FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT

FOR

USB RECEIVER

MODEL NUMBER: AS00764-001

FCC ID: JJ4-AS00764

REPORT NUMBER: 05U3274-1 REV B

ISSUE DATE: APRIL 6, 2005

Prepared for
GYRATION
12950 SARATOGA AVE.
SARATOGA, CA 95070, USA

Prepared by
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Revision History

Rev.		Revisions		Revised By
B		Add a note to Section 7.1 explaining the sharing of data		Danielle Z.
		Add Section 5.5 Test Configurations		Danielle Z.
		Add 2nd set of data under Section 7.3 and corresponding setup photos under Section 8		Danielle Z.
		Delete the original Section 7.1.4 Maximum Permissible Exposure		Danielle Z.

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: USB RECEIVER

MODEL: AS00764-001

SERIAL NUMBER: SVT 000025

DATE TESTED: FEBRUARY 25 – APRIL 5, 2005

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

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Tested By:

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. MEASUREMENT UNCERTAINTY

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Transceiver that uses DSSS and operates at 2.4 GHz band. It communicates with Wireless Keyboard and Wireless mouse and communicates the data received from these devices to the computer via the USB port of the computer.

The radio module is manufactured by CYPRESS.

5.2. MAXIMUM OUTPUT POWER

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

2400 to 2483.5 MHz Authorized Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2403 - 2479	DS SS	-2.08	0.62

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Receiver Agency Revision 1.5

The test utility software used during testing was USB_HID_TOOL, Revision 1.2.

5.5. TEST CONFIGURATIONS

Two EUT configurations were investigated during the testing:

Config. 1: EUT directly plugged into the USB port of the host laptop;

Config. 2: EUT plugged into the USB port of the host laptop via a USB cable.

Radiated emissions testing was conducted in configuration 2 which represents the worst-case scenario; Power Line Conducted emissions testing was conducted in both configurations.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacture	Model	Serial Number	FCC ID
LAPTOP	DELL	INSPIRON 3800	XYP93	DoC
AC ADAPTER	DELL	AA20031	3666	DoC

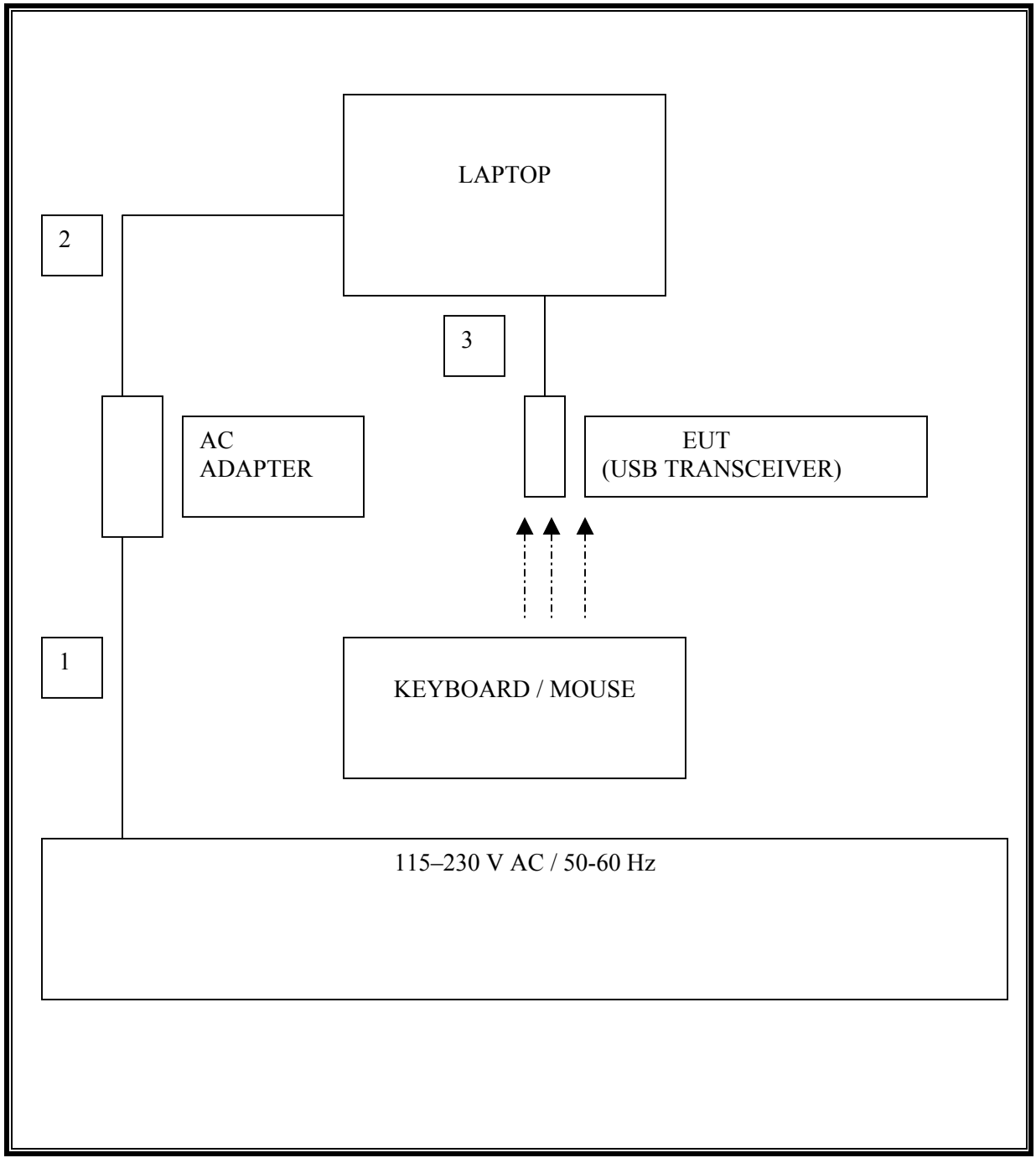
I/O CABLES

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

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Cal Due
EMI Test Receiver	R & S	ESHS 20	827129/006	10/22/2005
Site A Line Stabilizer / Conditioner	Tripplite	LC-1800a	A0051681	CNR
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2005
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/21/2005
Spectrum Analyzer	HP	E4446A	US42510266	8/25/2005
Antenna, Horn 1 ~ 18 GHz	EMCO	3117	29310	9/12/2005
Preamplifier, 1 ~ 26.5 GHz	HP	8449B	3008A00369	8/17/2005
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	29800	5/13/2005
Peak Power Meter	Agilent	E4416A	GB41291160	11/7/2005
Peak / Average Power Sensor	Agilent	E9327A	US40440755	11/7/2005
RF Filter Section	HP	85420E	3705A00256	11/21/2005
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/21/2005
30MHz---- 2Ghz	Sunol Sciences	JB1 Antenna	A121003	9/12/2005
4.0 High Pass Filter	Micro Tronics	HPM13351	3	CNR
2.4 - 2.5 Band Reject Filter	Micro Tronics	BRM50702	1	CNR

7. LIMITS AND RESULTS

7.1. CHANNEL TESTS FOR THE 2400 TO 2483.5 MHz BAND

Note: Since the USB transceiver has the same chipset (ID: CYWUSB6934-48LFC) as the Wireless Keyboard, and there is no difference in the RF conducted performance of the USB transceiver and the Wireless Keyboard, therefore this entire section shares the same data as documented in the corresponding section of the 05U3274- 1 Keyboard report.

7.1.1. 6 dB BANDWIDTH

LIMIT

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

TEST PROCEDURE

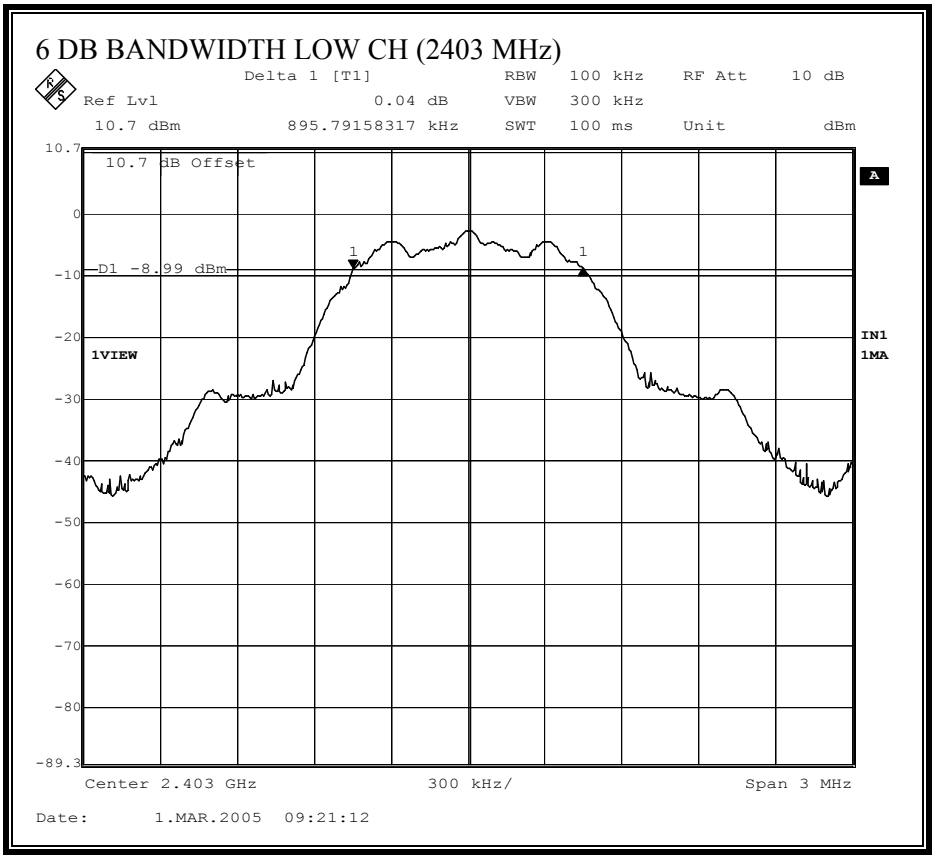
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

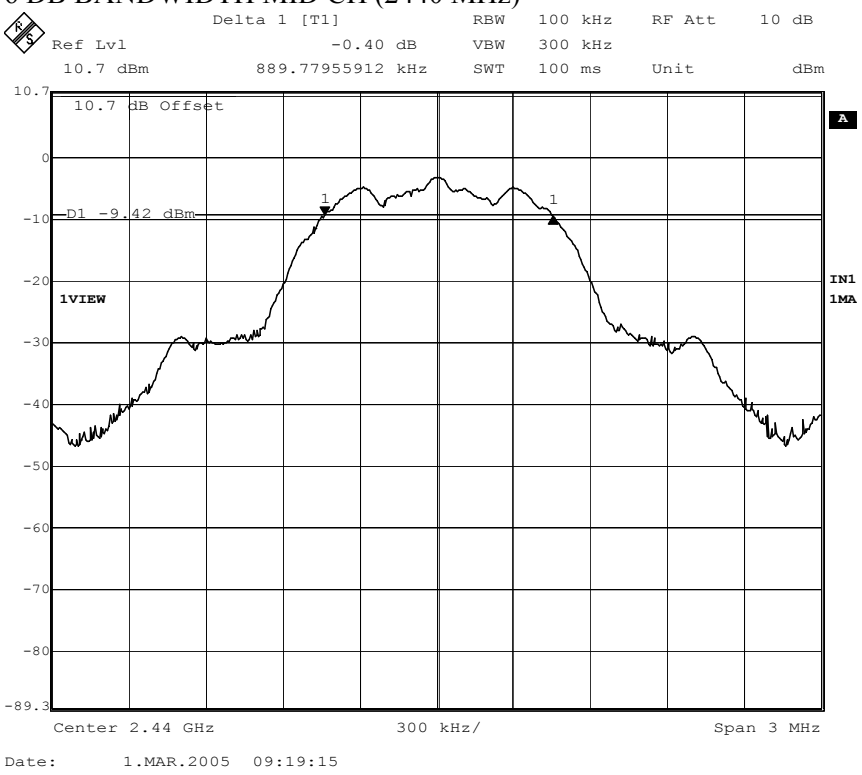
No non-compliance noted:

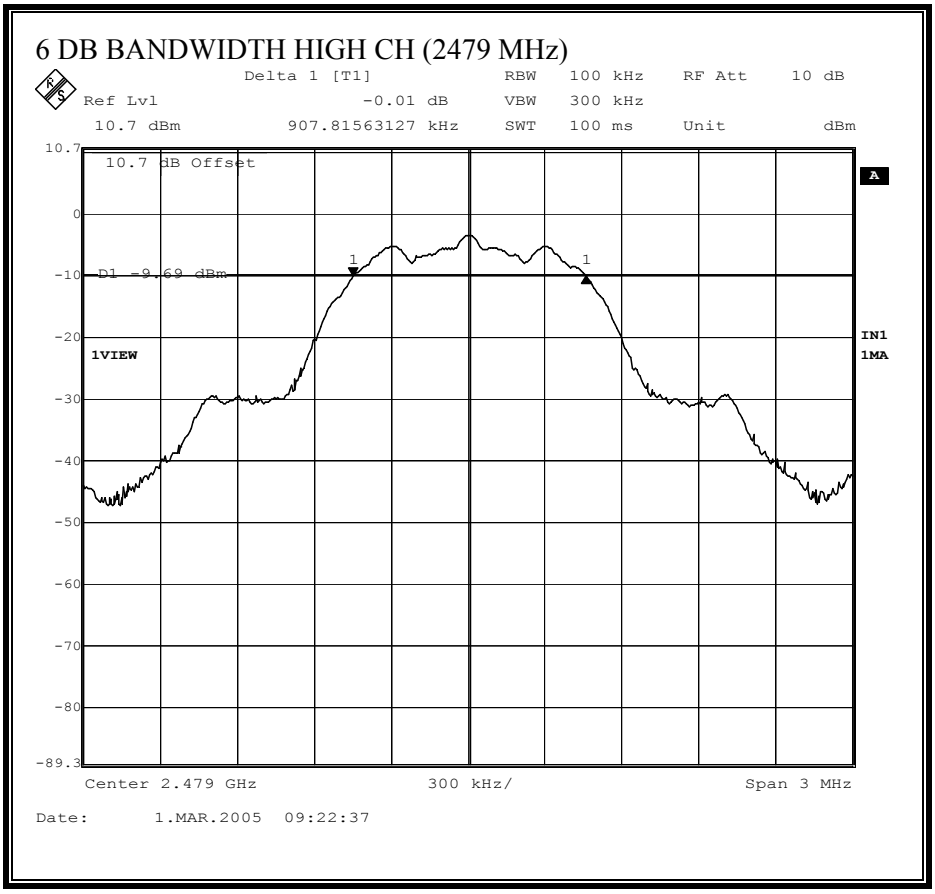
Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Margin (kHz)
Low	2403	895.791	500	396
Middle	2440	889.779	500	390
High	2479	907.815	500	408

6 DB BANDWIDTH



6 DB BANDWIDTH MID CH (2440 MHz)





7.1.2. 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

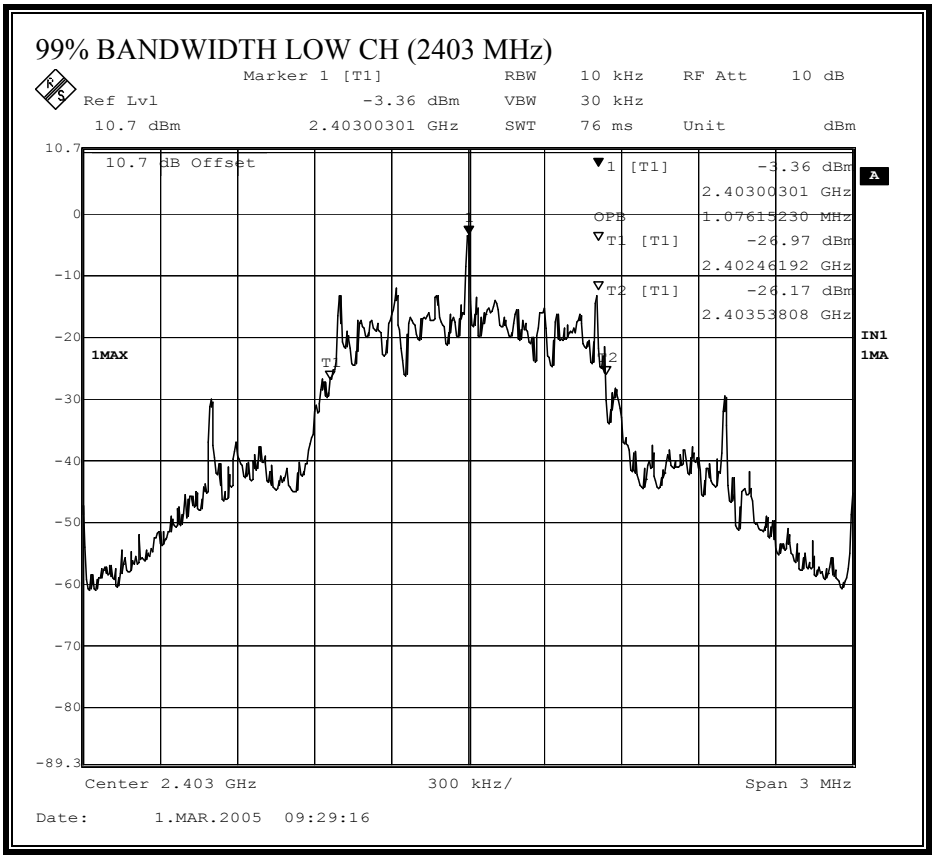
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

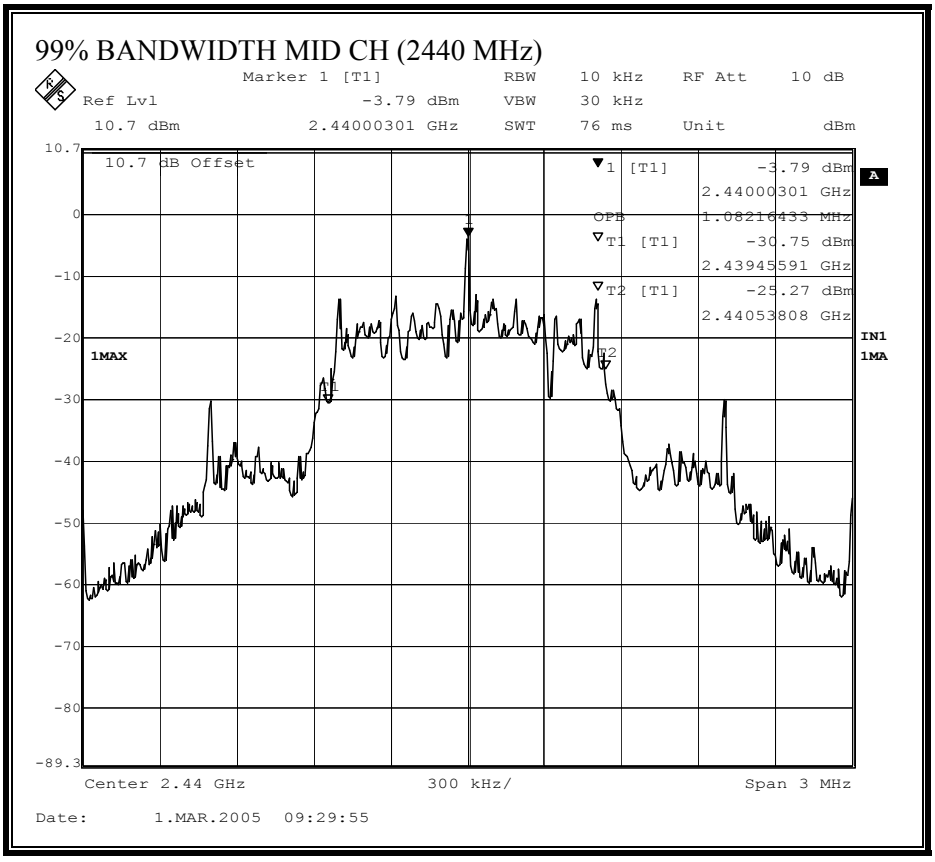
RESULTS

No non-compliance noted:

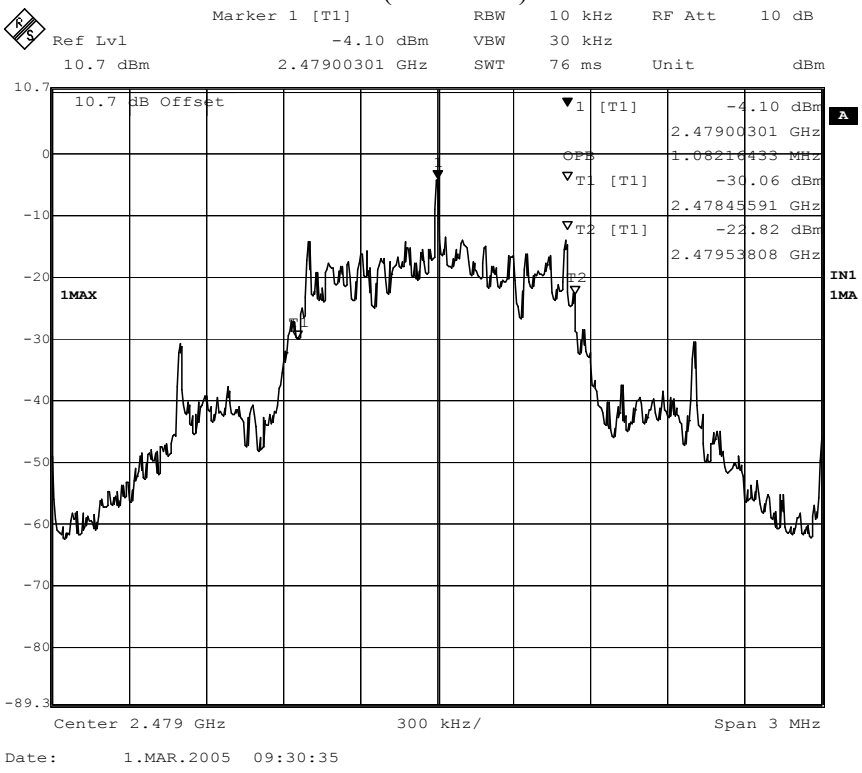
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2403	1.076
Middle	2440	1.082
High	2479	1.082

99% BANDWIDTH





99% BANDWIDTH HIGH CH (2479 MHz)



7.1.3. PEAK OUTPUT POWER

PEAK POWER LIMIT

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

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

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

§15.247 (b) (4) (i) Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.

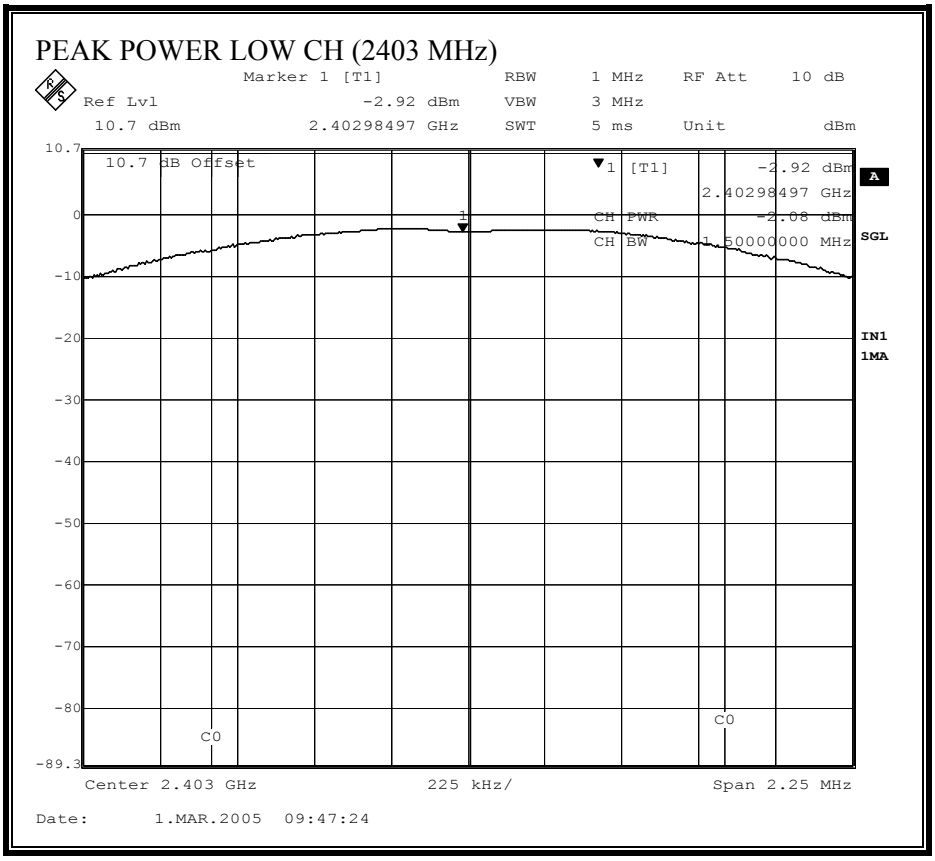
RESULTS

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

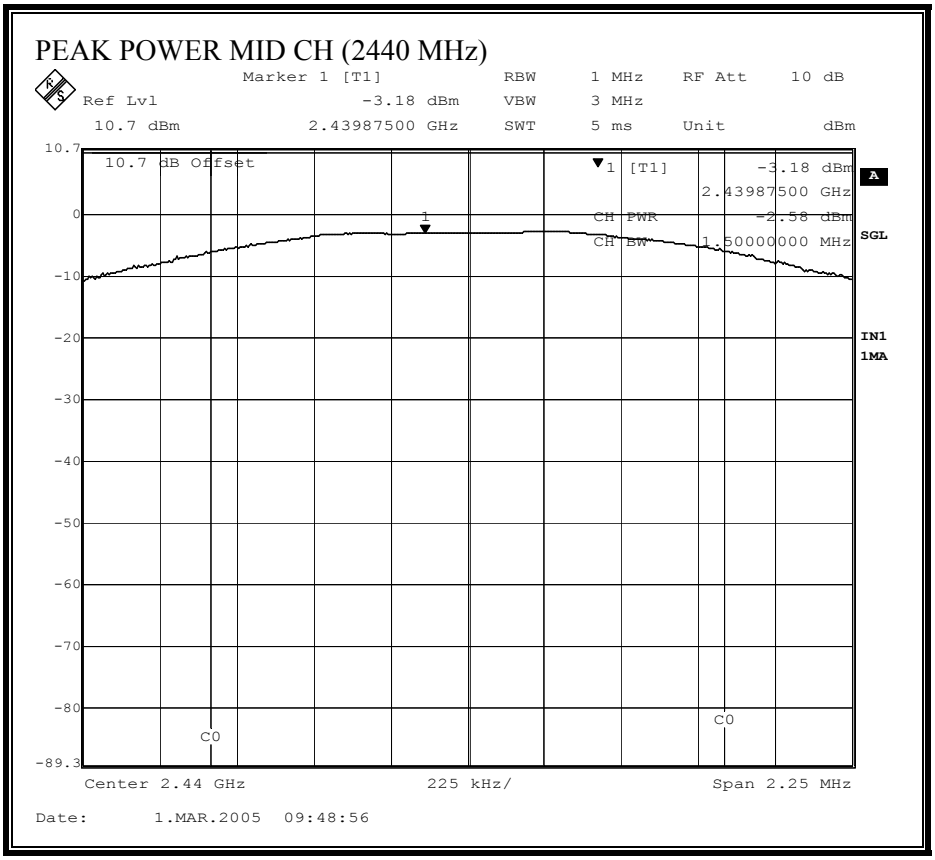
No non-compliance noted:

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2403	-2.08	30	-32.08
Middle	2440	-2.58	30	-32.58
High	2479	-2.84	30	-32.84

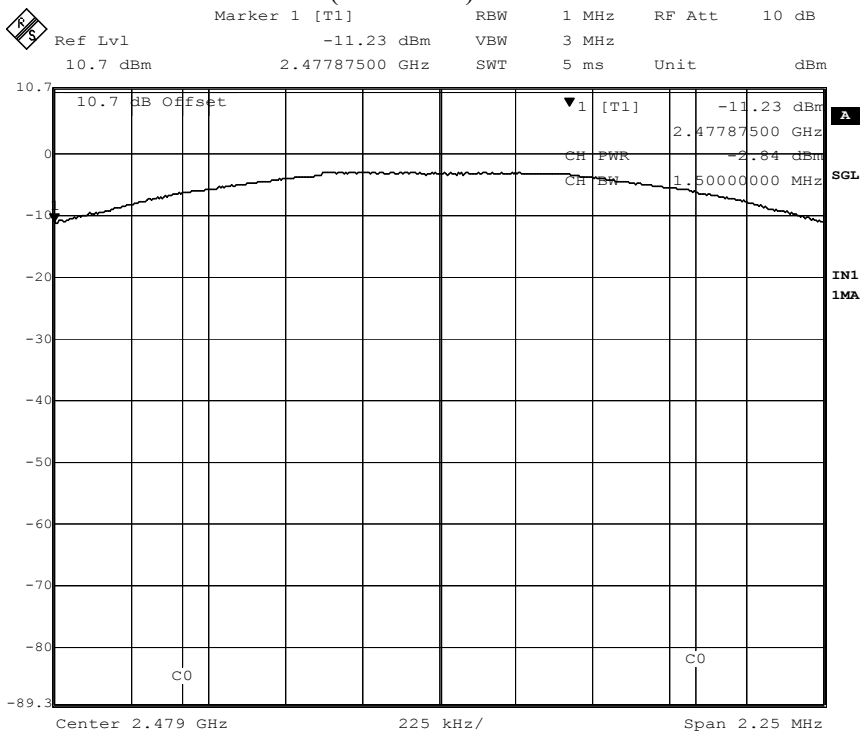
OUTPUT POWER



PEAK POWER MID CH (2440 MHz)



PEAK POWER HIGH CH (2479 MHz)



7.1.4. AVERAGE POWER

AVERAGE POWER LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

No non-compliance noted:

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

Channel	Frequency (MHz)	Power (dBm)
Low	2403	-2.96
Middle	2440	-3.27
High	2479	-3.61

7.1.5. PEAK POWER SPECTRAL DENSITY

LIMIT

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

TEST PROCEDURE

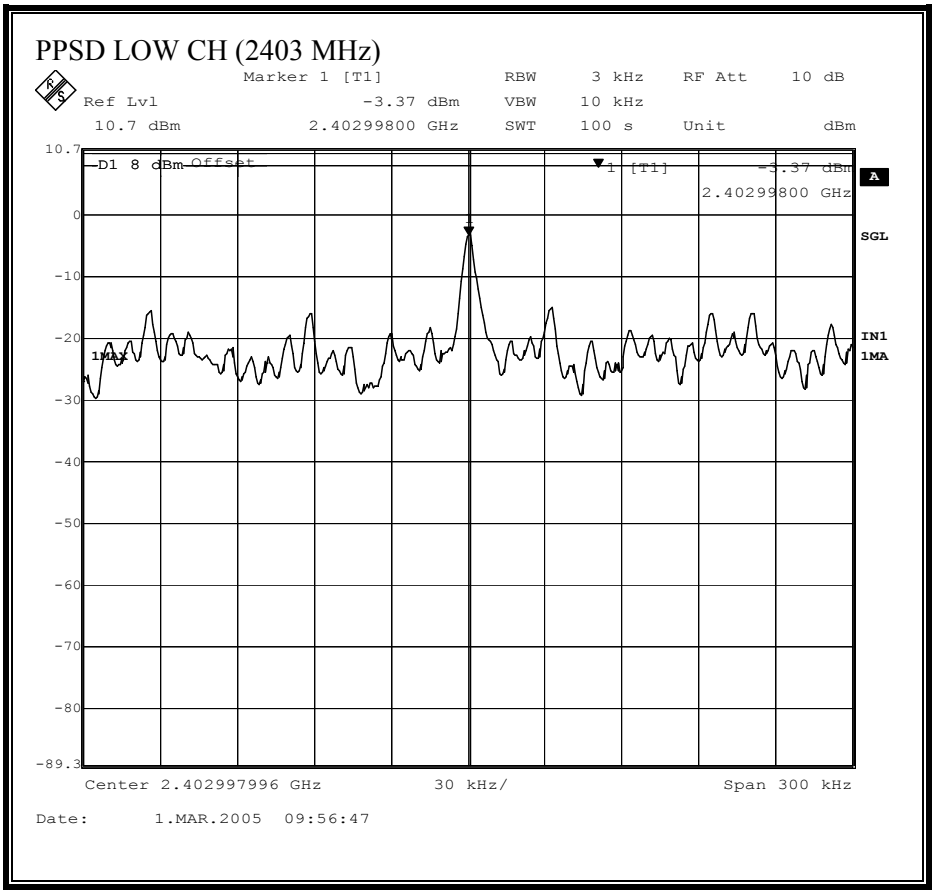
The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz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

RESULTS

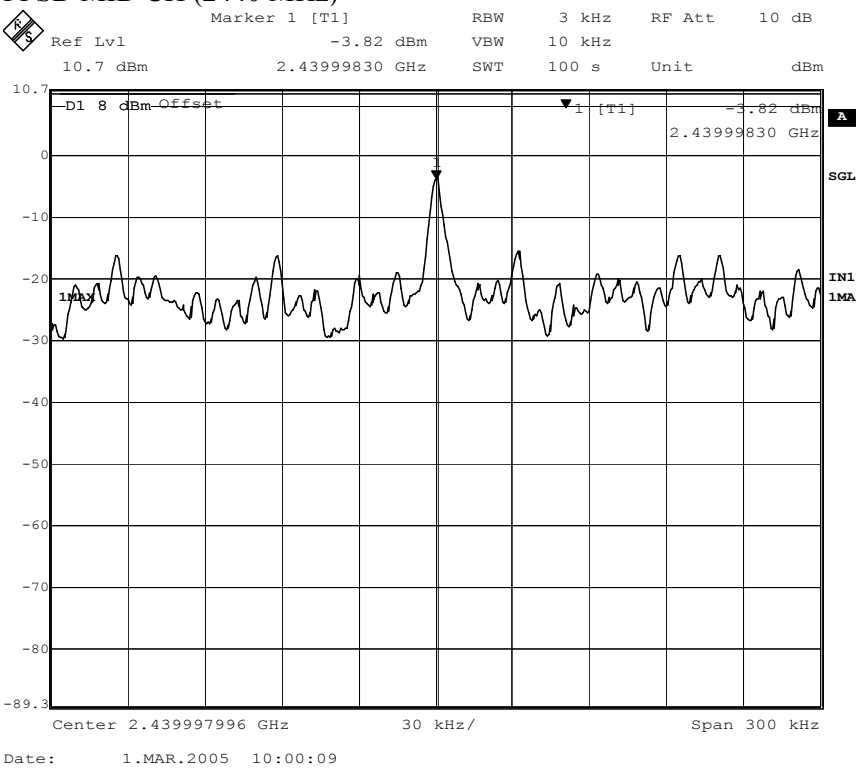
No non-compliance noted:

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2403	-3.37	8	-11.37
Middle	2440	-3.82	8	-11.82
High	2479	-4.10	8	-12.10

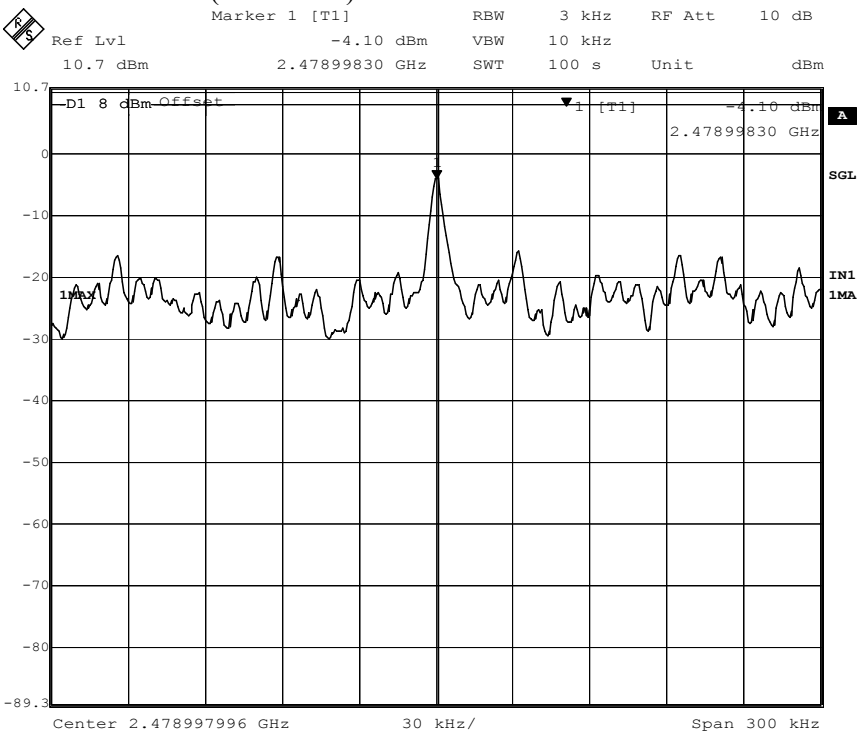
PEAK POWER SPECTRAL DENSITY



PPSD MID CH (2440 MHz)



PPSD HIGH CH (2479 MHz)



