



**FCC CFR47 CLASS II PERMISSIVE CHANGE  
CERTIFICATION**

**TEST REPORT**

**FOR**

**802.11 a/b/g Mini-PCI Module**

**MODEL NUMBER: AR5BMB-44**

**FCC ID: PPD-AR5BMB-00044**

**REPORT NUMBER: 04U2852-1**

**ISSUE DATE: AUGUST 11, 2004**

*Prepared for*

**ATHEROS COMMUNICATIONS, INC.**

**529 ALMANOR AVENUE**

**SUNNYVALE, CA 94085**

**U.S.A.**

*Prepared by*

**COMPLIANCE CERTIFICATION SERVICES**

**561F MONTEREY ROAD,**

**MORGAN HILL, CA 95037, U.S.A.**

**TEL: (408) 463-0885**

**FAX: (408) 463-0888**



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## 1. TEST RESULT CERTIFICATION

**COMPANY NAME:** ATHEROS COMMUNICATIONS, INC.  
529 ALMANOR AVENUE  
SUNNYVALE, CA 94085

**EUT DESCRIPTION:** 802.11 a/b/g Mini-PCI Module

**MODEL:** AR5BMB-44

**DATE TESTED:** JULY 22, 2004- AUGUST 2, 2004

| 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:** This document reports conditions under which testing was conducted and results of tests performed. 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.

Approved & Released For CCS By:

Tested By:



YAN ZHENG  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

CHIN PANG  
EMC TECHNICIAN  
COMPLIANCE CERTIFICATION SERVICES

## 2. EUT DESCRIPTION

### 2.1. DESCRIPTION OF EUT

The EUT is an 802.11a/b/g transceiver Mini PCI card module.

The transmitter has a maximum peak conducted output power as follows:

| Frequency Band<br>(MHz) | Mode          | Output Power<br>(dBm) | Output Power<br>(mW) |
|-------------------------|---------------|-----------------------|----------------------|
| 2412 - 2462             | 802.11b       | 20.85                 | 121.62               |
| 2412 - 2462             | 802.11g       | 24.45                 | 278.61               |
| 2437                    | 802.11g Turbo | 24.34                 | 271.64               |
| 5745 - 5825             | 802.11a       | 25.74                 | 374.97               |
| 5760 - 5800             | 802.11a Turbo | 24.38                 | 274.16               |

## 2.2. DESCRIPTION OF CLASS II CHANGE

The radio utilizes two integrated omni directional antennas for diversity (main and auxiliary), each with an integrated coaxial cable. The models used for 2.4 GHz band testing are the Hitachi models 91P6810 (main) / 91P6811 (auxiliary). This antenna set has a maximum antenna assembly gain of 2 dBi in the 2.4 GHz band. The models used for 5.8 GHz band testing are the SMartAnt RO222-099 (main) / RO222-100 (auxiliary). This antenna set has a maximum antenna assembly gain of 3 dBi in the 5.8 GHz band.

Following is a complete list of available antennas:

### Added Antennas

| Antenna Part Number                         | Antenna Type               | <u>Peak Assembly Gains (with Cable Loss)</u><br>(dBi) |                                     |                                                |
|---------------------------------------------|----------------------------|-------------------------------------------------------|-------------------------------------|------------------------------------------------|
|                                             |                            | <u>Cable Lengths</u><br>Main/Aux (mm)                 | <u>Peak Gain in</u><br>2.4GHz (dBi) | <u>Peak Gain</u><br>5.725-<br>5.85GHz<br>(dBi) |
| Foxconn 62P4204 (main) / 62P4203 (aux)      | Integrated Omnidirectional | 740/845                                               | 1                                   | 0                                              |
| Hitachi 91P6841 (main) / 91P6840 (aux)      | Integrated Omnidirectional | 755/580                                               | 1                                   | 1                                              |
| Hitachi 91P6812 (main) / 91P6813 (aux)      | Integrated Omnidirectional | 775/670                                               | 2                                   | 2                                              |
| Hitachi 91P6810 (main) / 91P6811 (aux)      | Integrated Omnidirectional | 750/635                                               | 2                                   | 0                                              |
| Nissei 13N5743 (main) / 13N5742 (aux)       | Integrated Omnidirectional | 488 / 449                                             | 2                                   | 2                                              |
| SMartAnt RO222-099 (main) / RO222-100 (aux) | Integrated Omnidirectional | 570/610                                               | 1                                   | 3                                              |
| Nissei 08K4083 (main) / 08K4084 (aux)       | Integrated Omnidirectional | 394/534                                               | 1                                   | 0                                              |

Gain values above Include all cable losses. All antenna types are Omni Directional.  
Nominal gain for all antennas above is 3 dBi or less in 5GHz band.  
Nominal gain for all antennas above is 2 dBi or less in 2.4GHz bands.

### 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/2001, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

### 4. 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>.



No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

## 5. CALIBRATION AND UNCERTAINTY

### 5.1. 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.

### 5.2. 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%.

### 5.3. 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             | Agilent        | E4446A           | MY43360112    | 1/13/2005  |
| Peak Power Meter              | Agilent        | E4416A           | GB41291160    | 11/7/2004  |
| Peak / Average Power Sensor   | Agilent        | E9327A           | US40440755    | 11/7/2004  |
| Antenna, Horn 1 ~ 18 GHz      | EMCO           | 3115             | 2238          | 2/4/2005   |
| Antenna, Horn 18 ~ 26 GHz     | ARA            | SWH-28           | 1007          | 2/24/2005  |
| Antenna, Horn 26 ~ 40 GHz     | ARA            | MWH-2640/B       | 1029          | 12/3/2004  |
| PreAmplifier 1-26GHz          | MITEQ          | NSP2600-SP       | 924341        | 6/10/2005  |
| PreAmplifier 26-40 GHz        | MITEQ          | NSP4000-SP2      | 924343        | 6/10/2005  |
| 7.6GHz High Pass Filter       | Micro-tronics  | HPM13195         | SN-002        | N/A        |
| 4.0GHz High Pass Filter       | Micro-tronics  | HPM13351         | SN-001        | N/A        |
| EMI Receiver, 9 kHz ~ 2.9 GHz | HP             | 8542E            | 3942A00286    | 11/20/2004 |
| RF Filter Section             | HP             | 85420E           | 3705A00256    | 11/20/2004 |
| Bilog Antenna                 | Sunol Sciences | JB1              | A121003       | 12/22/2004 |
| LISN, 10 kHz ~ 30 MHz         | FCC            | 50/250-25-2      | 114           | 10/13/2004 |
| Line Filter                   | Lindgren       | LMF-3489         | 497           | CNR        |
| LISN, 10 kHz ~ 30 MHz         | Solar          | 8012-50-R-24-BNC | 8379443       | 10/13/2004 |



## 6. SETUP OF EQUIPMENT UNDER TEST

### SUPPORT EQUIPMENT

| PERIPHERAL SUPPORT EQUIPMENT LIST |              |          |               |        |
|-----------------------------------|--------------|----------|---------------|--------|
| Description                       | Manufacturer | Model    | Serial Number | FCC ID |
| IBM Laptop                        | IBM          | Thinkpad | NA            | DOC    |
| AC Adapter                        | IBM          | NA       | NA            | DOC    |

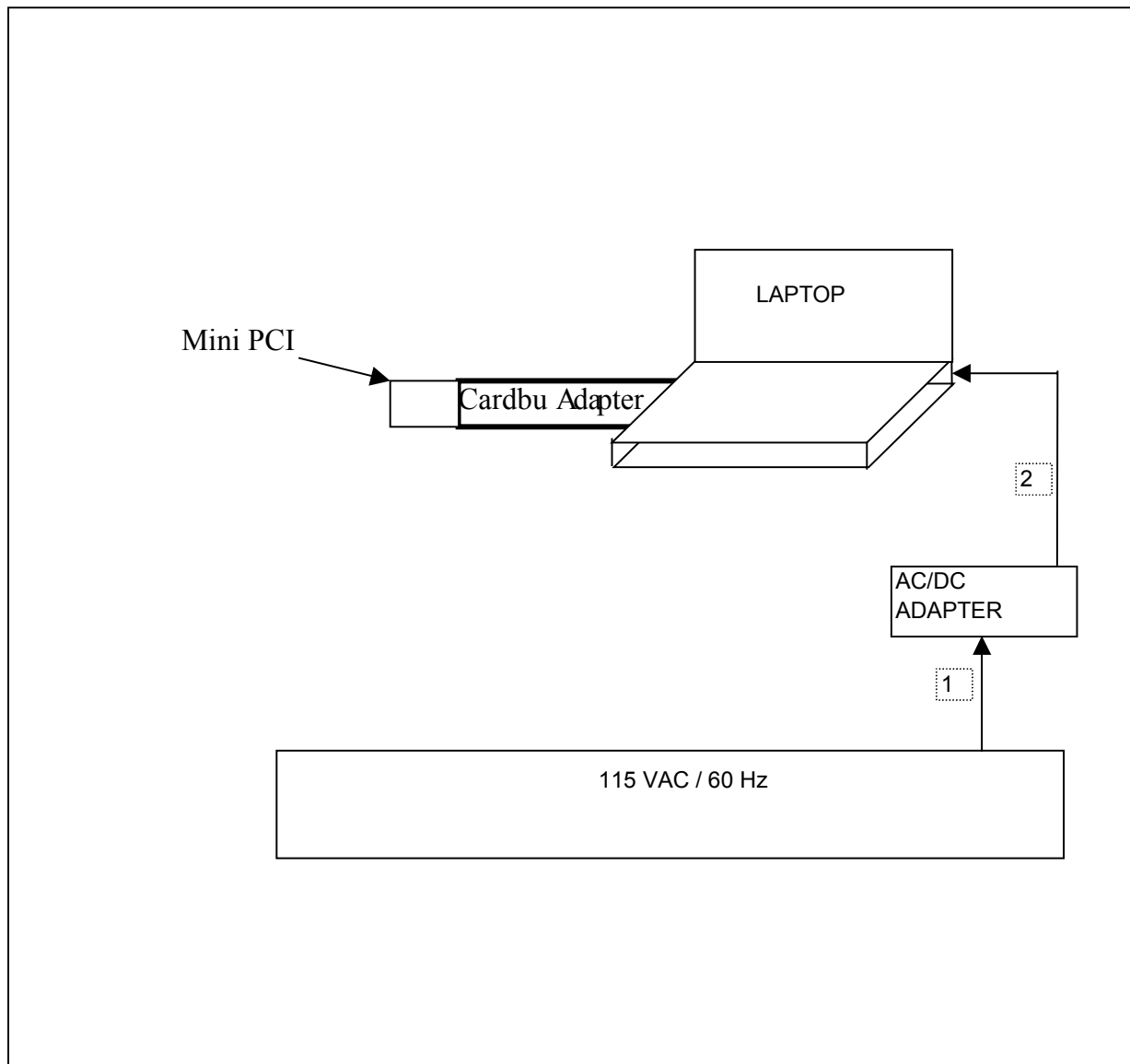
### I/O CABLES

| 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           | N/A     |
| 2              | DC   | 1                    | DC             | Un-shielded | 1m           | N/A     |

### TEST SETUP

The EUT is installed in a host laptop computer via a cardbus-to-miniPCI adapter / extension board during the tests. Test software exercised the radio card.

