



**Compliance Testing, LLC**  
Previously Flom Test Lab  
EMI, EMC, RF Testing Experts Since 1963

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## Test Report

Prepared for: OrthoSensor Inc

Model: Load Sensor

Description: "Sensor Assisted Surgical" (SAS™) Device

to

Federal Communications Commission

Rule Part 95 – Personal Radio Services

FCC ID: XNL-ORTHOSNSR1

Date of Report: March 25, 2011

At the Request of:

OrthoSensor Inc  
1560 Sawgrass Corporate Pkwy  
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Sunrise, FL 33323

Attention of:

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By

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John Erhard

Project Test Engineer

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All results of this test report relate only to the item(s) there were tested



### Test Report Revision History

Revision	Date	Revised By	Reason for revision
1.0	March 25, 2011	J. Erhard	Original Document



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## Standard Test Conditions and Engineering Practices

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

In accordance with ANSI/C63.4-2009, 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.

Environmental Conditions	
Temperature	Humidity
32	26

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



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## **ILAC / A2LA**

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009)

The tests results contained within this test report all fall within our scope of accreditation, unless noted in the table below

Please refer to <http://www.compliancetesting.com/labscope.html> for current scope of accreditation.

Testing Certificate Number: **2152.01**



**FCC OATS Reg, #933597**

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

**Non-accredited tests contained in this report:**

**N/A**



### Test Results Summary

Specification	Test Name	Pass, Fail, N/A	Comments
95.628(c)(4)	Radiated Output Power	Pass	
95.628(c)(4)	Radiated Spurious Emissions	Pass	
95.628(d)	Transmitter Occupied Bandwidth	Pass	
95.628(e)	Frequency Stability	Pass	

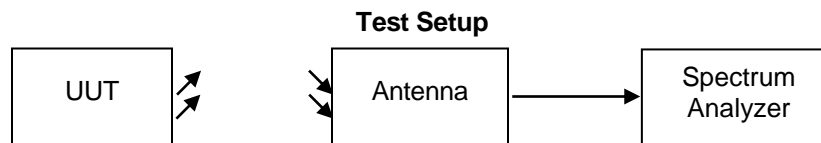


**Name of Test:** Radiated Output Power  
**Specification:** 95.628(c)(4)  
**Test Equipment Utilized:** i00103, i00267, i00379

**Engineer:** J. Erhard  
**Test Date:** 3/24/2011

### Test Procedure

The UUT was tested in an Open Area Test Site (OATS) set 3m from the receiving transducer. A spectrum analyzer was used to verify that the UUT met the requirements for Radiated Output Power. 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.

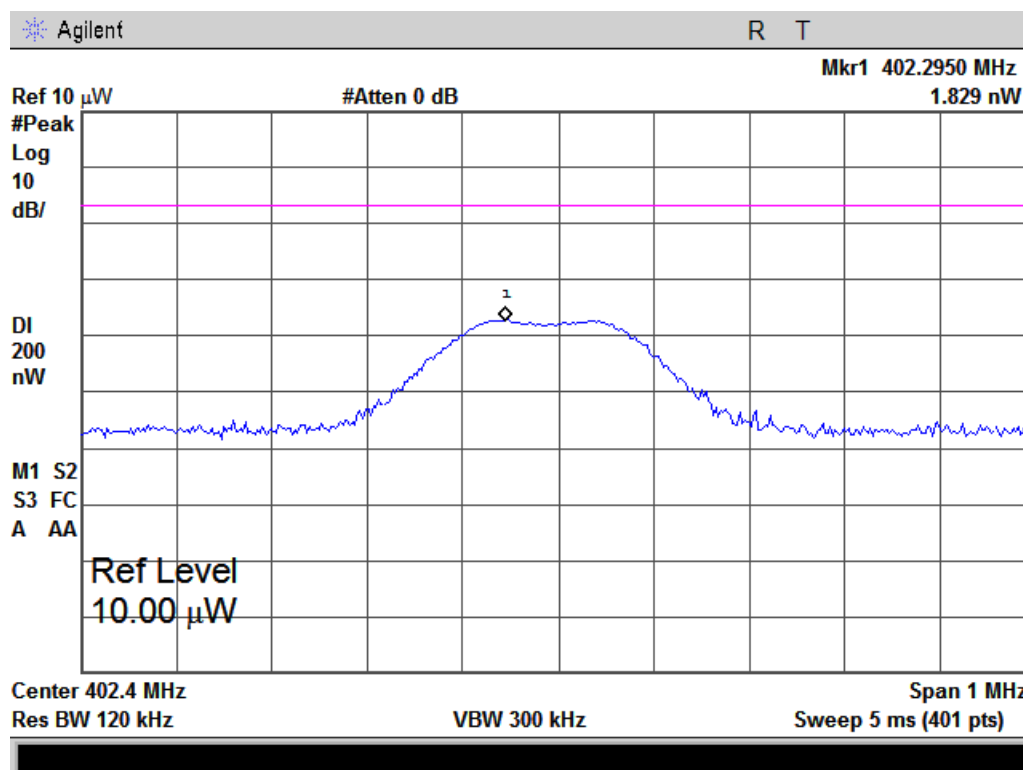


**Radiated Power Results Table**

Tuned Frequency MHz	Recorded Power	Specification Limit	Result
402.35	1.829 nW	200 nW	Pass
403.00	1.774 nW	200 nW	Pass
404.30	0.997 nW	200 nW	Pass