7.1.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

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

TEST PROCEDURE

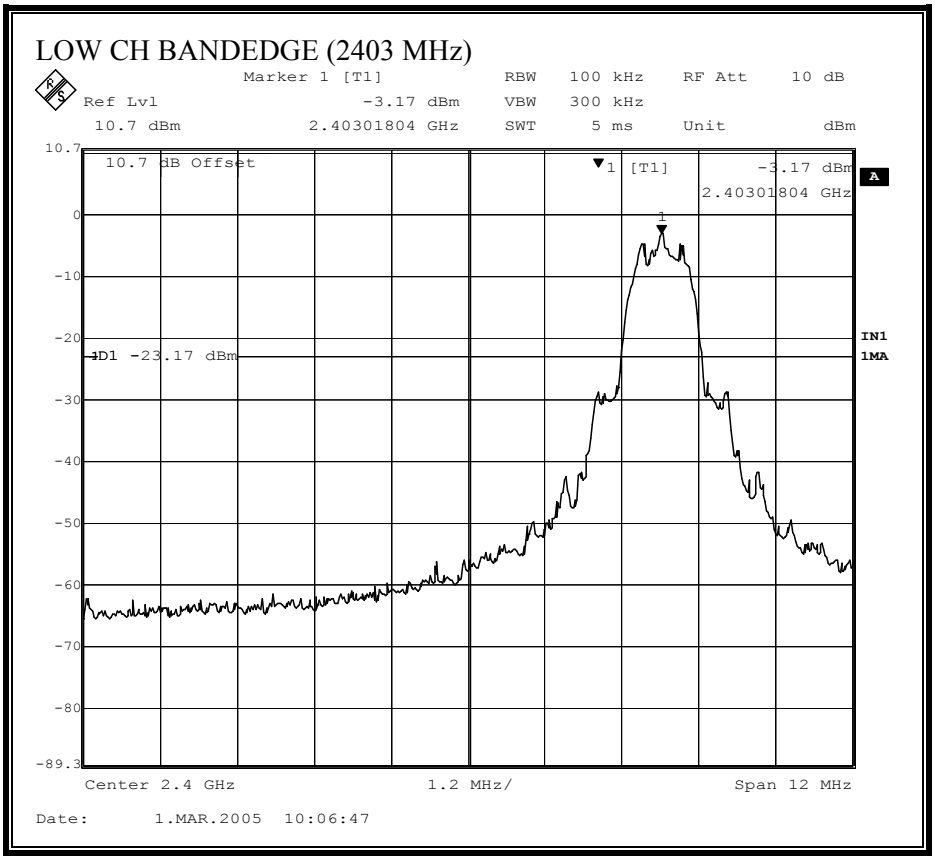
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

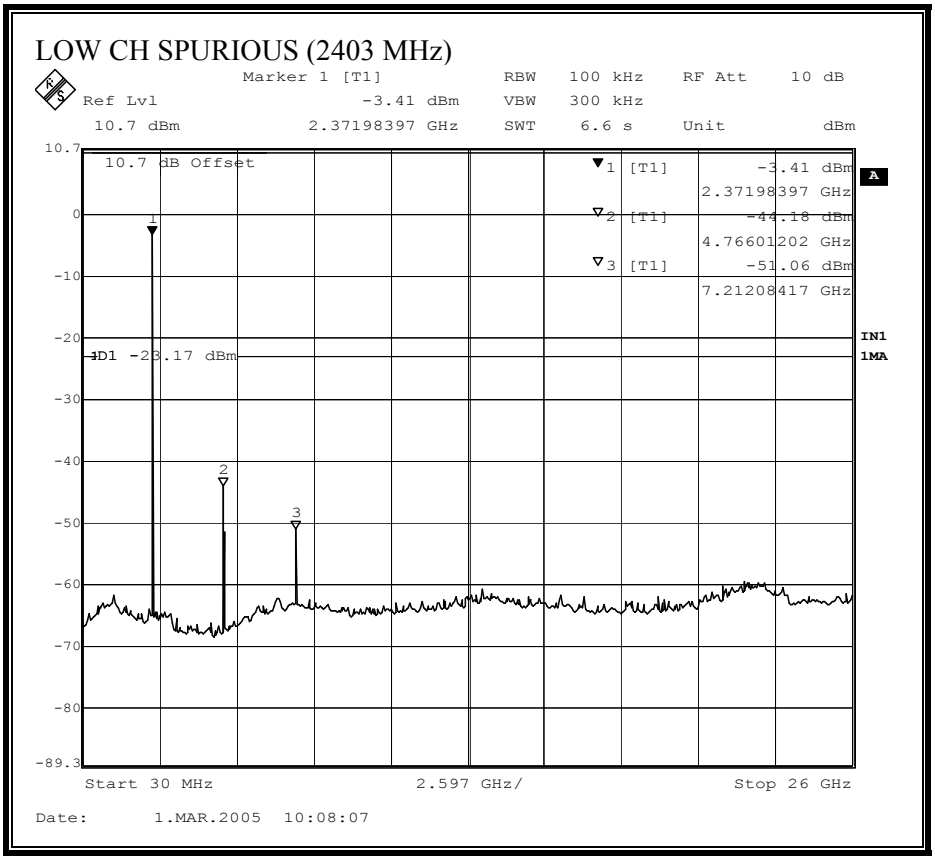
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

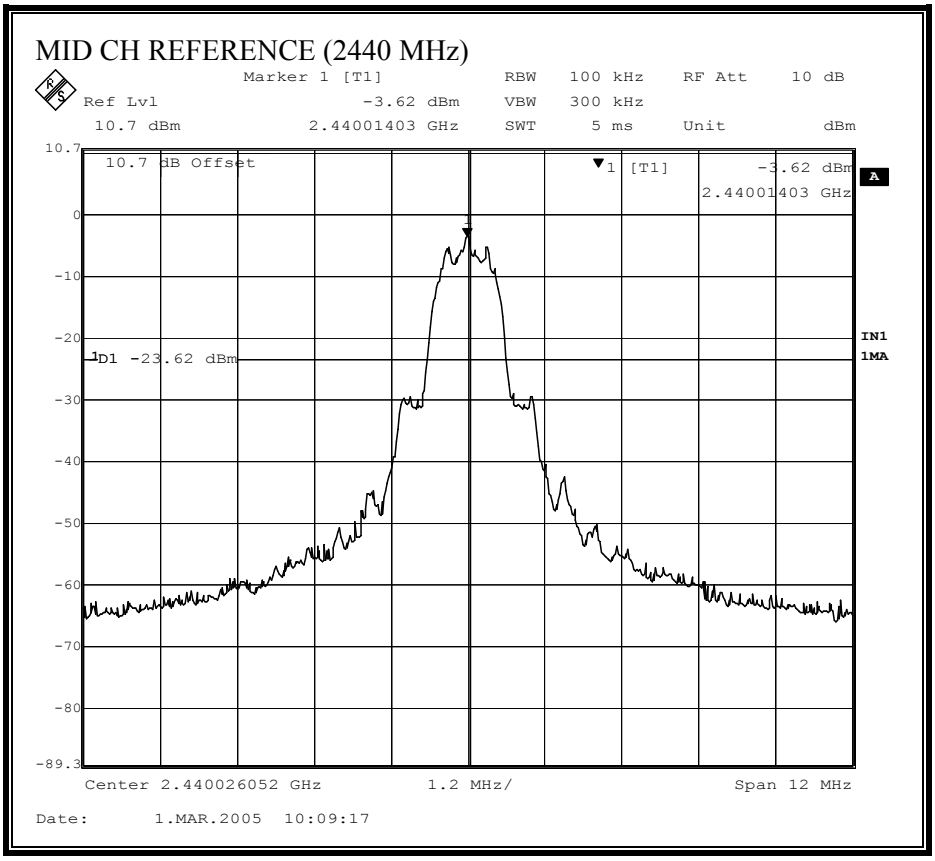
No non-compliance noted:

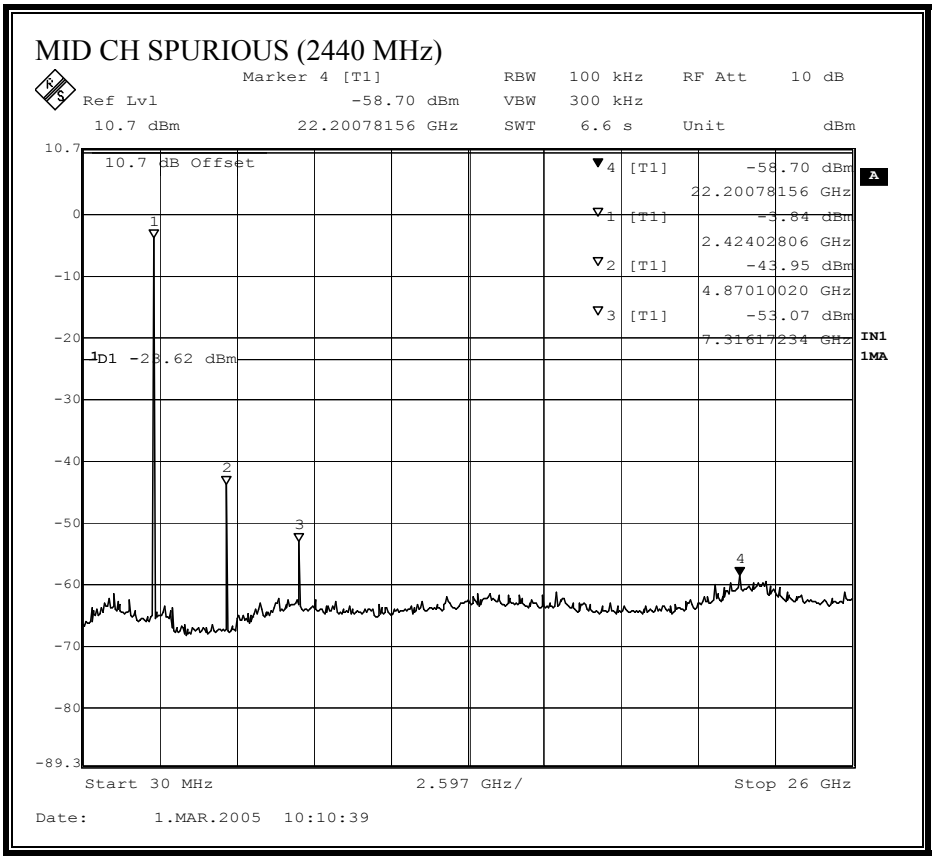
SPURIOUS EMISSIONS, LOW CHANNEL (2403 MHz)



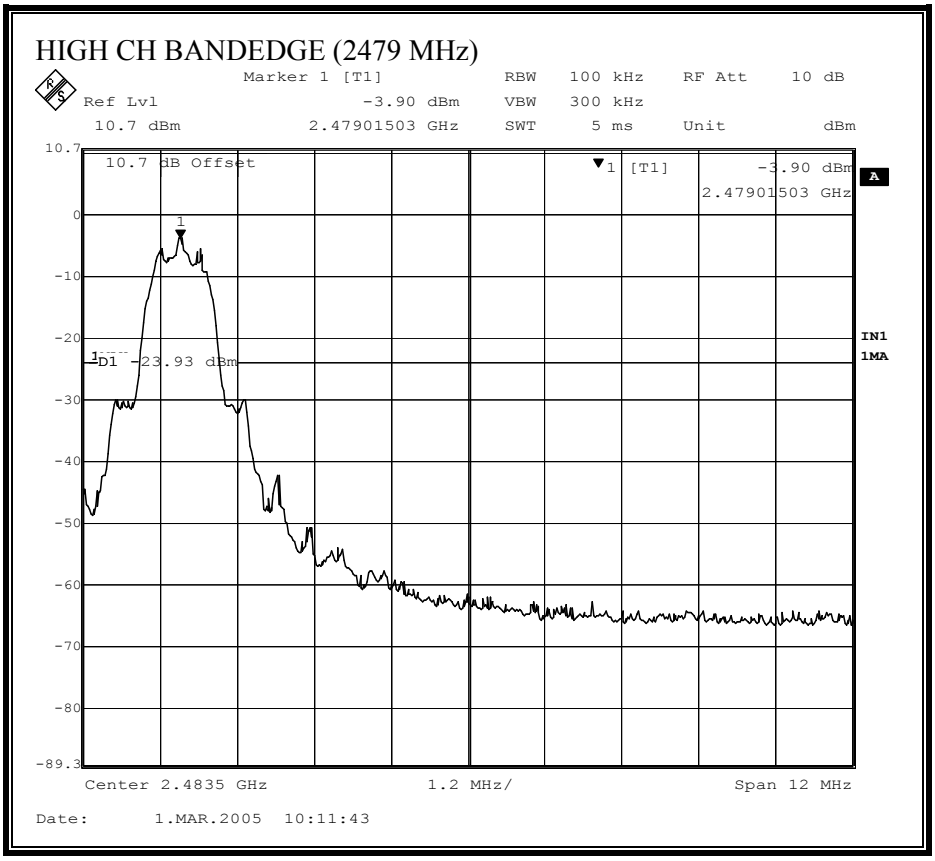


SPURIOUS EMISSIONS, MID CHANNEL

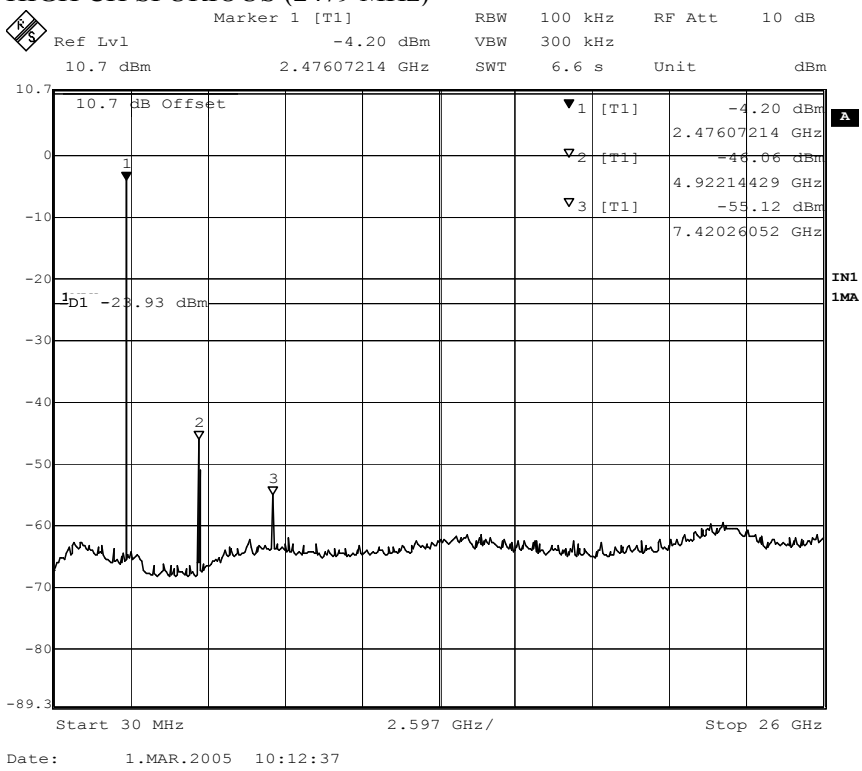




SPURIOUS EMISSIONS, HIGH CHANNEL



HIGH CH SPURIOUS (2479 MHz)



