



Compliance Testing, LLC

Previously Flom Test Lab

EMI, EMC, RF Testing Experts Since 1963

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Test Report

Prepared for: Applied Satellite Technology Limited

Model: AD511 Iridium Active Antenna

Description: AD511 Iridium Active Antenna

To

FCC Rule Part 25

Date of Issue: July 16, 2013

On the behalf of the applicant:

Applied Satellite Technology Limited
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Attention of:

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Project No: p11c0005

John Erhard
Project Test Engineer

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Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	January 3, 2012	John Erhard	Original Document
2.0	June 11, 2012	Karen Springer	Removed “-“ from Model Info Add test data for 1626.5 MHz
3.0	July 16, 2013	Amanda Reed	Updated date



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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 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 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		
Temperature (° C)	Humidity (%)	Pressure (mbar)
19.40	29.80	981.300

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.



Peak Output Power

Name of Test: Peak Output Power
Specification: 25.254
Test Equipment Utilized: i00103, i00331, i00348

Engineer: John Erhard
Test Date: 12/23/2011

Test Procedure

A signal generator provided a simulated satellite signal (BPSK, +13.5 dBm) which was injected in to the EUT for radiated testing. The radiated power was measured in dBm and compared to the limit of 1 dBW which was converted to dBm for comparison to the measured value. All antenna correction factors and cable losses were input into the spectrum analyzer for accurate measurements.

Test Setup



Peak Output Power

Tuned Frequency (MHz)	Recorded Measurement	Specification Limit	Result
1616.0	22.47 dBm	31 dBm	Pass
1621.0	21.79 dBm	31 dBm	Pass
1626.5	21.74 dBm	31 dBm	Pass



Emissions Limitations

Name of Test: Emissions Limitations
Specification: 25.254
Test Equipment Utilized: i00103, i00331, i00348

Engineer: John Erhard
Test Date: 12/23/2012

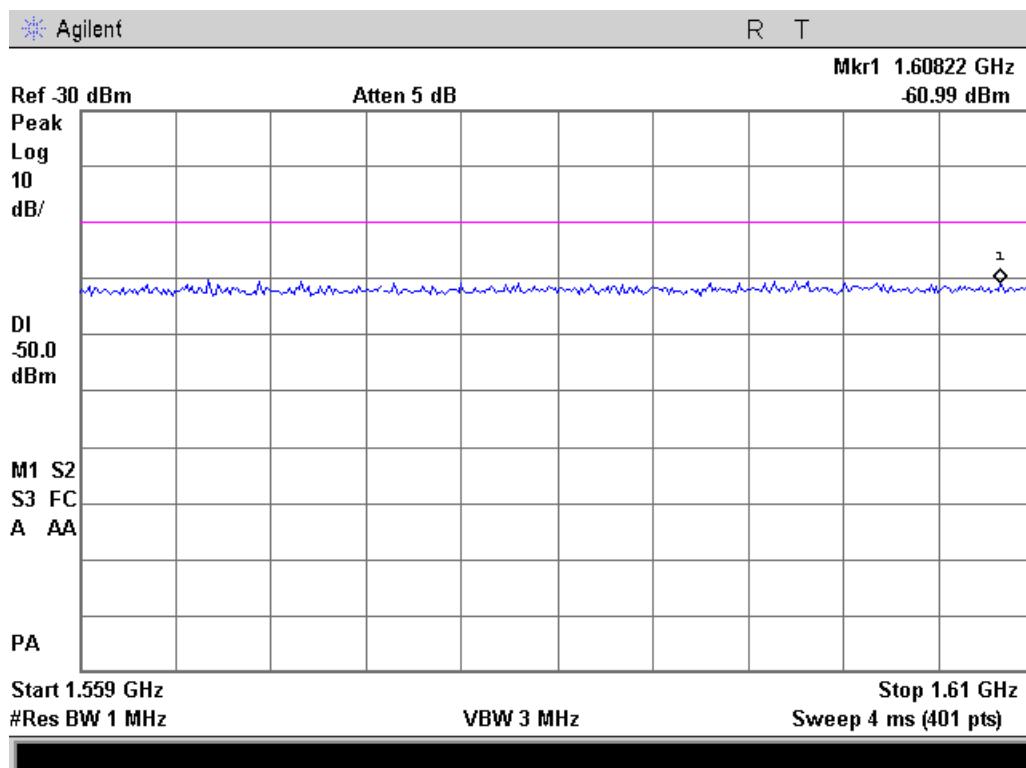
Test Procedure

A signal generator provided a simulated satellite signal (BPSK, +13.5 dBm) which was injected in to the EUT for radiated spurious emissions testing. All limits were converted to dBm and input into the spectrum analyzer as limit lines. All antenna correction factors and cable losses were input into the spectrum analyzer for accurate measurements.

Test Setup



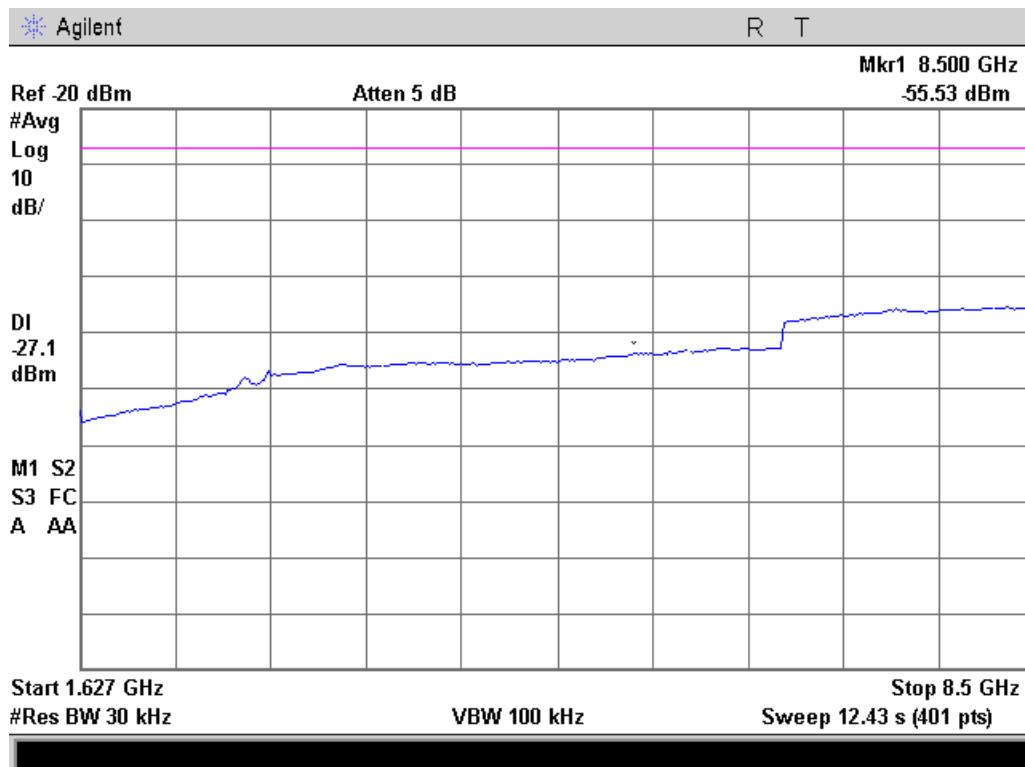
Emissions Limitations Plot (Carrier-Off State)



