



Flom Test Labs  
EMI, EMC, RF Testing Experts Since 1963

toll-free: (866) 311-3268  
fax: (480) 926-3598  
<http://www.flomlabs.com>  
[info@flomlabs.com](mailto:info@flomlabs.com)

Date: August 30, 2007

Federal Communications Commission  
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: SNIF Labs  
Equipment: monitor  
FCC ID: VLFS5A001  
FCC Rules: 15.247

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

enclosure(s)  
cc: Applicant  
HSB/je

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

p0760008, d0780032

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

Applicant: SNIF Labs  
FCC ID: VLFS5A001

**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 F.T.L. Inc.**

- A. Testimonial & Statement of Certification
- B. Statement of Qualifications



**Flom Test Labs**  
EMI, EMC, RF Testing Experts Since 1963

toll-free: (866) 311-3268

fax: (480) 926-3598

<http://www.flomlabs.com>

[info@flomlabs.com](mailto:info@flomlabs.com)

## **Transmitter Certification**

of

FCC ID: VLFS5A001

Model: S5A001

to

**Federal Communications Commission**

Rule Part(s) 15.247

**Date Of Report:** August 30, 2007

**On the Behalf of the Applicant:** SNIF Labs  
108 Lincoln Street  
Boston, MA 02111

**Attention of:** Jon Gips  
Ph: 617-338-7643  
Fax: 617-933-9363  
email: [jon@sniflabs.com](mailto:jon@sniflabs.com)

Supervised By:

Hoosamuddin S. Bandukwala, Lab Director

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

p0760008, d0780032

**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.

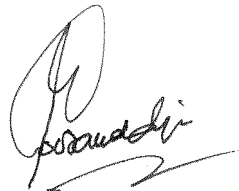
Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories 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

## Table Of Contents

Rule	Description	Page
	Test Report	1
2.1033(c)	General Information Required	2
	Standard Test Conditions and Engineering Practices	4
	Test Results Summary	5
15.247(b)	Peak Output Power	6
15.247(d)	Conducted Spurious Emissions	6
15.247(c),	Radiated Spurious Emissions	14
15.247(d),	Emissions At Band Edges	15
15.247(a)(2)	Occupied Bandwidth	19
15.247(d)	Transmitter Power Spectral Density (PSD)	23
15.207	A/C Powerline Conducted Emissions	25
	Test Equipment Utilized	26

*Required information per ISO 17025-2005, paragraph 5.10:*

a) **Test Report**

b) Laboratory: Flom Test Lab, Inc.  
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107  
(Canada: IC 2044) Chandler, AZ 85225

c) Report Number: d0780032

d) Client: SNIF Labs

e) Identification: S5A001

Description: mobile transceiver

f) EUT Condition: Not required unless specified in individual tests.

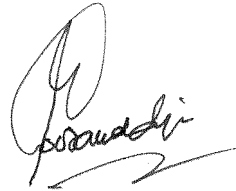
g) Report Date: August 30, 2007  
EUT Received:

h, j, k): As indicated in individual tests.

i) Sampling method: No sampling procedure used.

l) Uncertainty: In accordance with FTL internal quality manual.

m) Supervised by:



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

15.247

**Sub-Part 2.1033**

(c)(1):

**Name and Address of Applicant:** SNIF Labs

(c)(2): **FCC ID:** VLFS5A001

**Model Number:** S5A001

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

Please See Attached Exhibits

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

(c)(5): **FREQUENCY RANGE, MHz:** 2400.1 to 2482.25

(c)(6): **Power Rating** 1.42 mW  
\_\_\_\_\_ Switchable \_\_\_\_\_ Variable   X   N/A

(c)(7): **Maximum Power Rating FCC Limit** 1 W

**15.203: Antenna Requirement:**

1 dBi PCB integrated Antenna   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

☒ 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:

15.247      Operation within bands 2400-2483.5 MHz (spread spectrum)

### Standard Test Conditions and Engineering Practices

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

In accordance with ANSI C63.4-2004, FCC DTS Guide March 23, 2005, 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.

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.

### A2LA

"A2LA has accredited Flom Test Labs, Inc. 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](http://www.a2la.org) for current scope of accreditation.

