FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT

FOR

802.11n DUAL BAND CARDBUS ADAPTER

MODEL NUMBER: AR5BCB-00072

FCC ID: PPD-AR5BCB-00072

REPORT NUMBER: 06U10485-1

ISSUE DATE: AUGUST 22, 2006

Prepared for
ATHEROS COMMUNICATIONS, INC.
5480 GREAT AMERICA PARKWAY
SANTA CLARA, CA 95054, USA

Prepared by
COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD
MORGAN HILL, CA 95037, USA
TEL: (408) 463-0885
FAX: (408) 463-0888

LAB CODE:200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	8/22/2006	Initial Issue	MH

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: ATHEROS COMMUNICATIONS, INC.
5480 Great America Parkway
Santa Clara, CA 95054, USA

EUT DESCRIPTION: 802.11n DUAL BAND CARDBUS ADAPTER

MODEL: AR5BCB-00072

SERIAL NUMBER: CB72-020-L0073

DATE TESTED: AUGUST 02-07, 2006

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:

MIKE HECKROTTE
ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES

CHIN PANG
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 561F Monterey Road, Morgan Hill, 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

The AR5BCB-00072 is designed for 802.11a/b/g/n applications using the AR541X/51XX chipset with a PCMCIA interface, configured in a Cardbus form factor. It has three receive chains and two transmit chains (2x3 configuration).

The 2x3 configuration is implemented with two outside chains (Chain 0 and 2) as Tx/Rx with inverted-F antennas and the middle chain (chain 1) as Rx only with a PCB antenna.

A 2x2 configuration is implemented by depopulating the middle receive chain; in this configuration the transmit chains are identical to the 2x3 configuration. The 2x2 version, when marketed, will have a unique model ID to differentiate it from the fully configured version.

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)
2400 to 2483.5 MHz Authorized Band			
2412 - 2462	802.11b	23.56	226.99
2412 - 2462	802.11g	23.24	210.86
2412 - 2462	802.11n HT20	23.12	205.12
2422 - 2452	802.11n HT40	23.19	208.45
5725 to 5850 MHz Authorized Band			
5745 - 5825	802.11a	20.88	122.46
5745 - 5825	802.11n HT20	20.48	111.69
5755 - 5795	802.11n HT40	20.41	109.90

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The 2x3 configuration utilizes a set of two identical Inverted-F antennas for Tx/Rx Chains 0 and 2, with a maximum gain of –1.2 dBi at 2.4 GHz and 1.5 dBi at 5.8 GHz, plus a PCB Integrated monopole antenna for Rx Chain 1, with a maximum gain of –2.3 dBi at 2.4 GHz and 0.5 dBi at 5.8 GHz.

Two identical Inverted-F antennas as described above are used in the 2x2 configuration.

5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed in the host support equipment during testing was AR5002, ANWI Diagnostic Kernel Drive.

The test utility software used during testing was Art Software Revision 0.4 Build #4 Art 11n

5.5. WORST-CASE CONFIGURATION AND MODE

The 2x3 configuration was used for all testing in this report.

The worst-case data rates are determined to be as follows for each mode, based on the investigations by measuring the average power, peak power and PPSD across all the data rates, bandwidths, modulations and spatial stream modes.

Thus all emissions tests were made with following data rates:

- 802.11b mode, 20 MHz Channel Bandwidth, 1 Mb/s, CCK Modulation, Spatial Stream 1.
- 802.11g mode, 20 MHz Channel Bandwidth, 9 Mb/s, OFDM Modulation, Spatial Stream 1.
- 802.11a mode, 20 MHz Channel Bandwidth, 9 Mb/s, OFDM Modulation, Spatial Stream 1.
- 802.11n HT20 mode, 20 MHz Channel Bandwidth, MCS0, 6.5 Mb/s, OFDM Modulation, Spatial Stream 1.
- 802.11n HT40 mode, 40 MHz Channel Bandwidth, MCS0, 13.5 Mb/s, OFDM Modulation, Spatial Stream 1.

The worst-case configuration for tests below 1 GHz is the mode and channel with the highest power: 802.11b mode, mid channel.

Baseline testing demonstrated that the Power Spectral Density as measured through a combiner with both chains operating simultaneously is less than the sum of the Power Spectral Density of each individual chain when added linearly.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	IBM	Thinkpad T43	L3-CL842	DoC
AC adapter	IBM	92P1020	11SP1020Z1ZBRM63EGJA	DoC

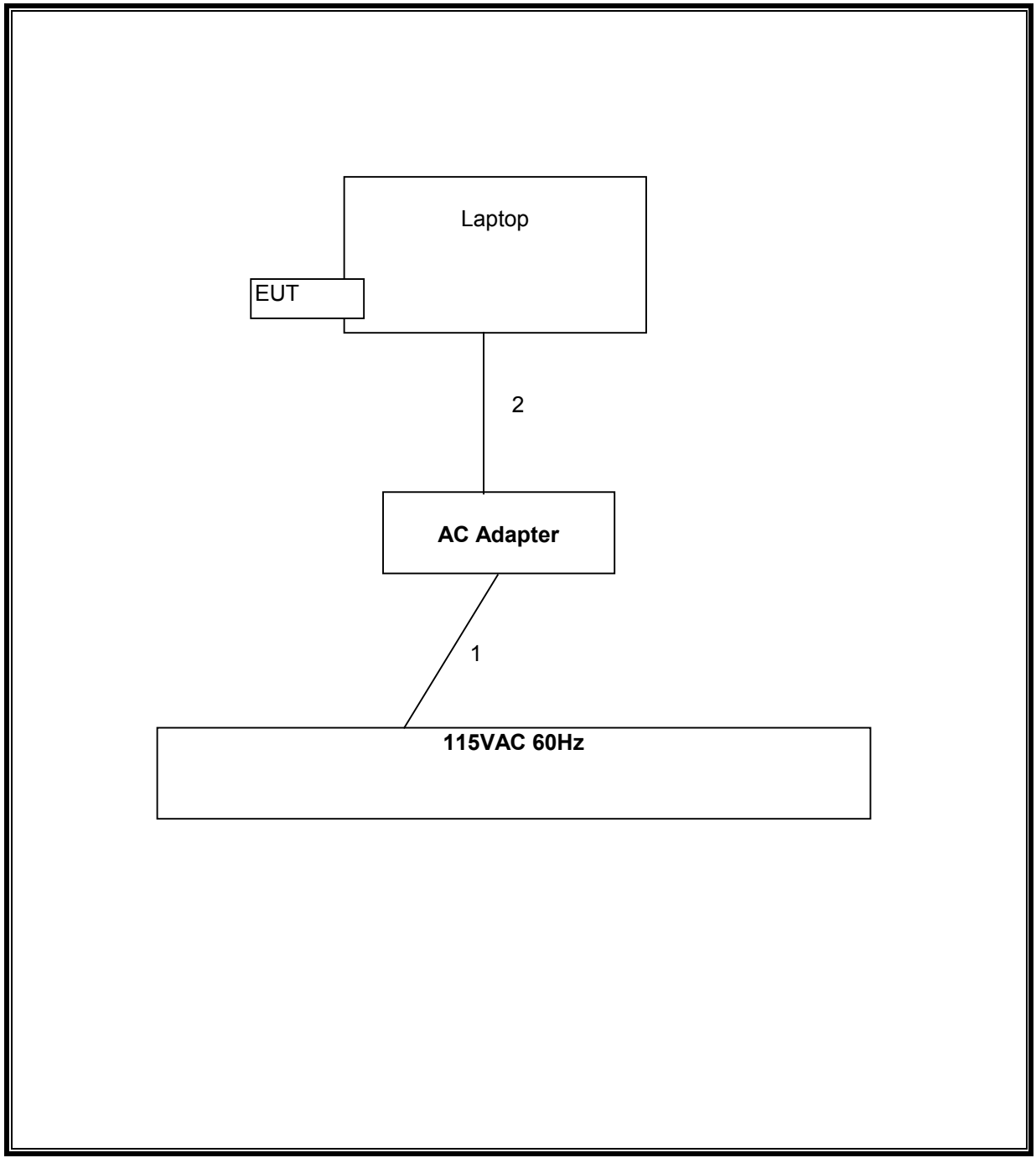
I/O CABLES

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

TEST SETUP

The EUT is installed in a host laptop computer 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
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/2007
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00561	10/3/2007
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	US42510266	10/19/2006
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/3/2006
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	2/4/2007
RF Filter Section	Agilent / HP	85420E	3705A00256	2/4/2007
Peak Power Meter	Agilent / HP	E4416A	GB41291160	12/2/2007
Peak / Average Power Sensor	Agilent	E9327A	US40440755	12/2/2007
Antenna, Horn 18 ~ 26 GHz	ARA	MWH-1826/B	1049	9/12/2006
Preamplifier, 26 ~ 40 GHz	Miteq	NSP4000-SP2	924343	8/18/2006
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2006
EMI Test Receiver	R & S	ESHS 20	827129/006	9/3/2006

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.

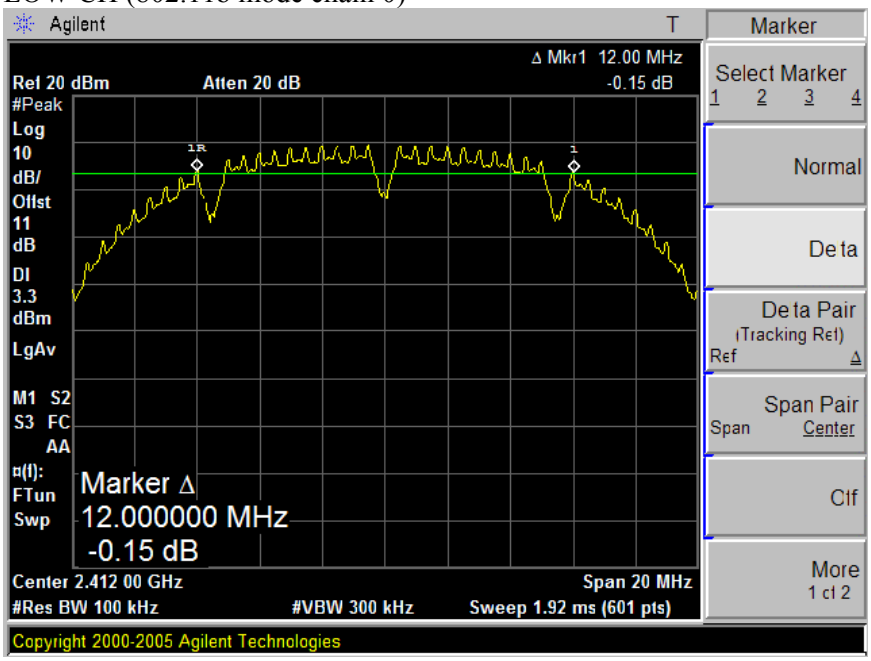
RESULTS

No non-compliance noted:

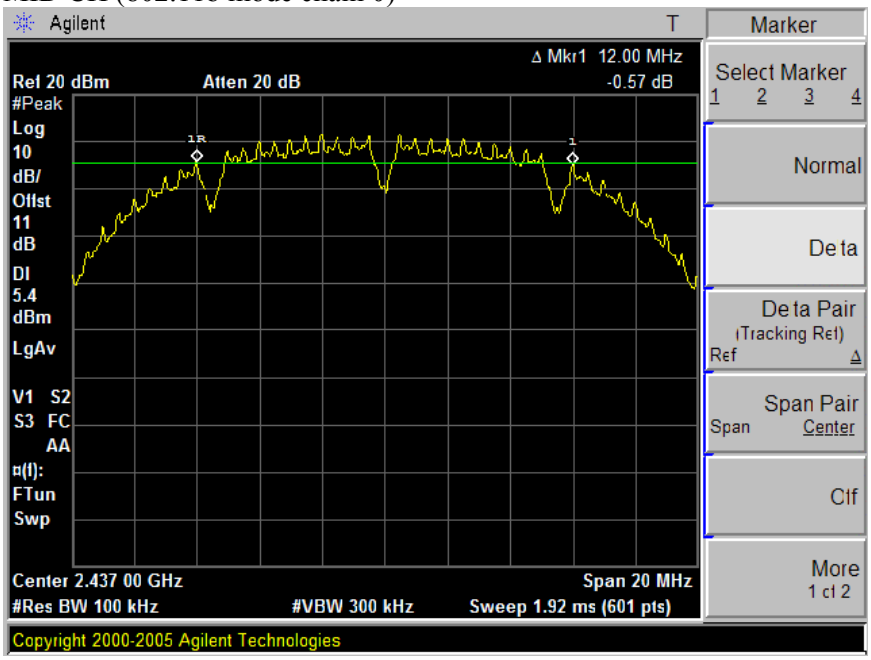
Mode Channel	Frequency (MHz)	6 dB BW Chain 0 (kHz)	6 dB BW Chain 2 (kHz)	Minimum Limit (kHz)	Minimum Margin (kHz)
802.11b Mode					
Low	2412	12000	12000	500	11500
Middle	2437	12000	12000	500	11500
High	2462	12030	12030	500	11530
802.11g Mode					
Low	2412	16330	16400	500	15830
Middle	2437	16370	16400	500	15870
High	2462	16400	16430	500	15900
802.11n HT20 Mode					
Low	2412	17600	17600	500	17100
Mid	2437	17530	17570	500	17030
High	2462	17570	17600	500	17070
802.11n HT40 Mode					
Low	2422	36330	36420	500	35830
Mid	2437	36330	36170	500	35670
High	2452	36330	36080	500	35580

(802.11b MODE CHAIN 0)

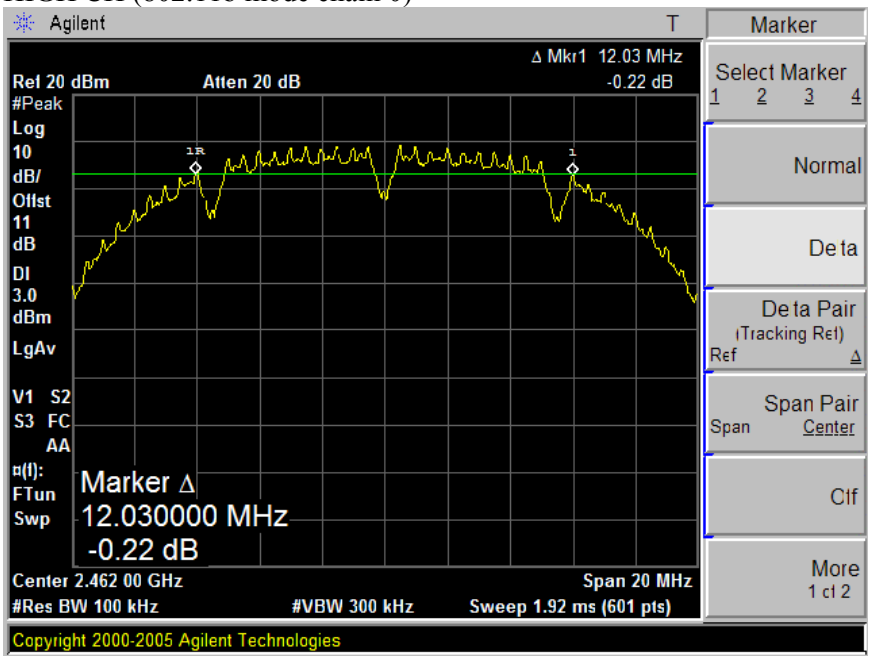
LOW CH (802.11b mode chain 0)



MID CH (802.11b mode chain 0)

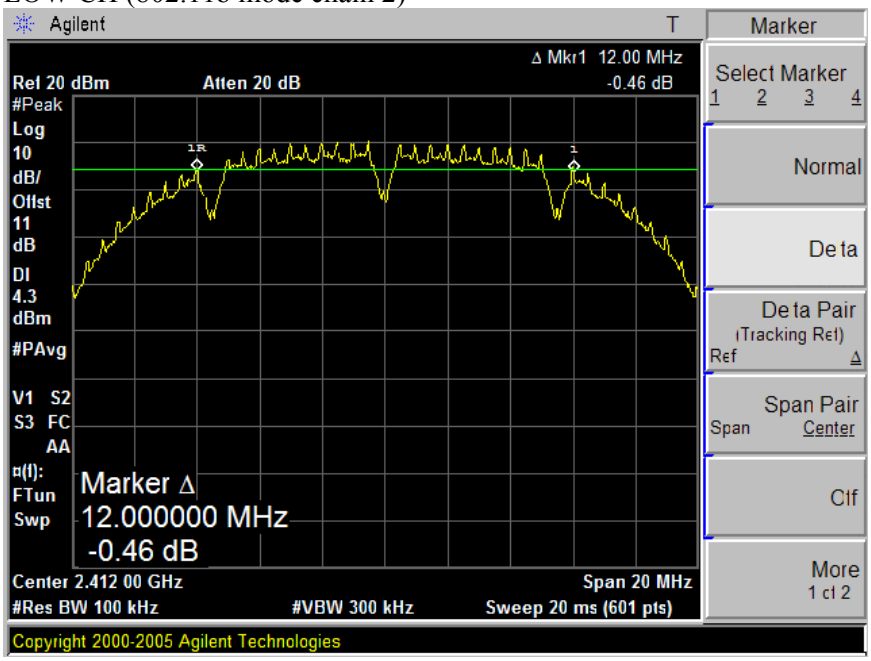


HIGH CH (802.11b mode chain 0)

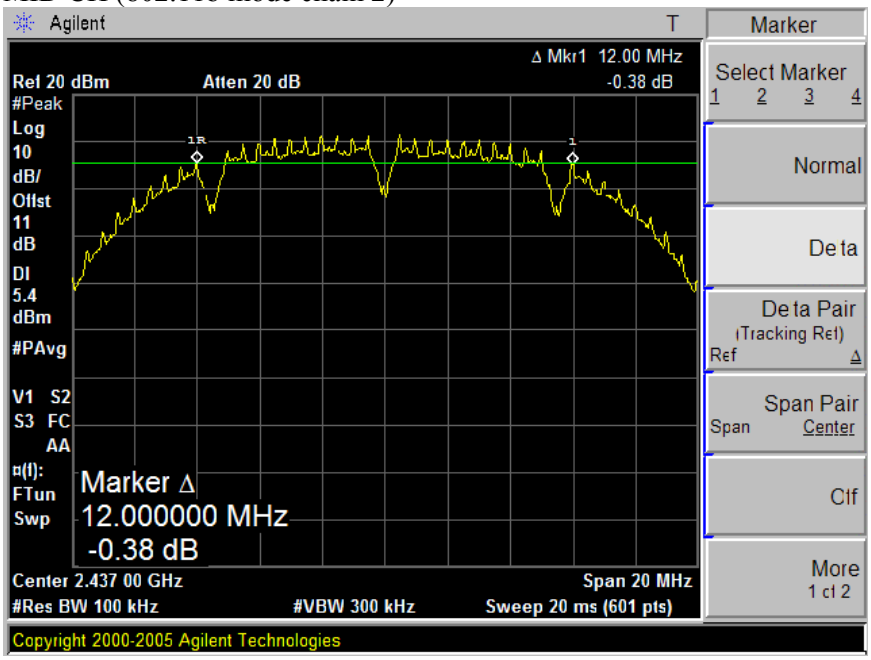


(802.11b MODE CHAIN 2)

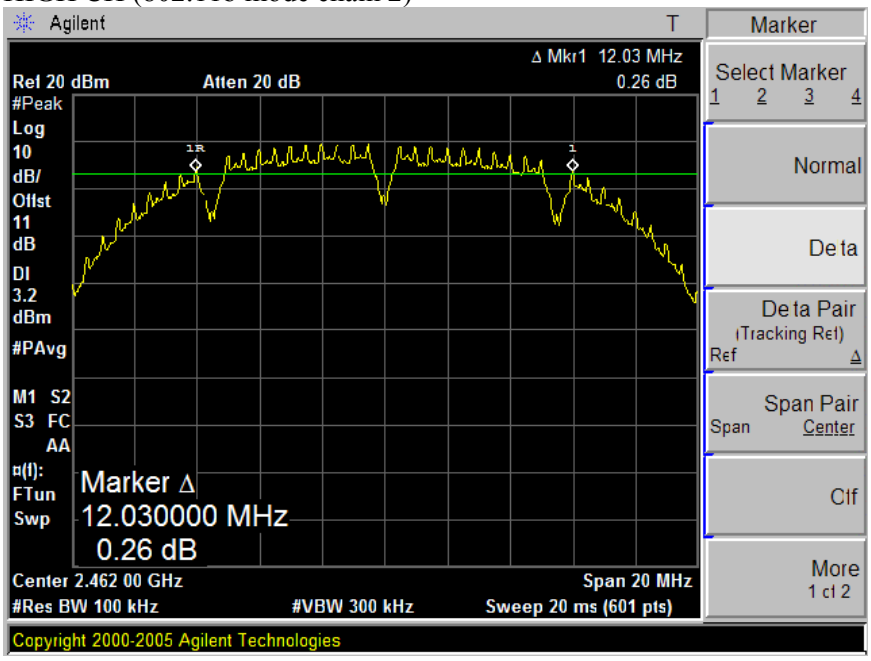
LOW CH (802.11b mode chain 2)



MID CH (802.11b mode chain 2)

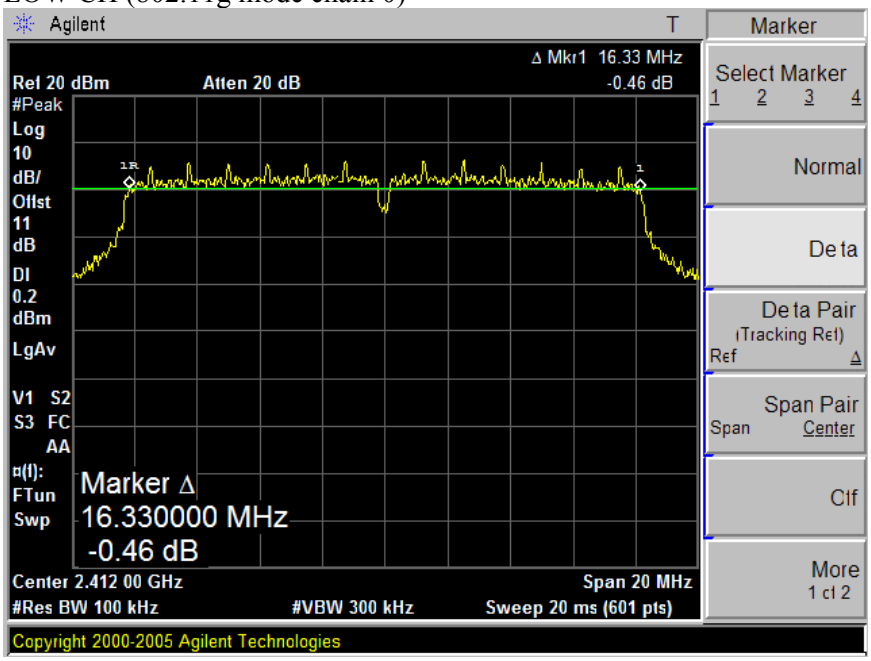


HIGH CH (802.11b mode chain 2)

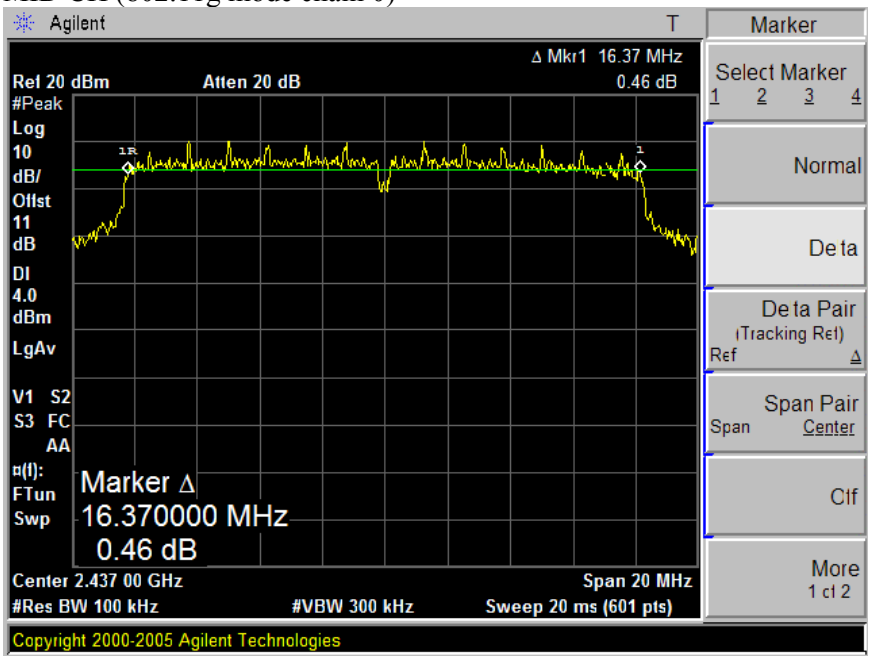


(802.11g MODE CHAIN 0)

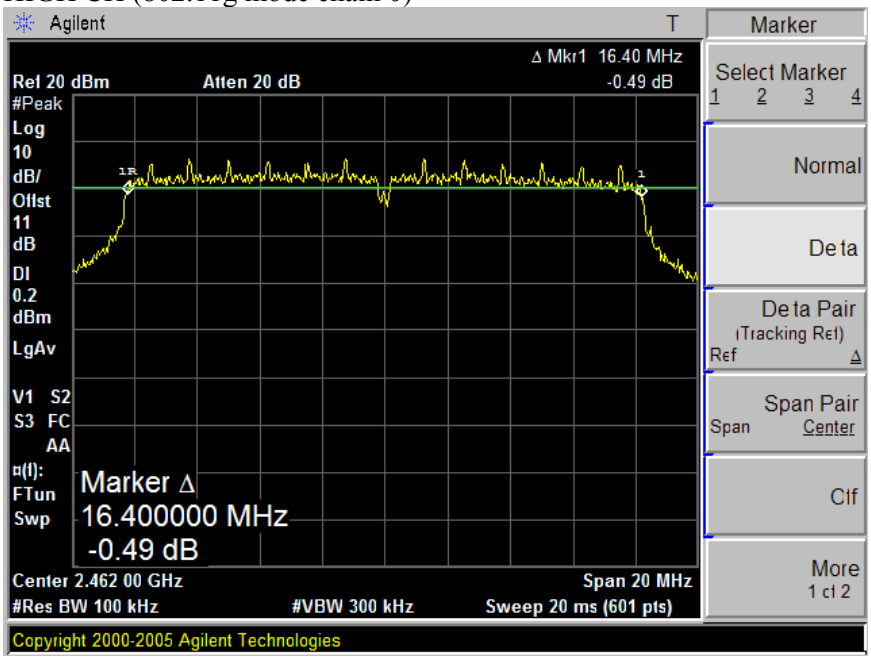
LOW CH (802.11g mode chain 0)



MID CH (802.11g mode chain 0)

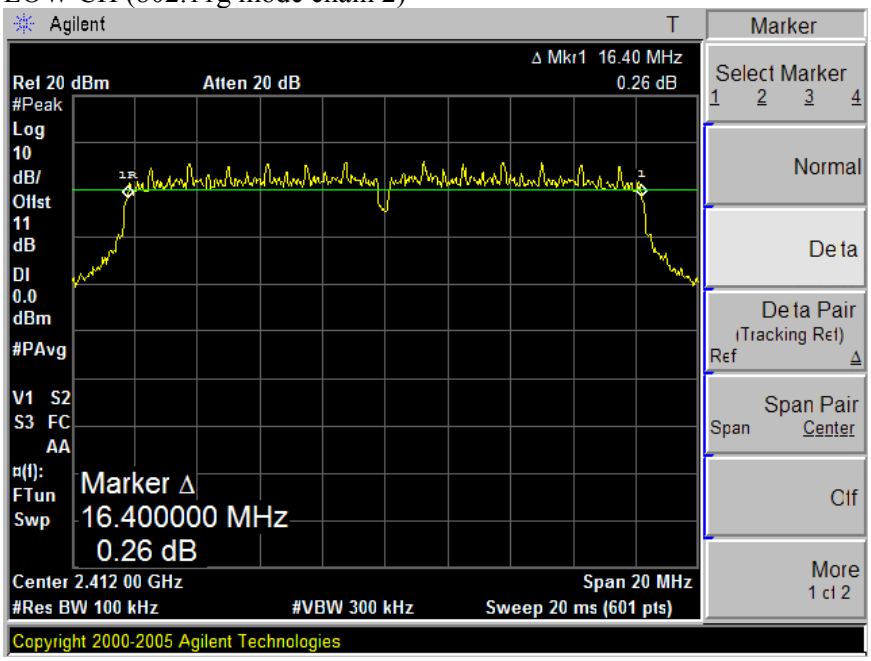


HIGH CH (802.11g mode chain 0)

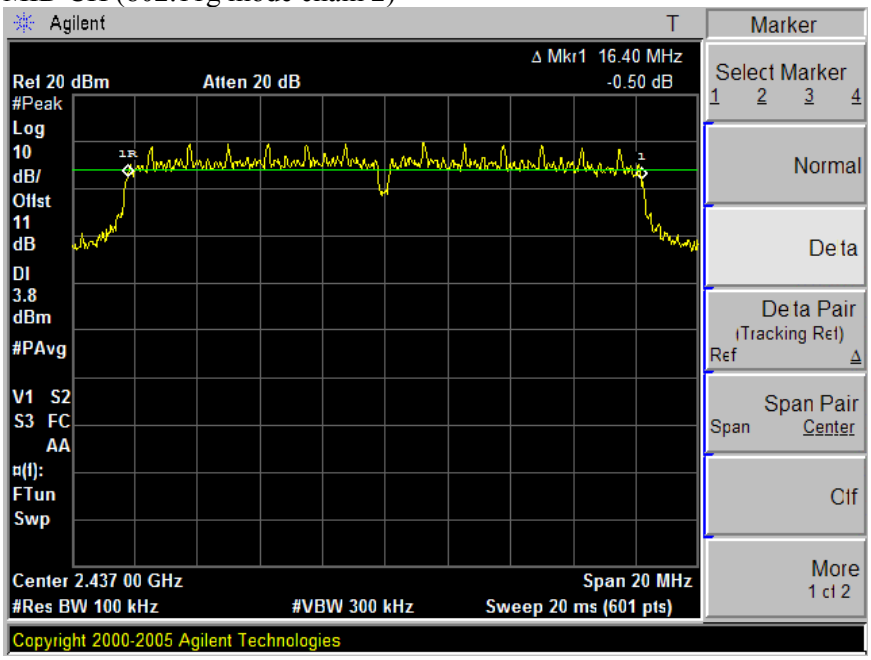


(802.11g MODE CHAIN 2)

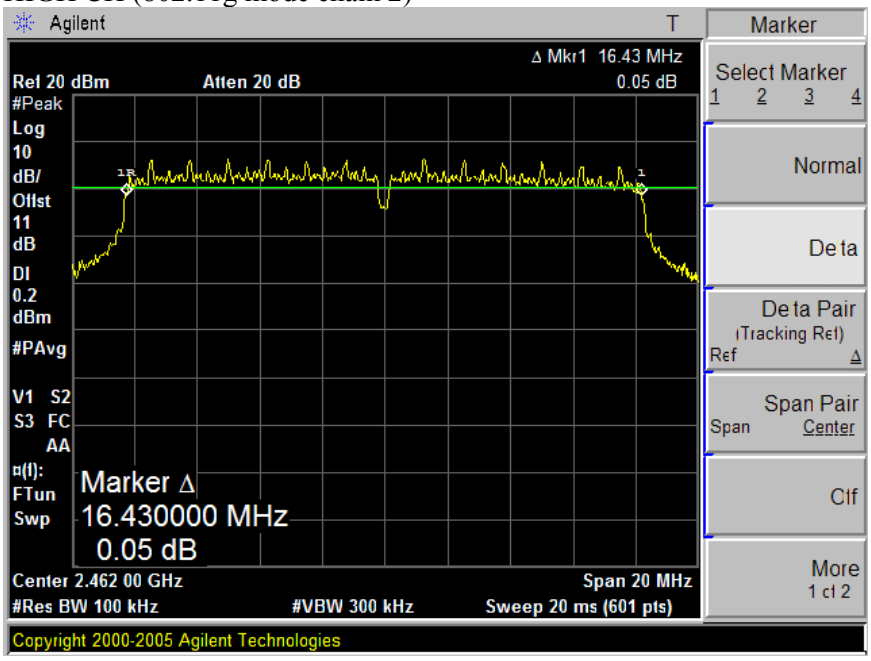
LOW CH (802.11g mode chain 2)



MID CH (802.11g mode chain 2)

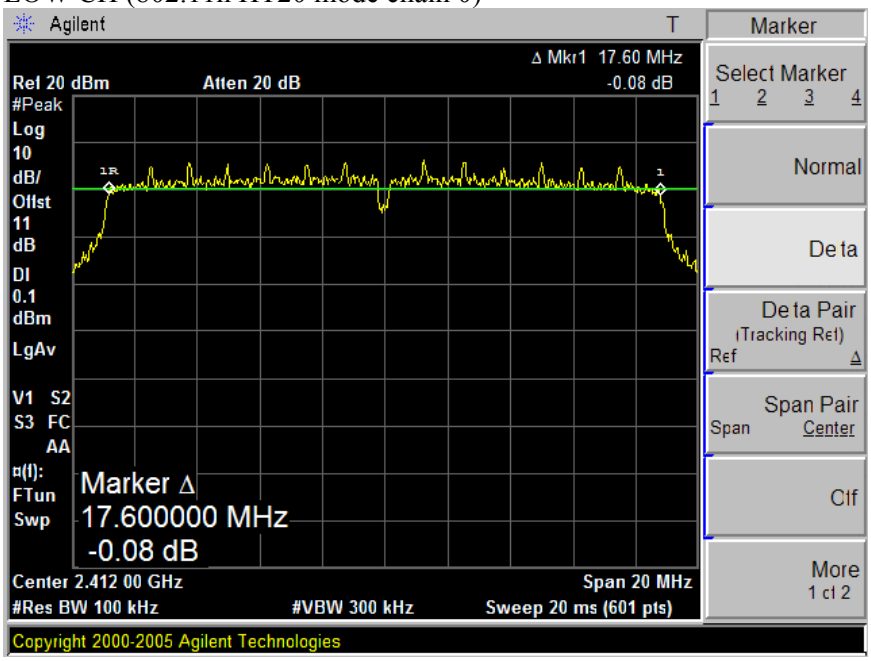


HIGH CH (802.11g mode chain 2)

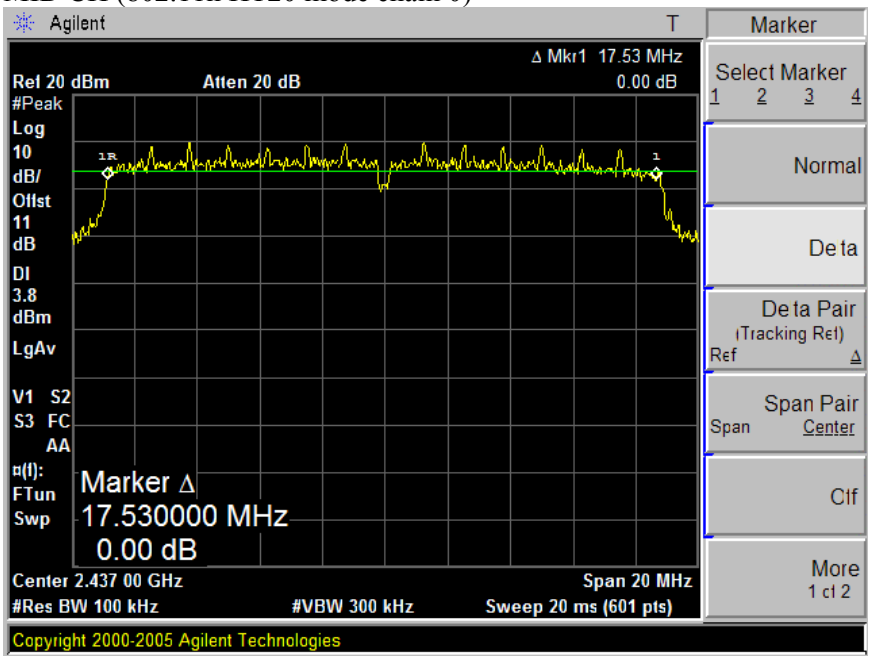


(802.11n HT20 MODE CHAIN 0)

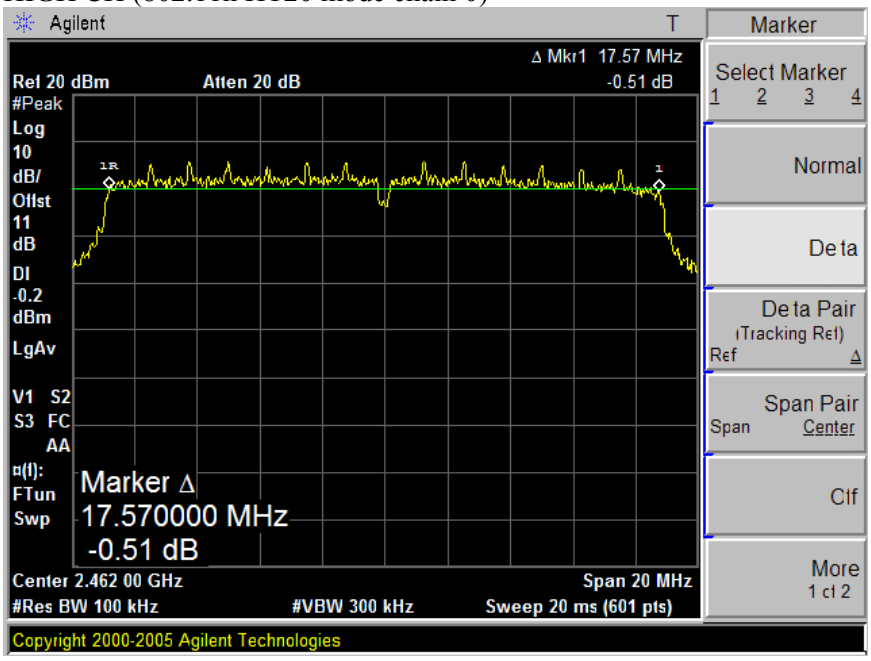
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

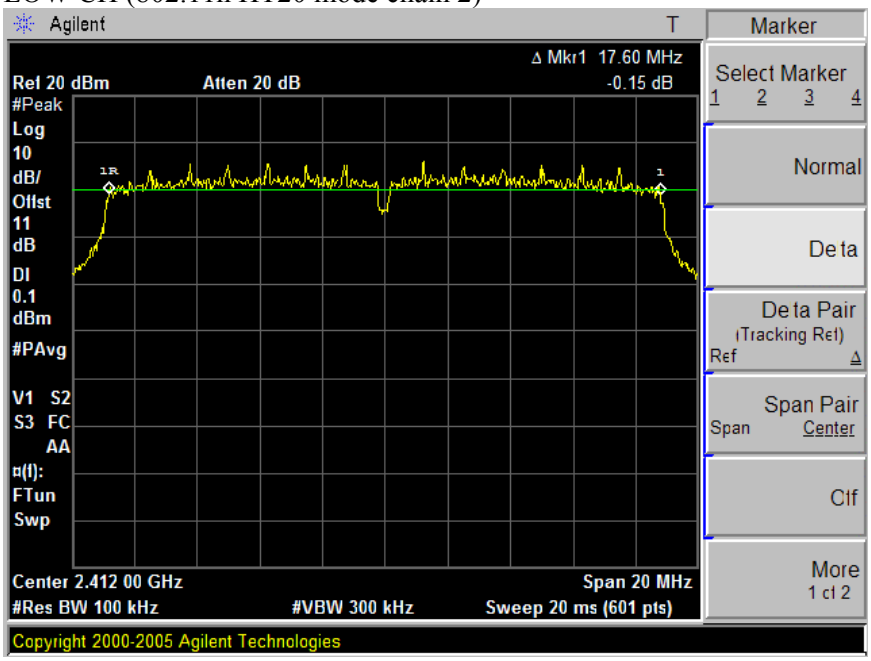


HIGH CH (802.11n HT20 mode chain 0)

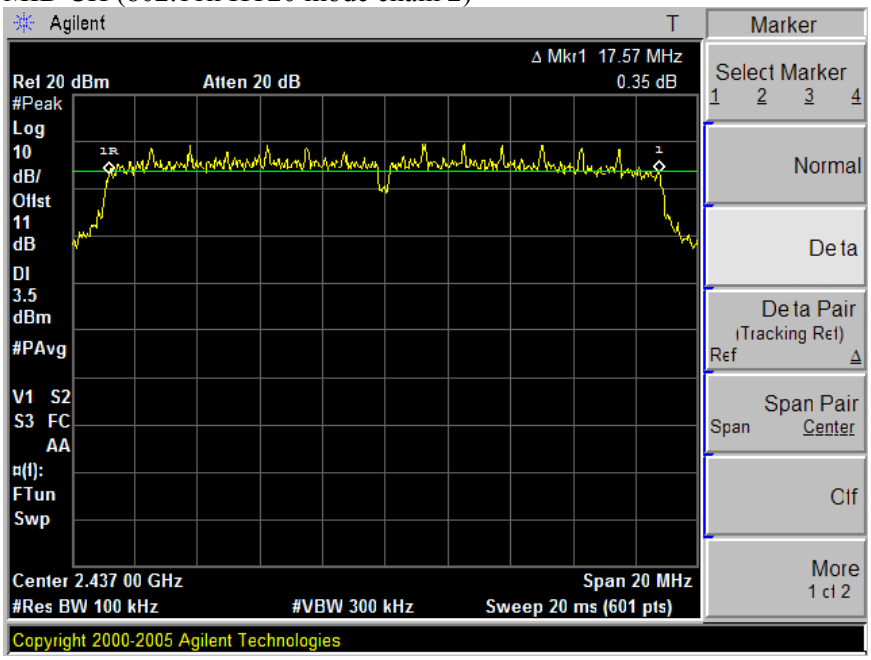


(802.11 HT20 MODE CHAIN 2)

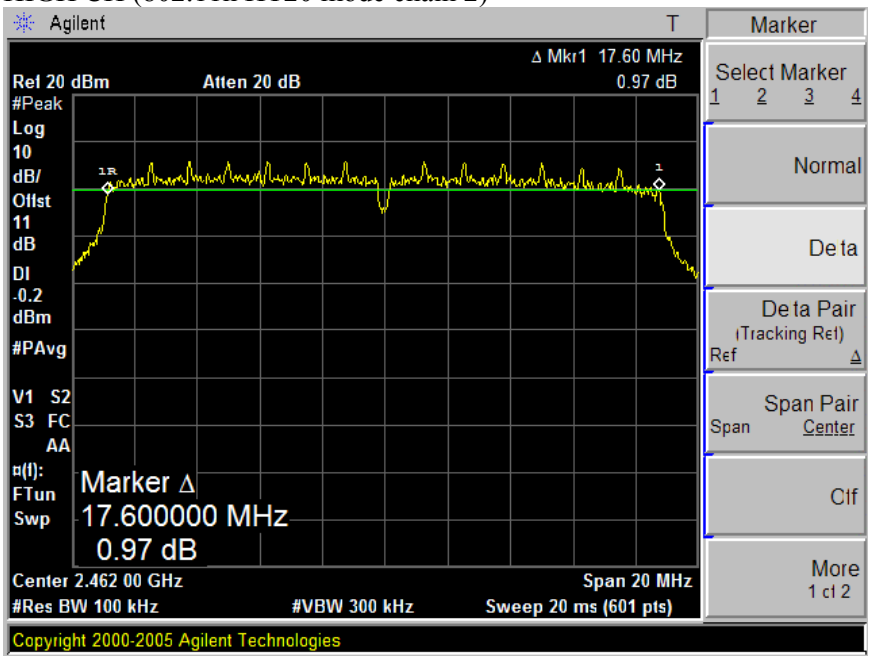
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