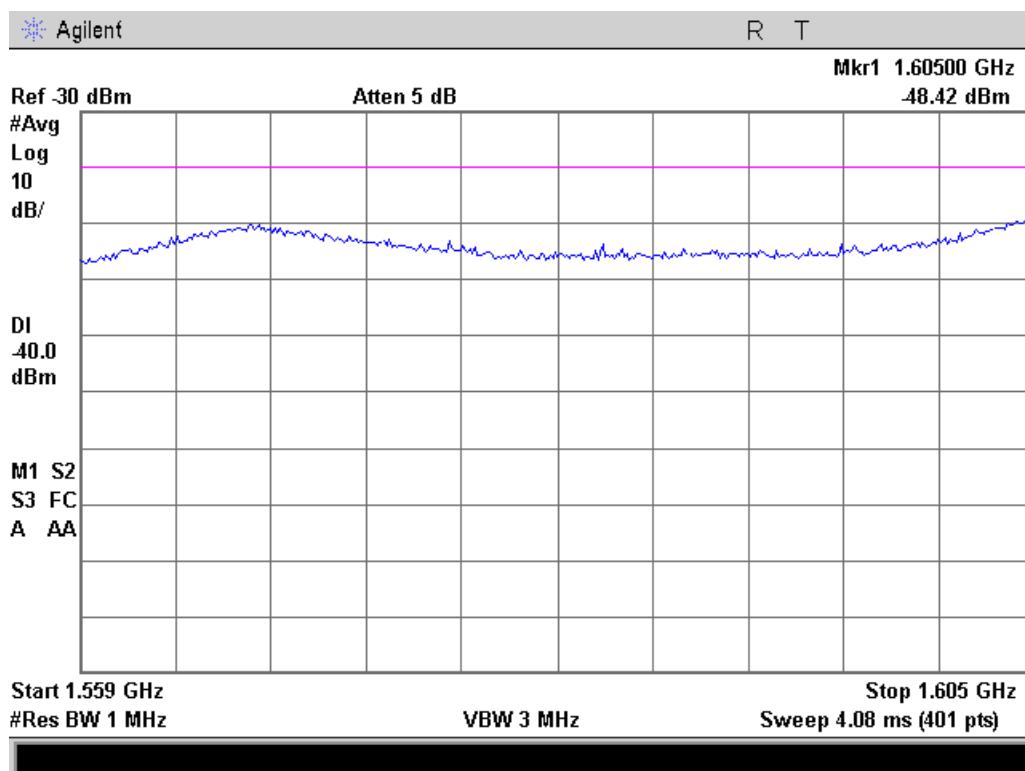


Tuned Frequency 1616 MHz

-57.1 dBW/30 kHz 1626-8500 MHz

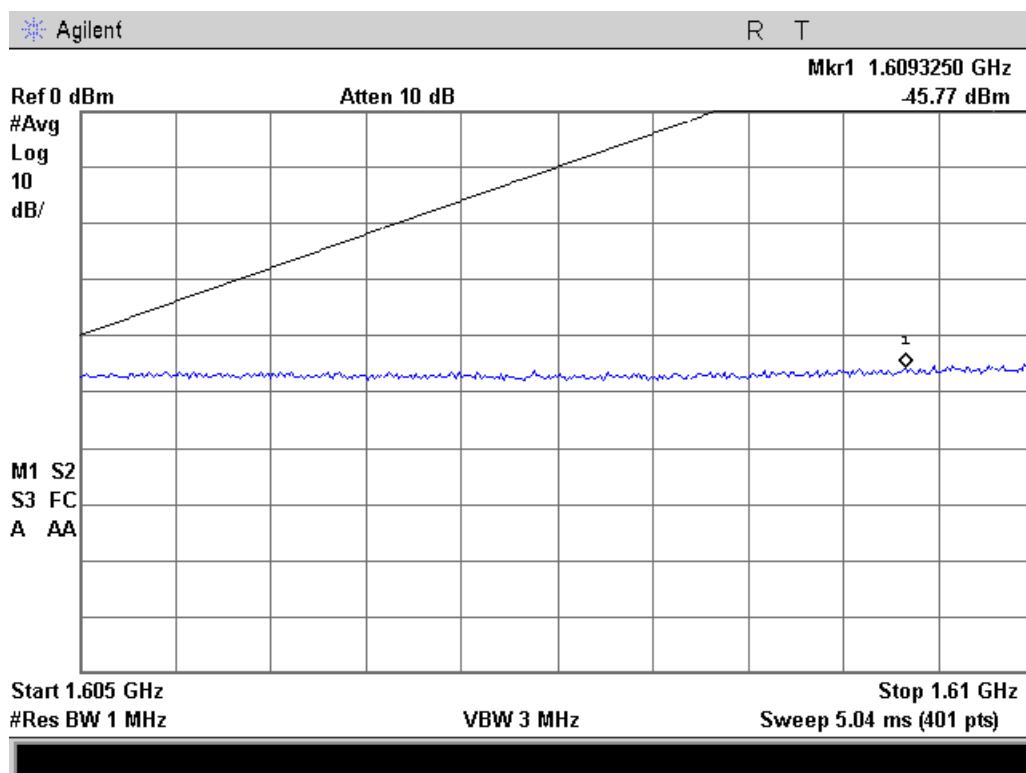


-70 dBW/1 MHz 1559-1605 MHz

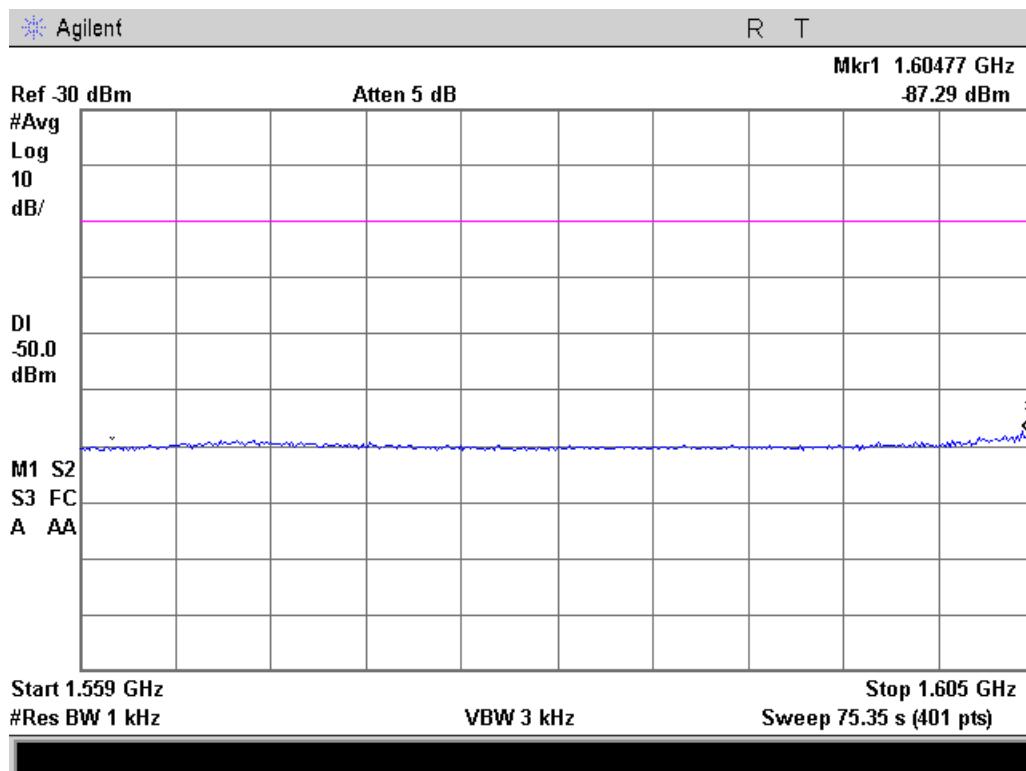




-70 dBW/MHz 1605 MHz -10 dBW/MHz 1610 MHz

