



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

TEST REPORT

For

D-Link AirPremier N Dual Band PoE Access Point

Model : DAP-2553

Trade Name : D-Link

Issued for

D-Link Corporation

No. 289, Sinhu 3rd Rd., Neihu District,

Taipei City 114, Taiwan, R.O.C

Issued by

Compliance Certification Services Inc.

Hsinchu Lab.

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	06/17/2008	Initial Issue	All Page 169	Jason Chang
01	07/14/2008	Update 26dB Bandwidth, 99% Bandwidth and Restricted Band Edge	Page 13, 15, 17, 19, 21, 23, 25 ~ 28, 30, 32, 34, 36, 38, 40, 42 ~ 45, 142 ~ 147	Jason Chang
02	07/22/2008	Update Restricted Band Edges	Page 148 ~ 153	Jason Chang
03	07/29/2008	Update Description Of EUT & Power, 26db Bandwidth, Maximum Conducted Output Power, Maximum Permissible Exposure, Average Power, Conducted Spurious Emission, Transmitter Radiated Emission Above 1 GHz and Restricted Band Edges	Page 5 ~ 6, 12 ~ 16, 19 ~ 27, 29 ~ 44, 45 ~ 62, 64, 68 ~ 89, 91 ~ 106, 108 ~ 127, 134 ~ 135, 137 ~ 138, 142 ~ 143, 146 ~ 147, 150 ~ 151 All Page 167	Jason Chang



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1. TEST REPORT CERTIFICATION

Applicant : D-Link Corporation
Address : No. 289, Sinhu 3rd Rd., Neihu District,
Taipei City 114, Taiwan, R.O.C.
Equipment Under Test : D-Link AirPremier N Dual Band PoE Access Point
Model : DAP-2553
Trade Name : D-Link
Tested Date : February 29 ~ June 12, 2008 ; July 11 ~ 26, 2008

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

Approved by:

Jason Chang

Jason Chang
Team Leader of Hsinchu Laboratory
Compliance Certification Services Inc.

Reviewed by:

Alan Fan

Alan Fan
Team Leader of Hsinchu Laboratory
Compliance Certification Services Inc.



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	D-Link AirPremier N Dual Band PoE Access Point
Model Number	DAP-2553
Frequency Range	IEEE 802.11a, IEEE 802.11n HT20/HT40 : 5150MHz ~ 5250MHz
Transmit Power	IEEE 802.11a : 10.63dBm IEEE 802.11n HT20 : 15.26dBm IEEE 802.11n HT40 : 15.93dBm
Channel Spacing	IEEE 802.11a, IEEE 802.11n HT20: 20MHz / HT40 : 40MHz
Channel Number	IEEE 802.11a : 3 Channels IEEE 802.11n HT20 : 3 Channels IEEE 802.11n HT40 : 1 Channels
Transmit Data Rate	IEEE 802.11a : 54, 48, 36, 24, 18, 12, 9, 6Mbps IEEE 802.11n HT20 : 144.444, 130, 117, 115.556, 104, 86.667, 78, 72.2, 65, 58.5, 57.8, 57.778, 52, 43.333, 43.3, 39, 28.9, 28.889, 26, 21.7, 19.5, 14.444, 14.4, 13, 7.2, 6.5 Mbps IEEE 802.11n HT40 : 300, 270, 243, 240, 216, 180, 162, 150, 135, 121.5, 120, 108, 90, 81, 60, 54, 45, 40.5, 30, 27, 15, 13.5Mbps
Type of Modulation	IEEE 802.11a : OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20 / 40 : OFDM (64QAM, 16QAM, QPSK, BPSK)
Frequency Selection	by software / firmware
Antenna Type	Dipole Antenna × 3 2.4 GHz ~ 2.5 GHz Antenna Gain : 3dBi 4.9 GHz ~ 5.825 GHz Antenna Gain : 5dBi
Power Source	5.0VDC (From Power Adapter)
Note	Atheros Communications Inc. RF Module Model : MB82

Operation Frequency:

IEEE 802.11a, IEEE 802.11n HT20 mode

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)	
CHANNEL	MHz
36	5180
40	5200
44	5220

IEEE 802.11n HT40 mode

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)	
CHANNEL	MHz
38	5190

**Power Adapter :**

No.	Manufacturer	Model No.	Power Input	Power Output
1	D-Link	AF1805-A	100-120VAC, 50/60Hz, 0.4A	5VDC, 2.5A
2	D-Link	AF1805-B	100-120VAC, 50/60Hz, 0.4A	5VDC, 2.5A

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: KA2AP2553A1 filing to comply with Section 15.407 FCC Part 15, Subpart E 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 Access Point form factor. It has three transmitter chains and three receive chains (3×3 configurations). The 3×3 configuration is implemented with three outside chains (Chain 0, 1, 2).

The RF chipset is manufactured by Atheros Communications Inc.

IEEE 802.11a mode, IEEE 802.11n HT20 mode (5150MHz ~ 5250MHz)

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	5180
Middle	5200
High	5220

IEEE 802.11a mode : 6Mbps 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 (5150MHz ~ 5250MHz)

The EUT had been tested under operating condition.

There is one channel have been tested as following :

Channel	Frequency (MHz)
Low	5190

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.



4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.407.

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 Taiwan Accreditation Foundation for the specific scope of accreditation under Lab Code: 0240 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 TAF or any agency of the 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	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 90585, 90584
Japan	VCCI	3/10 meter Open Area Test Sites to perform conducted/radiated measurements	 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	 Testing Laboratory 0240
Taiwan	BSMI	CNS 13803, CNS 13438, CNS 13439, CNS 13783-1, CNS 14115	 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	RSS-GEN Issue 2	 IC 4417-1, IC-4417-2

* No part of this report may be used to claim or imply product endorsement by TAF 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	DELL	Latitude D610	CN-0C4708-48643-625-5565	E2K24BNHM
2	Notebook PC	HP	nx6130	CNU543274R	CNTWM3B2200BGA

SETUP DIAGRAM FOR TESTS

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

EUT OPERATING CONDITION

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



8. APPLICABLE LIMITS AND TEST RESULTS

8.1 26dB BANDWIDTH

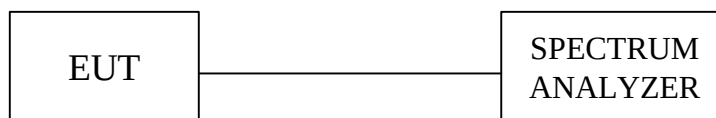
LIMIT

§ 15.303 (c) (2), For purposes of this subpart, the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

TEST 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 24, 2008

TEST SETUP



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low-loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 1%EBW, VBW = RBW, Span = 50MHz and Sweep = auto.
Or Set the spectrum analyzer as RBW > 1%EBW, VBW > RBW, Span > 26dB bandwidth (Base Mode) and Sweep = auto.
4. Mark the peak frequency and -26dB (upper and lower) frequency.
5. Repeat until all the rest channels were investigated.

**TEST RESULTS**

No non-compliance noted

IEEE 802.11a mode

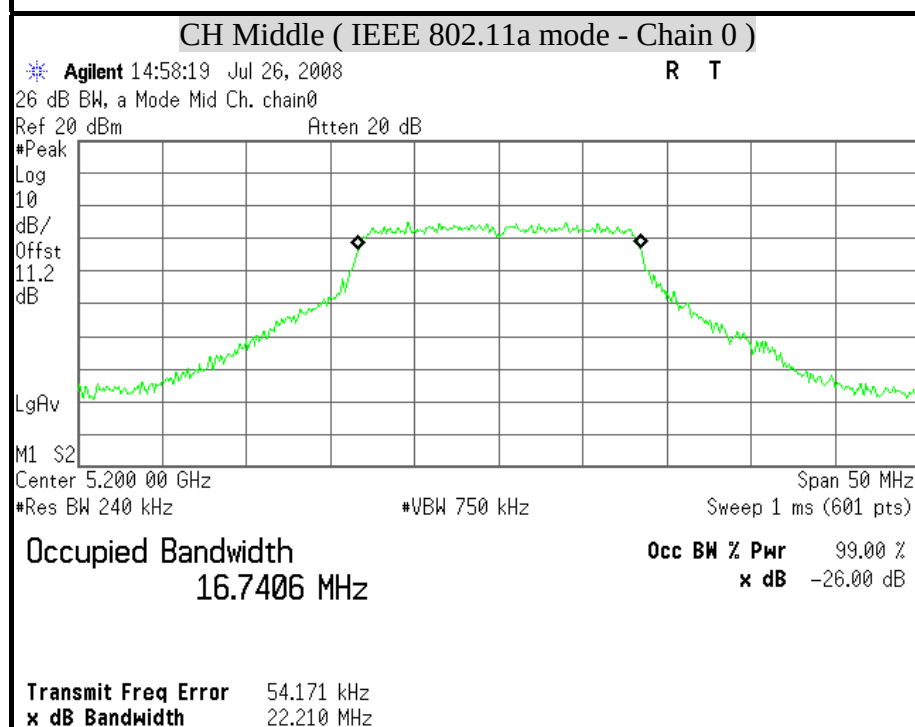
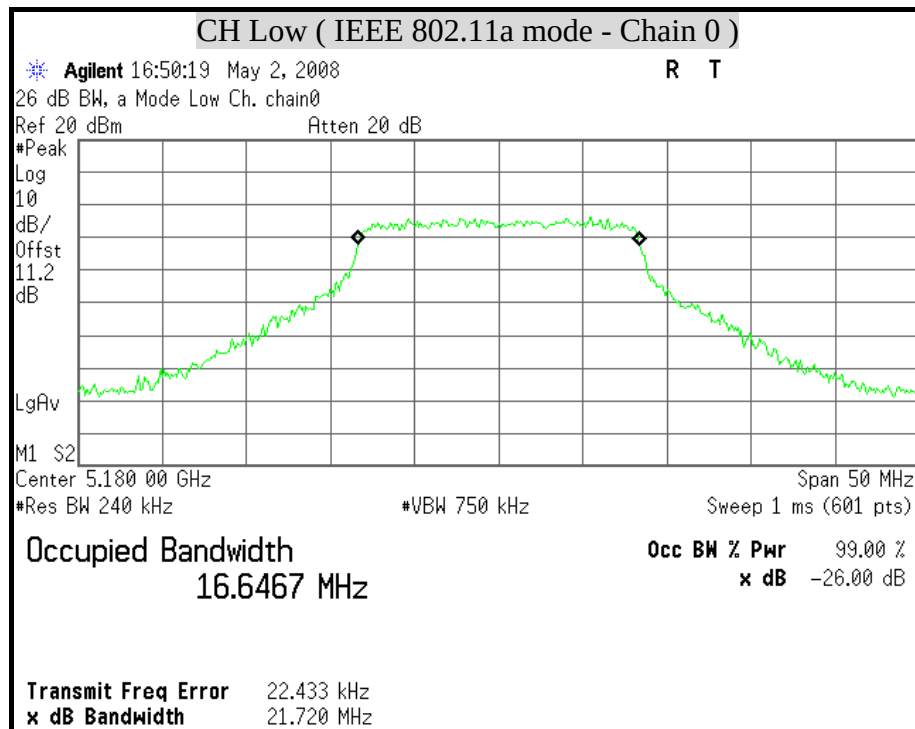
Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
Low	5180	21.720	22.397	23.035	N/A
Middle	5200	22.210	21.810	22.111	N/A
High	5220	21.980	22.668	22.350	N/A

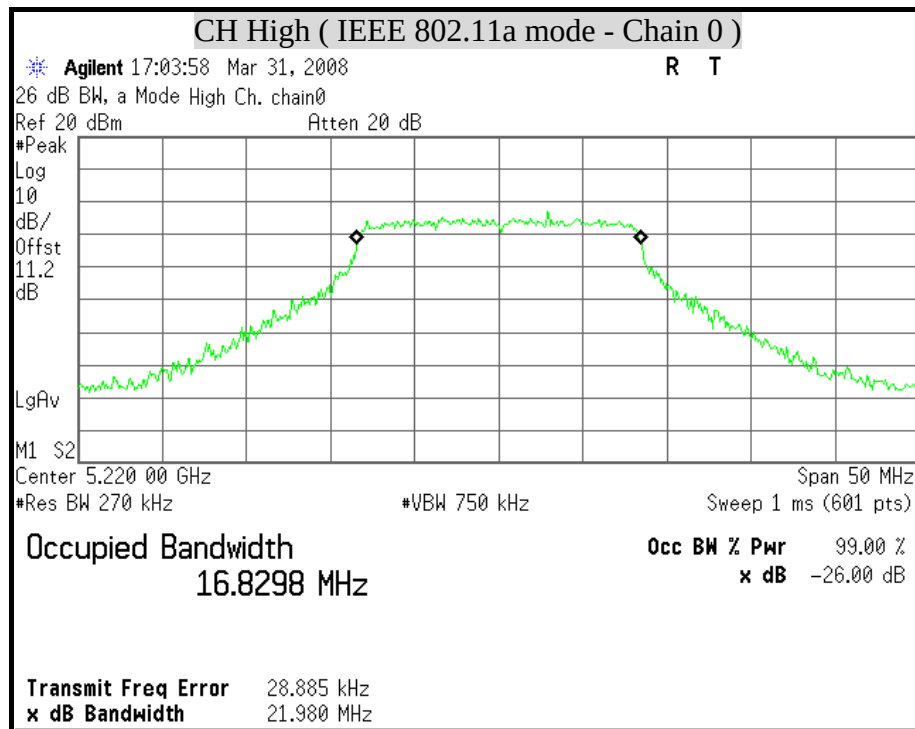
IEEE 802.11n HT20 mode

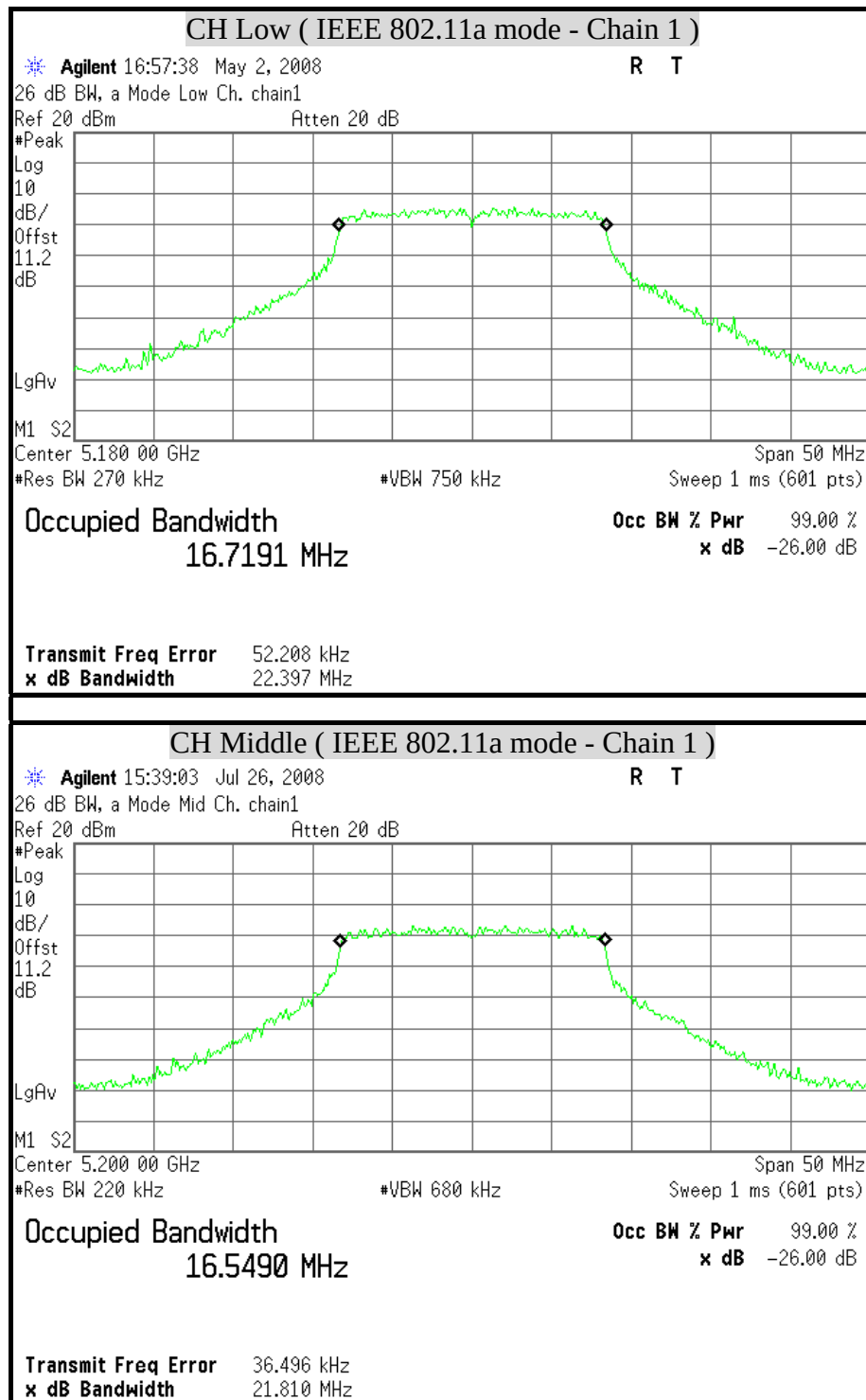
Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
Low	5180	24.717	23.682	22.860	N/A
Middle	5200	23.452	24.515	23.054	N/A
High	5220	23.220	22.977	23.896	N/A

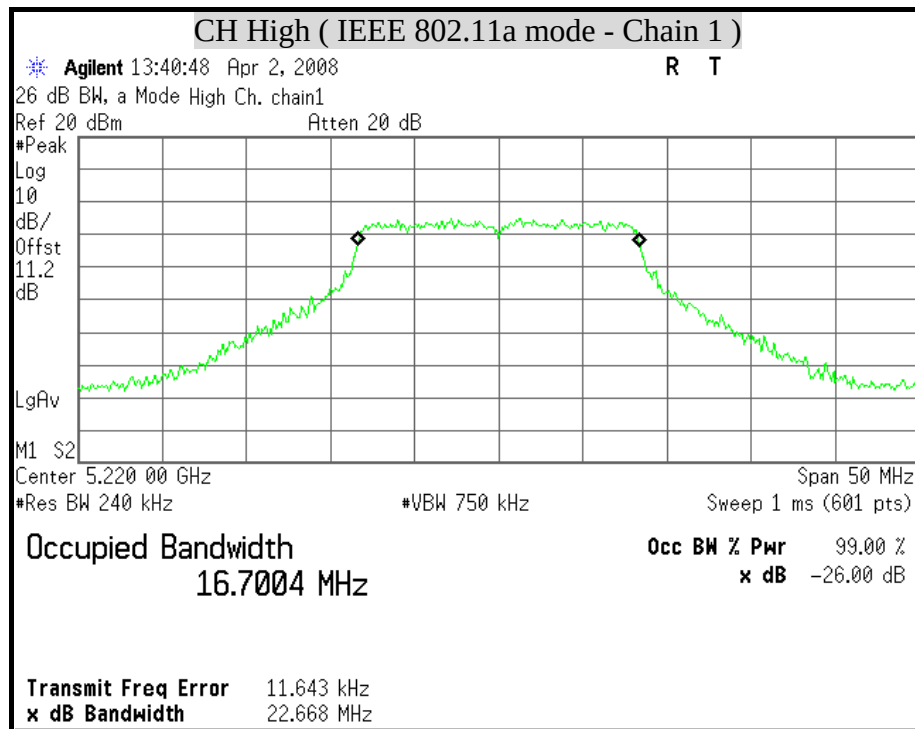
IEEE 802.11n HT40 mode

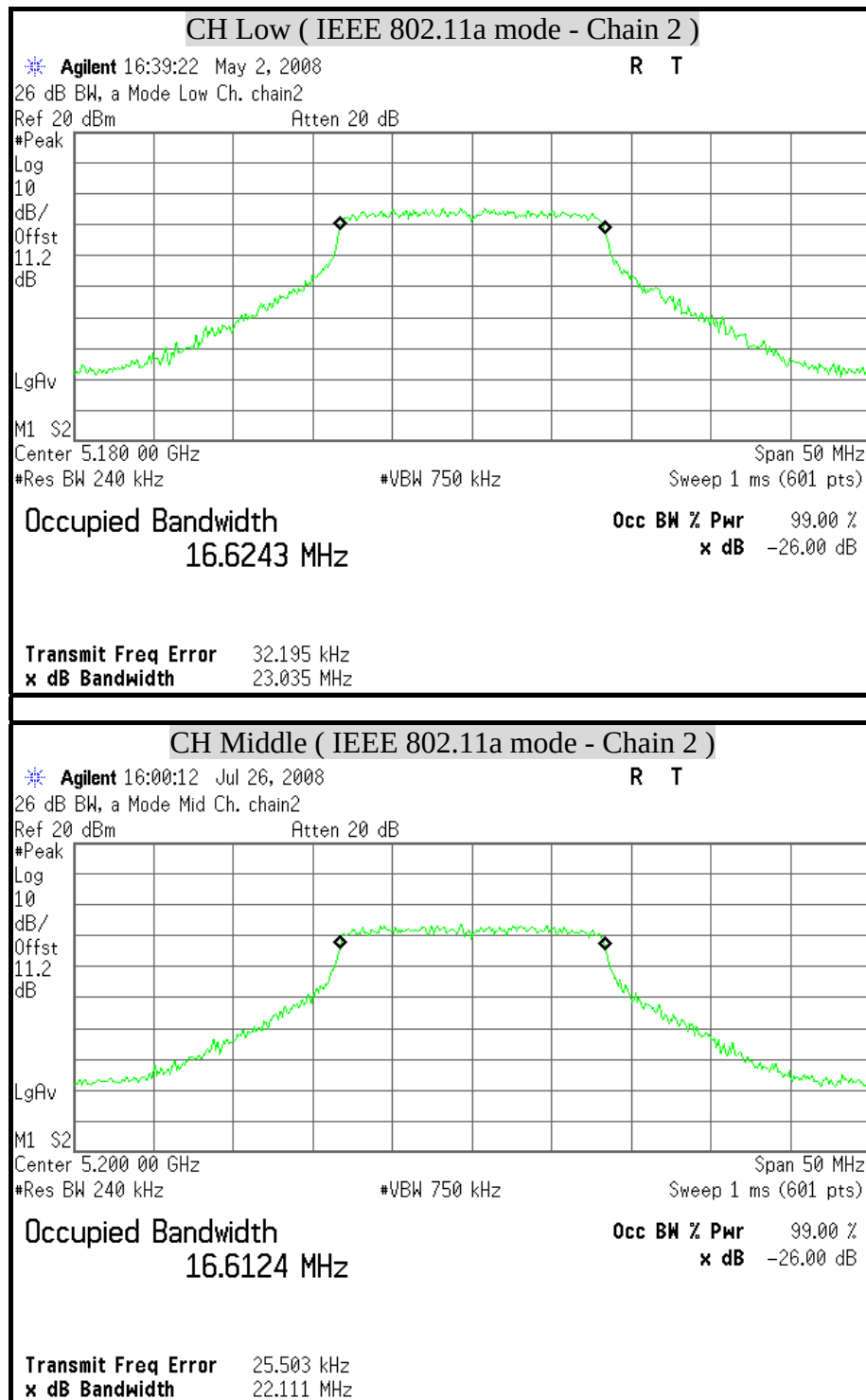
Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
Low	5190	48.714	47.067	45.855	N/A

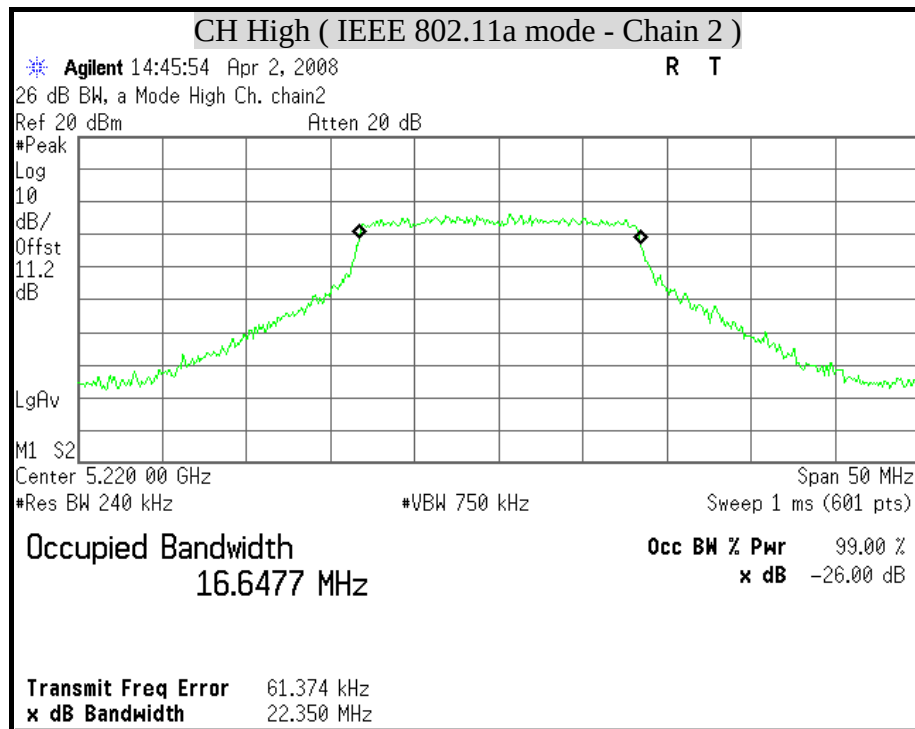
**26dB BANDWIDTH (IEEE 802.11a mode)**

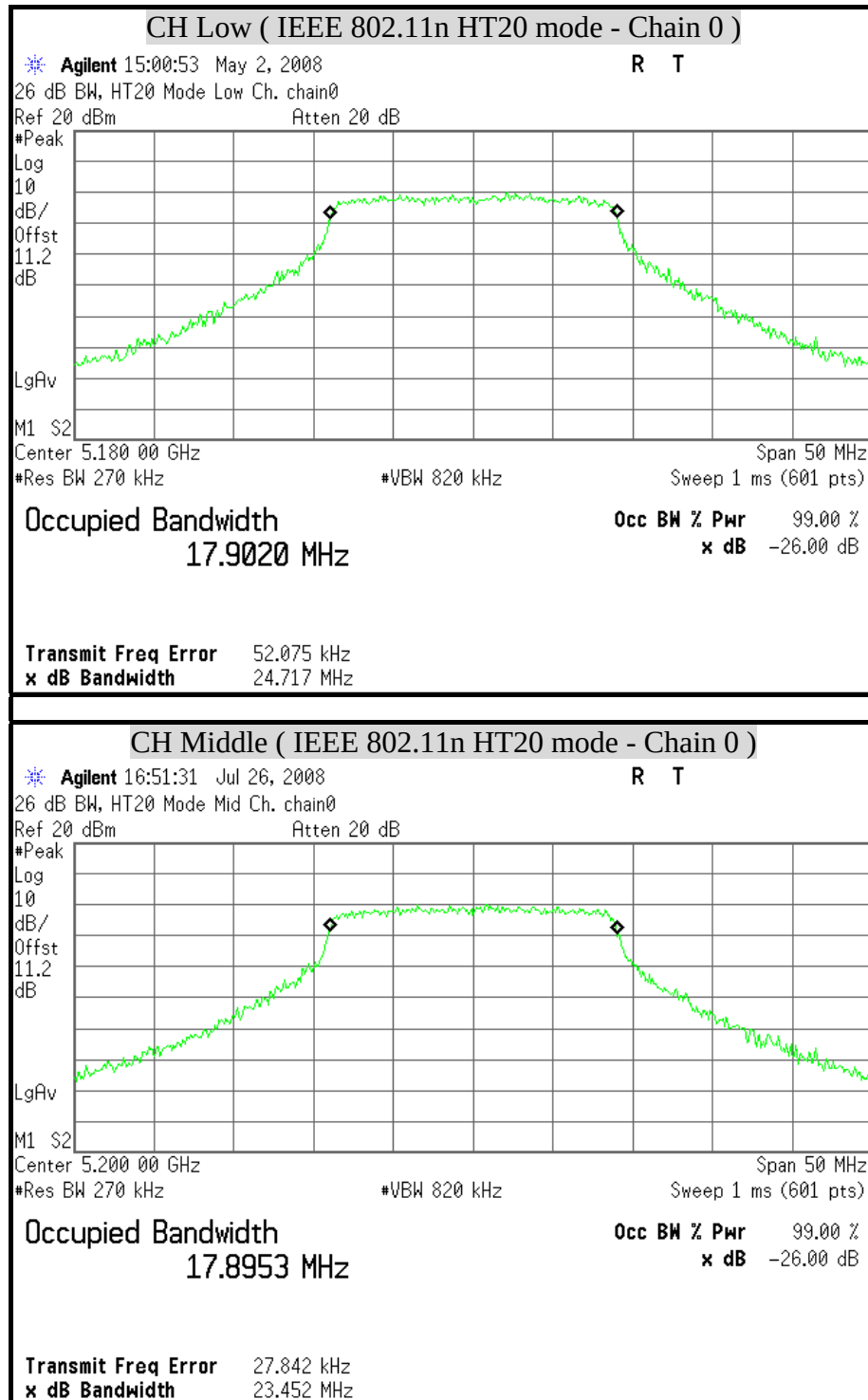


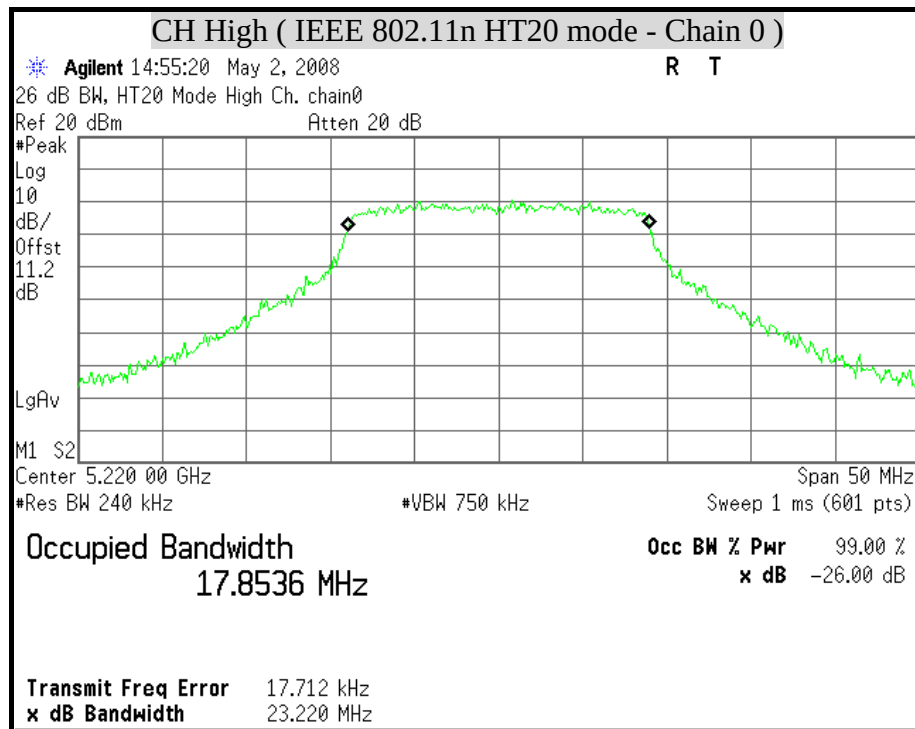


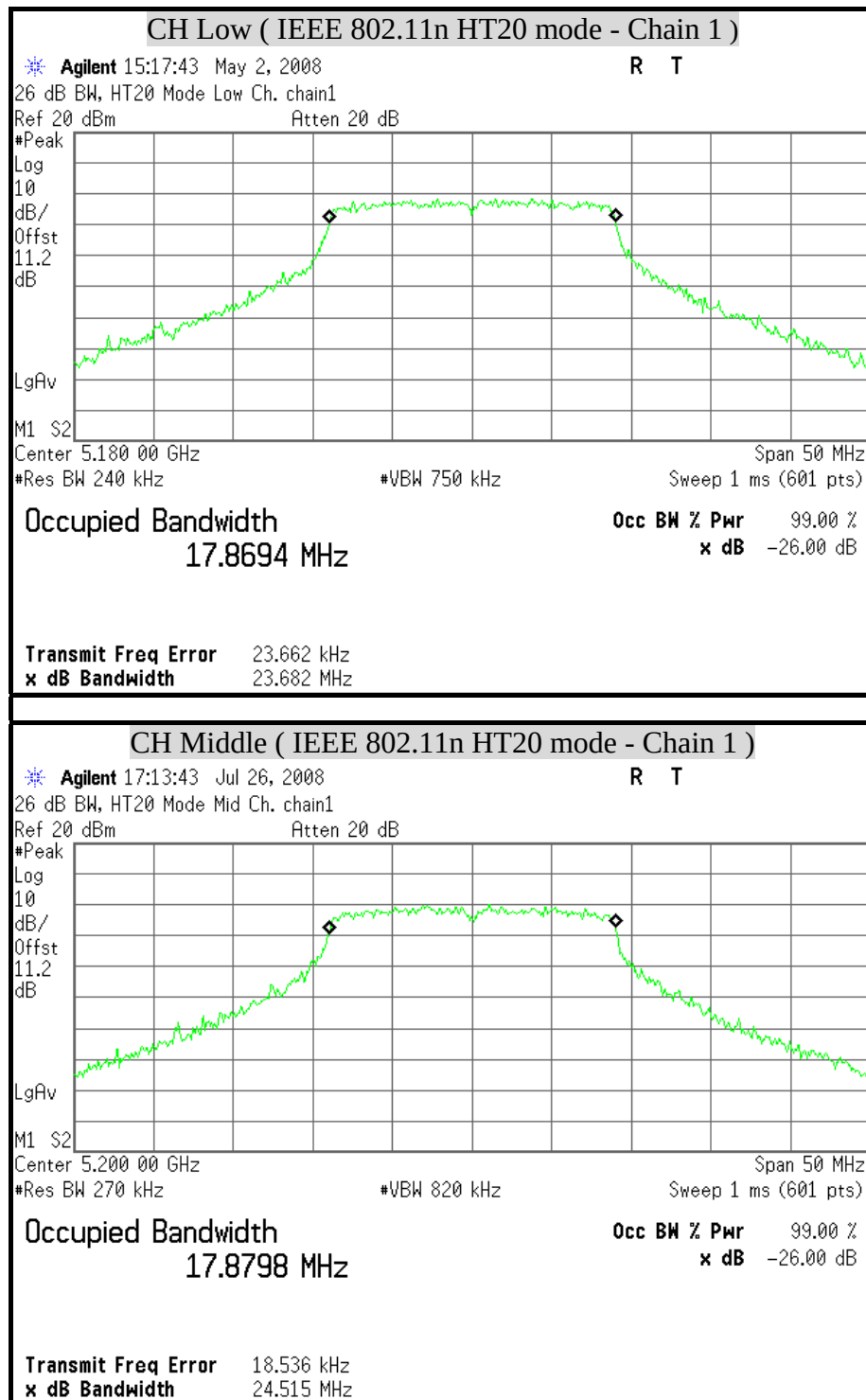


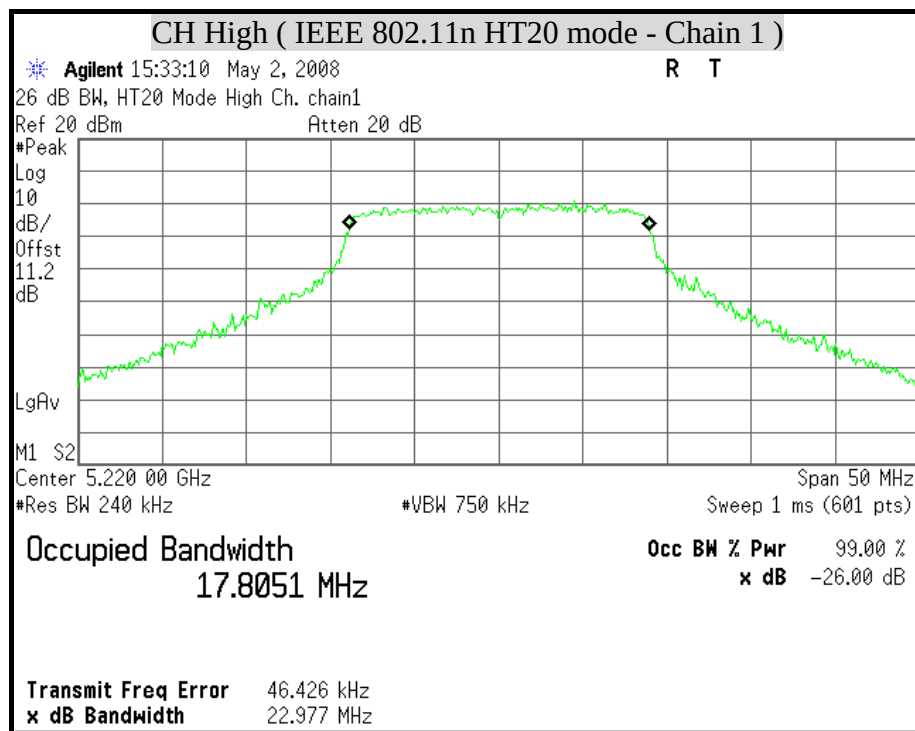


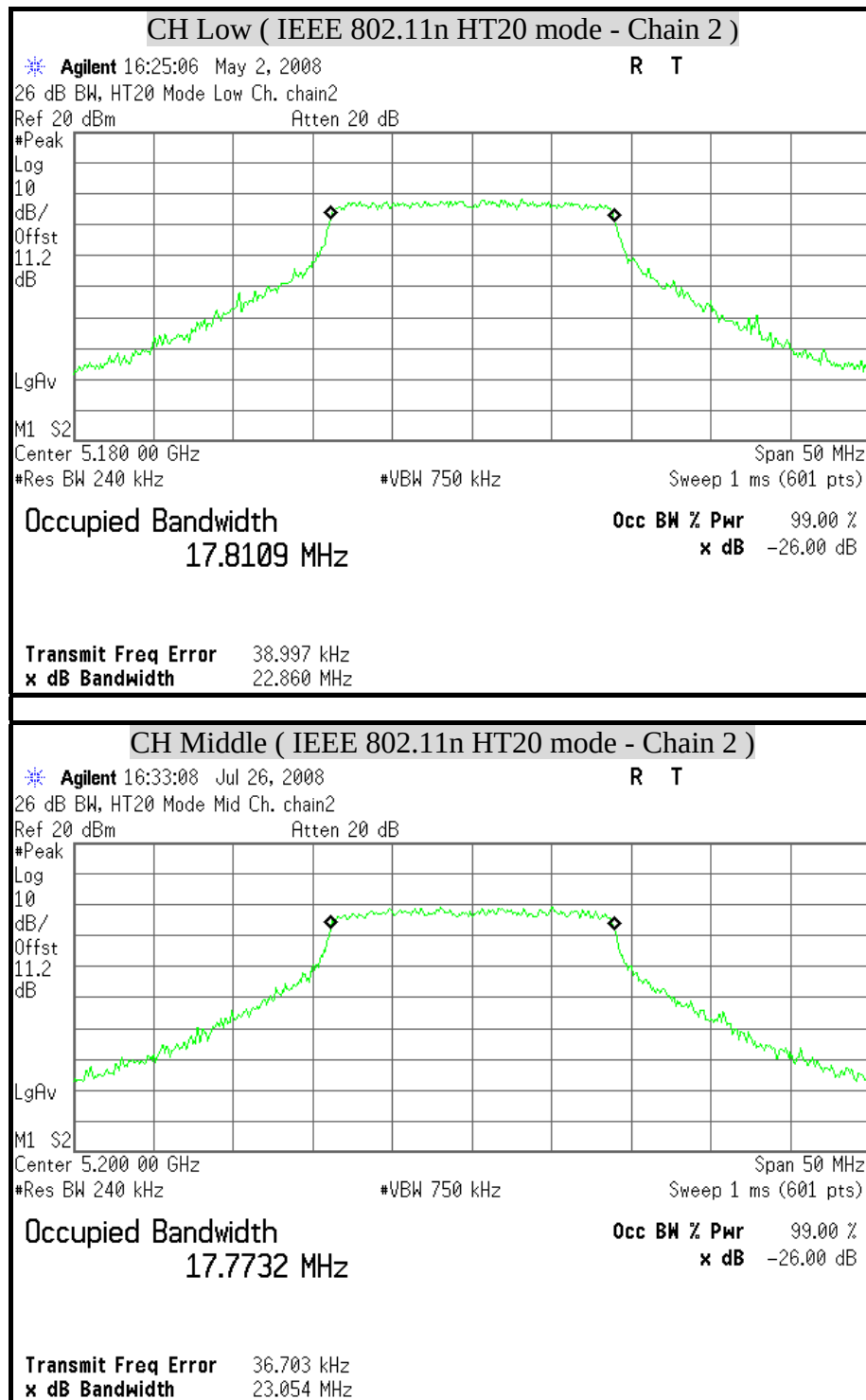


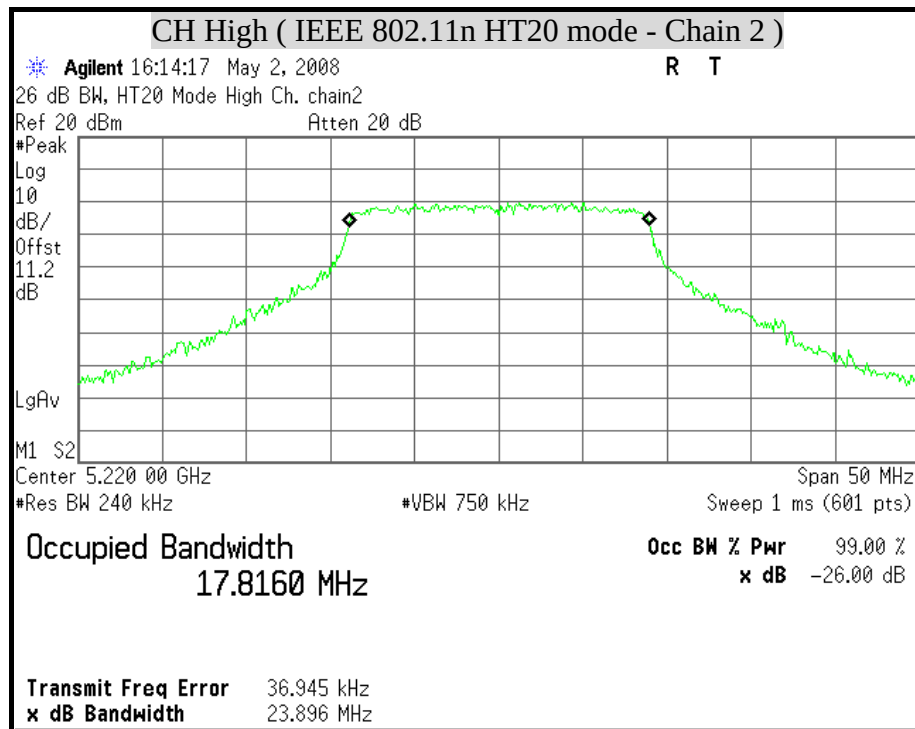
**26dB BANDWIDTH (IEEE 802.11n HT20 mode)**

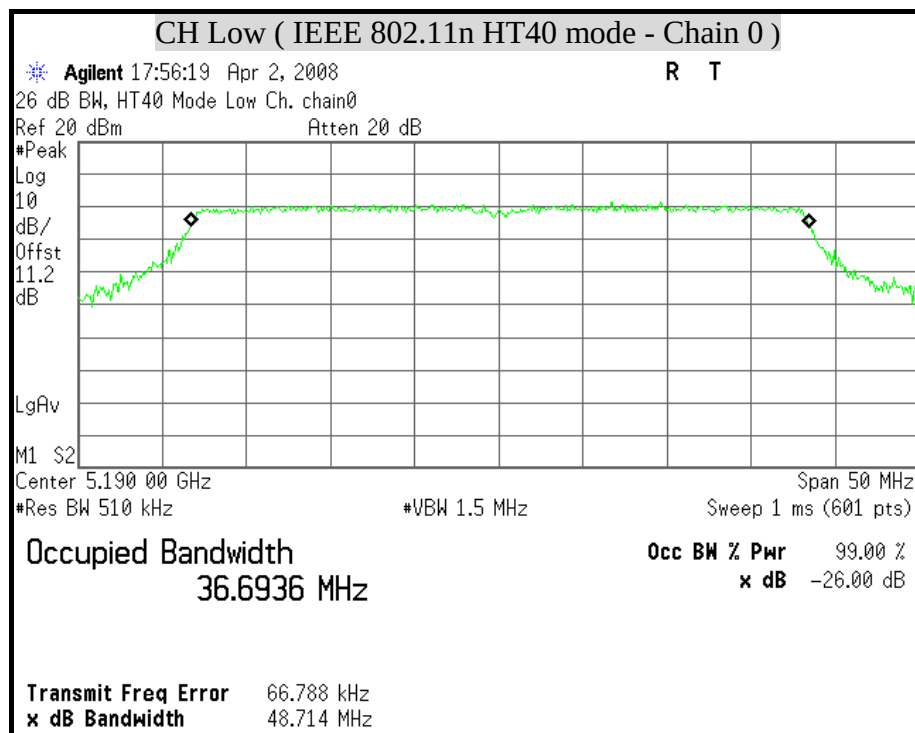


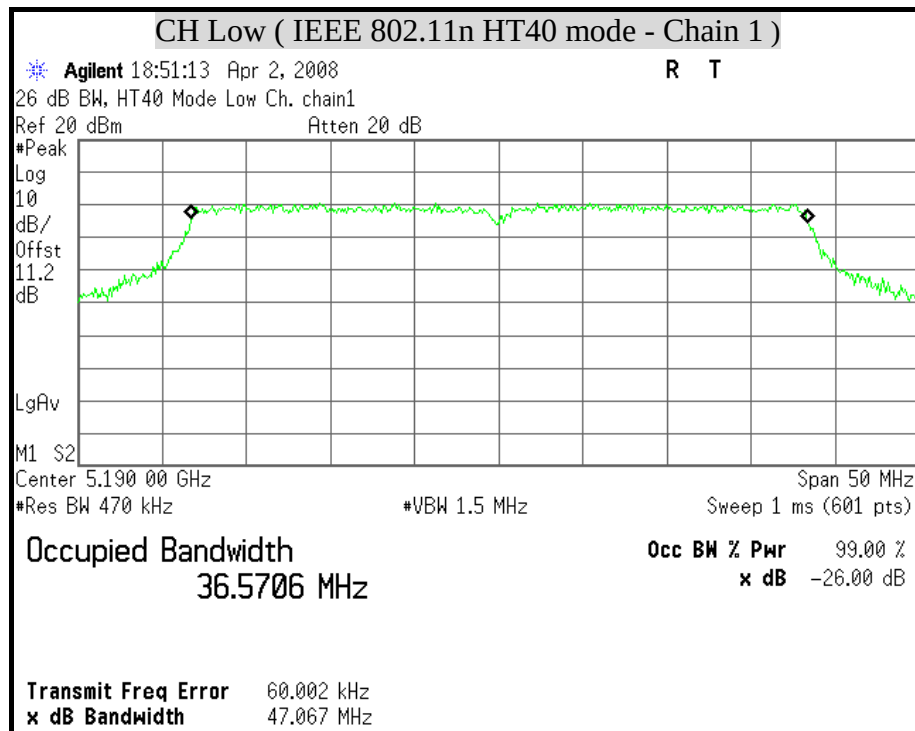


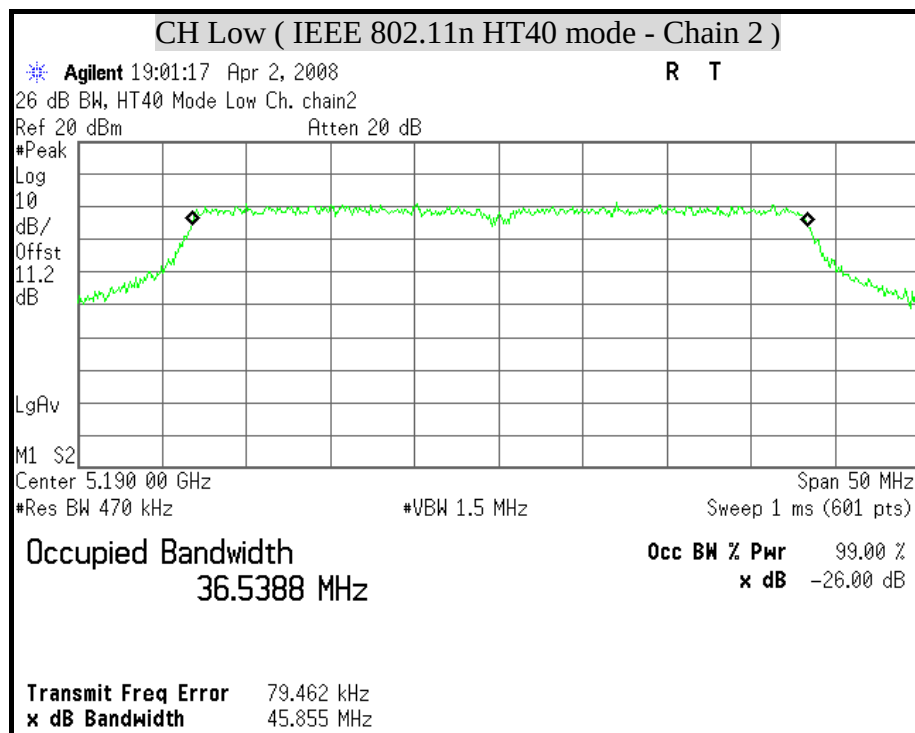






**26dB BANDWIDTH (IEEE 802.11n HT40 mode)**



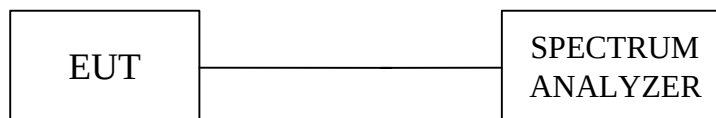


**8.2 99% BANDWIDTH****LIMIT**

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 24, 2008

TEST SETUP**TEST PROCEDURE**

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the selected span. The VBW is set to 3 times the RBW. The sweep time is occupied.

