



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

**FOR**

**TRANSCEIVER**

**MODEL NUMBER: AC02043-001**

**FCC ID: JJ4-DD2**

**REPORT NUMBER: 06U10188-1**

**ISSUE DATE: APRIL 13, 2006**

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LAB CODE:200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	04/13/06	Initial Issue	D. Garcia

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** GYRATION  
12950 SARATOGA AVE.  
SARATOGA, CA 95070, USA

**EUT DESCRIPTION:** Transceiver

**MODEL:** AC02043-001

**SERIAL NUMBER:** PROTOTYPE

**DATE TESTED:** JANUARY 7 – MARCH 27, 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:



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DAVID GARCIA  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES



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ALVIN ILARINA  
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 a direct sequence (DSSS) transceiver.

The radio module is manufactured by Cypress

### 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)
2402 - 2479	DSSS	-8.50	0.14

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integral PCB antenna with a maximum gain of 0 dBi.

### 5.4. SOFTWARE AND FIRMWARE

Operating system: Computer Operation System; Standard Windows XP.

Software drivers or utility software was SW02110-001 Version 2.1

### 5.5. WORST-CASE MODE FOR EMISSIONS TESTS

The worst-case channel is determined as the channel with the highest output power, based on the radio test reports for this product. The highest measured output power was at 2402 MHz.

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Host PC	Dell	Media Center	NA	DoC
AC Adapter	Dell	ADP-150EB	NA	DoC

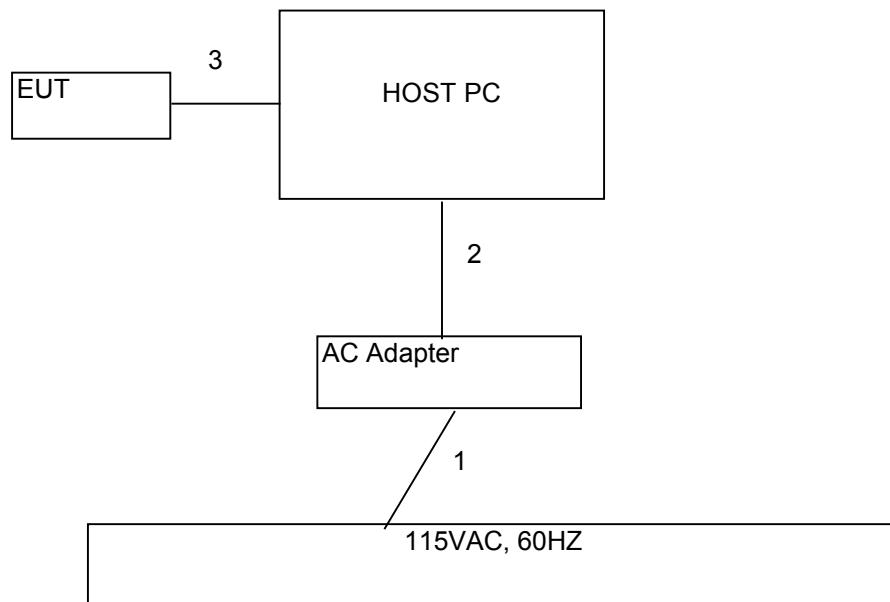
### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	2m	NA
3	USB	1	Copper Wire	Un-shielded	0.1m	NA

### TEST SETUP

The EUT is a USB Transceiver and is plugged into the USB port of the host laptop. It communicates with the Wireless devices like the wireless mouse and the wireless Keyboard via a wireless link and sends the data to the laptop

**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	10/22/2006
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2006
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent	E4446A	US42510266	10/19/2006
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/2006
Preamplifier, 1 ~ 26 GHz	Miteq	NSP2600-44	646456	8/17/2006
Peak Power Meter	Agilent	E4416A	GB41291160	12/2/2007
Peak / Average Power Sensor	Agilent	E9327A	US40440755	12/2/2007
RF Filter Section	HP	85420E	3705A00256	3/29/2006
Antenna, Bilog 30MHz---- 2GHz	Sunol Sciences	JB1	A121003	3/3/2006

## 7. LIMITS AND RESULTS

### 7.1. CHANNEL TESTS

#### 7.1.1. 6 dB BANDWIDTH

##### LIMIT

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

##### TEST PROCEDURE

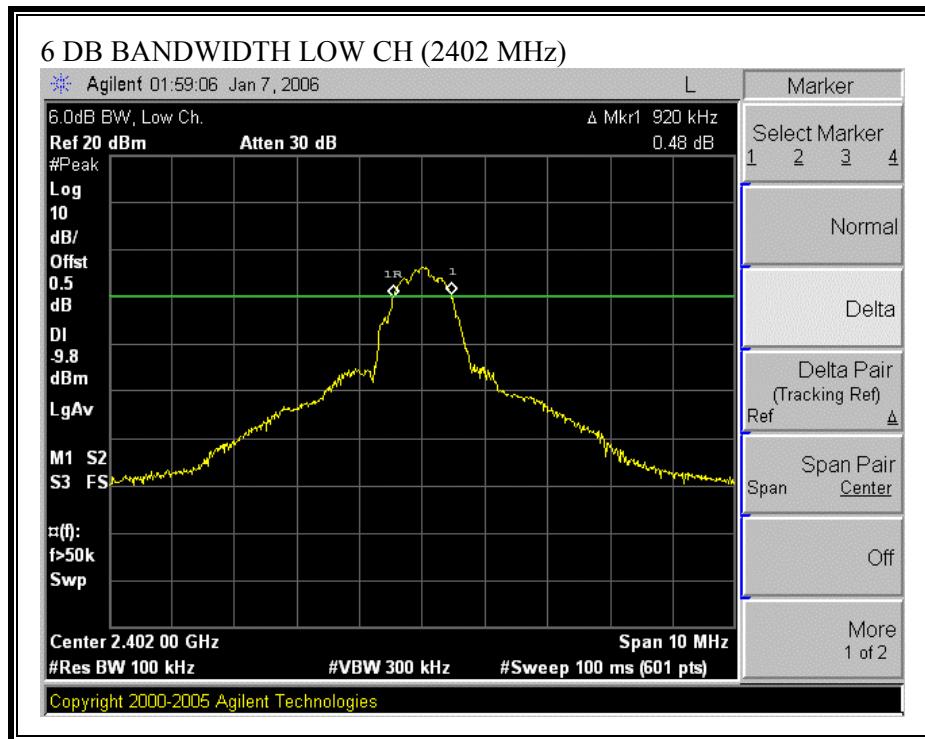
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

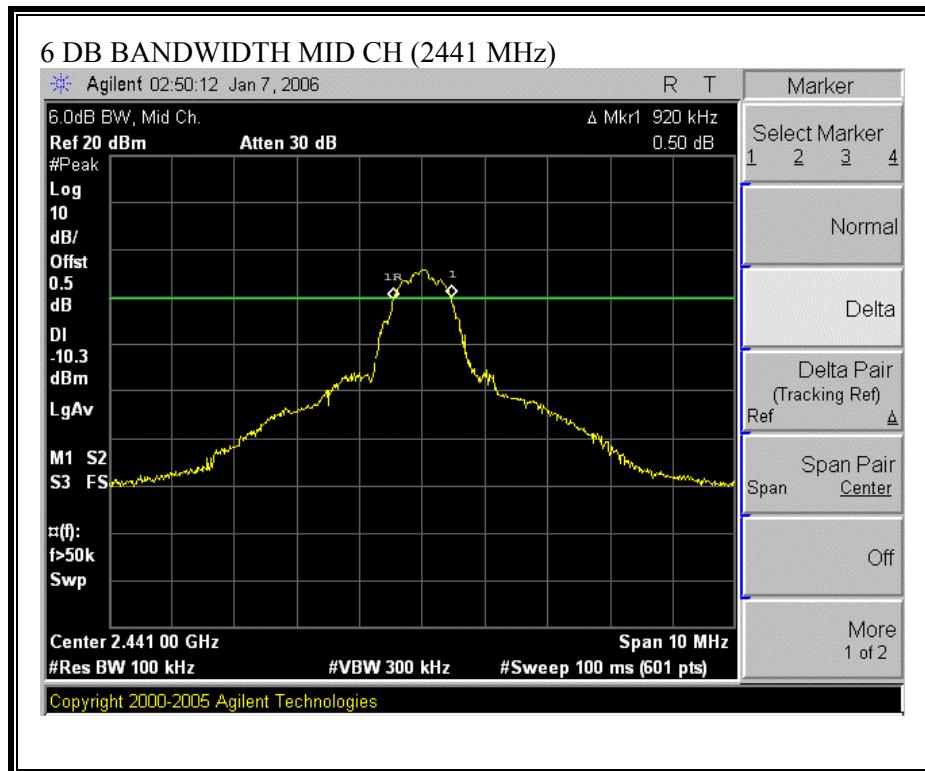
##### RESULTS

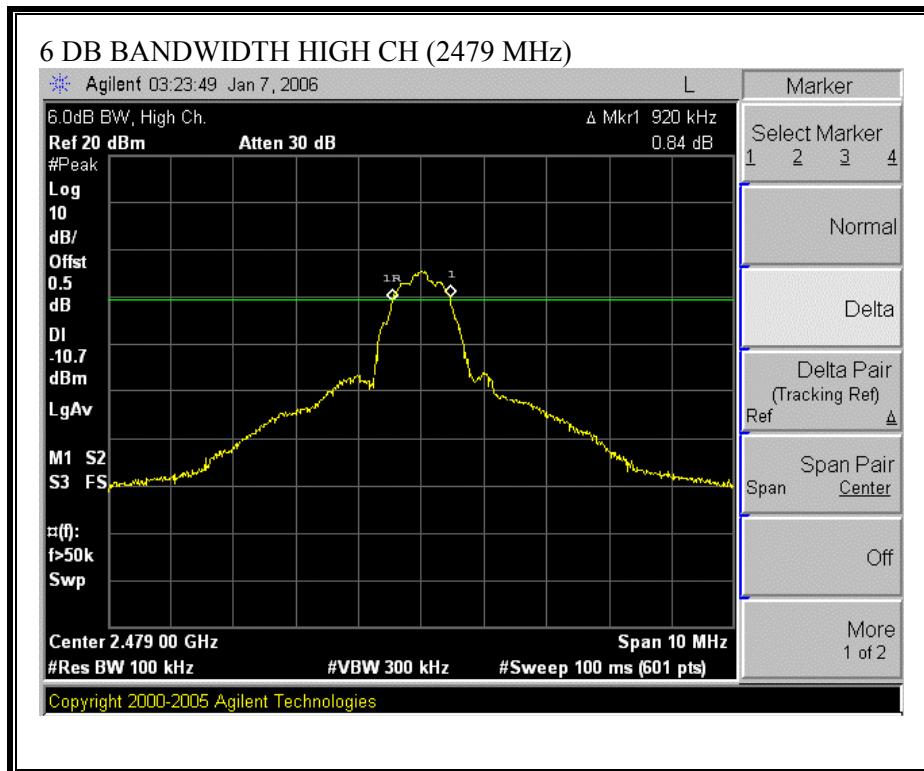
No non-compliance noted:

Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Margin (kHz)
Low	2402	920	500	417
Middle	2441	920	500	417
High	2479	920	500	417

## 6 DB BANDWIDTH







### 7.1.2. 99% BANDWIDTH

#### LIMIT

None; for reporting purposes only.

