



**FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT**

FOR

**RoHS WLAN PCIe minicard a/b/g/n Adapter for 2.4/5GHz Client
Applications**

MODEL NUMBER: 65-VE239-P2

FCC ID: J9C-65VE239P2

REPORT NUMBER: 07U11134-1, REVISION B

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Prepared for
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NVLAP LAB CODE 200065-0

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--	07/18/07	Initial Issue	T. Chan
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: QUALCOMM INCORPORATED
900 ARASTRADERO ROAD
PALO ALTO, CA 94304, USA

EUT DESCRIPTION: ROHS WLAN PCIE MINICARD A/B/G/N ADAPTER FOR 2.4/5GHZ
CLIENT APPLICATIONS

MODEL: 65-VE239-P2

SERIAL NUMBER: 4956, 4961, 4965

DATE TESTED: JUNE 18 - JULY 7, 2007

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

WILLIAM ZHUANG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. 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.

4.2. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

RoHS WLAN PCIe minicard a/b/g/n Adapter for 2.4/5GHz Client Applications.

The radio module is manufactured by QUALCOMM, Inc.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
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2400 to 2483.5 MHz Authorized Band

2412 - 2462	802.11b	26.83	481.95
2412 - 2462	802.11g	24.47	279.90
2412 - 2462	802.11n HT20	24.38	274.16
2422 - 2452	802.11n HT40	23.82	240.99

5725 to 5850 MHz Authorized Band

5745 - 5825	802.11a	26.56	452.90
5745 - 5825	802.11n HT20	26.47	443.61
5755 - 5795	802.11n HT40	25.48	353.18

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes 3 identical omni antennas in a 2x3 MIMO configuration, with maximum gain at 2dBi for 2.4GHz and 3dBi for 5GHz.

5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed in the host support equipment during testing was WFB400 802.11n rev. 0.0.93.451.

The test utility software used during testing was PTT.0.0.93.451 revised 4 June 2007.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at mid channel for 2.4GHz Band and low channel for 5.8GHz Band

The worst-case data rate emissions tests were made in the 802.11, legacy mode, at 6Mbps, HT20, at MCS07, 65Mbps and HT40, at MCS15, 135Mbps.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	IBM	T60 Type 2007-64U	L3-5G47Y 06/12	Doc
AC/DC Adapter	Lenovo	92P1105	11s92P1105Z1ZBW96 AP1AM	Doc
DC Power Supply	Agilent	E3620A	X28343	Doc

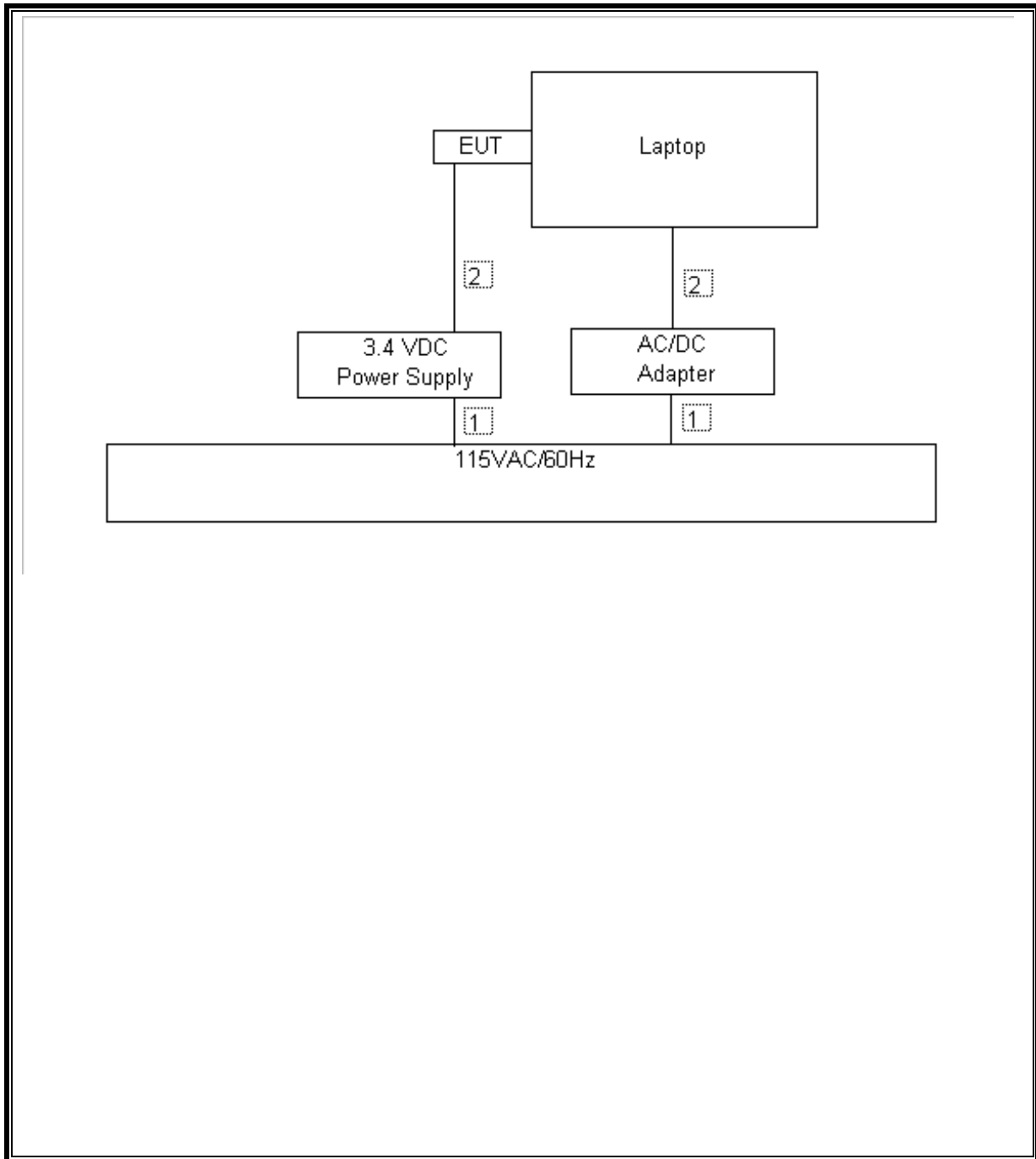
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	2	US 115V	Un-shielded	2m	N/A
2	DC	2	US 115V	Un-shielded	1m	N/A

TEST SETUP

The EUT is installed in a host laptop computer via a mini card adapter and extension board during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Cal Due
Peak Power Meter	Agilent / HP	E4416A	GB41291160	12/2/2007
Peak / Average Power Sensor	Agilent	E9327A	US40440755	12/2/2007
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY43360112	5/3/2008
SA Display Section 2	Agilent / HP	85662A	2816A16696	4/7/2008
SA RF Section, 1.5 GHz	Agilent / HP	85680B	2814A04227	1/7/2008
Quasi-Peak Adaptor	Agilent / HP	85650A	3145A01654	1/21/2008
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A0022704	9/3/2007
Preamp 30-1000MHz	Sonoma	310N	185623	1/20/2008
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/2008
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00561	10/3/2007
EMI Test Receiver	R & S	ESHS 20	827129/006	6/3/2008
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2007
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	8/30/2007

7. LIMITS AND RESULTS

7.1. CHANNEL TESTS FOR THE 2400 TO 2483.5 MHz BAND

7.1.1. 6 dB BANDWIDTH

LIMIT

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

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

No non-compliance noted:

Mode Channel	Frequency (MHz)	6 dB BW Chain 0 (kHz)	6 dB BW Chain 1 (kHz)	Minimum Limit (kHz)	Minimum Margin (kHz)
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802.11b Mode

Low	2412	10583.333	9083.333	500	8583
Mid	2437	8583.333	10083.333	500	8083
High	2462	9500.000	8500.000	500	8000

802.11g Mode

Low	2412	16333.333	16083.333	500	15583
Mid	2437	16250.000	16333.333	500	15750
High	2462	16416.667	16333.333	500	15833

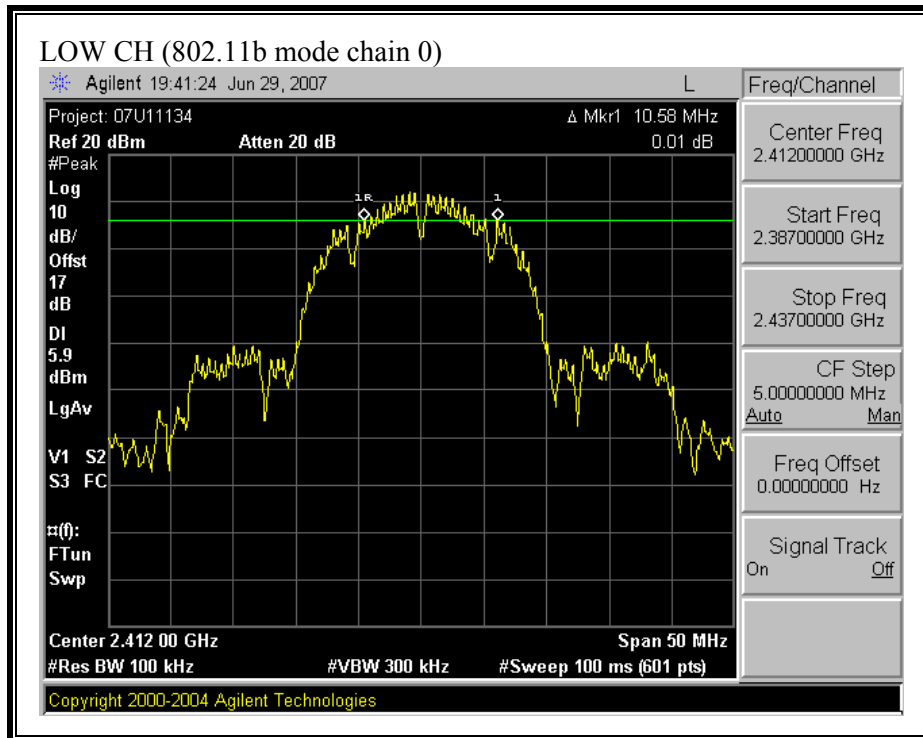
802.11n HT20 Mode

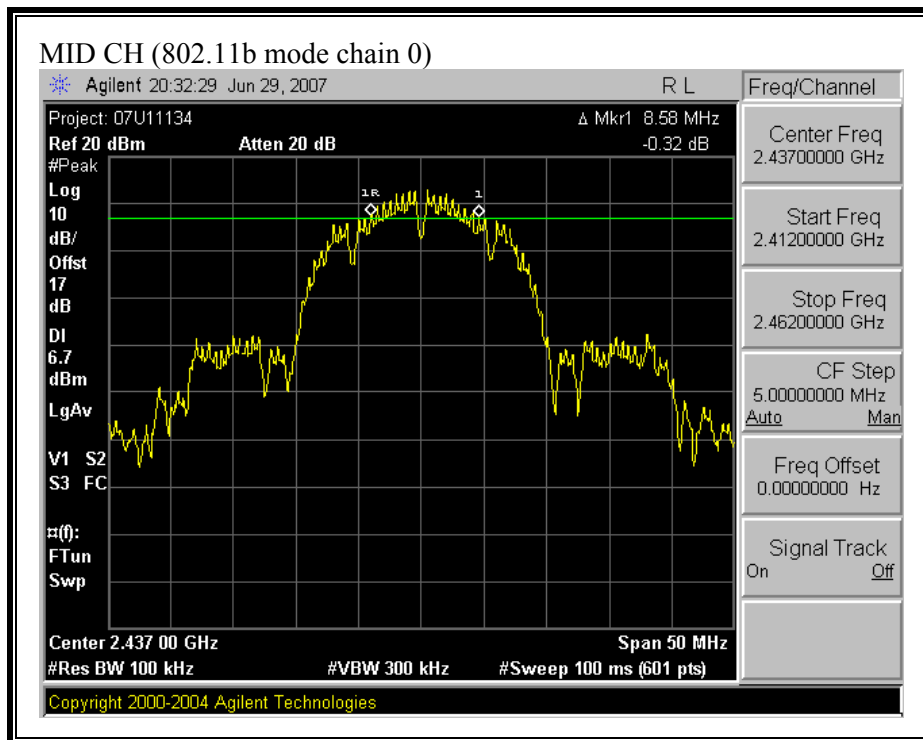
Low	2412	17333.333	17166.667	500	16667
Mid	2437	17583.333	17250.000	500	16750
High	2462	17416.667	17333.333	500	16833

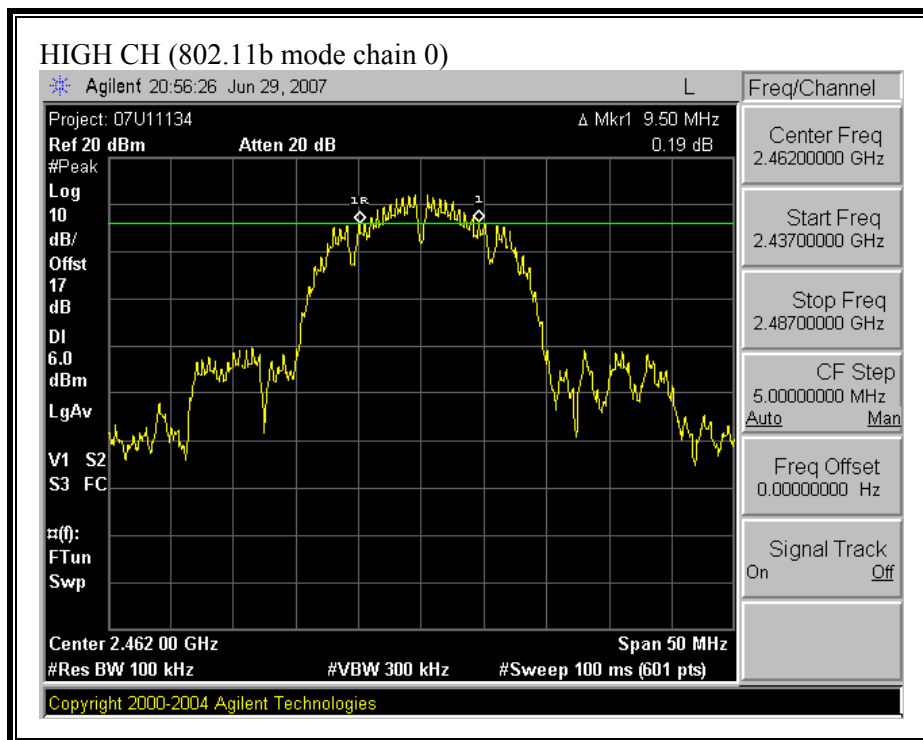
802.11n HT40 Mode

Low	2422	35500.000	35333.333	500	34833
Mid	2447	35500.000	35333.333	500	34833
High	2452	35500.000	35333.333	500	34833

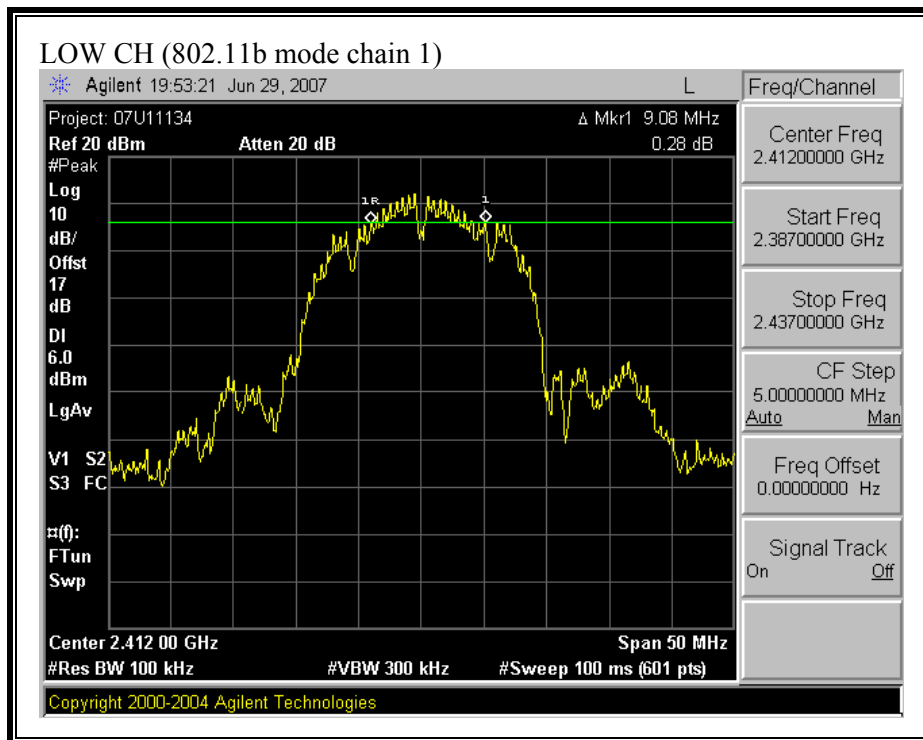
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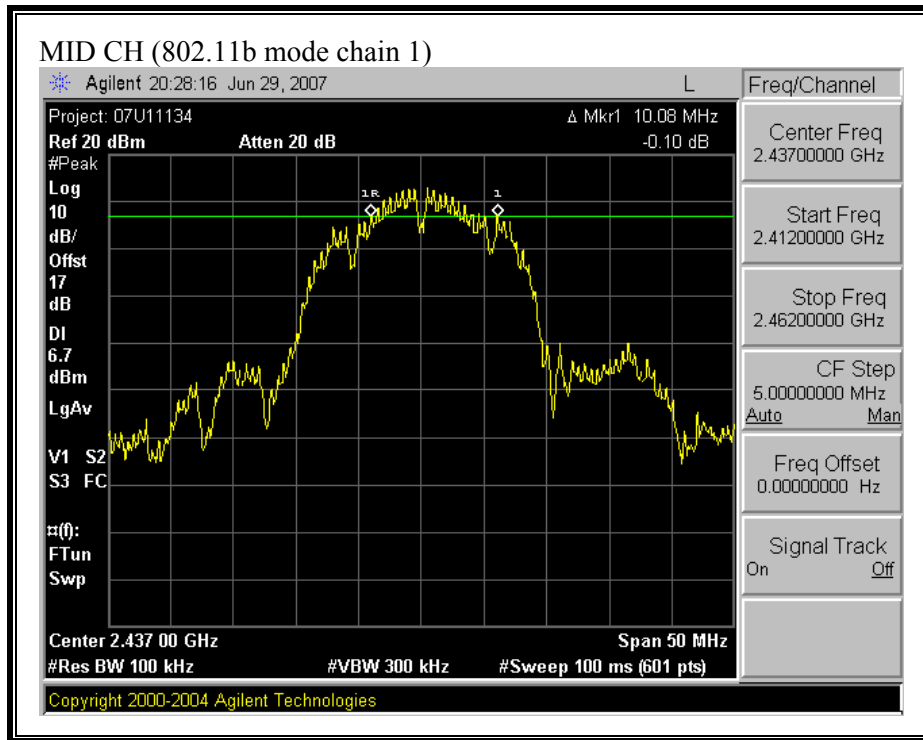


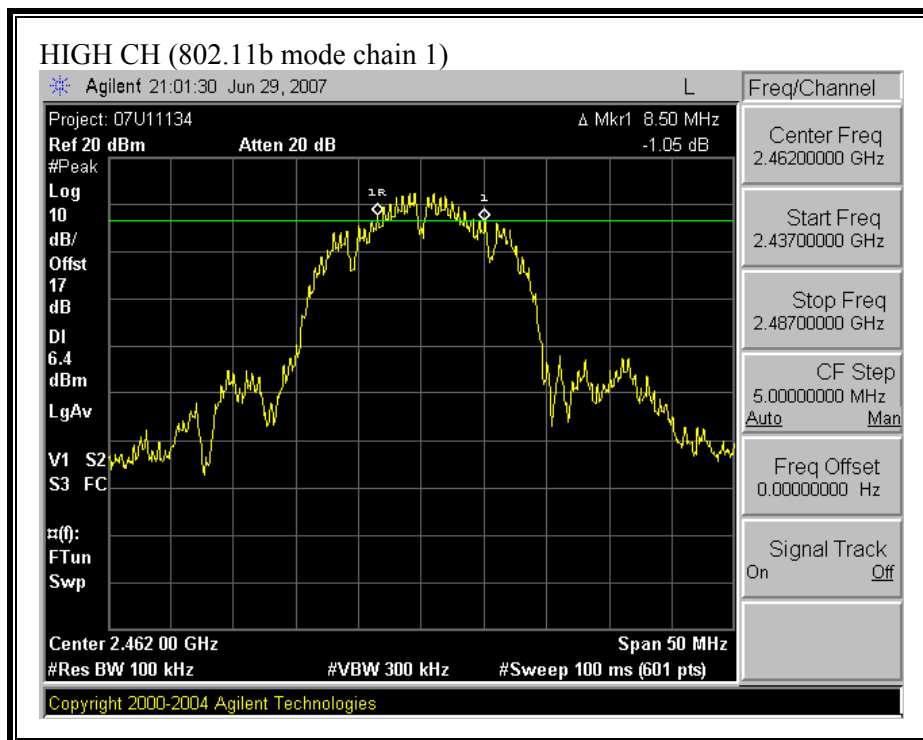




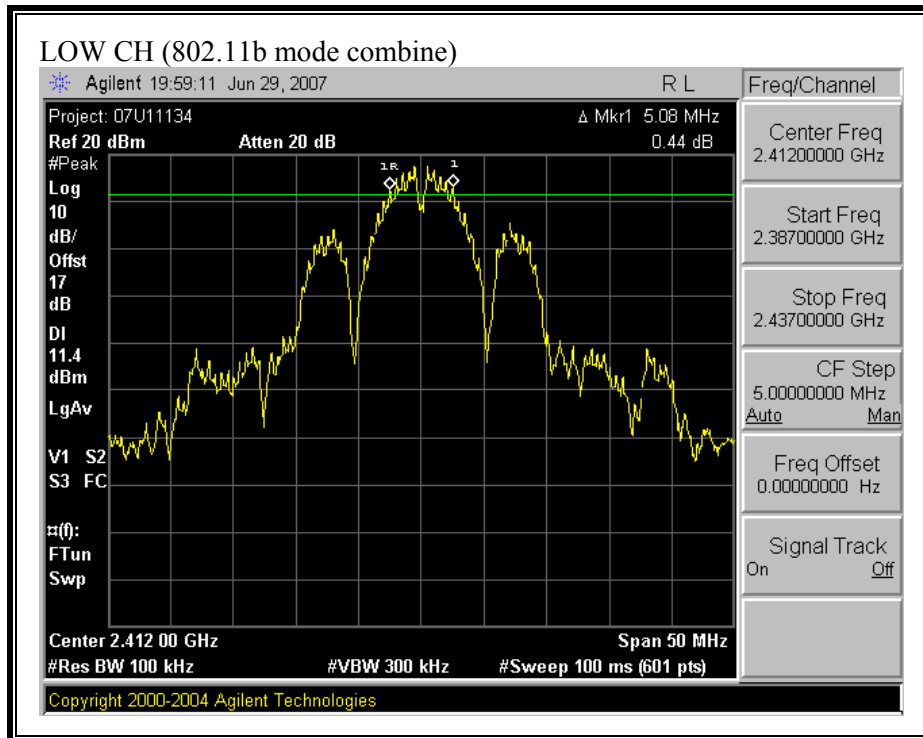
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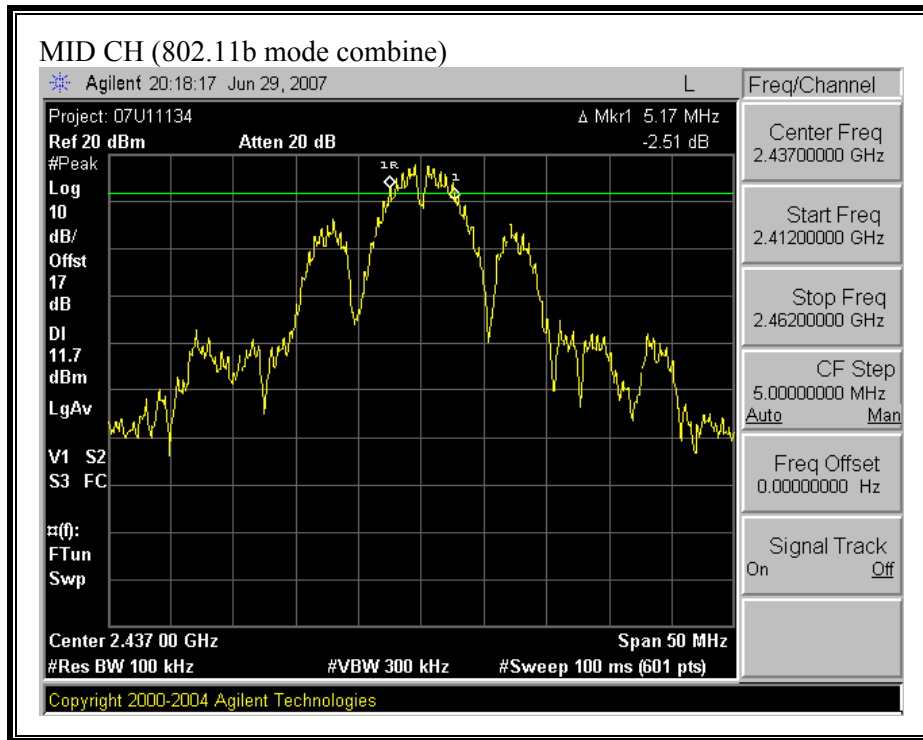


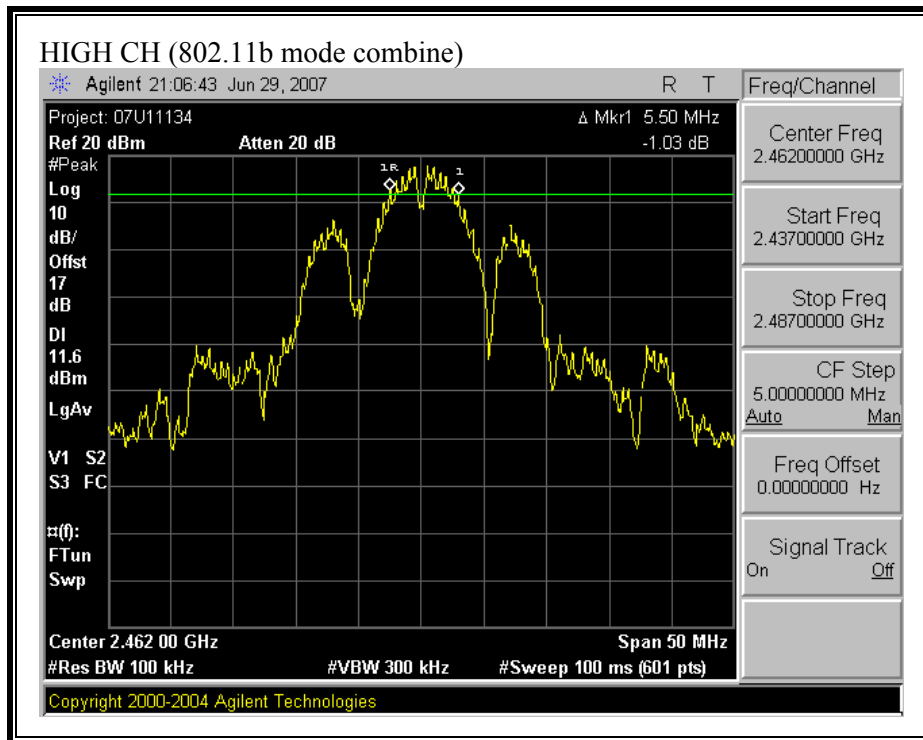




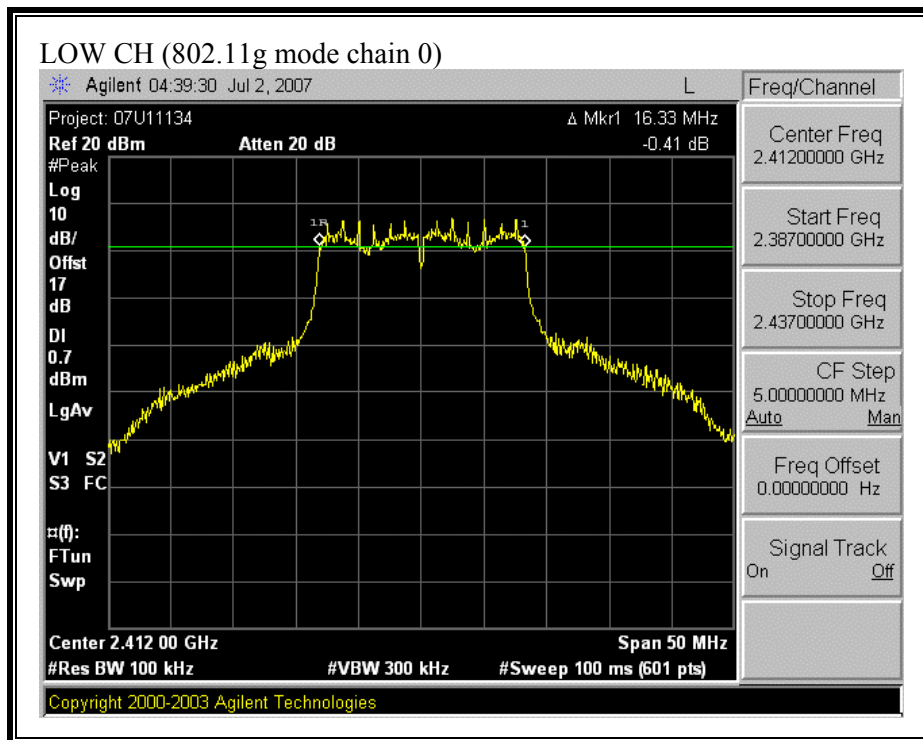
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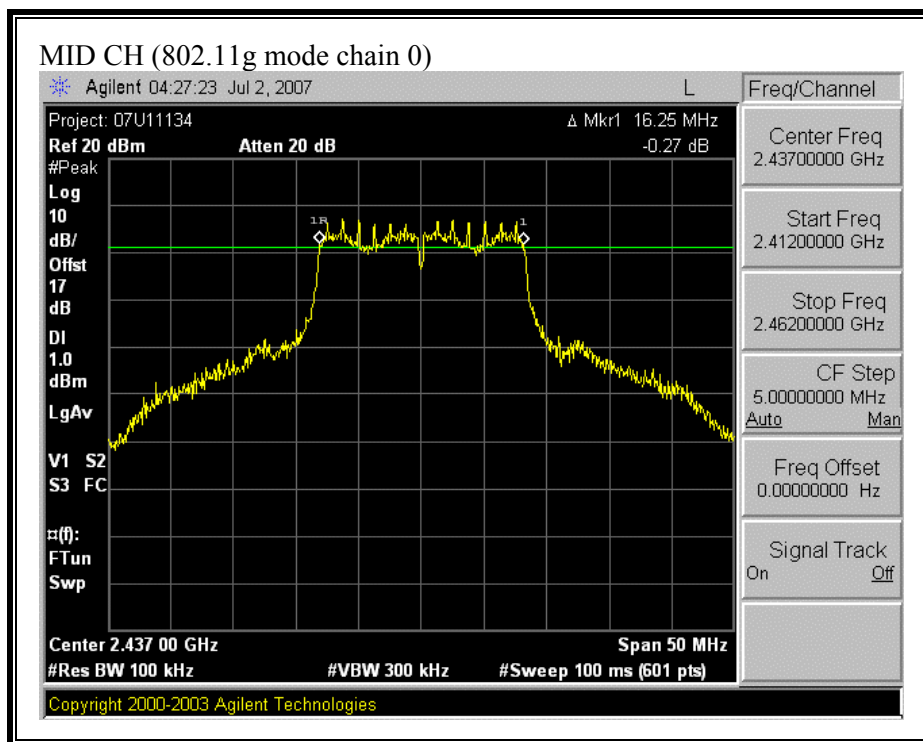


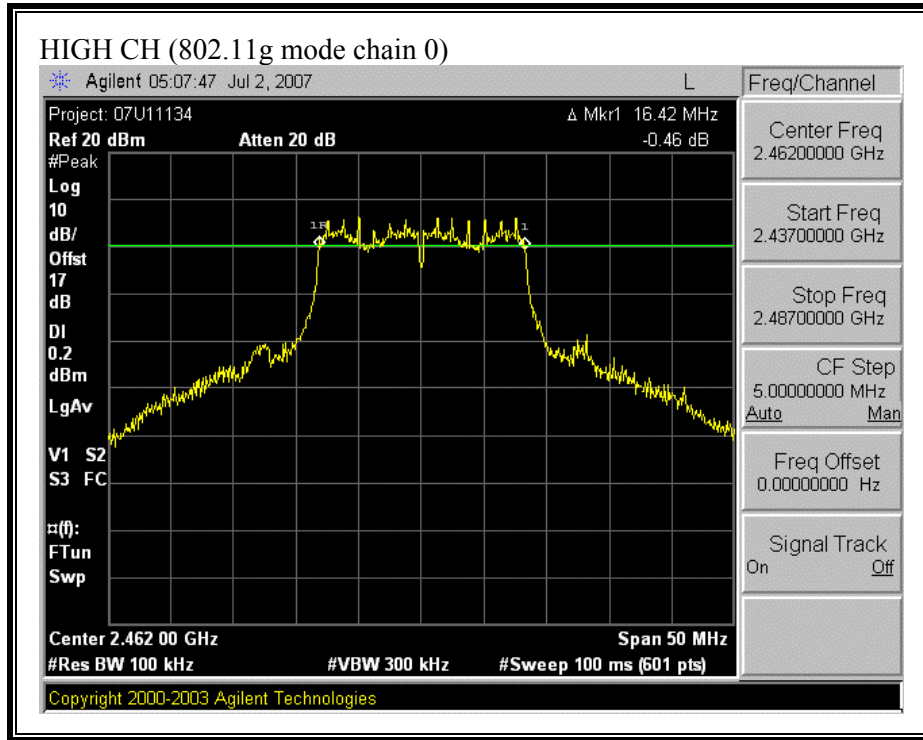




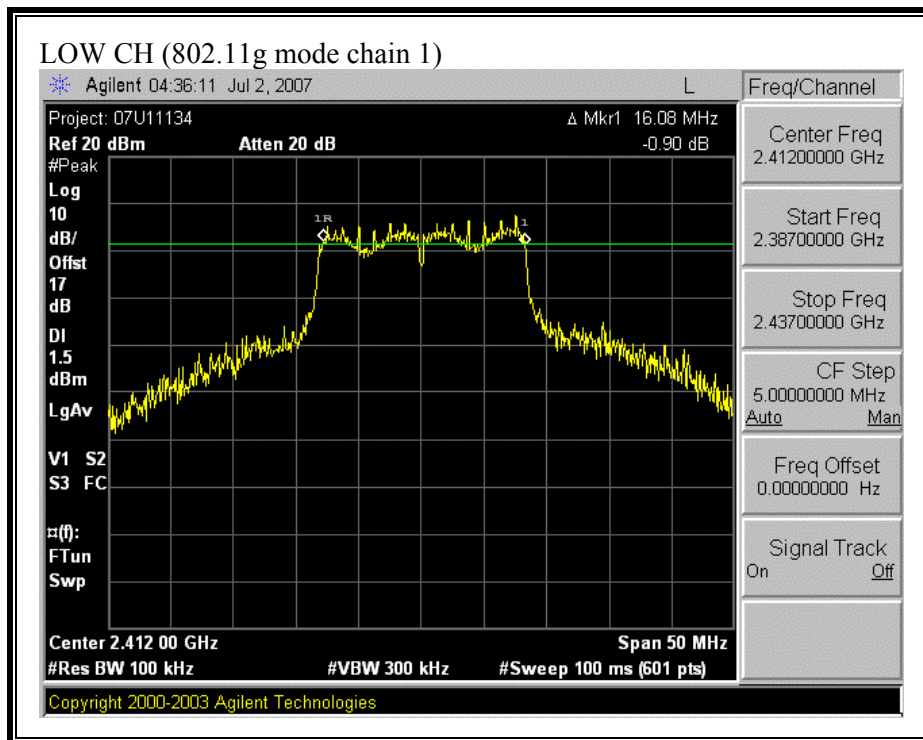
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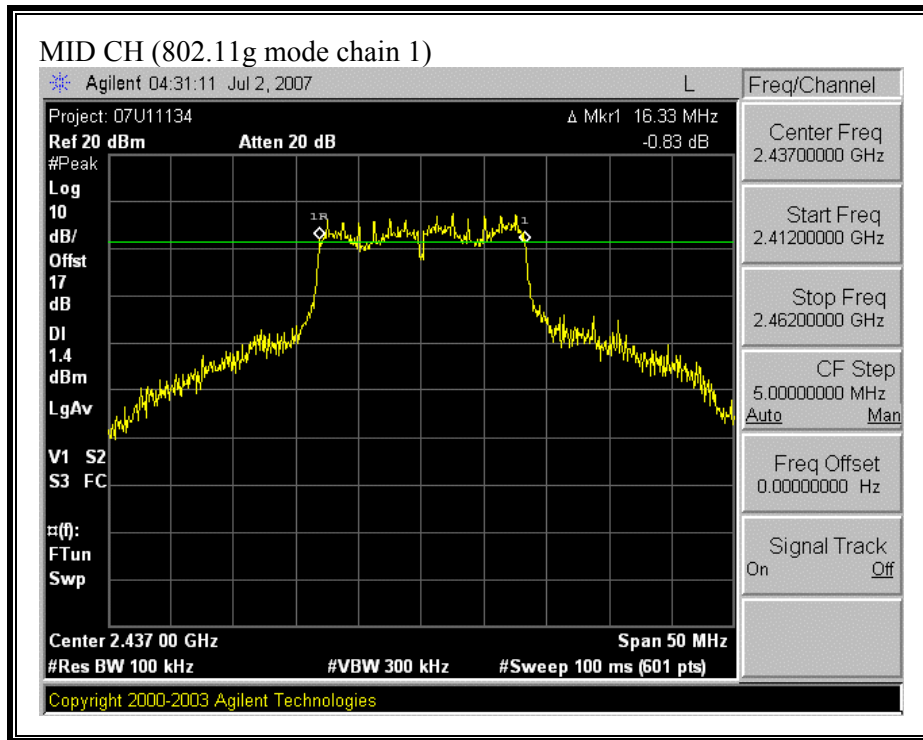


