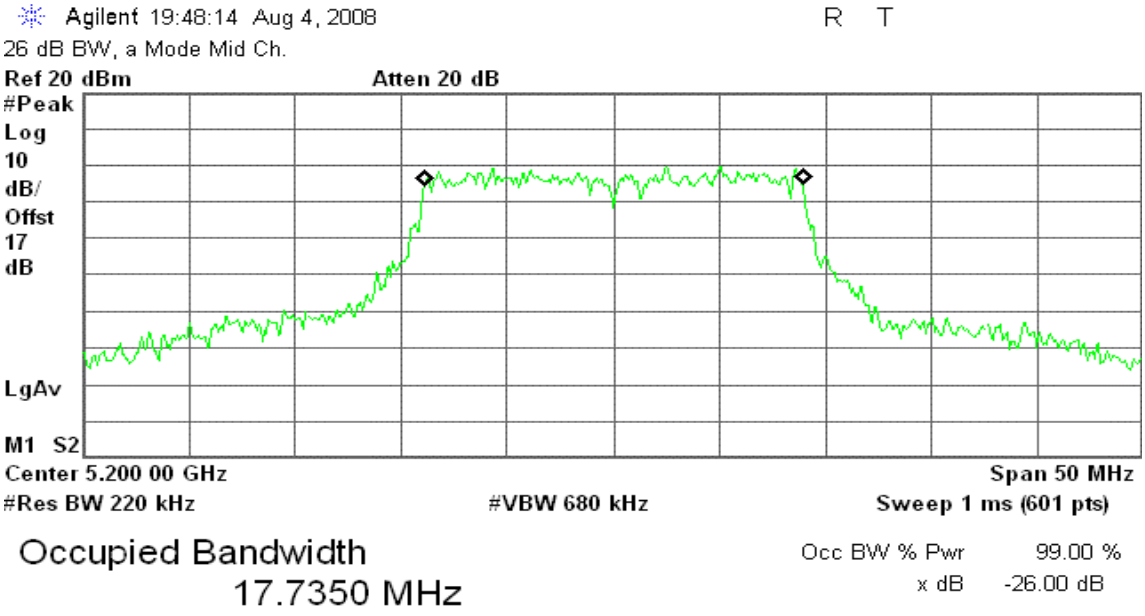
draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1

CH Low



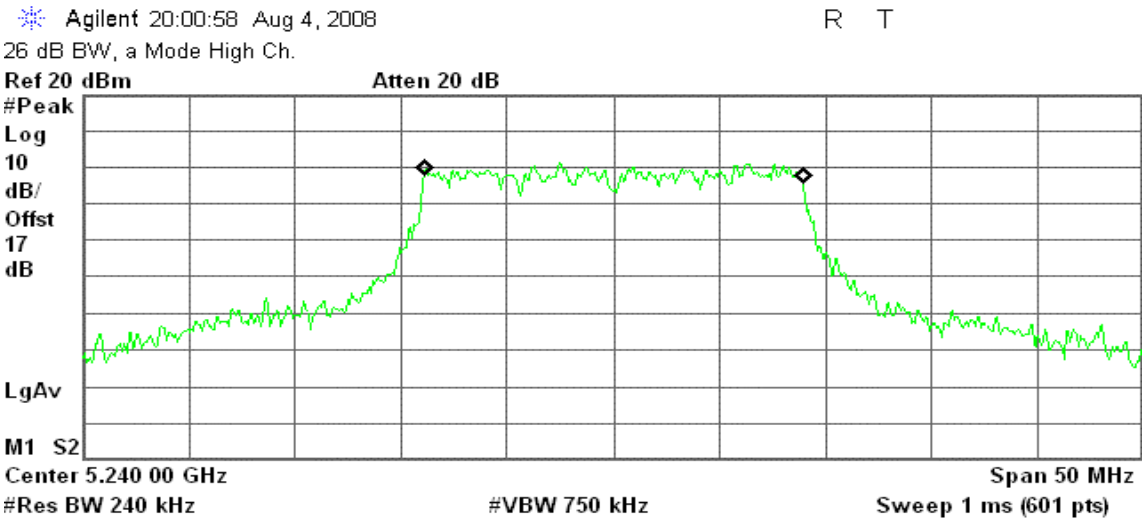
Transmit Freq Error	39.695 kHz
x dB Bandwidth	20.709 MHz

CH Mid



Transmit Freq Error	21.893 kHz
x dB Bandwidth	20.063 MHz

CH High



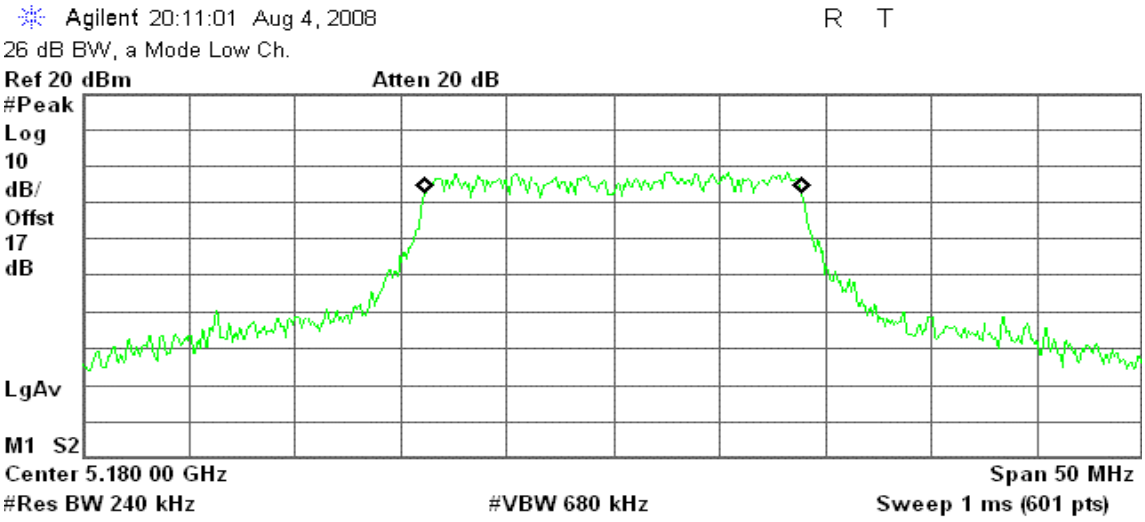
Occupied Bandwidth
17.7409 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 12.897 kHz
x dB Bandwidth 20.369 MHz

draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 2

CH Low

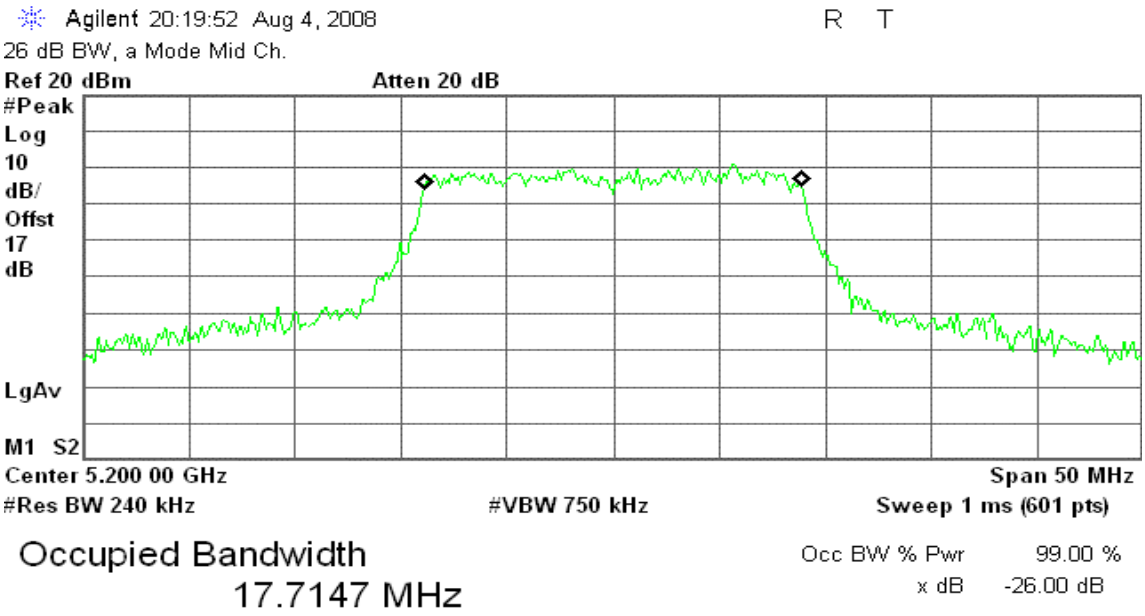


Occupied Bandwidth
17.6451 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 14.863 kHz
x dB Bandwidth 20.098 MHz

CH Mid

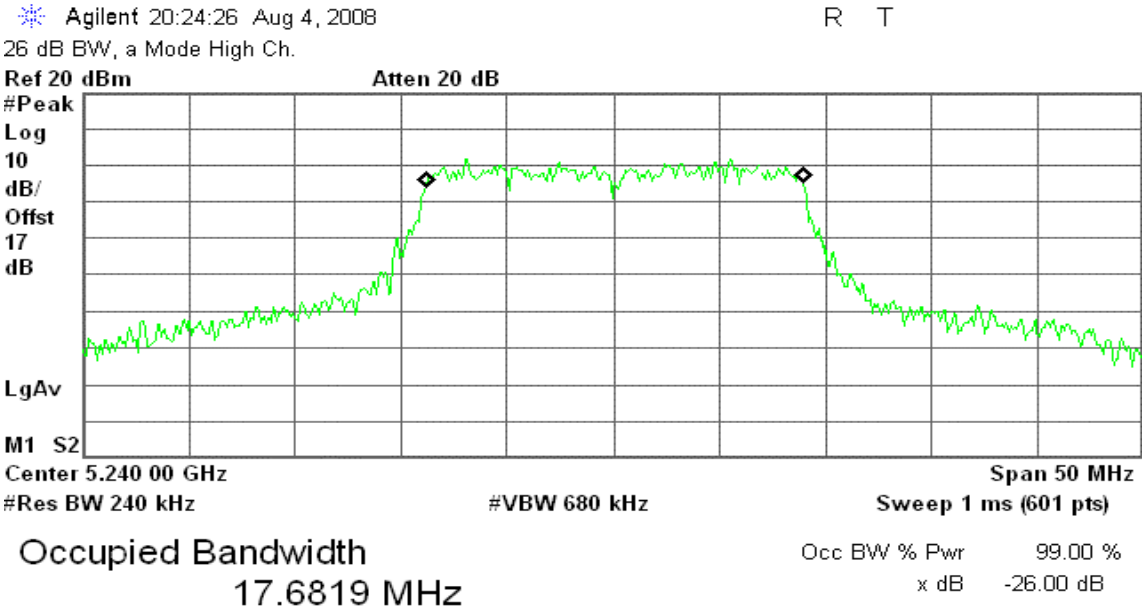


Occupied Bandwidth
17.7147 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 8.270 kHz
x dB Bandwidth 20.359 MHz

CH High



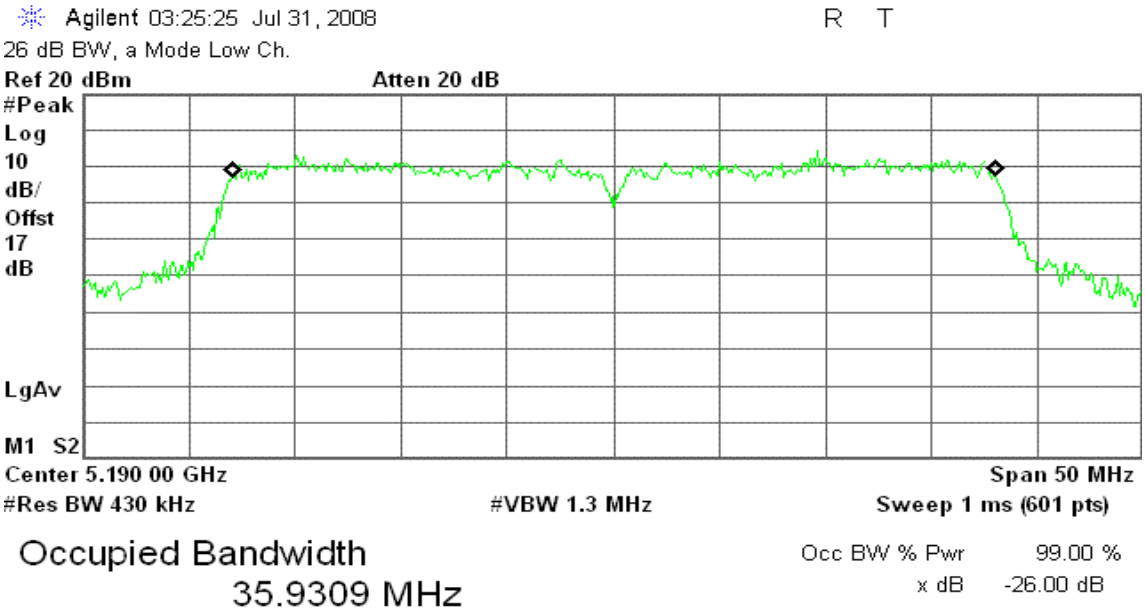
Occupied Bandwidth
17.6819 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 67.555 kHz
x dB Bandwidth 20.775 MHz

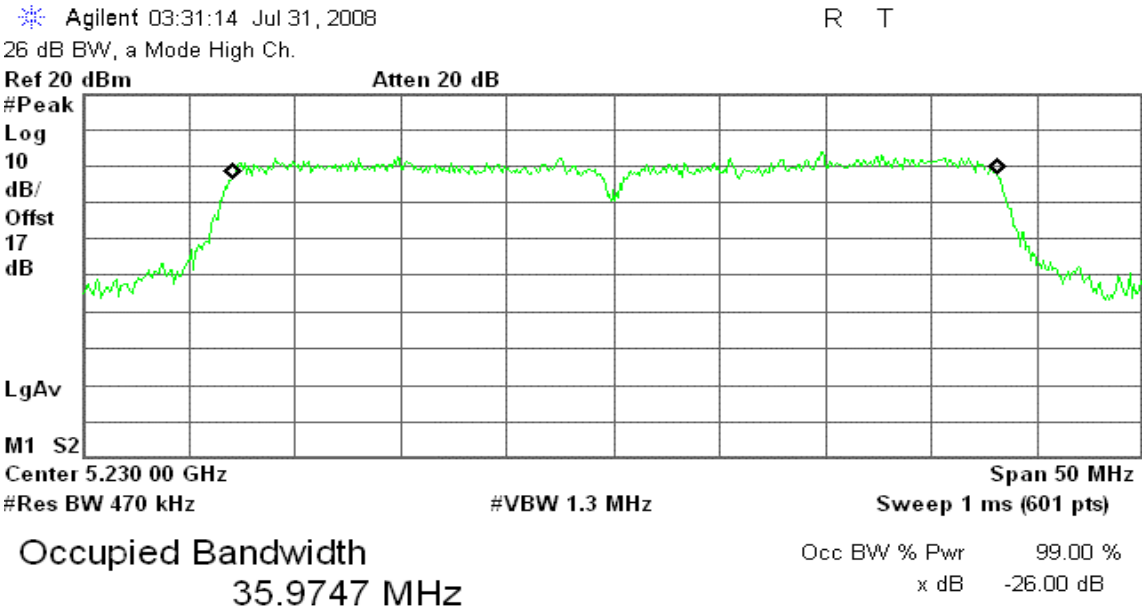
draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 0

CH Low



Transmit Freq Error	32.844 kHz
x dB Bandwidth	38.628 MHz

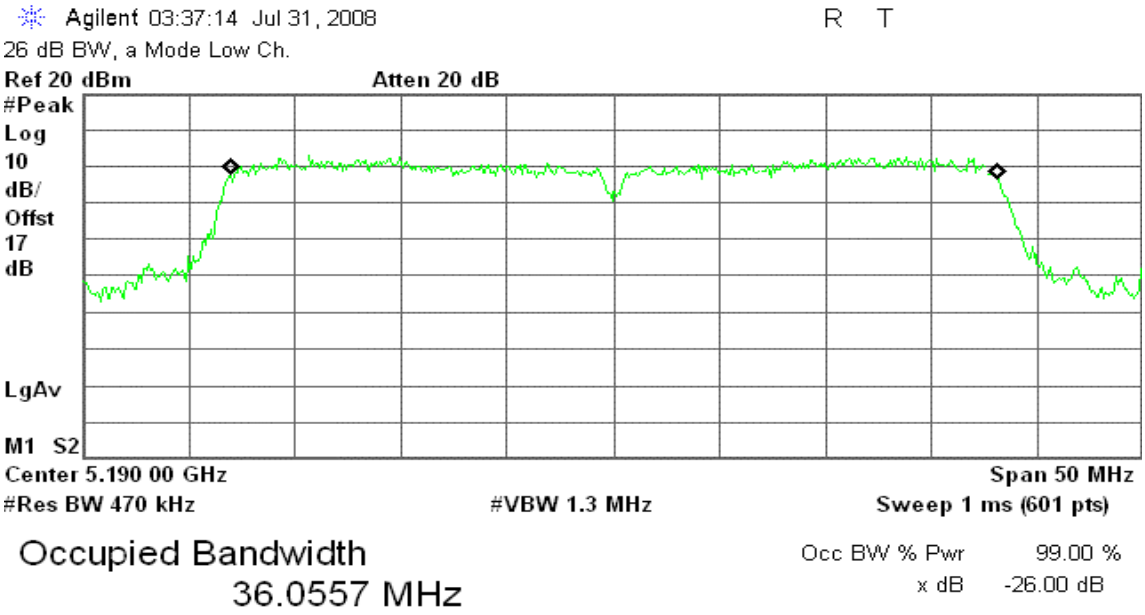
CH High



Transmit Freq Error	78.602 kHz
x dB Bandwidth	39.117 MHz

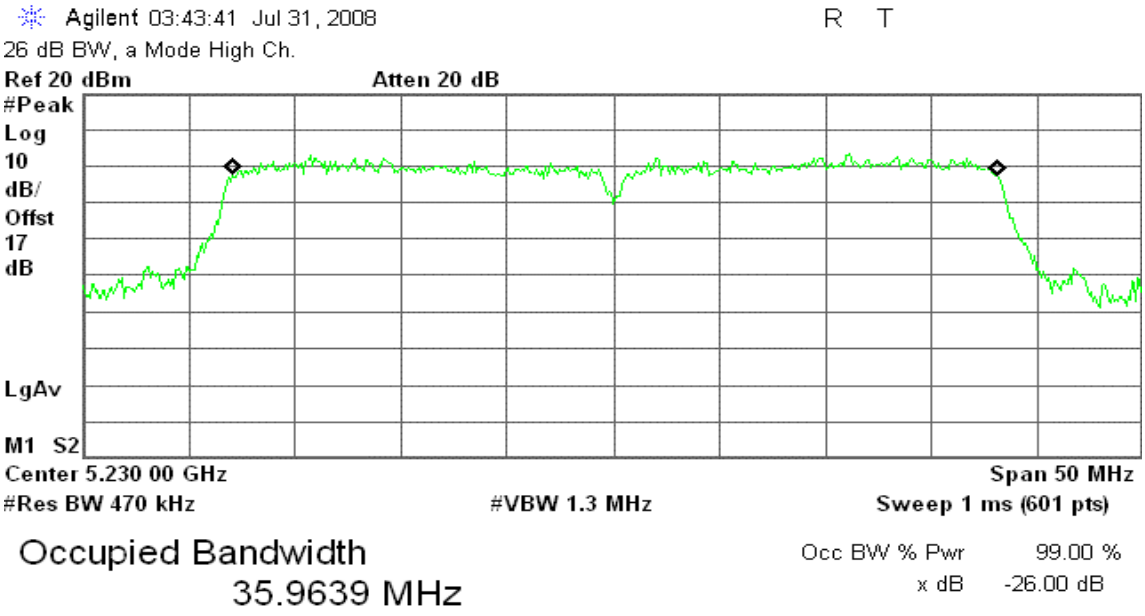
draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 1

CH Low



Transmit Freq Error	16.440 kHz
x dB Bandwidth	39.154 MHz

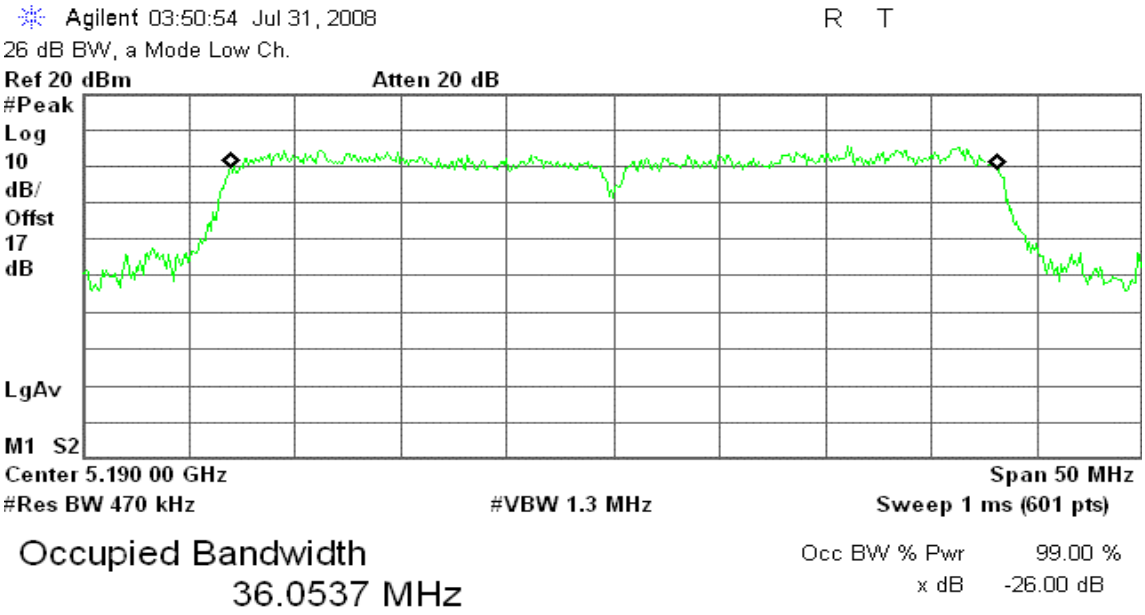
CH High



Transmit Freq Error	69.716 kHz
x dB Bandwidth	38.921 MHz

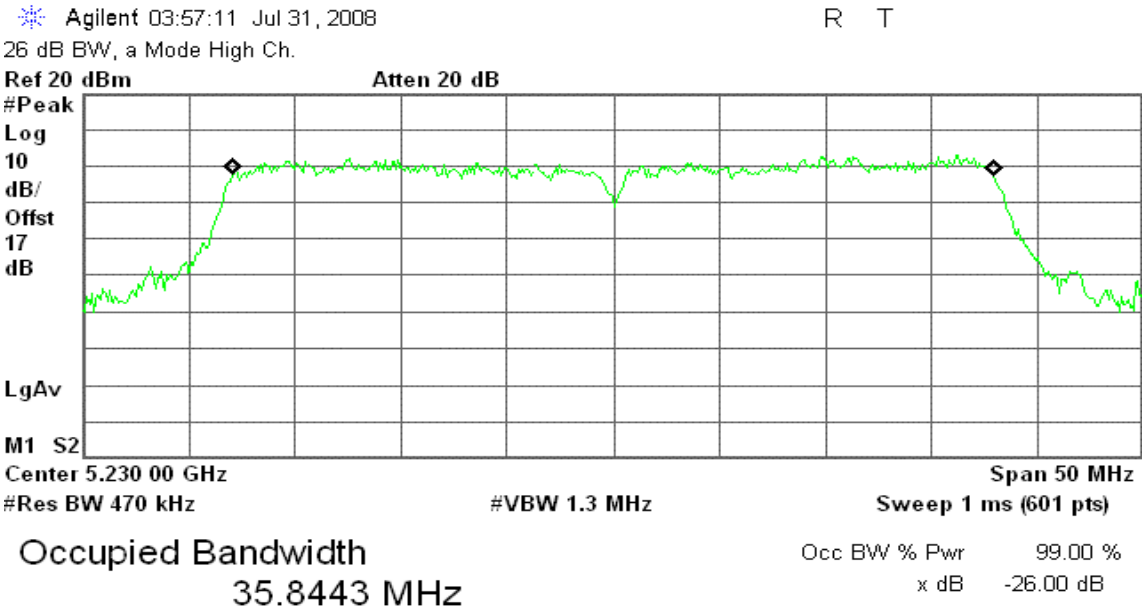
draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 2

CH Low



Transmit Freq Error	56.529 kHz
x dB Bandwidth	38.893 MHz

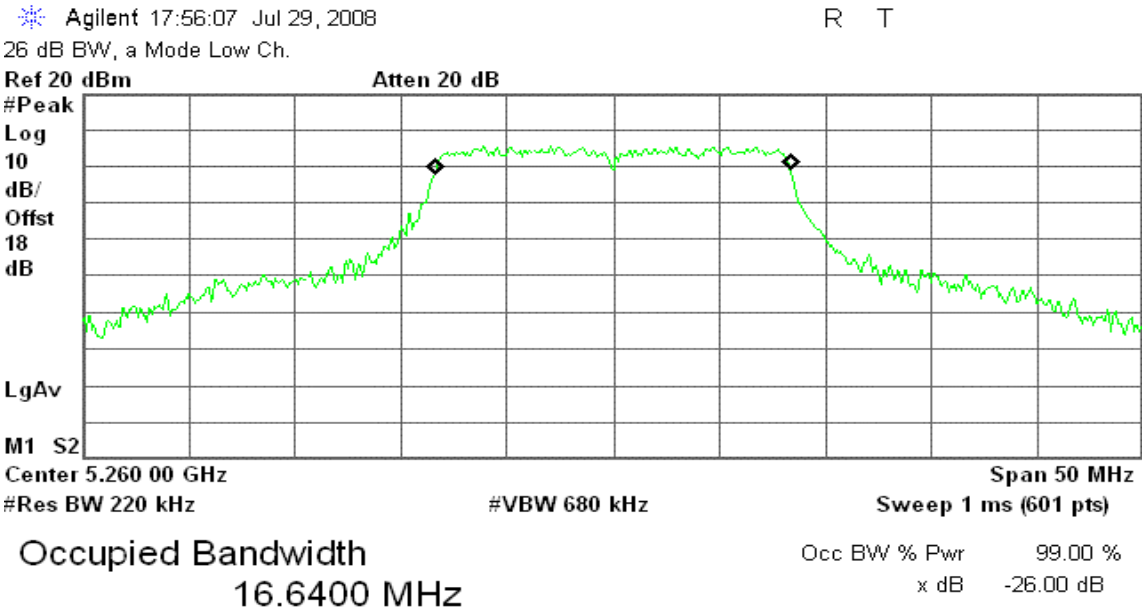
CH High



Transmit Freq Error	11.200 kHz
x dB Bandwidth	38.995 MHz

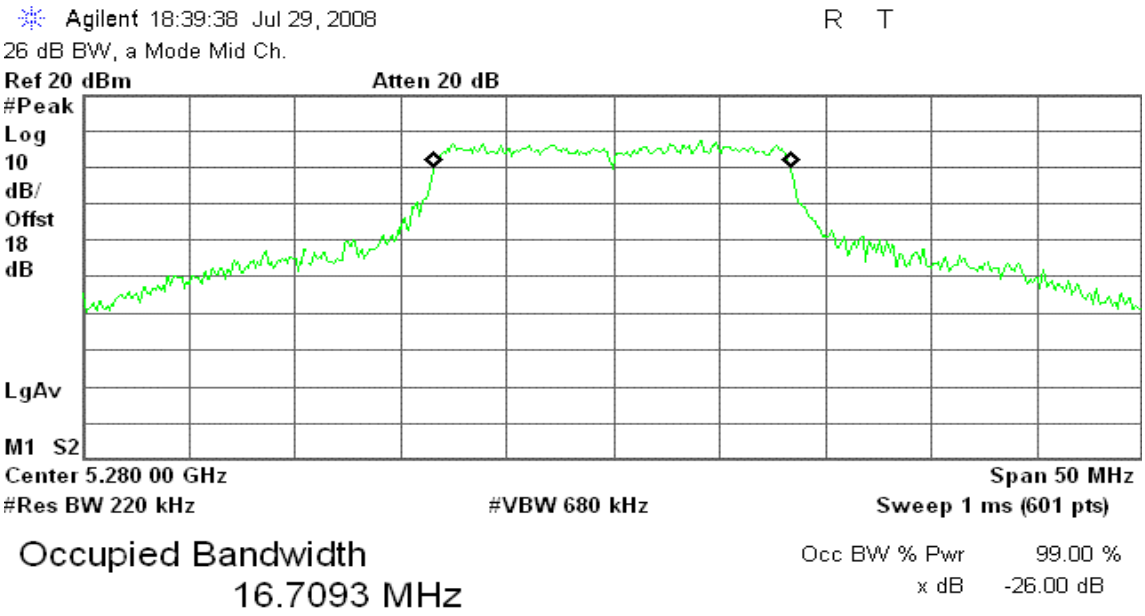
IEEE 802.11a mode / 5260 ~ 5320MHz

CH Low



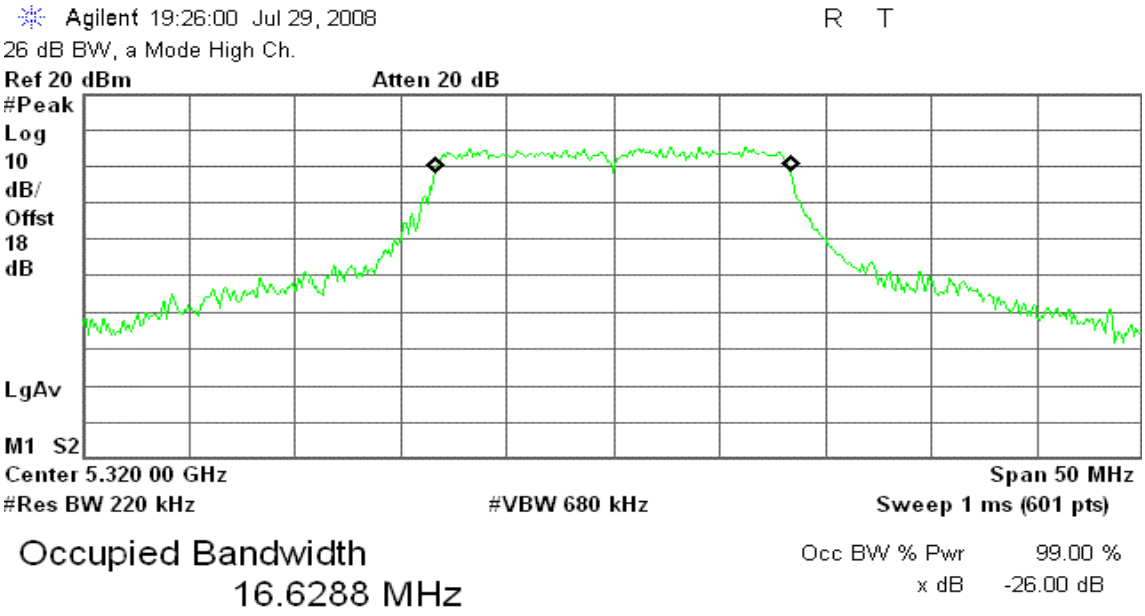
Transmit Freq Error	-26.074 kHz
x dB Bandwidth	20.563 MHz

CH Mid



Transmit Freq Error	-40.129 kHz
x dB Bandwidth	20.873 MHz

CH High



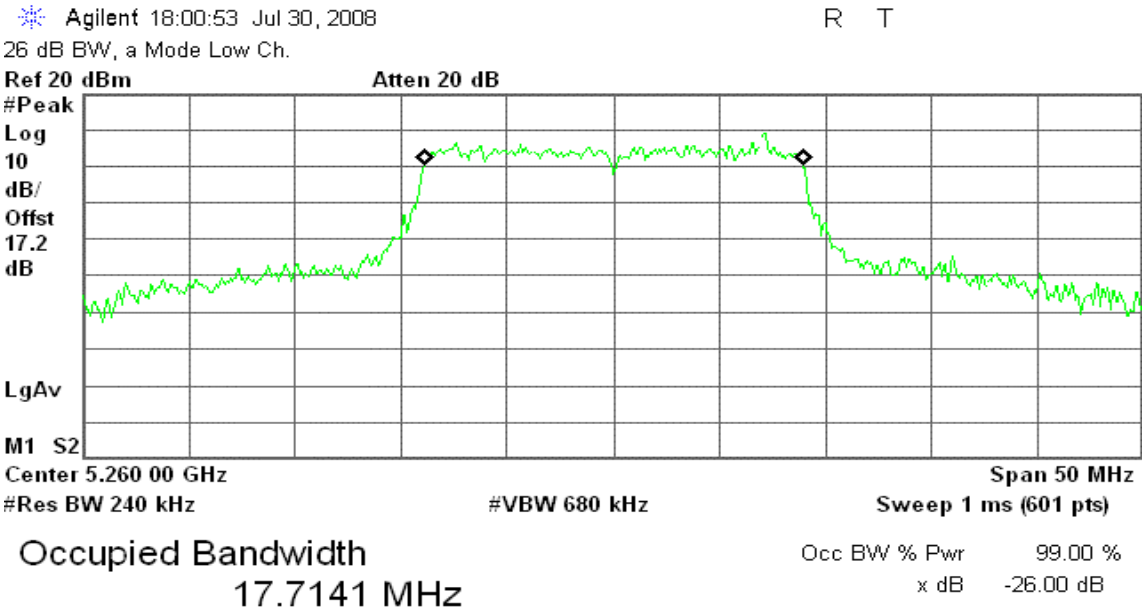
Occupied Bandwidth
16.6288 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -22.260 kHz
x dB Bandwidth 20.412 MHz

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

CH Low

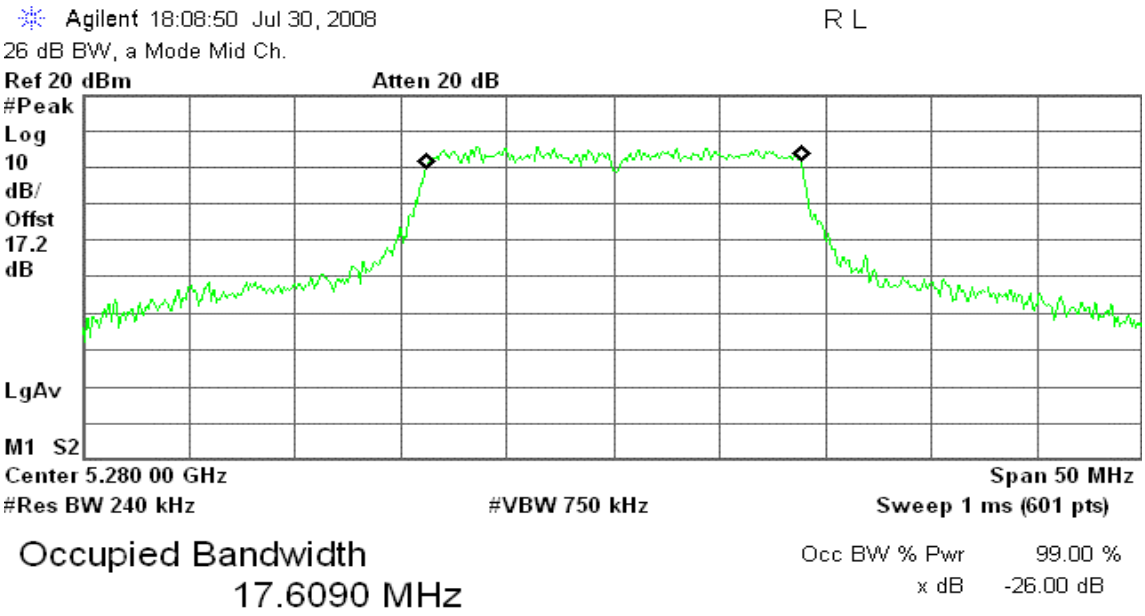


Occupied Bandwidth
17.7141 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 29.891 kHz
x dB Bandwidth 19.940 MHz

CH Mid

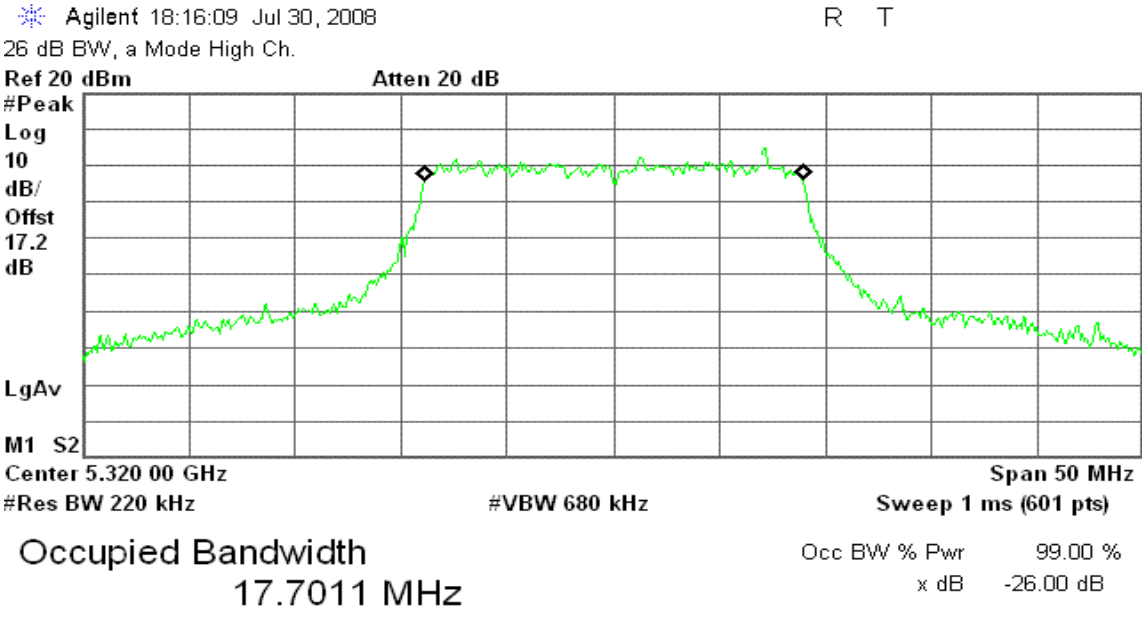


Occupied Bandwidth
17.6090 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 28.467 kHz
x dB Bandwidth 20.489 MHz

