Compliance Testing, LLC
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Test Report

for

FCC ID: L2V-HUGFOB

Model: HUGFOB

to

Federal Communications Commission

Rule Part(s) 15.247

Date of Report: November 23, 2010

On the Behalf of the Applicant:	Spot, LLC 300 Holiday Square Blvd Covington, LA 70433
Attention of:	Christopher Robinson, Design Engineer Ph: (985) 335-1530 Fax: (985) 335-1730 Email: chris.robinson@globalstar.com

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

Test Report Revision History

Revision	Date	Revised By	Reason for revision
1.0	November 23, 2010	J. Erhard	Original Document
2.0	December 9, 2010	J. Erhard	Add Conducted Spurious RX Emissions data

The applicant has been cautioned as to the following:

15.21 Information to User

The user's 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

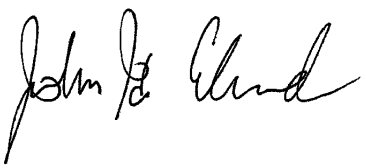
Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply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



Certifying Engineer: John Erhard: Engineering Manager

Table of Contents

List of General Information Required For Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to 15.247

Sub-Part 2.1033

(b)(1):

Name and Address of Applicant: Spot, LLC

(b)(2):

FCC ID: L2V-HUGFOB

Model Number: HUGFOB

(b)(3):

Instruction Manual(s): Please See Exhibits

(b)(4):

Theory of Operation: Please See Exhibits

(b)(5):

Block Diagram: Please See Exhibits

(b)(6):

T**est Report**: Contained Herein

(b)(7):

Test Setup Photos: Please See Exhibits

Type of Emission: DTS

Frequency Range, MHz: 2402 – 2410

Power Rating, W: 0.0013

____ Switchable ____ Variable __X__ N/A

Maximum Power Rating, W: 1W

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

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: 15.247, Operation within bands 902-928, 2400-2483.5, 5725-5850 MHz

Standard Test Conditions and Engineering Practices

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

In accordance with ANSI C63.10-2009 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.

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

A2LA

"A2LA has accredited Compliance Testing, LLC, 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 O.A.T.S. Number: 2044A-1

Test Results Summary

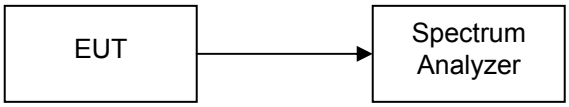
Specification	Test Name	Pass, Fail, N/A	Comments
15.247(b)	Peak Output Power	Pass	
15.247(d)	Conducted Spurious Emissions	Pass	
15.247(d), 15.209(a), 15.205	Radiated Spurious Emissions	Pass	
15.247(d), 15.209(a), 15.205	Emissions At Band Edges	Pass	
15.247(a)(2)	Occupied Bandwidth	Pass	
15.247(e)	Transmitter Power Spectral Density	Pass	
15.207	A/C Powerline Conducted Emissions	N/A	The EUT does not connect to the AC mains
RSS-GEN6(b)	Receiver Spurious Emissions	Pass	

Name of Test: Peak Output Power
Specification: 15.247(b) **Engineer: J. Erhard**
Test Equipment Utilized: i00331 **Test Date: 11/15/2010**

Test Procedure

The EUT was connected spectrum analyzer. The RBW was set to a value greater than the emission bandwidth with the VBW wider than the RBW. This ensures that there is no signal compression and that the power reading was accurate. The peak readings were taken and the result was then compared to the limit.

Test Setup



Transmitter Peak Output Power

Tuned Frequency MHz	Recorded Value dBm	Recorded Value Watts	Specification Limit	Result
2402	1	0.0012	1 W	Pass
2410	1.17	0.0013	1 W	Pass

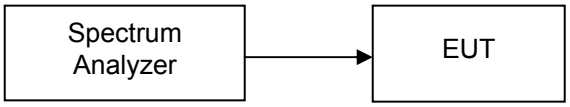
Name of Test: Conducted Spurious Emissions
Specification: 15.247(d) **Engineer: J. Erhard**
Test Equipment Utilized: i00331 **Test Date: 11/18/2010**

Test Procedure

The EUT was connected directly to a spectrum analyzer to verify that the EUT met the requirements for spurious emissions. The frequency range from 30 MHz to the 10th harmonic of the fundamental transmitter was observed. A high pass filter was utilized to eliminate the fundamental ensuring the spectrum analyzer was not in compression ensuring accurate measurements.

Only the worst case is recorded in the Conducted Spurious Emissions Summary Test Table.

