FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-GEN AND RSS-210
CERTIFICATION
TEST REPORT

FOR

BROADCOM 802.11g WLAN PCI-E MINICARD

MODEL NUMBER: BCM94312MCG

FCC ID: QDS-BRCM1028

IC: 4324A-BRCM1028

REPORT NUMBER: 07U11146-1

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	07/20/07	Initial Issue	T. Chan

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: BROADCOM CORPORATION
190 MATHILDA PLACE
SUNNYVALE, CA 94086, USA

EUT DESCRIPTION: BROADCOM 802.11g WLAN PCI-E MINICARD

MODEL: BCM94312 MCG

SERIAL NUMBER: 1142807

DATE TESTED: JULY 2 - 10, 2007

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED
RSS-GEN ISSUE 1	NO NON-COMPLIANCE NOTED
IC RSS-210 ISSUE 7 ANNEX 8	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:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

THANH NGUYEN
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, FCC CFR 47 Part 15, RSS-GEN, RSS-210, RSS-212, and ANSI C63.4-200.

3. FACILITIES AND ACCREDITATION

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11 b/g wireless LAN PCI-E mini card that utilizes an integral antenna with a maximum gain of 3.9 dBi.

The radio module is manufactured by Broadcom Corp.

5.2. 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	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	21.94	156.31
2412 - 2462	802.11g	22.53	179.06

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna manufactured by Hitachi, model HFT17-DL17, with a 3.9 dBi gain.

5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed in the host support equipment during testing was MS DOS Batch file,Ver 4.150.27.0

The test utility software used during testing was wl-tools.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined by the channel with the highest output power. The highest measured output power was 2437 MHz. Thus, all emissions tests were made in the 802.11b mode, 2437MHz, 1 Mb/s.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop PC	HP	Pavilion zv6000	CND5150BMD	DOC
AC Adapter	HP	PPP017L	7300157701	DOC
Extender Card	Catalyst	384-1053-002	H014-4880	N/A

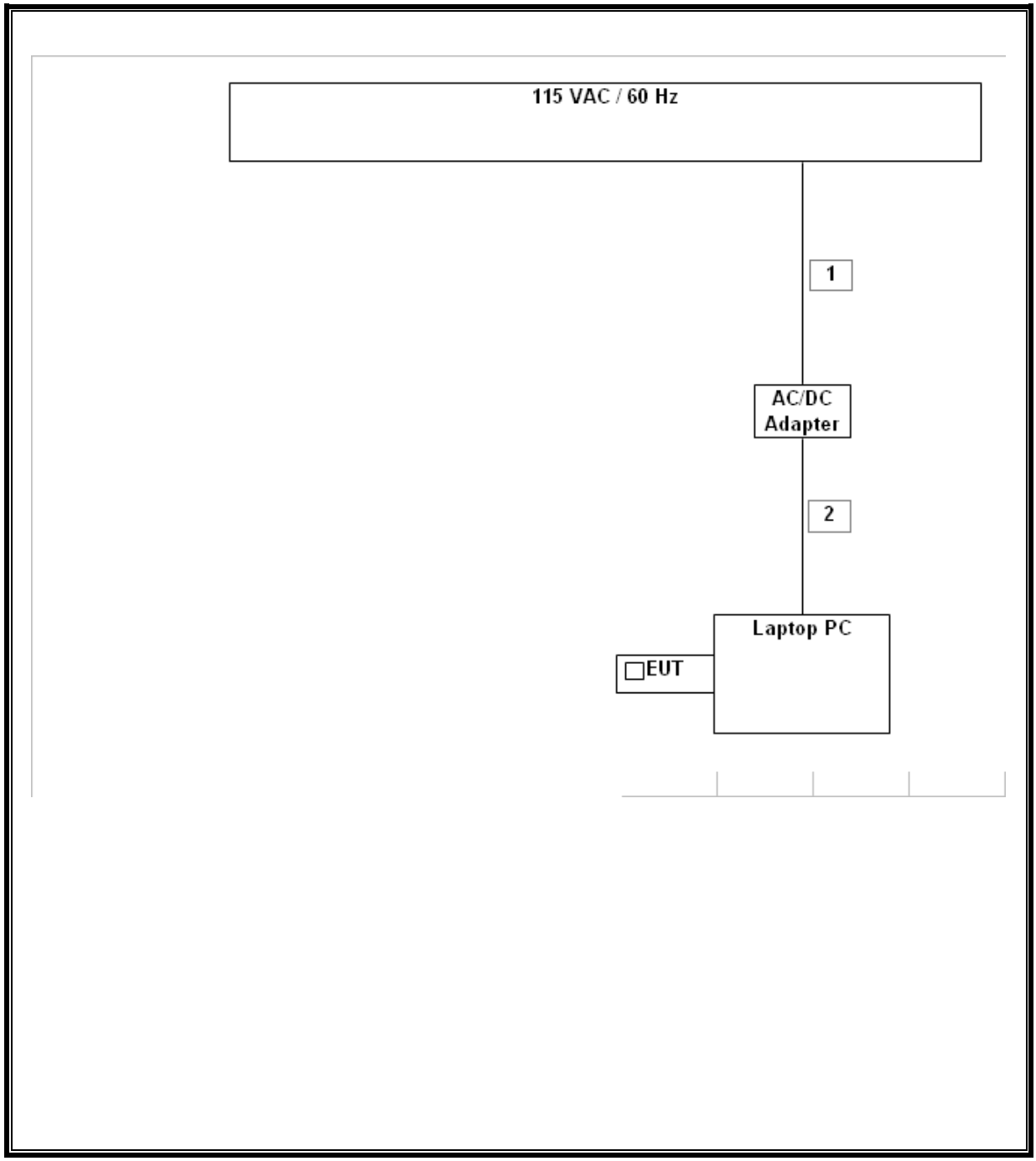
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	1	AC	Unshielded	1.5 m	N/A
2	DC	1	DC	Unshielded	2.0 m	N/A

TEST SETUP

The EUT is connected to a host laptop computer via extender card 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**
EMI Test Receiver	R & S	ESHS 20	827129/006	10/22/2007
Site A Line Stabilizer / Conditioner	Tripplite	LC-1800a	A0051681	CNR
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2007
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/21/2007
Spectrum Analyzer	HP	E4446A	US42510266	8/25/2007
Antenna, Horn 1 ~ 18 GHz	EMCO	3117	29310	9/12/2007
Preamplifier, 1 ~ 26.5 GHz	HP	8449B	3008A00369	8/17/2007
Peak Power Meter	Agilent	E4416A	GB41291160	11/7/2007
Peak / Average Power Sensor	Agilent	E9327A	US40440755	11/7/2007
RF Filter Section	HP	85420E	3705A00256	11/21/2007
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/22/2007
30MHz - 2Ghz	Sunol Sciences	JB1 Antenna	A121003	12/22/2007
4.0 High Pass Filter	Micro Tronics	HPM13351	3	N/A

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)
RSS-210 Clause A8.2 (1)

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:

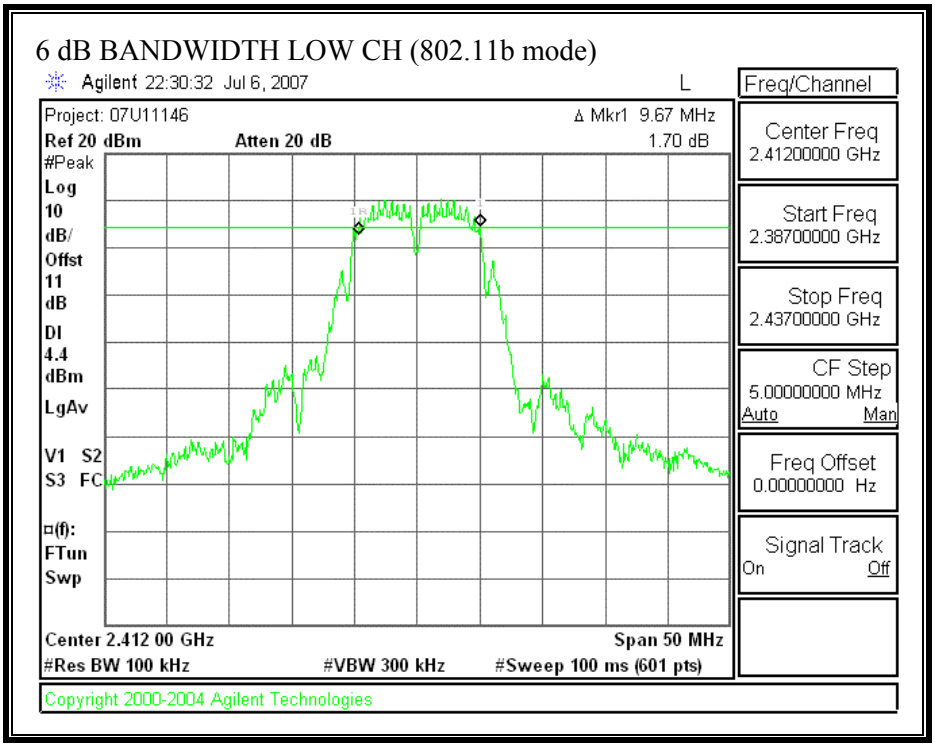
802.11b Mode

Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Margin (kHz)
Low	2412	9.67	500	-490
Middle	2437	9.58	500	-490
High	2462	9.67	500	-490

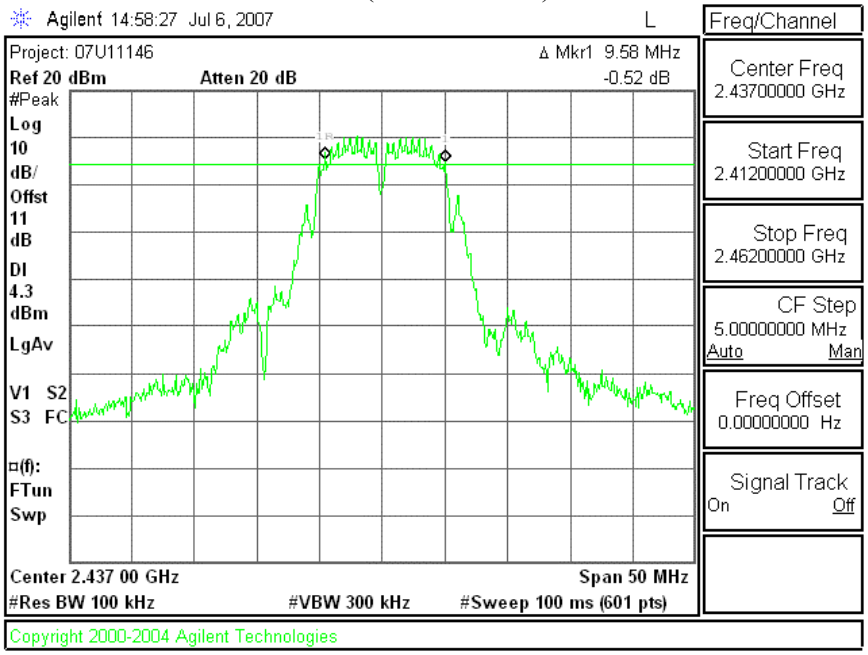
802.11g Mode

Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Margin (kHz)
Low	2412	15.42	500	-485
Middle	2437	15.75	500	-484
High	2462	15.25	500	-485

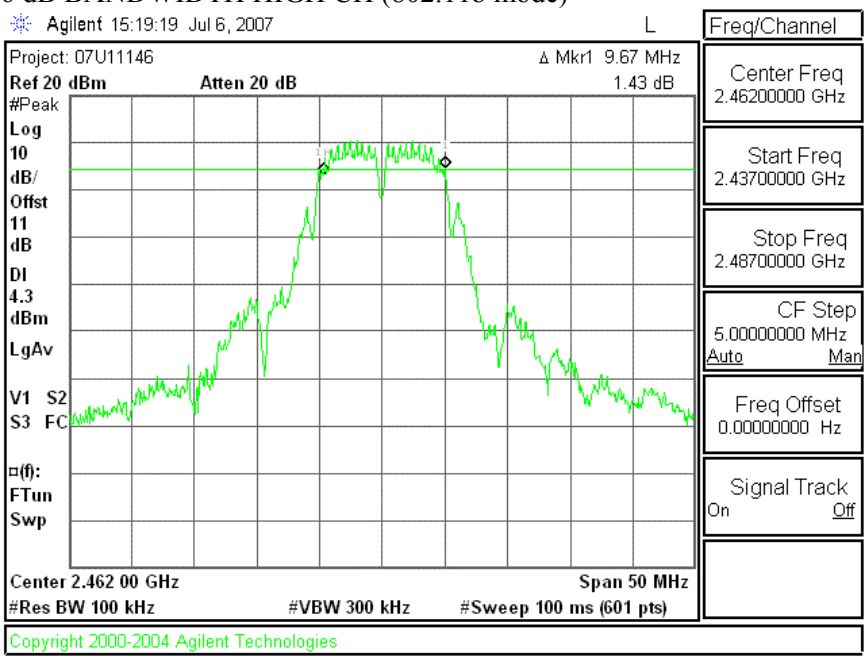
6 dB BANDWIDTH (802.11b MODE)



6 dB BANDWIDTH MID CH (802.11b mode)

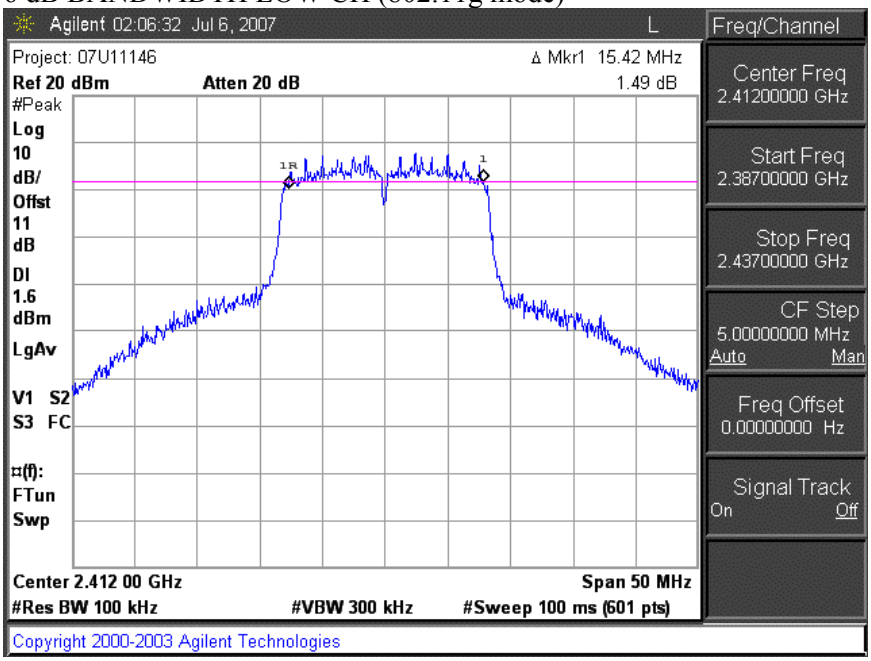


6 dB BANDWIDTH HIGH CH (802.11b mode)

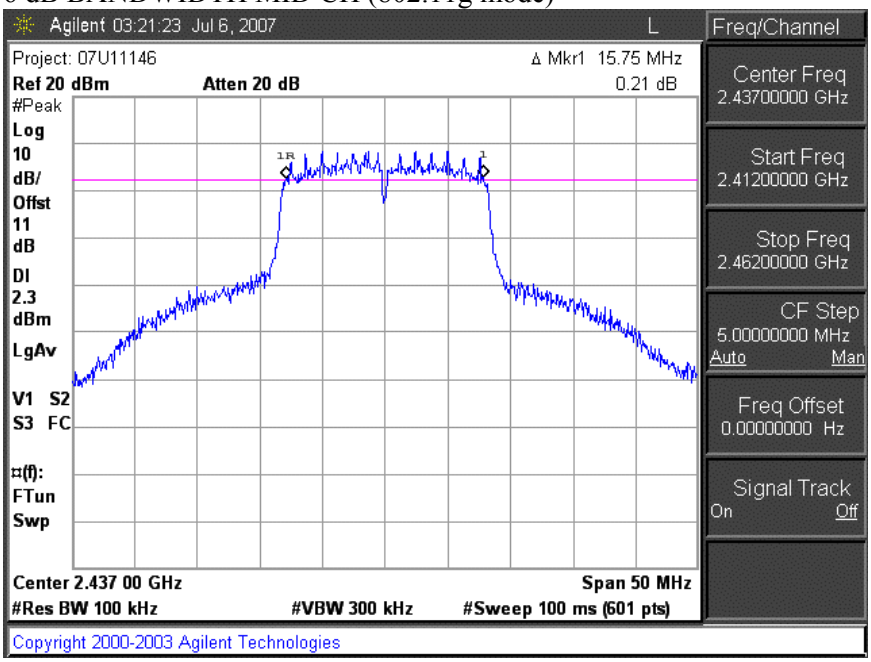


6 dB BANDWIDTH (802.11g MODE)

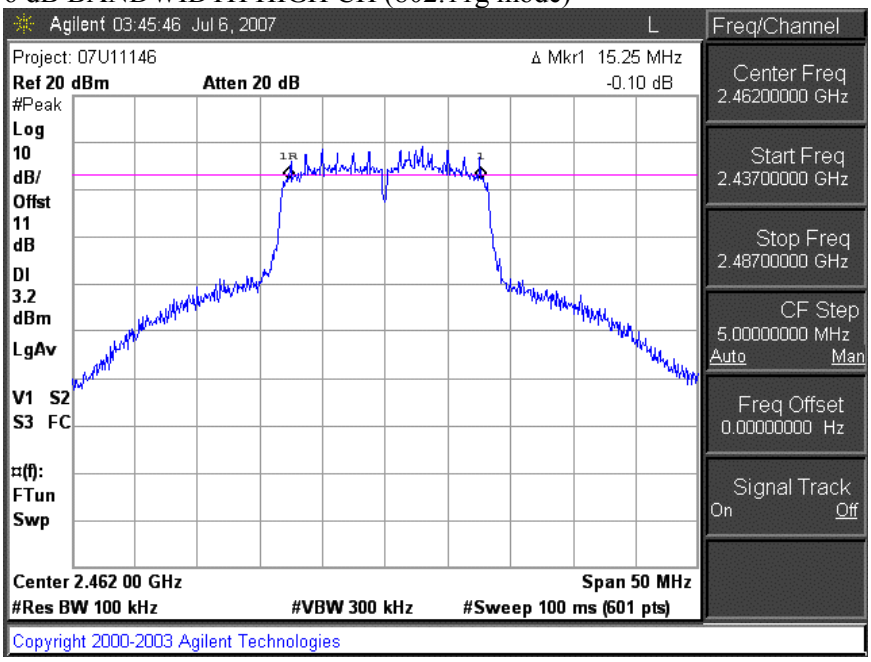
6 dB BANDWIDTH LOW CH (802.11g mode)



6 dB BANDWIDTH MID CH (802.11g mode)



6 dB BANDWIDTH HIGH CH (802.11g mode)



7.1.2. 99% 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 function is utilized.

