Compliance Testing, LLC
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info@ComplianceTesting.com

Test Report

Prepared for: SPOT, LLC

Model: Spot 3

Description: Handheld, Satellite Based Personal Tracking Unit

To

FCC Rule Part 25

Date of Issue: April 17, 2013

On the behalf of the applicant:	**SPOT, LLC** **300 Holiday Square Blvd.** **Covington, LA 70433**
Attention of:	**Eric Blanchard, Sr. Design Engineer** **Ph: (985) 335-1513** **E-Mail: eric.blanchard@globalstar.com**

Prepared By
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Project No: p1310017

Alex Macon
Project Test Engineer

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	April 17, 2013	Alex Macon	Original Document
2.0	May 30, 2013	John Erhard	Draft reports inadvertently provided to the manufacturer
3.0	June 20, 2013	John Erhard	Add bandwidth correction factor to power measurement

Table of Contents

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 below.

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

Testing Certificate Number: **2152.01**

ACCREDITED
TESTING CERT
#2152.01

FCC OATS Reg, #933597

IC Reg. #2044A-1

Non-accredited tests contained in this report:

N/A

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: FCC Part 25 Satellite Communications.

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, section 6.1.9, 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		
Temp (ºC)	**Humidity (%)**	**Pressure (mbar)**
25.2° C – 28.8° C	21.9% - 27.1%	951.3 – 970.2

Measurement results, unless otherwise noted, are worst case measurement.

EUT Description

Model: Spot 3
Description: Handheld, Satellite Based Personal Tracking Device

Additional Information

The EUT is a handheld personal satellite tracking system for use in a wilderness environment.

EUT Operation during Tests

EUT is placed in a test mode allowing for frequency selection via mode using a dip switch settings provided by the manufacturer.

Accessories: None

Cables: None

Modifications: None

Test Result Summary

Specification	Test Name	Pass, Fail, N/A	Comments
25.204	Power Limits	Pass	
25.202(f)	Emissions Limitations for Mobile Earth Stations	Pass	
25.202(f)	Emissions Mask	Pass	
25.216(c)(g)(i)	Emissions Limits for Mobile Earth Stations	Pass	
25.202(d)	Frequency Tolerance	Pass	

Power Limits

Name of Test: Power Limits

Specification: 25.204 **Engineer:** Alex Macon

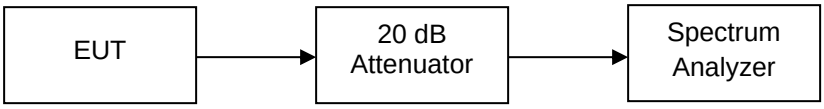
Test Equipment Utilized: i00008, i00331 **Test Date:** 4/11/2013

Test Procedure

The UUT was connected to a Spectrum analyzer through a 20 dB attenuator. Attenuator and cable losses were input into the analyzer as a reference level offset to ensure accurate measurements were obtained. All measurements were made in a 1 MHz RBW. The EIRP is a summation of the conducted power, the antenna gain, and the bandwidth correction factor.

BW correction factor = 10log(1/2.046) = 3.2

Test Setup



Transmitter Peak Output Power

Tuned Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	Bandwidth CF (dB)	EIRP Output Power (dBm)	Specification Limit
1611.25	18.22	0.59	3.2	22.01	No limit for Mobile Earth Stations
1613.75	19.72	0.60	3.2	23.52	No limit for Mobile Earth Stations
1616.25	19.72	0.53	3.2	23.45	No limit for Mobile Earth Stations
1618.75	19.74	0.09	3.2	23.03	No limit for Mobile Earth Stations

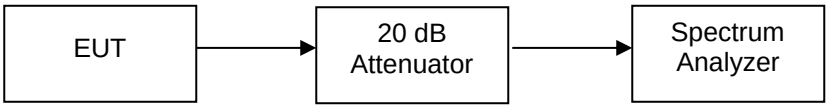
Emissions Limitations for Mobile Earth Stations

Name of Test:	Emissions Limitations for Mobile Earth Stations	
Specification:	25.202(f)	**Engineer:** Alex Macon
Test Equipment Utilized:	i00008, i00331	**Test Date:** 04/08/2013

Test Procedure

The EUT was connected directly to a spectrum analyzer and the conducted spurious emissions were measured to ensure that the EUT met the requirements specified. Only the worst case emission at each frequency was reported. Attenuator losses were input into the analyzer as a reference level offset to ensure accurate measurements were obtained.

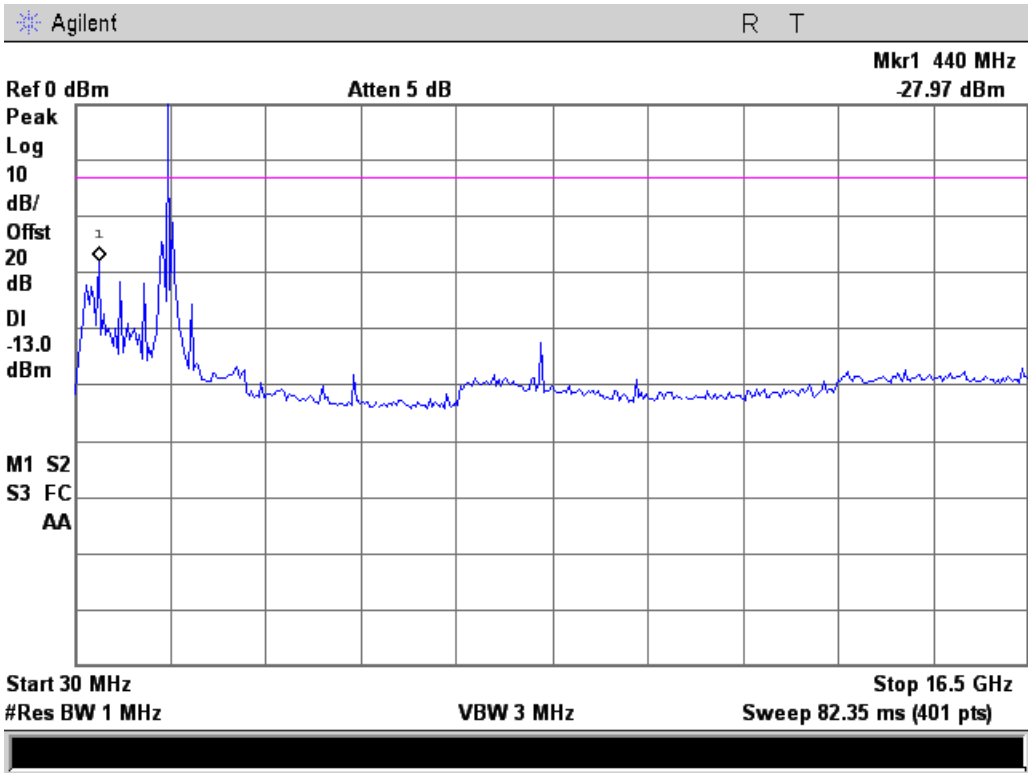
Test Setup



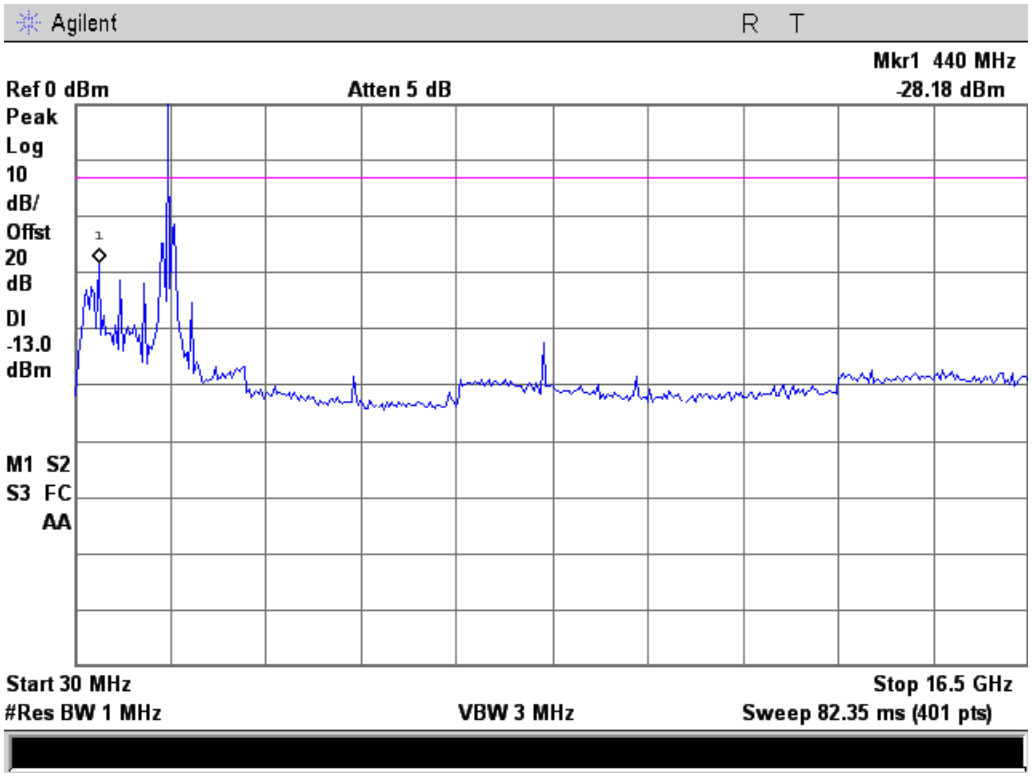
Emissions Limitations Summary Table

Tuned Frequency (MHz)	Result	Comments
1611.25	Pass	See Plots
1613.75	Pass	See Plots
1616.25	Pass	See Plots
1618.75	Pass	See Plots

