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http://www.ComplianceTesting.com
info@ComplianceTesting.com

**Date:** December 13, 2008

Federal Communications Commission
Via: Electronic Filing

**Attention:** Authorization & Evaluation Division

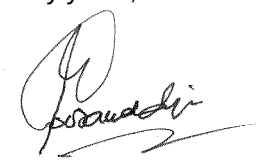
**Applicant:** FLEET DATA SYSTEMS, LLC
**Equipment:** FMOD-V3
**FCC ID:** WZF-KL7-FMOD-V3
**FCC Rules:** 15.231

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

Compliance Testing
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

**List Of Exhibits**

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

**Applicant:** FLEET DATA SYSTEMS, LLC

**FCC ID:** WZF-KL7-FMOD-V3

**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

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# Test Report

for

**FCC ID:** WZF-KL7-FMOD-V3

**Model:** FMOD-V3

to

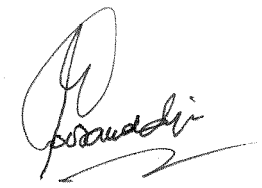
**Federal Communications Commission**

Rule Part(s)15.231

**Date Of Report:** December 13, 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



Supervised By: Hoosamuddin S. Bandukwala, Lab Director

# Test Report Revision History

| Revision | Date | Revised By | Reason for revision |
|---|---|---|---|
| 1.0 | December 13, 2008 | J Erhard | Original Document |
| 2.0 | October 15, 2009 | J. Erhard | Add formulas detailing the correction factors for radiated testing |
| 3.0 | October 25, 2009 | J. Erhard | Add test indicating transmission time |
| | | | |

**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.

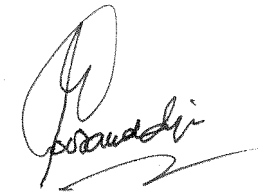
Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply 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.



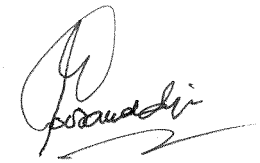
Certifying Engineer: Hoosamuddin S. Bandukwala, Lab Director

Compliance Testing
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

**Table Of Contents**

*Required information per ISO 17025-2005, paragraph 5.10.2:*

a) **Test Report**

| | |
|---|---|
| b) Laboratory:<br>(FCC: 31040/SIT)<br>(Canada: IC 2044A-1) | Compliance Testing<br>3356 N. San Marcos Place, Suite 107<br>Chandler, AZ 85225 |
| c) Report Number: | d08c0017 |
| d) Client: | FLEET DATA SYSTEMS, LLC |
| e) Identification:<br><br>Description: | FMOD-V3<br>FCC ID: WZF-KL7-FMOD-V3<br>434 MHz Fuel module |
| f) EUT Condition: | Not required unless specified in individual tests. |
| g) Report Date: | December 13, 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: |  <br>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-FMOD-V3

**Model Number**: FMOD-V3

(c)(3): **Instruction Manual(s)**:

Please See Attached Exhibits

(c)(4): **Type of Emission**: FSK

(c)(5): **FREQUENCY RANGE, MHz**: 434 MHz

(c)(6): **Power Rating, W**: 0.000079 mW

____ Switchable ____ Variable __X__ N/A

(c)(7): **Maximum Power Rating, W**: 0.002512 mW

15.203: **Antenna Requirement**:

__X__ 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, 15.231.

**Standard Test Conditions and Engineering Practices**

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

In accordance with ANSI C63.4-2003 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.

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 for current scope of accreditation.

Certificate number: 2152.01

ACCREDITED
TESTING CERT# 2152.01

**FCC OATS Reg. #933597**

**IC Reg. # 2044A-1**

**Test Results Summary**

| Specification | Test Name | Pass, Fail, N/A | Comments |
|---|---|---|---|
| 15.231(b)(1) | Fundamental Field Strength | Pass | |
| 15.231(b)(3) | Out of Band Spurious Emissions | Pass | |
| 15.231(c) | Occupied Bandwidth | Pass | |
| 15.321(a)(1) | Transmissions Time | Pass | |
| RSS-210 | 99% Occupied Bandwidth | Pass | |

