TEST REPORT

Report Number: 3100969ATL-003a

October 17, 2006

Product Designation: EW 40 Control Unit FCCID: UL5-EW40US)

Standard: FCC Part 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHZ, and 24.0-24.25 GHz.
RSS-210 Issue 6 September 2005: Annex 2.9

Tested by:
Intertek Testing Services NA Inc.
1950 Evergreen Blvd., Suite 100
Duluth, GA 30096

Client:
Exhausto, Inc.
1200 Northmeadow Pkwy. Suite 180
Roswell, GA 30076
Contact: Steen Hagensen
Phone: 770.587.3238
Fax: 770.587.4731

Tests performed by:

Richard Bianco
EMC Engineer

Report reviewed by:

David J. Schramm
EMC Department Manager

1.0 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatum text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2.0 Test Summary

Section	Test Full Name	Test Date	Result
4.0	System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)		
5.0	Overview of EUT (Low Power Transmitters) (FCC 15C - EUT Overview)		
6.0	Radiated emissions (E-field) (Radiated Emissions)	08/07/2006	PASS
NA	Duty Cycle Determination (FCC 15A - 15.35(c)) was waived due to The fundamental power is below the limit of 15.249 without duty cycle consideration.		
NA	Conducted emissions on AC power lines (Conducted Emissions) was waived due to The EUT is battery operated		
NA	15.249(b): Requirements for fixed, point-to-point operation (FCC 15C - 15.249(b)) was waived due to the EUT is not intended for point-to-point operation.		

3.0 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Wireless Control System – Control Unit	Exhausto	EW 40	Engineering Sample

EUT receive date:	July 12, 2006
EUT receive condition:	Production

Description of EUT provided by Client:
The EW40 is a wireless control that can be used to operate and control an Exhausto chimney fan or power vent system. It is designed for use with fireplaces and stoves. The use is not restricted to any type of fuel.
The unit allows the user to stop and start and control the speed of a chimney fan from a wireless Control Unit. It can be installed with or without a temperature sensor. For gas-fired appliances, a safety system in the form of a PDS (Proven Draft Switch) must be installed.

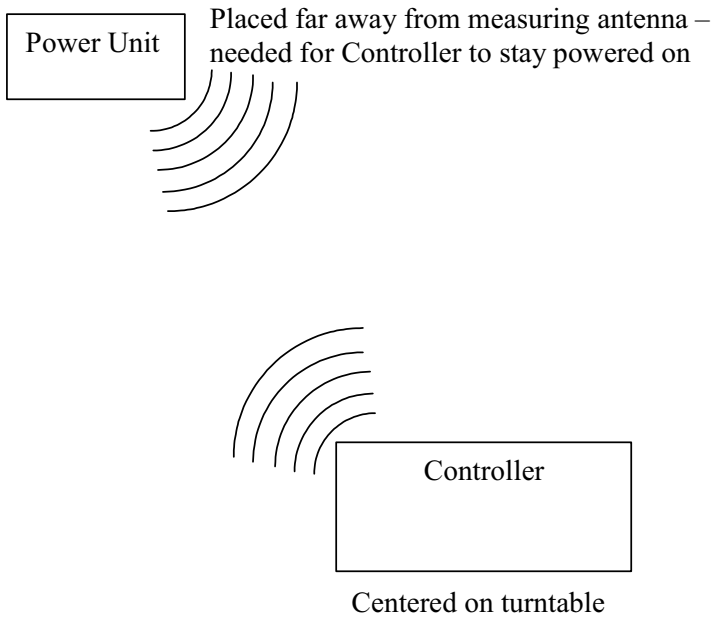
Description of EUT exercising:
The Control Unit, Repeater, and Power Unit were each tested individually.

4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

Method:

Record the details of EUTcabling, document the support equipment, and show the interconnections in a block diagram.

Drawing:



System Block Diagram

4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

Data:

EUT Cabling						
					Connection	
ID	Description	Length	Shielding	Ferrites	From	To
Control Unit						
None Required						

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Power Unit	Exhausto	EW-40	Engineering Sample

5.0 Overview of EUT (Low Power Transmitters) (FCC 15C - EUT Overview)

Method:

Complete the overview spreadsheet.

Related Submittal(s) Grants: This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application.

