



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

**FOR**

**2.4GHz WIRELESS MONITOR/PROJECTOR RADIO ADAPTER**

**MODEL NUMBER: WiJET**

**BRAND NAME: OTC**

**FCC ID: MKZWJTL02682**

**REPORT NUMBER: 02U1707-1, Rev. B**

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Revision History

<u>Rev.</u>	<u>Revisions</u>	<u>Revised By</u>
B	Corrected Antenna Information, added insertion loss note for Peak Power measurement.	MH

## TABLE OF CONTENTS

<b>1. TEST RESULT CERTIFICATION .....</b>	<b>4</b>
<b>2. EUT DESCRIPTION .....</b>	<b>5</b>
2.1. DESCRIPTION OF EUT.....	5
2.2. MODIFICATIONS TO THE EUT.....	5
<b>3. TEST METHODOLOGY.....</b>	<b>6</b>
<b>4. FACILITIES AND ACCREDITATION.....</b>	<b>6</b>
4.1. FACILITIES AND EQUIPMENT.....	6
4.2. LABORATORY ACCREDITATIONS AND LISTINGS.....	6
4.3. TABLE OF ACCREDITATIONS AND LISTINGS.....	7
<b>5. CALIBRATION AND UNCERTAINTY .....</b>	<b>8</b>
5.1. MEASURING INSTRUMENT CALIBRATION .....	8
5.2. MEASUREMENT UNCERTAINTY .....	8
5.3. TEST AND MEASUREMENT EQUIPMENT.....	9
<b>6. SETUP OF EQUIPMENT UNDER TEST.....</b>	<b>10</b>
<b>7. APPLICABLE RULES .....</b>	<b>14</b>
<b>8. TEST SETUP, PROCEDURE AND RESULT .....</b>	<b>17</b>
8.1. 6 dB BANDWIDTH.....	17
8.2. PEAK POWER.....	21
8.3. PEAK POWER SPECTRAL DENSITY.....	22
8.4. MAXIMUM PERMISSIBLE EXPOSURE.....	26
8.5. SPURIOUS EMISSIONS.....	28
8.6. RADIATED EMISSIONS.....	35
8.7. POWERLINE CONDUCTED EMISSIONS.....	46
8.8. SETUP PHOTOS.....	49

# 1. TEST RESULT CERTIFICATION

**COMPANY NAME:** OTC WIRELESS, INC.  
48507 MILMONT DRIVE  
FREMONT, CA 94583, USA

**EUT DESCRIPTION:** 2.4GHZ WIRELESS MONITOR/PROJECTOR RADIO ADAPTER

**MODEL NAME:** WiJET

**DATE TESTED:** JANUARY 28 –JANUARY 31, 2003

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.

**Note:** The 2.4 GHz bands are applicable to this report.

Approved & Released For CCS By:

Tested By:



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MIKE HECKROTTE  
CHIEF ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

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NEELESH RAJ  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. EUT DESCRIPTION

### 2.1. DESCRIPTION OF EUT

The WiJET is an 802.11b compliant product designed specifically for wired projectors and monitors. It connects to the existing VGA connector and offers 802.11b connectivity at 11Mbps. It utilizes two antennas for spatial diversity. The internal dipole antenna has 0 dBi gain and the external dipole antenna has 5 dBi gain. The external antenna is connected via a reverse polarity SMA connector.

The Wijet operates in the frequency range of 2400-2483.5 MHz and has a peak output power of 13.81 dbm.

### 2.2. MODIFICATIONS TO THE EUT

Conductive paint was sprayed on the inside of the plastic chassis in order to pass digital device radiated emissions.

### 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, and 15.407.

### 4. FACILITIES AND ACCREDITATION

#### 4.1. FACILITIES AND EQUIPMENT







The open area test sites and conducted measurement facilities used to collect the radiated data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

#### 4.2. LABORATORY ACCREDITATIONS AND LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200065-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT (1300B3) and 31040/SIT (1300F2)).

### 4.3. TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP*	FCC Part 15, CISPR 22, AS/NZS 3548, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, CNS 13438	 200065-0
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 1300
Japan	VCCI	CISPR 22 Two OATS and one conducted Site	 R-1014, R-619, C-640
Norway	NEMKO	EN50081-1, EN50081-2, EN50082-1, EN50082-2, IEC61000-6-1, IEC61000-6-2, EN50083-2, EN50091-2, EN50130-4, EN55011, EN55013, EN55014-1, EN55104, EN55015, EN61547, EN55022, EN55024, EN61000-3-2, EN61000-3-3, EN60945, EN61326-1	 ELA 117
Norway	NEMKO	EN60601-1-2 and IEC 60601-1-2, the Collateral Standards for Electro-Medical Products. MDD, 93/42/EEC, AIMD 90/385/EEC	 ELA-171
Taiwan	BSMI	CNS 13438	 SL2-IN-E-1012
Canada	Industry Canada	RSS210 Low Power Transmitter and Receiver	 IC2324 A,B,C, and F

\* 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 measurement instruments utilized to perform the tests documented in this report have been calibrated in accordance with the manufacturer's recommendations, and are traceable to national standards.

### 5.2. MEASUREMENT UNCERTAINTY

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

<b>Radiated Emission</b>	
30MHz – 200 MHz	+/- 3.3dB
200MHz – 1000MHz	+4.5/-2.9dB
1000MHz – 2000MHz	+4.6/-2.2dB
<b>Power Line Conducted Emission</b>	
150kHz – 30MHz	+/-2.9

Any results falling within the above values are deemed to be marginal.



### 5.3. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
Preamplifier, 1300 MHz	HP	8447D	2944A06550	8/22/2003
Quasi-Peak Adaptor	HP	85650A	2521A01038	4/15/2003
SA Display Section 3	HP	85662A	2314A04793	4/15/2003
SA RF Section, 1.5 GHz	HP	85680A	2314A02604	11/26/2003
Line Filter	Lindgren	LMF-3489	497	NCR
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	9/6/2003
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	837990	9/6/2003
EMI Test Receiver	R & S	ESHS 20	827129/006	4/17/2003
Biconical Antenna	EATON	94455-1	1214	3/30/2003
Log Antenna	EMCO	3146	9109-3163	3/30/2003
PSA Series Spectrum Analyzer 1-26.5GHz	AGLIENT	E4440A	US42221737	9/24/2003
Preamplifier, 1-26GHz	MITEQ	NSP10023988	646456	4/46/03

## 6. SETUP OF EQUIPMENT UNDER TEST

### SETUP INFORMATION FOR TRANSMITTER TESTS

#### SUPPORT EQUIPMENT

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
AC ADAPTER MONITOR	DELTA VIEW SONIC	ADP-105B REV. H VCDTS2154-3R	BWVO242002128 EZ92703699	N/A DoC
THE FOLLOWING WAS USED ONLY TO START THE EUT				
KEYBOARD	HP	FDA-104EB	FDKB8019633	F42FDA104EB
LAPTOP	COMPAQ	1456VQLIN	1V9CDCHEOPY	DoC
AC ADAPTER	COMPAQ	PA-1600-19A	167529	N/A
WIRELESS RADIO	N/A	N/A	N/A	N/A
AC ADAPTER	AK TECH.	A10D1-OSMP	N/A	N/A

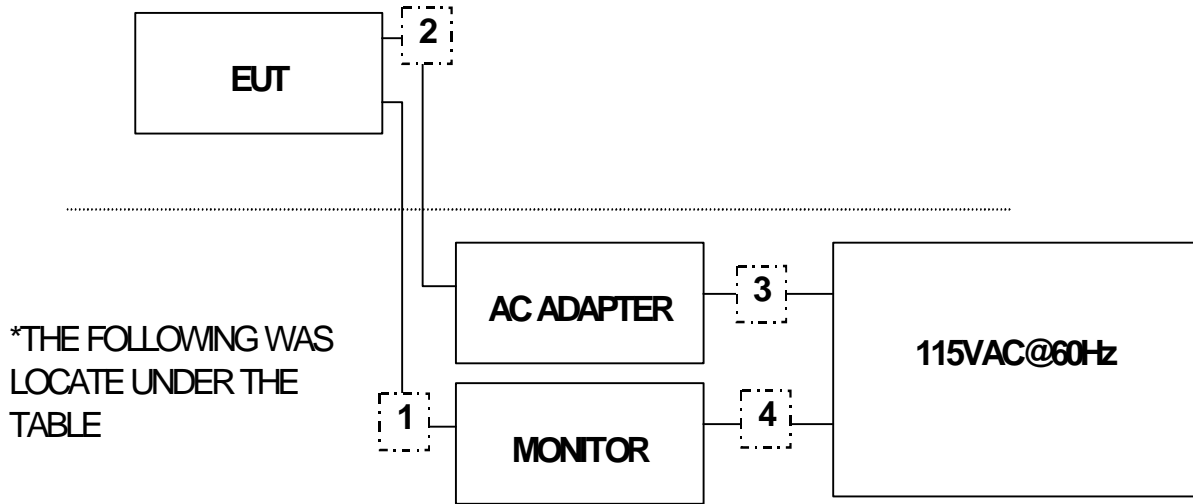
#### I/O CABLES

TEST I / O CABLES								
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
1	VIDEO	1	DB-15	SHIELDED	1.86M	YES	YES	FERRITE EUT END
2	PWR	1	DC PWR	UNSHIELDED	1.86M	NO	YES	N/A
3	PWR	1	AC PWR	UNSHIELDED	1.86M	NO	NO	BUNDLED ON LINE CONDUCTION
4	PWR	1	AC PWR	UNSHIELDED	1.86M	NO	NO	N/A

#### TEST SETUP

The EUT was connected to the monitor via its video port.

**SETUP DIAGRAM FOR TRANSMITTER TESTS**



**SETUP INFORMATION FOR DIGITAL DEVICE TESTS**

**SUPPORT EQUIPMENT**

<b>TEST PERIPHERALS</b>				
<b>Device Type</b>	<b>Manufacturer</b>	<b>Model Number</b>	<b>Serial Number</b>	<b>FCC ID</b>
<b>AC ADAPTER MONITOR</b>	<b>DELTA VIEW SONIC</b>	<b>ADP-105B REV. H VCDTS2154-3R</b>	<b>BWWO242002128 EZ92703699</b>	<b>N/A DoC</b>
<b>THE FOLLOWING WAS USED ONLY TO START THE EUT</b>				
<b>KEYBOARD</b>	<b>HP</b>	<b>FDA-104EB</b>	<b>FDKB8019633</b>	<b>F42FDA104EB</b>
<b>LAPTOP</b>	<b>COMPAQ</b>	<b>1456VQLIN</b>	<b>1V9CDCHEOPY</b>	<b>DoC</b>
<b>AC ADAPTER</b>	<b>COMPAQ</b>	<b>PA-1600-19A</b>	<b>167529</b>	<b>N/A</b>
<b>WIRELESS RADIO</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>AC ADAPTER</b>	<b>AK TECH.</b>	<b>A10D1-OSMP</b>	<b>N/A</b>	<b>N/A</b>

