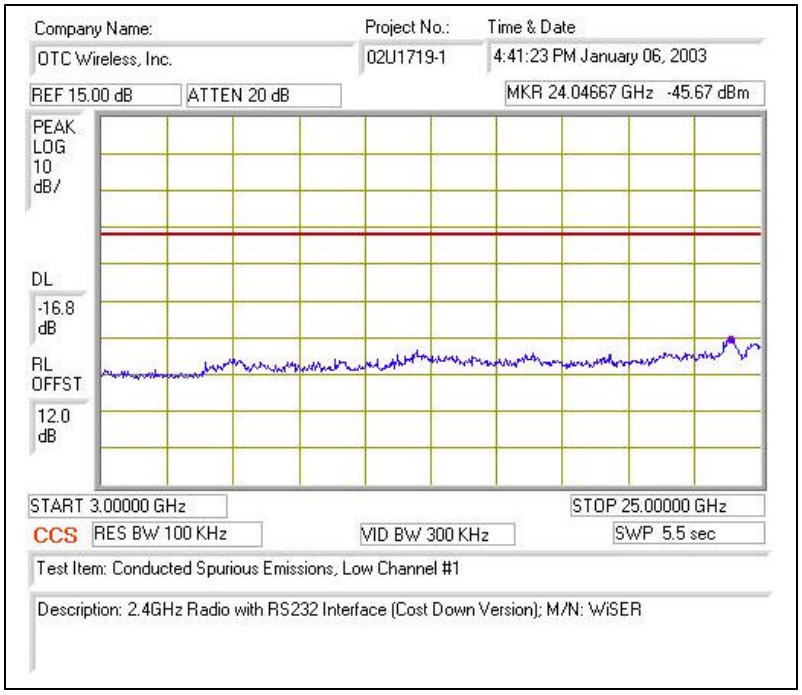

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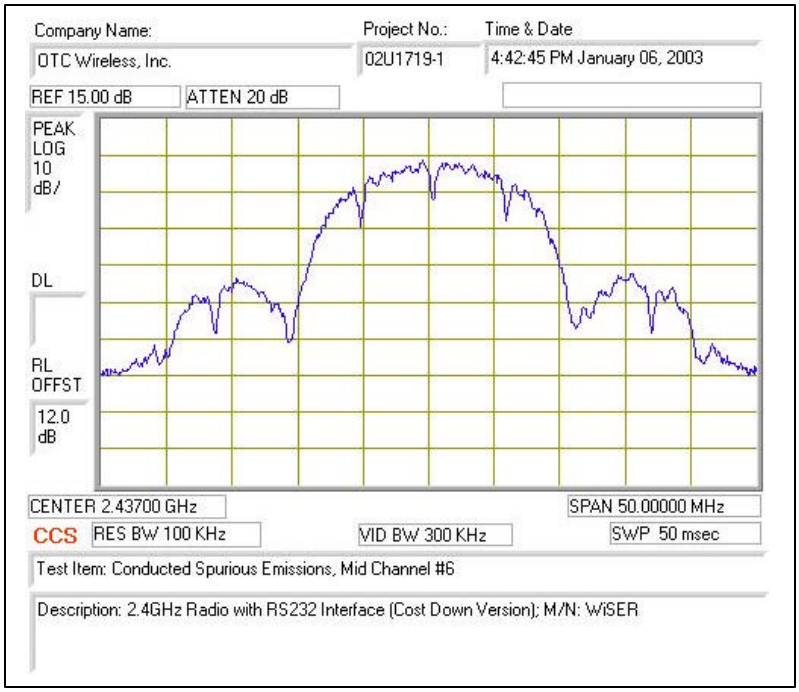

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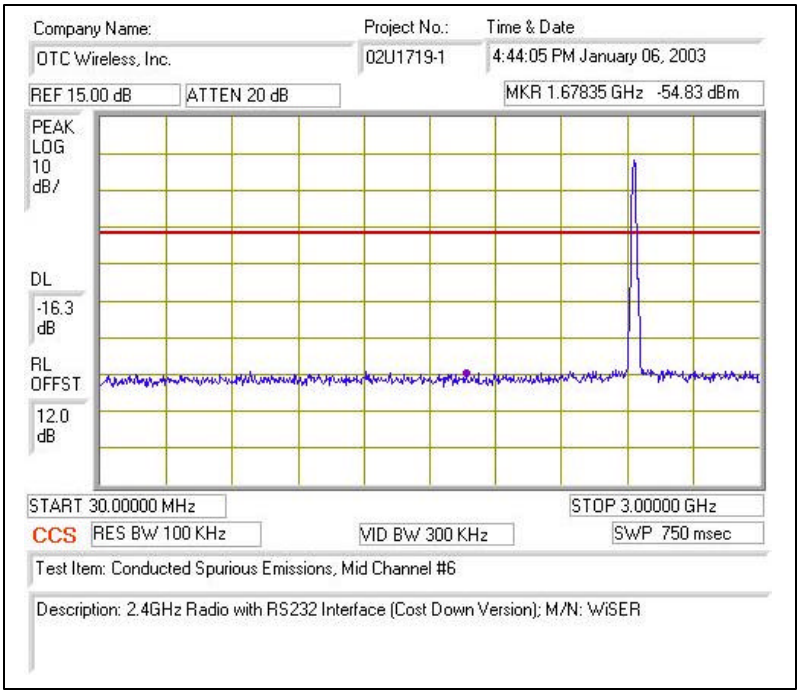