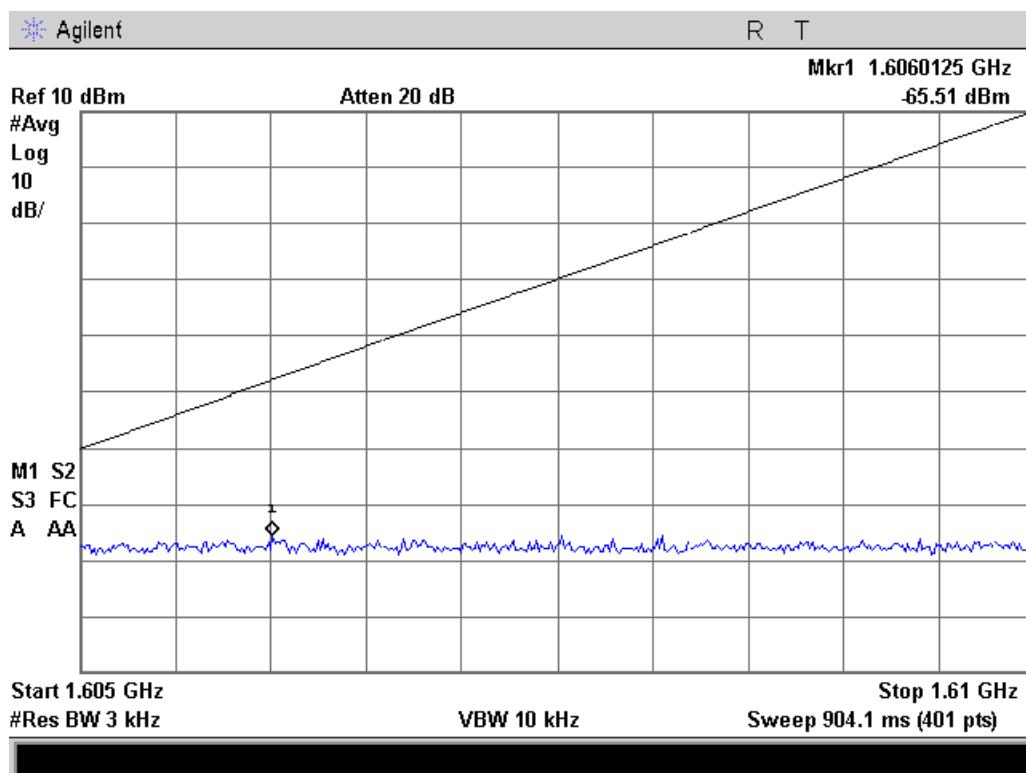


-80 dBW/kHz 1559-1605 MHz



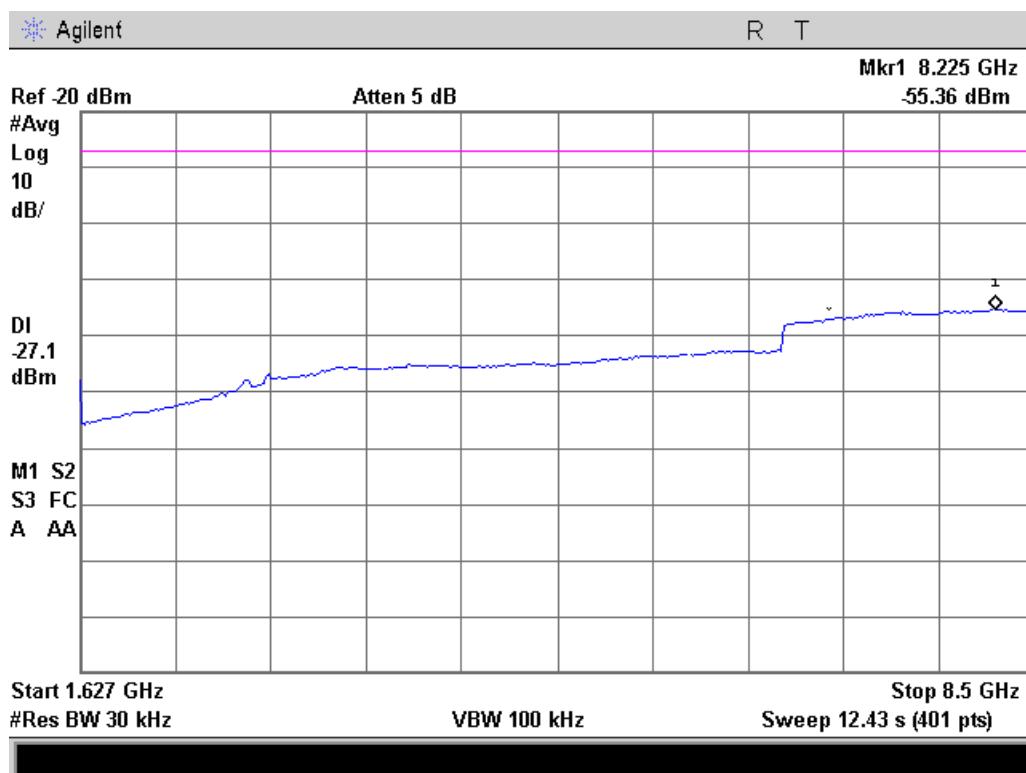


-80 dBW/kHz 1605 MHz -20 dBW/kHz at 1610 MHz



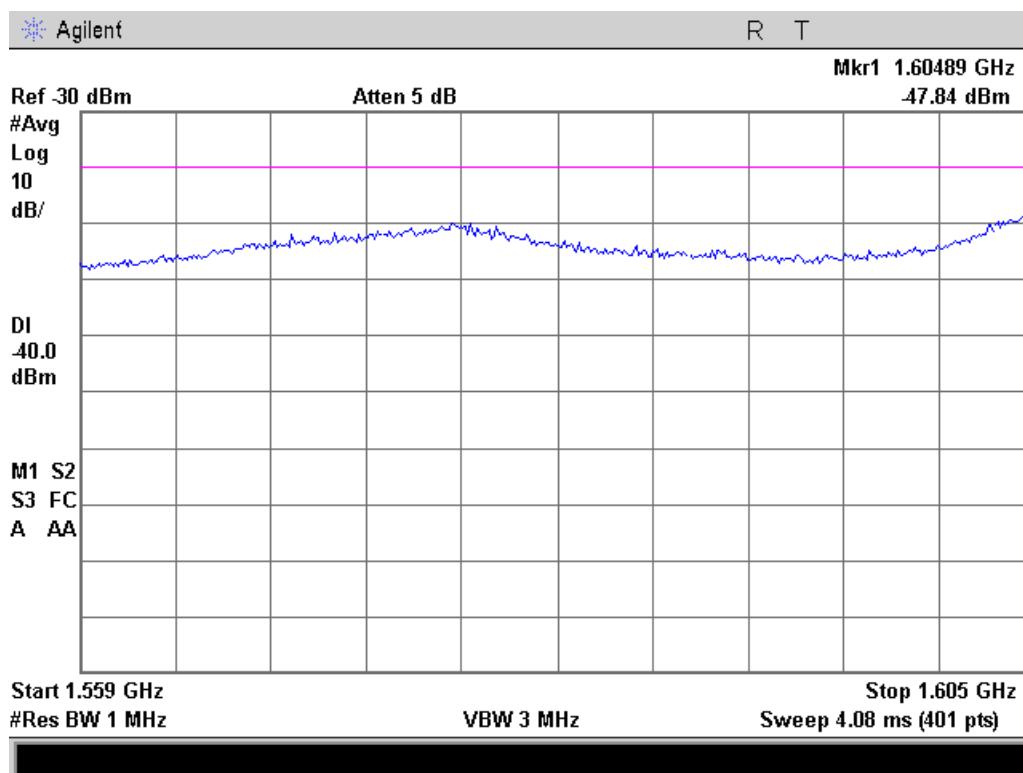
Tuned Frequency 1621 MHz

-57.1 dBW/30 kHz 1626-8500 MHz

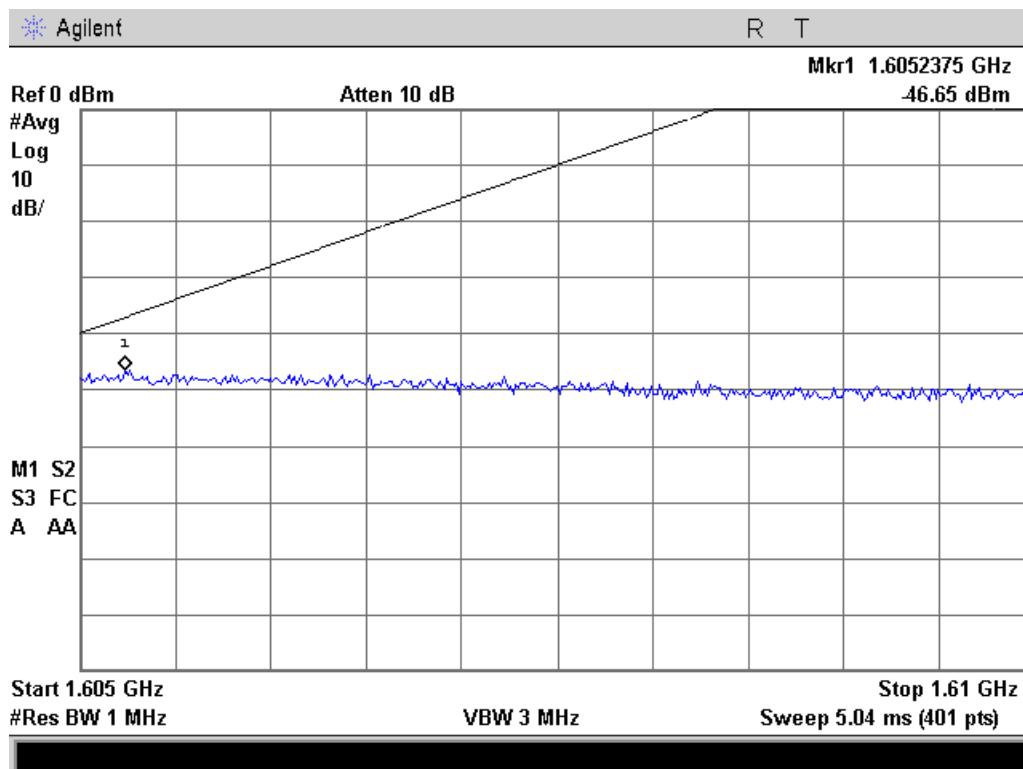




