FCC CFR47 PART 15 SUBPART C
CLASS II PERMISSIVE CHANGE
CERTIFICATION TEST REPORT

FOR

2.4GHz 802.11n CARDBUS

MODEL NUMBER: AR5BCB-00071

FCC ID: PPD-AR5BCB-00071

REPORT NUMBER: 06U10251-1

ISSUE DATE: APRIL 20, 2006

Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	4/20/2006	Initial Release	A. Ilarina

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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: 2.4GHz 802.11n CARDBUS

MODEL: AR5BCB-00071

SERIAL NUMBER: CB71-044-L0281

DATE TESTED: APRIL 19-20, 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:

ALVIN ILARINA
EMC SUPERVISOR
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 EUT is an 802.11n MIMO transceiver in cardbus form factor. . It has two transmitter chains and three receive chains (2x3 configurations). The 2x3 configuration is implemented with two outside chains (Chain 0 and 2) and the middle chain (chain 1) Rx only. The device may be sold in a 2x2 configuration where the middle receive chain is depopulated.

RF TX chains #0 & #2 connect to Inverted-F Antennas for Tx/Rx; RF chain #1 connects to a PCB Antenna for Rx only.

The EUT description was changed after testing commenced. All data in this report is applicable to the EUT description documented in Section 1 above.

There two housing included in this report, both housings are identical in term of PCB design / layout. The original housing does not incorporate gasket on the top of metal plate and the bottom of PCB. The alternate housing has incorporated gaskets on both positions. The alternate housing is using same plastic and metal material, the alternate housing is litter thicker (the difference is < 1 mm) than the original housing.

5.2. DESCRIPTION OF CLASS II CHANGE

The changes filed under this application include:

Change#1	The PCB Layout was changed around the XLNA & Power Management areas of the board. The PCB dimensions & antennas are not changed.
Change#2	Components were changed in the receive circuit/XLNA.
Change#3	Components were changed in the regulator circuit.
Change#4	The MAC/Baseband chip was updated to implement various digital logic bug fixes & improved power consumption. The Radio chip is unchanged.

5.3. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak 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	24.20	263.03
2412 - 2462	802.11g	24.12	258.23
2412 - 2462	802.11 HT20	23.32	214.78
2422 - 2452	802.11 HT40	23.10	204.17

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two Inverted-F antennas for tx/rx and one PCB integrated monopole antenna for receive-only. The maximum antenna gain of the Inverted-F transmitting antennas is -1.2dBi.

5.5. 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 0.1 Build #2 Art 11n
.

5.6. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 2437 MHz.

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

Thus all emissions tests were made with following data rates:

- b mode, 20 MHz Channel Bandwidth, 2412 MHz-2462 MHz, 1 Mb/s, BPSK Modulation, Spatial Stream 1.
- g mode, 20 MHz Channel Bandwidth, 2412 MHz-2462 MHz, 6 Mb/s, OFDM Modulation, Spatial Stream 1.
- HT20 mode, 20 MHz Channel Bandwidth, 2412 MHz-2462 MHz, 6.5 Mb/s, BPSK Modulation, Spatial Stream 1..
- HT40 mode, 40 MHz Channel Bandwidth, 2422 MHz-2452 MHz, 13.5 Mb/s, BPSK Modulation, Spatial Stream 1.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	IBM	ThinkPad R52	L3-CR106	DoC
AC Adapter	IBM	08K8204	11S08K8204Z1ZAX859223U	DoC

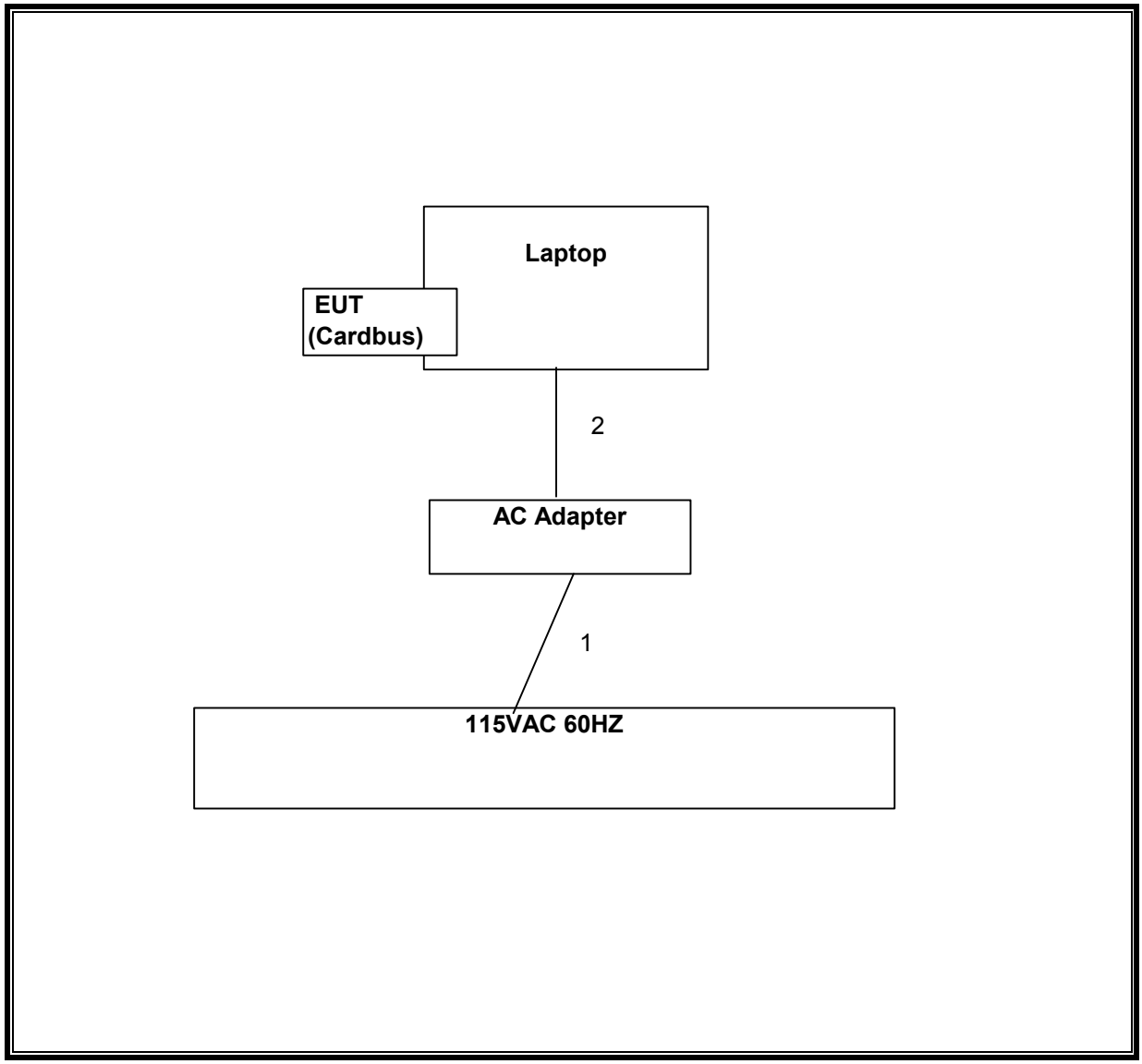
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	1	US 115V	Un-shielded	1m	NA
2	DC	1	SC	Un-shielded	1.5m	NA

TEST SETUP

The EUT is inserted to 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**
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent	E4446A	US42510266	10/19/2006
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/2006
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/3/2006
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	2/4/2007
RF Filter Section	HP	85420E	3705A00256	2/4/2007
Preamplifier, 1300 MHz	HP	8447D	1937A02062	1/23/2007
Preamplifier, 1 ~ 26 GHz	Miteq	NSP2600-SP	924342	9/2/2006
Peak Power Meter	Agilent	E4416A	GB41291160	12/2/2007
Peak / Average Power Sensor	Agilent	E9327A	US40440755	12/2/2007
2.4GHz Reject Filter	Micro Tronics	BRM50702	3	N/A

7. LIMITS AND RESULTS

7.1. CHANNEL TESTS FOR THE 2400 TO 2483.5 MHz BAND

7.1.1. PEAK OUTPUT POWER

PEAK 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) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz , and 5725-5850 MHz bands: 1 watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

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

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer 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.

The test is performed in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005. The transmitter operates continuously therefore Power Output Option 2, Method # 1 is used.

RESULTS,

The maximum antenna gain is –1.2 dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm.

Total peak power calculation formula: 10 log (10^ (Pchain0 / 10) + 10^ (Pchain2 / 10))

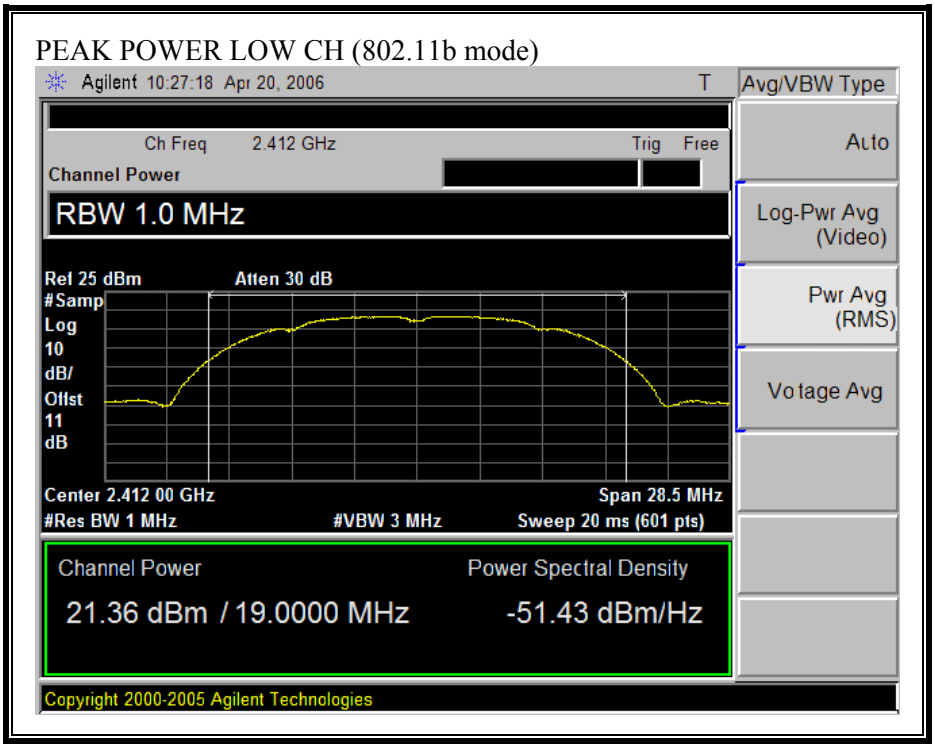
Note: Pchain 0 and Pchain2 are in dBm

No non-compliance noted:

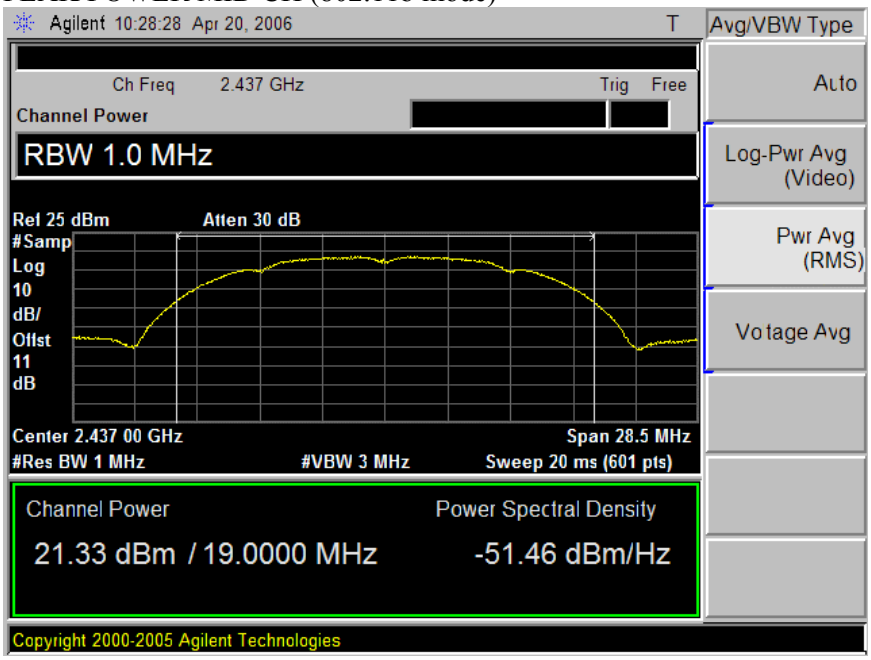
Channel	Frequency (MHz)	Peak Power Chain 0 (dBm)	Peak Power Chain 2 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
802.11b Mode						
Low	2412	21.36	19.89	23.70	30.0	-6.30
Middle	2437	21.33	21.04	24.20	30.0	-5.80
High	2462	19.56	19.07	22.33	30.0	-7.67
802.11g Mode						
Low	2412	17.32	17.17	20.26	30.0	-9.74
Middle	2437	20.82	21.39	24.12	30.0	-5.88
High	2462	18.25	18.42	21.35	30.0	-8.65
802.11 HT20 Mode						
Low	2412	16.76	16.59	19.69	30.0	-10.31
Middle	2437	20.18	20.44	23.32	30.0	-6.68
High	2462	17.97	17.98	20.99	30.0	-9.01
802.11 HT40 Mode						
Low	2422	16.28	15.22	18.79	30.0	-11.21
Second Low	2427	16.26	16.42	19.35	30.0	-10.65
Middle	2437	20.04	20.13	23.10	30.0	-6.90
Second High	2447	16.70	17.17	19.95	30.0	-10.05
High	2452	16.52	17.24	19.91	30.0	-10.09

CHAIN 0, OUTPUT POWER (802.11b MODE)

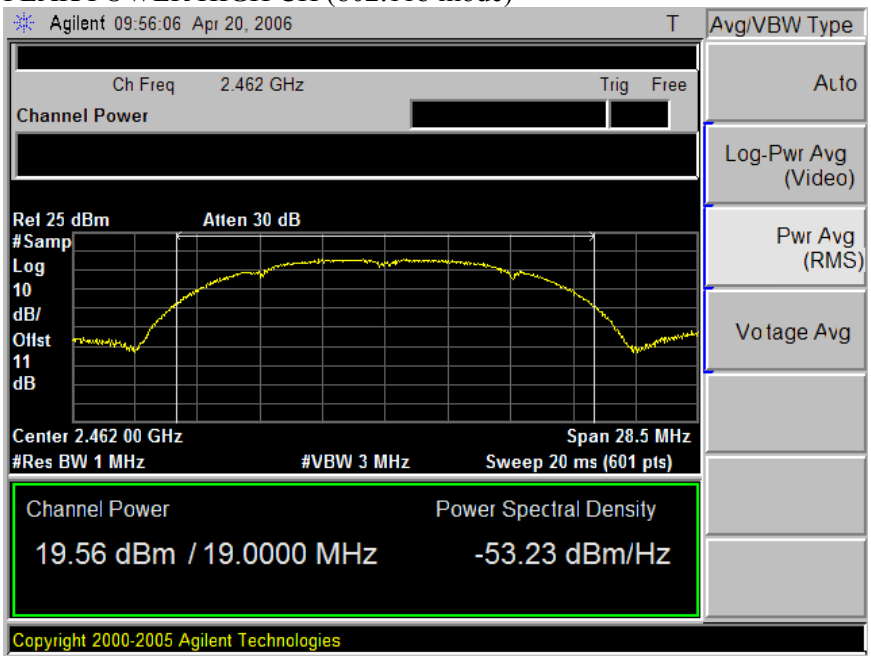
PEAK POWER LOW CH (802.11b mode)



PEAK POWER MID CH (802.11b mode)

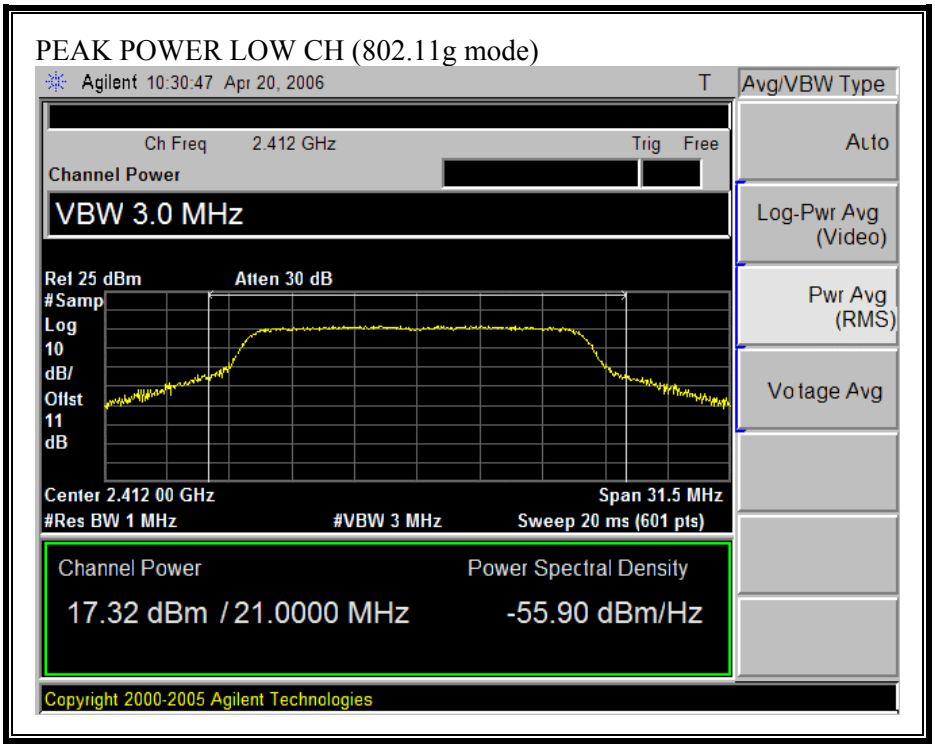


PEAK POWER HIGH CH (802.11b mode)

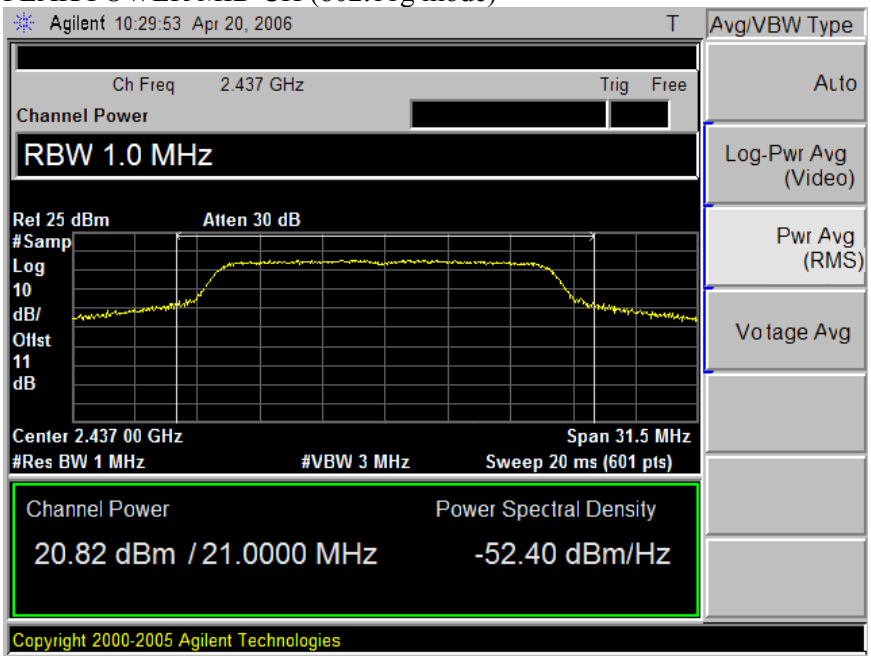


CHAIN 0, OUTPUT POWER (802.11g MODE)

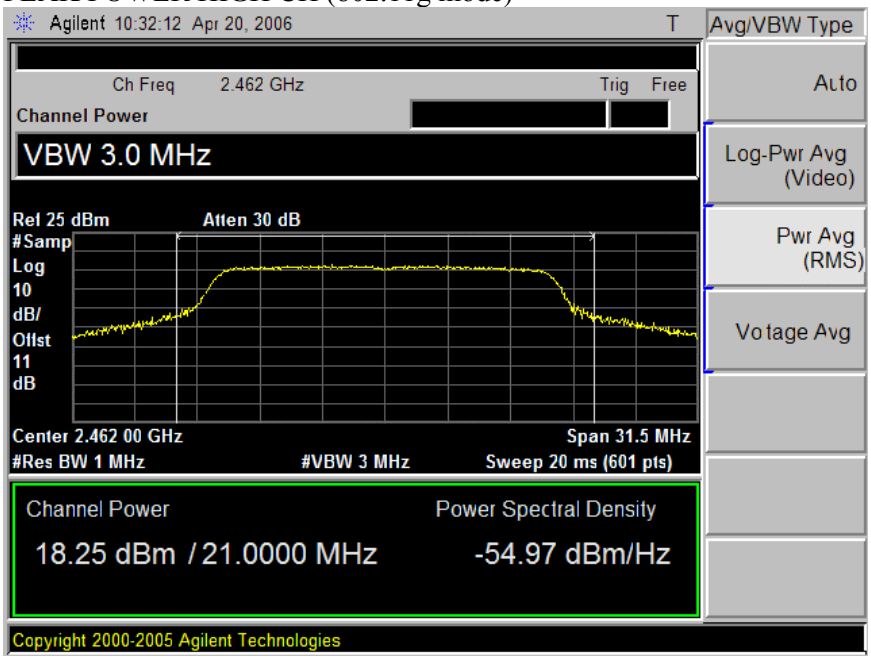
PEAK POWER LOW CH (802.11g mode)



PEAK POWER MID CH (802.11g mode)

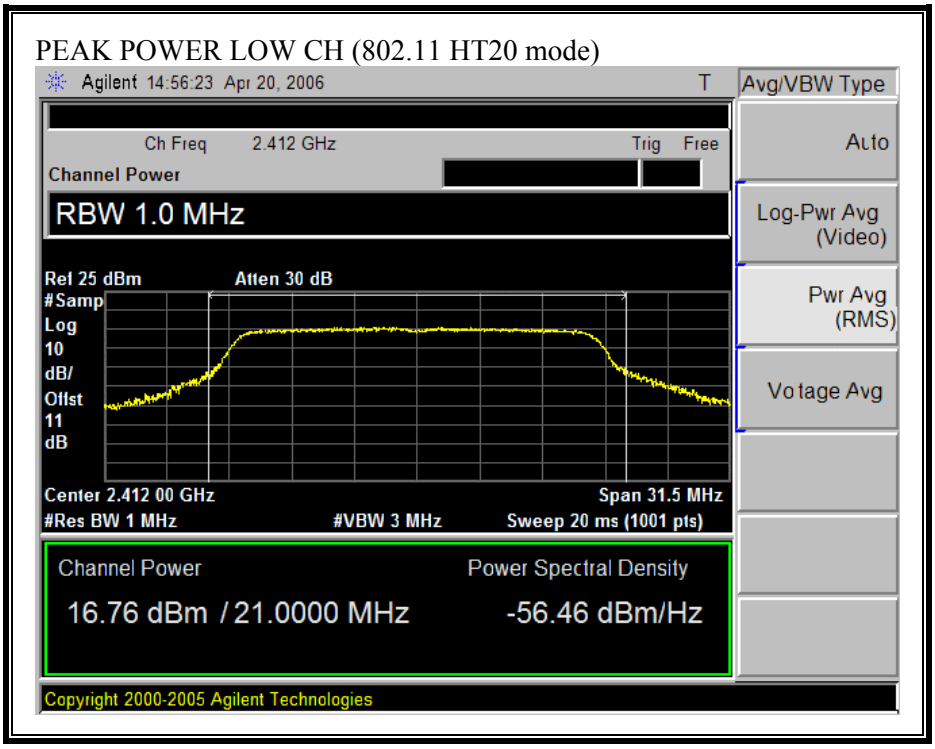


PEAK POWER HIGH CH (802.11g mode)

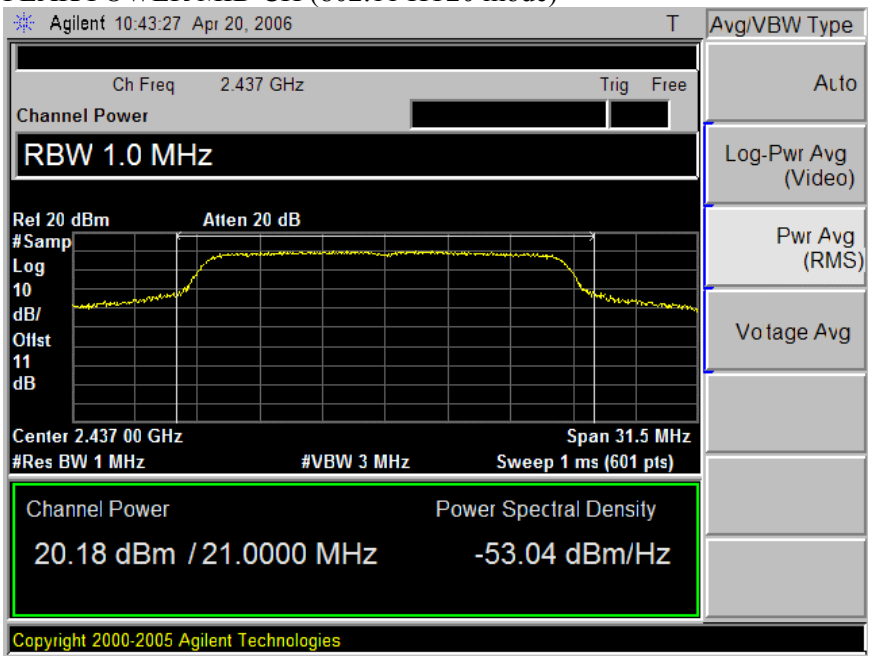


CHAIN 0, OUTPUT POWER (802.11 HT20 MODE)

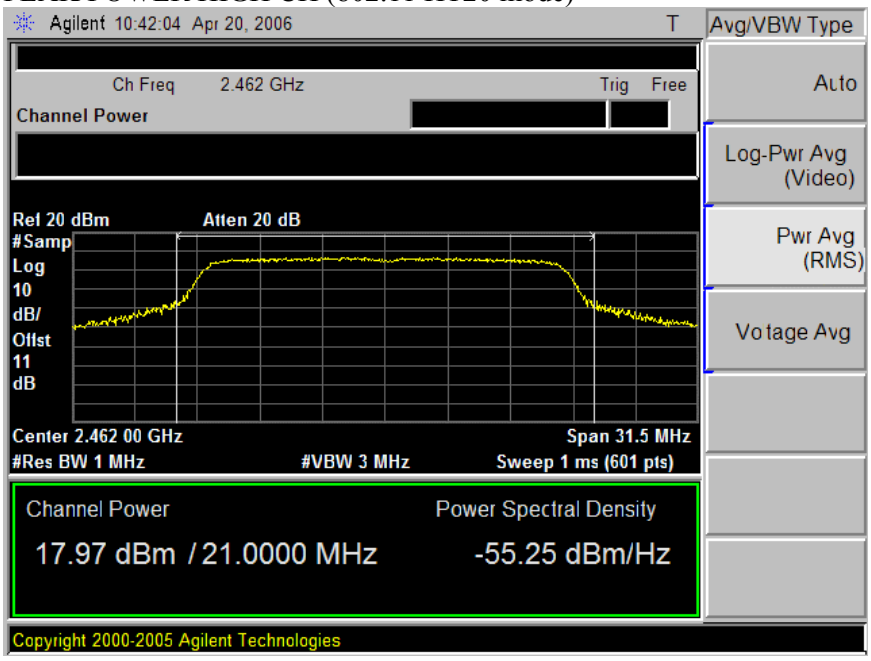
PEAK POWER LOW CH (802.11 HT20 mode)



PEAK POWER MID CH (802.11 HT20 mode)

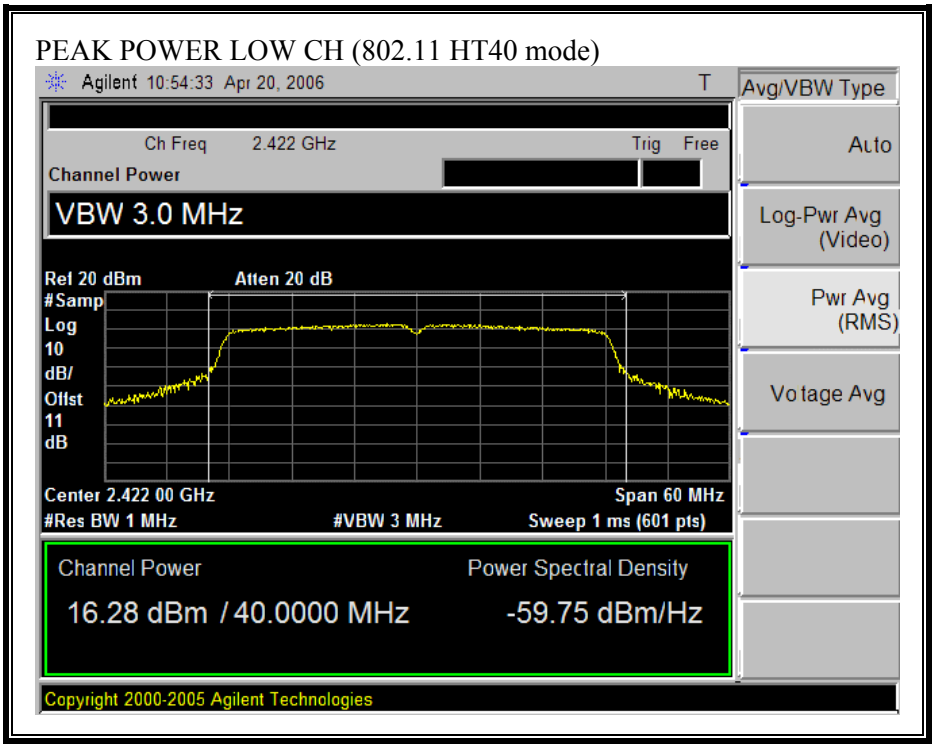


PEAK POWER HIGH CH (802.11 HT20 mode)

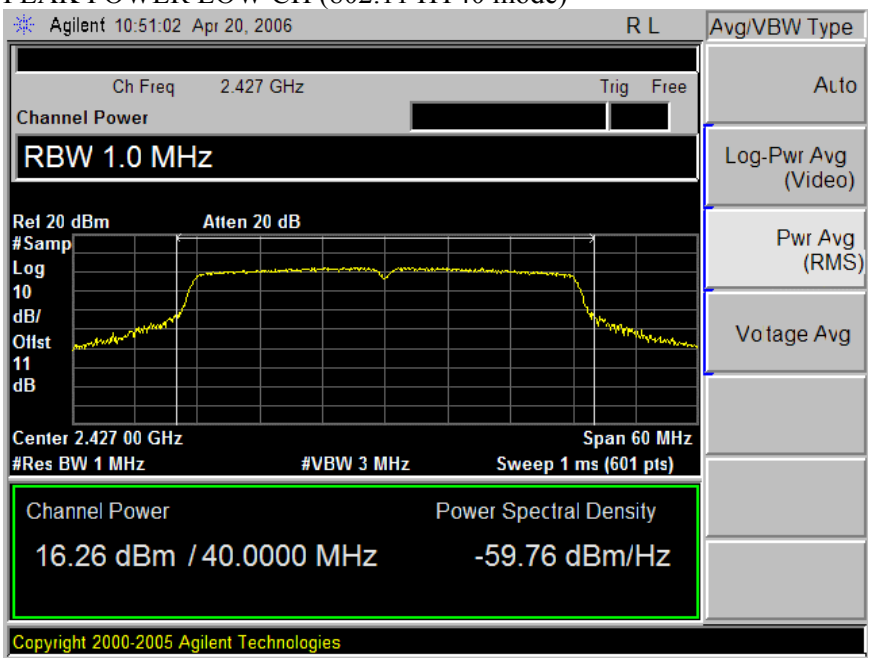


CHAIN 0, OUTPUT POWER (802.11 HT40 MODE)

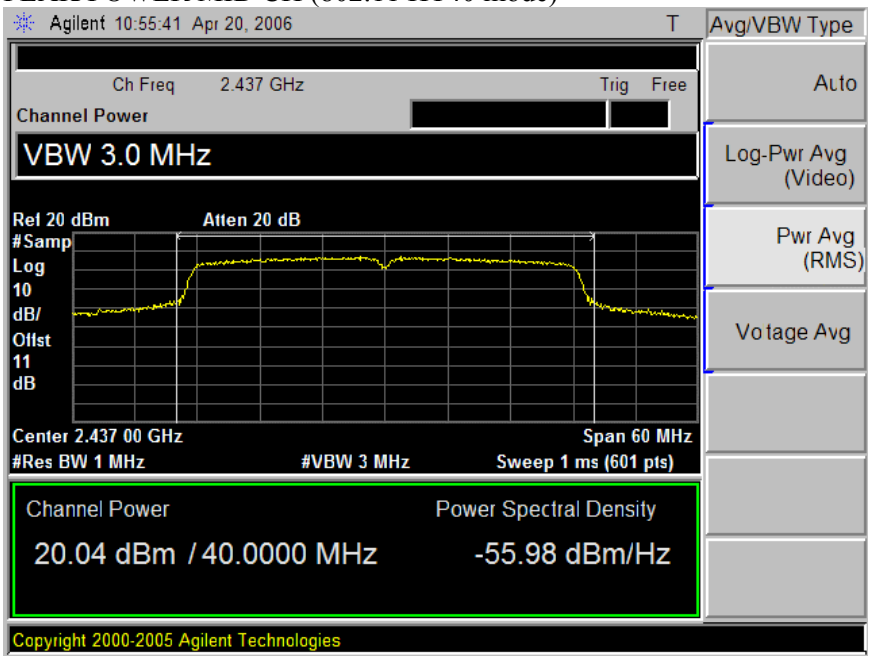
PEAK POWER LOW CH (802.11 HT40 mode)