#### TEST PROCEDURE

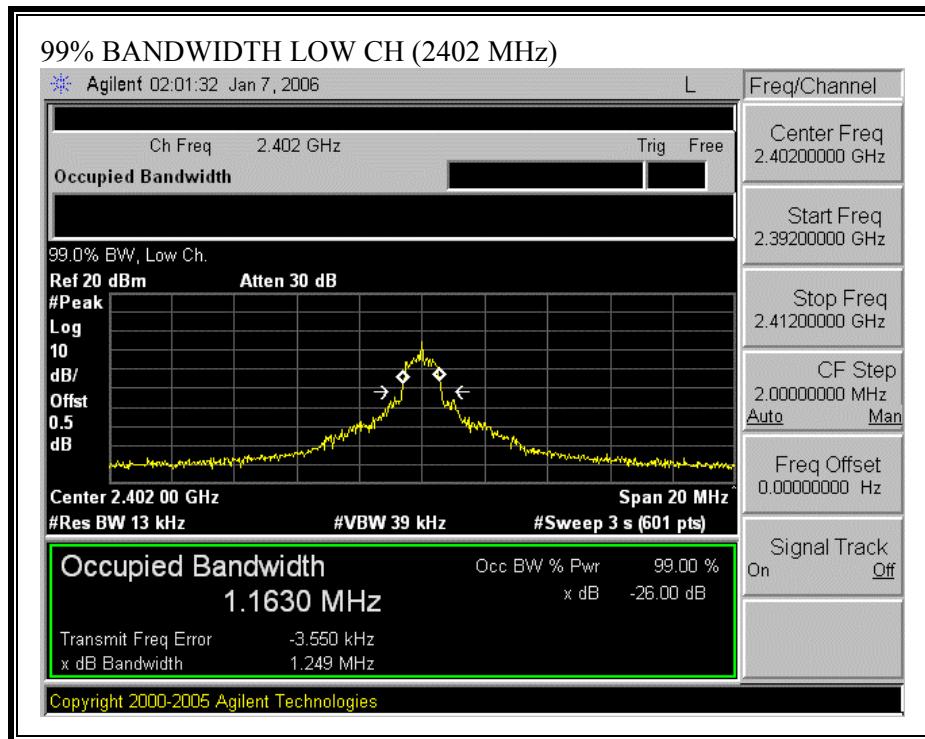
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

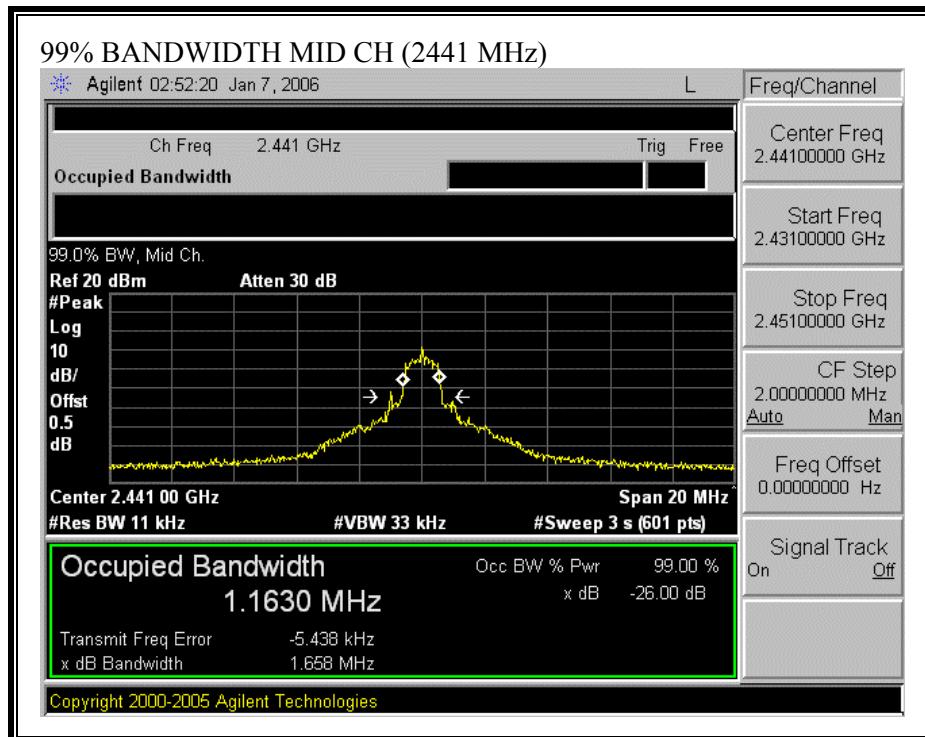
#### RESULTS

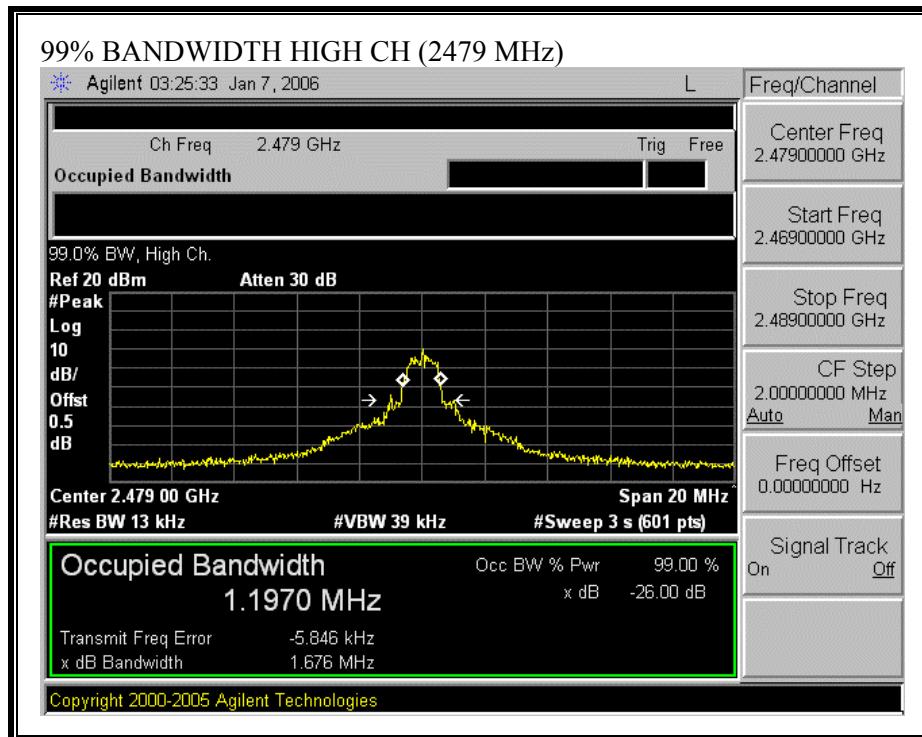
No non-compliance noted:

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.163
Middle	2441	1.163
High	2479	1.197

**99% BANDWIDTH**







### 7.1.3. 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) (4) Except as shown in paragraphs (b)(4) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§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.

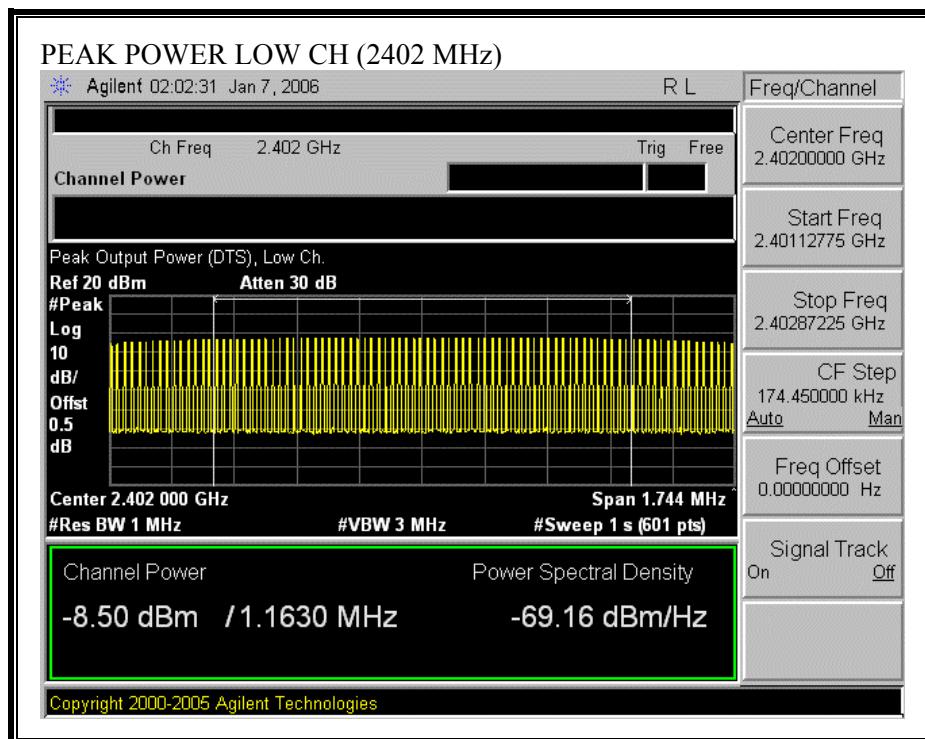
## **RESULTS**

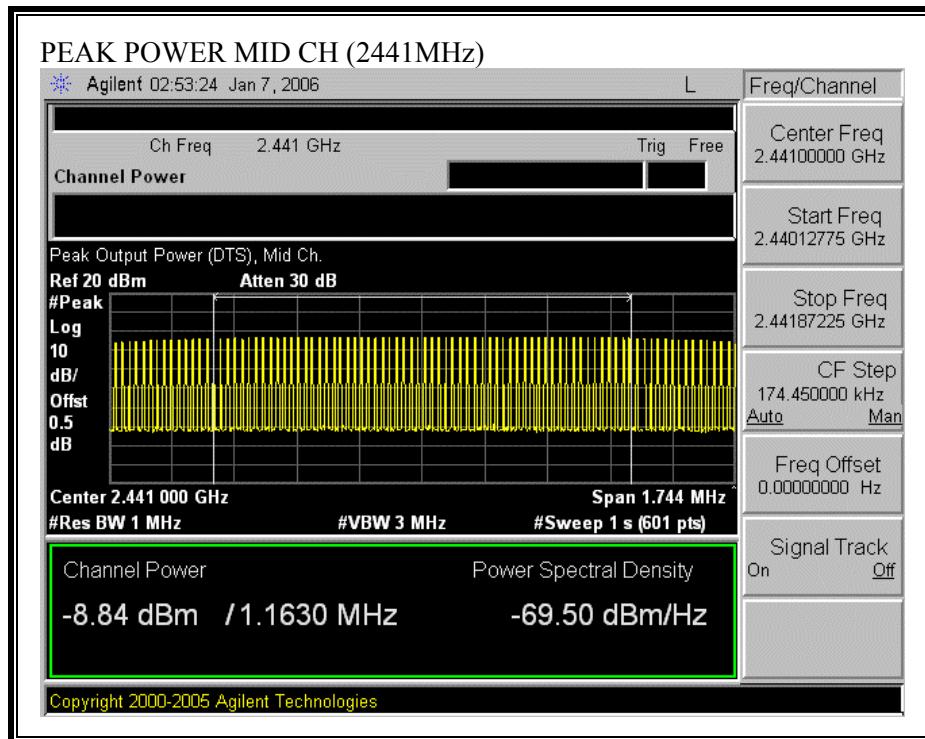
The maximum antenna gain is 0 dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm.