-70 dBW/MHz 1559-1605 MHz

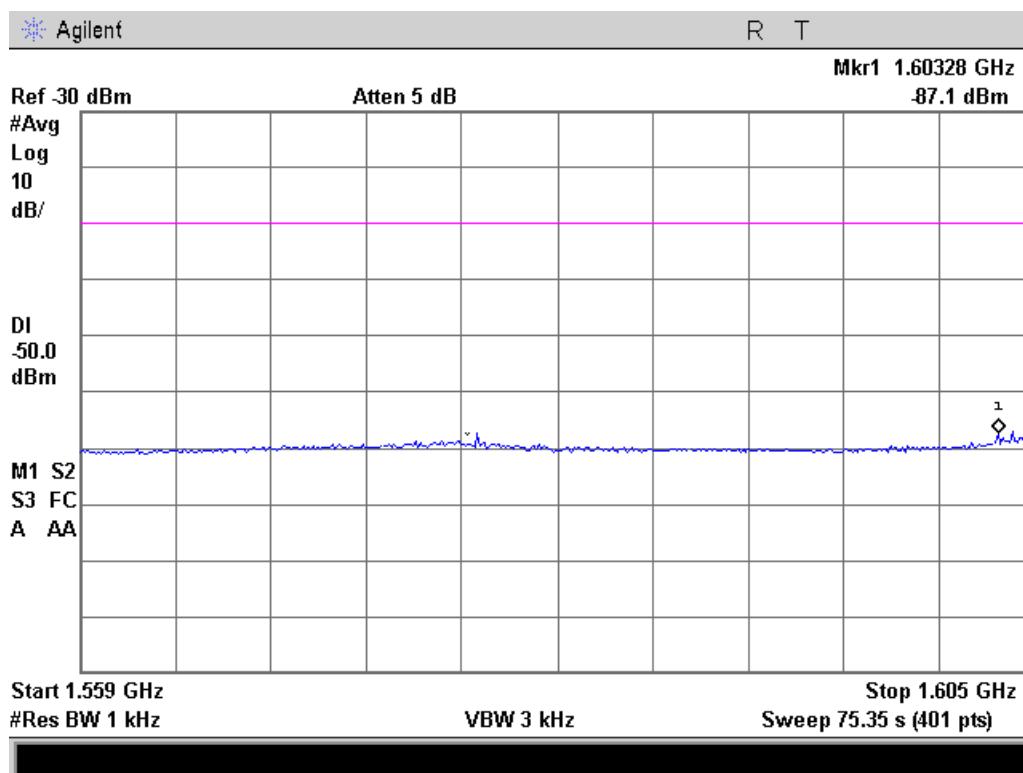


-70 dBW/MHz 1605 MHz -10 dBW/MHz 1610 MHz

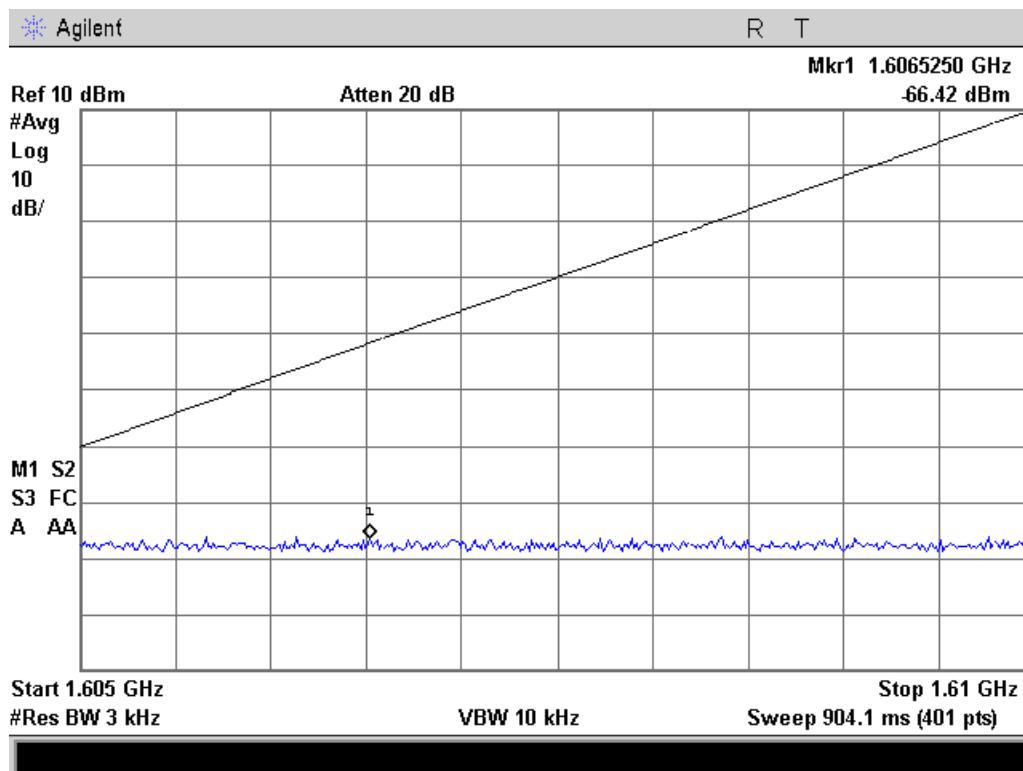




-80 dBW/kHz 1559-1605 MHz



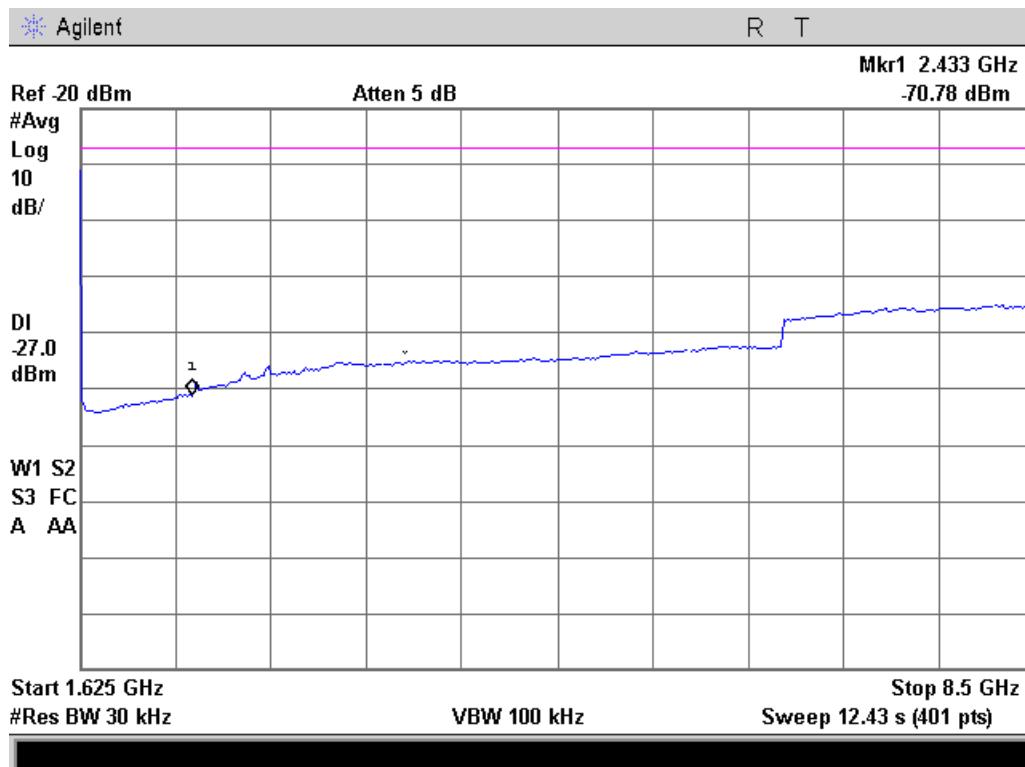
-80 dBW/kHz 1605 MHz -20 dBW/kHz 1610 MHz