Certificate number: 2152.01



**IC O.A.T.S. Number:** 2044A-1

### Test Results Summary

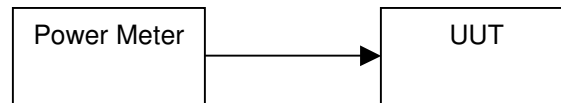
Specification	Test Name	Pass, Fail, N/A	Comments
15.247(b)	Peak Output Power	Pass	
15.247(d)	Conducted Spurious Emissions	Pass	
15.247(d), 15.209(a), 15.205	Radiated Spurious Emissions	Pass	
15.247(d), 15.209(a), 15.205	Emissions At Band Edges	Pass	
15.247(a)(2)	Occupied Bandwidth	Pass	
15.247(e)	Transmitter Power Spectral Density	Pass	
15.207	A/C Powerline Conducted Emissions	Pass	

**Name of Test:** Peak Output Power  
**Specification:** 15.247(b)  
**Test Equipment Utilized** i00228, i00317

### Test Procedure

The UUT was connected directly to a power meter input. The peak readings were taken and the result was then compared to the limit.

### Test Setup



### Transmitter Peak Output Power

Tuned Frequency MHz	Recorded Measurement	Specification Limit	Result
2400.1	1.42 mW	1 W	Pass
2441.6	1.42 mW	1 W	Pass
2482.25	1.38 mW	1 W	Pass

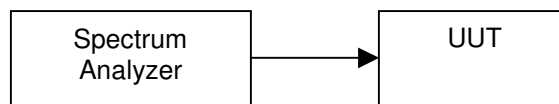
**Name of Test:** Conducted Spurious Emissions  
**Specification:** 15.247(d)  
**Spec. Limit:** -20 dBc  
**Test Equipment Utilized** i00029, i00329

### Test Procedure

The UUT was connected directly to a spectrum analyzer to verify that the UUT met the requirements for spurious emissions. The reference level was offset for the peak power output with the resolution bandwidth set for 1 MHz. The frequency range from 30 MHz to the 10<sup>th</sup> harmonic of the fundamental transmitter was observed. Only detectable spurious emissions were recorded and plotted. The reference level is added to the recorded measurement to provide the corrected level dBc

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

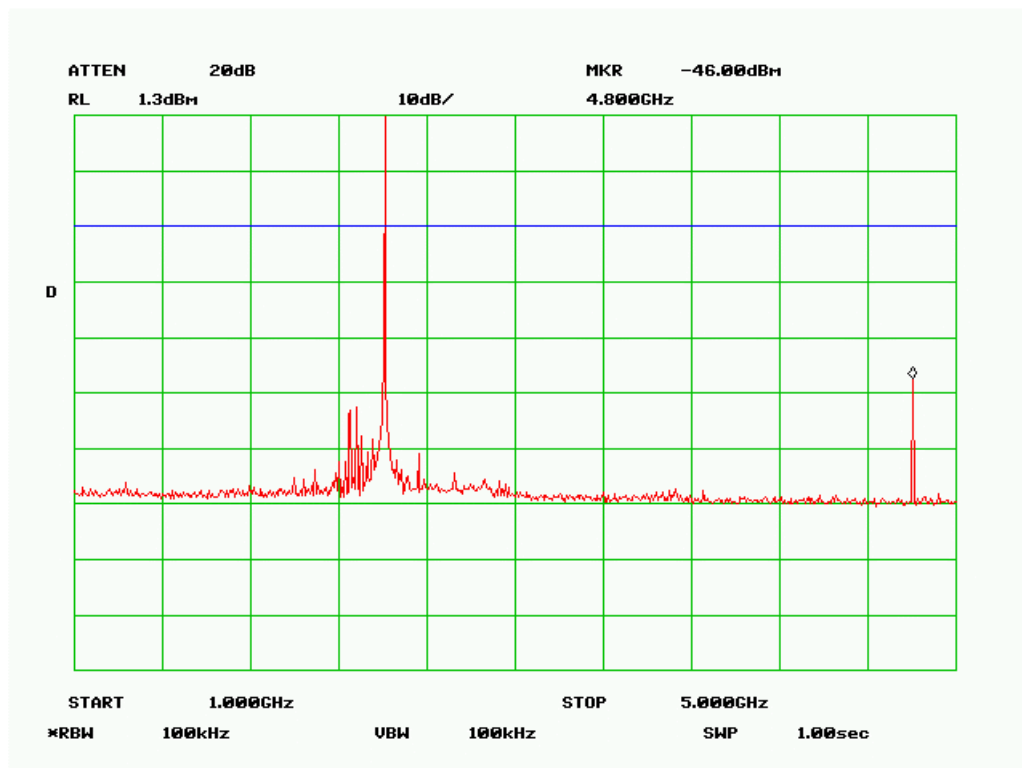
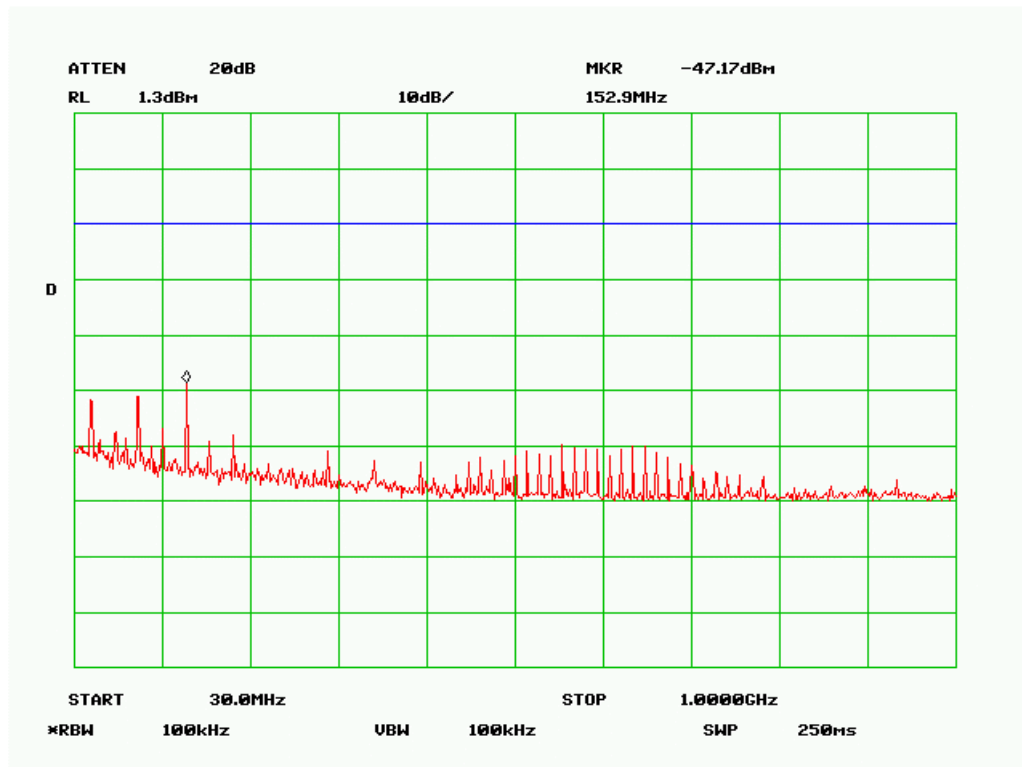
### Test Setup