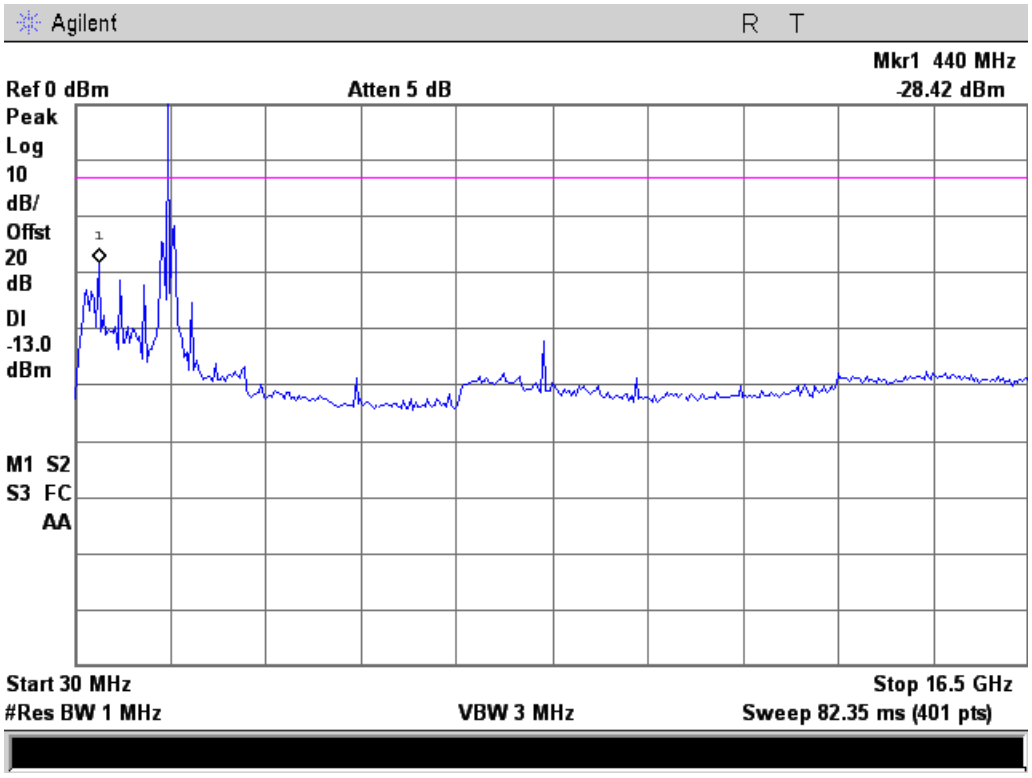
Emissions Limitations Plot 1611.25 MHz



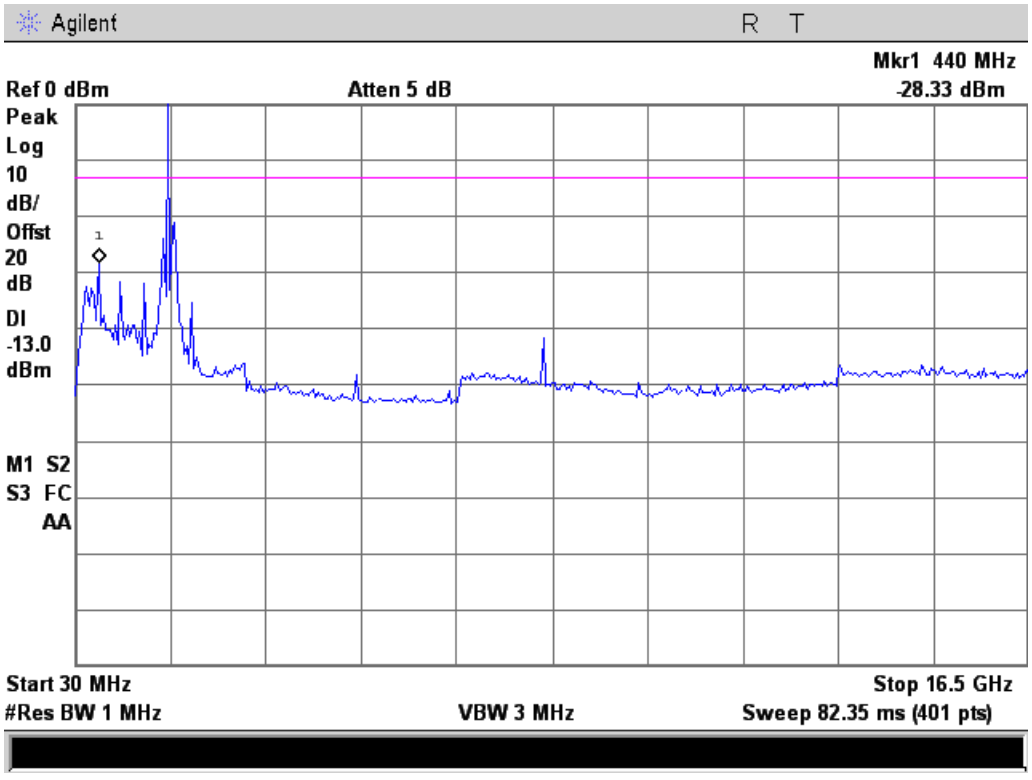
Emissions Limitations Plot 1613.75 MHz



Emissions Limitations Plot 1616.25 MHz



Emissions Limitations Plot 1618.75 MHz



Occupied Bandwidth

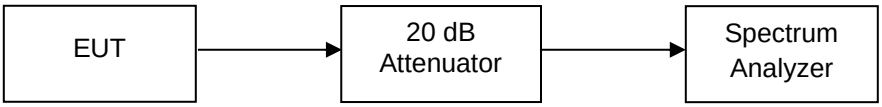
Name of Test:	Occupied Bandwidth	
Specification:	N/A	**Engineer:** Alex Macon
Test Equipment:	i00008, i00331	**Test Date:** 4/11/2013

There is no requirement for occupied bandwidth in Part 25 for Mobile Earth Stations. However, the emissions masks are based upon the occupied bandwidth. This information is reported for reference only.

Test Procedure

The EUT was connected directly to a spectrum analyzer. The occupied bandwidth of the modulated output was measured and plotted. Attenuator and cable losses were input into the analyzer as a reference level offset to ensure accurate measurements were obtained.

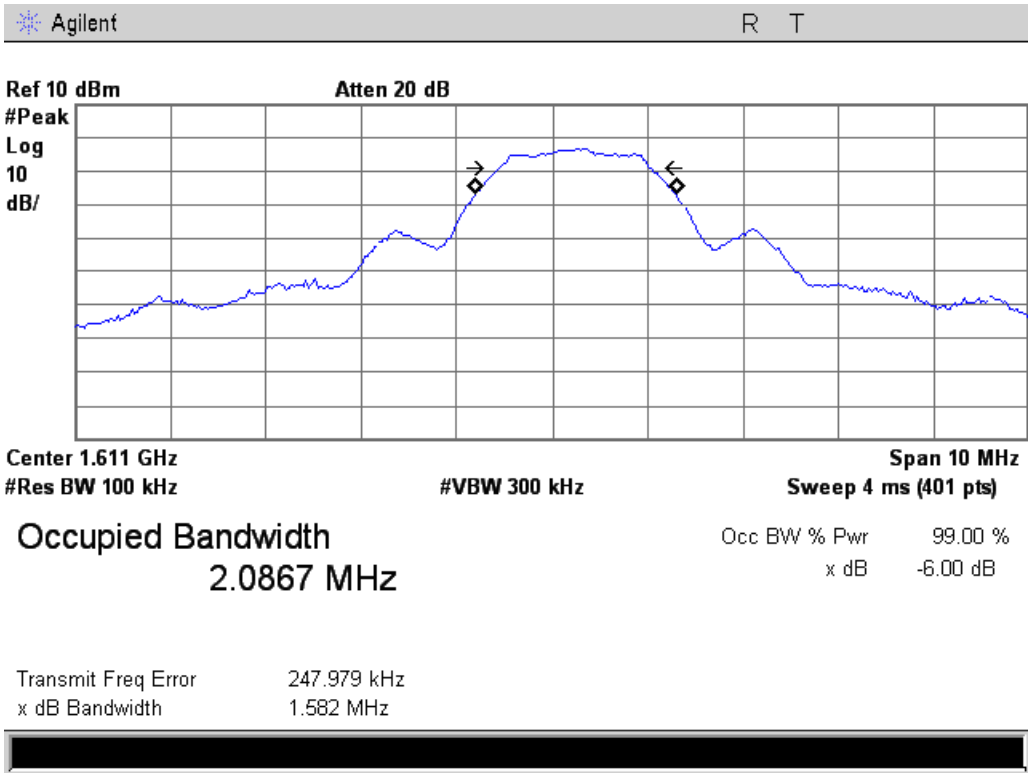
Test Setup



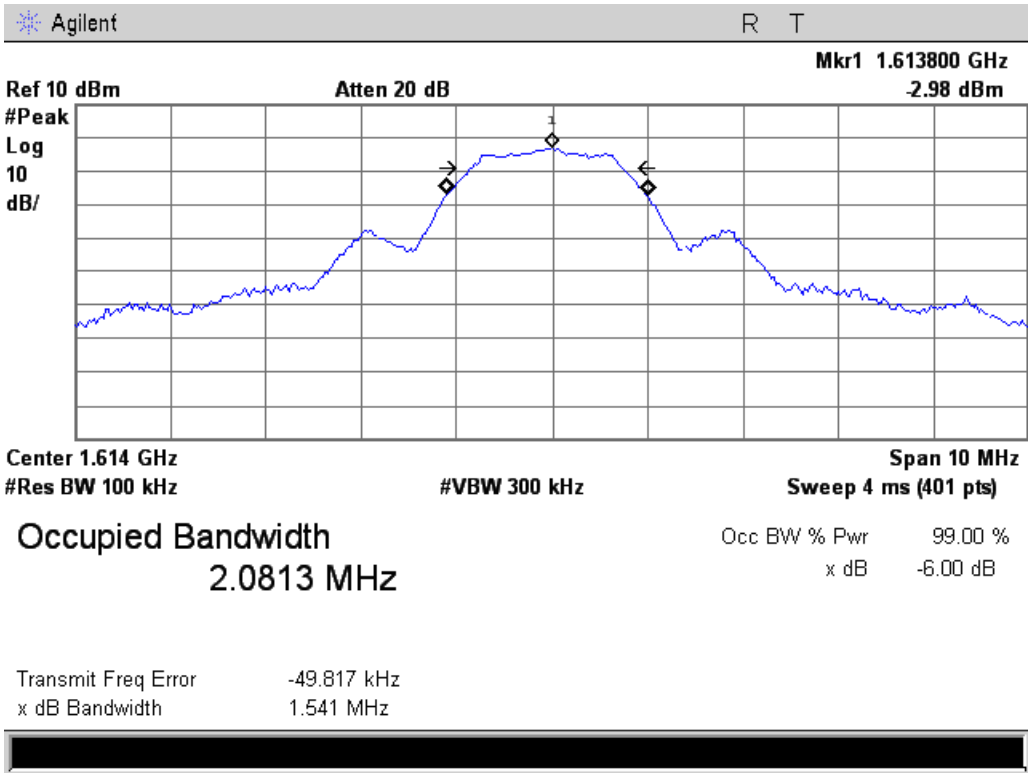
Test Results

Frequency (MHz)	Measured Bandwidth (MHz)
1611.25	2.0339
1613.75	2.0448
1616.25	2.0466
1618.75	2.0279