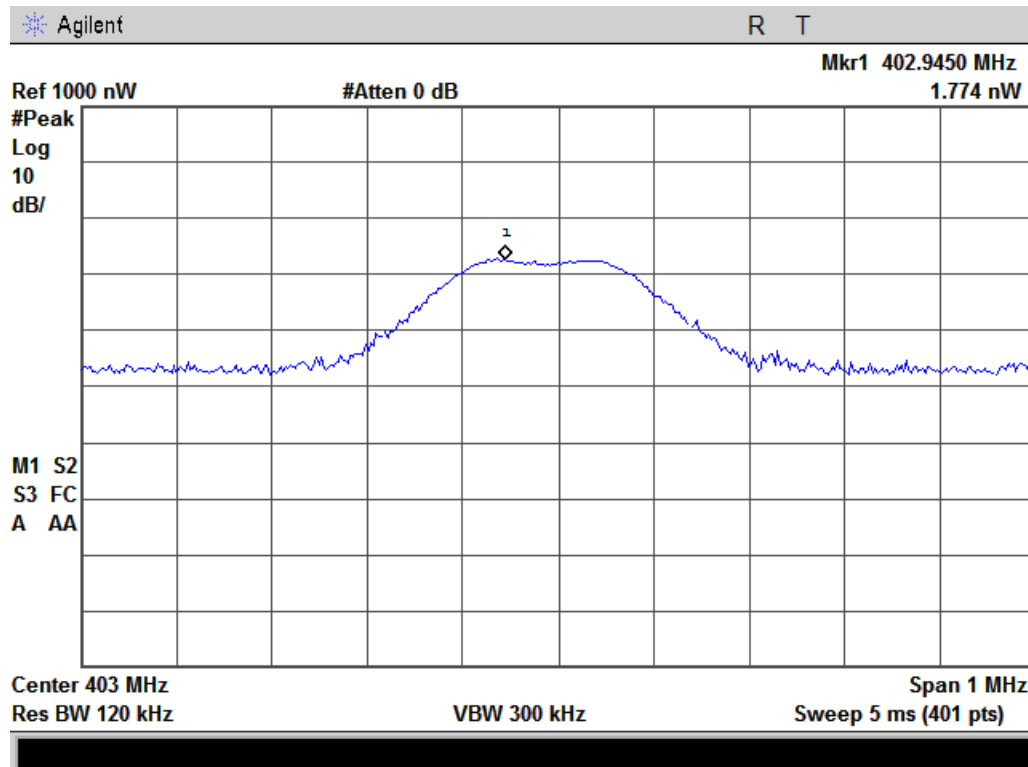
### Radiated Power Test Plots

**402.35 MHz**

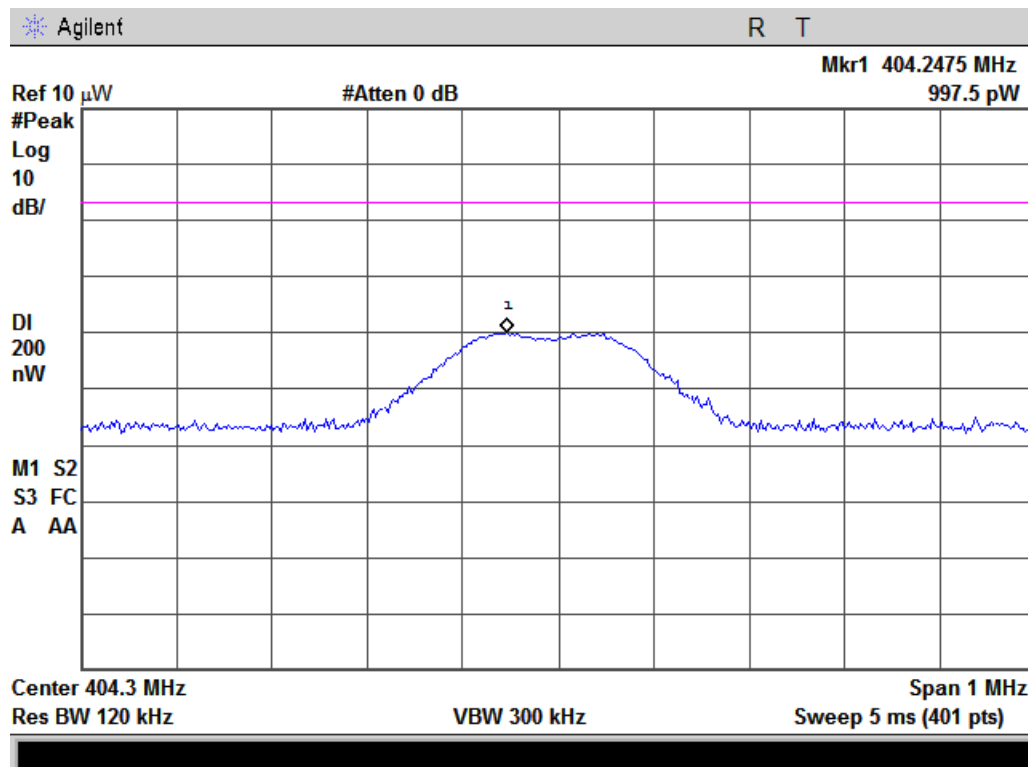




### 403 MHz



### 404.3 MHz







**Name of Test:** Radiated Spurious Emissions

**Specification:** 95.628(c)

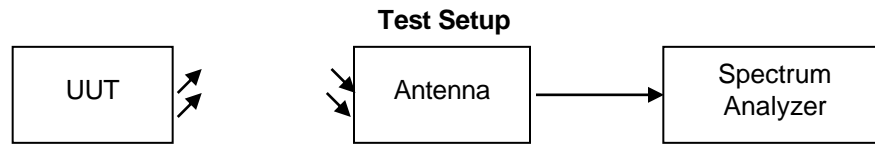
**Test Equipment Utilized:** i00103, i00267, i00379

**Engineer:** J. Erhard

**Test Date:** 3/24/2011

### Test Procedure

The UUT was tested in an Open Area Test Site (OATS) set 3m from the receiving transducer. A spectrum analyzer was used to verify that the UUT met the requirements for Radiated spurious Emissions. 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. All emission from 30 MHz to the 10<sup>th</sup> harmonic of the fundamental transmitter were examined. All detectable emission were plotted and recorded in the results tables. The limits were converted from  $\mu\text{V}$  to a common form of measurement for ease of comparison to the limit.



**Transmitter Spurious Emissions 402.35 MHz Test Table**

Measured Frequency MHz	Recorded Level	Limit	Result
804.580	59.3 pW	857 pW	Pass
1206.900	45.16 dB/ $\mu\text{V}$	54 dB/ $\mu\text{V}$	Pass
1609.640	44.92 dB/ $\mu\text{V}$	54 dB/ $\mu\text{V}$	Pass
2011.465	45.01 dB/ $\mu\text{V}$	54 dB/ $\mu\text{V}$	Pass

**Transmitter Spurious Emissions 403 MHz Test Table**

Measured Frequency MHz	Recorded Level	Limit	Result
805.881	74.24 pW	857 pW	Pass
1209.015	44.82 dB/ $\mu\text{V}$	54 dB/ $\mu\text{V}$	Pass
1612.935	40.78 dB/ $\mu\text{V}$	54 dB/ $\mu\text{V}$	Pass
2014.905	45.01 dB/ $\mu\text{V}$	54 dB/ $\mu\text{V}$	Pass