**TEST RESULTS**

No non-compliance noted

IEEE 802.11a mode

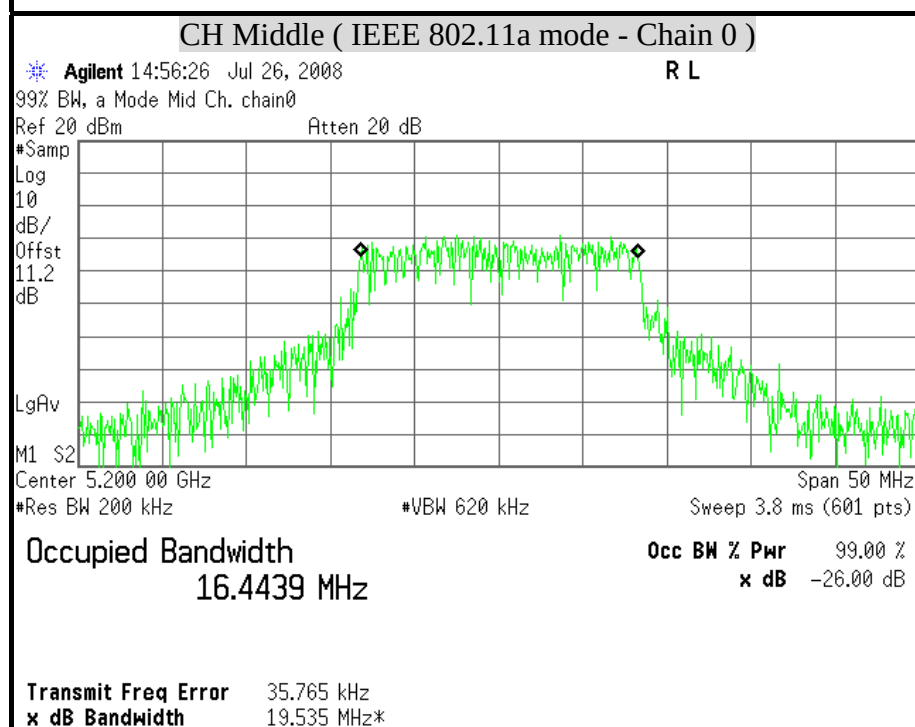
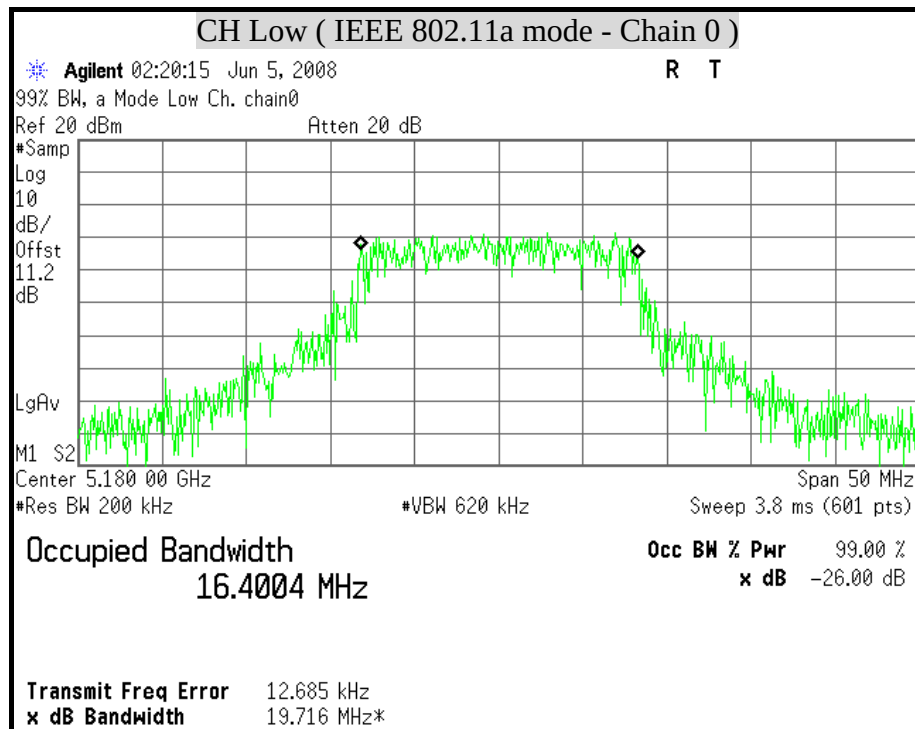
Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
Low	5180	16.40	16.24	16.43
Middle	5200	16.44	16.39	16.36
High	5220	16.46	16.37	16.49

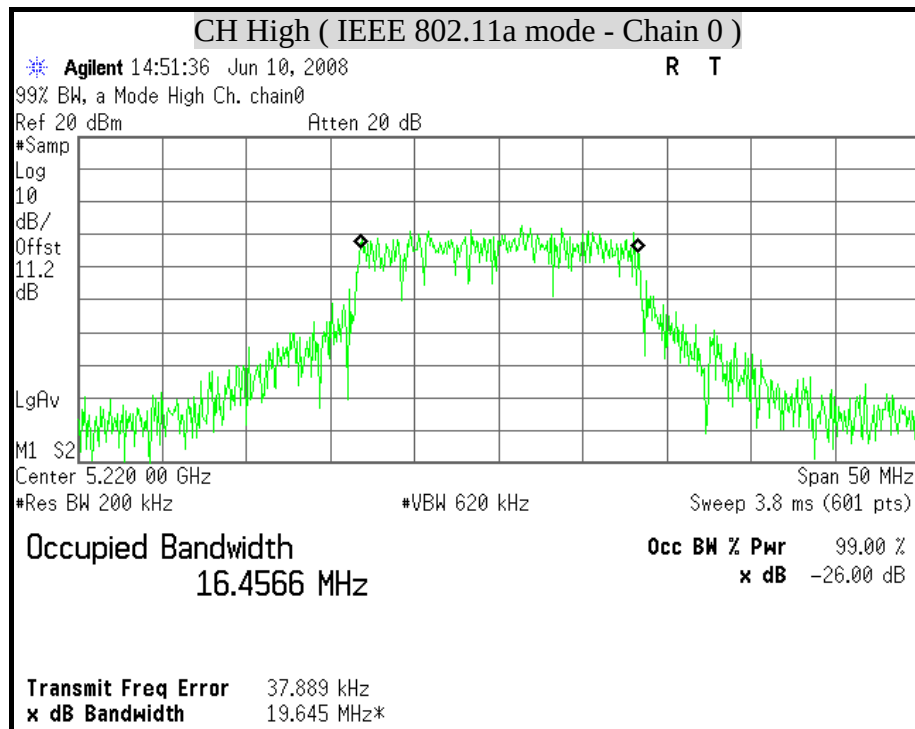
IEEE 802.11n HT20 mode

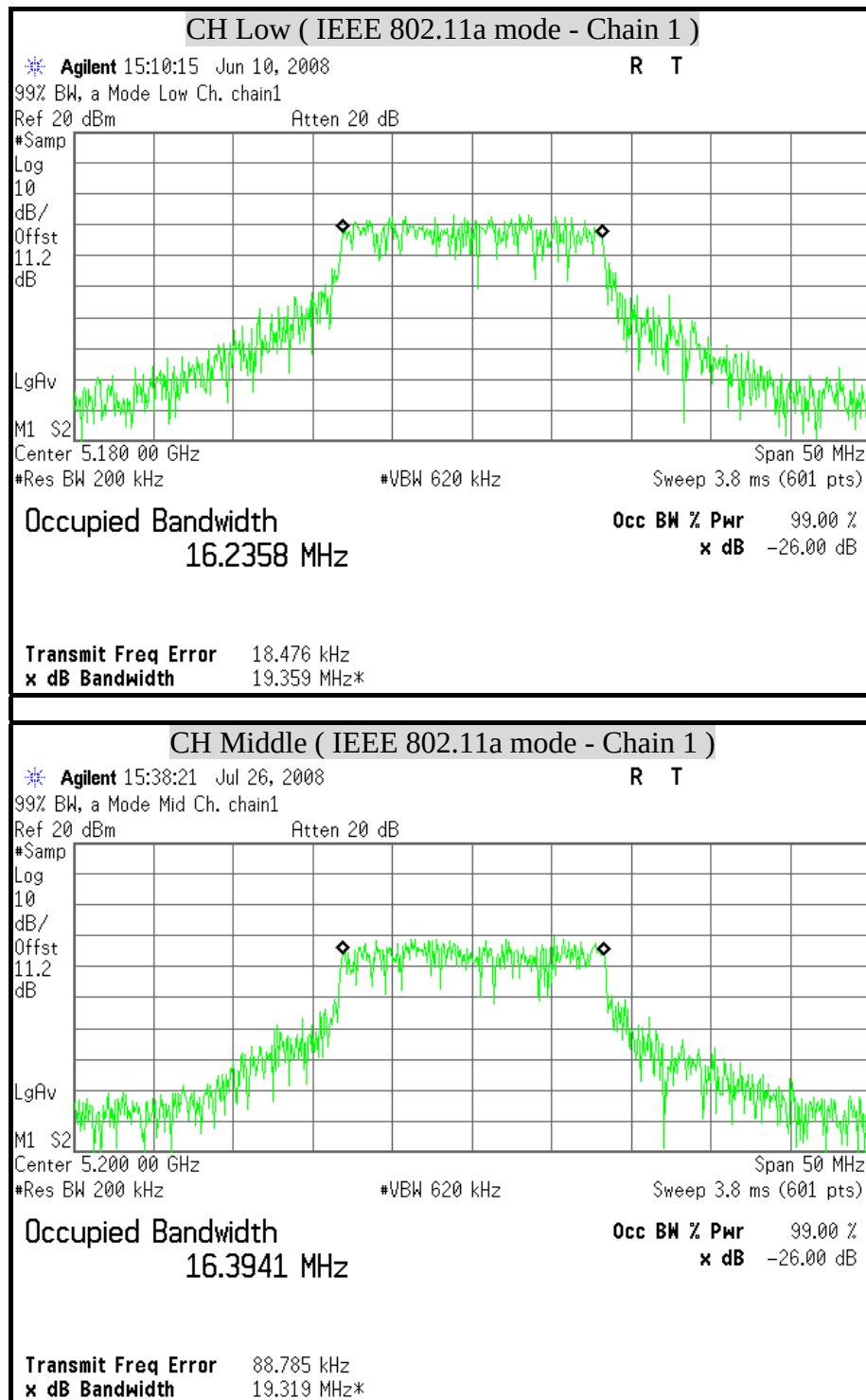
Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
Low	5180	17.62	17.58	17.61
Middle	5200	17.60	17.71	17.74
High	5220	17.63	17.63	17.67

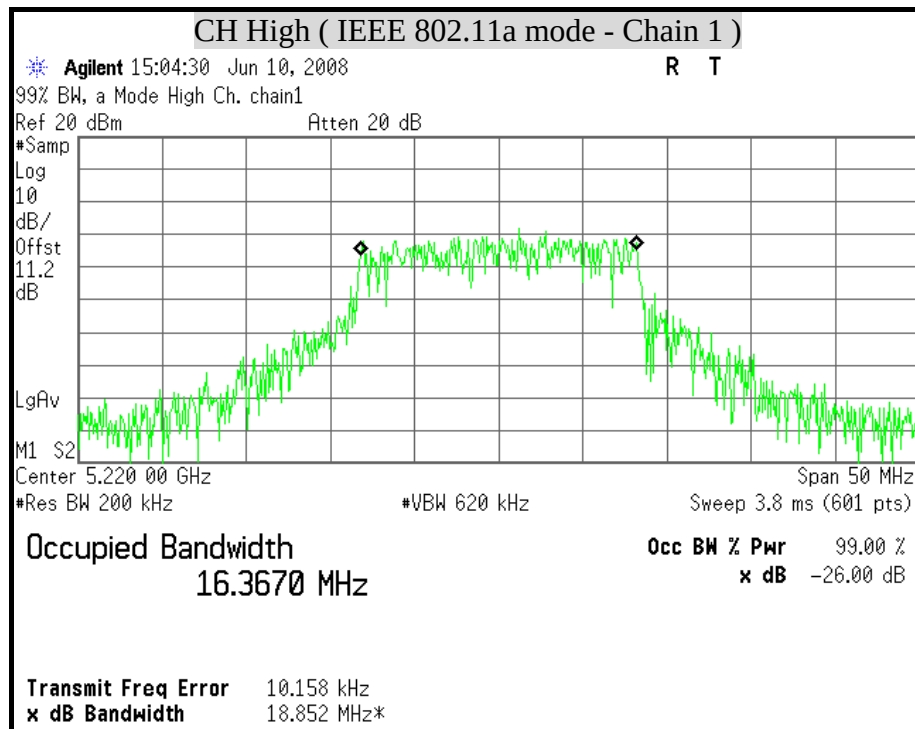
IEEE 802.11n HT40 mode

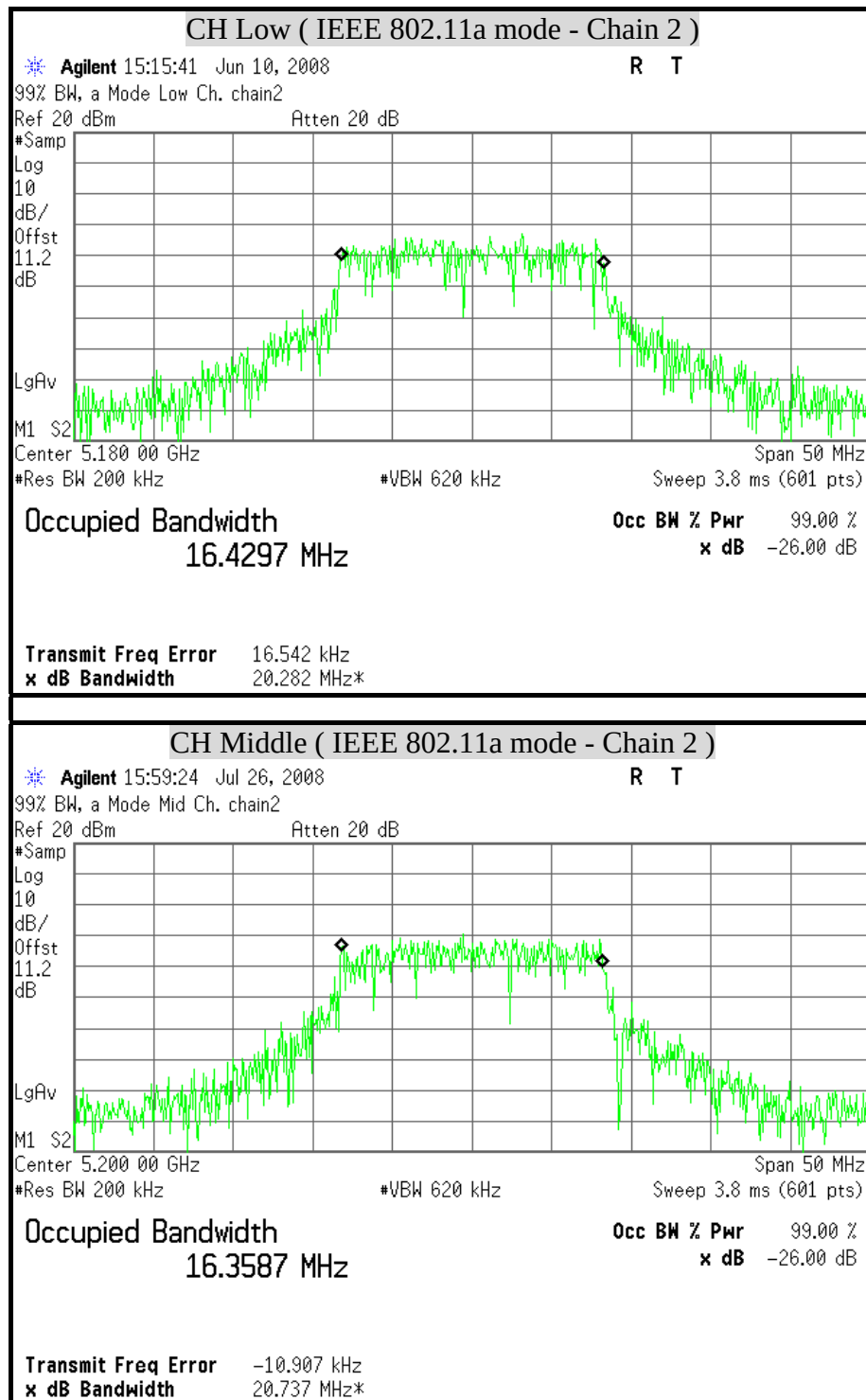
Channel	Channel Frequency (MHz)	99% Occupied power bandwidth (MHz)		
		Chain 0	Chain 1	Chain 2
Low	5190	36.35	36.25	36.29

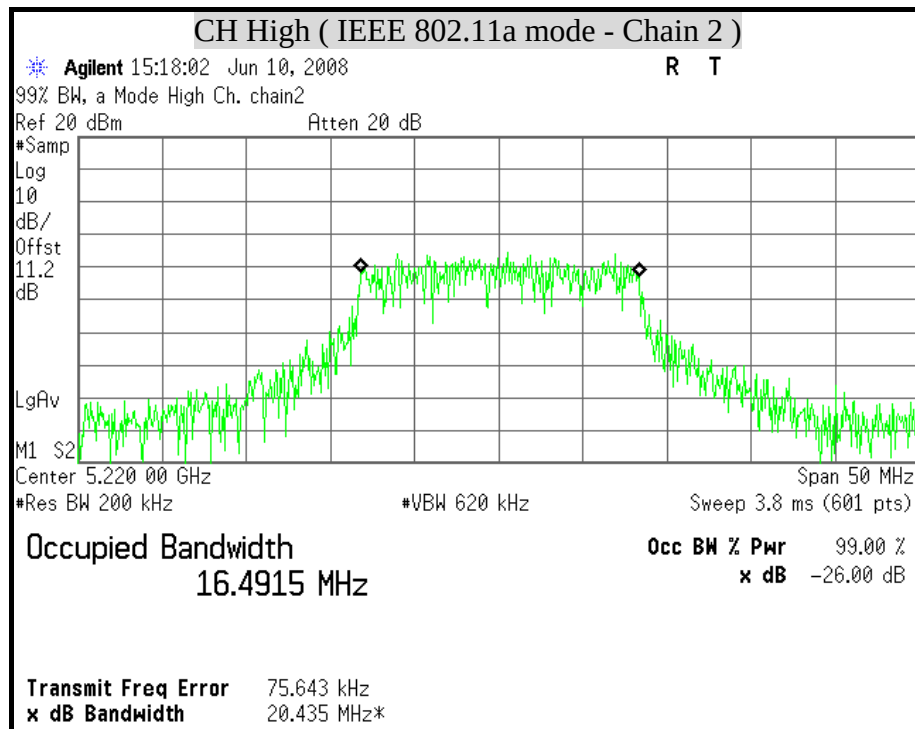
**99% BANDWIDTH (IEEE 802.11a mode)**

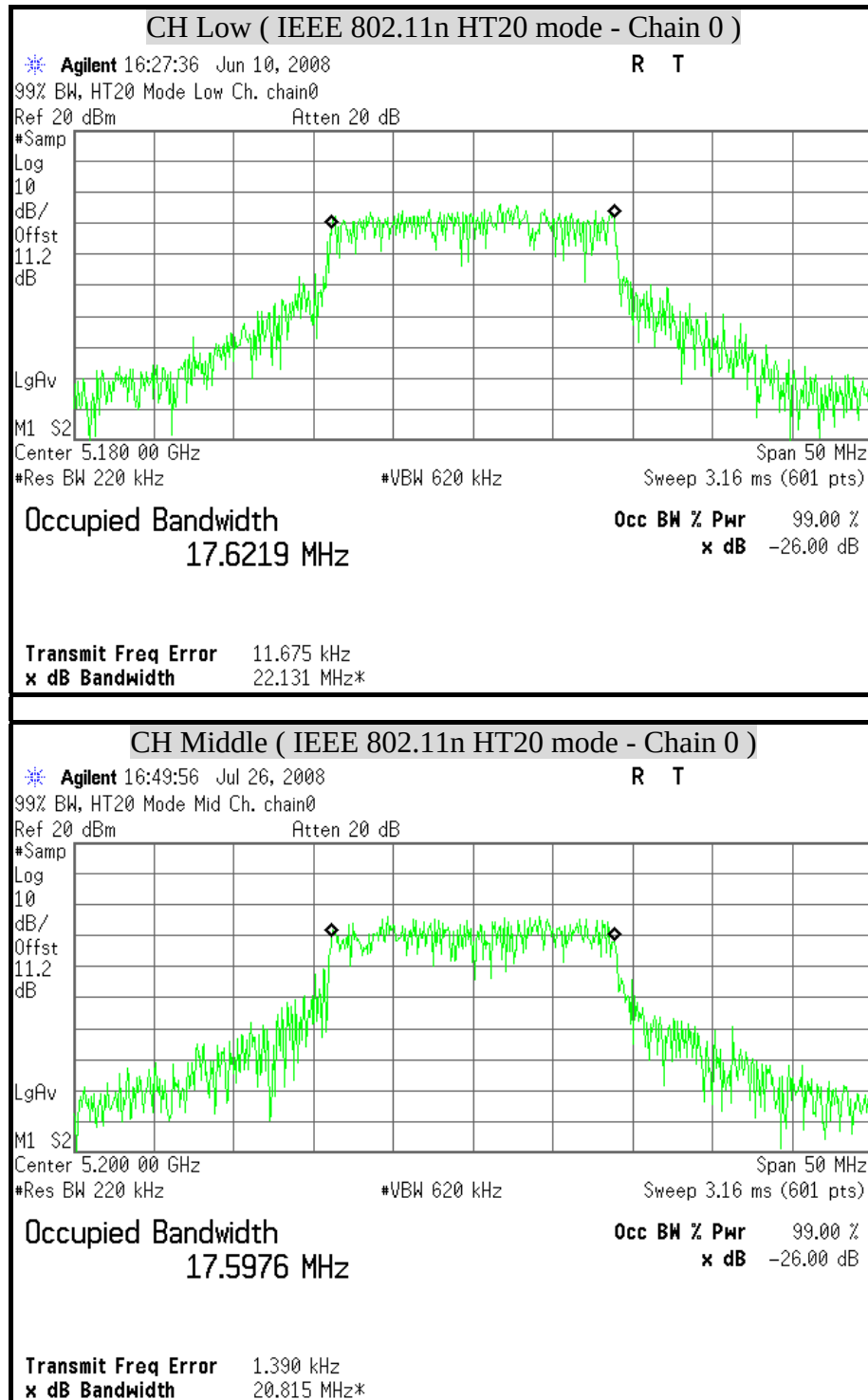


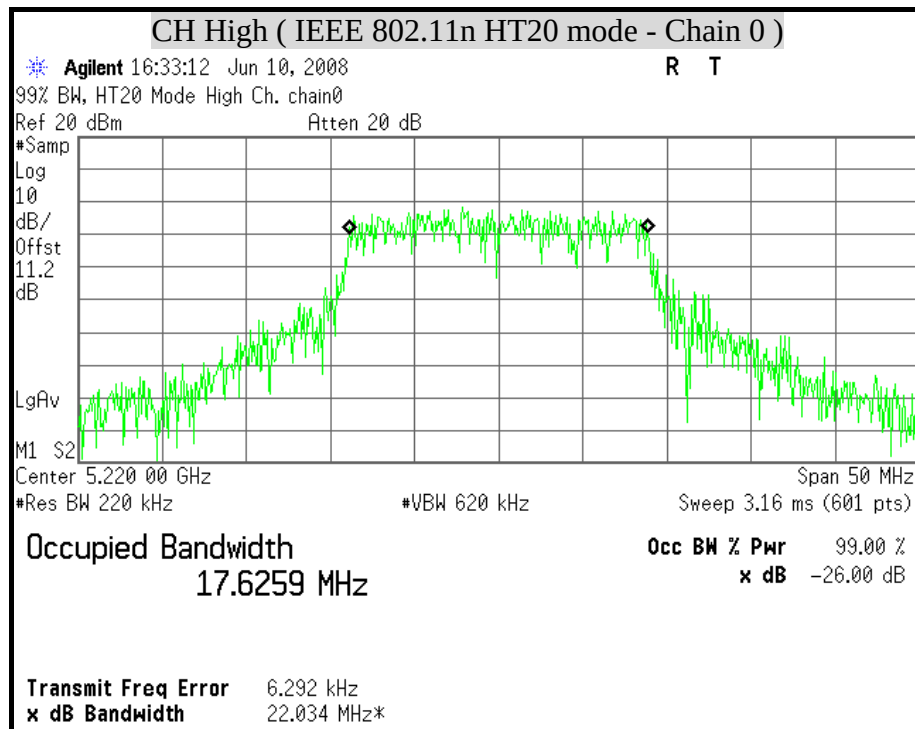


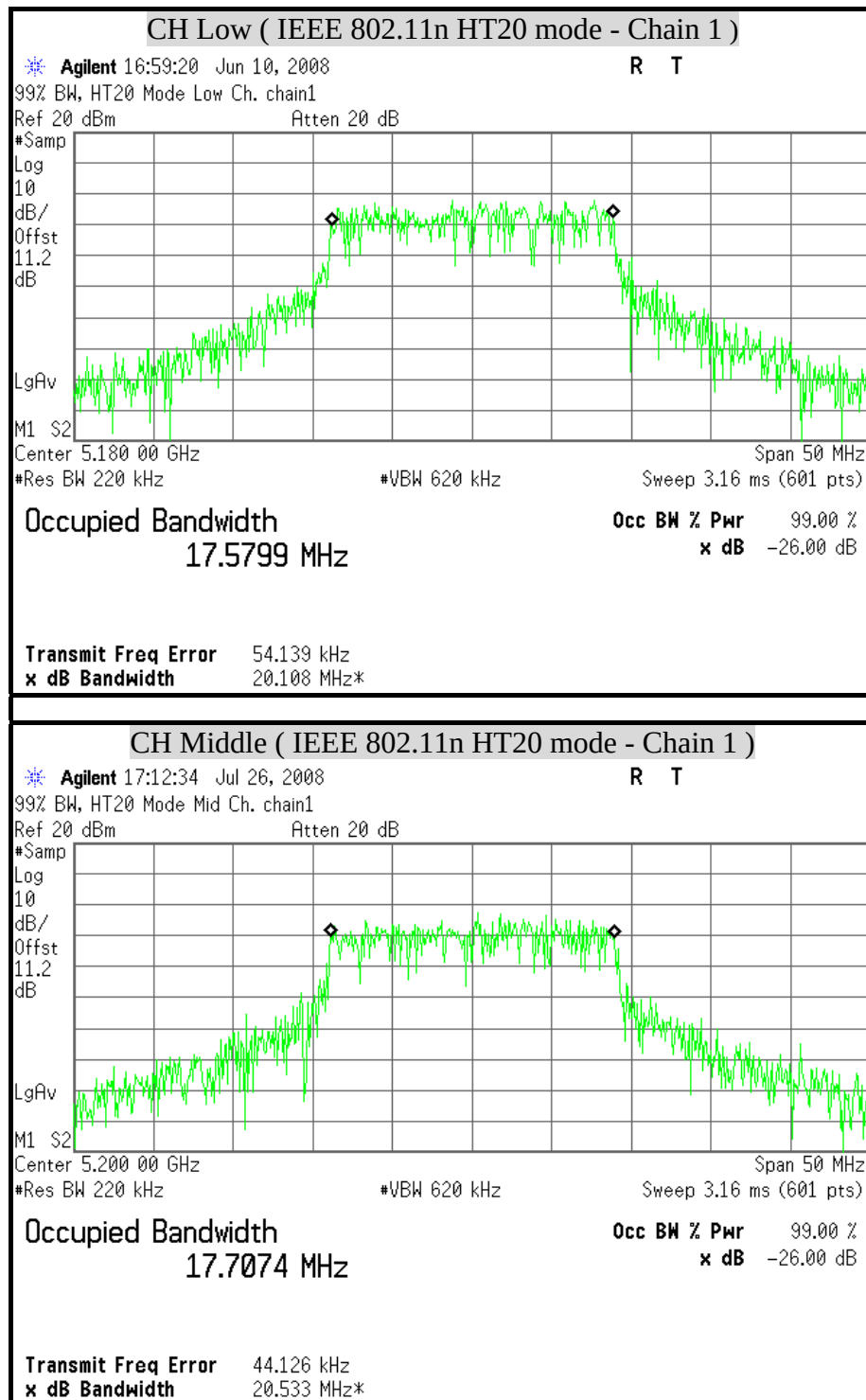


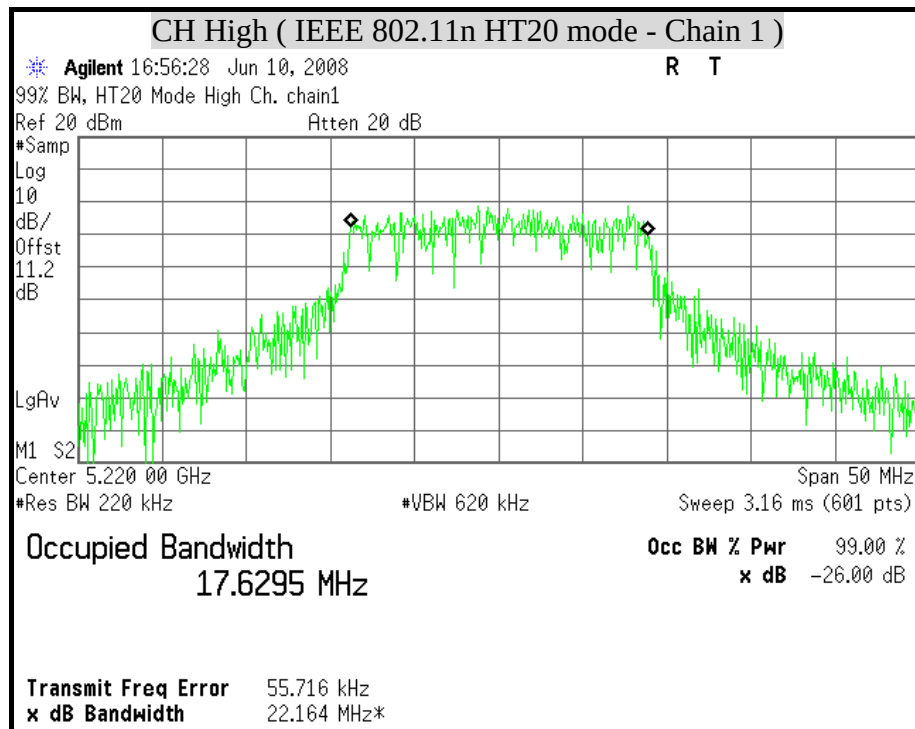


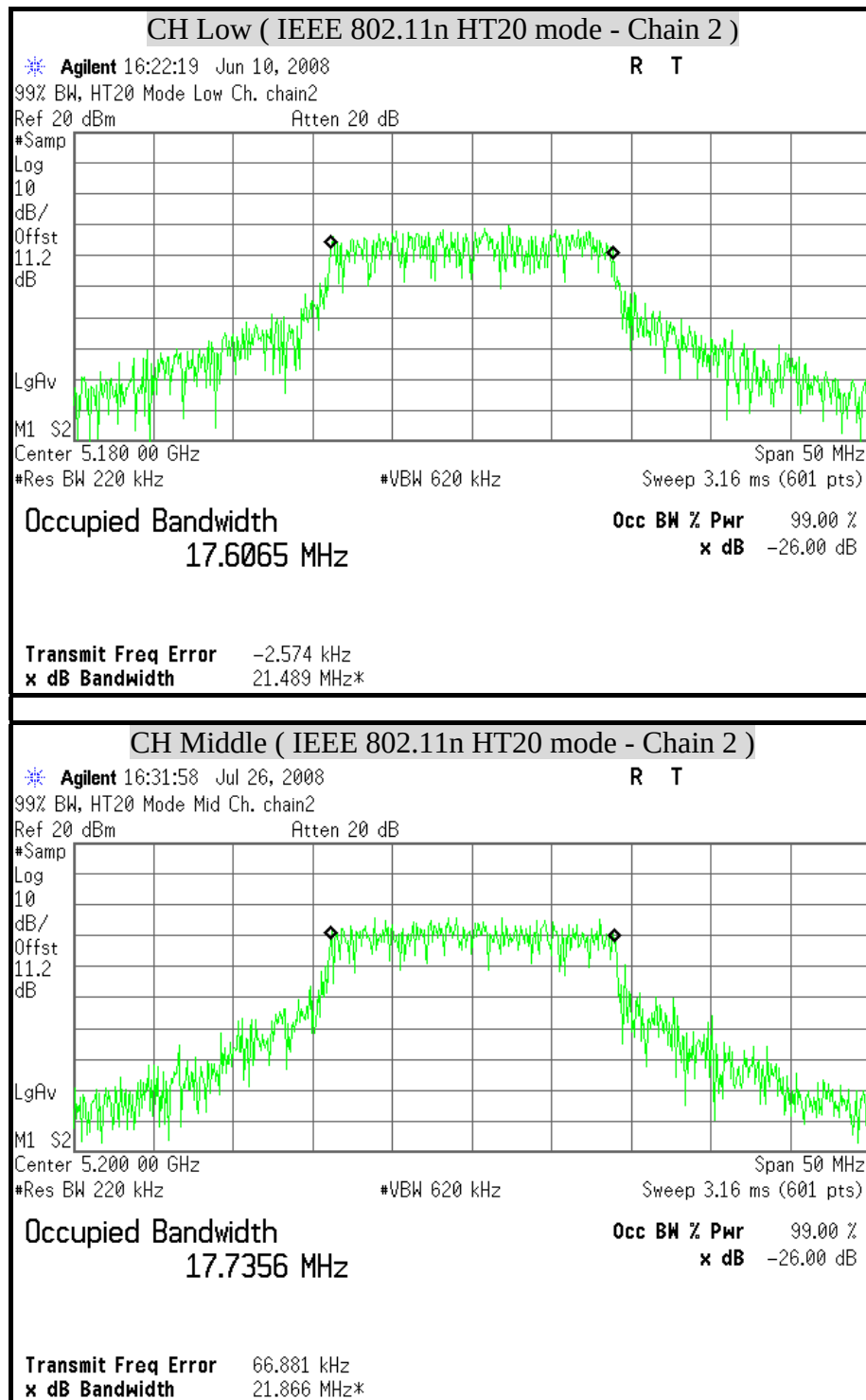


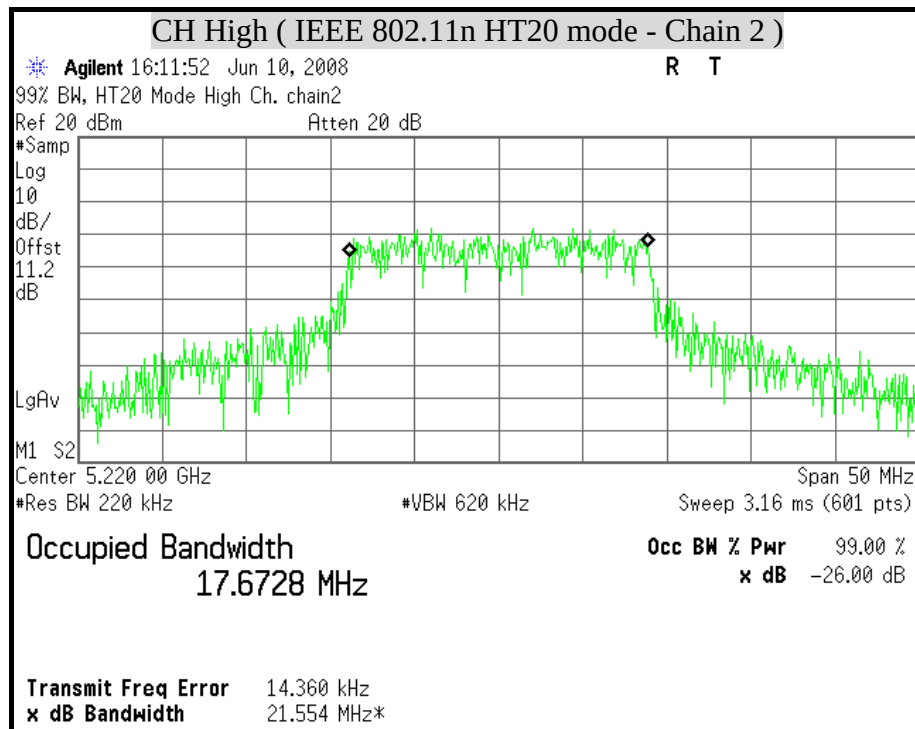
**99% BANDWIDTH (IEEE 802.11n HT20 mode)**

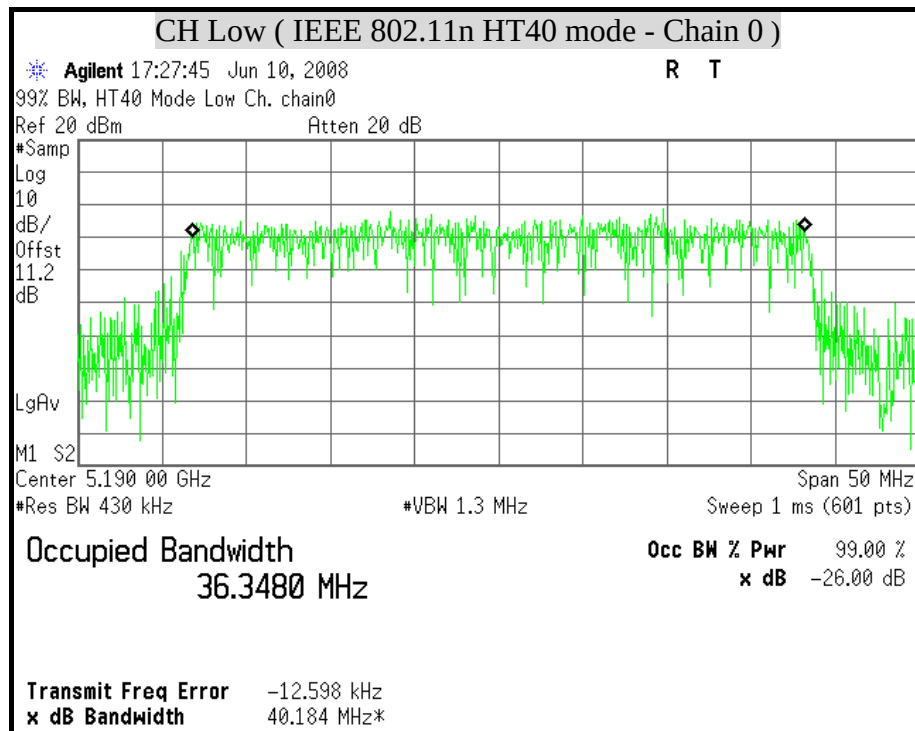


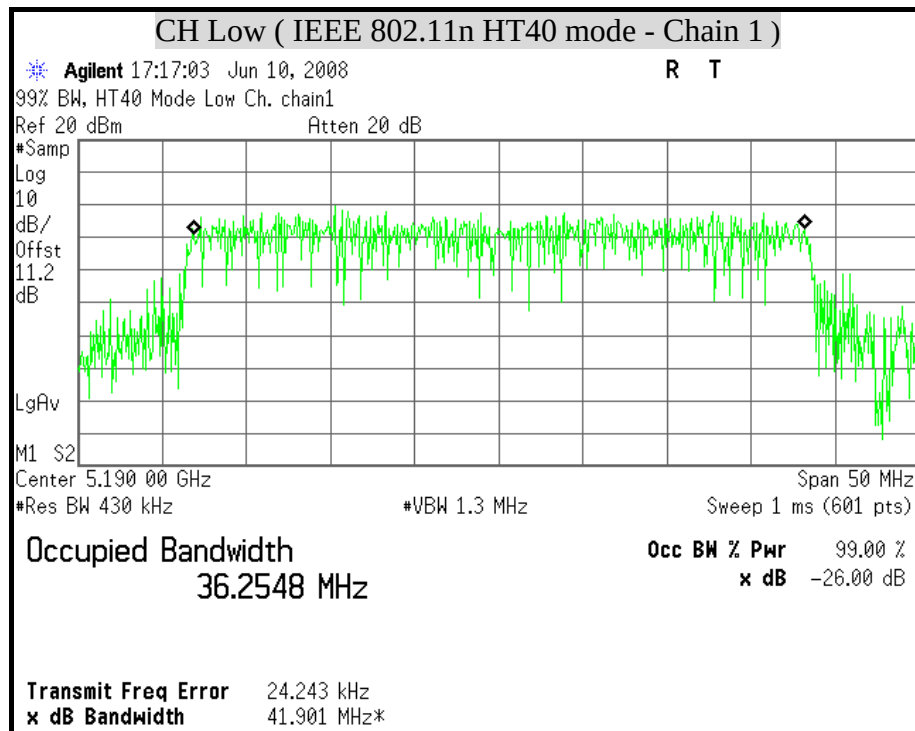


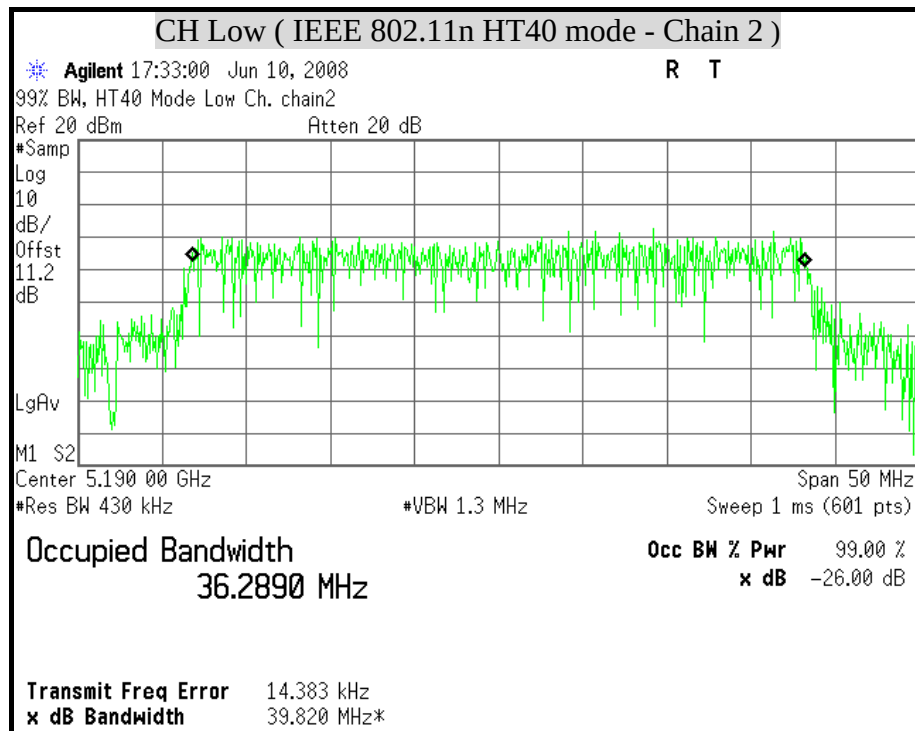






**99% BANDWIDTH (IEEE 802.11n HT40 mode)**







8.3 MAXIMUM CONDUCTED OUTPUT POWER

LIMIT

§ 15.407(a)

(1) For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50mW (17dBm) or $4\text{dBm} + 10\log B$, where B is the 26dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4dBm in any 1 MHz band.

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. The peak power shall not exceeded the limit as follows:

Specified Limit of the Peak Power

IEEE 802.11a mode

Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)			26dB Bandwidth Total (MHz)	10 Log B (dB)	4dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
		Chain 0	Chain 1	Chain 2				
Low	5180	21.720	22.397	23.035	27.19	14.34	18.34	17
Middle	5200	22.210	21.810	22.111	26.82	14.28	18.28	17
High	5220	21.980	22.668	22.350	27.11	14.37	18.37	17

IEEE 802.11n HT20 mode

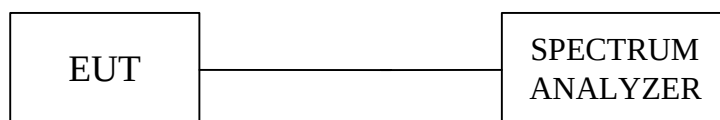
Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)			26dB Bandwidth Total (MHz)	10 Log B (dB)	4dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
		Chain 0	Chain 1	Chain 2				
Low	5180	24.717	23.682	22.860	28.59	14.56	18.56	17
Middle	5200	23.452	24.515	23.054	28.49	14.55	18.55	17
High	5220	23.220	22.977	23.896	28.15	14.50	18.50	17

**IEEE 802.11n HT40 mode**

Channel	Channel Frequency (MHz)	26dB Bandwidth (B) (MHz)			26dB Bandwidth Total (MHz)	10 Log B (dB)	4dBm + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
		Chain 0	Chain 1	Chain 2				
Low	5190	48.714	47.067	45.855	52.14	17.17	21.17	17

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 24, 2008

TEST SETUP**TEST PROCEDURE**

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

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

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



TEST RESULTS

No non-compliance noted

Total peak power calculation formula:

$$10 \log (10^{\text{Chain 0 Power} / 10} + 10^{\text{Chain1 Power} / 10} + 10^{\text{Chain 2 Power} / 10}).$$

In the legacy mode, the effective antenna gain is $5 + 10 \times \log(3) = 9.77\text{dBi}$, therefore the limit is 13.23 dBm.

In the HT20/HT40 mode, the maximum antenna gain is 5dBi, therefore the limit is 17 dBm.

