



**ComplianceTesting.com**

Previously Flom Test Lab

**EMI, EMC, RF Testing Experts Since 1963**

toll-free: (866) 311-3268

fax: (480) 926-3598

<http://www.ComplianceTesting.com>

[info@ComplianceTesting.com](mailto:info@ComplianceTesting.com)

**Date:** December 11, 2008

**Applicant:** FLEET DATA SYSTEMS, LLC  
652 Bair Island Road  
Suite 207  
Redwood City, CA 94063

**Attention of:** Raymond Cheung  
Ph: 650-799-4167  
Fax: 509-352-8989  
E-Mail: [rcheung@fleetdatasys.com](mailto:rcheung@fleetdatasys.com)

**Equipment:** HHI-V3B  
**FCC ID:** WZF-KL7-HHI-V3B  
**FCC Rules:** Part 15.207, 15.209

Gentlemen:

Enclosed please find your copy of the Test Data Report for the referenced equipment.

Please keep the original on record for submission to the FCC.

Should you have any questions, please do not hesitate to call.

Sincerely yours,

Hoosamuddin S. Bandukwala, Lab Director



**ComplianceTesting.com**  
Previously Flom Test Lab  
**EMI, EMC, RF Testing Experts Since 1963**

toll-free: (866) 311-3268  
fax: (480) 926-3598  
<http://www.ComplianceTesting.com>  
[info@ComplianceTesting.com](mailto:info@ComplianceTesting.com)

**Date:** December 11, 2008

Federal Communications Commission  
Via: Electronic Filing

**Attention:** Authorization & Evaluation Division

**Applicant:** FLEET DATA SYSTEMS, LLC

**Equipment:** HHI-V3B

**FCC ID:** WZF-KL7-HHI-V3B

**FCC Rules:** 15.207, 15.209

Gentlemen:

On behalf of the Applicant, enclosed please find Application Form 731, Engineering Test Report and all pertinent documentation, the whole for approval of the referenced equipment as shown.

We trust the same is in order. Should you need any further information, kindly contact the writer who is authorized to act as agent.

Sincerely yours,

Hoosamuddin S. Bandukwala, Lab Director

**List Of Exhibits**

(FCC Certification (Transmitters) - Revised 9/28/98)

**Applicant:** FLEET DATA SYSTEMS, LLC**FCC ID:** WZF-KL7-HHI-V3B**By Applicant:**

1. Letter Of Authorization
2. Identification Drawings
  - Id Label
  - Location Info
  - Attestation Statement(S)
  - Location of Compliance Statement
3. Documentation: 2.1033(B)
  - (3) User Manual(S)
  - (4) Operational Description
  - (5) Block Diagram
  - (5) Schematic Diagram
  - (7) External Photographs  
Internal Photographs  
Parts List  
Active Devices

**By Compliance Testing:**

- A. Testimonial & Statement of Certification
- B. Statement of Qualifications



**ComplianceTesting.com**  
Previously Flom Test Lab  
**EMI, EMC, RF Testing Experts Since 1963**

toll-free: (866) 311-3268  
fax: (480) 926-3598  
<http://www.ComplianceTesting.com>  
[info@ComplianceTesting.com](mailto:info@ComplianceTesting.com)

## Test Report

for

**FCC ID: WZF-KL7-HHI-V3B**

**Model: HHI-V3B**

to

**Federal Communications Commission**

Rule Part(s)15.207, 15.209

**Date Of Report:** December 11, 2008

**On the Behalf of the Applicant:** FLEET DATA SYSTEMS, LLC  
652 Bair Island Road  
Suite 207  
Redwood City, CA 94063

**Attention of:**  
Raymond Cheung  
Ph: 650-799-4167  
Fax: 509-352-8989  
E-Mail: [rcheung@fleetdatasys.com](mailto:rcheung@fleetdatasys.com)

Supervised By:

Hoosamuddin S. Bandukwala, Lab Director

## Test Report Revision History

Revision	Date	Revised By	Reason for revision
1.0	December 11, 2008	J Erhard	Original Document
2.0	October 14, 2009	J. Erhard	Convert limits from uV to dB/uV
3.0	October 25, 2009	J. Erhard	Edit field strength table



**The applicant has been cautioned as to the following:**

**15.21              Information to User.**

The users manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**15.27(a)              Special Accessories.**

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge.

