FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT

FOR

EUT

802.11a/b/g/n PCIExpress Minicard

MODEL NUMBER: AR5BXB72

FCC ID: PPD-AR5BXB72P

REPORT NUMBER: 06U10408-1

ISSUE DATE: JUNE 29, 2006

Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	6/29/06	Initial Issue	MH

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: 802.11a/b/g/n PCIExpress Minicard

MODEL TESTED: AR5BXB72

SERIAL NUMBER: XB72-060-L0416

DATE TESTED: JUNE 11-26, 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 AR5BXB72 is designed for 802.11a/b/g/n applications using the AR541X/51XX chipset with a PCIExpress Minicard interface. 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 and the middle chain (chain 1) as Rx only.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

2400 to 2483.5 MHz Authorized Band

Frequency Range (MHz)	Mode	Total Output Power (dBm)	Total Output Power (mW)
2412 - 2462	802.11b	20.64	115.88
2412 - 2462	802.11g	23.63	230.67
2412 - 2462	802.11 HT20	23.70	234.42
2422 - 2452	802.11 HT40	21.80	151.36

5725 to 5850 MHz Authorized Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5745 - 5825	802.11a	20.22	105.20
5745 - 5825	802.11n HT20	20.22	105.20
5755 - 5815	802.11n HT40	20.20	104.71

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The 2x3 configuration utilizes a set of three identical PIFA antennas (maximum gain is 3.62 dBi in the 2.4 GHz band and 4.76 dBi in the 5.8 GHz band) or a set of three identical Monopole antennas (maximum gain is 1.5 dBi in the 2.4 GHz band and 4.4 dBi in the 5.8 GHz band).

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 0.3 Build #4 Art 11n

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case data rates are determined to be as follows for each mode, based on the investigations by measuring the avarage 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	Thindthind R52	L3-GR045	DoC
AC Adapter	IBM	92P1016	11S92P1016Z1ZAC65C71HZ	DoC

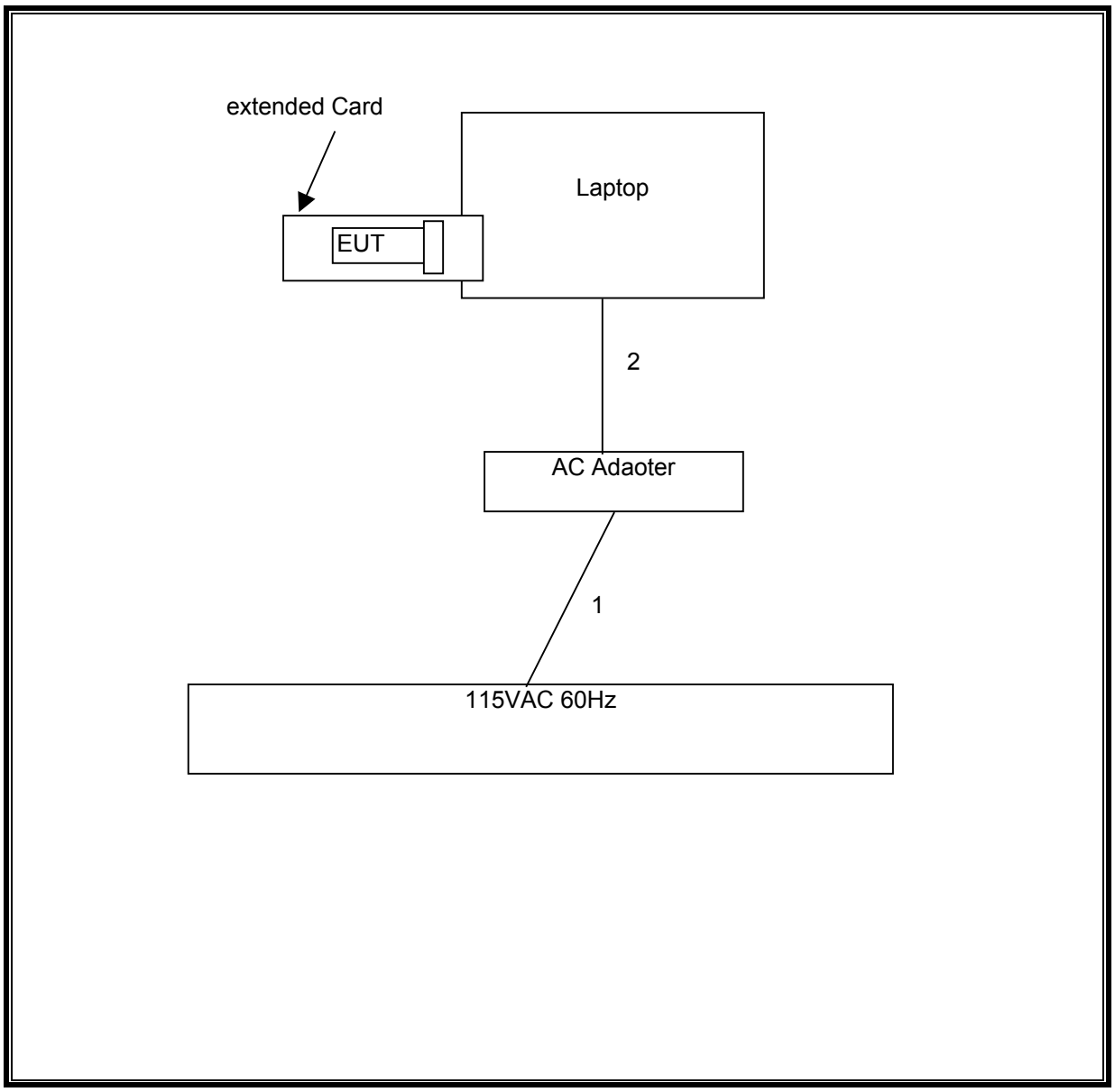
I/O CABLES

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 via a PCIExpress Minicard extender 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**
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/3/2006
RF Filter Section	Agilent / HP	85420E	3705A00256	2/4/2007
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	2/4/2007
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/2007
Antenna, Horn, 18 ~ 26 GHz	ARA	MWH-1826/B	1013	9/12/2006
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00369	8/17/2006
Antenna, Horn 26 ~ 40 GHz	ARA	MWH-2640/B	1029	4/13/2007
Preamplifier, 26 ~ 40 GHz	Miteq	NSP4000-SP2	924343	8/18/2006
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY45300064	12/19/2006
Peak / Average Power Sensor	Agilent	E9327A	US40440755	12/2/2007
Peak Power Meter	Agilent / HP	E4416A	GB41291160	12/2/2007
EMI Test Receiver	R & S	ESHS 20	827129/006	11/3/2006
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2006

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.

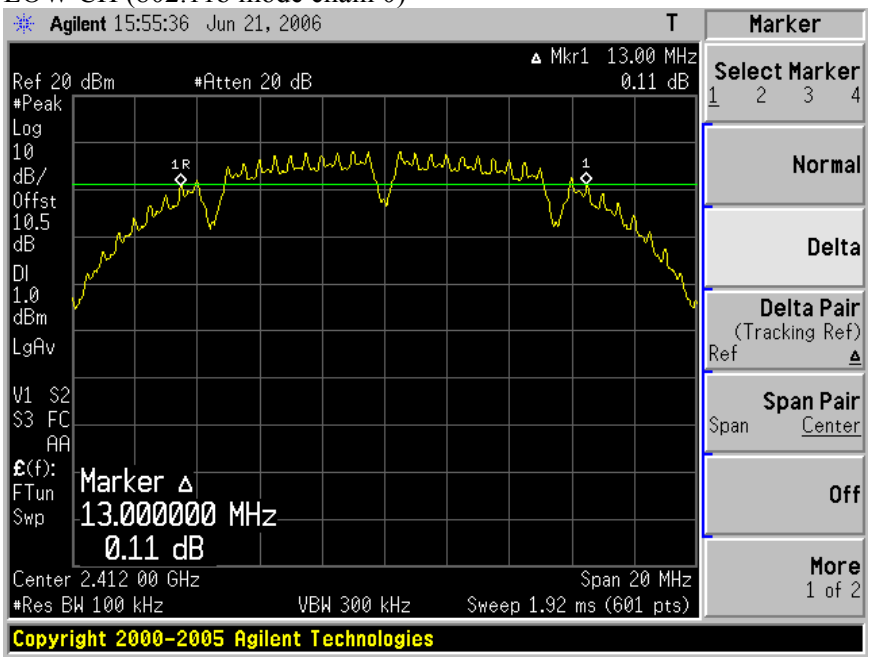
RESULTS

No non-compliance noted:

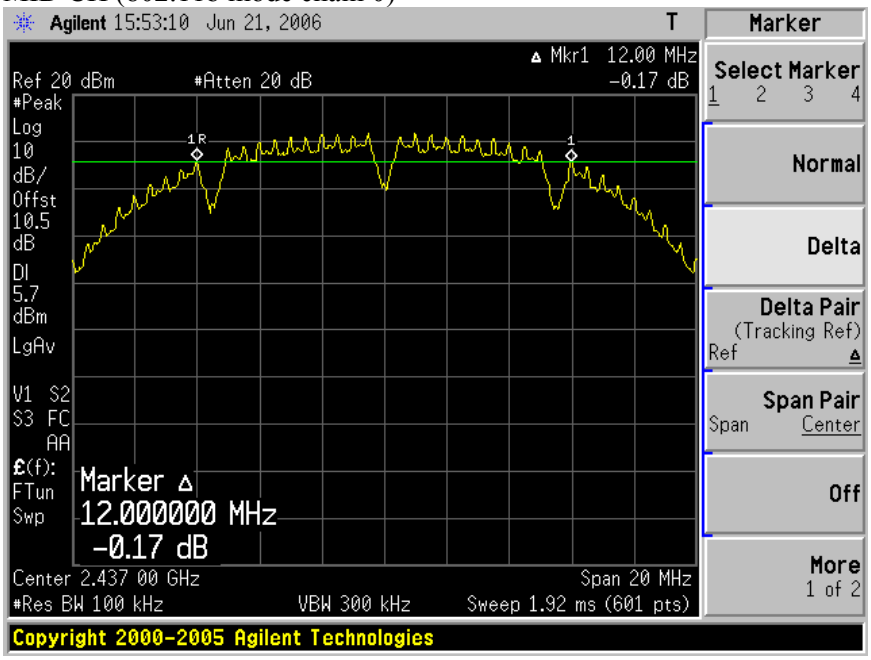
Mode Channel	Frequency (MHz)	6 dB BW Chain 0 (kHz)	6 dB BW Chain 1 (kHz)	Minimum Limit (kHz)	Minimum Margin (kHz)
802.11b Mode					
Low	2412	13000	12100	500	11600
Middle	2437	12000	12000	500	11500
High	2462	12030	12030	500	11530
802.11g Mode					
Low	2412	16330	16400	500	15830
Middle	2437	16330	16370	500	15830
High	2462	16430	16500	500	15930
802.11n HT20 Mode					
Low	2412	17600	17530	500	17030
Mid	2437	17570	17530	500	17030
High	2462	17600	17630	500	17100
802.11n HT40 Mode					
Low	2422	36250	36500	500	35750
Mid	2437	36420	36500	500	35920
High	2452	36250	36500	500	35750

(802.11b MODE CHAIN 0)

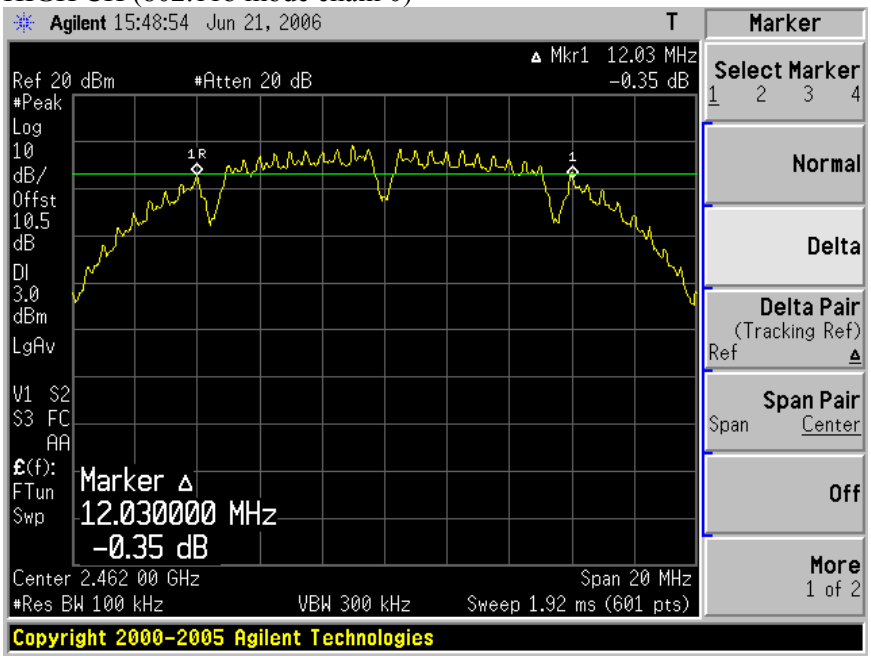
LOW CH (802.11b mode chain 0)



MID CH (802.11b mode chain 0)

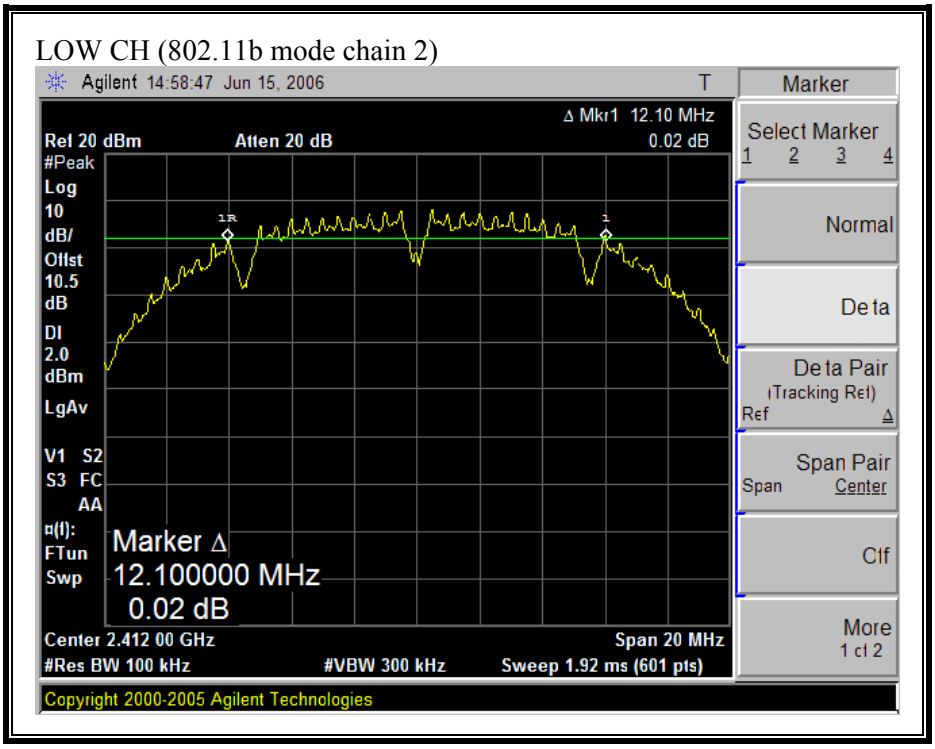


HIGH CH (802.11b mode chain 0)

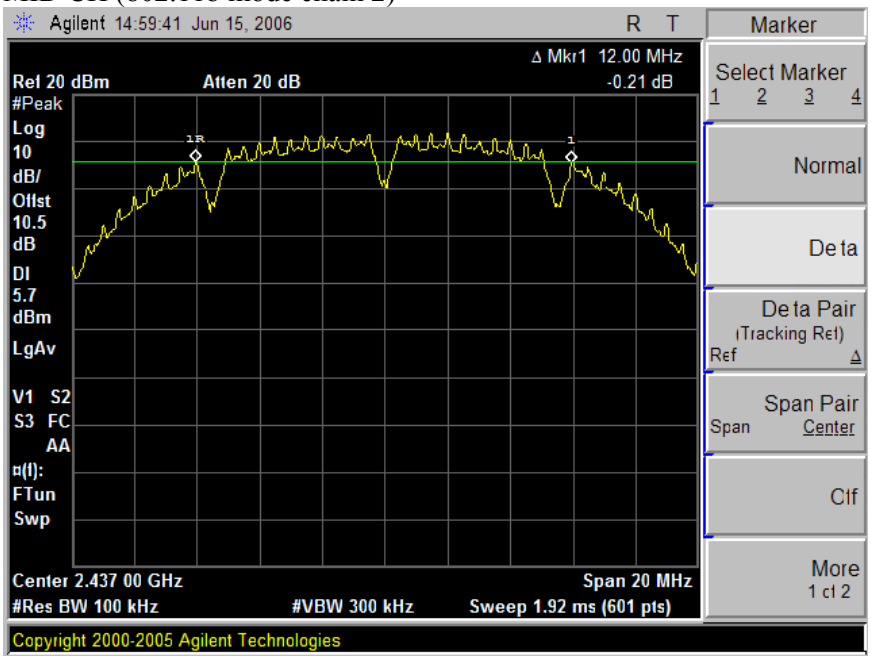


(802.11b MODE CHAIN 2)

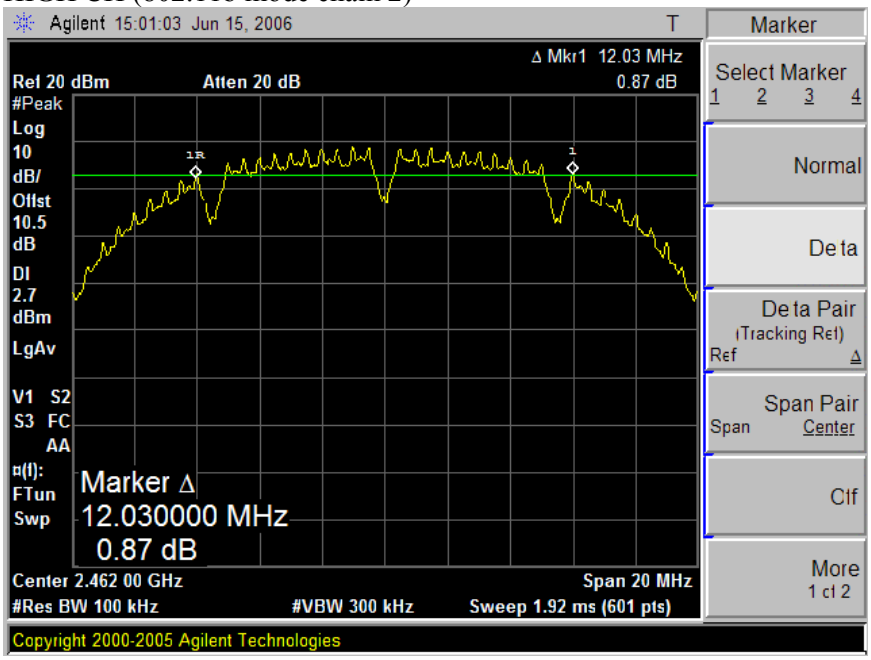
LOW CH (802.11b mode chain 2)



MID CH (802.11b mode chain 2)

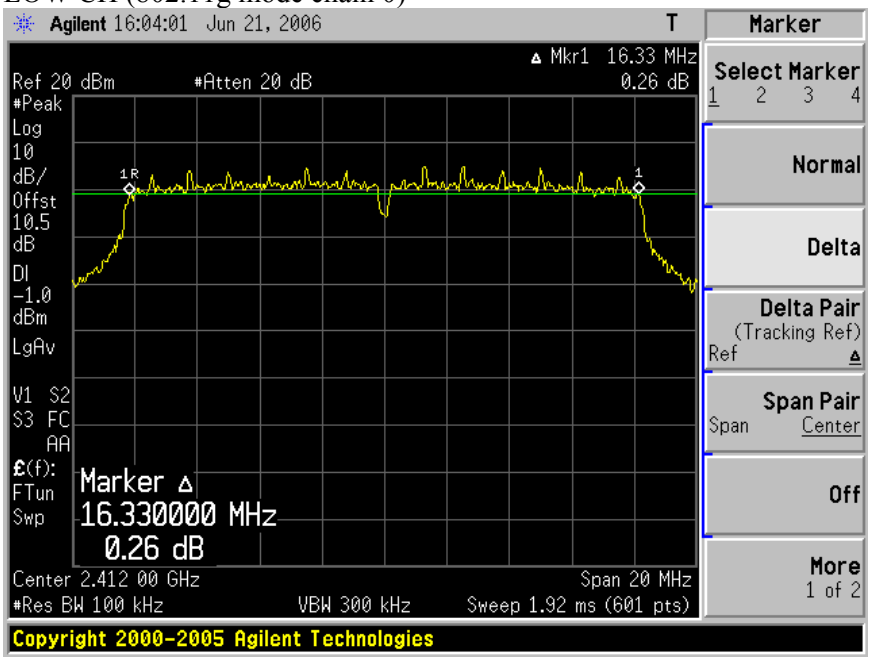


HIGH CH (802.11b mode chain 2)

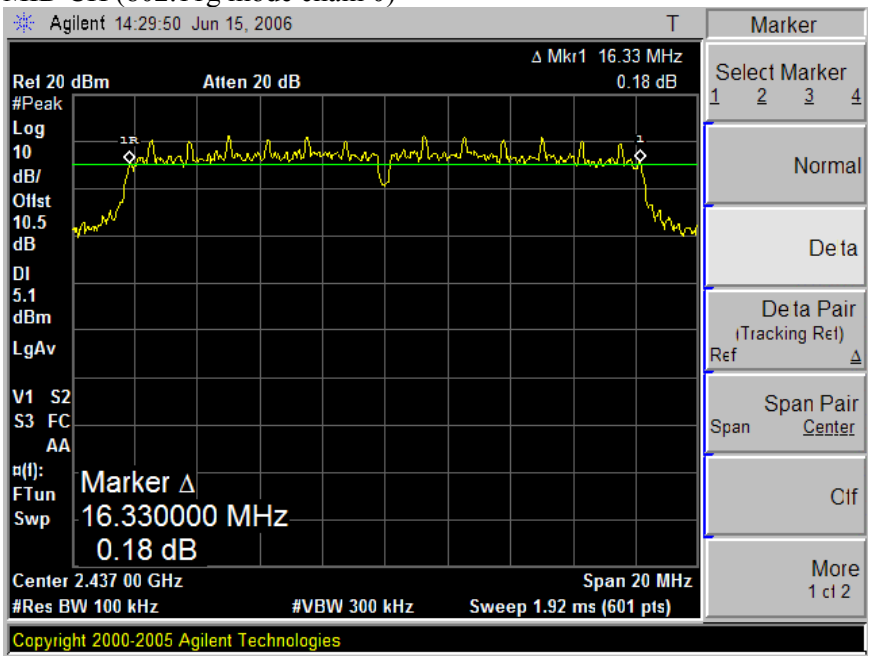


(802.11g MODE CHAIN 0)

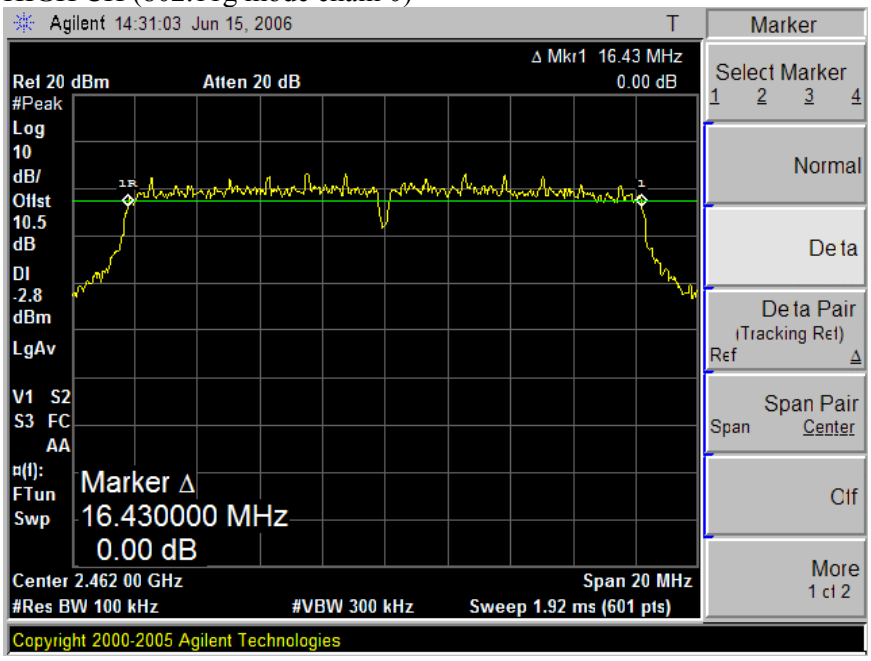
LOW CH (802.11g mode chain 0)



MID CH (802.11g mode chain 0)

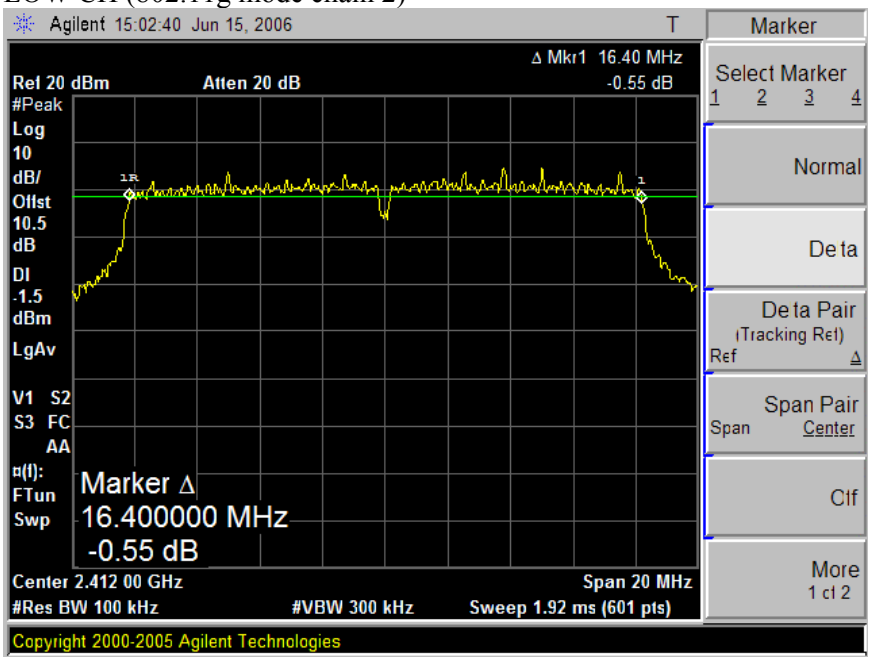


HIGH CH (802.11g mode chain 0)

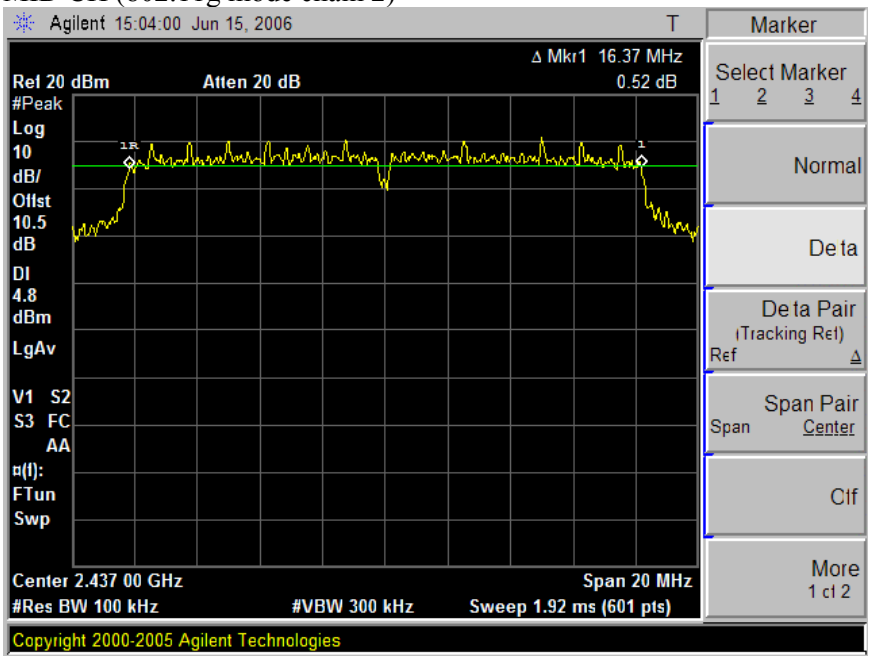


(802.11g MODE CHAIN 2)

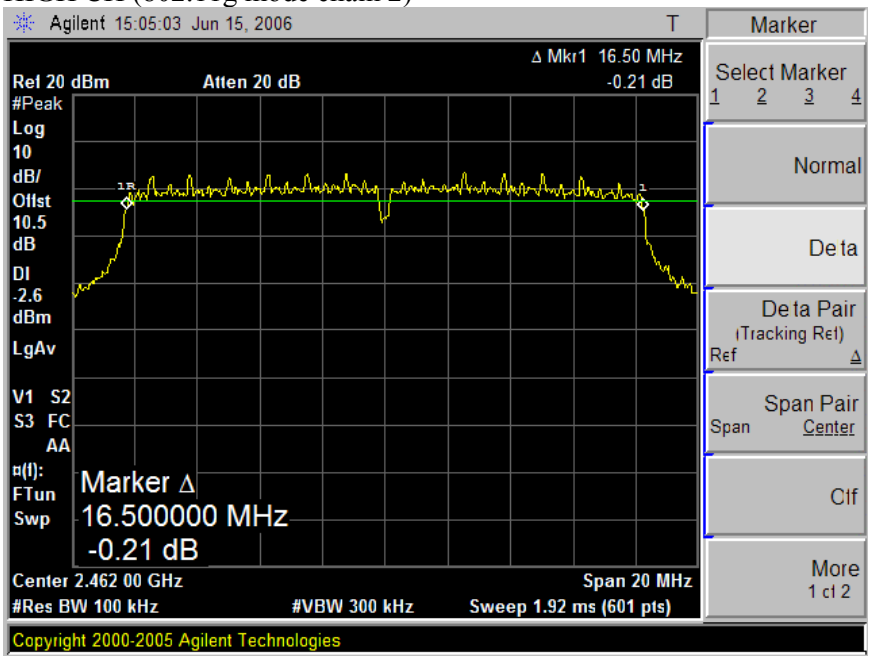
LOW CH (802.11g mode chain 2)



MID CH (802.11g mode chain 2)

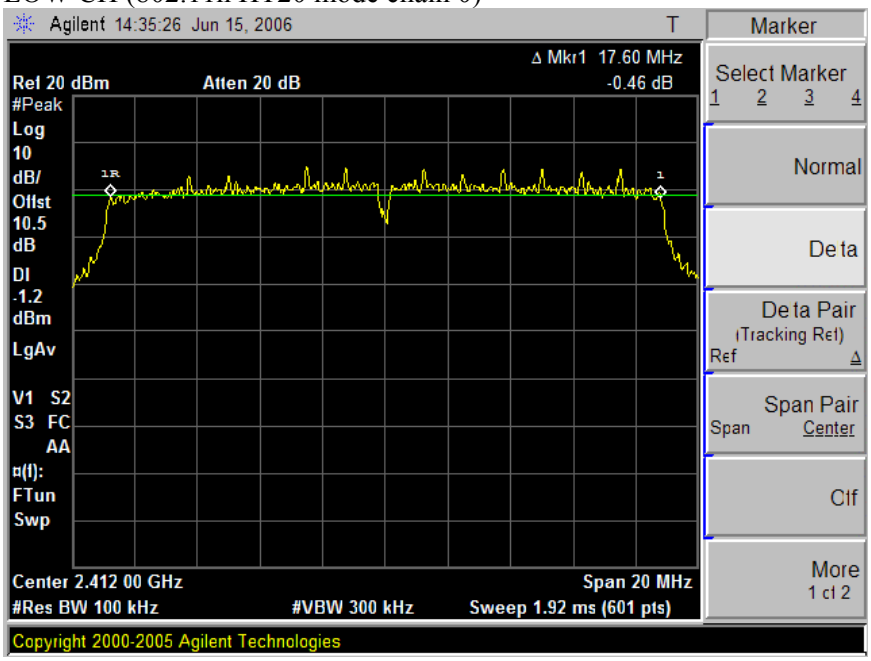


HIGH CH (802.11g mode chain 2)

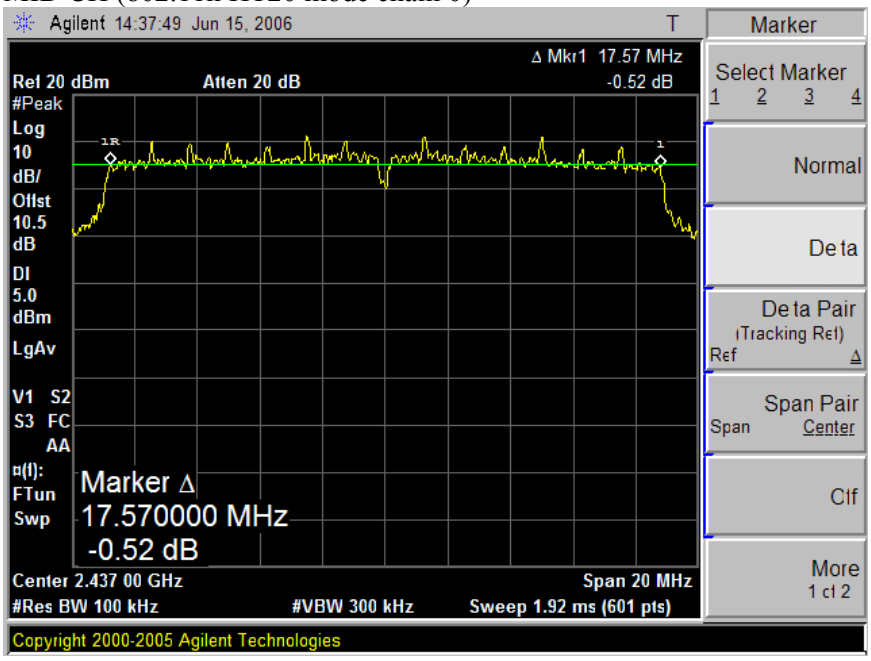


(802.11n HT20 MODE CHAIN 0)

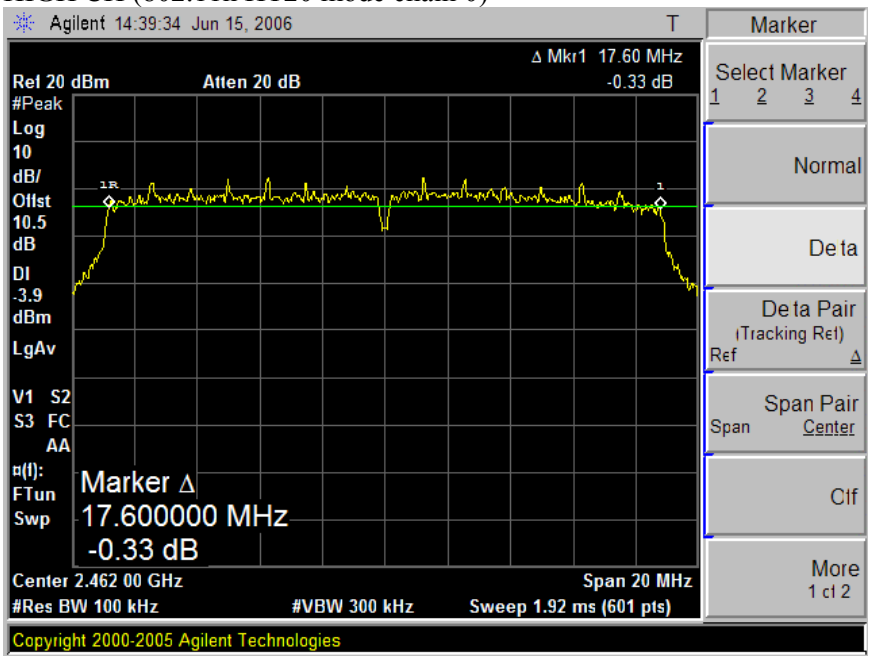
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

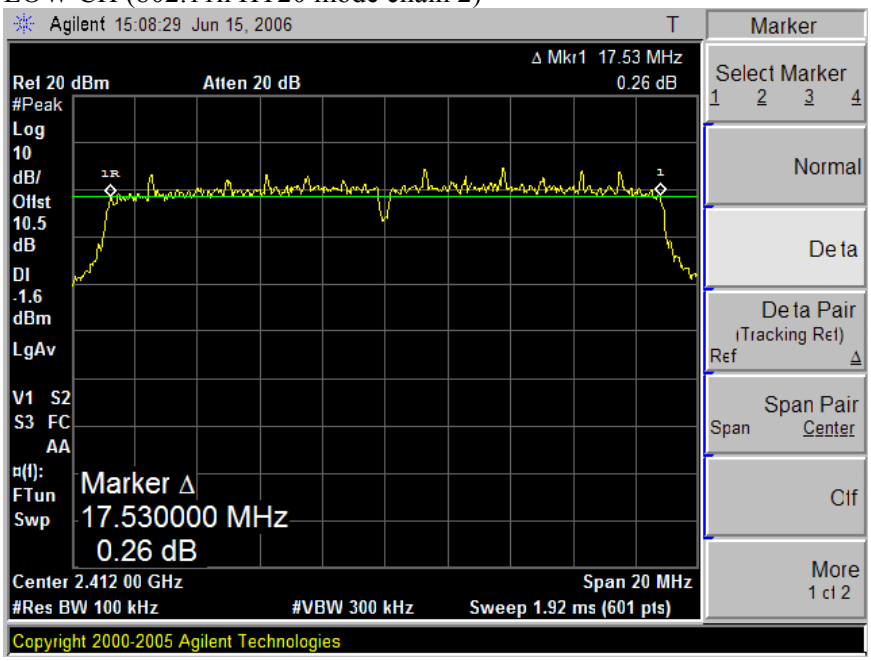


HIGH CH (802.11n HT20 mode chain 0)

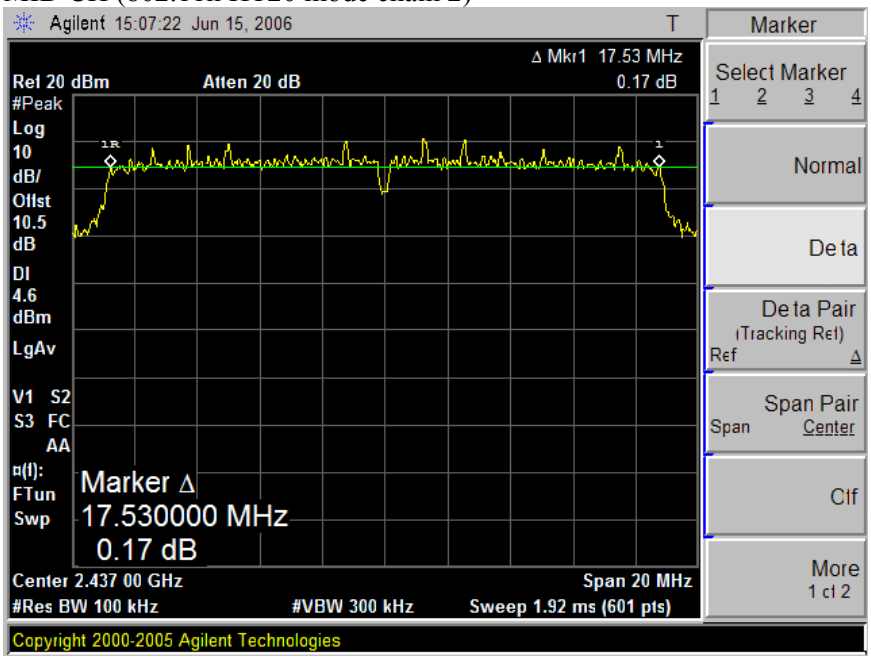


(802.11 HT20 MODE CHAIN 2)

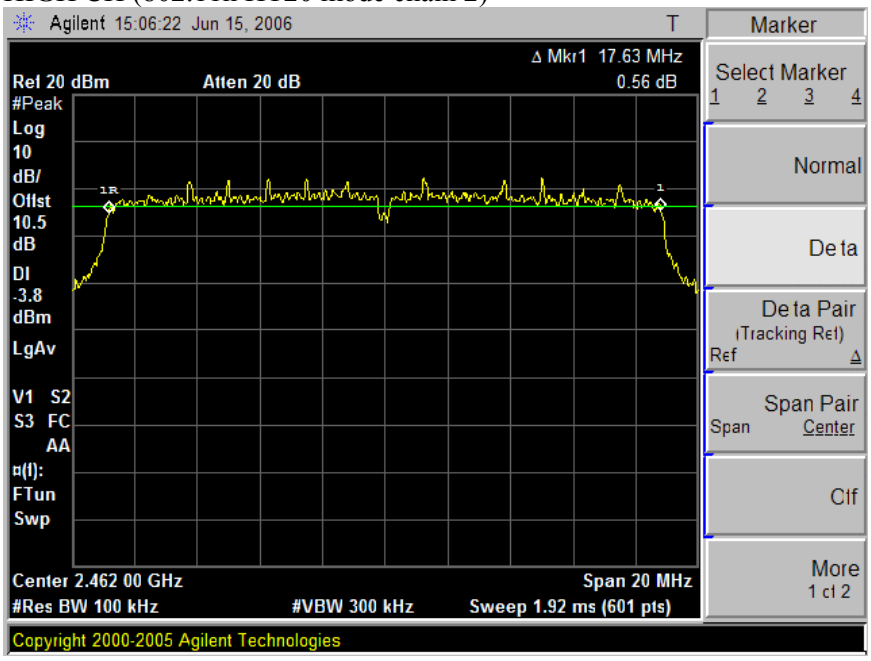
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

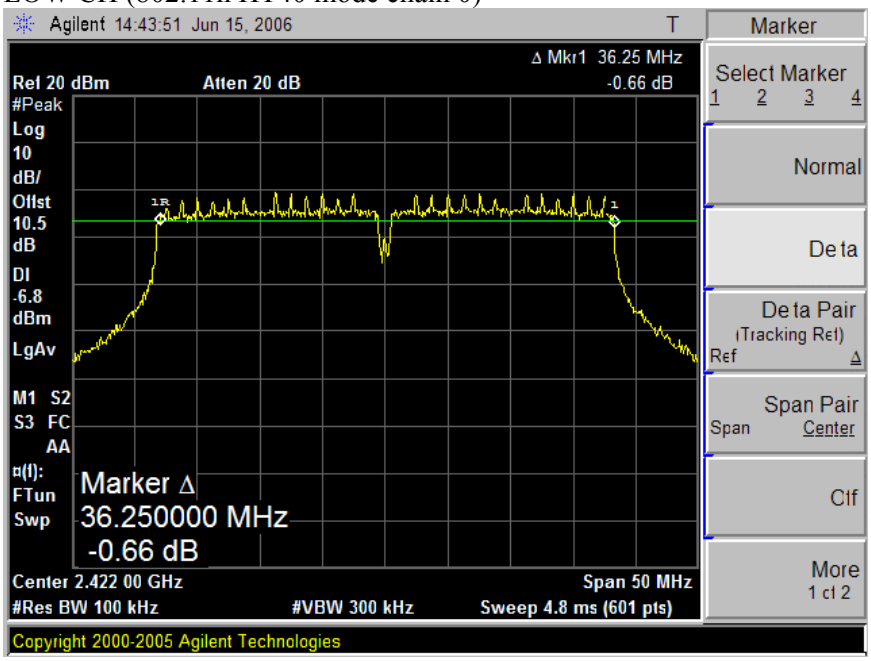


HIGH CH (802.11n HT20 mode chain 2)