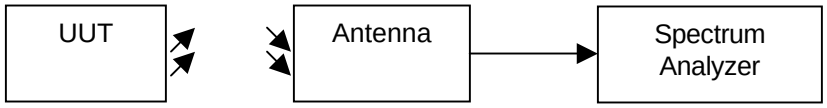
**Name of Test**: Fundamental Field Strength
**Specification**: 15.231(b)(1) **Engineer: J Erhard**
**Test Equipment Utilized** i00033, i00088, i00089, i00103 **Test Date: 12/11/2008**

## Test Procedure

The UUT was tested on an Open Area Test Site (OATS) at a distance of 3 meters from the receiving antenna. A spectrum analyzer was used to verify that the UUT met the requirements for Fundamental Field Strength. The limit was calculated using the standard linearization formula; Limit = L1 + [(Fo-F1)(L2-L1)/(F2-F1)] where Fo is the frequency under test. The UUT was tested by rotating it 360° with the antennas in both the vertical and horizontal orientation and raised from 1 to 4 meters to ensure the TX signal levels were maximized

Correction Factor = Antenna Correction Factor + Cable Loss

## Test Setup




## Fundamental Field Strength

| Tuned Freq (MHz) | Measured Level (dBuV/m) | Correction Factor (dB) | Corrected Level (dBuV/m) | Detector | Limit (dBuV/m) | Result |
|---|---|---|---|---|---|---|
| 434 | 47.3 | 18.8 | 66.1 | Peak | 101.0 | Pass |
| 434 | 47.2 | 18.8 | 66.0 | Average | 81.0 | Pass |

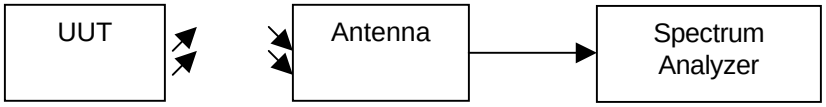
**Name of Test**: Radiated Spurious Emissions
**Specification**: 15.231(b)(3), 15.209 **Engineer: J Erhard**
**Test Equipment Utilized** i00033, i00088, i00089, i00103, i00331 **Test Date: 12/11/2008**

**Test Procedure**

The UUT was tested on an Open Area Test Site (OATS) at a distance of 3 meters from the receiving antenna. A spectrum analyzer was used to verify that the UUT met the requirements for Radiated Emissions. The spectrum for each tuned frequency was examined to the 10th harmonic. The UUT was tested by rotating it 360° with the antennas in both the vertical and horizontal orientation and raised from 1 to 4 meters to ensure the TX signal levels were maximized

Correction Factor = Antenna Correction Factor + Cable Loss

**Test Setup**




**Radiated Emissions**

| Emission Freq (MHz) | Measured Level (dBuV/m) | Correction Factor (dB) | Corrected Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|
| 45.980 | 15.1 | 11.6 | 26.7 | 40.0 | -13.3 |
| 161.280 | 17.6 | 15.0 | 32.6 | 40.0 | -7.4 |
| 262136 | 13.6 | 16.8 | 30.4 | 47.0 | -16.7 |
| 378.834 | 13.6 | 18.2 | 31.8 | 47.0 | -15.2 |
| 447.648 | 13.6 | 19.4 | 33.0 | 47.0 | -14.0 |
| 748.708 | 13.6 | 25.5 | 39.1 | 47.0 | -7.9 |

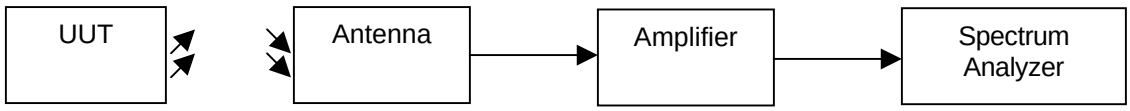
**Name of Test**: Occupied Bandwidth
**Specification**: 15.231(c)
**Test Equipment Utilized** i00331