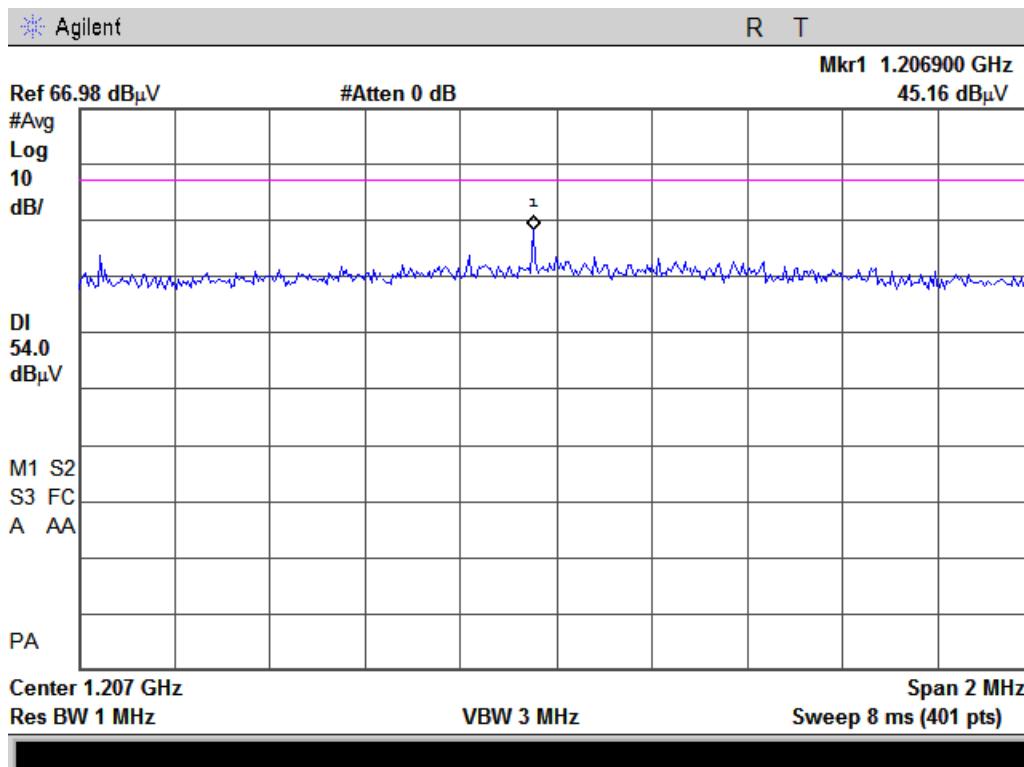
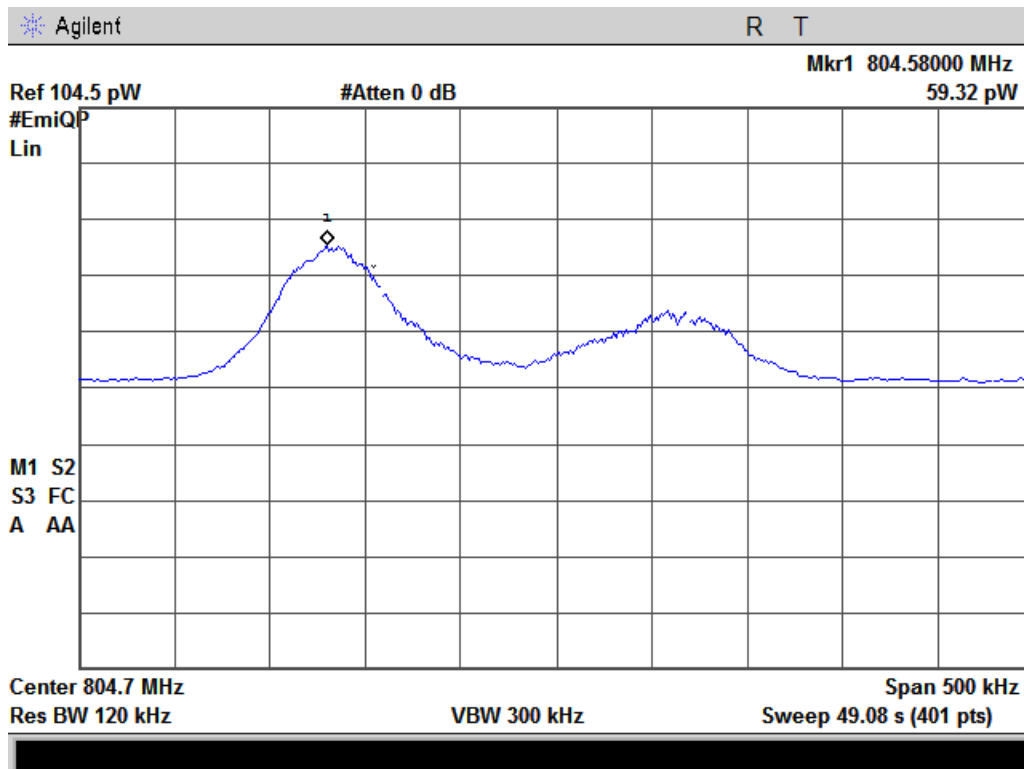
**Transmitter Spurious Emissions 404.3 MHz Test Table**

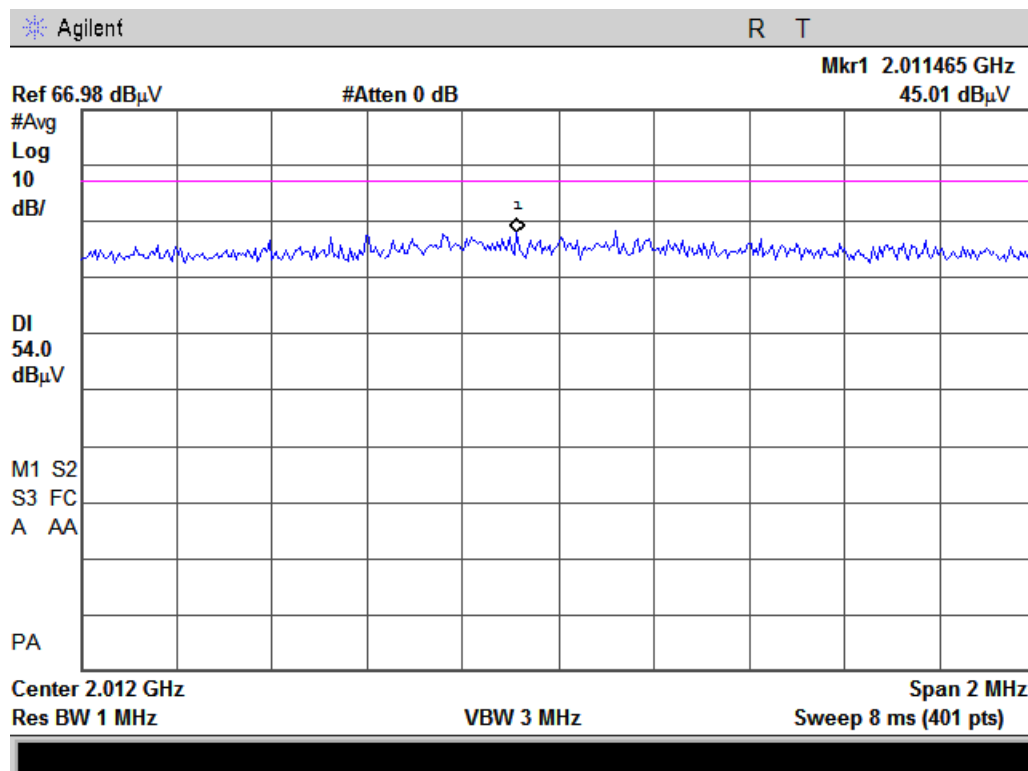
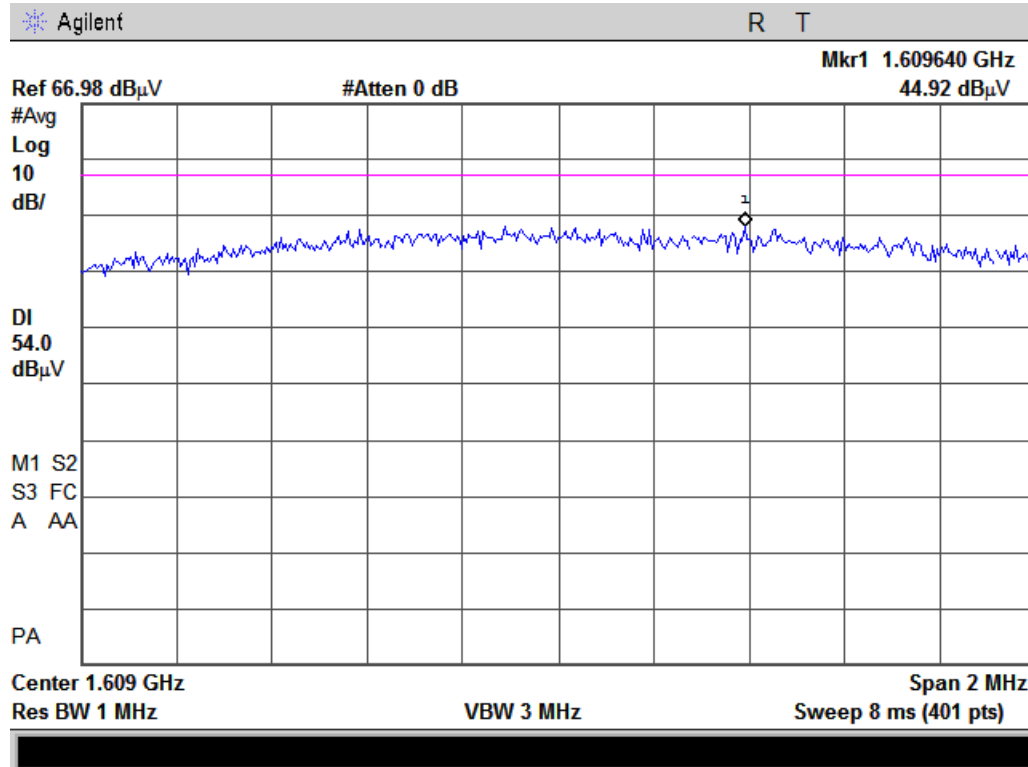
Measured Frequency MHz	Recorded Level	Limit	Result
808.481	33.01 pW	857 pW	Pass
1212.770	39.53 dB/ $\mu\text{V}$	54 dB/ $\mu\text{V}$	Pass
1616.795	46.45 dB/ $\mu\text{V}$	54 dB/ $\mu\text{V}$	Pass
2021.370	45.37 dB/ $\mu\text{V}$	54 dB/ $\mu\text{V}$	Pass