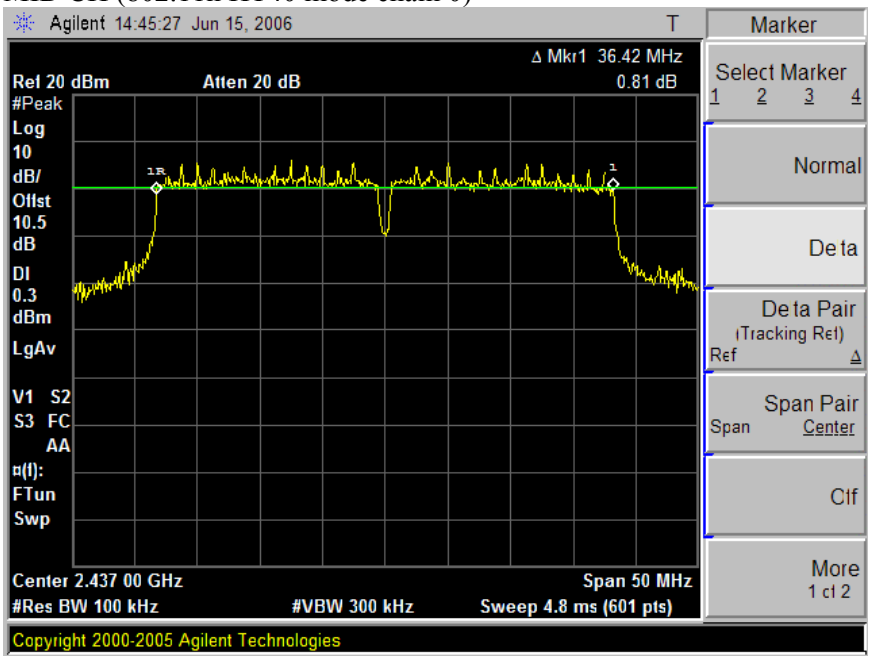


(802.11 HT40 MODE CHAIN 0)

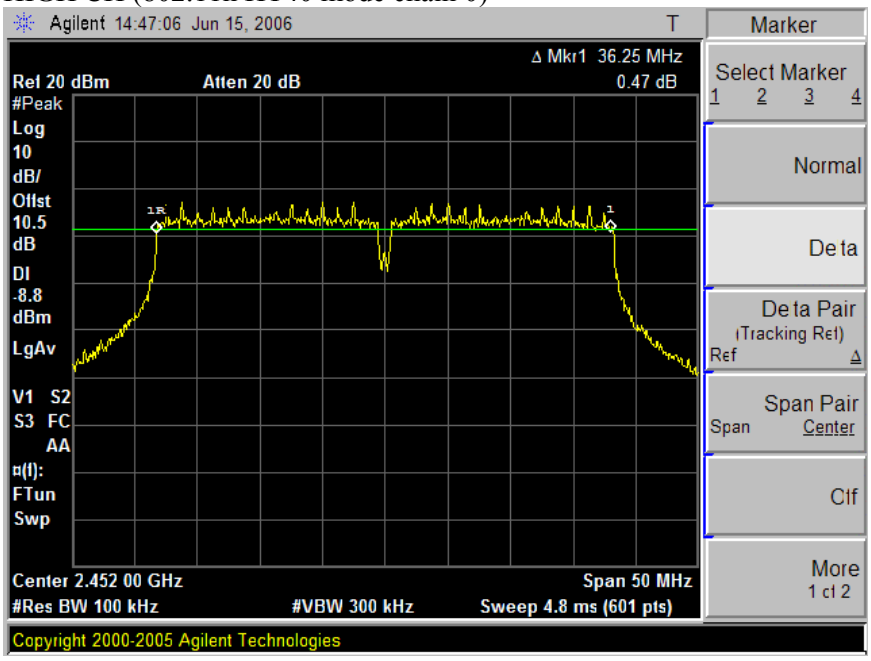
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

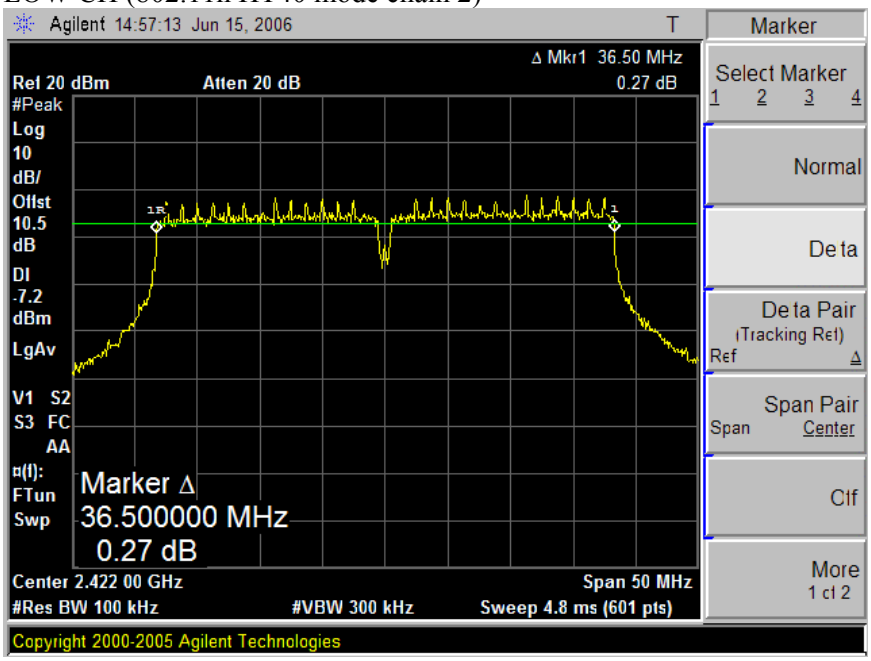


HIGH CH (802.11n HT40 mode chain 0)

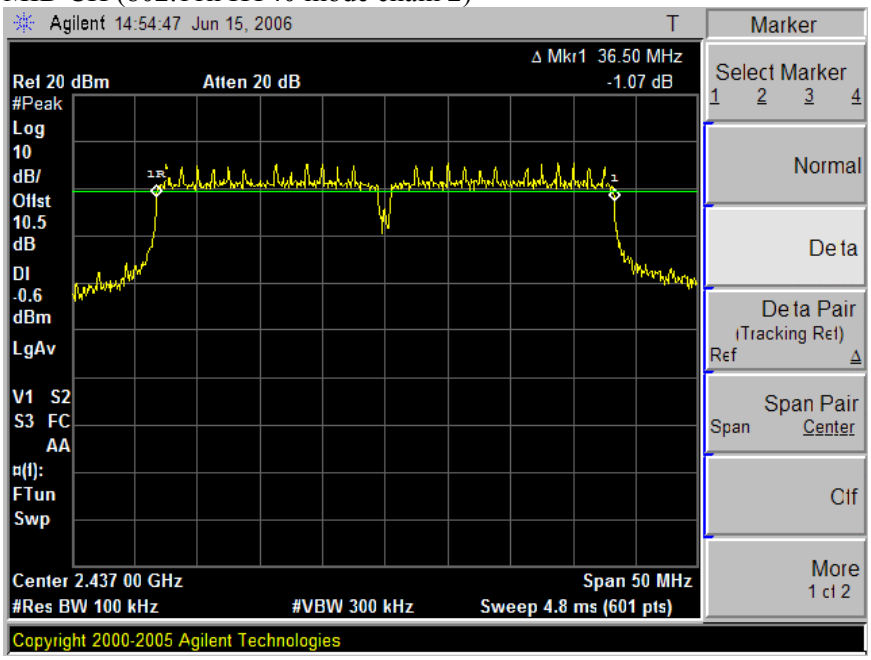


(802.11 HT40 MODE CHAIN 2)

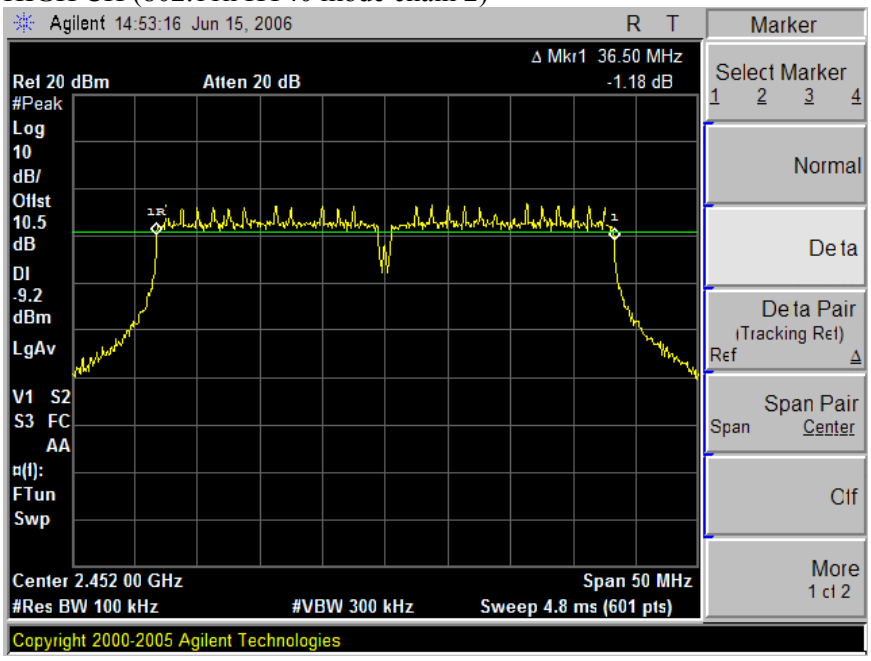
LOW CH (802.11n HT40 mode chain 2)



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.

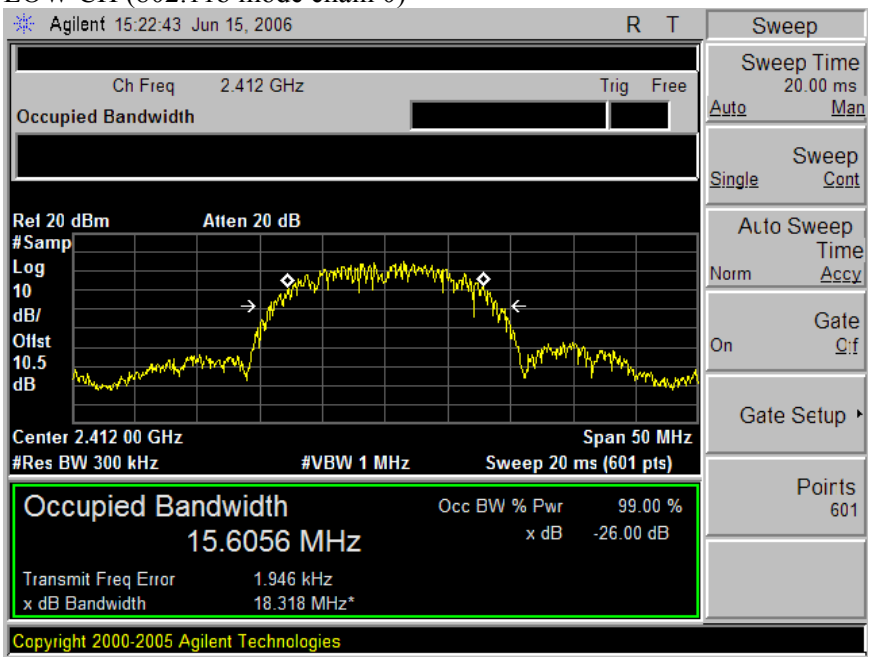
RESULTS

No non-compliance noted:

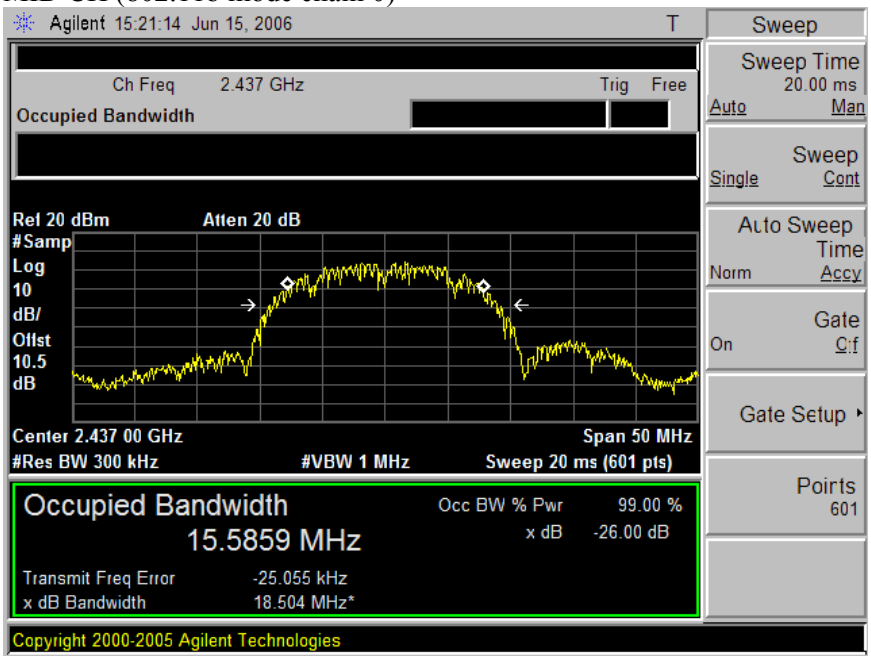
Mode Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 2 (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 2 (MHz)
802.11b Mode					
Low	2412	15.6056	15.5471	18.318	18.75
Middle	2437	15.5859	15.4618	18.504	18.86
High	2462	16.7115	16.4614	18.831	18.27
802.11g Mode					
Low	2412	16.5306	16.4825	21.013	21.60
Middle	2437	16.4925	16.4694	21.232	21.42
High	2462	16.4723	16.4233	21.605	21.50
802.11n HT20 Mode					
Low	2412	17.6962	17.5351	21.206	23.13
Mid	2437	17.8	17.7602	21.816	23.67
High	2462	17.6658	17.7898	22.974	23.18
802.11n HT40 Mode					
Low	2422	36.2066	36.3169	46.271	44.47
Mid	2437	36.3271	36.2187	45.77	46.74
High	2452	36.3204	36.0857	46.492	47.93

(802.11b MODE CHAIN 0)

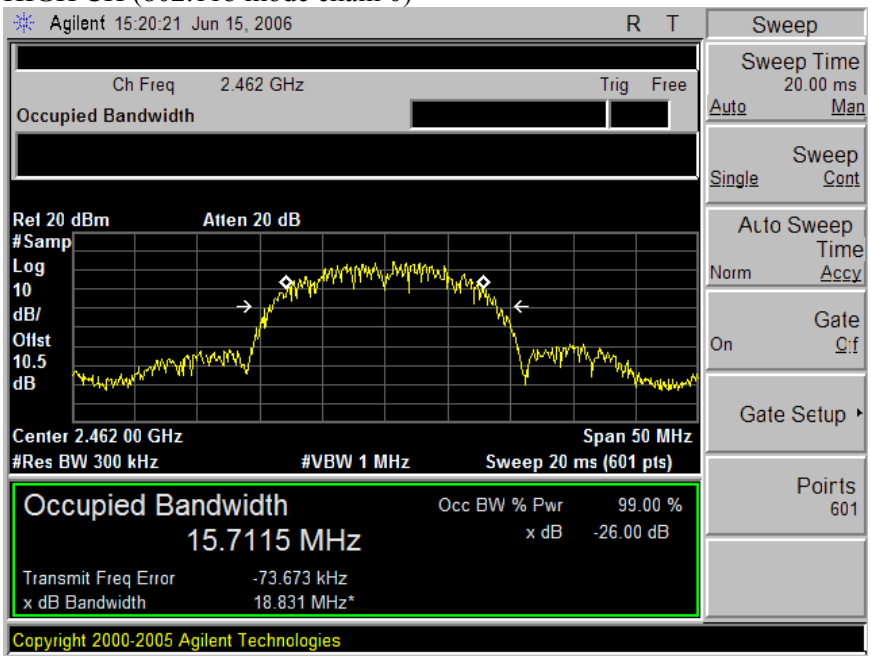
LOW CH (802.11b mode chain 0)



MID CH (802.11b mode chain 0)

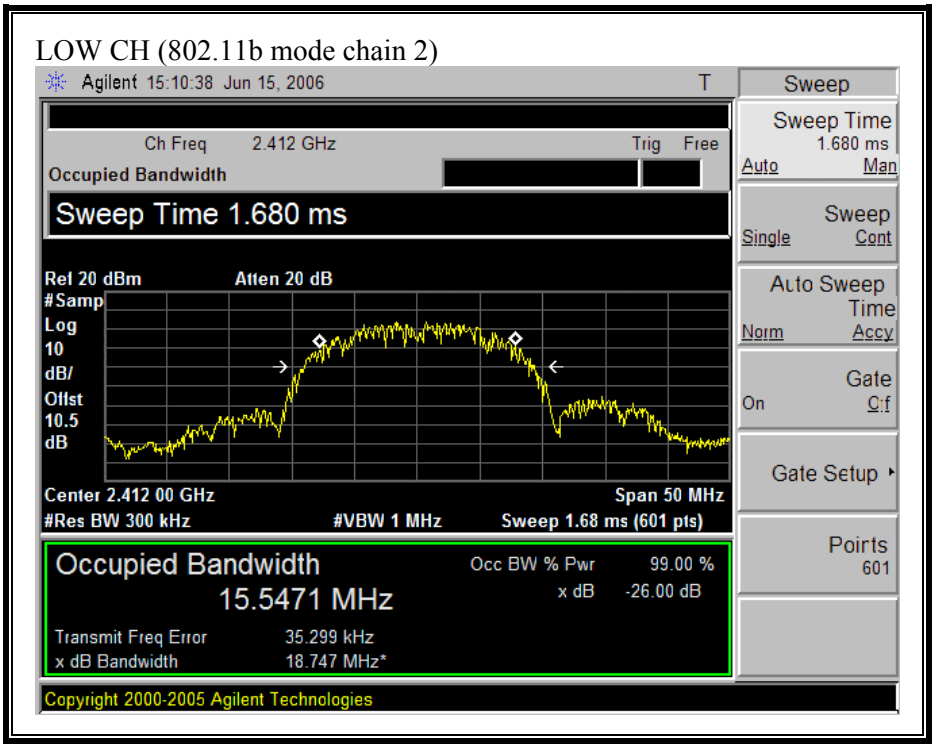


HIGH CH (802.11b mode chain 0)

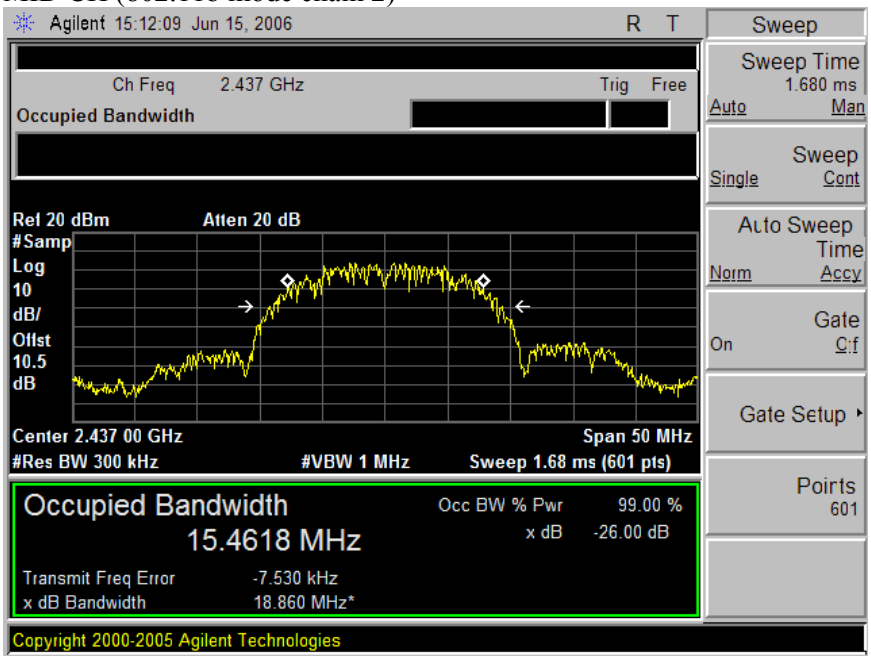


(802.11b MODE CHAIN 2)

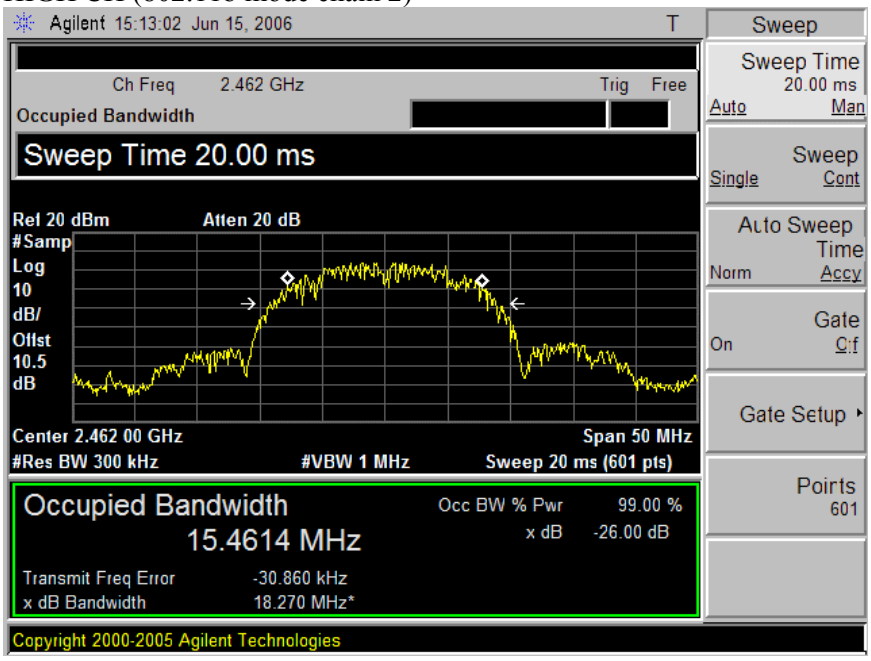
LOW CH (802.11b mode chain 2)



MID CH (802.11b mode chain 2)

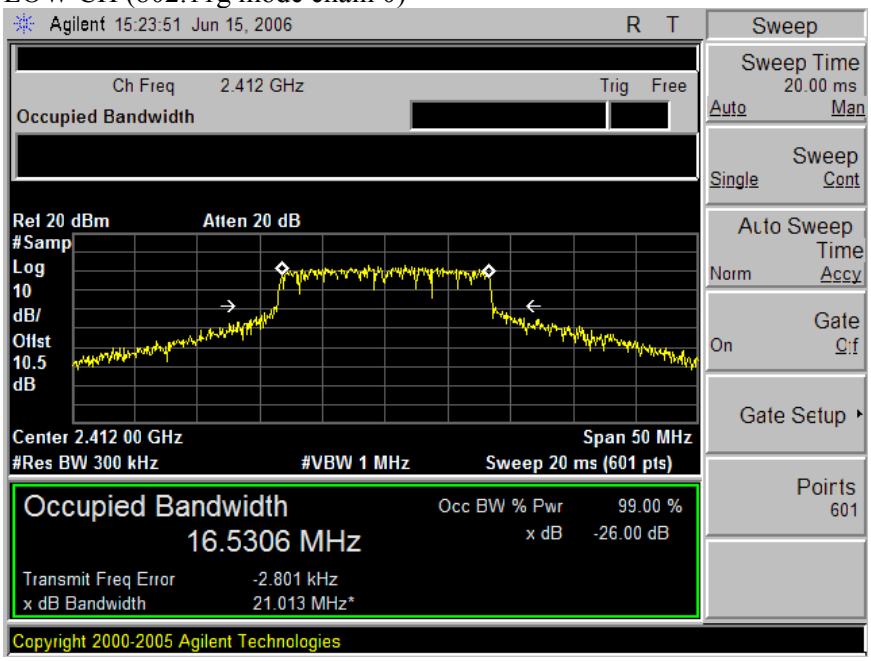


HIGH CH (802.11b mode chain 2)

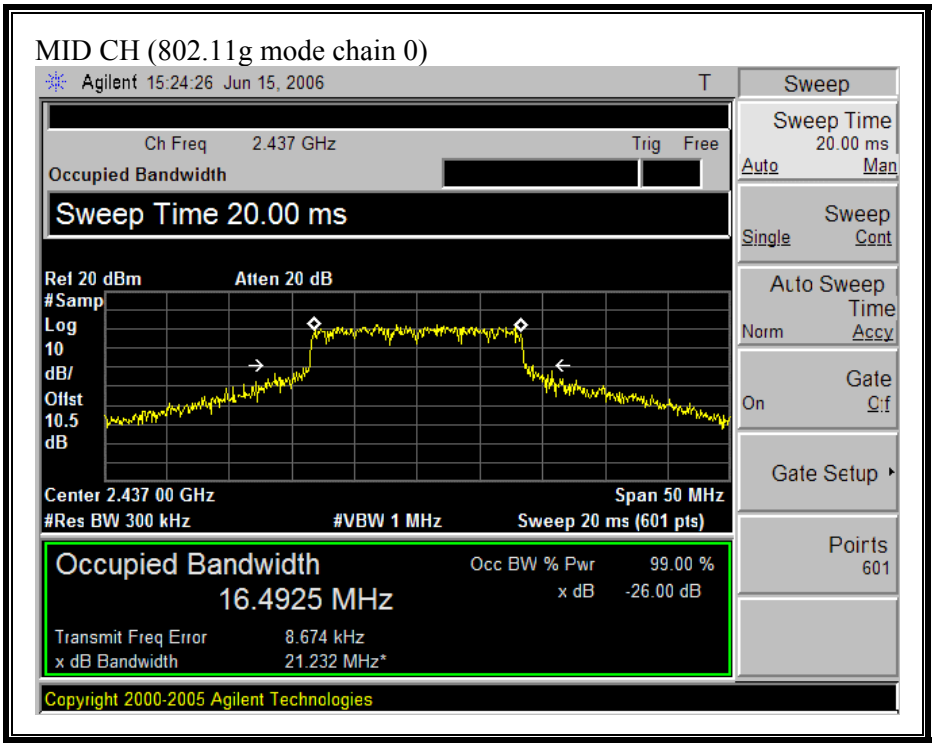


(802.11g MODE CHAIN 0)

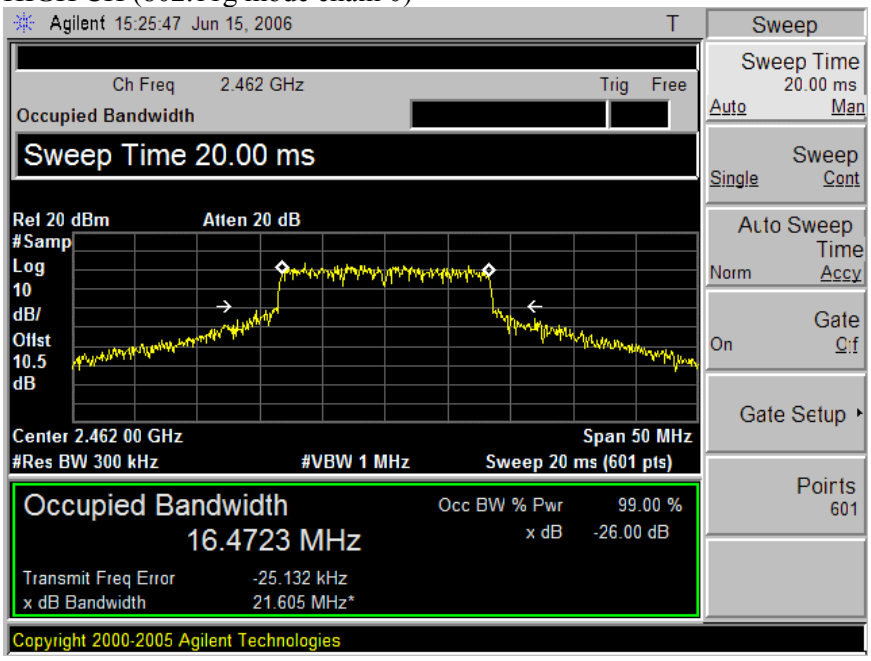
LOW CH (802.11g mode chain 0)



MID CH (802.11g mode chain 0)

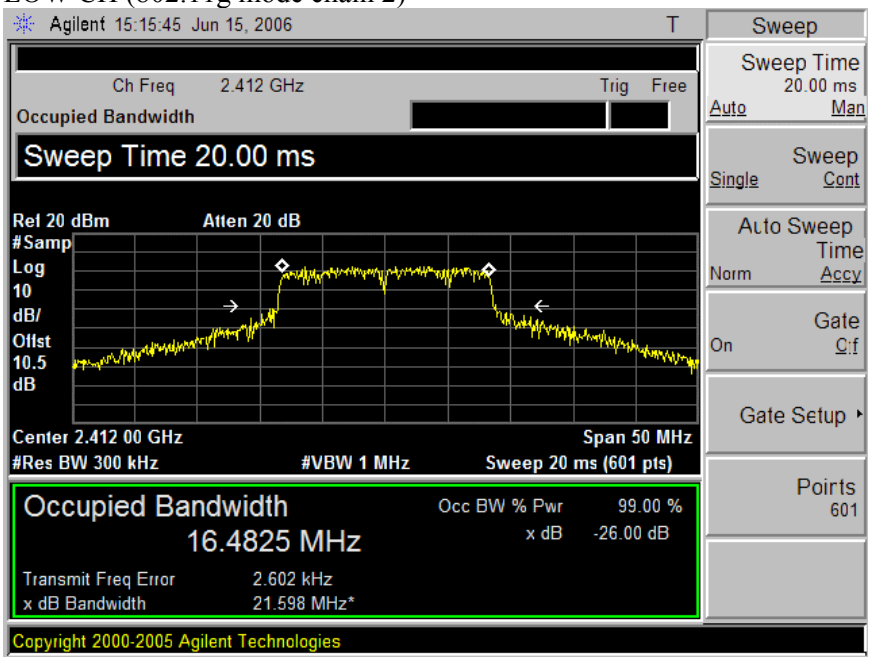


HIGH CH (802.11g mode chain 0)

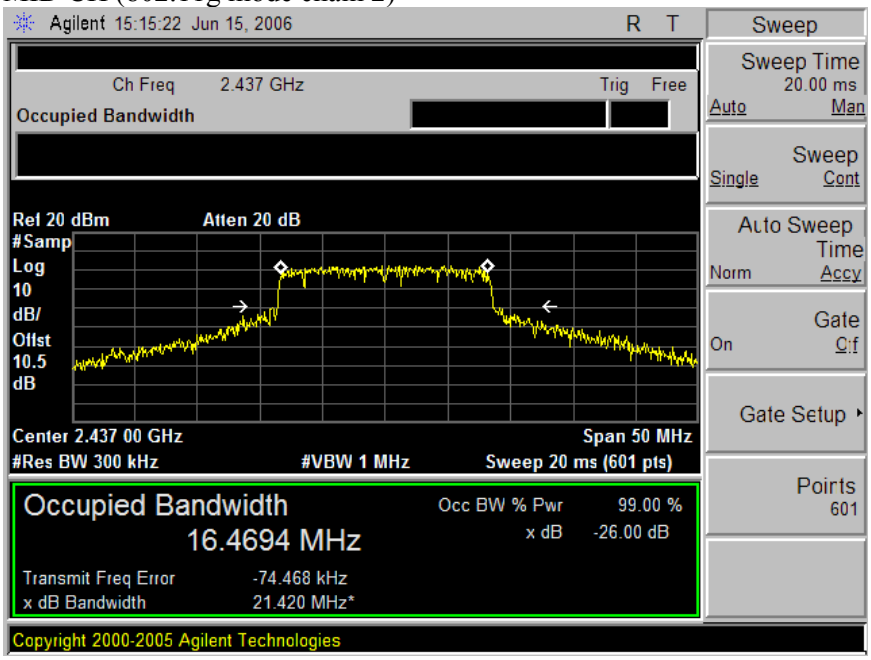


(802.11g MODE CHAIN 2)

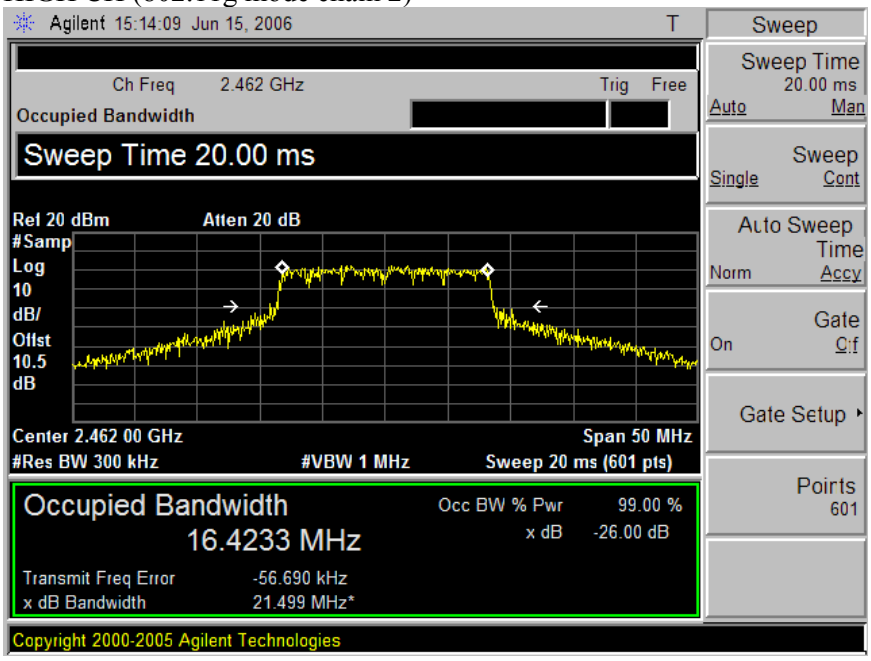
LOW CH (802.11g mode chain 2)



MID CH (802.11g mode chain 2)

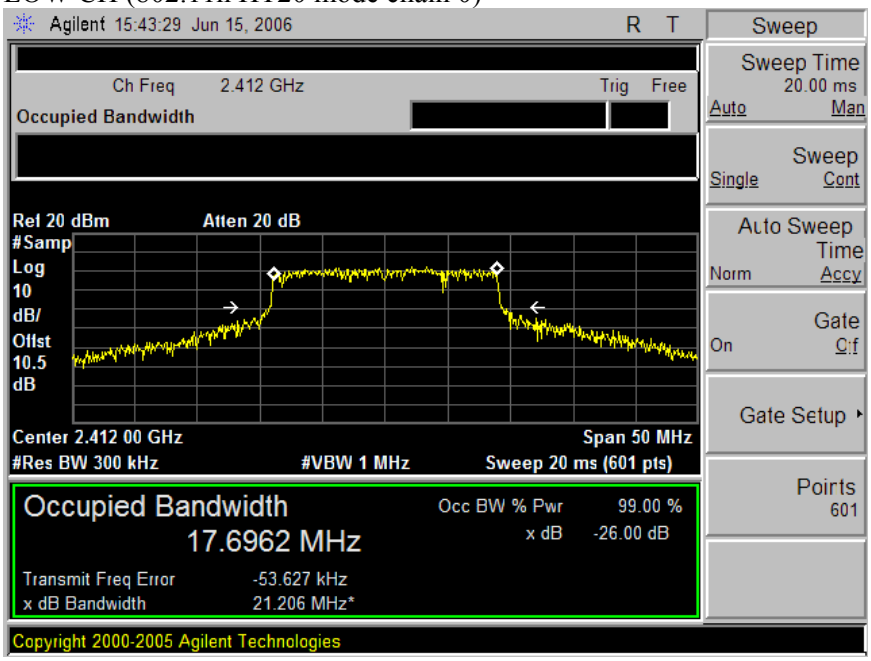


HIGH CH (802.11g mode chain 2)

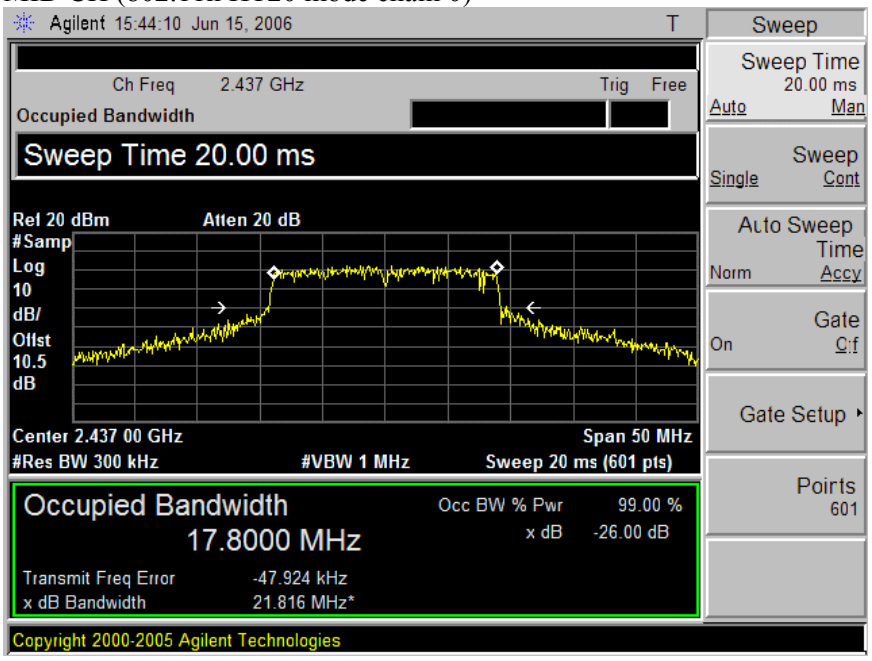


(802.11n HT20 MODE CHAIN 0)

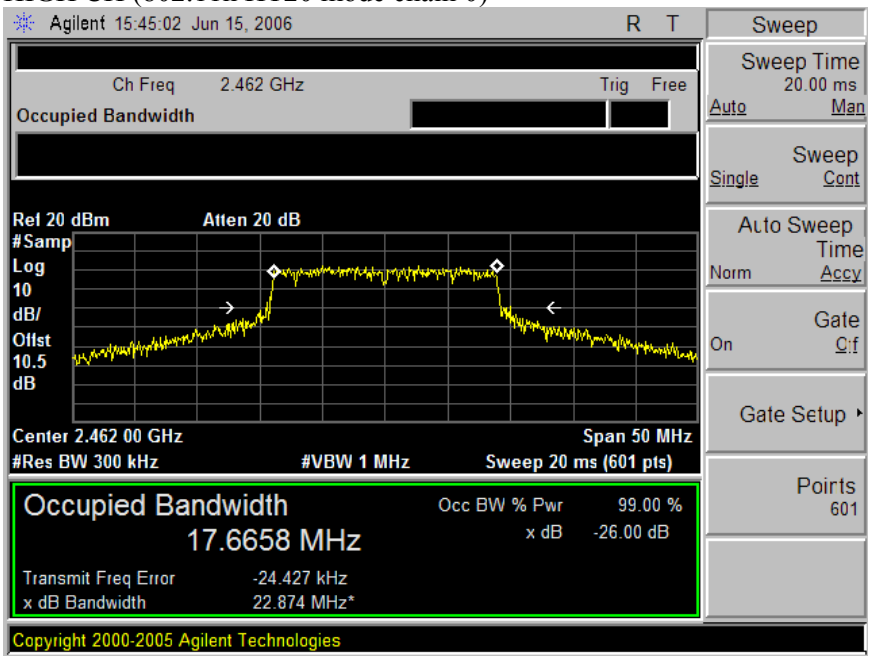
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

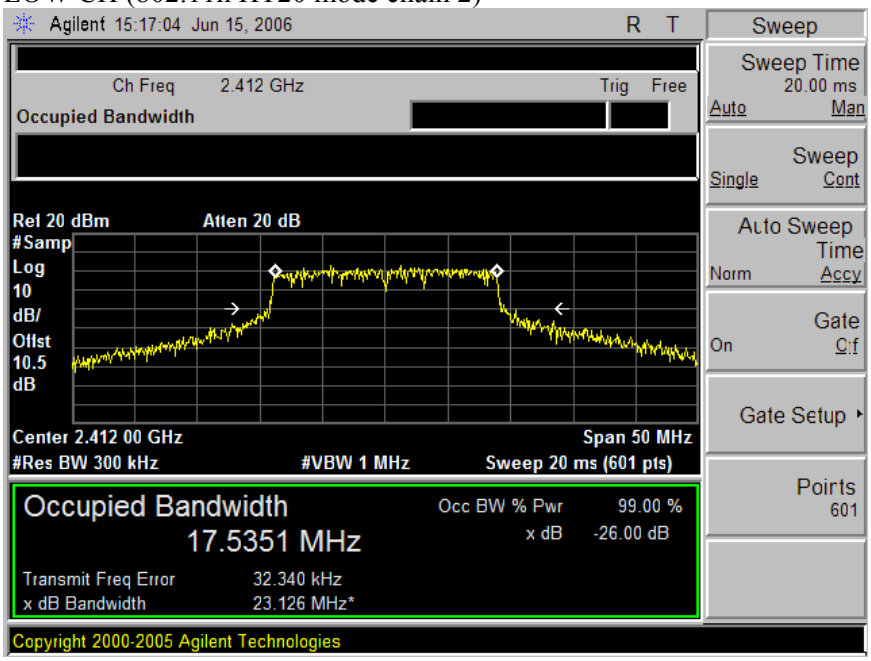


HIGH CH (802.11n HT20 mode chain 0)

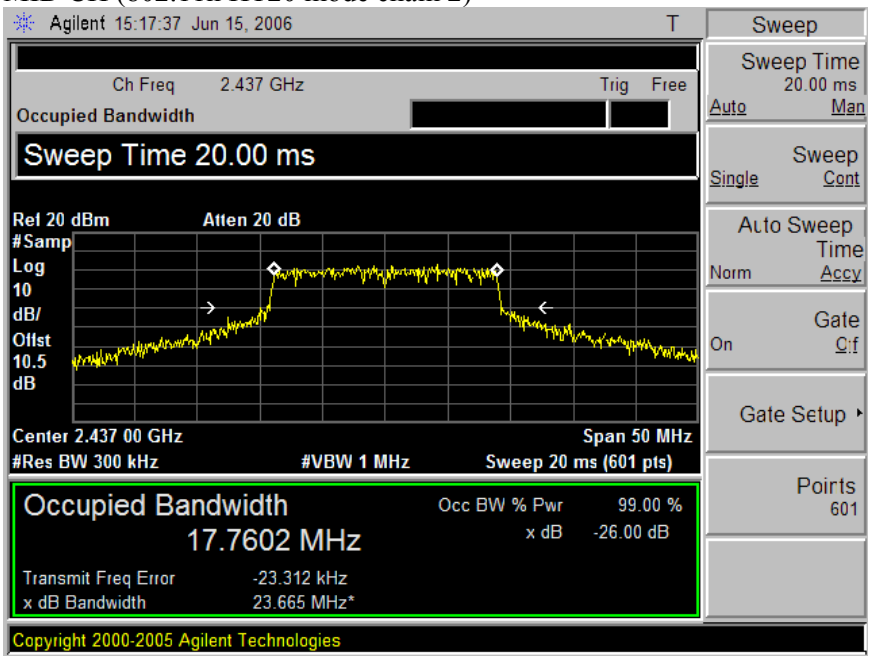


(802.11 HT20 MODE CHAIN 2)

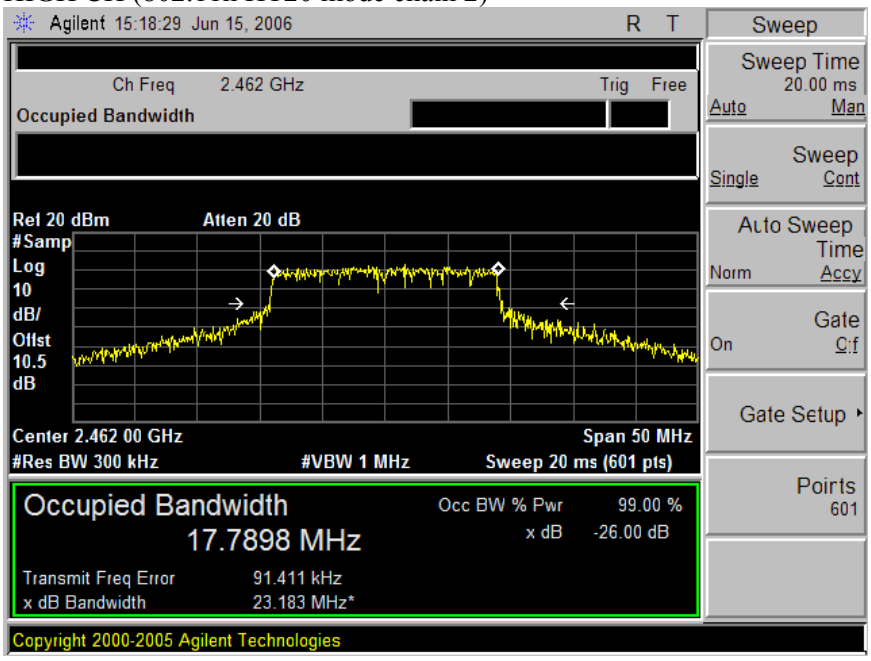
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