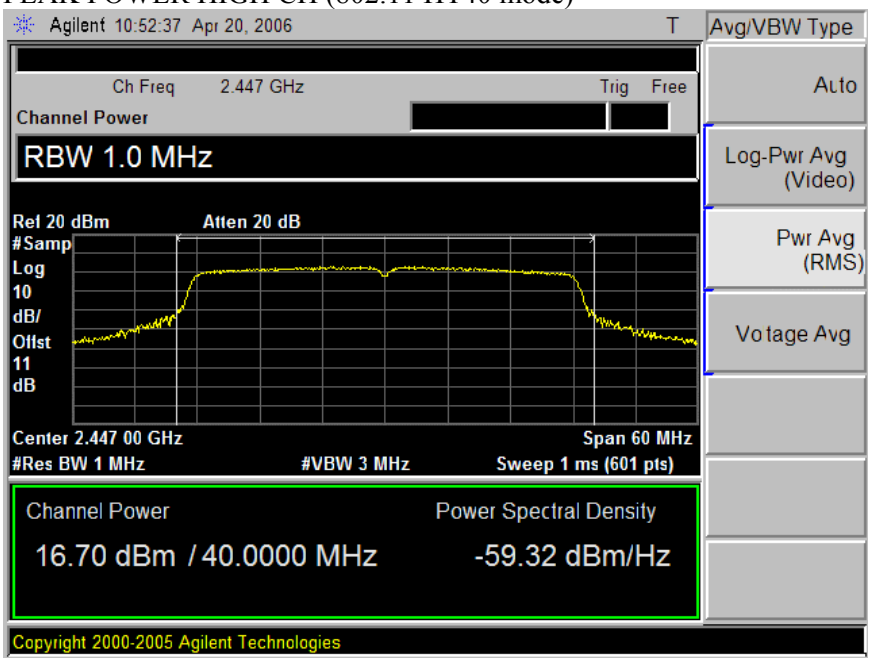
PEAK POWER LOW CH (802.11 HT40 mode)



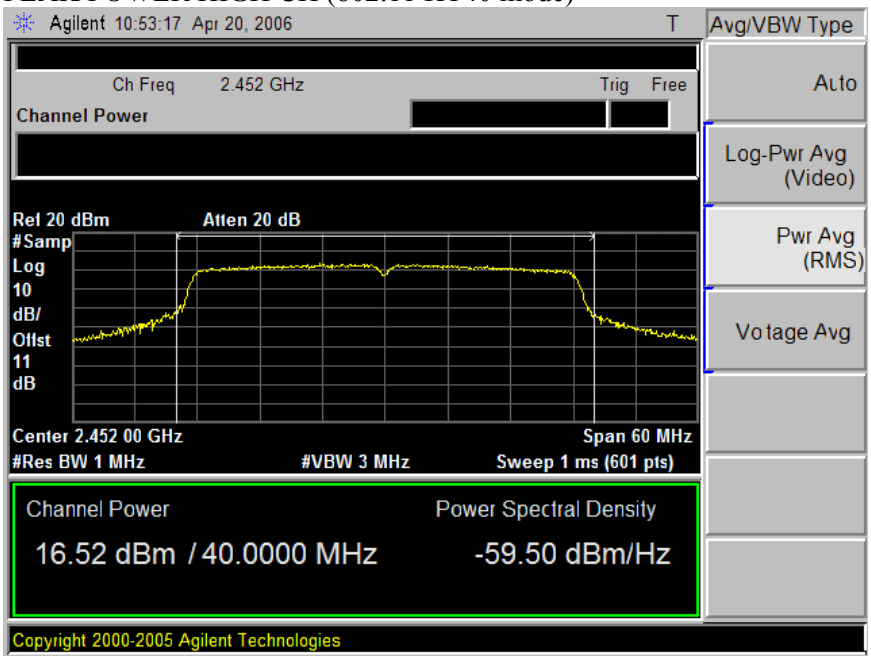
PEAK POWER MID CH (802.11 HT40 mode)



PEAK POWER HIGH CH (802.11 HT40 mode)

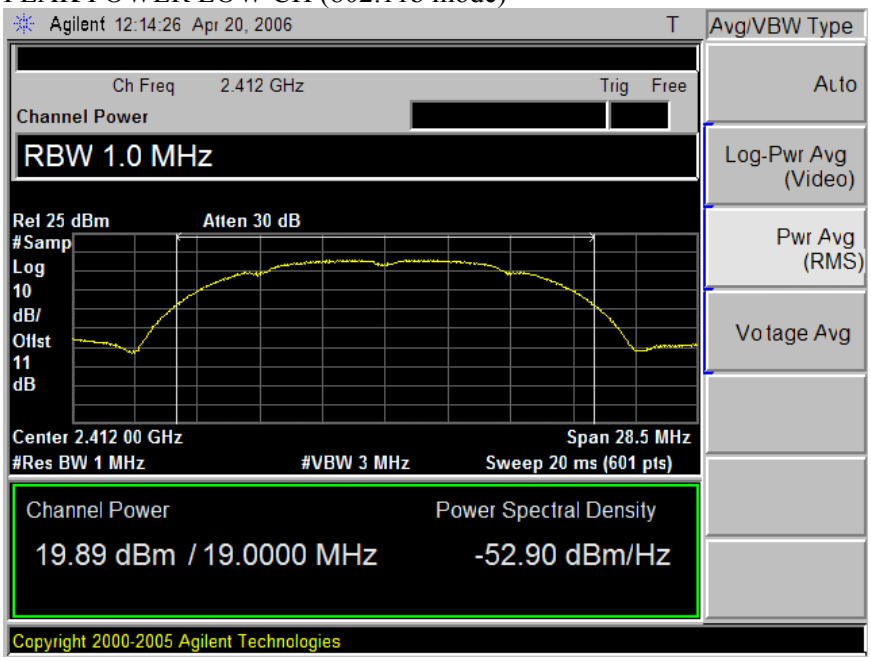


PEAK POWER HIGH CH (802.11 HT40 mode)

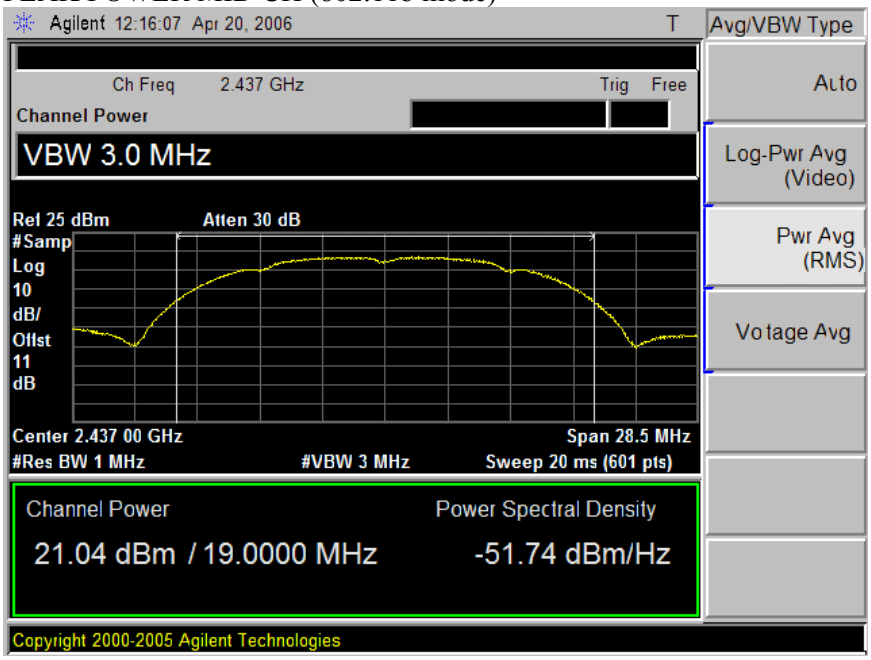


CHAIN 2, OUTPUT POWER (802.11b MODE)

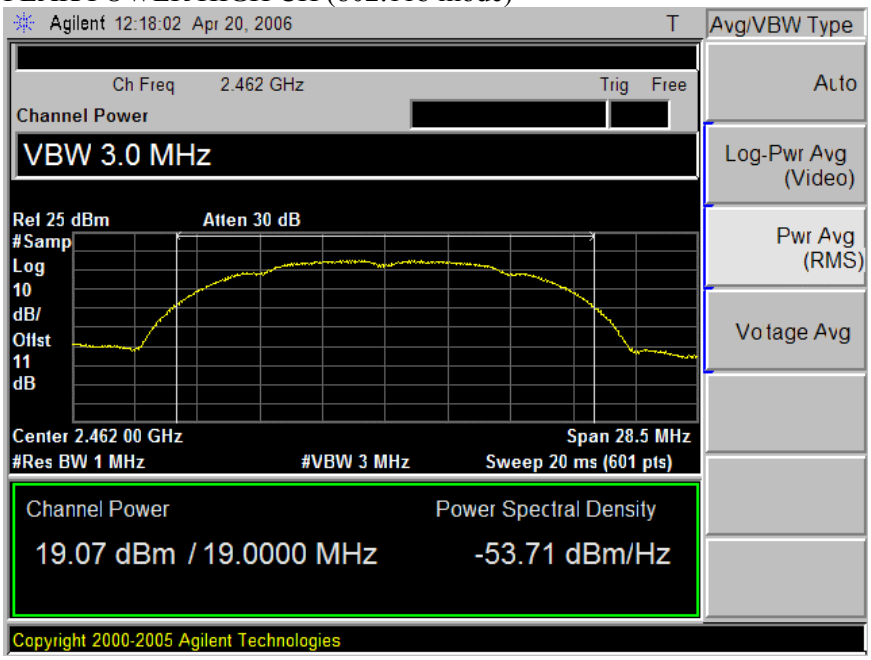
PEAK POWER LOW CH (802.11b mode)



PEAK POWER MID CH (802.11b mode)

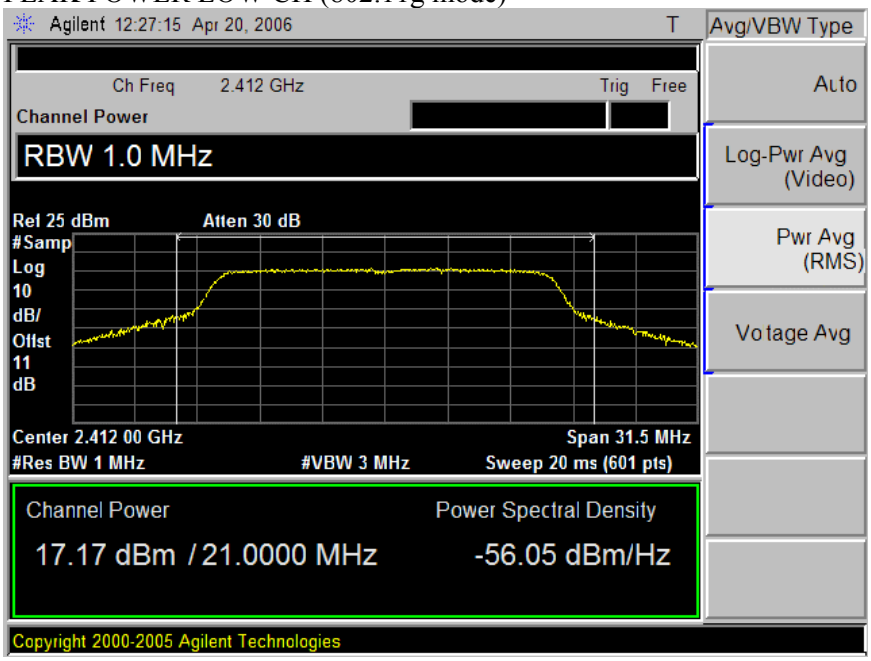


PEAK POWER HIGH CH (802.11b mode)

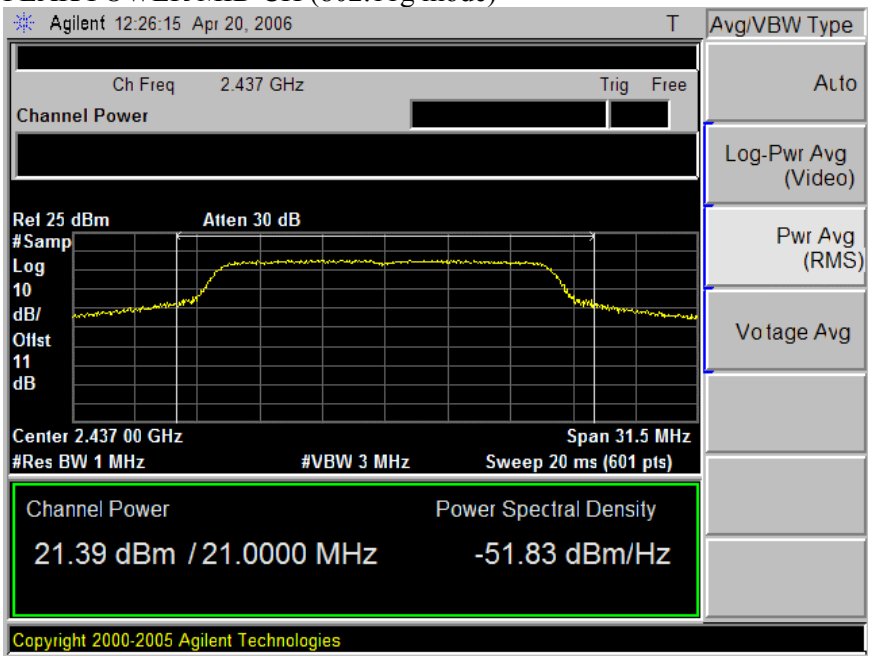


CHAIN 2, OUTPUT POWER (802.11g MODE)

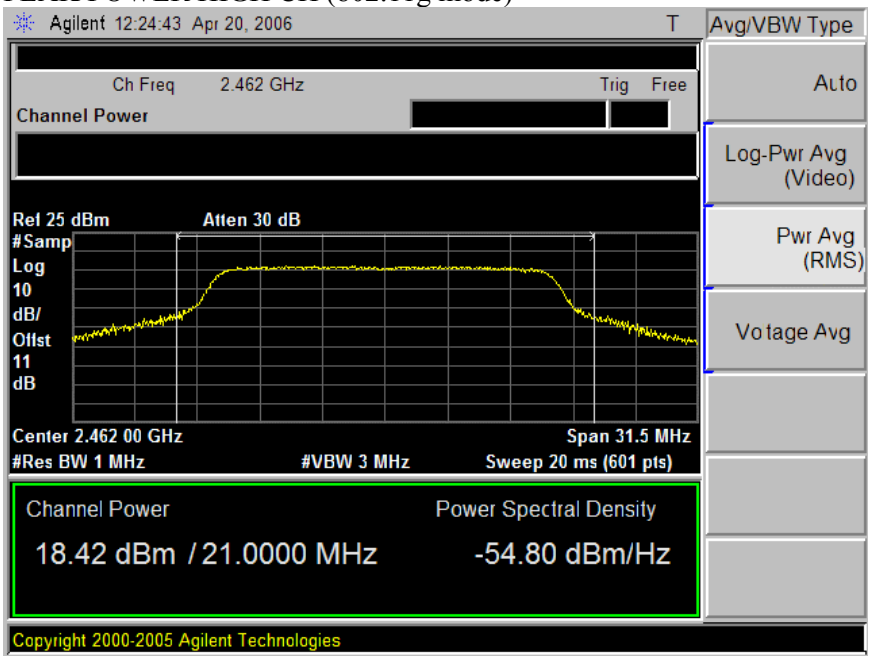
PEAK POWER LOW CH (802.11g mode)



PEAK POWER MID CH (802.11g mode)

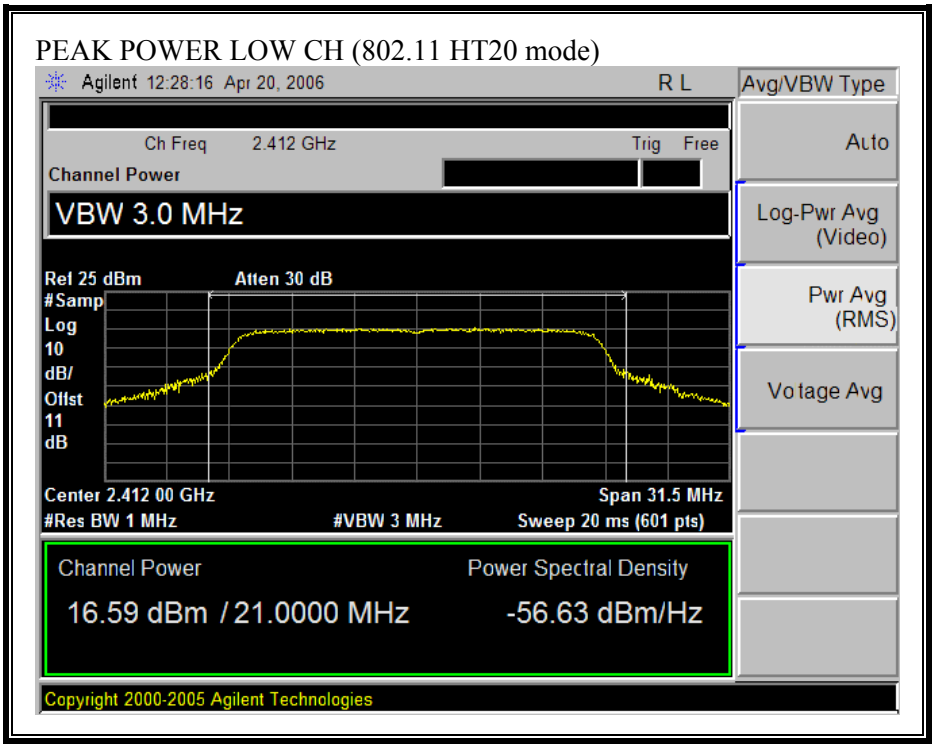


PEAK POWER HIGH CH (802.11g mode)

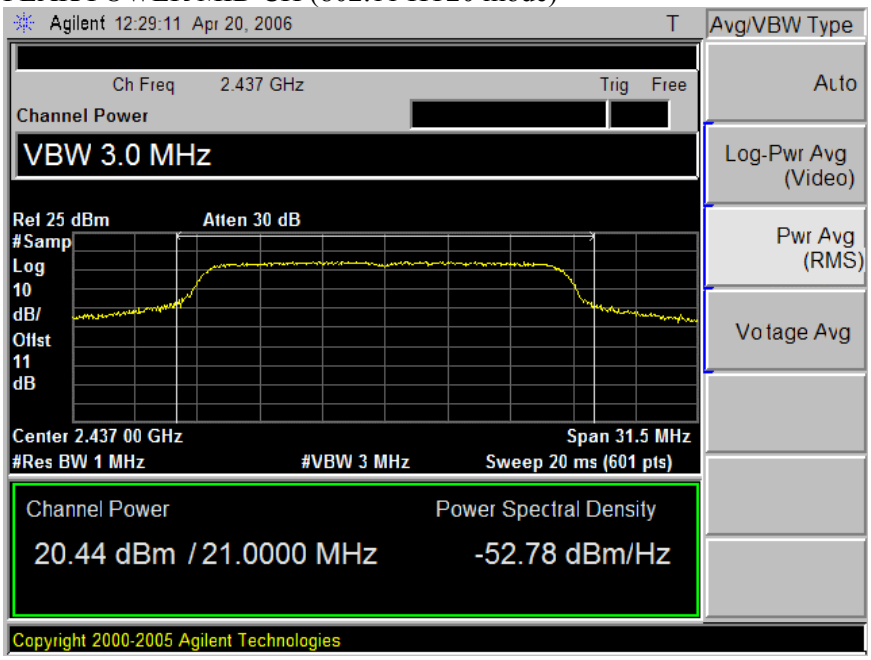


CHAIN 2, OUTPUT POWER (802.11 HT20 MODE)

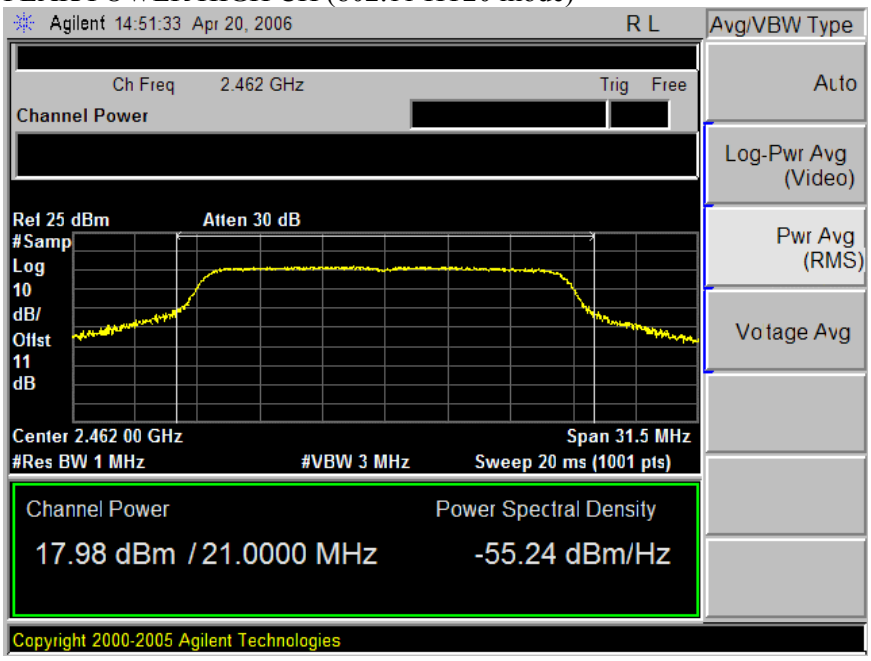
PEAK POWER LOW CH (802.11 HT20 mode)



PEAK POWER MID CH (802.11 HT20 mode)

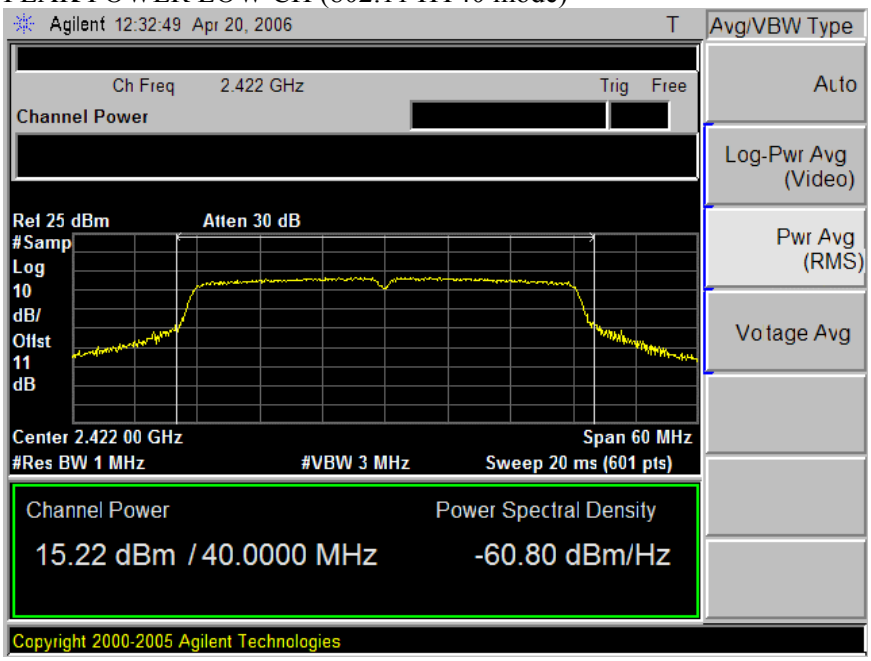


PEAK POWER HIGH CH (802.11 HT20 mode)

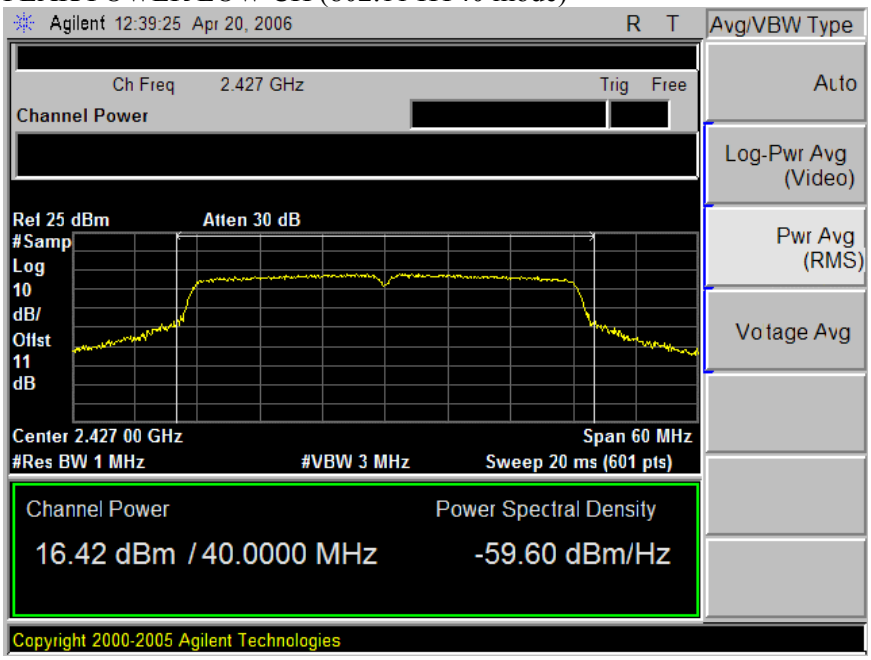


CHAIN 2, OUTPUT POWER (802.11 HT40 MODE)

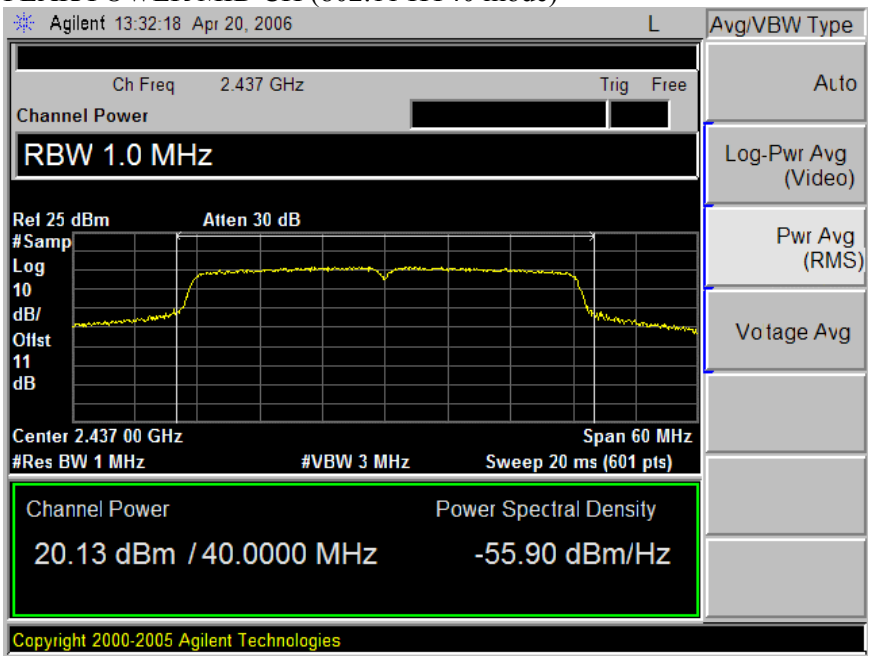
PEAK POWER LOW CH (802.11 HT40 mode)



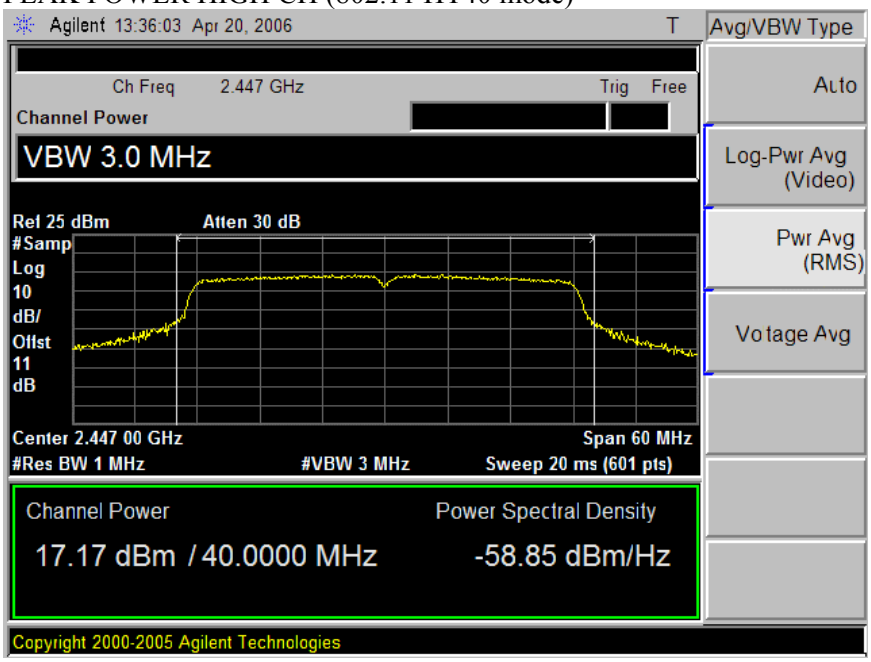
PEAK POWER LOW CH (802.11 HT40 mode)



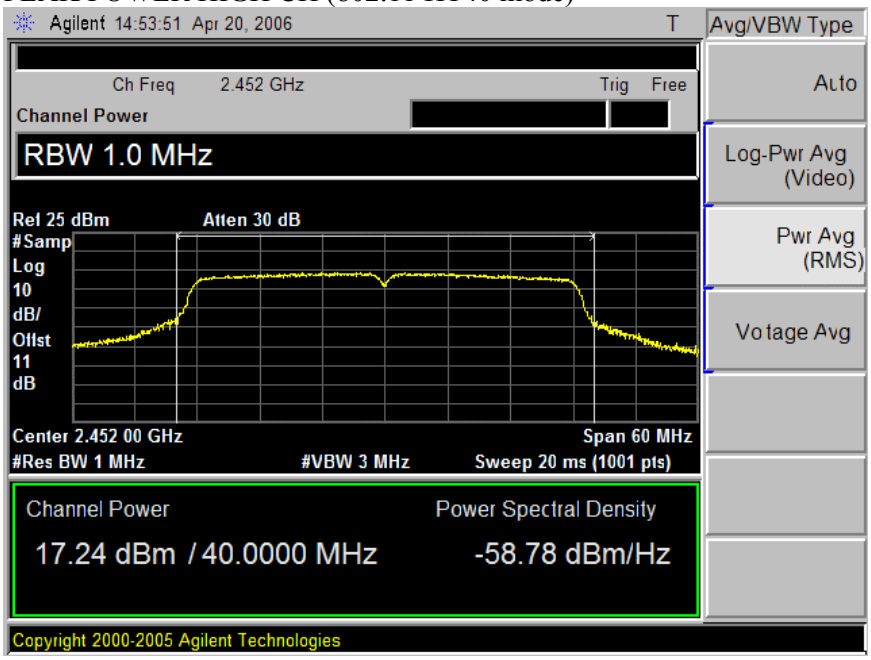
PEAK POWER MID CH (802.11 HT40 mode)



PEAK POWER HIGH CH (802.11 HT40 mode)



PEAK POWER HIGH CH (802.11 HT40 mode)



7.1.2. AVERAGE POWER

AVERAGE POWER LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

No non-compliance noted:

Channel	Frequency (MHz)	Average Power Chain 0 (dBm)	Average Power Chain 2 (dBm)	Average Power Total (dBm)
802.11b Mode				
Low	2412	20.5	20.3	23.4
Middle	2437	20.8	20.3	23.6
High	2462	19.3	18.8	22.1
802.11g Mode				
Low	2412	16.5	16.9	19.7
Middle	2437	20.7	20.8	23.8
High	2462	18.0	17.7	20.9
802.11 HT20 Mode				
Low	2412	16.4	16.1	19.3
Middle	2437	20.6	20.8	23.7
High	2462	17.6	17.5	20.6
802.11 HT40 Mode				
Low	2422	16.1	15.0	18.6
Second Low	2427	16.6	15.6	19.1
Middle	2437	19.9	19.8	22.9
Second High	2447	16.2	16.3	19.3
High	2452	15.0	16.2	18.7

The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

7.1.3. CONDUCTED SPURIOUS EMISSIONS,

LIMITS

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

TEST PROCEDURE

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

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

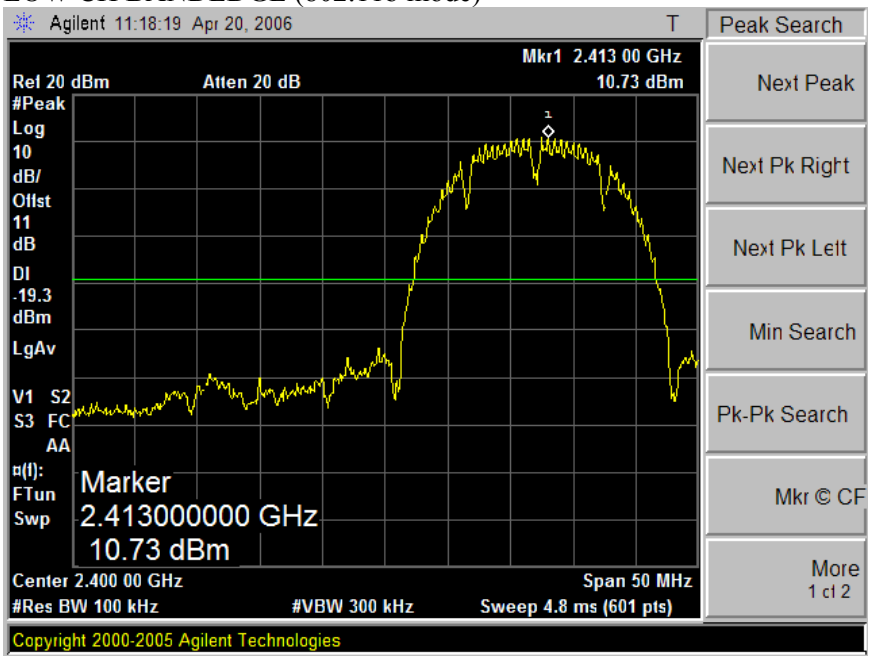
RESULTS

No non-compliance noted:

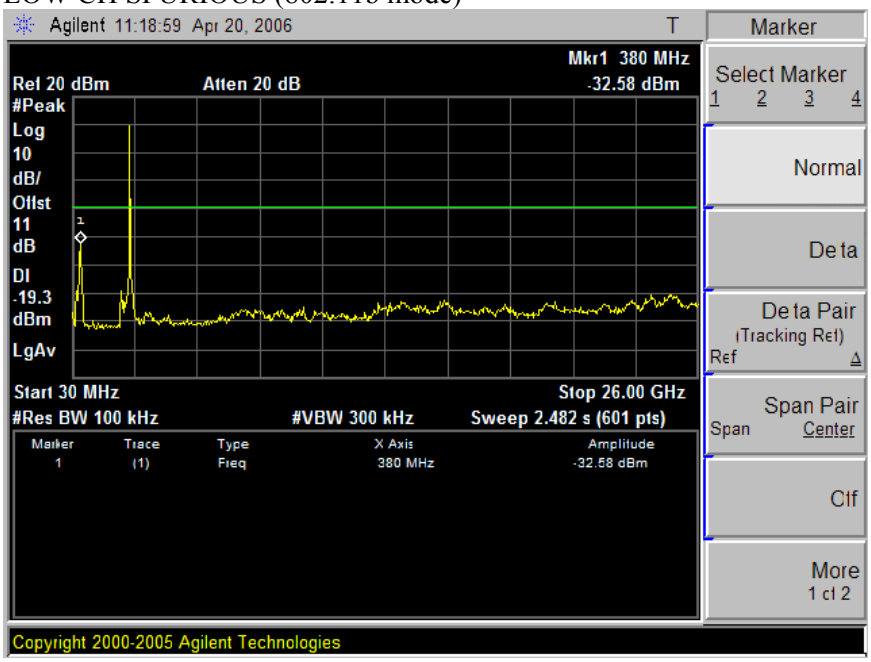
CHAIN 0

SPURIOUS EMISSIONS, LOW CHANNEL (802.11b MODE)

LOW CH BANDEDGE (802.11b mode)

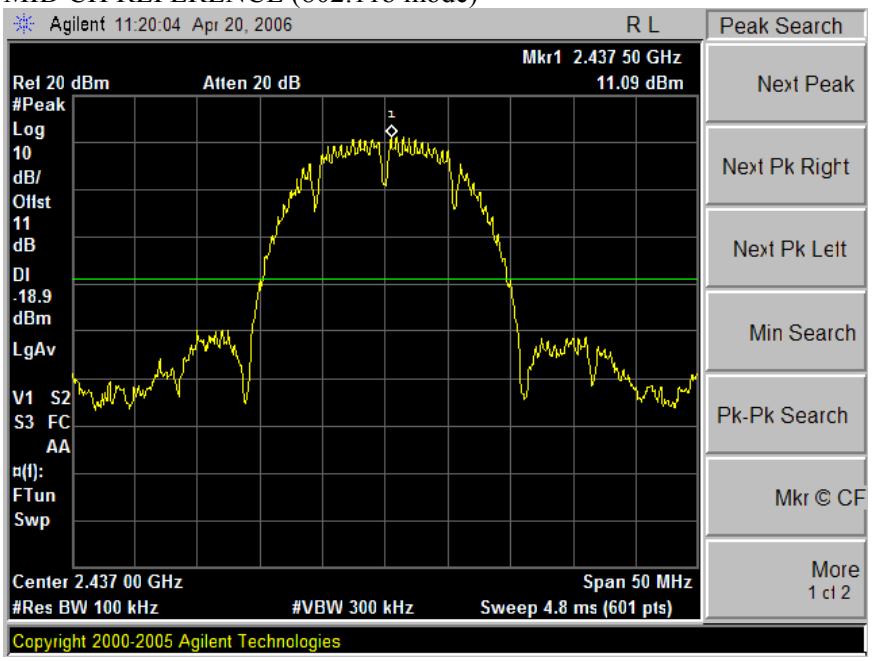


LOW CH SPURIOUS (802.11b mode)

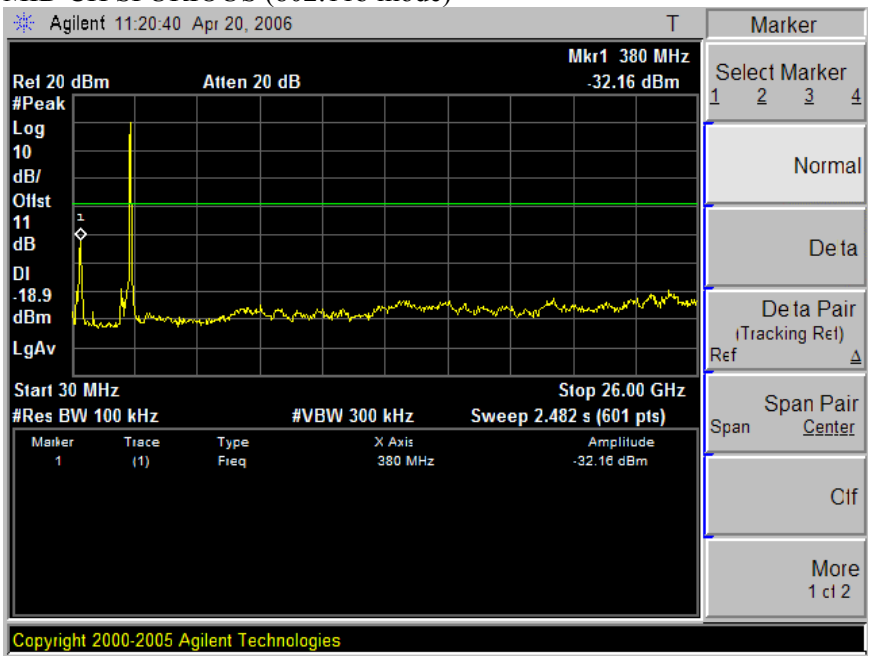


SPURIOUS EMISSIONS, MID CHANNEL (802.11b MODE)

MID CH REFERENCE (802.11b mode)

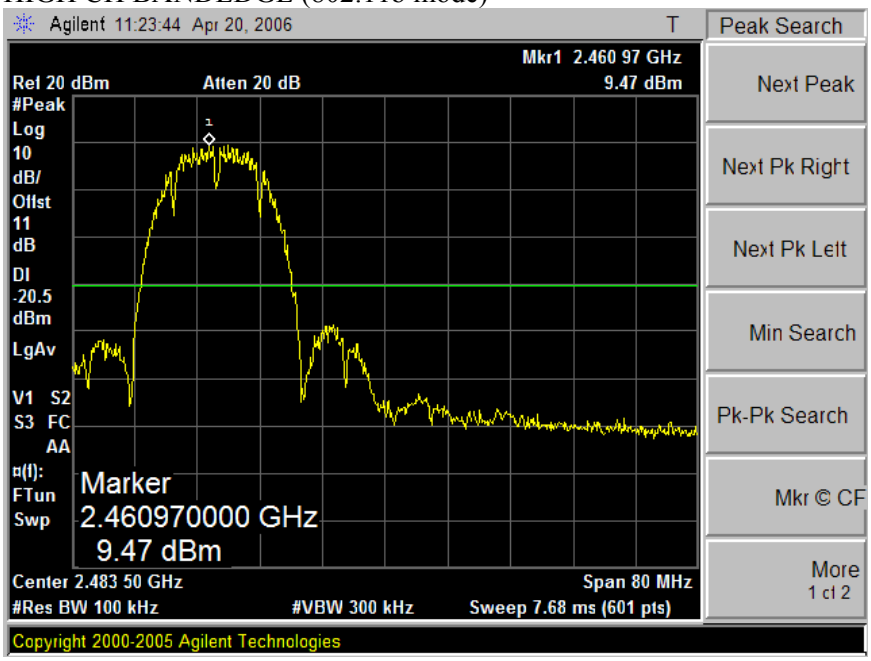


MID CH SPURIOUS (802.11b mode)

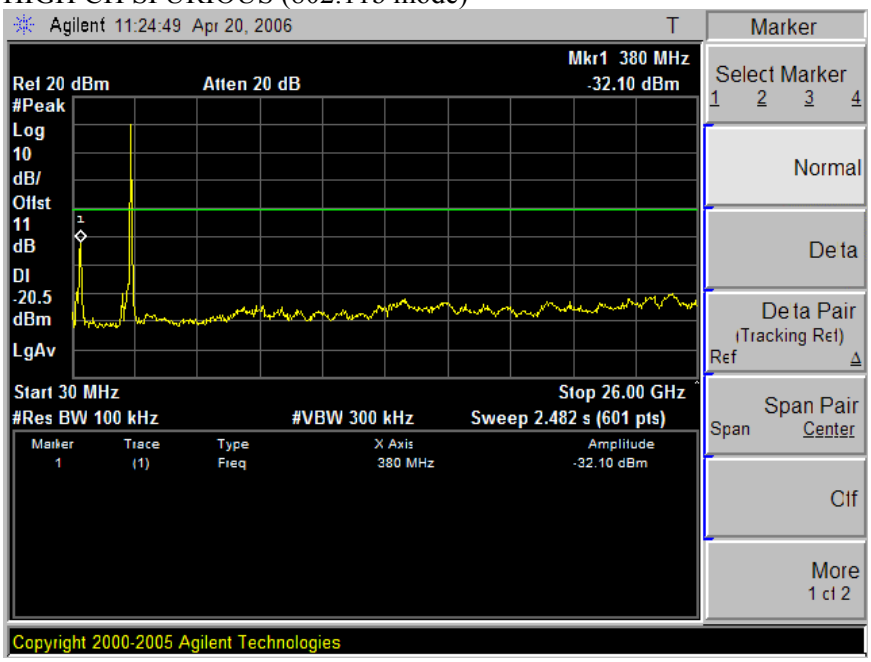


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b MODE)

HIGH CH BANDEDGE (802.11b mode)

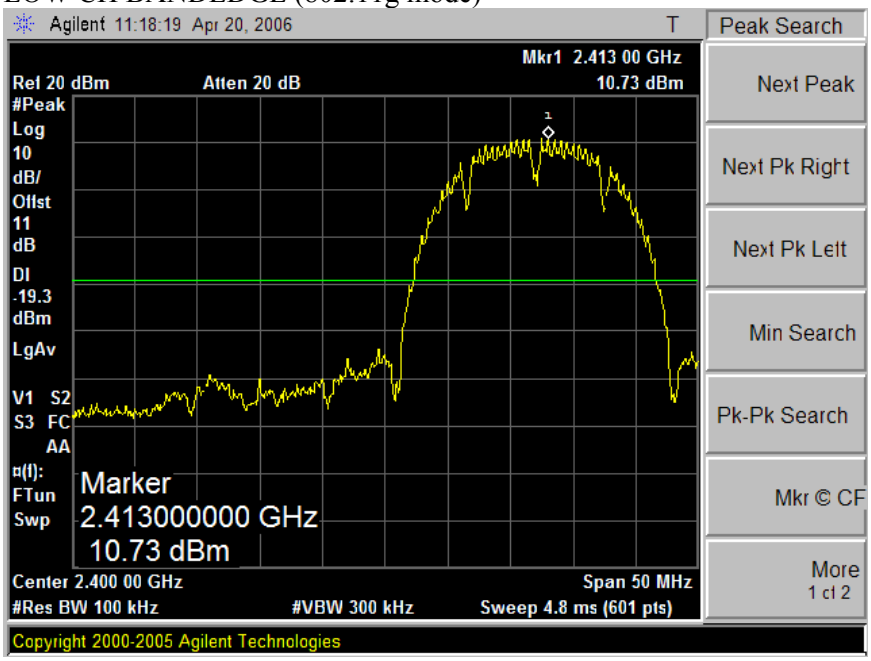


HIGH CH SPURIOUS (802.11b mode)

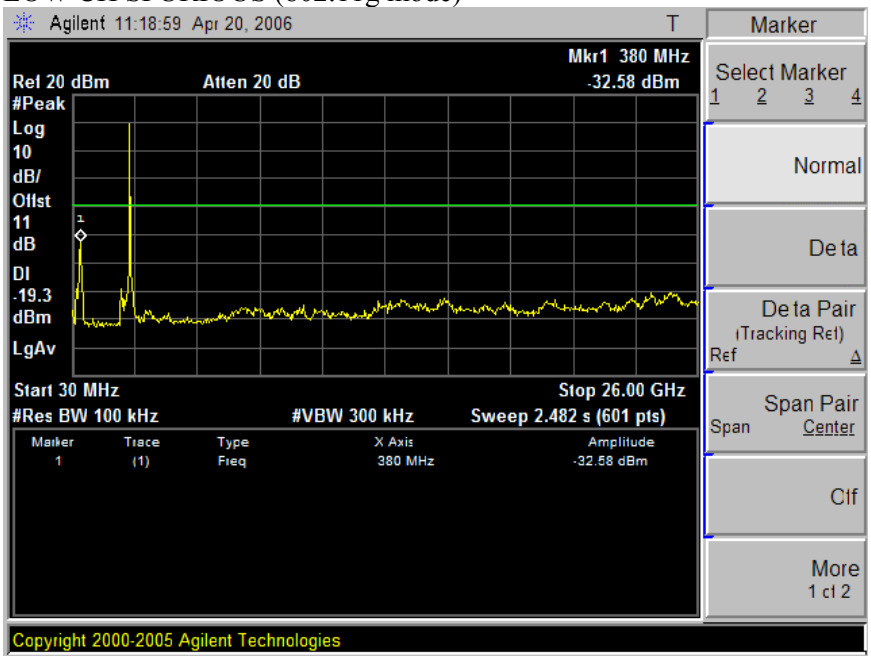


SPURIOUS EMISSIONS, LOW CHANNEL (802.11g MODE)

LOW CH BANDEDGE (802.11g mode)

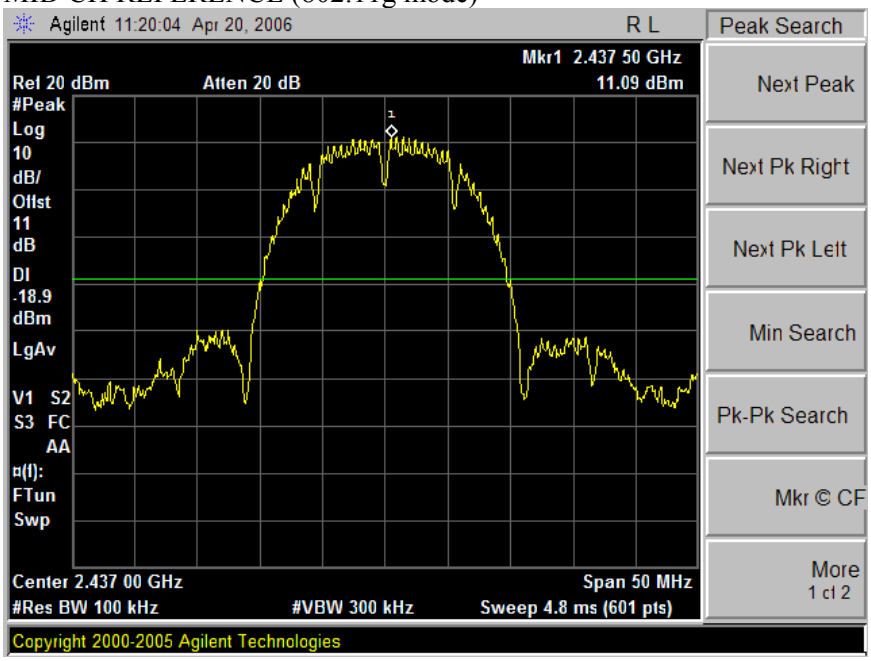


LOW CH SPURIOUS (802.11g mode)

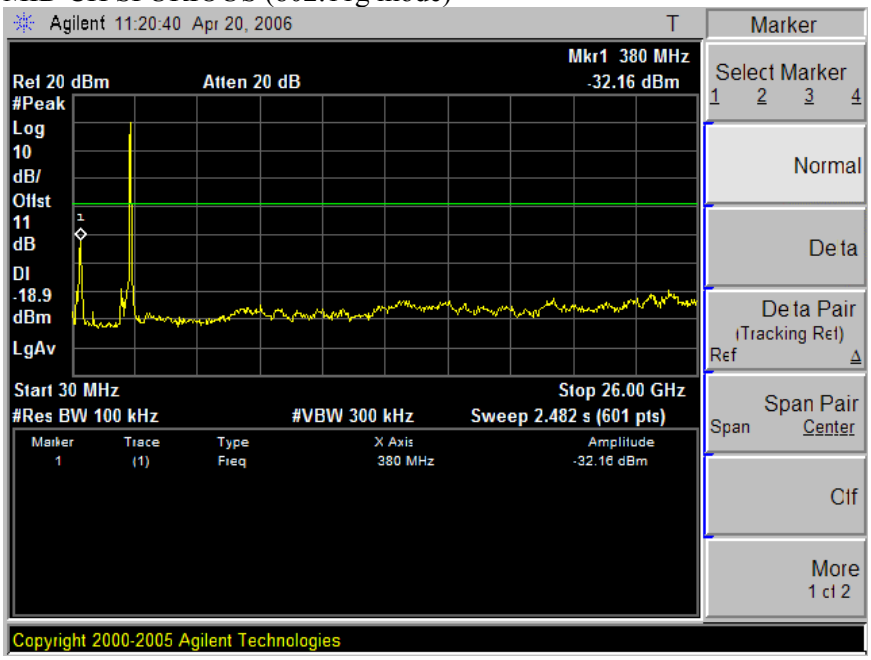


SPURIOUS EMISSIONS, MID CHANNEL (802.11g MODE)

MID CH REFERENCE (802.11g mode)

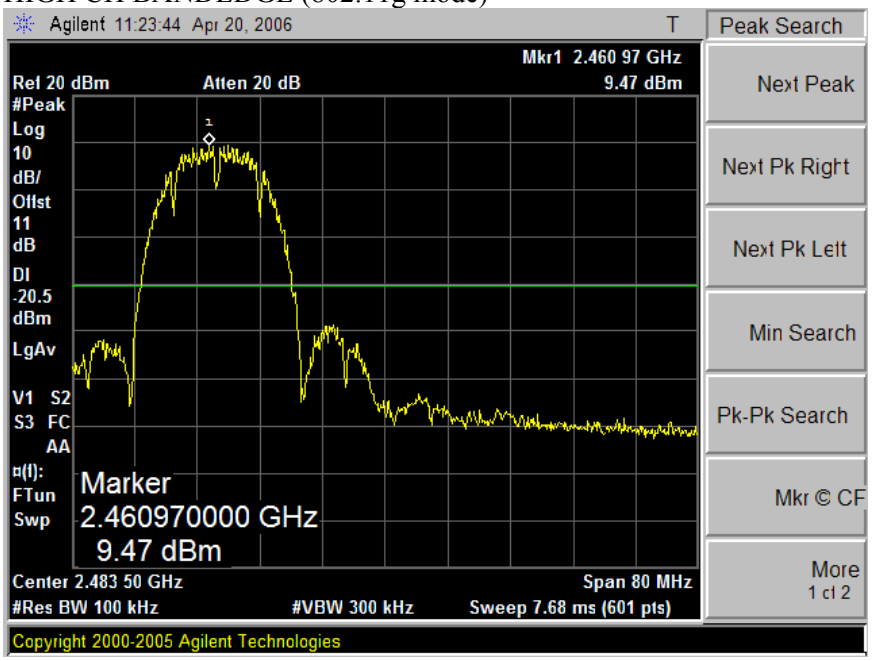


MID CH SPURIOUS (802.11g mode)

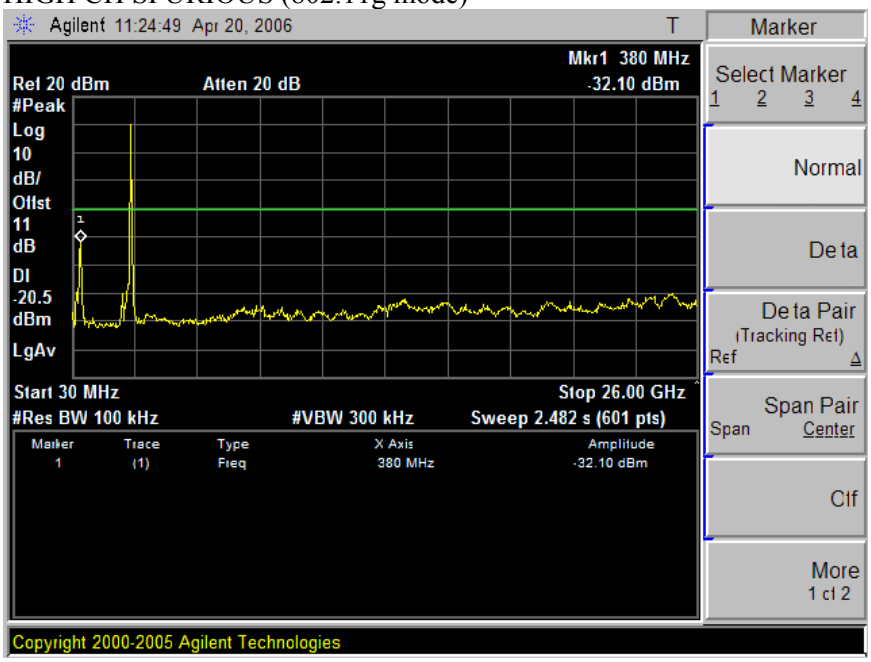


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g MODE)

HIGH CH BANDEDGE (802.11g mode)

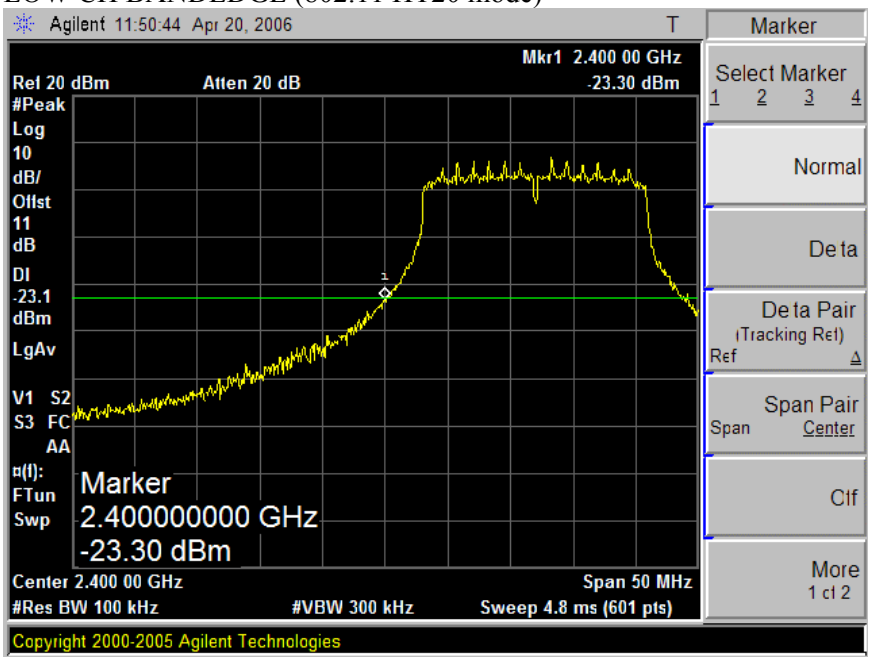


HIGH CH SPURIOUS (802.11g mode)

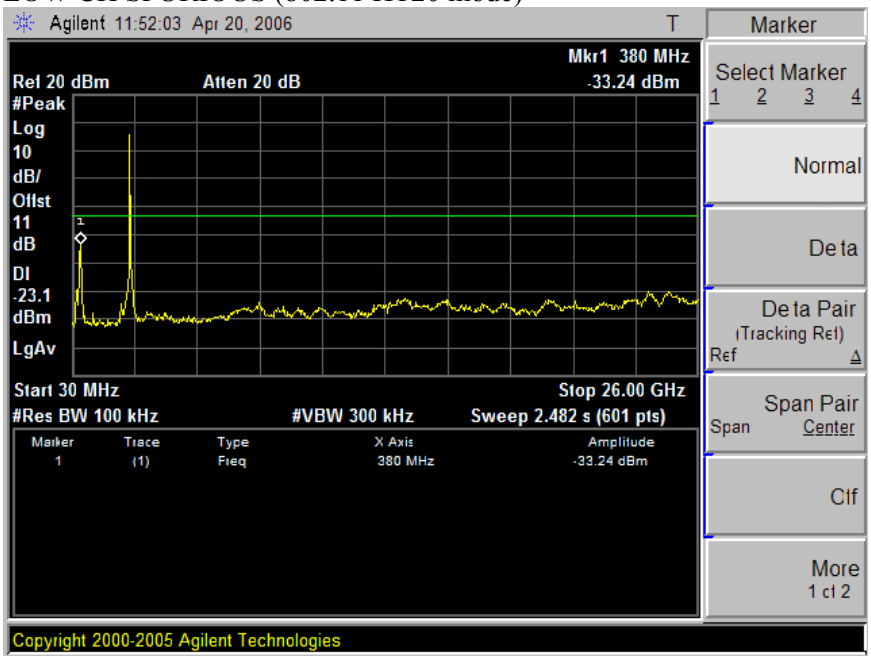


SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT20 MODE)

LOW CH BANDEDGE (802.11 HT20 mode)

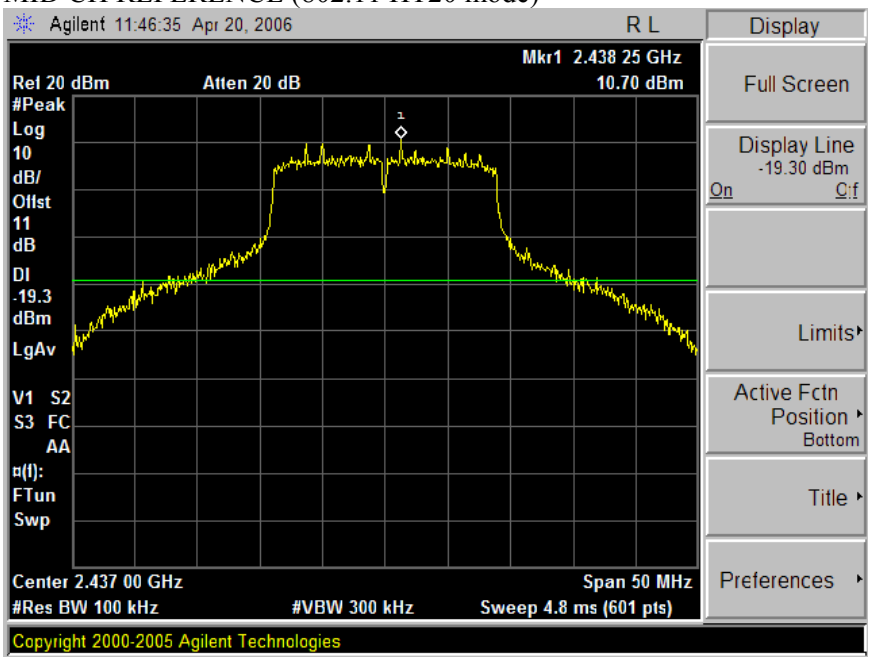


LOW CH SPURIOUS (802.11 HT20 mode)

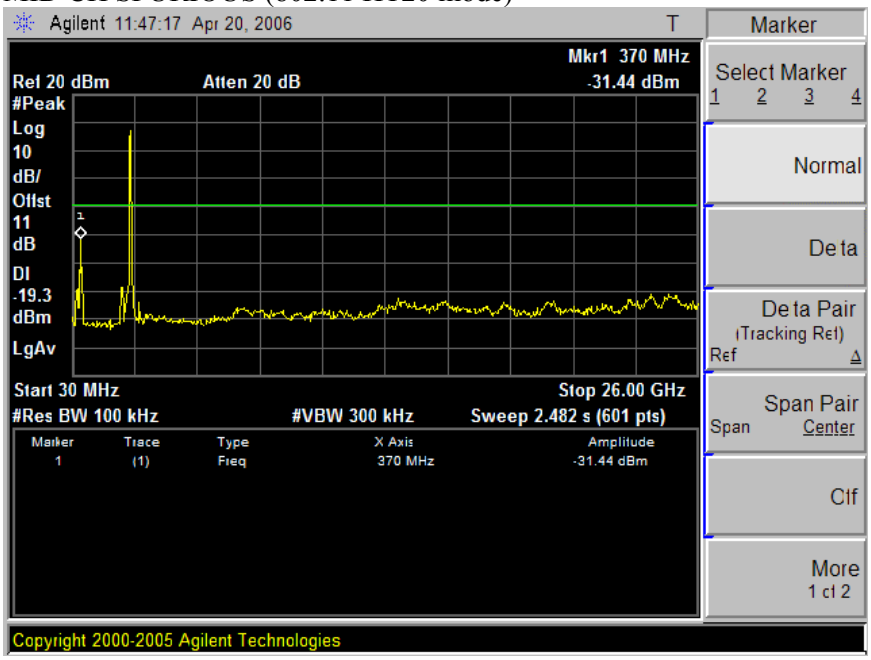


SPURIOUS EMISSIONS, MID CHANNEL (802.11 HT20 MODE)

MID CH REFERENCE (802.11 HT20 mode)

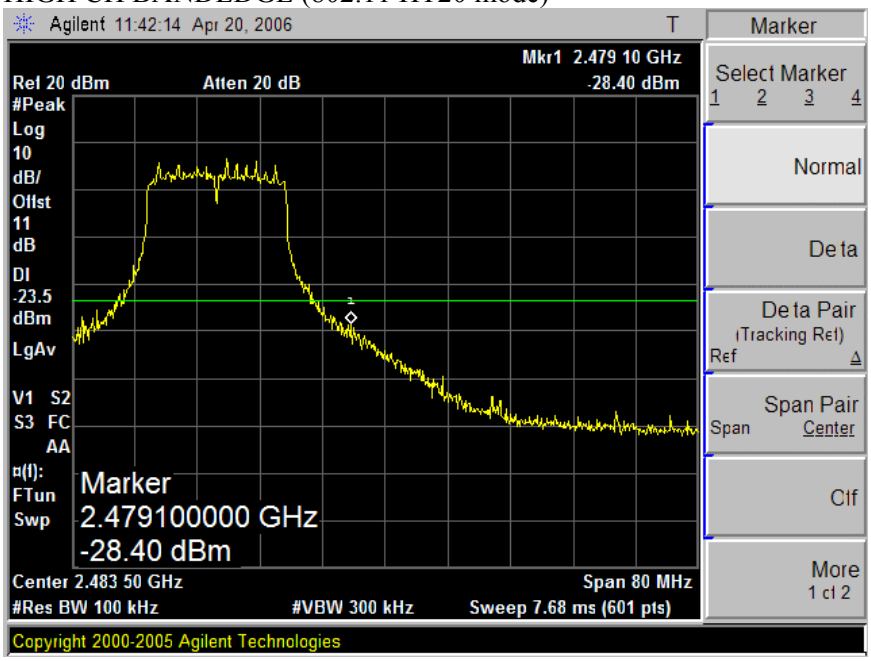


MID CH SPURIOUS (802.11 HT20 mode)

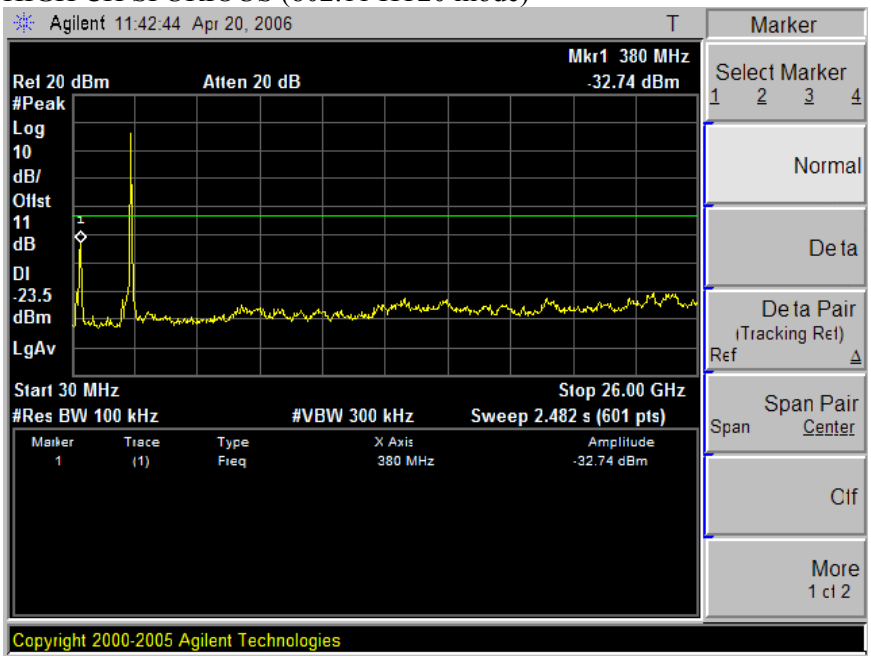


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT20 MODE)

HIGH CH BANDEDGE (802.11 HT20 mode)