RESULTS

No non-compliance noted:

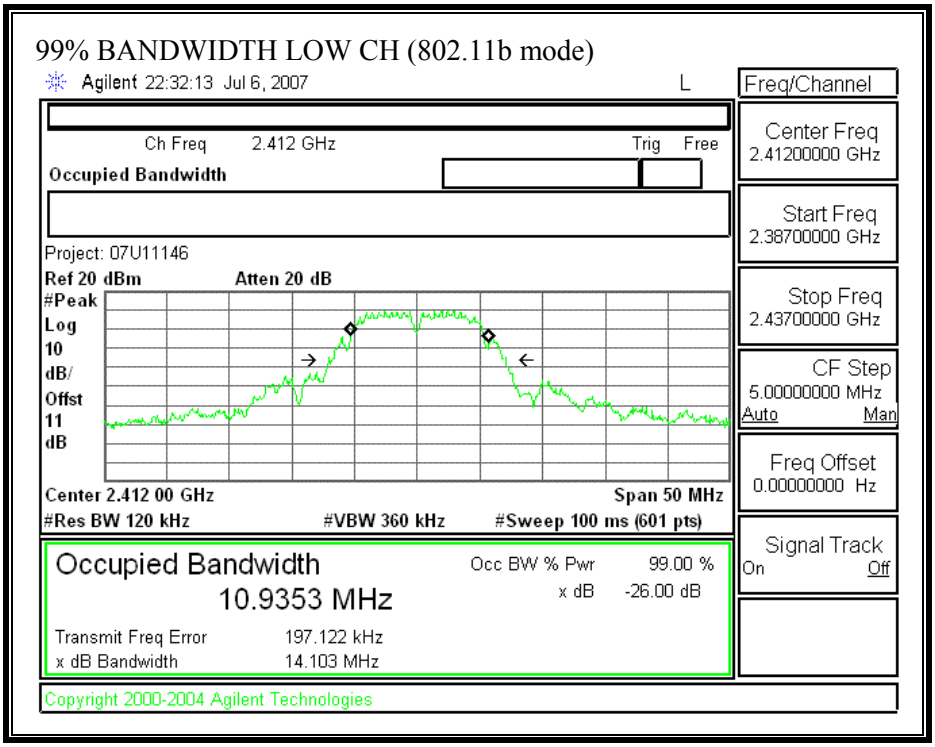
802.11b Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	10.935
Middle	2437	10.860
High	2462	11.074

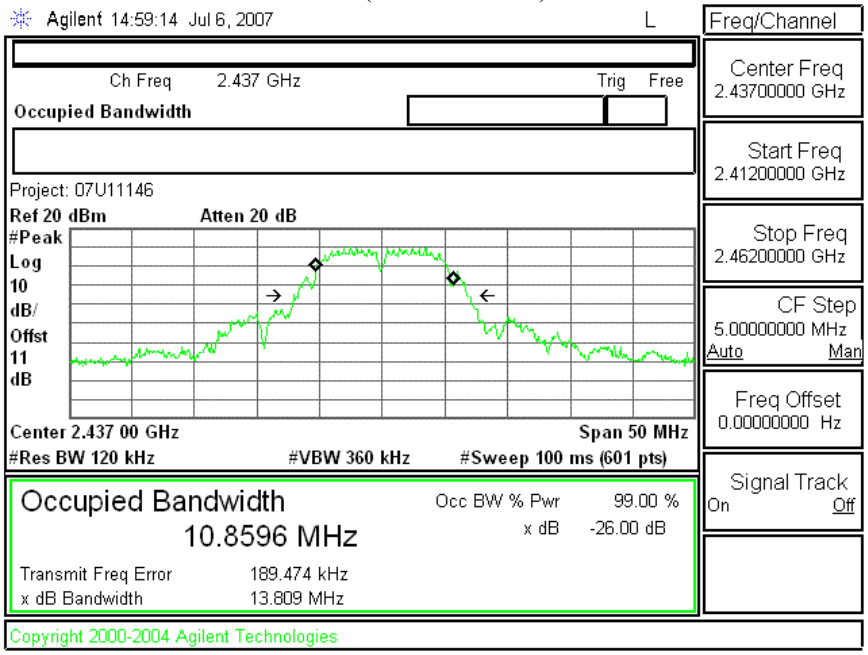
802.11g Mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.356
Middle	2437	16.367
High	2462	16.357

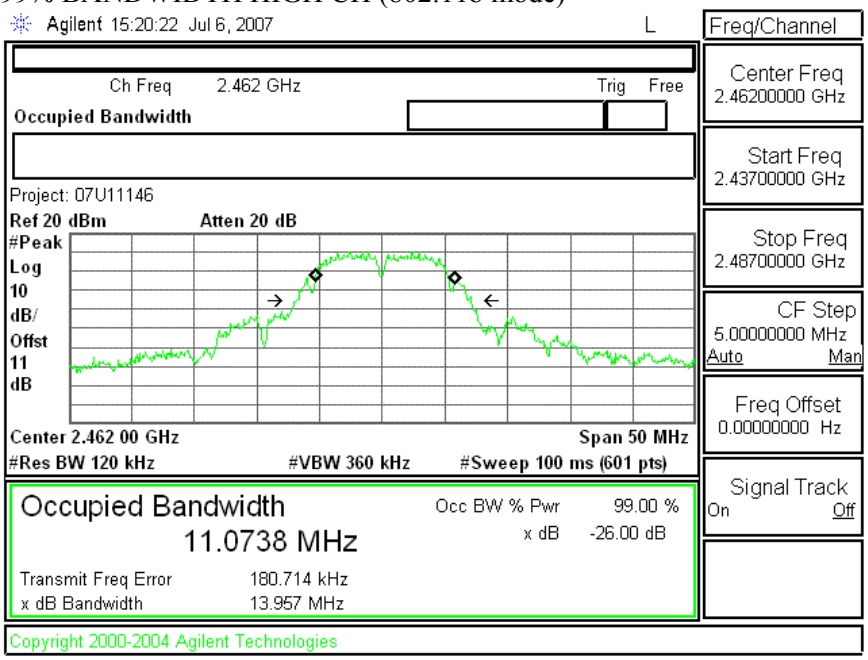
99% BANDWIDTH (802.11b MODE)



99% BANDWIDTH MID CH (802.11b mode)

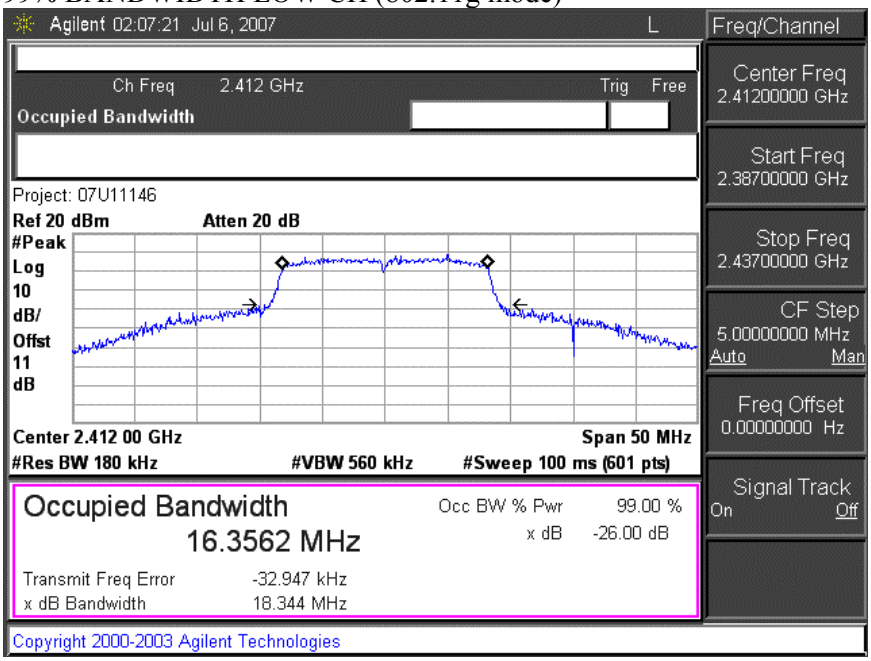


99% BANDWIDTH HIGH CH (802.11b mode)

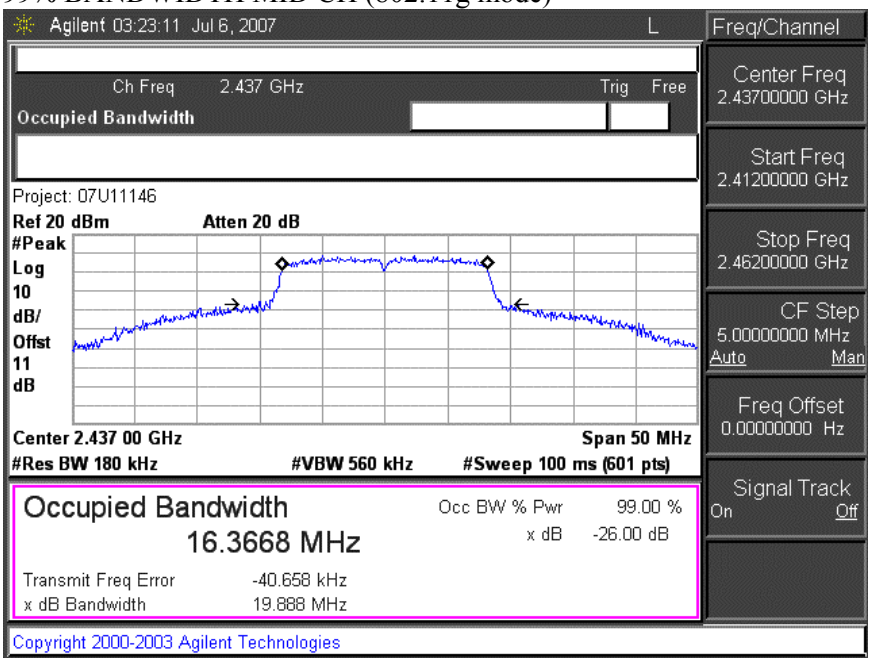


99% BANDWIDTH (802.11g MODE)

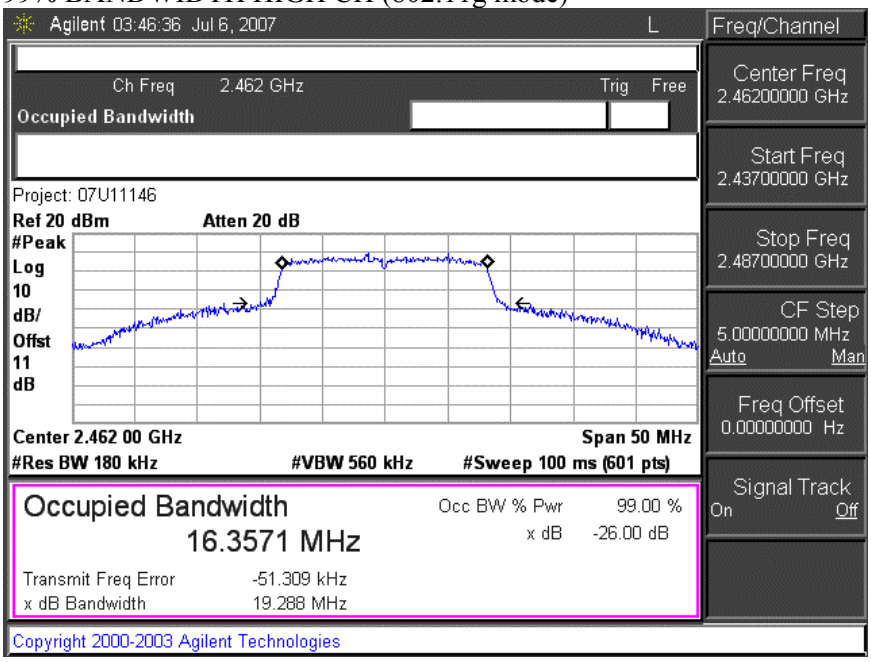
99% BANDWIDTH LOW CH (802.11g mode)



99% BANDWIDTH MID CH (802.11g mode)



99% BANDWIDTH HIGH CH (802.11g mode)



7.1.3. PEAK OUTPUT POWER

PEAK POWER LIMIT

§15.247 (b)
§15.247 (b) (3).
§15.247 (b) (4)
§15.247 (b) (4) (i)
RSS-210 Issue 6 Clause A8.4

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.

RESULTS

The maximum antenna gain is 3.9 dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm.

No non-compliance noted:

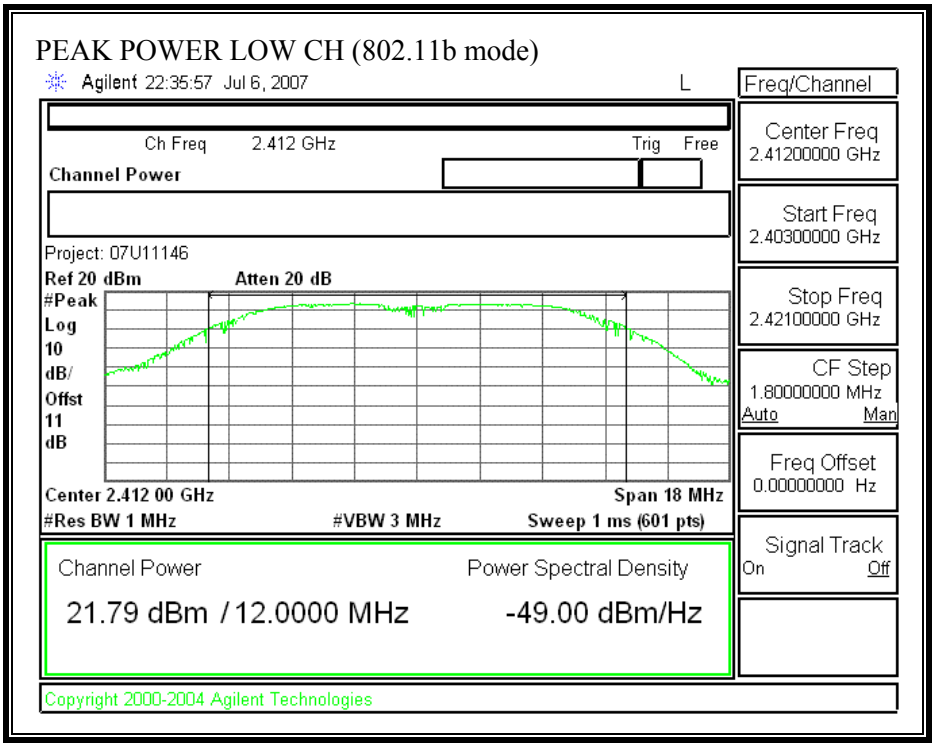
802.11b Mode

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	21.79	30	-8.21
Middle	2437	21.82	30	-8.18
High	2462	21.94	30	-8.06

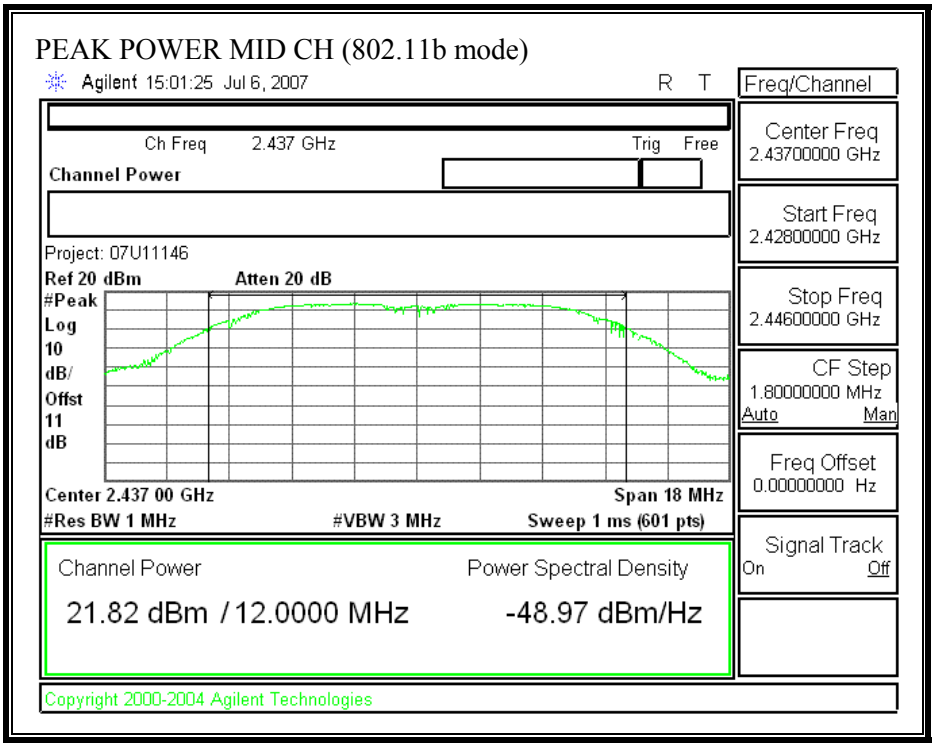
802.11g Mode

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	21.77	30	-8.23
Middle	2437	22.53	30	-7.47
High	2462	20.48	30	-9.52