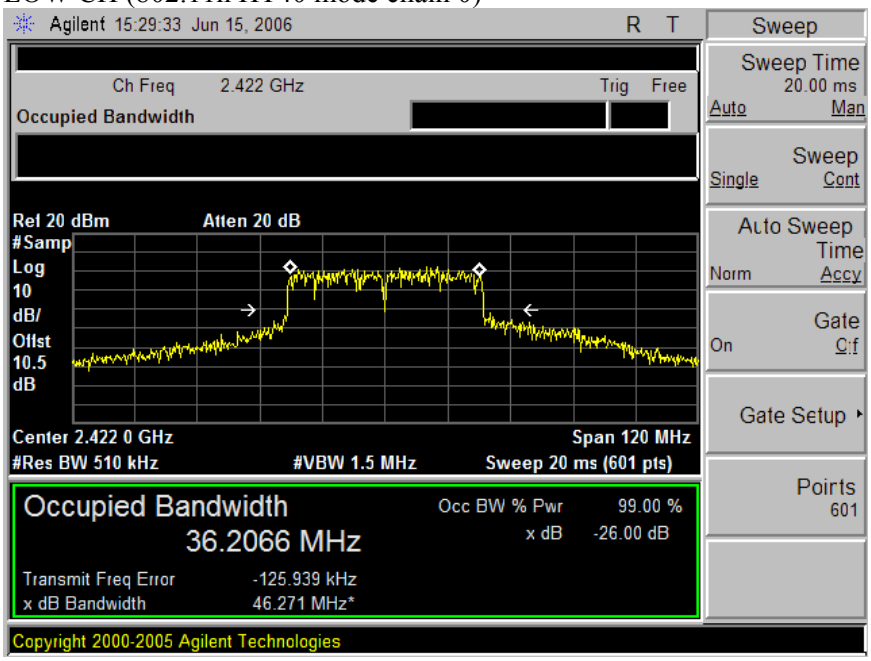


HIGH CH (802.11n HT20 mode chain 2)

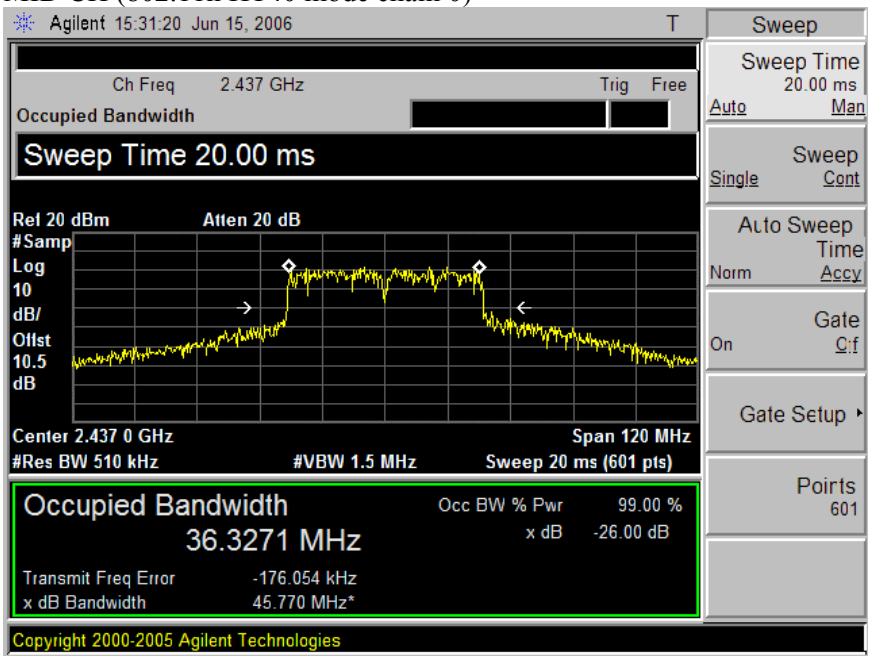


(802.11 HT40 MODE CHAIN 0)

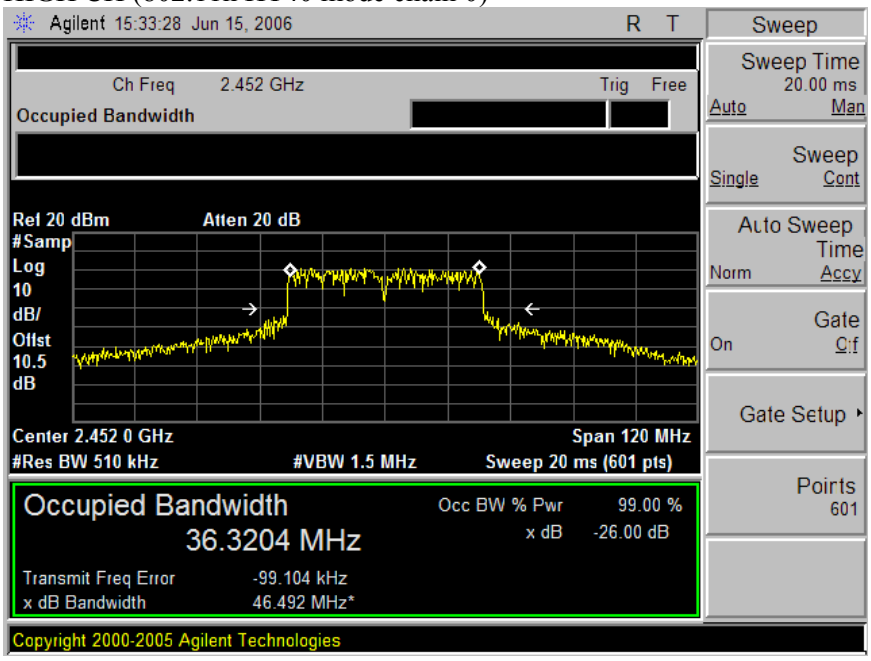
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

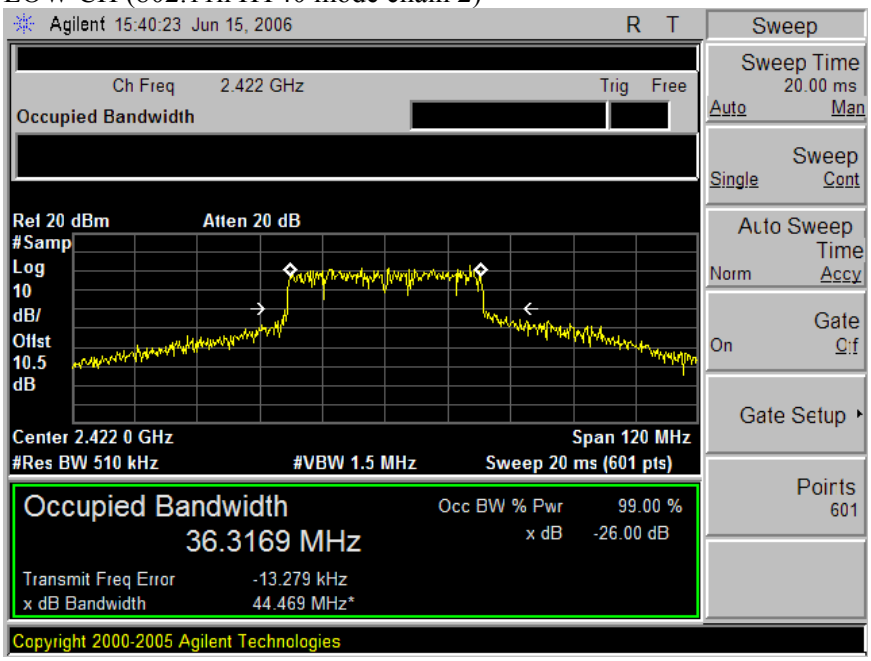


HIGH CH (802.11n HT40 mode chain 0)

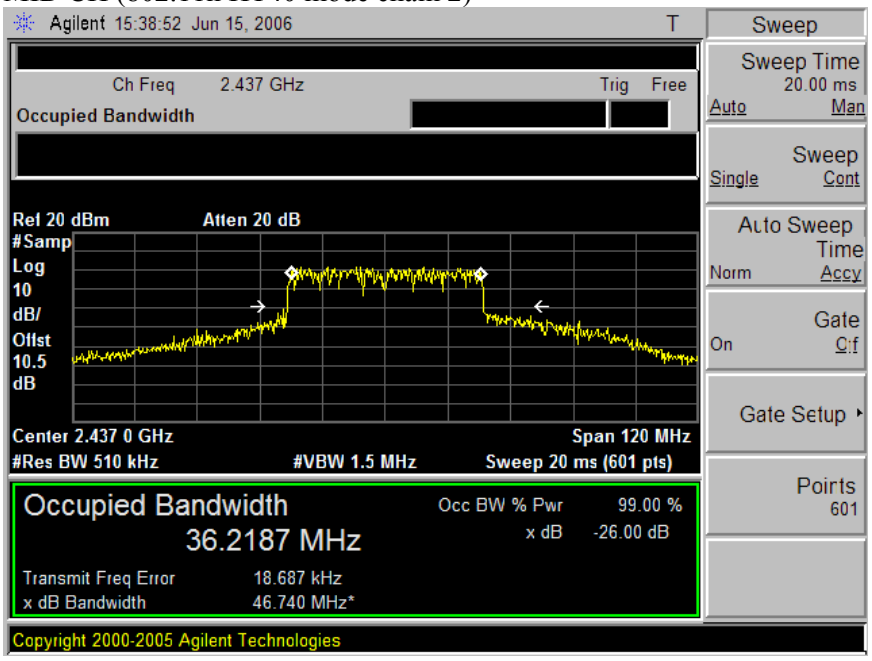


(802.11 HT40 MODE CHAIN 2)

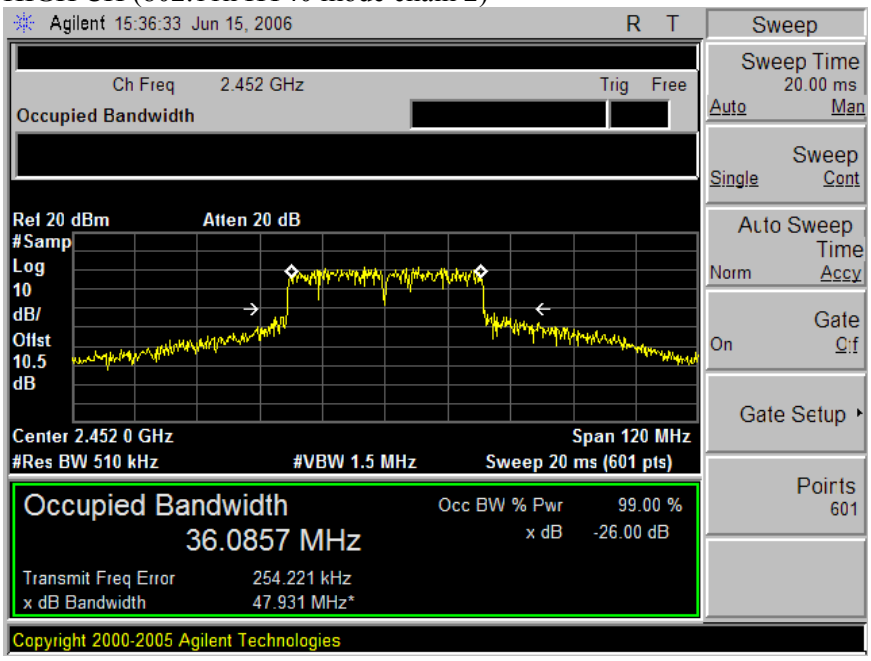
LOW CH (802.11n HT40 mode chain 2)



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. 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.

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

RESULTS

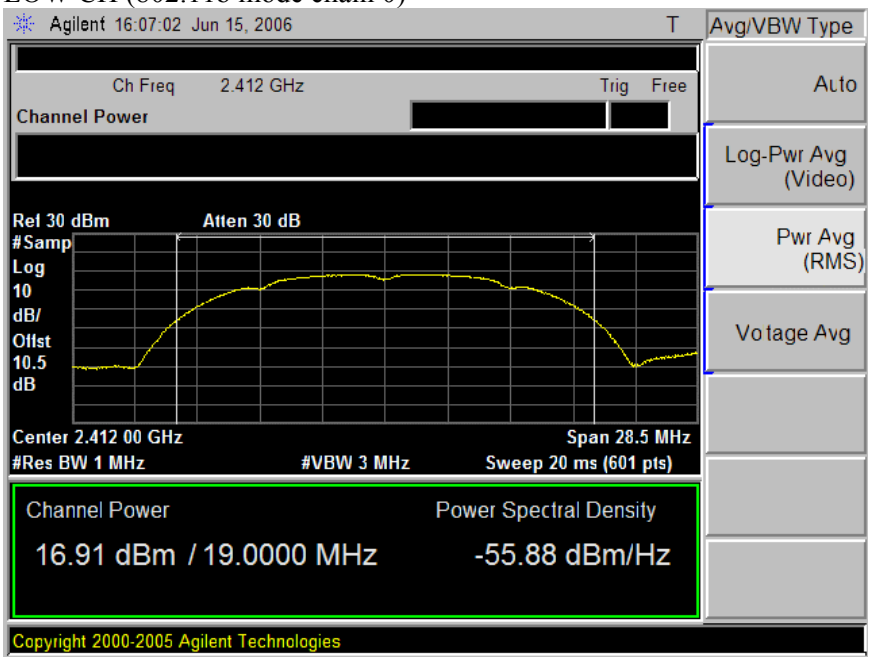
The maximum antenna gain is 3.62dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm. In the legacy mode, the effective antenna gain is 3.62 + 10*Log(2) = 6.63 dBi.

No non-compliance noted:

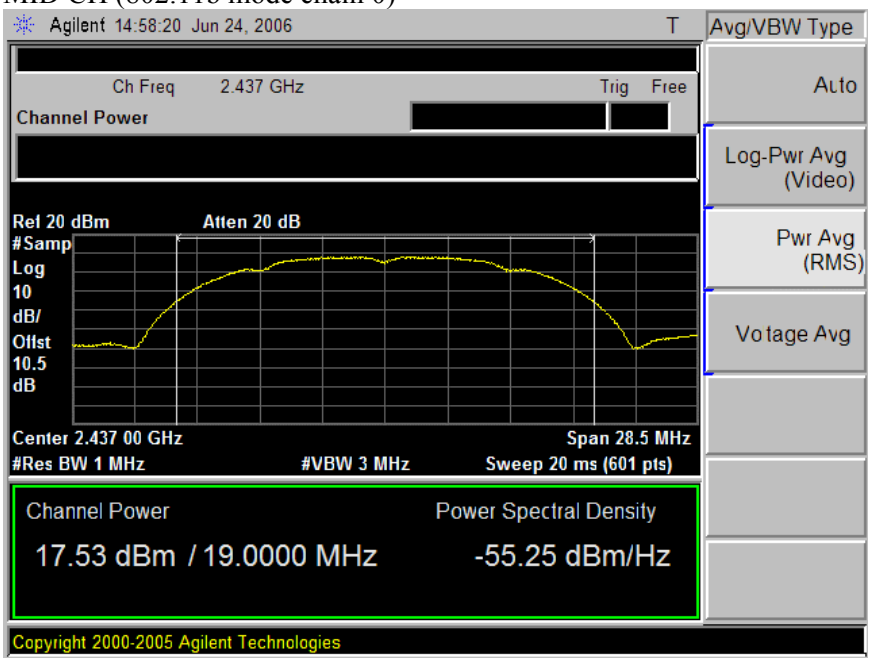
Mode Channel	Frequency (MHz)	Max Power Chain 0 (dBm)	Max Power Chain 2 (dBm)	Max Power Total (dBm)	Limit (dBm)	Margin (dB)
802.11b Mode						
Low	2412	16.91	16.95	19.94	29.4	-9.43
Middle	2437	17.53	17.72	20.64	29.4	-8.73
High	2462	17.19	17.56	20.39	29.4	-8.98
802.11g Mode						
Low	2412	15.36	15.25	18.32	29.4	-11.05
Middle	2437	20.37	20.86	23.63	29.4	-5.74
High	2462	14.05	14.46	17.27	29.4	-12.10
802.11n HT20 Mode						
Low	2412	14.80	15.30	18.07	30.0	-11.93
Middle	2437	20.54	20.84	23.70	30.0	-6.30
High	2462	13.09	13.21	16.16	30.0	-13.84
802.11n HT40 Mode						
Low	2422	12.42	12.78	15.61	30.0	-14.39
Middle	2437	18.75	18.83	21.80	30.0	-8.20
High	2452	10.55	10.80	13.69	30.0	-16.31

(802.11b MODE CHAIN 0)

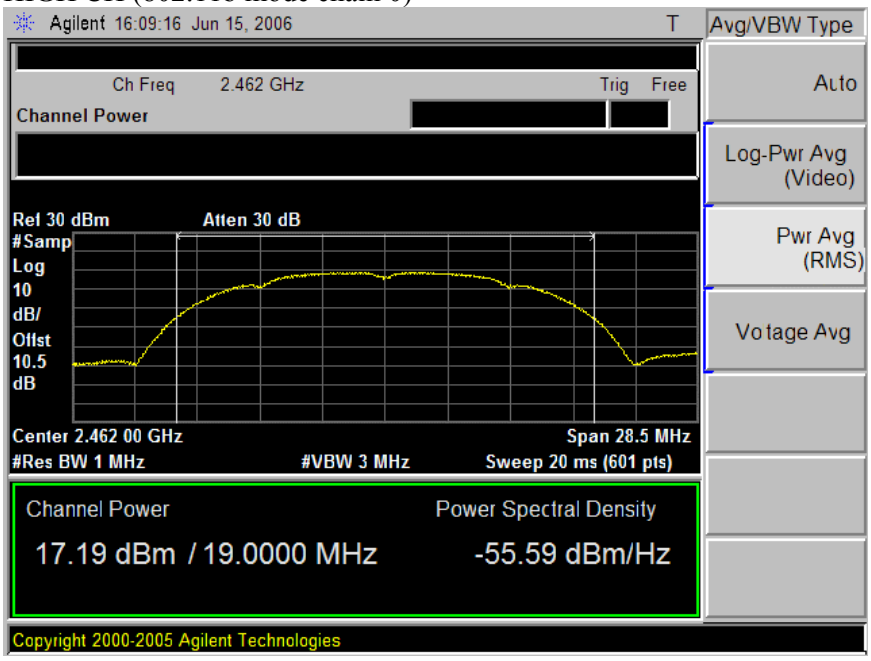
LOW CH (802.11b mode chain 0)



MID CH (802.11b mode chain 0)

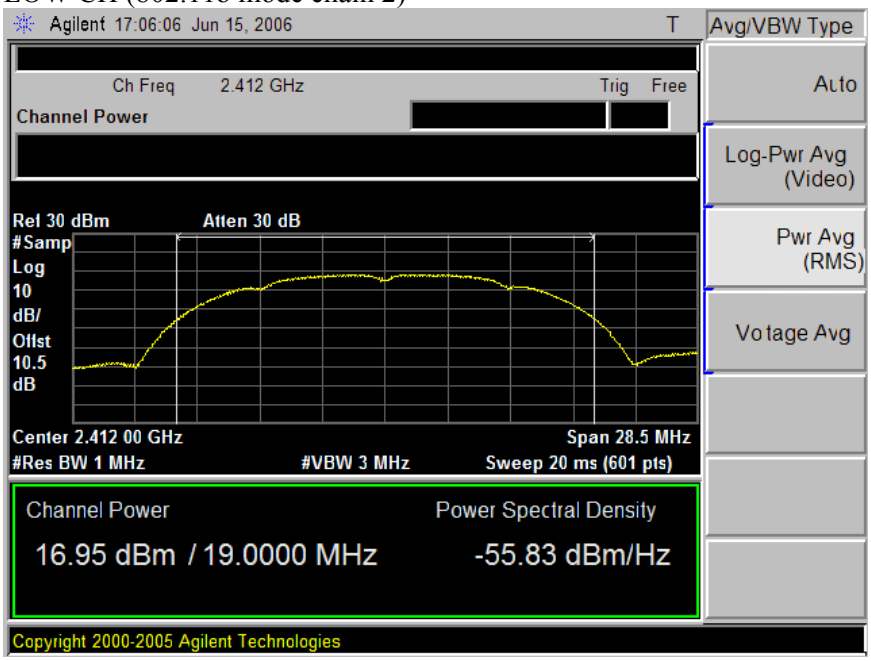


HIGH CH (802.11b mode chain 0)

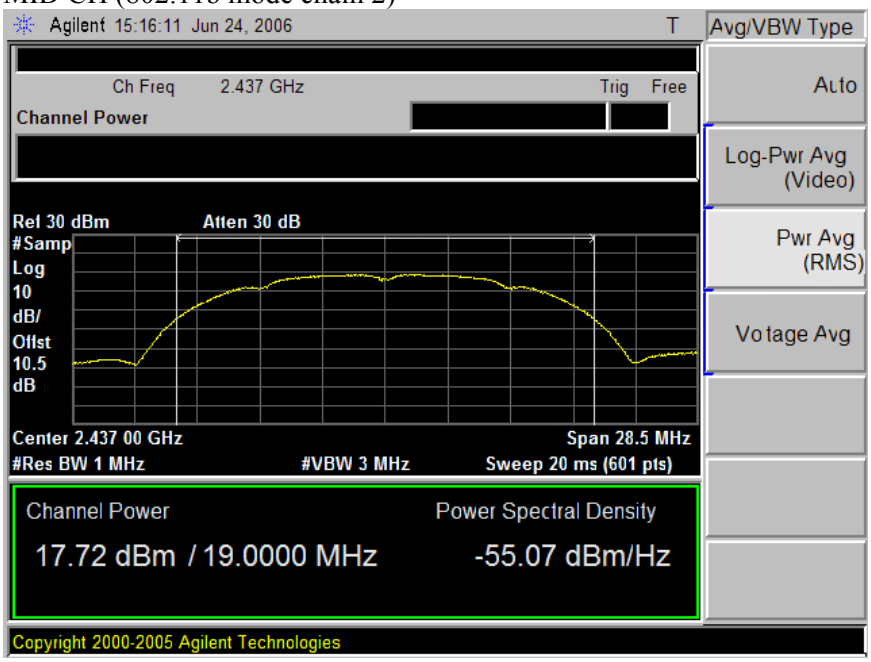


(802.11b MODE CHAIN 2)

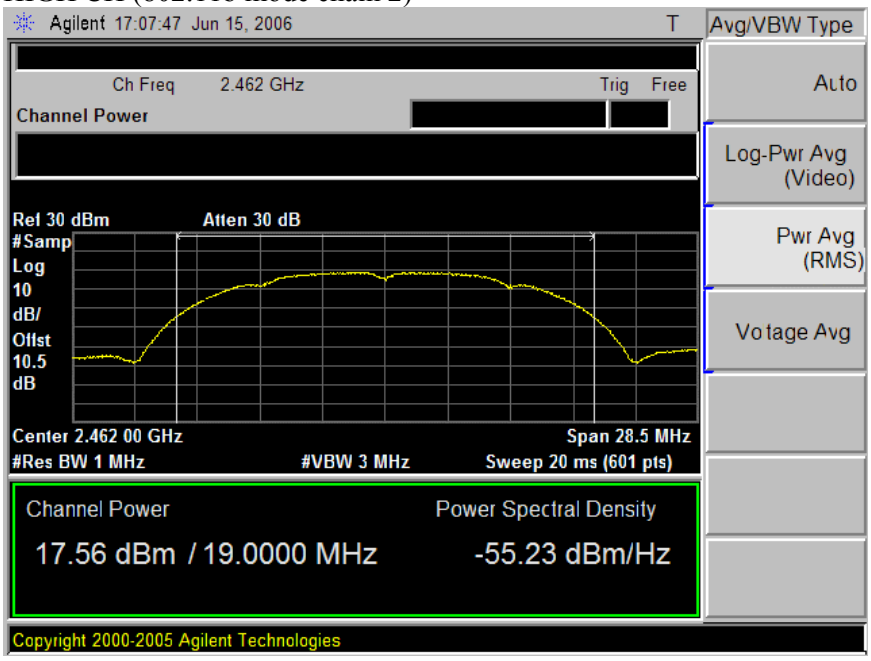
LOW CH (802.11b mode chain 2)



MID CH (802.11b mode chain 2)

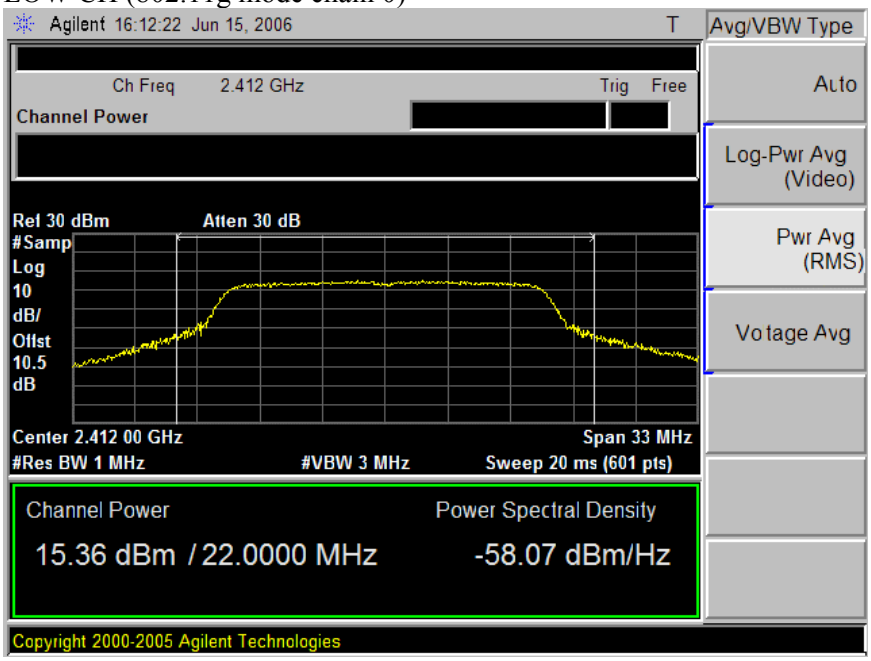


HIGH CH (802.11b mode chain 2)

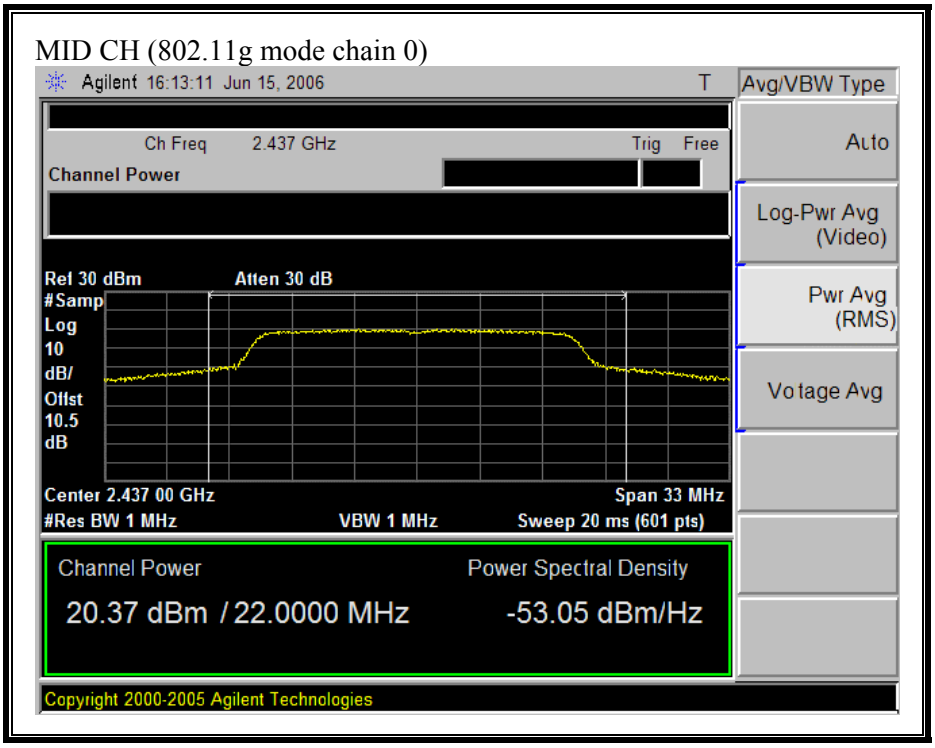


(802.11g MODE CHAIN 0)

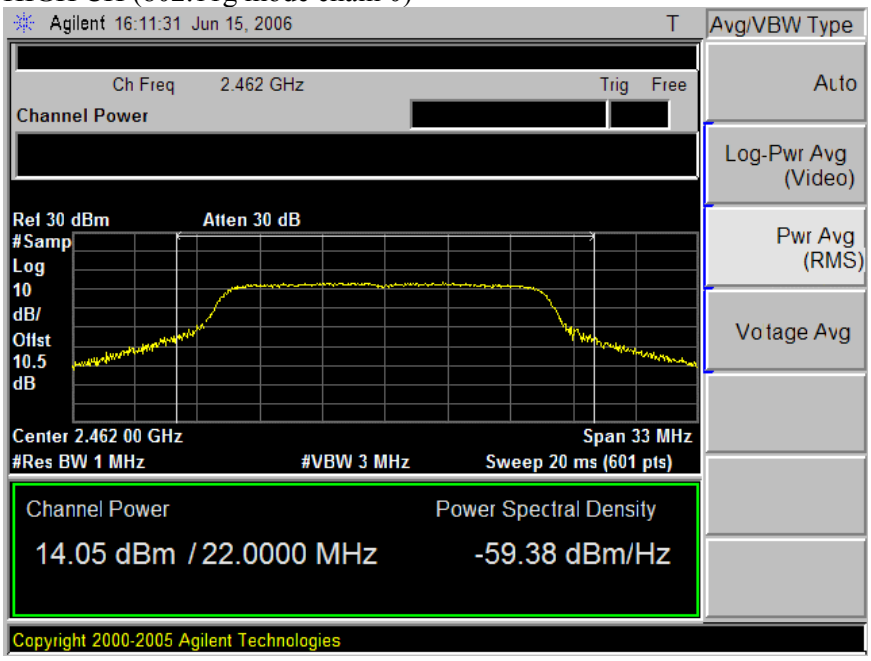
LOW CH (802.11g mode chain 0)



MID CH (802.11g mode chain 0)

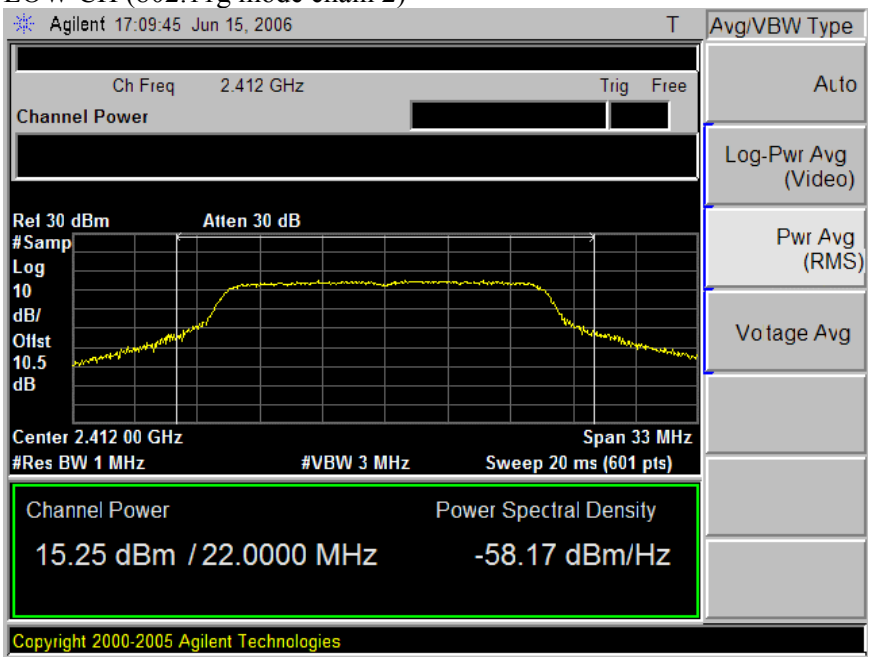


HIGH CH (802.11g mode chain 0)

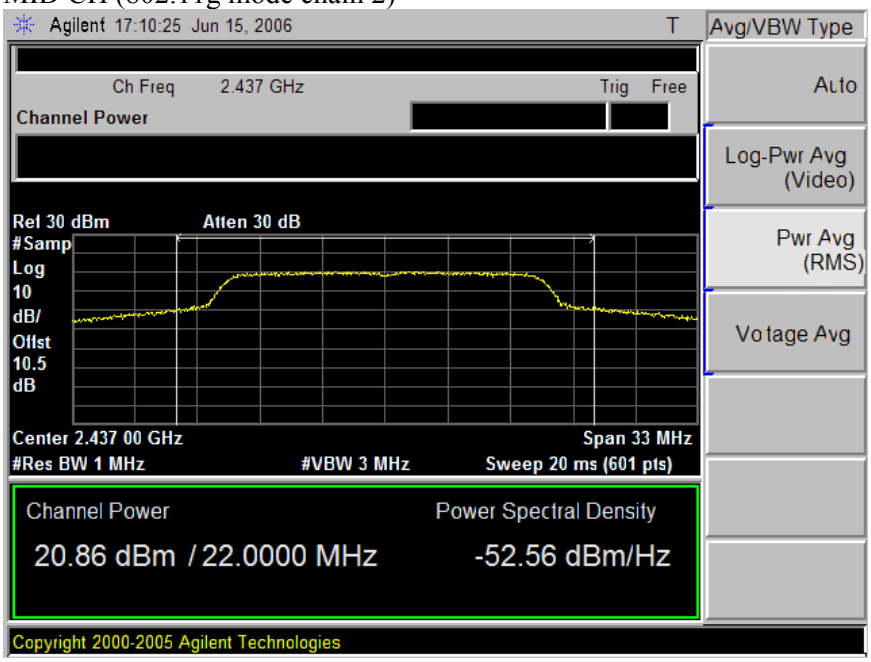


(802.11g MODE CHAIN 2)

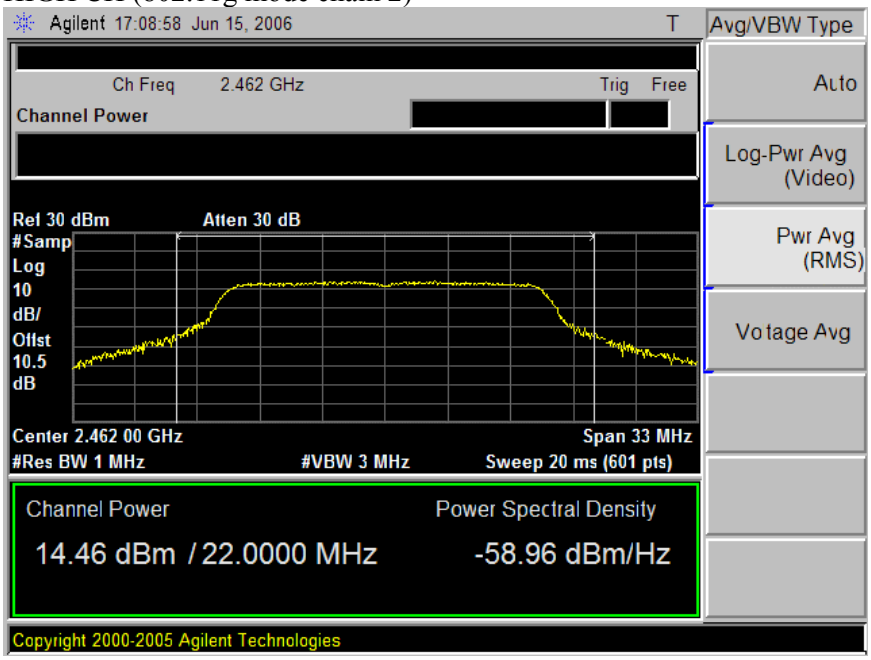
LOW CH (802.11g mode chain 2)



MID CH (802.11g mode chain 2)

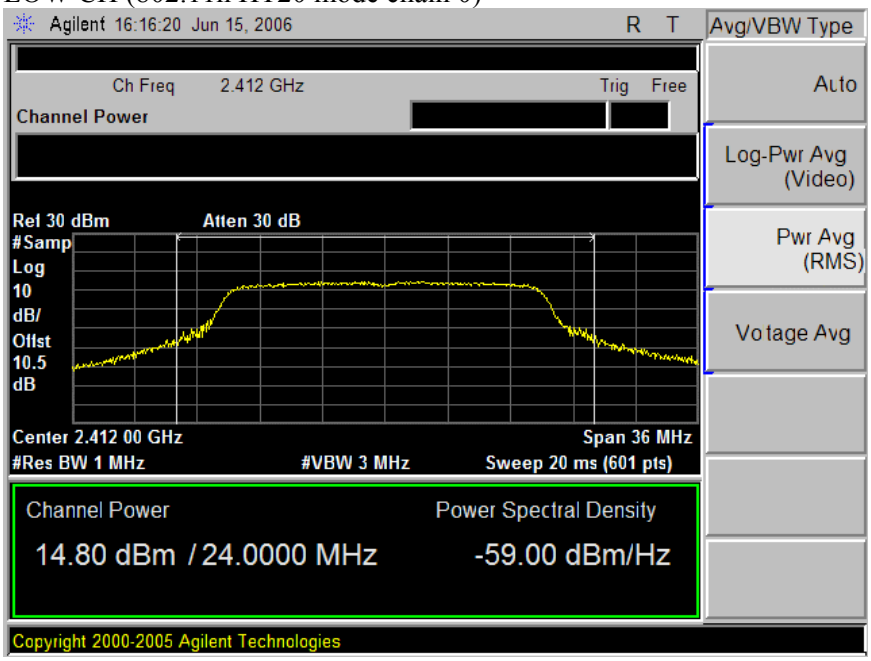


HIGH CH (802.11g mode chain 2)

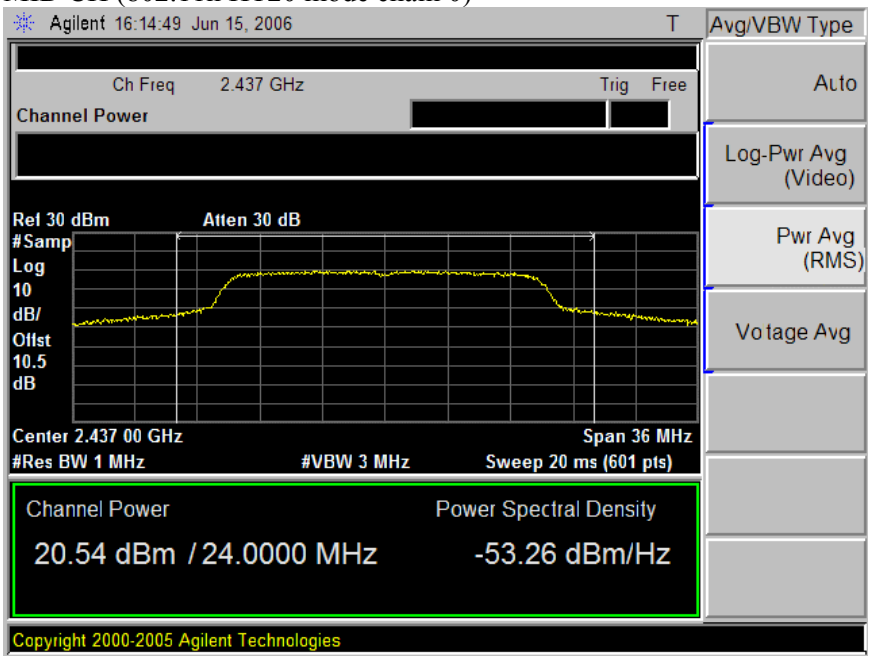


(802.11n HT20 MODE CHAIN 0)

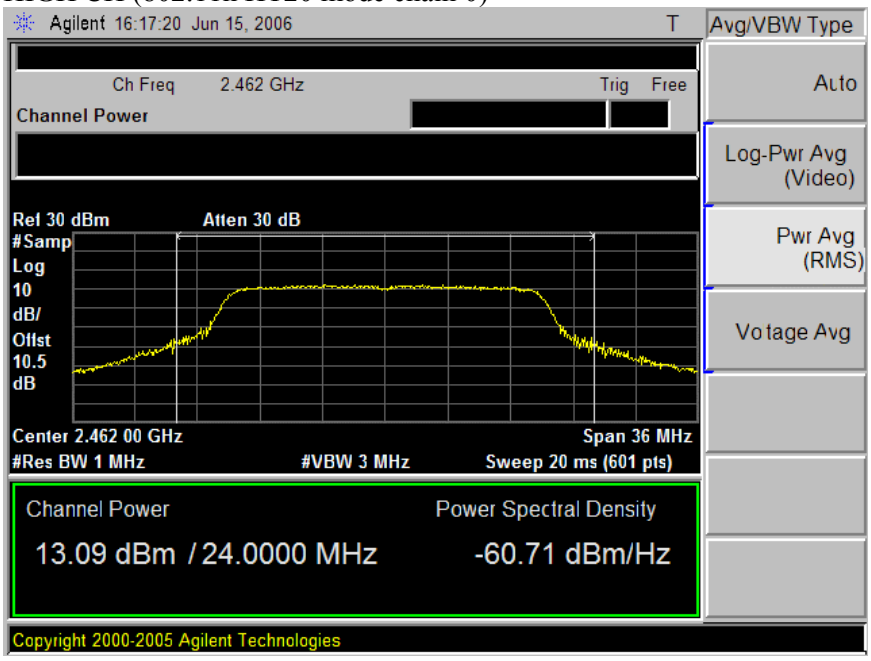
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

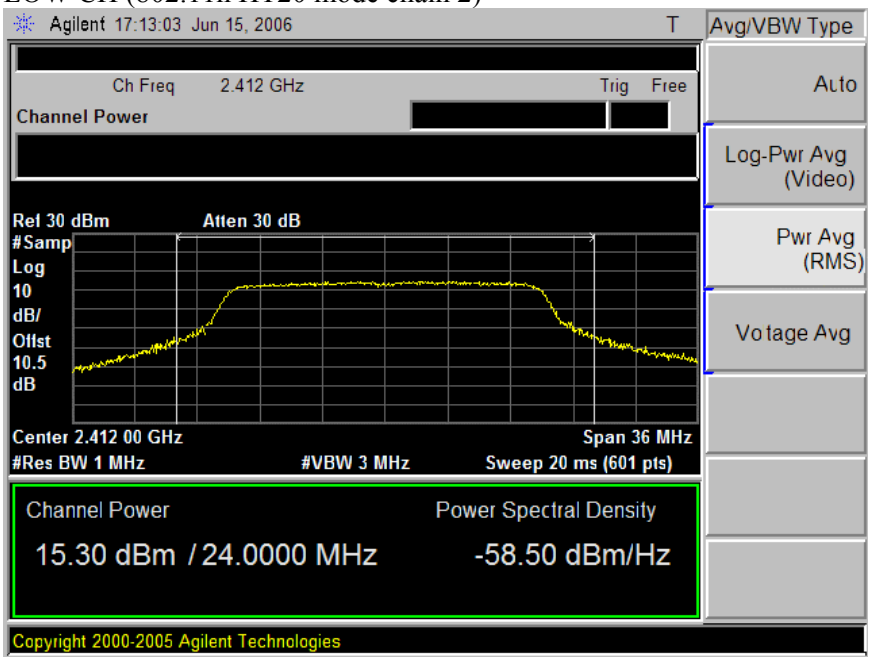


HIGH CH (802.11n HT20 mode chain 0)