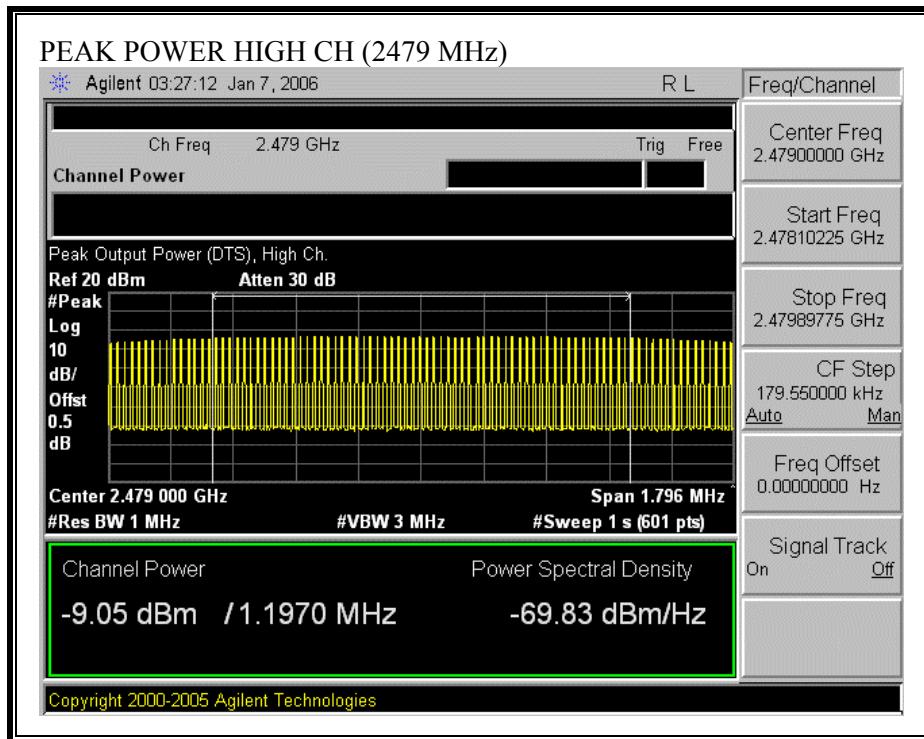
No non-compliance noted:

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-8.50	30	-38.50
Middle	2441	-8.84	30	-38.84
High	2479	-9.05	30	-39.05

**OUTPUT POWER**







#### 7.1.4. 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:

The cable assembly insertion loss of 10.7 dB (including 10 dB pad and 0.7 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2402	-11.06
Middle	2441	-11.40
High	2479	-11.36

### 7.1.5. PEAK POWER SPECTRAL DENSITY

#### LIMIT

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

#### TEST PROCEDURE

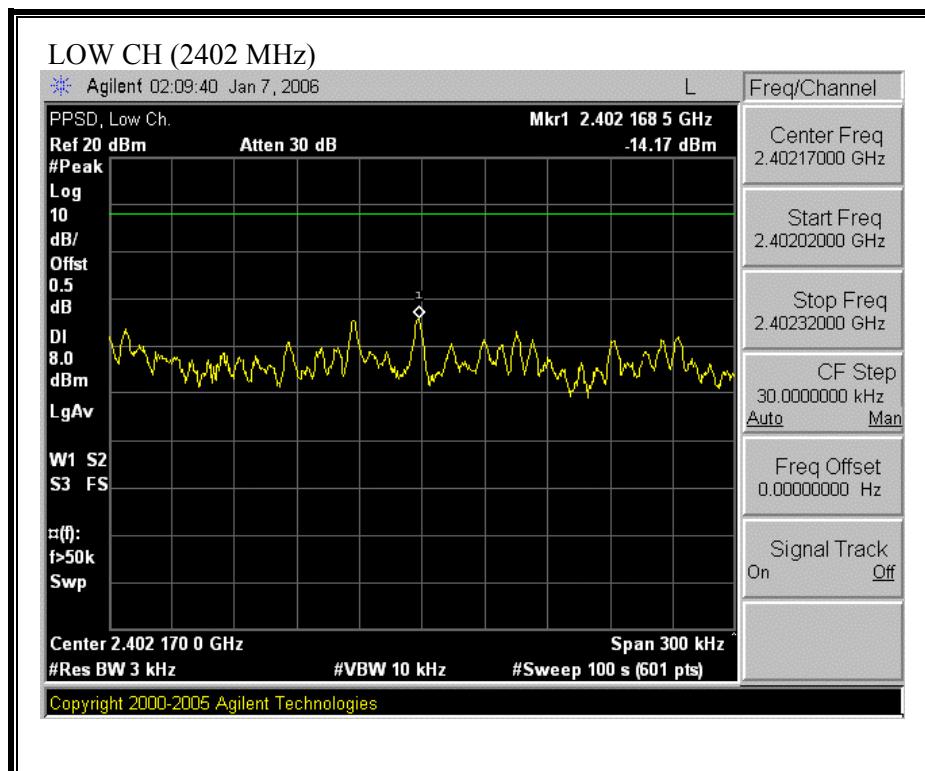
The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz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

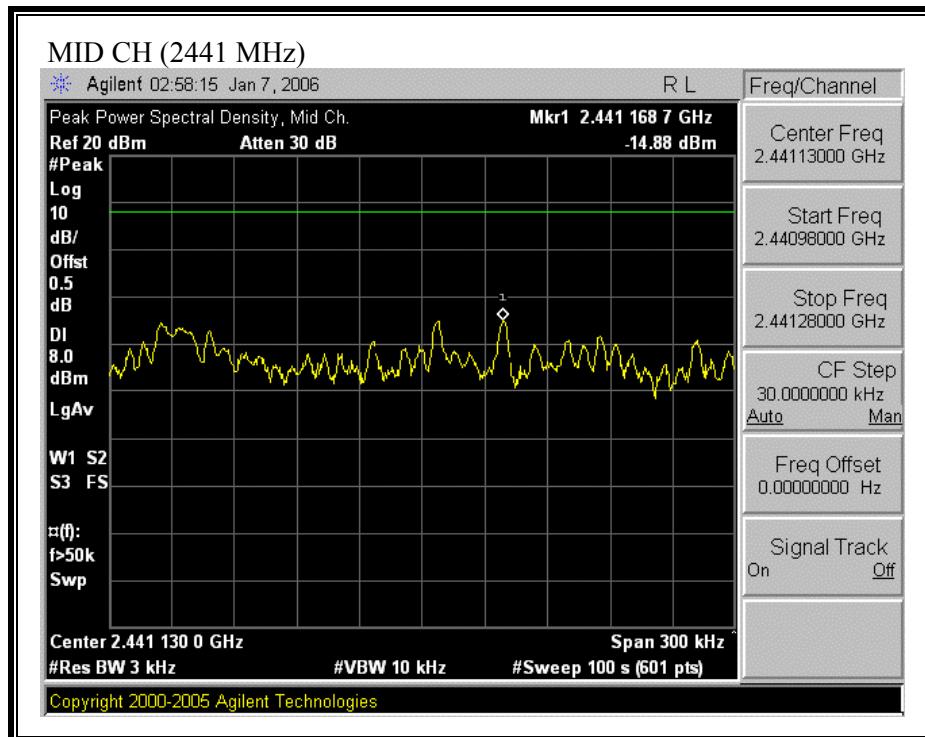
#### RESULTS

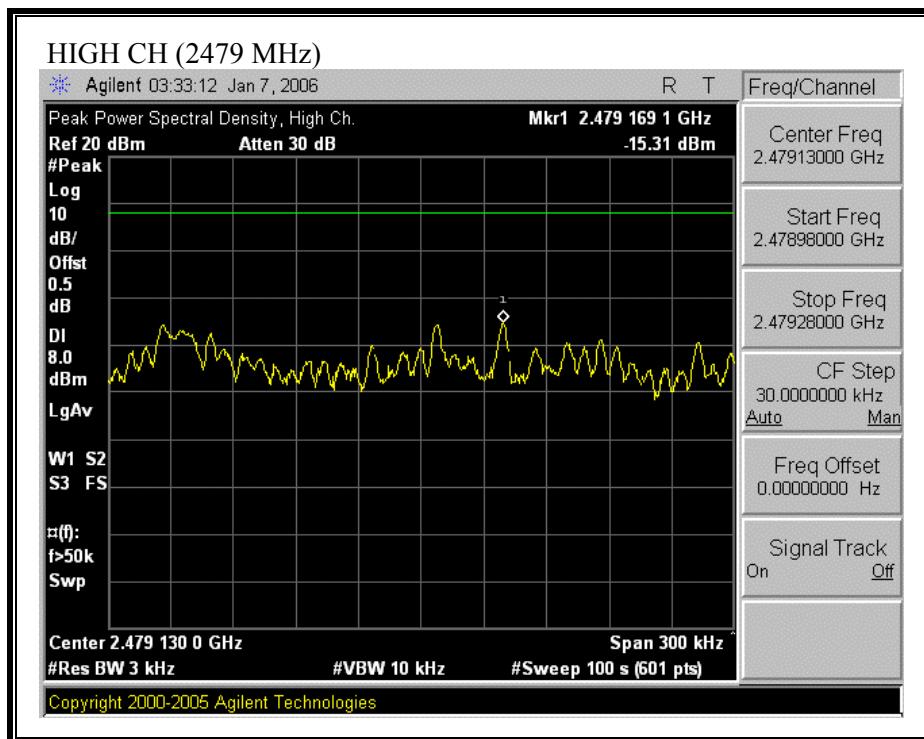
No non-compliance noted:

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-14.17	8	-22.17
Middle	2441	-14.88	8	-22.88
High	2479	-15.31	8	-23.31

**POWER SPECTRAL DENSITY**







### 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

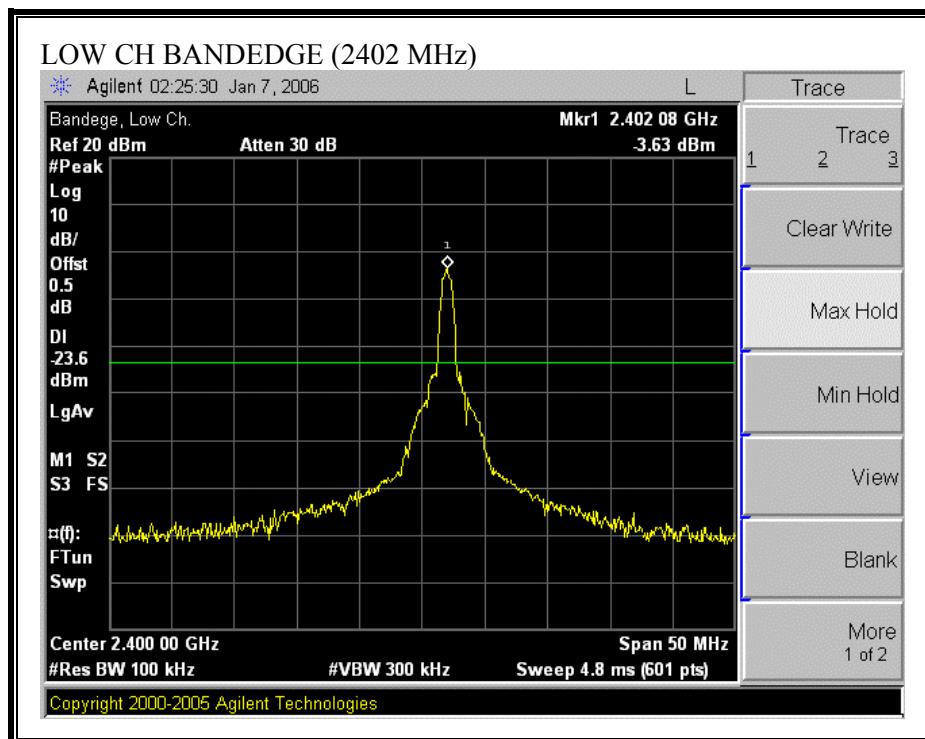
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