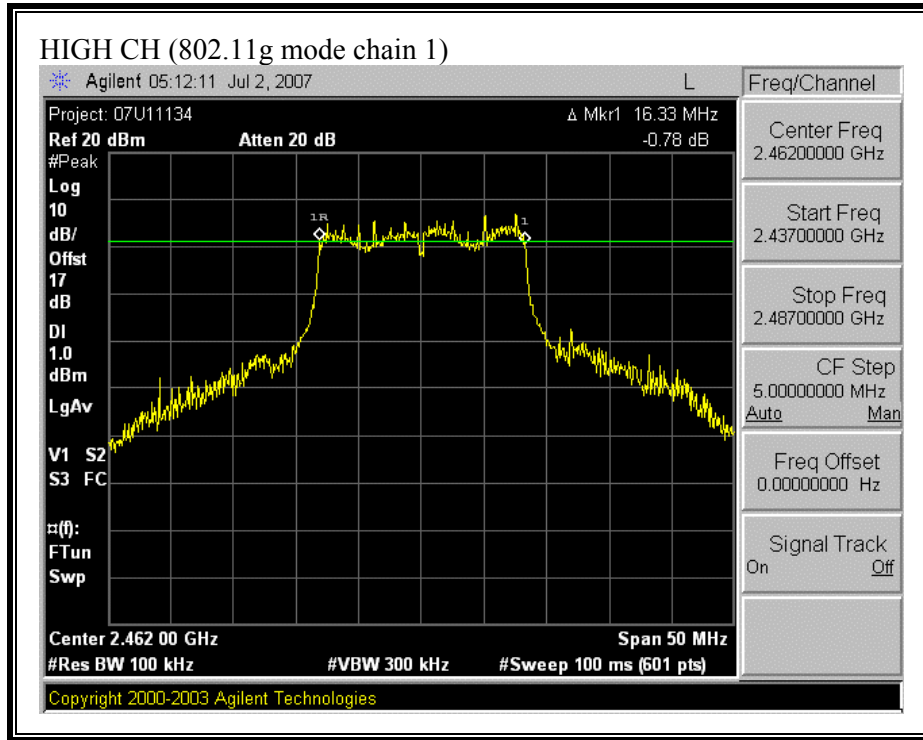


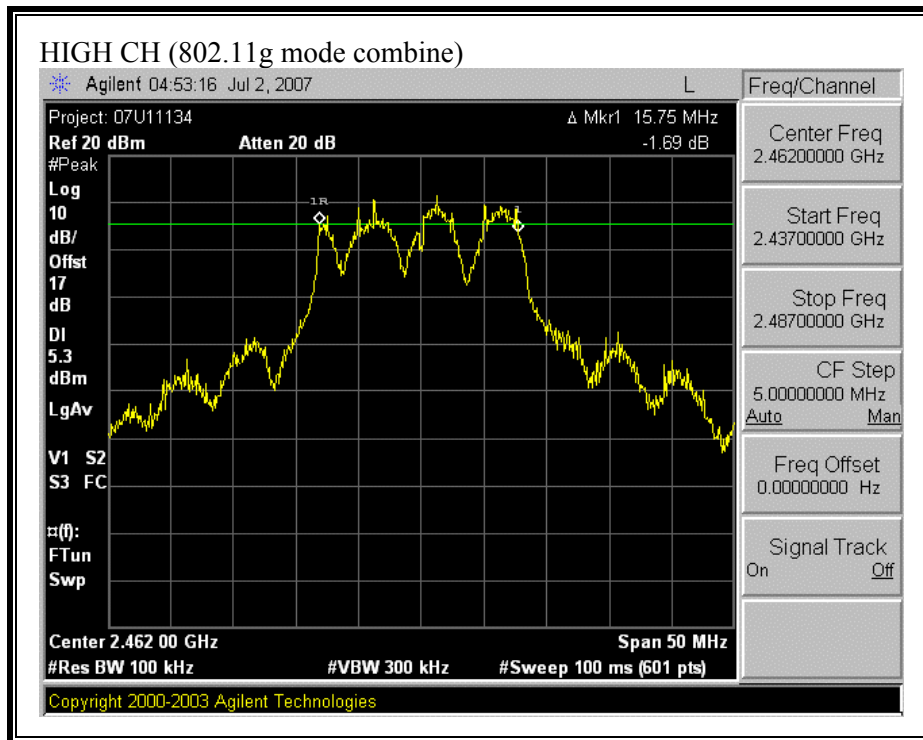


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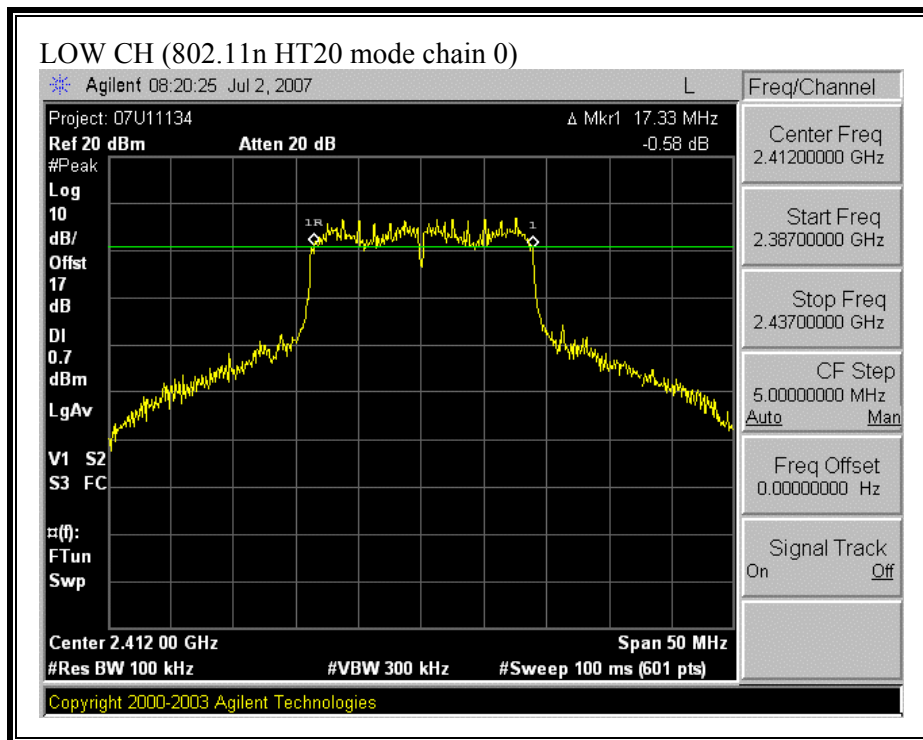


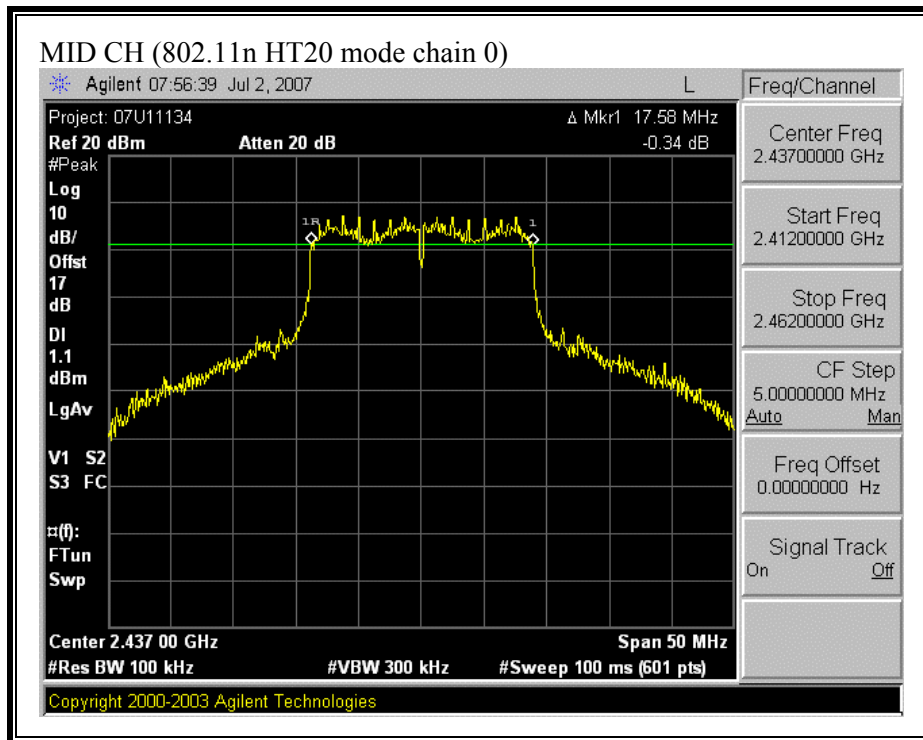


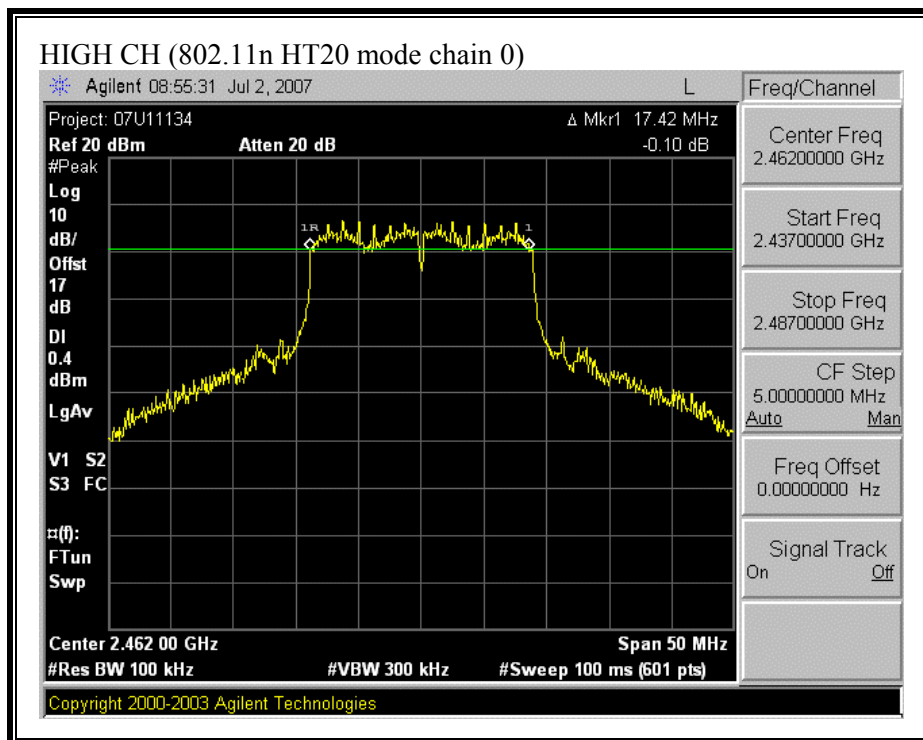




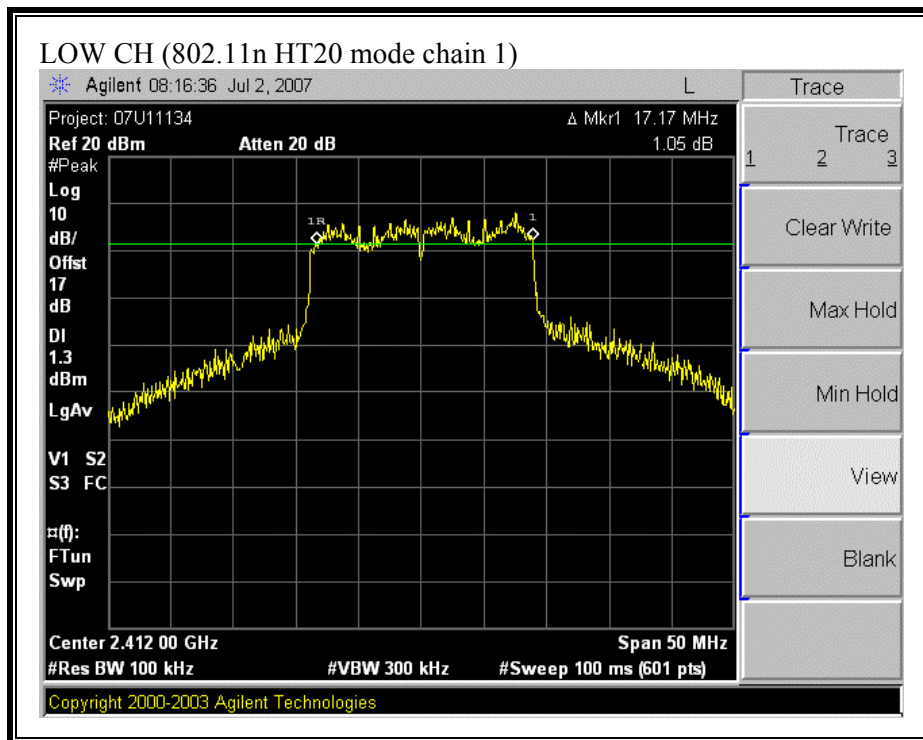
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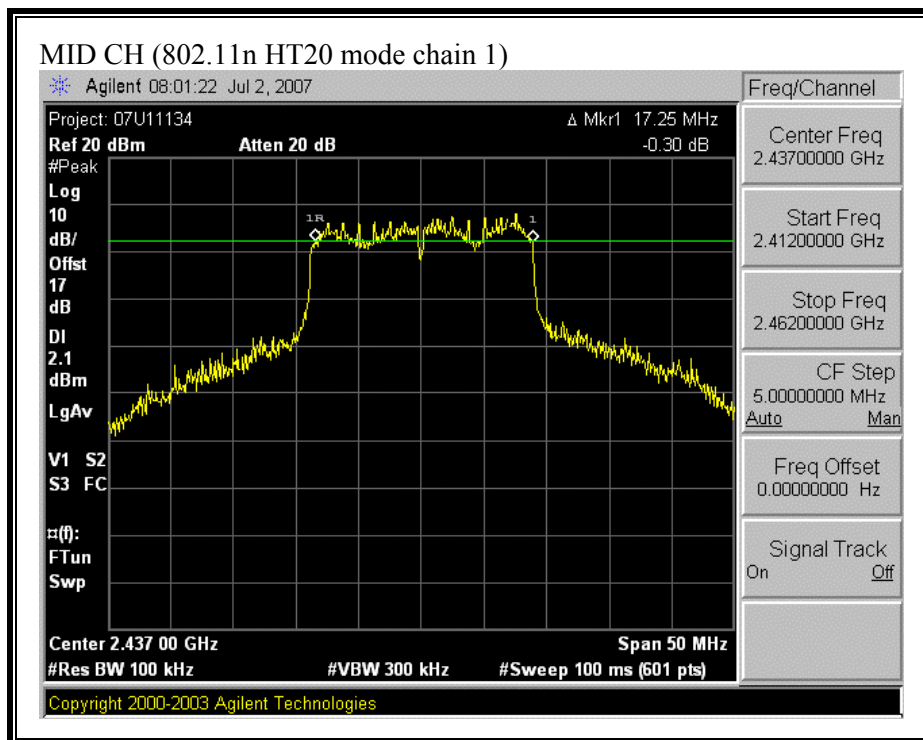


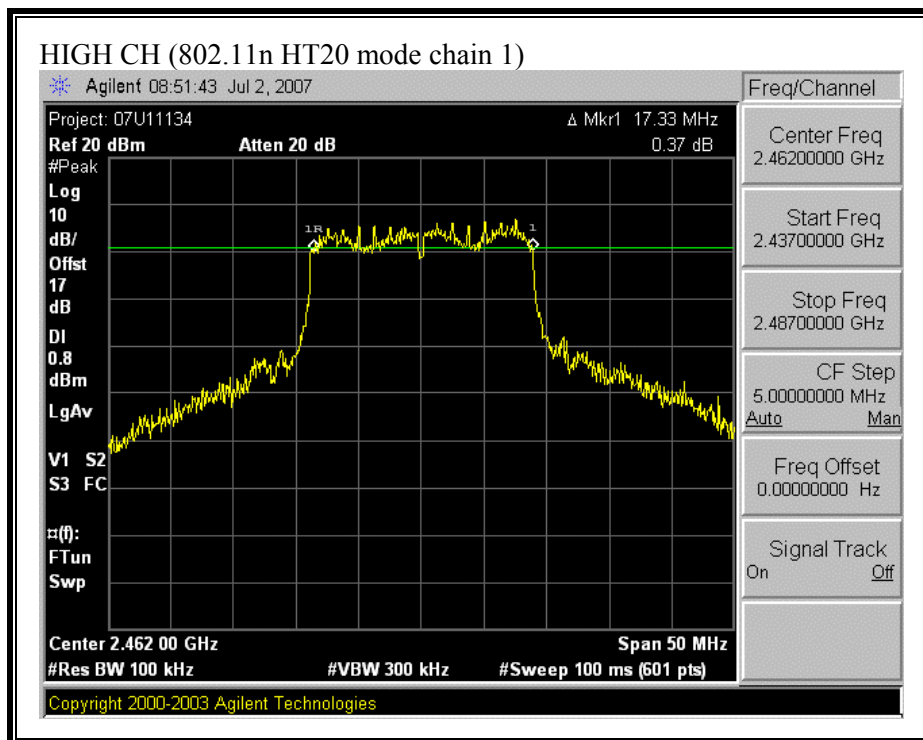




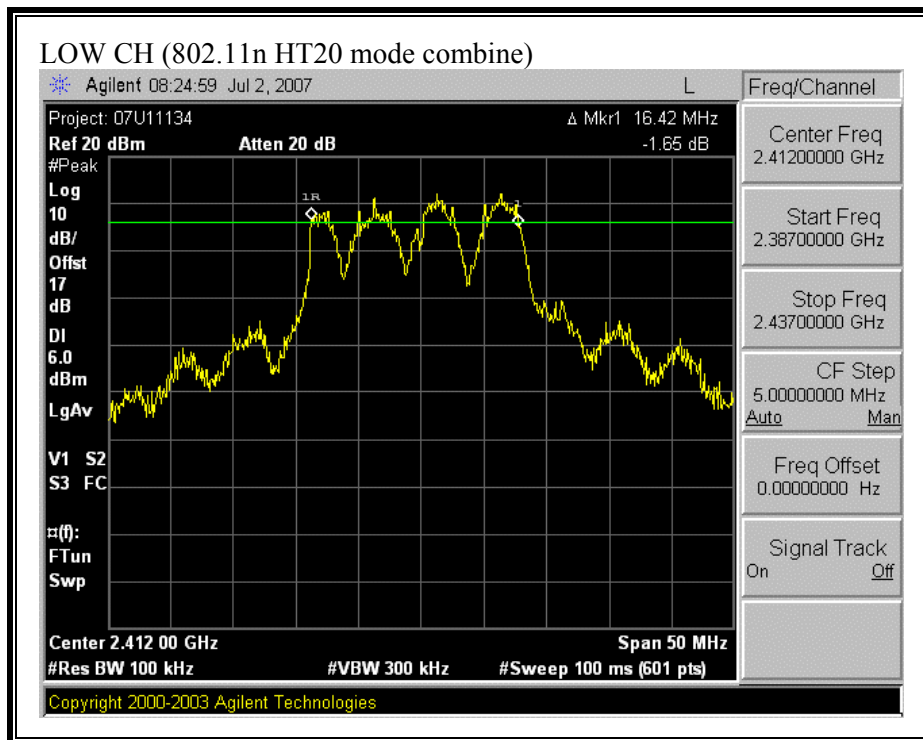
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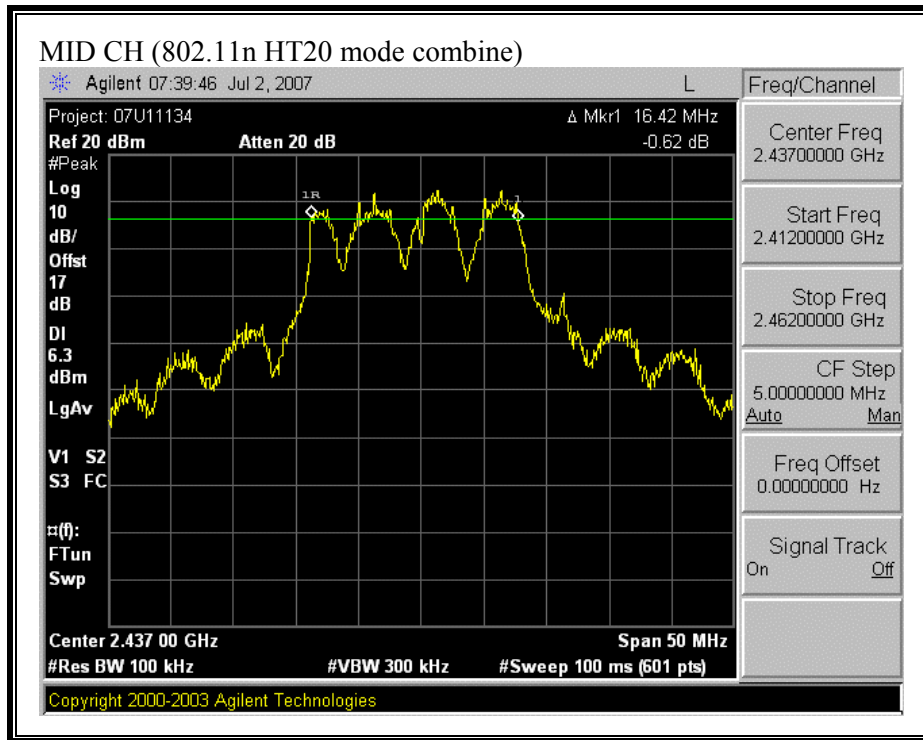


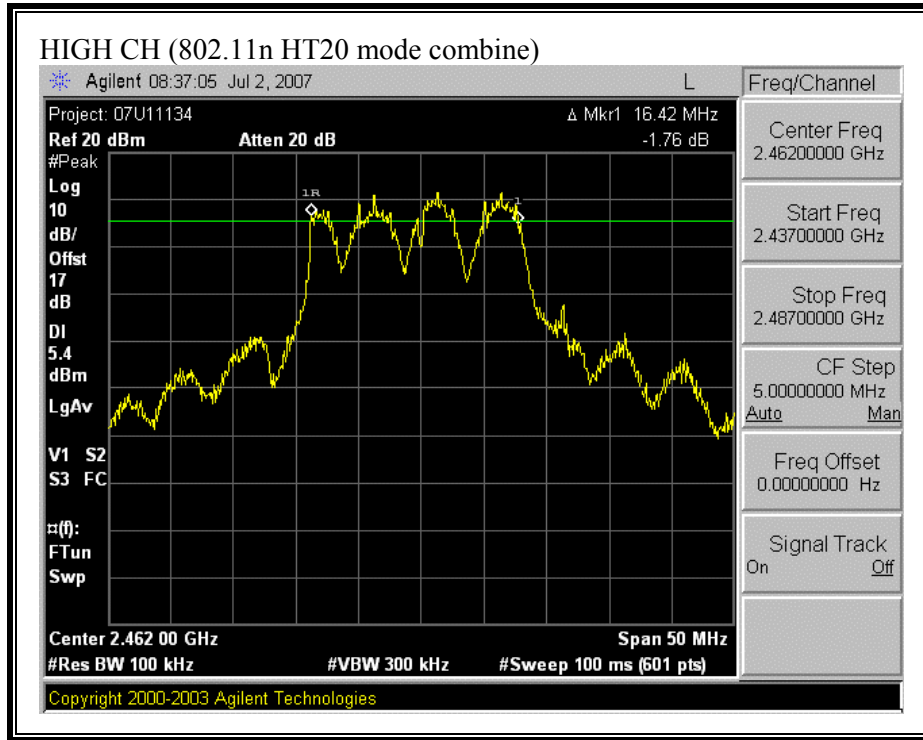




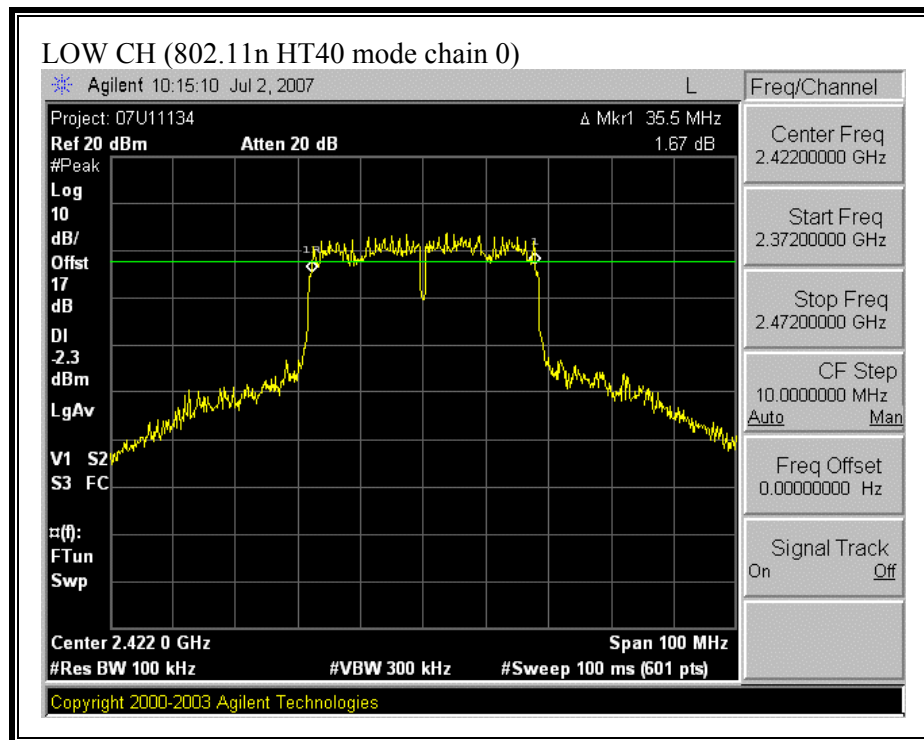
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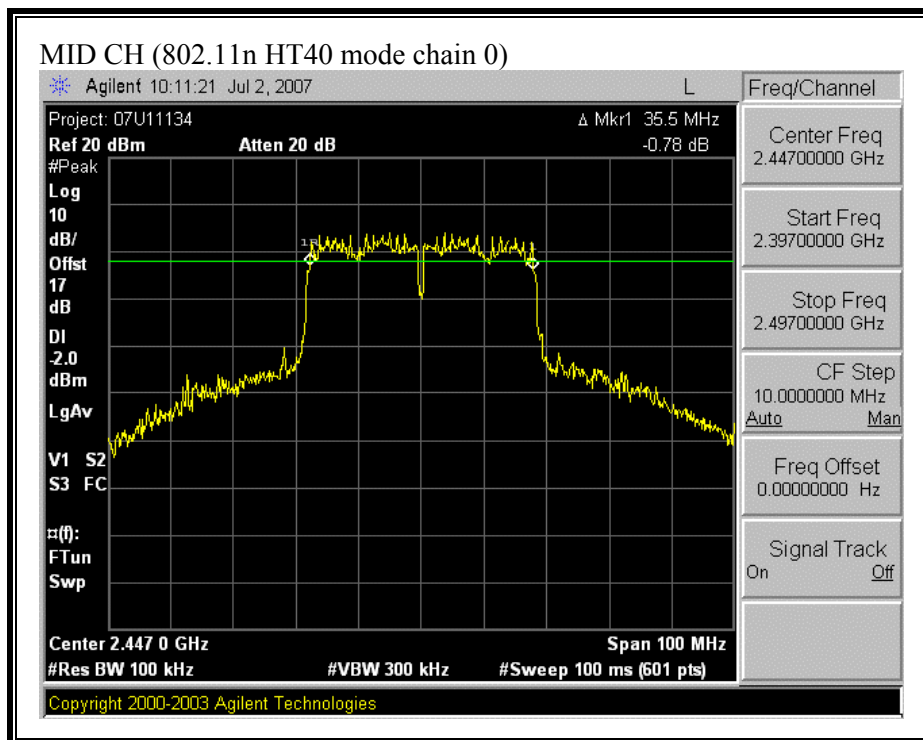


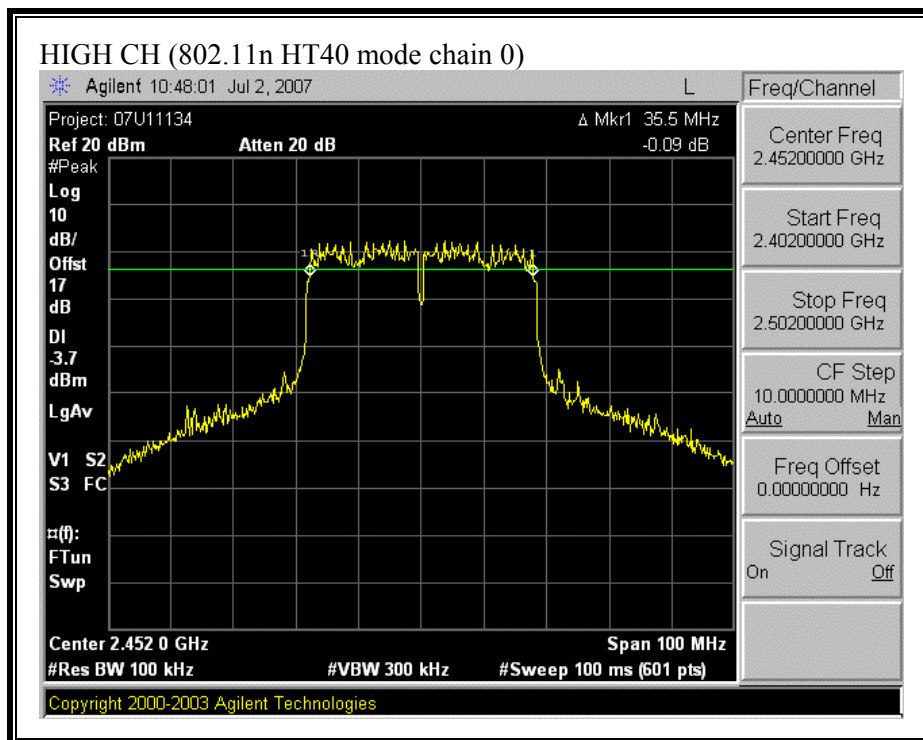




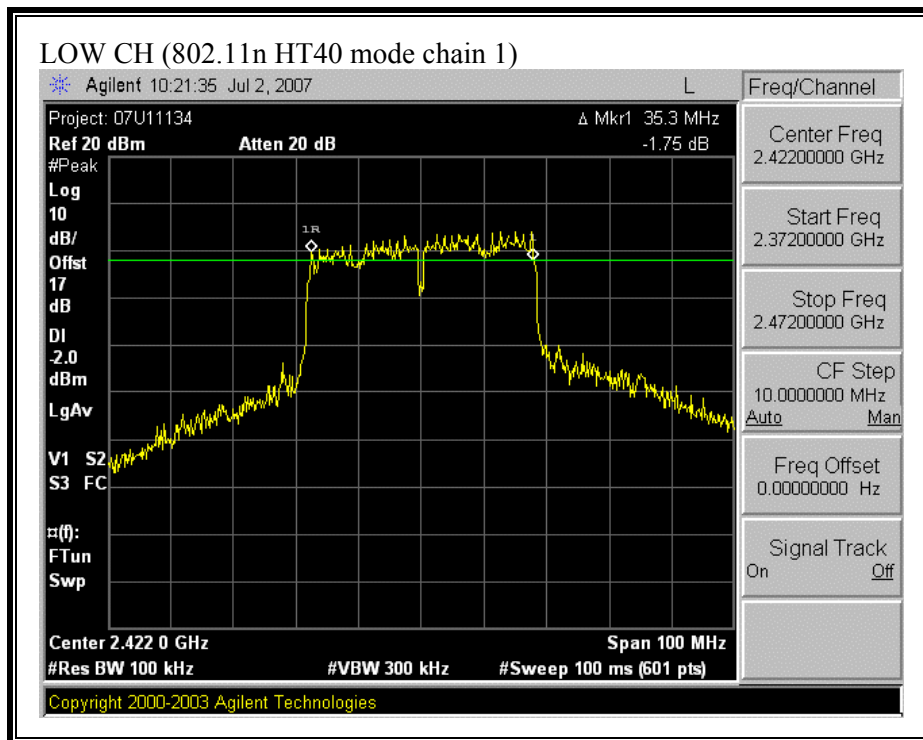
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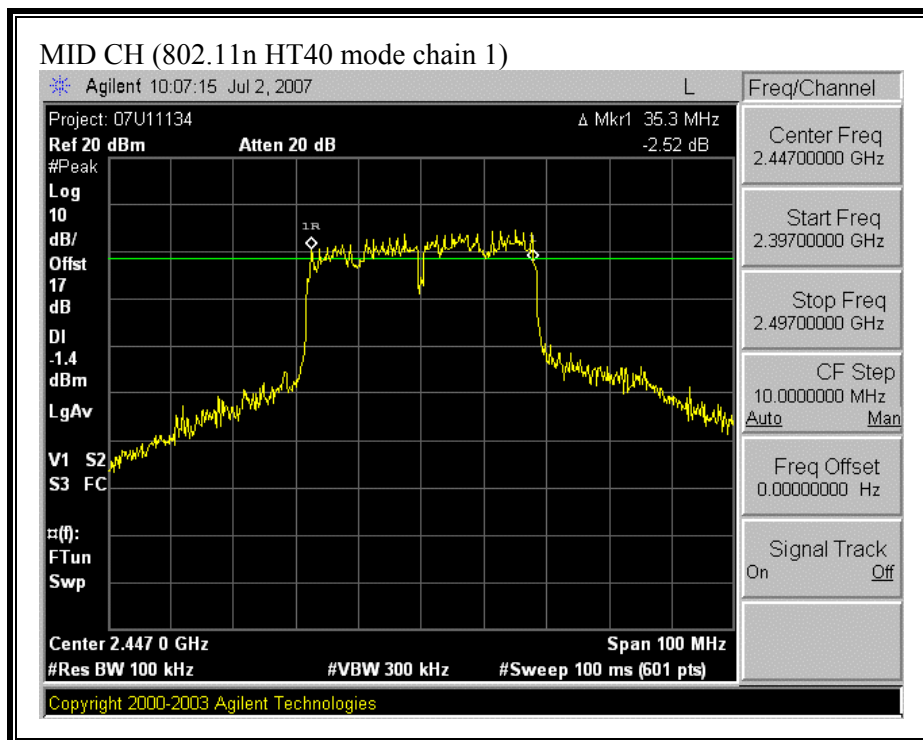


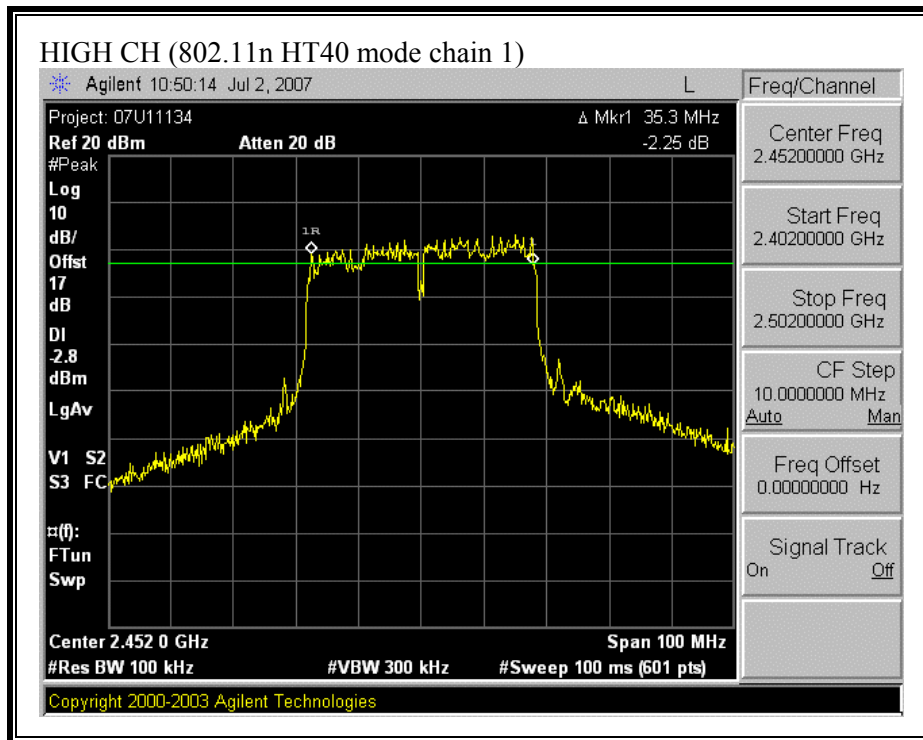




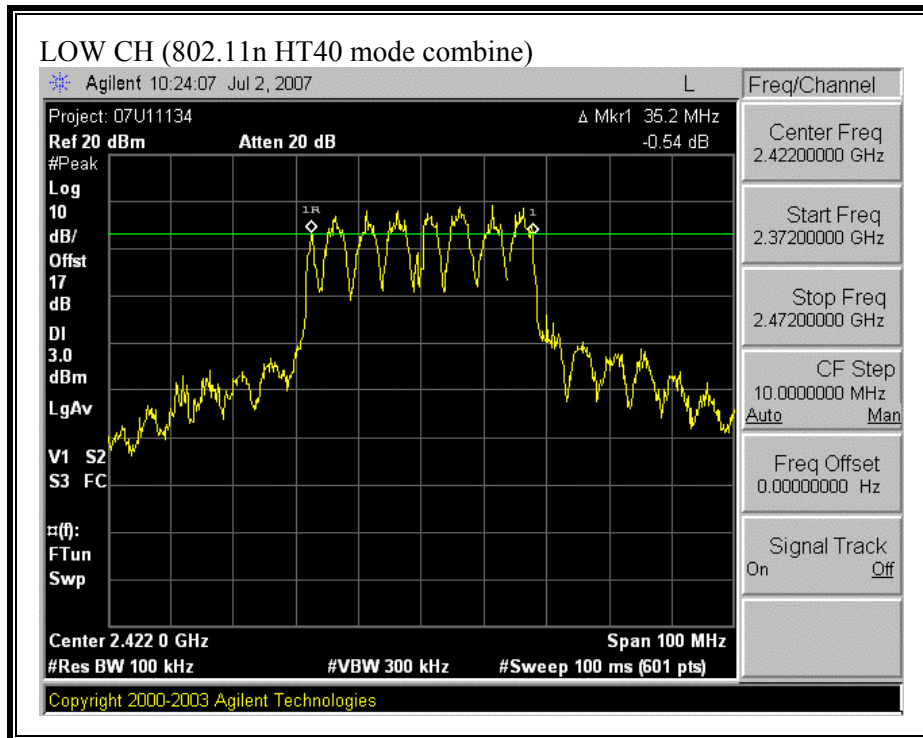
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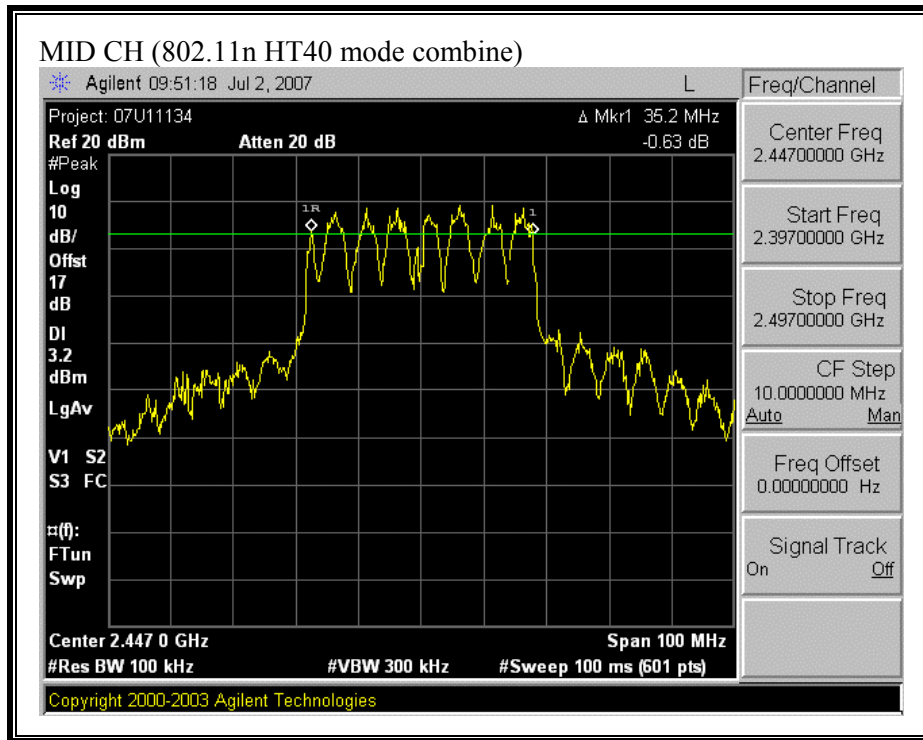


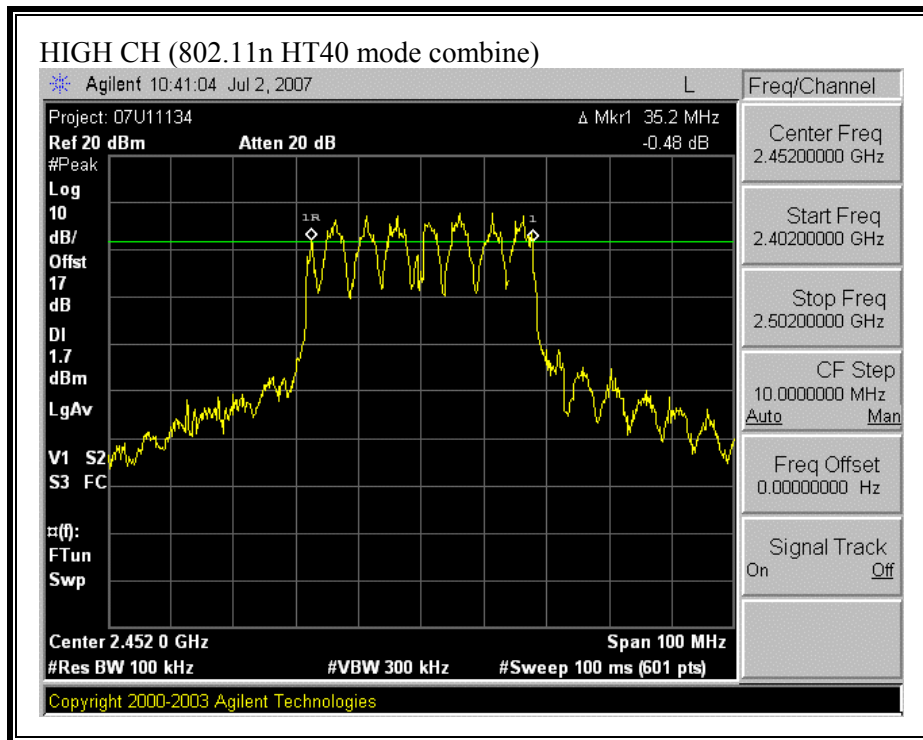




(802.11n HT40 MODE COMBINE)







7.1.2. 99% BANDWIDTH AND 26 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth and 26 dB bandwidth functions are utilized.