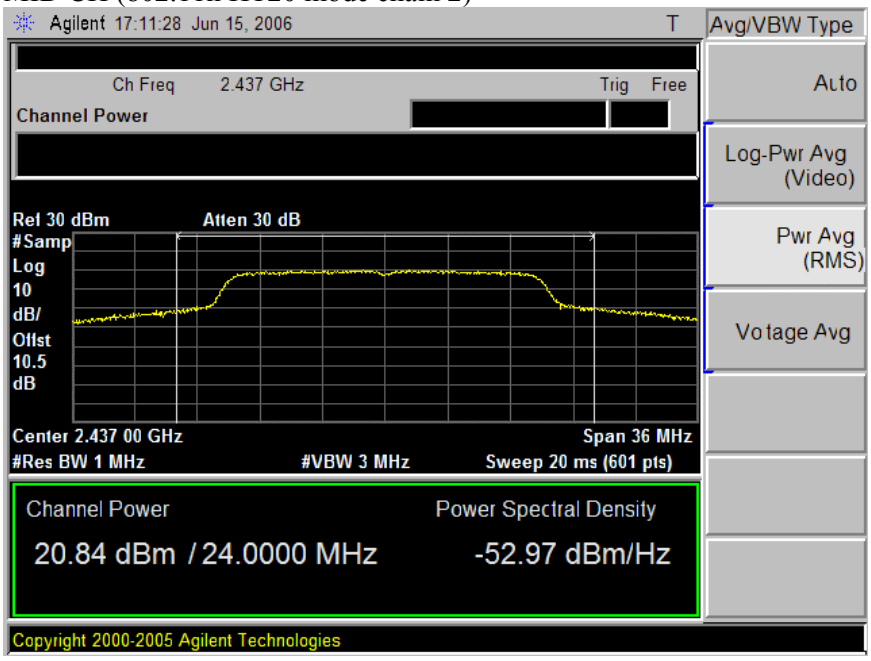


(802.11 HT20 MODE CHAIN 2)

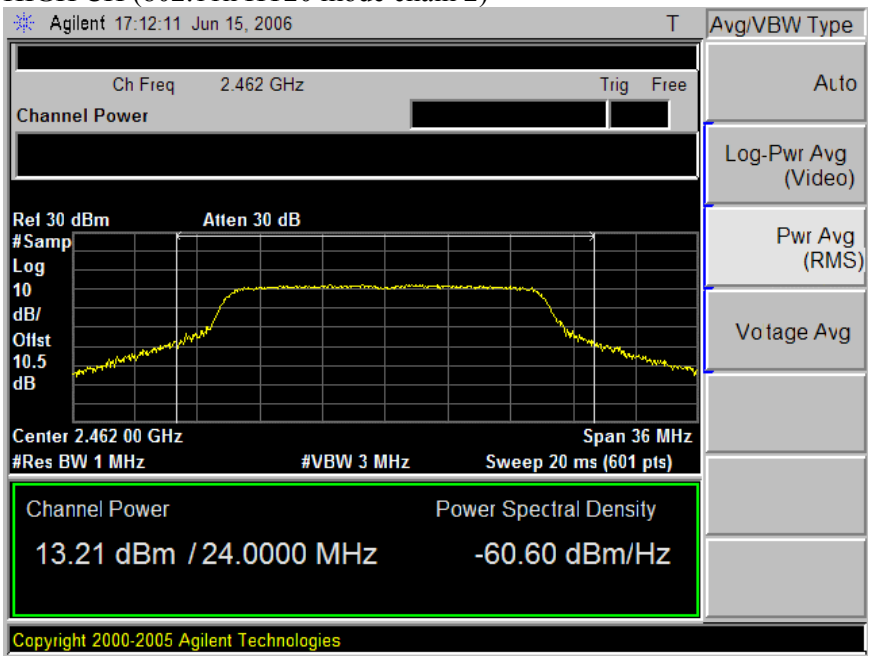
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

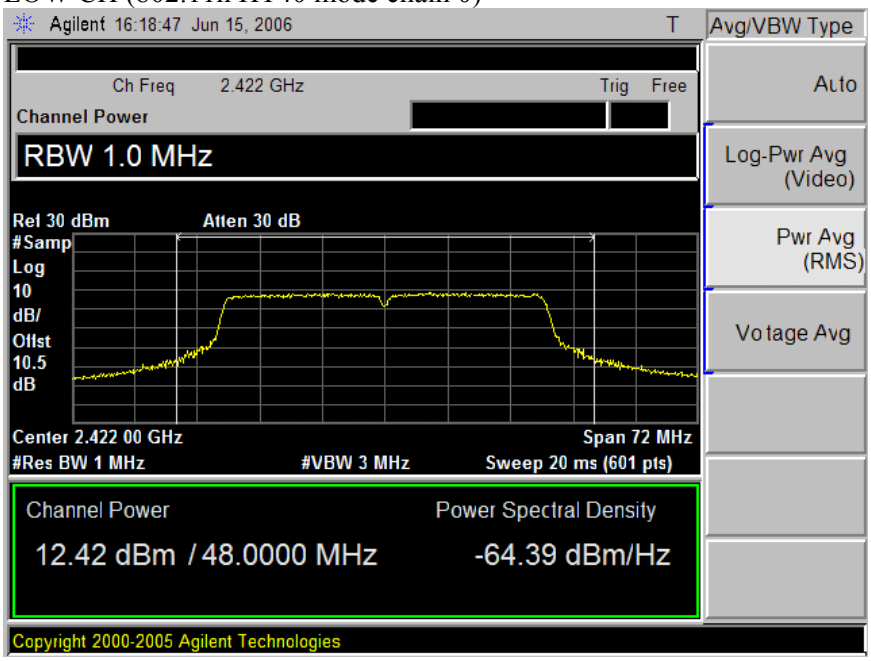


HIGH CH (802.11n HT20 mode chain 2)

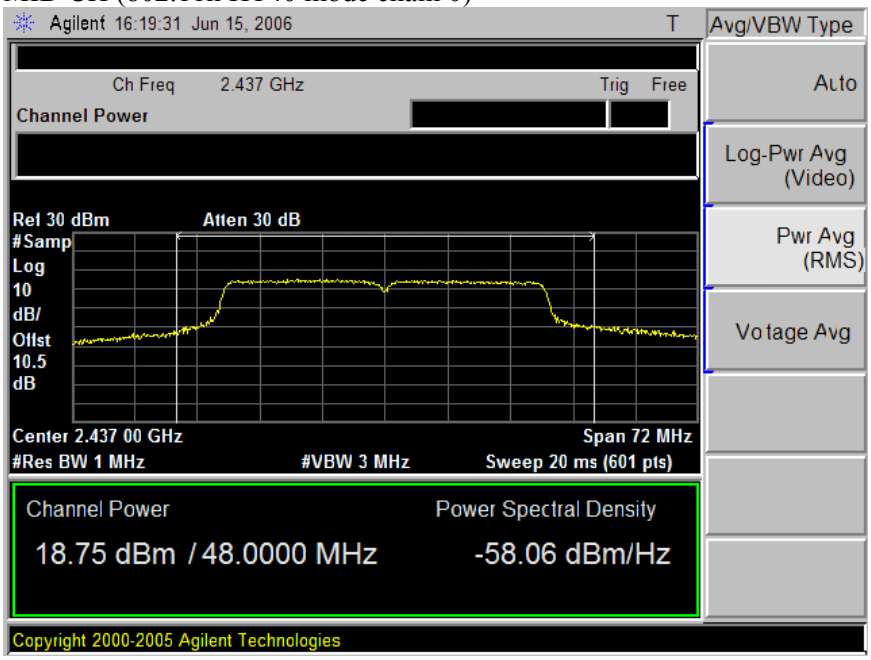


(802.11 HT40 MODE CHAIN 0)

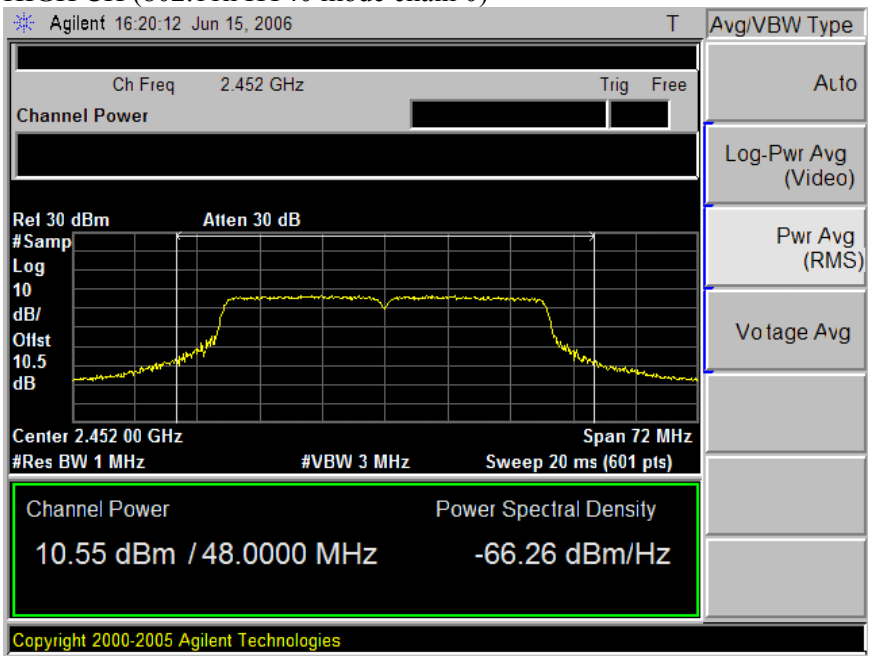
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

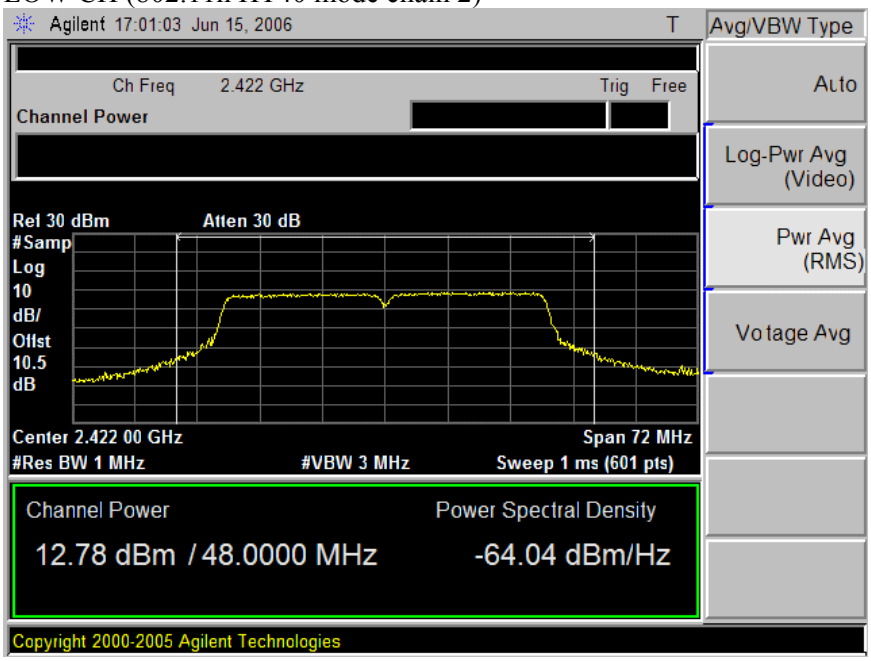


HIGH CH (802.11n HT40 mode chain 0)

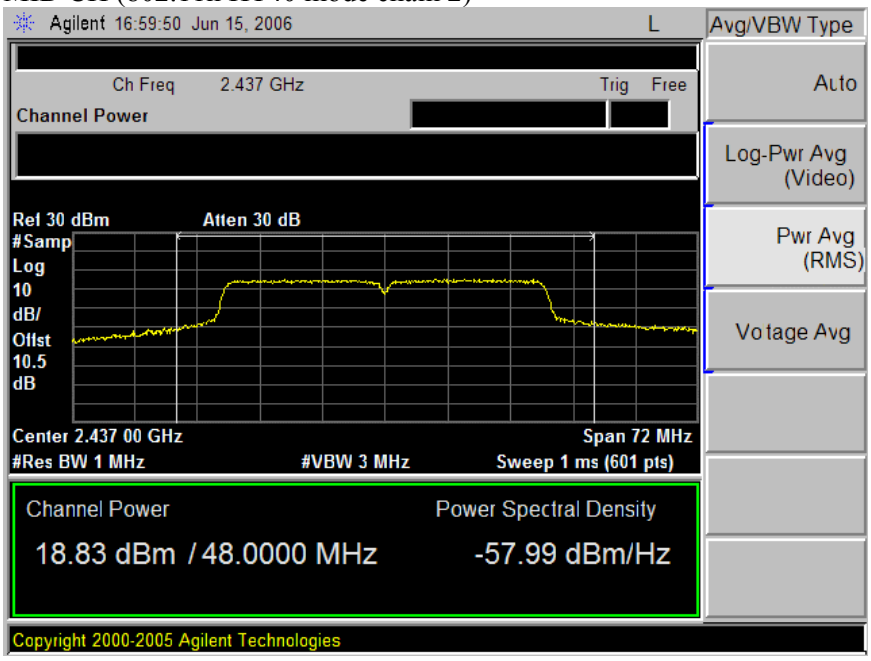


(802.11 HT40 MODE CHAIN 2)

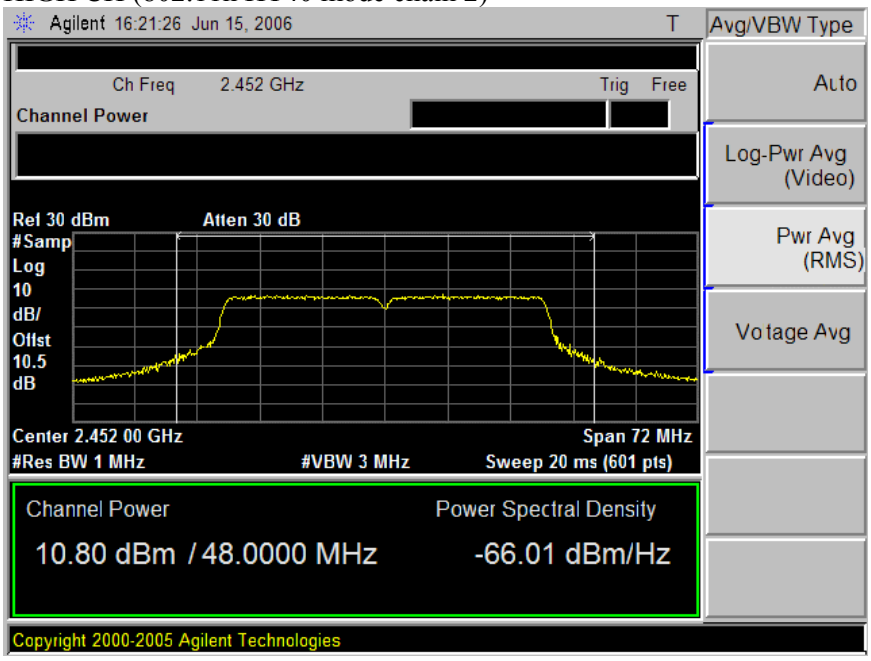
LOW CH (802.11n HT40 mode chain 2)



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 10.5 dB (including 10 dB pad and 0.5 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	17.1	16.9	20.0
Middle	2437	17.3	17.7	20.5
High	2462	17.4	17.6	20.5
802.11g Mode				
Low	2412	15.2	15.1	18.1
Middle	2437	20.3	20.7	23.5
High	2462	13.8	14.2	17.0
802.11n HT20 Mode				
Low	2412	15.1	15.1	18.1
Middle	2437	20.4	20.6	23.5
High	2462	12.5	12.8	15.7
802.11n HT40 Mode				
Low	2422	12.0	12.2	15.1
Middle	2437	18.6	18.6	21.6
High	2452	10.3	10.3	13.3

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 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^ (Chain 0 PPSD / 10) + 10^ (Chain 2 PPSD / 10))

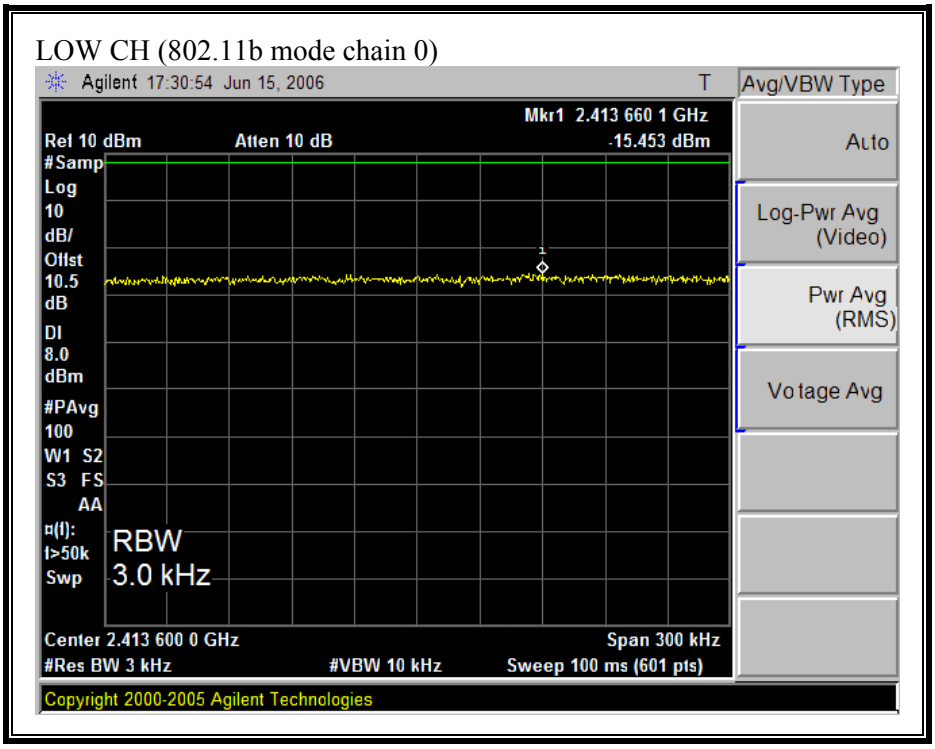
RESULTS

No non-compliance noted:

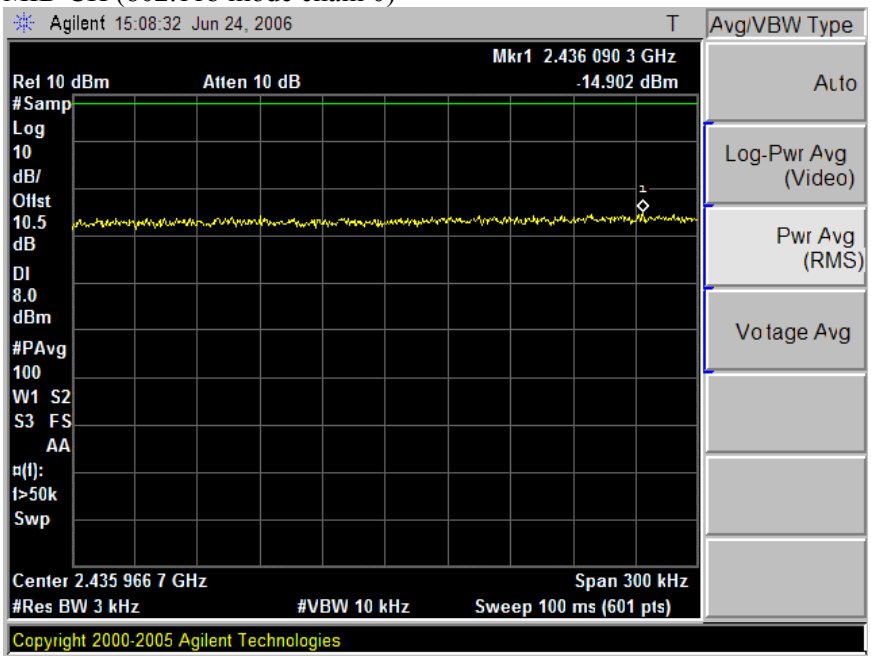
Mode Channel	Frequency (MHz)	PPSD Chain 0 (dBm)	PPSD Chain 2 (dBm)	PPSD Total (dBm)	Limit (dBm)	Margin (dB)
802.11b Mode						
Low	2412	-15.45	-15.72	-12.57	8	-20.57
Middle	2437	-14.90	-15.43	-12.15	8	-20.15
High	2462	-15.79	-15.86	-12.81	8	-20.81
802.11g Mode						
Low	2412	-18.89	-18.36	-15.61	8	-23.61
Middle	2437	-13.47	-13.12	-10.28	8	-18.28
High	2462	-20.39	-19.17	-16.73	8	-24.73
802.11n HT20 Mode						
Low	2412	-19.13	-18.62	-15.86	8	-23.86
Middle	2437	-13.65	-13.42	-10.52	8	-18.52
High	2462	-21.81	-19.54	-17.52	8	-25.52
802.11n HT40 Mode						
Low	2422	-25.58	-25.55	-22.55	8	-30.55
Middle	2437	-19.39	-18.63	-15.98	8	-23.98
High	2452	-27.07	-27.05	-24.05	8	-32.05

(802.11b MODE CHAIN 0)

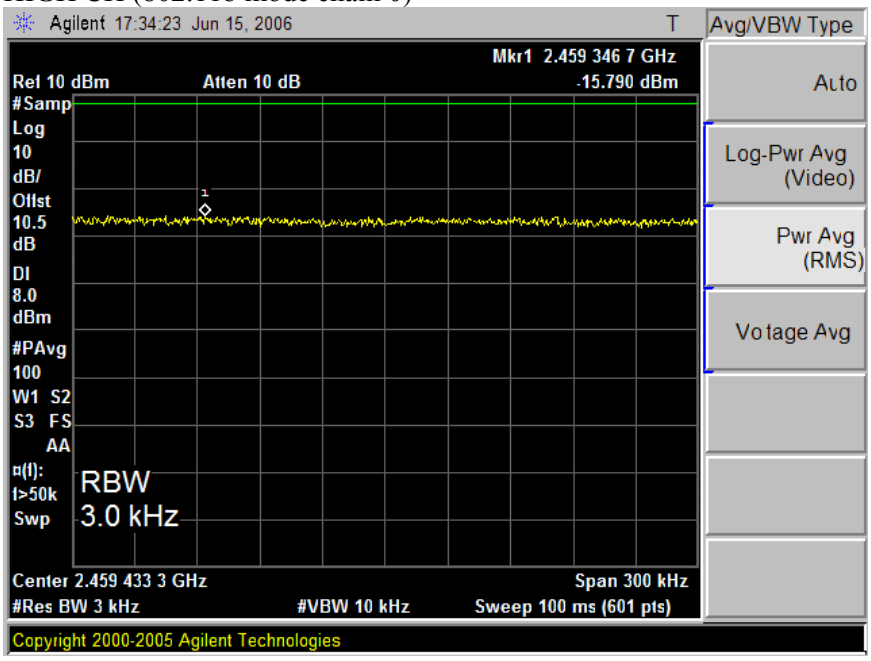
LOW CH (802.11b mode chain 0)



MID CH (802.11b mode chain 0)

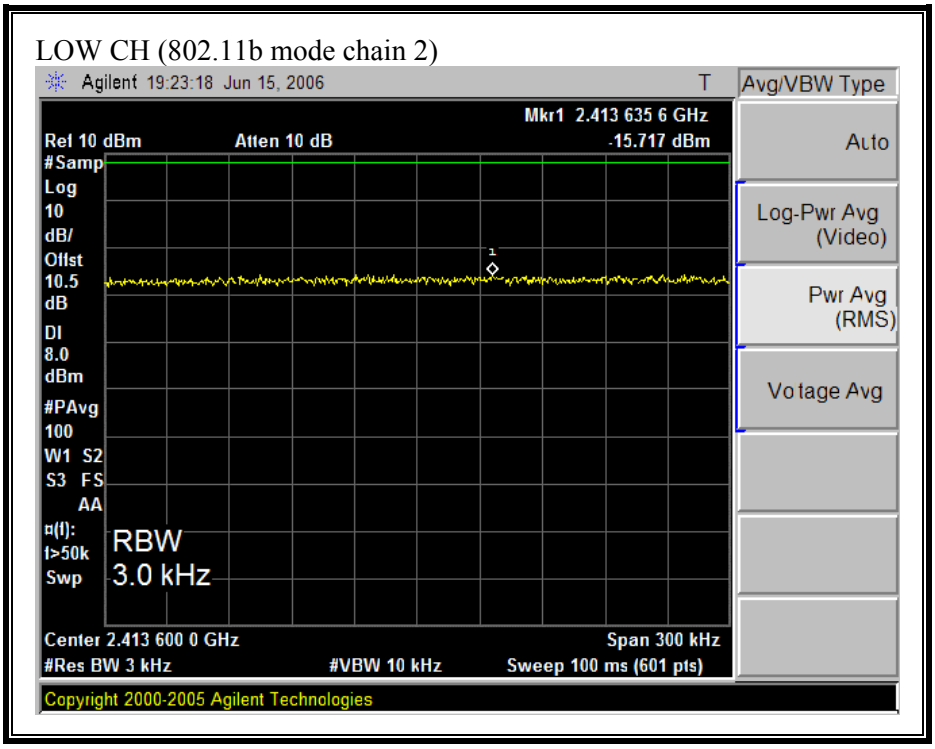


HIGH CH (802.11b mode chain 0)

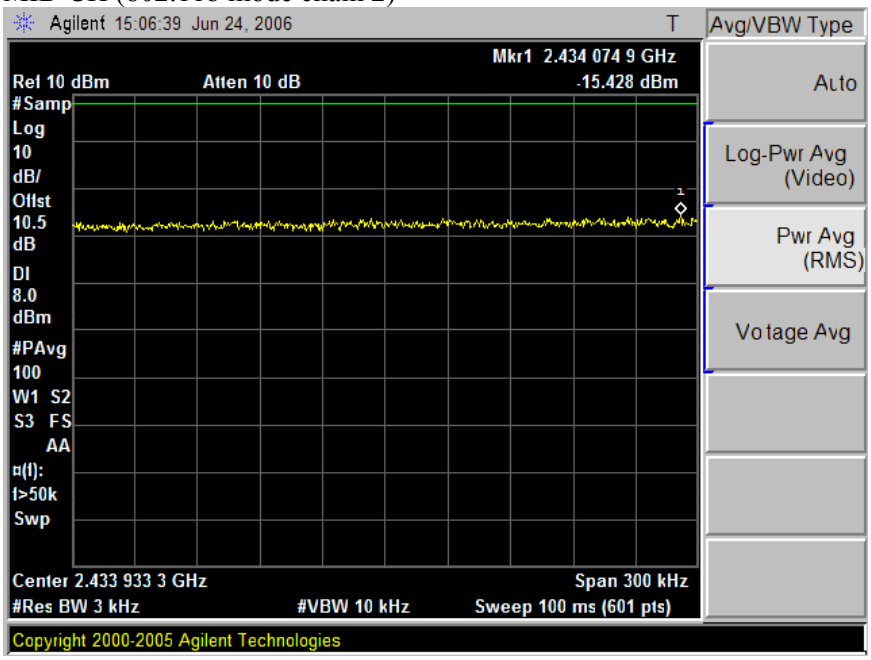


(802.11b MODE CHAIN 2)

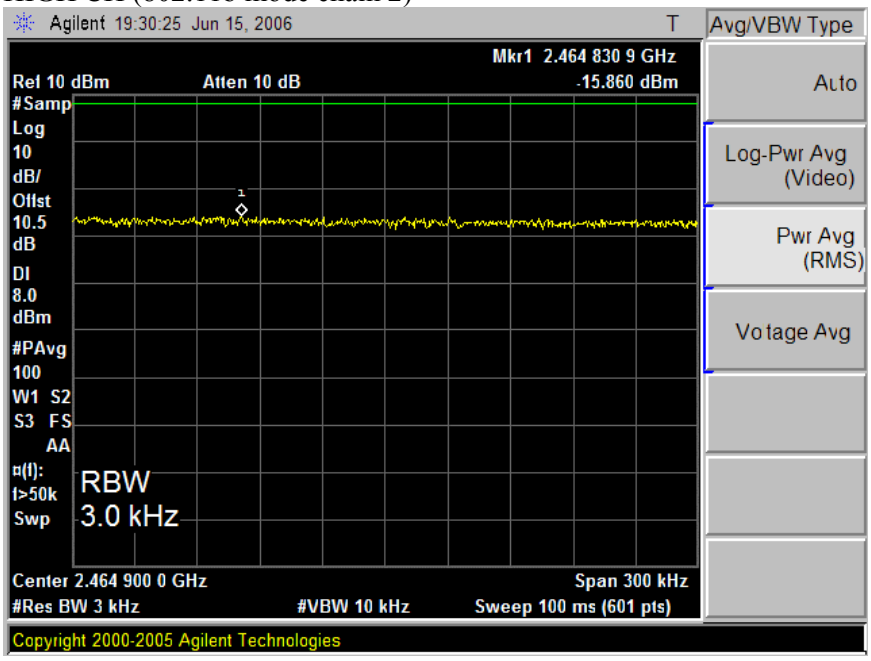
LOW CH (802.11b mode chain 2)



MID CH (802.11b mode chain 2)

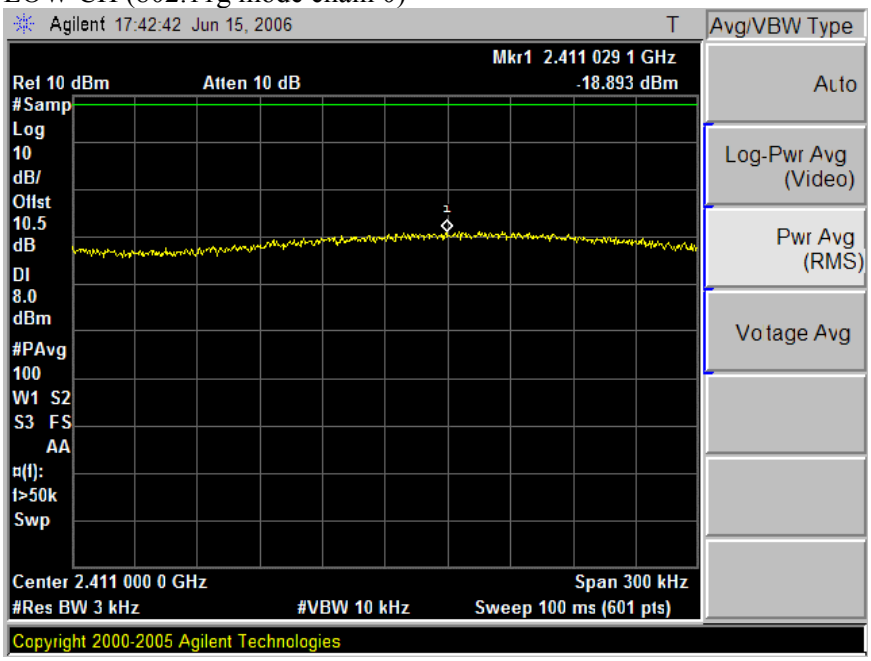


HIGH CH (802.11b mode chain 2)

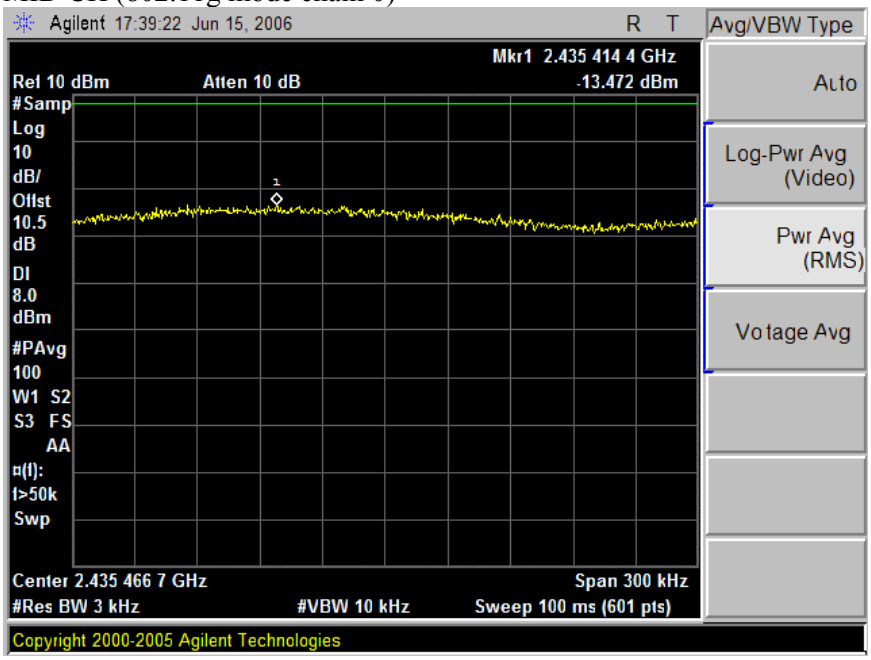


(802.11g MODE CHAIN 0)

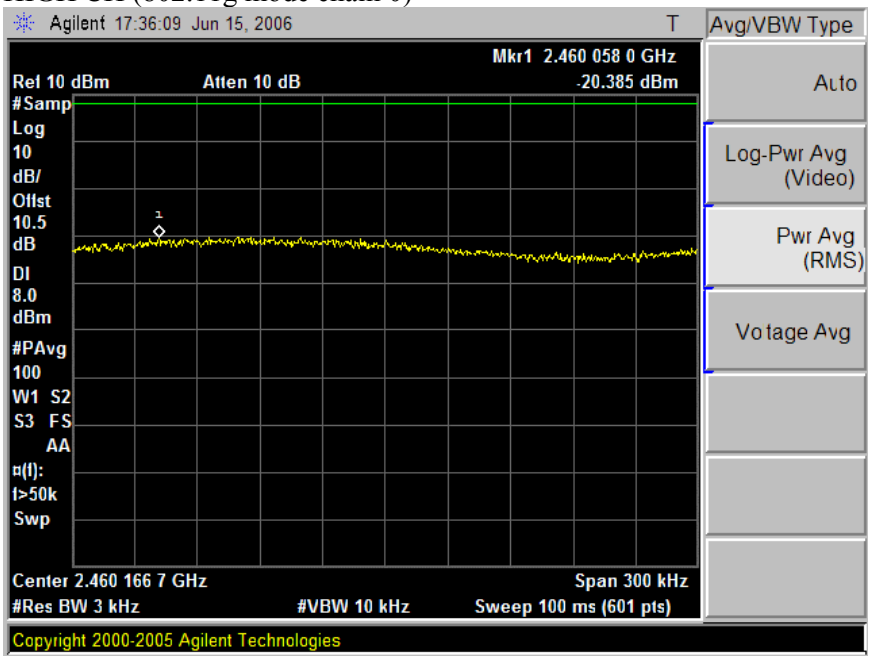
LOW CH (802.11g mode chain 0)



MID CH (802.11g mode chain 0)

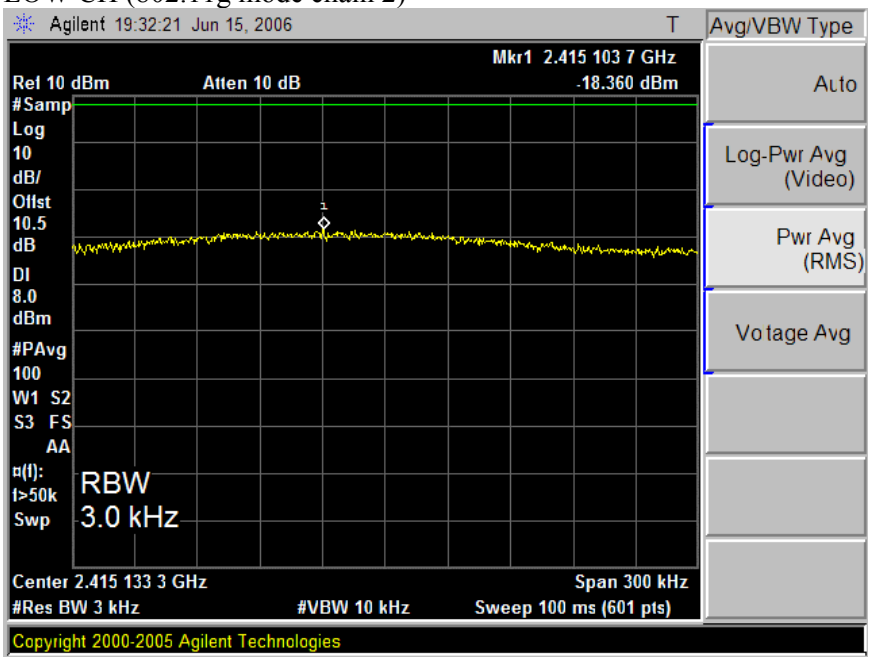


HIGH CH (802.11g mode chain 0)

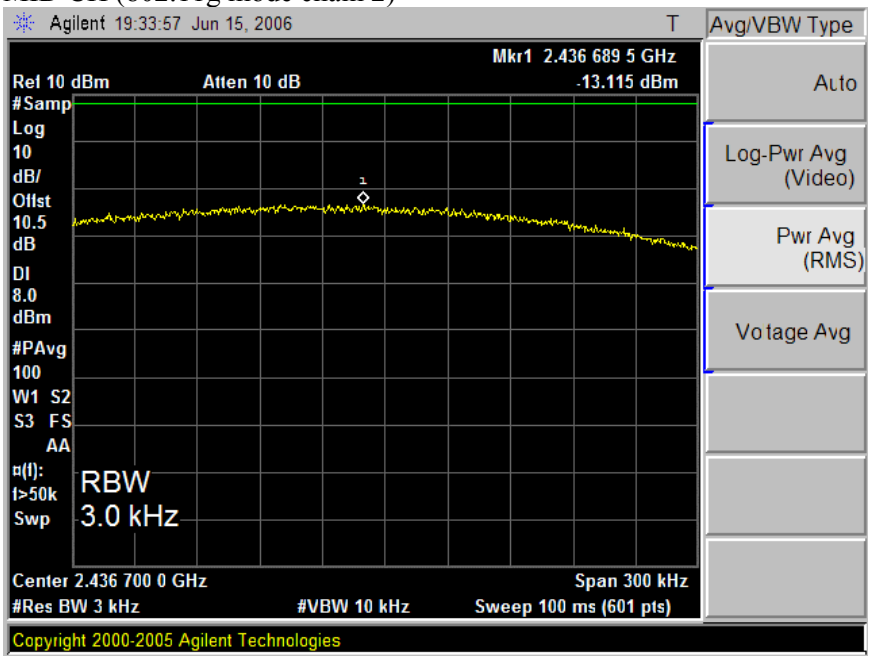


(802.11g MODE CHAIN 2)

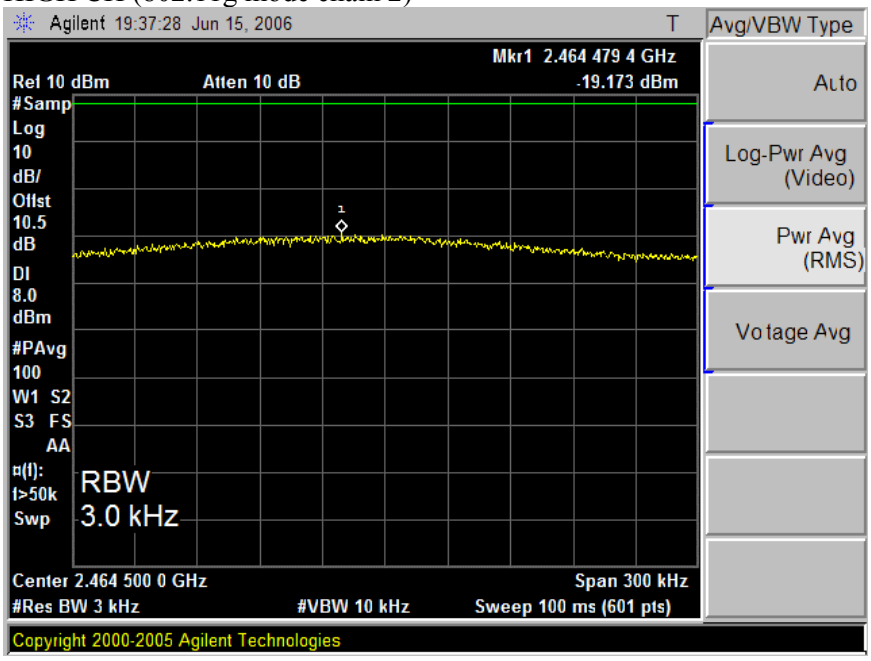
LOW CH (802.11g mode chain 2)



MID CH (802.11g mode chain 2)

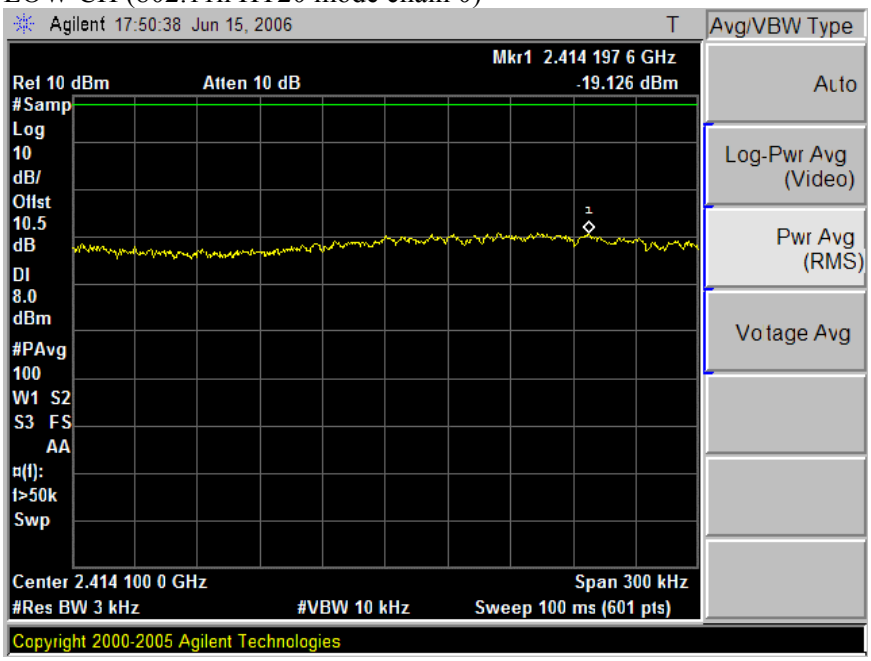


HIGH CH (802.11g mode chain 2)

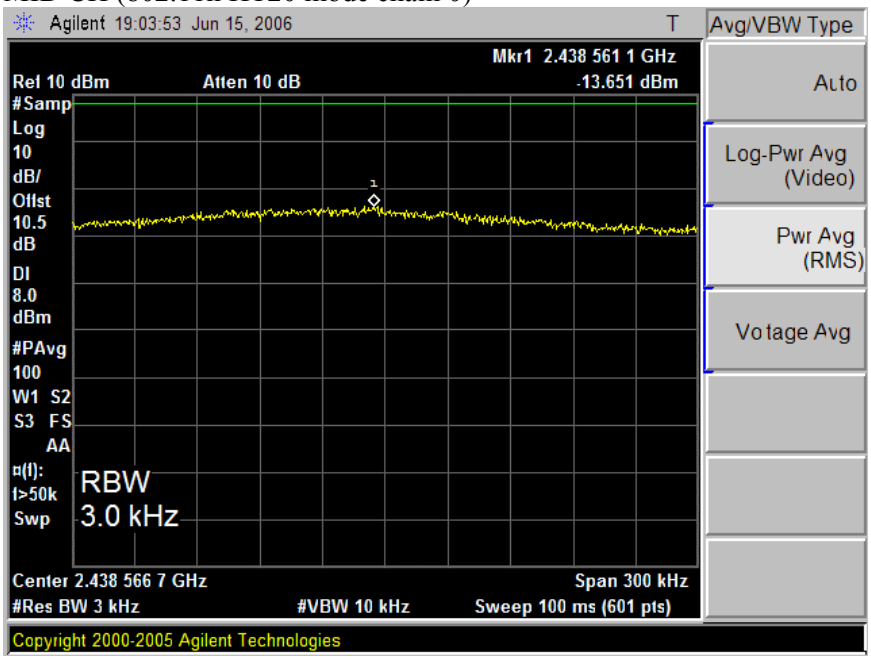


(802.11n HT20 MODE CHAIN 0)