7.2. RADIATED EMISSIONS

7.2.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]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	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

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

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

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

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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

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

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

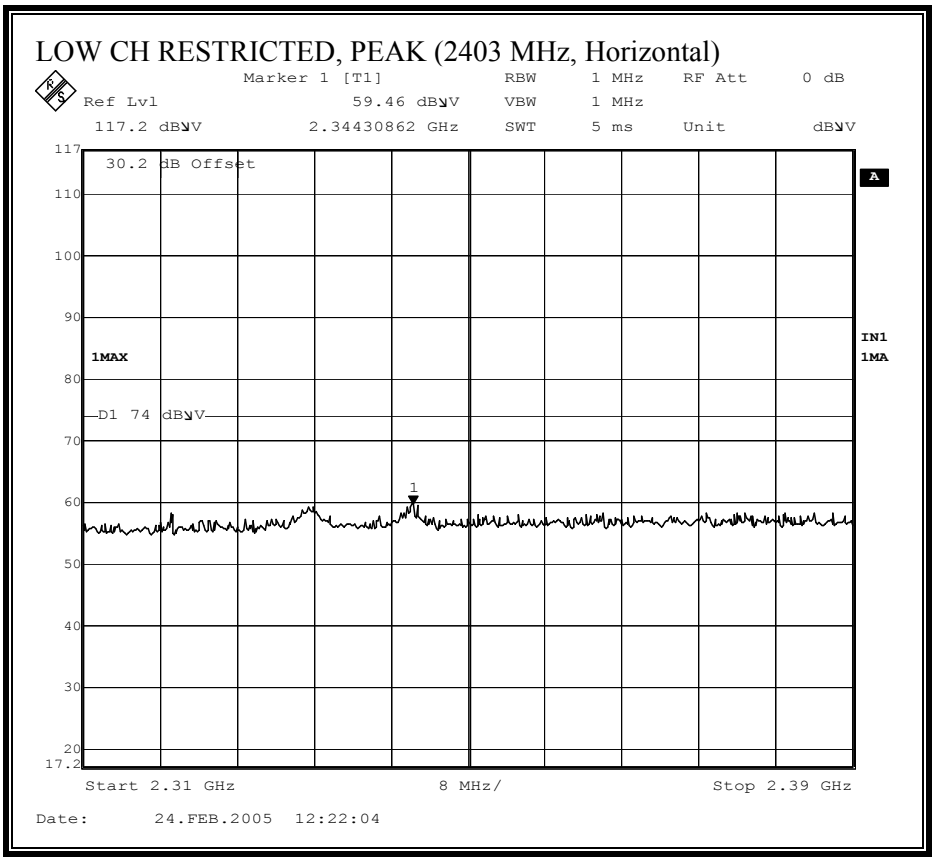
TEST RESULT

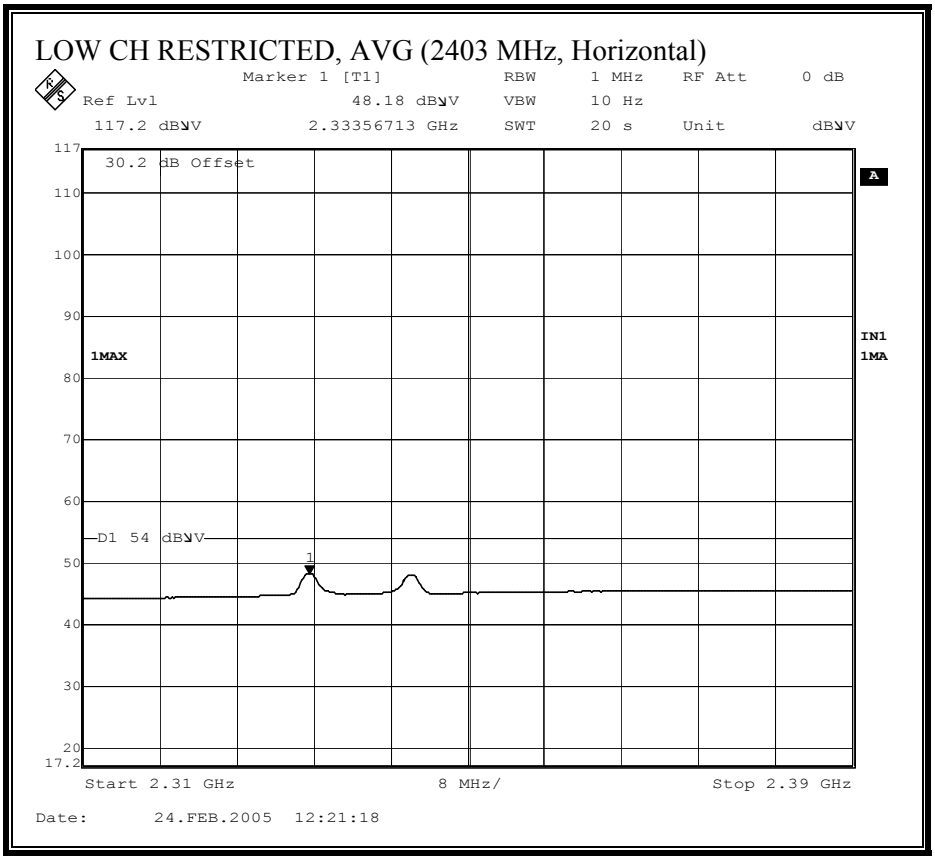
No non-compliance noted.

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

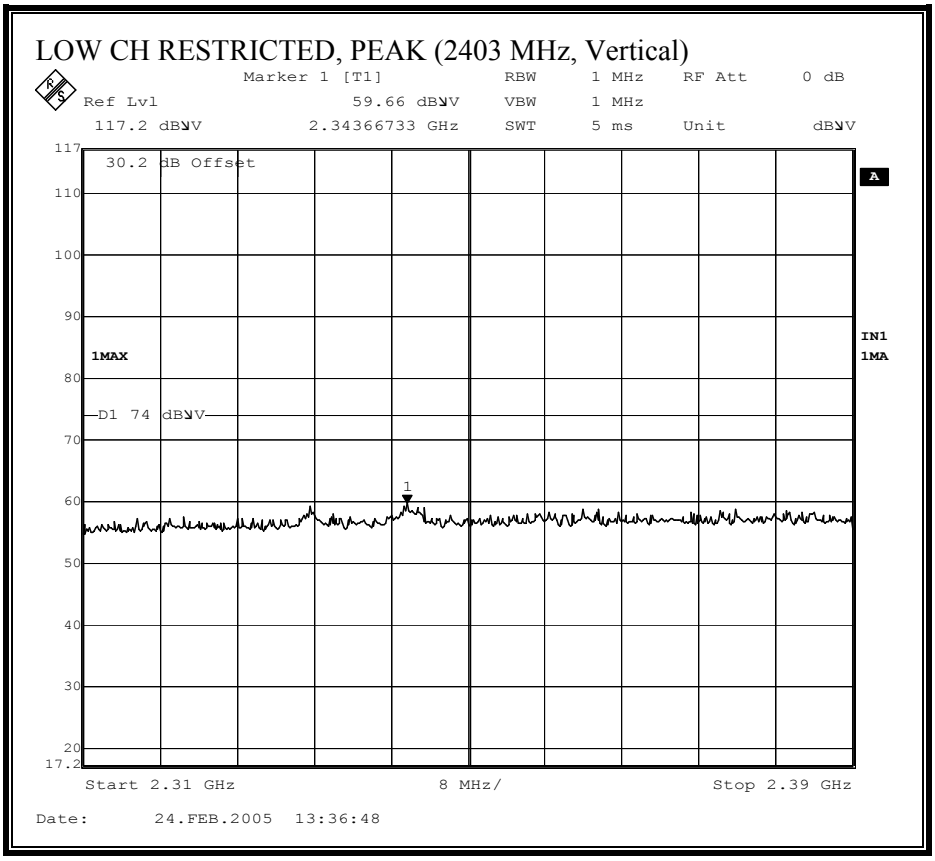
7.2.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

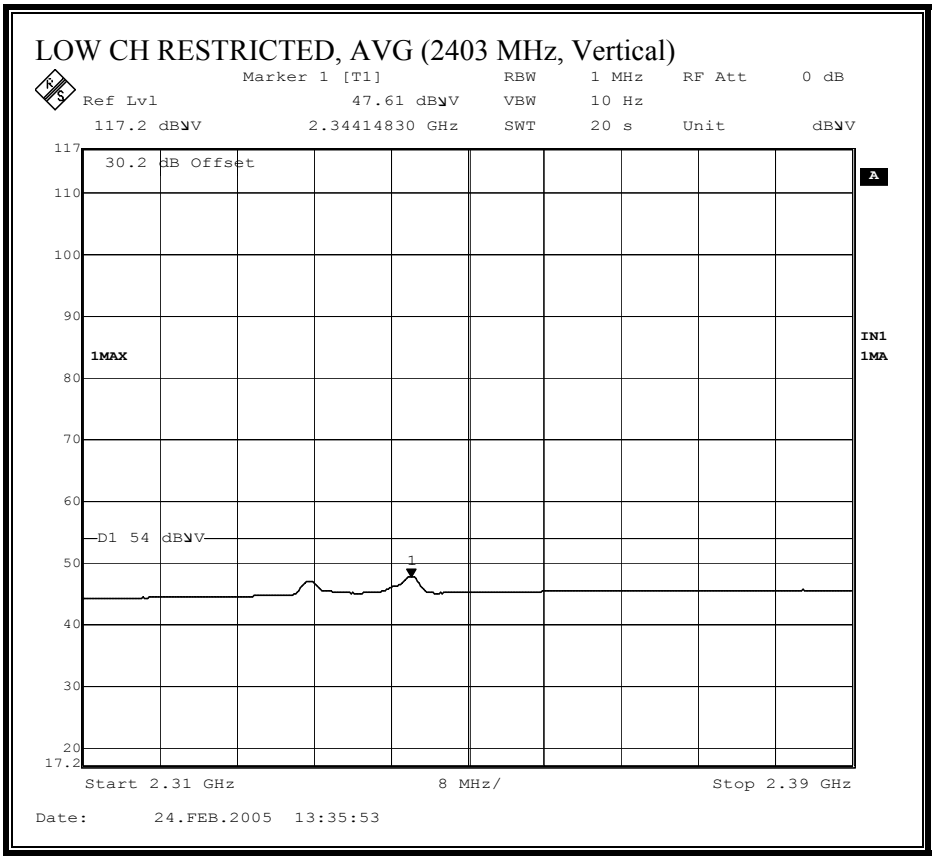
RESTRICTED BANDEDGE (2403 MHz, LOW CHANNEL, HORIZONTAL)