RESULTS

No non-compliance noted:

Mode Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
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802.11b Mode

Low	2412	16.102	15.858	19.074	18.541
Mid	2437	16.268	15.986	19.155	18.768
High	2462	16.039	15.907	18.811	18.729

802.11g Mode

Low	2412	16.639	16.689	22.986	32.399
Mid	2437	16.636	16.740	25.826	28.870
High	2462	16.570	16.564	22.679	23.676

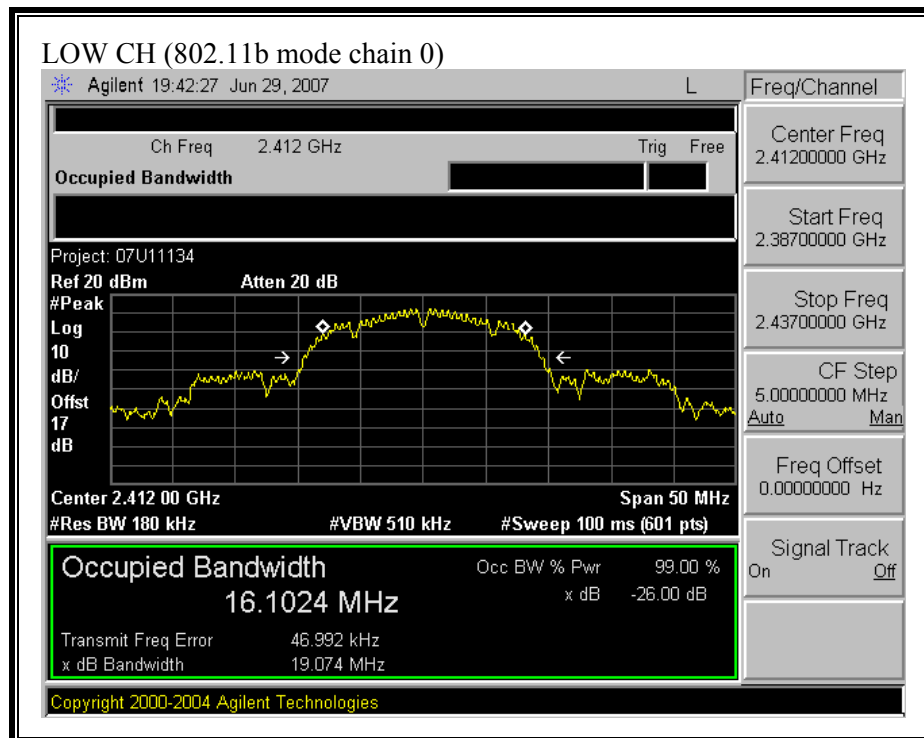
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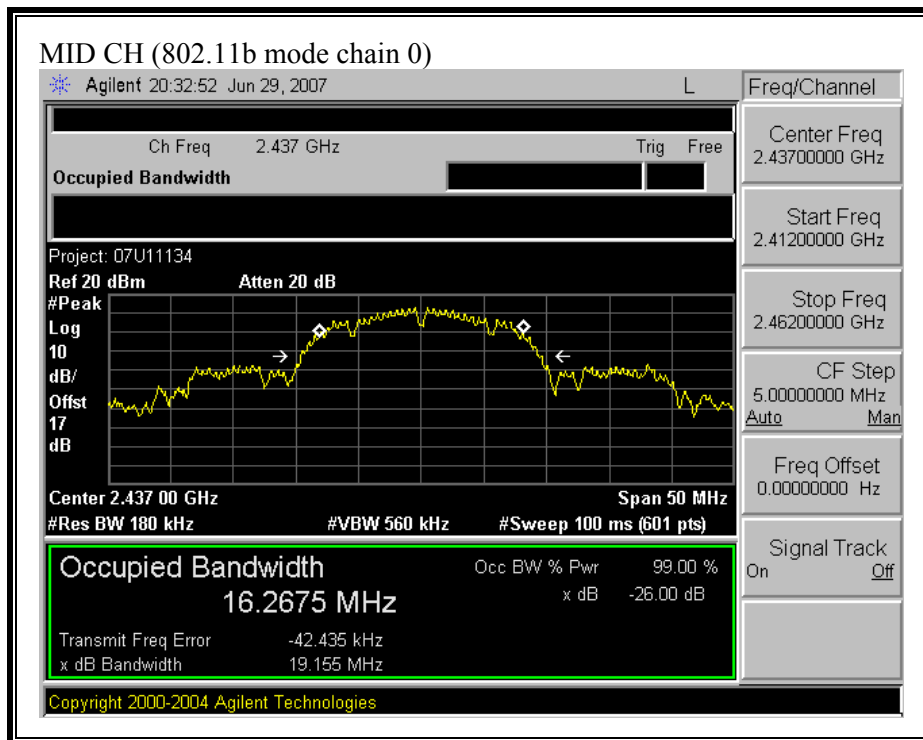
Low	2412	17.580	17.662	24.499	28.106
Mid	2437	17.609	17.648	25.602	26.902
High	2462	17.585	17.552	23.975	20.995

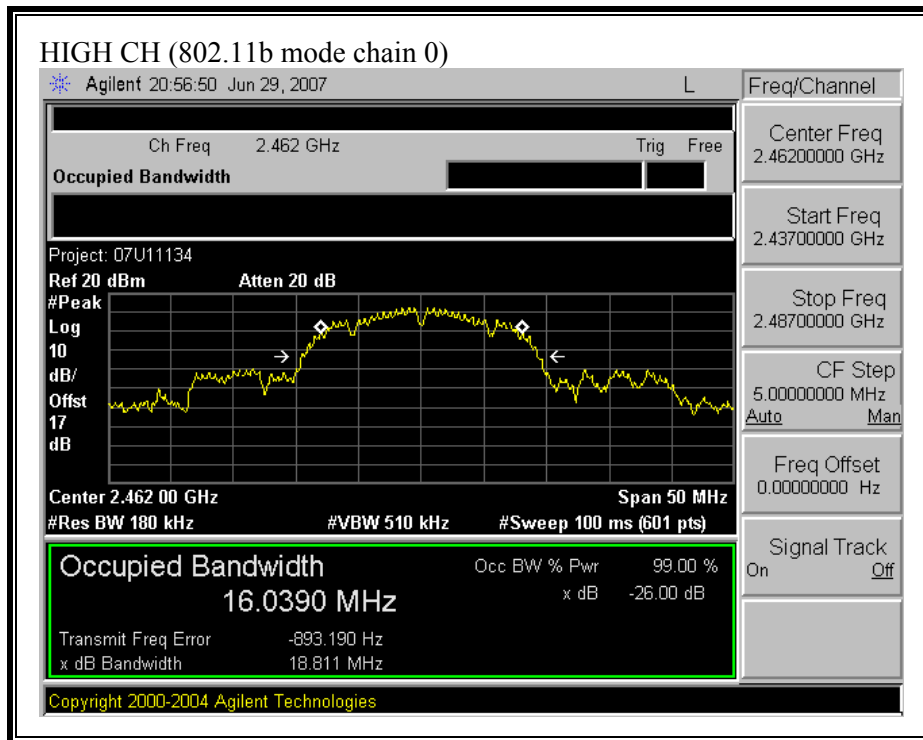
802.11n HT40 Mode

Low	2422	35.791	35.676	43.297	47.967
Mid	2447	35.895	35.782	51.822	45.862
High	2452	35.630	35.706	39.830	41.224

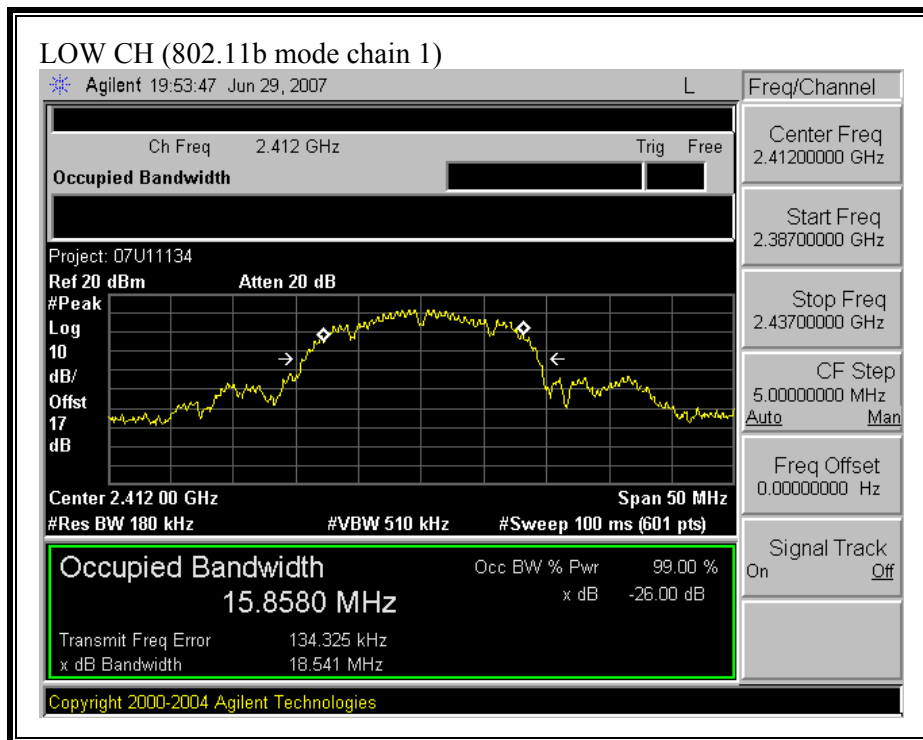
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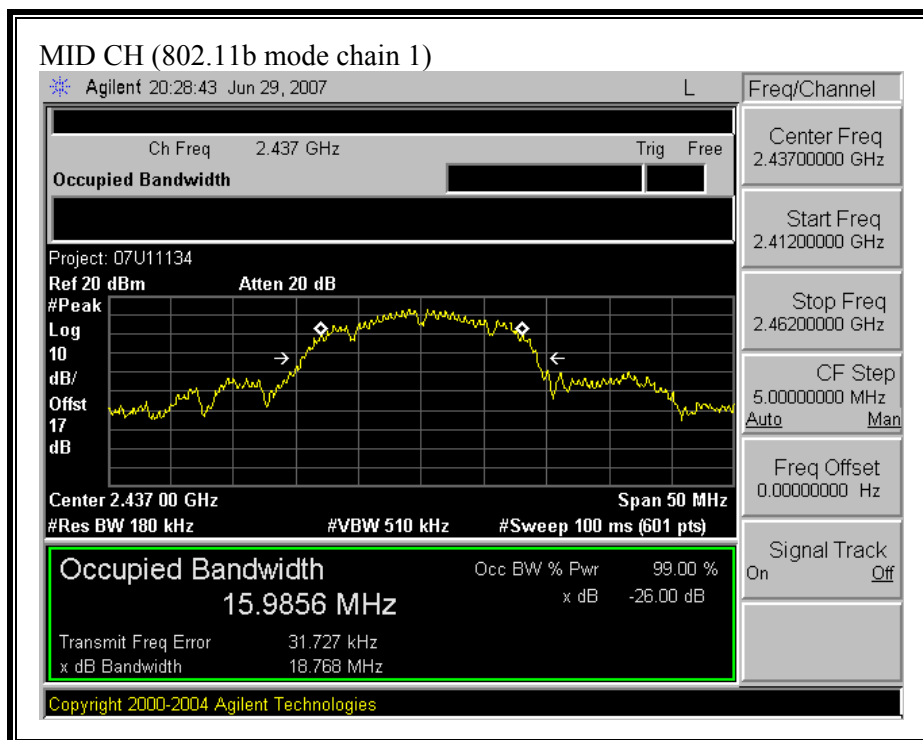


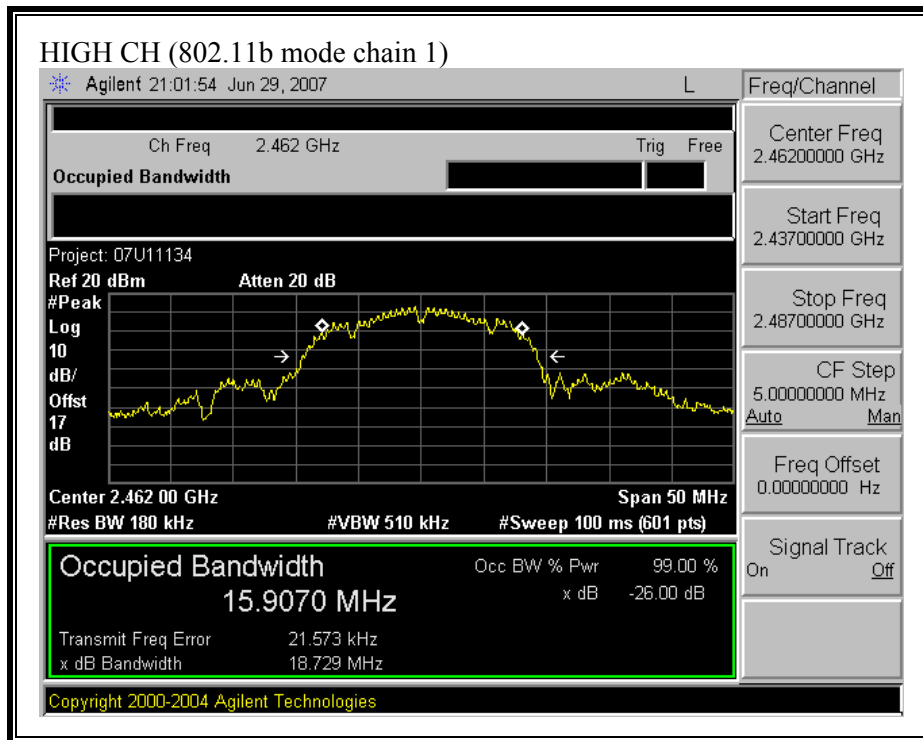




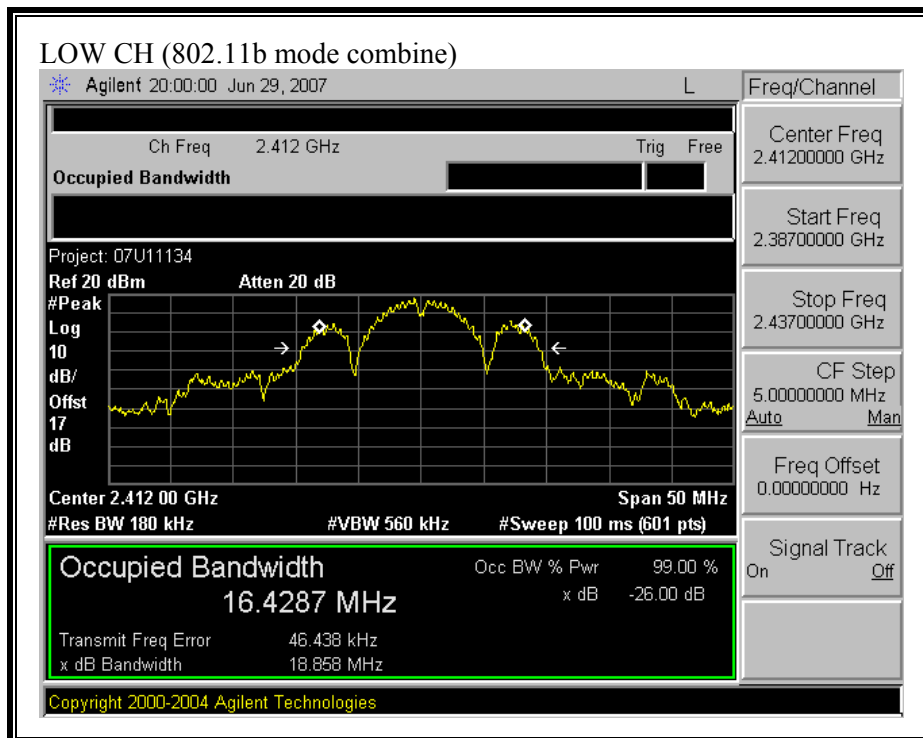
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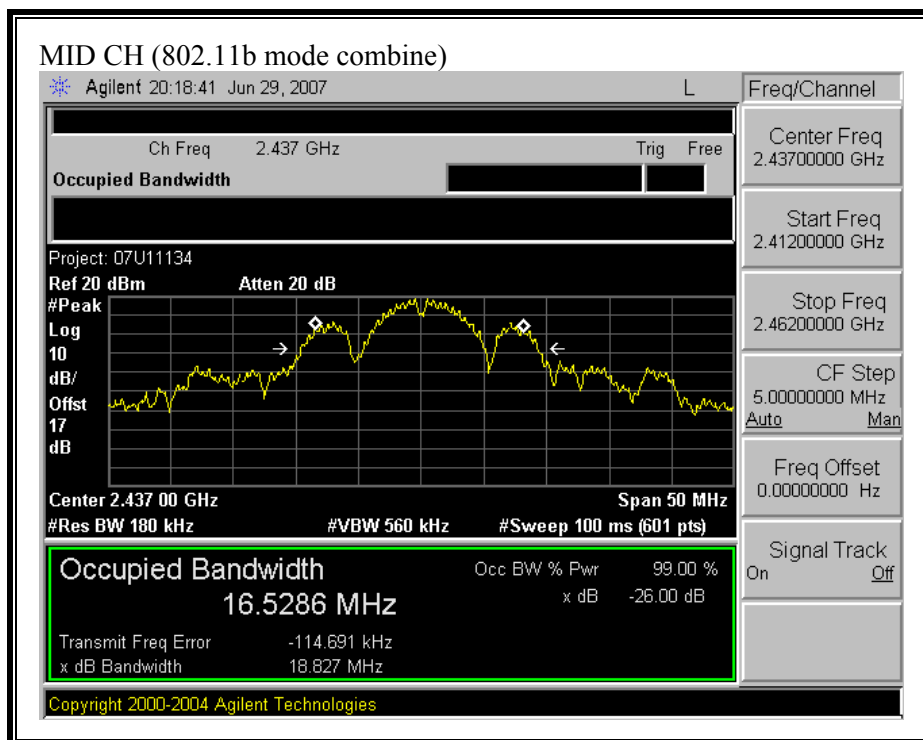


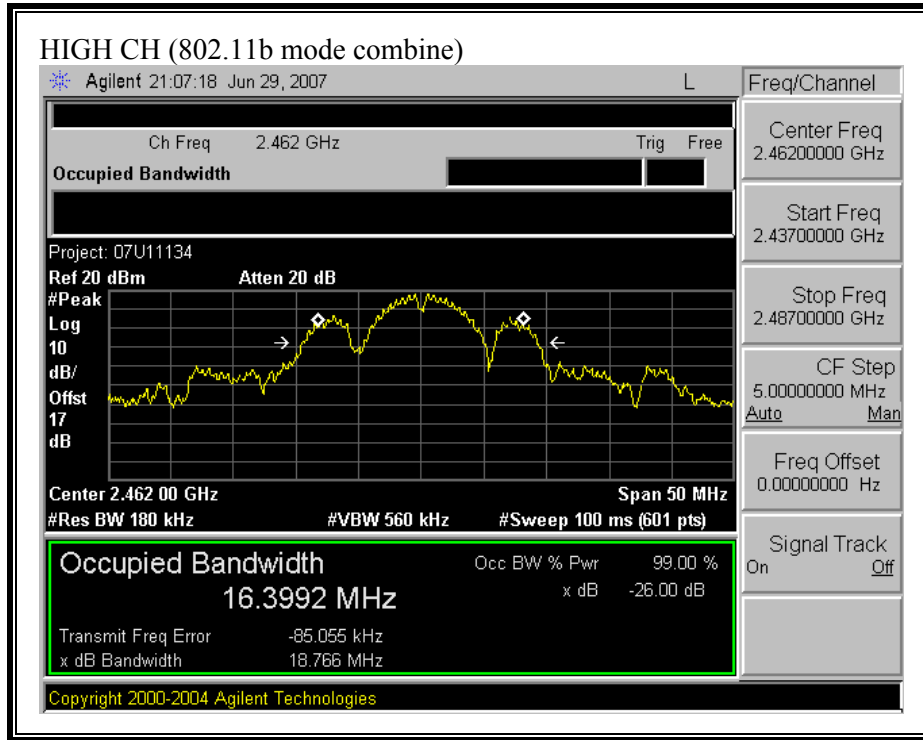




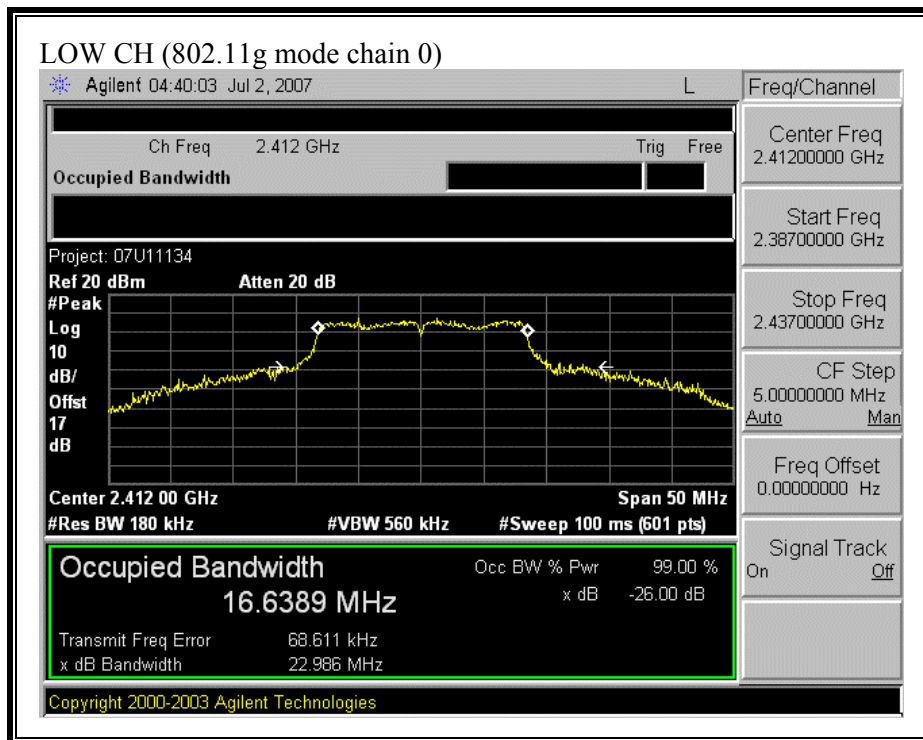
(802.11b MODE COMBINE)

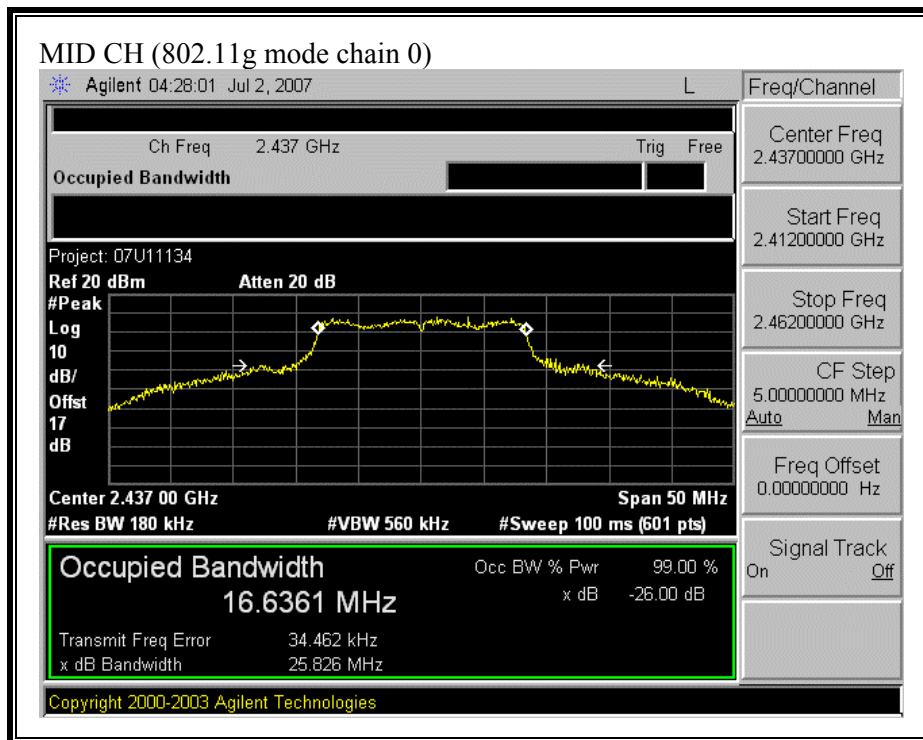


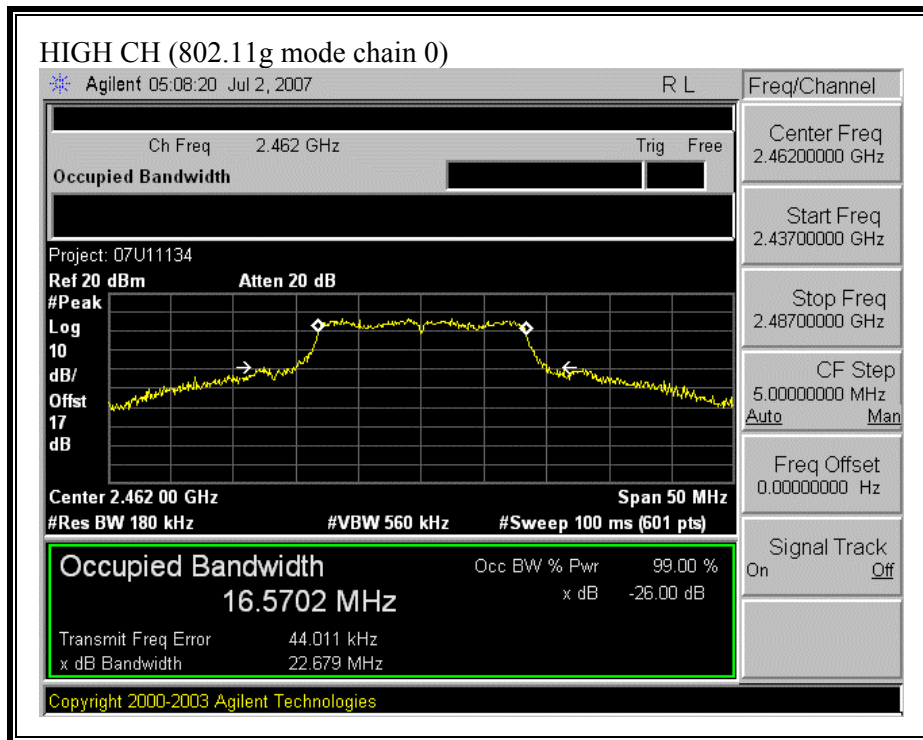




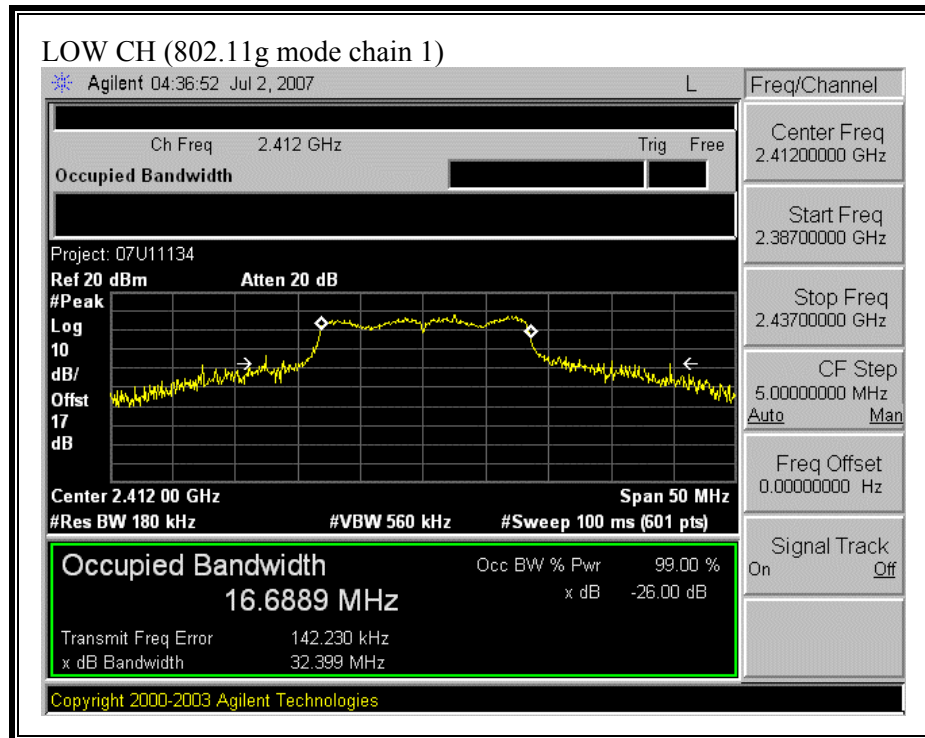
(802.11g MODE CHAIN 0)

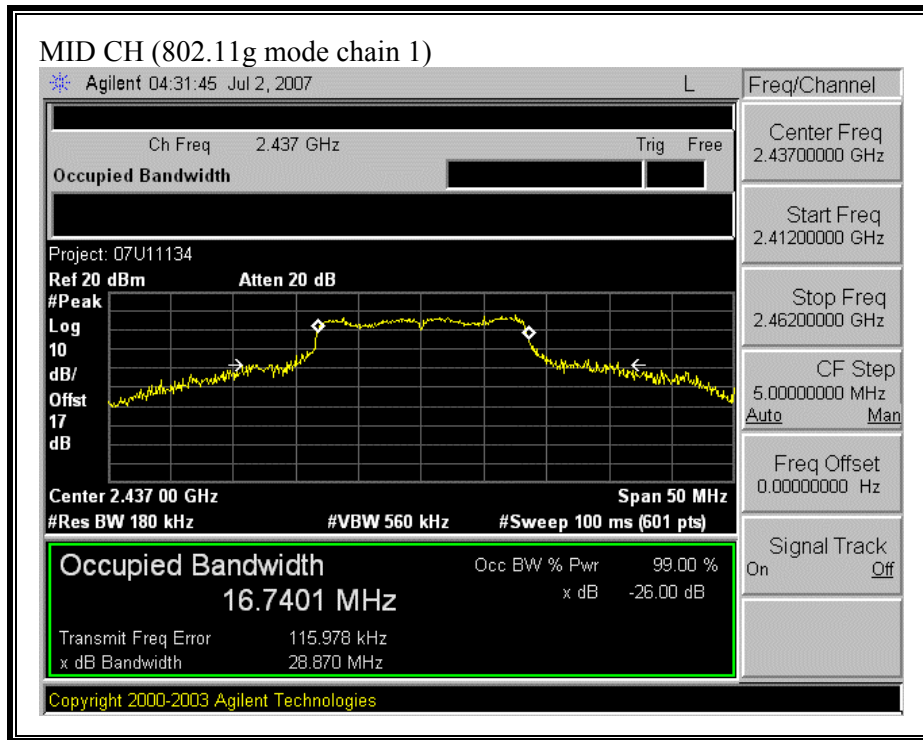


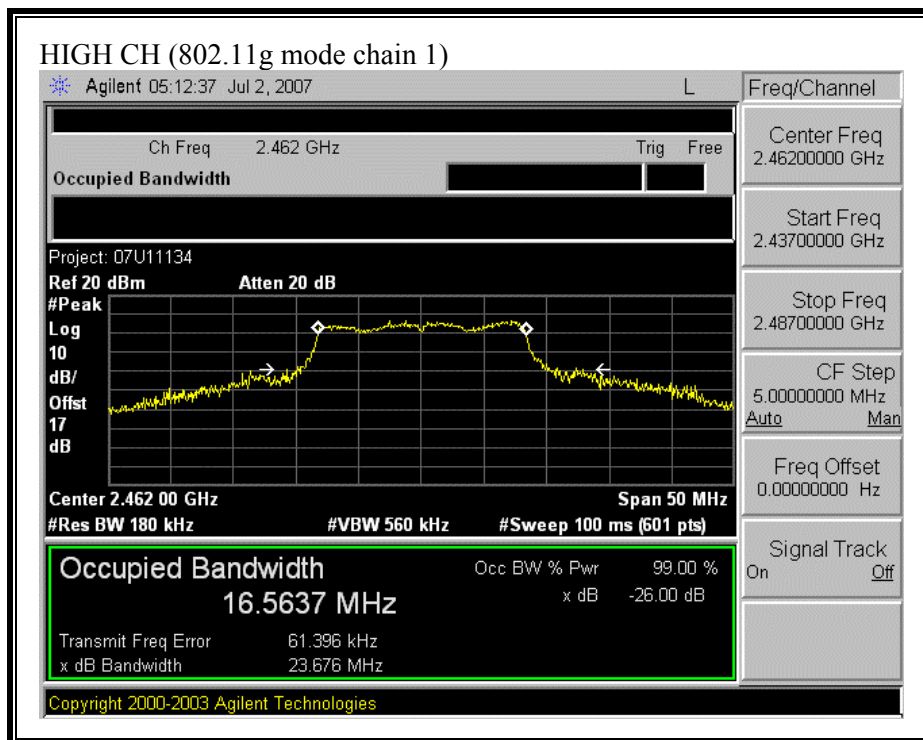




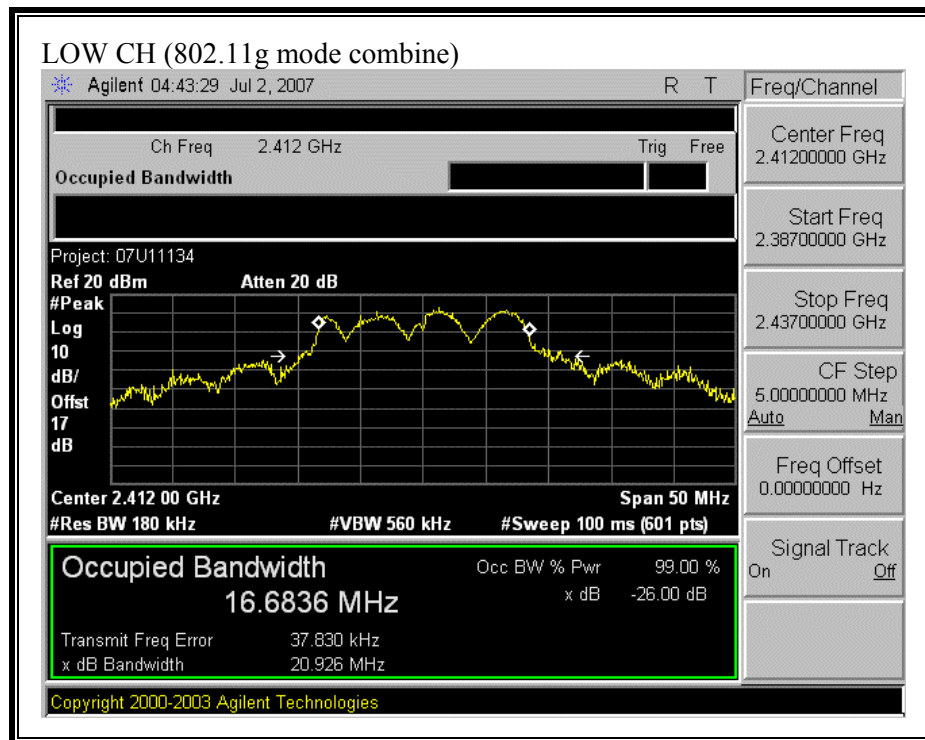
(802.11g MODE CHAIN 1)