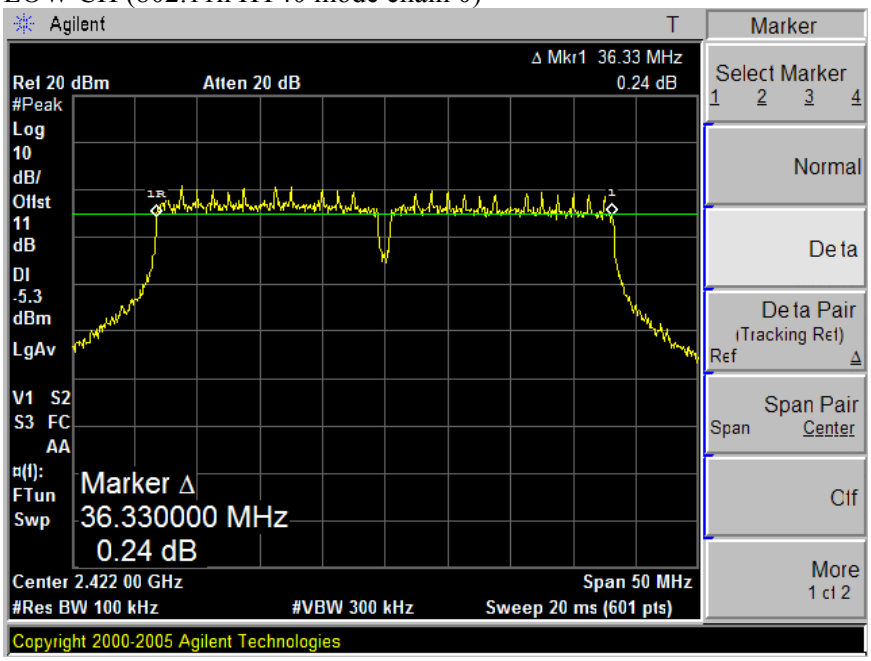


HIGH CH (802.11n HT20 mode chain 2)

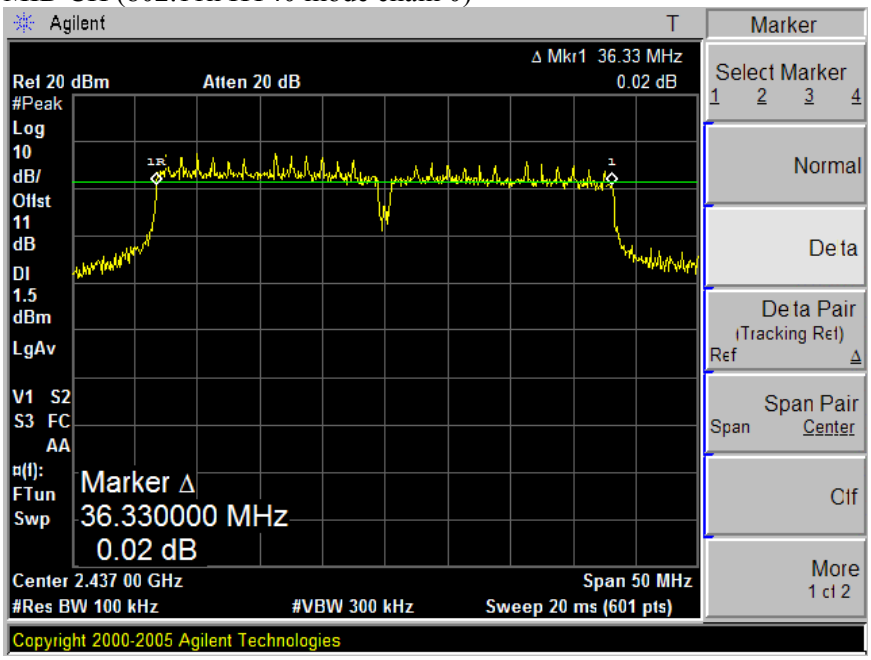


(802.11 HT40 MODE CHAIN 0)

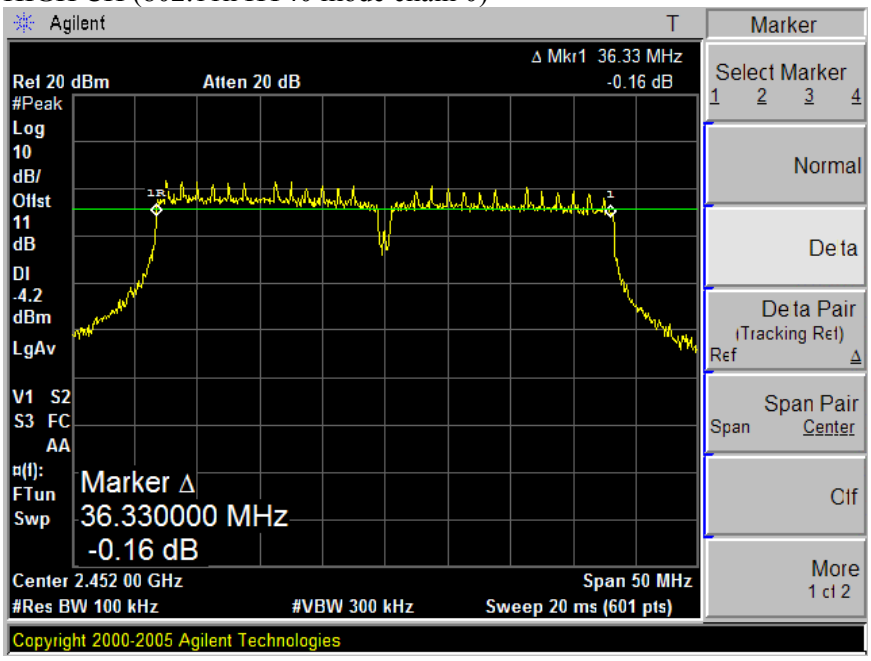
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

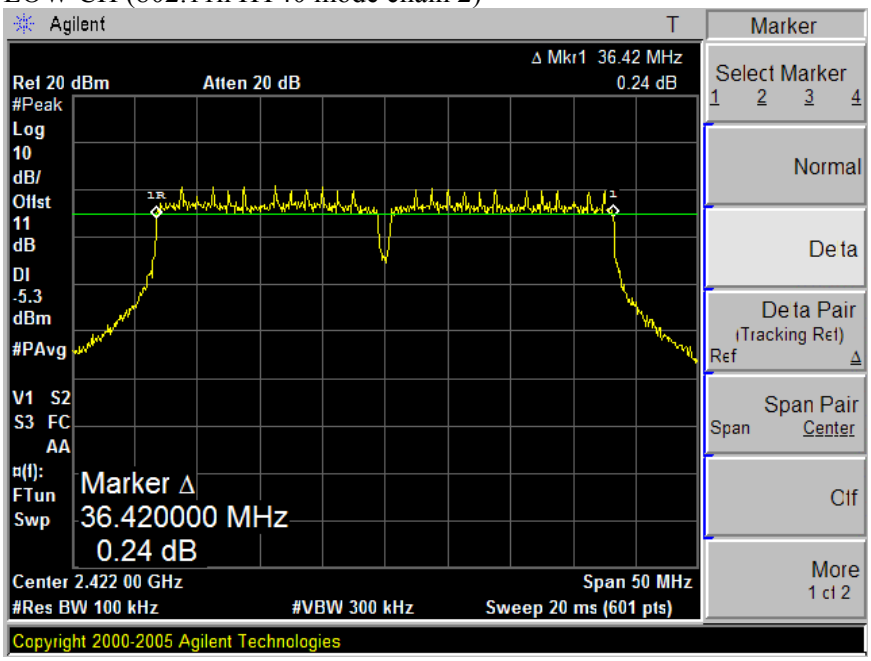


HIGH CH (802.11n HT40 mode chain 0)

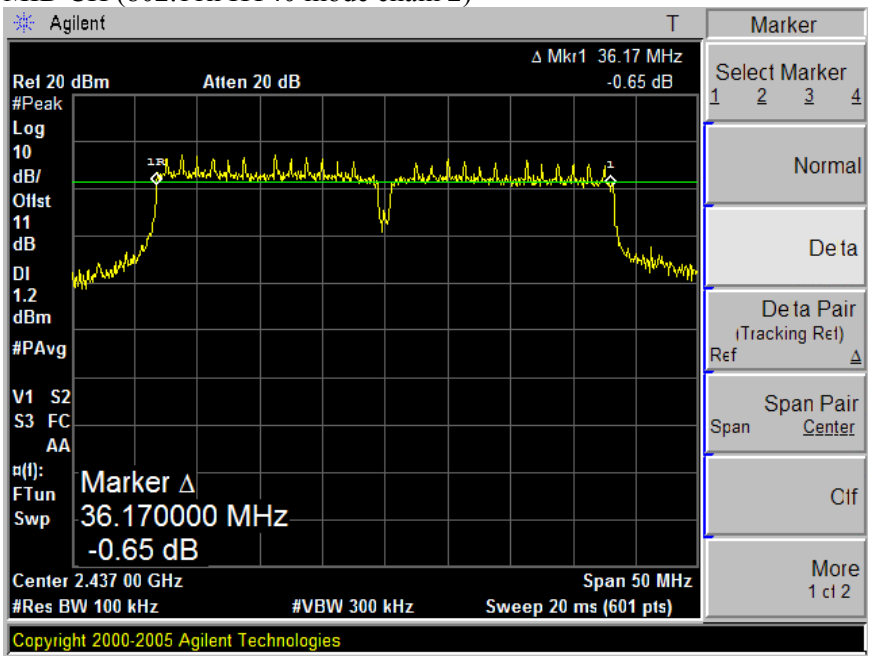


(802.11 HT40 MODE CHAIN 2)

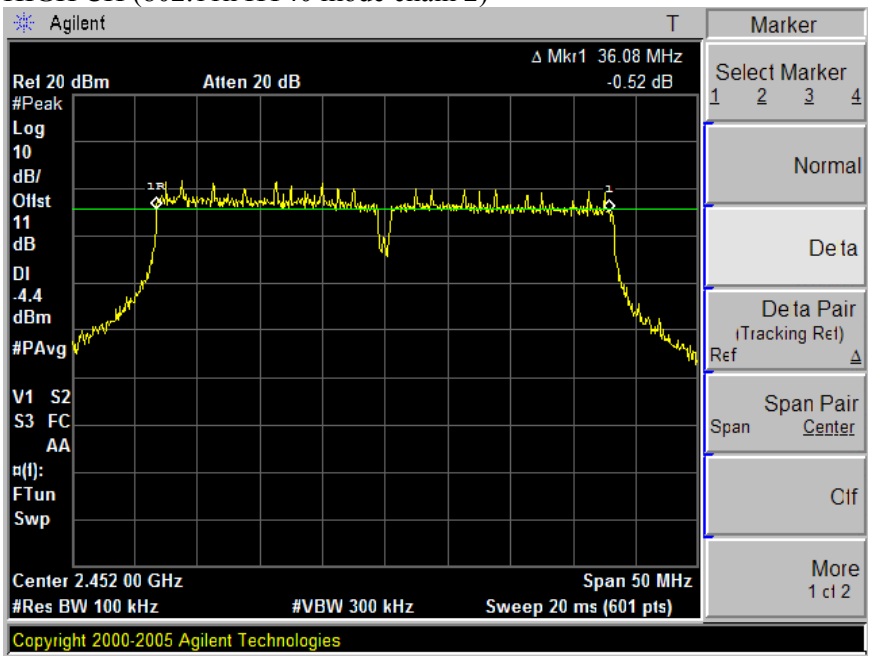
LOW CH (802.11n HT40 mode chain 2)



MID CH (802.11n HT40 mode chain 2)



HIGH CH (802.11n HT40 mode chain 2)



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.

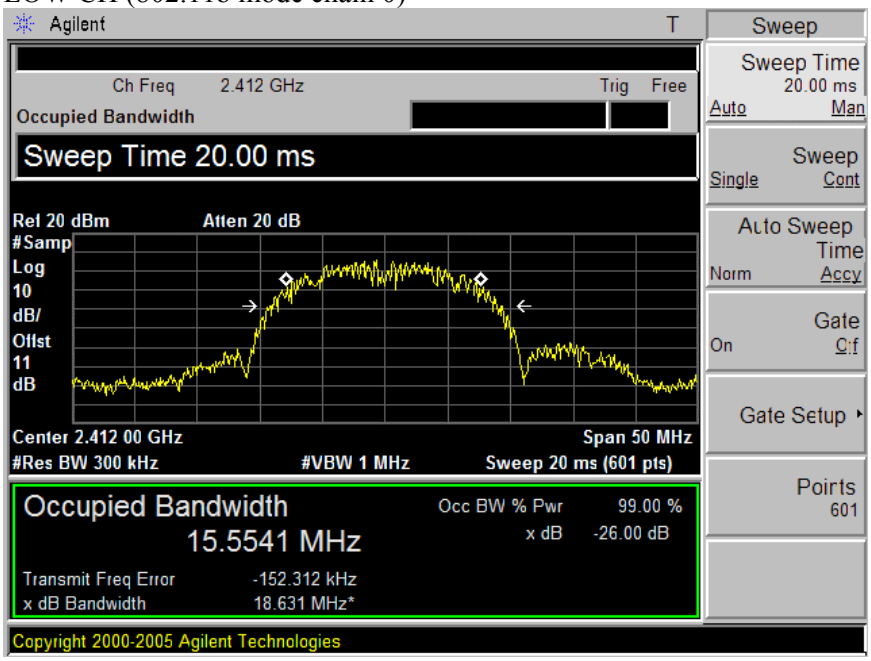
RESULTS

No non-compliance noted:

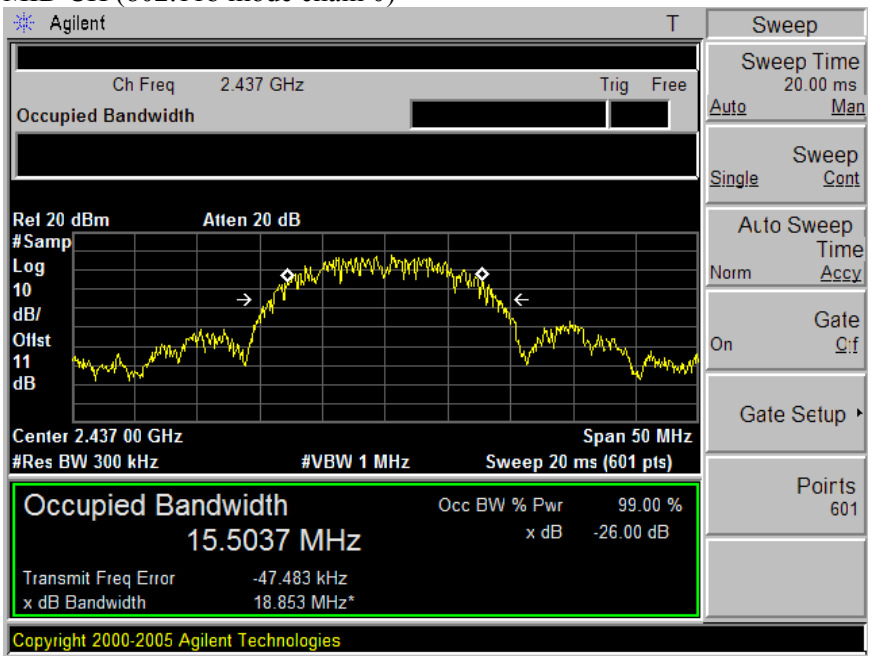
Mode Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 2 (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 2 (MHz)
802.11b Mode					
Low	2412	15.5541	15.566	18.631	18.55
Middle	2437	15.5037	15.5979	18.853	18.92
High	2462	15.4699	15.4864	18.607	18.55
802.11g Mode					
Low	2412	16.534	16.5498	21.485	21.75
Middle	2437	16.4885	16.5881	21.508	21.17
High	2462	16.4517	16.5011	21.231	21.87
802.11n HT20 Mode					
Low	2412	17.6484	17.7627	21.28	21.63
Mid	2437	17.6122	17.6568	21.436	21.90
High	2462	17.7012	17.7665	21.576	21.04
802.11n HT40 Mode					
Low	2422	36.2031	36.3464	40.876	40.50
Mid	2437	36.3971	36.355	41.693	41.59
High	2452	36.3596	36.4566	40.376	41.72

(802.11b MODE CHAIN 0)

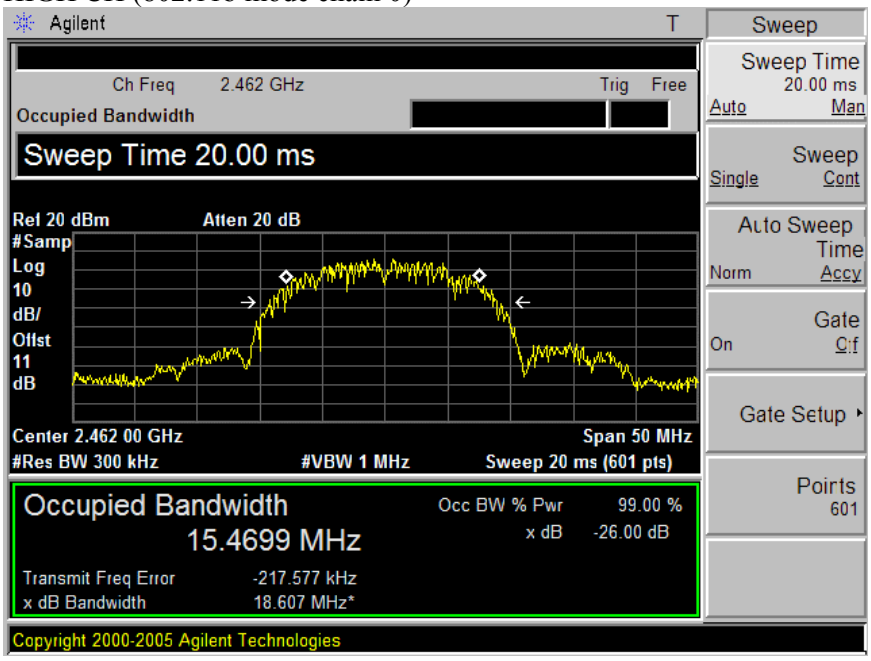
LOW CH (802.11b mode chain 0)



MID CH (802.11b mode chain 0)

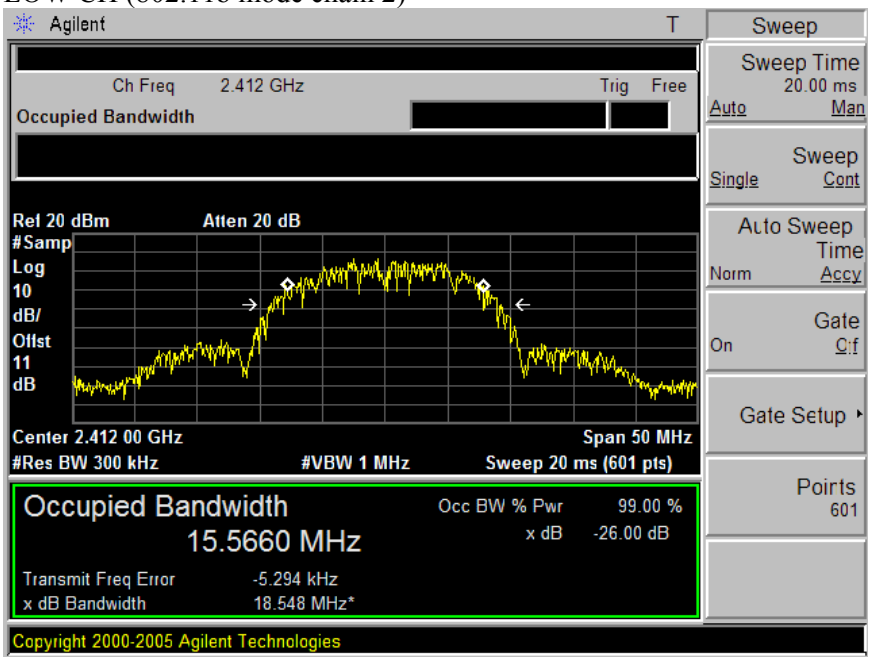


HIGH CH (802.11b mode chain 0)

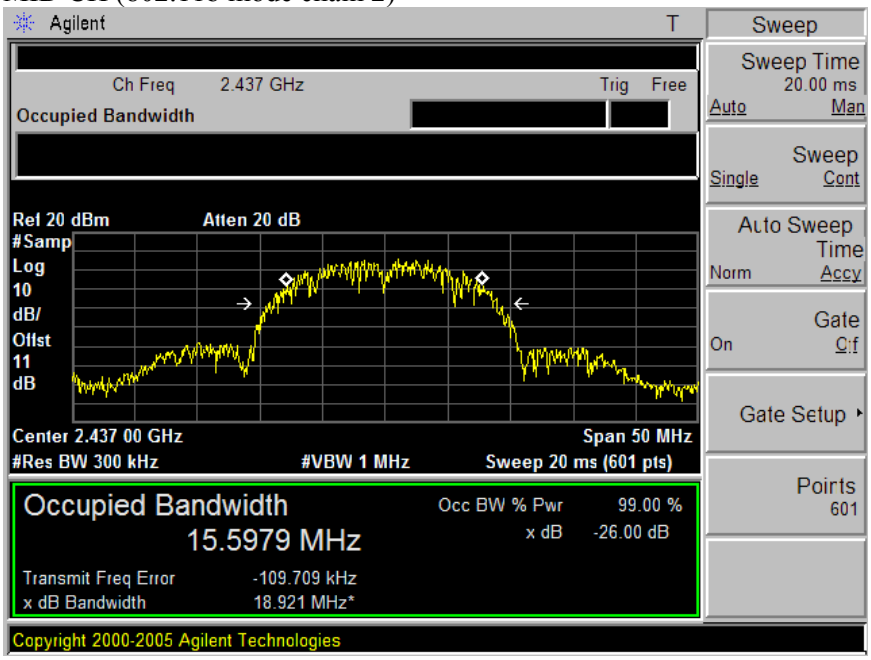


(802.11b MODE CHAIN 2)

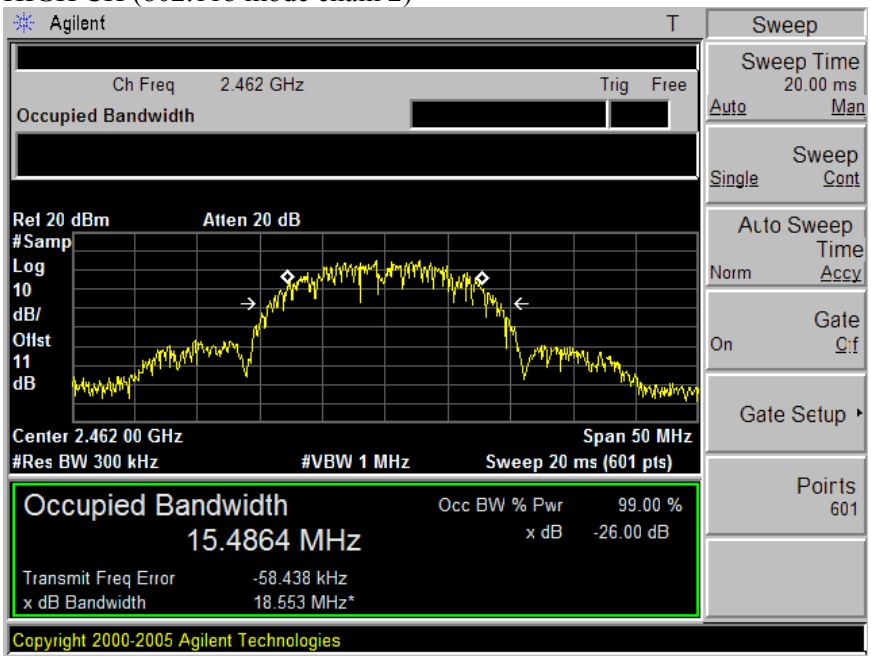
LOW CH (802.11b mode chain 2)



MID CH (802.11b mode chain 2)

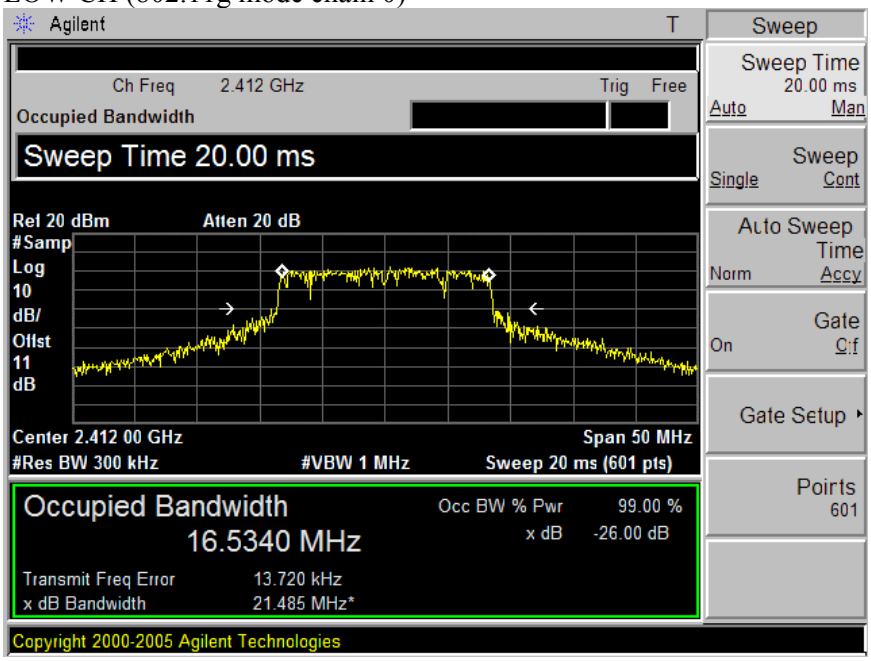


HIGH CH (802.11b mode chain 2)

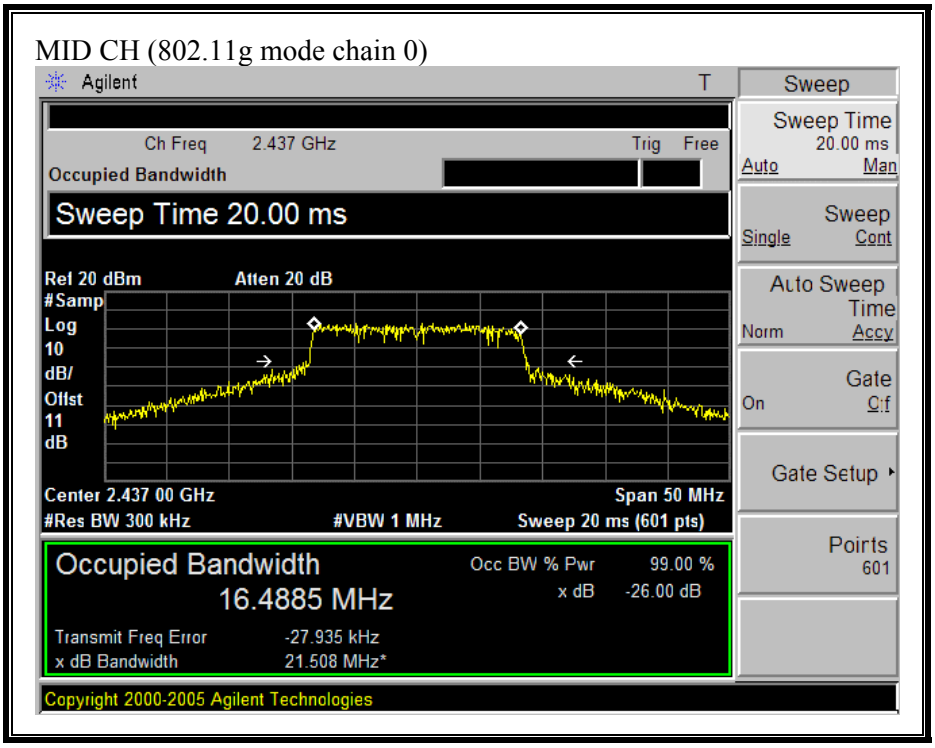


(802.11g MODE CHAIN 0)

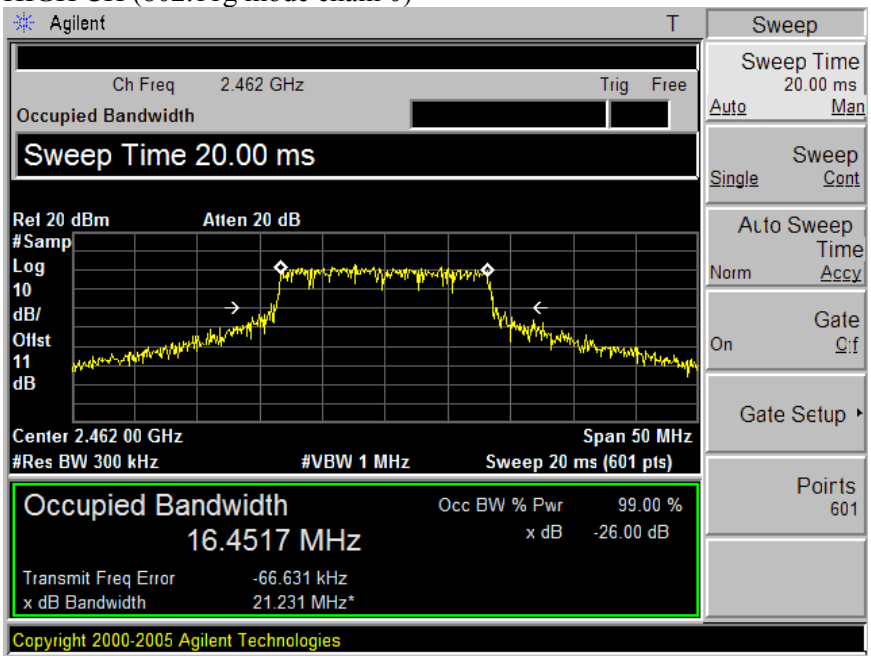
LOW CH (802.11g mode chain 0)



MID CH (802.11g mode chain 0)

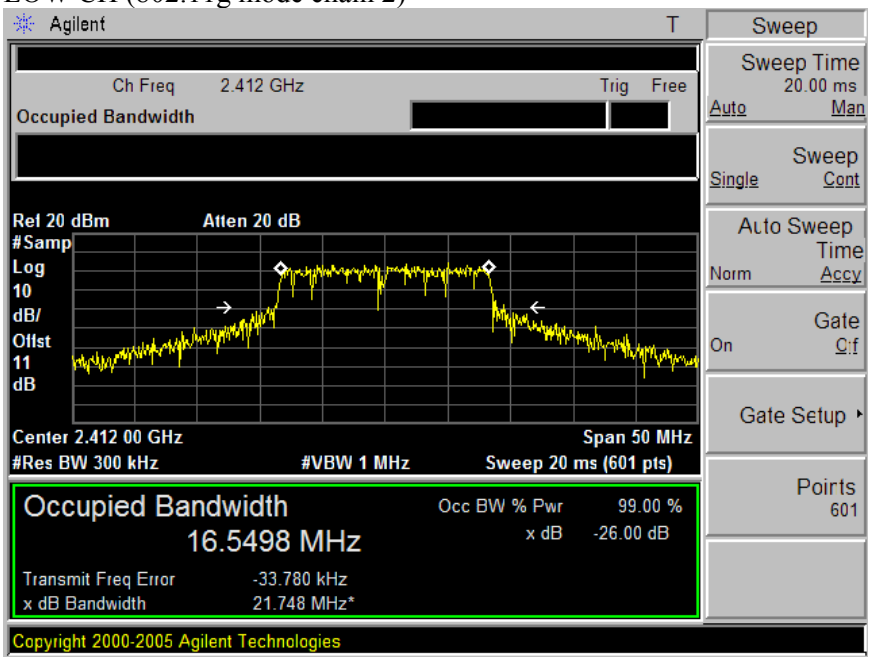


HIGH CH (802.11g mode chain 0)

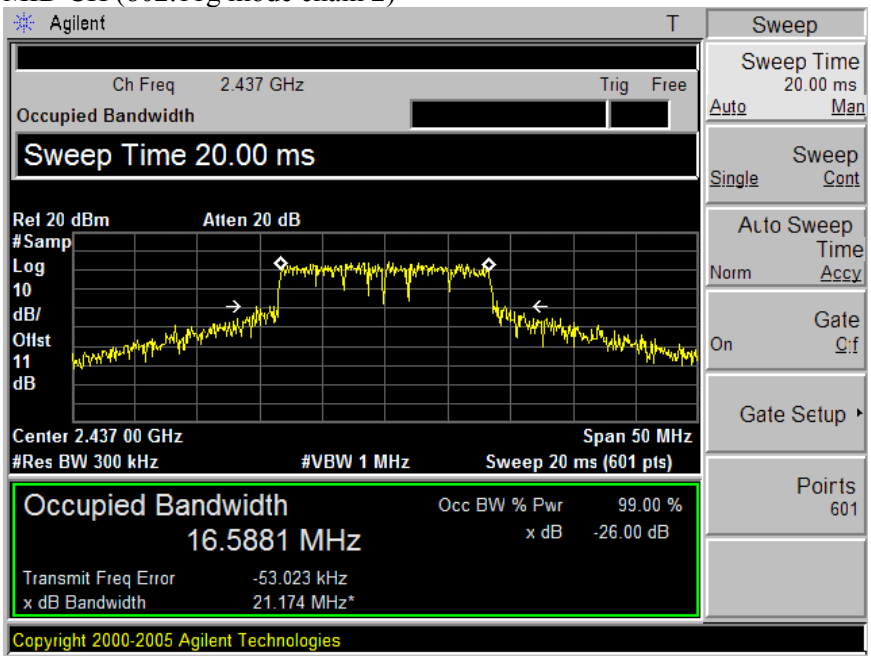


(802.11g MODE CHAIN 2)

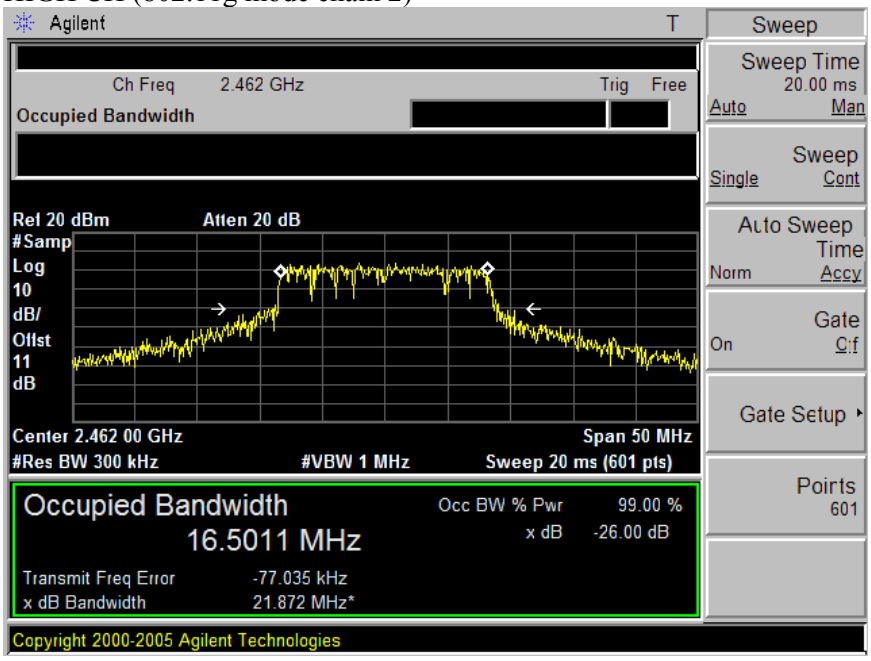
LOW CH (802.11g mode chain 2)



MID CH (802.11g mode chain 2)

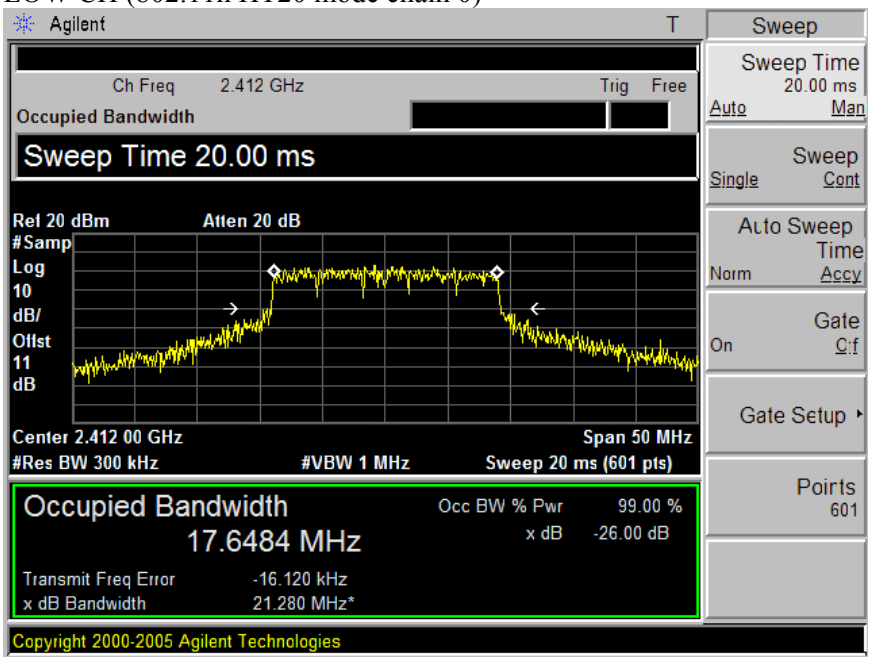


HIGH CH (802.11g mode chain 2)

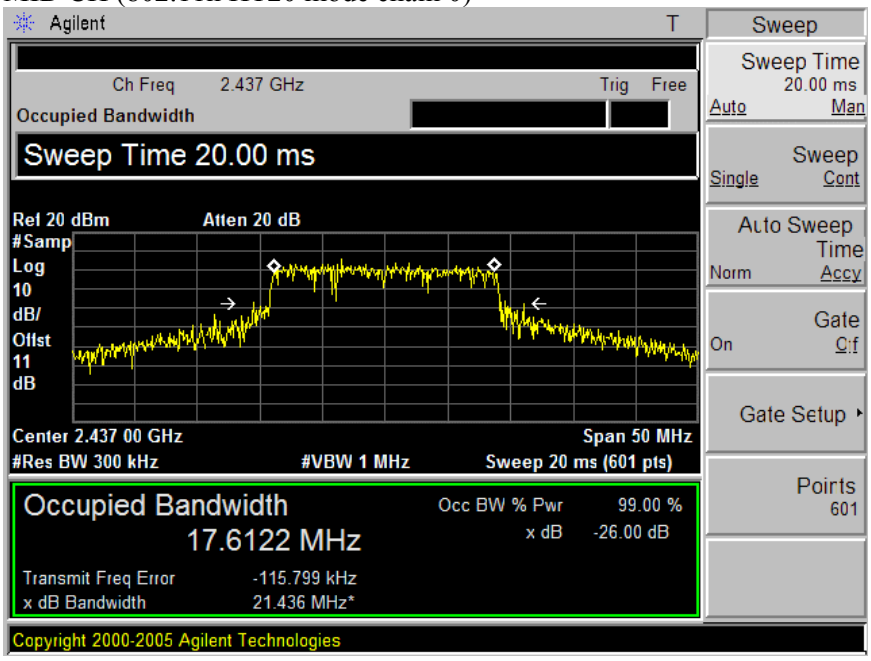


(802.11n HT20 MODE CHAIN 0)

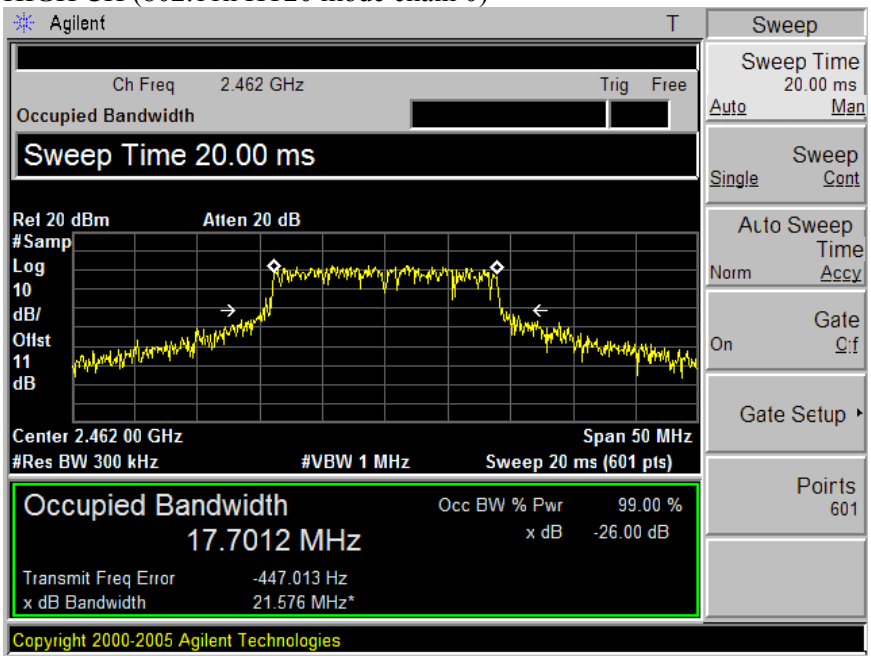
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

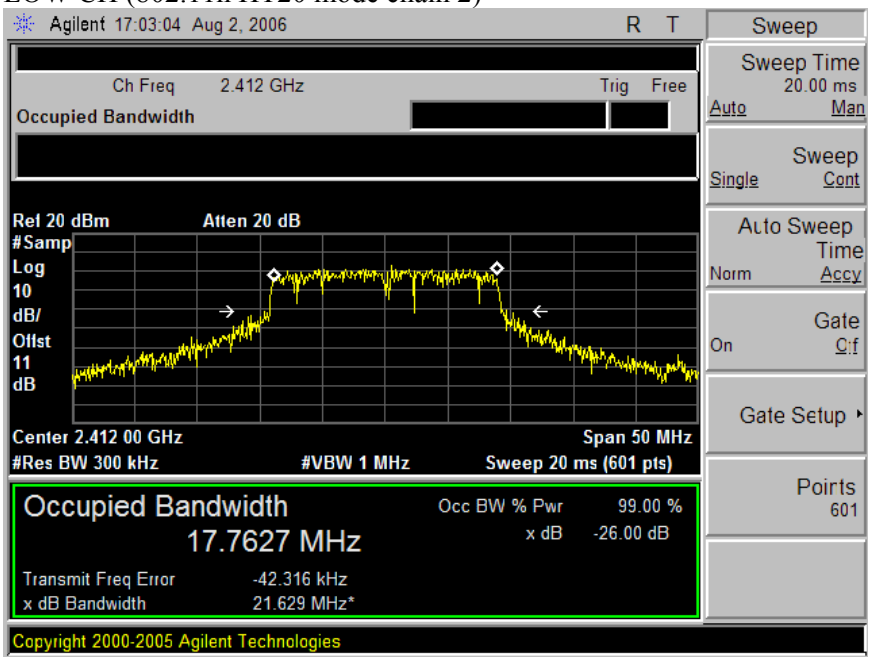


HIGH CH (802.11n HT20 mode chain 0)

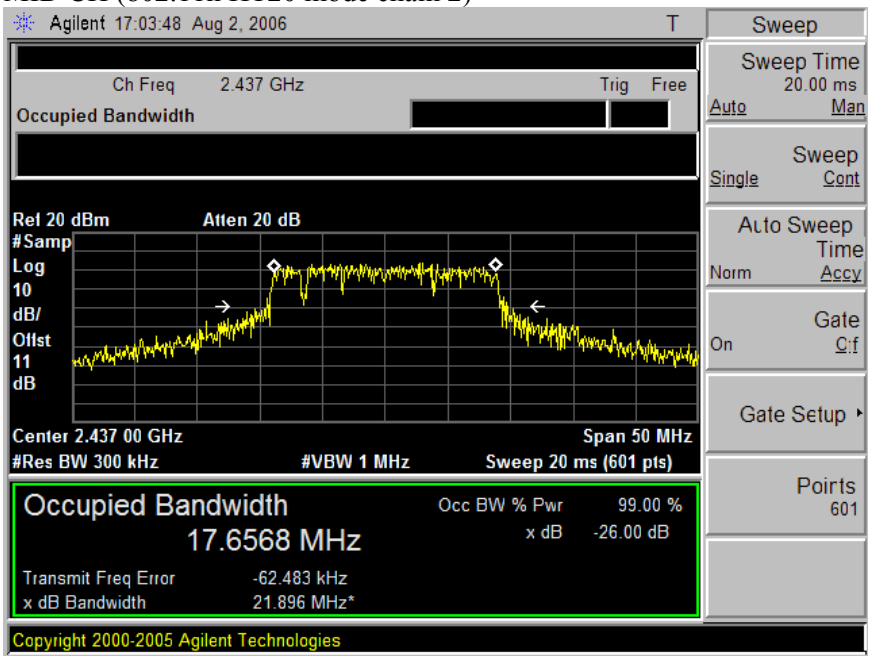


(802.11 HT20 MODE CHAIN 2)