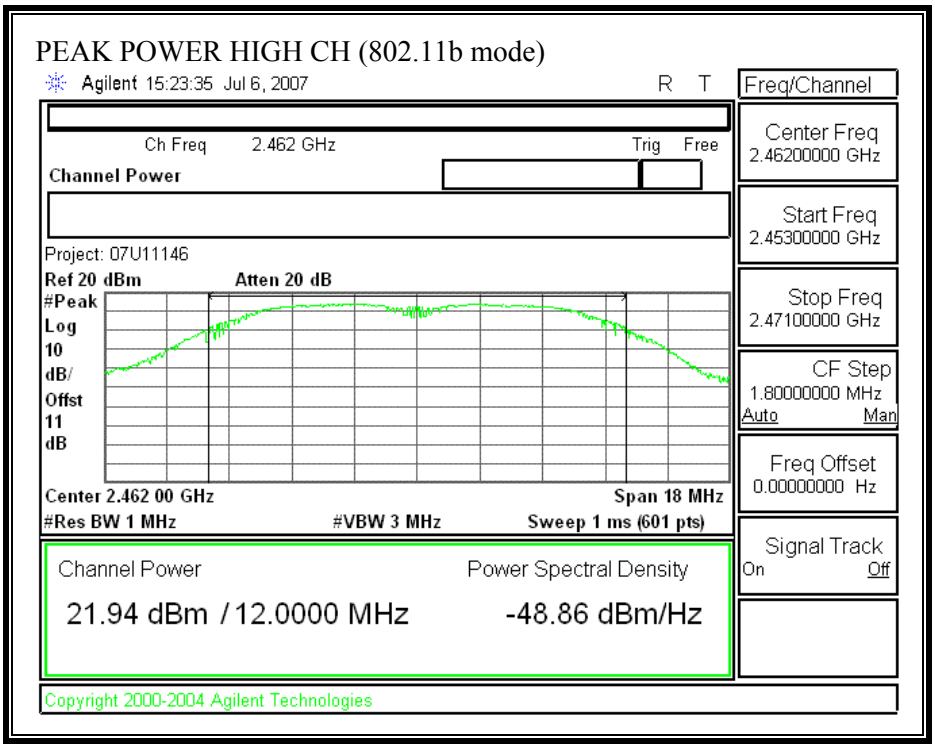
OUTPUT POWER (802.11b MODE)



PEAK POWER MID CH (802.11b mode)

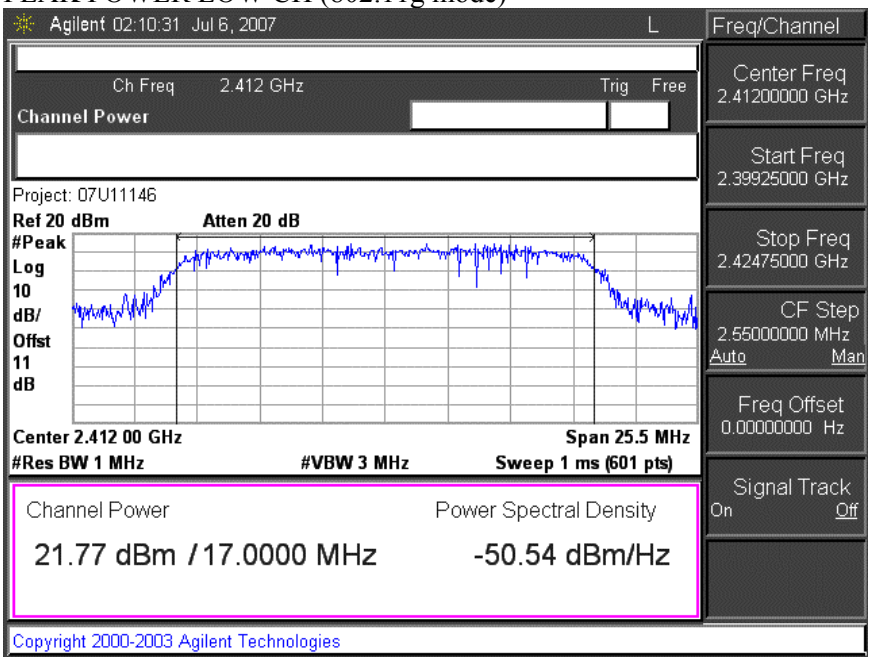


PEAK POWER HIGH CH (802.11b mode)

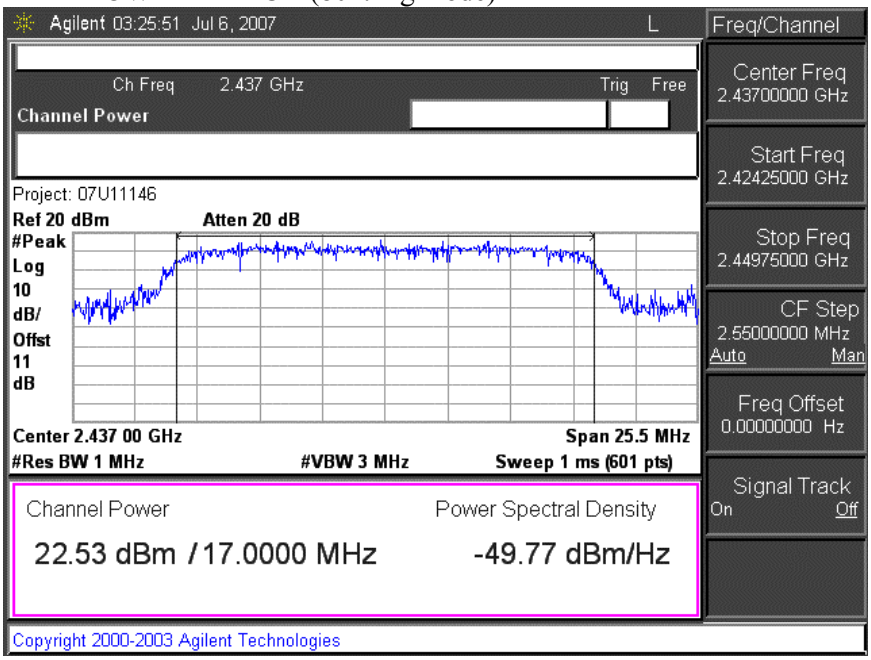


OUTPUT POWER (802.11g MODE)

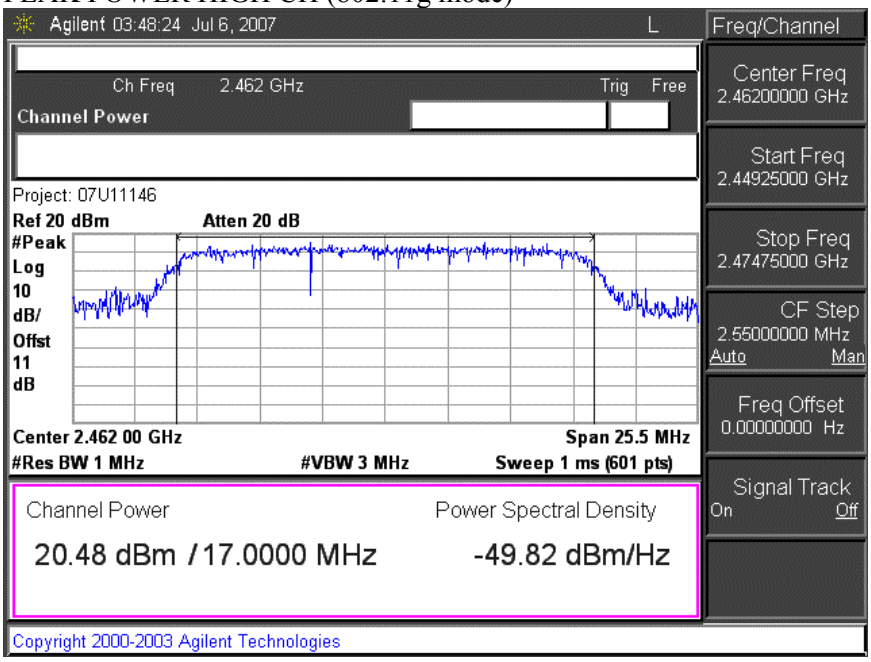
PEAK POWER LOW CH (802.11g mode)



PEAK POWER MID CH (802.11g mode)



PEAK POWER HIGH CH (802.11g mode)



7.1.4. MAXIMUM PERMISSIBLE EXPOSURE

LIMITS

§1.1310
IC Safety Code 6, Section 2.2.1 (a)

LIMITS

From §1.1310 Table 1 (B), the maximum value of S = 1.0 mW/cm^2

RESULTS

No non-compliance noted: (MPE distance equals 20 cm)

Mode	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm^2)
802.11b	20.0	21.94	3.90	0.08
802.11g	20.0	22.53	3.90	0.09

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

7.1.5. 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.

RSS-210 A8.2 (2) The transmitter power spectral density (into the antenna) shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0 second duration. This power spectral density shall be determined in accordance with the provisions of Section A8.4 below. The same method of determining the conducted output power shall be used to determine the power spectral density.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

RESULTS

No non-compliance noted:

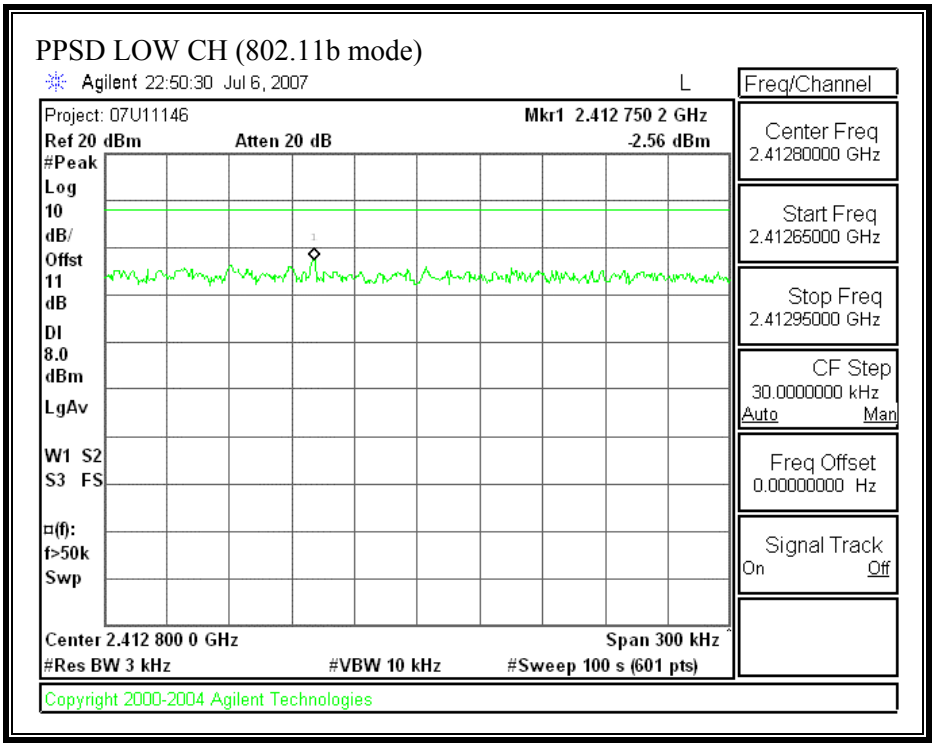
802.11b Mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-2.56	8	-10.56
Middle	2437	-2.06	8	-10.06
High	2462	-2.13	8	-10.13

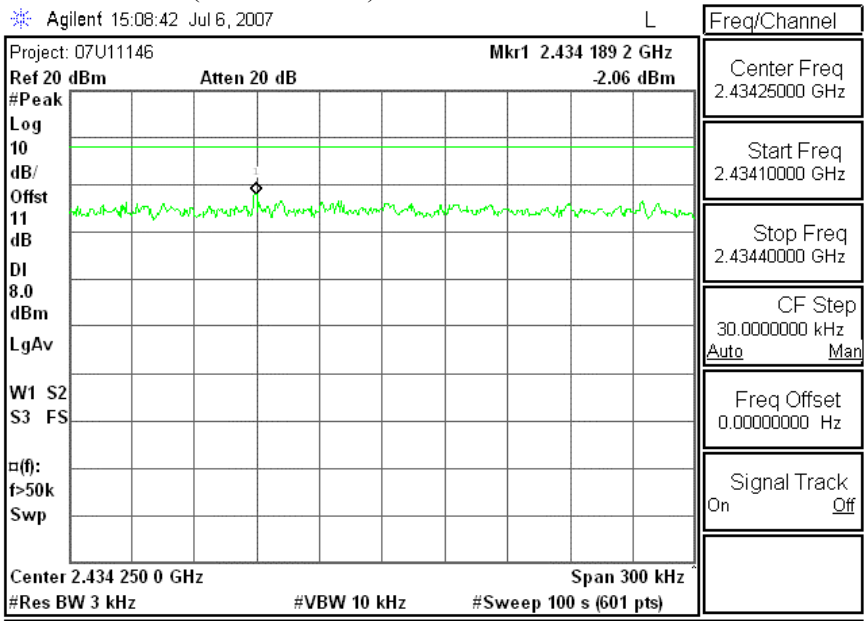
802.11g Mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-6.81	8	-14.81
Middle	2437	-4.57	8	-12.57
High	2462	-6.09	8	-14.09

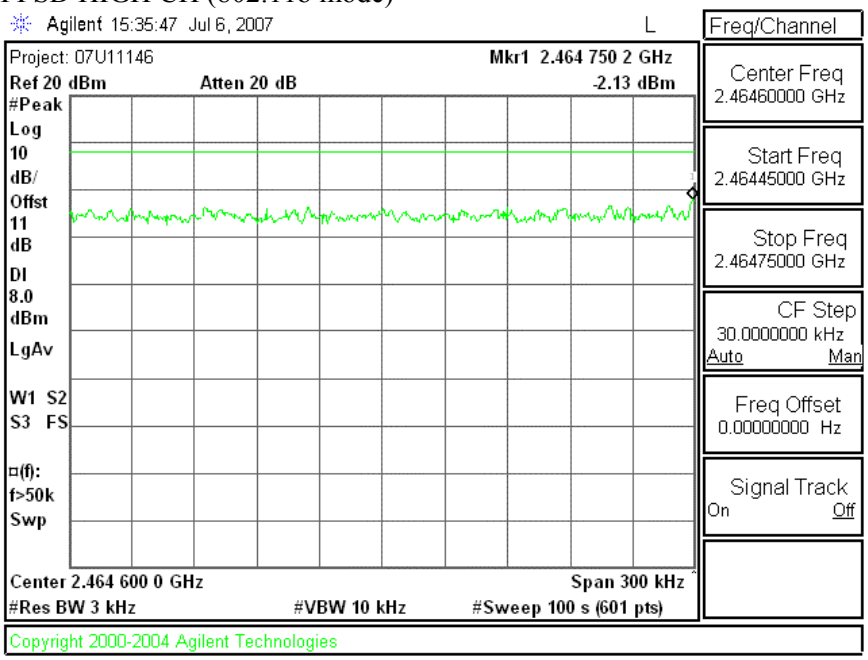
PEAK POWER SPECTRAL DENSITY (802.11b MODE)



PPSD MID CH (802.11b mode)

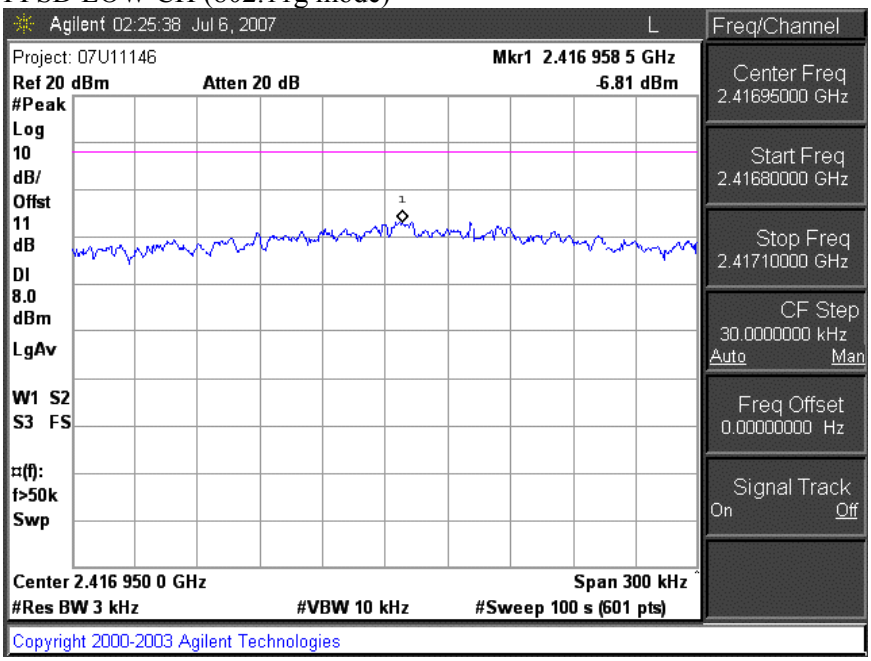


PPSD HIGH CH (802.11b mode)

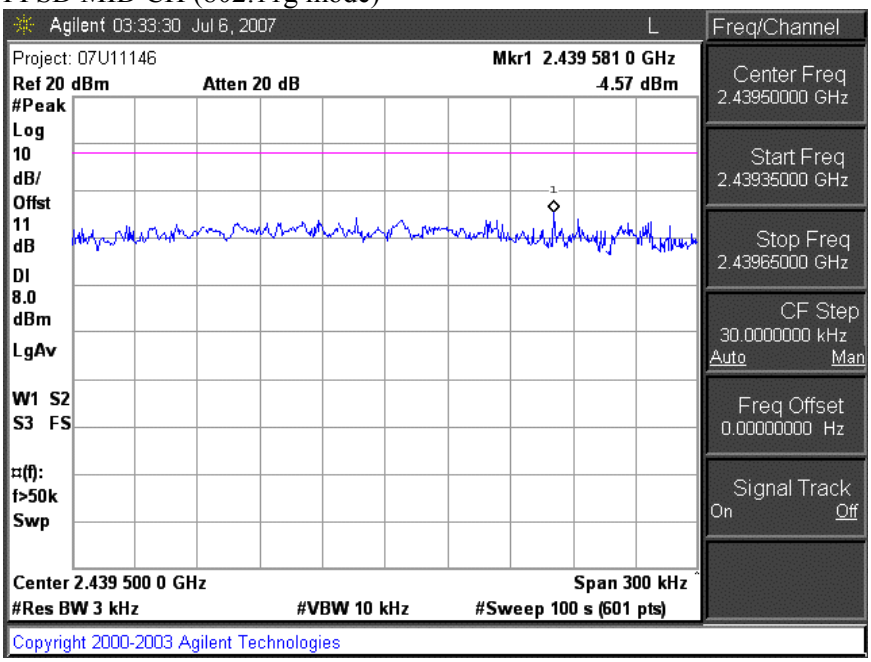


PEAK POWER SPECTRAL DENSITY (802.11g MODE)

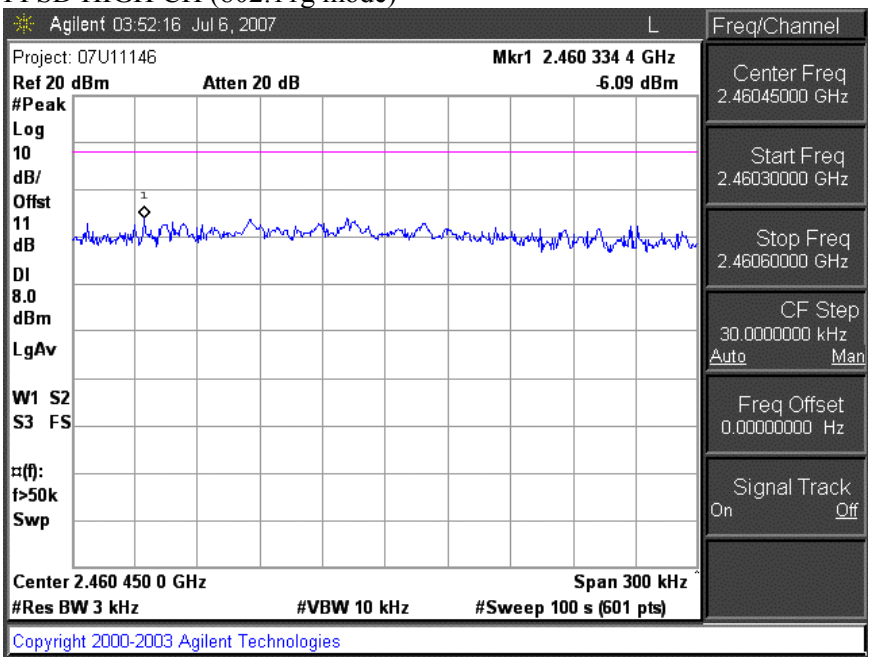
PPSD LOW CH (802.11g mode)



PPSD MID CH (802.11g mode)



PPSD HIGH CH (802.11g mode)



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)).