IEEE 802.11a mode

Channel	Channel Frequency (MHz)	Output Power (dBm)			Output Power Total (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
Low	5180	6.35	5.45	5.72	10.63	13.23	PASS
Middle	5200	5.06	5.12	5.64	10.05	13.23	PASS
High	5220	5.32	5.30	5.50	10.15	13.23	PASS

Remark: 1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT20 mode

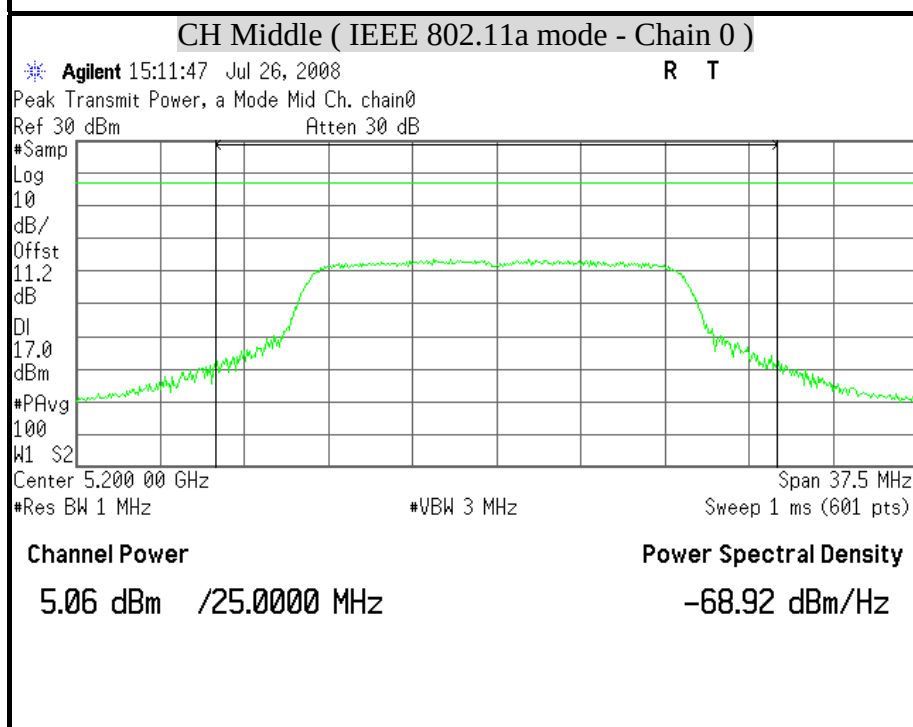
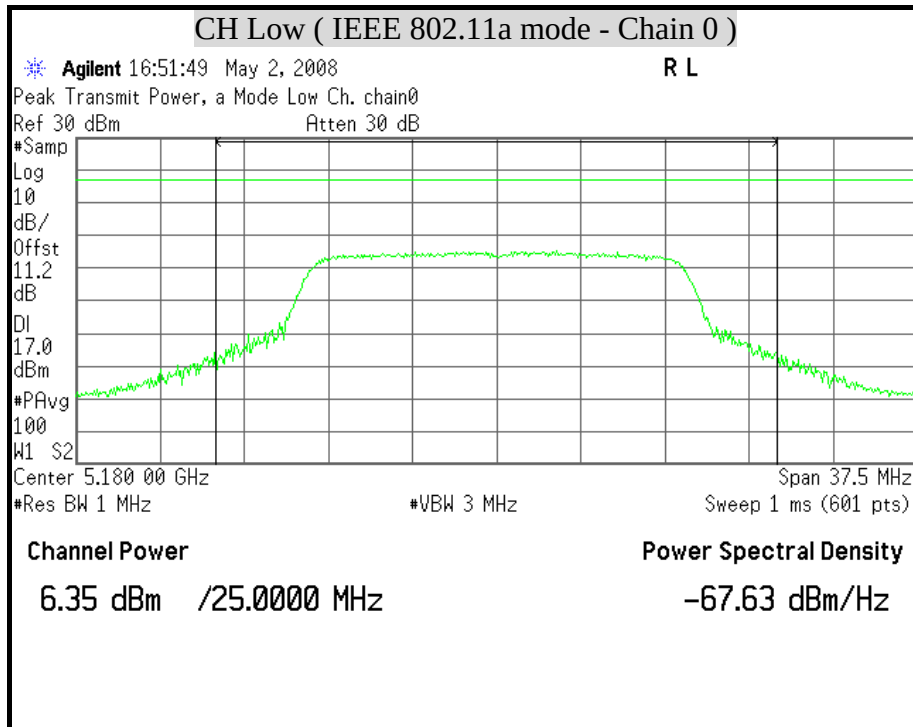
Channel	Channel Frequency (MHz)	Output Power (dBm)			Output Power Total (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
Low	5180	10.08	9.18	9.49	14.37	17.00	PASS
Middle	5200	10.15	9.58	9.55	14.54	17.00	PASS
High	5220	10.30	10.53	10.64	15.26	17.00	PASS

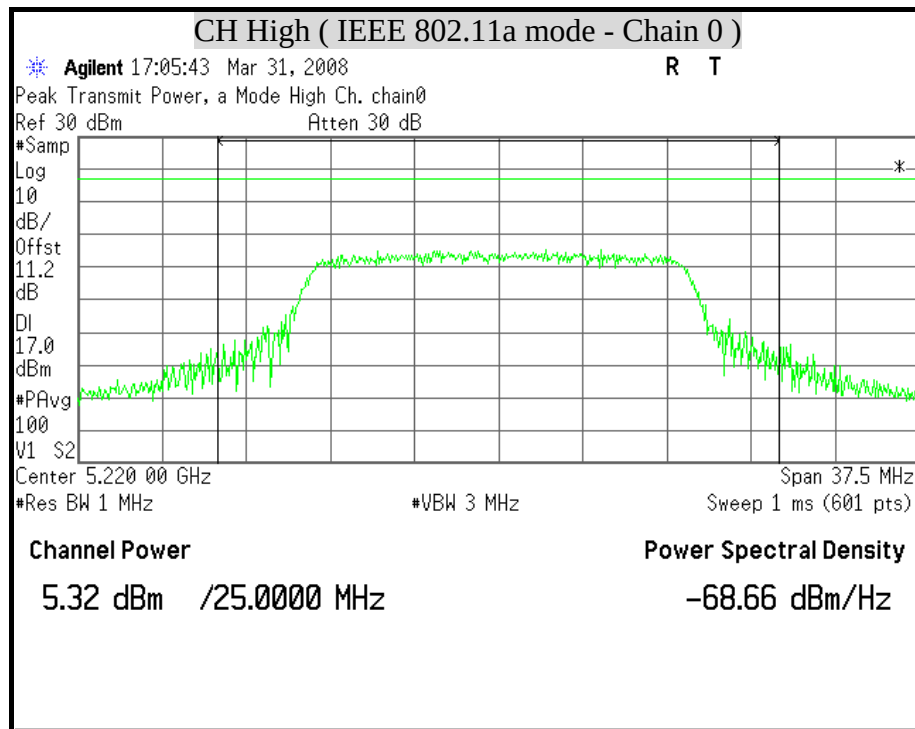
Remark: 1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

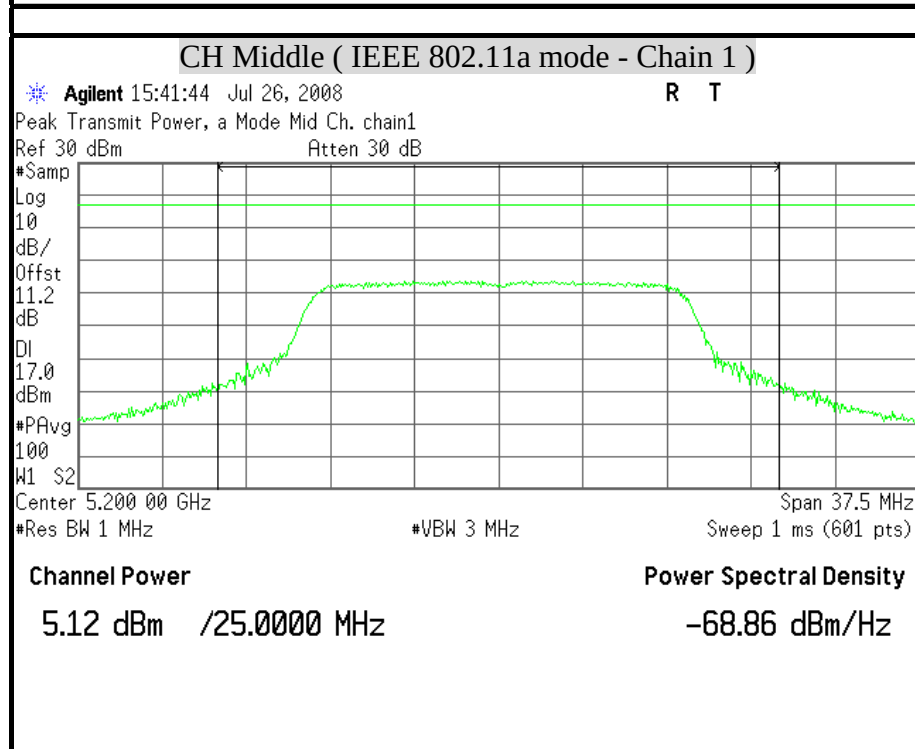
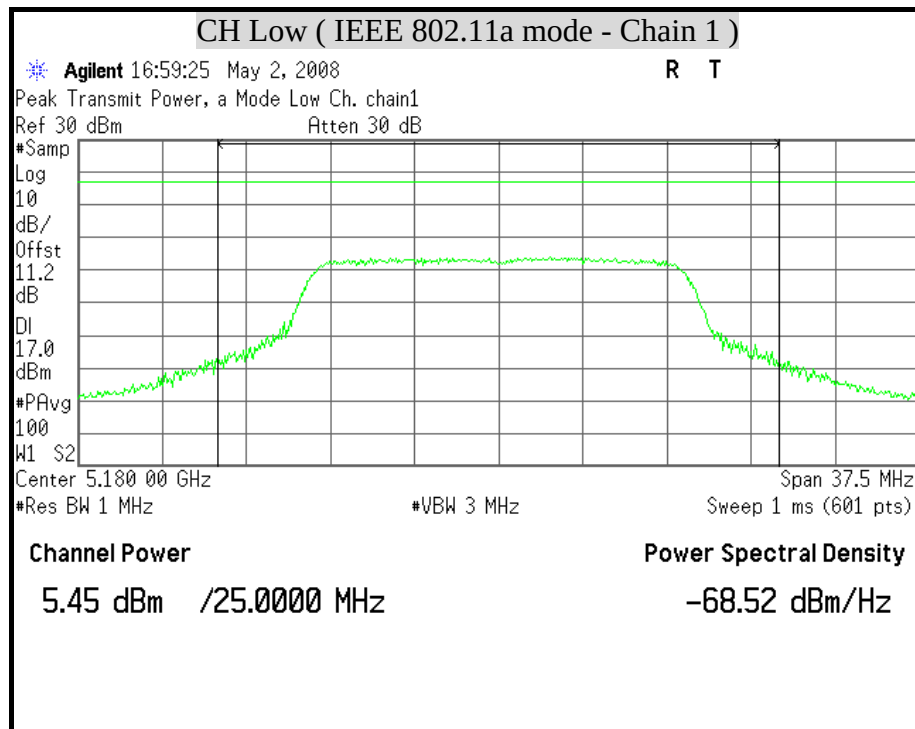
IEEE 802.11n HT40 mode

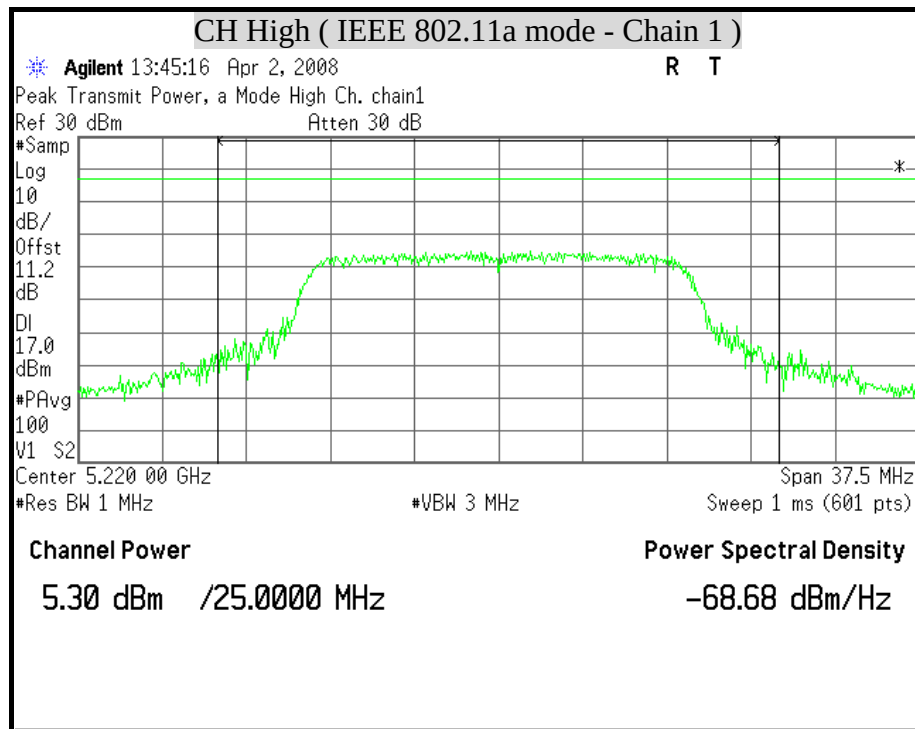
Channel	Channel Frequency (MHz)	Output Power (dBm)			Output Power Total (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
Low	5190	11.59	11.14	10.71	15.93	17.00	PASS

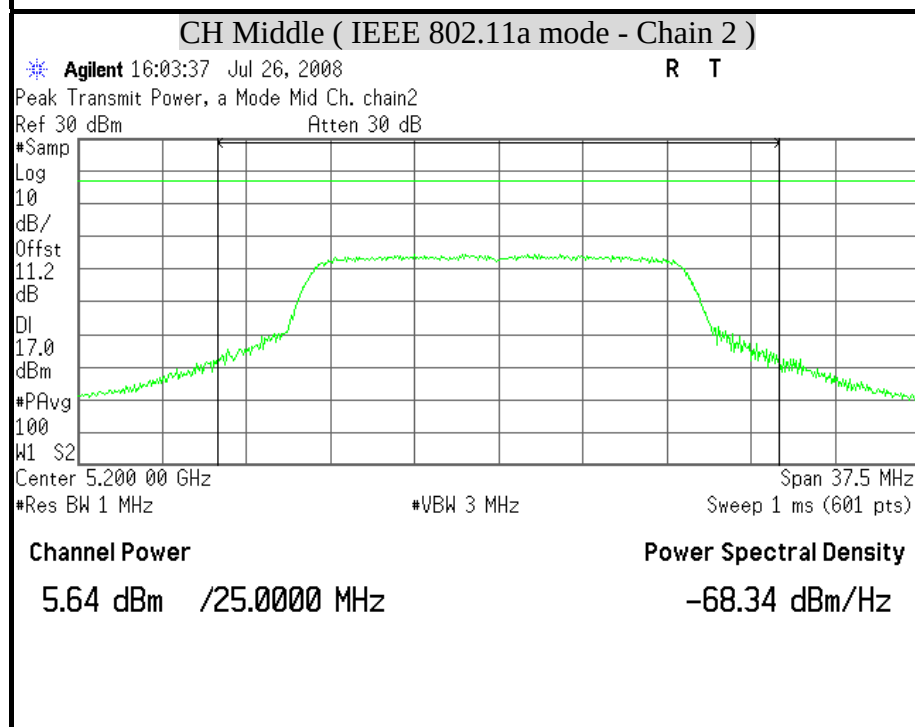
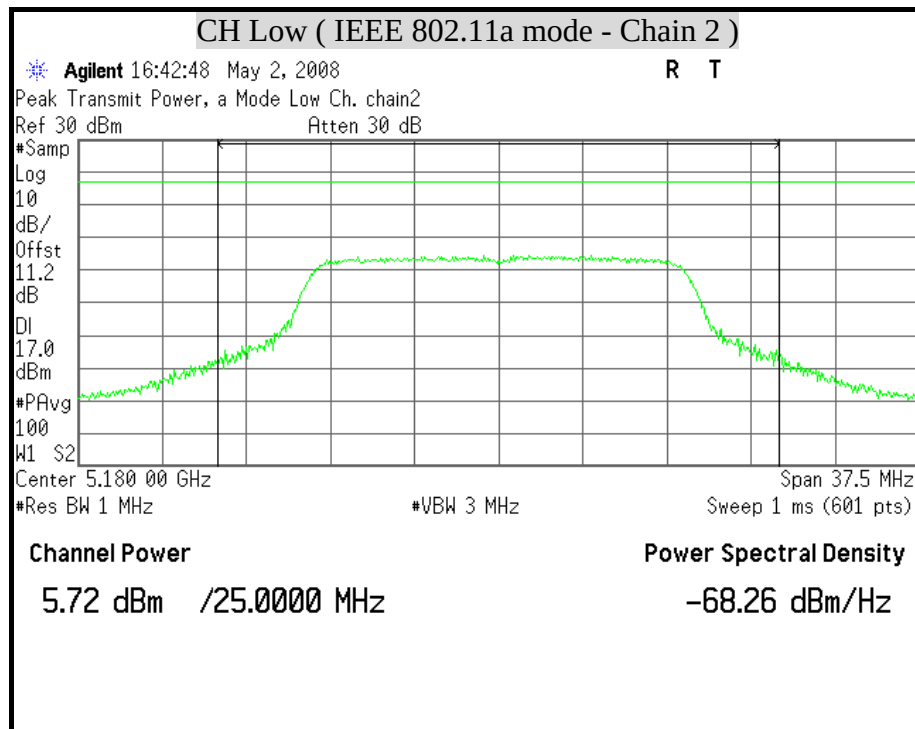
Remark: 1. At final test to get the worst-case emission at 13.5Mbps.
2. The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

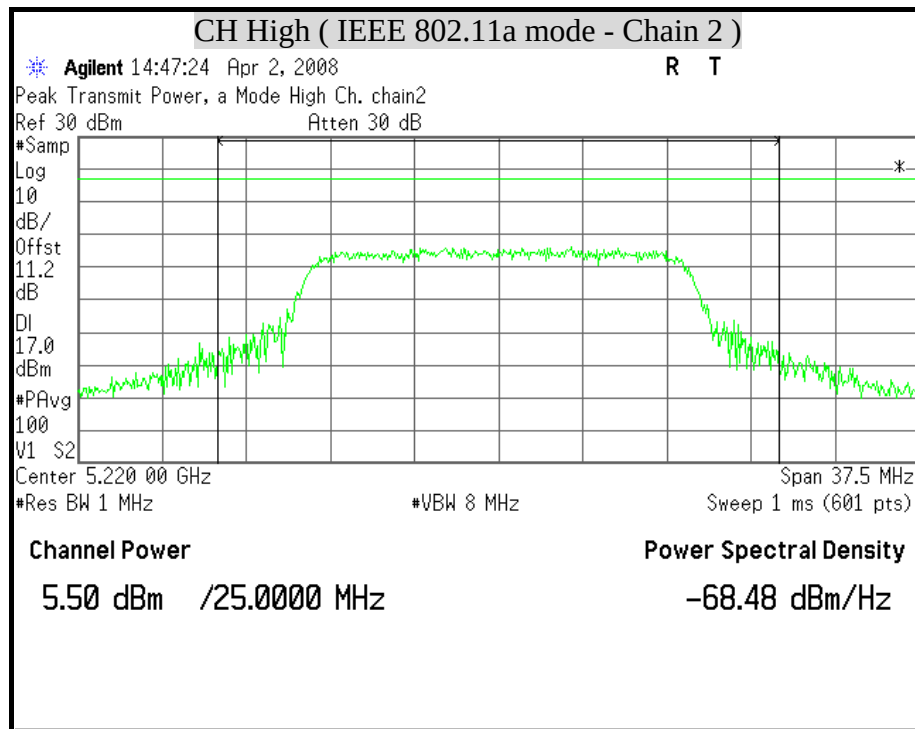
**PEAK CONDUCTED TRANSMIT POWER (IEEE 802.11a mode)**

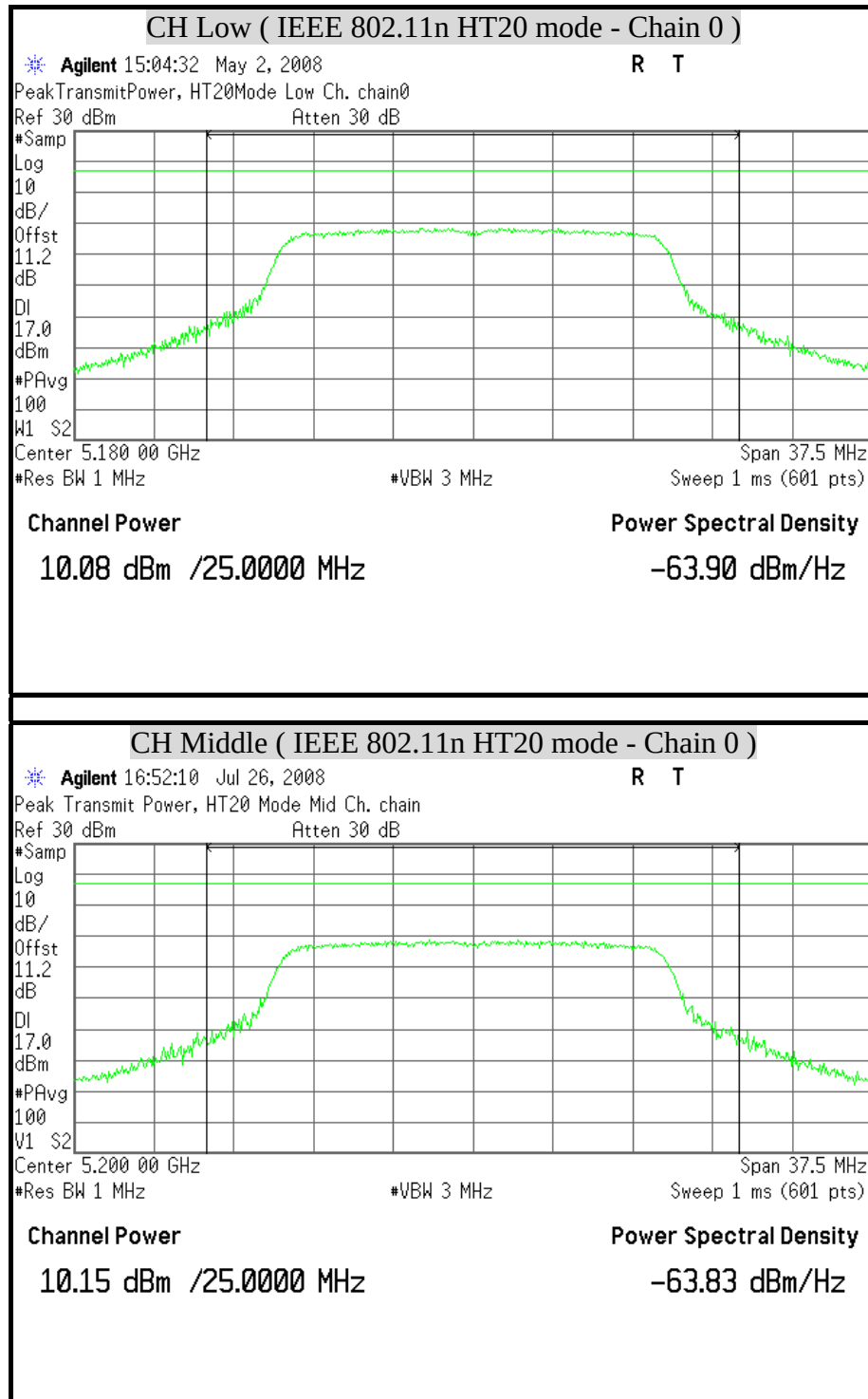


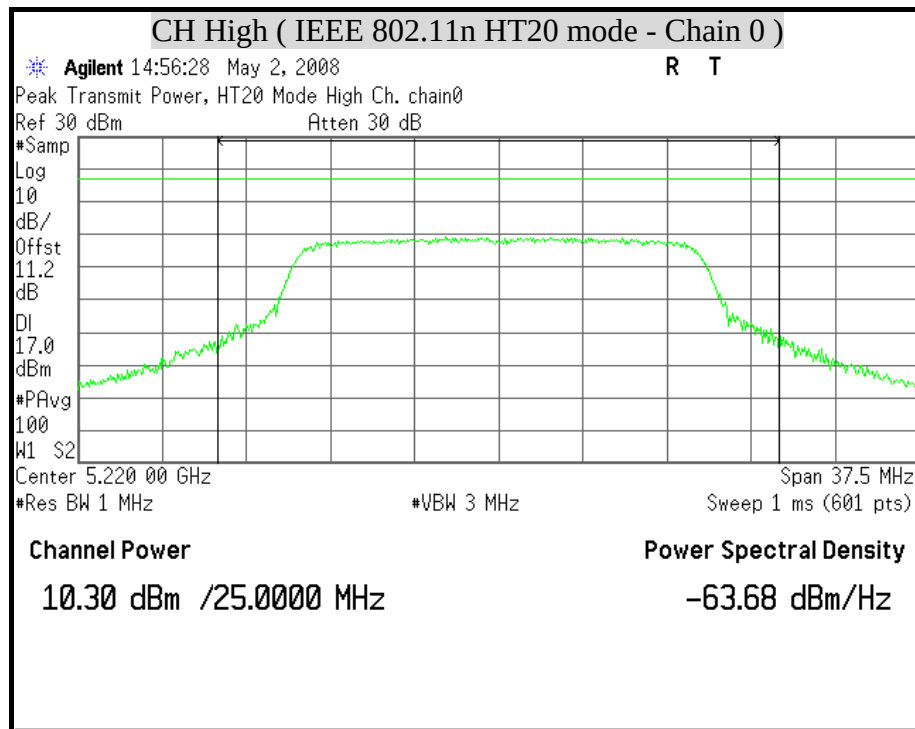








**PEAK CONDUCTED TRANSMIT POWER (IEEE 802.11n HT20 mode)**



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

Agilent 15:21:08 May 2, 2008

R T

Peak Transmit Power, HT20 Mode Low Ch. chain1

Ref 30 dBm

Atten 30 dB

#Samp

Log

10

dB/

Offst

11.2

dB

DI

17.0

dBm

#PAvg

100

W1 S2

Center 5.180 00 GHz

#VBW 3 MHz

Span 37.5 MHz

Sweep 1 ms (601 pts)

Channel Power

9.18 dBm /25.0000 MHz

Power Spectral Density

-64.80 dBm/Hz

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

Agilent 17:14:51 Jul 26, 2008

R T

Peak Transmit Power, HT20 Mode Mid Ch. chain

Ref 30 dBm

Atten 30 dB

#Samp

Log

10

dB/

Offst

11.2

dB

DI

17.0

dBm

#PAvg

100

V1 S2

Center 5.200 00 GHz

#VBW 3 MHz

Span 37.5 MHz

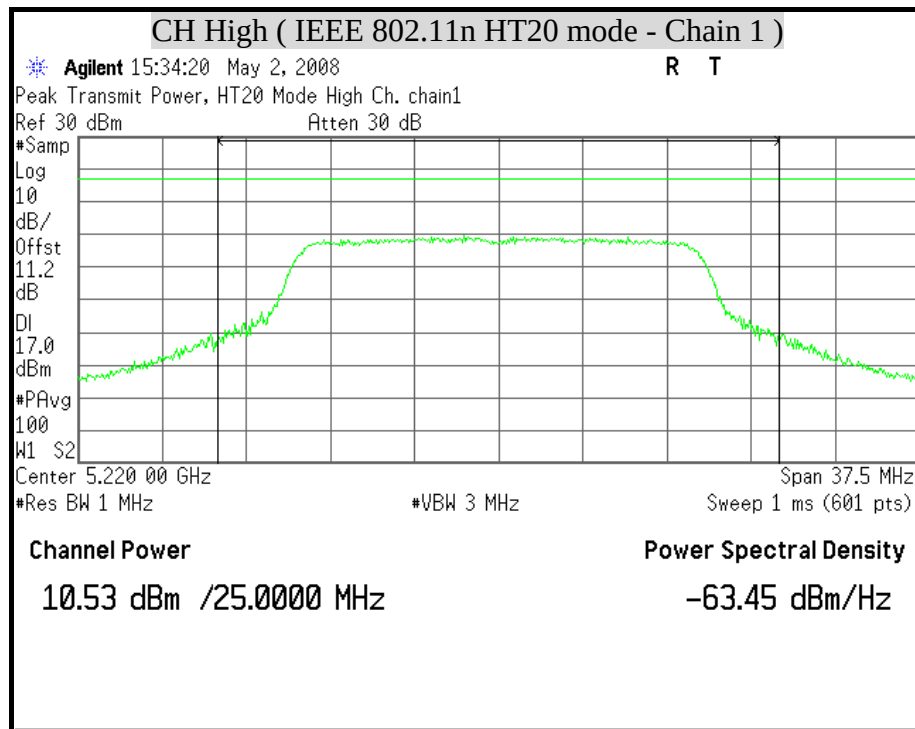
Sweep 1 ms (601 pts)

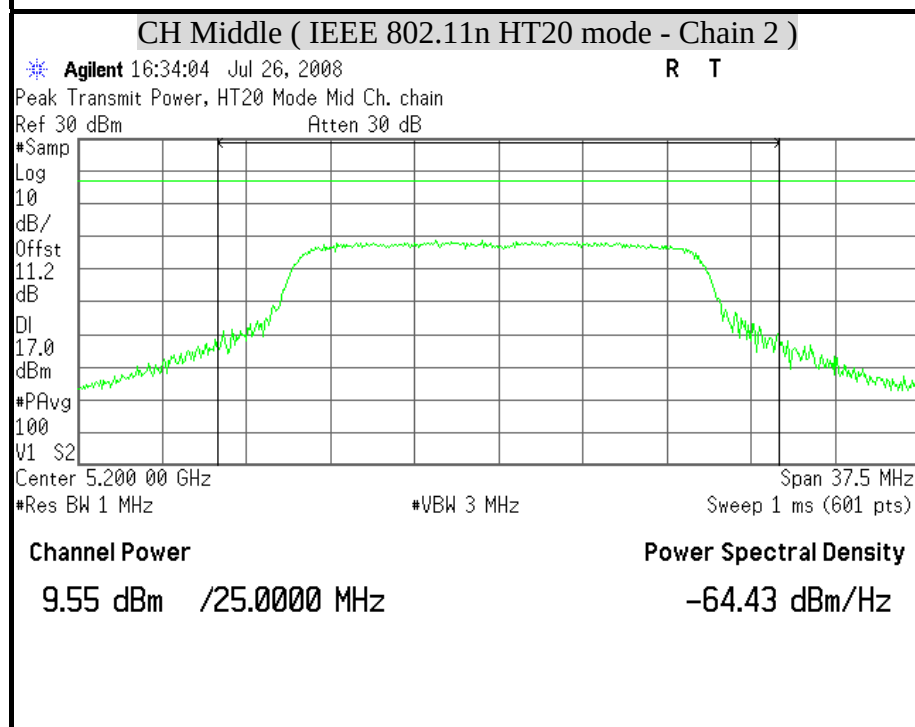
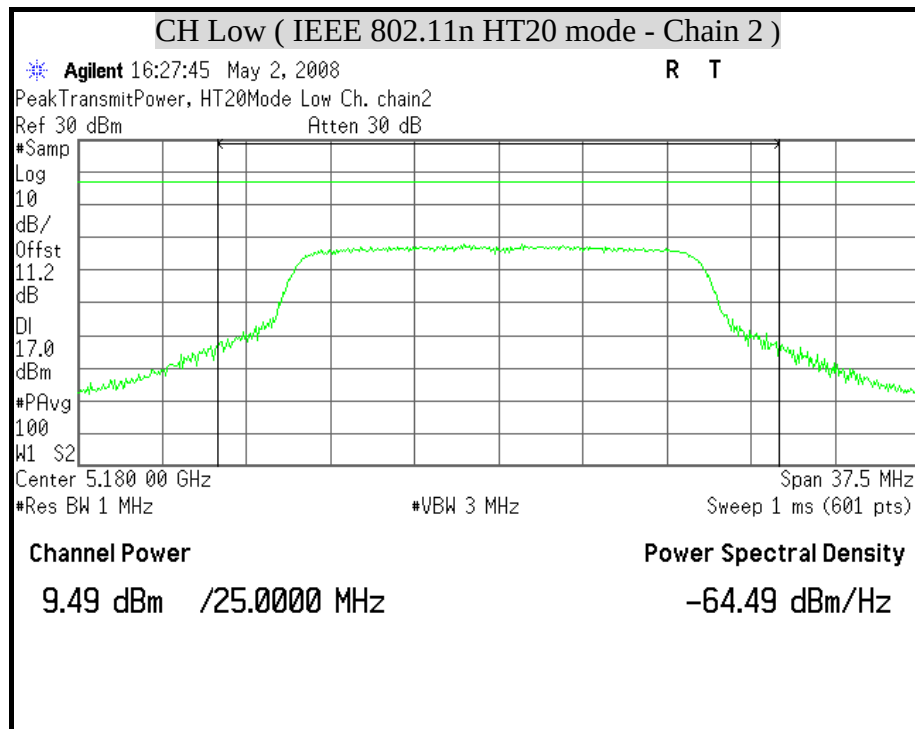
Channel Power

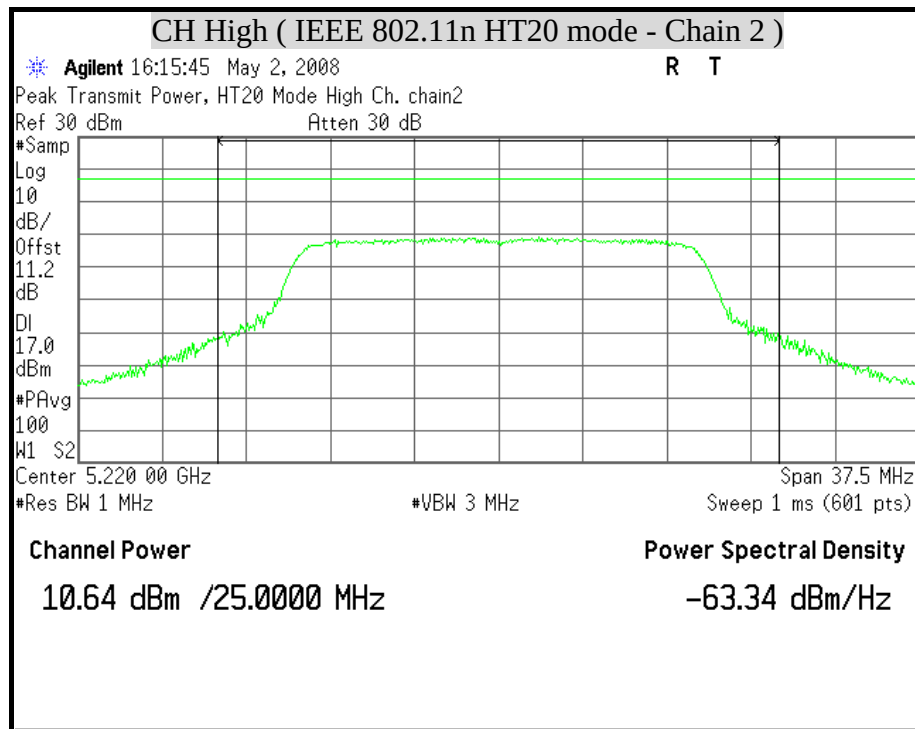
9.58 dBm /25.0000 MHz

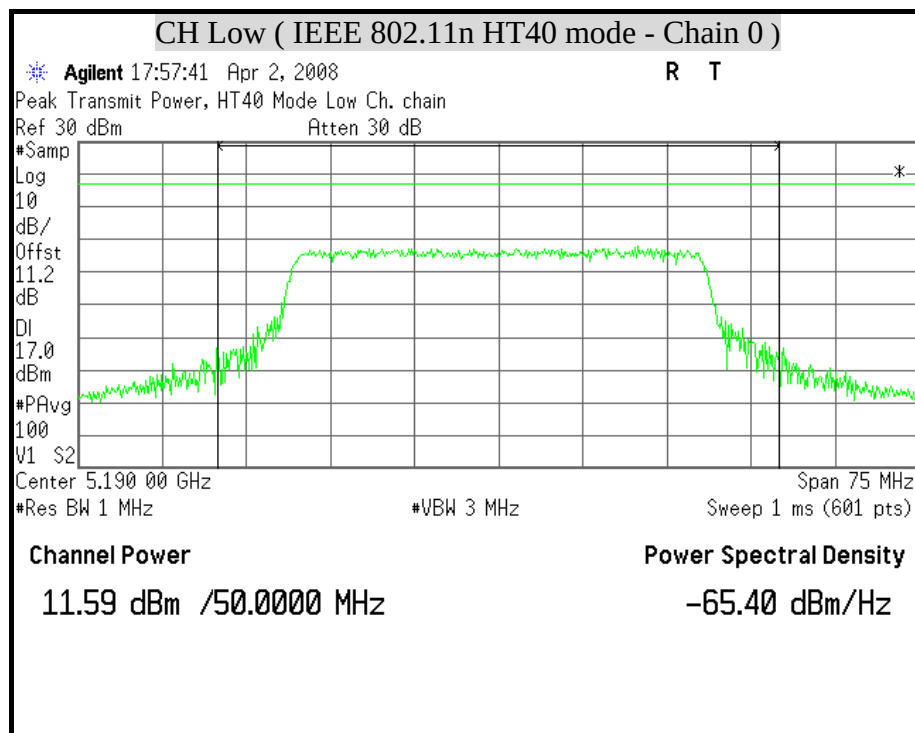
Power Spectral Density

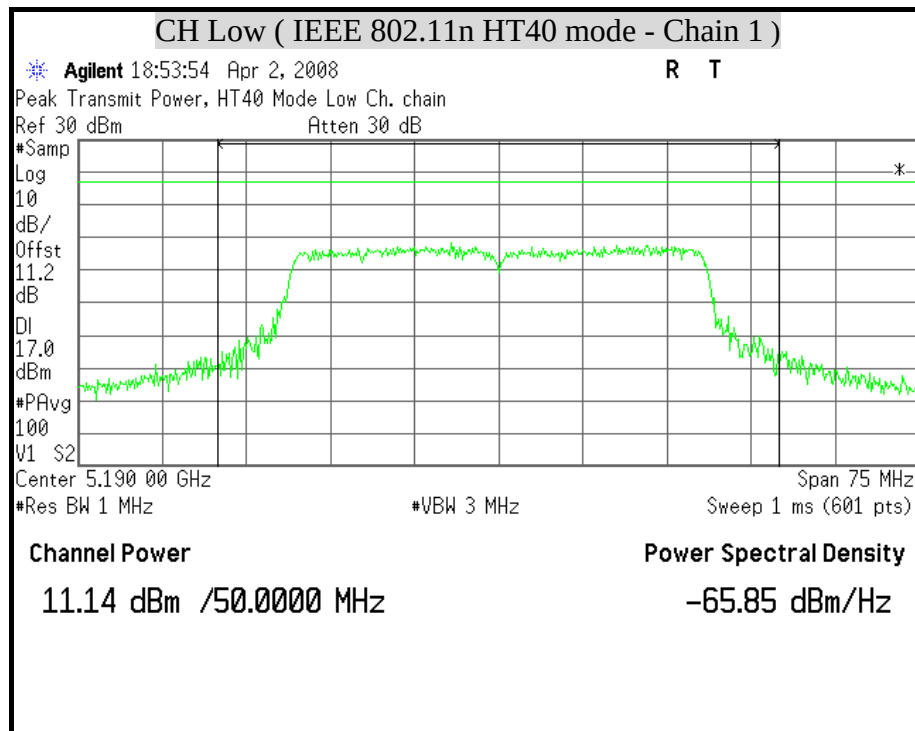
-64.40 dBm/Hz

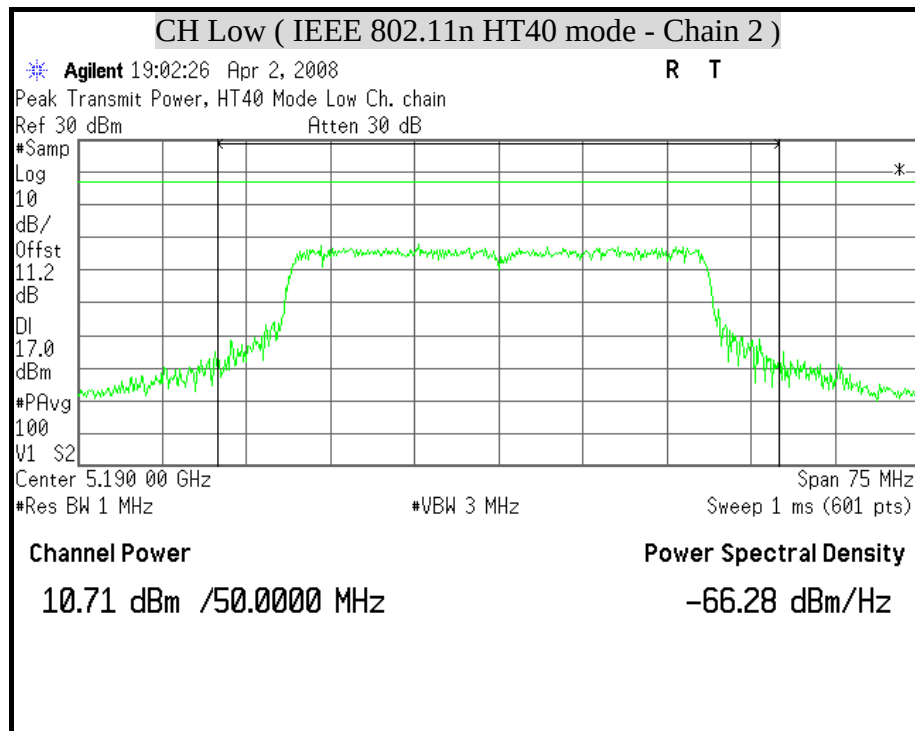






**PEAK CONDUCTED TRANSMIT POWER (IEEE 802.11n HT40 mode)**







8.4 MAXIMUM PERMISSIBLE EXPOSURE

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b) LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time
(A) Limits for Occupational / Control Exposures				
300-1,500	--	--	F/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Population / Uncontrol Exposures				
300-1,500	--	--	F/1500	6
1,500-100,000	--	--	1	30

CALCULATIONS

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

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

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

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

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

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

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

**LIMIT**

Power Density Limit, $S=1.0\text{mW/cm}^2$

TEST RESULTS

No non-compliance noted

Mode	Minimum separation distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	Power Density Limit (mW/cm^2)	Power Density at 20cm (mW/cm^2)
IEEE 802.11a	20	10.63	5	1.00	0.007273
IEEE 802.11n HT20	20	15.26	5	1.00	0.021122
IEEE802.11n HT40	20	15.93	5	1.00	0.024645

Remark: For mobile or fixed location transmitters, the maximum power density is 1.0 mW/cm^2 even if the calculation indicates that the power density would be larger.



8.5 AVERAGE POWER

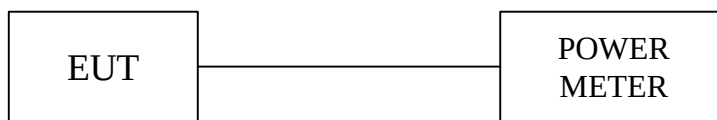
LIMIT

None; for reporting purposes only.

TEST EQUIPMENT

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
ANRITSU POWER METER	ML2487A MAL2491A	6K00001783 030982	May 03, 2008

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to a power meter.



TEST RESULTS

No non-compliance noted

Total avg power calculation formula:

$10 \log (10^{\text{Chain 0 Power} / 10} + 10^{\text{Chain1 Power} / 10} + 10^{\text{Chain 2 Power} / 10})$.

IEEE 802.11a mode

Channel	Channel Frequency (MHz)	AVG Power (dBm)			AVG Power Total (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
Low	5180	6.16	5.15	5.48	10.39	N/A
Middle	5200	5.03	5.11	5.59	10.02	N/A
High	5220	5.10	5.11	5.49	10.01	N/A

Remark: 1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 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)	AVG Power (dBm)			AVG Power Total (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
Low	5180	9.70	9.14	8.91	14.03	N/A
Middle	5200	9.76	9.31	9.48	14.29	N/A
High	5220	10.19	10.44	10.48	15.14	N/A

Remark: 1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 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)	AVG Power (dBm)			AVG Power Total (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
Low	5190	11.28	10.57	10.66	15.62	N/A

Remark: 1. At final test to get the worst-case emission at 13.5Mbps.
2. The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.



8.6 PEAK POWER SPECTRAL DENSITY

LIMIT

§ 15.407 (a)

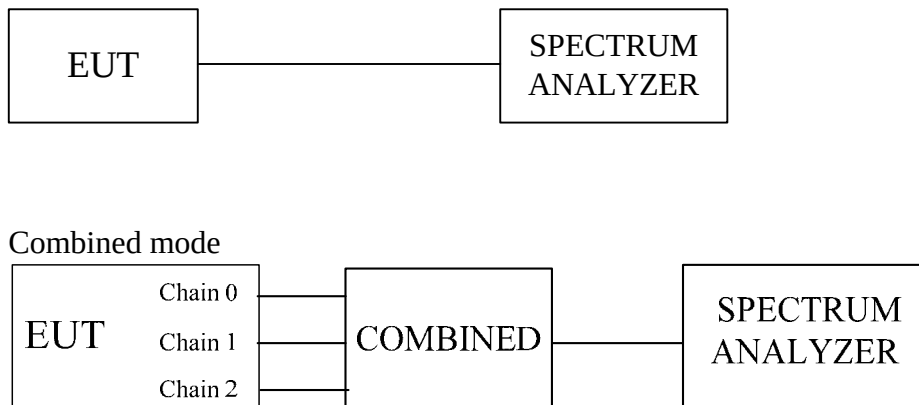
(1) For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.

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

TEST 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 24, 2008

TEST SETUP



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span = Sweep= AUTO
Set span encompass the entire emission bandwidth (EBW) of the signal.
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

**TEST RESULTS**

No non-compliance noted

Total power spectral density calculation formula:

$$10 \log (10^{\text{Chain 0 PPSPD} / 10} + 10^{\text{Chain1 PPSPD} / 10} + 10^{\text{Chain 2 PPSPD} / 10}).$$

In the legacy mode, the effective antenna gain is $5 + 10 \times \log(3) = 9.77\text{dBi}$, therefore the limit is 0.23 dBm.

In the HT20/HT40 mode, the maximum antenna gain is 5dBi, therefore the limit is 4 dBm

IEEE 802.11a mode

Channel	Channel Frequency (MHz)	PPSPD (dBm)			PPSPD Total (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
Low	5180	-4.724	-5.979	-5.517	-0.604	0.23	-0.834	PASS
Middle	5200	-5.927	-5.276	-5.363	-0.741	0.23	-0.971	PASS
High	5220	-4.695	-5.151	-3.926	0.210	0.23	-0.020	PASS

Remark: 1. At final test to get the worst-case emission at 6Mbps.

2. The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 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)	PPSPD with combiner (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5180	-0.013	0.23	-0.243	PASS
Middle	5200	-1.845	0.23	-2.075	PASS
High	5220	0.216	0.23	-0.014	PASS

Remark: 1. At final test to get the worst-case emission at 6Mbps.

2. The cable assembly insertion loss of 18.0 dB (including 10 dB pad and 8.0 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)	PPSPD (dBm)			PPSPD Total (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
Low	5180	-1.322	-2.016	-2.067	2.983	4	-1.017	PASS
Middle	5200	-1.197	-1.124	-1.495	3.502	4	-0.498	PASS
High	5220	-0.606	-0.828	-0.982	3.969	4	-0.031	PASS

Remark: 1. At final test to get the worst-case emission at 6.5Mbps.

2. The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 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)	PPSD with combiner (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5180	3.346	4	-0.654	PASS
Middle	5200	3.256	4	-0.744	PASS
High	5220	3.809	4	-0.191	PASS

Remark: 1. At final test to get the worst-case emission at 6.5Mbps.

2. The cable assembly insertion loss of 18.0 dB (including 10 dB pad and 8.0 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)	PPSD (dBm)			PPSD Total (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
Low	5190	-3.092	-3.624	-3.611	1.336	4	-2.664	PASS

Remark: 1. At final test to get the worst-case emission at 13.5Mbps.

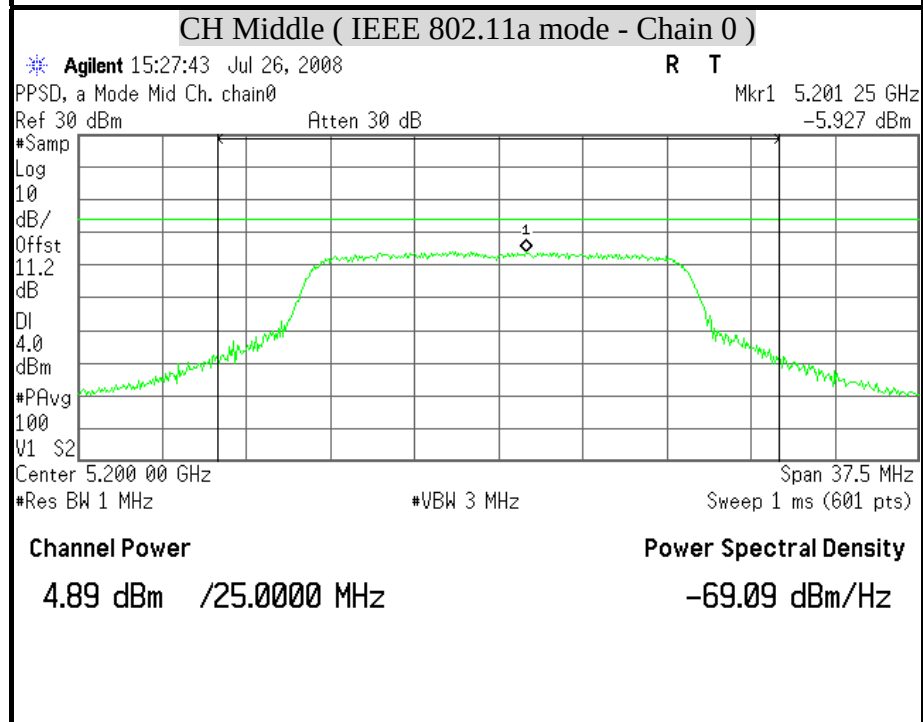
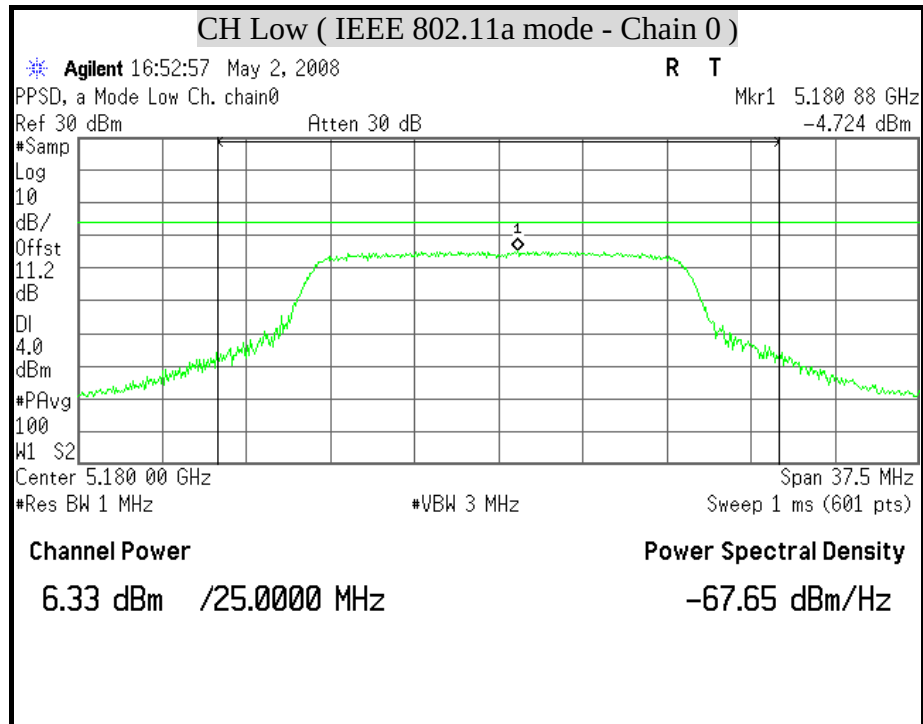
2. The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

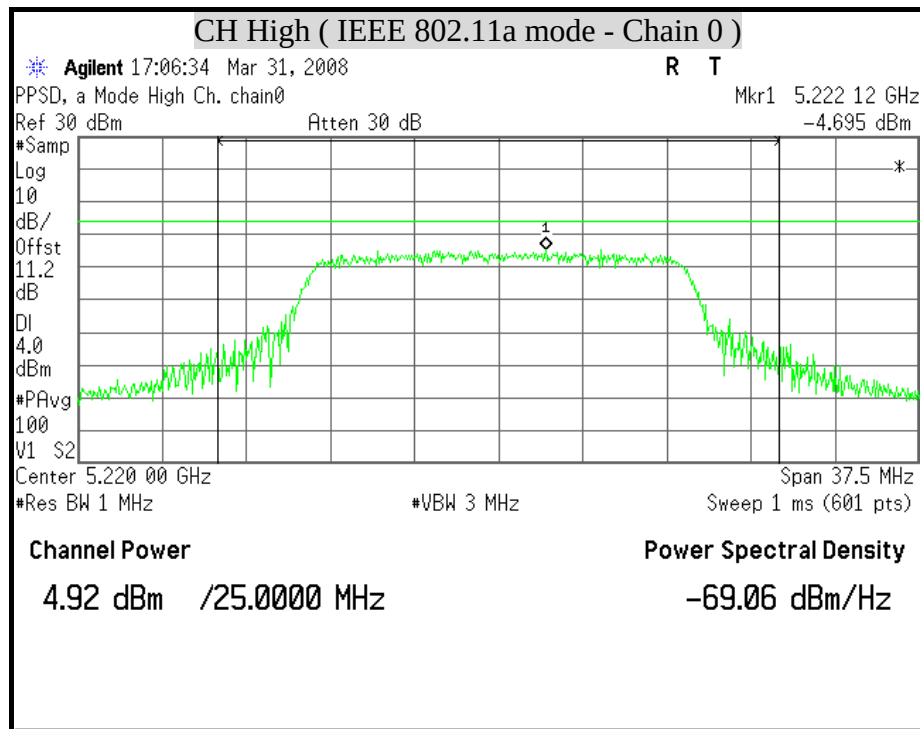
IEEE 802.11n HT40 Combined mode

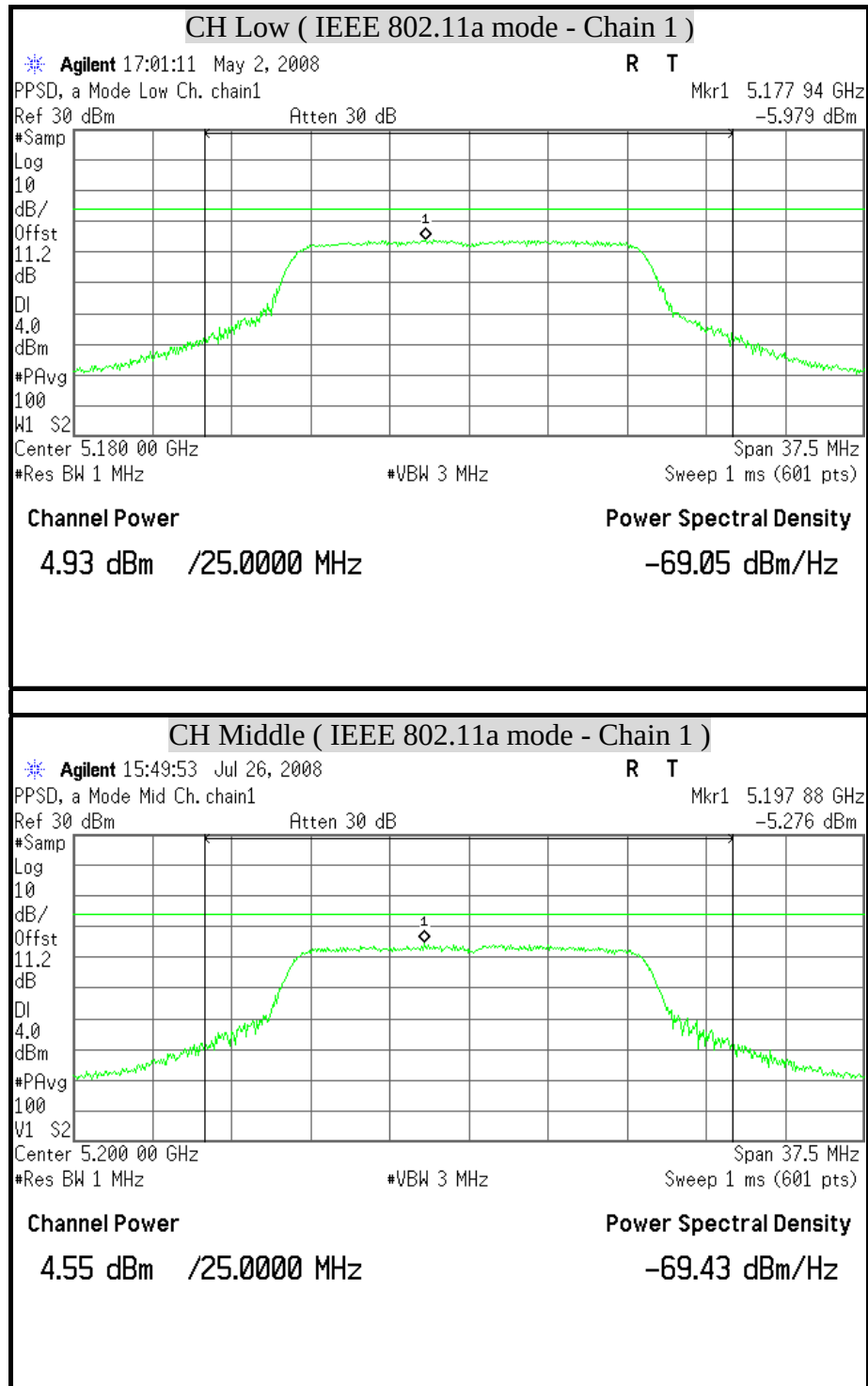
Channel	Channel Frequency (MHz)	PPSD with combiner (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
Low	5190	3.430	4	-0.570	PASS

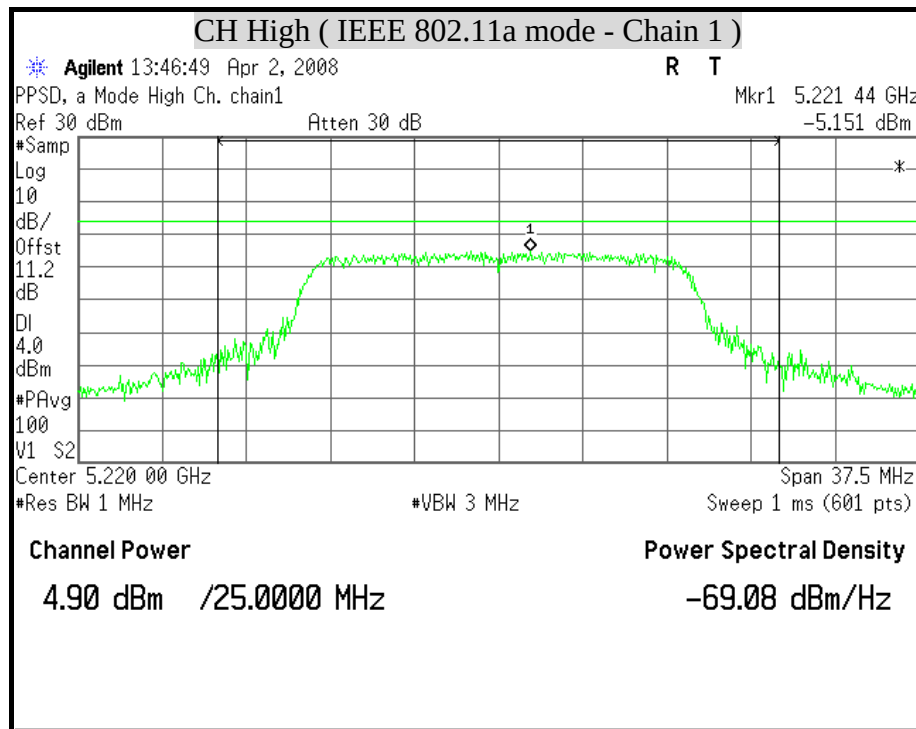
Remark: 1. At final test to get the worst-case emission at 6.5Mbps.