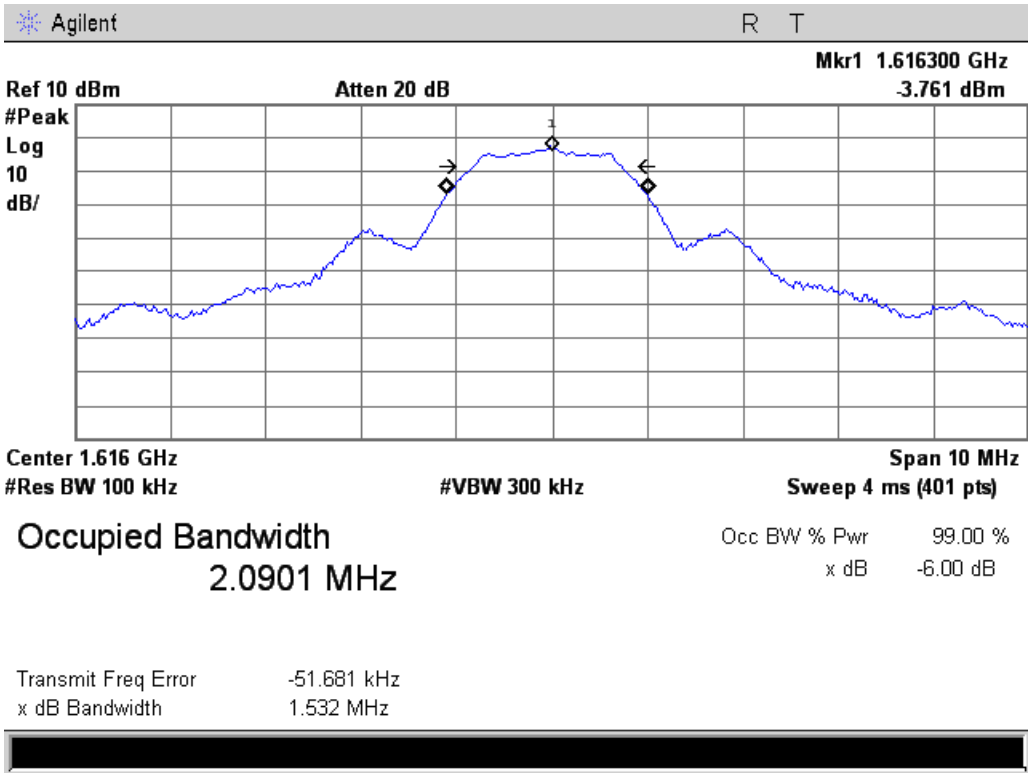
1611.25



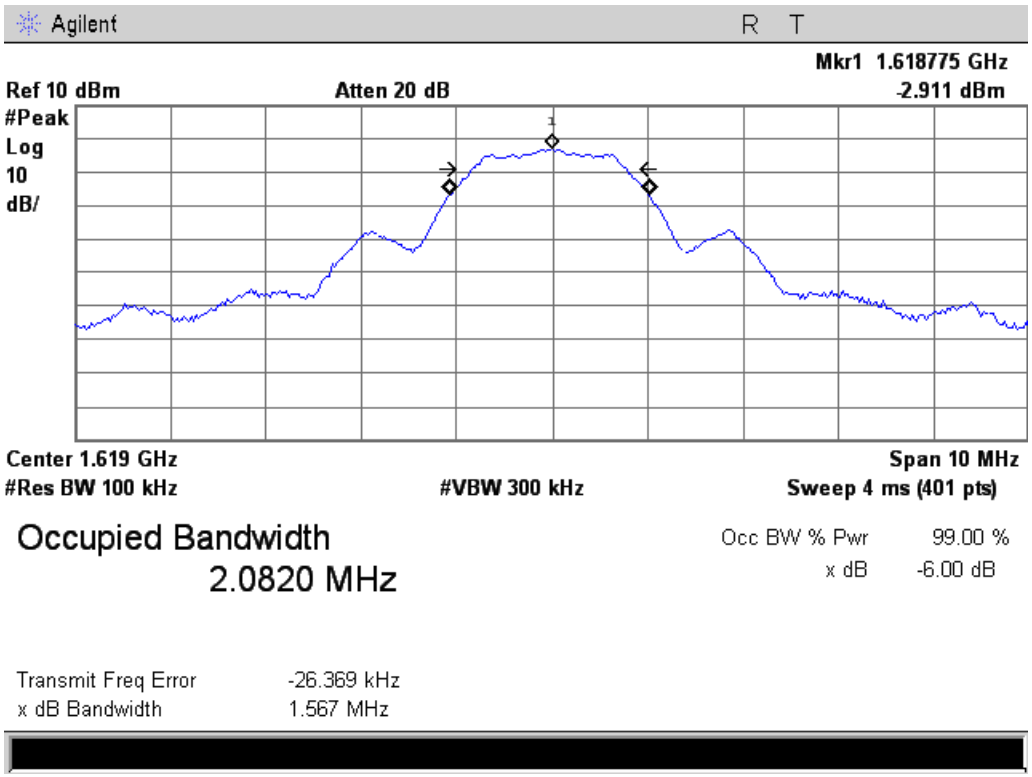
1613.75



1616.25



1618.75



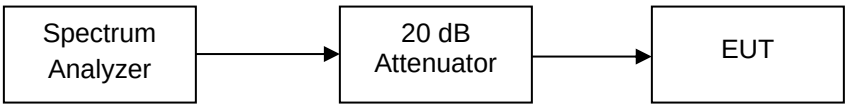
Emission Masks

Name of Test:	Emission Masks	
Specification:	25.202(f)	**Engineer:** Alex Macon
Test Equipment Utilized:	i00008, i00331	**Test Date:** 4/11/2013

Test Procedure

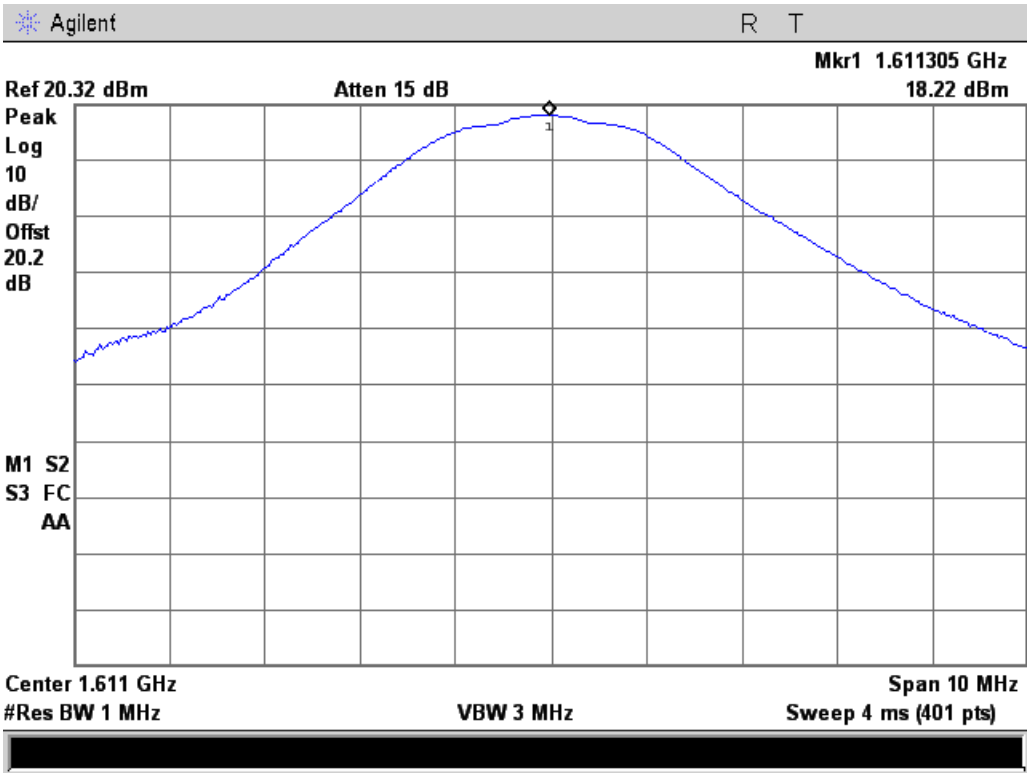
The EUT was connected directly to a spectrum analyzer to verify that the EUT met the requirements for emission mask. Attenuator and cable losses were input into the analyzer as a reference level offset to ensure accurate measurements were obtained.