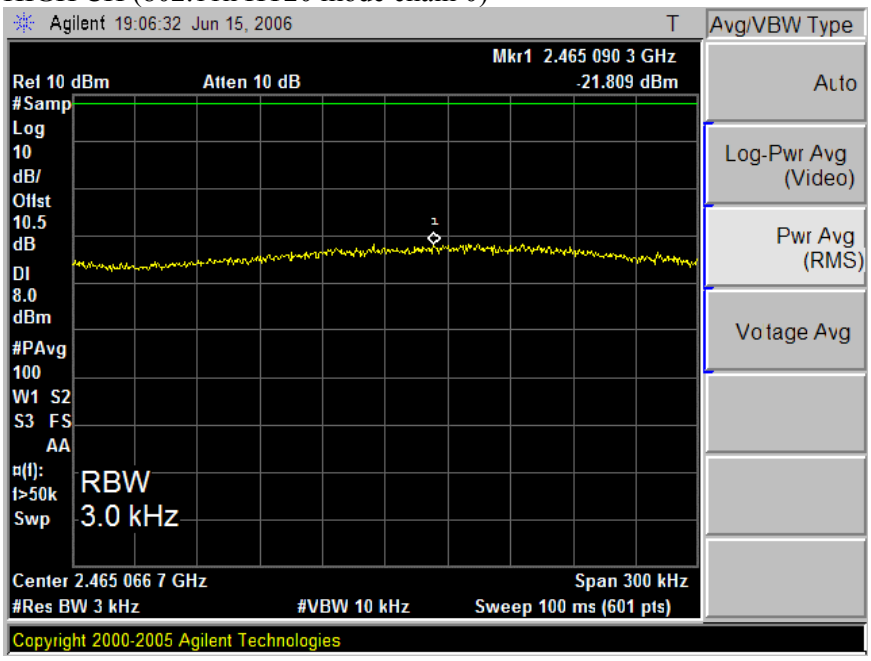
LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)

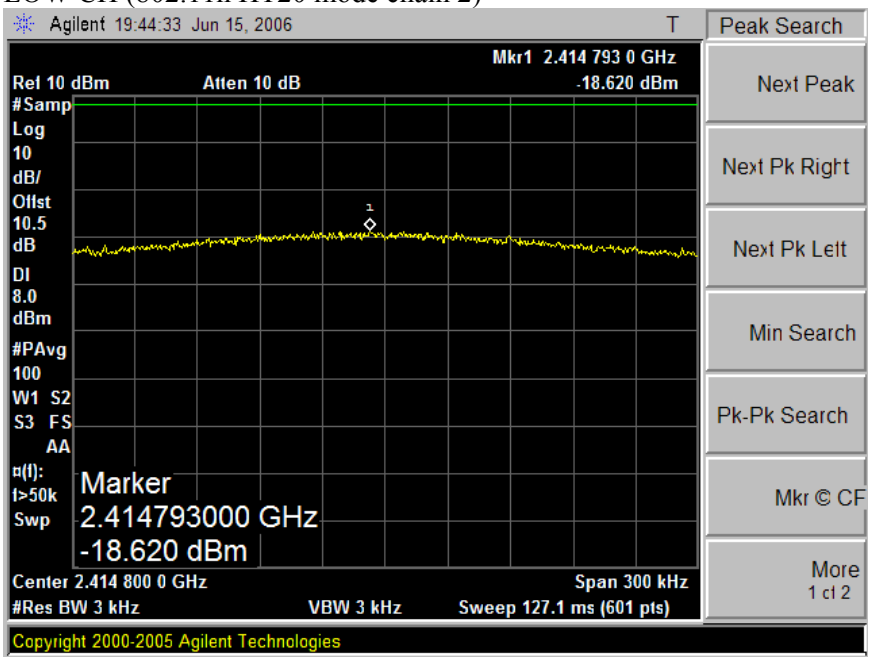


HIGH CH (802.11n HT20 mode chain 0)

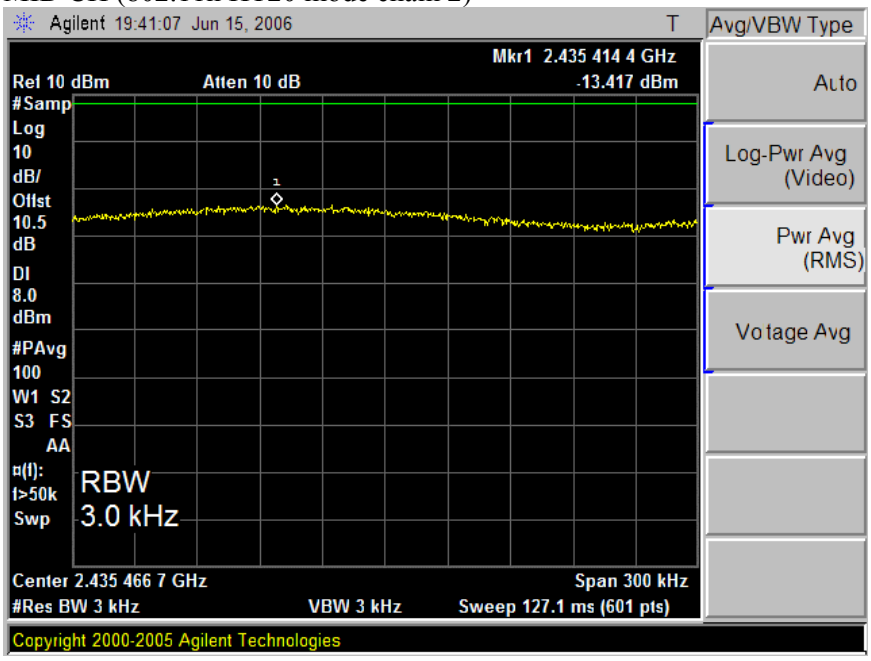


(802.11 HT20 MODE CHAIN 2)

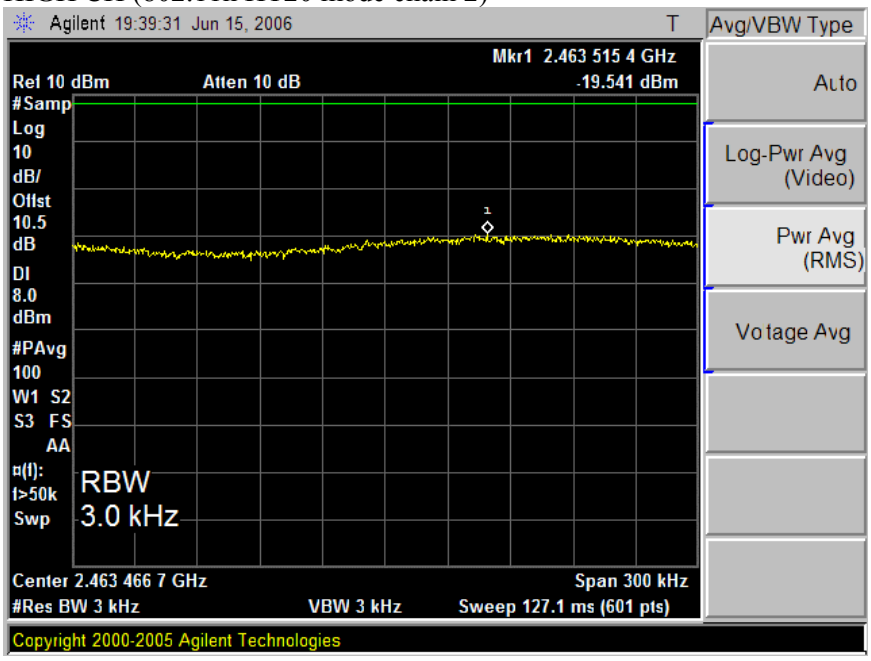
LOW CH (802.11n HT20 mode chain 2)



MID CH (802.11n HT20 mode chain 2)

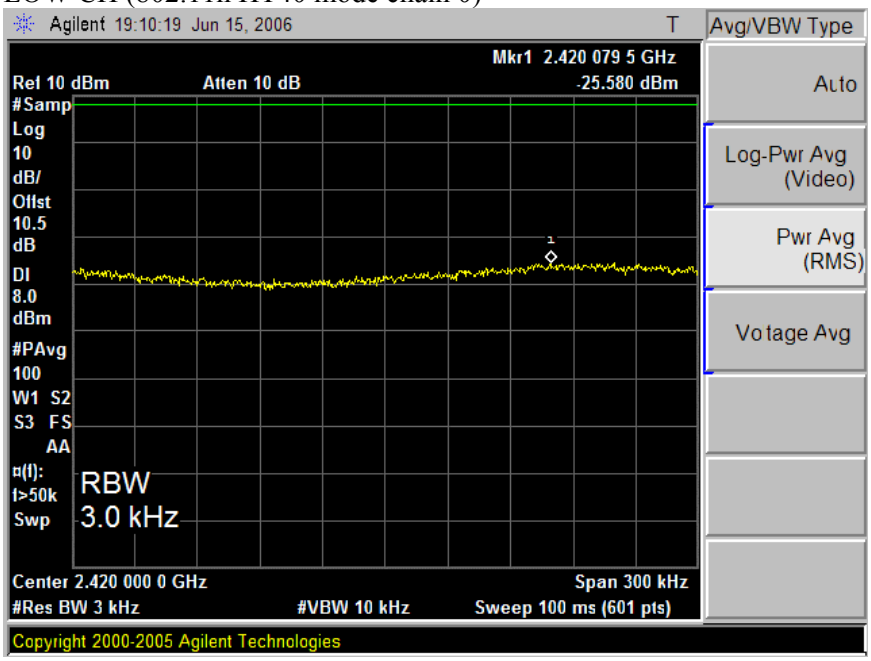


HIGH CH (802.11n HT20 mode chain 2)

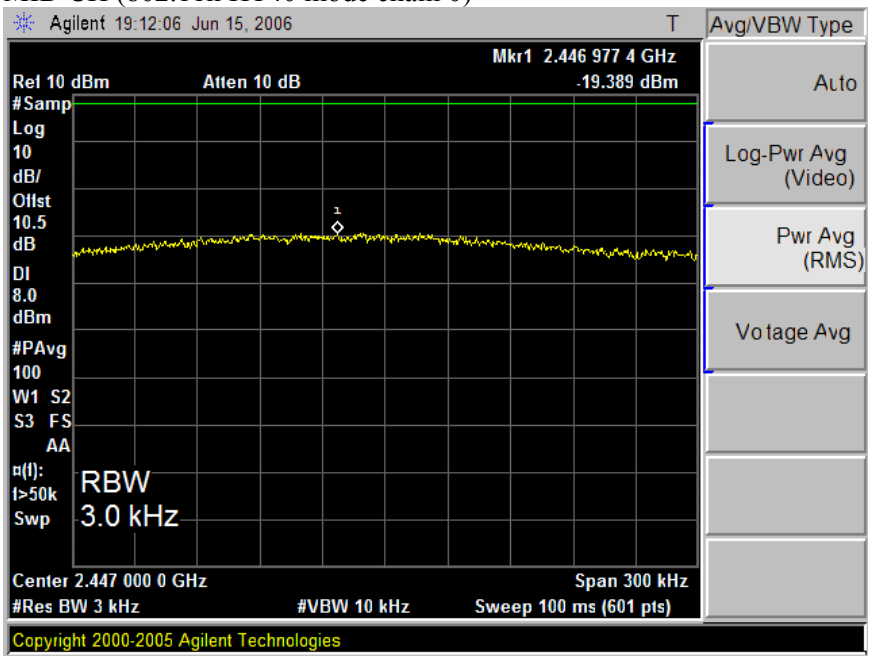


(802.11 HT40 MODE CHAIN 0)

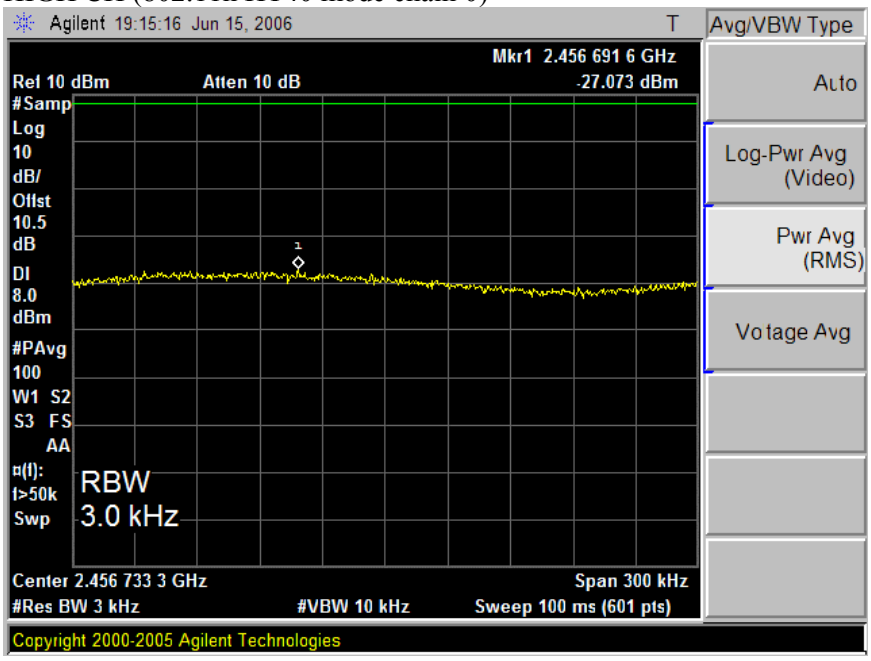
LOW CH (802.11n HT40 mode chain 0)



MID CH (802.11n HT40 mode chain 0)

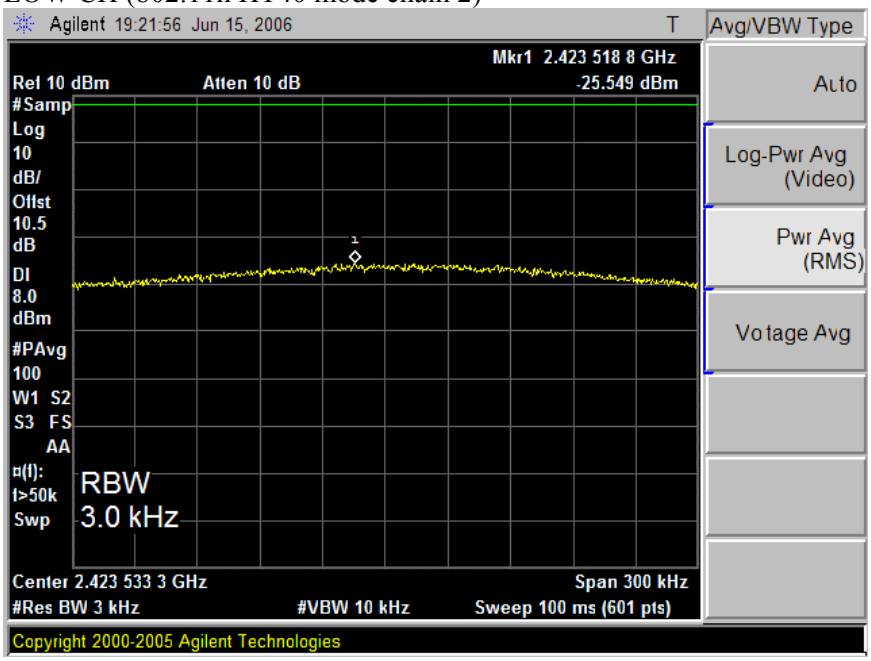


HIGH CH (802.11n HT40 mode chain 0)

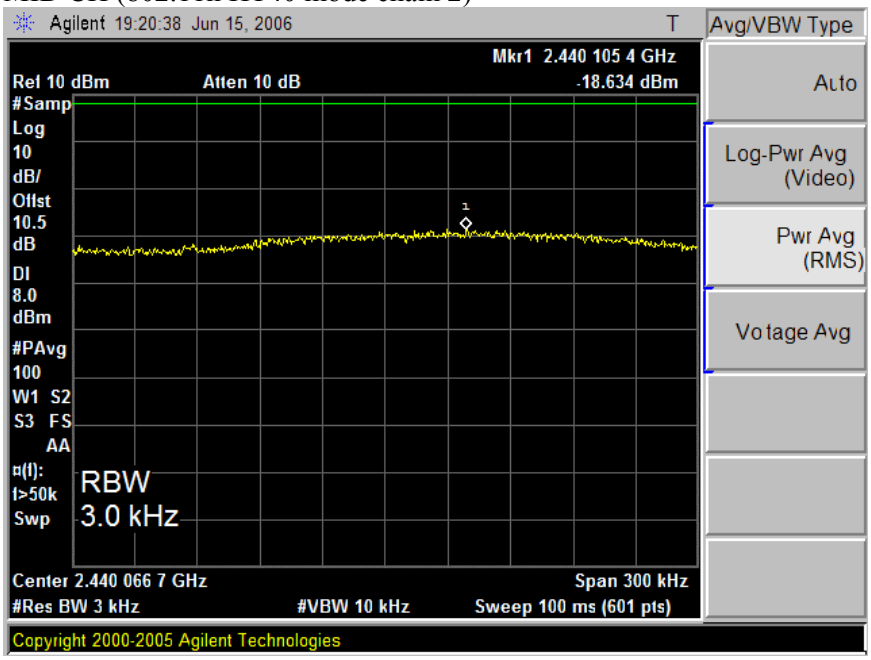


(802.11 HT40 MODE CHAIN 2)

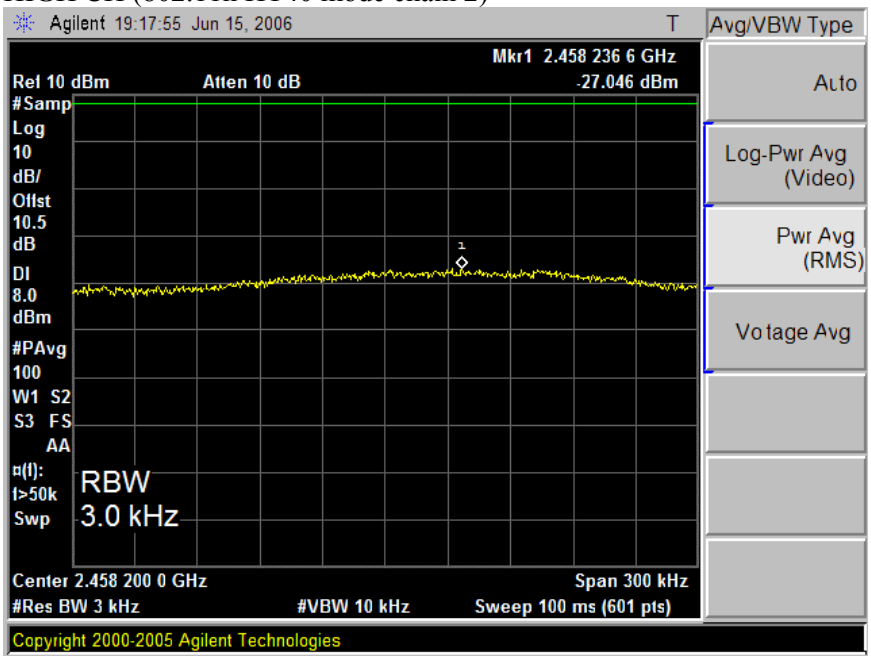
LOW CH (802.11n HT40 mode chain 2)



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 150 kHz.

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

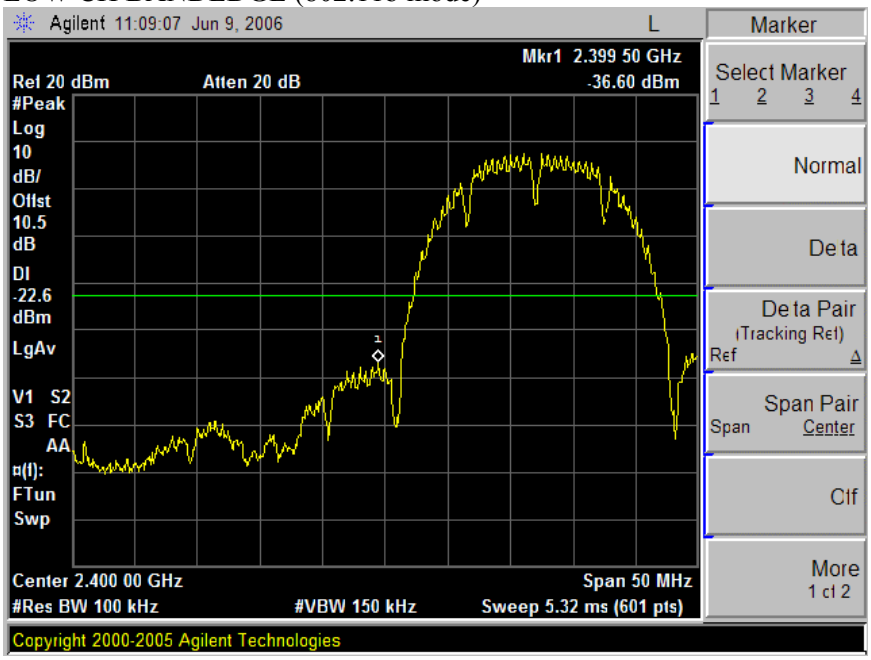
RESULTS

No non-compliance noted:

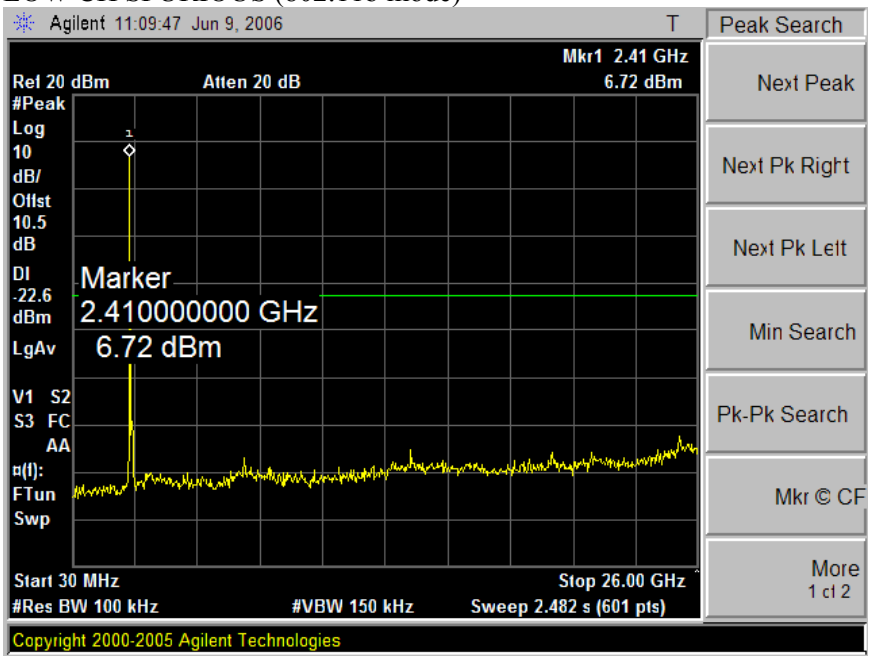
CHAIN 0

SPURIOUS EMISSIONS, LOW CHANNEL (802.11b MODE)

LOW CH BANDEDGE (802.11b mode)



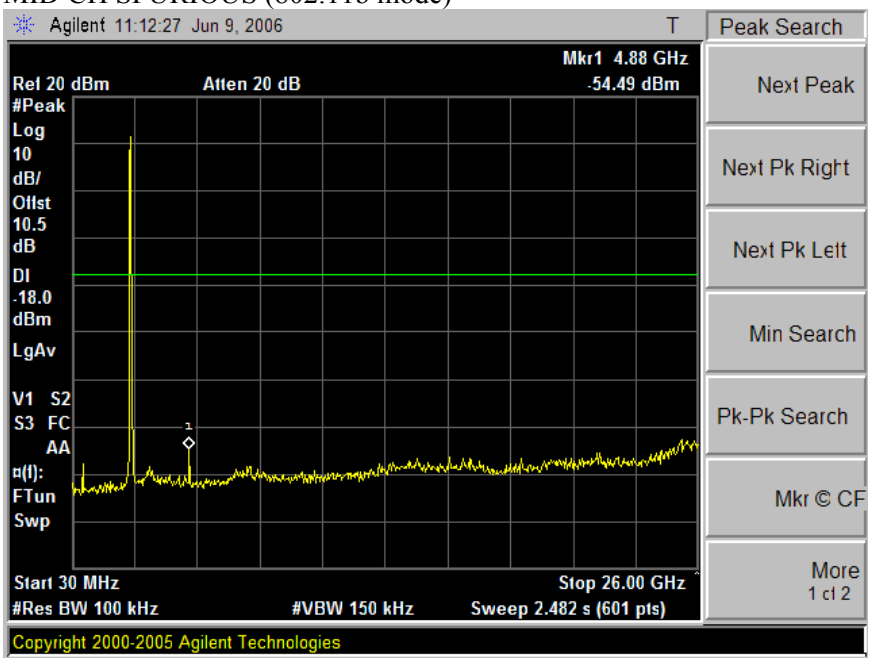
LOW CH SPURIOUS (802.11b mode)



SPURIOUS EMISSIONS, MID CHANNEL (802.11b MODE)

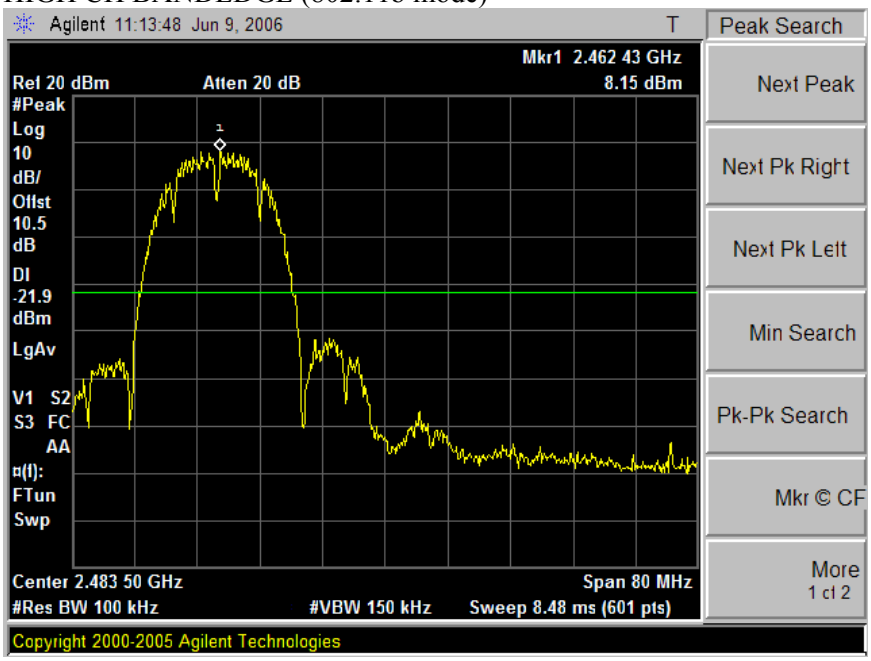
MID CH REFERENCE (802.11b mode)

MID CH SPURIOUS (802.11b mode)

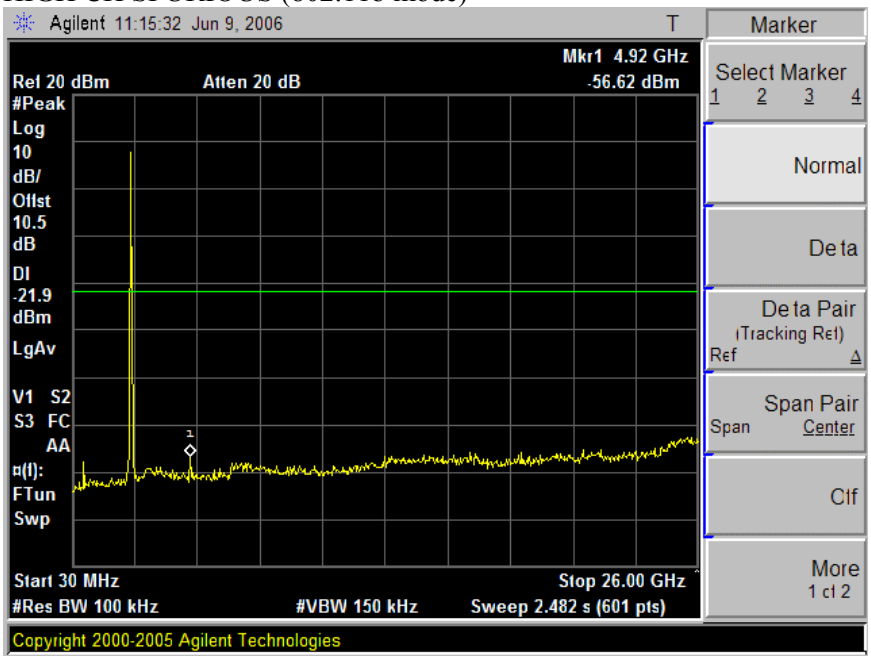


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b MODE)

HIGH CH BANDEDGE (802.11b mode)

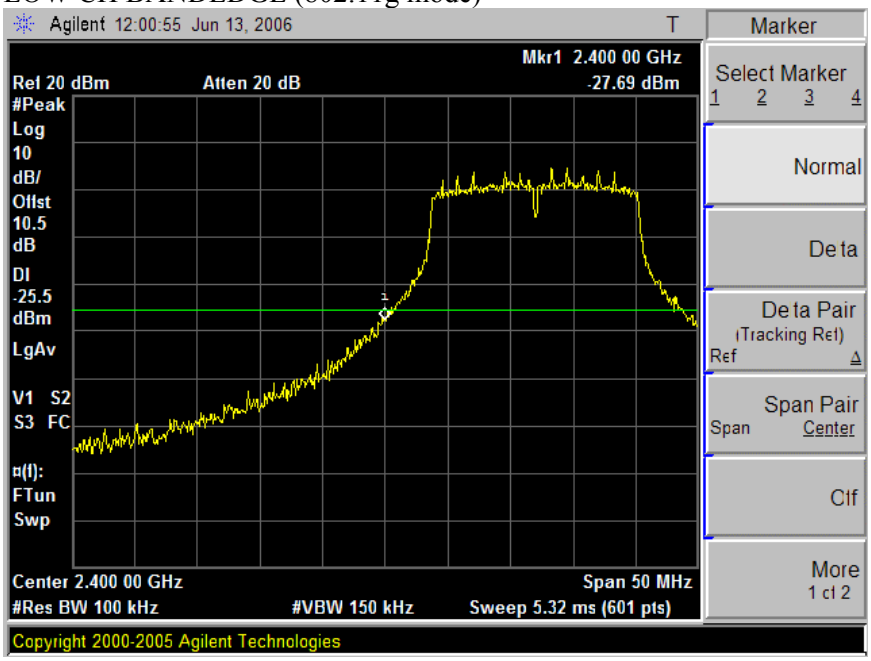


HIGH CH SPURIOUS (802.11b mode)

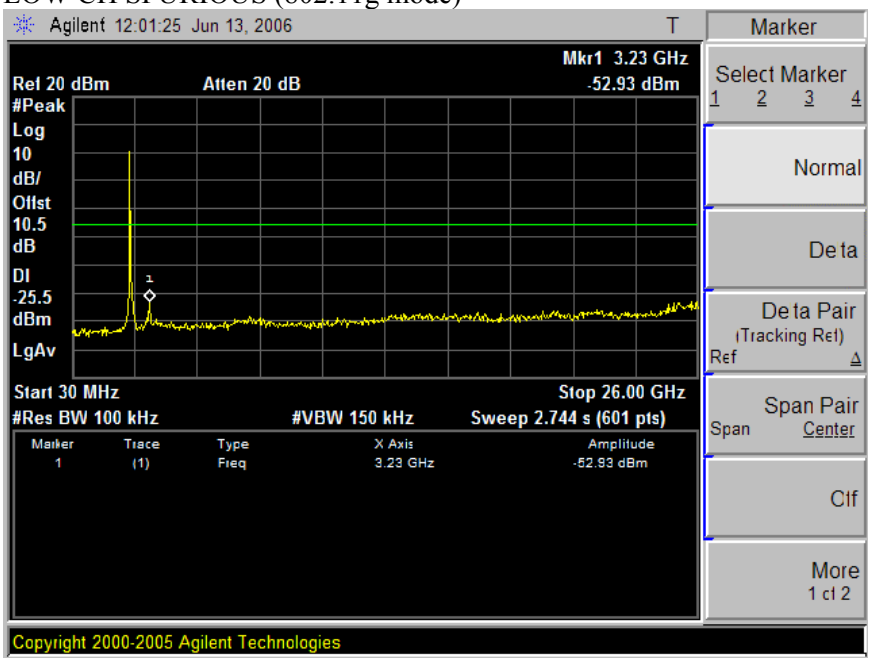


SPURIOUS EMISSIONS, LOW CHANNEL (802.11g MODE)

LOW CH BANDEDGE (802.11g mode)

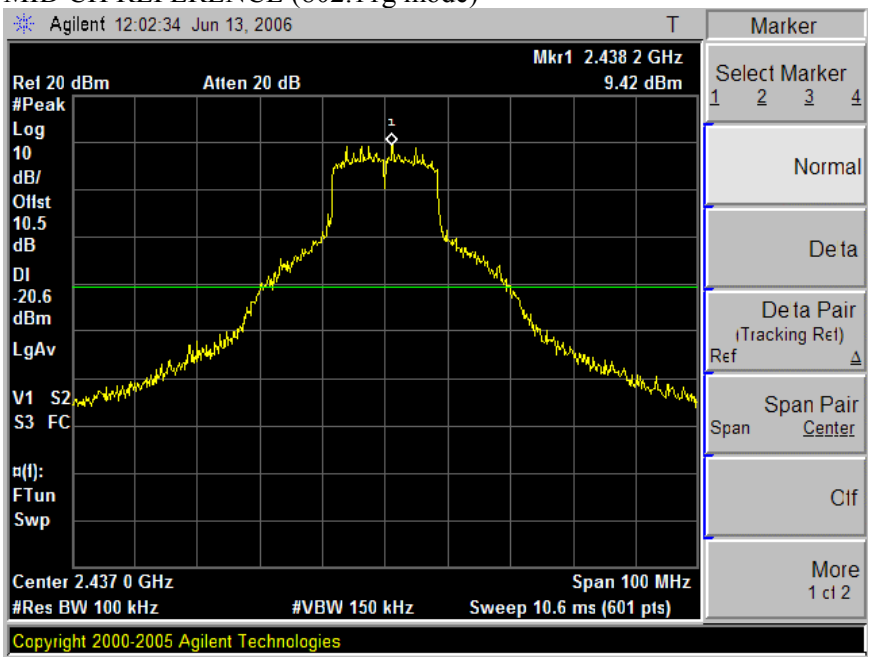


LOW CH SPURIOUS (802.11g mode)

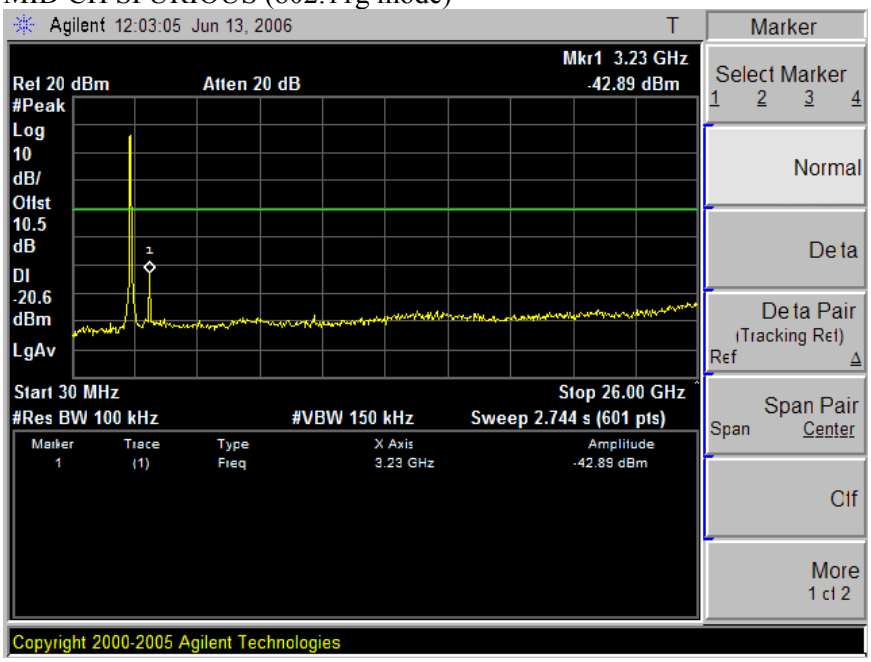


SPURIOUS EMISSIONS, MID CHANNEL (802.11g MODE)

MID CH REFERENCE (802.11g mode)

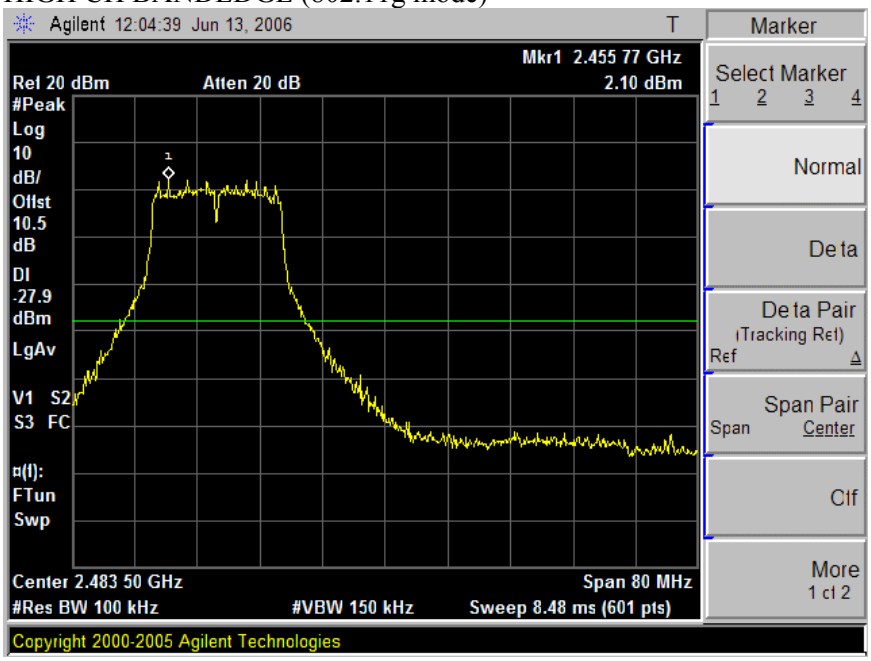


MID CH SPURIOUS (802.11g mode)

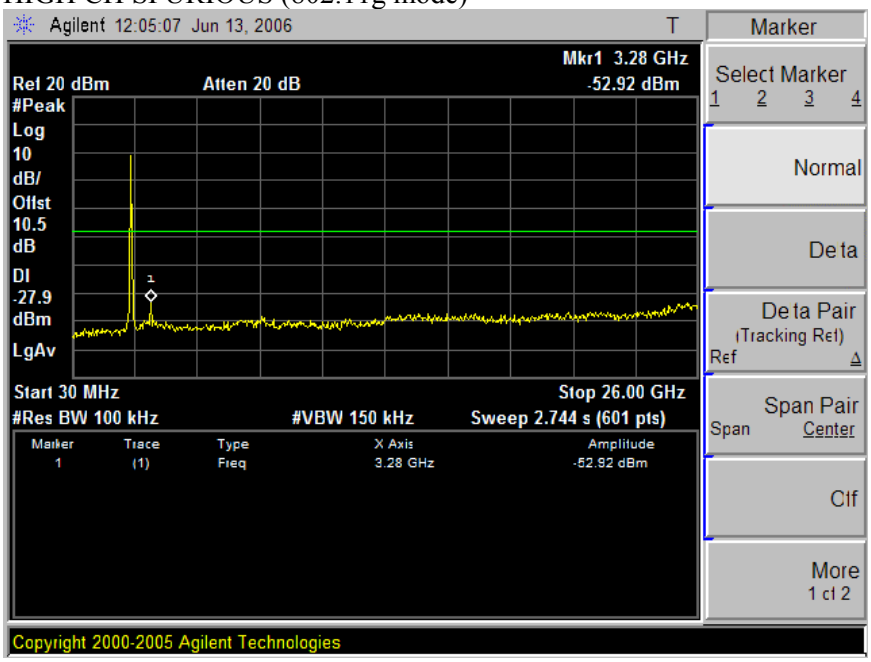


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g MODE)

HIGH CH BANDEDGE (802.11g mode)

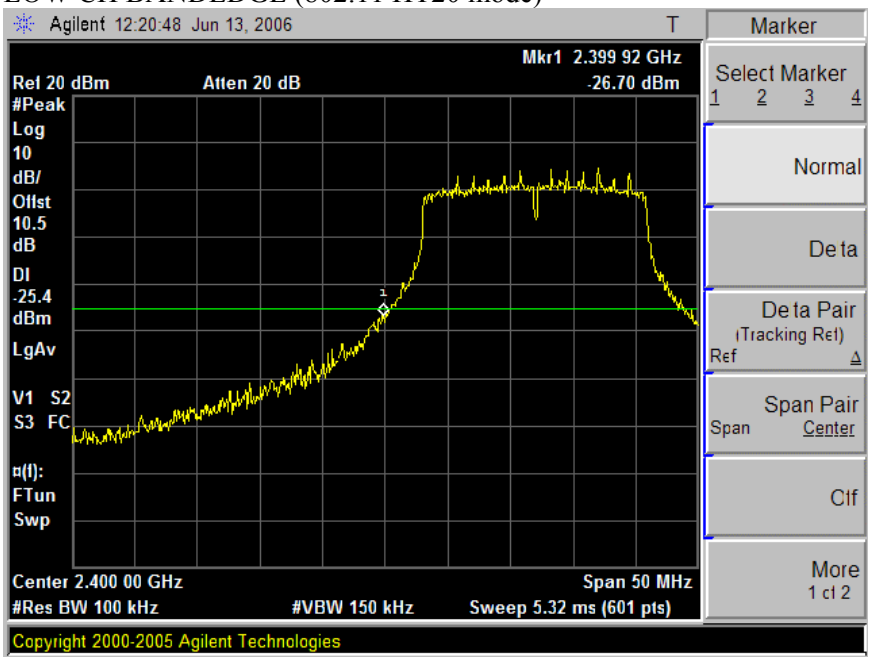


HIGH CH SPURIOUS (802.11g mode)

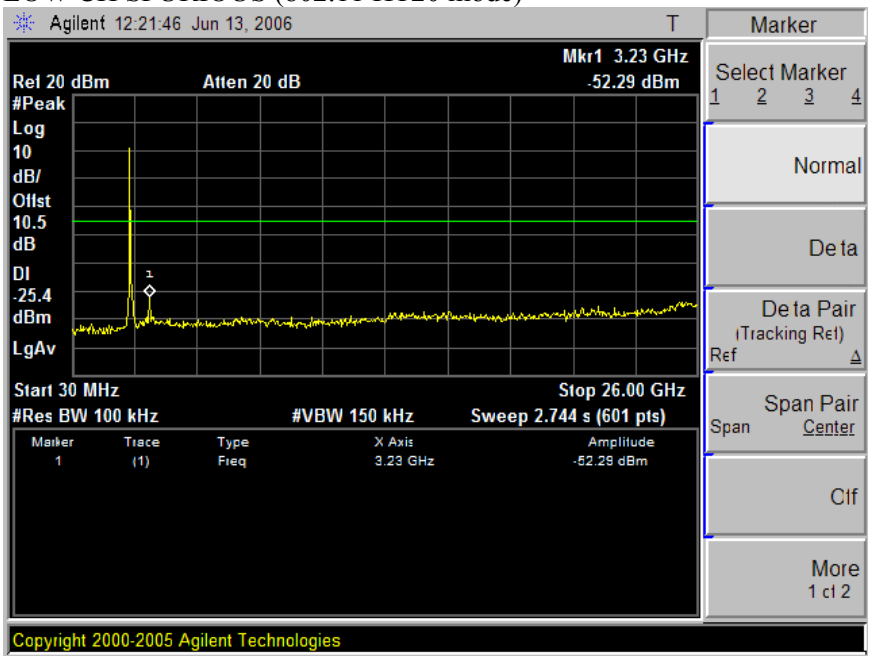


SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT20 MODE)

LOW CH BANDEDGE (802.11 HT20 mode)