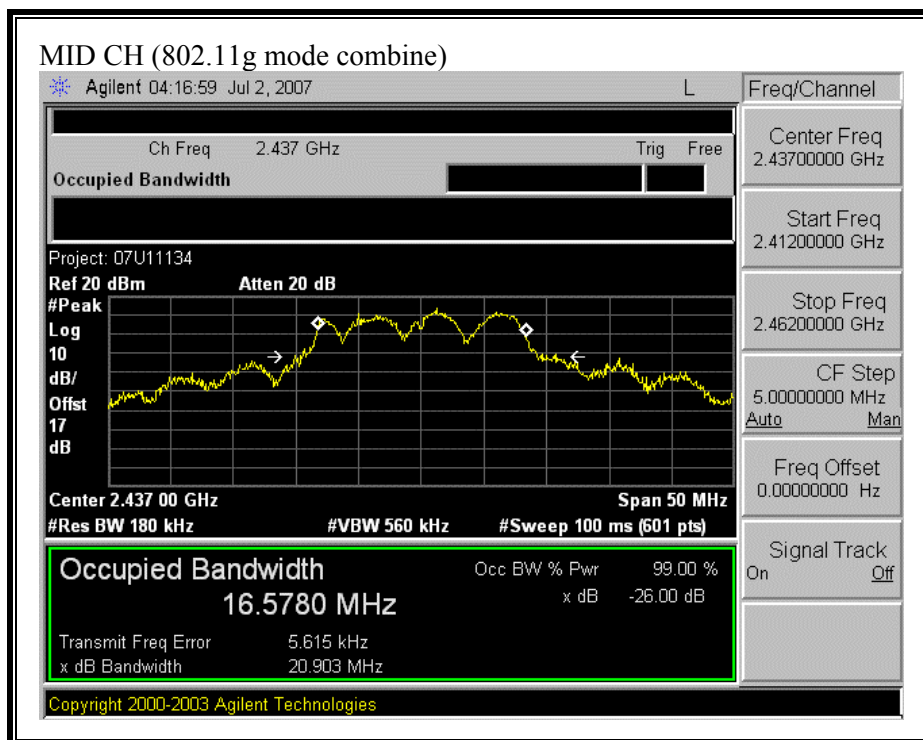


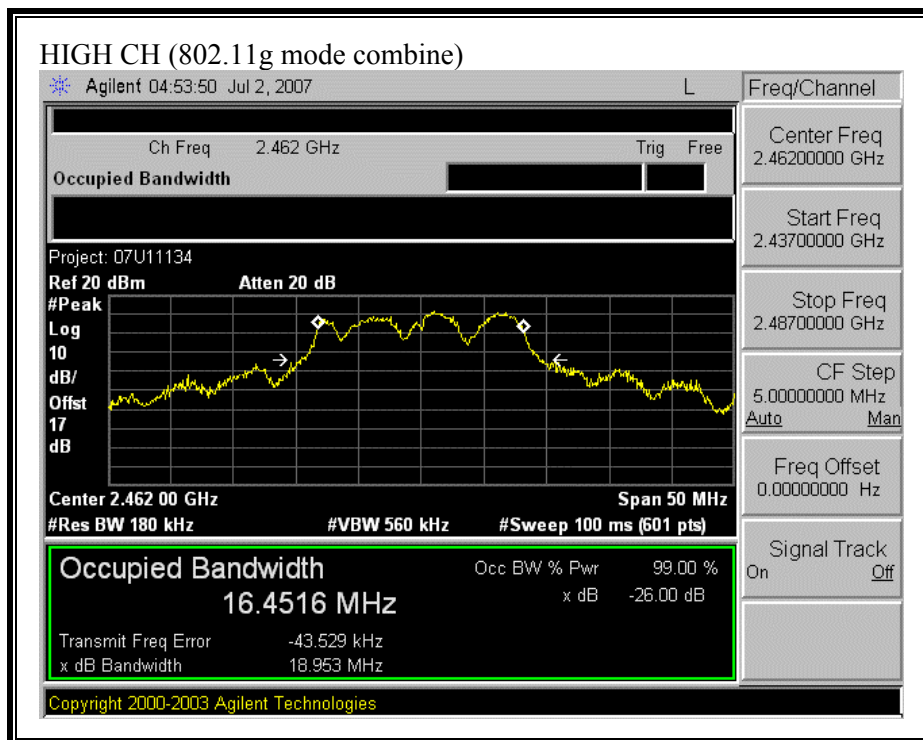




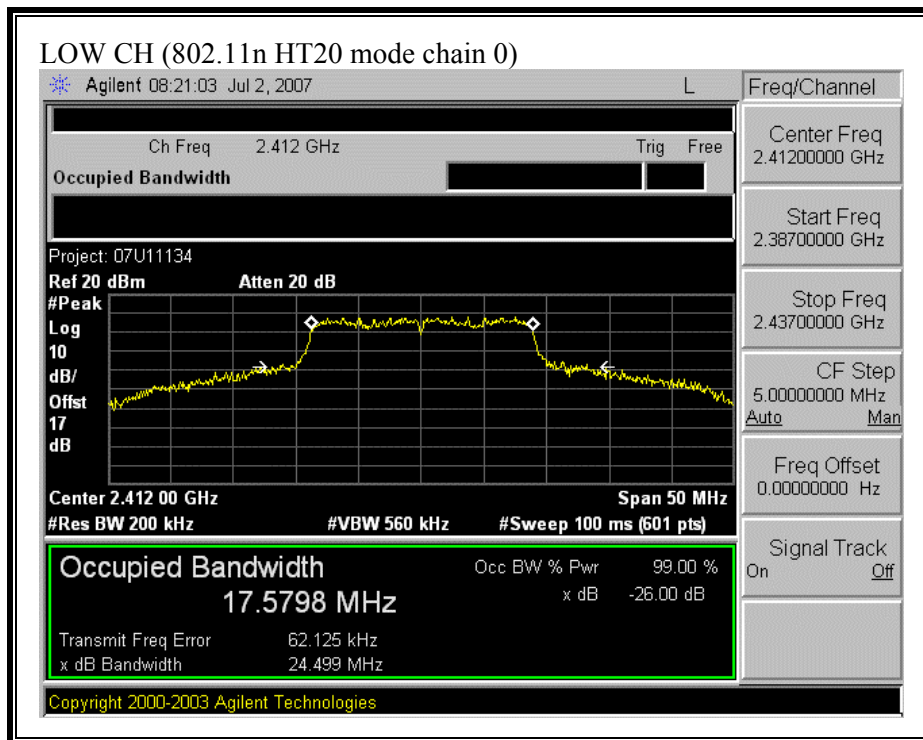
(802.11g MODE COMBINE)

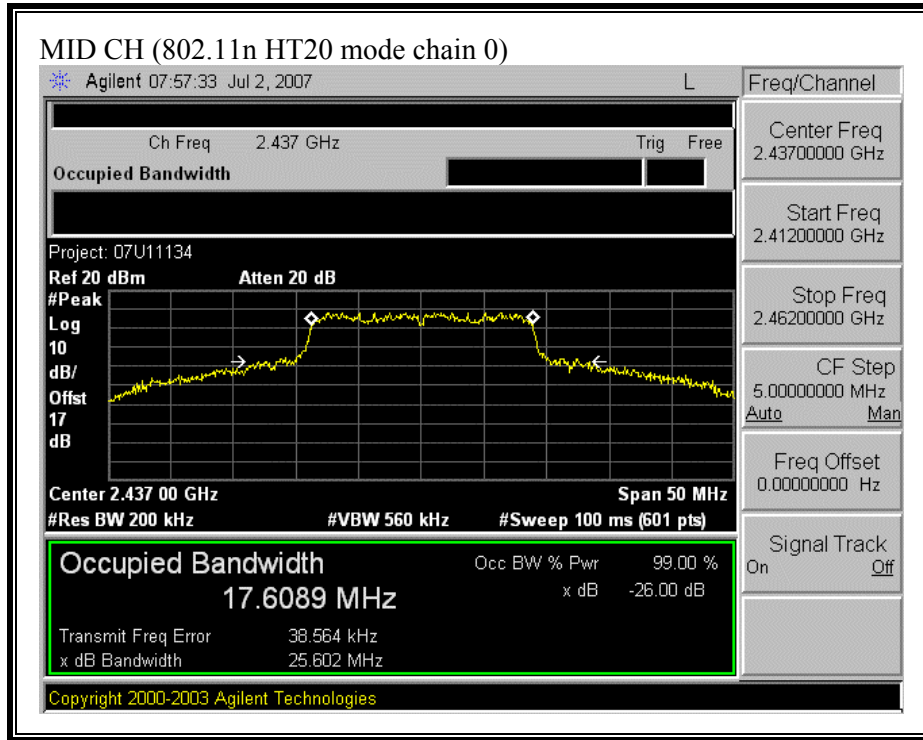


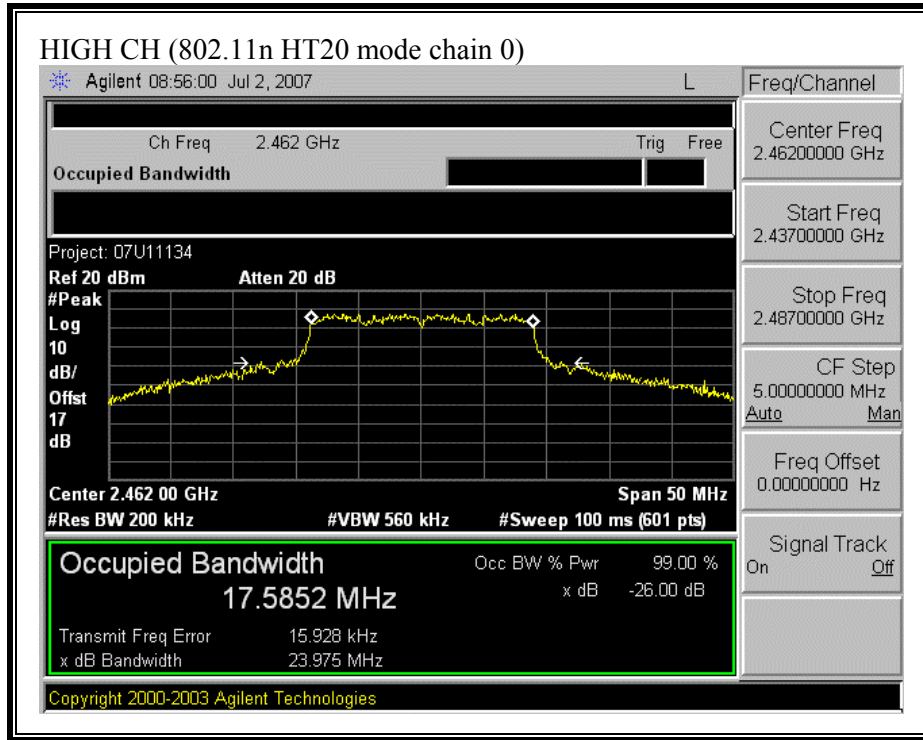




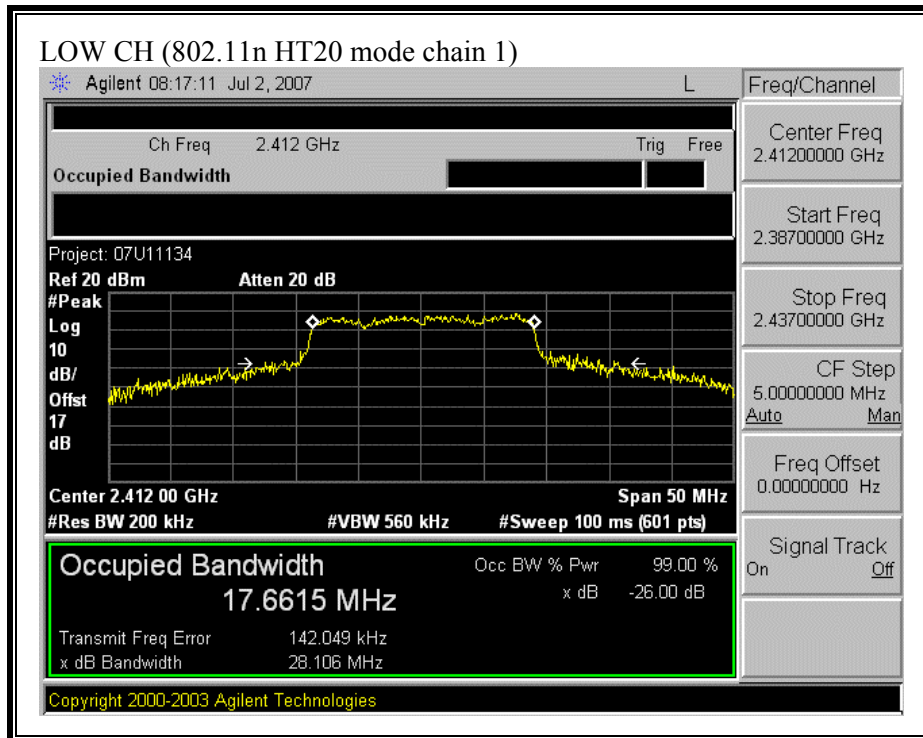
(802.11n HT20 MODE CHAIN 0)

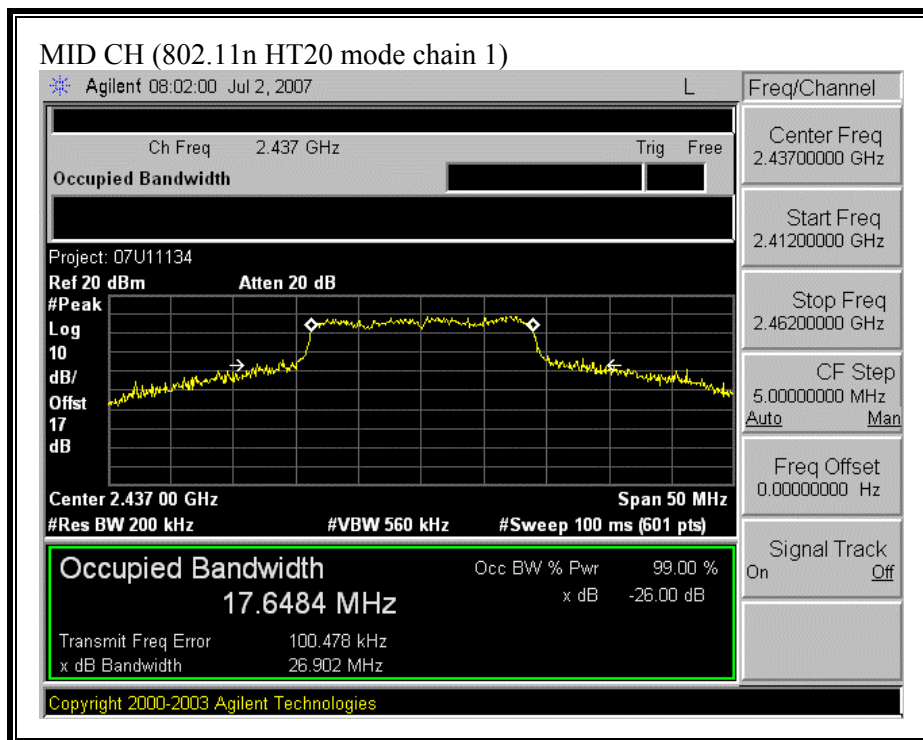


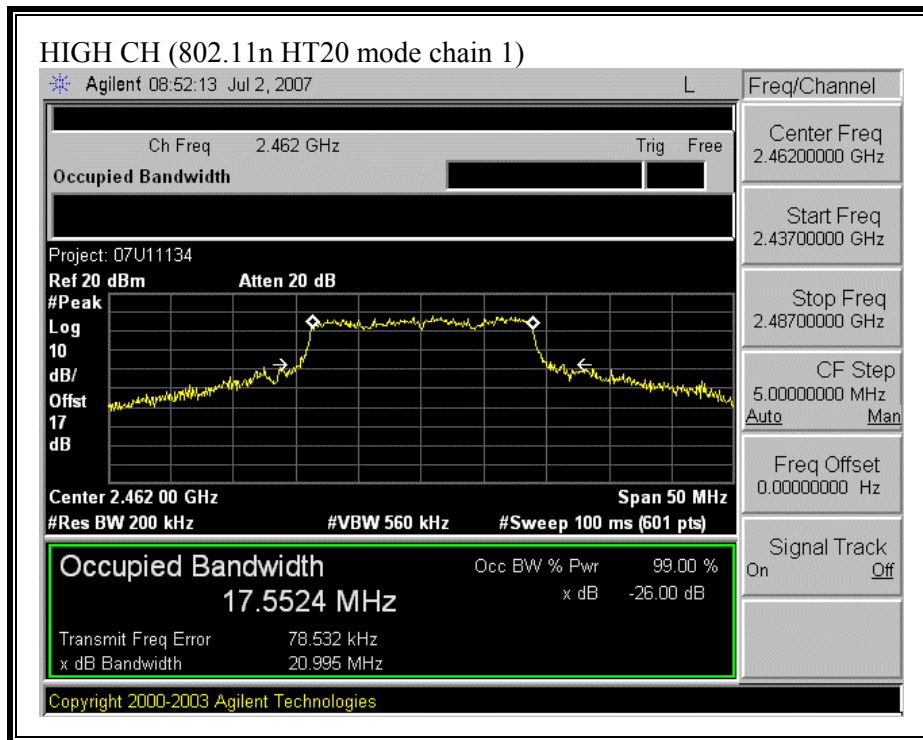




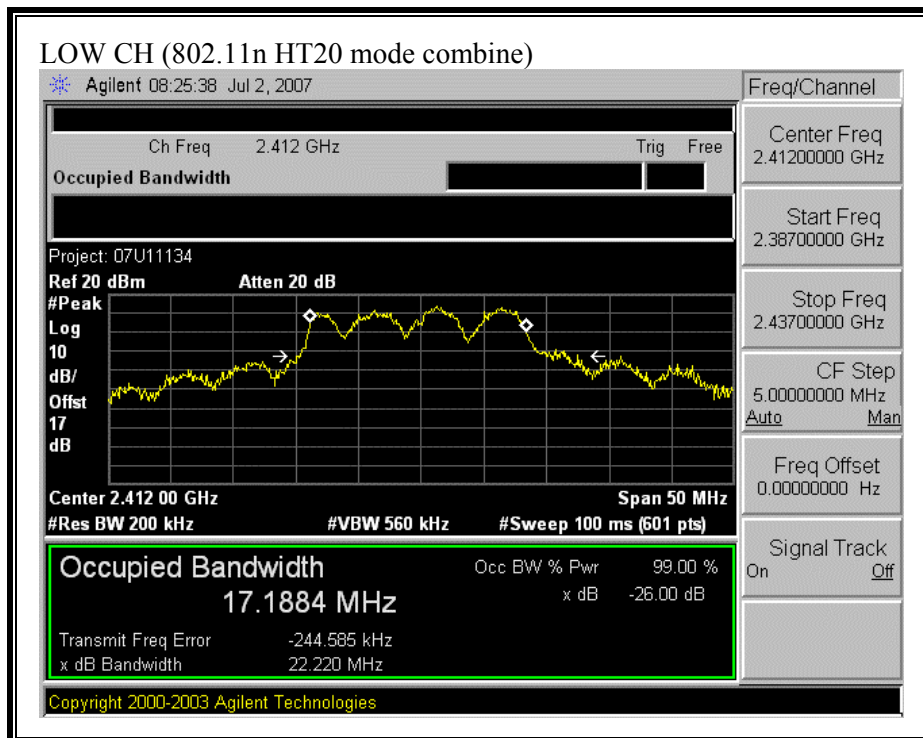
(802.11n HT20 MODE CHAIN 1)

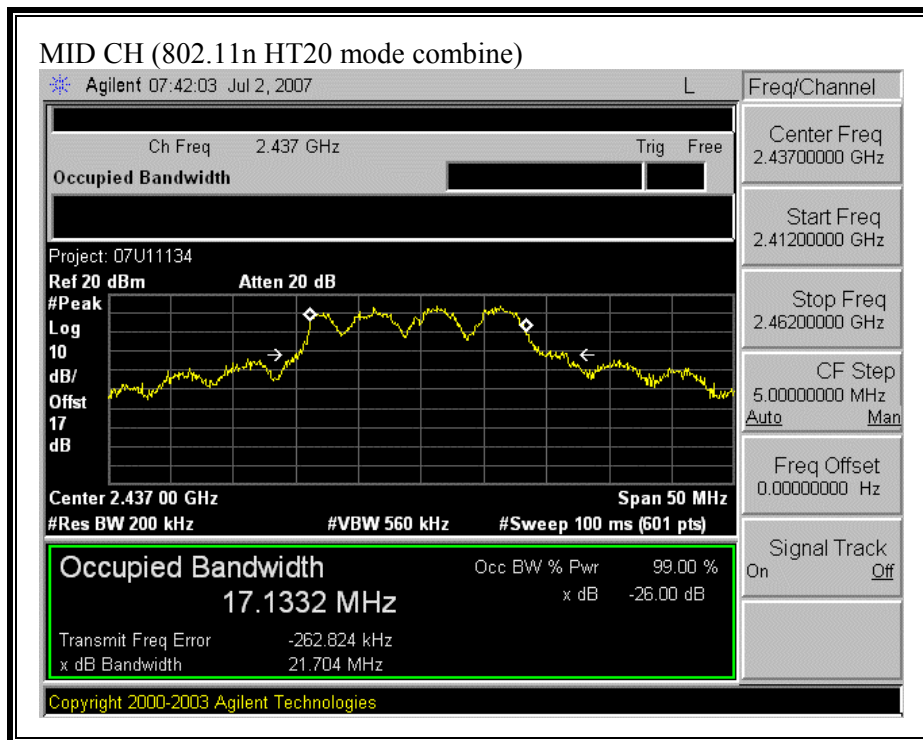


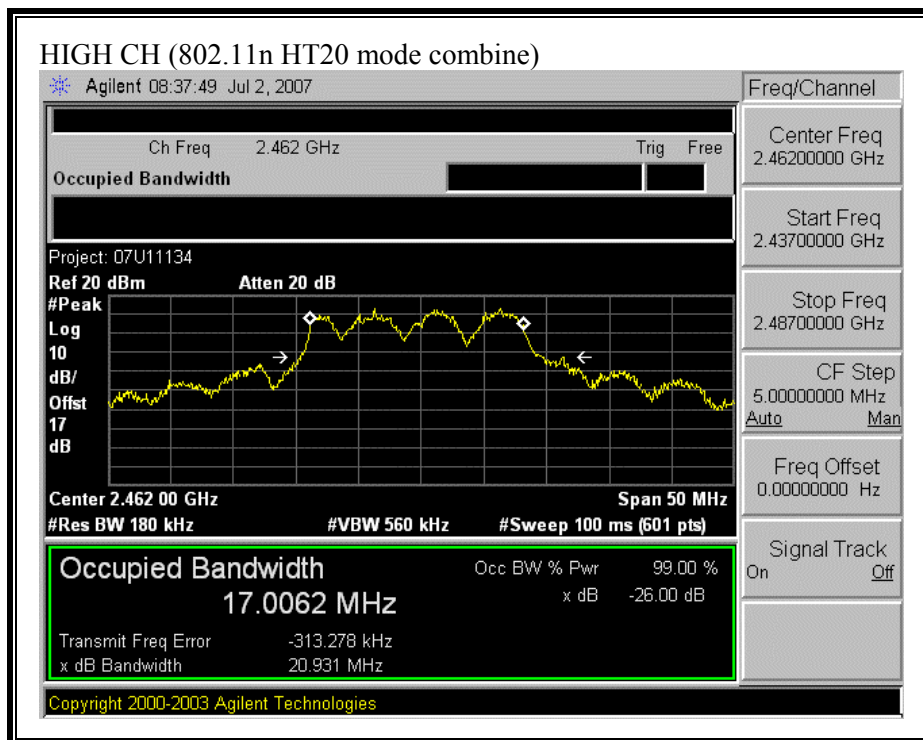




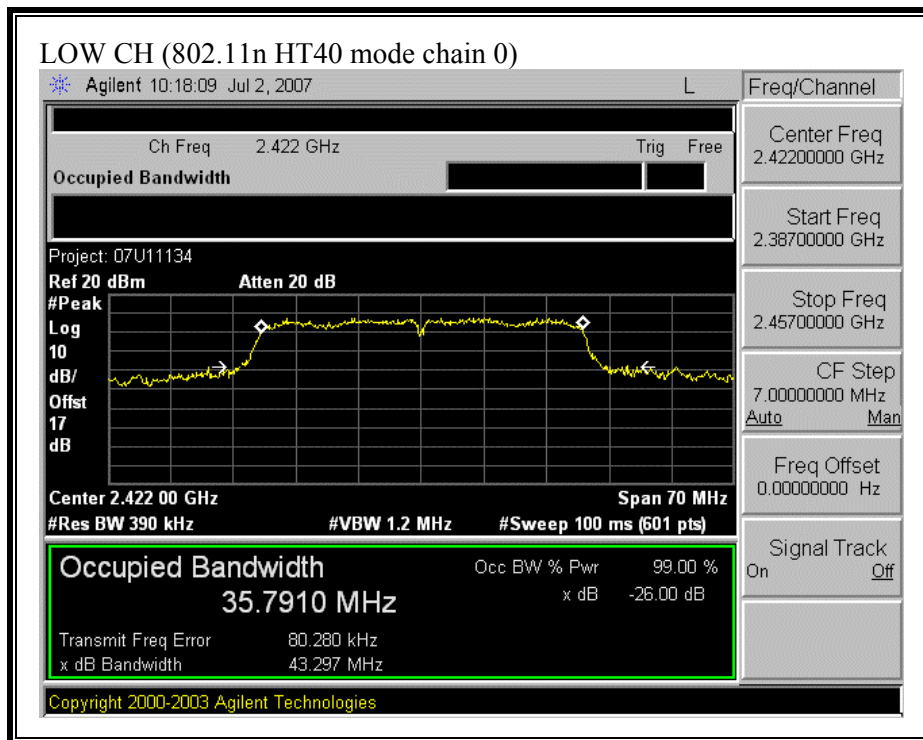
(802.11n HT20 MODE COMBINE)

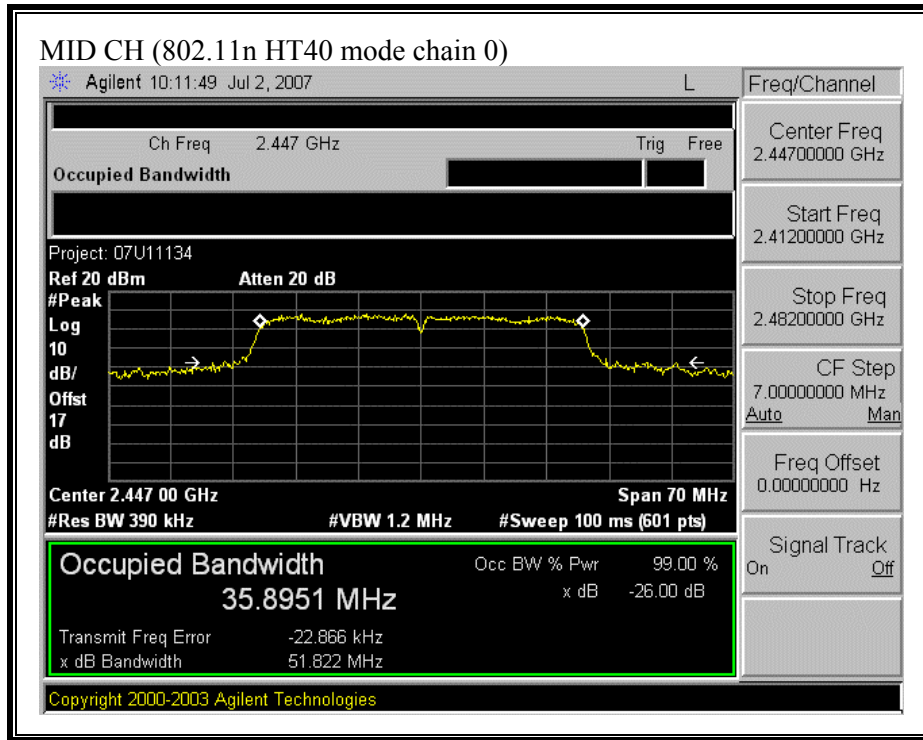


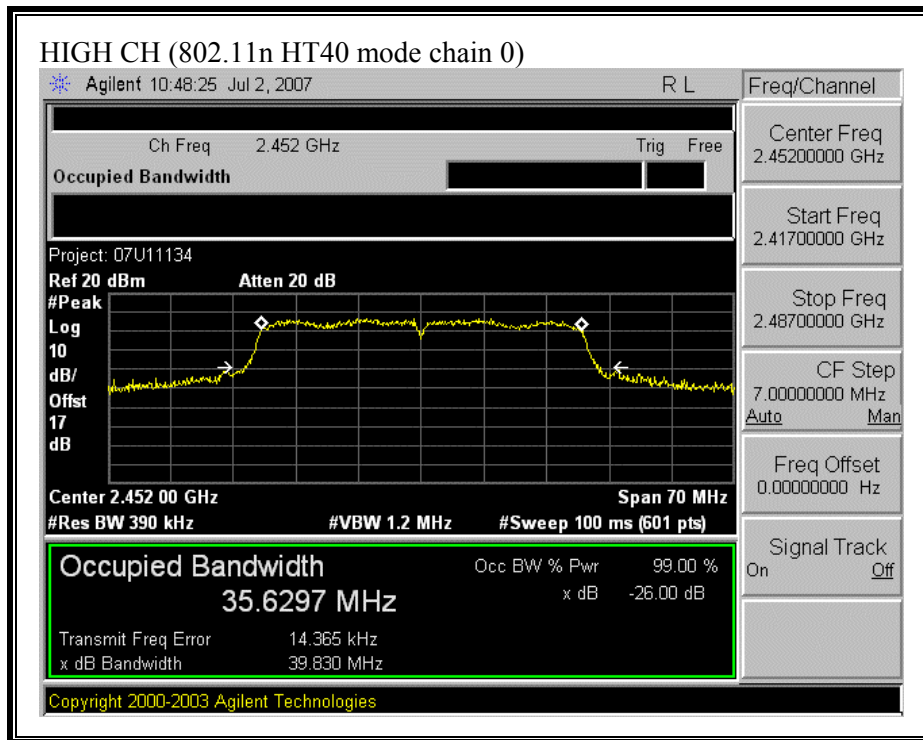




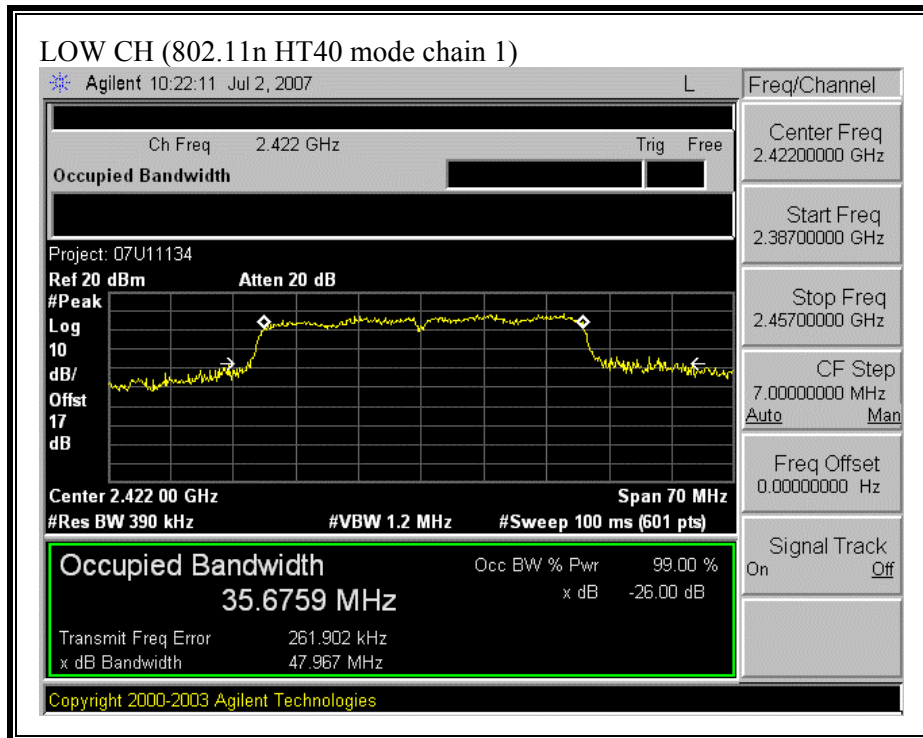
(802.11n HT40 MODE CHAIN 0)

