FCC 47 CFR PART 15 SUBPART C AND ANSI C63.4 : 2003

TEST REPORT

For

WLAN USB Stick a/b/g/n Adapter

Model : 65-VF438-P2

Trade Name : Qualcomm

Issued for

QUALCOMM INCORPORATED

5775 Morehouse Drive San Diego California United States 92121

Issued by

NVLAP LAB CODE 200118-0

Compliance Certification Services Inc.
Hsinchu Lab.
Rm. 258, Bldg. 17, NO.195, Sec.4 Chung Hsing Rd.,
ChuTung Chen, Hsinchu, Taiwan 310, R.O.C
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Testing Laboratory
0240

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1. TEST REPORT CERTIFICATION

Applicant ：QUALCOMM INCORPORATED
Address ：5775 Morehouse Drive San Diego California United States 92121
Equipment Under Test ：WLAN USB Stick a/b/g/n Adapter
Model ：65-VF438-P2
Trade Name ：Qualcomm
Tested Date ：November 08 ~ December 03, 2007

APPLICABLE STANDARD	
STANDARD	**TEST RESULT**
FCC Part 15 Subpart C:2006 AND ANSI C63.4:2003	No non-compliance noted

Approved by: ***Reviewed by:***

S. B. Lu

S. B. Lu
Assistant Manager of Hsinchu Laboratory
Compliance Certification Services Inc.

Jason Chang

Jason Chang
Test Engineer of Hsinchu Laboratory
Compliance Certification Services Inc.

檢測報告
專用章
C C S

WE HEREBY CERTIFY THAT: The measurements shown in the attachment were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable. We assume full responsibility for the accuracy and completeness of these measurements and vouch for the qualifications of all persons taking them.

2. EUT DESCRIPTION

2.1 DESCRIPTION OF EUT & POWER

Product Name	WLAN USB Stick a/b/g/n Adapter
Model Number	65-VF438-P2
Frequency Range	IEEE 802.11a, IEEE 802.11n HT20/HT40 : 5725MHz ~ 5850MHz IEEE 802.11b/g, IEEE 802.11n HT20 : 2412MHz～2462MHz IEEE 802.11n HT40 : 2422MHz～2452MHz
Transmit Power	IEEE 802.11a : 20.14dBm IEEE 802.11n HT20 : 19.84dBm IEEE 802.11n HT40 : 20.83dBm IEEE 802.11b : 17.75dBm IEEE 802.11g : 21.39dBm IEEE 802.11n HT20 : 21.54dBm IEEE 802.11n HT40 : 21.11dBm
Channel Spacing	IEEE 802.11a, IEEE 802.11n HT20/HT40 : 20MHz IEEE 802.11b/g, IEEE 802.11n HT20/HT40 : 5MHz
Channel Number	IEEE 802.11a, IEEE 802.11n HT20 : 5 Channels IEEE 802.11n HT40 : 2 Channels IEEE 802.11b/g, IEEE 802.11n HT20 : 11 Channels IEEE 802.11n HT40 : 7 Channels
Transmit Data Rate	IEEE 802.11a : 54, 48, 36, 24, 18, 12, 9, 6 Mbps IEEE 802.11b : 11, 5.5, 2, 1 Mbps IEEE 802.11g : 54, 48, 36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n HT20 : 144.444, 130.0, 117.0, 115,556, 104.0, 86.667, 78.0, 65.0, 58.5, 57.778, 52.0, 43.333, 39.0, 28.889, 26.0, 19.5, 14.444, 13.0, 6.5Mbps IEEE 802.11n HT40 : 300, 270, 243, 240, 216, 180, 162, 135, 121.5, 120, 108, 81, 54, 40.5, 27, 13.5Mbps
Type of Modulation	IEEE 802.11a : OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11b : DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g : OFDM (64QAM, 16AQM, QPSK, BPSK) IEEE 802.11n HT20/40 : OFDM (64QAM, 16QAM, QPSK, BPSK)
Frequency Selection	by software / firmware
Antenna Type	Chip Antenna, Antenna Peak Gain : (2.34dBi (×2)for 5GHz , 1.51dBi (× 2)for 2.4GHz)
Power Source	5.0VDC (From Notebook PC, Powered From Host Device)

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: J9C-65VF438P2 filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.*
3. *For more details, please refer to the User's manual of the EUT.*

3. DESCRIPTION OF TEST MODES

The EUT is an 802.11n MIMO transceiver in USB form factor. It has two transmitter chains and two receive chains (2 × 2 configurations). The 2 × 2 configuration is implemented with two outside chains (Chain 0, 1).

The RF chipset is manufactured by QUALCOMM International, Inc.
The antenna peak gain 1.51 dBi (2.4G) and 2.34 dBi (5G) were chosen for full testing.

IEEE 802.11a mode, IEEE 802.11n HT20 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	5745
Middle	5785
High	5825

IEEE 802.11a mode : 6 Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT20 mode : 6.5Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT40 mode

The EUT had been tested under operating condition.

There are two channels have been tested as following :

Channel	Frequency (MHz)
Low	5755
High	5795

IEEE 802.11n HT40 mode : 13.5 Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11b mode, IEEE 802.11g mode, IEEE 802.11n HT20 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode : 1 Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11g mode : 6 Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT20 mode : 6.5 Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT40 mode

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	2422
Middle	2437
High	2452

IEEE 802.11n HT40 mode : 13.5Mbps data rate (worst case) were chosen for full testing.

The worst-case data rates are determined according to the description above, based on the investigations by measuring the PSD and average power across all the data rates, bandwidths, modulations and spatial stream modes.

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 2437 MHz. Thus all emissions tests were made in the IEEE 802.11b mode, 2437 MHz, 1Mb/s.

4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CRF 47 2.1046, 2046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at
Rm.258, Bldg.17, NO.195 , Sec. 4, Chung Hsing Rd., Chu-Tung Chen. Hsin-Chu,
Taiwan 310 R.O.C.
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 preselectors 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 LABORATORY ACCREDITATIONS LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200118-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (registration no: 90585 and 90584).

5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP	EN 55014-1, AS/NZS 1044, CNS 13783-1, IEC/CISPR 14-1, IEC/CISPR 22, EN 55022, EN 61000-3-2, EN 61000-3-3, ANSI C63.4, AS/NZS CISPR 22, AS/NZS 3548, IEC 61000-4-2/3/4/5/6/8/11	NVLAP 200118-0
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	FC 90585, 90584
Japan	VCCI	3/10 meter Open Area Test Sites to perform conducted/radiated measurements	VCCI R-1229/1189 C-1250/1294
Taiwan	TAF	FCC Method-47 CFR Part 15 Subpart C,D,E CISPR 11, FCC METHOD-47 CFR Part 18, EN 55011, CNS 13803, CISPR 13, CNS 13439, FCC Method-47 CFR Part 15 Subpart B, CISPR 14-1, EN 55014-1, CNS 13783-1, EN 55015, CNS 14115, CISPR 22, EN 55022, VCCI CNS 13438, EN 61000-4-2/3/4/5/6/8/11	TAF Testing Laboratory 0240
Taiwan	BSMI	CNS 13803, CNS 13438, CNS 13439, CNS 13783-1, CNS 14115	商檢 SL2-IS-E-0002 SL2-IN-E-0002 SL2-A1-E-0002 SL2-R1-E-0002 SL2-R2-E-0002 SL2-L1-E-0002
Canada	Industry Canada	RSS212, Issue 1	Canada IC 4417-1

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

6. CALIBRATION AND UNCERTAINTY

6.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

6.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 1000 MHz	+/- 3.2 dB
Radiated Emission, 1 to 26.5 GHz	+/- 3.2 dB
Power Line Conducted Emission	+/- 2.1 dB

Uncertainty figures are valid to a confidence level of 95%

7. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	Serial No.	FCC ID
1	Notebook PC	IBM	X60	LV-R1400	DoC

SETUP DIAGRAM FOR TESTS

EUT & peripherals setup diagram is shown in appendix setup photos.

8. APPLICABLE LIMITS AND TEST RESULTS

8.1 6dB BANDWIDTH

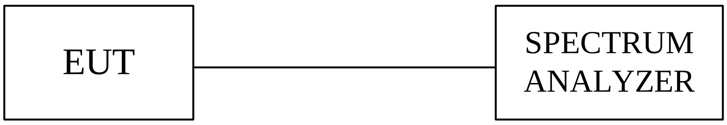
LIMIT

§ 15.207(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

TEST EQUIPMENT

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	March 22, 2007

TEST SETUP



TEST PROCEDURE

The transmitter output was connected to a spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

TEST RESULTS

No non-compliance noted

IEEE 802.11a mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain 1		
Low	5745	16420	16420	500	PASS
Middle	5785	16500	16250	500	PASS
High	5825	16420	16420	500	PASS

IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain 1		
Low	5745	17500	17330	500	PASS
Middle	5785	17500	17580	500	PASS
High	5825	17250	17580	500	PASS

IEEE 802.11n HT40 mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain 1		
Low	5755	34080	34920	500	PASS
High	5795	33750	35750	500	PASS

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	7920	500	PASS
Middle	2437	8580	500	PASS
High	2462	6920	500	PASS

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain 1		
Low	2412	16420	16420	500	PASS
Middle	2437	16330	16420	500	PASS
High	2462	1650	16330	500	PASS

IEEE 802.11n HT20 mode

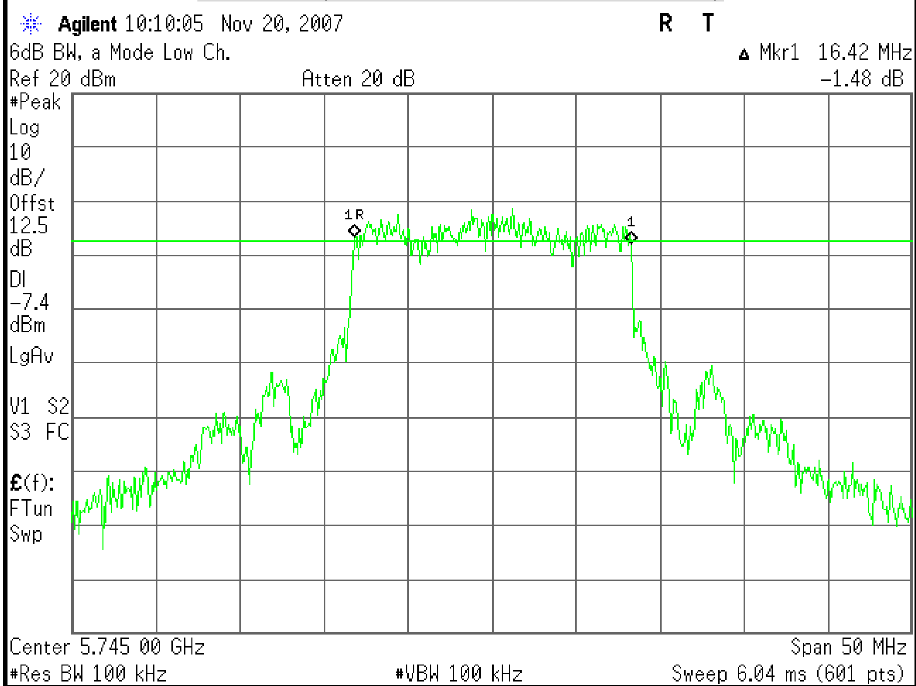
Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain 1		
Low	2412	16920	17250	500	PASS
Middle	2437	17250	17580	500	PASS
High	2462	17670	17330	500	PASS

IEEE 802.11n HT40 mode

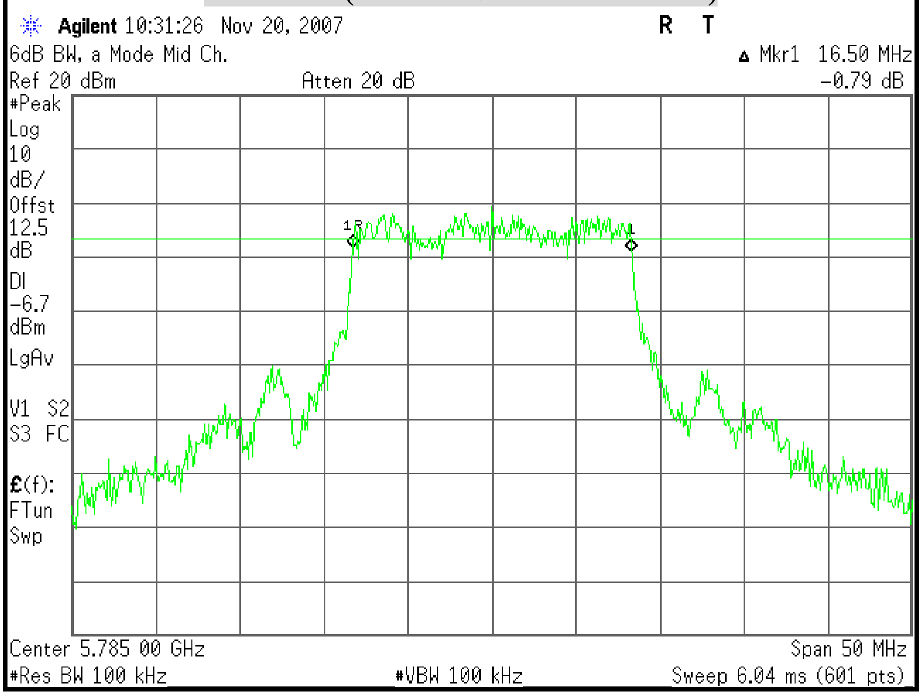
Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)		Minimum Limit (kHz)	Pass / Fail
		Chain 0	Chain 1		
Low	2422	32670	34080	500	PASS
Middle	2437	35080	32580	500	PASS
High	2452	34830	34420	500	PASS

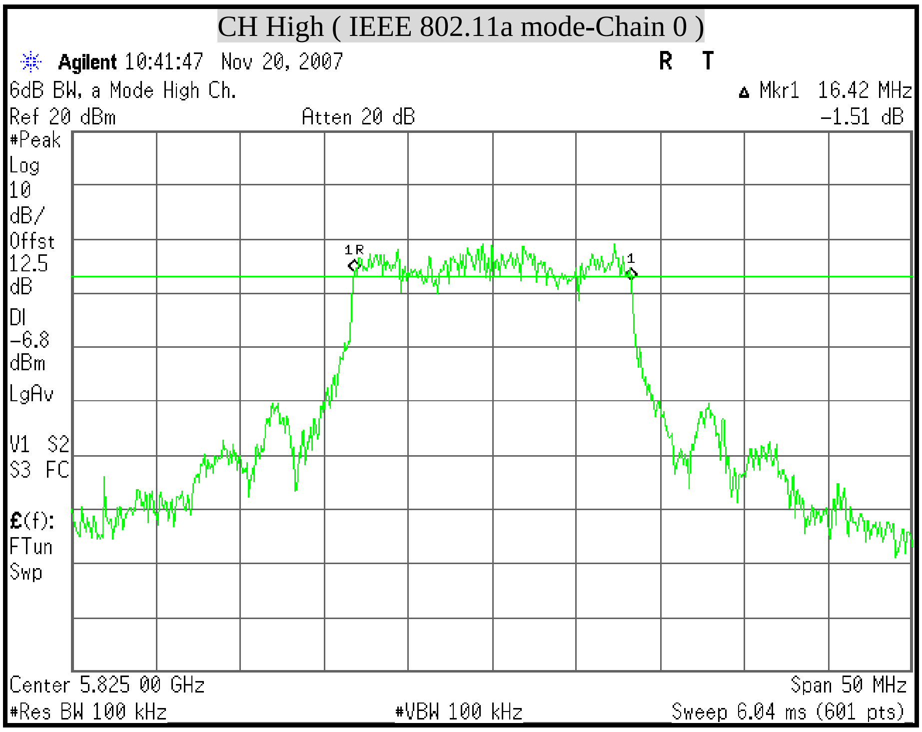
6dB BANDWIDTH (IEEE 802.11a mode)

CH Low (IEEE 802.11a mode-Chain 0)

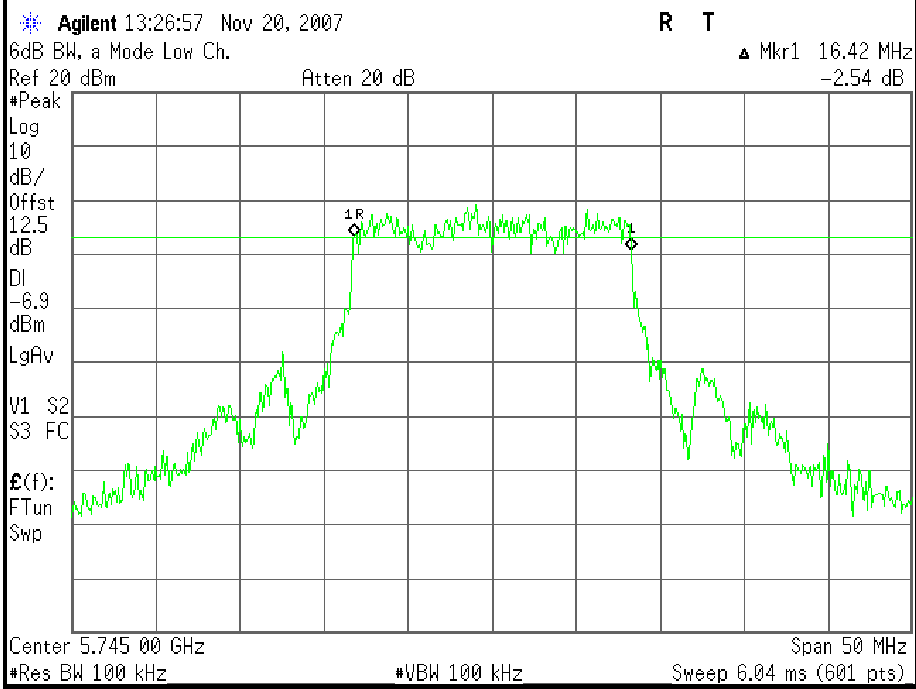


CH Middle (IEEE 802.11a mode-Chain 0)

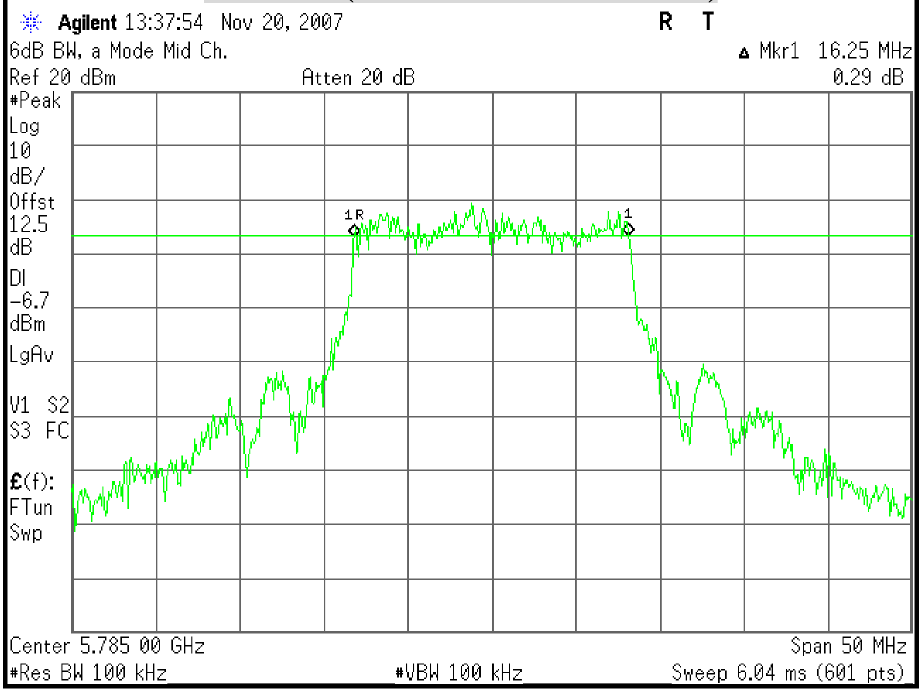



CH High (IEEE 802.11a mode-Chain 0)
Agilent 10:41:47 Nov 20, 2007
R T
6dB BW, a Mode High Ch.
Mkr1 16.42 MHz
Ref 20 dBm
Atten 20 dB
-1.51 dB
#Peak
Log
10
dB/
Offst
12.5
dB
Dl
-6.8
dBm
LgAv
V1 S2
S3 FC
£(f):
FTun
Swp
Center 5.825 00 GHz
Span 50 MHz
#Res BW 100 kHz
#VBW 100 kHz
Sweep 6.04 ms (601 pts)

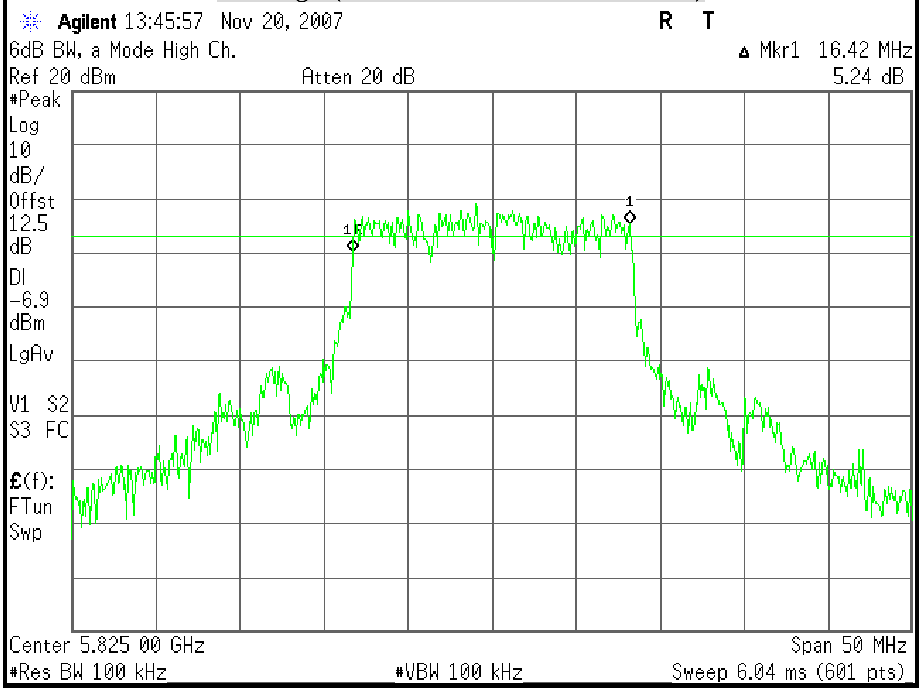
CH Low (IEEE 802.11a mode-Chain 1)



CH Middle (IEEE 802.11a mode-Chain 1)

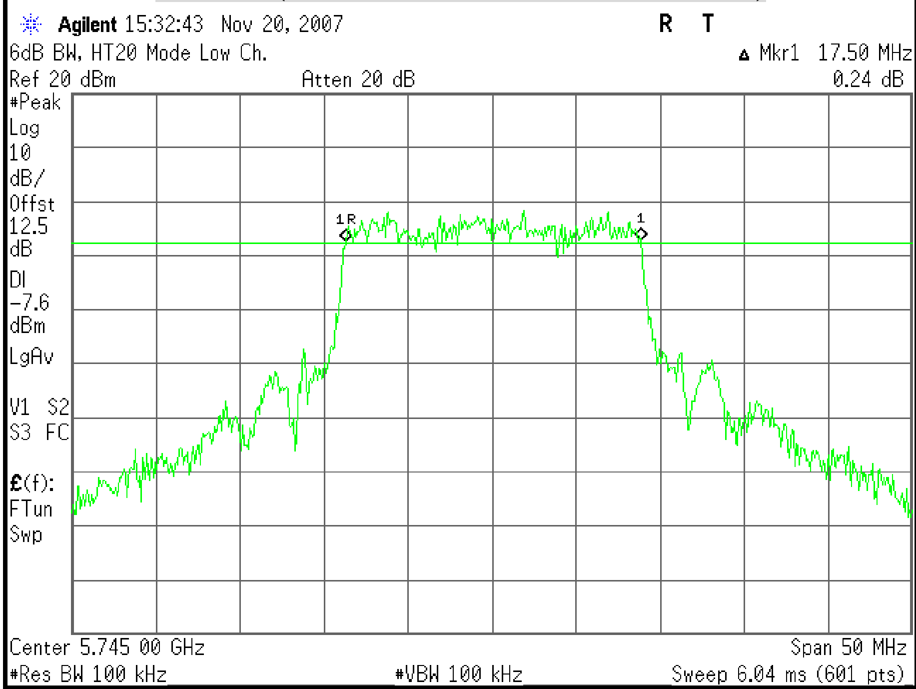


CH High (IEEE 802.11a mode-Chain 1)



6dB BANDWIDTH (IEEE 802.11n HT20 mode)

CH Low (IEEE 802.11n HT20 mode-Chain 0)



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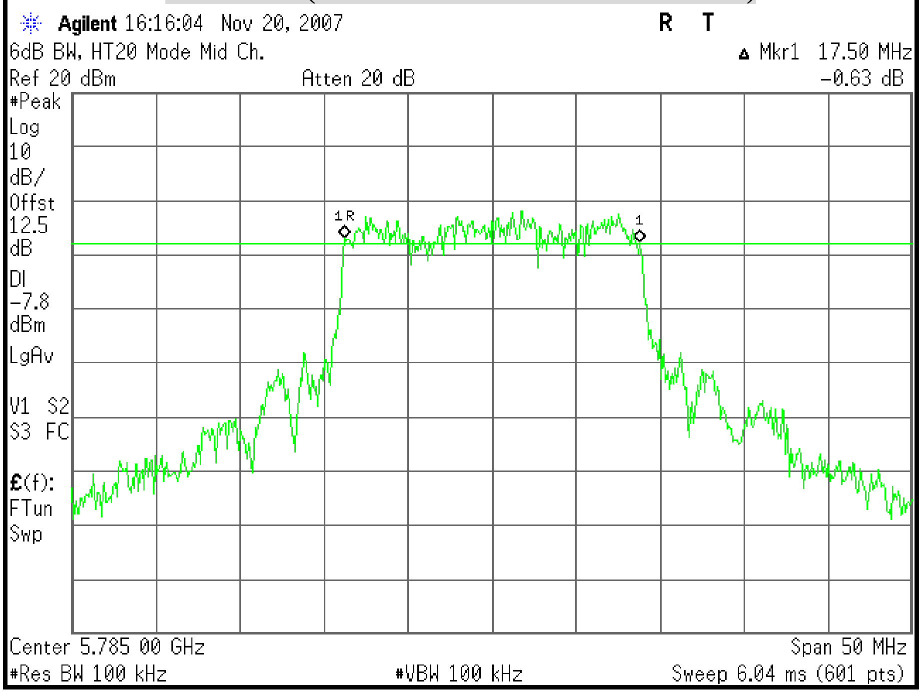

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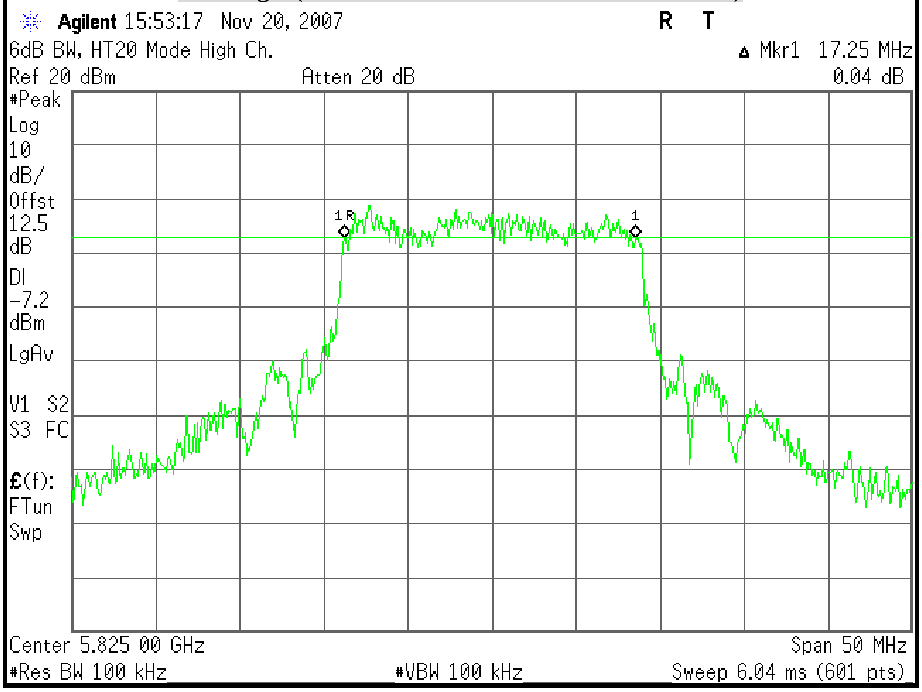

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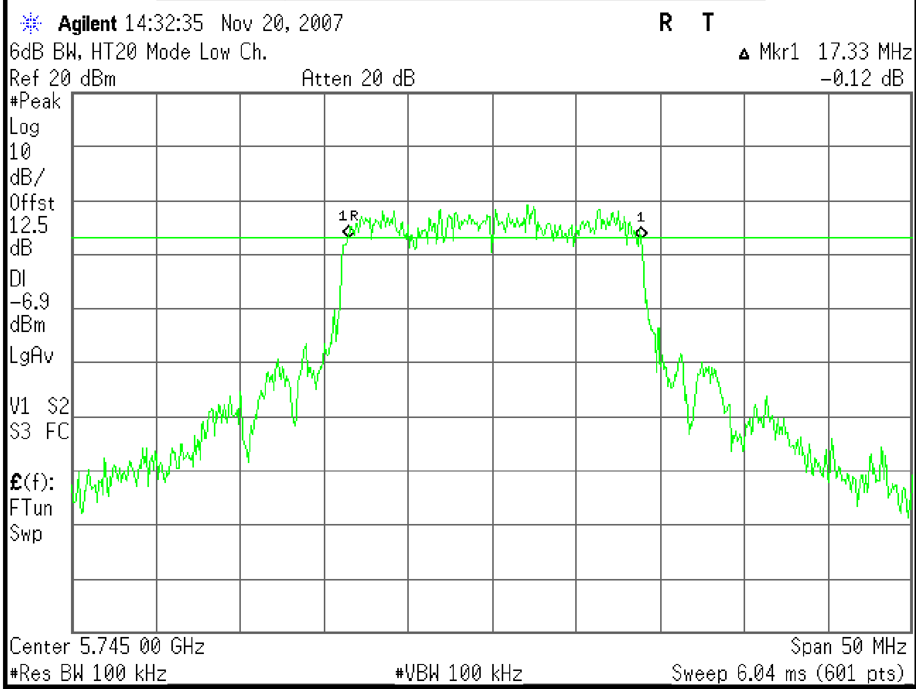

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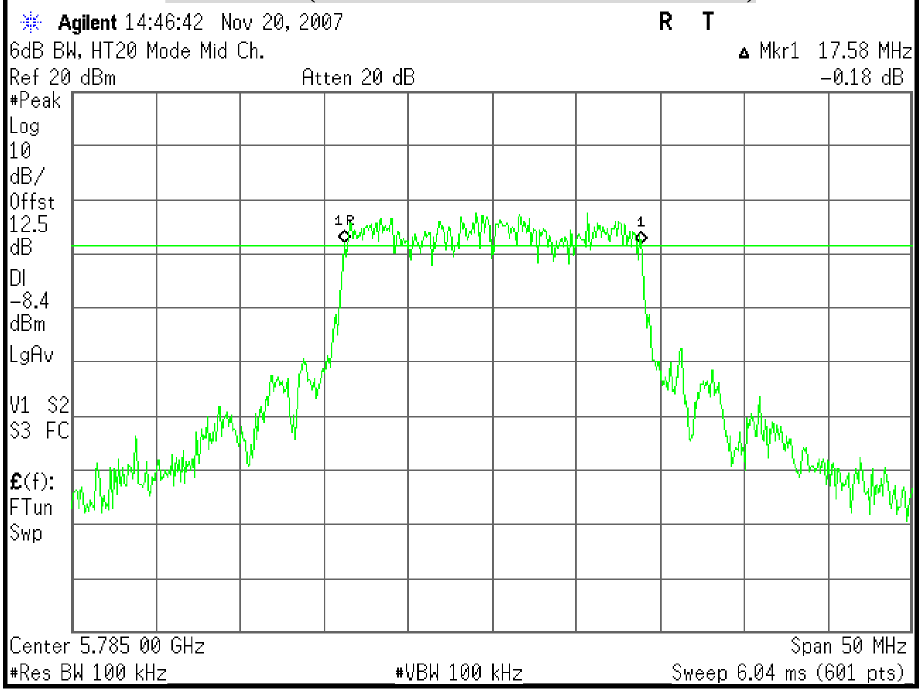
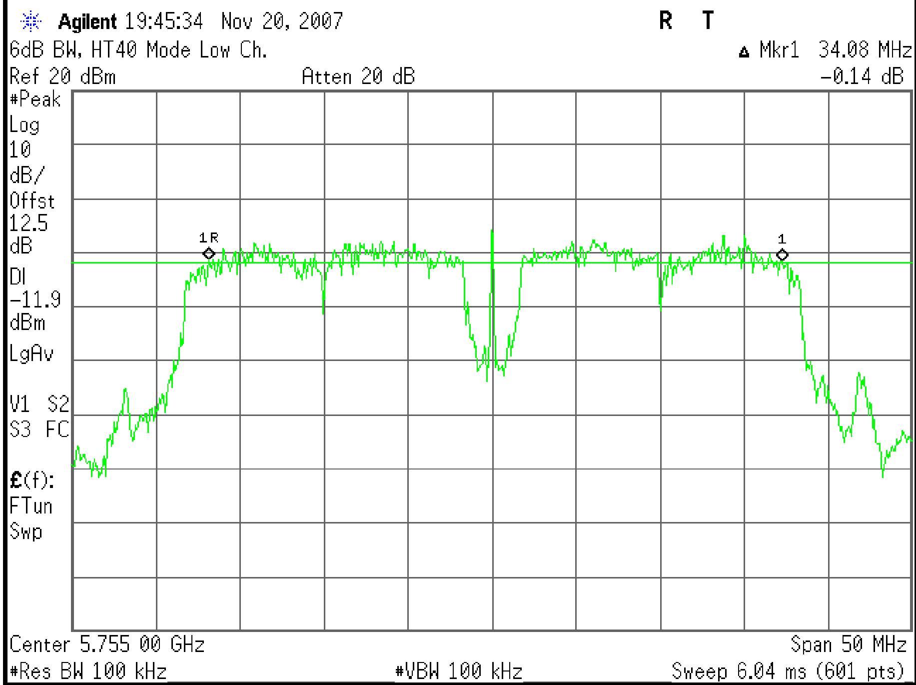


CH High (IEEE 802.11n HT20 mode-Chain 1)

6dB BANDWIDTH (IEEE 802.11n HT40 mode)

CH Low (IEEE 802.11n HT40 mode-Chain 0)



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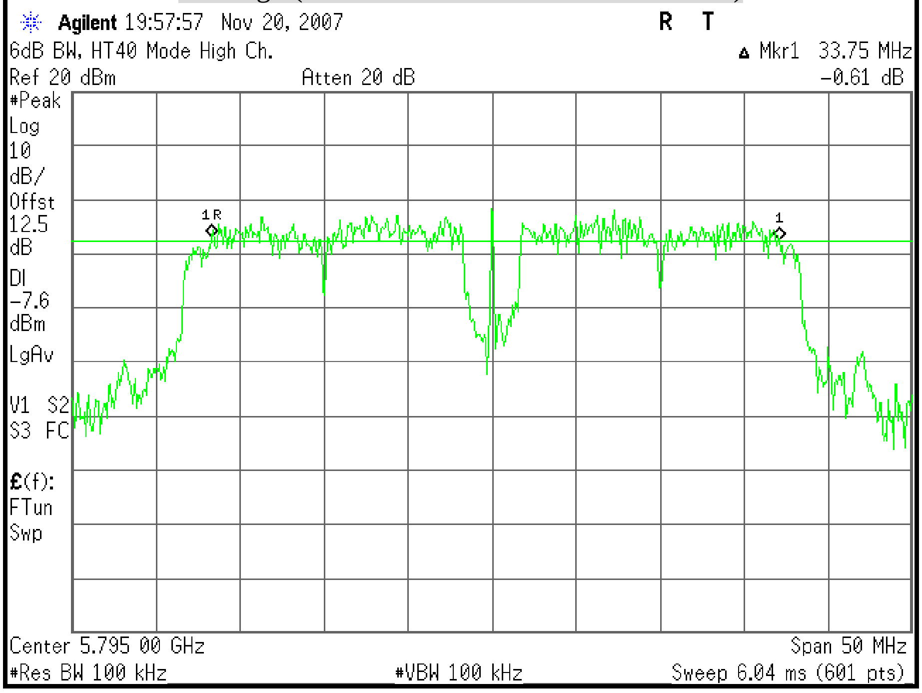
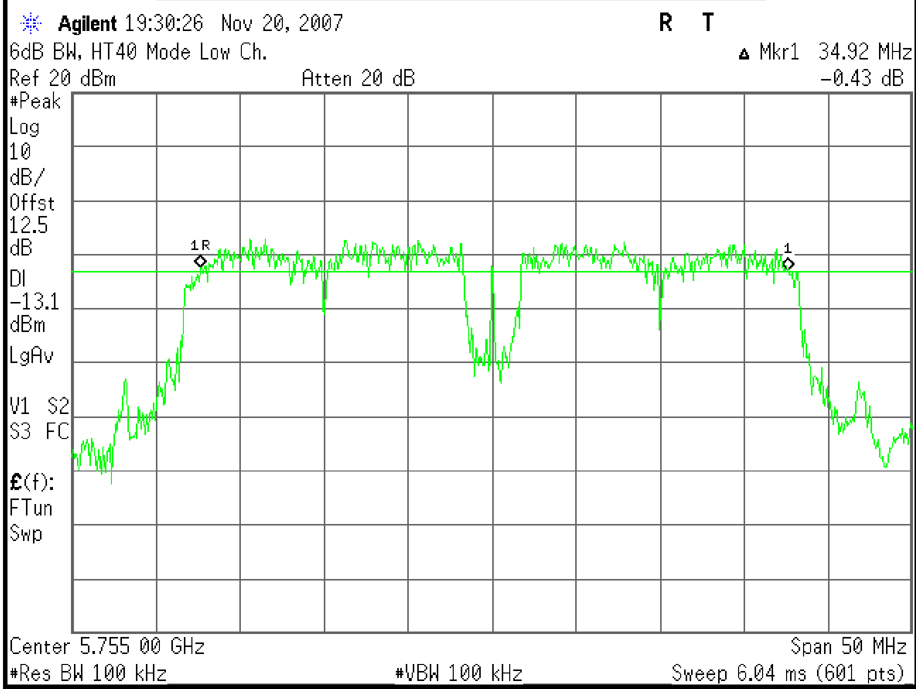
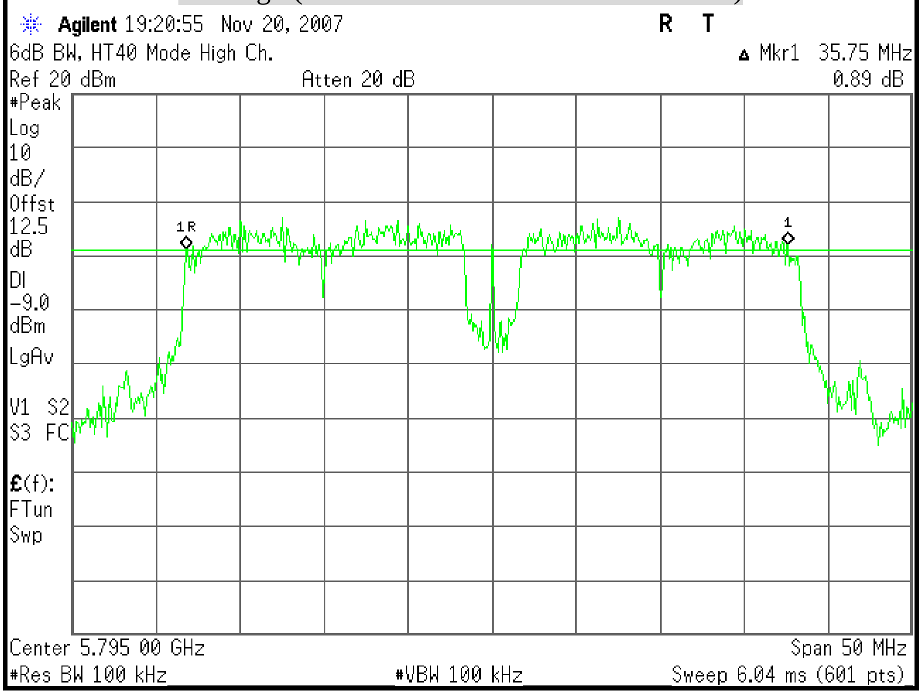


CH Low (IEEE 802.11n HT40 mode-Chain 1)

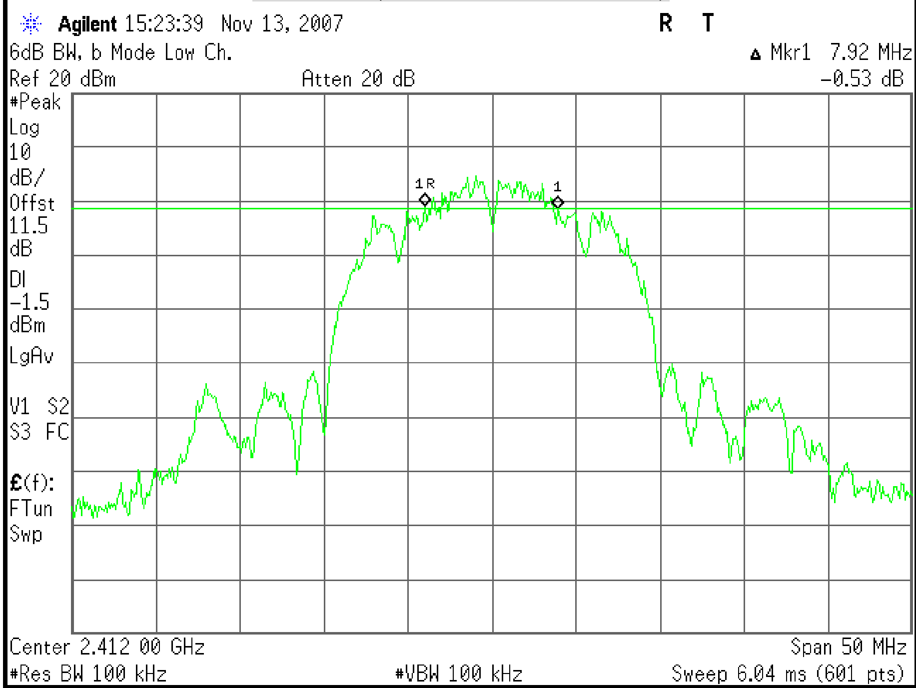


CH High (IEEE 802.11n HT40 mode-Chain 1)

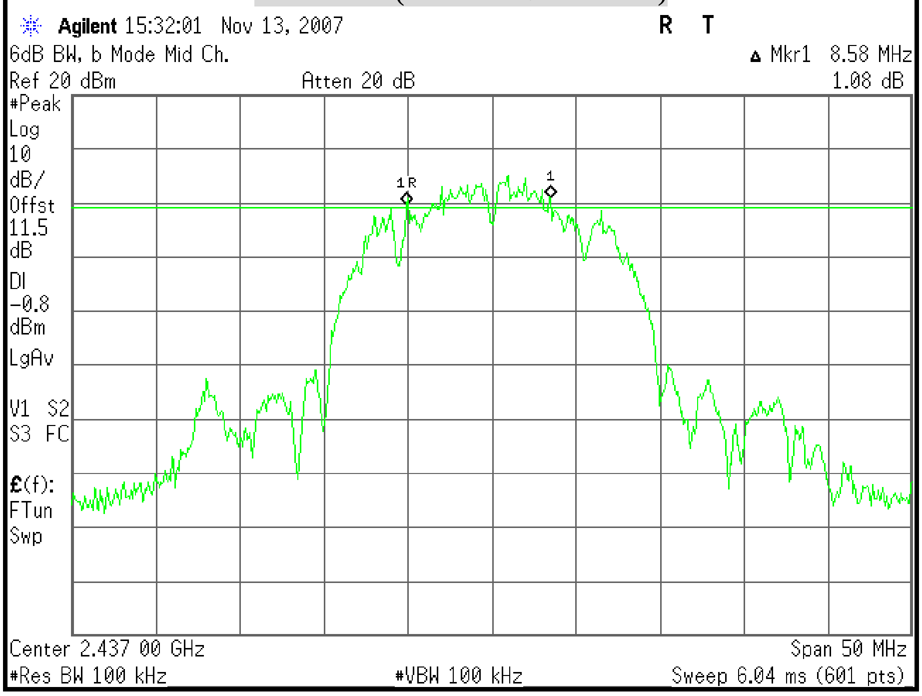


6dB BANDWIDTH (IEEE 802.11b mode)

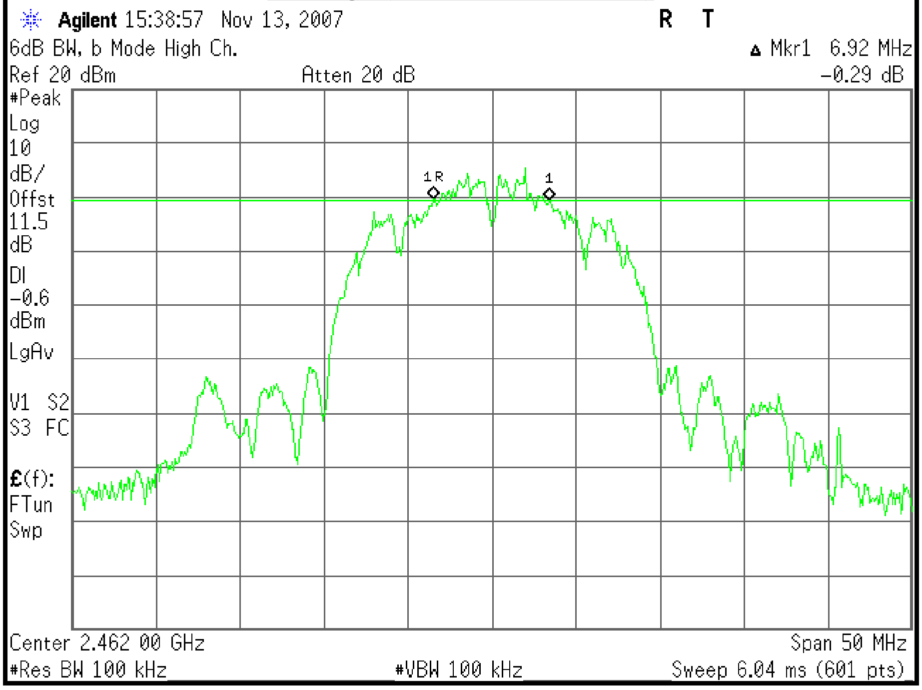
CH Low (IEEE 802.11b mode)



CH Middle (IEEE 802.11b mode)

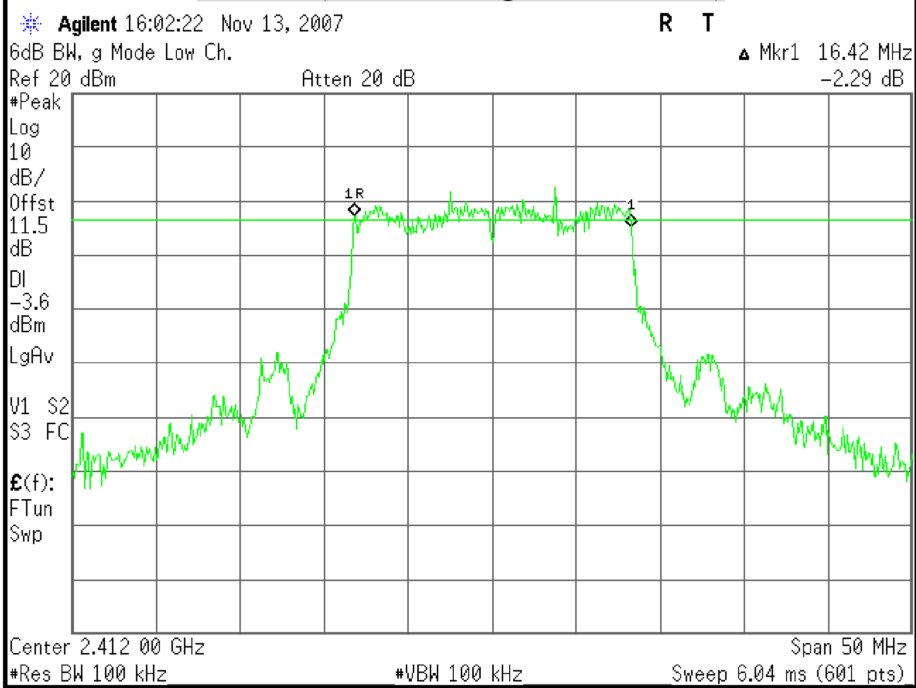


CH High (IEEE 802.11b mode)

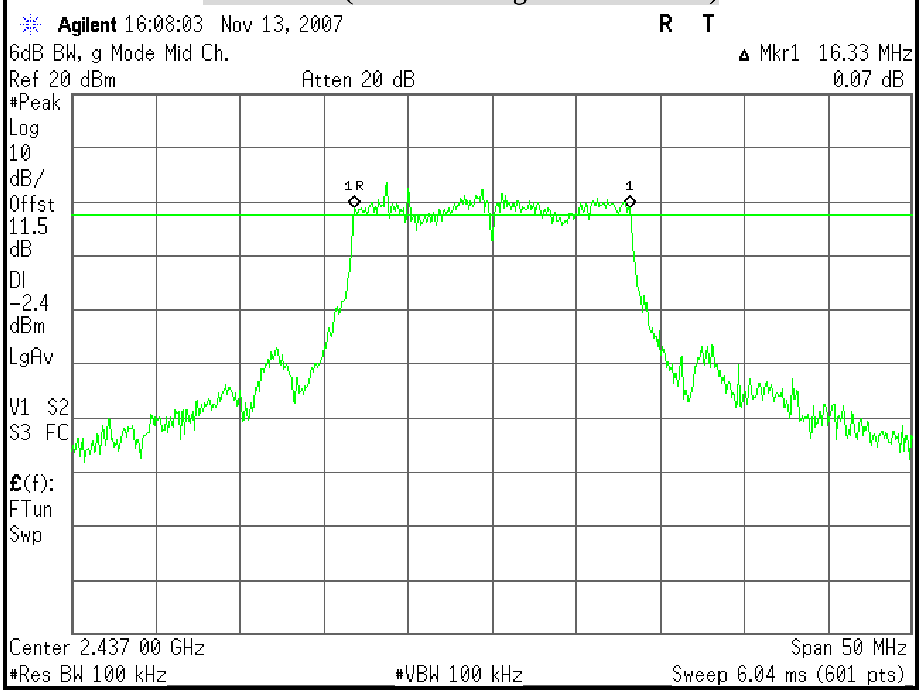


6dB BANDWIDTH (IEEE 802.11g mode)

CH Low (IEEE 802.11g mode-Chain 0)



CH Middle (IEEE 802.11g mode-Chain 0)



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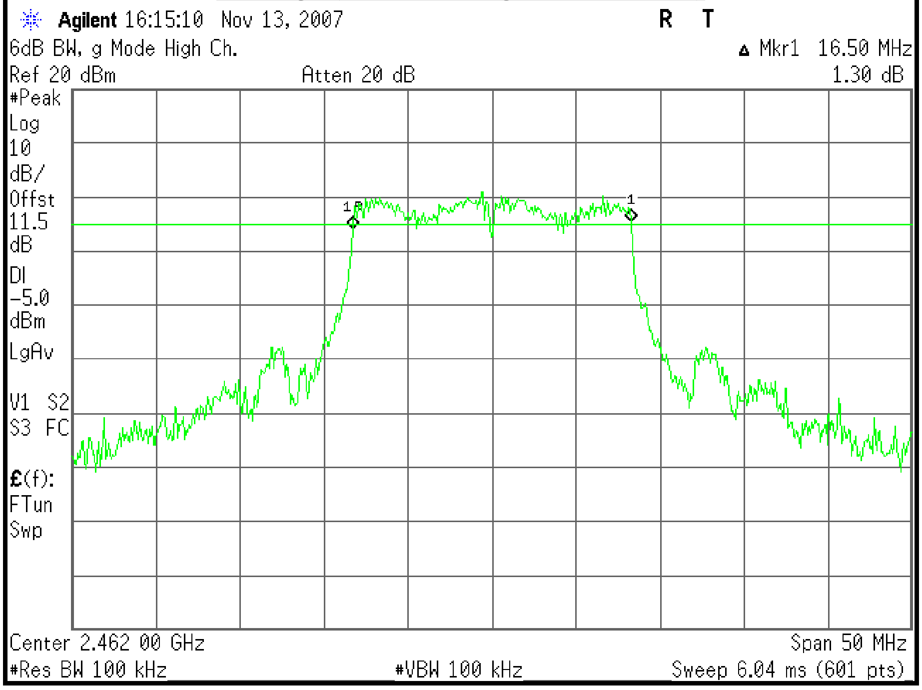

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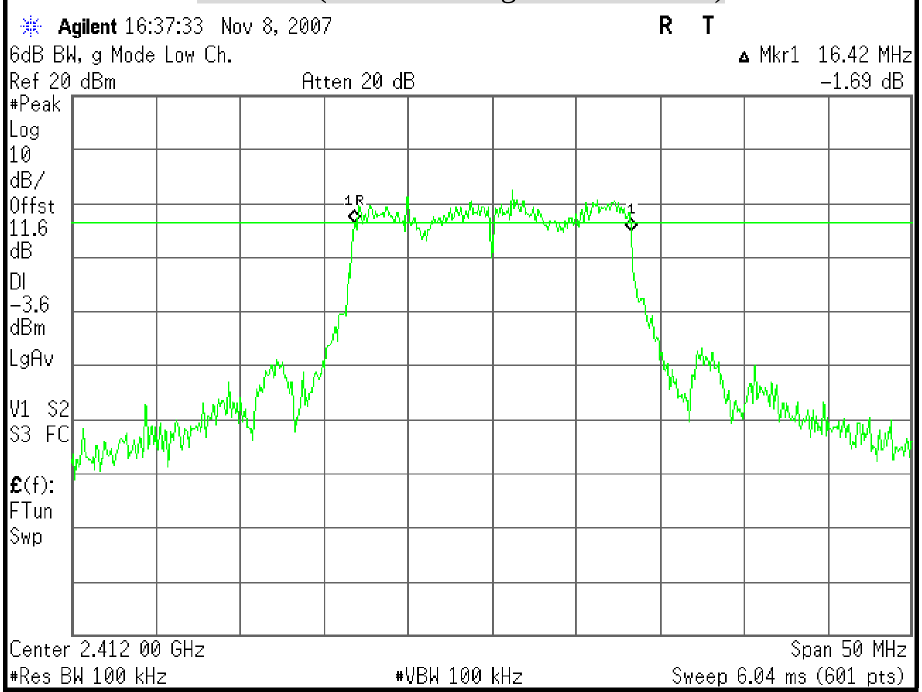

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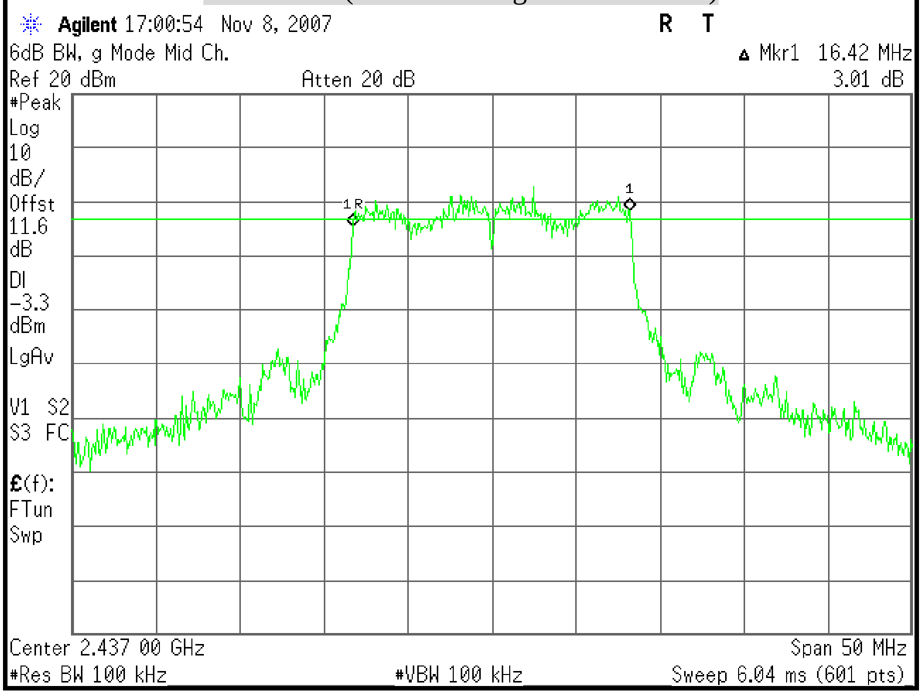

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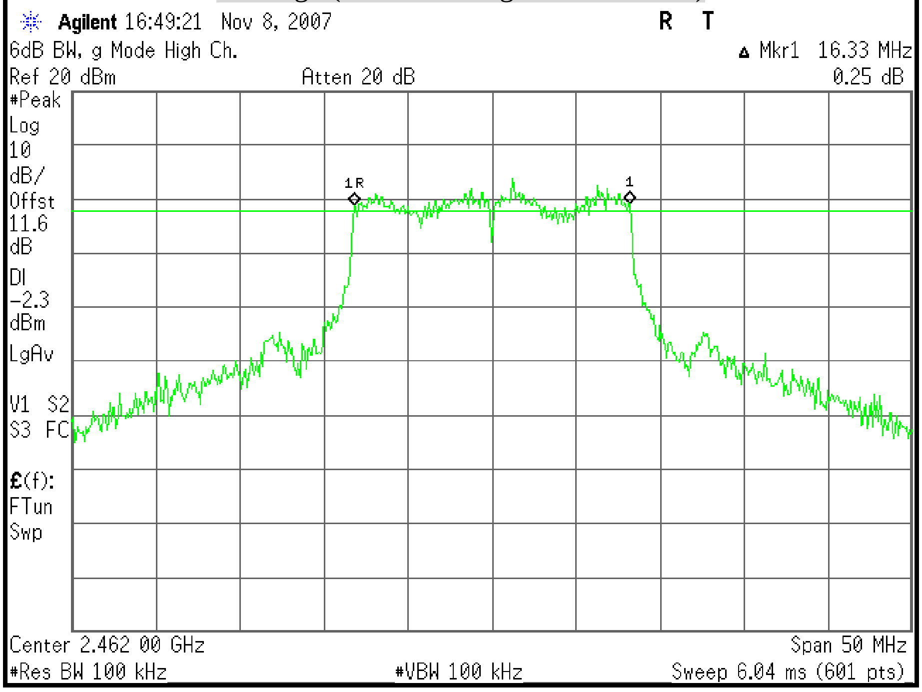
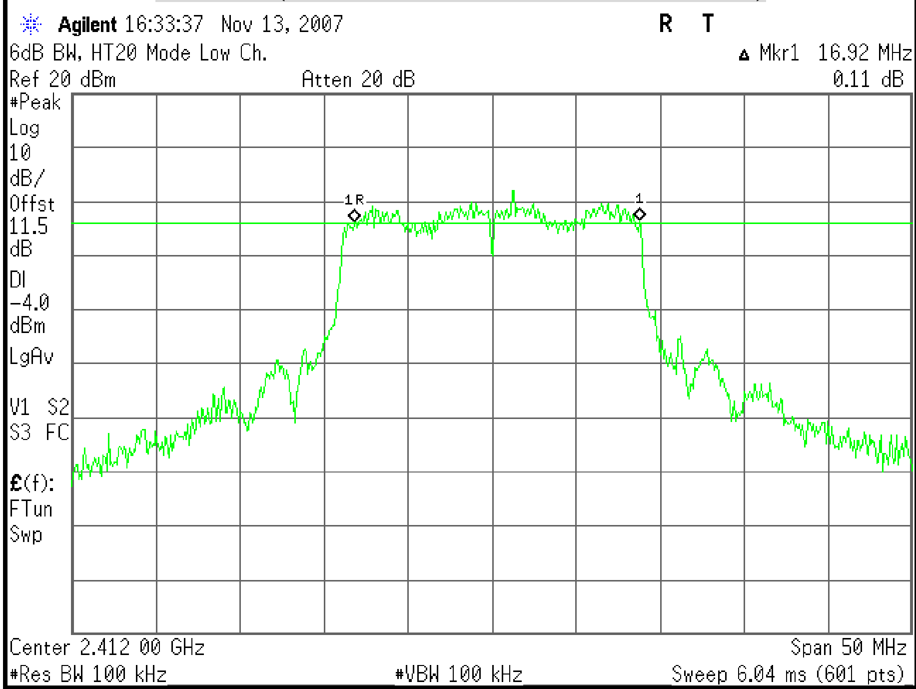


6dB BANDWIDTH (IEEE 802.11n HT20 mode)

CH Low (IEEE 802.11n HT20 mode-Chain 0)



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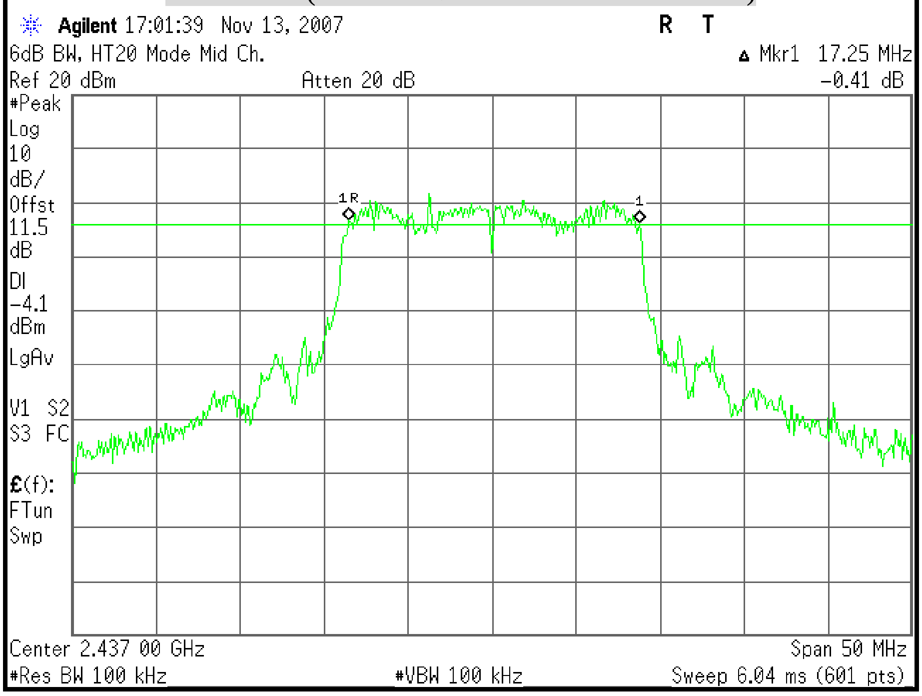