Data:

Applicant	Exhausto Incorporated
	1200 Northmeadow Parkway, Ste. 180
	Roswell, GA 30076, USA
Trade Name & Model No.	EW 40 Wireless Control System
FCC Identifier	UL5-EW40US
Use of product	Chimney Fan and PowerVent Wireless Controller
Transmitter activation	☑ Automatically activated
	☐ Periodic transmissions
Frequency Range (MHz)	908MHz
Antenna Type (15.203)	Permanently Attached, integral
Manufacturer name & address	Exhausto Incorporated
	1200 Northmeadow Parkway, Ste. 180
	Roswell, GA 30076, USA

Related Submittals and Grants:	This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application.
Additions, deviations and exclusions from standards	None

6.0 Radiated emissions (E-field) (Radiated Emissions)

Method:

Measurements in the frequency range of 30 MHz to 1000 MHz shall be performed with a quasi-peak detector instrument that meets the requirements of Section One of CISPR 16. The measuring antenna shall correlate to a balanced dipole. Above 1 GHz, average measurements are made. When peak detectors are used, it shall be clearly indicated in the test data.

Bandwidths:
30 MHz to 1000 MHz: RBW=120 kHz, VBW=1MHz
Above 1GHz: RBW=1MHz, VBW=3MHz

Measurements of the radiated field are made with the antenna located at a distance of 3 or 10 meters from the EUT. The limit applied to the measurement shall be appropriate for the test distance. The test distance shall be indicated in the results section.

The EUT shall be arranged and connected with cables terminated in accordance with the product specification.

Exploratory tests should be carried out while varying the cable positions to determine the maximum or near-maximum emission level. During manipulation, cables shall not be placed under or on top of the system test components unless such placement is required by the inherent equipment design.

The antenna shall be adjusted between 1m and 4m in height above the ground plane for maximum meter reading at each test frequency.

The antenna-to-EUT azimuth shall be varied during the measurement to find the maximum field-strength readings.

The antenna-to-EUT polarization (horizontal and vertical) shall be varied during the measurements to find the maximum field-strength readings.

If the EUT is intended for tabletop use, it shall be placed on a table whose top is 0.8m above the ground plane. The table shall be constructed of non-conductive materials. Its dimensions are at least 1m by 1.5m, but may be extended for larger EUT.

If EUT is floor standing, the EUT was placed on a horizontal metal ground plane and isolated from the ground plane by up to 12 mm of insulating material.

Equipment setup for radiated disturbance tests shall follow the guidelines of ANSI C63.4:2003, RSS-210, RSS-GEN.

TEST SITE
The test site for radiated emissions is located at 1950 Evergreen Blvd, Suite 100, Duluth, Georgia 30096.

MEASUREMENT UNCERTAINTY
Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes. The values given are the measurement uncertainty values with an expanded uncertainty of k=2.
30 MHz to 1000 MHz at 3 meters: +/- 3.9 dB
30 MHz to 1000 MHz at 10 meters: +/- 3.6 dB
1 GHz to 18 GHz at 3 meters: +/- 4.2 dB