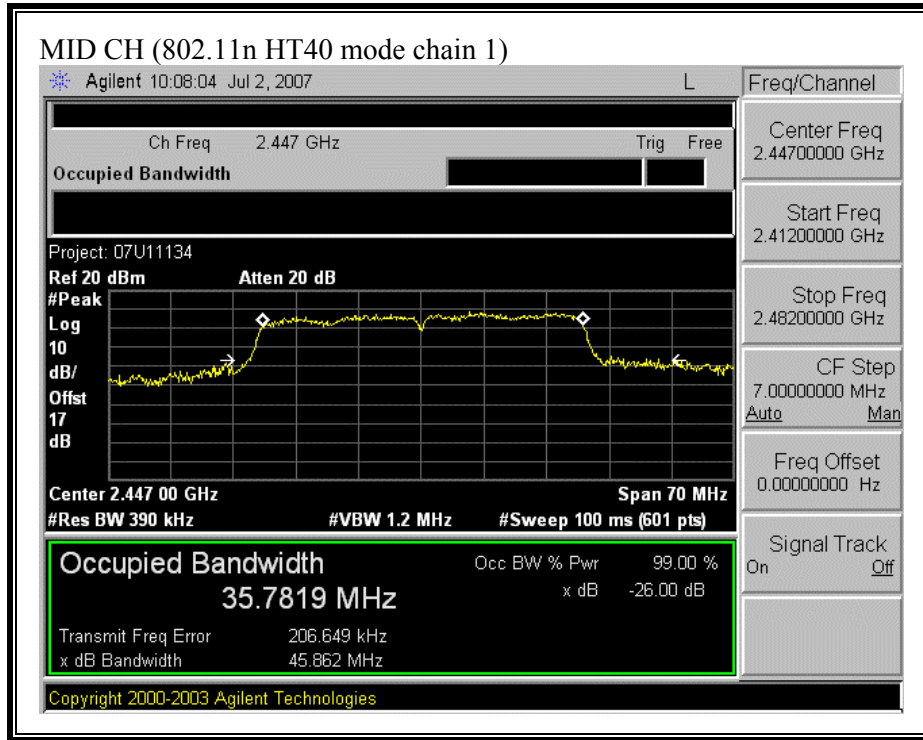


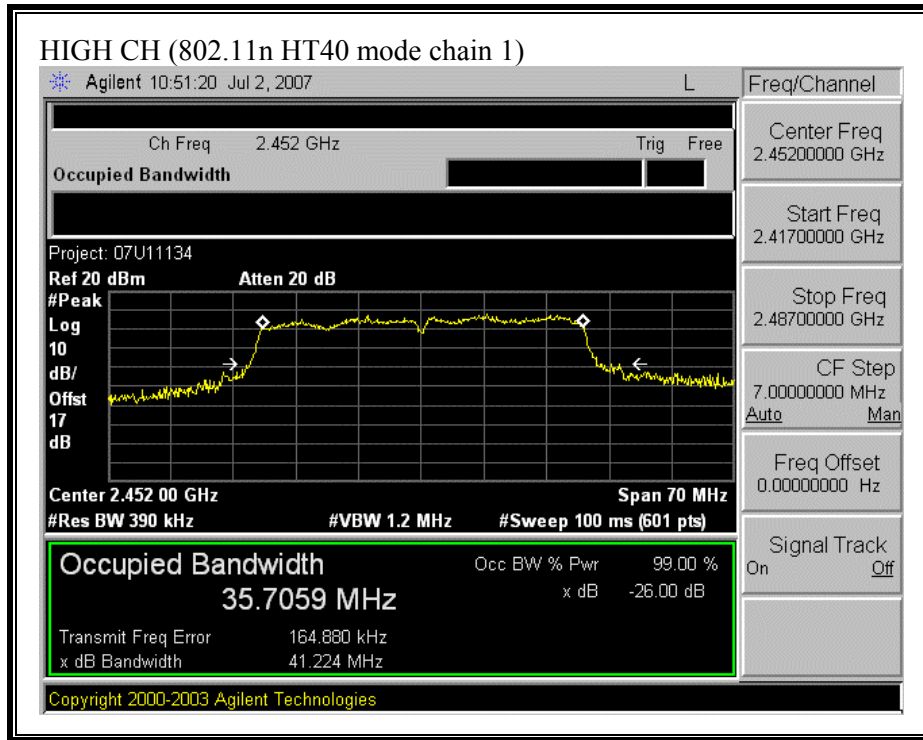




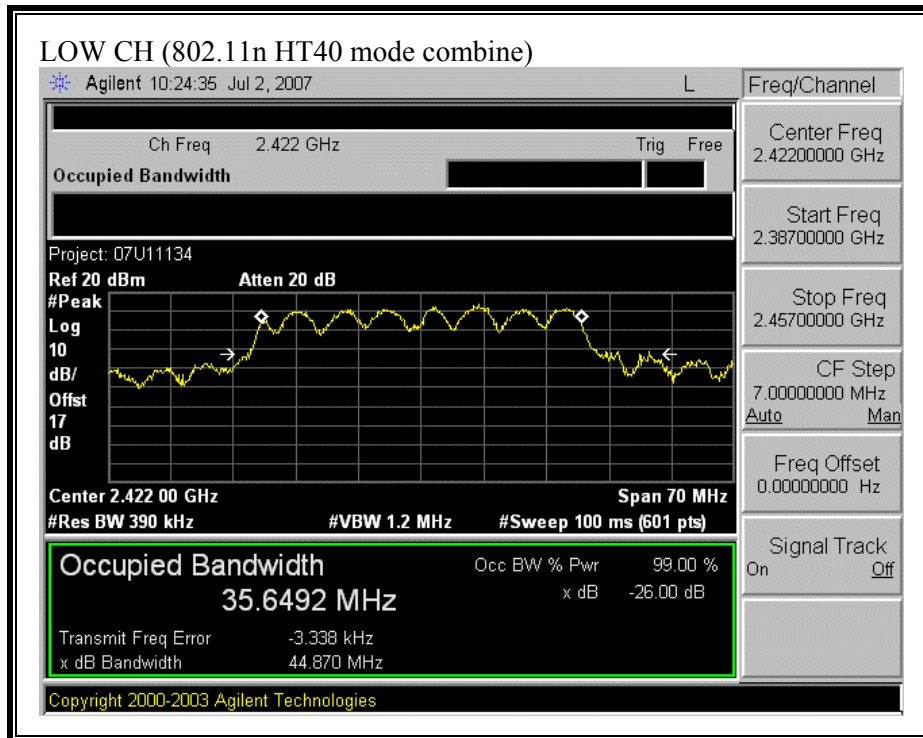
(802.11n HT40 MODE CHAIN 1)

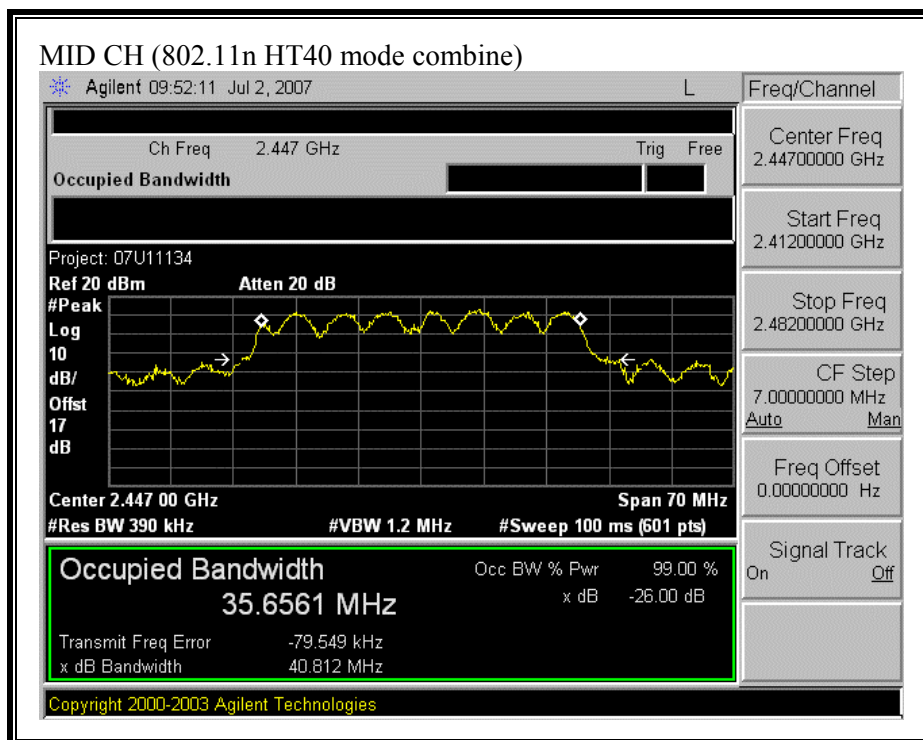


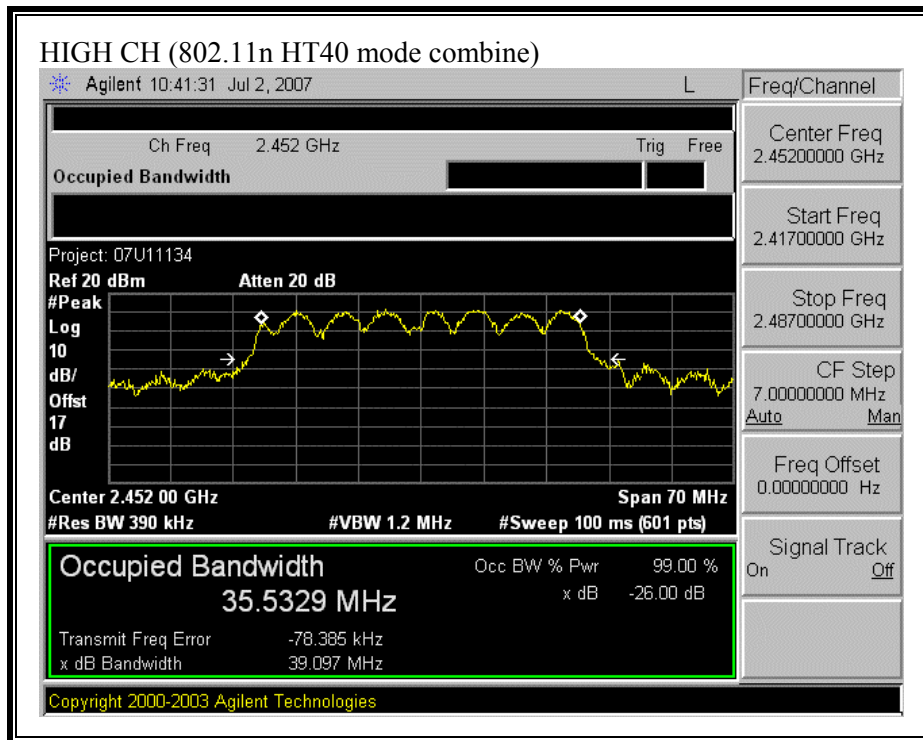




(802.11n HT40 MODE COMBINE)







7.1.3. MAXIMUM 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. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

§15.247 (b) (4) (i) Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The test is performed in accordance with Option 2 procedures in FCC document “Measurement of Digital Transmission Systems Operating under Section 15.247”, March 23, 2005. The transmitter operates continuously therefore Method # 1 is used.

Each chain is measured separately and the total power is calculated using:

Total Power = $10 \log (10^{(\text{Chain 0 Power} / 10)} + 10^{(\text{Chain 1 Power} / 10)})$

RESULTS

No non-compliance noted:

Fixed Limit (dBm)	17
Antenna Gain (dBi)	2
10 Log (# Tx Chains)	3.01
Effective Legacy Gain	5.01

Mode Channel	Frequency (MHz)	Max Power Chain 0 (dBm)	Max Power Chain 1 (dBm)	Max Power Total (dBm)	Limit (dBm)	Margin (dB)
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802.11b Mode

Low	2412	23.22	22.90	26.07	30.00	-3.93
Mid	2437	23.79	23.85	26.83	30.00	-3.17
High	2462	23.22	23.34	26.29	30.00	-3.71

802.11g Mode

Low	2412	20.91	21.19	24.06	30.00	-5.94
Mid	2437	21.28	21.63	24.47	30.00	-5.53
High	2462	20.59	20.51	23.56	30.00	-6.44

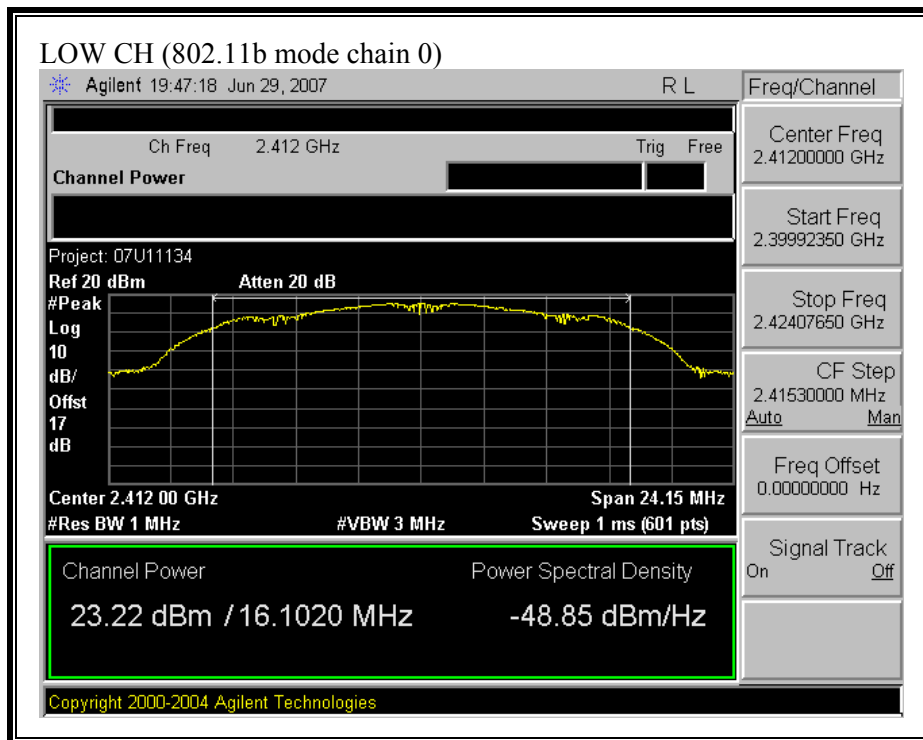
802.11n HT20 Mode

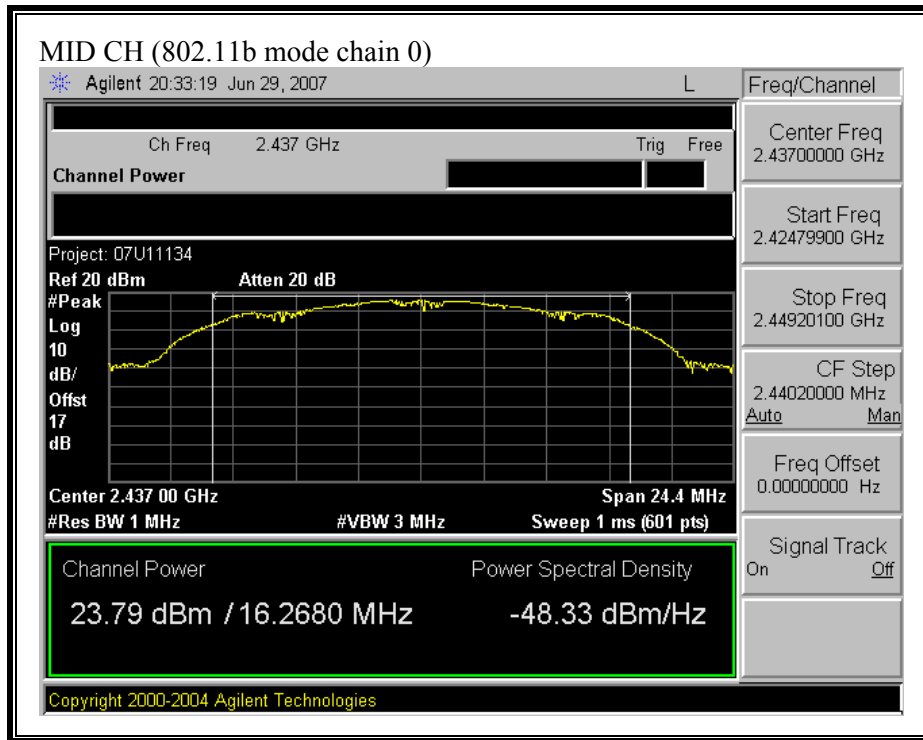
Low	2412	21.00	21.26	24.14	30.00	-5.86
Mid	2437	21.35	21.39	24.38	30.00	-5.62
High	2462	20.78	20.49	23.65	30.00	-6.35

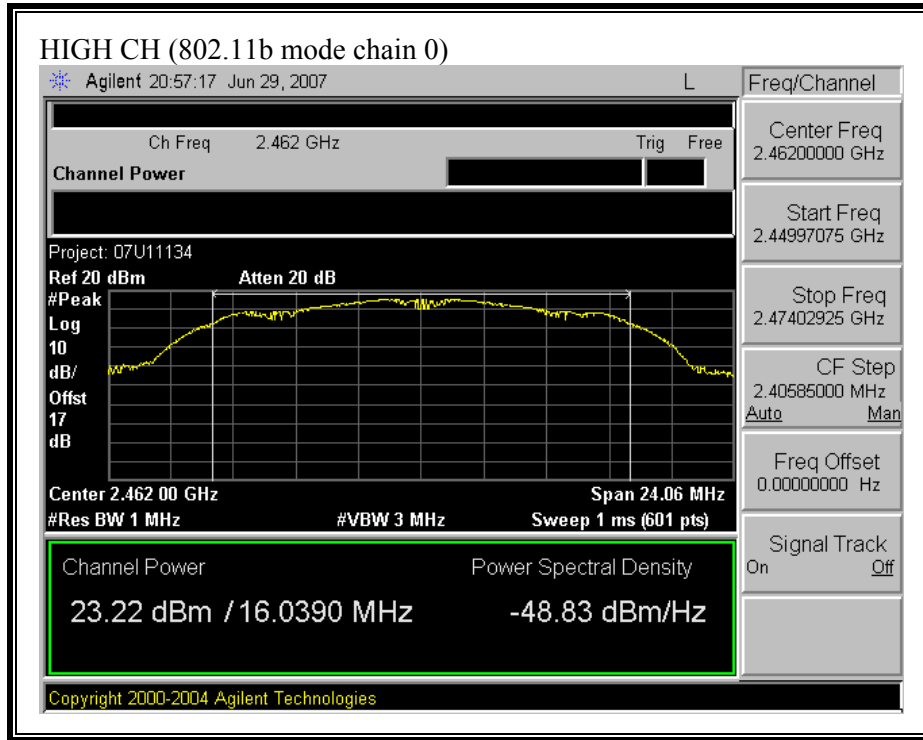
802.11n HT40 Mode

Low	2422	20.47	20.33	23.41	30.00	-6.59
Mid	2447	20.84	20.78	23.82	30.00	-6.18
High	2452	19.22	19.22	22.23	30.00	-7.77

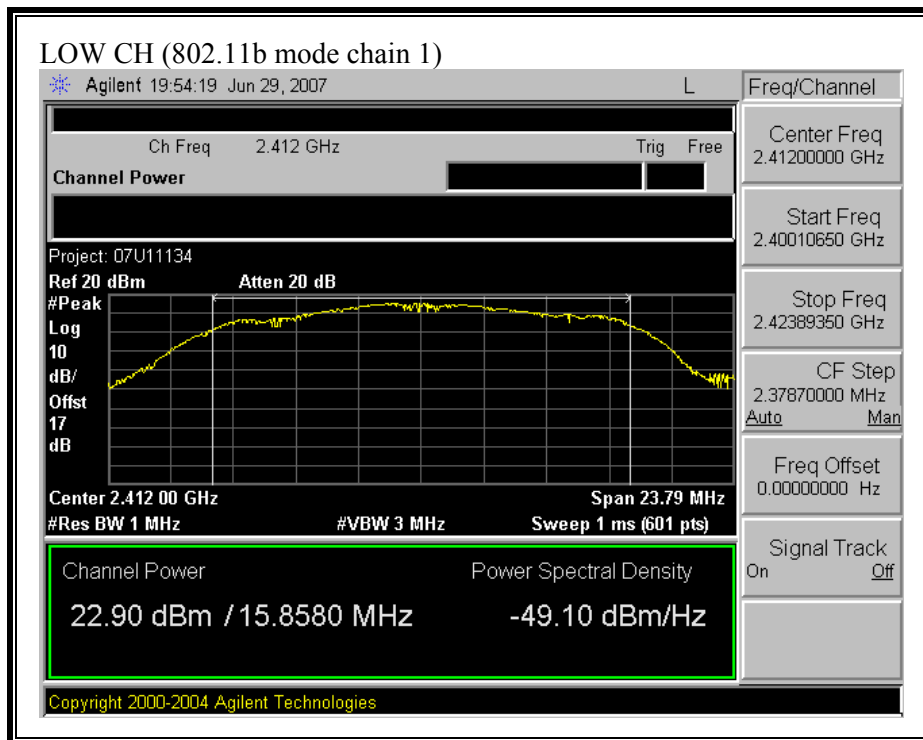
(802.11b MODE CHAIN 0)

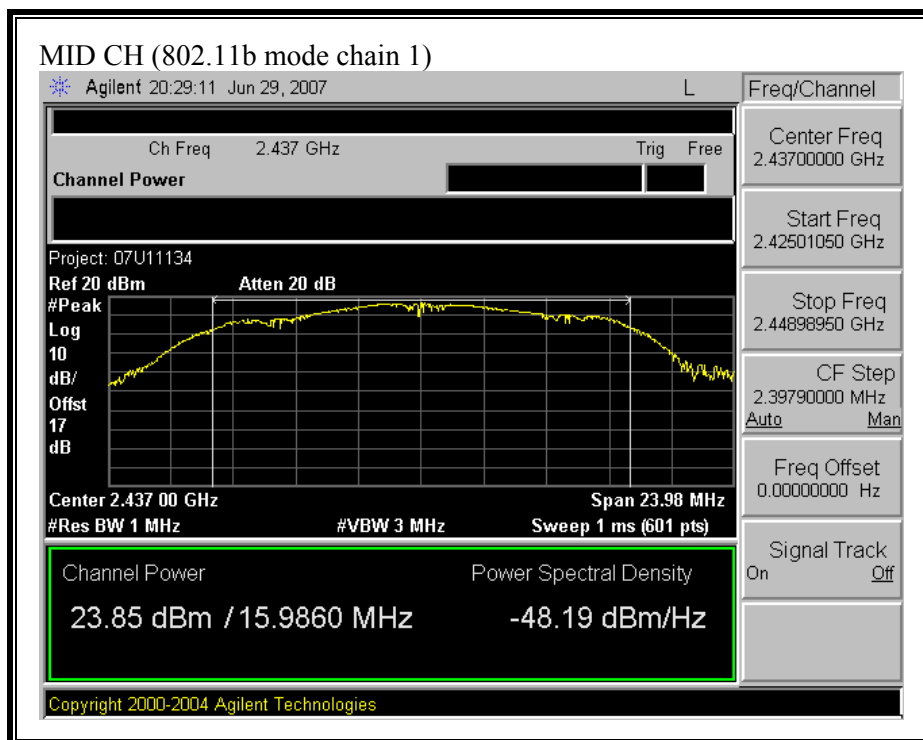


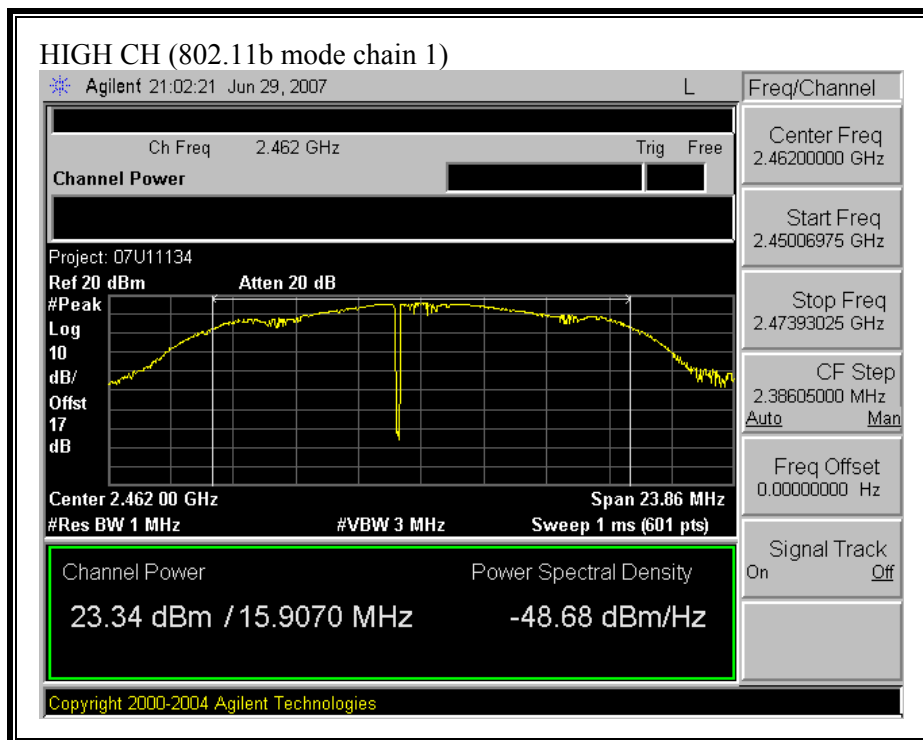




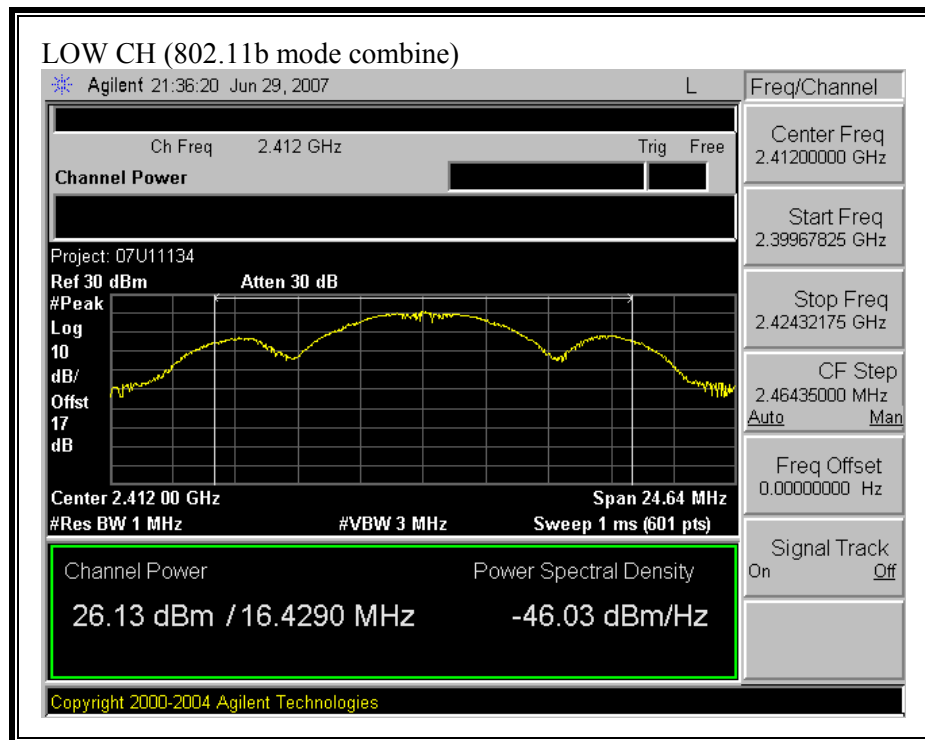
(802.11b MODE CHAIN 1)

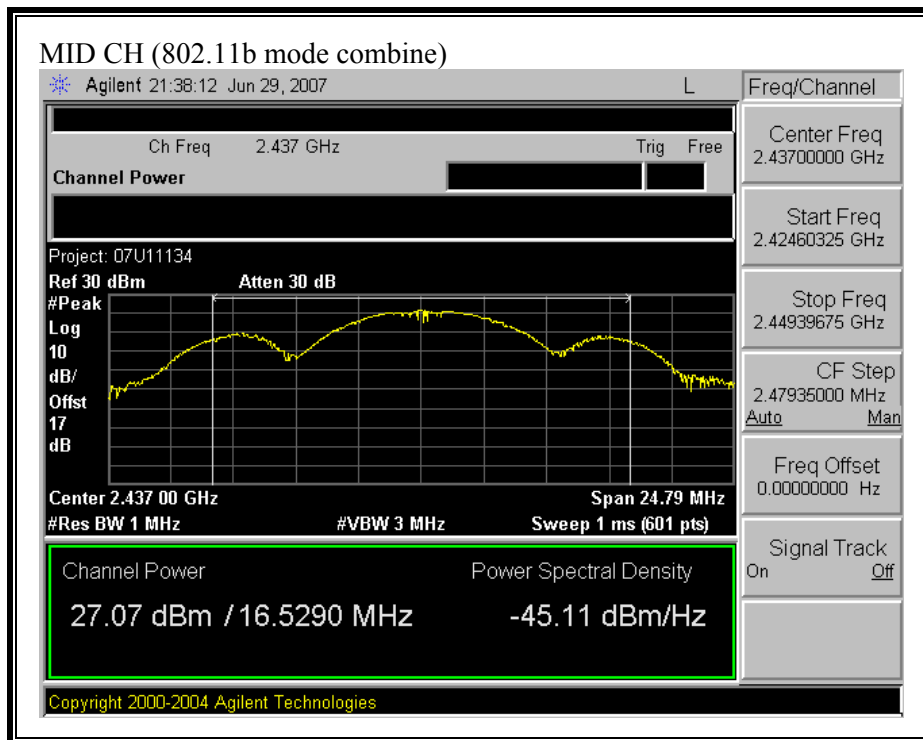


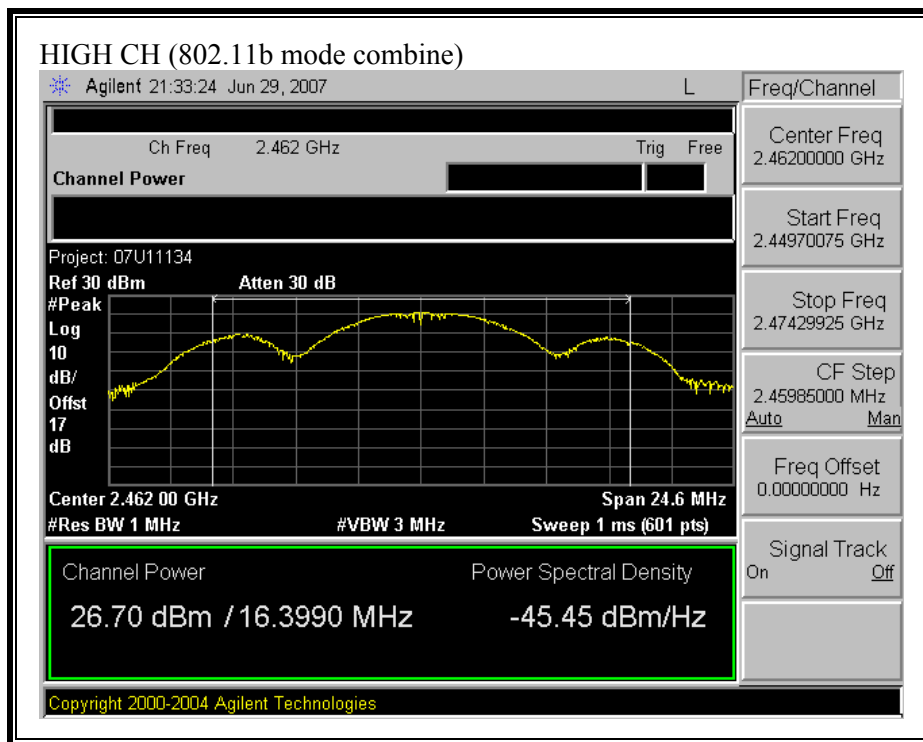




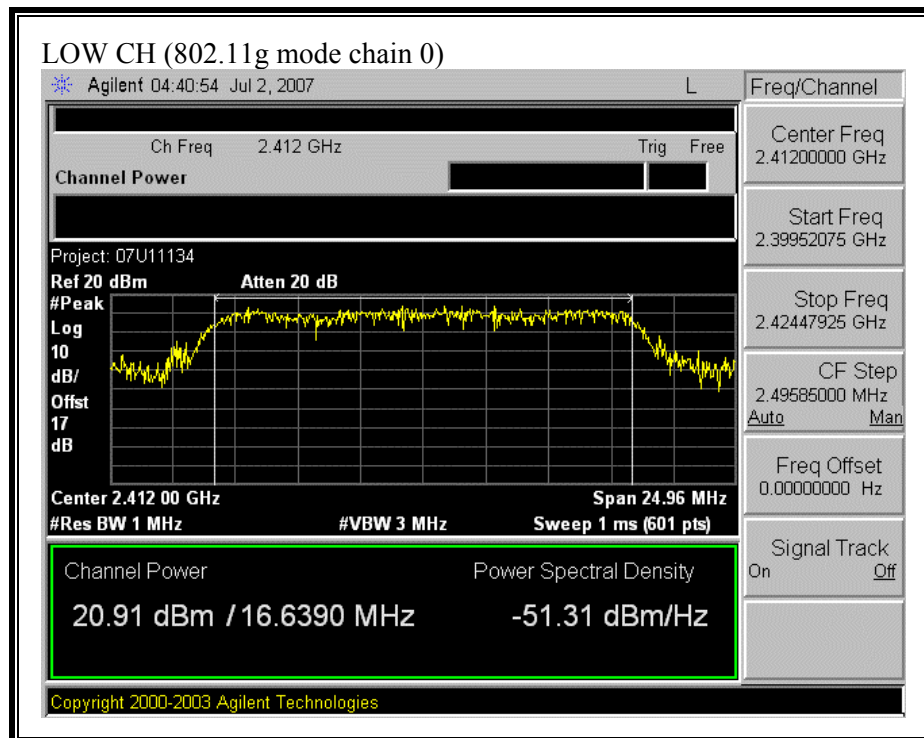
(802.11b MODE COMBINE)

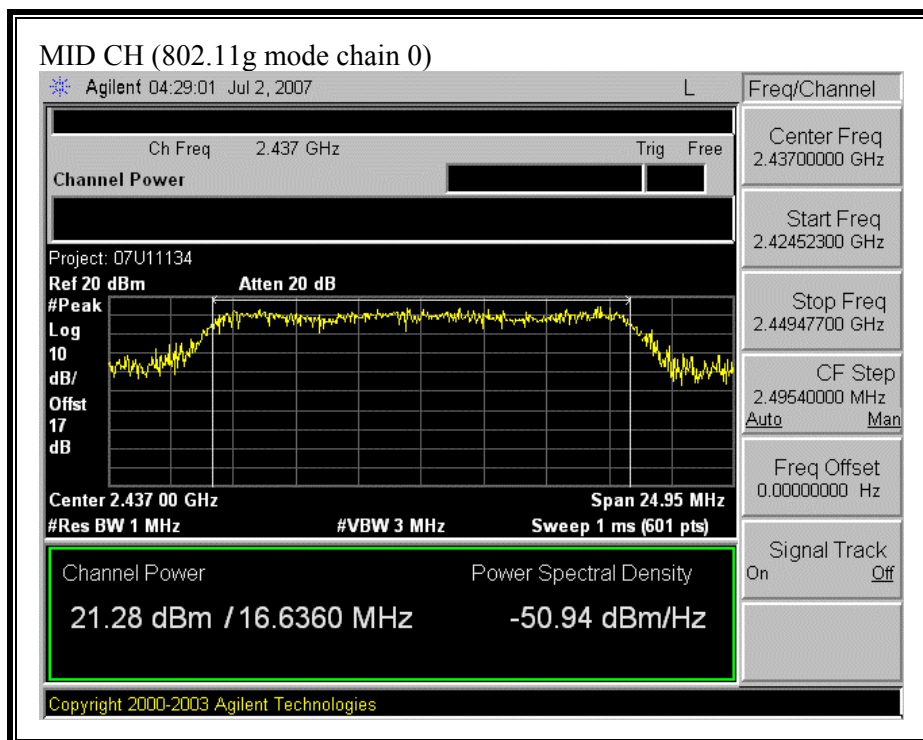


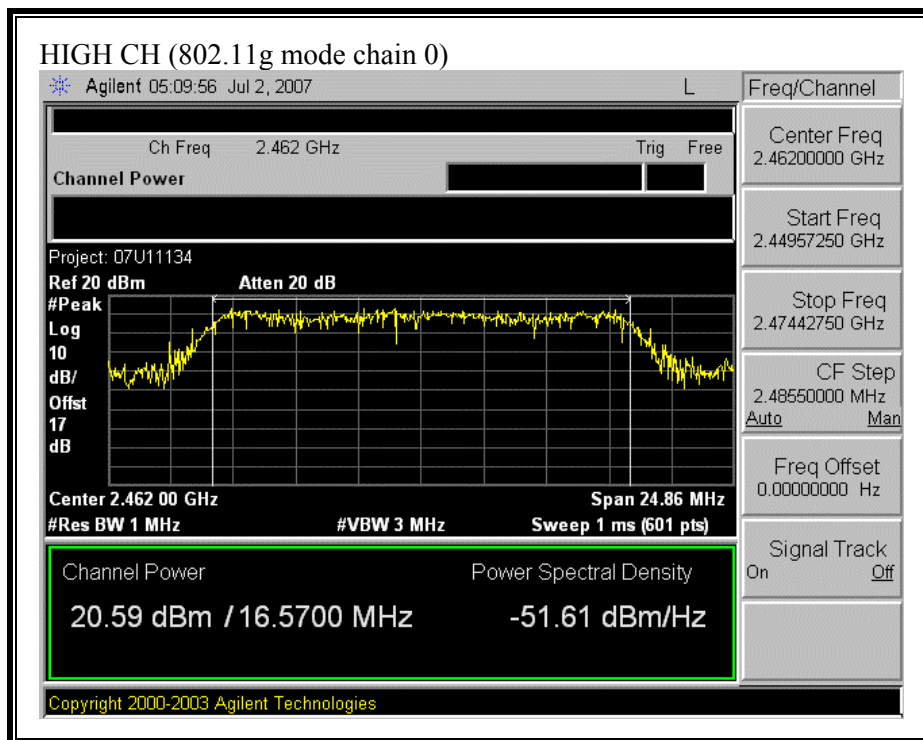




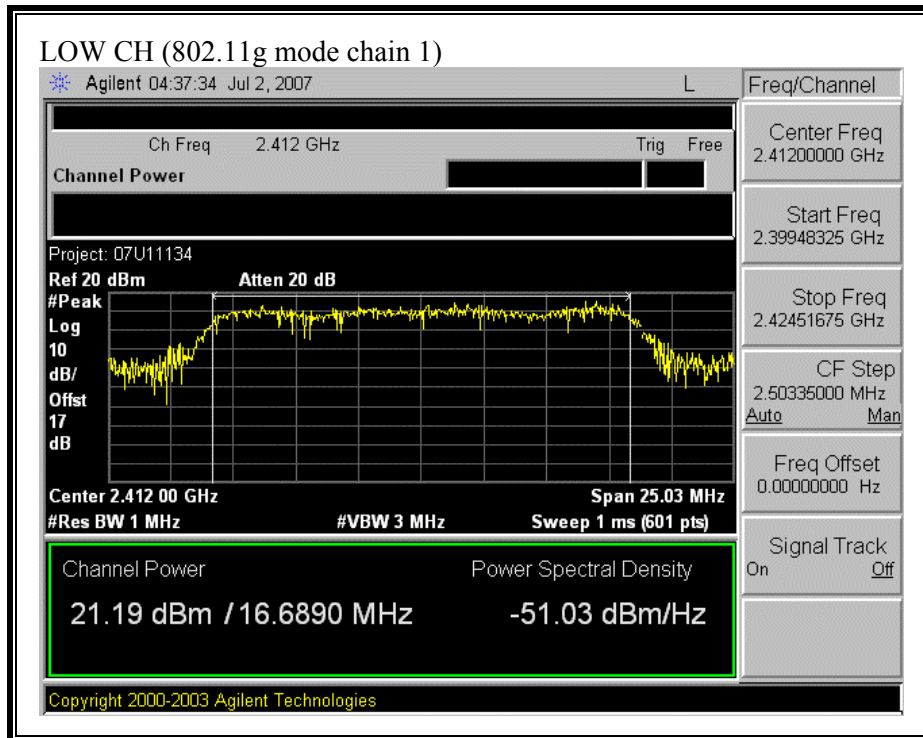
(802.11g MODE CHAIN 0)