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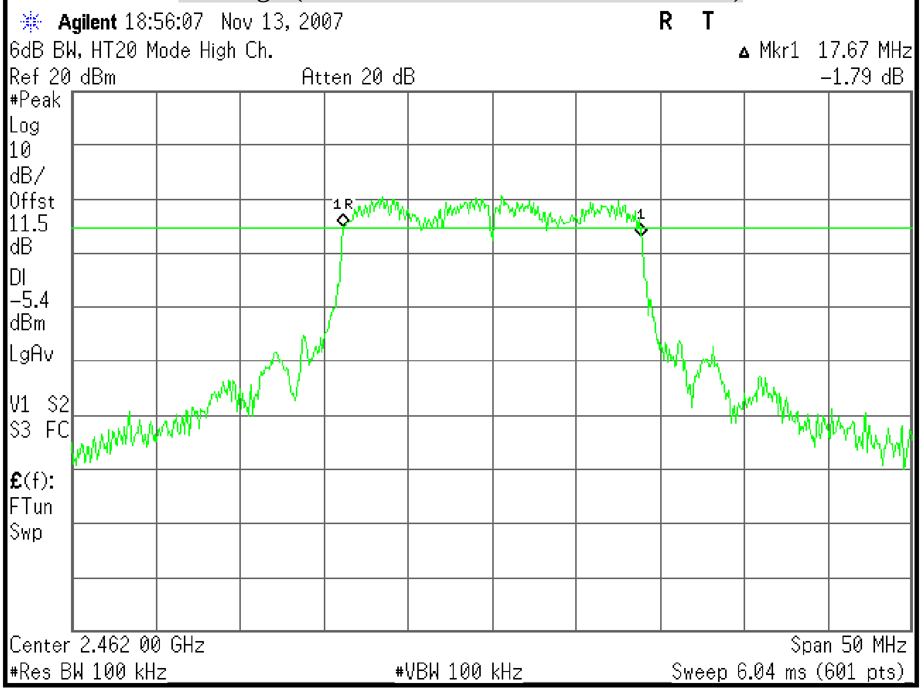

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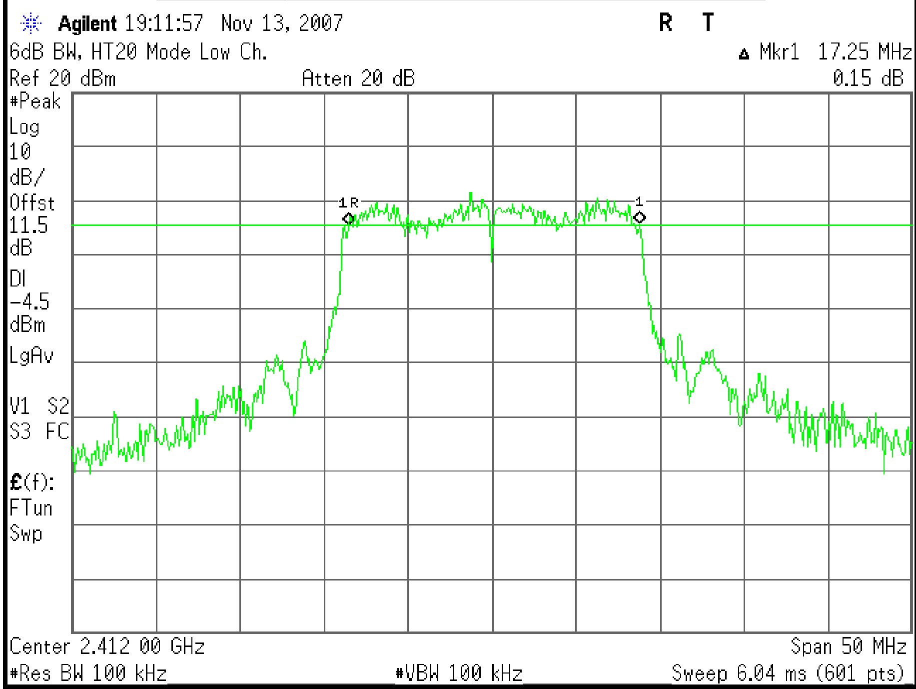

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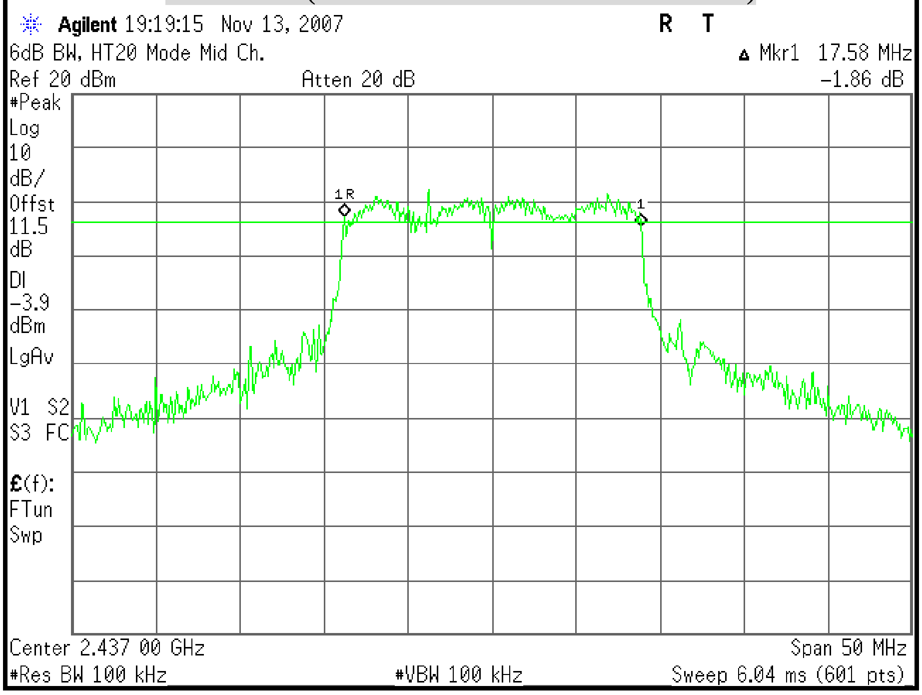
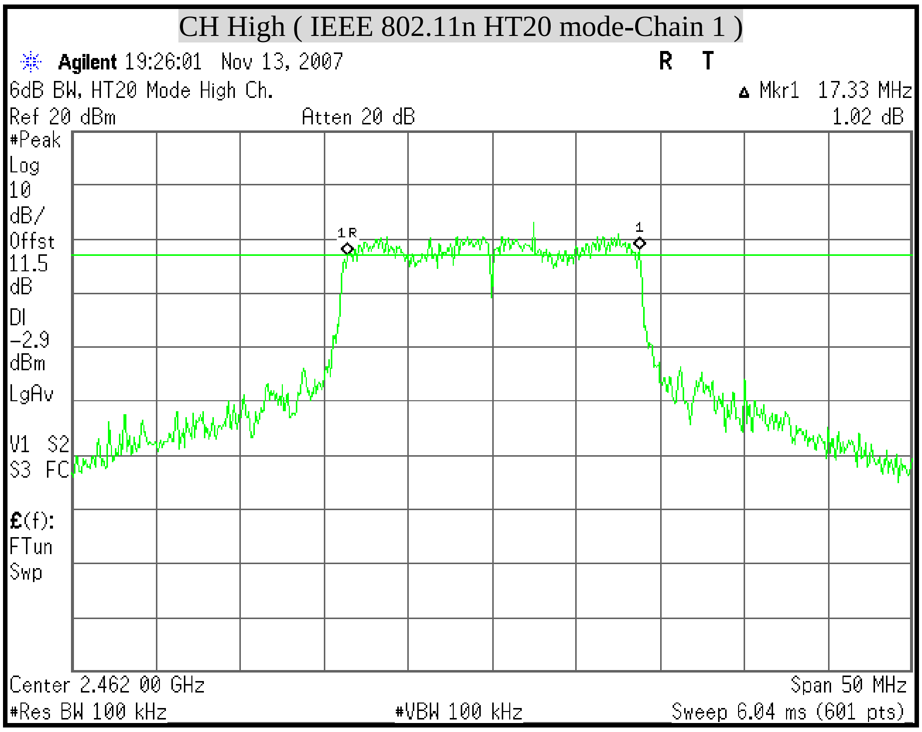
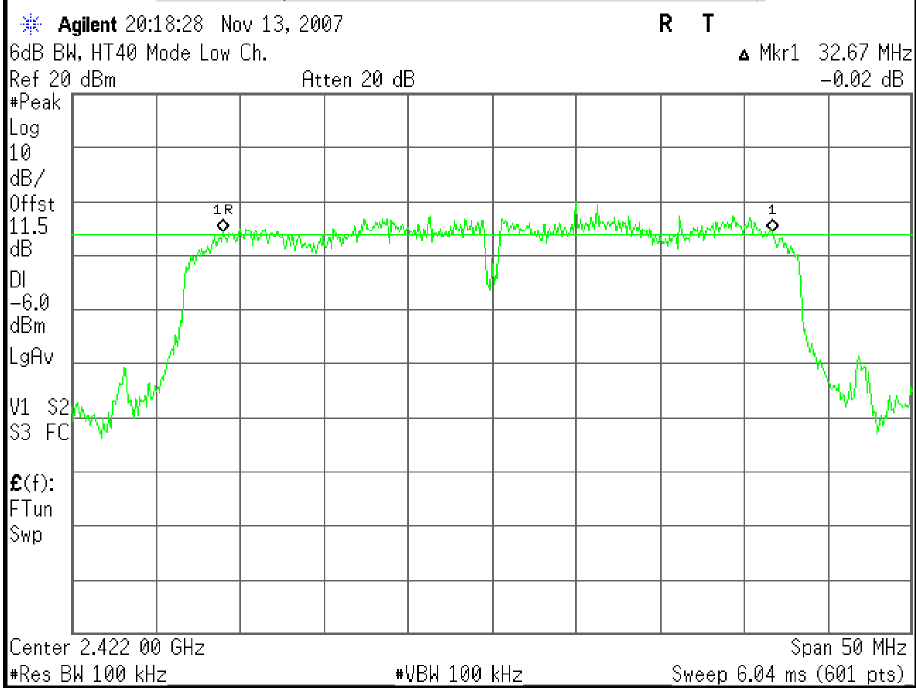


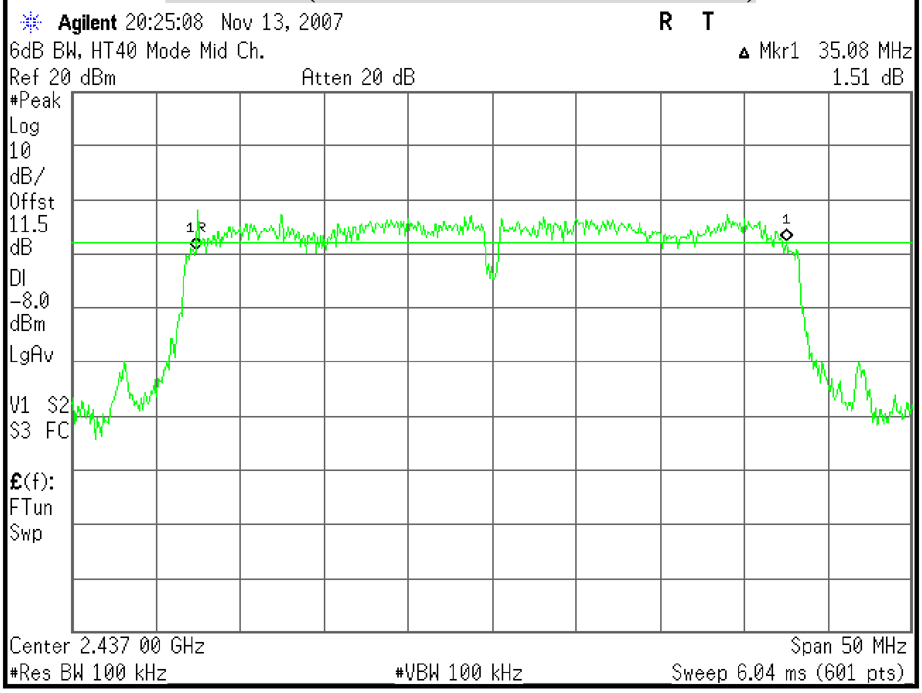

CH High (IEEE 802.11n HT20 mode-Chain 1)
Agilent 19:26:01 Nov 13, 2007
R T
6dB BW, HT20 Mode High Ch.
Mkr1 17.33 MHz
Ref 20 dBm
Atten 20 dB
1.02 dB
#Peak
Log
10
dB/
Offst
11.5
dB
Dl
-2.9
dBm
LgAv
V1 S2
S3 FC
£(f):
FTun
Swp
Center 2.462 00 GHz
Span 50 MHz
#Res BW 100 kHz
#VBW 100 kHz
Sweep 6.04 ms (601 pts)

6dB BANDWIDTH (IEEE 802.11n HT40 mode)

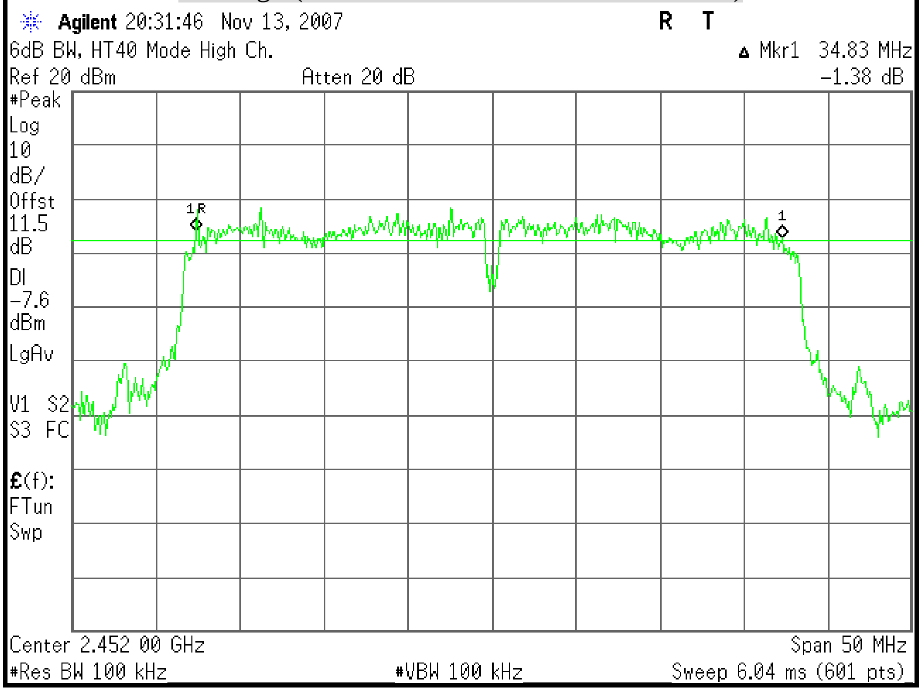
CH Low (IEEE 802.11n HT40 mode-Chain 0)



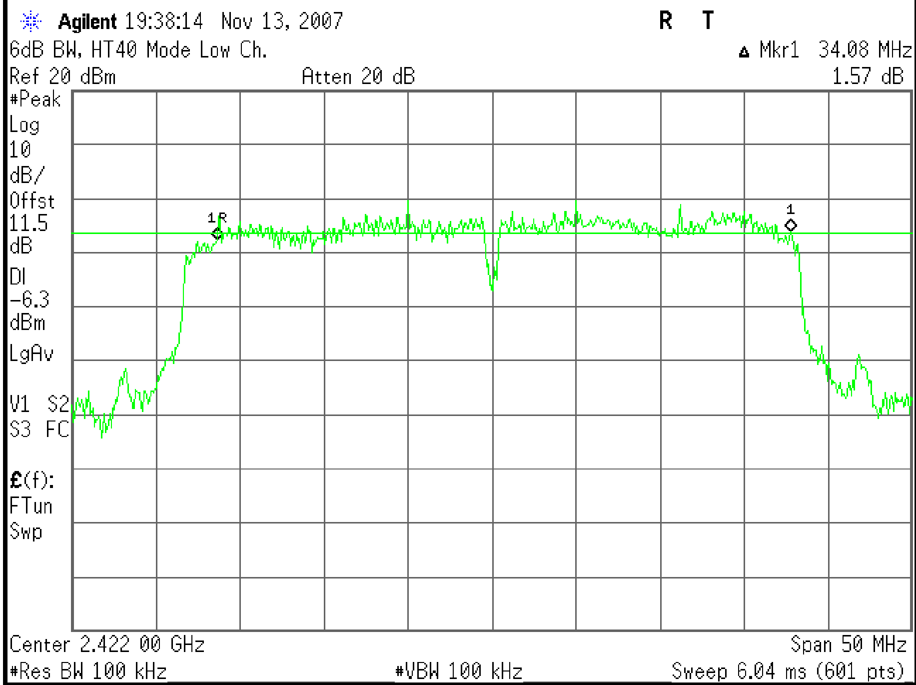
CH Middle (IEEE 802.11n HT40 mode-Chain 0)



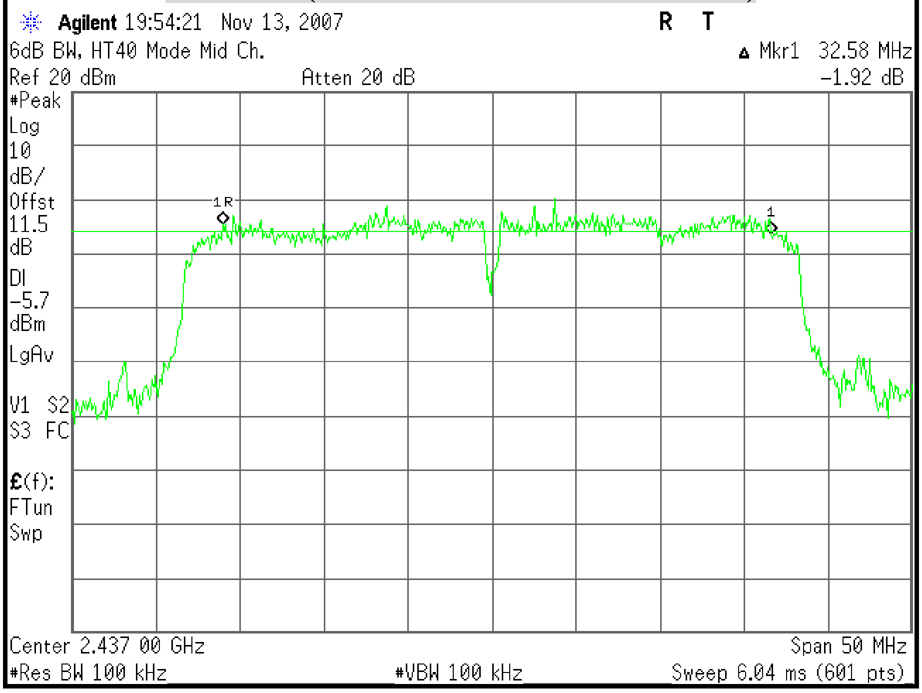
CH High (IEEE 802.11n HT40 mode-Chain 0)



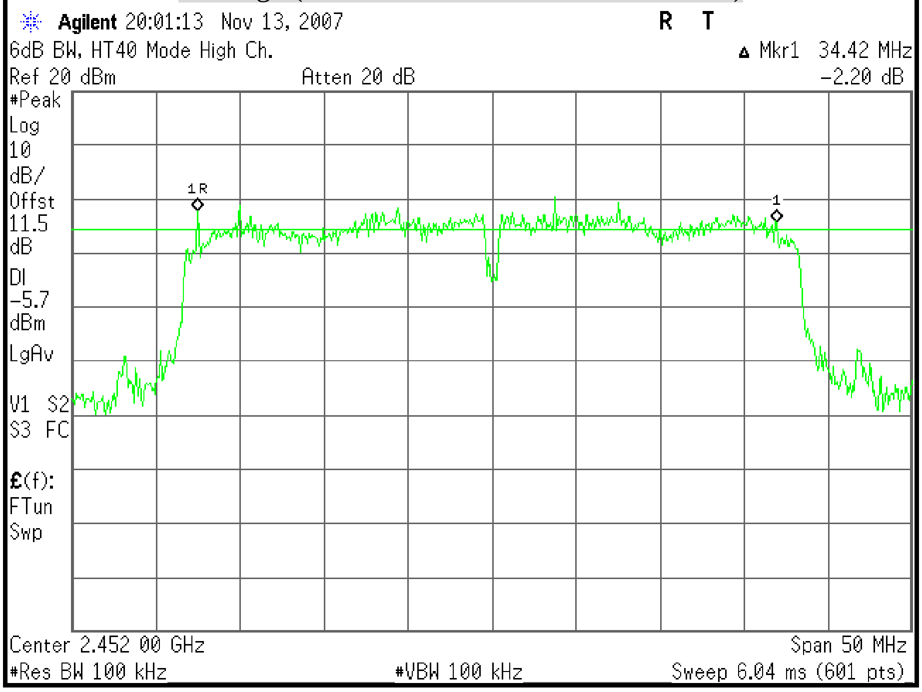
CH Low (IEEE 802.11n HT40 mode-Chain 1)



CH Middle (IEEE 802.11n HT40 mode-Chain 1)



CH High (IEEE 802.11n HT40 mode-Chain 1)



8.2 99% BANDWIDTH

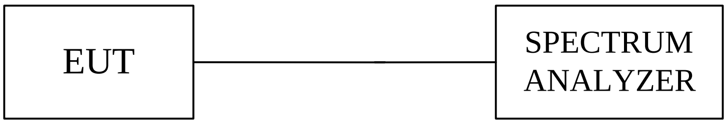
LIMIT

None; for reporting purposes only.

TEST EQUIPMENT

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	June 06, 2007

TEST SETUP



TEST PROCEDURE

1. The spectrum shall be set as follows :
   Span : The minimum span to fully display the emission and approximately 20dB below peak level.
   RBW : The set to 1% to 3% of the approximate emission width.
2. Compute the combined power of all signal responses contained in the trace by covering all the data points.
3. For 99% occupied BW, place the markers at the frequency at which 0.5% of the power lies to the right of the right marker and 0.5% of the power lies to the left of the left marker.
4. The 99% BW is the bandwidth between the right and left markers.

TEST RESULTS

No non-compliance noted

IEEE 802.11a mode

Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)	
		Chain 0	Chain 1
Low	5745	16.49	16.51
Middle	5785	16.48	16.48
High	5825	16.51	16.51

IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)	
		Chain 0	Chain 1
Low	5745	17.56	17.57
Middle	5785	17.56	17.58
High	5825	17.56	17.57

IEEE 802.11n HT40 mode

Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)	
		Chain 0	Chain 1
Low	5755	35.77	35.83
High	5795	35.86	35.81

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)
Low	2412	15.60
Middle	2437	15.66
High	2462	15.69

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)	
		Chain 0	Chain 1
Low	2412	16.55	16.54
Middle	2437	16.56	16.57
High	2462	16.54	16.59

IEEE 802.11n HT20 mode

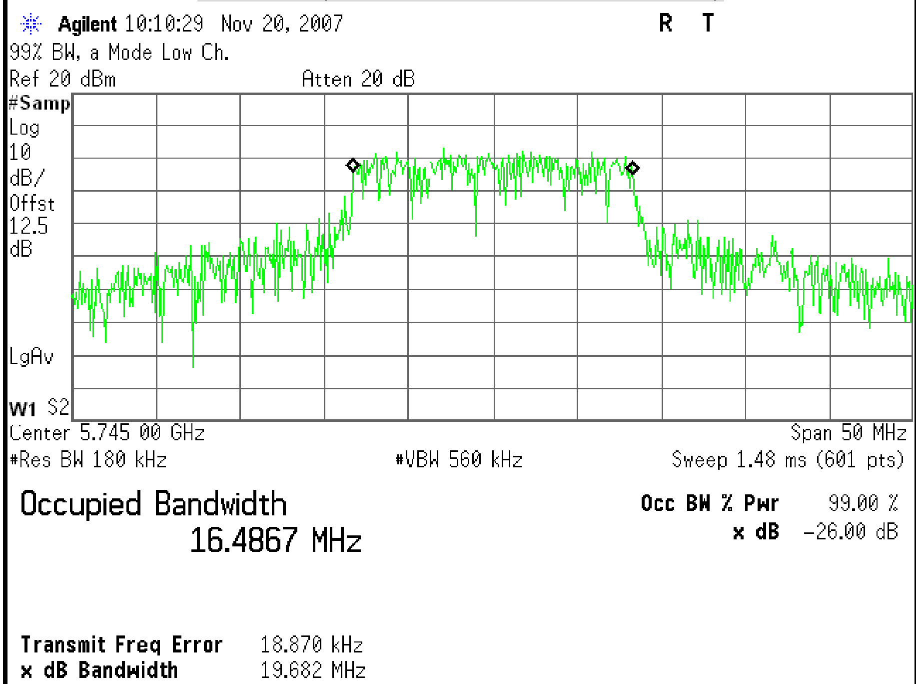
Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)	
		Chain 0	Chain 1
Low	2412	17.57	17.60
Middle	2437	17.59	17.64
High	2462	17.59	17.69

IEEE 802.11n HT40 mode

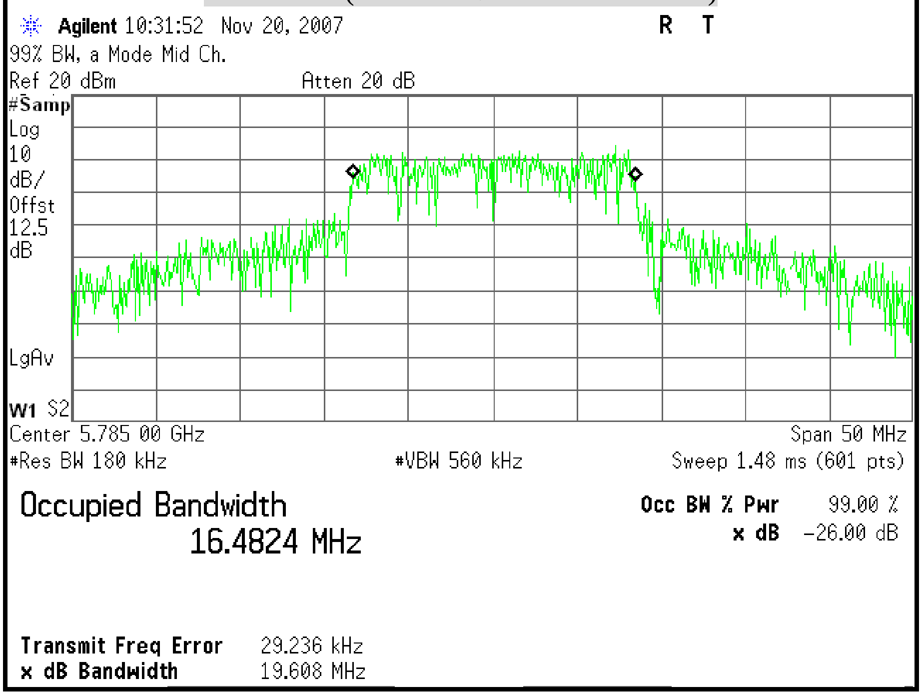
Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)	
		Chain 0	Chain 1
Low	2422	35.61	35.55
Middle	2437	35.59	35.54
High	2452	35.59	35.59

99% BANDWIDTH (IEEE 802.11a mode)

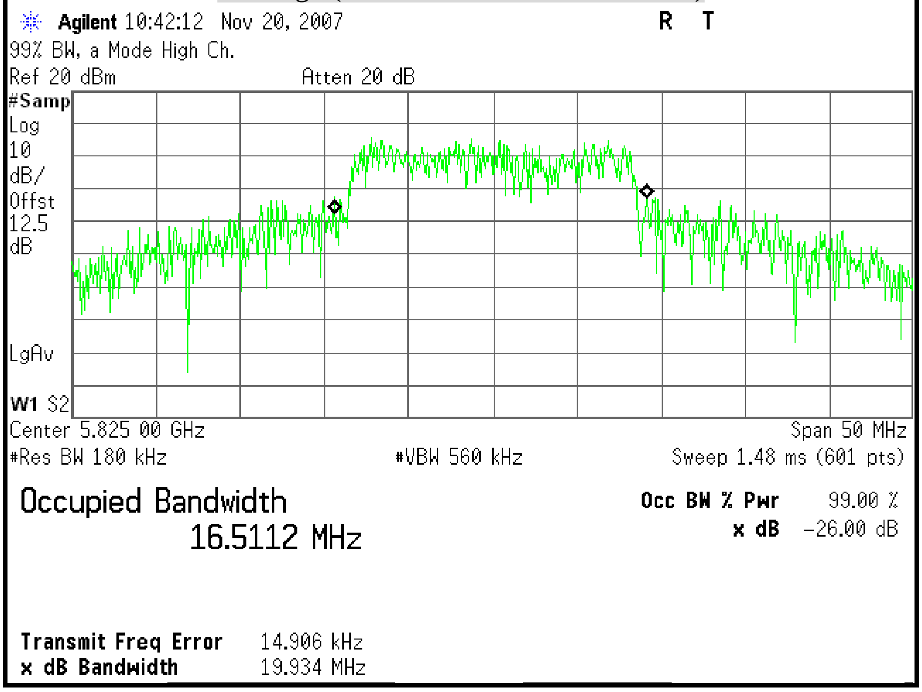
CH Low (IEEE 802.11a mode-Chain 0)



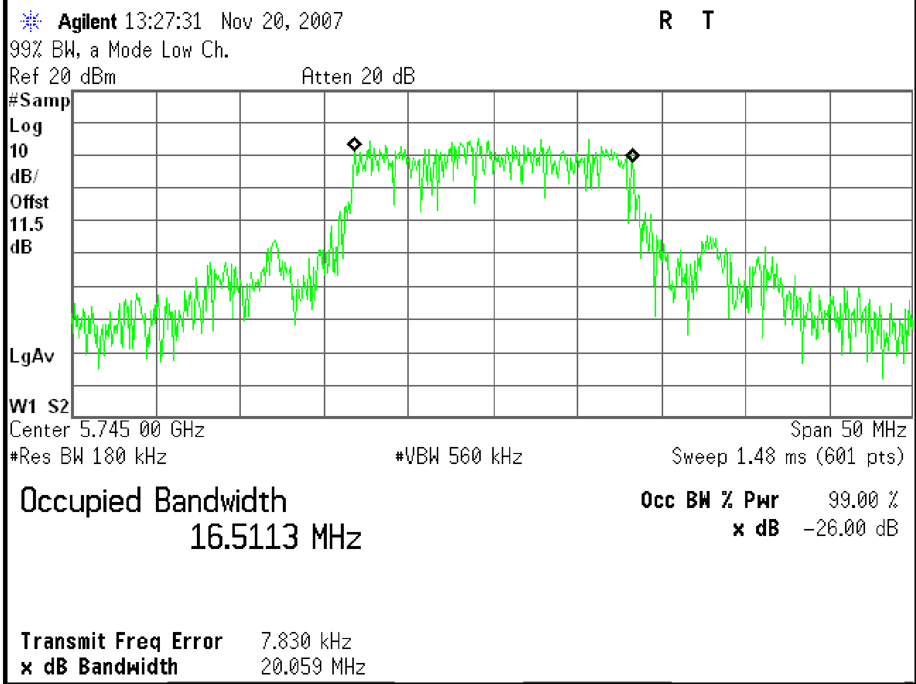
CH Middle (IEEE 802.11a mode-Chain 0)



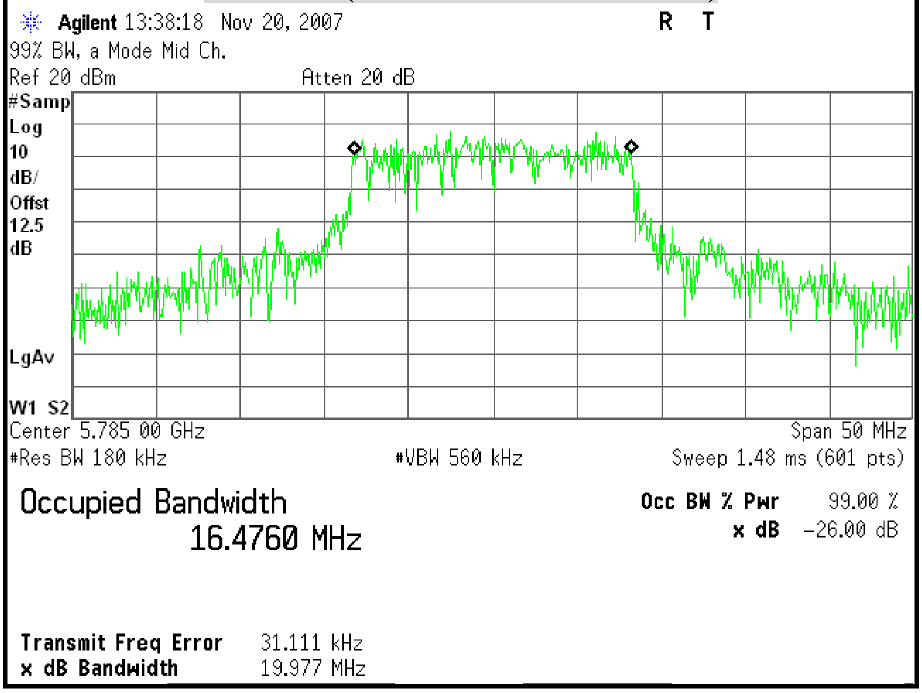
CH High (IEEE 802.11a mode-Chain 0)



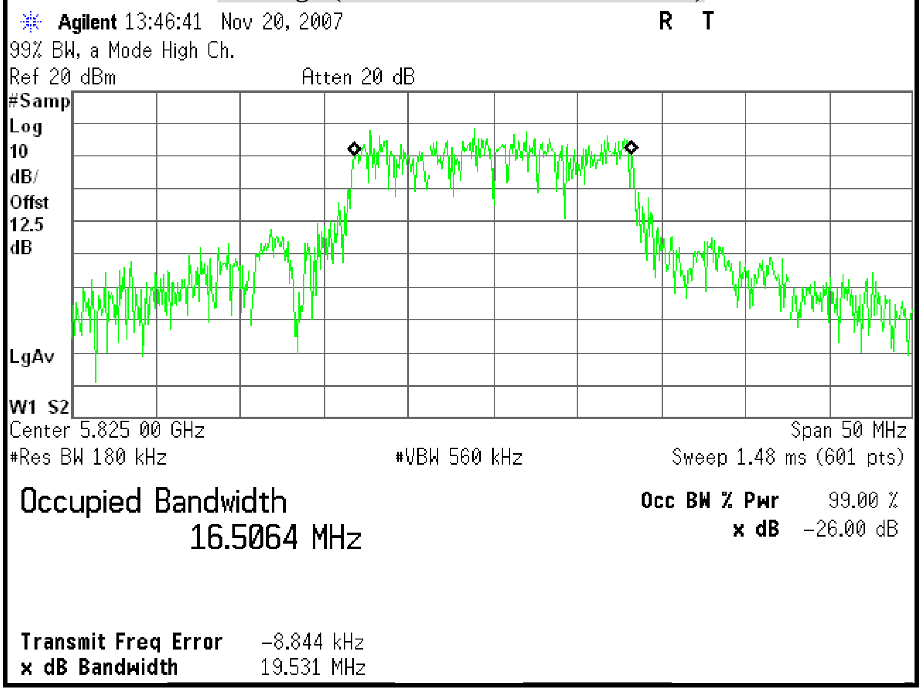
CH Low (IEEE 802.11a mode-Chain 1)



CH Middle (IEEE 802.11a mode-Chain 1)

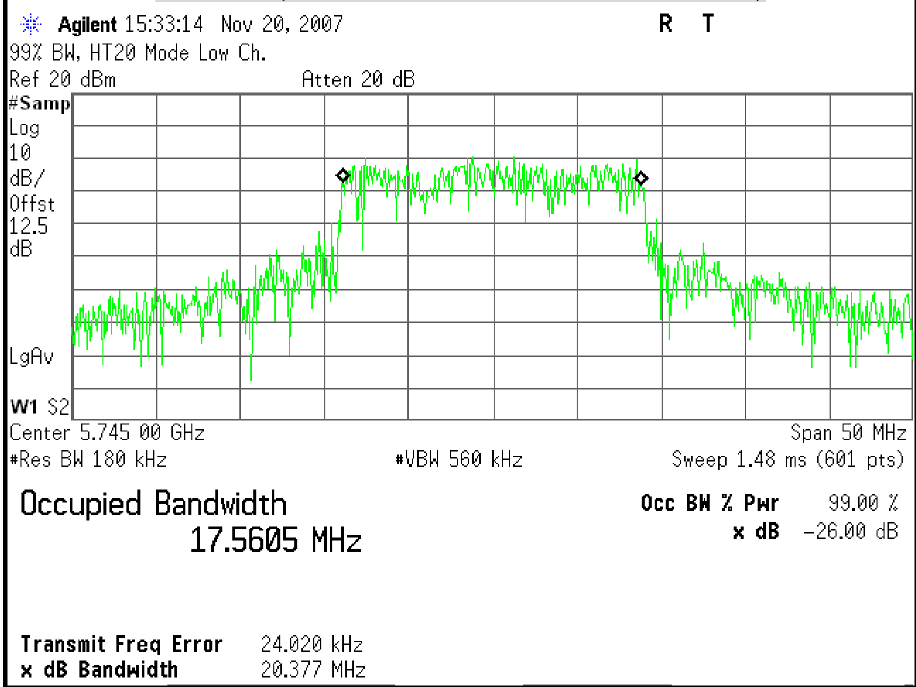


CH High (IEEE 802.11a mode-Chain 1)

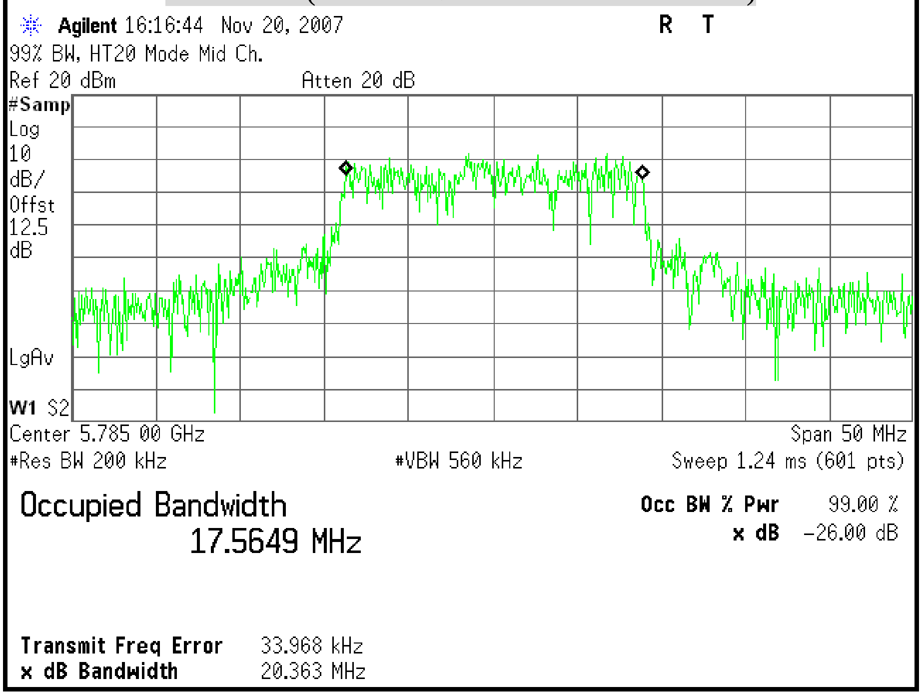


99% BANDWIDTH (IEEE 802.11n HT20 mode)

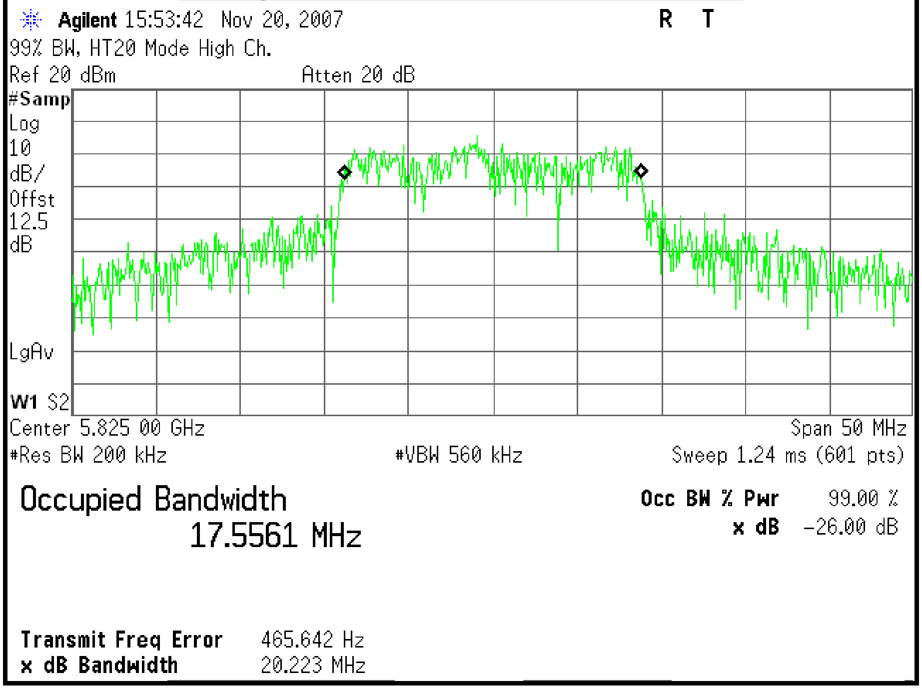
CH Low (IEEE 802.11n HT20 mode-Chain 0)



CH Middle (IEEE 802.11n HT20 mode-Chain 0)

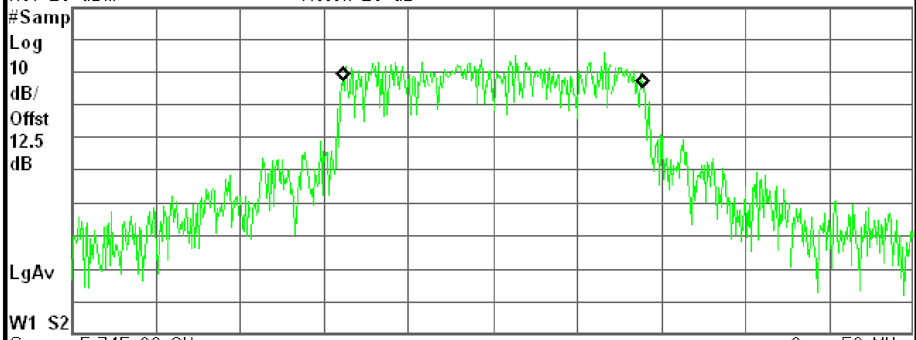


CH High (IEEE 802.11n HT20 mode-Chain 0)



CH Low (IEEE 802.11n HT20 mode-Chain 1)

Agilent 14:33:03 Nov 20, 2007 R T
99% BW, HT20 Mode Low Ch.
Ref 20 dBm Atten 20 dB



Center 5.745 00 GHz Span 50 MHz
#Res BW 200 kHz #VBW 560 kHz Sweep 1.24 ms (601 pts)

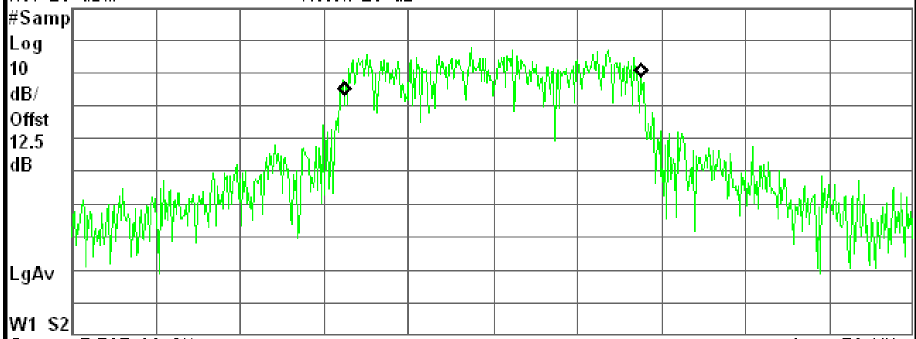
Occupied Bandwidth
17.5741 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 13.586 kHz
x dB Bandwidth 20.528 MHz

CH Middle (IEEE 802.11n HT20 mode-Chain 1)

Agilent 14:47:08 Nov 20, 2007 R T
99% BW, HT20 Mode Mid Ch.
Ref 20 dBm Atten 20 dB



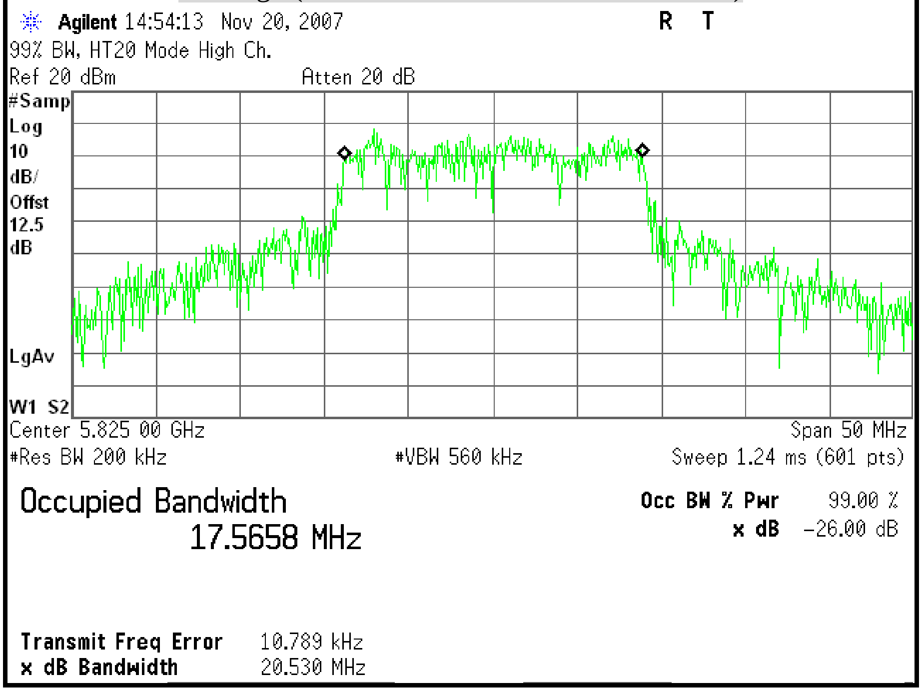
Center 5.785 00 GHz Span 50 MHz
#Res BW 200 kHz #VBW 560 kHz Sweep 1.24 ms (601 pts)

Occupied Bandwidth
17.5838 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

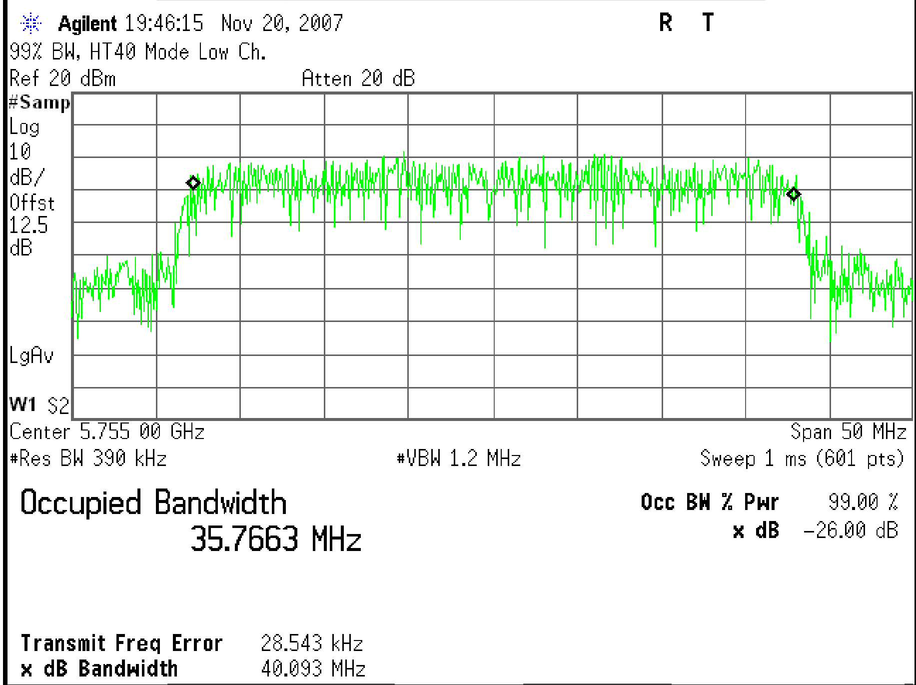
Transmit Freq Error 26.243 kHz
x dB Bandwidth 21.436 MHz

CH High (IEEE 802.11n HT20 mode-Chain 1)

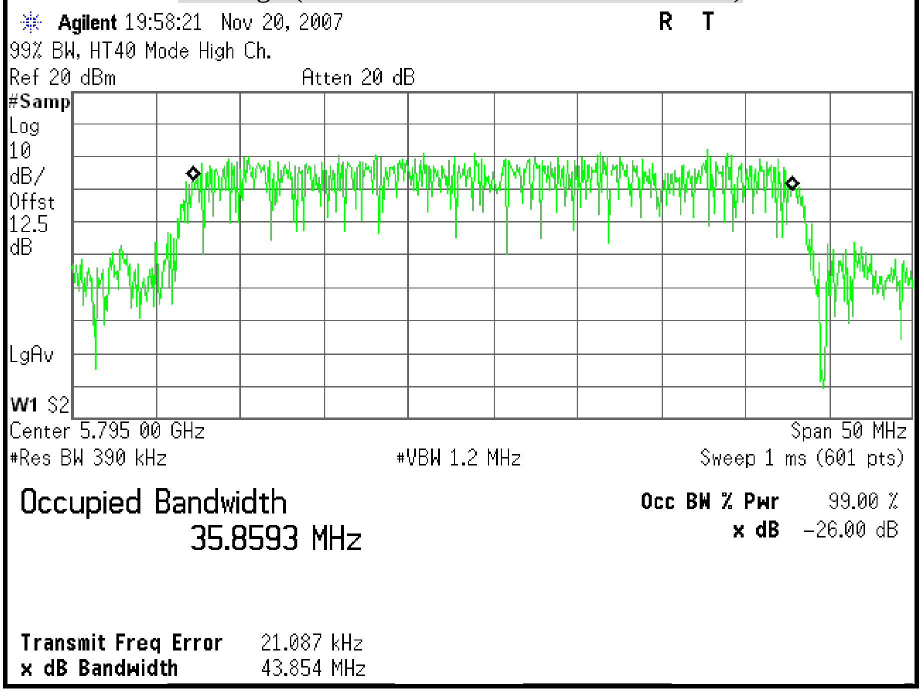


99% BANDWIDTH (IEEE 802.11n HT40 mode)

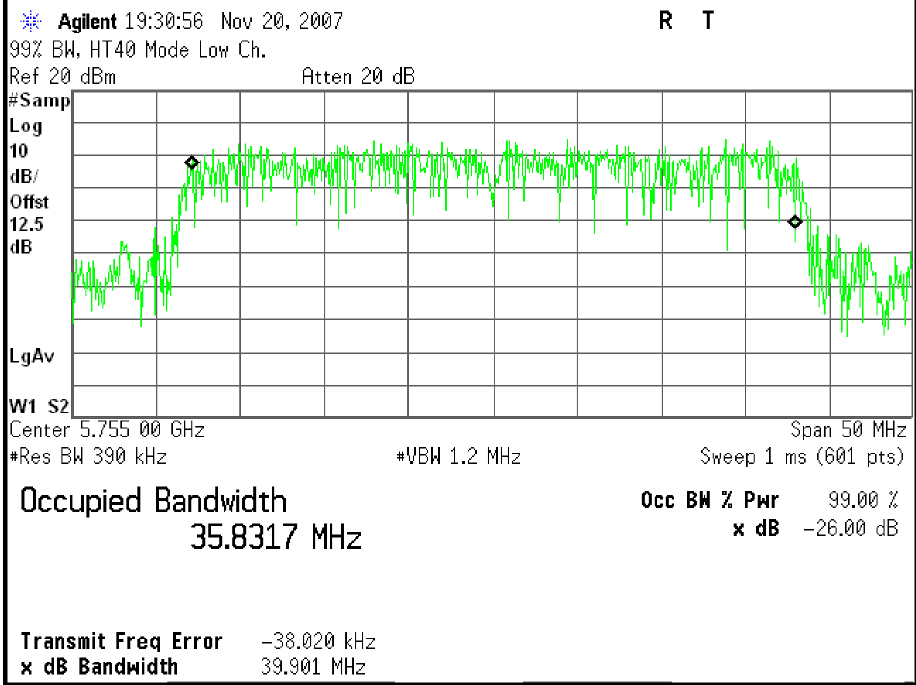
CH Low (IEEE 802.11n HT40 mode-Chain 0)



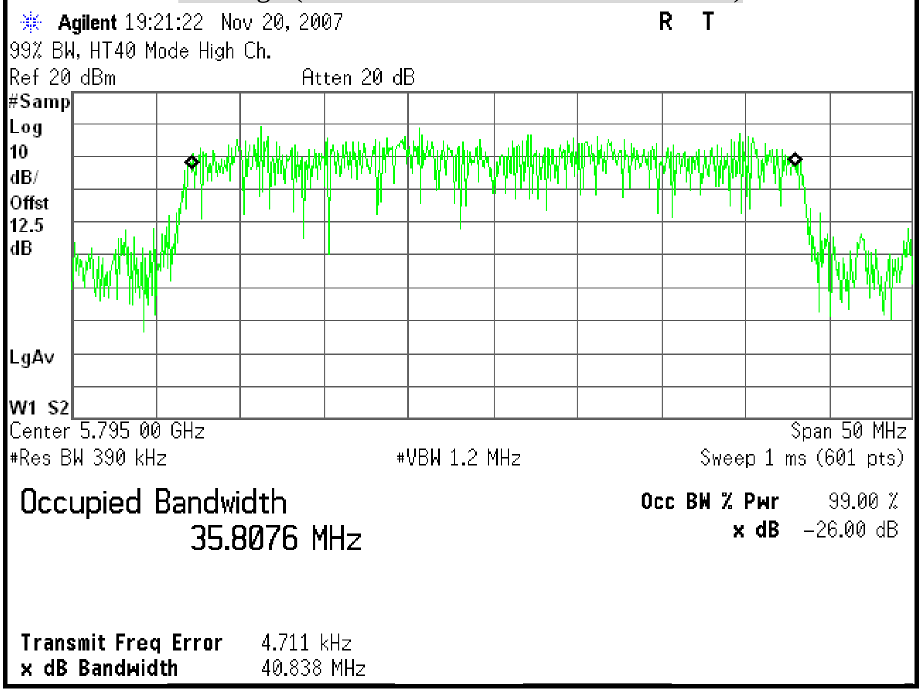
CH High (IEEE 802.11n HT40 mode-Chain 0)



CH Low (IEEE 802.11n HT40 mode-Chain 1)



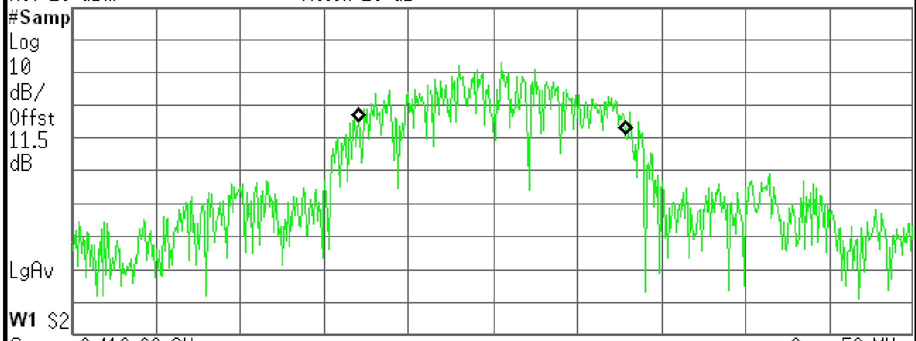
CH High (IEEE 802.11n HT40 mode-Chain 1)



99% BANDWIDTH (IEEE 802.11b mode)

CH Low (IEEE 802.11b mode)

Agilent 15:24:14 Nov 13, 2007 R T
99% BW, b Mode Low Ch.
Ref 20 dBm Atten 20 dB



Center 2.412 00 GHz Span 50 MHz
#Res BW 160 kHz #VBW 510 kHz Sweep 1.88 ms (601 pts)

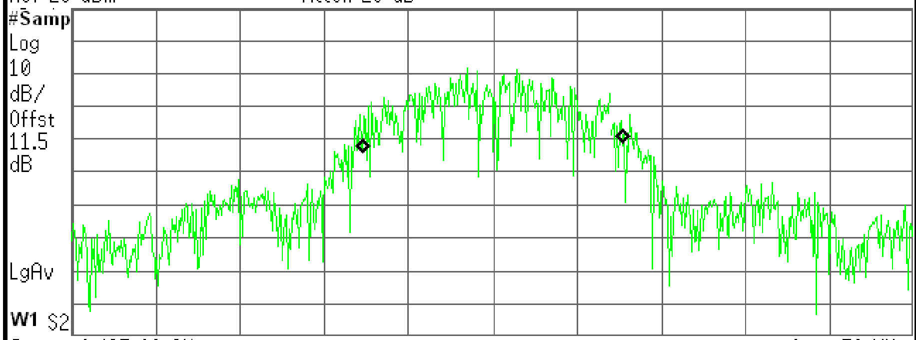
Occupied Bandwidth
15.5995 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 176.678 kHz
x dB Bandwidth 18.553 MHz

CH Middle (IEEE 802.11b mode)

Agilent 15:32:21 Nov 13, 2007 R T
99% BW, b Mode Mid Ch.
Ref 20 dBm Atten 20 dB



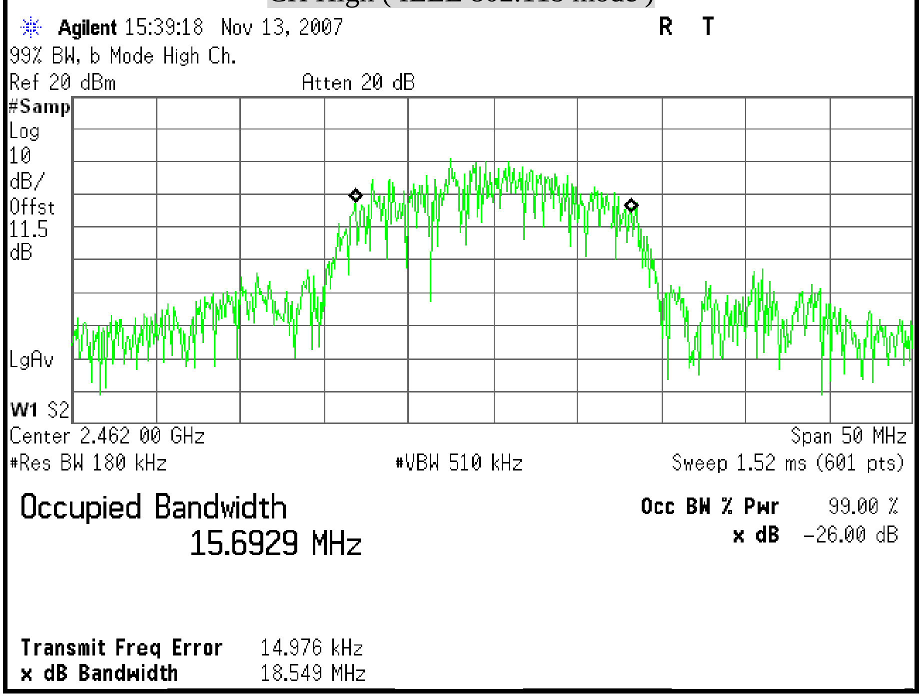
Center 2.437 00 GHz Span 50 MHz
#Res BW 180 kHz #VBW 510 kHz Sweep 1.52 ms (601 pts)

Occupied Bandwidth
15.6588 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

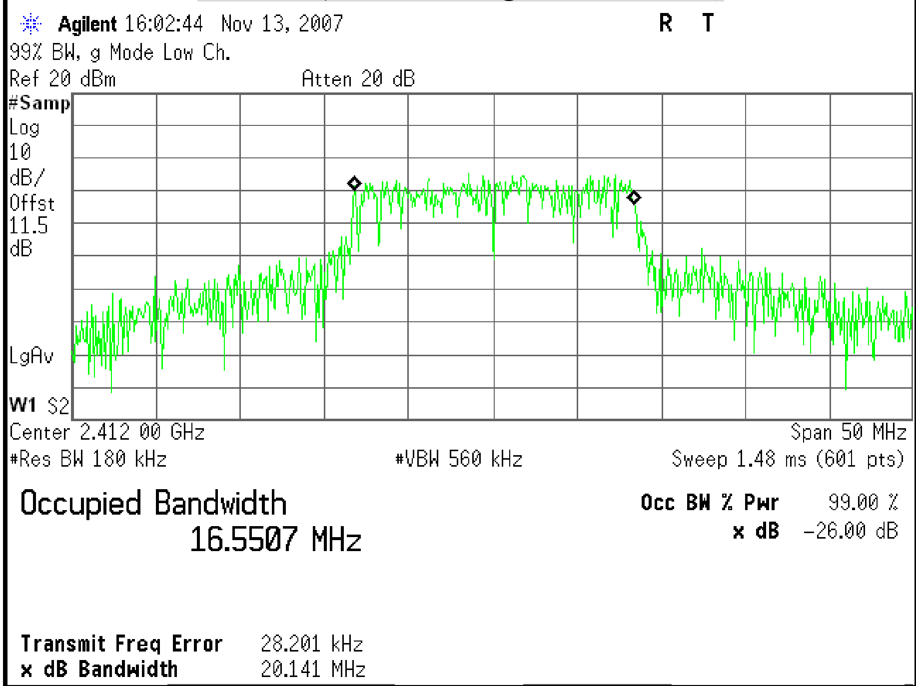
Transmit Freq Error 88.540 kHz
x dB Bandwidth 18.568 MHz

CH High (IEEE 802.11b mode)

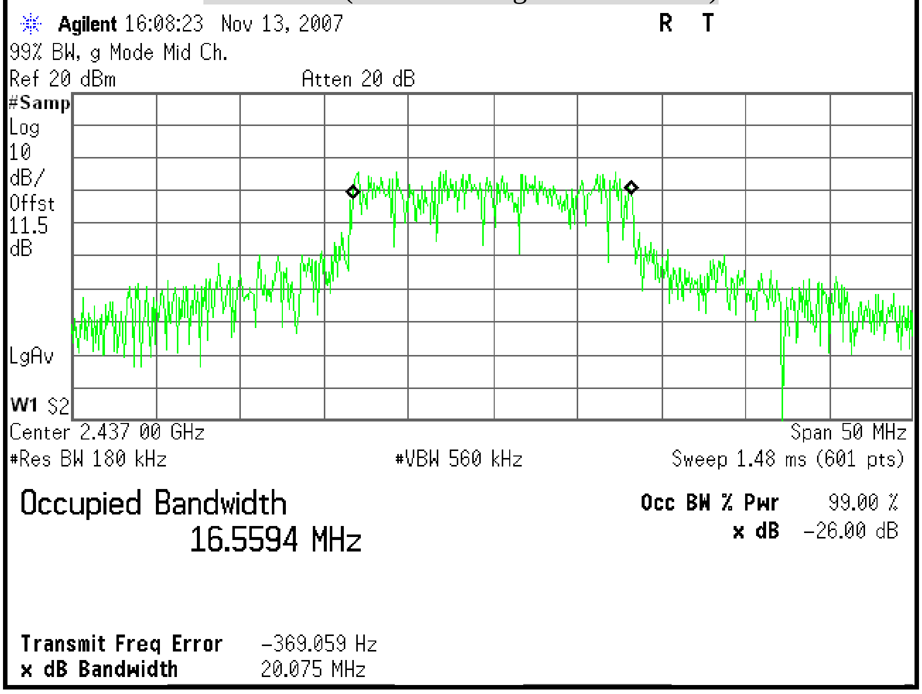


99% BANDWIDTH (IEEE 802.11g mode)