CH High



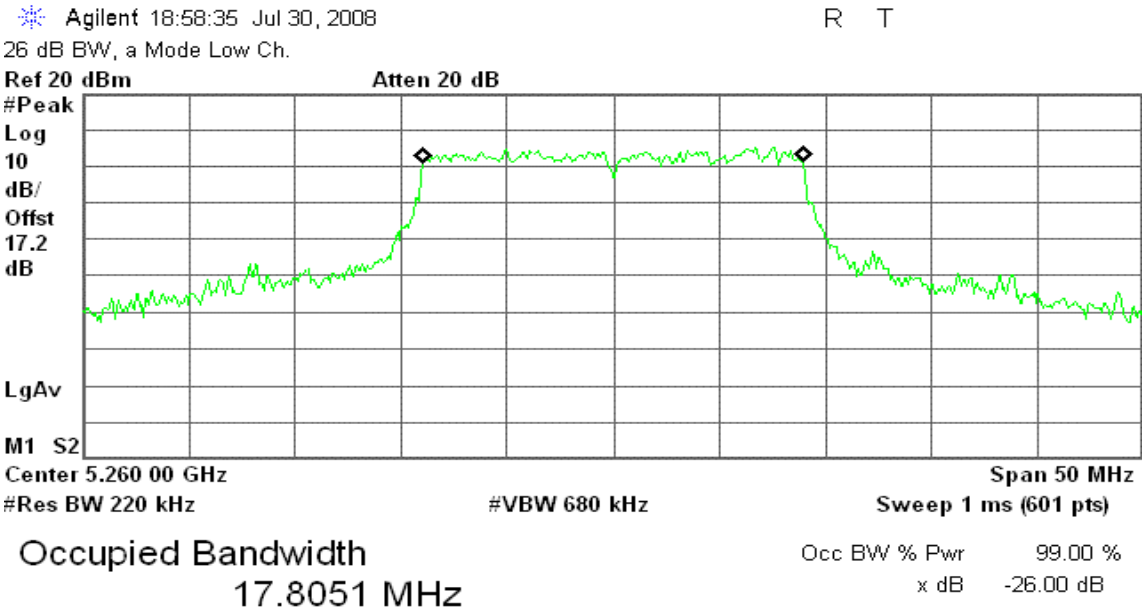
Occupied Bandwidth
17.7011 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 33.967 kHz
x dB Bandwidth 19.837 MHz

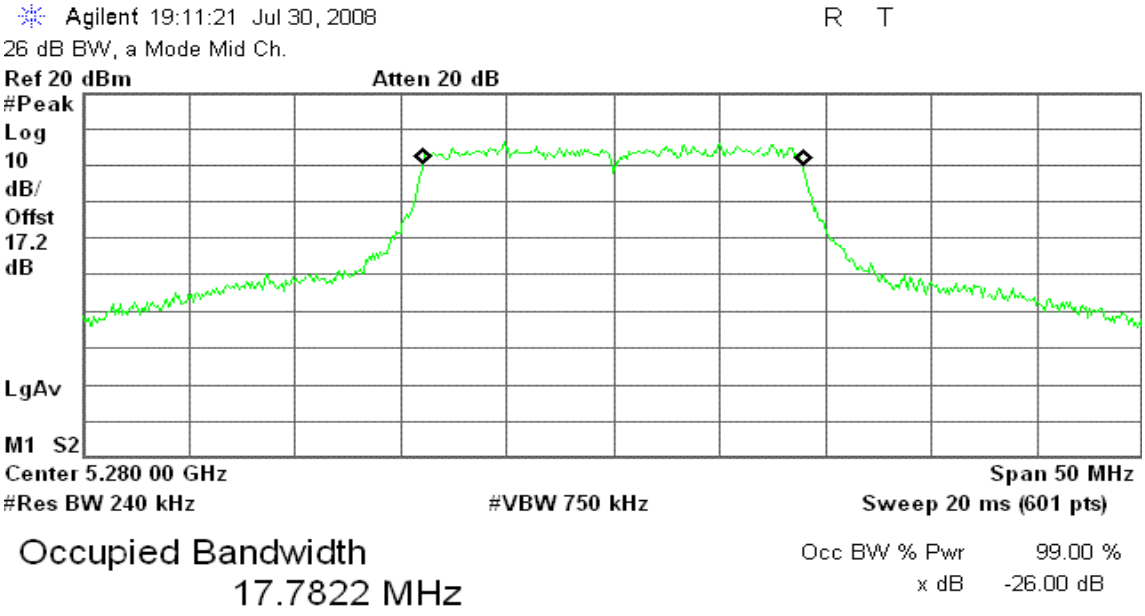
draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

CH Low



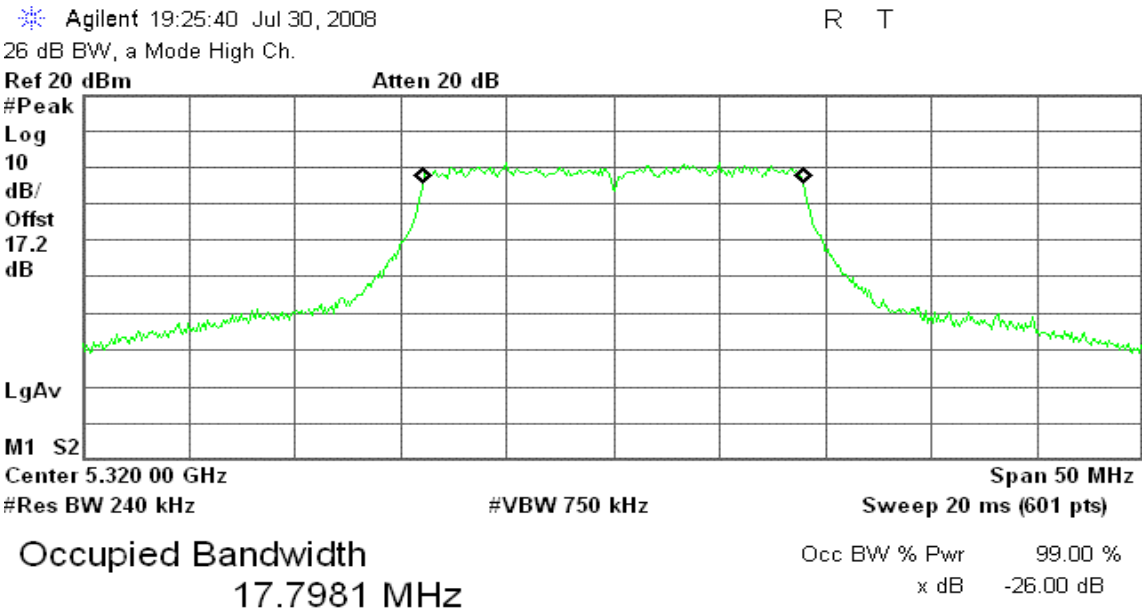
Transmit Freq Error	5.340 kHz
x dB Bandwidth	20.504 MHz

CH Mid



Transmit Freq Error	-2.718 kHz
x dB Bandwidth	20.522 MHz

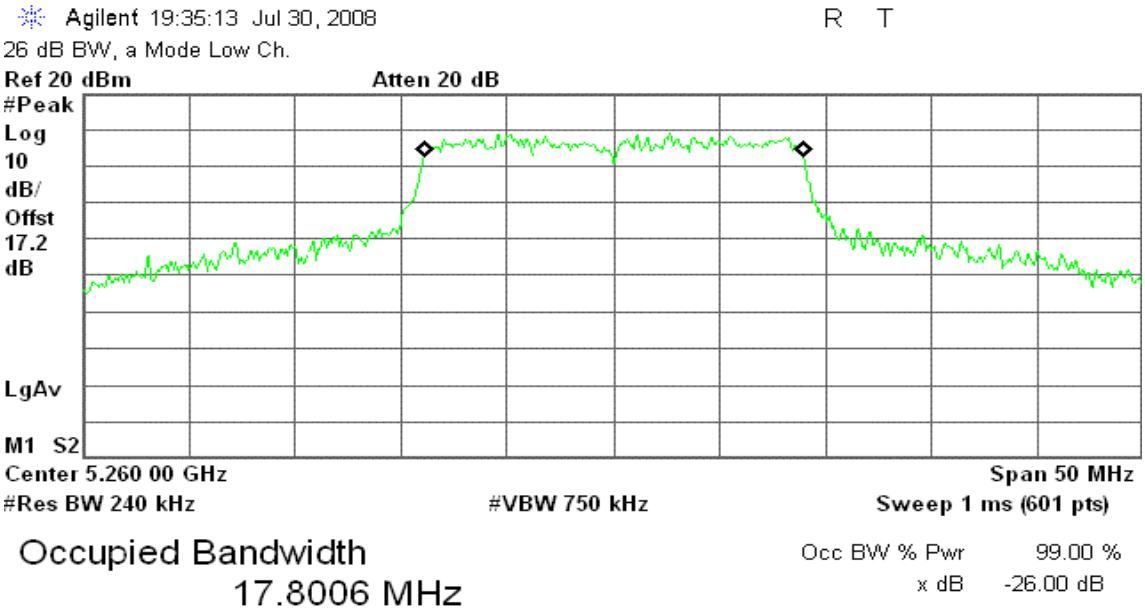
CH High



Transmit Freq Error 13.484 kHz
x dB Bandwidth 20.718 MHz

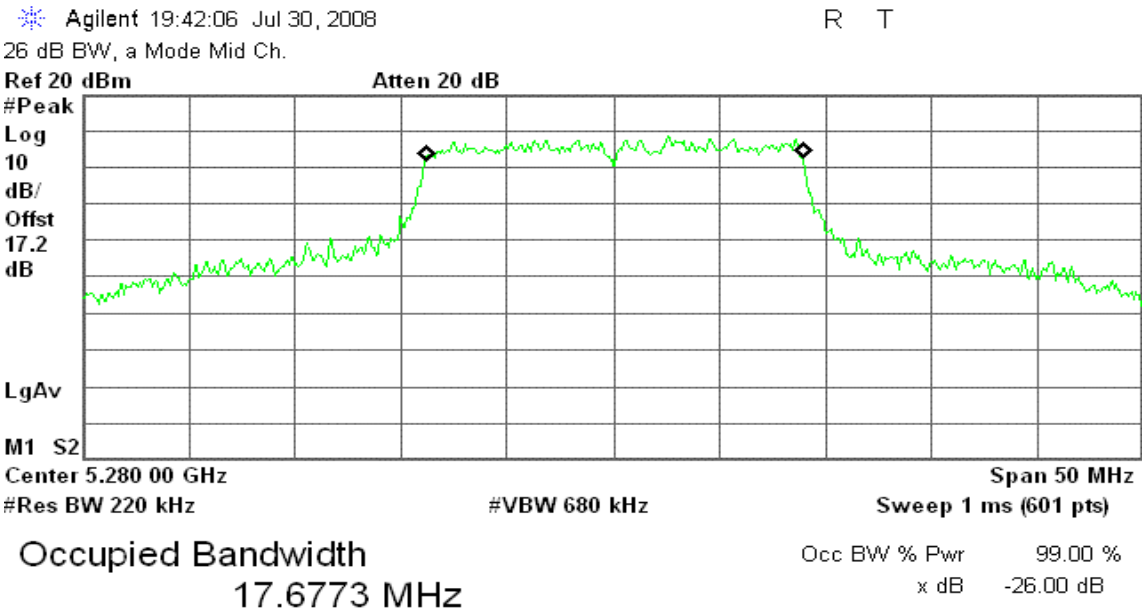
draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 2

CH Low



Transmit Freq Error 32.130 kHz
x dB Bandwidth 20.530 MHz

CH Mid

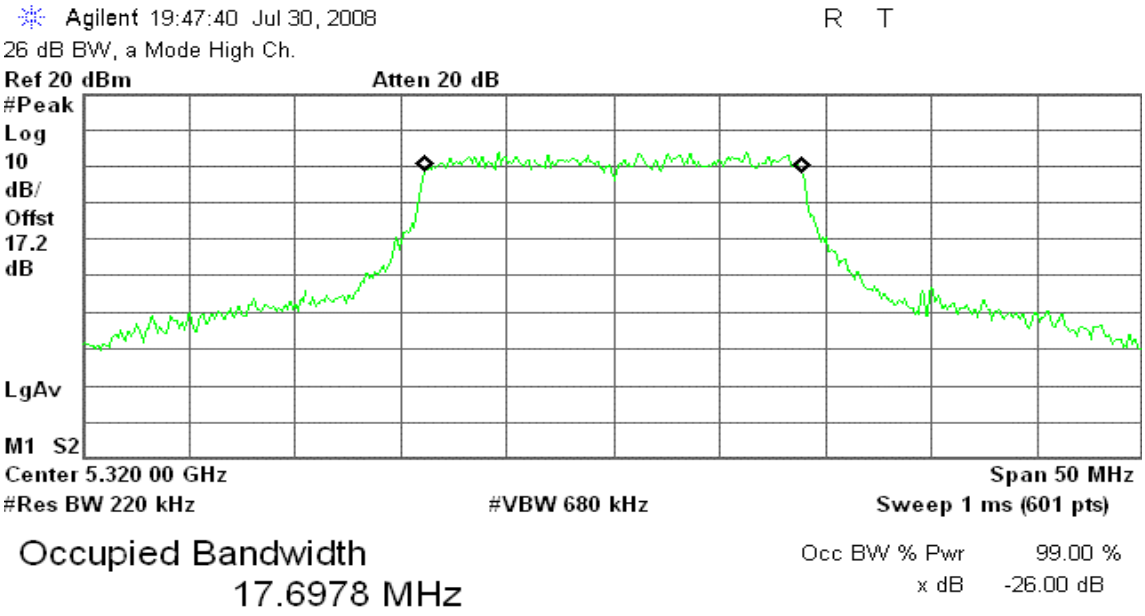


Occupied Bandwidth
17.6773 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	51.437 kHz
x dB Bandwidth	20.434 MHz

CH High



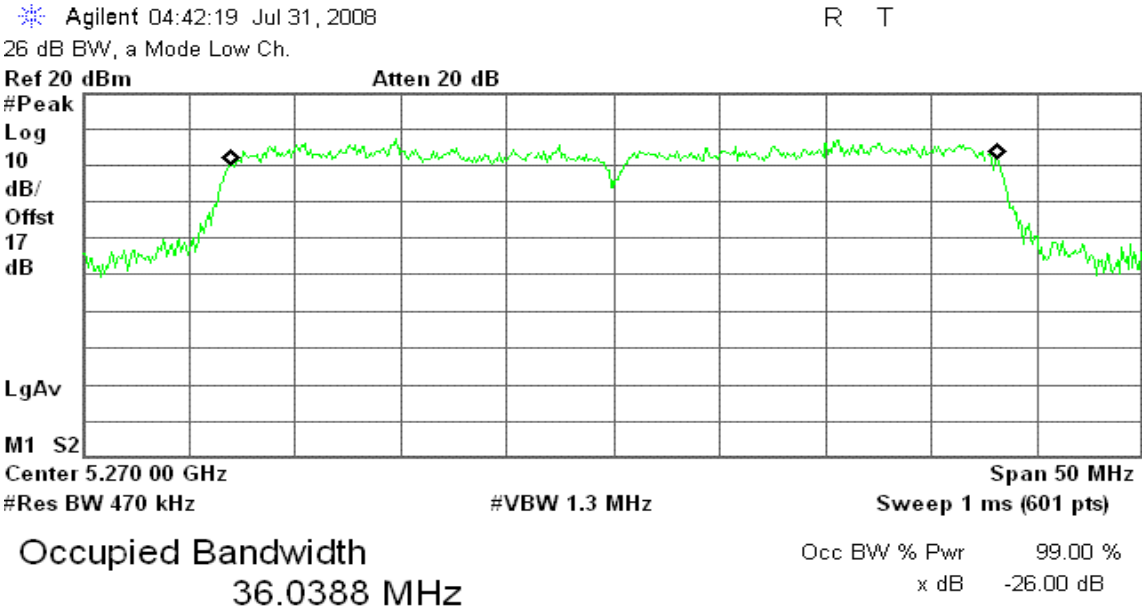
Occupied Bandwidth
17.6978 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	20.305 kHz
x dB Bandwidth	20.491 MHz

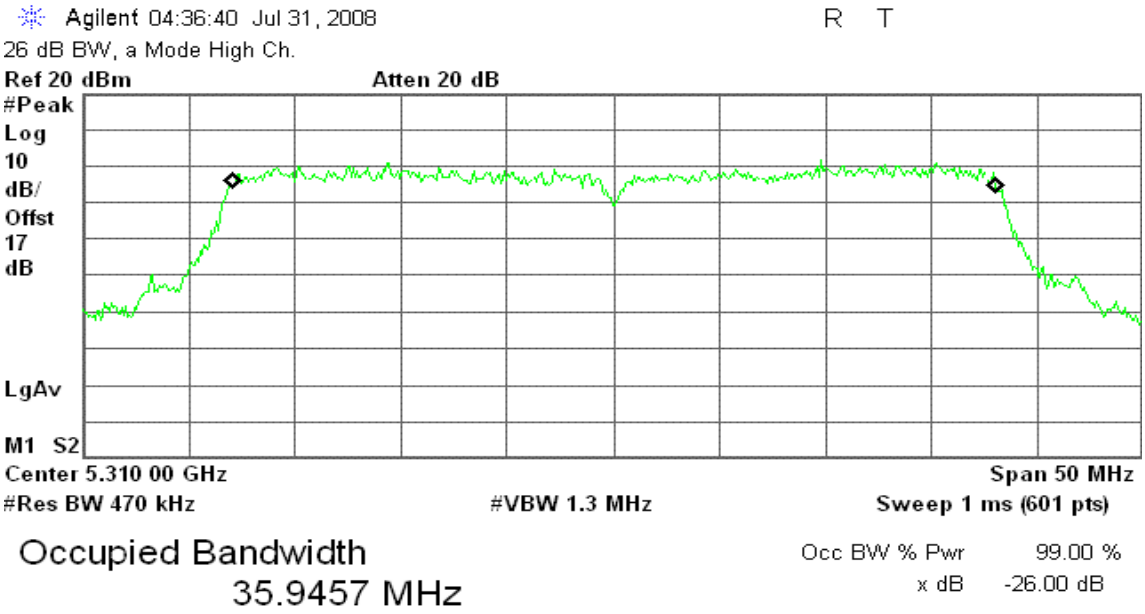
draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 0

CH Low



Transmit Freq Error	44.190 kHz
x dB Bandwidth	39.126 MHz

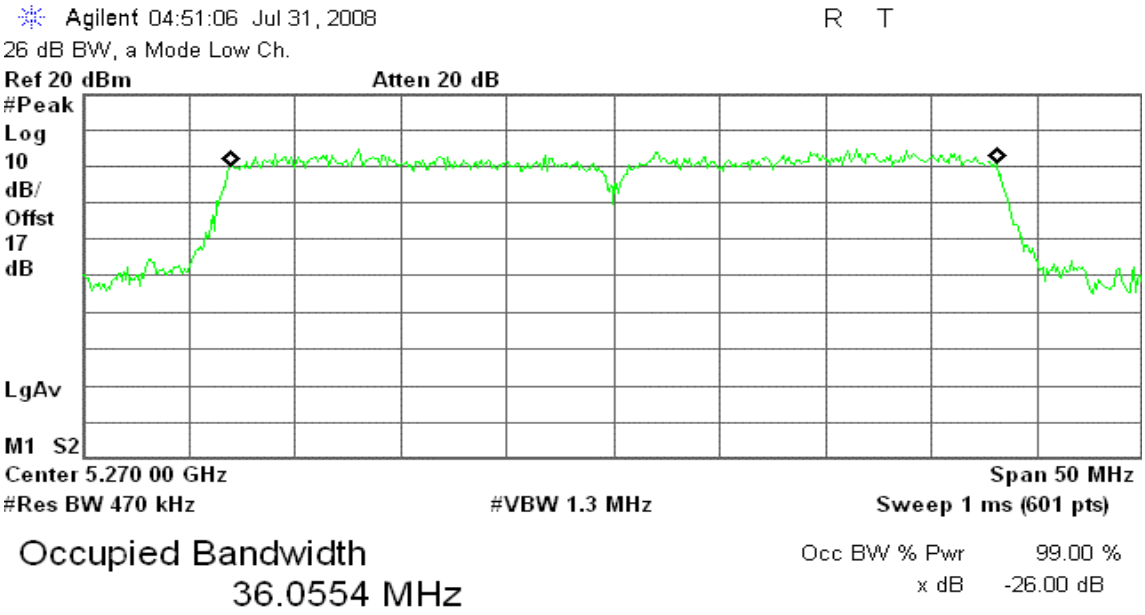
CH High



Transmit Freq Error	36.107 kHz
x dB Bandwidth	38.895 MHz

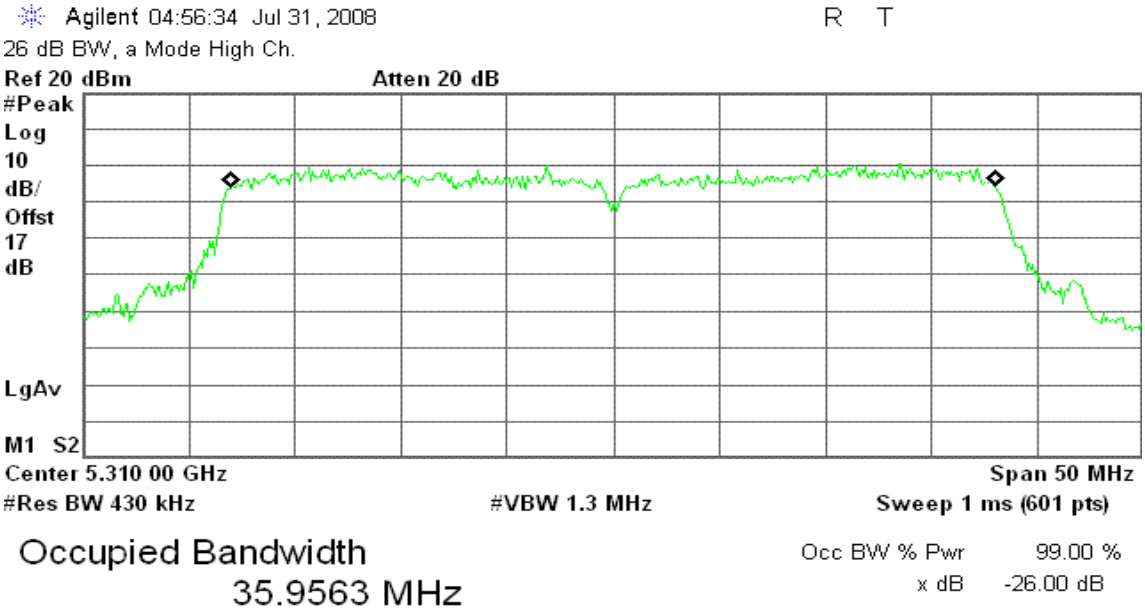
draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 1

CH Low



Transmit Freq Error	26.929 kHz
x dB Bandwidth	38.533 MHz

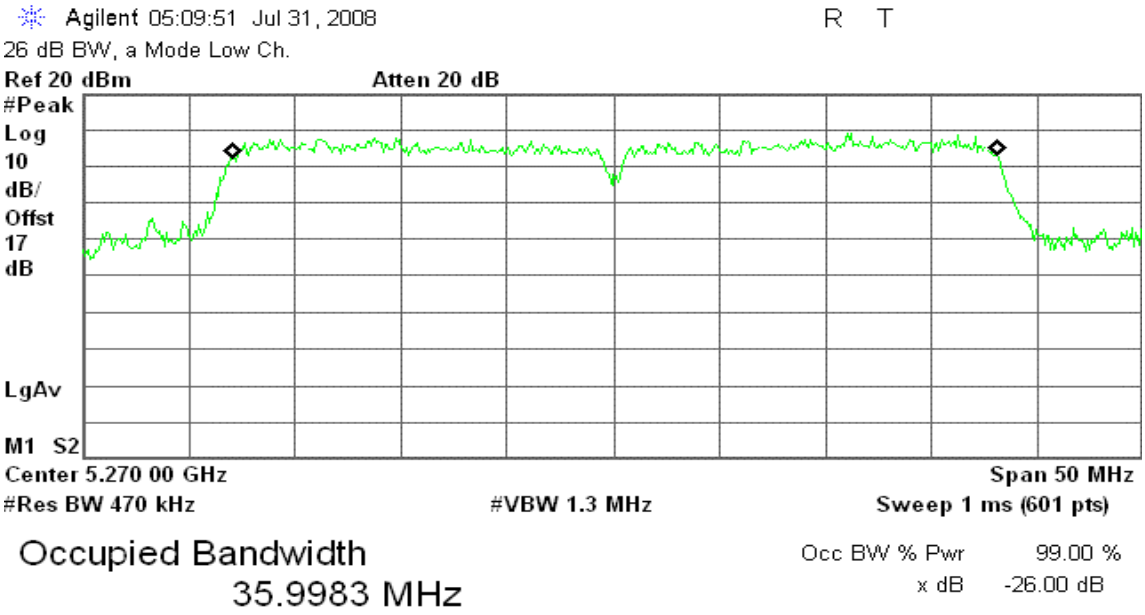
CH High



Transmit Freq Error	245.551 Hz
x dB Bandwidth	38.738 MHz

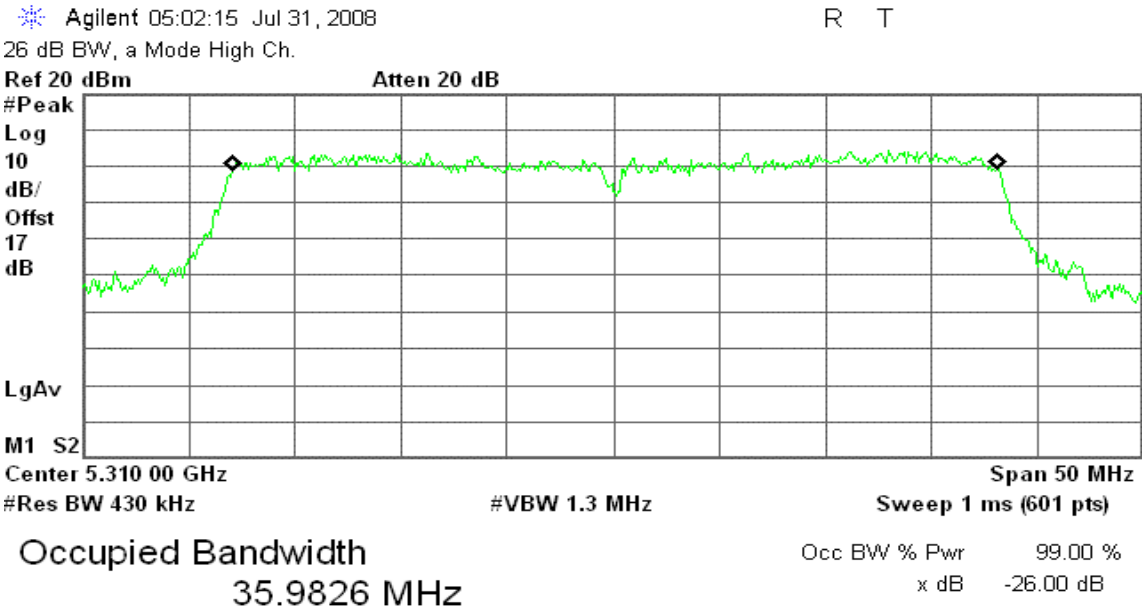
draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 2

CH Low



Transmit Freq Error	57.180 kHz
x dB Bandwidth	46.964 MHz

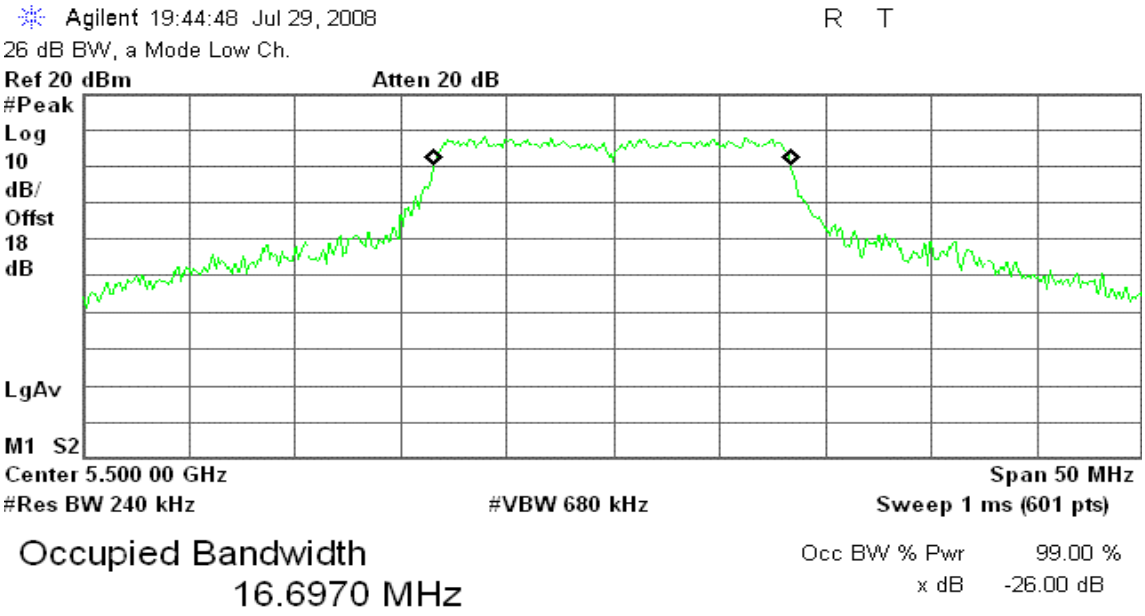
CH High



Transmit Freq Error	89.043 kHz
x dB Bandwidth	39.120 MHz

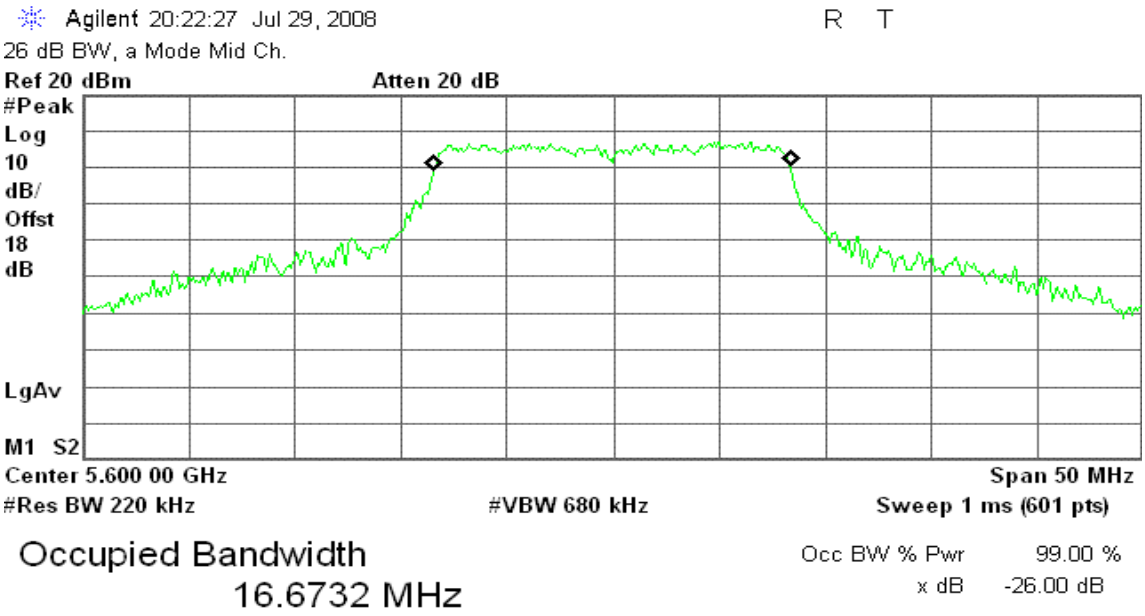
Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

CH Low



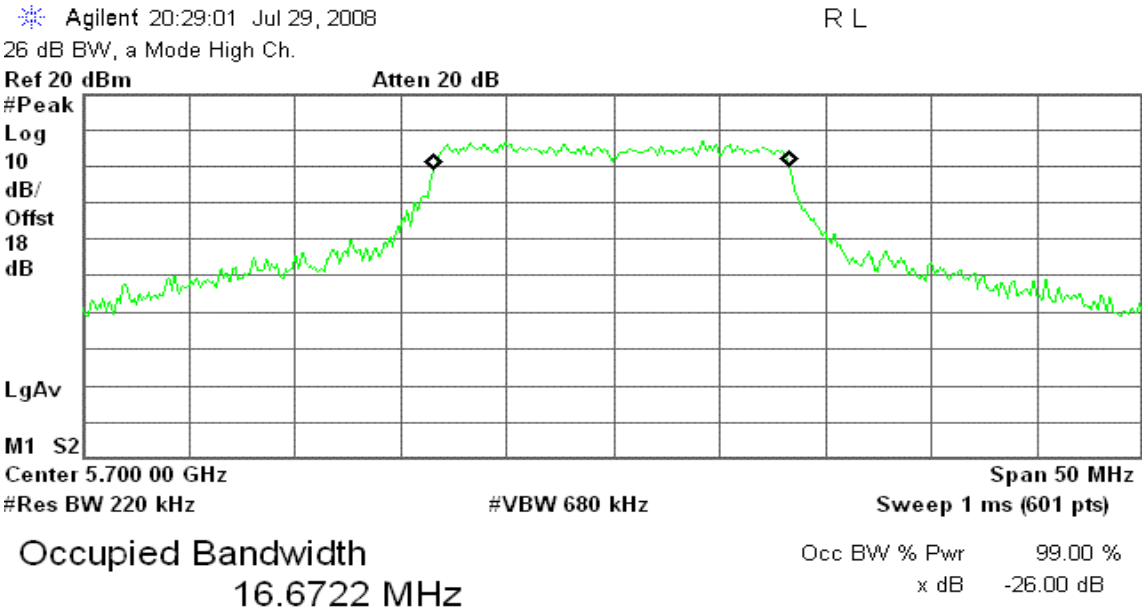
Transmit Freq Error	-39.870 kHz
x dB Bandwidth	21.863 MHz

CH Mid



Transmit Freq Error	-42.712 kHz
x dB Bandwidth	20.864 MHz

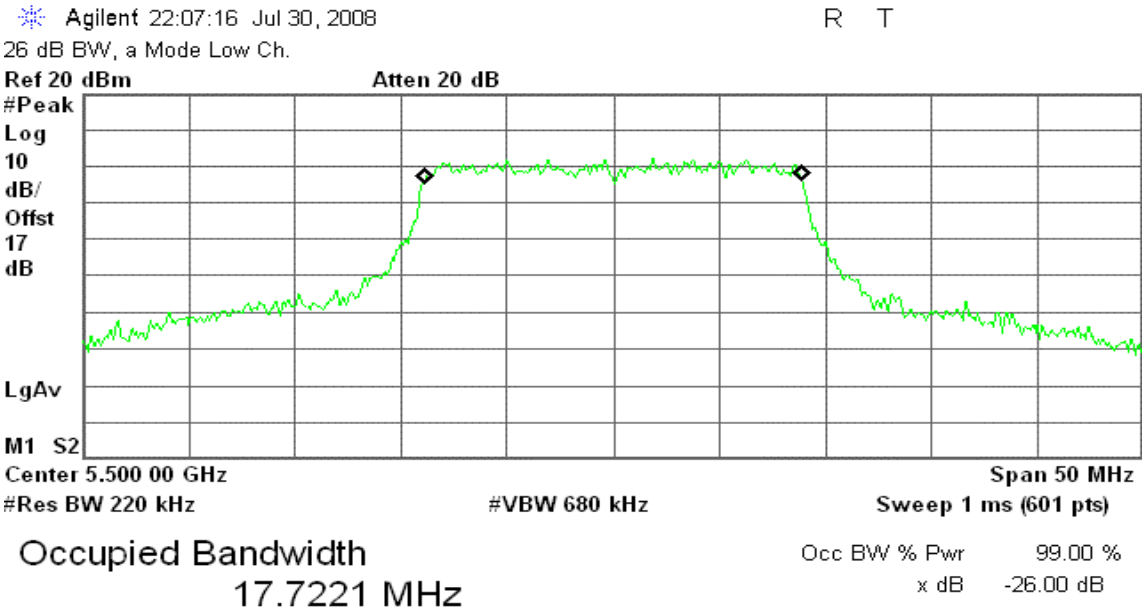
CH High



Transmit Freq Error -73.000 kHz
x dB Bandwidth 20.852 MHz

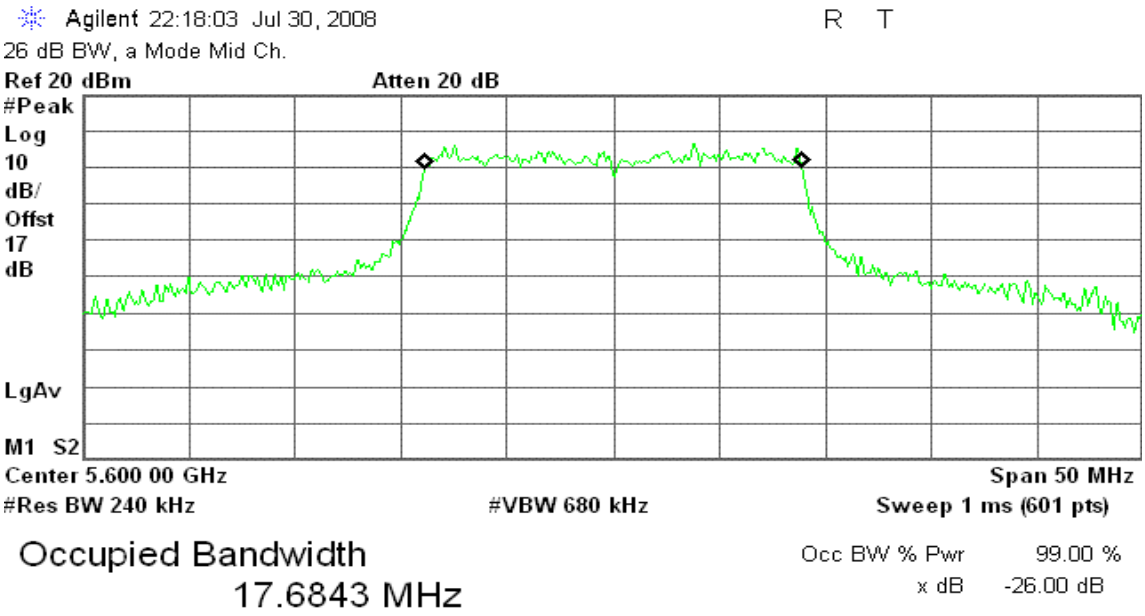
draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 0