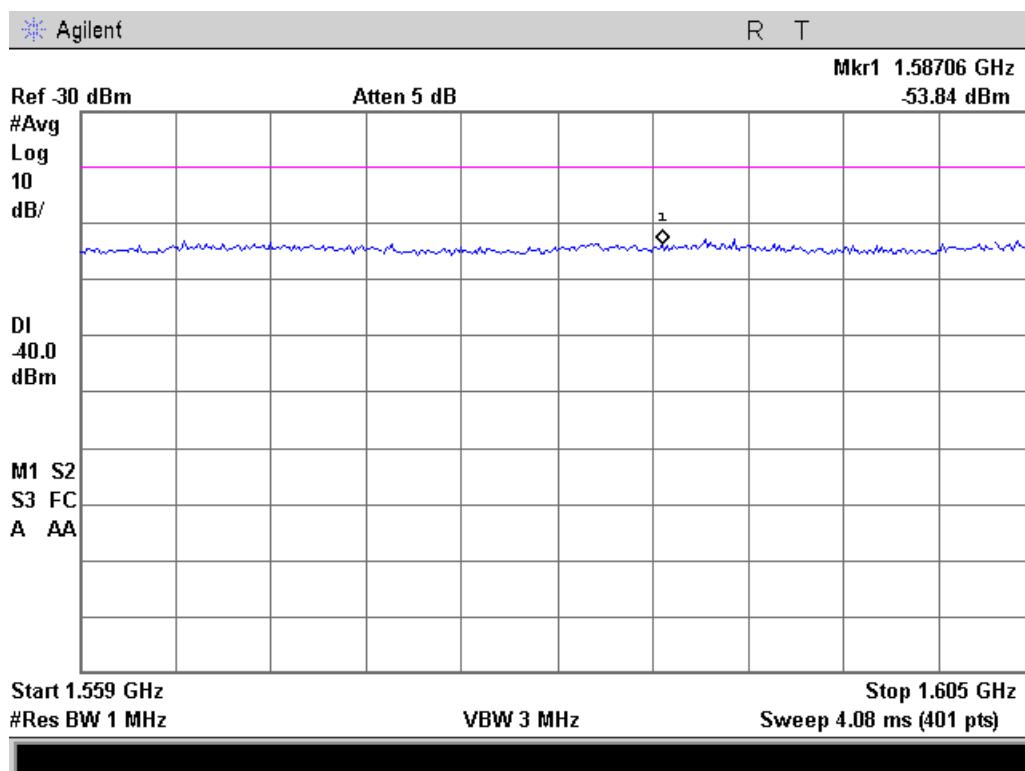


Tuned Frequency 1626.5 MHz

-57.1 dBW/30 kHz 1626-8500 MHz

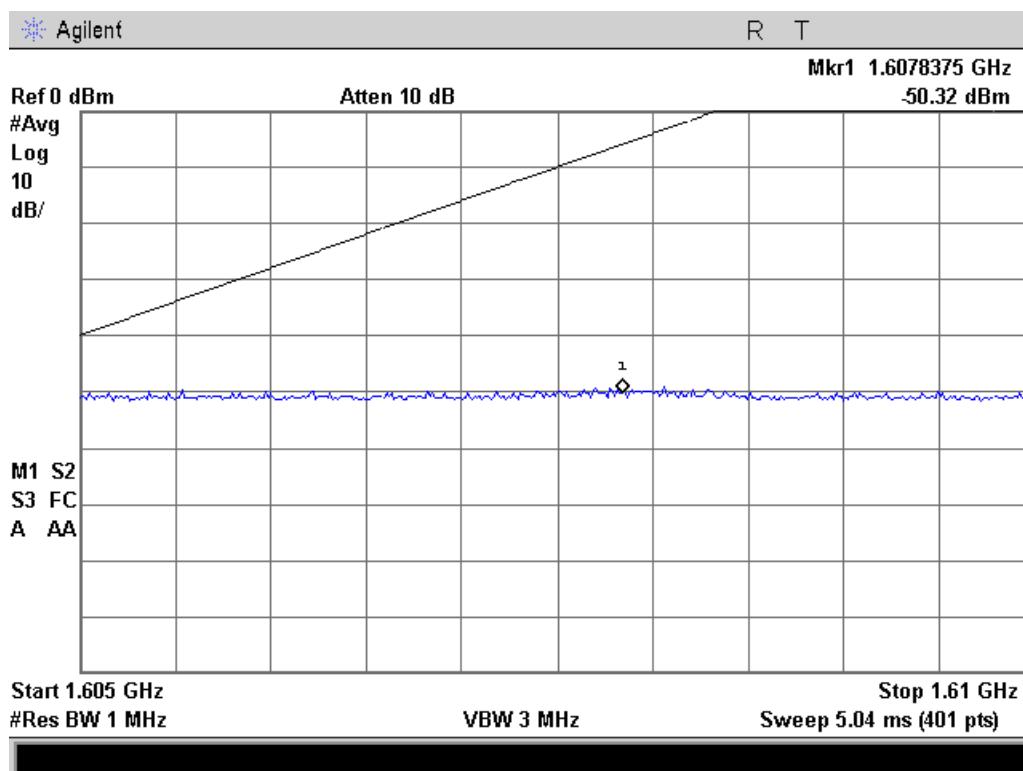


-70 dBW/1 MHz 1559-1605 MHz

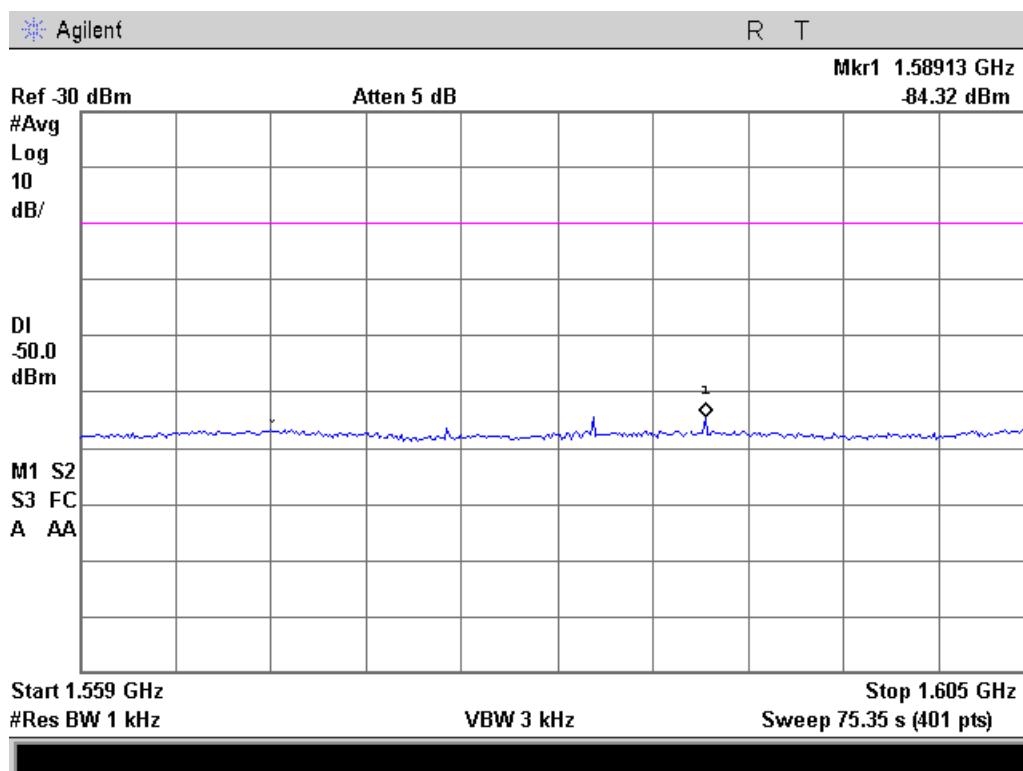




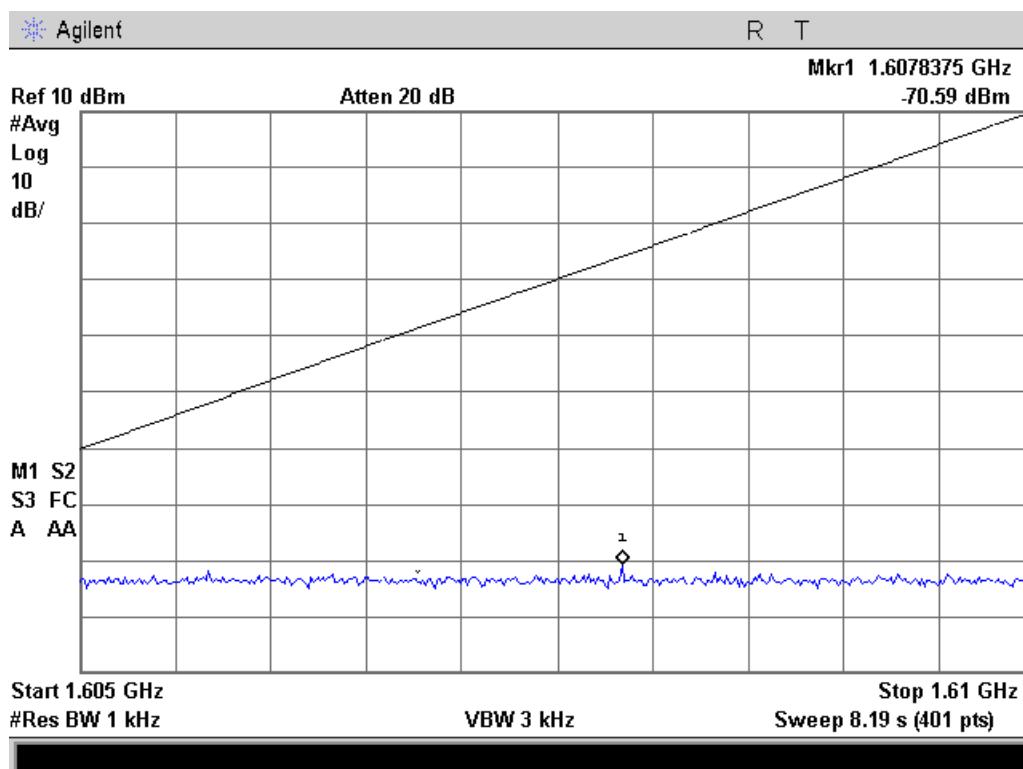
-70 dBW/MHz 1605 MHz -10 dBW/MHz 1610 MHz



-80 dBW/kHz 1559-1605 MHz



-80 dBW/kHz 1605 MHz -20 dBW/kHz at 1610 MHz





Occupied Bandwidth and Emissions Mask

Name of Test: Occupied Bandwidth and Emissions Mask

Specification: 25.254

Test Equipment: i00103, i00331, i00348

Engineer: John Erhard

Test Date: 12/23/2012

There is no FCC Part 25 Occupied Bandwidth requirement.

However the emissions masks are based upon the occupied bandwidth. This information is reported for reference only.

Test Procedure

A signal generator provided a simulated satellite signal (BPSK, +13.5 dBm) which was injected in to the EUT for radiated occupied bandwidth and emissions mask testing. All antenna correction factors and cable losses were input into the spectrum analyzer for accurate measurements.