## Transmitter Spurious Emissions Operating Plots

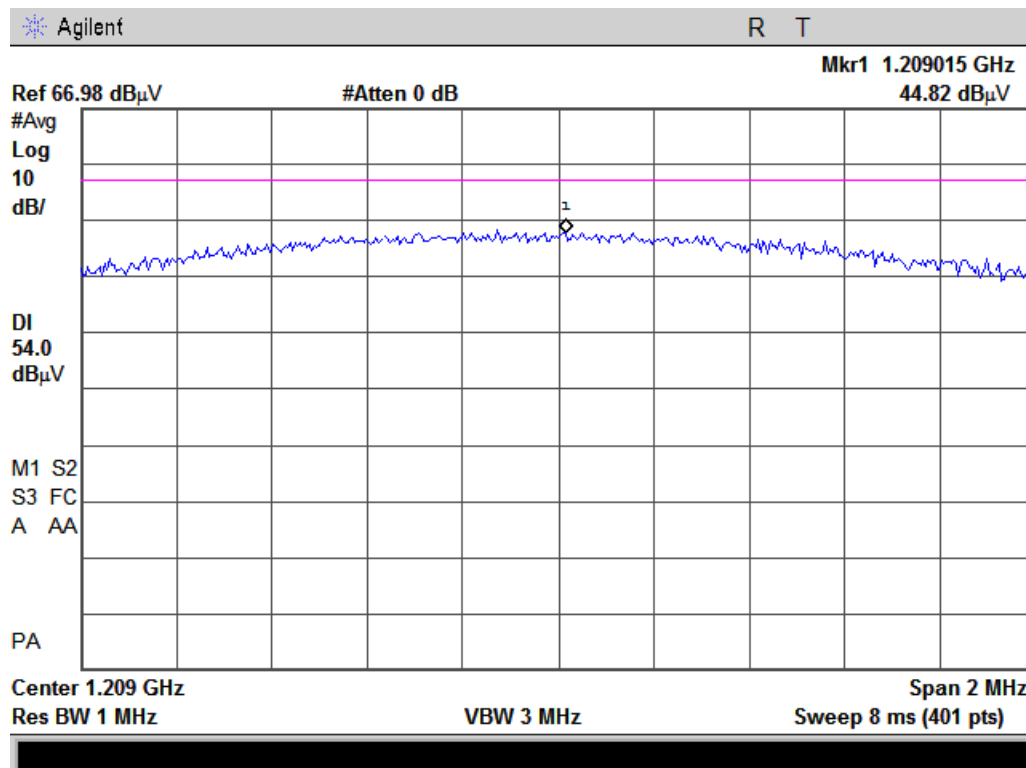
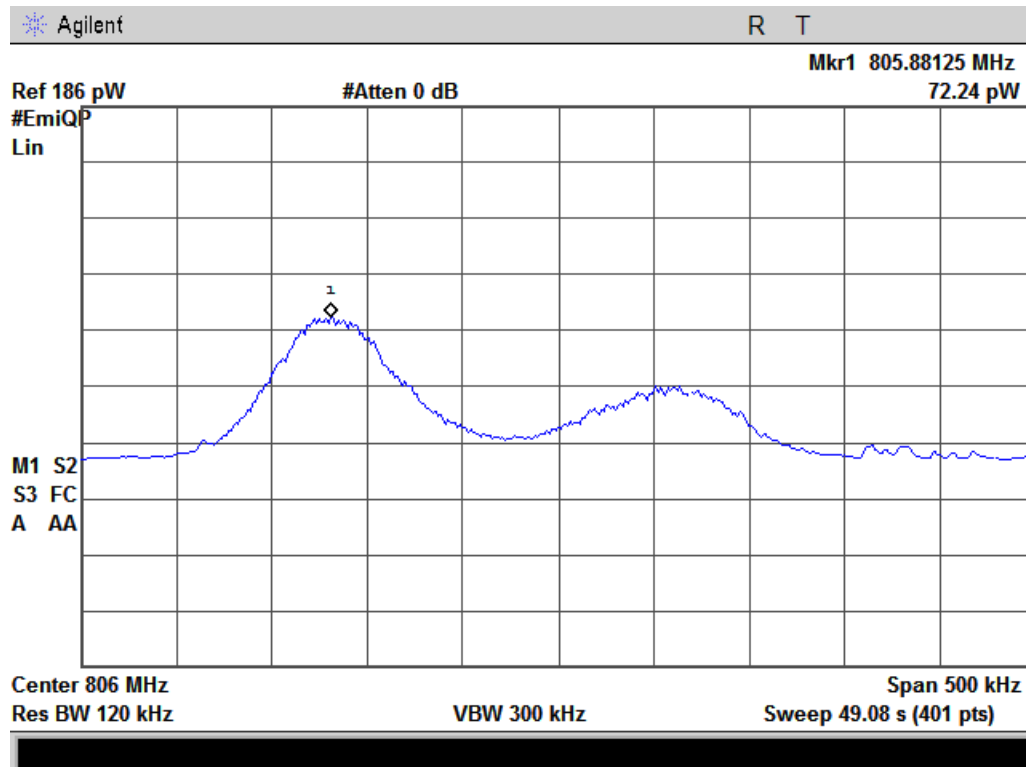
402.35 MHz