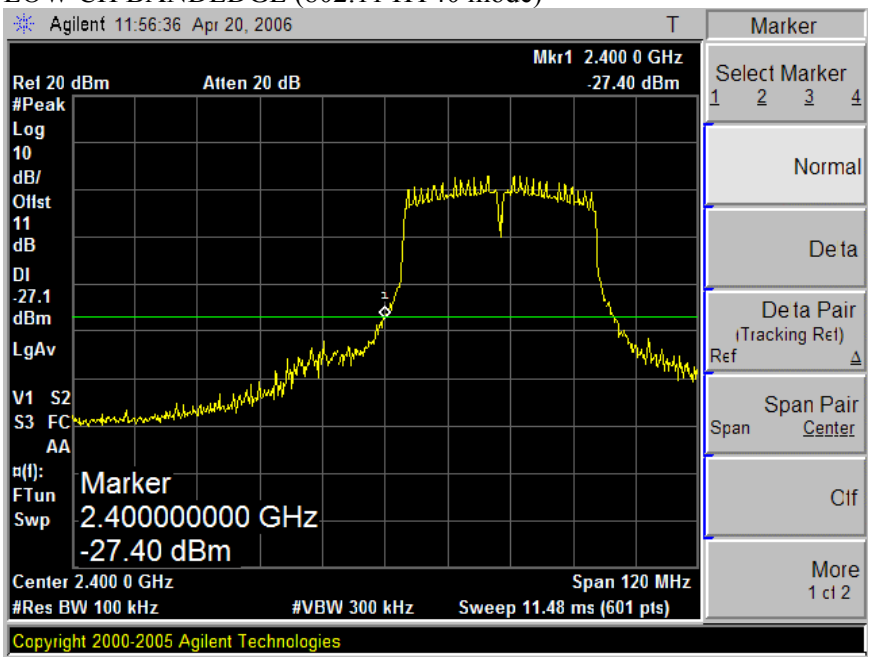
HIGH CH SPURIOUS (802.11 HT20 mode)



SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT40 MODE)

CH 2422MHz

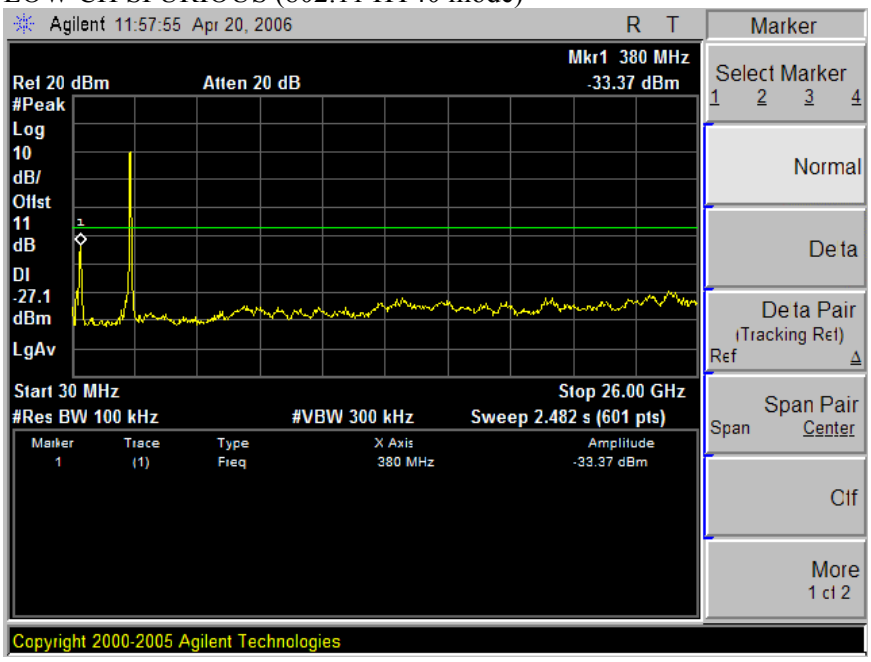
LOW CH BANDEDGE (802.11 HT40 mode)



SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT40 MODE)

CH. 2422 MHz

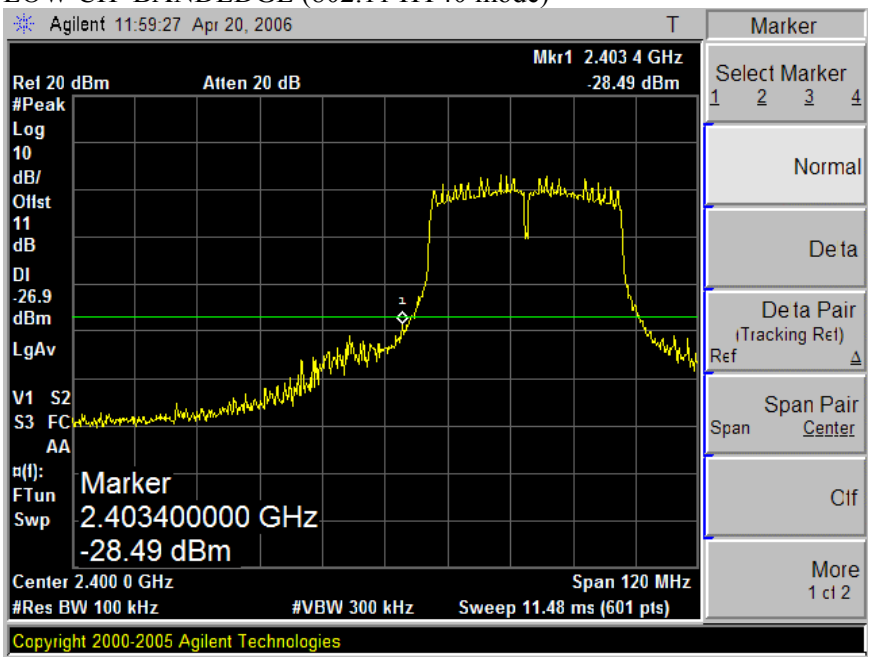
LOW CH SPURIOUS (802.11 HT40 mode)



SPURIOUS EMISSIONS, SECOND LOW CHANNEL (802.11 HT40 MODE)

CH 2427MHz

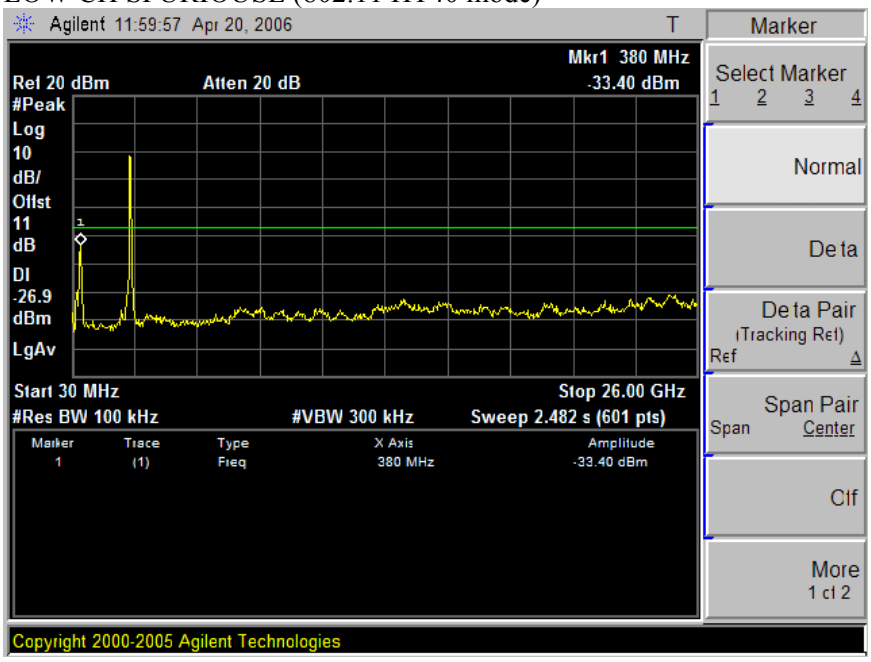
LOW CH BANDEDGE (802.11 HT40 mode)



SPURIOUS EMISSIONS, SECOND LOW CHANNEL (802.11 HT40 MODE)

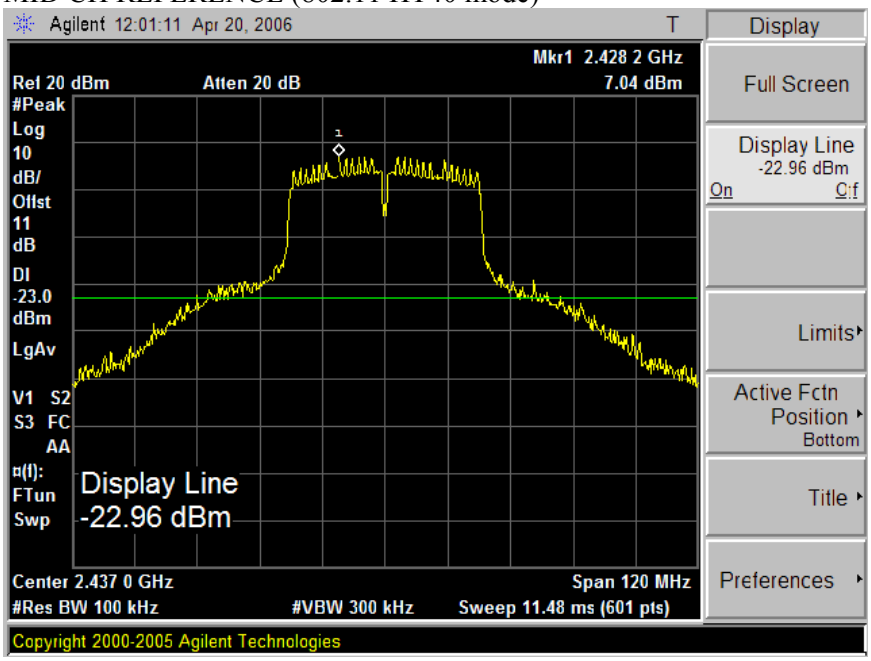
CH. 2427 MHz

LOW CH SPURIOUSE (802.11 HT40 mode)

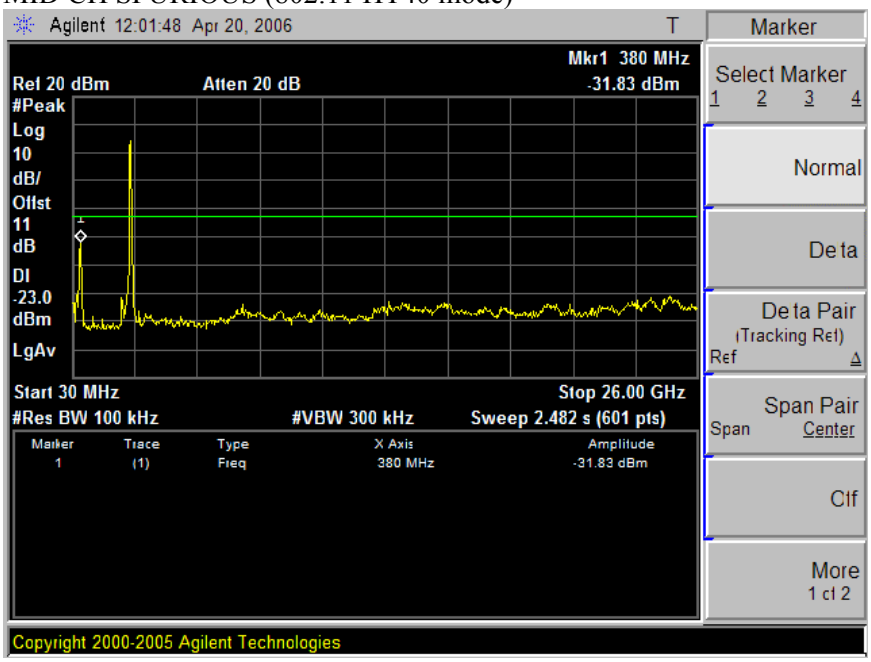


SPURIOUS EMISSIONS, MID CHANNEL (802.11 HT40 MODE)

MID CH REFERENCE (802.11 HT40 mode)



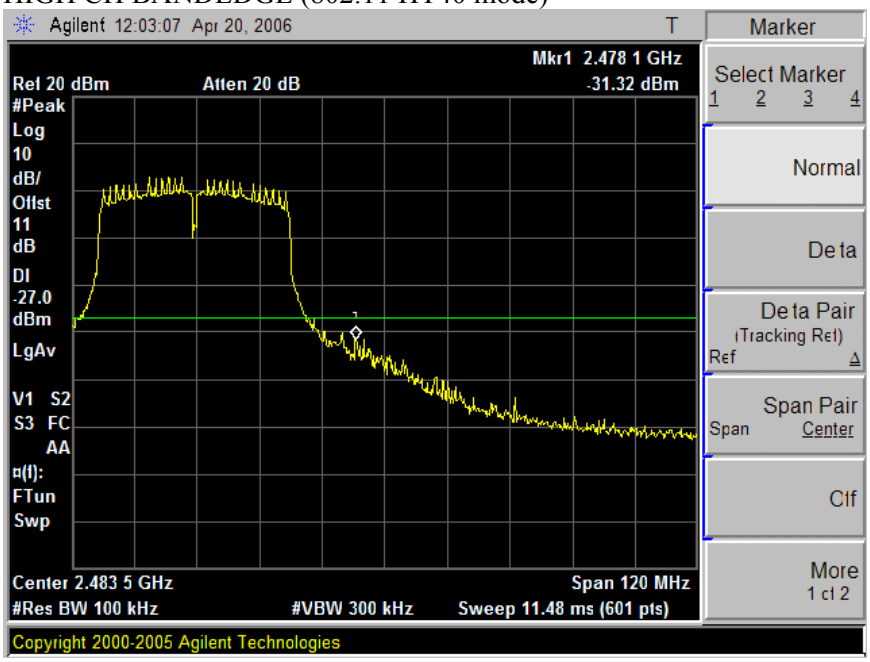
MID CH SPURIOUS (802.11 HT40 mode)



SPURIOUS EMISSIONS, SECOND HIGH CHANNEL (802.11 HT40 MODE)

CH 2447MHz

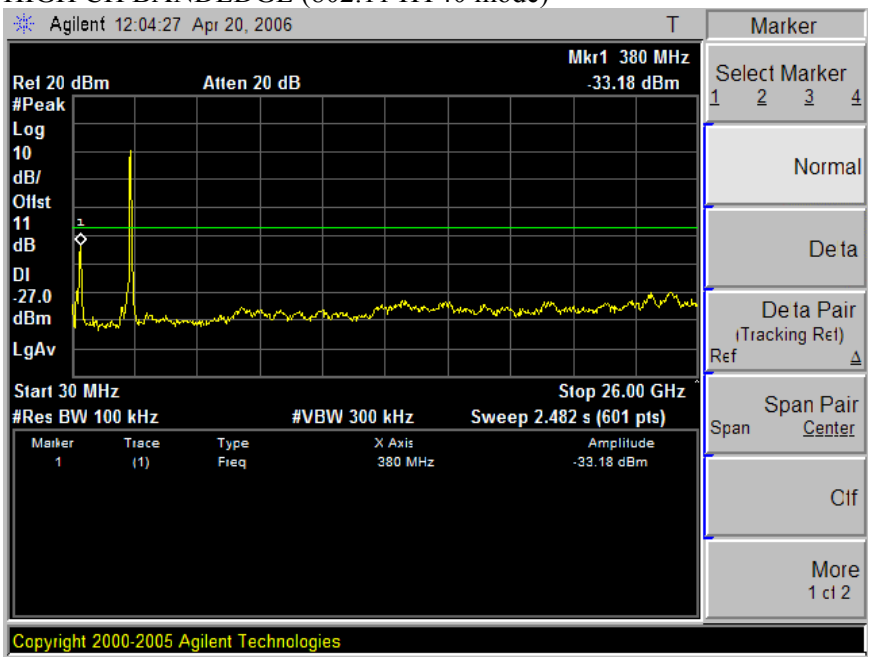
HIGH CH BANDEDGE (802.11 HT40 mode)



SPURIOUS EMISSIONS, SECOND HIGH CHANNEL (802.11 HT40 MODE)

CH 2447MHz

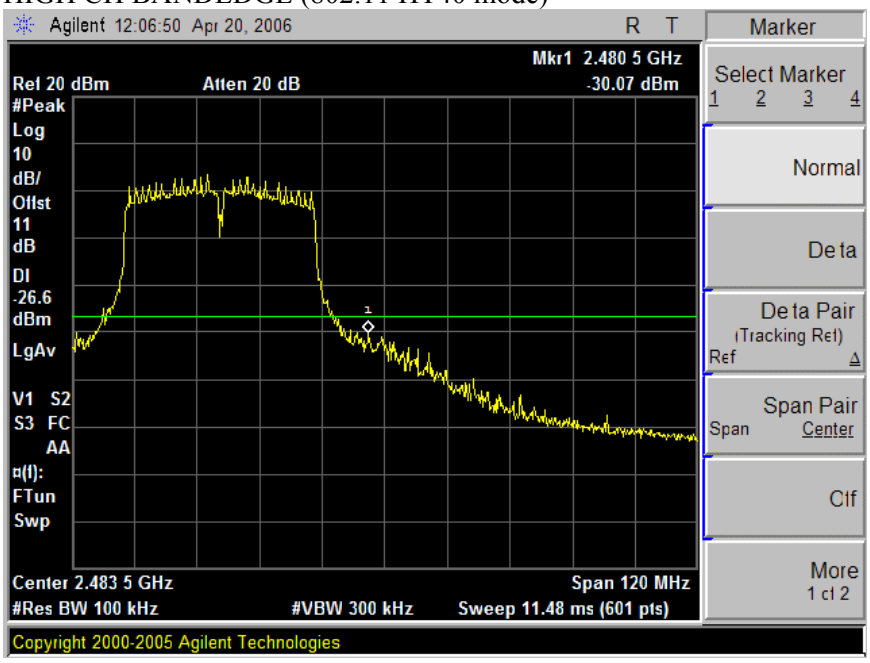
HIGH CH BANDEDGE (802.11 HT40 mode)



SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT40 MODE)

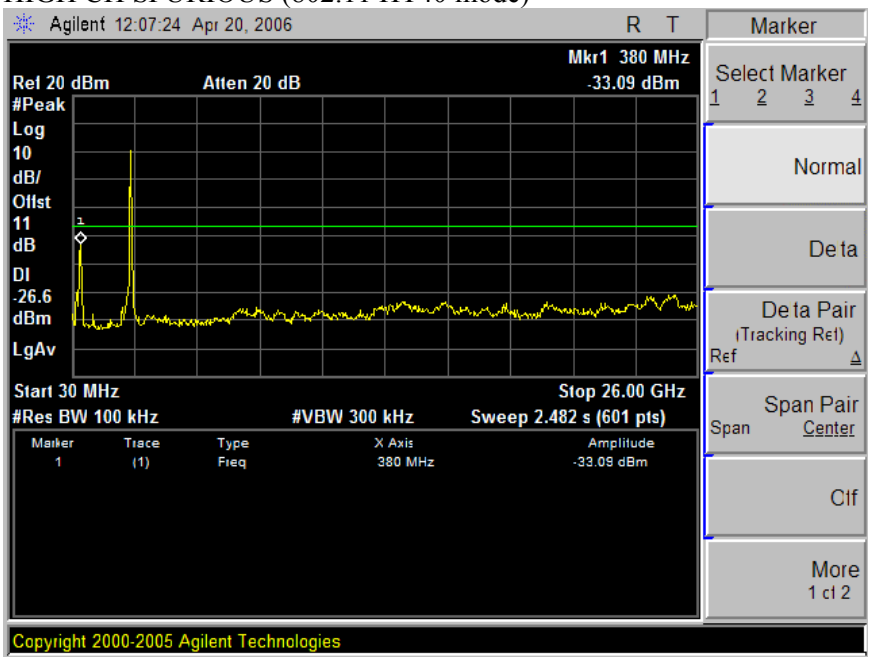
CH 2452MHz

HIGH CH BANDEDGE (802.11 HT40 mode)



SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT40 MODE

HIGH CH SPURIOUS (802.11 HT40 mode)

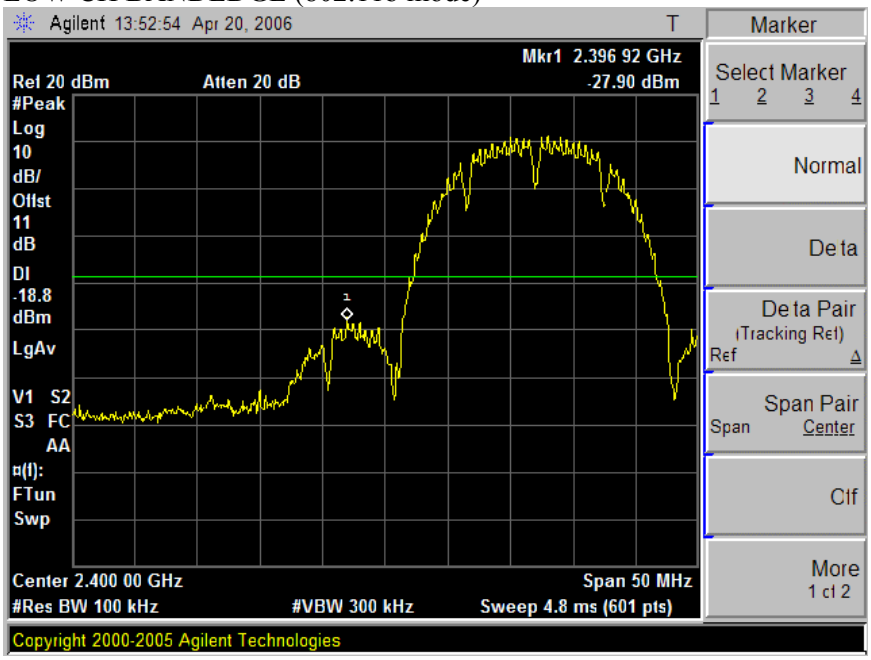


CHAIN 2

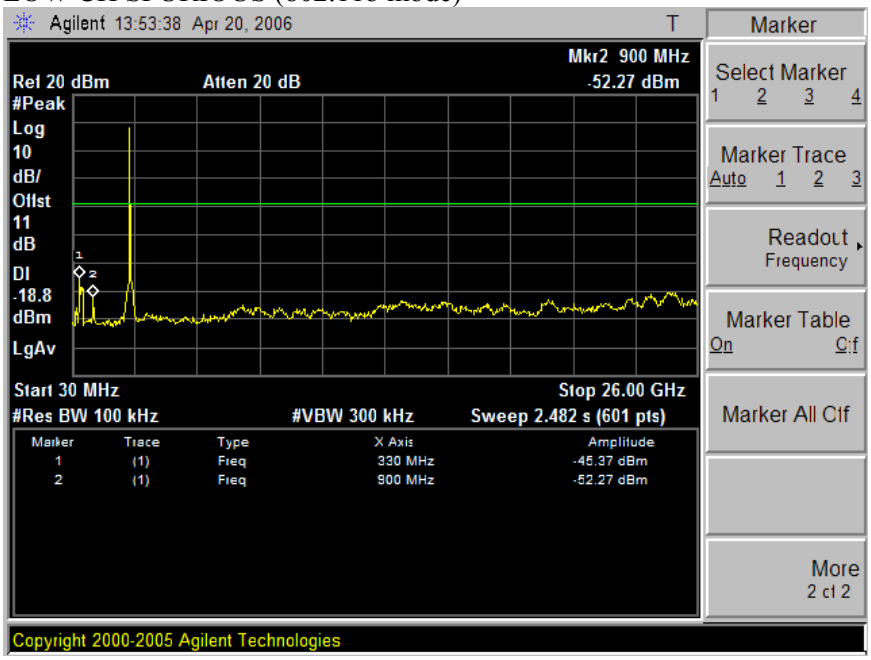
SPURIOUS EMISSIONS, LOW CHANNEL (802.11b MODE)

)

LOW CH BANDEDGE (802.11b mode)

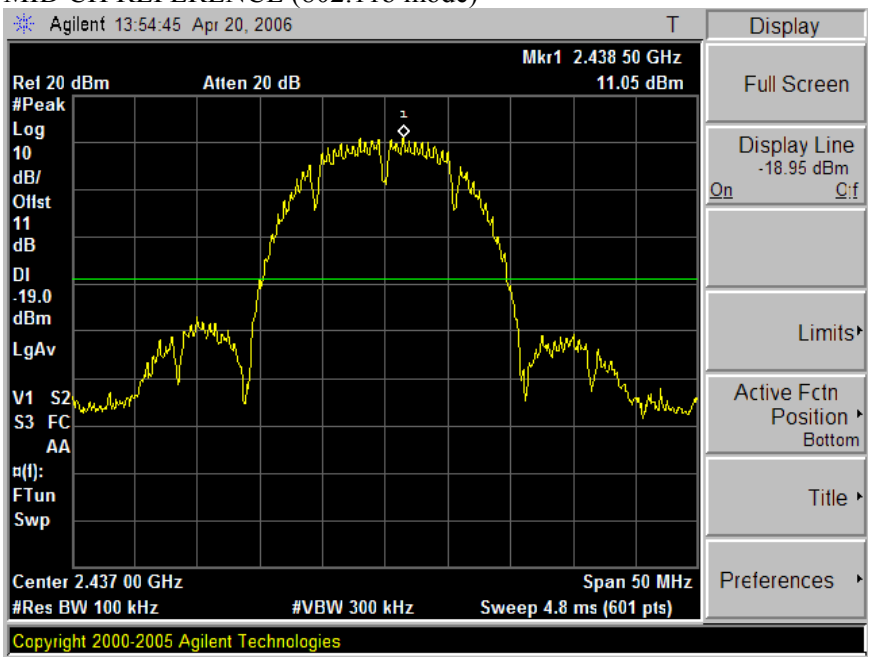


LOW CH SPURIOUS (802.11b mode)

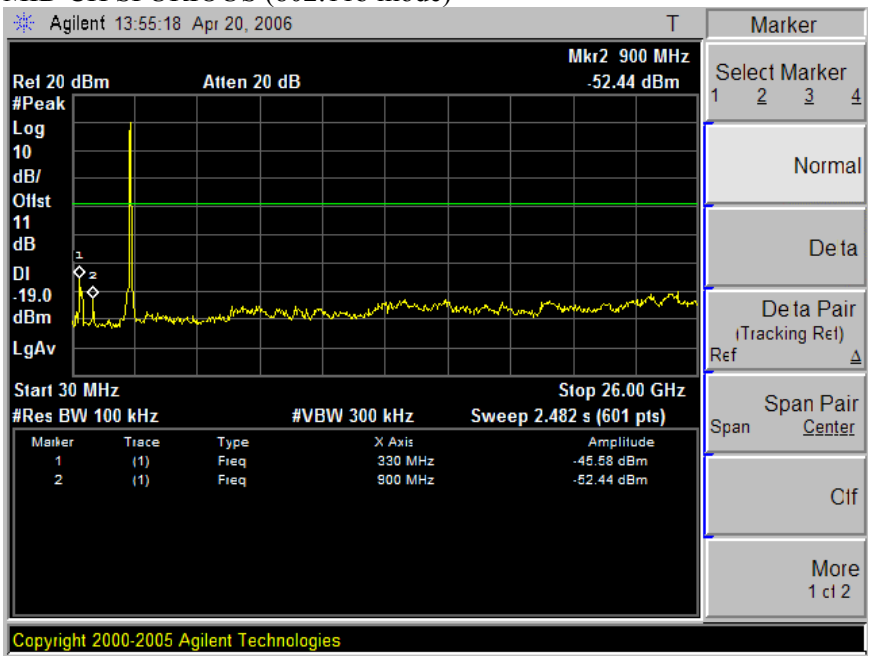


SPURIOUS EMISSIONS, MID CHANNEL (802.11b MODE)

MID CH REFERENCE (802.11b mode)

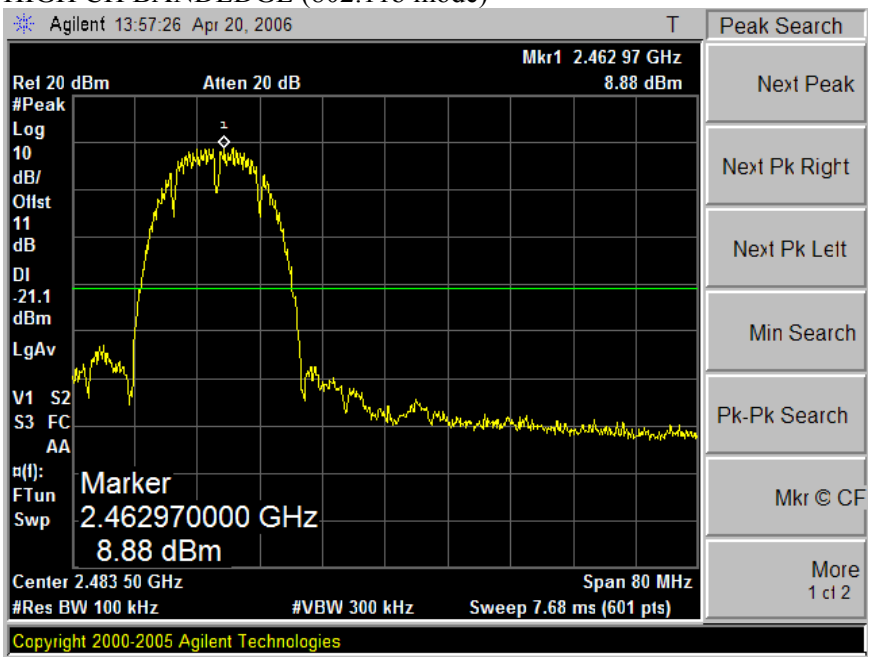


MID CH SPURIOUS (802.11b mode)

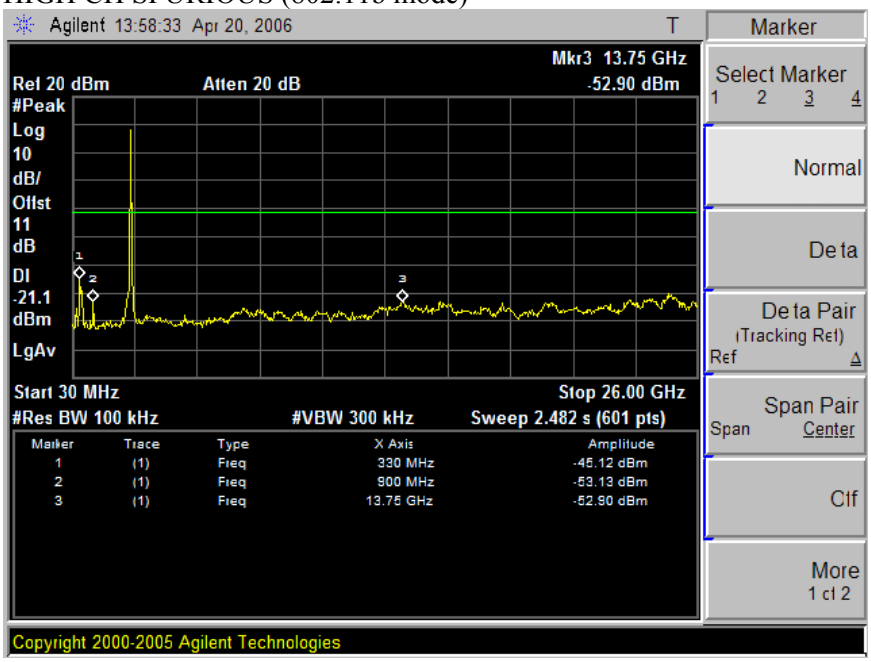


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b MODE)

HIGH CH BANDEDGE (802.11b mode)

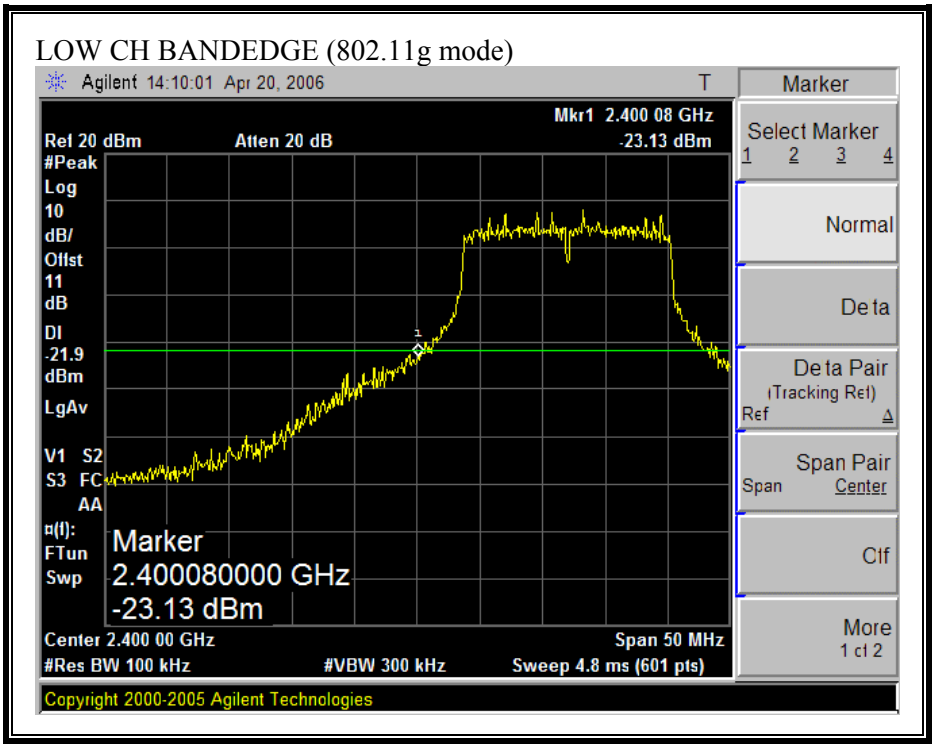


HIGH CH SPURIOUS (802.11b mode)