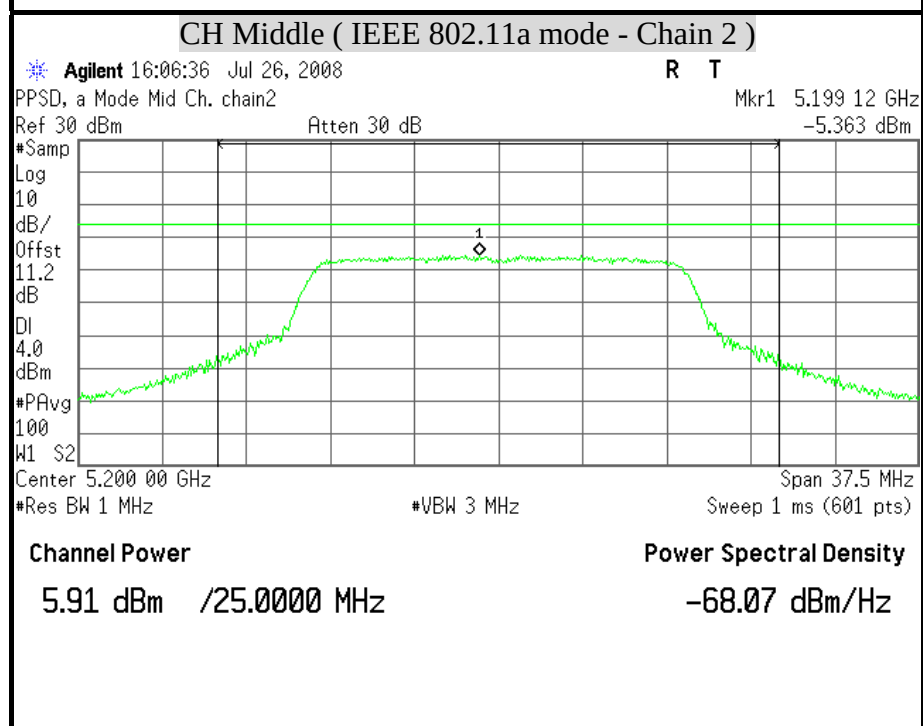
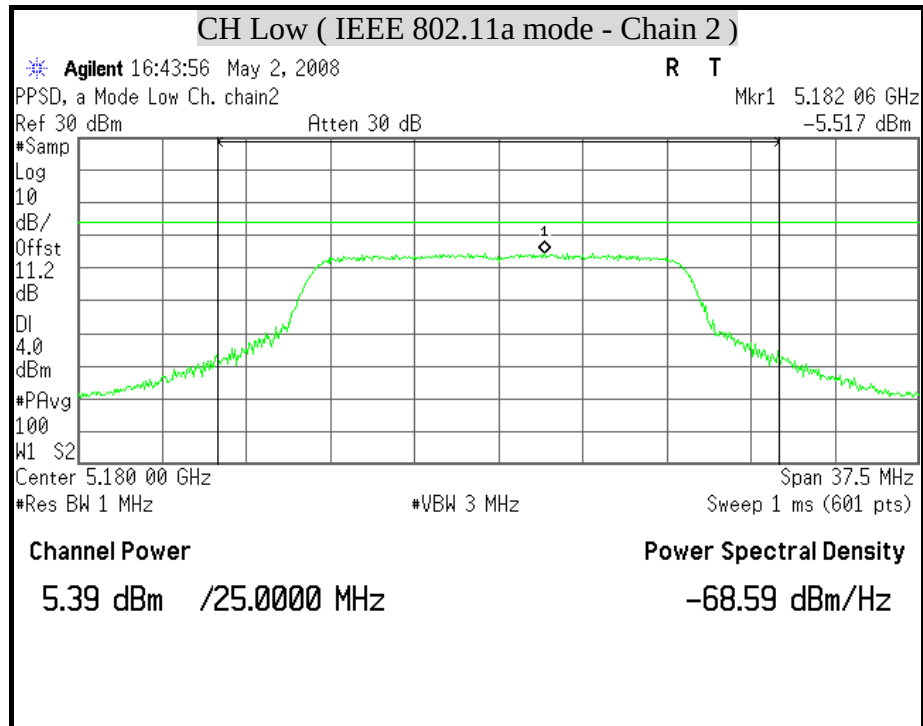
2. The cable assembly insertion loss of 18.0 dB (including 10 dB pad and 8.0 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

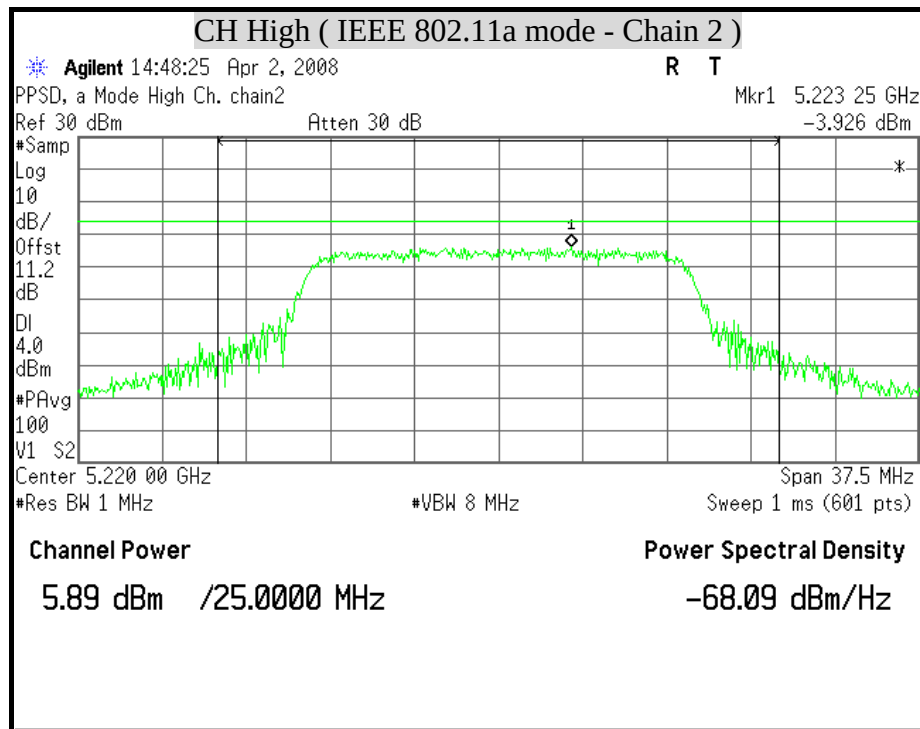
**POWER SPECTRAL DENSITY (IEEE 802.11a mode)**

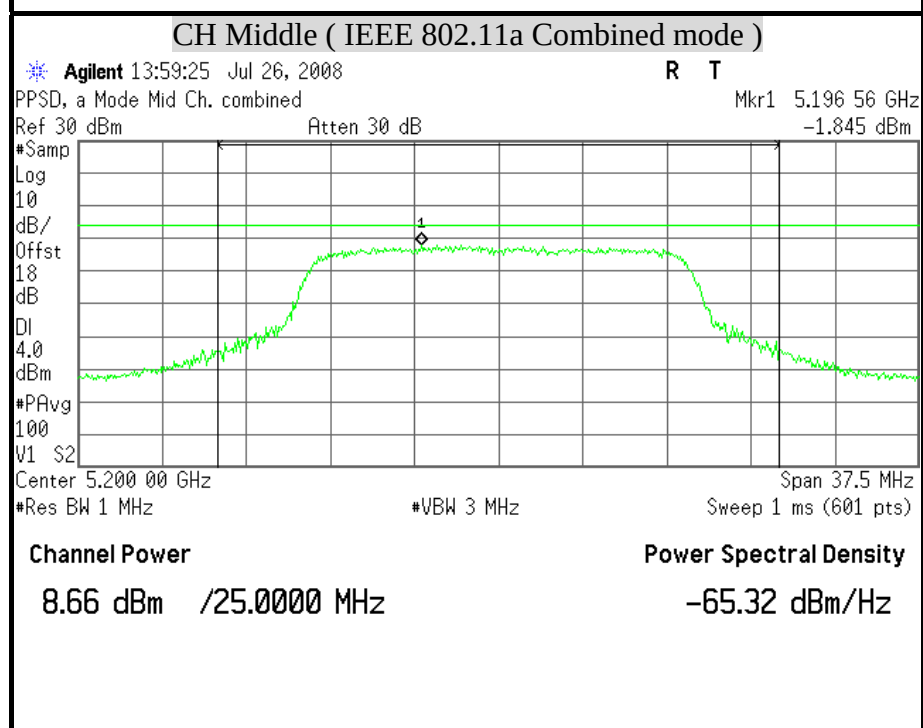
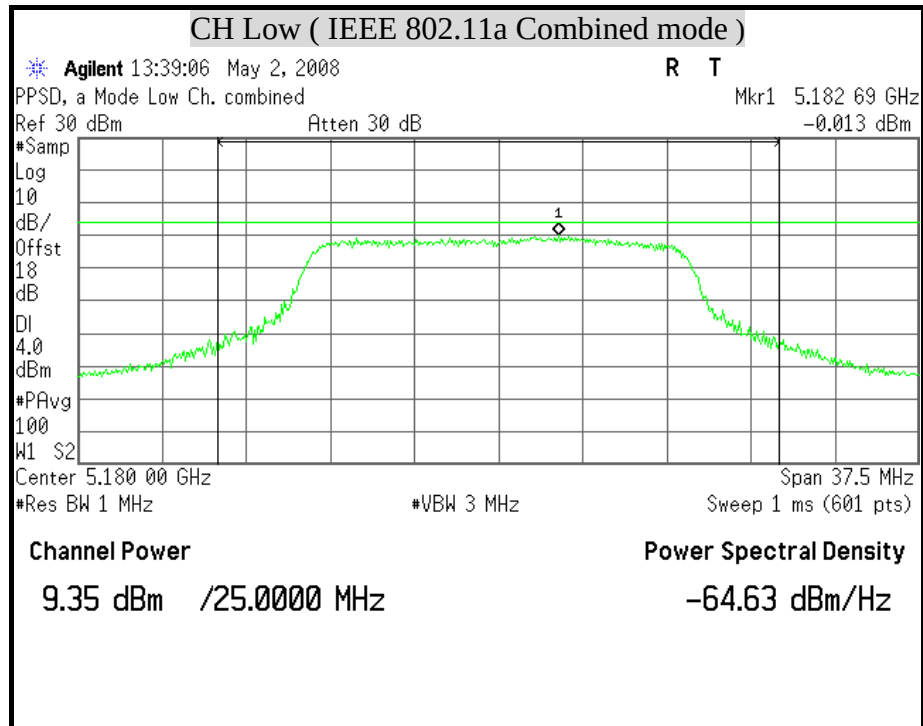


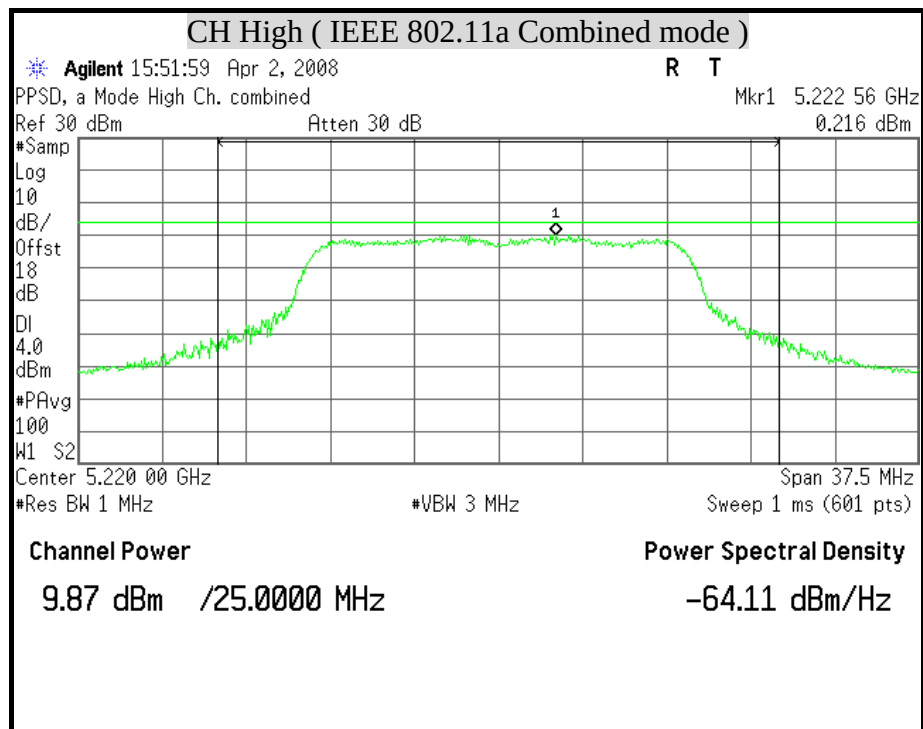


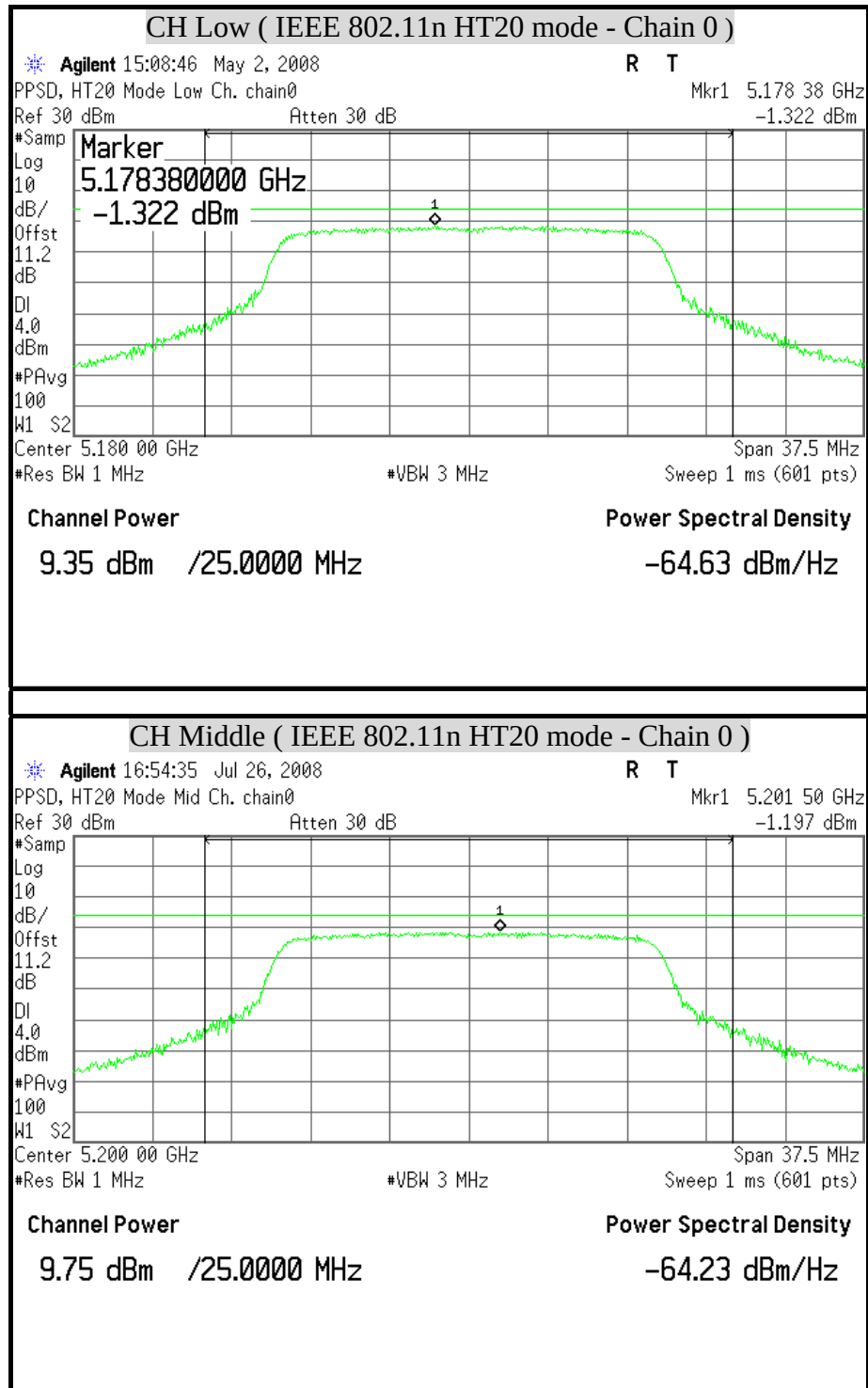


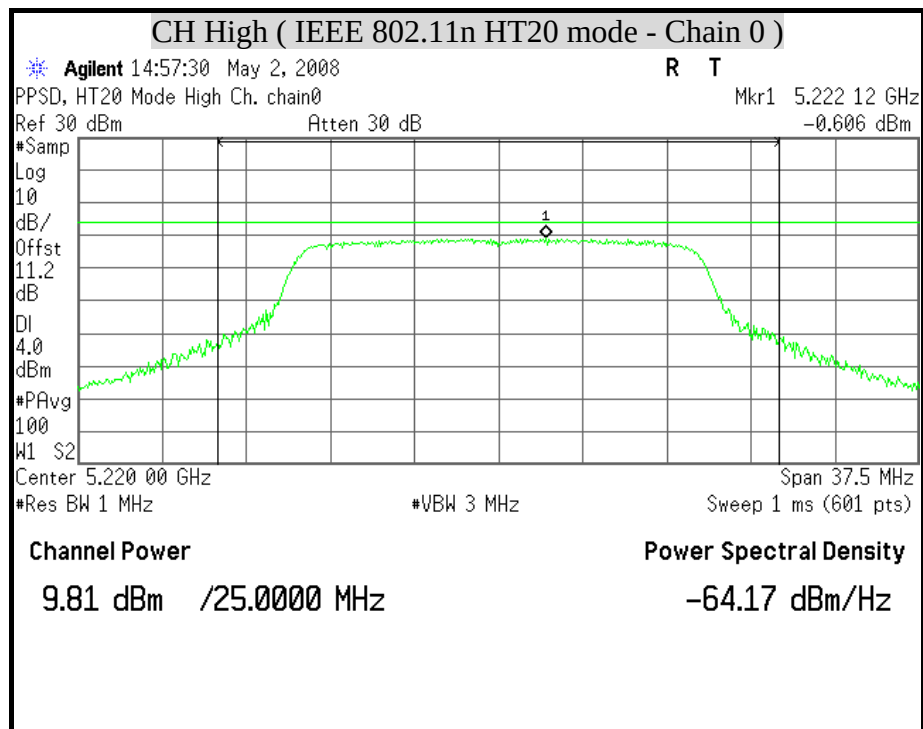


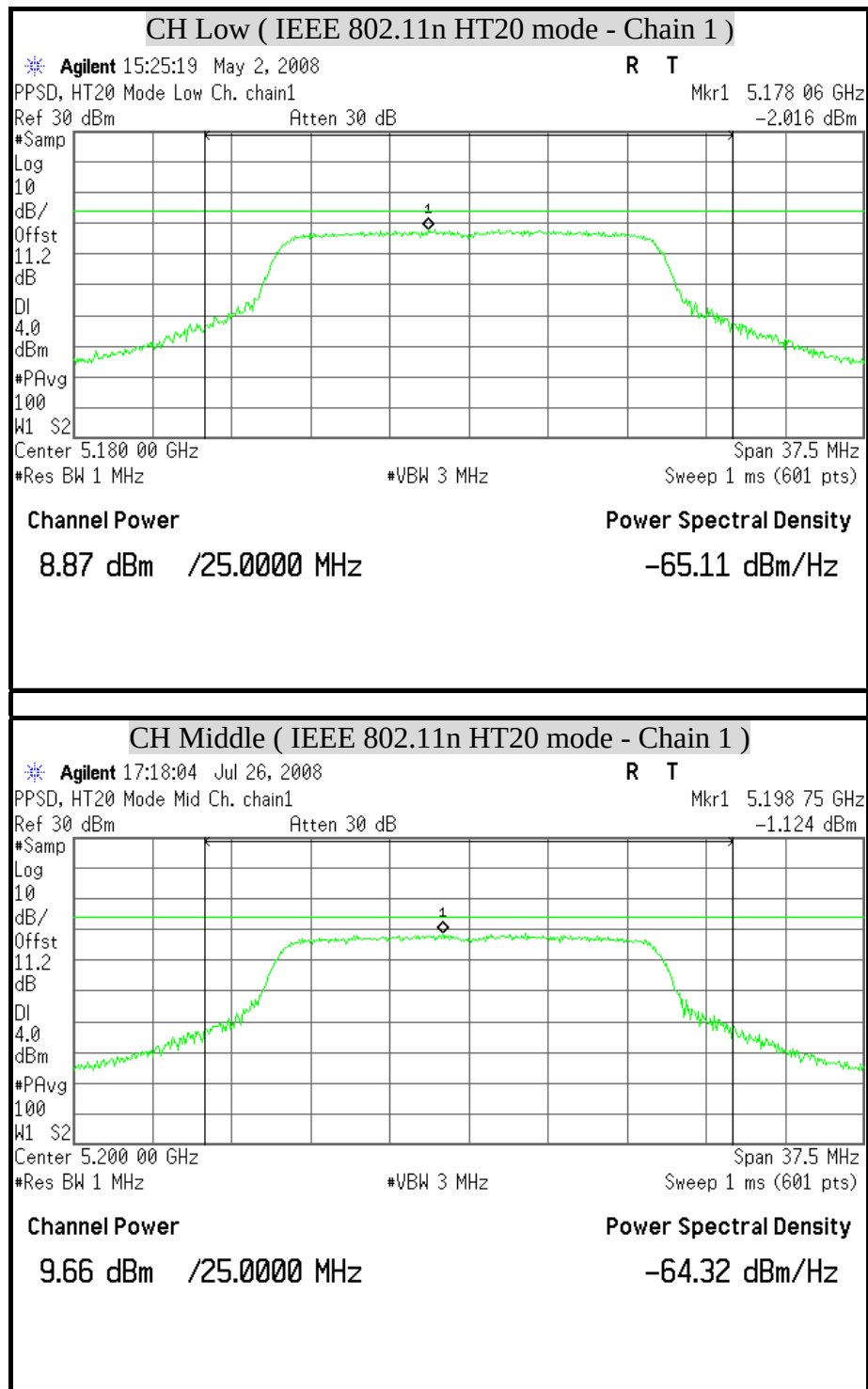


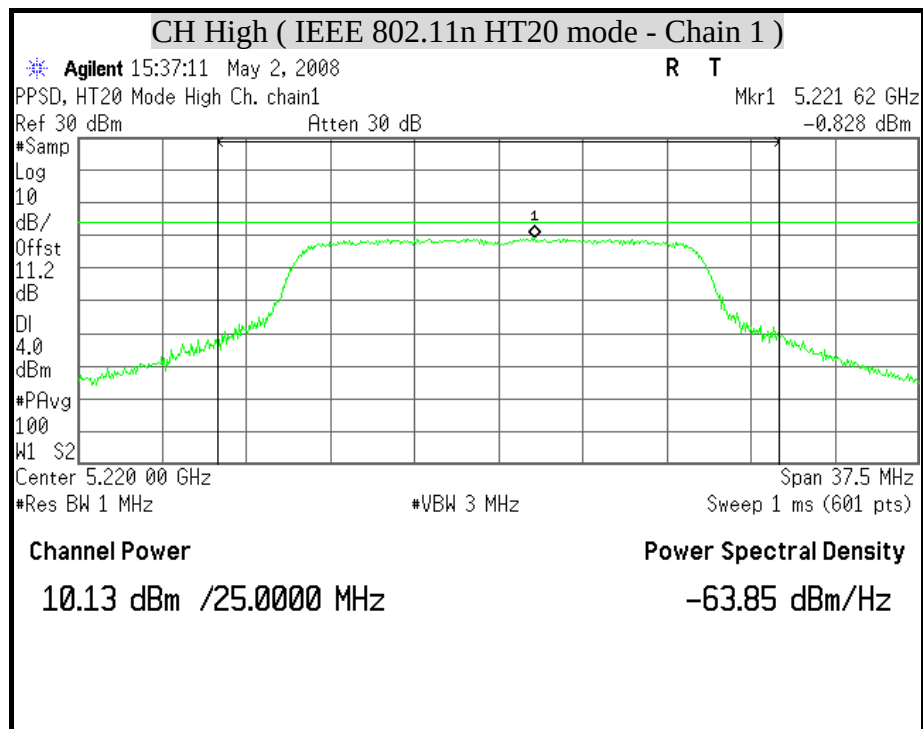
**POWER SPECTRAL DENSITY (IEEE 802.11a Combined mode)**

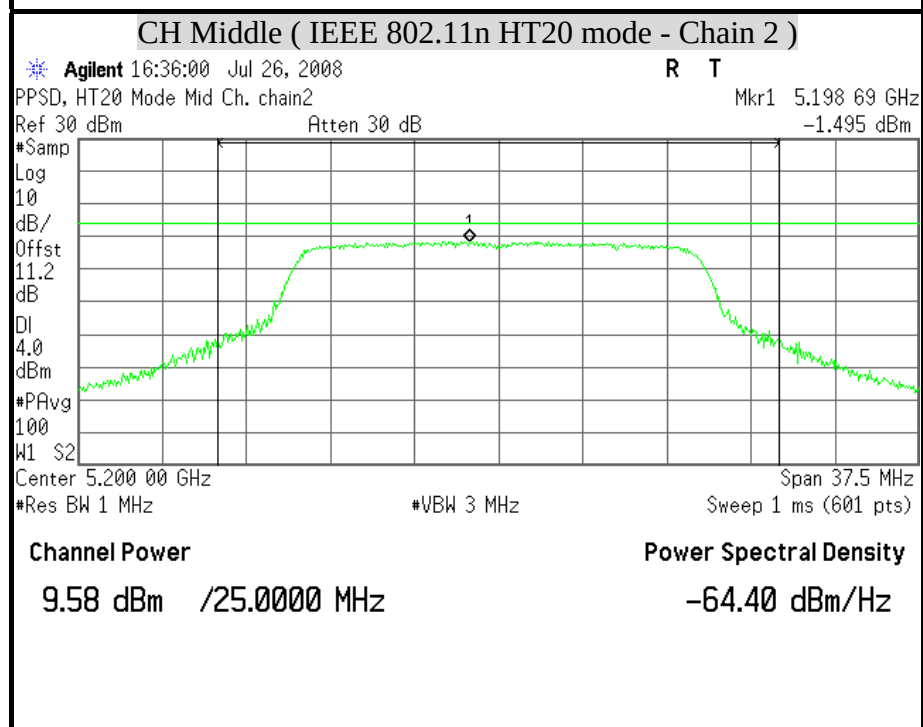
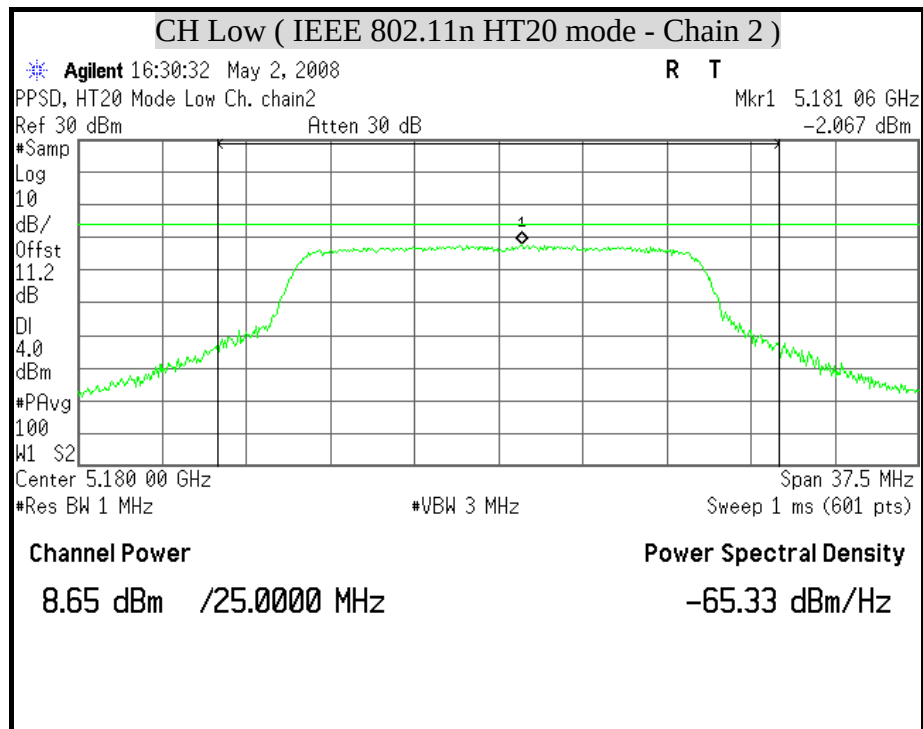


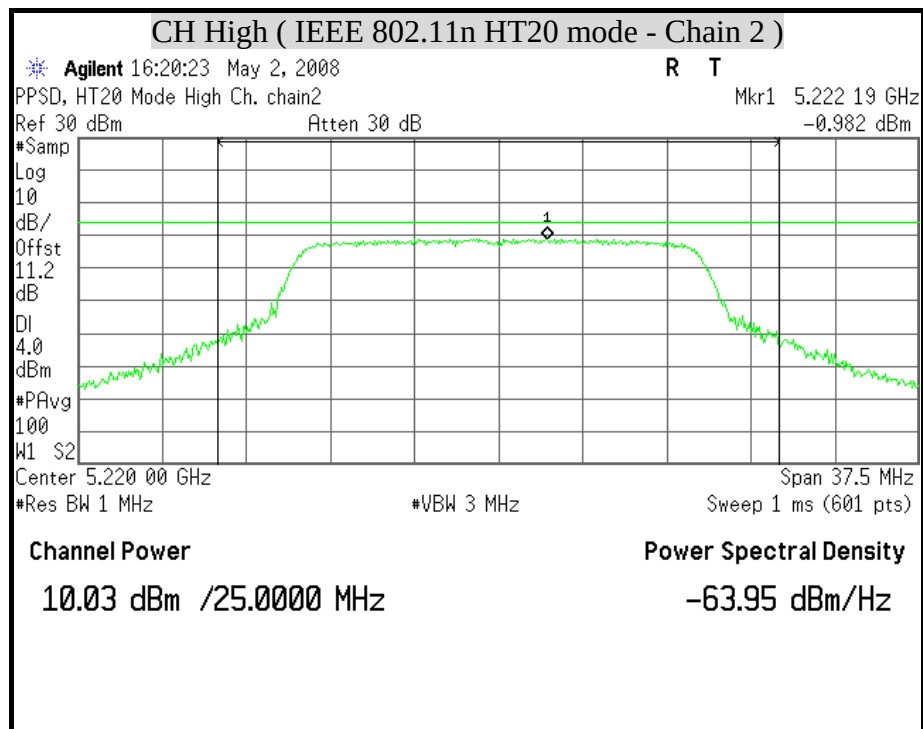
**POWER SPECTRAL DENSITY (IEEE 802.11n HT20 mode)**

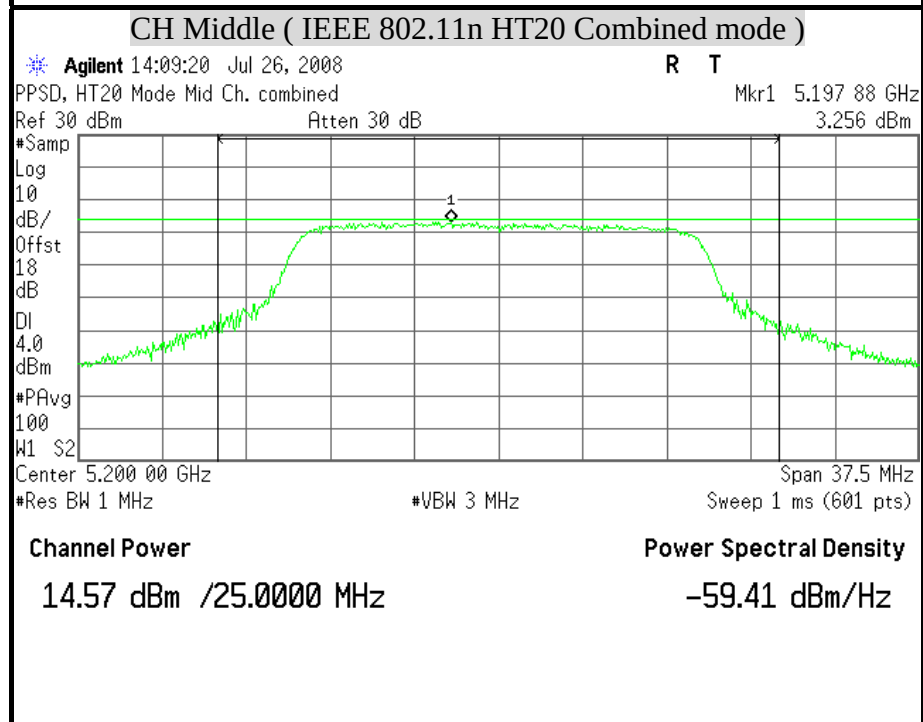
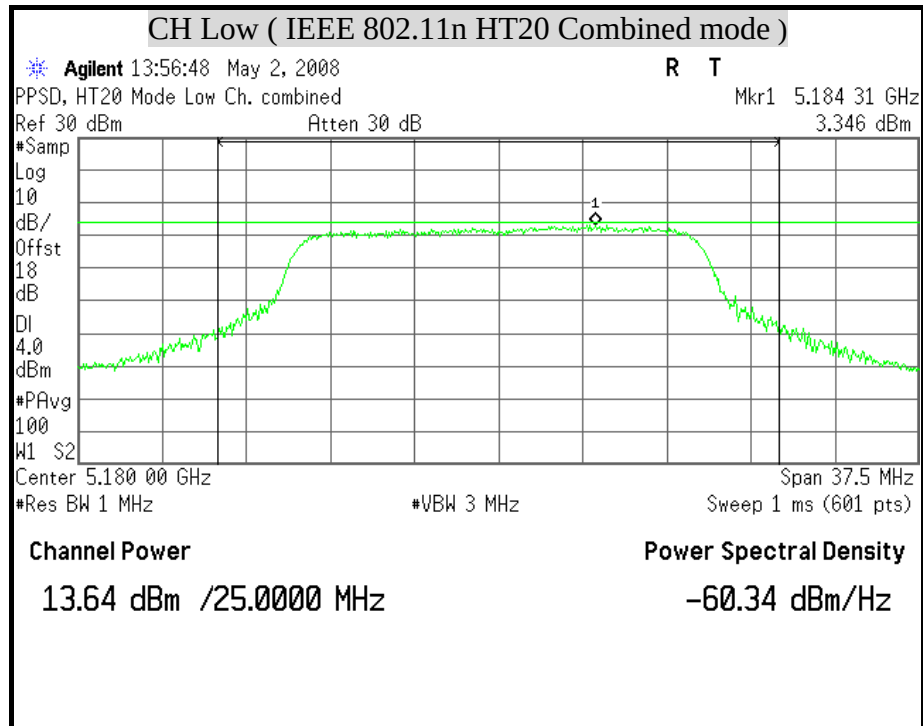






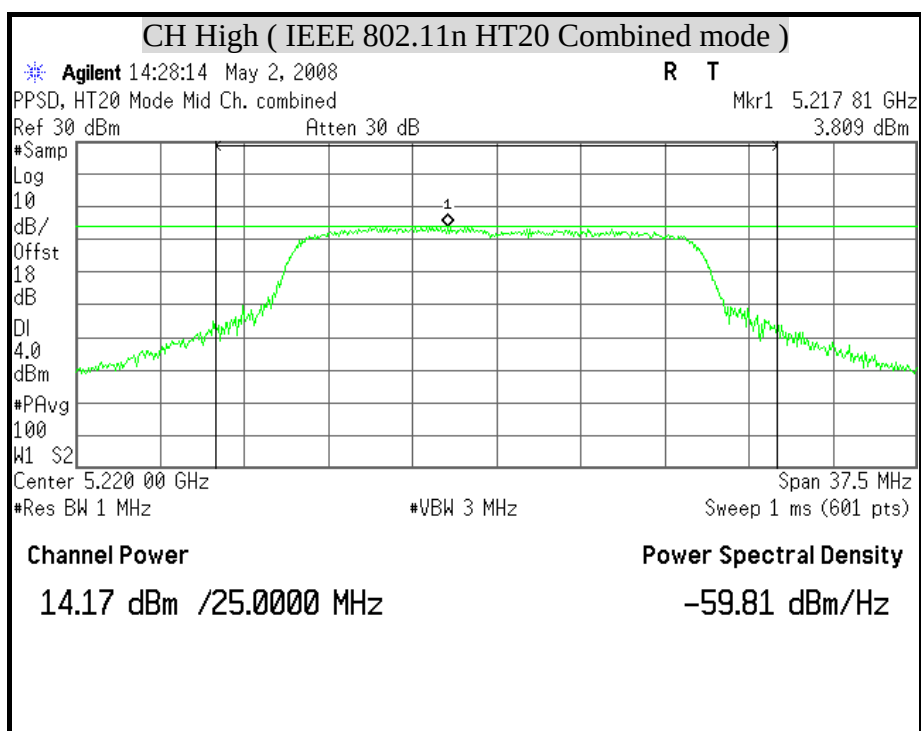


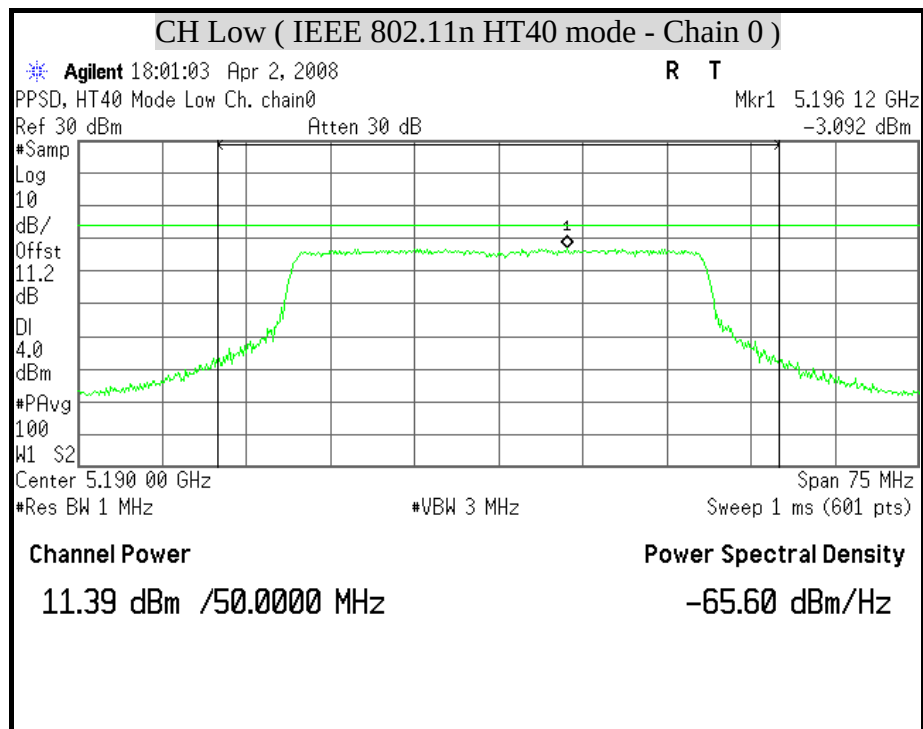


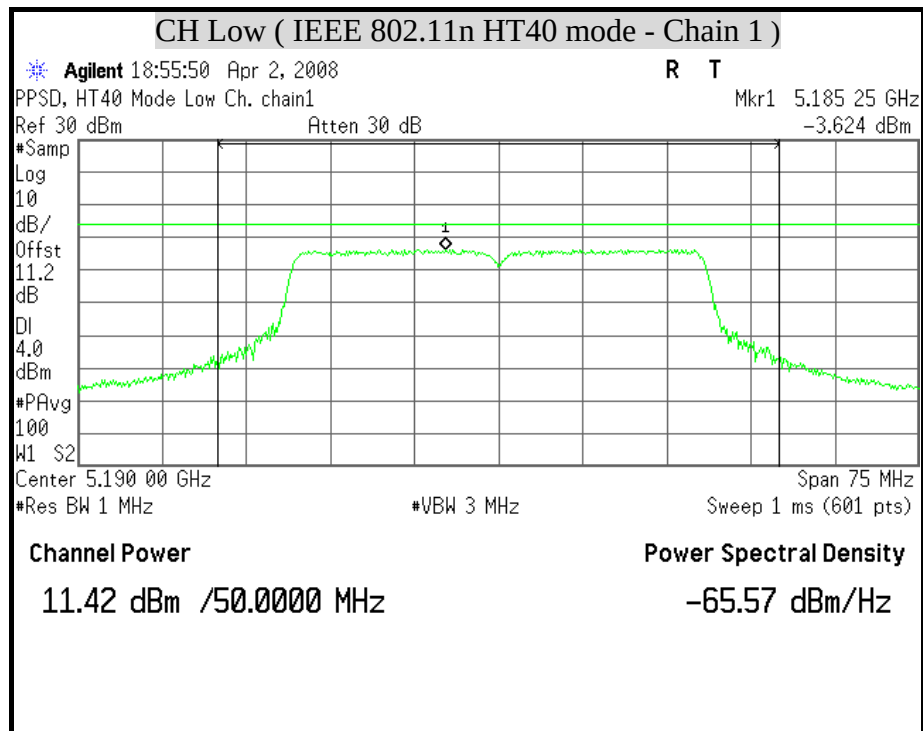
**POWER SPECTRAL DENSITY (IEEE 802.11n HT20 Combined mode)**

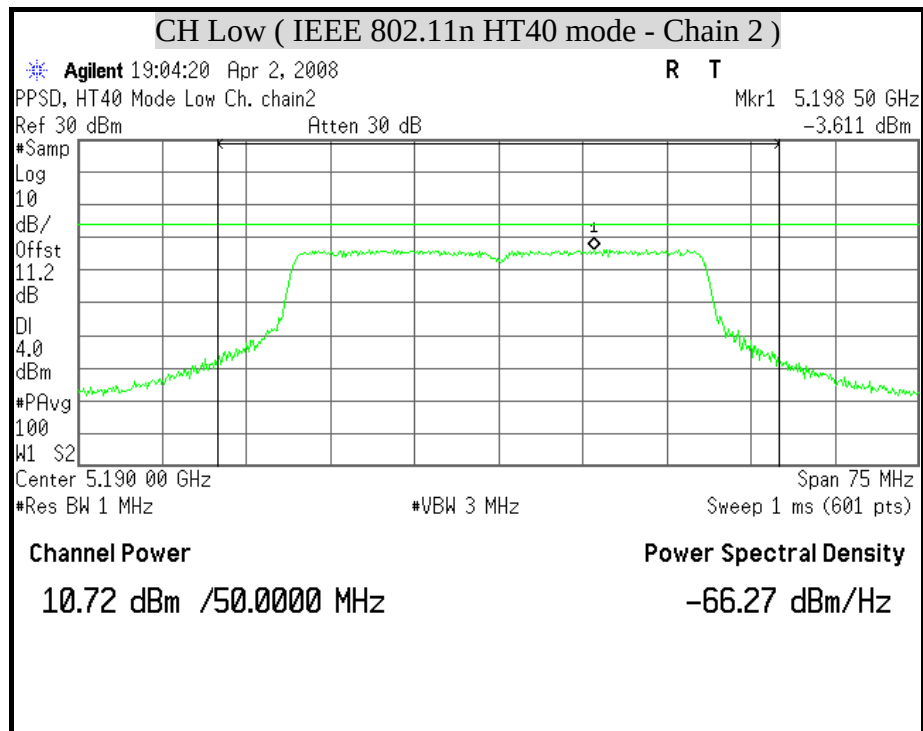


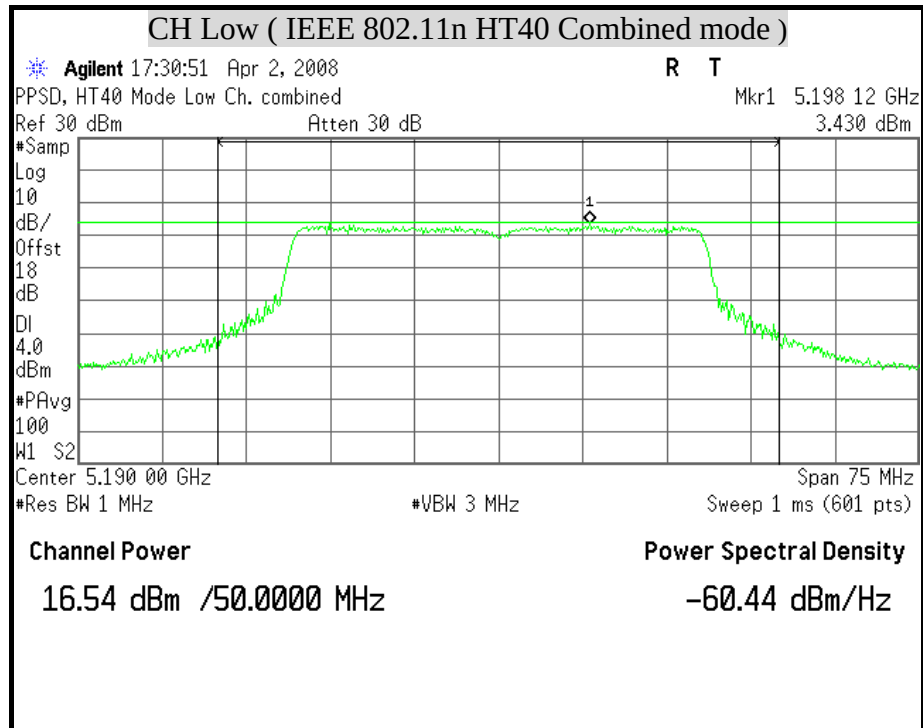
FCC ID : KA2AP2553A1
Report No. : 80524001-RP1-1
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**POWER SPECTRAL DENSITY (IEEE 802.11n HT40 mode)**





**POWER SPECTRAL DENSITY (IEEE 802.11n HT40 Combined mode)**



8.7 PEAK EXCURSION

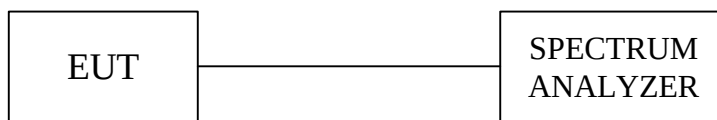
LIMIT

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

TEST EQUIPMENTS

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 24, 2008

TEST SETUP



TEST PROCEDURE

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

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to spectrum.
3. Trace A, Set RBW =1MHz, VBW $\geq$ 3MHz, with peak detector and Max. hold, Span > 26dB Bandwidth (Base Mode).
4. Delta Mark trace A Maximum frequency and trace B same frequency.
5. Repeat the above procedure until measurements for all frequencies were complete.