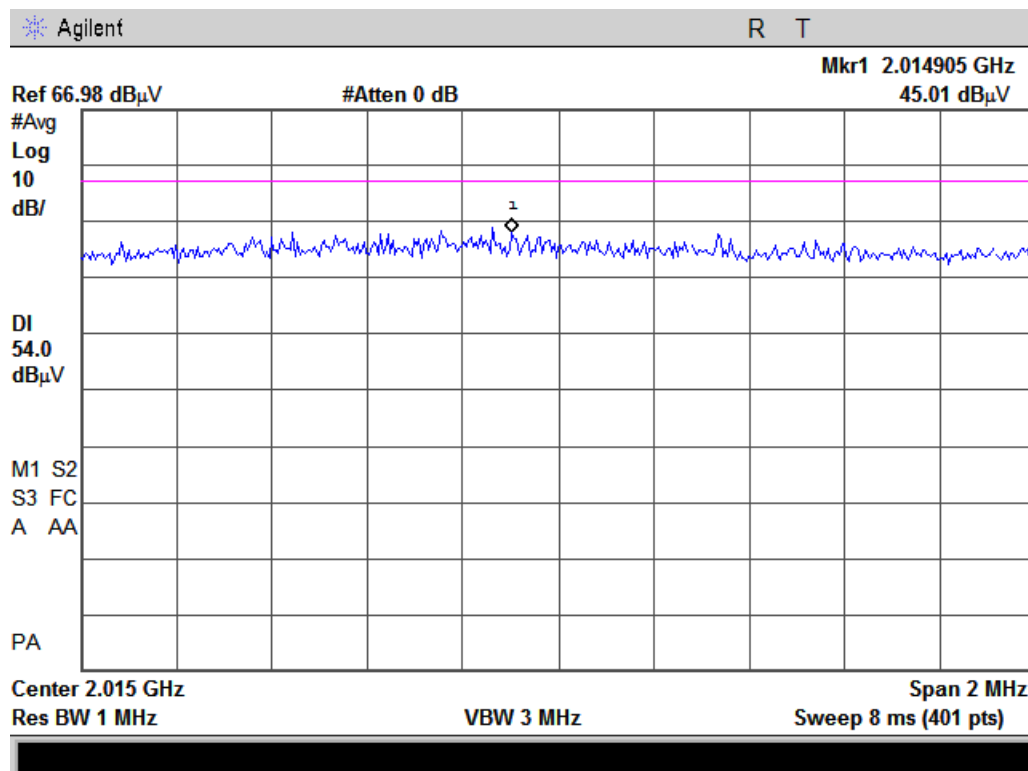
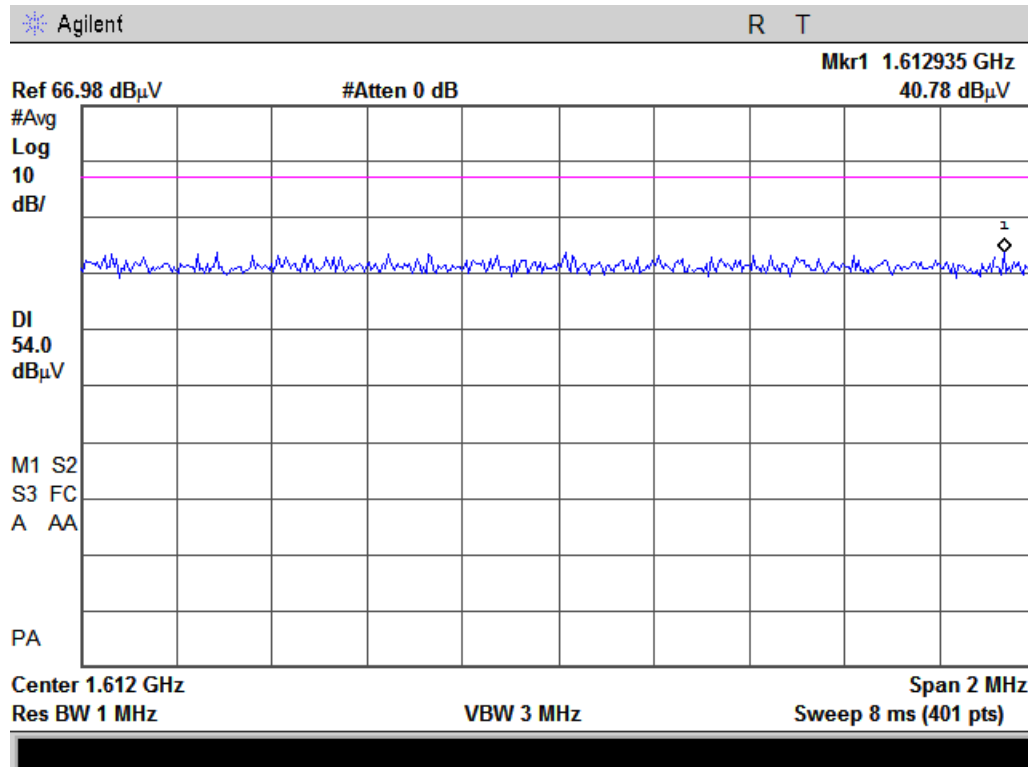