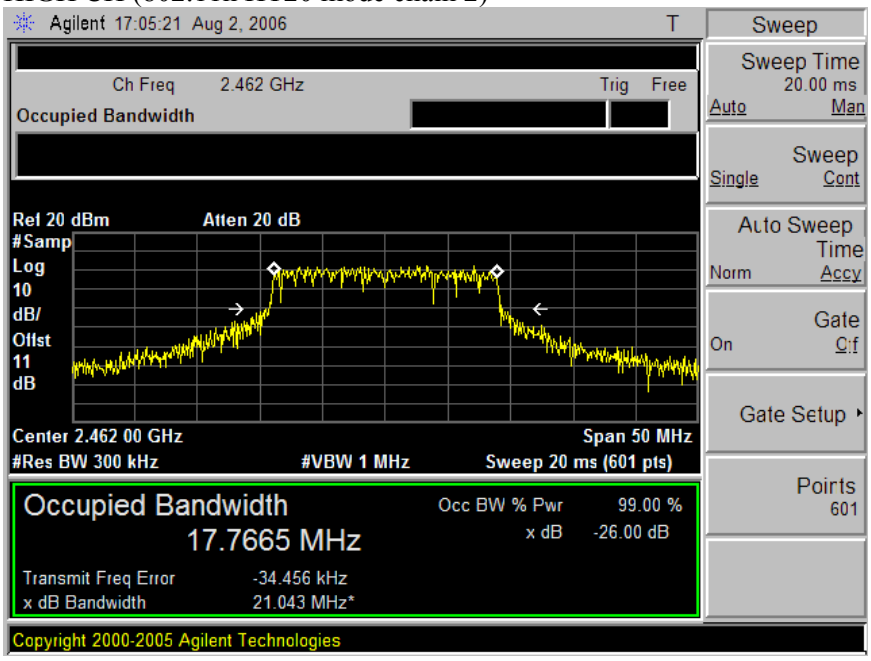
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

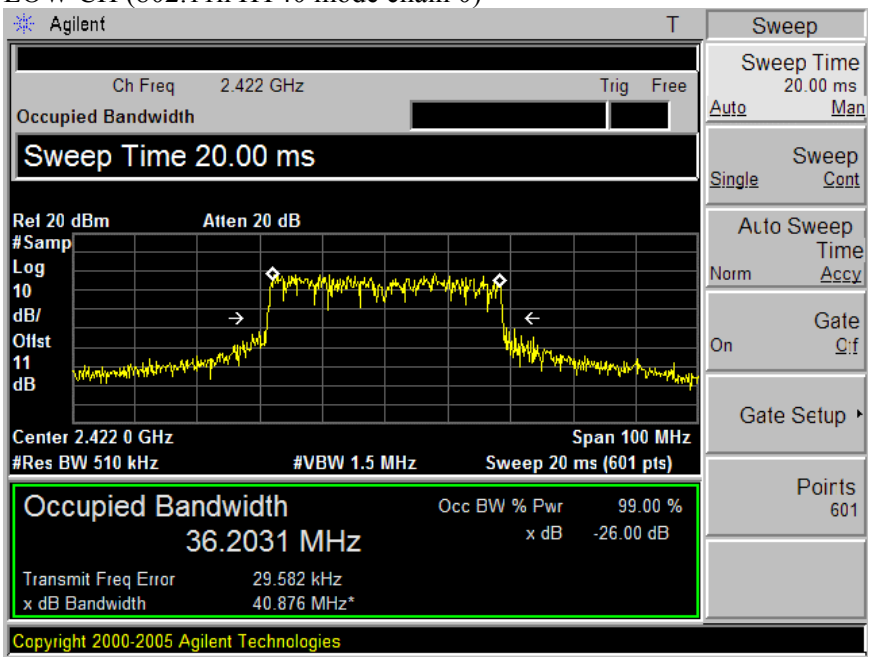


HIGH CH (802.11n HT20 mode chain 2)

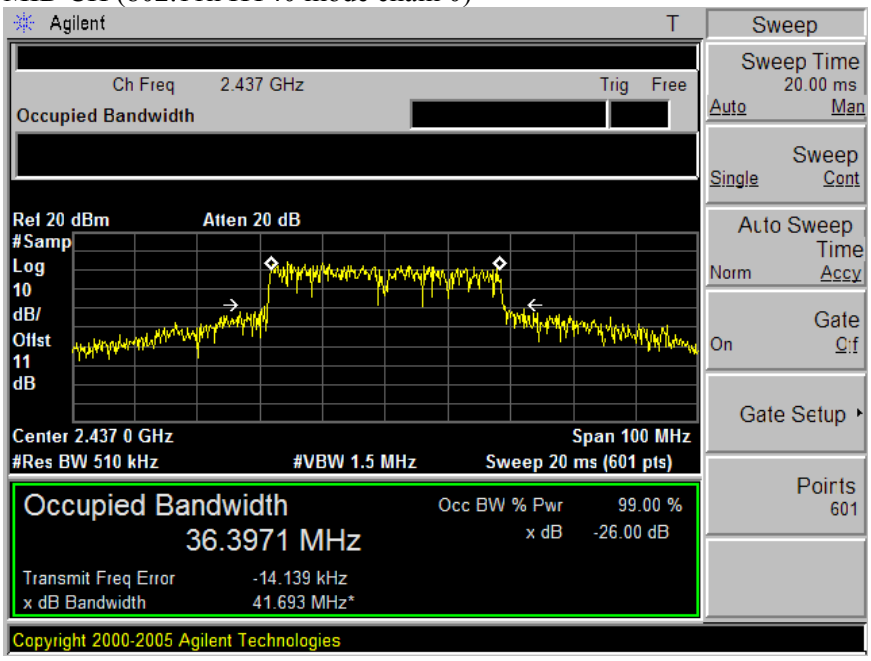


(802.11 HT40 MODE CHAIN 0)

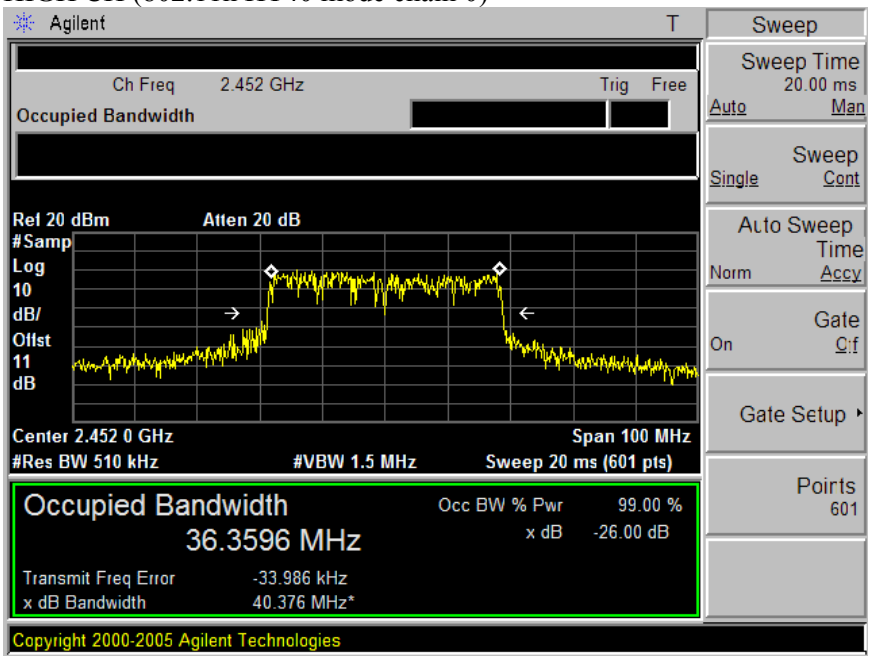
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

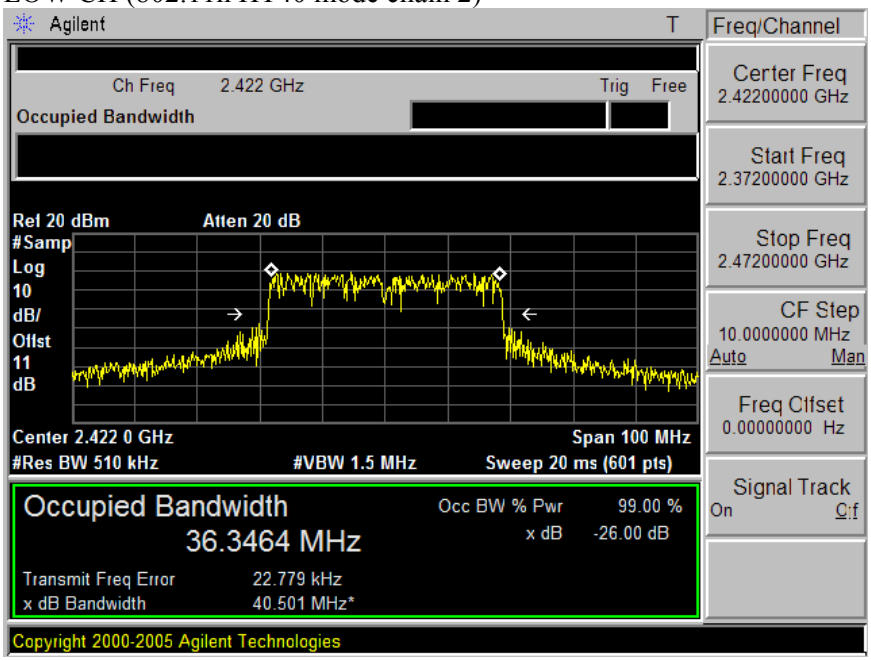


HIGH CH (802.11n HT40 mode chain 0)

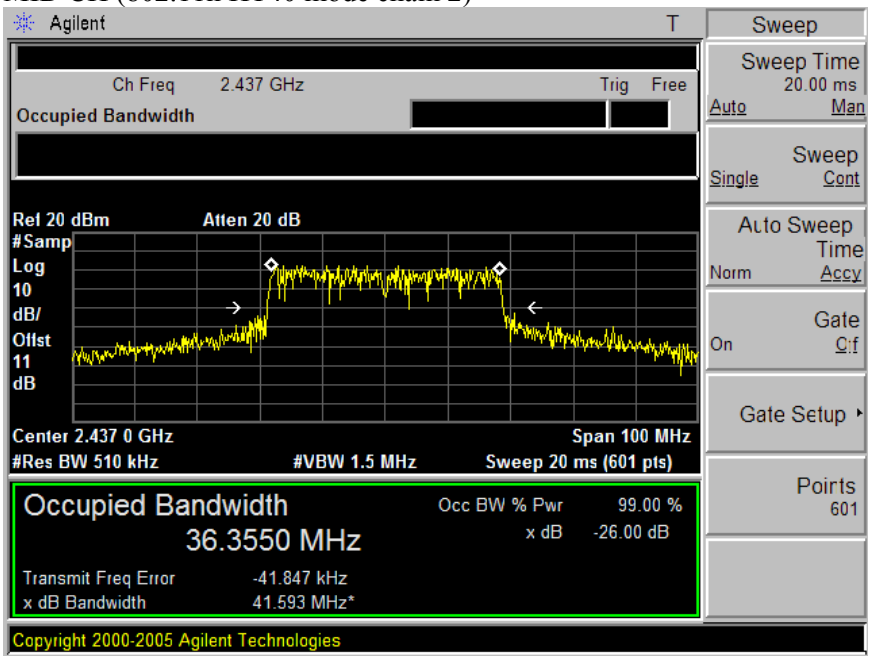


(802.11 HT40 MODE CHAIN 2)

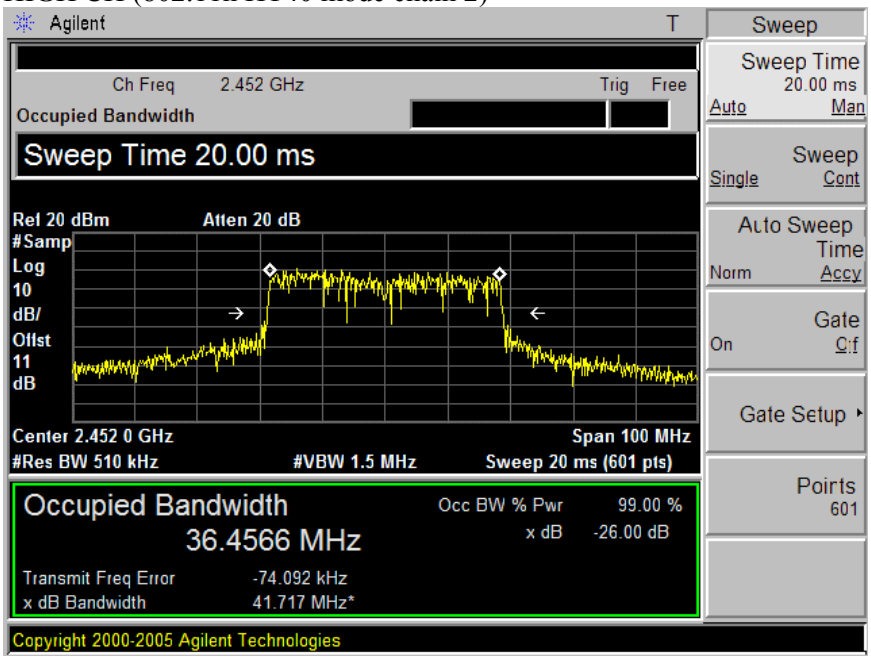
LOW CH (802.11n HT40 mode chain 2)



MID CH (802.11n HT40 mode chain 2)



HIGH CH (802.11n HT40 mode chain 2)



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.

§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 and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.

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

Total Power = 10 log (10^ (Chain 0 Power / 10) + 10^ (Chain 2 Power / 10))

RESULTS

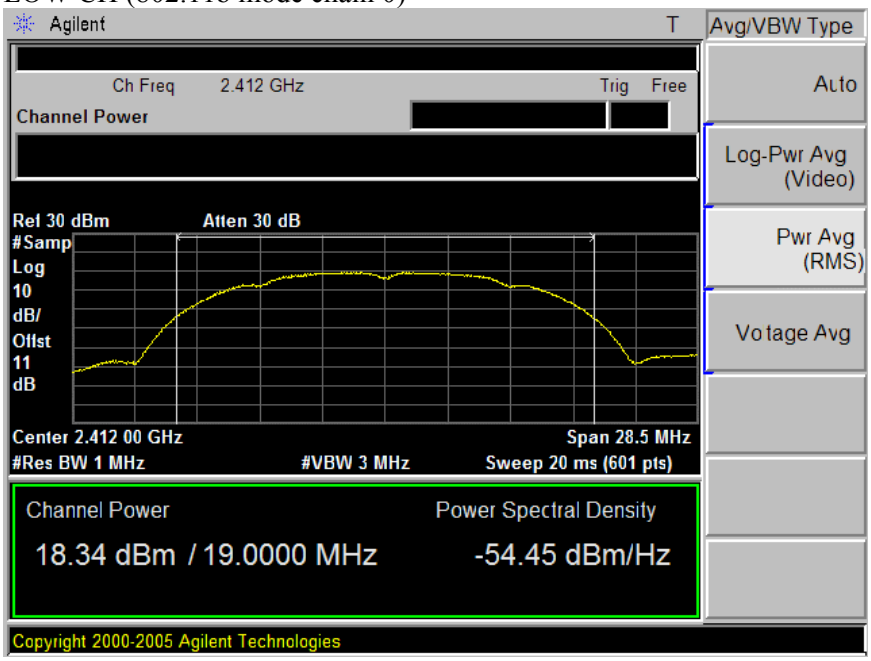
No non-compliance noted:

Fixed Limit (dBm)	17
Antenna Gain (dBi)	-1.2
10 Log (# Tx Chains)	3.01
Effective Legacy Gain	1.81

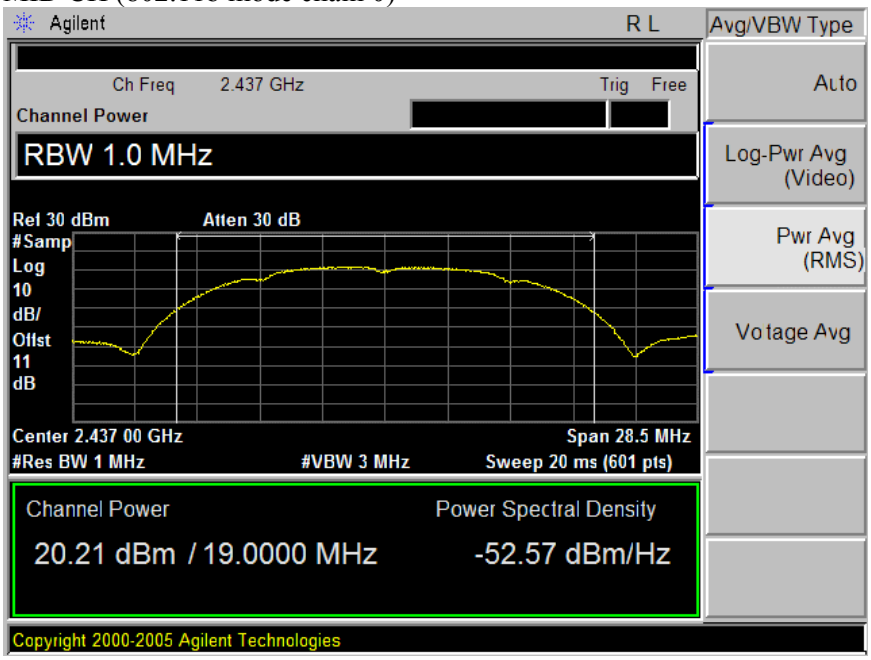
Mode Channel	Frequency (MHz)	Max Power Chain 0 (dBm)	Max Power Chain 2 (dBm)	Max Power Total (dBm)	Limit (dBm)	Margin (dB)
802.11b Mode						
Low	2412	18.34	18.65	21.51	30.00	-8.49
Middle	2437	20.21	20.87	23.56	30.00	-6.44
High	2462	18.68	18.82	21.76	30.00	-8.24
802.11g Mode						
Low	2412	16.68	16.67	19.69	30.00	-10.31
Middle	2437	20.14	20.32	23.24	30.00	-6.76
High	2462	16.79	17.73	20.30	30.00	-9.70
802.11n HT20 Mode						
Low	2412	16.70	16.72	19.72	30.00	-10.28
Middle	2437	20.02	20.19	23.12	30.00	-6.88
High	2462	17.26	17.19	20.24	30.00	-9.76
802.11n HT40 Mode						
Low	2422	14.37	14.63	17.51	30.00	-12.49
Middle	2437	20.10	20.25	23.19	30.00	-6.81
High	2452	15.22	15.28	18.26	30.00	-11.74

(802.11b MODE CHAIN 0)

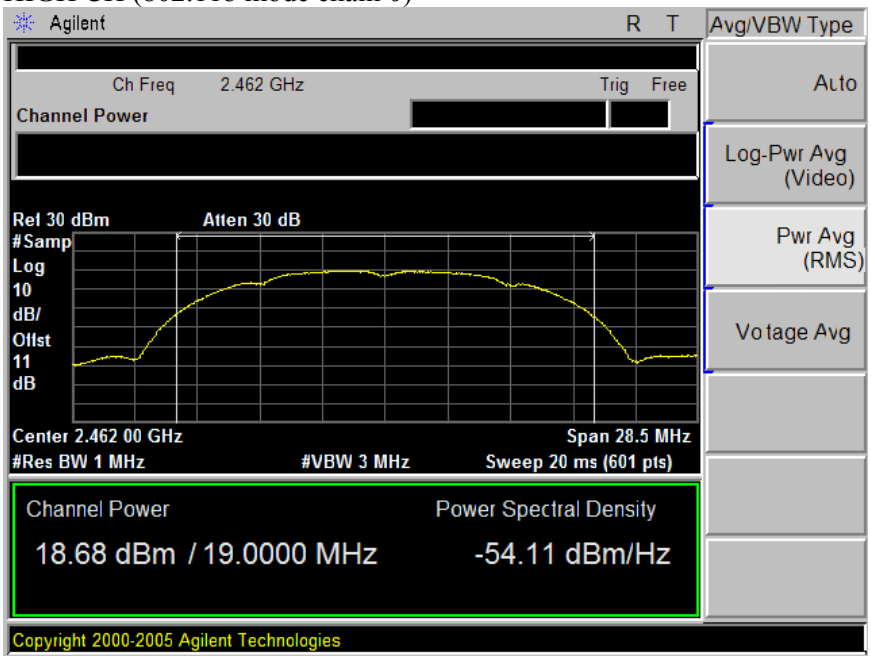
LOW CH (802.11b mode chain 0)



MID CH (802.11b mode chain 0)

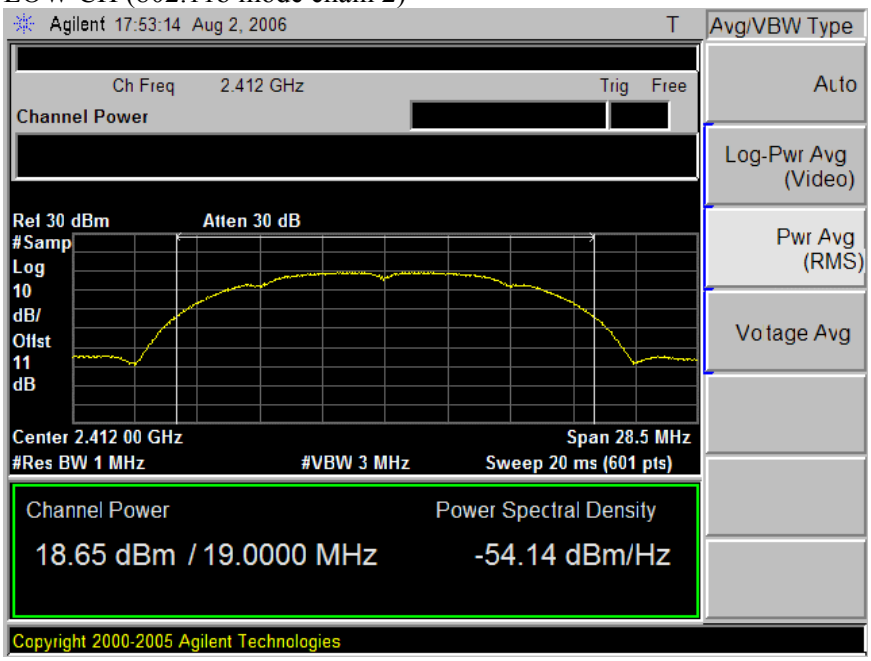


HIGH CH (802.11b mode chain 0)

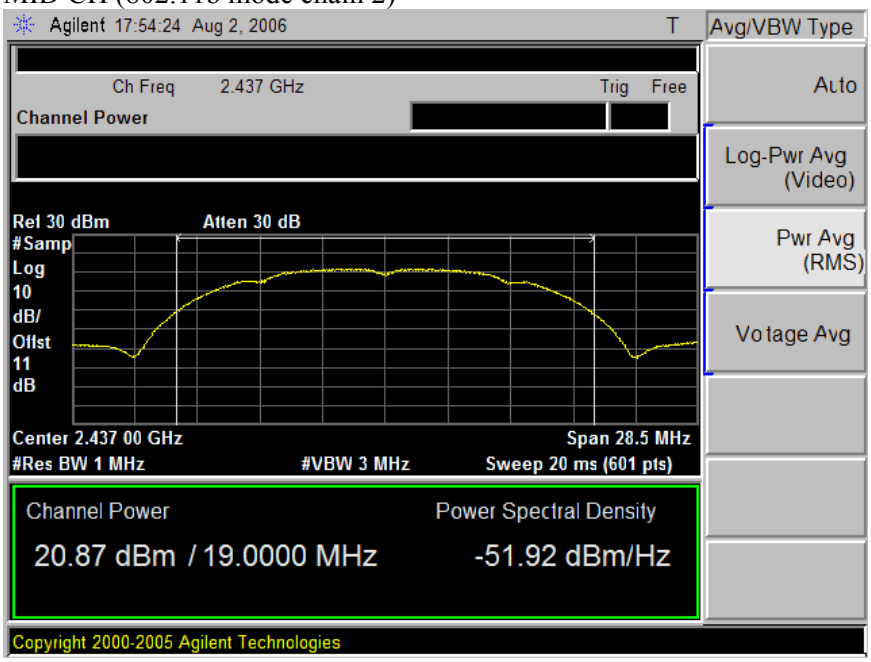


(802.11b MODE CHAIN 2)

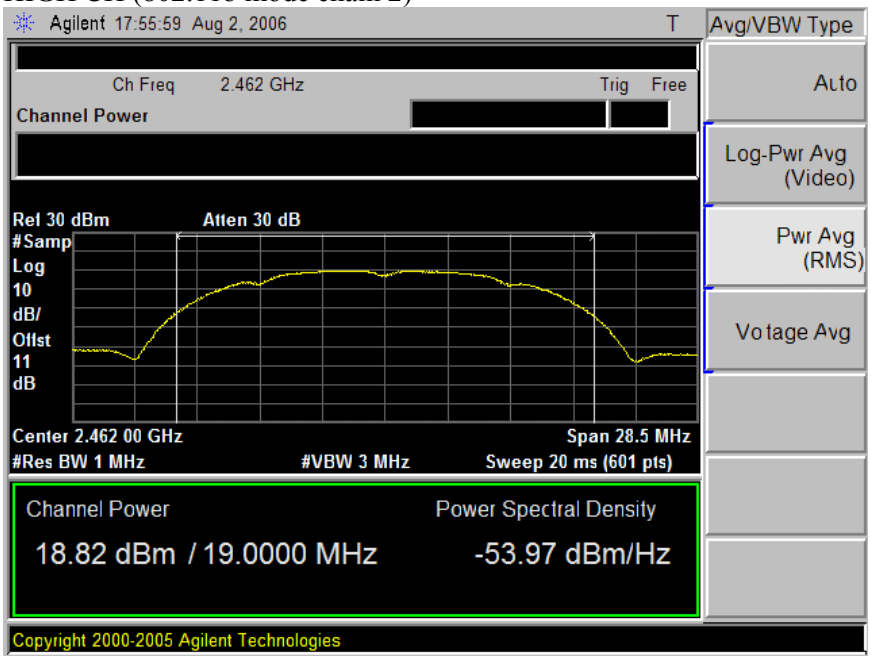
LOW CH (802.11b mode chain 2)



MID CH (802.11b mode chain 2)

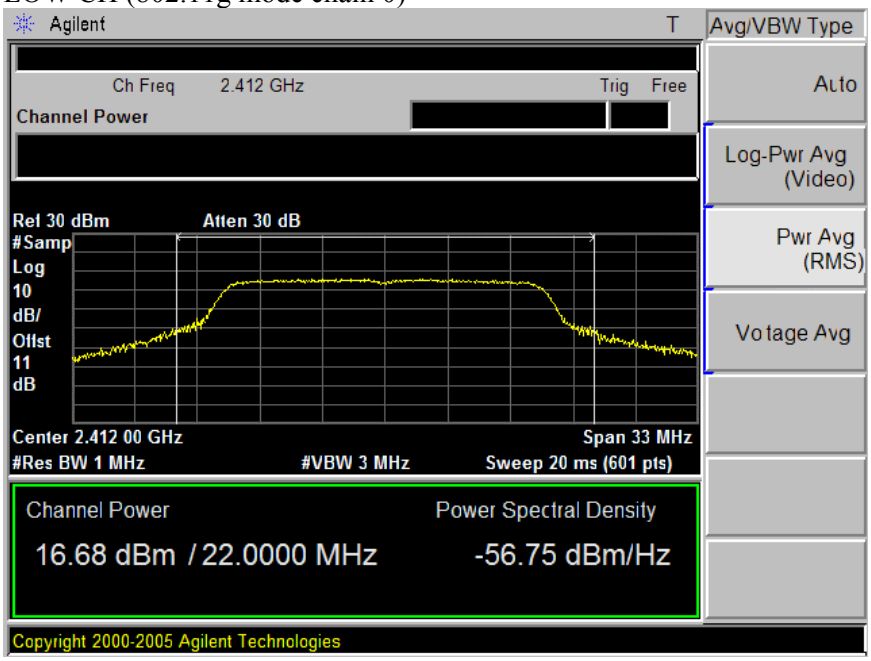


HIGH CH (802.11b mode chain 2)

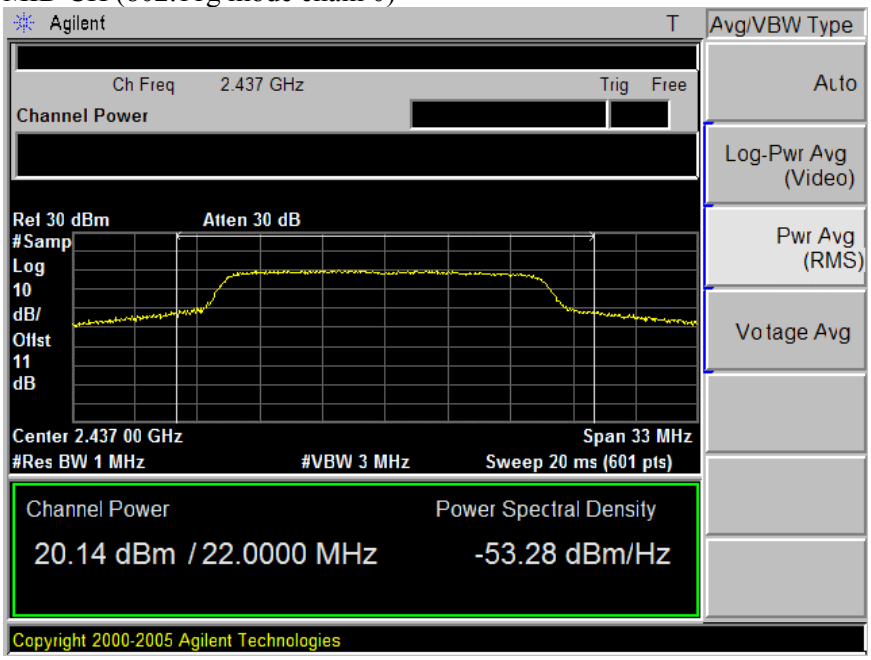


(802.11g MODE CHAIN 0)

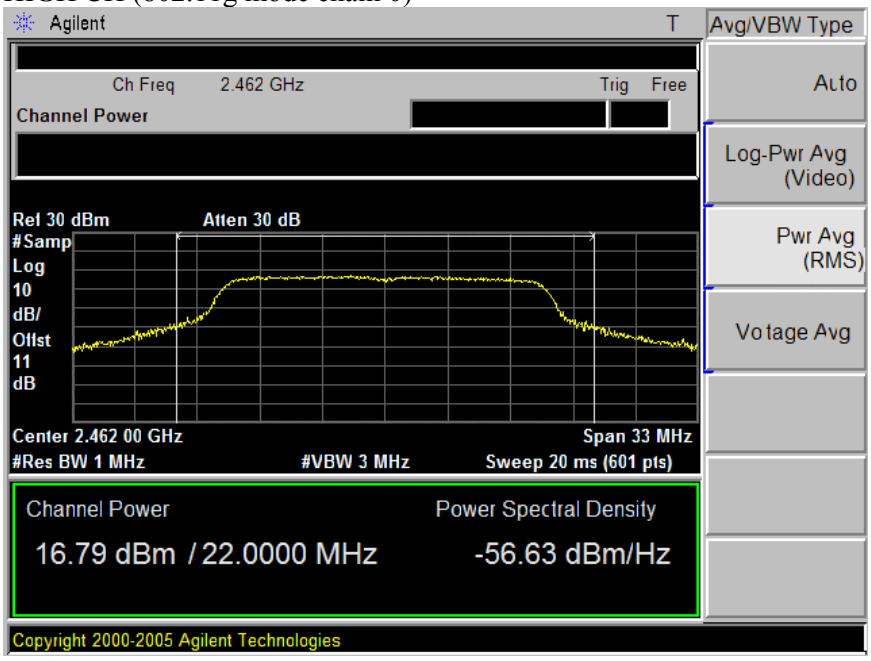
LOW CH (802.11g mode chain 0)



MID CH (802.11g mode chain 0)

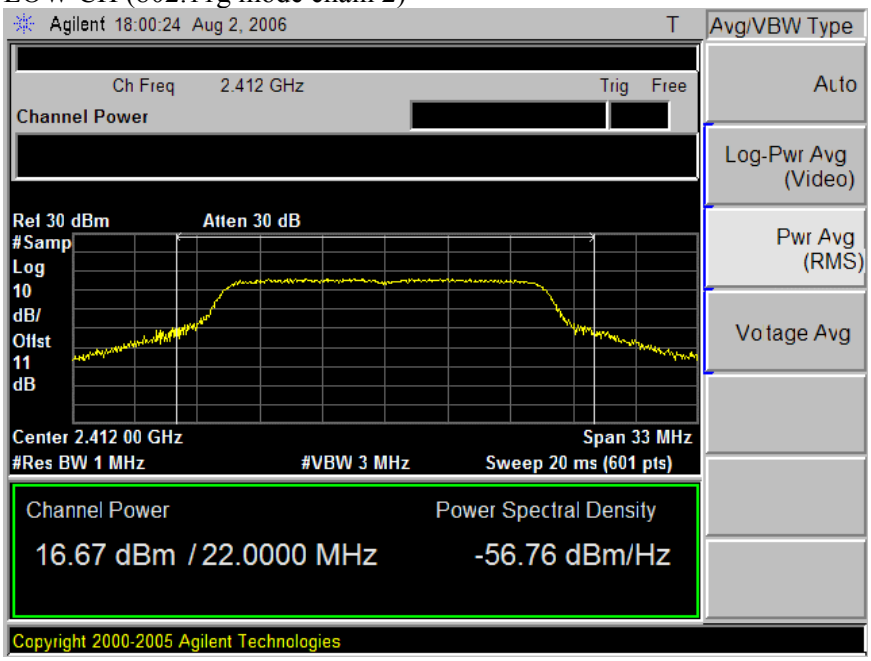


HIGH CH (802.11g mode chain 0)

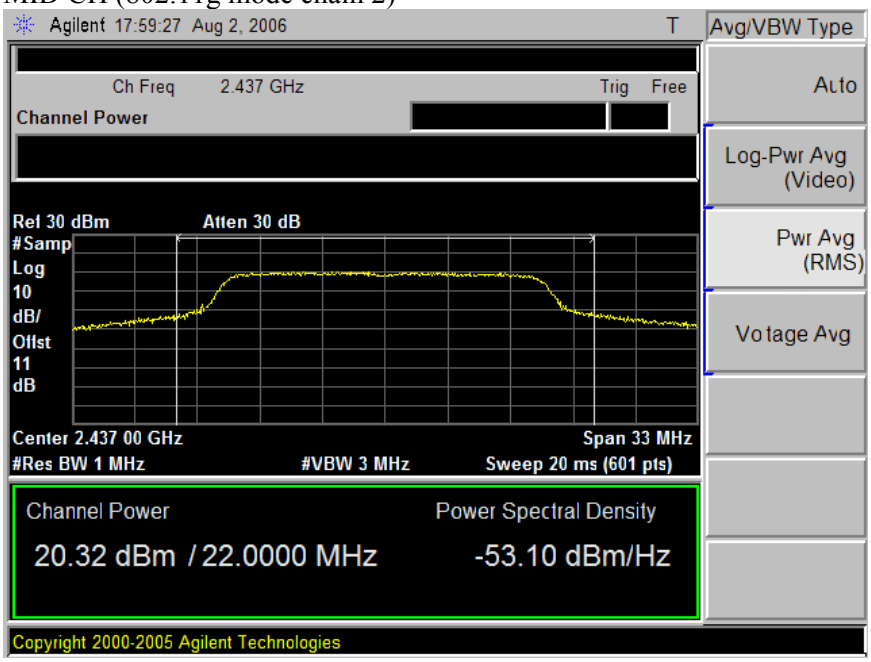


(802.11g MODE CHAIN 2)

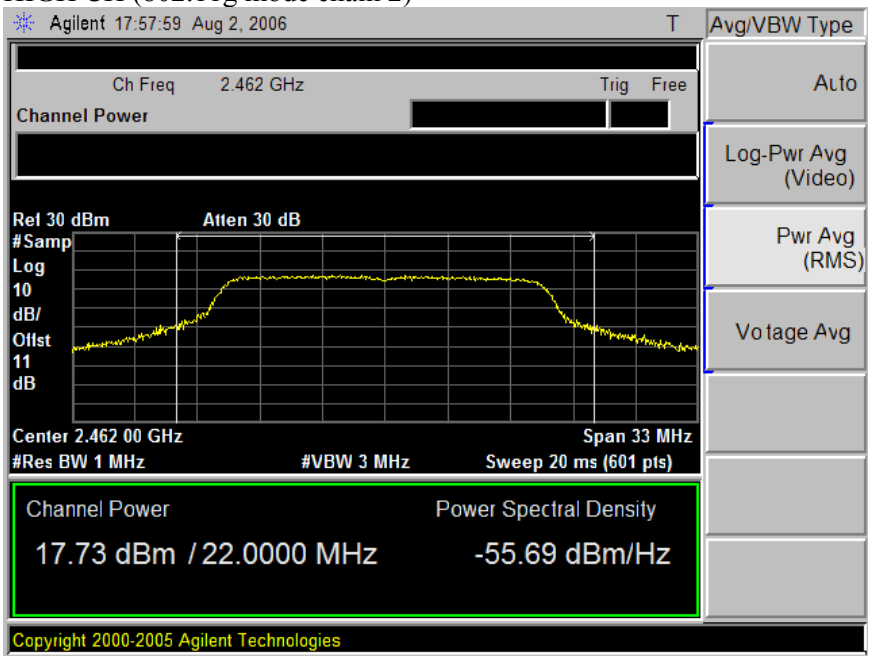
LOW CH (802.11g mode chain 2)



MID CH (802.11g mode chain 2)

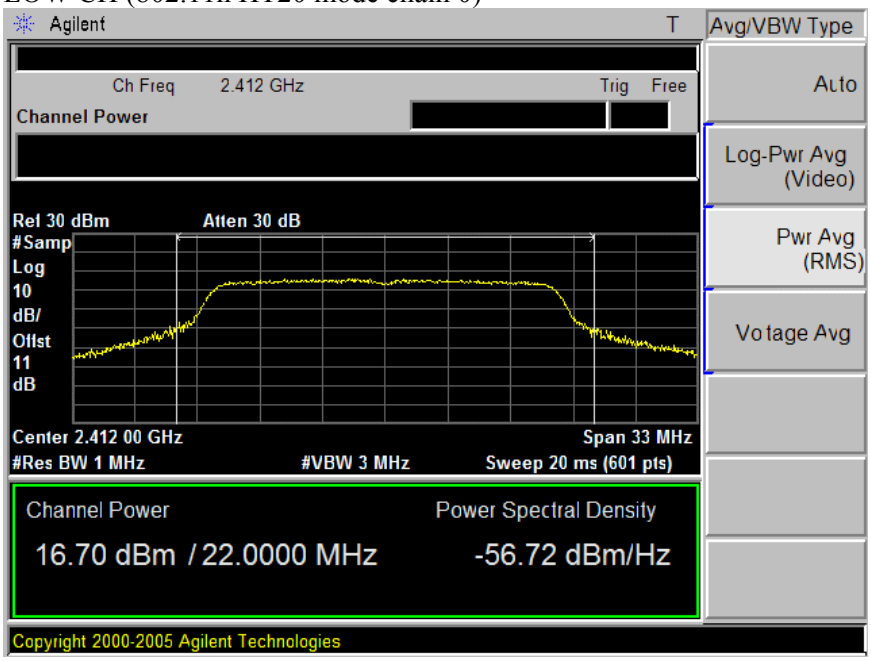


HIGH CH (802.11g mode chain 2)

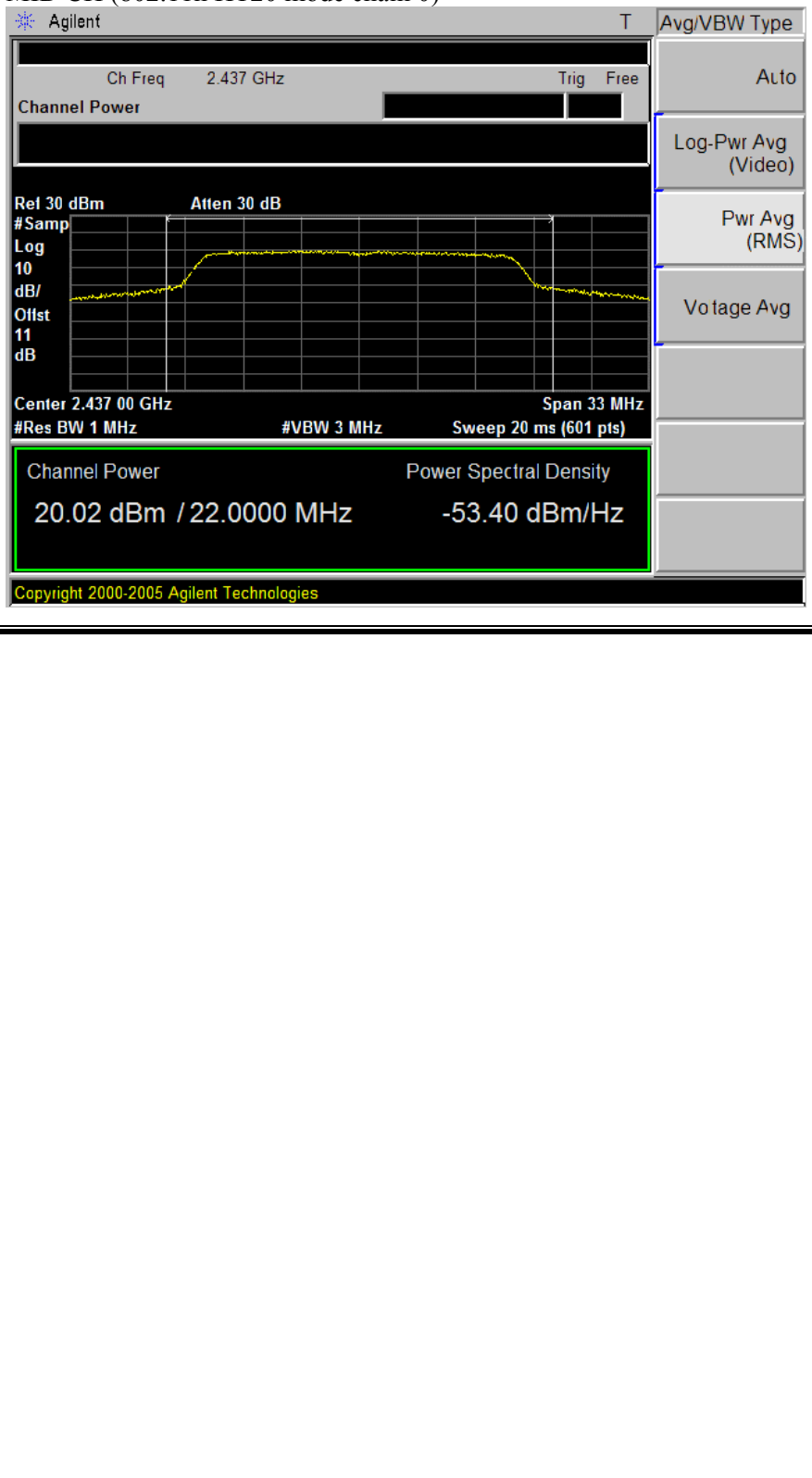


(802.11n HT20 MODE CHAIN 0)

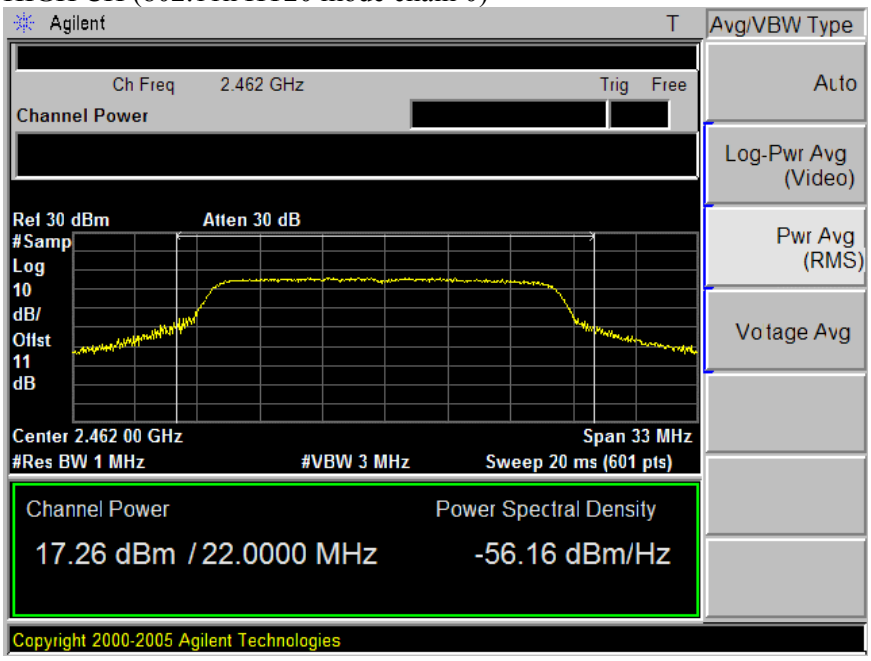
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