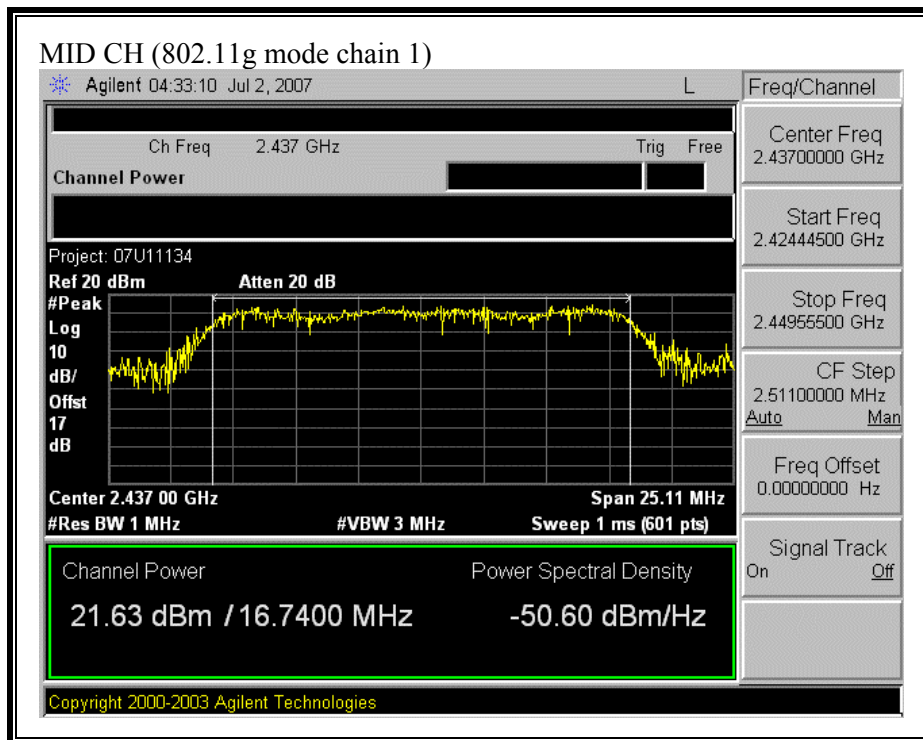


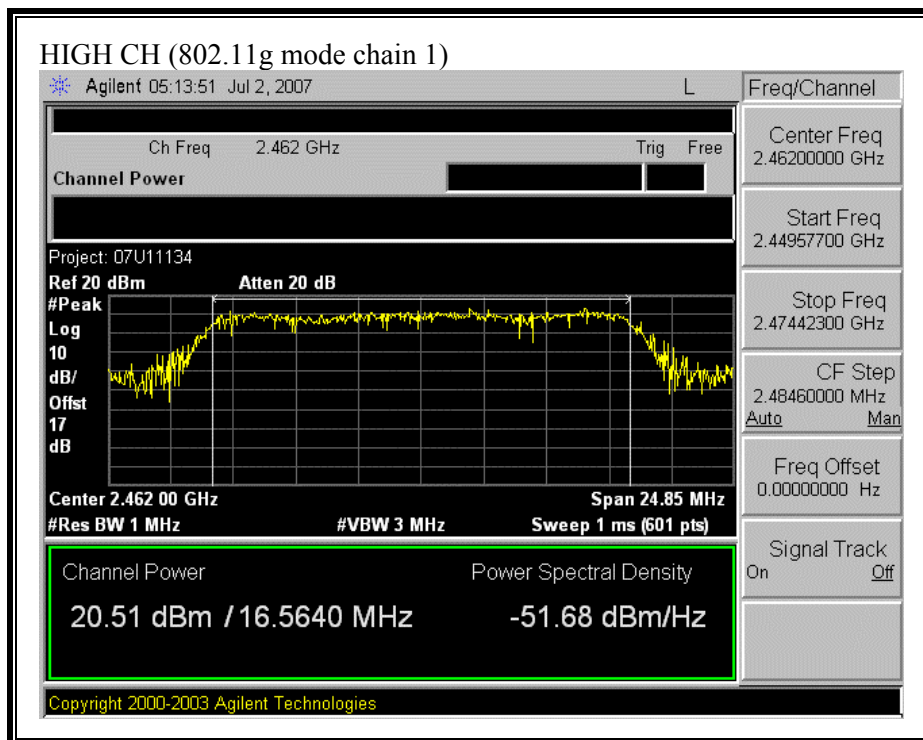


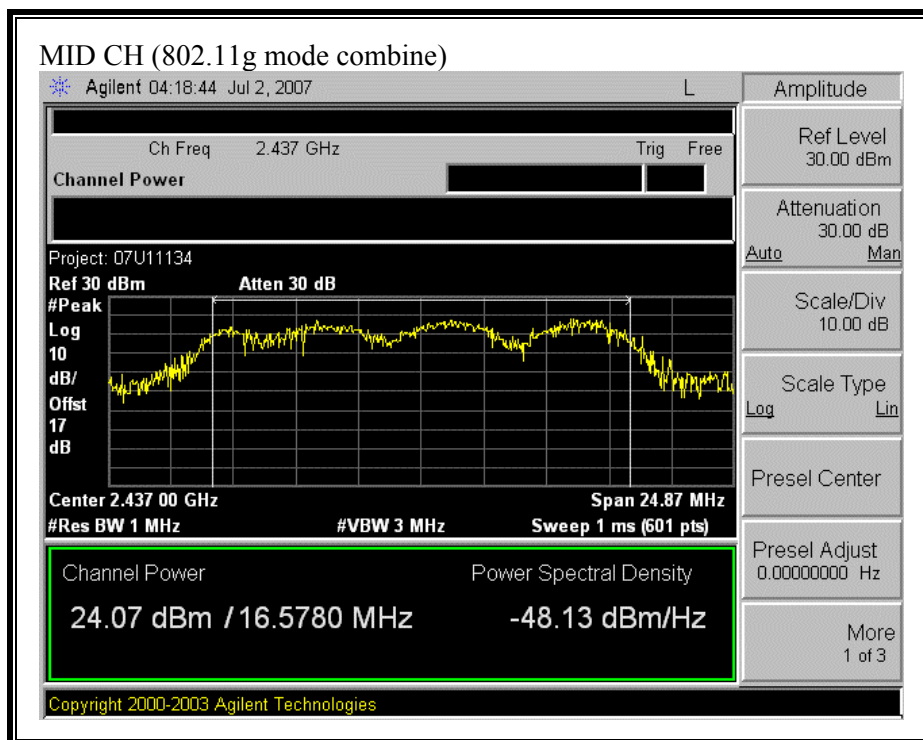


(802.11g MODE CHAIN 1)

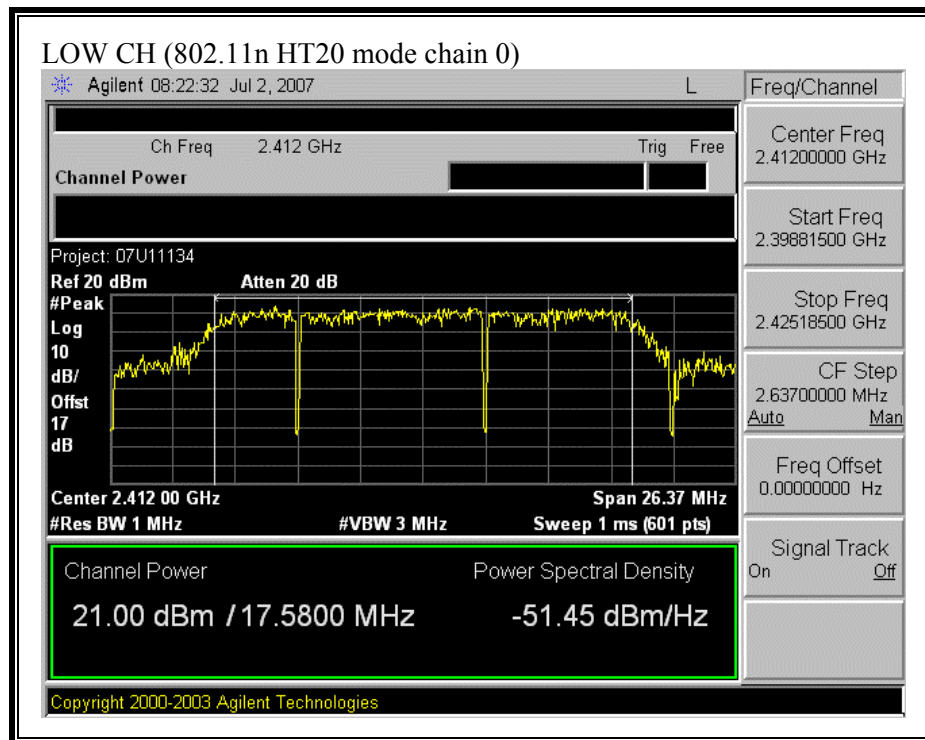


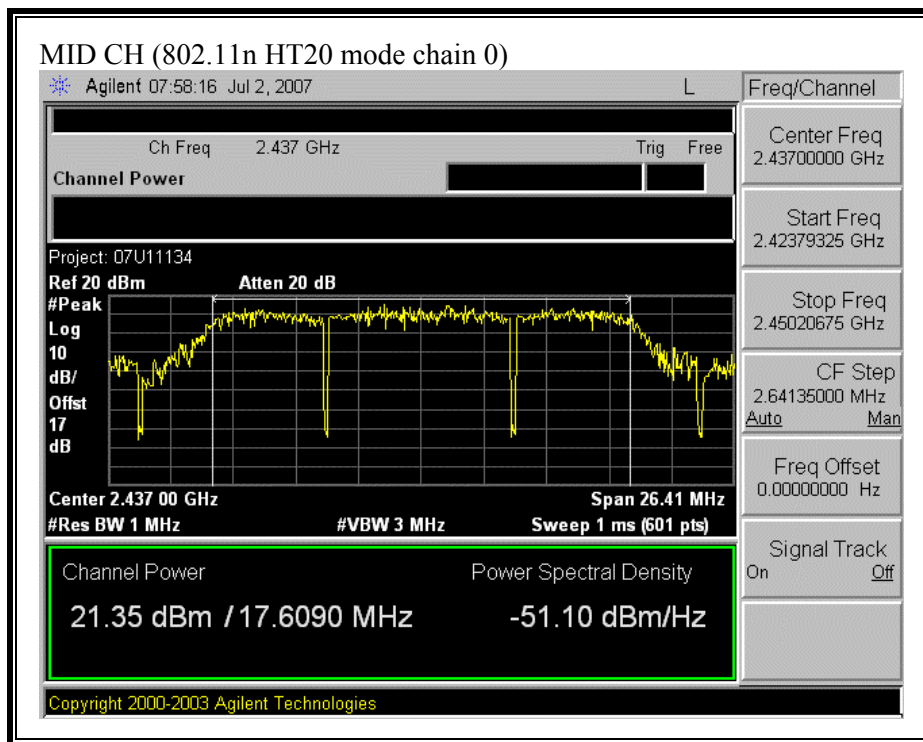


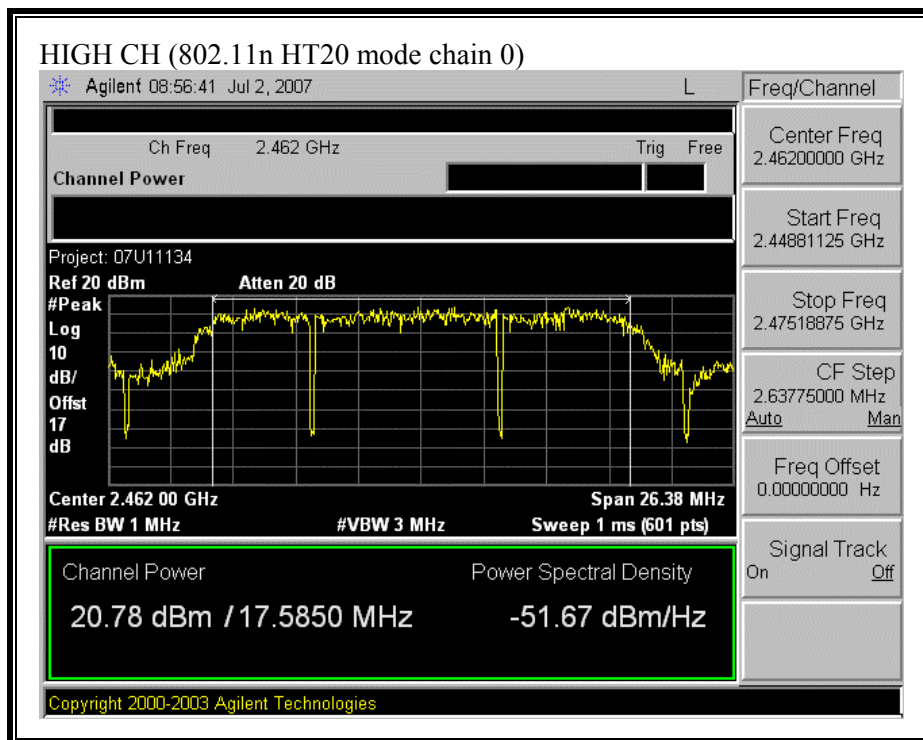




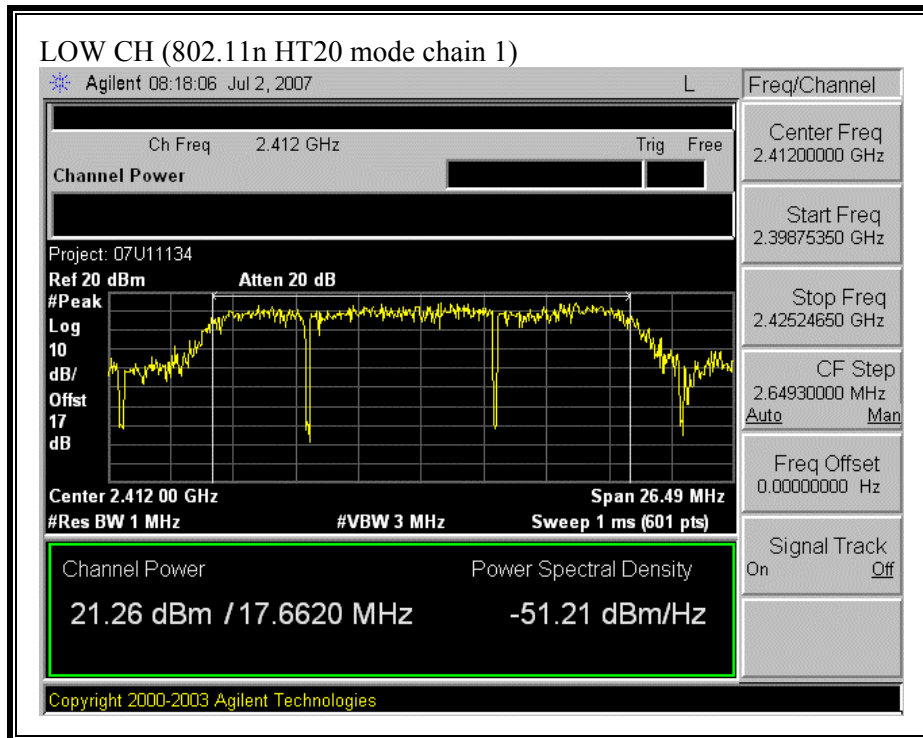
(802.11n HT20 MODE CHAIN 0)

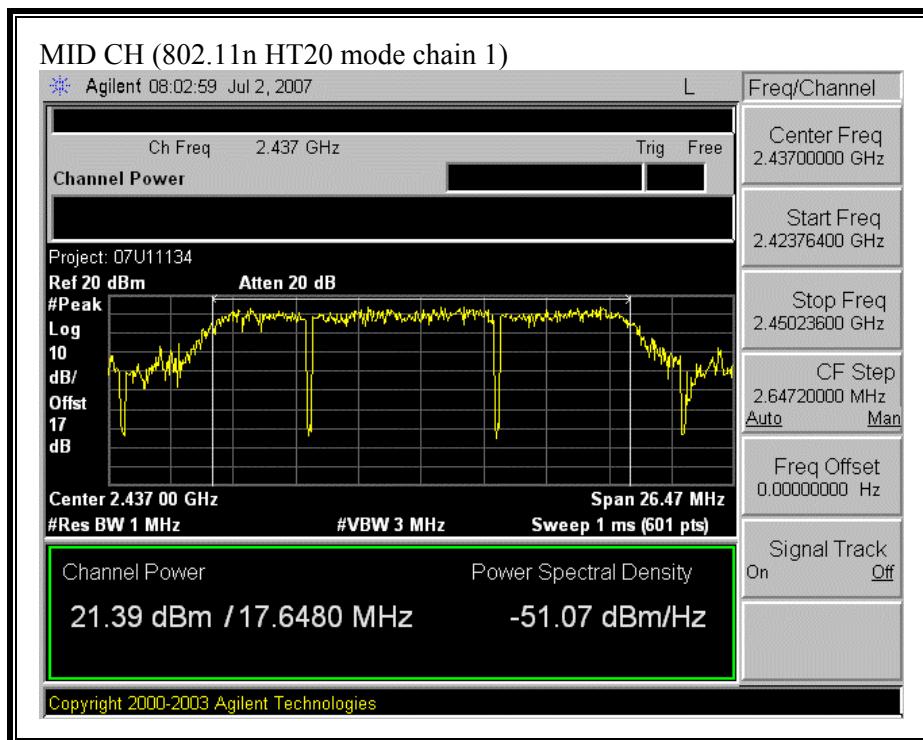


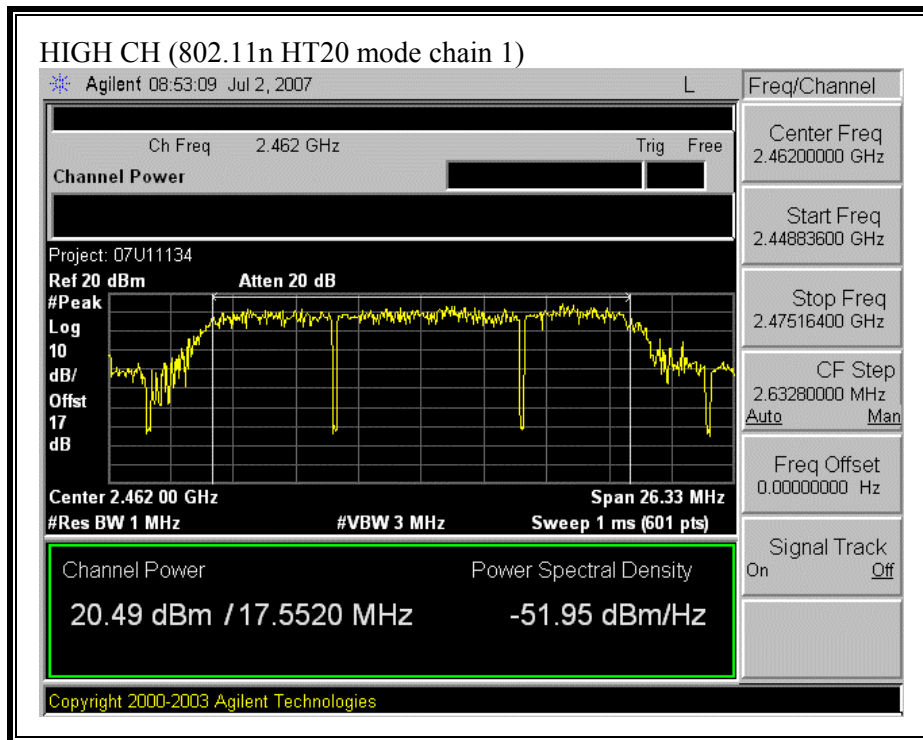




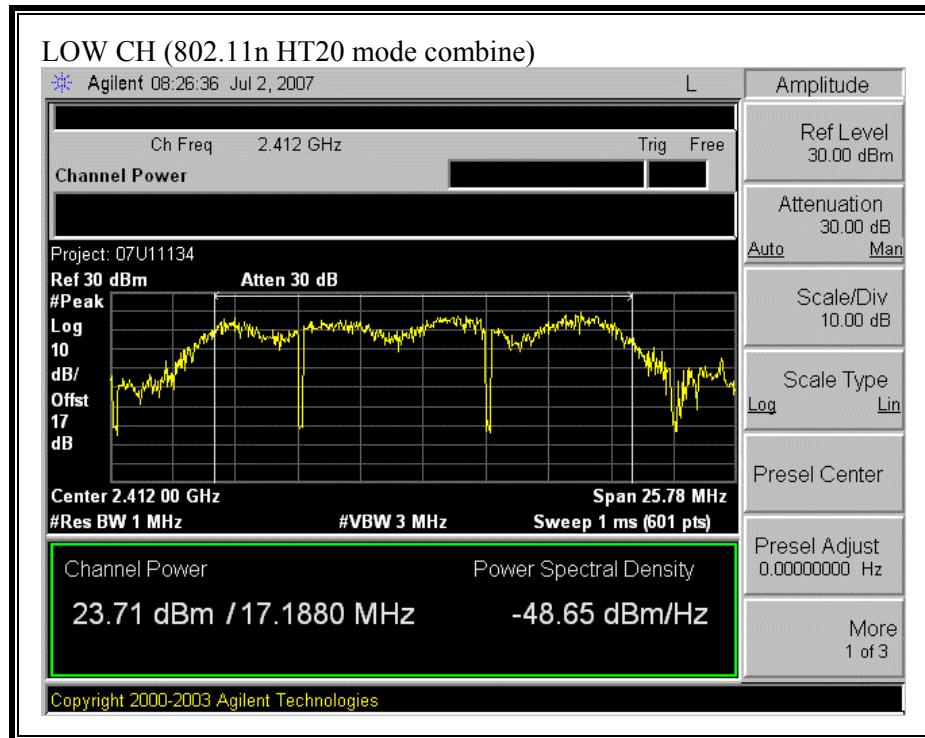
(802.11n HT20 MODE CHAIN 1)

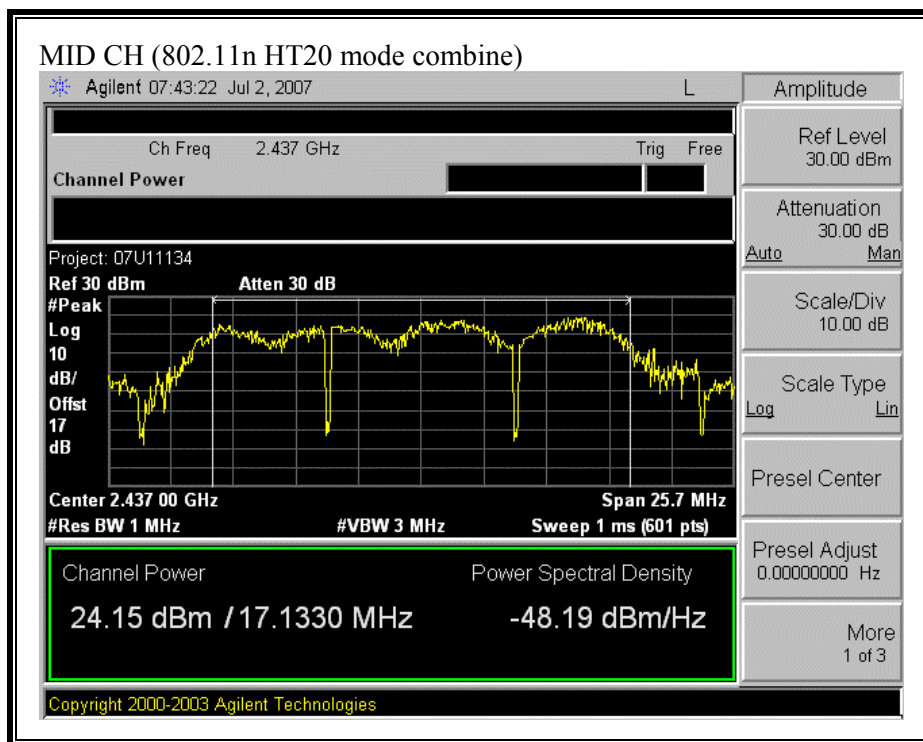


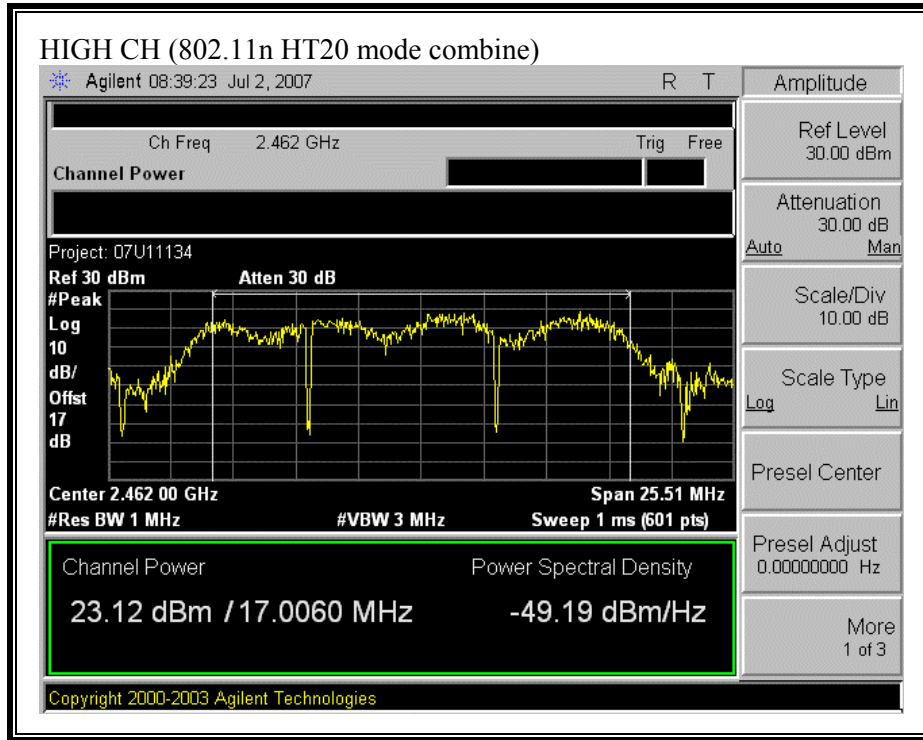




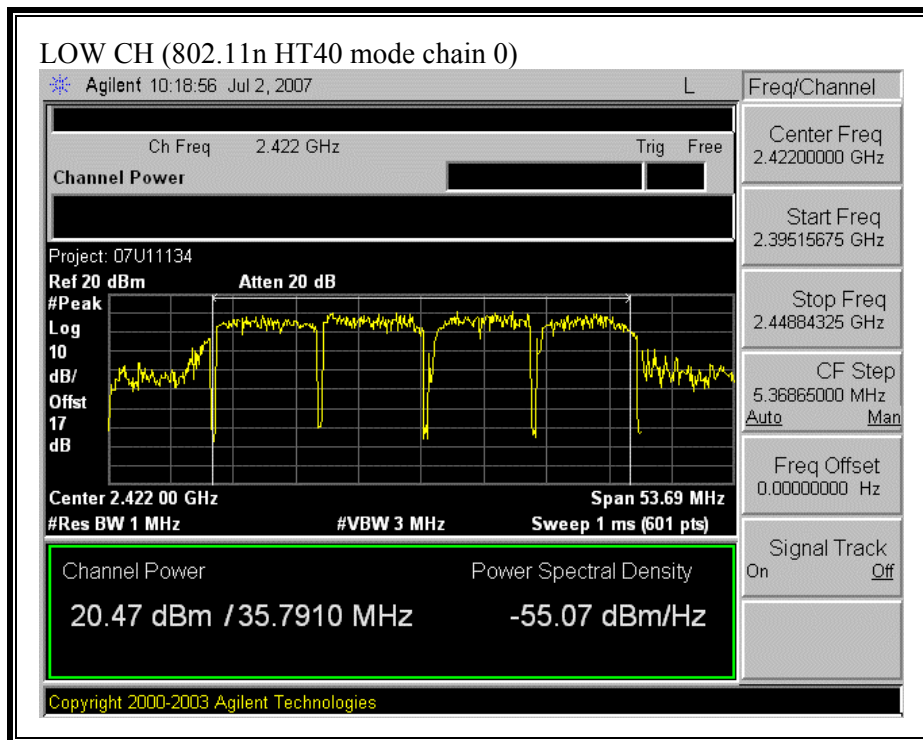
(802.11n HT20 MODE COMBINE)

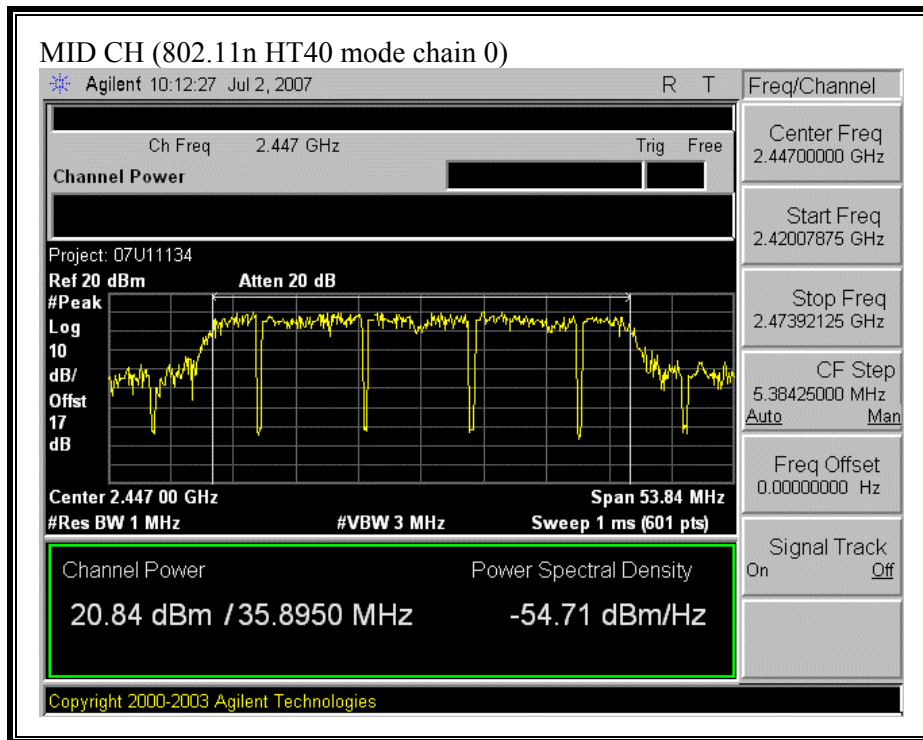


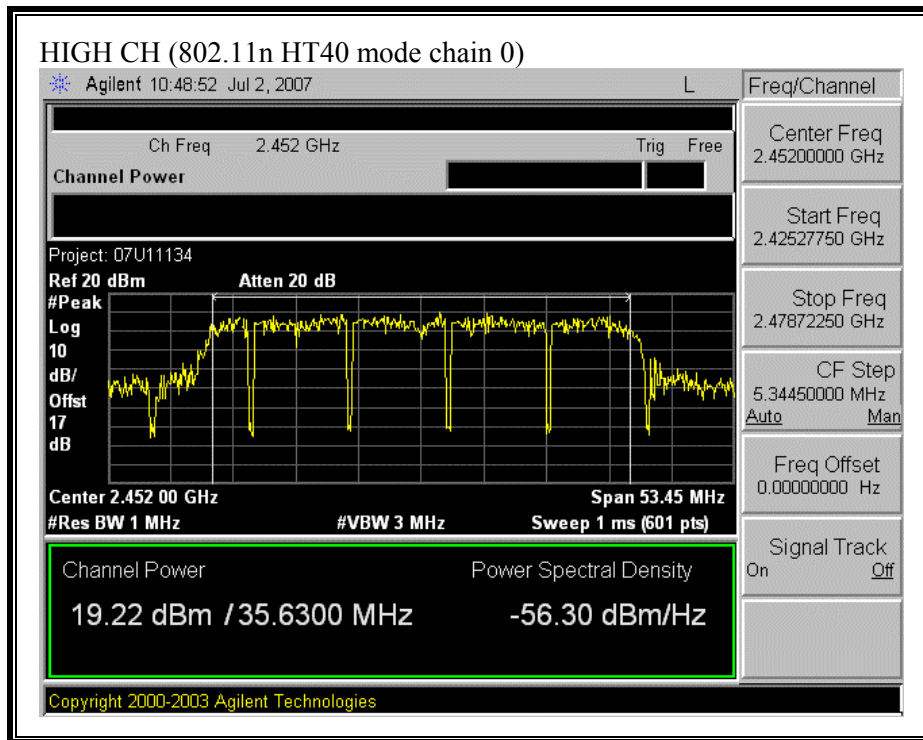




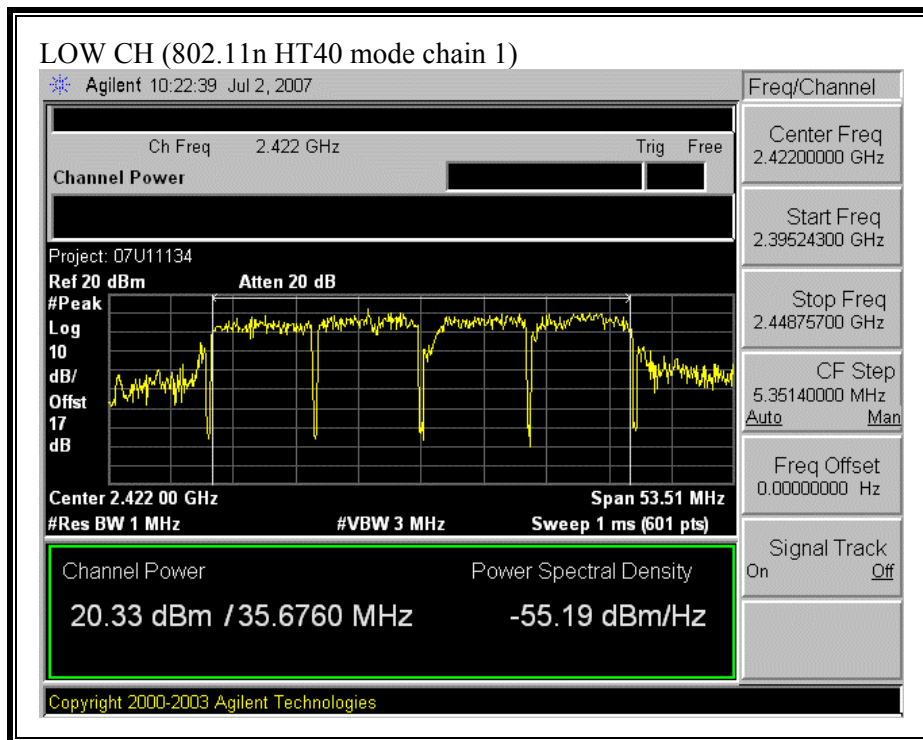
(802.11n HT40 MODE CHAIN 0)

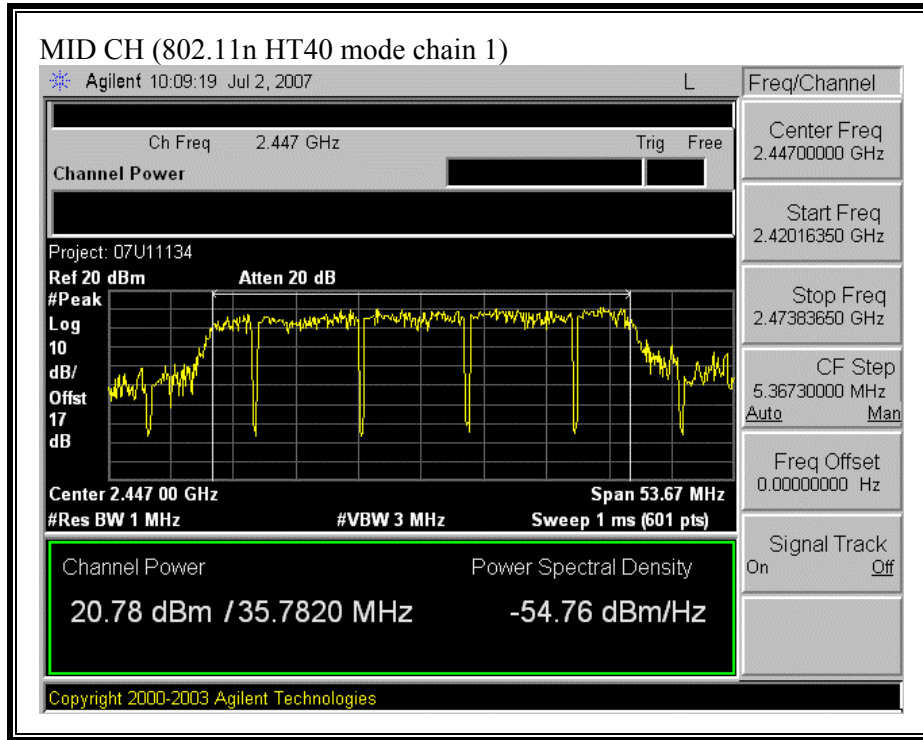


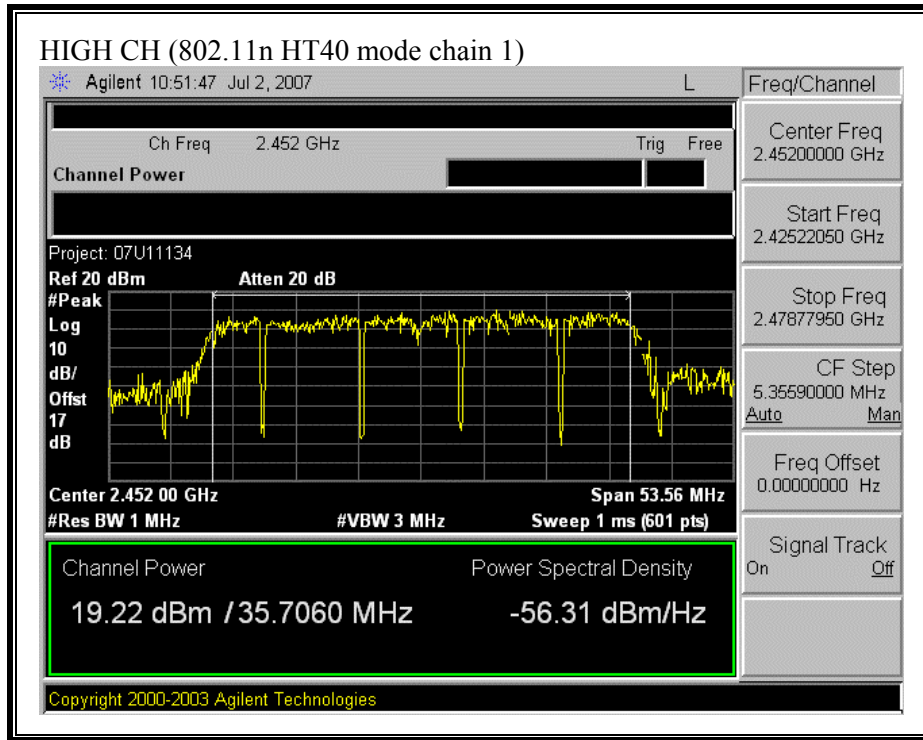




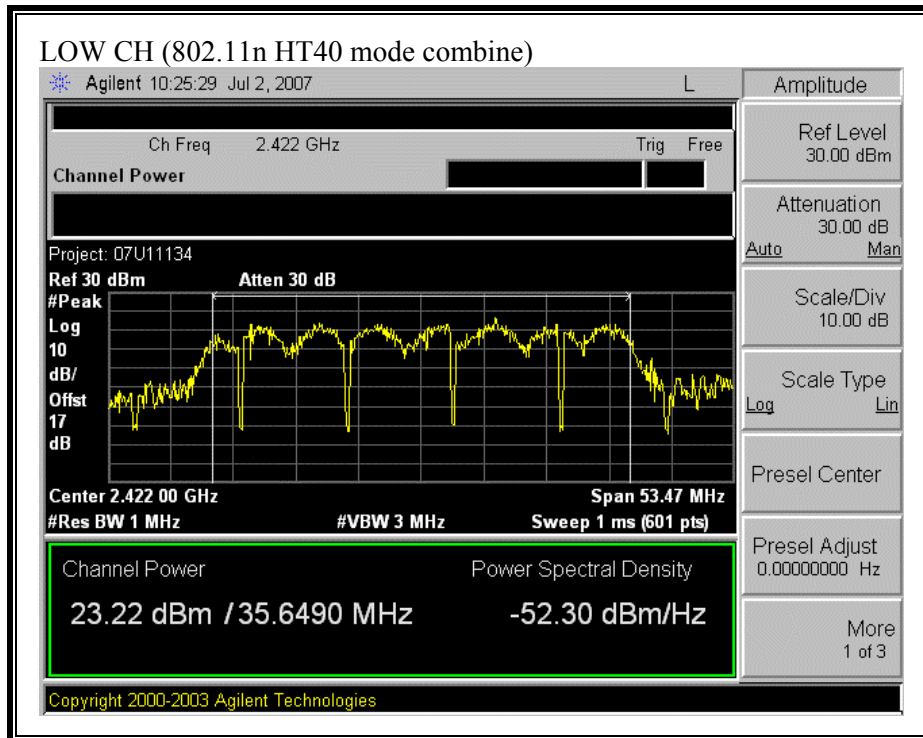
(802.11n HT40 MODE CHAIN 1)