**SETUP DIAGRAM FOR TESTS**



## APPLICABLE LIMITS AND TEST RESULTS

### 7.1. RADIATED EMISSIONS

#### 7.1.1. 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<br>(MHz) | Field Strength<br>(microvolts/meter) | Measurement Distance<br>(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 of 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 of the 5.8 GHz band.

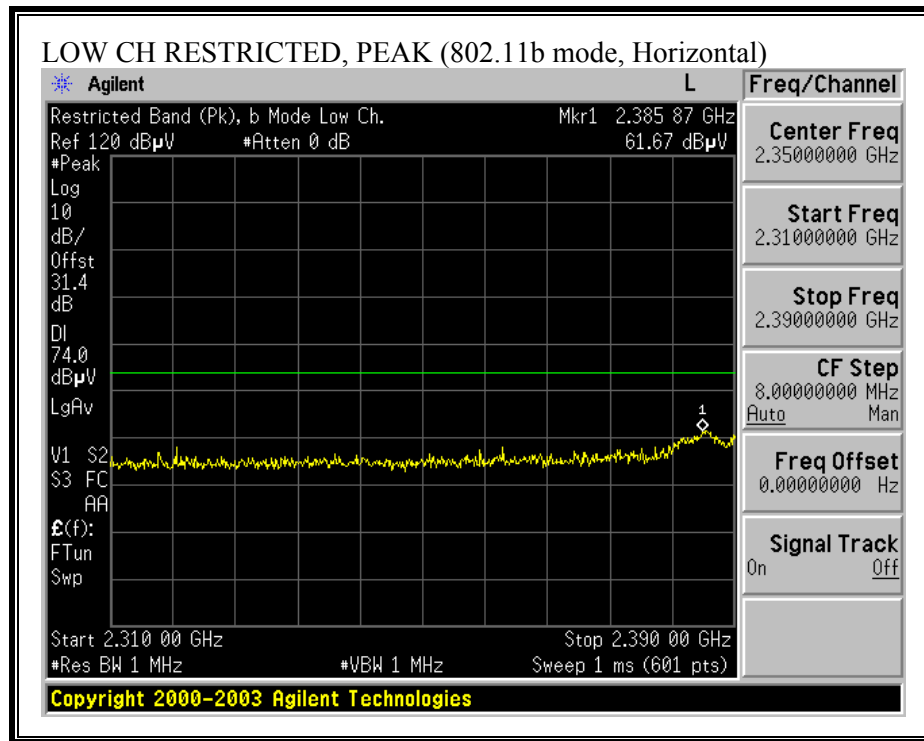
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

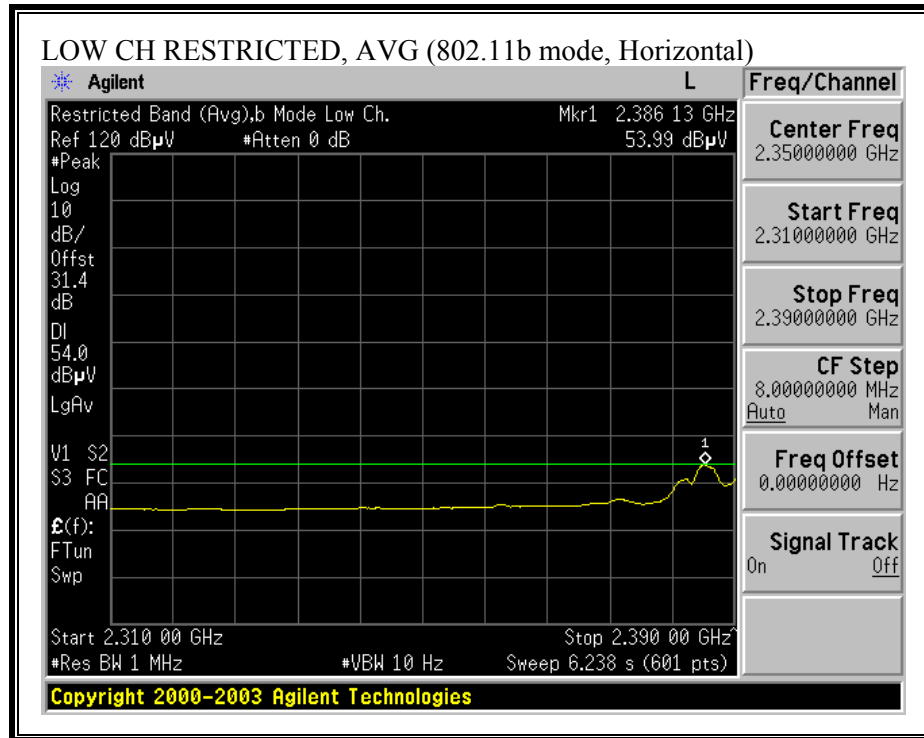
## **RESULTS**

No non-compliance noted:

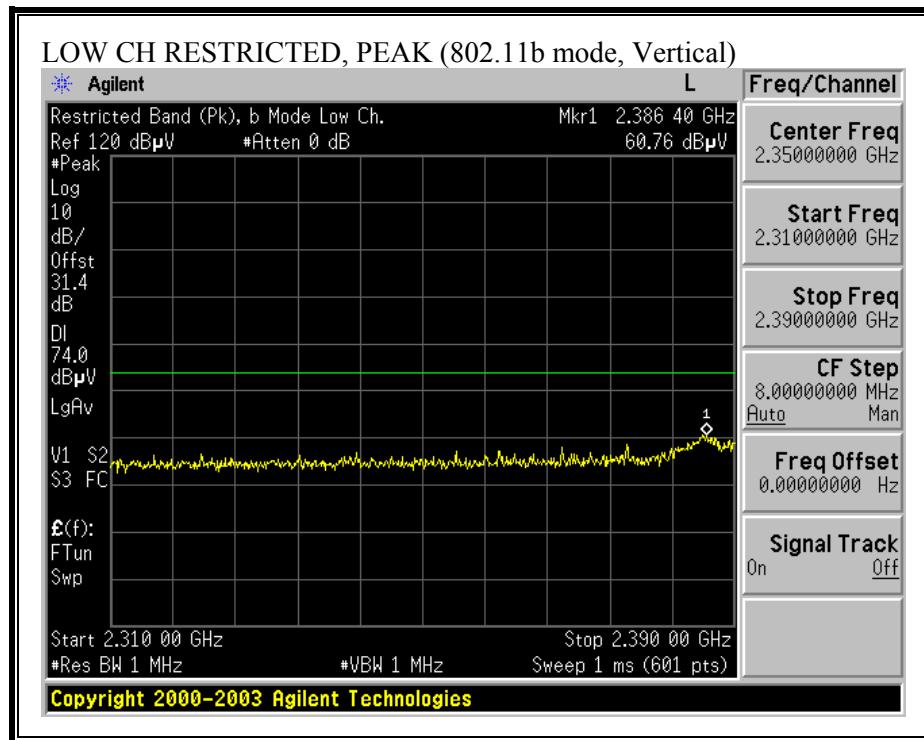
## 7.1.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

### RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)

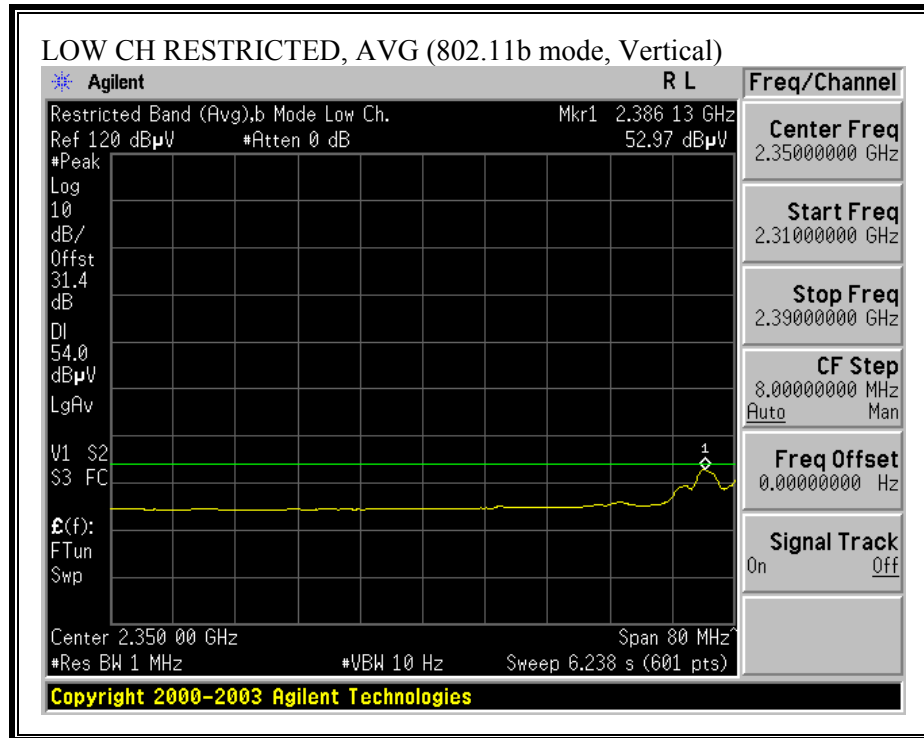




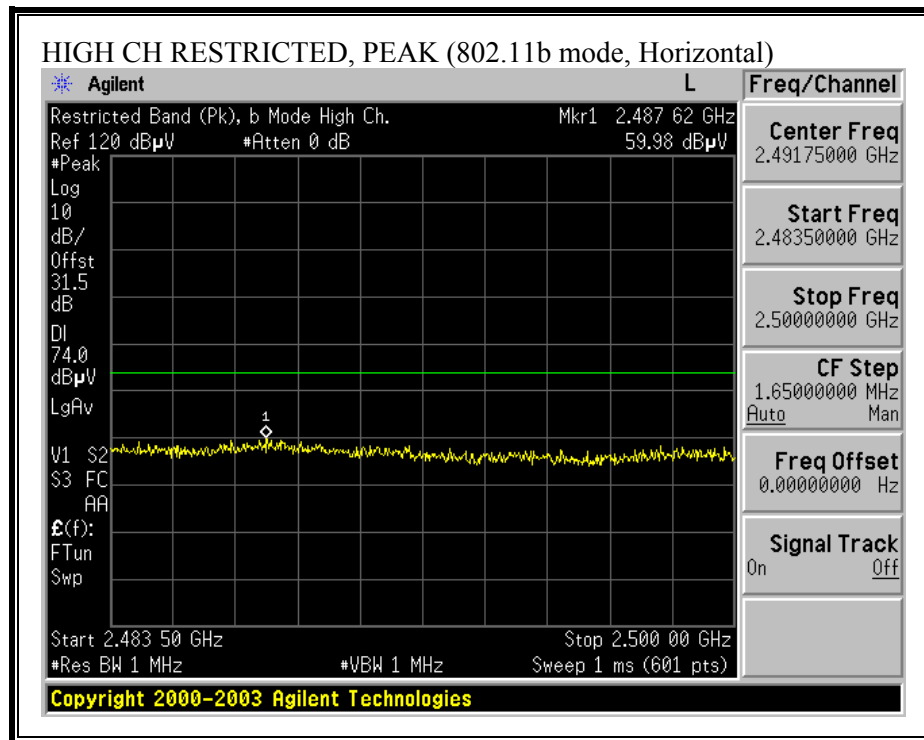
**RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)**

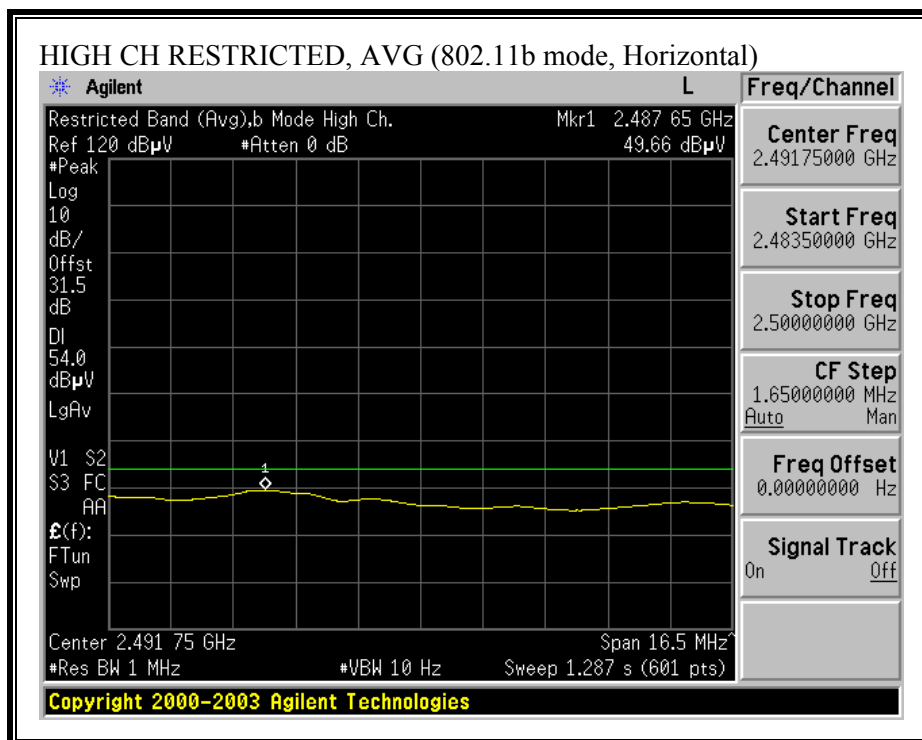




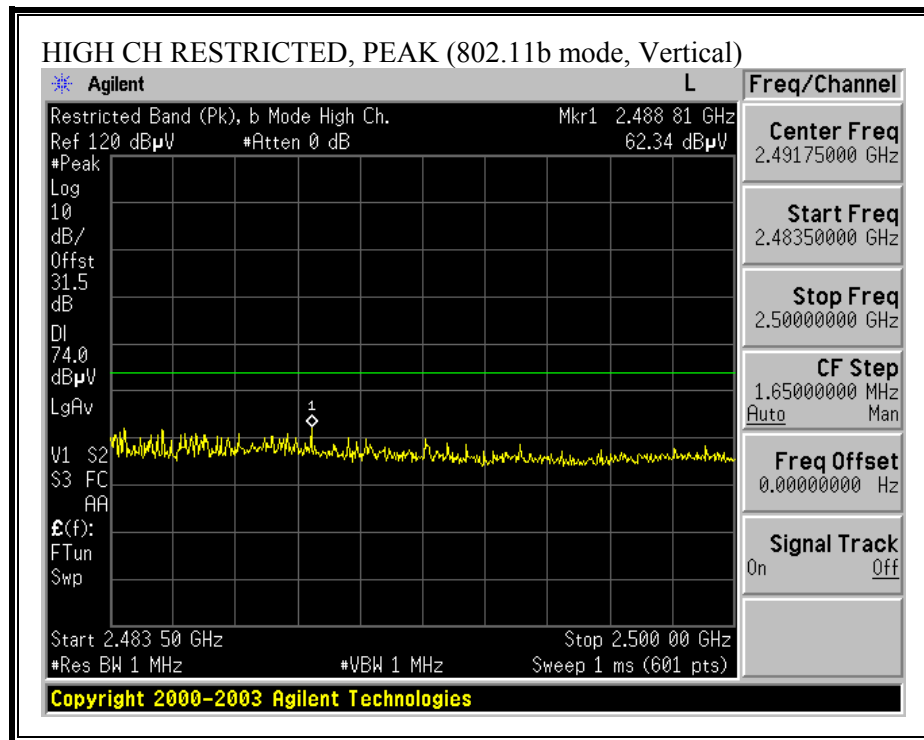


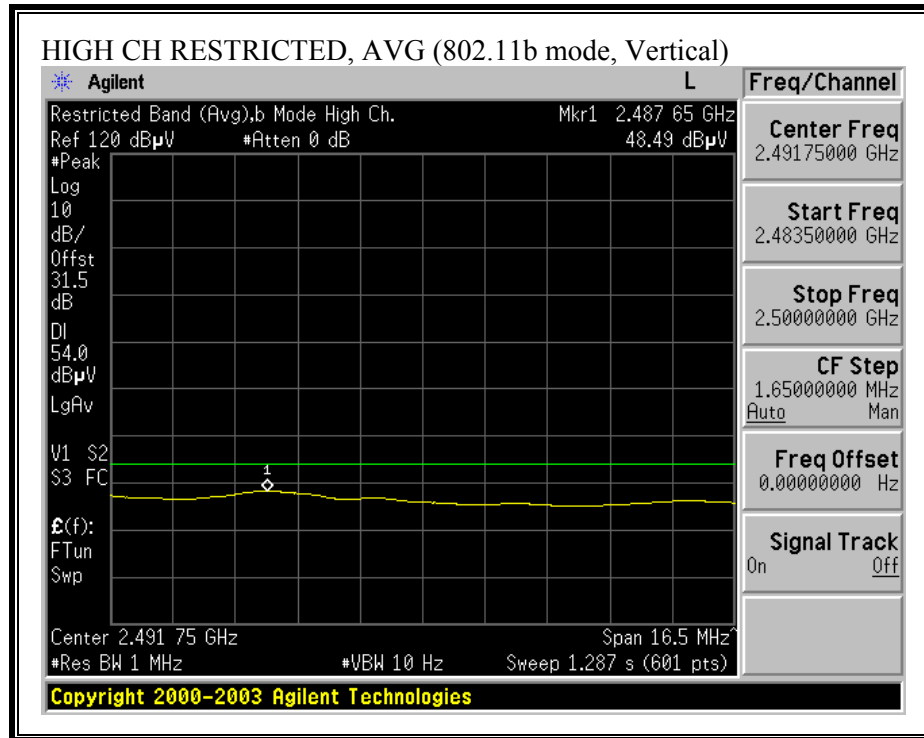
**RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)**