**Engineer: J Erhard**
**Test Date:12/11/2008**

## 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.

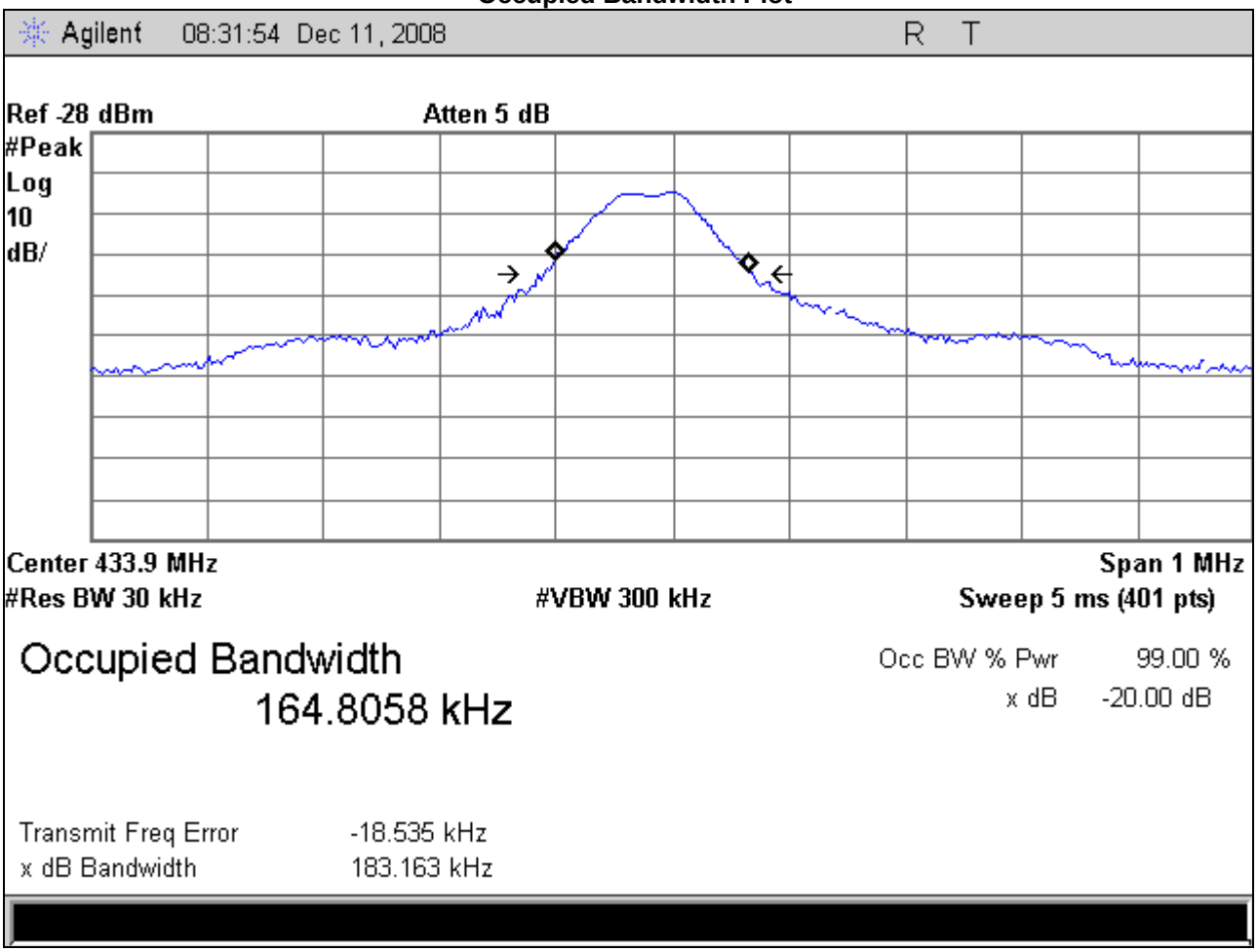
## Test Setup




## Occupied Bandwidth Summary

| Frequency MHz | Recorded Measurement | Result |
|---|---|---|
| 434 | 183.163 kHz | Pass |