CH Low



Transmit Freq Error -7.075 kHz
x dB Bandwidth 20.438 MHz

CH Mid

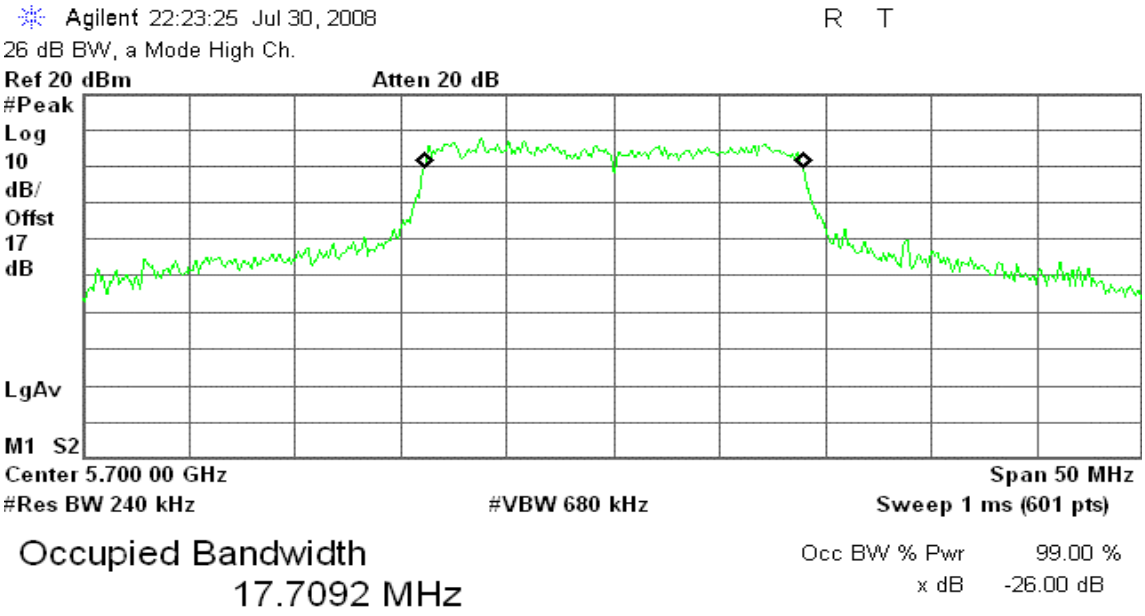


Occupied Bandwidth
17.6843 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	10.794 kHz
x dB Bandwidth	19.899 MHz

CH High



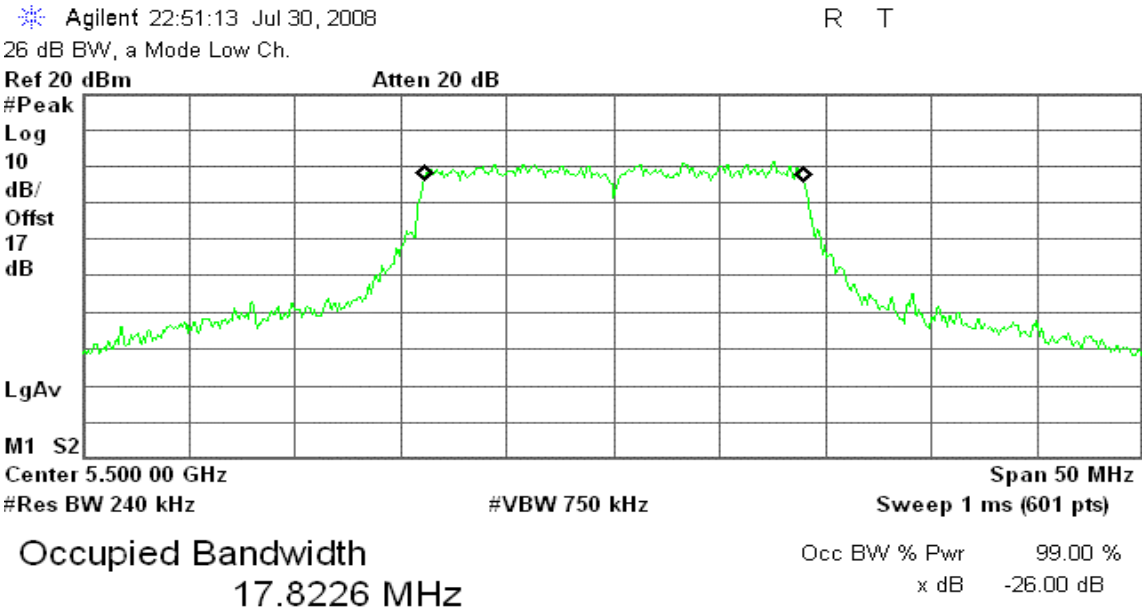
Occupied Bandwidth
17.7092 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	25.917 kHz
x dB Bandwidth	21.446 MHz

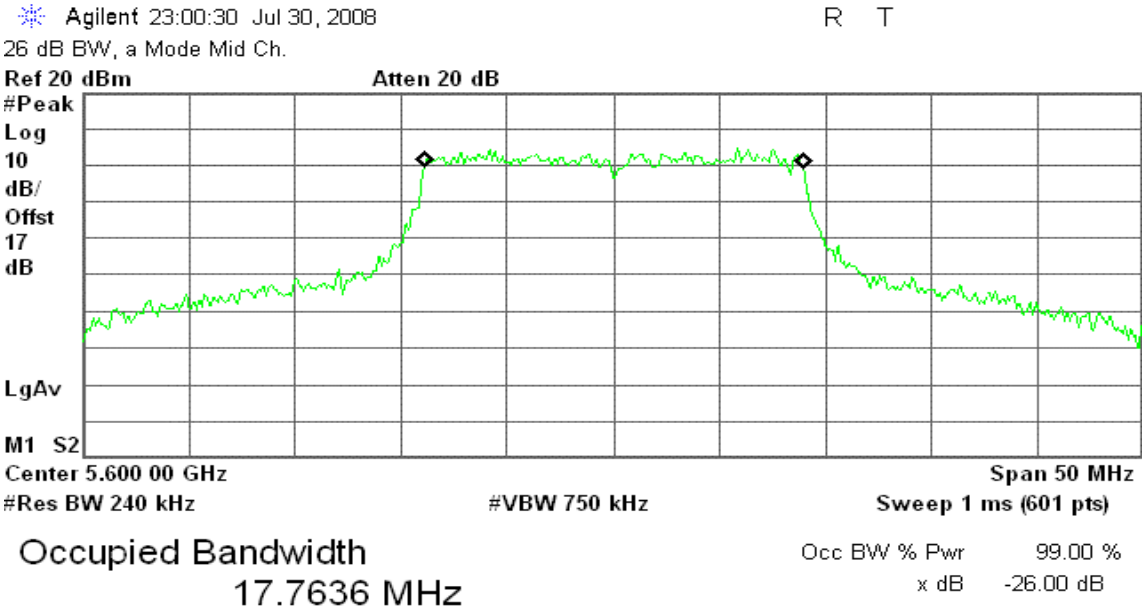
draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 1

CH Low



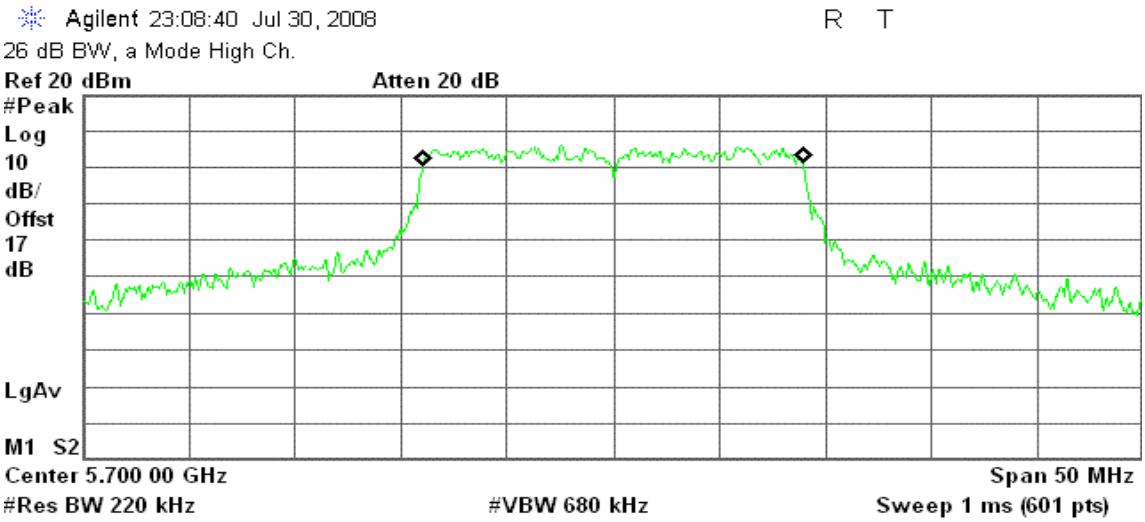
Transmit Freq Error	42.809 kHz
x dB Bandwidth	20.669 MHz

CH Mid



Transmit Freq Error	33.620 kHz
x dB Bandwidth	19.916 MHz

CH High



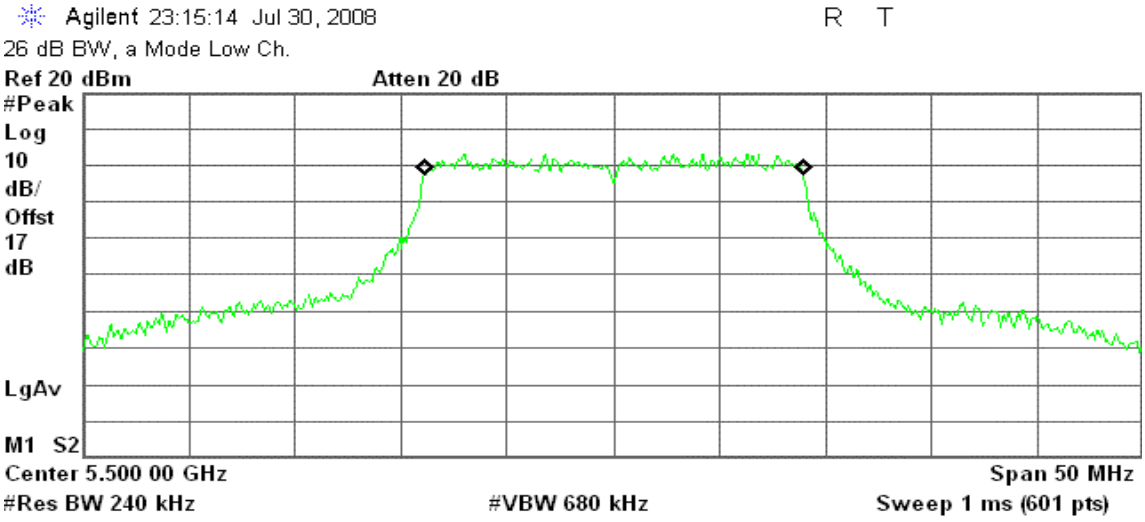
Occupied Bandwidth
17.7867 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 9.050 kHz
x dB Bandwidth 20.385 MHz

draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 2

CH Low

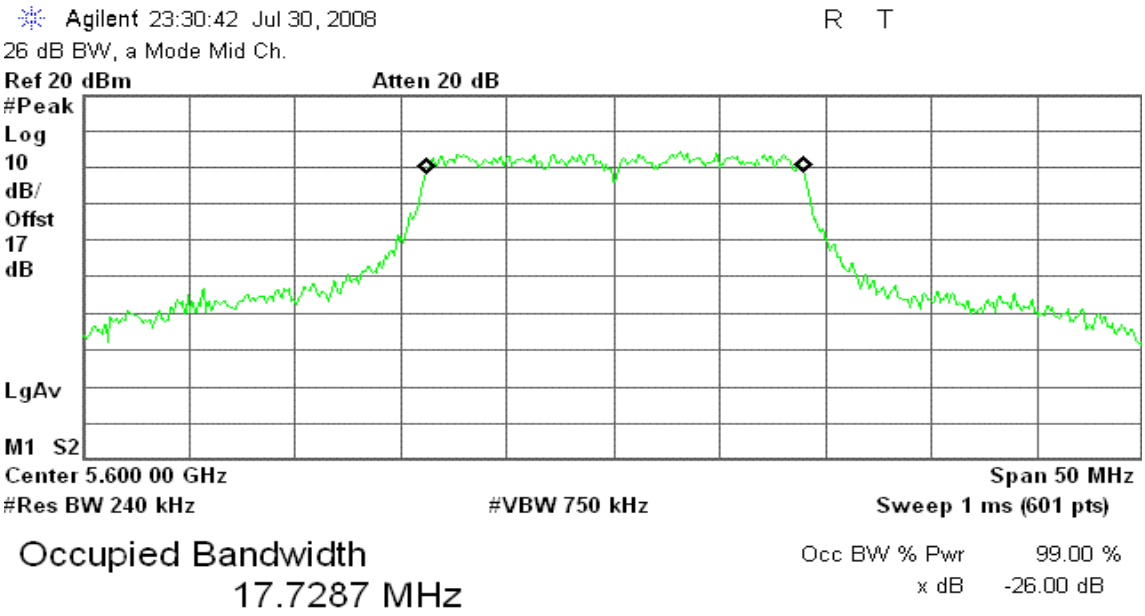


Occupied Bandwidth
17.7246 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 30.476 kHz
x dB Bandwidth 20.455 MHz

CH Mid

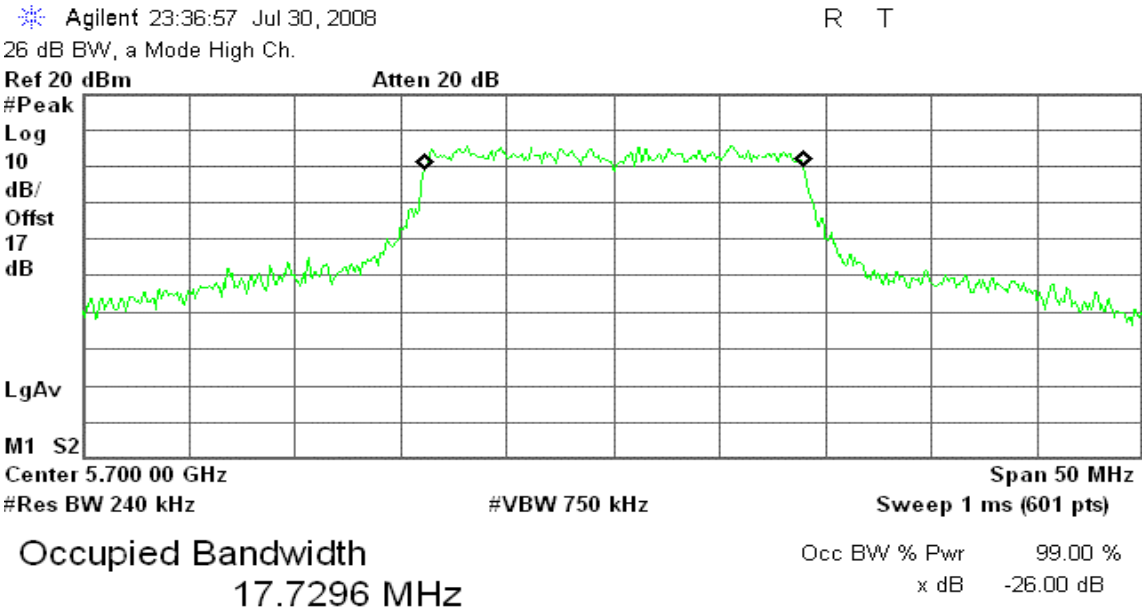


Occupied Bandwidth
17.7287 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	77.104 kHz
x dB Bandwidth	20.795 MHz

CH High



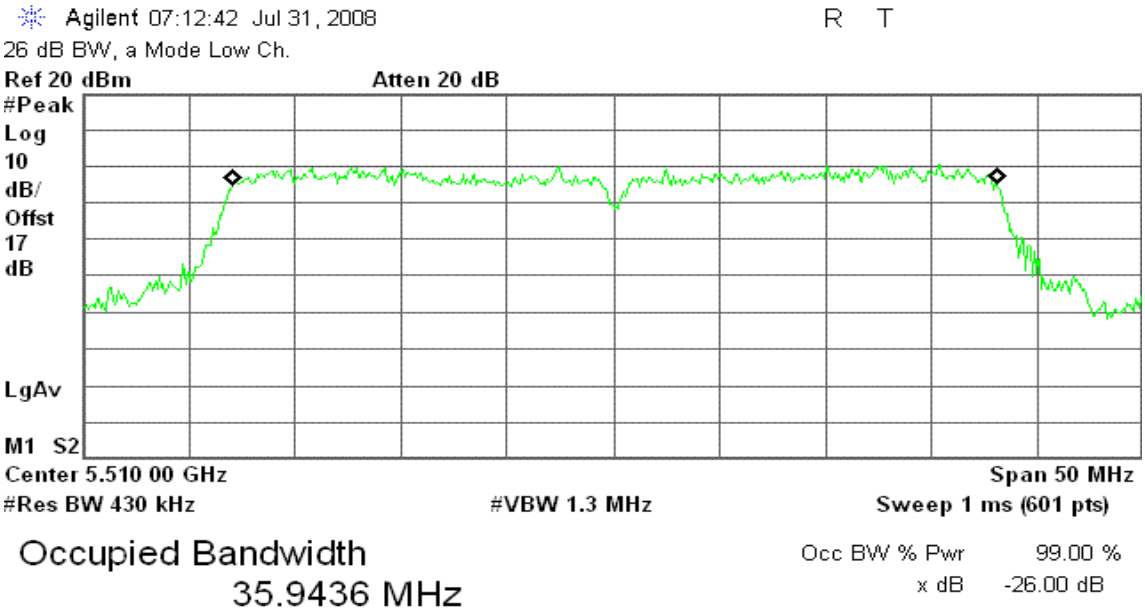
Occupied Bandwidth
17.7296 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	60.574 kHz
x dB Bandwidth	21.067 MHz

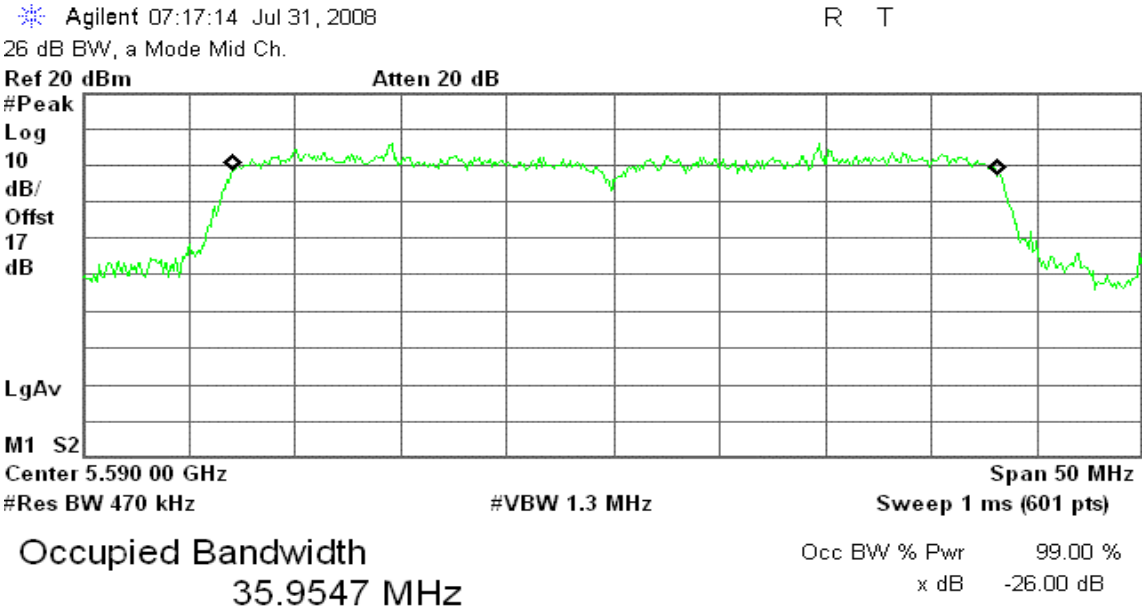
draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 0

CH Low



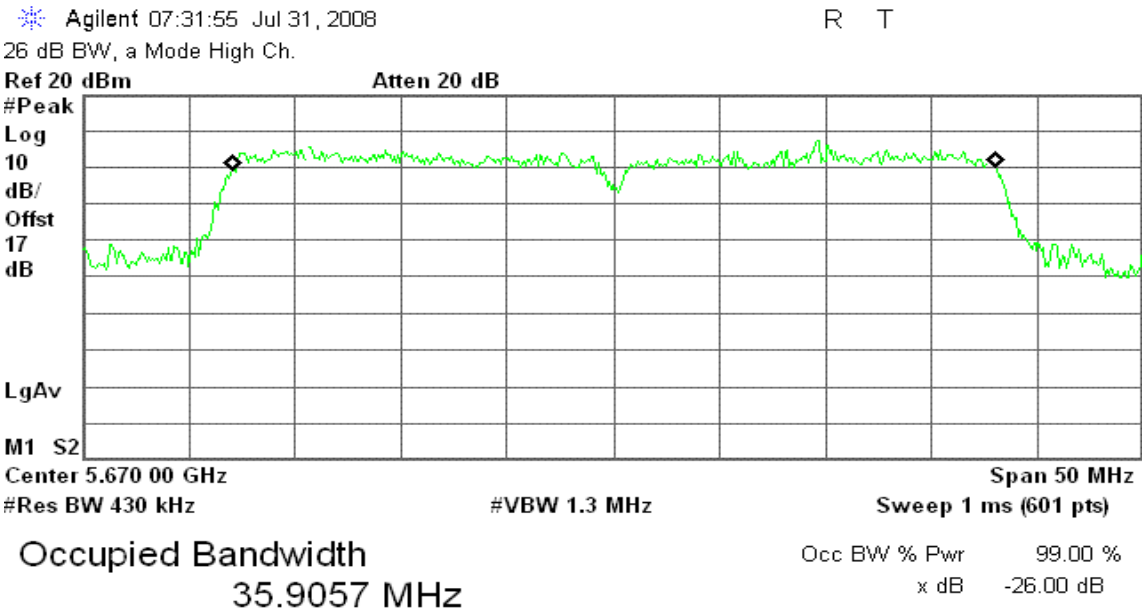
Transmit Freq Error	71.667 kHz
x dB Bandwidth	39.468 MHz

CH Mid



Transmit Freq Error	92.319 kHz
x dB Bandwidth	38.865 MHz

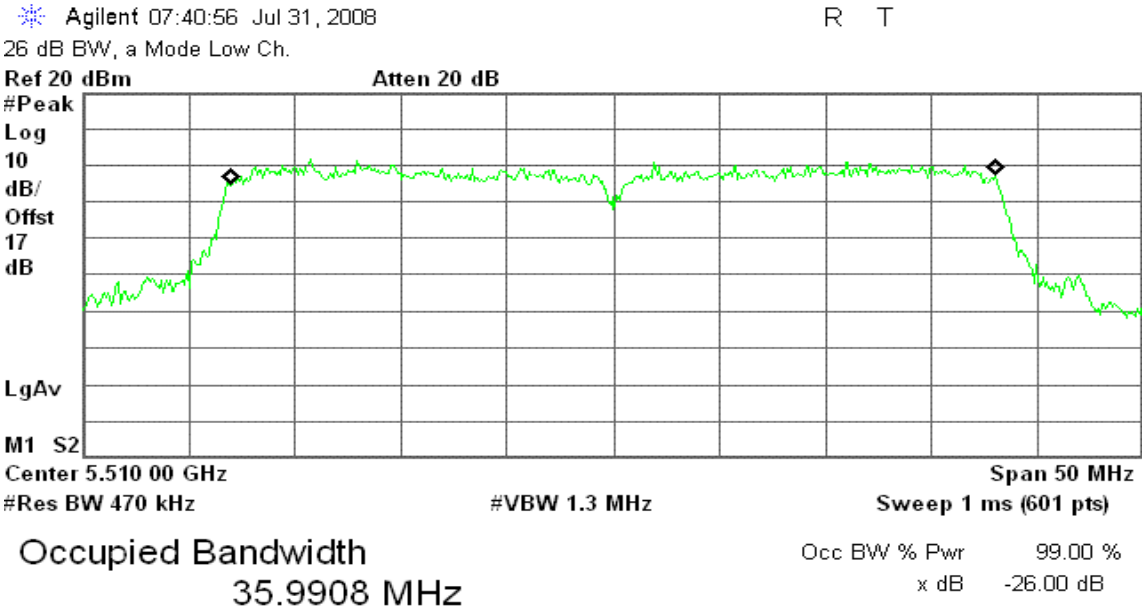
CH High



Transmit Freq Error	51.540 kHz
x dB Bandwidth	38.607 MHz

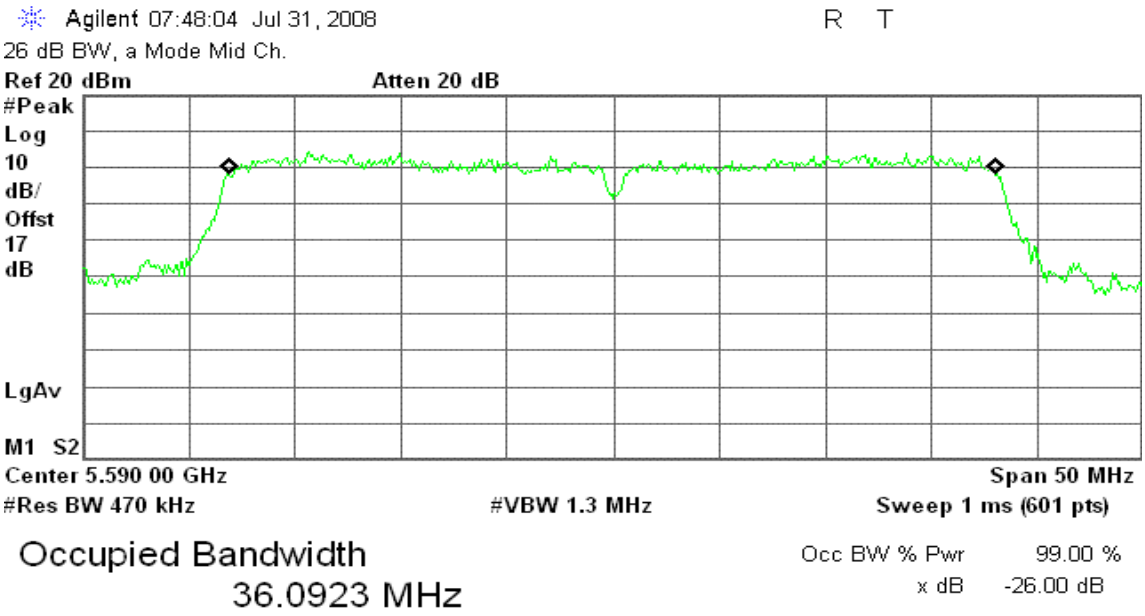
draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 1

CH Low



Transmit Freq Error	8.099 kHz
x dB Bandwidth	38.656 MHz

CH Mid

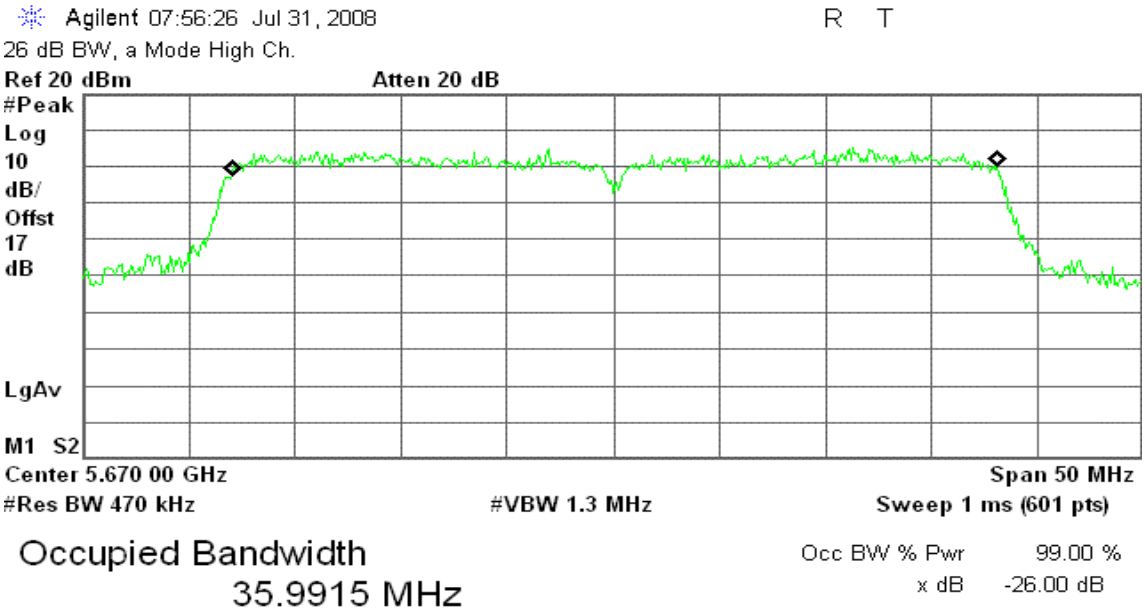


Occupied Bandwidth
36.0923 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -16.470 kHz
x dB Bandwidth 39.324 MHz

CH High



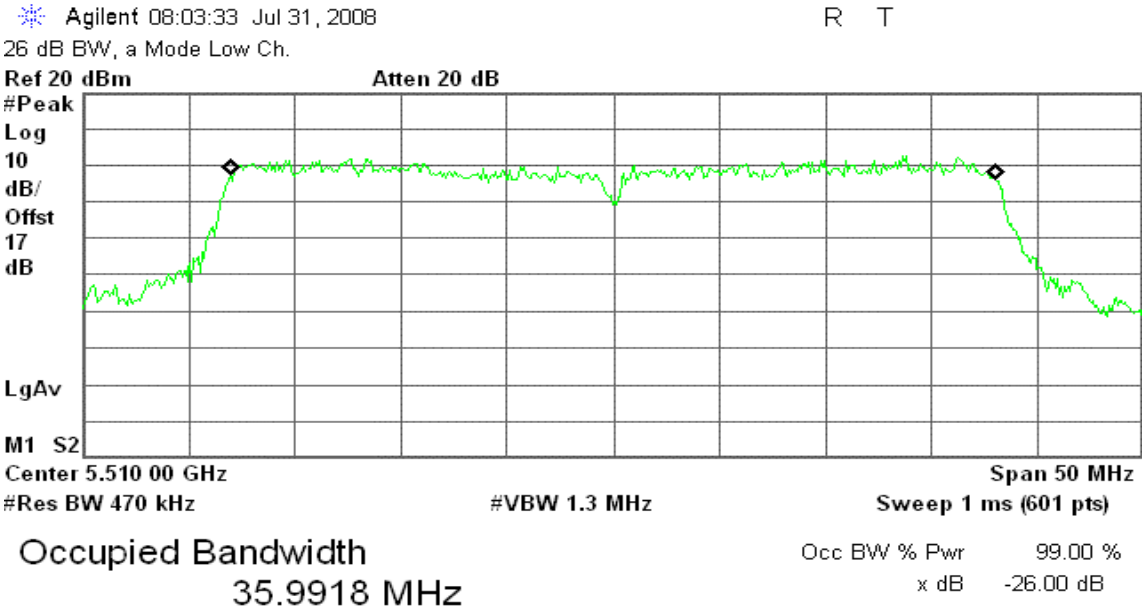
Occupied Bandwidth
35.9915 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 50.405 kHz
x dB Bandwidth 38.676 MHz

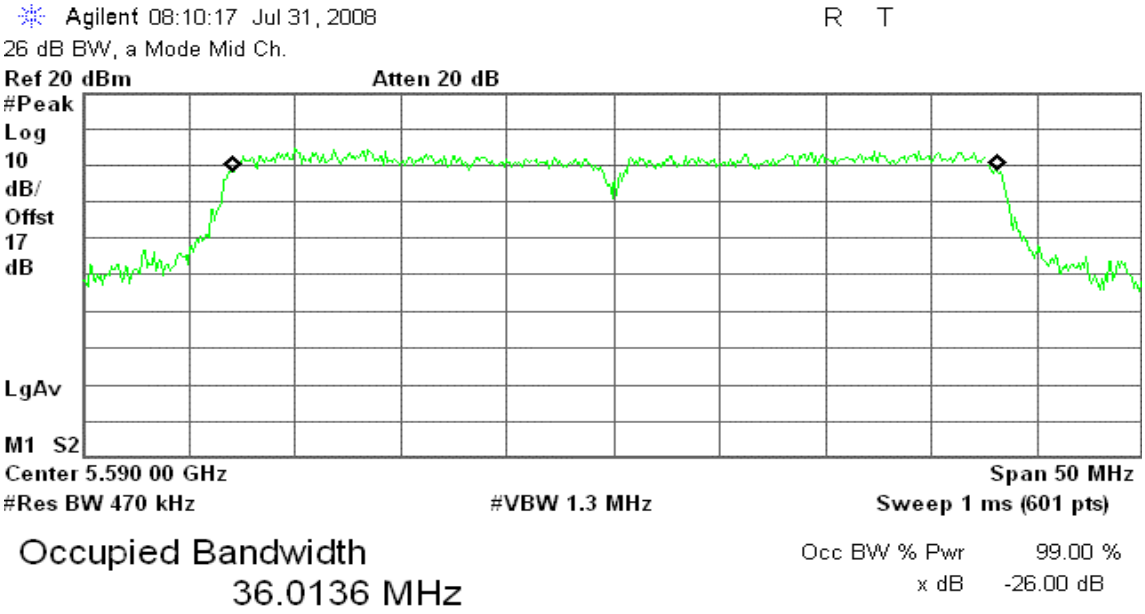
draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 2

CH Low



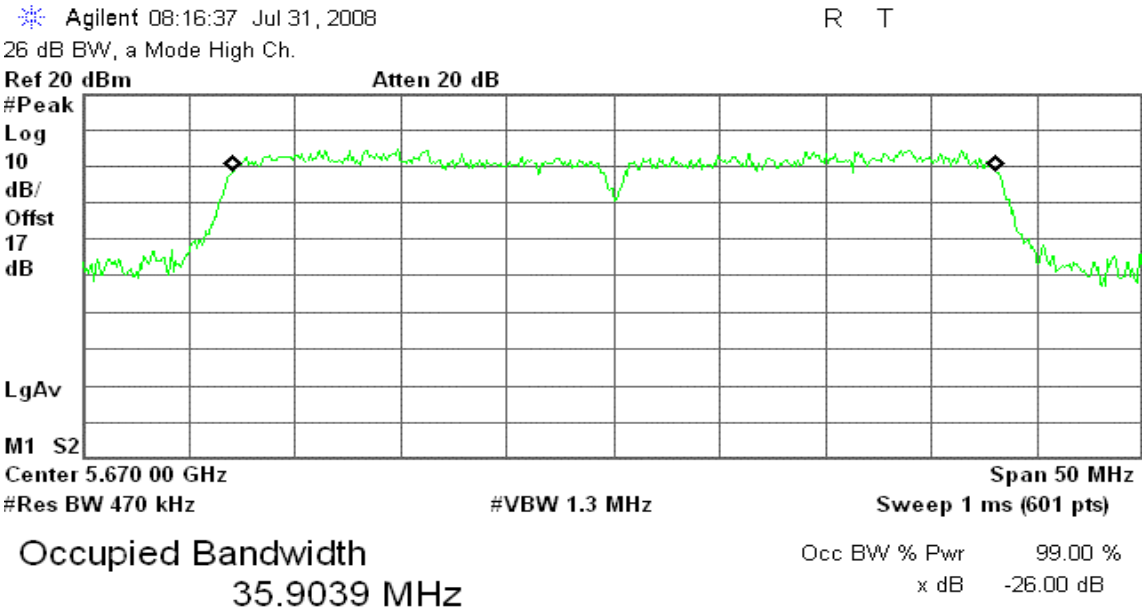
Transmit Freq Error	-5.507 kHz
x dB Bandwidth	38.457 MHz

CH Mid



Transmit Freq Error	53.213 kHz
x dB Bandwidth	39.157 MHz

CH High



Occupied Bandwidth
35.9039 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	66.613 kHz
x dB Bandwidth	39.480 MHz

7.2MAXIMUM 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:

Specified Limit of the Peak Power

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

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B or 11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5180	20.538	13.13	17.13	17.00
Mid	5220	20.211	13.06	17.06	17.00
High	5240	20.015	13.01	17.01	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)	Chain 2 26 dB Bandwidth (B) (MHz)	Total 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B or 11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5180	19.563	20.709	20.098	24.92	13.97	17.97	17.00
Mid	5220	20.307	20.063	20.359	25.02	13.98	17.98	17.00
High	5240	20.587	20.369	20.779	25.35	14.04	18.04	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)	Chain 2 26 dB Bandwidth (B) (MHz)	Total 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B or 11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5190	38.628	39.154	38.893	43.67	16.40	20.40	17.00
High	5230	39.117	38.921	38.995	43.78	16.41	20.41	17.00

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

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B or 11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5260	20.563	13.13	24.13	24.00
Mid	5280	20.873	13.20	24.20	24.00
High	5320	20.412	13.10	24.10	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)	Chain 2 26 dB Bandwidth (B) (MHz)	Total 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B or 11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5260	19.940	20.504	20.530	25.10	14.00	25.00	24.00
Mid	5280	20.489	20.522	20.434	25.25	14.02	25.02	24.00
High	5320	19.837	20.718	20.491	25.14	14.00	25.00	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)	Chain 2 26 dB Bandwidth (B) (MHz)	Total 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B or 11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5270	39.126	38.533	46.964	48.13	16.82	27.82	24.00
High	5310	38.895	38.738	39.120	43.69	16.40	27.40	24.00

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

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B or 11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5500	21.863	13.40	24.40	24.00
Mid	5600	20.864	13.19	24.19	24.00
High	5700	20.852	13.19	24.19	24.00

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

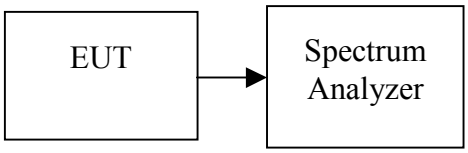
Channel	Frequency (MHz)	Chain 0 26 dB Bandwidth (B) (MHz)	Chain 1 26 dB Bandwidth (B) (MHz)	Chain 2 26 dB Bandwidth (B) (MHz)	Total 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B or 11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5500	20.438	20.669	20.455	25.29	14.03	24.03	24.00
Mid	5600	19.899	19.916	20.795	25.00	13.98	24.98	24.00
High	5700	21.446	20.385	21.067	25.76	14.11	24.11	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)	Chain 2 26 dB Bandwidth (B) (MHz)	Total 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B or 11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5510	39.468	38.656	38.457	43.65	16.40	27.40	24.00
Mid	5590	38.865	39.324	39.157	43.89	16.42	27.42	24.00
High	5670	38.607	38.676	39.480	43.71	16.41	27.41	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

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

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	15.22	17.00
Mid	5220	15.08	17.00
High	5240	14.73	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)	Chain 2 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	9.67	9.73	9.44	14.39	17.00
Mid	5220	10.05	10.21	10.25	14.94	17.00
High	5240	10.34	10.31	11.09	15.37	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)	Chain 2 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5190	11.9	11.04	12.52	16.63	17.00
High	5230	12.00	11.60	11.44	16.46	17.00

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

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	16.13	24.00
Mid	5280	16.86	24.00
High	5320	14.53	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)	Chain 2 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	15.82	15.20	17.20	20.93	24.00
Mid	5280	14.72	14.73	17.58	20.67	24.00
High	5320	11.73	10.10	13.68	16.85	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)	Chain 2 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5270	14.54	13.25	17.18	20.08	24.00
High	5310	9.08	8.56	13.35	15.67	24.00

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

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	16.38	24.00
Mid	5600	17.38	24.00
High	5700	16.87	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)	Chain 2 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	11.02	11.30	12.77	16.54	24.00
Mid	5600	14.67	13.37	14.01	18.82	24.00
High	5700	16.43	15.58	15.34	20.58	24.00

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

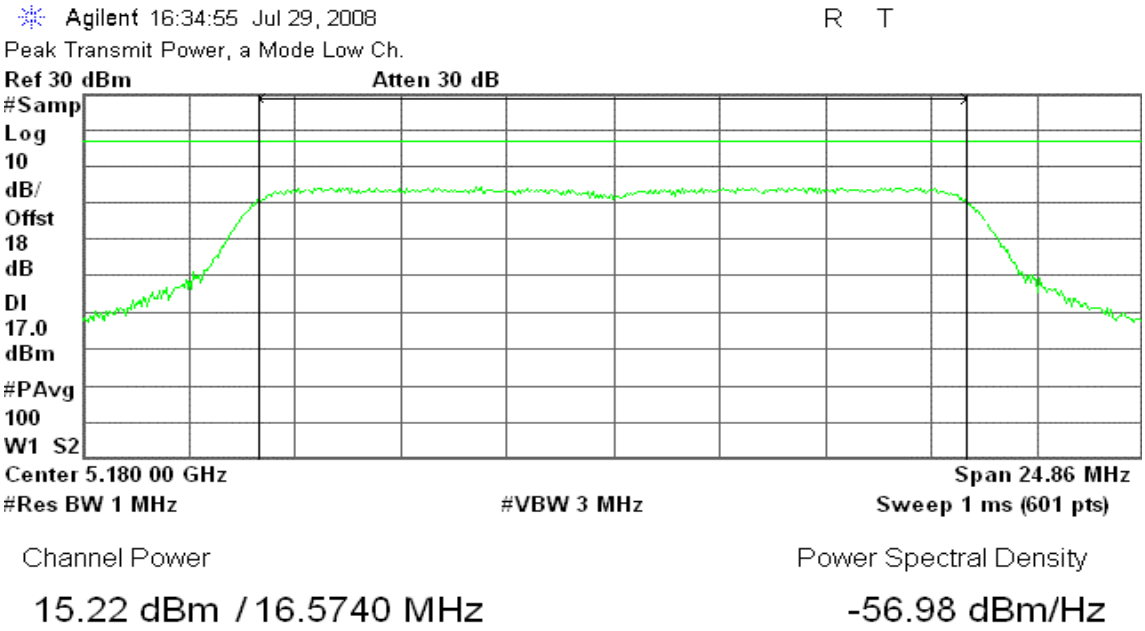
Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Chain 2 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5510	8.89	9.35	10.41	14.37	24.00
Mid	5590	12.86	12.78	13.33	17.77	24.00
High	5670	14.44	13.54	13.64	18.66	24.00

Remark: *Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000) + Chain 2 (10^(Output Power /10)/1000)*

Test Plot

IEEE 802.11a mode / 5180 ~ 5240MHz

CH Low



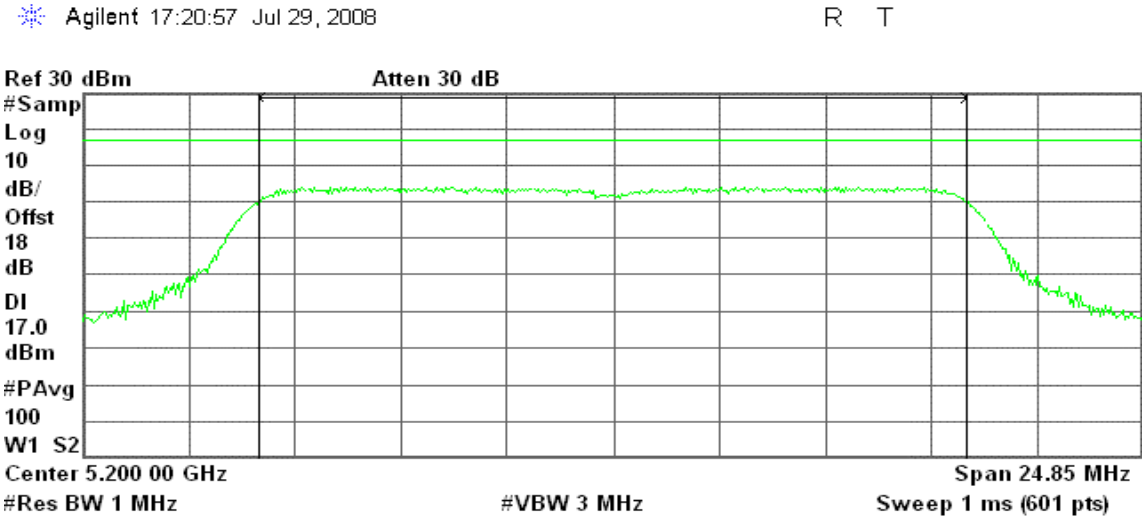
Channel Power

15.22 dBm / 16.5740 MHz

Power Spectral Density

-56.98 dBm/Hz

CH Mid



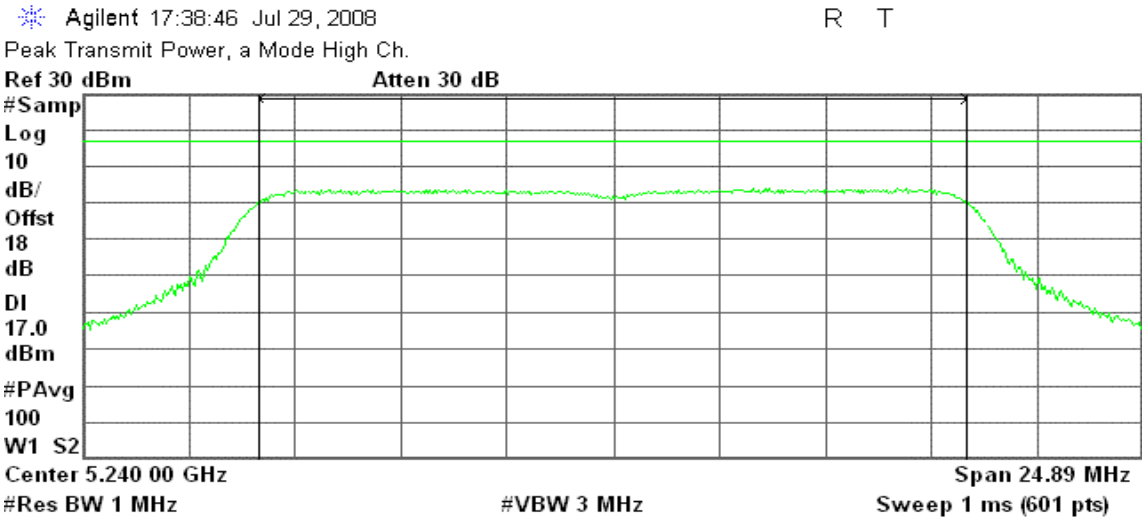
Channel Power

15.08 dBm / 16.5690 MHz

Power Spectral Density

-57.11 dBm/Hz

CH High

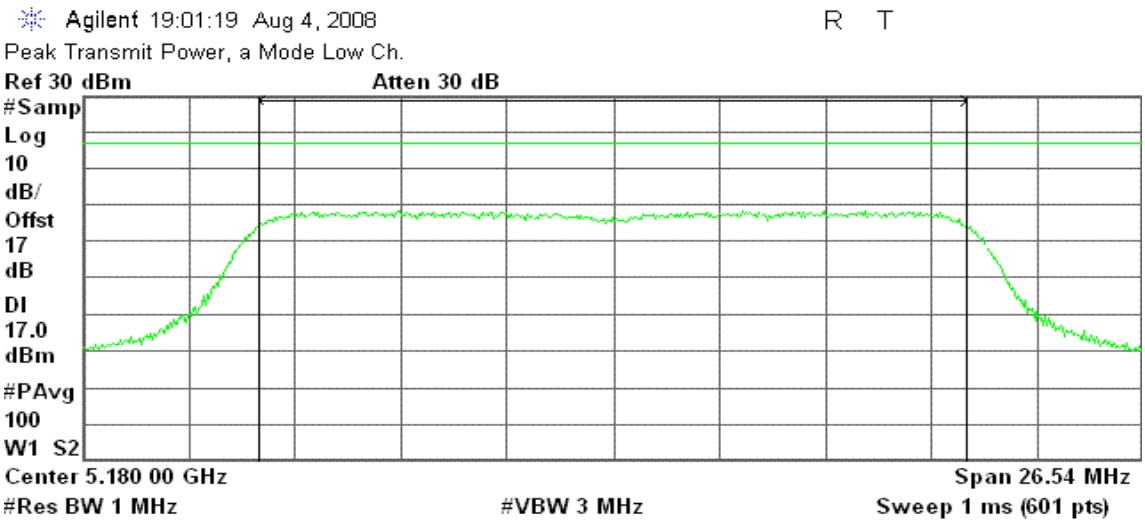


Channel Power
14.73 dBm / 16.5903 MHz

Power Spectral Density
-57.47 dBm/Hz

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

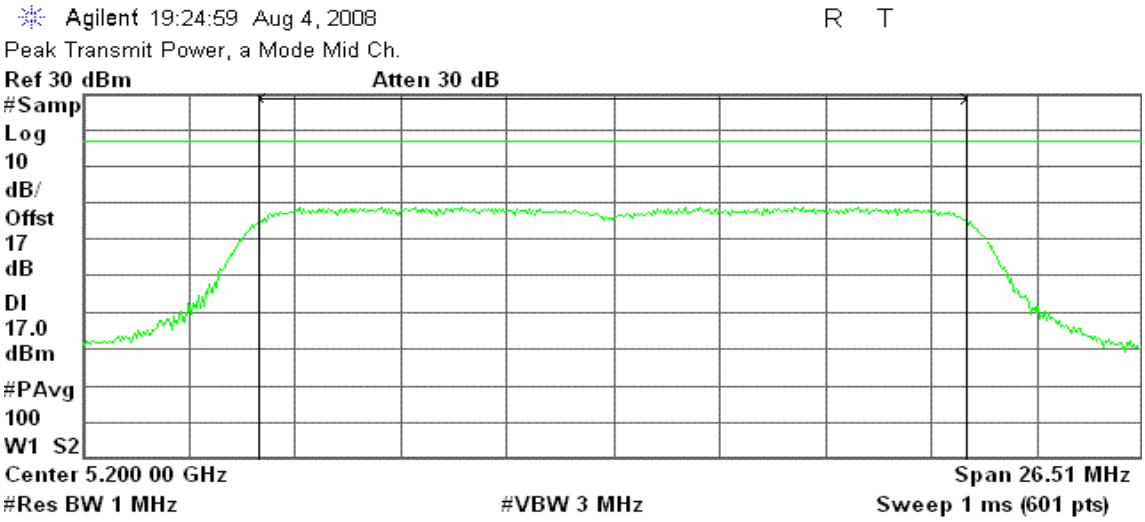
CH Low



Channel Power
9.69 dBm / 17.6924 MHz

Power Spectral Density
-62.79 dBm/Hz

CH Mid



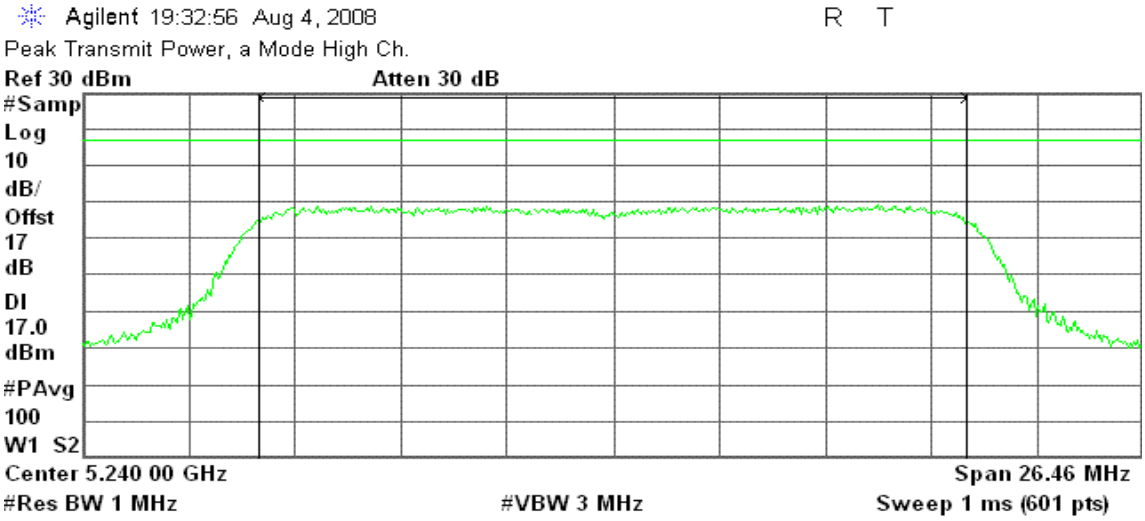
Channel Power

10.05 dBm / 17.6713 MHz

Power Spectral Density

-62.42 dBm/Hz

CH High



Channel Power

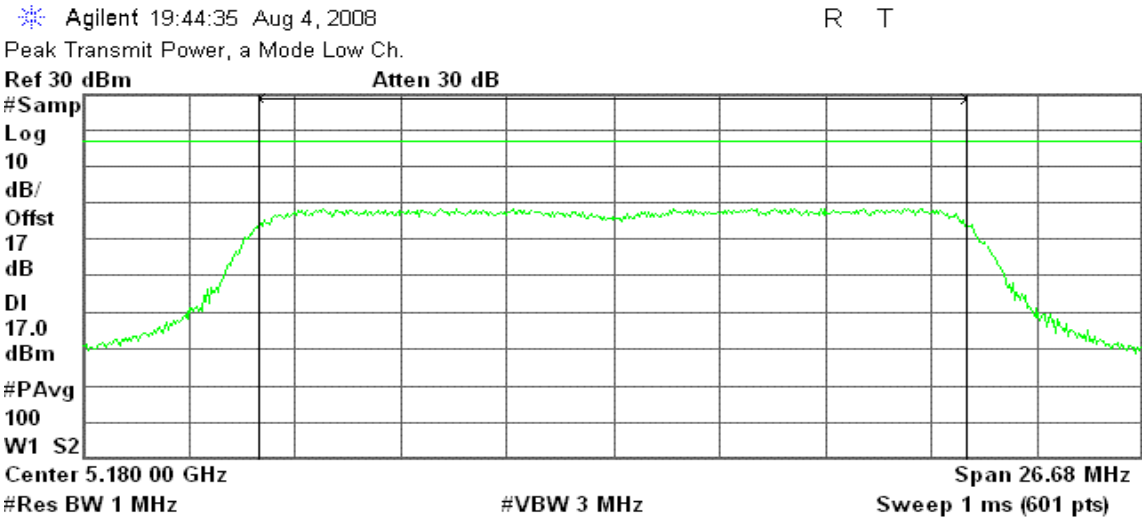
10.34 dBm / 17.6432 MHz

Power Spectral Density

-62.13 dBm/Hz

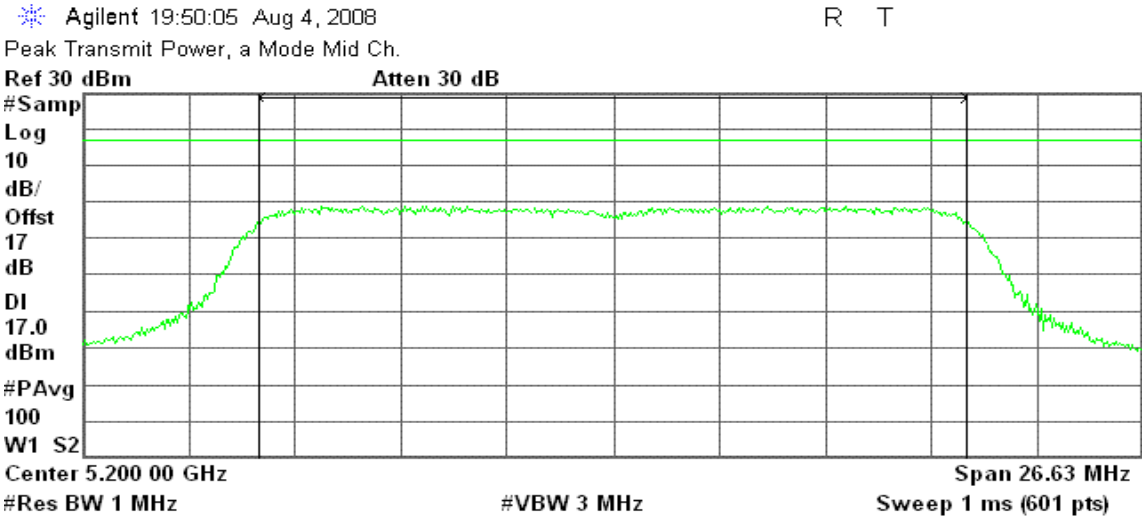
draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1

CH Low



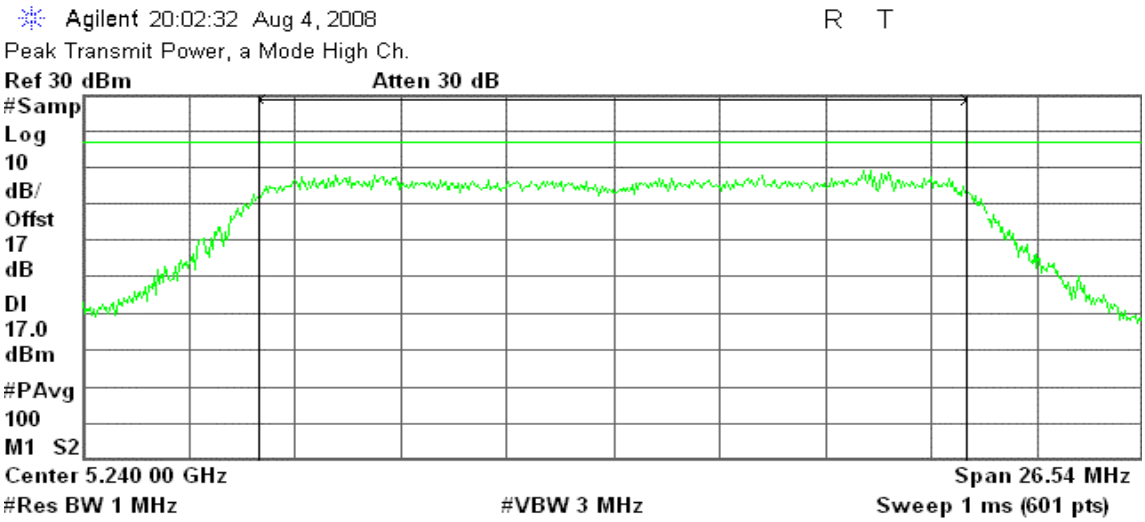
Channel Power	Power Spectral Density
9.73 dBm / 17.7865 MHz	-62.77 dBm/Hz

CH Mid



Channel Power	Power Spectral Density
10.21 dBm / 17.7565 MHz	-62.28 dBm/Hz

CH High

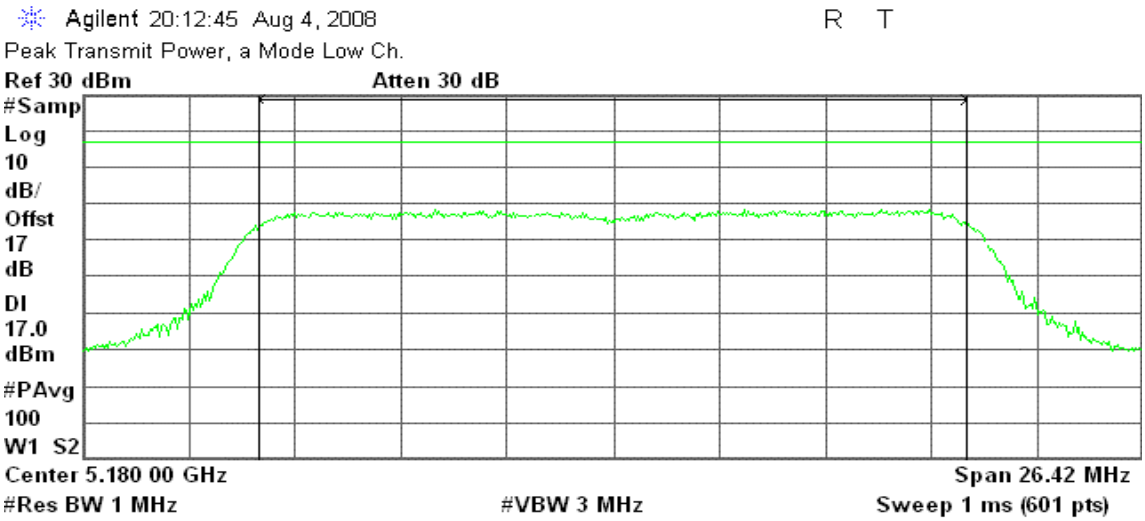


Channel Power
10.31 dBm / 17.6950 MHz

Power Spectral Density
-62.17 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5180 ~ 5240MHz / Chain 2

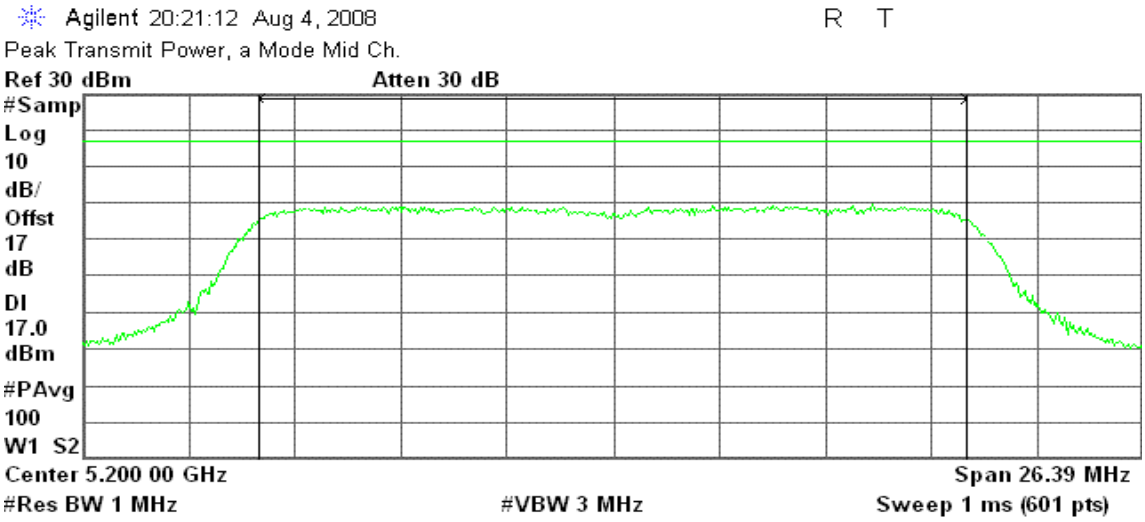
CH Low



Channel Power
9.44 dBm / 17.6106 MHz

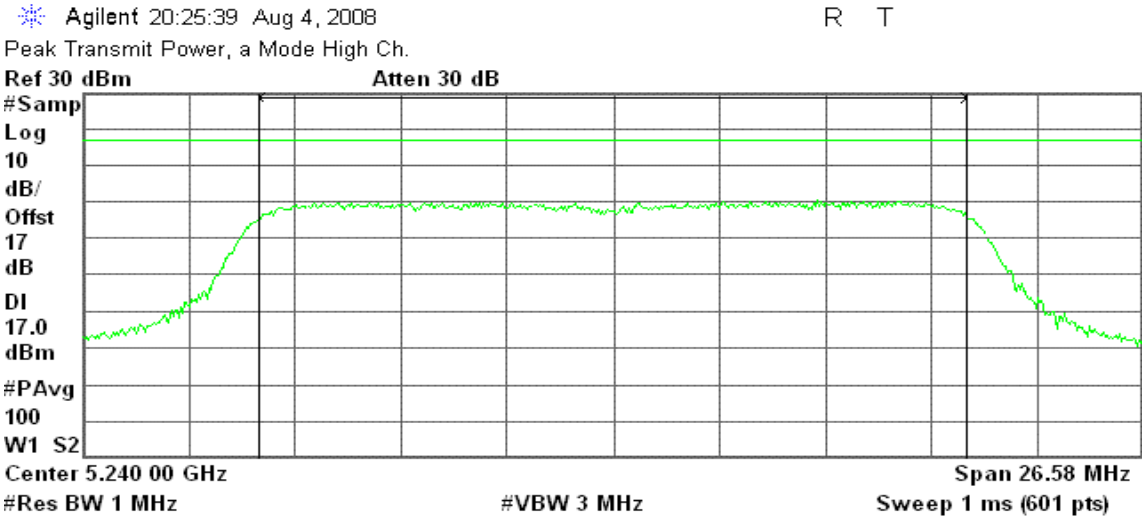
Power Spectral Density
-63.02 dBm/Hz

CH Mid



Channel Power	Power Spectral Density
10.25 dBm / 17.5928 MHz	-62.20 dBm/Hz

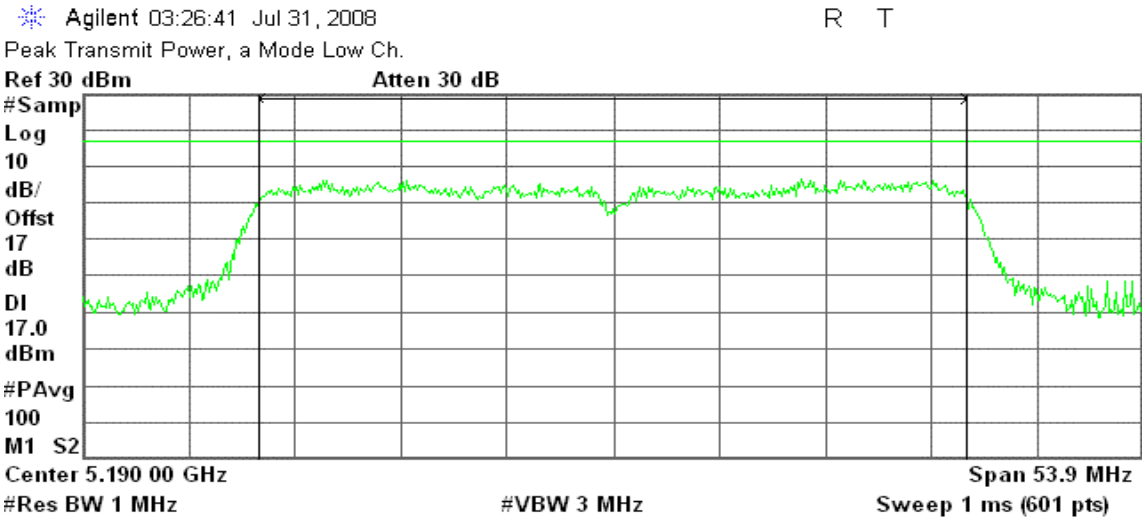
CH High



Channel Power	Power Spectral Density
11.09 dBm / 17.7226 MHz	-61.40 dBm/Hz

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

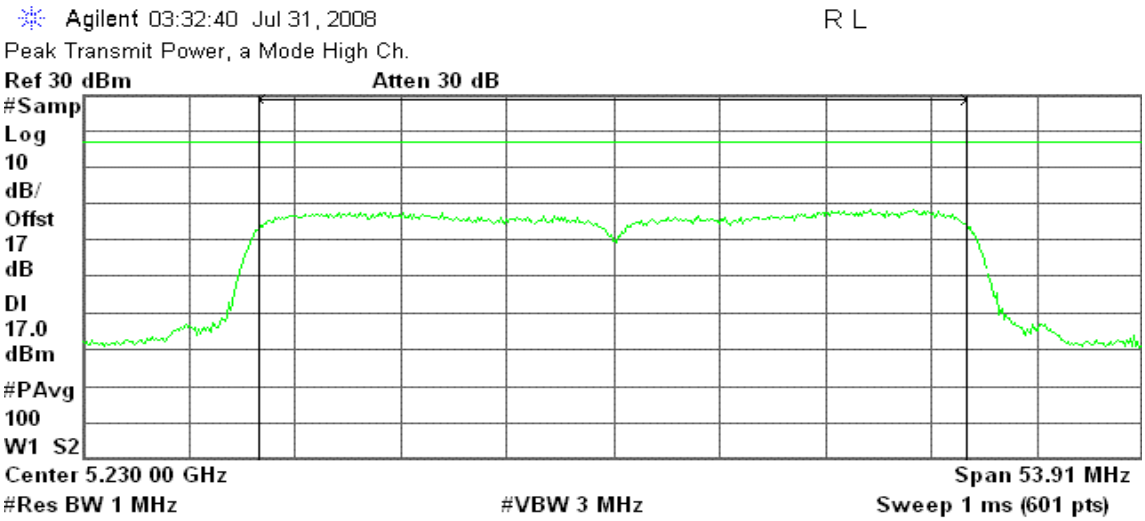
CH Low



Channel Power
11.90 dBm / 35.9354 MHz

Power Spectral Density
-63.66 dBm/Hz

CH High

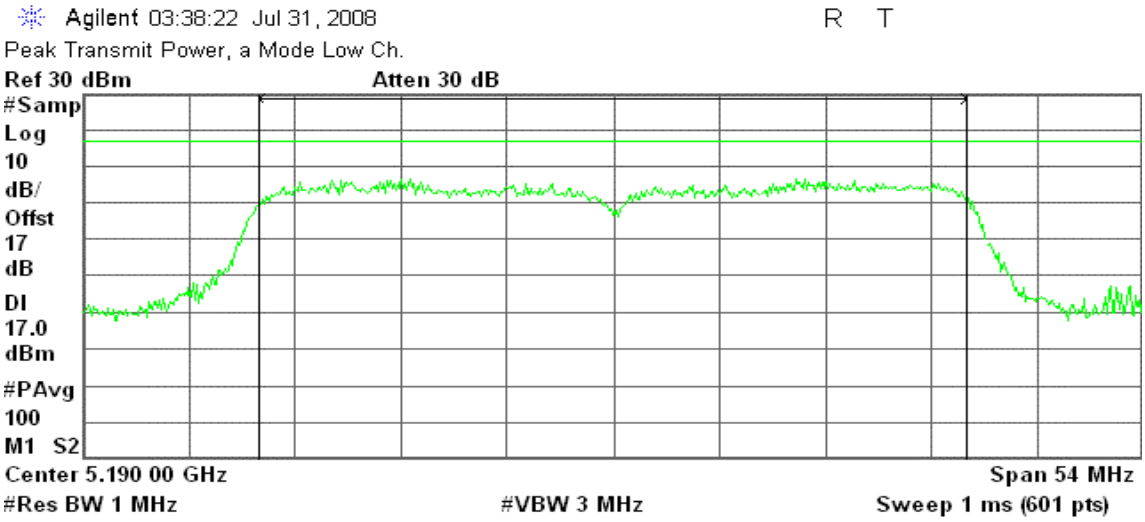


Channel Power
12.00 dBm / 35.9374 MHz

Power Spectral Density
-63.56 dBm/Hz

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

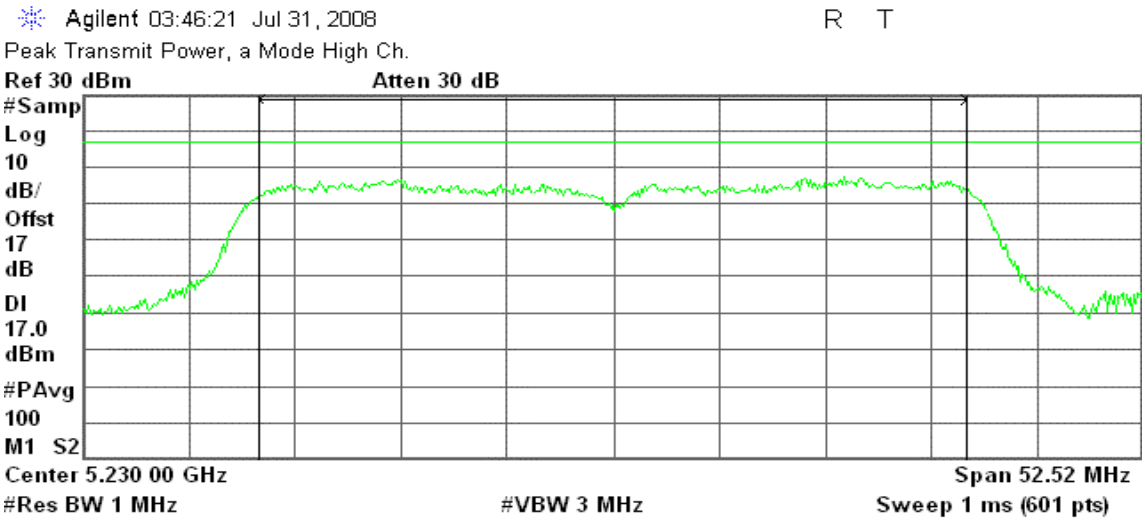
CH Low



Channel Power
11.04 dBm / 35.9990 MHz

Power Spectral Density
-63.53 dBm/Hz

CH High

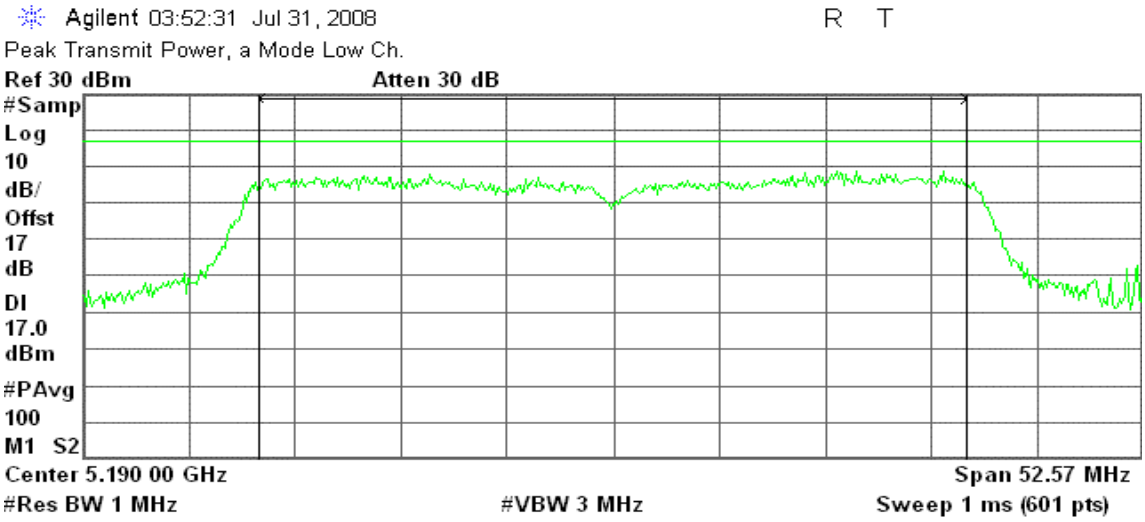


Channel Power
11.60 dBm / 35.0117 MHz

Power Spectral Density
-63.84 dBm/Hz

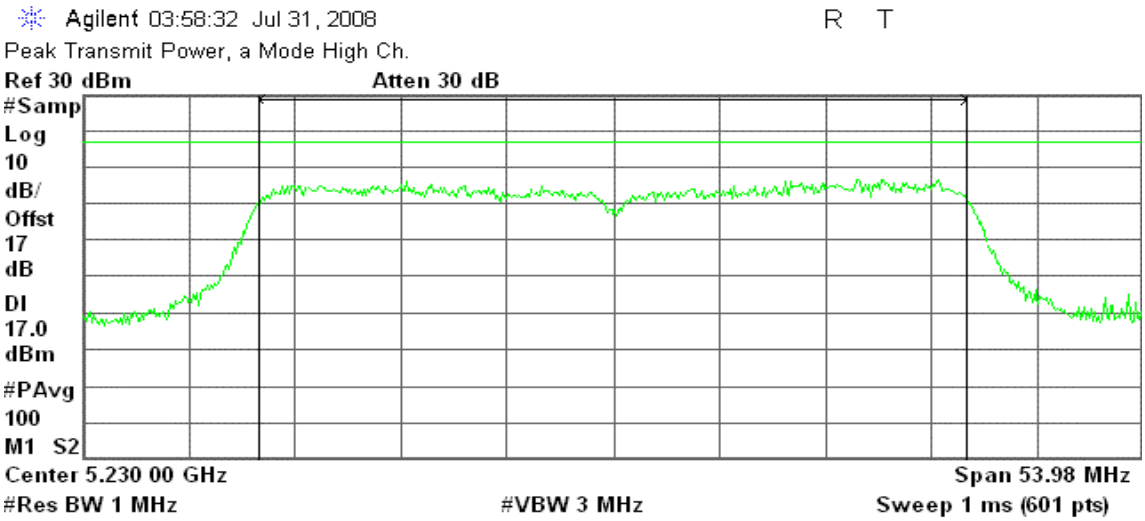
draft 802.11n Wide-40 MHz Channel mode / 5190 ~ 5230MHz / Chain 2