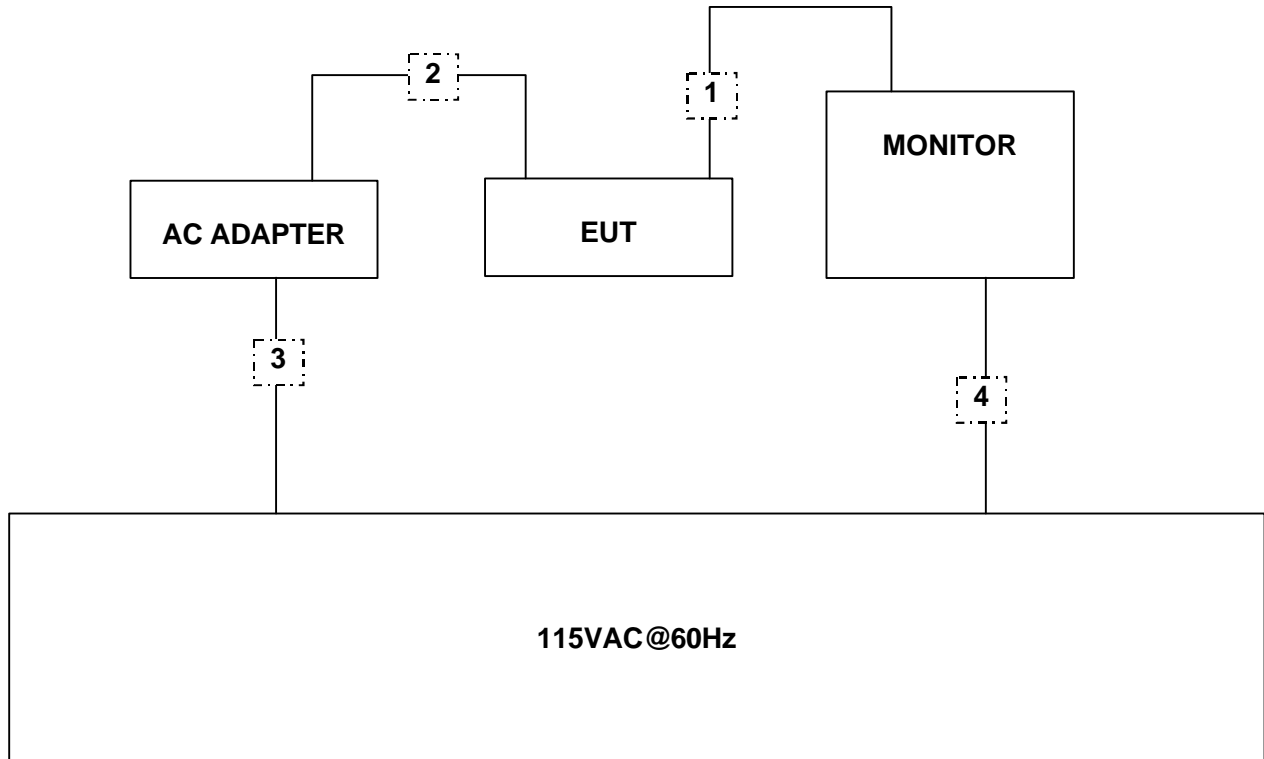
**I/O CABLES**

<b>TEST I / O CABLES</b>								
<b>Cable No</b>	<b>I/O Port</b>	<b># of I/O Port</b>	<b>Connector Type</b>	<b>Type of Cable</b>	<b>Cable Length</b>	<b>Data Traffic</b>	<b>Bundled</b>	<b>Remark</b>
<b>1</b>	<b>VIDEO</b>	<b>1</b>	<b>DB-15</b>	<b>SHIELDED</b>	<b>1.86M</b>	<b>YES</b>	<b>YES</b>	<b>FERRITE EUT END</b>
<b>2</b>	<b>PWR</b>	<b>1</b>	<b>DC PWR</b>	<b>UNSHIELDED</b>	<b>1.86M</b>	<b>NO</b>	<b>YES</b>	<b>N/A</b>
<b>3</b>	<b>PWR</b>	<b>1</b>	<b>AC PWR</b>	<b>UNSHIELDED</b>	<b>1.86M</b>	<b>NO</b>	<b>NO</b>	<b>BUNDLED ON LINE CONDUCTION</b>
<b>4</b>	<b>PWR</b>	<b>1</b>	<b>AC PWR</b>	<b>UNSHIELDED</b>	<b>1.86M</b>	<b>NO</b>	<b>NO</b>	<b>N/A</b>

**TEST SETUP**

The EUT was connected to the monitor via its video port..

**SETUP DIAGRAM FOR DIGITAL DEVICE TESTS**



## 7. APPLICABLE RULES

### **§15.247 (a)- BANDWIDTH**

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

### **§15.247 (b)- POWER OUTPUT**

The maximum peak output power of the intentional radiator shall not exceed the following:

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz , and 5725-5850 MHz bands: 1 watt.

(4) Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **§15.247 (b)- RADIO FREQUENCY EXPOSURE**

(5) Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See §1.1307(b)(1) of this chapter.

### **§15.247 (c)- SPURIOUS EMISSIONS**

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

### **§15.247 (d)- PEAK POWER SPECTRAL DENSITY**

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

(f) The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

**§15.205- RESTRICTED BANDS OF OPERATIONS**

(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

(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.

**§15.207- CONDUCTED LIMITS**

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

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.

**§15.209- RADIATED EMISSION LIMITS**

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

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

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

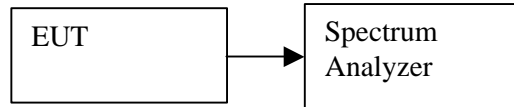
(b) In the emission table above, the tighter limit applies at the band edges.



## 8. TEST SETUP, PROCEDURE AND RESULT

### 8.1. 6 dB BANDWIDTH

#### TEST SETUP



#### TEST PROCEDURE

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

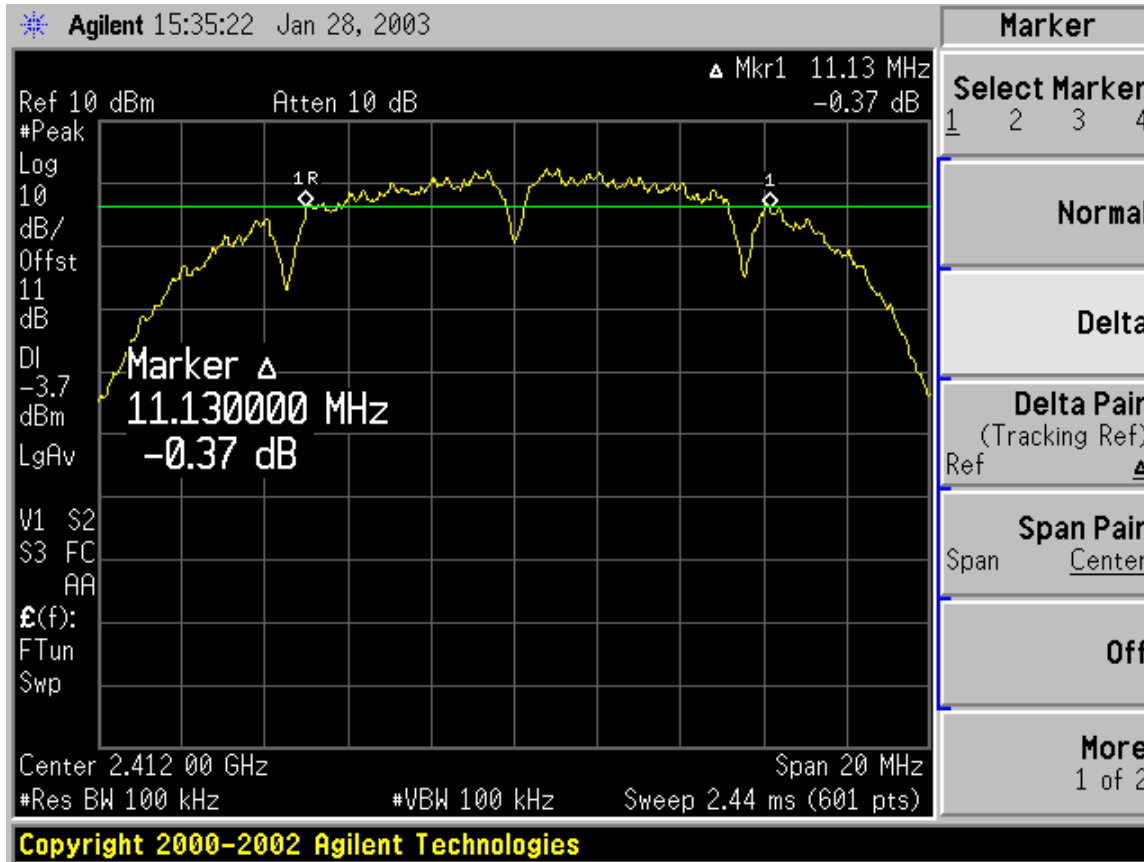
#### RESULTS

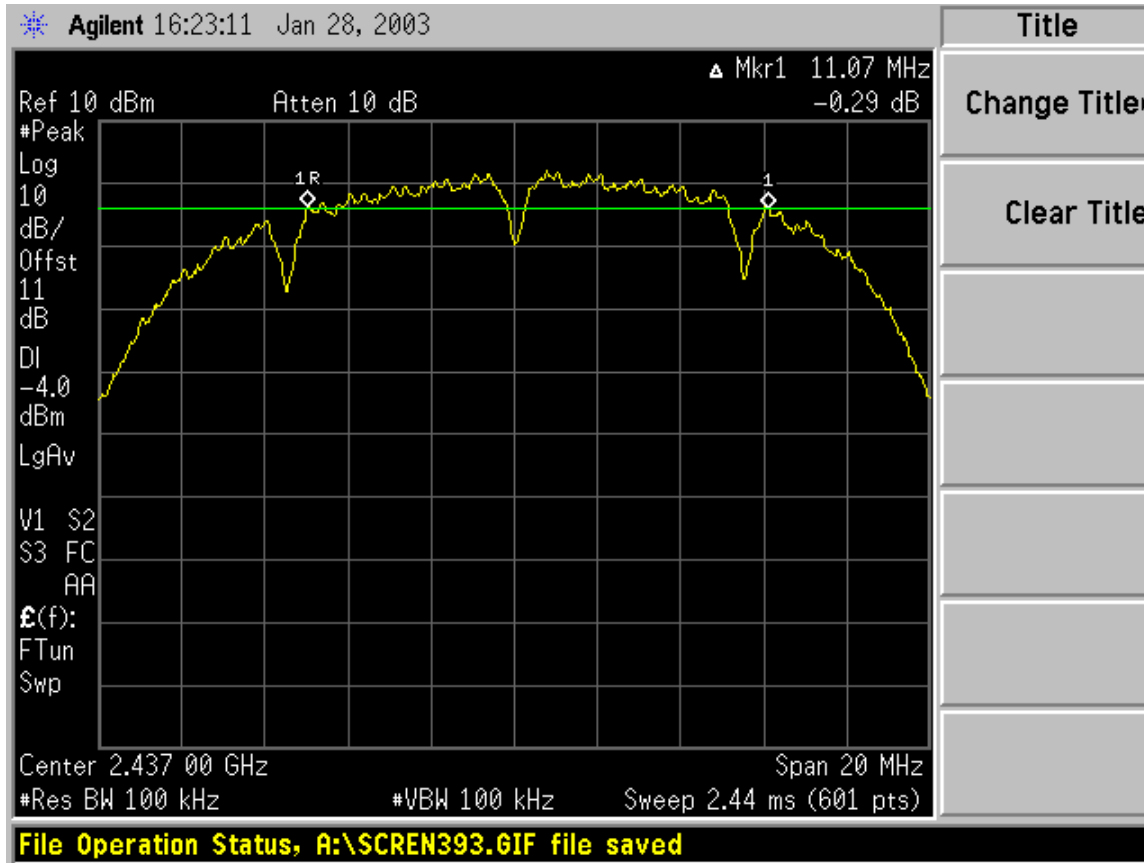
No non-compliance noted:

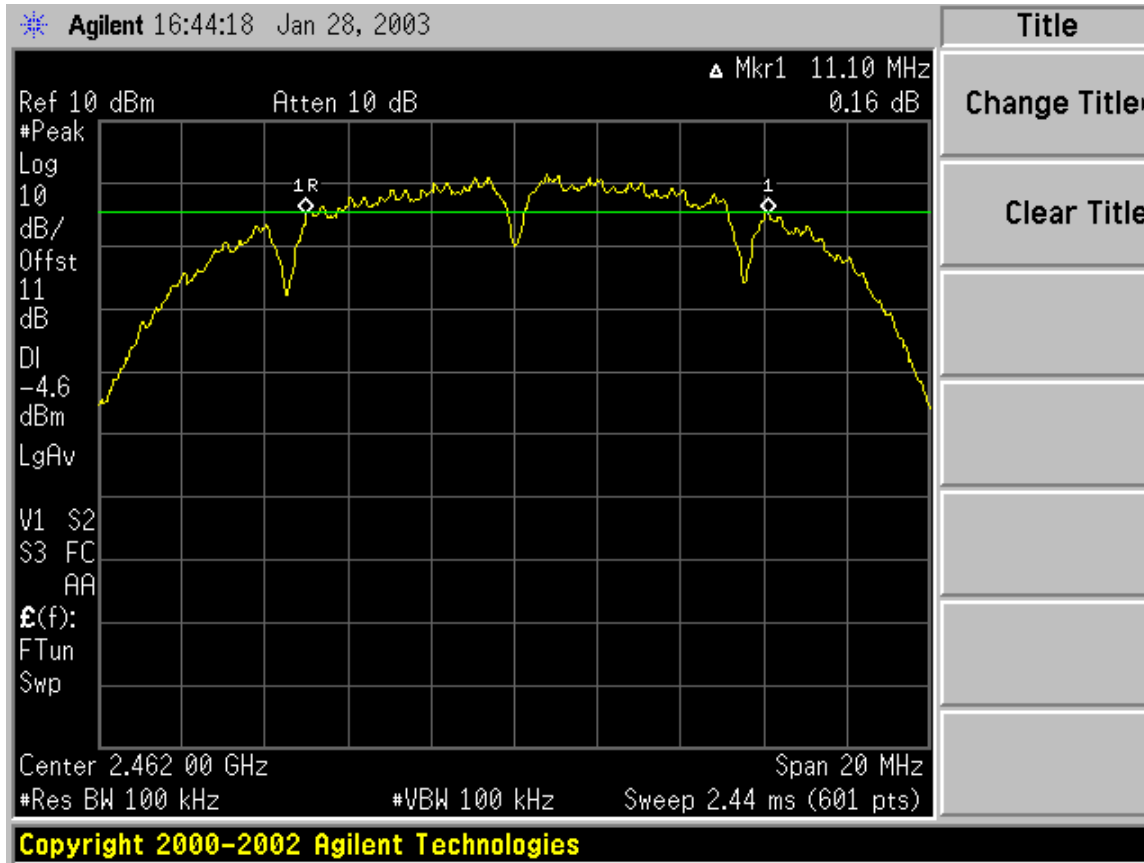
#### 2.4 GHz Band

Channel	Frequency (MHz)	B (kHz)	Limit (kHz)	Margin (kHz)
Low	2412	11130	500	10630
Middle	2437	11070	500	10570
High	2462	11100	500	10600