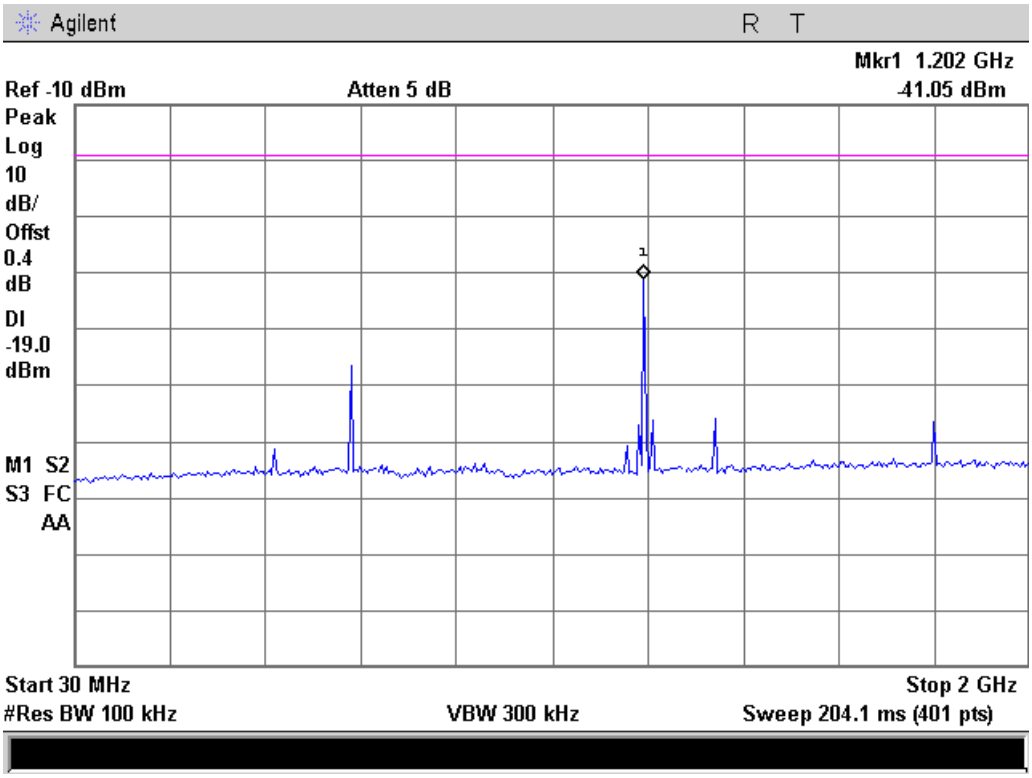
Test Setup

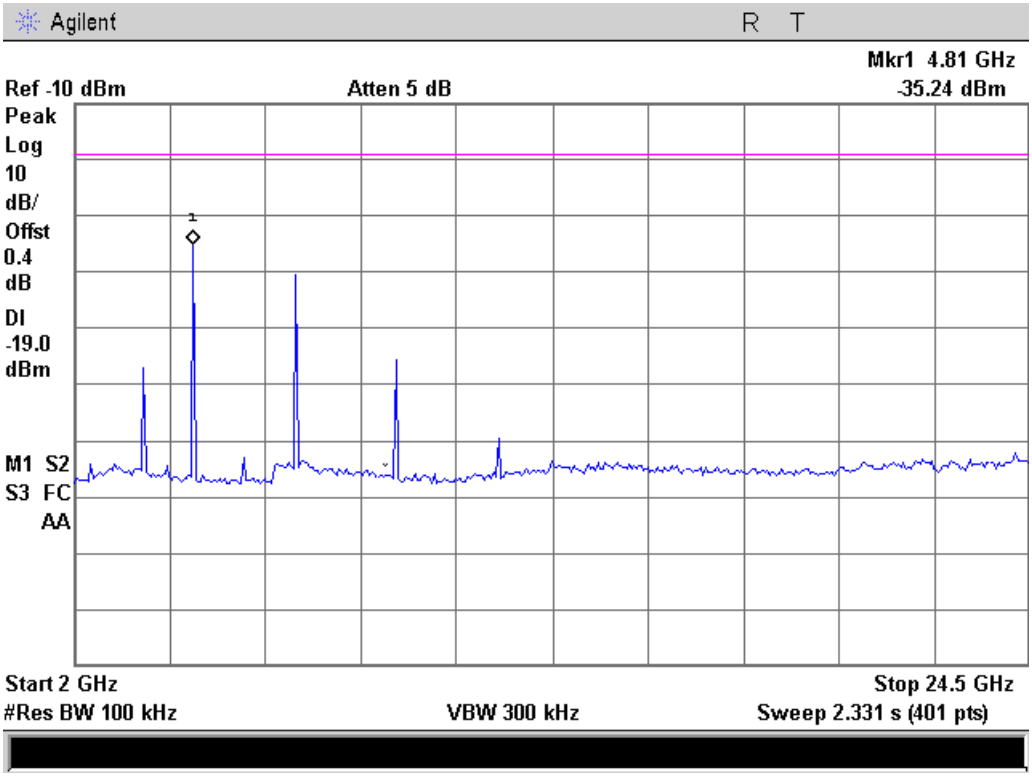


Conducted Spurious Emissions Summary Test Table

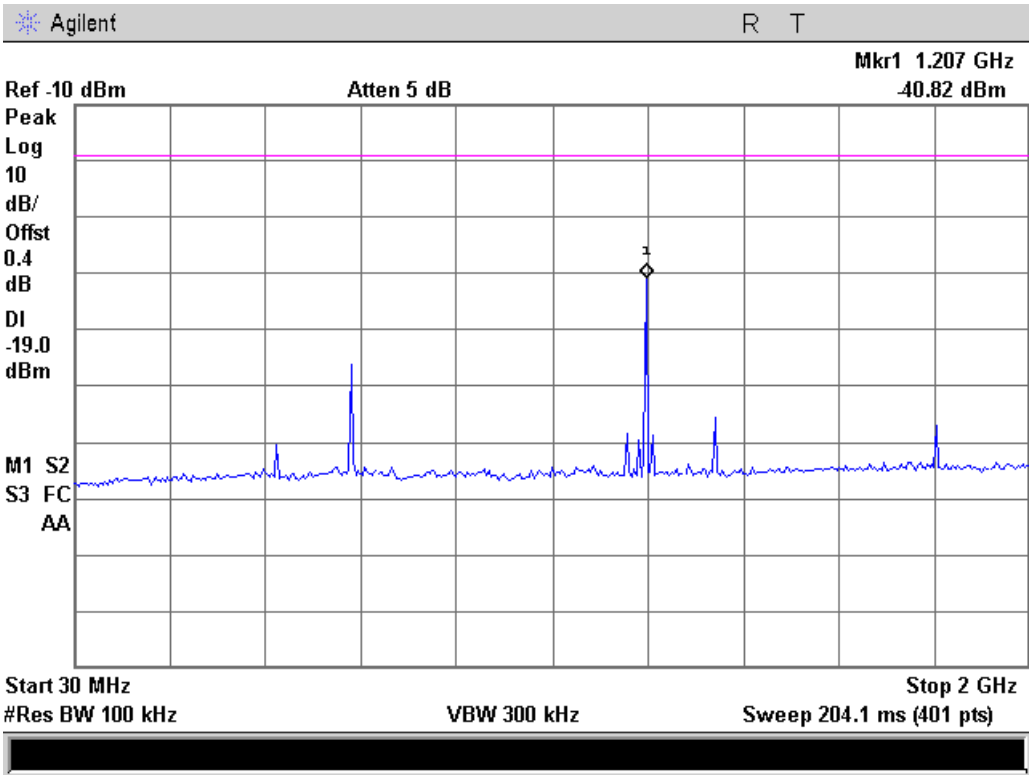
Tuned Frequency MHz	Emission Frequency MHz	Recorded Value dBm	Peak Power dBm	Corrected Value dBc	Specification Limit	Result
2402	4810	-35.24	1	-35.24	-20 dBc	Pass
2410	7230	-36.16	1.17	-37.33	-20 dBc	Pass