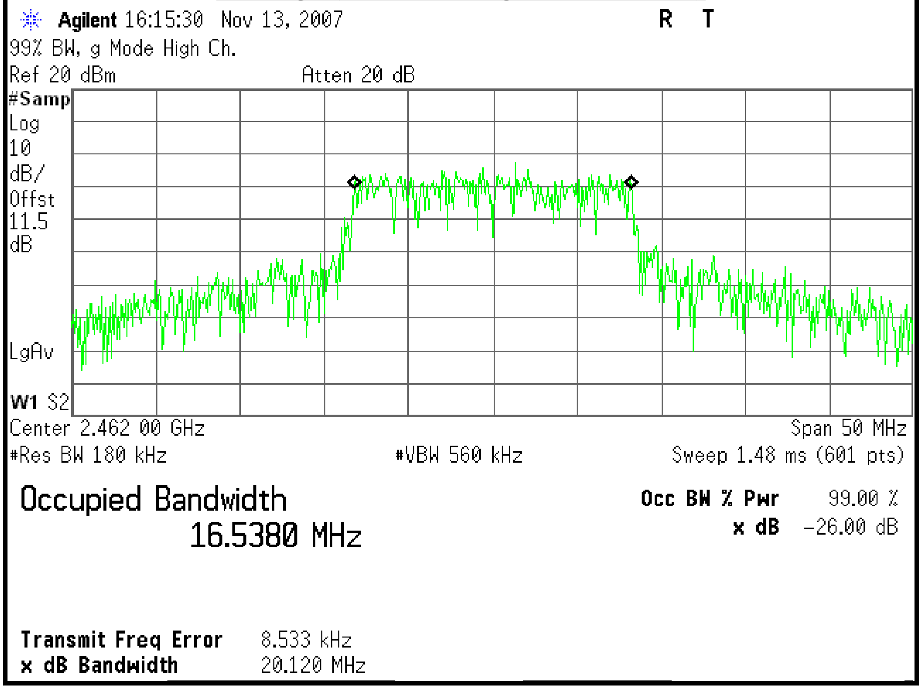
CH Low (IEEE 802.11g mode-Chain 0)



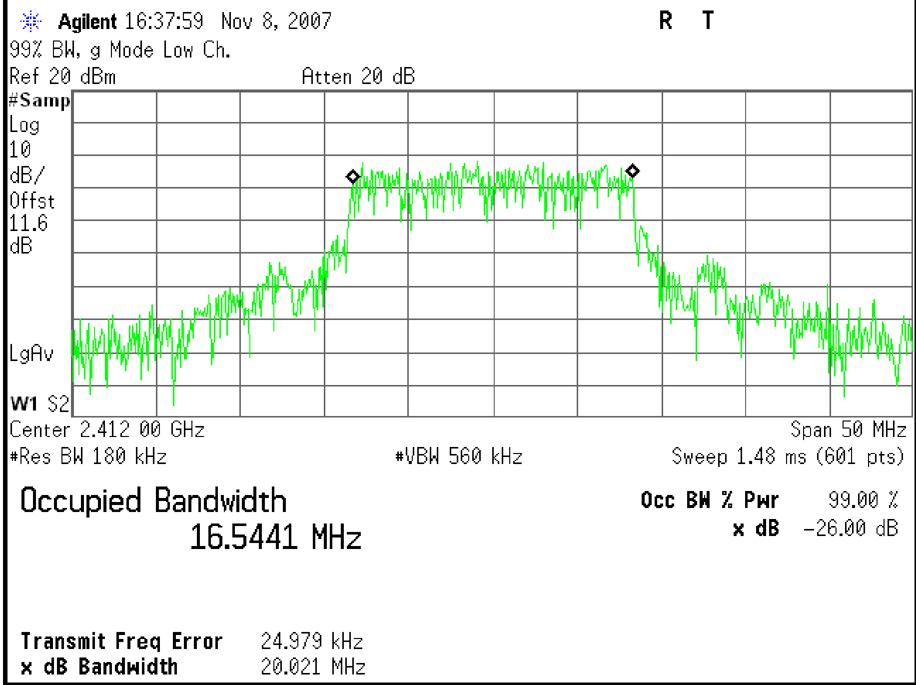
CH Middle (IEEE 802.11g mode-Chain 0)



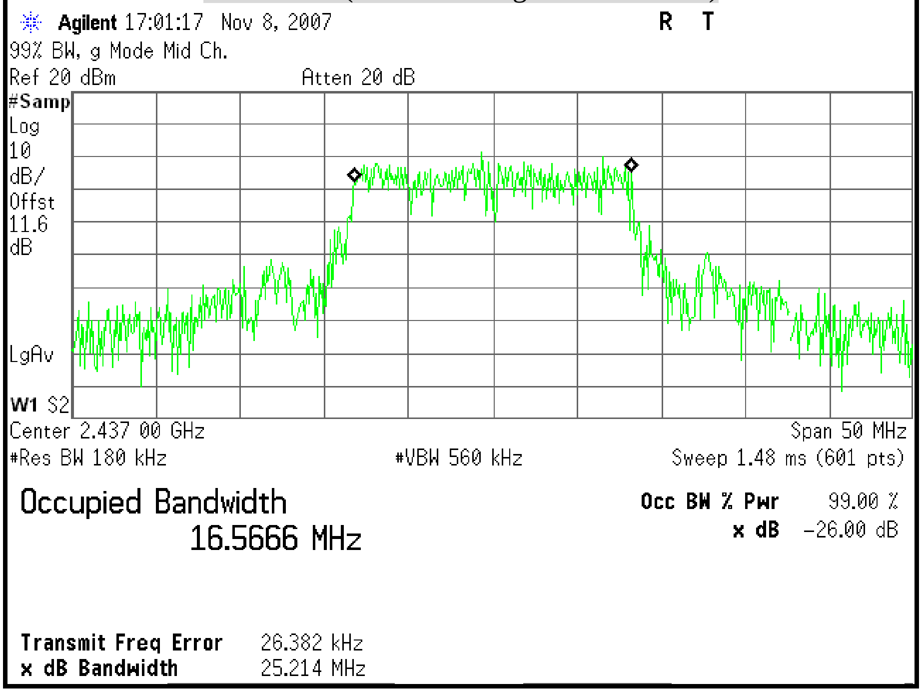
CH High (IEEE 802.11g mode-Chain 0)



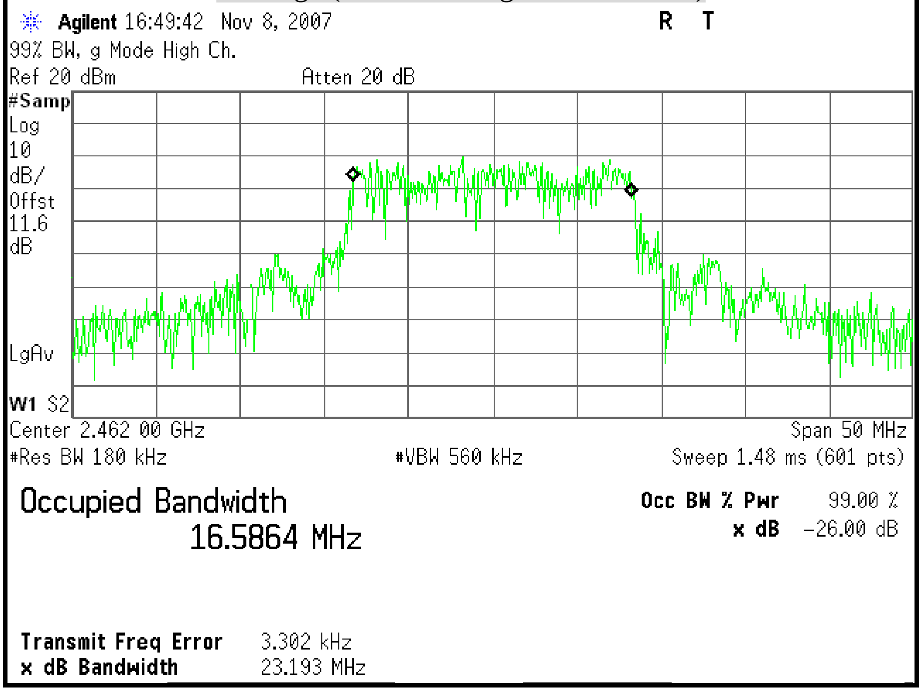
CH Low (IEEE 802.11g mode-Chain 1)



CH Middle (IEEE 802.11g mode-Chain 1)

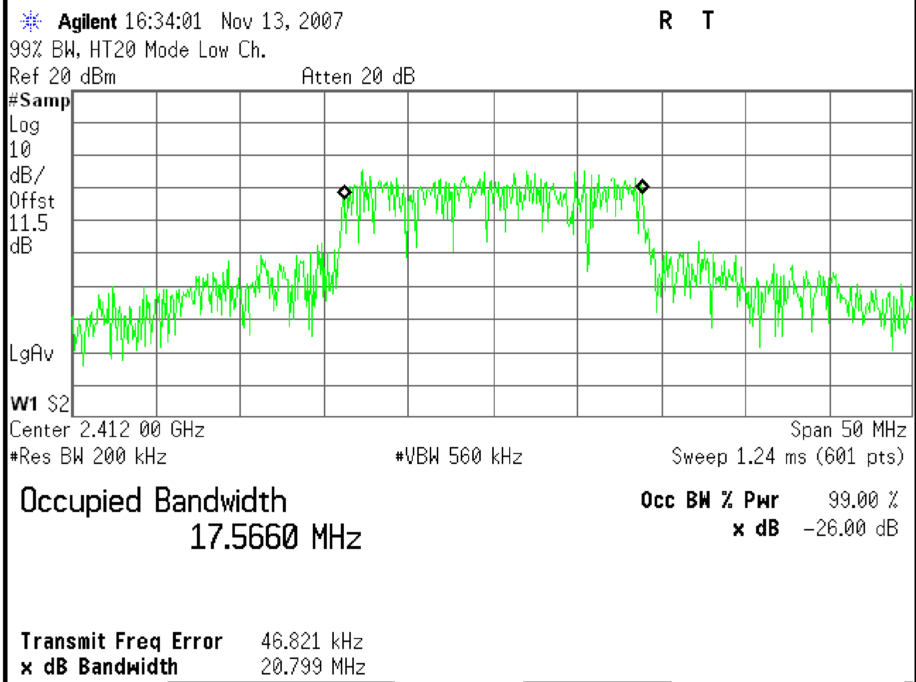


CH High (IEEE 802.11g mode-Chain 1)

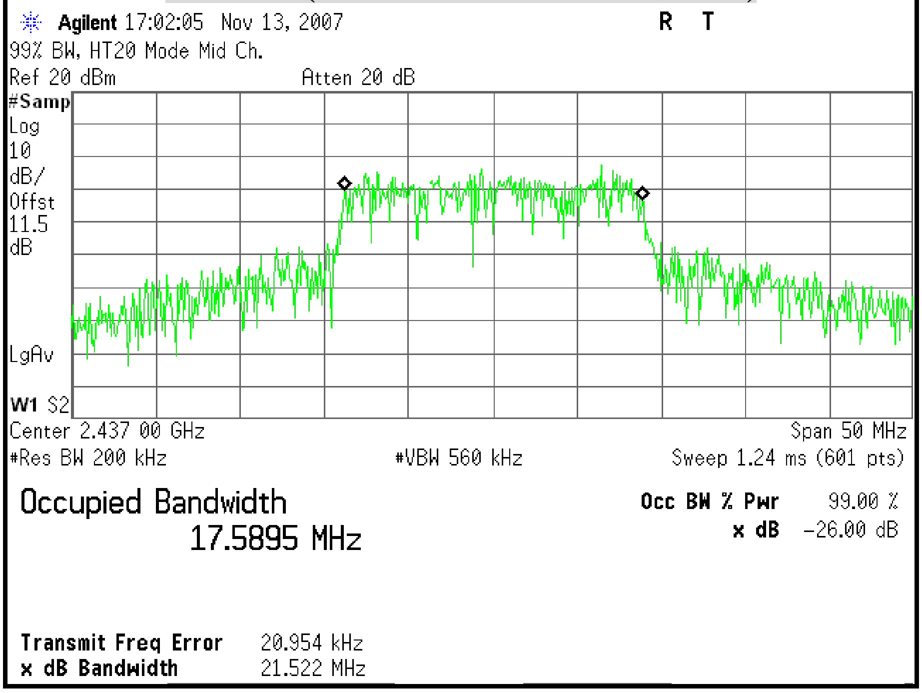


99% BANDWIDTH (IEEE 802.11n HT20 mode)

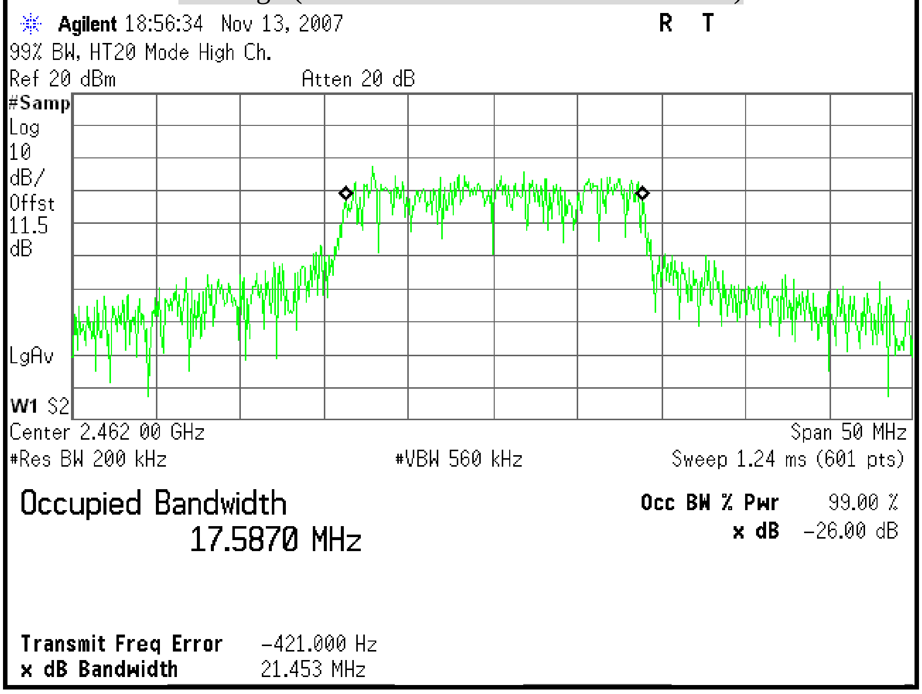
CH Low (IEEE 802.11n HT20 mode-Chain 0)



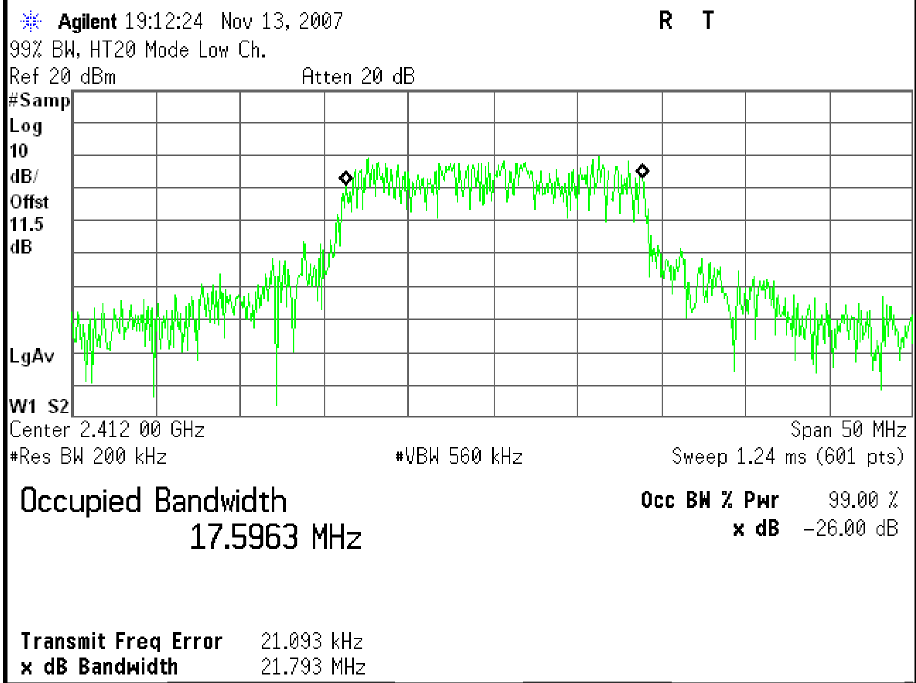
CH Middle (IEEE 802.11n HT20 mode-Chain 0)



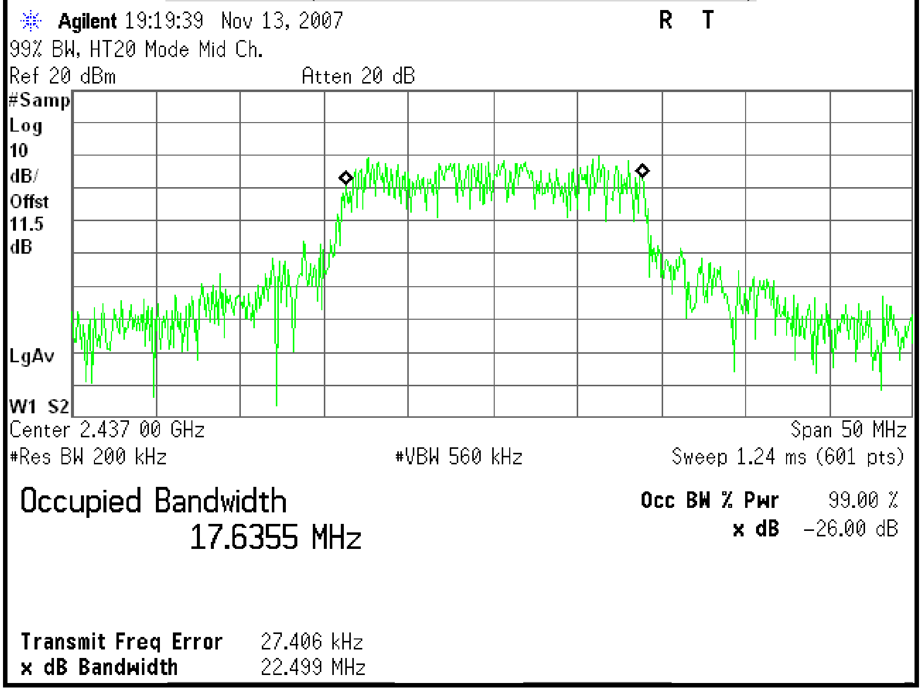
CH High (IEEE 802.11n HT20 mode-Chain 0)



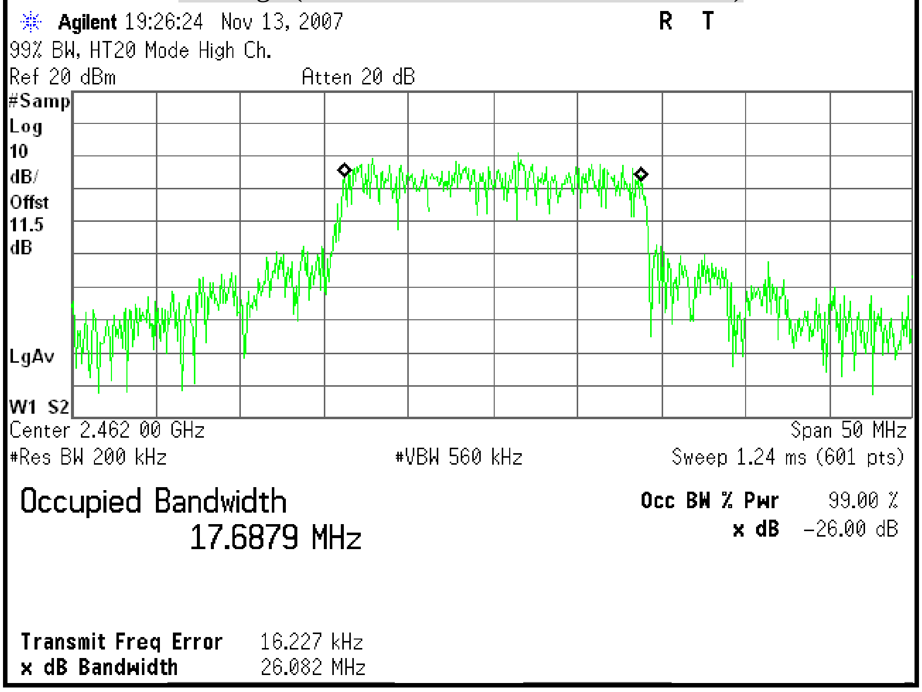
CH Low (IEEE 802.11n HT20 mode-Chain 1)



CH Middle (IEEE 802.11n HT20 mode-Chain 1)

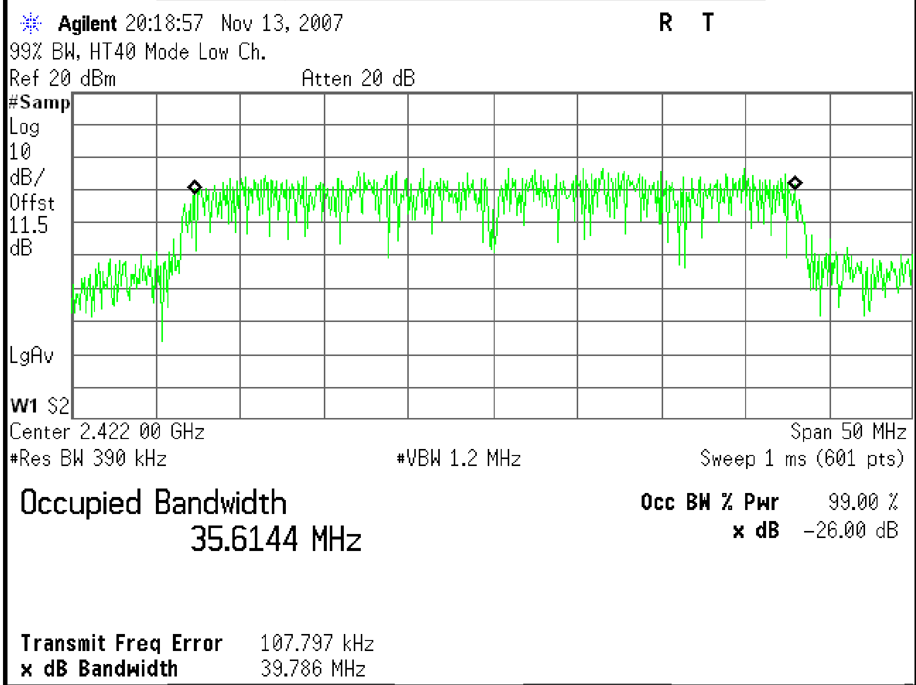


CH High (IEEE 802.11n HT20 mode-Chain 1)

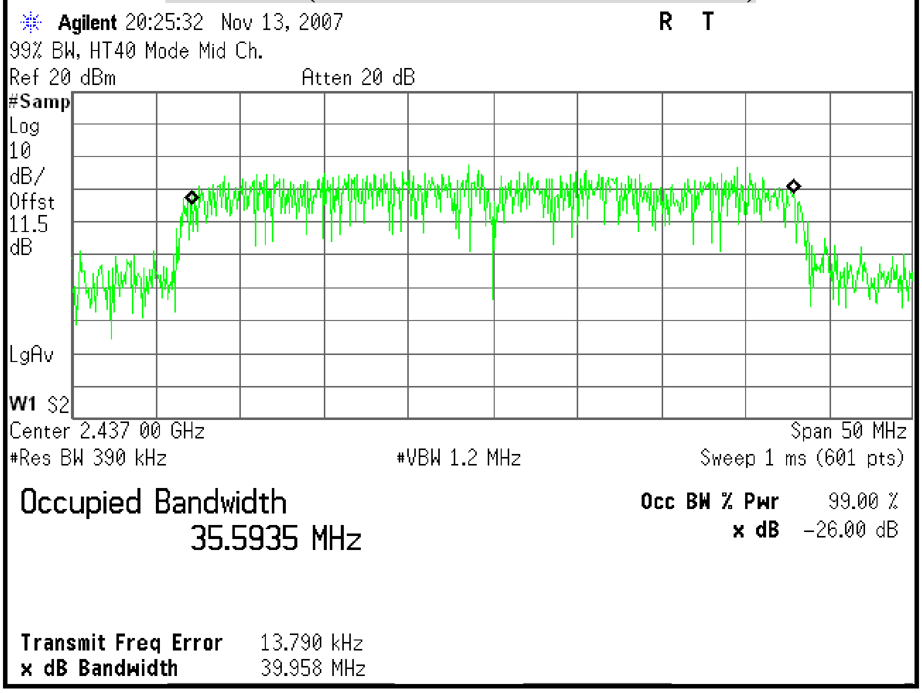


99% BANDWIDTH (IEEE 802.11n HT40 mode)

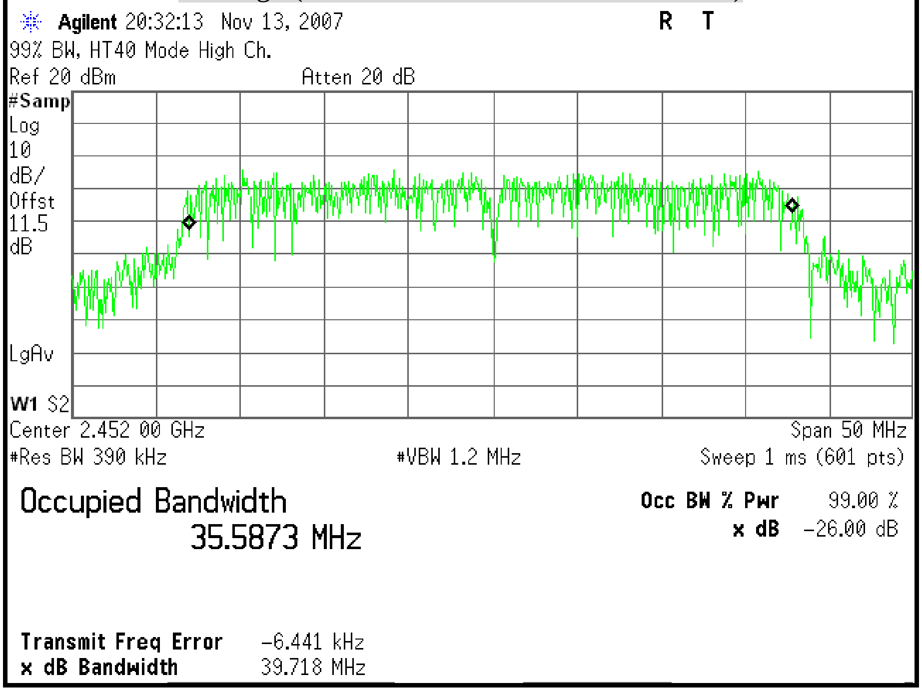
CH Low (IEEE 802.11n HT40 mode-Chain 0)



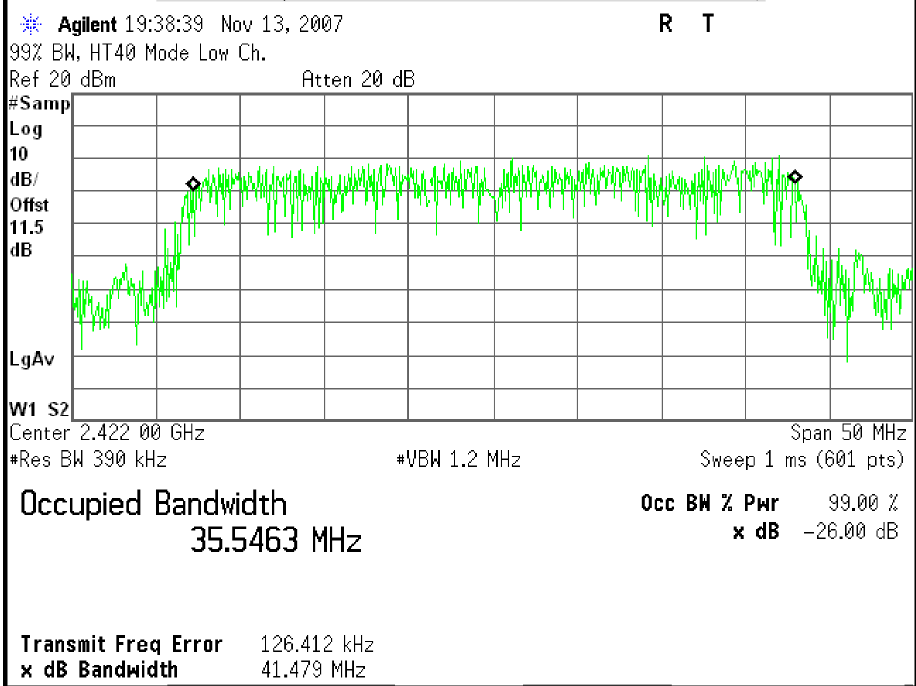
CH Middle (IEEE 802.11n HT40 mode-Chain 0)



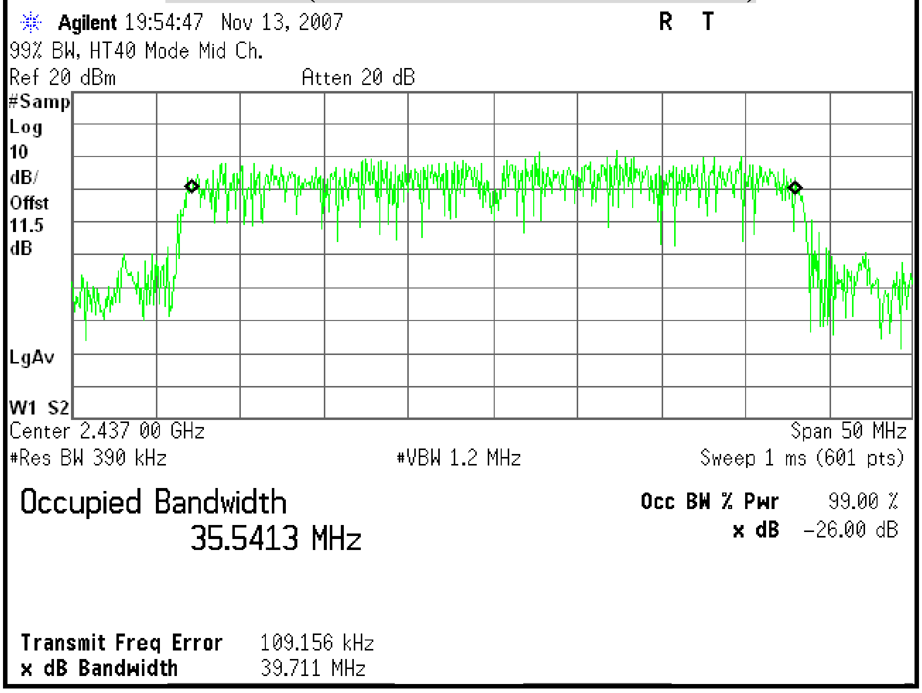
CH High (IEEE 802.11n HT40 mode-Chain 0)



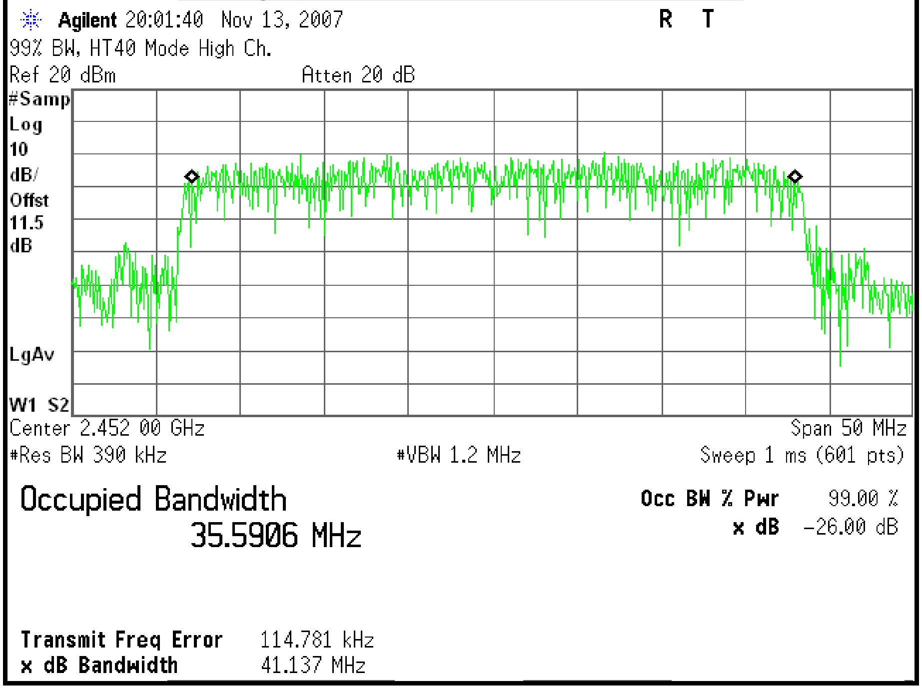
CH Low (IEEE 802.11n HT40 mode-Chain 1)



CH Middle (IEEE 802.11n HT40 mode-Chain 1)



CH High (IEEE 802.11n HT40 mode-Chain 1)



8.3 MAXIMUM PEAK OUTPUT POWER

LIMIT

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following :

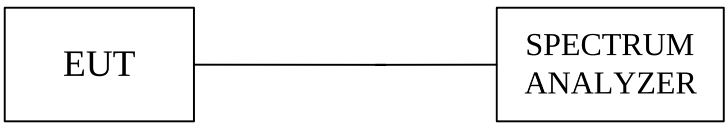
§ 15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands : 1 watt.

§ 15.247(b) (4) Except as shown in paragraphs (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2), and (b)(3) of this section , as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST EQUIPMENT

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	June 06, 2007

TEST SETUP



TEST PROCEDURE

1. The spectrum shall be set as follows :
   Span : 1.5 times channel integration bandwidth.
   RBW : 1MHz
   VBW : 3MHz
   Detector : Peak
   Sweep : Single trace
2. Compute the combined power of all signal responses contained in the trace by covering all the data points.
3. For 99% occupied BW, place the markers at the frequency at which 0.5% of the power lies to the right of the right marker and 0.5% of the power lies to the left of the left marker.
4. The peak output power is the channel power integrated over 99% bandwidth.

TEST RESULTS

No non-compliance noted

Total peak power calculation formula:
10 log (10^ (Chain 0 Power / 10) + 10^ (Chain1 Power / 10)).

The maximum antenna gain is 2.34 dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm. In the legacy mode, the effective antenna gain is 2.34 + 10 x Log (2) = 5.35 dBi. Please refer to IEEE 802.11a/11n mode.

The maximum antenna gain is 1.51 dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm. In the legacy mode, the effective antenna gain is 2.34 + 10 x Log (2) = 4.52 dBi Please refer to IEEE 802.11b/11g /11n mode.

IEEE 802.11a mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)		Peak Power Total (dBm)	Peak Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	5745	16.30	17.83	20.14	30	PASS
Middle	5785	16.57	16.06	19.33	30	PASS
High	5825	16.80	17.05	19.94	30	PASS

Remark:

1. *At finial test to get the worst-case emission at 6 Mbps.*
2. *The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT20 mode in The 5.8 GHz Band

Channel	Channel Frequency (MHz)	Peak Power (dBm)		Peak Power Total (dBm)	Peak Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	5745	16.75	16.82	19.80	30	PASS
Middle	5785	16.40	16.64	19.53	30	PASS
High	5825	16.88	16.77	19.84	30	PASS

Remark:

1. *At finial test to get the worst-case emission at 6.5 Mbps.*
2. *The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT40 mode in The 5.8 GHz Band

Channel	Channel Frequency (MHz)	Peak Power (dBm)		Peak Power Total (dBm)	Peak Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	5755	13.34	14.38	16.90	30	PASS
High	5795	18.51	17.01	20.83	30	PASS

Remark:

1. *At finial test to get the worst-case emission at 13.5 Mbps.*
2. *The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
		Chain 0		
Low	2412	17.56	30	PASS
Middle	2437	17.75	30	PASS
High	2462	17.26	30	PASS

Remark:

1. *At finial test to get the worst-case emission at 1 Mbps.*
2. *The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)		Peak Power Total (dBm)	Peak Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	2412	17.71	17.65	20.69	30	PASS
Middle	2437	18.43	17.92	21.19	30	PASS
High	2462	17.80	18.89	21.39	30	PASS

Remark:

1. *At finial test to get the worst-case emission at 6 Mbps.*
2. *The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT20 mode in The 2.4 GHz Band

Channel	Channel Frequency (MHz)	Peak Power (dBm)		Peak Power Total (dBm)	Peak Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	2412	17.51	17.74	20.64	30	PASS
Middle	2437	17.96	18.86	21.54	30	PASS
High	2462	17.74	18.63	21.22	30	PASS

Remark:

1. *At finial test to get the worst-case emission at 6. 5Mbps.*
2. *The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT40 mode in The 2.4 GHz Band

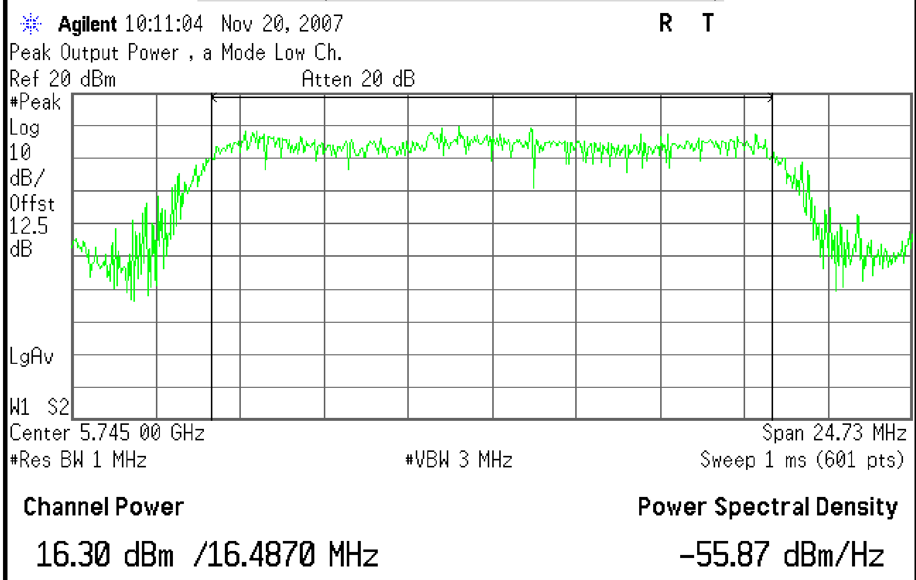
Channel	Channel Frequency (MHz)	Peak Power (dBm)		Peak Power Total (dBm)	Peak Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	2422	17.78	18.10	20.95	30	PASS
Middle	2437	17.96	18.14	21.06	30	PASS
High	2452	17.74	18.44	21.11	30	PASS

Remark:

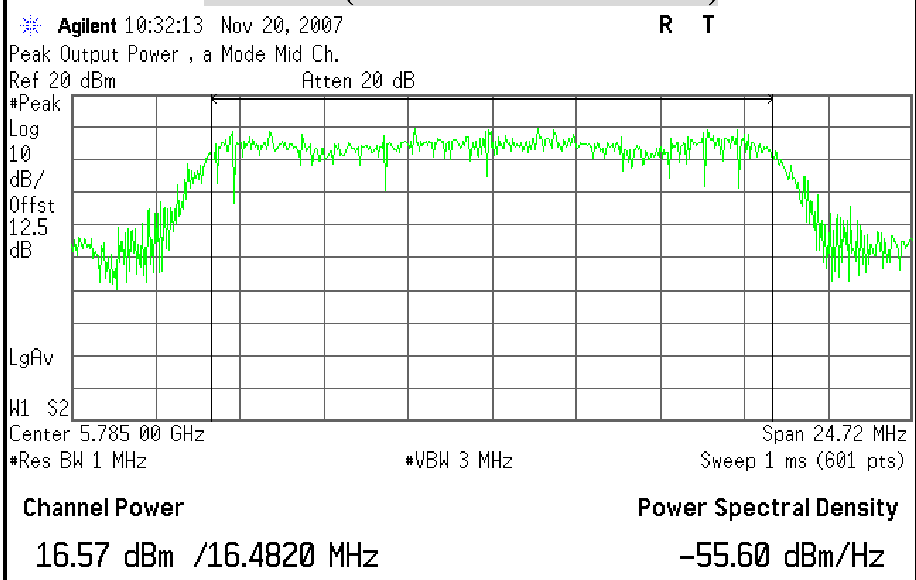
1. *At finial test to get the worst-case emission at 13.5 Mbps.*
2. *The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

MAXIMUM PEAK OUTPUT POWER (IEEE 802.11a mode)

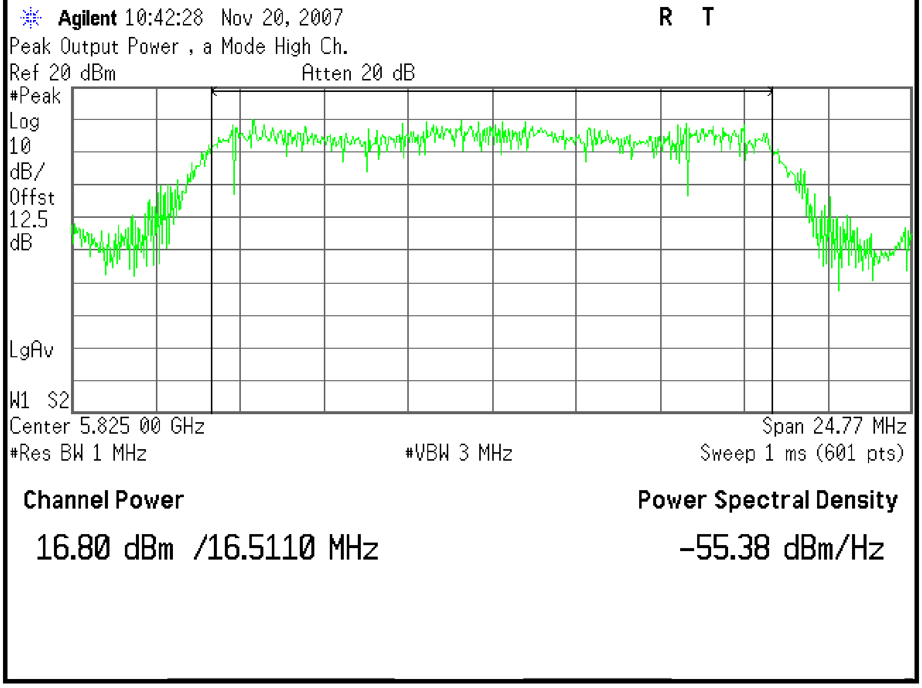
CH Low (IEEE 802.11a mode-Chain 0)



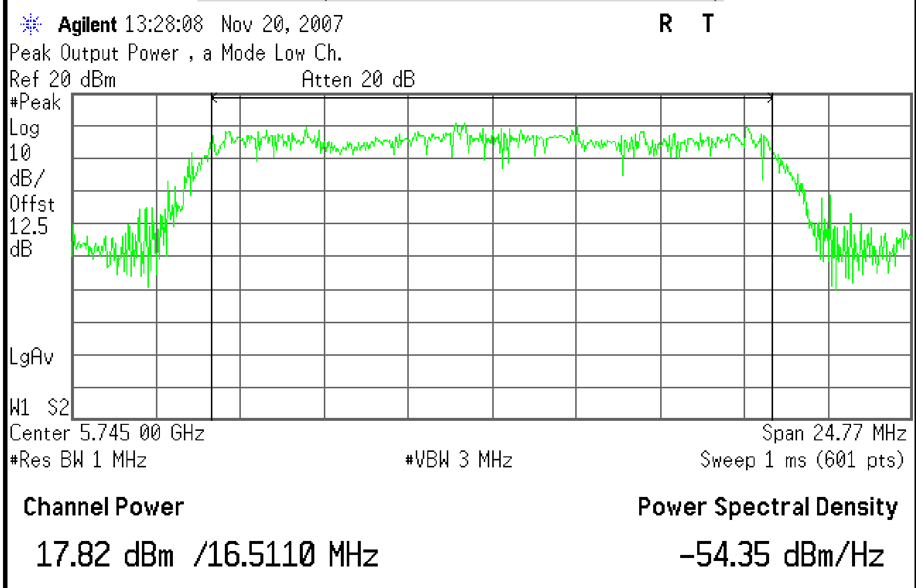
CH Middle (IEEE 802.11a mode-Chain 0)



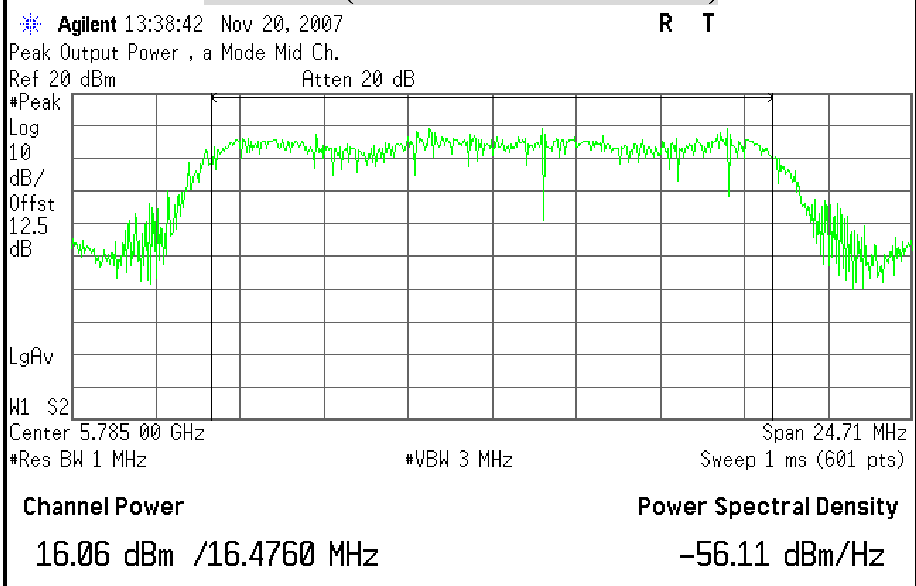
CH High (IEEE 802.11a mode-Chain 0)



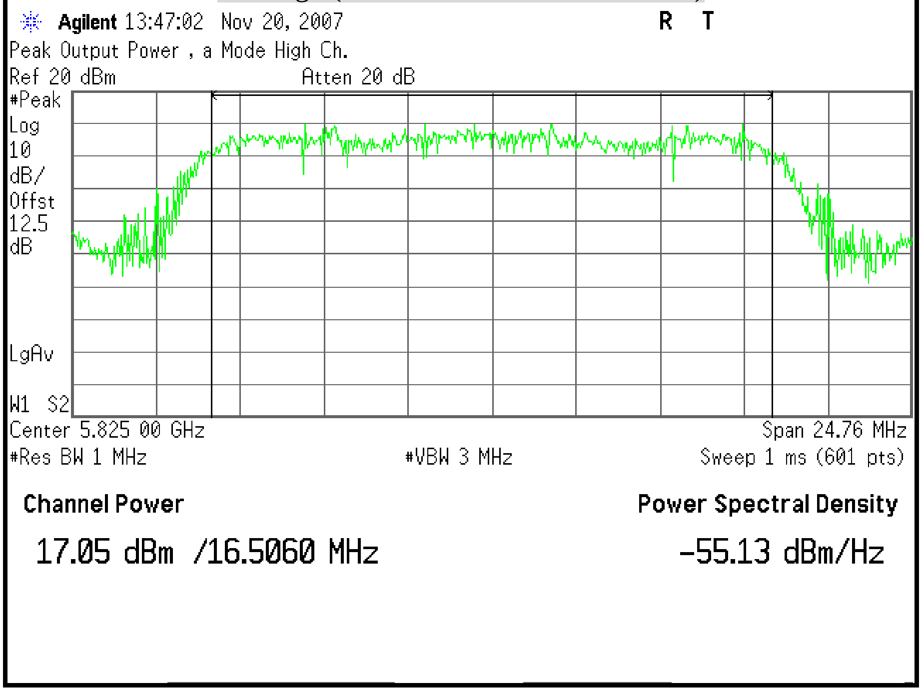
CH Low (IEEE 802.11a mode-Chain 1)



CH Middle (IEEE 802.11a mode-Chain 1)

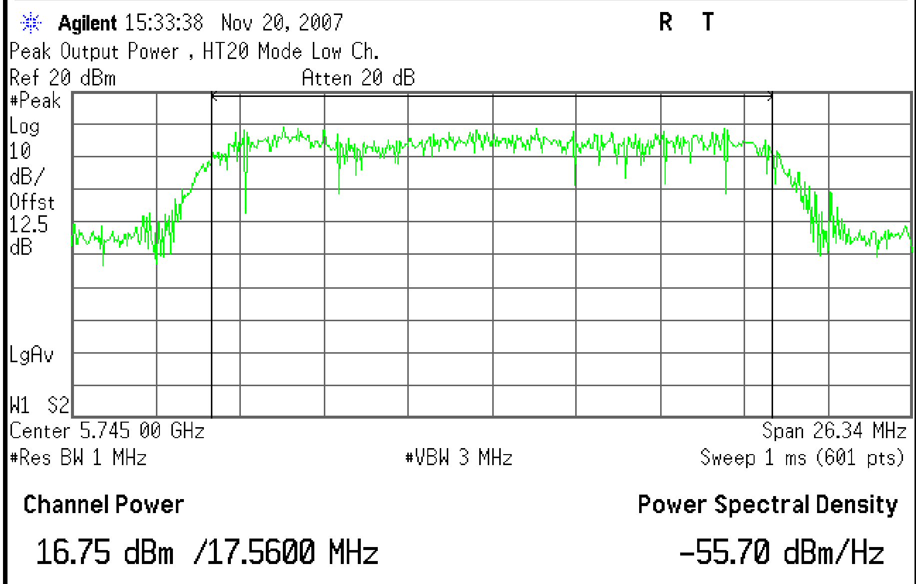


CH High (IEEE 802.11a mode-Chain 1)

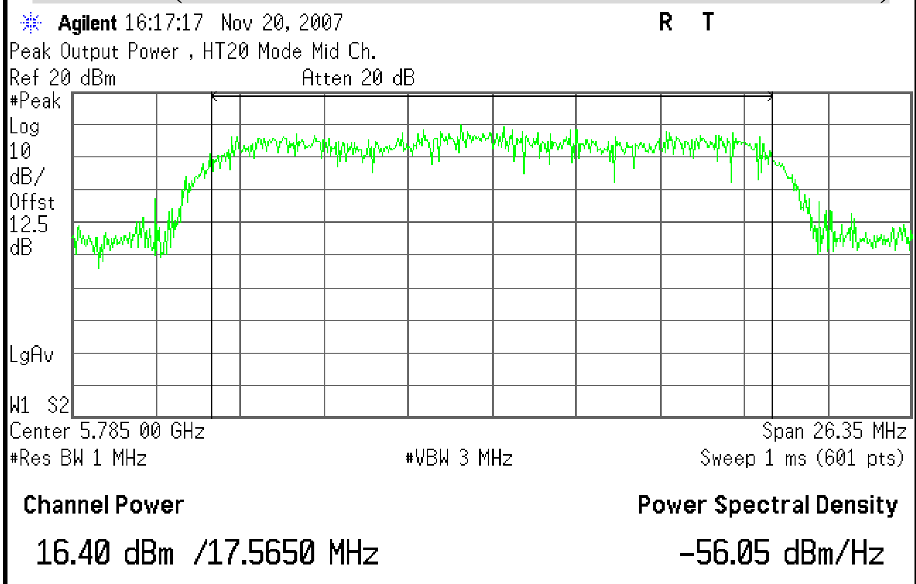


MAXIMUM PEAK OUTPUT POWER (IEEE 802.11n HT20 mode in The 5.8 GHz Band)

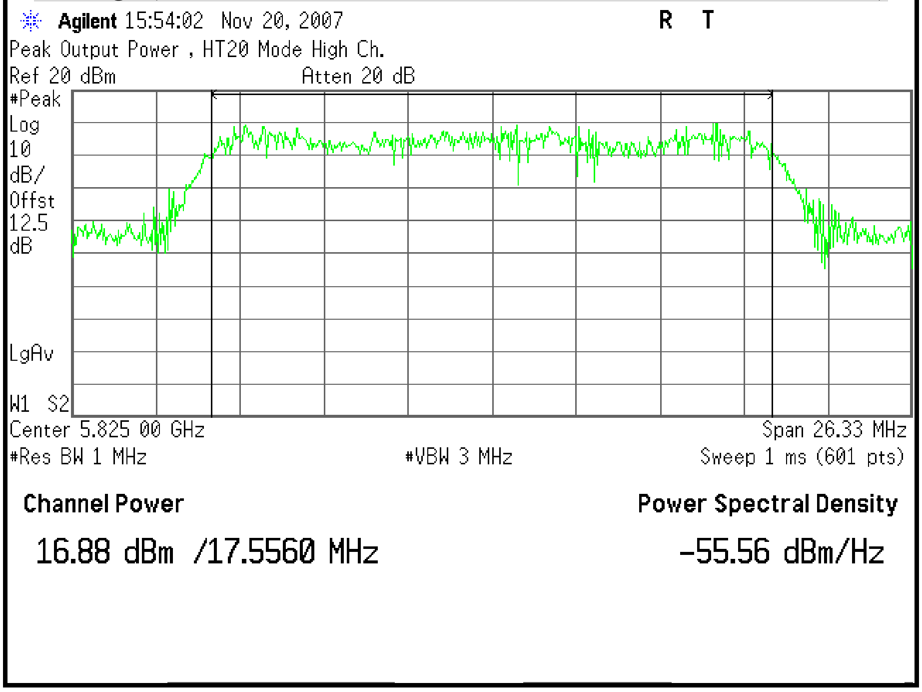
CH Low (IEEE 802.11n HT20 mode in The 5.8 GHz Band-Chain 0)



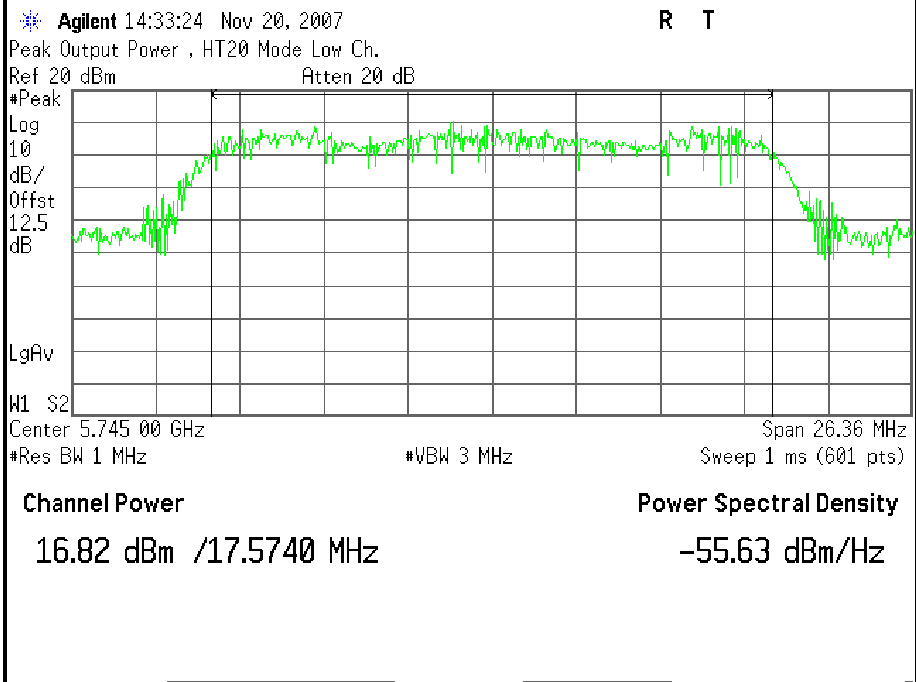
CH Middle (IEEE 802.11n HT20 mode in The 5.8 GHz Band -Chain 0)



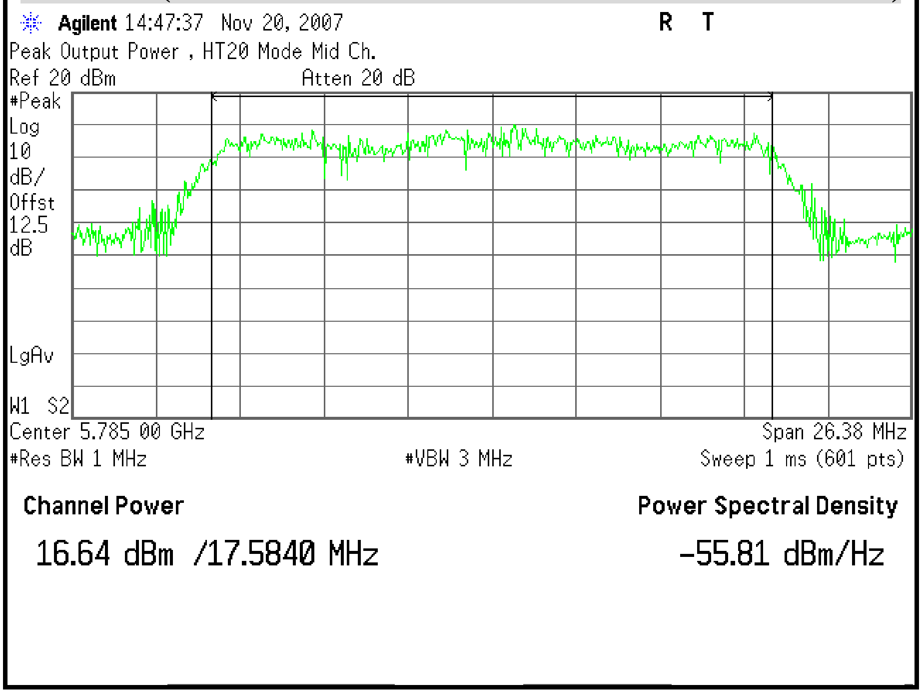
CH High (IEEE 802.11n HT20 mode in The 5.8 GHz Band -Chain 0)



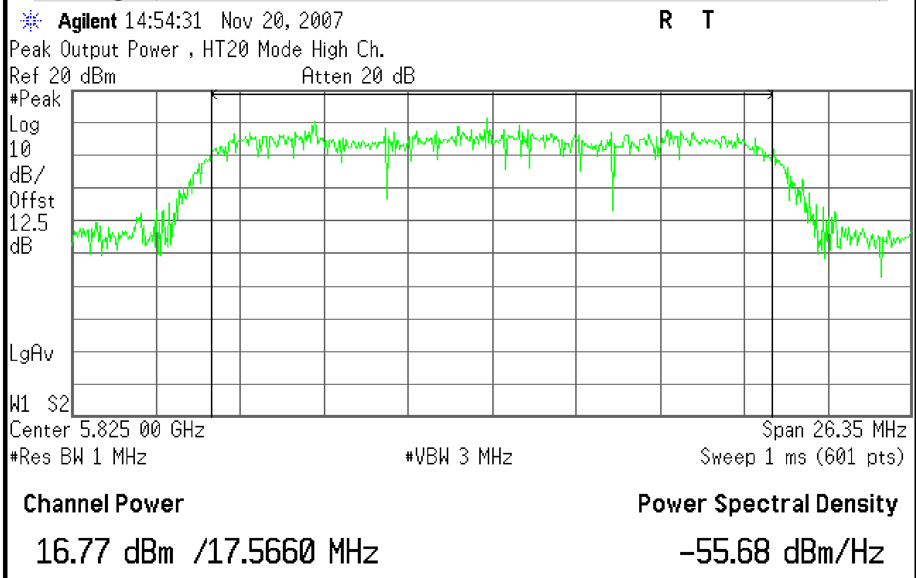
CH Low (IEEE 802.11n HT20 mode in The 5.8 GHz Band -Chain 1)



CH Middle (IEEE 802.11n HT20 mode in The 5.8 GHz Band -Chain 1)

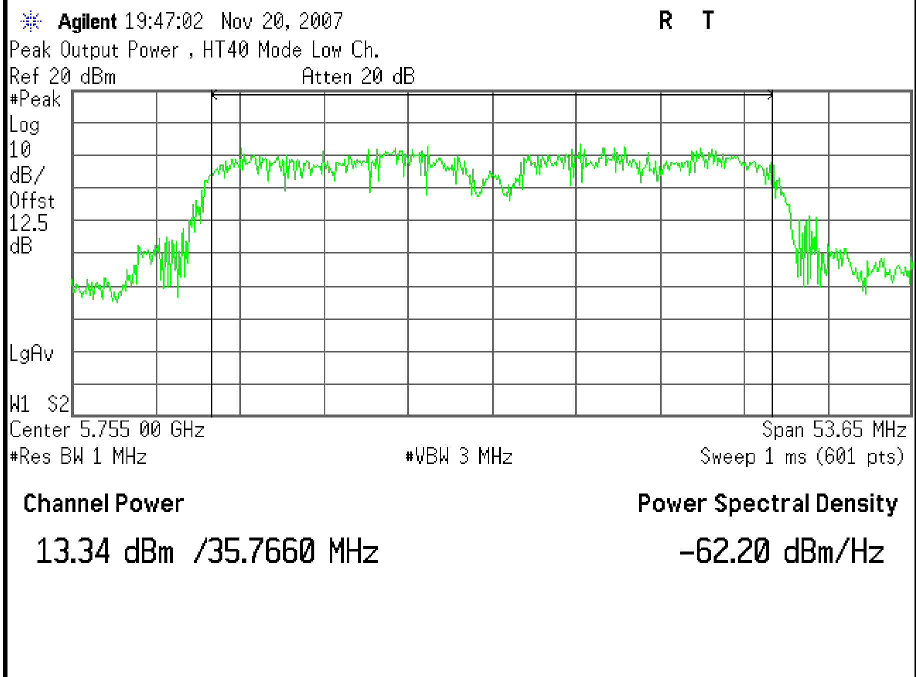


CH High (IEEE 802.11n HT20 mode in The 5.8 GHz Band -Chain 1)

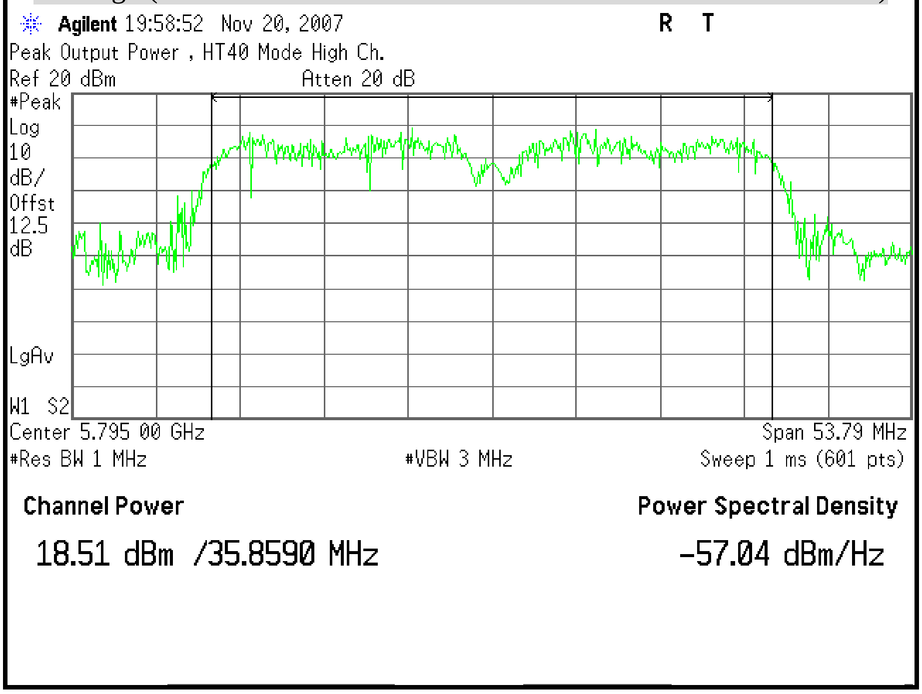


MAXIMUM PEAK OUTPUT POWER (IEEE 802.11n HT40 mode)