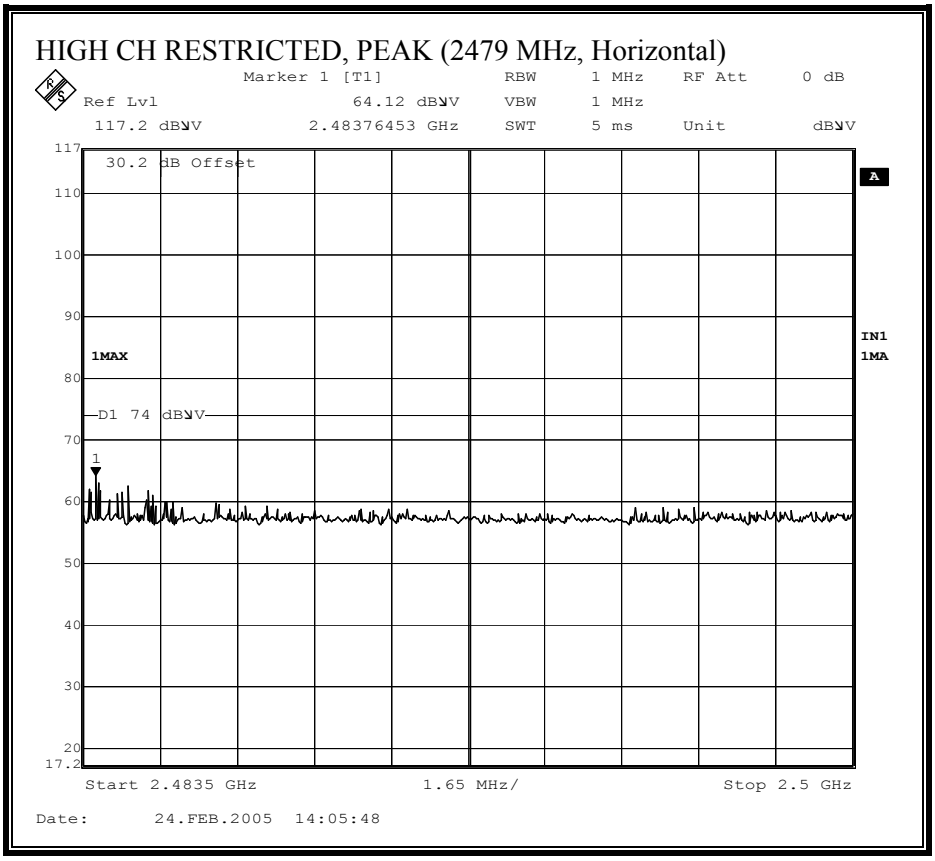


RESTRICTED BANDEDGE (2403 MHz, LOW CHANNEL, VERTICAL)

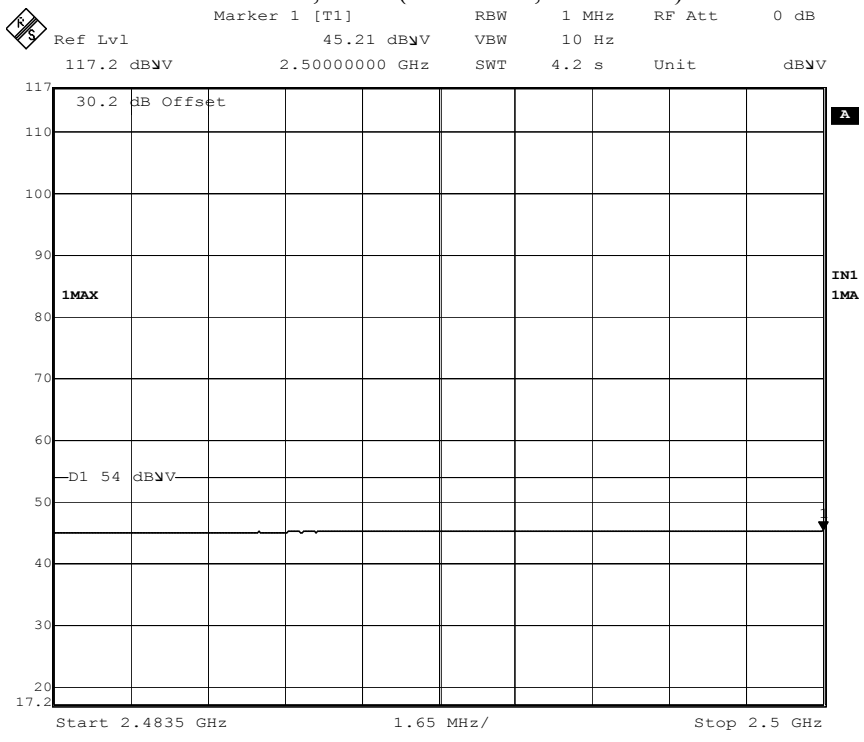




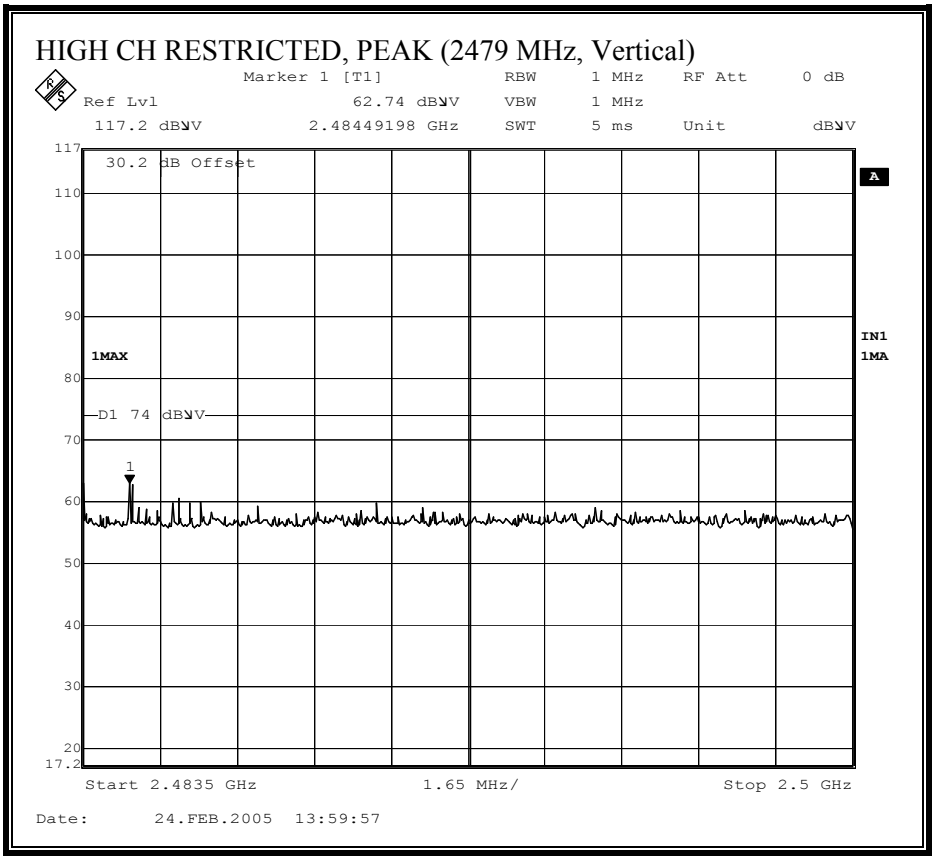
RESTRICTED BANDEDGE (2479 MHz, HIGH CHANNEL, HORIZONTAL)



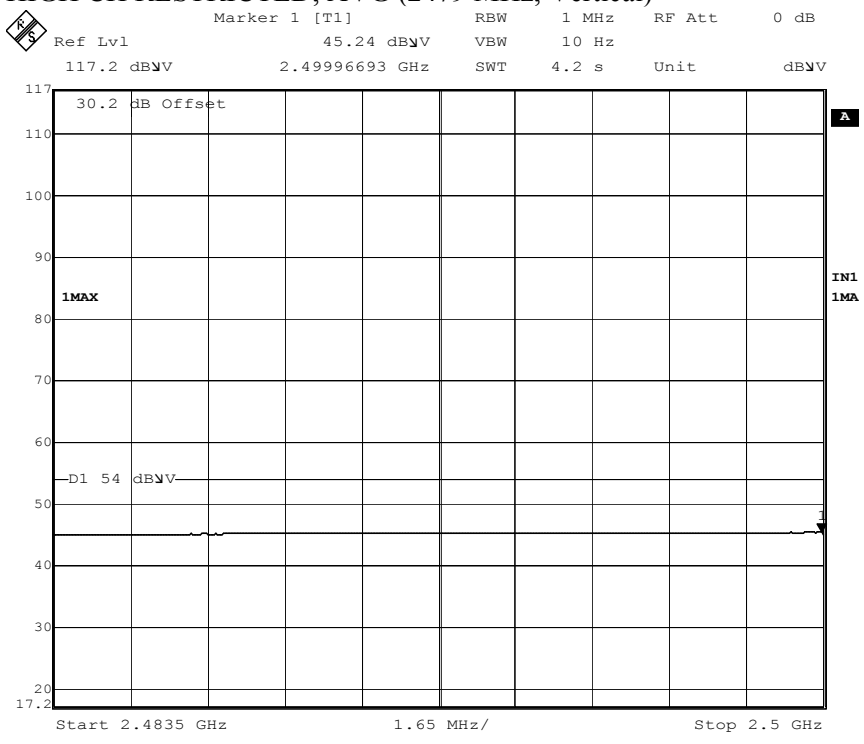
HIGH CH RESTRICTED, AVG (2479 MHz, Horizontal)



RESTRICTED BANDEDGE (2479 MHz, HIGH CHANNEL, VERTICAL)



HIGH CH RESTRICTED, AVG (2479 MHz, Vertical)



HARMONICS AND SPURIOUS EMISSIONS

02/25/05 **High Frequency Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: HITESH H. SOLANKI
Project #: 05U3274
Company: GYRATION
EUT Descrip.: WIRELESS USB TRANSCEIVER
EUT M/N: AS00674-001
Test Target: FCC CLASS B
Mode Oper: TRANS MIT ON SPECIFIED CHANNELS (2.4 GHz BAND)

Test Equipment:

EMCO Horn 1-18GHz: T73; S/N: 6717 @3m
Pre-amplifer 1-26GHz: T63 Miteq 646456
Pre-amplifer 26-40GHz:
Horn > 18GHz:
Hi Frequency Cables: 2 foot cable; 3 foot cable; 4 foot cable: 4_Hitesh; 12 foot cable: 12_Hitesh
HPF: HPF_4.0GHz
Reject Filter: R_001

Peak Measurements
RBW=VBW=1MHz

Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CHANNEL 2403 MHz															
4.806	3.0	67.3	36.4	32.9	4.4	-35.5	0.0	0.6	69.7	38.8	74	54	-4.3	-15.2	V
7.209	3.0	59.1	34.7	35.7	6.1	-34.9	0.0	0.6	66.6	42.2	74	54	-7.4	-11.8	V
9.612	3.0	44.9	30.9	37.5	7.6	-33.0	0.0	0.8	57.9	43.9	74	54	-16.1	-10.1	V
MIDDLE CHANNEL 2439 MHz															
4.878	3.0	63.4	36.0	32.9	4.5	-35.5	0.0	0.6	65.9	38.5	74	54	-8.1	-15.5	V
7.317	3.0	56.9	34.6	35.8	6.2	-34.8	0.0	0.6	64.8	42.5	74	54	-9.2	-11.5	V
9.756	3.0	47.6	31.4	37.6	7.7	-33.0	0.0	0.8	60.7	44.5	74	54	-13.3	-9.5	V
HIGH CHANNEL 2479 MHz															
4.958	3.0	60.0	35.7	33.0	4.5	-35.5	0.0	0.6	62.7	38.4	74	54	-11.3	-15.6	V
7.437	3.0	57.9	34.6	36.1	6.3	-34.7	0.0	0.6	66.2	42.9	74	54	-7.8	-11.1	V
9.916	3.0	48.6	32.7	37.6	7.8	-33.0	0.0	0.8	61.8	45.9	74	54	-12.2	-8.1	V
LOW CHANNEL 2403 MHz															
4.806	3.0	71.5	36.9	32.9	4.4	-35.5	0.0	0.6	73.9	39.3	74	54	-0.1	-14.7	H
7.209	3.0	59.4	35.0	35.7	6.1	-34.9	0.0	0.6	66.9	42.5	74	54	-7.1	-11.5	H
9.612	3.0	45.1	31.2	37.5	7.6	-33.0	0.0	0.8	58.1	44.2	74	54	-15.9	-9.8	H
MIDDLE CHANNEL 2439 MHz															
4.878	3.0	67.1	36.4	32.9	4.5	-35.5	0.0	0.6	69.6	38.9	74	54	-4.4	-15.1	H
7.317	3.0	57.8	34.8	35.8	6.2	-34.8	0.0	0.6	65.7	42.7	74	54	-8.3	-11.3	H
9.756	3.0	48.1	30.8	37.6	7.7	-33.0	0.0	0.8	61.2	43.9	74	54	-12.8	-10.1	H
HIGH CHANNEL 2479 MHz															
4.958	3.0	66.9	37.3	33.0	4.5	-35.5	0.0	0.6	69.6	40.0	74	54	-4.4	-14.0	H
7.437	3.0	58.4	35.3	36.1	6.3	-34.7	0.0	0.6	66.7	43.6	74	54	-7.3	-10.4	H
9.916	3.0	48.0	32.8	37.6	7.8	-33.0	0.0	0.8	61.2	46.0	74	54	-12.8	-8.0	H
															H

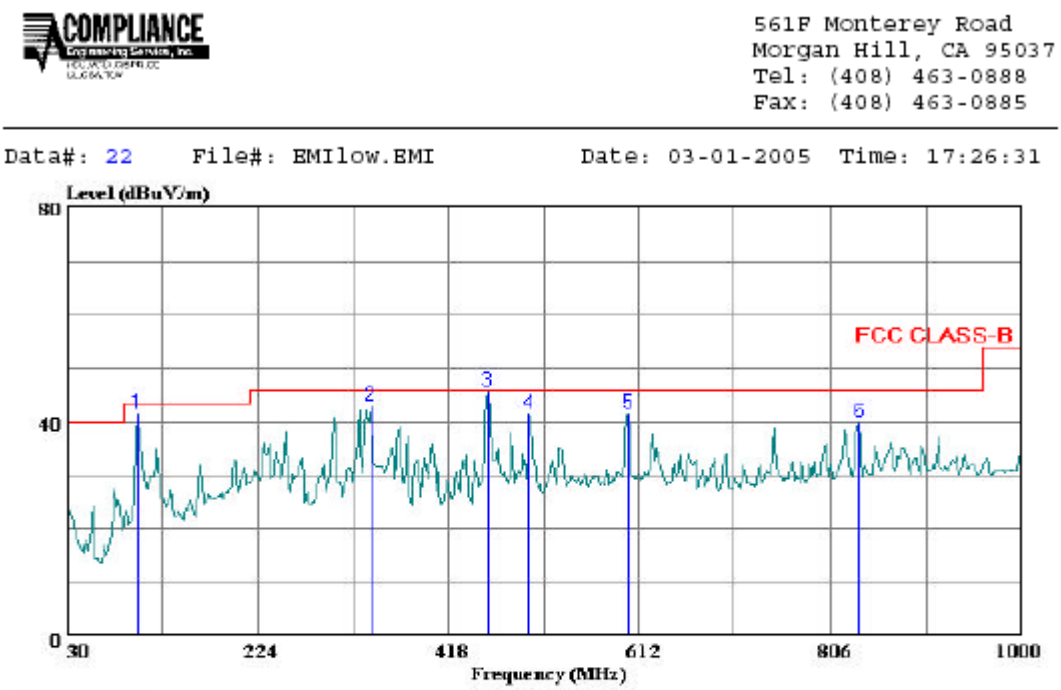
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

Note: No other emissions were found up to 10th Harmonic frequency of the fundamental freq.