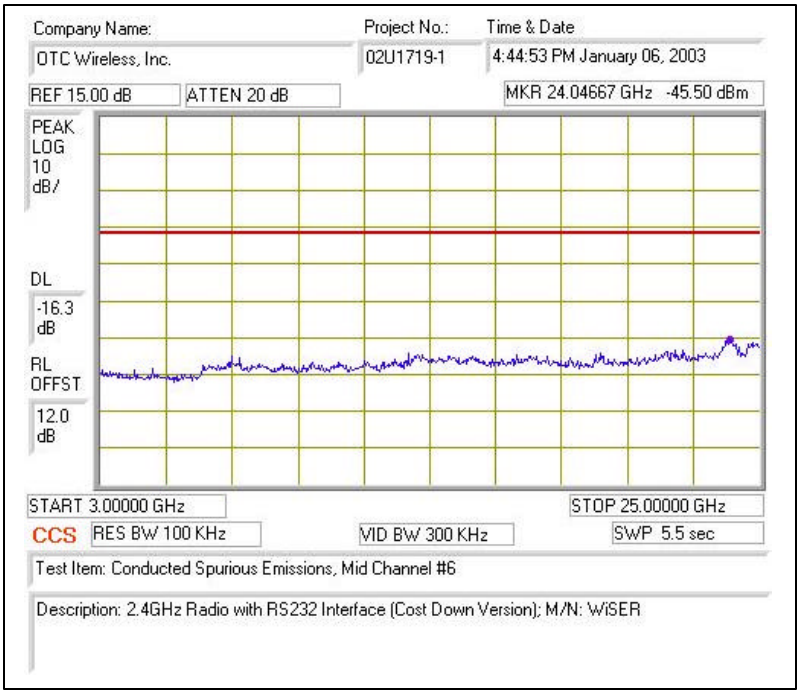

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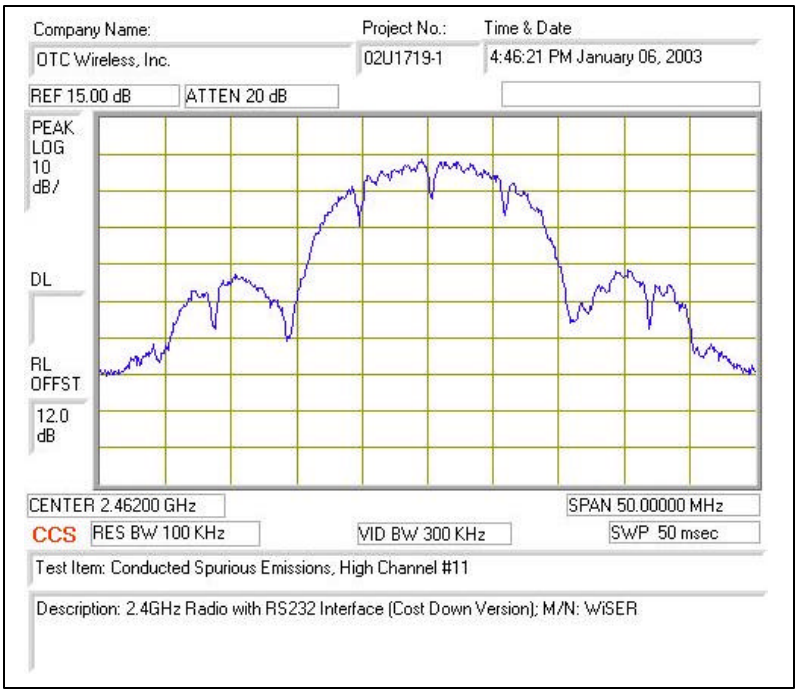
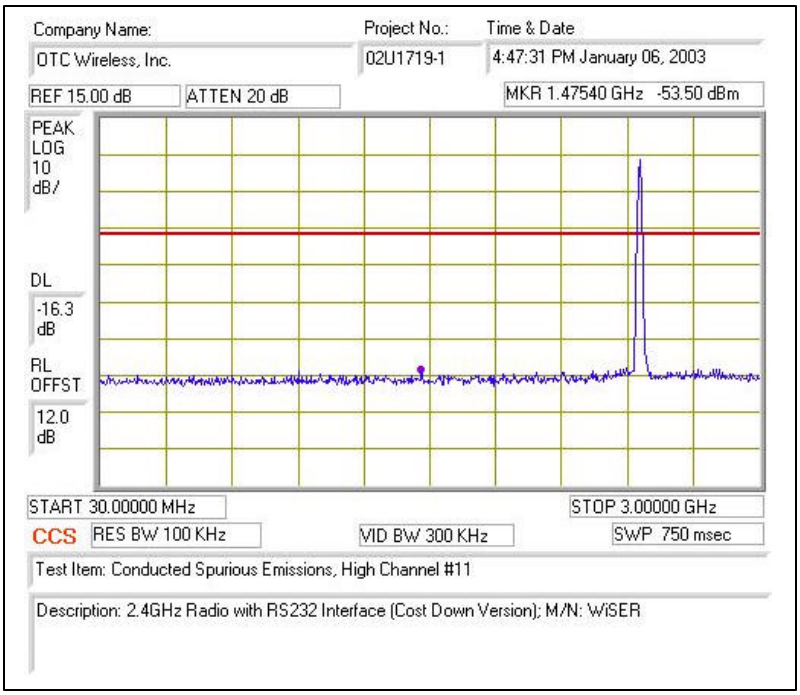
High Channel:





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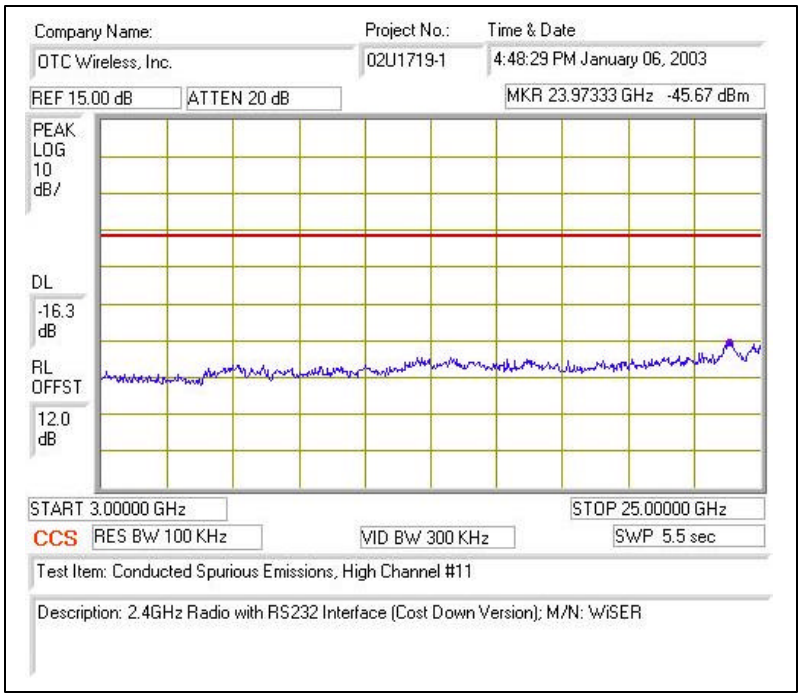

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8.6. RADIATED EMISSIONS

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 C63.4/2001.