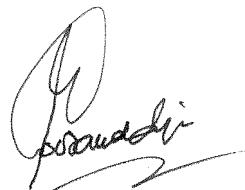
Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

## Testimonial And Statement Of Certification

**This is to certify that:**

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
2. **That** the technical data supplied with the application was taken under my direction and supervision.
3. **That** the data was obtained on representative units, randomly selected.
4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

Certifying Engineer:



Hoosamuddin S. Bandukwala, Lab Director

## Table Of Contents

Rule	Description	Page
	Test Report	1
2.1033(c)	General Information Required	2
	Standard Test Conditions and Engineering Practices	4
	Test Results Summary	5
15.209	Radiated Emissions	6
15.207	A/C Powerline Conducted Emissions	7
RSS 210	99% Occupied Bandwidth	8
	Test Setup Photos	9
	Test Equipment Utilized	11

Required information per ISO 17025-2005, paragraph 5.10.2:

a) **Test Report**

b) Laboratory: Compliance Testing  
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107  
(Canada: IC 2044A-1) Chandler, AZ 85225

c) Report Number: d08c0010

d) Client: FLEET DATA SYSTEMS, LLC

e) Identification: HHI-V3B  
FCC ID: WZF-KL7-HHI-V3B  
Description: Hand Held 434 MHz Transmitter

f) EUT Condition: Not required unless specified in individual tests.

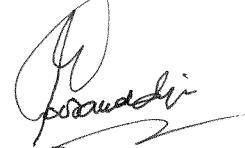
g) Report Date: December 11, 2008

h, j, k): As indicated in individual tests.

i) Sampling method: No sampling procedure used.

l) Uncertainty: In accordance with Compliance Testing internal quality manual.

m) Supervised by:



Hoosamuddin S. Bandukwala, Lab Director

n) Results: The results presented in this report relate only to the item tested.

o) Reproduction: This report must not be reproduced, except in full, without written permission from this laboratory.

**List Of General Information Required For Certification**

In Accordance with FCC Rules and Regulations,  
Volume II, Part 2 and to 15.231

**Sub-Part 2.1033**

(c)(1):

**Name and Address of Applicant:** FLEET DATA SYSTEMS, LLC(c)(2): **FCC ID:** WZF-KL7-HHI-V3B**Model Number:** HHI-V3B(c)(3): **Instruction Manual(s):**

Please See Attached Exhibits

(c)(4): **Type of Emission:** FSK(c)(5): **FREQUENCY RANGE, MHz:** 125 kHz(c)(6): **Power Rating, W:** -93.5 dBm (0.0 W)  
\_\_\_\_\_  
Switchable      \_\_\_\_\_  
                    Variable      \_\_\_\_\_  
                    X      N/A(c)(7): **Maximum Power Rating, W:** -88 dBm (0.0 W)**15.203: Antenna Requirement:**

The antenna is permanently attached to the EUT  
 The antenna uses a unique coupling  
 The EUT must be professionally installed  
 The antenna requirement does not apply

**Subpart 2.1033 (continued)****(c)(8): Circuit Diagram/Circuit Description:**

Including description of circuitry & devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation and limiting power.

Please See Attached Exhibits

**(c)(9): Label Information:**

Please See Attached Exhibits

**(c)(10): Photographs:**

Please See Attached Exhibits

**(c)(11): Digital Modulation Description:**

       Attached Exhibits  
x N/A

**(c)(12): Test And Measurement Data:**

Follows

Sub-part  
2.1033(b):

### Test And Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2 and the following individual Parts: 15.207, 15.209; Unintentional Radiators

### Standard Test Conditions and Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-2004, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.

### A2LA

"A2LA has accredited Compliance Testing in Chandler, AZ for technical competence in the field of Electrical testing. The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO 17025:2005 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing."

Please refer to [www.a2la.org](http://www.a2la.org) for current scope of accreditation.