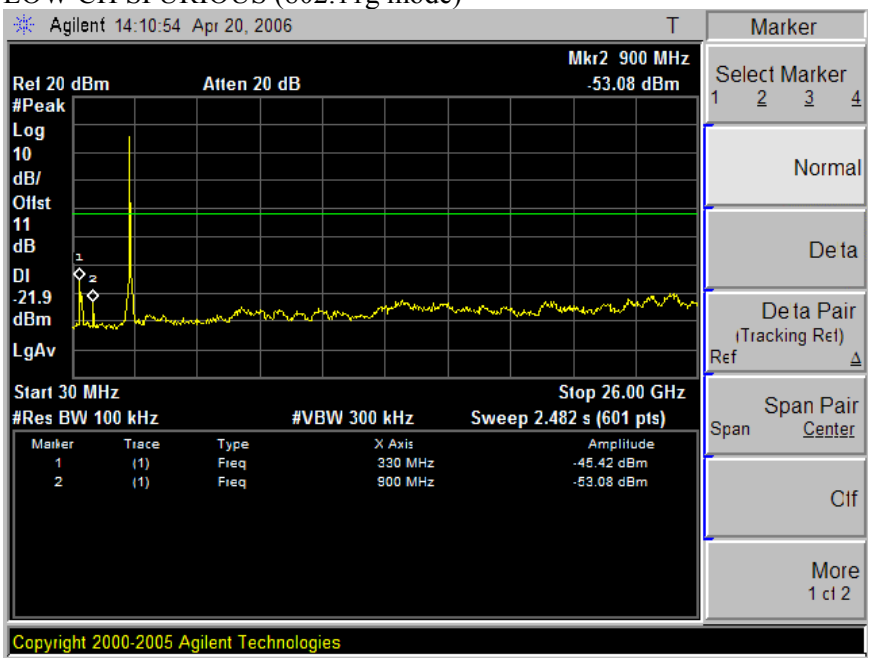


SPURIOUS EMISSIONS, LOW CHANNEL (802.11g MODE)

LOW CH BANDEDGE (802.11g mode)

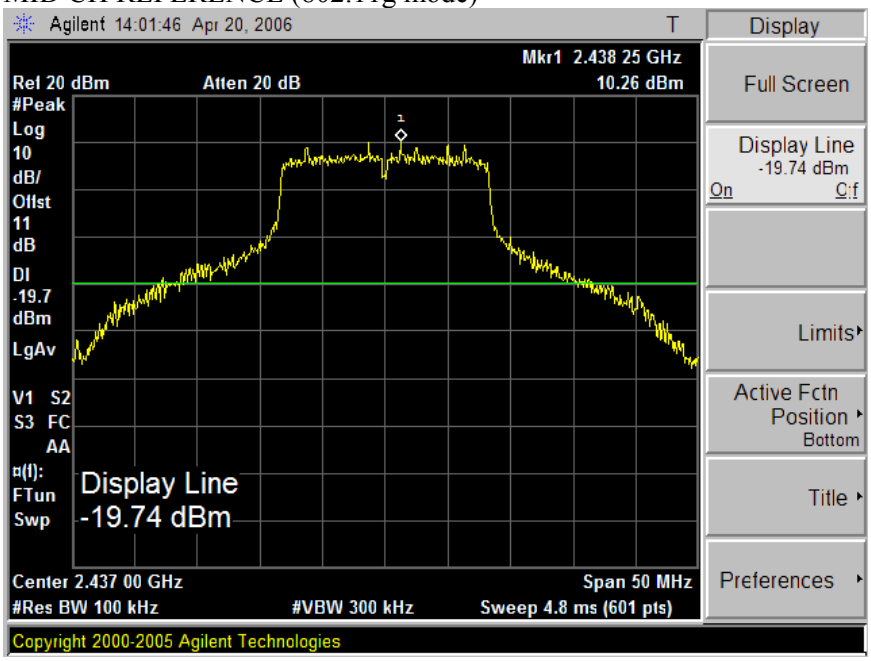


LOW CH SPURIOUS (802.11g mode)

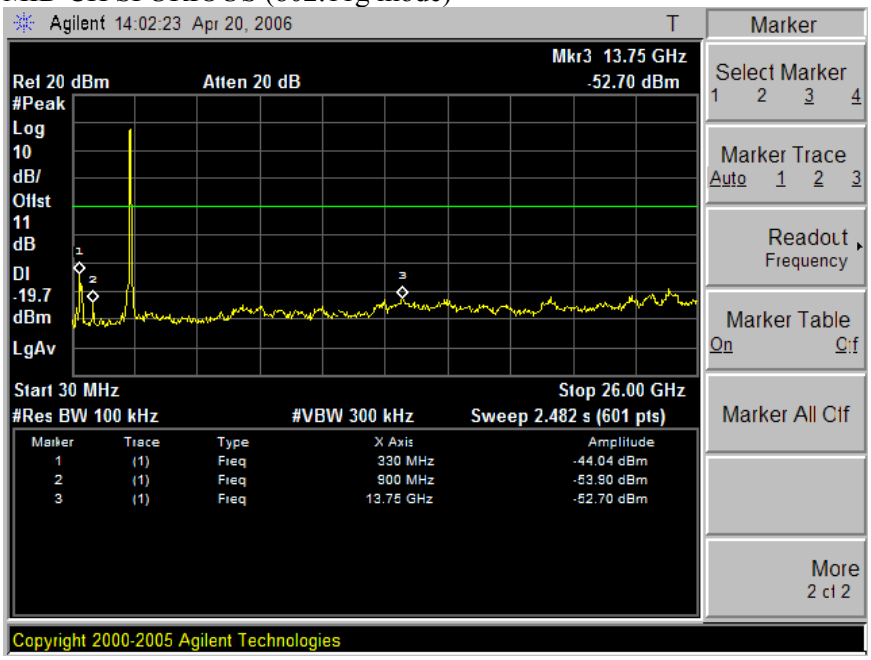


SPURIOUS EMISSIONS, MID CHANNEL (802.11g MODE)

MID CH REFERENCE (802.11g mode)

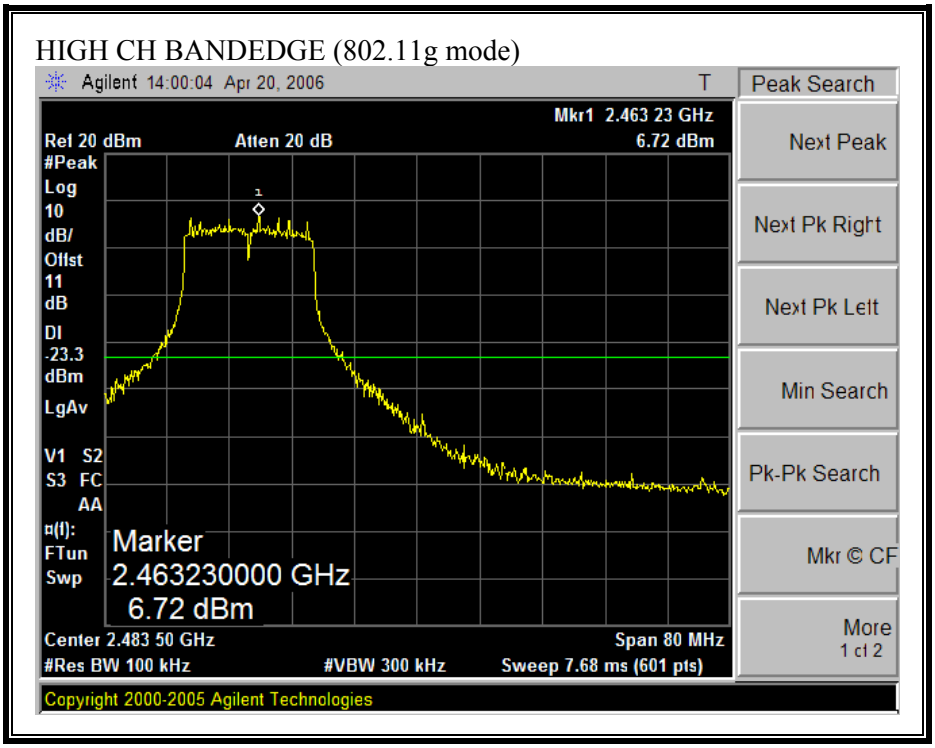


MID CH SPURIOUS (802.11g mode)

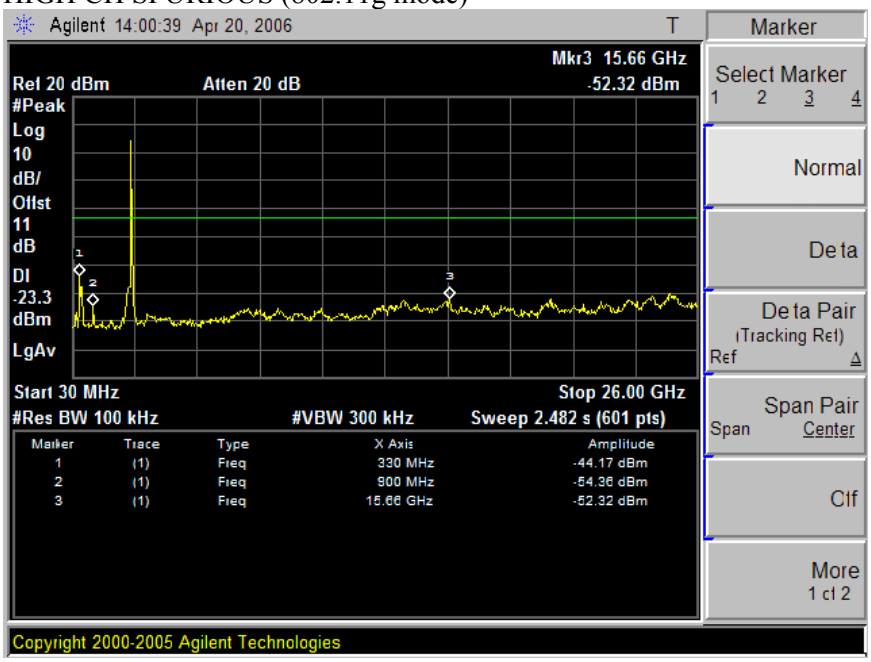


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g MODE)

HIGH CH BANDEDGE (802.11g mode)

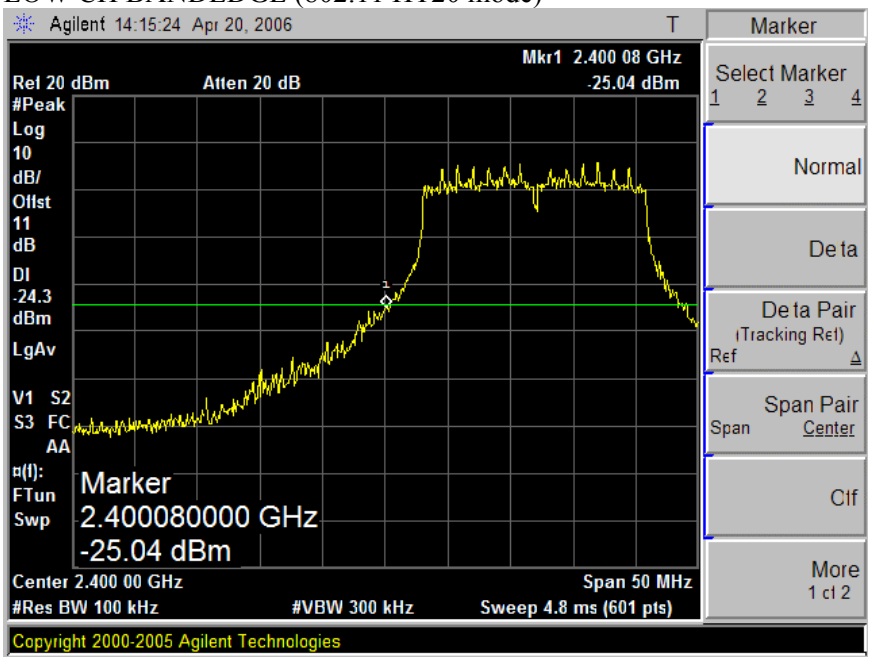


HIGH CH SPURIOUS (802.11g mode)

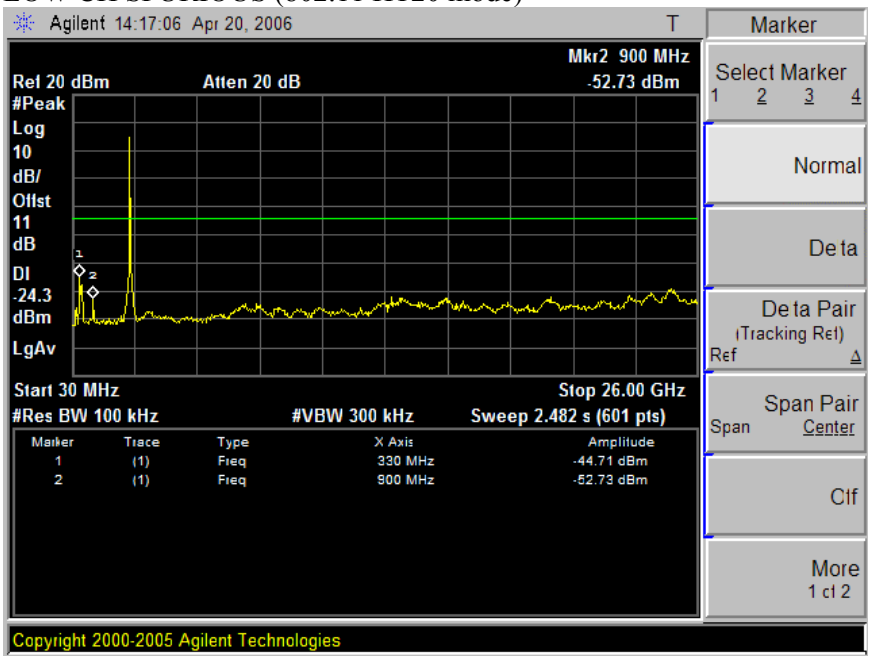


SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT20 MODE)

LOW CH BANDEDGE (802.11 HT20 mode)

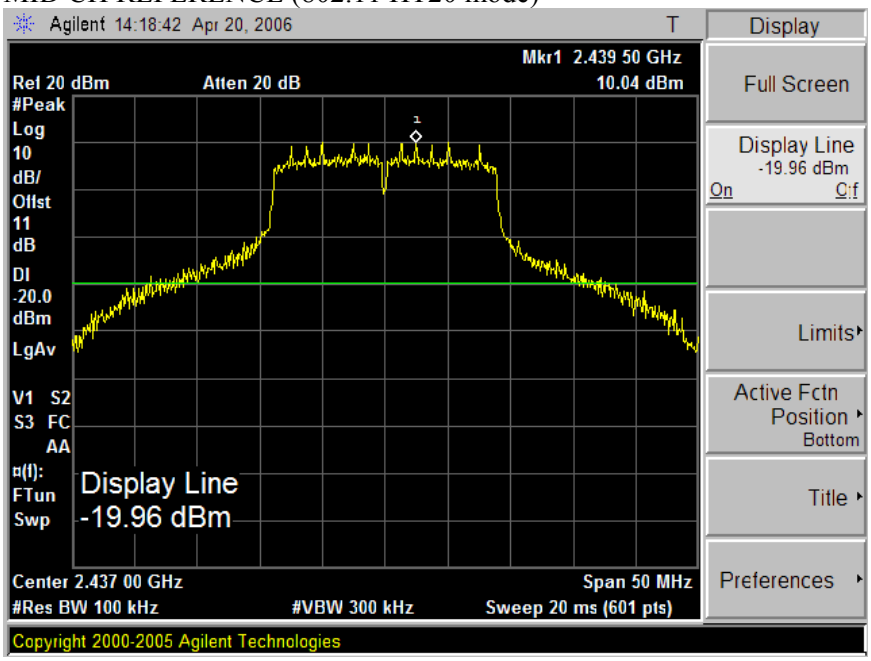


LOW CH SPURIOUS (802.11 HT20 mode)

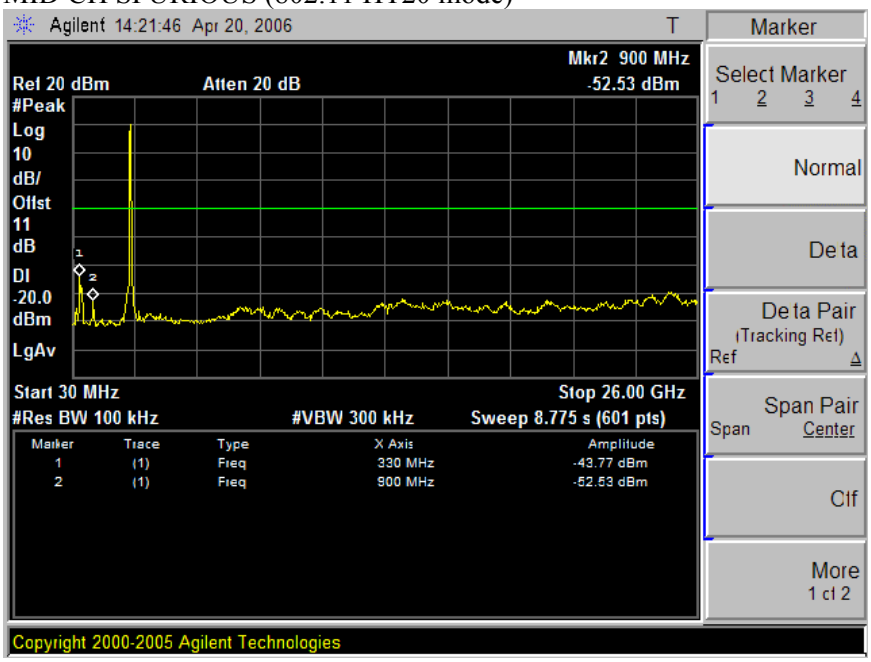


SPURIOUS EMISSIONS, MID CHANNEL (802.11 HT20 MODE)

MID CH REFERENCE (802.11 HT20 mode)

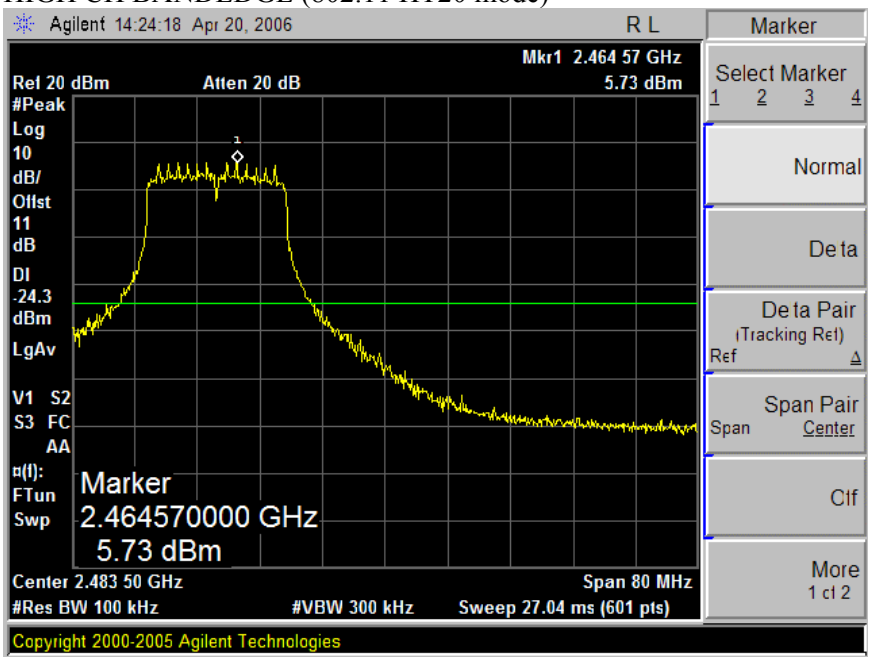


MID CH SPURIOUS (802.11 HT20 mode)

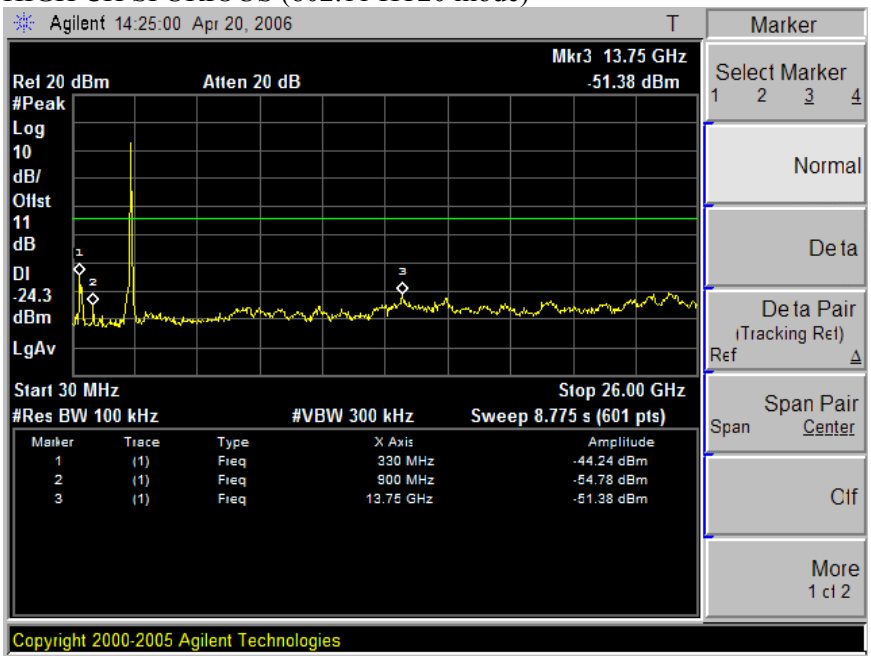


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT20 MODE)

HIGH CH BANDEDGE (802.11 HT20 mode)



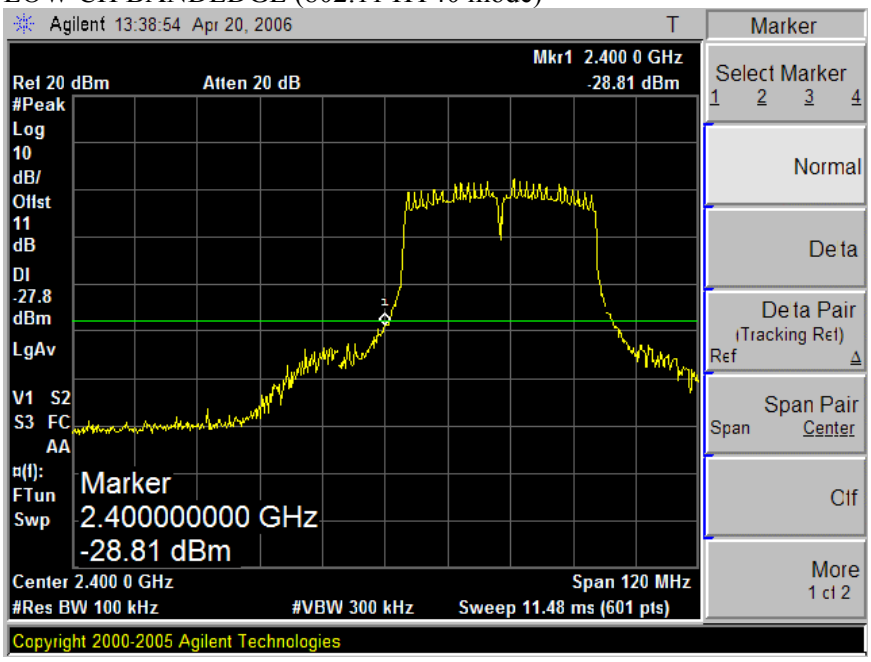
HIGH CH SPURIOUS (802.11 HT20 mode)



SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT40 MODE)

CH 2422MHz

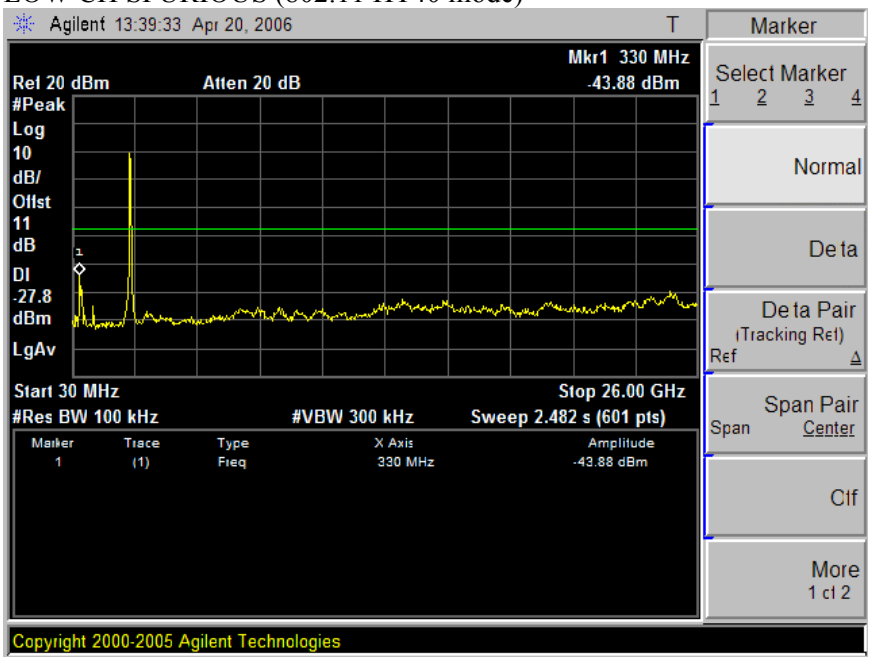
LOW CH BANDEDGE (802.11 HT40 mode)



SPURIOUS EMISSIONS, LOW CHANNEL (802.11 HT40 MODE)

CH. 2422 MHz

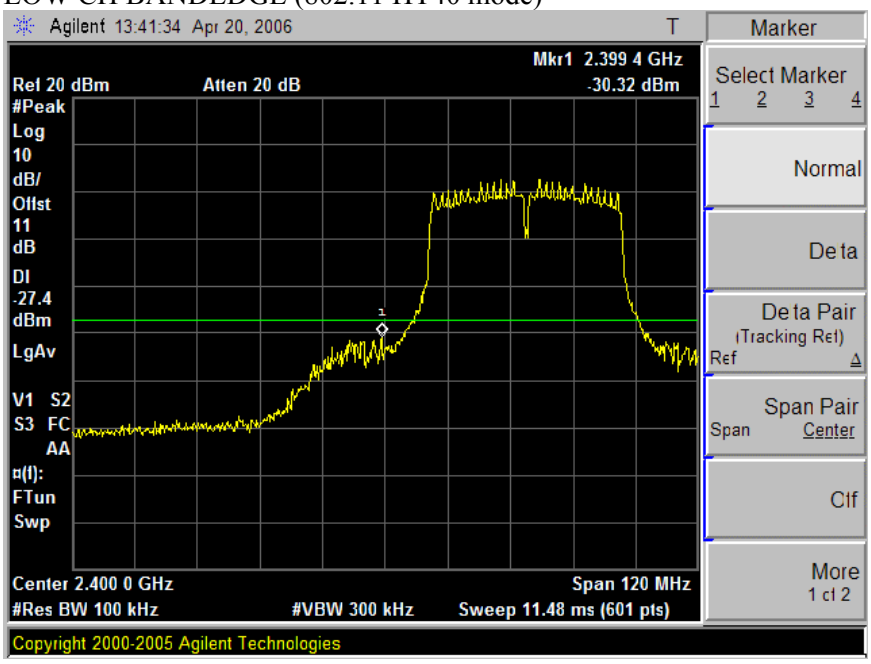
LOW CH SPURIOUS (802.11 HT40 mode)



SPURIOUS EMISSIONS, SECOND LOW CHANNEL (802.11 HT40 MODE

CH 2427MHz

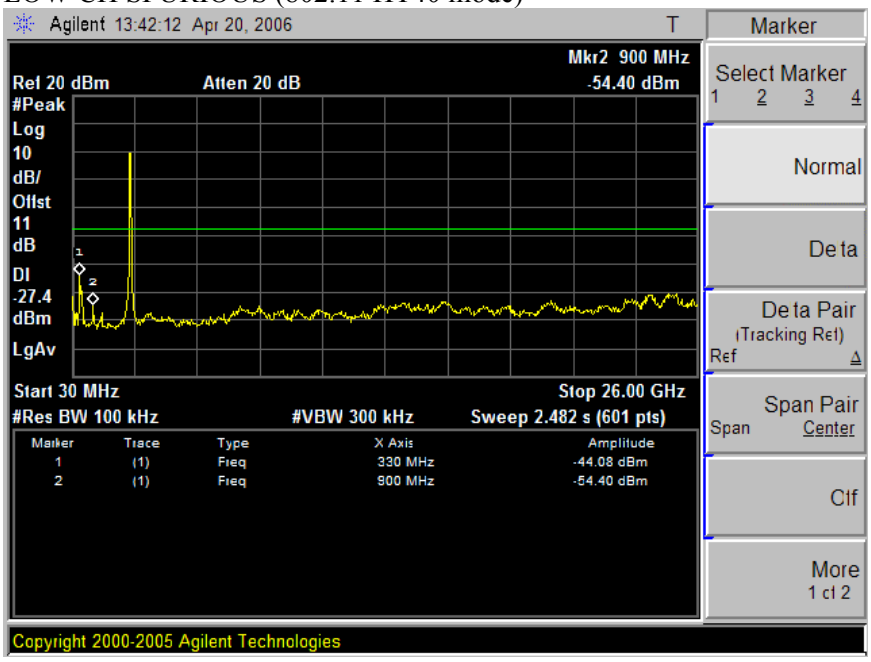
LOW CH BANDEDGE (802.11 HT40 mode)



SPURIOUS EMISSIONS, SECOND LOW CHANNEL (802.11 HT40 MODE)

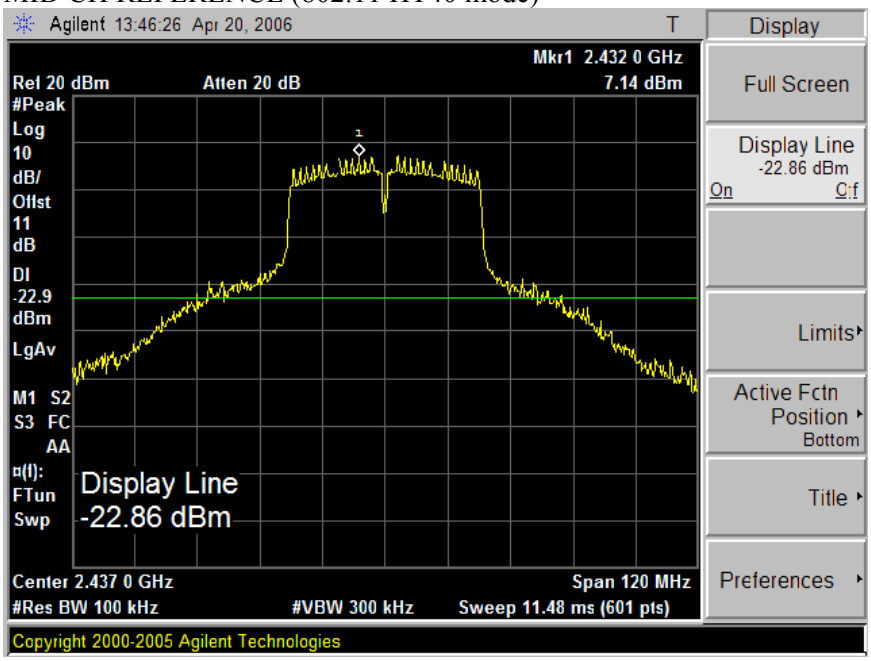
CH. 2427 MHz

LOW CH SPURIOUS (802.11 HT40 mode)

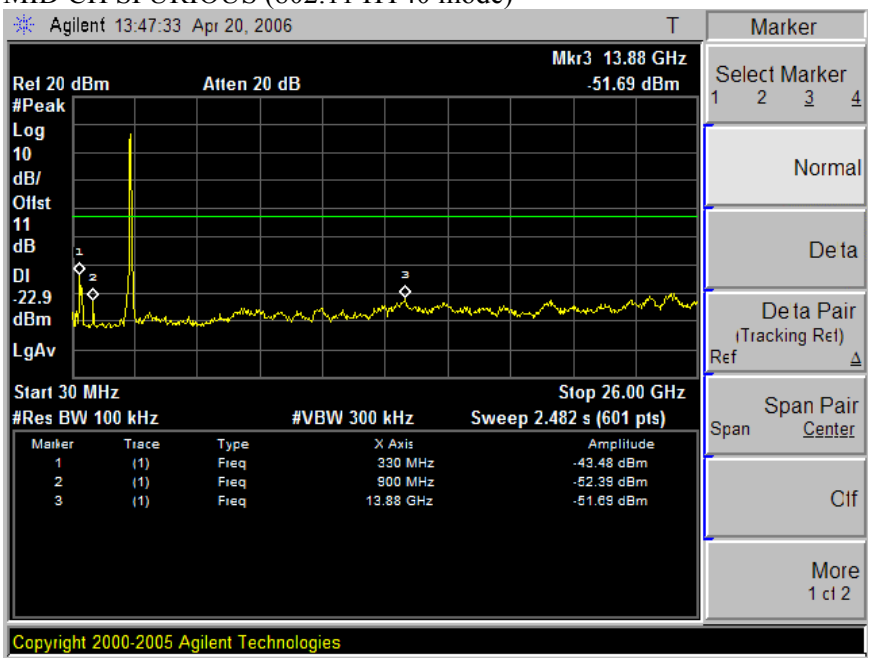


SPURIOUS EMISSIONS, MID CHANNEL (802.11 HT40 MODE)

MID CH REFERENCE (802.11 HT40 mode)



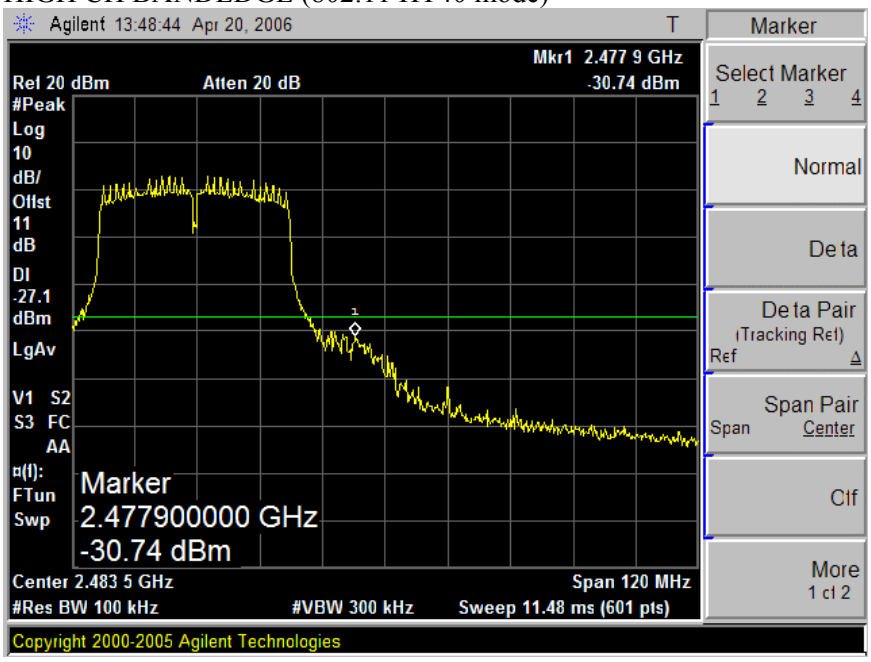
MID CH SPURIOUS (802.11 HT40 mode)