**6 DB BANDWIDTH (2.4 GHZ BAND)**

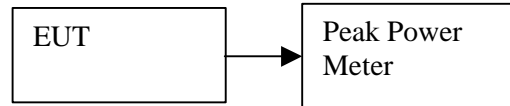






## 8.2. PEAK POWER

### TEST SETUP



### TEST PROCEDURE

The transmitter output is connected to the power meter. The power meter is set to read peak power.

### LIMIT

The maximum antenna gain = 5.0 dBi, therefore the limit is 30 dBm.

### RESULTS

No non-compliance noted:

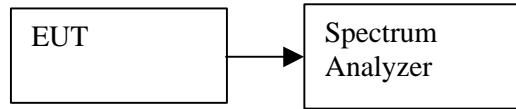
Note: Total Insertion Loss = 11 dB, consisting of a 10 dB Attenuator plus 1 dB Cable. This total insertion loss factor was entered in the power meter as an offset to provide direct reading of power at the EUT antenna port.

#### 2.4 GHz Band

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	13.00	30	-17.00
Middle	2437	13.81	30	-16.19
High	2462	13.13	30	-16.87

### 8.3. PEAK POWER SPECTRAL DENSITY

#### TEST SETUP



#### TEST PROCEDURE

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

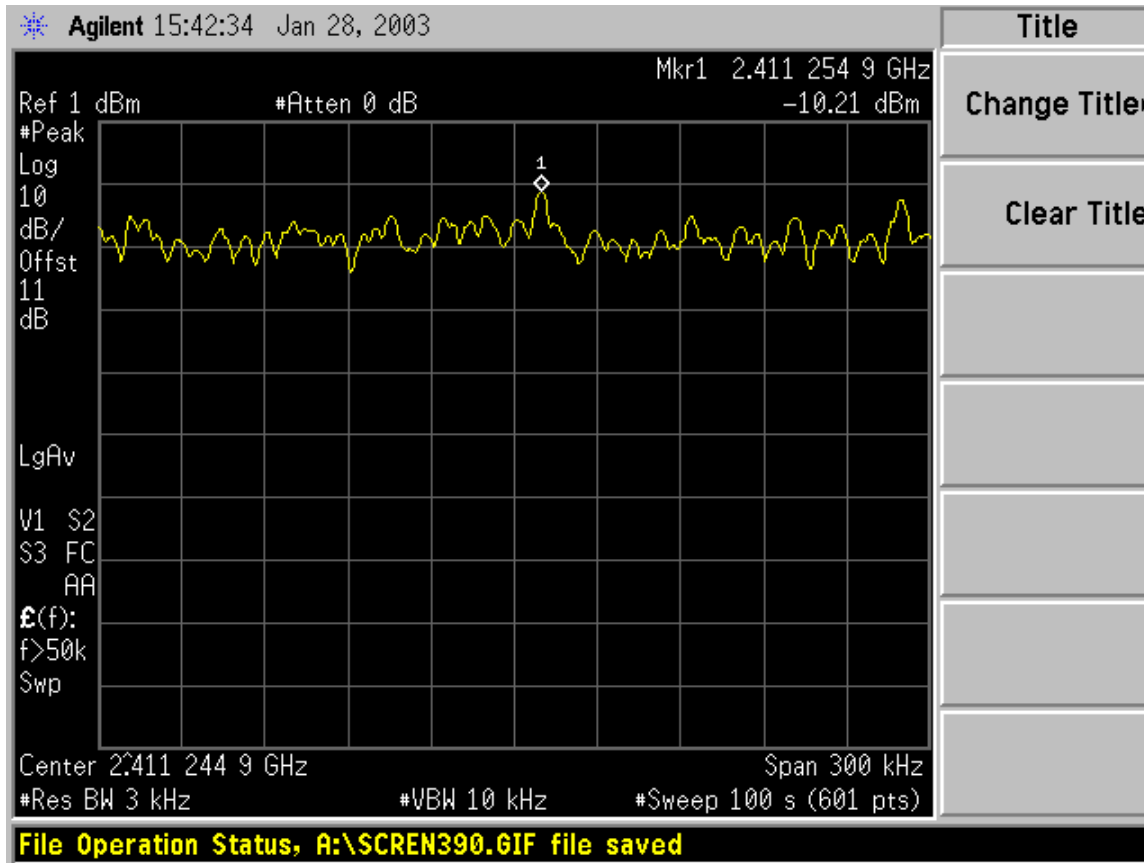
#### RESULTS

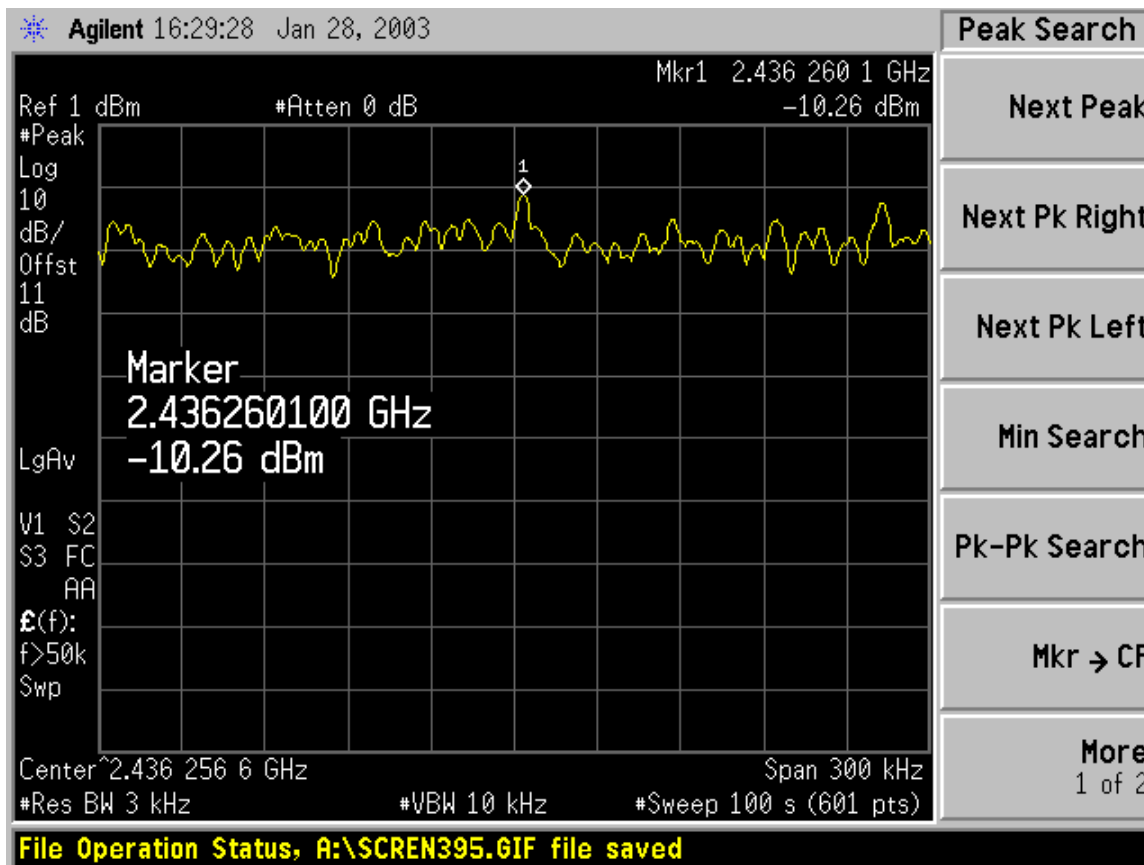
No non-compliance noted:

#### 2.4 GHz Band

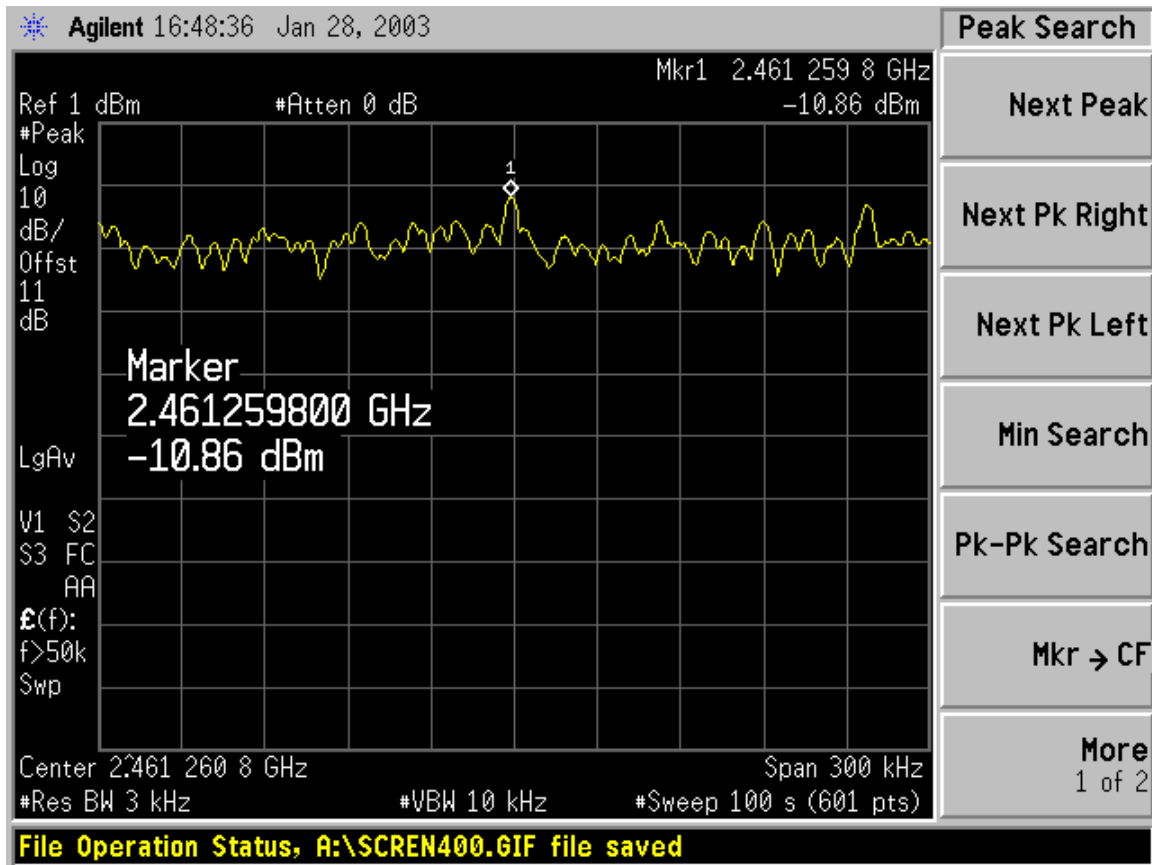
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.21	8	-18.21
Middle	2437	-10.26	8	-18.26
High	2462	-10.86	8	-18.86