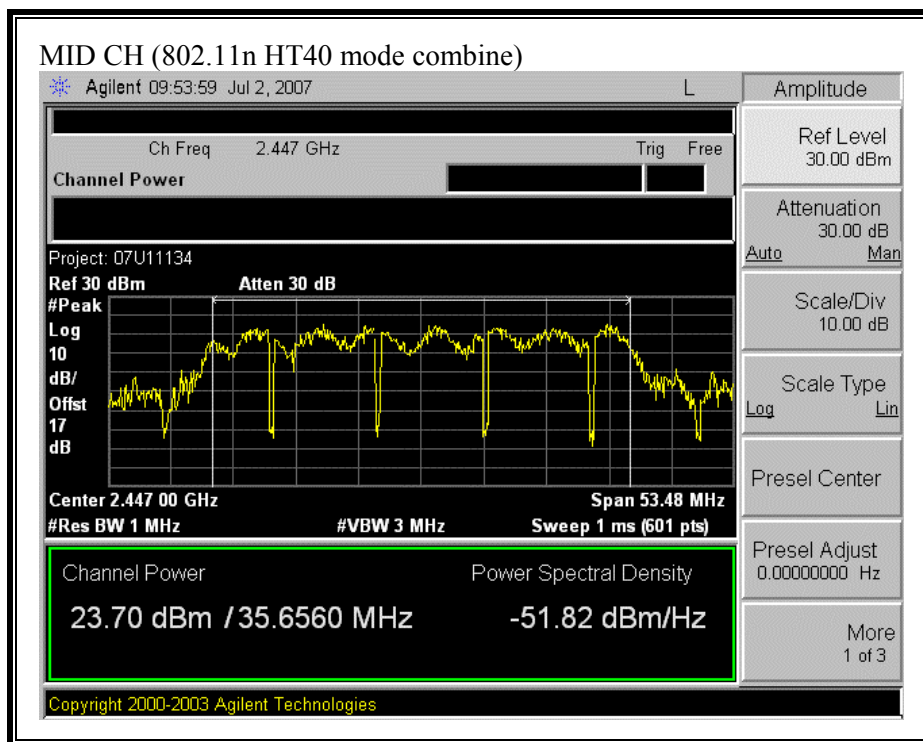


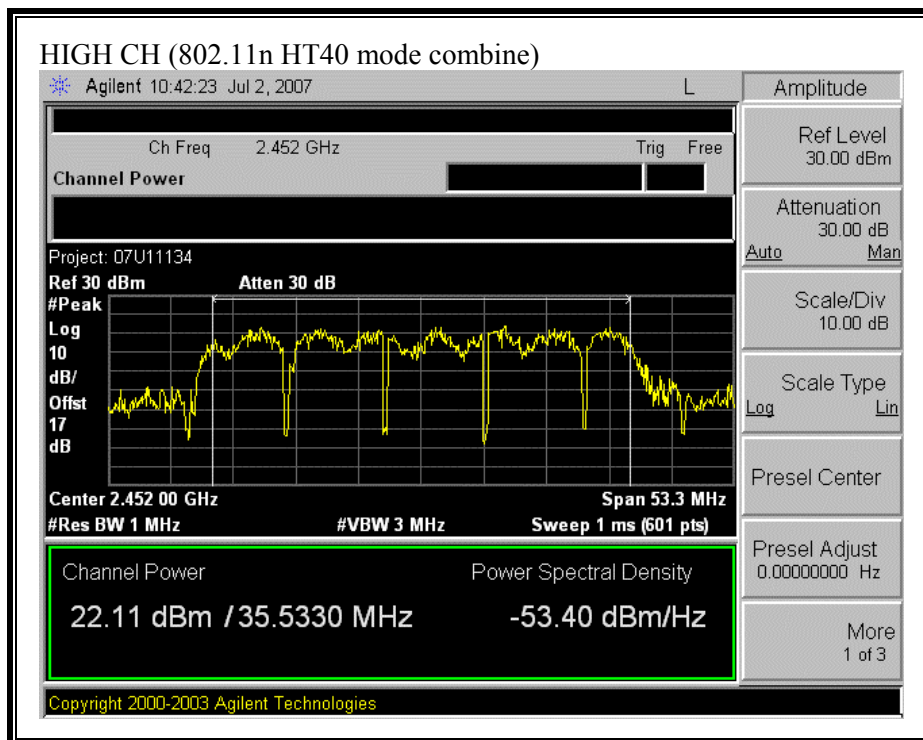




(802.11n HT40 MODE COMBINE)







7.1.4. MAXIMUM PERMISSIBLE EXPOSURE

LIMITS

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
30–300	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

CALCULATIONS

Given

$$E = \sqrt{(30 * P * G) / d}$$

and

$$S = E^2 / 3770$$

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 rearranging the terms to express the distance as a function of the remaining variables yields:

$$d = \sqrt{((30 * P * G) / (3770 * S))}$$

Changing to units of Power to mW and Distance to cm, using:

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

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

yields

$$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$$

$$d = 0.282 * \sqrt{(P * G / S)}$$

where

d = distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power Density in mW/cm²

Substituting the logarithmic form of power and gain using:

$$P \text{ (mW)} = 10^{(P \text{ (dBm)} / 10)} \text{ and}$$

$$G \text{ (numeric)} = 10^{(G \text{ (dBi)} / 10)}$$

yields

$$d = 0.282 * 10^{((P + G) / 20)} / \sqrt{S} \quad \text{Equation (1)}$$

where

d = MPE distance in cm

P = Power in dBm

G = Antenna Gain in dBi

S = Power Density Limit in mW/cm²

Equation (1) and the measured peak power is used to calculate the MPE distance.

LIMITS

From §1.1310 Table 1 (B), S = 1.0 mW/cm² in the 5.8 GHz band

RESULTS

No non-compliance noted:

802.11a Legacy Mode

Mode	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm²)
802.11 2.4GHz Band	20.0	26.83	2.00	0.15

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

7.1.5. AVERAGE POWER

AVERAGE POWER LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

Each chain is measured separately and the total power is calculated using:

Total Power = $10 \log (10^{\text{Chain 0 Power} / 10} + 10^{\text{Chain 1 Power} / 10})$

RESULTS

No non-compliance noted:

The cable assembly insertion loss of 17 dB (including 16 dB pad and 1.0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Mode Channel	Frequency (MHz)	Average Power Chain 0 (dBm)	Average Power Chain 1 (dBm)	Average Power Total (dBm)
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802.11b Mode

Low	2412	20.9	20.5	23.7
Mid	2437	21.4	21.2	24.3
High	2462	20.7	20.9	23.8

802.11g Mode

Low	2412	17.3	17.8	20.6
Mid	2437	17.8	17.9	20.9
High	2462	16.9	17.2	20.1

802.11n HT20 Mode

Low	2412	17.5	17.7	20.6
Mid	2437	17.8	17.9	20.9
High	2462	17.0	17.0	20.0

802.11n HT40 Mode

Low	2422	17.0	17.0	20.0
Mid	2447	17.4	17.1	20.3
High	2452	15.8	15.6	18.7

7.1.6. PEAK POWER SPECTRAL DENSITY

LIMIT

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

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The test is performed in accordance with Option 2 procedures in FCC document “Measurement of Digital Transmission Systems Operating under Section 15.247”, March 23, 2005. The conditions for sample detection are satisfied. The PPSD is the highest level found across the emission in any 3 kHz band.

Each chain is measured separately and the total PPSD is calculated using:

Total PPSD = $10 \log (10^{\text{Chain 0 PPSD} / 10} + 10^{\text{Chain 1 PPSD} / 10})$

RESULTS

No non-compliance noted:

Based on the previous preliminary scan of single channel vs. combiner, combined PPSD has the worse condition over all.

RESULTS WITH COMBINER

No non-compliance noted:

Mode Channel	Frequency (MHz)	PPSD Using Combiner (dBm)	Limit (dBm)	Margin (dB)
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802.11b Mode

Low	2412	4.11	8	-3.89
Mid	2437	5.61	8	-2.39
High	2462	5.02	8	-2.98

802.11g Mode

Low	2412	-1.25	8	-9.25
Mid	2437	-0.20	8	-8.20
High	2462	1.18	8	-6.82

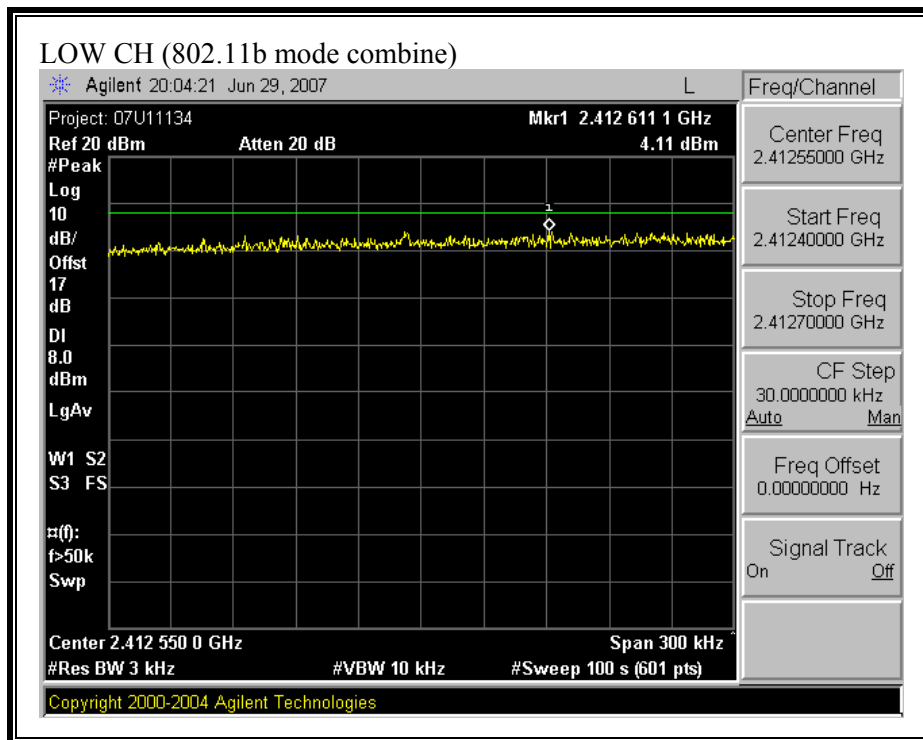
802.11n HT20 Mode

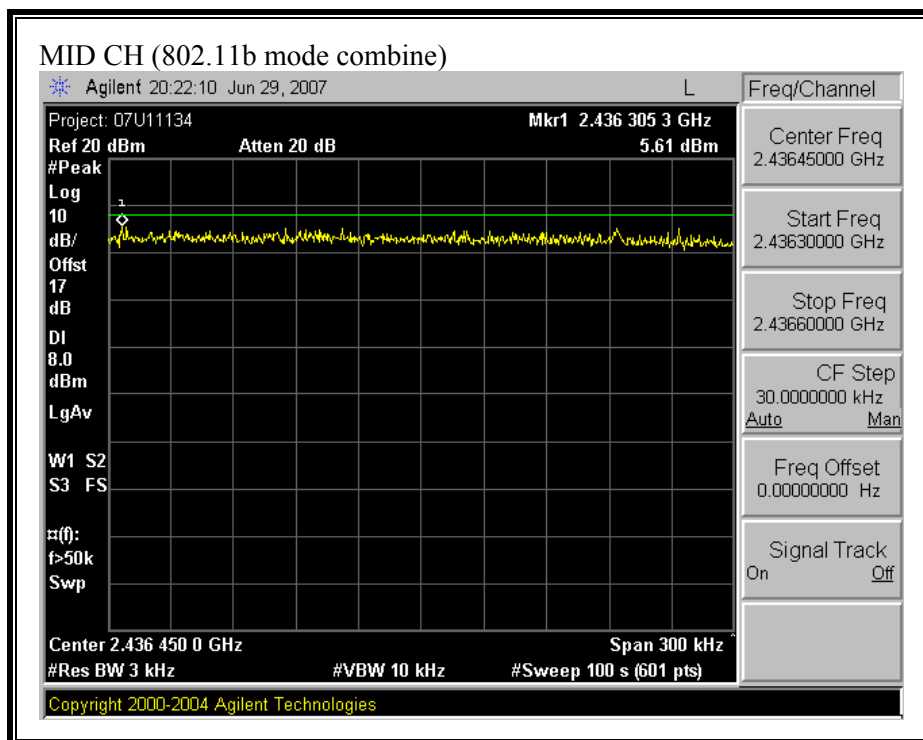
Low	2412	-0.14	8	-8.14
Mid	2437	-0.12	8	-8.12
High	2462	-0.86	8	-8.86

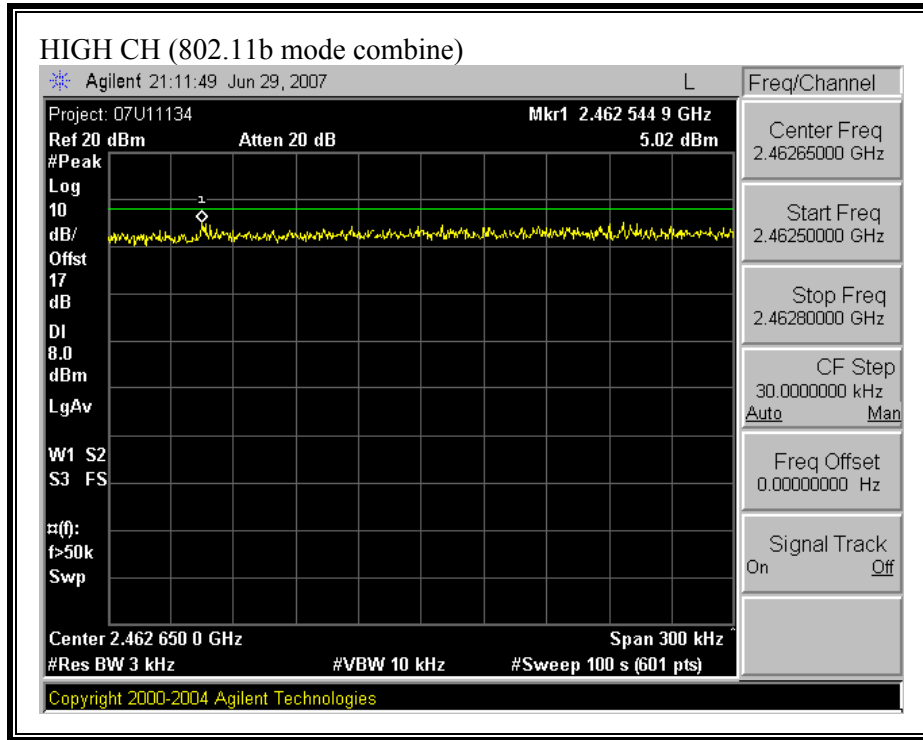
802.11n HT40 Mode

Low	2422	-3.27	8	-11.27
Mid	2447	-2.63	8	-10.63
High	2452	-4.58	8	-12.58

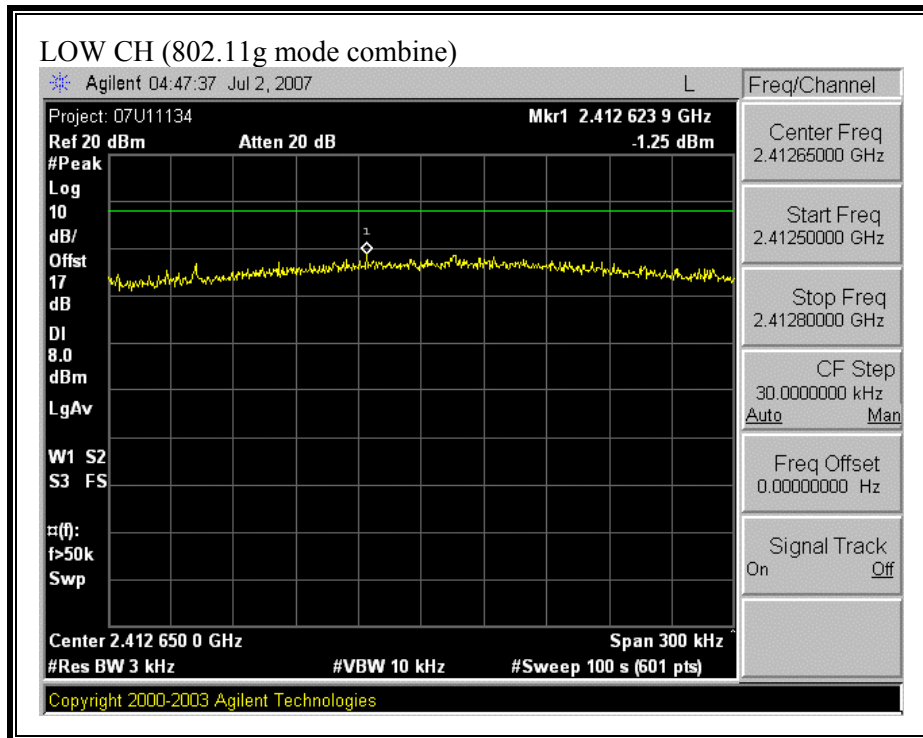
(802.11b MODE COMBINE)

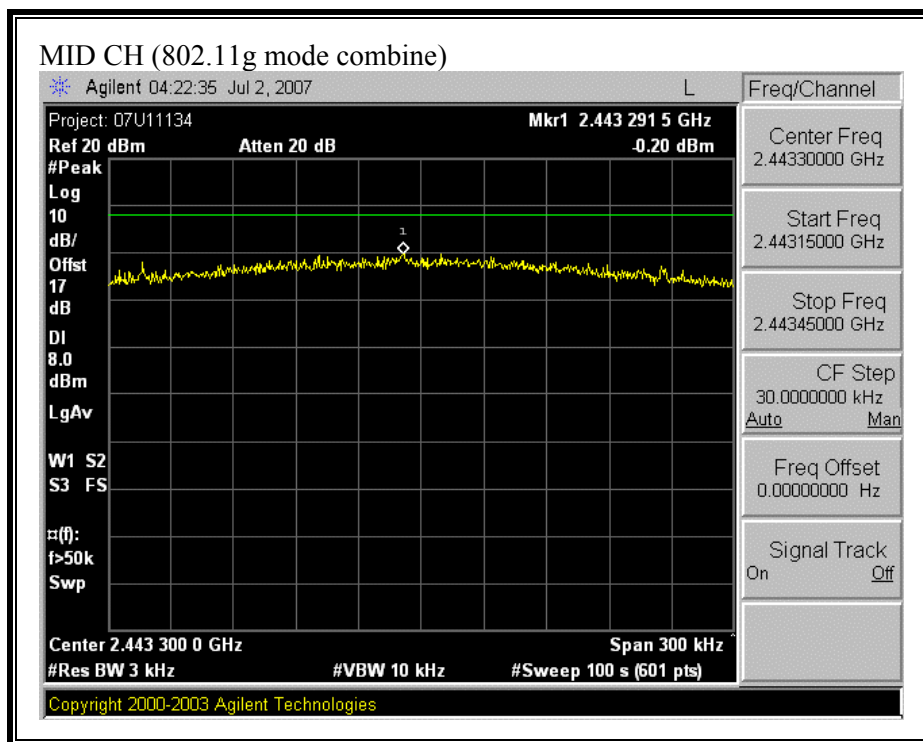


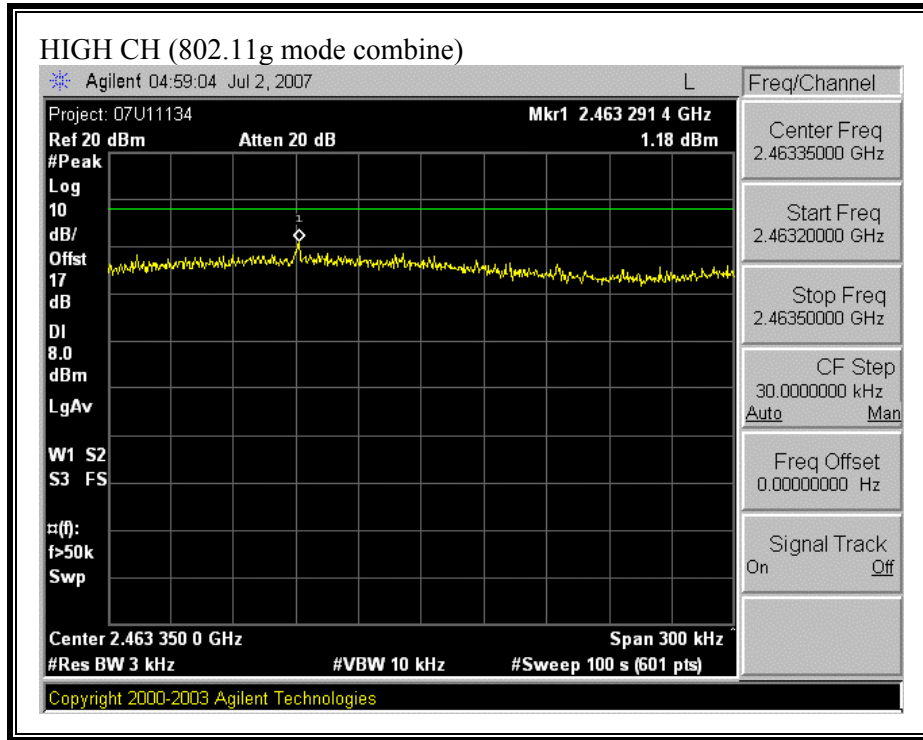




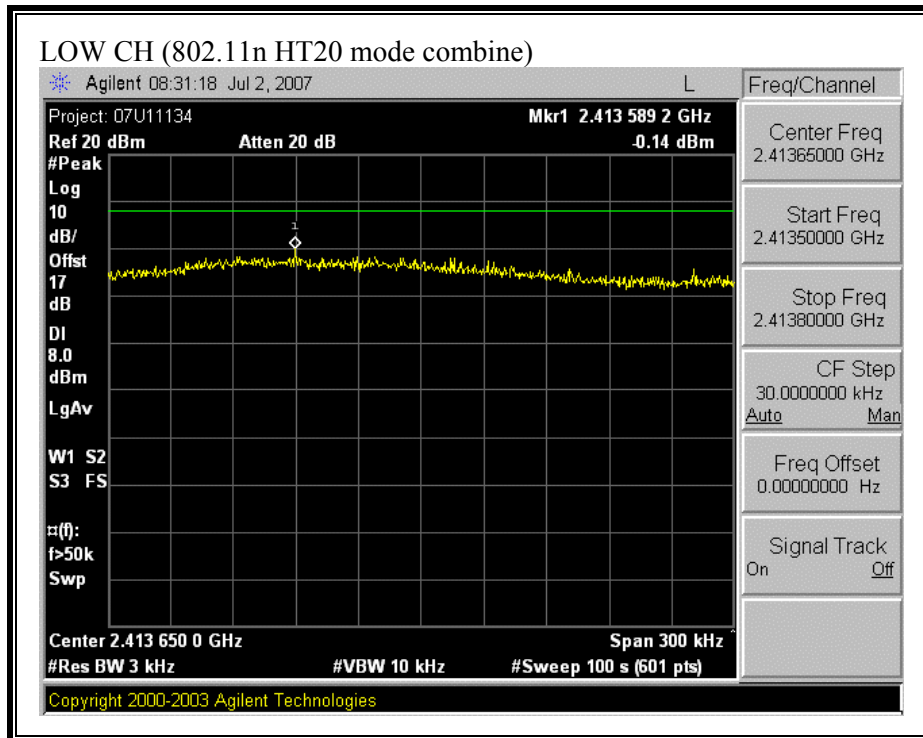
(802.11g MODE COMBINE)

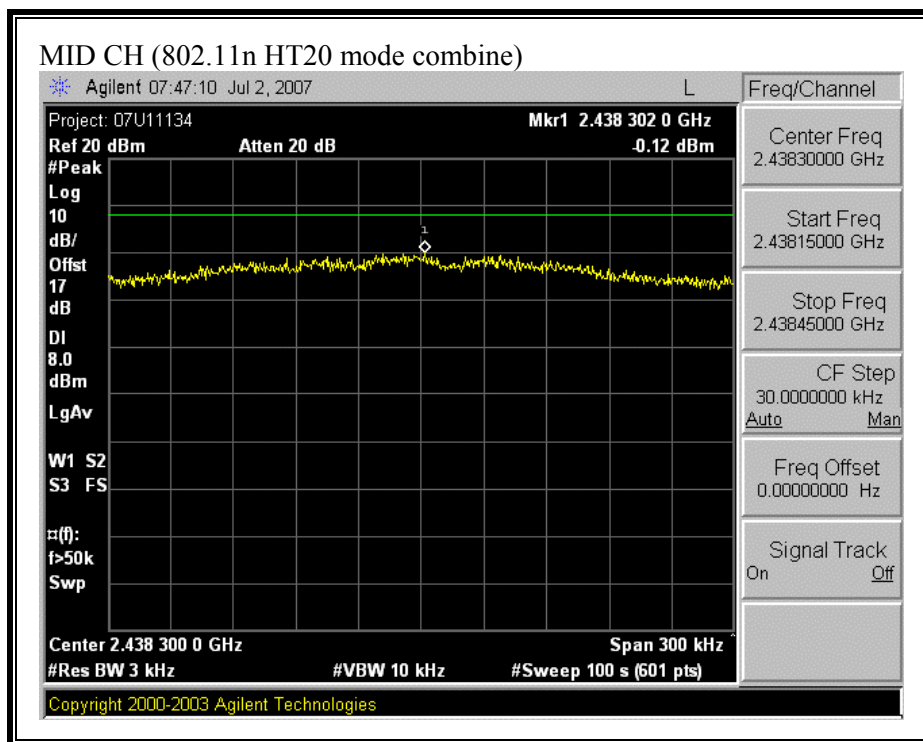


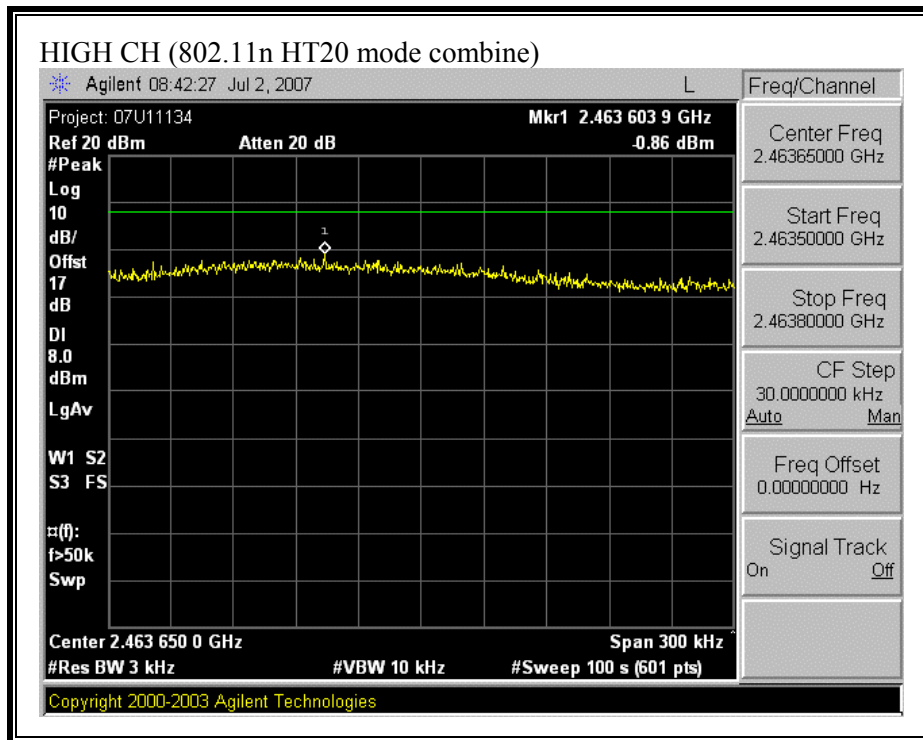




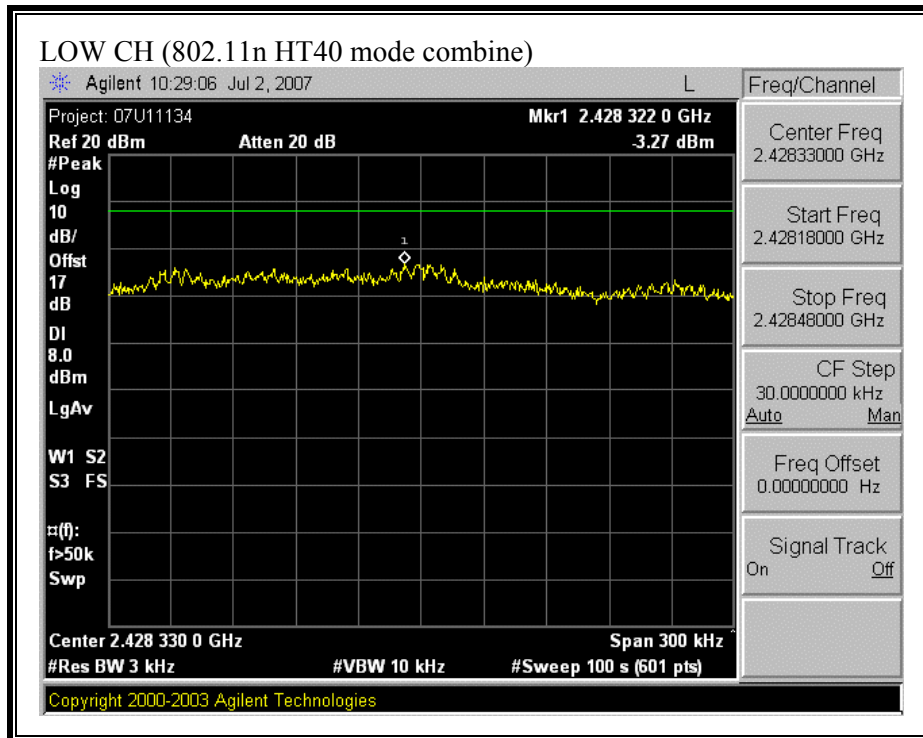
(802.11n HT20 MODE COMBINE)

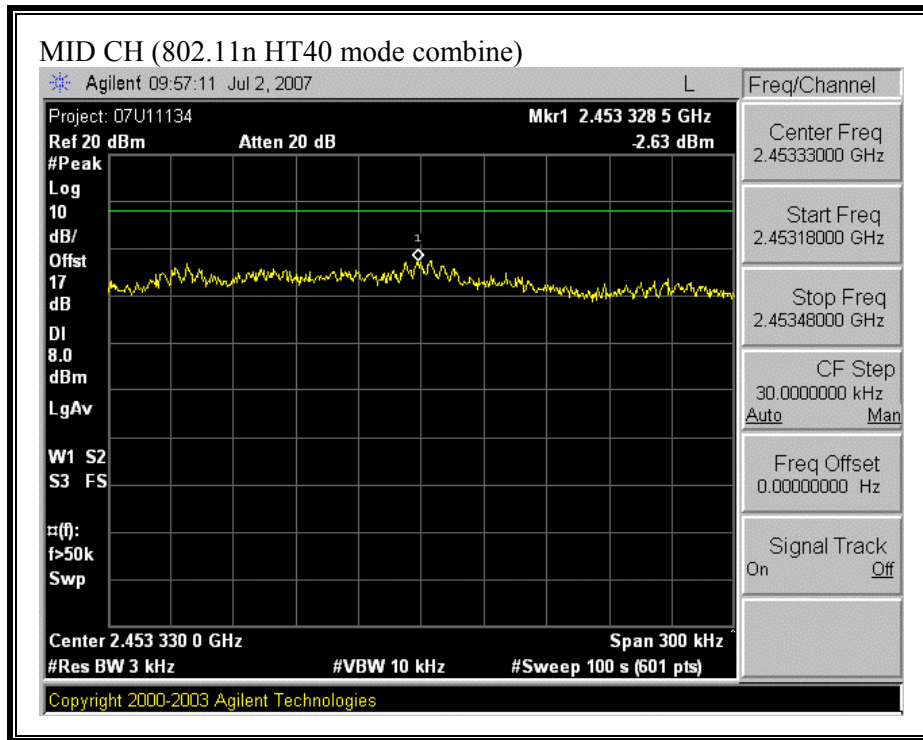


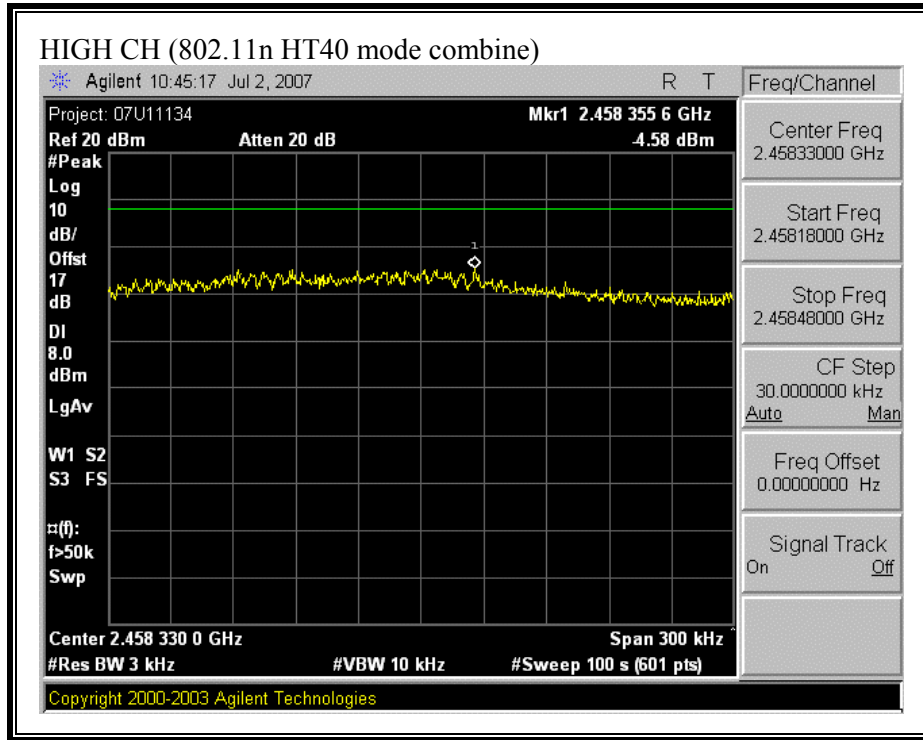




(802.11n HT40 MODE COMBINE)







7.1.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

§15.247 (c) 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 band 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