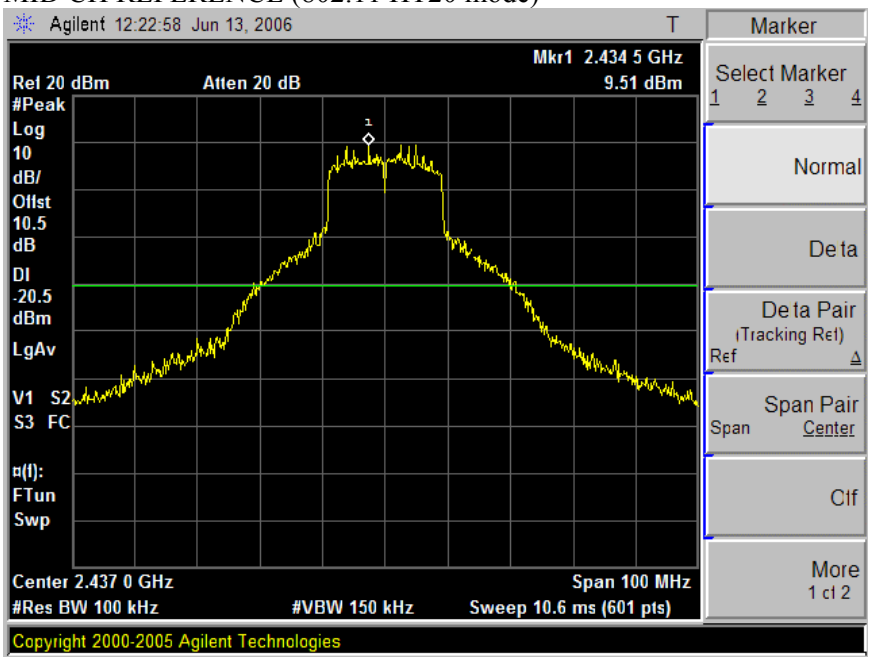


LOW CH SPURIOUS (802.11 HT20 mode)

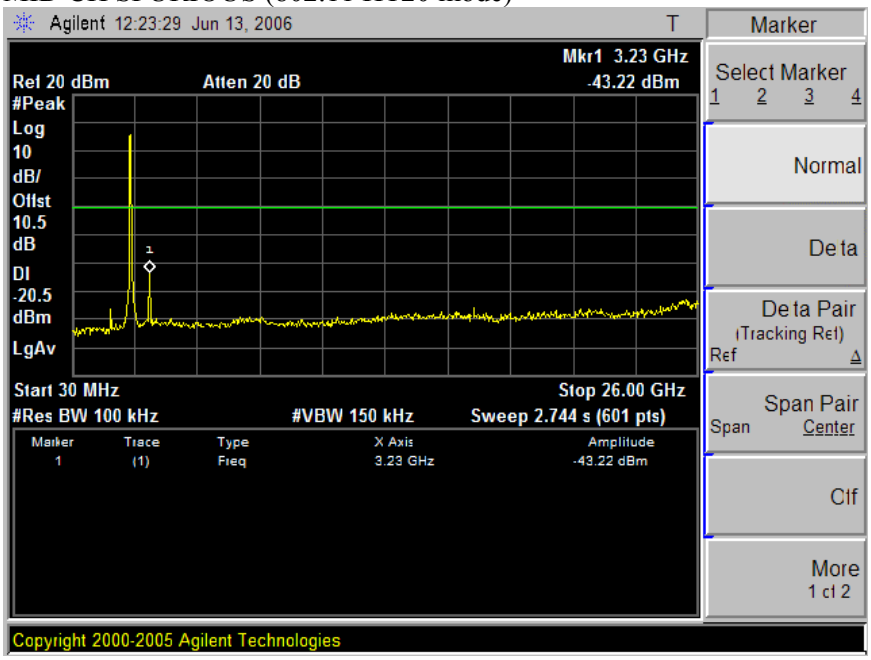


SPURIOUS EMISSIONS, MID CHANNEL (802.11 HT20 MODE)

MID CH REFERENCE (802.11 HT20 mode)

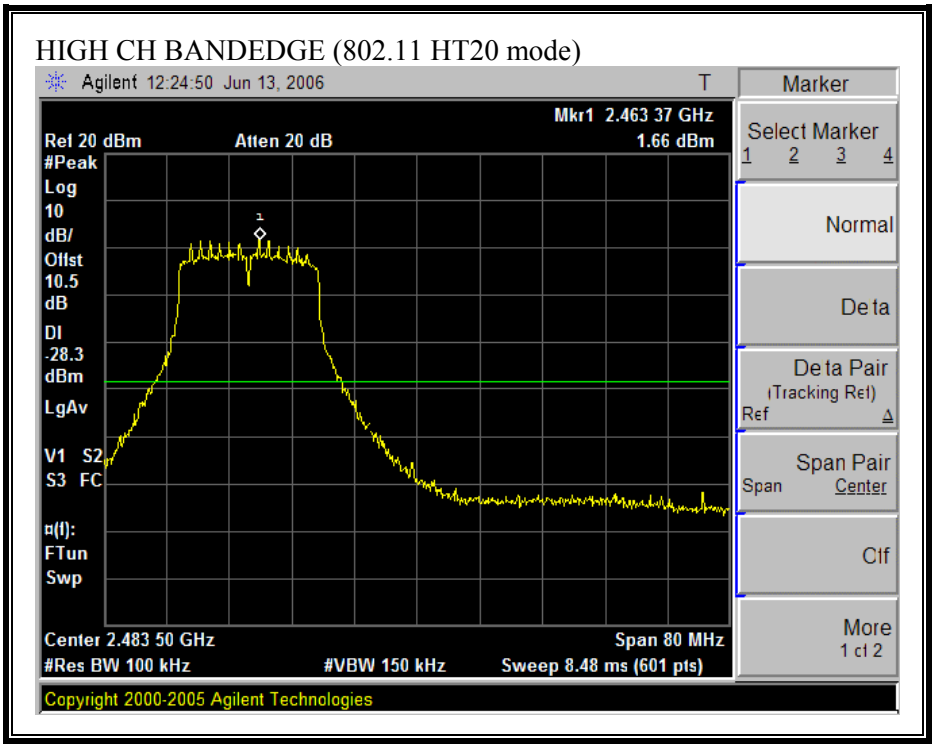


MID CH SPURIOUS (802.11 HT20 mode)

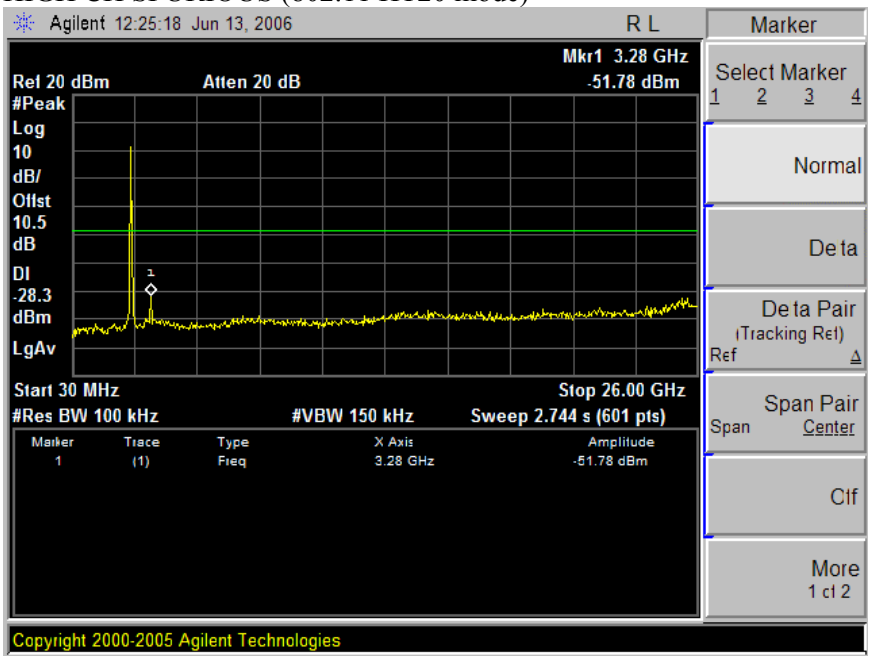


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT20 MODE)

HIGH CH BANDEDGE (802.11 HT20 mode)



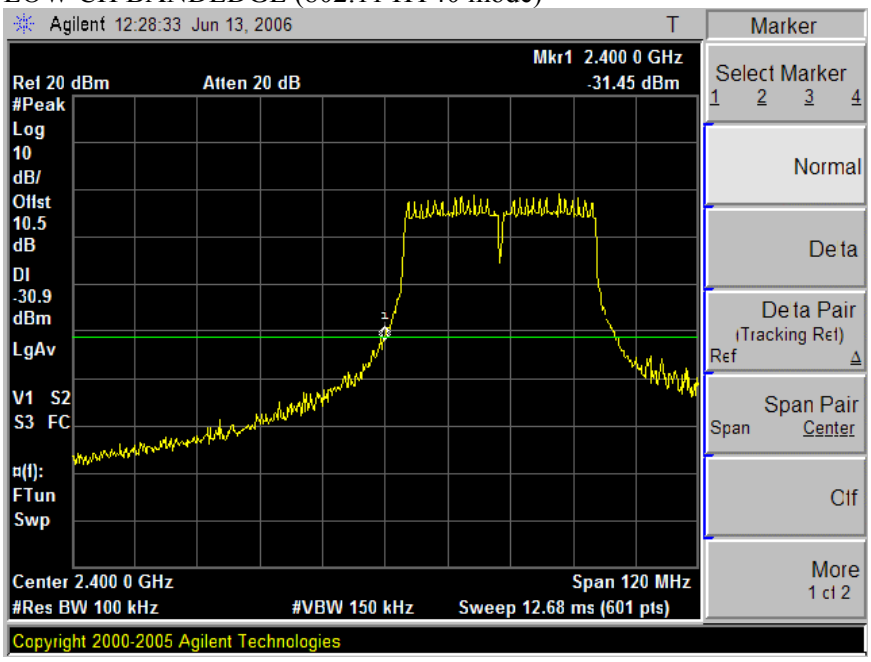
HIGH CH SPURIOUS (802.11 HT20 mode)



SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT40 MODE)

CH 2422MHz

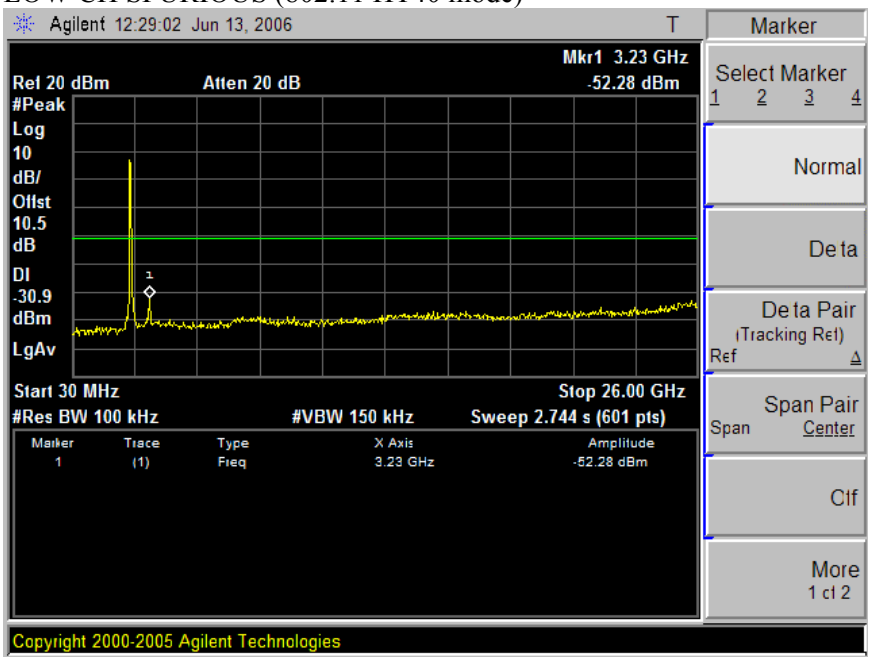
LOW CH BANDEDGE (802.11 HT40 mode)



SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT40 MODE)

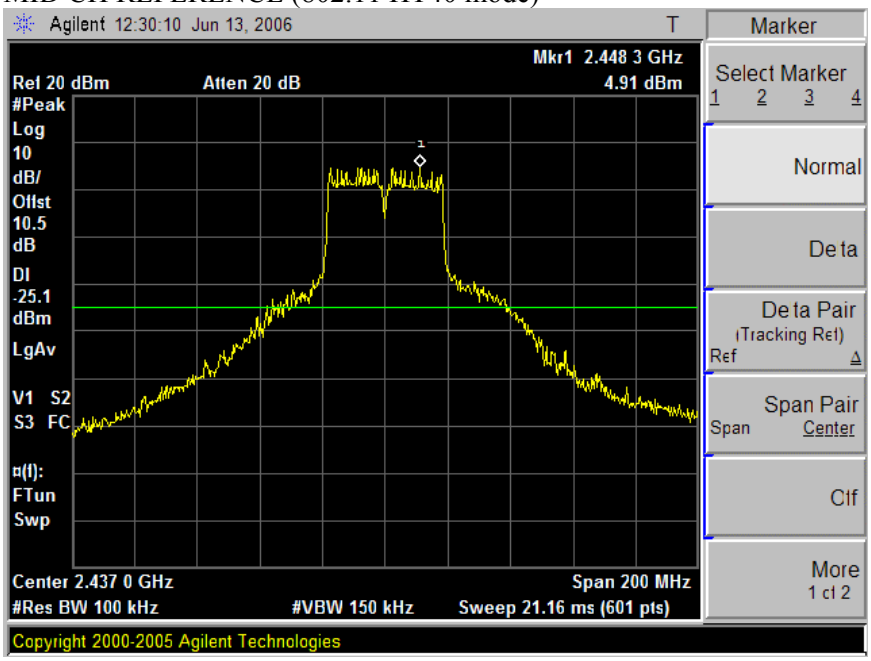
CH. 2422 MHz

LOW CH SPURIOUS (802.11 HT40 mode)

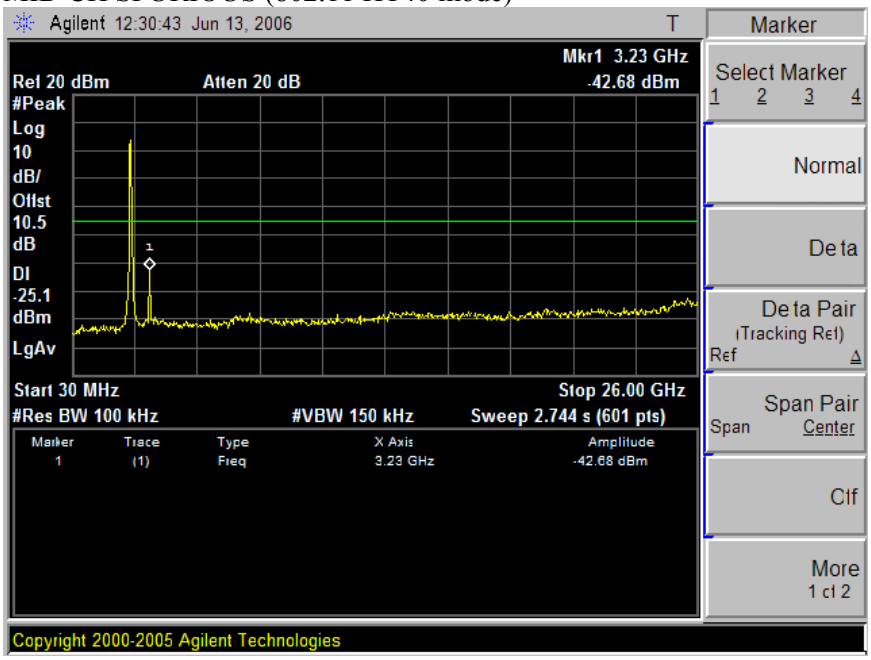


SPURIOUS EMISSIONS, MID CHANNEL (802.11 HT40 MODE)

MID CH REFERENCE (802.11 HT40 mode)



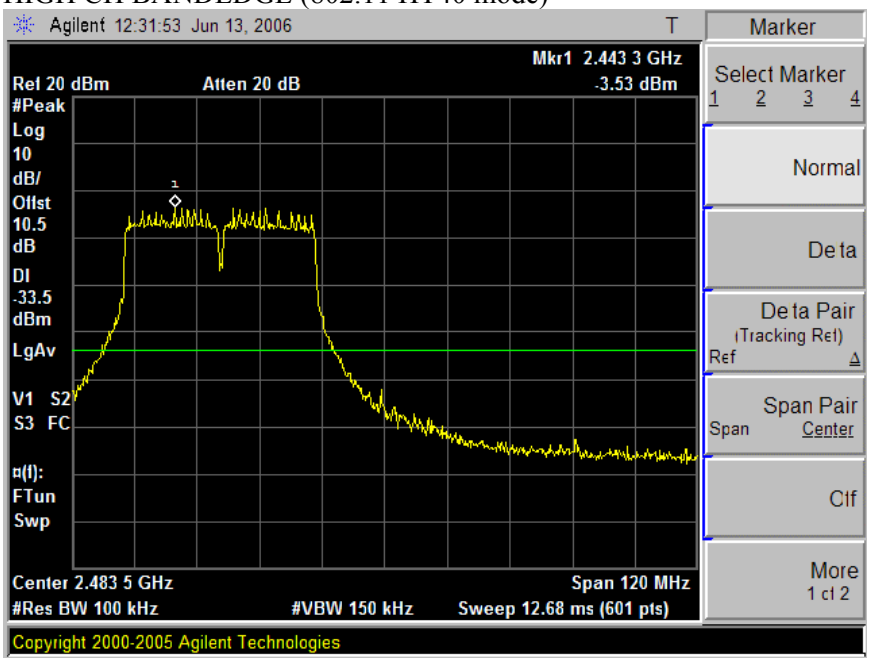
MID CH SPURIOUS (802.11 HT40 mode)



SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT40 MODE)

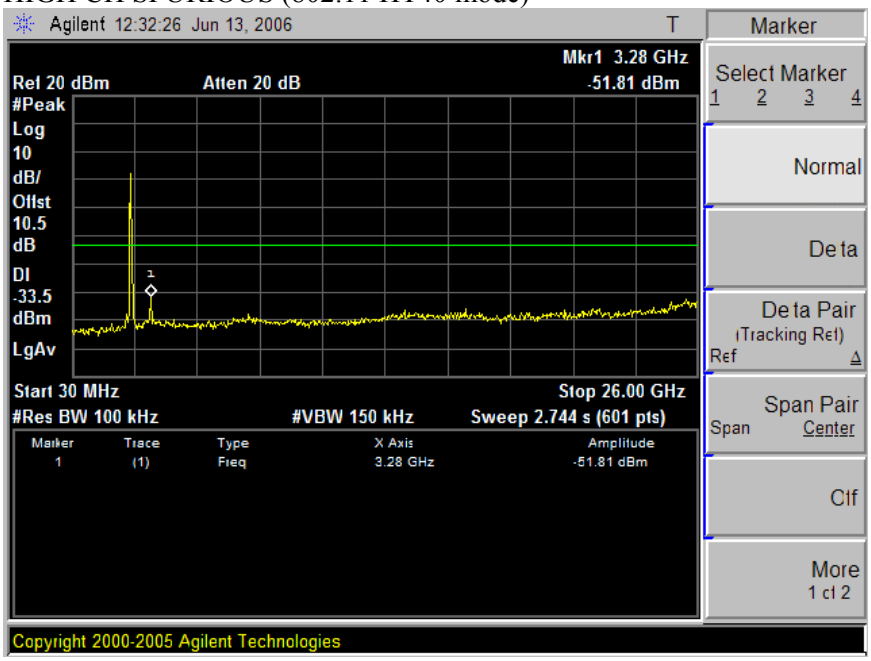
CH 2452MHz

HIGH CH BANDEDGE (802.11 HT40 mode)



SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT40 MODE

HIGH CH SPURIOUS (802.11 HT40 mode)

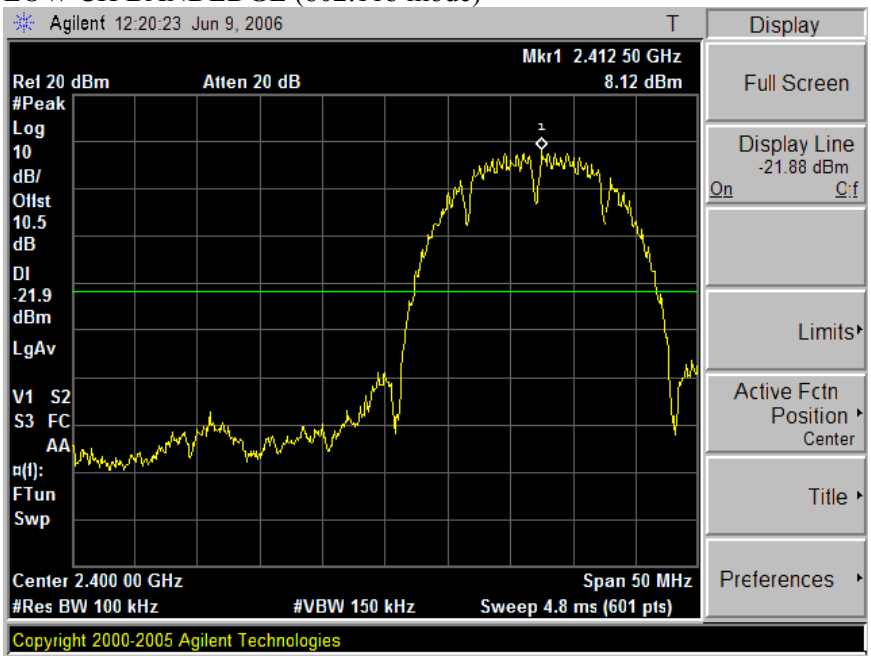


CHAIN 2

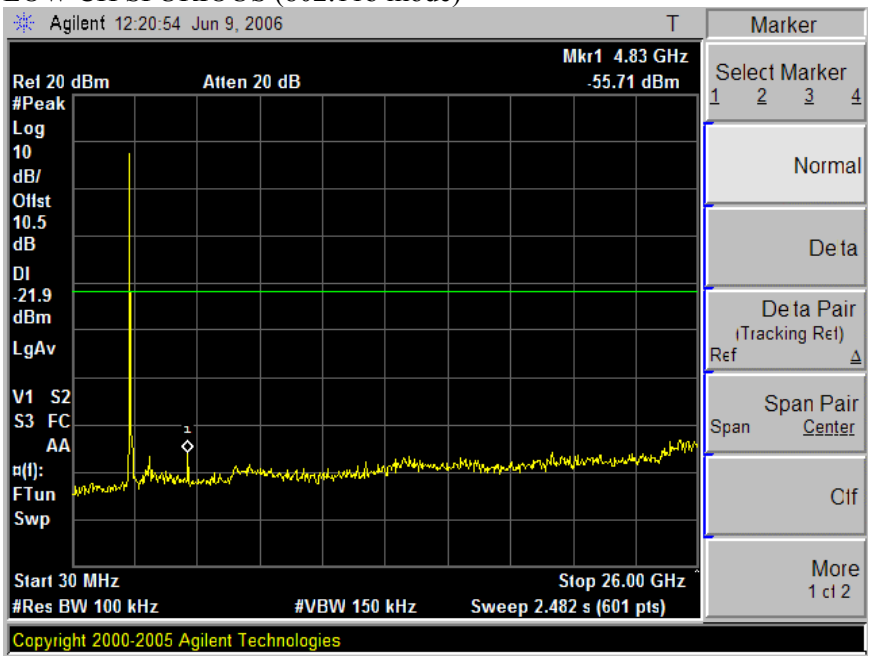
SPURIOUS EMISSIONS, LOW CHANNEL (802.11b MODE)

)

LOW CH BANDEDGE (802.11b mode)

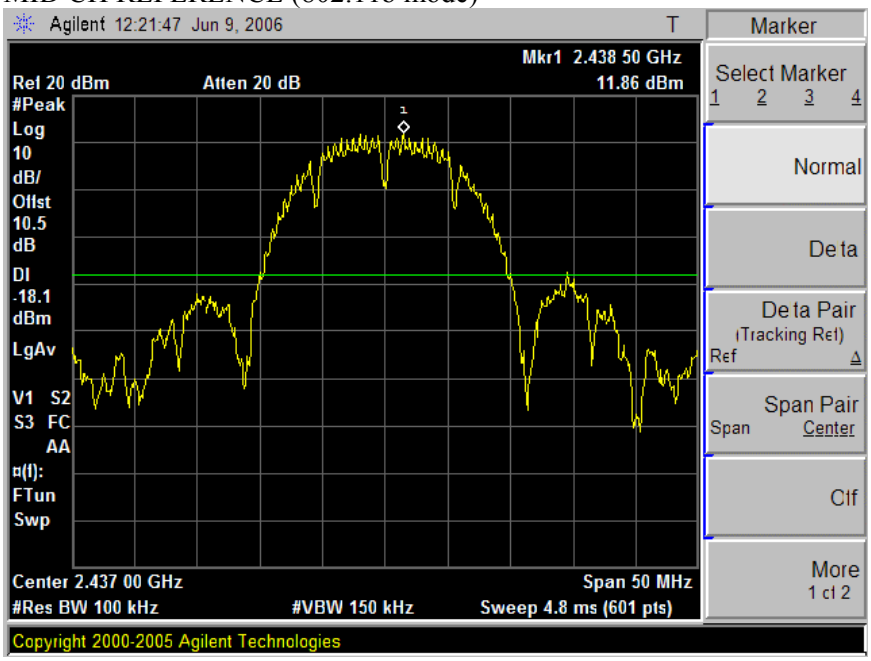


LOW CH SPURIOUS (802.11b mode)

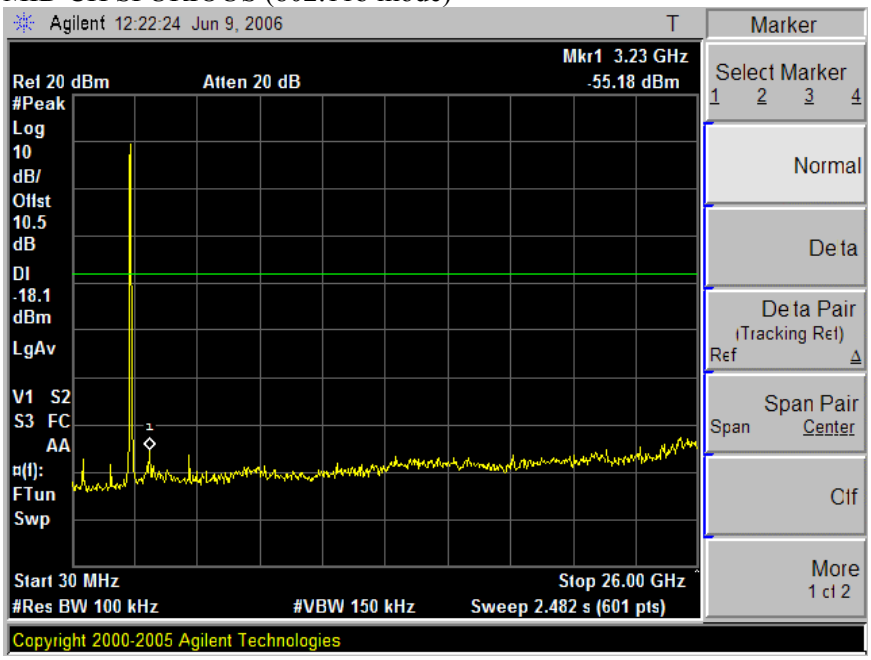


SPURIOUS EMISSIONS, MID CHANNEL (802.11b MODE)

MID CH REFERENCE (802.11b mode)

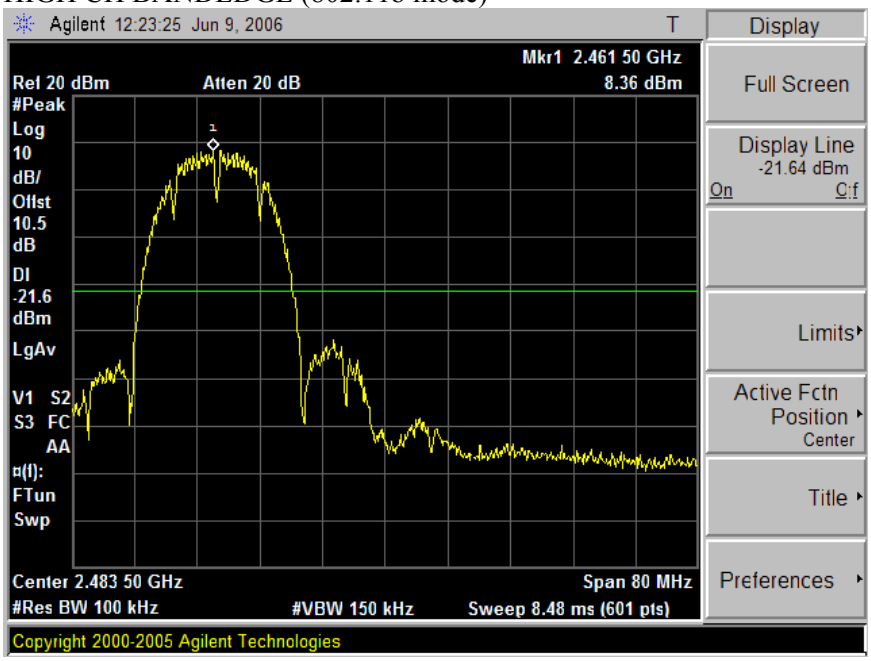


MID CH SPURIOUS (802.11b mode)

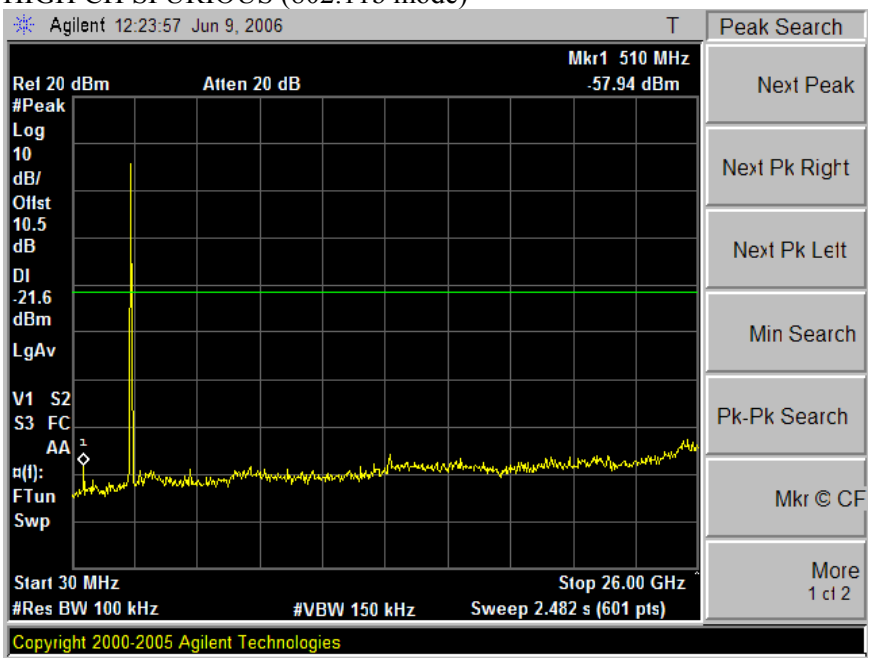


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b MODE)

HIGH CH BANDEDGE (802.11b mode)

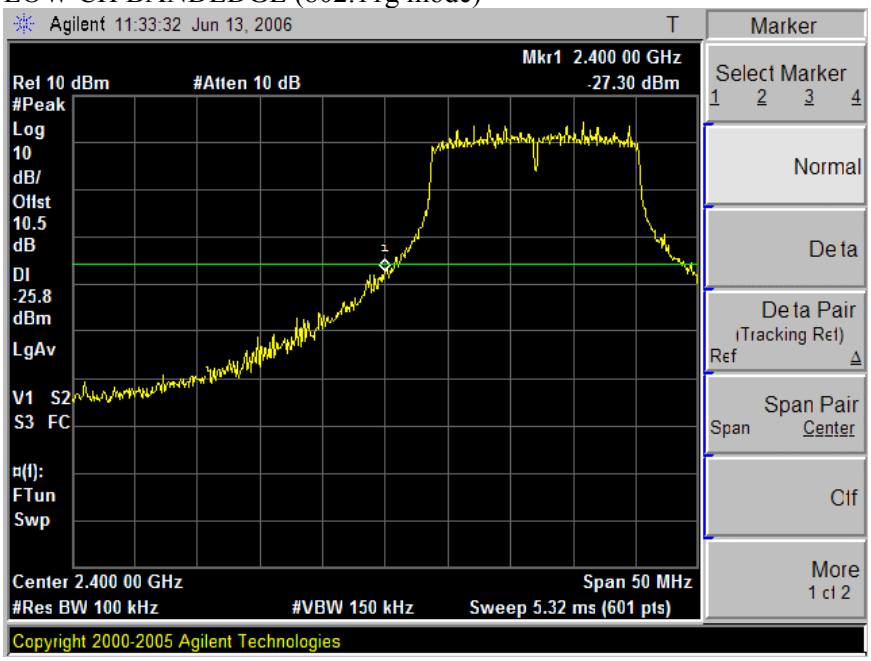


HIGH CH SPURIOUS (802.11b mode)

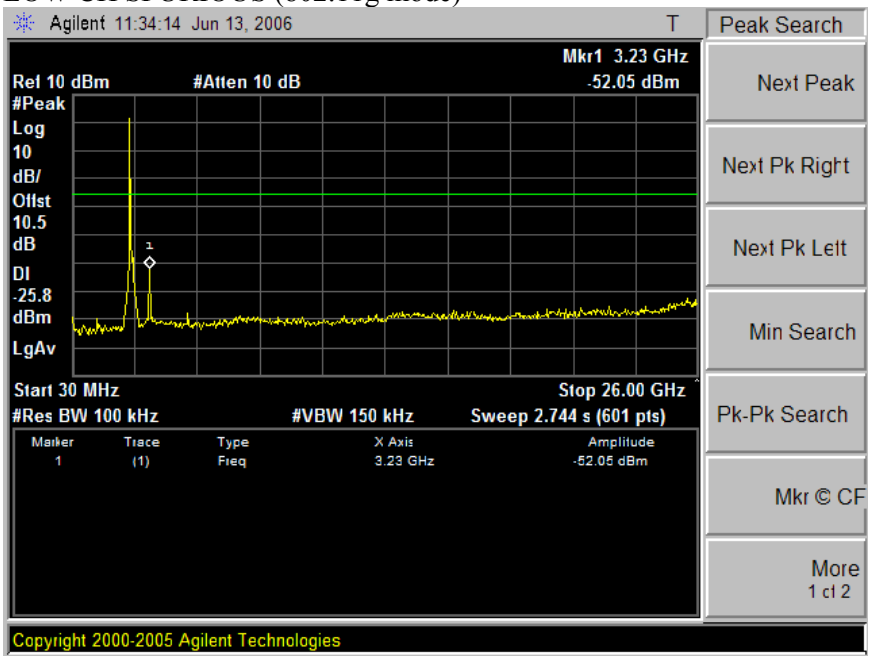


SPURIOUS EMISSIONS, LOW CHANNEL (802.11g MODE)

LOW CH BANDEDGE (802.11g mode)

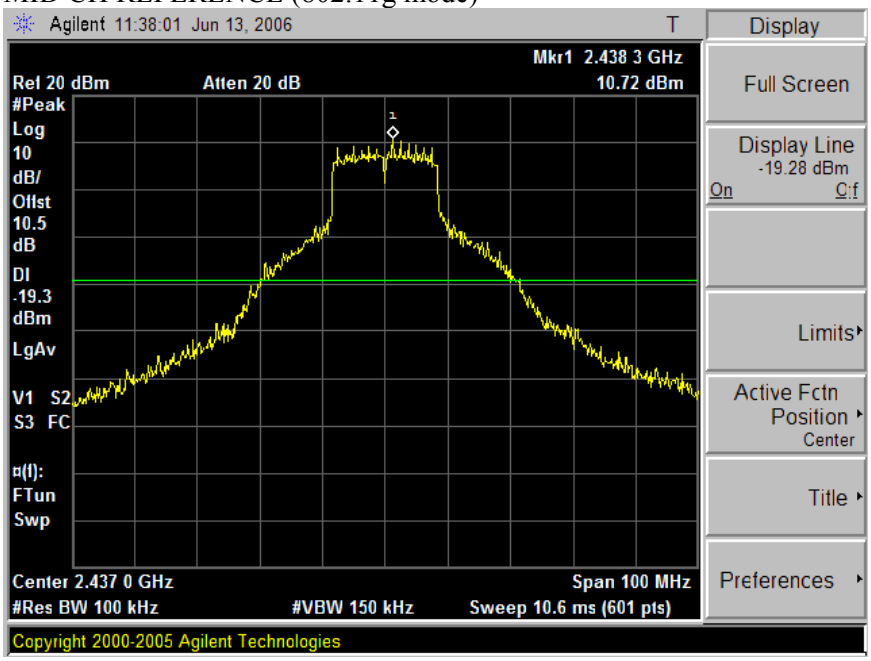


LOW CH SPURIOUS (802.11g mode)

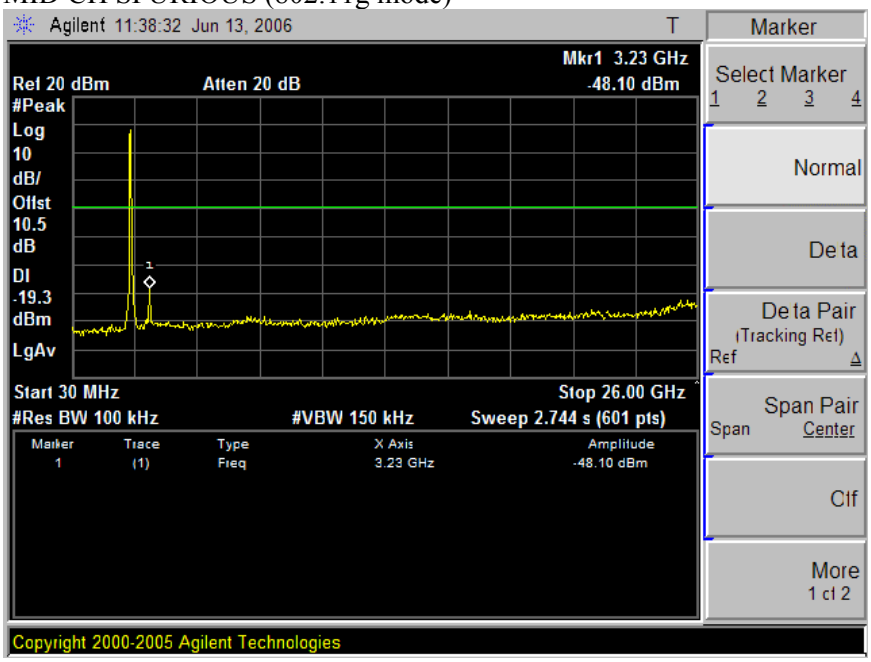


SPURIOUS EMISSIONS, MID CHANNEL (802.11g MODE)

MID CH REFERENCE (802.11g mode)

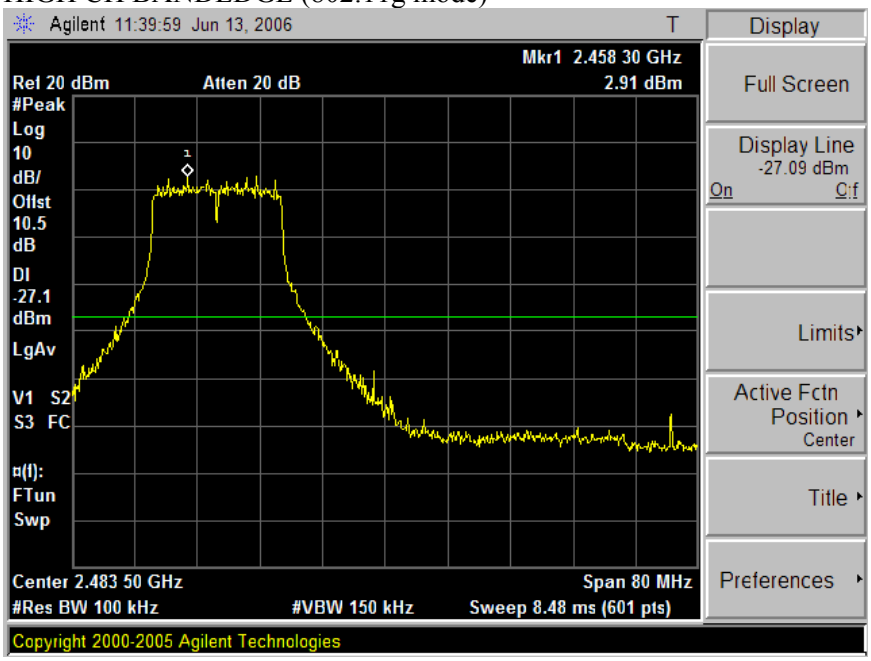


MID CH SPURIOUS (802.11g mode)

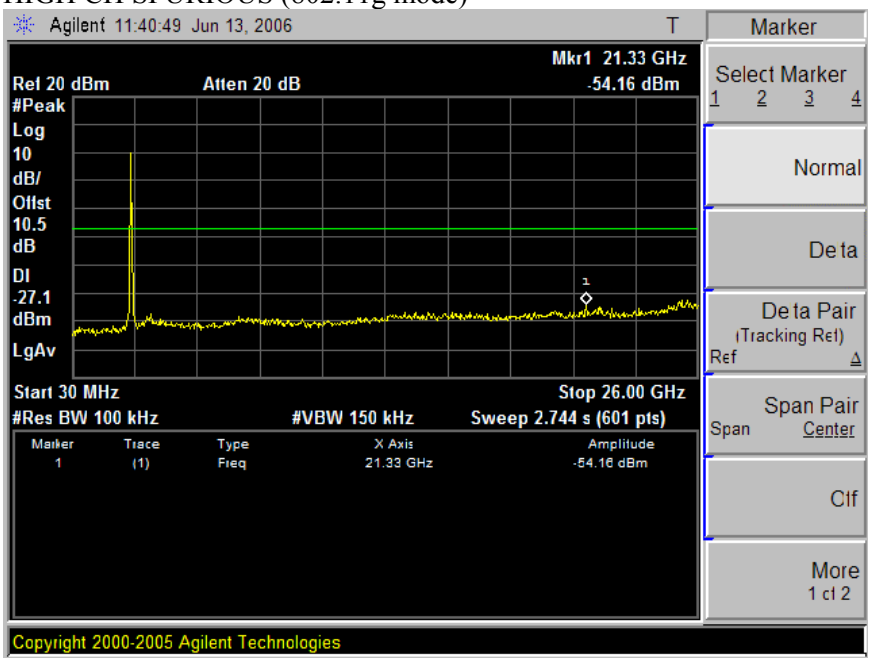


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g MODE)

HIGH CH BANDEDGE (802.11g mode)

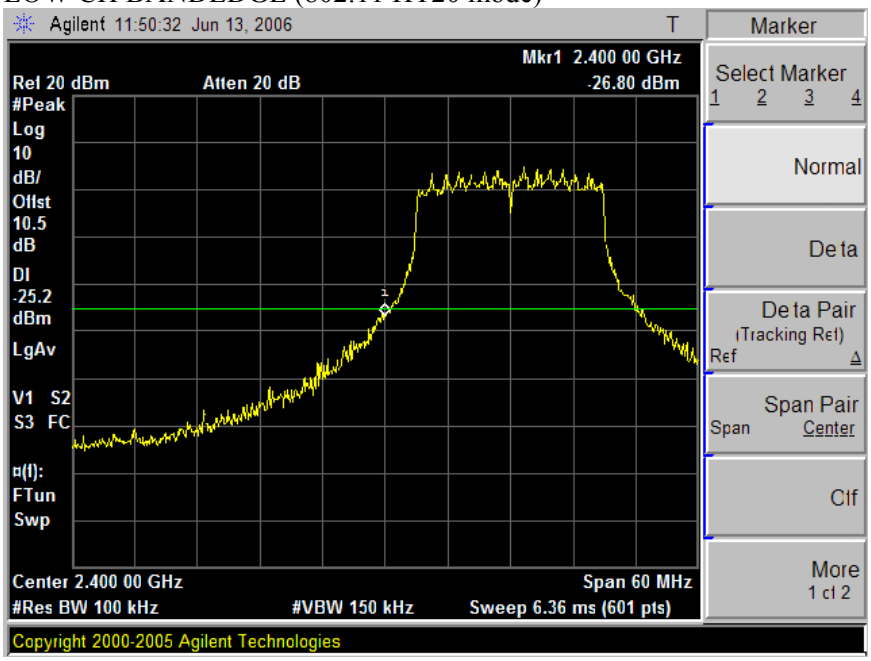


HIGH CH SPURIOUS (802.11g mode)