**TEST RESULTS**

No non-compliance noted

IEEE 802.11a mode

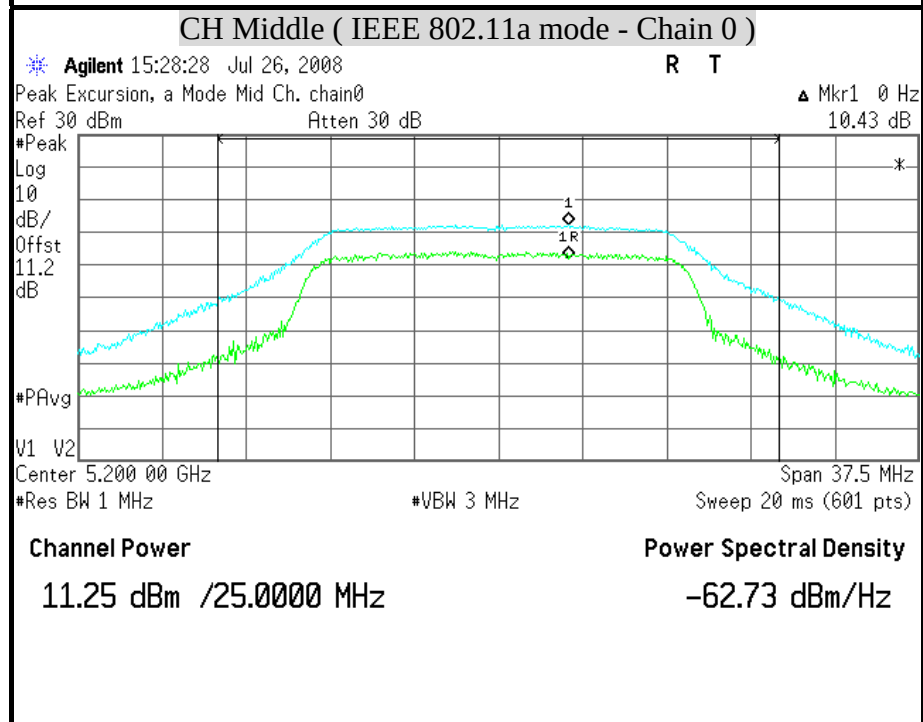
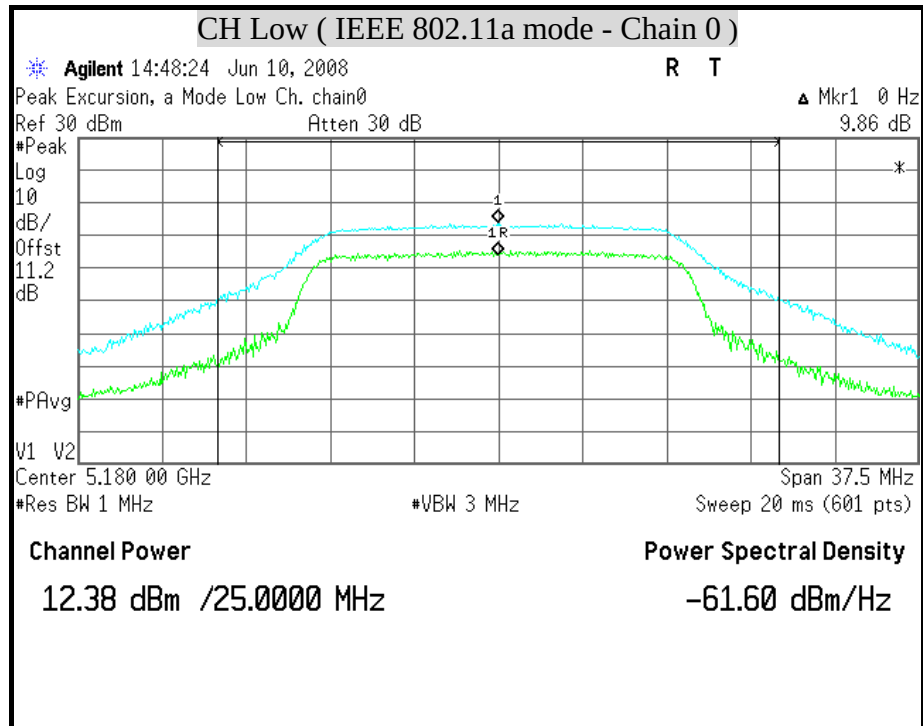
Channel	Channel Frequency (MHz)	Peak Excursion (dB)			Limit (dB)	Margin (dB)			Pass / Fail
		Chain 0	Chain 1	Chain 2		Chain 0	Chain 1	Chain 2	
Low	5180	9.86	9.87	11.00	13	-3.14	-3.13	-2.00	PASS
Middle	5200	10.43	9.77	10.25	13	-2.57	-3.03	-2.75	PASS
High	5220	9.99	11.18	11.57	13	-3.01	-1.82	-1.43	PASS

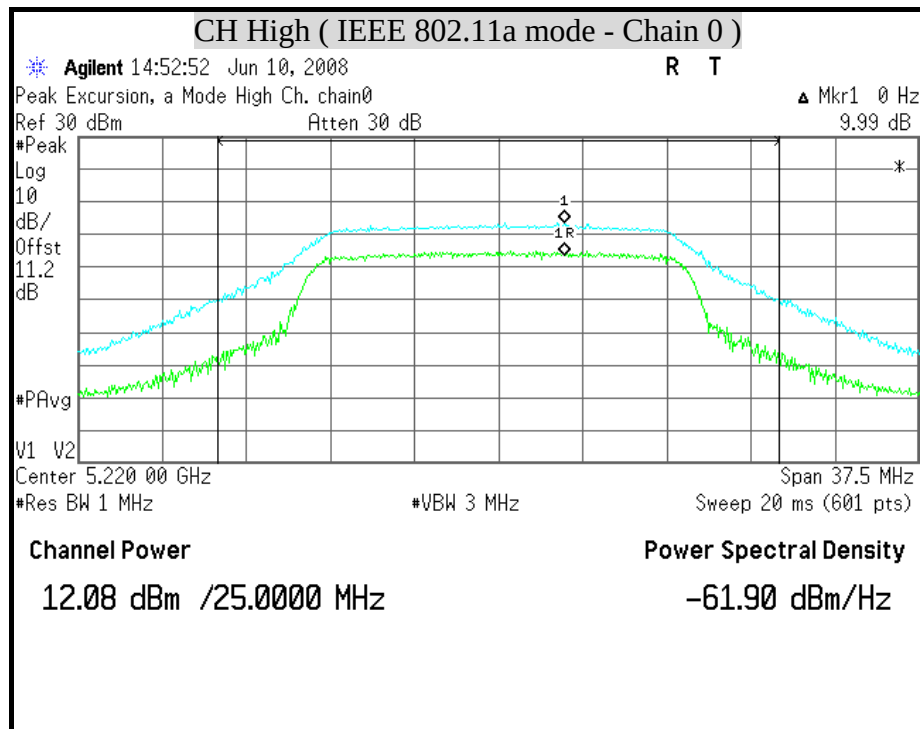
IEEE 802.11n HT20 mode

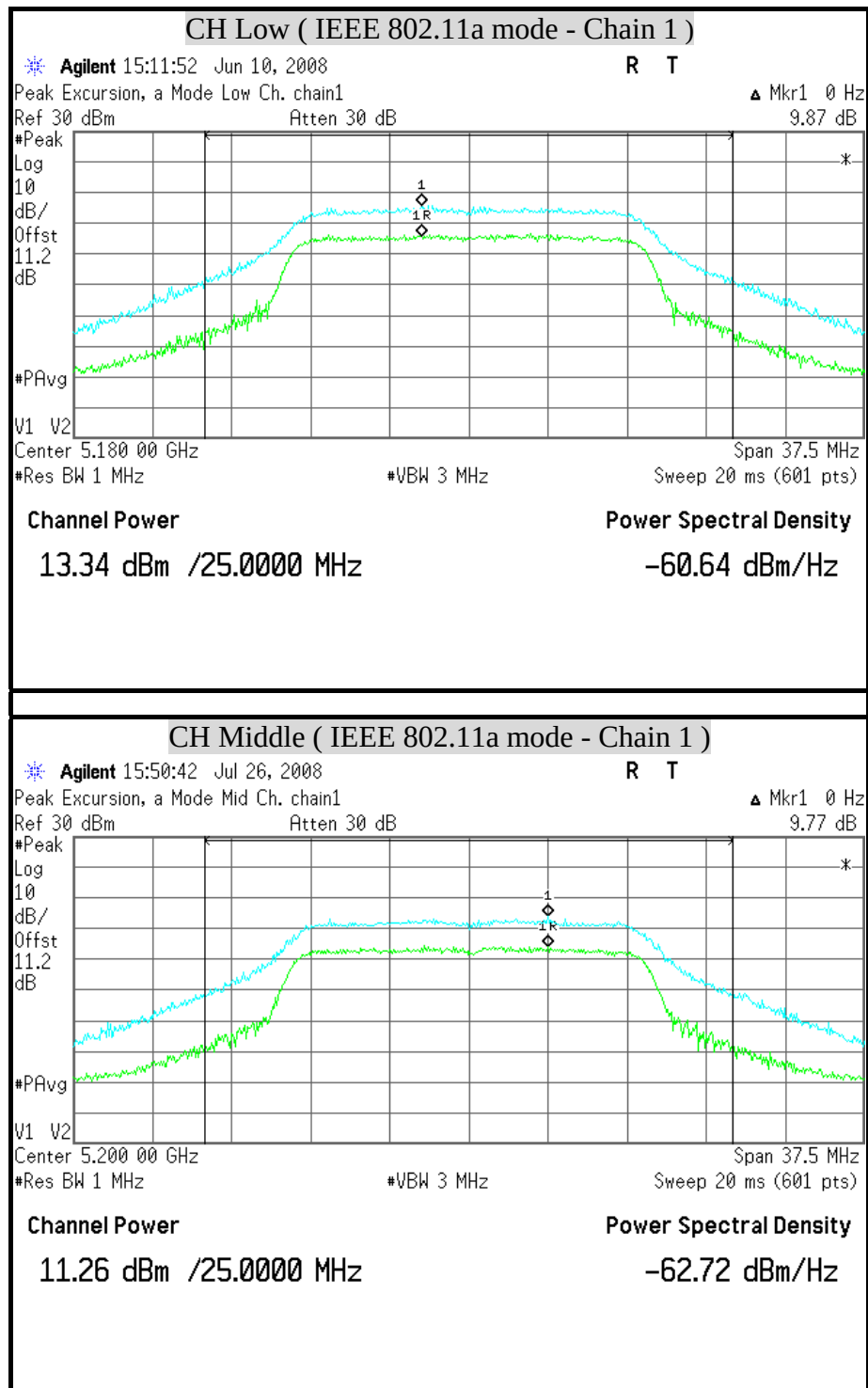
Channel	Channel Frequency (MHz)	Peak Excursion (dB)			Limit (dB)	Margin (dB)			Pass / Fail
		Chain 0	Chain 1	Chain 2		Chain 0	Chain 1	Chain 2	
Low	5180	9.50	10.12	9.90	13	-3.50	-2.88	-3.10	PASS
Middle	5200	10.54	10.01	9.46	13	-2.46	-2.99	-3.54	PASS
High	5220	9.23	9.22	9.92	13	-3.77	-3.78	-3.08	PASS

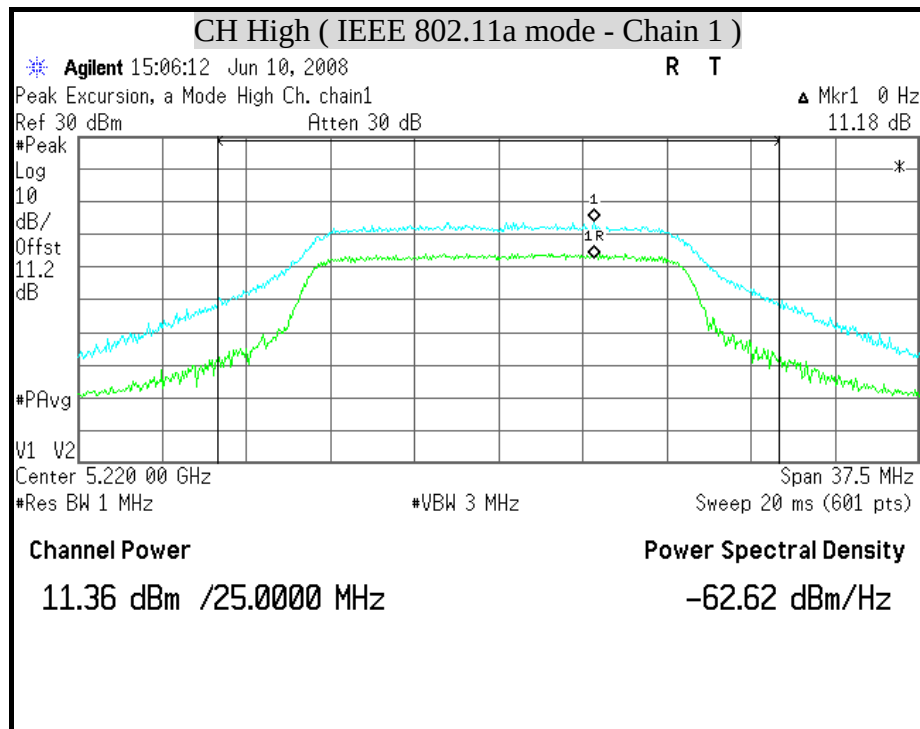
IEEE 802.11n HT40 mode

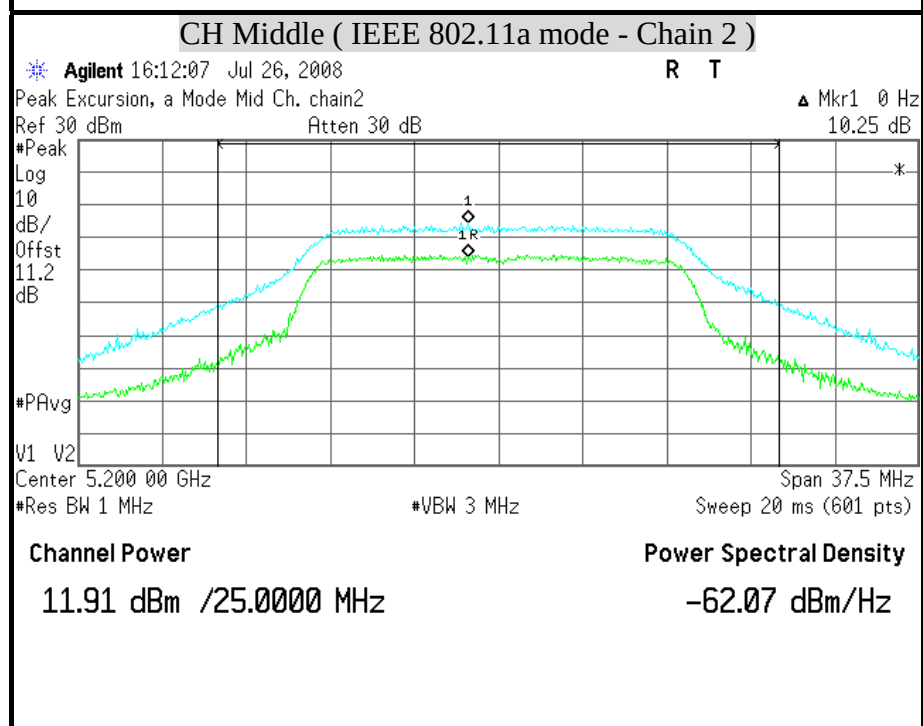
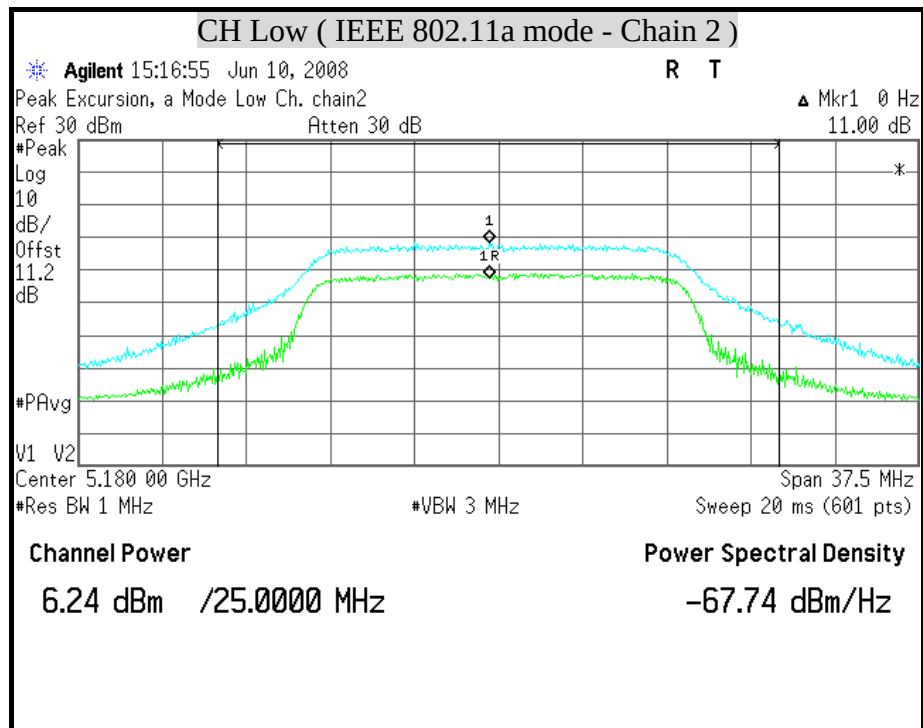
Channel	Channel Frequency (MHz)	Peak Excursion (dB)			Limit (dB)	Margin (dB)			Pass / Fail
		Chain 0	Chain 1	Chain 2		Chain 0	Chain 1	Chain 2	
Low	5190	10.86	10.89	11.21	13	-2.14	-2.11	-1.79	PASS

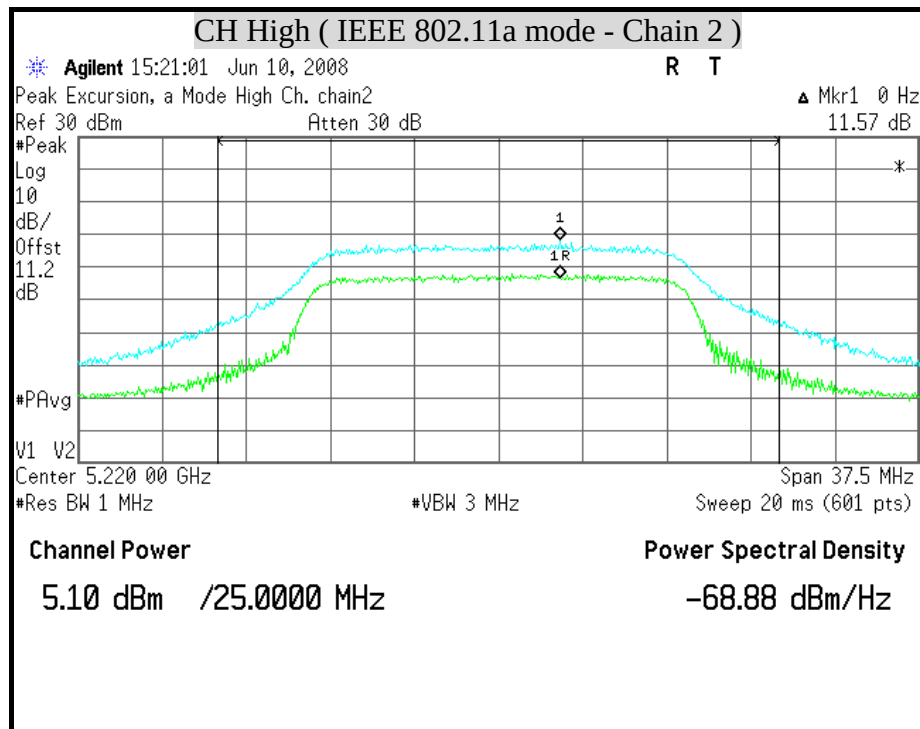
**PEAK EXCURSION (IEEE 802.11a mode)**

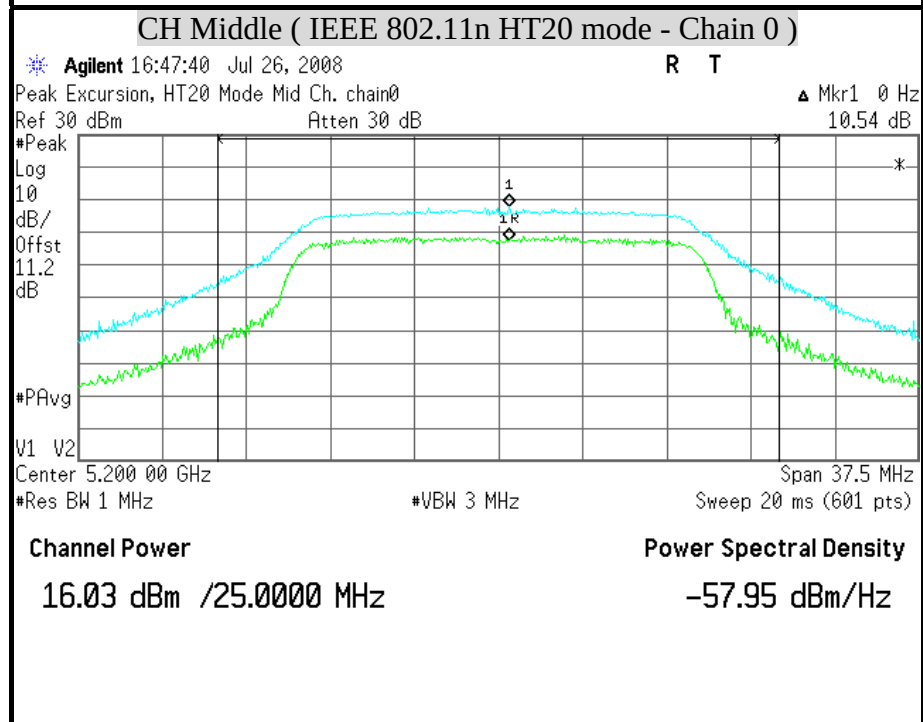
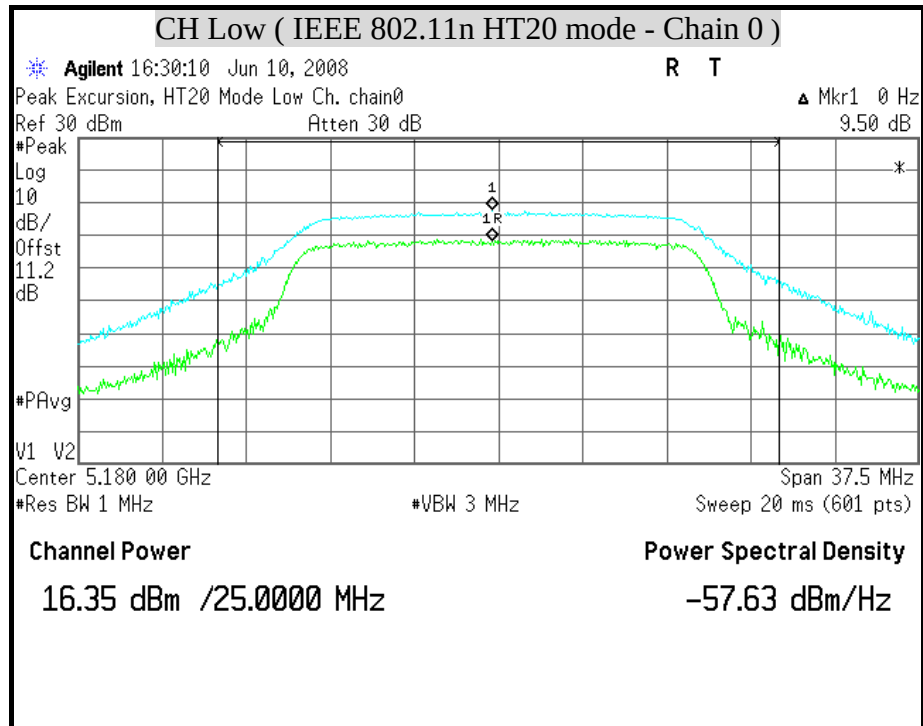


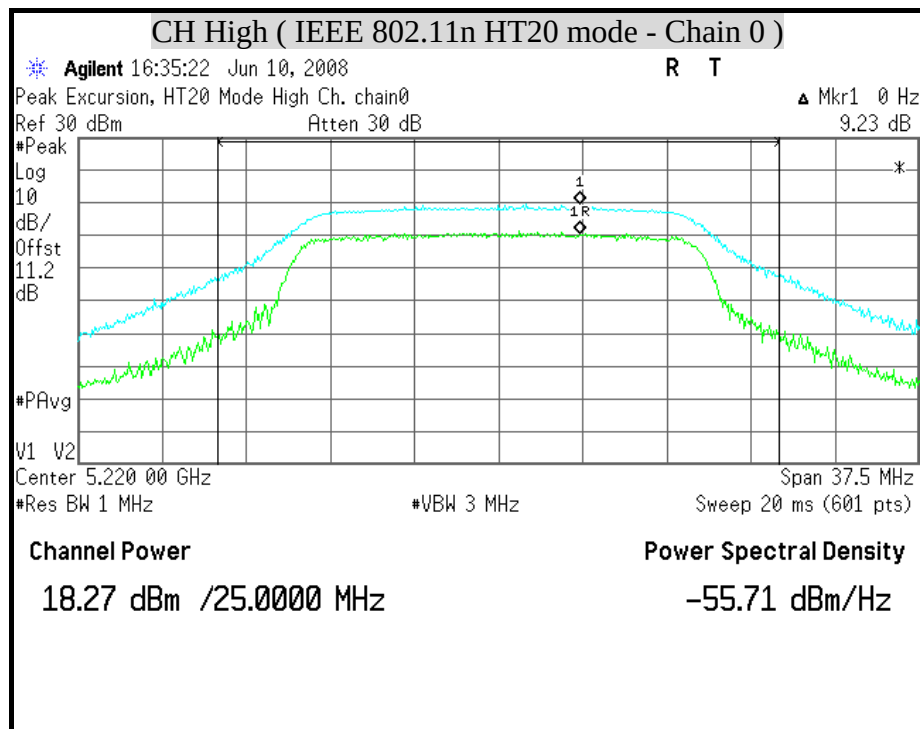


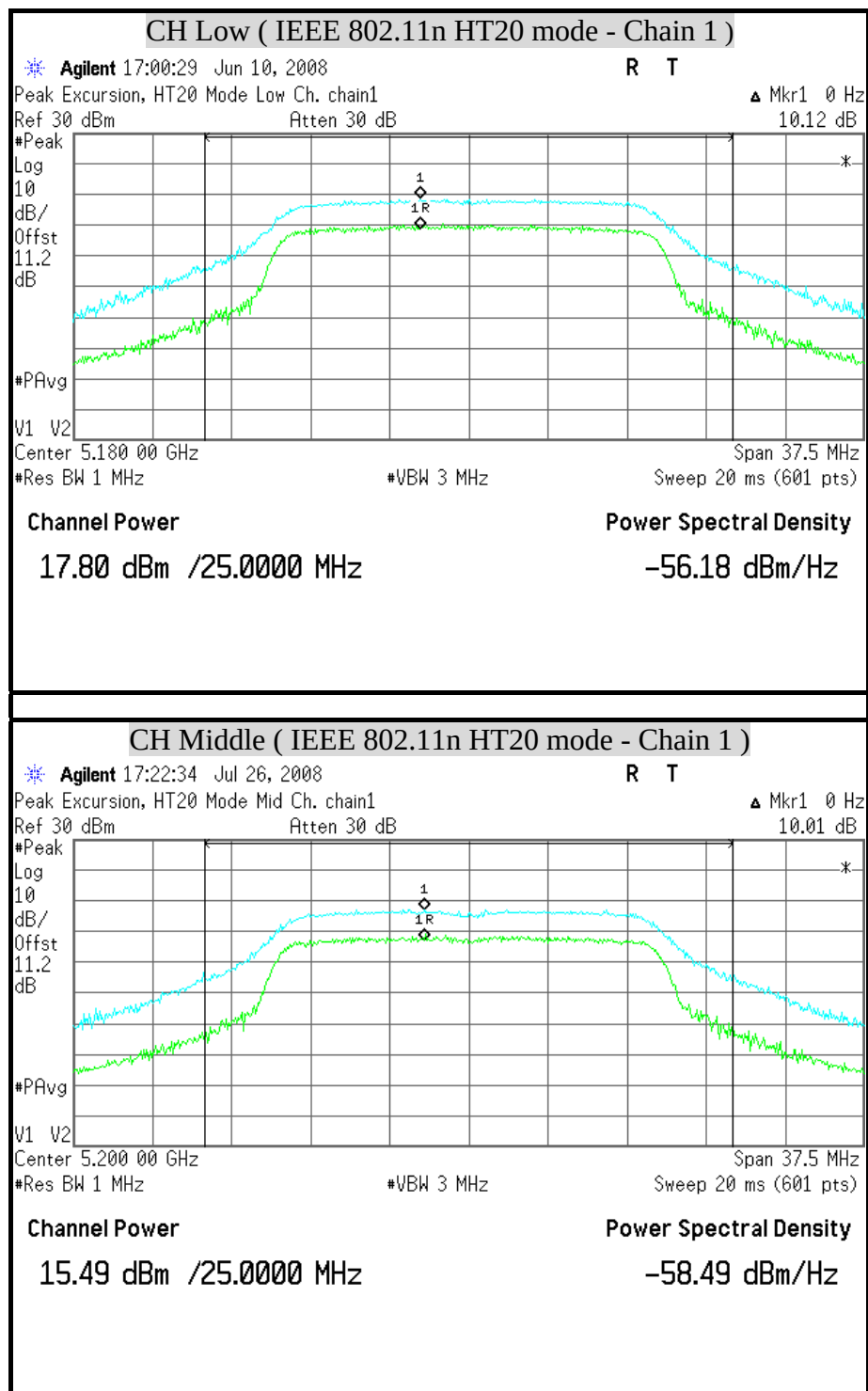


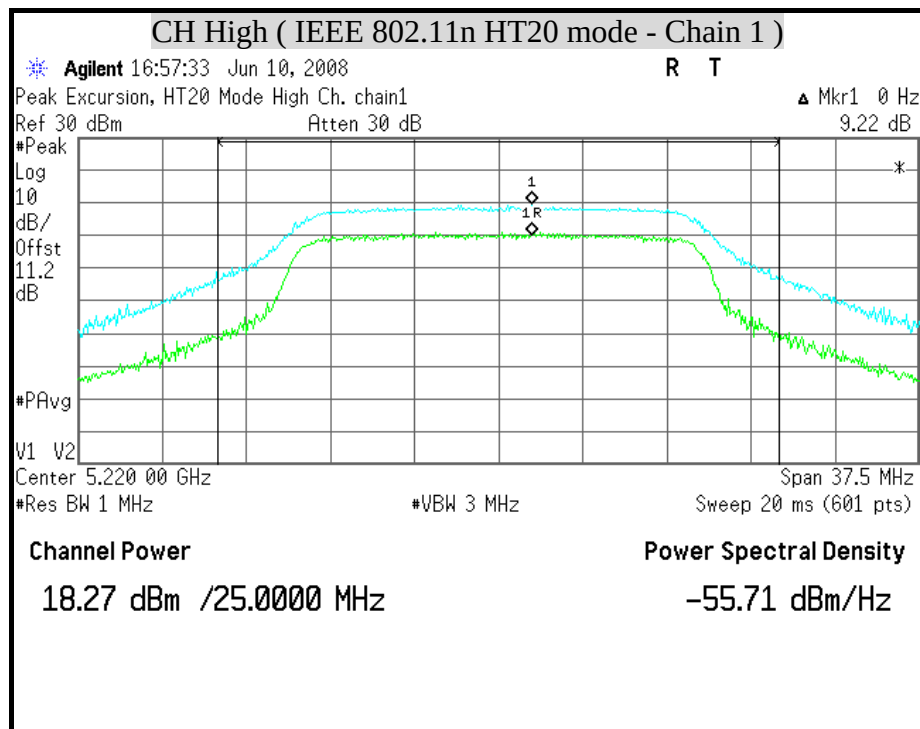


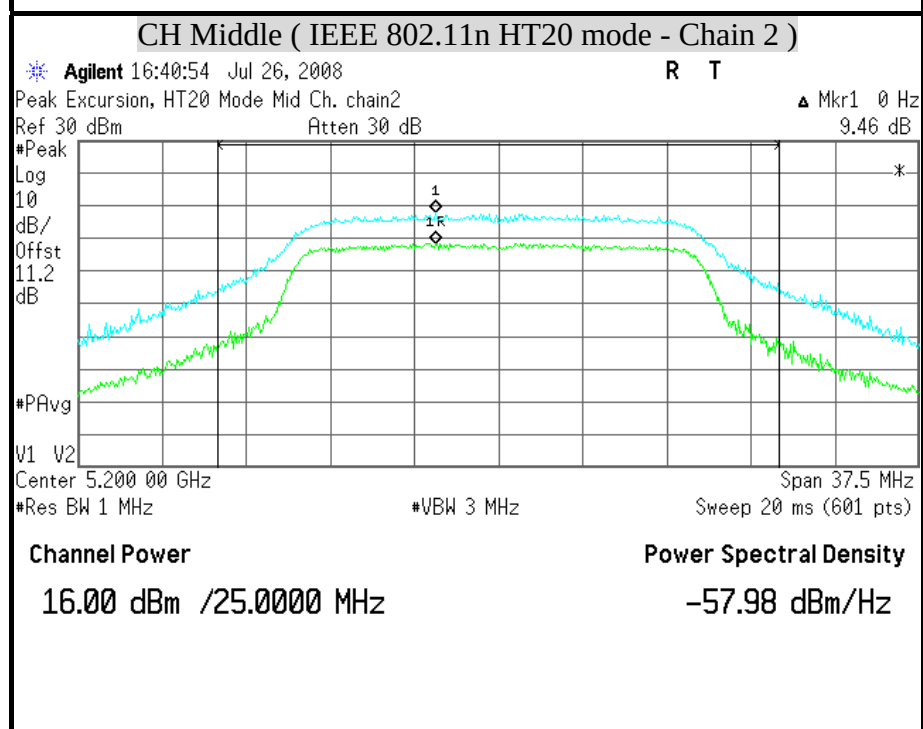
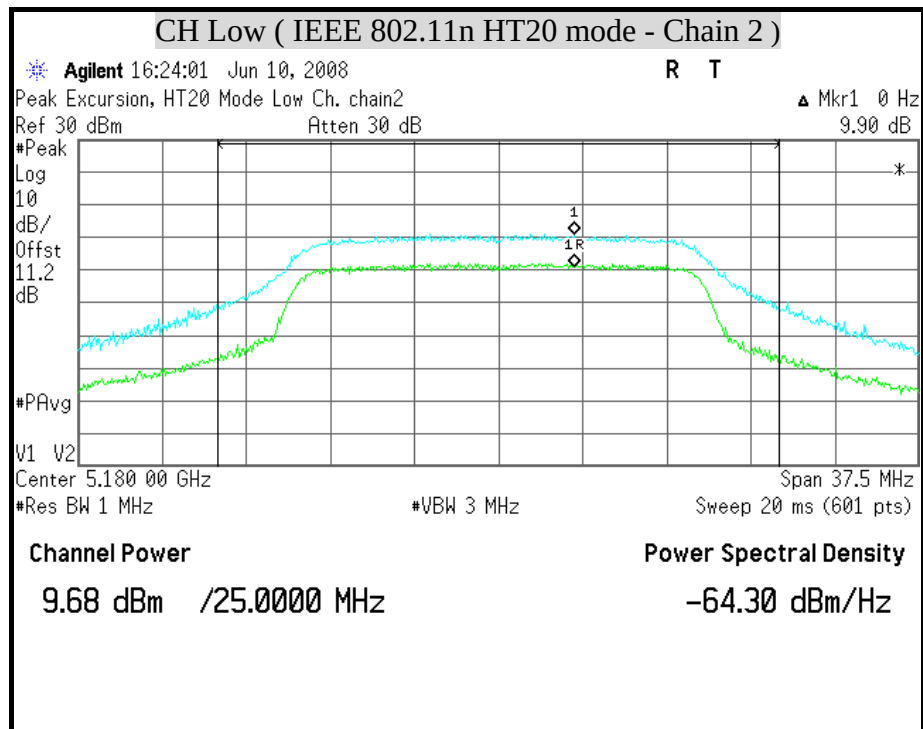


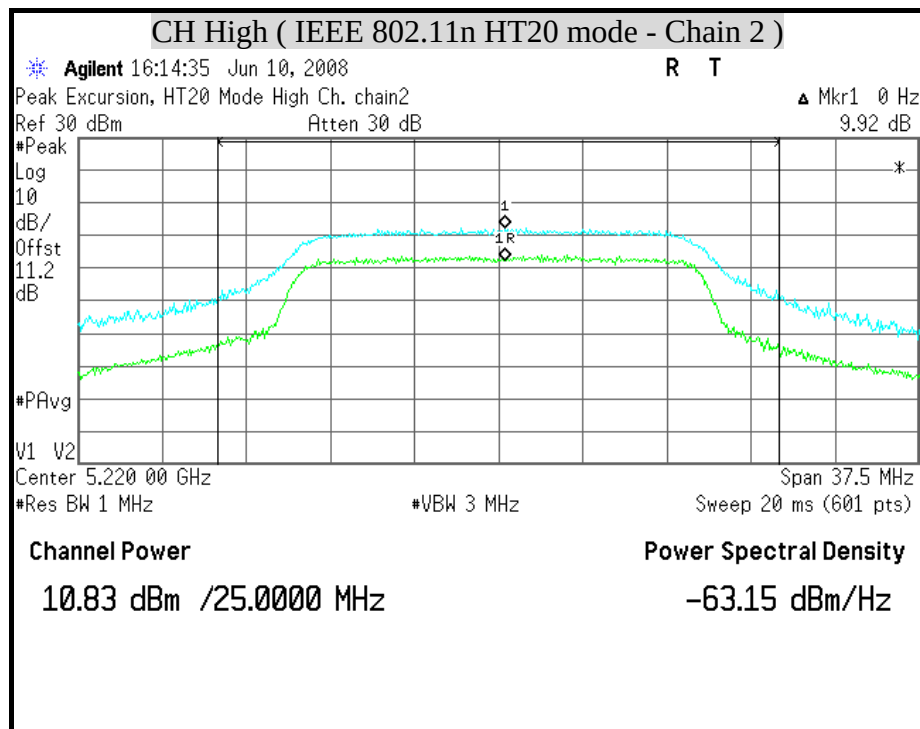
**PEAK EXCURSION (IEEE 802.11n HT20 mode)**

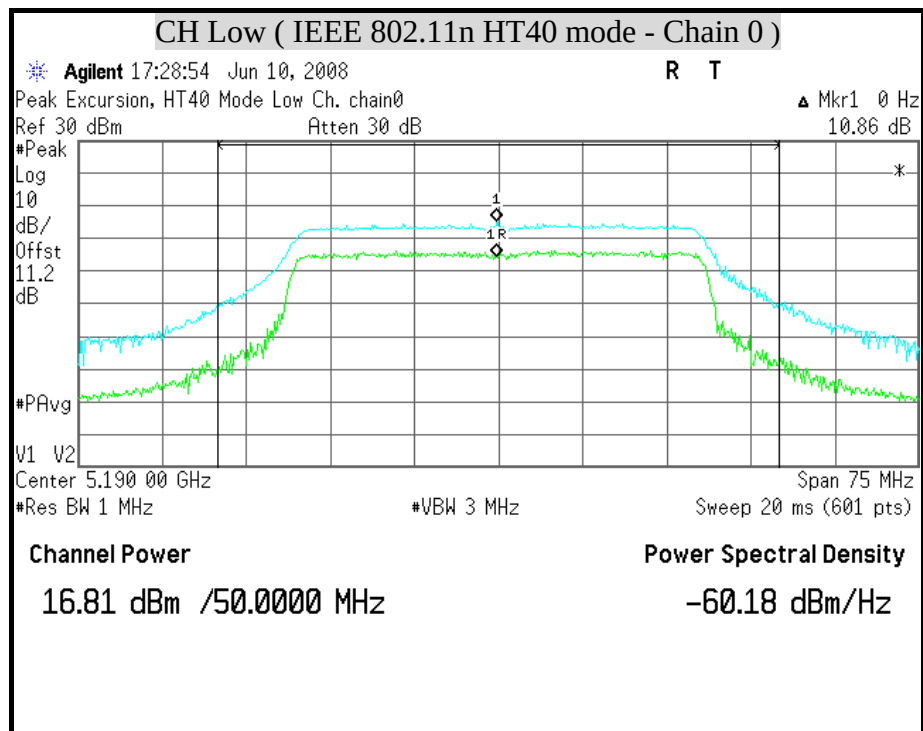


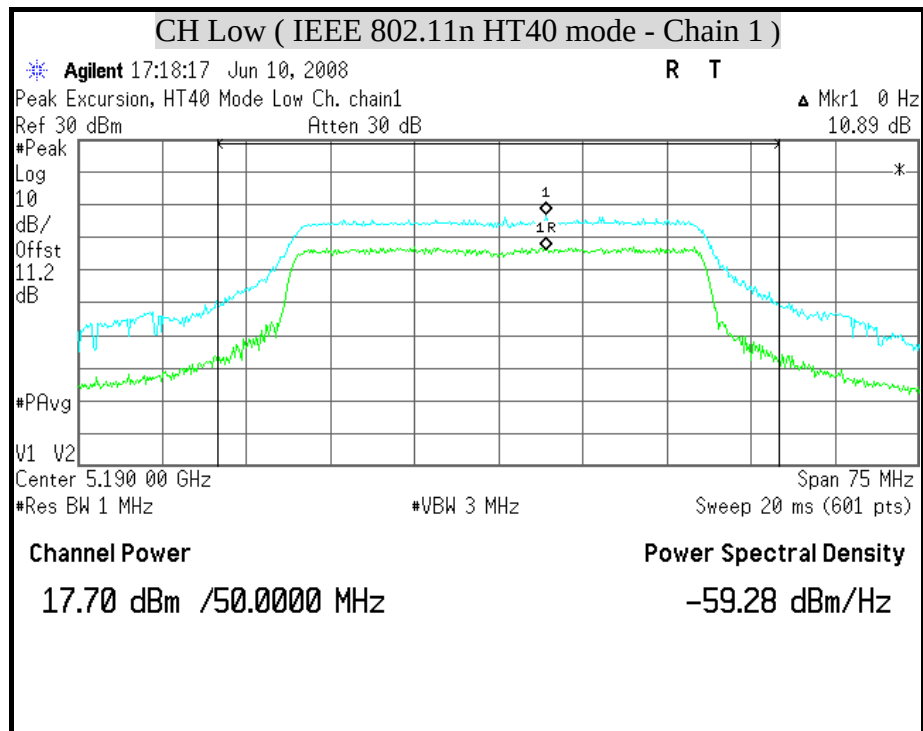


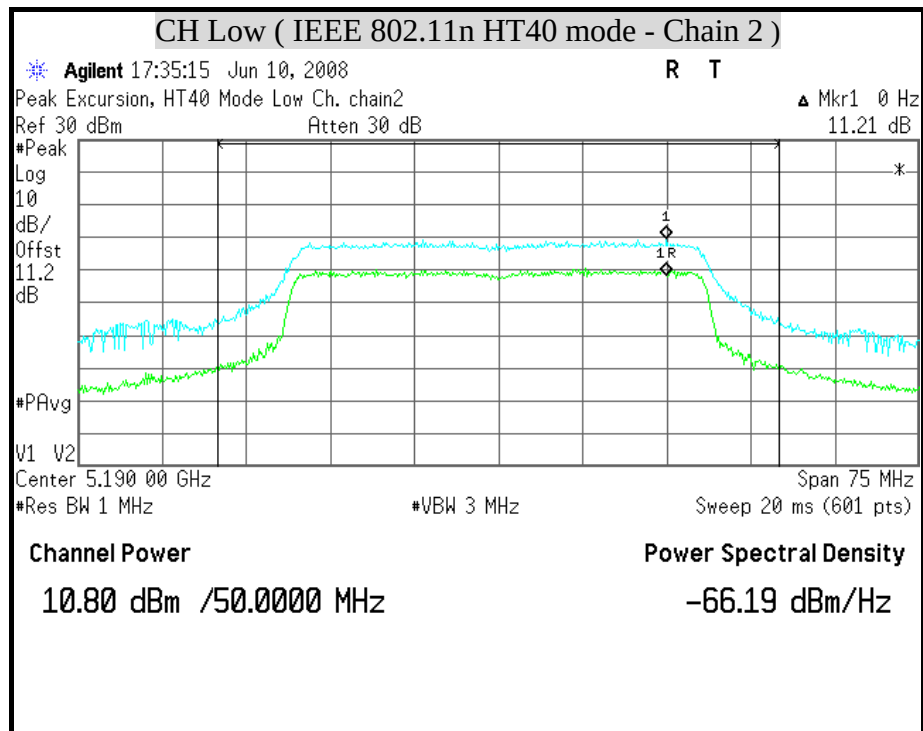






**PEAK EXCURSION (IEEE 802.11n HT40 mode)**







8.8 CONDUCTED SPURIOUS EMISSION

LIMITS

§ 15.407 (d) Transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27dBm / MHz. Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in § 15.207.

The provisions of § 15.205 apply to intentional radiators operating under this section.