CH Low



Channel Power	Power Spectral Density
12.52 dBm / 35.0464 MHz	-61.93 dBm/Hz

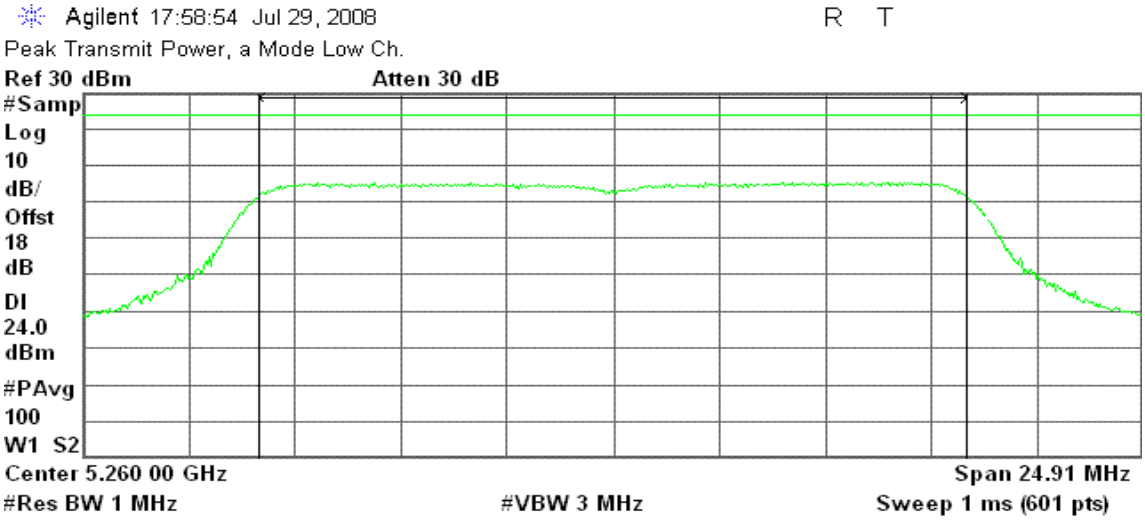
CH High



Channel Power	Power Spectral Density
11.44 dBm / 35.9880 MHz	-64.12 dBm/Hz

IEEE 802.11a mode / 5260 ~ 5320MHz

CH Low



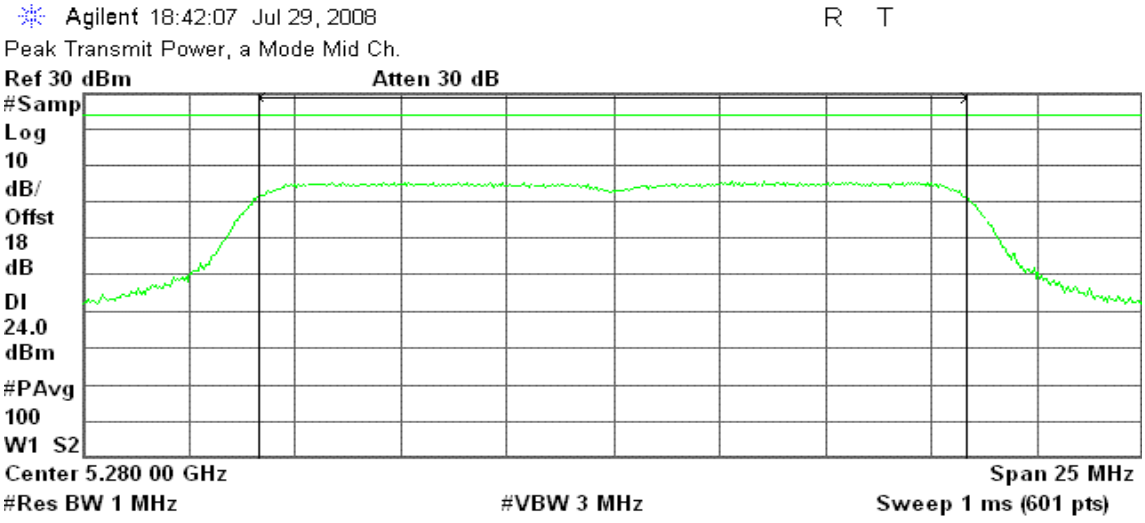
Channel Power

16.13 dBm / 16.6050 MHz

Power Spectral Density

-56.07 dBm/Hz

CH Mid



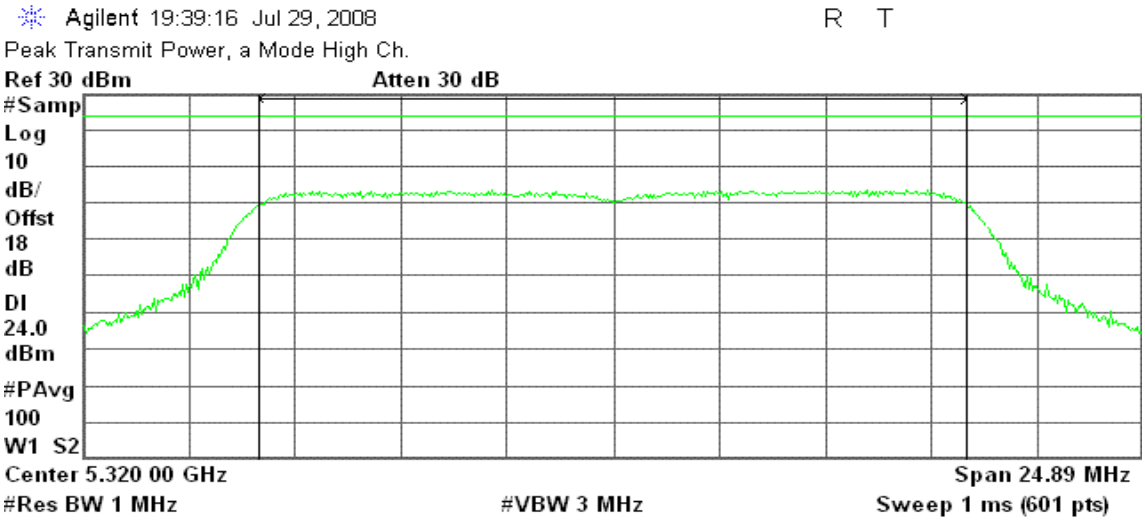
Channel Power

16.86 dBm / 16.6690 MHz

Power Spectral Density

-55.36 dBm/Hz

CH High

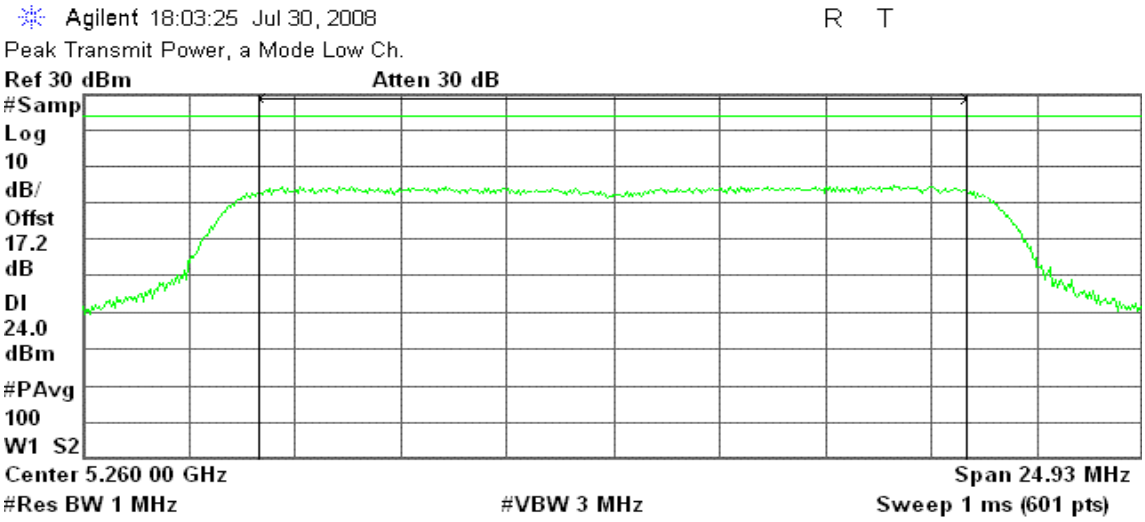


Channel Power
14.53 dBm / 16.5910 MHz

Power Spectral Density
-57.67 dBm/Hz

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

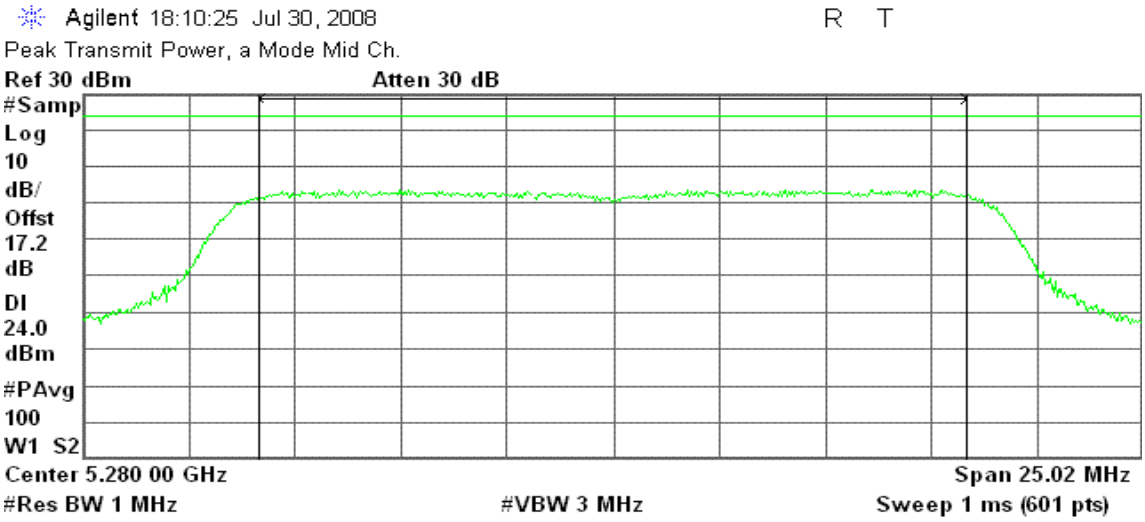
CH Low



Channel Power
15.82 dBm / 16.6212 MHz

Power Spectral Density
-56.39 dBm/Hz

CH Mid



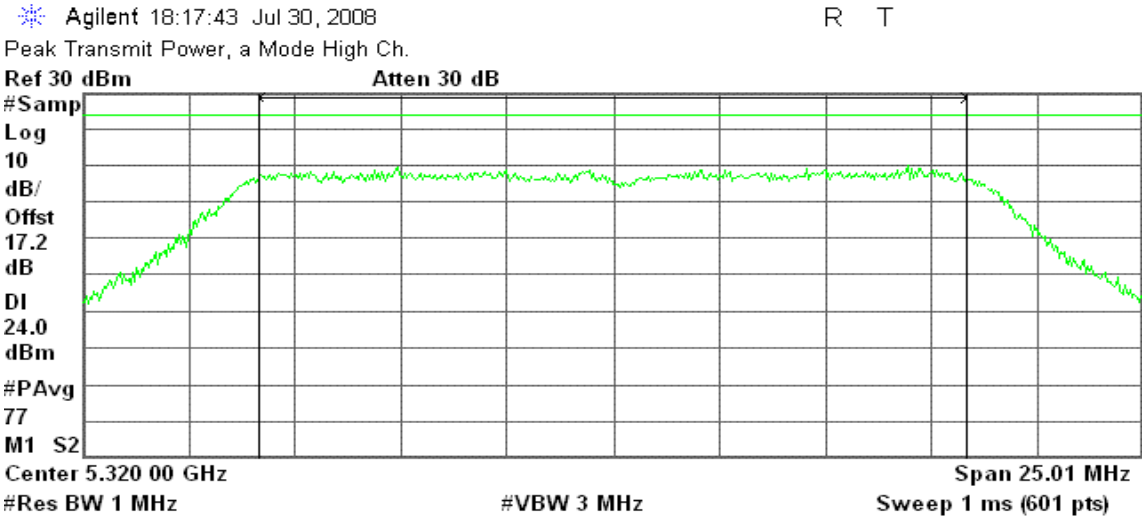
Channel Power

14.72 dBm / 16.6790 MHz

Power Spectral Density

-57.51 dBm/Hz

CH High



Channel Power

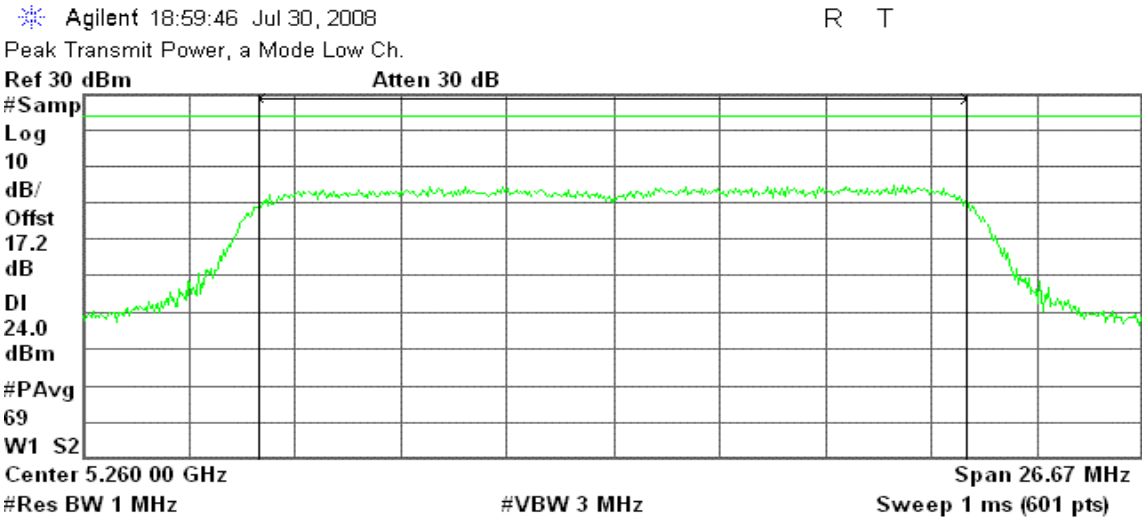
11.73 dBm / 16.6707 MHz

Power Spectral Density

-60.49 dBm/Hz

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

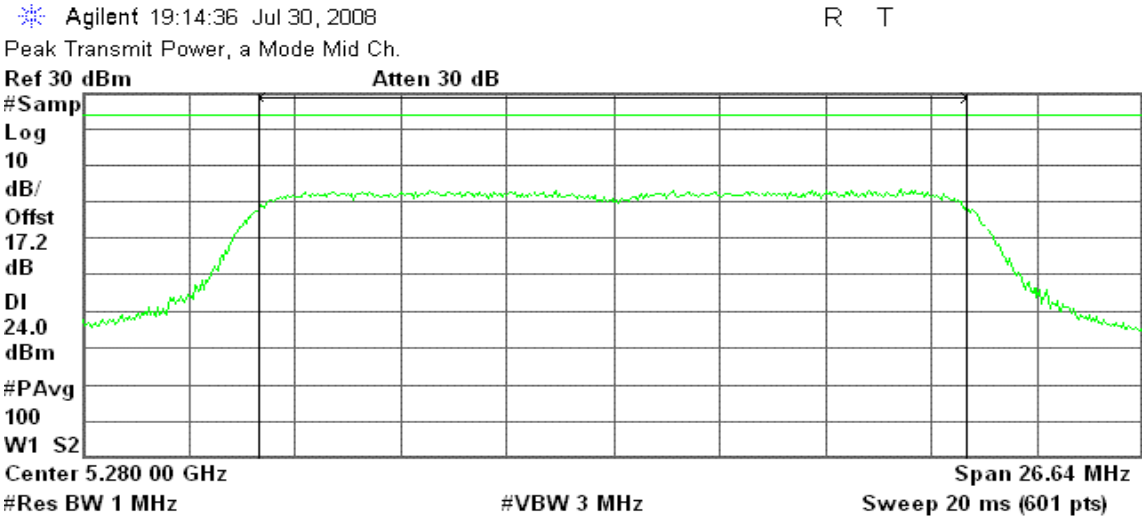
CH Low



Channel Power
15.20 dBm / 17.7820 MHz

Power Spectral Density
-57.30 dBm/Hz

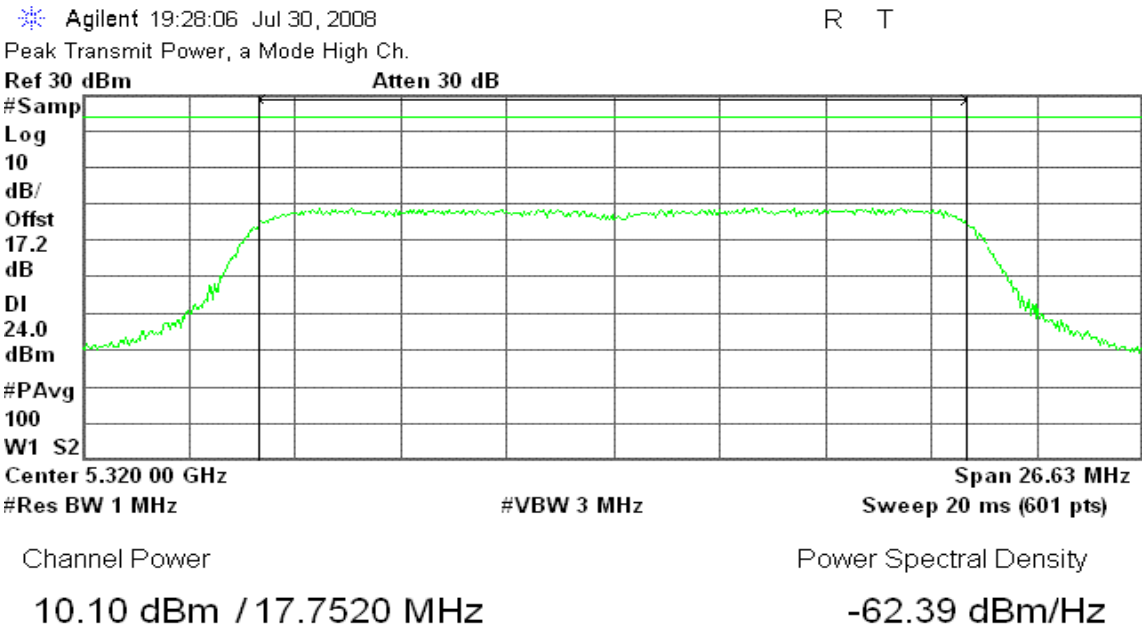
CH Mid



Channel Power
14.73 dBm / 17.7600 MHz

Power Spectral Density
-57.77 dBm/Hz

CH High

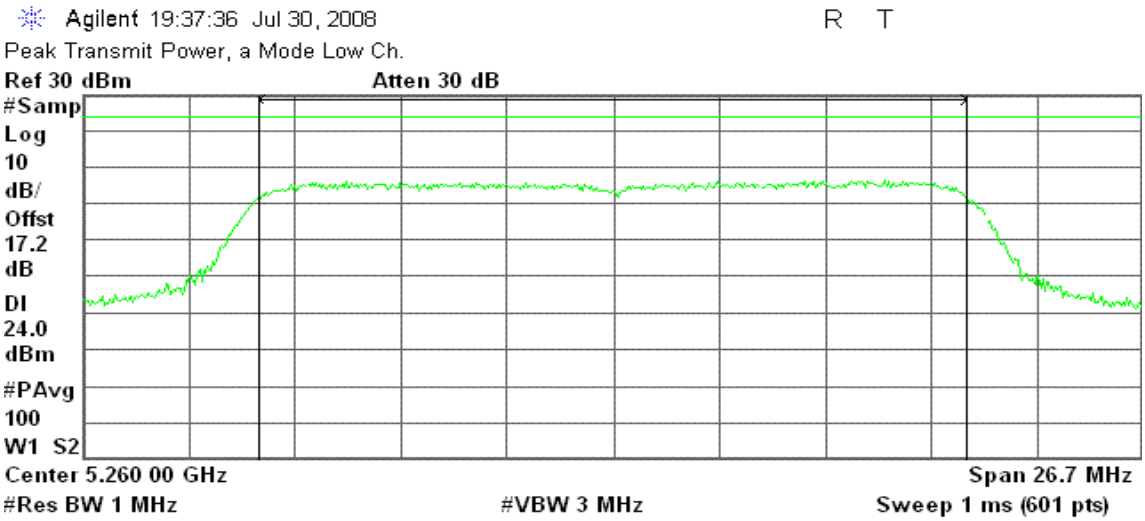


Channel Power
10.10 dBm / 17.7520 MHz

Power Spectral Density
-62.39 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5260 ~ 5320MHz / Chain 2

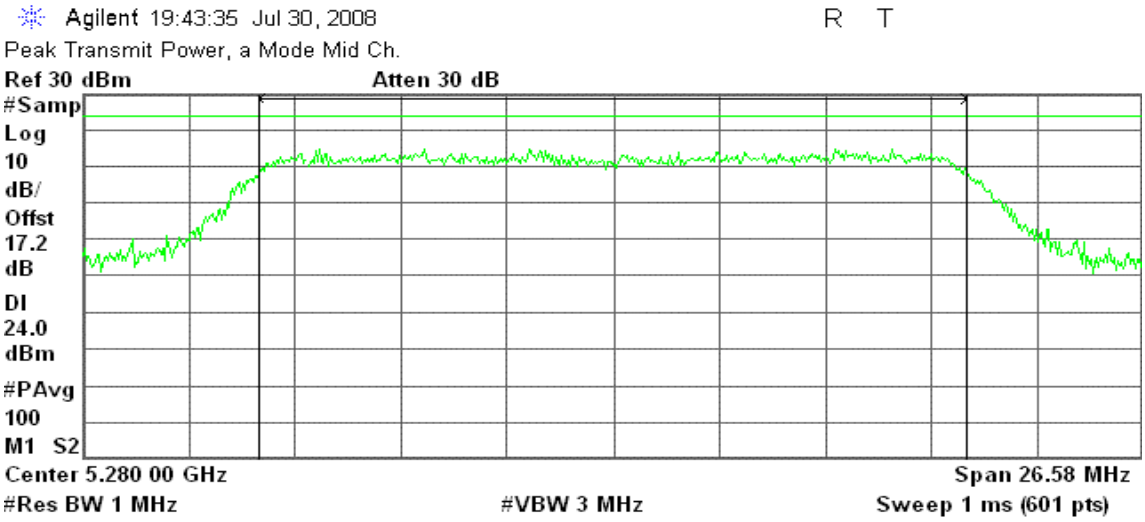
CH Low



Channel Power
17.20 dBm / 17.8030 MHz

Power Spectral Density
-55.31 dBm/Hz

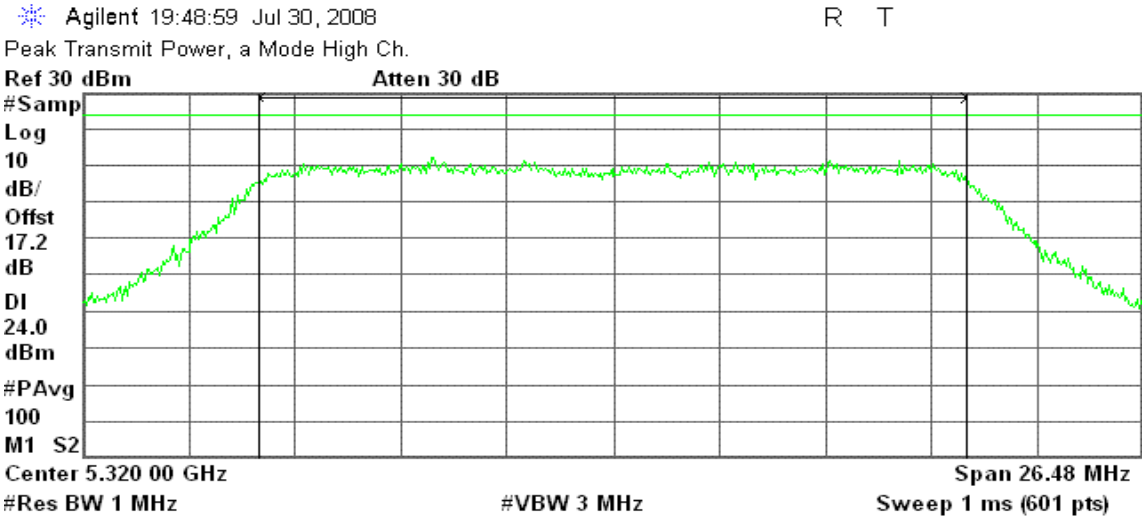
CH Mid



Channel Power
17.58 dBm / 17.7200 MHz

Power Spectral Density
-54.91 dBm/Hz

CH High

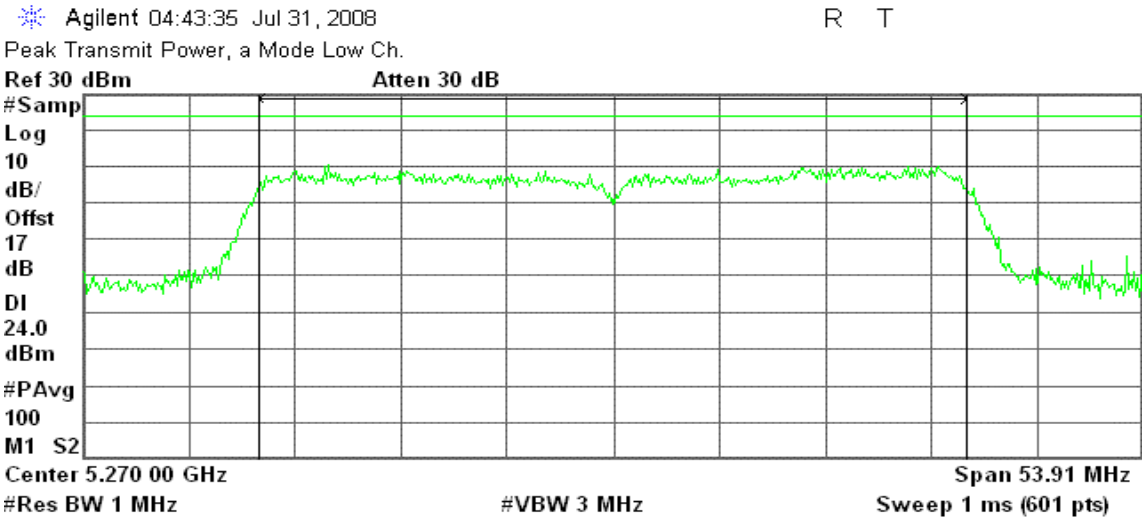


Channel Power
13.68 dBm / 17.6500 MHz

Power Spectral Density
-58.79 dBm/Hz

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

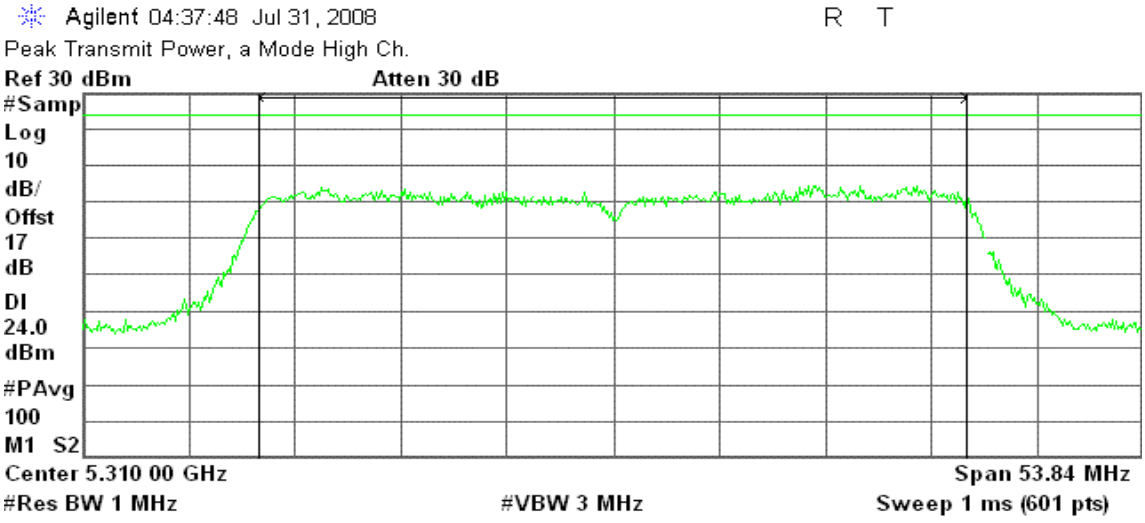
CH Low



Channel Power
14.54 dBm / 35.9396 MHz

Power Spectral Density
-61.01 dBm/Hz

CH High

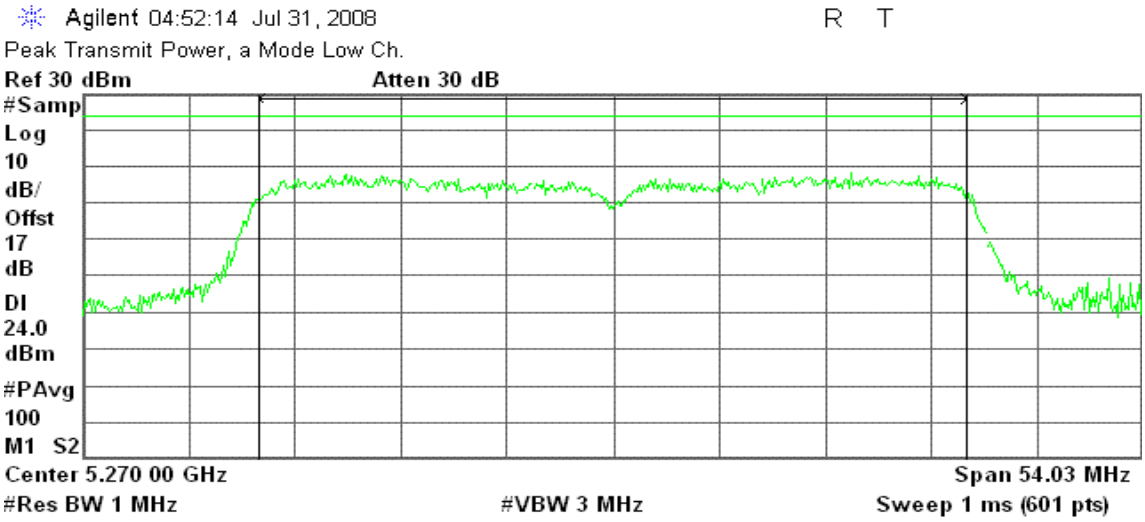


Channel Power
9.08 dBm / 35.8914 MHz

Power Spectral Density
-66.47 dBm/Hz

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

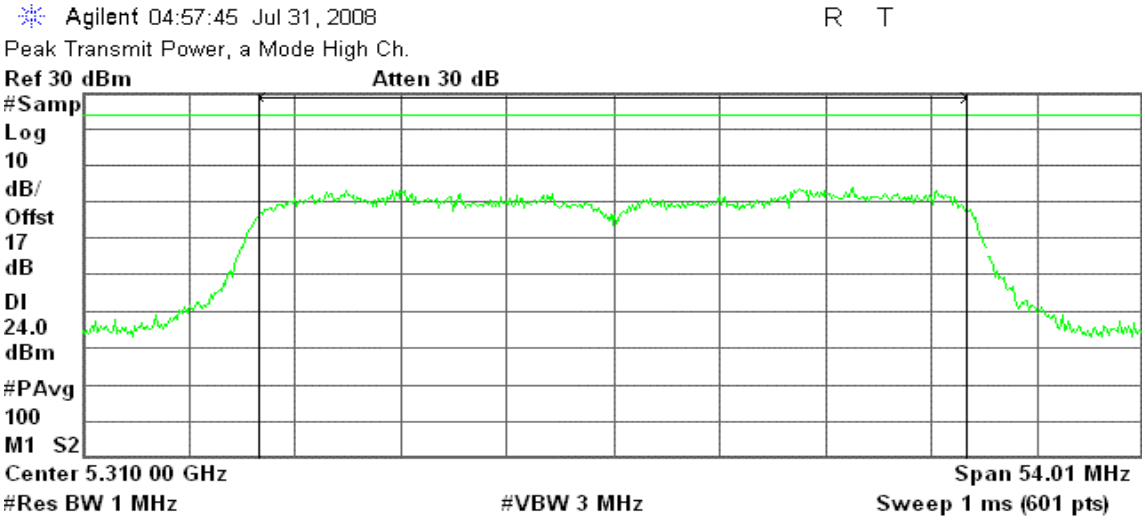
CH Low



Channel Power
13.25 dBm / 36.0180 MHz

Power Spectral Density
-62.31 dBm/Hz

CH High

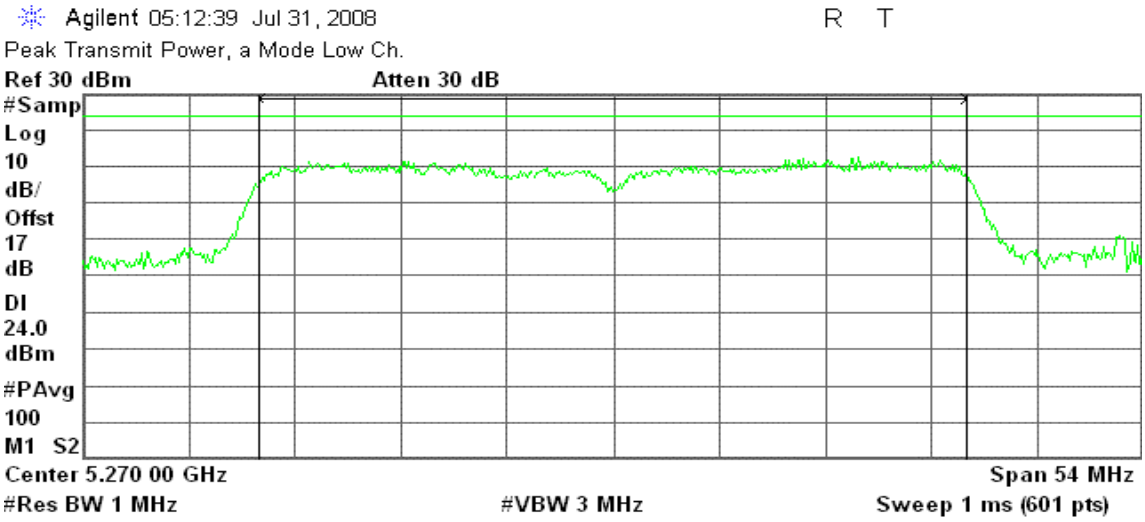


Channel Power
8.56 dBm / 36.0070 MHz

Power Spectral Density
-67.01 dBm/Hz

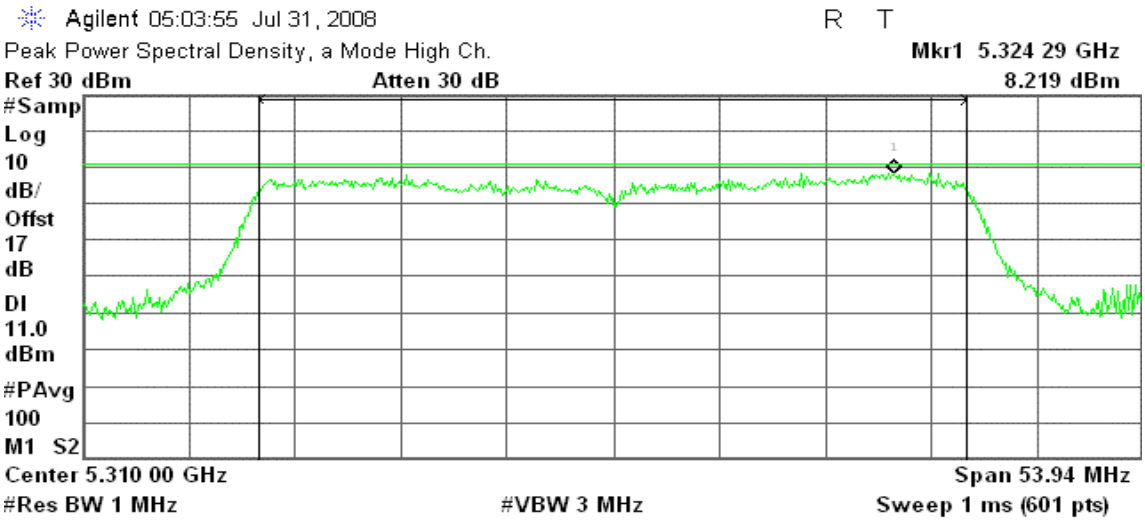
draft 802.11n Wide-40 MHz Channel mode / 5270 ~ 5310MHz / Chain 2