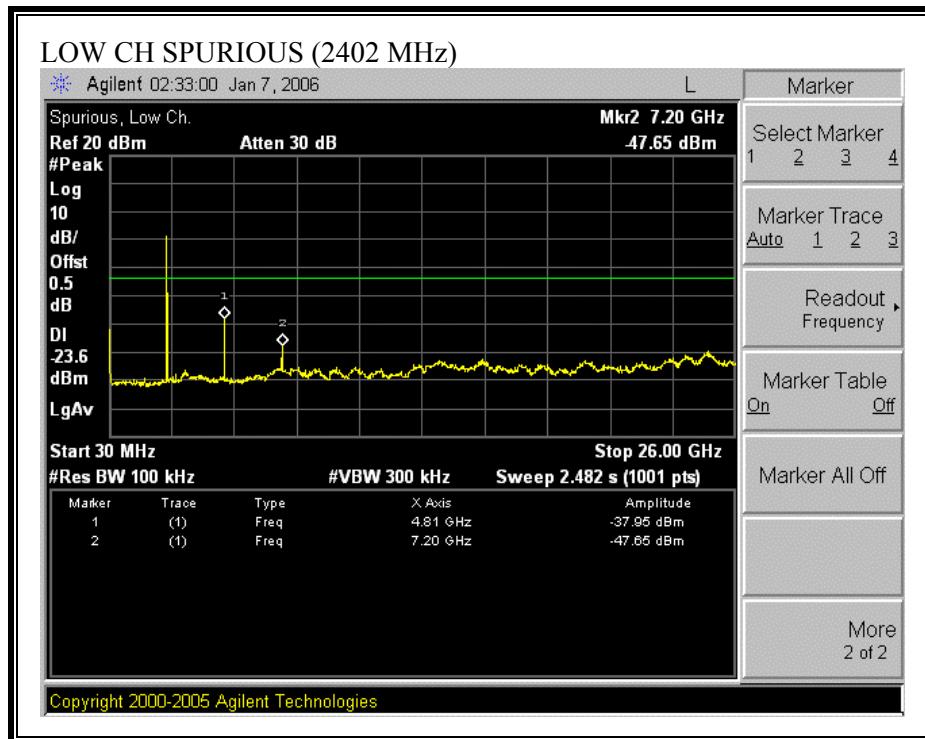
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

#### RESULTS

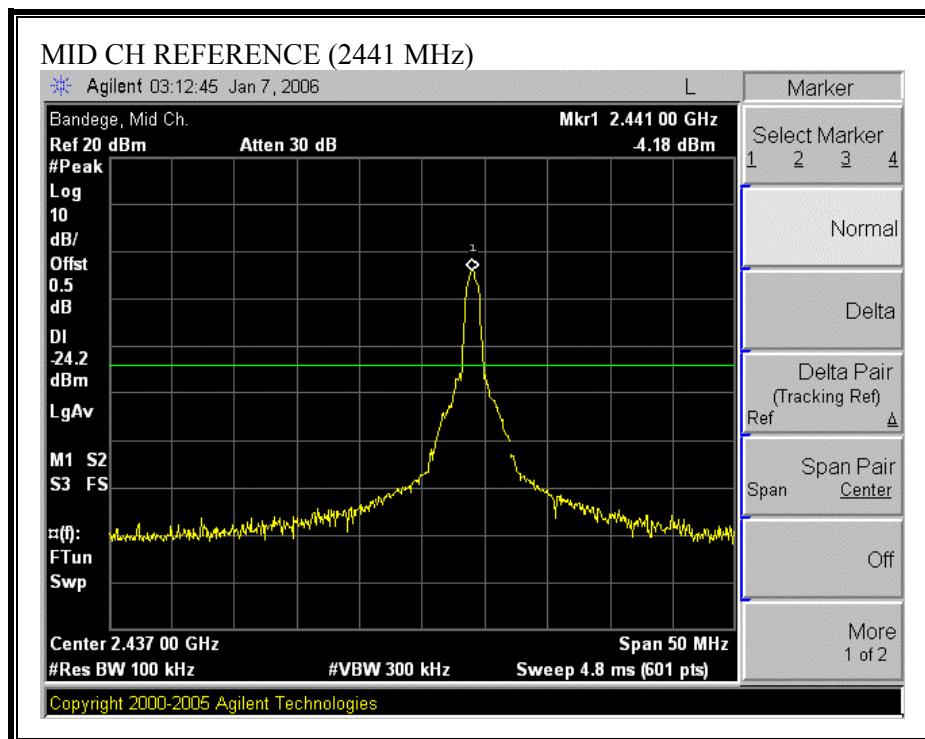
No non-compliance noted:

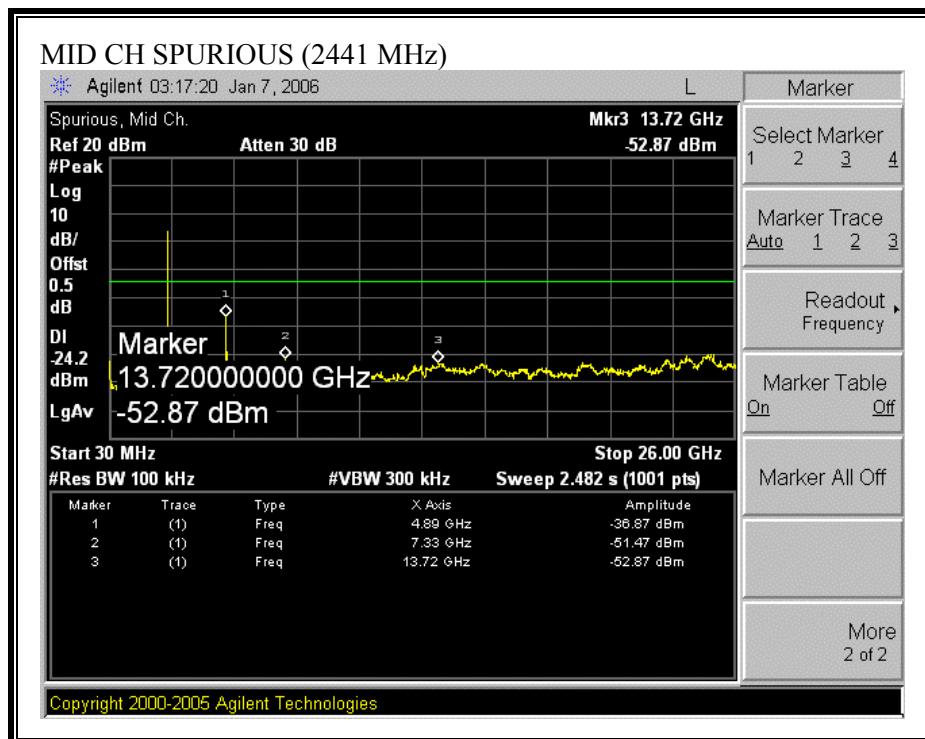
**SPURIOUS EMISSIONS, LOW CHANNEL (2402 MHz)**



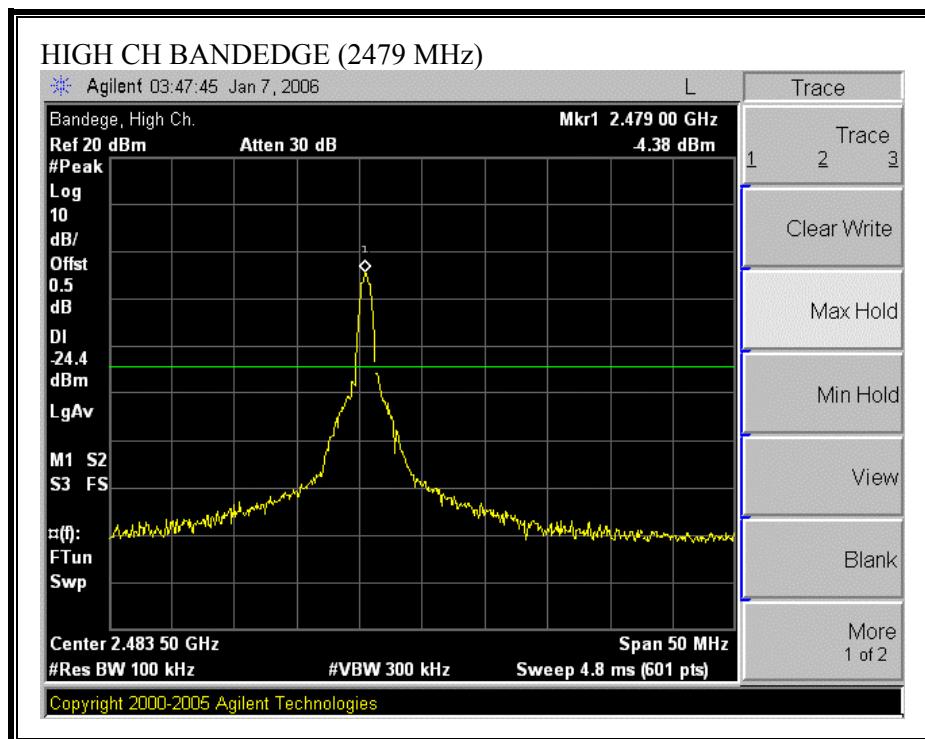


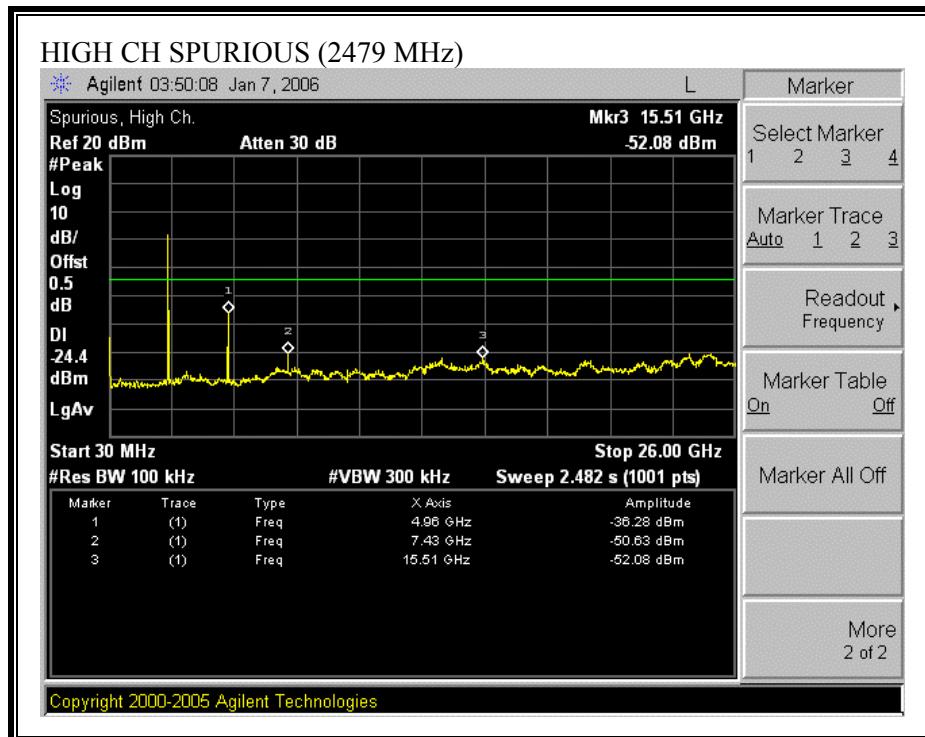
**SPURIOUS EMISSIONS, MID CHANNEL**





**SPURIOUS EMISSIONS, HIGH CHANNEL**





## 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
<sup>1</sup> 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	( <sup>2</sup> )
13.36 - 13.41			

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> 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.