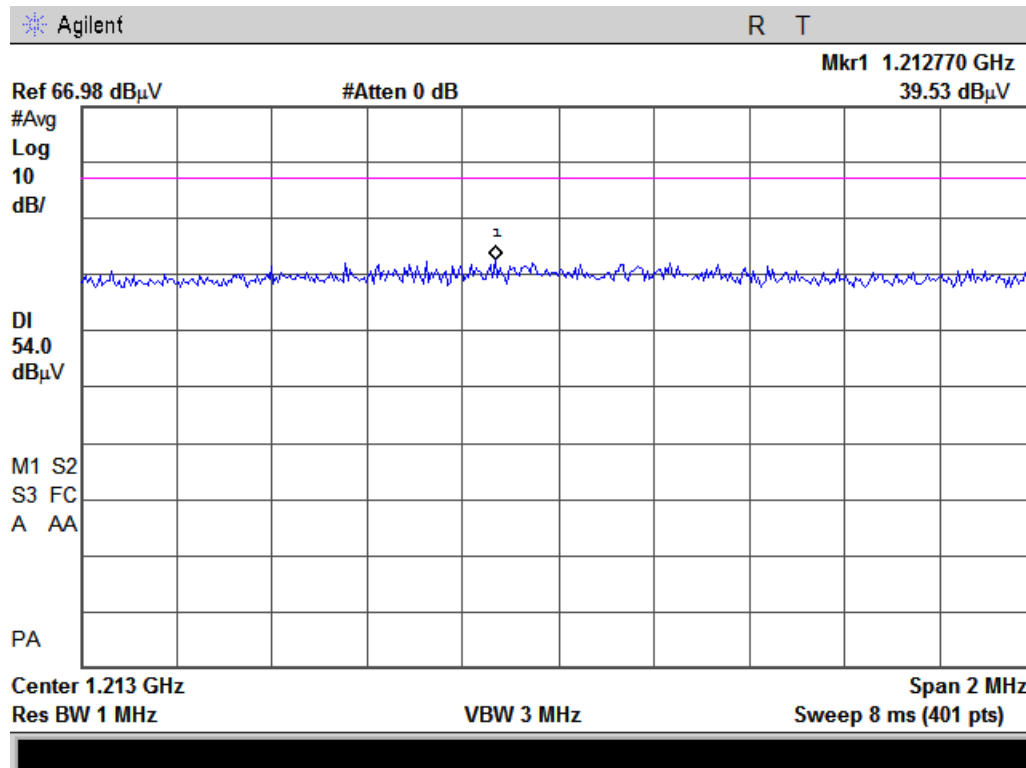
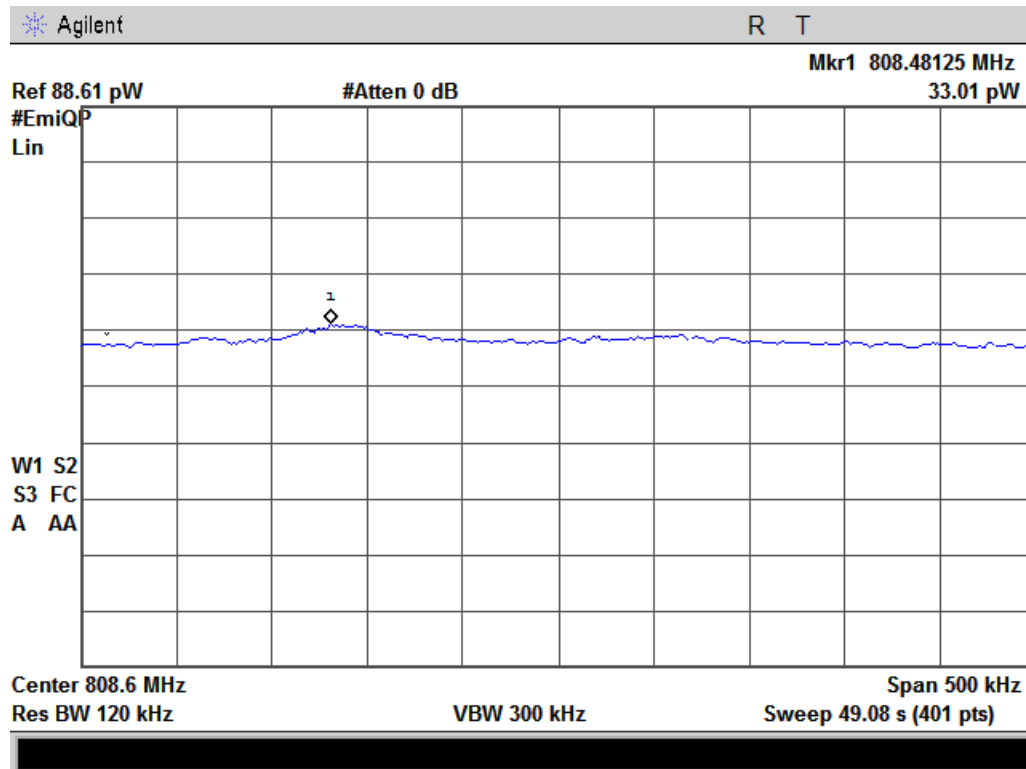
## 403 MHz

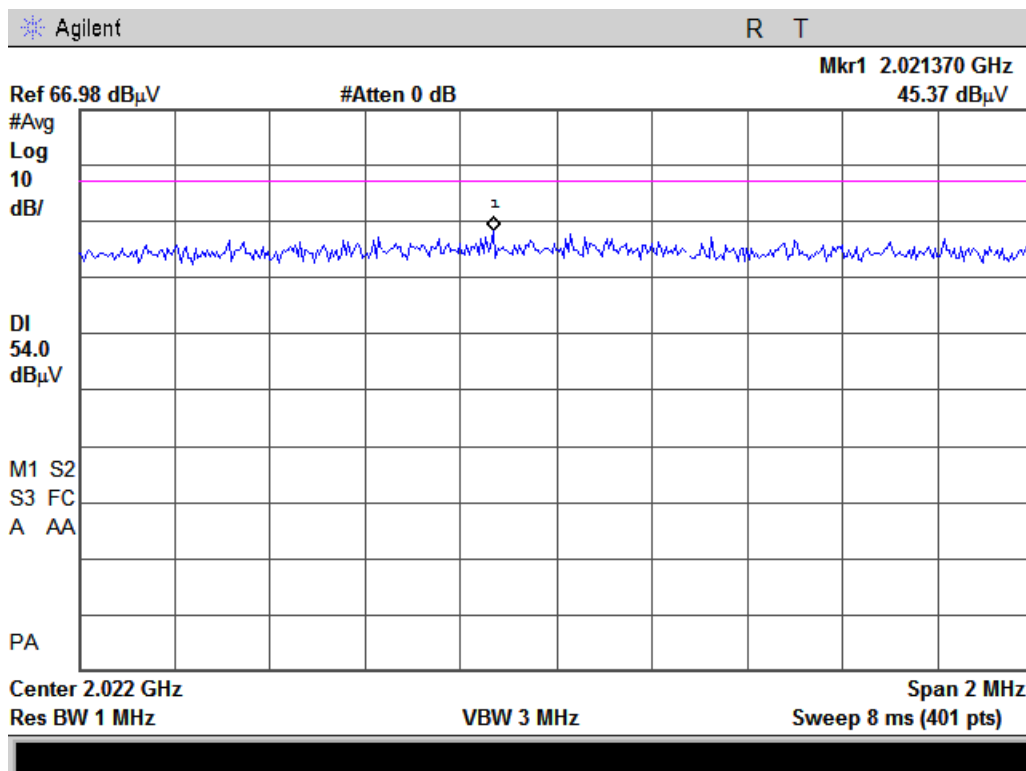
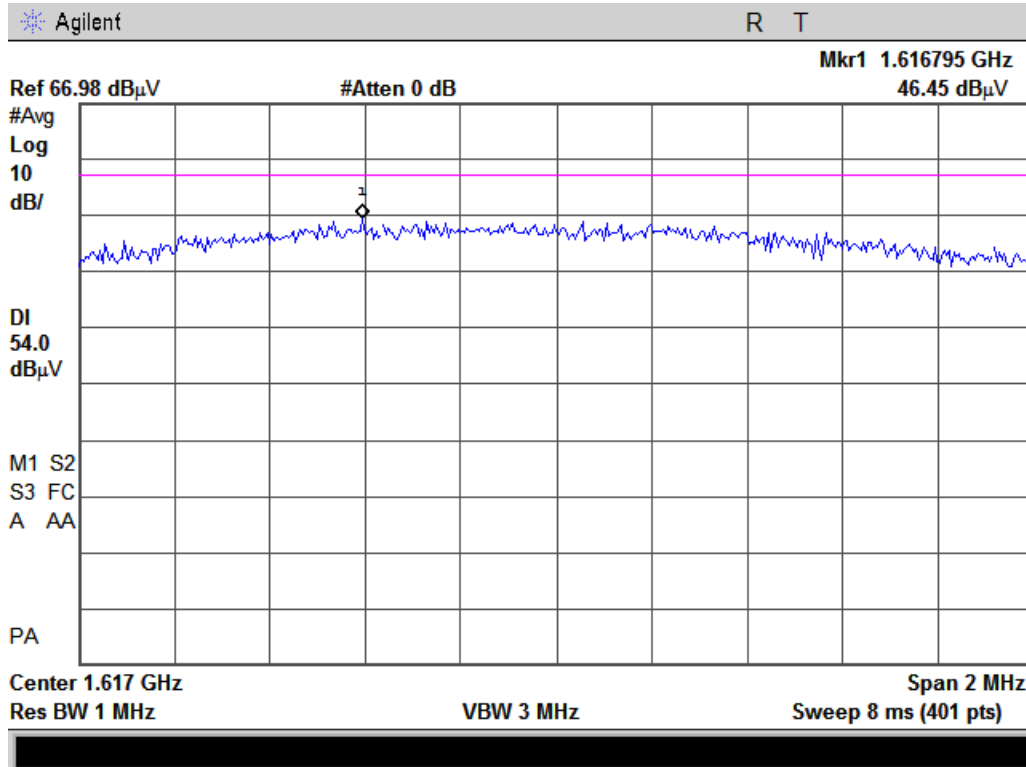