TEST PROCEDURE

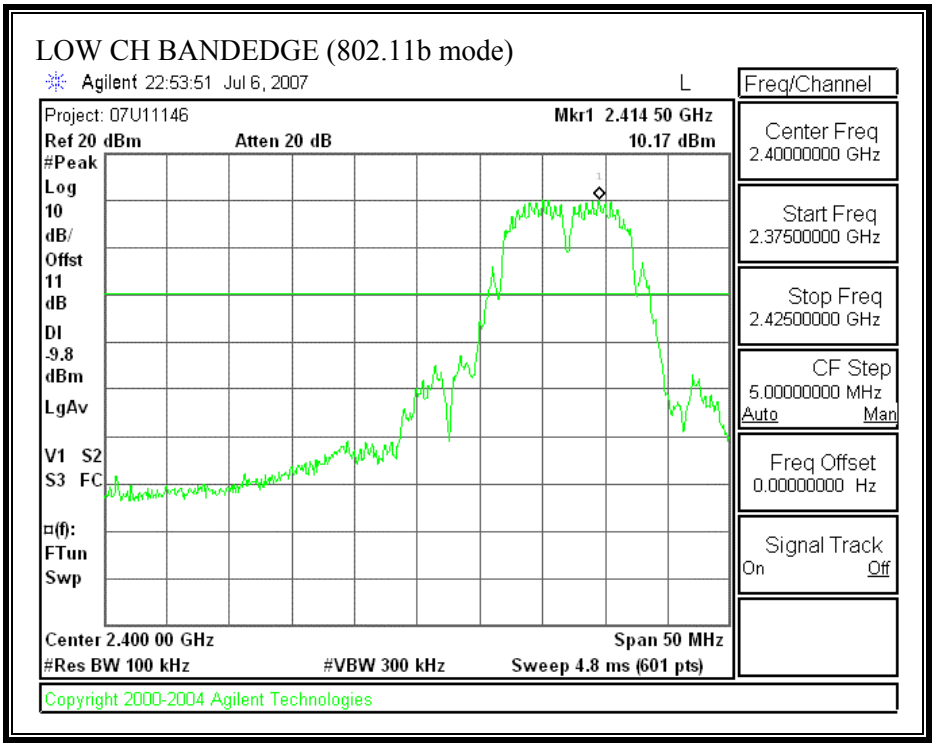
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

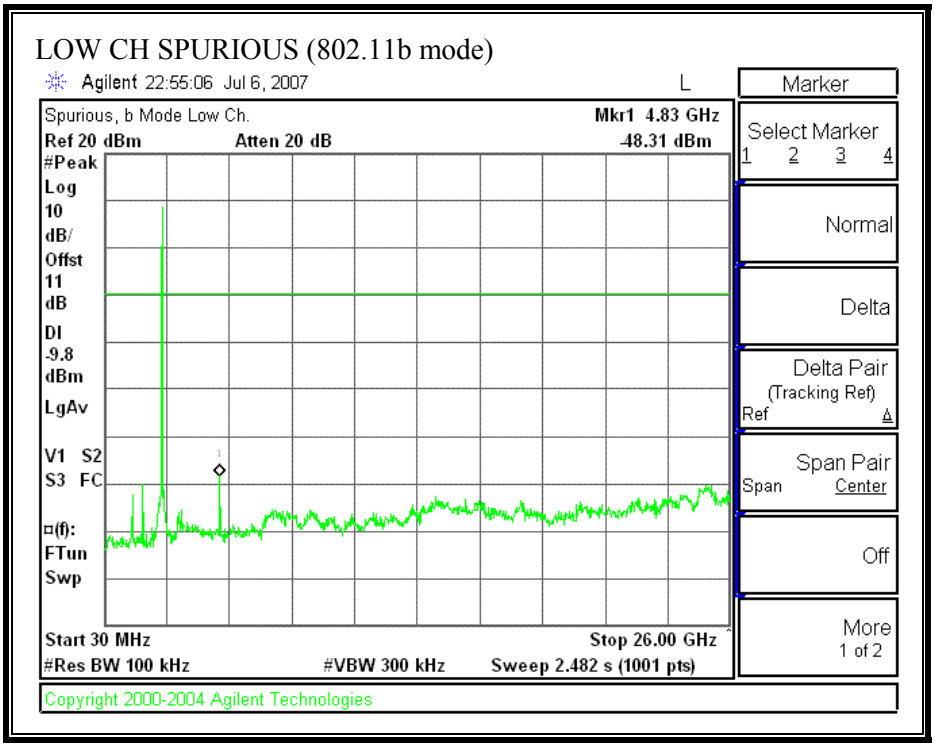
RESULTS

No non-compliance noted:

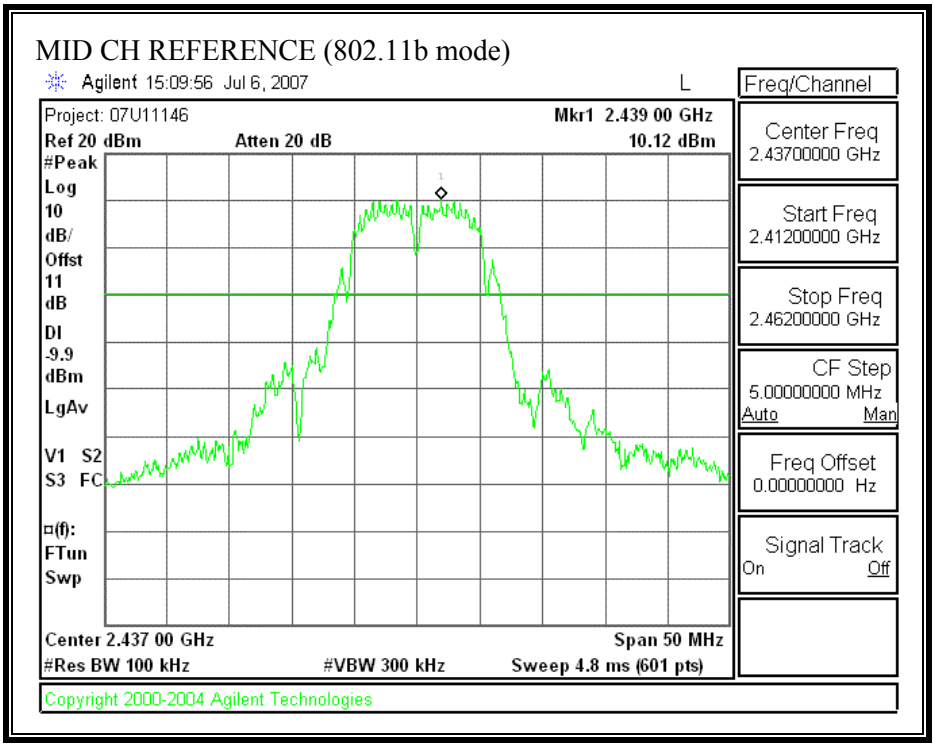
SPURIOUS EMISSIONS, LOW CHANNEL (802.11b MODE)



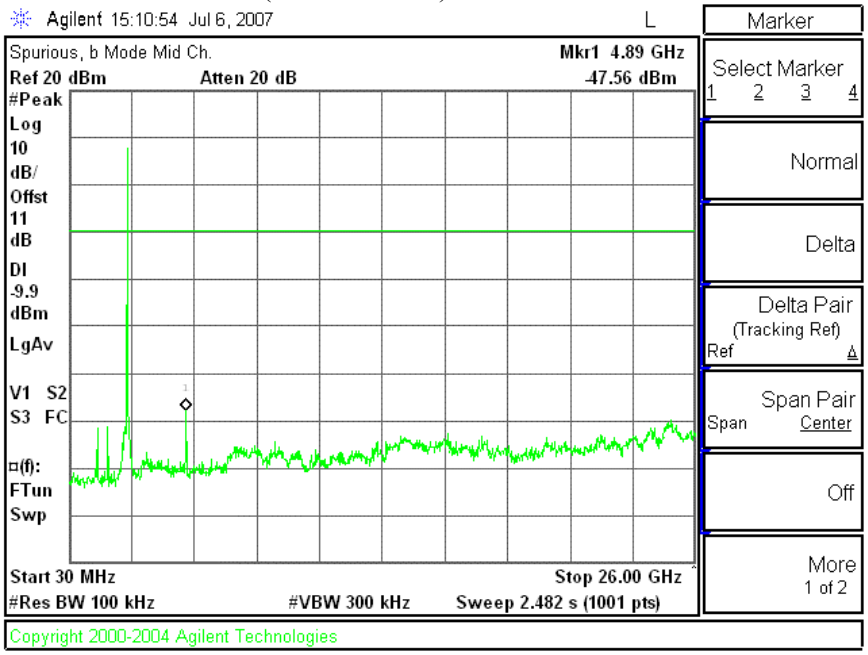
LOW CH SPURIOUS (802.11b mode)



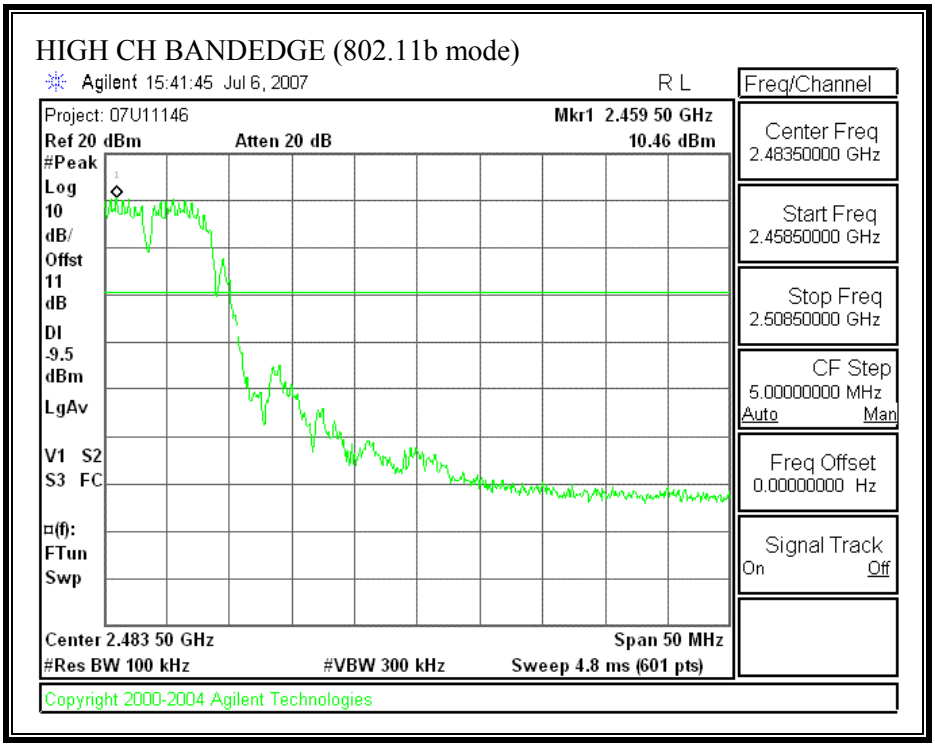
SPURIOUS EMISSIONS, MID CHANNEL (802.11b MODE)



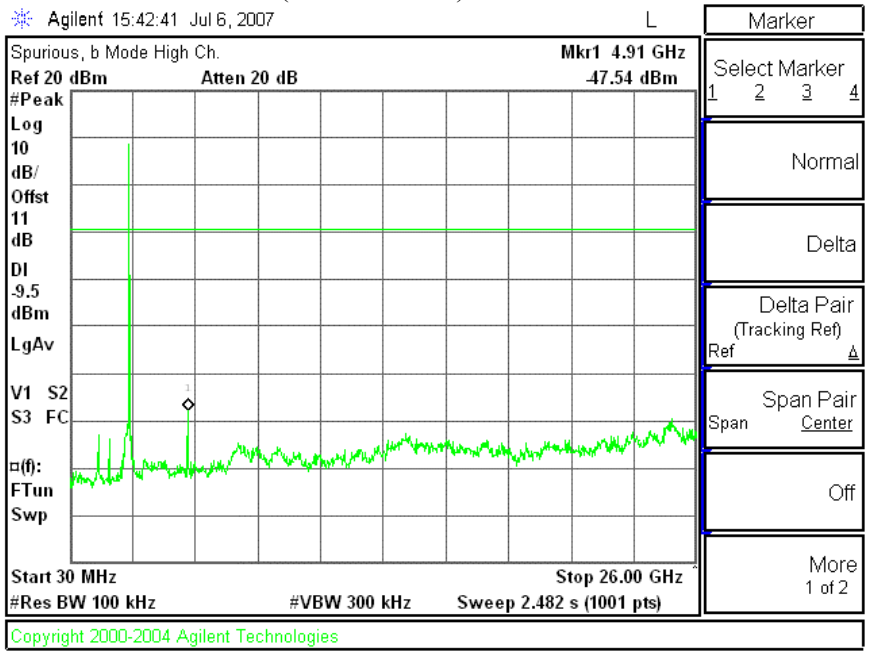
MID CH SPURIOUS (802.11b mode)



SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b MODE)

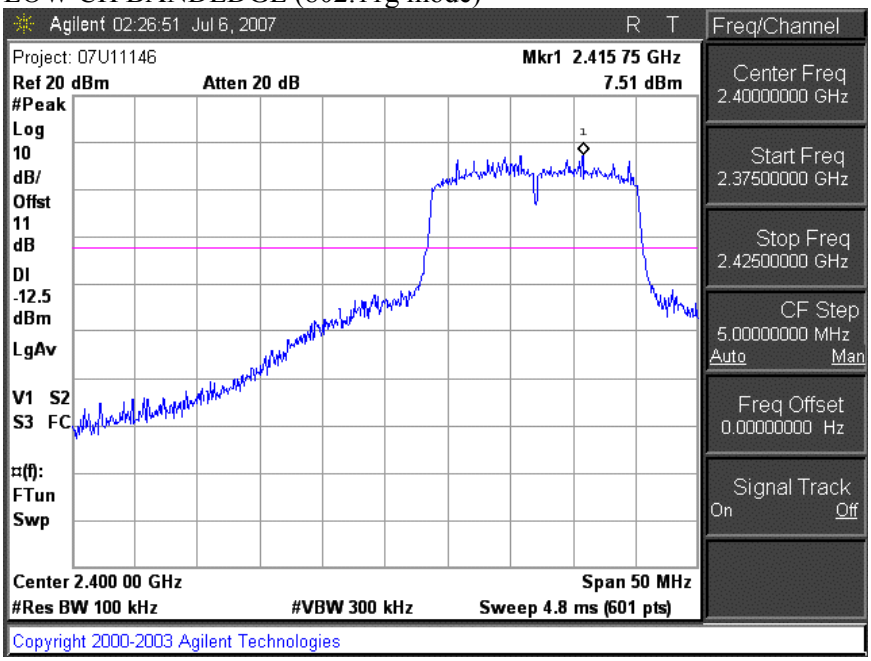


HIGH CH SPURIOUS (802.11b mode)