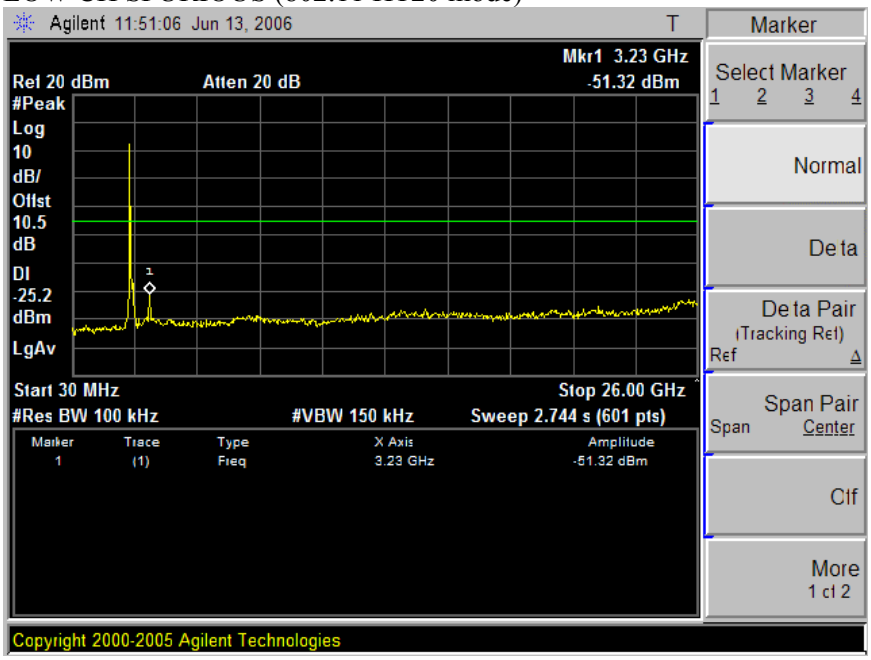


SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT20 MODE)

LOW CH BANDEDGE (802.11 HT20 mode)

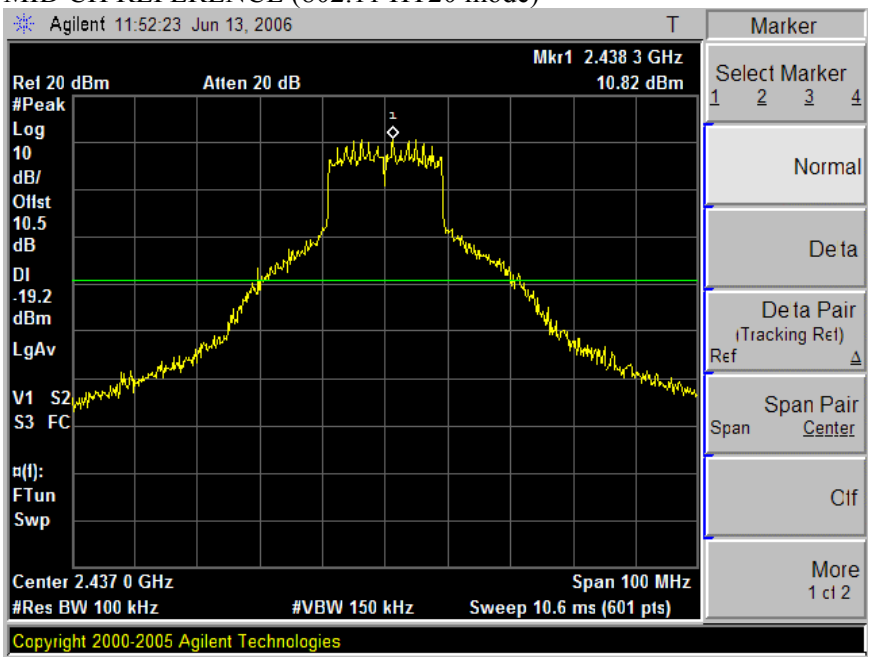


LOW CH SPURIOUS (802.11 HT20 mode)

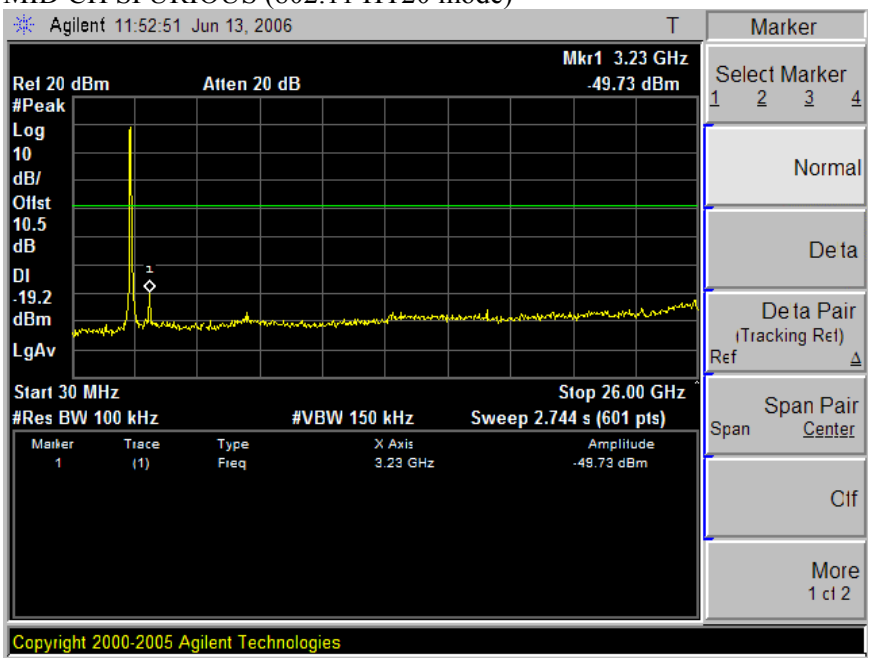


SPURIOUS EMISSIONS, MID CHANNEL (802.11 HT20 MODE)

MID CH REFERENCE (802.11 HT20 mode)

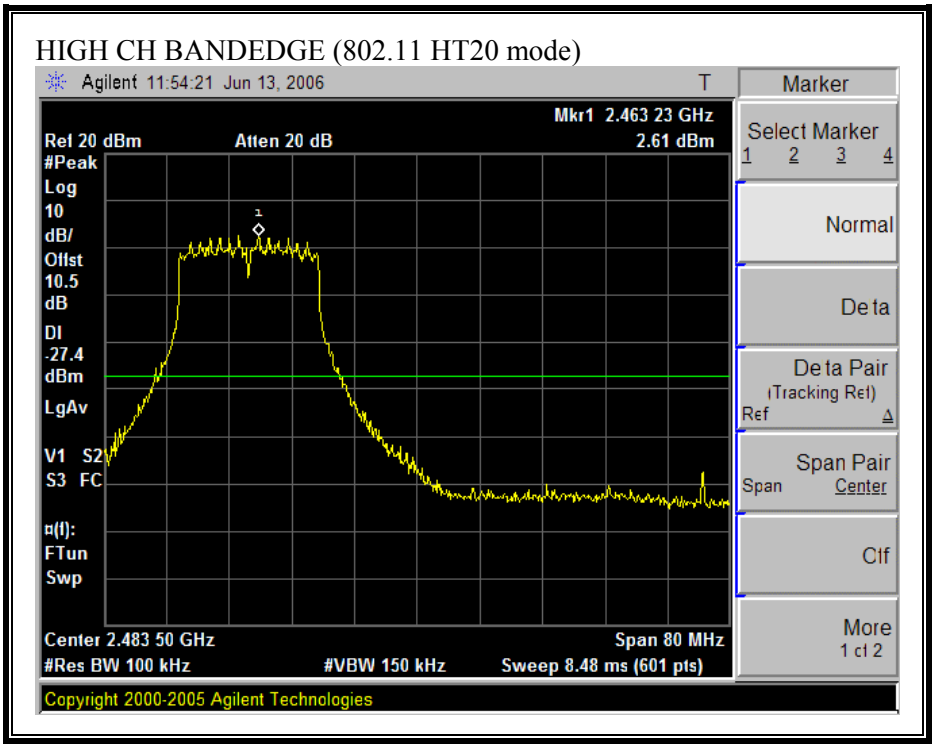


MID CH SPURIOUS (802.11 HT20 mode)

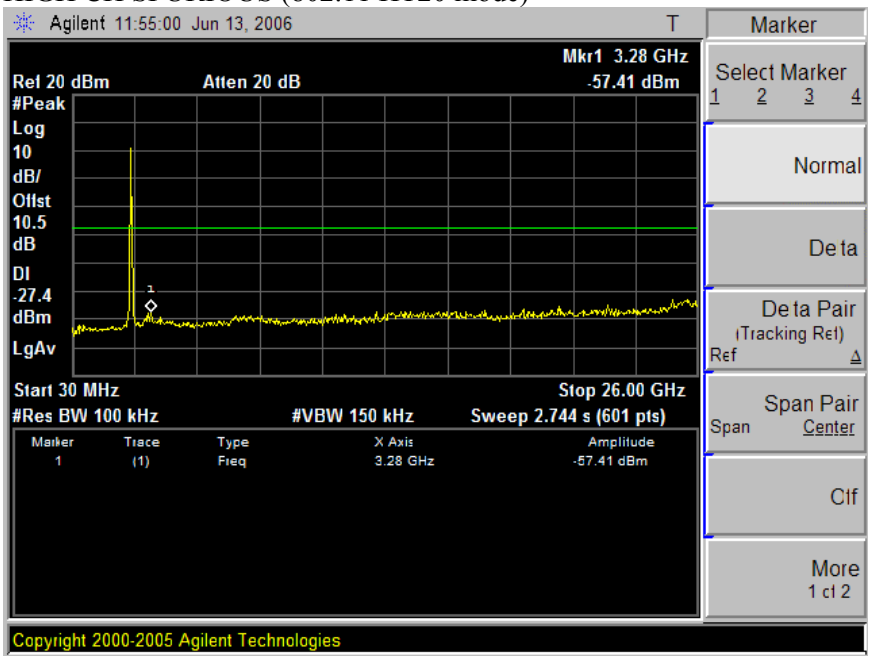


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT20 MODE)

HIGH CH BANDEDGE (802.11 HT20 mode)



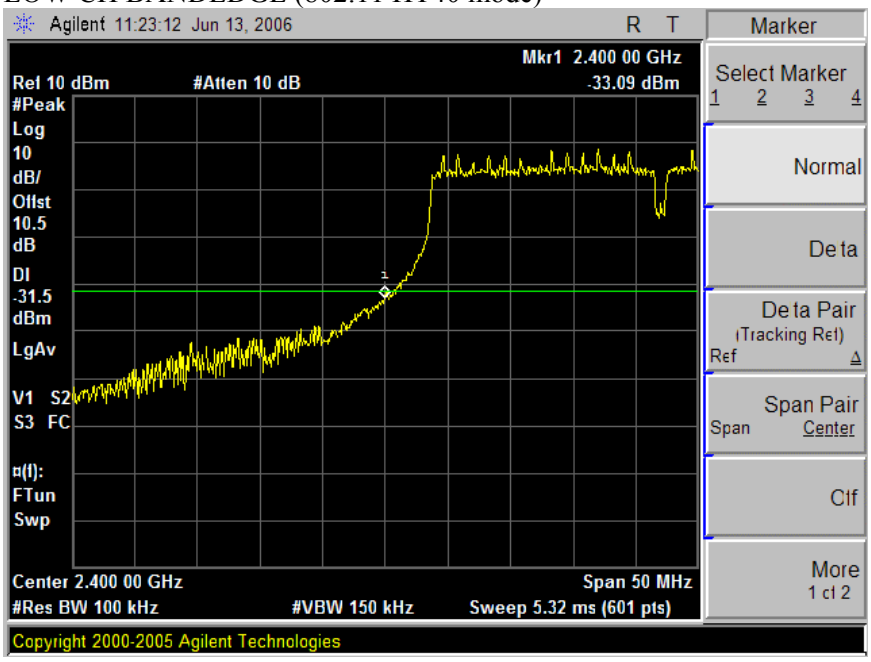
HIGH CH SPURIOUS (802.11 HT20 mode)



SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT40 MODE)

CH 2422MHz

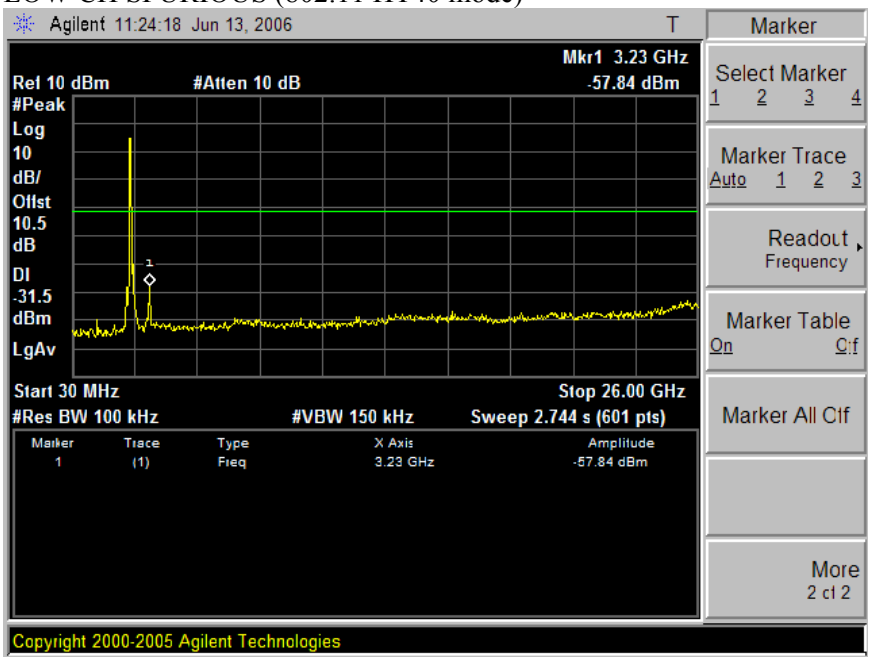
LOW CH BANDEDGE (802.11 HT40 mode)



SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT40 MODE)

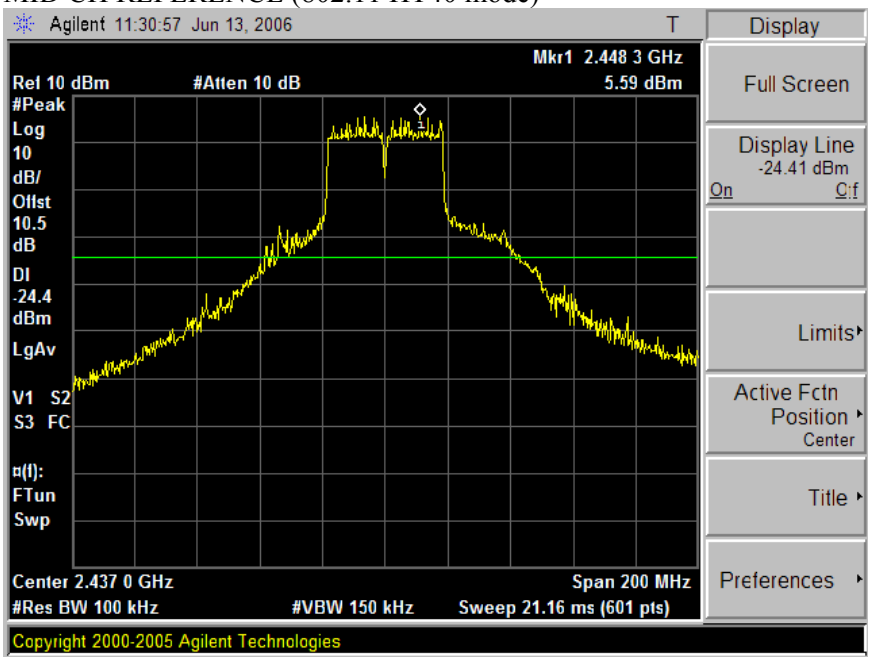
CH. 2422 MHz

LOW CH SPURIOUS (802.11 HT40 mode)

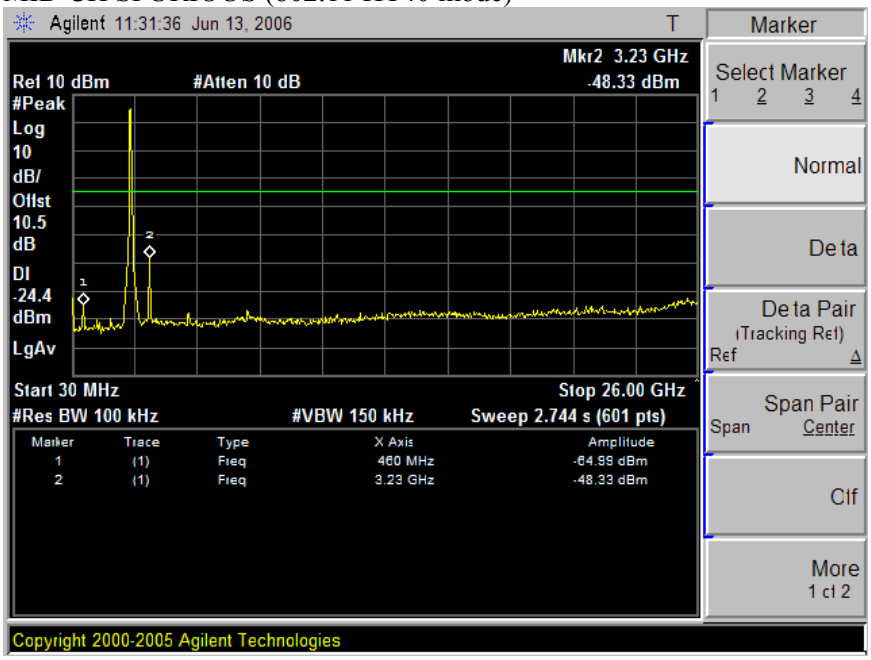


SPURIOUS EMISSIONS, MID CHANNEL (802.11 HT40 MODE)

MID CH REFERENCE (802.11 HT40 mode)



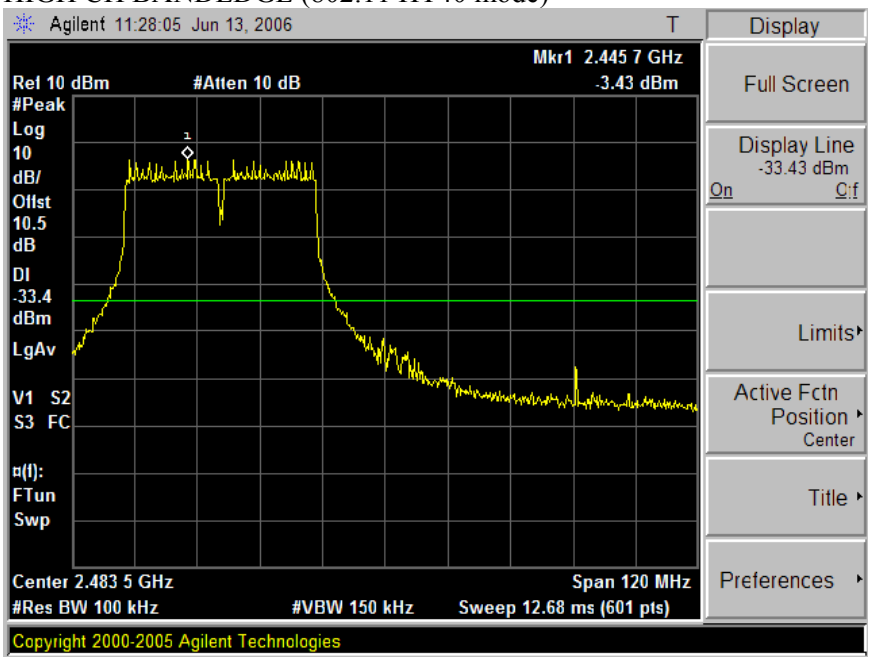
MID CH SPURIOUS (802.11 HT40 mode)



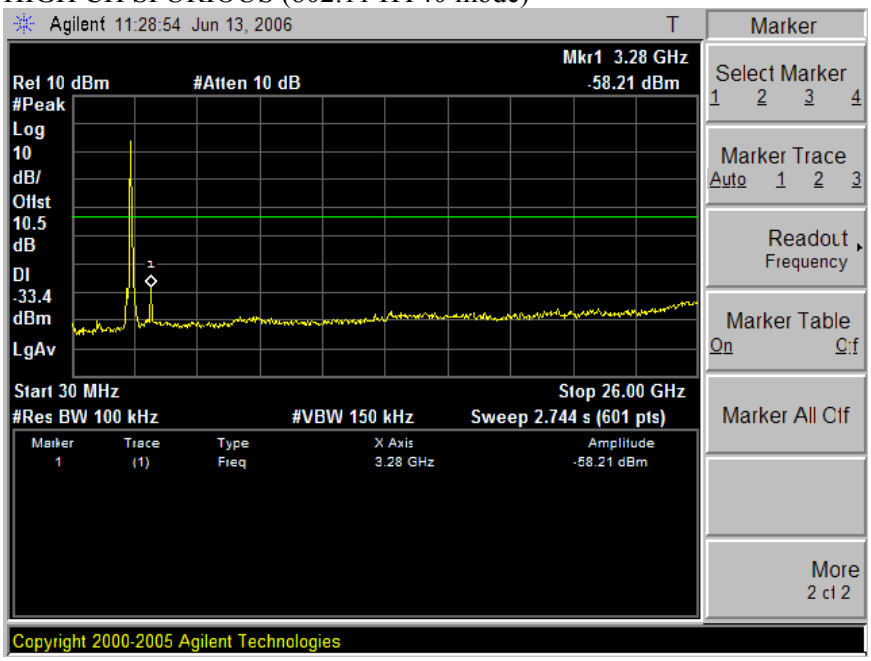
SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT40 MODE)

CH 2452MHz

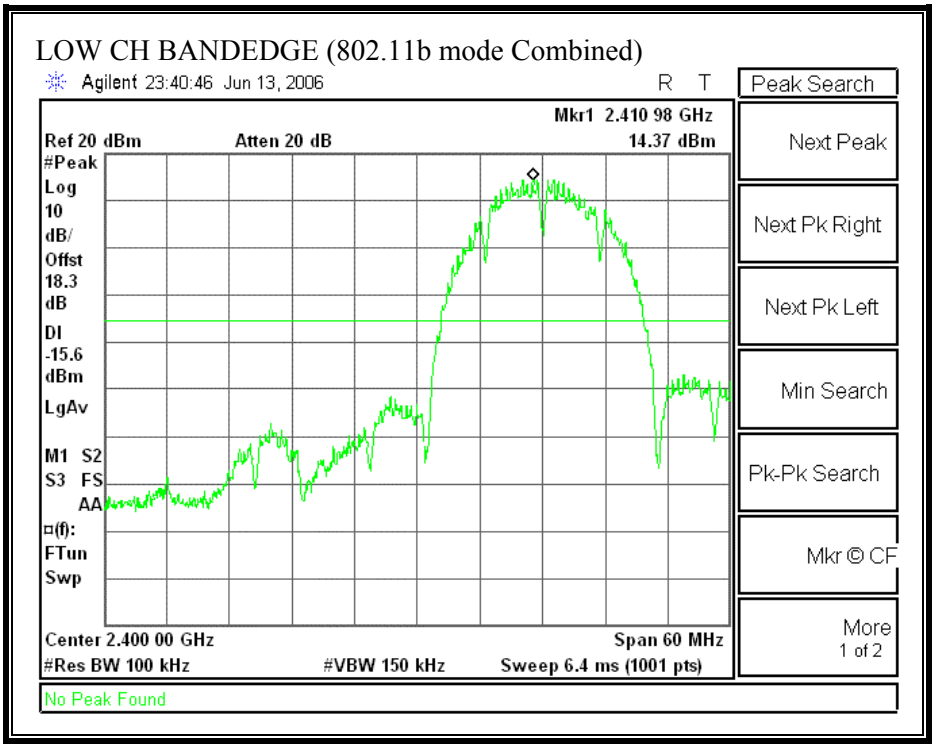
HIGH CH BANDEDGE (802.11 HT40 mode)



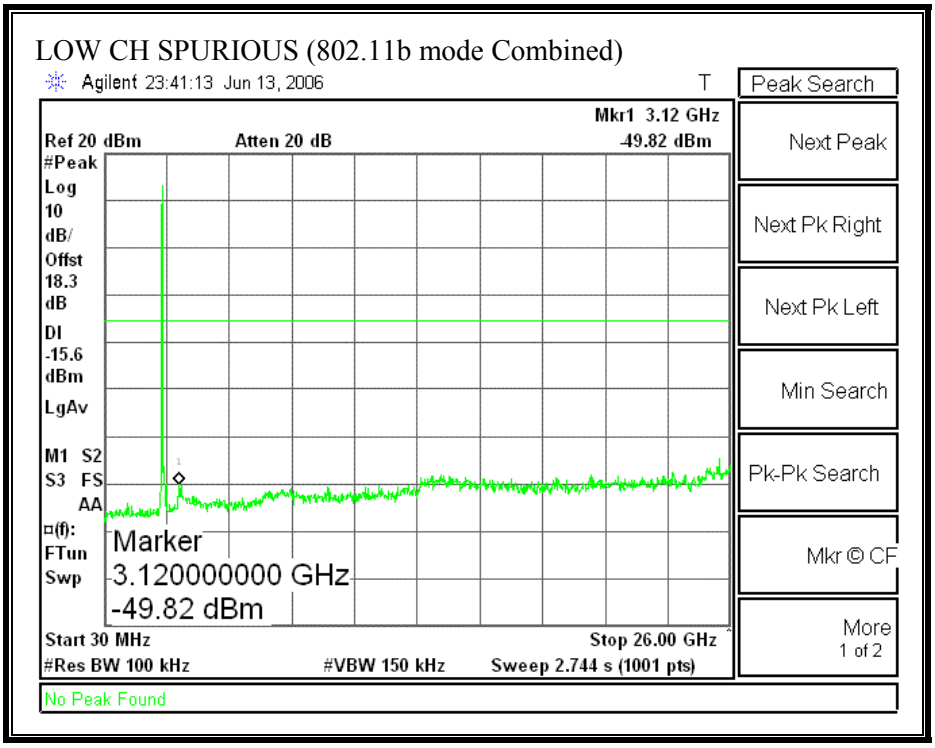
HIGH CH SPURIOUS (802.11 HT40 mode)



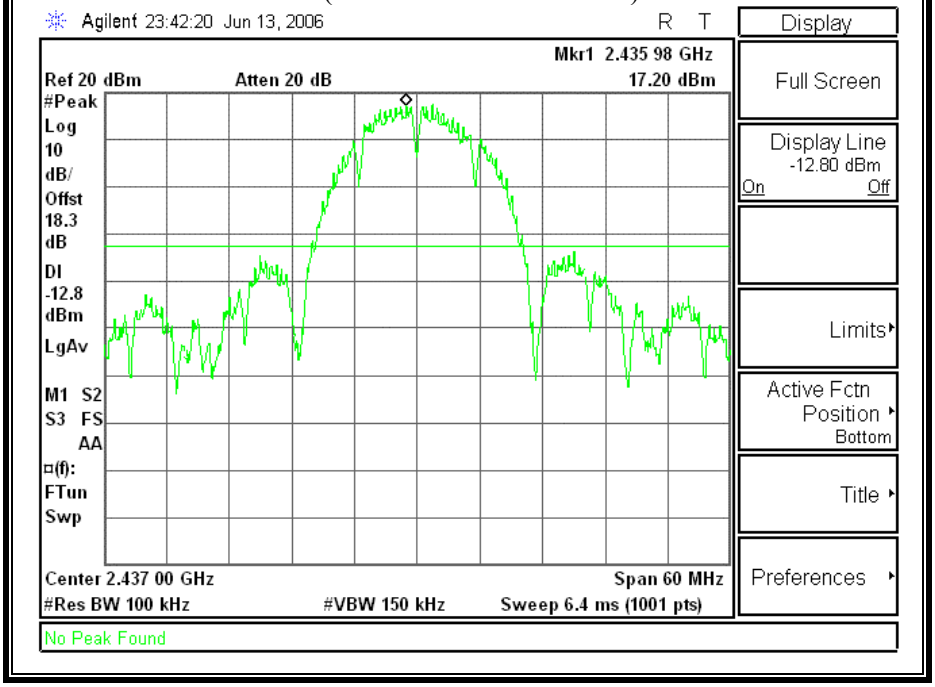
COMBINED SPURIOUS EMISSIONS (802.11b MODE)



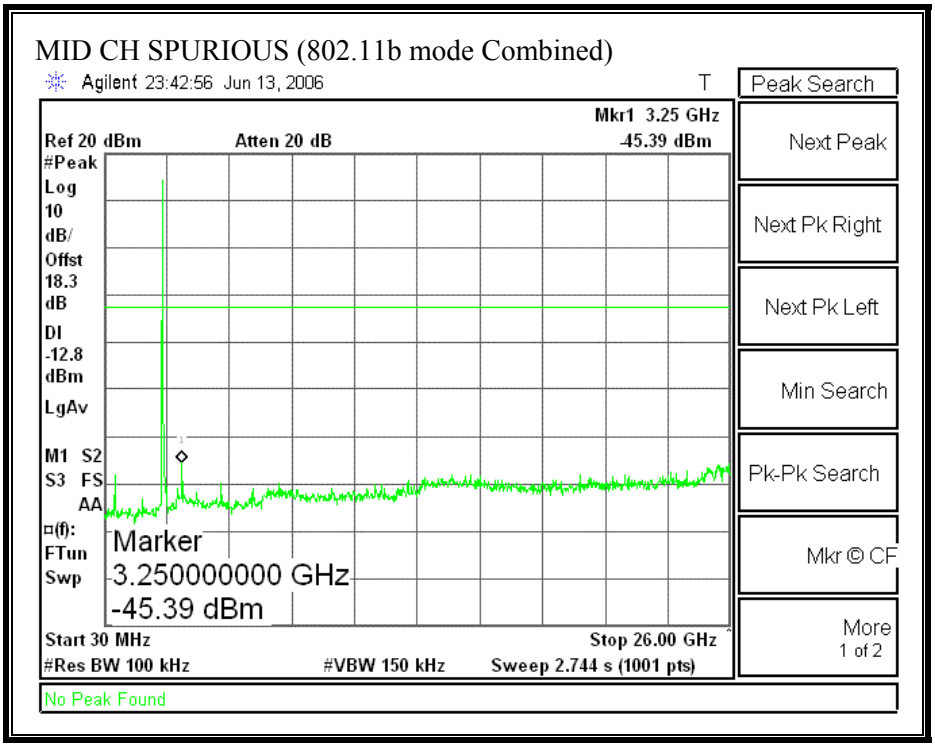
LOW CH SPURIOUS (802.11b mode Combined)



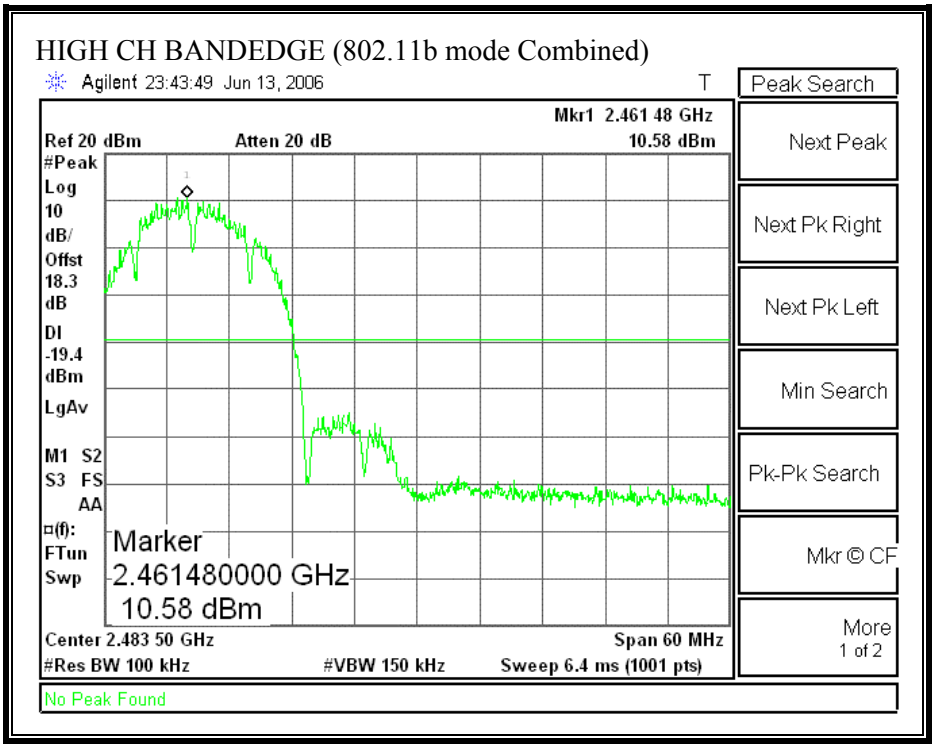
MID CH REFERENCE (802.11b mode Combined)



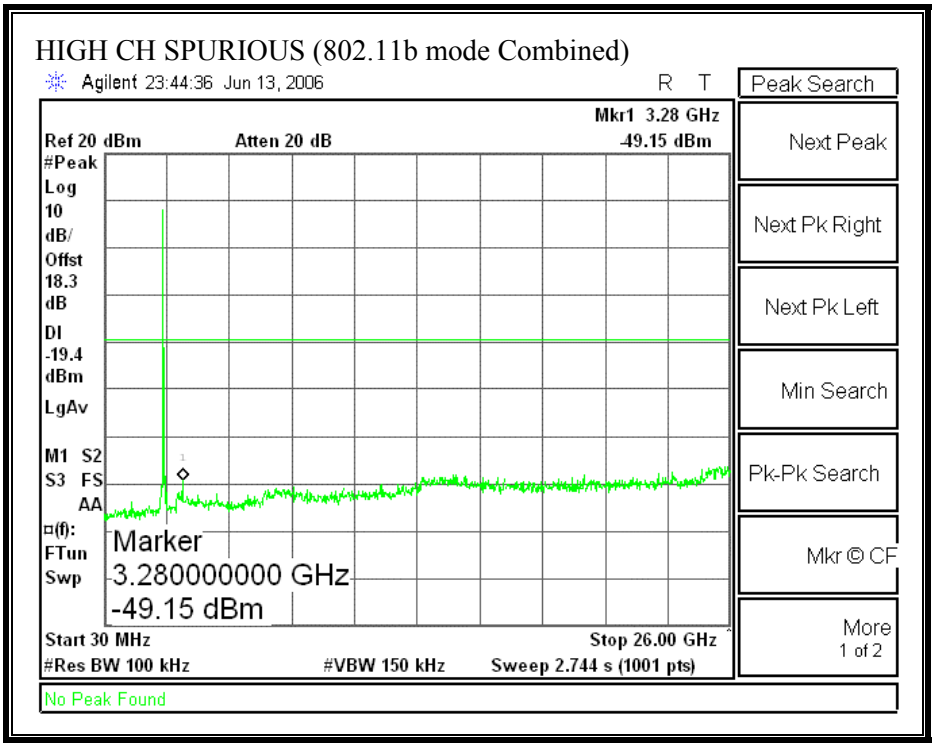
MID CH SPURIOUS (802.11b mode Combined)



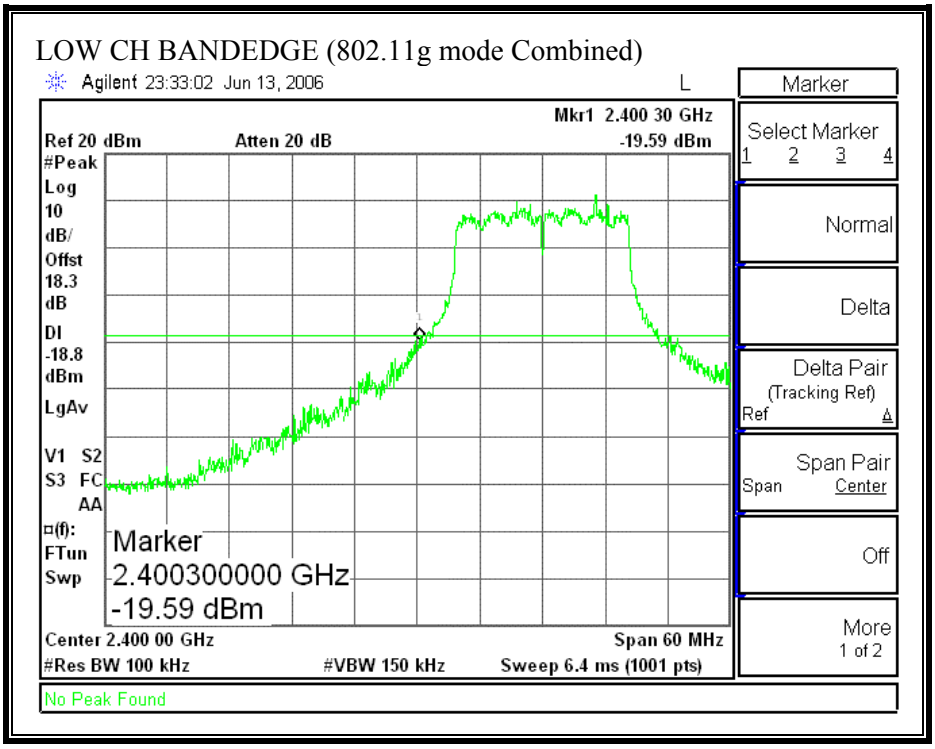
HIGH CH BANDEDGE (802.11b mode Combined)



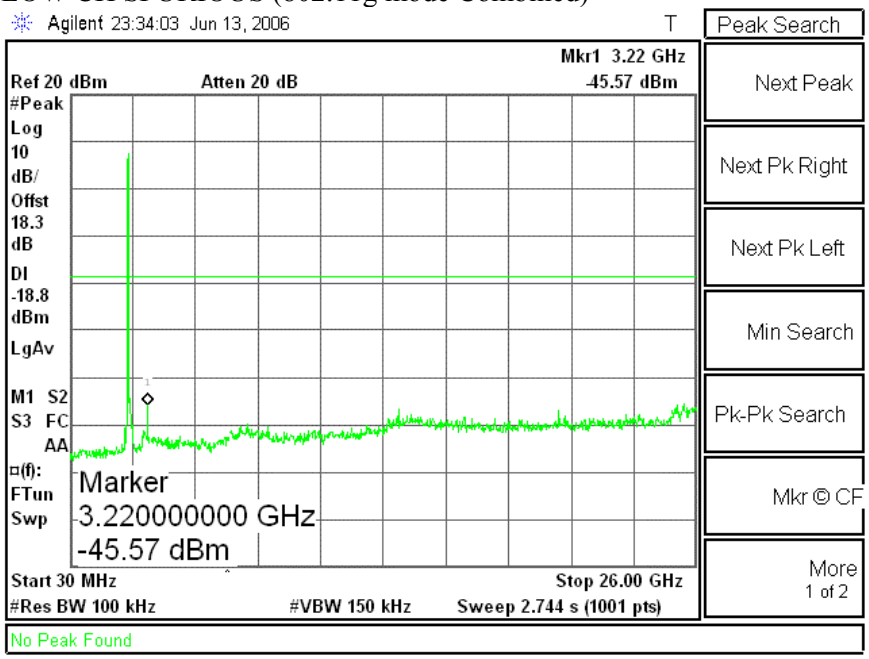
HIGH CH SPURIOUS (802.11b mode Combined)



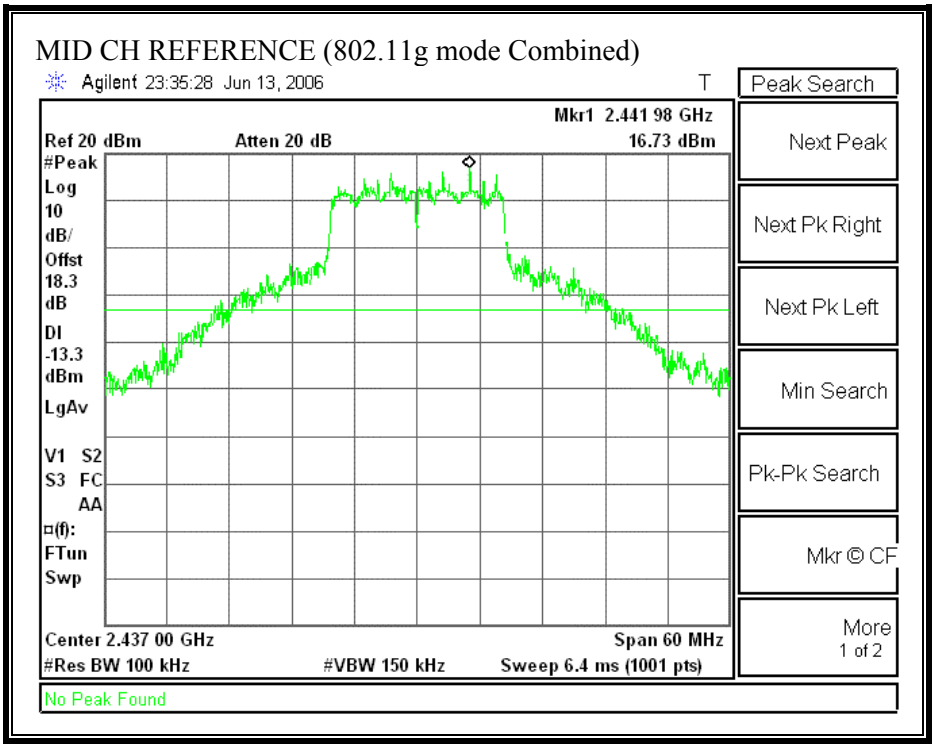
COMBINED SPURIOUS EMISSIONS (802.11g MODE)



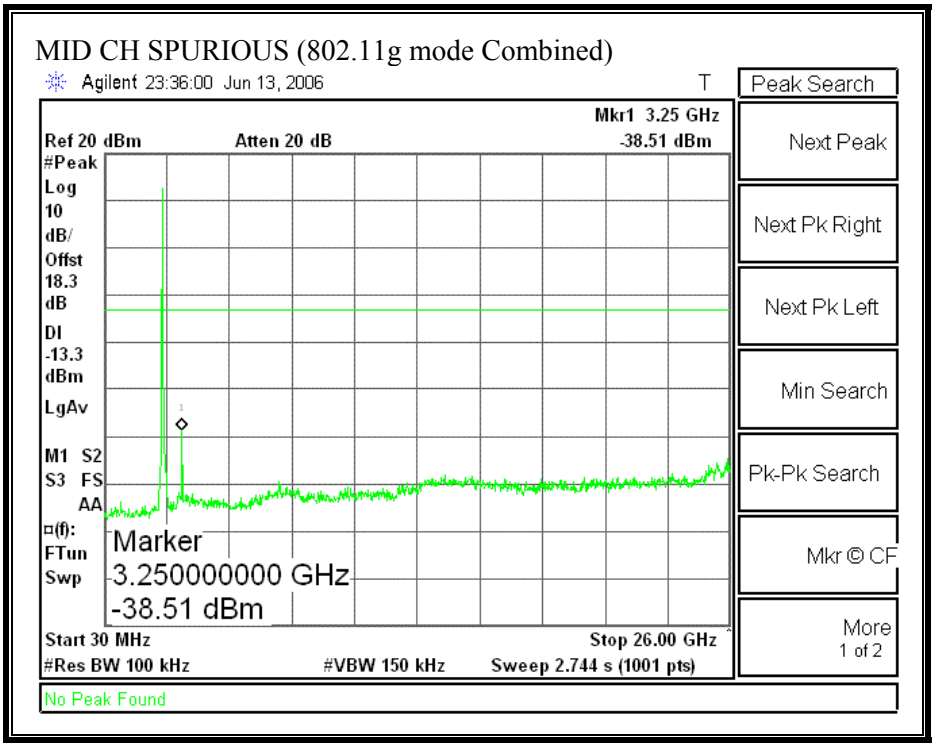
LOW CH SPURIOUS (802.11g mode Combined)