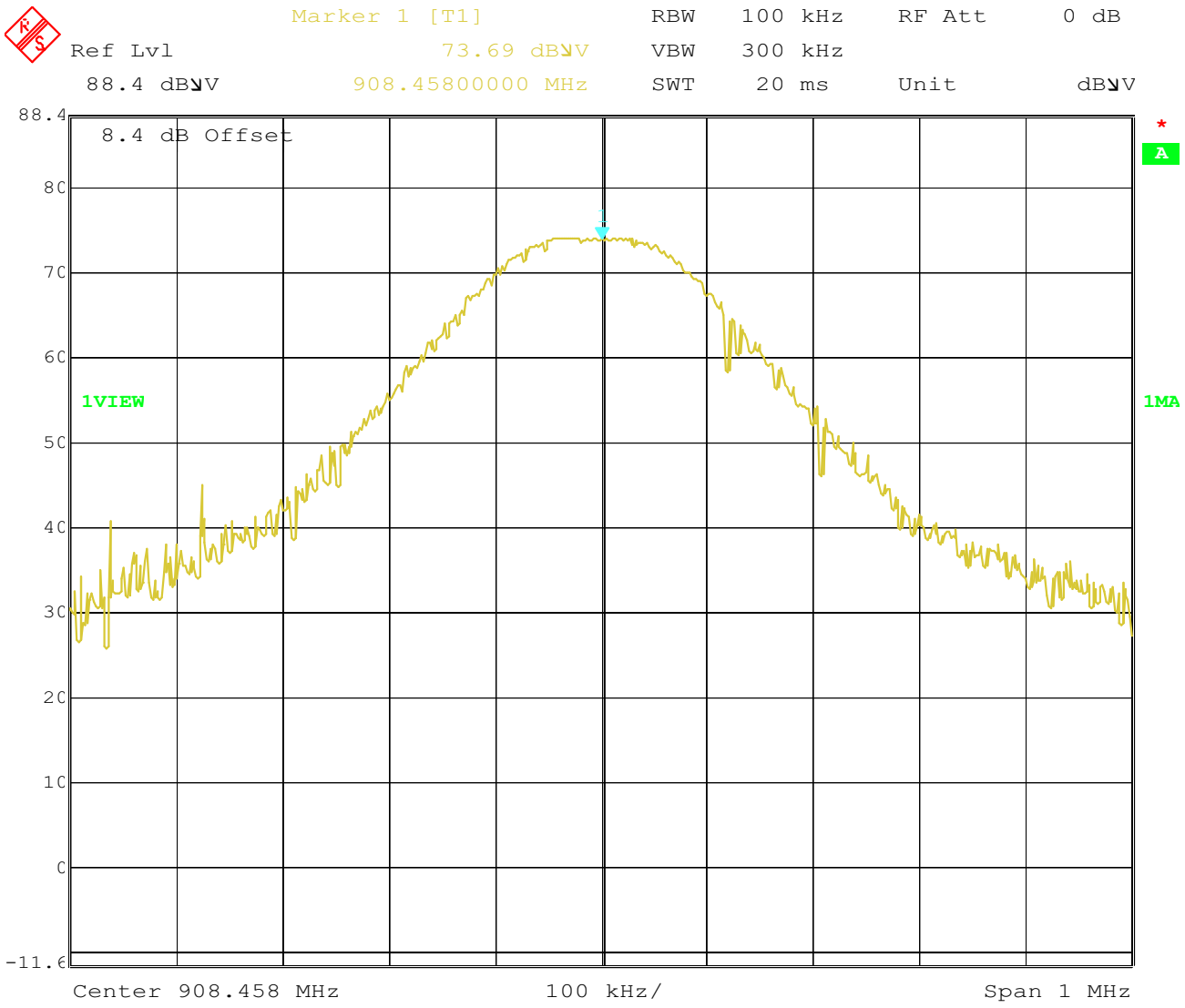
Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Antenna, BiLog (20MHz to 2GHz)	Chase	CBL6112A	211518	12/08/2005	12/08/2006
Antenna, Horn, 1-18 GHz	EMCO	3115	213061	03/28/2006	03/28/2007
Cable E01 (Formerly PE7000N-N2 or N2)	Pasternack	RG214/U	E01	05/11/2006	05/11/2007
Cable E05 (Formerly HS 1500 N-N)	Huber-Suhner	Sucoflex 104PEA	E05	05/11/2006	05/11/2007
Cable E06 (Formerly HS 1500 N-SMA)	Huber-Suhner	Sucoflex 104PEA	E06 211268	05/11/2006	05/11/2007
Cable E11 (Formerly HS 7000 N-SMA)	Huber-Suhner	Sucoflex 104PEA	E11 211266	05/11/2006	05/11/2007
Cable, 18 GHz, N, 394 inches	Megaphase	G919-NKNK-394	MP3	05/11/2006	05/11/2007
Coaxial Cable, 6ft, N(Male) to N(Male)	Mini-Circuits	CBL-6FT-NMNM	TT1	05/11/2006	05/11/2007
EMI Receiver	Hewlett Packard	8546A	211505	02/13/2006	02/13/2007
EMI Receiver, Preselector section	Hewlett Packard	85460A	211506	02/13/2006	02/13/2007
Preamplifier, 1-26 GHz	Hewlett Packard	8449B	213191	05/04/2006	05/04/2007
Preamplifier, 26 dB gain,100kHz to 1300 MHz	Hewlett Packard	8447D	213075	12/08/2005	12/08/2006
Spectrum Analyzer, 20 Hz to 40 GHz	Rohde & Schwarz	FSEK30	200062	01/12/2006	01/12/2007

Results: The sample tested was found to Comply.