Certificate number: 2152.01



**FCC OATS Reg. #933597**

**IC O.A.T.S. Number: 2044A-1**

**Test Results Summary**

Specification	Test Name	Pass, Fail, N/A	Comments
15.209	Radiated Emissions	Pass	
15.207	A/C Powerline Conducted Emissions	Pass	

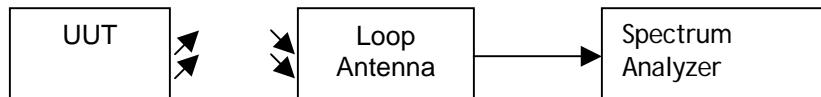
**Name of Test:** Radiated Emissions  
**Specification:** 15.209  
**Test Equipment Utilized** i00033, i00326

**Engineer: J Erhard**  
**Test Date: 12/5/2008**

### Test Procedure

The UUT was tested in a semi-anechoic chamber 1m from the receiving active loop antenna. The UUT was tested by rotating it 360° with the antennas in the X, Y, and Z-axis to ensure the TX signal levels were maximized. All emissions from the fundamental to greater than the 10<sup>th</sup> harmonic were examined.

### Test Setup



### Quasi-Peak Radiated Emissions

Emission Freq (kHz)	Measured Value (dBuV/m)	Correction Factor (dB)	Corrected Value (dBuV/m)	Limit (dBuV/m)	Margin dB
125	96.3	115.48	13.62	25.67	-12.05
249.921	46.91	114.98	-36.27	19.65	-55.92
375.086	57.3	114.98	-25.88	16.12	-42.00
499.91	41.73	74.98	-33.25	33.63	-66.88
624.992	48.47	74.98	-26.51	31.69	-58.2
749.972	38.15	75.18	-37.03	30.10	-67.13
874.993	42.53	74.78	-32.25	28.76	-61.01
1000.087	35.25	74.78	-39.53	27.60	-67.13
1125.085	39.71	74.78	-35.07	26.58	-61.65
1249.987	38.05	74.98	-36.93	25.67	-62.6

Measurements from 110 kHz to 490 kHz are average measurements all other measurements are quasi-peak.

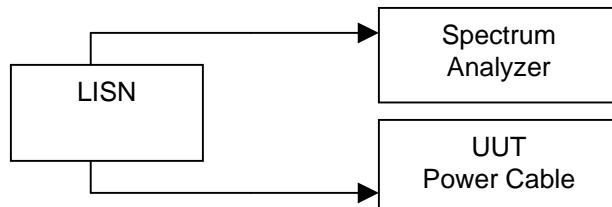
**Name of Test:** A/C Powerline Conducted Emissions  
**Specification:** 15.207  
**Test Equipment Utilized** i00033, i00270