Test Setup

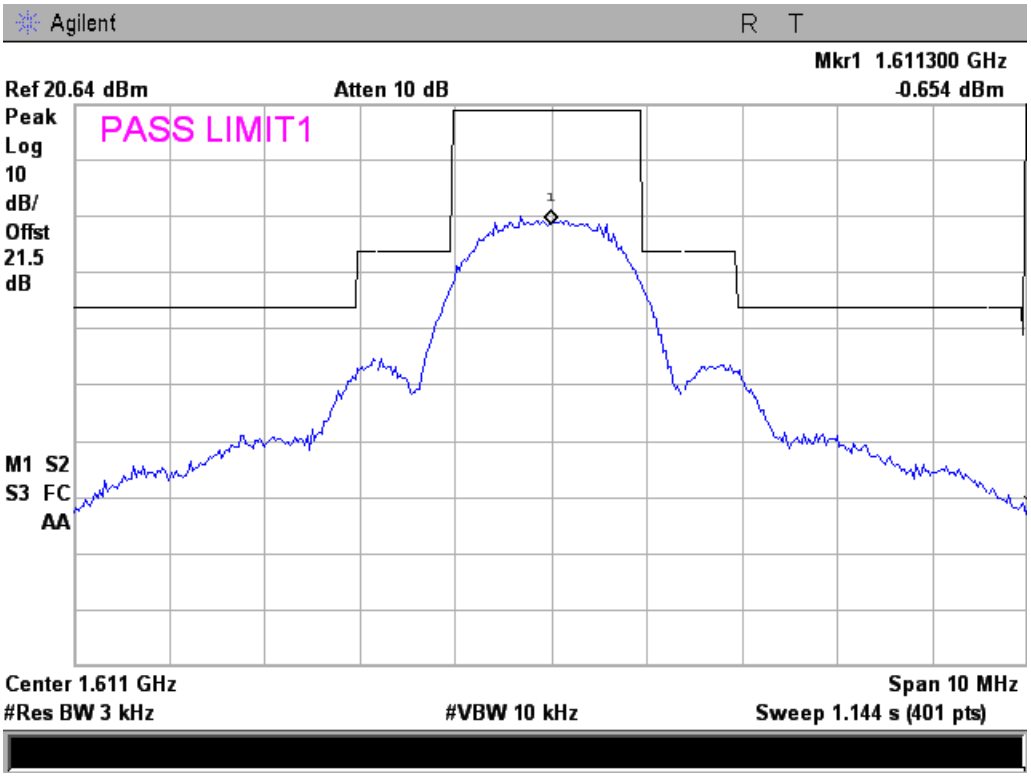


Emission Mask Plots

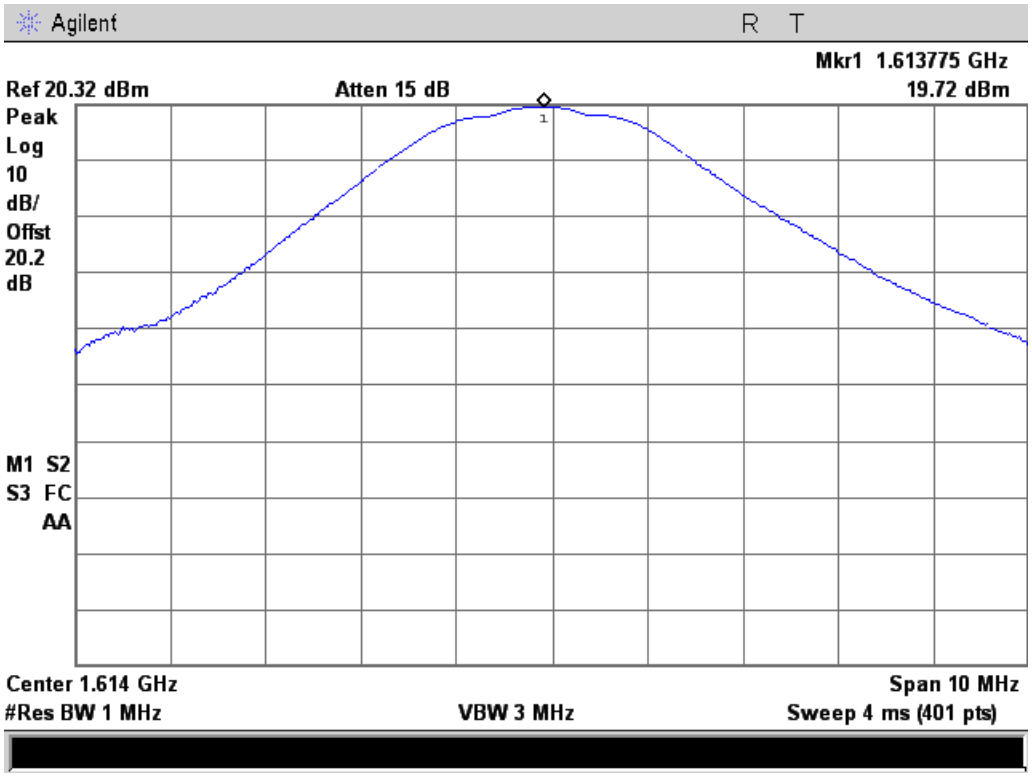
1611.25 MHz Reference



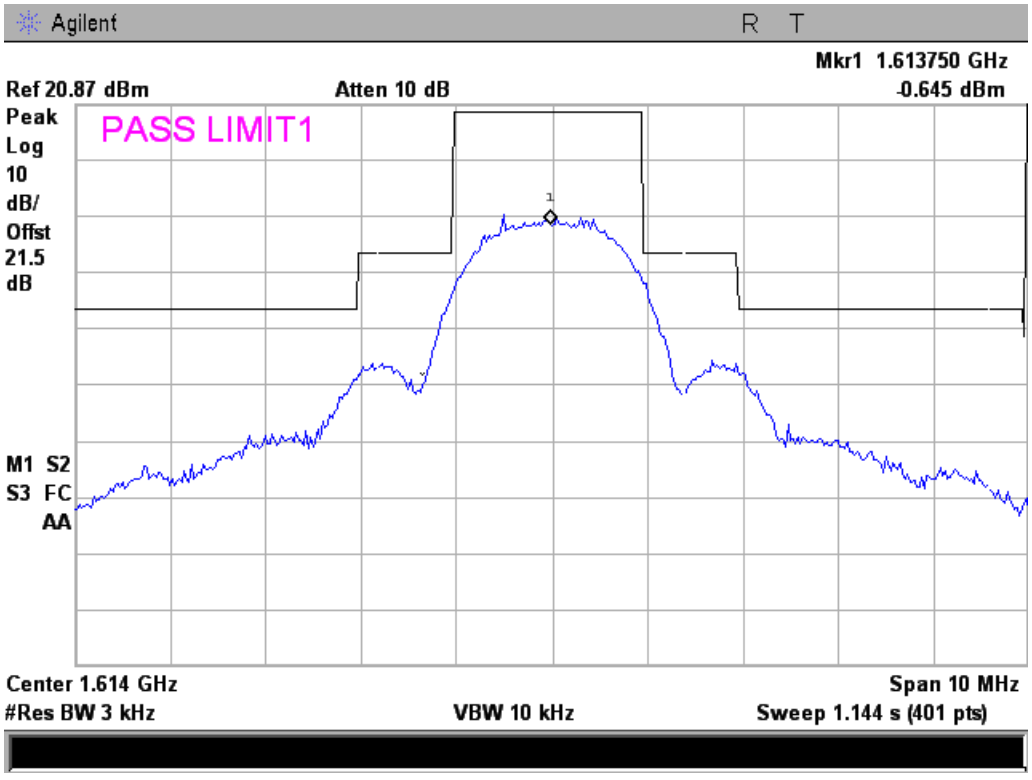
1611.25 MHz Mask



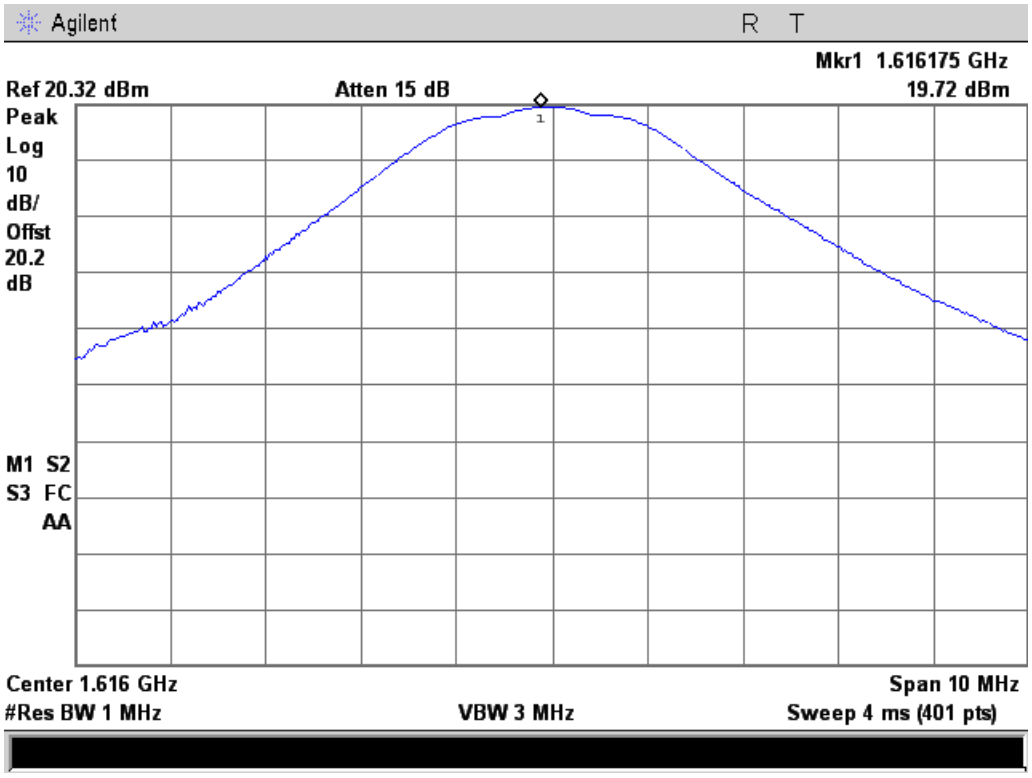
1613.75 MHz Reference



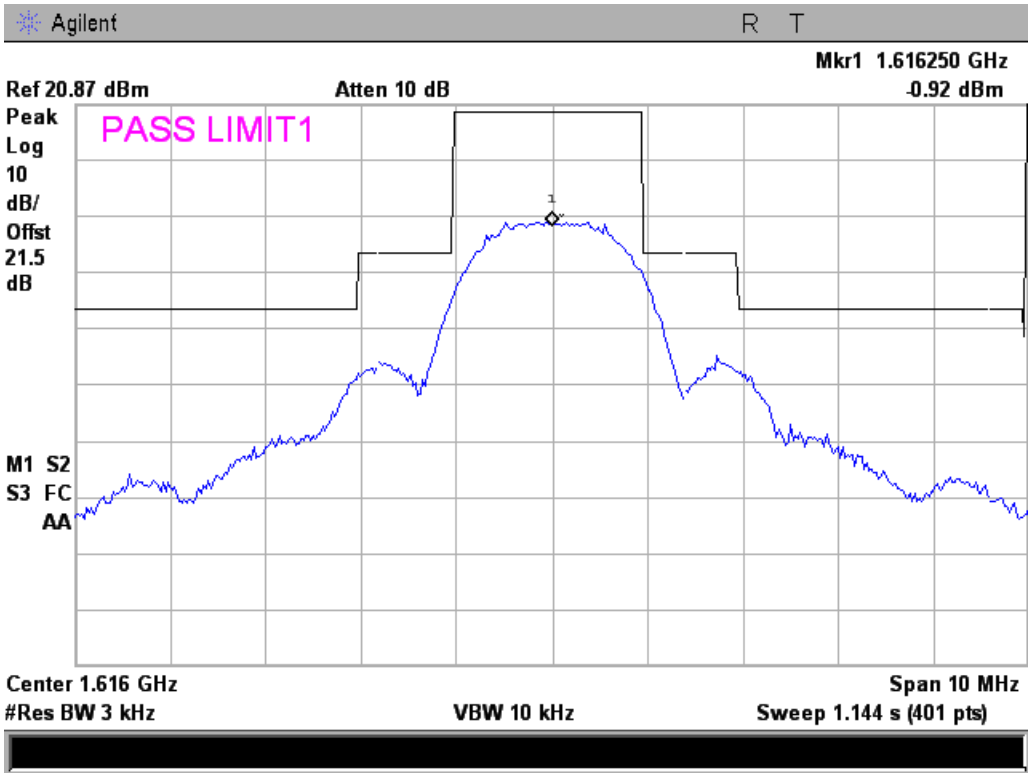
1613.75 MHz Mask



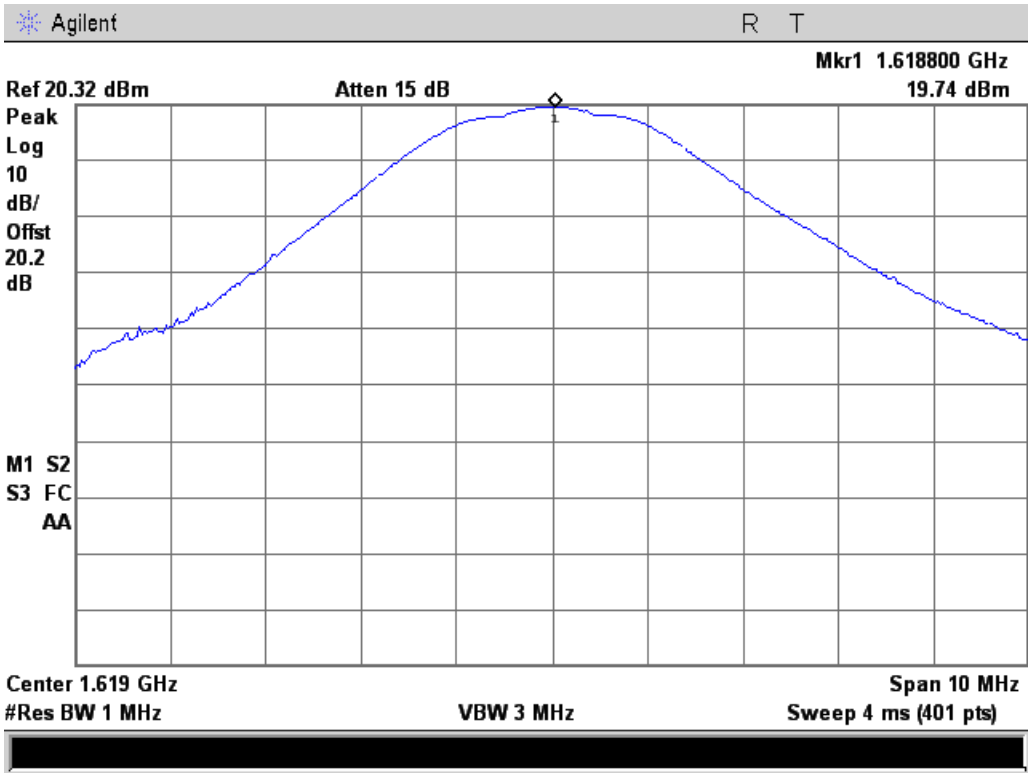
1616.25 MHz Reference



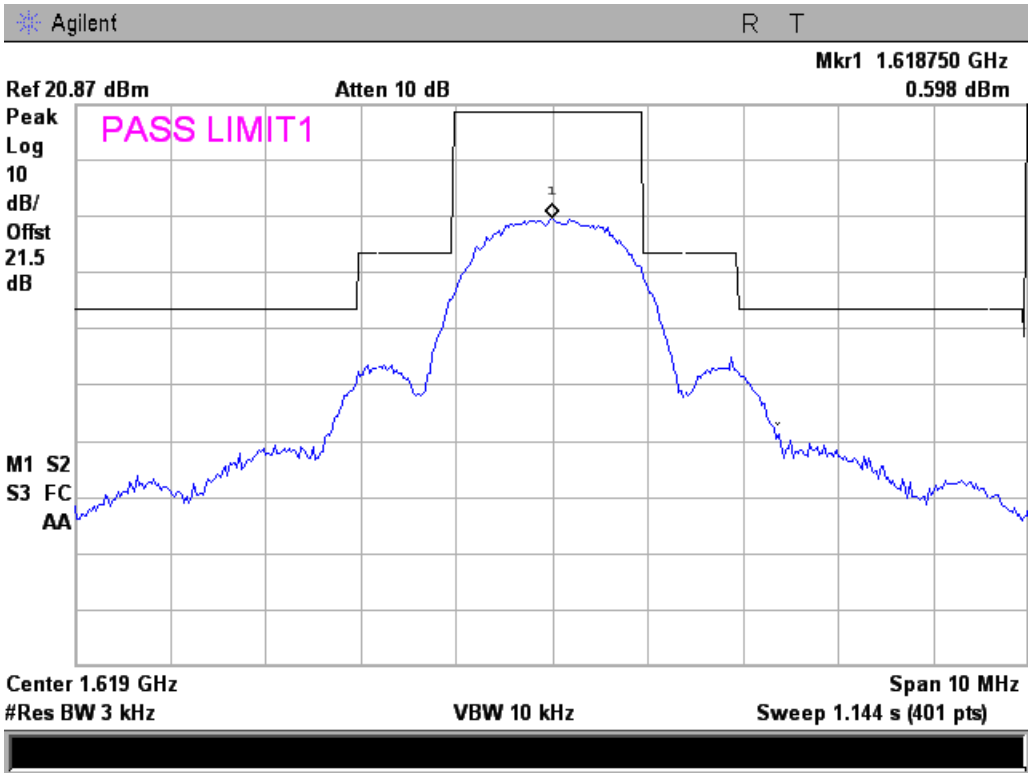
1616.25 MHz Mask



1618.75 MHz Reference



1618.75 MHz Mask



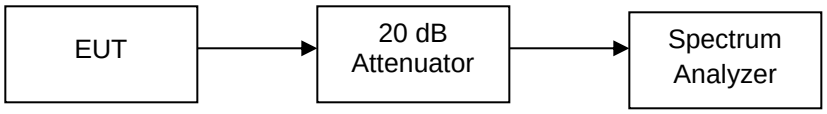
Emissions Limits for Mobile Earth Stations

Name of Test:	Emissions Limits for Mobile Earth Stations	
Specification:	25.216(c)(g)(i)	**Engineer:** Alex Macon
Test Equipment Utilized:	i00008, i00331	**Test Date:** 4/08/2013