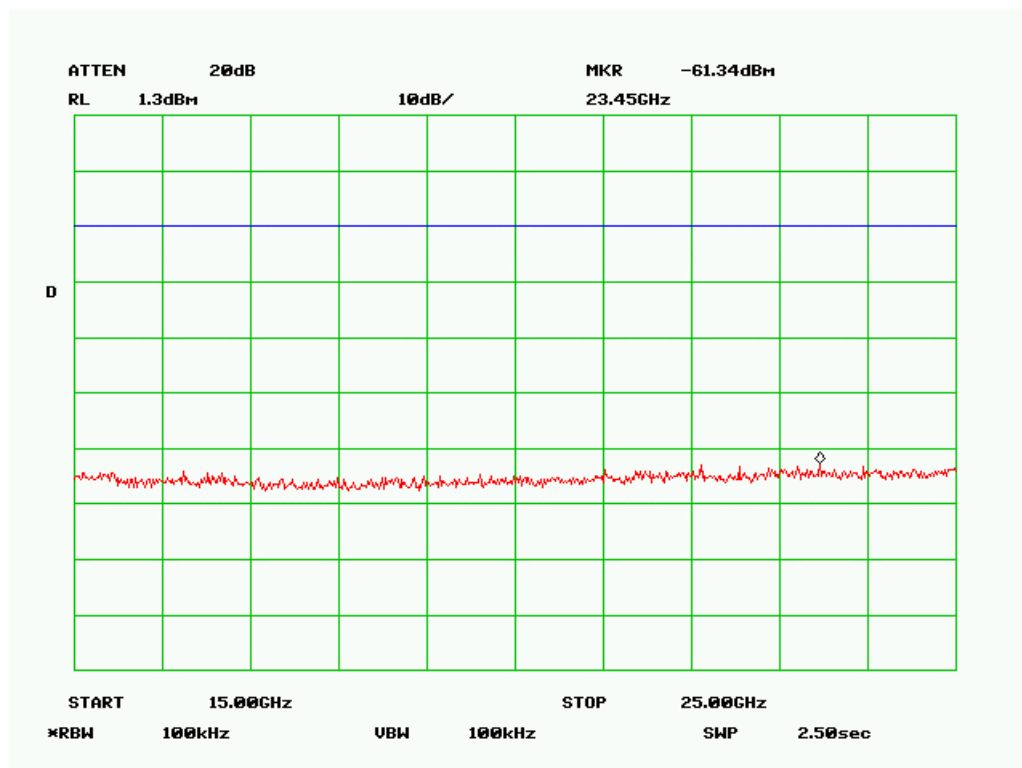
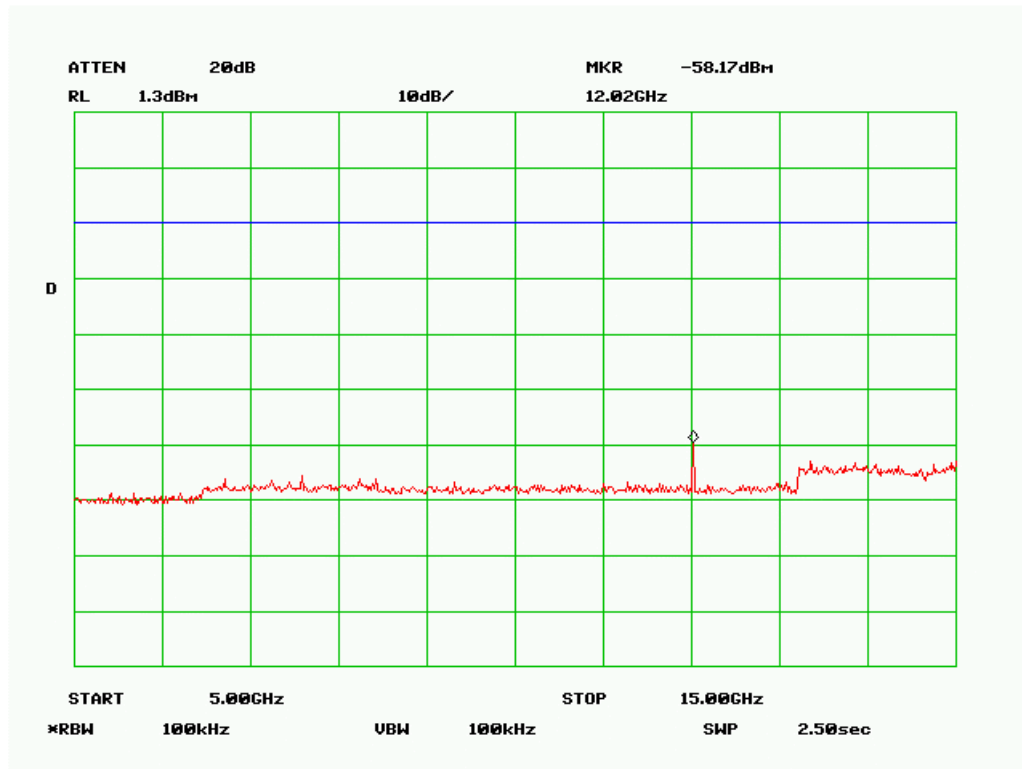