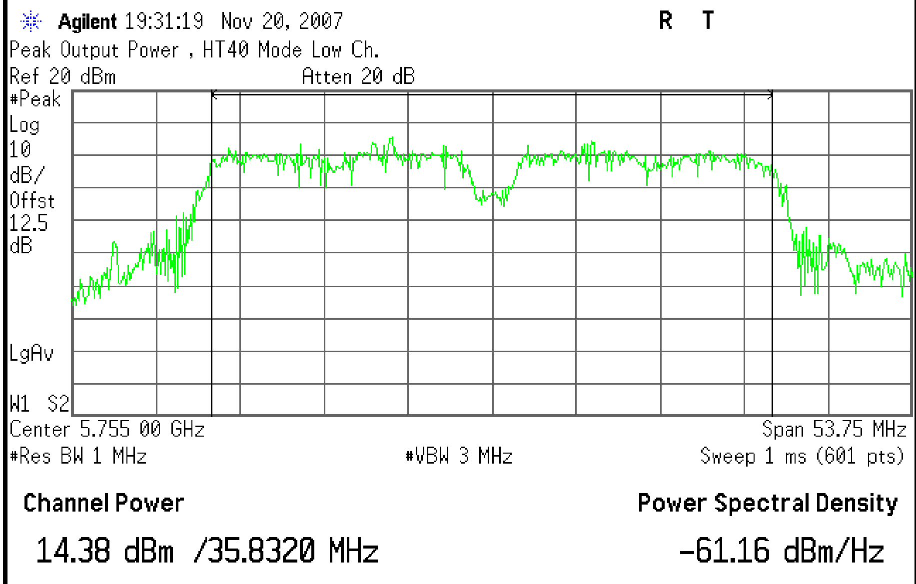
CH Low (IEEE 802.11n HT40 mode in The 5.8 GHz Band -Chain 0)



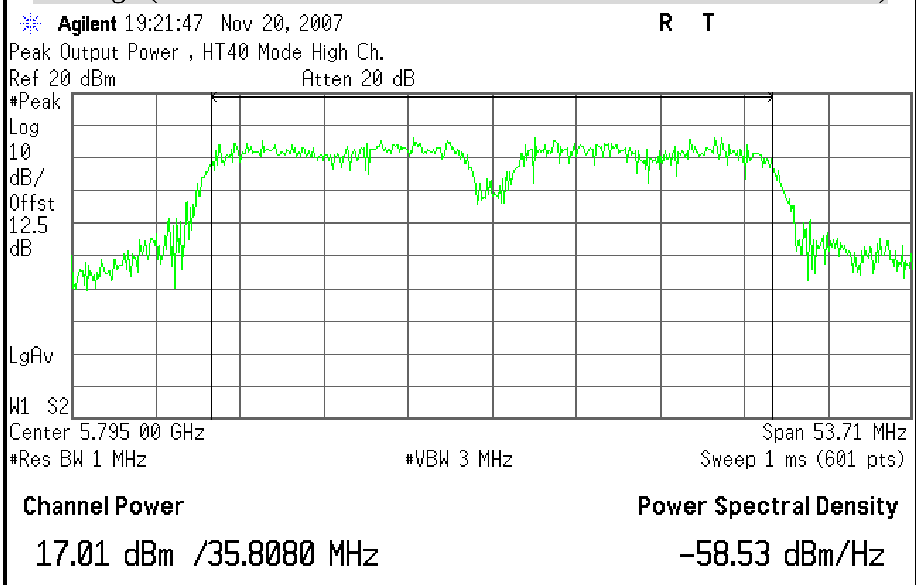
CH High (IEEE 802.11n HT40 mode in The 5.8 GHz Band -Chain 0)



CH Low (IEEE 802.11n HT40 mode in The 5.8 GHz Band -Chain 1)

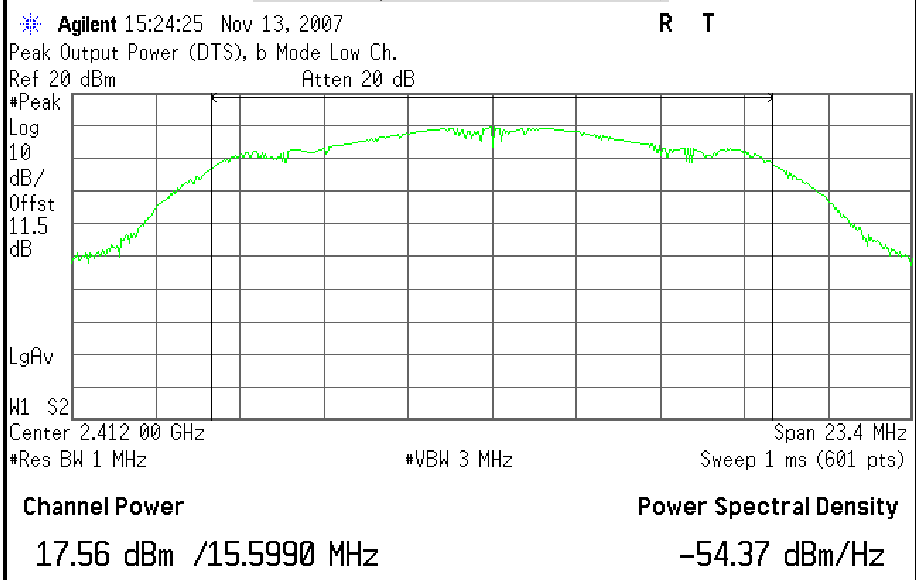


CH High (IEEE 802.11n HT40 mode in The 5.8 GHz Band -Chain 1)

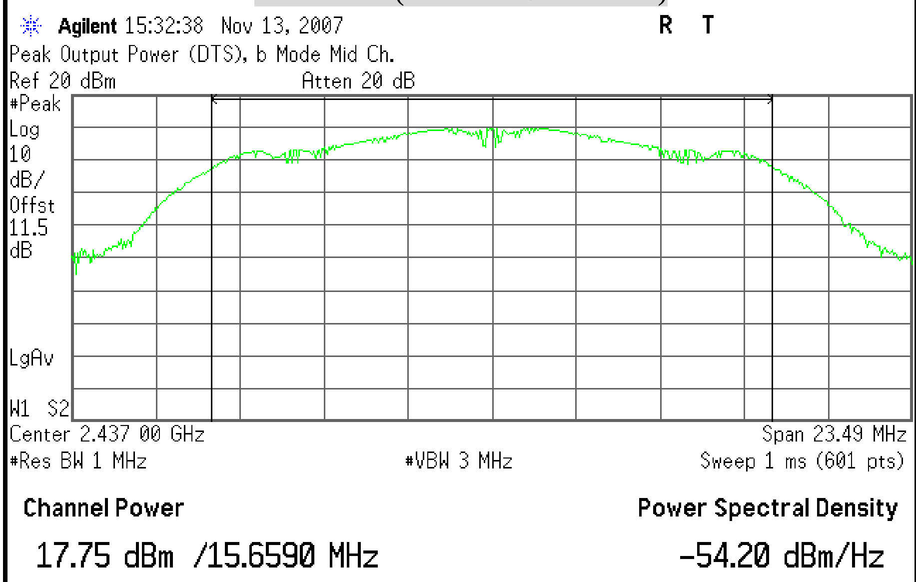


MAXIMUM PEAK OUTPUT POWER (IEEE 802.11b mode)

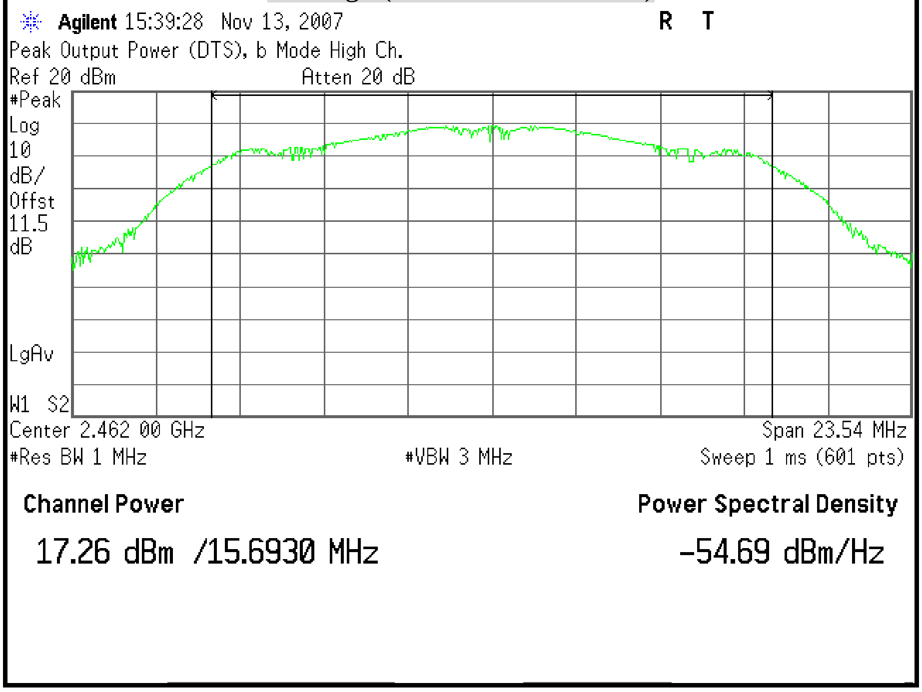
CH Low (IEEE 802.11b mode)



CH Middle (IEEE 802.11b mode)

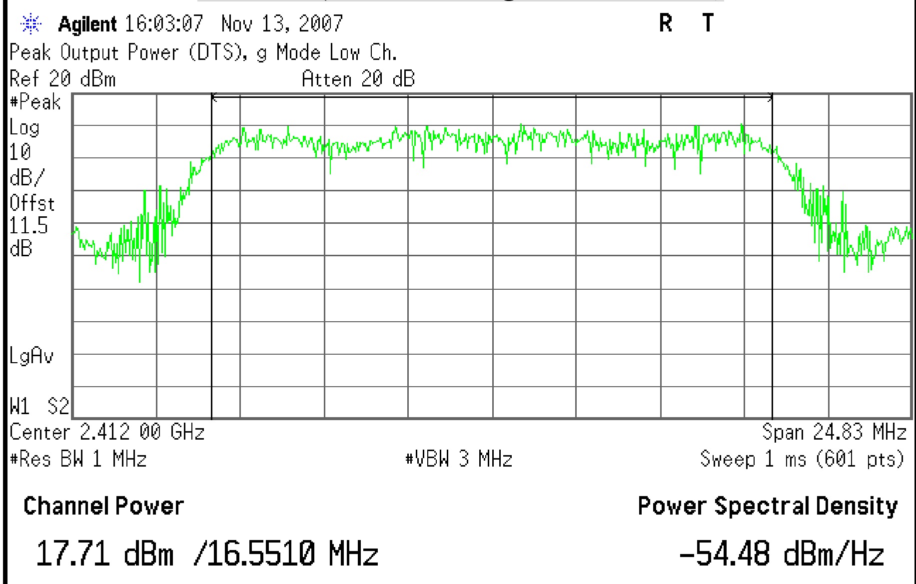


CH High (IEEE 802.11b mode)

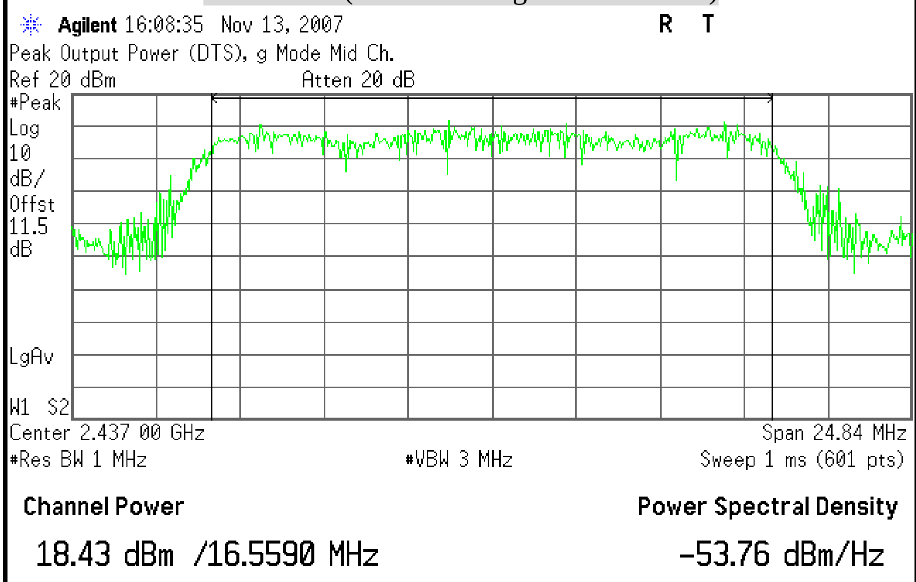


MAXIMUM PEAK OUTPUT POWER (IEEE 802.11g mode)

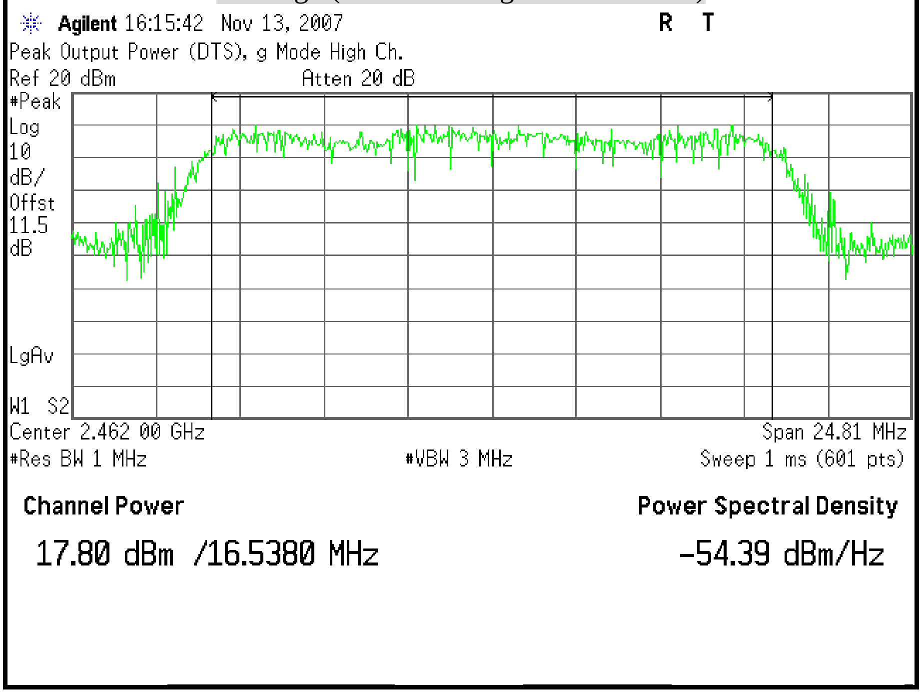
CH Low (IEEE 802.11g mode-Chain 0)



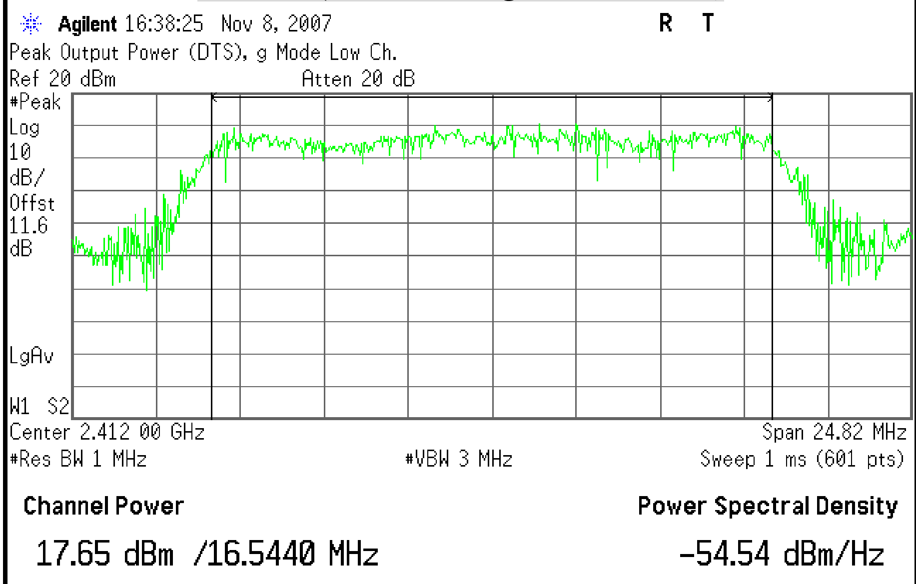
CH Middle (IEEE 802.11g mode-Chain 0)



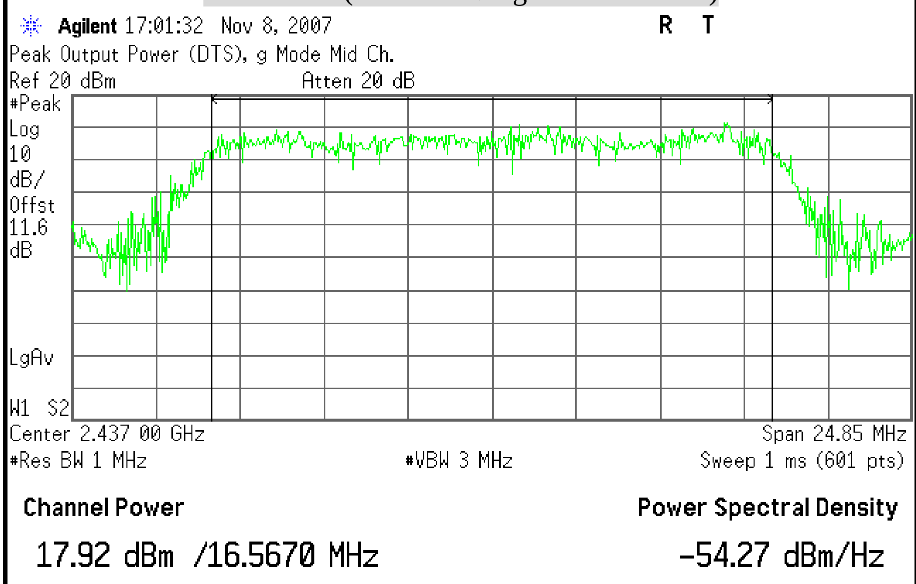
CH High (IEEE 802.11g mode-Chain 0)



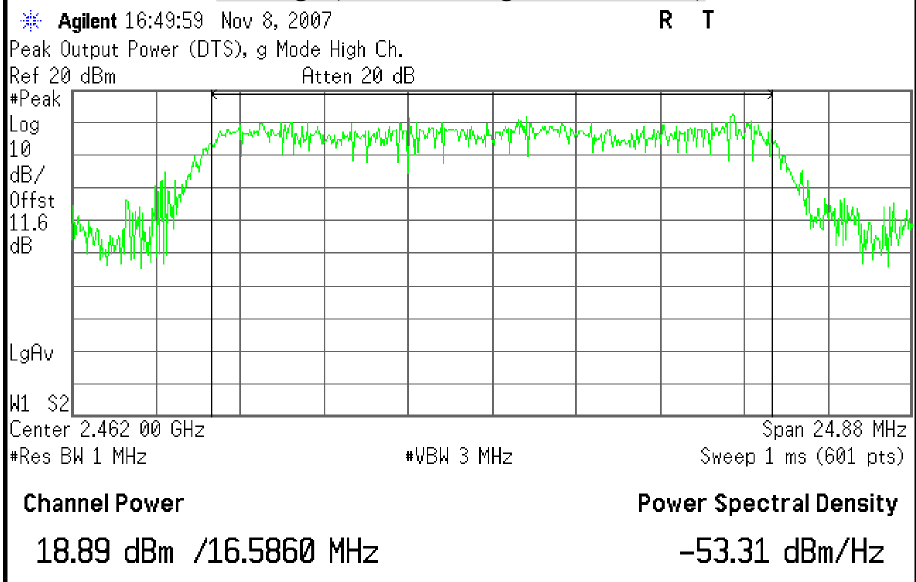
CH Low (IEEE 802.11g mode-Chain 1)



CH Middle (IEEE 802.11g mode-Chain 1)

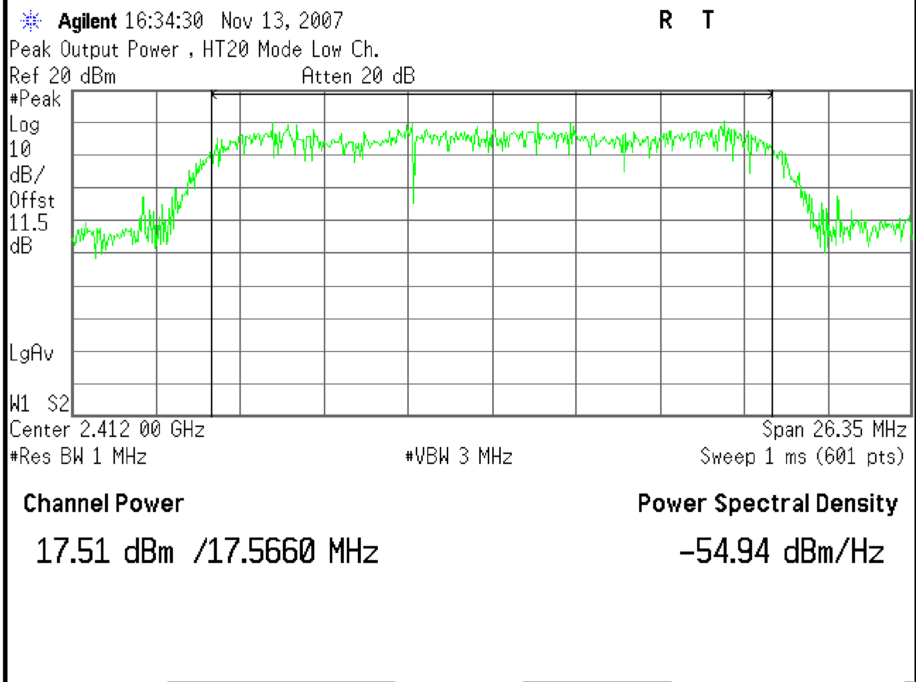


CH High (IEEE 802.11g mode-Chain 1)

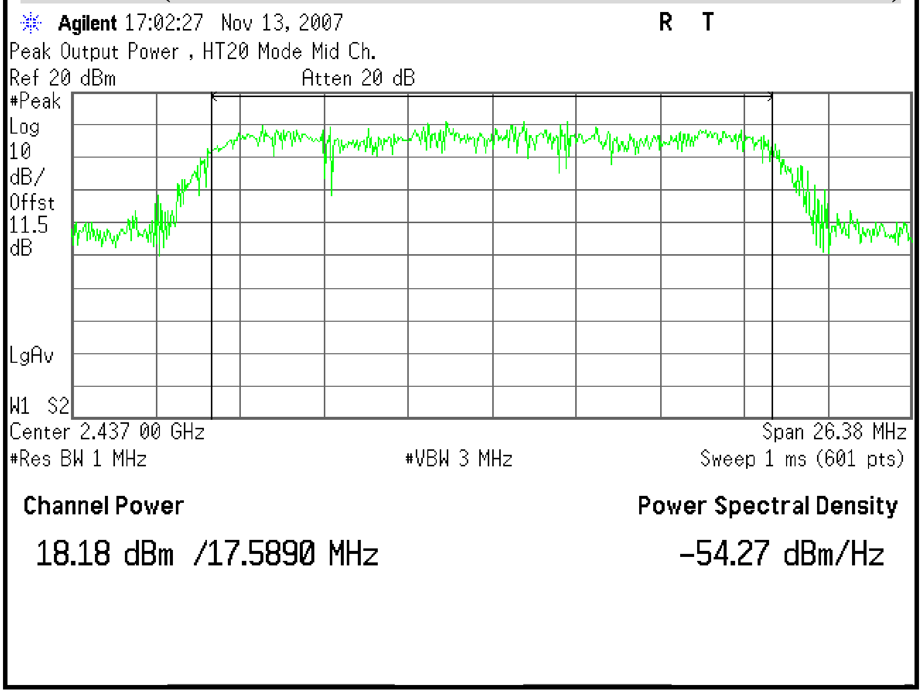


MAXIMUM PEAK OUTPUT POWER (IEEE 802.11n HT20 mode)

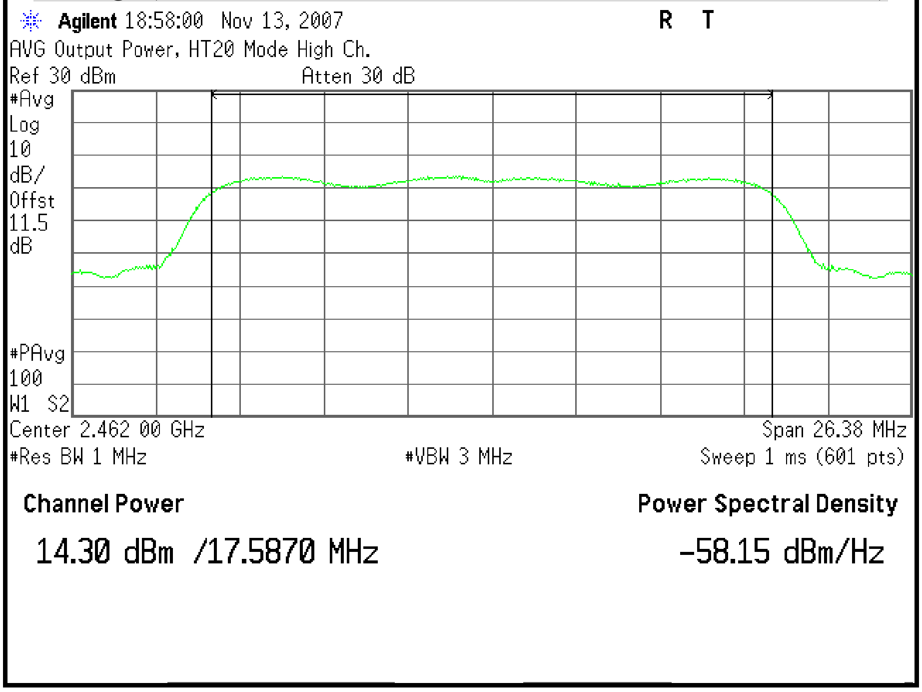
CH Low (IEEE 802.11n HT20 mode in The 2.4 GHz Band -Chain 0)



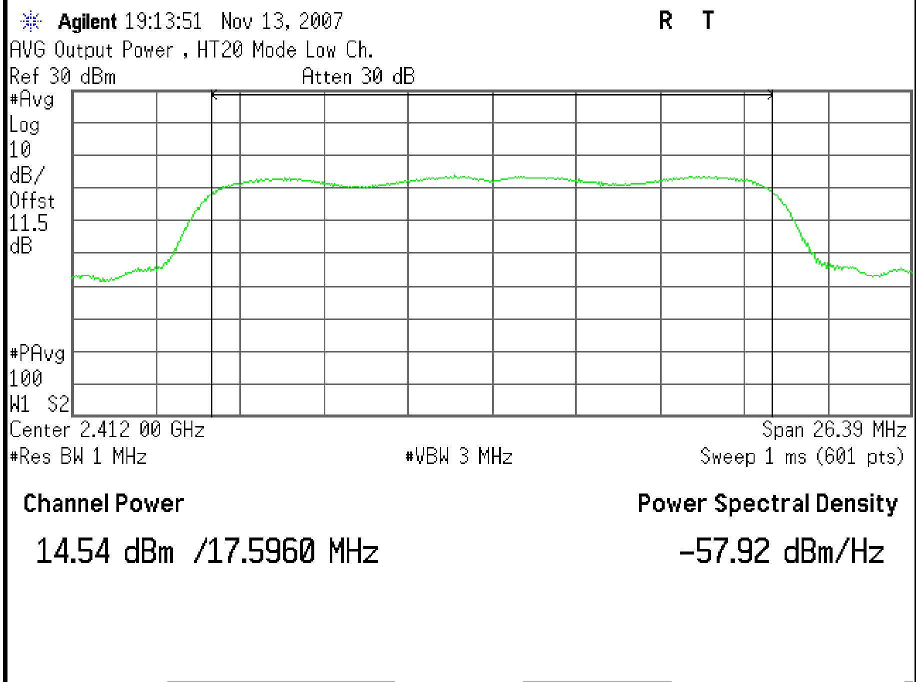
CH Middle (IEEE 802.11n HT20 mode in The 2.4 GHz Band -Chain 0)



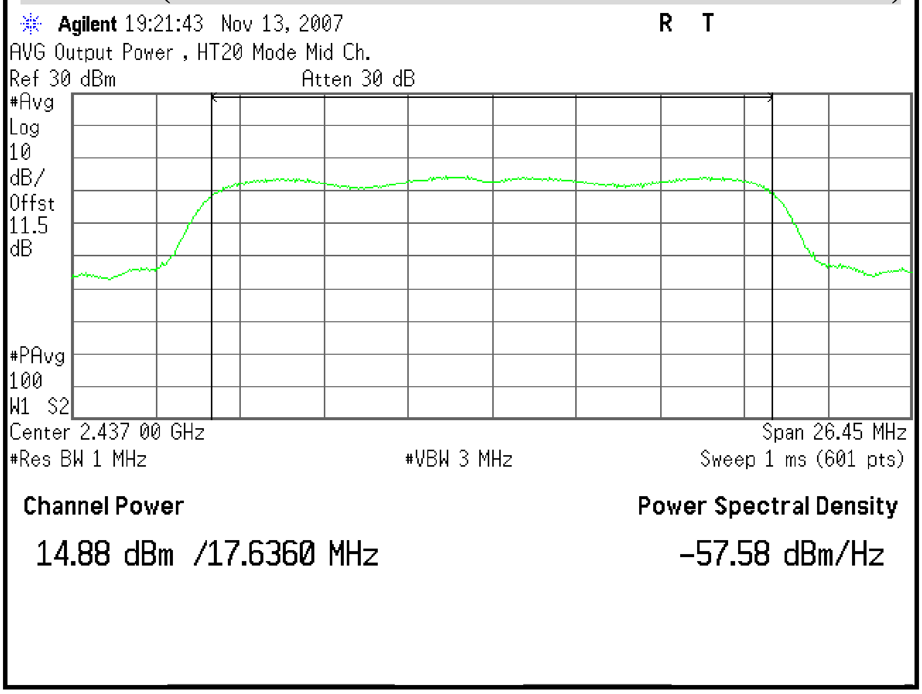
CH High (IEEE 802.11n HT20 mode in The 2.4 GHz Band -Chain 0)



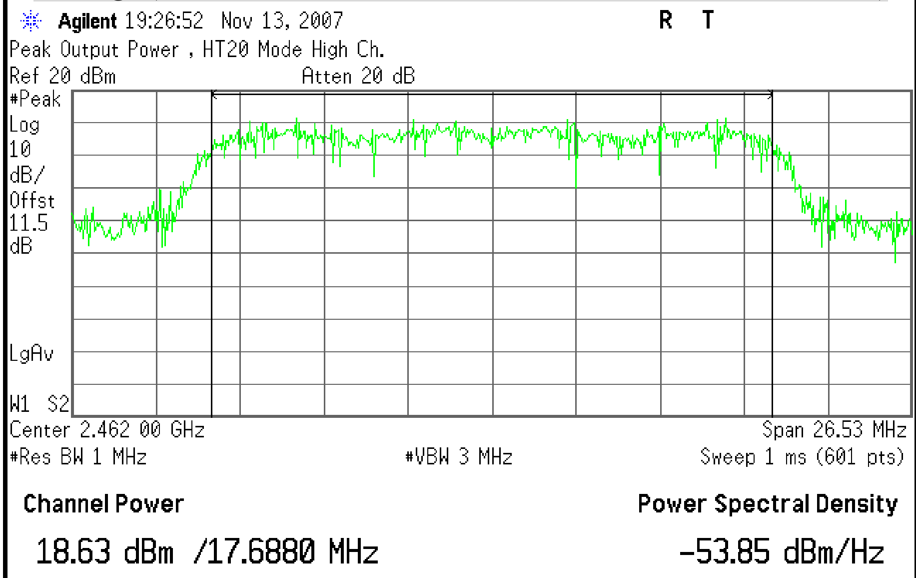
CH Low (IEEE 802.11n HT20 mode in The 2.4 GHz Band -Chain 1)



CH Middle (IEEE 802.11n HT20 mode in The 2.4 GHz Band -Chain 1)

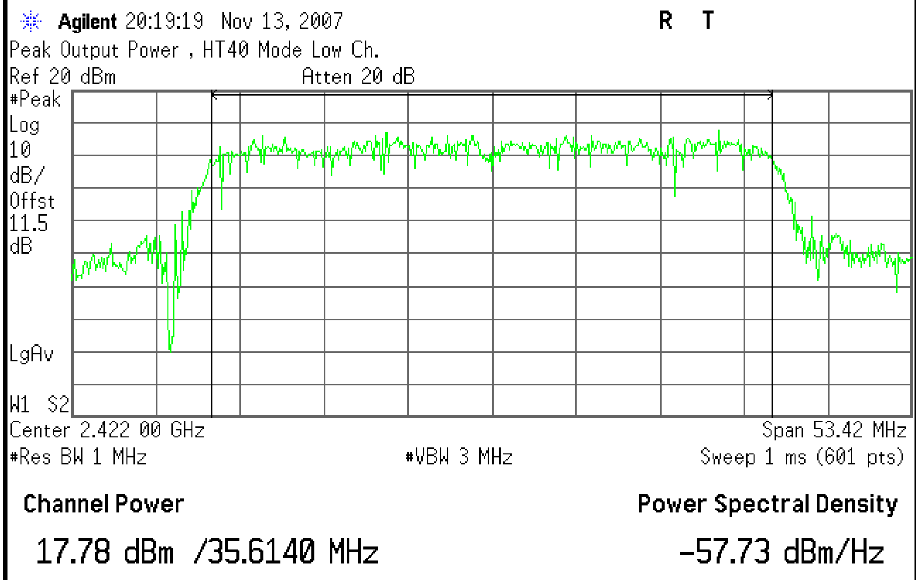


CH High (IEEE 802.11n HT20 mode in The 2.4 GHz Band -Chain 1)

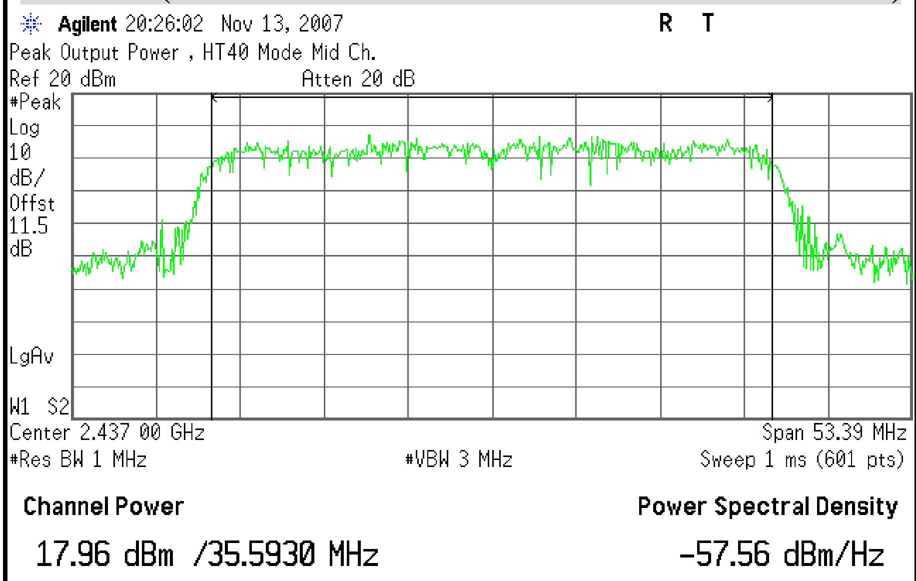


MAXIMUM PEAK OUTPUT POWER (IEEE 802.11n HT40 mode)

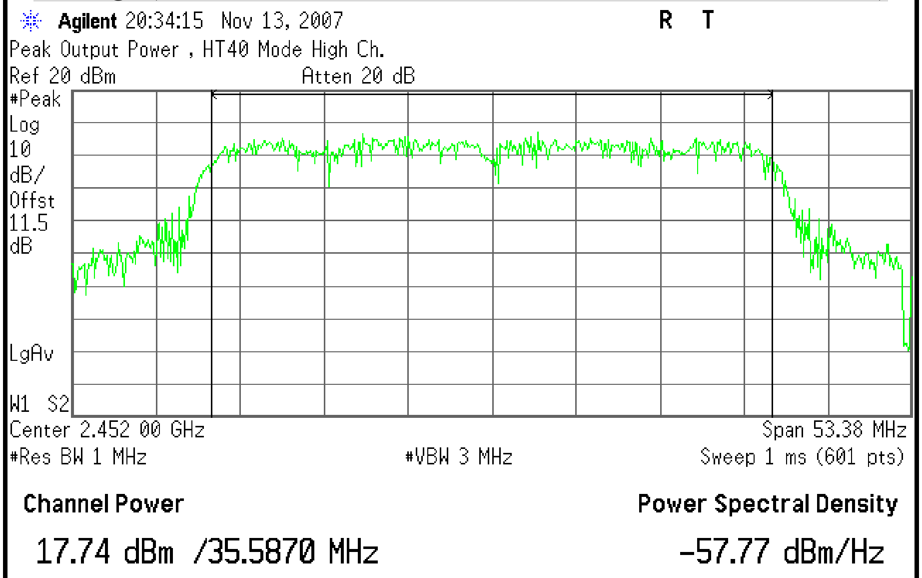
CH Low (IEEE 802.11n HT40 mode in The 2.4 GHz Band -Chain 0)



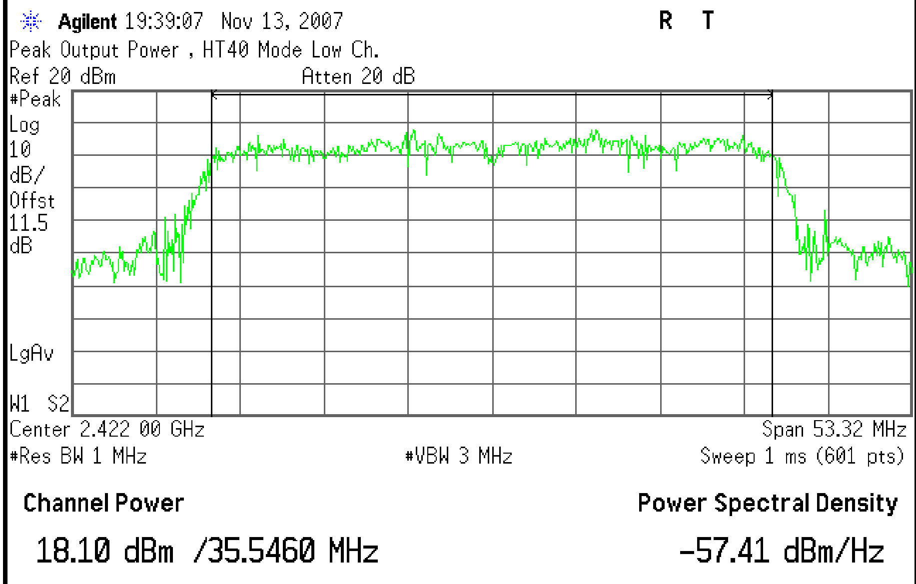
CH Middle (IEEE 802.11n HT40 mode in The 2.4 GHz Band -Chain 0)



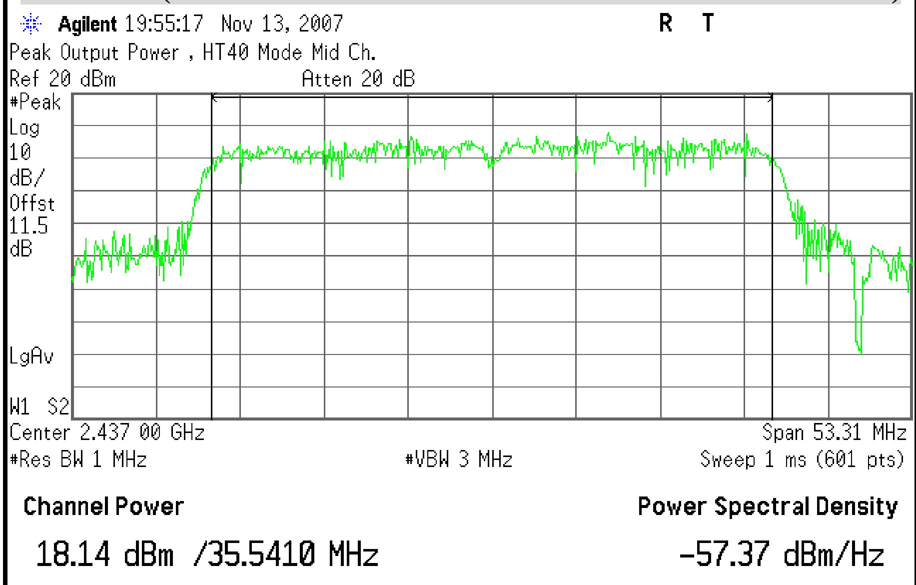
CH High (IEEE 802.11n HT40 mode in The 2.4 GHz Band -Chain 0)



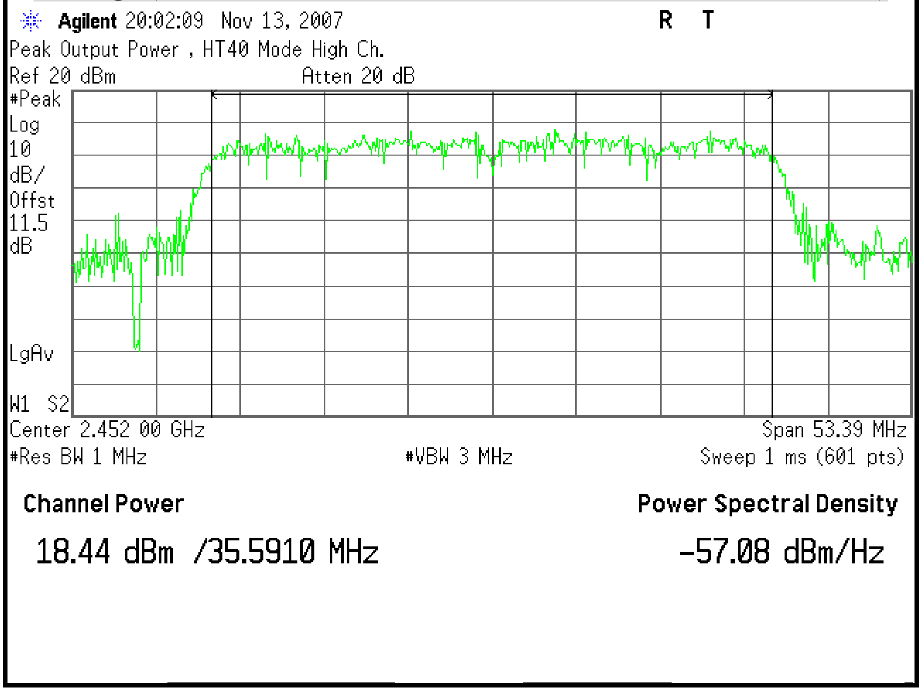
CH Low (IEEE 802.11n HT40 mode in The 2.4 GHz Band -Chain 1)



CH Middle (IEEE 802.11n HT40 mode in The 2.4 GHz Band -Chain 1)



CH High (IEEE 802.11n HT40 mode in The 2.4 GHz Band -Chain 1)



8.4 POWER SPECTRAL DENSITY

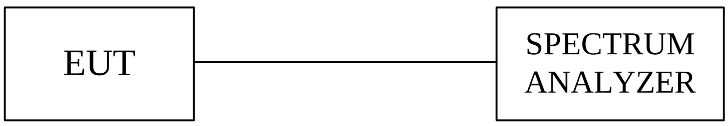
LIMIT

§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST EQUIPMENT

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	June 06, 2007

TEST SETUP



Combined mode

TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using RBW＝3KHz and VBW≧RBW, set sweep time＝span / 3KHz.

The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span / 3KHz for a full response of the mixer in the spectrum analyzer.

TEST RESULTS

No non-compliance noted

Total power spectral density calculation formula:
10 log (10^ (Chain 0 PPSD / 10) + 10^ (Chain1 PPSD / 10)).

IEEE 802.11a mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	5745	-3.80	-10.36	-2.93	8	PASS
Middle	5785	-1.47	-9.02	-0.77	8	PASS
High	5825	-2.99	-8.55	-1.92	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 6 Mbps.*
2. *The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11a Combined mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maxmum Limit (dBm)	Pass / Fail
Low	5745	-3.37	8	PASS
Middle	5785	0.20	8	PASS
High	5825	-0.92	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 6 Mbps.*
2. *The cable assembly insertion loss of 16.1 dB (including 10 dB pad and 6.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	5745	-3.83	-10.36	-2.93	8	PASS
Middle	5785	-3.36	-9.21	-2.36	8	PASS
High	5825	-2.99	-8.72	-1.96	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 6.5 Mbps.*
2. *The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT20 Combined mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maxmum Limit (dBm)	Pass / Fail
Low	5745	-1.99	8	PASS
Middle	5785	-1.37	8	PASS
High	5825	-0.80	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 6.5 Mbps.*
2. *The cable assembly insertion loss 16.1 dB (including 10 dB pad and 6.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT40 mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	5755	-4.27	-11.84	-3.57	8	PASS
High	5795	-3.74	-8.57	-2.51	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 13.5 bps.*
2. *The cable assembly insertion loss of 12.5 dB (including 10 dB pad and 2.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT40 Combined mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maxmum Limit (dBm)	Pass / Fail
Low	5755	-4.40	8	PASS
High	5795	-2.25	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 13.5Mbps.*
2. *The cable assembly insertion loss of 16.1 dB (including 10 dB pad and 6.1 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maxmum Limit (dBm)	Pass / Fail
Low	2412	-6.26	8	PASS
Middle	2437	-6.69	8	PASS
High	2462	-6.74	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 1 Mbps.*
2. *The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	2412	-9.87	-9.03	-6.42	8	PASS
Middle	2437	-9.17	-7.79	-5.42	8	PASS
High	2462	-9.45	-7.83	-5.55	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 6 Mbps.*
2. *The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	2412	-8.62	-9.70	-6.12	8	PASS
Middle	2437	-8.60	-9.09	-5.83	8	PASS
High	2462	-9.04	-8.13	-5.55	8	PASS

Remark:

1. *At finial test to get the worst-case emission at 6.5Mbps.*
2. *The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

IEEE 802.11n HT40 mode

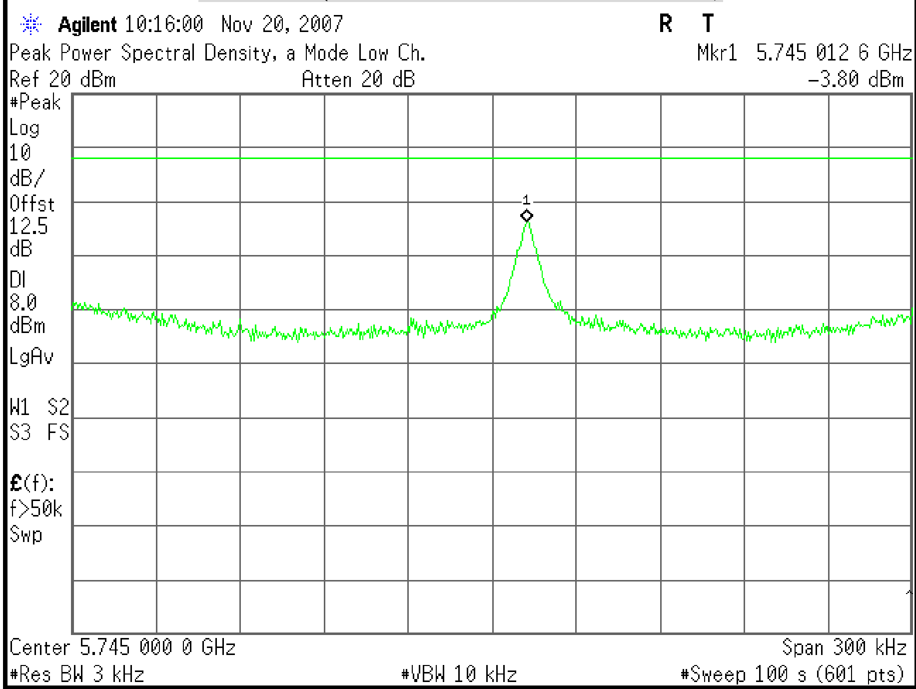
Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)		PPSD Total (dBm)	Maxmum Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
Low	2422	-12.81	-12.25	-9.51	8	PASS
Middle	2437	-10.20	-12.09	-8.03	8	PASS
High	2452	-13.10	-12.19	-9.61	8	PASS

Remark:

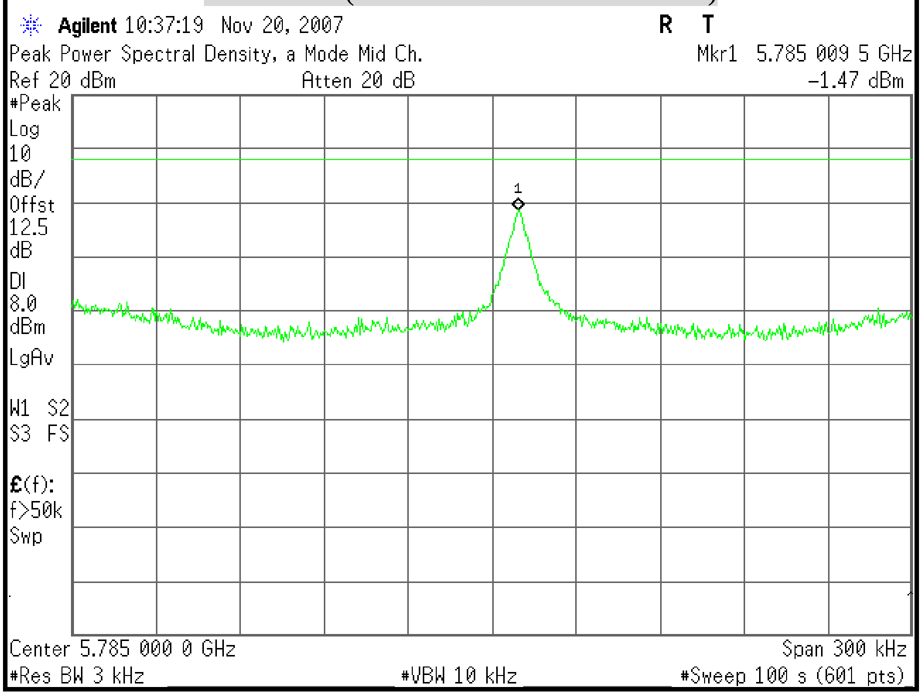
1. *At finial test to get the worst-case emission at 13.5Mbps.*
2. *The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.*

POWER SPECTRAL DENSITY (IEEE 802.11a mode)

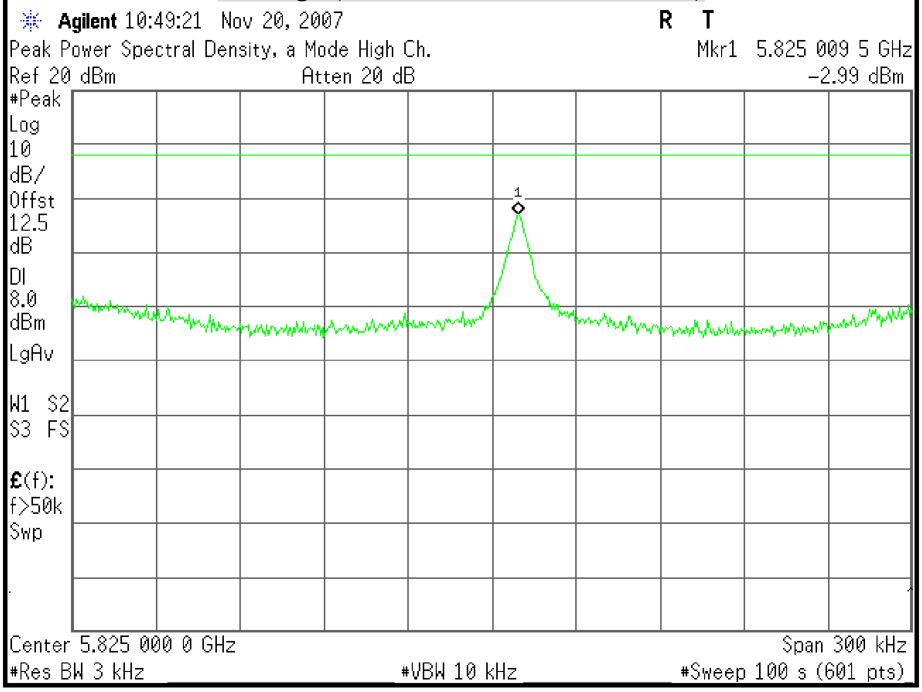
CH Low (IEEE 802.11a mode-Chain 0)



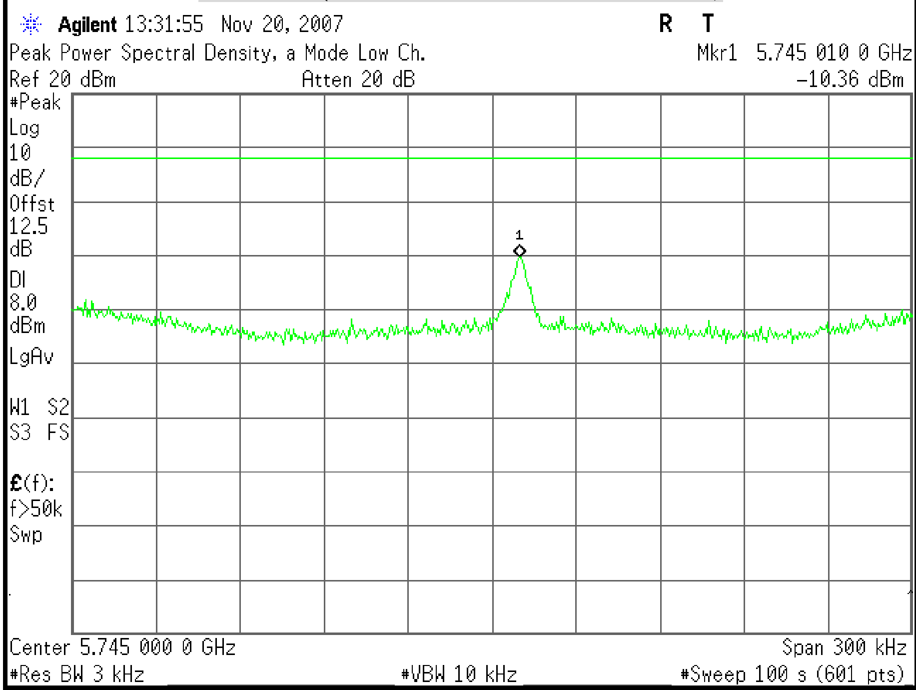
CH Middle (IEEE 802.11a mode-Chain 0)



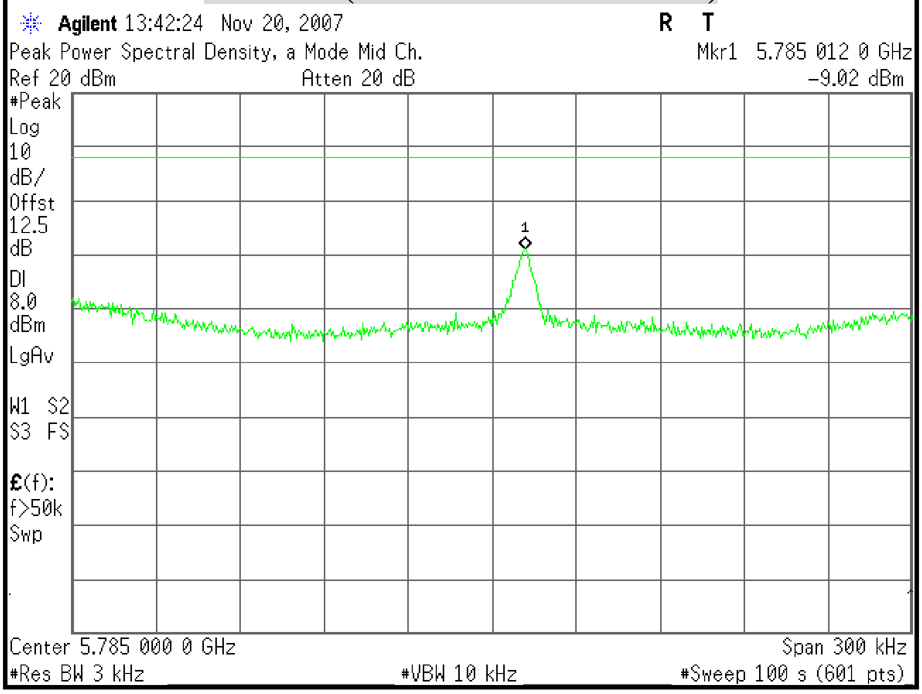
CH High (IEEE 802.11a mode-Chain 0)



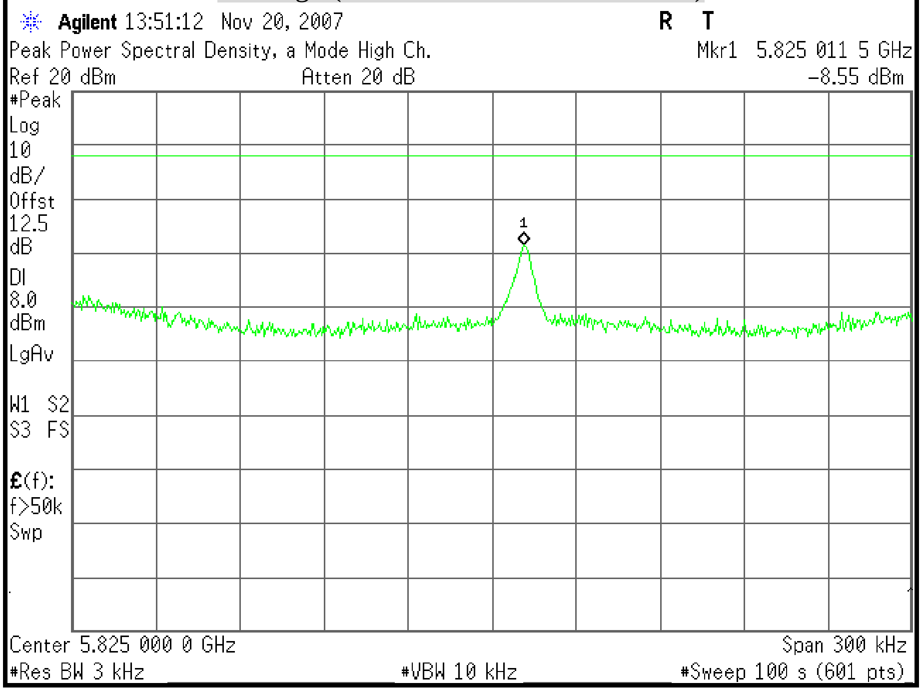
CH Low (IEEE 802.11a mode-Chain 1)



CH Middle (IEEE 802.11a mode-Chain 1)

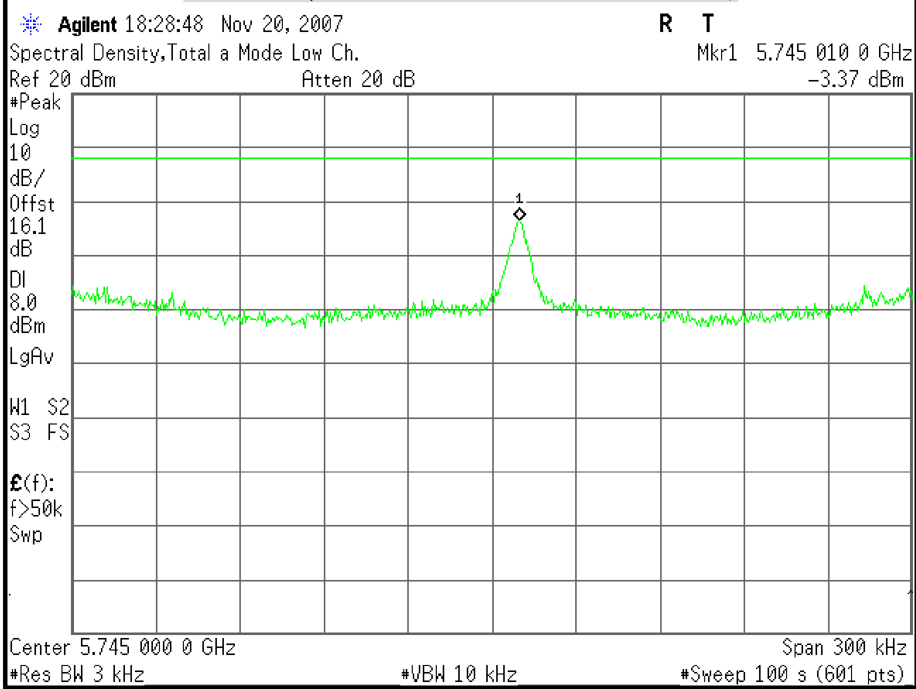


CH High (IEEE 802.11a mode-Chain 1)

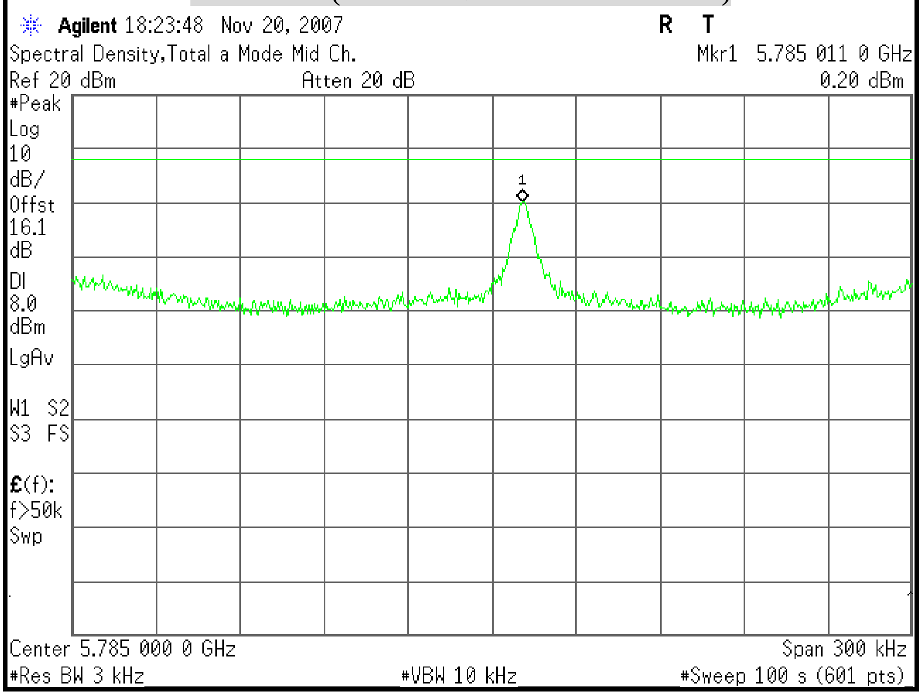


POWER SPECTRAL DENSITY (IEEE 802.11a Combined mode)