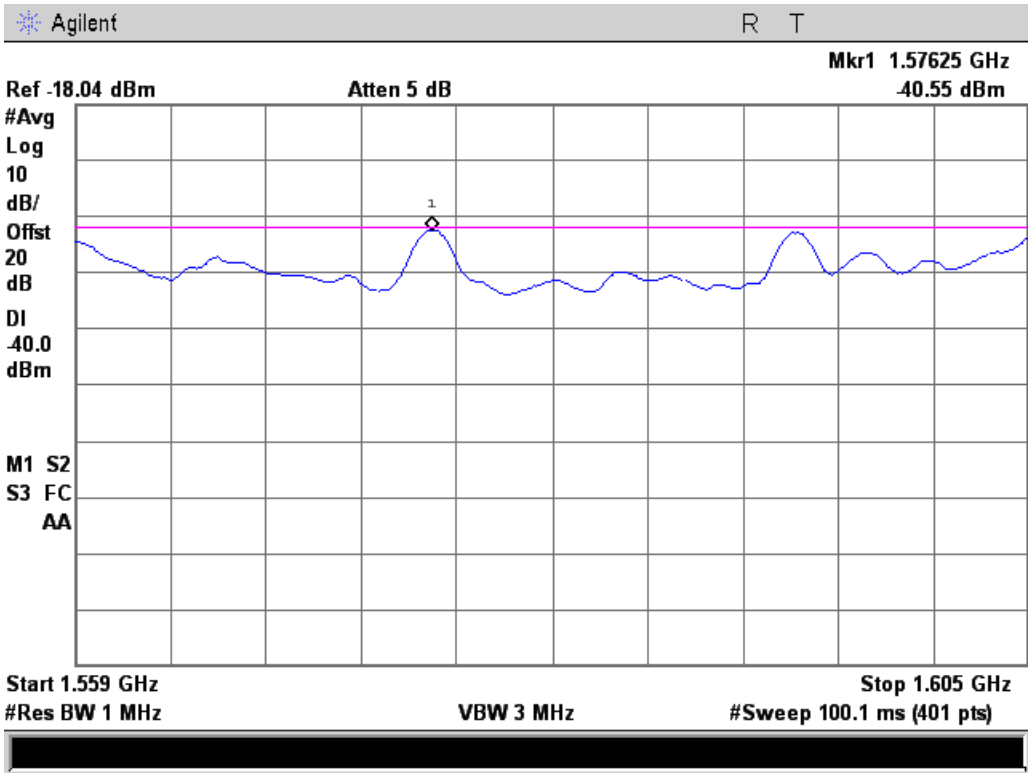
Test Procedure

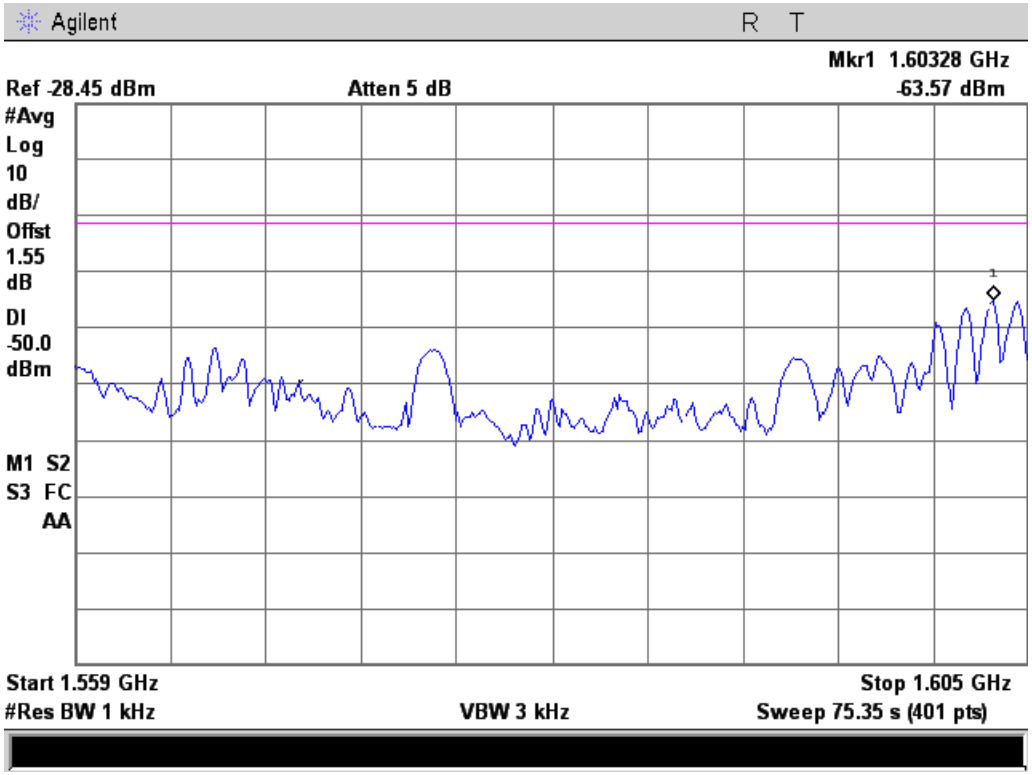
The EUT was connected directly to a spectrum analyzer to verify that the EUT met the requirements for emission limits. Attenuator and cable losses were input into the analyzer as a reference level offset to ensure accurate measurements were obtained.