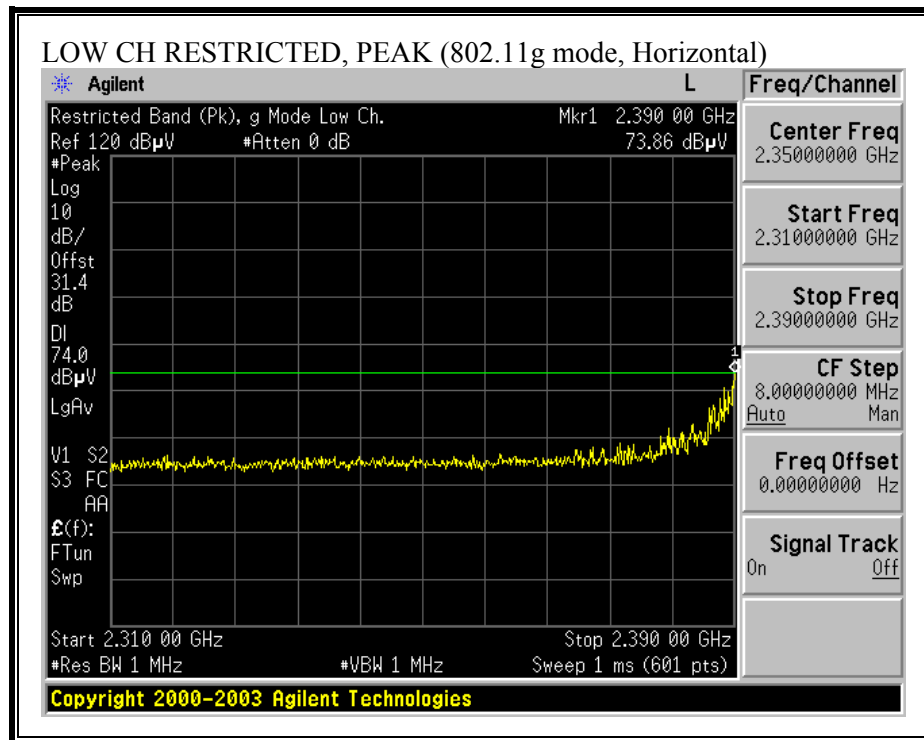


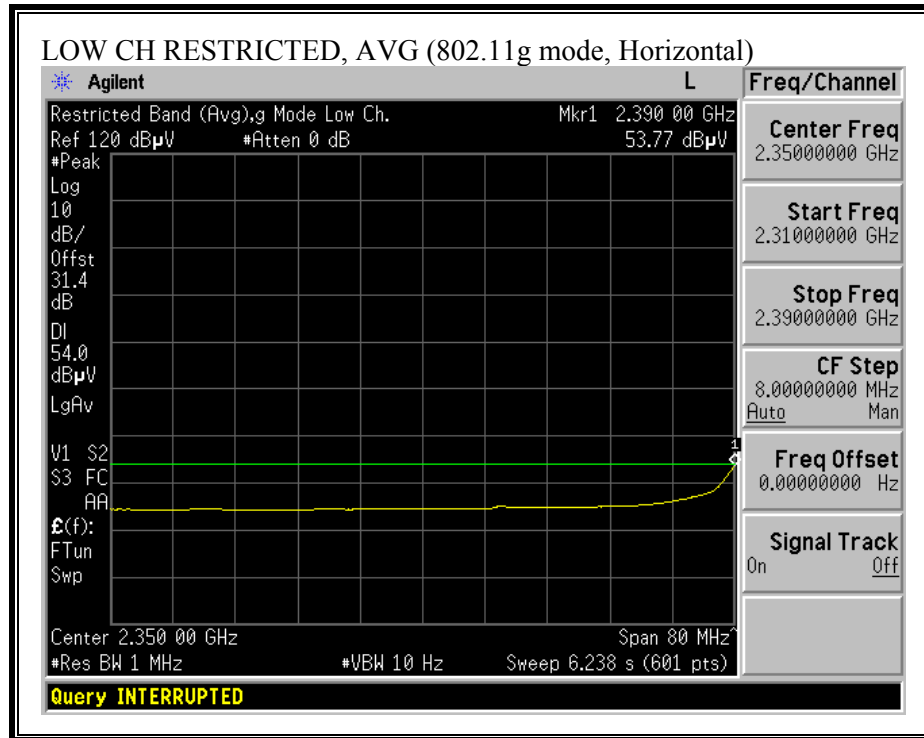


# **HARMONICS AND SPURIOUS EMISSIONS (b MODE)**

| f<br>GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Dist<br>feet | Read Pk<br>dBuV | Read Avg.<br>dBuV | AF<br>dB/m | CL<br>dB | Amp<br>dB | D Corr<br>dB | HPF | Peak<br>dBuV/m | Avg<br>dBuV/m | Pk Lim<br>dBuV/m | Avg Lim<br>dBuV/m | Pk Mar<br>dB | Avg Mar<br>dB | Notes |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|-------------------|------------|----------|-----------|--------------|-----|----------------|---------------|------------------|-------------------|--------------|---------------|-------|
| <b>b Mode, 2412MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
| 4.824                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 54.2            | 36.4              | 33.4       | 3.0      | -35.3     | 0.0          | 1.0 | 56.2           | 38.3          | 74.0             | 54.0              | -17.8        | -15.7         | V     |
| 4.824                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 49.9            | 37.0              | 33.4       | 3.0      | -35.3     | 0.0          | 1.0 | 51.8           | 39.0          | 74.0             | 54.0              | -22.2        | -15.0         | H     |
| 7.236                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 45.8            | 35.2              | 35.7       | 3.9      | -34.6     | 0.0          | 1.0 | 51.7           | 41.1          | 74.0             | 54.0              | -22.3        | -12.9         | V     |
| 7.236                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 43.6            | 31.8              | 35.7       | 3.9      | -34.6     | 0.0          | 1.0 | 49.5           | 37.7          | 74.0             | 54.0              | -24.5        | -16.3         | H     |
| <b>b Mode, 2437MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
| 4.874                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 53.0            | 33.7              | 33.4       | 3.0      | -35.3     | 0.0          | 1.0 | 55.1           | 35.7          | 74.0             | 54.0              | -18.9        | -18.3         | V     |
| 4.874                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 49.9            | 35.5              | 33.4       | 3.0      | -35.3     | 0.0          | 1.0 | 52.0           | 37.6          | 74.0             | 54.0              | -22.0        | -16.4         | H     |
| 7.311                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 46.0            | 36.2              | 35.8       | 3.9      | -34.6     | 0.0          | 1.0 | 52.2           | 42.3          | 74.0             | 54.0              | -21.8        | -11.7         | V     |
| 7.311                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 45.9            | 34.5              | 35.8       | 3.9      | -34.6     | 0.0          | 1.0 | 52.0           | 40.6          | 74.0             | 54.0              | -22.0        | -13.4         | H     |
| <b>b Mode, 2462MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
| 4.924                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 49.1            | 36.2              | 33.5       | 3.0      | -35.3     | 0.0          | 1.0 | 51.2           | 38.3          | 74.0             | 54.0              | -22.8        | -15.7         | V     |
| 4.924                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 51.0            | 37.8              | 33.5       | 3.0      | -35.3     | 0.0          | 1.0 | 53.2           | 40.0          | 74.0             | 54.0              | -20.8        | -14.0         | H     |
| 7.386                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 51.0            | 41.1              | 36.0       | 3.9      | -34.5     | 0.0          | 1.0 | 57.3           | 47.4          | 74.0             | 54.0              | -16.7        | -6.6          | V     |
| 7.386                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 50.3            | 41.6              | 36.0       | 3.9      | -34.5     | 0.0          | 1.0 | 56.6           | 47.9          | 74.0             | 54.0              | -17.4        | -6.1          | H     |
| <div> <div>f</div> <div>Measurement Frequency</div> </div> <div> <div>Dist</div> <div>Distance to Antenna</div> </div> <div> <div>Read</div> <div>Analyzer Reading</div> </div> <div> <div>AF</div> <div>Antenna Factor</div> </div> <div> <div>CL</div> <div>Cable Loss</div> </div> <div> <div>Amp</div> <div>Preamp Gain</div> </div> <div> <div>D Corr</div> <div>Distance Correct to 3 meters</div> </div> <div> <div>Avg</div> <div>Average Field Strength @ 3 m</div> </div> <div> <div>Peak</div> <div>Calculated Peak Field Strength</div> </div> <div> <div>HPF</div> <div>High Pass Filter</div> </div> <div> <div>Avg Lim</div> <div>Average Field Strength Limit</div> </div> <div> <div>Pk Lim</div> <div>Peak Field Strength Limit</div> </div> <div> <div>Avg Mar</div> <div>Margin vs. Average Limit</div> </div> <div> <div>Pk Mar</div> <div>Margin vs. Peak Limit</div> </div> |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |

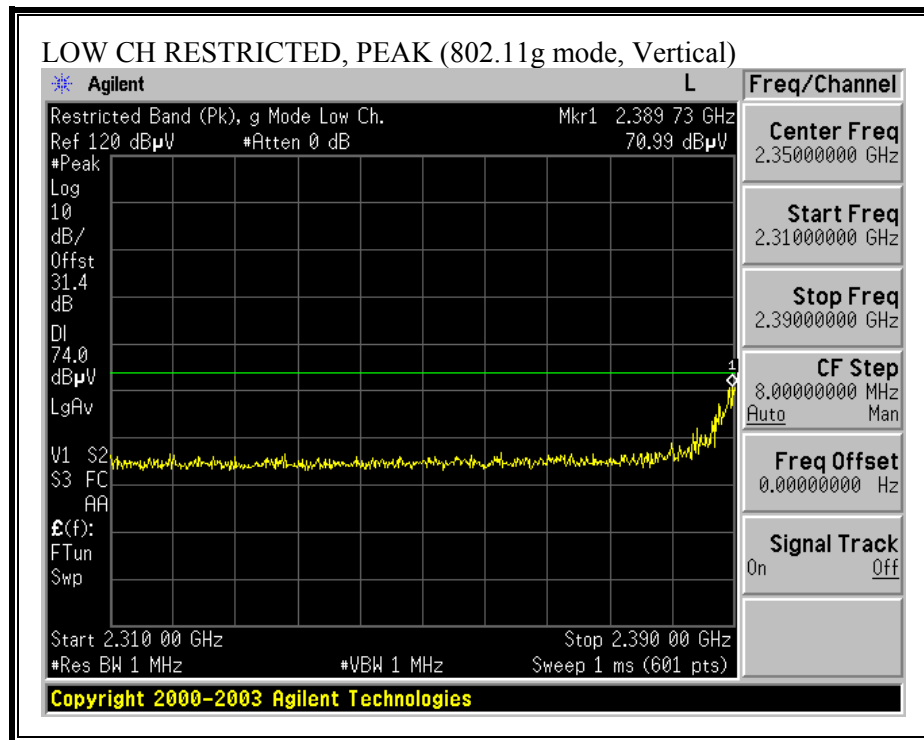
**RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)**