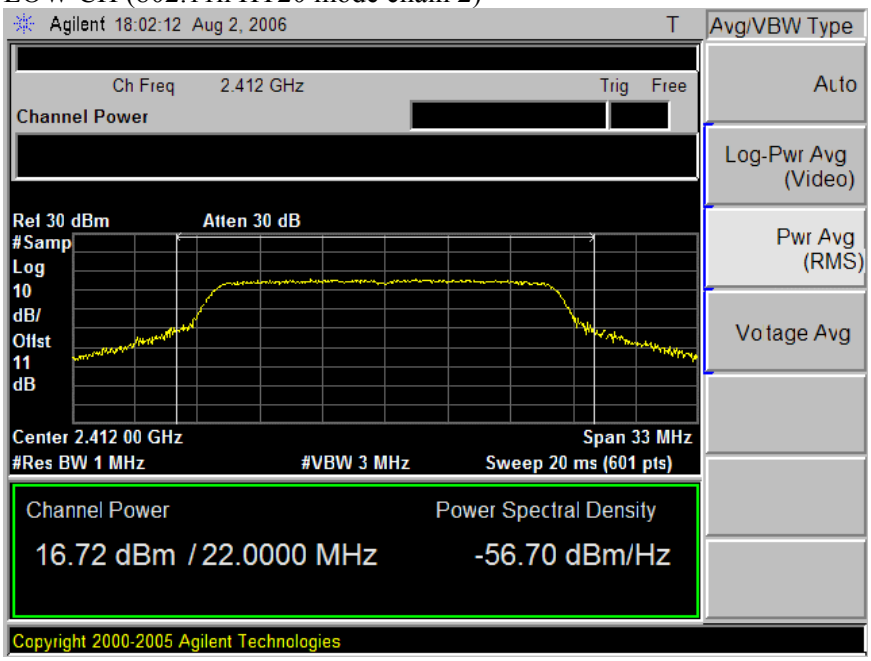


HIGH CH (802.11n HT20 mode chain 0)

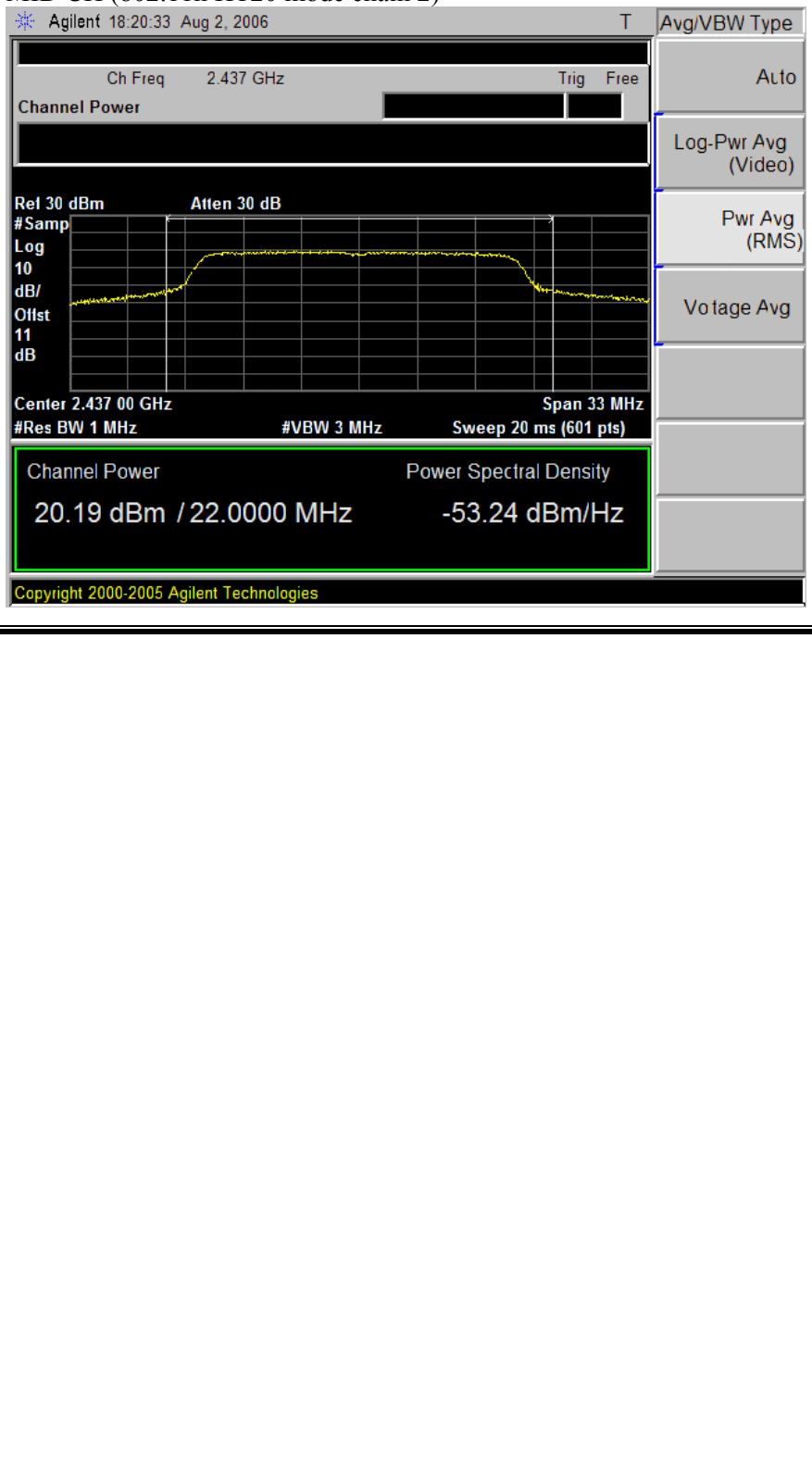


(802.11 HT20 MODE CHAIN 2)

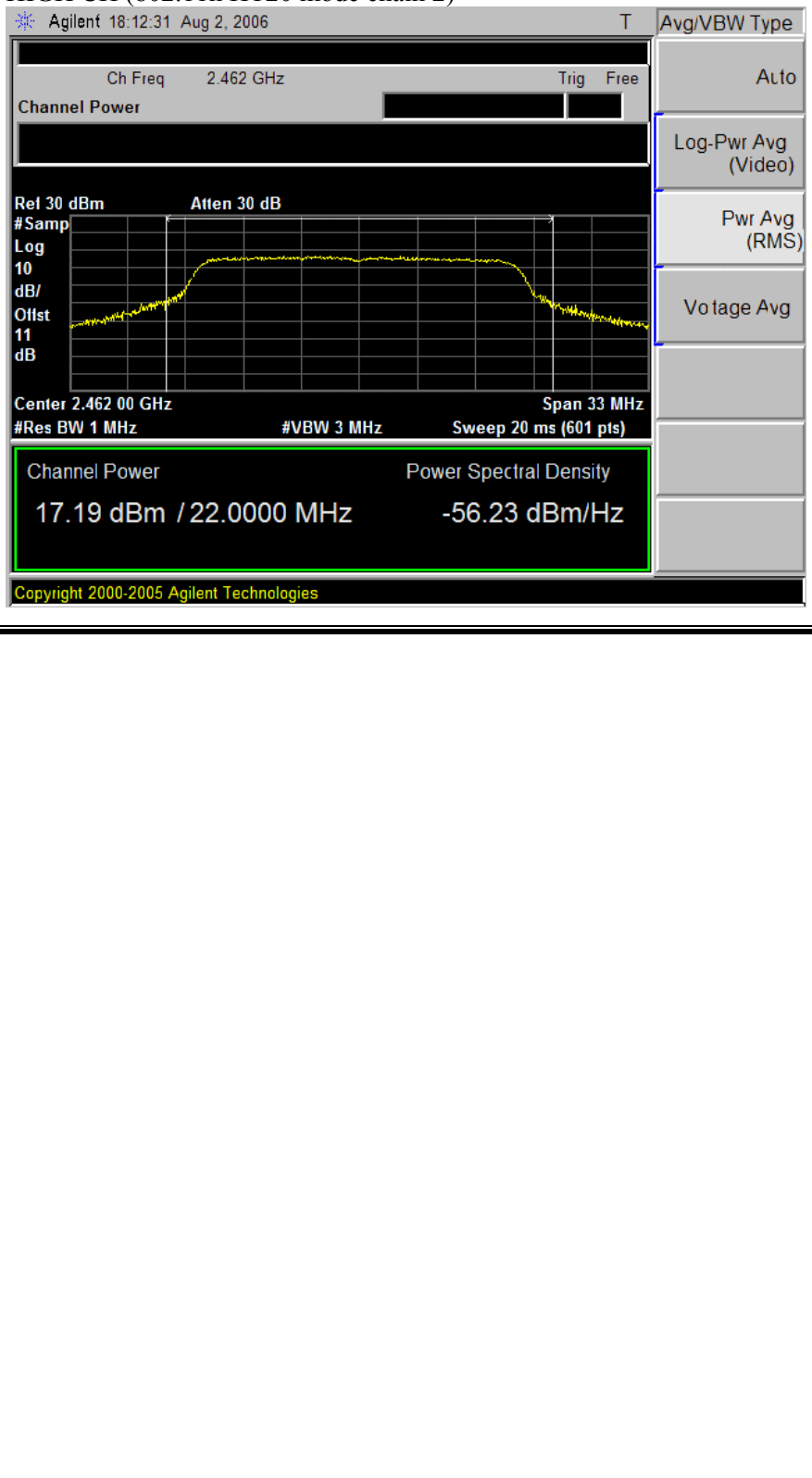
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

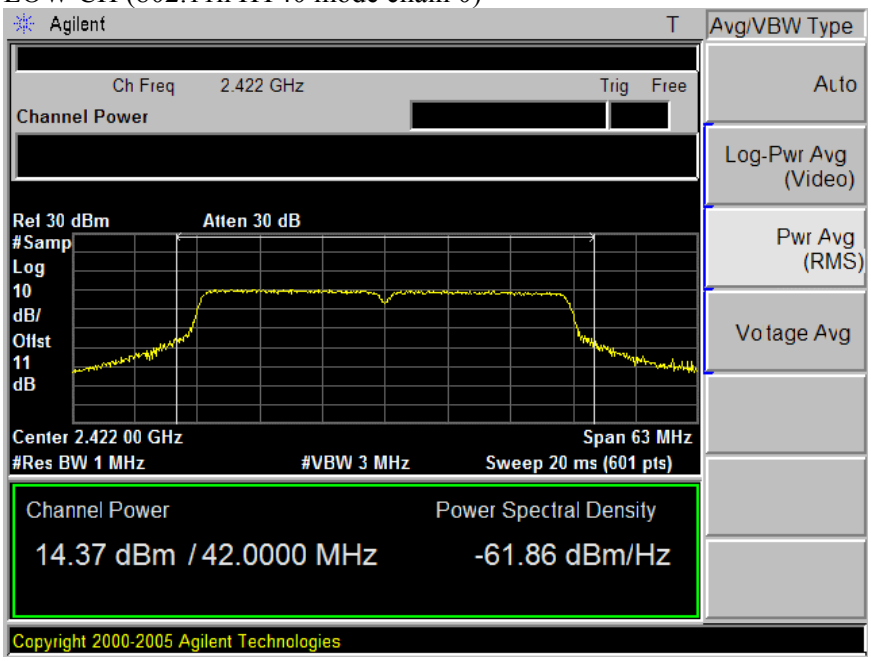


HIGH CH (802.11n HT20 mode chain 2)

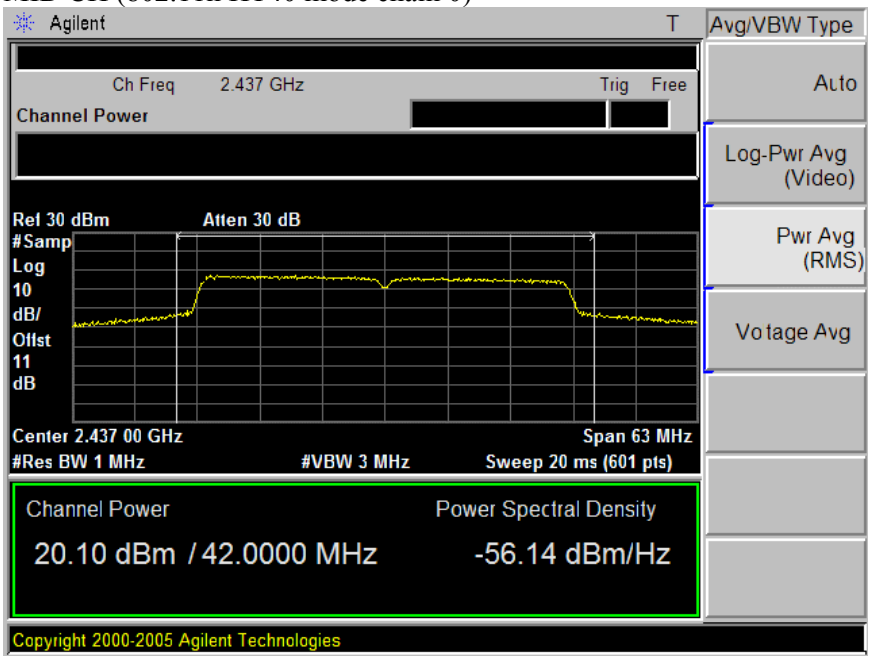


(802.11 HT40 MODE CHAIN 0)

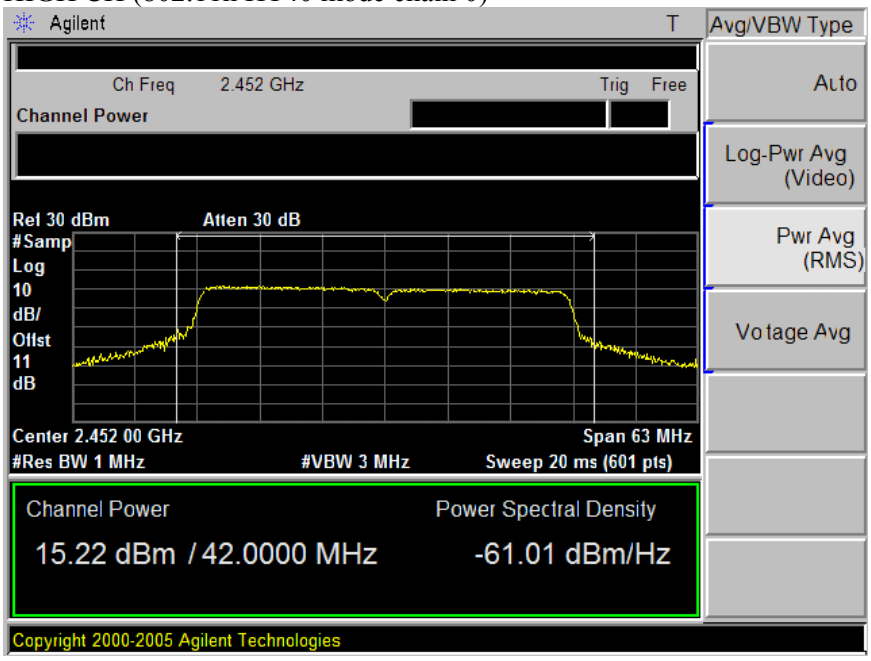
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

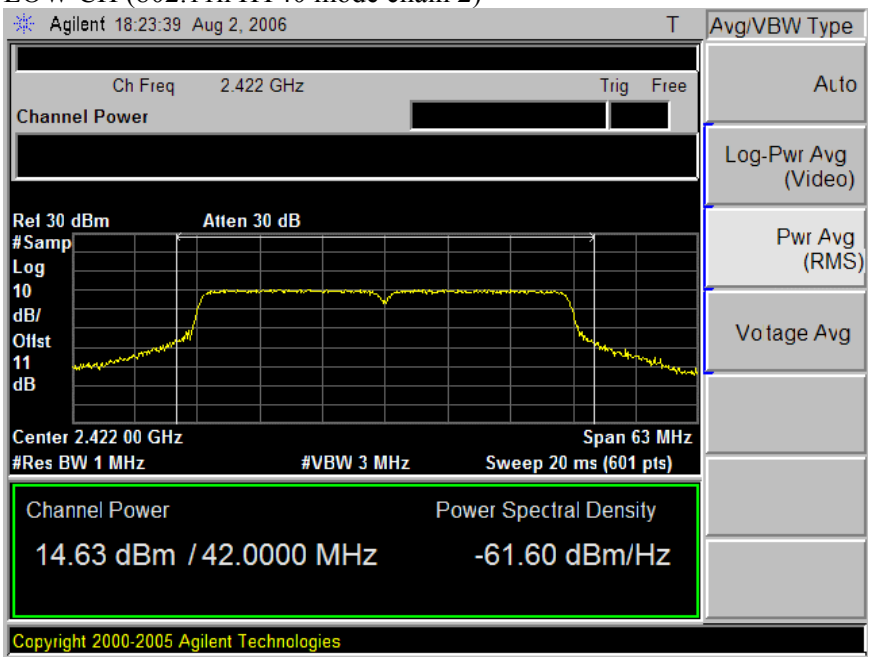


HIGH CH (802.11n HT40 mode chain 0)

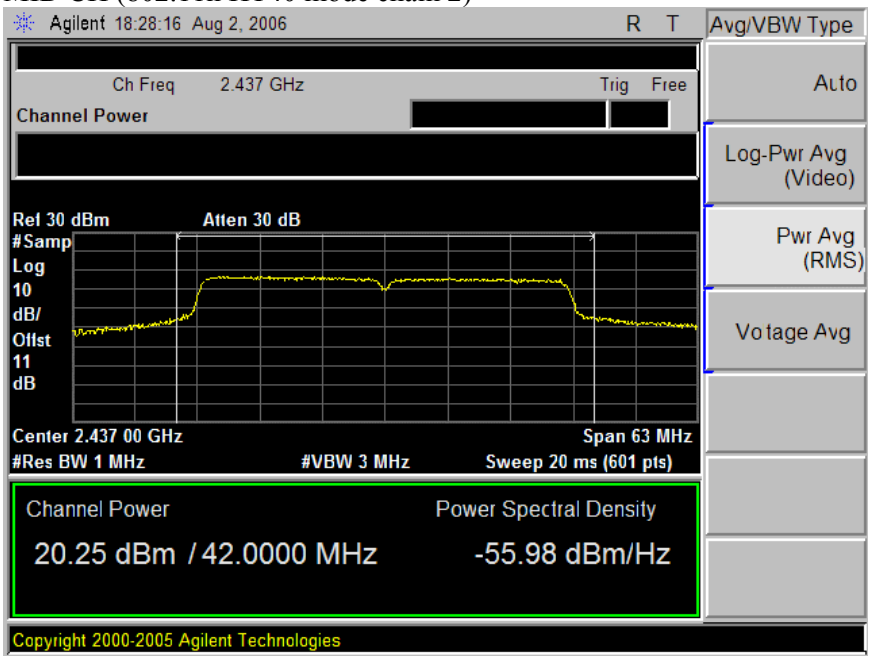


(802.11 HT40 MODE CHAIN 2)

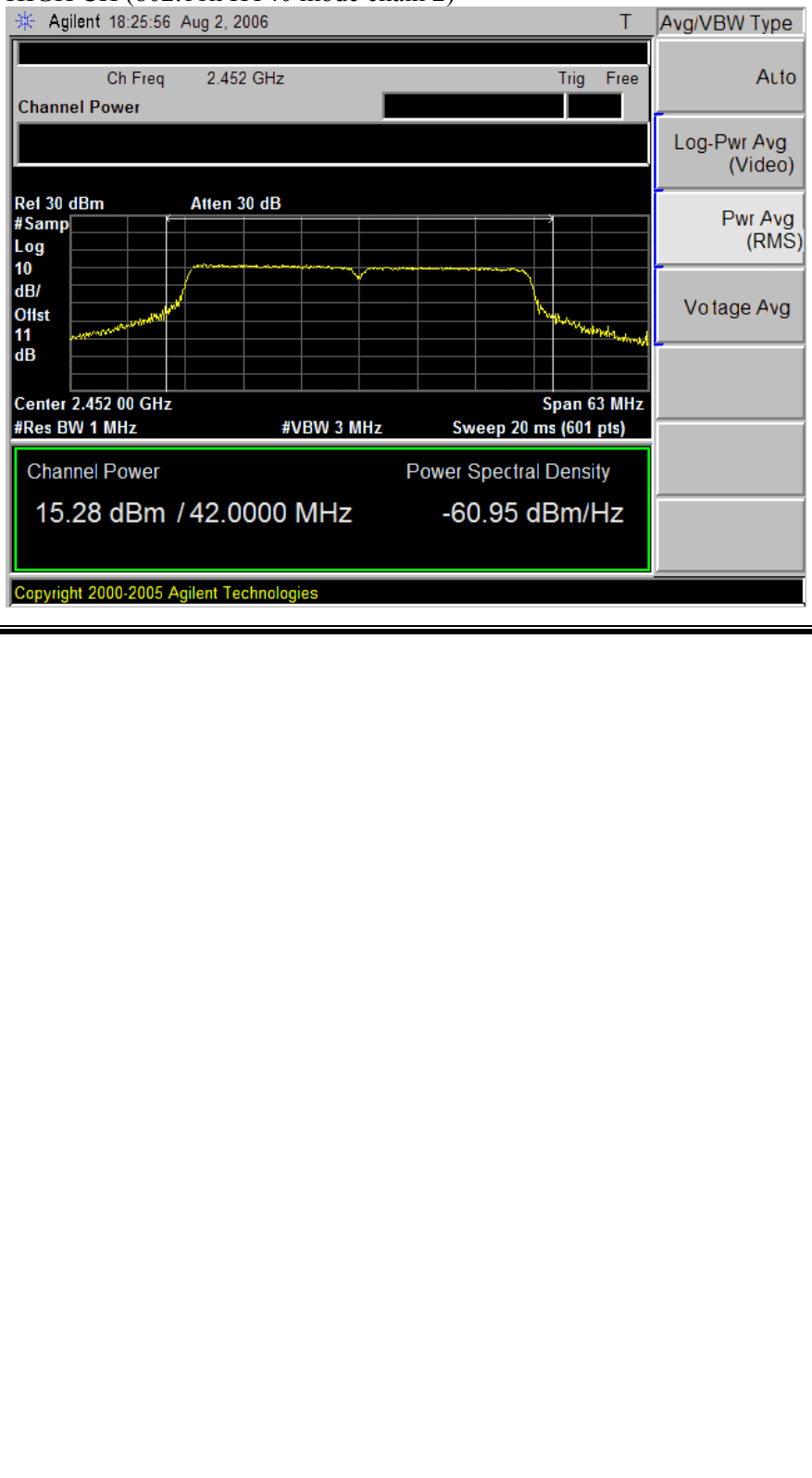
LOW CH (802.11n HT40 mode chain 2)



MID CH (802.11n HT40 mode chain 2)



HIGH CH (802.11n HT40 mode chain 2)



7.1.4. 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^ (Chain 0 Power / 10) + 10^ (Chain 2 Power / 10))

RESULTS

No non-compliance noted:

The cable assembly insertion loss of 11. dB (including 10 dB pad and 1 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 2 (dBm)	Average Power Total (dBm)
802.11b Mode				
Low	2412	18.4	18.5	21.5
Middle	2437	20.2	21.0	23.6
High	2462	18.7	18.8	21.8
802.11g Mode				
Low	2412	16.5	16.6	19.6
Middle	2437	19.9	20.2	23.1
High	2462	17.7	17.6	20.7
802.11n HT20 Mode				
Low	2412	16.4	16.3	19.4
Middle	2437	19.9	20.1	23.0
High	2462	17.4	17.1	20.3
802.11n HT40 Mode				
Low	2422	14.4	14.4	17.4
Middle	2437	19.5	20.1	22.8
High	2457	15.2	15.0	18.1

7.1.5. 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 maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. 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^ (Chain 0 PPSD / 10) + 10^ (Chain 2 PPSD / 10))

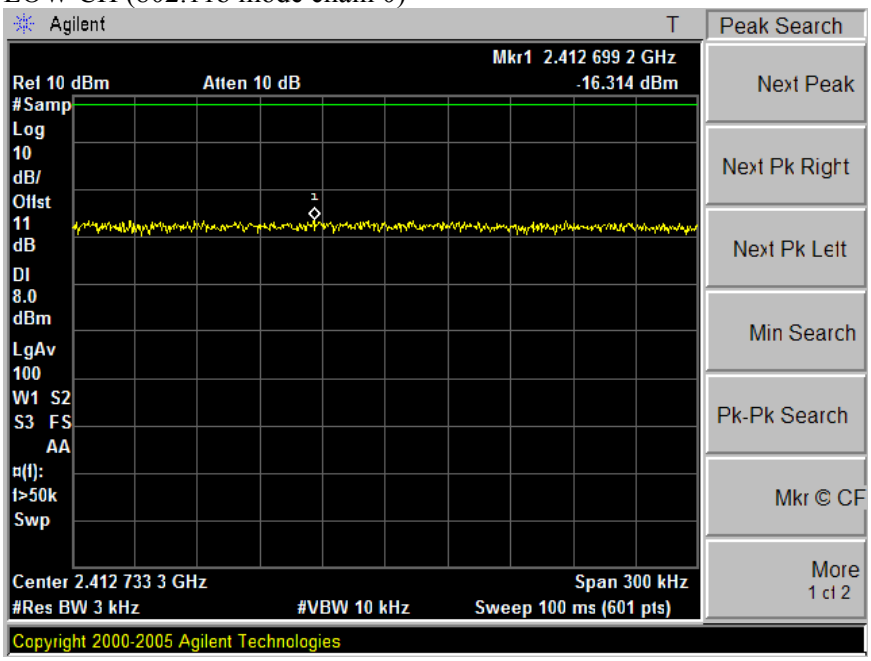
RESULTS

No non-compliance noted:

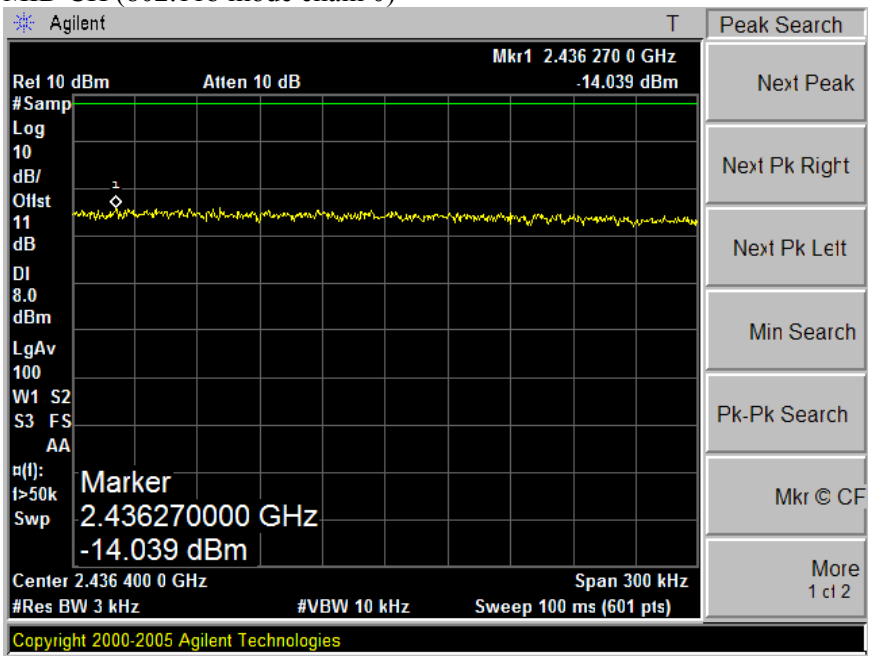
Mode Channel	Frequency (MHz)	PPSD Chain 0 (dBm)	PPSD Chain 2 (dBm)	PPSD Total (dBm)	Limit (dBm)	Margin (dB)
802.11b Mode						
Low	2412	-16.31	-17.72	-13.95	8	-21.95
Middle	2437	-14.04	-13.86	-10.94	8	-18.94
High	2462	-16.74	-16.07	-13.38	8	-21.38
802.11g Mode						
Low	2412	-19.06	-20.04	-16.51	8	-24.51
Middle	2437	-16.10	-18.07	-13.96	8	-21.96
High	2462	-19.03	-18.78	-15.89	8	-23.89
802.11n HT20 Mode						
Low	2412	-19.46	-19.30	-16.37	8	-24.37
Middle	2437	-16.19	-16.18	-13.17	8	-21.17
High	2462	-19.48	-19.67	-16.57	8	-24.57
802.11n HT40 Mode						
Low	2422	-23.21	-26.12	-21.42	8	-29.42
Middle	2437	-17.02	-20.12	-15.29	8	-23.29
High	2452	-22.24	-24.57	-20.24	8	-28.24

(802.11b MODE CHAIN 0)

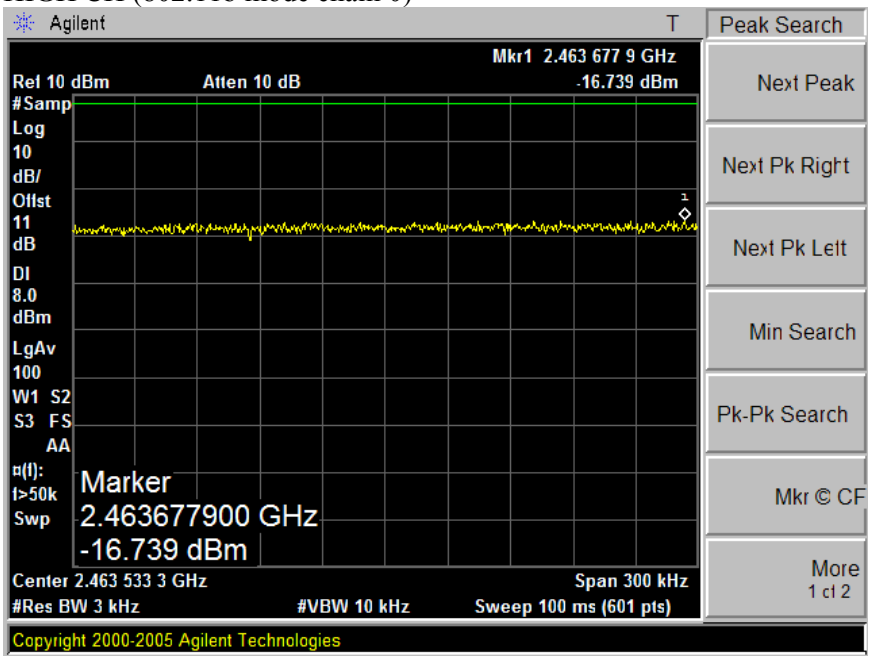
LOW CH (802.11b mode chain 0)



MID CH (802.11b mode chain 0)

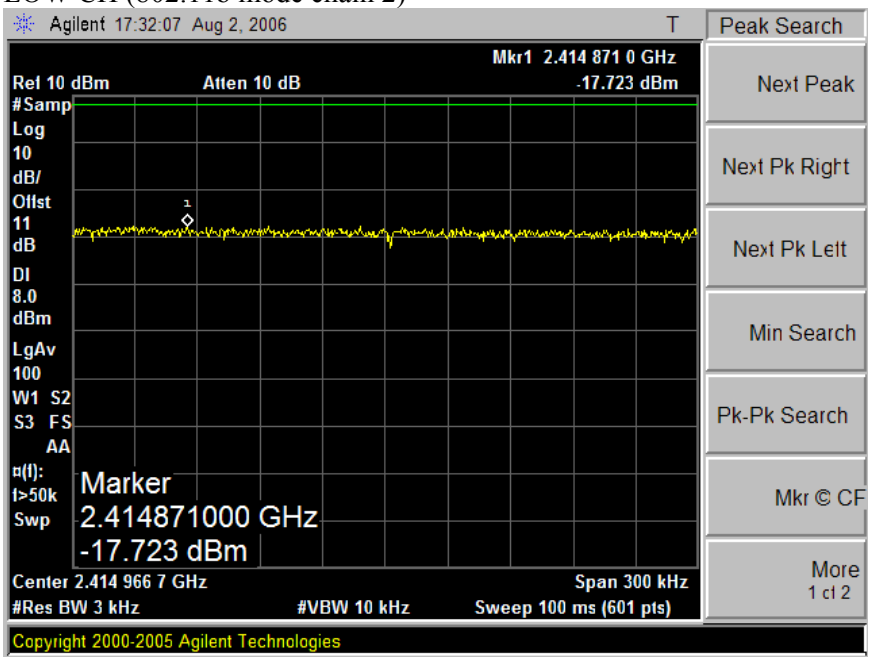


HIGH CH (802.11b mode chain 0)

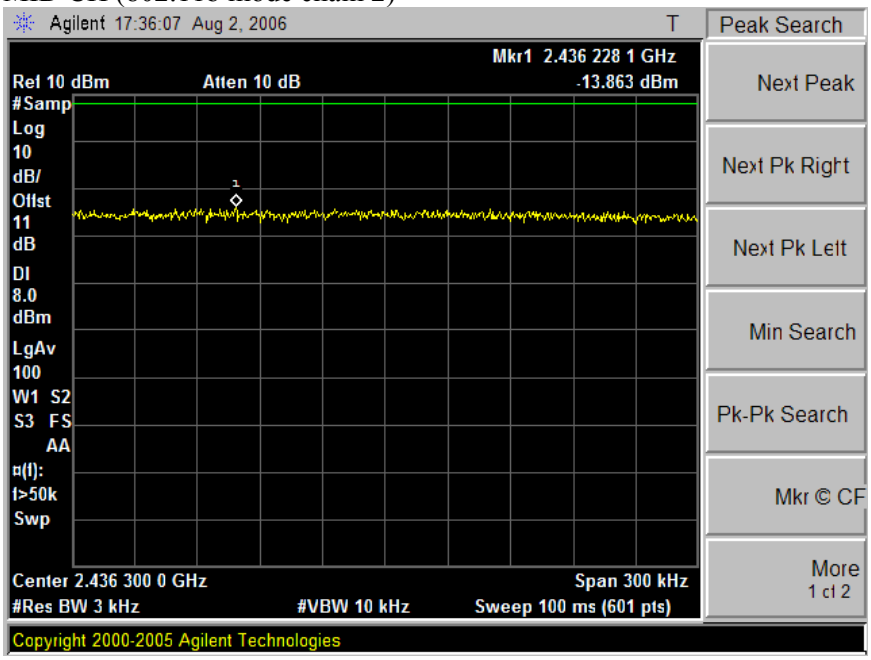


(802.11b MODE CHAIN 2)

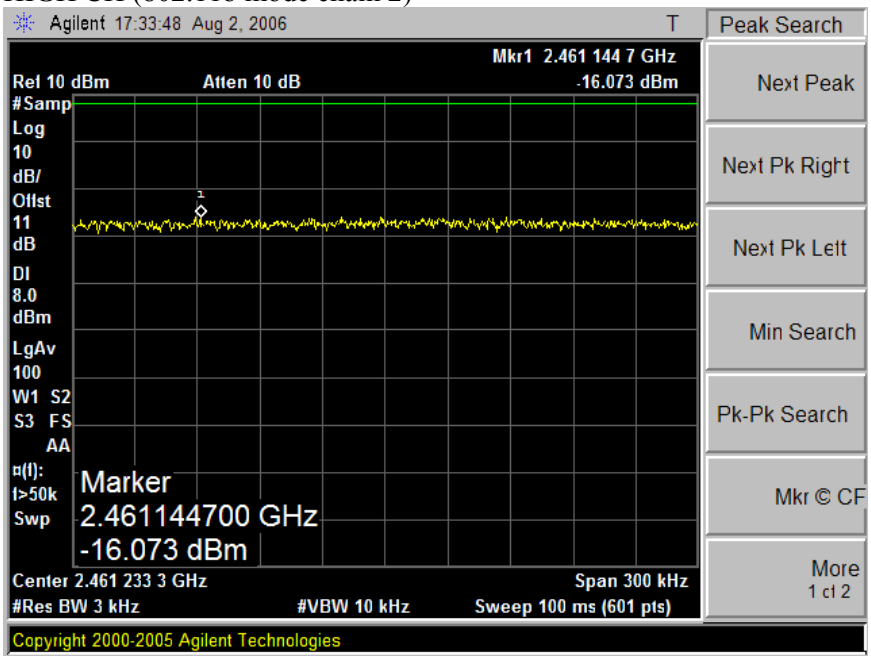
LOW CH (802.11b mode chain 2)



MID CH (802.11b mode chain 2)

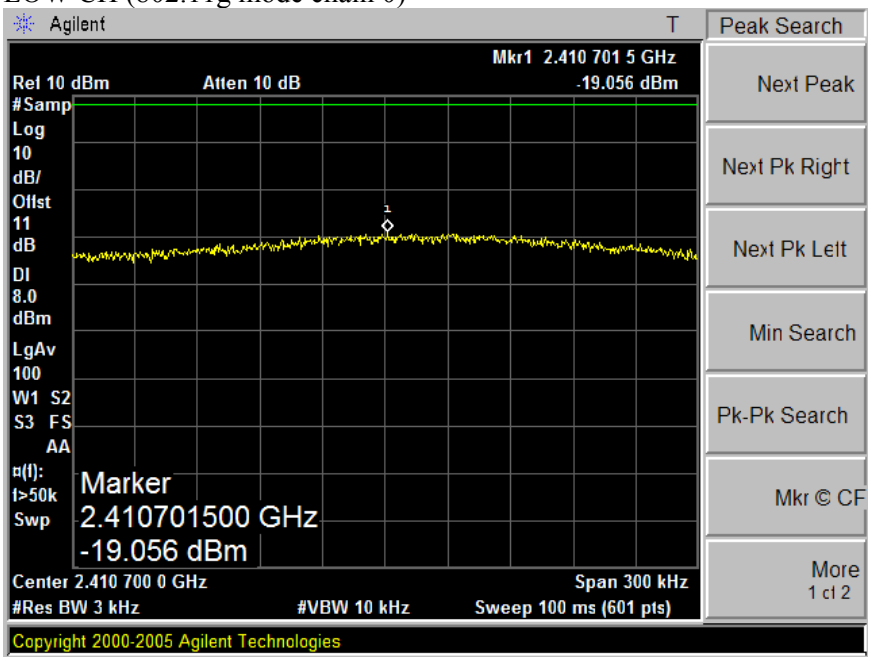


HIGH CH (802.11b mode chain 2)

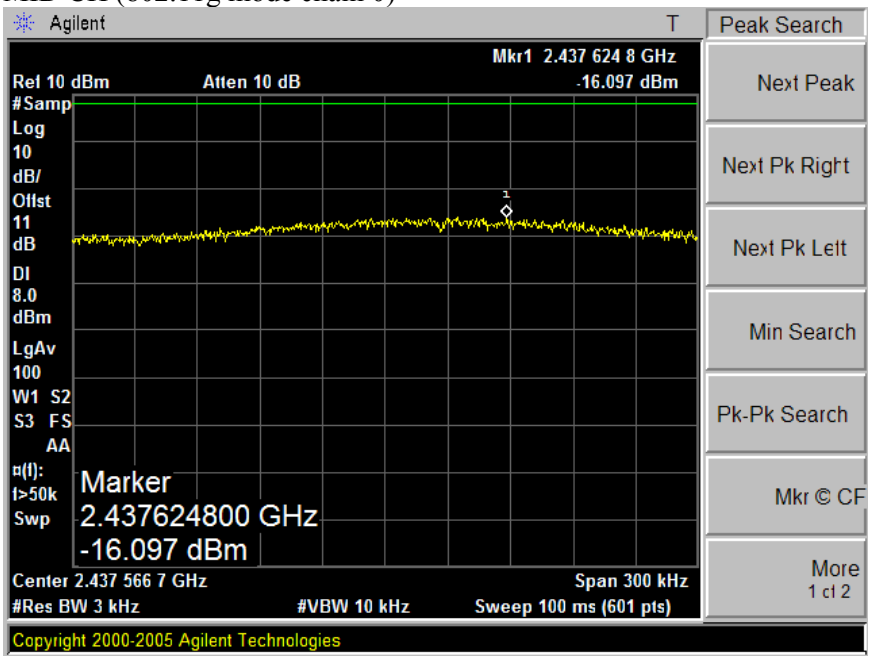


(802.11g MODE CHAIN 0)

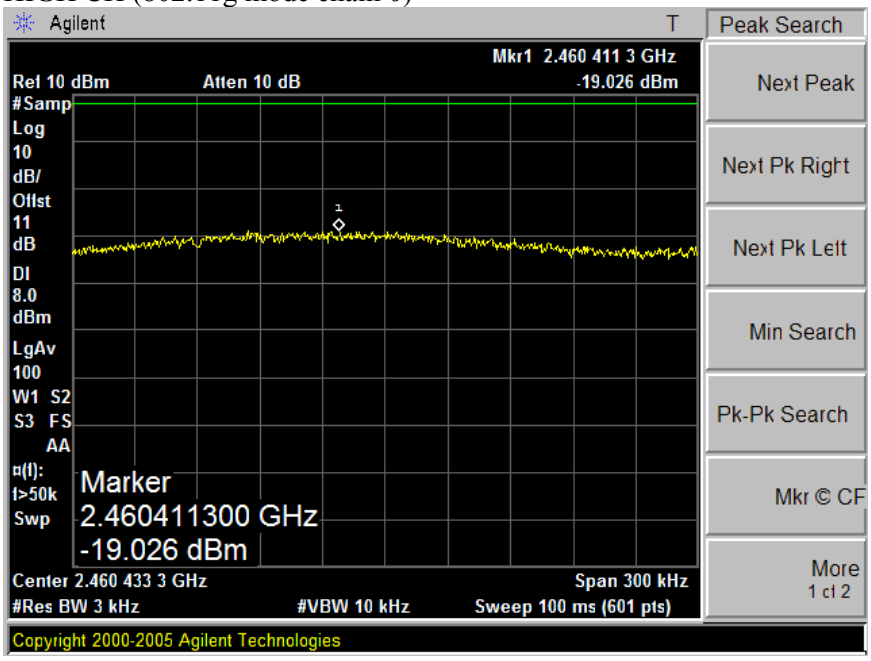
LOW CH (802.11g mode chain 0)



MID CH (802.11g mode chain 0)

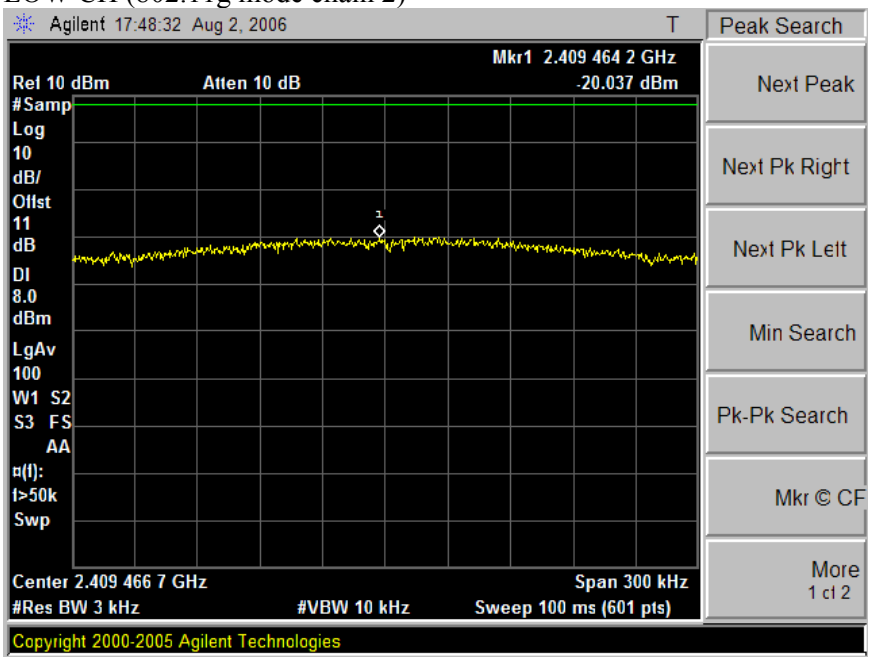


HIGH CH (802.11g mode chain 0)