**PPSD (2.4 GHZ BAND)**









## 8.4. MAXIMUM PERMISSIBLE EXPOSURE

### CALCULATIONS

Given

$$E = \sqrt{(30 * P * G) / d}$$

and

$$S = E^2 / 3770$$

where

E = Field Strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = distance in meters

S = Power Density in milliwatts / square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

$$d = \sqrt{((30 * P * G) / (3770 * S))}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = 100 * d \text{ (m)}$$

yields

$$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$$

$$d = 0.282 * \sqrt{(P * G / S)}$$

where

d = distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power Density in mW / cm<sup>2</sup>

Substituting the logarithmic form of power and gain using:

$$P \text{ (mW)} = 10^{(P \text{ (dBm)} / 10)} \text{ and}$$

$$G \text{ (numeric)} = 10^{(G \text{ (dBi)} / 10)}$$

yields

$$d = 0.282 * 10^{((P + G) / 20) / \sqrt{S}} \quad \text{Equation (1)}$$

where

d = MPE safe distance in cm

P = Power in dBm

G = Antenna Gain in dBi

S = Power Density Limit in mW / cm<sup>2</sup>

## **RESULTS**

No non-compliance noted:

### **MAXIMUM PERMISSIBLE EXPOSURE (2.4 GHZ BAND)**

EUT output power = 13.81 dBm

Antenna Gain = 5.0 dBi

S = 1.0 mW / cm<sup>2</sup> from 1.1310 Table 1

Substituting these parameters into Equation (1) above:

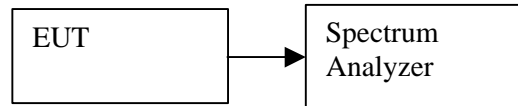
MPE Safe Distance = 2.5 cm

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

## 8.5. SPURIOUS EMISSIONS

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

### TEST SETUP



### TEST PROCEDURE

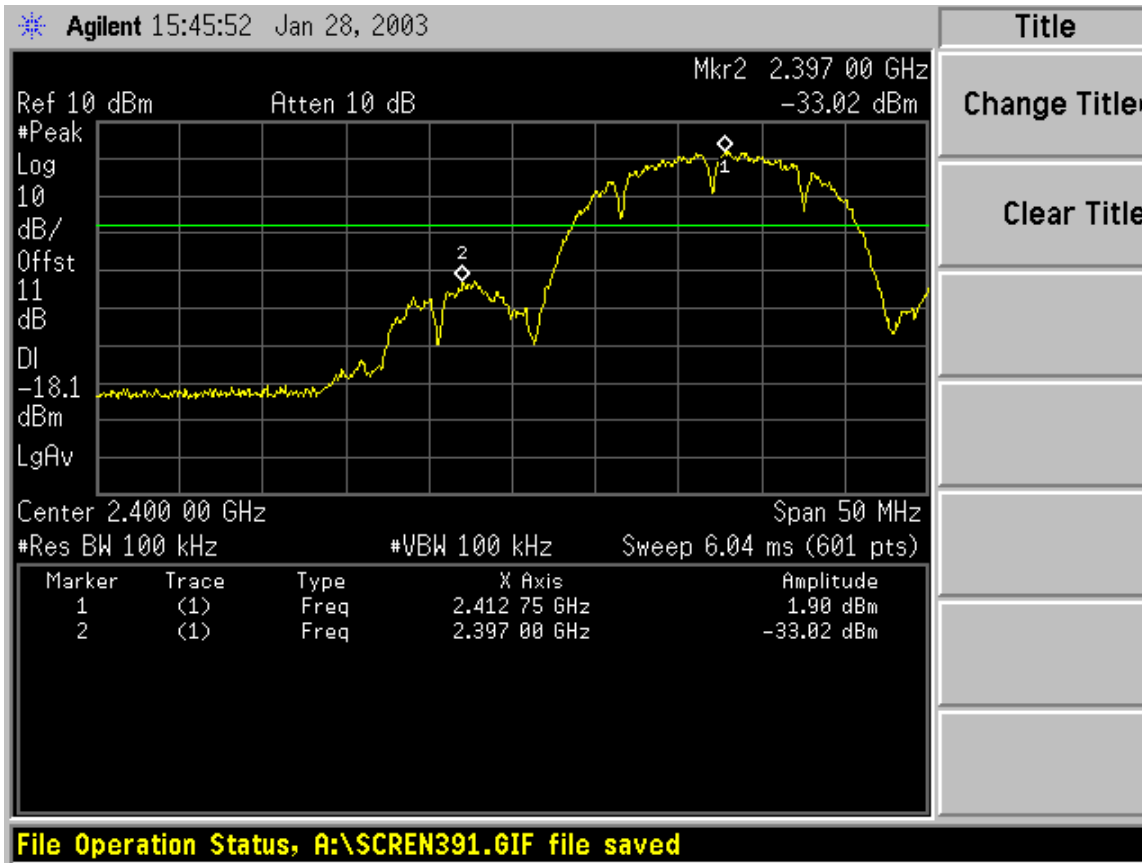
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

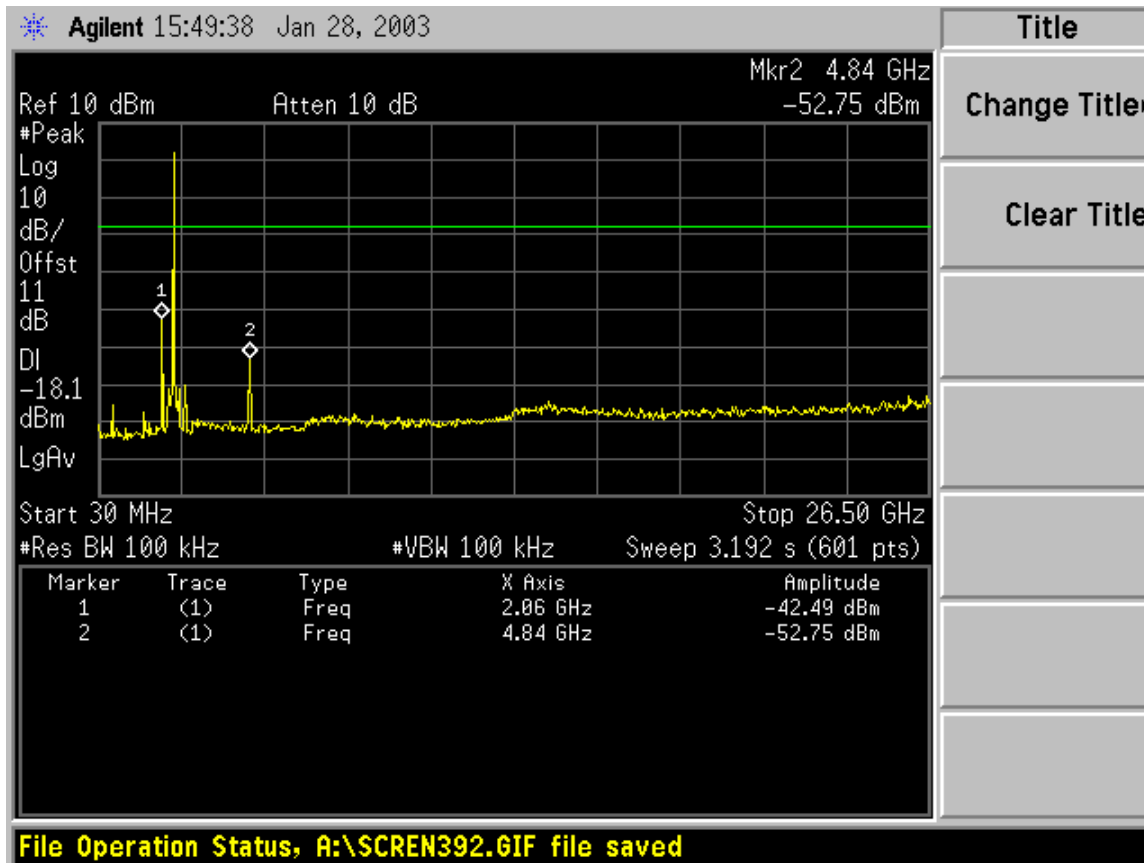
Measurements are made over the 30 MHz to 26.5 GHz range with the transmitter set to the lowest, middle, and highest channels.