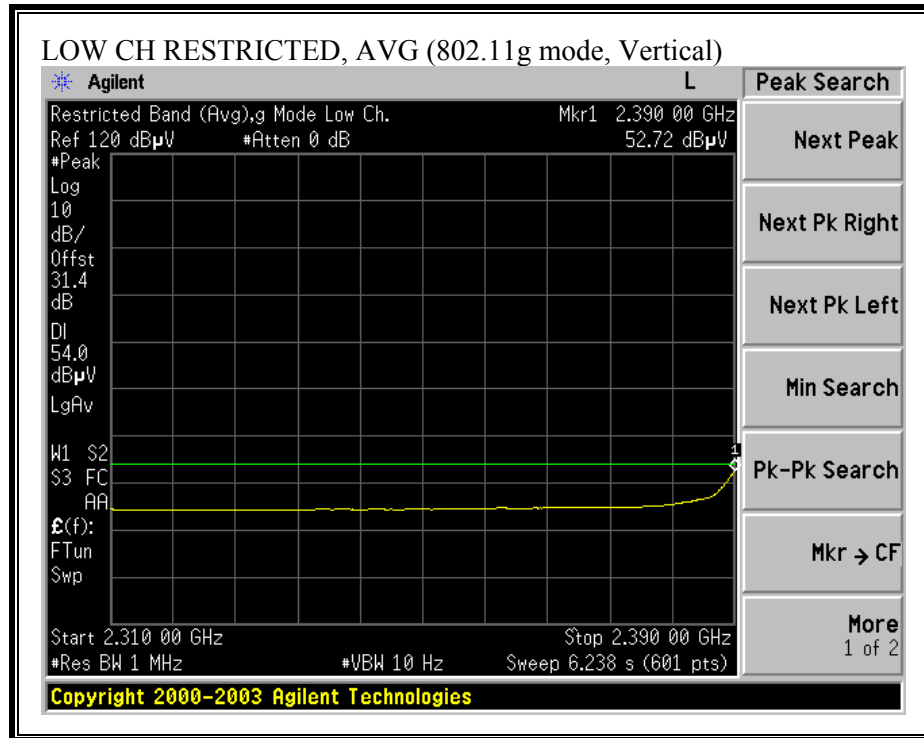




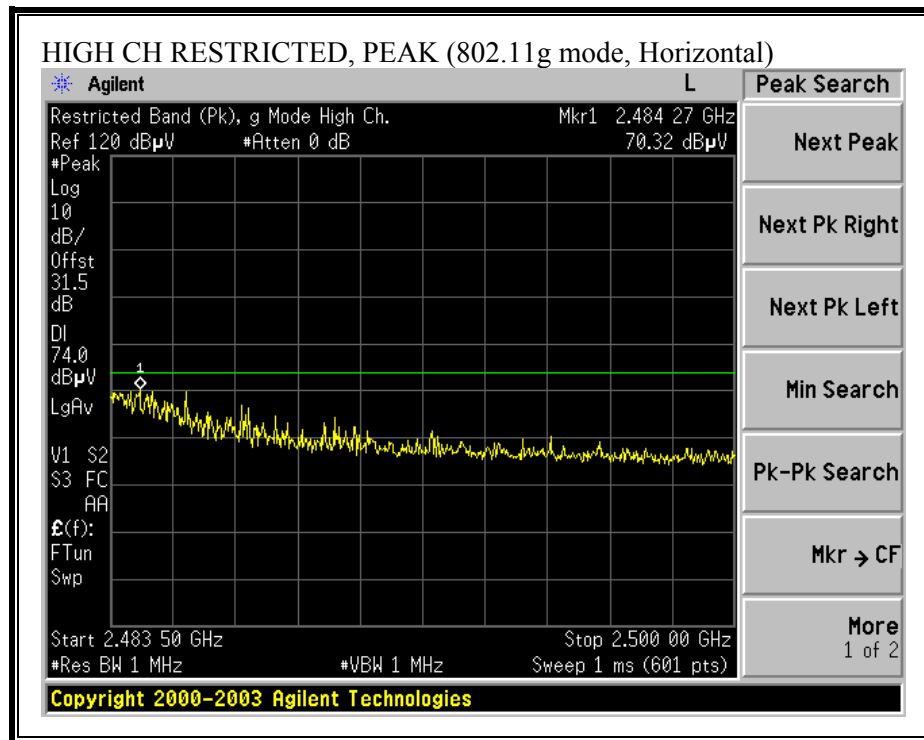


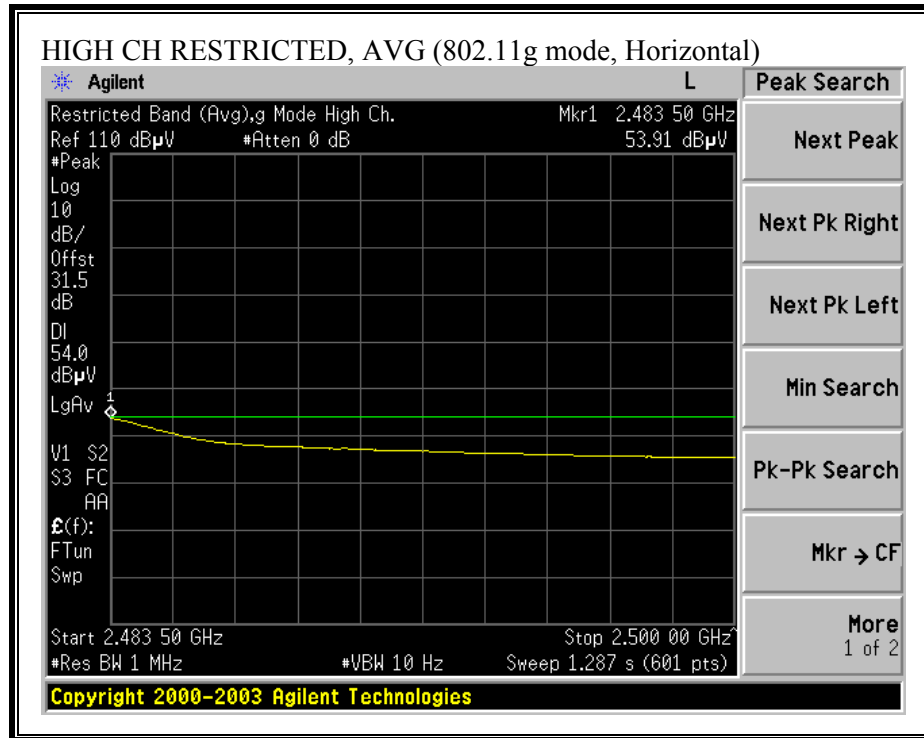
**RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)**



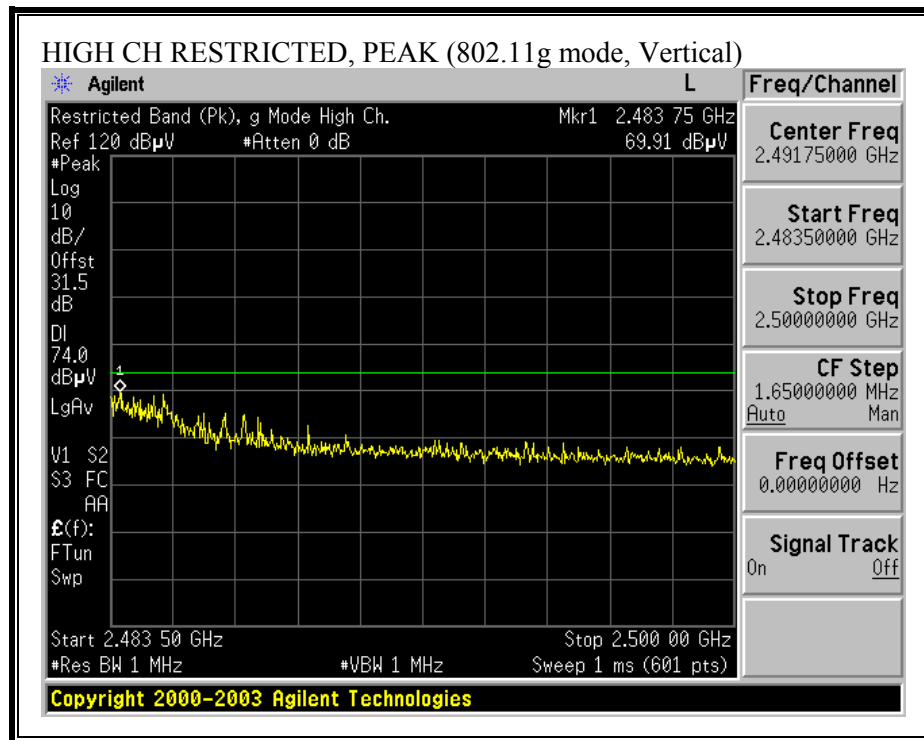


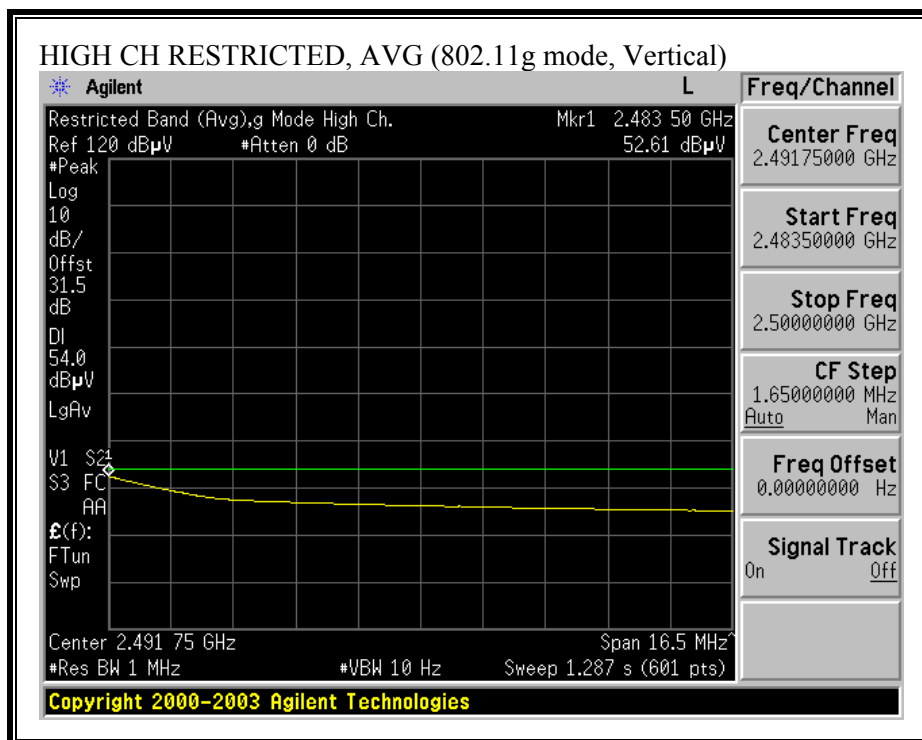
**RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)**