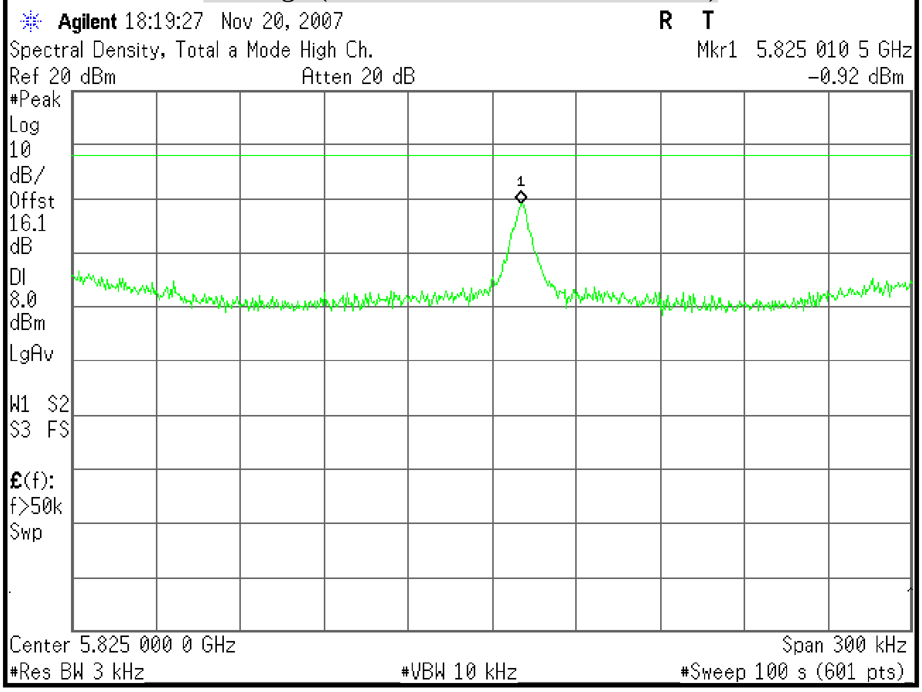
CH Low (IEEE 802.11a Combined mode)



CH Middle (IEEE 802.11a Combined mode)

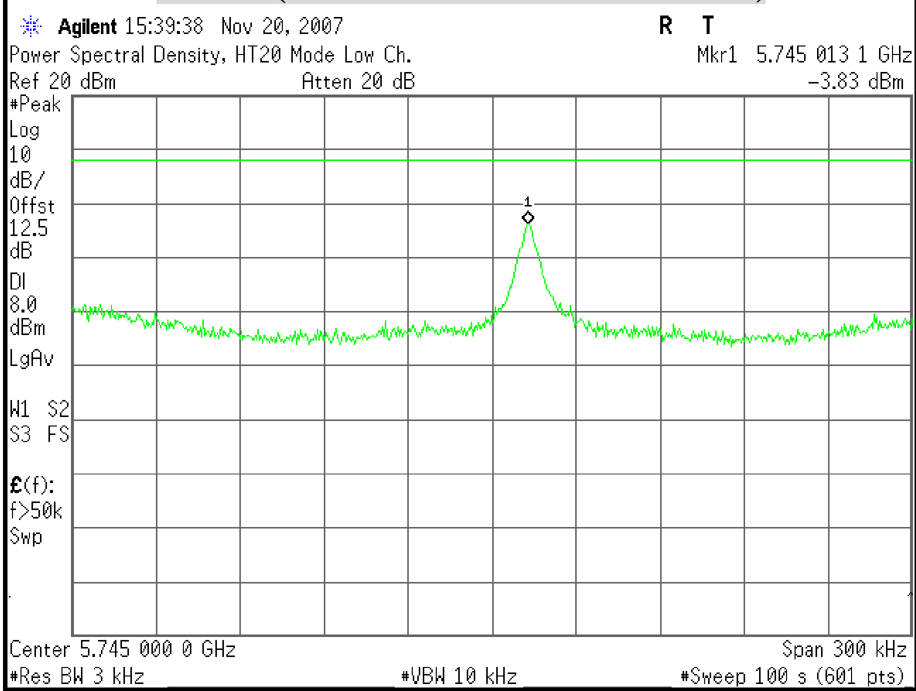


CH High (IEEE 802.11a Combined mode)

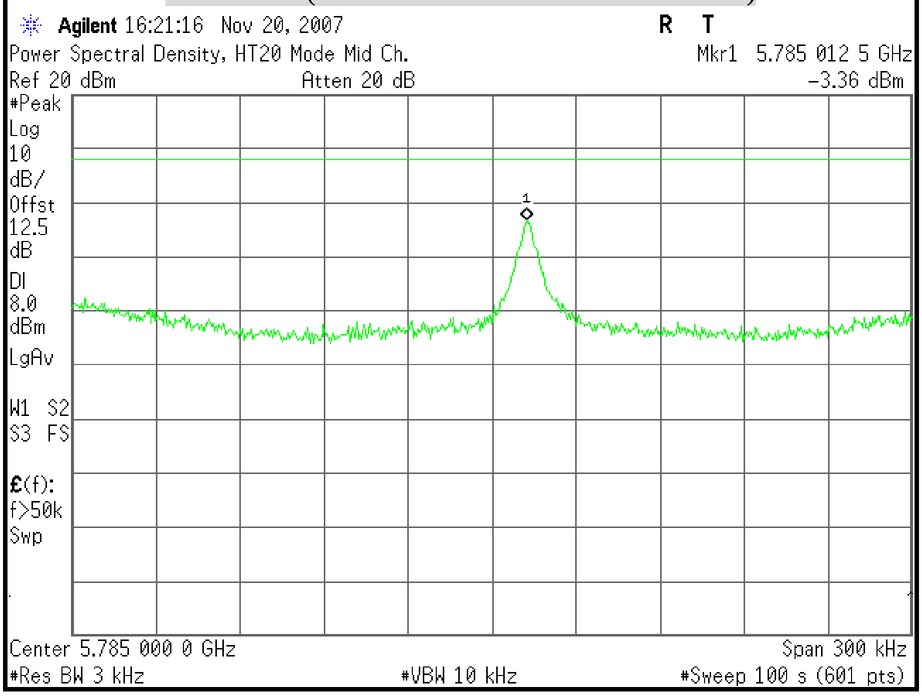


POWER SPECTRAL DENSITY (IEEE 802.11n HT20 mode)

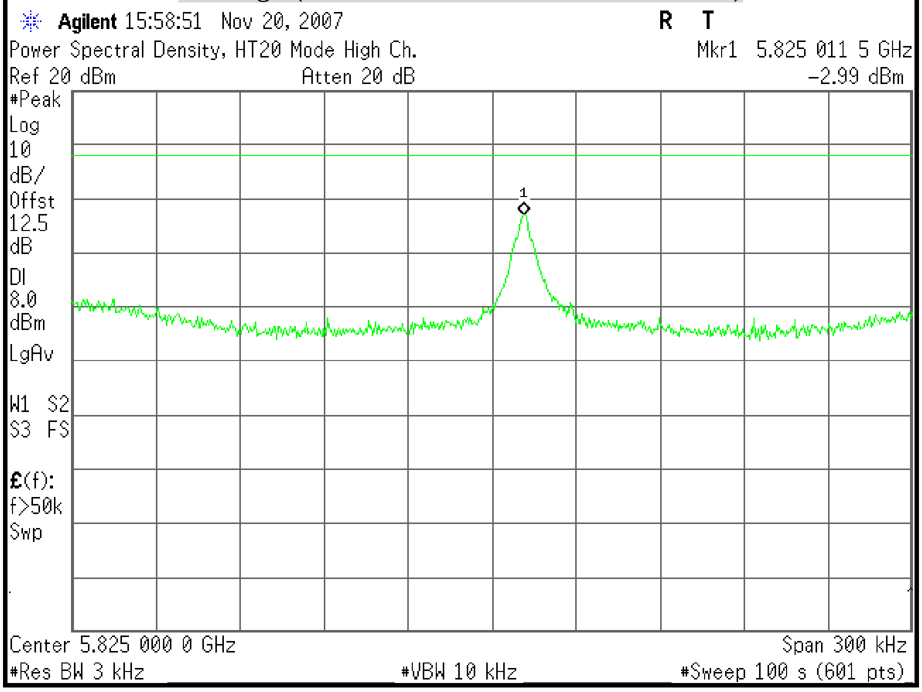
CH Low (IEEE 802.11n HT20 mode-Chain 0)



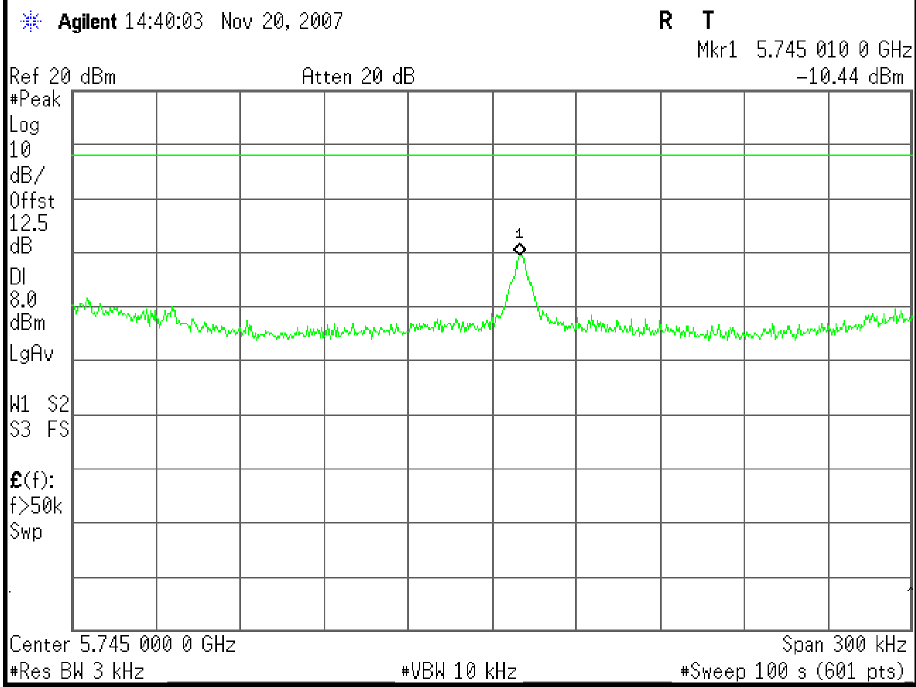
CH Middle (IEEE 802.11n HT20 mode-Chain 0)



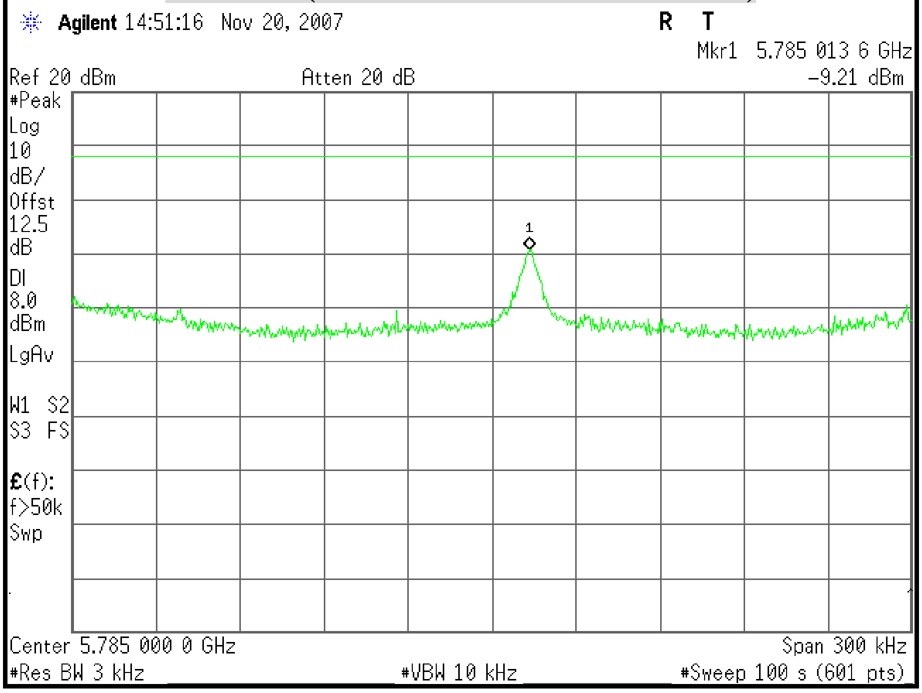
CH High (IEEE 802.11n HT20 mode-Chain 0)



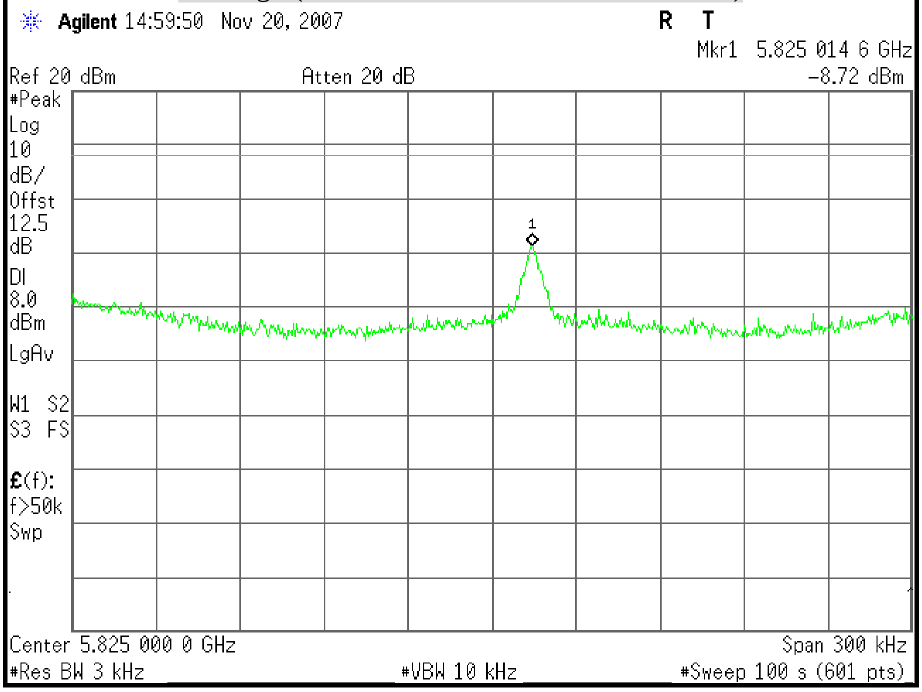
CH Low (IEEE 802.11n HT20 mode-Chain 1)



CH Middle (IEEE 802.11n HT20 mode-Chain 1)

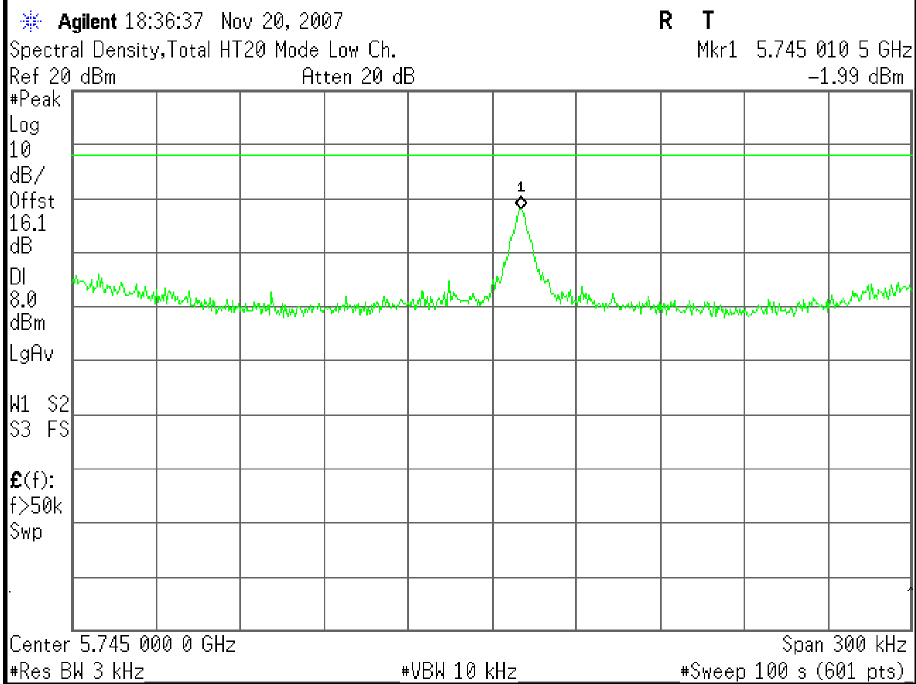


CH High (IEEE 802.11n HT20 mode-Chain 1)

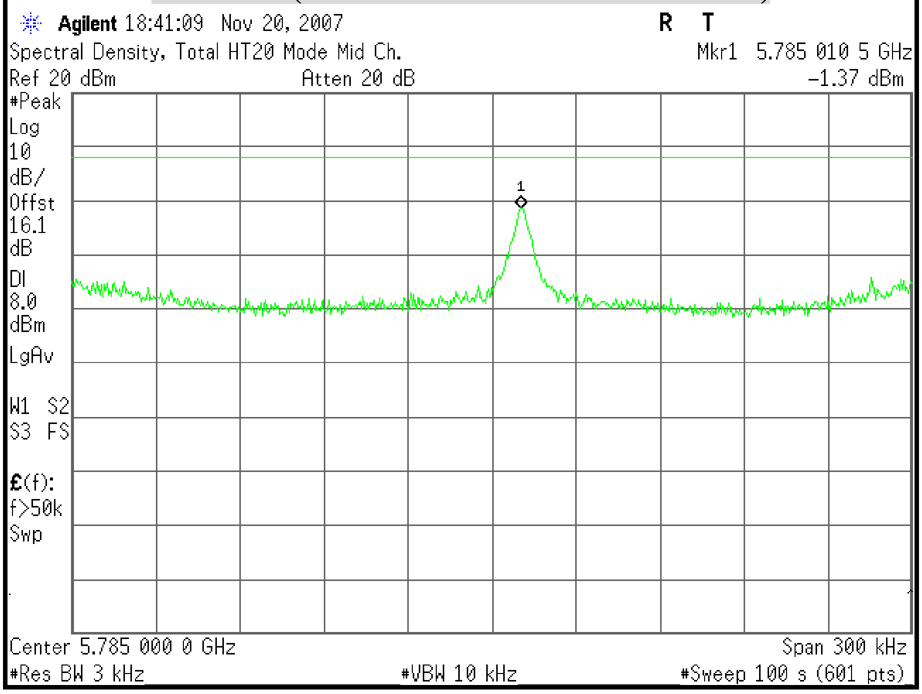


POWER SPECTRAL DENSITY (IEEE 802.11n HT20 Combined mode)

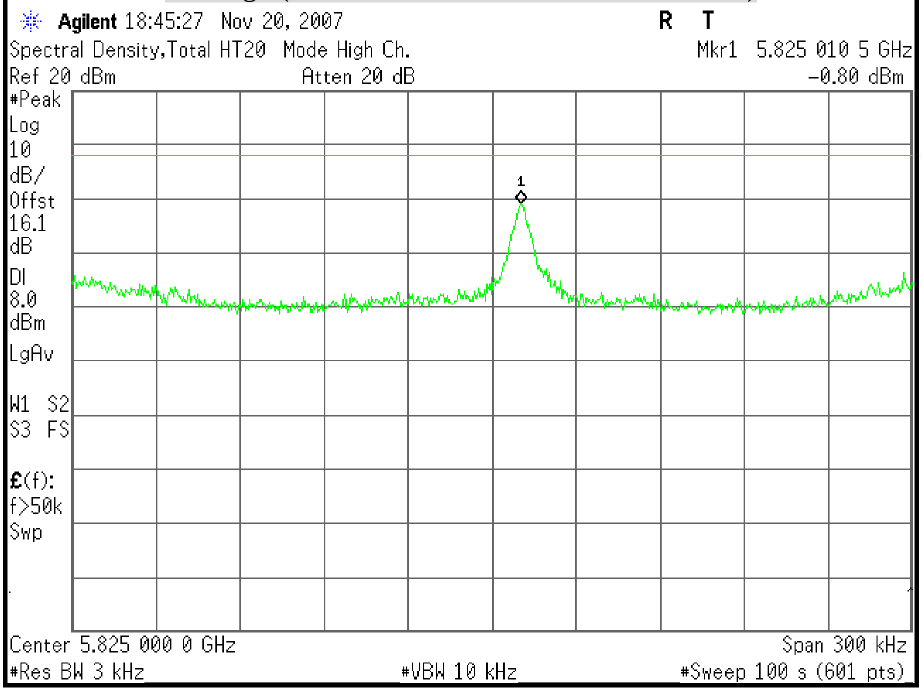
CH Low (IEEE 802.11n HT20 Combined mode)



CH Middle (IEEE 802.11n HT20 Combined mode)

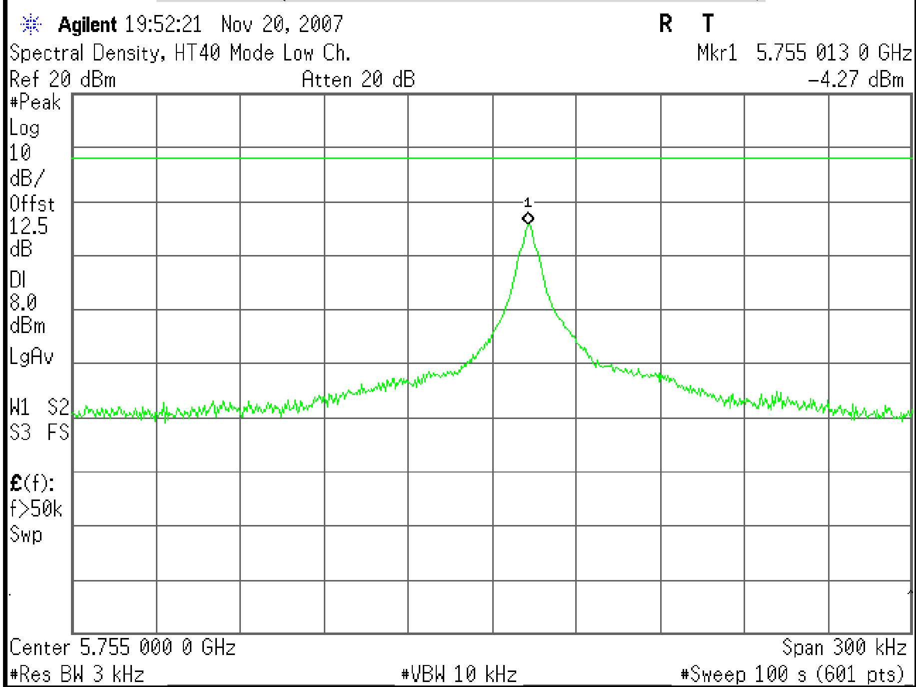


CH High (IEEE 802.11n HT20 Combined mode)

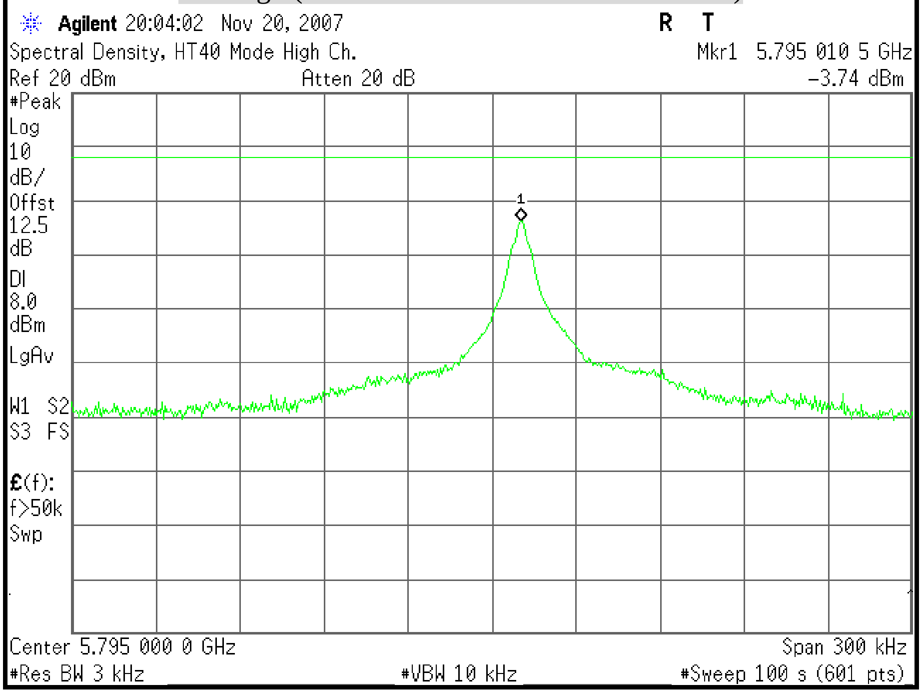


POWER SPECTRAL DENSITY (IEEE 802.11n HT40 mode)

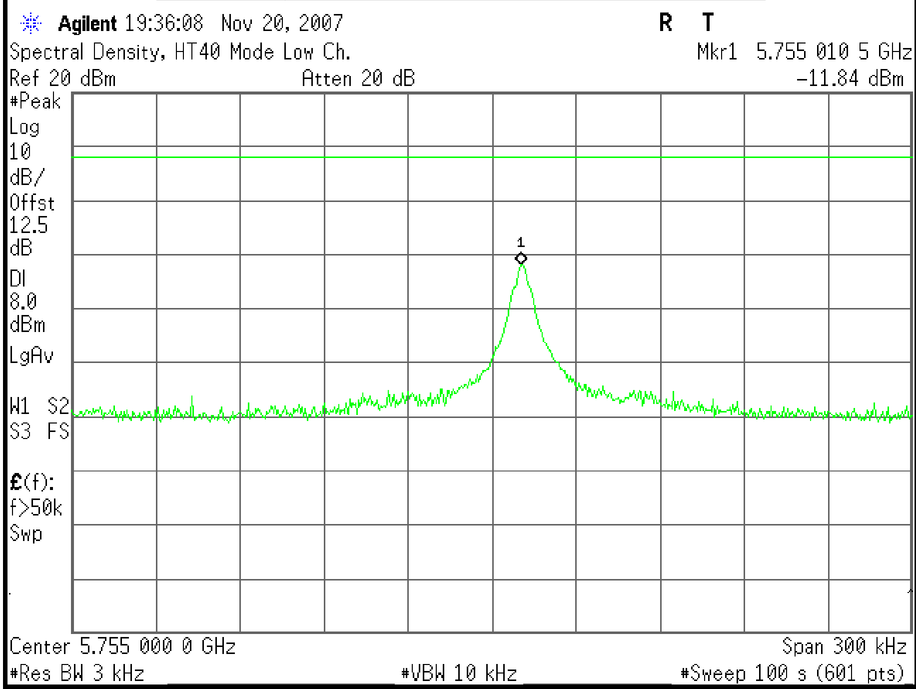
CH Low (IEEE 802.11n HT40 mode-Chain 0)



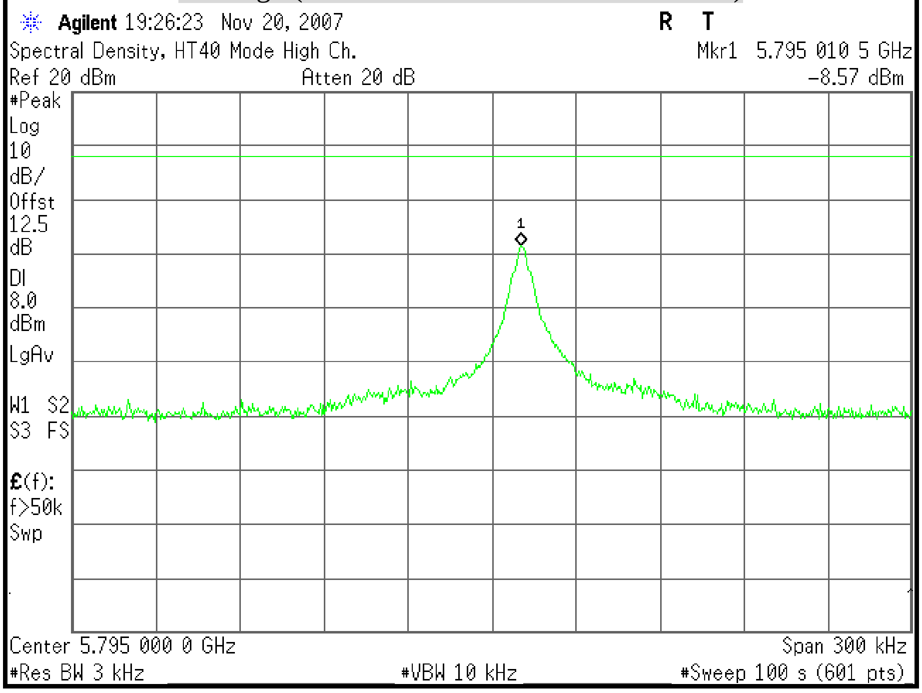
CH High (IEEE 802.11n HT40 mode-Chain 0)



CH Low (IEEE 802.11n HT40 mode-Chain 1)

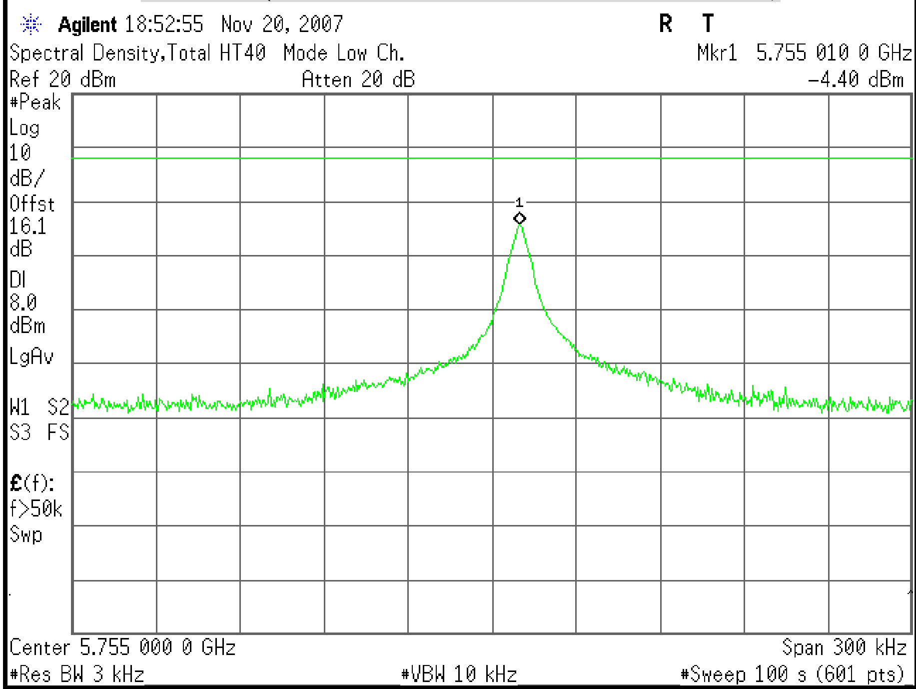


CH High (IEEE 802.11n HT40 mode-Chain 1)

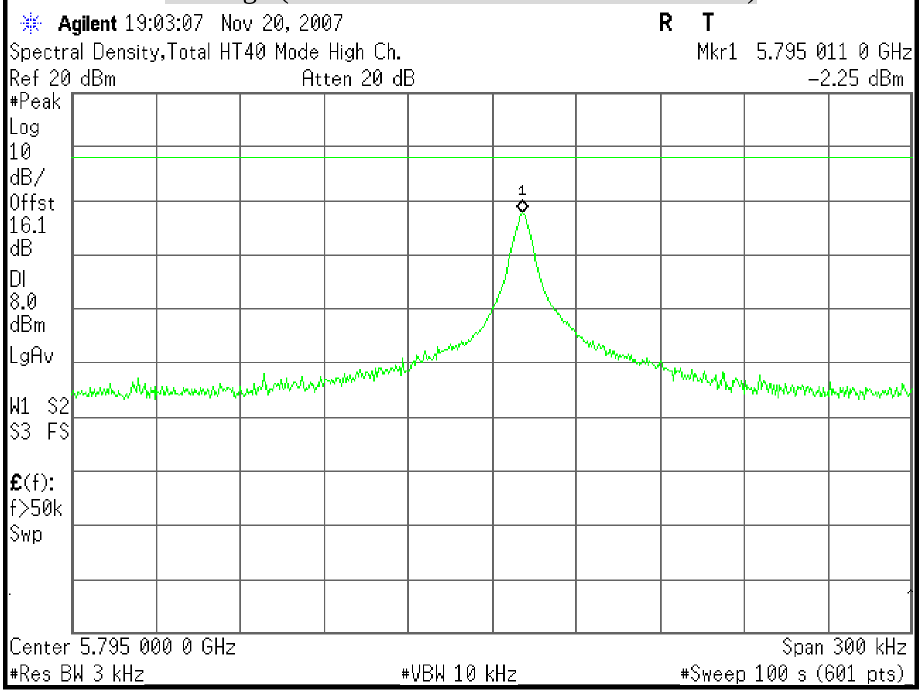


POWER SPECTRAL DENSITY (IEEE 802.11n HT40 Combined mode)

CH Low (IEEE 802.11n HT40 Combined mode)

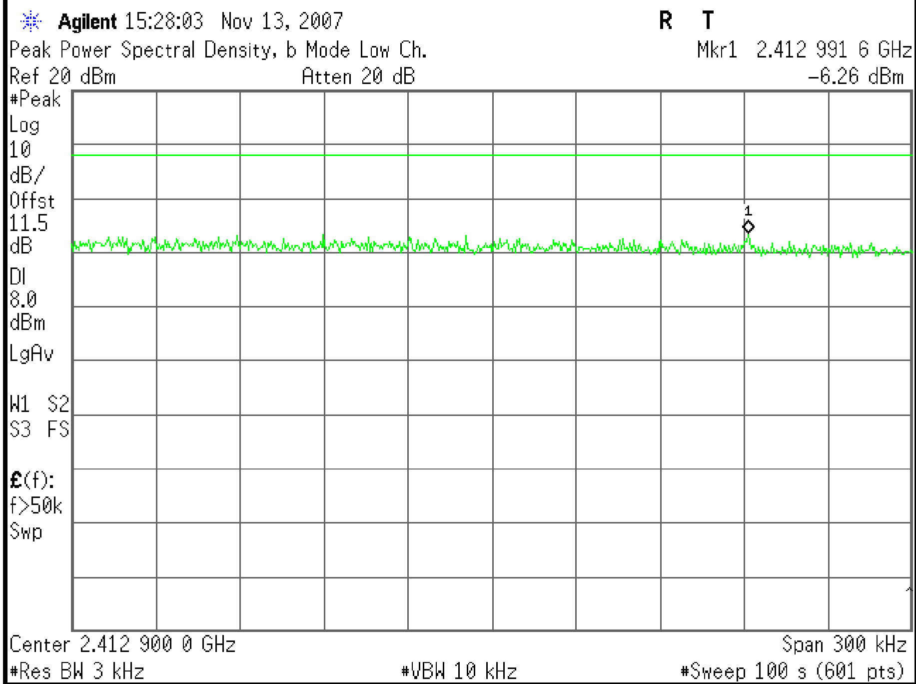


CH High (IEEE 802.11n HT40 Combined mode)

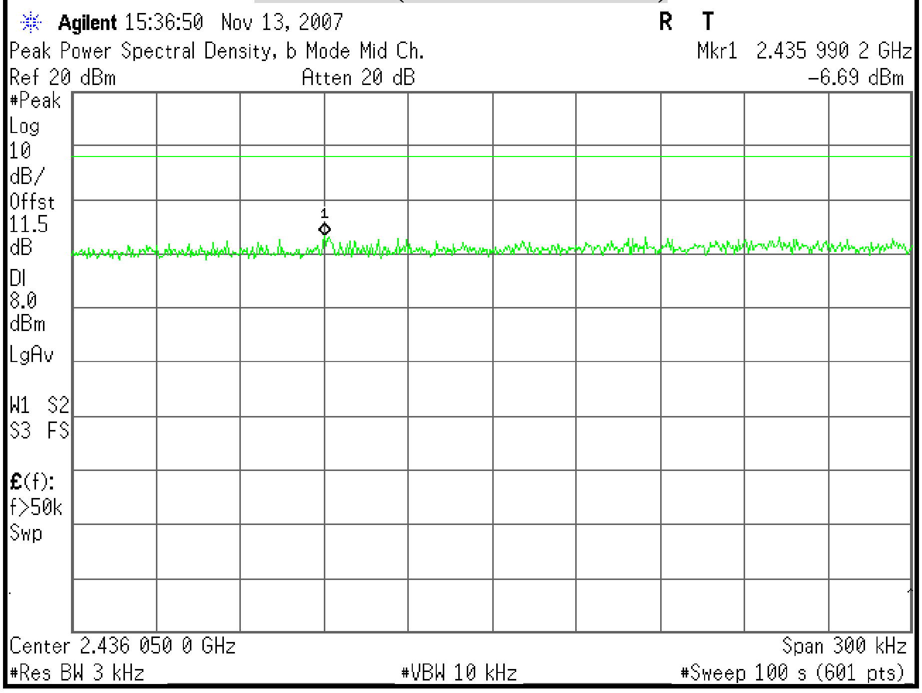


POWER SPECTRAL DENSITY (IEEE 802.11b mode)

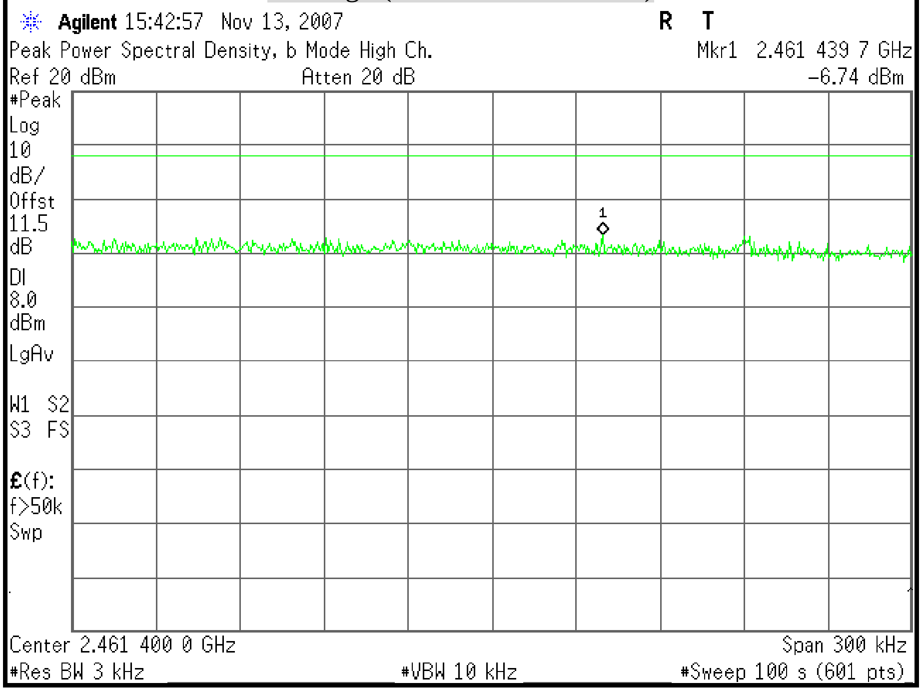
CH Low (IEEE 802.11b mode)



CH Middle (IEEE 802.11b mode)

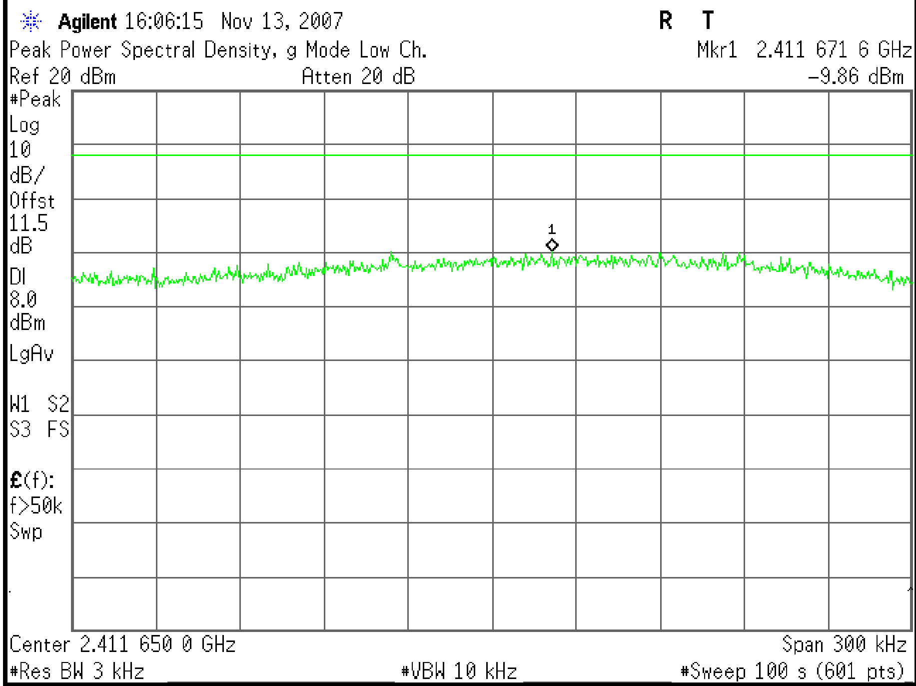


CH High (IEEE 802.11b mode)

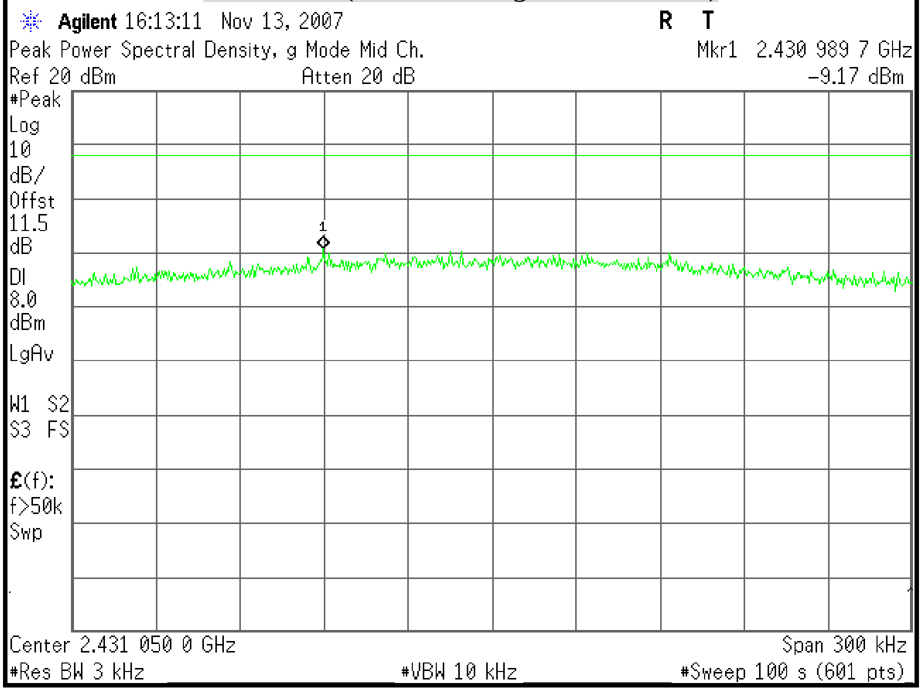


POWER SPECTRAL DENSITY (IEEE 802.11g mode)

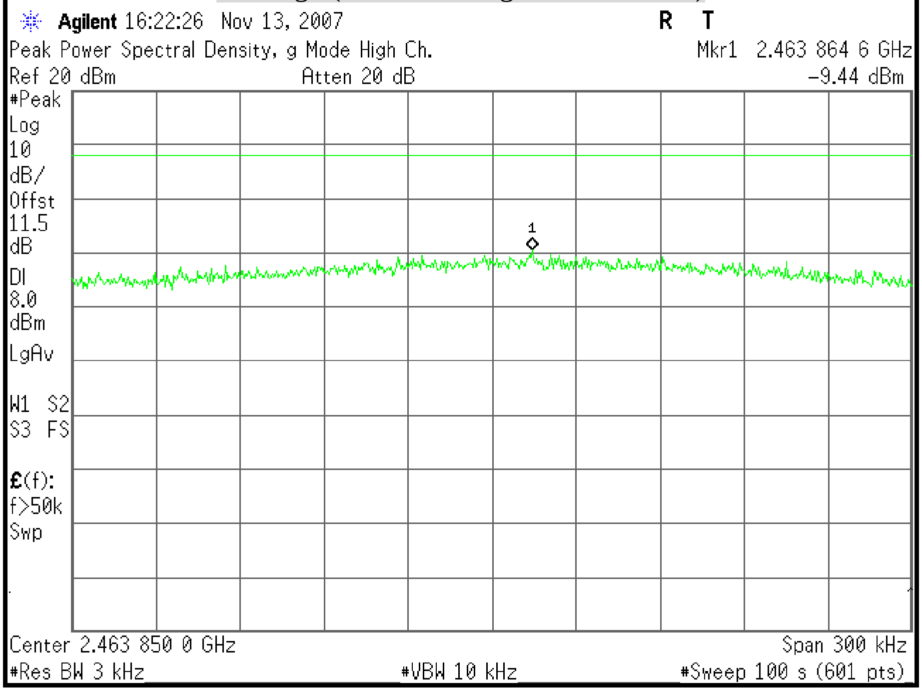
CH Low (IEEE 802.11g mode-Chain 0)



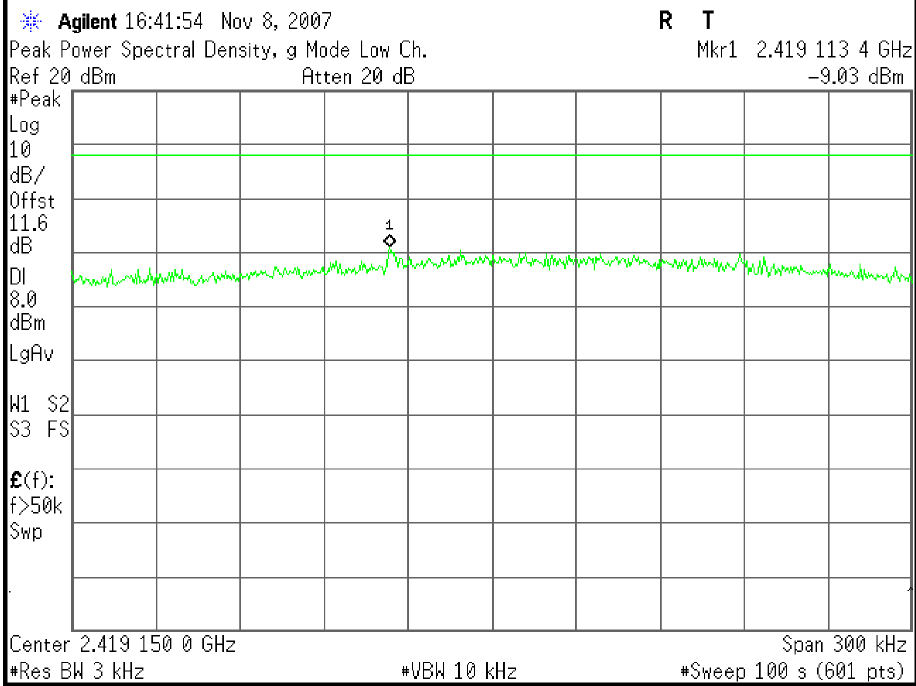
CH Middle (IEEE 802.11g mode-Chain 0)



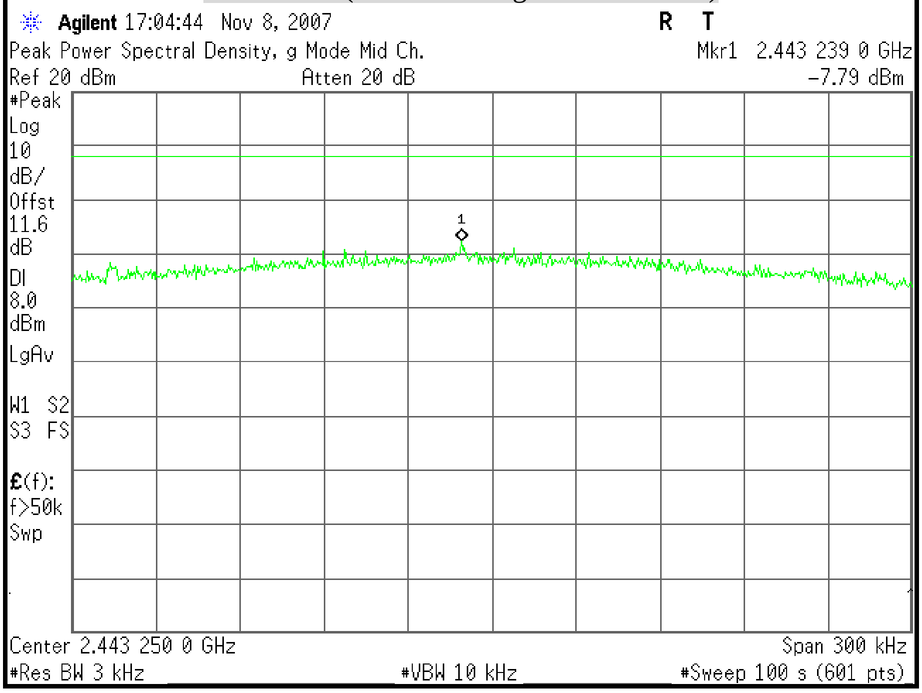
CH High (IEEE 802.11g mode-Chain 0)



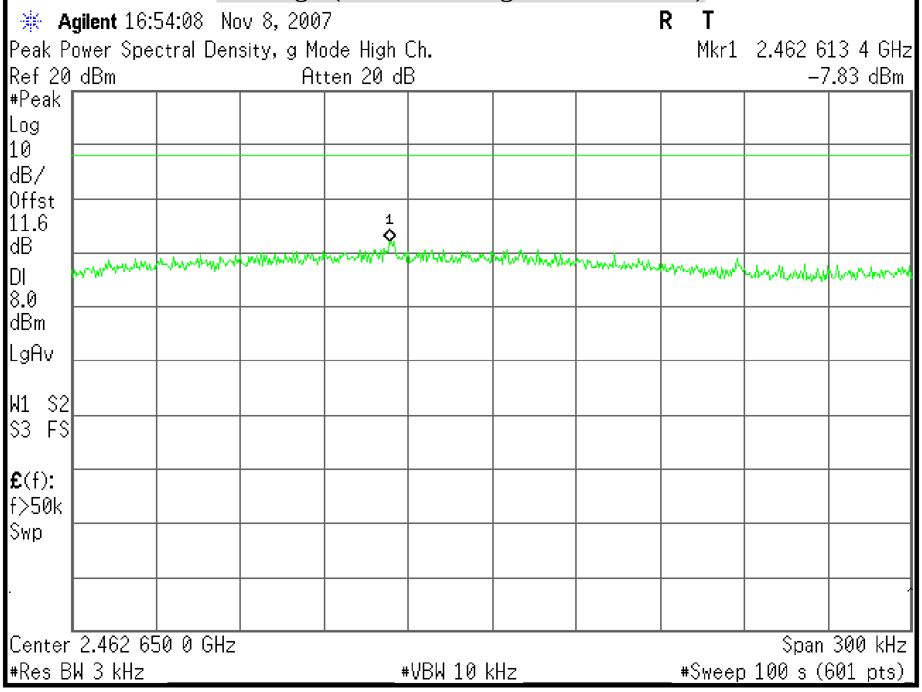
CH Low (IEEE 802.11g mode-Chain 1)



CH Middle (IEEE 802.11g mode-Chain 1)

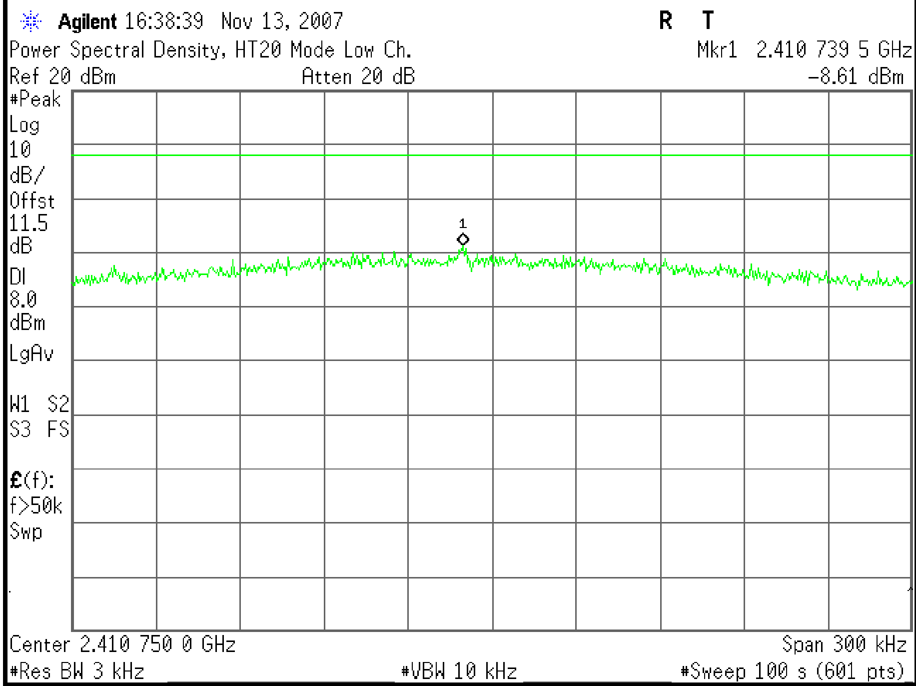


CH High (IEEE 802.11g mode-Chain 1)

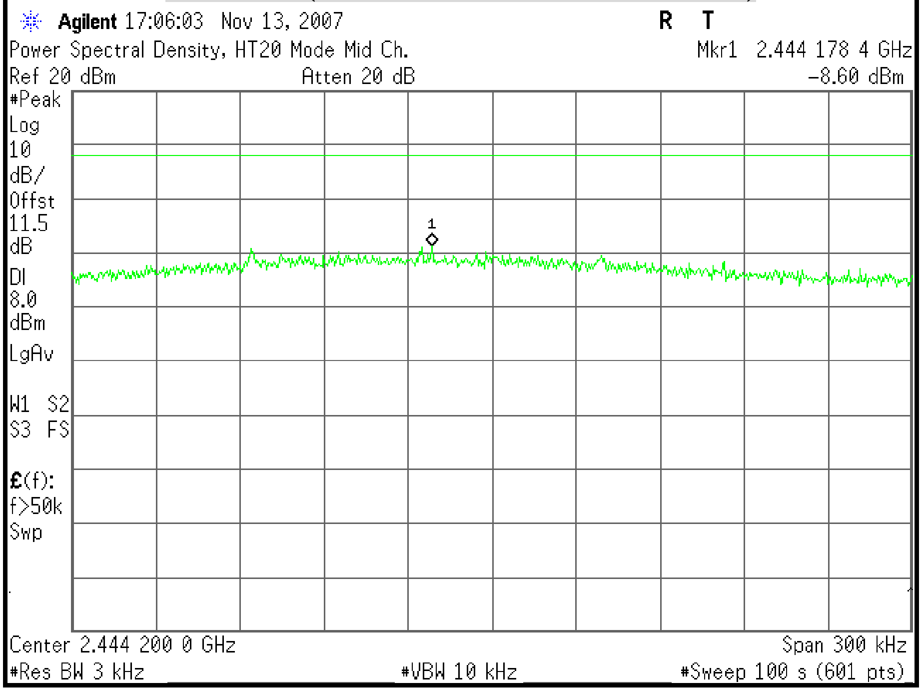


POWER SPECTRAL DENSITY (IEEE 802.11n HT20 mode)

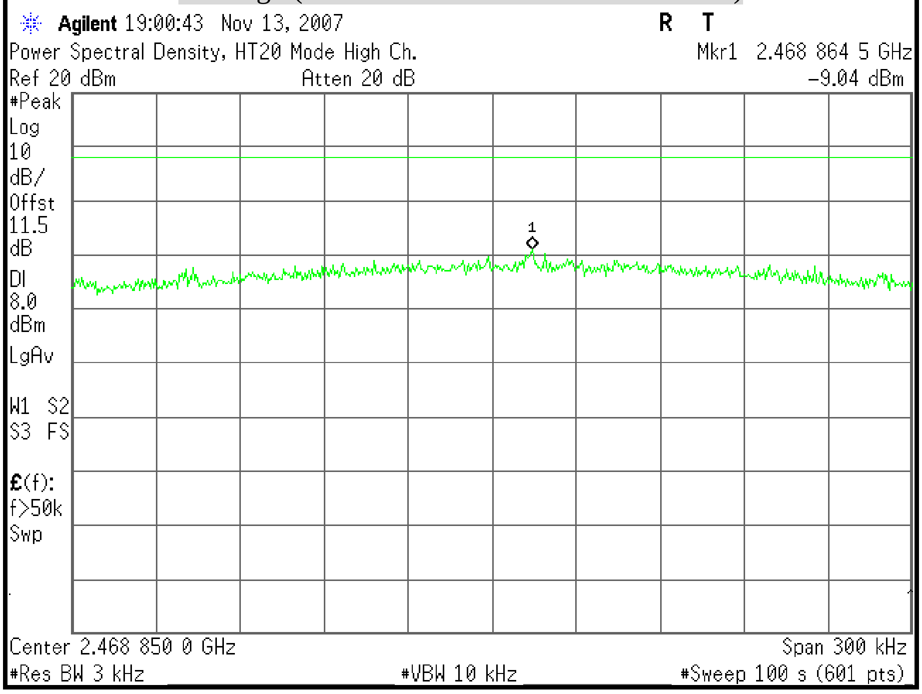
CH Low (IEEE 802.11n HT20 mode-Chain 0)



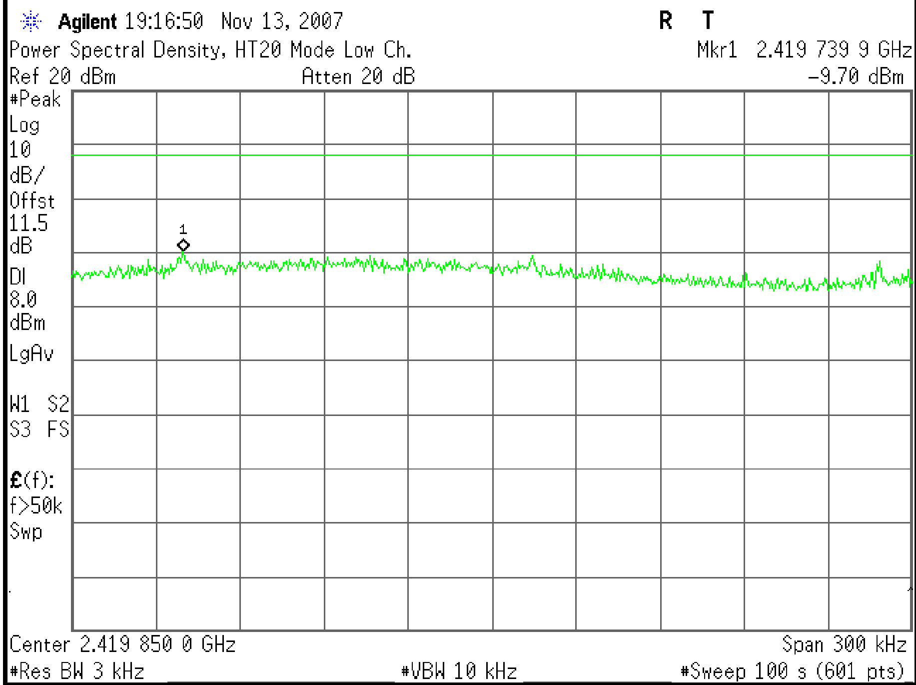
CH Middle (IEEE 802.11n HT20 mode-Chain 0)



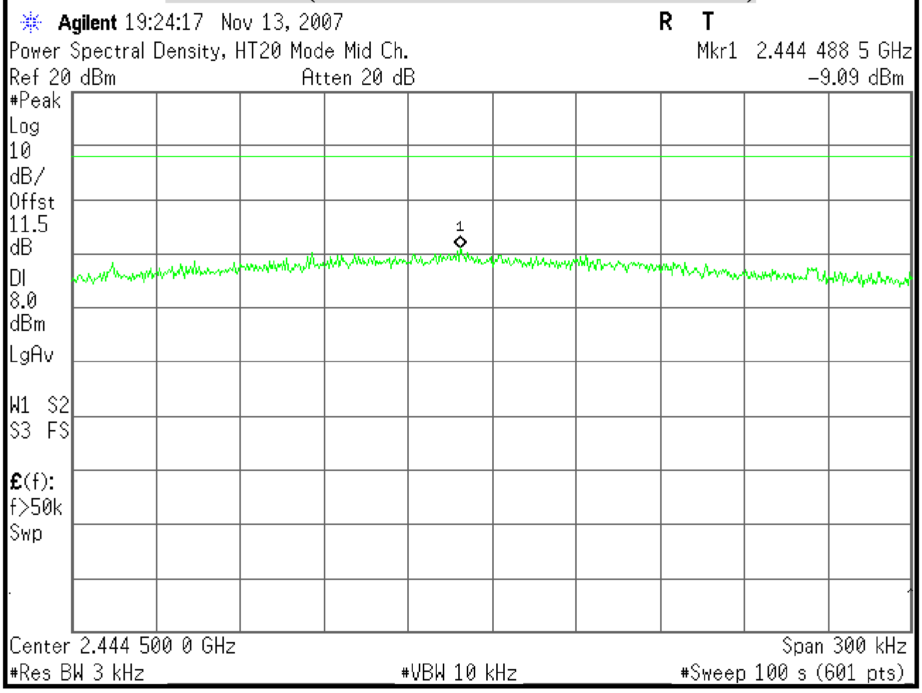
CH High (IEEE 802.11n HT20 mode-Chain 0)



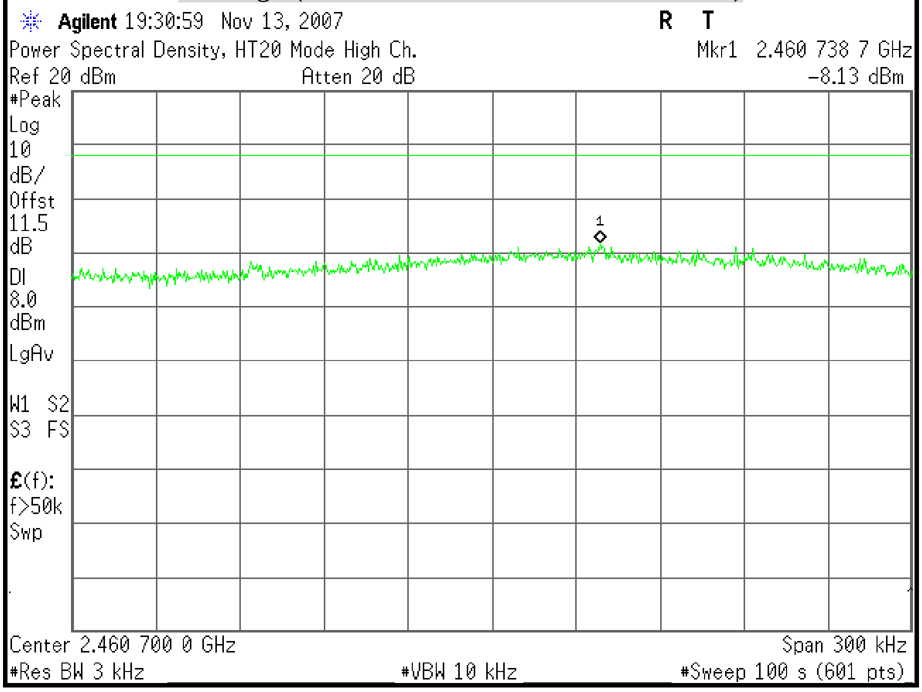
CH Low (IEEE 802.11n HT20 mode-Chain 1)