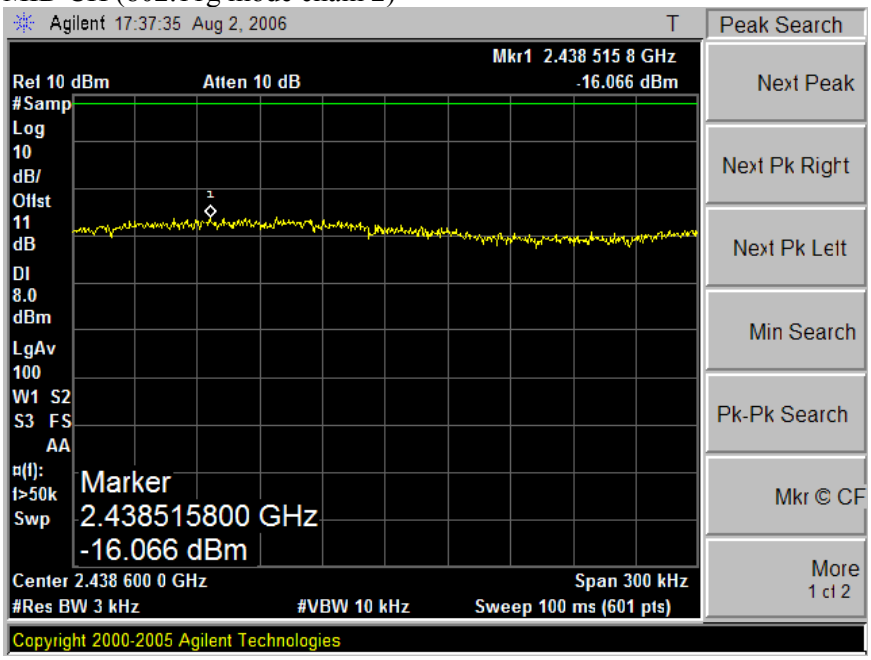


(802.11g MODE CHAIN 2)

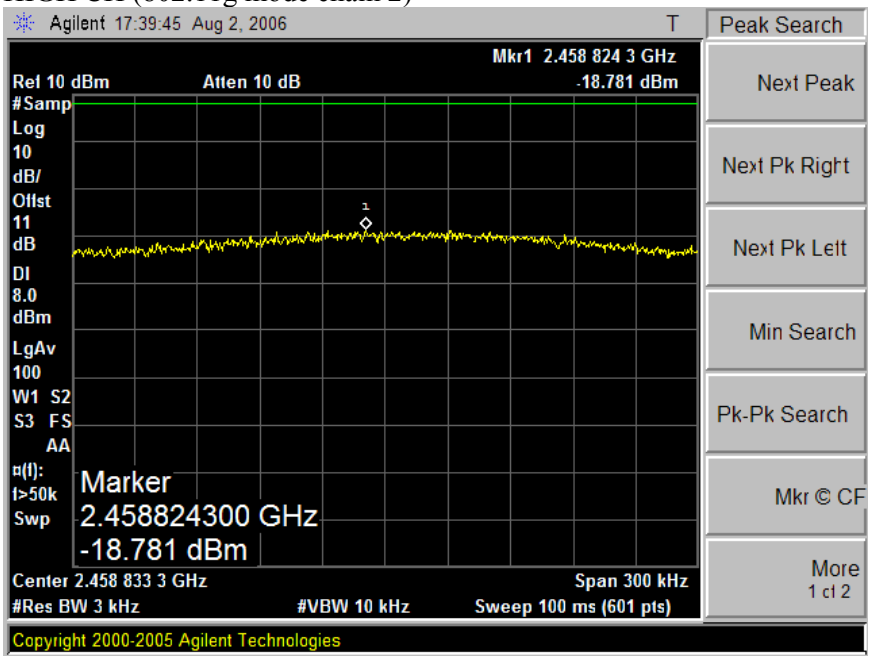
LOW CH (802.11g mode chain 2)



MID CH (802.11g mode chain 2)

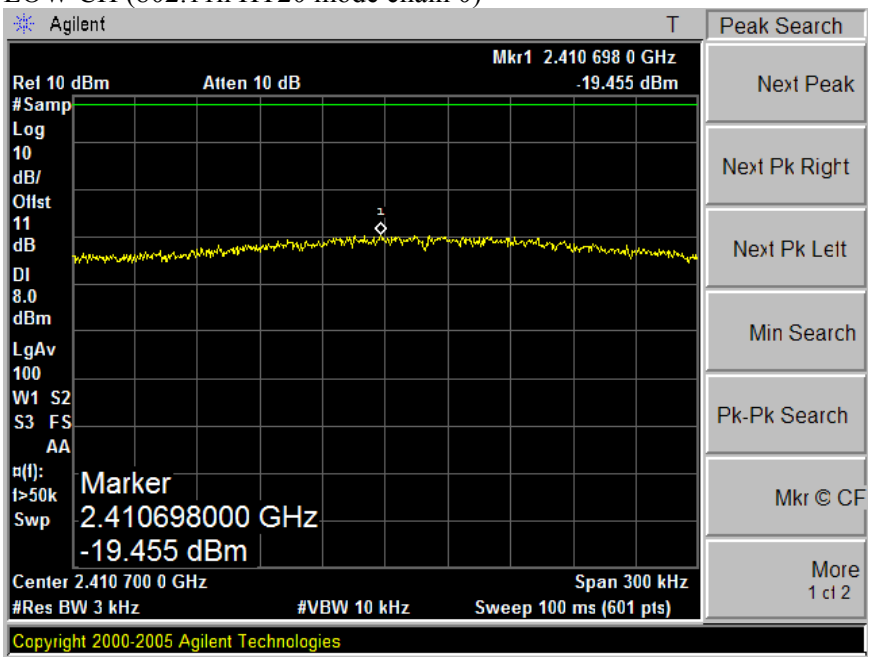


HIGH CH (802.11g mode chain 2)

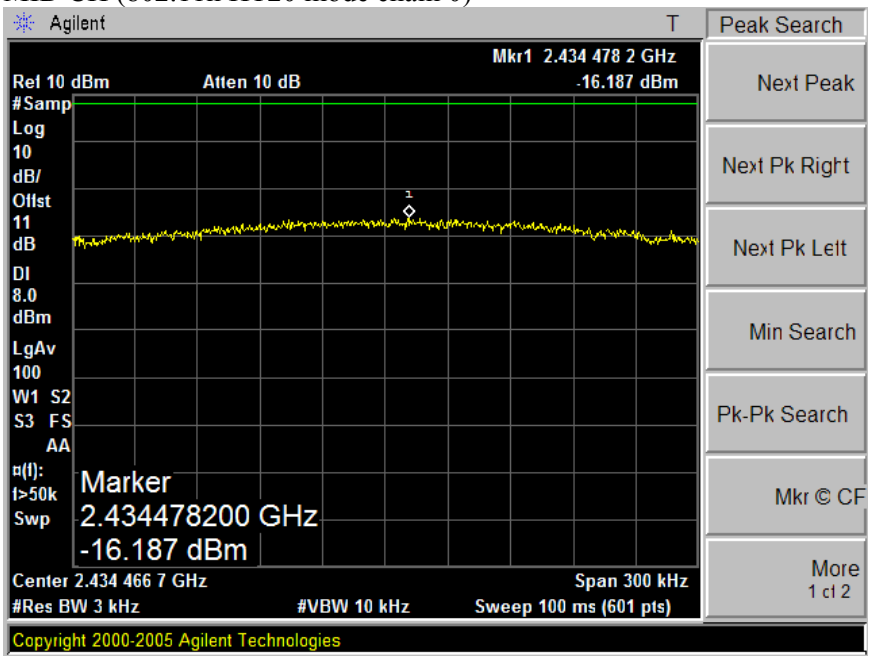


(802.11n HT20 MODE CHAIN 0)

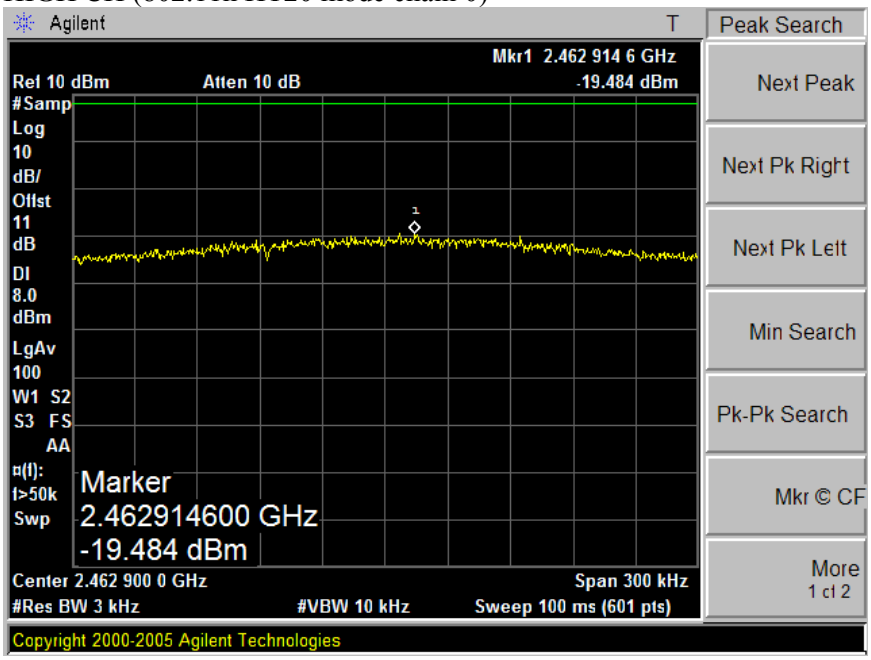
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

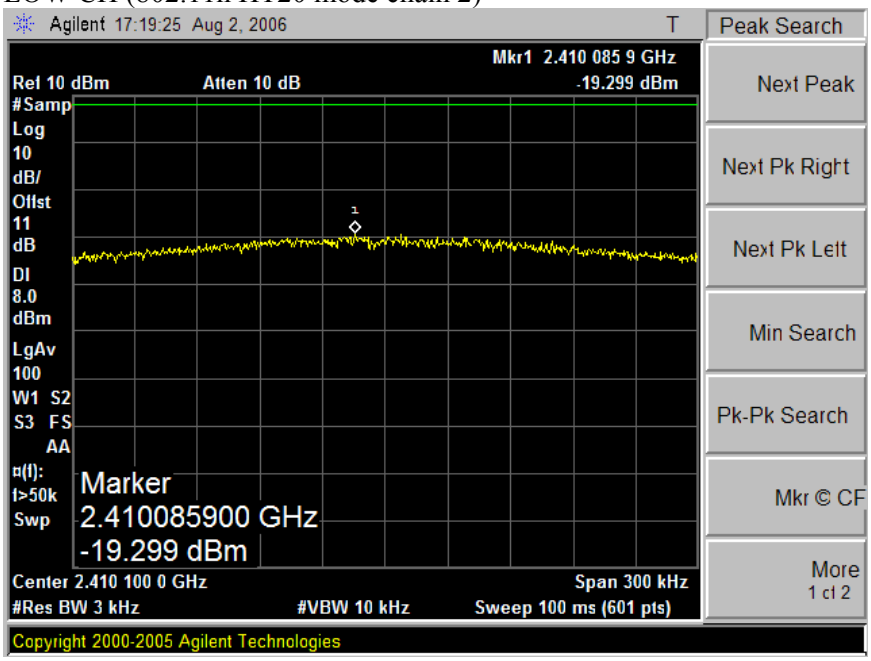


HIGH CH (802.11n HT20 mode chain 0)

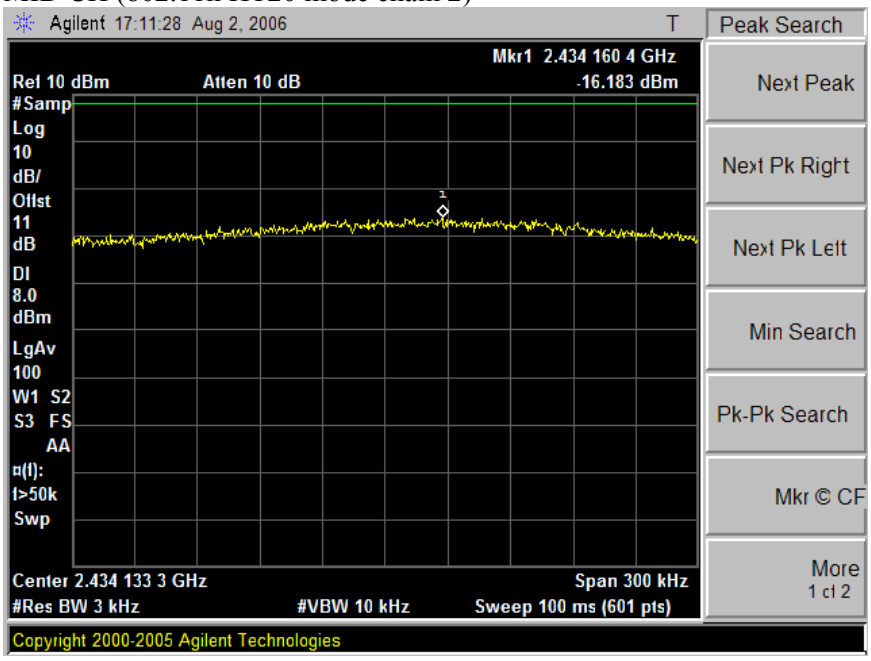


(802.11 HT20 MODE CHAIN 2)

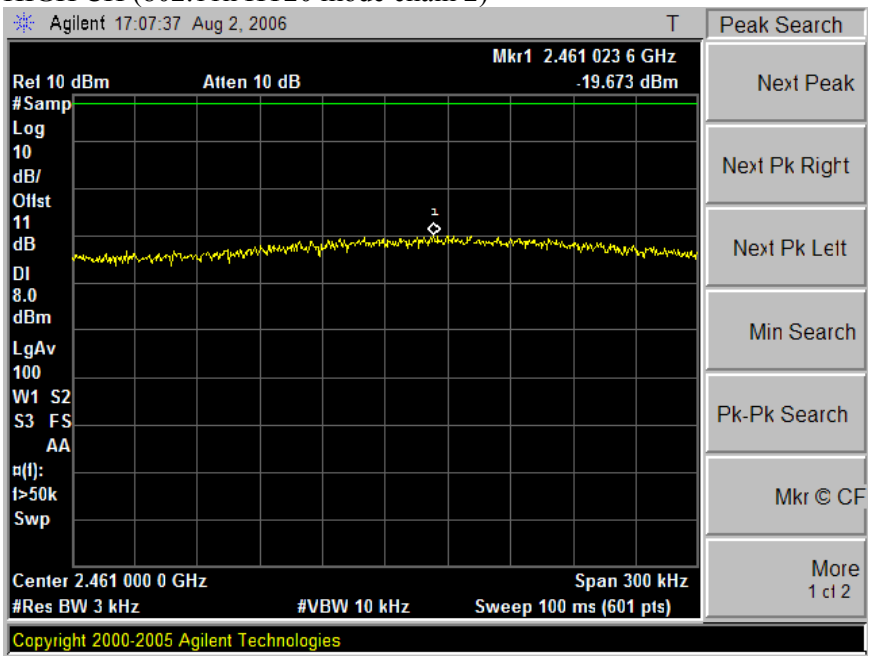
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

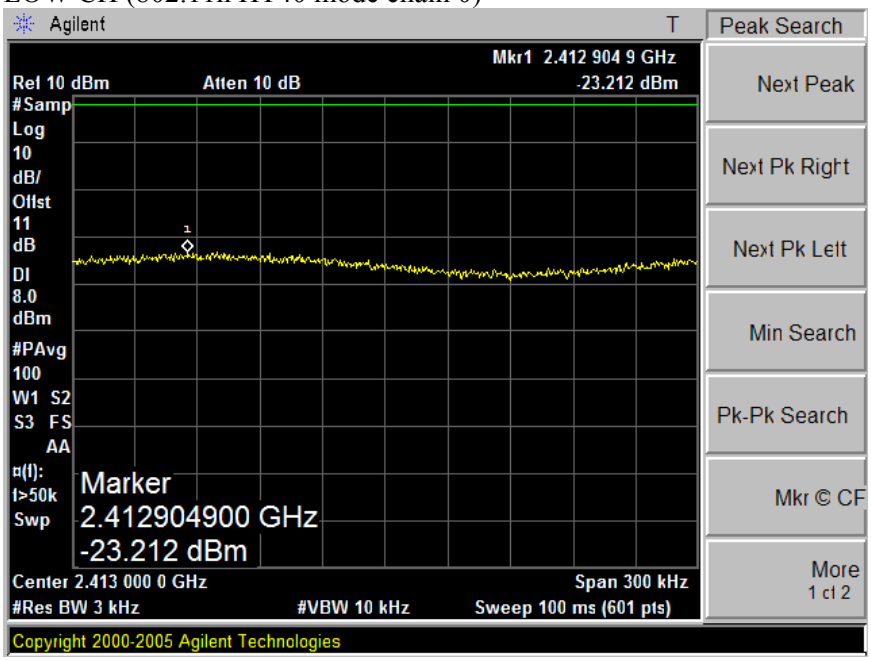


HIGH CH (802.11n HT20 mode chain 2)

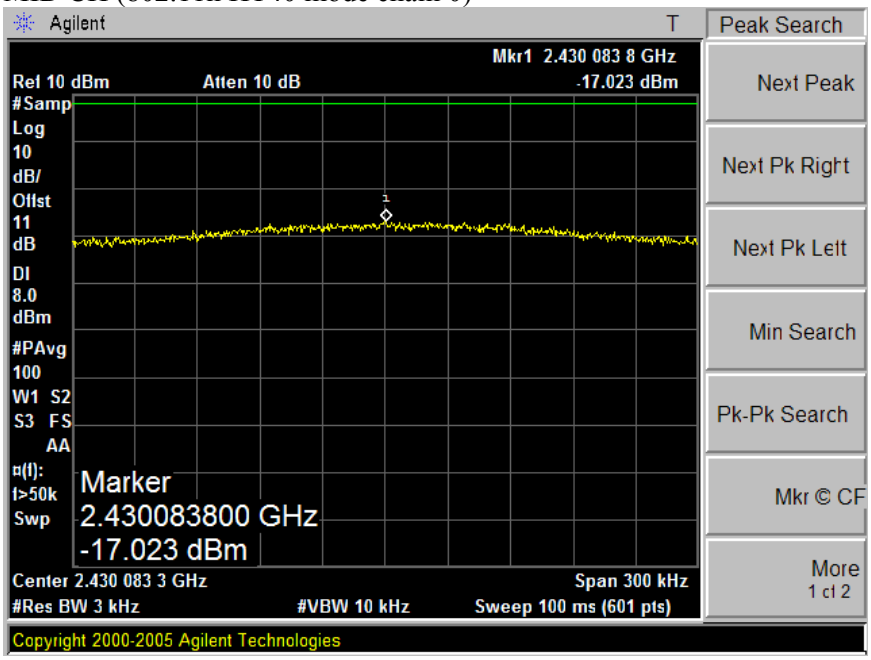


(802.11 HT40 MODE CHAIN 0)

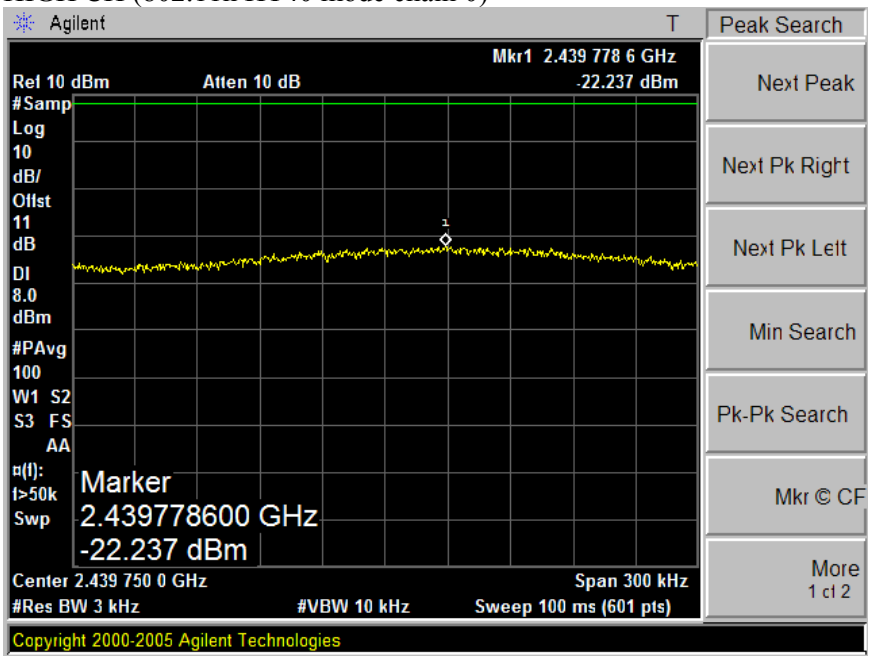
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

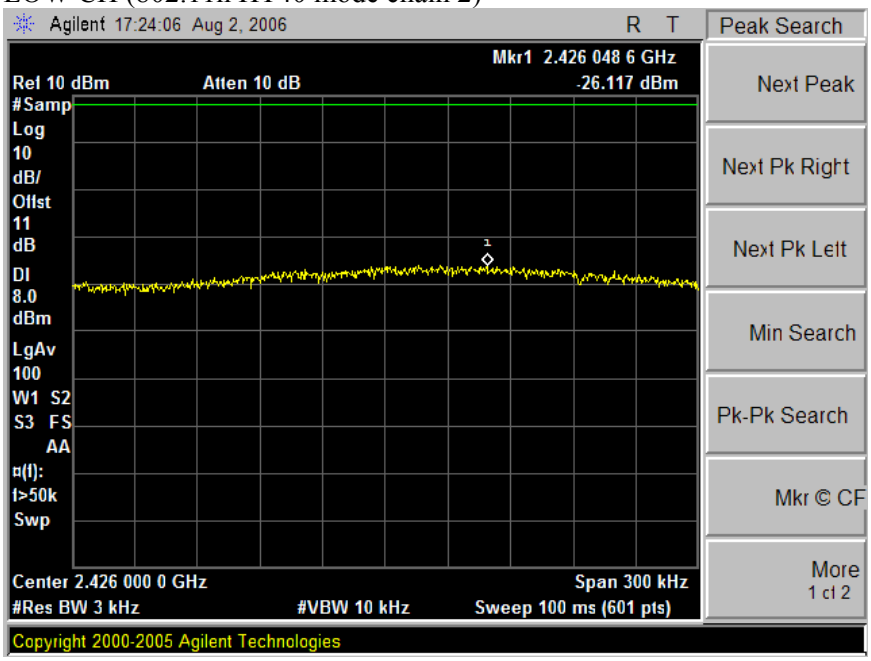


HIGH CH (802.11n HT40 mode chain 0)

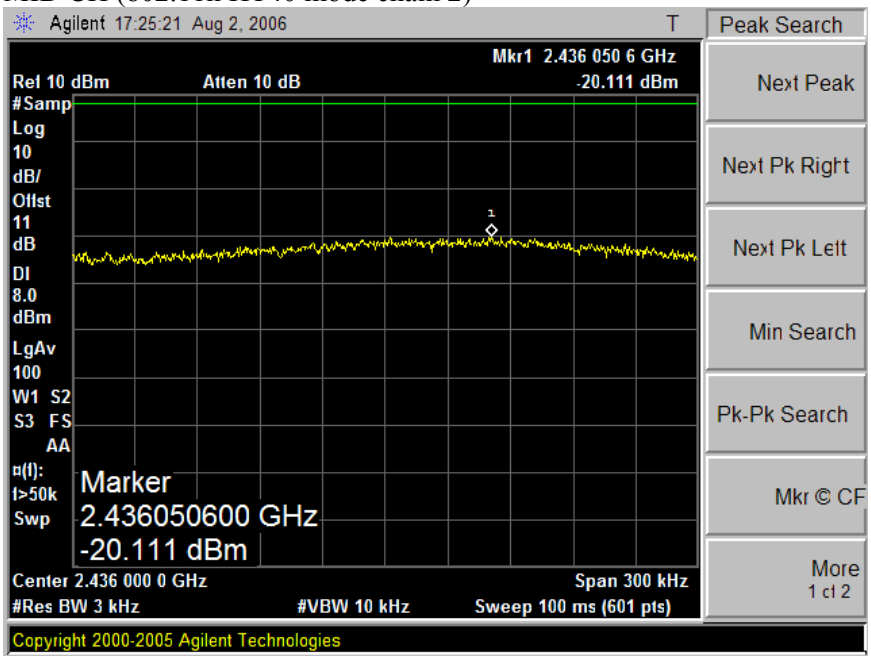


(802.11 HT40 MODE CHAIN 2)

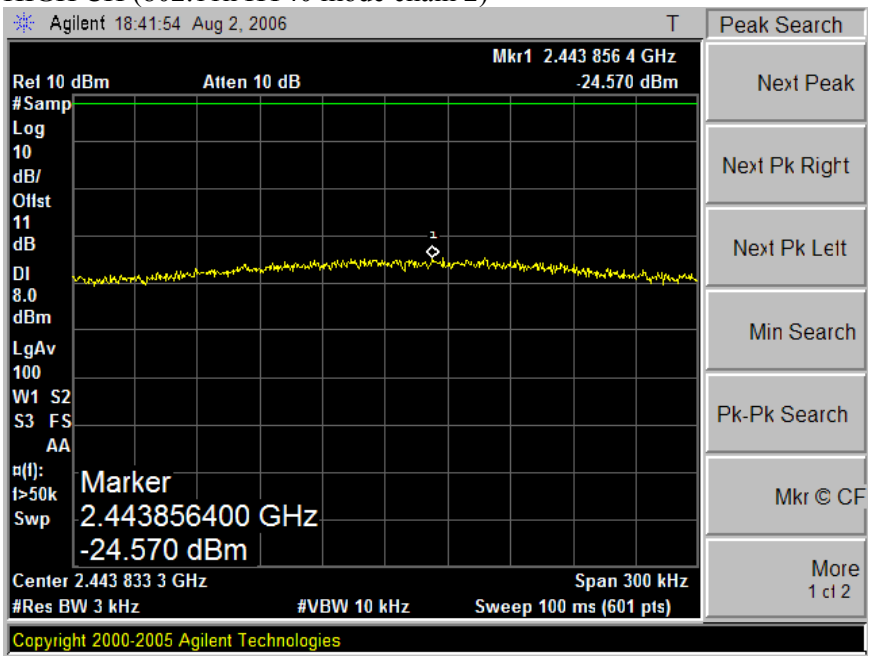
LOW CH (802.11n HT40 mode chain 2)



MID CH (802.11n HT40 mode chain 2)



HIGH CH (802.11n HT40 mode chain 2)



7.1.6. 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)).

Conducted power was measured using the Option 2 procedures, therefore the required attenuation is 30 dB.

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.

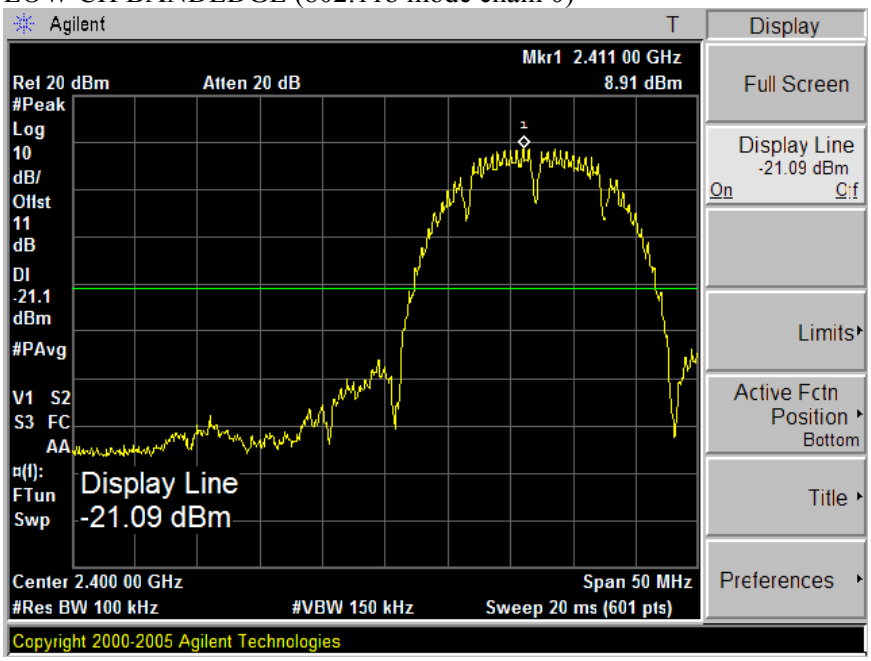
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

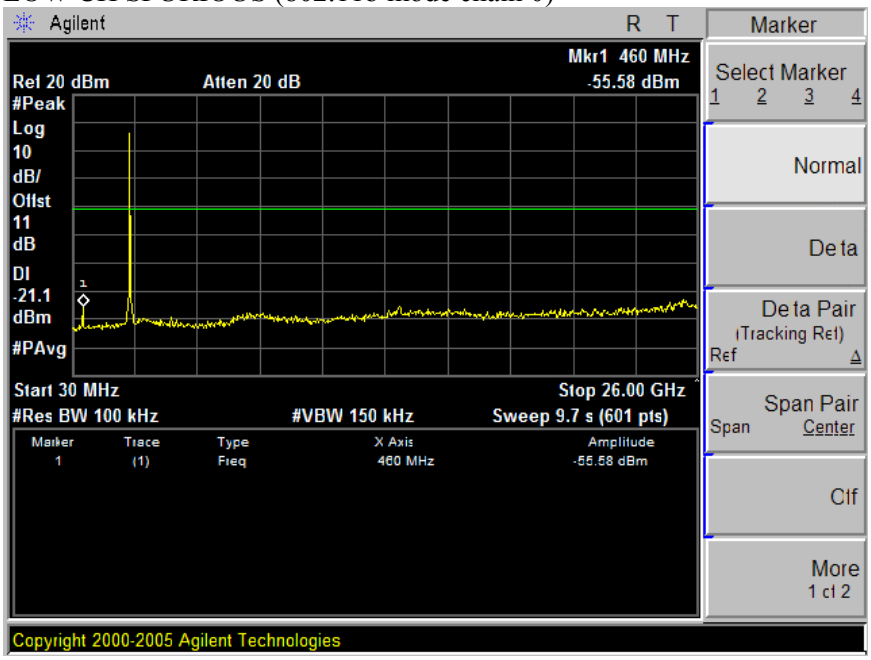
No non-compliance noted:

SPURIOUS EMISSIONS (802.11b MODE CHAIN 0)

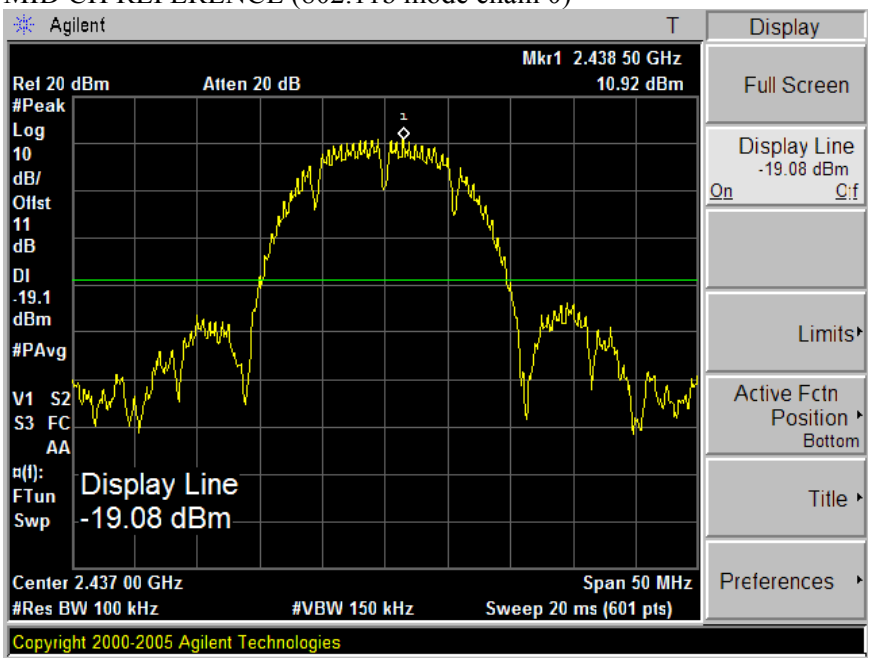
LOW CH BANDEDGE (802.11b mode chain 0)



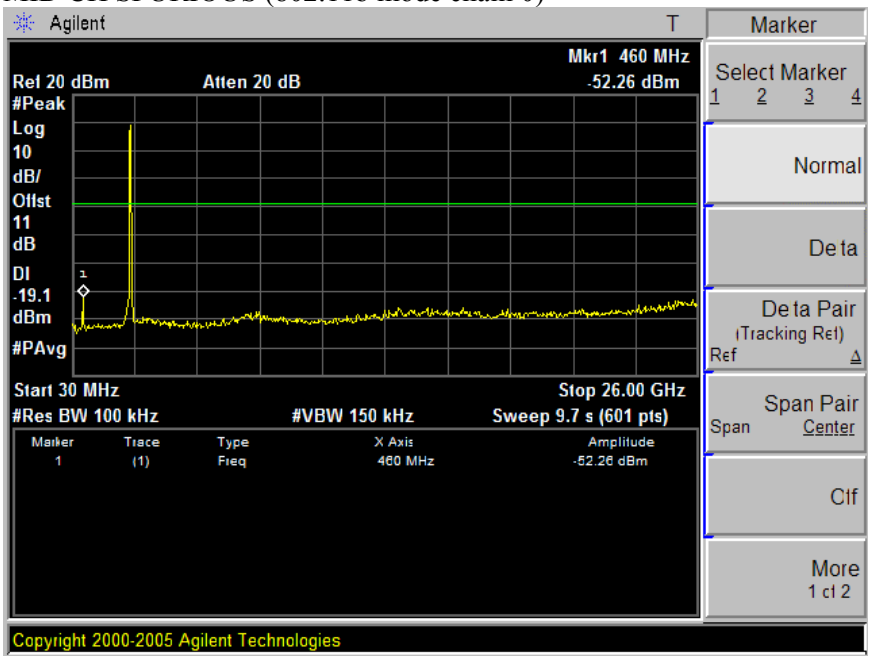
LOW CH SPURIOUS (802.11b mode chain 0)



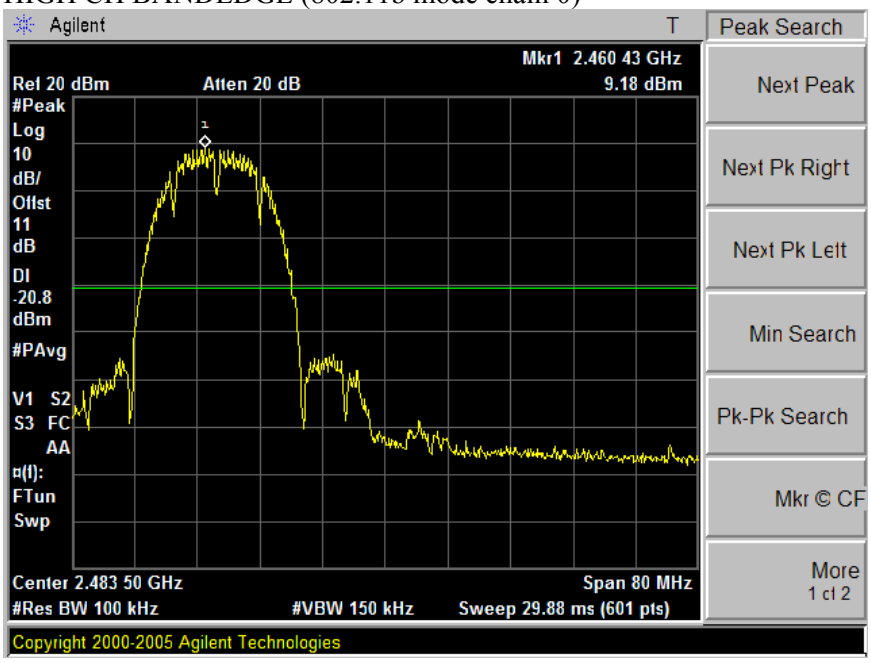
MID CH REFERENCE (802.11b mode chain 0)



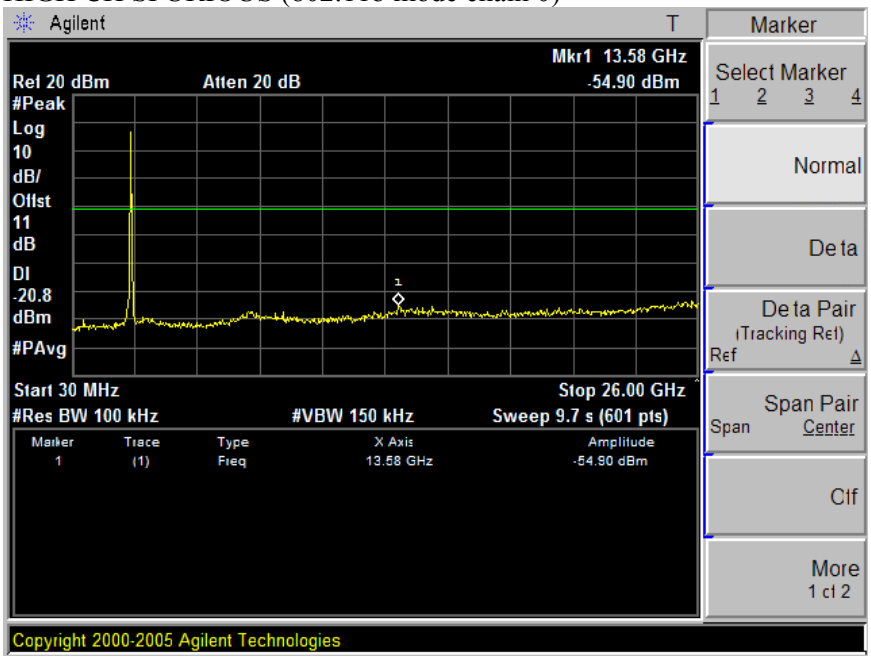
MID CH SPURIOUS (802.11b mode chain 0)



HIGH CH BANDEDGE (802.11b mode chain 0)

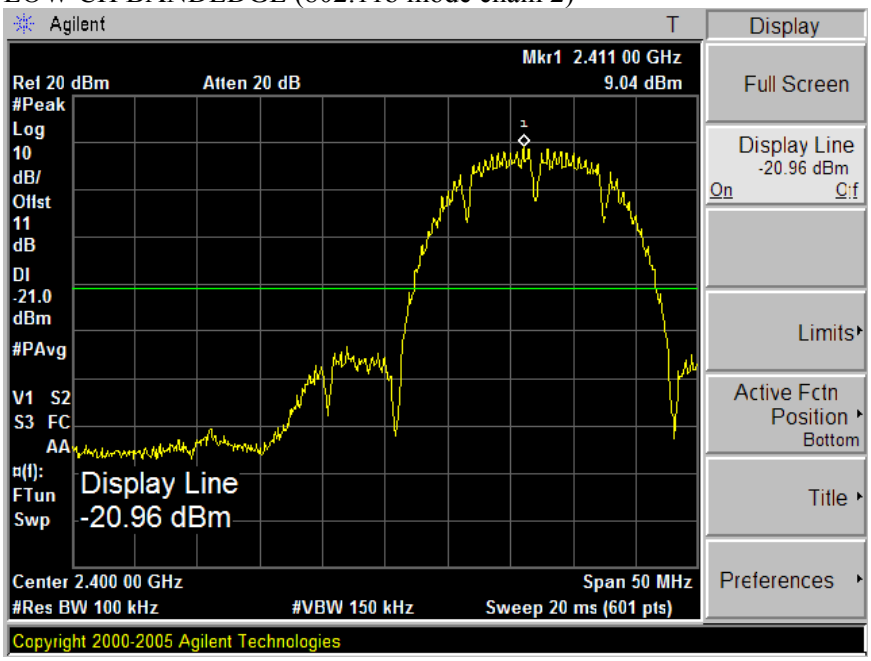


HIGH CH SPURIOUS (802.11b mode chain 0)

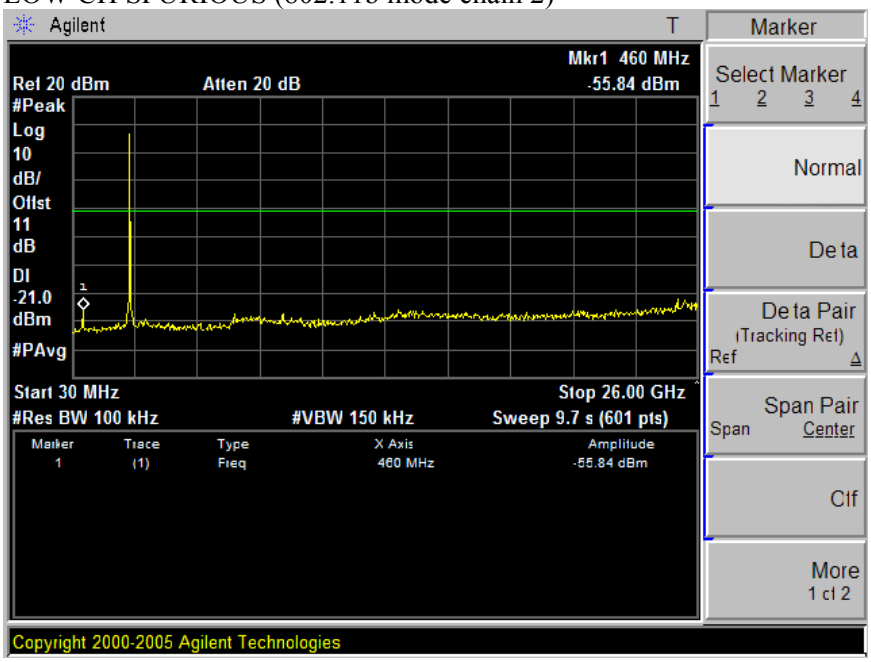


SPURIOUS EMISSIONS (802.11b MODE CHAIN 2)

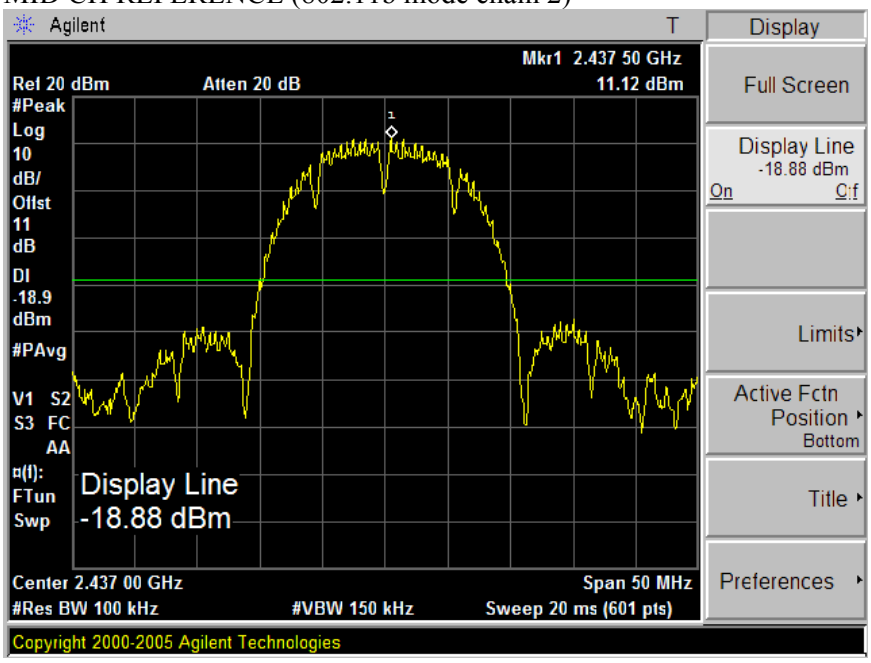
LOW CH BANDEDGE (802.11b mode chain 2)