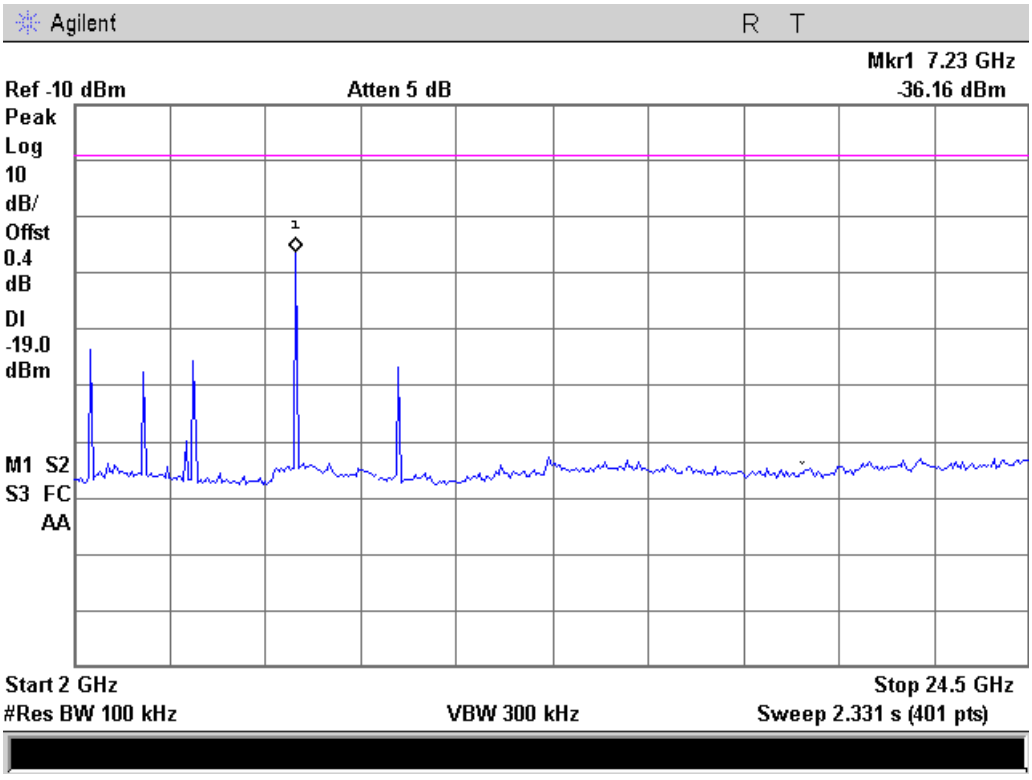
Conducted Spurious Emissions 2402 MHz





Conducted Spurious Emissions 2410 MHz



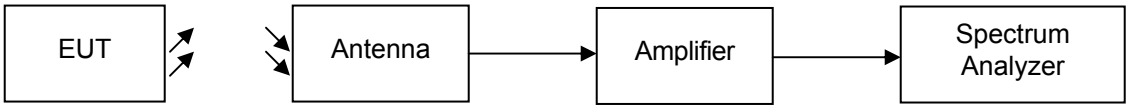


Name of Test: Radiated Spurious Emissions
Specification: 15.247(d), 15.209(a), 15.205 **Engineer: J. Erhard**
Test Equipment Utilized: i00028, i00331, i00103 **Test Date: 11/19/2010**

Test Procedure

The EUT was tested in a semi-anechoic chamber set 3m from the receiving antenna. A spectrum analyzer was used to verify that the EUT met the requirements for Radiated Spurious Emissions. The RBW was set to 1 MHz and the VBW was set 3X the RBW. The antenna and cable correction factors were summed with the amplifier gain and input into the spectrum analyzer as an offset to ensure accurate readings. The spectrum for each tuned frequency was examined to the 10th harmonic.

Test Setup



Radiated Spurious Emissions

Tuned Freq (MHz)	Emission Freq (MHz)	Peak Monitored Level (dBuV/m)	Peak Limit (dBuV/m)	Average Monitored Level (dBuV/m)	Average Limit (dBuV/m)	Result
2402	4804	52.54	74.0	45.24	54.0	Pass
2402	7206	59.49	74.0	52.11	54.0	Pass
2402	9608	61.78	74.0	52.35	54.0	Pass
2410	4820	52.33	74.0	44.40	54.0	Pass
2410	7630	58.03	74.0	52.90	54.0	Pass
2410	9640	59.57	74.0	52.14	54.0	Pass

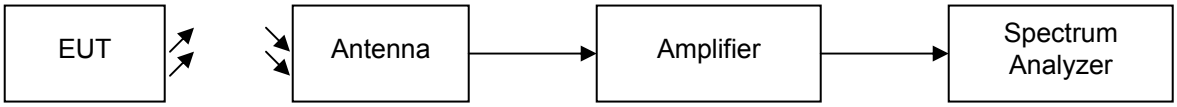
No other emissions were detectable. All emissions were greater than –20 dBc.

Name of Test: Emissions At Band Edges
Specification: 15.247(d), 15.209(a), 15.205 **Engineer: J. Erhard**
Test Equipment Utilized: i00028, i00331, i00103 **Test Date: 11/19/2010**

Test Procedure

The EUT was tested in a semi-anechoic chamber set 3m from the receiving transducer. A spectrum analyzer was used to verify that the EUT met the requirements for band edge with both peak and average measurements. The cable and transducer correction factors were input into the analyzer as a reference level offset to ensure accurate readings were obtained.