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 spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels within the 5.8 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:

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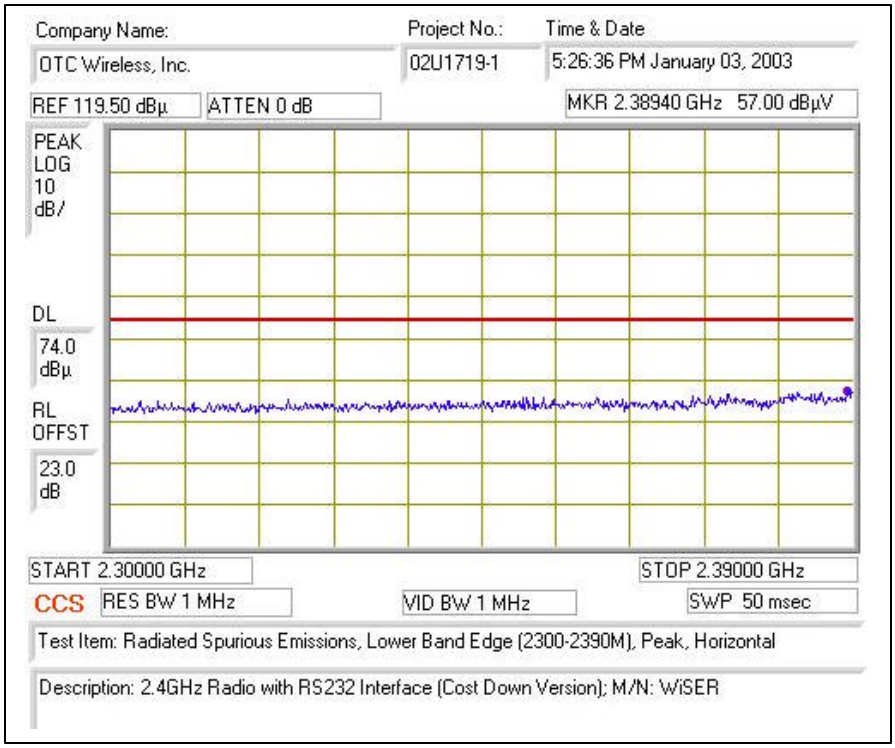
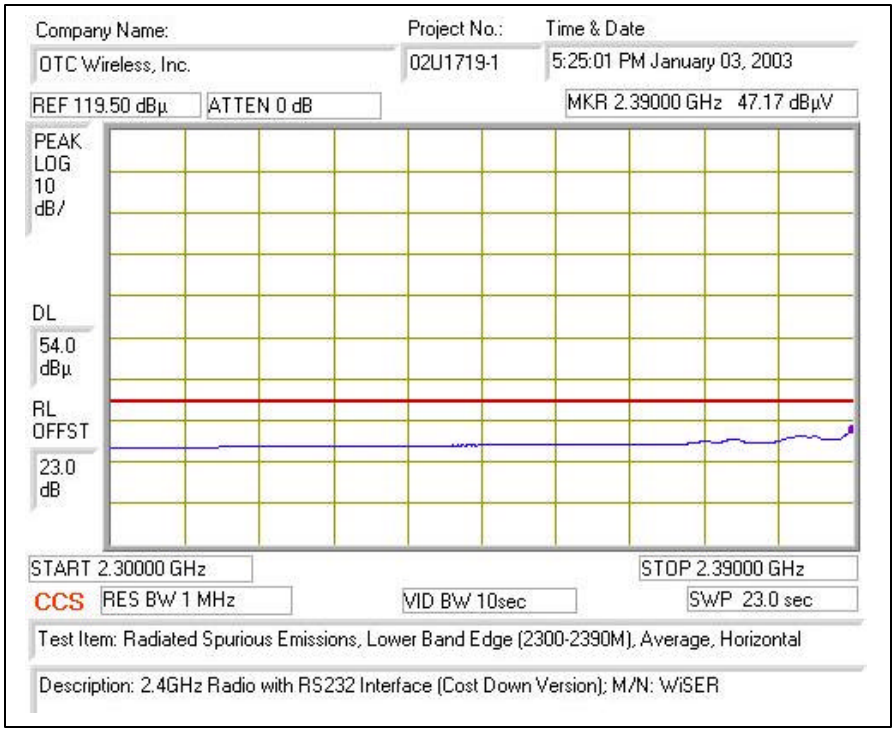
BAND EDGE RADIATED EMISSIONS (LOW CHANNEL, HORIZONTAL POLARIZATION)