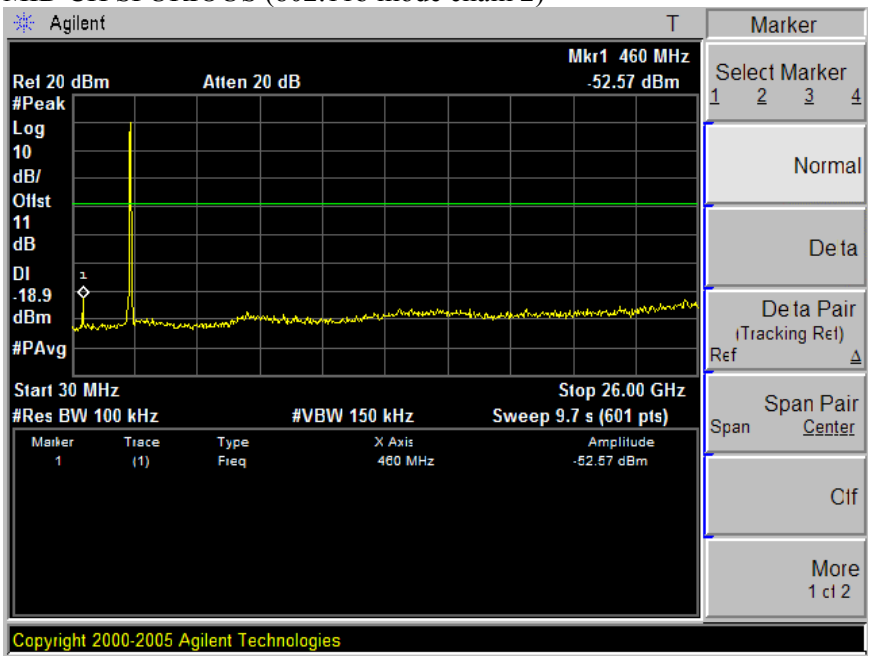
LOW CH SPURIOUS (802.11b mode chain 2)



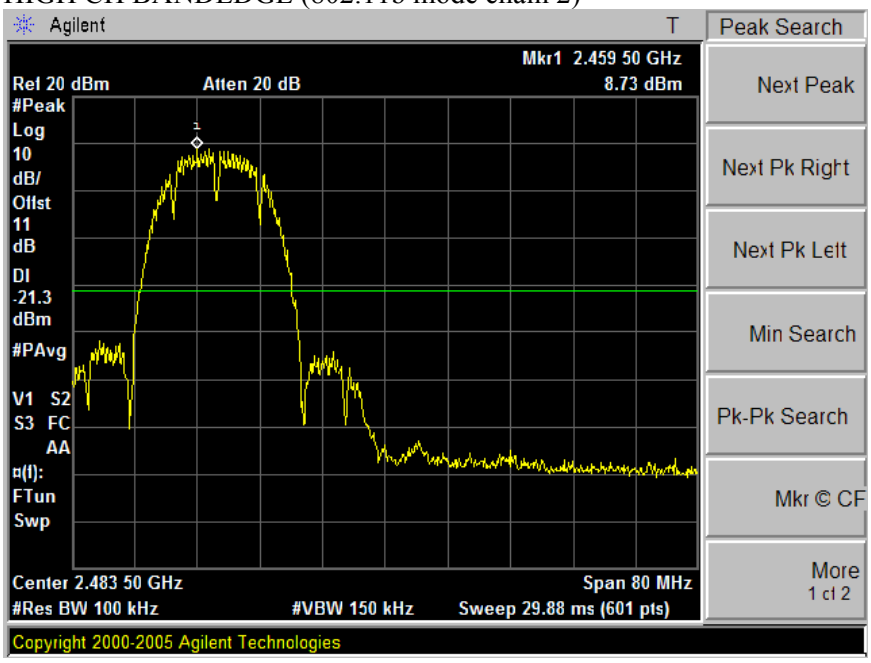
MID CH REFERENCE (802.11b mode chain 2)



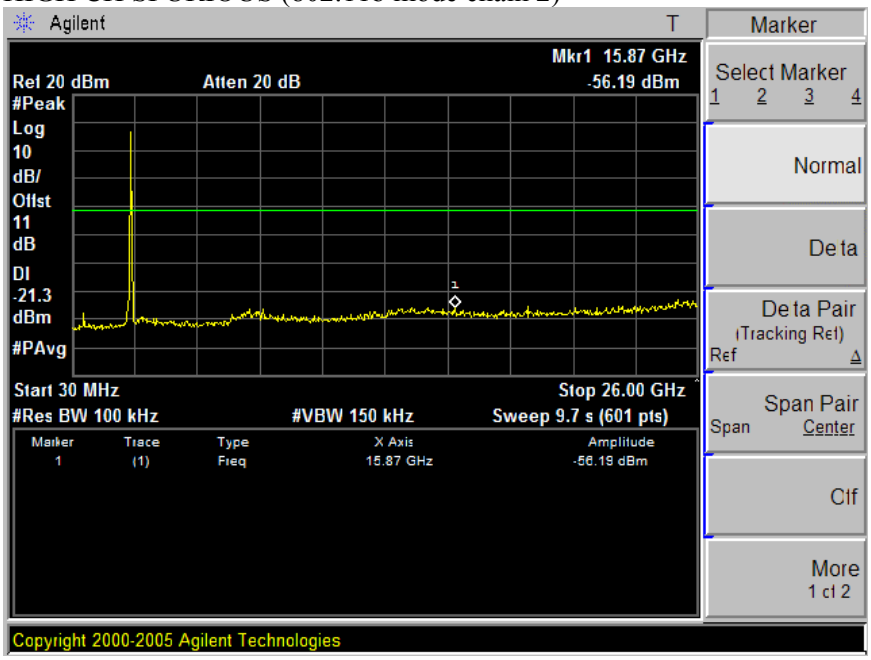
MID CH SPURIOUS (802.11b mode chain 2)



HIGH CH BANDEDGE (802.11b mode chain 2)

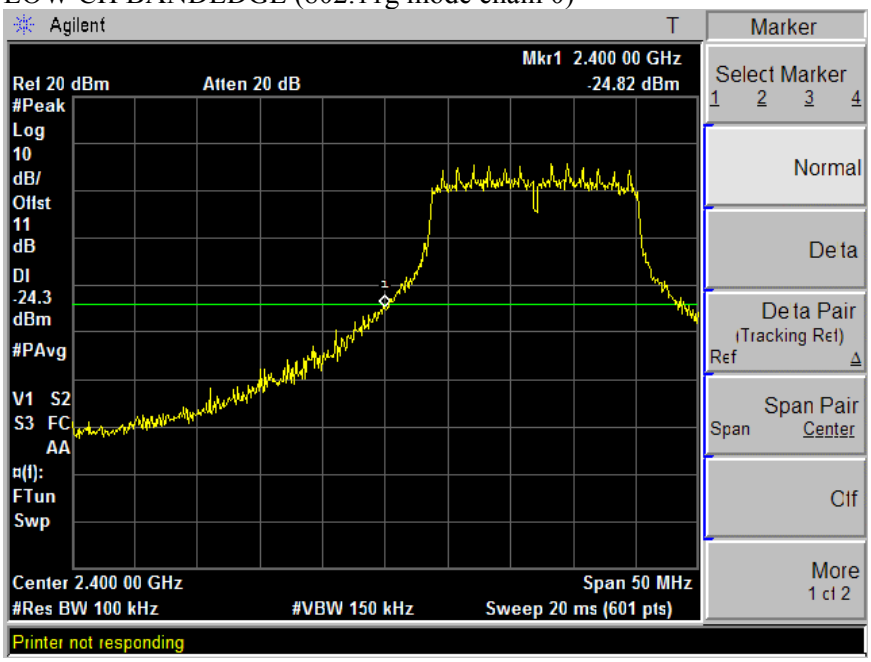


HIGH CH SPURIOUS (802.11b mode chain 2)

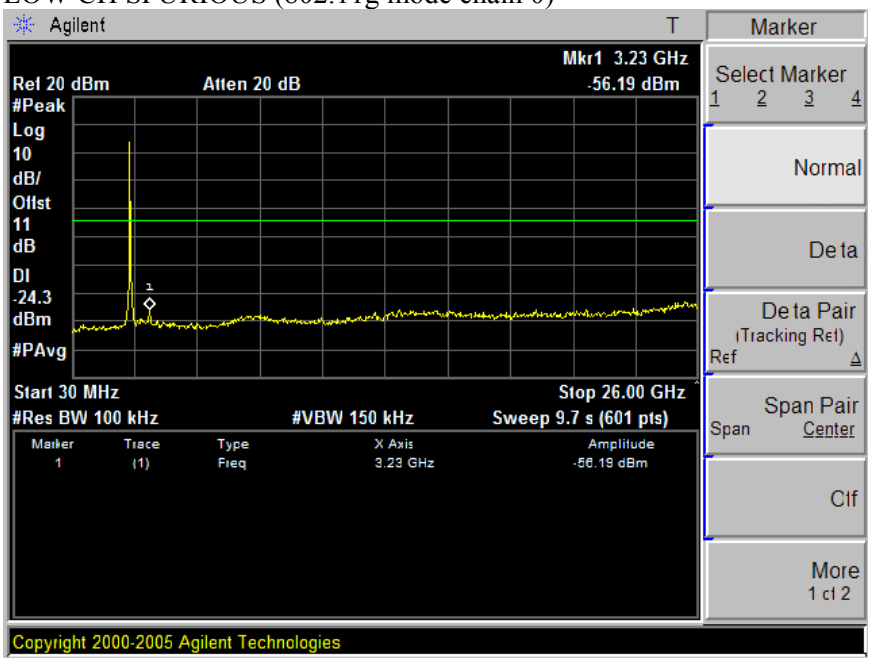


SPURIOUS EMISSIONS (802.11g MODE CHAIN 0)

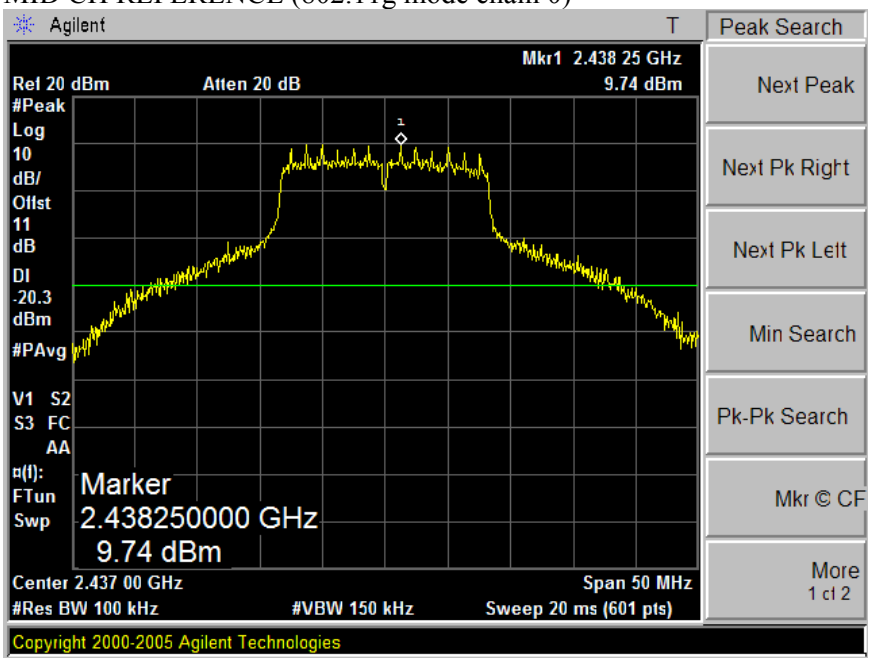
LOW CH BANDEDGE (802.11g mode chain 0)



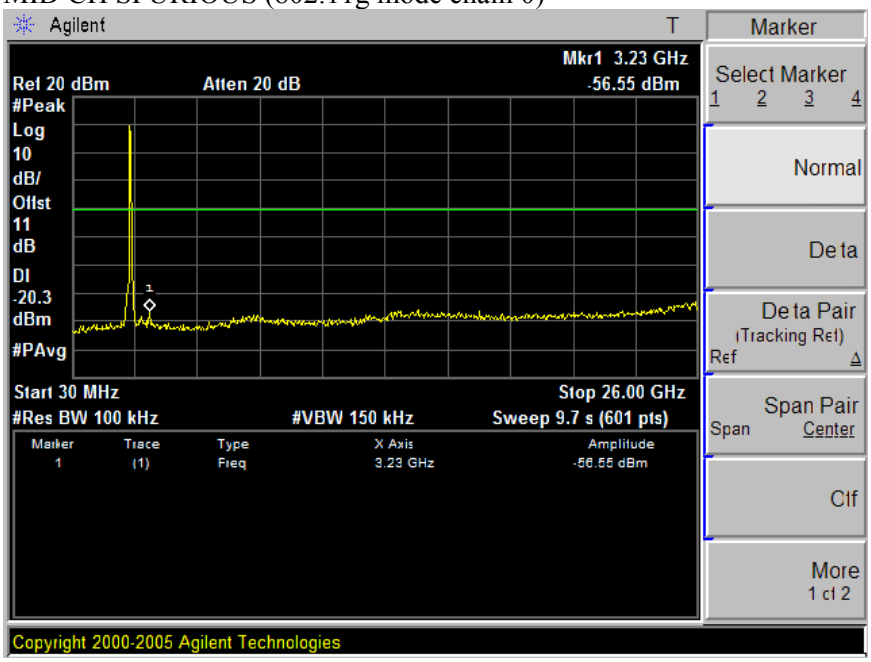
LOW CH SPURIOUS (802.11g mode chain 0)



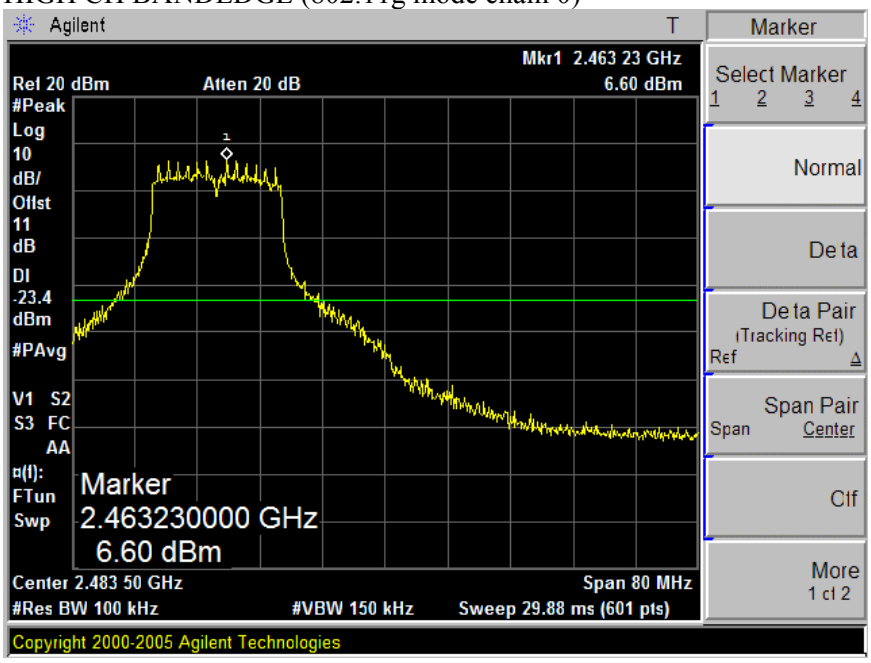
MID CH REFERENCE (802.11g mode chain 0)



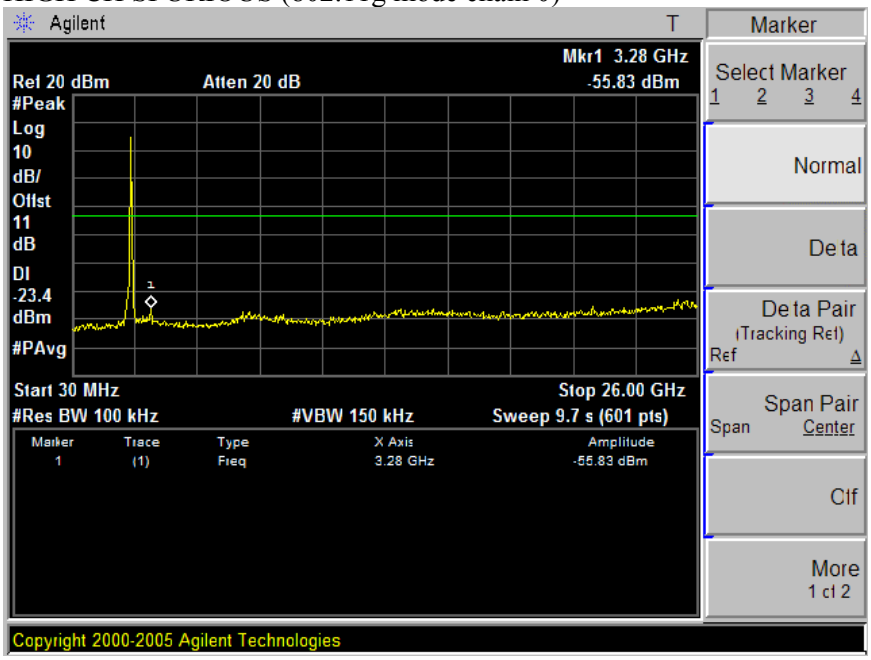
MID CH SPURIOUS (802.11g mode chain 0)



HIGH CH BANDEDGE (802.11g mode chain 0)

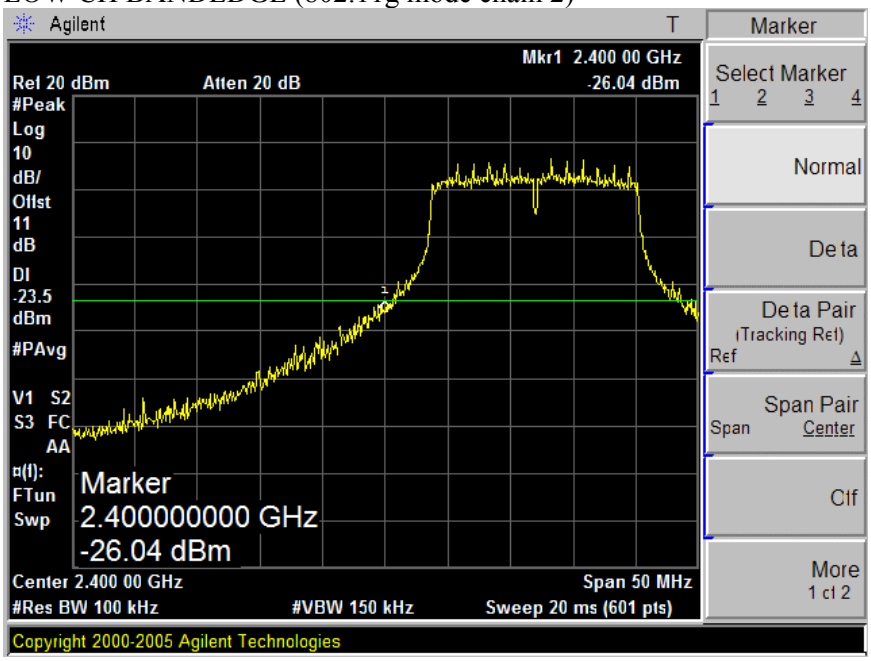


HIGH CH SPURIOUS (802.11g mode chain 0)

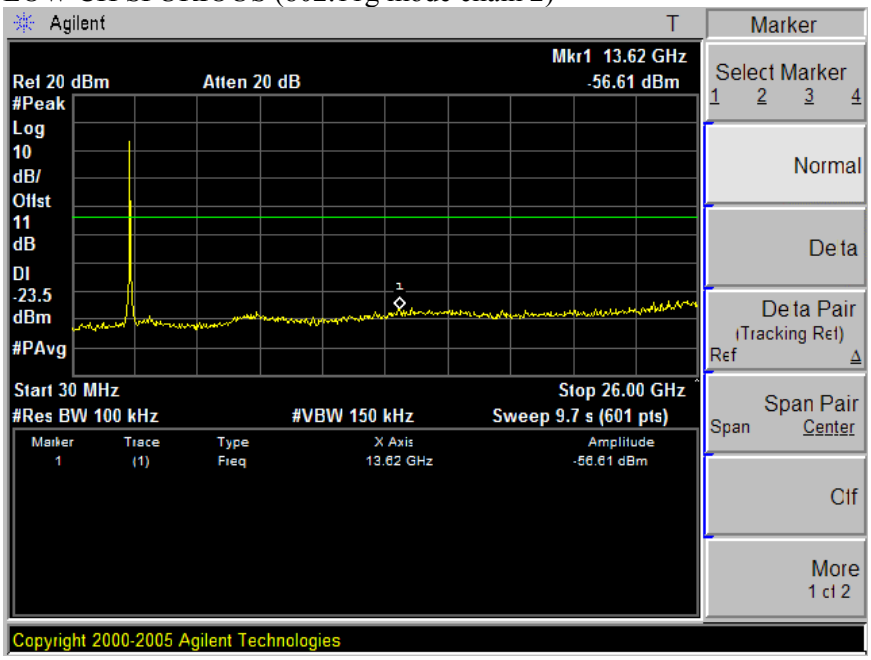


SPURIOUS EMISSIONS (802.11g MODE CHAIN 2)

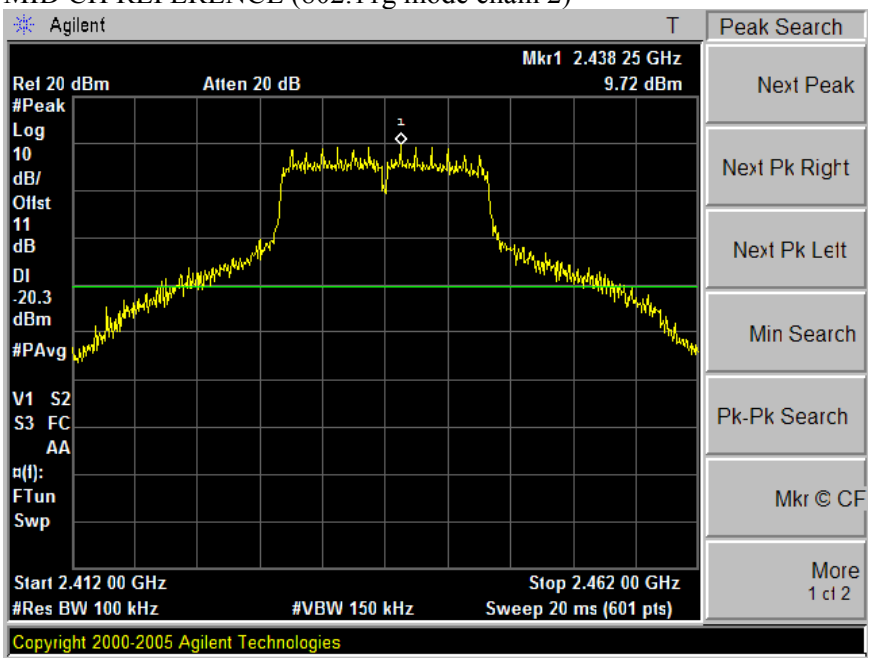
LOW CH BANDEDGE (802.11g mode chain 2)



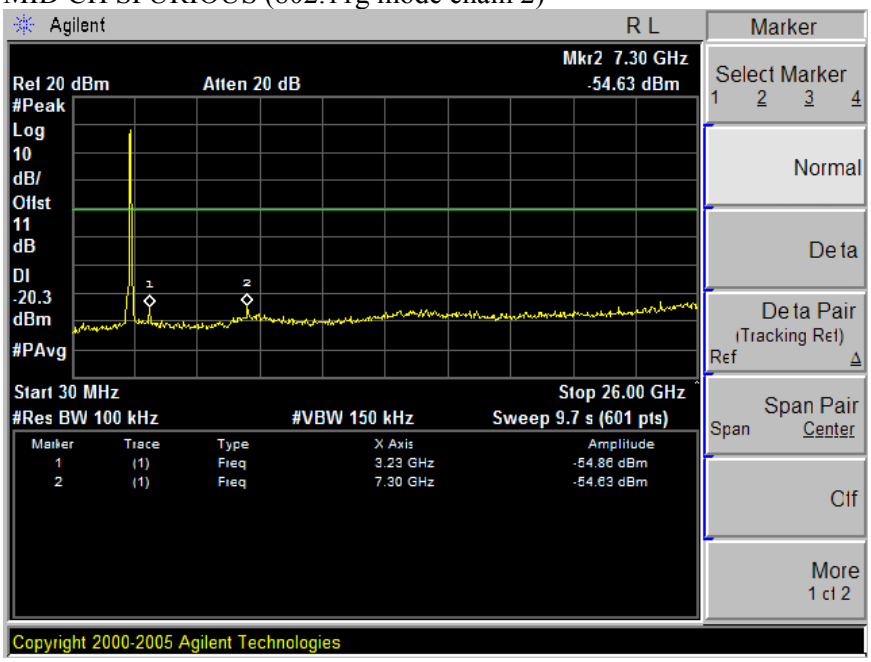
LOW CH SPURIOUS (802.11g mode chain 2)



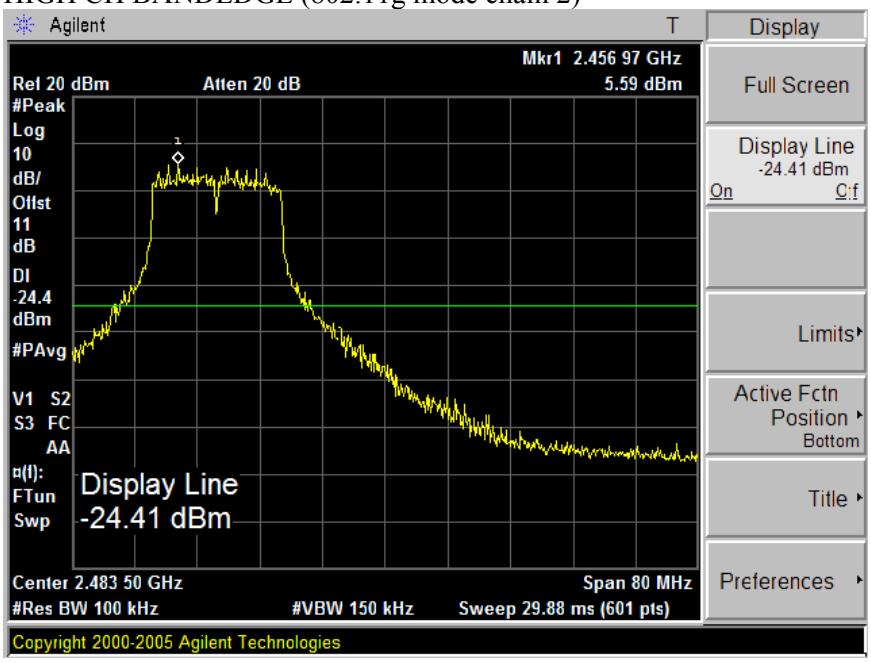
MID CH REFERENCE (802.11g mode chain 2)



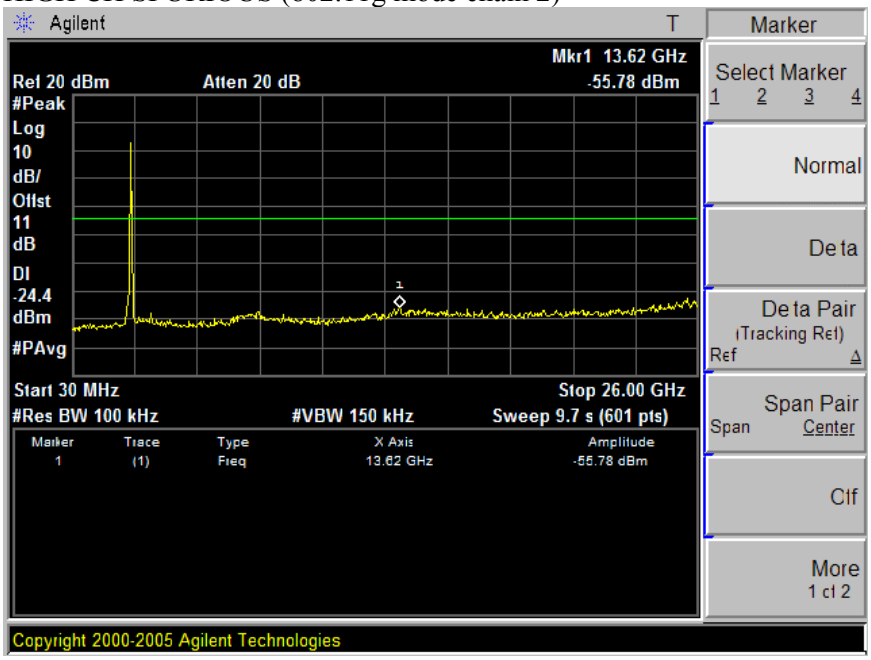
MID CH SPURIOUS (802.11g mode chain 2)



HIGH CH BANDEDGE (802.11g mode chain 2)

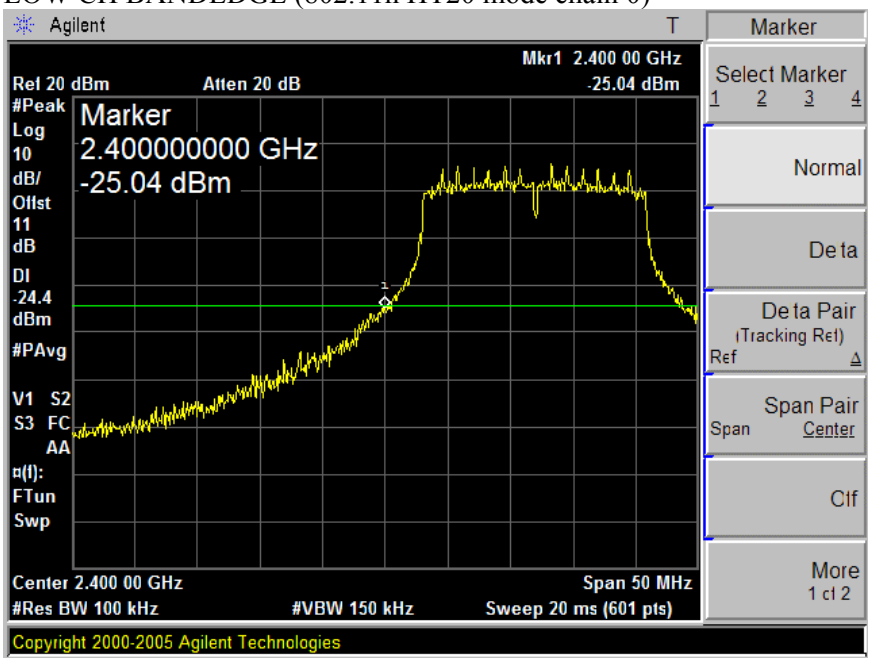


HIGH CH SPURIOUS (802.11g mode chain 2)

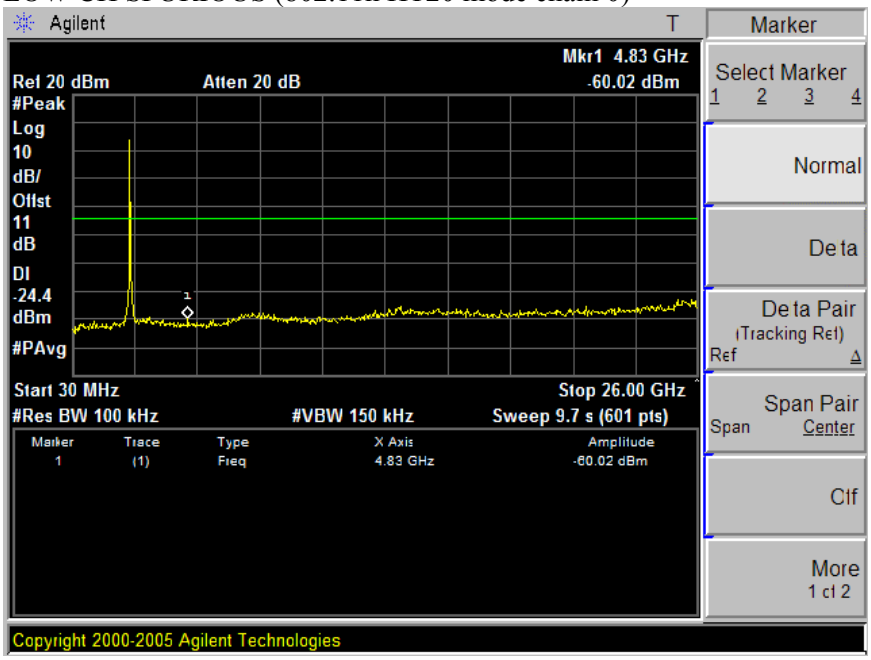


SPURIOUS EMISSIONS (802.11n HT20 MODE CHAIN 0)

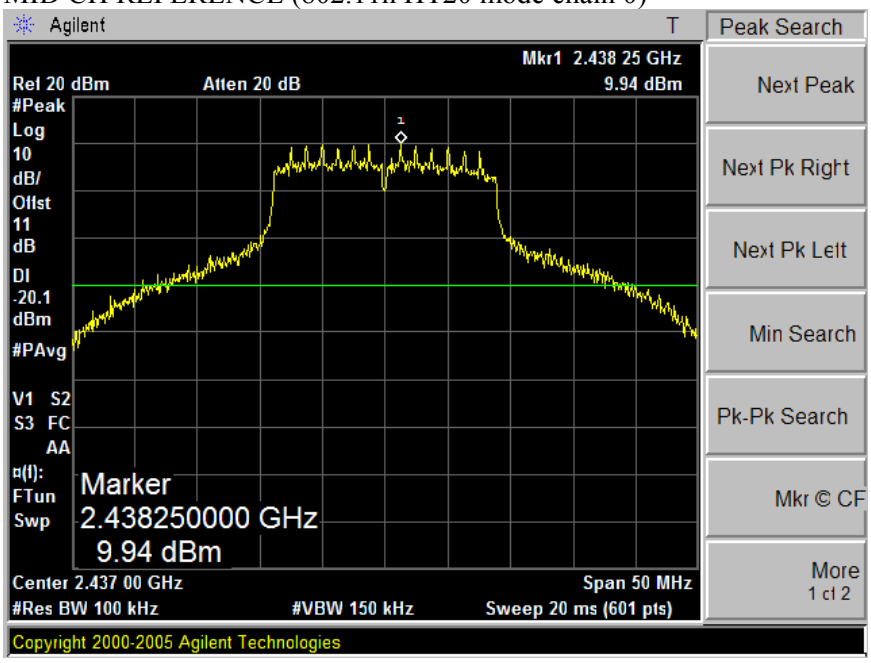
LOW CH BANDEDGE (802.11n HT20 mode chain 0)



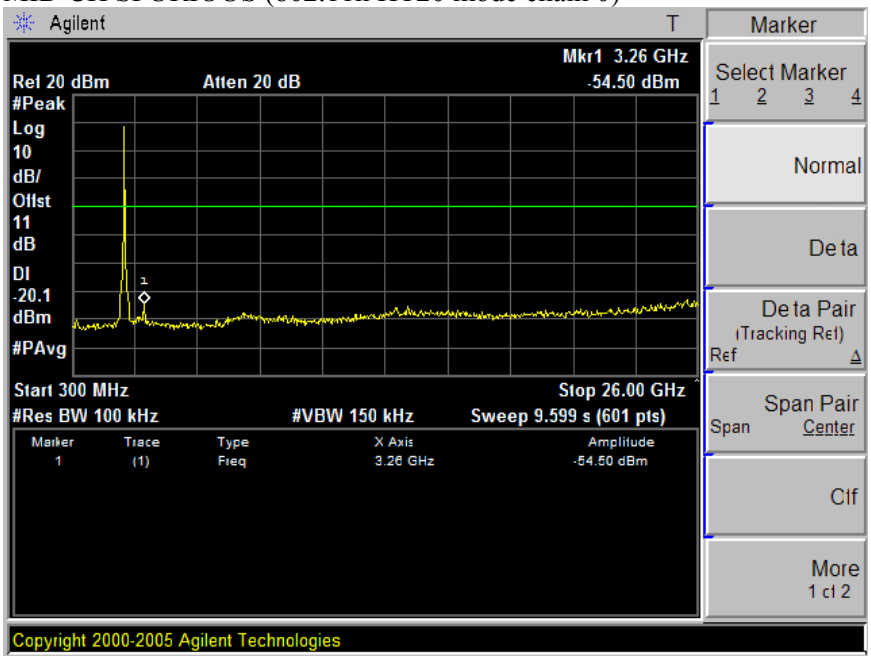
LOW CH SPURIOUS (802.11n HT20 mode chain 0)



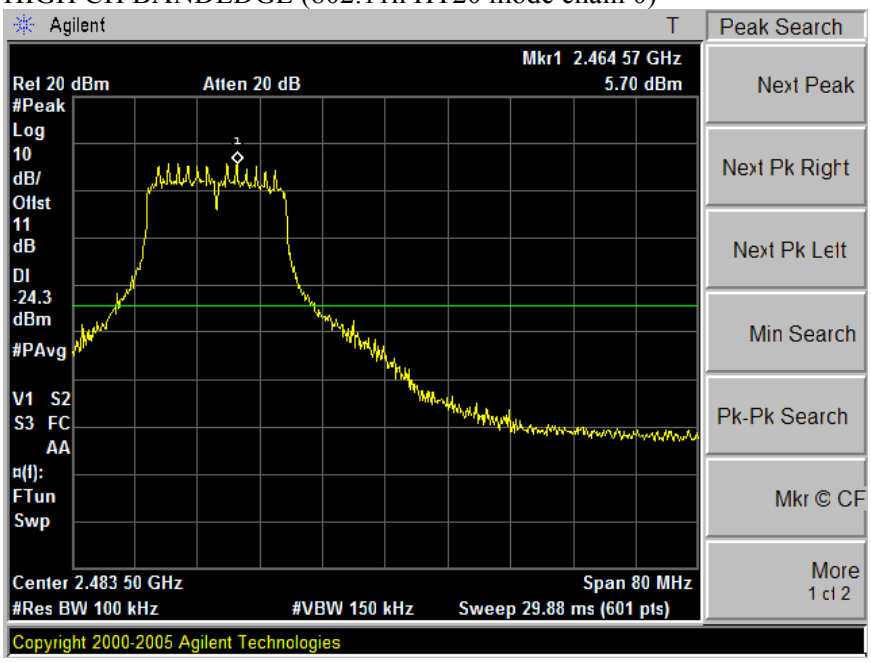
MID CH REFERENCE (802.11n HT20 mode chain 0)



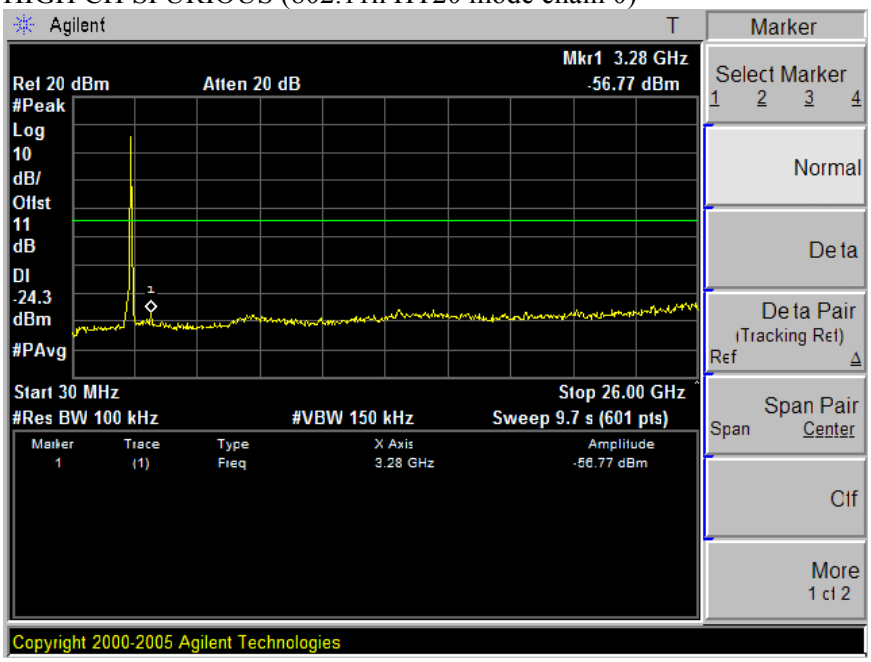
MID CH SPURIOUS (802.11n HT20 mode chain 0)



HIGH CH BANDEDGE (802.11n HT20 mode chain 0)

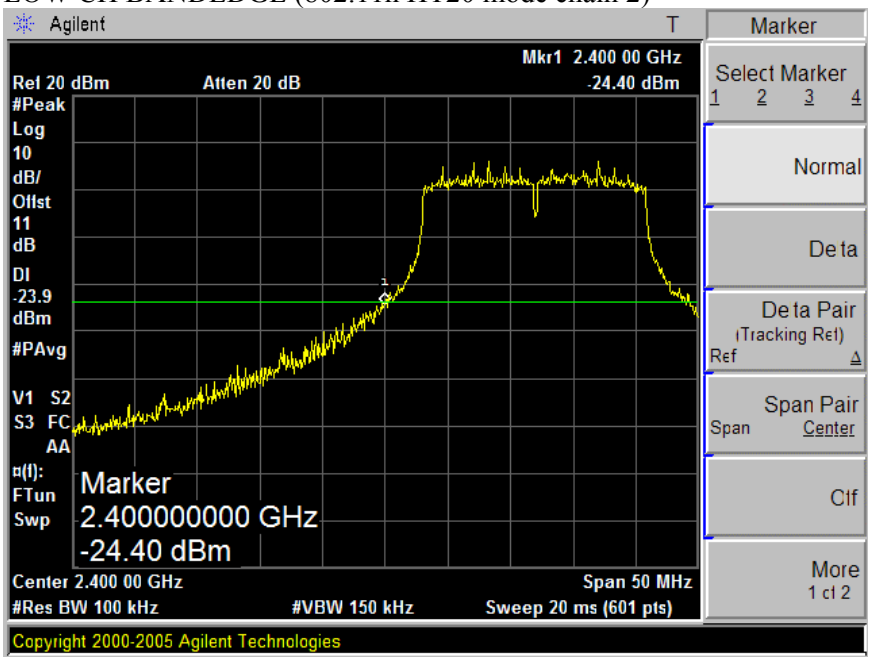


HIGH CH SPURIOUS (802.11n HT20 mode chain 0)

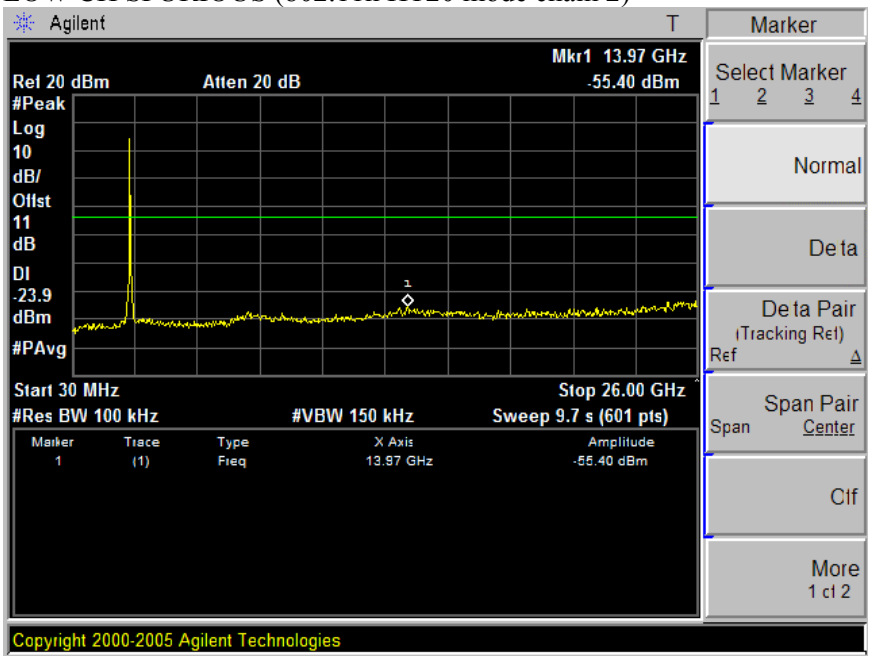


SPURIOUS EMISSIONS (802.11 HT20 MODE CHAIN 2)