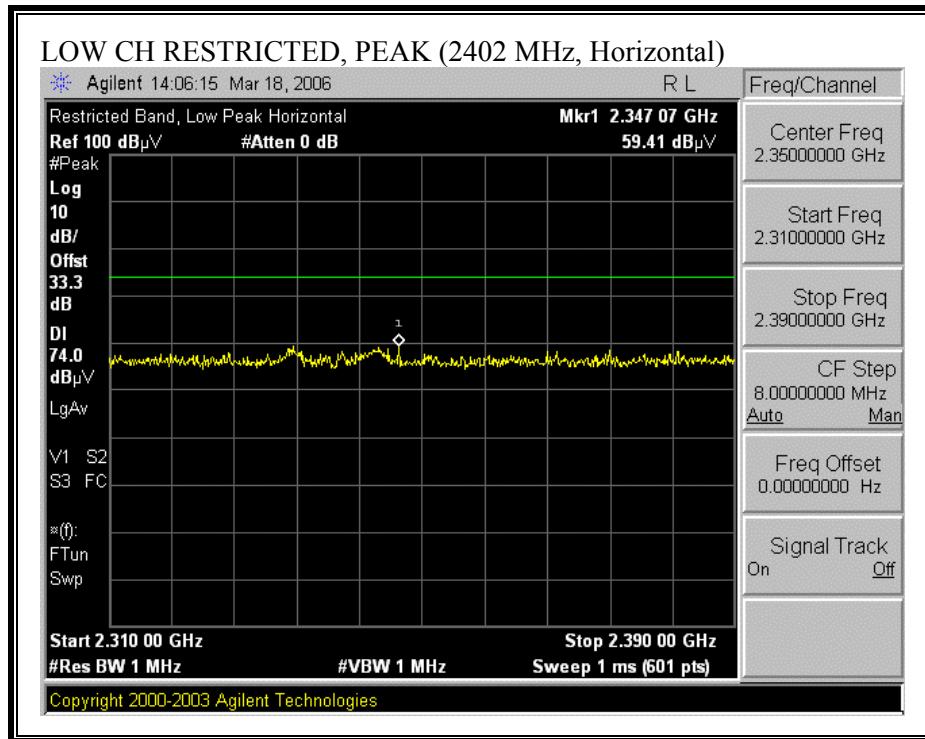
### **TEST RESULT**

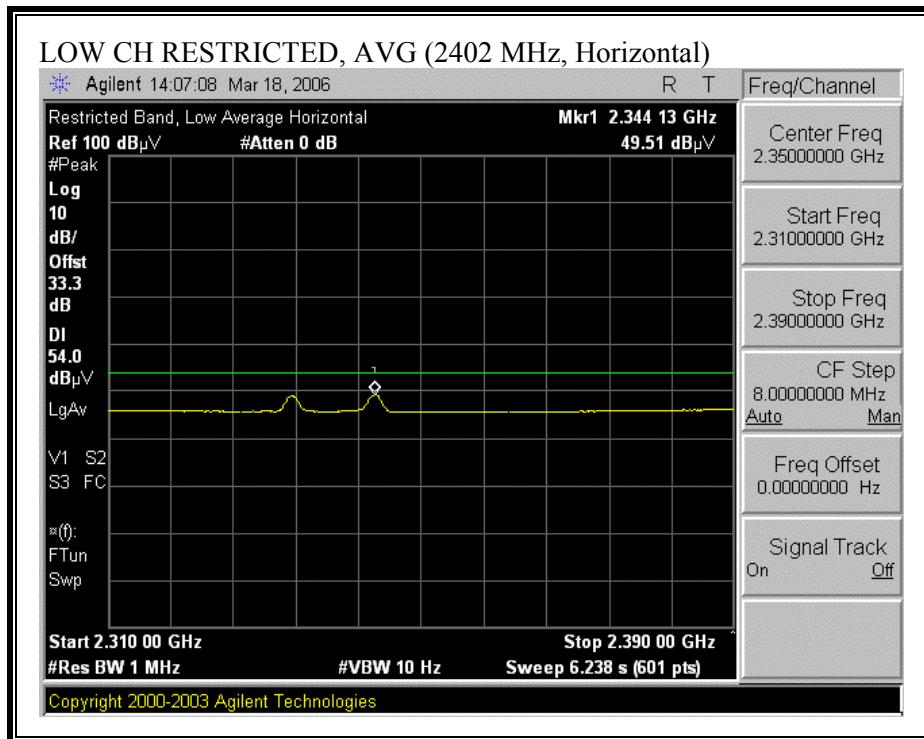
No non-compliance noted.

Note: The radiated emissions data documented in this section was tested with the configuration of EUT connecting to the host via a USB cable

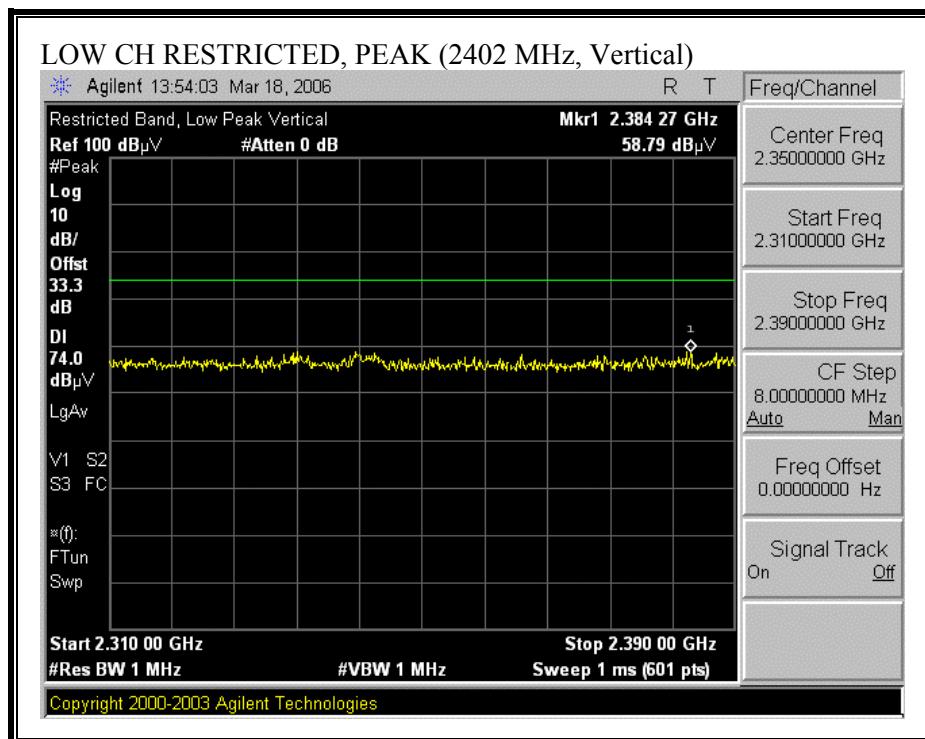
## 7.2.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

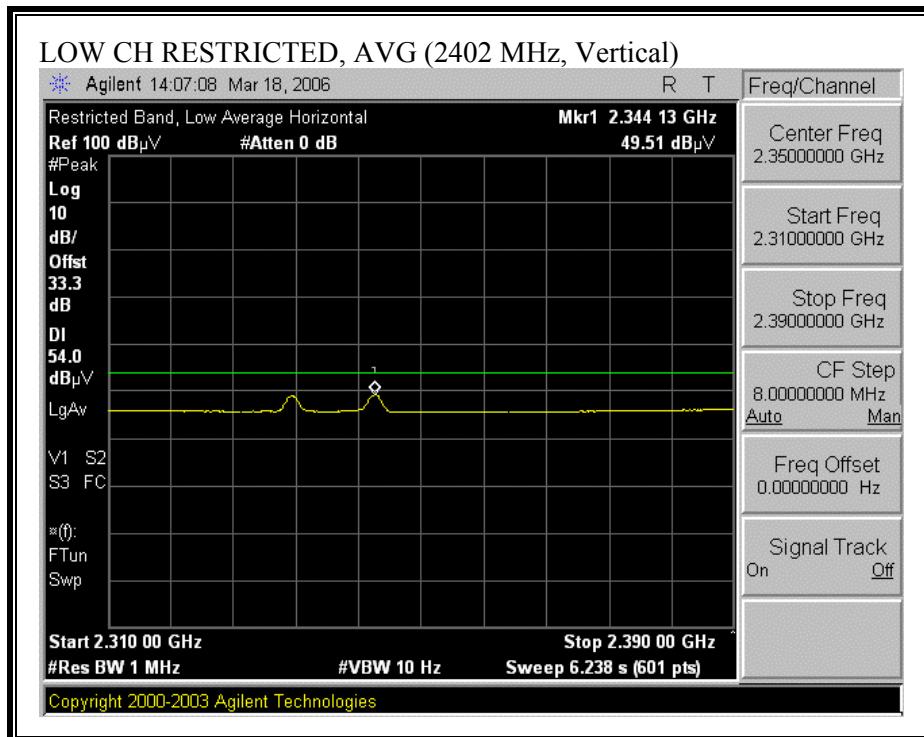
### RESTRICTED BANDEDGE (2402 MHz, LOW CHANNEL, HORIZONTAL)