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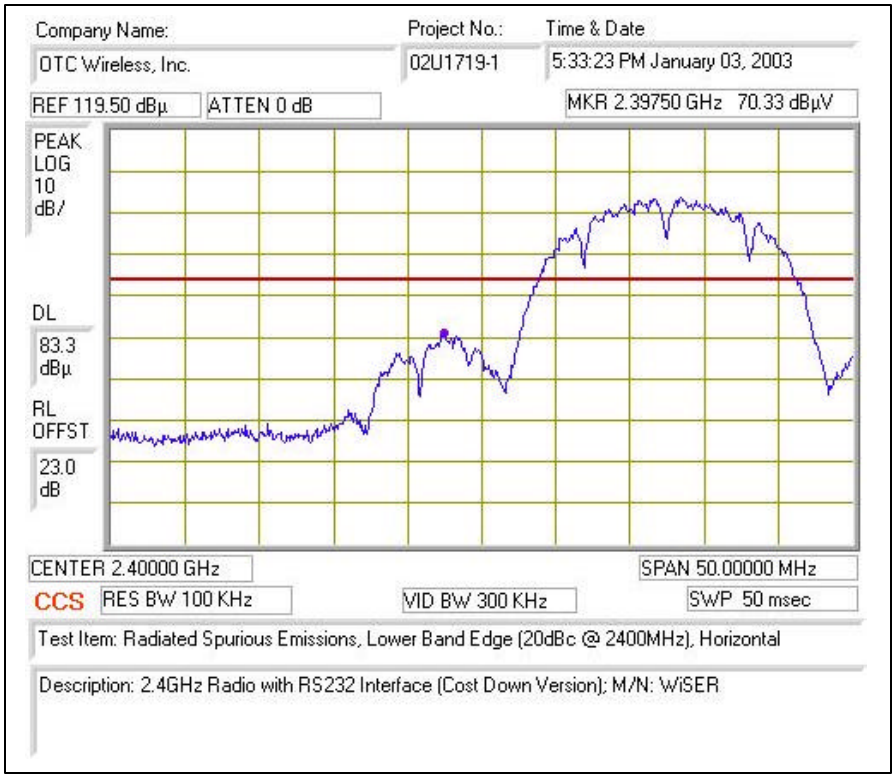

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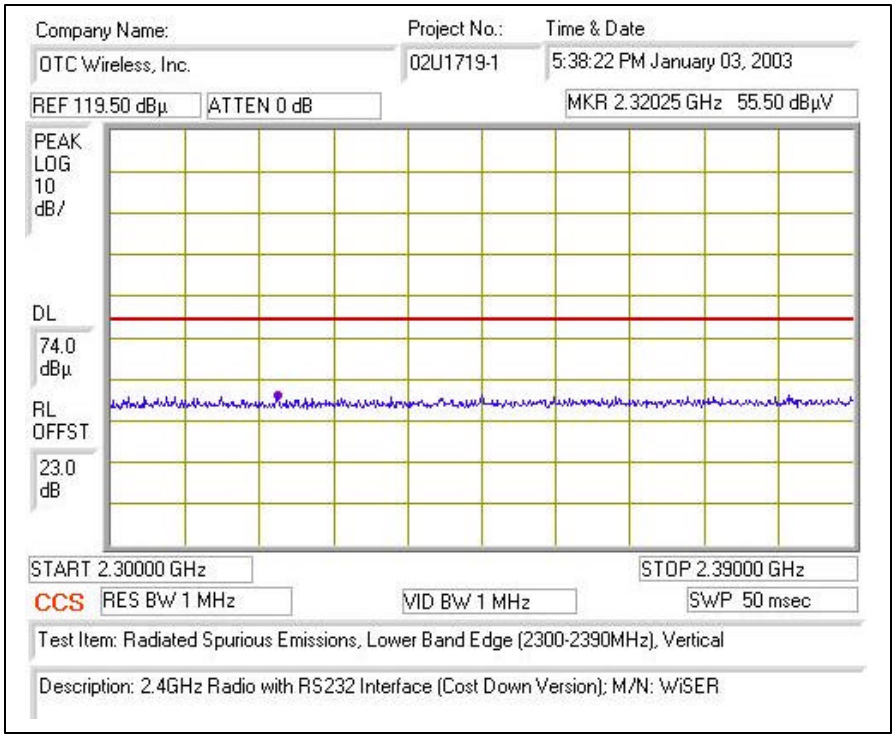
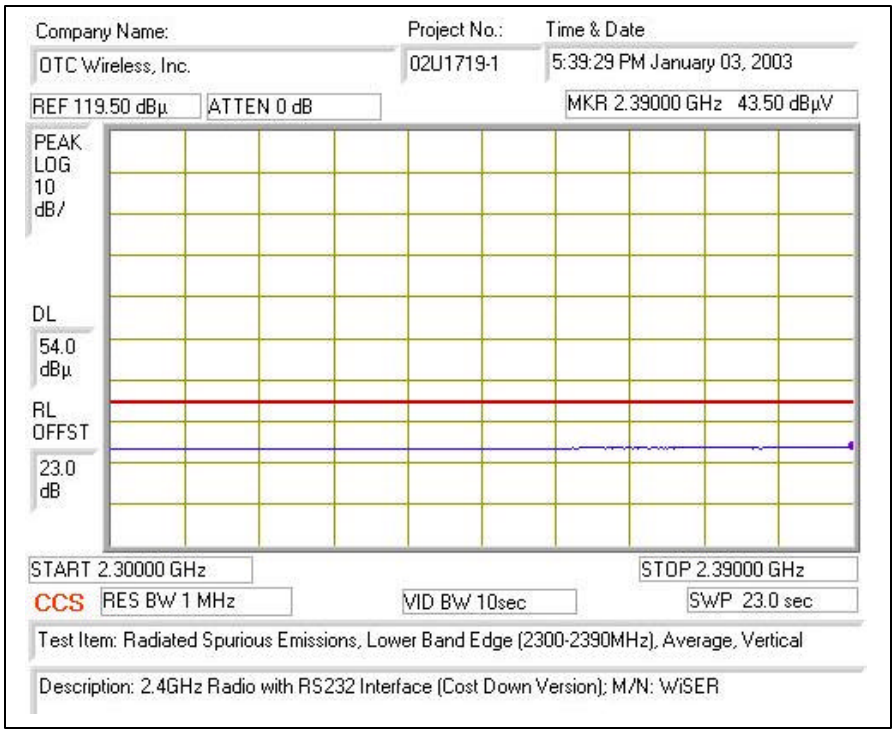
BAND EDGE RADIATED EMISSIONS (LOW CHANNEL, VERTICAL POLARIZATION)