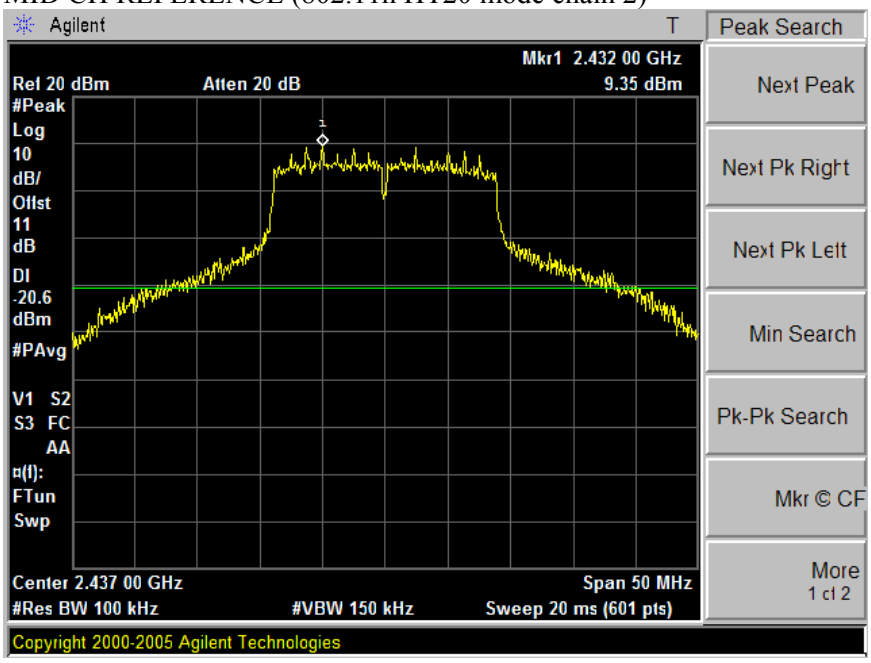
LOW CH BANDEDGE (802.11n HT20 mode chain 2)



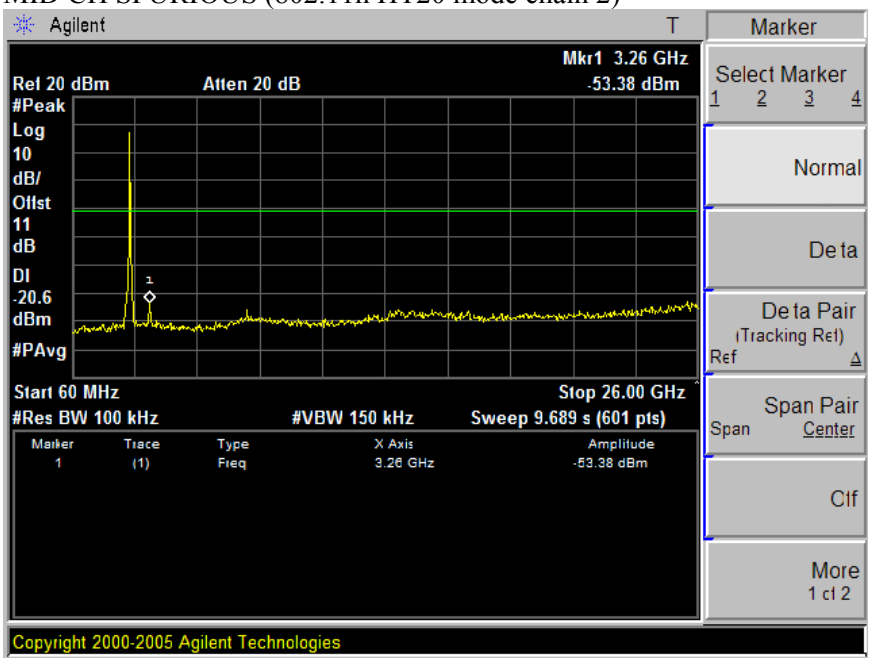
LOW CH SPURIOUS (802.11n HT20 mode chain 2)



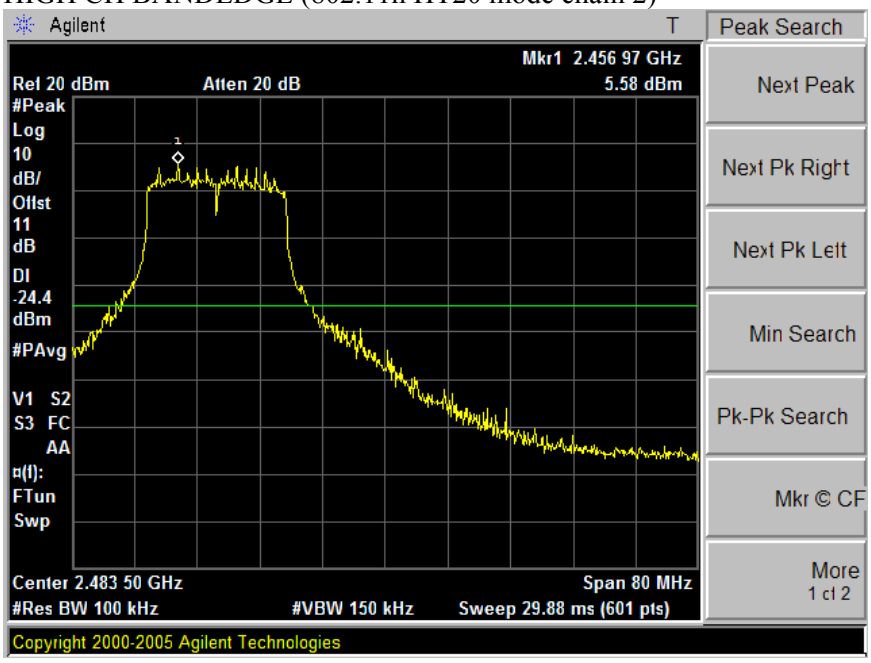
MID CH REFERENCE (802.11n HT20 mode chain 2)



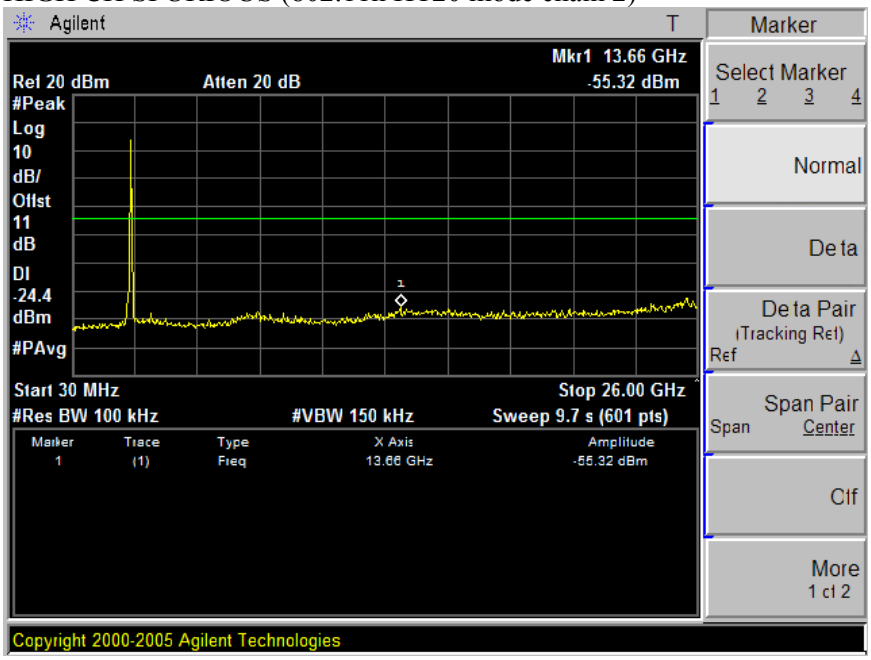
MID CH SPURIOUS (802.11n HT20 mode chain 2)



HIGH CH BANDEDGE (802.11n HT20 mode chain 2)

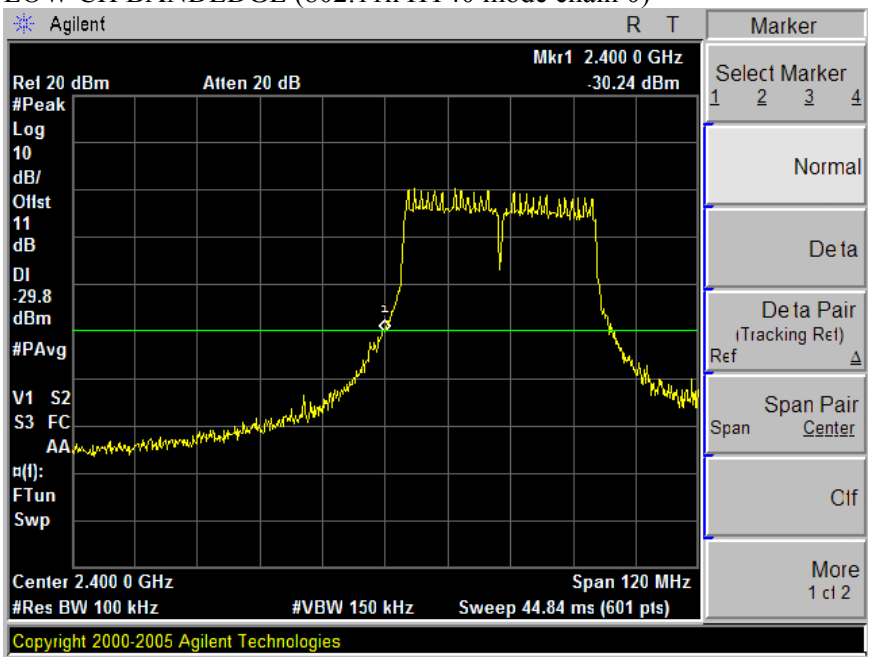


HIGH CH SPURIOUS (802.11n HT20 mode chain 2)

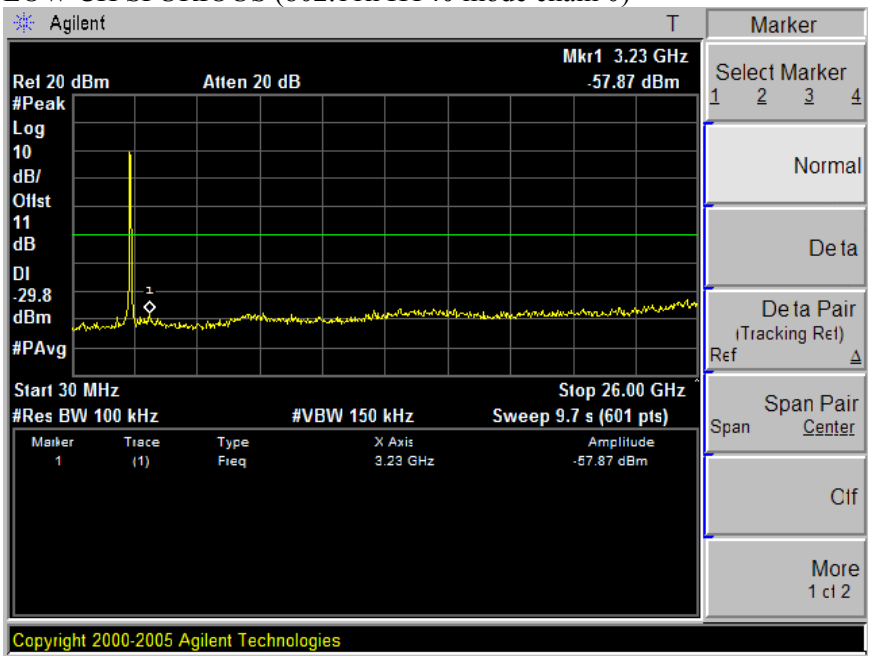


SPURIOUS EMISSIONS (802.11 HT40 MODE CHAIN 0)

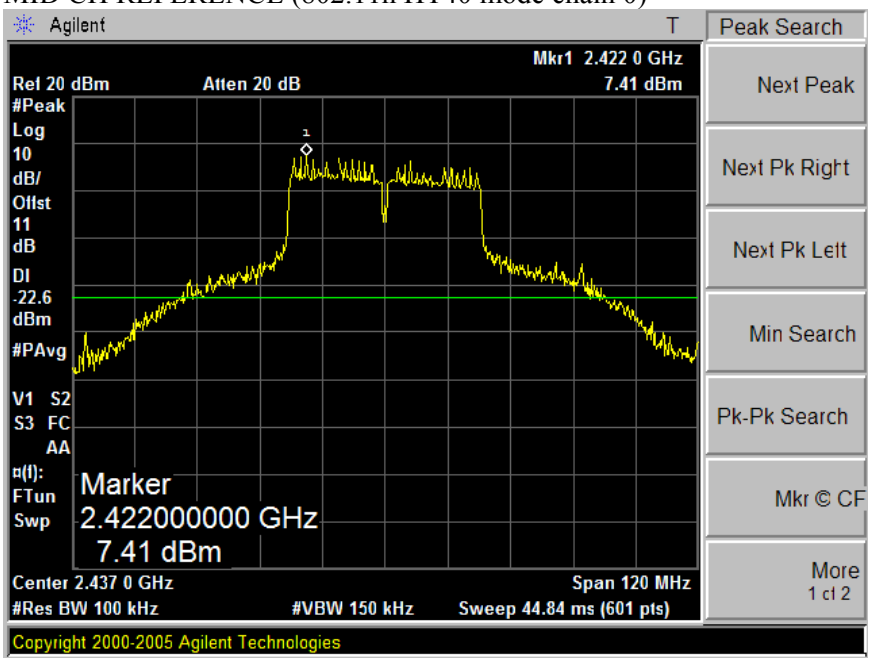
LOW CH BANDEDGE (802.11n HT40 mode chain 0)



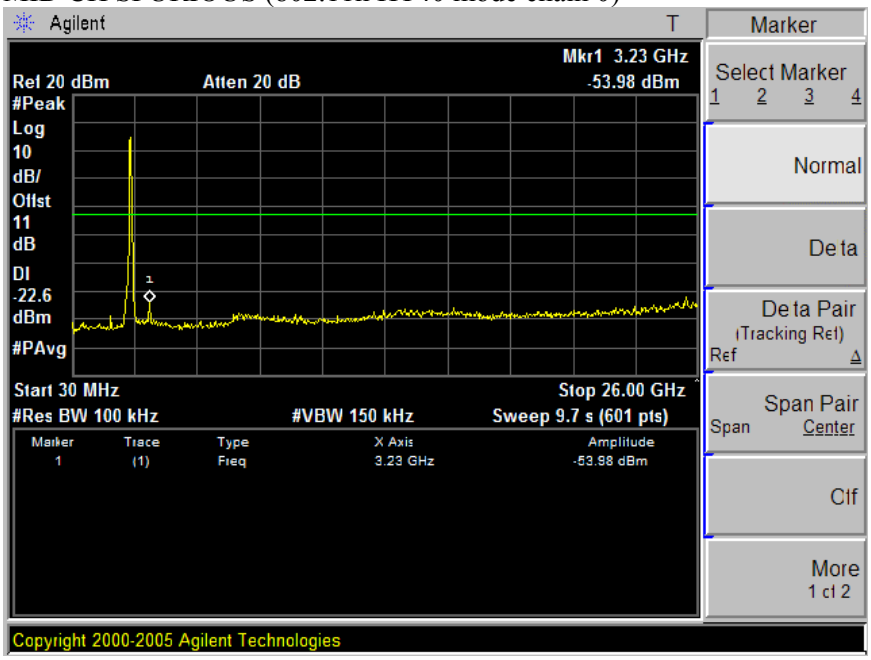
LOW CH SPURIOUS (802.11n HT40 mode chain 0)



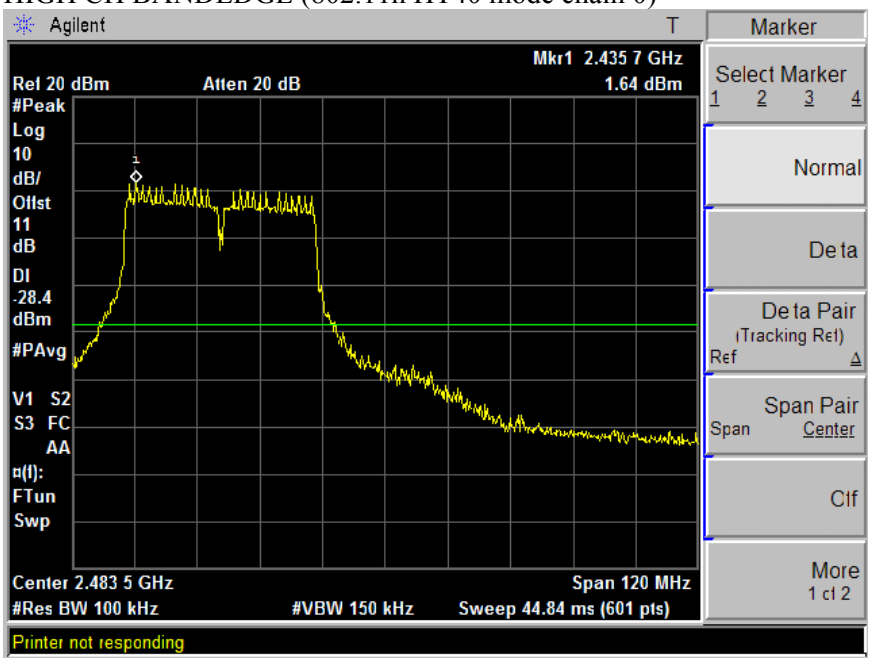
MID CH REFERENCE (802.11n HT40 mode chain 0)



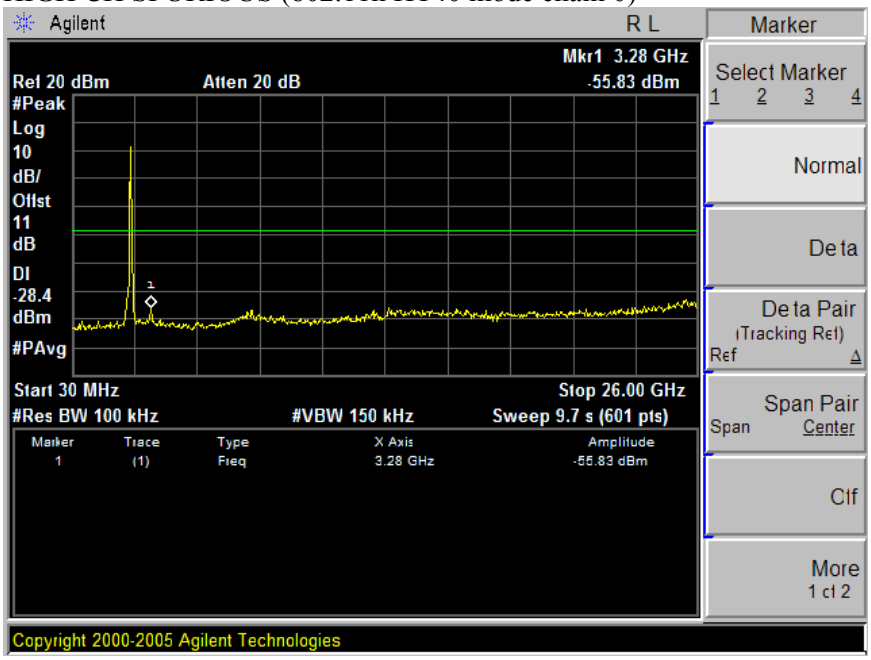
MID CH SPURIOUS (802.11n HT40 mode chain 0)



HIGH CH BANDEDGE (802.11n HT40 mode chain 0)

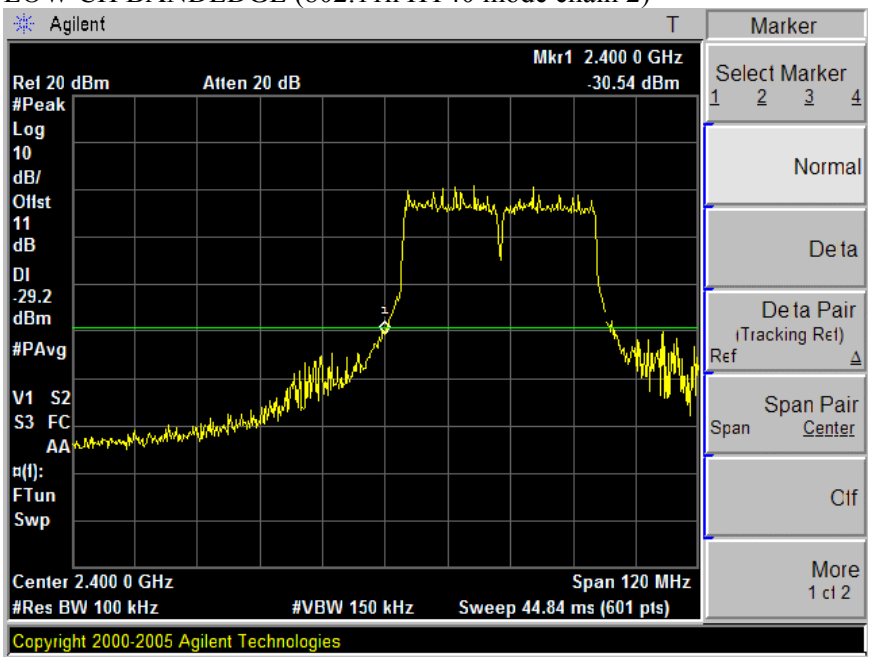


HIGH CH SPURIOUS (802.11n HT40 mode chain 0)

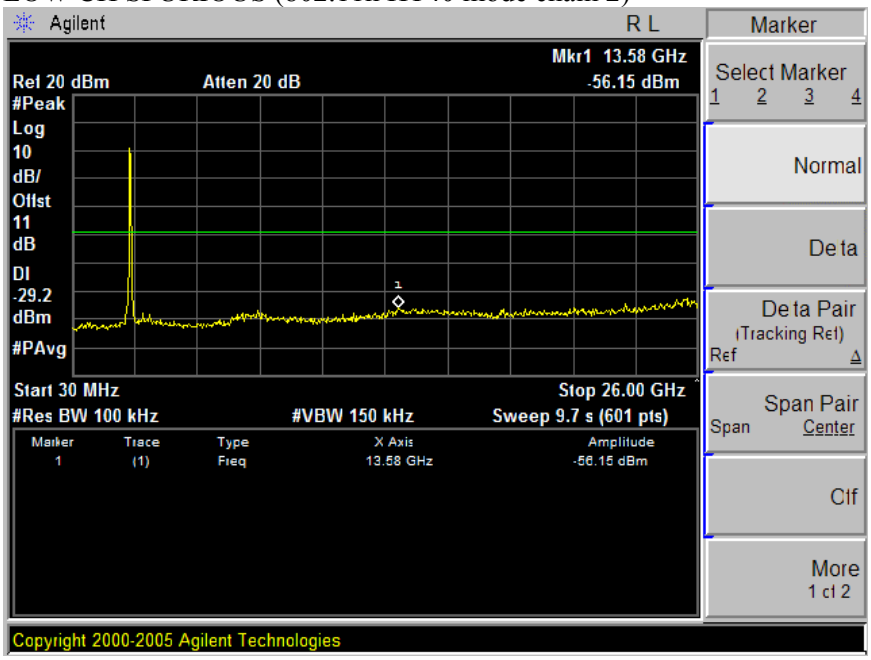


SPURIOUS EMISSIONS (802.11 HT40 MODE CHAIN 2)

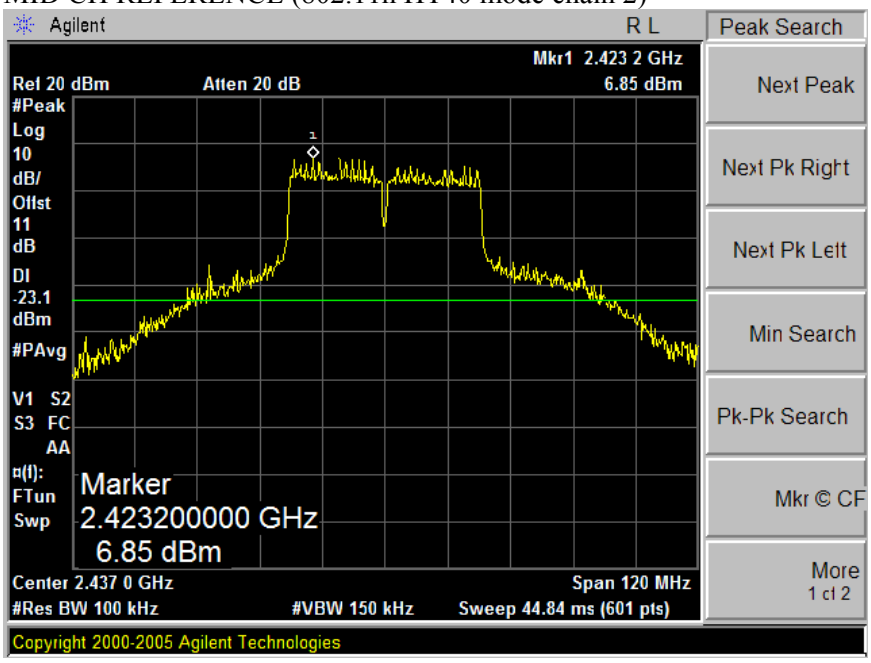
LOW CH BANDEDGE (802.11n HT40 mode chain 2)



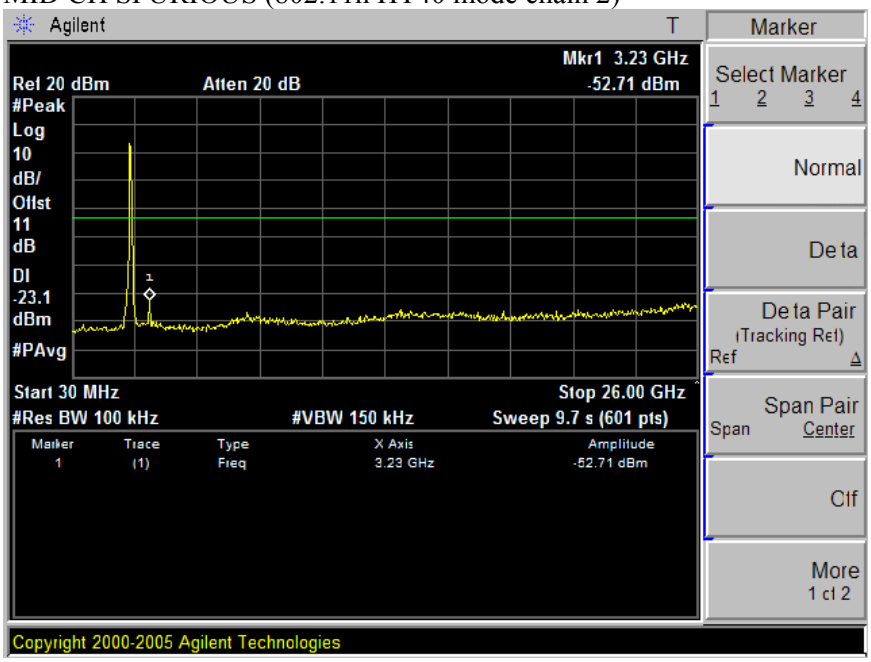
LOW CH SPURIOUS (802.11n HT40 mode chain 2)



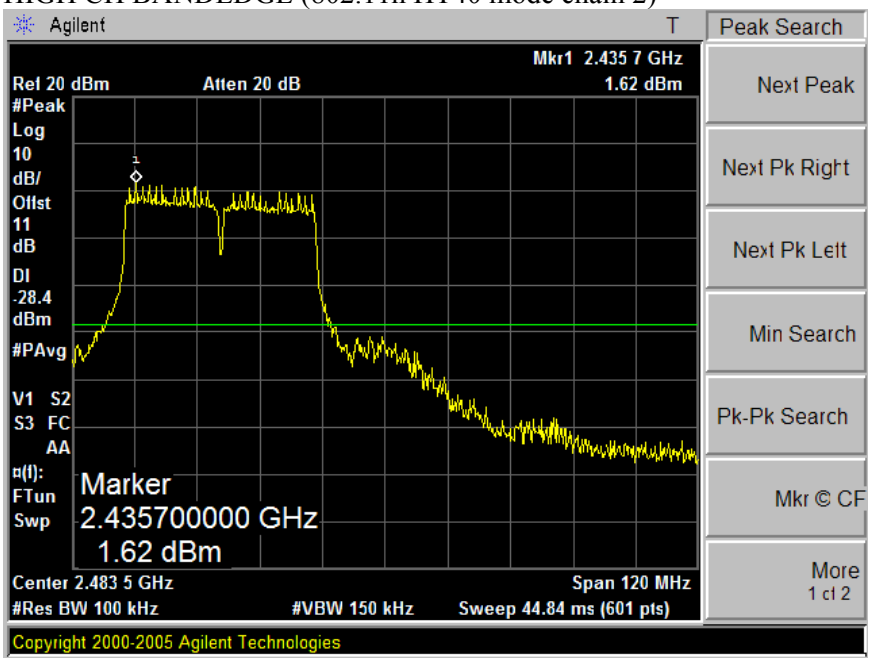
MID CH REFERENCE (802.11n HT40 mode chain 2)



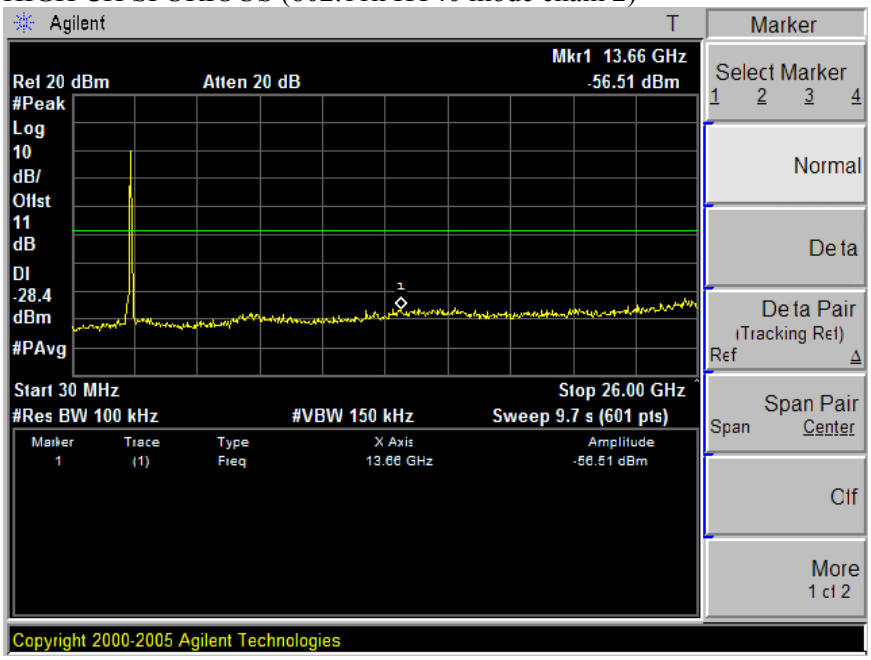
MID CH SPURIOUS (802.11n HT40 mode chain 2)



HIGH CH BANDEDGE (802.11n HT40 mode chain 2)

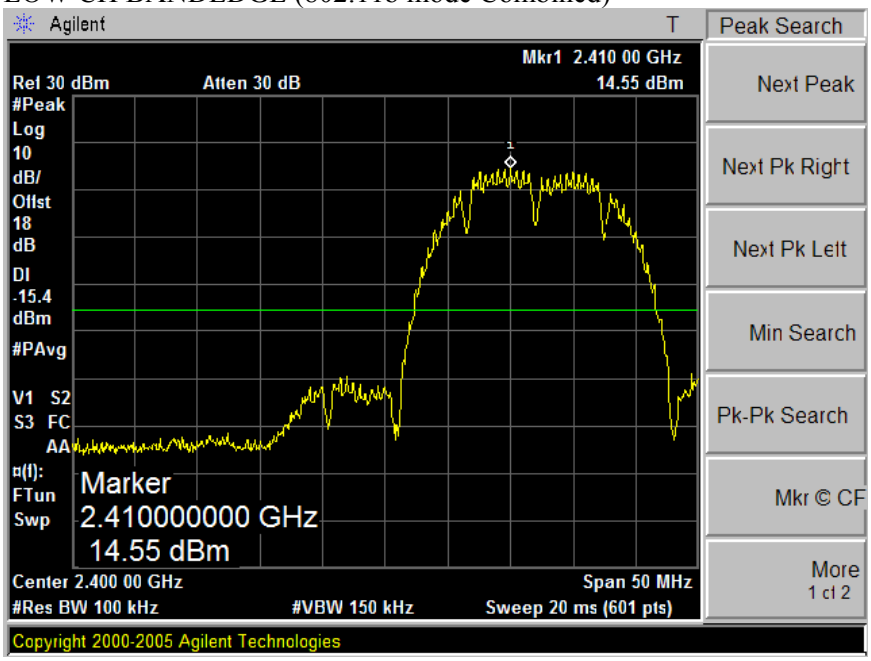


HIGH CH SPURIOUS (802.11n HT40 mode chain 2)

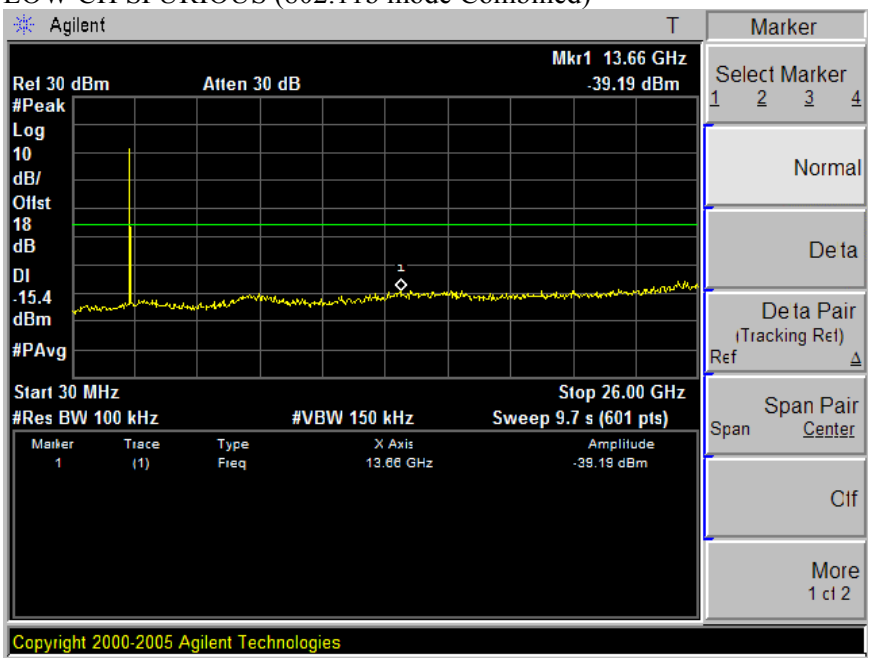


COMBINED SPURIOUS EMISSIONS (802.11b MODE)

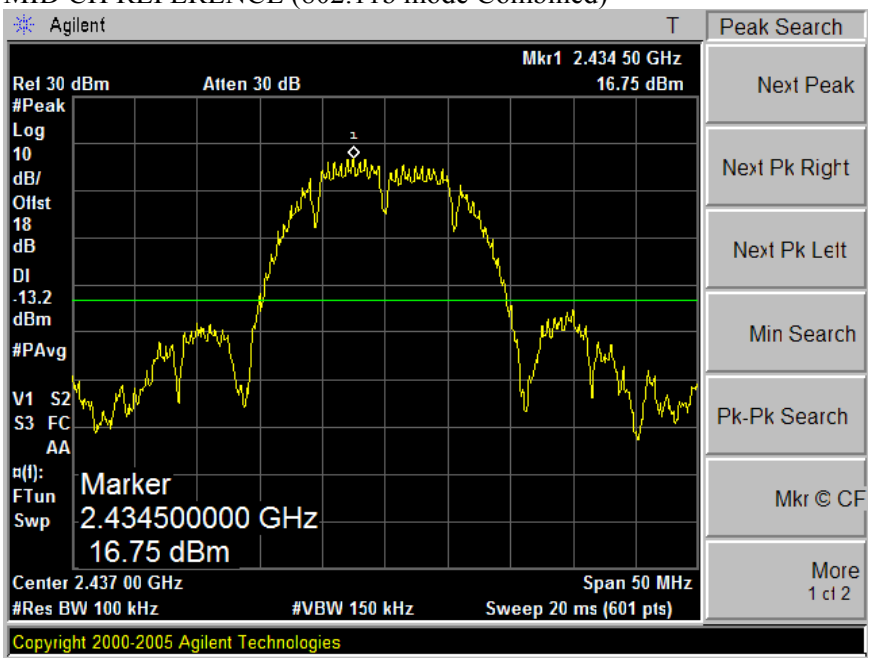
LOW CH BANDEDGE (802.11b mode Combined)



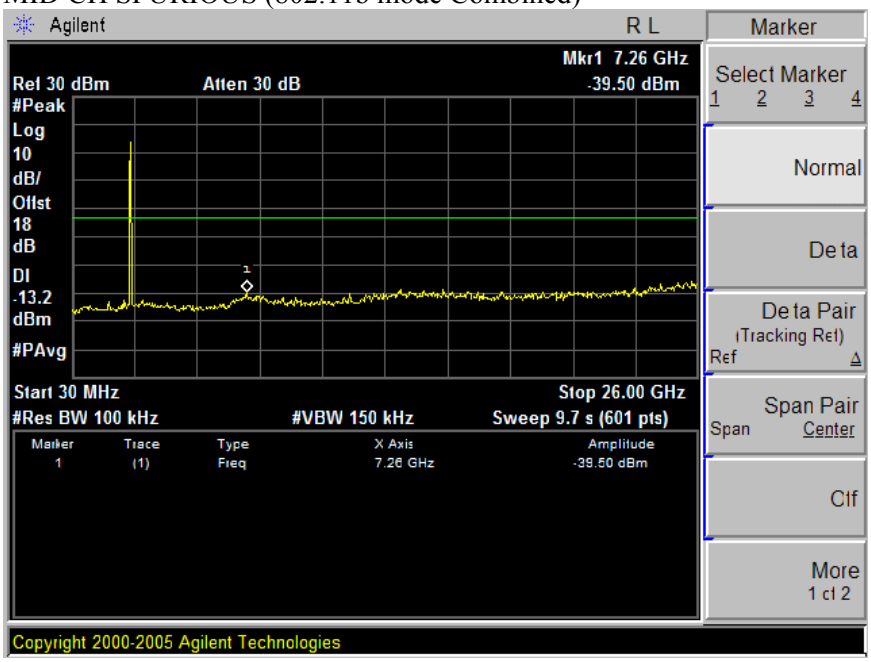
LOW CH SPURIOUS (802.11b mode Combined)



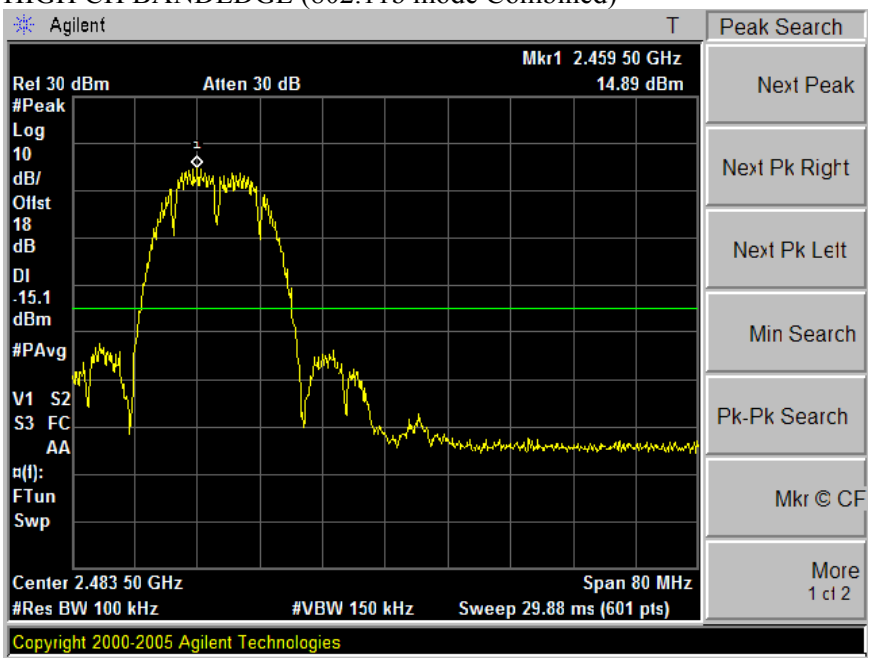
MID CH REFERENCE (802.11b mode Combined)



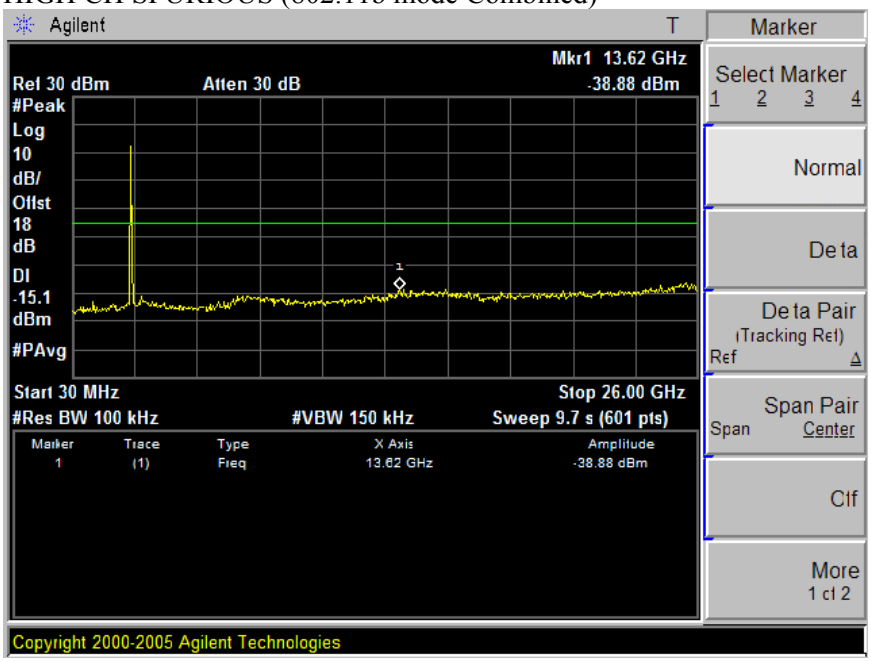
MID CH SPURIOUS (802.11b mode Combined)



HIGH CH BANDEDGE (802.11b mode Combined)

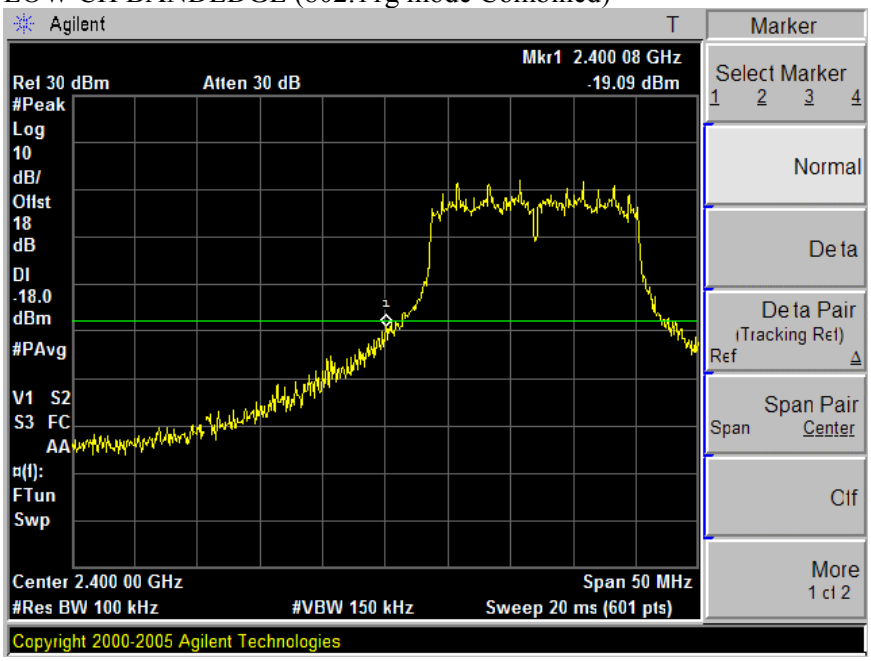


HIGH CH SPURIOUS (802.11b mode Combined)