Test Setup



Band Edge Emissions Summary

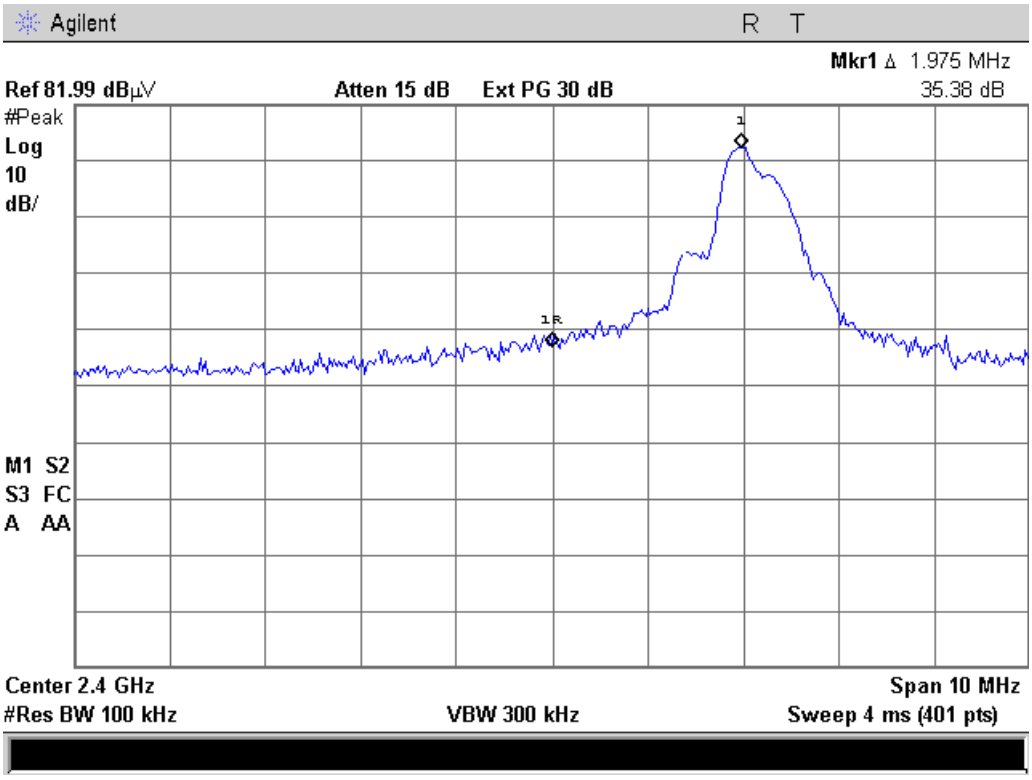
Tuned Freq (MHz)	Emission Freq (MHz)	Monitored Level	Detector	Limit	Result
2402	2400	-35.38 dBc	Peak	-20 dBc	Pass
2410	2483.5	-34.09 dBc	Peak	-20 dBc	Pass

Restricted Band Emissions Summary

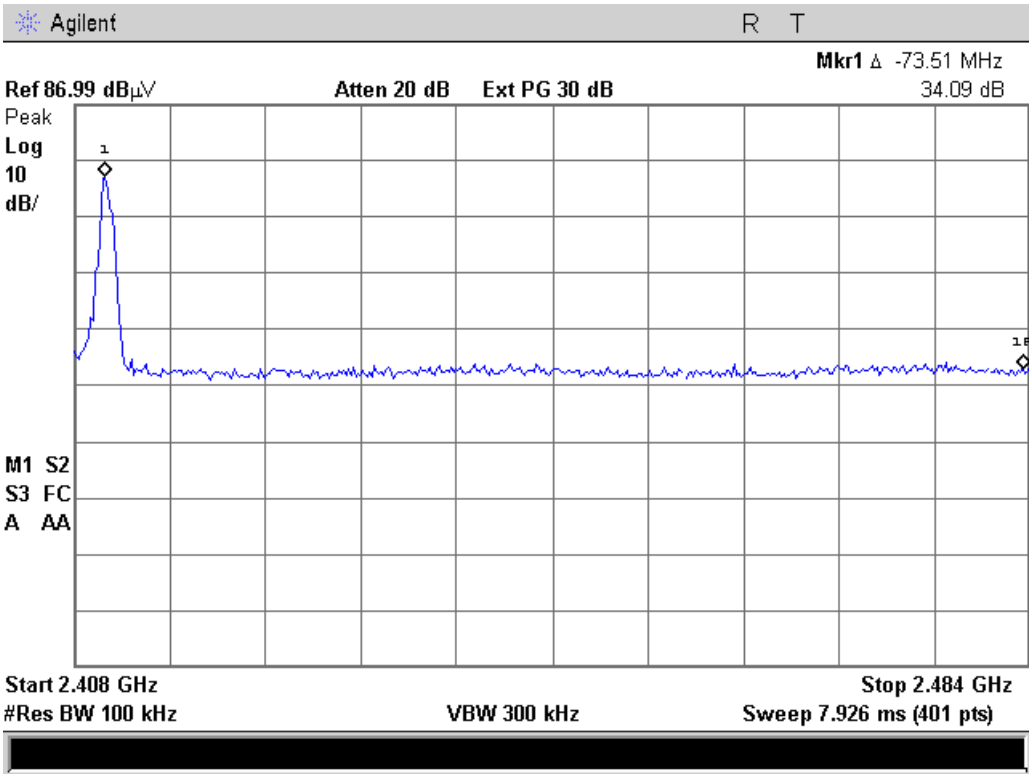
Tuned Freq (MHz)	Emission Freq (MHz)	Monitored Level	Detector	Limit	Result
2402	2385.95	38.33 dBuV/m	Peak	74 dBuV/m	Pass
2410	2483.75	49.08 dBuV/m	Peak	74 dBuV/m	Pass