Test Setup

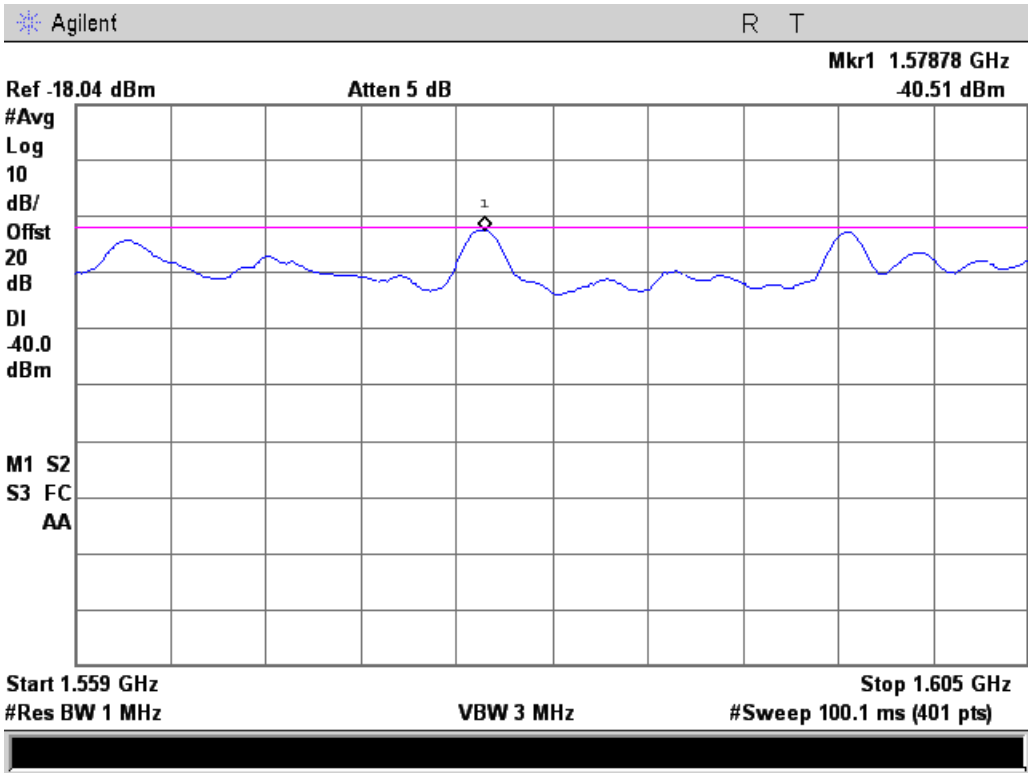


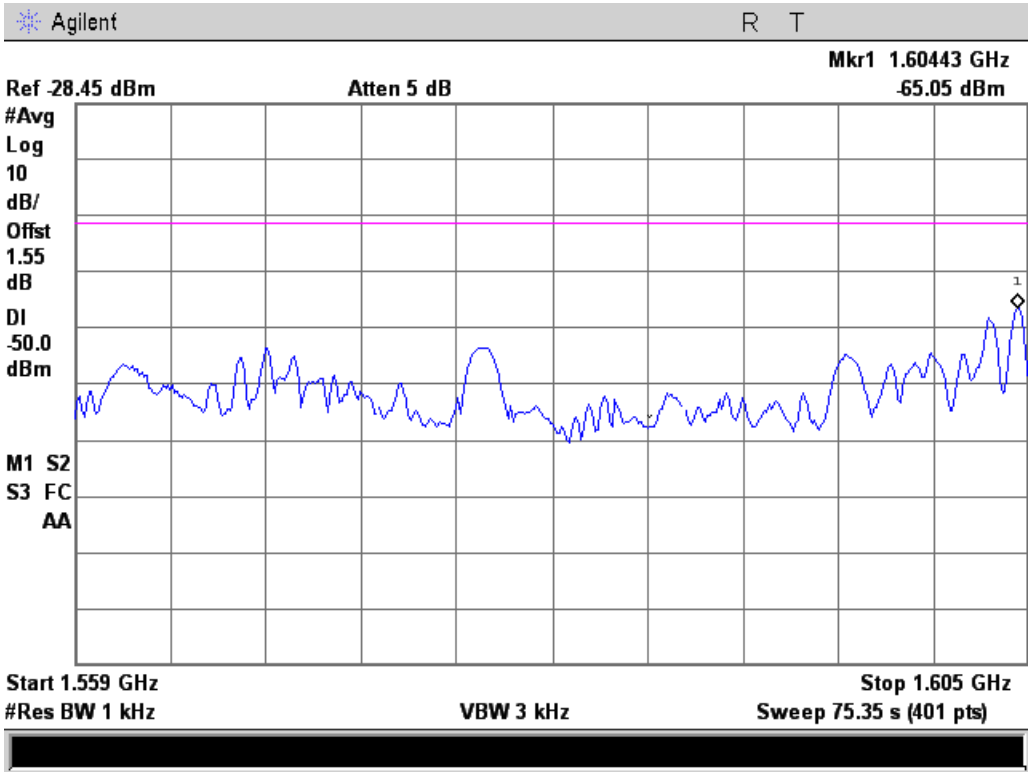
25.216(c) 1611.25 MHz



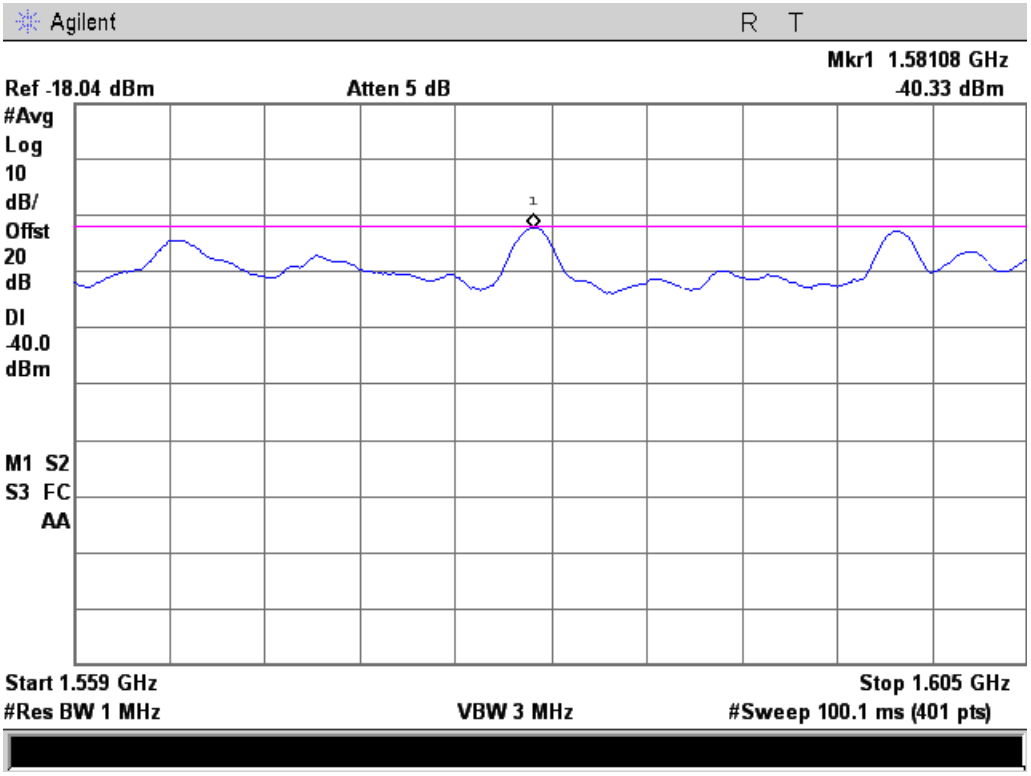


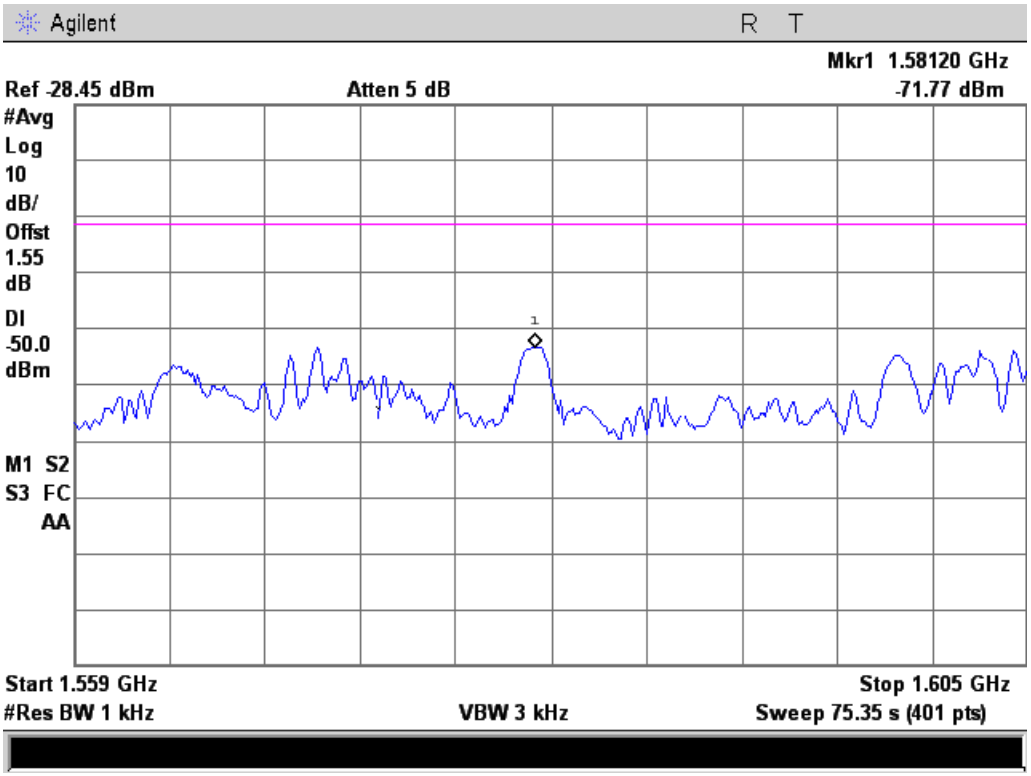
25.216(c) 1613.75 MHz



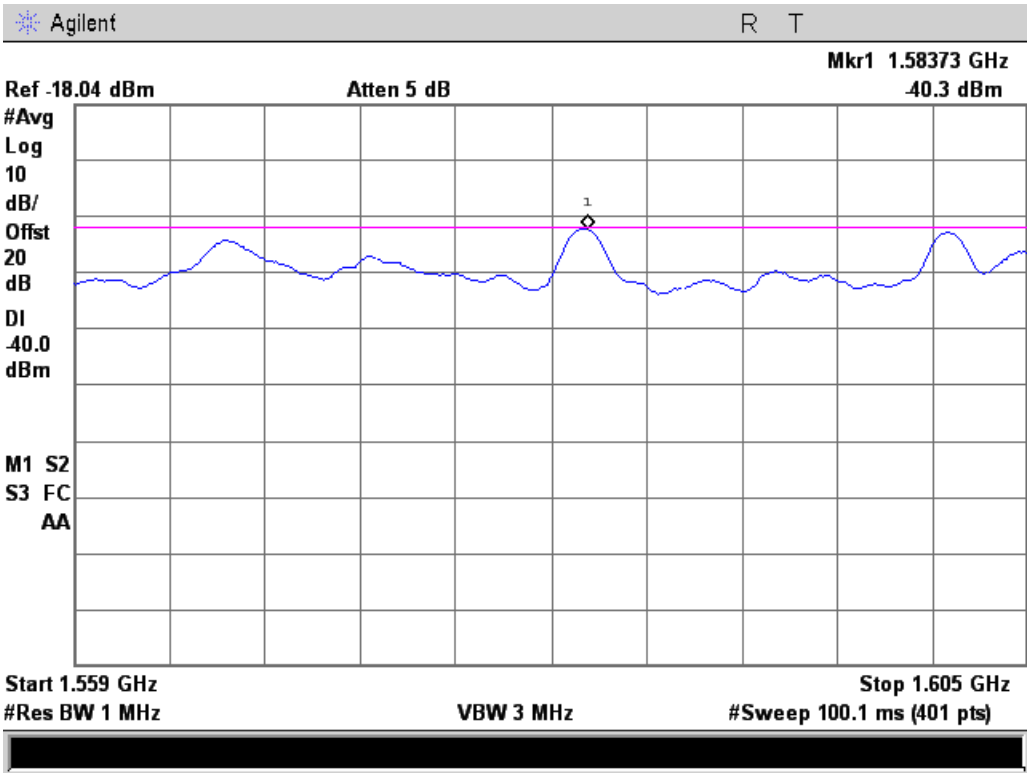


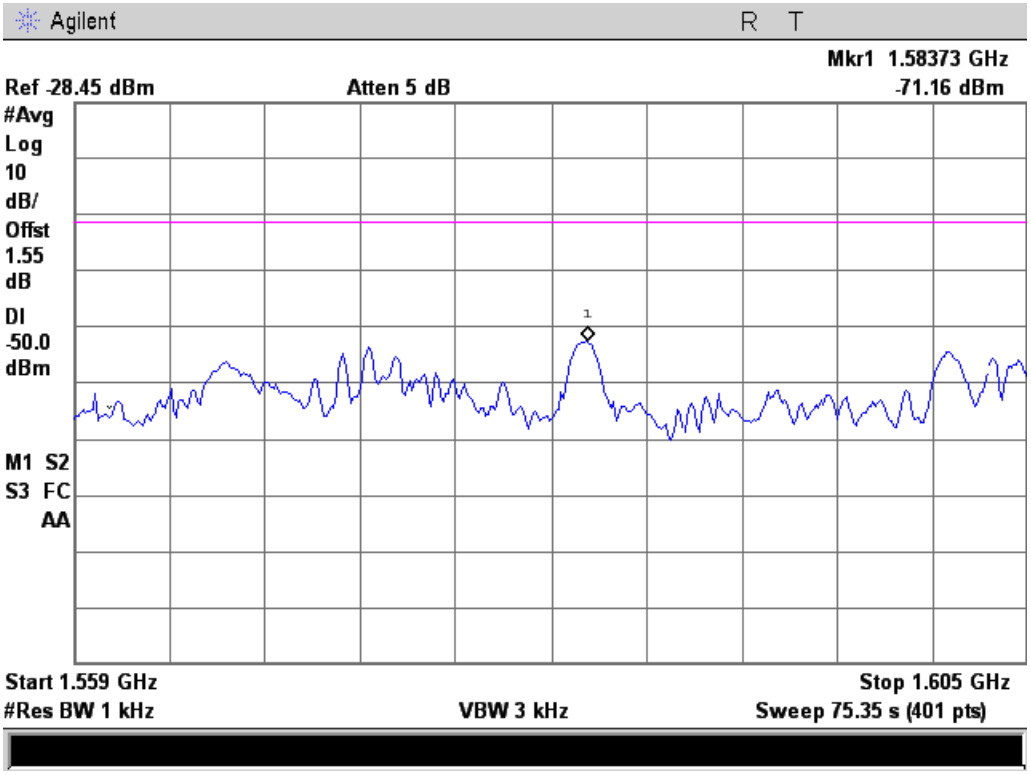
25.216(c) 1616.75 MHz



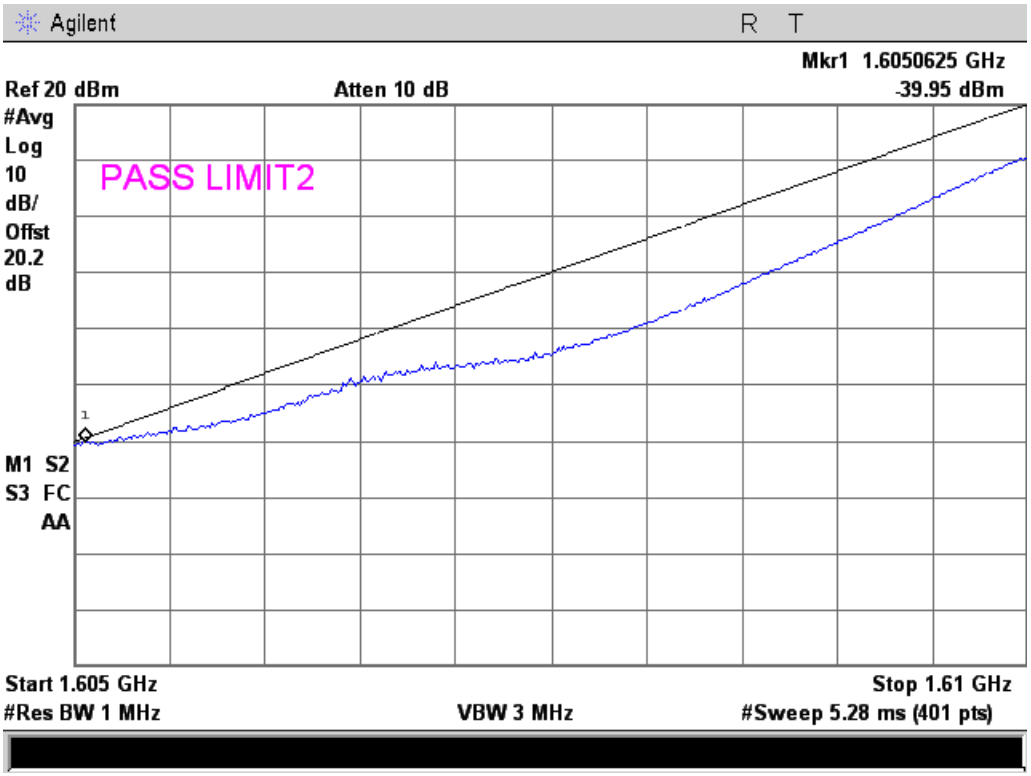


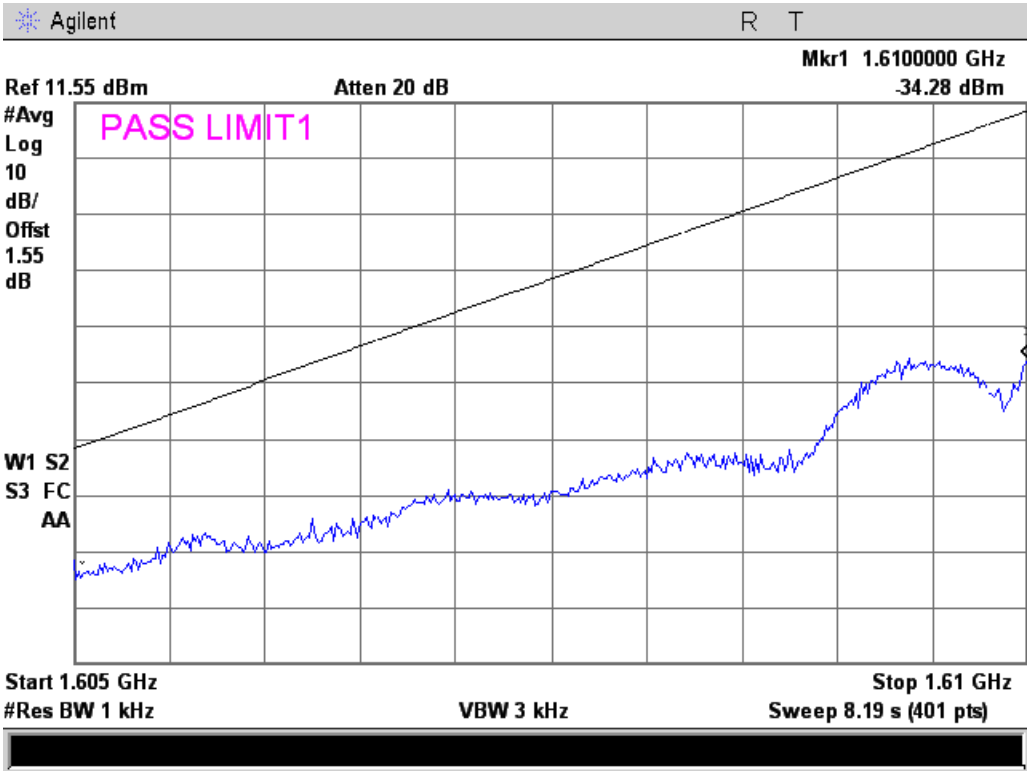
25.216(c) 1618.25 MHz



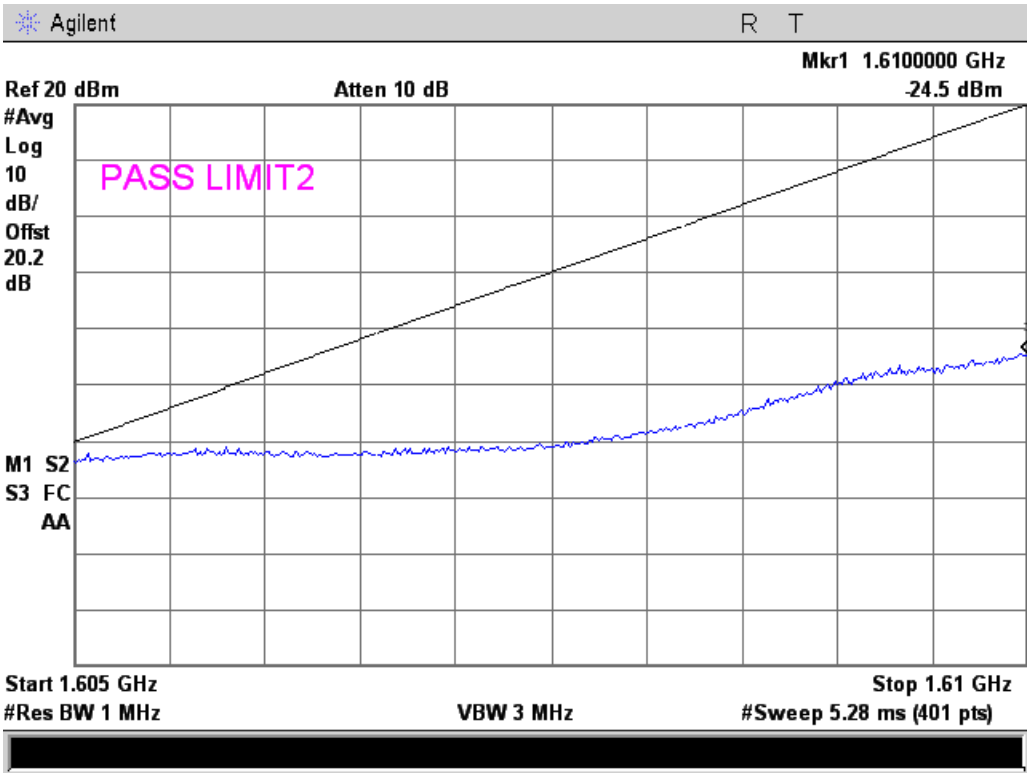


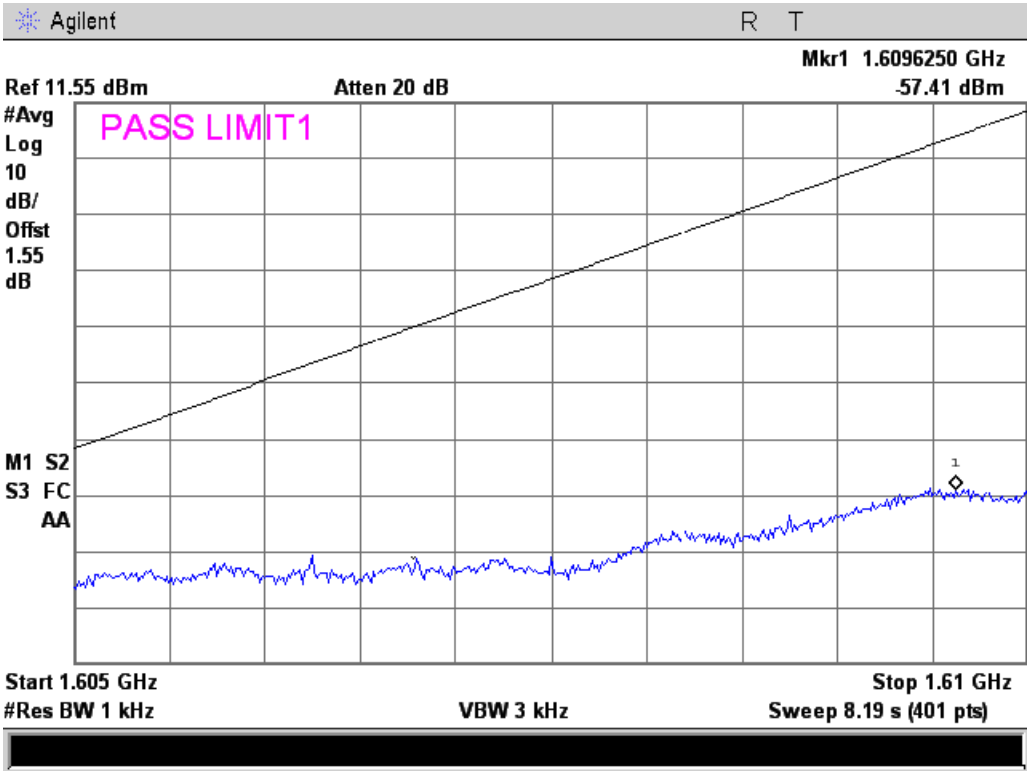
25.216(g) 1611.25 MHz



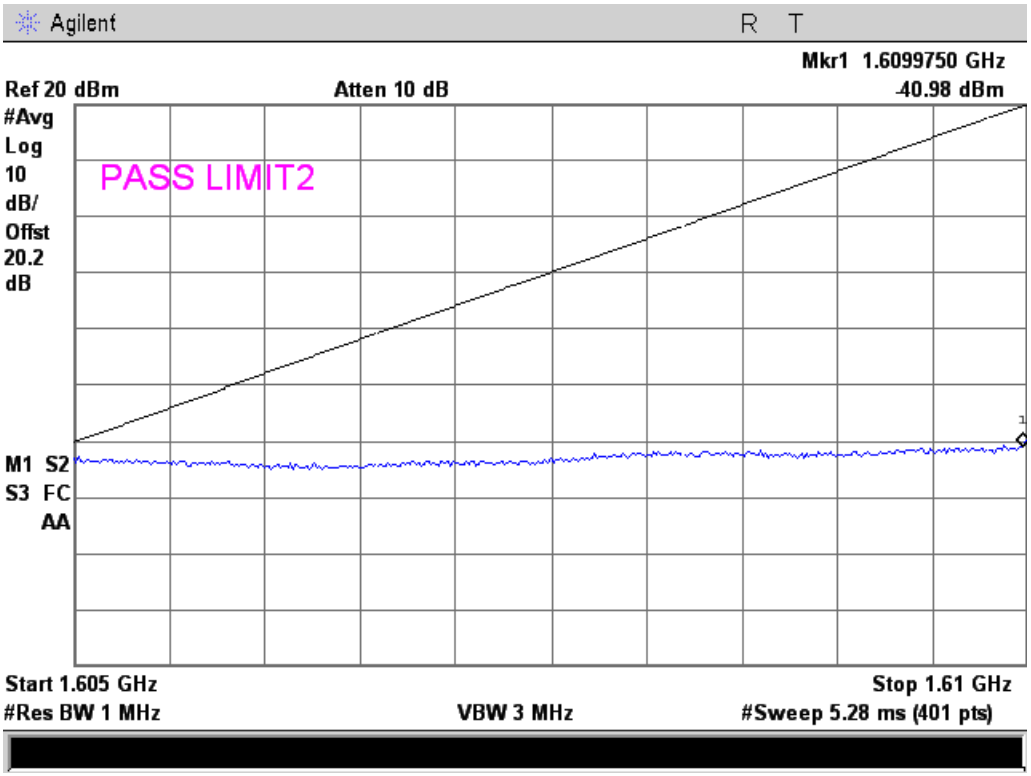


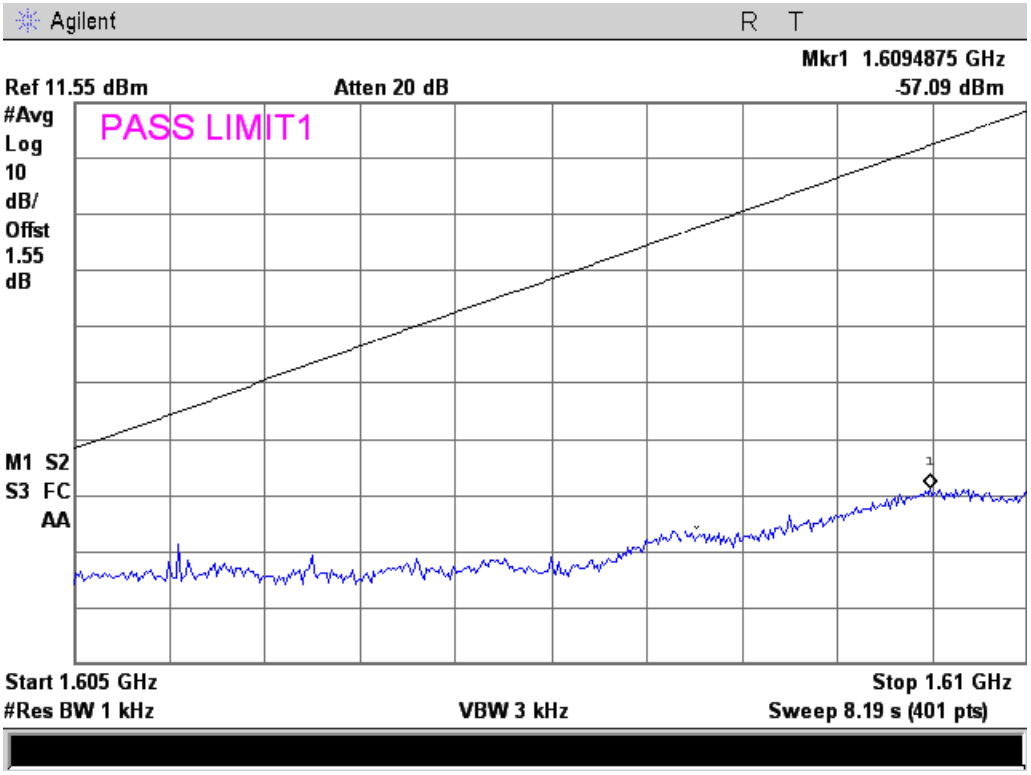
25.216(g) 1613.75 MHz



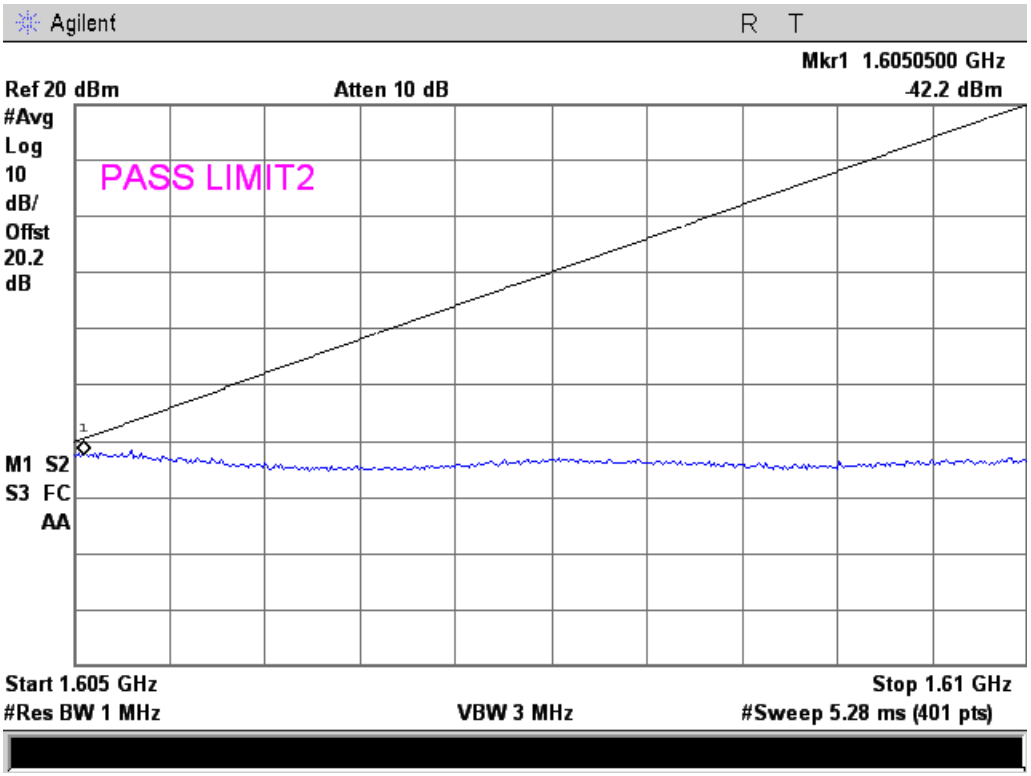