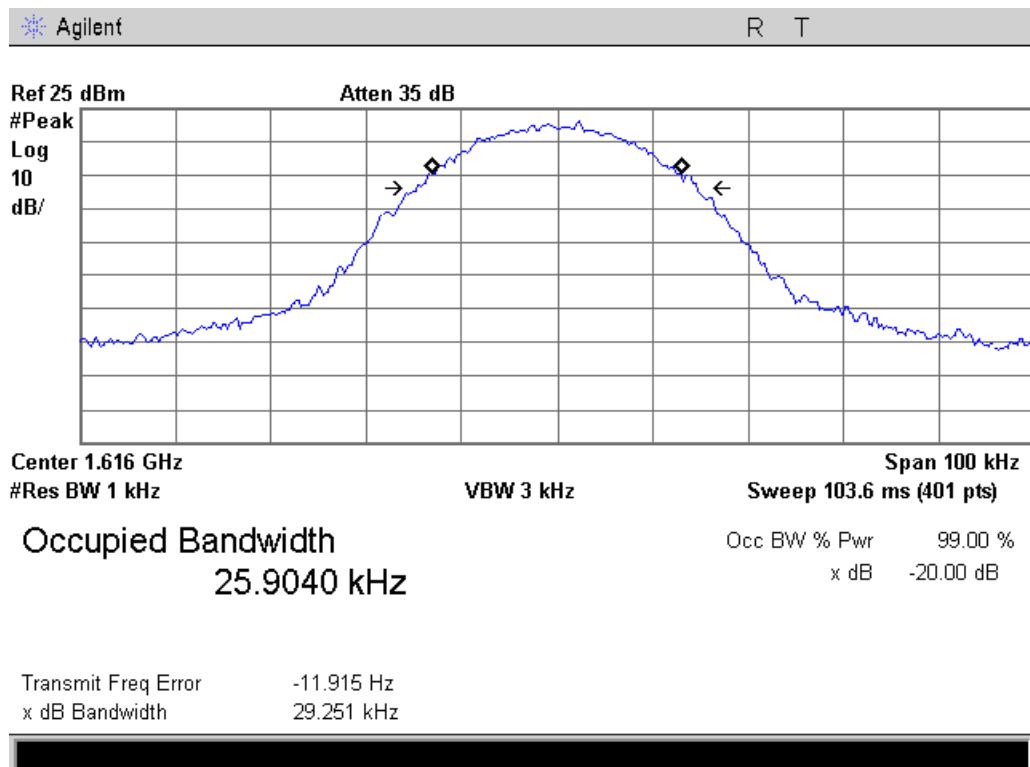
Test Setup



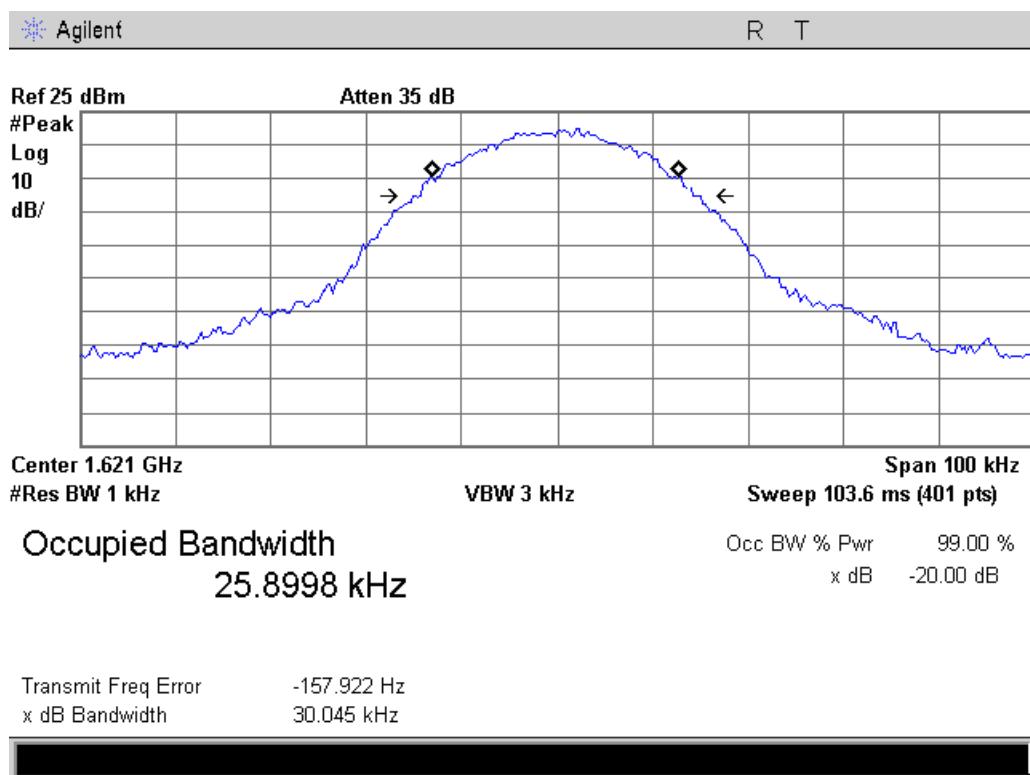


Occupied Bandwidth Plots

1616 MHz

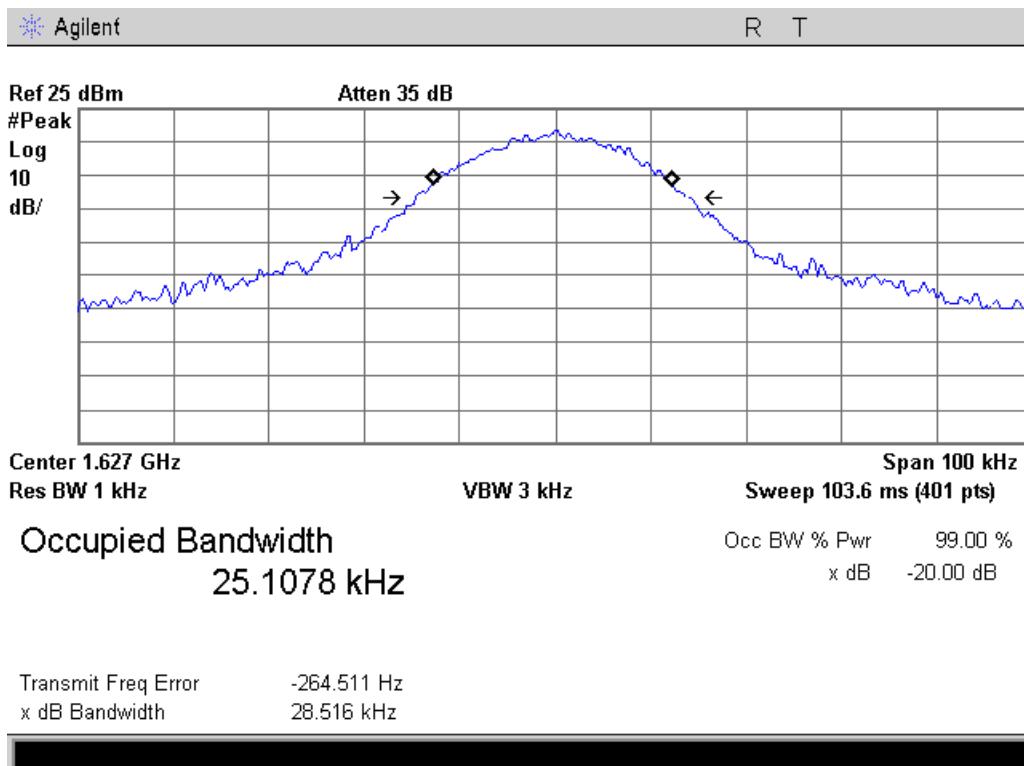


1621 MHz



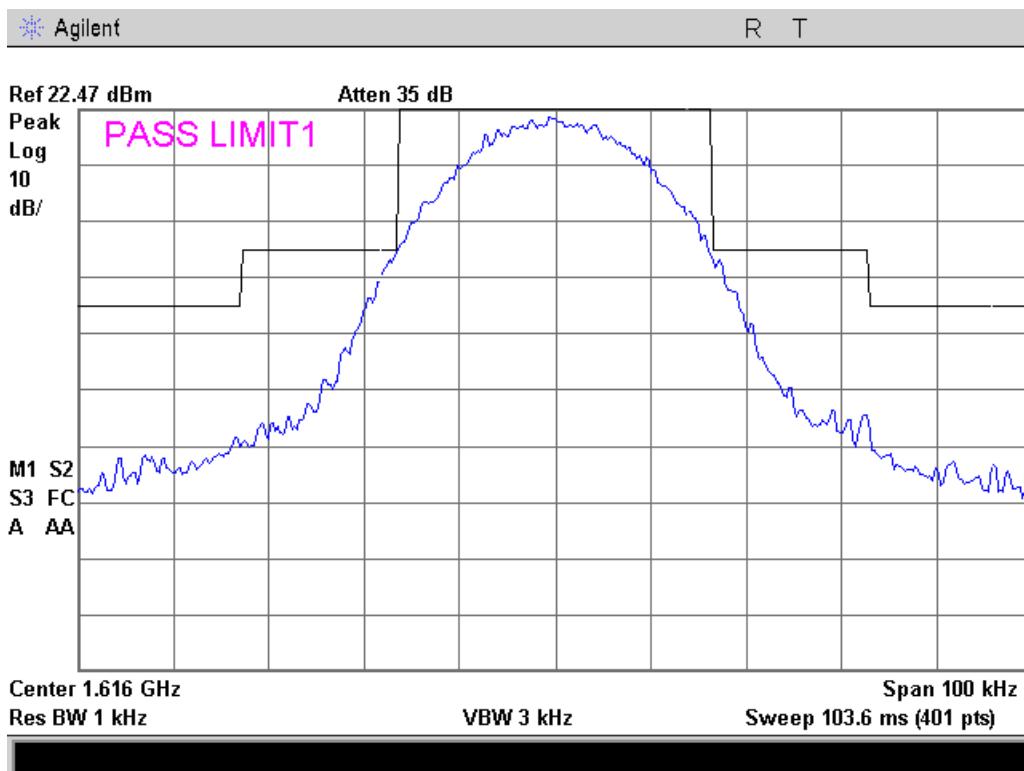


1626.5 MHz



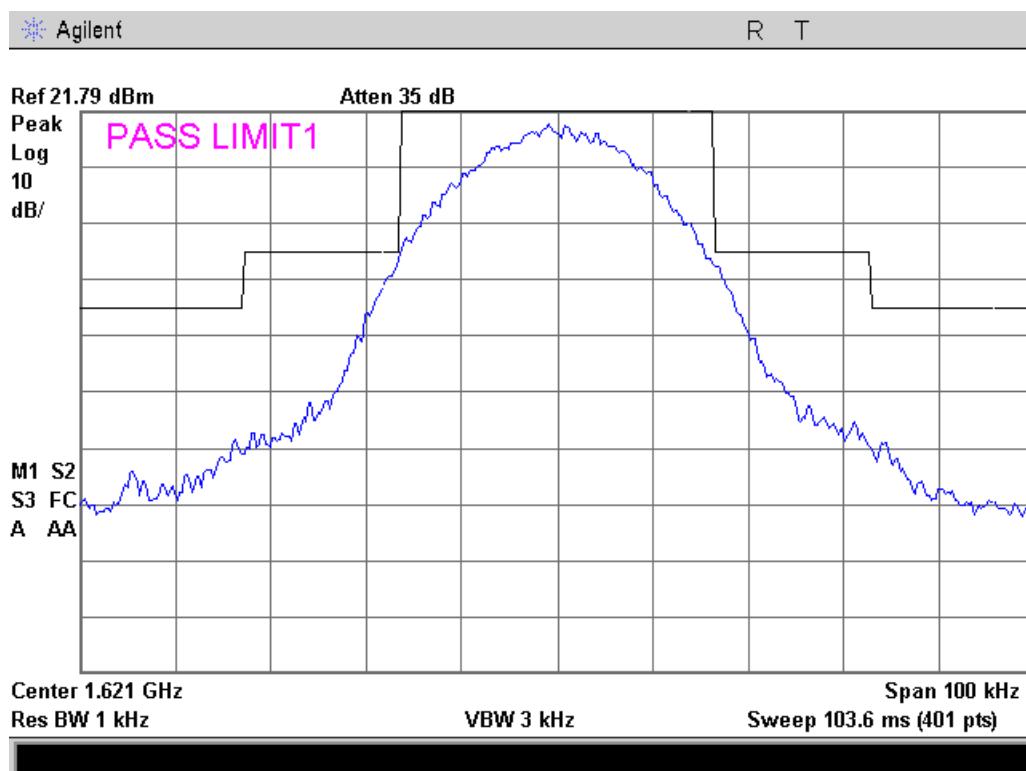
Emission Mask Plots

1616 MHz

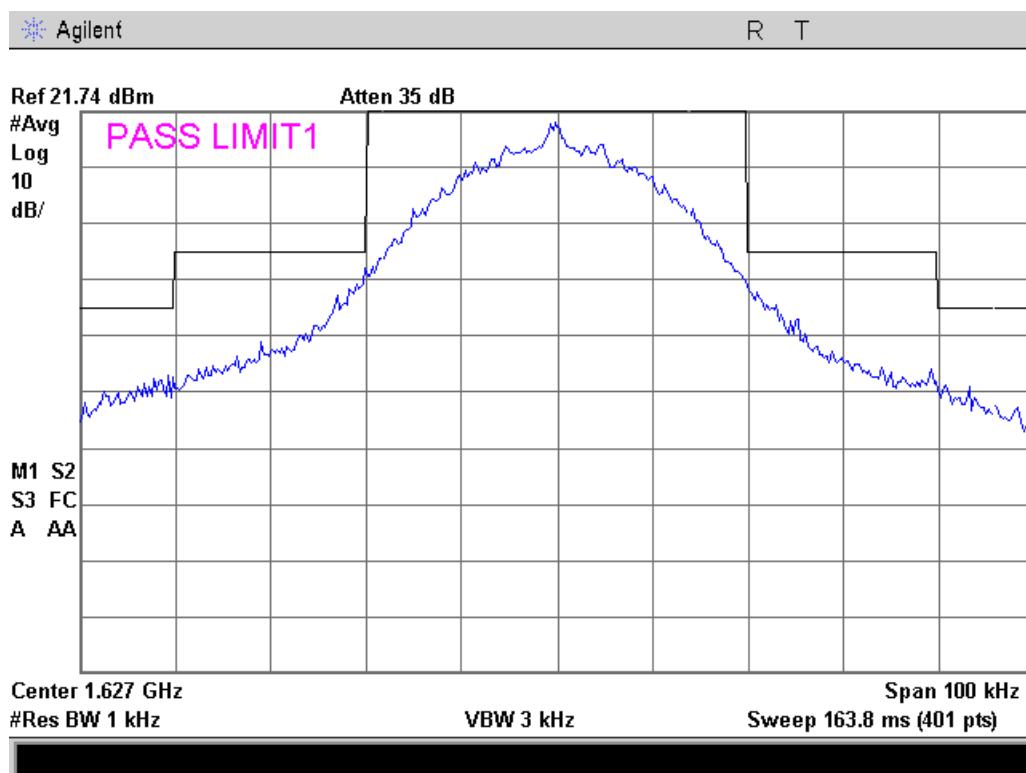




1621 MHz



1626.5 MHz





Frequency Tolerance

Name of Test: Frequency Tolerance
Specification: 25.254
Limit: 0.001%