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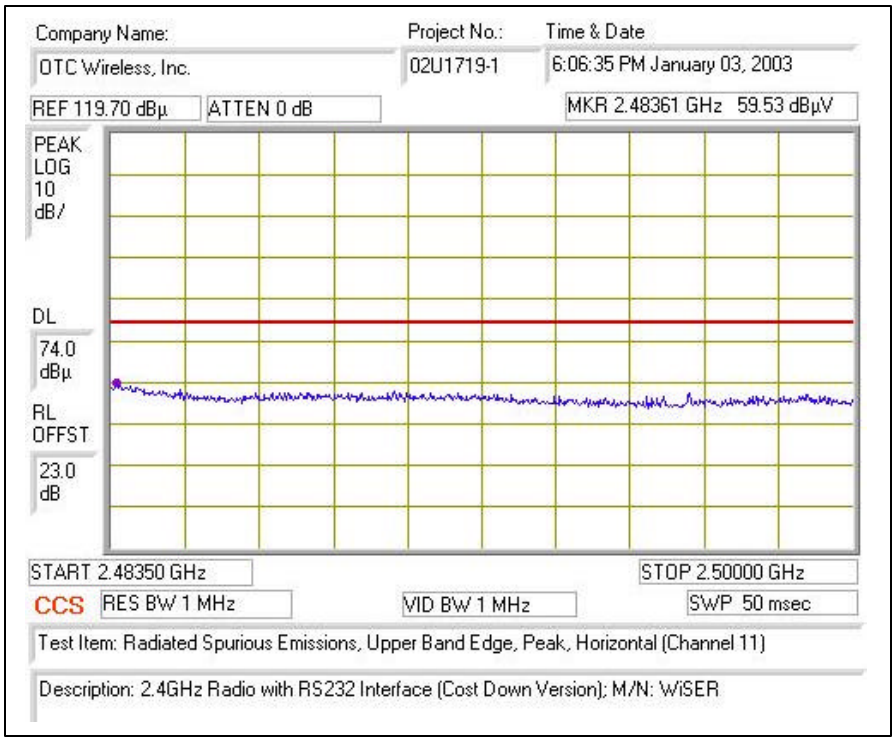
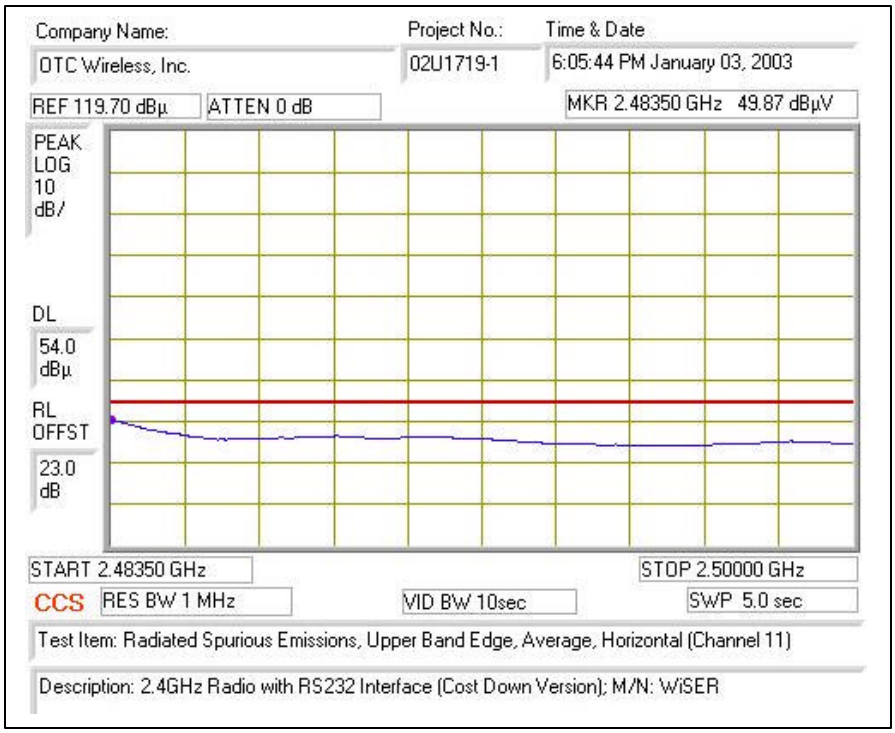
BAND EDGE RADIATED EMISSIONS (HIGH CHANNEL, HORIZONTAL POLARIZATION)