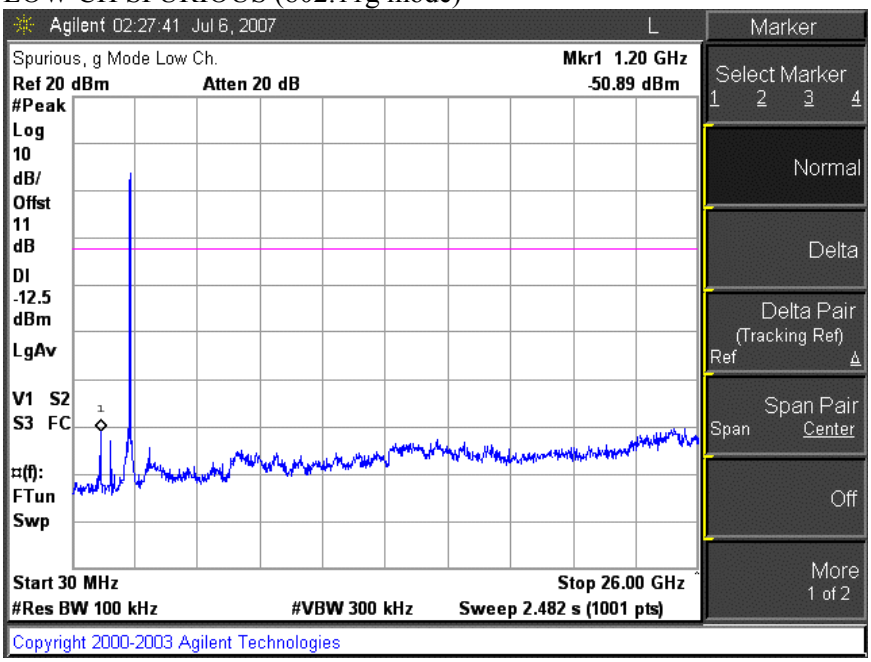


SPURIOUS EMISSIONS, LOW CHANNEL (802.11g MODE)

LOW CH BANDEDGE (802.11g mode)

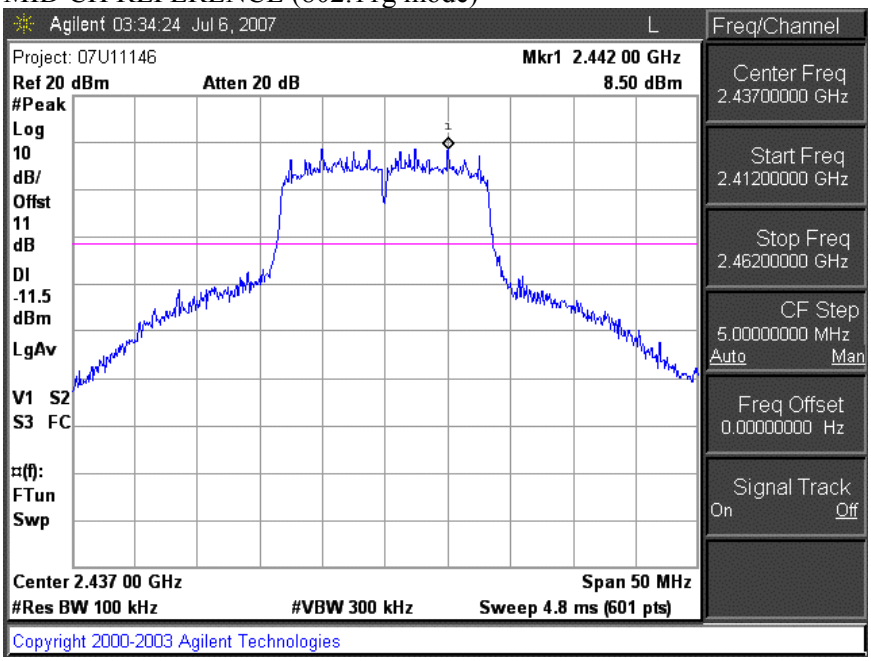


LOW CH SPURIOUS (802.11g mode)

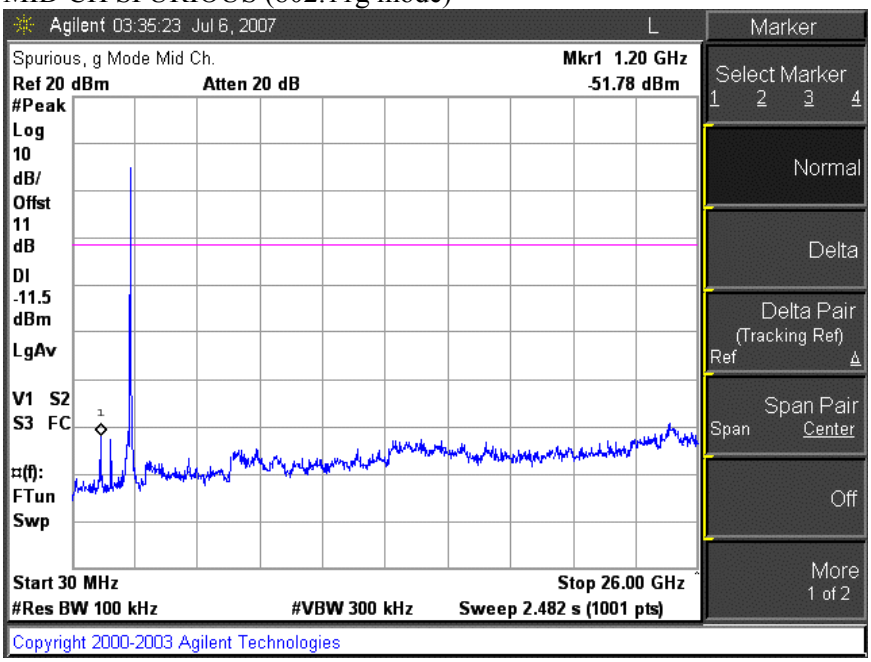


SPURIOUS EMISSIONS, MID CHANNEL (802.11g MODE)

MID CH REFERENCE (802.11g mode)

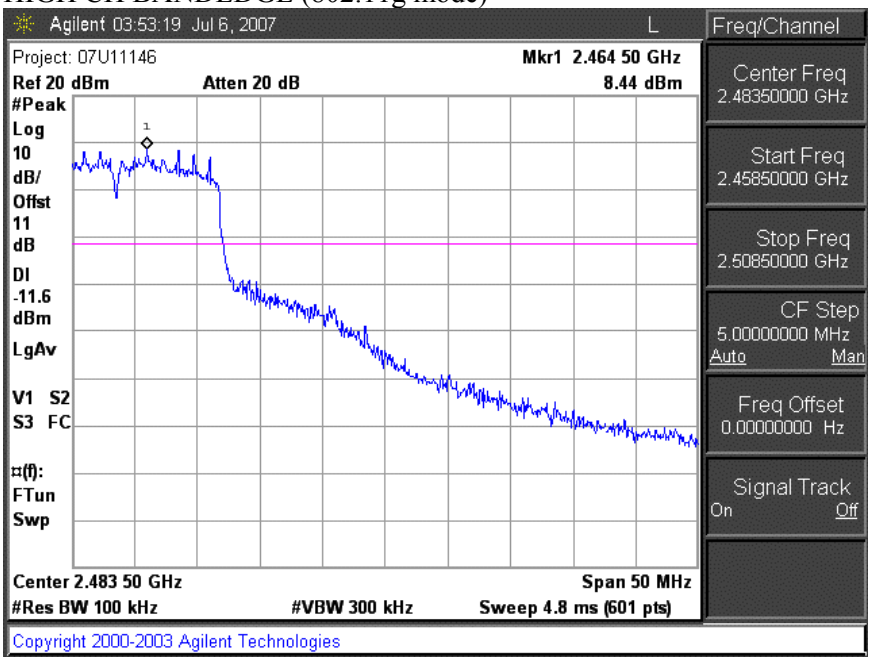


MID CH SPURIOUS (802.11g mode)

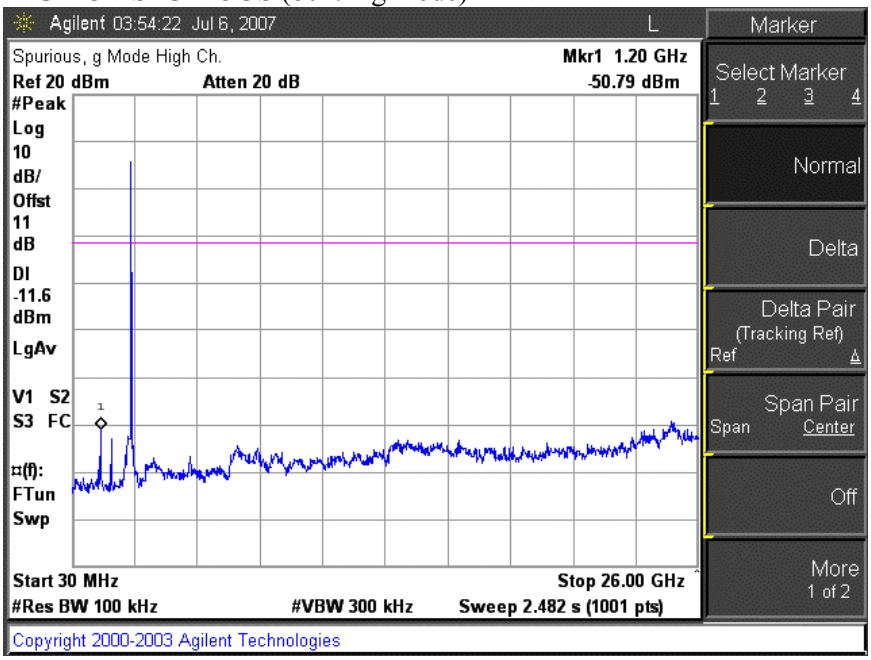


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g MODE)

HIGH CH BANDEDGE (802.11g mode)



HIGH CH SPURIOUS (802.11g mode)



7.2. RADIATED EMISSIONS

7.2.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

§15.205 (a)
§15.205 (b
RSS 210

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.

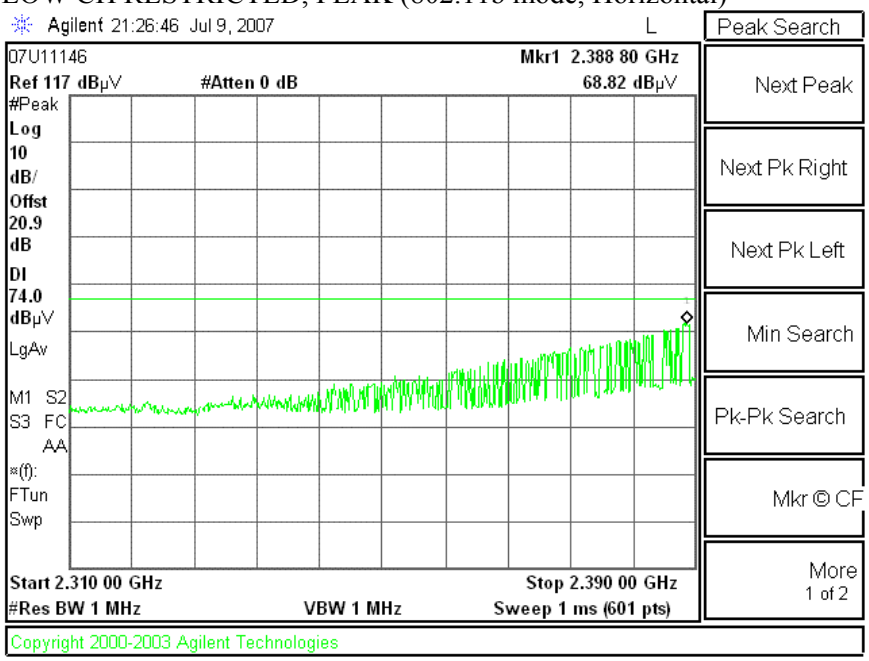
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

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.

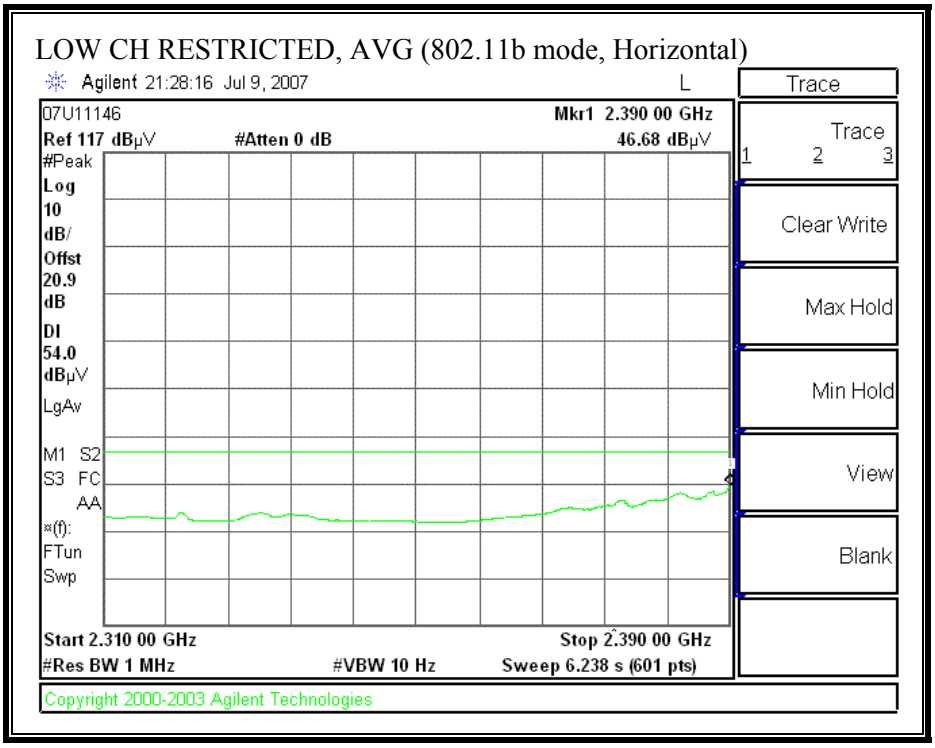
7.2.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)

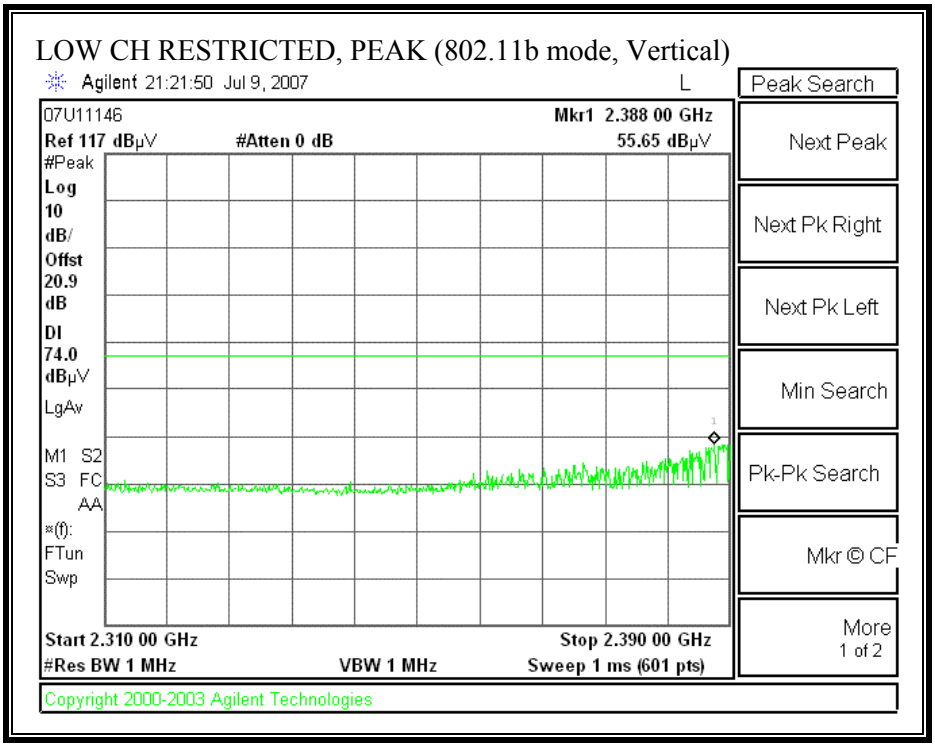
LOW CH RESTRICTED, PEAK (802.11b mode, Horizontal)



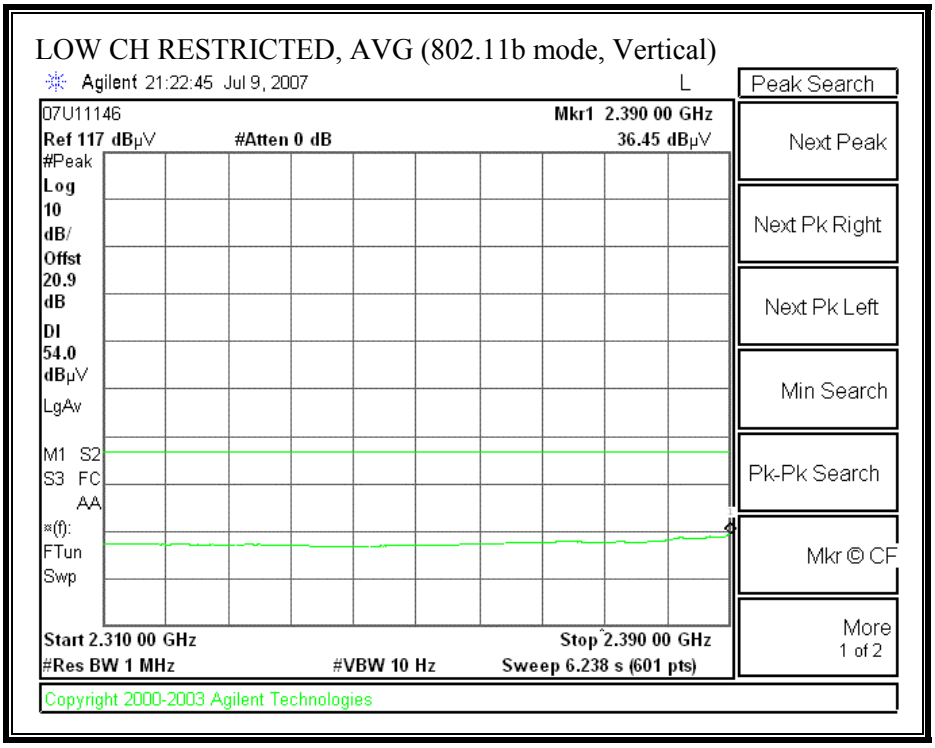
LOW CH RESTRICTED, AVG (802.11b mode, Horizontal)