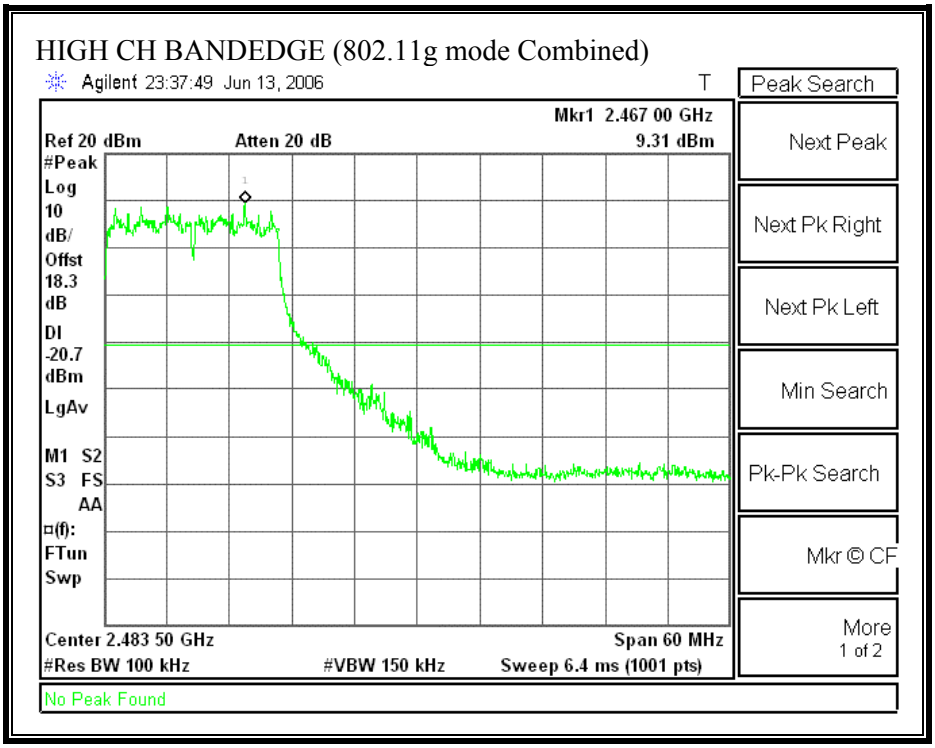
MID CH REFERENCE (802.11g mode Combined)



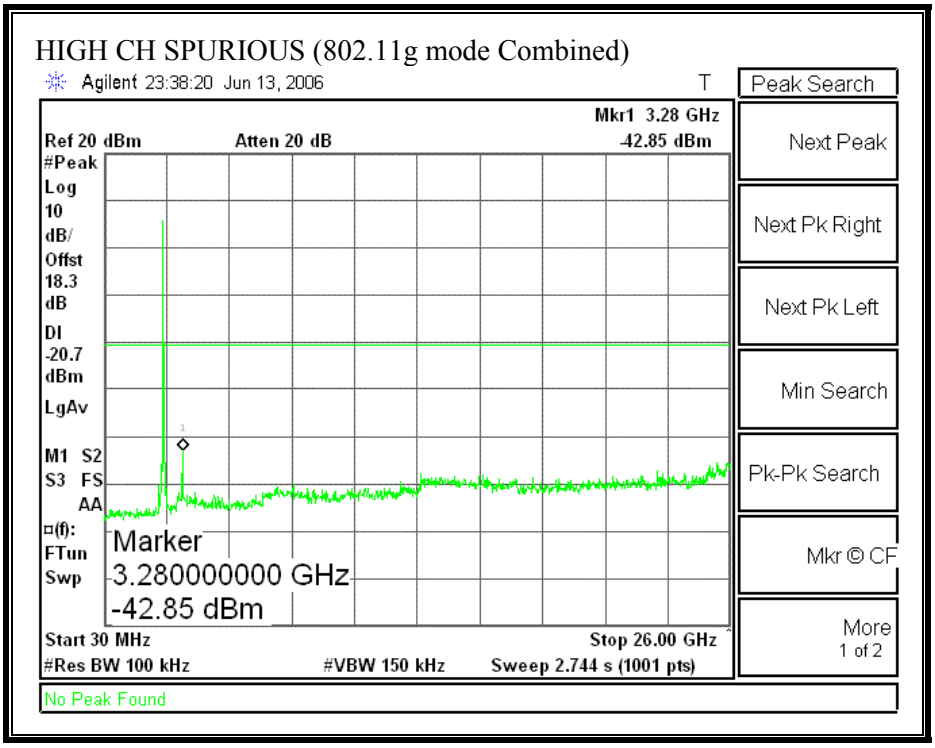
MID CH SPURIOUS (802.11g mode Combined)



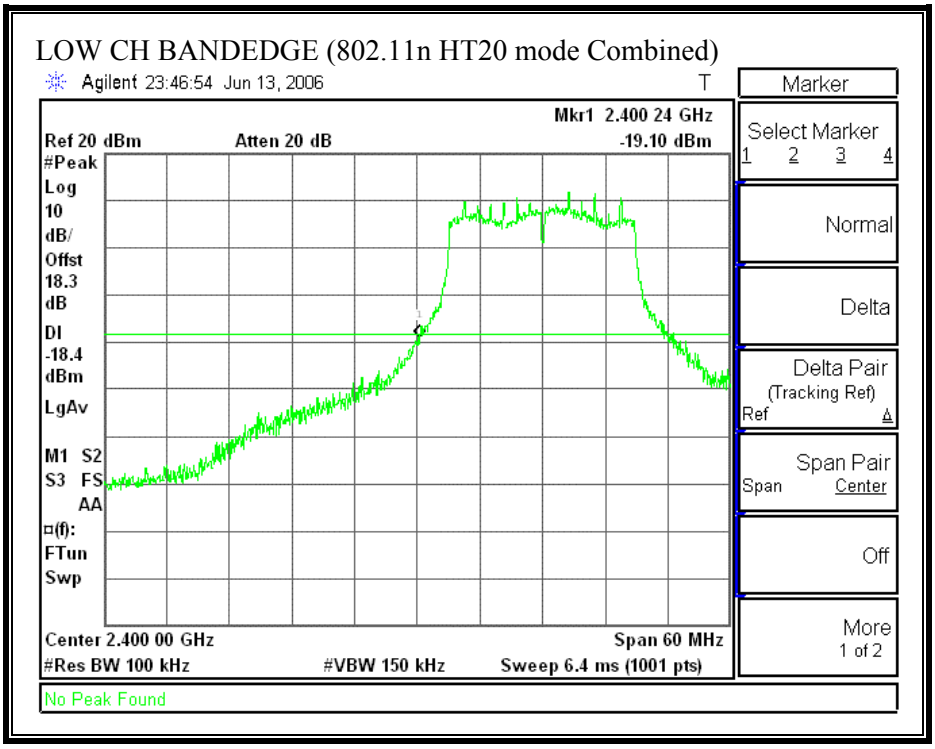
HIGH CH BANDEDGE (802.11g mode Combined)



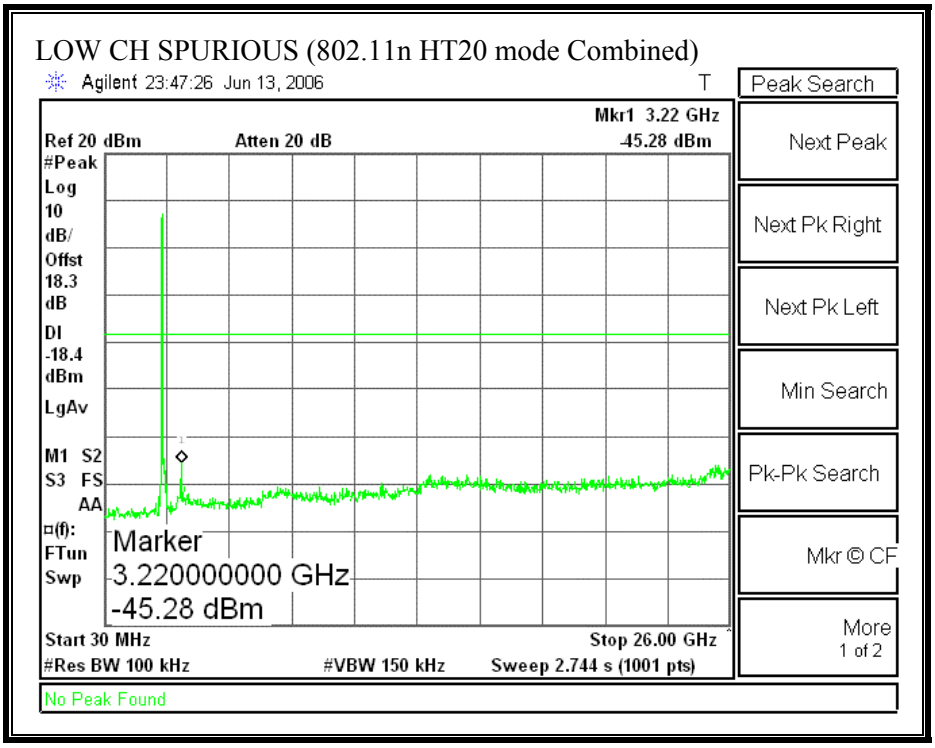
HIGH CH SPURIOUS (802.11g mode Combined)



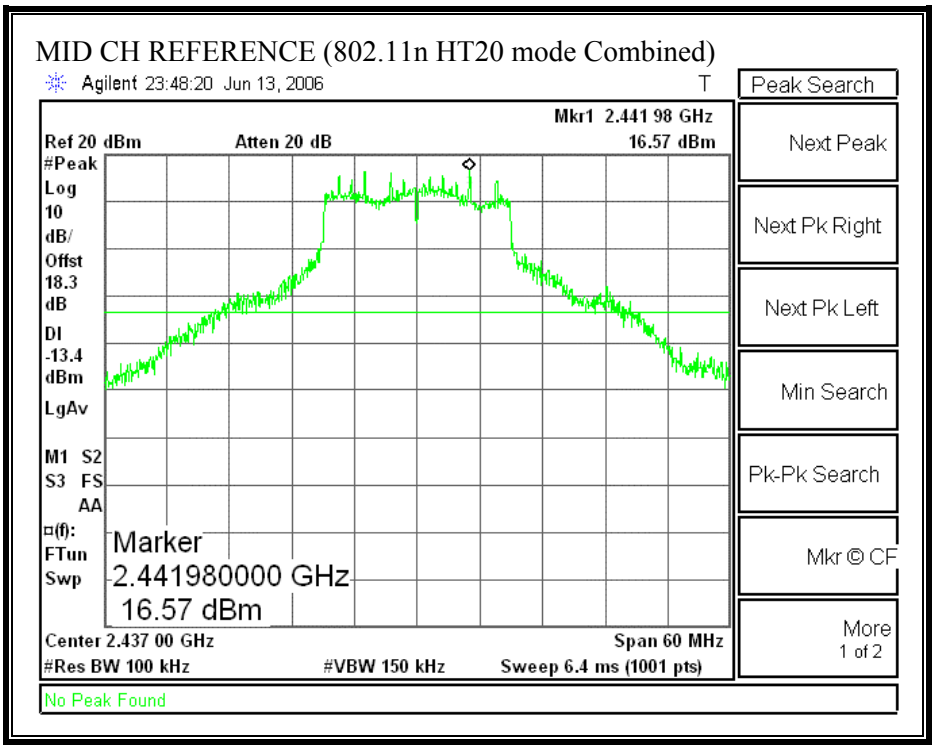
COMBINED SPURIOUS EMISSIONS (802.11n HT20 MODE)



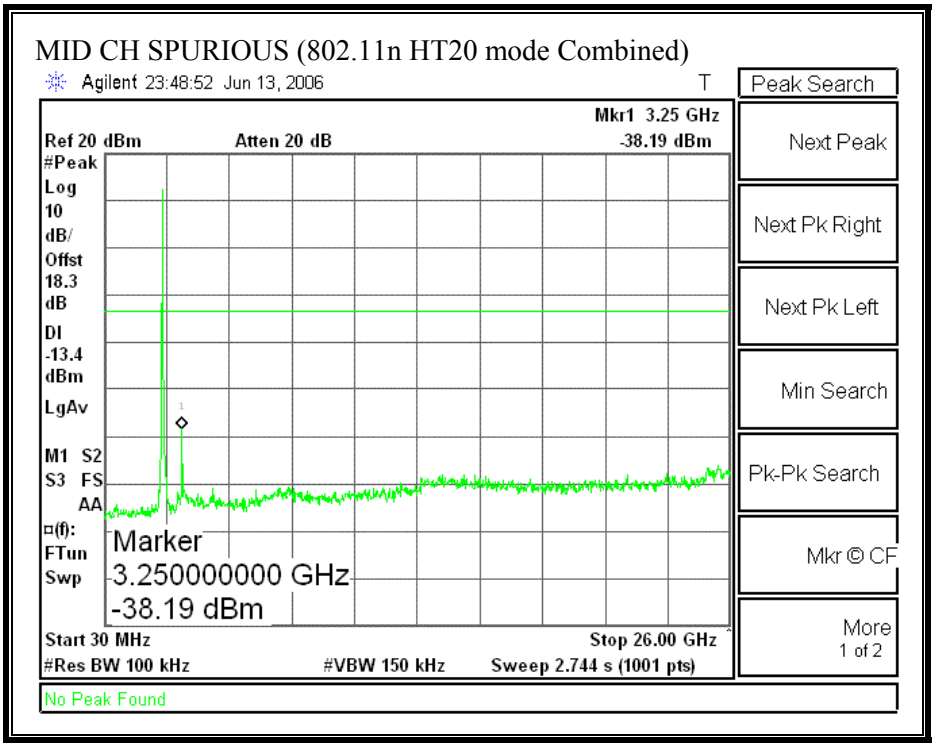
LOW CH SPURIOUS (802.11n HT20 mode Combined)



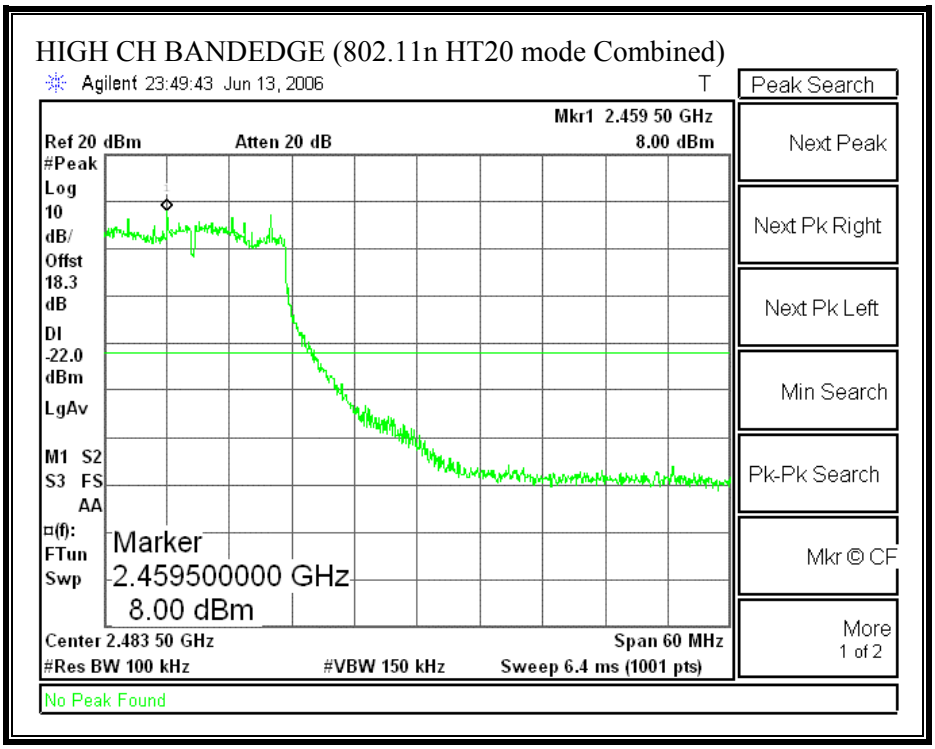
MID CH REFERENCE (802.11n HT20 mode Combined)



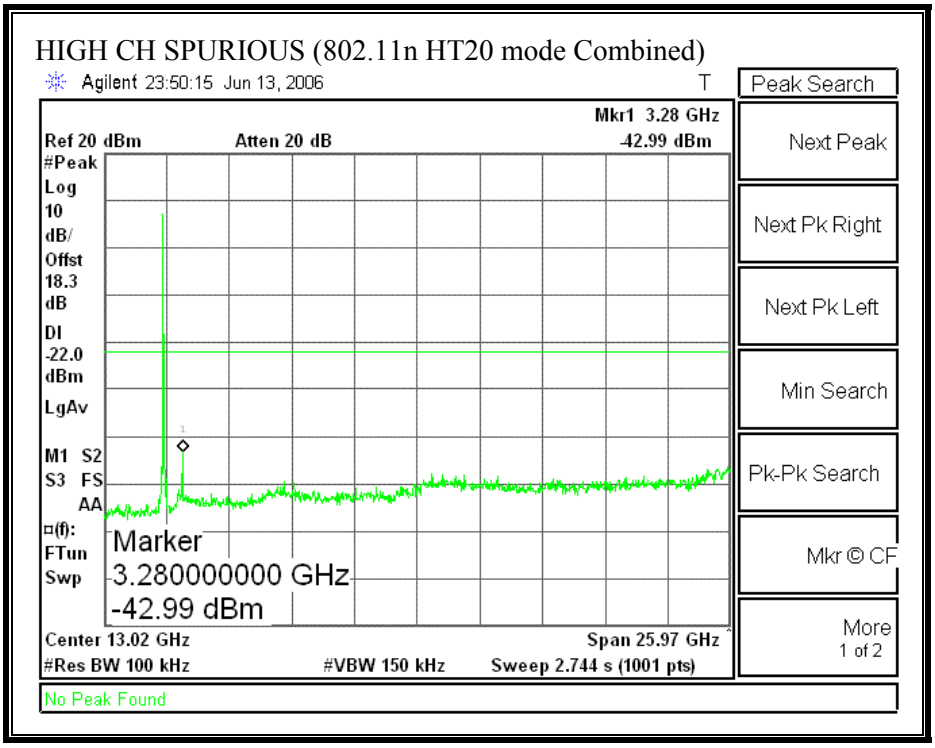
MID CH SPURIOUS (802.11n HT20 mode Combined)



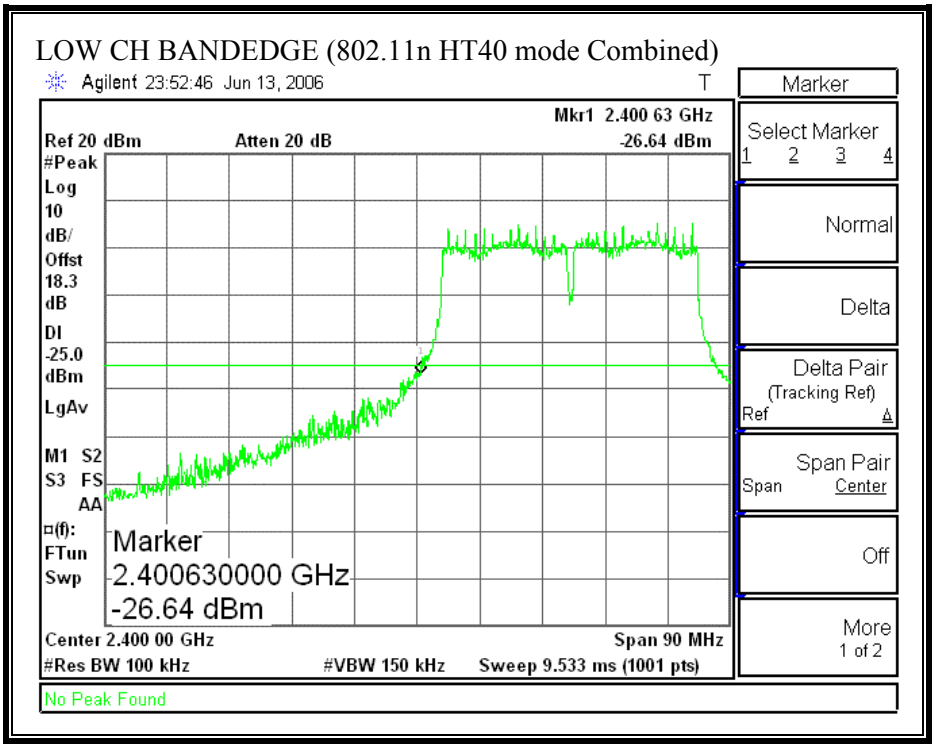
HIGH CH BANDEDGE (802.11n HT20 mode Combined)



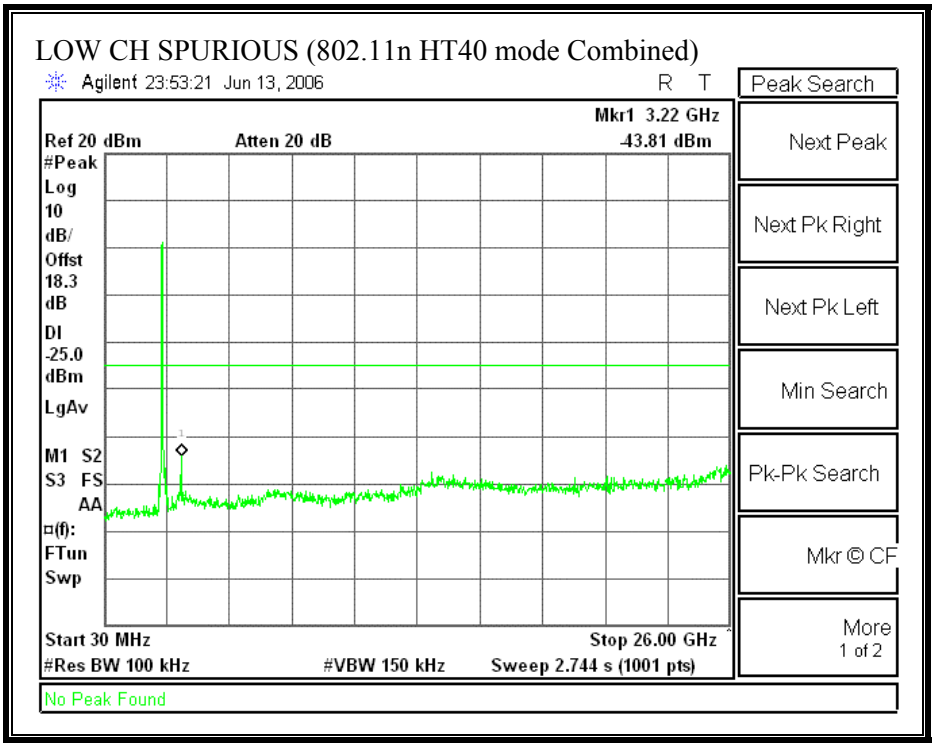
HIGH CH SPURIOUS (802.11n HT20 mode Combined)



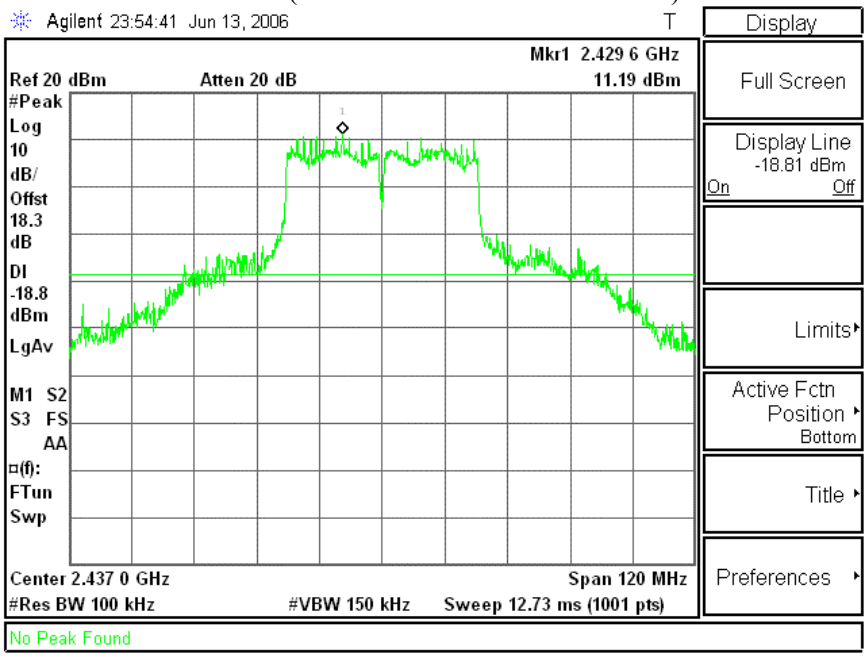
COMBINED SPURIOUS EMISSIONS (802.11 HT40 MODE)



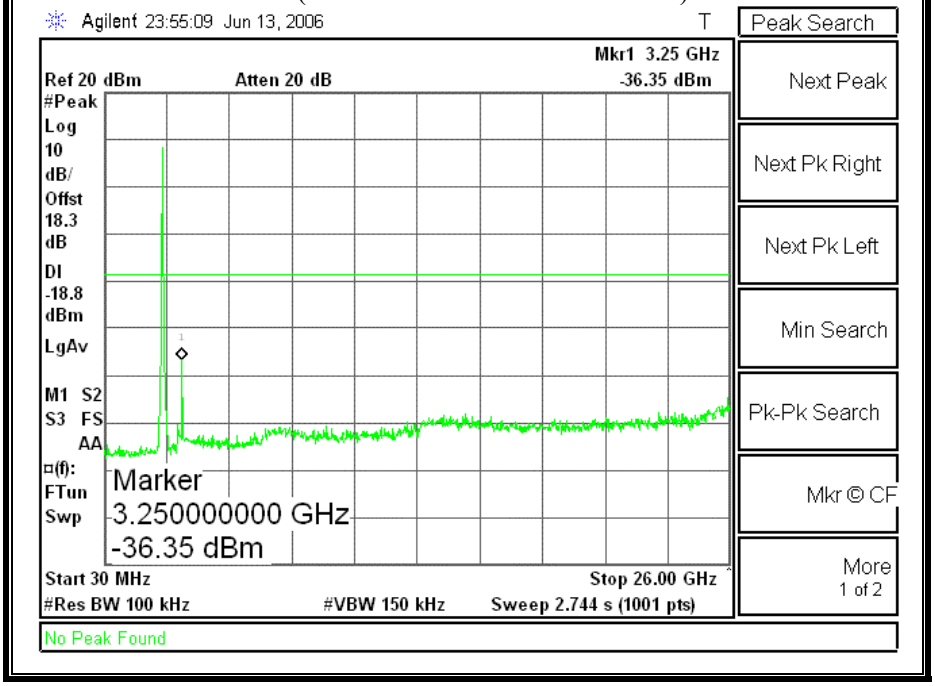
LOW CH SPURIOUS (802.11n HT40 mode Combined)



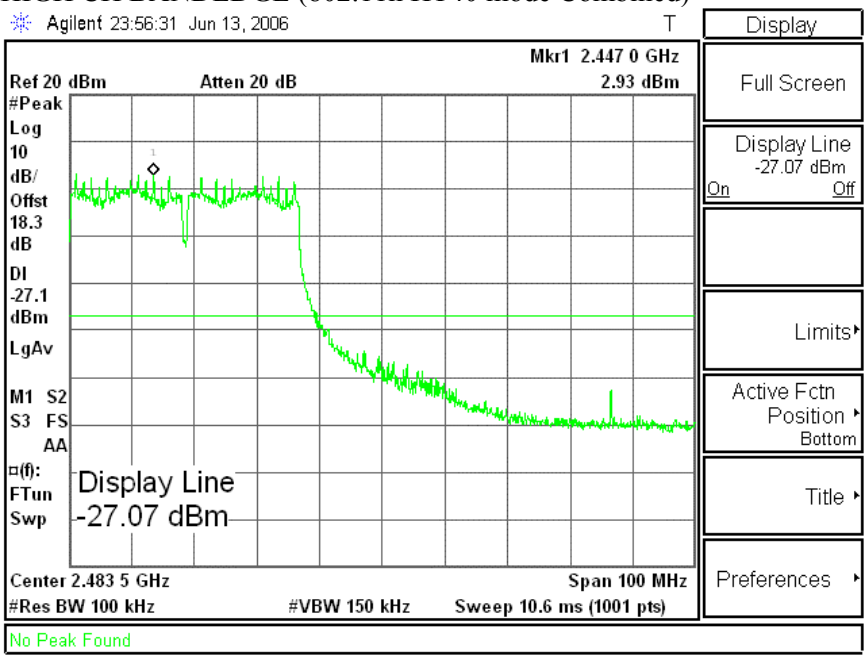
MID CH REFERENCE (802.11n HT40 mode Combined)



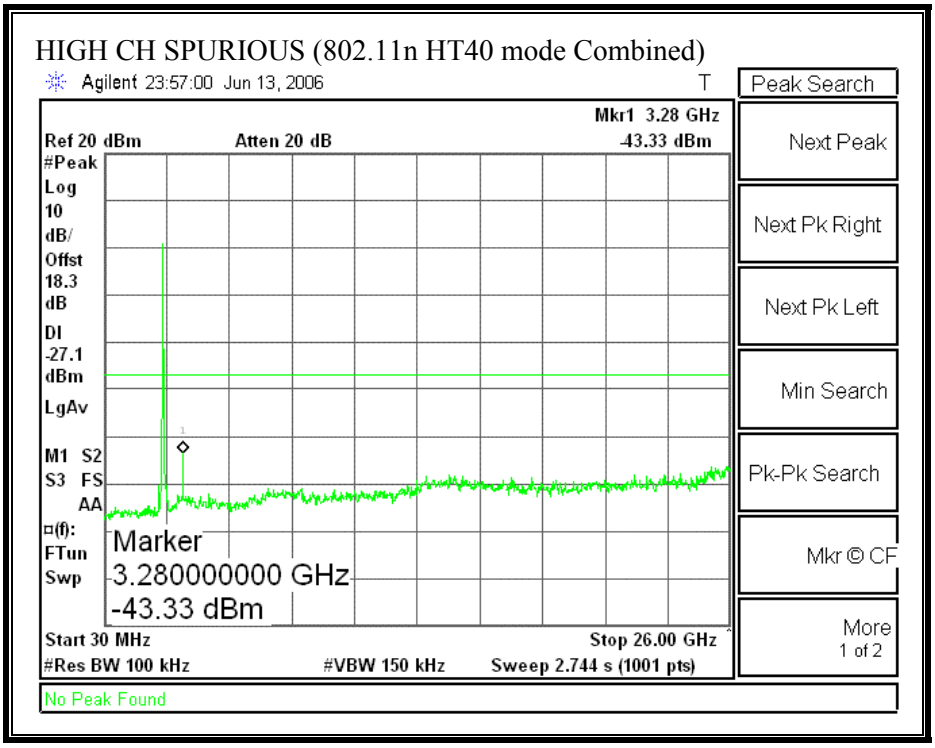
MID CH SPURIOUS (802.11n HT40 mode Combined)



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.

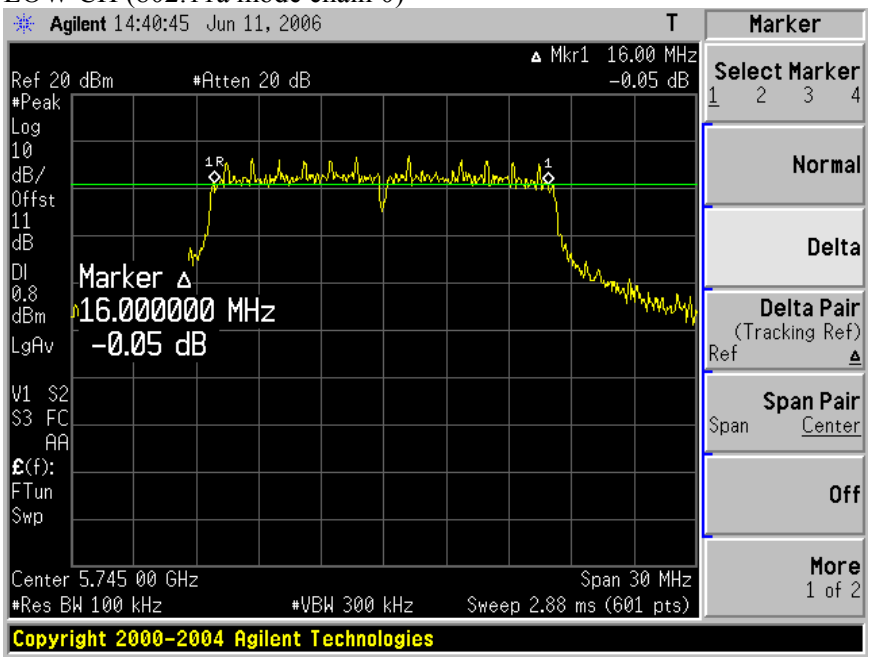
RESULTS

No non-compliance noted:

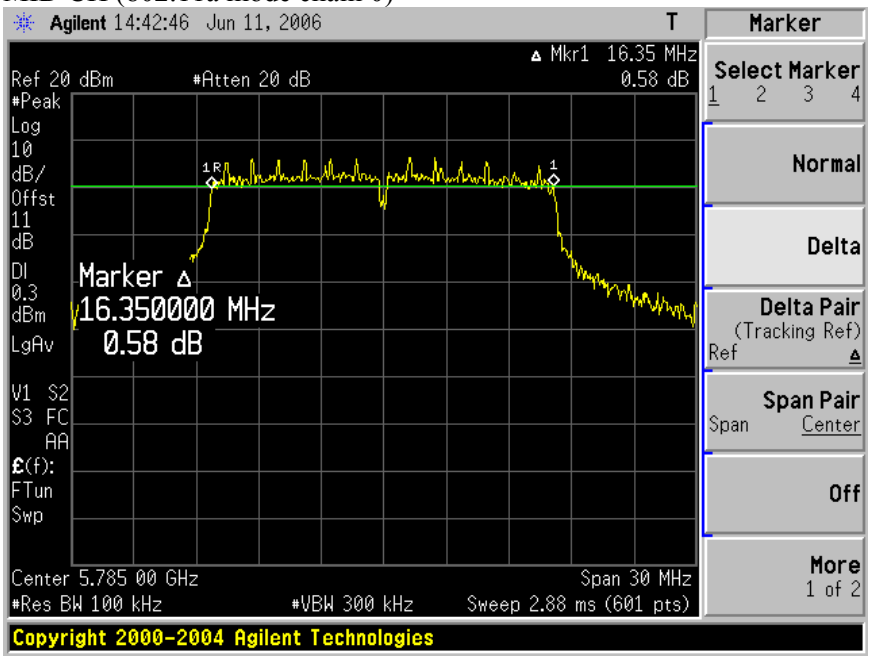
Mode Channel	Frequency (MHz)	6 dB BW Chain 0 (kHz)	6 dB BW Chain 2 (kHz)	Minimum Limit (kHz)	Minimum Margin (kHz)
802.11a Mode					
Low	5745	16000	16200	500	15500
Middle	5785	16350	16400	500	15850
High	5825	16100	16350	500	15600
802.11n HT20 Mode					
Low	5745	16650	16200	500	15700
Mid	5785	17450	16400	500	15900
High	5825	17450	16350	500	15850
802.11n HT40 Mode					
Low	5755	36200	36400	500	35700
Mid	5785	36300	36200	500	35700
High	5815	36200	36100	500	35600

(802.11a MODE CHAIN 0)

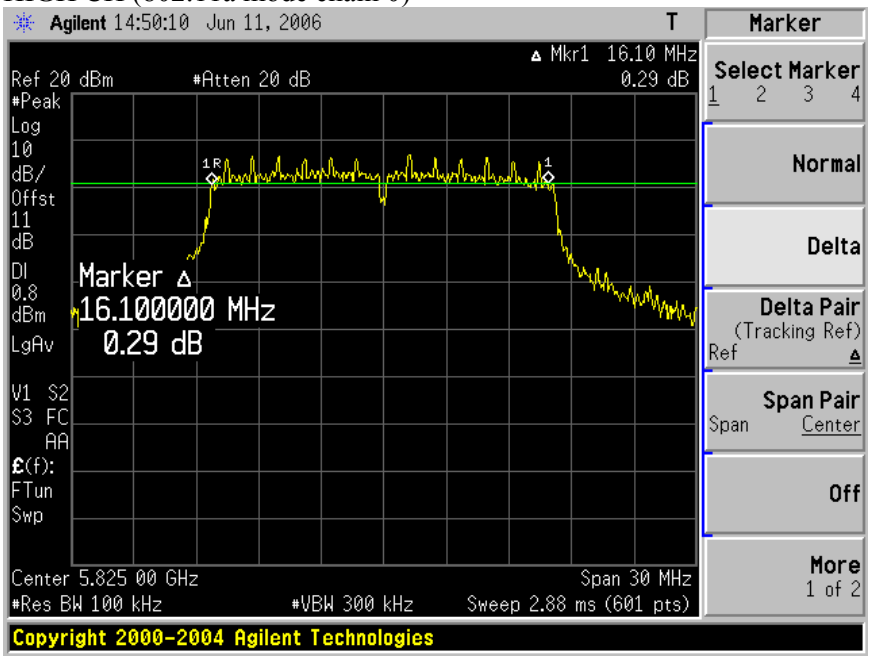
LOW CH (802.11a mode chain 0)



MID CH (802.11a mode chain 0)

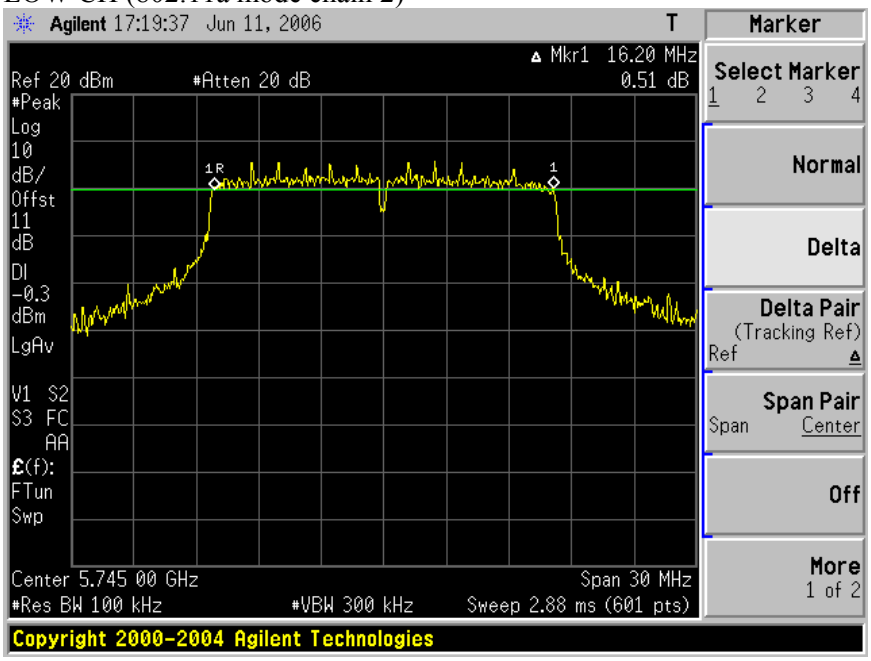


HIGH CH (802.11a mode chain 0)

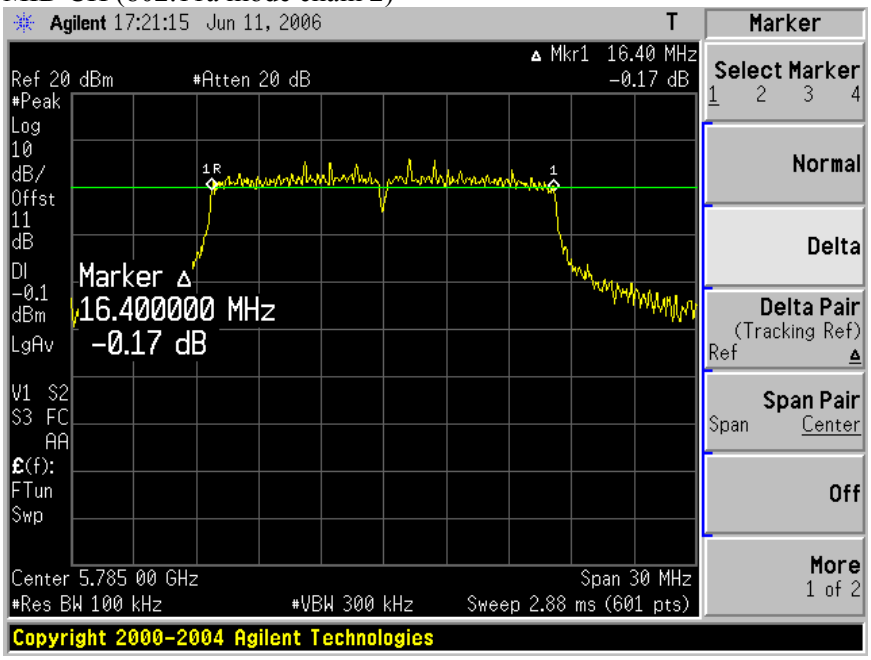


(802.11a MODE CHAIN 2)

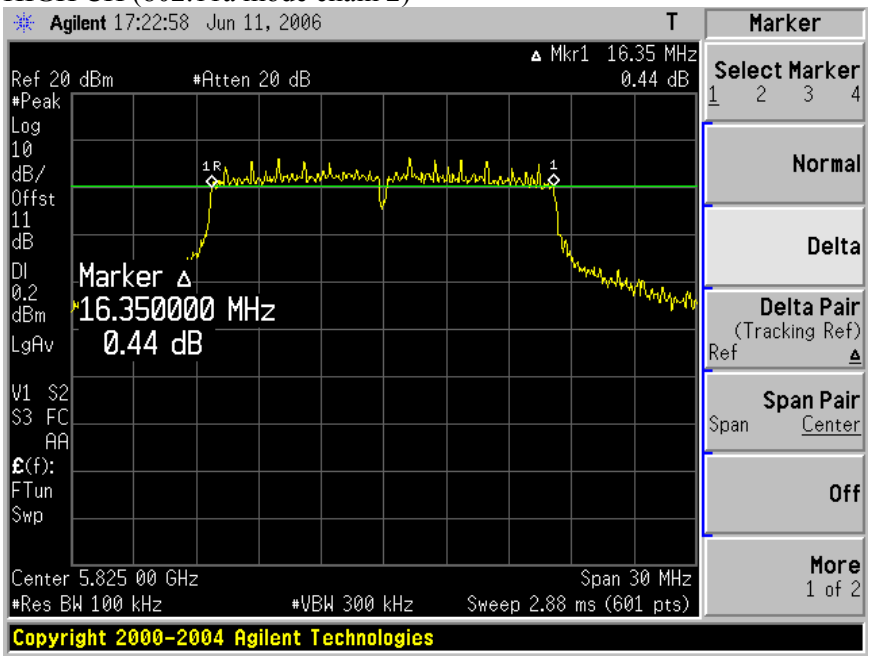
LOW CH (802.11a mode chain 2)



MID CH (802.11a mode chain 2)

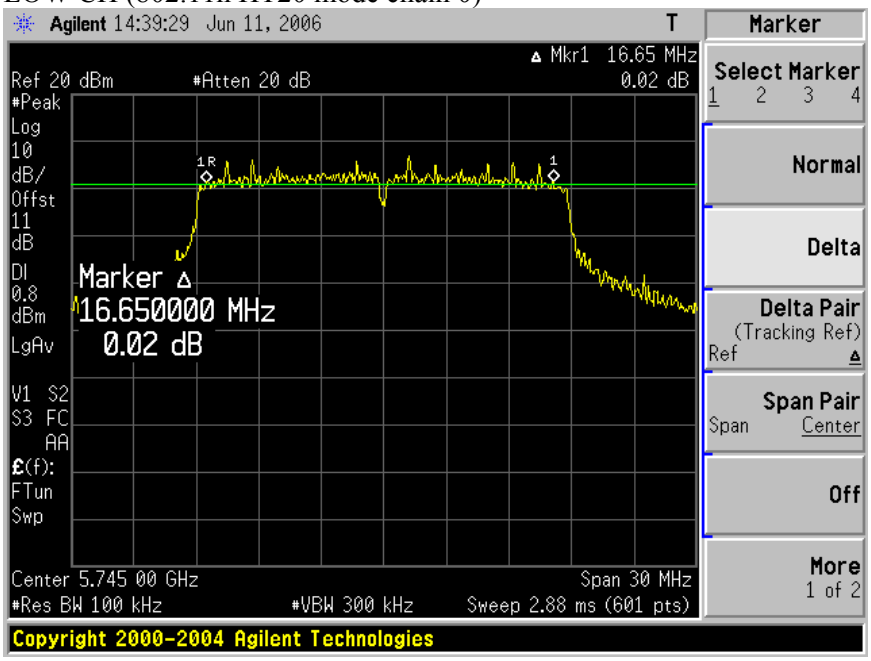


HIGH CH (802.11a mode chain 2)



(802.11n HT20 MODE CHAIN 0)

LOW CH (802.11n HT20 mode chain 0)



MID CH (802.11n HT20 mode chain 0)