CH Low



Channel Power	Power Spectral Density
17.18 dBm / 35.9990 MHz	-58.38 dBm/Hz

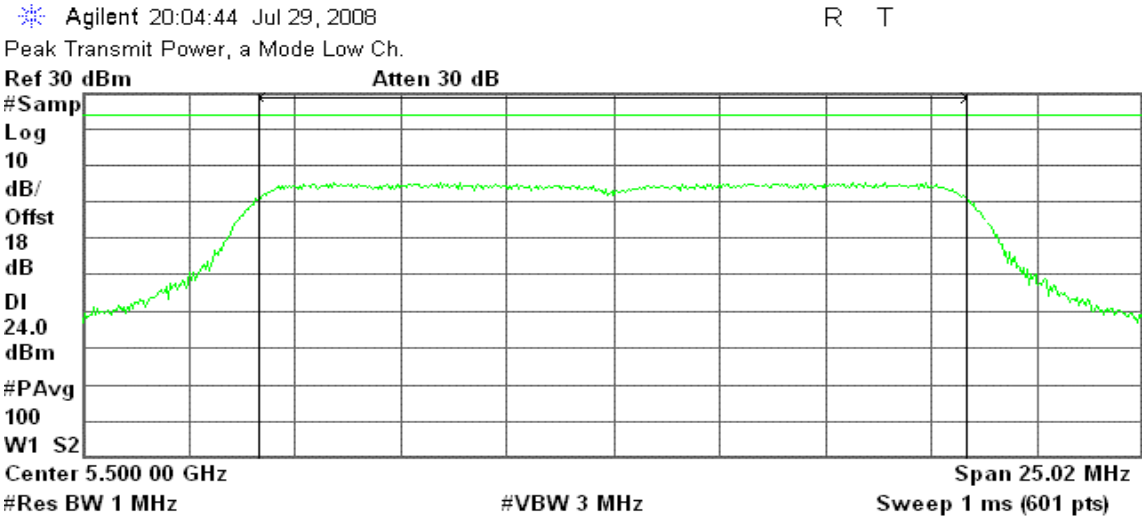
CH High



Channel Power	Power Spectral Density
13.35 dBm / 35.9614 MHz	-62.20 dBm/Hz

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

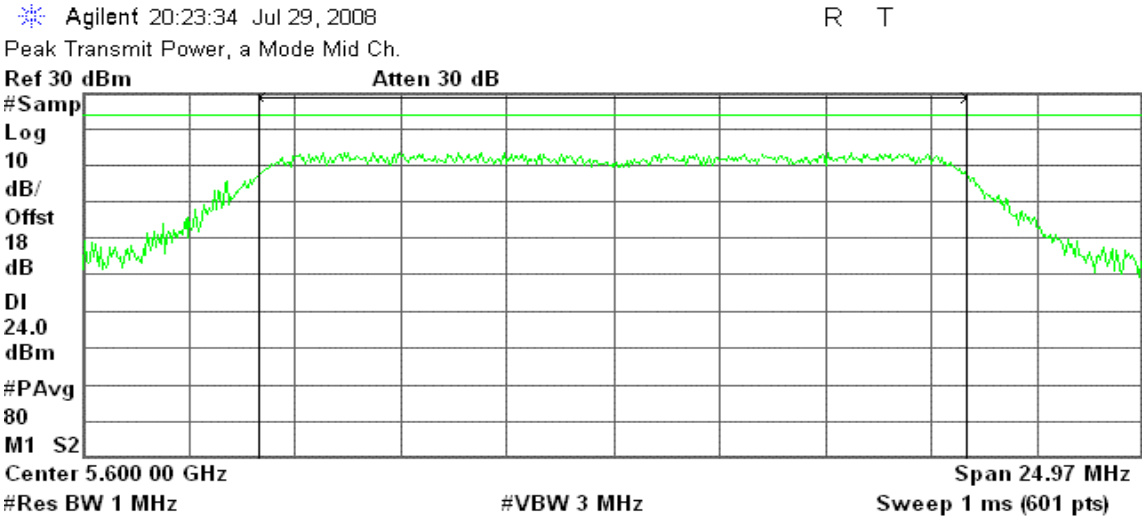
CH Low



Channel Power
16.38 dBm / 16.6780 MHz

Power Spectral Density
-55.84 dBm/Hz

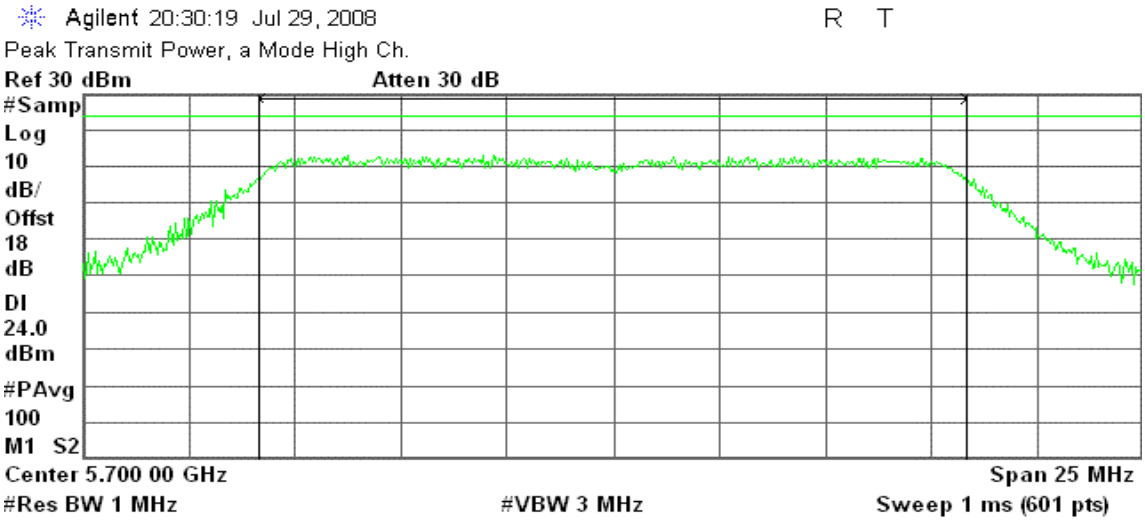
CH Mid



Channel Power
17.38 dBm / 16.6440 MHz

Power Spectral Density
-54.83 dBm/Hz

CH High

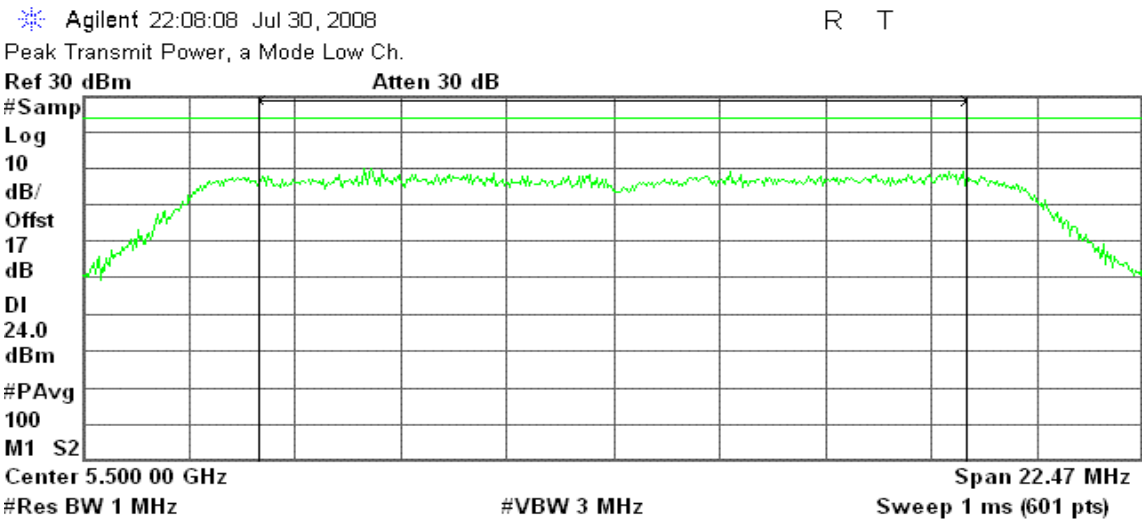


Channel Power
16.87 dBm / 16.6690 MHz

Power Spectral Density
-55.35 dBm/Hz

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

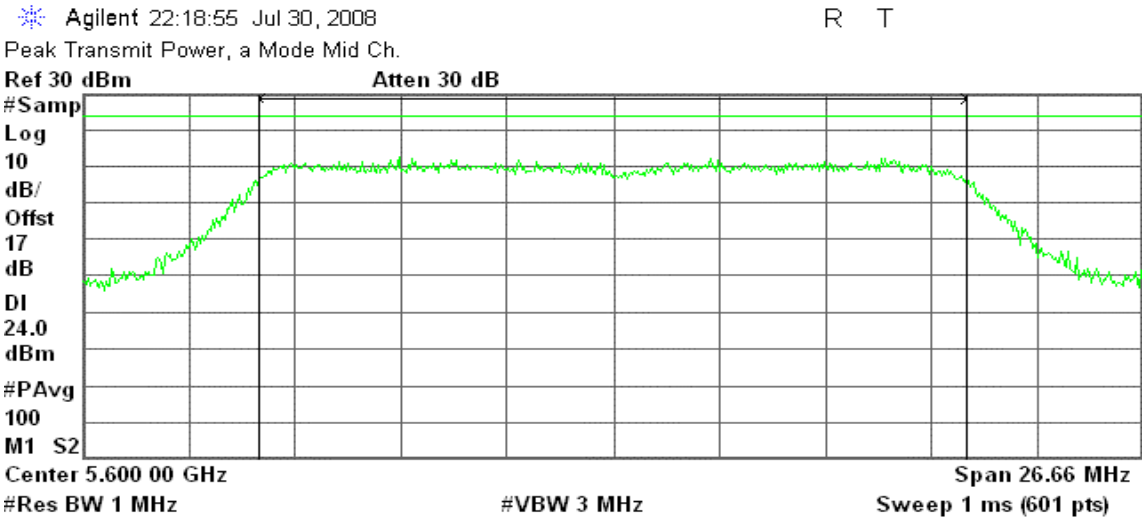
CH Low



Channel Power
11.02 dBm / 14.9800 MHz

Power Spectral Density
-60.73 dBm/Hz

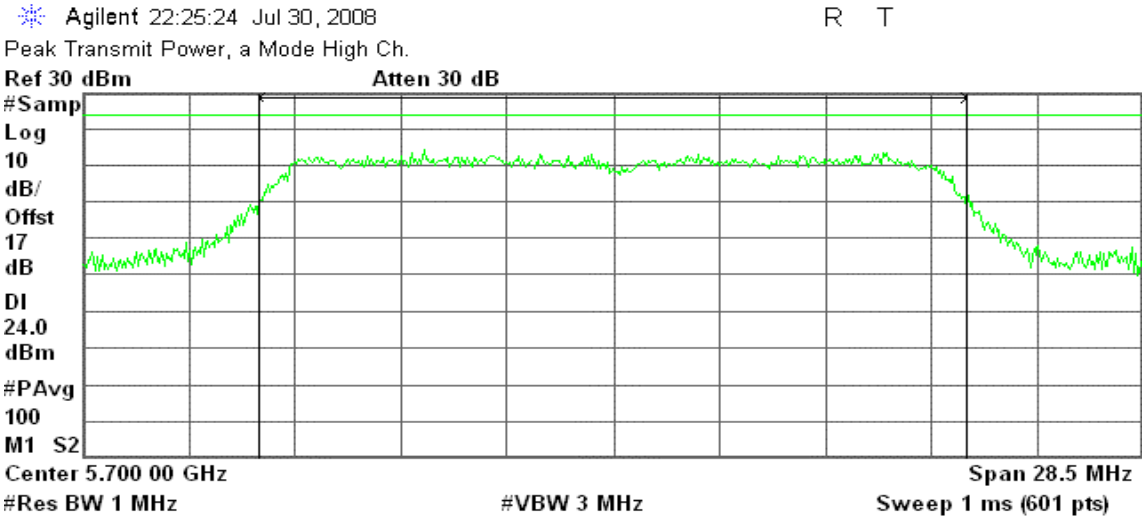
CH Mid



Channel Power
14.67 dBm / 17.7700 MHz

Power Spectral Density
-57.83 dBm/Hz

CH High

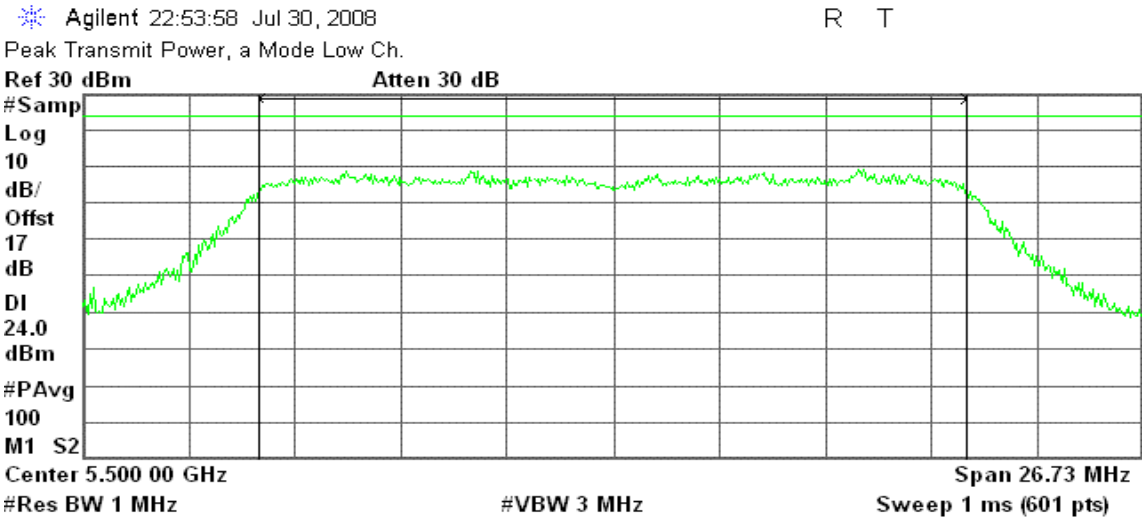


Channel Power
16.43 dBm / 19.0000 MHz

Power Spectral Density
-56.36 dBm/Hz

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

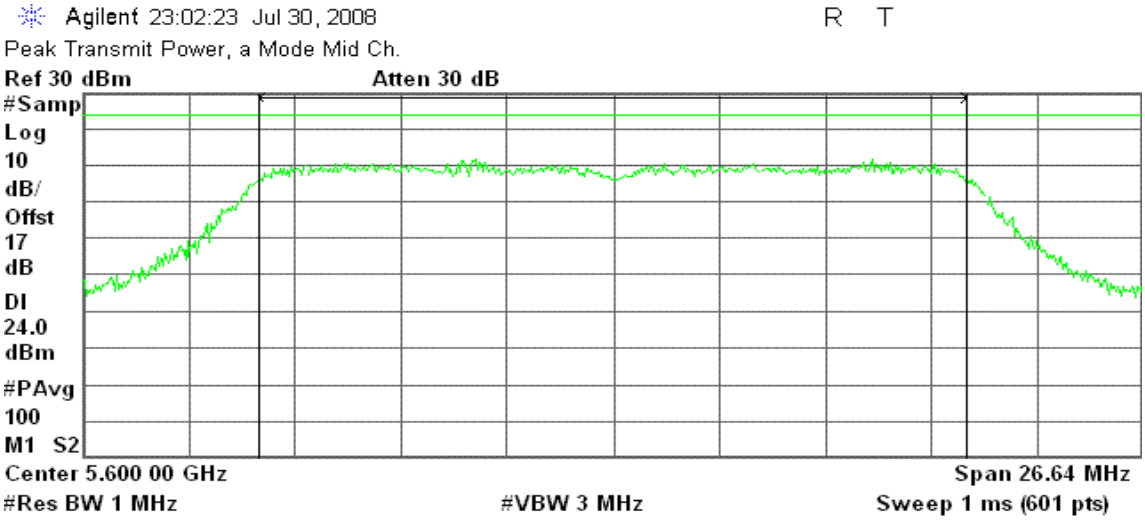
CH Low



Channel Power
11.30 dBm / 17.8226 MHz

Power Spectral Density
-61.21 dBm/Hz

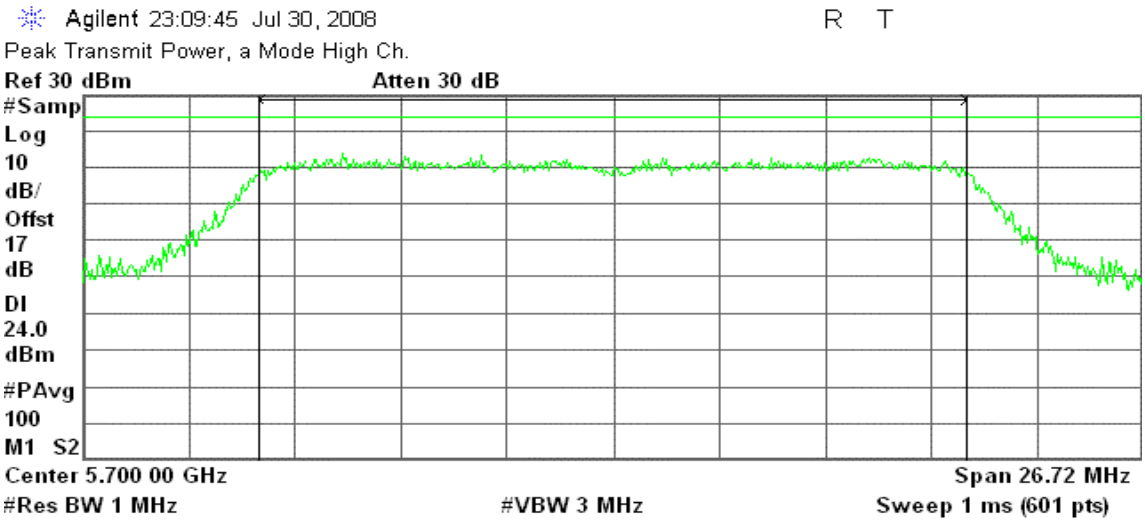
CH Mid



Channel Power
13.37 dBm / 17.7593 MHz

Power Spectral Density
-59.13 dBm/Hz

CH High

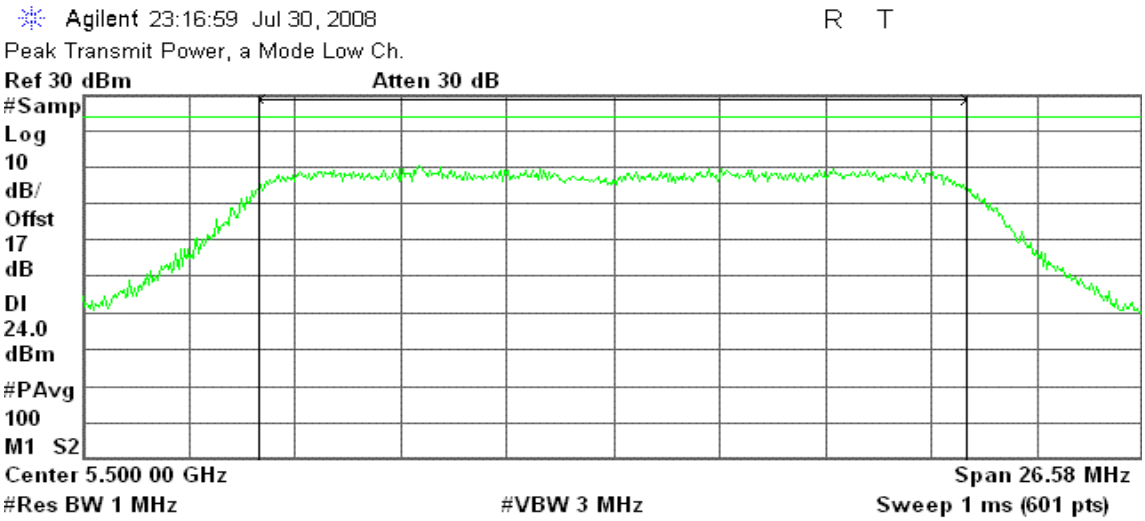


Channel Power
15.58 dBm / 17.8110 MHz

Power Spectral Density
-56.93 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5500 ~ 5700MHz / Chain 2

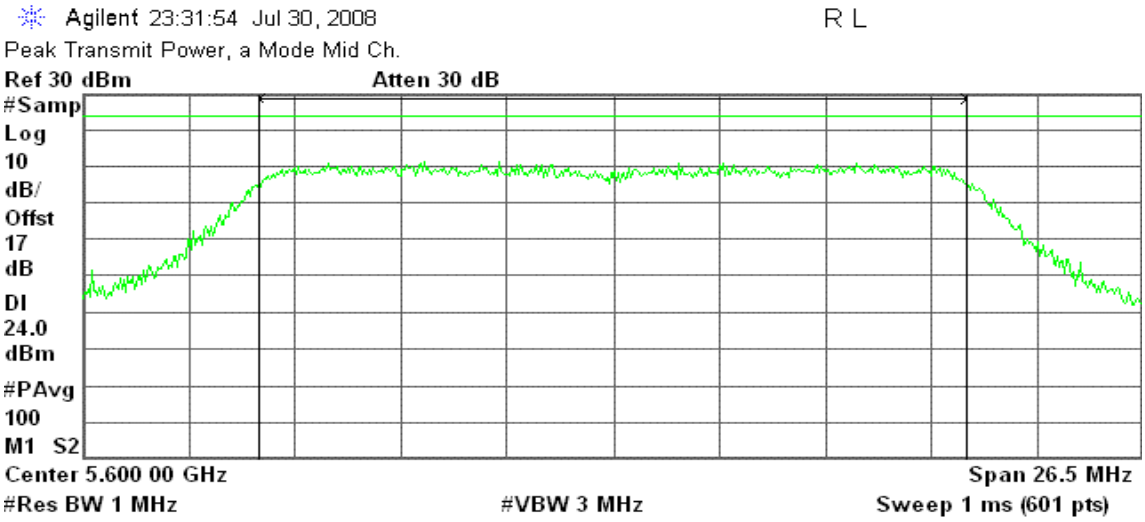
CH Low



Channel Power
12.77 dBm / 17.7185 MHz

Power Spectral Density
-59.72 dBm/Hz

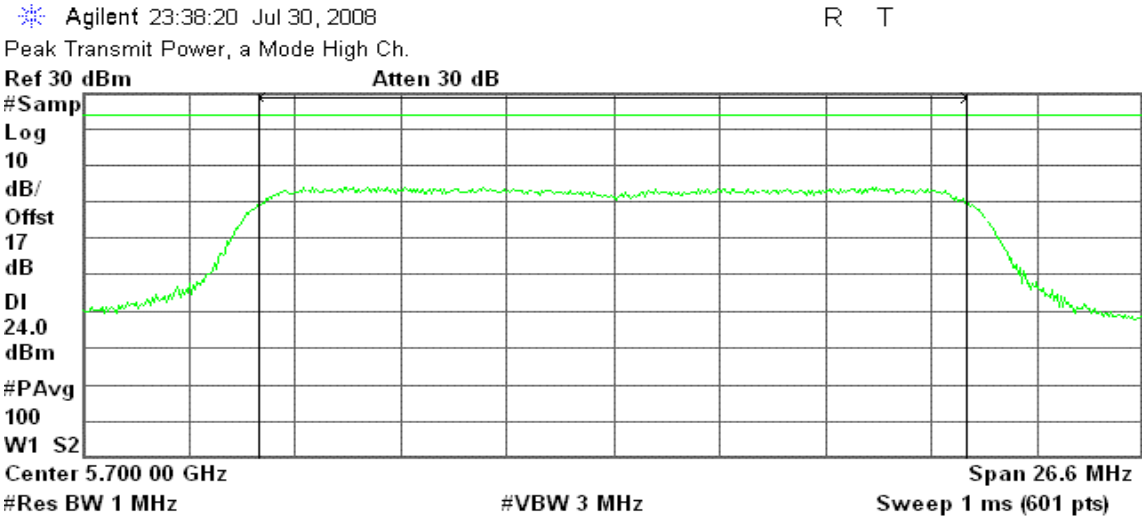
CH Mid



Channel Power
14.01 dBm / 17.6643 MHz

Power Spectral Density
-58.46 dBm/Hz

CH High

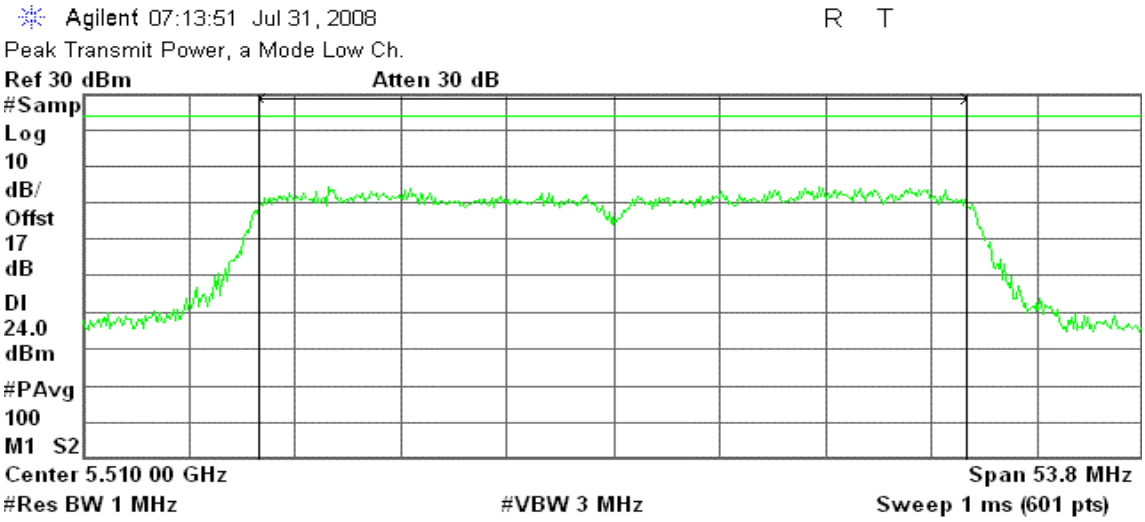


Channel Power
15.34 dBm / 17.7337 MHz

Power Spectral Density
-57.14 dBm/Hz

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

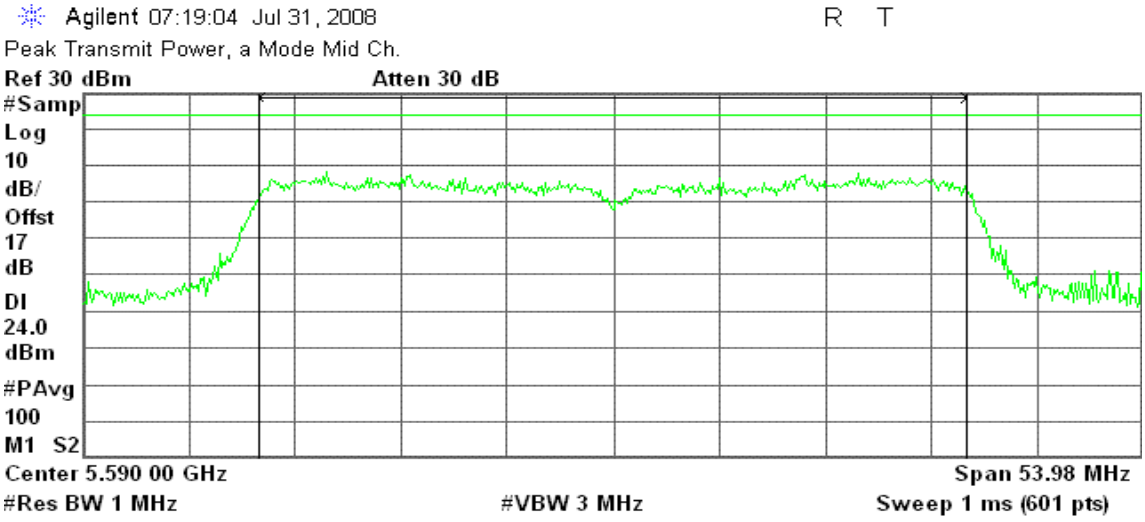
CH Low



Channel Power
8.89 dBm / 35.8690 MHz

Power Spectral Density
-66.66 dBm/Hz

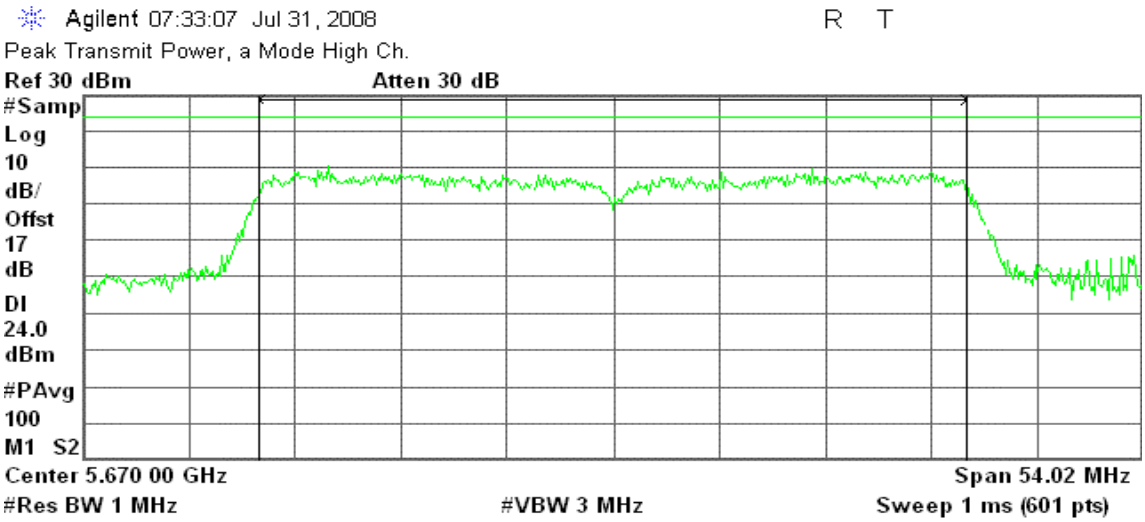
CH Mid



Channel Power
12.86 dBm / 35.9880 MHz

Power Spectral Density
-62.70 dBm/Hz

CH High

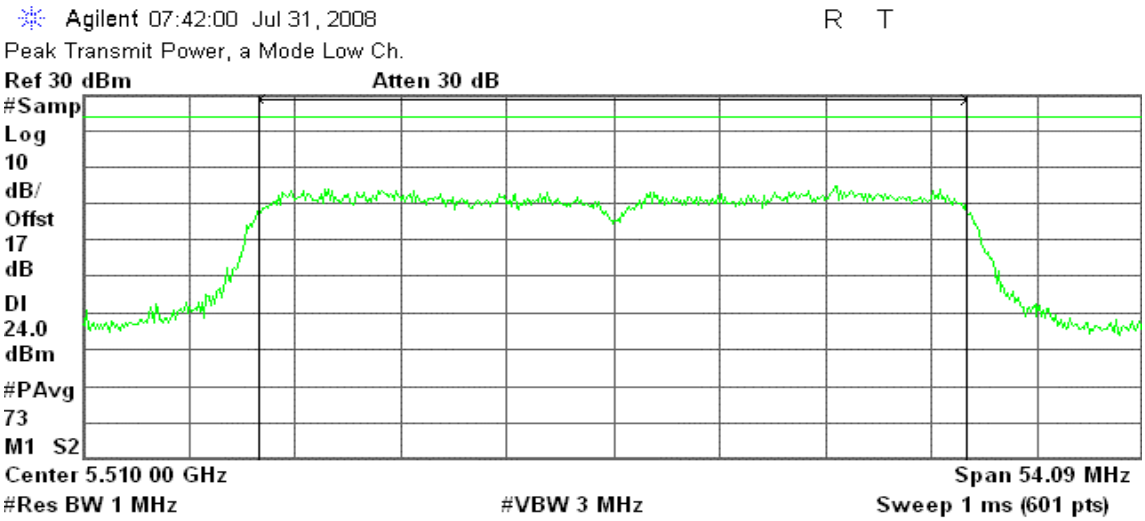


Channel Power
14.44 dBm / 36.0150 MHz

Power Spectral Density
-61.12 dBm/Hz

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

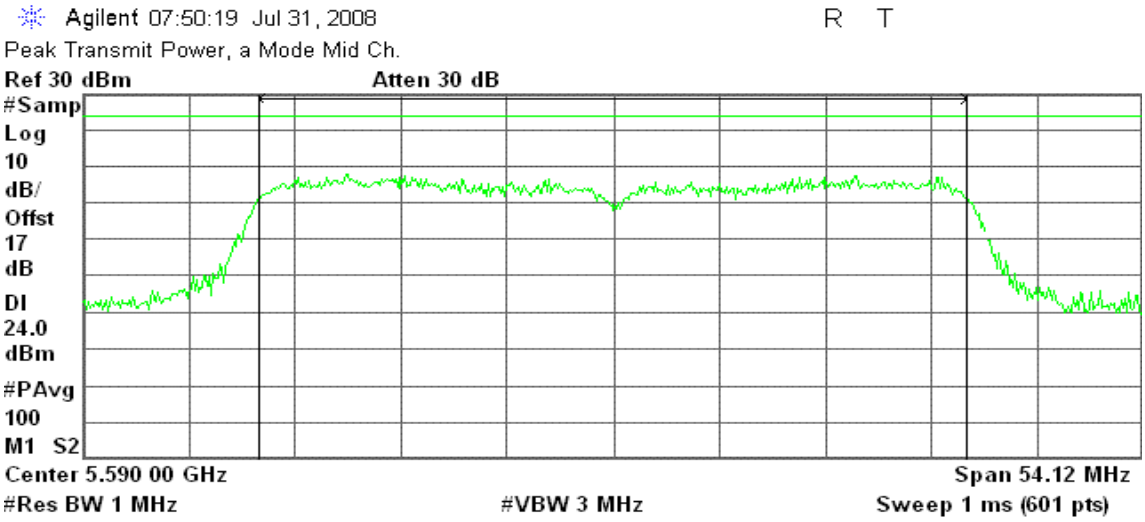
CH Low



Channel Power
9.35 dBm / 36.0621 MHz

Power Spectral Density
-66.22 dBm/Hz

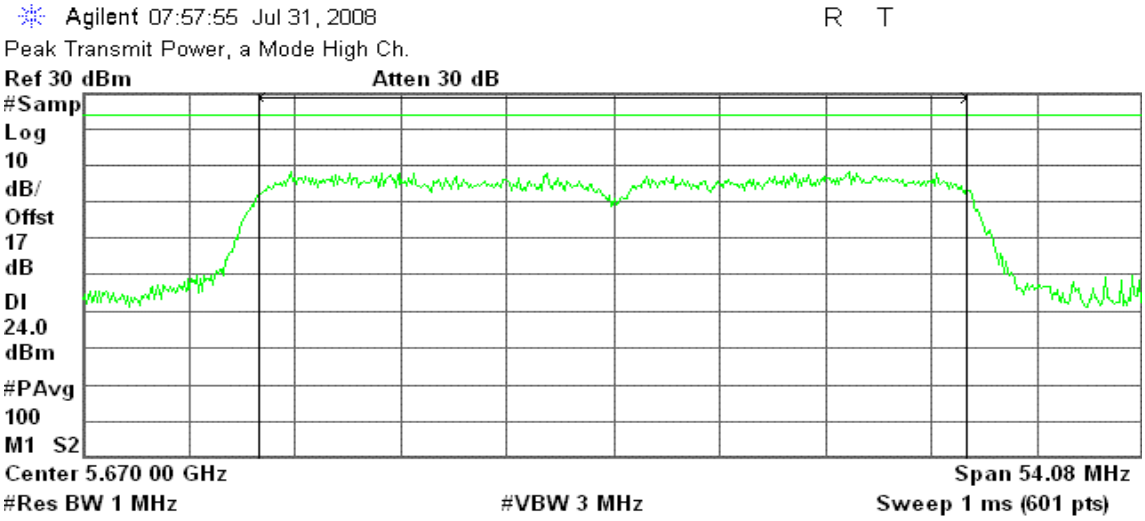
CH Mid



Channel Power
12.78 dBm / 36.0825 MHz

Power Spectral Density
-62.79 dBm/Hz

CH High

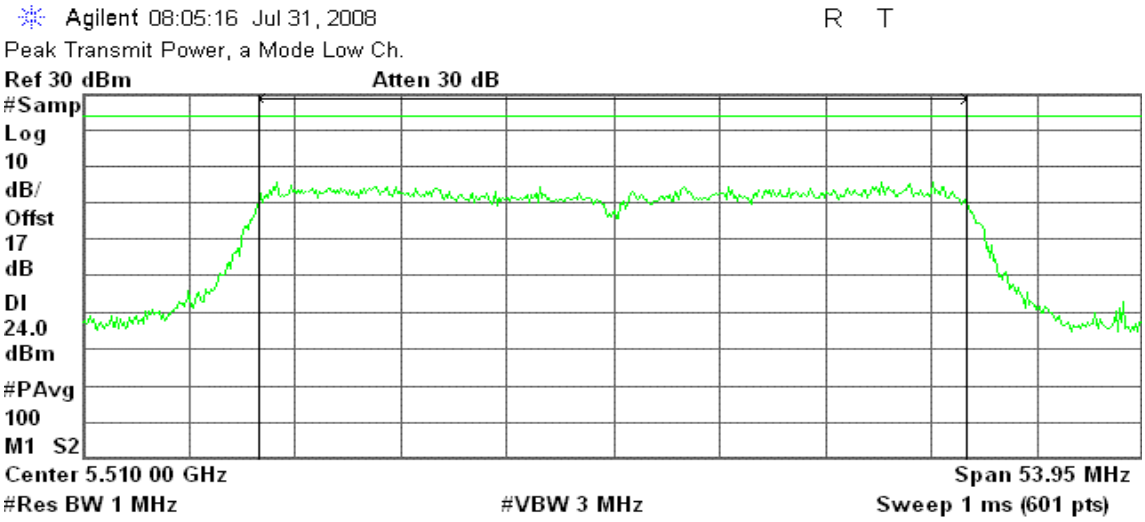


Channel Power
13.54 dBm / 36.0509 MHz

Power Spectral Density
-62.03 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / 5510 ~ 5670MHz / Chain 2