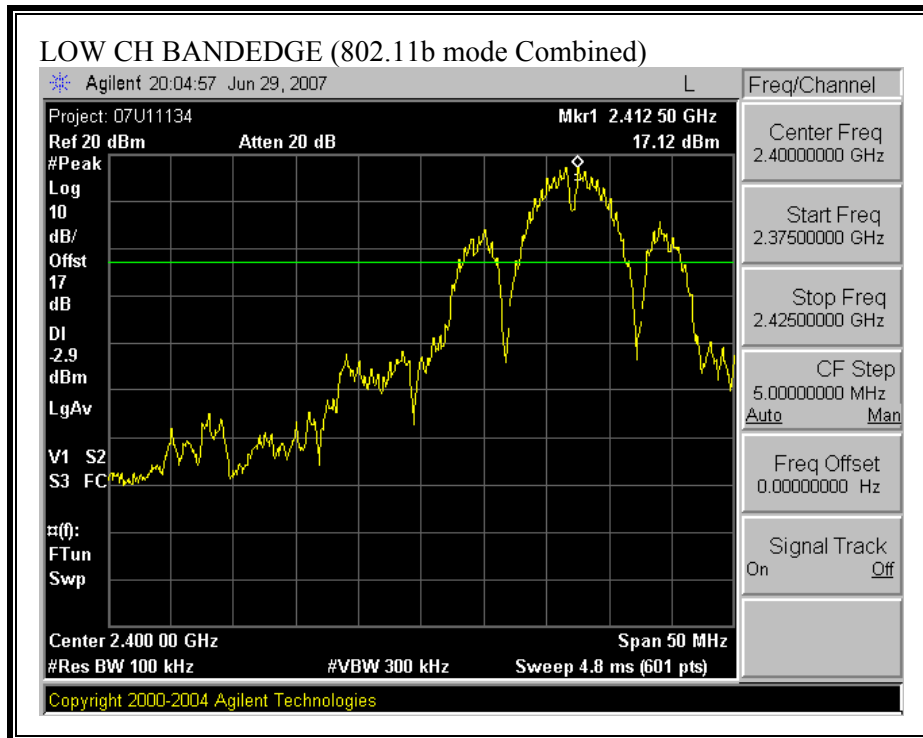
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

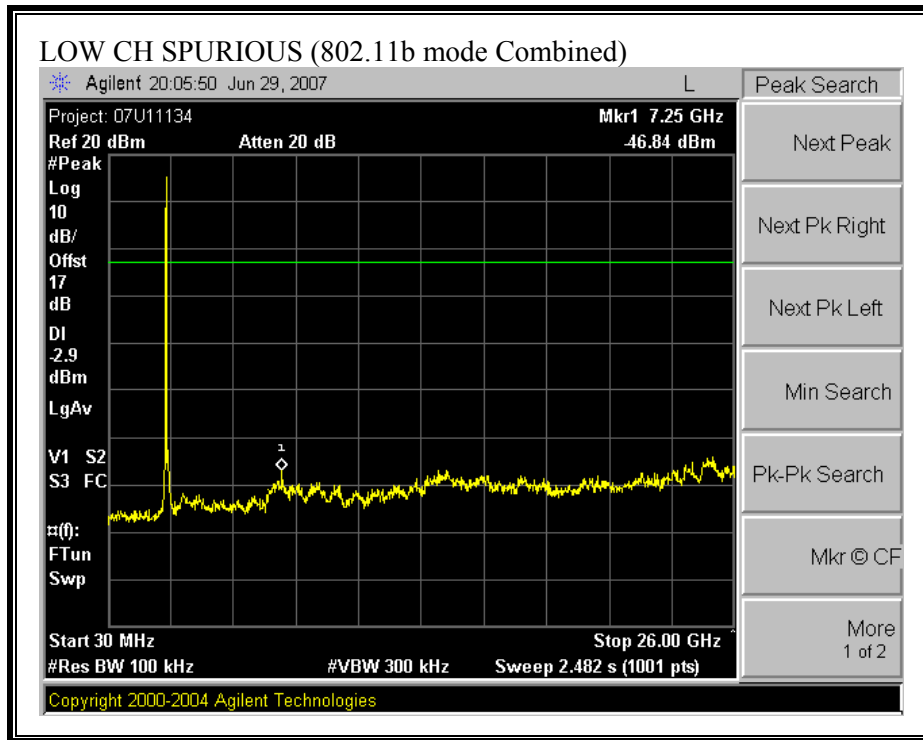
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

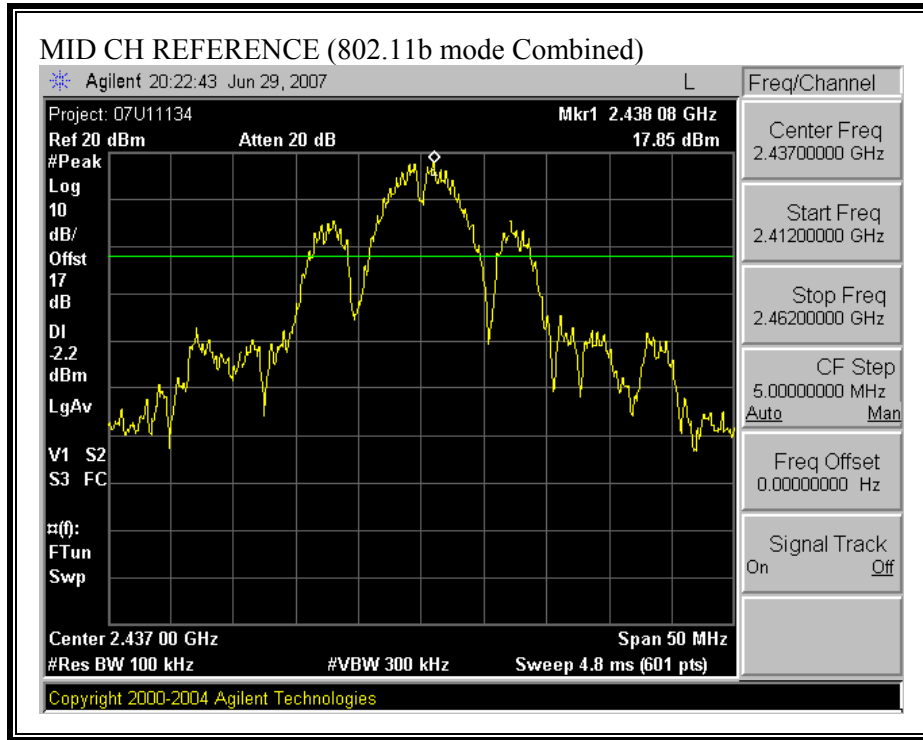
RESULTS

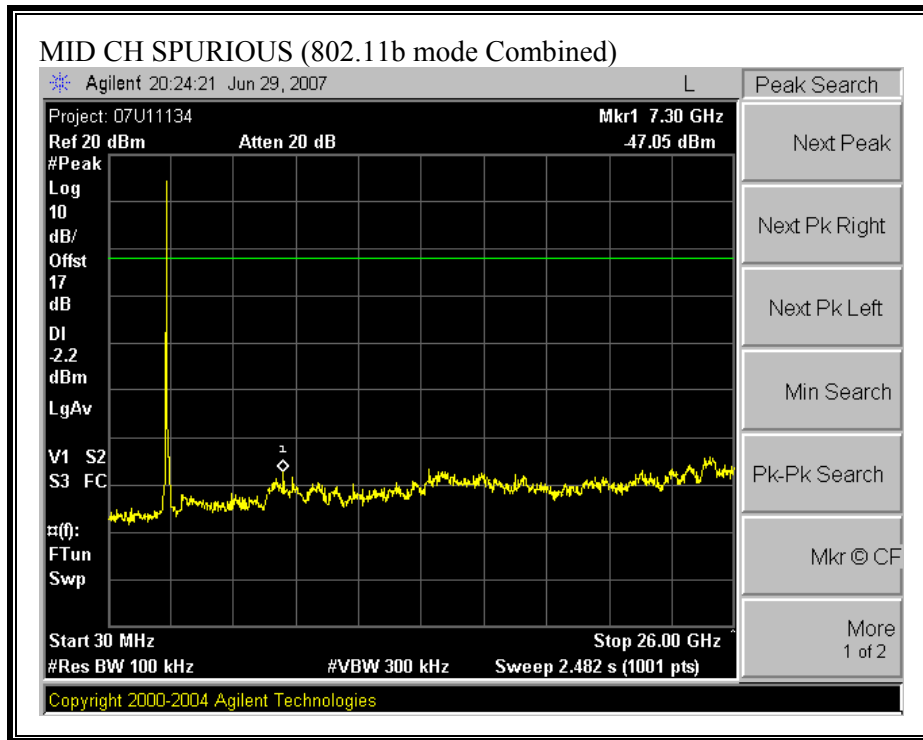
No non-compliance noted:

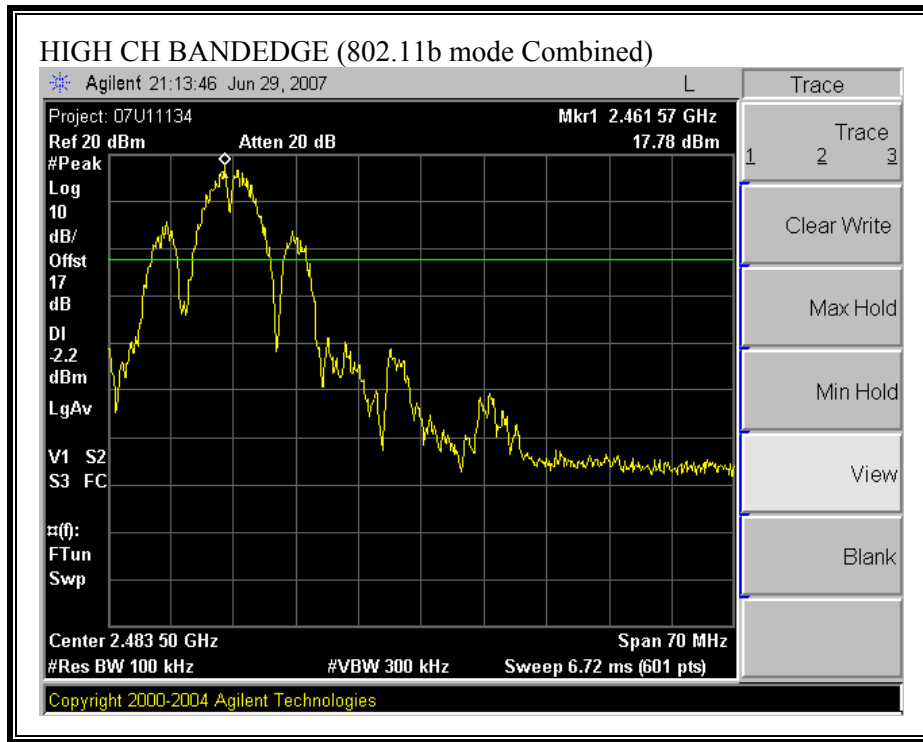
COMBINED SPURIOUS EMISSIONS (802.11b MODE)

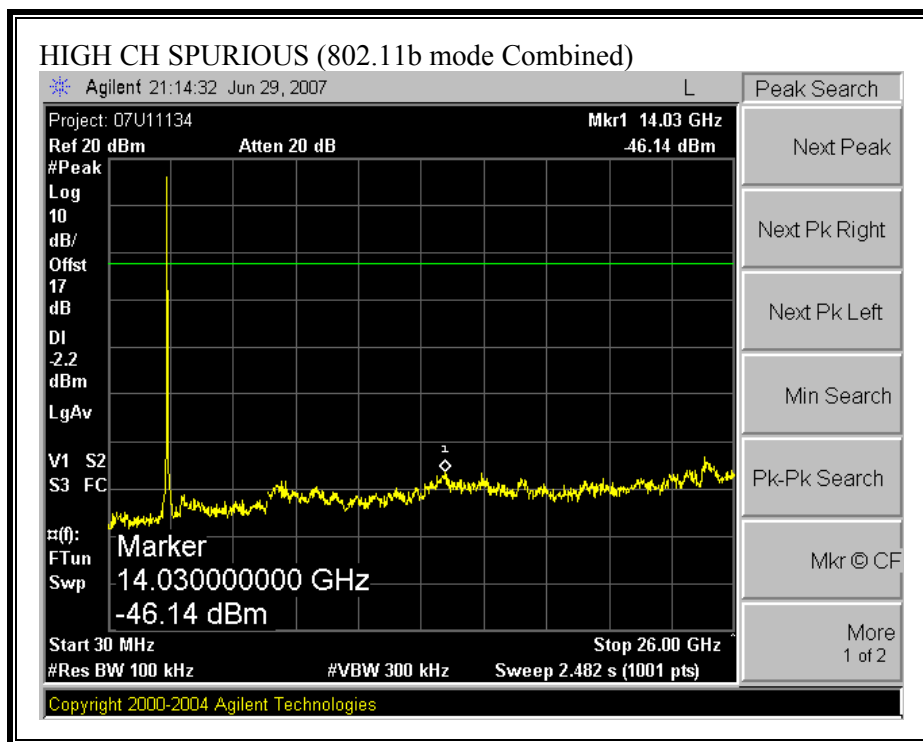




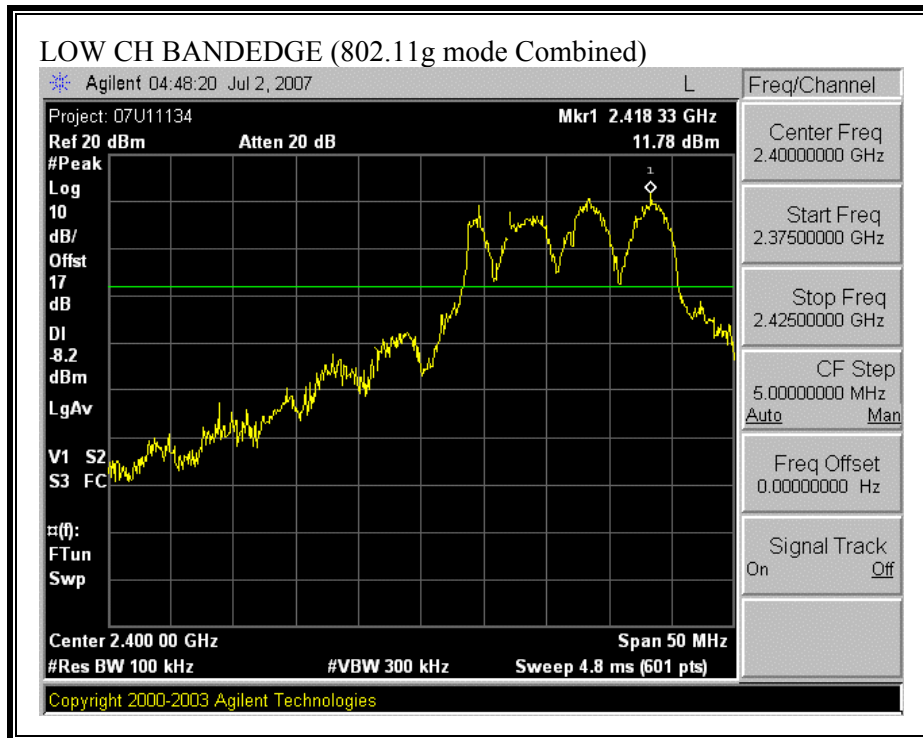


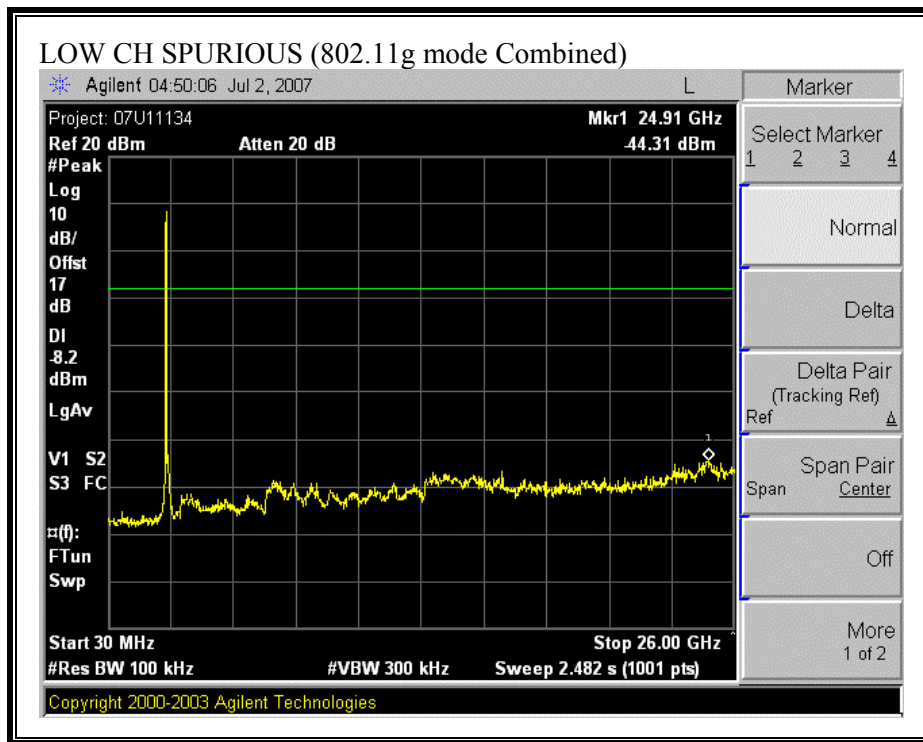


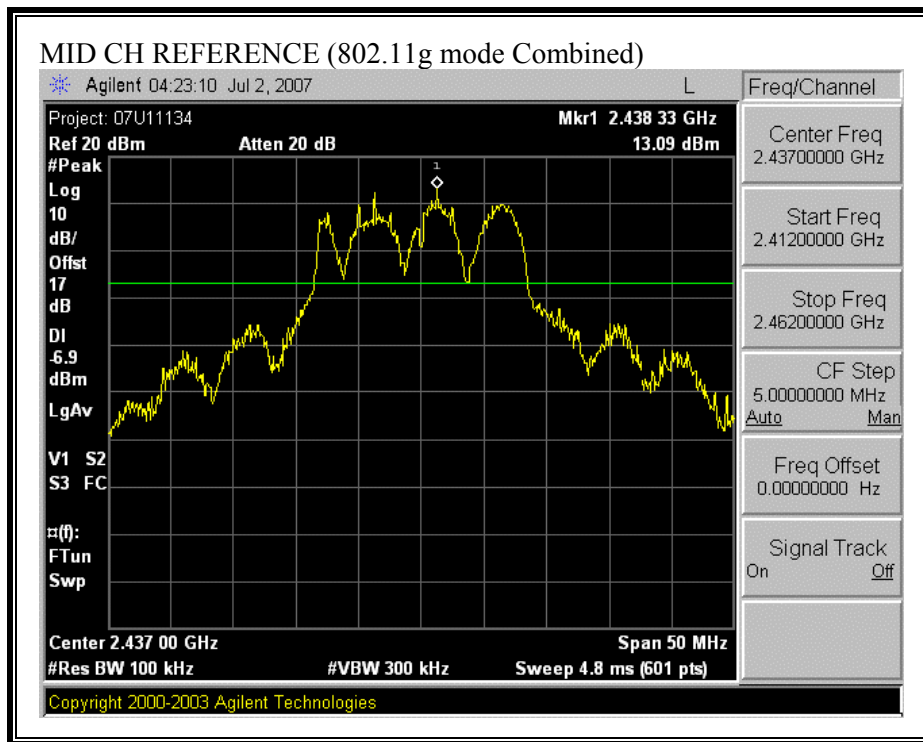


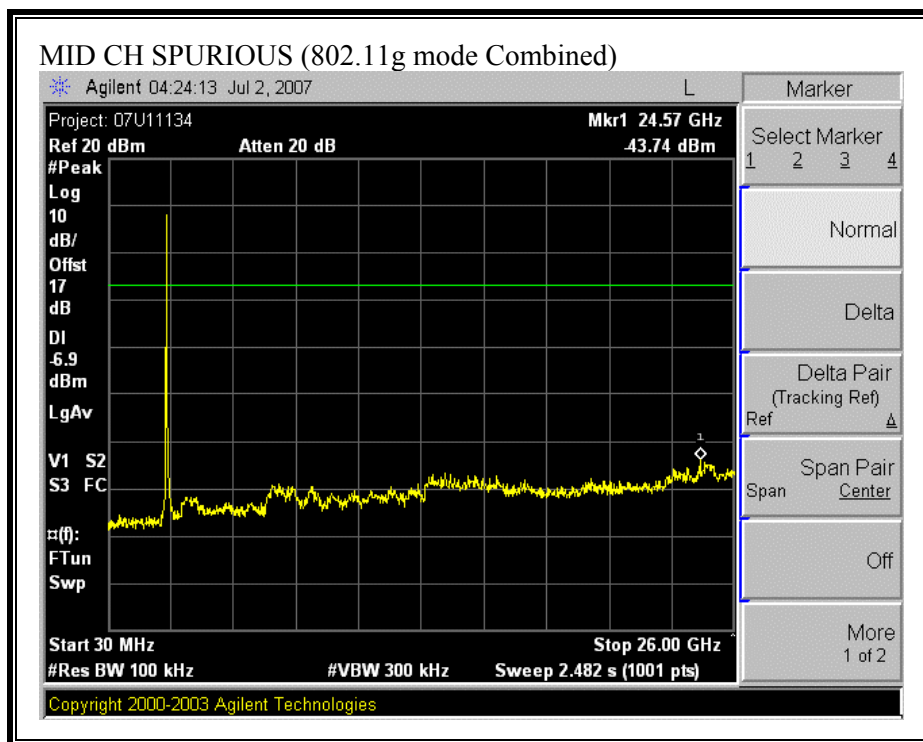


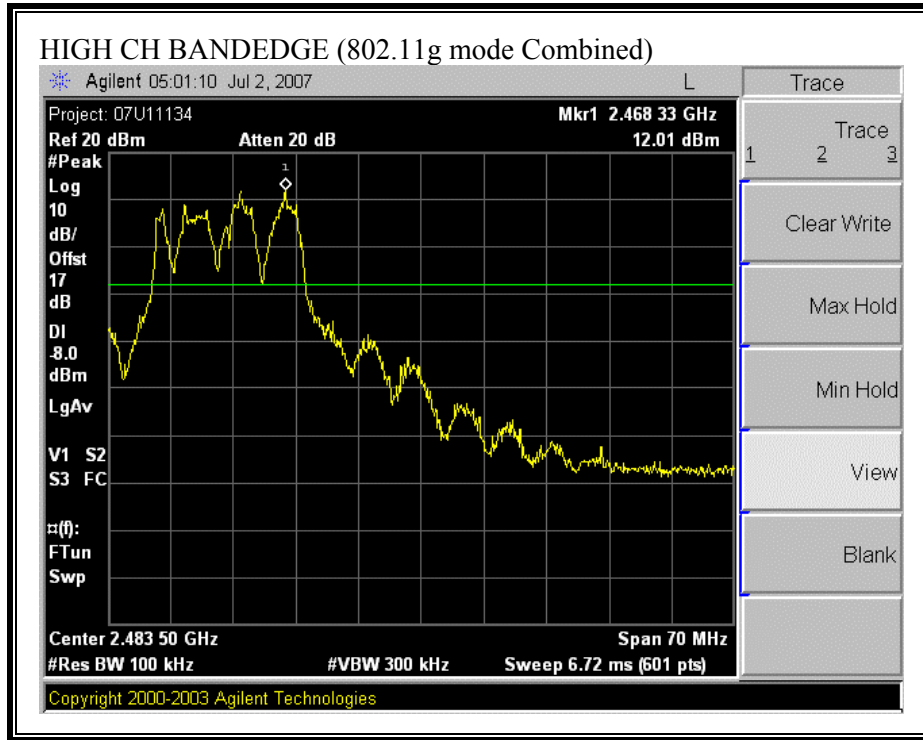
COMBINED SPURIOUS EMISSIONS (802.11g MODE)

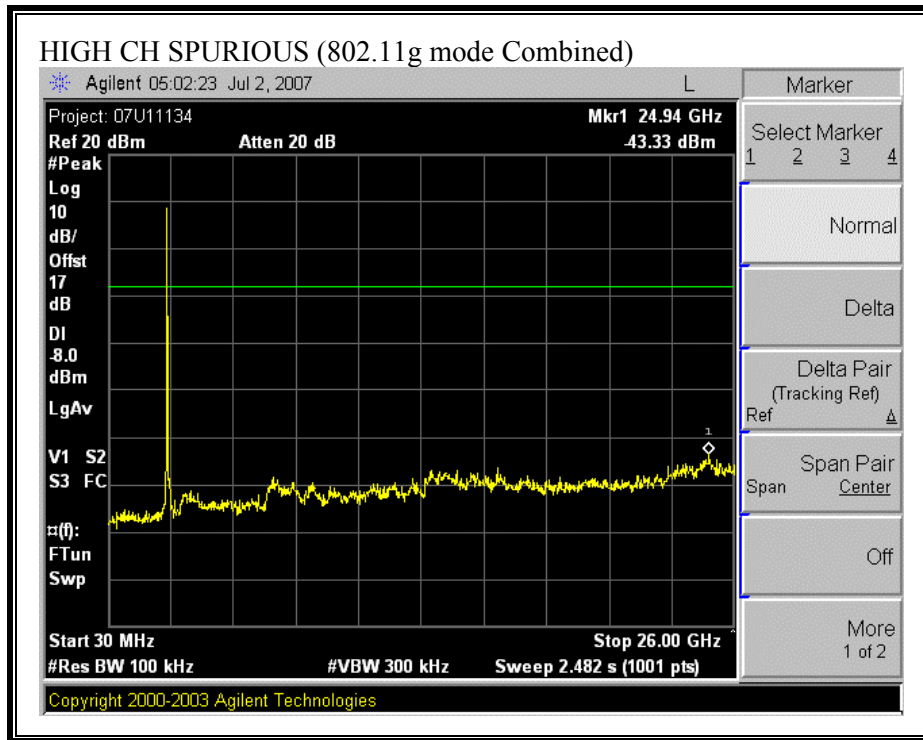




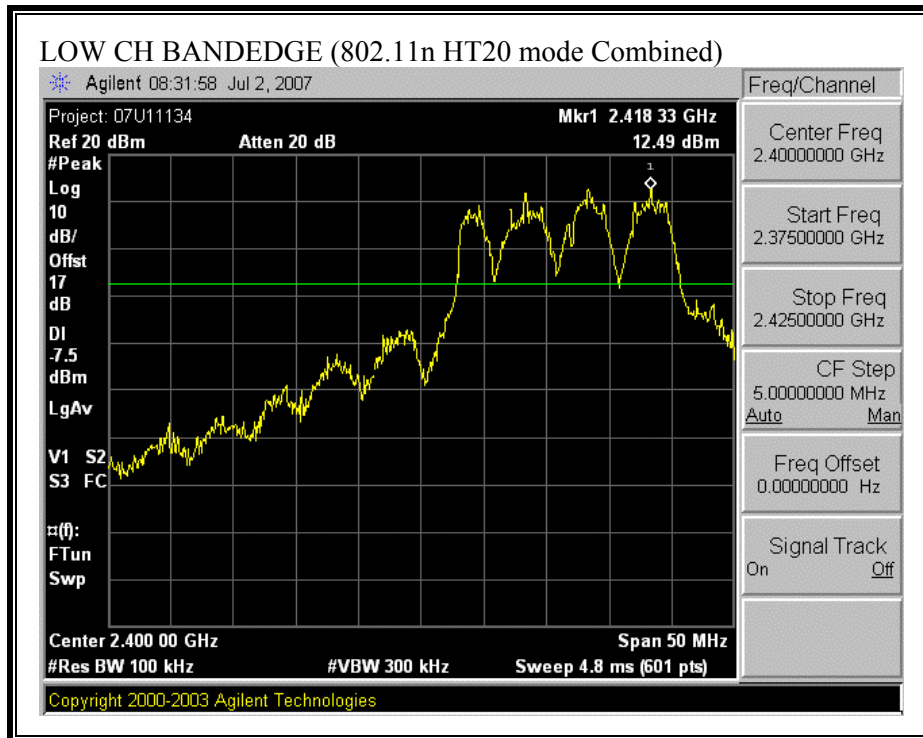


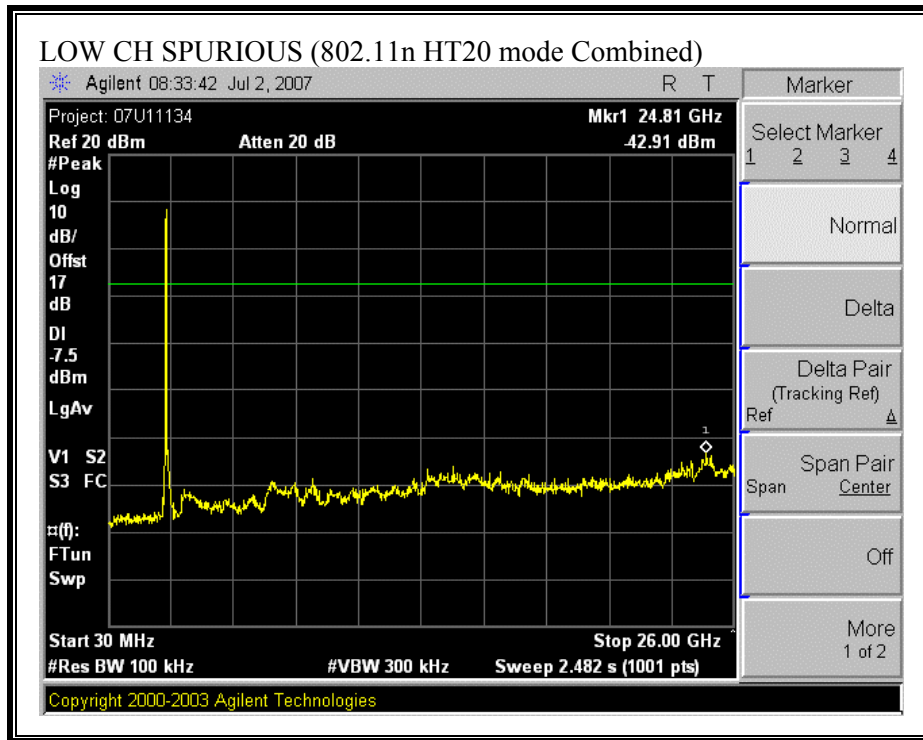


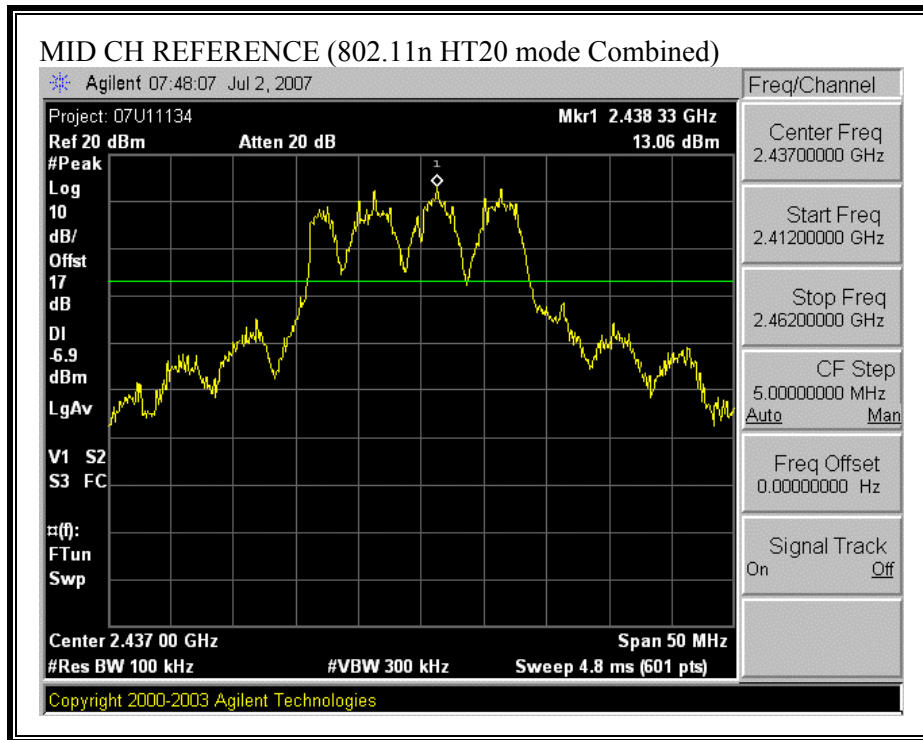


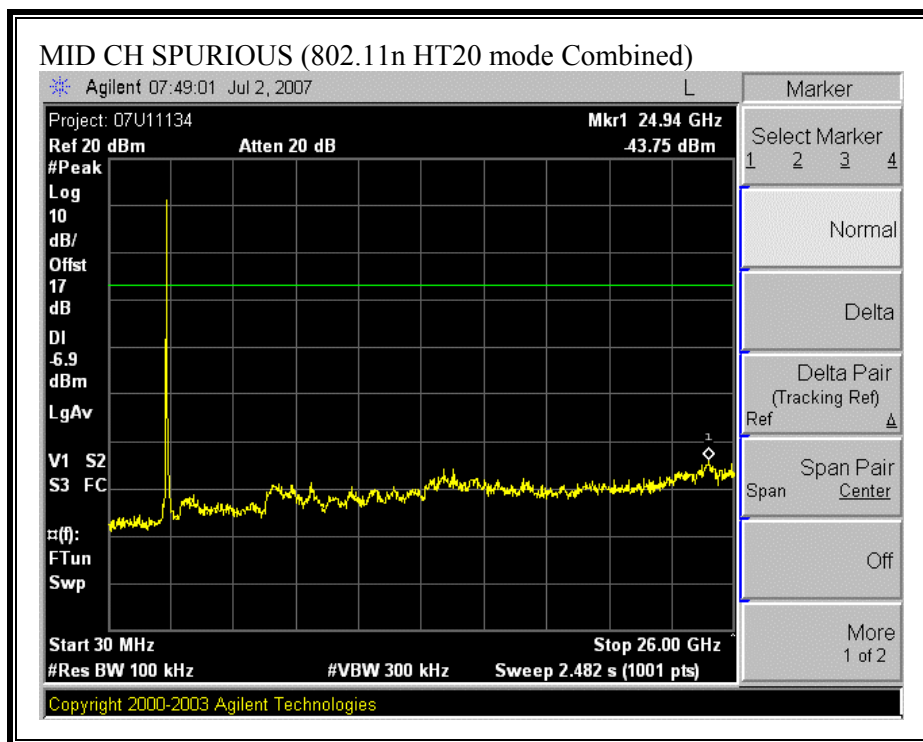


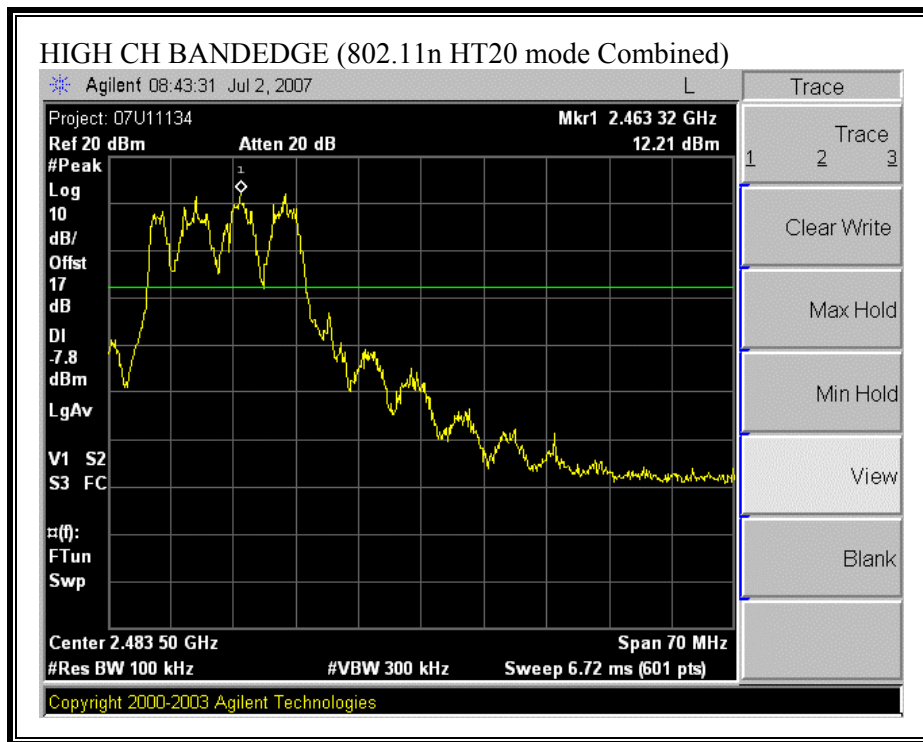
COMBINED SPURIOUS EMISSIONS (802.11n HT20 MODE)

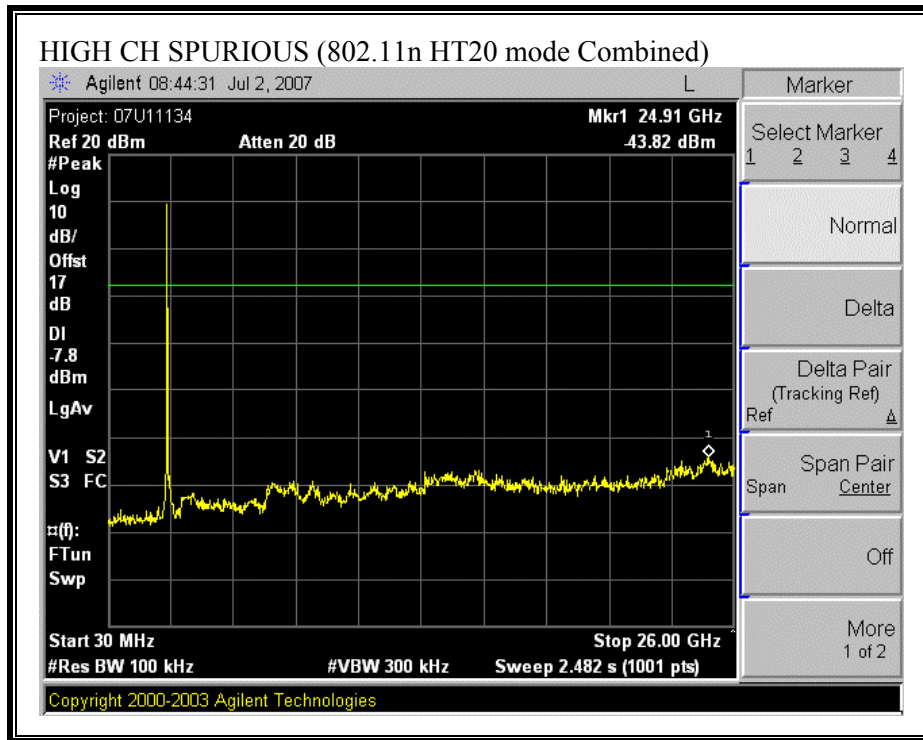












COMBINED SPURIOUS EMISSIONS (802.11 HT40 MODE)