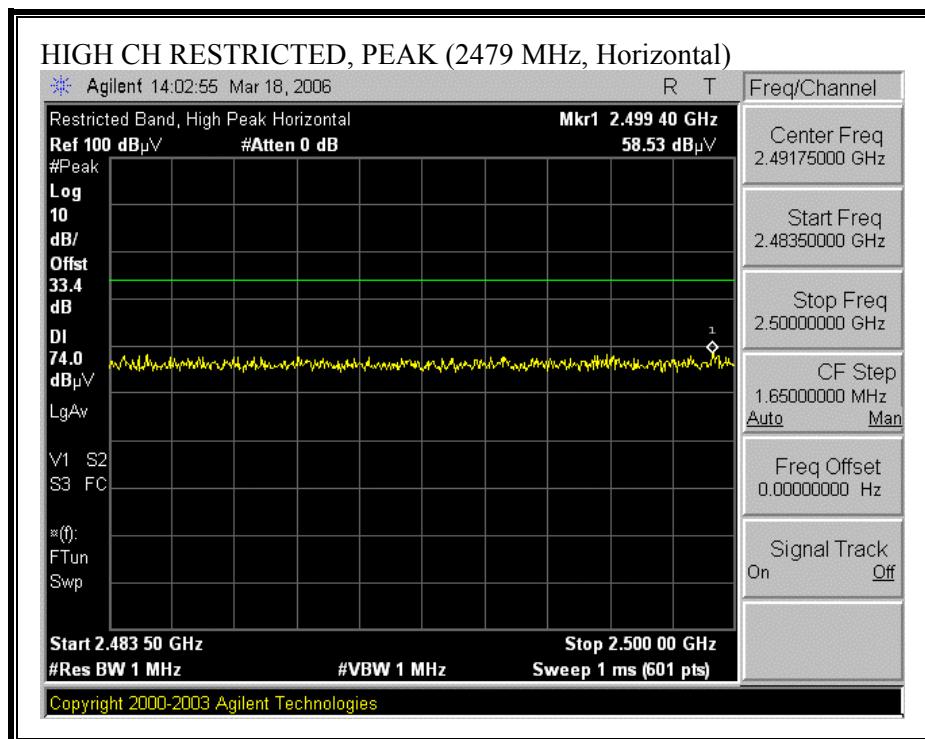


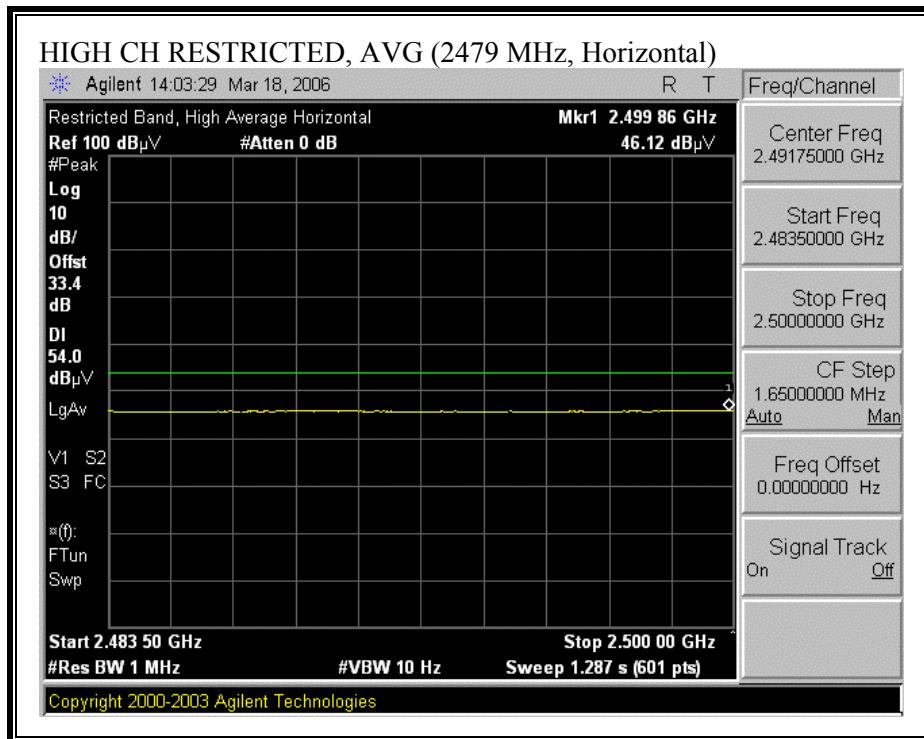
**RESTRICTED BANDEDGE (2402 MHz, LOW CHANNEL, VERTICAL)**



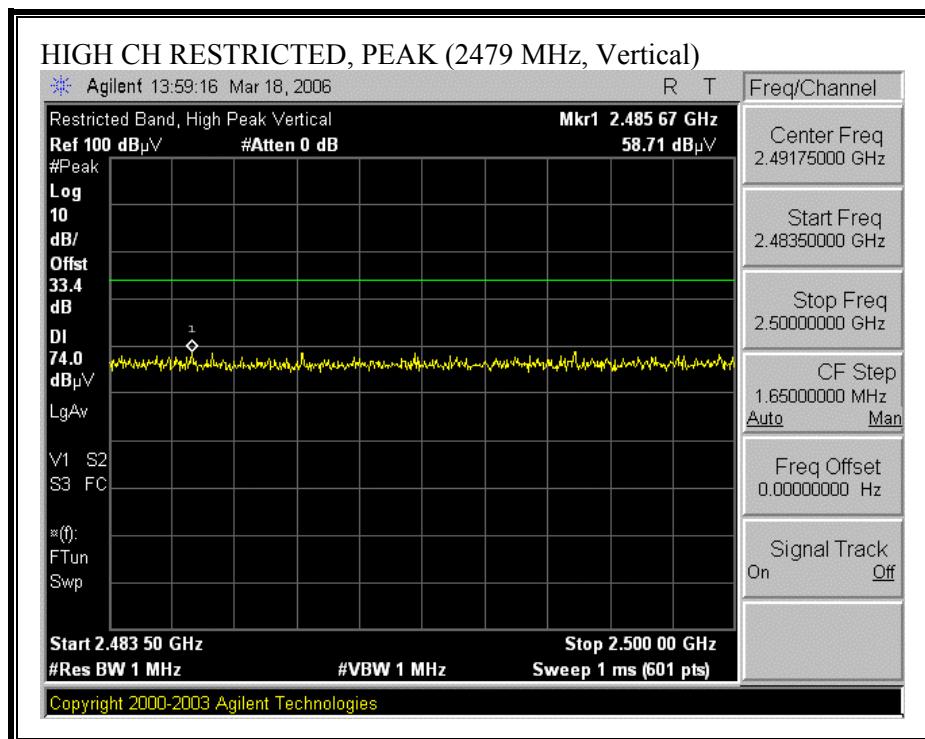


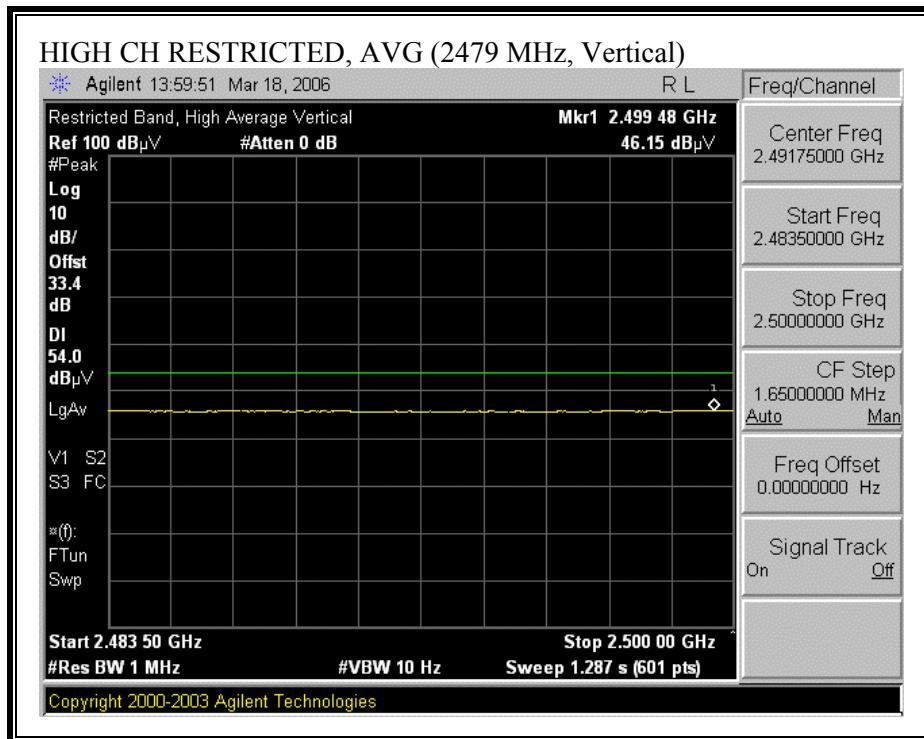
**RESTRICTED BANDEDGE (2480 MHz, HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (2479 MHz, HIGH CHANNEL, VERTICAL)**