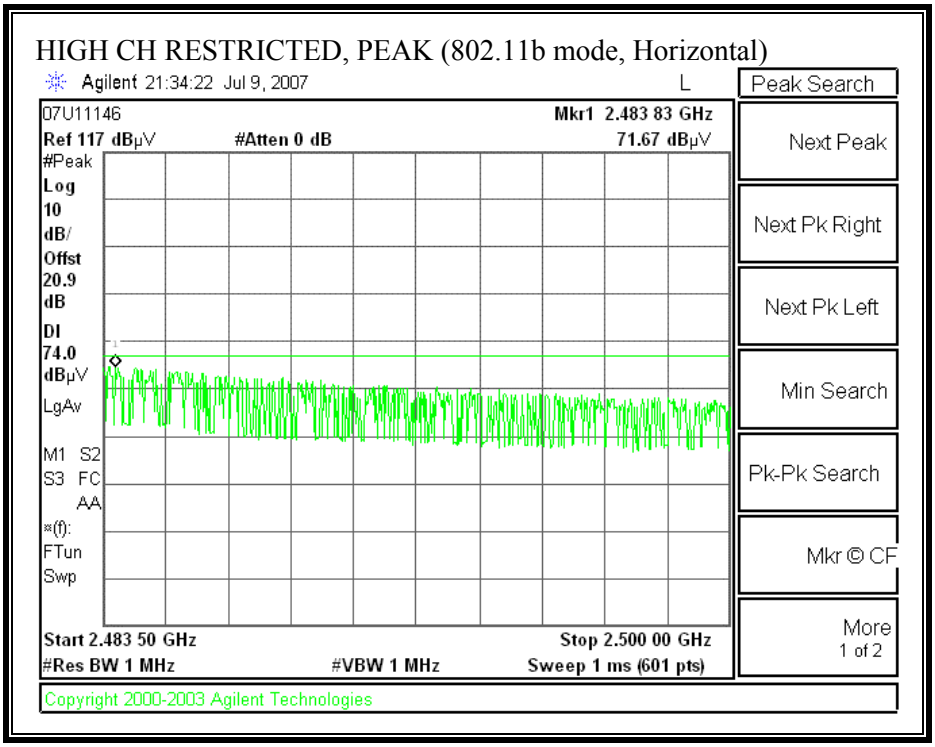
RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)



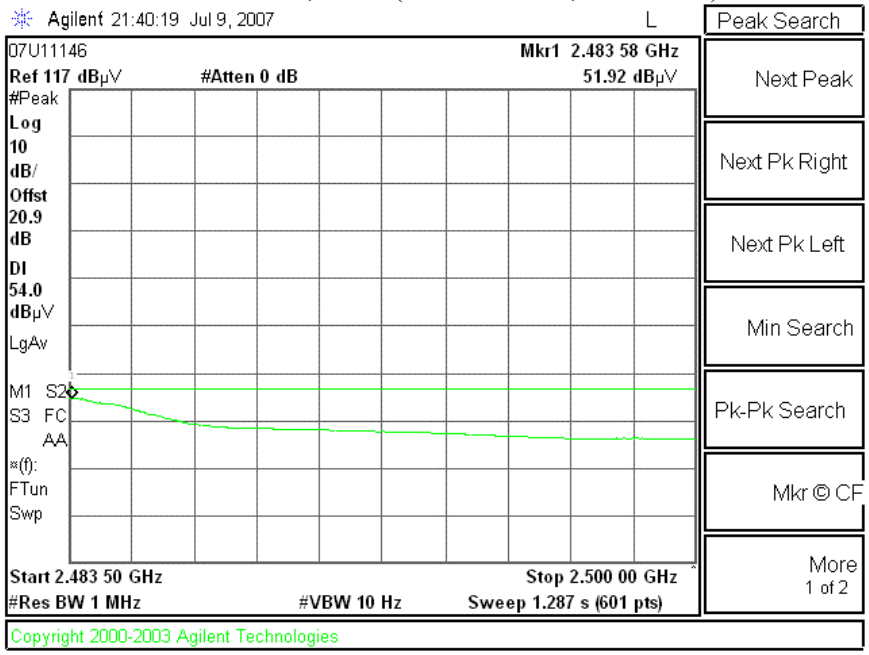
LOW CH RESTRICTED, AVG (802.11b mode, Vertical)



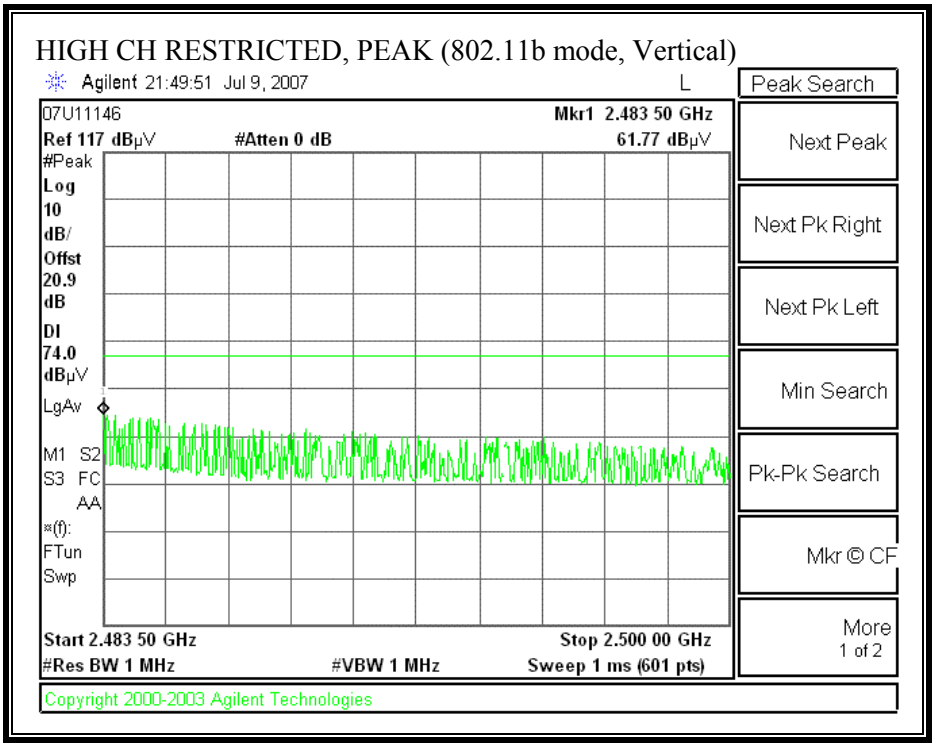
RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)



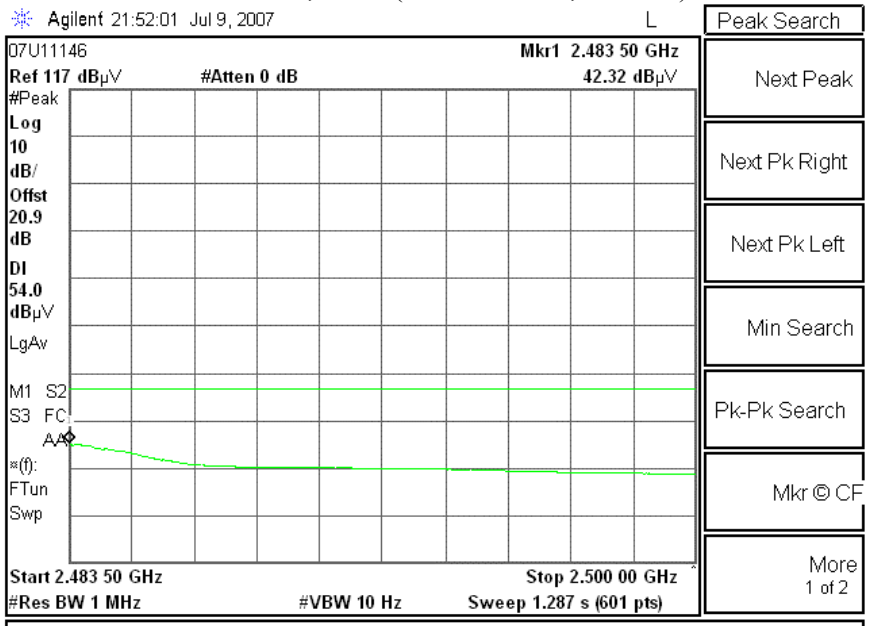
HIGH CH RESTRICTED, AVG (802.11b mode, Horizontal)



RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)



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



HARMONICS AND SPURIOUS EMISSIONS (b MODE)

High Frequency Measurement
Compliance Certification Services

Company:	Broadcom
Project #:	07U11146
Date:	7/9/2007
Test Engineer:	Keith NG
Configuration:	EUT with laptop
Mode:	2.4GHz Tx 11b 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

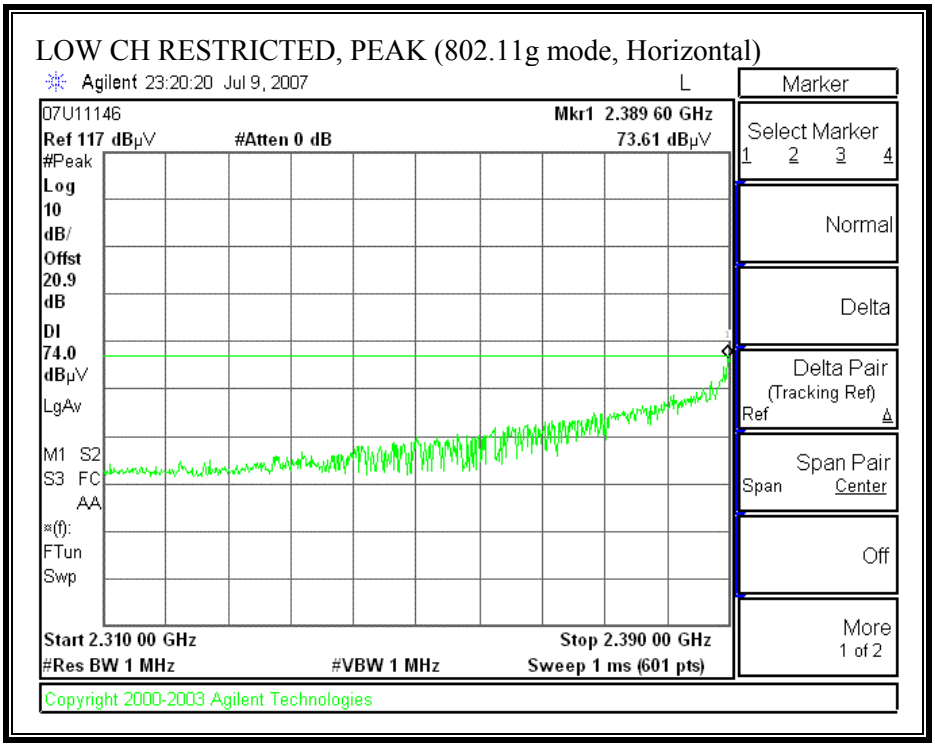
2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Thanh 187215003	Joseph 208946001		R_001

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

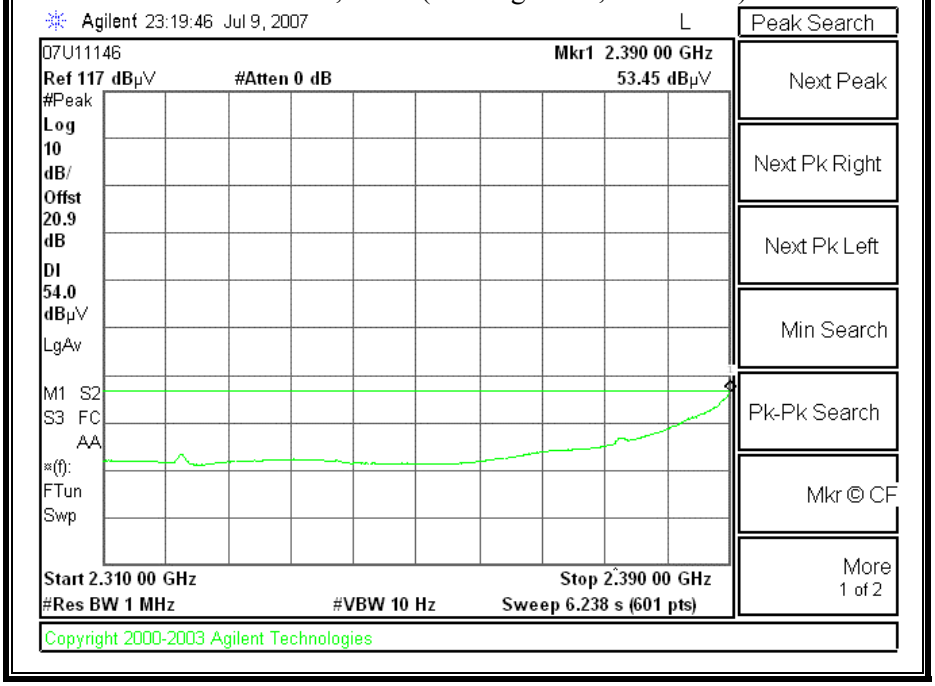
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch (2412Mhz)															
1.328	3.0	58.6	36.0	25.0	1.7	-37.8	0.0	0.0	47.5	24.9	74	54	-26.5	-29.1	V
4.824	3.0	46.2	41.9	33.3	2.8	-34.8	0.0	0.0	47.5	43.2	74	54	-26.5	-10.8	V
1.319	3.0	57.7	36.9	25.0	1.7	-37.8	0.0	0.0	46.6	25.7	74	54	-27.4	-28.3	H
4.824	3.0	50.6	47.2	33.3	2.8	-34.8	0.0	0.0	51.9	48.5	74	54	-22.1	-5.5	H
Mid Ch(2437MHz)															
1.326	3.0	58.6	37.5	25.0	1.7	-37.8	0.0	0.0	47.5	26.4	74	54	-26.5	-27.6	V
4.874	3.0	47.6	44.1	33.4	2.9	-34.8	0.0	0.0	49.0	45.5	74	54	-25.0	-8.5	V
1.321	3.0	56.0	34.8	25.0	1.7	-37.8	0.0	0.0	44.8	23.7	74	54	-29.2	-30.3	H
4.874	3.0	47.4	43.7	33.4	2.9	-34.8	0.0	0.0	48.8	45.1	74	54	-25.2	-8.9	H
Hi Ch(2462MHz)															
1.327	3.0	57.9	36.3	25.0	1.7	-37.8	0.0	0.0	46.8	25.2	74	54	-27.2	-28.8	V
4.924	3.0	48.0	44.9	33.4	2.9	-34.8	0.0	0.0	49.5	46.4	74	54	-24.5	-7.6	V
1.318	3.0	57.8	35.8	25.0	1.7	-37.8	0.0	0.0	46.7	24.6	74	54	-27.3	-29.4	H
4.924	3.0	44.1	36.6	33.4	2.9	-34.8	0.0	0.0	45.6	38.1	74	54	-28.4	-15.9	H
No other emissions were detected above 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		

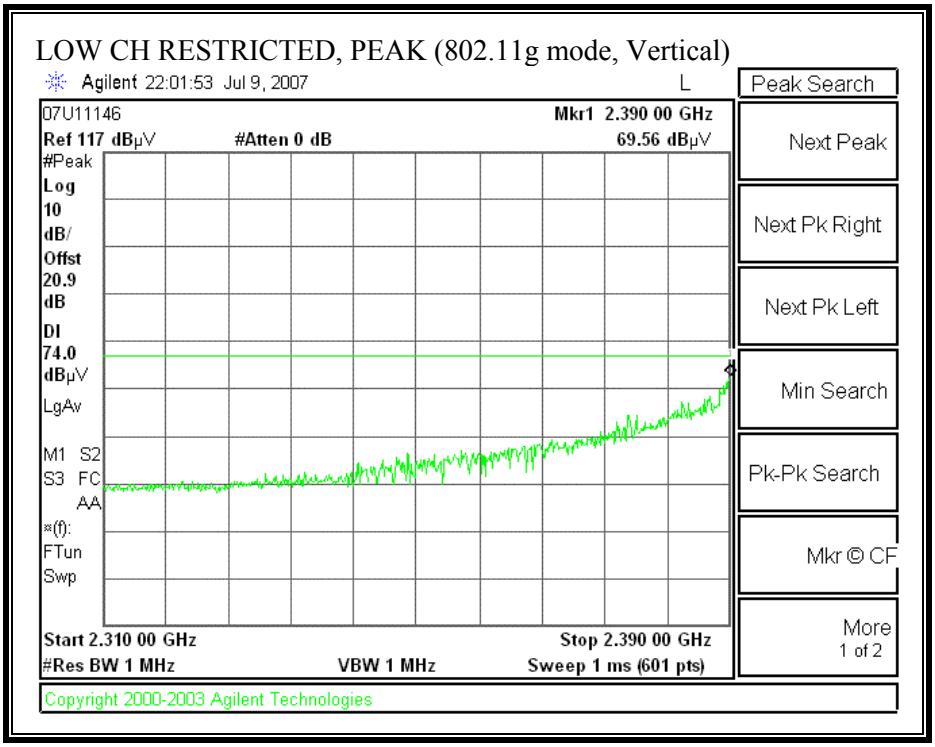
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2412MHz, HORIZONTAL)



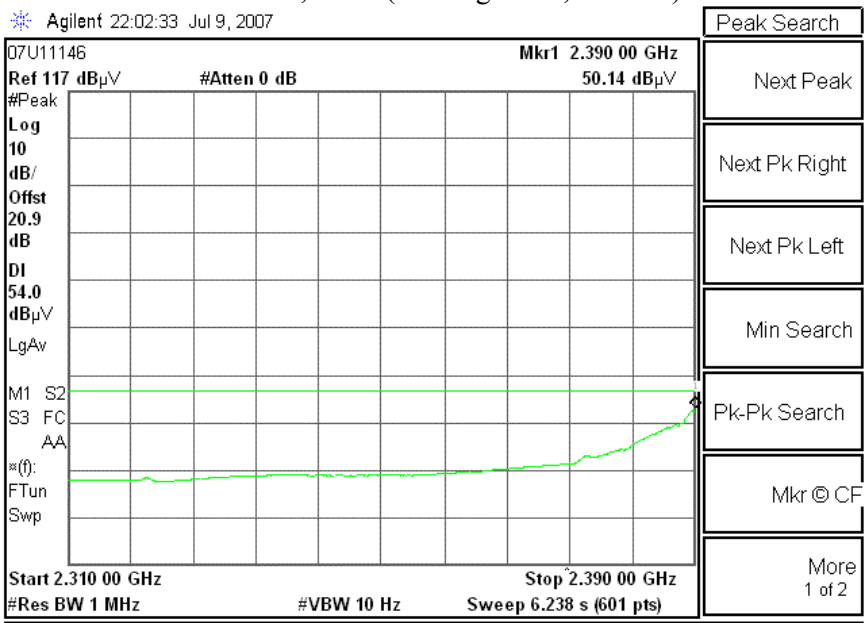
LOW CH RESTRICTED, AVG (802.11g mode, Horizontal)