7.2.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

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

HORIZONTAL PLOT



HORIZONTAL DATA

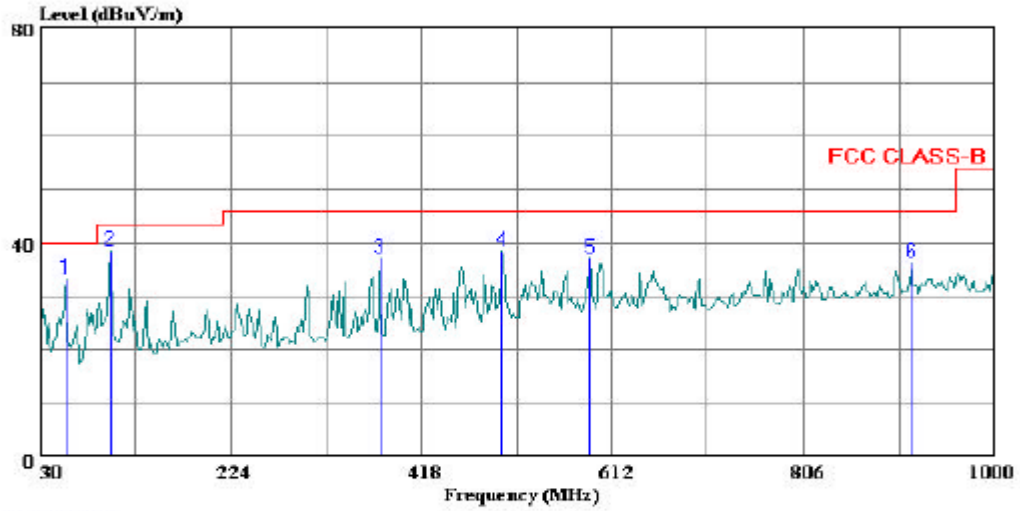
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	101.780	57.59	-16.05	41.54	43.50	-1.96	Peak
2	339.430	53.68	-10.90	42.78	46.00	-3.22	Peak
3	458.740	53.89	-8.10	45.79	46.00	-0.21	Peak
4	499.480	48.87	-7.24	41.63	46.00	-4.37	Peak
5	601.330	47.01	-5.45	41.56	46.00	-4.44	Peak
6	834.130	41.45	-1.60	39.85	46.00	-6.15	Peak

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

VERTICAL PLOT

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

Data#: 24 File#: EMIlow.EMI Date: 03-01-2005 Time: 17:37:16



(Audix ATC)
Trace: 23 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : HITESH H. SOLANKI
Project #: : 05U3274
Company: : GYRATION
EUT: : USB TRANSCEIVER
Model No : AS00764-001
Configuration: : EUT with DELL LAPTOP
Target of Test: : FCC Class B
Mode of Operation: TRANSMIT ON SINGLE CHANNEL (Worst Case)

VERTICAL DATA

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	56.190	52.49	-19.39	33.10	40.00	-6.90	Peak
2	101.780	54.41	-16.05	38.36	43.50	-5.14	Peak
3	376.290	47.09	-10.00	37.09	46.00	-8.91	Peak
4	499.480	45.70	-7.24	38.46	46.00	-7.54	Peak
5	589.690	42.83	-5.65	37.18	46.00	-8.82	Peak
6	914.640	37.05	-0.88	36.17	46.00	-9.83	Peak

7.3. POWERLINE CONDUCTED EMISSIONS

LIMIT

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

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

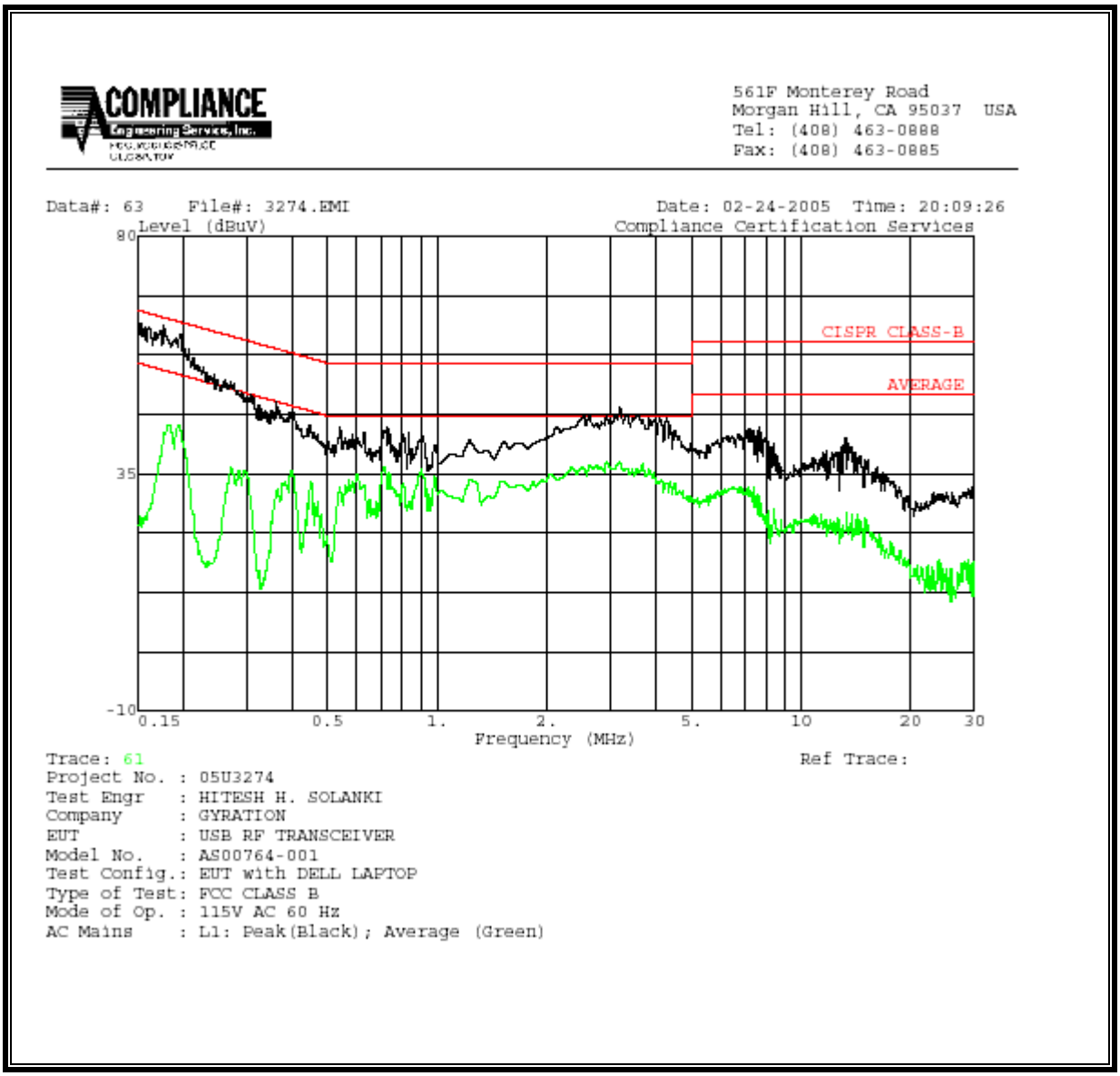
No non-compliance noted:

Configuration 1 - EUT tested via USB cable

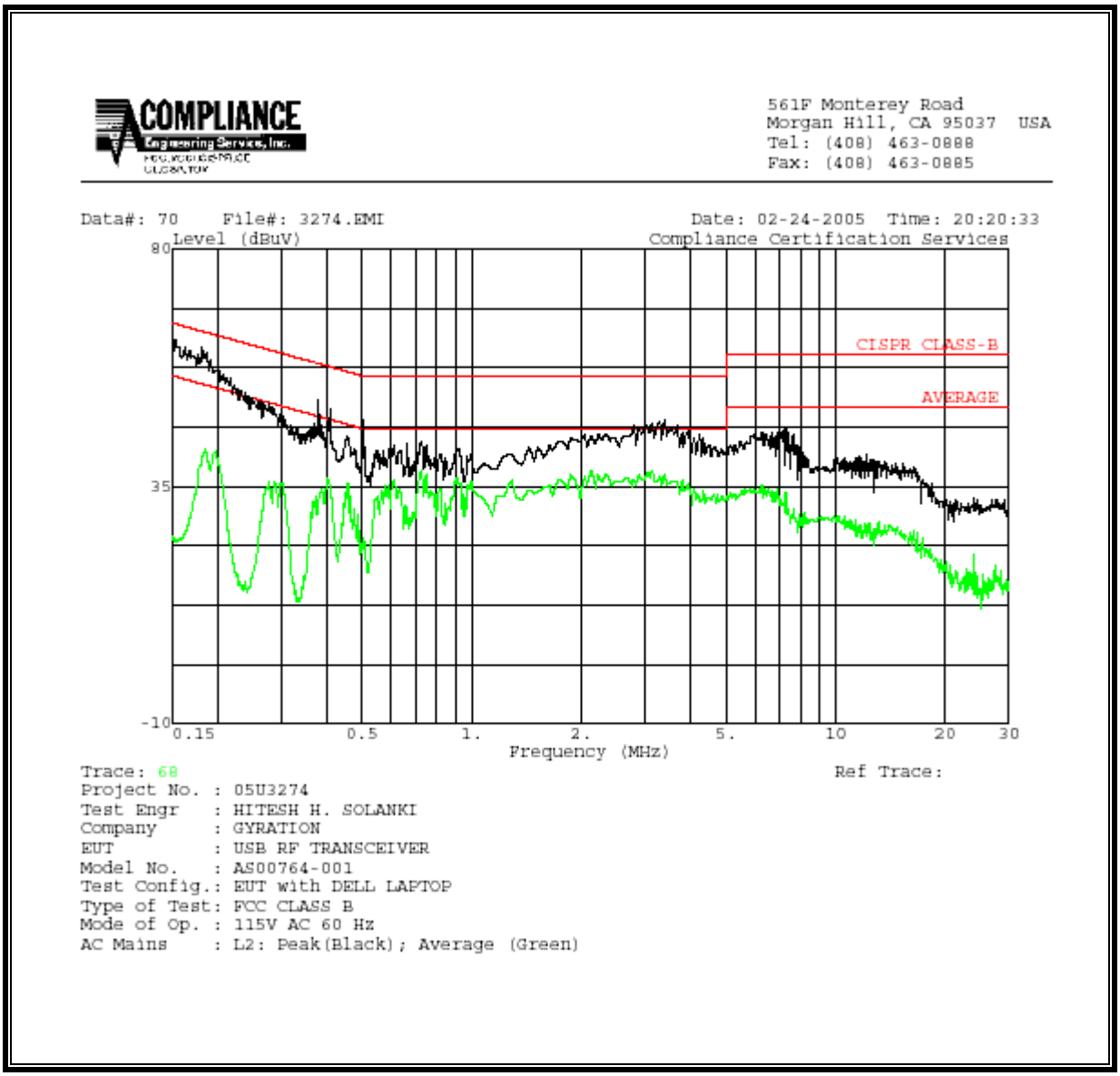
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.18	63.22	--	44.05	0.00	64.63	54.63	-1.41	-10.58	L1
3.17	47.76	--	37.36	0.00	56.00	46.00	-8.24	-8.64	L1
13.27	41.88	--	27.79	0.00	60.00	50.00	-18.12	-22.21	L1
0.15	63.40	--	25.47	0.00	66.00	56.00	-2.60	-30.53	L2
0.51	47.62	--	36.11	0.00	56.00	46.00	-8.38	-9.89	L2
3.38	47.56	--	38.04	0.00	56.00	46.00	-8.44	-7.96	L2
6 Worst Data									