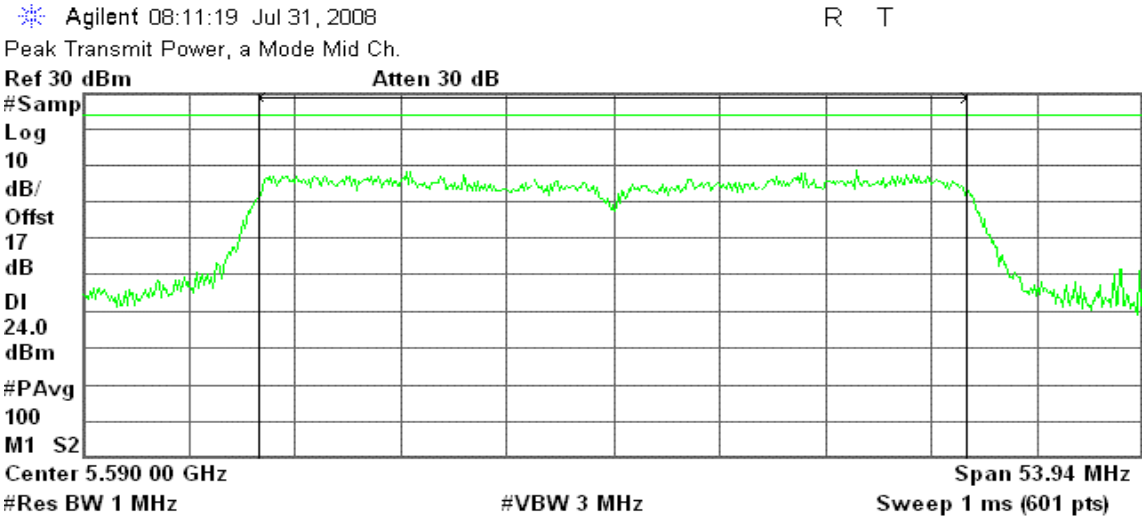
CH Low



Channel Power
10.41 dBm / 35.9660 MHz

Power Spectral Density
-65.15 dBm/Hz

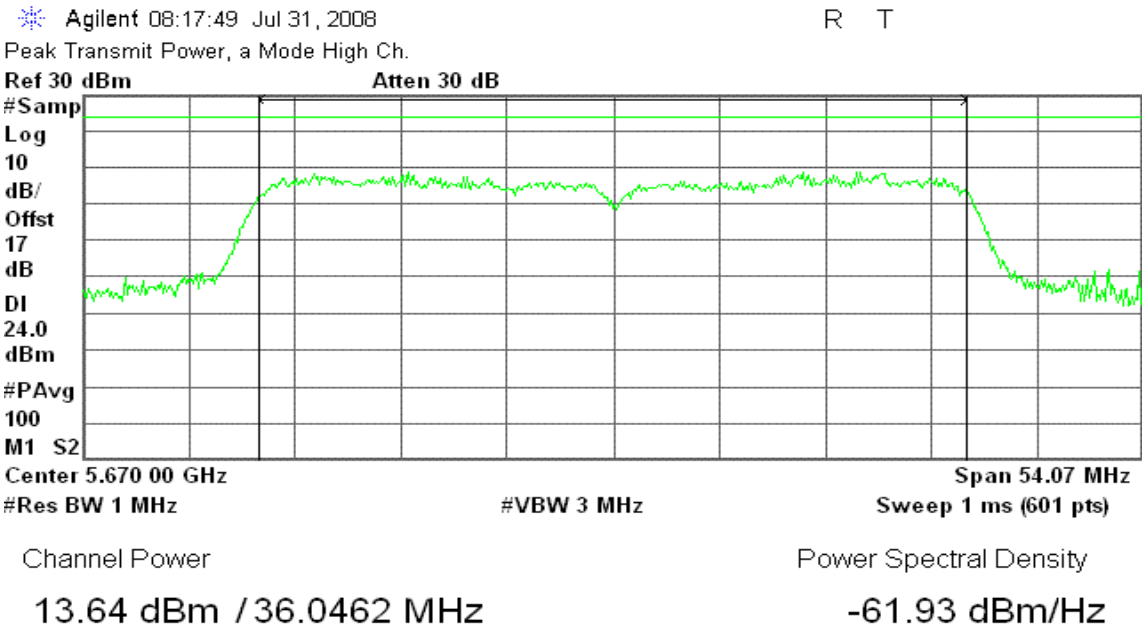
CH Mid



Channel Power
13.33 dBm / 35.9580 MHz

Power Spectral Density
-62.23 dBm/Hz

CH High



Channel Power

13.64 dBm / 36.0462 MHz

Power Spectral Density

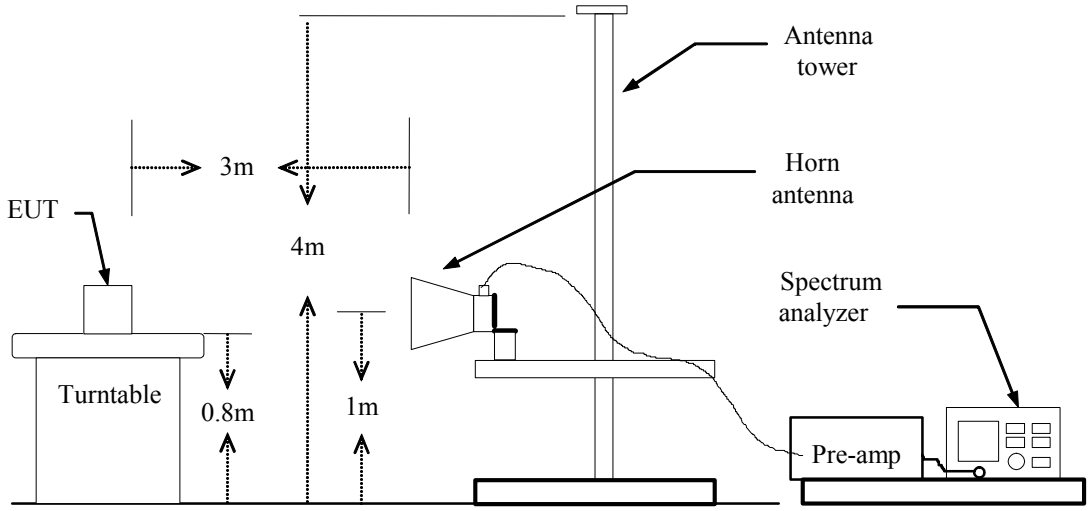
-61.93 dBm/Hz

7.3BAND 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

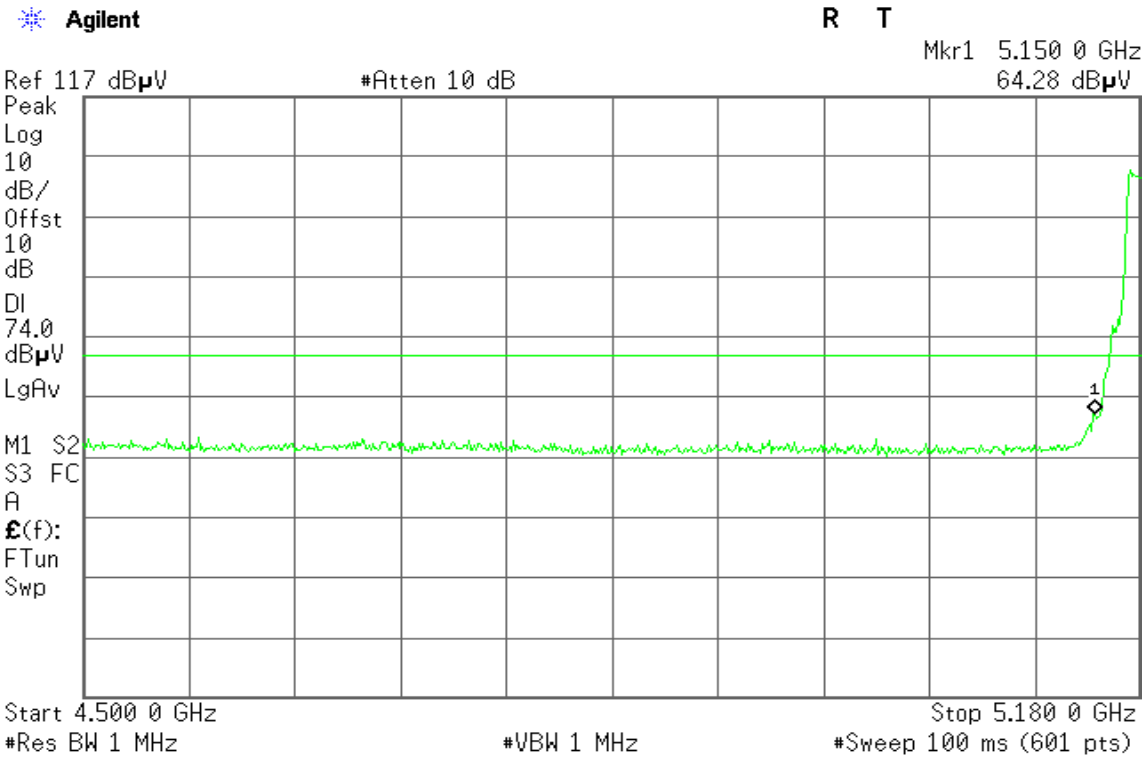
1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the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

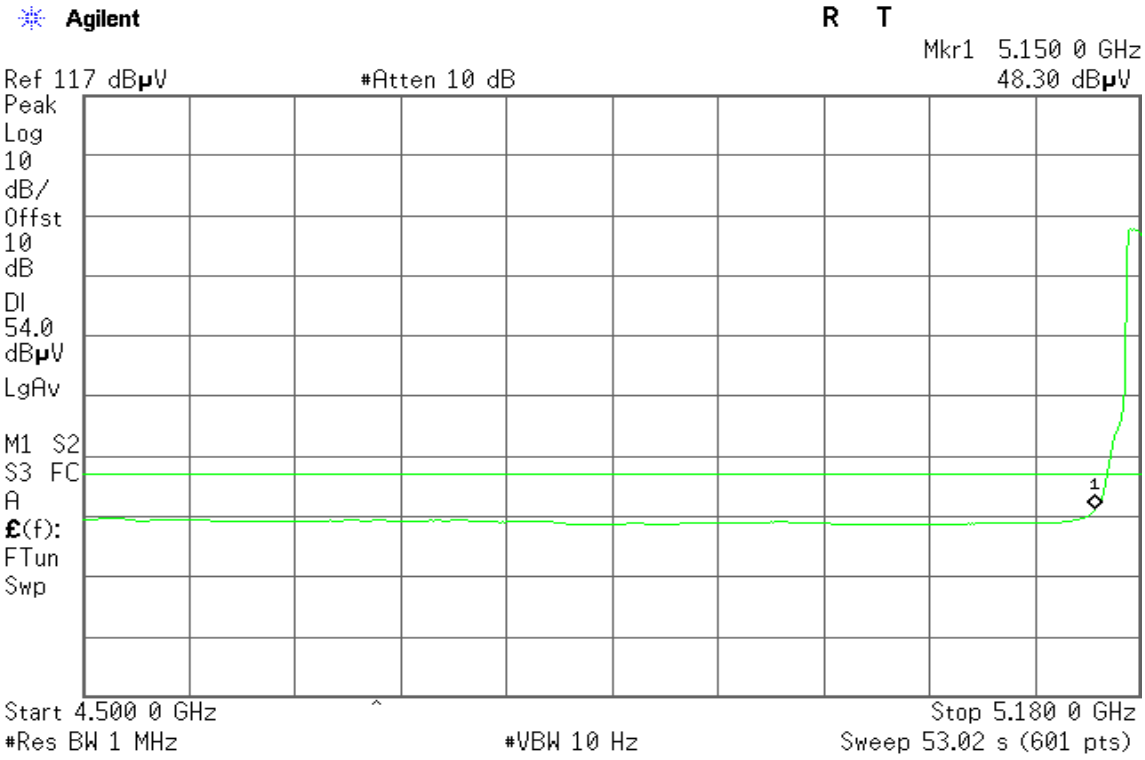
Refer to attach spectrum analyzer data chart.

Band Edges (IEEE 802.11a mode / 5180 MHz)

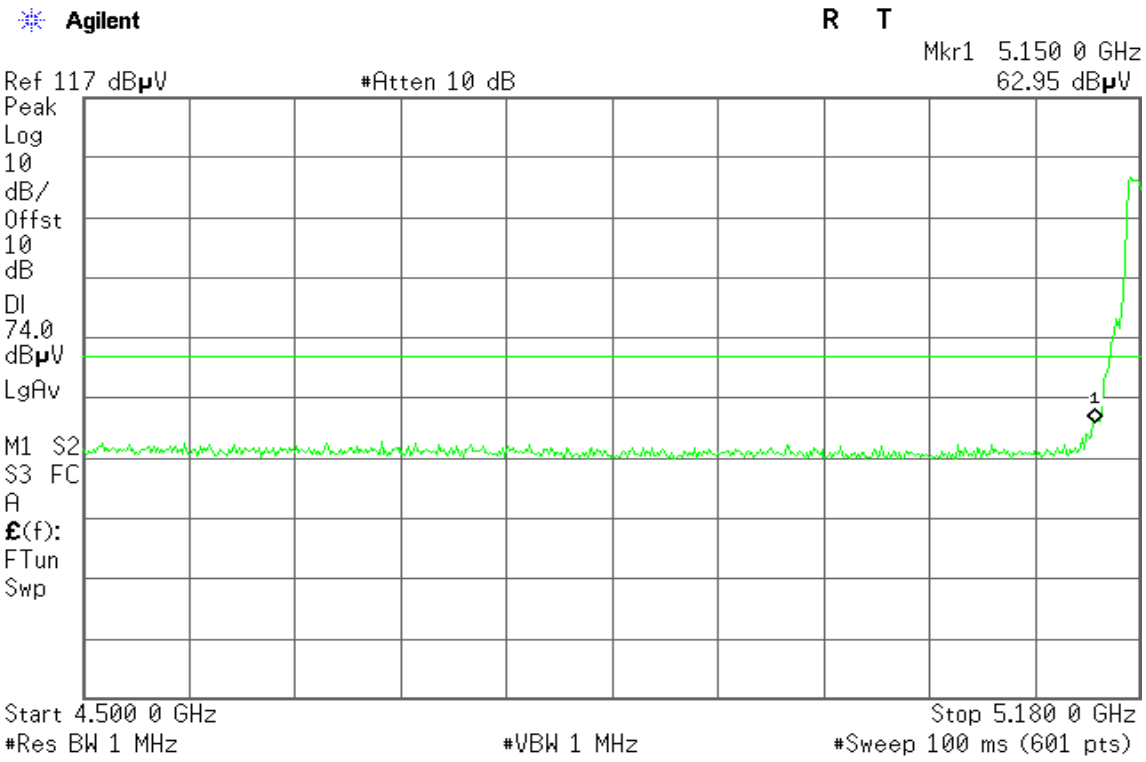
Detector mode: Peak **Polarity: Vertical**



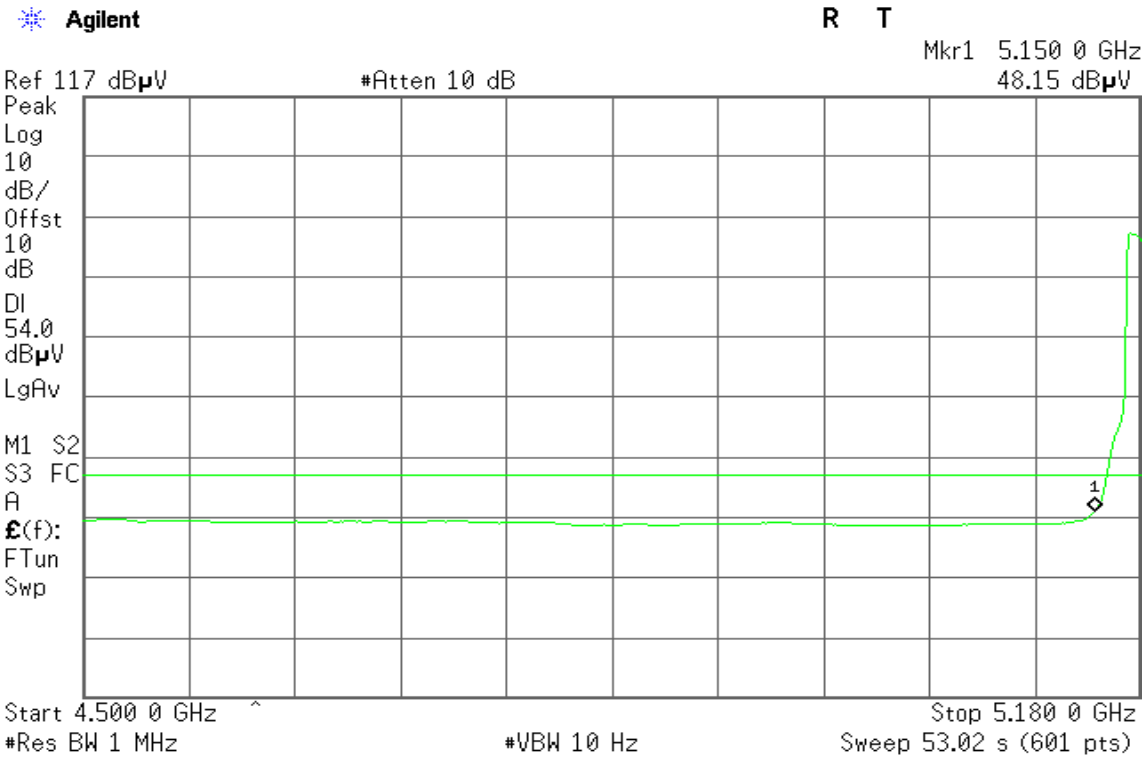
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

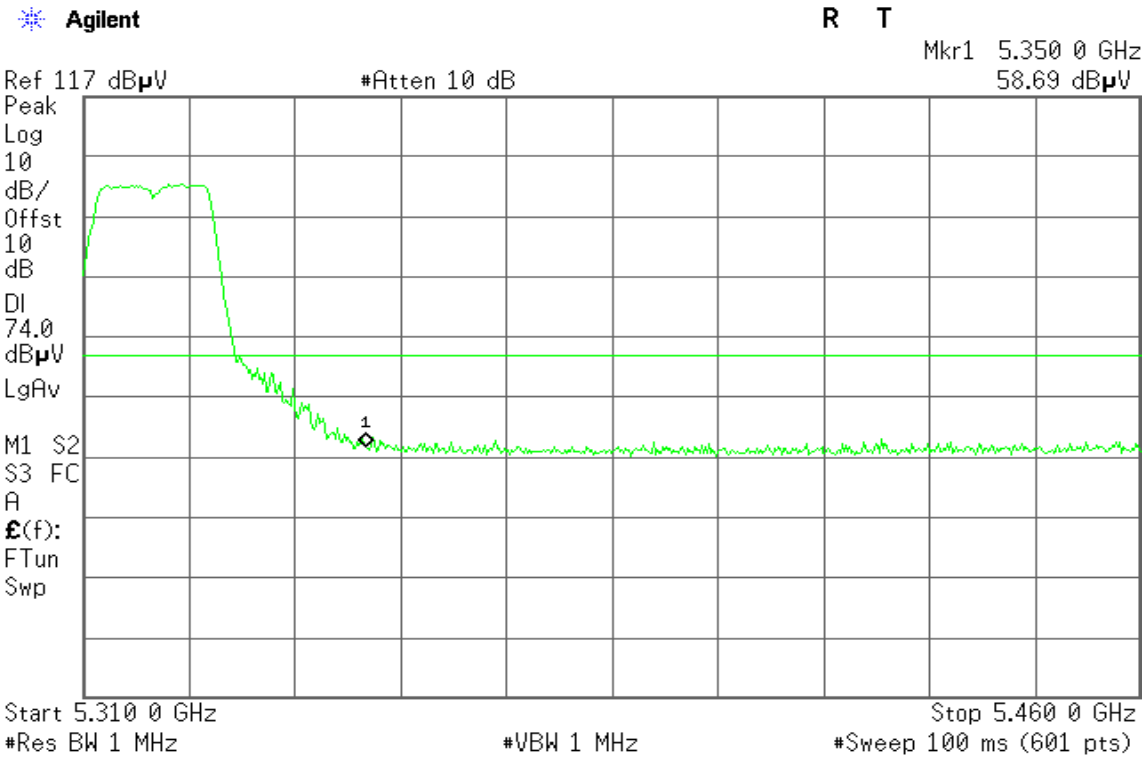


Detector mode: Average **Polarity: Horizontal**

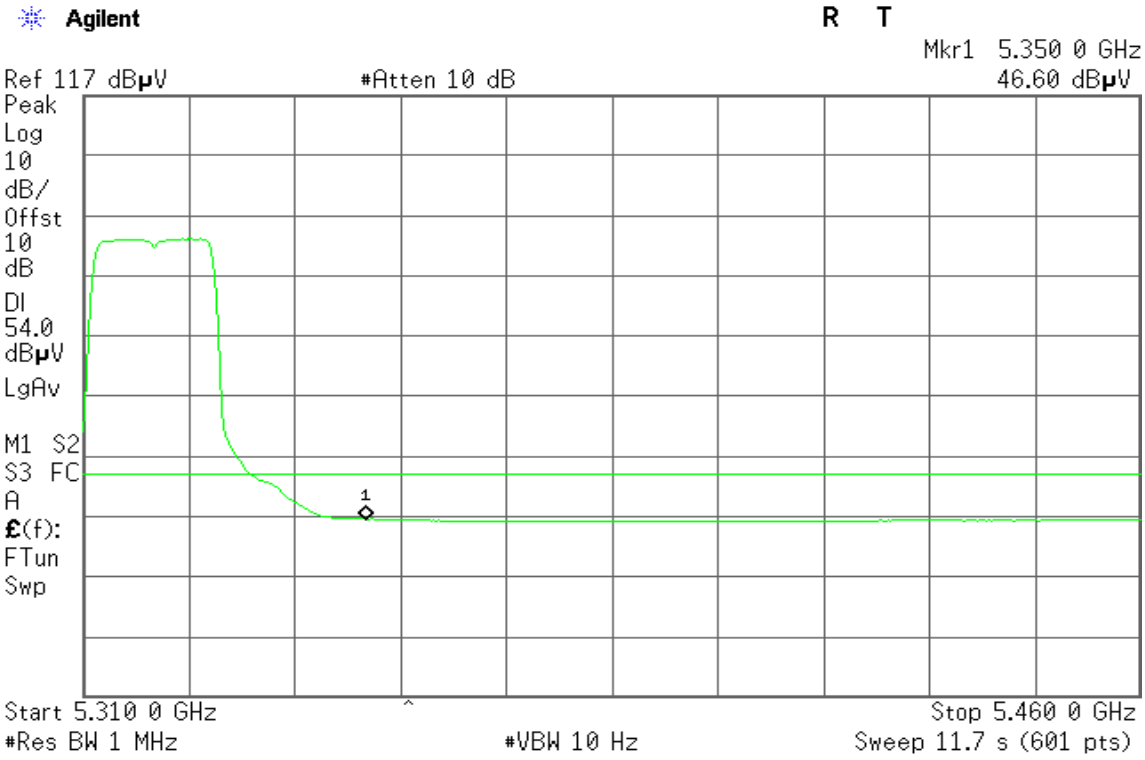


Band Edges (IEEE 802.11a mode / 5320 MHz

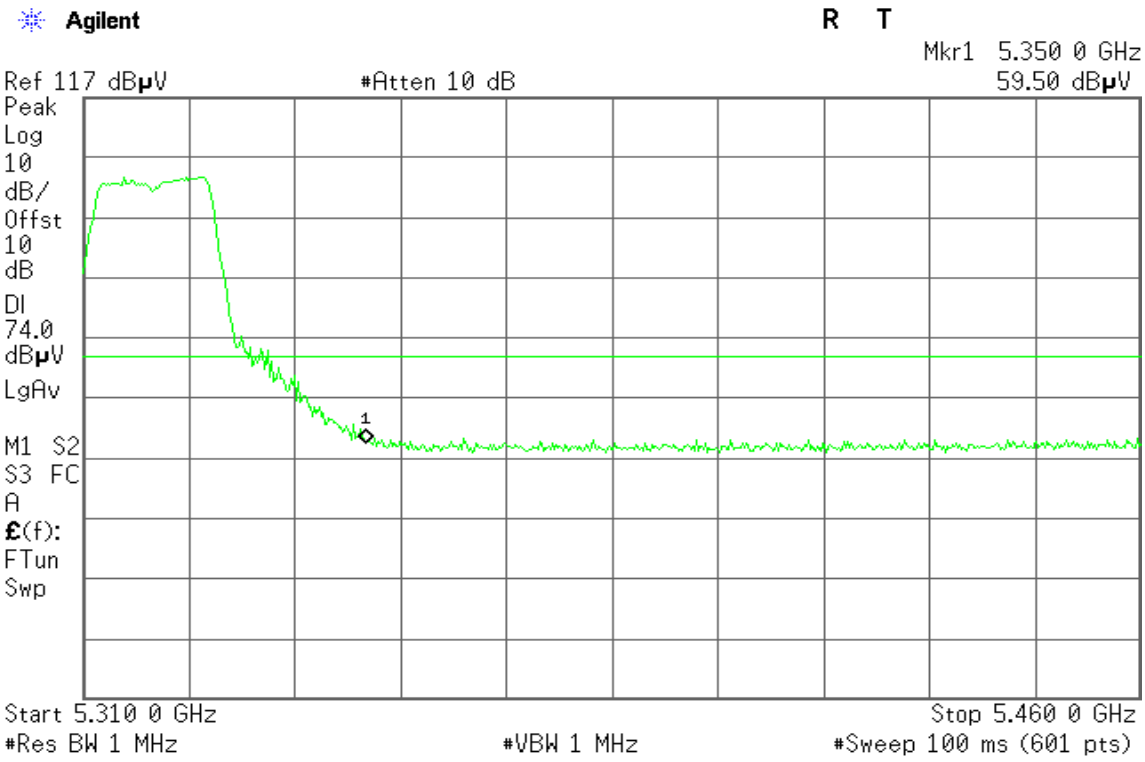
Detector mode: Peak **Polarity: Vertical**



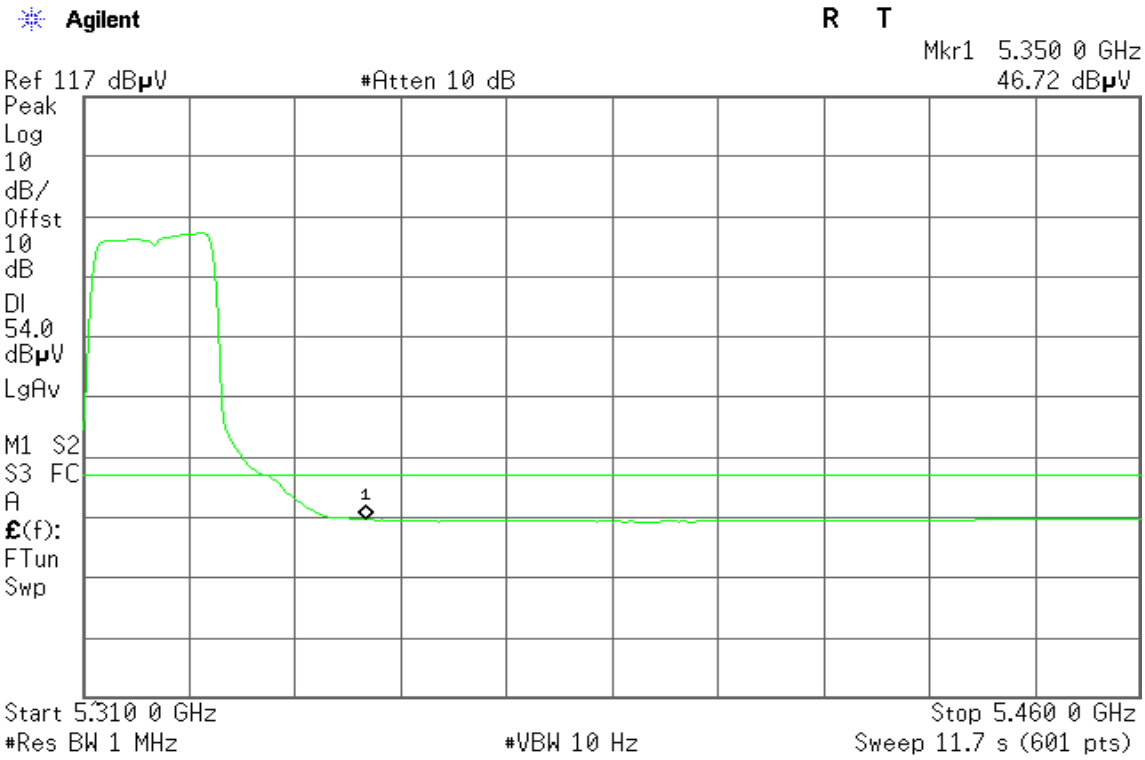
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

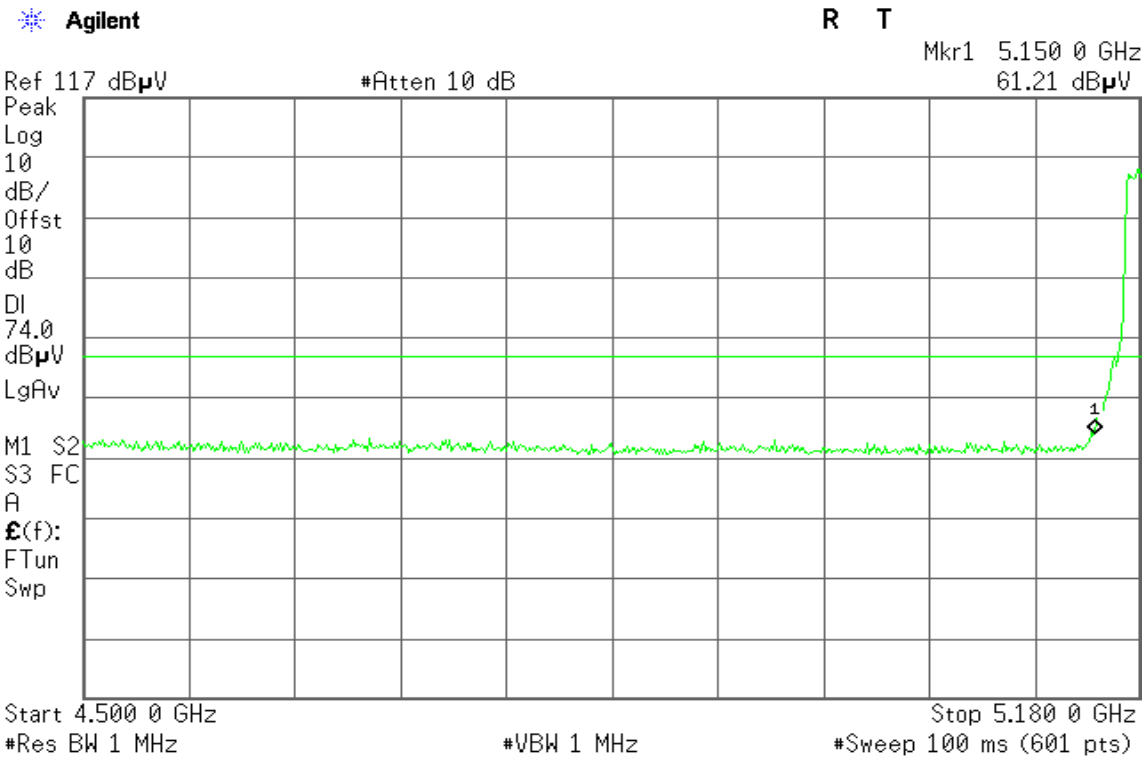


Detector mode: Average **Polarity: Horizontal**

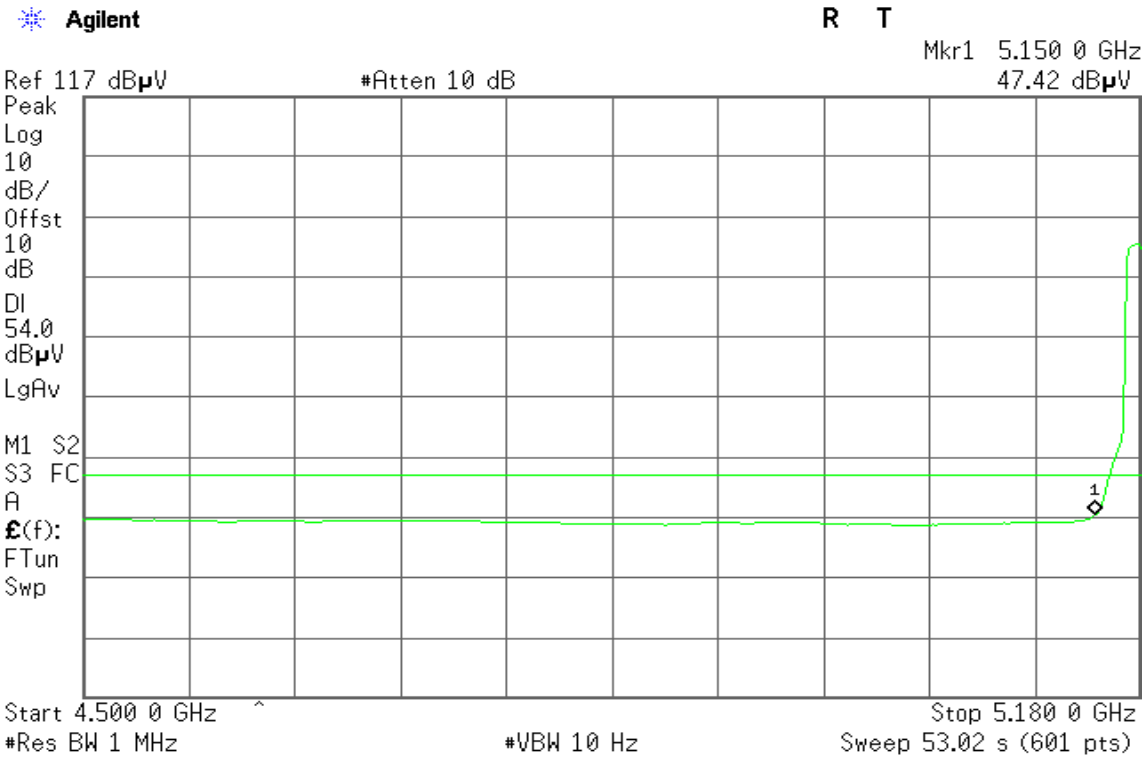


Band Edges (draft 802.11n Standard-20 MHz Channel mode / 5180 MHz)

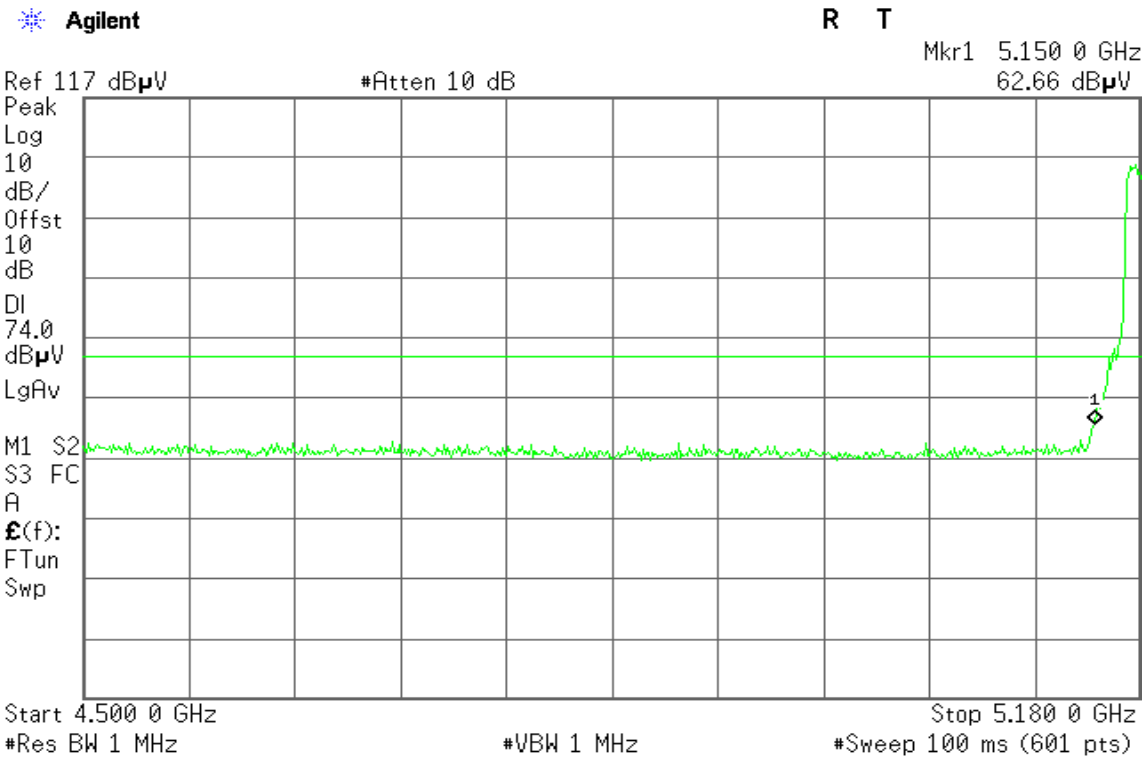
Detector mode: Peak **Polarity: Vertical**