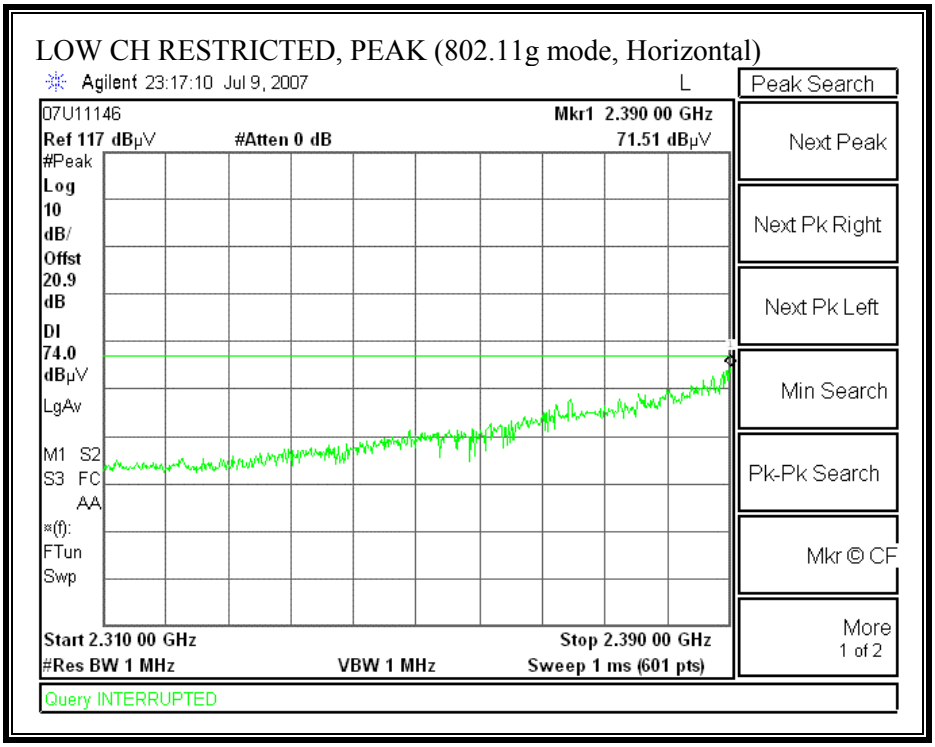
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2412MHz, VERTICAL)



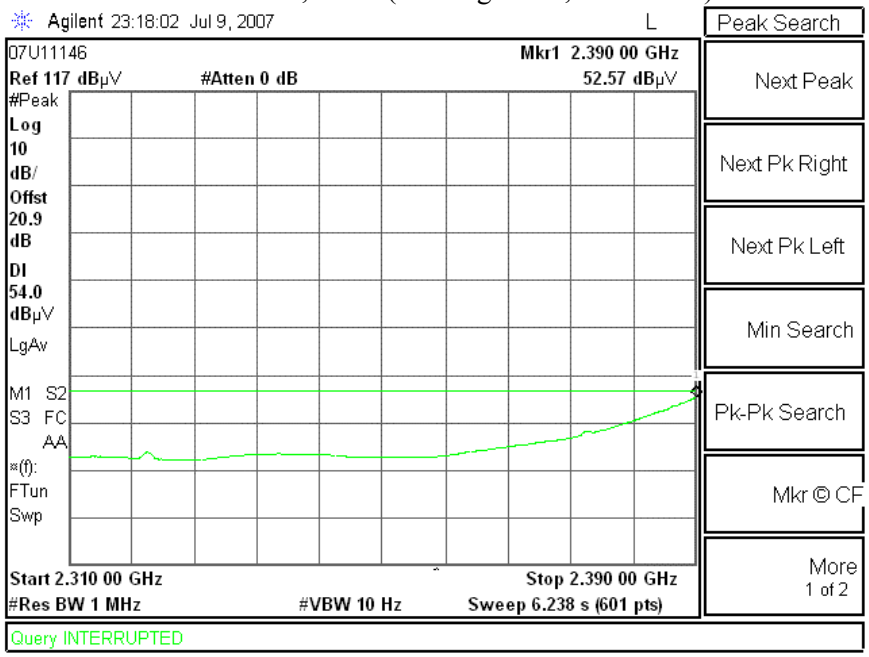
LOW CH RESTRICTED, AVG (802.11g mode, Vertical)



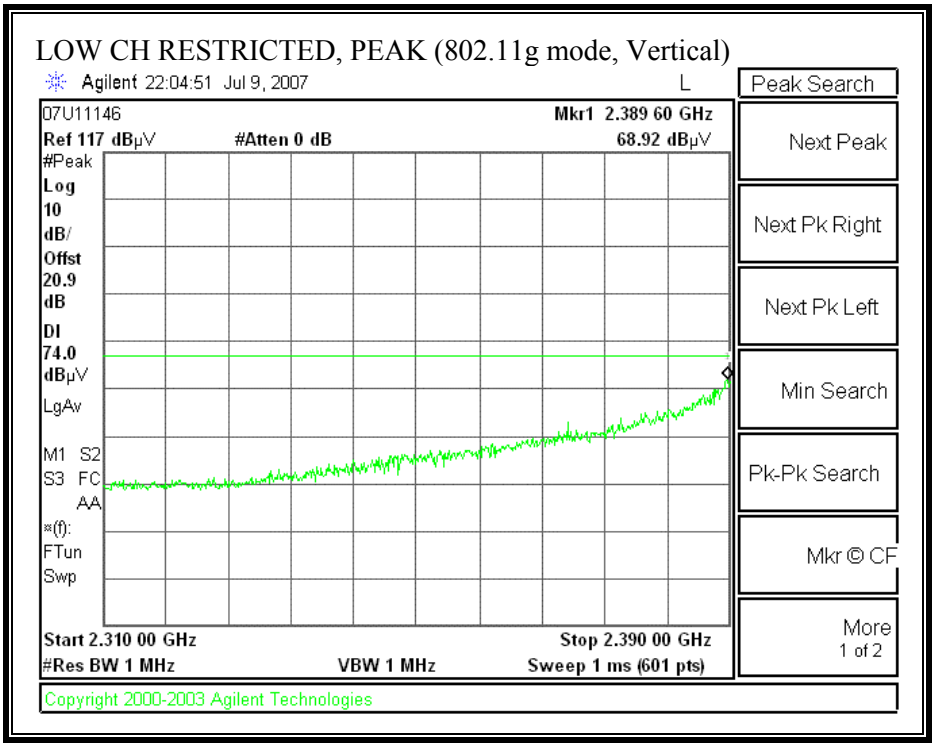
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2417MHz, HORIZONTAL)



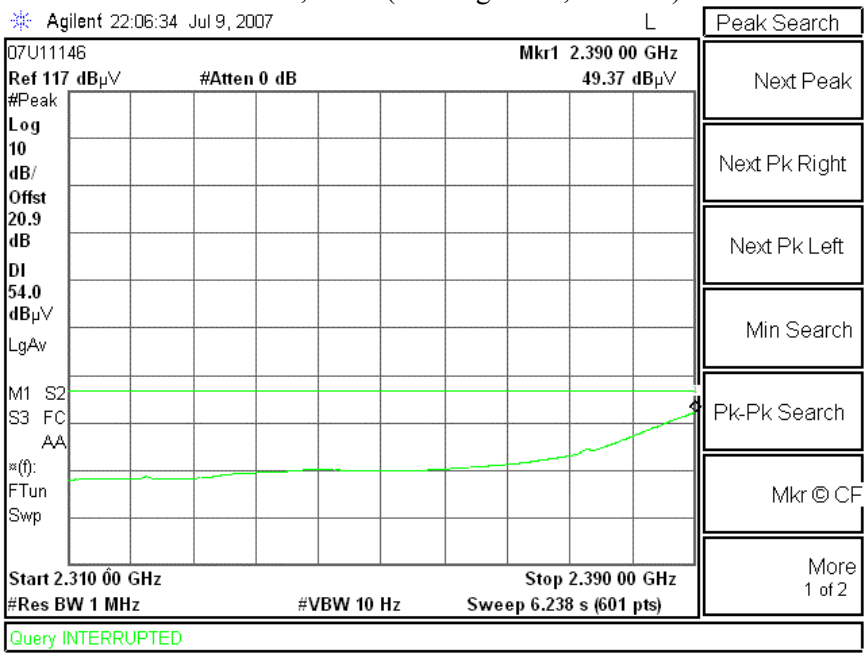
LOW CH RESTRICTED, AVG (802.11g mode, Horizontal)



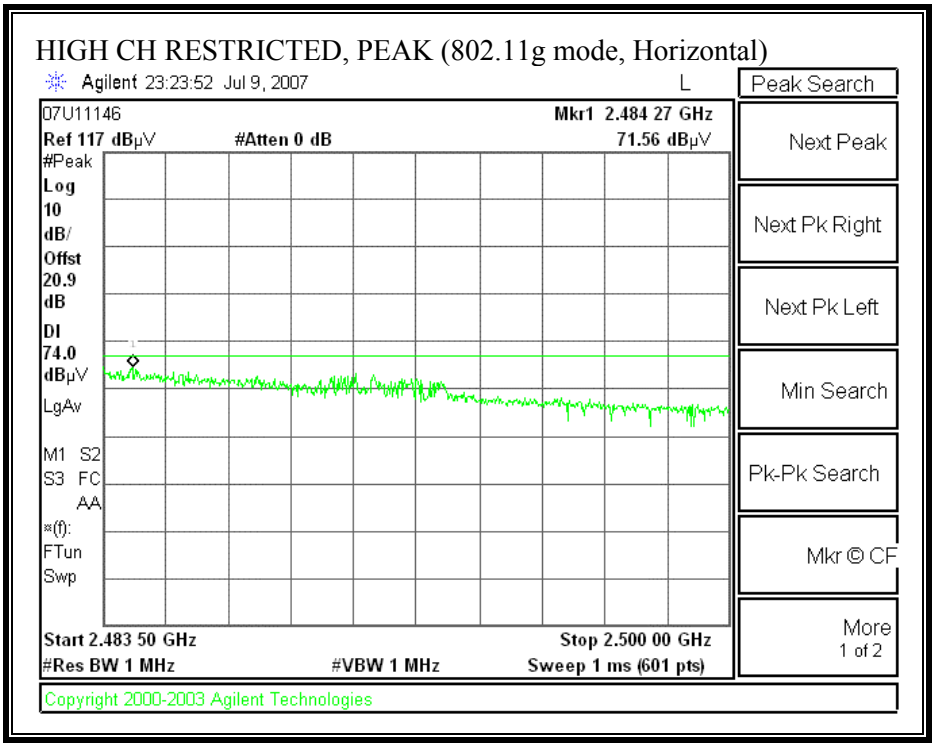
RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2417MHz, VERTICAL)



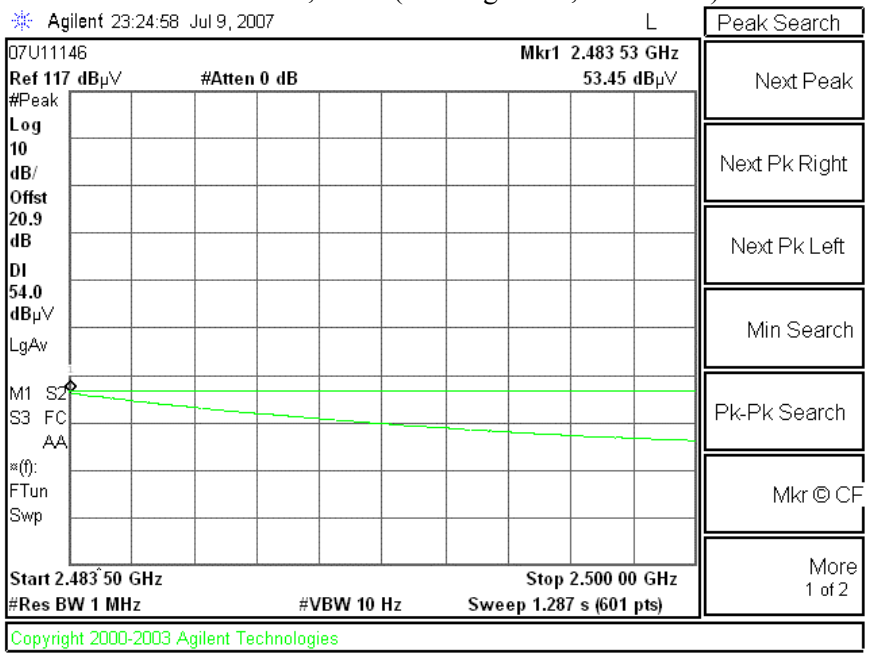
LOW CH RESTRICTED, AVG (802.11g mode, Vertical)



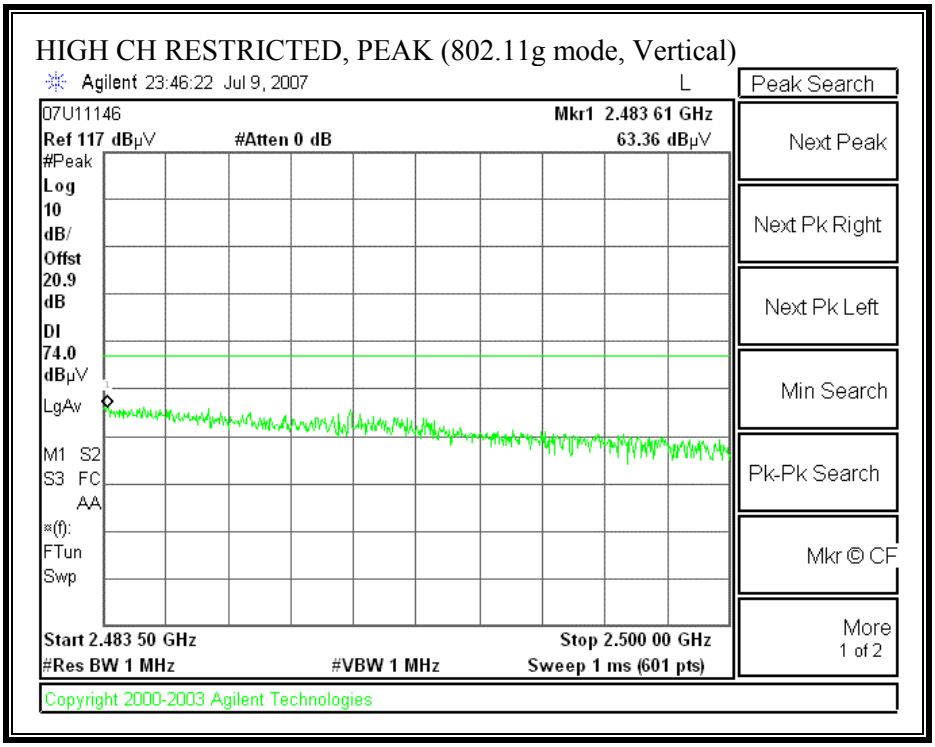
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, 2457MHz, HORIZONTAL)



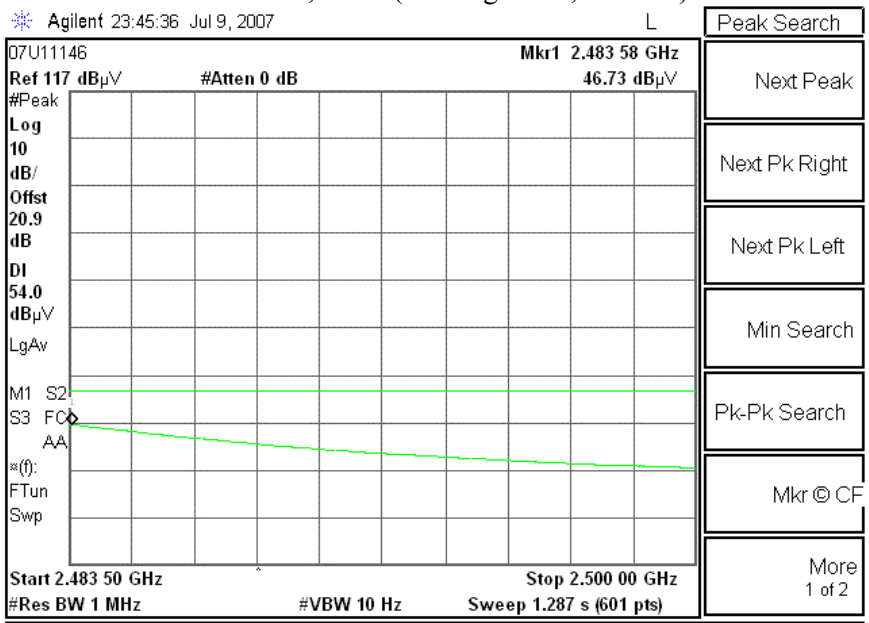
HIGH CH RESTRICTED, AVG (802.11g mode, Horizontal)



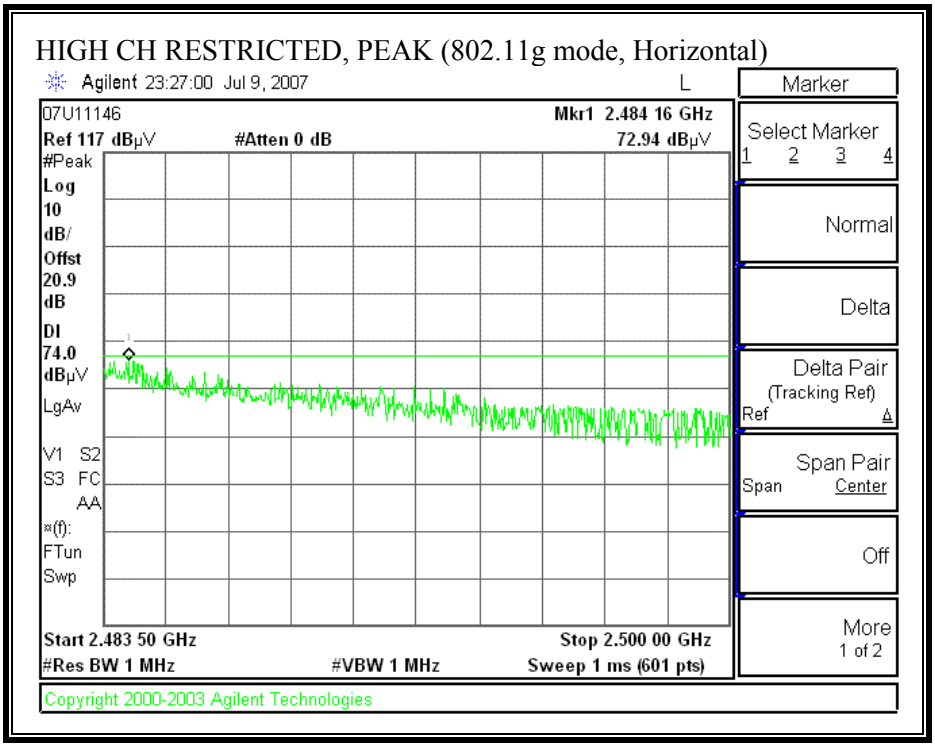
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, 2457MHz, VERTICAL)