LINE 1 RESULT



LINE 2 RESULT

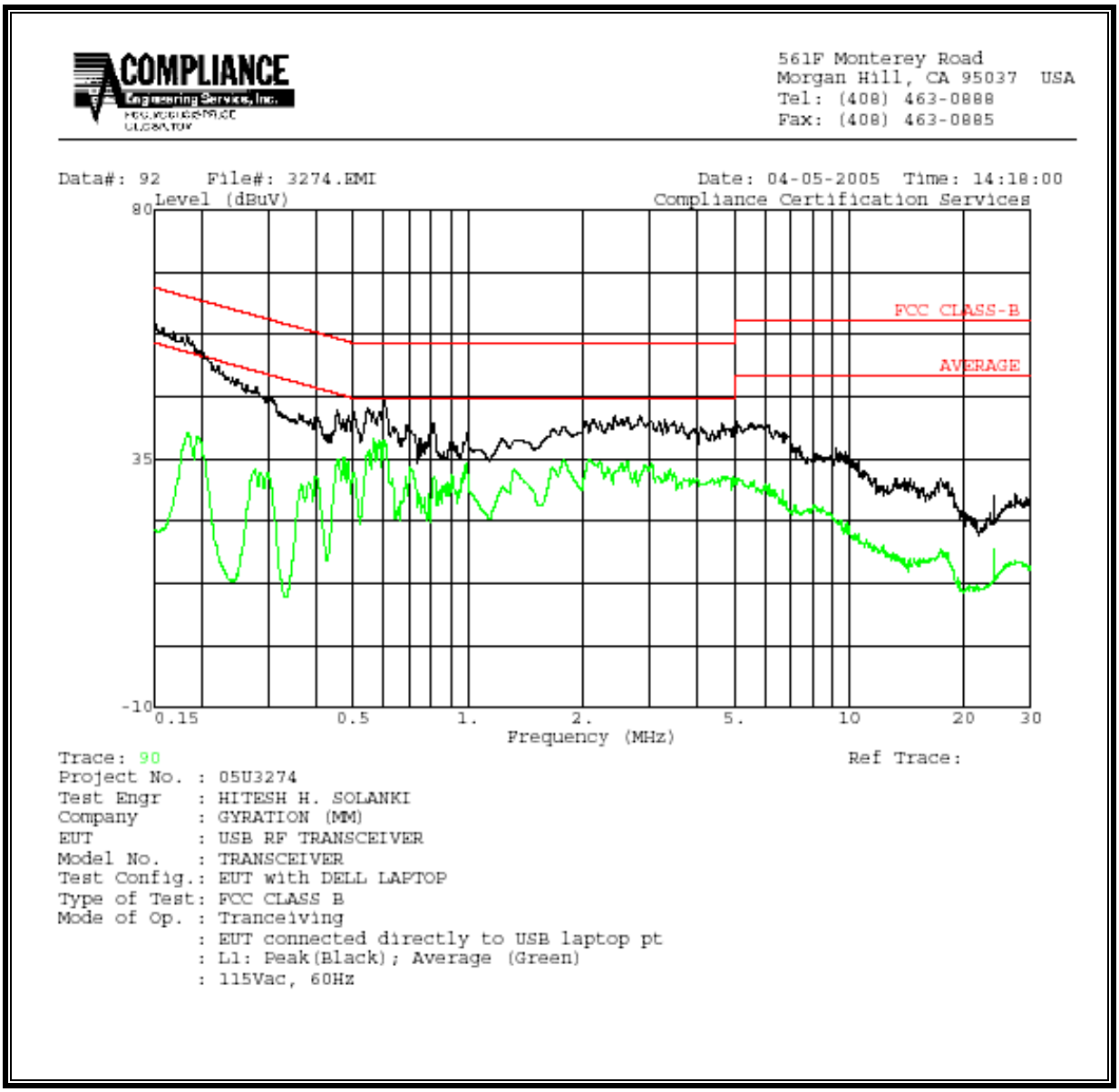


Configuration 1 - For EUT tested directly connected to the host

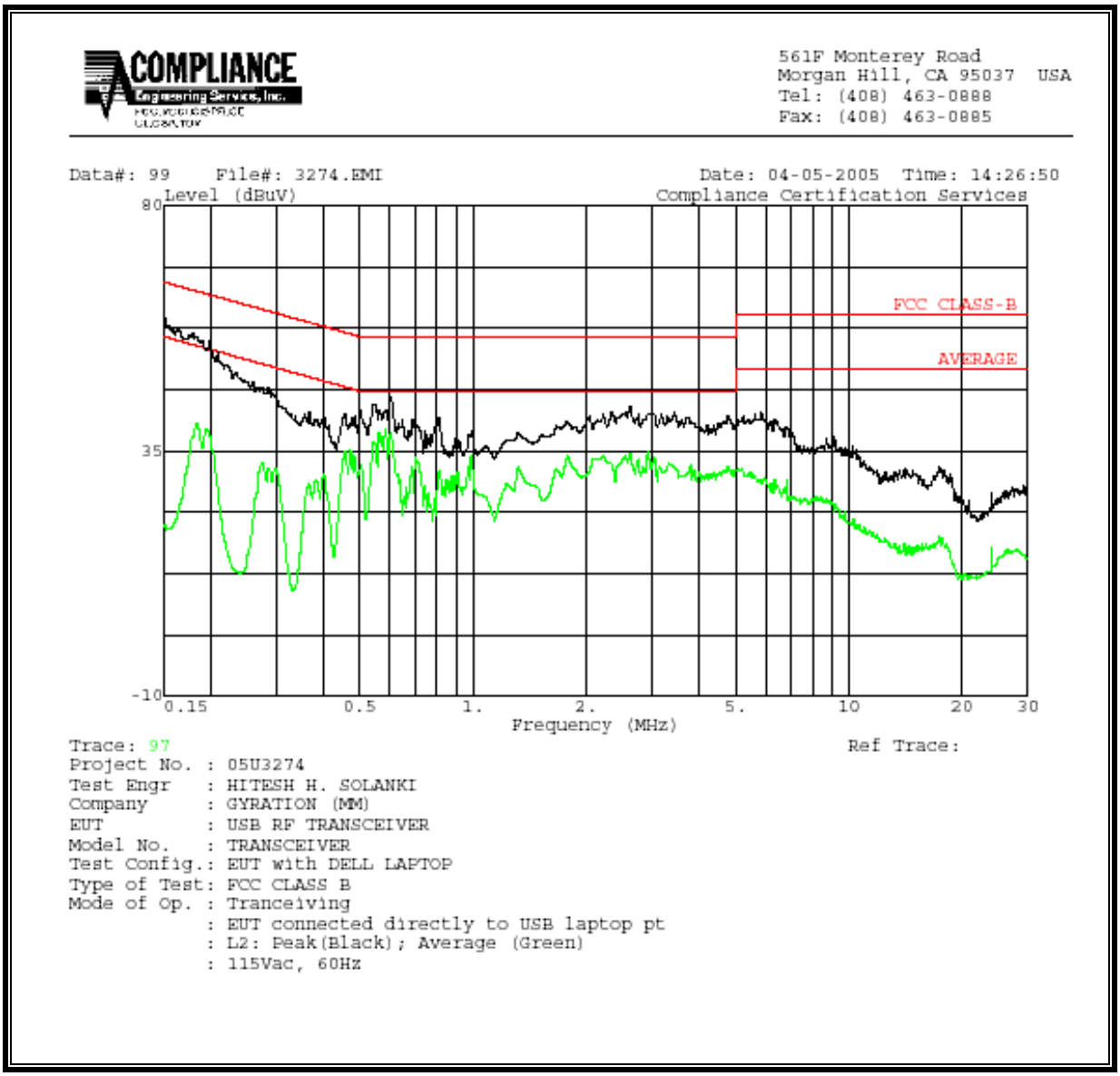
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.15	59.38	--	22.22	0.00	65.89	55.89	-6.51	-33.67	L1
0.18	57.38	--	38.70	0.00	64.35	54.35	-6.97	-15.65	L1
0.60	45.48	--	38.10	0.00	56.00	46.00	-10.52	-7.90	L1
0.15	59.44	--	22.01	0.00	65.89	55.89	-6.45	-33.88	L2
0.20	55.18	--	38.85	0.00	63.61	53.61	-8.43	-14.76	L2
0.60	44.64	--	38.69	0.00	56.00	46.00	-11.36	-7.31	L2
6 Worst Data									

LINE 1 RESULT



LINE 2 RESULT

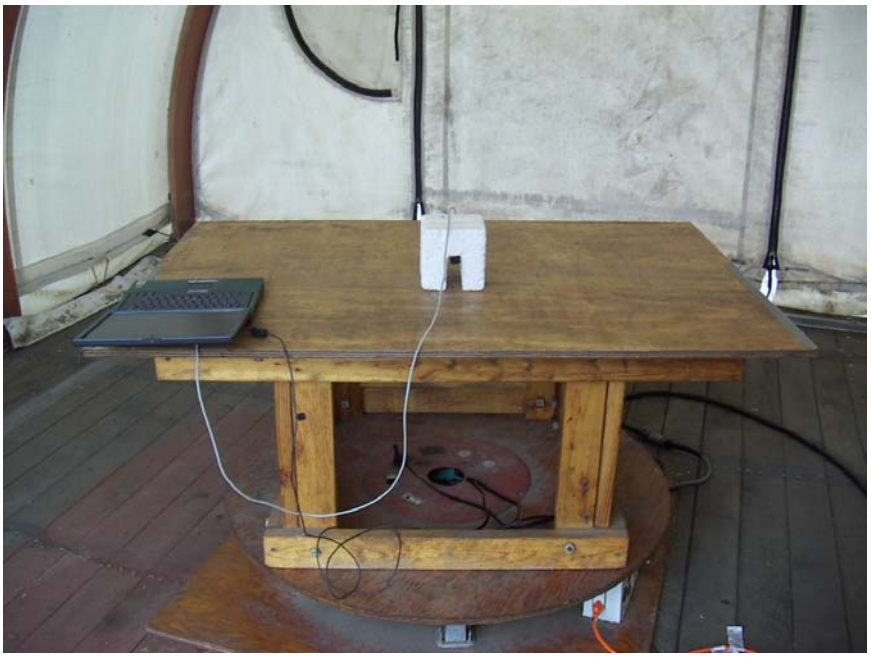


8. SETUP PHOTOS

RADIATED RF MEASUREMENT SETUP

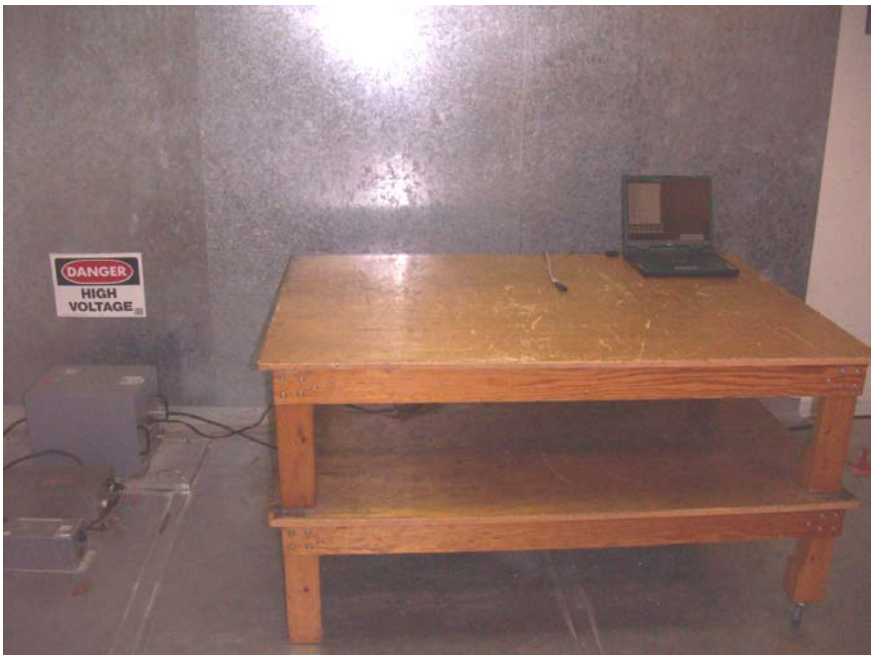
RADIATED FRONT PHOTO

RADIATED BACK PHOTO



POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP – EUT connected to host via USB cable

LINE CONDUCTED FRONT PHOTO



LINE CONDUCTED BACK PHOTO

POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP - EUT directly connected to host

LINE CONDUCTED FRONT PHOTO

LINE CONDUCTED BACK PHOTO

END OF REPORT