404.3 MHz







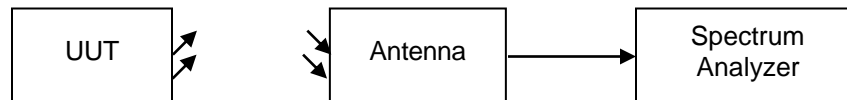
**Name of Test:** Transmitter Occupied Bandwidth  
**Specification:** 95.628(d)  
**Test Equipment Utilized:** i00103, i00267, i00379

**Engineer:** J. Erhard  
**Test Date:** 3/24/2011

### Test Procedure

The UUT was tested in an Open Area Test Site (OATS) set 3m from the receiving transducer. A spectrum analyzer was used to verify that the UUT met the requirements for Occupied Bandwidth. The UUT was tested by rotating it 360° with the antennas in both the vertical and horizontal orientation and rose from 1 to 4 meters to ensure the TX signal levels were maximized.

### Test Setup

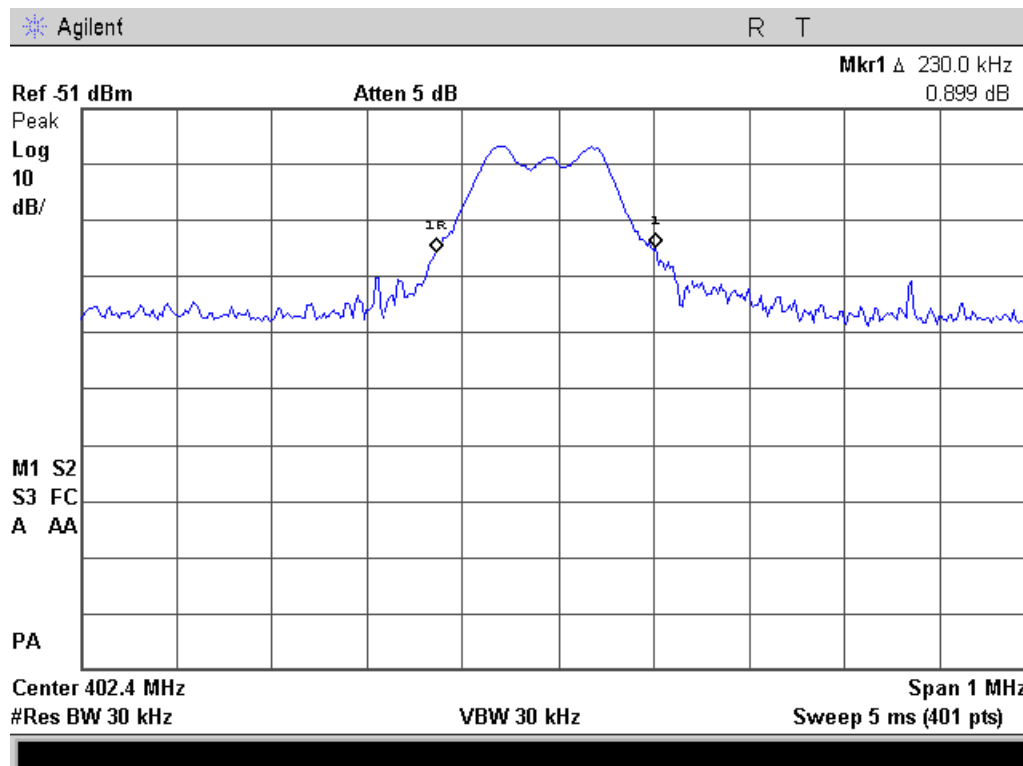


### Emissions Bandwidth Results Table

Tuned Frequency MHz	Recorded Measurement
402.35	230.0 kHz
403.00	237.5 kHz
404.30	235.0 kHz