**Engineer:** J Erhard  
**Test Date:** 12/10/2008

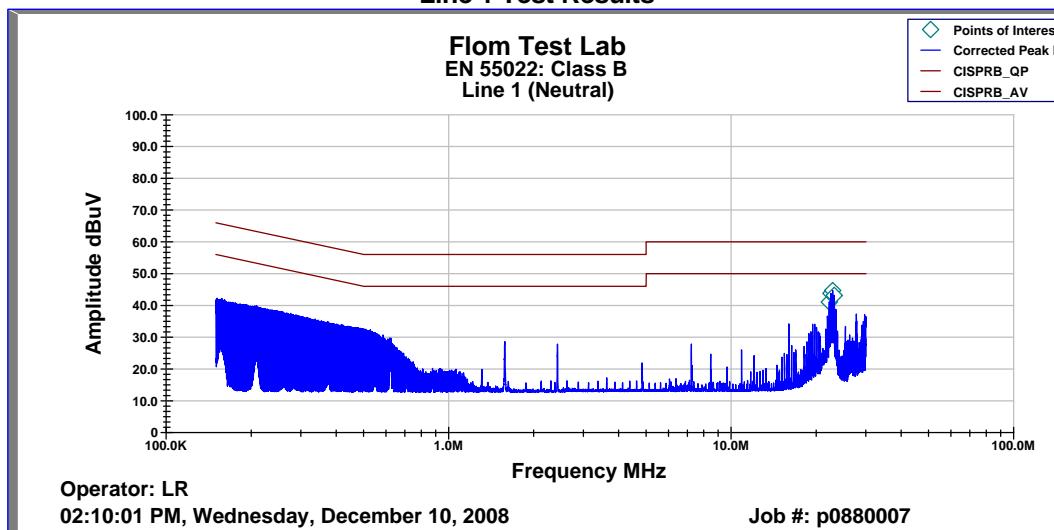
### Test Procedure

The UUT power cable connected to a LISN and the monitored output of the LISN was connected directly to a spectrum analyzer. The conducted emissions from 150 kHz to 30 MHz were monitored and compared to the specification limits.

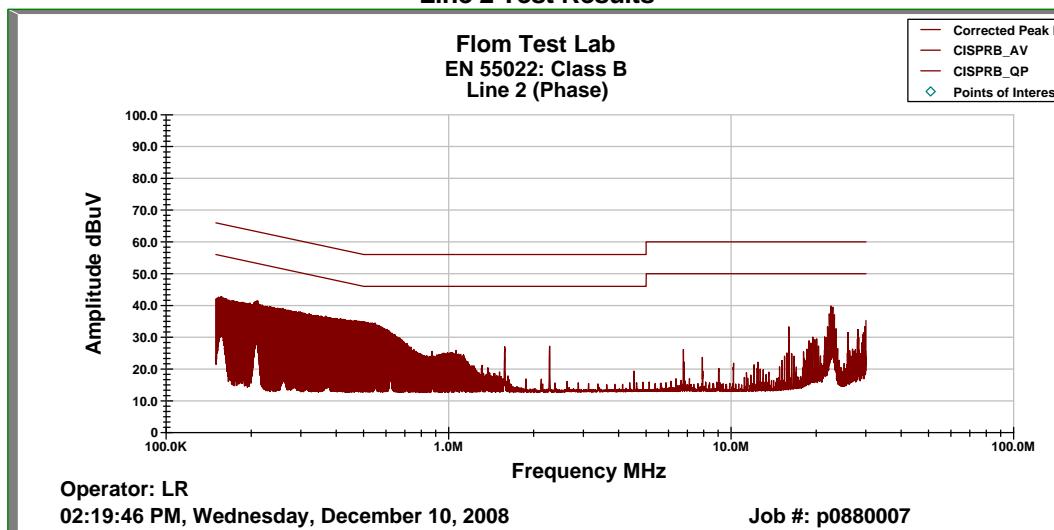
### Test Setup



### Line 1 Test Results



### Line 2 Test Results



All peak emissions were below the quasi-peak limit.

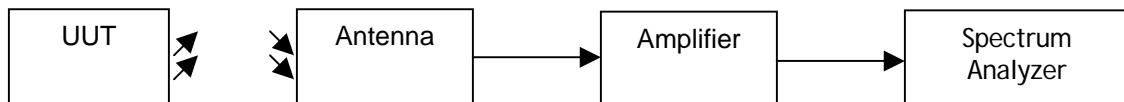
**Name of Test:** 99% Occupied Bandwidth  
**Specification:** RSS 210 Industry Canada Only  
**Test Equipment Utilized** i00033, i00089

**Engineer: J Erhard**  
**Test Date: 12/10/2008**

### Test Procedure

The UUT was tested on an Open Area Test Site (OATS) at a distance of 3 meter from the receiving antenna. The Span was set wide enough to capture the entire transmit spectrum and the resolution bandwidth was set to at least 1% of the span. The analyzer was set to max hold the 99% bandwidth was measured.