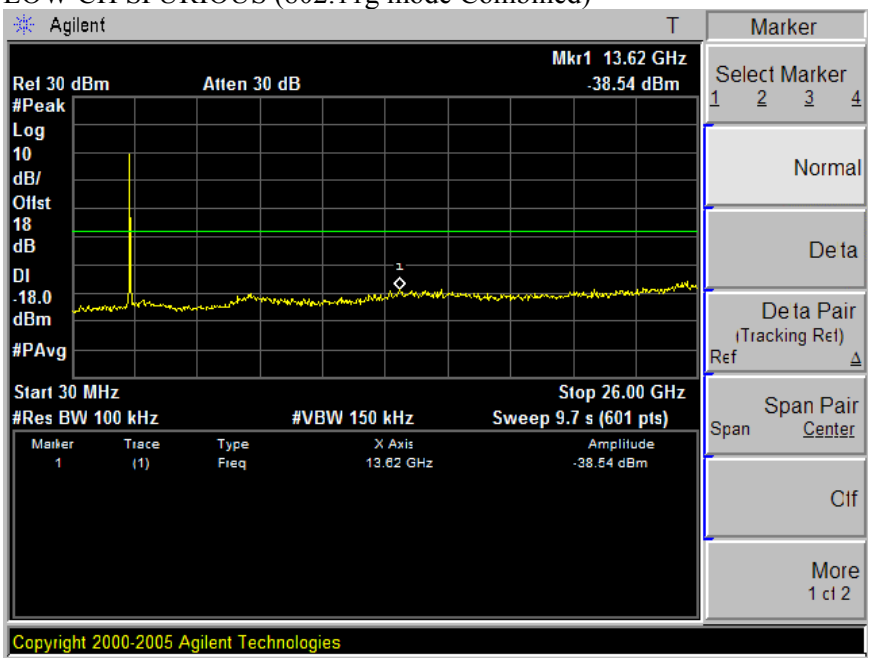


COMBINED SPURIOUS EMISSIONS (802.11g MODE)

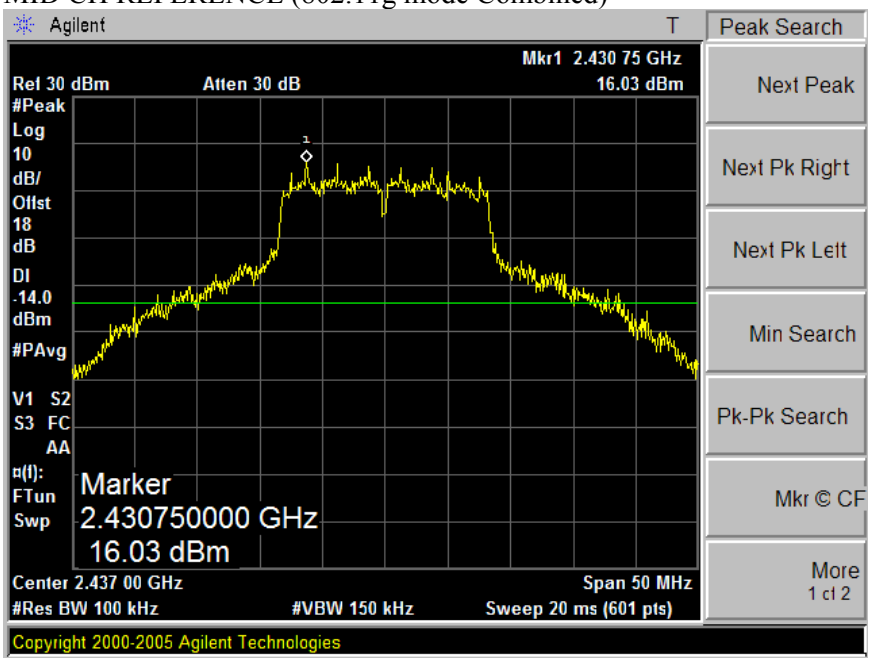
LOW CH BANDEDGE (802.11g mode Combined)



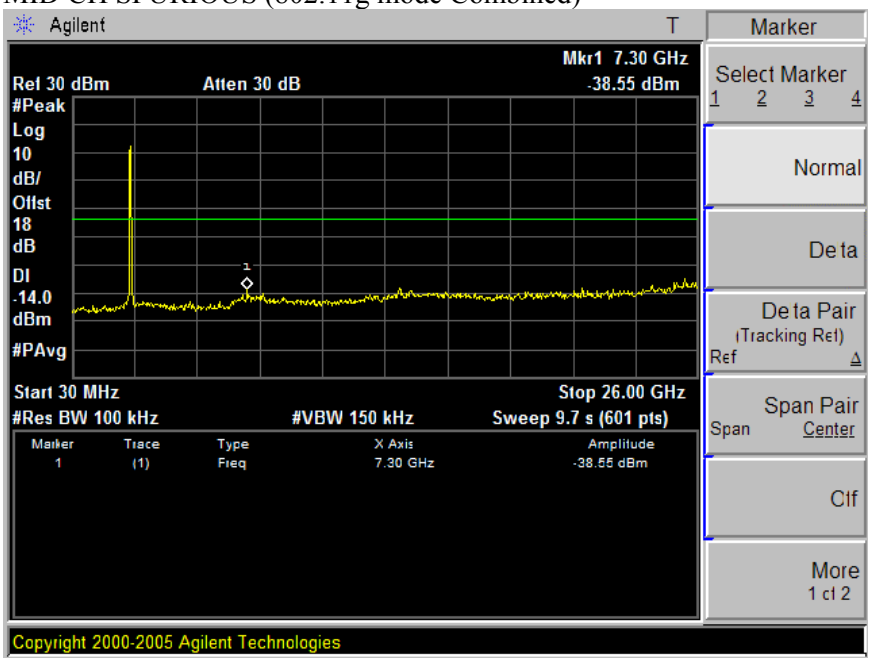
LOW CH SPURIOUS (802.11g mode Combined)



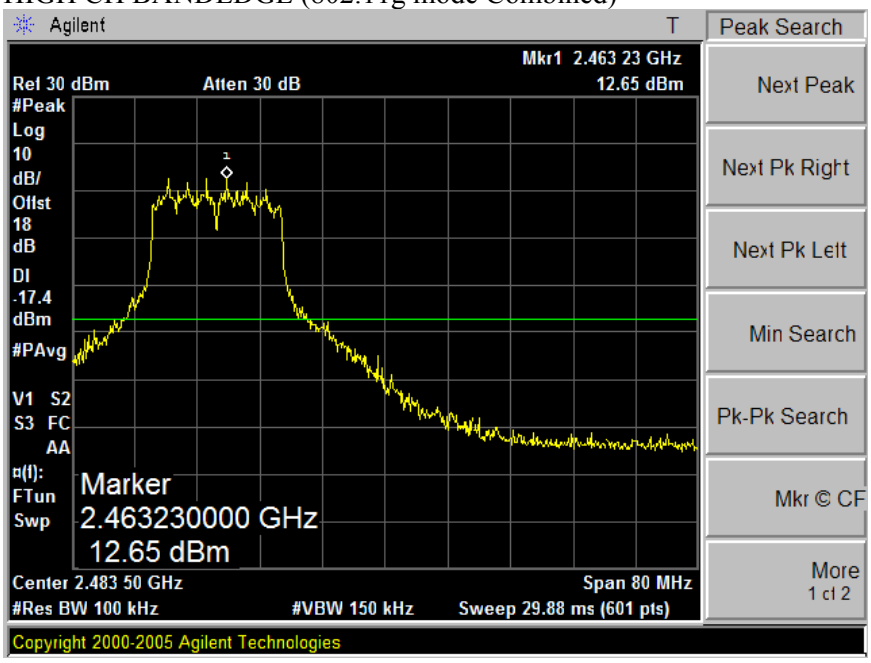
MID CH REFERENCE (802.11g mode Combined)



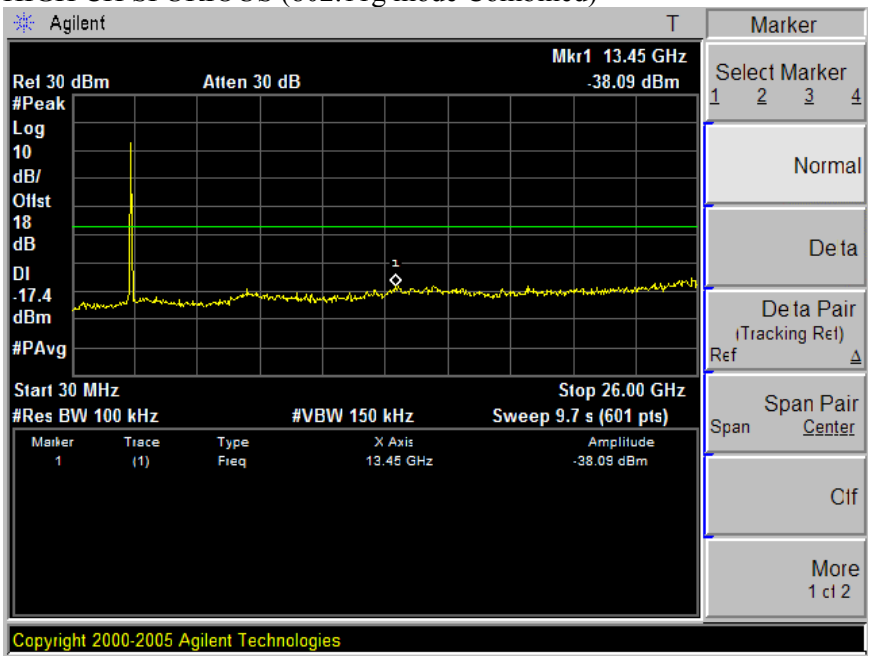
MID CH SPURIOUS (802.11g mode Combined)



HIGH CH BANDEDGE (802.11g mode Combined)



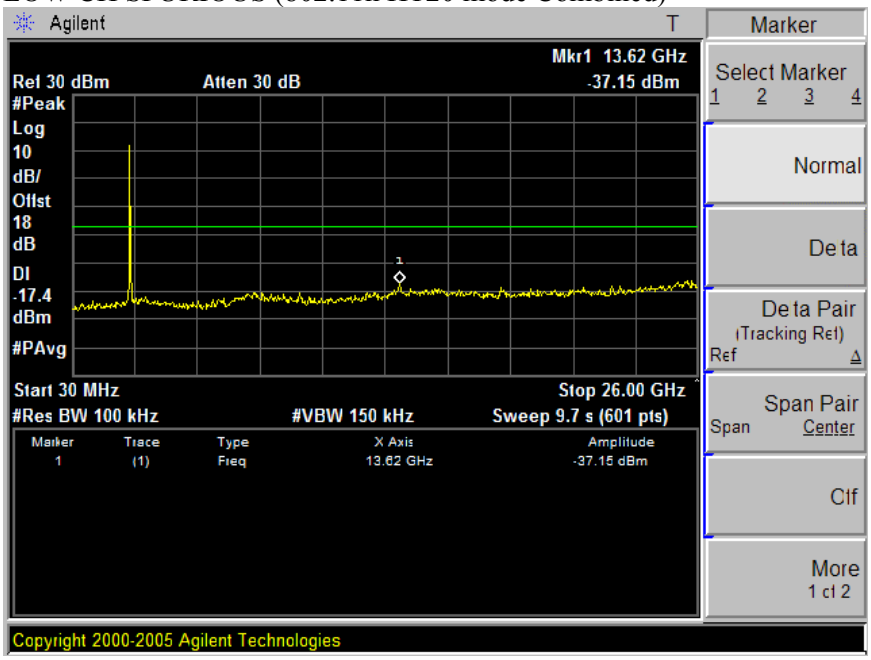
HIGH CH SPURIOUS (802.11g mode Combined)



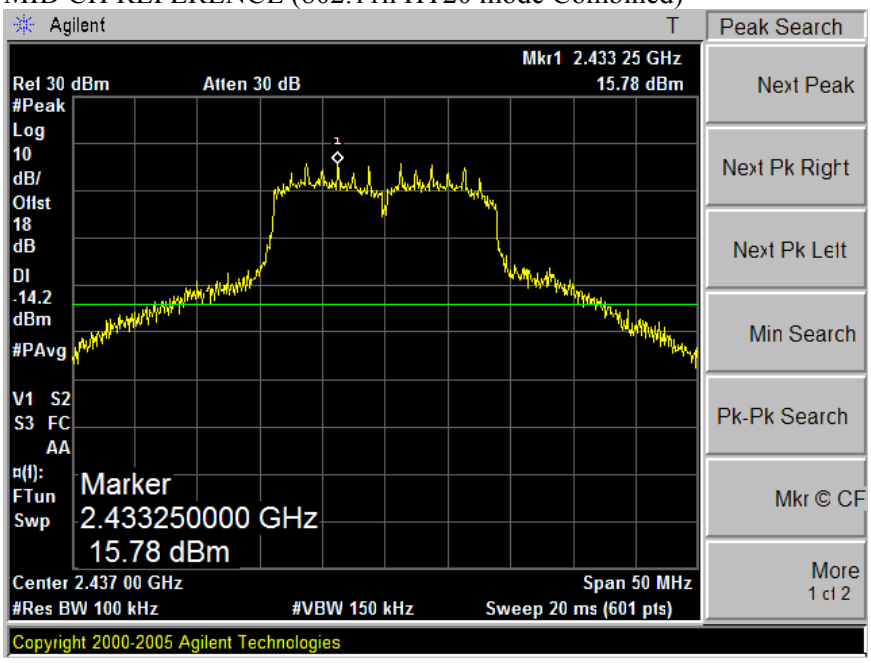
COMBINED SPURIOUS EMISSIONS (802.11n HT20 MODE)

LOW CH BANDEDGE (802.11n HT20 mode Combined)

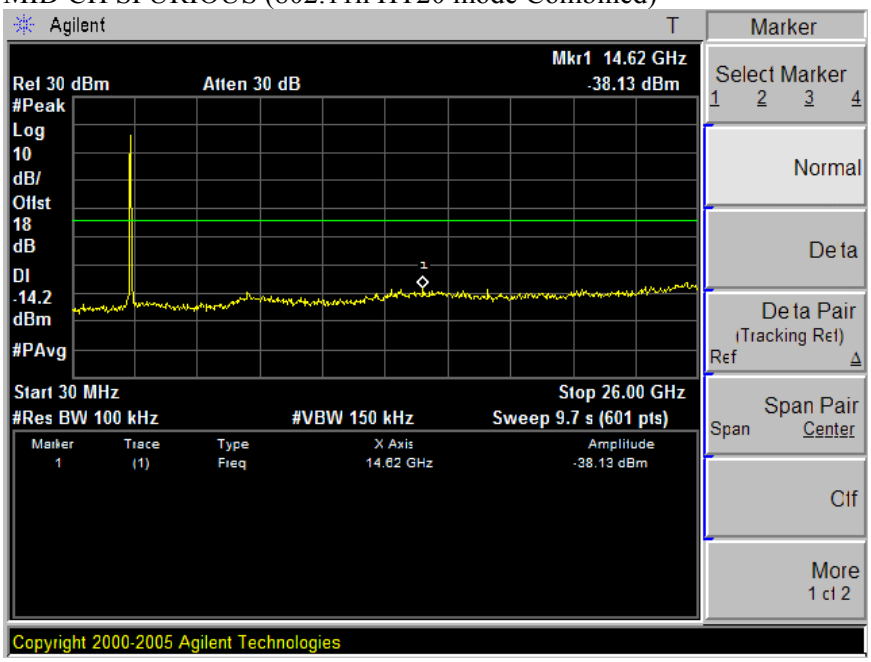
LOW CH SPURIOUS (802.11n HT20 mode Combined)



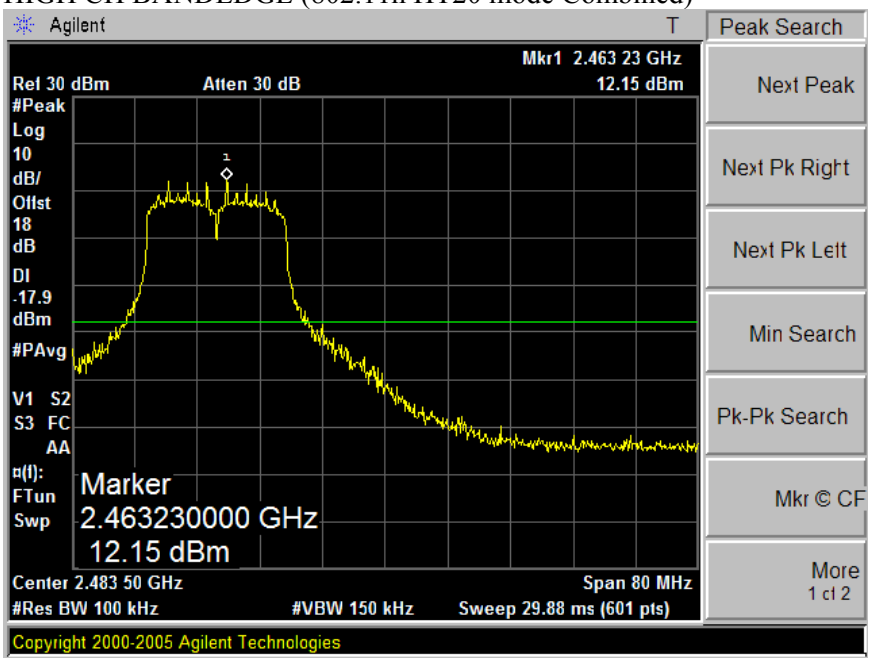
MID CH REFERENCE (802.11n HT20 mode Combined)



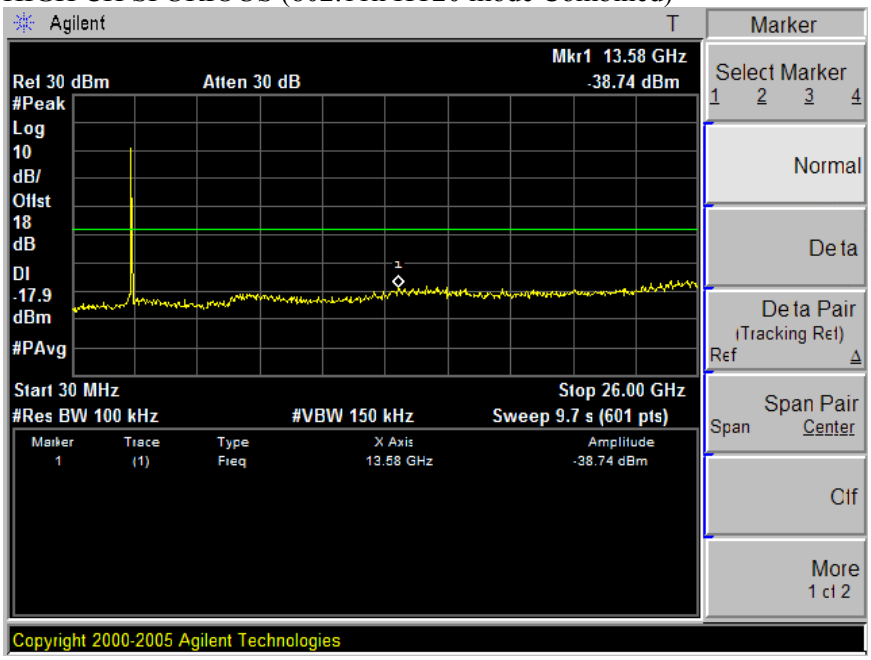
MID CH SPURIOUS (802.11n HT20 mode Combined)



HIGH CH BANDEDGE (802.11n HT20 mode Combined)

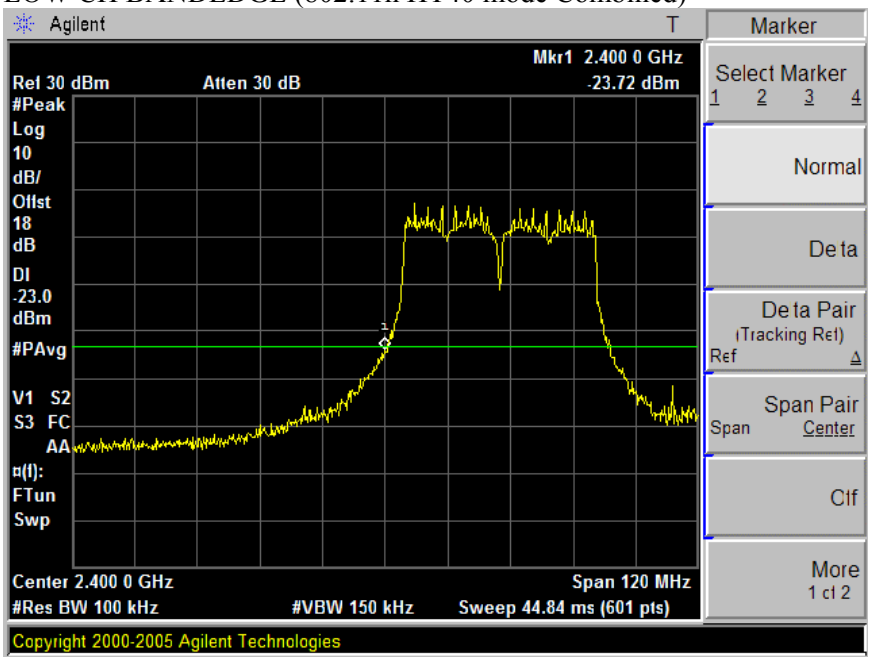


HIGH CH SPURIOUS (802.11n HT20 mode Combined)

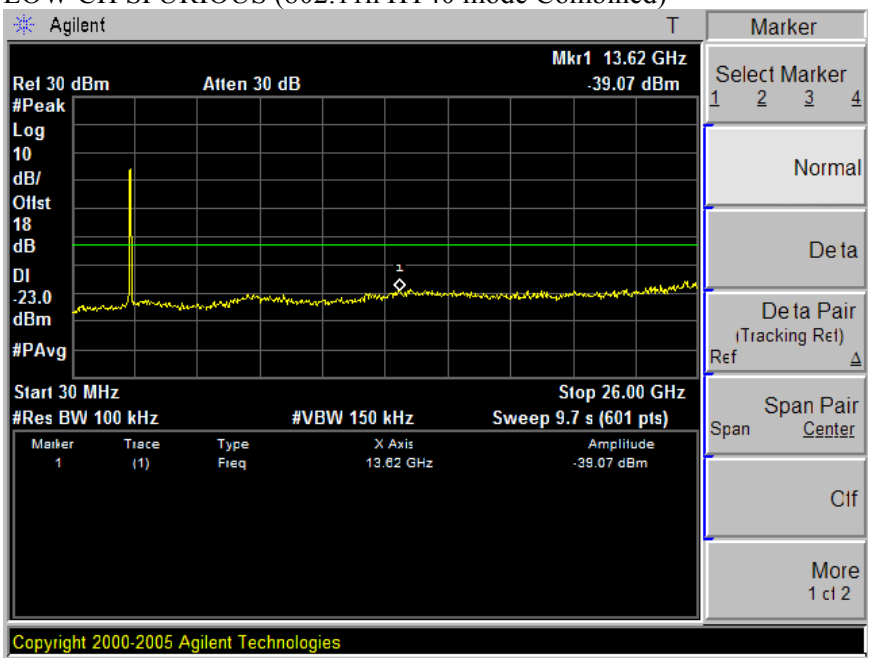


COMBINED SPURIOUS EMISSIONS (802.11 HT40 MODE)

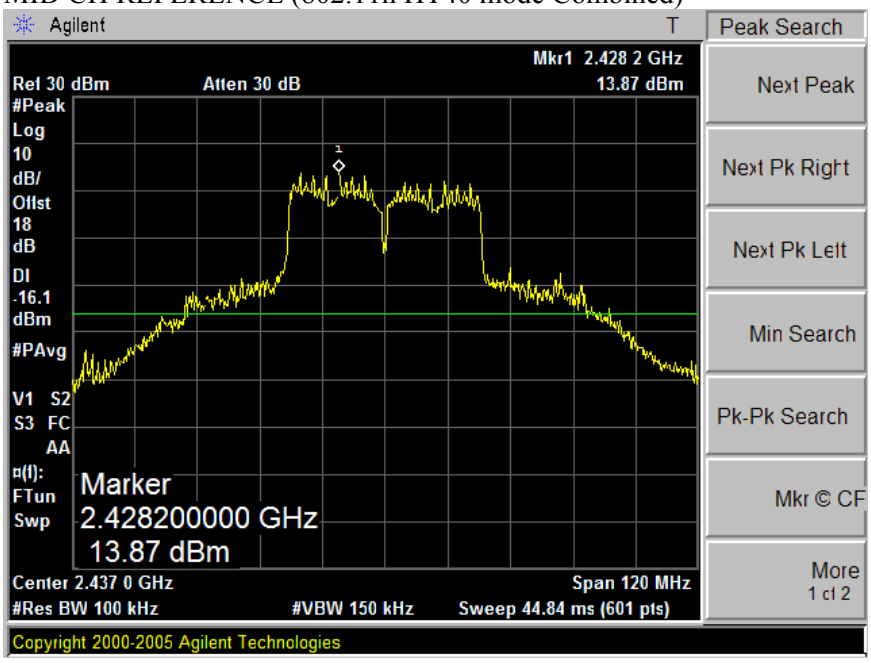
LOW CH BANDEDGE (802.11n HT40 mode Combined)



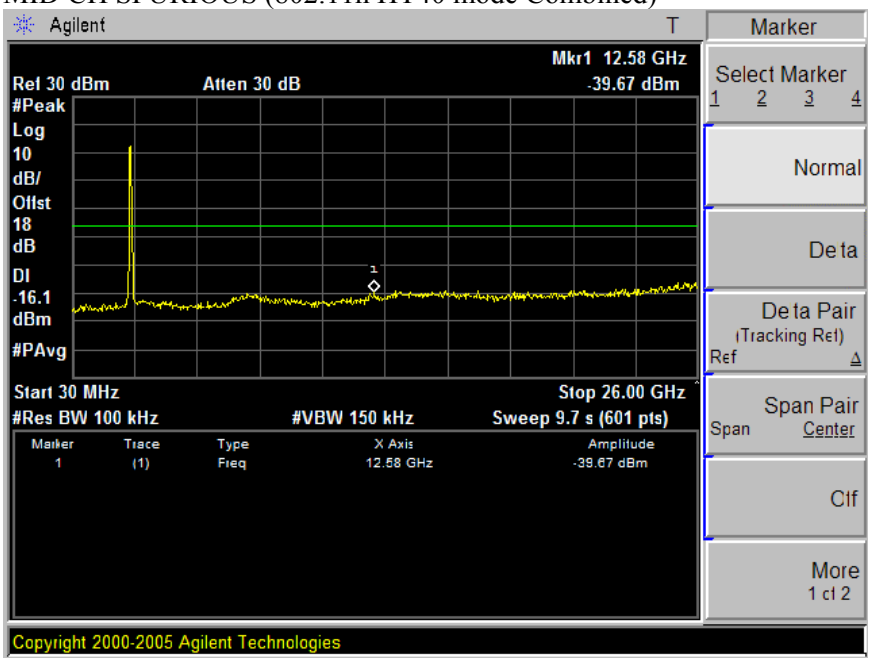
LOW CH SPURIOUS (802.11n HT40 mode Combined)



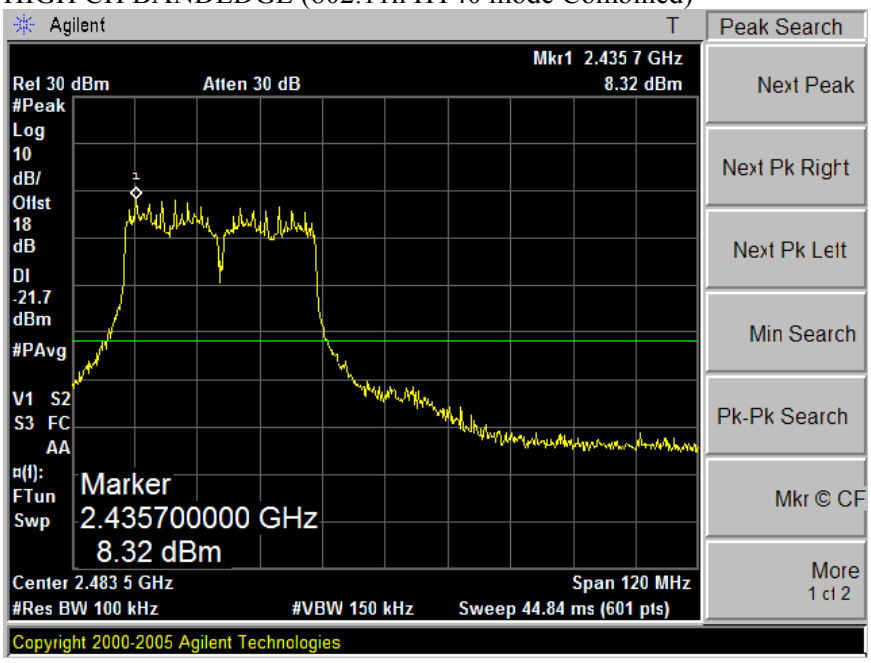
MID CH REFERENCE (802.11n HT40 mode Combined)



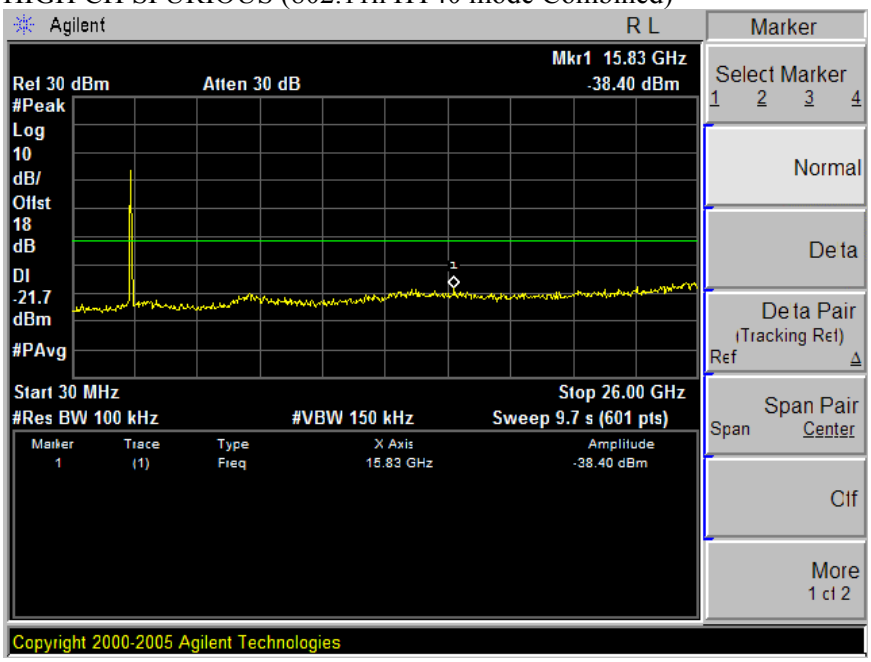
MID CH SPURIOUS (802.11n HT40 mode Combined)



HIGH CH BANDEDGE (802.11n HT40 mode Combined)



HIGH CH SPURIOUS (802.11n HT40 mode Combined)



7.2. CHANNEL TESTS FOR THE 5725 TO 5850 MHz BAND

7.2.1. 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.

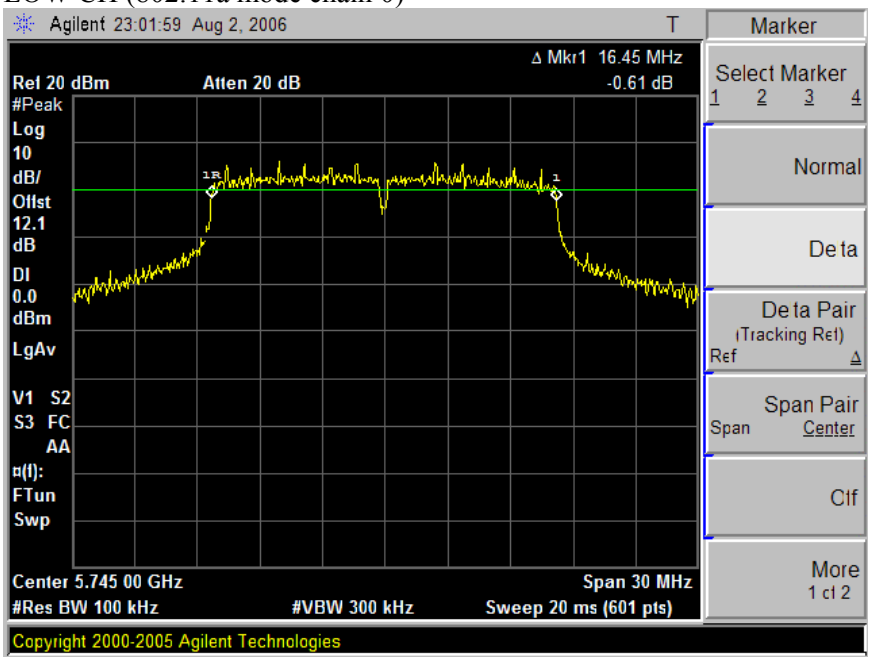
RESULTS

No non-compliance noted:

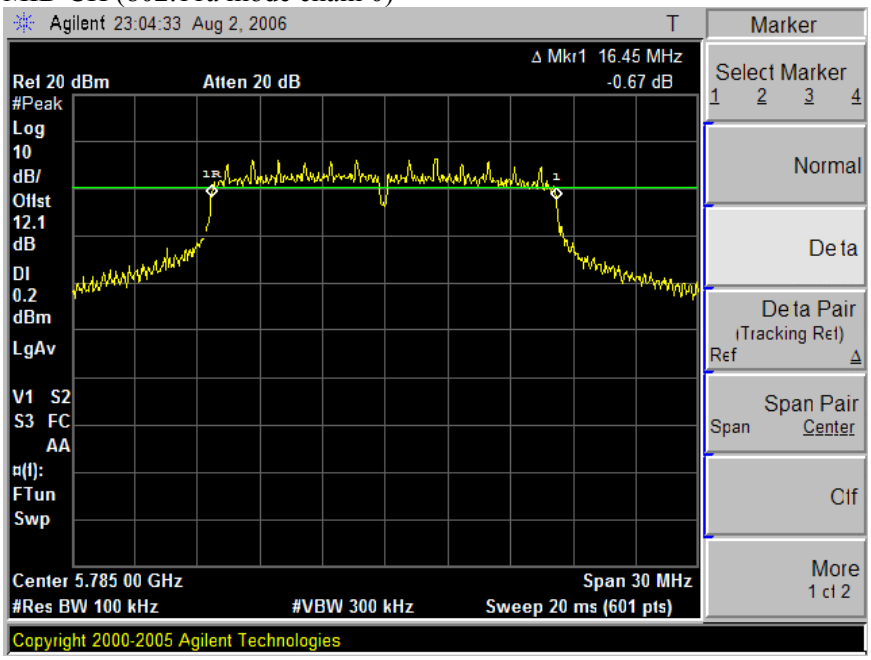
Mode Channel	Frequency (MHz)	6 dB BW Chain 0 (kHz)	6 dB BW Chain 2 (kHz)	Minimum Limit (kHz)	Minimum Margin (kHz)
802.11a Mode					
Low	5745	16450	16370	500	15870
Middle	5785	16450	16400	500	15900
High	5825	16450	16370	500	15870
802.11n HT20 Mode					
Low	5745	17550	17570	500	17050
Mid	5785	17500	17570	500	17000
High	5825	17500	17570	500	17000
802.11n HT40 Mode					
Low	5755	36200	36250	500	35700
High	5795	36200	36250	500	35700

(802.11a MODE CHAIN 0)

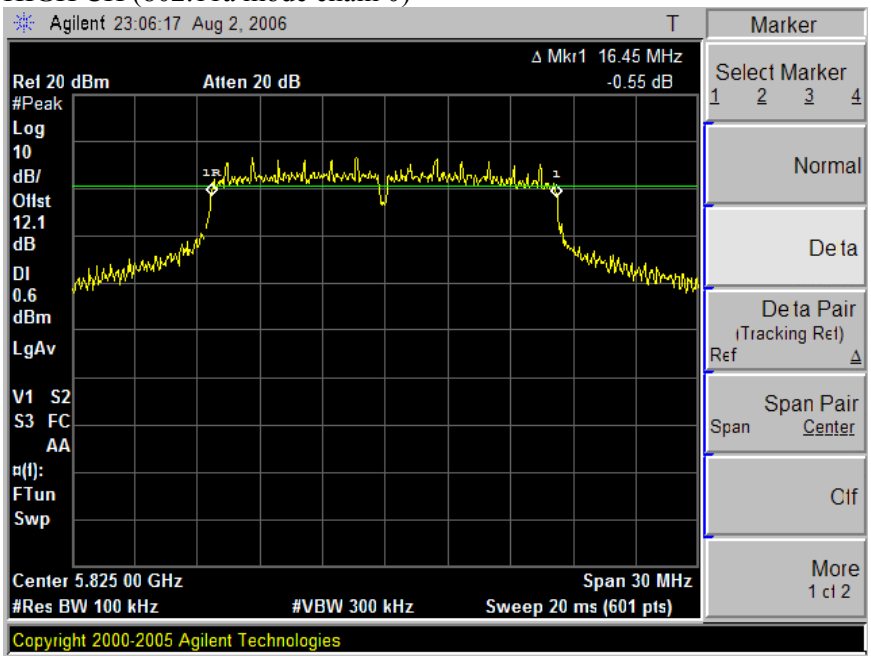
LOW CH (802.11a mode chain 0)



MID CH (802.11a mode chain 0)

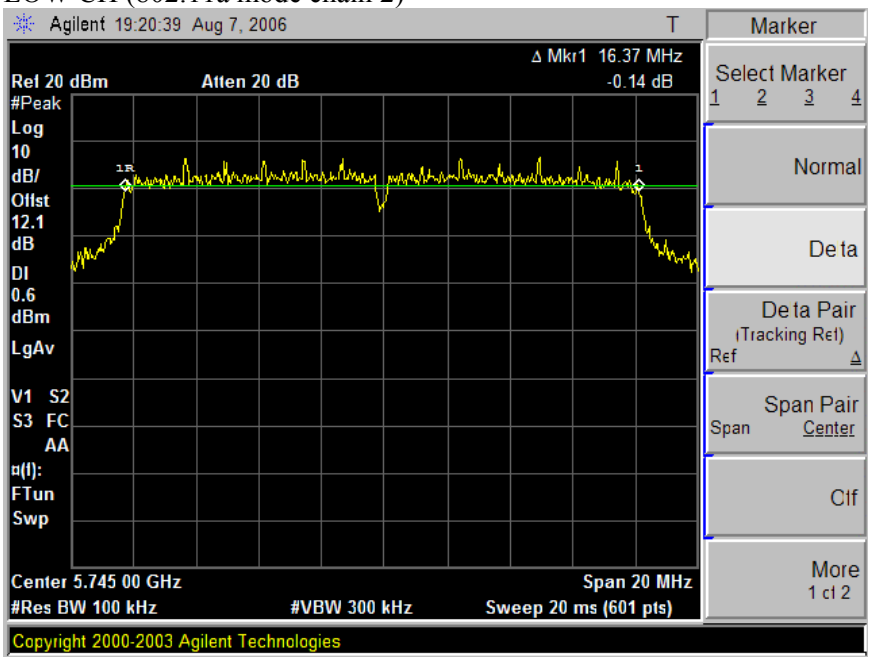


HIGH CH (802.11a mode chain 0)

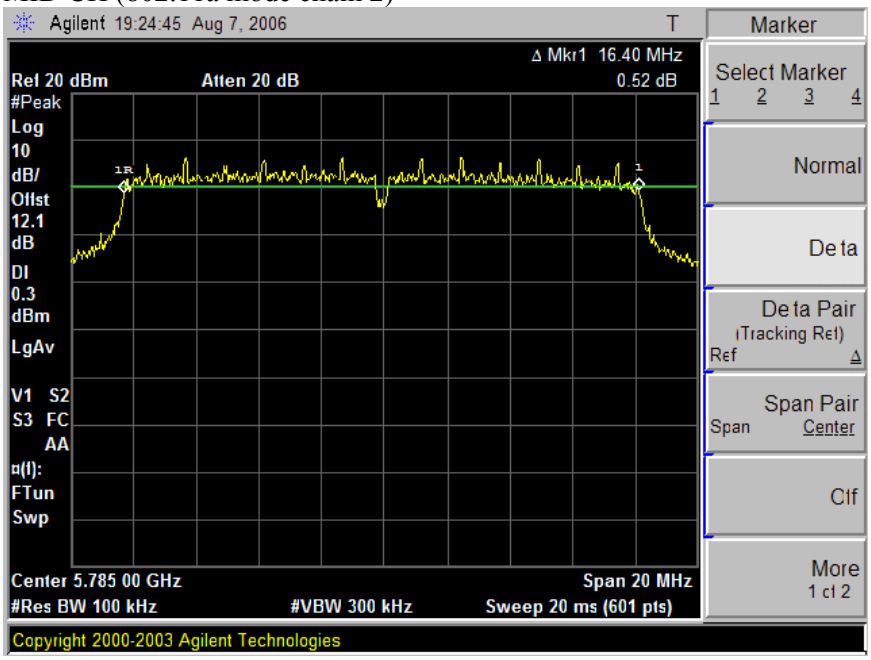


(802.11a MODE CHAIN 2)

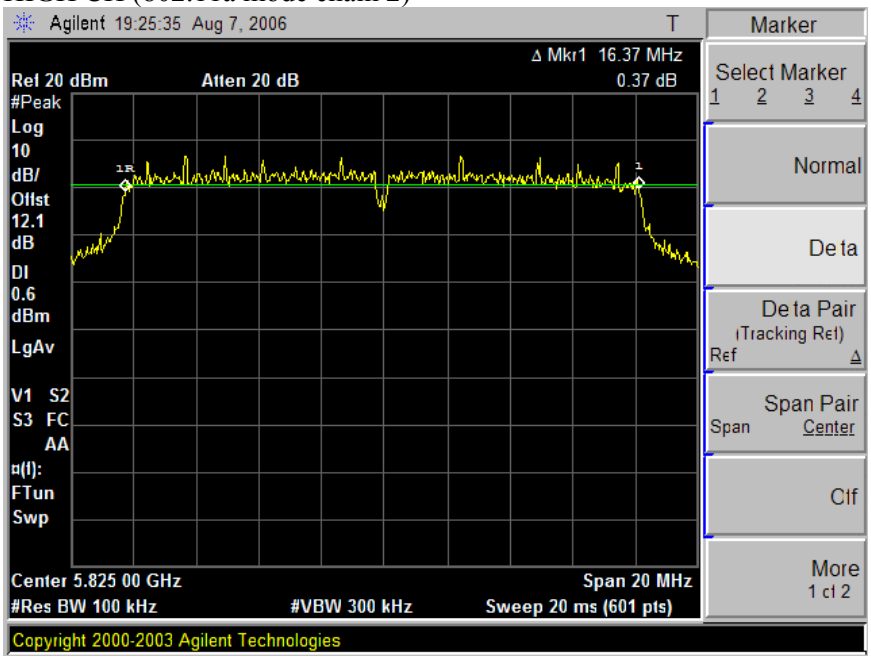
LOW CH (802.11a mode chain 2)



MID CH (802.11a mode chain 2)

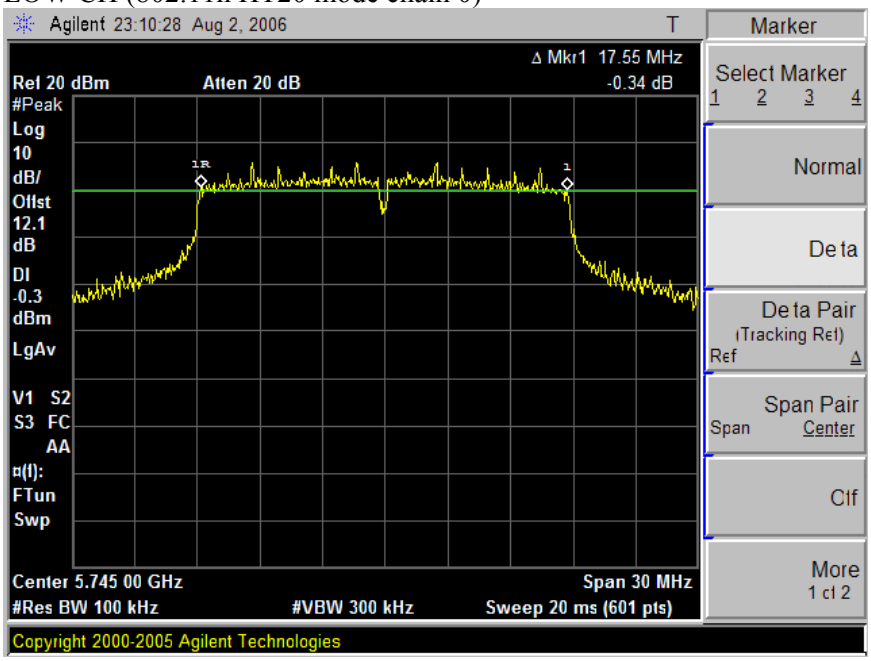


HIGH CH (802.11a mode chain 2)



(802.11n HT20 MODE CHAIN 0)

LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)