## Occupied Bandwidth Plot

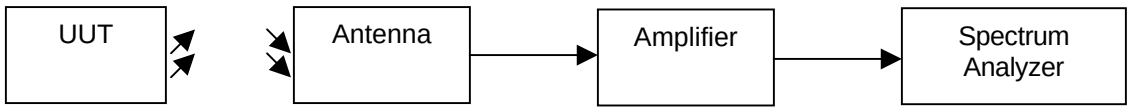


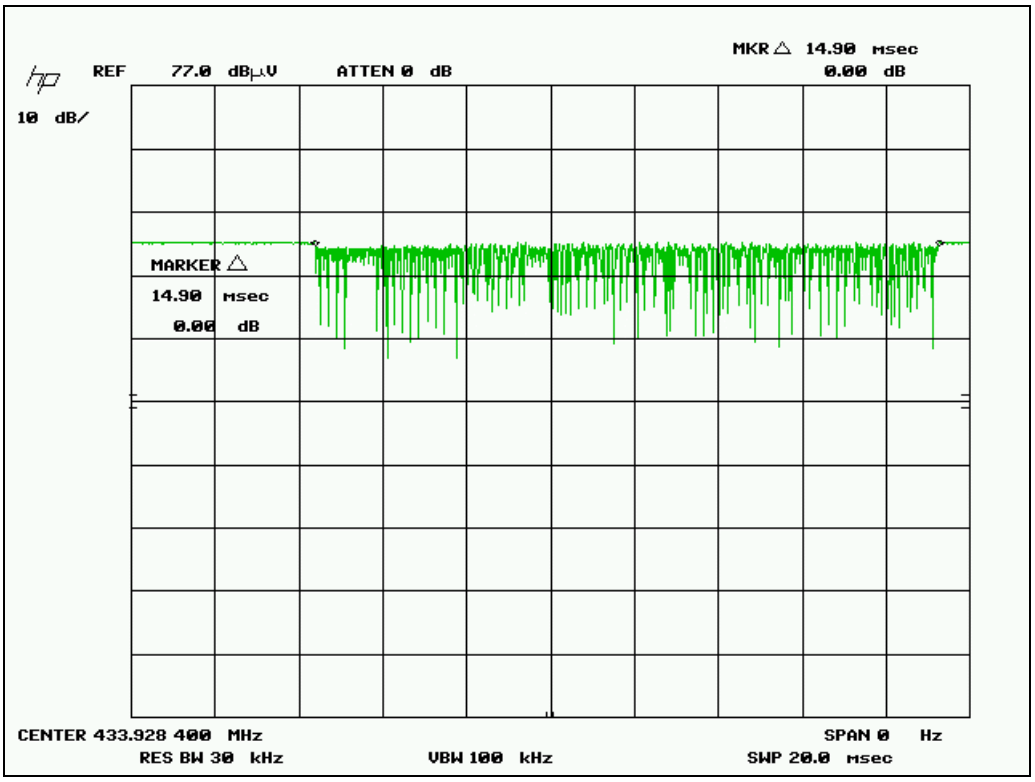
**Name of Test**: Transmissions Time
**Specification**: 15.231(a)(a) **Engineer: J Erhard**
**Test Equipment Utilized** i00330 **Test Date: 10/25/2009**

## Test Procedure

The UUT was tested on an Open Area Test Site (OATS) at a distance of 3 meter from the receiving antenna. The Zero span mode was used, as it measures time, to capture a single transmission. The marker delta method was used to record the time of transmission at 14.9 mSec.

## Test Setup



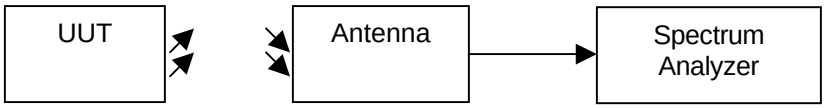



**Name of Test**: 99% Occupied Bandwidth
**Specification**: RSS 210 Industry Canada Only **Engineer: J Erhard**
**Test Equipment Utilized** i00331 **Test Date: 12/11/2008**