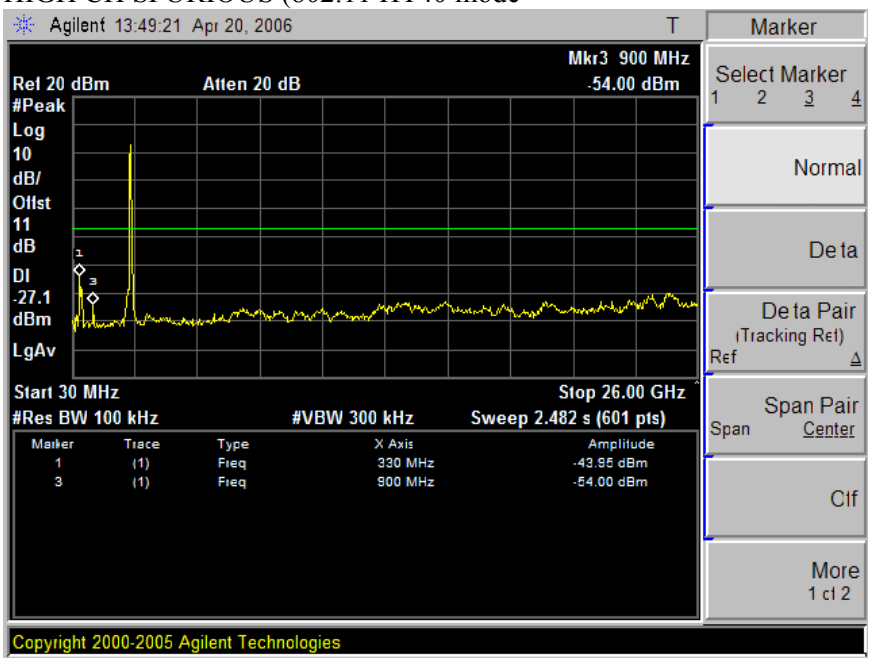
SPURIOUS EMISSIONS, SECOND HIGH CHANNEL (802.11 HT40 MODE)

CH 2447MHz

HIGH CH BANDEDGE (802.11 HT40 mode)



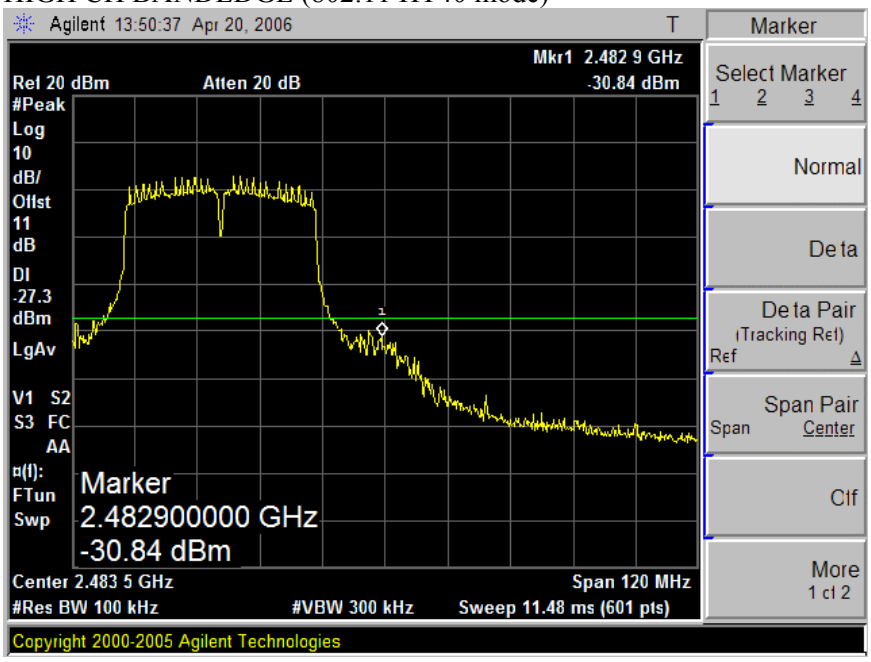
HIGH CH SPURIOUS (802.11 HT40 mode



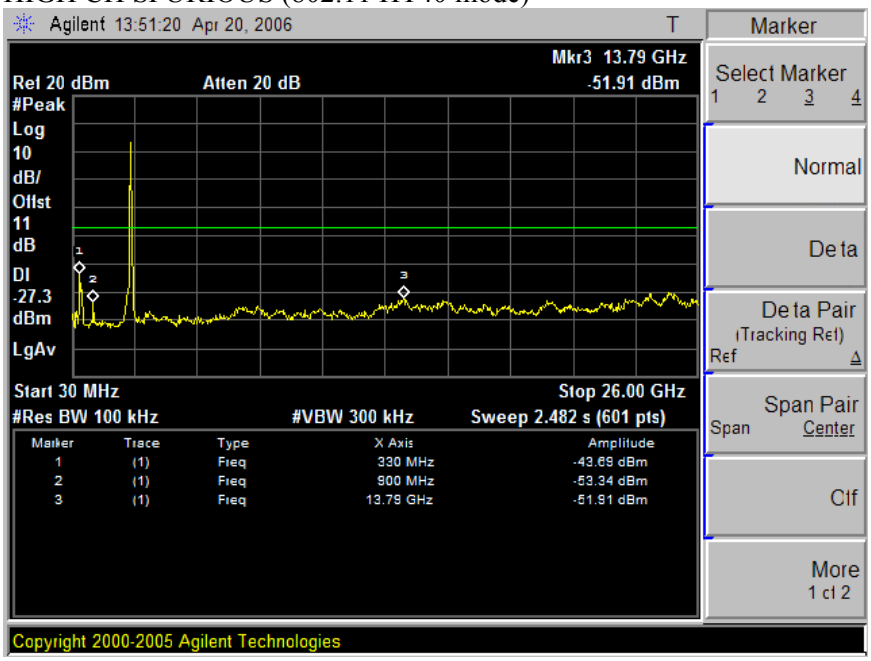
SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 HT40 MODE)

CH 2452MHz

HIGH CH BANDEDGE (802.11 HT40 mode)



HIGH CH SPURIOUS (802.11 HT40 mode)



7.2. RADIATED EMISSIONS

7.2.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

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

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

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

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

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

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

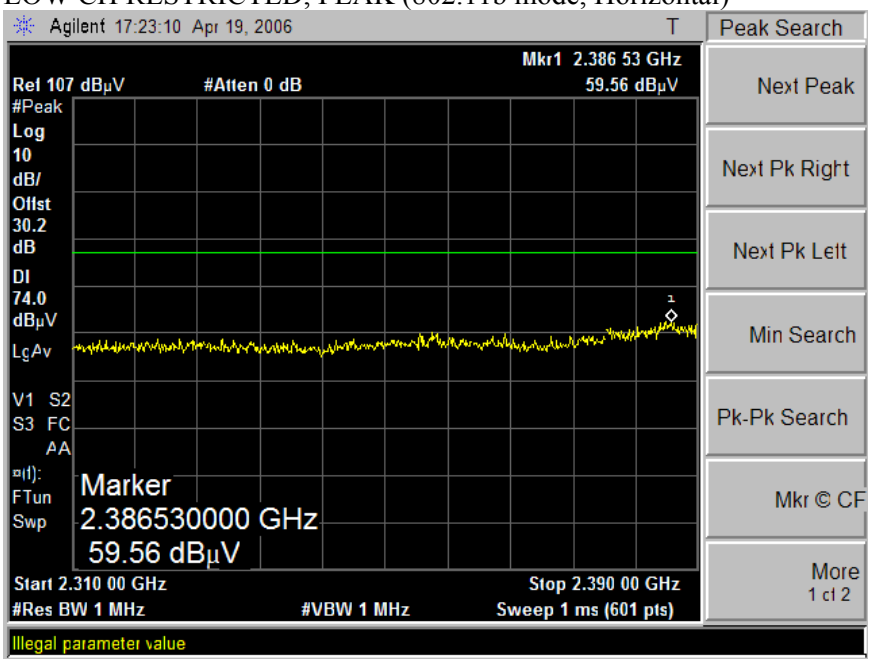
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

The EUT was operating in dual chain mode for transmitter spurious tests.

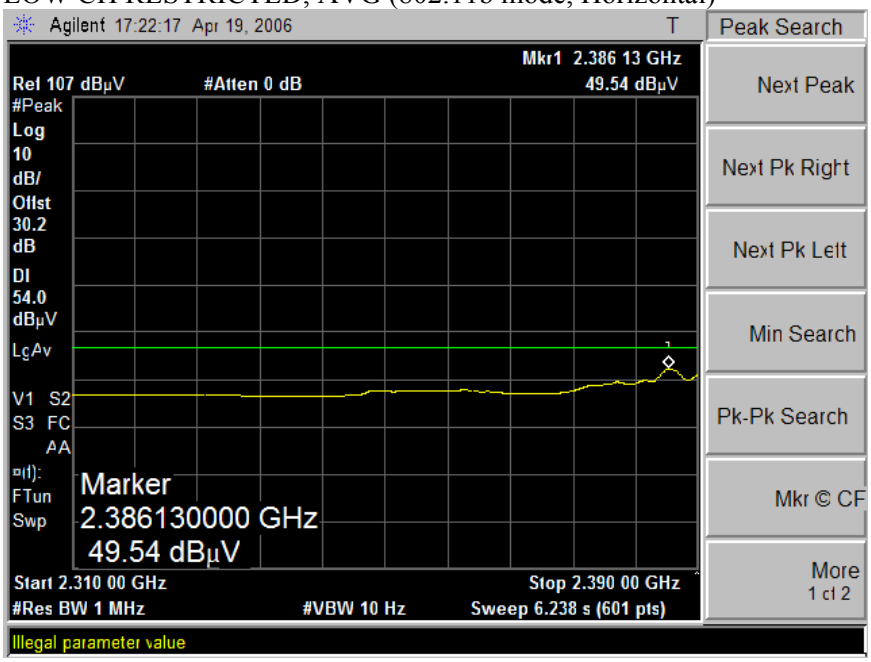
7.2.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

CH 0, RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11b mode, Horizontal)

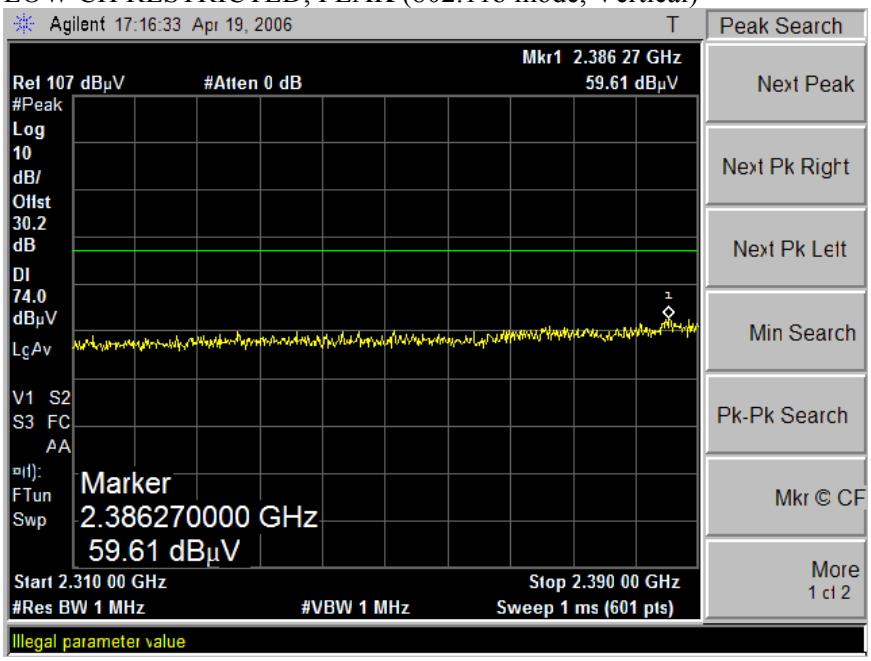


LOW CH RESTRICTED, AVG (802.11b mode, Horizontal)

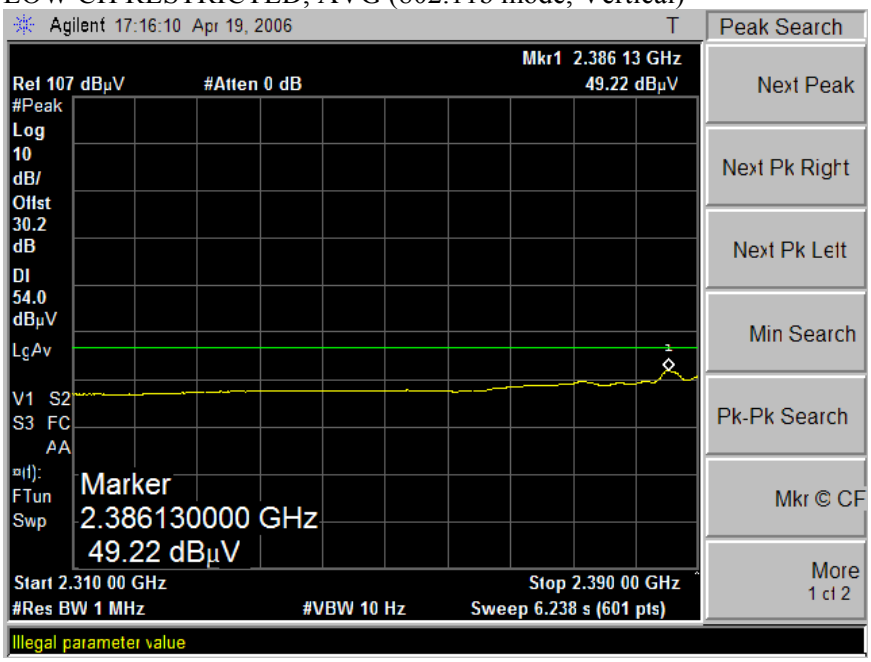


RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11b mode, Vertical)

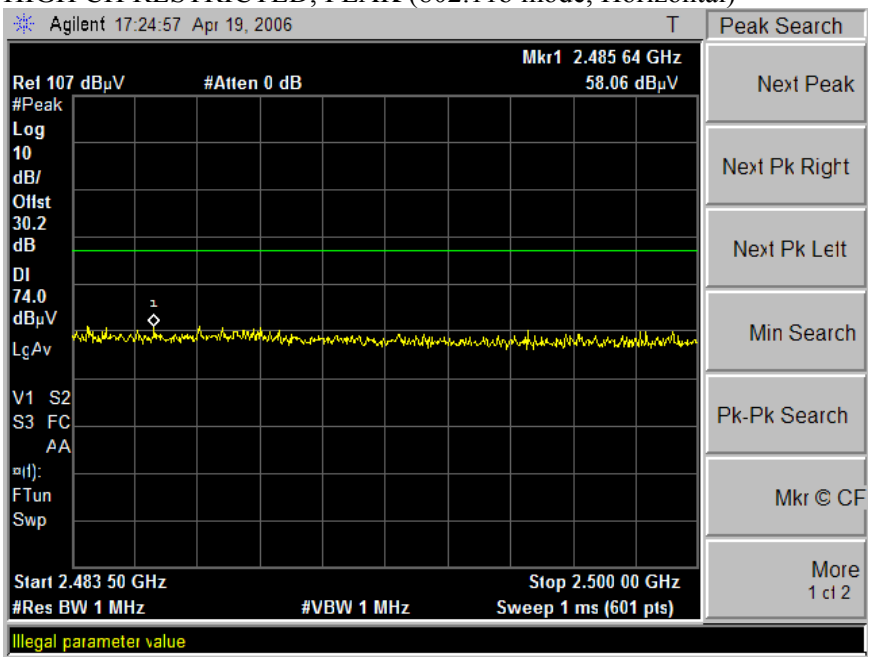


LOW CH RESTRICTED, AVG (802.11b mode, Vertical)

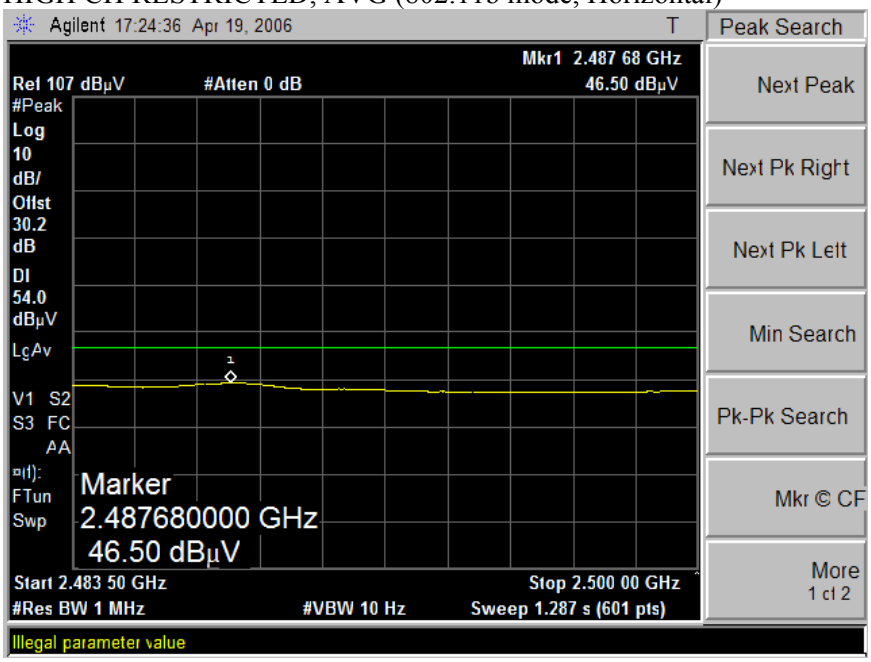


RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11b mode, Horizontal)

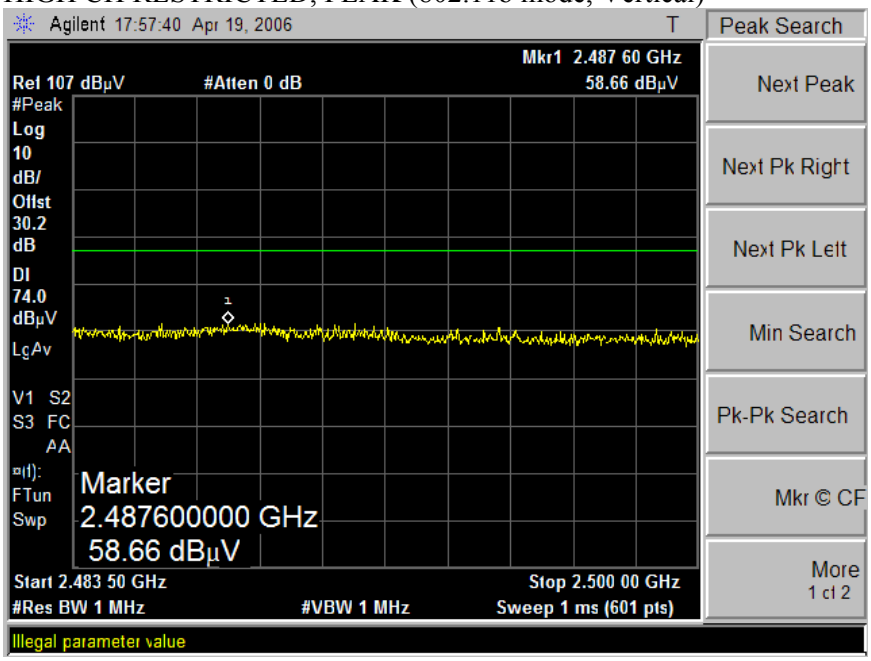


HIGH CH RESTRICTED, AVG (802.11b mode, Horizontal)

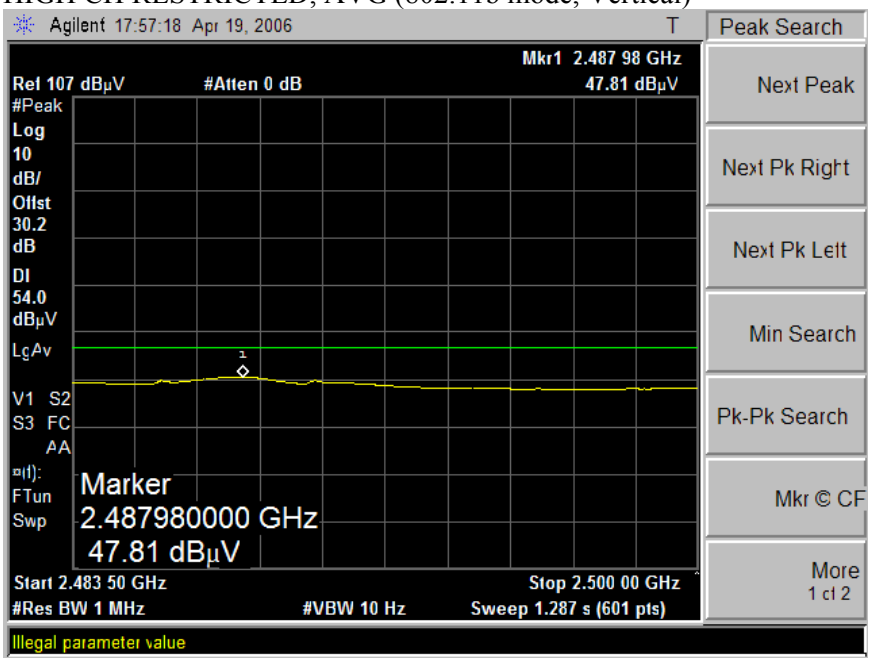


RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11b mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11b mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (b MODE)

04/19/06 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer:Chin Pang
Project #:06U10251
Company:Atheros
EUT Description:2.4GHz 802.11n Cardbus
EUT M/N:AR5BCB-00071
EUT S/N:
Test Target:FCC15.247
Mode Of Operation:b Mode

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T34 HP 8449B			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Chin 197538001	Chin 200354001		R_001

Peak Measurements RBW=VBW=1MHz
Average Measurements RBW=1MHz ; VBW=10Hz

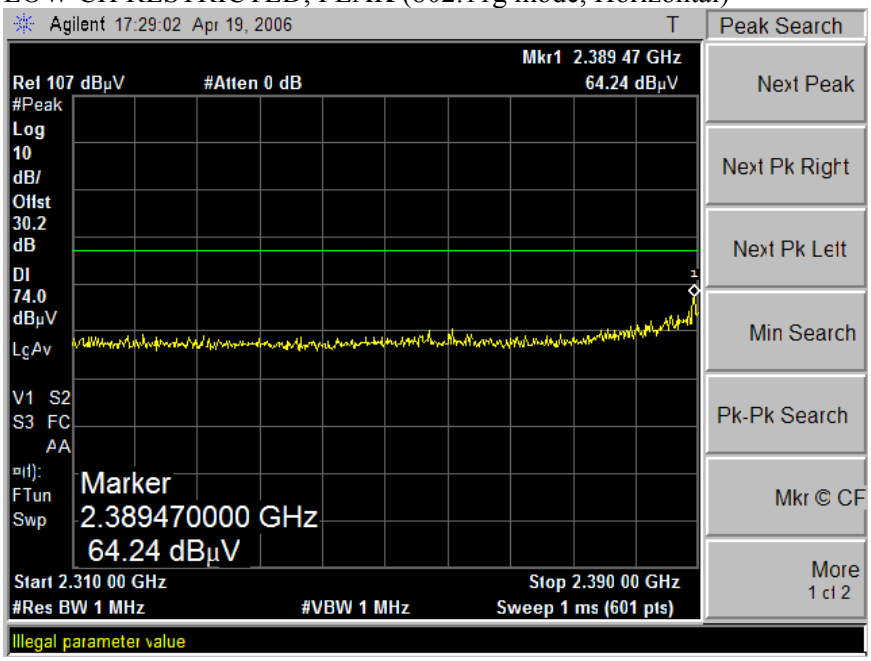
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
low ch, 2412MHz															
4.824	3.0	53.8	50.9	33.7	3.2	-34.8	0.0	0.0	55.9	53.0	74	54	-18.1	-1.0	V
4.824	3.0	54.0	51.2	33.7	3.2	-34.8	0.0	0.0	56.1	53.3	74	54	-17.9	-0.7	H
Mid Ch, 2437MHz															
4.874	3.0	54.4	51.3	33.8	3.2	-34.8	0.0	0.0	56.6	53.5	74	54	-17.4	-0.5	V
7.311	3.0	50.0	41.0	35.5	3.6	-34.1	0.0	0.0	55.0	46.0	74	54	-19.0	-8.0	V
4.874	3.0	54.7	51.5	33.8	3.2	-34.8	0.0	0.0	56.9	53.7	74	54	-17.1	-0.3	H
7.311	3.0	51.4	43.0	35.5	3.6	-34.1	0.0	0.0	56.4	48.0	74	54	-17.6	-6.0	H
High Ch, 2462MHz															
4.924	3.0	53.0	49.5	33.8	3.2	-34.8	0.0	0.0	55.3	51.8	74	54	-18.7	-2.2	V
7.386	3.0	46.0	36.0	35.6	3.6	-34.1	0.0	0.0	51.1	41.1	74	54	-22.9	-12.9	V
4.924	3.0	53.6	50.5	33.8	3.2	-34.8	0.0	0.0	55.9	52.8	74	54	-18.1	-1.2	H
7.386	3.0	45.0	35.0	35.6	3.6	-34.1	0.0	0.0	50.1	40.1	74	54	-23.9	-13.9	H

Note: No other emissions were detected above the system noise floor.

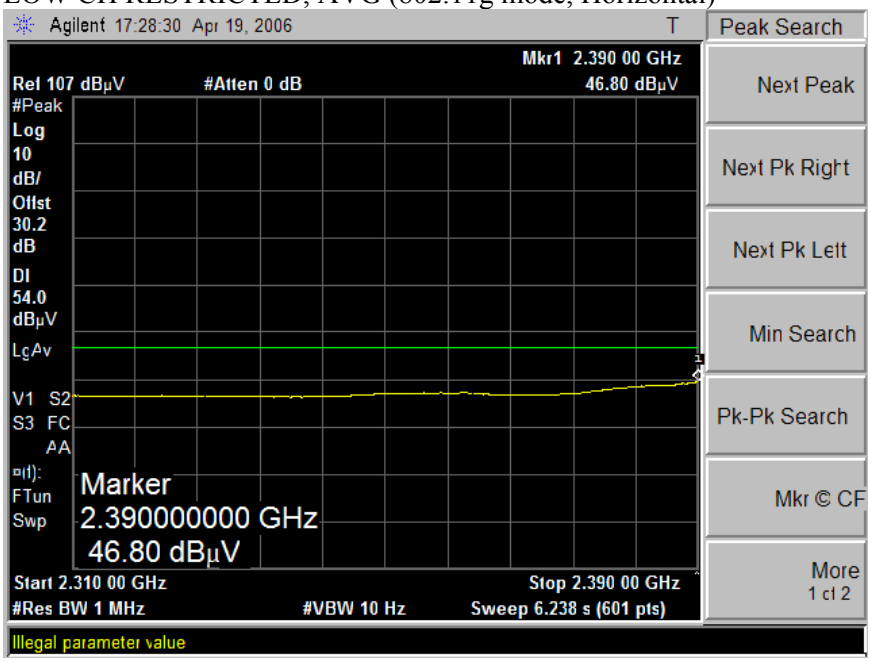
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11g mode, Horizontal)

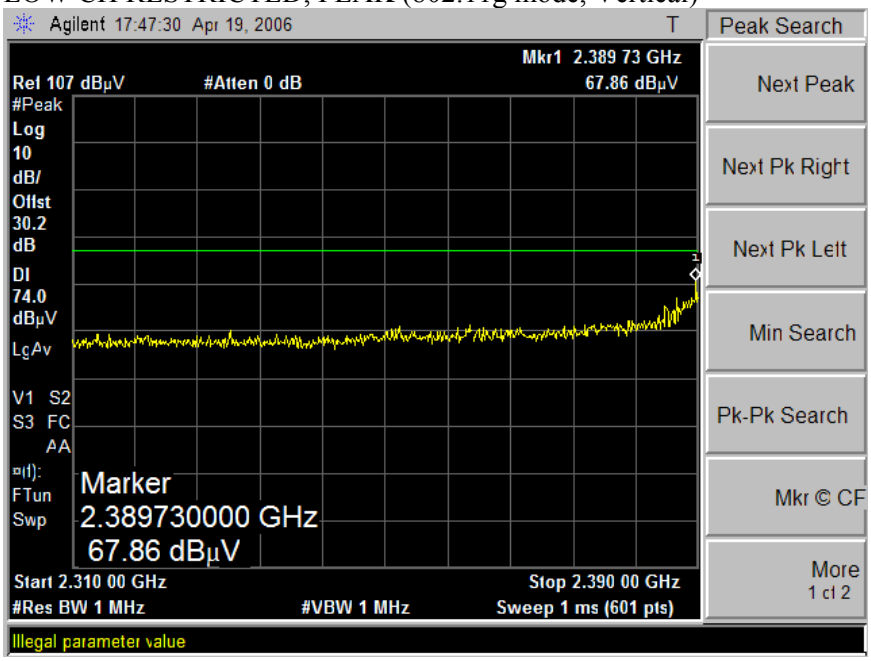


LOW CH RESTRICTED, AVG (802.11g mode, Horizontal)

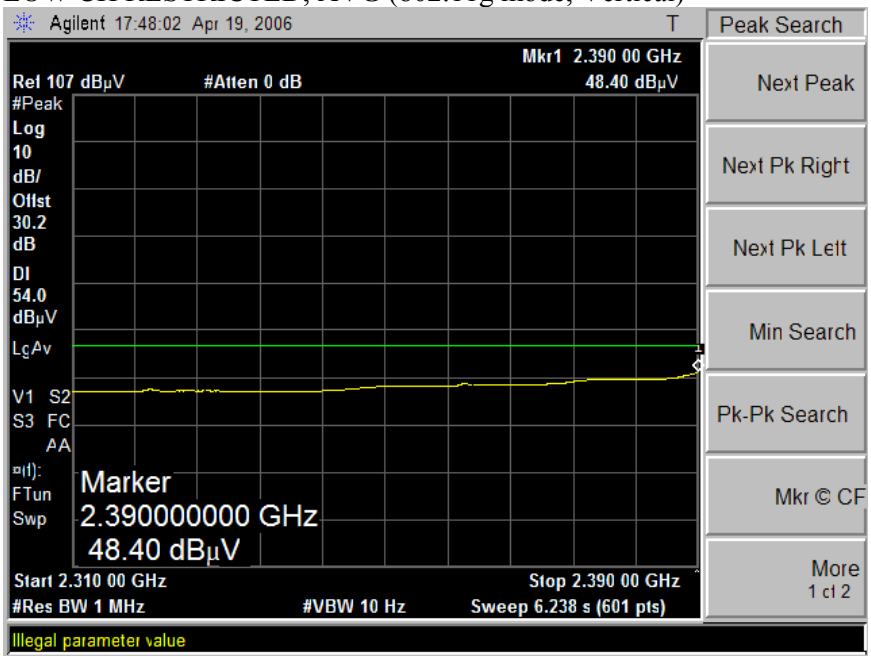


RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11g mode, Vertical)

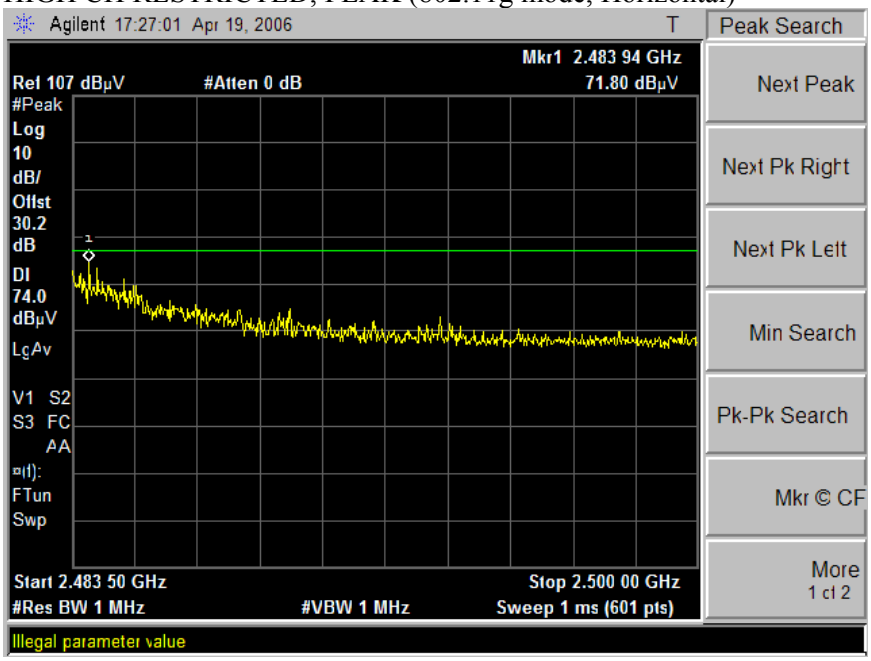


LOW CH RESTRICTED, AVG (802.11g mode, Vertical)