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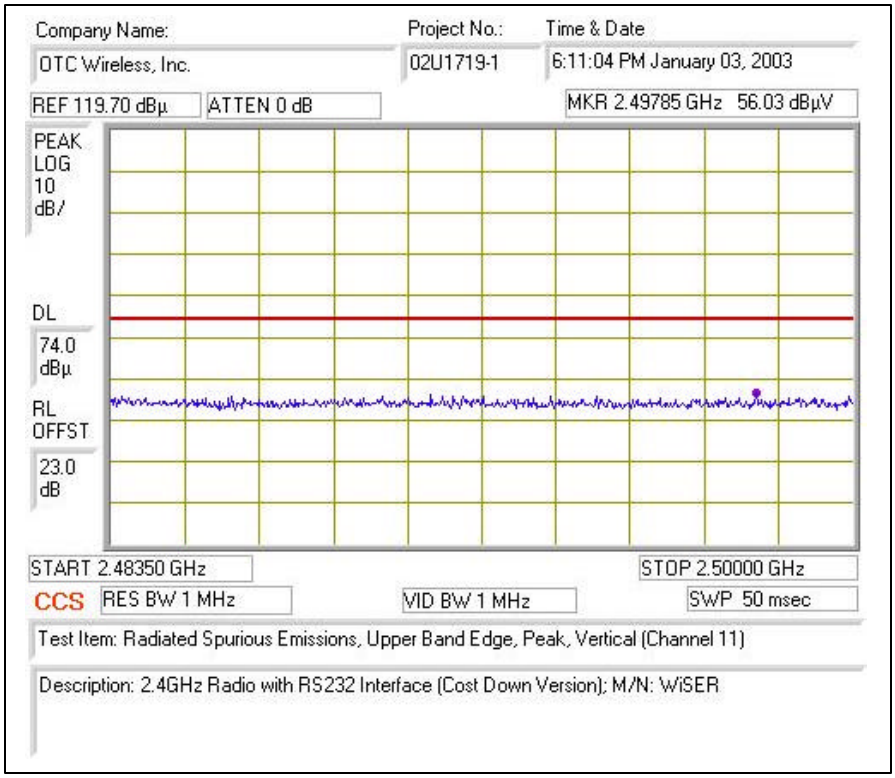
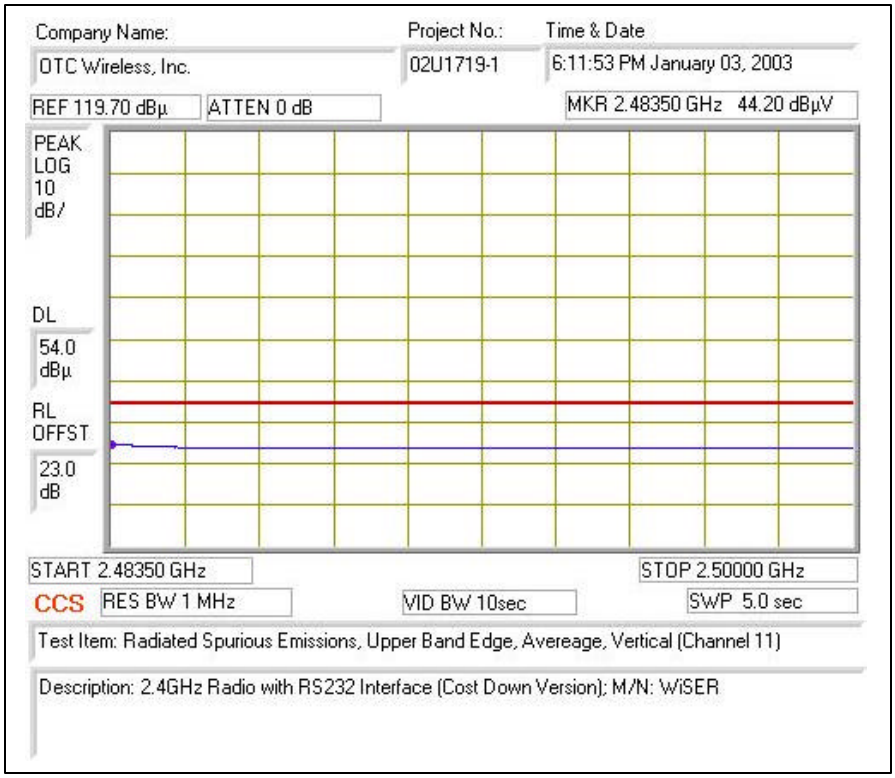
BAND EDGE RADIATED EMISSIONS (HIGH CHANNEL, VERTICAL POLARIZATION)





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HARMONIC AND SPURIOUS RADIATED EMISSIONS

01/06/03 **High Frequency Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1719-1
Company: OTC Wireless, Inc.
EUT Descrip.: 2.4GHz Radio with RS232 Interface (Cost Down Version)
EUT M/N: WiSER
Test Target: FCC 15.247
Mode Oper: Transmitting @ Low / Mid / High Channel

Test Equipment:

Cable (feet)	EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz
15	T73; S/N: 6717	HP 8449B	8593EM Analyzer	

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
Harmonic & Spurous Emissons:															
Low Channel:															
4.824	3.3	61.2	57.0	33.8	5.7	-34.6	-9.5	1.0	57.6	53.4	74.0	54.0	-16.4	-0.6	V
4.824	3.3	60.0	56.0	33.8	5.7	-34.6	-9.5	1.0	56.4	52.4	74.0	54.0	-17.6	-1.6	H
7.236	3.3	57.0	51.0	37.0	7.2	-34.5	-9.5	1.0	58.2	52.2	74.0	54.0	-15.8	-1.8	H
7.236	3.3	58.3	52.2	37.0	7.2	-34.5	-9.5	1.0	59.6	53.4	74.0	54.0	-14.4	-0.6	V
9.648	3.3	46.0	36.0	39.7	8.5	-34.7	-9.5	1.0	51.1	41.1	74.0	54.0	-22.9	-12.9	V
9.648	3.3	45.0	34.0	39.7	8.5	-34.7	-9.5	1.0	50.1	39.1	74.0	54.0	-23.9	-14.9	H
12.060	3.3	43.0	32.5	39.4	9.5	-33.4	-9.5	1.0	50.0	39.5	74.0	54.0	-24.0	-14.5	V (Noise Floor)
Mid Channel:															
4.874	3.3	61.8	57.2	33.9	5.8	-34.6	-9.5	1.0	58.5	53.8	74.0	54.0	-15.5	-0.2	V
4.874	3.3	61.0	56.2	33.9	5.8	-34.6	-9.5	1.0	57.6	52.8	74.0	54.0	-16.4	-1.2	H
7.311	3.3	56.9	51.0	37.2	7.3	-34.6	-9.5	1.0	58.3	52.4	74.0	54.0	-15.7	-1.6	H
7.311	3.3	58.0	52.3	37.2	7.3	-34.6	-9.5	1.0	59.4	53.7	74.0	54.0	-14.6	-0.3	V
9.748	3.3	46.5	36.5	39.8	8.6	-34.6	-9.5	1.0	51.8	41.8	74.0	54.0	-22.2	-12.2	V
9.748	3.3	45.5	34.3	39.8	8.6	-34.6	-9.5	1.0	50.8	39.6	74.0	54.0	-23.2	-14.4	H
12.185	3.3	43.0	32.5	39.3	9.5	-33.3	-9.5	1.0	50.0	39.5	74.0	54.0	-24.0	-14.5	V (Noise Floor)
High Channel:															
4.924	3.3	60.3	55.5	34.1	5.8	-34.5	-9.5	1.0	57.2	52.4	74.0	54.0	-16.8	-1.6	V
4.924	3.3	58.5	54.0	34.1	5.8	-34.5	-9.5	1.0	55.4	50.9	74.0	54.0	-18.6	-3.1	H
7.386	3.3	54.7	49.5	37.3	7.3	-34.6	-9.5	1.0	56.3	51.1	74.0	54.0	-17.7	-2.9	H
7.326	3.3	57.2	51.2	37.2	7.3	-34.6	-9.5	1.0	58.7	52.7	74.0	54.0	-15.3	-1.3	V
9.848	3.3	44.5	35.5	40.0	8.6	-34.6	-9.5	1.0	50.0	41.0	74.0	54.0	-24.0	-13.0	V
9.848	3.3	44.0	33.5	40.0	8.6	-34.6	-9.5	1.0	49.5	39.0	74.0	54.0	-24.5	-15.0	H
12.310	3.3	43.0	32.5	39.2	9.6	-33.3	-9.5	1.0	50.0	39.5	74.0	54.0	-24.0	-14.5	V (Noise Floor)

No other emissions were found within 20dB under the limits up to 10th harmonic.