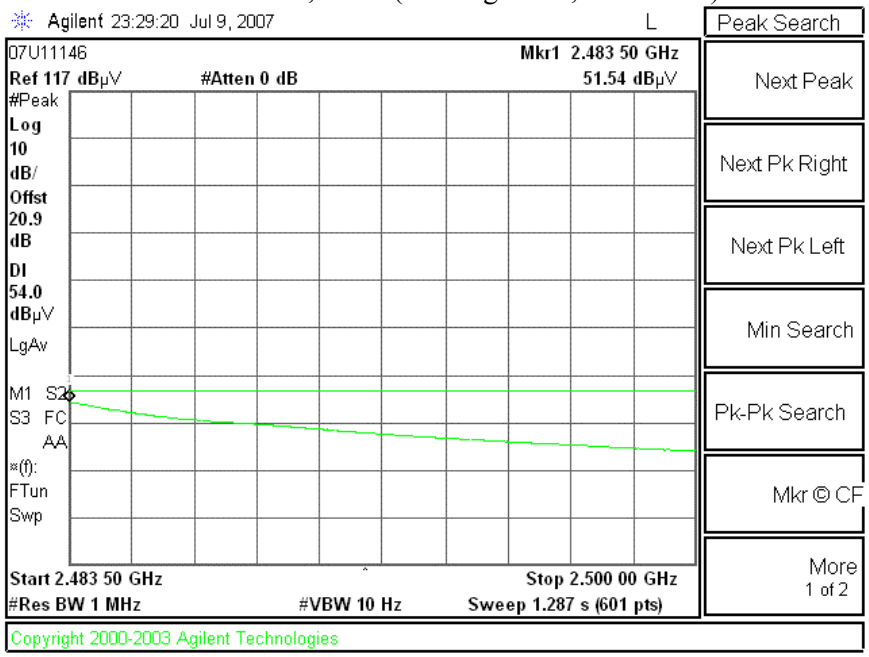
HIGH CH RESTRICTED, AVG (802.11g mode, Vertical)



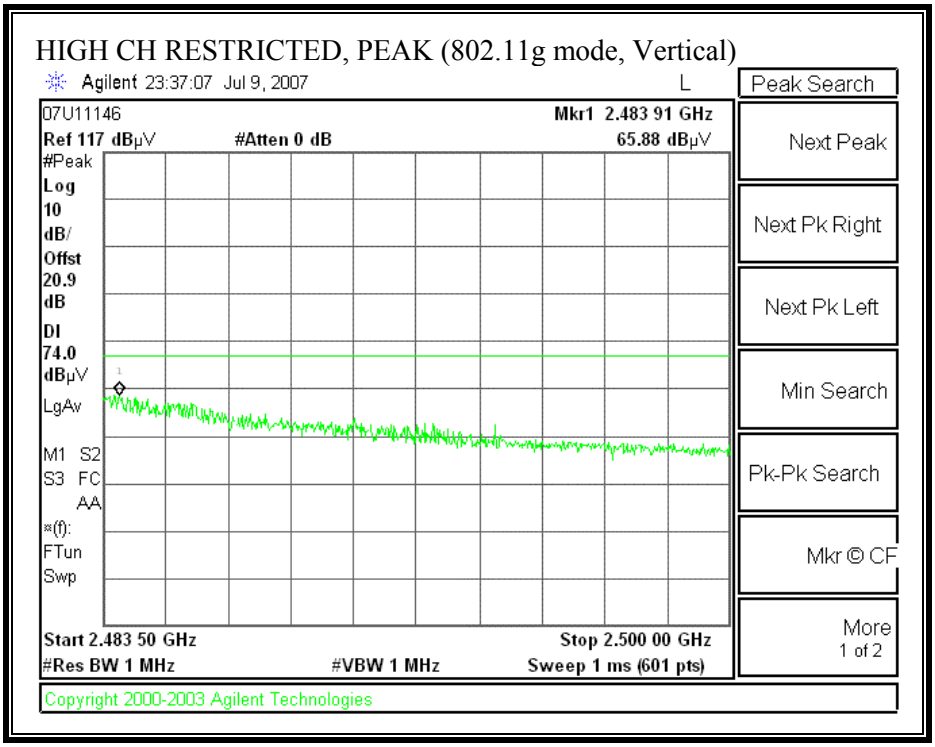
RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, 2462MHz, HORIZONTAL)



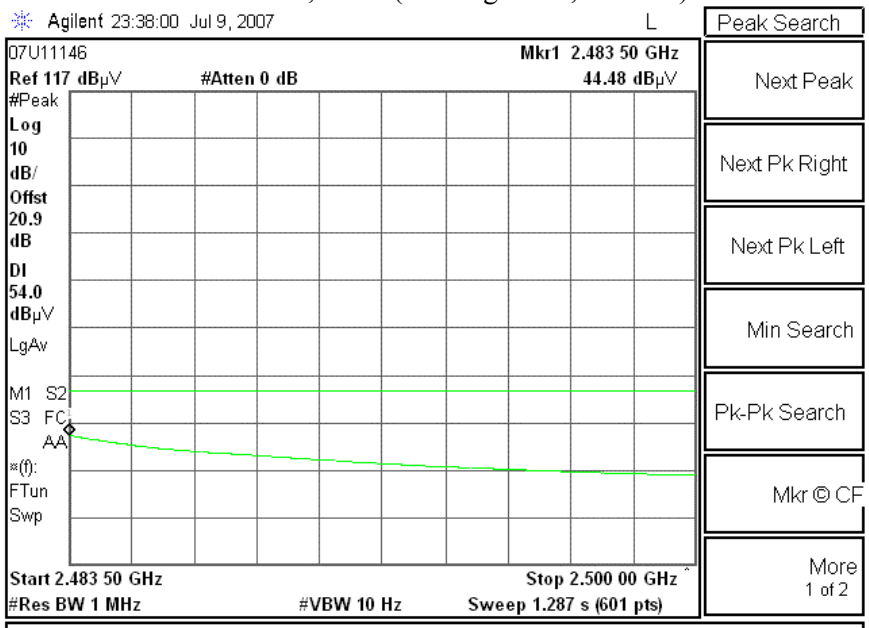
HIGH CH RESTRICTED, AVG (802.11g mode, Horizontal)



RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, 2462MHz, VERTICAL)



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



HARMONICS AND SPURIOUS EMISSIONS (g MODE)

High Frequency Measurement
Compliance Certification Services

Company:	Broadcom
Project #:	07U11146
Date:	7/9/2007
Test Engineer:	Keith NG
Configuration:	EUT with laptop
Mode:	2.4GHz Tx 11g 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
	Thanh 187215003	Joseph 208946001		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)															
1.328	3.0	58.6	37.6	25.0	1.7	-37.8	0.0	0.0	47.5	26.5	74	54	-26.5	-27.5	V
4.824	3.0	39.8	30.1	33.3	2.8	-34.8	0.0	0.0	41.1	31.4	74	54	-32.9	-22.6	V
1.324	3.0	58.9	36.9	25.0	1.7	-37.8	0.0	0.0	47.7	25.8	74	54	-26.3	-28.2	H
4.824	3.0	46.4	35.6	33.3	2.8	-34.8	0.0	0.0	47.7	36.9	74	54	-26.3	-17.1	H
Mid Ch(2437MHz)															
1.000	3.0	59.7	39.3	23.8	1.6	-38.3	0.0	0.0	46.8	26.4	74	54	-27.2	-27.6	V
1.326	3.0	55.9	36.3	25.0	1.7	-37.8	0.0	0.0	44.8	25.2	74	54	-29.2	-28.8	V
4.874	3.0	43.8	32.0	33.4	2.9	-34.8	0.0	0.0	45.2	33.4	74	54	-28.8	-20.6	V
1.318	3.0	59.9	36.8	25.0	1.7	-37.8	0.0	0.0	48.7	25.6	74	54	-25.3	-28.4	H
4.874	3.0	47.7	33.5	33.4	2.9	-34.8	0.0	0.0	49.0	34.9	74	54	-25.0	-19.1	H
Hi Ch(2462MHz)															
1.013	3.0	54.3	35.7	23.8	1.6	-38.2	0.0	0.0	41.5	22.9	74	54	-32.5	-31.1	V
1.330	3.0	59.6	37.4	25.0	1.7	-37.8	0.0	0.0	48.6	26.3	74	54	-25.4	-27.7	V
4.924	3.0	44.9	32.1	33.4	2.9	-34.8	0.0	0.0	46.3	33.6	74	54	-27.7	-20.4	V
1.322	3.0	57.6	35.9	25.0	1.7	-37.8	0.0	0.0	46.5	24.8	74	54	-27.5	-29.2	H
4.924	3.0	47.7	35.4	33.4	2.9	-34.8	0.0	0.0	49.2	36.9	74	54	-24.8	-17.1	H
No other emissions were detected above 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. RECEIVER EMISSIONS ABOVE 1 GHZ

RESULTS

No non-compliance noted:

RECEIVER SPURIOUS EMISSIONS FOR 2400 TO 2483.5 MHz BAND

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Broadcom Corporation
Project #: 07U11146
Date: 07/02/07
Test Engineer: Tom Chen
Configuration: EUT with Notebook PC
Mode: RX mode (Worst Case)

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T144 Miteq 3008A00931			RX RSS 210

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		A-5m Chamber		

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)
1.247	3.0	63.0	36.0	26.0	3.3	-39.1	0.0	0.0	53.2	26.2	74	54	-20.8	-27.8	V
1.300	3.0	59.0	34.0	26.2	3.4	-39.1	0.0	0.0	49.5	24.5	74	54	-24.5	-29.5	V
1.700	3.0	52.6	29.6	27.2	3.9	-38.5	0.0	0.0	45.2	22.2	74	54	-28.8	-31.8	V
2.500	3.0	53.5	30.0	28.9	4.9	-37.5	0.0	0.0	49.8	26.3	74	54	-24.2	-27.7	V
3.270	3.0	43.7	28.6	31.0	5.6	-37.2	0.0	0.0	43.1	28.0	74	54	-30.9	-26.0	V
1.200	3.0	52.0	33.8	25.9	3.3	-39.2	0.0	0.0	42.0	23.8	74	54	-32.0	-30.2	H
1.300	3.0	57.0	35.7	26.2	3.4	-39.1	0.0	0.0	47.5	26.2	74	54	-26.5	-27.8	H
1.400	3.0	53.0	31.2	26.4	3.5	-38.9	0.0	0.0	44.0	22.2	74	54	-30.0	-31.8	H
2.200	3.0	49.3	30.5	28.2	4.6	-37.8	0.0	0.0	44.3	25.5	74	54	-29.7	-28.5	H
2.500	3.0	52.8	30.3	28.9	4.9	-37.5	0.0	0.0	49.1	26.6	74	54	-24.9	-27.4	H

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		

7.2.4. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

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

HORIZONTAL DATA

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 5 File#: 07U11146.EMI Date: 07-03-2007 Time: 14:44:06

Condition: FCC CLASS-B 3m A-5M CHAMBER 012007 HORIZONTAL
Test Operator:: Tom Chen
Project #: : 07U11146
Company: : Broadcom
Configuration:: EUT With Host Laptop
Mode : : TX @ 2.4GHz (Worst Case)
Target: : FCC Class B

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	99.840	31.21	11.06	42.27	43.50	-1.23	Peak
2	300.630	25.89	15.78	41.67	46.00	-4.33	Peak
3	371.440	19.55	17.52	37.07	46.00	-8.93	Peak
4	567.380	22.40	21.49	43.89	46.00	-2.11	Peak
5	631.400	21.15	22.48	43.62	46.00	-2.38	Peak
6	827.340	15.09	25.20	40.29	46.00	-5.71	Peak

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

VERTICAL DATA

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 9 File#: 07U11146.EMI Date: 07-03-2007 Time: 15:03:03

Condition: FCC CLASS-B 3m A-5M CHAMBER 012007 VERTICAL
Test Operator:: Tom Chen
Project #: : 07U11146
Company: : Broadcom
Configuration:: EUT With Host Laptop
Mode : : TX @ 2.4GHz (Worst Case)
Target: : FCC Class B

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	99.840	24.33	11.06	35.39	43.50	-8.11	Peak
2	284.140	21.81	15.18	36.99	46.00	-9.01	Peak
3	339.430	18.81	16.76	35.57	46.00	-10.43	Peak
4	567.380	20.01	21.49	41.50	46.00	-4.50	Peak
5	635.280	20.28	22.53	42.81	46.00	-3.19	Peak
6	902.030	13.32	26.25	39.57	46.00	-6.43	Peak

7.3. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

RSS-Gen 7.2.2

Except when the requirements applicable to a given device state otherwise, for any licence-exempt radiocommnication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in Table 2. The tighter limit applies at the frequency range boundaries.

Table 2 – AC Power Lines Conducted Emission Limits

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

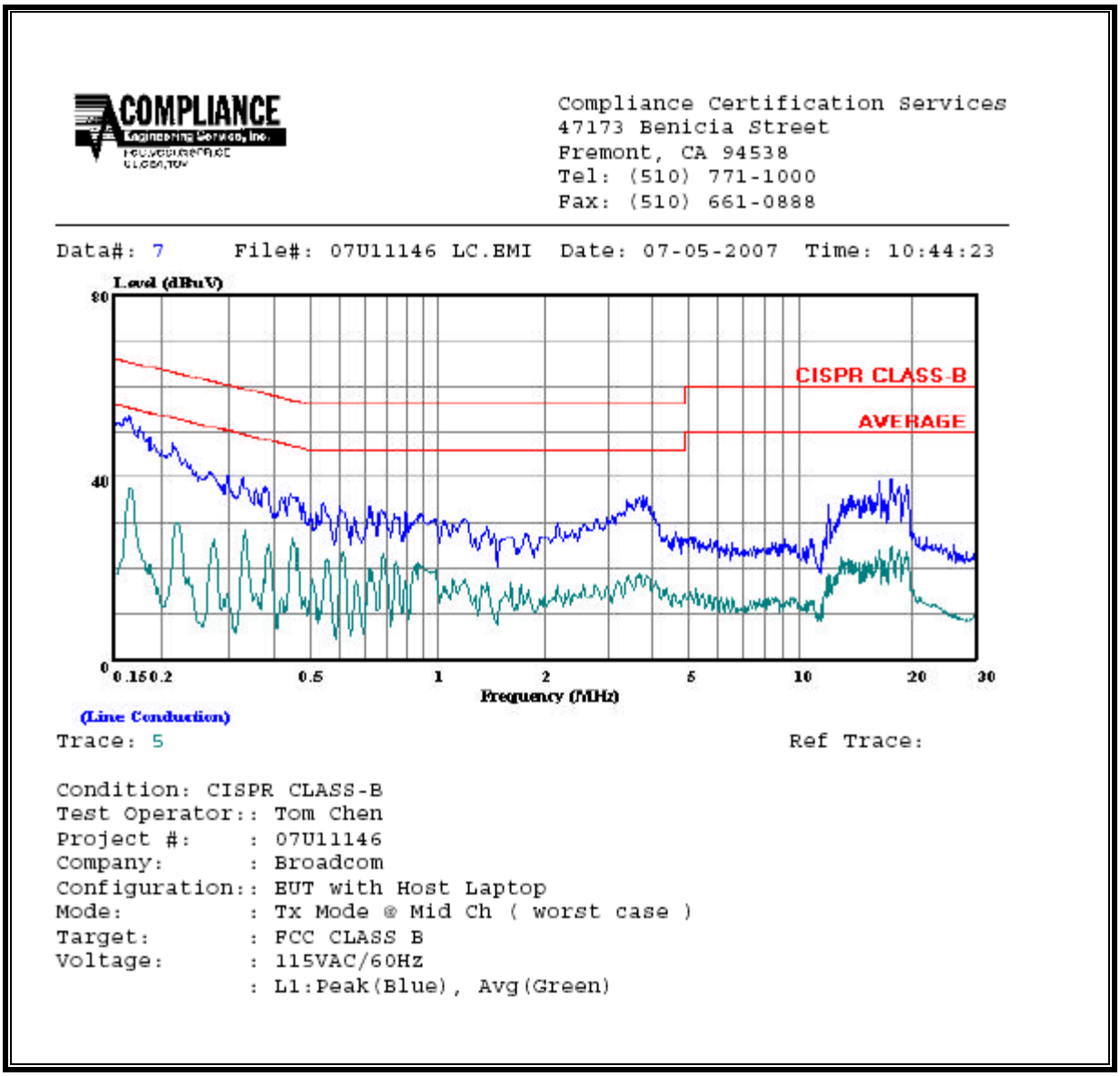
RESULTS

No non-compliance noted:

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.17	53.60	--	37.92	0.00	65.21	55.21	-11.61	-17.29	L1
0.22	46.91	--	27.73	0.00	62.97	52.97	-16.06	-25.24	L1
3.88	35.92	--	16.07	0.00	56.00	46.00	-20.08	-29.93	L1
0.16	54.04	--	31.12	0.00	65.41	55.41	-11.37	-24.29	L2
0.22	45.18	--	25.57	0.00	62.82	52.82	-17.64	-27.25	L2
15.07	48.52	--	22.85	0.00	60.00	50.00	-11.48	-27.15	L2
6 Worst Data									

LINE 1 RESULTS



LINE 2 RESULTS