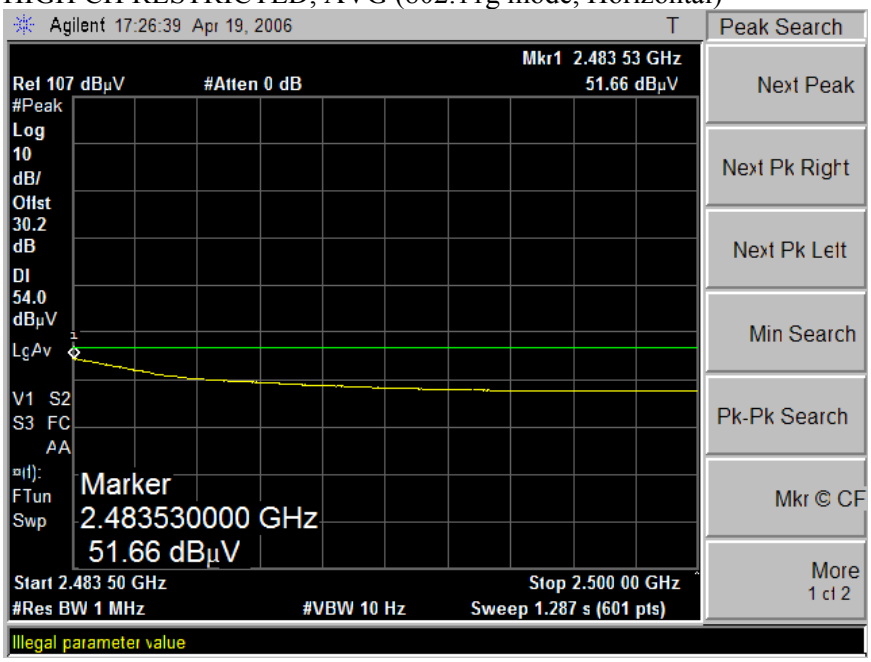


RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11g mode, Horizontal)

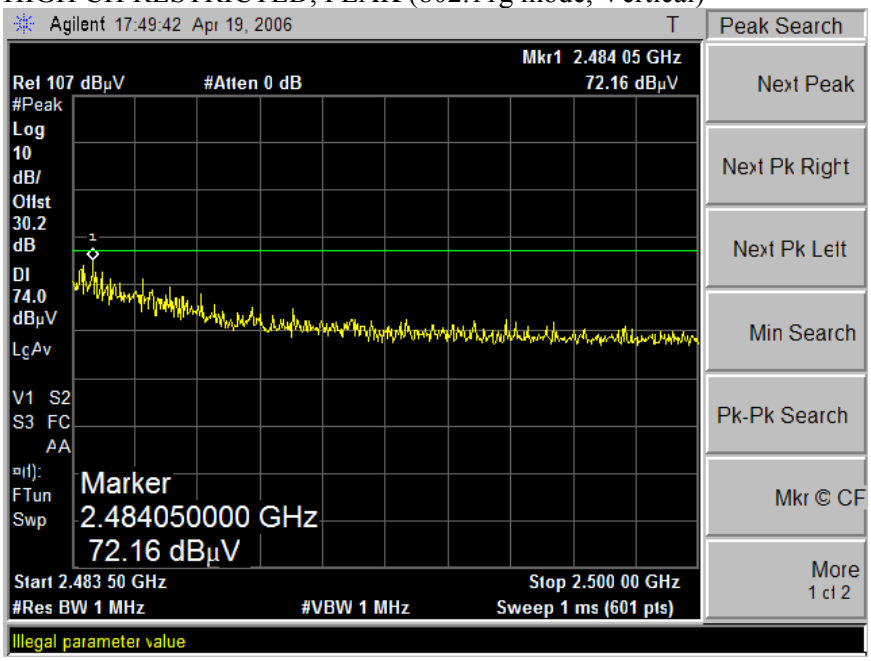


HIGH CH RESTRICTED, AVG (802.11g mode, Horizontal)

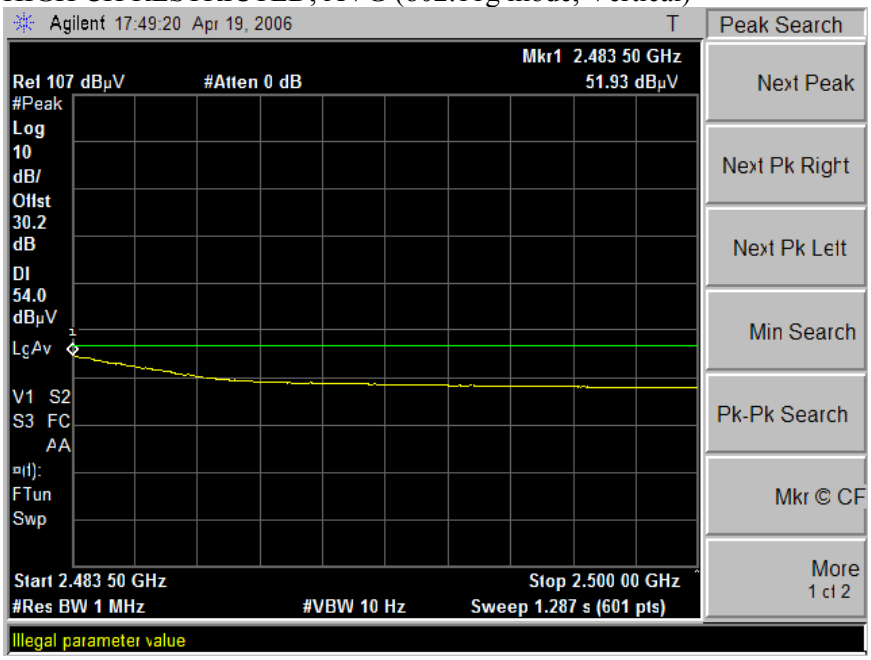


RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11g mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11g mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (g MODE)

04/19/06 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer:Chin Pang
Project #:06U10251
Company:Atheros
EUT Description:2.4GHz 802.11n Cardbus
EUT M/N:AR5BCB-00071
EUT S/N:
Test Target:FCC15.247
Mode Of Operation:TX, g Mode

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T34 HP 8449B			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Chin 197538001	Chin 200354001		R_001

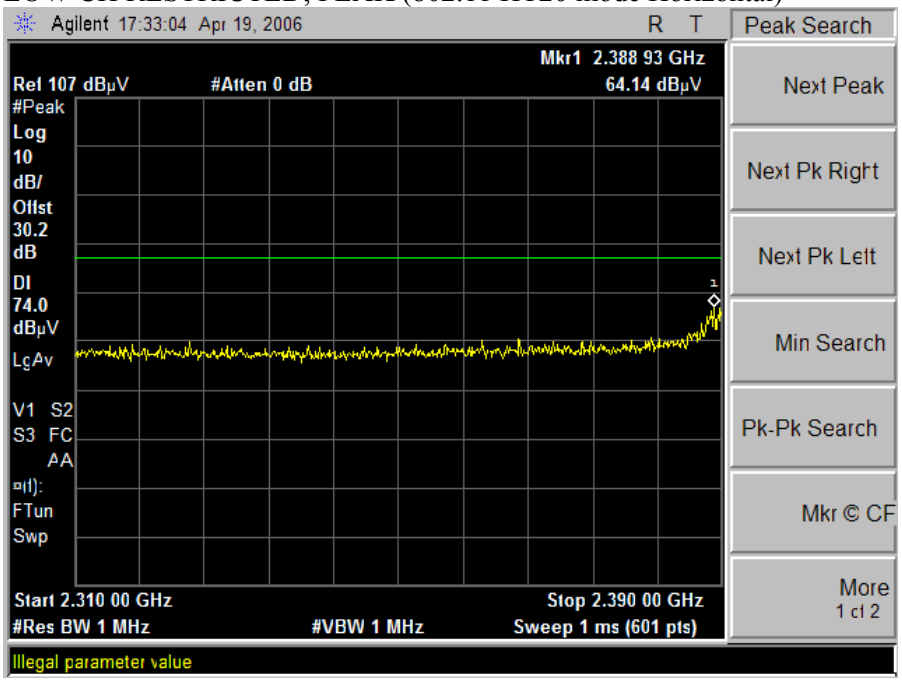
Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch, 2412MHz															
4.824	3.0	51.3	36.3	33.7	3.2	-34.8	0.0	0.0	53.4	38.4	74	54	-20.6	-15.6	V
4.824	3.0	50.0	35.0	33.7	3.2	-34.8	0.0	0.0	52.1	37.1	74	54	-21.9	-16.9	H
Mid Ch, 2437															
4.874	3.0	52.3	39.0	33.8	3.2	-34.8	0.0	0.0	54.5	41.2	74	54	-19.5	-12.8	V
7.311	3.0	53.5	40.0	35.5	3.6	-34.1	0.0	0.0	58.5	45.0	74	54	-15.5	-9.0	V
4.874	3.0	58.6	45.0	33.8	3.2	-34.8	0.0	0.0	60.8	47.2	74	54	-13.2	-6.8	H
7.311	3.0	50.0	36.5	35.5	3.6	-34.1	0.0	0.0	55.0	41.5	74	54	-19.0	-12.5	H
High Ch, 2462															
4.924	3.0	51.0	38.5	33.8	3.2	-34.8	0.0	0.0	53.3	40.8	74	54	-20.7	-13.2	V
7.386	3.0	49.0	35.2	35.6	3.6	-34.1	0.0	0.0	54.1	40.3	74	54	-19.9	-13.7	V
4.924	3.0	52.4	38.2	33.8	3.2	-34.8	0.0	0.0	54.7	40.5	74	54	-19.3	-13.5	H
7.386	3.0	46.5	35.0	35.6	3.6	-34.1	0.0	0.0	51.6	40.1	74	54	-22.4	-13.9	H
Note: No other emissions were detected above the system noise floor.															

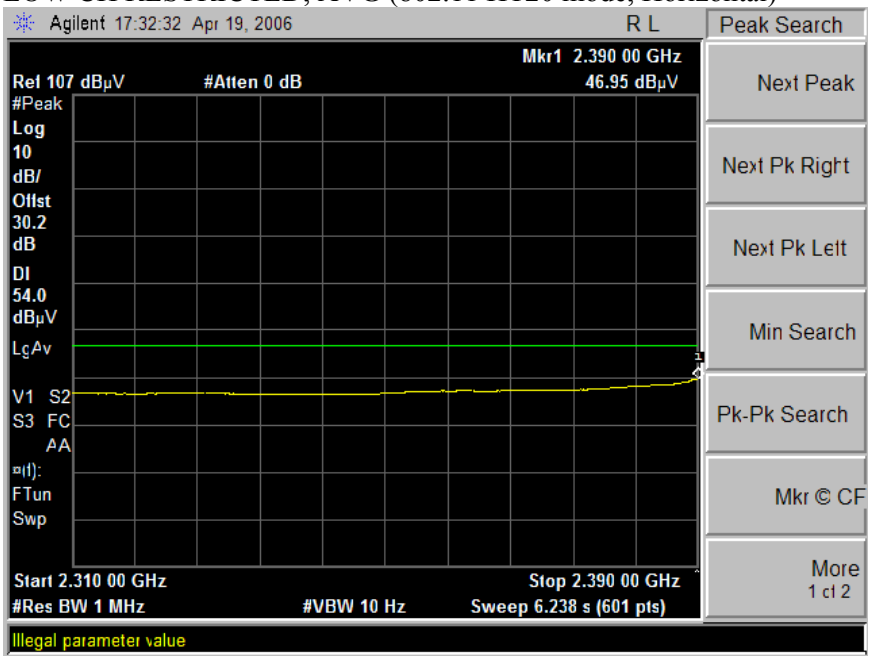
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

RESTRICTED BANDEDGE (HT20 MODE, LOW CHANNEL, HORIZONTAL

LOW CH RESTRICTED, PEAK (802.11 HT20 mode Horizontal)

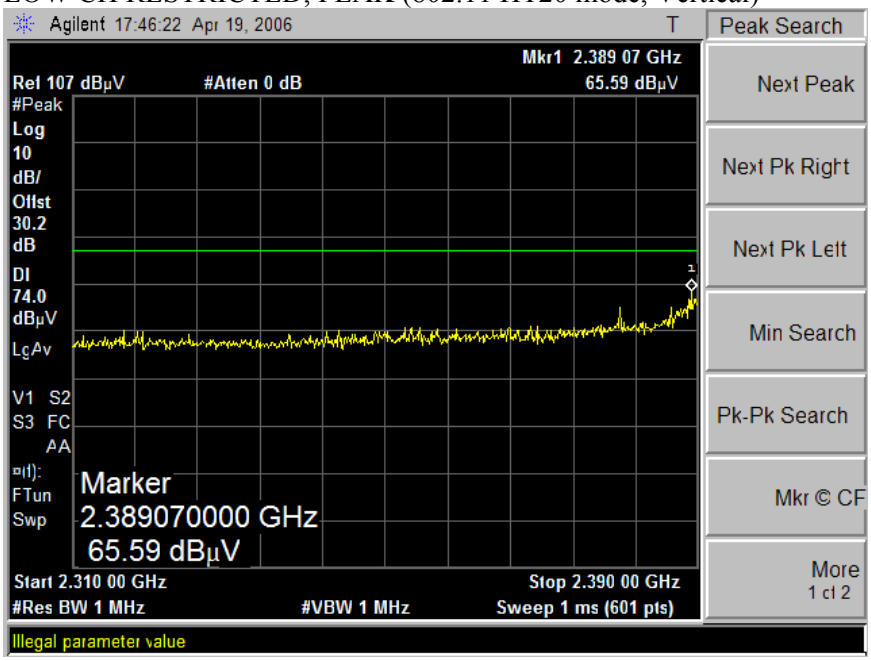


LOW CH RESTRICTED, AVG (802.11 HT20 mode, Horizontal)

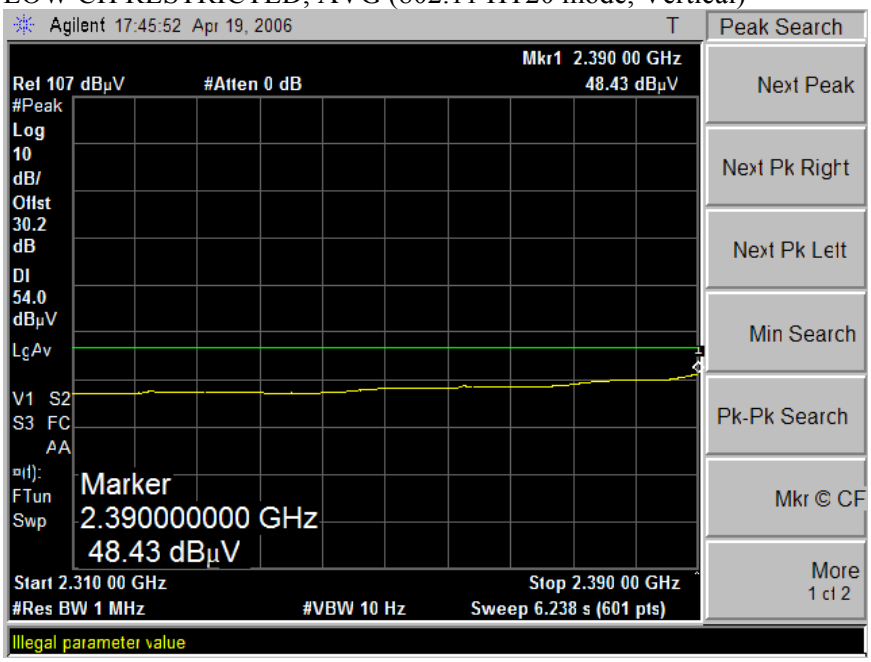


RESTRICTED BANDEDGE (HT20 MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11 HT20 mode, Vertical)

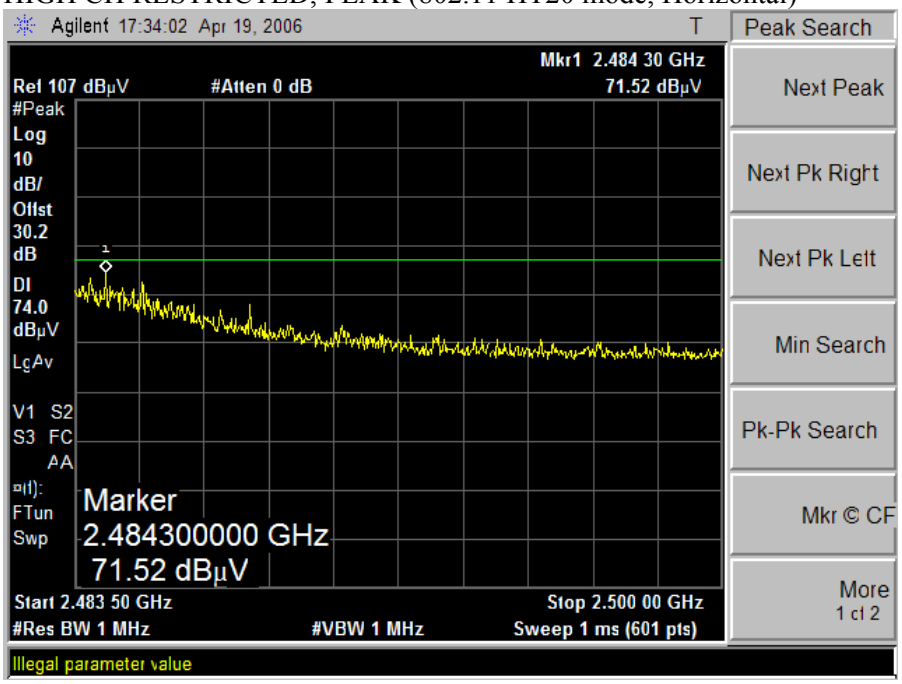


LOW CH RESTRICTED, AVG (802.11 HT20 mode, Vertical)

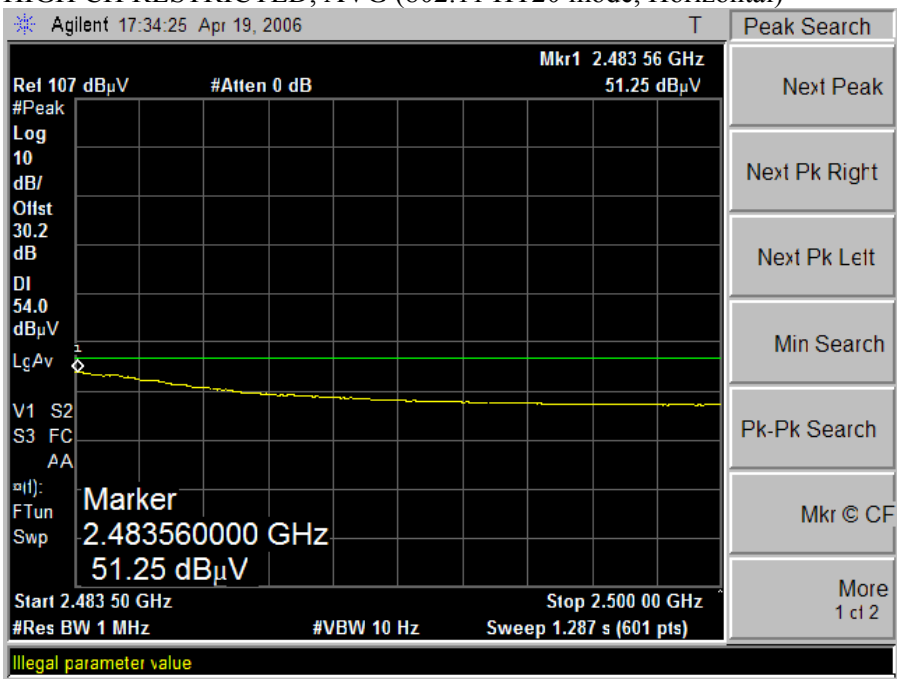


RESTRICTED BANDEDGE (HT20 MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11 HT20 mode, Horizontal)

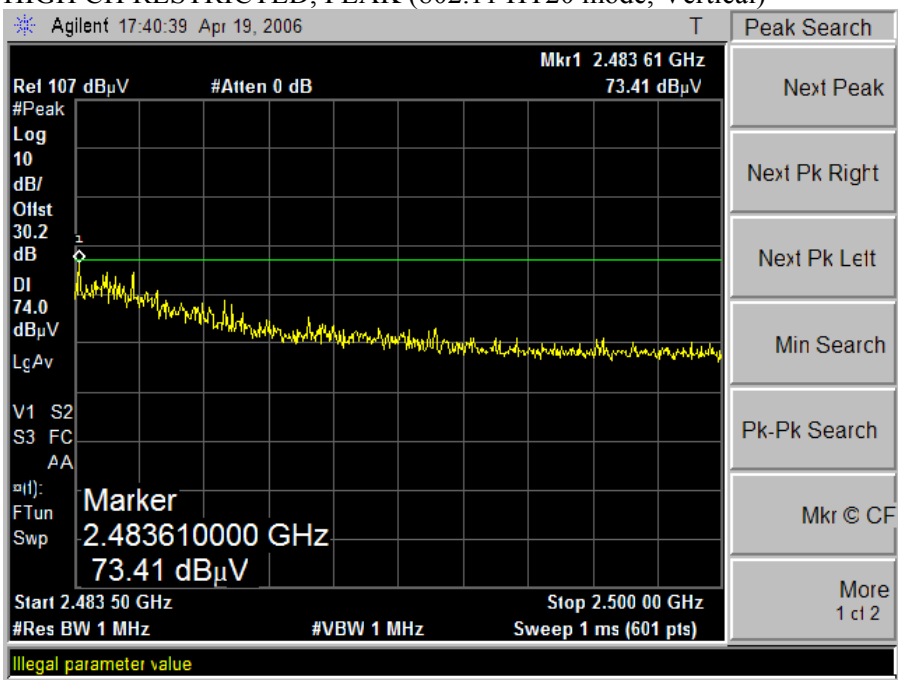


HIGH CH RESTRICTED, AVG (802.11 HT20 mode, Horizontal)

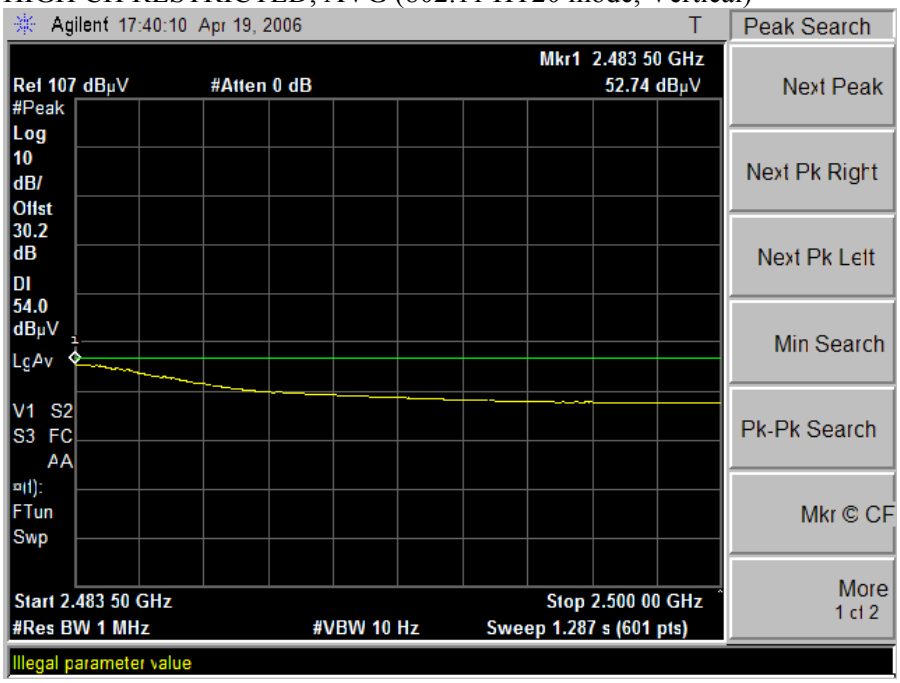


RESTRICTED BANDEDGE (HT20 MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11 HT20 mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11 HT20 mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (g HT20 MODE)

04/19/06 **High Frequency Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer:Chin Pang
Project #:06U10251
Company:Atheros
EUT Description:2.4GHz 802.11n Cardbus
EUT M/N:AR5BCB-00071
EUT S/N:
Test Target:FCC15.247
Mode Of Operation:TX, HT20 Mode

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T34 HP 8449B			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Chin 197538001	Chin 200354001		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

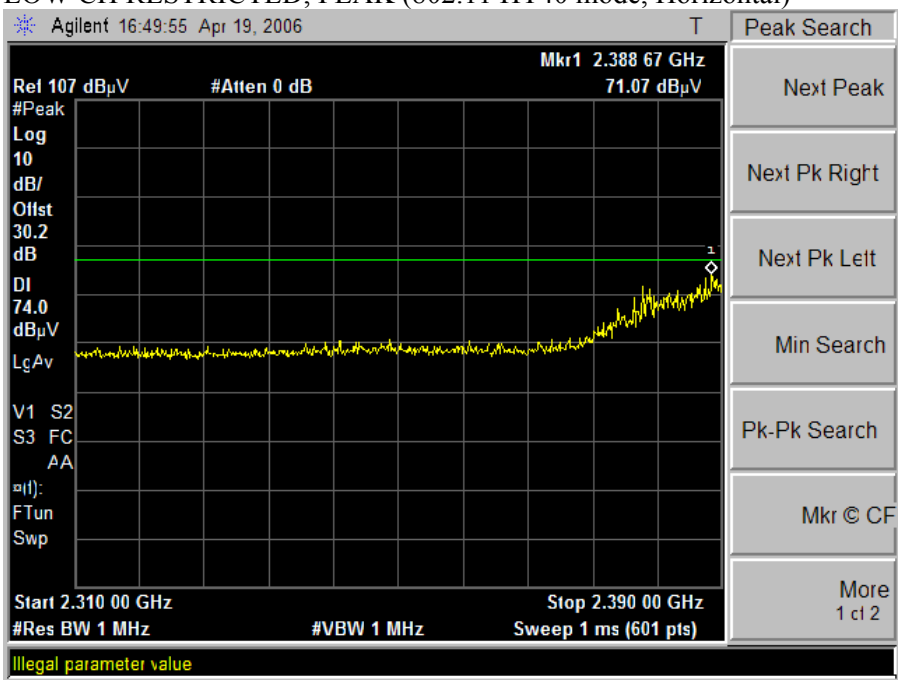
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch, 2412MHz															
4.824	3.0	49.3	34.0	33.7	3.2	-34.8	0.0	0.0	51.4	36.1	74	54	-22.6	-17.9	V
4.824	3.0	48.0	33.7	33.7	3.2	-34.8	0.0	0.0	50.1	35.8	74	54	-23.9	-18.2	H
Mid Ch, 2437MHz															
4.874	3.0	51.5	39.5	33.8	3.2	-34.8	0.0	0.0	53.7	41.7	74	54	-20.3	-12.3	V
7.311	3.0	46.0	40.0	35.5	3.6	-34.1	0.0	0.0	51.0	45.0	74	54	-23.0	-9.0	V
4.874	3.0	55.0	41.5	33.8	3.2	-34.8	0.0	0.0	57.2	43.7	74	54	-16.8	-10.3	H
7.311	3.0	48.0	35.6	35.5	3.6	-34.1	0.0	0.0	53.0	40.6	74	54	-21.0	-13.4	H
High Ch, 2462MHz															
4.924	3.0	52.0	38.4	33.8	3.2	-34.8	0.0	0.0	54.3	40.7	74	54	-19.7	-13.3	V
7.386	3.0	47.0	33.5	35.6	3.6	-34.1	0.0	0.0	52.1	38.6	74	54	-21.9	-15.4	V
4.924	3.0	52.4	38.2	33.8	3.2	-34.8	0.0	0.0	54.7	40.5	74	54	-19.3	-13.5	H
7.386	3.0	45.8	33.0	35.6	3.6	-34.1	0.0	0.0	50.9	38.1	74	54	-23.1	-15.9	H

Note: No other emissions were detected above the system noise floor.

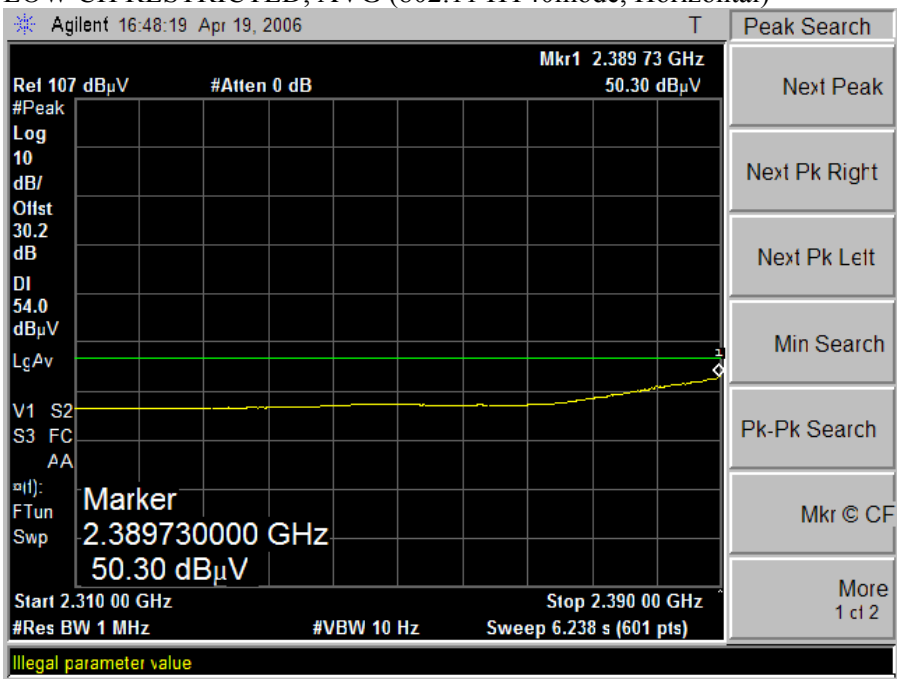
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

LOW CH, 2422MHz RESTRICTED BANDEDGE (HT40 MODE, LOW CHANNEL, HORIZONTAL

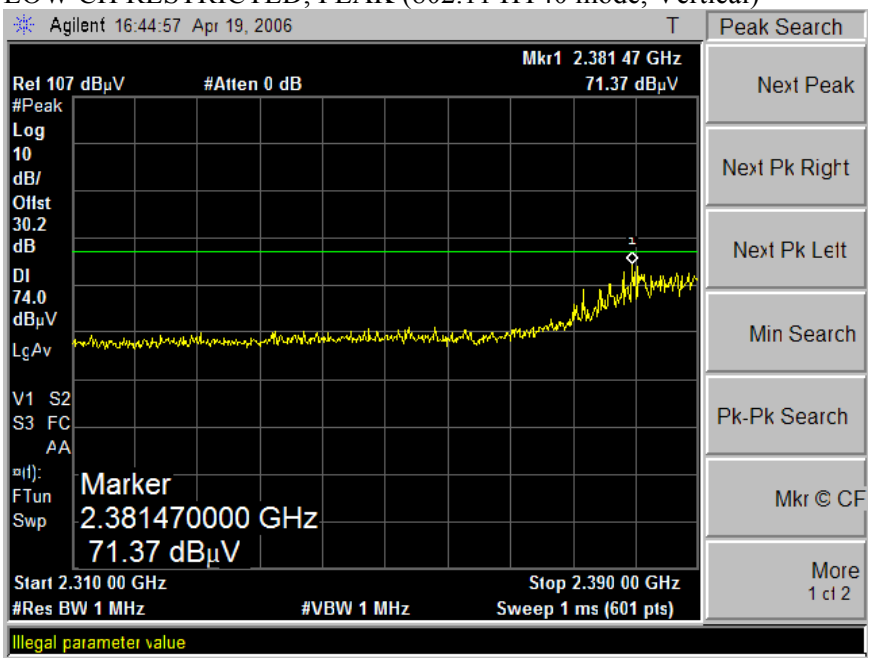
LOW CH RESTRICTED, PEAK (802.11 HT40 mode, Horizontal)



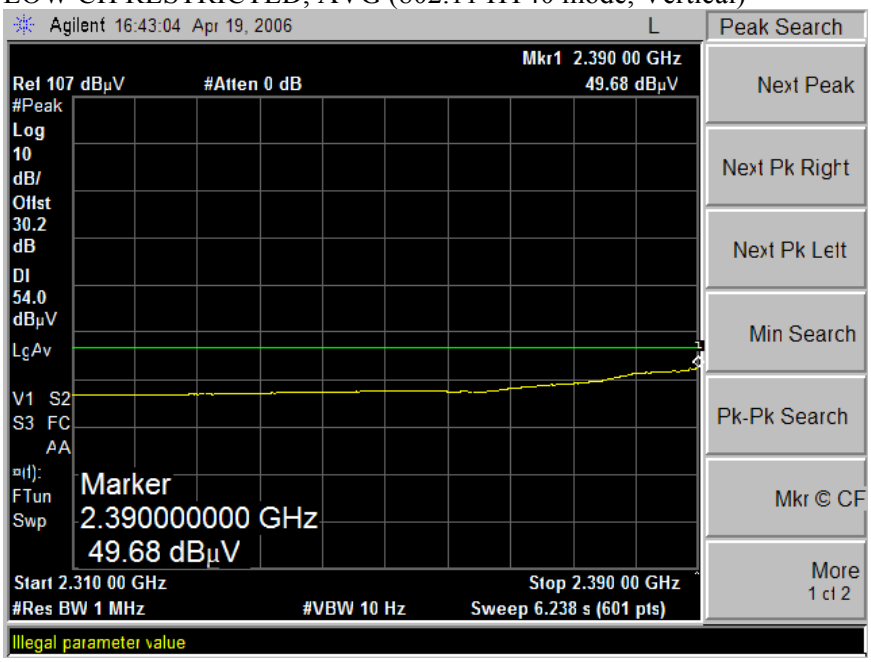
LOW CH RESTRICTED, AVG (802.11 HT40mode, Horizontal)



LOW CH RESTRICTED, PEAK (802.11 HT40 mode, Vertical)