### Emissions Bandwidth Test Plots

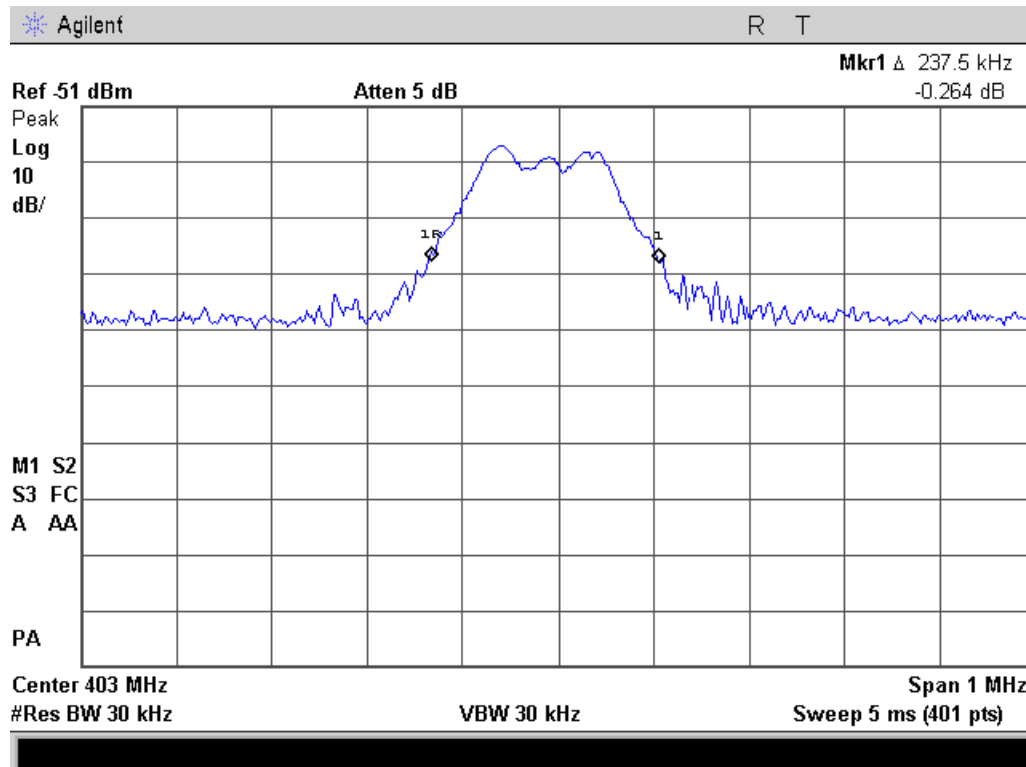
#### 402.35 MHz



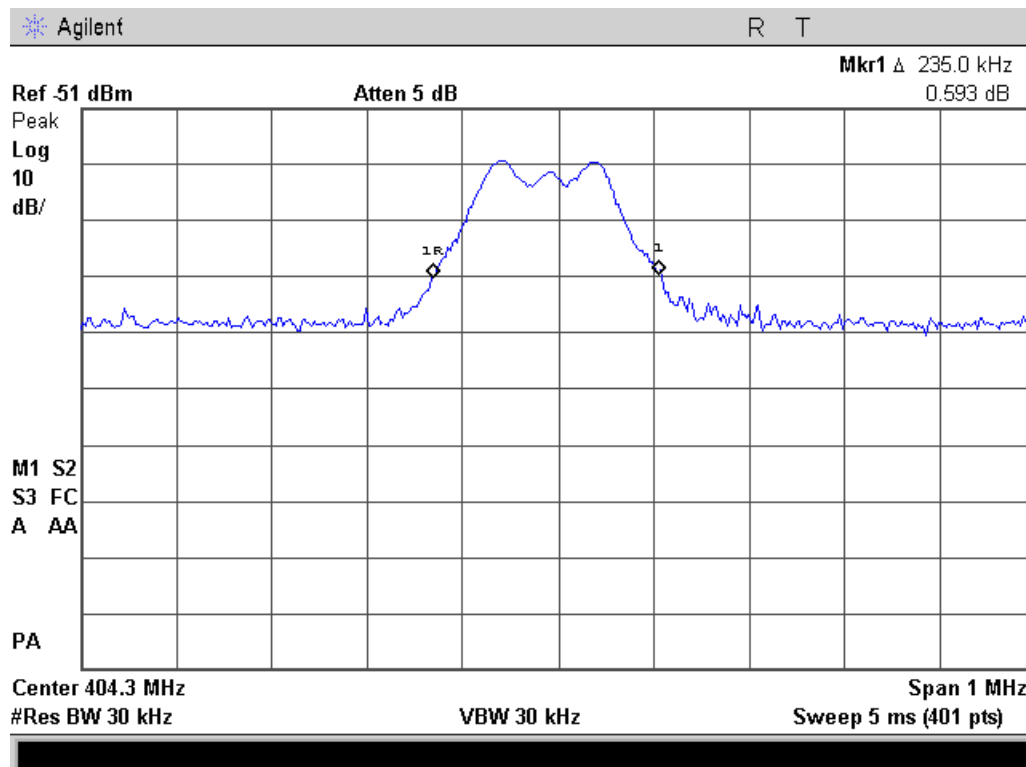




### 403.00 MHz



### 404.30 MHz



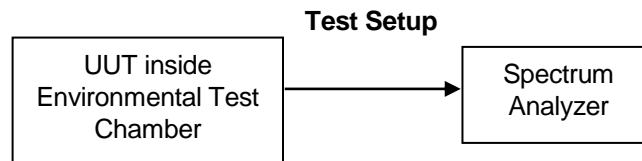


**Name of Test:** Frequency Stability  
**Specification:** 95.628(e)  
**Test Equipment Utilized:** i00027, i00343, i00345

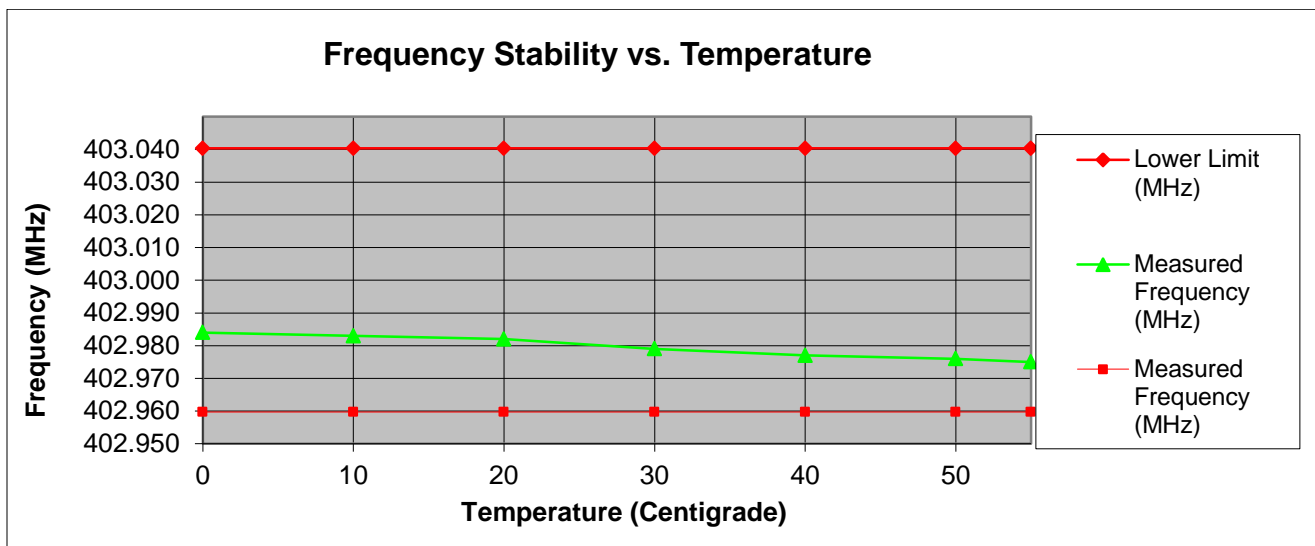
**Engineer:** J. Erhard  
**Test Date:** 3/29/2011

### Test Procedure

The UUT was placed inside of an environmental test chamber. The temperature was varied from 0°C to 55°C in 10°C increments except for the final step which was 5°C. At each temperature the EUT was given sufficient time for temperature stabilization. The frequency was measured with a spectrum analyzer set to a very narrow span and resolution bandwidth to ensure accurate measurements were obtained. The data was plotted and compared to the limit as indicated in the following graph.



### Frequency Stability





### Test Equipment Utilized

Description	MFG	Model Number	CT Asset Number	Last Cal Date	Cal Due Date
Temperature Chamber	Tenney	Tenney Jr.	i00027	NCR	NCR
Horn Antenna	EMCO	3115	i00103	11/05/2010	11/05/2012
Biconilog antenna	Schaffner	CBL6111C	i00267	11/21/2009	11/21/2011
Temperature Data Logger	Fluke	Hydra	i00343	11/18/2010	11/18/2010
Spectrum analyzer	Tektronix	RSA3308A	i00345	9/02/2010	9/02/2011
EMI Receiver	Agilent	E7405A	i00379	11/22/2010	11/22/2011

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