**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.

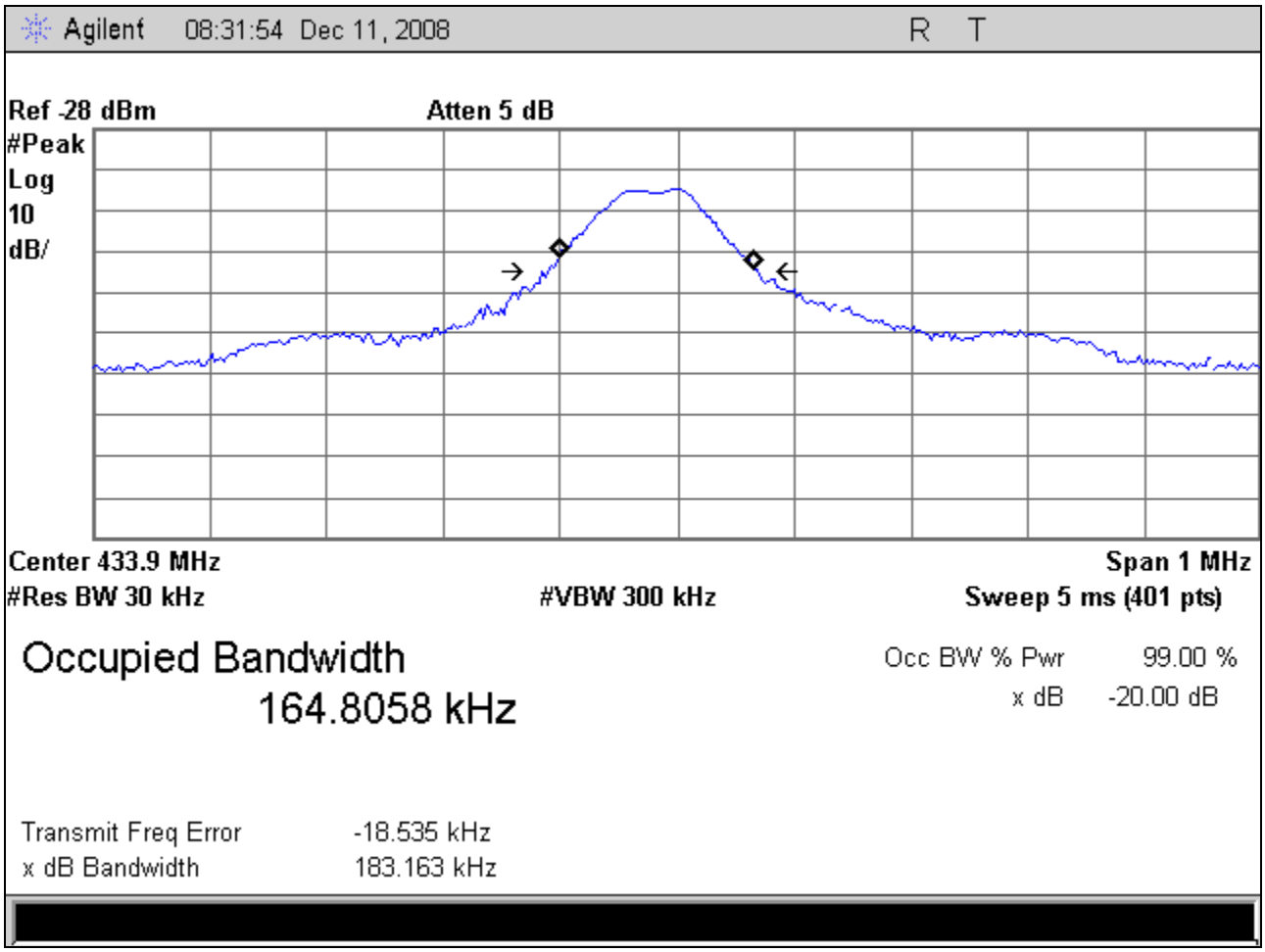
**Test Setup**




**Occupied Bandwidth Summary**

| Frequency MHz | Recorded Measurement | Result |
|---|---|---|
| 434 MHz | 164.8058 kHz | Pass |

**99% Occupied Bandwidth Plot**



**Test Equipment Utilized**

| Description | MFG | Model Number | CT Asset Number | Last Cal Date | Cal Due Date |
|---|---|---|---|---|---|
| Spectrum Analyzer | HP | 85462A | i00033 | 10/14//08 | 10/14//09 |
| Bi-conical Antenna | EMCO | 3109B | i00088 | 10/16/07 | 10/16/09 |
| Log Periodic Antenna | Aprel | 2001 | i00089 | 10/22/07 | 10/22/09 |
| Horn Antenna | EMCO | 3115 | i00103 | 11/25/08 | 11/25/10 |
| Spectrum Analyzer | Agilent | 8566 | i00330 | 6/9/09 | 6/9/10 |
| Spectrum Analyzer | Agilent | E4407B | i00331 | 11/03/08 | 11/03/09 |

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