CH Middle (IEEE 802.11n HT20 mode-Chain 1)

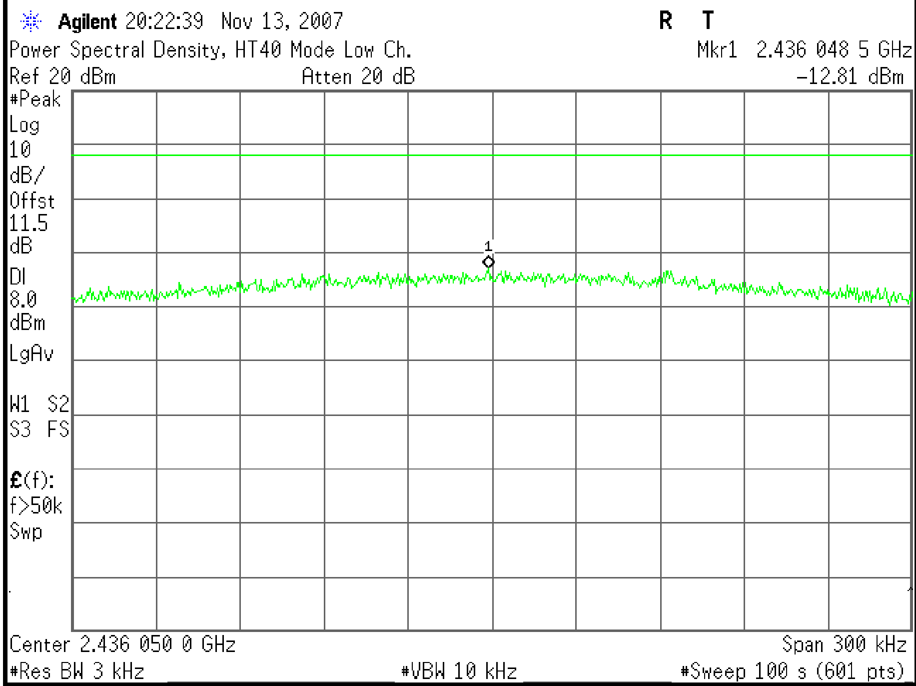


CH High (IEEE 802.11n HT20 mode-Chain 1)

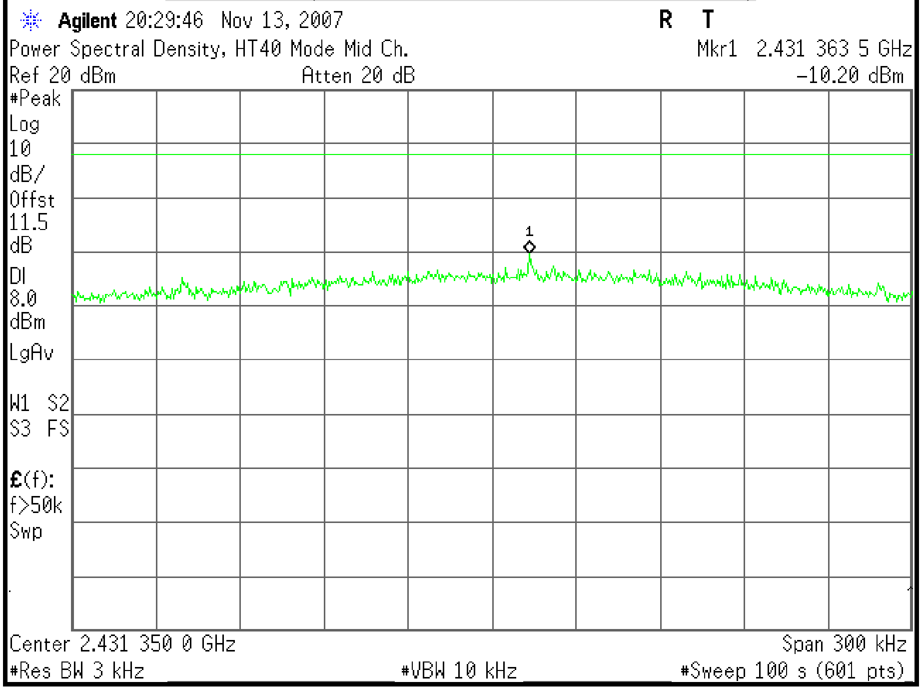


POWER SPECTRAL DENSITY (IEEE 802.11n HT40 mode)

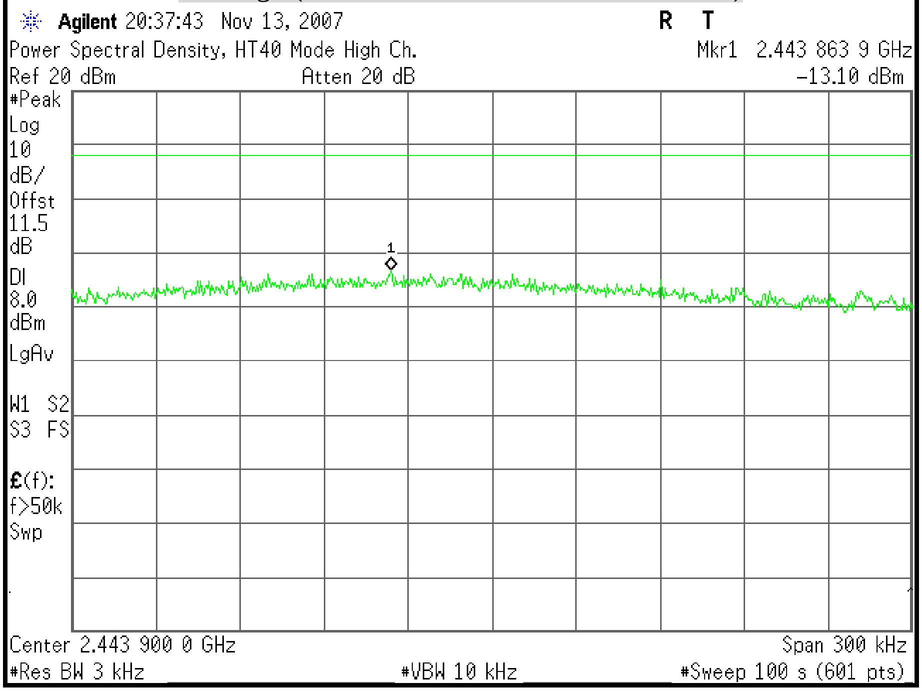
CH Low (IEEE 802.11n HT40 mode-Chain 0)



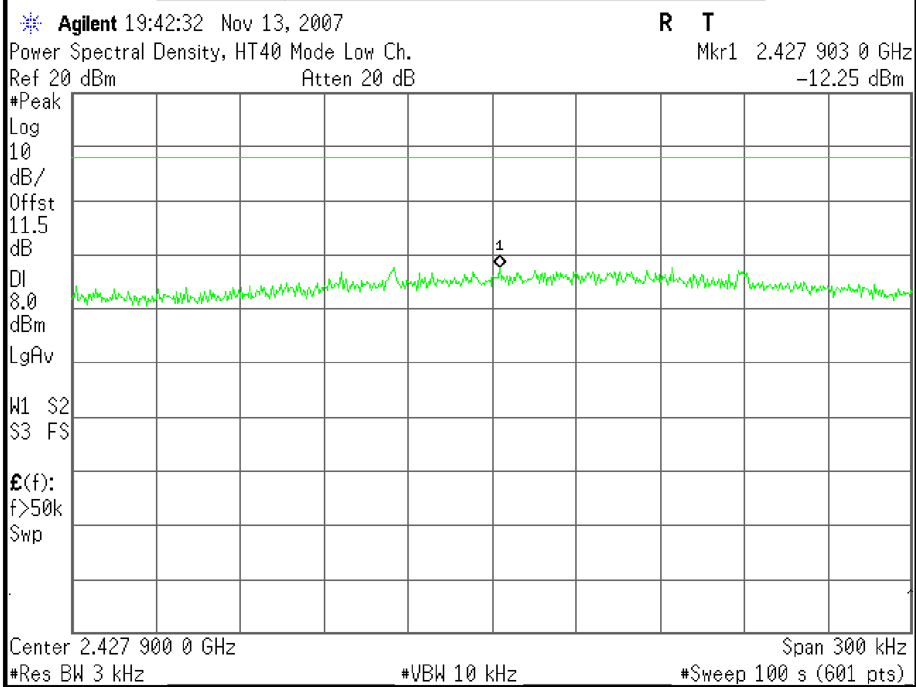
CH Middle (IEEE 802.11n HT40 mode-Chain 0)



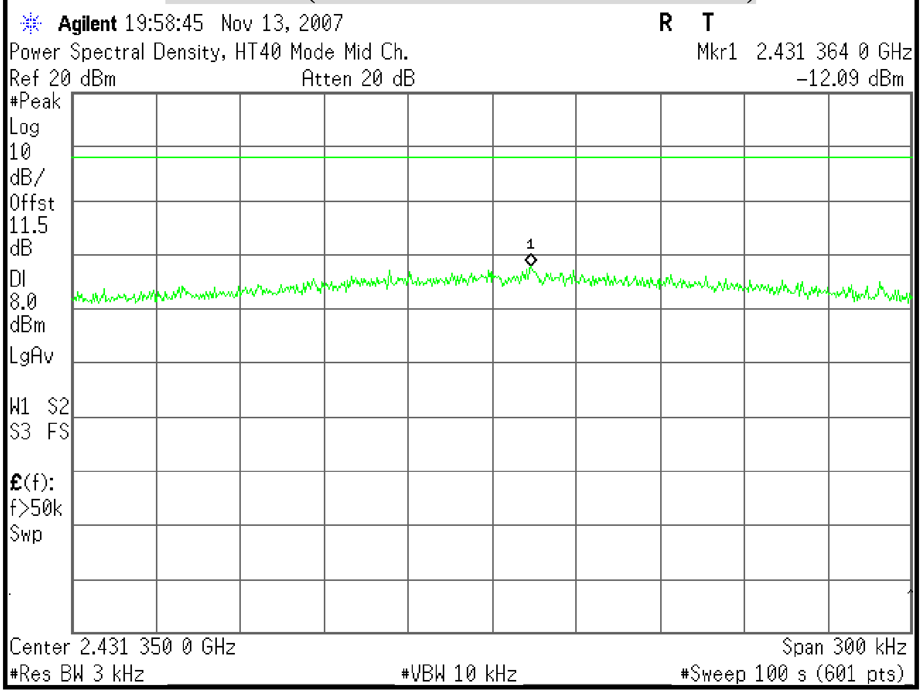
CH High (IEEE 802.11n HT40 mode-Chain 0)



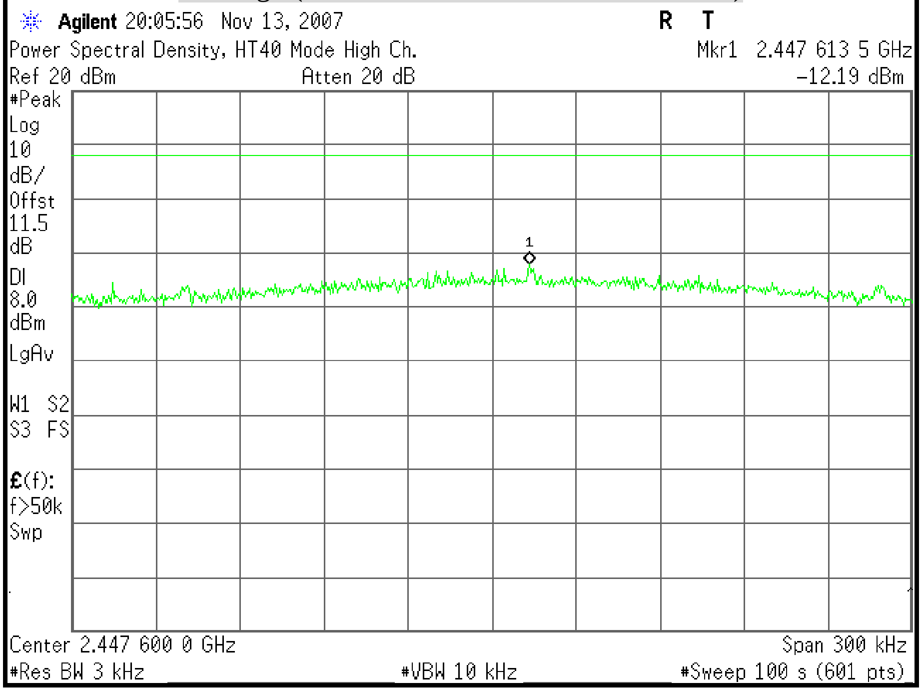
CH Low (IEEE 802.11n HT40 mode-Chain 1)



CH Middle (IEEE 802.11n HT40 mode-Chain 1)



CH High (IEEE 802.11n HT40 mode-Chain 1)



8.5 CONDUCTED SPURIOUS EMISSION

LIMITS

§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the and that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

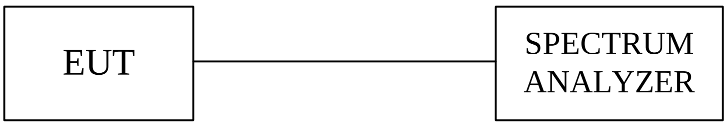
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 5.8 GHz band.

TEST SETUP



Combined mode

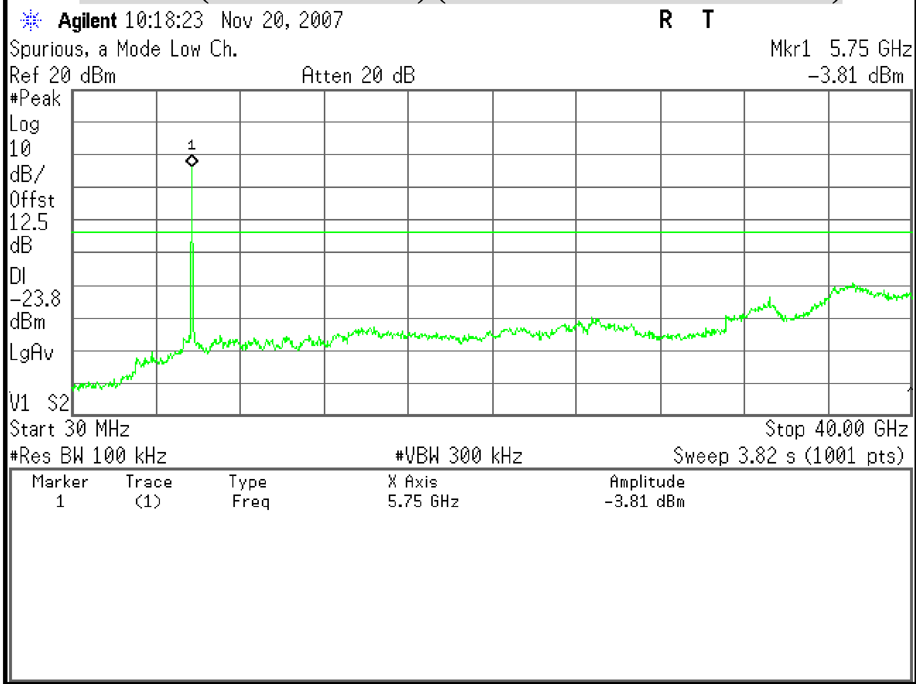
TEST RESULTS

No non-compliance noted

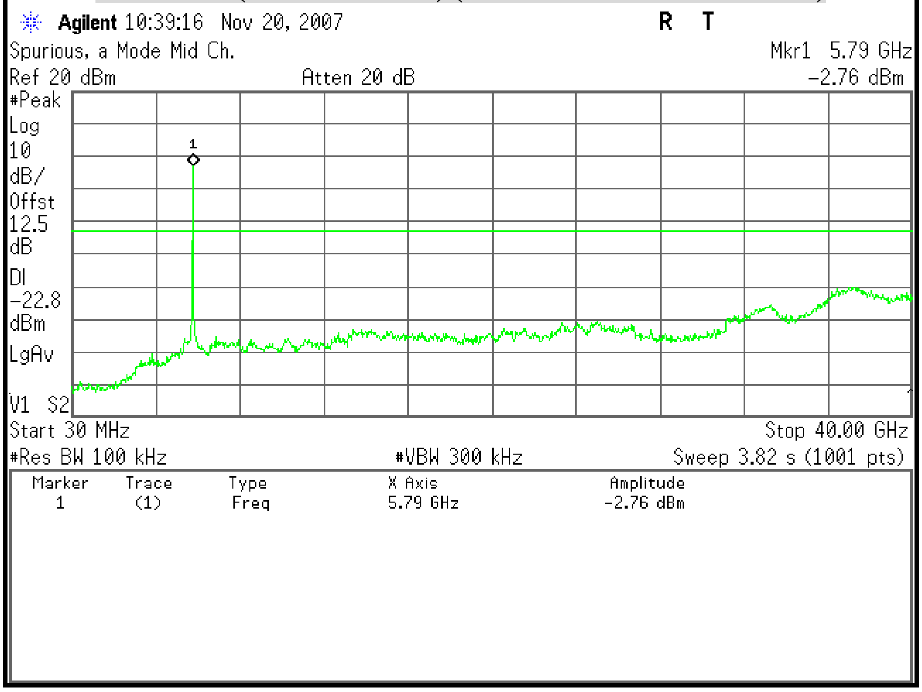
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11a mode)

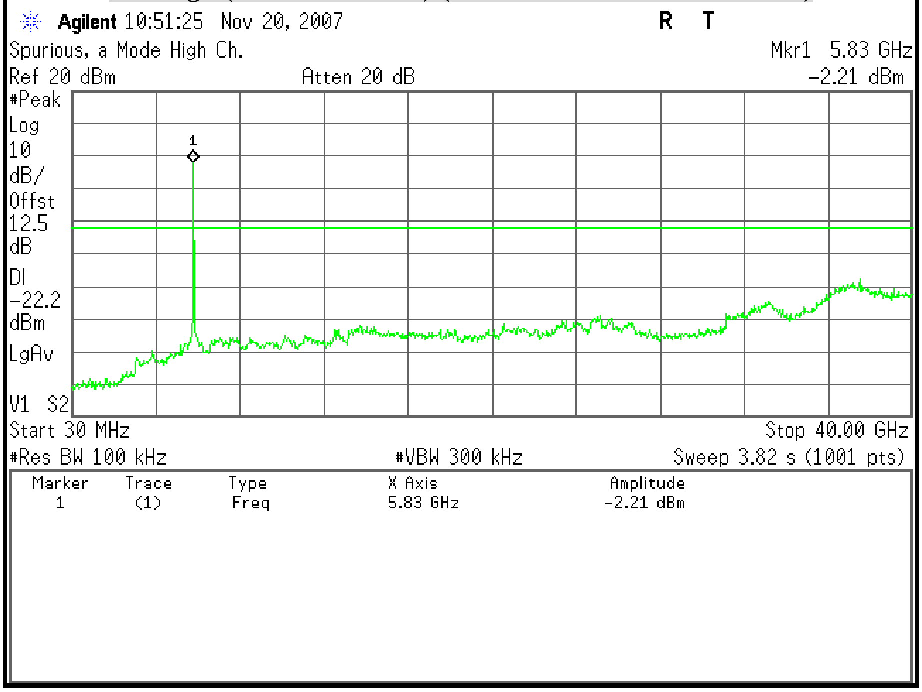
CH Low (30MHz~40GHz) (IEEE 802.11a mode-Chain 0)



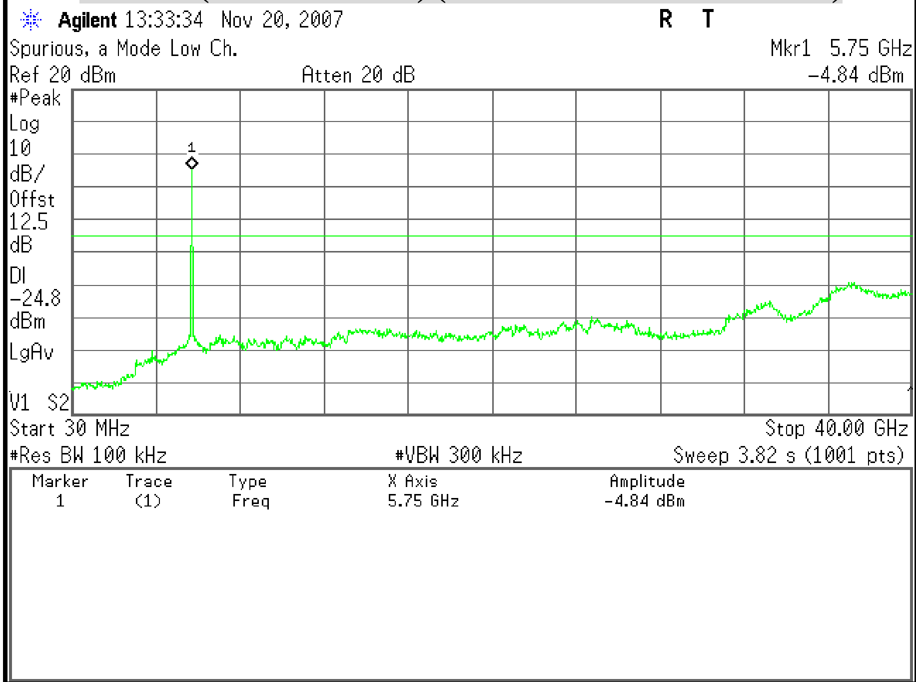
CH Middle (30MHz~40GHz) (IEEE 802.11a mode-Chain 0)



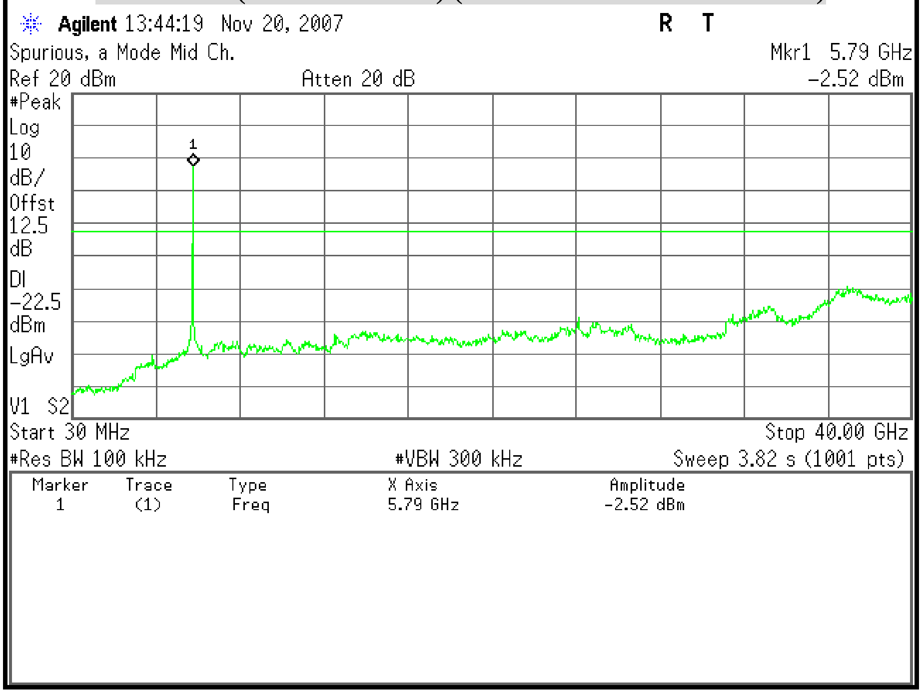
CH High (30MHz~40GHz) (IEEE 802.11a mode-Chain 0)



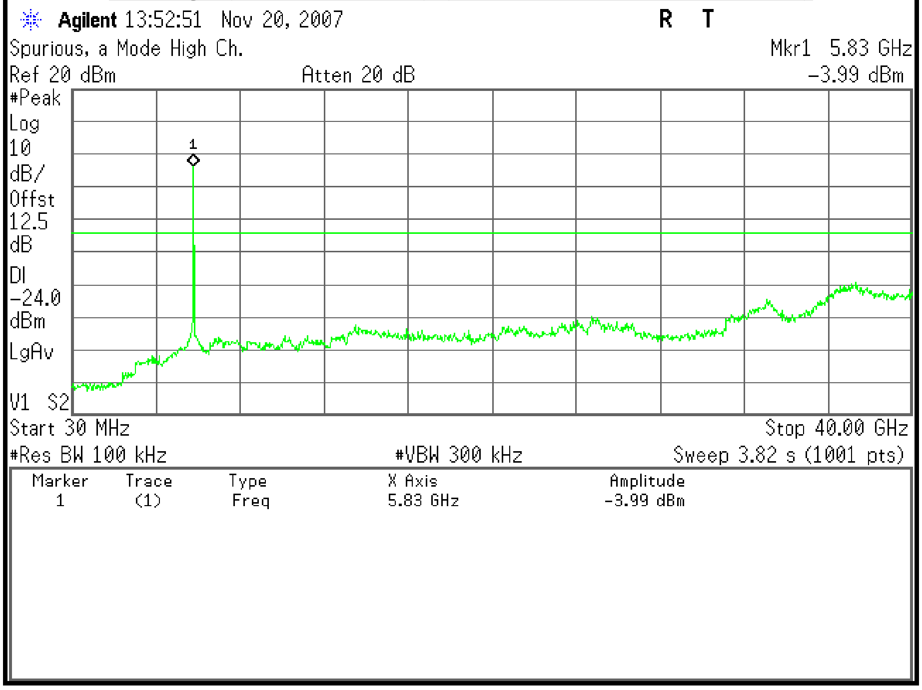
CH Low (30MHz~40GHz) (IEEE 802.11a mode-Chain 1)



CH Middle (30MHz~40GHz) (IEEE 802.11a mode-Chain 1)



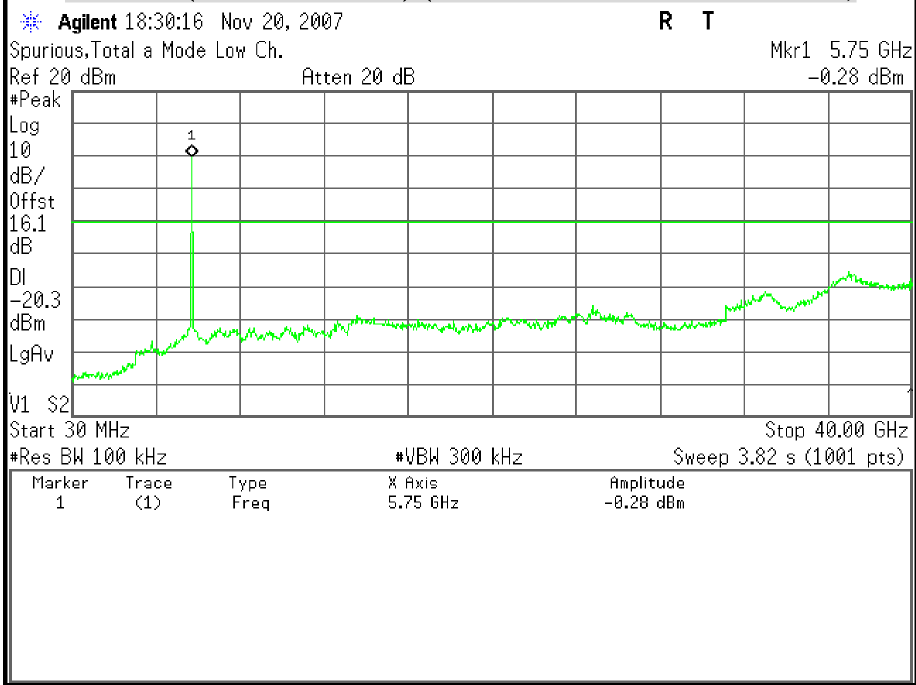
CH High (30MHz~40GHz) (IEEE 802.11a mode-Chain 1)



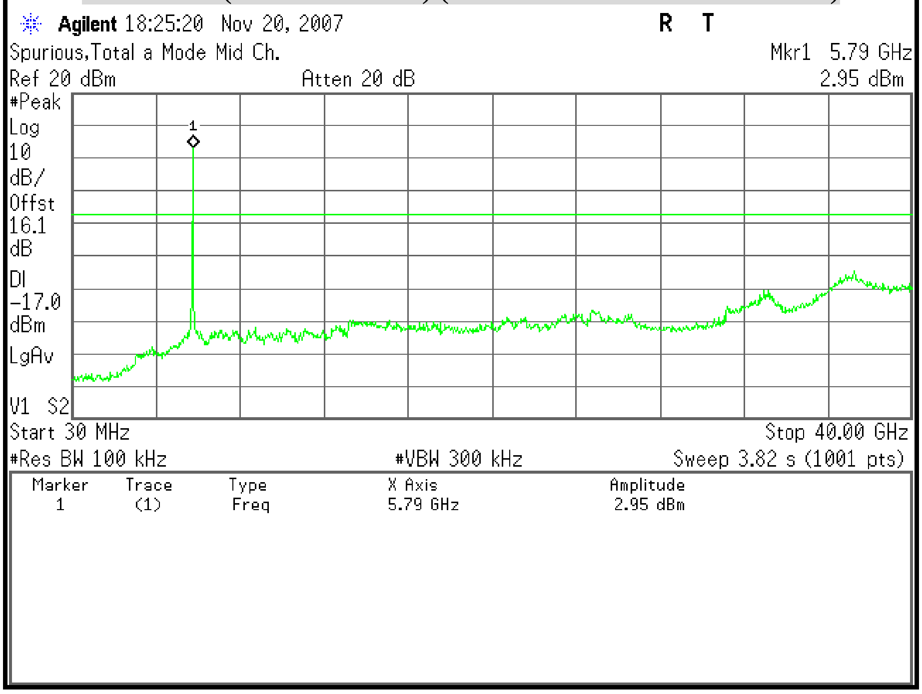
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11a Combined mode)

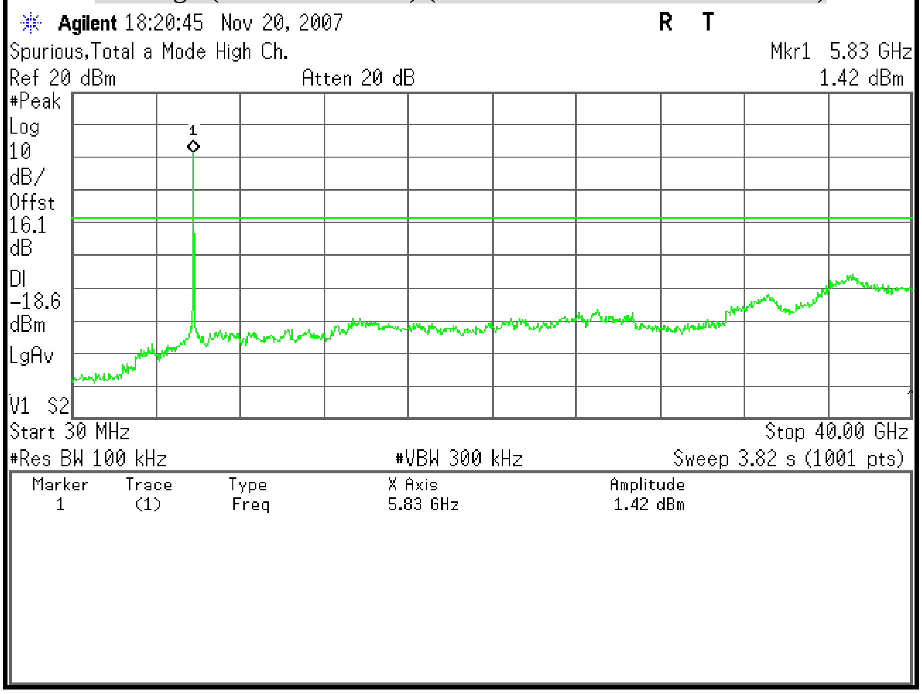
CH Low (30MHz~40GHz) (IEEE 802.11a Combined mode)



CH Middle (30MHz~40GHz) (IEEE 802.11a Combined mode)



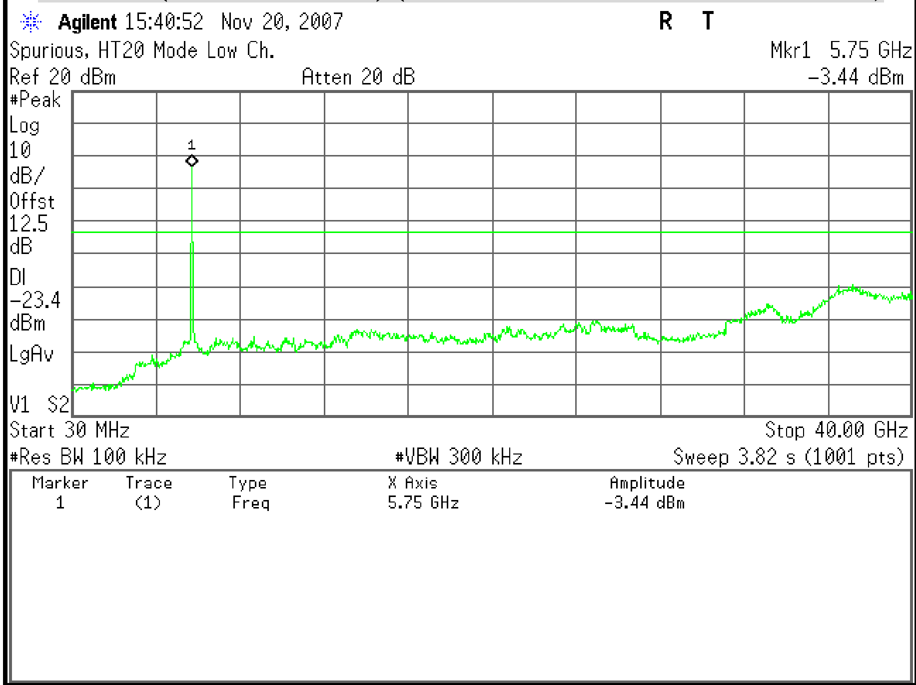
CH High (30MHz~40GHz) (IEEE 802.11a Combined mode)



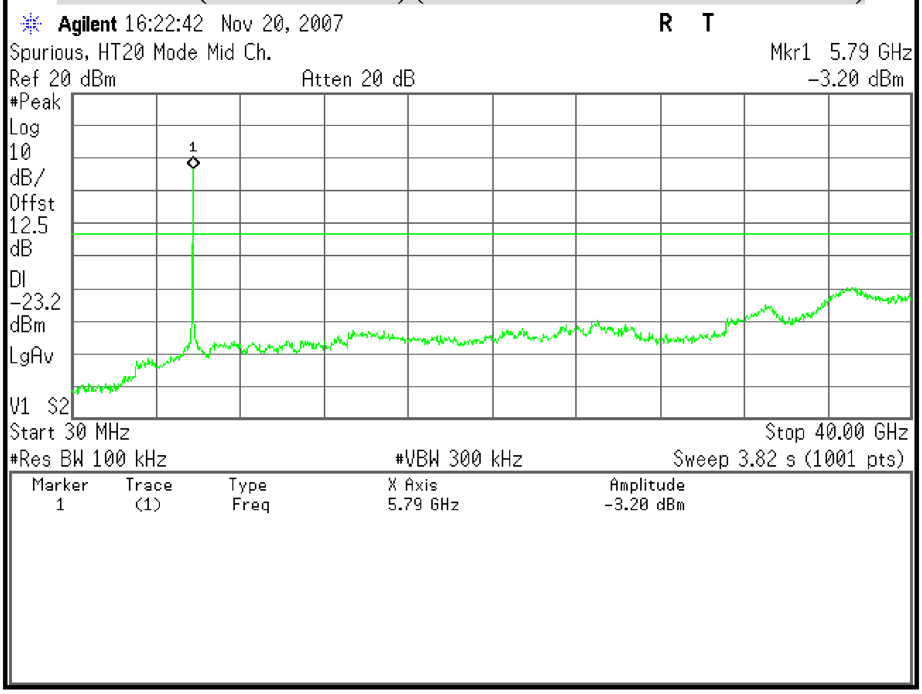
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11n HT20 mode)

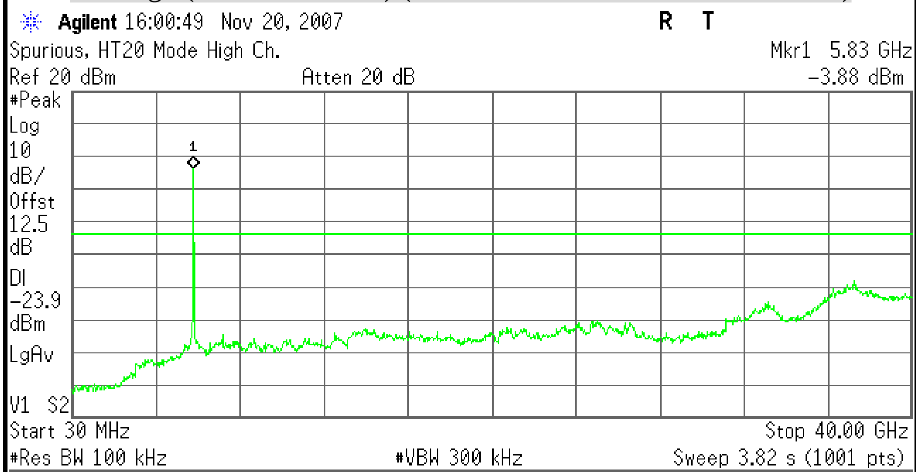
CH Low (30MHz~40GHz) (IEEE 802.11n HT20 mode-Chain 0)



CH Middle (30MHz~40GHz) (IEEE 802.11n HT20 mode-Chain 0)

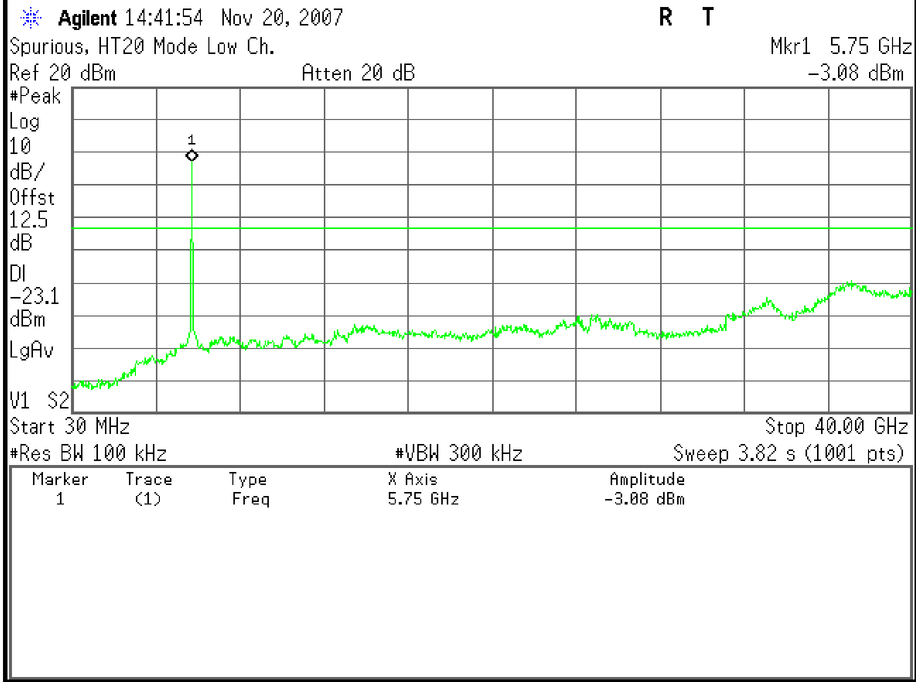


CH High (30MHz~40GHz) (IEEE 802.11n HT20 mode-Chain 0)

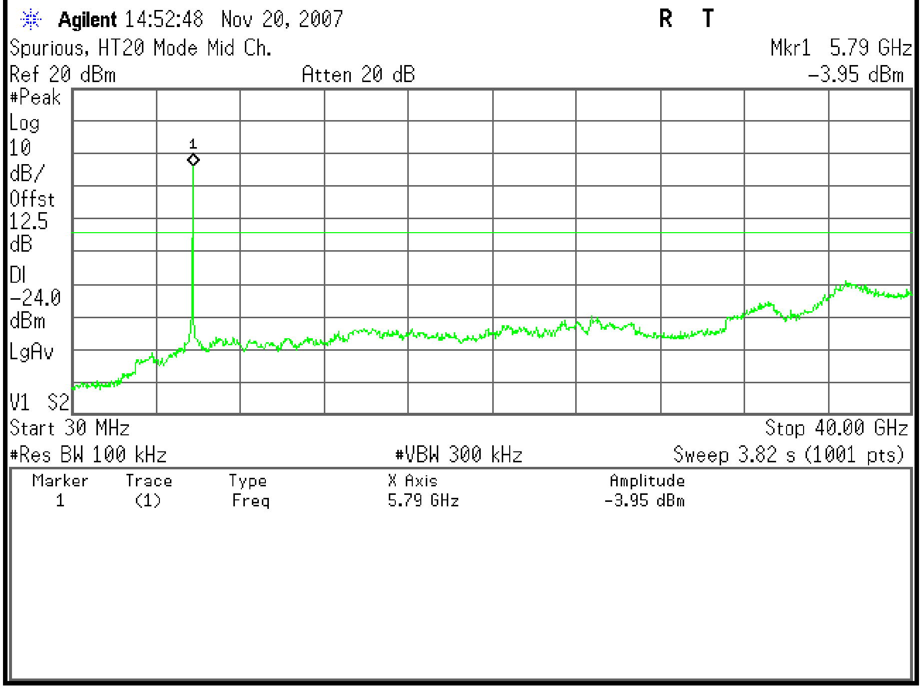


Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	5.83 GHz	-3.88 dBm

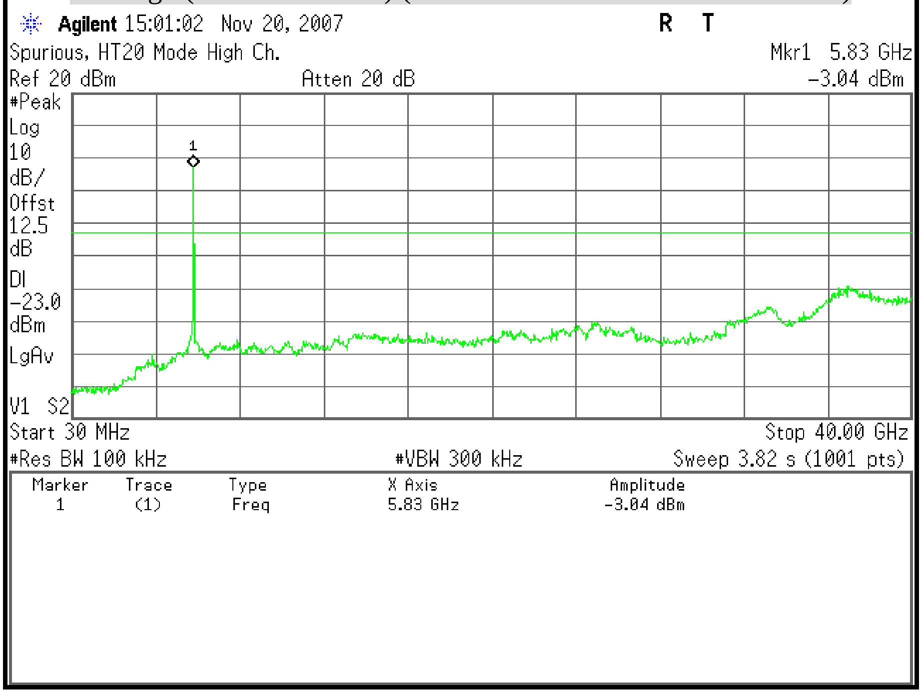
CH Low (30MHz~40GHz) (IEEE 802.11n HT20 mode-Chain 1)



CH Middle (30MHz~40GHz) (IEEE 802.11n HT20 mode-Chain 1)



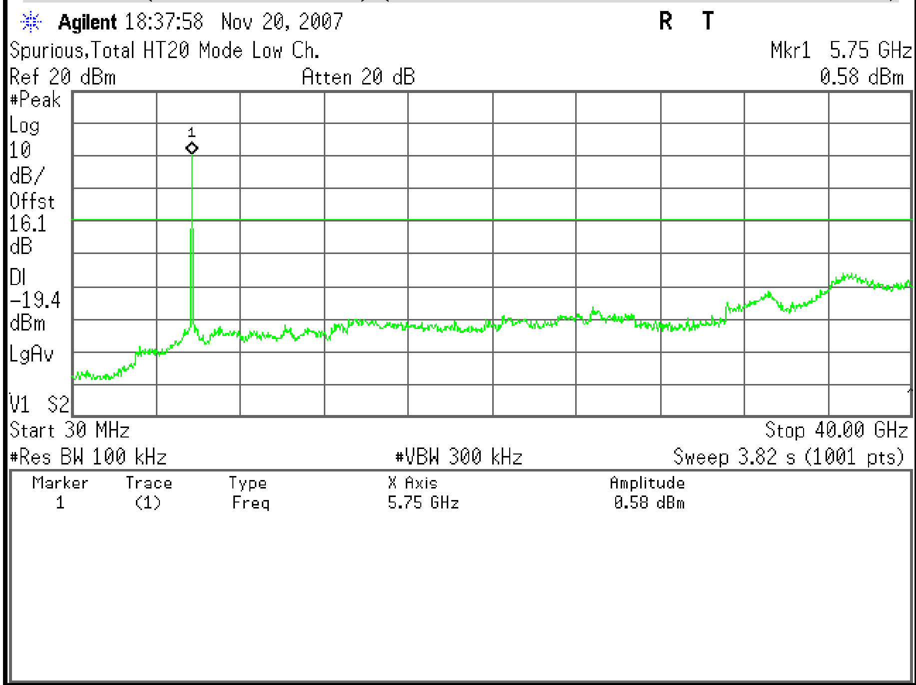
CH High (30MHz~40GHz) (IEEE 802.11n HT20 mode-Chain 1)



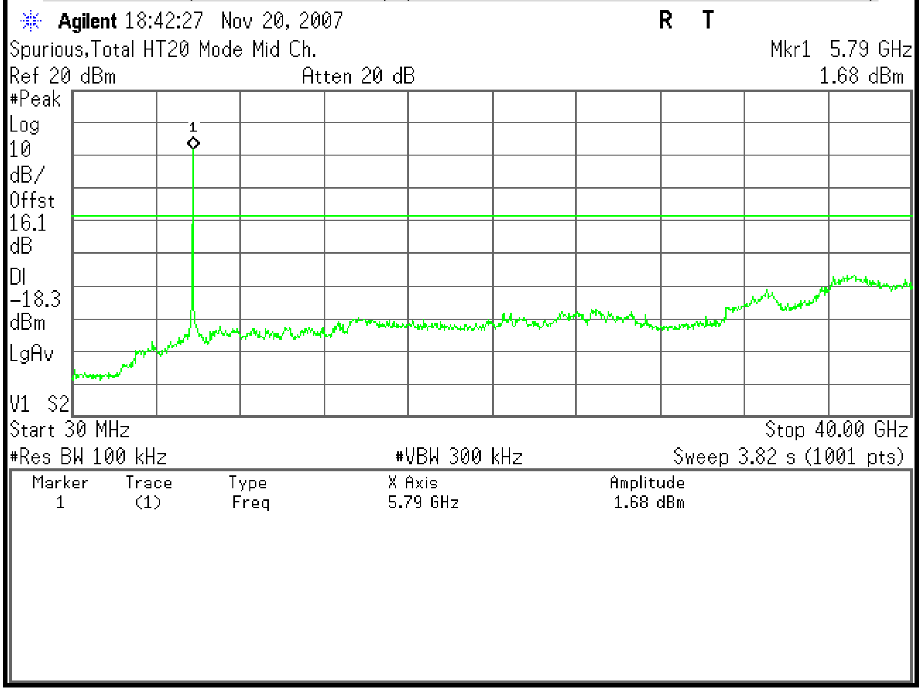
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11n HT20 Combined mode)

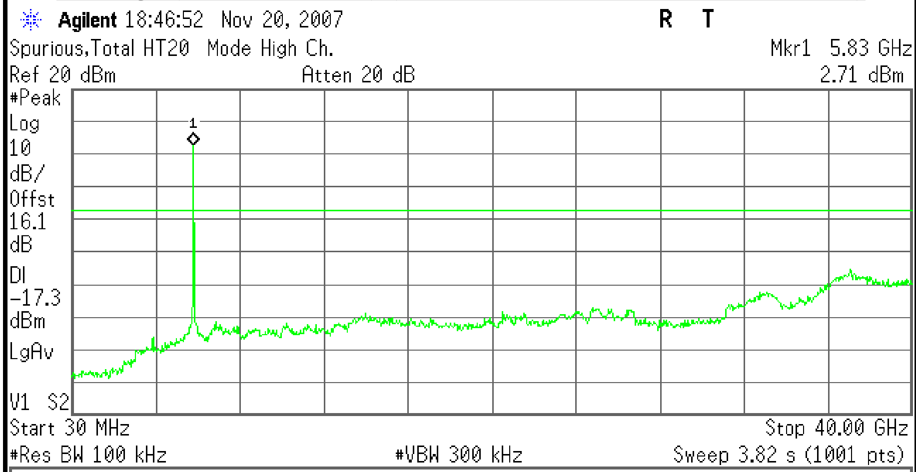
CH Low (30MHz~40GHz) (IEEE 802.11n HT20 Combined mode)



CH Middle (30MHz~40GHz) (IEEE 802.11n HT20 Combined mode)



CH High (30MHz~40GHz) (IEEE 802.11n HT20 Combined mode)

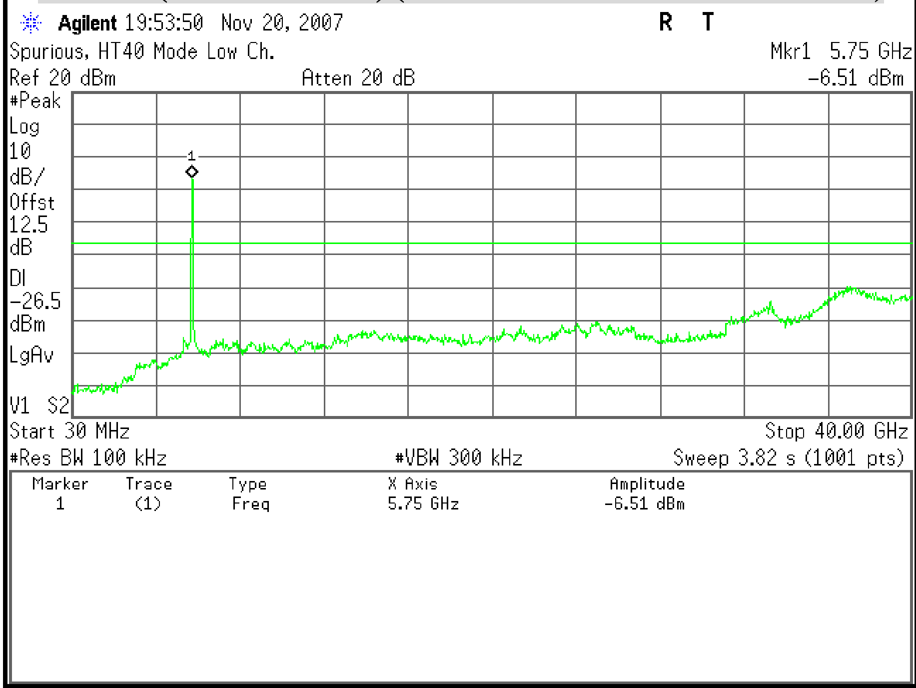


Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	5.83 GHz	2.71 dBm

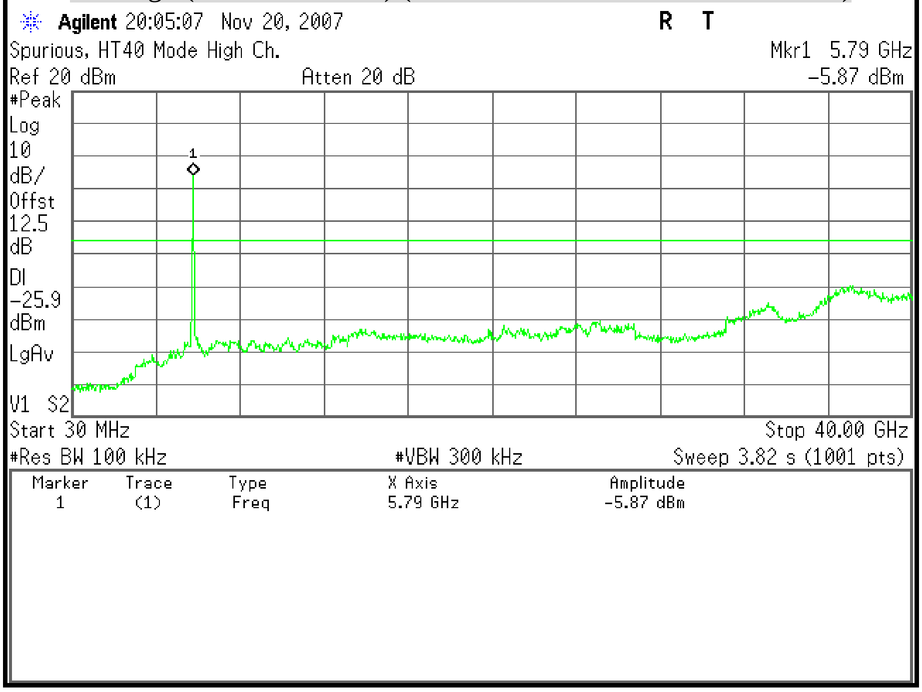
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11n HT40 mode)

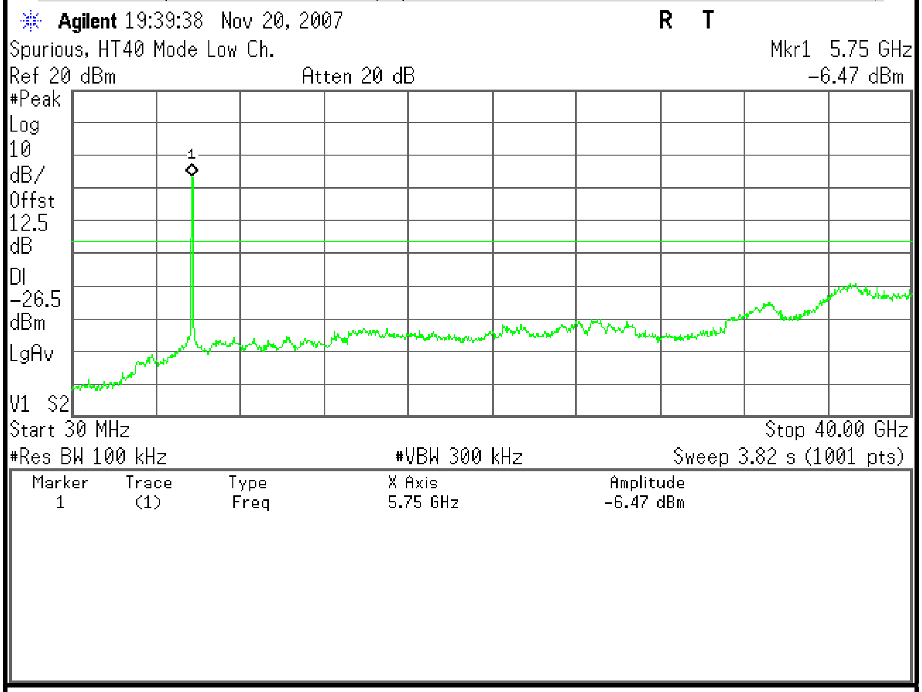
CH Low (30MHz~40GHz) (IEEE 802.11n HT40 mode-Chain 0)



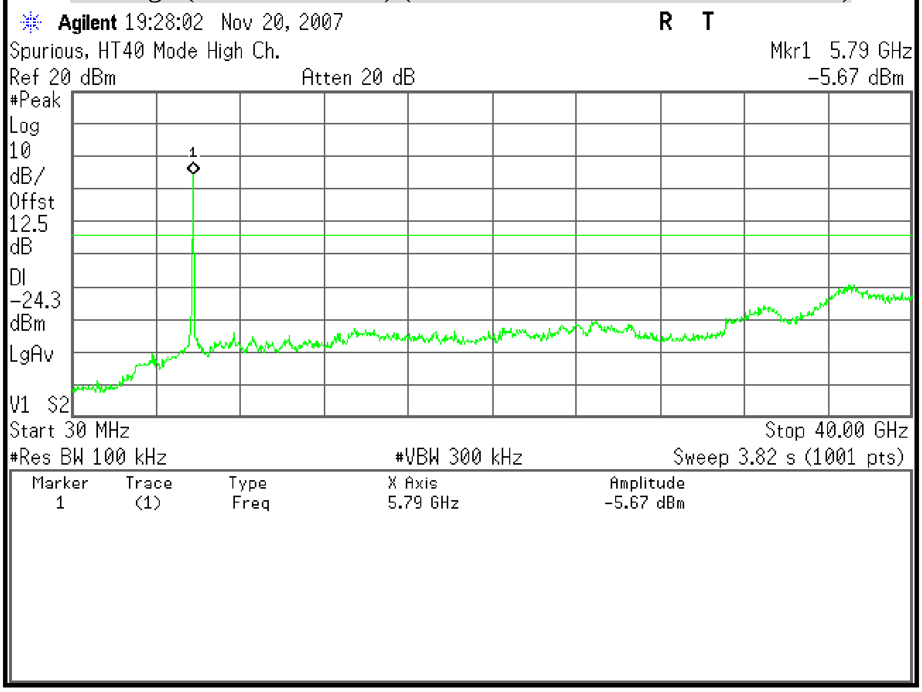
CH High (30MHz~40GHz) (IEEE 802.11n HT40 mode-Chain 0)



CH Low (30MHz~40GHz) (IEEE 802.11n HT40 mode-Chain 1)



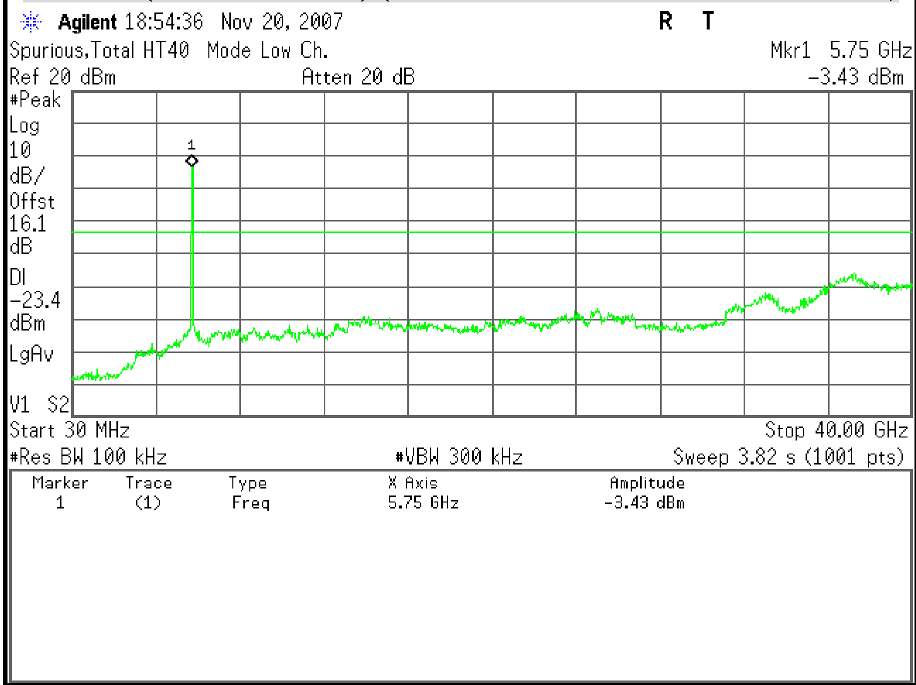
CH High (30MHz~40GHz) (IEEE 802.11n HT40 mode-Chain 1)



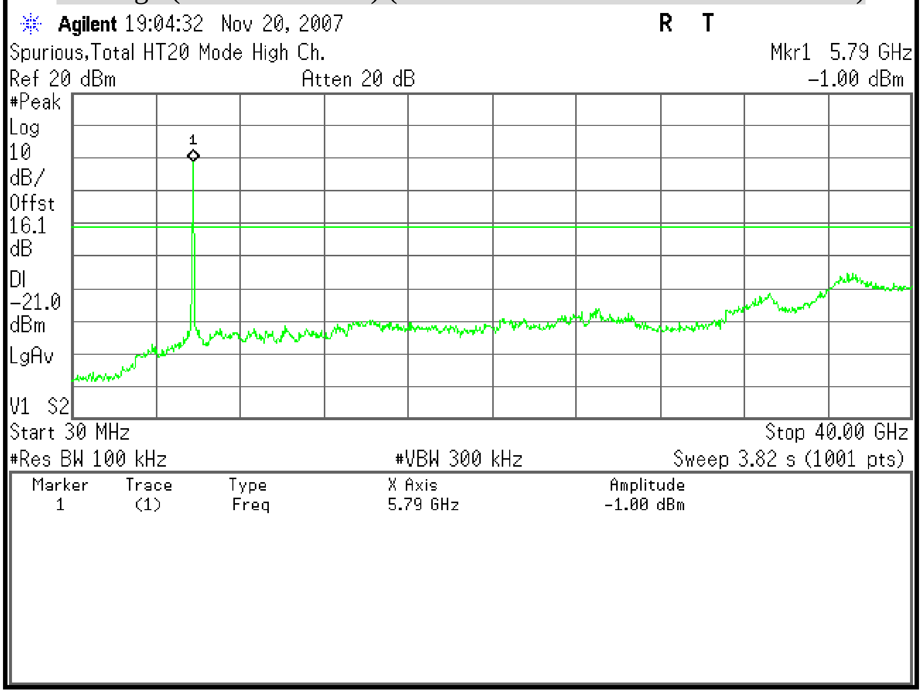
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11n HT40 Combined mode)

CH Low (30MHz~40GHz) (IEEE 802.11n HT40 Combined mode)



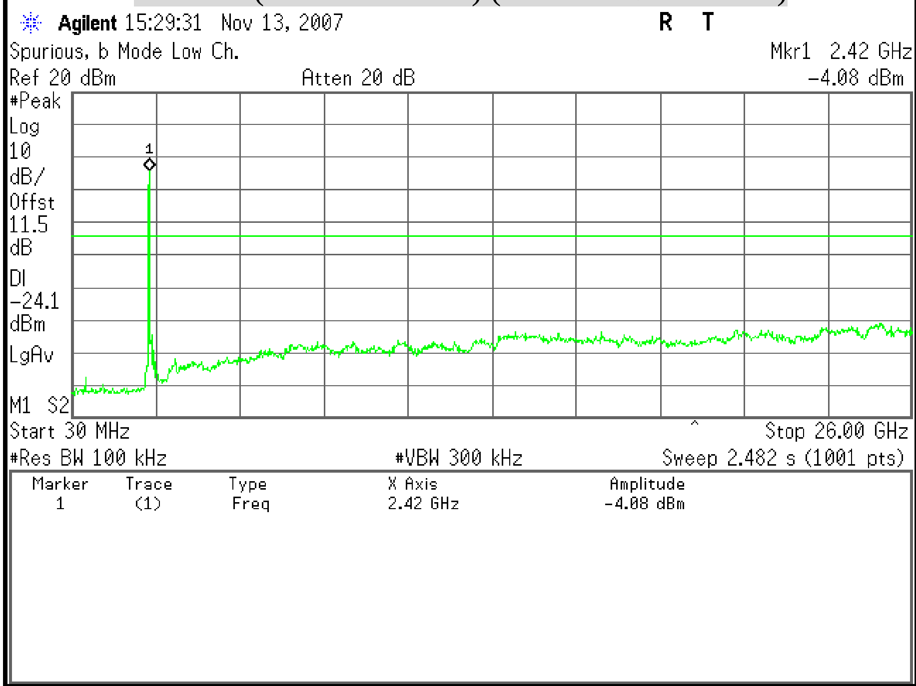
CH High (30MHz~40GHz) (IEEE 802.11n HT40 Combined mode)