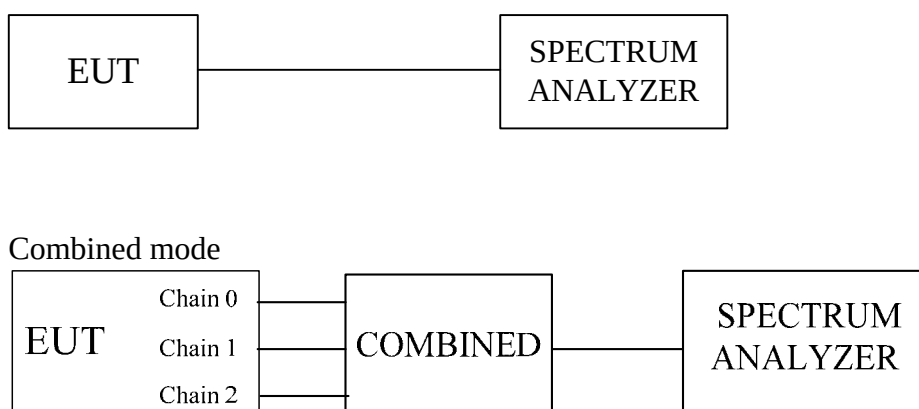
TEST PROCEDURE

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

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1MHz. The video bandwidth is set to 1MHz. Peak detection measurements are compared to the average EIRP limit, adjusted for the maximum antenna gain. If necessary, additional average detection measurements are made.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST SETUP

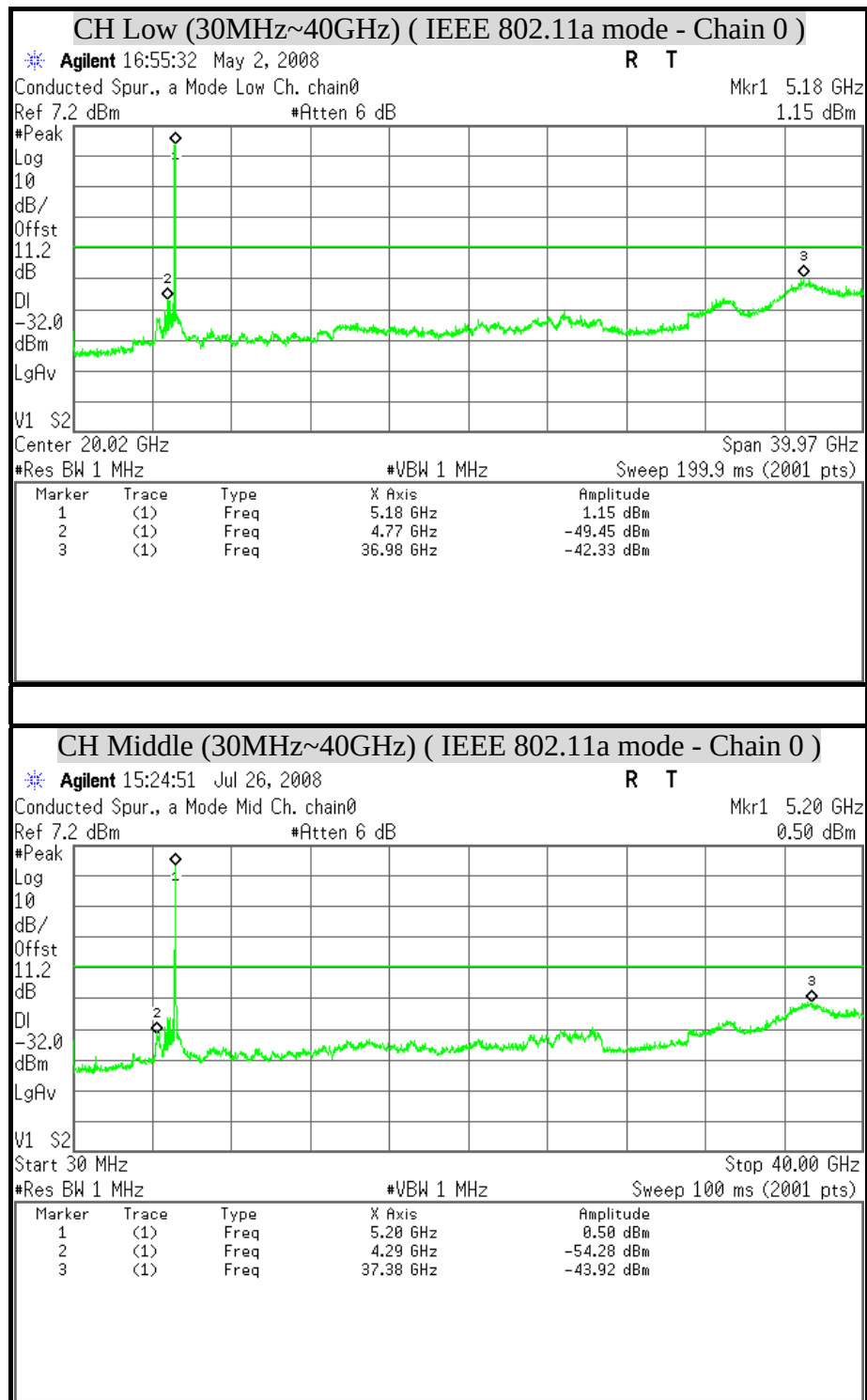


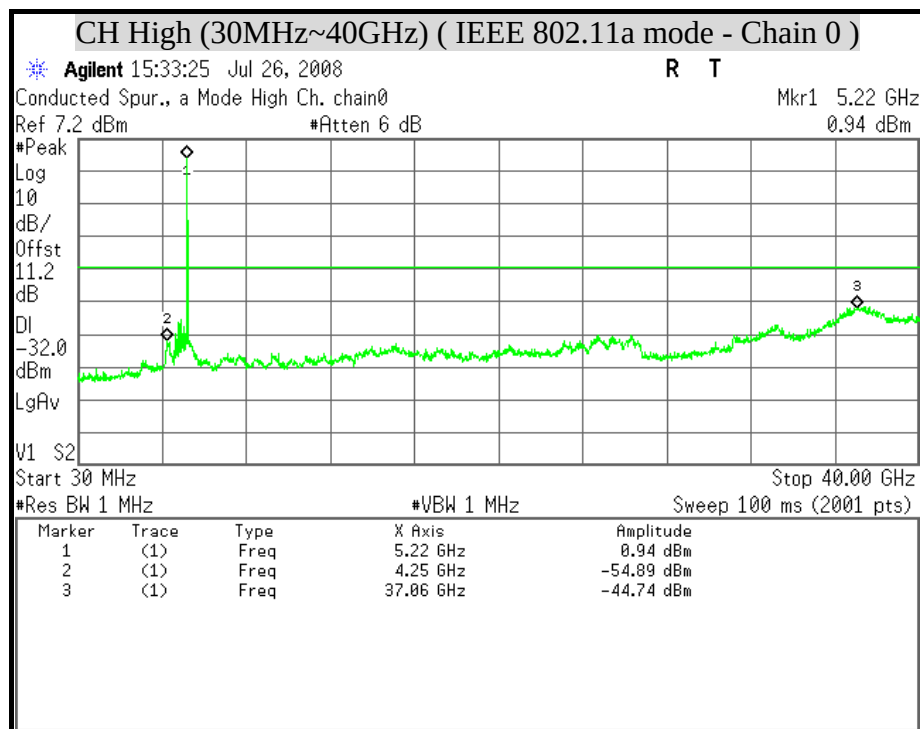
TEST RESULTS

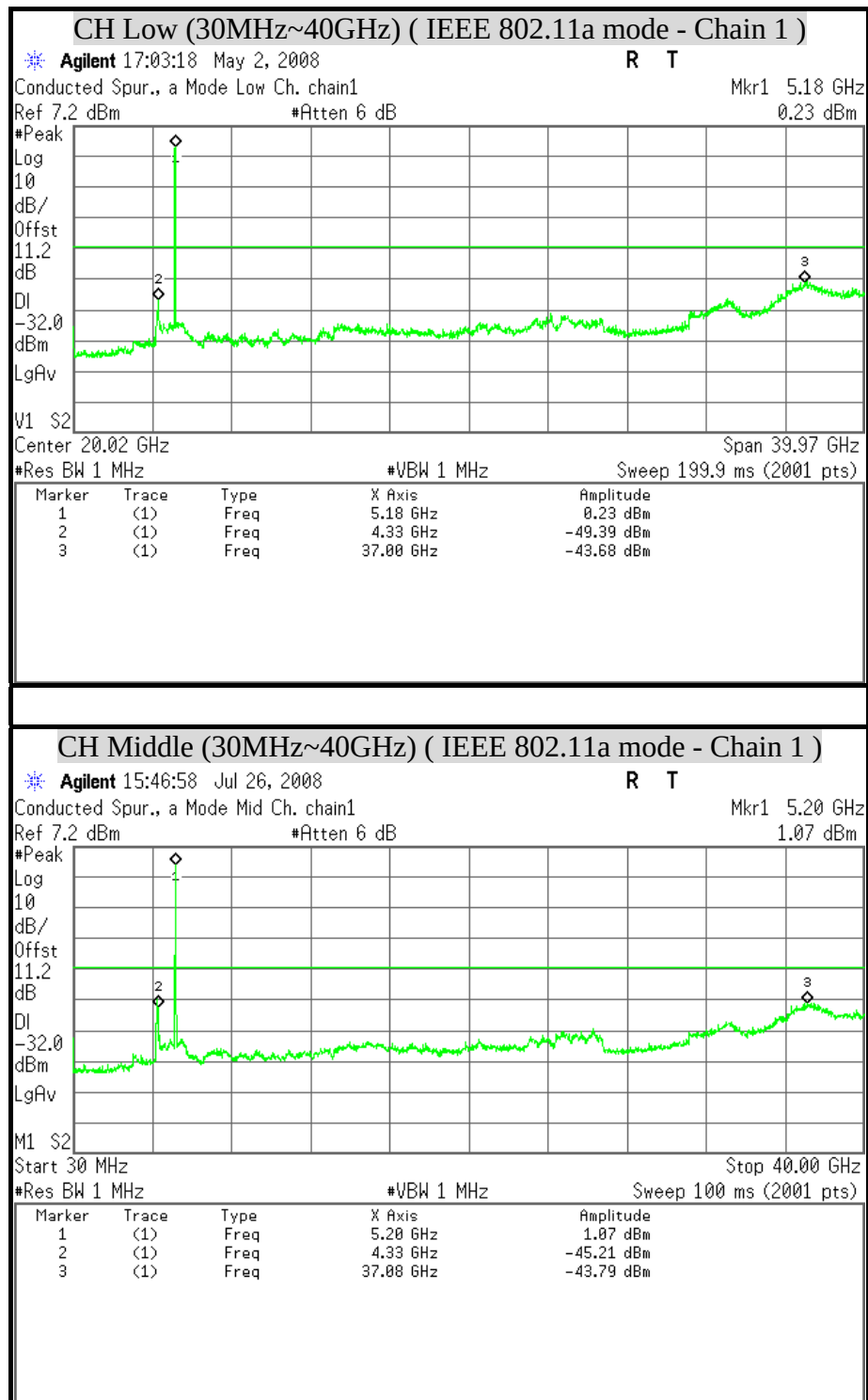
No non-compliance noted

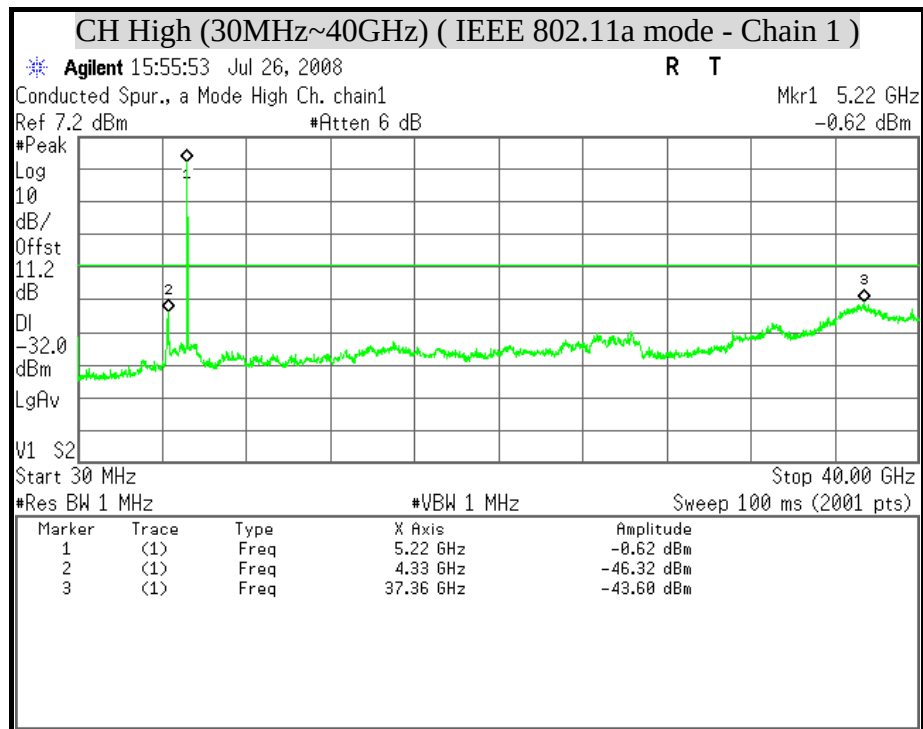


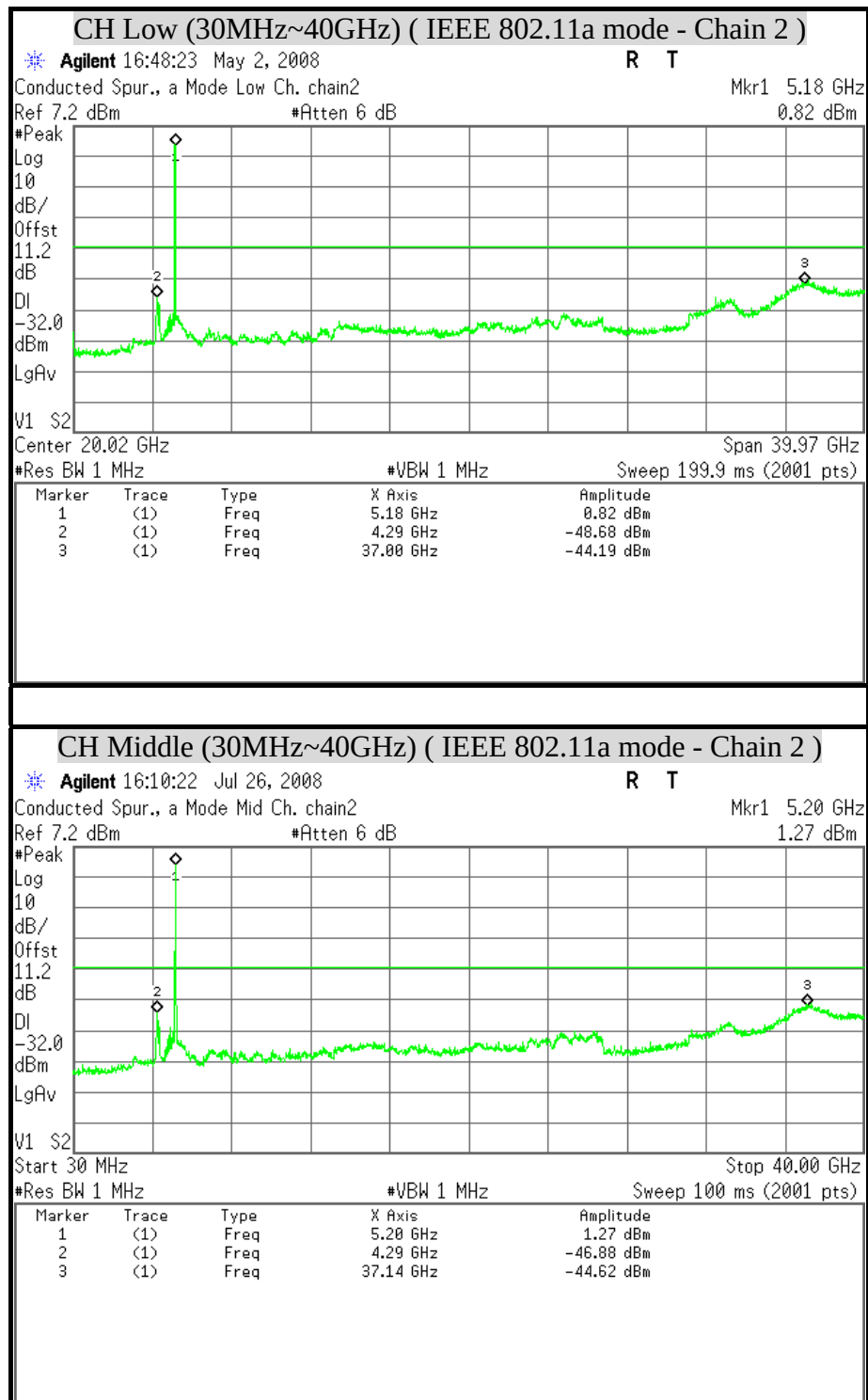
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT (IEEE 802.11a mode)

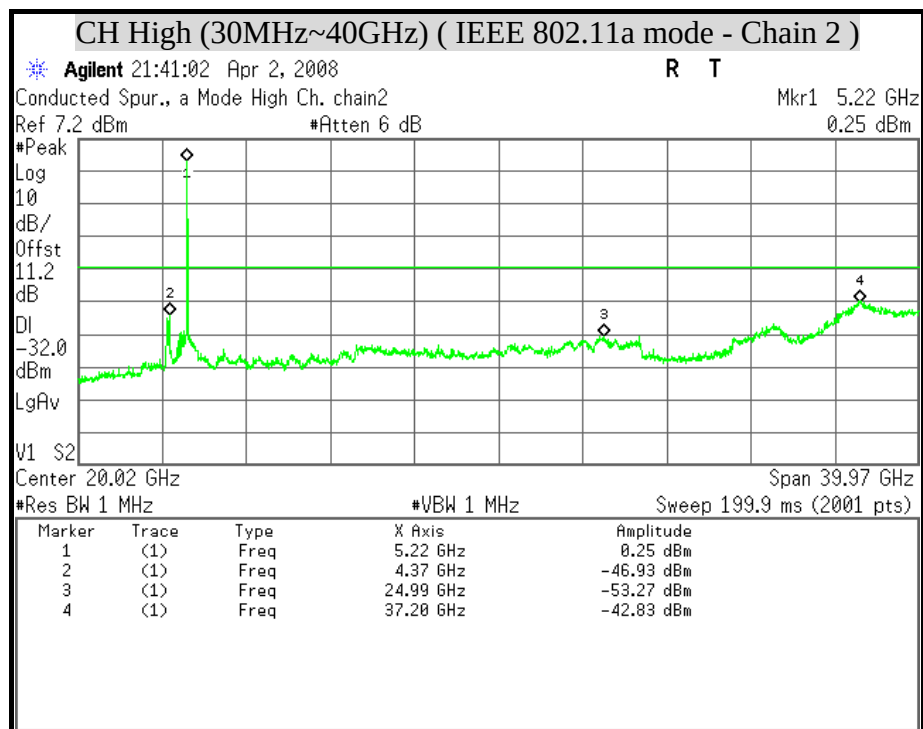






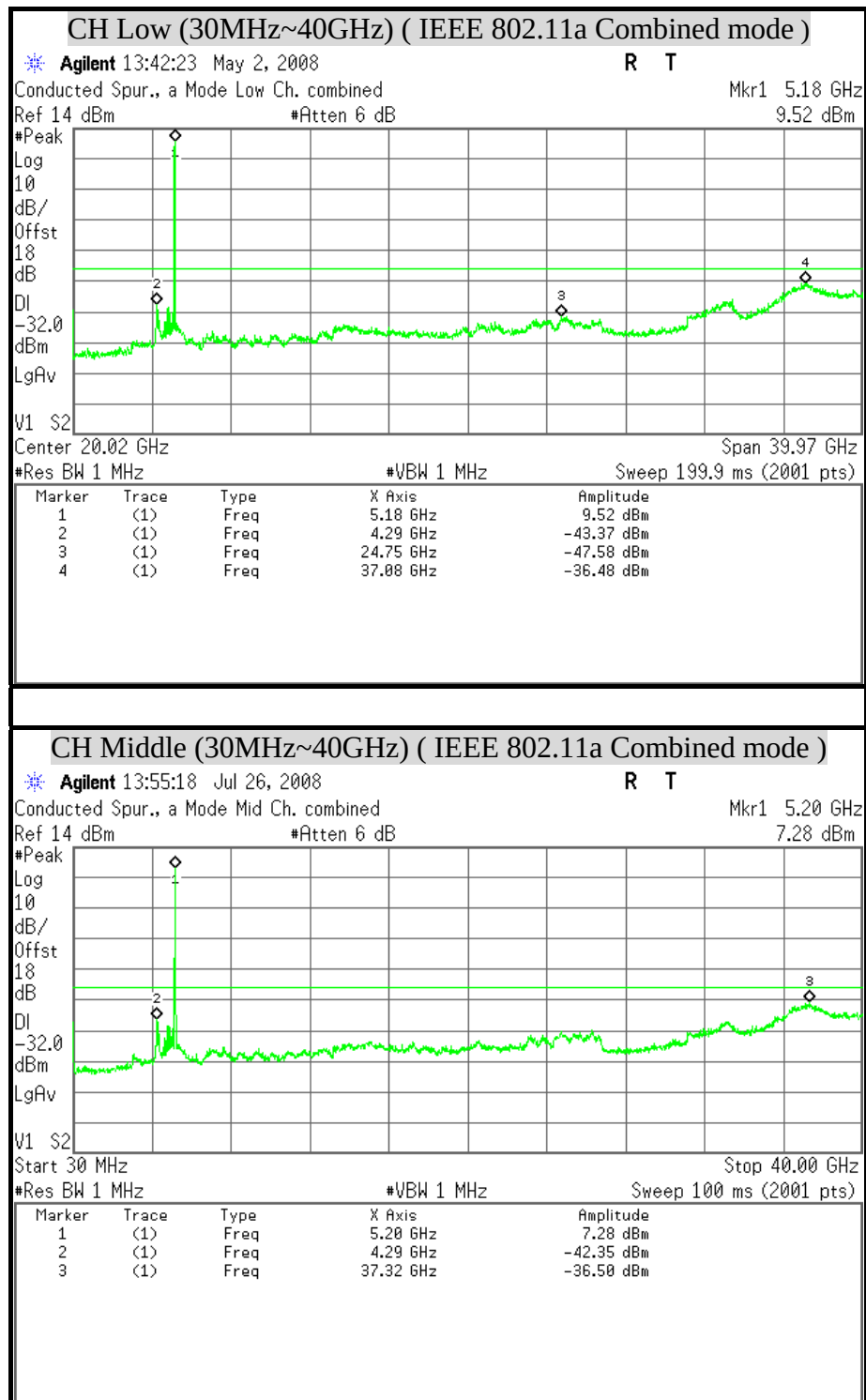


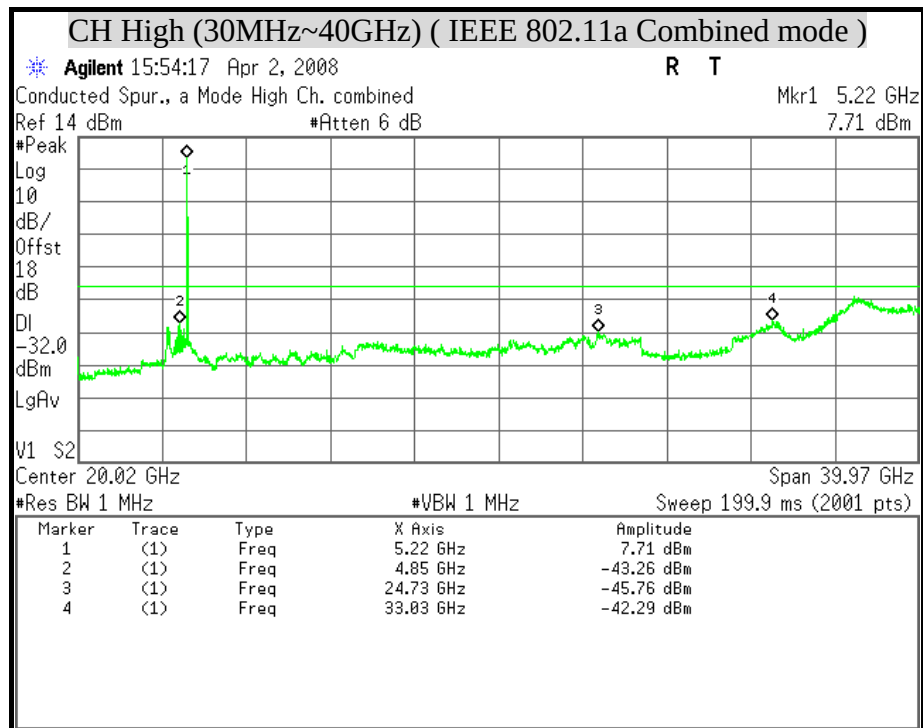






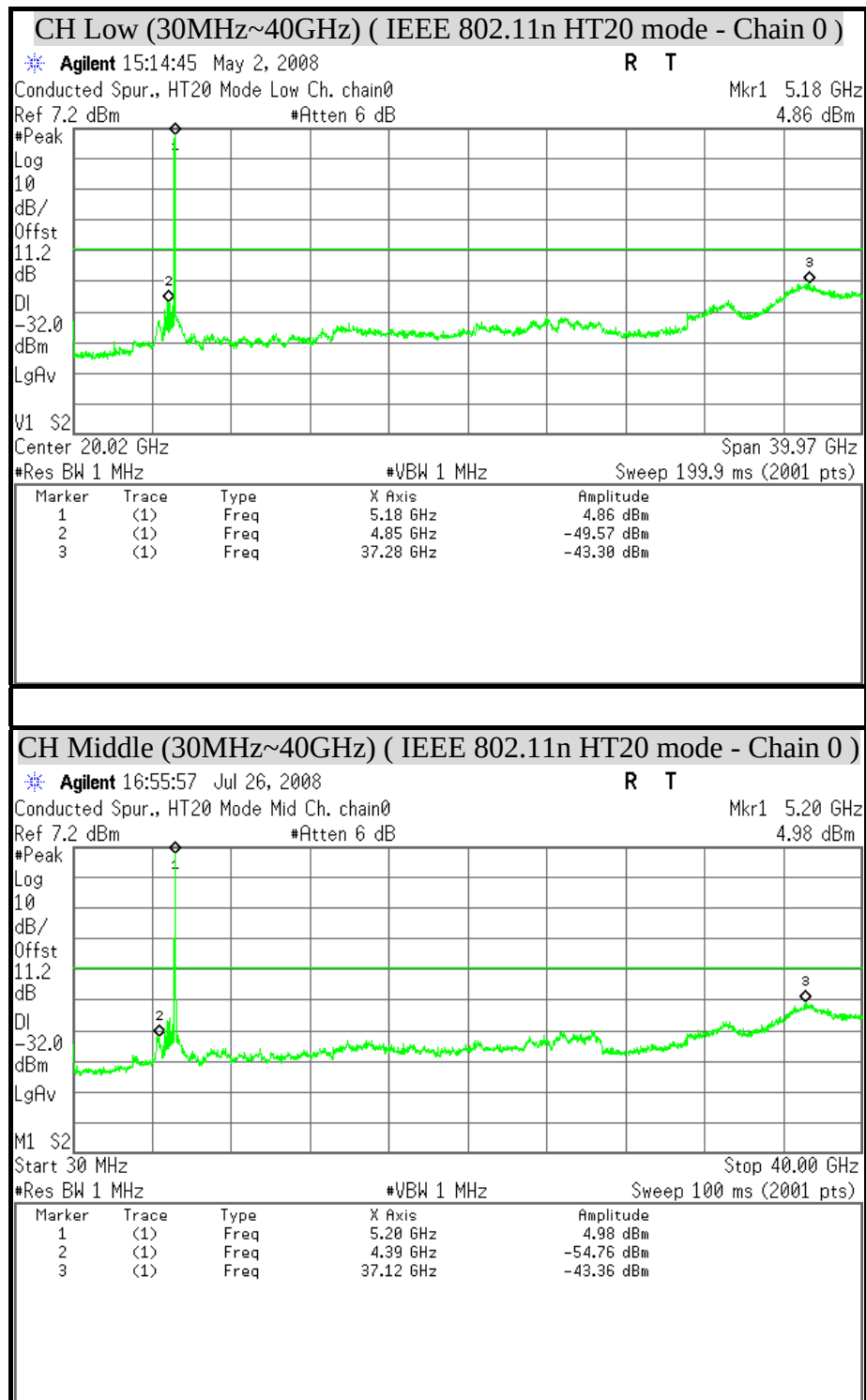
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT (IEEE 802.11a Combined mode)

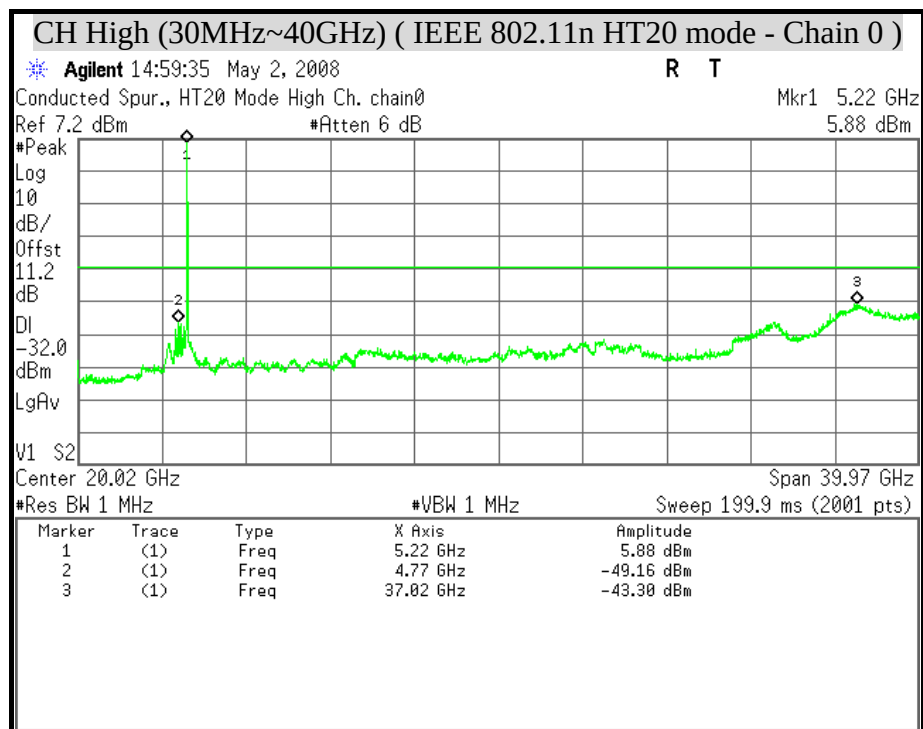


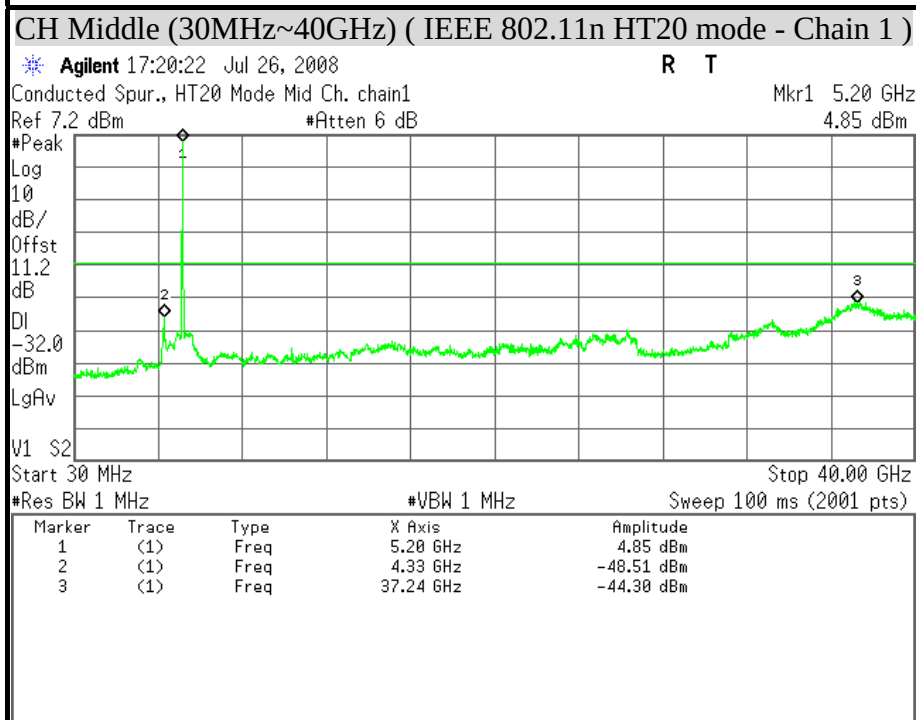
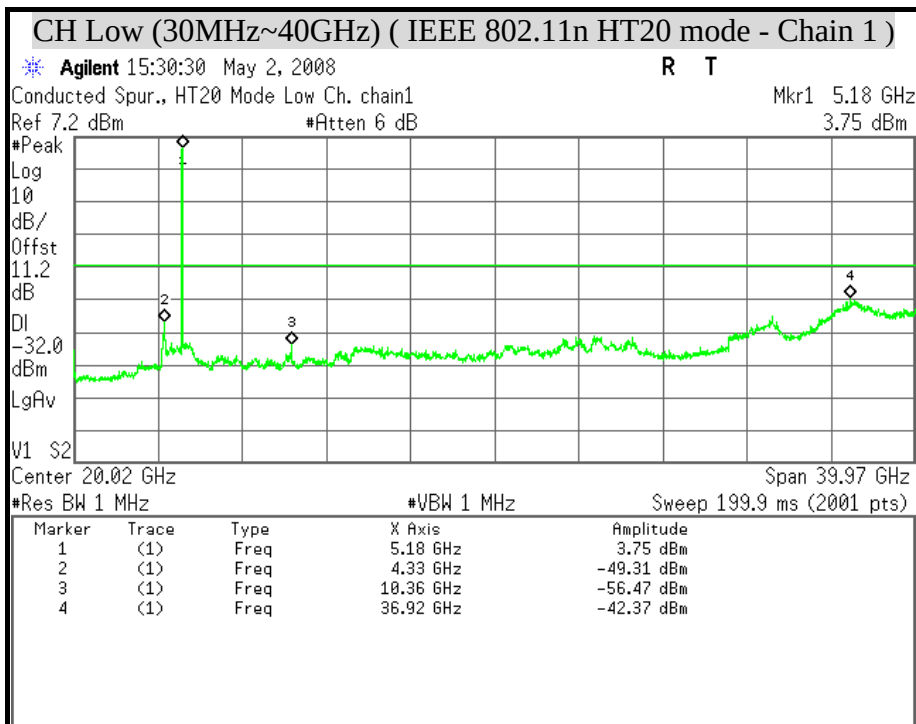


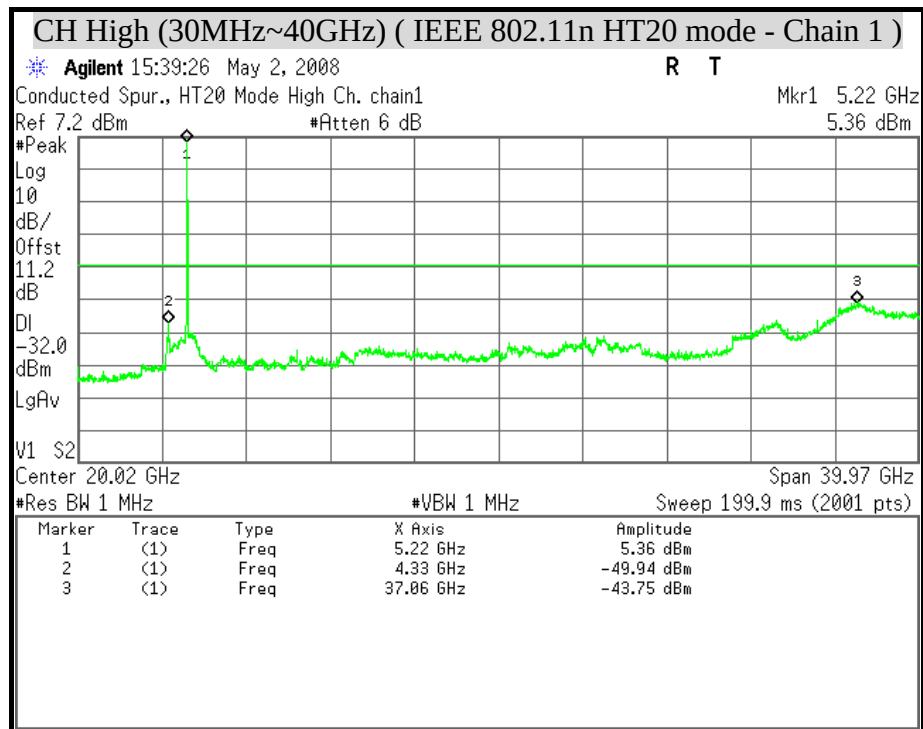


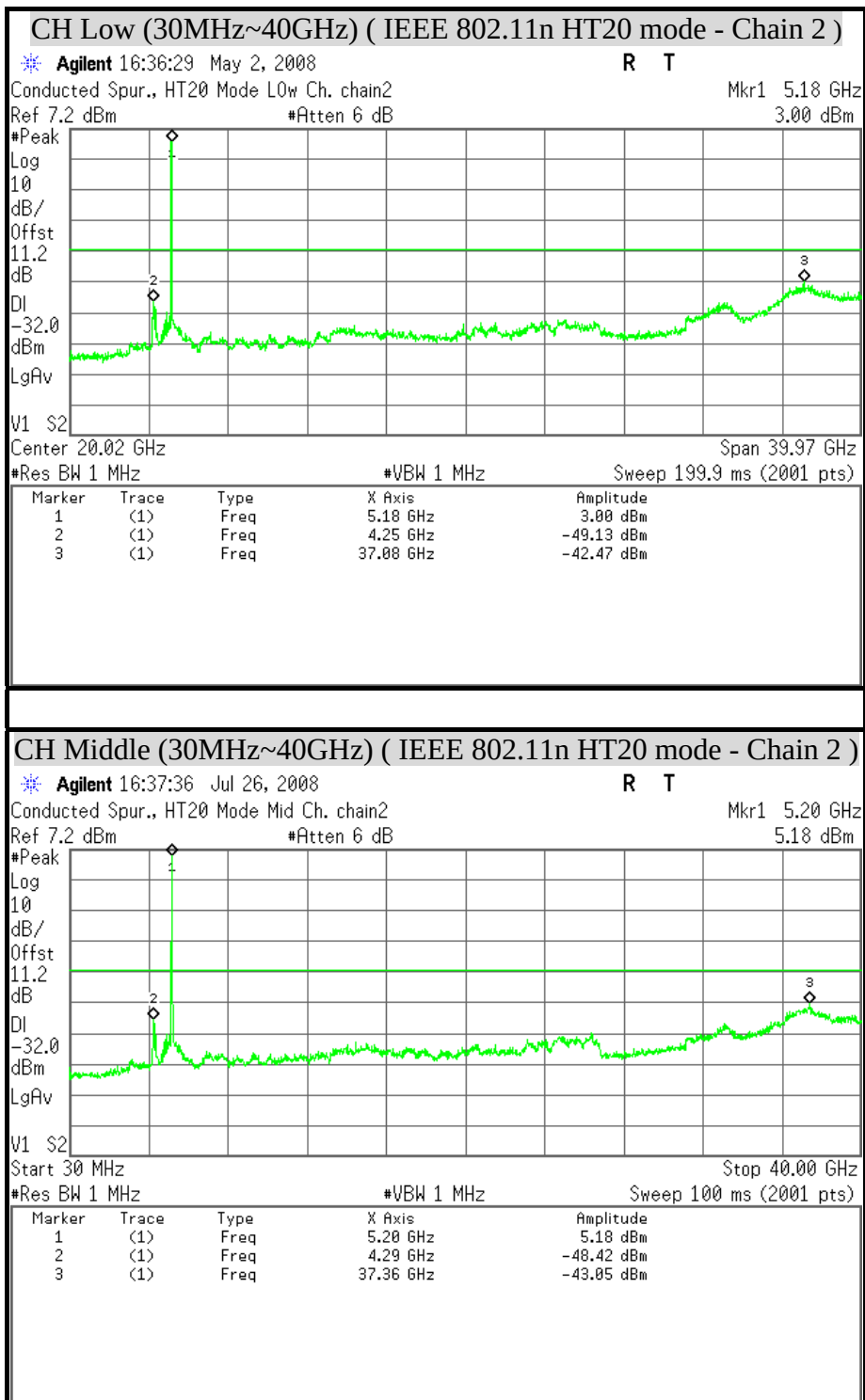
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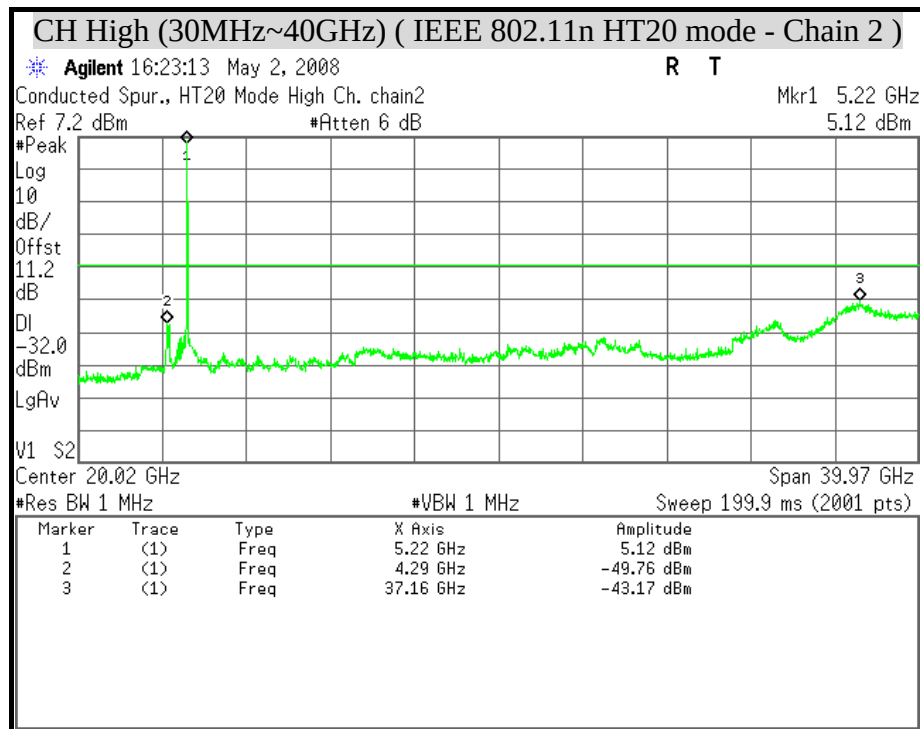






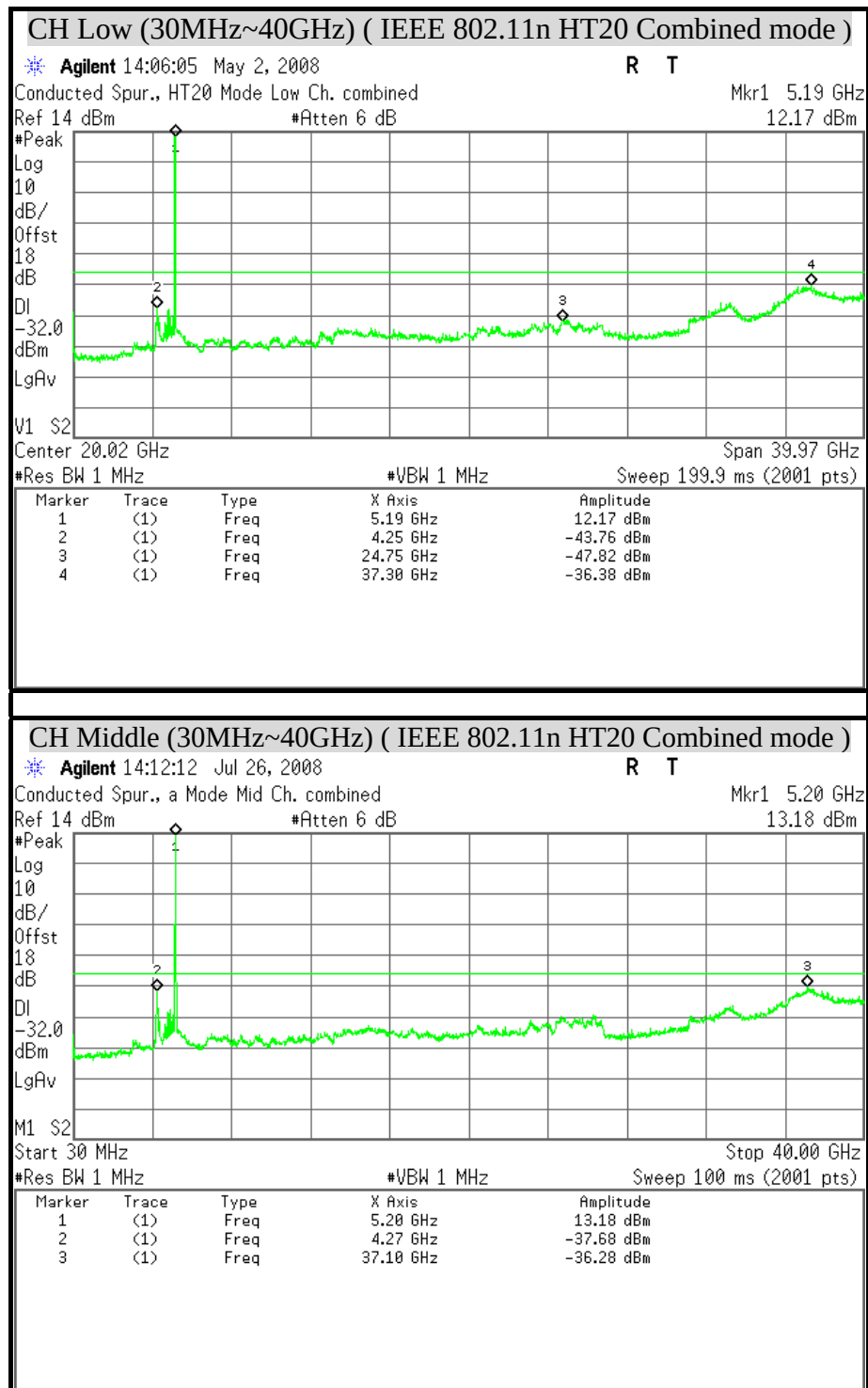


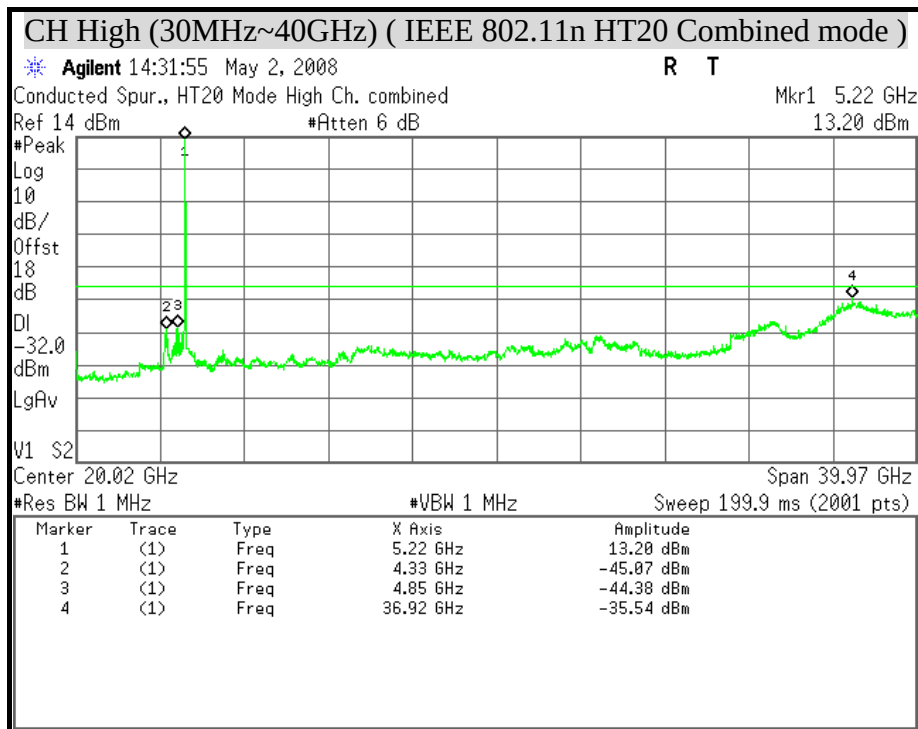






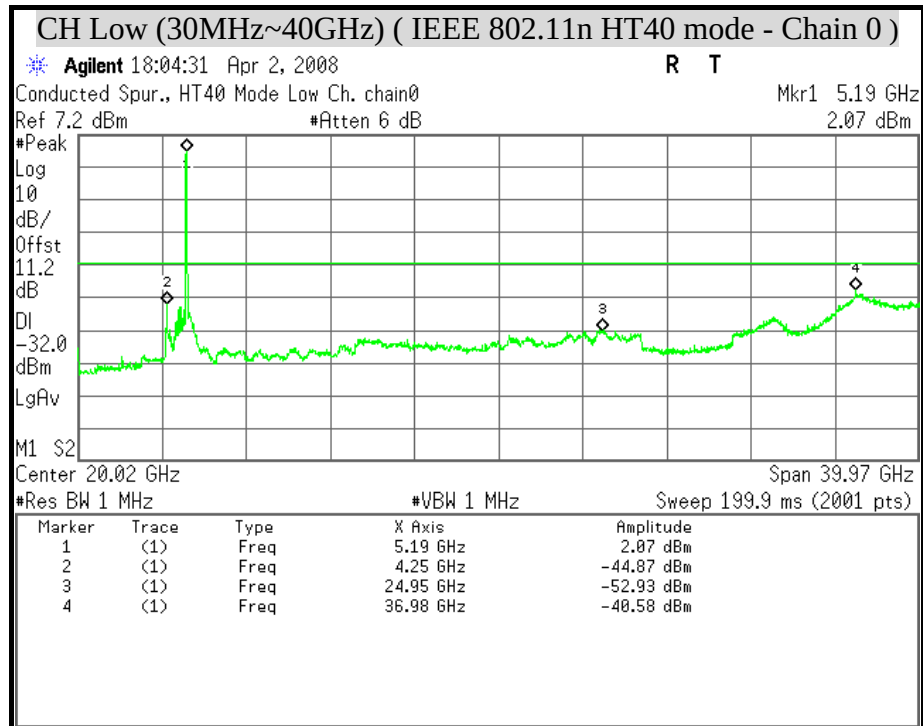
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT (IEEE 802.11n HT20 Combined mode)

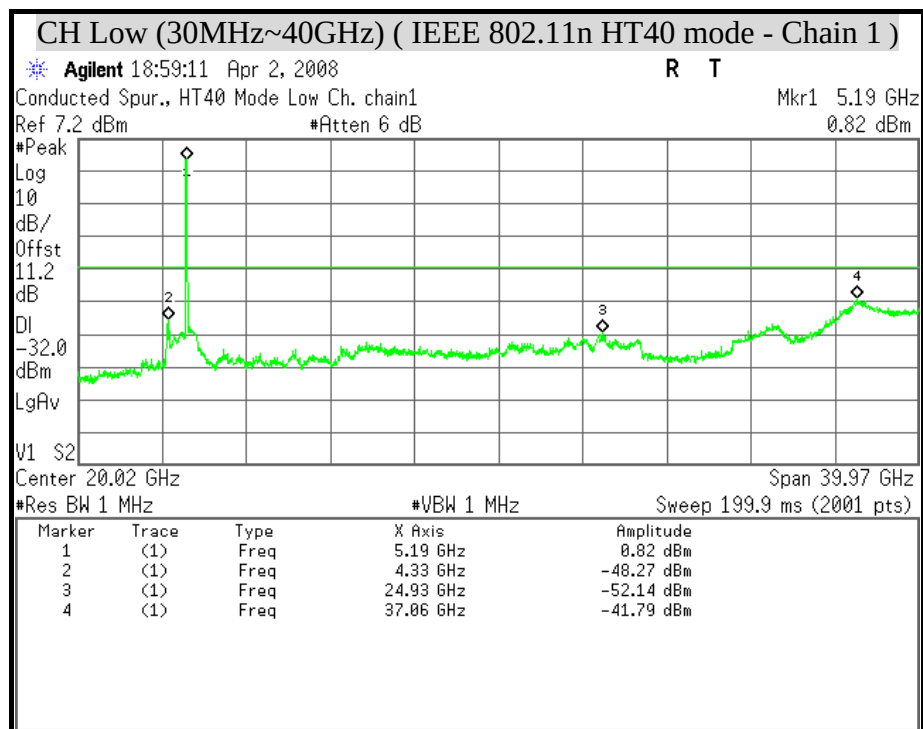


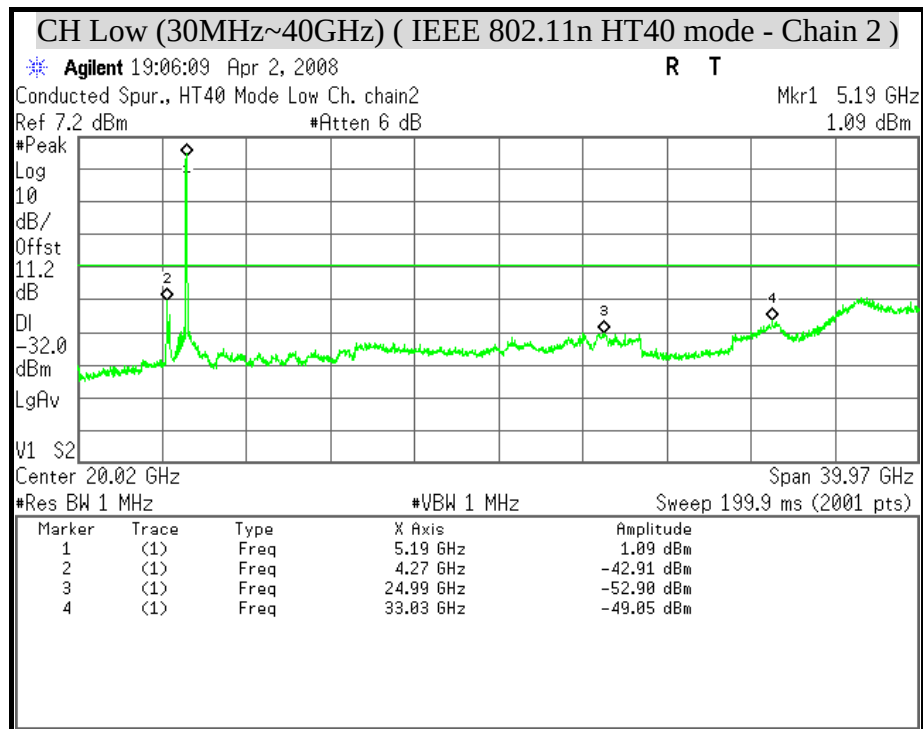




OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT (IEEE 802.11n HT40 mode)

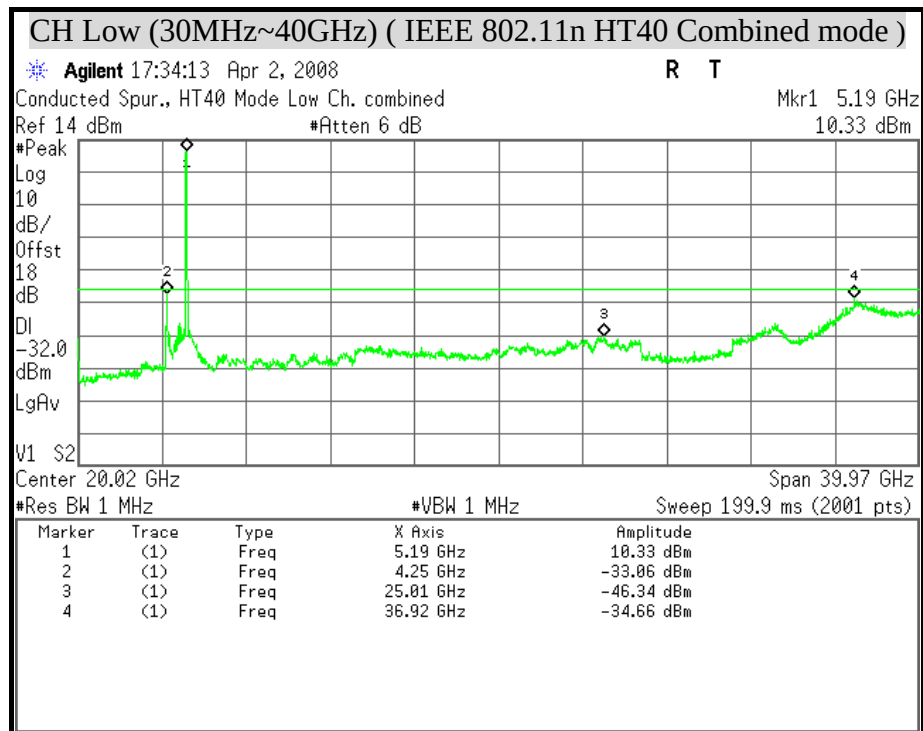








OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT (IEEE 802.11n HT40 Combined mode)





8.9 RADIATED EMISSIONS

8.9.1 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 in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



§ 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.