# **HARMONICS AND SPURIOUS EMISSIONS (g MODE)**

| f<br>GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Dist<br>feet | Read Pk<br>dBuV | Read Avg.<br>dBuV | AF<br>dB/m | CL<br>dB | Amp<br>dB | D Corr<br>dB | HPF | Peak<br>dBuV/m | Avg<br>dBuV/m | Pk Lim<br>dBuV/m | Avg Lim<br>dBuV/m | Pk Mar<br>dB | Avg Mar<br>dB | Notes |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|-------------------|------------|----------|-----------|--------------|-----|----------------|---------------|------------------|-------------------|--------------|---------------|-------|
| <b>g Mode, 2412MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
| 4.824                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 50.7            | 35.3              | 33.4       | 3.0      | -35.3     | 0.0          | 1.0 | 52.7           | 37.2          | 74.0             | 54.0              | -21.3        | -16.8         | V     |
| 4.824                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 47.0            | 35.0              | 33.4       | 3.0      | -35.3     | 0.0          | 1.0 | 49.0           | 37.0          | 74.0             | 54.0              | -25.0        | -17.0         | H     |
| 7.236                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 53.5            | 38.9              | 35.7       | 3.9      | -34.6     | 0.0          | 1.0 | 59.4           | 44.8          | 74.0             | 54.0              | -14.6        | -9.2          | V     |
| 7.236                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 49.7            | 35.9              | 35.7       | 3.9      | -34.6     | 0.0          | 1.0 | 55.6           | 41.8          | 74.0             | 54.0              | -18.4        | -12.2         | H     |
| <b>g Mode, 2437MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
| 4.874                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 46.8            | 33.7              | 33.4       | 3.0      | -35.3     | 0.0          | 1.0 | 48.9           | 35.7          | 74.0             | 54.0              | -25.1        | -18.3         | V     |
| 4.874                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 47.0            | 35.1              | 33.4       | 3.0      | -35.3     | 0.0          | 1.0 | 49.1           | 37.2          | 74.0             | 54.0              | -24.9        | -16.8         | H     |
| 7.311                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 58.2            | 42.4              | 35.8       | 3.9      | -34.6     | 0.0          | 1.0 | 64.3           | 48.5          | 74.0             | 54.0              | -9.7         | -5.5          | V     |
| 7.311                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 55.1            | 41.4              | 35.8       | 3.9      | -34.6     | 0.0          | 1.0 | 61.3           | 47.5          | 74.0             | 54.0              | -12.7        | -6.5          | H     |
| <b>g Mode, 2462MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
| 4.924                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 46.3            | 34.4              | 33.5       | 3.0      | -35.3     | 0.0          | 1.0 | 48.4           | 36.5          | 74.0             | 54.0              | -25.6        | -17.5         | V     |
| 4.924                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 53.1            | 41.0              | 33.5       | 3.0      | -35.3     | 0.0          | 1.0 | 55.2           | 43.2          | 74.0             | 54.0              | -18.8        | -10.8         | H     |
| 7.386                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 56.3            | 43.0              | 36.0       | 3.9      | -34.5     | 0.0          | 1.0 | 62.7           | 49.3          | 74.0             | 54.0              | -11.3        | -4.7          | V     |
| 7.386                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 54.0            | 40.3              | 36.0       | 3.9      | -34.5     | 0.0          | 1.0 | 60.3           | 46.6          | 74.0             | 54.0              | -13.7        | -7.4          | H     |
| <div> <div>f</div> <div>Measurement Frequency</div> </div> <div> <div>Dist</div> <div>Distance to Antenna</div> </div> <div> <div>Read</div> <div>Analyzer Reading</div> </div> <div> <div>AF</div> <div>Antenna Factor</div> </div> <div> <div>CL</div> <div>Cable Loss</div> </div> <div> <div>Amp</div> <div>Preamp Gain</div> </div> <div> <div>D Corr</div> <div>Distance Correct to 3 meters</div> </div> <div> <div>Avg</div> <div>Average Field Strength @ 3 m</div> </div> <div> <div>Peak</div> <div>Calculated Peak Field Strength</div> </div> <div> <div>HPF</div> <div>High Pass Filter</div> </div> <div> <div>Avg Lim</div> <div>Average Field Strength Limit</div> </div> <div> <div>Pk Lim</div> <div>Peak Field Strength Limit</div> </div> <div> <div>Avg Mar</div> <div>Margin vs. Average Limit</div> </div> <div> <div>Pk Mar</div> <div>Margin vs. Peak Limit</div> </div> |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |

# **HARMONICS AND SPURIOUS EMISSIONS (g TURBO MODE)**

| f<br>GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Dist<br>feet | Read Pk<br>dBuV | Read Avg.<br>dBuV | AF<br>dB/m | CL<br>dB | Amp<br>dB | D Corr<br>dB | HPF | Peak<br>dBuV/m | Avg<br>dBuV/m | Pk Lim<br>dBuV/m | Avg Lim<br>dBuV/m | Pk Mar<br>dB | Avg Mar<br>dB | Notes |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|-------------------|------------|----------|-----------|--------------|-----|----------------|---------------|------------------|-------------------|--------------|---------------|-------|
| <b>g Turbo Mode, 2437MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
| 4.874                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 43.3            | 31.6              | 33.4       | 3.0      | -35.3     | 0.0          | 1.0 | 45.4           | 33.7          | 74.0             | 54.0              | -28.6        | -20.3         | V     |
| 4.874                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 46.8            | 34.2              | 33.4       | 3.0      | -35.3     | 0.0          | 1.0 | 48.9           | 36.3          | 74.0             | 54.0              | -25.1        | -17.7         | H     |
| 7.311                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 52.8            | 39.9              | 35.8       | 3.9      | -34.6     | 0.0          | 1.0 | 58.9           | 46.1          | 74.0             | 54.0              | -15.1        | -7.9          | V     |
| 7.311                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 9.8          | 48.3            | 35.7              | 35.8       | 3.9      | -34.6     | 0.0          | 1.0 | 54.4           | 41.8          | 74.0             | 54.0              | -19.6        | -12.2         | H     |
| <div> <div>f</div> <div>Measurement Frequency</div> </div> <div> <div>Amp</div> <div>Preamp Gain</div> </div> <div> <div>Avg Lim</div> <div>Average Field Strength Limit</div> </div> <div> <div>Dist</div> <div>Distance to Antenna</div> </div> <div> <div>D Corr</div> <div>Distance Correct to 3 meters</div> </div> <div> <div>Pk Lim</div> <div>Peak Field Strength Limit</div> </div> <div> <div>Read</div> <div>Analyzer Reading</div> </div> <div> <div>Avg</div> <div>Average Field Strength @ 3 m</div> </div> <div> <div>Avg Mar</div> <div>Margin vs. Average Limit</div> </div> <div> <div>AF</div> <div>Antenna Factor</div> </div> <div> <div>Peak</div> <div>Calculated Peak Field Strength</div> </div> <div> <div>Pk Mar</div> <div>Margin vs. Peak Limit</div> </div> <div> <div>CL</div> <div>Cable Loss</div> </div> <div> <div>HPF</div> <div>High Pass Filter</div> </div> |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |



# **HARMONICS AND SPURIOUS EMISSIONS (a MODE)**

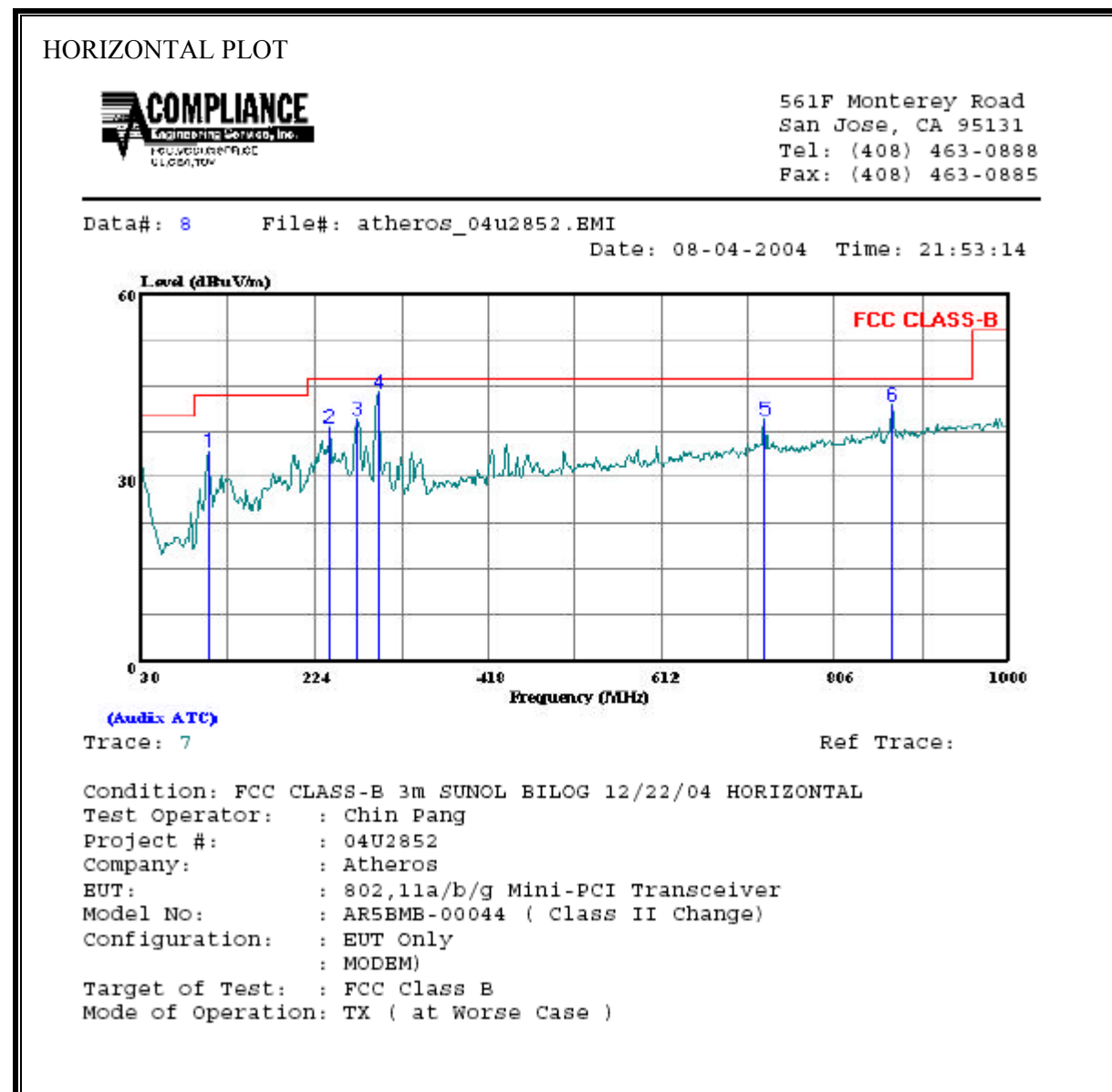
| f<br>GHz        | Dist<br>feet          | Read Pk<br>dBuV | Read Avg.<br>dBuV | AF<br>dB/m | CL<br>dB | Amp<br>dB | D Corr<br>dB                   | HPF | Peak<br>dBuV/m | Avg<br>dBuV/m | Pk Lim<br>dBuV/m | Avg Lim<br>dBuV/m | Pk Mar<br>dB                 | Avg Mar<br>dB | Notes |
|-----------------|-----------------------|-----------------|-------------------|------------|----------|-----------|--------------------------------|-----|----------------|---------------|------------------|-------------------|------------------------------|---------------|-------|
| a Mode, 5745MHz |                       |                 |                   |            |          |           |                                |     |                |               |                  |                   |                              |               |       |
| 11.490          | 9.8                   | 58.6            | 47.0              | 38.8       | 4.9      | -41.5     | 0.0                            | 1.0 | 61.7           | 50.1          | 74.0             | 54.0              | -12.3                        | -3.9          | V     |
| 11.490          | 9.8                   | 52.7            | 42.6              | 38.8       | 4.9      | -41.5     | 0.0                            | 1.0 | 55.7           | 45.7          | 74.0             | 54.0              | -18.3                        | -8.3          | H     |
| 17.235          | 9.8                   | 57.8            | 45.9              | 41.5       | 6.1      | -46.1     | 0.0                            | 1.0 | 60.3           | 48.4          | 74.0             | 54.0              | -13.7                        | -5.6          | V     |
| 17.235          | 9.8                   | 59.3            | 48.7              | 41.5       | 6.1      | -46.1     | 0.0                            | 1.0 | 61.8           | 51.2          | 74.0             | 54.0              | -12.2                        | -2.8          | H     |
| a Mode, 5785MHz |                       |                 |                   |            |          |           |                                |     |                |               |                  |                   |                              |               |       |
| 11.570          | 9.8                   | 64.2            | 49.7              | 38.8       | 4.9      | -41.6     | 0.0                            | 1.0 | 67.3           | 52.8          | 74.0             | 54.0              | -6.7                         | -1.2          | V     |
| 11.570          | 9.8                   | 58.7            | 47.1              | 38.8       | 4.9      | -41.6     | 0.0                            | 1.0 | 61.8           | 50.1          | 74.0             | 54.0              | -12.2                        | -3.9          | H     |
| 17.355          | 9.8                   | 61.7            | 48.8              | 42.2       | 6.2      | -46.0     | 0.0                            | 1.0 | 65.0           | 52.1          | 74.0             | 54.0              | -9.0                         | -1.9          | V     |
| 17.355          | 9.8                   | 60.6            | 48.2              | 42.2       | 6.2      | -46.0     | 0.0                            | 1.0 | 63.9           | 51.5          | 74.0             | 54.0              | -10.1                        | -2.5          | H     |
| a Mode, 5825MHz |                       |                 |                   |            |          |           |                                |     |                |               |                  |                   |                              |               |       |
| 11.650          | 9.8                   | 64.6            | 50.2              | 38.9       | 4.9      | -41.7     | 0.0                            | 1.0 | 67.6           | 53.2          | 74.0             | 54.0              | -6.4                         | -0.8          | V     |
| 11.650          | 9.8                   | 63.8            | 50.3              | 38.9       | 4.9      | -41.7     | 0.0                            | 1.0 | 66.8           | 53.4          | 74.0             | 54.0              | -7.2                         | -0.6          | H     |
| 17.475          | 9.8                   | 57.9            | 45.5              | 43.0       | 6.2      | -46.0     | 0.0                            | 1.0 | 62.0           | 49.6          | 74.0             | 54.0              | -12.0                        | -4.4          | V     |
| 17.475          | 9.8                   | 58.6            | 47.0              | 43.0       | 6.2      | -46.0     | 0.0                            | 1.0 | 62.7           | 51.1          | 74.0             | 54.0              | -11.3                        | -2.9          | 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               |     |                |               |                  |                   |                              |               |       |

# **HARMONICS AND SPURIOUS EMISSIONS (a TURBO MODE)**

| f<br>GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Dist<br>feet | Read Pk<br>dBuV | Read Avg.<br>dBuV | AF<br>dB/m | CL<br>dB | Amp<br>dB | D Corr<br>dB | HPF | Peak<br>dBuV/m | Avg<br>dBuV/m | Pk Lim<br>dBuV/m | Avg Lim<br>dBuV/m | Pk Mar<br>dB | Avg Mar<br>dB | Notes |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|-------------------|------------|----------|-----------|--------------|-----|----------------|---------------|------------------|-------------------|--------------|---------------|-------|
| <b>a turbo Mode, 5760MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
| 11.520                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9.8          | 57.5            | 44.5              | 38.8       | 4.9      | -41.5     | 0.0          | 1.0 | 60.6           | 47.6          | 74.0             | 54.0              | -13.4        | -6.4          | V     |
| 11.520                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9.8          | 54.0            | 42.0              | 38.8       | 4.9      | -41.5     | 0.0          | 1.0 | 57.1           | 45.1          | 74.0             | 54.0              | -16.9        | -8.9          | H     |
| 17.280                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9.8          | 59.4            | 47.0              | 41.8       | 6.1      | -46.1     | 0.0          | 1.0 | 62.2           | 49.8          | 74.0             | 54.0              | -11.8        | -4.2          | V     |
| 17.280                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9.8          | 58.5            | 47.0              | 41.8       | 6.1      | -46.1     | 0.0          | 1.0 | 61.3           | 49.8          | 74.0             | 54.0              | -12.7        | -4.2          | H     |
| <b>a turbo Mode, 5805MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
| 11.610                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9.8          | 60.0            | 47.8              | 38.9       | 4.9      | -41.6     | 0.0          | 1.0 | 63.1           | 50.9          | 74.0             | 54.0              | -10.9        | -3.1          | V     |
| 11.610                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9.8          | 58.3            | 46.9              | 38.9       | 4.9      | -41.6     | 0.0          | 1.0 | 61.4           | 49.9          | 74.0             | 54.0              | -12.6        | -4.1          | H     |
| 17.415                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9.8          | 57.5            | 45.3              | 42.6       | 6.2      | -46.0     | 0.0          | 1.0 | 61.2           | 49.0          | 74.0             | 54.0              | -12.8        | -5.0          | V     |
| 17.415                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9.8          | 61.3            | 49.0              | 42.6       | 6.2      | -46.0     | 0.0          | 1.0 | 65.0           | 52.7          | 74.0             | 54.0              | -9.0         | -1.3          | H     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |
| <div> <div>f</div> <div>Measurement Frequency</div> </div> <div> <div>Dist</div> <div>Distance to Antenna</div> </div> <div> <div>Read</div> <div>Analyzer Reading</div> </div> <div> <div>AF</div> <div>Antenna Factor</div> </div> <div> <div>CL</div> <div>Cable Loss</div> </div> <div> <div>Amp</div> <div>Preamp Gain</div> </div> <div> <div>D Corr</div> <div>Distance Correct to 3 meters</div> </div> <div> <div>Avg</div> <div>Average Field Strength @ 3 m</div> </div> <div> <div>Peak</div> <div>Calculated Peak Field Strength</div> </div> <div> <div>HPF</div> <div>High Pass Filter</div> </div> <div> <div>Avg Lim</div> <div>Average Field Strength Limit</div> </div> <div> <div>Pk Lim</div> <div>Peak Field Strength Limit</div> </div> <div> <div>Avg Mar</div> <div>Margin vs. Average Limit</div> </div> <div> <div>Pk Mar</div> <div>Margin vs. Peak Limit</div> </div> |              |                 |                   |            |          |           |              |     |                |               |                  |                   |              |               |       |

### 7.1.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

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



# HORIZONTAL DATA

|   | Freq    | Remark | Read<br>Level | Factor | Level  | Limit<br>Line | Over<br>Limit |
|---|---------|--------|---------------|--------|--------|---------------|---------------|
|   | MHz     |        | dBuV          | dB     | dBuV/m | dBuV/m        | dB            |
| 1 | 104.690 | Peak   | 22.18         | 12.11  | 34.29  | 43.50         | -9.21         |
| 2 | 240.490 | Peak   | 24.34         | 13.73  | 38.07  | 46.00         | -7.93         |
| 3 | 271.530 | Peak   | 24.35         | 15.15  | 39.50  | 46.00         | -6.50         |
| 4 | 295.780 | Peak   | 28.14         | 15.84  | 43.98  | 46.00         | -2.03         |
| 5 | 727.430 | Peak   | 15.31         | 24.22  | 39.53  | 46.00         | -6.47         |
| 6 | 870.990 | Peak   | 16.11         | 25.61  | 41.72  | 46.00         | -4.28         |

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

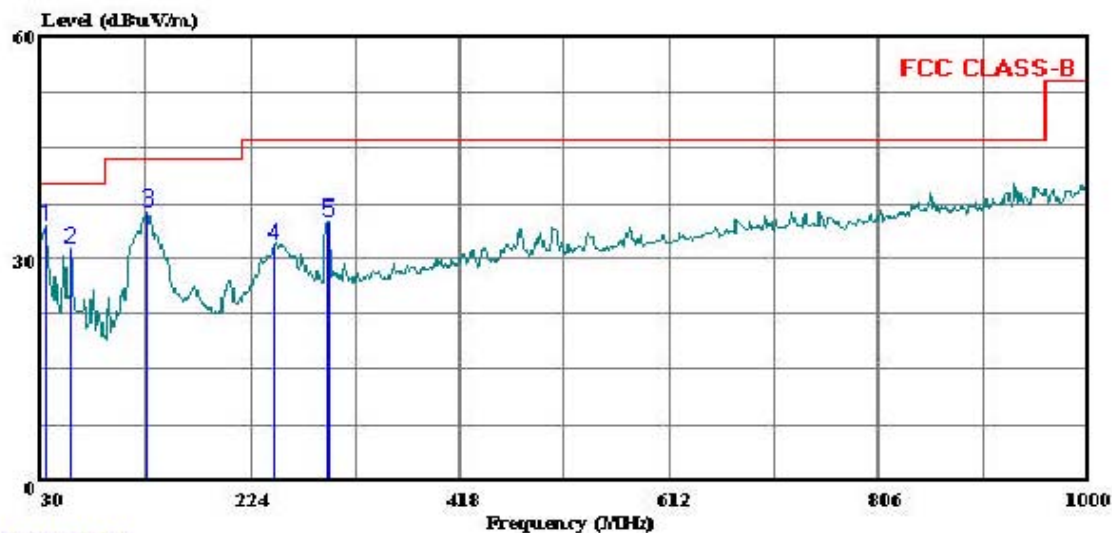
VERTICAL PLOT



561F Monterey Road  
San Jose, CA 95131  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 6 File#: atheros\_04u2852.EMI