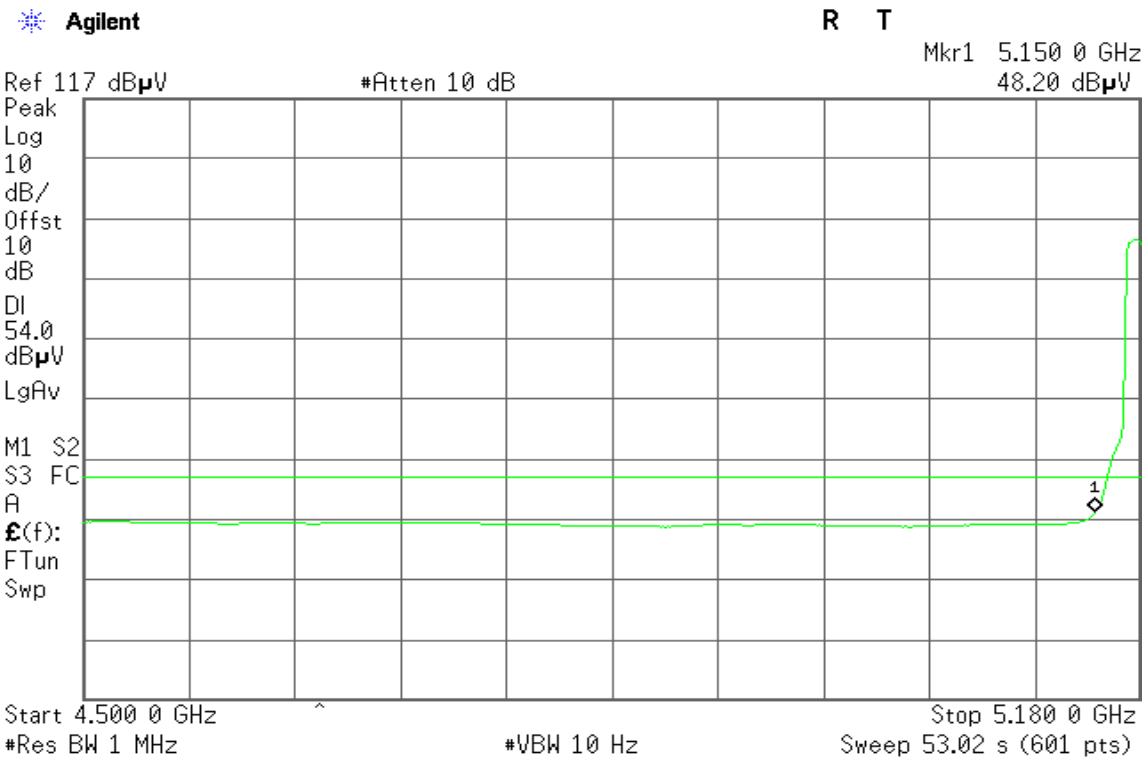
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

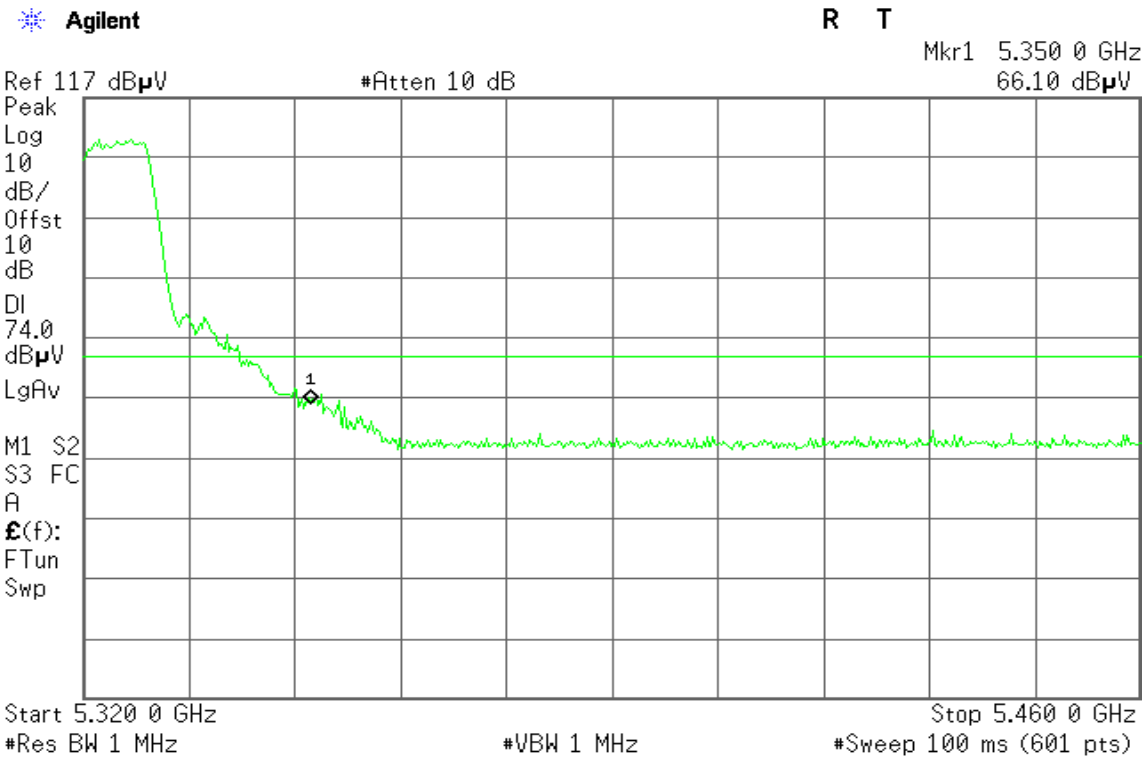


Detector mode: Average **Polarity: Horizontal**

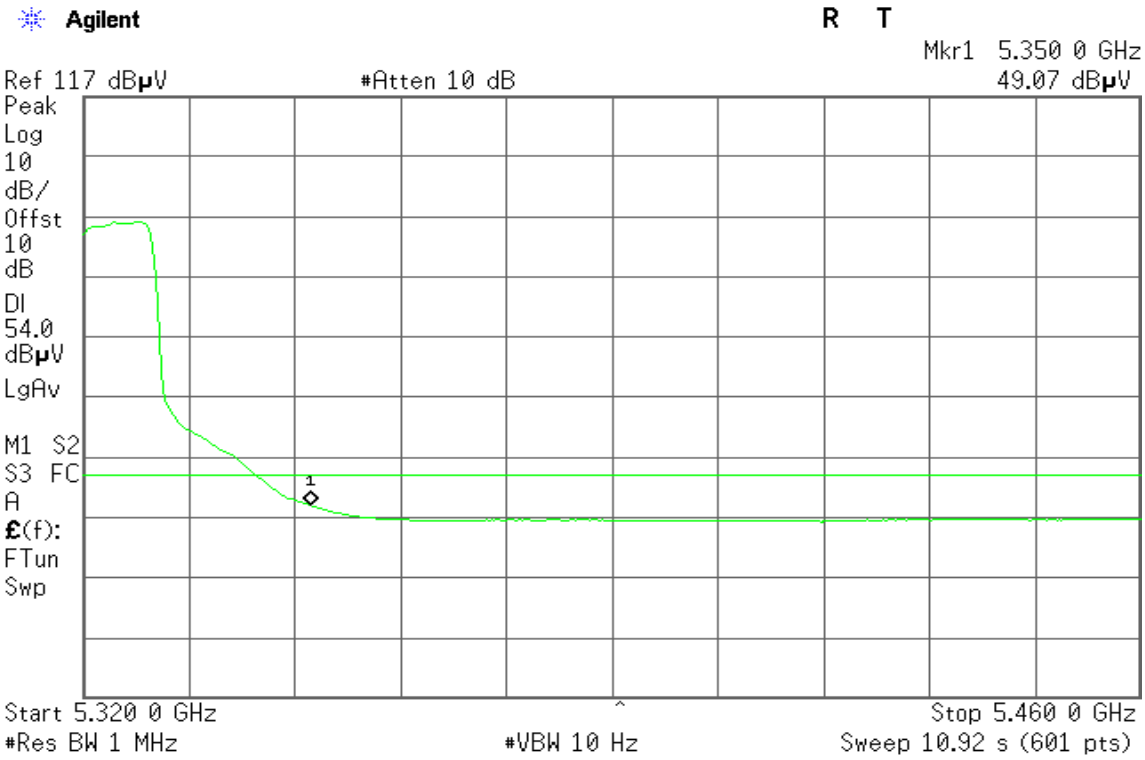


Band Edges (draft 802.11n Standard-20 MHz Channel mode / 5320 MHz)

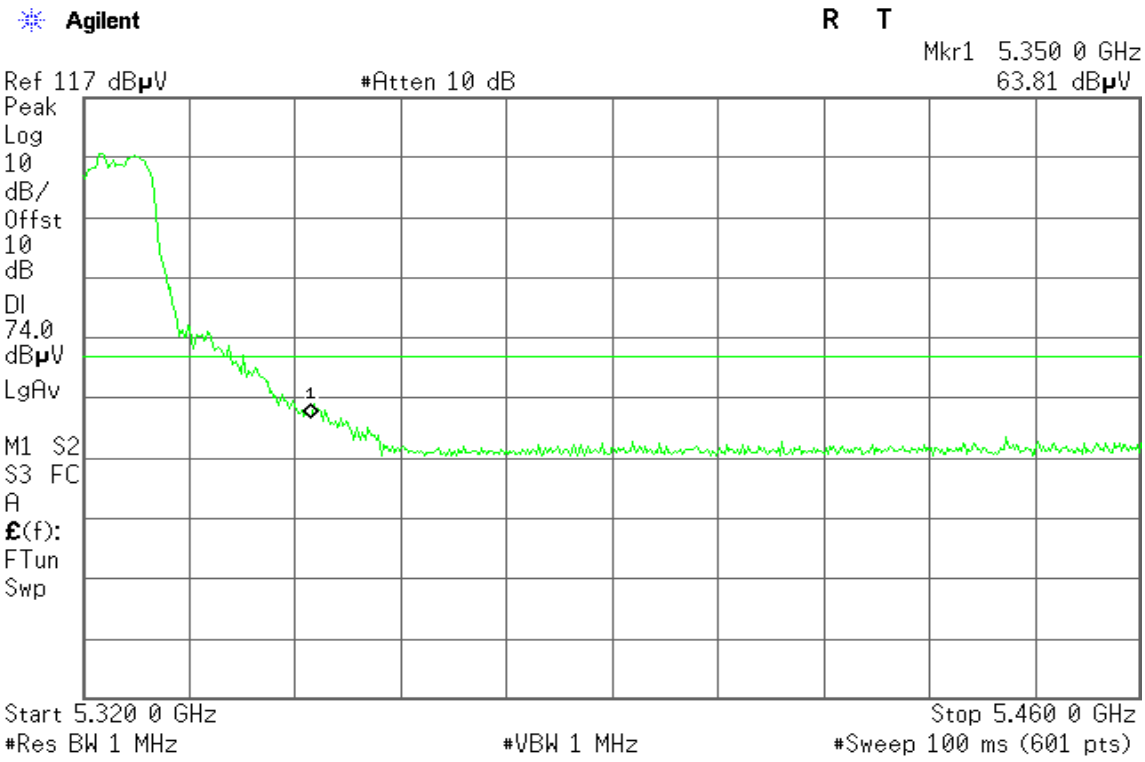
Detector mode: Peak **Polarity: Vertical**



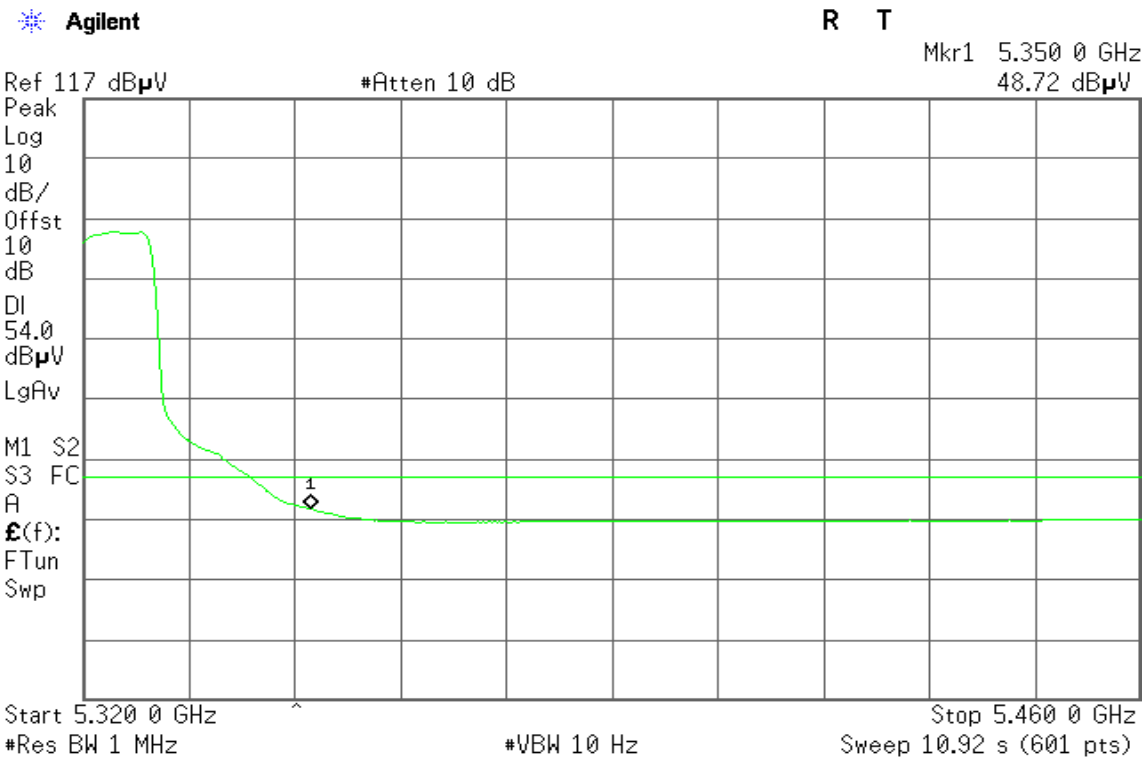
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

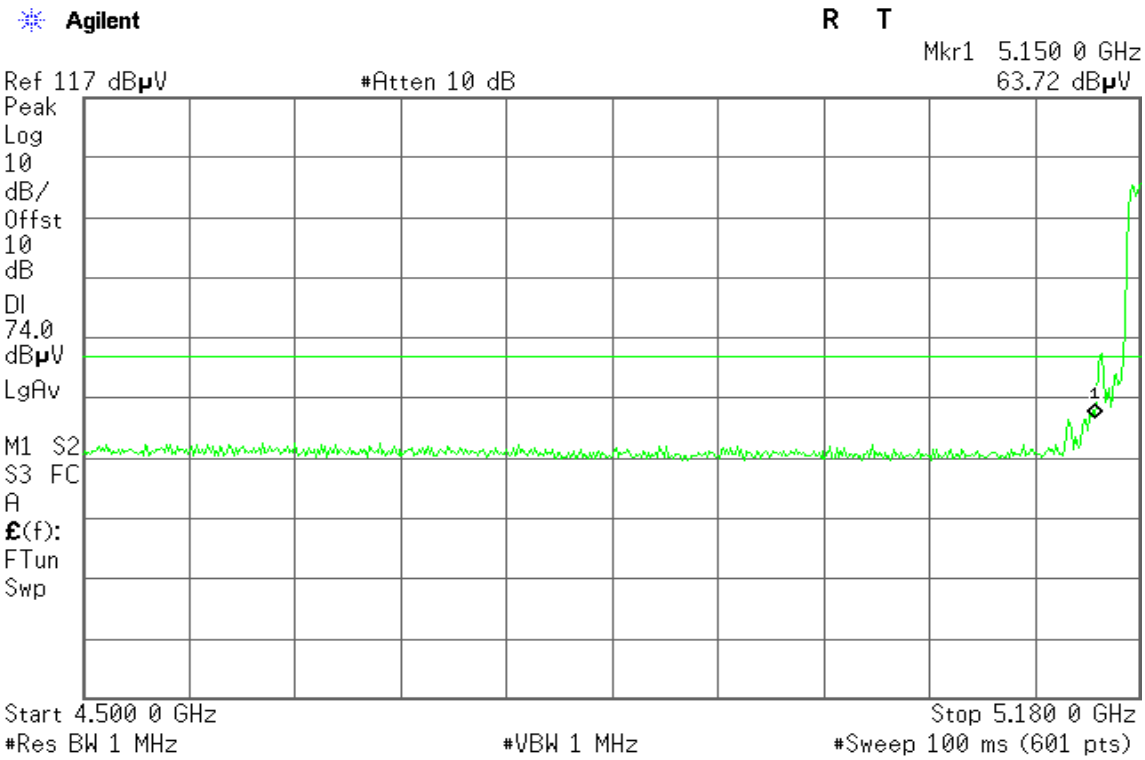


Detector mode: Average **Polarity: Horizontal**

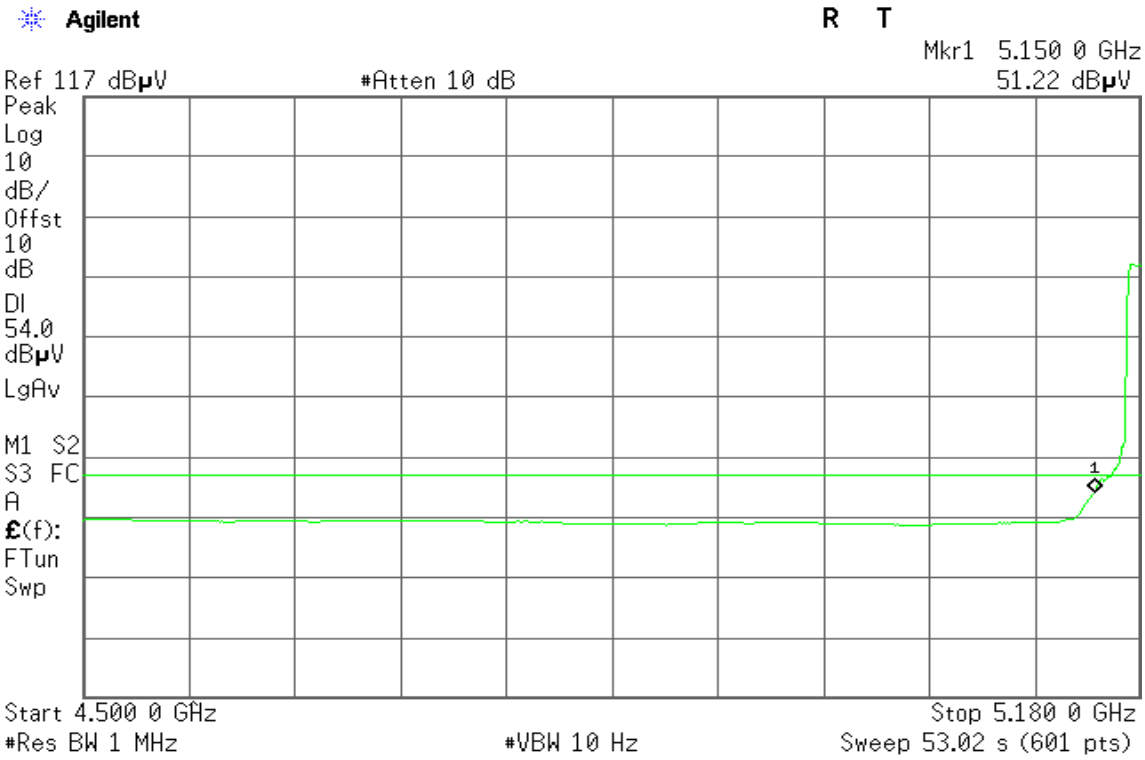


Band Edges (draft 802.11n Wide-40 MHz Channel mode / 5190 MHz)

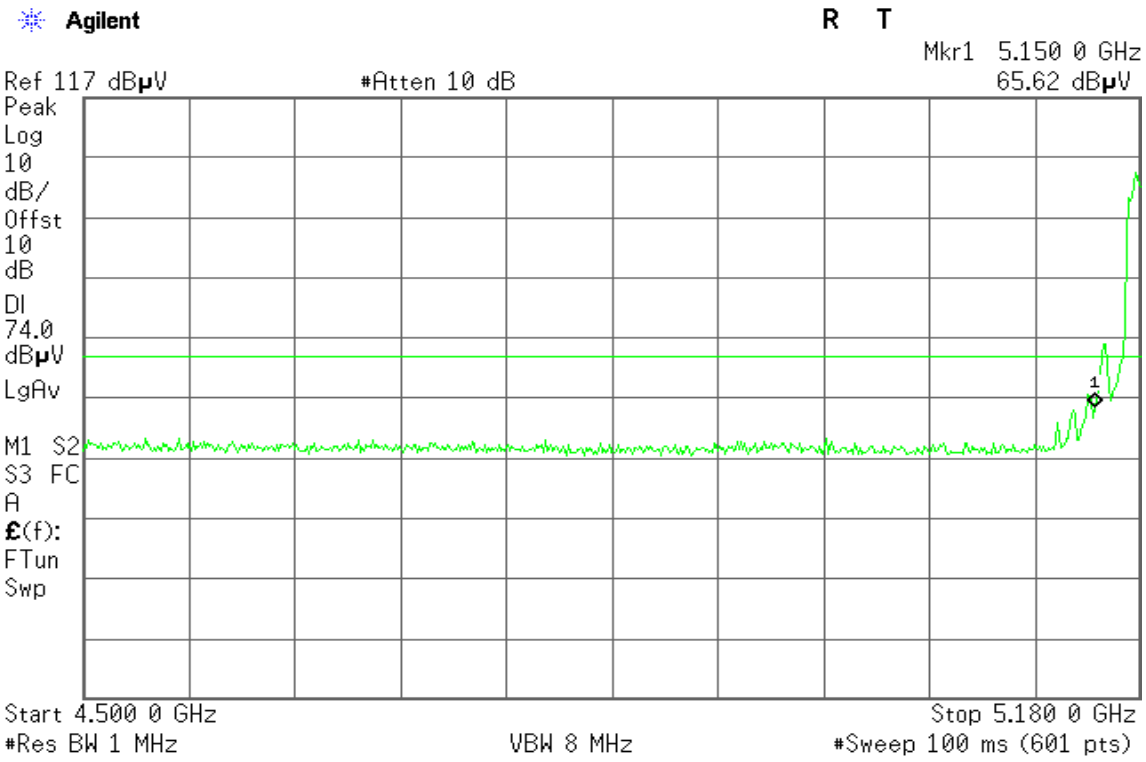
Detector mode: Peak **Polarity: Vertical**



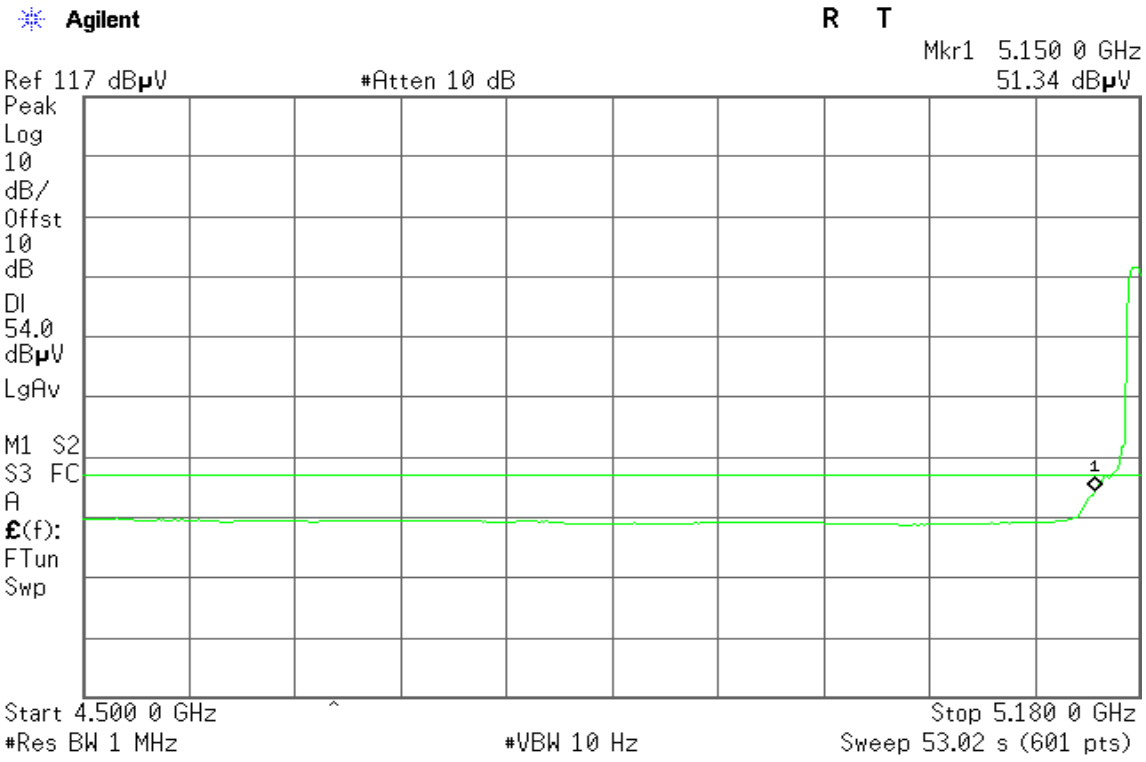
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

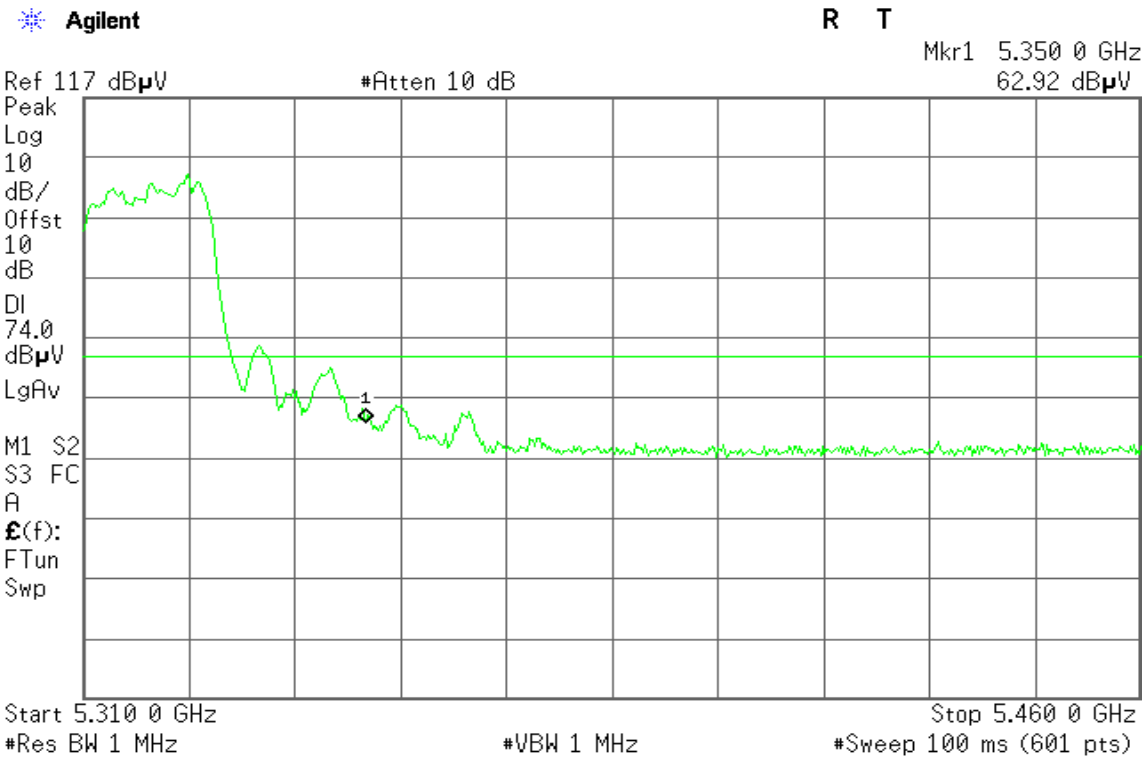


Detector mode: Average **Polarity: Horizontal**

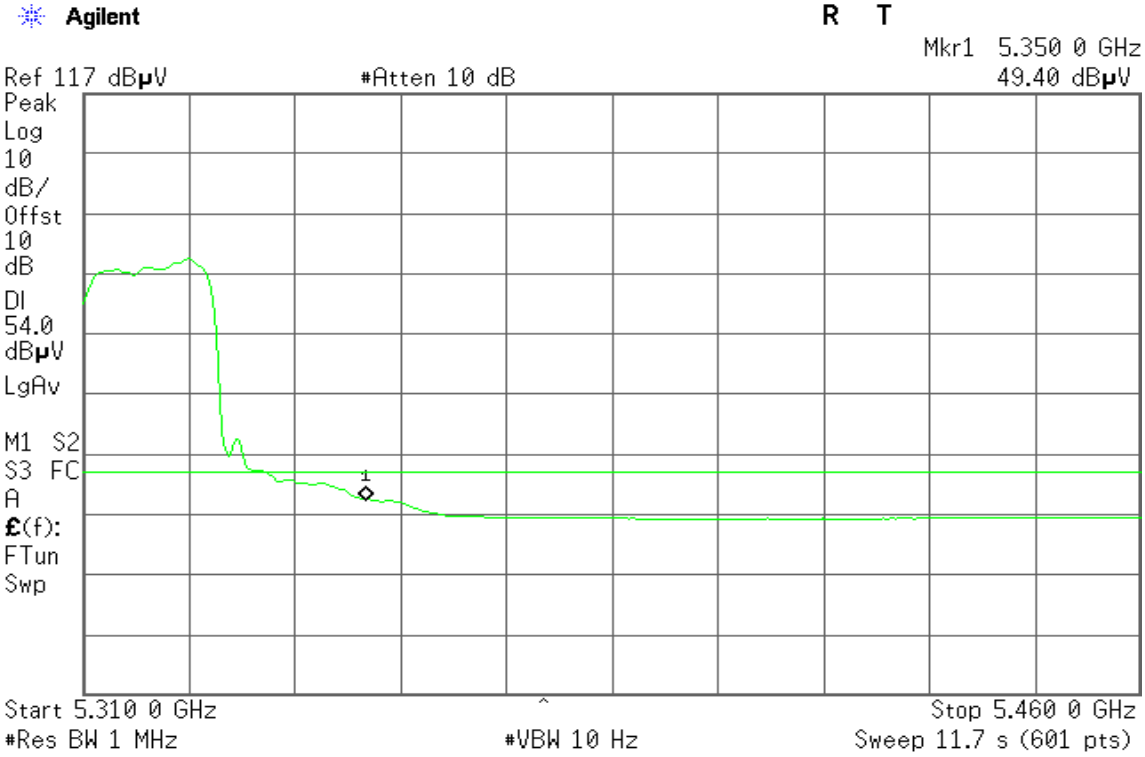


Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH 5310 MHz)

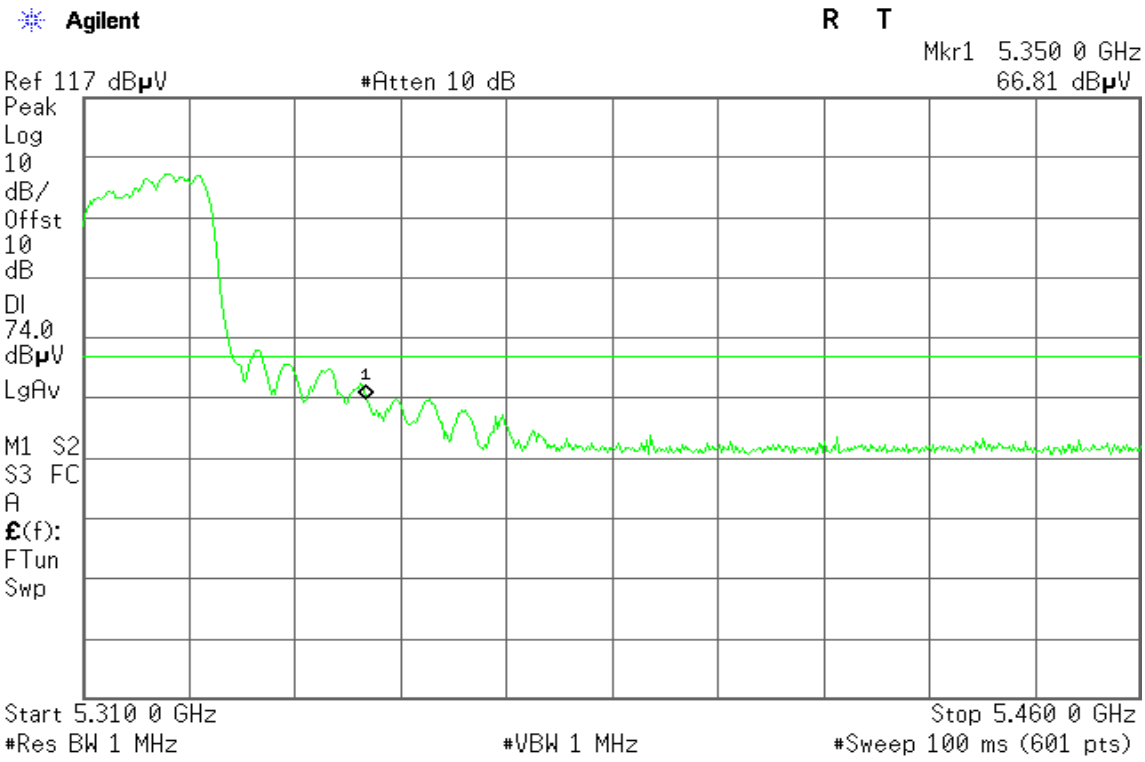
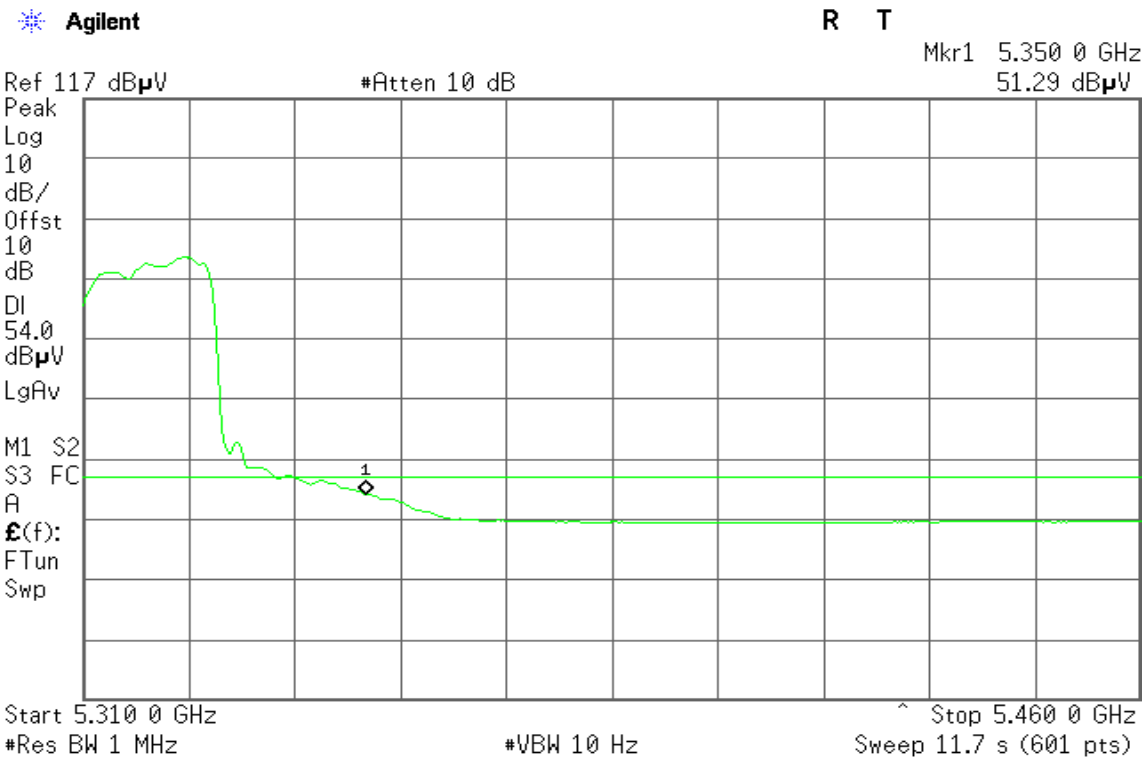
Detector mode: Peak **Polarity: Vertical**



Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**