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		

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DIGITAL DEVICE RADIATED EMISSIONS

COMPLIANCE Certification Services

FCC, VCCI, CISPR, CE, AUSTEL,
UL, CSA, TUV, BSMI, DHHS, NVLAF

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PHONE: (408) 463-088! FAX: (408) 463-0888

Project #: 02U1719-1
Report #: 030107B1
Date& Time: 01/07/03 9:45 AM
Test Engr: Thu Chan

Company: OTC Wireless, Inc.
EUT Description: 2.4GHz Radio with RS232 Interface (Cost Down Version)
Test Configuration : EUT/Laptop/Modem/Printer/Mouse
Type of Test: FCC Class B
Mode of Operation: Tramnsmitting Mode

<< Main Sheet

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit EN_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
132.00	43.00	11.40	2.85	28.34	28.91	30.00	-1.09	10mV	0.00	1.00	P
144.00	43.50	10.78	2.93	28.30	28.91	30.00	-1.09	10mV	0.00	1.00	P
44.00	44.00	10.89	1.80	28.52	28.17	30.00	-1.83	10mV	0.00	1.00	P
132.00	40.00	11.40	2.85	28.34	25.91	30.00	-4.09	10mH	0.00	2.00	P
240.00	45.20	11.47	3.81	27.98	32.49	37.00	-4.51	10mH	0.00	2.00	P
216.00	40.00	9.84	3.61	28.04	25.41	30.00	-4.59	10mH	0.00	2.00	P
6 Worst Data											

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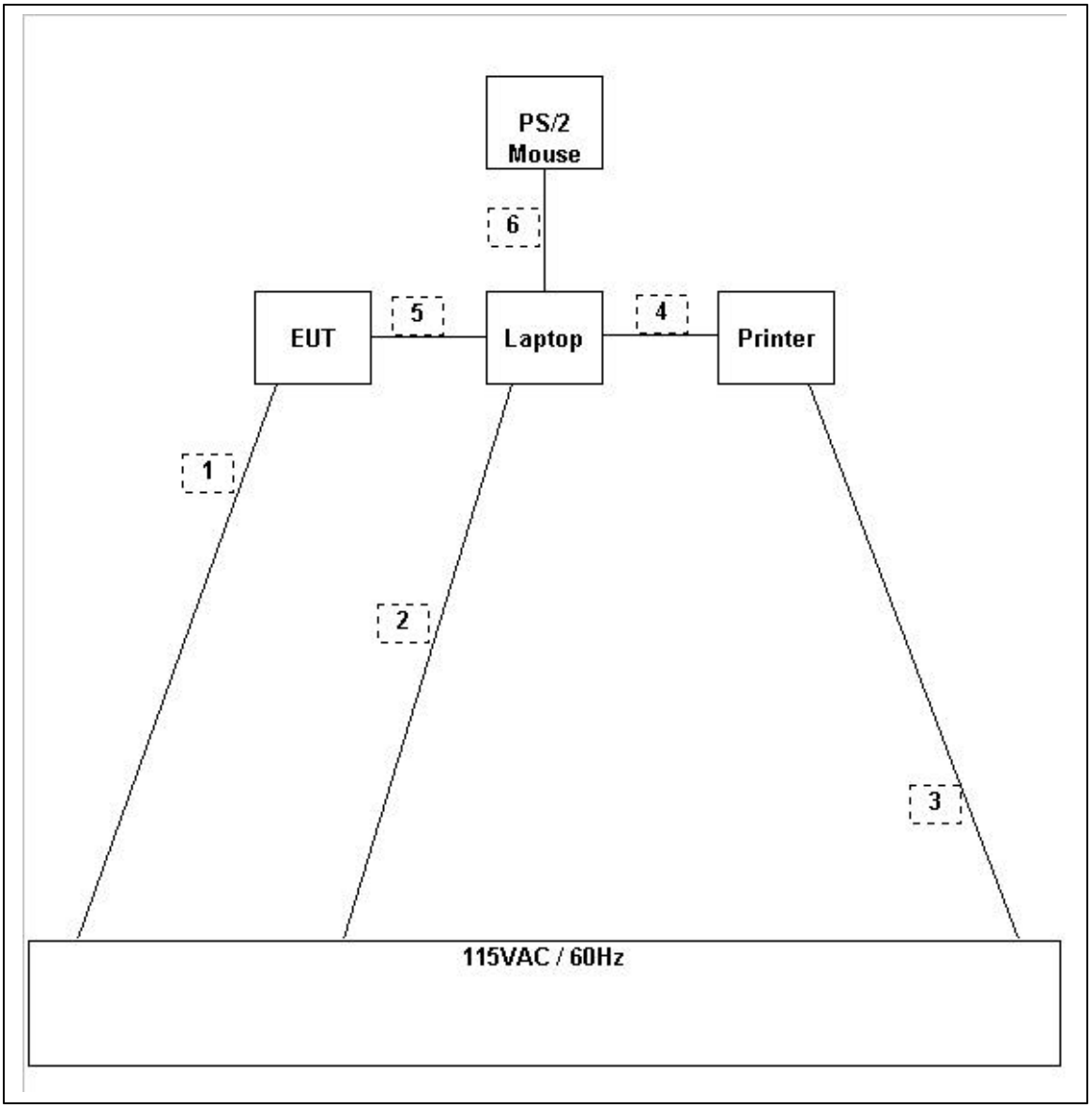