Date: 08-04-2004 Time: 21:50:10



(Auxiliary ATC)

Trace: 5

Ref Trace:

Condition: FCC CLASS-B 3m SUNOL BILOG 12/22/04 VERTICAL

Test Operator: : Chin Pang

Project #: : 04U2852

Company: : Atheros

EUT: : 802.11a/b/g Mini-PCI Transceiver

Model No: : AR5BMB-00044 ( Class II Change)

Configuration: : EUT Only

: MODEM)

Target of Test: : FCC Class B

Mode of Operation: TX ( at Worse Case )

| VERTICAL DATA |         |        |               |        |        |               |               |
|---------------|---------|--------|---------------|--------|--------|---------------|---------------|
|               | Freq    | Remark | Read<br>Level | Factor | Level  | Limit<br>Line | Over<br>Limit |
|               | MHz     |        | dBuV          | dB     | dBuV/m | dBuV/m        | dB            |
| 1             | 33.880  | Peak   | 13.92         | 20.70  | 34.62  | 40.00         | -5.38         |
| 2             | 58.130  | Peak   | 22.65         | 8.73   | 31.38  | 40.00         | -8.62         |
| 3             | 128.940 | Peak   | 20.73         | 15.53  | 36.26  | 43.50         | -7.24         |
| 4             | 246.310 | Peak   | 18.14         | 13.90  | 32.04  | 46.00         | -13.96        |
| 5             | 295.780 | Peak   | 19.14         | 15.84  | 34.98  | 46.00         | -11.03        |

## 7.2. 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

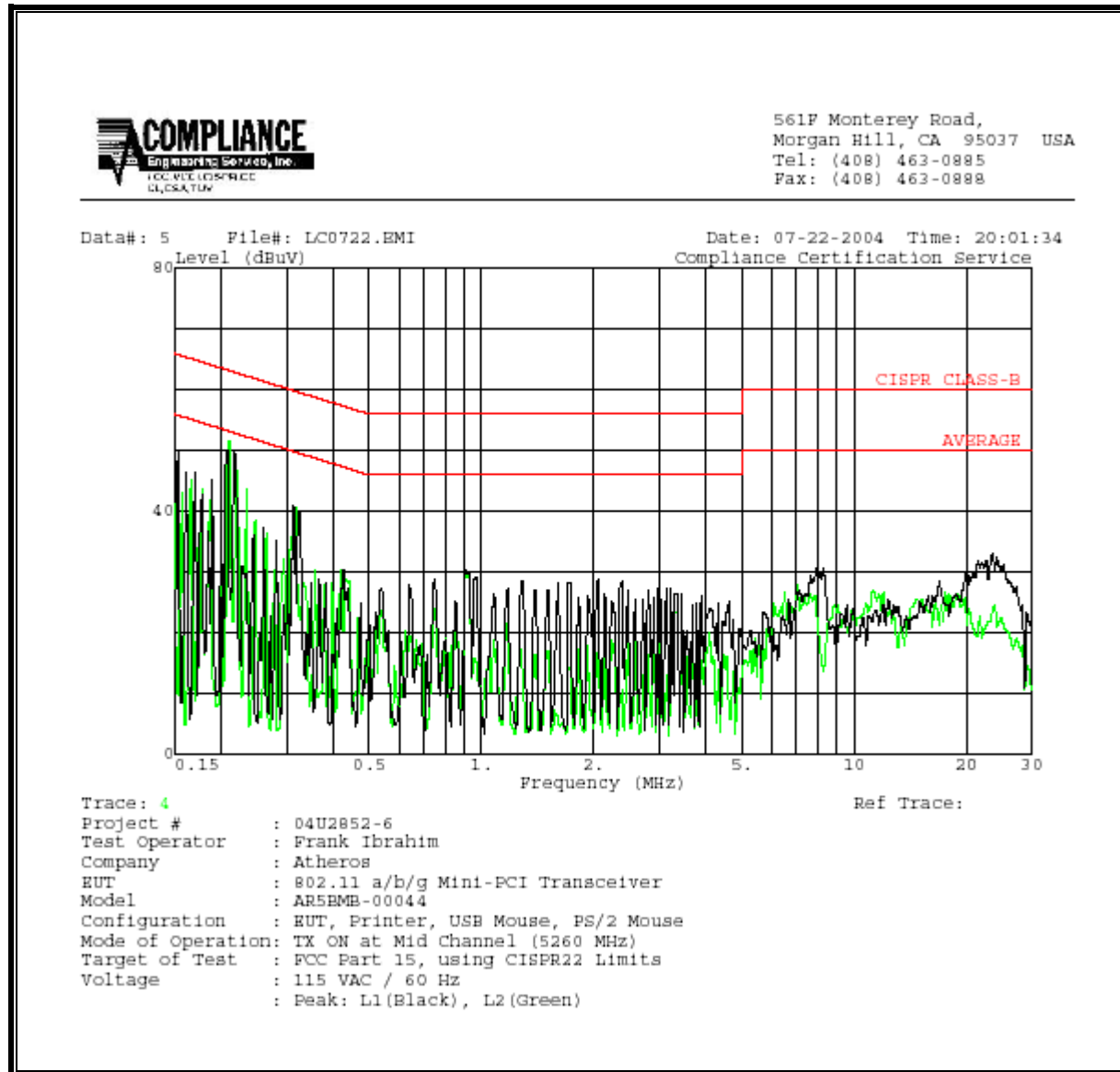
No non-compliance noted:

# **6 WORST EMISSIONS**

| Freq.        | Reading   |           |           | Closs | Limit | EN B  | Margin  |         | Remark  |
|--------------|-----------|-----------|-----------|-------|-------|-------|---------|---------|---------|
| (MHz)        | PK (dBuV) | QP (dBuV) | AV (dBuV) | (dB)  | QP    | AV    | QP (dB) | AV (dB) | L1 / L2 |
| 0.15         | 50.19     | --        | --        | 0.00  | 65.91 | 55.91 | -15.72  | -5.72   | L1      |
| 0.21         | 50.17     | --        | --        | 0.00  | 64.34 | 54.34 | -14.17  | -4.17   | L1      |
| 0.22         | 50.10     | --        | --        | 0.00  | 64.11 | 54.11 | -14.01  | -4.01   | L1      |
| 0.16         | 43.13     | --        | --        | 0.00  | 65.80 | 55.80 | -22.67  | -12.67  | L2      |
| 0.17         | 45.20     | --        | --        | 0.00  | 65.54 | 55.54 | -20.34  | -10.34  | L2      |
| 0.21         | 51.60     | --        | --        | 0.00  | 64.26 | 54.26 | -12.66  | -2.66   | L2      |
| 6 Worst Data |           |           |           |       |       |       |         |         |         |



## LINE 1 AND LINE 2 RESULTS



## 8. SETUP PHOTOS

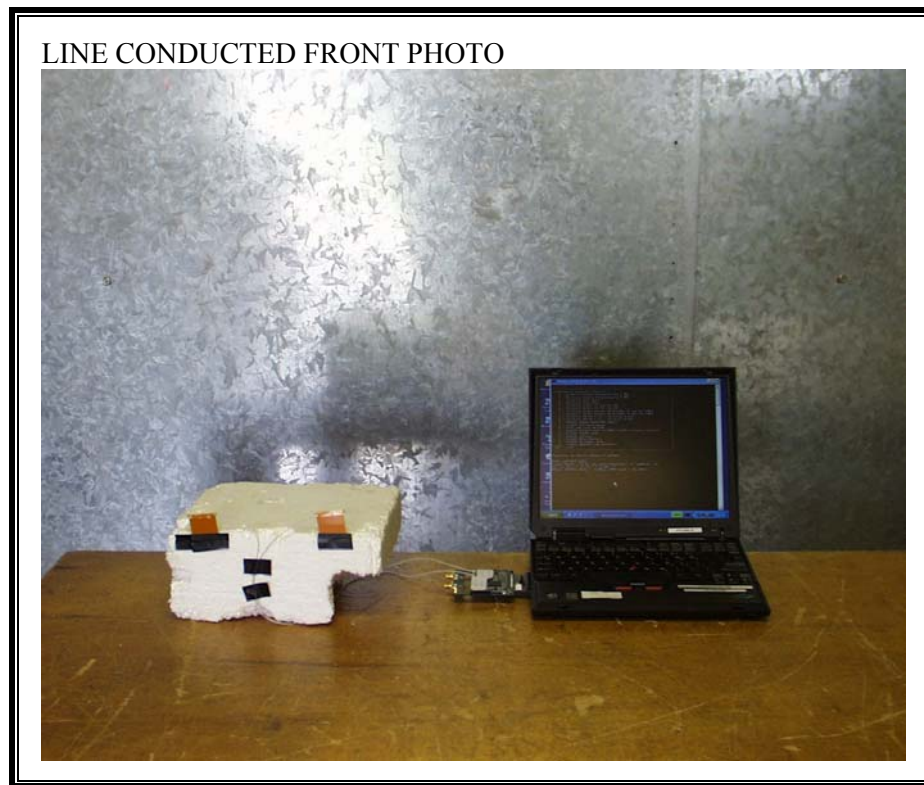
### RADIATED RF MEASUREMENT SETUP



RADIATED BACK PHOTO



**POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP**



LINE CONDUCTED BACK PHOTO



**END OF REPORT**