** All peak emission were below the average limit.

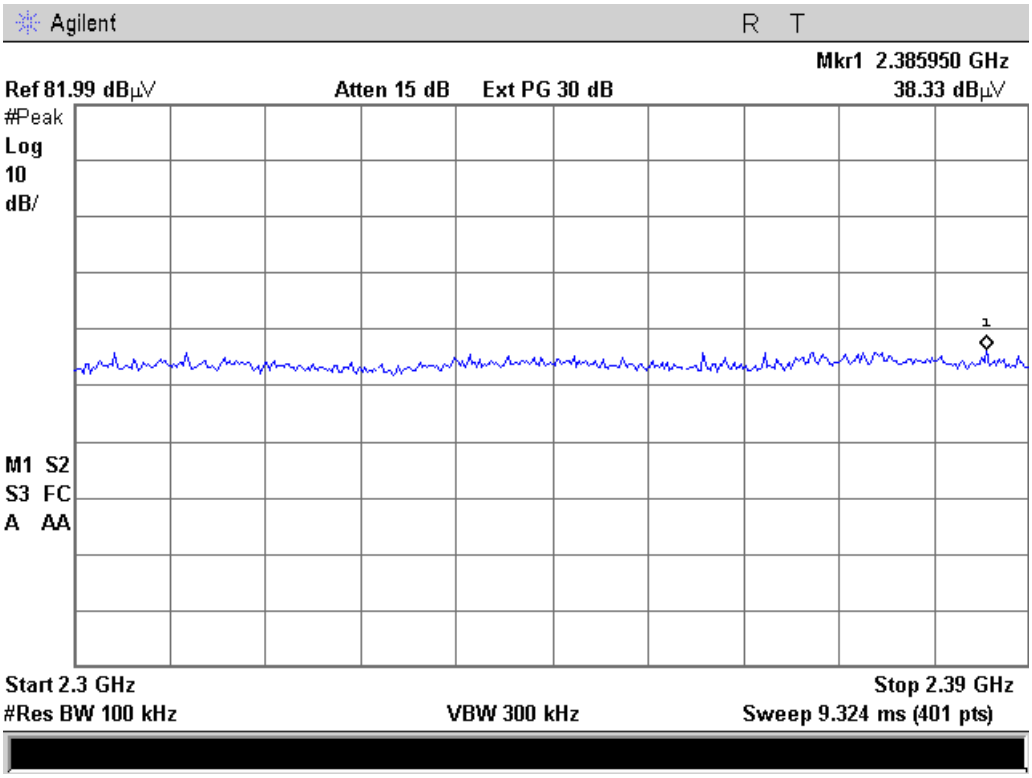
Band Edge 2400 MHz



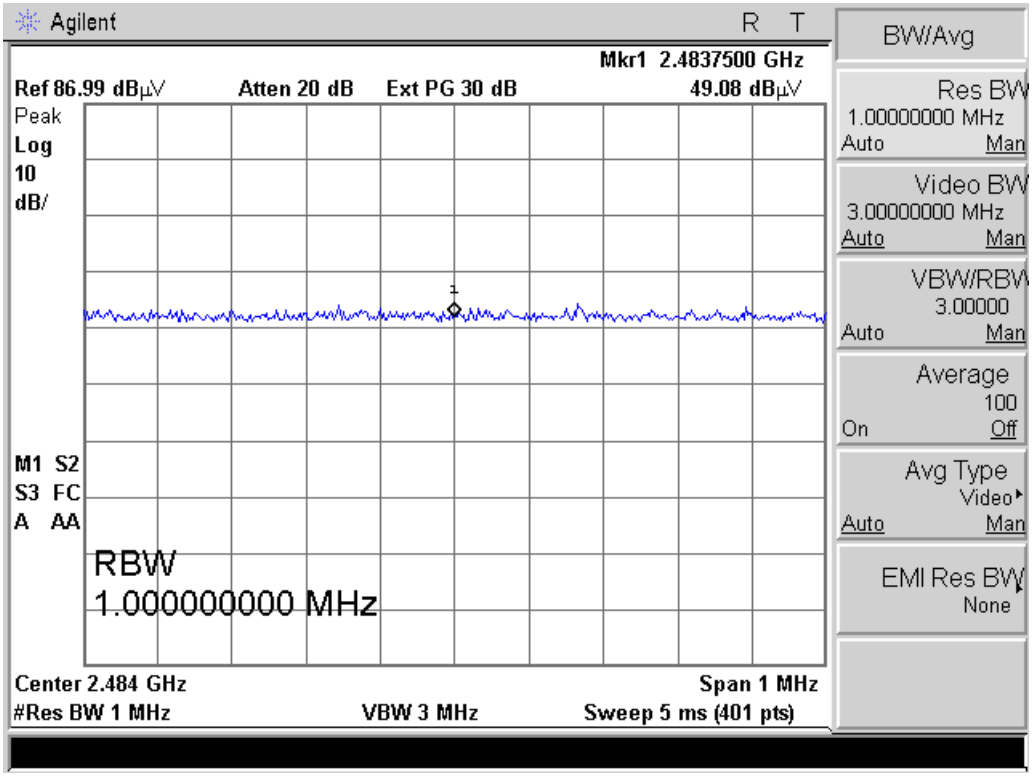
Band Edge 2483.5 MHz



Restricted Band 2390 MHz



Restricted Band 2483.5 MHz

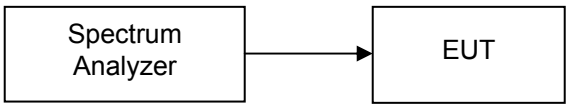


Name of Test: Occupied Bandwidth
Specification: 15.247(a)(2) **Engineer: J. Erhard**
Test Equipment Utilized: i00331 **Test Date: 11/18/2010**

Test Procedure

The EUT was connected directly to a spectrum analyzer. 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 and when the entire spectrum was captured the 6dB and 99% bandwidths were measured to verify the bandwidth met the specification.