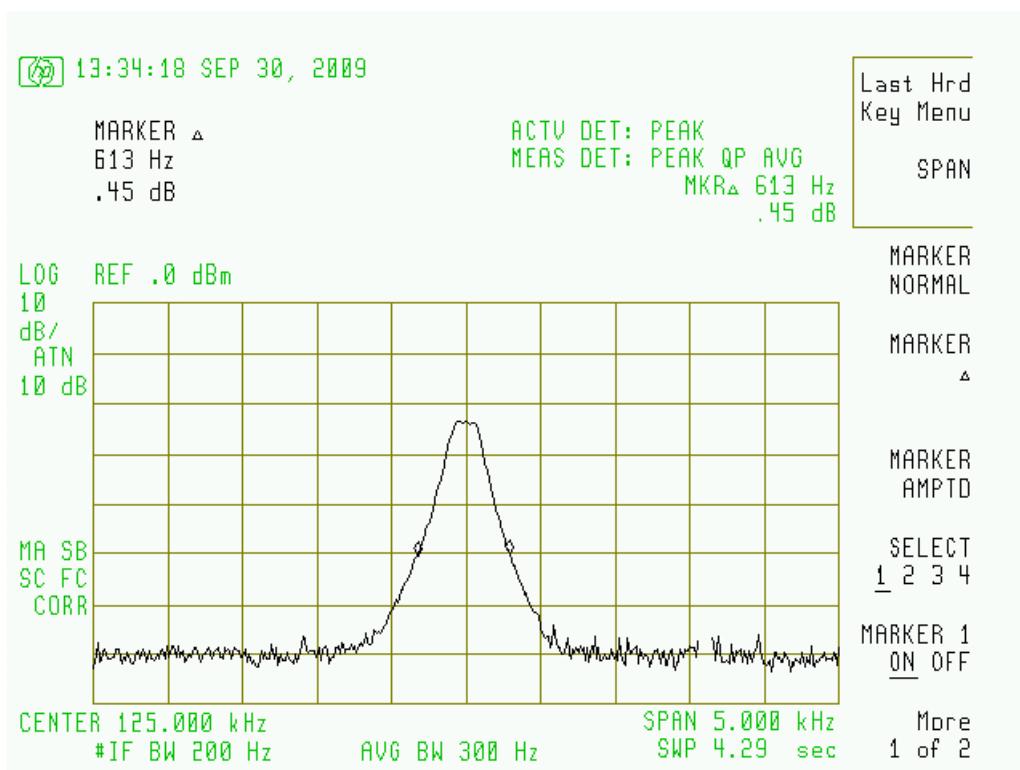
### Test Setup



### Occupied Bandwidth Summary

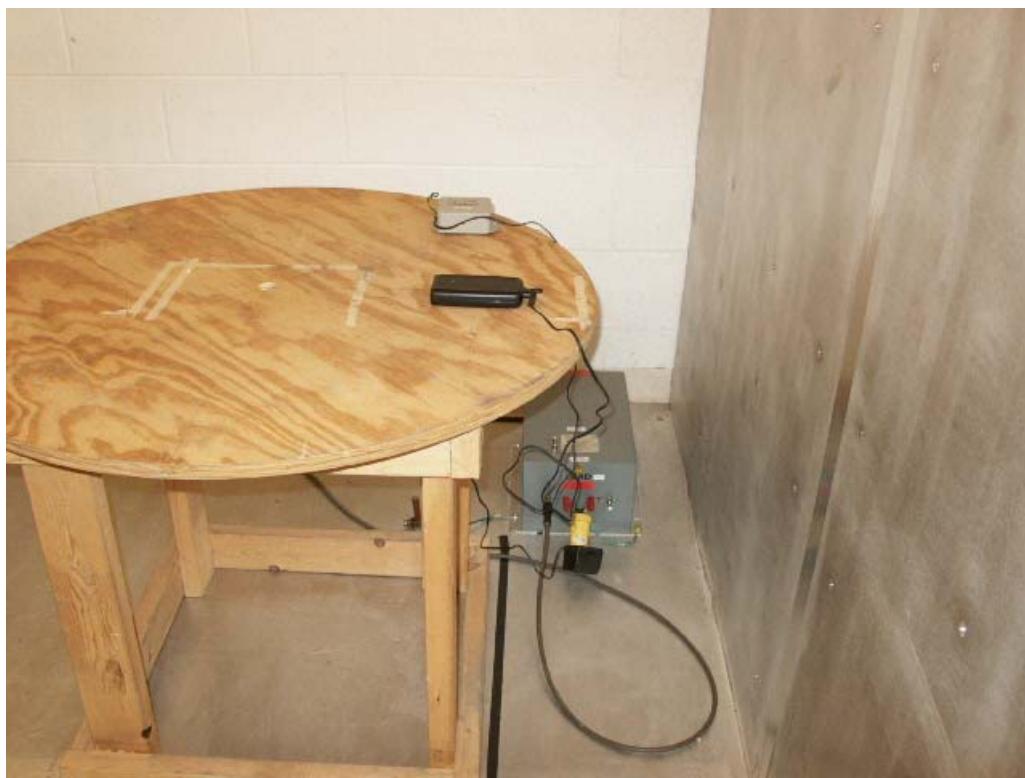
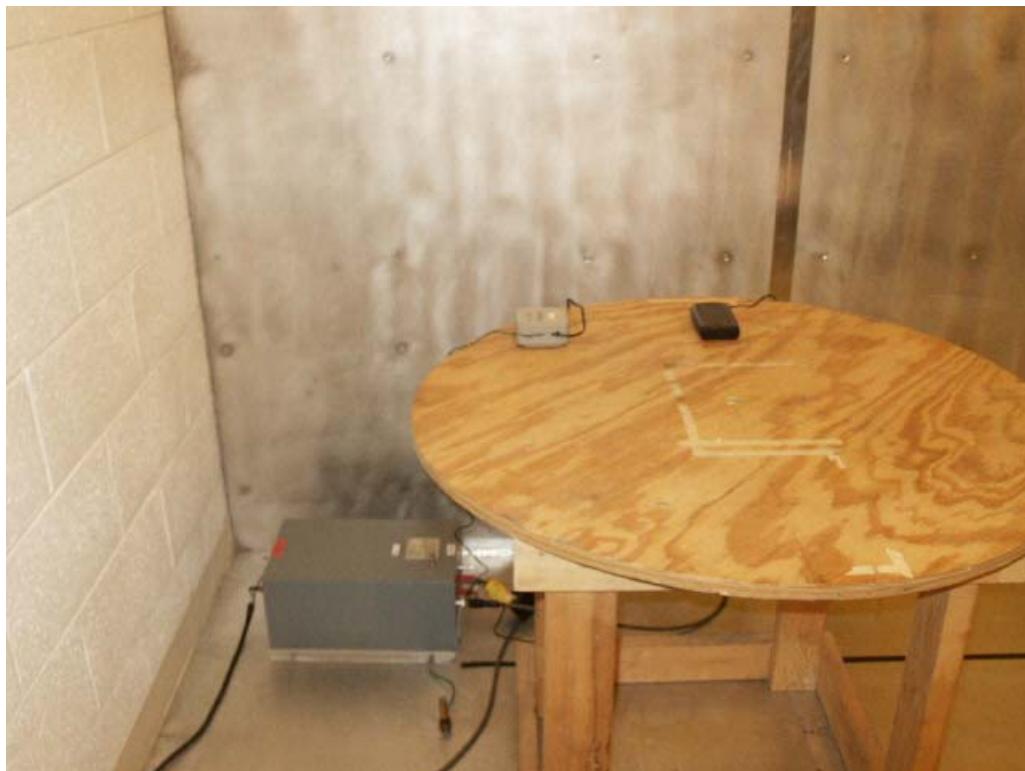
Frequency	Recorded Measurement	Result
125 kHz	613 Hz	Pass

### 99% Occupied Bandwidth Plot



### Radiated Emissions Test Setup Photos



**AC Conducted Emissions Test Setup Photos**

**Test Equipment Utilized**

Description	MFG	Model Number	FTL Asset Number	Last Cal Date	Cal Due Date
Spectrum Analyzer	HP	85462A	i00033	10/14/08	10/14/09
LISN	FCC	FCC-LISN-50-32-2-01	i00270	9/17/08	9/17/10
Loop Antenna	EMCO	6507	i00326	1/19/07	1/19/09

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

**END OF TEST REPORT**