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TEST PROCEDURE

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
0.23	53.63	47.13	--	0.00	63.71	53.71	-16.58	-6.58	L1
0.69	46.10	42.95	--	0.00	56.00	46.00	-13.05	-3.05	L1
1.49	48.70	43.31	--	0.00	56.00	46.00	-12.69	-2.69	L1
0.23	52.78	46.45	--	0.00	63.74	53.74	-17.29	-7.29	L2
0.70	45.70	43.36	--	0.00	56.00	46.00	-12.64	-2.64	L2
1.49	47.92	42.03	--	0.00	56.00	46.00	-13.97	-3.97	L2
6 Worst Data									

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Tel: (408) 463-0885
Fax: (408) 463-0888

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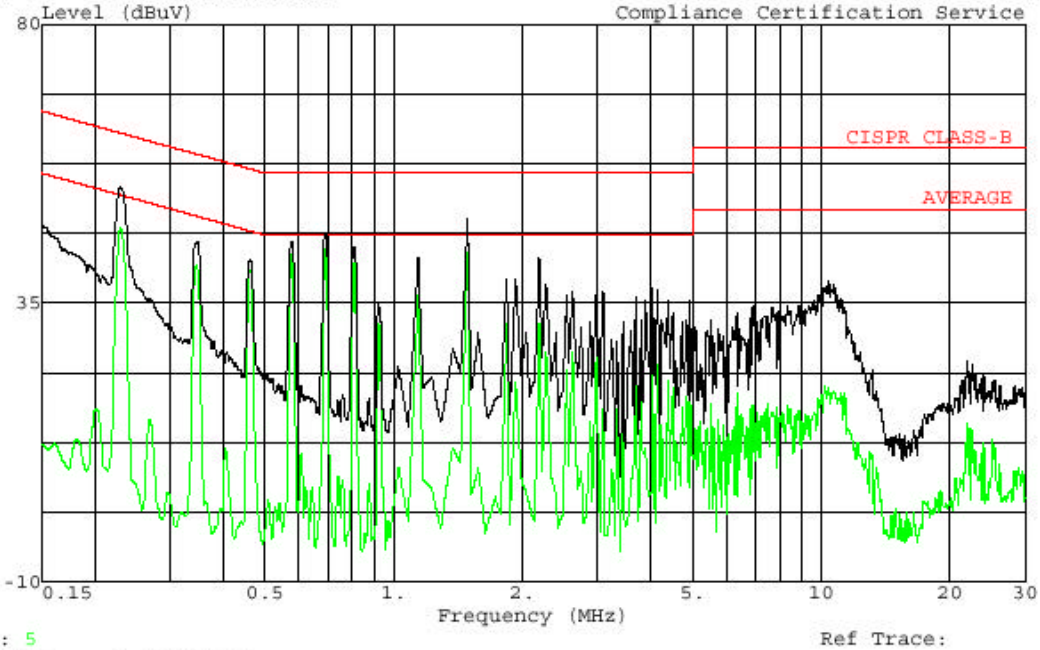

Trace: 5 Ref Trace:

Project # : 02U1719-1
Test Engineer : Thu Chan
Company : OTC Wireless, Inc.
EUT : 2.4GHz Radio with RS232 Interface
: (Cost Down Version)
Model Name : WiSER
Test Config. : EUT/ Laptop/Monitor/Printer/Mouse
Test of Target: EN55022 Class B
Mode of Op. : Transmitting Mode
: L1: Peak (Black), Average(Green)
: 115VAC, 60Hz

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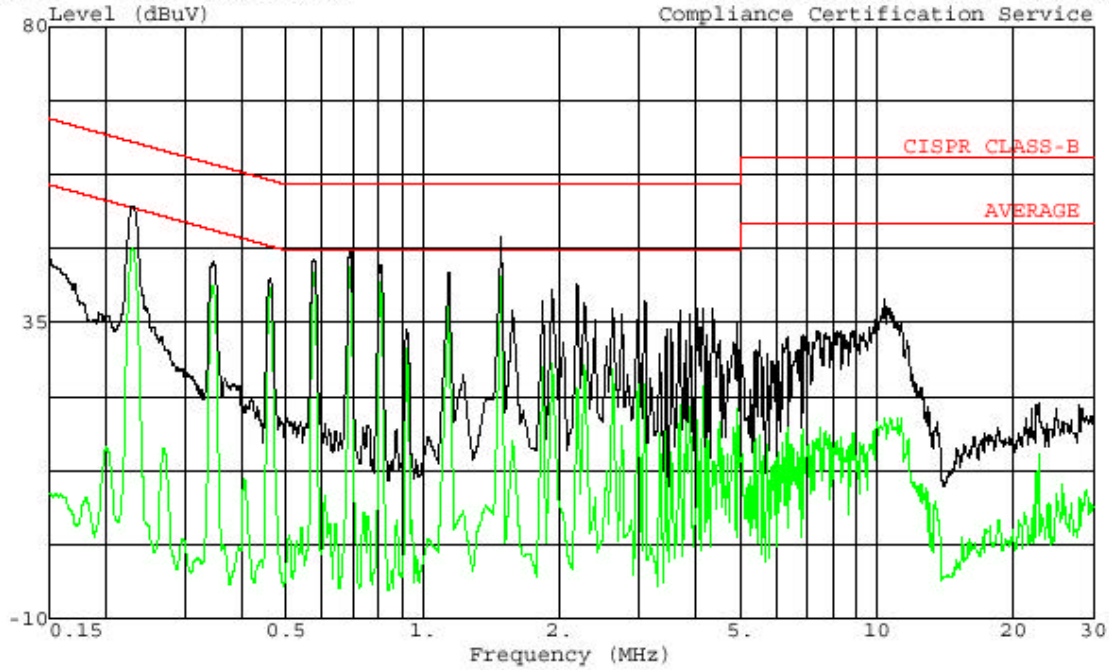

Trace: 12 Ref Trace:

Project # : 02U1719-1
Test Engineer : Thu Chan
Company : OTC Wireless, Inc.
EUT : 2.4GHz Radio with RS232 Interface
: (Cost Down Version)
Model Name : WiSER
Test Config. : EUT/ Laptop/Monitor/Printer/Mouse
Test of Target: EN55022 Class B
Mode of Op. : Transmitting Mode
: L2: Peak (Black), Average(Green)
: 115VAC, 60Hz

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