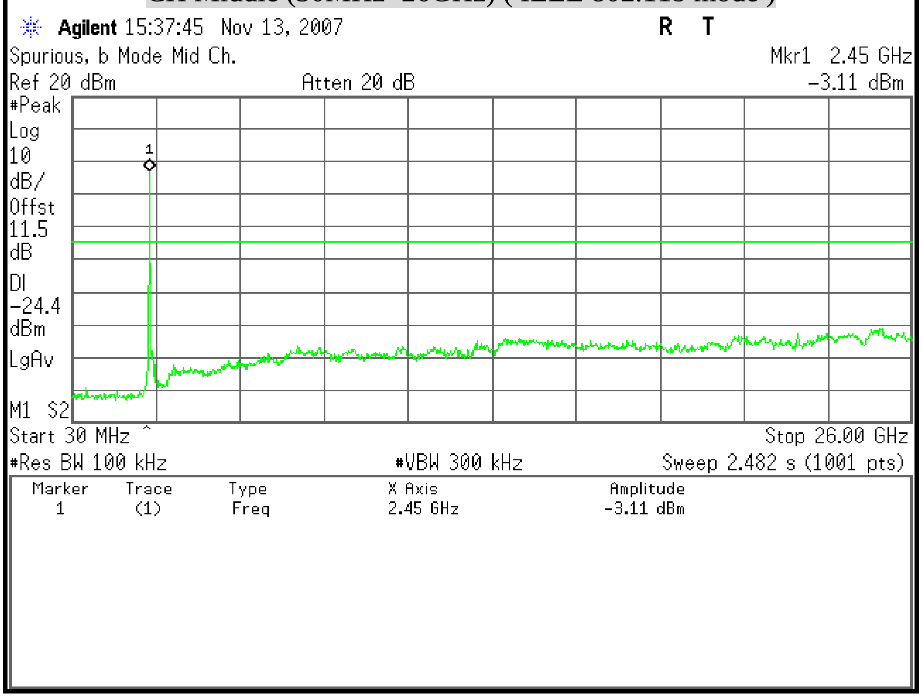
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11b mode)

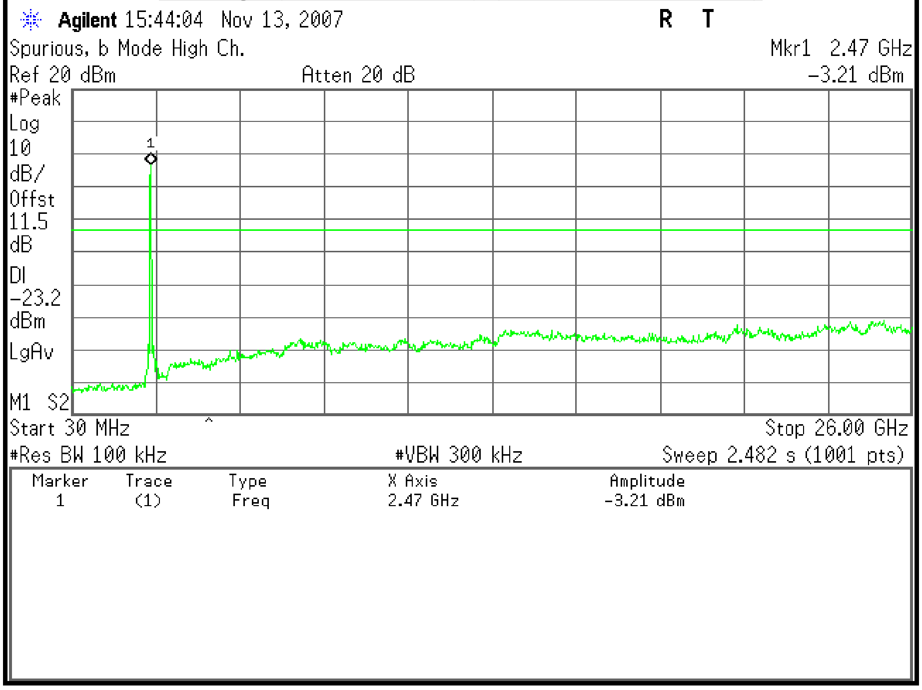
CH Low (30MHz~26GHz) (IEEE 802.11b mode)



CH Middle (30MHz~26GHz) (IEEE 802.11b mode)



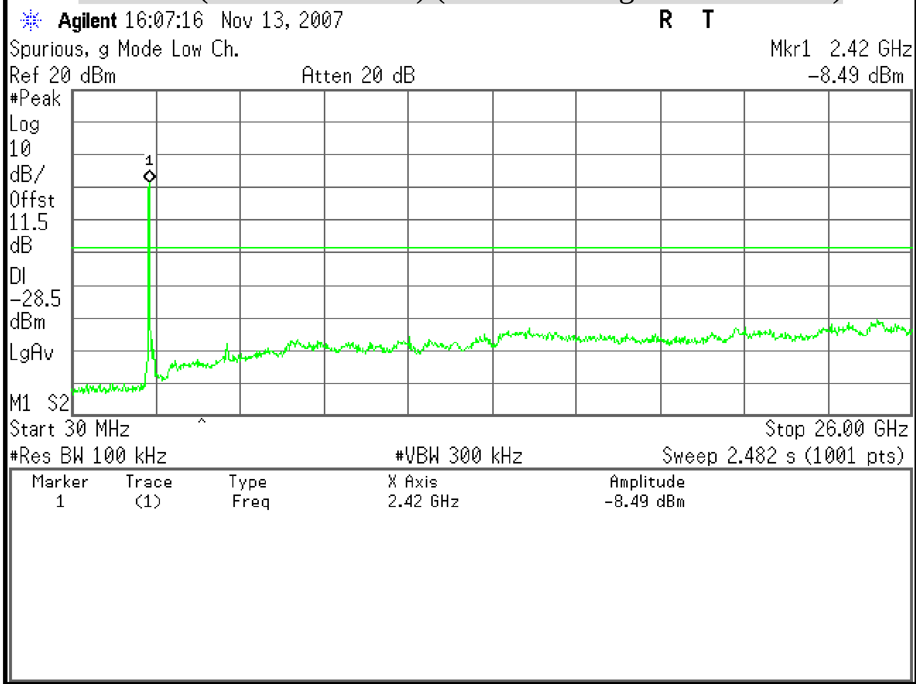
CH High (30MHz~26GHz) (IEEE 802.11b mode)



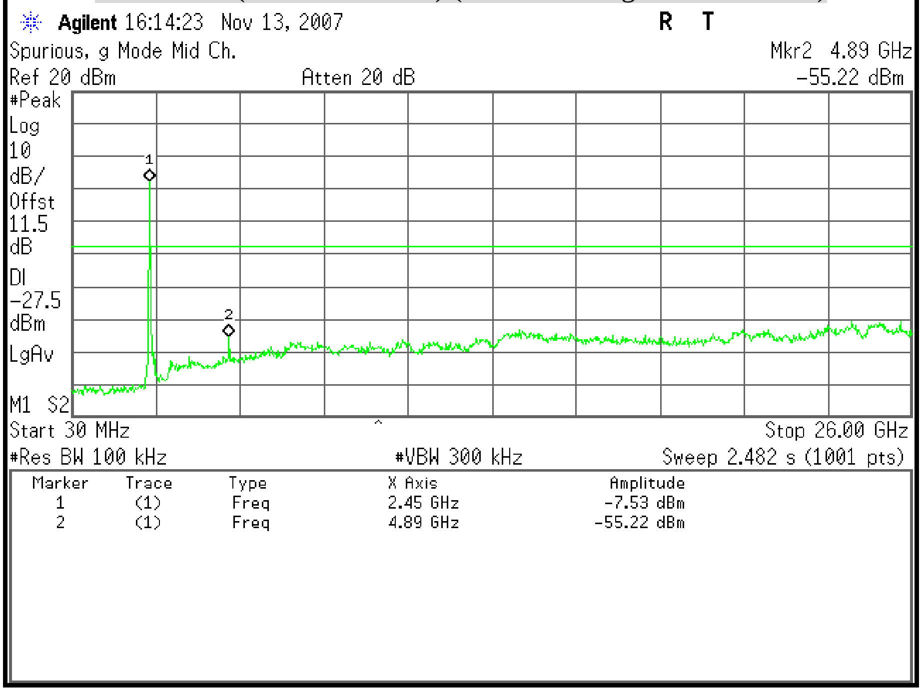
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11g mode)

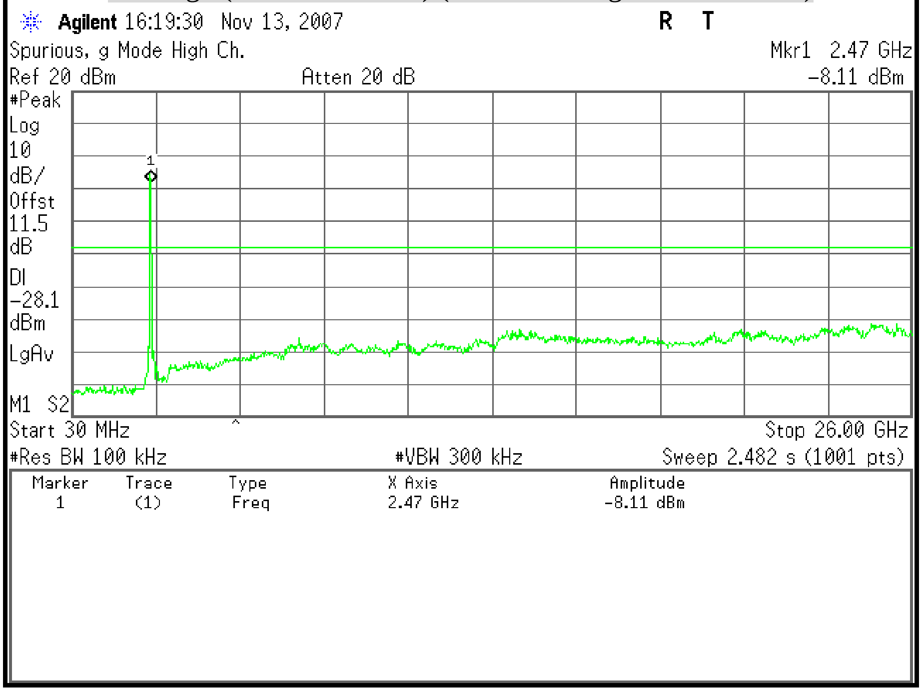
CH Low (30MHz~26GHz) (IEEE 802.11g mode-Chain 0)



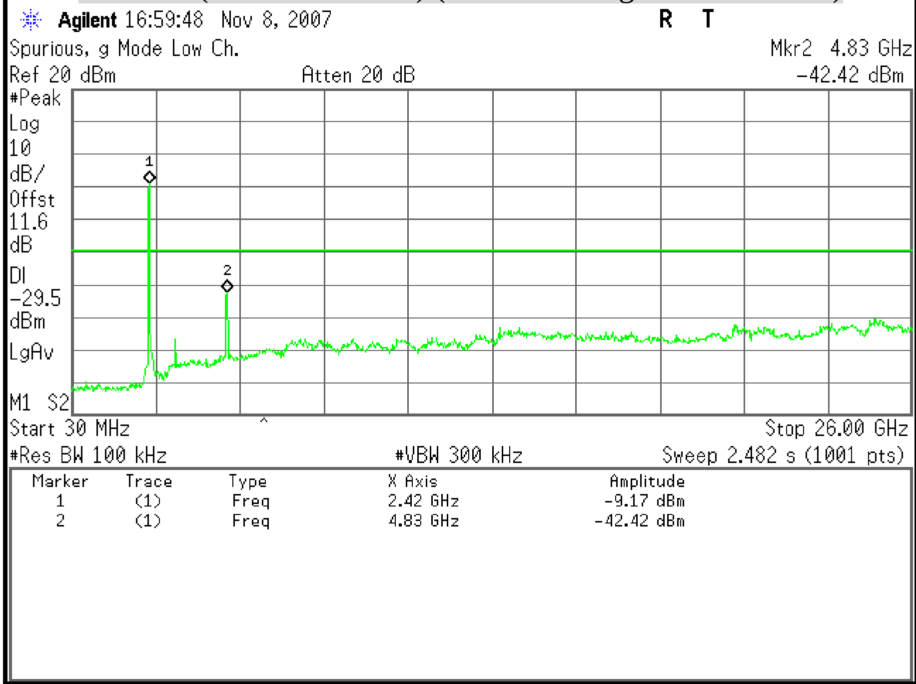
CH Middle (30MHz~26GHz) (IEEE 802.11g mode-Chain 0)



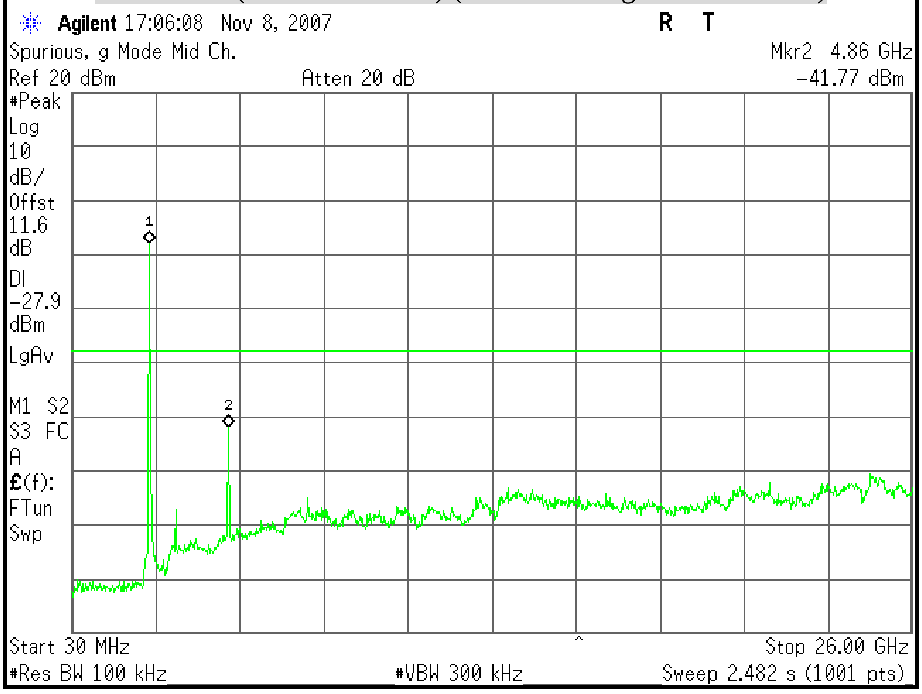
CH High (30MHz~26GHz) (IEEE 802.11g mode-Chain 0)



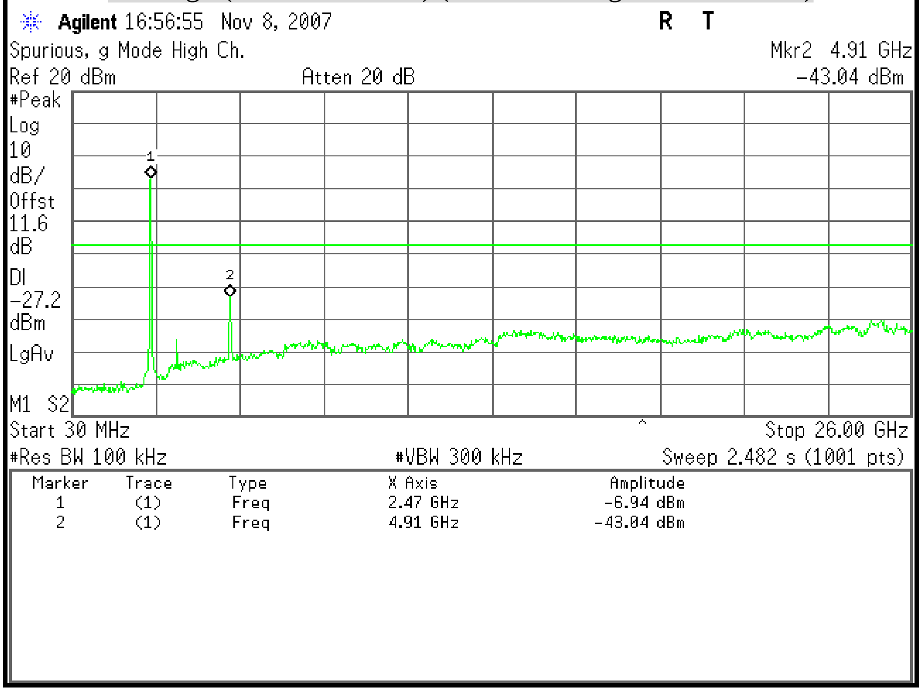
CH Low (30MHz~26GHz) (IEEE 802.11g mode-Chain 1)



CH Middle (30MHz~26GHz) (IEEE 802.11g mode-Chain 1)



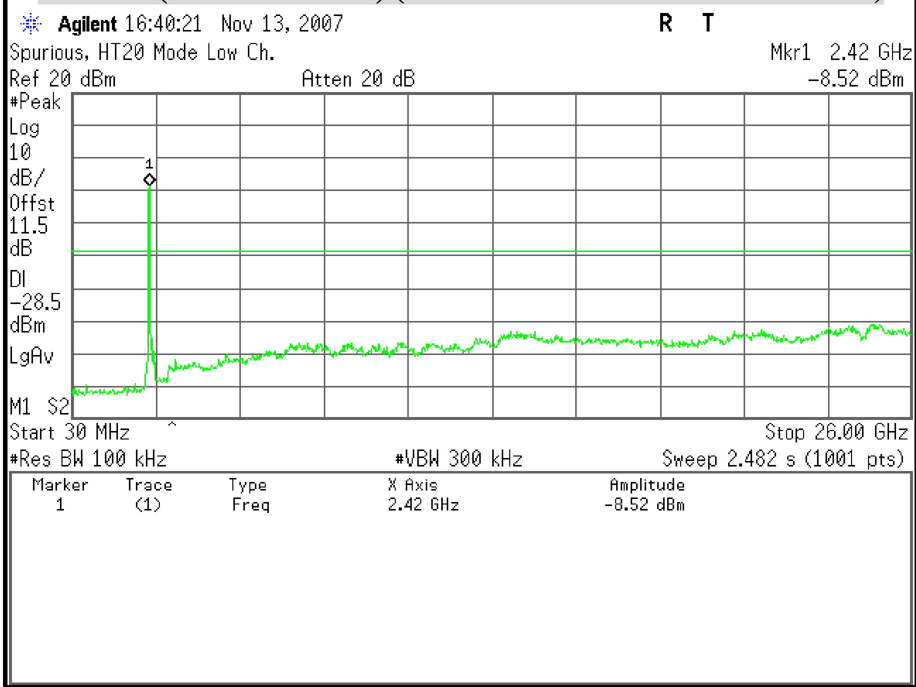
CH High (30MHz~26GHz) (IEEE 802.11g mode-Chain 1)



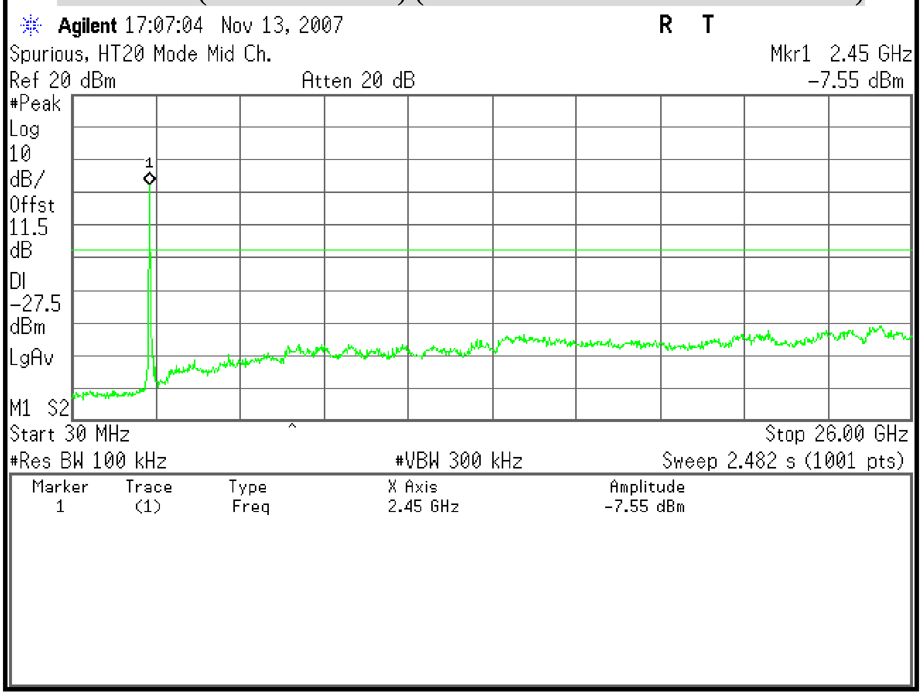
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11n HT20 mode)

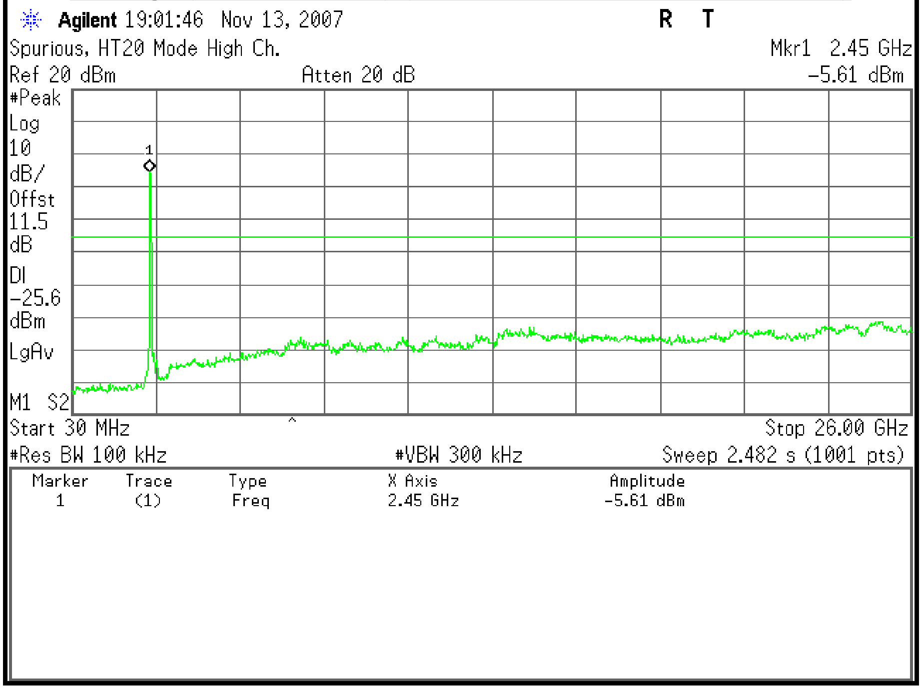
CH Low (30MHz~26GHz) (IEEE 802.11n HT20 mode-Chain 0)



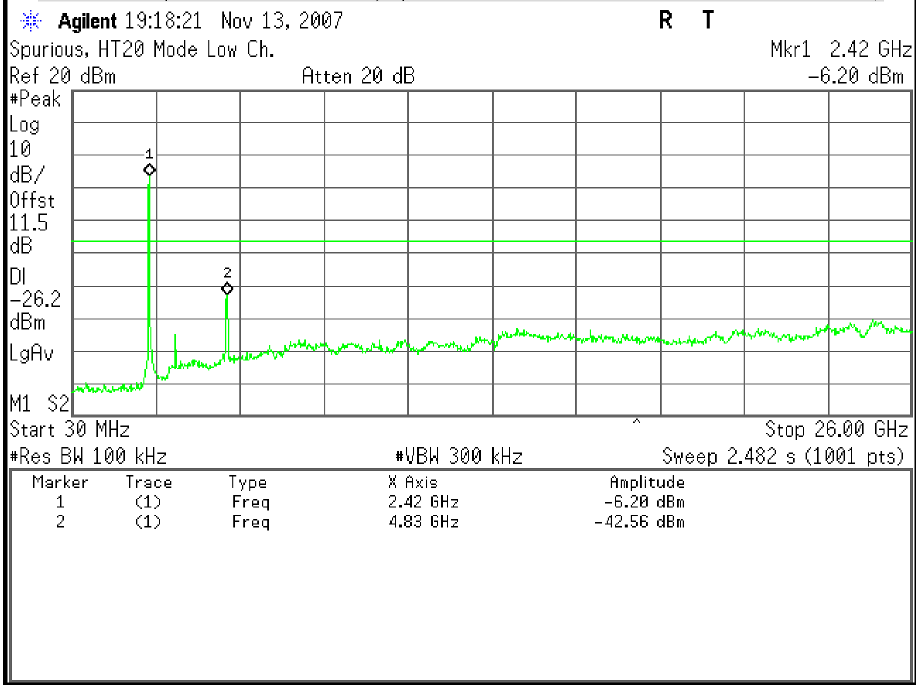
CH Middle (30MHz~26GHz) (IEEE 802.11n HT20 mode-Chain 0)



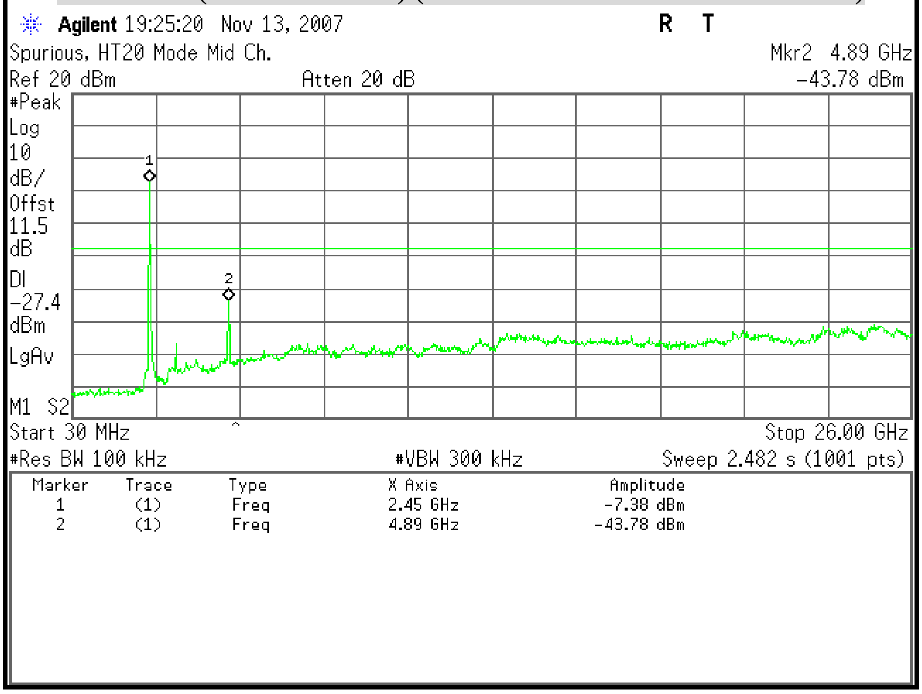
CH High (30MHz~26GHz) (IEEE 802.11n HT20 mode-Chain 0)



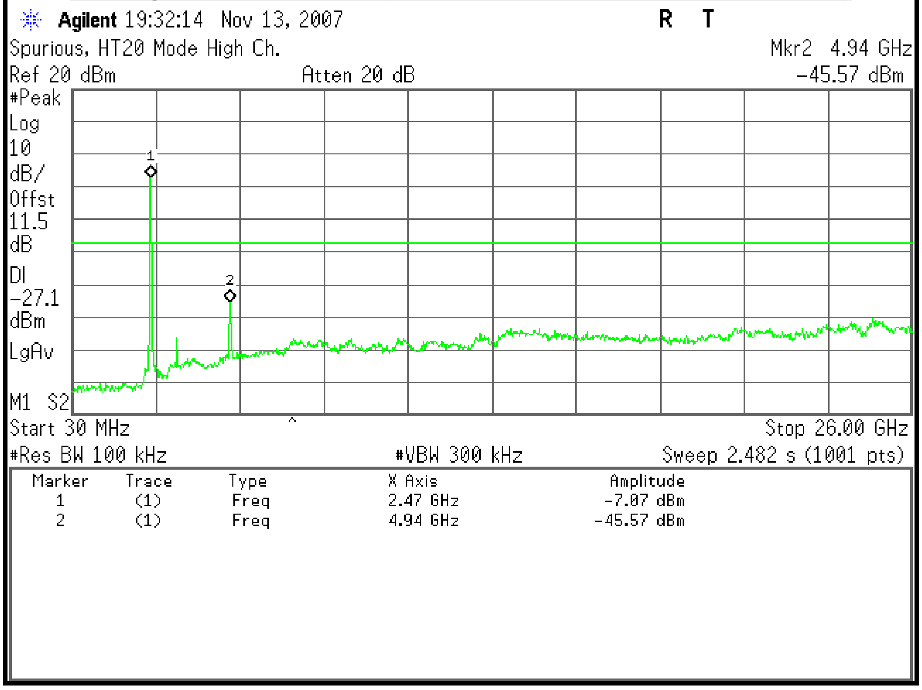
CH Low (30MHz~26GHz) (IEEE 802.11n HT20 mode-Chain 1)



CH Middle (30MHz~26GHz) (IEEE 802.11n HT20 mode-Chain 1)



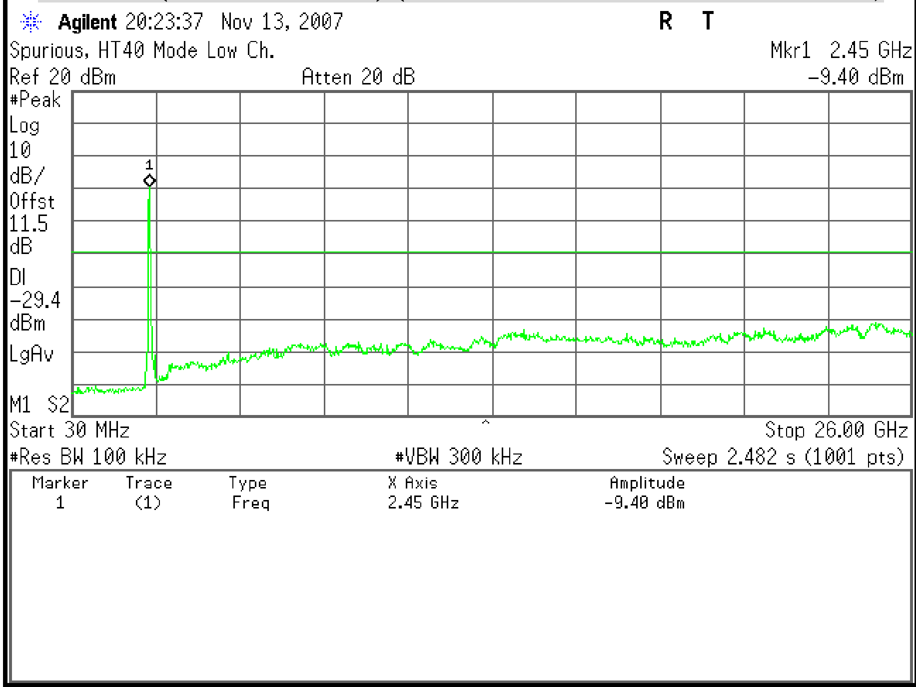
CH High (30MHz~26GHz) (IEEE 802.11n HT20 mode-Chain 1)



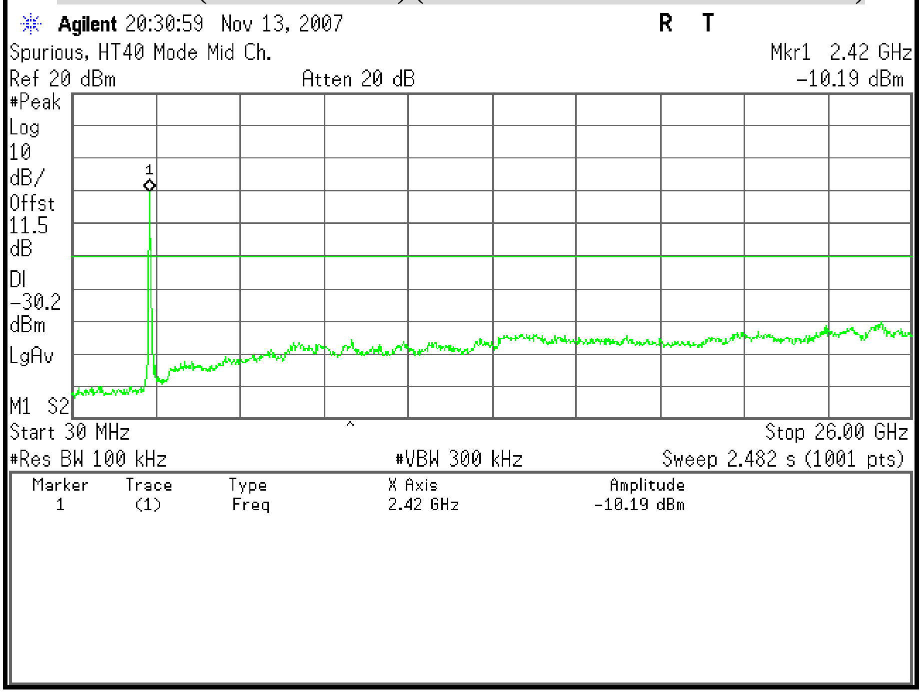
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(IEEE 802.11n HT40 mode)

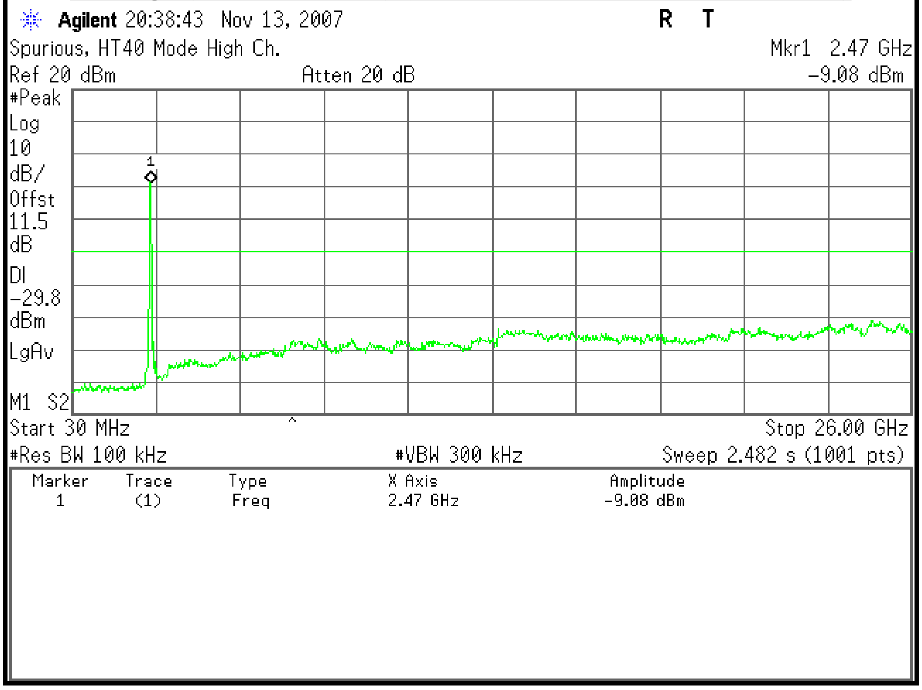
CH Low (30MHz~26GHz) (IEEE 802.11n HT40 mode-Chain 0)



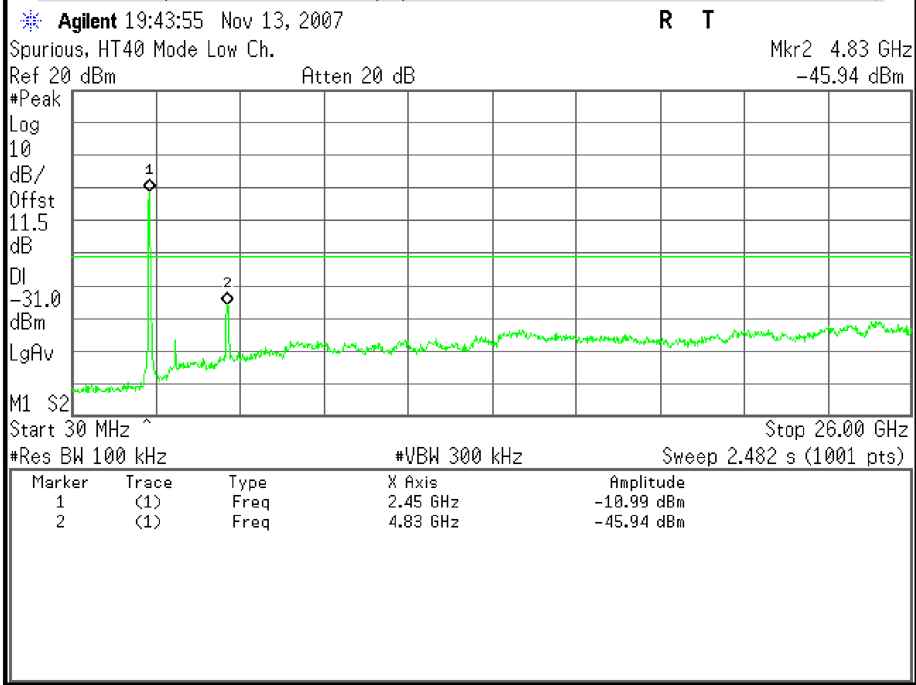
CH Middle (30MHz~26GHz) (IEEE 802.11n HT40 mode-Chain 0)



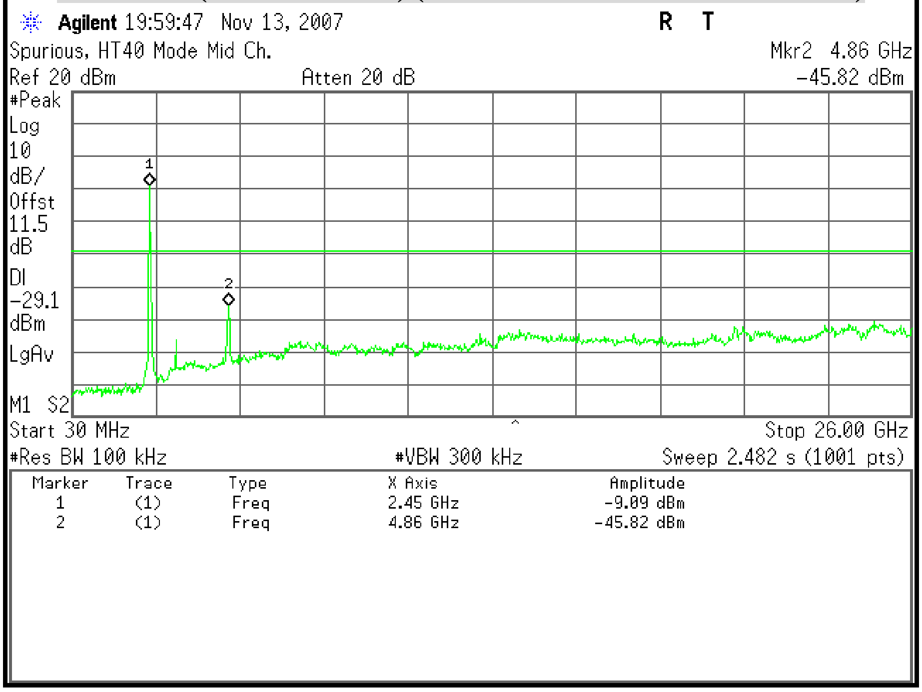
CH High (30MHz~26GHz) (IEEE 802.11n HT40 mode-Chain 0)



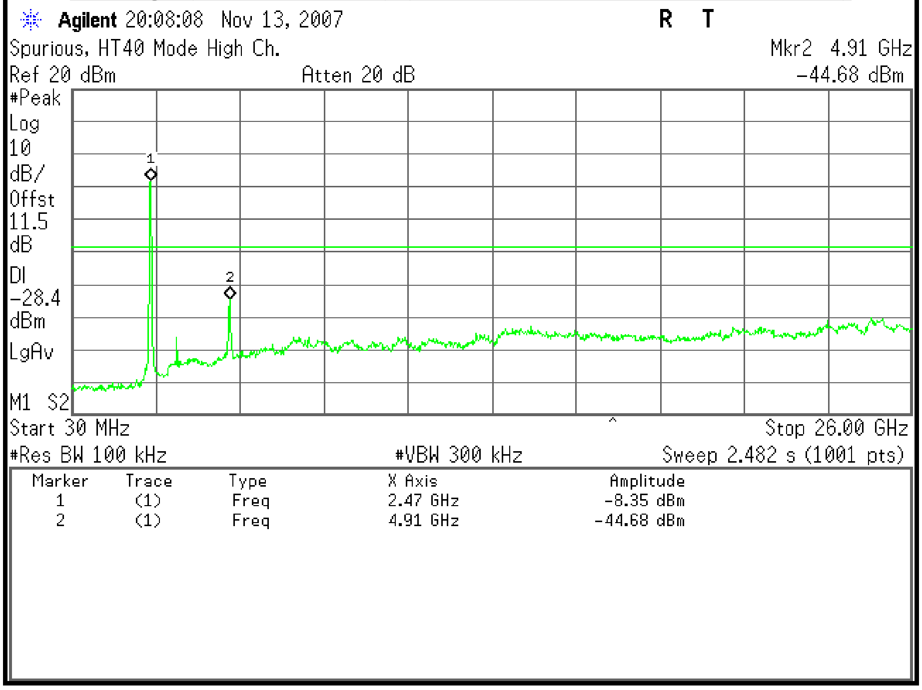
CH Low (30MHz~26GHz) (IEEE 802.11n HT40 mode-Chain 1)



CH Middle (30MHz~26GHz) (IEEE 802.11n HT40 mode-Chain 1)



CH High (30MHz~26GHz) (IEEE 802.11n HT40 mode-Chain 1)



8.6 RADIATED EMISSIONS

8.6.1 TRANSMITTER RADIATED SUPURIOUS EMSSIONS

LIMITS

§ 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 -1710	10.6 -12.7
6.26775 - 6.26825	108 -121.94	1718.8 - 1722.2	13.25 -13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 – 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 -16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3338	36.43 - 36.5
12.57675 - 12.57725	322 -335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

§ 15.205 (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 is 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.

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

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

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

§ 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

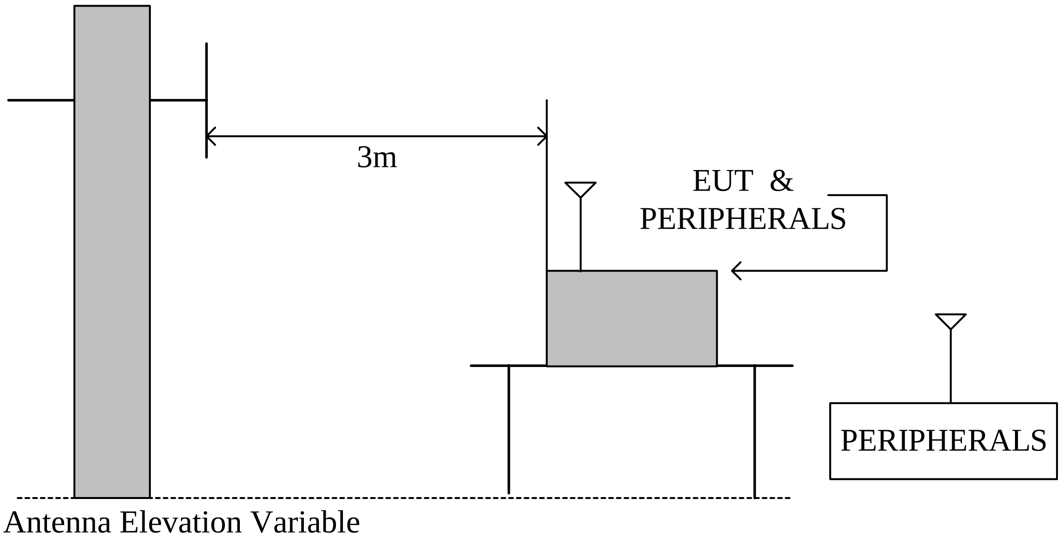
TEST EQUIPMENT

The following test equipment is utilized in making the measurements contained in this report.

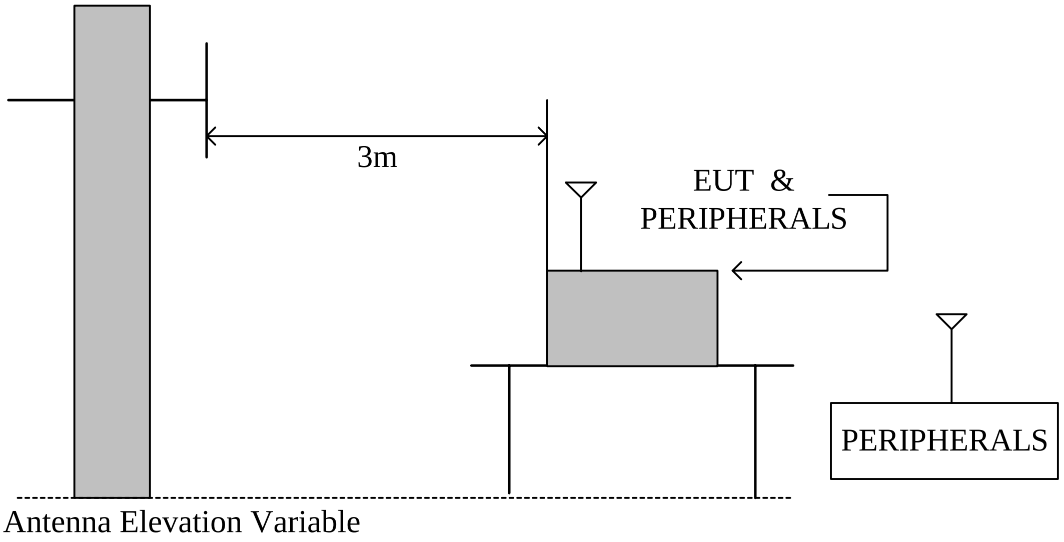
Manufacturer or Type	Model No.	Serial No.	Date of Calibration	Calibration Period	Remark
CHASE BILOG ANTENNA	CBL6112B	2817	October 18, 2007	1 Year	FINAL
R/S SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007	1 Year	FINAL
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	June 06, 2007	1 Year	FINAL
R/S EMI TEST RECEIVER	ESCS30	835418/008	October 16, 2007	1 Year	FINAL
OPEN SITE	----------	No.2	May 07, 2007	1 Year	FINAL
MIYAZAKI N TYPE COAXIAL CABLE	8D-FB	02	May 16, 2007	1 Year	FINAL
Horn Antenna	AH-118	10089	October 18, 2007	1 Year	FINAL
Horn Antenna	AH-840	03077	February 25, 2007	1 Year	FINAL
Agilent Pre-amplifier	8449B	3008A01471	December 25, 2006	1 Year	FINAL
HP Amplifier	8447D	1937A02748	December 25, 2006	1 Year	FINAL
HP High pass filter	84300/80038	002	CAL. ON USE	1 Year	FINAL
HP High pass filter	84300/80039	003	CAL. ON USE	1 Year	FINAL
Loop Antenna ETS-LINDGREN	6502	2356	June 15, 2007	1 Year	FINAL

TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 to 1GHz.



The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



TEST PROCEDURE

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. White measuring the radiated emission below 1GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. White measuring the radiated emission above 1GHz, the EUT was set 1 meters away from the interference-receiving antenna

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold mode.

f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Note：

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.

2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.

3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

TEST RESULTS

No non-compliance noted

8.6.2 WORST-CASE RADIATED EMISSION BELOW 1 GHz

Product Name	WLAN USB Stick a/b/g/n Adapter	**Test Date**	2007/11/21
Model	65-VF438-P2	**Test By**	Jason Chang
Test Mode	Normal operating	**TEMP & Humidity**	23°C, 50%

Horizontal polarity						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Mark (P/Q/A)
171.62	51.29	-14.13	37.16	43.50	-6.34	P
266.68	52.66	-14.04	38.62	46.00	-7.38	P
299.66	52.98	-13.04	39.94	46.00	-6.06	P
366.59	50.84	-11.86	38.98	46.00	-7.02	P
433.52	46.81	-10.77	36.04	46.00	-9.96	P
749.74	40.35	-5.15	35.20	46.00	-10.80	P
960.23	41.03	-2.06	38.97	54.00	-15.03	P

Vertical polarity						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Mark (P/Q/A)
233.70	47.03	-15.04	31.99	46.00	-14.01	P
298.69	42.94	-13.06	29.87	46.00	-16.13	P
364.65	42.49	-11.88	30.61	46.00	-15.39	P
433.52	49.96	-10.77	39.19	46.00	-6.81	P
497.54	45.73	-9.94	35.79	46.00	-10.21	P
533.43	43.85	-9.31	34.55	46.00	-11.45	P
566.41	41.46	-8.63	32.83	46.00	-13.17	P
796.30	38.79	-4.28	34.52	46.00	-11.48	P

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*
3. *Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).*

8.6.3 TRANSMITTER RADIATED EMISSION ABOVE 1 GHz

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11a TX (CH Low)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1500.00	53.14	---	-13.81	39.33	---	74.00	54.00	-14.67	P
1735.00	51.44	---	-13.05	38.39	---	74.00	54.00	-15.61	P
3830.00	47.77	---	-6.17	41.60	---	74.00	54.00	-12.40	P
11496.00	52.11	41.23	7.55	59.66	48.78	74.00	54.00	-5.22	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1500.00	57.08	---	-13.81	43.27	---	74.00	54.00	-10.73	P
2500.00	52.09	---	-8.30	43.78	---	74.00	54.00	-10.22	P
11496.00	53.21	42.88	7.55	60.76	50.43	74.00	54.00	-3.57	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11a TX (CH Middle)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
3180.00	57.05	---	-7.44	49.61	---	74.00	54.00	-4.39	P
11568.00	51.28	40.28	7.54	58.82	47.82	74.00	54.00	-6.18	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
3885.00	55.64	---	-6.07	49.57	---	74.00	54.00	-4.43	P
11568.00	54.48	43.37	7.54	62.02	50.91	74.00	54.00	-3.09	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11a TX (CH High)	TEMP & Humidity	23°C, 51%

Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
3260.00	56.88	---	-7.27	49.62	---	74.00	54.00	-4.38	P
11652.00	51.25	40.28	7.50	58.75	47.78	74.00	54.00	-6.22	A

Vertical polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1815.00	58.81	---	-12.79	46.03	---	74.00	54.00	-7.97	P
11652.00	56.65	45.32	7.50	64.15	52.82	74.00	54.00	-1.18	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH Low)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
3170.00	56.72	---	-7.46	49.26	---	74.00	54.00	-4.74	P
11496.00	48.54	39.55	7.55	56.09	47.10	74.00	54.00	-6.90	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
3125.00	56.86	---	-7.55	49.30	---	74.00	54.00	-4.70	P
11496.00	50.33	43.28	7.55	57.88	50.83	74.00	54.00	-3.17	A
17232.00	44.24	34.28	15.71	59.95	49.99	74.00	54.00	-4.01	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH Middle)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
3315.00	56.76	---	-7.15	49.62	---	74.00	54.00	-4.38	P
11568.00	49.21	40.25	7.54	56.75	47.79	74.00	54.00	-6.21	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4085.00	55.18	---	-5.58	49.60	---	74.00	54.00	-4.40	P
11568.00	50.35	41.58	7.54	57.89	49.12	74.00	54.00	-4.88	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH High)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
2725.00	57.27	---	-8.09	49.19	---	74.00	54.00	-4.81	P
11652.00	48.11	37.15	7.50	55.61	44.65	74.00	54.00	-9.35	A
17340.00	45.21	34.11	15.75	60.96	49.86	74.00	54.00	-4.14	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4695.00	54.64	---	-3.63	51.01	---	74.00	54.00	-2.99	P
11652.00	51.05	42.11	7.50	58.55	49.61	74.00	54.00	-4.39	A
17472.00	47.22	35.11	15.80	63.02	50.91	74.00	54.00	-3.09	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT40 TX (CH Low)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
3375.00	57.23	---	-7.02	50.21	---	74.00	54.00	-3.79	P
11508.00	53.15	40.25	7.56	60.71	47.81	74.00	54.00	-6.19	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
11508.00	54.92	41.25	7.56	62.48	48.81	74.00	54.00	-5.19	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/14
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT40 TX (CH High)	TEMP & Humidity	23°C, 51%

Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
2585.00	57.16	---	-8.22	48.94	---	74.00	54.00	-5.06	P
11628.00	42.12	---	7.51	49.63	---	74.00	54.00	-4.37	P

Vertical polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
11628.00	55.35	42.88	7.51	62.86	50.39	74.00	54.00	-3.61	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11b TX (CH Low)	TEMP & Humidity	23°C, 51%

Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1629.00	53.47	---	-13.39	40.08	---	74.00	54.00	-13.92	P

Vertical polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1595.00	59.98	---	-13.50	46.48	---	74.00	54.00	-7.52	P

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11b TX (CH Middle)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1595.00	56.58	---	-13.50	43.08	---	74.00	54.00	-10.92	P

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1595.00	59.28	---	-13.50	45.77	---	74.00	54.00	-8.23	P

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11b TX (CH High)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4842.00	49.79	---	-3.23	46.56	---	74.00	54.00	-7.44	P

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1595.00	58.52	---	-13.50	45.02	---	74.00	54.00	-8.98	P

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11g TX (CH Low)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4825.00	70.57	54.91	-3.27	67.30	51.64	74.00	54.00	-2.36	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1731.00	56.43	---	-13.06	43.37	---	74.00	54.00	-10.63	P
4808.00	69.10	54.94	-3.32	65.78	51.62	74.00	54.00	-2.38	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11g TX (CH Middle)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1595.00	59.06	---	-13.50	45.56	---	74.00	54.00	-8.44	P
4876.00	71.51	56.18	-3.13	68.38	53.05	74.00	54.00	-0.95	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1612.00	54.79	---	-13.45	41.35	---	74.00	54.00	-12.65	P
4876.00	65.36	49.39	-3.13	62.23	46.26	74.00	54.00	-7.74	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11g TX (CH High)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4910.00	69.63	49.67	-3.04	66.59	46.63	74.00	54.00	-7.37	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1595.00	60.82	0.00	-13.50	47.32	-13.50	74.00	54.00	-6.68	P
4944.00	63.58	51.99	-2.95	60.63	49.04	74.00	54.00	-4.96	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH Low)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4825.00	70.70	55.87	-3.27	67.43	52.60	74.00	54.00	-1.40	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1612.00	60.35	---	-13.45	46.90	---	74.00	54.00	-7.10	P
4825.00	68.91	53.18	-3.27	65.64	49.91	74.00	54.00	-4.09	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH Middle)	TEMP & Humidity	23°C, 51%

Horizontal polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4876.00	70.96	55.71	-3.13	67.83	52.58	74.00	54.00	-1.42	P

Vertical polarity									
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1629.00	59.23	---	-13.39	45.84	---	74.00	54.00	-8.16	P
4876.00	66.83	52.73	-3.13	63.70	49.60	74.00	54.00	-4.40	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT20 TX (CH High)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4927.00	65.13	48.22	-2.99	62.14	45.23	74.00	54.00	-8.77	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4927.00	62.12	44.46	-2.99	59.13	41.47	74.00	54.00	-12.53	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT40 TX (CH Low)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4859.00	66.61	51.35	-3.18	63.43	48.17	74.00	54.00	-5.83	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1629.00	58.43	---	-13.39	45.04	---	74.00	54.00	-8.96	P
4859.00	65.85	48.55	-3.18	62.67	45.37	74.00	54.00	-8.63	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT40 TX (CH Middle)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1629.00	57.31	---	-13.39	43.92	---	74.00	54.00	-10.08	P
4859.00	63.74	50.40	-3.18	60.56	47.22	74.00	54.00	-6.78	A

Vertical polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
1595.00	61.67	---	-13.50	48.16	---	74.00	54.00	-5.84	P
4842.00	64.58	48.22	-3.23	61.35	44.99	74.00	54.00	-9.01	A

Remark:

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

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/11/08
Model	65-VF438-P2	Test By	Jason Chang
Test Mode	IEEE 802.11n HT40 TX (CH High)	TEMP & Humidity	23°C, 51%

Horizontal polarity

Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4876.00	63.69	49.20	-3.13	60.56	46.07	74.00	54.00	-7.93	A

Vertical polarity

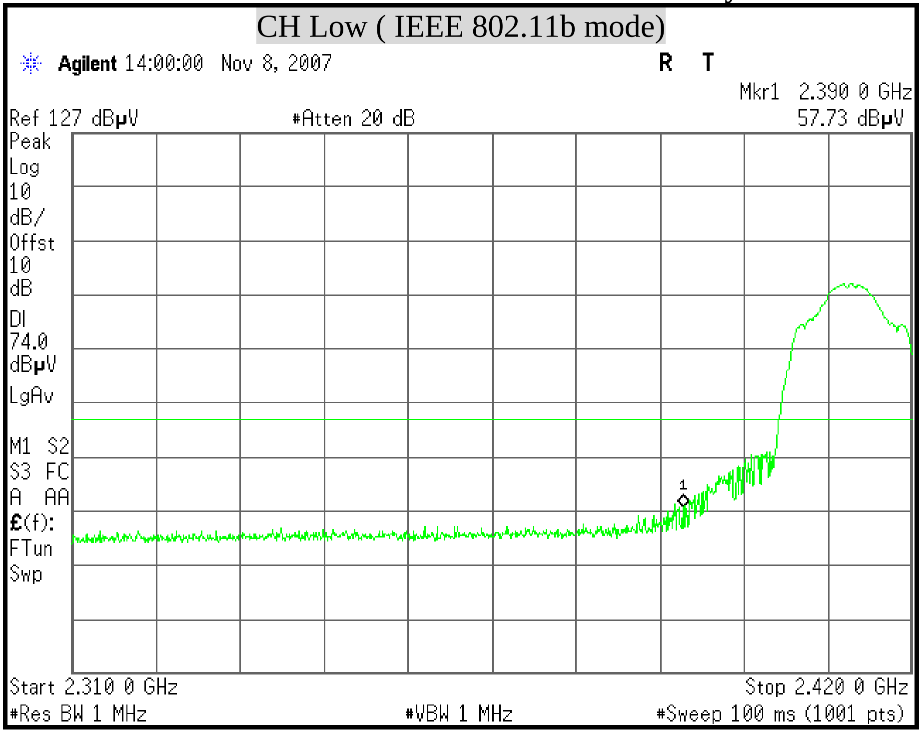
Freq. (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Mark (P/Q/A)
4893.00	62.19	48.22	-3.09	59.10	45.13	74.00	54.00	-8.87	A

Remark:

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

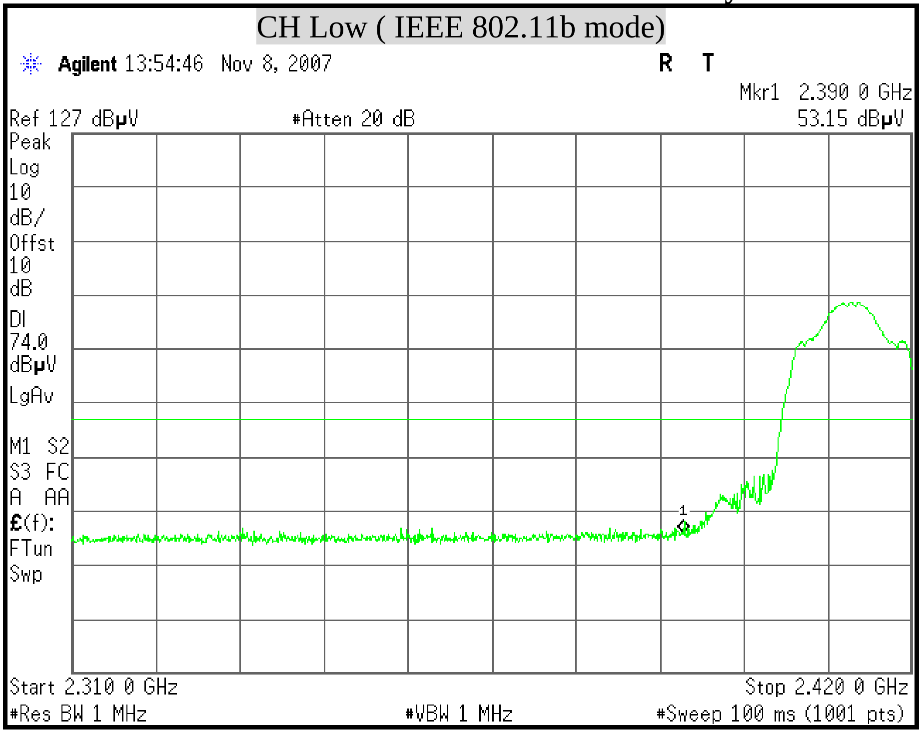
8.6.4 RESTRICTED BAND EDGES

Detector mode : Peak **Polarity : Horizontal**

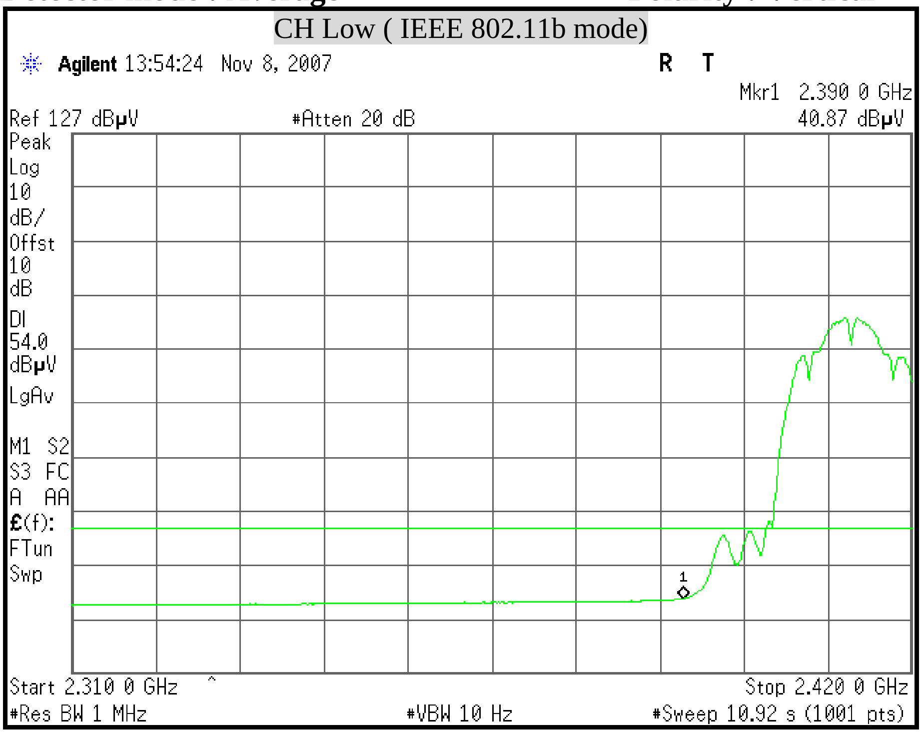


Detector mode : Average **Polarity : Horizontal**

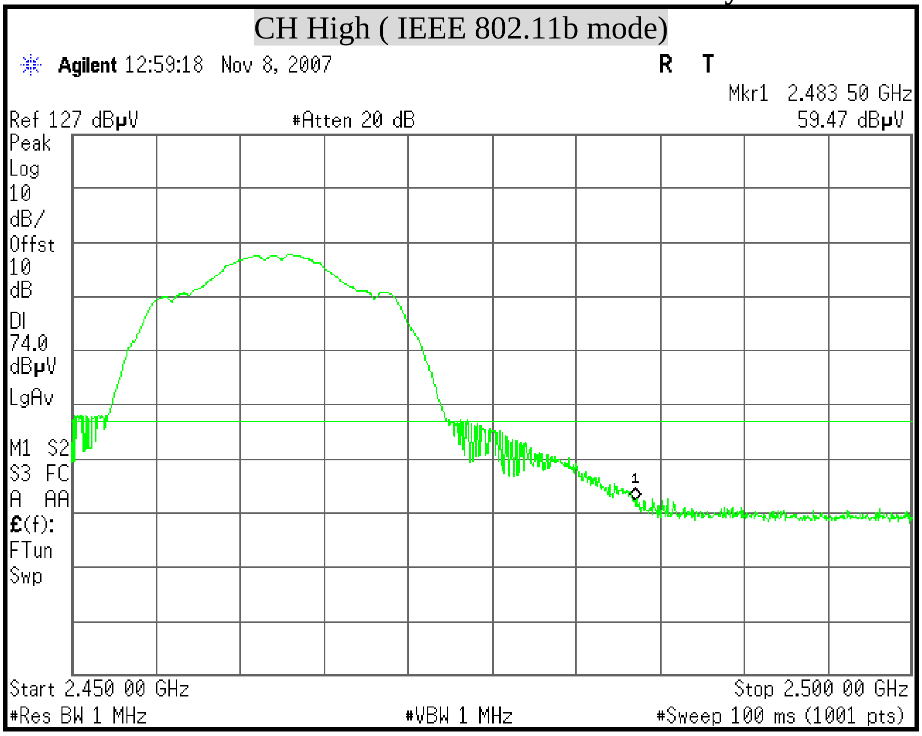
Detector mode : Peak **Polarity : Vertical**