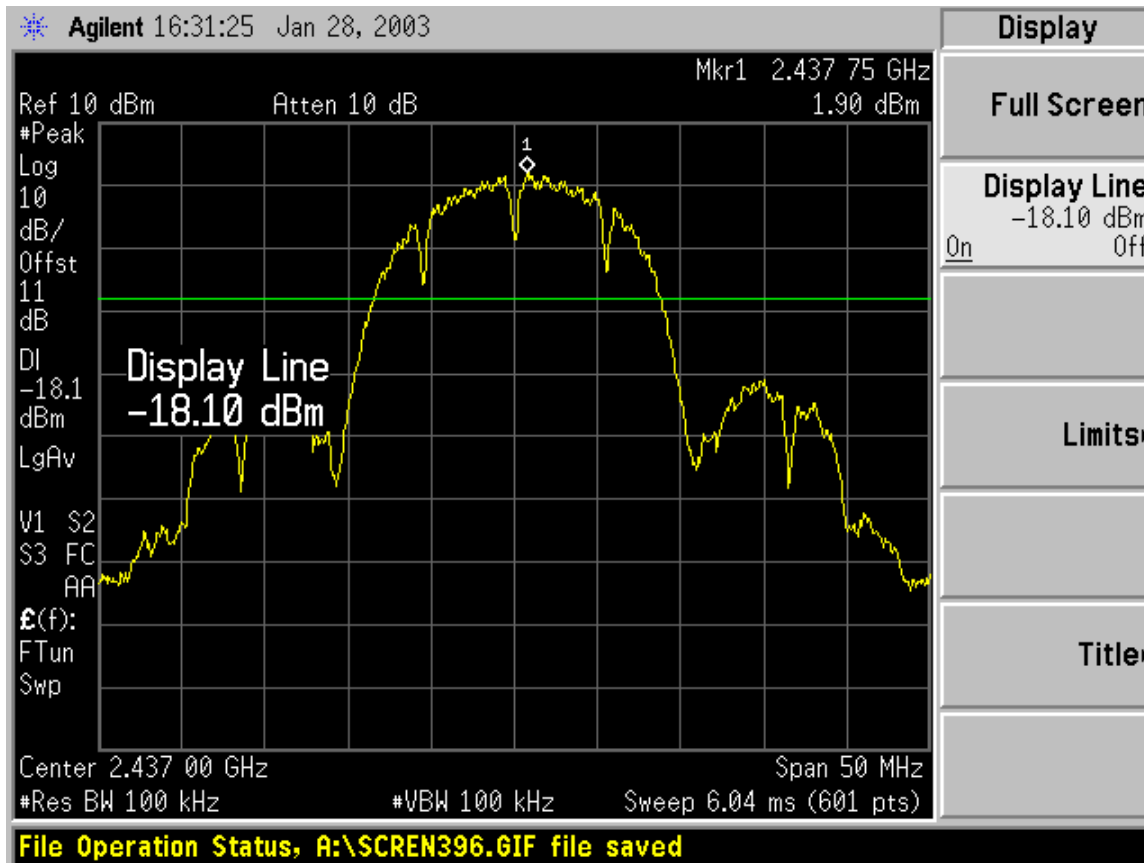
### RESULTS

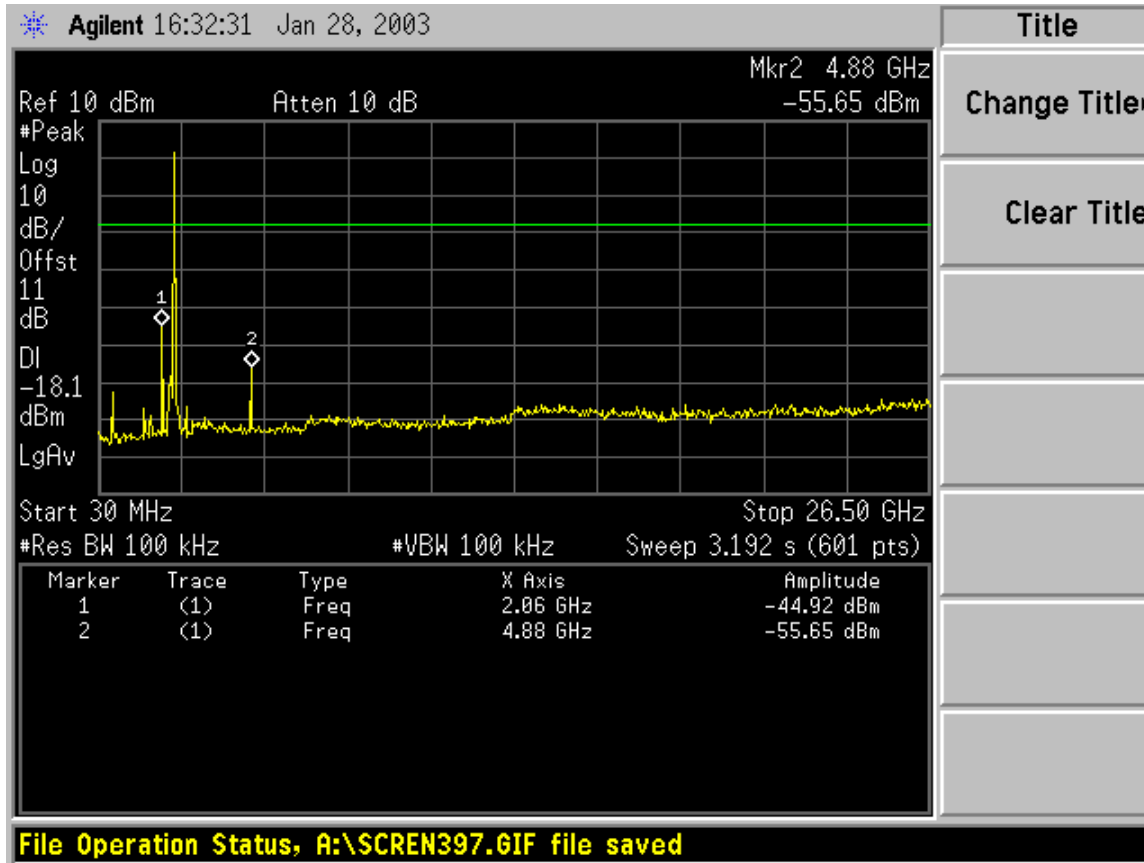
No non-compliance noted:

**CONDUCTED SPURIOUS EMISSIONS (2.4 GHZ BAND)**

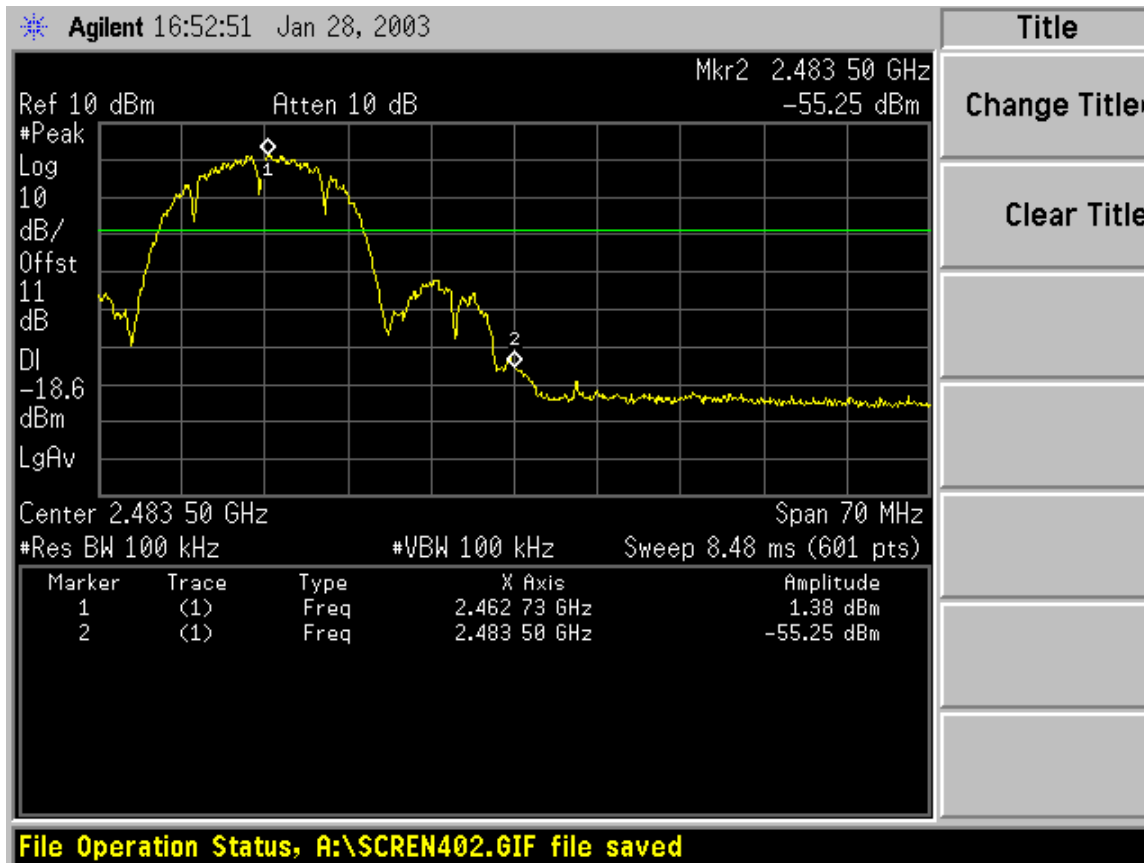


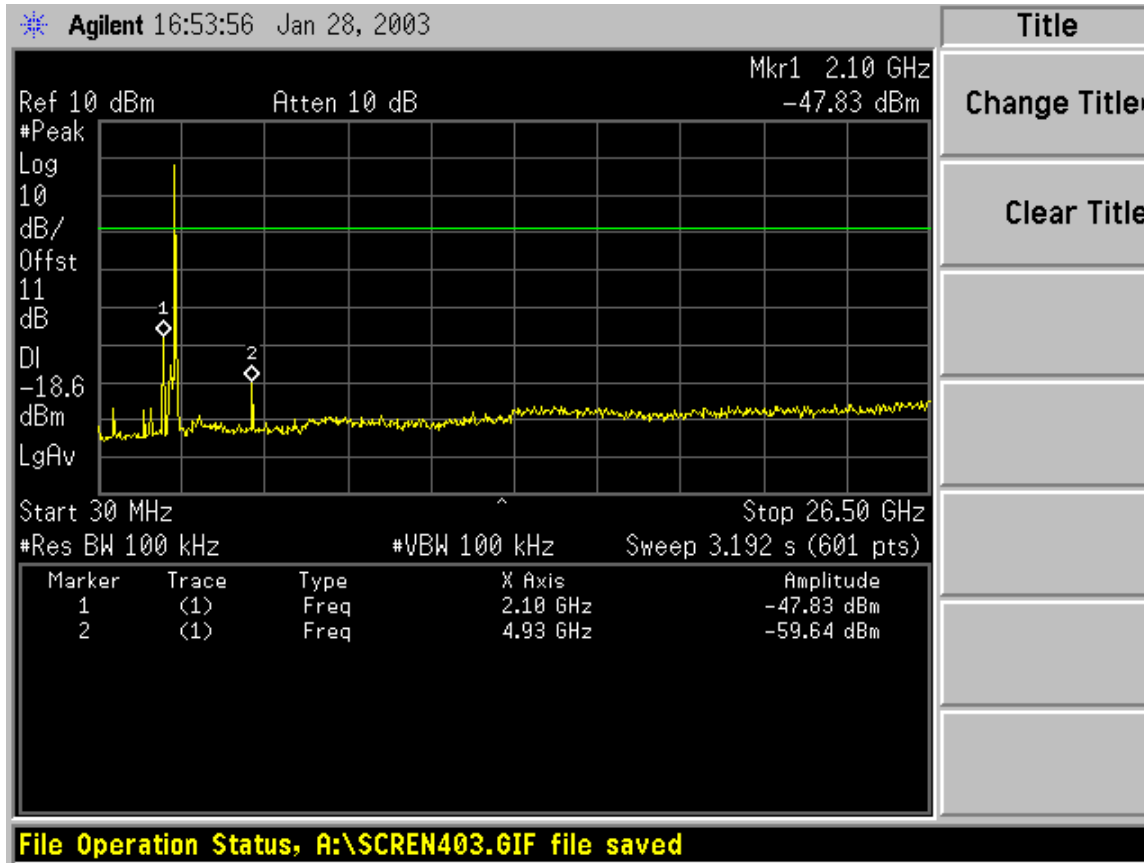












## 8.6. RADIATED EMISSIONS

### TEST SETUP

The EUT is placed on the wooden table. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4/1992.

The EUT is set to transmit in a continuous mode.

### TEST PROCEDURE

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.

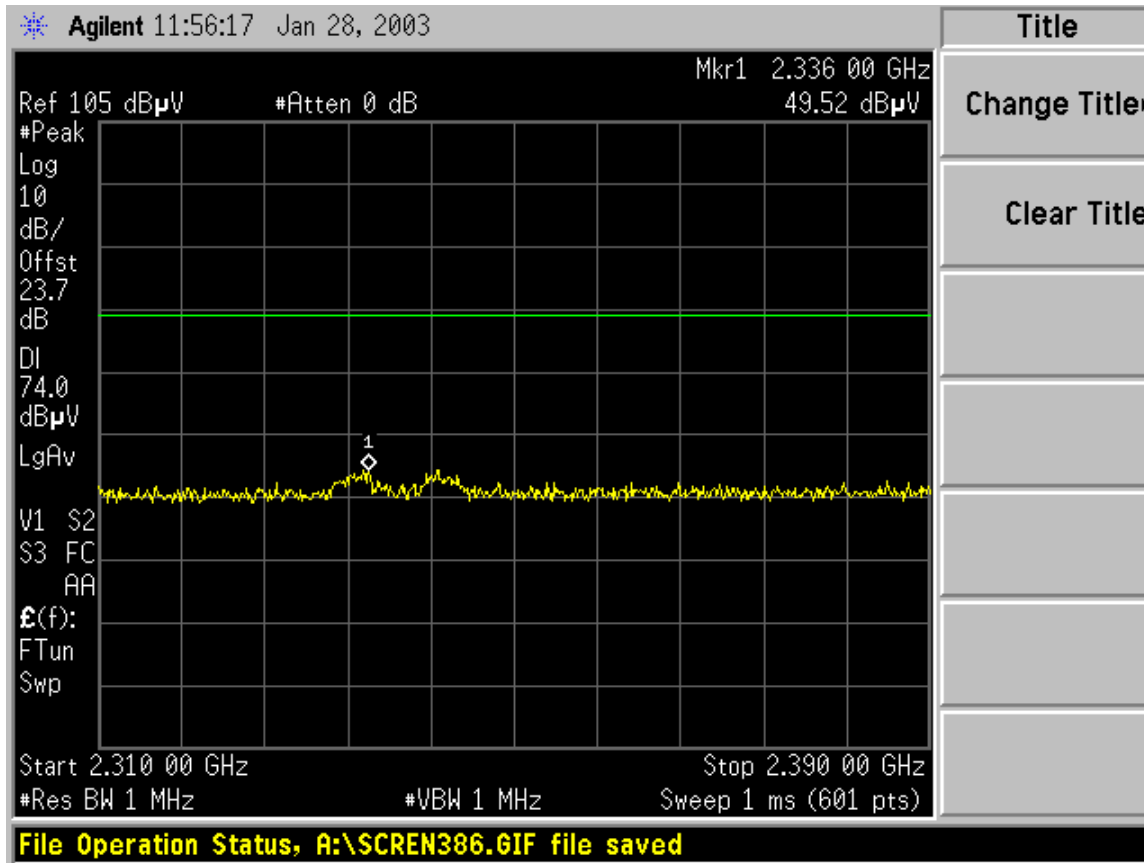
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels within the 2.4 GHz band.