6.0 Radiated emissions (E-field) (Radiated Emissions)

Photo:



Fundamental Plot

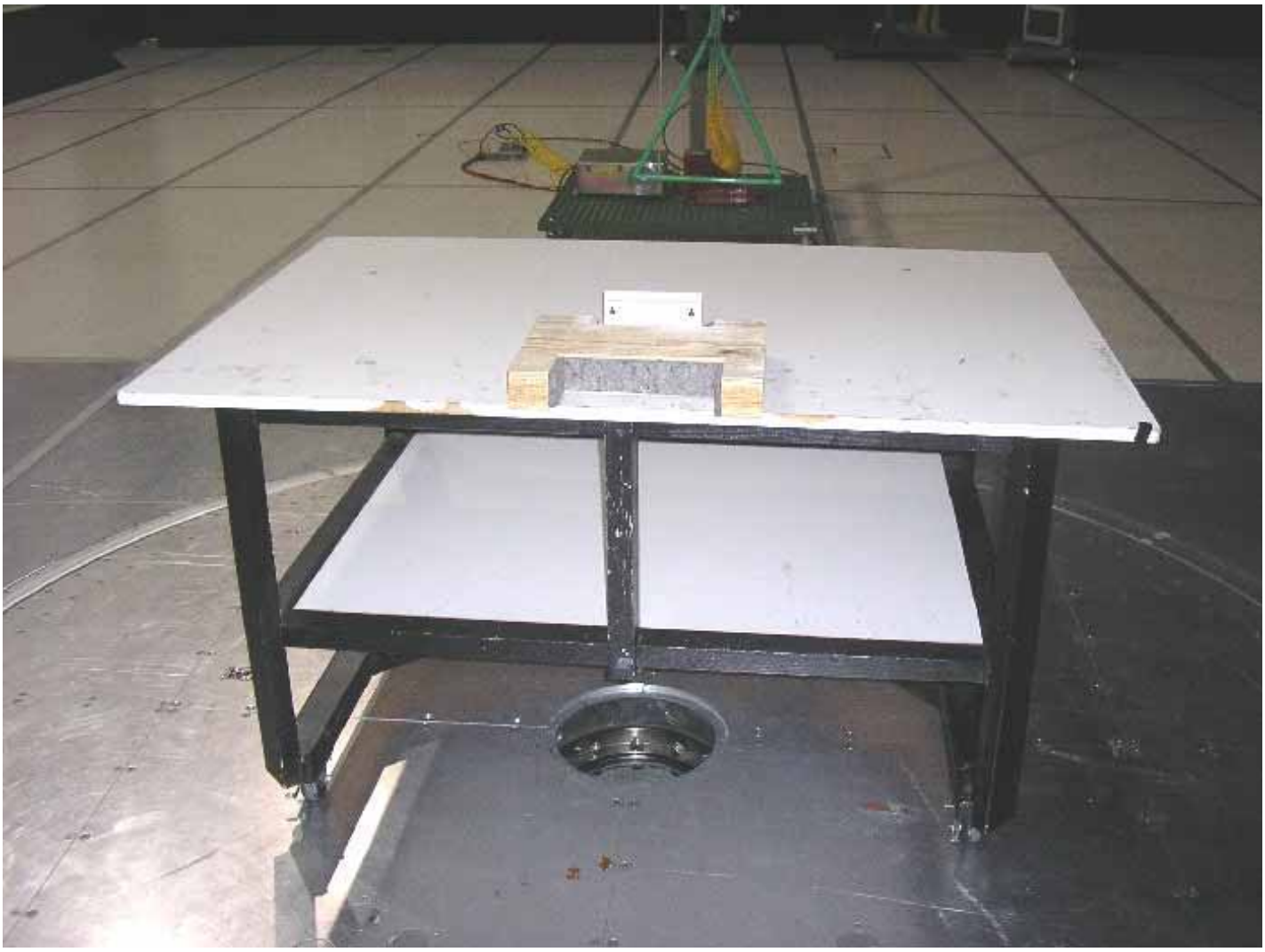
6.0 Radiated emissions (E-field) (Radiated Emissions)