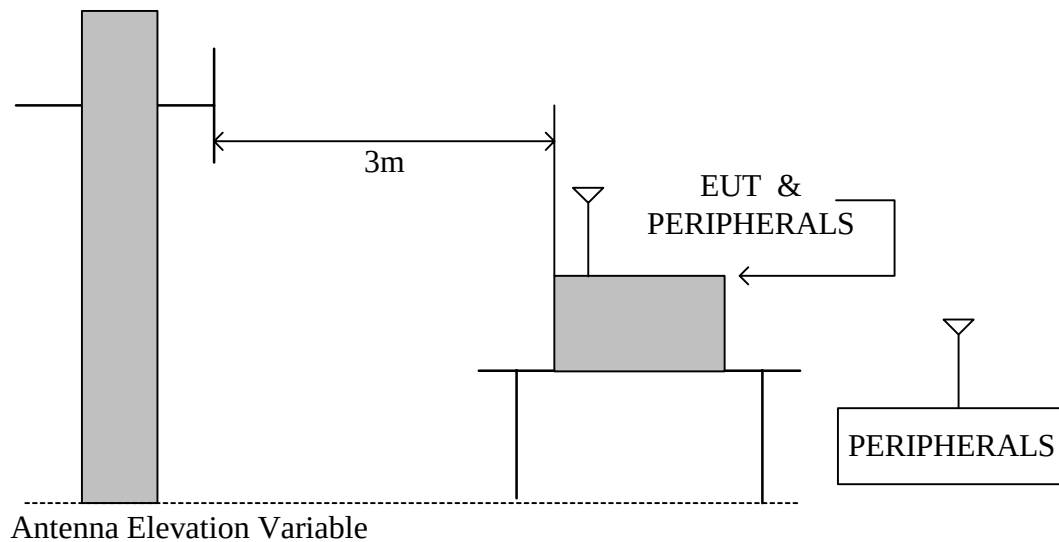
TEST EQUIPMENT

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

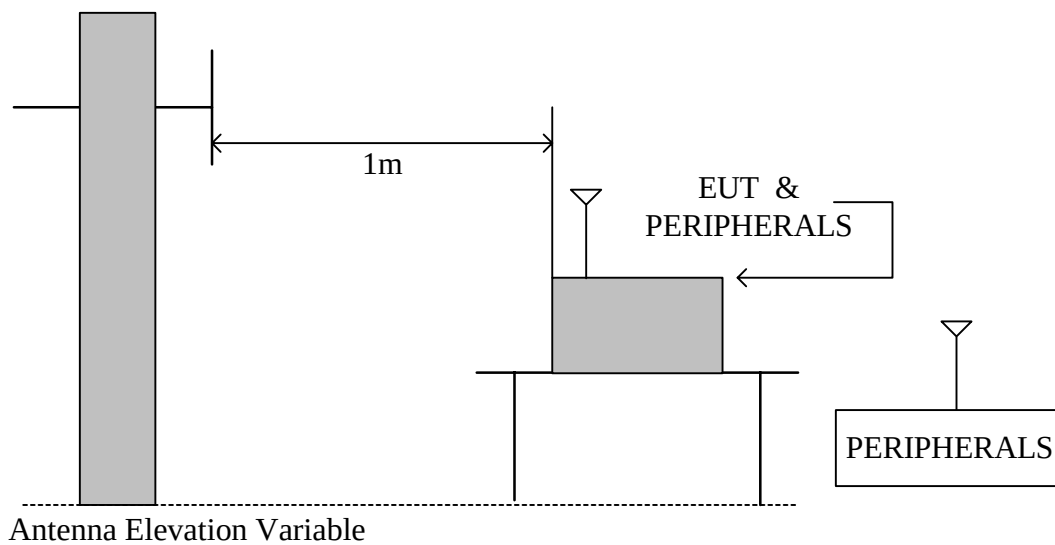
Manufacturer or Type	Model No.	Serial No.	Date of Calibration	Calibration Period	Remark
CHASE BILOG ANTENNA	CBL6112B	2817	December 21, 2007	1 Year	FINAL
R/S SPECTRUM ANALYZER	FSEK30	835253/002	October 25, 2007	1 Year	FINAL
AGILENT SPECTRUM ANALYZER	E4446A	MY433601.32	June 24, 2008	1 Year	FINAL
R/S EMI TEST RECEIVER	ESCS30	835418/008	October 16, 2007	1 Year	FINAL
OPEN SITE	-----	No.2	May 07, 2008	1 Year	FINAL
MIYAZAKI N TYPE COAXIAL CABLE	8D-FB	02	May 16, 2008	1 Year	FINAL
Horn Antenna	AH-118	10089	October 18, 2007	1 Year	FINAL
Horn Antenna	AH-840	03077	December 25, 2007	1 Year	FINAL
Agilent Pre-amplifier	8449B	3008A01471	December 20, 2007	1 Year	FINAL
HP Amplifier	8447D	2944A10052	December 24, 2007	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

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. While 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. While measuring the radiated emission above 1GHz, the EUT was set 1 meter 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



8.9.2 WORST-CASE RADIATED EMISSION BELOW 1 GHz

Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/06/07
Model	DAP-2553	Test By	Alan Fan
Test Mode	Normal operating (worst-case)	TEMP & Humidity	33°C, 60%

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading at 3m(dBμV)		Limits (dBμV/m)	Emission Level at 3m(dBμV/m)	
			Horizontal	Vertical		Horizontal	Vertical
75.00	7.05	1.23	10.00	22.00	40.00	18.28	30.28
225.00	11.50	2.18	7.00	7.50	46.00	20.68	21.18
249.99	12.80	2.33	10.50	11.70	46.00	25.63	26.83
300.00	13.90	2.62	11.10	10.00	46.00	27.62	26.52
375.00	15.85	3.00	11.00	7.80	46.00	29.85	26.65
400.00	16.50	3.13	12.70	13.20	46.00	32.33	32.83
499.99	17.70	3.61	11.50	16.00	46.00	32.81	37.31
600.00	19.00	3.95	8.00	9.50	46.00	30.95	32.45
630.00	19.18	4.07	6.50	5.00	46.00	29.75	28.25
650.00	19.30	4.14	7.00	5.30	46.00	30.44	28.74
730.00	19.90	4.44	4.00	2.80	46.00	28.34	27.14
750.00	20.10	4.51	5.00	3.20	46.00	29.61	27.81

Remark: Emission level (dBμV/m) = Antenna Factor (dB/m) + Cable loss (dB) + Meter Reading (dBμV).



8.9.3 TRANSMITTER RADIATED EMISSION ABOVE 1 GHz

Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/03/18
Model	DAP-2553	Test By	Gumdam Lin
Test Mode	IEEE 802.11a TX (CH Low)	TEMP & Humidity	25°C, 92%

Measurement Distance at 1m Horizontal polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3453.33	46.75	30.69	5.76	35.60	9.50	0.00	38.10	74.00	-35.90	P	1.00
3453.33	32.02	30.69	5.76	35.60	9.50	0.00	23.37	54.00	-30.63	A	1.00
6906.65	47.23	38.18	8.13	35.80	9.50	0.97	49.21	74.00	-24.79	P	1.00
6906.65	33.87	38.18	8.13	35.80	9.50	0.97	35.85	54.00	-18.15	A	1.00
10360.91	48.65	39.46	9.83	35.82	9.50	0.49	53.10	74.00	-20.90	P	1.00
10360.91	35.71	39.46	9.83	35.82	9.50	0.49	40.16	54.00	-13.84	A	1.00
15539.62	47.58	42.36	11.97	35.32	9.50	0.76	57.85	74.00	-16.15	P	1.00
15539.62	33.49	42.36	11.97	35.32	9.50	0.76	43.76	54.00	-10.24	A	1.00
Measurement Distance at 1m Vertical polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3453.33	46.32	30.69	5.76	35.60	9.50	0.00	37.67	74.00	-36.33	P	1.00
3453.33	32.47	30.69	5.76	35.60	9.50	0.00	23.82	54.00	-30.18	A	1.00
6906.65	49.16	38.18	8.13	35.80	9.50	0.97	51.14	74.00	-22.86	P	1.00
6906.65	37.26	38.18	8.13	35.80	9.50	0.97	39.24	54.00	-14.76	A	1.00
10360.91	52.85	39.46	9.83	35.82	9.50	0.49	57.30	74.00	-16.70	P	1.00
10360.91	37.75	39.46	9.83	35.82	9.50	0.49	42.20	54.00	-11.80	A	1.00
15539.62	50.27	42.36	11.97	35.32	9.50	0.76	60.54	74.00	-13.46	P	1.00
15539.62	35.16	42.36	11.97	35.32	9.50	0.76	45.43	54.00	-8.57	A	1.00

Remark:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation is as follow:
$$\text{Level} = \text{Reading} + \text{AF} + \text{Cable} - \text{Preamp} + \text{Filter} - \text{Dist}, \text{Margin} = \text{Level} - \text{Limit}$$
5. The other emission levels were 20dB below the limit
6. The test limit distance is 3M limit.



Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/07/26
Model	DAP-2553	Test By	Gumdam Lin
Test Mode	IEEE 802.11a TX (CH Middle)	TEMP & Humidity	35°C, 55%

Measurement Distance at 1m Horizontal polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3466.84	46.58	30.69	5.77	35.60	9.50	0.00	37.94	74.00	-36.06	P	1.00
3466.84	32.33	30.69	5.77	35.60	9.50	0.00	23.69	54.00	-30.31	A	1.00
6933.75	48.78	38.33	8.15	35.80	9.50	1.01	50.97	74.00	-23.03	P	1.00
6933.75	33.50	38.33	8.15	35.80	9.50	1.01	35.69	54.00	-18.31	A	1.00
10400.18	47.63	39.50	9.80	35.76	9.50	0.47	52.14	74.00	-21.86	P	1.00
10400.18	33.18	39.50	9.80	35.76	9.50	0.47	37.69	54.00	-16.31	A	1.00
15600.00	47.56	42.46	12.08	35.34	9.50	0.80	58.06	74.00	-15.94	P	1.00
15600.00	34.02	42.46	12.08	35.34	9.50	0.80	44.52	54.00	-9.48	A	1.00
Measurement Distance at 1m Vertical polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3466.84	46.78	30.69	5.77	35.60	9.50	0.00	38.14	74.00	-35.86	P	1.00
3466.84	33.02	30.69	5.77	35.60	9.50	0.00	24.38	54.00	-29.62	A	1.00
6933.75	50.36	38.33	8.15	35.80	9.50	1.01	52.55	74.00	-21.45	P	1.00
6933.75	36.89	38.33	8.15	35.80	9.50	1.01	39.08	54.00	-14.92	A	1.00
10400.18	49.25	39.50	9.80	35.76	9.50	0.47	53.76	74.00	-20.24	P	1.00
10400.18	33.88	39.50	9.80	35.76	9.50	0.47	38.39	54.00	-15.61	A	1.00
15600.00	47.23	42.46	12.08	35.34	9.50	0.80	57.73	74.00	-16.27	P	1.00
15600.00	34.57	42.46	12.08	35.34	9.50	0.80	45.07	54.00	-8.93	A	1.00

Remark:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation is as follow:
$$\text{Level} = \text{Reading} + \text{AF} + \text{Cable} - \text{Preamp} + \text{Filter} - \text{Dist}, \text{Margin} = \text{Level} - \text{Limit}$$
5. The other emission levels were 20dB below the limit
6. The test limit distance is 3M limit.



Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/03/18
Model	DAP-2553	Test By	Gumdam Lin
Test Mode	IEEE 802.11a TX (CH High)	TEMP & Humidity	25°C, 92%

Measurement Distance at 1m Horizontal polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3480.00	46.37	30.70	5.78	35.60	9.50	0.00	37.74	74.00	-36.26	P	1.00
3480.00	32.89	30.70	5.78	35.60	9.50	0.00	24.26	54.00	-29.74	A	1.00
6960.08	47.55	38.48	8.16	35.80	9.50	1.05	49.94	74.00	-24.06	P	1.00
6960.08	34.46	38.48	8.16	35.80	9.50	1.05	36.85	54.00	-17.15	A	1.00
10439.27	47.23	39.54	9.78	35.70	9.50	0.45	51.80	74.00	-22.20	P	1.00
10439.27	34.60	39.54	9.78	35.70	9.50	0.45	39.17	54.00	-14.83	A	1.00
15660.00	47.61	42.56	12.20	35.36	9.50	0.84	58.33	74.00	-15.67	P	1.00
15660.00	34.31	42.56	12.20	35.36	9.50	0.84	45.03	54.00	-8.97	A	1.00
Measurement Distance at 1m Vertical polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3480.00	46.63	30.70	5.78	35.60	9.50	0.00	38.00	74.00	-36.00	P	1.00
3480.00	33.23	30.70	5.78	35.60	9.50	0.00	24.60	54.00	-29.40	A	1.00
6960.08	49.47	38.48	8.16	35.80	9.50	1.05	51.86	74.00	-22.14	P	1.00
6960.08	37.62	38.48	8.16	35.80	9.50	1.05	40.01	54.00	-13.99	A	1.00
10439.27	49.91	39.54	9.78	35.70	9.50	0.45	54.48	74.00	-19.52	P	1.00
10439.27	36.53	39.54	9.78	35.70	9.50	0.45	41.10	54.00	-12.90	A	1.00
15660.00	47.58	42.56	12.20	35.36	9.50	0.84	58.30	74.00	-15.70	P	1.00
15660.00	34.89	42.56	12.20	35.36	9.50	0.84	45.61	54.00	-8.39	A	1.00

Remark:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation is as follow:
$$\text{Level} = \text{Reading} + \text{AF} + \text{Cable} - \text{Preamp} + \text{Filter} - \text{Dist}, \text{Margin} = \text{Level} - \text{Limit}$$
5. The other emission levels were 20dB below the limit
6. The test limit distance is 3M limit.



Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/03/18
Model	DAP-2553	Test By	Gumdam Lin
Test Mode	IEEE 802.11n HT20 TX (CH Low)	TEMP & Humidity	25°C, 92%

Measurement Distance at 1m Horizontal polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3453.33	45.73	30.69	5.76	35.60	9.50	0.00	37.08	74.00	-36.92	P	1.00
3453.33	31.86	30.69	5.76	35.60	9.50	0.00	23.21	54.00	-30.79	A	1.00
6906.77	47.23	38.18	8.13	35.80	9.50	0.97	49.21	74.00	-24.79	P	1.00
6906.77	34.59	38.18	8.13	35.80	9.50	0.97	36.57	54.00	-17.43	A	1.00
10359.25	49.08	39.46	9.83	35.83	9.50	0.49	53.53	74.00	-20.47	P	1.00
10359.25	34.49	39.46	9.83	35.83	9.50	0.49	38.94	54.00	-15.06	A	1.00
15537.65	48.91	42.36	11.96	35.32	9.50	0.75	59.17	74.00	-14.83	P	1.00
15537.65	33.75	42.36	11.96	35.32	9.50	0.75	44.01	54.00	-9.99	A	1.00
Measurement Distance at 1m Vertical polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3453.33	45.74	30.69	5.76	35.60	9.50	0.00	37.09	74.00	-36.91	P	1.00
3453.33	31.85	30.69	5.76	35.60	9.50	0.00	23.20	54.00	-30.80	A	1.00
6906.77	49.33	38.18	8.13	35.80	9.50	0.97	51.31	74.00	-22.69	P	1.00
6906.77	37.96	38.18	8.13	35.80	9.50	0.97	39.94	54.00	-14.06	A	1.00
10359.25	52.25	39.46	9.83	35.83	9.50	0.49	56.70	74.00	-17.30	P	1.00
10359.25	37.41	39.46	9.83	35.83	9.50	0.49	41.86	54.00	-12.14	A	1.00
15537.65	50.47	42.36	11.96	35.32	9.50	0.75	60.73	74.00	-13.27	P	1.00
15537.65	35.13	42.36	11.96	35.32	9.50	0.75	45.39	54.00	-8.61	A	1.00

Remark:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation is as follow:
$$\text{Level} = \text{Reading} + \text{AF} + \text{Cable} - \text{Preamp} + \text{Filter} - \text{Dist}, \text{Margin} = \text{Level} - \text{Limit}$$
5. The other emission levels were 20dB below the limit
6. The test limit distance is 3M limit.



Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/07/26
Model	DAP-2553	Test By	Gumdam Lin
Test Mode	IEEE 802.11n HT20 TX (CH Middle)	TEMP & Humidity	35°C, 55%

Measurement Distance at 1m Horizontal polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3466.84	46.98	30.69	5.77	35.60	9.50	0.00	38.34	74.00	-35.66	P	1.00
3466.84	33.12	30.69	5.77	35.60	9.50	0.00	24.48	54.00	-29.52	A	1.00
6933.75	47.02	38.33	8.15	35.80	9.50	1.01	49.21	74.00	-24.79	P	1.00
6933.75	33.54	38.33	8.15	35.80	9.50	1.01	35.73	54.00	-18.27	A	1.00
10400.18	47.20	39.50	9.80	35.76	9.50	0.47	51.71	74.00	-22.29	P	1.00
10400.18	33.11	39.50	9.80	35.76	9.50	0.47	37.62	54.00	-16.38	A	1.00
15600.00	47.80	42.46	12.08	35.34	9.50	0.80	58.30	74.00	-15.70	P	1.00
15600.00	33.19	42.46	12.08	35.34	9.50	0.80	43.69	54.00	-10.31	A	1.00
Measurement Distance at 1m Vertical polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3466.84	46.77	30.69	5.77	35.60	9.50	0.00	38.13	74.00	-35.87	P	1.00
3466.84	32.03	30.69	5.77	35.60	9.50	0.00	23.39	54.00	-30.61	A	1.00
6933.75	49.03	38.33	8.15	35.80	9.50	1.01	51.22	74.00	-22.78	P	1.00
6933.75	35.38	38.33	8.15	35.80	9.50	1.01	37.57	54.00	-16.43	A	1.00
10400.18	47.88	39.50	9.80	35.76	9.50	0.47	52.39	74.00	-21.61	P	1.00
10400.18	34.44	39.50	9.80	35.76	9.50	0.47	38.95	54.00	-15.05	A	1.00
15600.00	47.50	42.46	12.08	35.34	9.50	0.80	58.00	74.00	-16.00	P	1.00
15600.00	34.13	42.46	12.08	35.34	9.50	0.80	44.63	54.00	-9.37	A	1.00

Remark:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation is as follow:
$$\text{Level} = \text{Reading} + \text{AF} + \text{Cable} - \text{Preamp} + \text{Filter} - \text{Dist}, \text{Margin} = \text{Level} - \text{Limit}$$
5. The other emission levels were 20dB below the limit
6. The test limit distance is 3M limit.



Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/03/18
Model	DAP-2553	Test By	Gumdam Lin
Test Mode	IEEE 802.11n HT20 TX (CH High)	TEMP & Humidity	25°C, 92%

Measurement Distance at 1m Horizontal polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3480.00	45.95	30.70	5.78	35.60	9.50	0.00	37.32	74.00	-36.68	P	1.00
3480.00	32.92	30.70	5.78	35.60	9.50	0.00	24.29	54.00	-29.71	A	1.00
6960.21	47.46	38.48	8.16	35.80	9.50	1.05	49.85	74.00	-24.15	P	1.00
6960.21	35.09	38.48	8.16	35.80	9.50	1.05	37.48	54.00	-16.52	A	1.00
10439.56	47.30	39.54	9.78	35.70	9.50	0.45	51.87	74.00	-22.13	P	1.00
10439.56	34.55	39.54	9.78	35.70	9.50	0.45	39.12	54.00	-14.88	A	1.00
15660.00	46.79	42.56	12.20	35.36	9.50	0.84	57.51	74.00	-16.49	P	1.00
15660.00	34.35	42.56	12.20	35.36	9.50	0.84	45.07	54.00	-8.93	A	1.00
Measurement Distance at 1m Vertical polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3480.00	45.82	30.70	5.78	35.60	9.50	0.00	37.19	74.00	-36.81	P	1.00
3480.00	32.75	30.70	5.78	35.60	9.50	0.00	24.12	54.00	-29.88	A	1.00
6960.21	48.88	38.48	8.16	35.80	9.50	1.05	51.27	74.00	-22.73	P	1.00
6960.21	37.66	38.48	8.16	35.80	9.50	1.05	40.05	54.00	-13.95	A	1.00
10439.56	48.48	39.54	9.78	35.70	9.50	0.45	53.05	74.00	-20.95	P	1.00
10439.56	35.94	39.54	9.78	35.70	9.50	0.45	40.51	54.00	-13.49	A	1.00
15660.00	47.30	42.56	12.20	35.36	9.50	0.84	58.02	74.00	-15.98	P	1.00
15660.00	34.73	42.56	12.20	35.36	9.50	0.84	45.45	54.00	-8.55	A	1.00

Remark:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation is as follow:
$$\text{Level} = \text{Reading} + \text{AF} + \text{Cable} - \text{Preamp} + \text{Filter} - \text{Dist}, \text{Margin} = \text{Level} - \text{Limit}$$
5. The other emission levels were 20dB below the limit
6. The test limit distance is 3M limit.



Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/03/18
Model	DAP-2553	Test By	Gumdam Lin
Test Mode	IEEE 802.11n HT40 TX (CH Low)	TEMP & Humidity	25°C, 92%

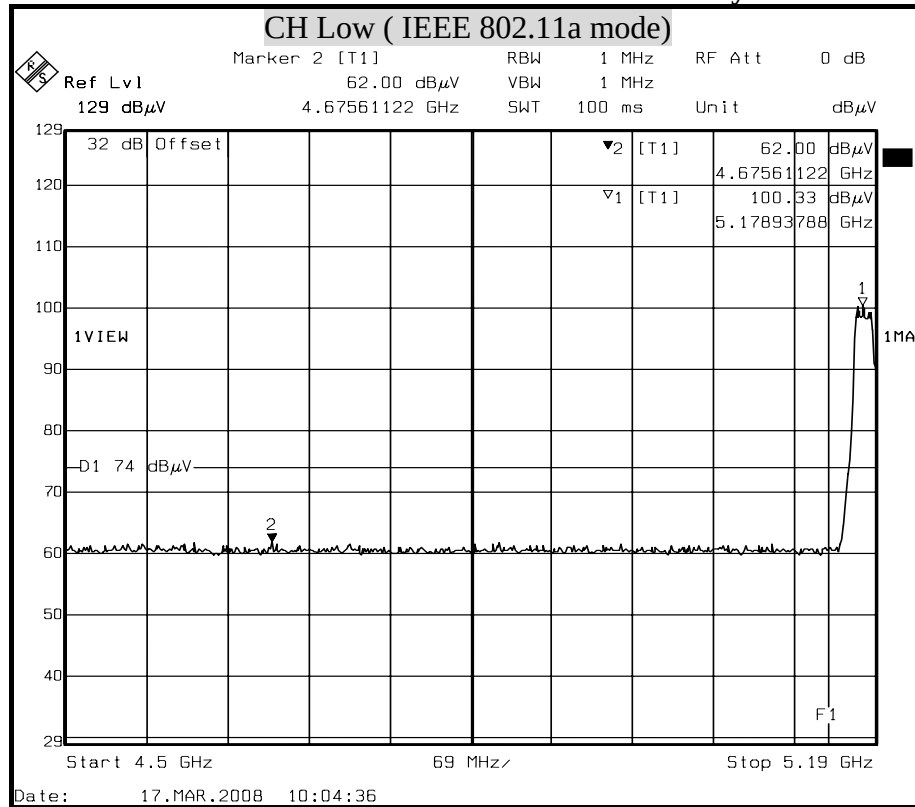
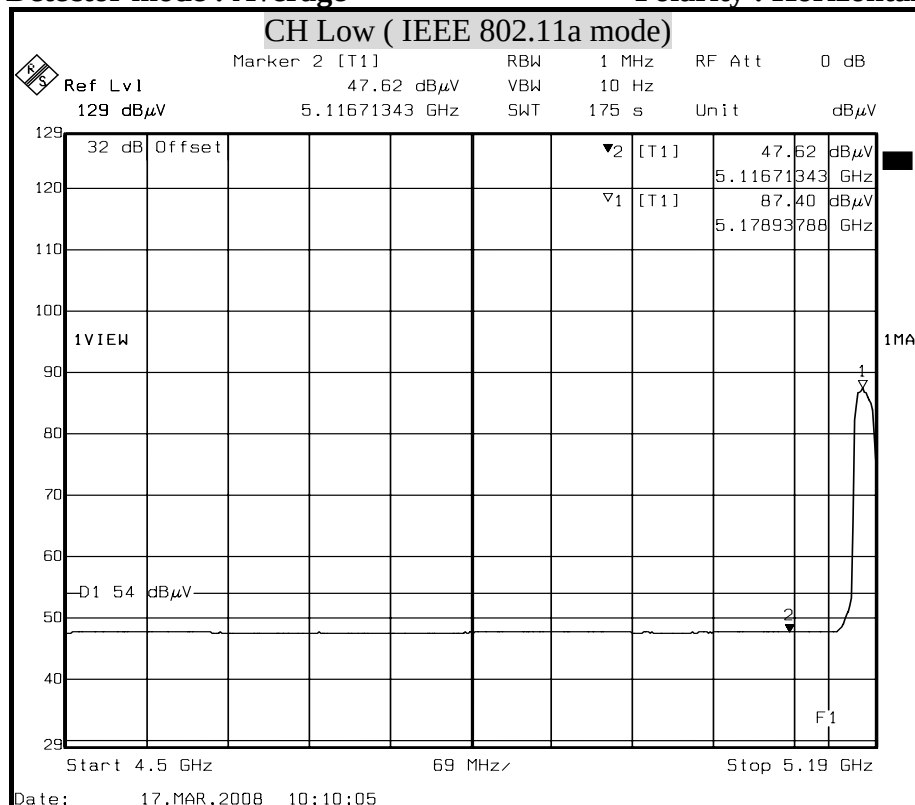
Measurement Distance at 1m Horizontal polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3460.00	45.74	30.69	5.77	35.60	9.50	0.00	37.10	74.00	-36.90	P	1.00
3460.00	31.62	30.69	5.77	35.60	9.50	0.00	22.98	54.00	-31.02	A	1.00
6920.10	47.83	38.25	8.14	35.80	9.50	0.99	49.91	74.00	-24.09	P	1.00
6920.10	34.38	38.25	8.14	35.80	9.50	0.99	36.46	54.00	-17.54	A	1.00
10378.55	47.94	39.48	9.82	35.79	9.50	0.48	52.42	74.00	-21.58	P	1.00
10378.55	34.45	39.48	9.82	35.79	9.50	0.48	38.93	54.00	-15.07	A	1.00
15558.56	47.47	42.39	12.00	35.32	9.50	0.77	57.81	74.00	-16.19	P	1.00
15558.56	33.68	42.39	12.00	35.32	9.50	0.77	44.02	54.00	-9.98	A	1.00
Measurement Distance at 1m Vertical polarity											
Freq. (MHz)	Reading (dBμV)	AF (dBμV)	Cable (dB)	Pre-amp (dB)	Dist (dB)	Filter (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Mark (P/Q/A)	Height (Meter)
3460.00	45.45	30.69	5.77	35.60	9.50	0.00	36.81	74.00	-37.19	P	1.00
3460.00	31.51	30.69	5.77	35.60	9.50	0.00	22.87	54.00	-31.13	A	1.00
6920.10	51.33	38.25	8.14	35.80	9.50	0.99	53.41	74.00	-20.59	P	1.00
6920.10	37.30	38.25	8.14	35.80	9.50	0.99	39.38	54.00	-14.62	A	1.00
10378.55	50.96	39.48	9.82	35.79	9.50	0.48	55.44	74.00	-18.56	P	1.00
10378.55	35.93	39.48	9.82	35.79	9.50	0.48	40.41	54.00	-13.59	A	1.00
15558.56	47.85	42.39	12.00	35.32	9.50	0.77	58.19	74.00	-15.81	P	1.00
15558.56	34.70	42.39	12.00	35.32	9.50	0.77	45.04	54.00	-8.96	A	1.00

Remark:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
4. The result basic equation calculation is as follow:
$$\text{Level} = \text{Reading} + \text{AF} + \text{Cable} - \text{Preamp} + \text{Filter} - \text{Dist}, \text{Margin} = \text{Level} - \text{Limit}$$
5. The other emission levels were 20dB below the limit
6. The test limit distance is 3M limit.



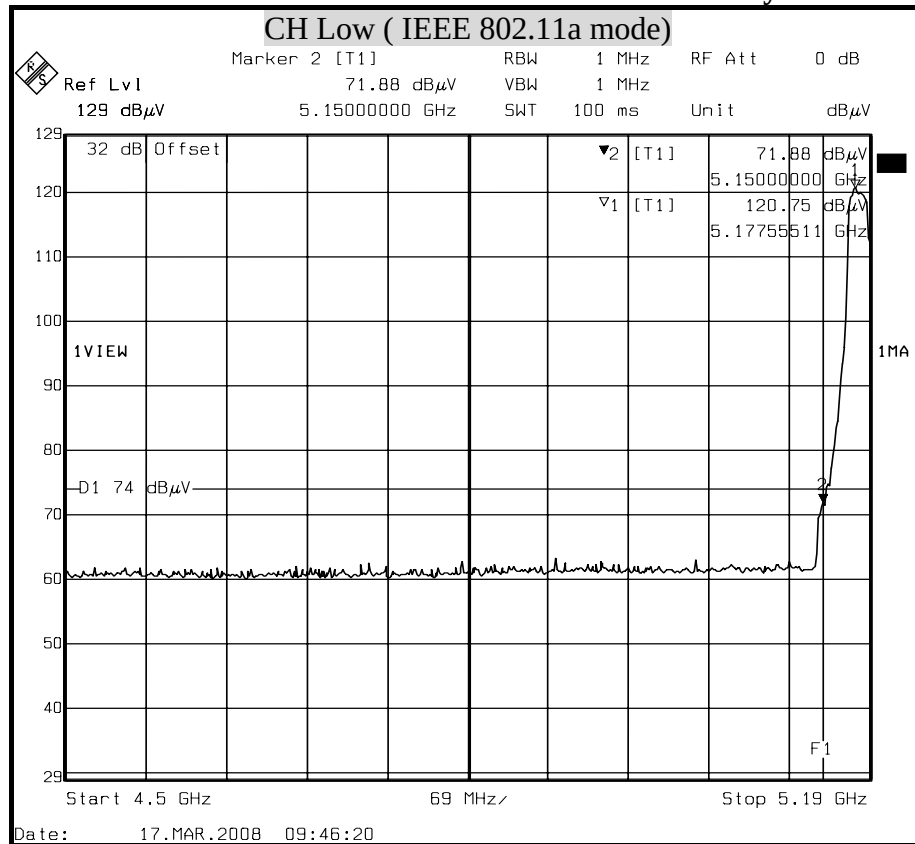
8.9.4 RESTRICTED BAND EDGES

Detector mode : Peak**Polarity : Horizontal****Detector mode : Average****Polarity : Horizontal**