## HARMONICS AND SPURIOUS EMISSIONS

03/27/06 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site C																																																																																																																																																																																																																																																																																																																																																																				
<p><b>Test Engineer:</b> Alvin Ilarina  <b>Project #:</b> 06U10188  <b>Company:</b> Gyration  <b>EUT Description:</b> 2.4GHz Wireless USB  <b>EUT M/N:</b> AC02043-001  <b>Test Target:</b> FCC15.247  <b>Mode Of Operation:</b> TX</p> <p><b>Test Equipment:</b></p> <table border="1"> <tr> <td>Horn 1-18GHz</td> <td>Pre-amplifier 1-26GHz</td> <td>Pre-amplifier 26-40GHz</td> <td colspan="3">Horn &gt; 18GHz</td> <td>Limit</td> </tr> <tr> <td>T120; S/N: 29310 @3m</td> <td>T87 Miteq 924342</td> <td></td> <td colspan="3"></td> <td>FCC Class B</td> </tr> <tr> <td colspan="15">Hi Frequency Cables</td> </tr> <tr> <td colspan="2">2 foot cable</td> <td colspan="2">3 foot cable</td> <td colspan="2">12 foot cable</td> <td>HPF</td> <td>Reject Filter</td> <td colspan="6">Peak Measurements RBW=VBW=1MHz</td> </tr> <tr> <td colspan="2">Joseph 187207005</td> <td colspan="2"></td> <td colspan="2">Gordon 203134001</td> <td>HPF_4.0GHz</td> <td></td> <td colspan="6">Average Measurements RBW=1MHz ; VBW=10Hz</td> </tr> </table> <p><b>Measurement Data:</b></p> <table border="1"> <thead> <tr> <th>f GHz</th> <th>Dist (m)</th> <th>Read Pk dBuV</th> <th>Read Avg dBuV</th> <th>AF dB/m</th> <th>CL dB</th> <th>Amp dB</th> <th>D Corr dB</th> <th>Fltr dB</th> <th>Peak dBuV/m</th> <th>Avg dBuV/m</th> <th>Pk Lim dBuV/m</th> <th>Avg Lim dBuV/m</th> <th>Pk Mar dB</th> <th>Avg Mar dB</th> <th>Notes (V/H)</th> </tr> </thead> <tbody> <tr> <td colspan="15"><b>Low Ch</b></td> </tr> <tr> <td>4.803</td> <td>3.0</td> <td>62.8</td> <td>52.2</td> <td>33.9</td> <td>3.1</td> <td>-45.3</td> <td>0.0</td> <td>0.6</td> <td>55.1</td> <td>44.5</td> <td>74</td> <td>54</td> <td>-18.9</td> <td>-9.5</td> <td>V</td> </tr> <tr> <td>7.206</td> <td>3.0</td> <td>64.5</td> <td>53.5</td> <td>35.9</td> <td>3.4</td> <td>-43.4</td> <td>0.0</td> <td>0.6</td> <td>61.0</td> <td>50.0</td> <td>74</td> <td>54</td> <td>-13.0</td> <td>-4.0</td> <td>V</td> </tr> <tr> <td>9.607</td> <td>3.0</td> <td>59.4</td> <td>40.7</td> <td>37.5</td> <td>4.0</td> <td>-40.0</td> <td>0.0</td> <td>0.8</td> <td>61.8</td> <td>43.1</td> <td>74</td> <td>54</td> <td>-12.2</td> <td>-10.9</td> <td>V</td> </tr> <tr> <td>4.803</td> <td>3.0</td> <td>62.3</td> <td>52.1</td> <td>33.9</td> <td>3.1</td> <td>-45.3</td> <td>0.0</td> <td>0.6</td> <td>54.6</td> <td>44.4</td> <td>74</td> <td>54</td> <td>-19.4</td> <td>-9.6</td> <td>H</td> </tr> <tr> <td>7.206</td> <td>3.0</td> <td>60.7</td> <td>48.6</td> <td>35.9</td> <td>3.4</td> <td>-43.4</td> <td>0.0</td> <td>0.6</td> <td>57.2</td> <td>45.1</td> <td>74</td> <td>54</td> <td>-16.8</td> <td>-8.9</td> <td>H</td> </tr> <tr> <td>9.607</td> <td>3.0</td> <td>53.4</td> <td>37.6</td> <td>37.5</td> <td>4.0</td> <td>-40.0</td> <td>0.0</td> <td>0.8</td> <td>55.8</td> <td>40.0</td> <td>74</td> <td>54</td> <td>-18.2</td> <td>-14.0</td> <td>H</td> </tr> <tr> <td colspan="15"><b>Mid Ch</b></td> </tr> <tr> <td>4.882</td> <td>3.0</td> <td>56.4</td> <td>47.8</td> <td>34.0</td> <td>3.1</td> <td>-45.3</td> <td>0.0</td> <td>0.6</td> <td>48.7</td> <td>40.1</td> <td>74</td> <td>54</td> <td>-25.3</td> <td>-13.9</td> <td>V</td> </tr> <tr> <td>7.323</td> <td>3.0</td> <td>48.4</td> <td>39.2</td> <td>35.9</td> <td>3.4</td> <td>-43.2</td> <td>0.0</td> <td>0.6</td> <td>45.2</td> <td>36.0</td> <td>74</td> <td>54</td> <td>-28.8</td> <td>-18.0</td> <td>V</td> </tr> <tr> <td>4.882</td> <td>3.0</td> <td>60.4</td> <td>49.2</td> <td>34.0</td> <td>3.1</td> <td>-45.3</td> <td>0.0</td> <td>0.6</td> <td>52.7</td> <td>41.5</td> <td>74</td> <td>54</td> <td>-21.3</td> <td>-12.5</td> <td>H</td> </tr> <tr> <td>7.323</td> <td>3.0</td> <td>54.3</td> <td>40.8</td> <td>35.9</td> <td>3.4</td> <td>-43.2</td> <td>0.0</td> <td>0.6</td> <td>51.1</td> <td>37.6</td> <td>74</td> <td>54</td> <td>-22.9</td> <td>-16.4</td> <td>H</td> </tr> <tr> <td colspan="15"><b>High Ch</b></td> </tr> <tr> <td>4.958</td> <td>3.0</td> <td>58.0</td> <td>43.8</td> <td>34.0</td> <td>3.1</td> <td>-45.4</td> <td>0.0</td> <td>0.6</td> <td>50.4</td> <td>36.2</td> <td>74</td> <td>54</td> <td>-23.6</td> <td>-17.8</td> <td>V</td> </tr> <tr> <td>7.437</td> <td>3.0</td> <td>59.5</td> <td>43.1</td> <td>35.9</td> <td>3.5</td> <td>-43.0</td> <td>0.0</td> <td>0.6</td> <td>56.5</td> <td>40.1</td> <td>74</td> <td>54</td> <td>-17.5</td> <td>-13.9</td> <td>V</td> </tr> <tr> <td>4.958</td> <td>3.0</td> <td>60.7</td> <td>46.6</td> <td>34.0</td> <td>3.1</td> <td>-45.4</td> <td>0.0</td> <td>0.6</td> <td>53.1</td> <td>39.0</td> <td>74</td> <td>54</td> <td>-20.9</td> <td>-15.0</td> <td>H</td> </tr> <tr> <td>7.437</td> <td>3.0</td> <td>55.3</td> <td>41.1</td> <td>35.9</td> <td>3.5</td> <td>-43.0</td> <td>0.0</td> <td>0.6</td> <td>52.3</td> <td>38.1</td> <td>74</td> <td>54</td> <td>-21.7</td> <td>-15.9</td> <td>H</td> </tr> </tbody> </table> <p><b>Note:</b> No other emissions were detected above the system noise floor.</p>															Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz			Limit	T120; S/N: 29310 @3m	T87 Miteq 924342					FCC Class B	Hi Frequency Cables															2 foot cable		3 foot cable		12 foot cable		HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz						Joseph 187207005				Gordon 203134001		HPF_4.0GHz		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)	<b>Low Ch</b>															4.803	3.0	62.8	52.2	33.9	3.1	-45.3	0.0	0.6	55.1	44.5	74	54	-18.9	-9.5	V	7.206	3.0	64.5	53.5	35.9	3.4	-43.4	0.0	0.6	61.0	50.0	74	54	-13.0	-4.0	V	9.607	3.0	59.4	40.7	37.5	4.0	-40.0	0.0	0.8	61.8	43.1	74	54	-12.2	-10.9	V	4.803	3.0	62.3	52.1	33.9	3.1	-45.3	0.0	0.6	54.6	44.4	74	54	-19.4	-9.6	H	7.206	3.0	60.7	48.6	35.9	3.4	-43.4	0.0	0.6	57.2	45.1	74	54	-16.8	-8.9	H	9.607	3.0	53.4	37.6	37.5	4.0	-40.0	0.0	0.8	55.8	40.0	74	54	-18.2	-14.0	H	<b>Mid Ch</b>															4.882	3.0	56.4	47.8	34.0	3.1	-45.3	0.0	0.6	48.7	40.1	74	54	-25.3	-13.9	V	7.323	3.0	48.4	39.2	35.9	3.4	-43.2	0.0	0.6	45.2	36.0	74	54	-28.8	-18.0	V	4.882	3.0	60.4	49.2	34.0	3.1	-45.3	0.0	0.6	52.7	41.5	74	54	-21.3	-12.5	H	7.323	3.0	54.3	40.8	35.9	3.4	-43.2	0.0	0.6	51.1	37.6	74	54	-22.9	-16.4	H	<b>High Ch</b>															4.958	3.0	58.0	43.8	34.0	3.1	-45.4	0.0	0.6	50.4	36.2	74	54	-23.6	-17.8	V	7.437	3.0	59.5	43.1	35.9	3.5	-43.0	0.0	0.6	56.5	40.1	74	54	-17.5	-13.9	V	4.958	3.0	60.7	46.6	34.0	3.1	-45.4	0.0	0.6	53.1	39.0	74	54	-20.9	-15.0	H	7.437	3.0	55.3	41.1	35.9	3.5	-43.0	0.0	0.6	52.3	38.1	74	54	-21.7	-15.9	H
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### 7.2.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

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

#### HORIZONTAL DATA



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

Data#: 6 File#: 30MHz-1000MHz2.EMI Date: 03-24-2006 Time: 19:08:42  
Audix ATC

Condition: FCC CLASS-B HORIZONTAL  
Test Operator : Alvin Ilarina  
Project # : 06U10188-1  
Company : Gyration  
EUT : 2.4GHz Wireless USB Transceiver  
Model No : AC02043-001, Orc  
Configuration : EUT with PC  
Mode of operation: Tx Mid  
Target of Test : FCC Class B

Page: 1

Freq	Read		Limit	Over	Remark
	Level	Factor			
MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	509.180	18.41	20.36	38.77	46.00 -7.23 Peak
2	575.140	18.42	21.20	39.62	46.00 -6.38 Peak
3	676.990	19.80	22.74	42.54	46.00 -3.46 QP
4	676.990	22.53	22.74	45.27	46.00 -0.73 Peak

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

**VERTICAL DATA**



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

Data#: 10 File#: 30MHz-1000MHz2.EMI Date: 03-24-2006 Time: 19:12:00  
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Condition: FCC CLASS-B VERTICAL  
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EUT : 2.4GHz Wireless USB Transceiver  
Model No : AC02043-001, Orc  
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Target of Test : FCC Class B

Page: 1

Freq	Read		Limit Line	Over Limit	Remark
	Level	Factor			
MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	313.240	22.16	16.05	38.21	46.00 -7.79 Peak
2	373.380	19.27	17.46	36.73	46.00 -9.27 Peak
3	674.080	19.30	22.71	42.01	46.00 -3.99 QP
4 *	674.080	23.35	22.71	46.06	46.00 0.06 Peak

#### 7.2.4. 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  $\mu$ H/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.

The lower limit applies at the boundary between the frequency ranges.

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.

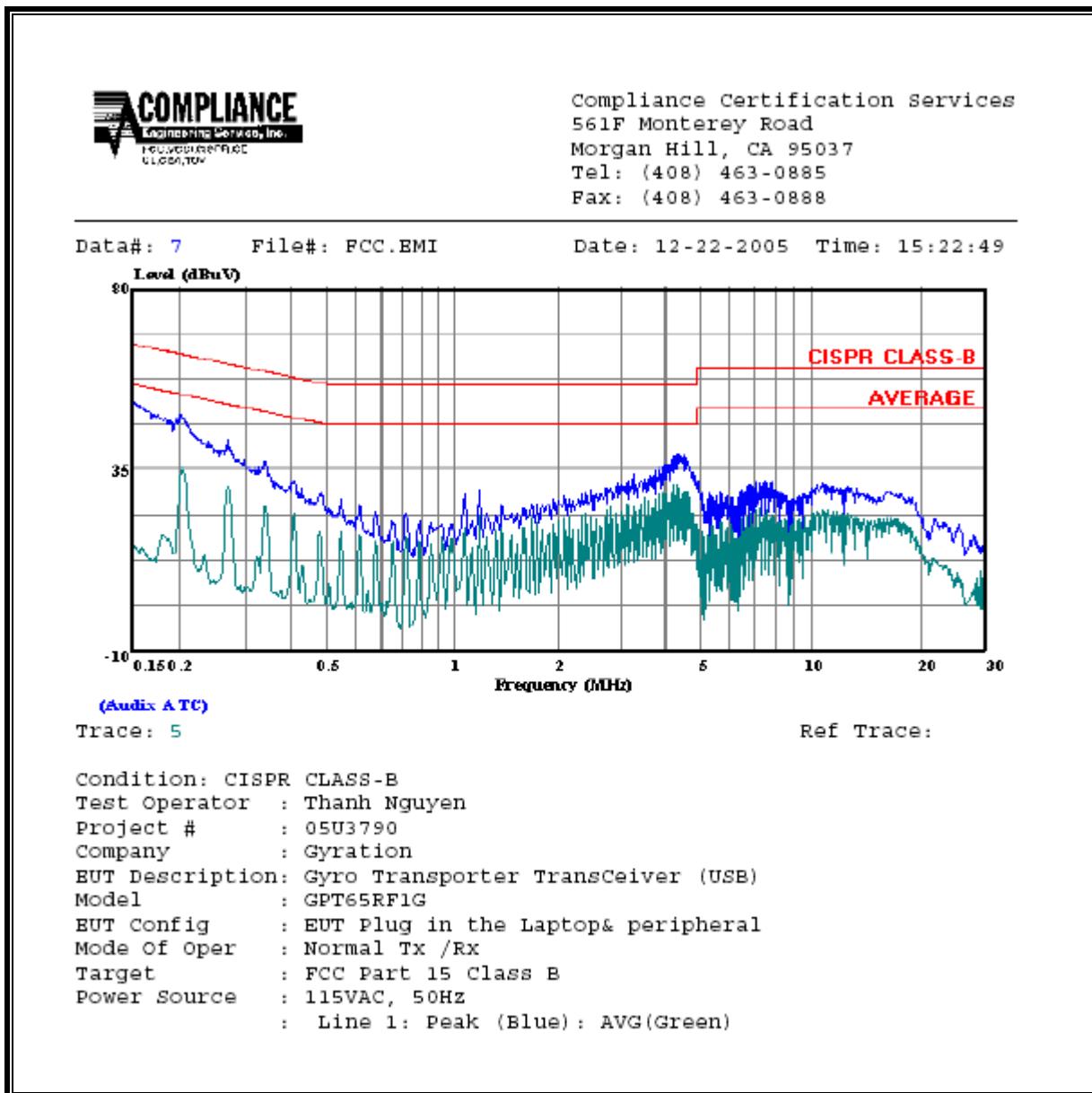
##### RESULTS

No non-compliance noted:

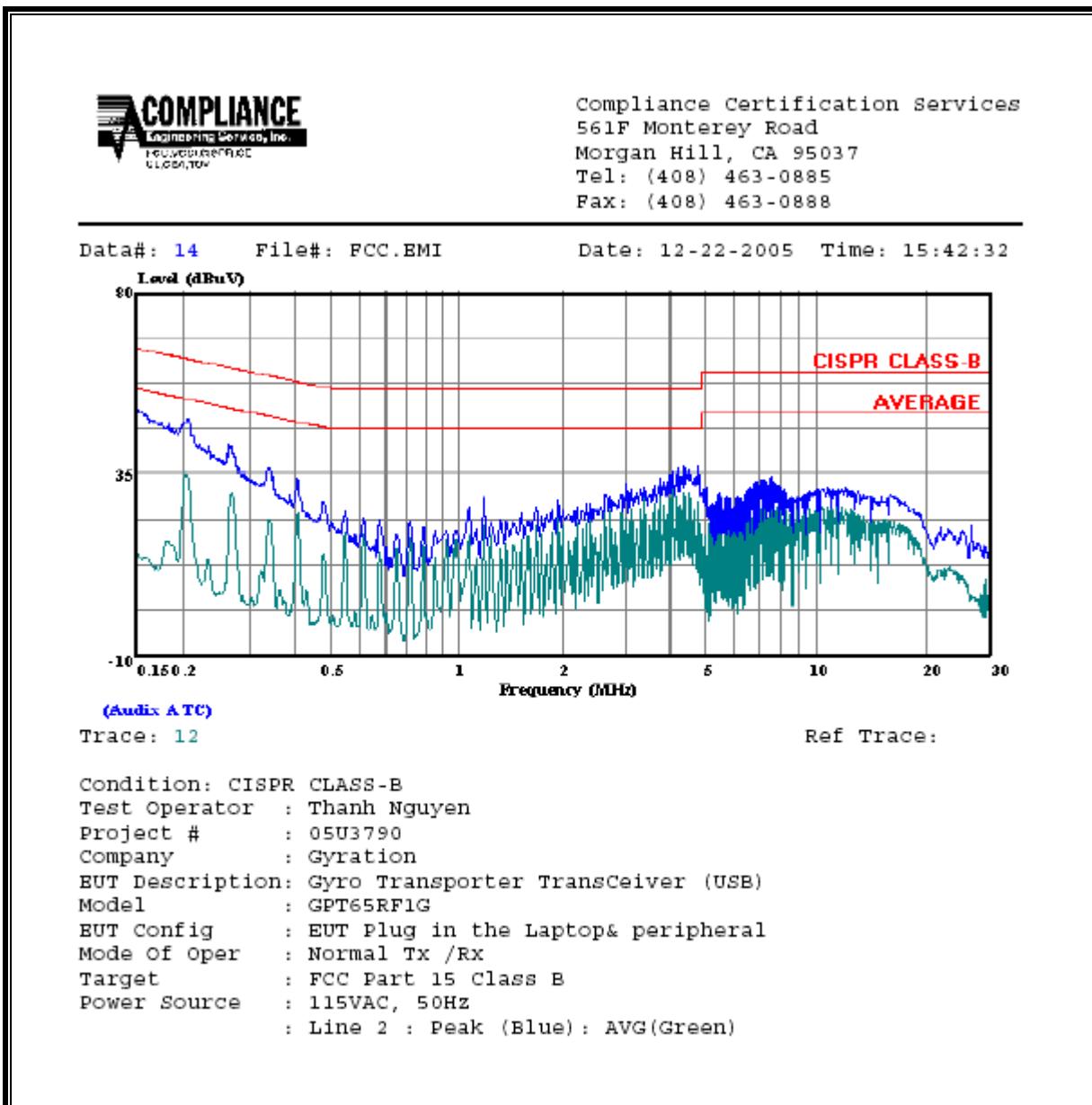
**6 WORST EMISSIONS**

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Closs (dB)	Limit QP	EN B AV	Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)				QP (dB)	AV (dB)	
0.20	46.00	--	--	0.00	63.53	53.53	-17.53	-7.53	L1
0.27	49.20	--	--	0.00	61.06	51.06	-11.86	-1.86	L1
0.68	39.40	--	--	0.00	56.00	46.00	-16.60	-6.60	L1
0.20	47.80	--	--	0.00	63.49	53.49	-15.69	-5.69	L2
0.27	46.10	--	--	0.00	61.06	51.06	-14.96	-4.96	L2
0.68	39.90	--	--	0.00	56.00	46.00	-16.10	-6.10	L2
6 Worst Data									

**LINE 1 RESULT**

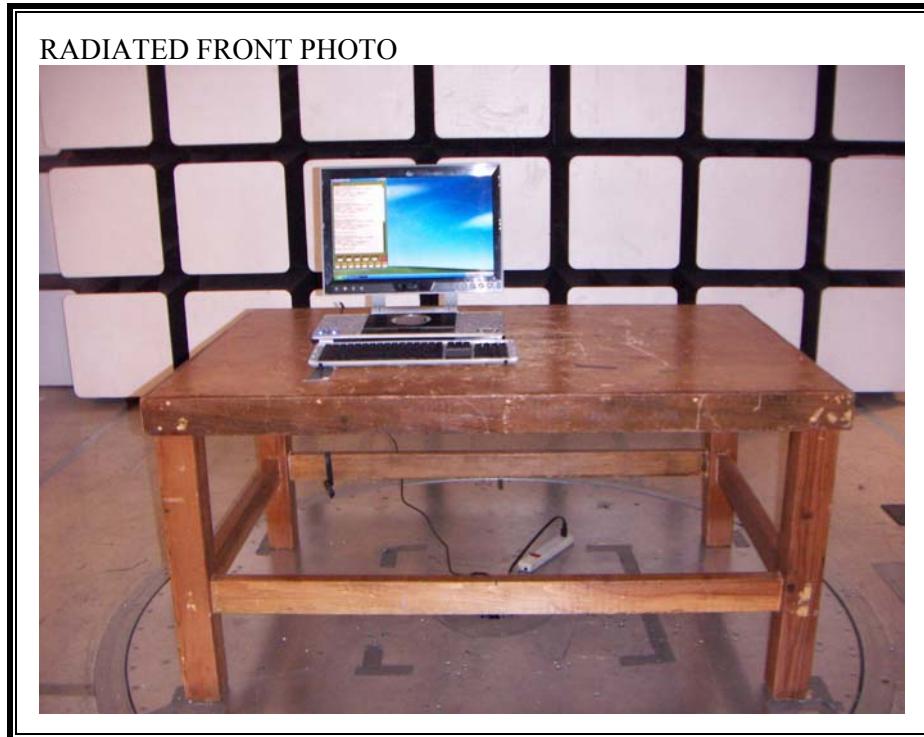


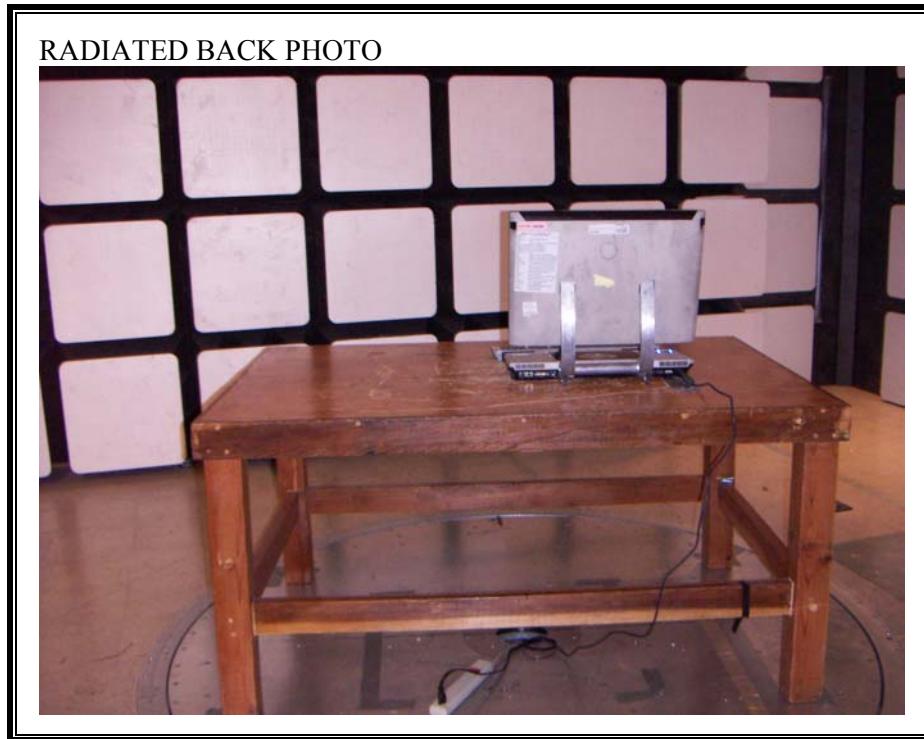
**LINE 2 RESULT**



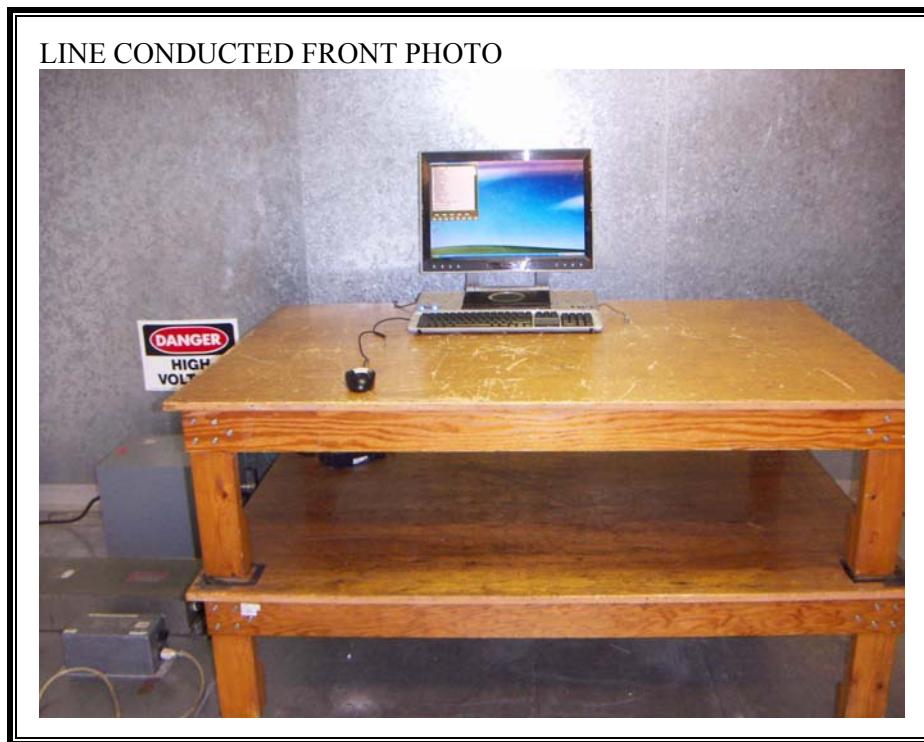
## 8. SETUP PHOTOS

### RADIATED RF MEASUREMENT SETUP





**POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP**



LINE CONDUCTED BACK PHOTO



**END OF REPORT**