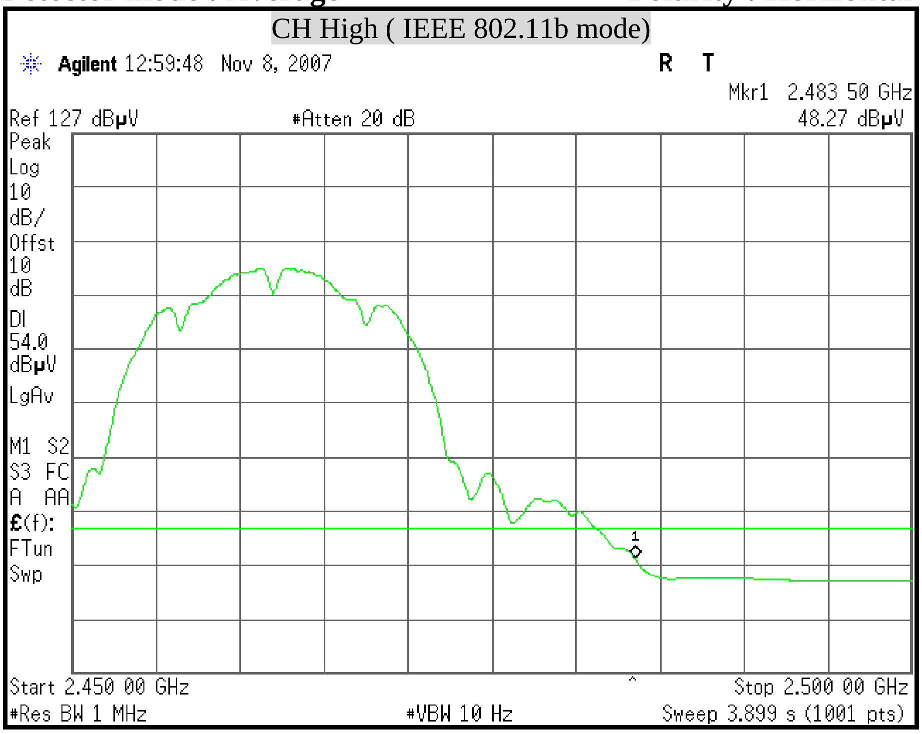
Detector mode : Average **Polarity : Vertical**



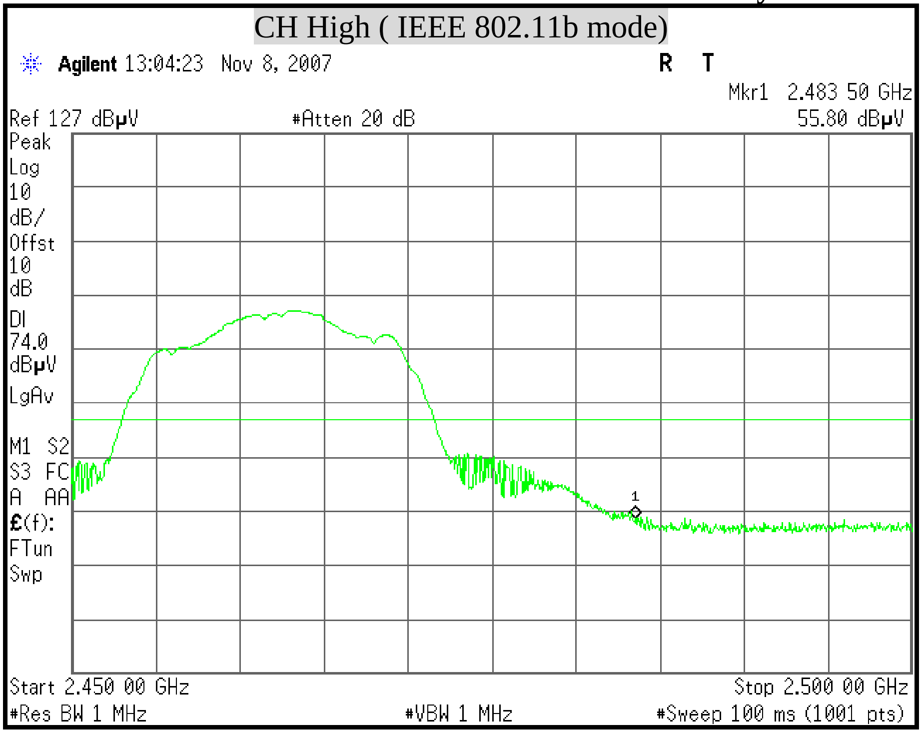
Detector mode : Peak **Polarity : Horizontal**



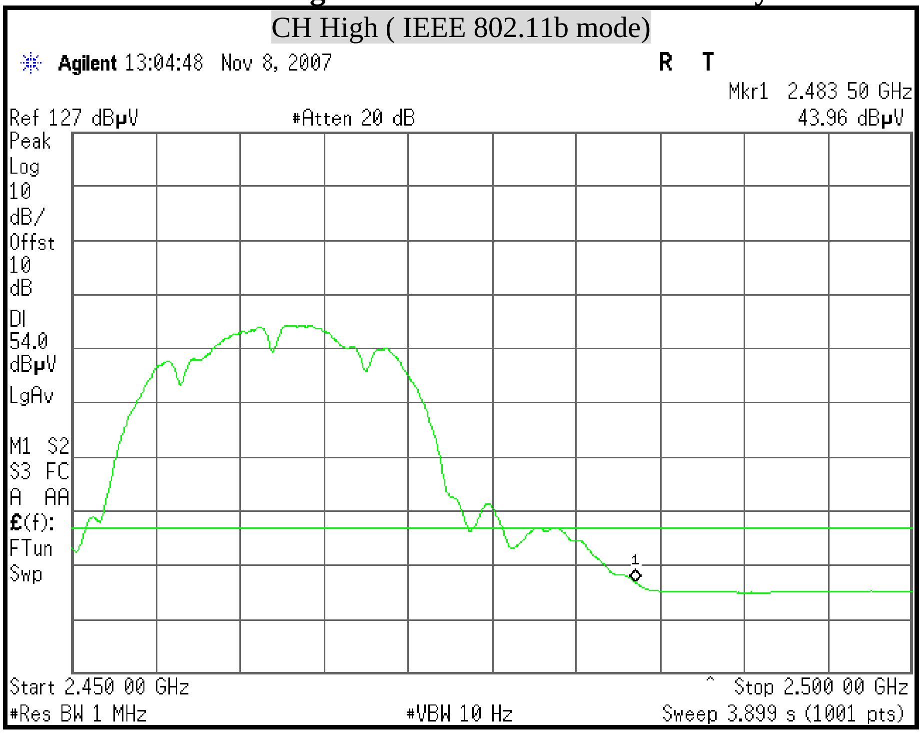
Detector mode : Average **Polarity : Horizontal**



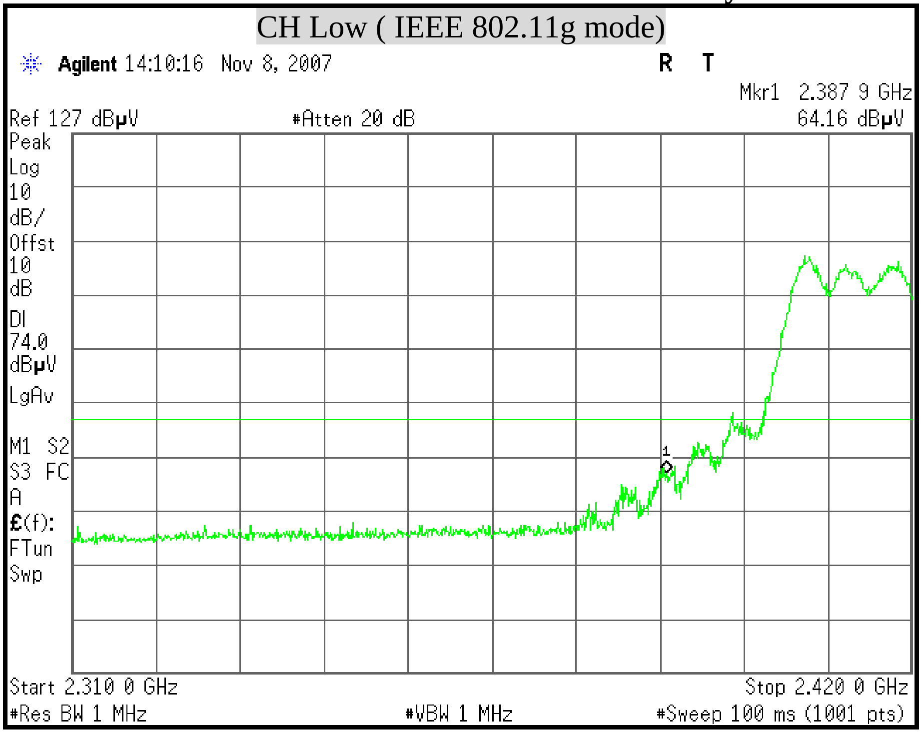
Detector mode : Peak **Polarity : Vertical**



Detector mode : Average **Polarity : Vertical**



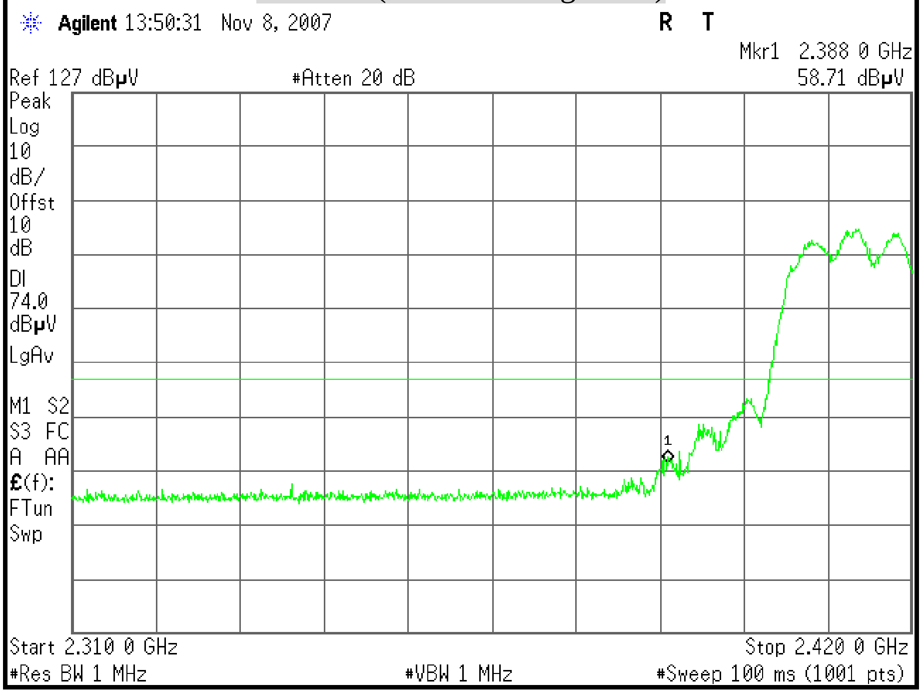
Detector mode : Peak **Polarity : Horizontal**



Detector mode : Average **Polarity : Horizontal**

Detector mode : Peak **Polarity : Vertical**

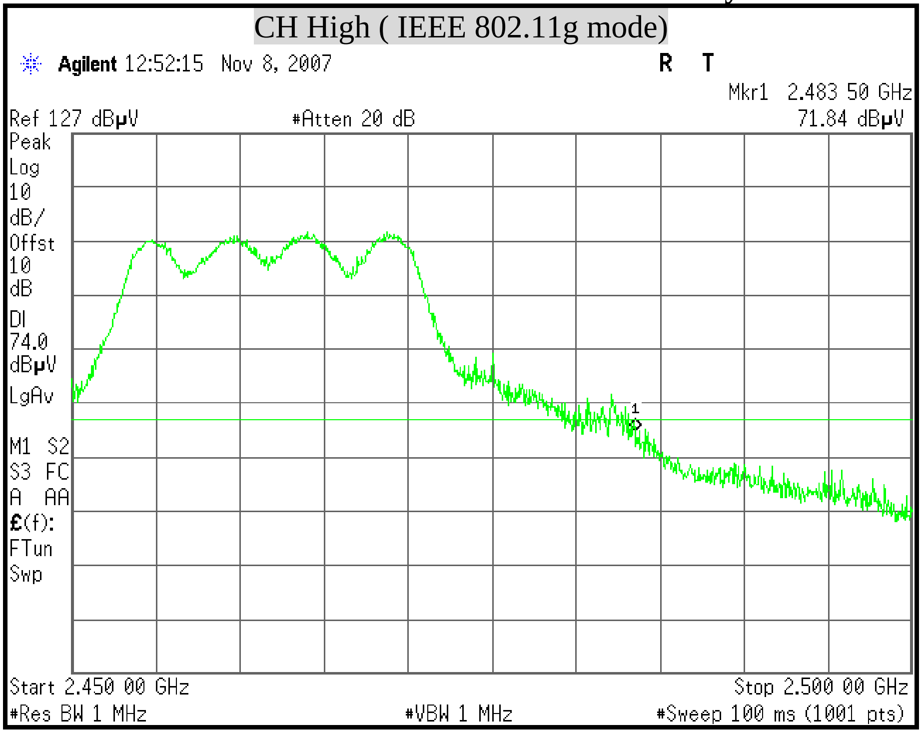
CH Low (IEEE 802.11g mode)



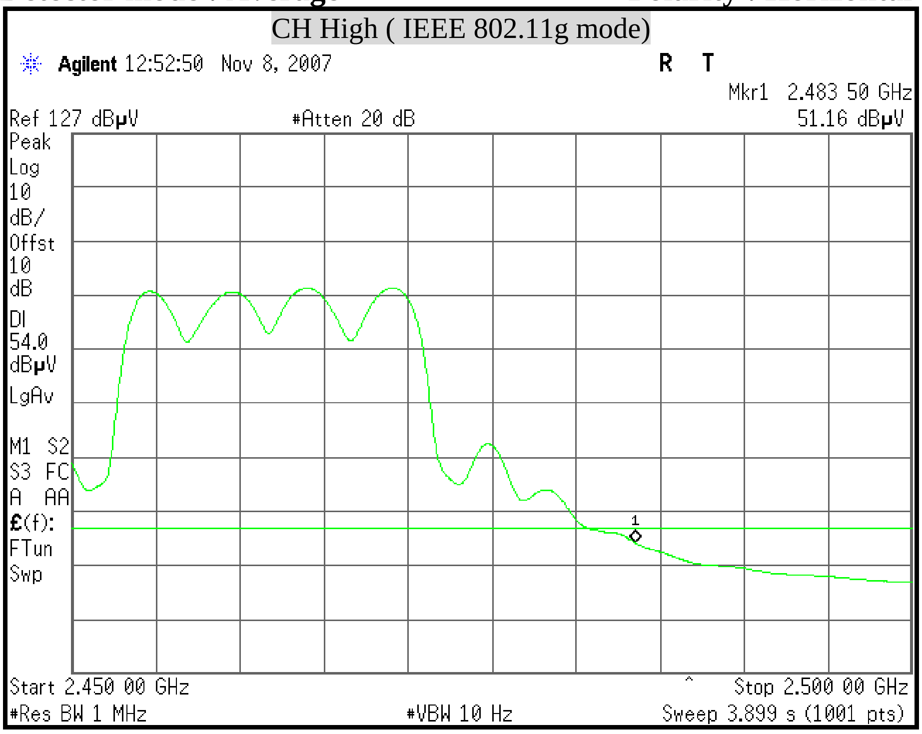
Detector mode : Average **Polarity : Vertical**

CH Low (IEEE 802.11g mode)

Detector mode : Peak **Polarity : Horizontal**

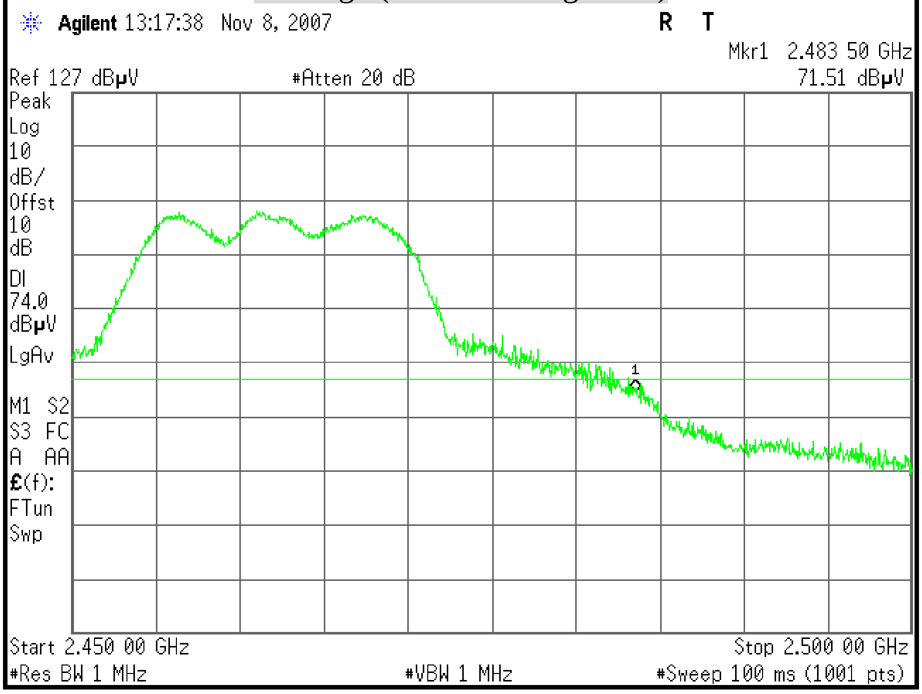


Detector mode : Average **Polarity : Horizontal**



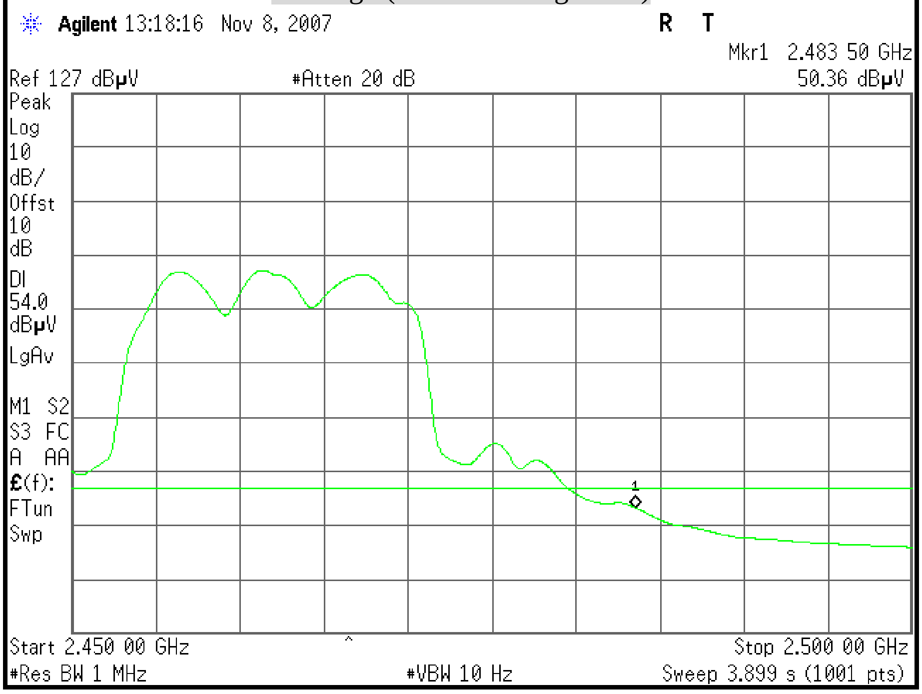
Detector mode : Peak **Polarity : Vertical**

CH High (IEEE 802.11g mode)



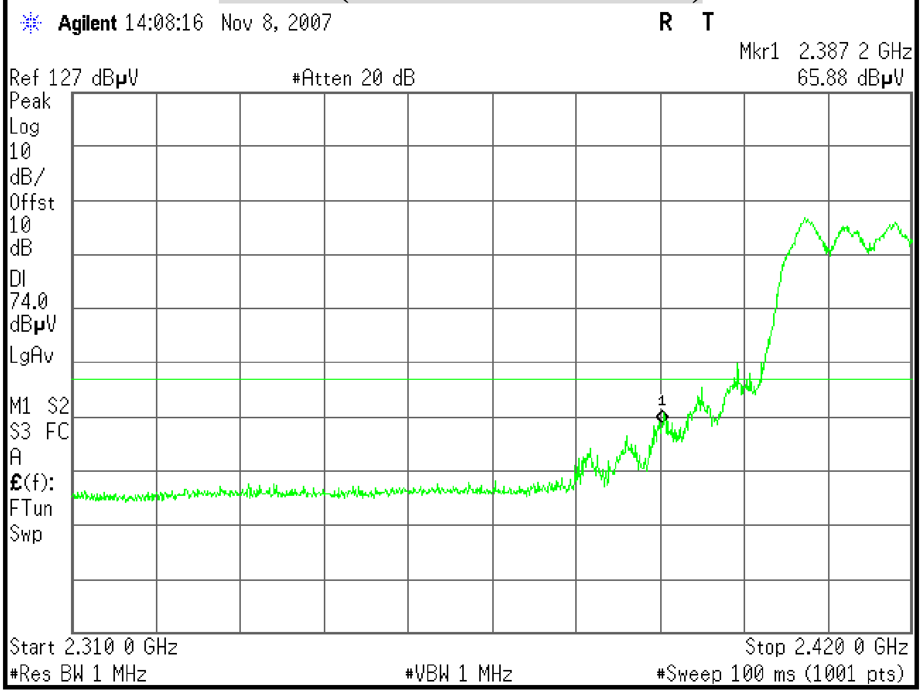
Detector mode : Average **Polarity : Vertical**

CH High (IEEE 802.11g mode)



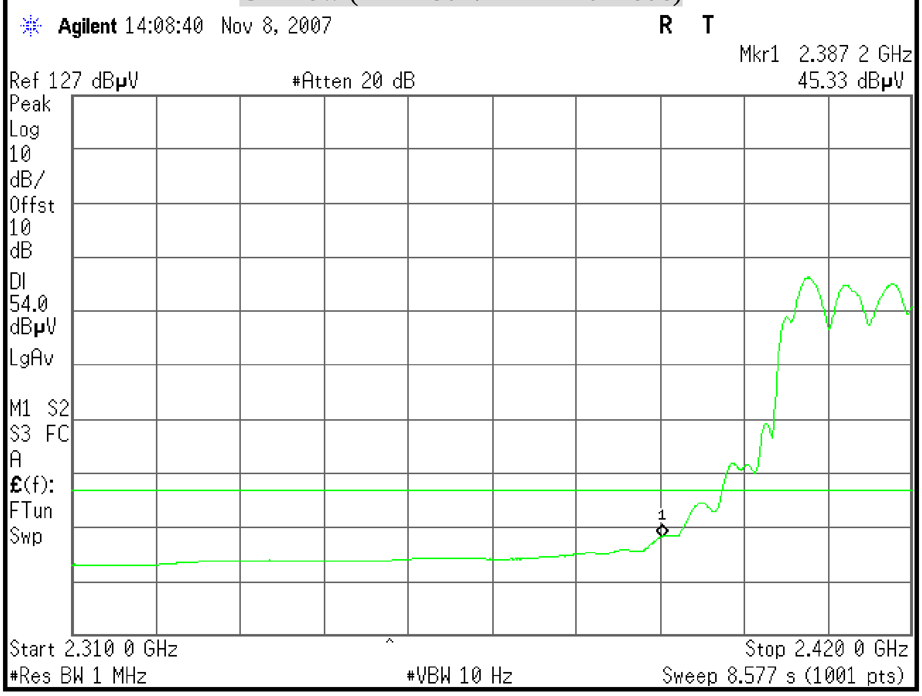
Detector mode : Peak **Polarity : Horizontal**

CH Low (IEEE 802.11n HT20 mode)

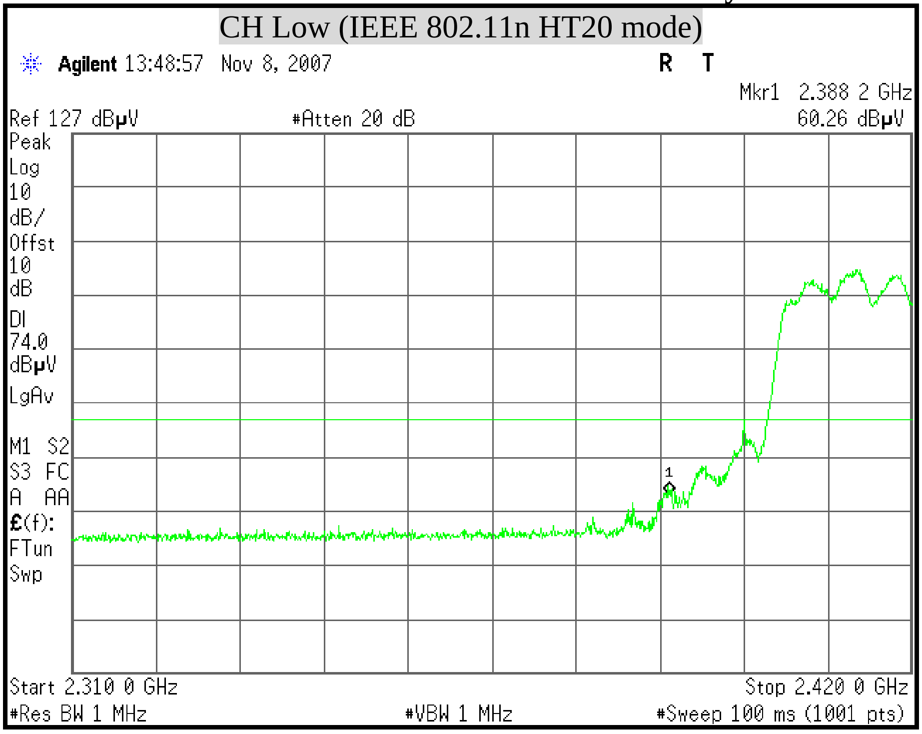


Detector mode : Average **Polarity : Horizontal**

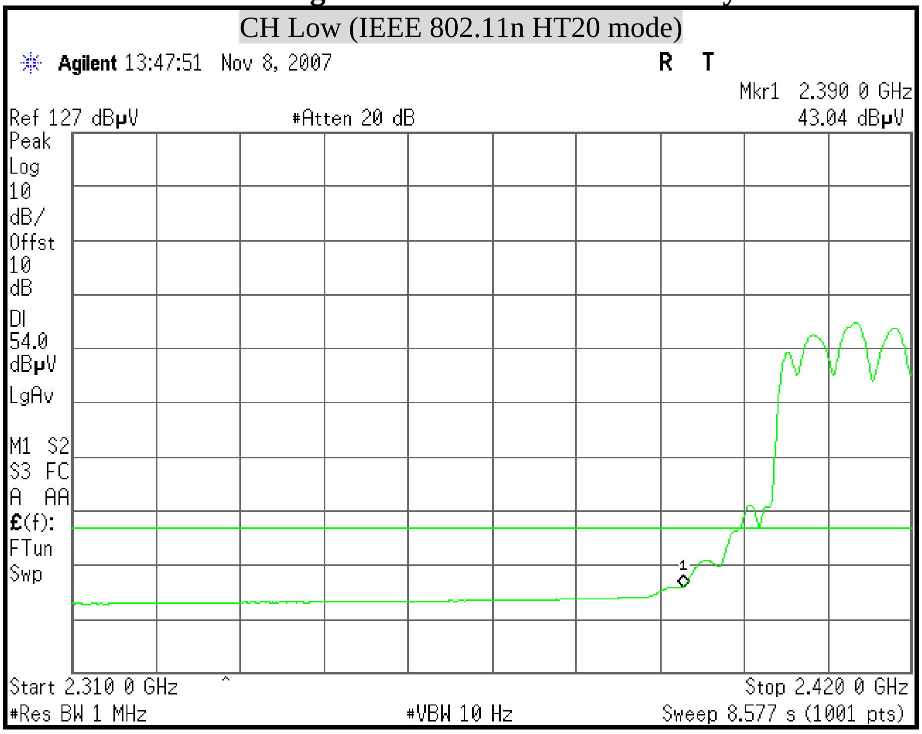
CH Low (IEEE 802.11n HT20 mode)



Detector mode : Peak **Polarity : Vertical**



Detector mode : Average **Polarity : Vertical**

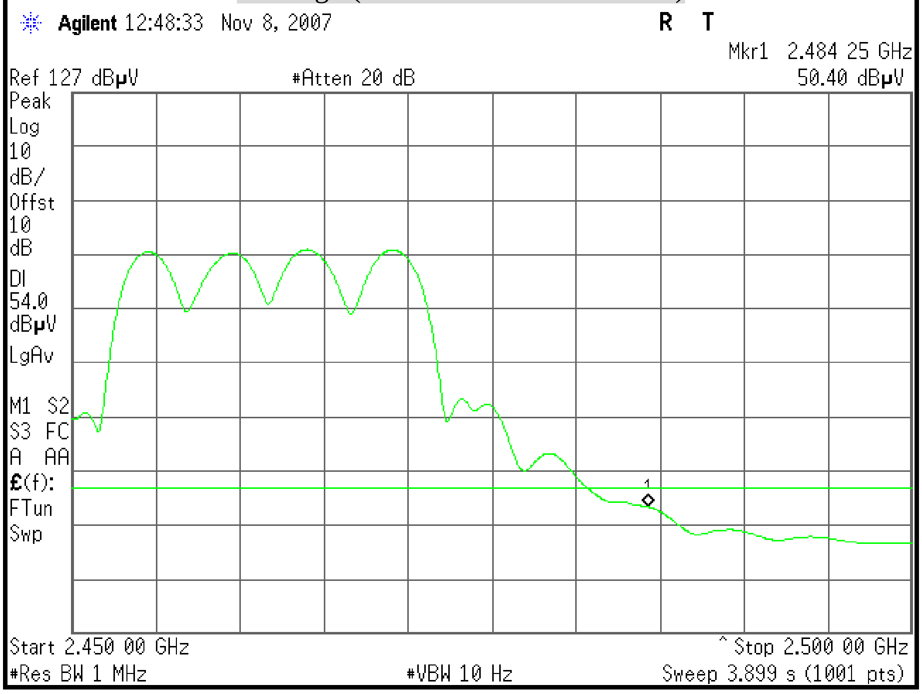


Detector mode : Peak **Polarity : Horizontal**

CH High (IEEE 802.11n HT20 mode)

Detector mode : Average **Polarity : Horizontal**

CH High (IEEE 802.11n HT20 mode)

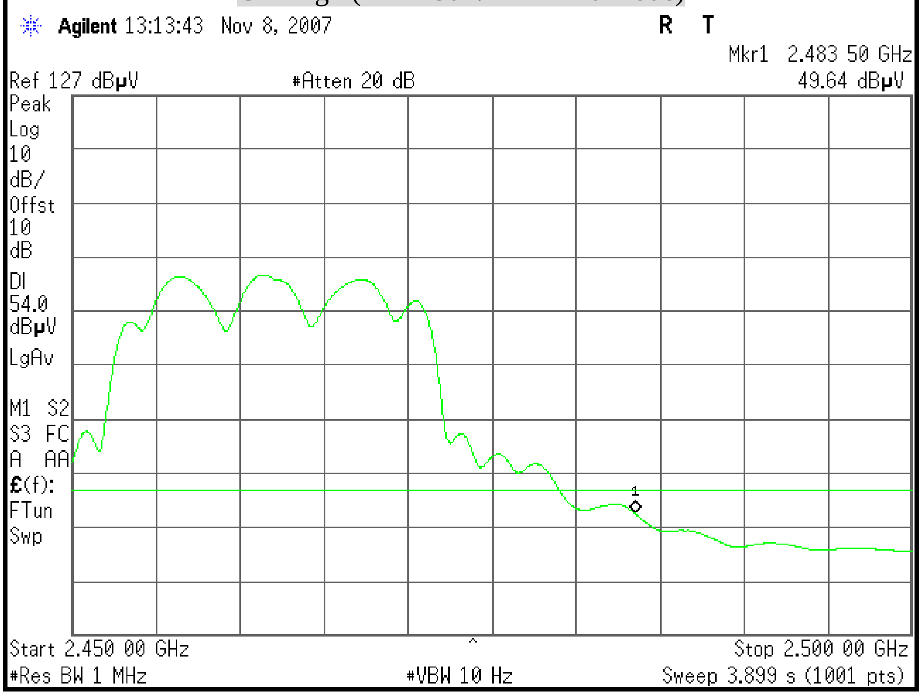


Detector mode : Peak **Polarity : Vertical**

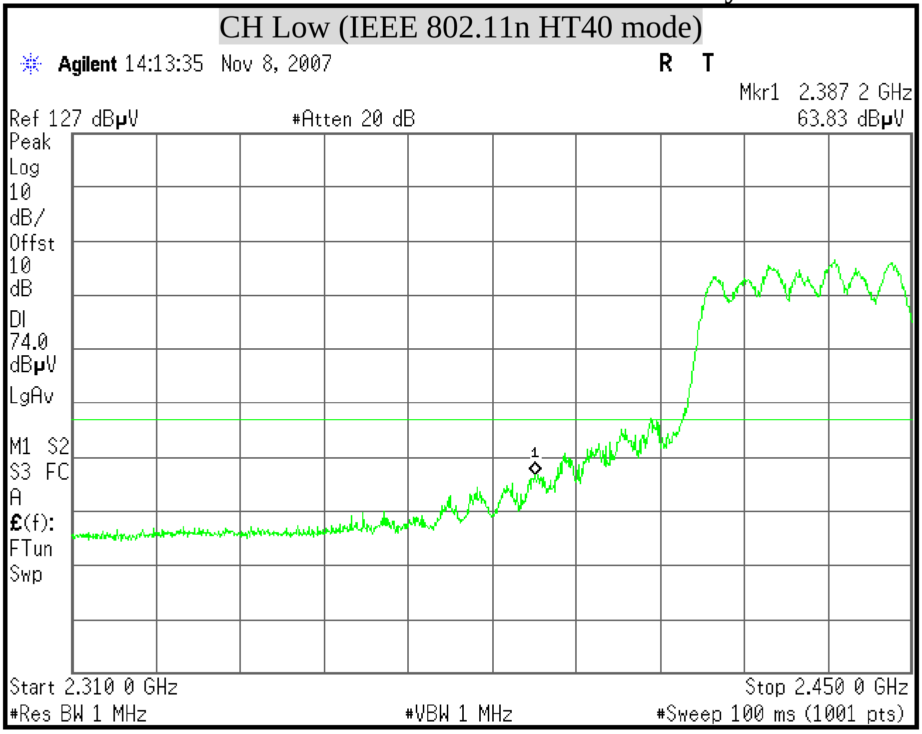
CH High (IEEE 802.11n HT20 mode)

Detector mode : Average **Polarity : Vertical**

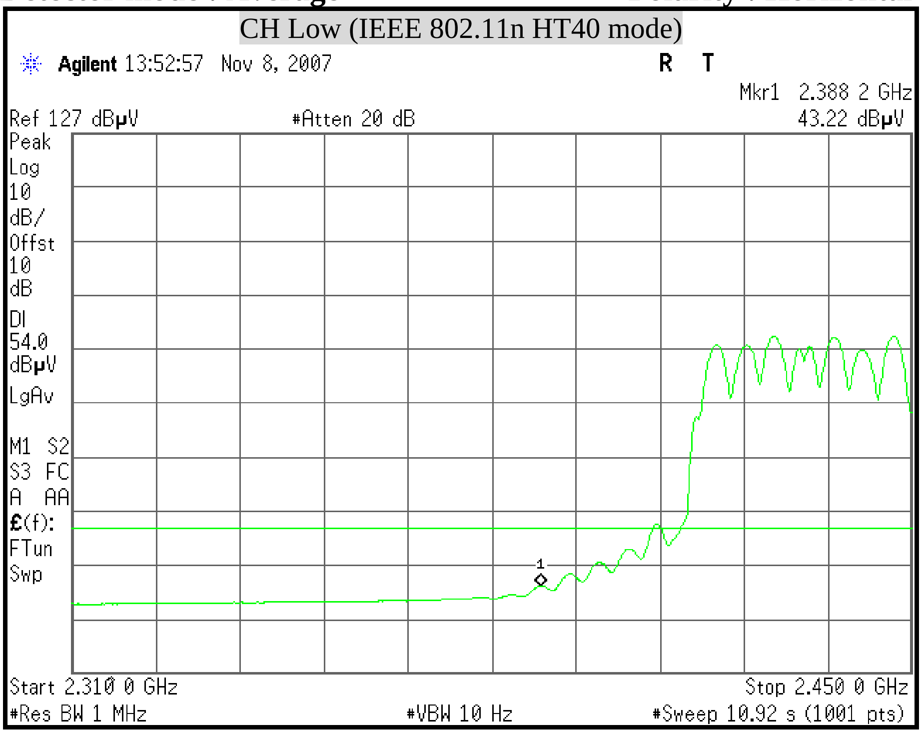
CH High (IEEE 802.11n HT20 mode)



Detector mode : Peak **Polarity : Horizontal**

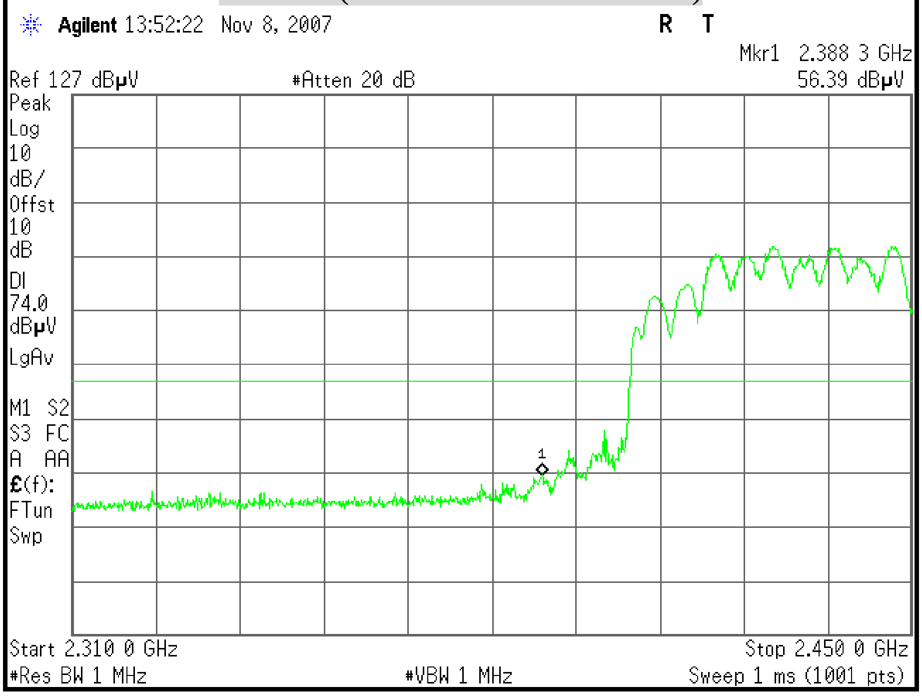


Detector mode : Average **Polarity : Horizontal**



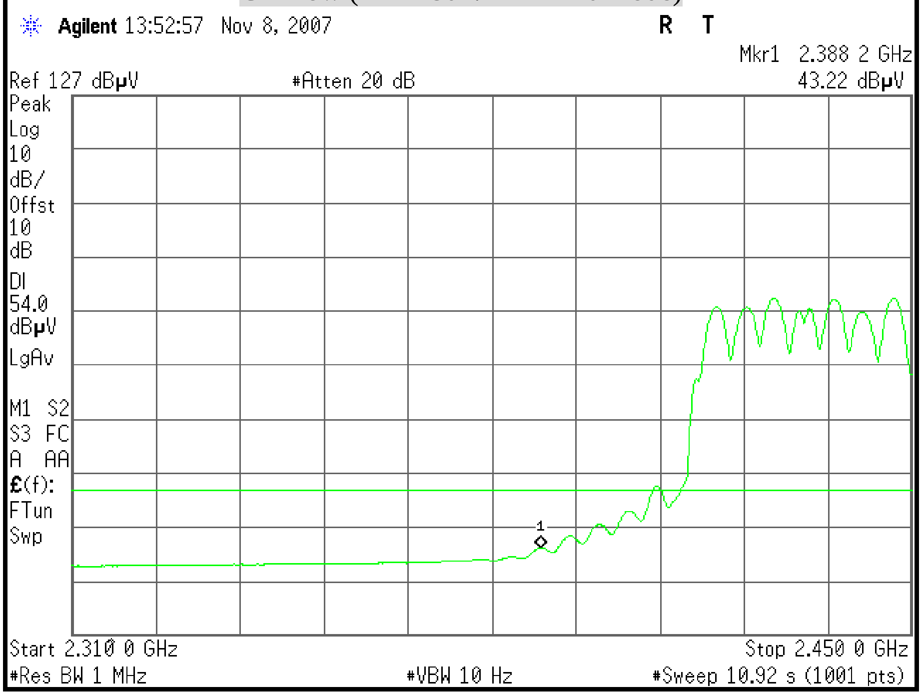
Detector mode : Peak **Polarity : Vertical**

CH Low (IEEE 802.11n HT40 mode)

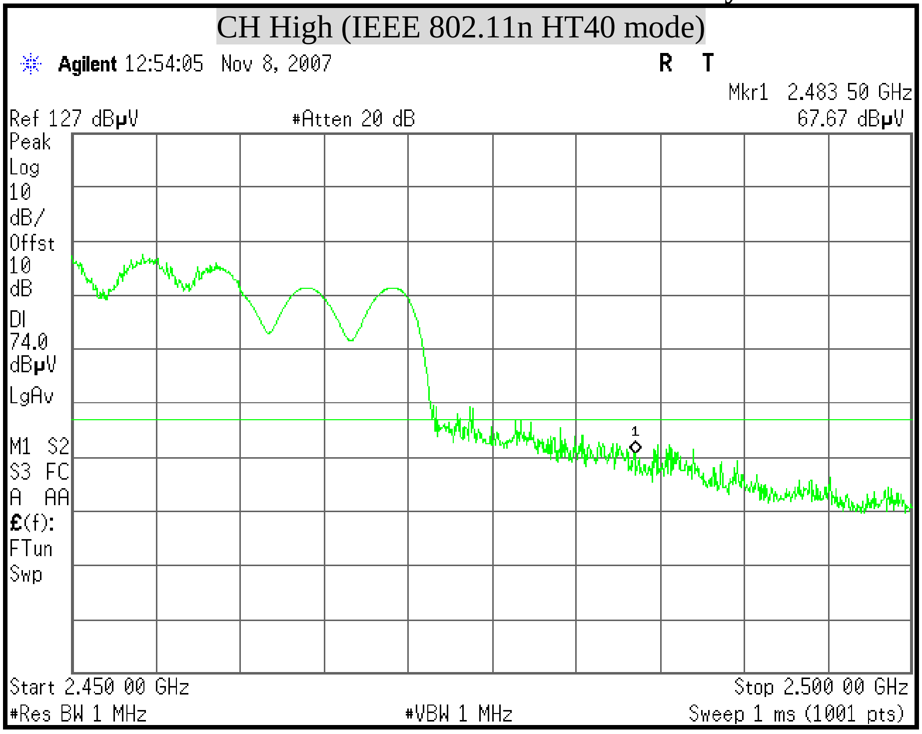


Detector mode : Average **Polarity : Vertical**

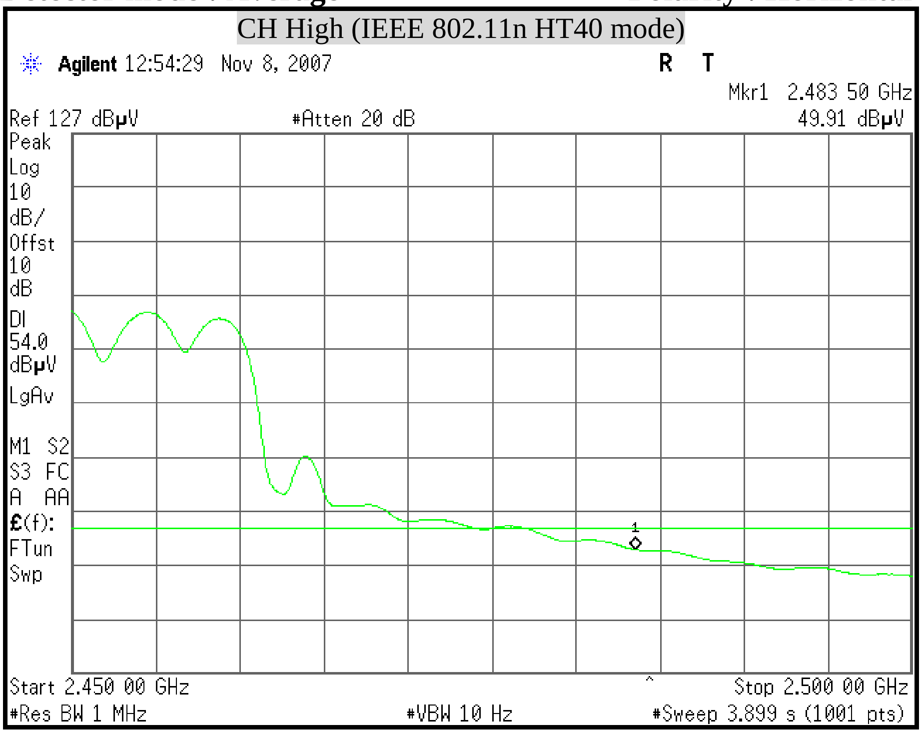
CH Low (IEEE 802.11n HT40 mode)



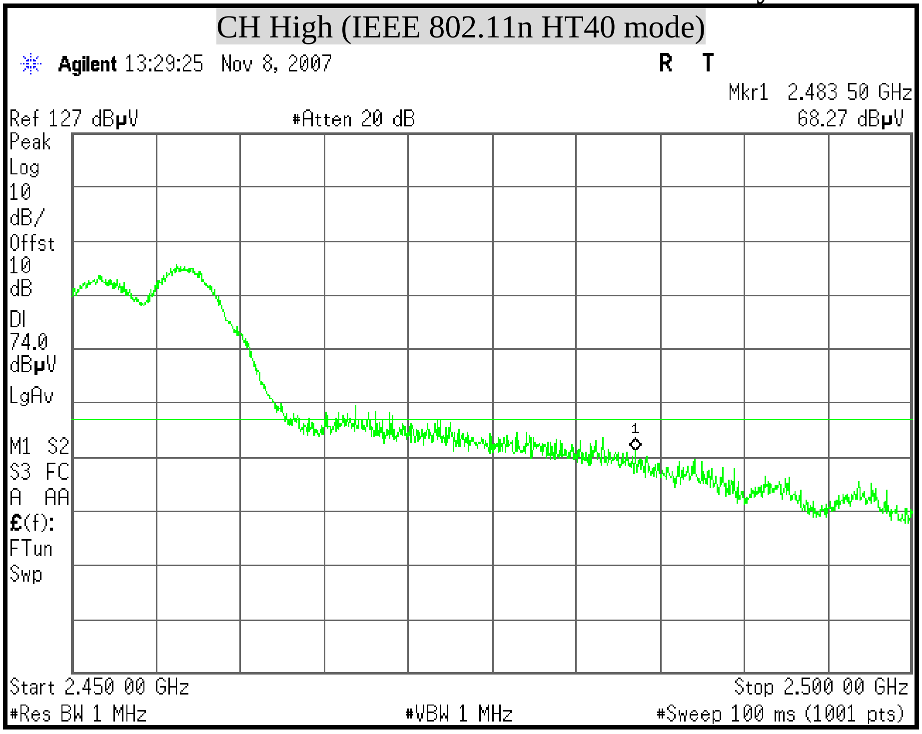
Detector mode : Peak **Polarity : Horizontal**



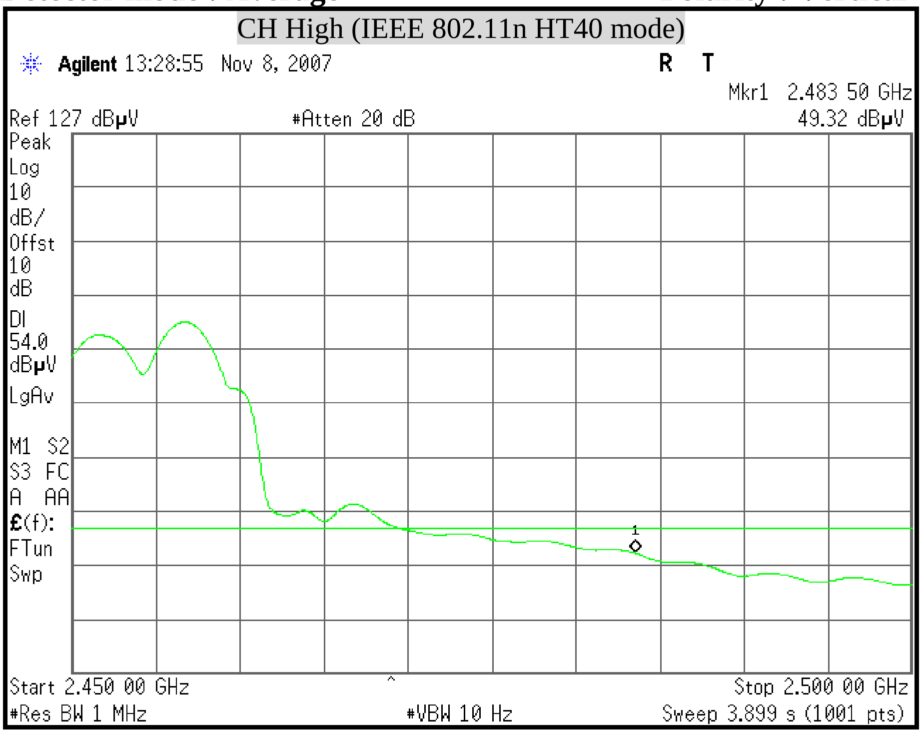
Detector mode : Average **Polarity : Horizontal**



Detector mode : Peak **Polarity : Vertical**



Detector mode : Average **Polarity : Vertical**



8.7 POWERLINE CONDUCTED EMISSIONS

LIMITS

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

The lower limit applies at the boundary between the frequency ranges.

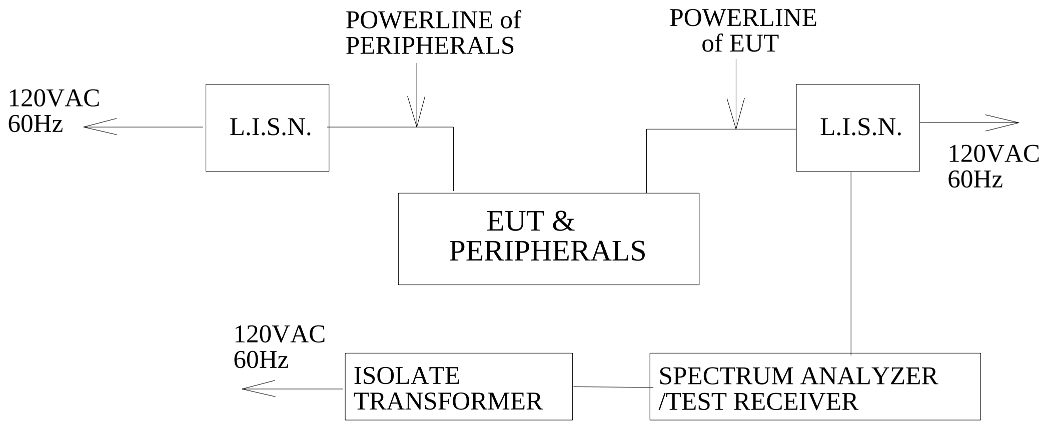
Frequency of Emission (MHz)	Conducted limit (dBμv)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.5 - 5	56	46
5 - 30	60	50

TEST EQUIPMENT

The following test equipment is used during the conducted powerline tests：

Manufacturer or Type	Model No.	Serial No.	Date of Calibration	Calibration Period	Remark
SCHWARZBECK L.I.S.N	NSLK 8127	8127-465	July 09, 2007	1 Year	FINAL
CHASE L.I.S.N	NNLK 8129	8129118	January 26, 2007	1 Year	FINAL
R & S TEST RECEIVER	ESHS30	838550/003	January 31, 2007	1 Year	FINAL
KEENE SHIELDED ROOM	5983	No.1	N/A	N/A	FINAL
R & S PULSE LIMIT	ESH3-Z2	10117	September 17, 2007	1 Year	FINAL
BELDEN N TYPE COAXIAL CABLE	8268 M17/164	003	September 14, 2007	1 Year	FINAL

TEST SETUP



TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80cm above the horizontal ground plane. The EUT IS CONFIGURED IN ACCORDANCE WITH ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both quasi-peak detection and average detection measurements.

Line conducted data is recorded for both NEUTRAL and LINE.

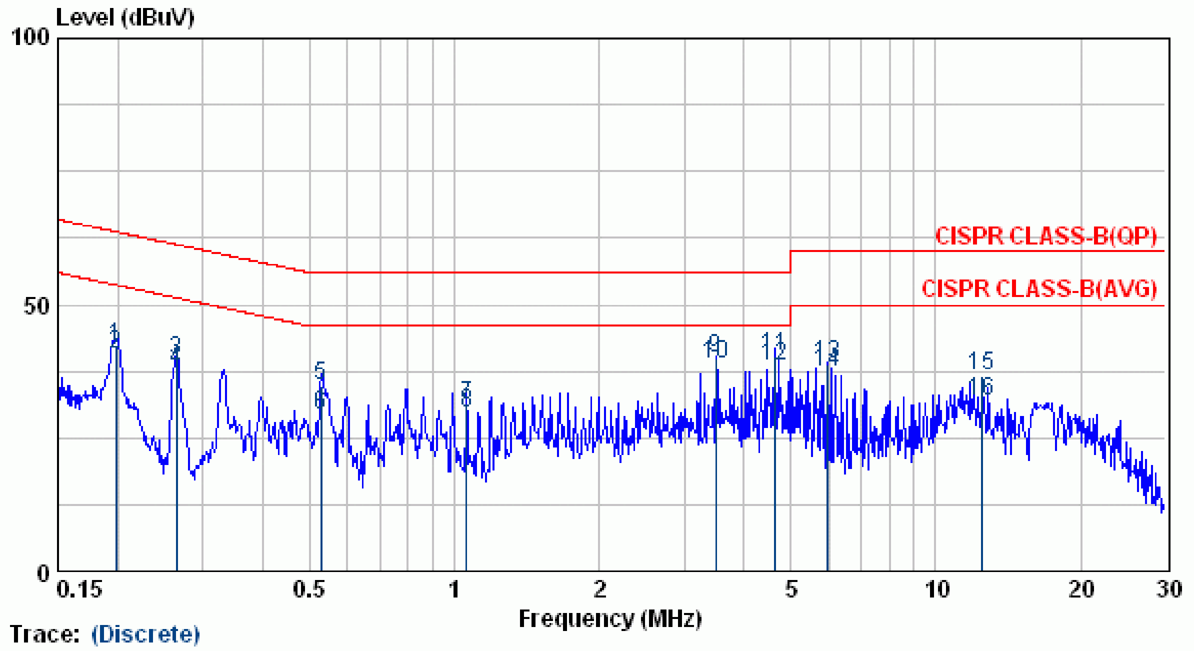
TEST RESULTS

No non-compliance noted

CONDUCTED RF VOLTAGE MEASUREMENT

Product Name	WLAN USB Stick a/b/g/n Adapter	Test Date	2007/12/03
Model	65-VE438-P2	Test By	Jason Chang
Test Mode	TX Mode	TEMP & Humidity	24.5°C, 54%

LINE



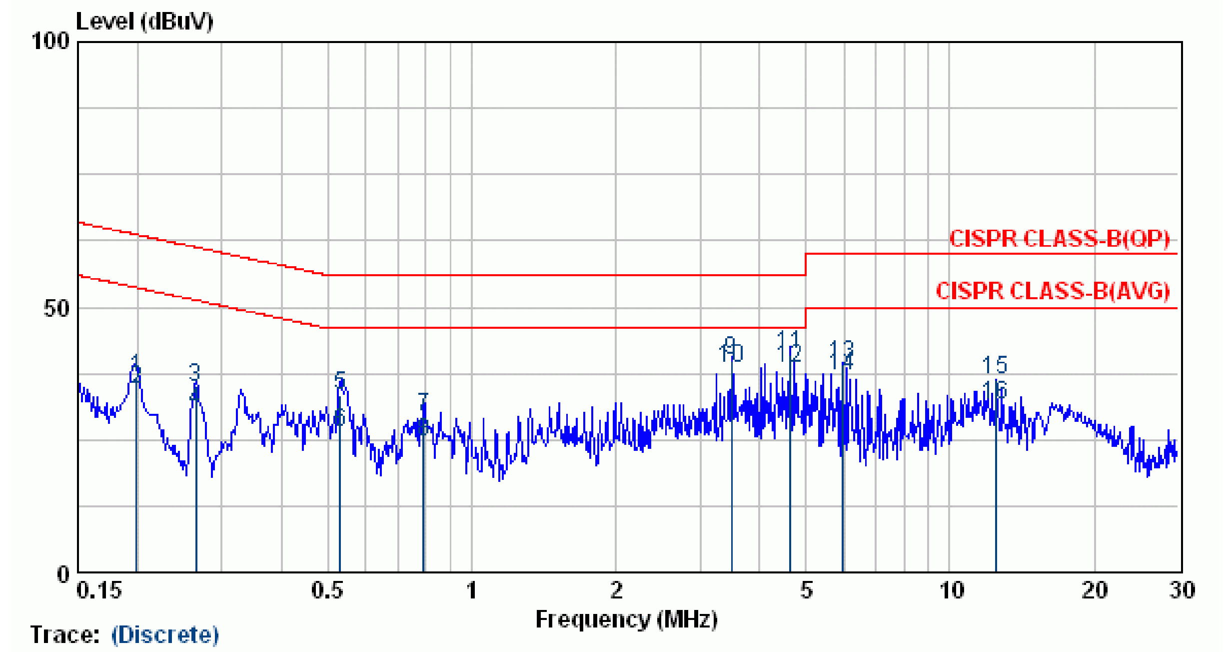
Freq. MHz	Corr. Factor dB	Reading Value dBuV Q.P.	Reading Value dBuV Ave.	Emission Level dBuV Q.P.	Emission Level dBuV Ave.	Limit dBuV Q.P.	Limit dBuV Ave.	Margin dBuV Q.P.	Margin dBuV Ave.
0.198	0.10	42.17	40.55	42.27	40.65	63.68	53.68	-21.41	-13.03
0.264	0.10	39.28	37.65	39.38	37.75	61.29	51.29	-21.91	-13.54
0.529	0.10	34.57	29.19	34.67	29.29	56.00	46.00	-21.33	-16.71
1.060	0.10	31.01	29.66	31.11	29.76	56.00	46.00	-24.89	-16.24
3.486	0.20	39.69	38.49	39.89	38.69	56.00	46.00	-16.11	-7.31
4.628	0.20	40.16	38.19	40.36	38.39	56.00	46.00	-15.64	-7.61
5.951	0.29	38.58	37.05	38.87	37.34	60.00	50.00	-21.13	-12.66
12.502	0.50	36.17	31.49	36.67	31.99	60.00	50.00	-23.33	-18.01

Remark:

1. *Correction Factor = Insertion loss + cable loss*
2. *Margin value = Emission level – Limit value*

Product Name	WLAN USB Stick a/b/g/n Adapter	**Test Date**	2007/12/03
Model	65-VE438-P2	**Test By**	Jason Chang
Test Mode	TX Mode	**TEMP & Humidity**	24.5°C, 54%

NEUTRAL



Freq. MHz	Corr. Factor dB	Reading Value dBuV Q.P.	Reading Value dBuV Ave.	Emission Level dBuV Q.P.	Emission Level dBuV Ave.	Limit dBuV Q.P.	Limit dBuV Ave.	Margin dBuV Q.P.	Margin dBuV Ave.
0.199	0.20	36.51	34.37	36.71	34.57	63.65	53.65	-26.94	-19.08
0.265	0.20	34.77	30.19	34.97	30.39	61.28	51.28	-26.31	-20.89
0.532	0.20	33.22	26.19	33.42	26.39	56.00	46.00	-22.58	-19.61
0.794	0.20	28.97	24.48	29.17	24.68	56.00	46.00	-26.83	-21.32
3.485	0.20	39.61	38.26	39.81	38.46	56.00	46.00	-16.19	-7.54
4.628	0.20	40.72	38.42	40.92	38.62	56.00	46.00	-15.08	-7.38
5.951	0.29	38.74	36.78	39.03	37.07	60.00	50.00	-20.97	-12.93
12.501	0.50	35.61	31.17	36.11	31.67	60.00	50.00	-23.89	-18.33

Remark:

1. *Correction Factor = Insertion loss + cable loss*
2. *Margin value = Emission level – Limit value*

9. ANTENNA REQUIREMENT

9.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

9.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used for this product is Printed antenna. The peak Gain of this antenna is 1.51dBi at 2.4GHz.

The antenna used for this product is Printed antenna. The peak Gain of this antenna is 2.34dBi at 5 GHz