Photo:

Radiated Emissions Front View

6.0 Radiated emissions (E-field) (Radiated Emissions)

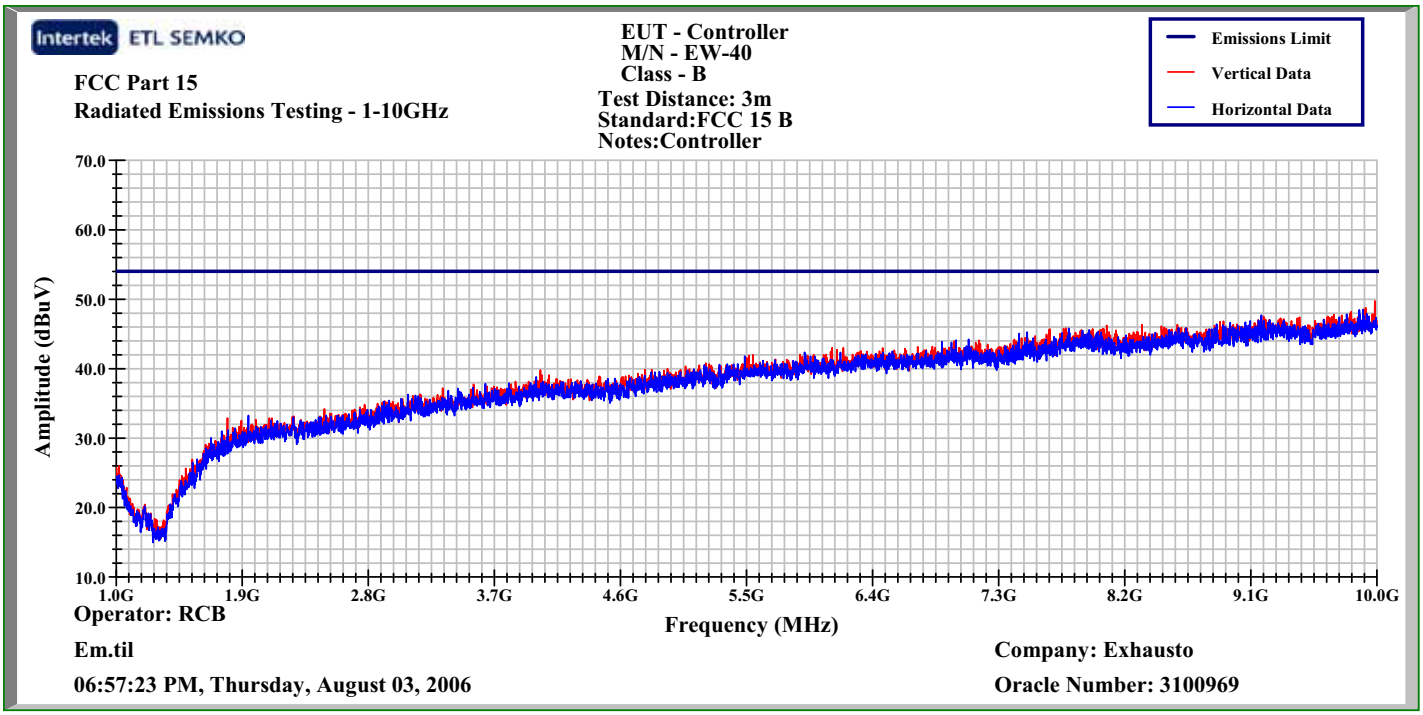
Photo:



Radiated Emissions Rear View

6.0 Radiated emissions (E-field) (Radiated Emissions)

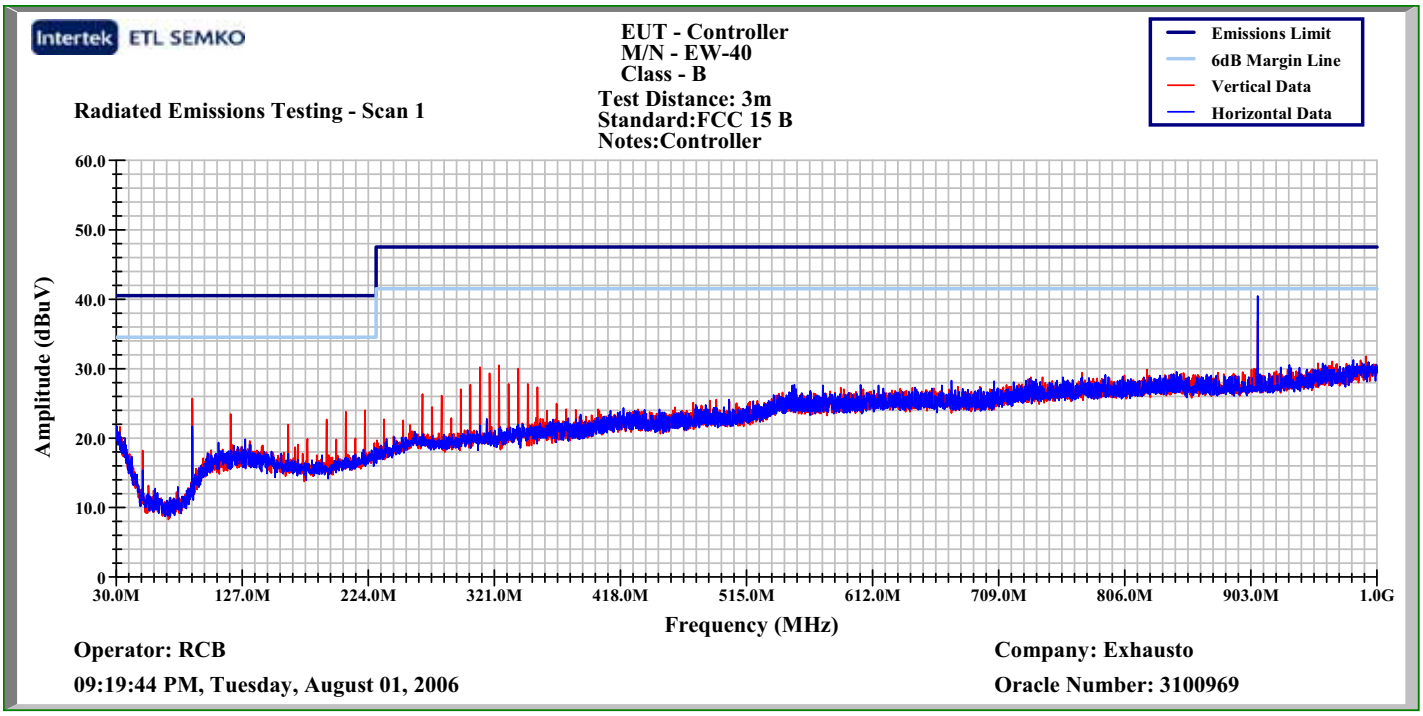
Plot:



Radiated Emissions Plot 1000MHz-10000MHz

6.0 Radiated emissions (E-field) (Radiated Emissions)

Plot:



Radiated Emissions Plot 30MHz-1000MHz

6.0 Radiated emissions (E-field) (Radiated Emissions)

Data:

Date: 07-26-2006 **Limit:** FCC15.249

Frequency Range (MHz): 30 to 10,000 **Test Distance (m):** 3

Input power: 120/60 **Modifications for compliance (y/n):** No

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	**Frequency MHz**	**Reading dB(uV)**	**Antenna Factor dB(1/m)**	**Cable Loss dB**	**Pre-amp Factor dB**	**Net dB(uV/m)**	**3m Limit dB(uV/m)**	**Margin dB**	**Notes**
V	217.510	43.0	10.6	2.6	28.0	28.2	46.0	-17.8	1
V	237.040	35.1	11.7	2.6	28.0	21.4	46.0	-24.6	1
V	310.520	37.8	13.8	3.2	28.0	26.8	46.0	-19.2	1
V	318.220	37.7	13.8	3.2	28.0	26.7	46.0	-19.3	1
V	325.070	38.3	13.9	3.2	28.0	27.4	46.0	-18.6	1
V	340.000	37.0	14.7	3.2	28.0	26.9	46.0	-19.1	1
Fundamental frequency is 908.458 MHz									
H	908.458	64.2	21.7	15.5	27.6	73.7	94.0	-46.1	1
Calculations		G=C+D+E-F		I=G-H					

Note 1: Quasi-Peak detector