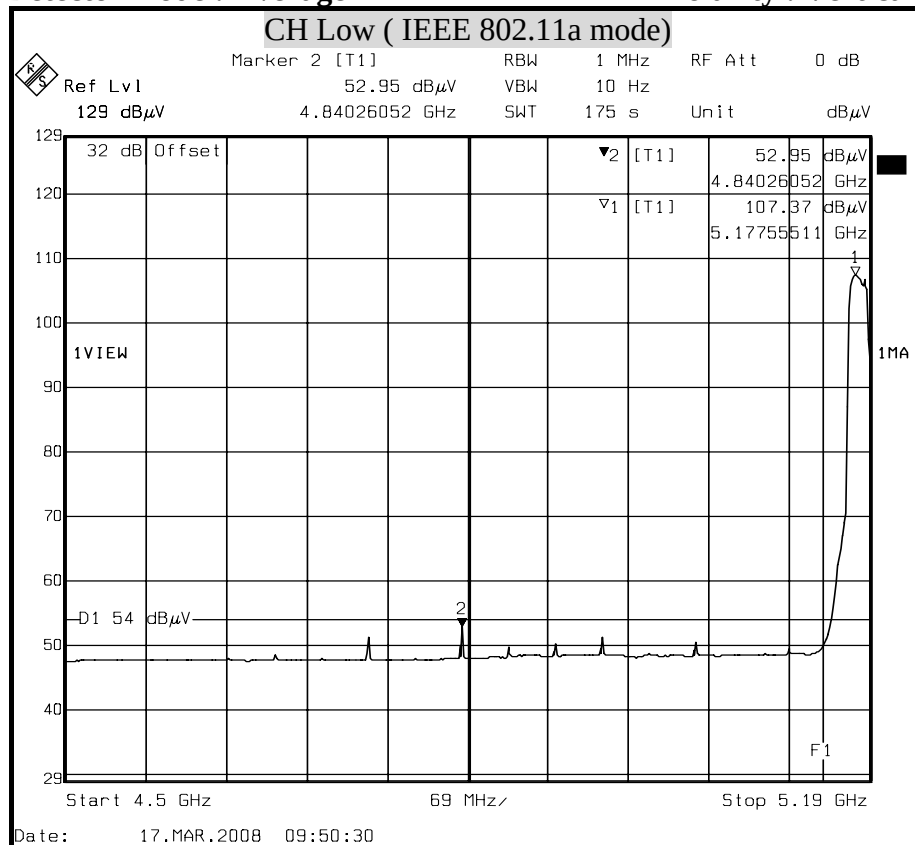
Detector mode : Peak

Polarity : Vertical



Detector mode : Average

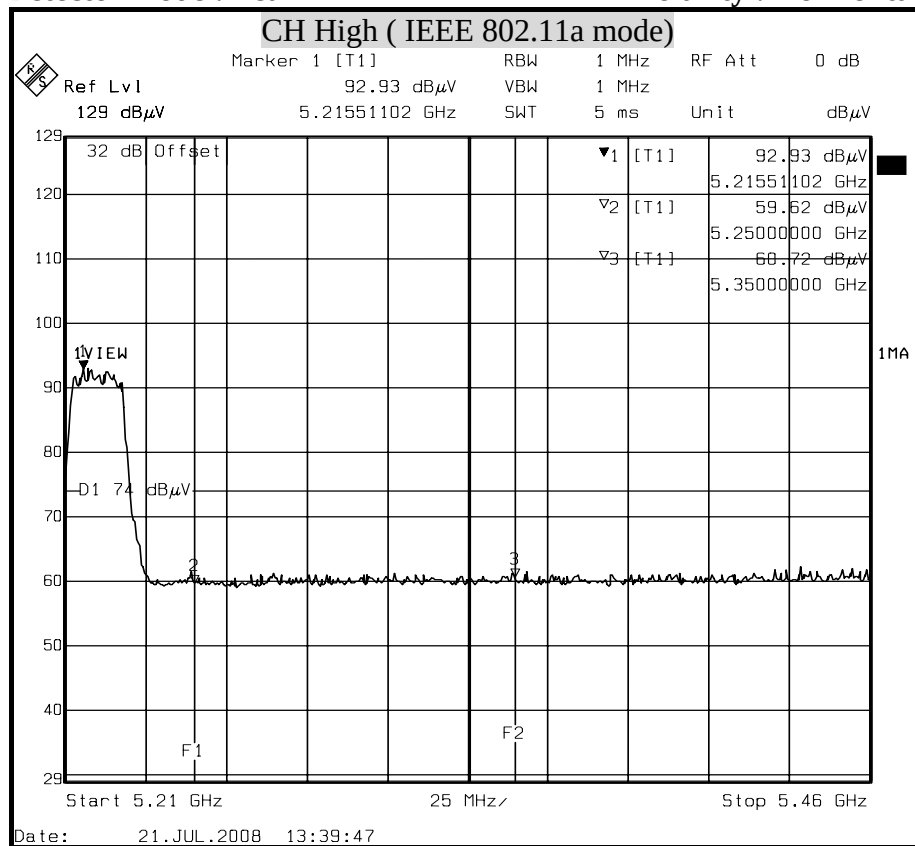
Polarity : Vertical





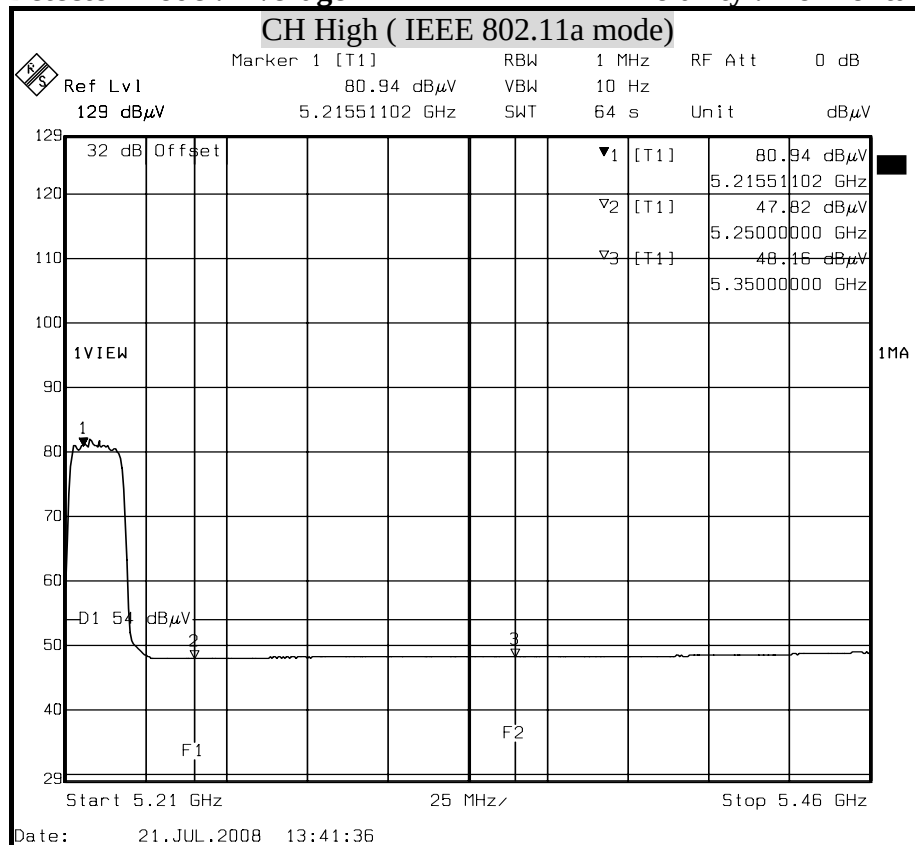
Detector mode : Peak

Polarity : Horizontal



Detector mode : Average

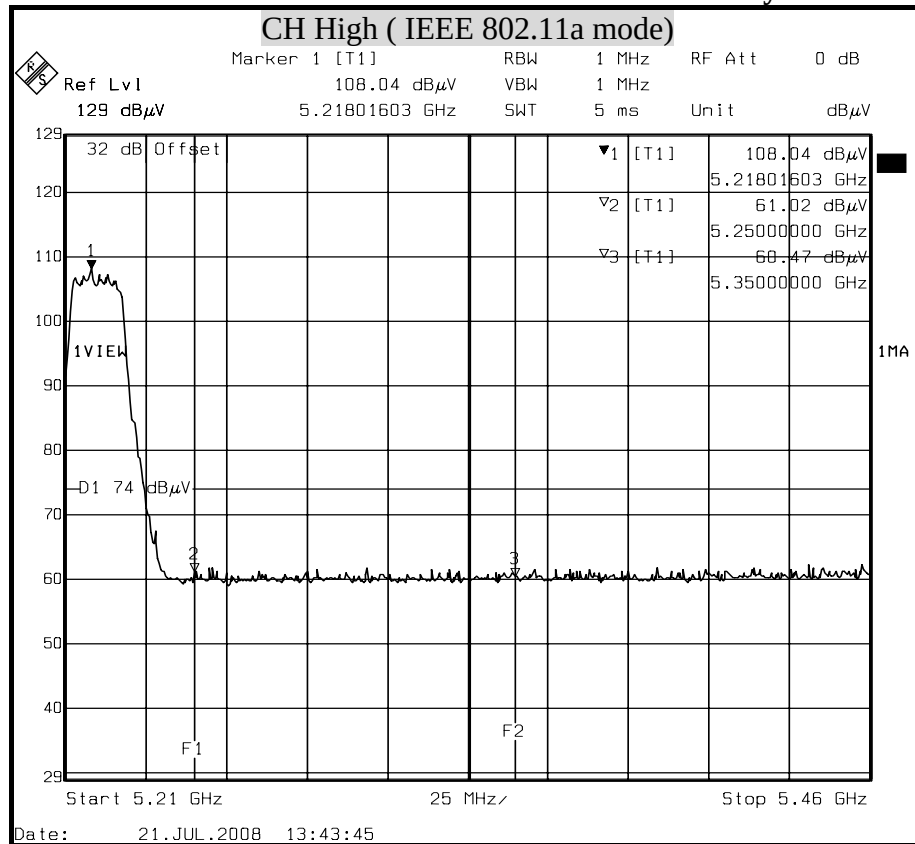
Polarity : Horizontal





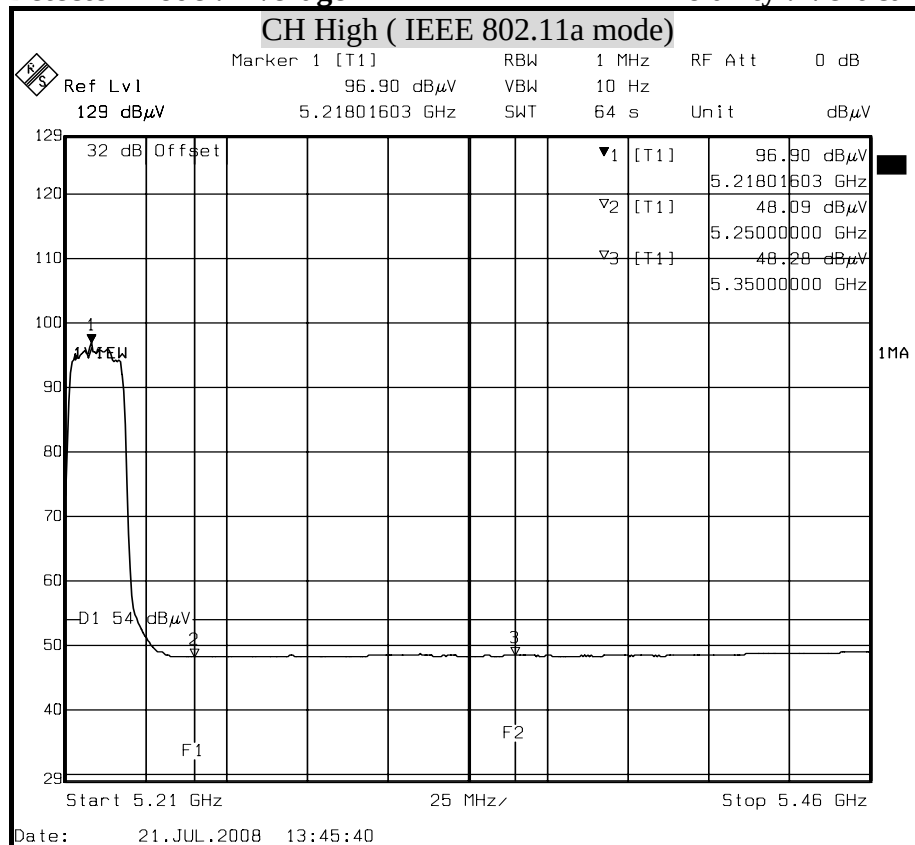
Detector mode : Peak

Polarity : Vertical



Detector mode : Average

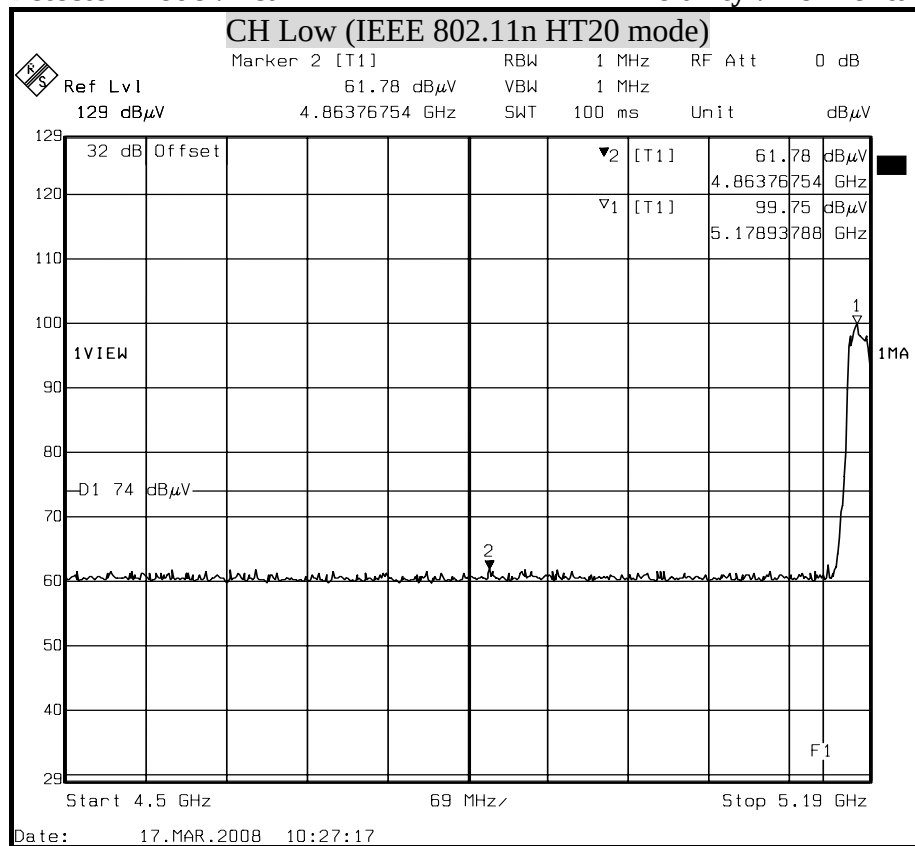
Polarity : Vertical





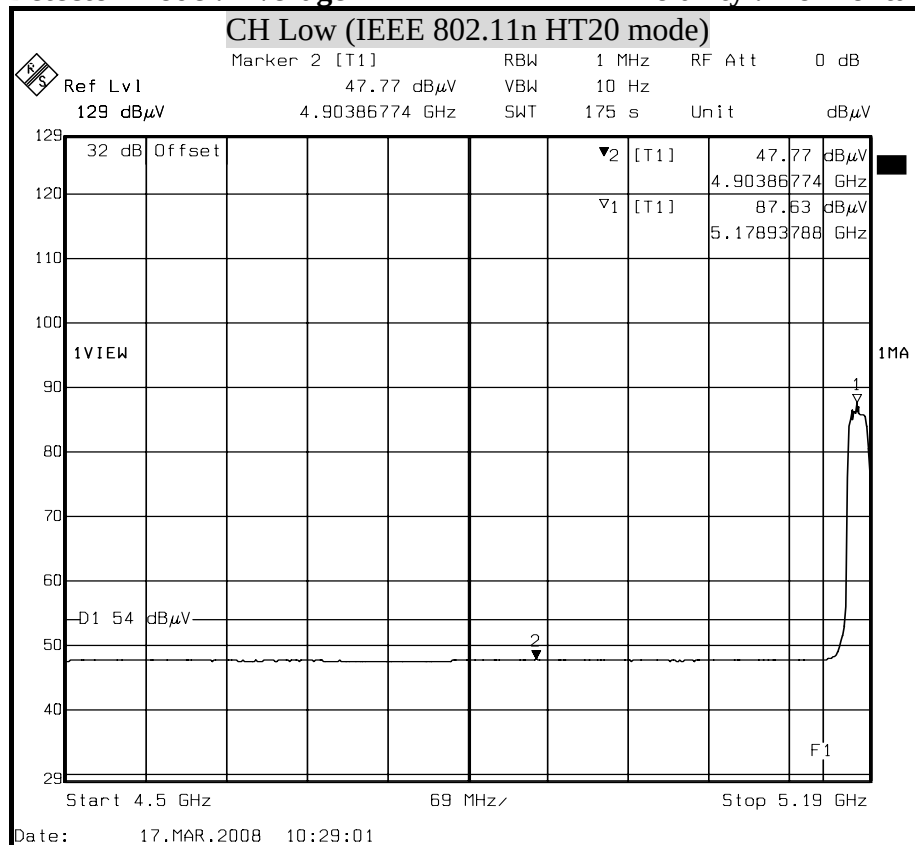
Detector mode : Peak

Polarity : Horizontal



Detector mode : Average

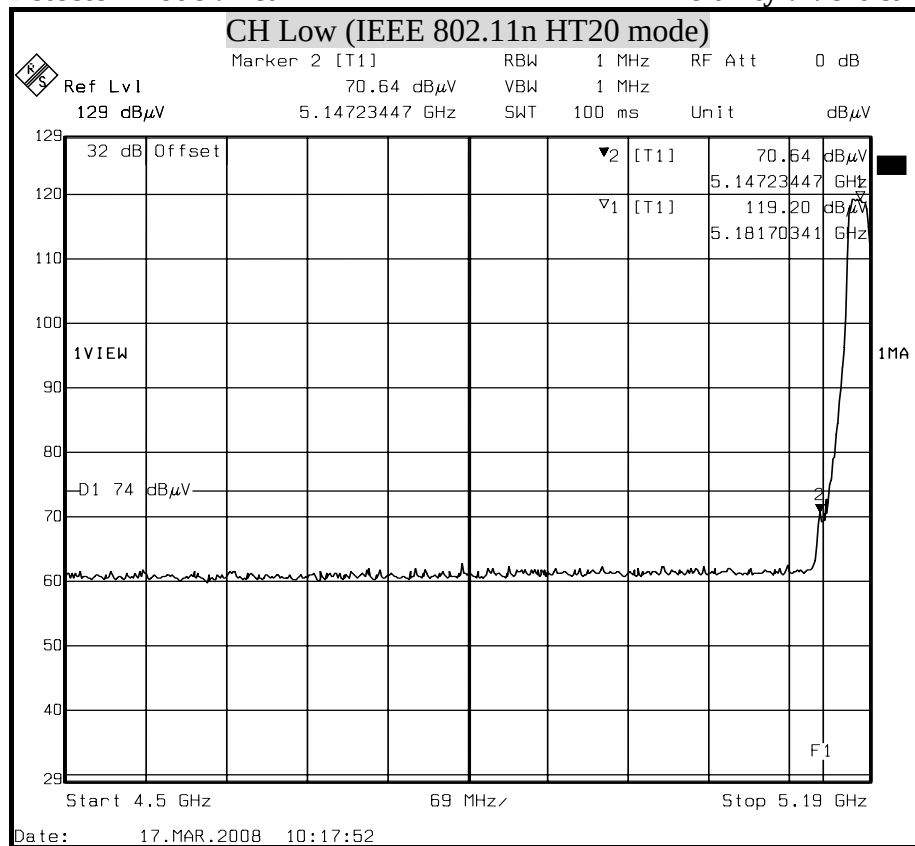
Polarity : Horizontal





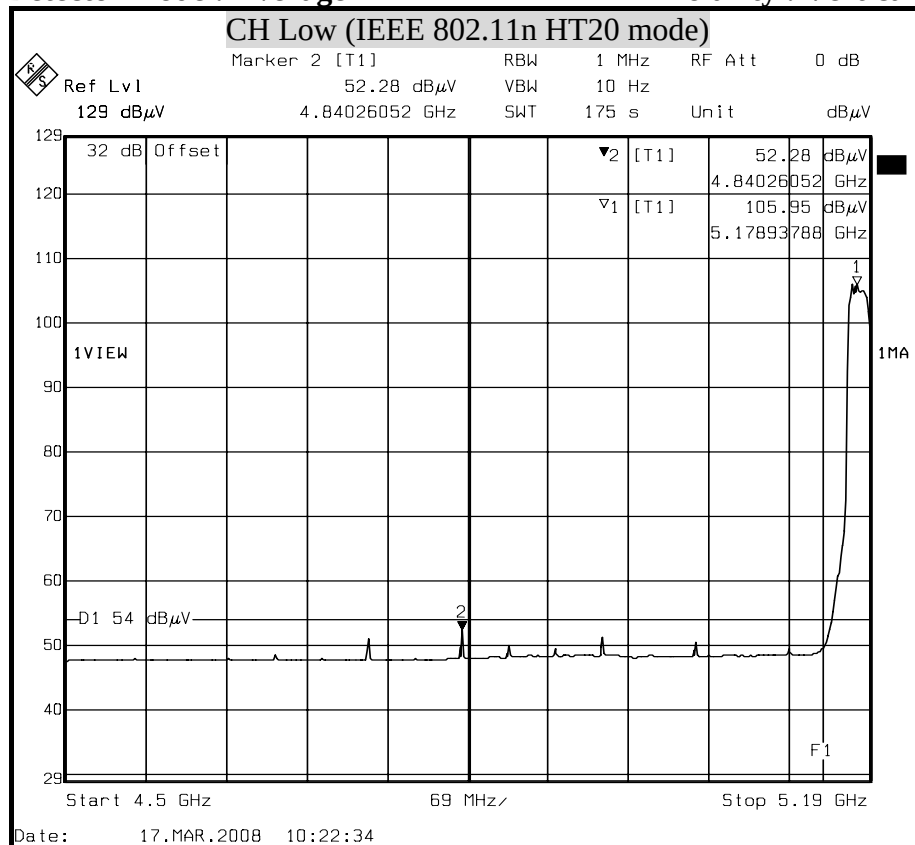
Detector mode : Peak

Polarity : Vertical



Detector mode : Average

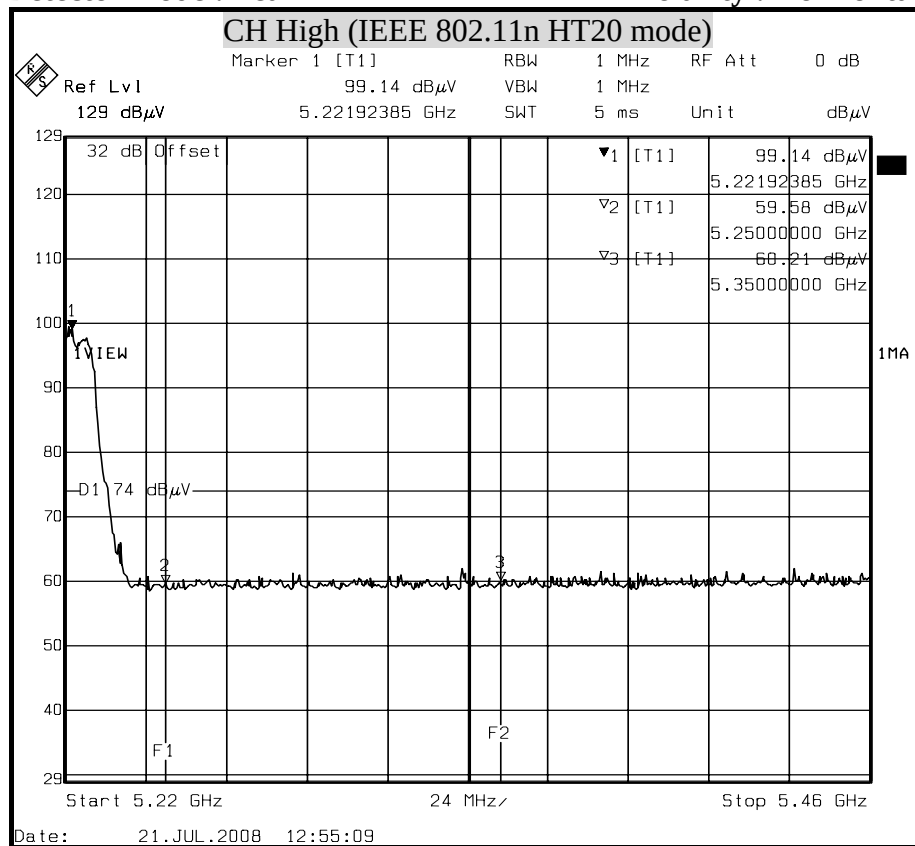
Polarity : Vertical





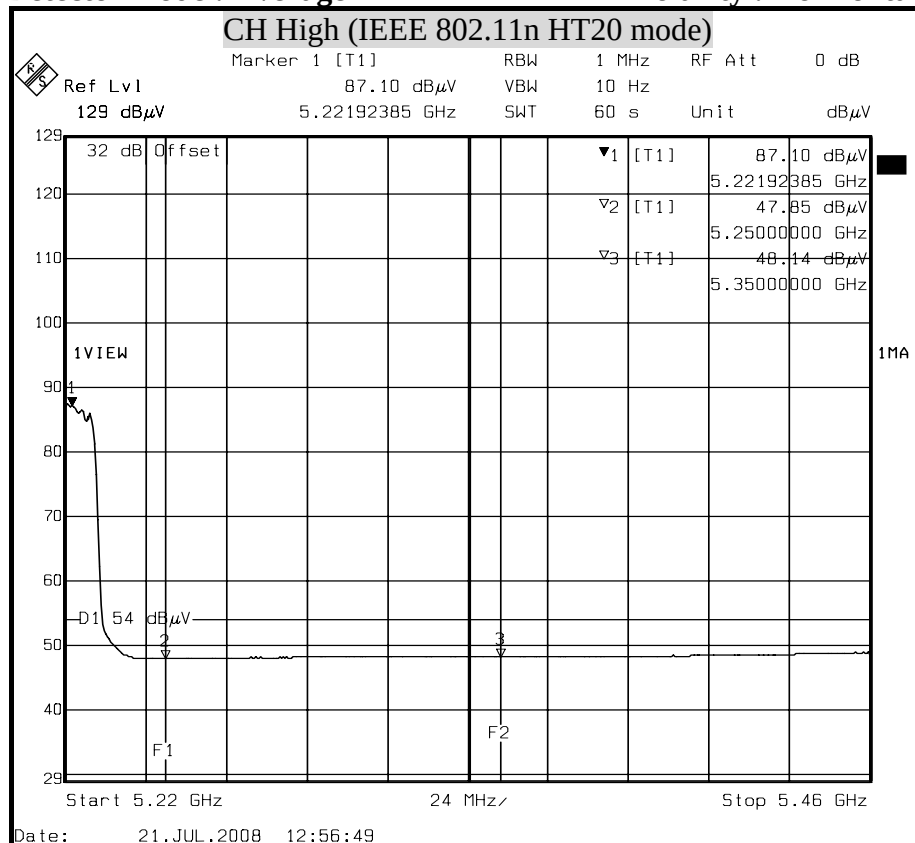
Detector mode : Peak

Polarity : Horizontal



Detector mode : Average

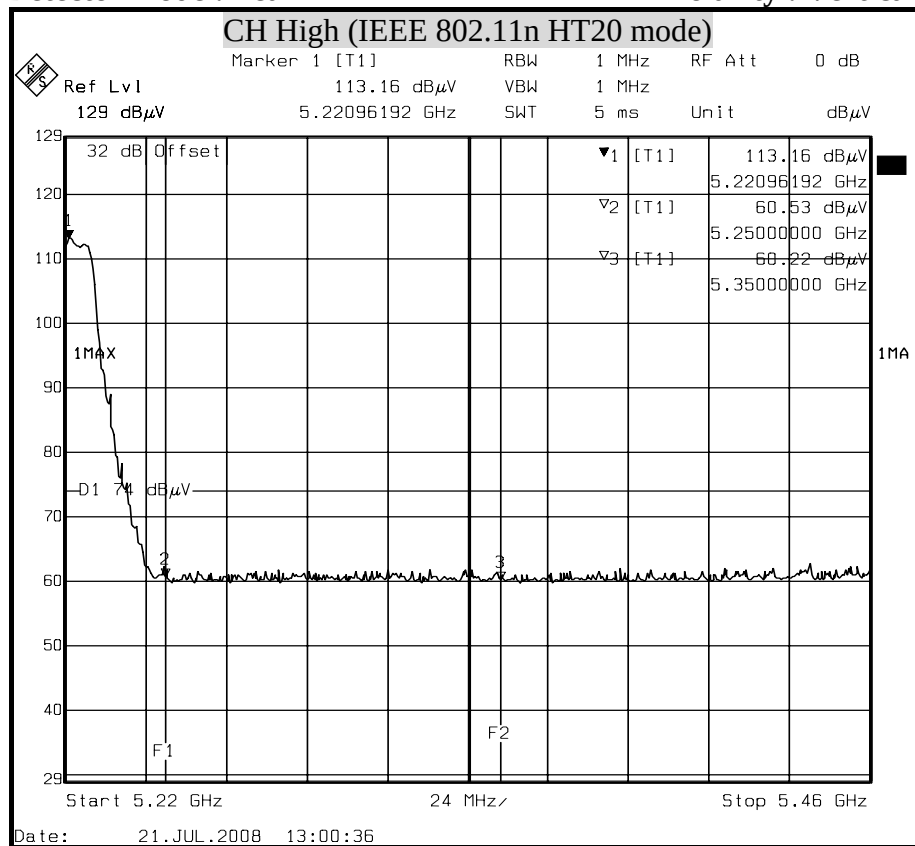
Polarity : Horizontal





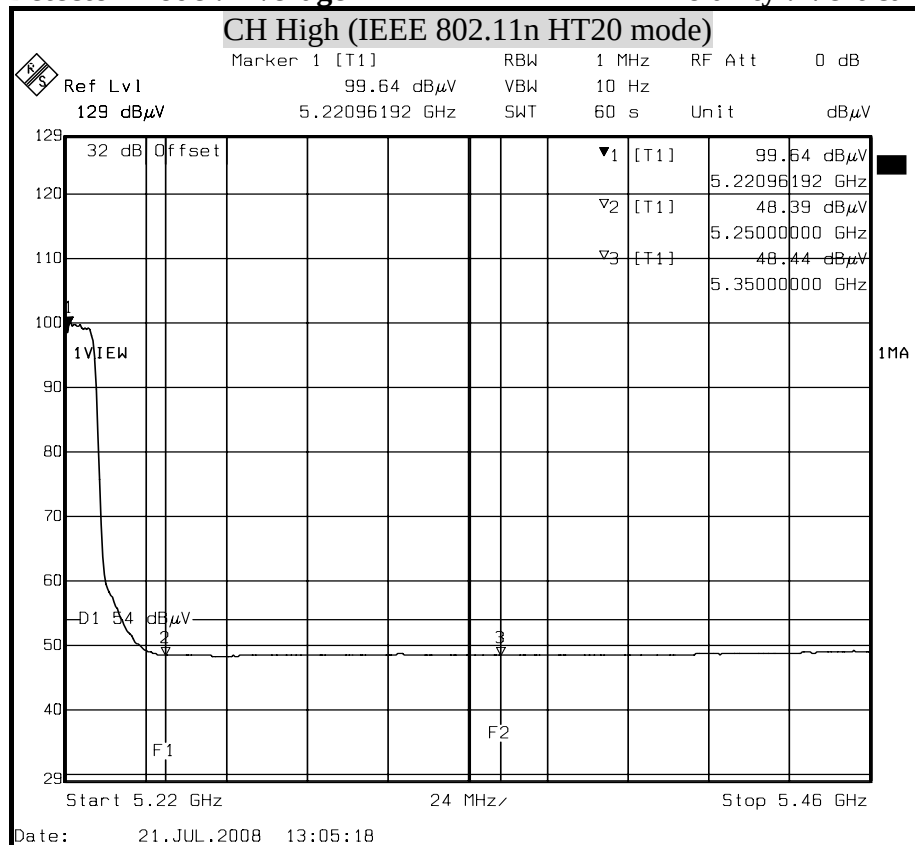
Detector mode : Peak

Polarity : Vertical



Detector mode : Average

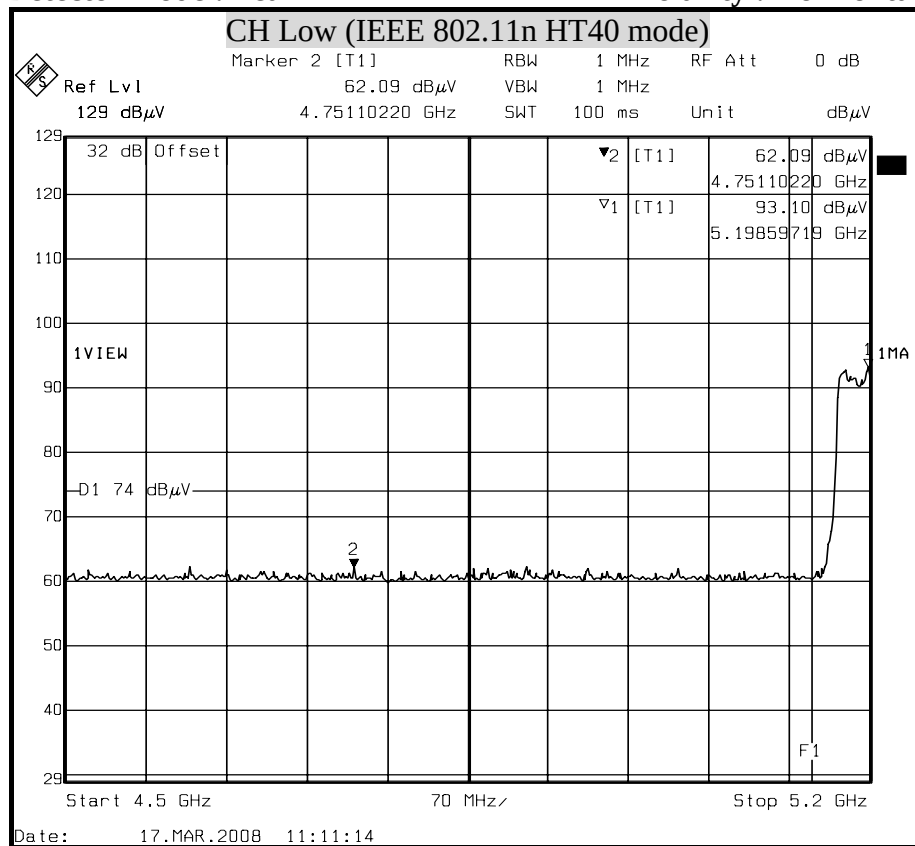
Polarity : Vertical





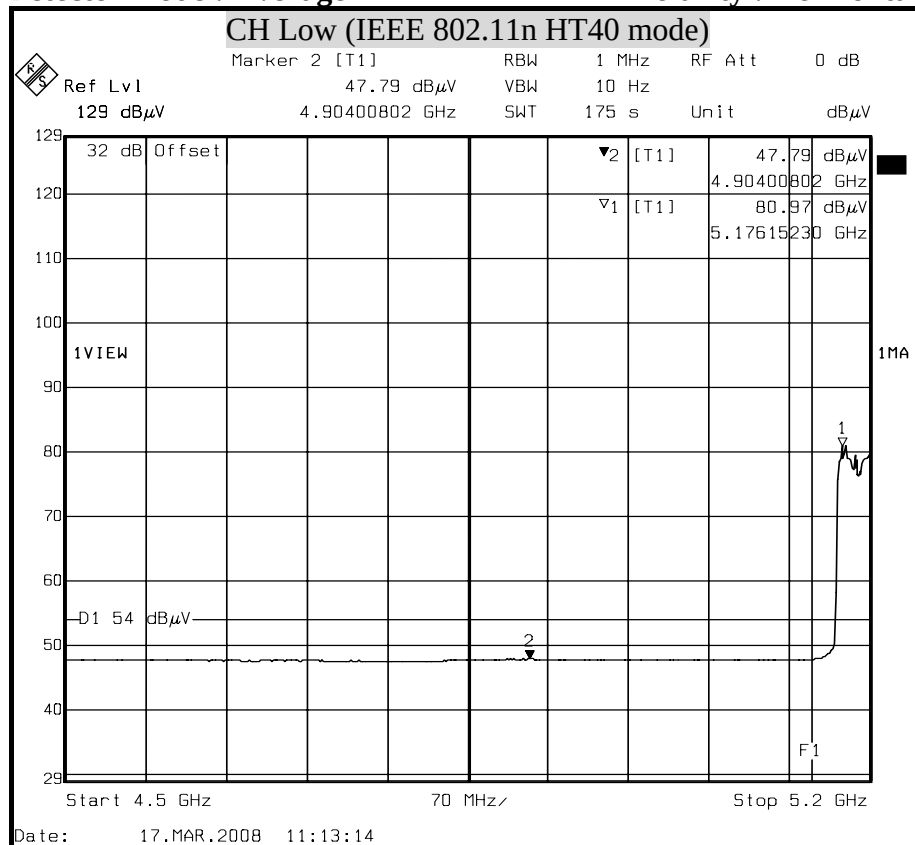
Detector mode : Peak

Polarity : Horizontal



Detector mode : Average

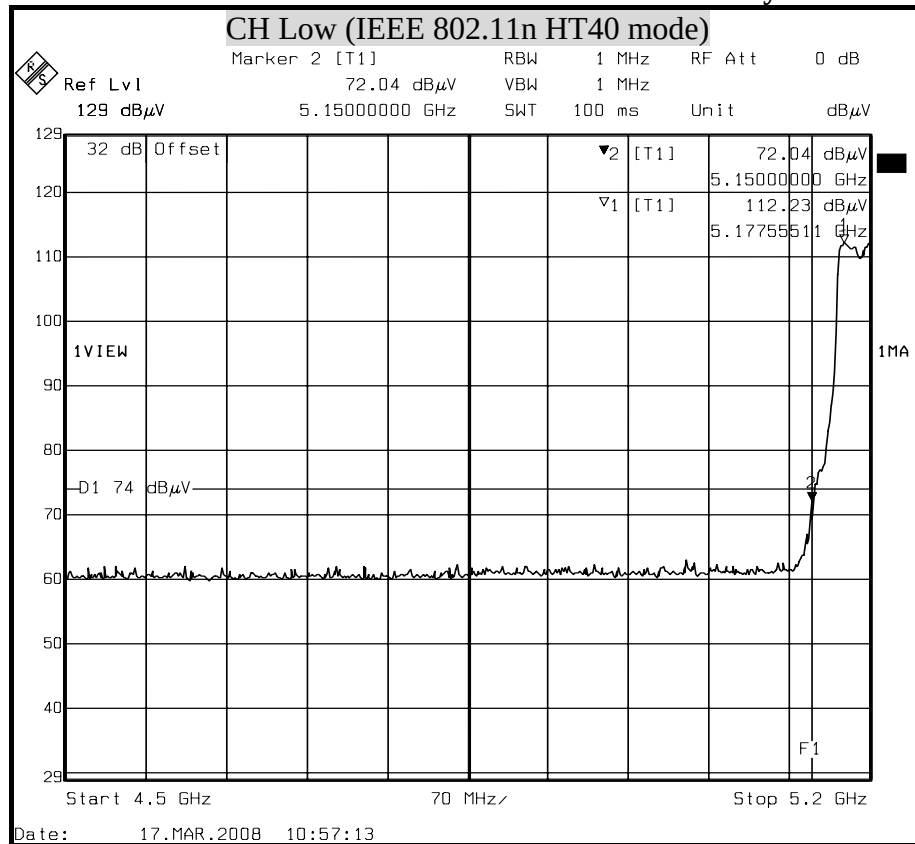
Polarity : Horizontal





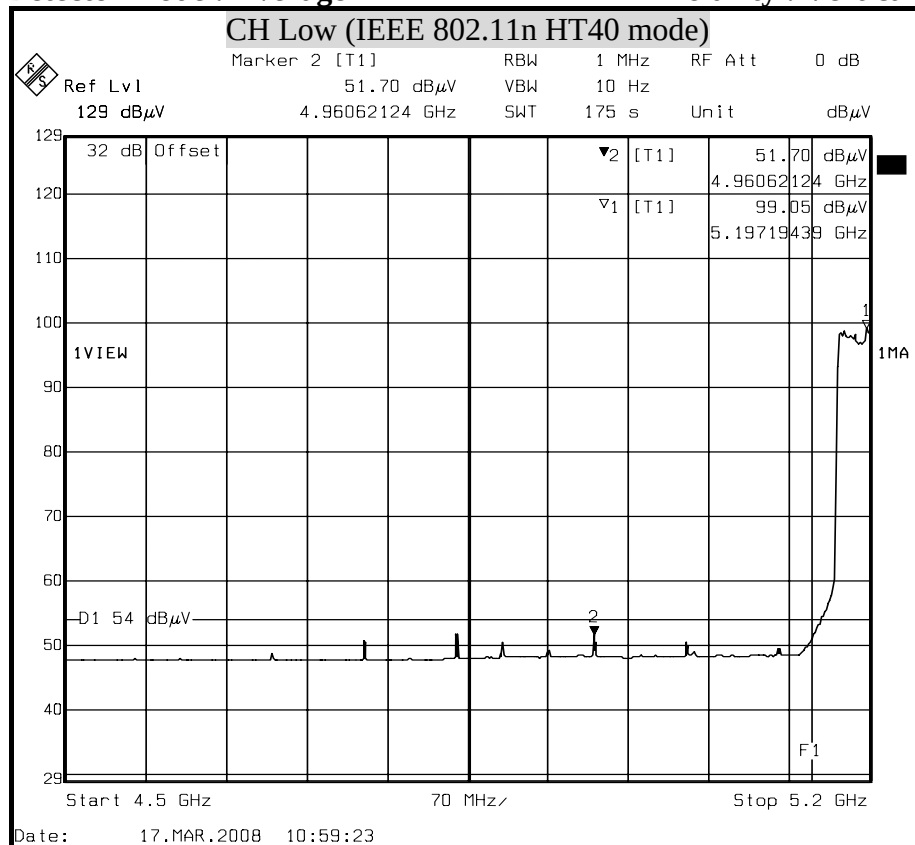
Detector mode : Peak

Polarity : Vertical



Detector mode : Average

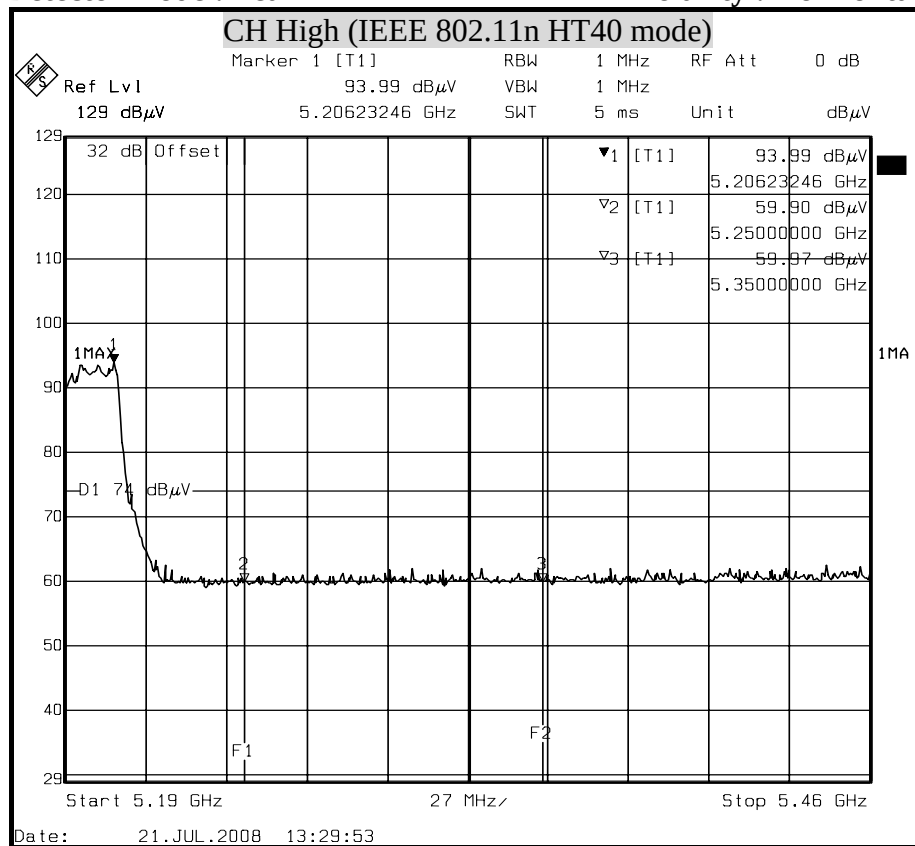
Polarity : Vertical





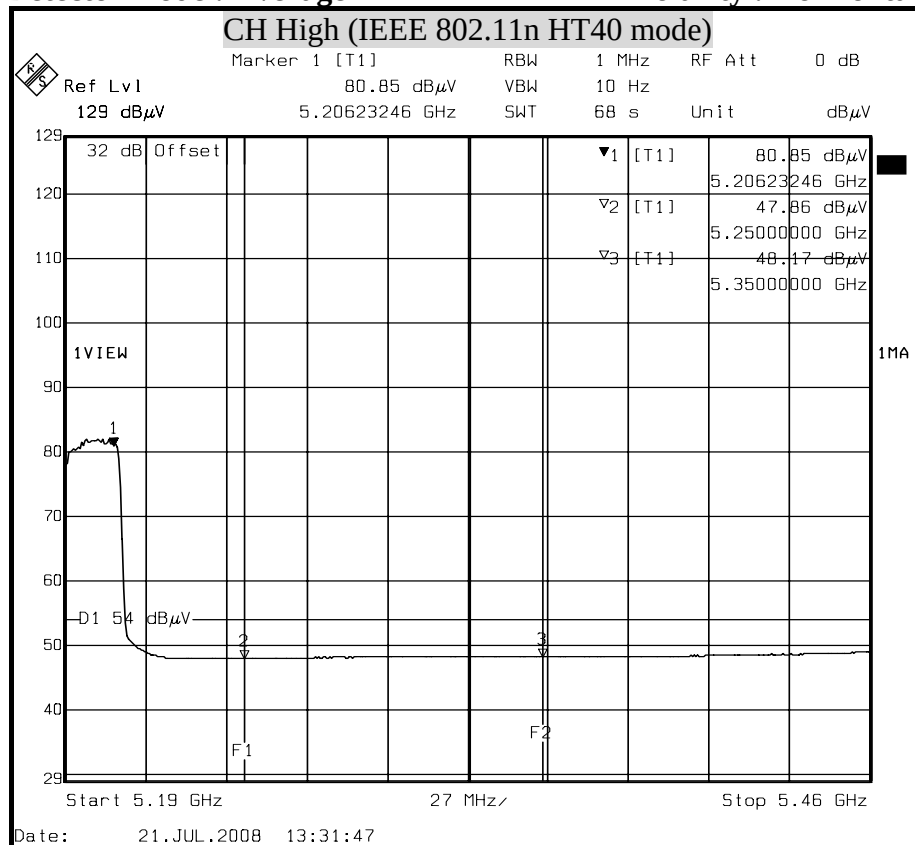
Detector mode : Peak

Polarity : Horizontal



Detector mode : Average

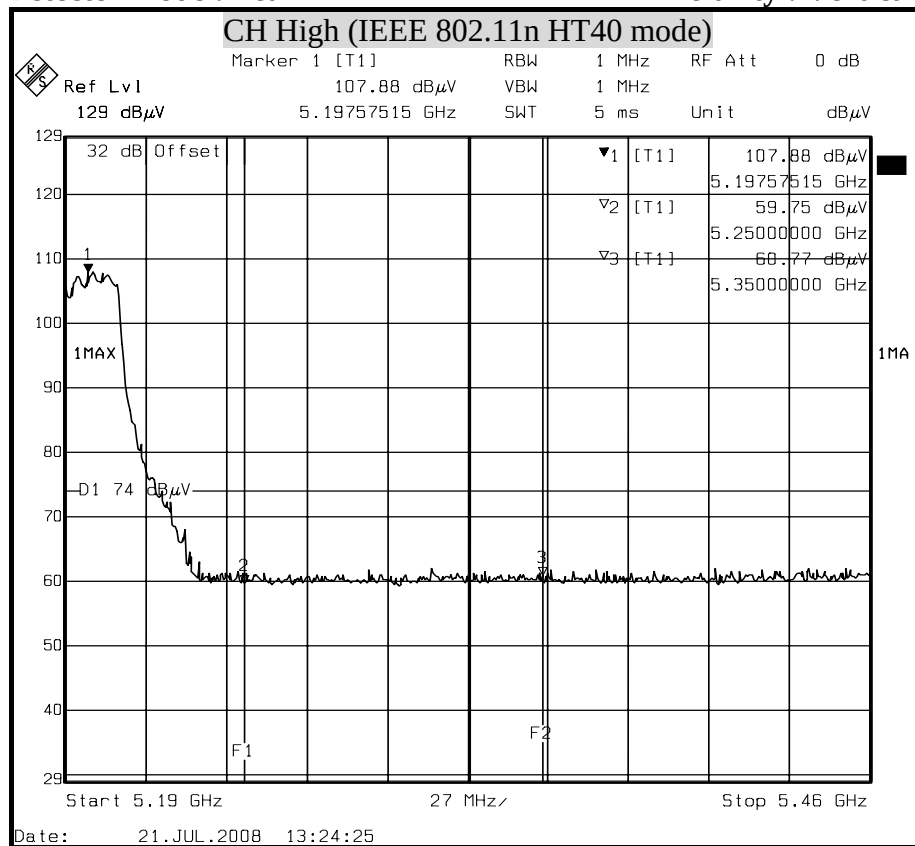
Polarity : Horizontal





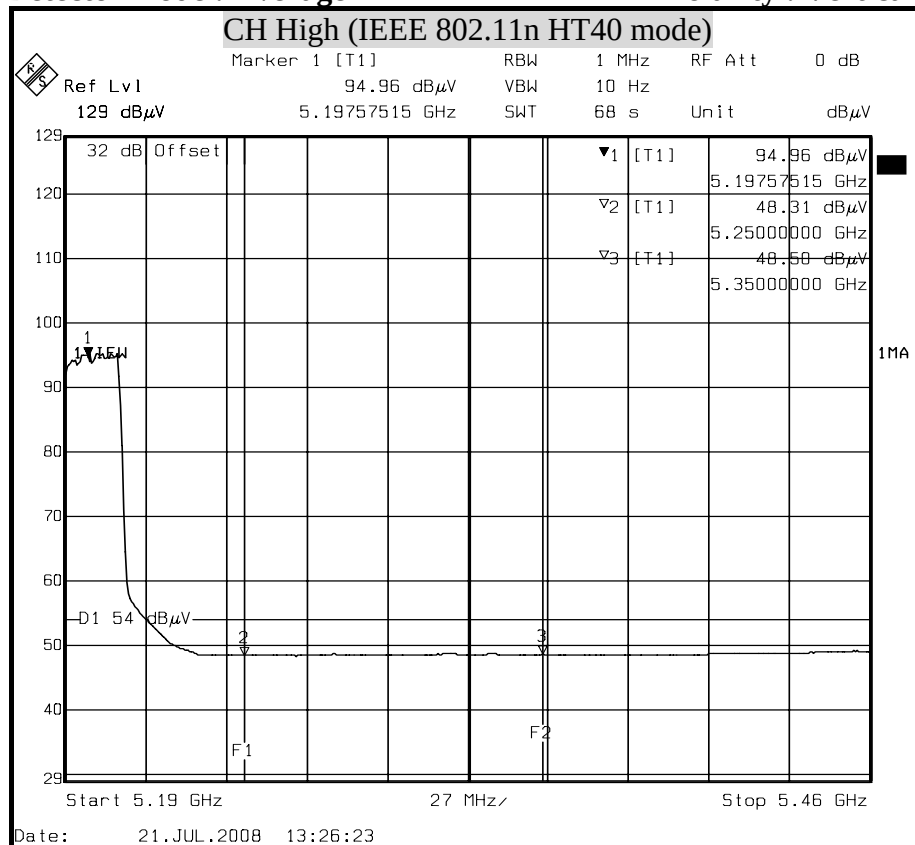
Detector mode : Peak

Polarity : Vertical



Detector mode : Average

Polarity : Vertical





8.10 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 μ H/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.

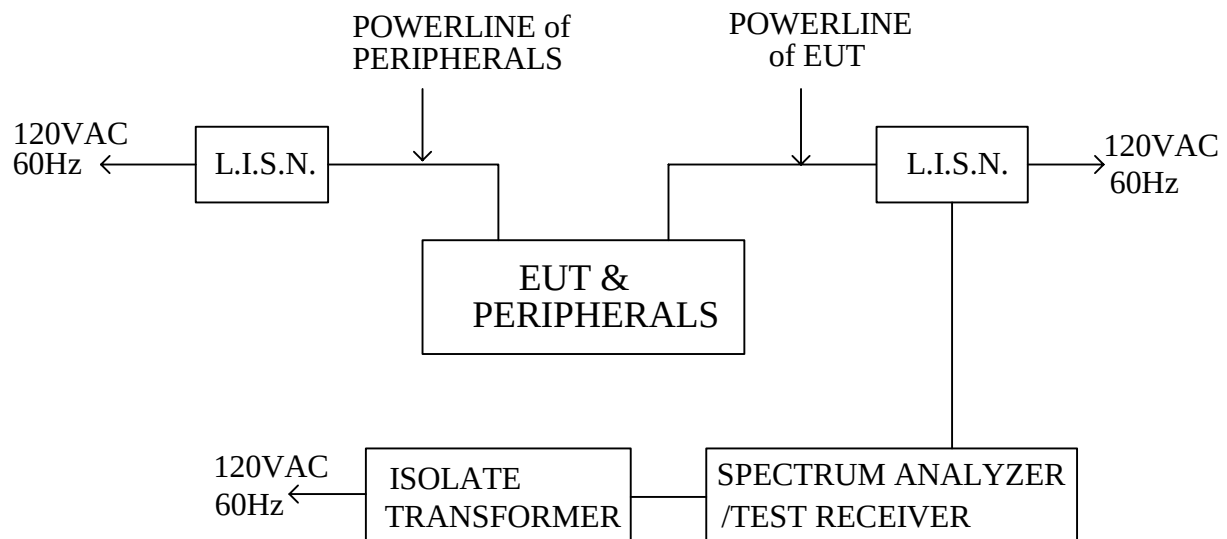
The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted limit (dB μ v)	
	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
SCHWARZBECK L.I.S.N	NSLK 8127	8127-473	October 04, 2007	1 Year	FINAL
R & S TEST RECEIVER	ESHS30	838550/003	January 23, 2008	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.

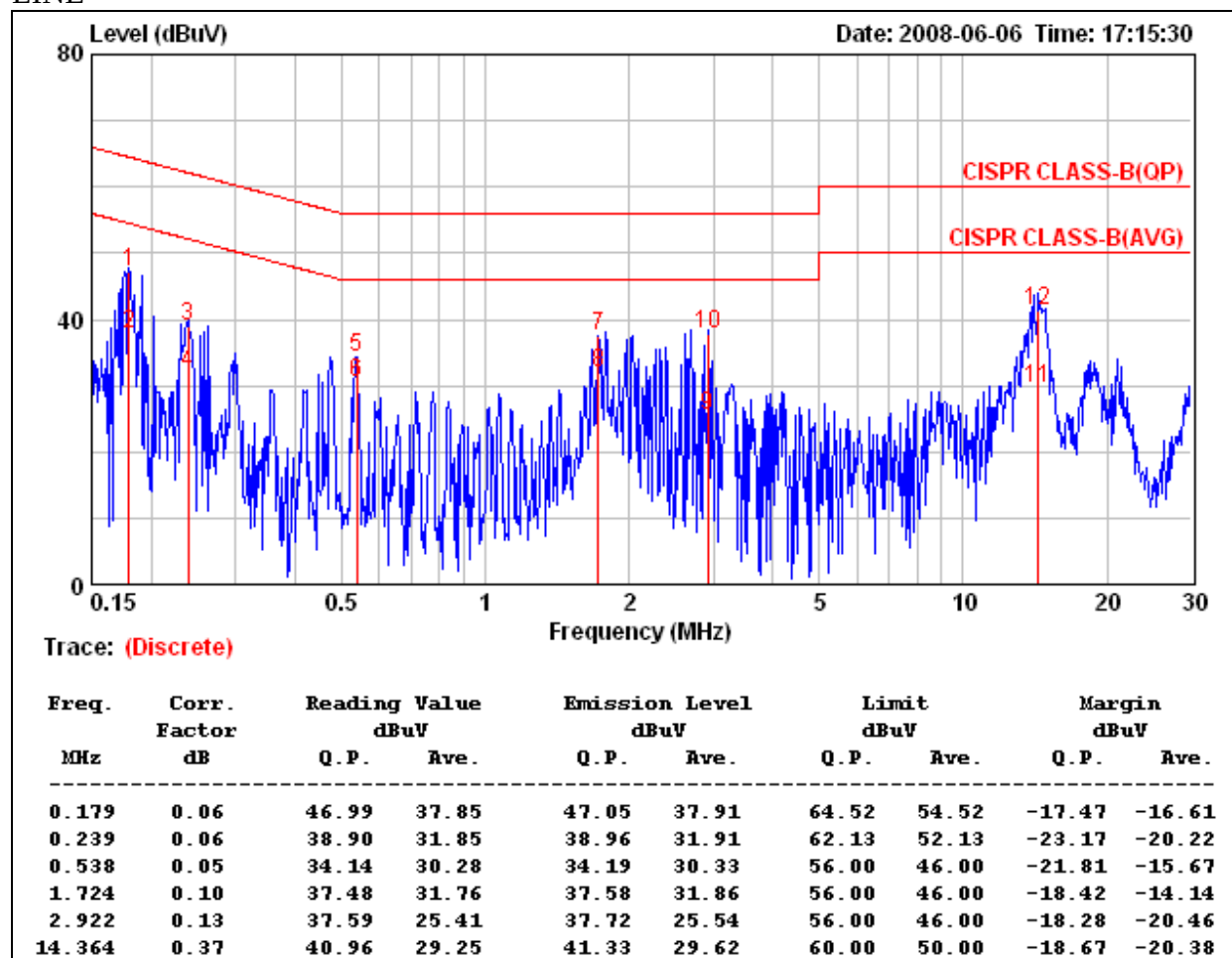
TEST RESULTS

No non-compliance noted

**CONDUCTED RF VOLTAGE MEASUREMENT**

Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/06/06
Model	DAP-2553	Test By	Vic Lin
Test Mode	Power Adapter (1)	TEMP & Humidity	23.9°C, 72%

LINE

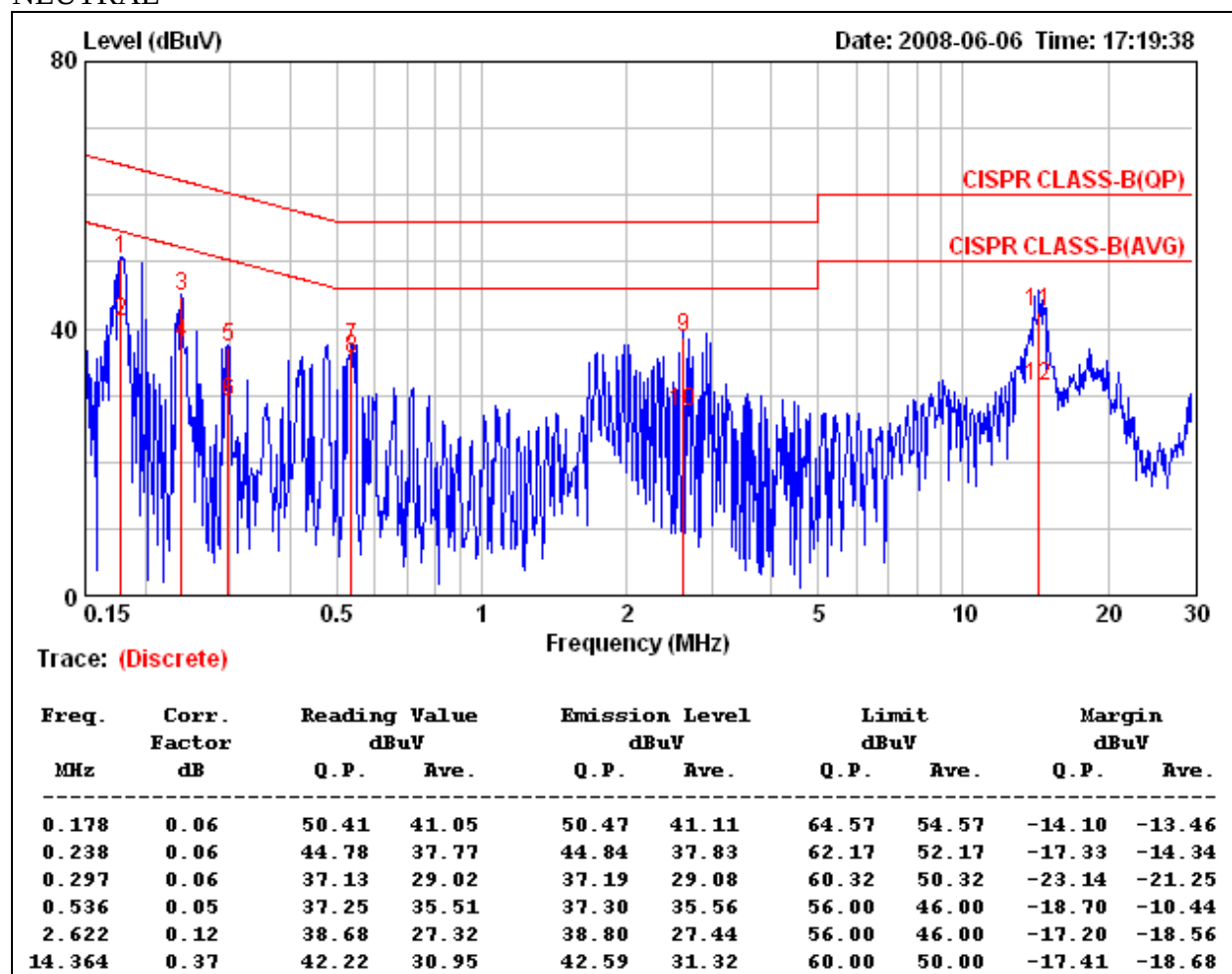
**Remark:**

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



Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/06/06
Model	DAP-2553	Test By	Vic Lin
Test Mode	Power Adapter (1)	TEMP & Humidity	23.9°C, 72%

NEUTRAL

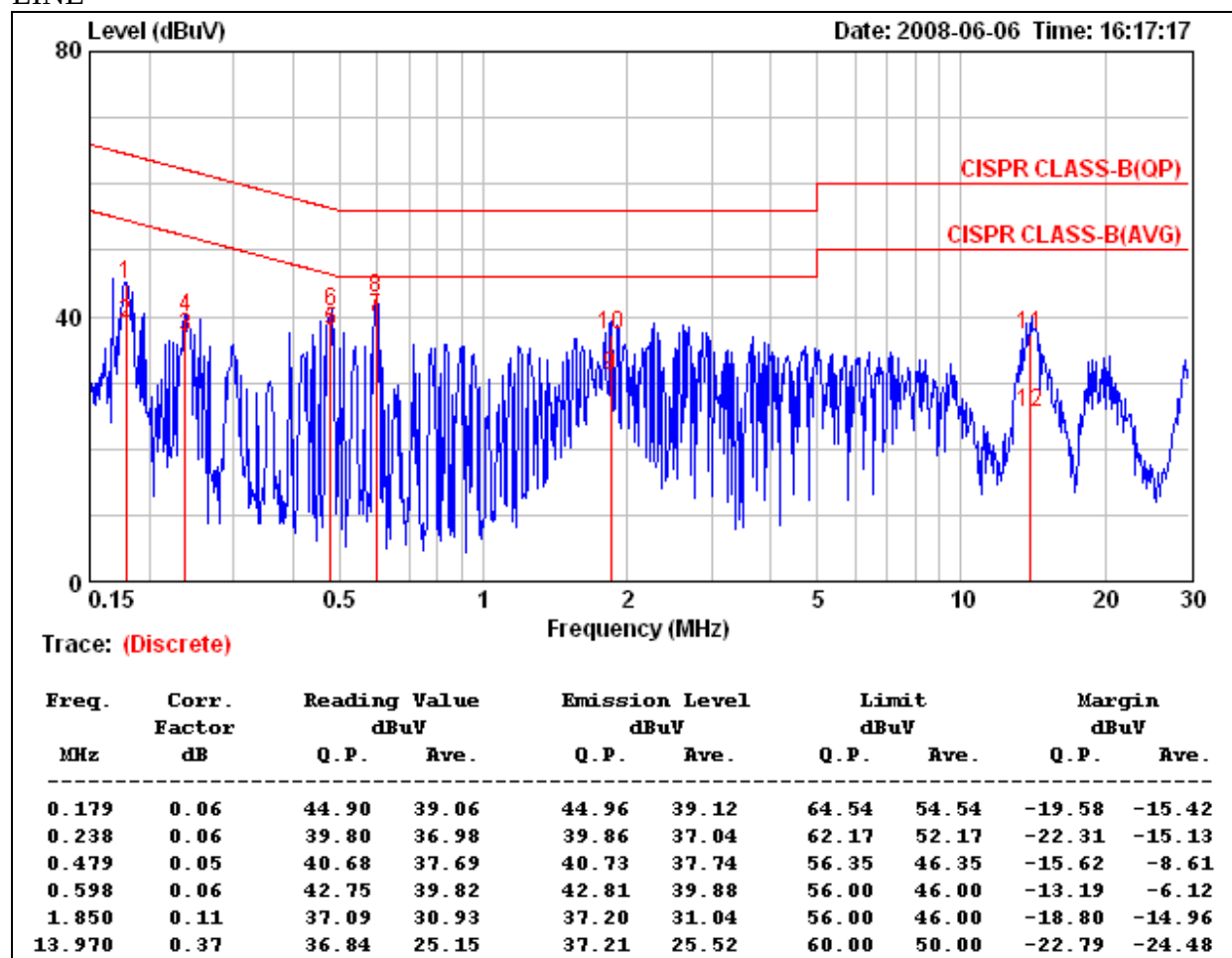
**Remark:**

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



Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/06/06
Model	DAP-2553	Test By	Vic Lin
Test Mode	Power Adapter (2)	TEMP & Humidity	23.9°C, 72%

LINE



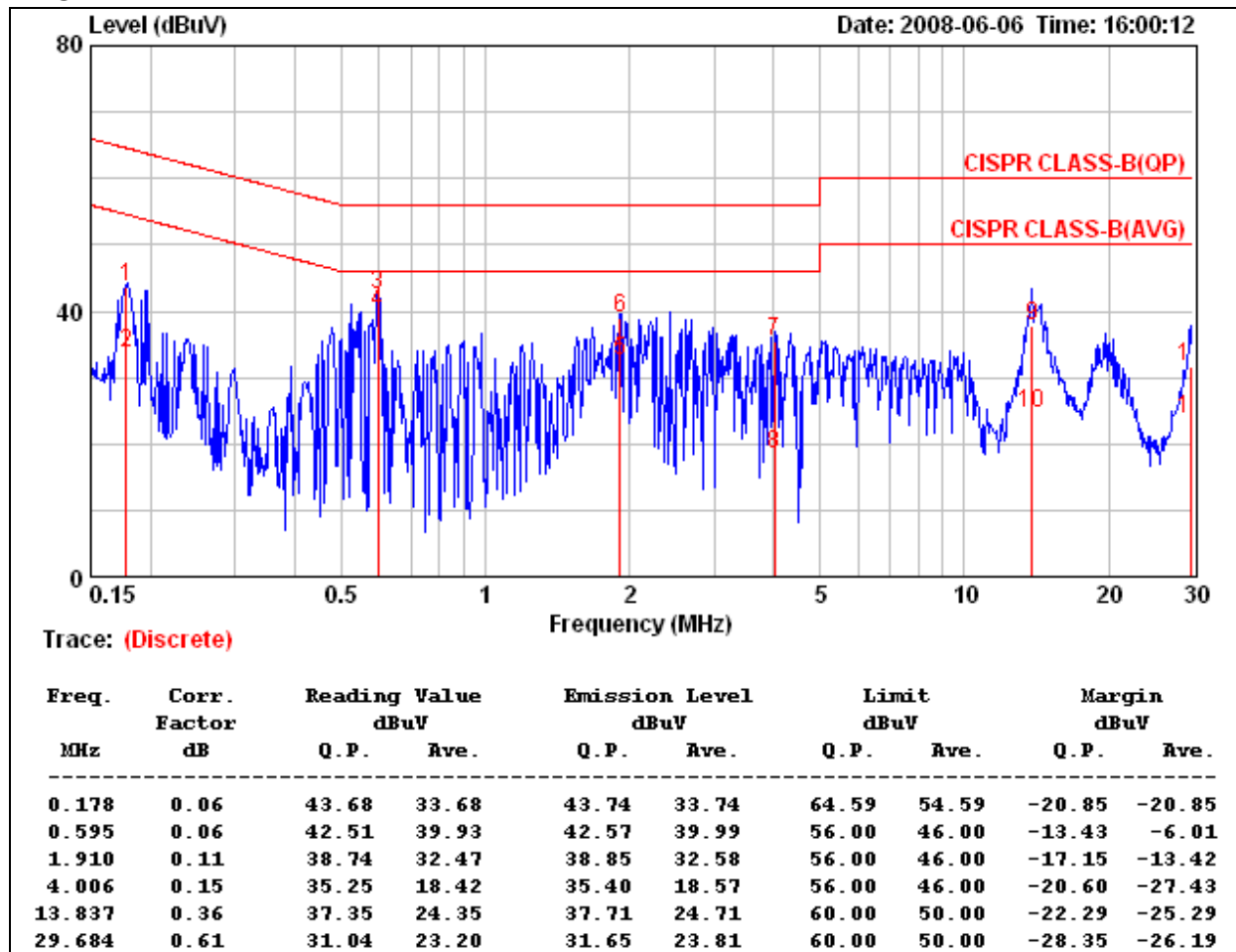
Remark:

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



Product Name	D-Link AirPremier N Dual Band PoE Access Point	Test Date	2008/06/06
Model	DAP-2553	Test By	Vic Lin
Test Mode	Power Adapter (2)	TEMP & Humidity	23.9°C, 72%

NEUTRAL

**Remark:**

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



8.11 TRANSMISSION IN ABSENCE OF DATA

LIMIT

According to §15.319(f), the device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude transmission of control and signaling information or use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

Applicants shall include in their application for equipment authorization a description of how this requirement is met.

TEST PROCEDURE

Please refer to the operational description for details.

Remark: *For the details, please refer to the operational description.*



8.12 FREQUENCY STABILITY

LIMIT

According to §15.407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the operational description.

TEST PROCEDURE

Please refer to the operational description for details.

Remark: *An examination of the band-edge plots shows that the emission will stay within the authorized band over the entire temperature range.*



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 Dipole antenna. The peak Gain of this antenna is 3dBi at 2.4GHz and 5dBi at 5.0GHz.