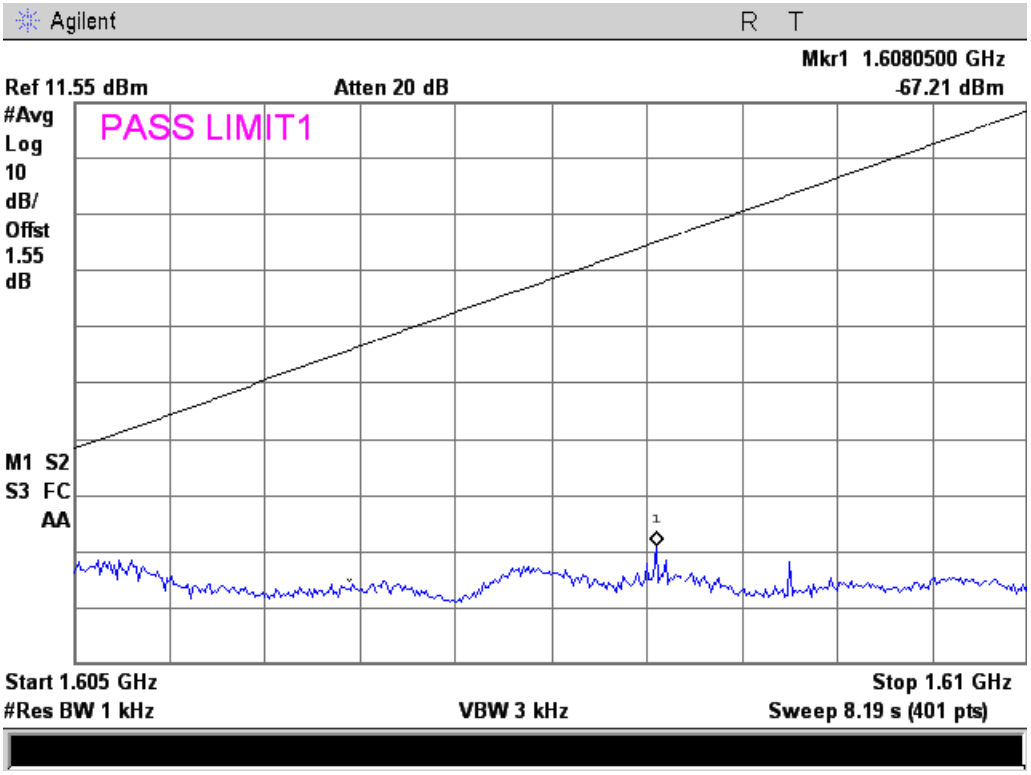
25.216(g) 1616.75 MHz



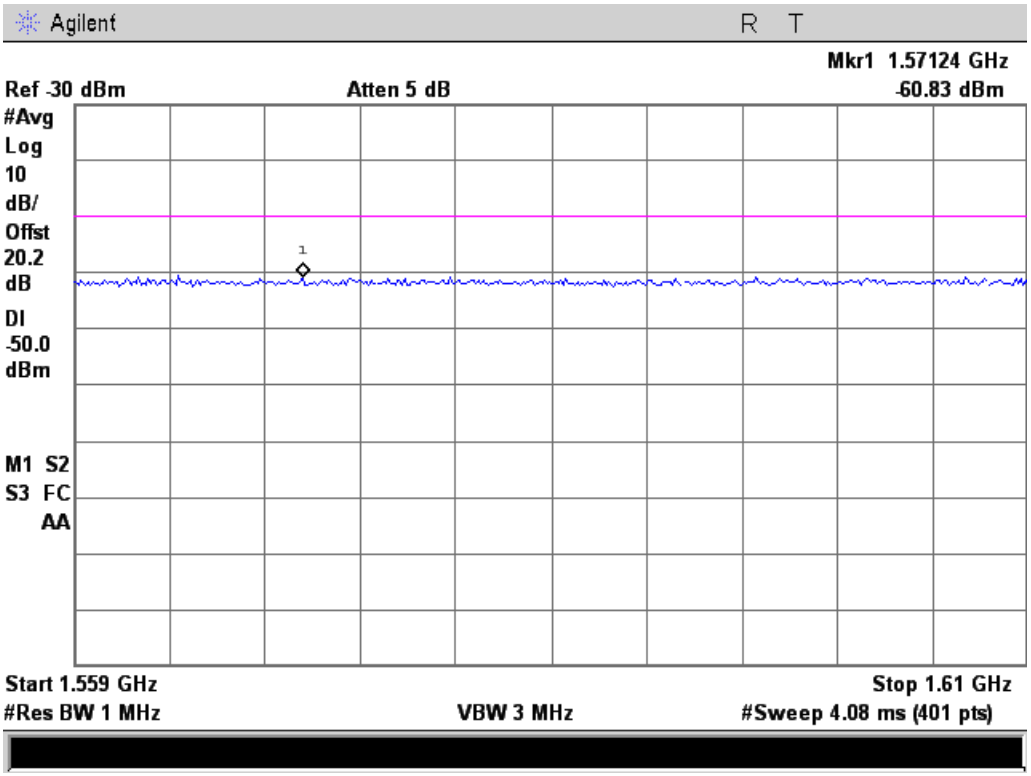


25.216(g) 1618.25 MHz





25.216(i)


Agilent
R T
Mkr1 1.57124 GHz
Ref 30 dBm
Atten 5 dB
-60.83 dBm
#Avg
Log
10
dB/
Offst
20.2
dB
Dl
-50.0
dBm
M1 S2
S3 FC
AA
Start 1.559 GHz
Stop 1.61 GHz
#Res BW 1 MHz
VBW 3 MHz
#Sweep 4.08 ms (401 pts)

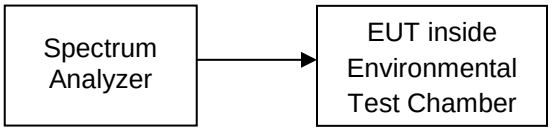
Frequency Tolerance (Temperature Variation)

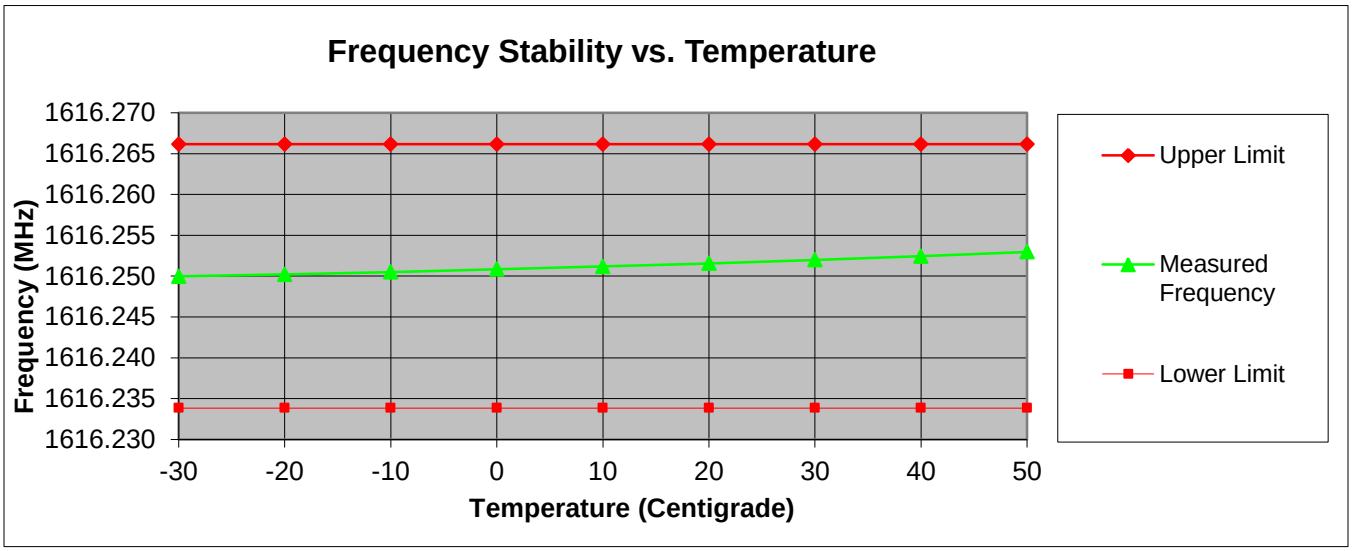
Name of Test:	Frequency Tolerance (Temperature Variation)	**Limit:** 0.001%
Specification:	25.202(d)	**Test Engineer:** Alex Macon
Test Equipment Utilized:	i00008, i00027, i00331	**Test Date:** 03/05/2013

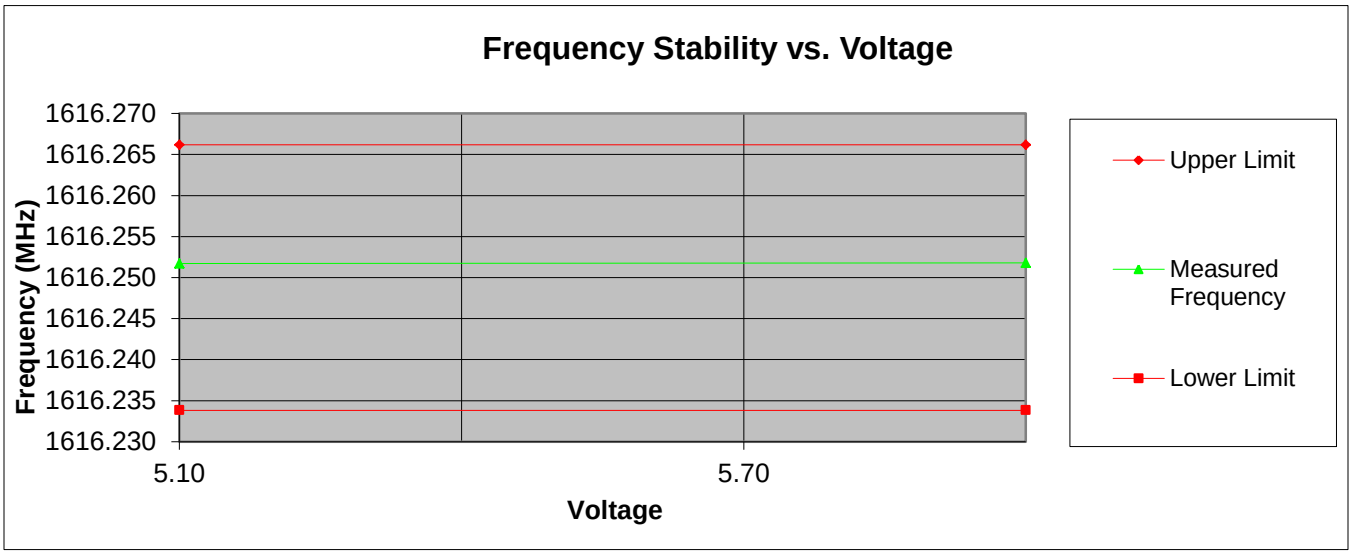
Test Procedure

The EUT was placed inside an environmental test chamber, and connected to a spectrum analyzer. The span and RBW was adjusted for narrowband operation to ensure an accurate measurement of the CW signal.
The temperature was varied from –30 to +50°C in 10°C increments. After a 30-minute soak time the output frequency was measured. At 20°C the voltage was varied +/- 15% from the nominal voltage.

Test Setup







Test Equipment Utilized

Description	MFG	Model Number	CT Asset #	Last Cal Date	Cal Due Date
Power Supply	Kenwood	PR18-3A	i00008	Verified on: 3/4/13	
Temperature Chamber	Tenney	Tenney Jr	i00027	Verified on: 3/5/13	
Spectrum Analyzer	Agilent	E4407B	i00331	4/20/12	4/20/13

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