Test Setup



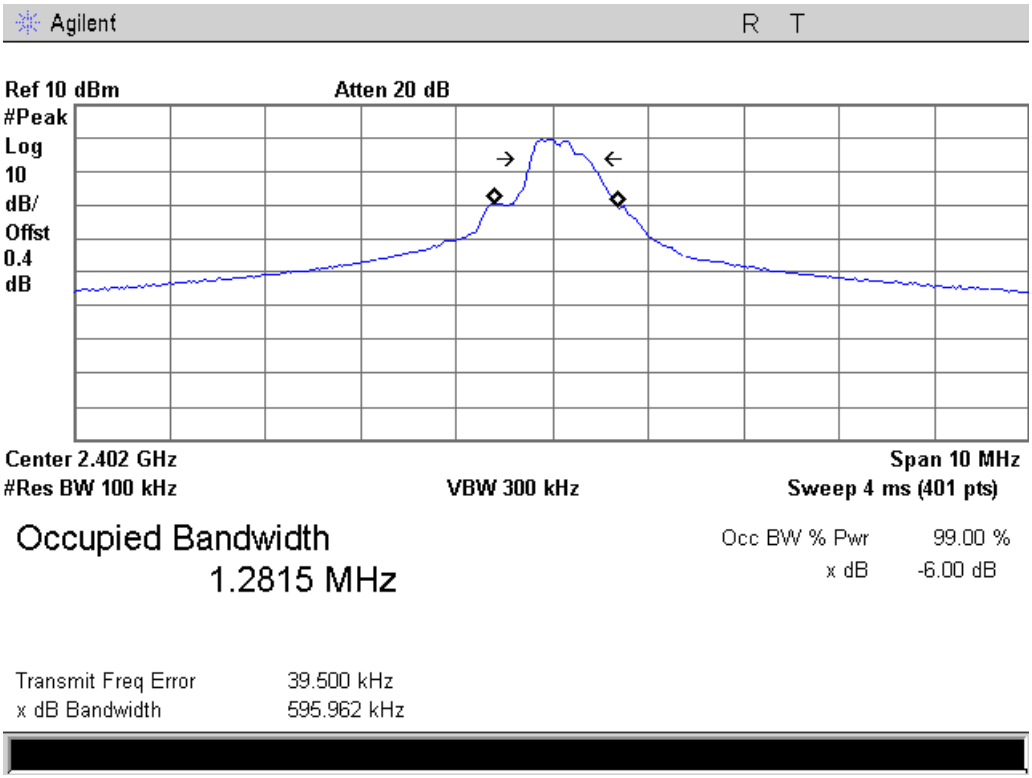
Occupied Bandwidth Summary

Frequency MHz	Recorded Measurement	Specification Limit	Result
2402	595.9	≥ 500 KHz	Pass
2410	690.0	≥ 500 KHz	Pass

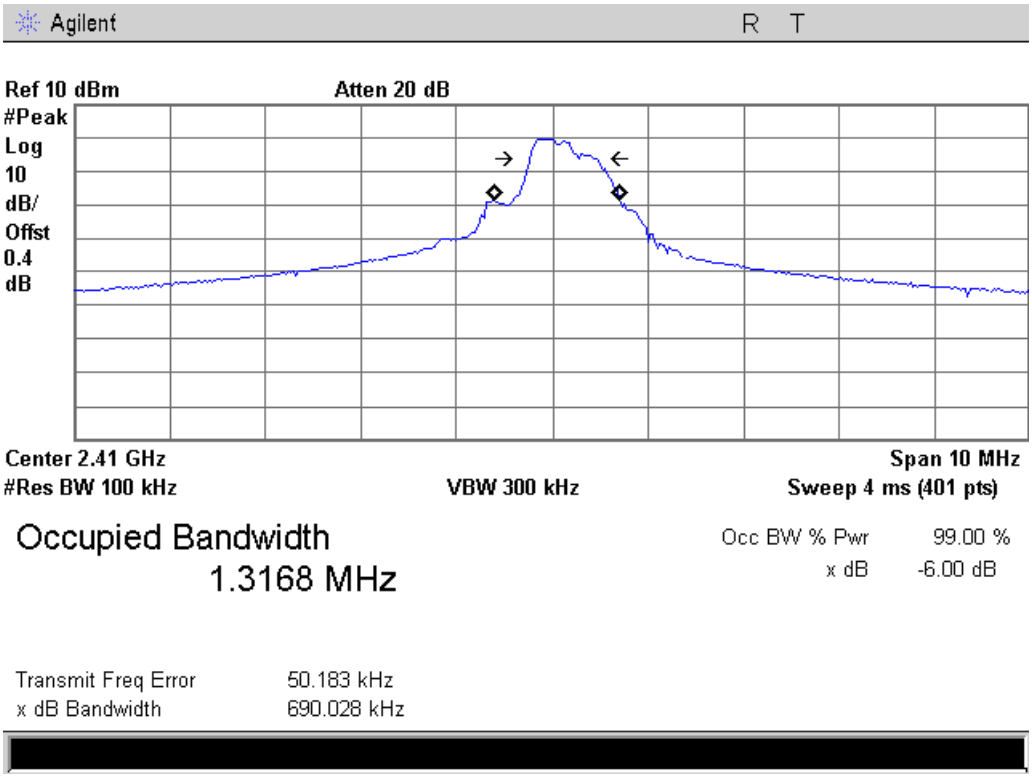
99% Bandwidth Summary

Frequency MHz	Recorded Measurement	Result
2402	1.2815	Pass
2410	1.3186	Pass

Bandwidth 2402 MHz



Bandwidth 2410 MHz

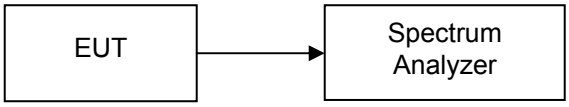


Name of Test: Transmitter Power Spectral Density (PSD)
Specification: 15.247(e) **Engineer: J. Erhard**
Test Equipment Utilized: i00331 **Test Date: 11/17/2010**

Test Procedure

The EUT was connected directly to a spectrum analyzer. The Span was set to 1.5 MHz and the resolution bandwidth was set to 3 KHz. The analyzer was set for a sweep time of 500 seconds. When the entire spectrum was captured the marker peak function of the analyzer was utilized to verify the PSD met the specification.