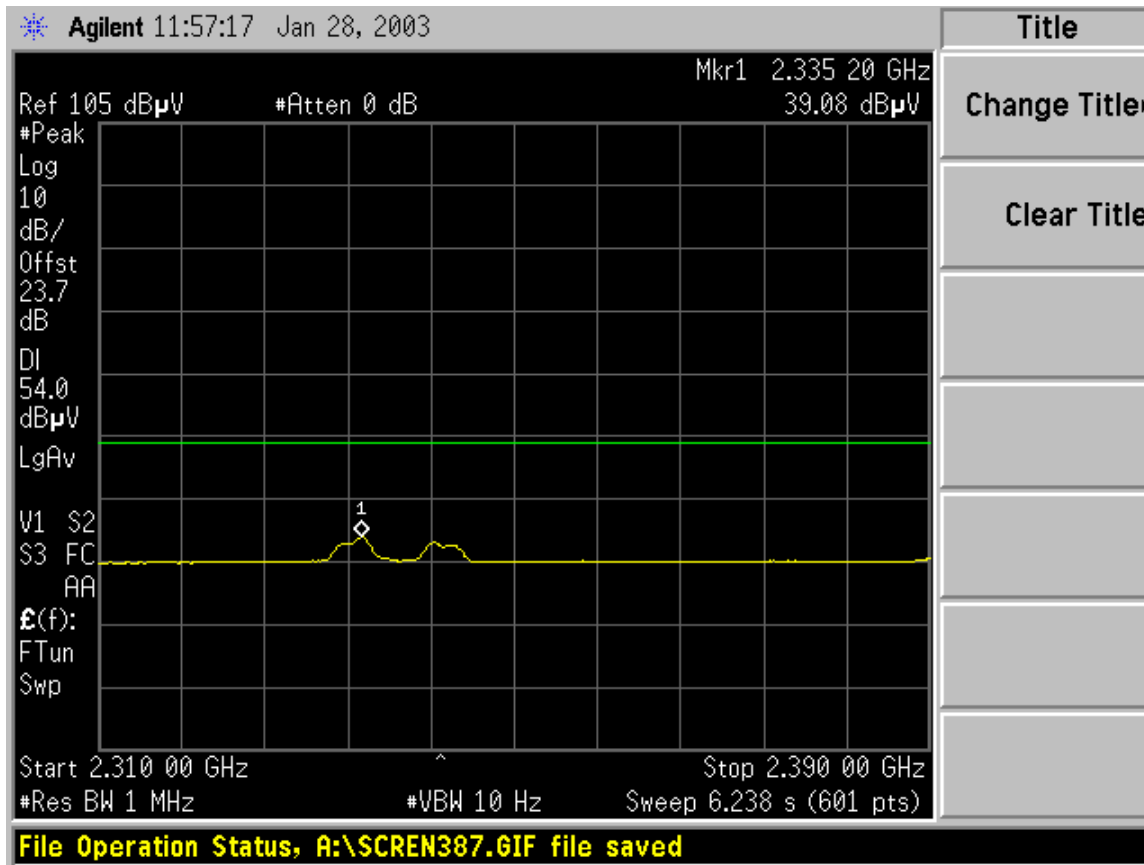
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The frequency span is set small enough to easily differentiate between broadcast stations, intermittent ambient signals and EUT emissions. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the suspected signal. Measurements were made with the antenna polarized in both the vertical and the horizontal positions.

### TEST RESULTS

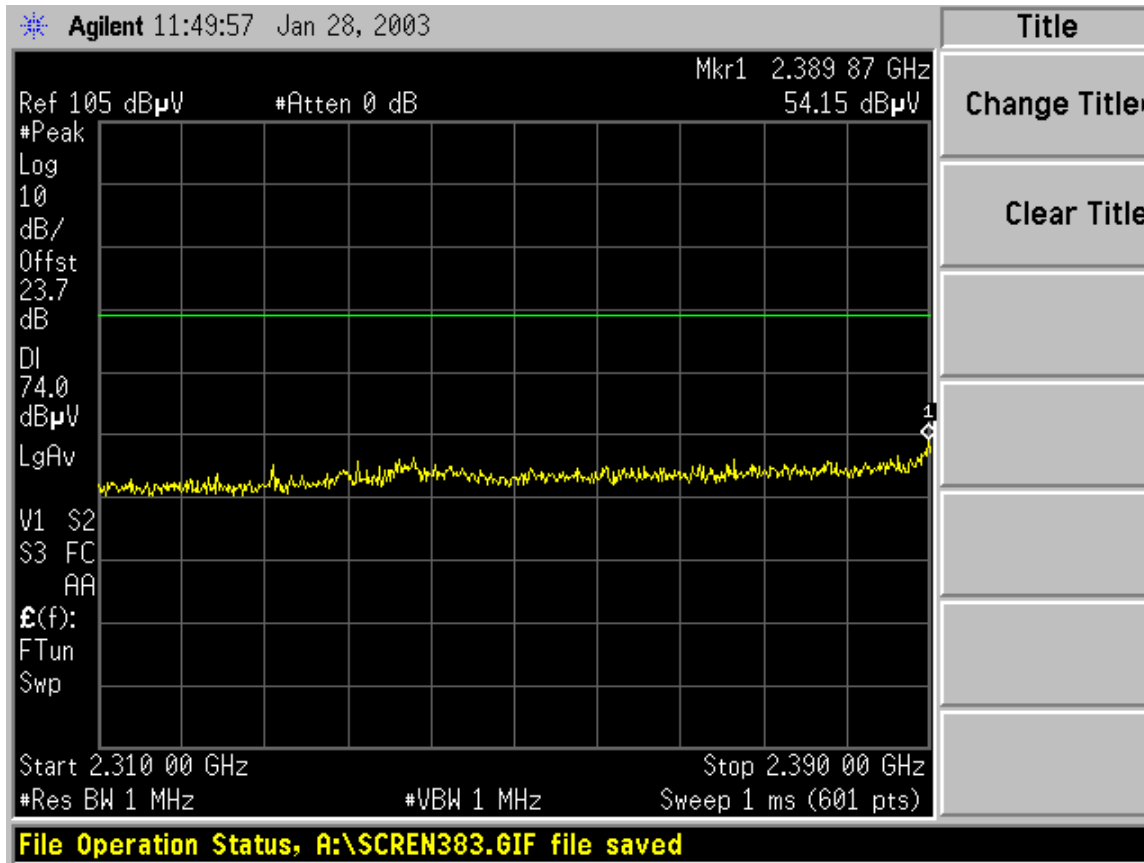
No non-compliance noted:

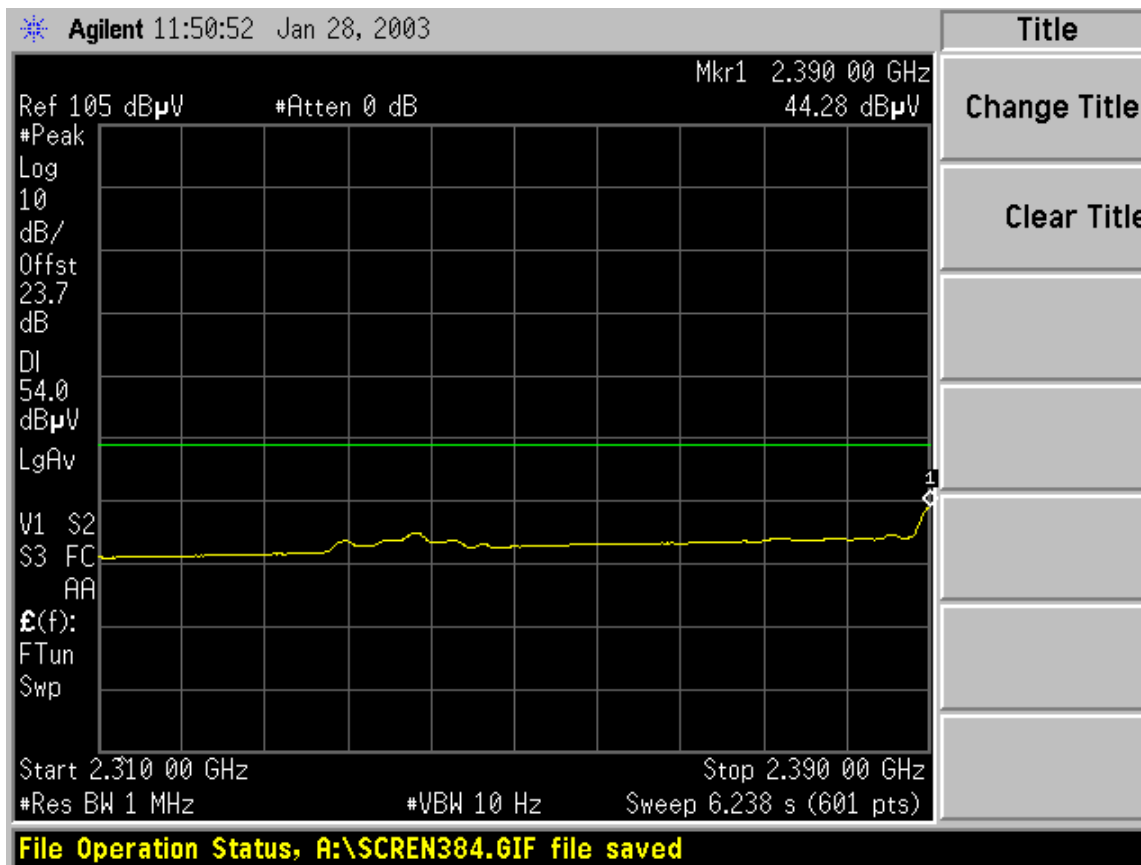
**RESTRICTED BAND RADIATED EMISSIONS (LOW CHANNEL, HORIZONTAL POLARIZATION)**



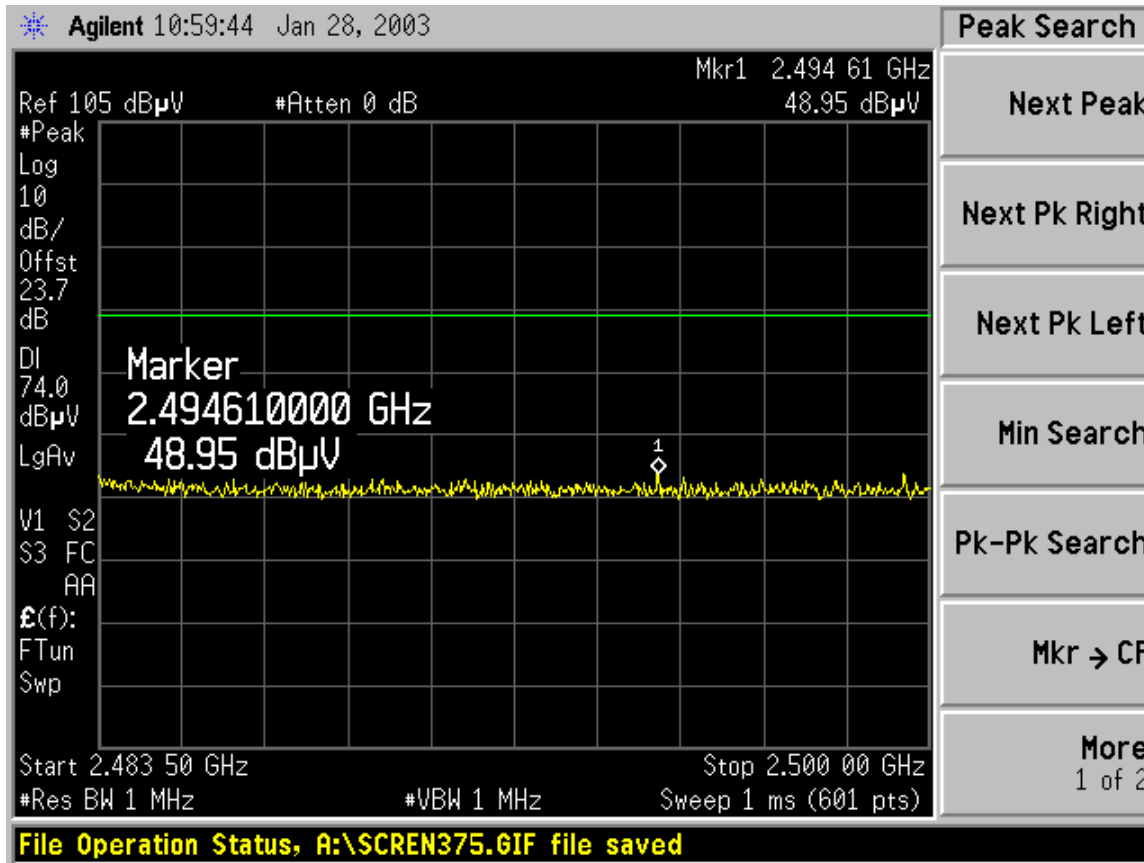


**RESTRICTED BAND RADIATED EMISSIONS (LOW CHANNEL, VERTICAL POLARIZATION)**

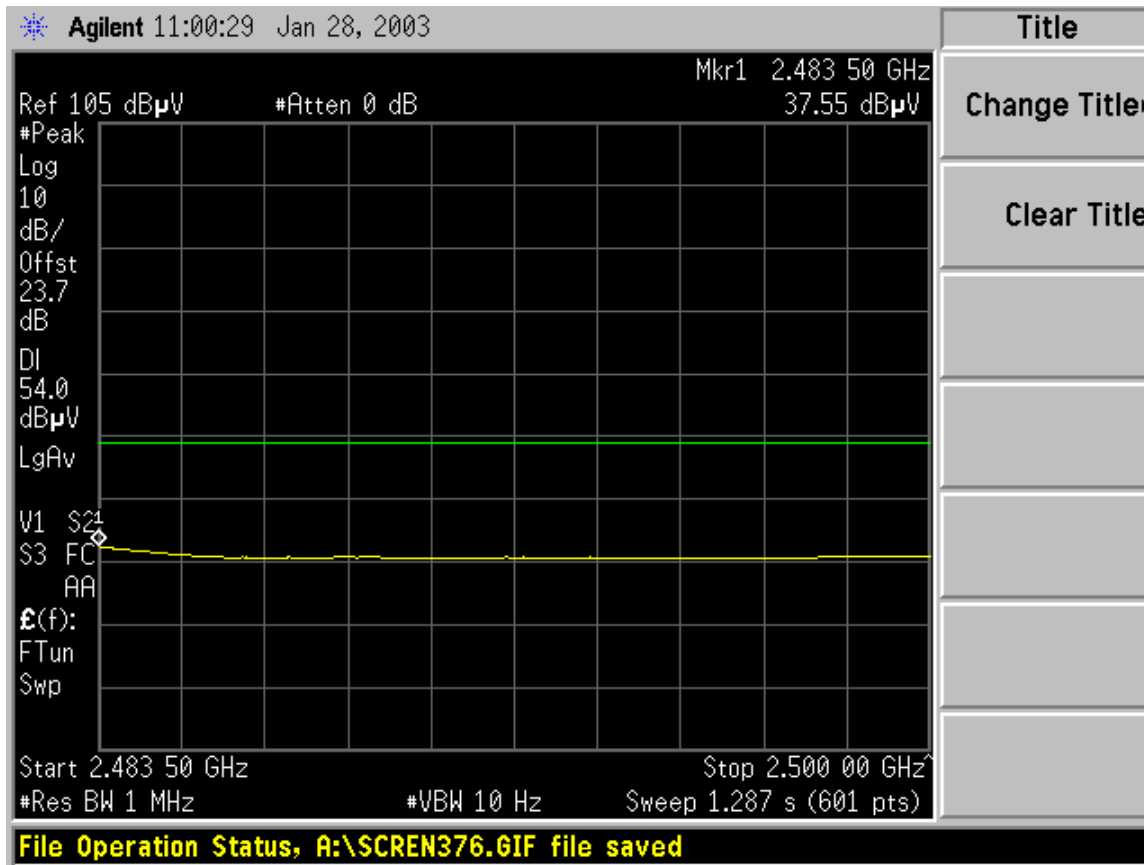




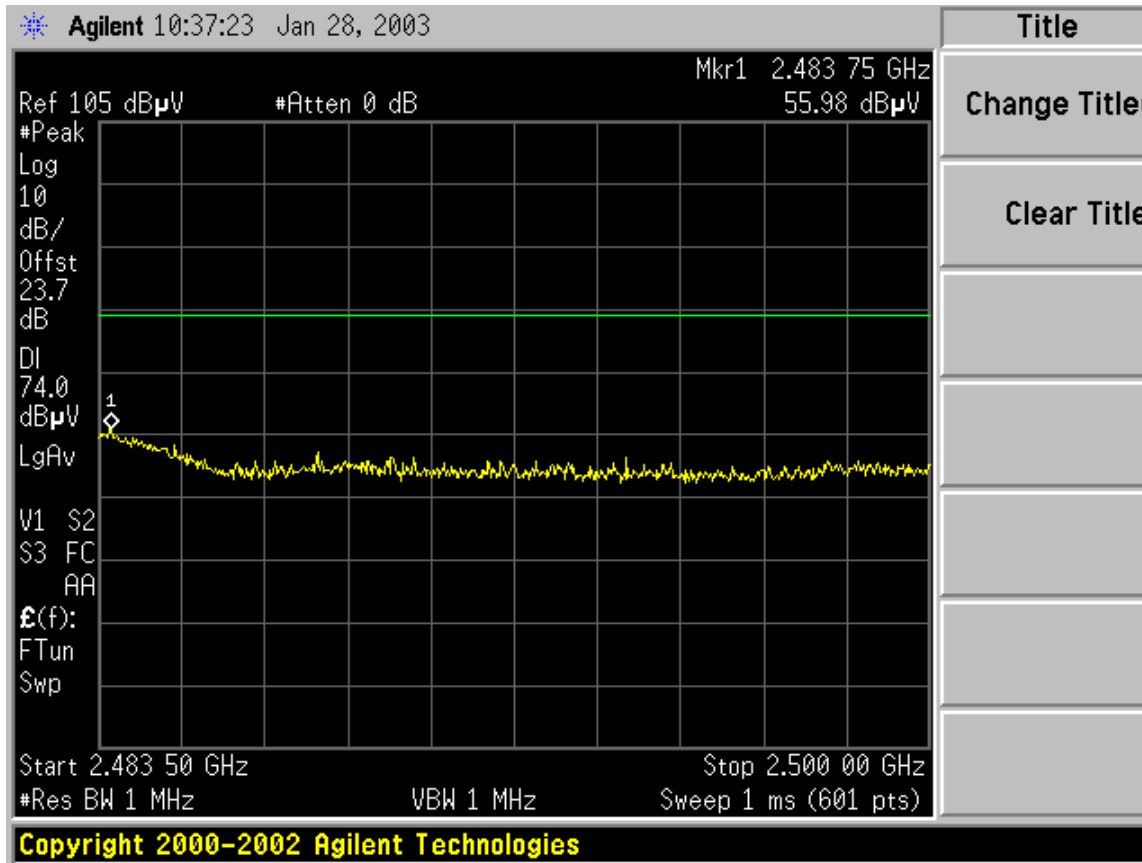
**RESTRICTED BAND RADIATED EMISSIONS (HIGH CHANNEL, HORIZONTAL POLARIZATION)**

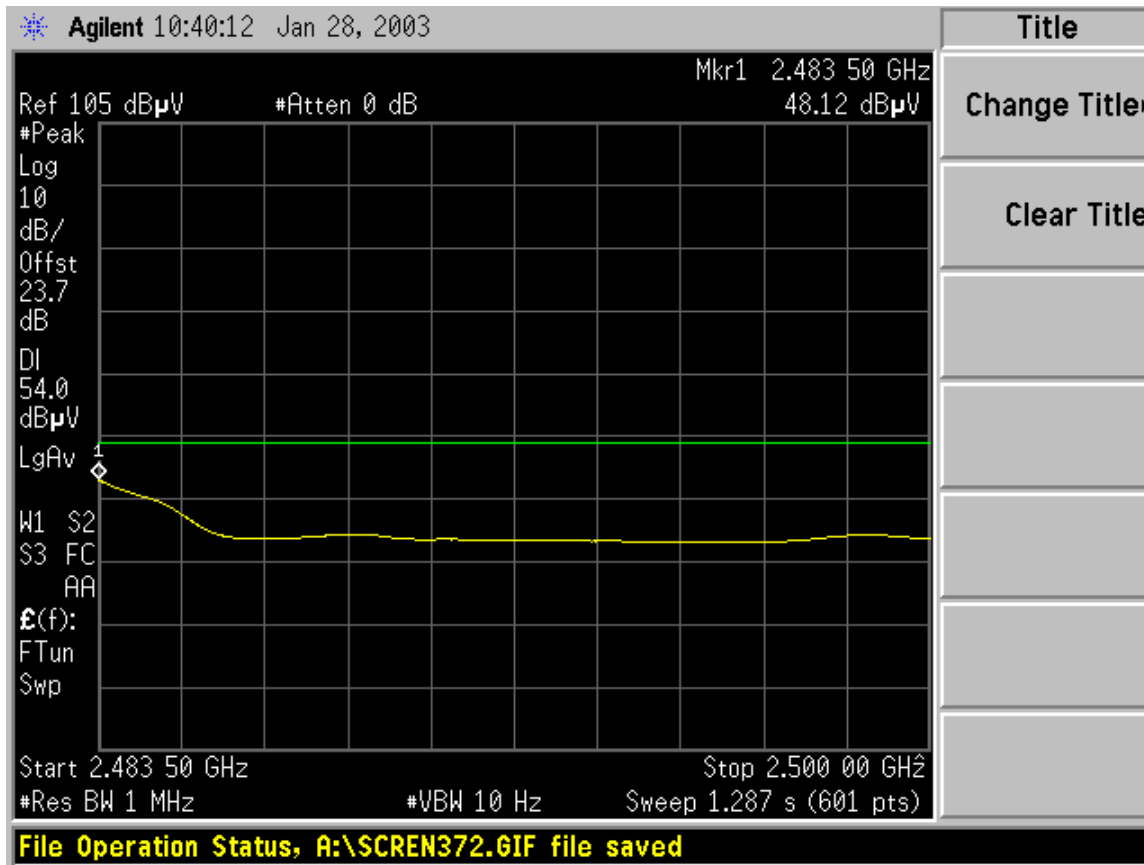






**RESTRICTED BAND RADIATED EMISSIONS (HIGH CHANNEL, VERTICAL POLARIZATION)**





**HARMONIC AND SPURIOUS RADIATED EMISSIONS (2.4 GHZ BAND)**

01/28/03 High Frequency Measurement  
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: NEELESH RAJ  
 Project #: 02U1707  
 Company: OTC WIRELESS  
 EUT Descrip.: 2.4 GHz WIRELESS MONITOR/PROJECTOR RADIO  
 EUT M/N: WJET  
 Test Target: FCC  
 Mode Oper: TX

Test Equipment:

<table border="1"> <tr><td>Cable (feet)</td></tr> <tr><td>15</td></tr> </table>	Cable (feet)	15	<table border="1"> <tr><td>EMCO Horn 1-18GHz</td></tr> <tr><td>T72; S/N: 6739</td></tr> </table>	EMCO Horn 1-18GHz	T72; S/N: 6739	<table border="1"> <tr><td>Pre-amplifier 1-26GHz</td></tr> <tr><td>Miteq NSP2600-44</td></tr> </table>	Pre-amplifier 1-26GHz	Miteq NSP2600-44	<table border="1"> <tr><td>Spectrum Analyzer</td></tr> <tr><td>PSA</td></tr> </table>	Spectrum Analyzer	PSA	<table border="1"> <tr><td>Horn &gt; 18GHz</td></tr> <tr><td></td></tr> </table>	Horn > 18GHz	
Cable (feet)														
15														
EMCO Horn 1-18GHz														
T72; S/N: 6739														
Pre-amplifier 1-26GHz														
Miteq NSP2600-44														
Spectrum Analyzer														
PSA														
Horn > 18GHz														