Test Equipment Utilized: i00287, i00343, i00348

Test Engineer: John Erhard
Test Date: 12/20/2012

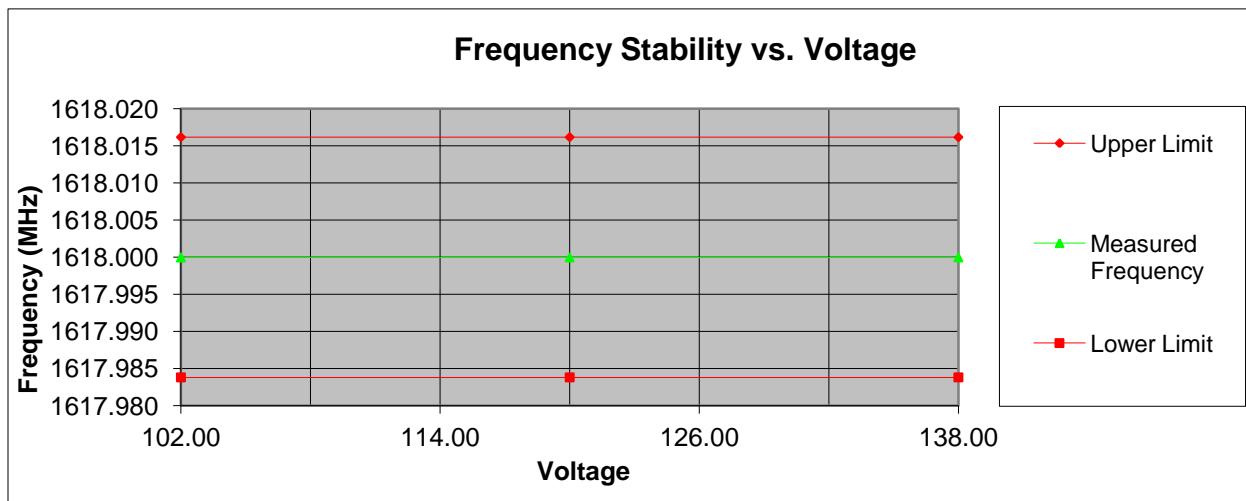
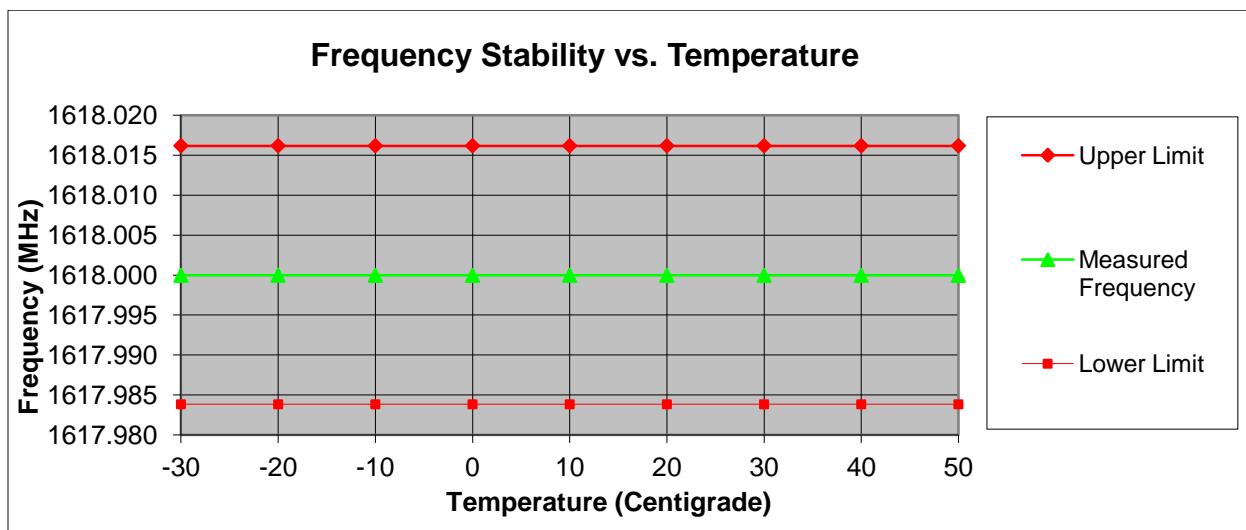
Test Procedure

A signal generator provided a CW signal which was injected in to the EUT for radiated frequency stability testing. The EUT was placed in an environmental test chamber and the temperature was raised from -30°C to 50°C in 10°C increments. At each 10°C increment the frequency was measured.

Test Setup



Test Results





Test Equipment Utilized

Description	Manufacturer	Model Number	CT Asset #	Last Cal Date	Cal Due Date
Temperature Chamber	Tenney	Tenney II Benchmaster	i00287	Verified on: 12/20/2012	
Horn Antenna	EMCO	3115	i00103	11/5/10	11/5/12
Voltmeter	Fluke	87III	i00319	6/20/11	6/20/12
Spectrum Analyzer	Agilent	E4407B	i00331	5/24/11	5/24/12
Data Logger	Fluke	Hydra Data Bucket	i00343	12/15/11	12/15/12
Vector Signal Generator	Agilent	E4438C	i00348	9/27/11	9/27/12

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