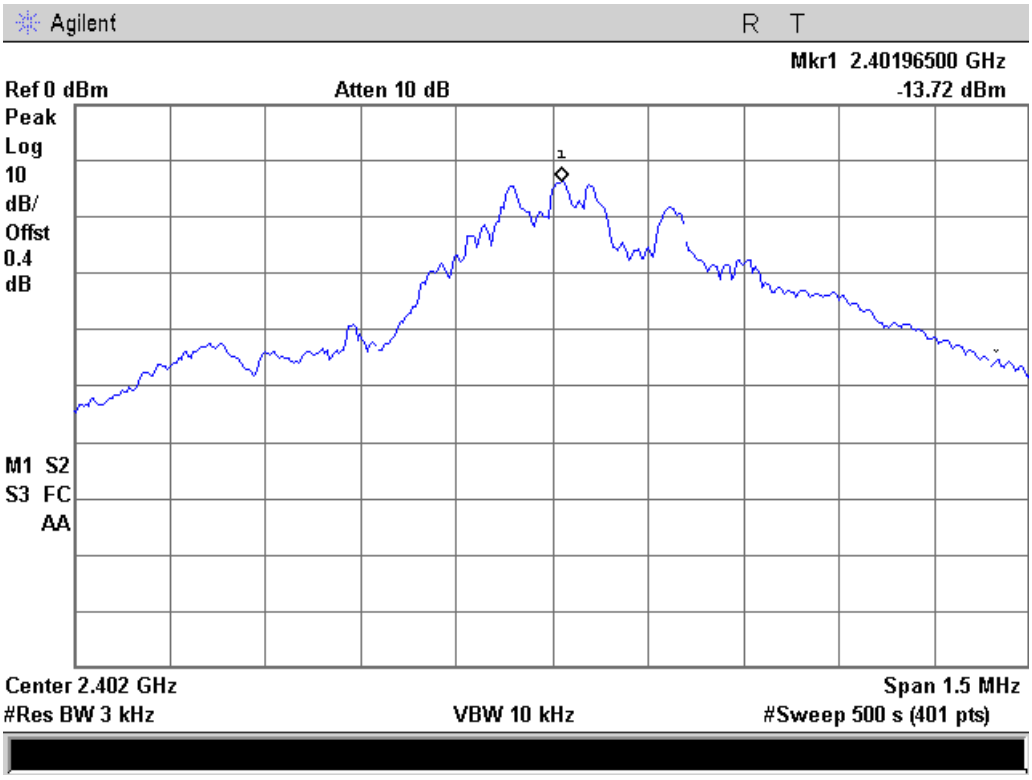
Test Setup



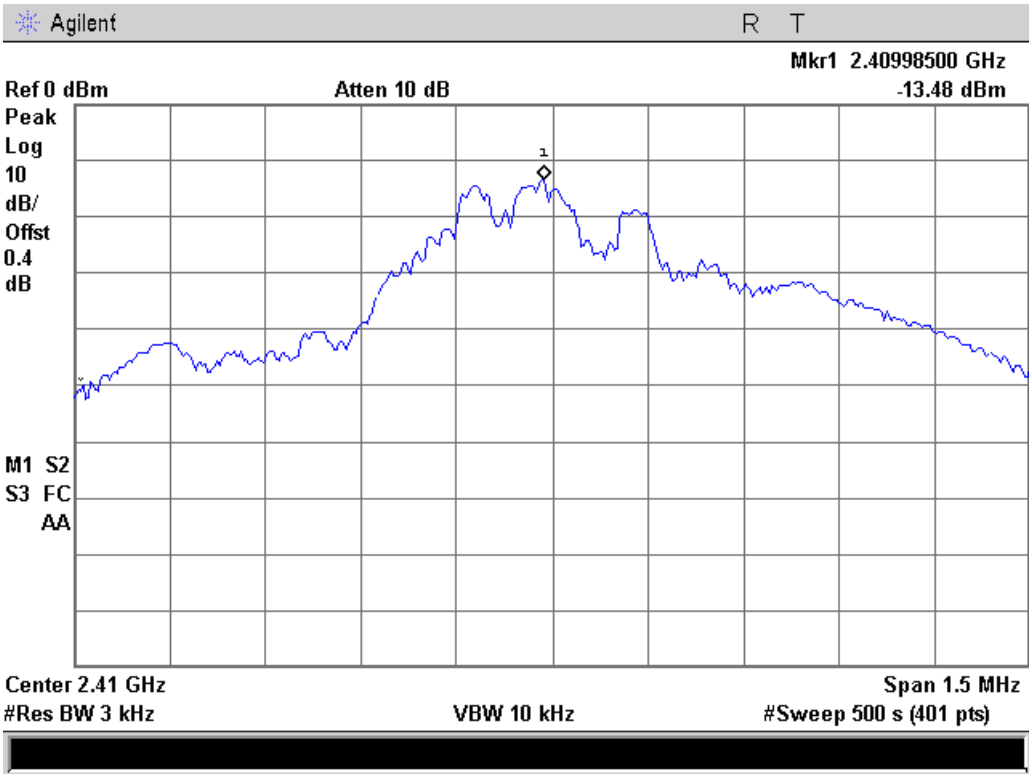
PSD Summary

Frequency MHz	Recorded Measurement	Specification Limit	Result
2402	-13.72	8 dBm	Pass
2410	-13.48	8 dBm	Pass

PSD 2402 MHz



PSD 2410 MHz

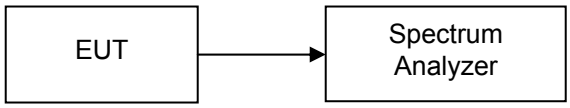


Name of Test: Receiver Spurious Emissions
Specification: RSS-GEN 6(b) **Engineer: J. Erhard**
Test Equipment Utilized: i00379 **Test Date: 12/9/2010**

Test Procedure

The EUT was connected directly to a spectrum analyzer. The receiver spurious emissions were measured from 30 MHz to greater than 3 times the highest tunable frequency.