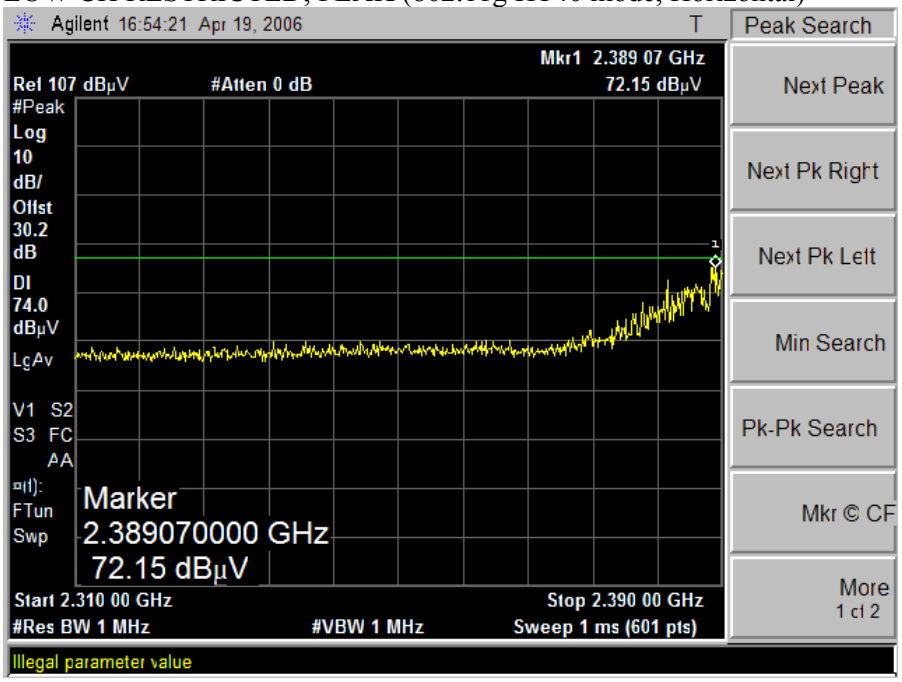


LOW CH RESTRICTED, AVG (802.11 HT40 mode, Vertical)

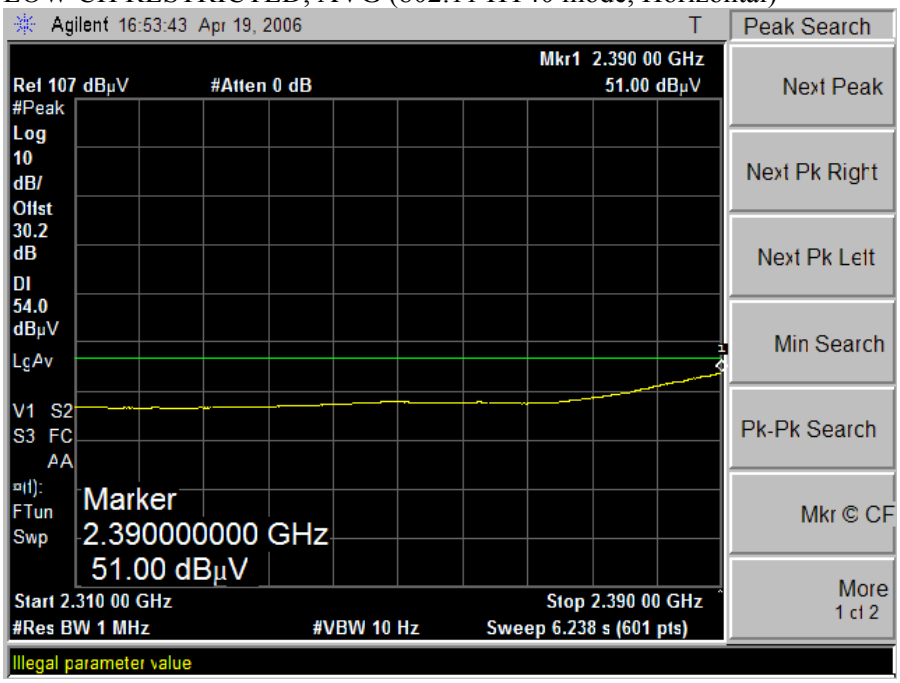


SECOND CH, 2427MHz RESTRICTED BANDEDGE (g HT40 MODE, LOW CHANNEL, HORIZONTAL

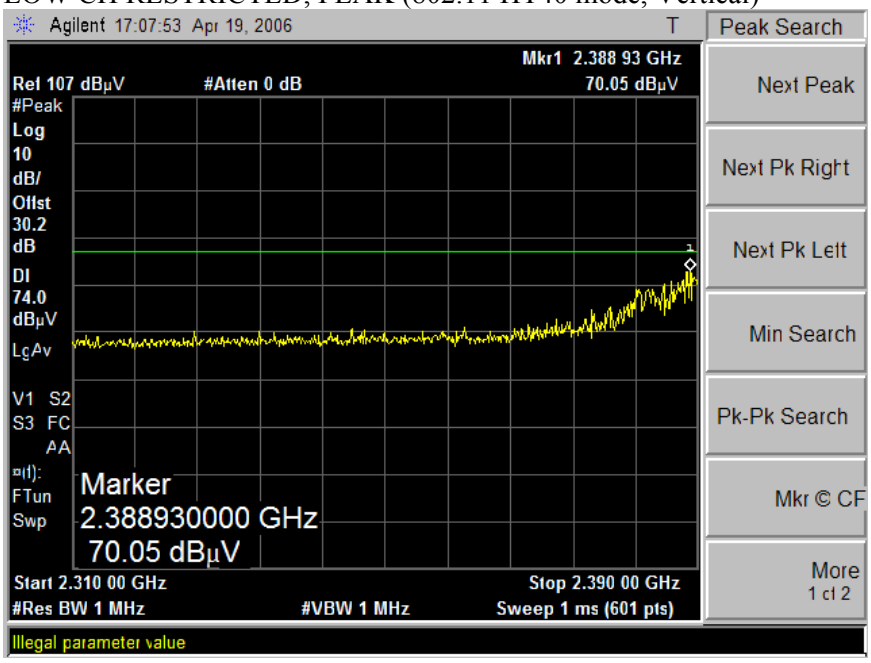
LOW CH RESTRICTED, PEAK (802.11g HT40 mode, Horizontal)



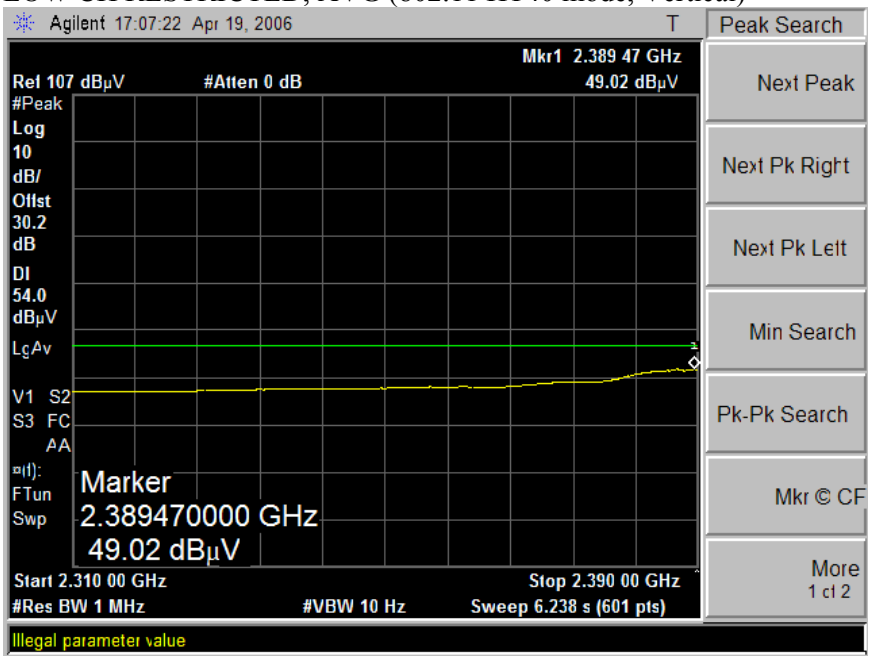
LOW CH RESTRICTED, AVG (802.11 HT40 mode, Horizontal)



LOW CH RESTRICTED, PEAK (802.11 HT40 mode, Vertical)

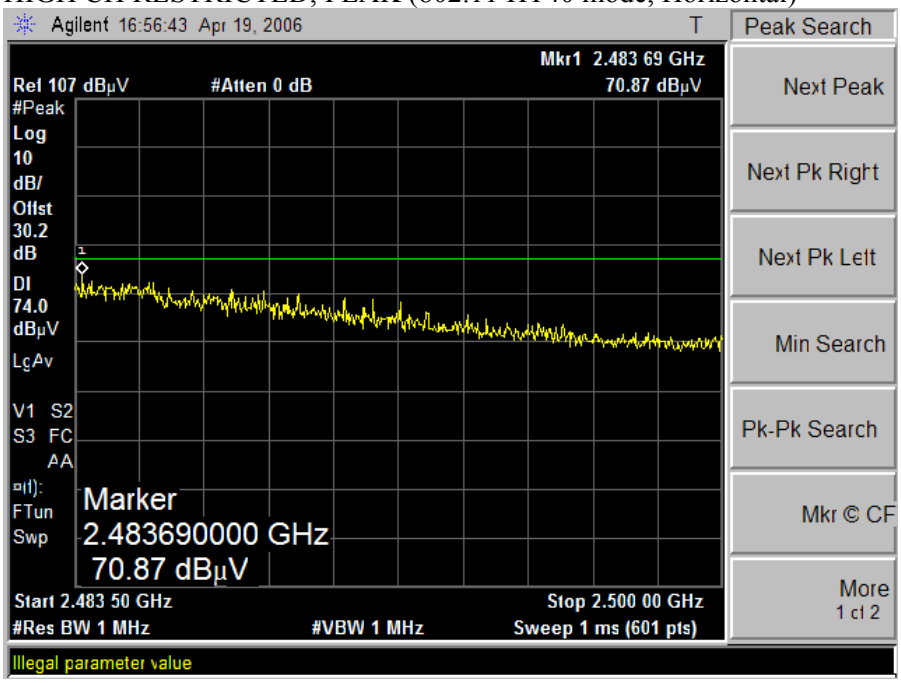


LOW CH RESTRICTED, AVG (802.11 HT40 mode, Vertical)

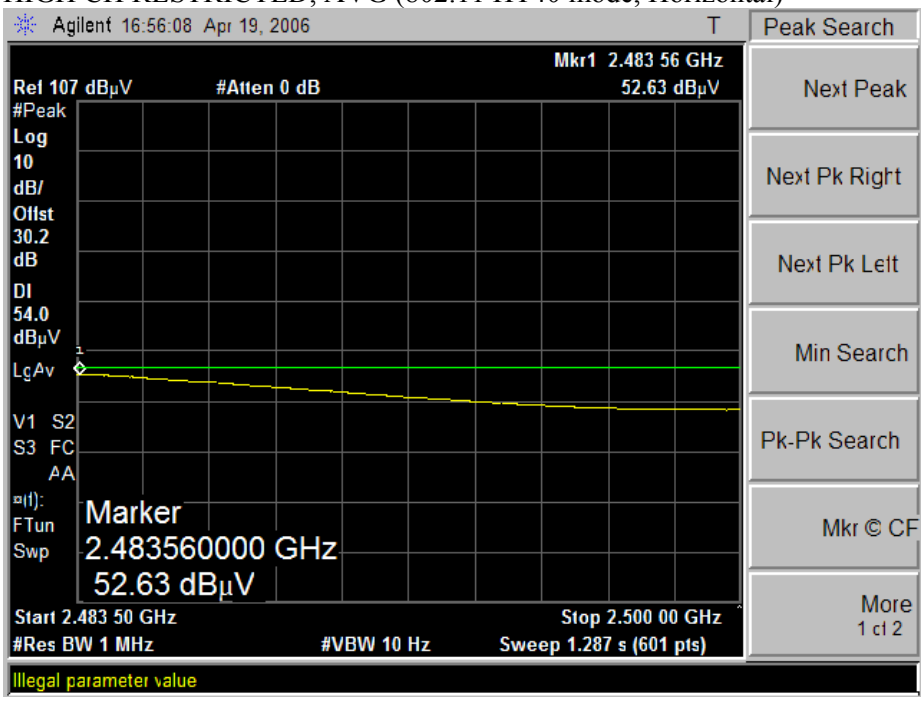


SECOND HIGH CH, 2447MHz RESTRICTED BANDEDGE (HT40 MODE, HIGH CHANNEL, Horizontal)

HIGH CH RESTRICTED, PEAK (802.11 HT40 mode, Horizontal)

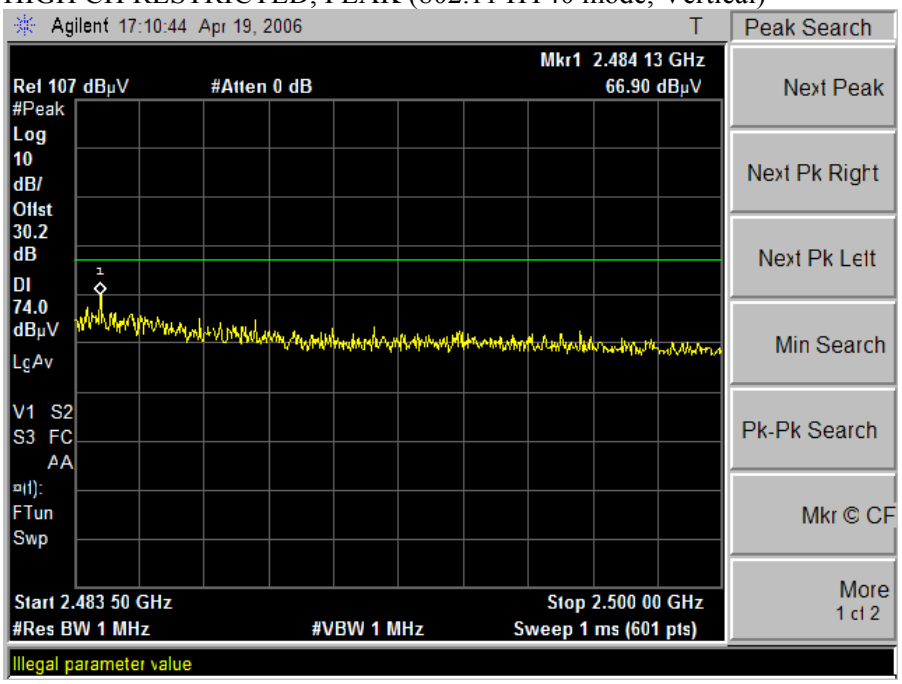


HIGH CH RESTRICTED, AVG (802.11 HT40 mode, Horizontal)

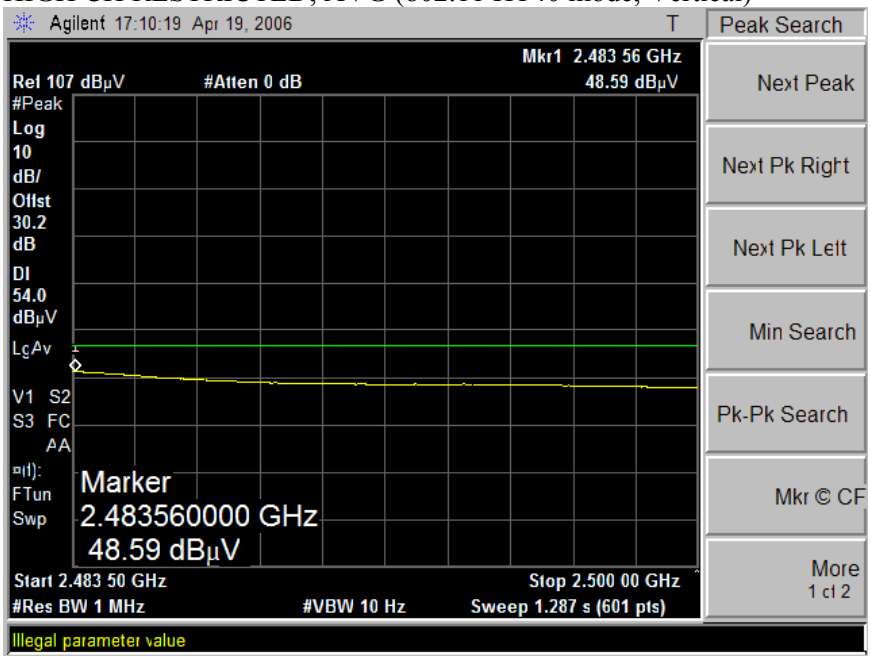


RESTRICTED BANDEDGE (HT40 MODE, HIGH CHANNEL, Vertical)

HIGH CH RESTRICTED, PEAK (802.11 HT40 mode, Vertical)

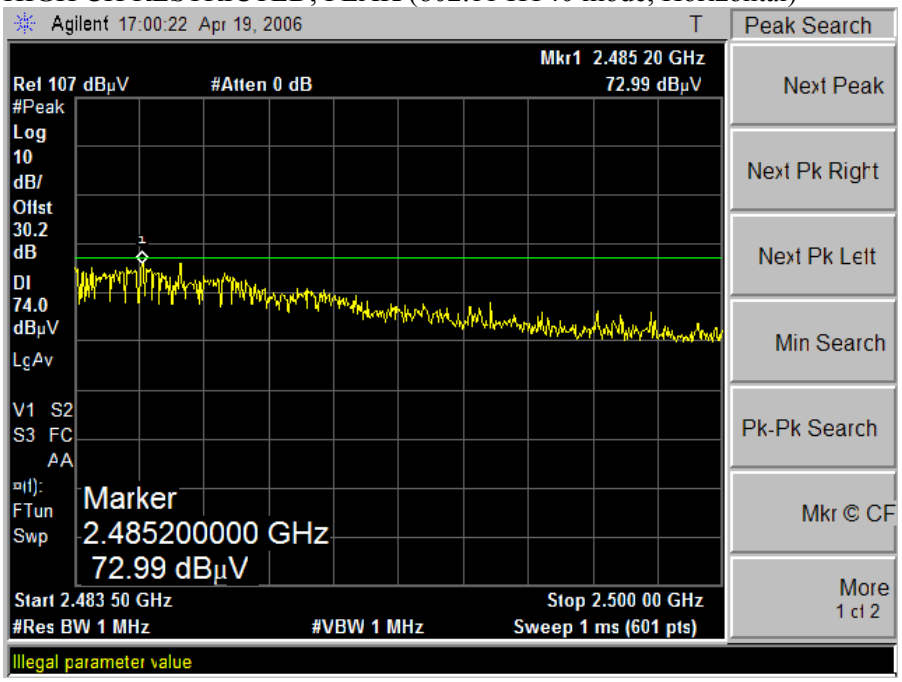


HIGH CH RESTRICTED, AVG (802.11 HT40 mode, Vertical)

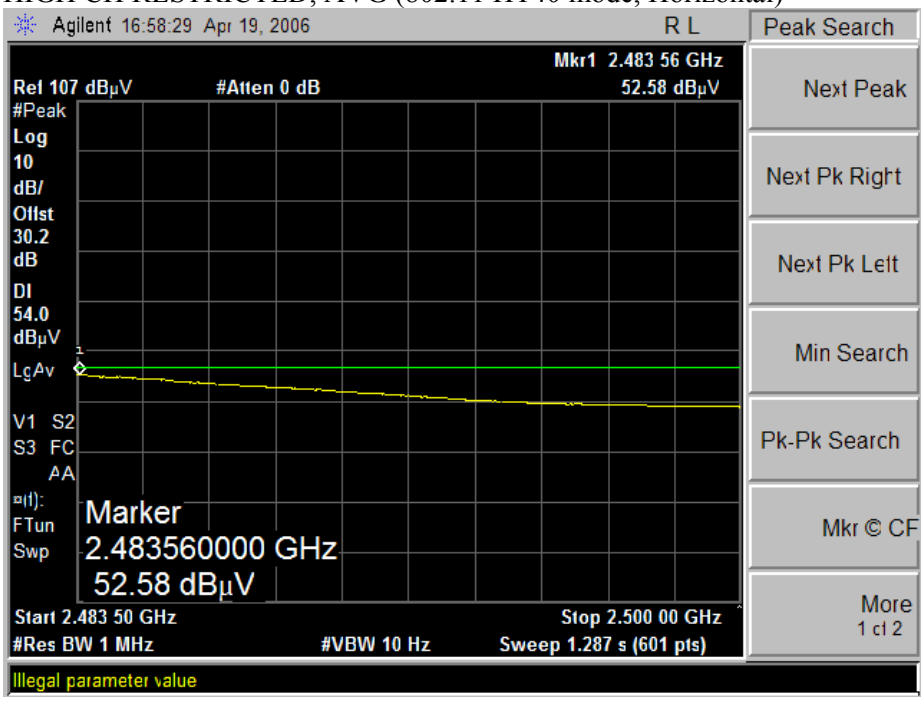


HIGH CH, 2452MHz RESTRICTED BANDEDGE (HT40 MODE, HIGH CHANNEL, Horizontal)

HIGH CH RESTRICTED, PEAK (802.11 HT40 mode, Horizontal)

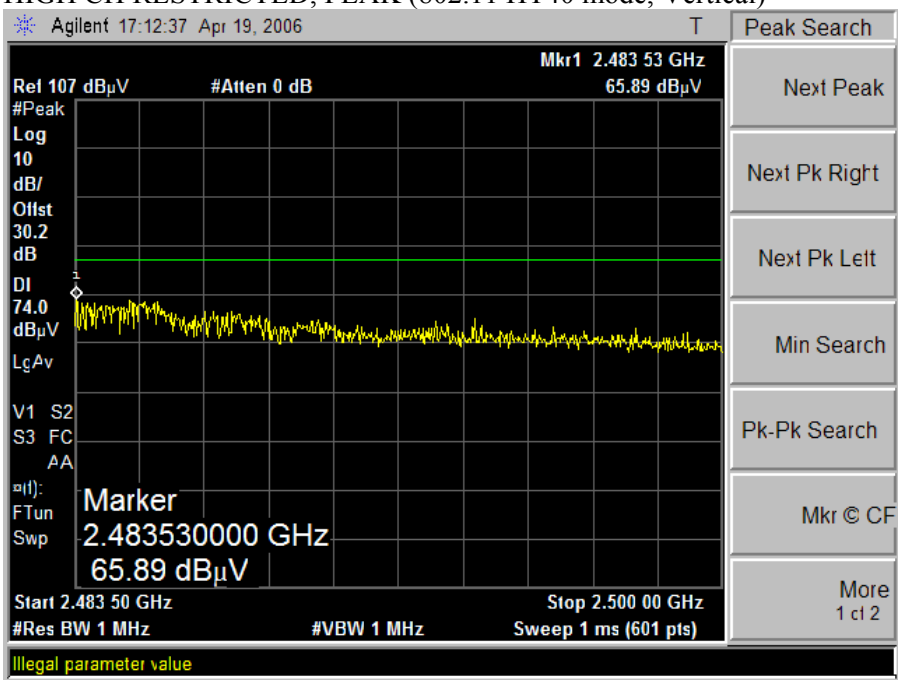


HIGH CH RESTRICTED, AVG (802.11 HT40 mode, Horizontal)

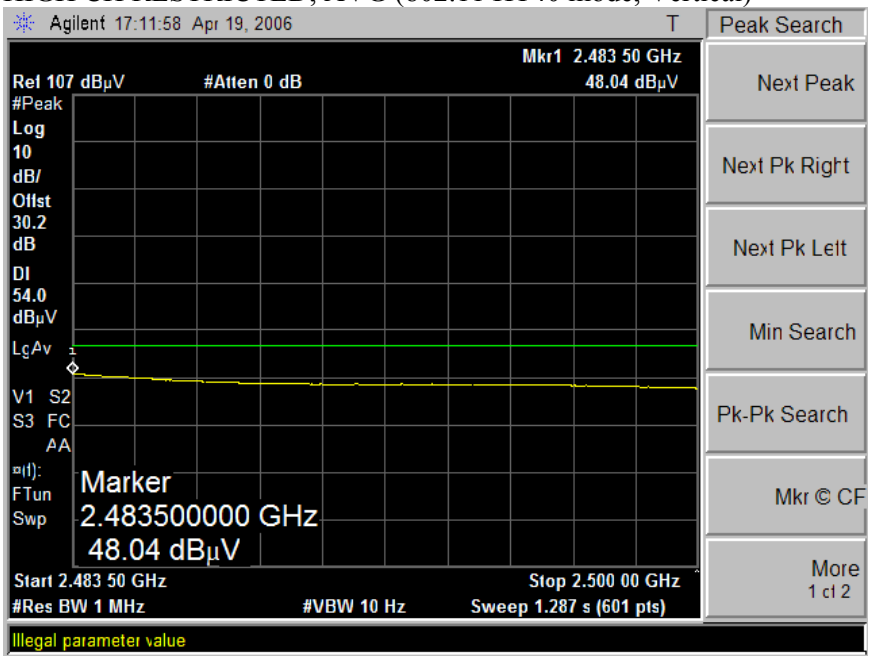


RESTRICTED BANDEDGE (HT40 MODE, HIGH CHANNEL, Vertical)

HIGH CH RESTRICTED, PEAK (802.11 HT40 mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11 HT40 mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (g HT40 MODE)

04/19/06 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer:Chin Pang
Project #:06U10242
Company:Atheros
EUT Description:2.4GHz 802.11n Cardbus
EUT M/N:AR5BCB-00071
Test Target:FCC 15.247
Mode Of Operation:TX, HT40

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T34 HP 8449B			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Chin 197538001	Chin 200354001		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch, 2422MHz															
4.842	3.0	50.0	35.4	33.7	3.2	-34.8	0.0	0.0	52.1	37.5	74	54	-21.9	-16.5	V
7.266	3.0	48.0	35.0	35.4	3.6	-34.1	0.0	0.0	52.9	39.9	74	54	-21.1	-14.1	V
4.842	3.0	47.2	34.0	33.7	3.2	-34.8	0.0	0.0	49.3	36.1	74	54	-24.7	-17.9	H
7.266	3.0	45.0	32.6	35.4	3.6	-34.1	0.0	0.0	49.9	37.5	74	54	-24.1	-16.5	H
2nd Low Ch, 2427MHz															
4.854	3.0	50.0	37.0	33.7	3.2	-34.8	0.0	0.0	52.1	39.1	74	54	-21.9	-14.9	V
7.281	3.0	49.0	36.0	35.5	3.6	-34.1	0.0	0.0	53.9	40.9	74	54	-20.1	-13.1	V
4.854	3.0	49.0	35.0	33.7	3.2	-34.8	0.0	0.0	51.1	37.1	74	54	-22.9	-16.9	H
7.281	3.0	45.0	33.0	35.5	3.6	-34.1	0.0	0.0	49.9	37.9	74	54	-24.1	-16.1	H
Mid Ch, 2437MHz															
4.874	3.0	57.0	43.0	33.8	3.2	-34.8	0.0	0.0	59.2	45.2	74	54	-14.8	-8.8	V
7.311	3.0	49.0	36.0	35.5	3.6	-34.1	0.0	0.0	54.0	41.0	74	54	-20.0	-13.0	V
4.874	3.0	54.6	42.0	33.8	3.2	-34.8	0.0	0.0	56.8	44.2	74	54	-17.2	-9.8	H
7.311	3.0	48.0	35.5	35.5	3.6	-34.1	0.0	0.0	53.0	40.5	74	54	-21.0	-13.5	H
2nd High Ch, 2447MHz															
4.894	3.0	53.5	40.0	33.8	3.2	-34.8	0.0	0.0	55.7	42.2	74	54	-18.3	-11.8	V
7.341	3.0	46.0	33.4	35.5	3.6	-34.1	0.0	0.0	51.0	38.4	74	54	-23.0	-15.6	V
4.894	3.0	49.2	35.5	33.8	3.2	-34.8	0.0	0.0	51.4	37.7	74	54	-22.6	-16.3	H
7.341	3.0	45.0	33.0	35.5	3.6	-34.1	0.0	0.0	50.0	38.0	74	54	-24.0	-16.0	H
High Ch, 2452MHz															
4.904	3.0	53.3	39.0	33.8	3.2	-34.8	0.0	0.0	55.5	41.2	74	54	-18.5	-12.8	V
7.356	3.0	46.0	34.0	35.6	3.6	-34.1	0.0	0.0	51.1	39.1	74	54	-22.9	-14.9	V
4.904	3.0	51.5	36.3	33.8	3.2	-34.8	0.0	0.0	53.7	38.5	74	54	-20.3	-15.5	H
7.358	3.0	44.6	31.4	35.6	3.6	-34.1	0.0	0.0	49.7	36.5	74	54	-24.3	-17.5	H

Note: No other emissions were detected above the system noise floor.

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

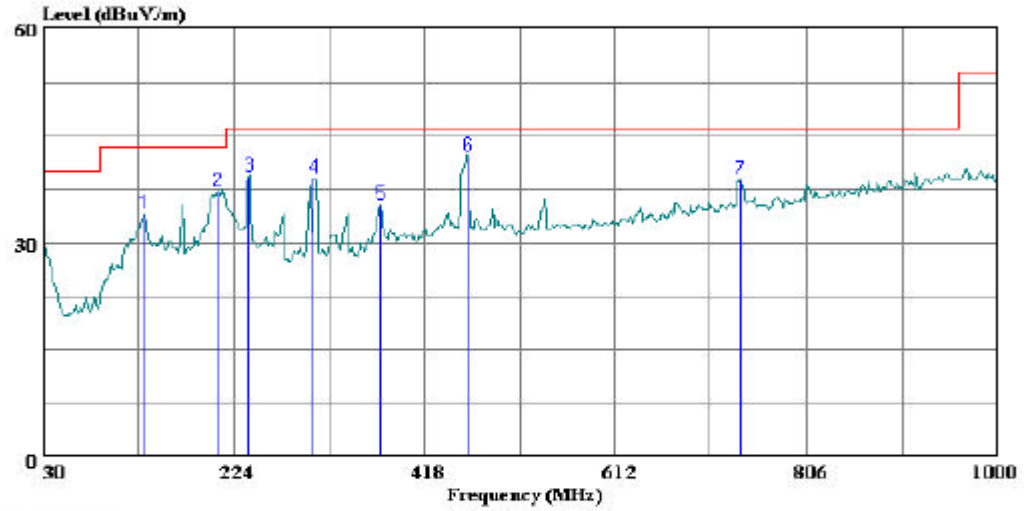
7.2.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT

561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 4 File#: 06U10251emi.EMI Date: 04-19-2006 Time: 09:47:22



(Audix ATC)
Trace: 3 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator : Chin Pang
Project # : 06U10251-1
Company : Atheros
EUT : 2.4GHz 802.11n Cardbus
Model No : AR5BCD-00071
S/N :
Configuration : EUT/Laptop
Mode of operation: Mid ch (Worst Case)
Target of Test : FCC Class B

HORIZONTAL DATA

Page: 1

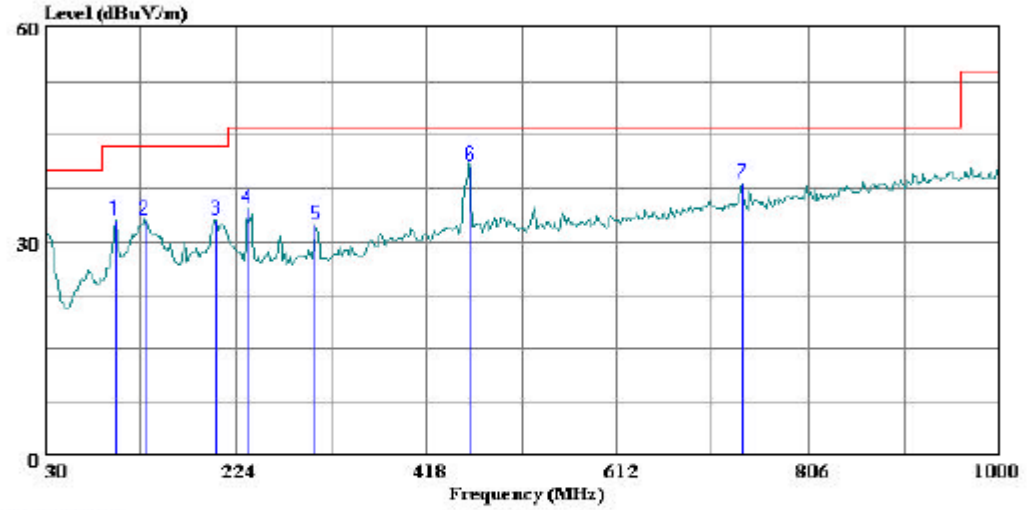
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	133.790	19.00	15.02	34.02	43.50	-9.48	Peak
2	208.480	23.96	13.30	37.26	43.50	-6.24	Peak
3	239.520	25.75	13.47	39.21	46.00	-6.79	Peak
4	305.480	23.30	15.80	39.10	46.00	-6.90	Peak
5	373.380	17.77	17.46	35.23	46.00	-10.77	Peak
6	463.590	22.71	19.50	42.21	46.00	-3.79	Peak
7	740.040	15.14	23.71	38.85	46.00	-7.15	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT

561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 2 File#: 06U10251emi.EMI Date: 04-19-2006 Time: 09:40:43



(Audix ATC)
Trace: 1 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator : Chin Pang
Project # : 06U10251-1
Company : Atheros
EUT : 2.4GHz 802.11n Cardbus
Model No : AR5BCB-00071
S/N :
Configuration : EUT/Laptop
Mode of operation: Mid ch (Worst Case)
Target of Test : FCC Class B

VERTICAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	101.780	21.22	11.77	32.99	43.50	-10.51	Peak
2	131.850	17.99	15.07	33.06	43.50	-10.44	Peak
3	203.630	19.10	14.01	33.11	43.50	-10.39	Peak
4	235.640	21.34	13.30	34.64	46.00	-11.36	Peak
5	305.480	16.61	15.80	32.41	46.00	-13.59	Peak
6	462.620	21.14	19.49	40.63	46.00	-5.37	Peak
7	740.040	14.50	23.71	38.21	46.00	-7.79	Peak

Note: The setup photos on pages 151 thru 154 have been extracted into a separate file.