Peak Measurements:  
 1 MHz Resolution Bandwidth  
 1MHz Video Bandwidth

Average Measurements:  
 1 MHz Resolution Bandwidth  
 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
HARMONICS															
LOW CHANNEL 2.412 GHz															
4.824	3.3	52.7	48.0	33.9	5.7	-36.1	-9.5	1.0	47.8	43.0	74.0	54.0	-26.2	-11.0	V
4.824	3.3	49.0	42.0	33.9	5.7	-36.1	-9.5	1.0	44.0	37.0	74.0	54.0	-30.0	-17.0	H
MID CHANNEL 2.437 GHz															
4.874	3.3	50.3	44.7	34.0	5.8	-36.1	-9.5	1.0	45.5	39.9	74.0	54.0	-28.5	-14.1	V
4.874	3.3	46.7	39.6	34.0	5.8	-36.1	-9.5	1.0	41.9	34.8	74.0	54.0	-32.1	-19.2	H
7.311	3.3	41.1	31.3	37.1	7.3	-36.3	-9.5	1.0	40.7	30.9	74.0	54.0	-33.3	-23.1	V
7.311	3.3	40.9	31.0	37.1	7.3	-36.3	-9.5	1.0	40.5	30.6	74.0	54.0	-33.5	-23.4	H
HIGH CHANNEL 2.462GHz															
4.924	3.3	48.3	42.1	34.2	5.8	-36.1	-9.5	1.0	43.7	37.5	74.0	54.0	-30.3	-16.5	V
4.924	3.3	47.4	39.2	34.2	5.8	-36.1	-9.5	1.0	42.9	34.6	74.0	54.0	-31.1	-19.4	H
7.386	3.3	41.6	31.0	37.3	7.3	-36.2	-9.5	1.0	41.5	30.9	74.0	54.0	-32.5	-23.1	V
7.386	3.3	40.0	30.3	37.3	7.3	-36.2	-9.5	1.0	39.9	30.2	74.0	54.0	-34.1	-23.8	H
SPURIOUS															
LOW CHANNEL 2.412 GHz															
4.075	3.3	41.0	33.3	33.2	5.2	-36.1	-9.5	5.4	39.1	31.5	74.0	54.0	-34.9	-22.5	V
4.075	3.3	43.7	34.0	33.2	5.2	-36.1	-9.5	5.4	41.9	32.2	74.0	54.0	-32.1	-21.8	H
MID CHANNEL 2.437 GHz															
4.285	3.3	41.0	30.3	33.1	5.3	-36.1	-9.5	3.4	37.1	26.5	74.0	54.0	-36.9	-27.5	V
4.285	3.3	40.0	30.3	33.1	5.3	-36.1	-9.5	3.4	36.2	26.5	74.0	54.0	-37.8	-27.5	H
HIGH CHANNEL 2.462GHz															
(NO OTHER SPURIOUS EMISSIONS WERE DETECTED ABOVE THE NOISE FLOOR)															

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

DIGITAL DEVICE RADIATED EMISSIONS



FCC, VCCI, CISPR, CE, AUSTEL, NZ  
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001  
PHONE: (408) 463-0885 FAX: (408) 463-0888

*Project #:* 02U1707  
*Report #:* 12903  
*Date & Time:* 01/29/03 9:50 AM  
*Test Engr:* NEELESH RAJ

*Company:* OTC WIRELESS INC.  
*EUT Description:* 2.4GHz WIRELESS MONITOR/PROJECTOR RADIO ADAPTER  
*Test Configuration:* EUT/MONITOR  
*Type of Test:* CISPR22-B  
*Mode of Operation:* TX

[<< Main Sheet](#)

Freq. (MHz)	Reading (dBuV)	AF (dB)	Class (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit EN B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
220.00	40.90	10.59	2.54	26.54	27.48	30.00	-2.52	10mV	135.00	1.50	P
352.00	41.80	15.09	3.29	26.77	33.41	37.00	-3.59	10mV	0.00	1.00	P
176.00	35.00	15.45	2.28	26.74	25.99	30.00	-4.01	10mV	180.00	1.00	QP
220.00	39.10	10.59	2.54	26.54	25.68	30.00	-4.32	10mV	135.00	1.50	QP
176.00	34.50	15.45	2.28	26.74	25.49	30.00	-4.51	10mH	270.00	2.00	P
968.00	30.00	23.49	5.99	27.12	32.36	37.00	-4.64	10mV	180.00	1.00	P
6 Worst Data											

## 8.7. POWERLINE CONDUCTED EMISSIONS

### TEST SETUP

The EUT is placed on a wooden table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane on the floor.

The EUT is set to transmit in a continuous mode.

### TEST PROCEDURE

The resolution bandwidth is set to 10 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.

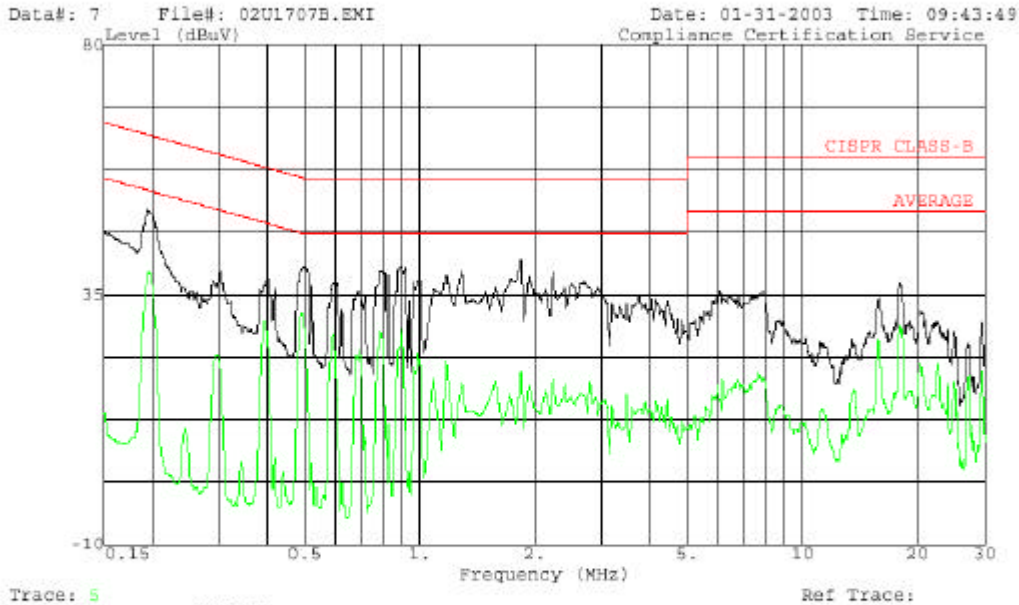
### RESULTS

No non-compliance noted:

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN B	Margin		Remark
(MHz)	PK (dBUV)	QP (dBUV)	AV (dBUV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.19	50.22	--	37.82	0.00	64.77	54.77	-14.55	-16.95	L1
1.84	41.30	--	21.17	0.00	56.00	46.00	-14.70	-24.83	L1
0.89	39.88	--	25.67	0.00	56.00	46.00	-16.12	-20.33	L1
0.19	53.08	--	35.04	0.00	64.83	54.83	-11.75	-19.79	L2
0.30	40.99	--	20.62	0.00	61.63	51.63	-20.64	-31.01	L2
1.84	39.72	--	22.39	0.00	56.00	46.00	-16.28	-23.61	L2
6 Worst Data									



561F Monterey Road,  
San Jose, CA 95037 USA  
Tel: (408) 463-0885  
Fax: (408) 463-0888

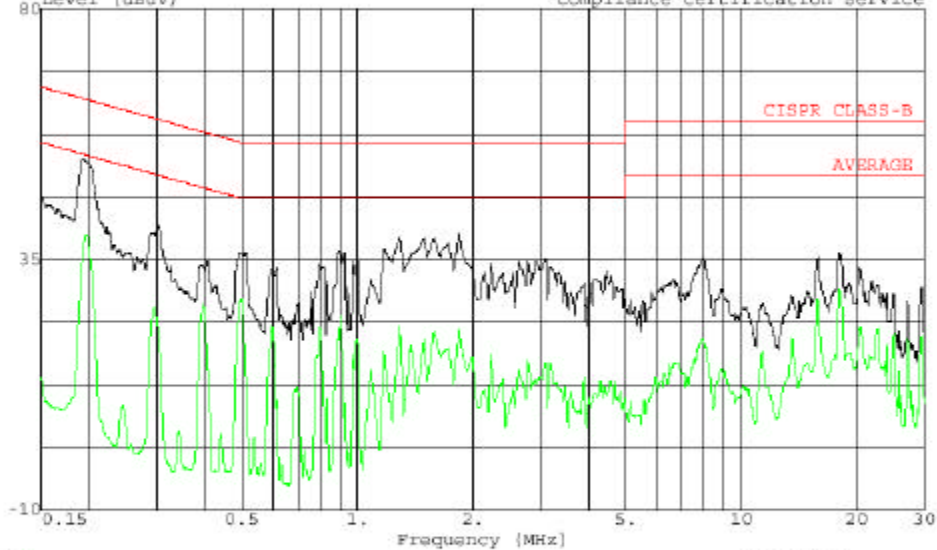






561F Monterey Road,  
San Jose, CA 95037 USA  
Tel: (408) 463-0885  
Fax: (408) 463-0888

Data#: 7 File#: 02U1707A.EMI Date: 01-31-2003 Time: 09:27:50  
Level (dBuV) Compliance Certification Service



Trace: 5  
Project # : 02U1707  
Test Engineer : NEELESH RAJ  
Company : OTC WIRELESS, INC.  
EUT : 2.4GHz WIRELESS MONITOR/PRO RADIO  
 : ADAPTER  
Test Config. : EUT/MONITOR/AC ADAPTER  
Model Name : WIJET  
Test of Target: CISPR22-B  
Mode of Op. : TX  
 : 115VAC@60Hz  
 : L2 (peak:black avg:green)

Ref Trace:



## 8.8. SETUP PHOTOS

### ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



**RADIATED RF MEASUREMENT SETUP**

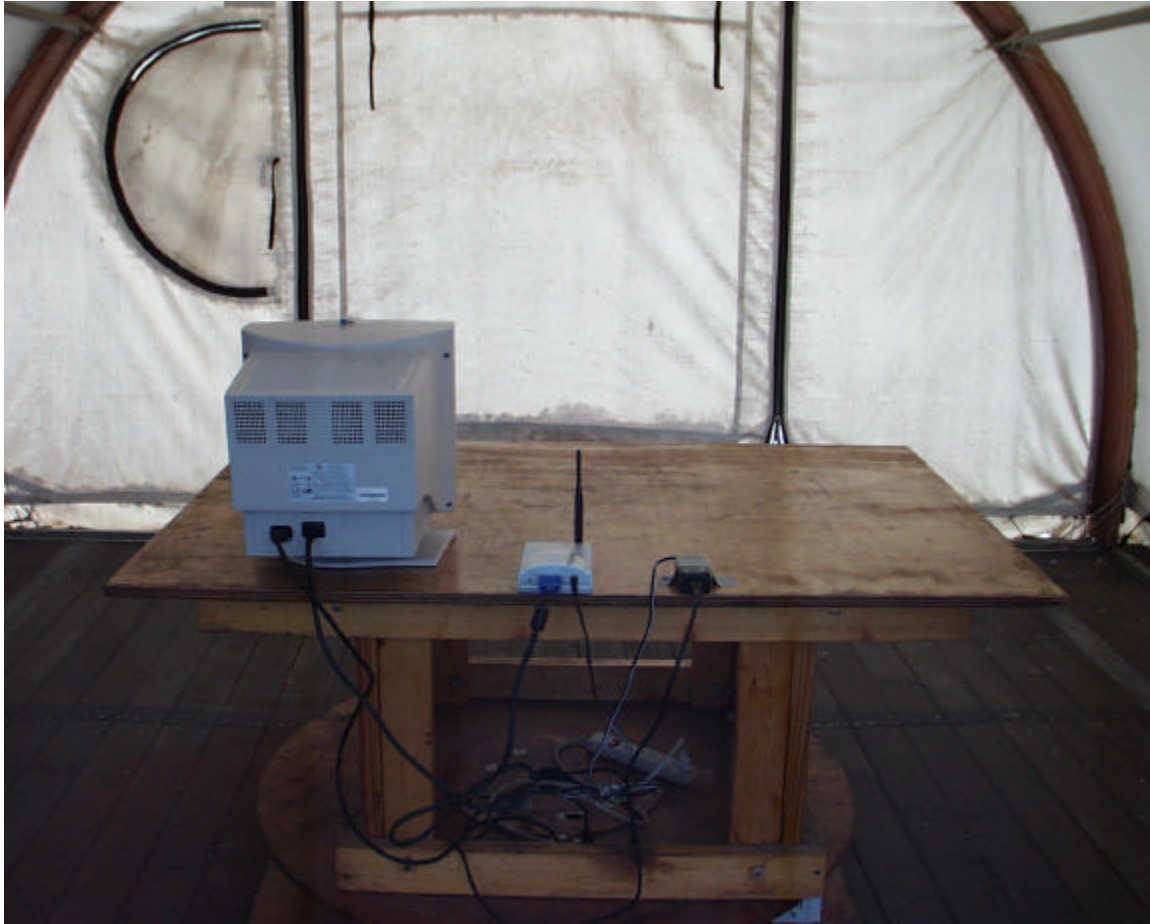






**DIGITAL DEVICE RADIATED EMISSIONS MEASUREMENT SETUP**





**POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP**







**END OF REPORT**