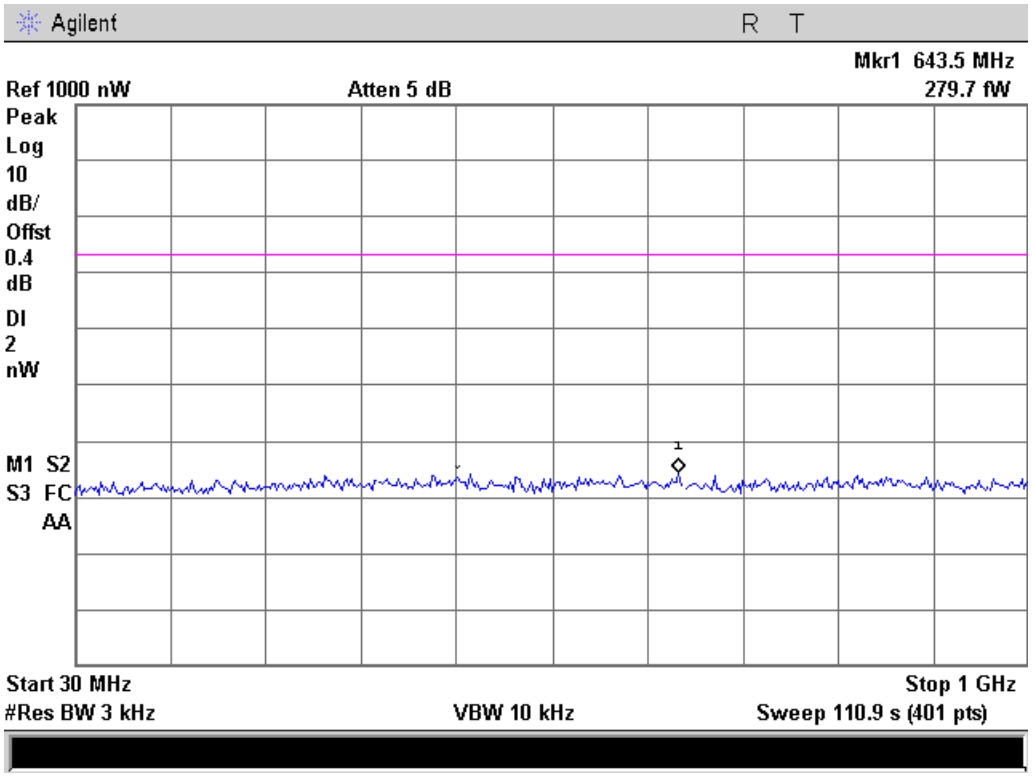
Test Setup



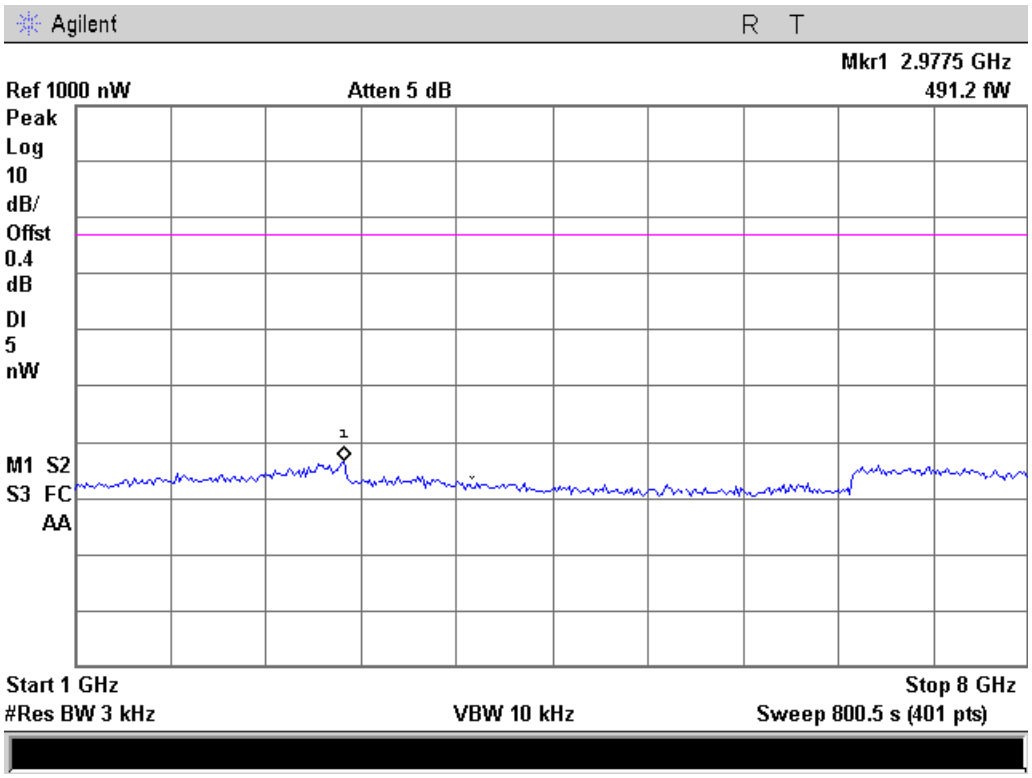
Receiver Spurious Emissions Summary

Frequency Range MHz	Recorded Measurement	Specification Limit	Result
30 - 1000	279.7 fW	2 nW	Pass
1000 - 8000	491.2 fW	5 nW	Pass

Receiver Spurious Emissions 30 MHz – 1 GHz



Receiver Spurious Emissions 1 GHz – 8 GHz



Test Equipment Utilized

Description	MFG	Model Number	CT Asset Number	Last Cal Date	Cal Due Date
RF Pre-Amplifier	HP	8449	i00028	9/17/2010	9/17/2011
Spectrum Analyzer	Agilent	E4407B	i00331	11/03/2009	11/03/2010**
Horn Antenna	EMCO	3115	i00103	11/5/2010	11/5/2012
EMC analyzer	Agilent	E7405A	i00379	11/22/2010	11/22/2011

** 30-Day calibration extension

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