**Conducted Spurious Emissions Summary Test Table**

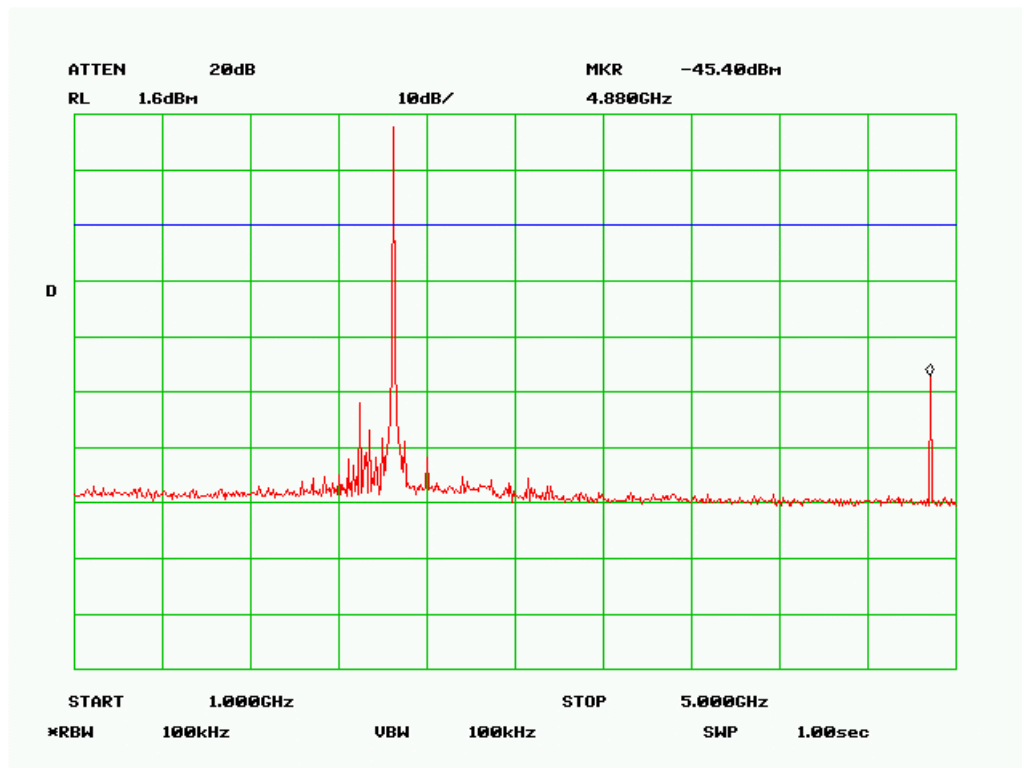
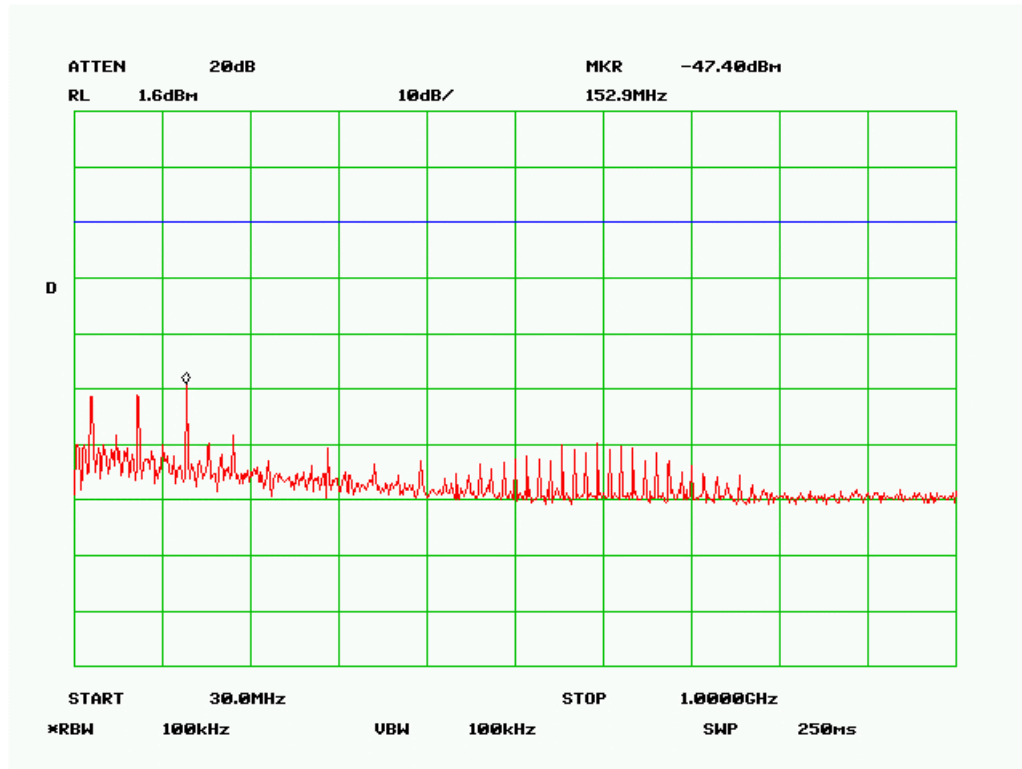
Tuned Frequency MHz	Emission Frequency MHz	Recorded Measurement	Reference Level	Corrected Measurement	Specification Limit	Result
2400.1	4800	-46.00 dBm	1.3 dBm	-47.30 dBc	-20 dBc	Pass
2441.6	7350	-43.73 dBm	1.6 dBm	-45.33 dBc	-20 dBc	Pass
2482.25	4960	-44.47 dBm	1.5 dBm	-45.97 dBc	-20 dBc	Pass

## Conducted Spurious Emissions 2400.1 MHz

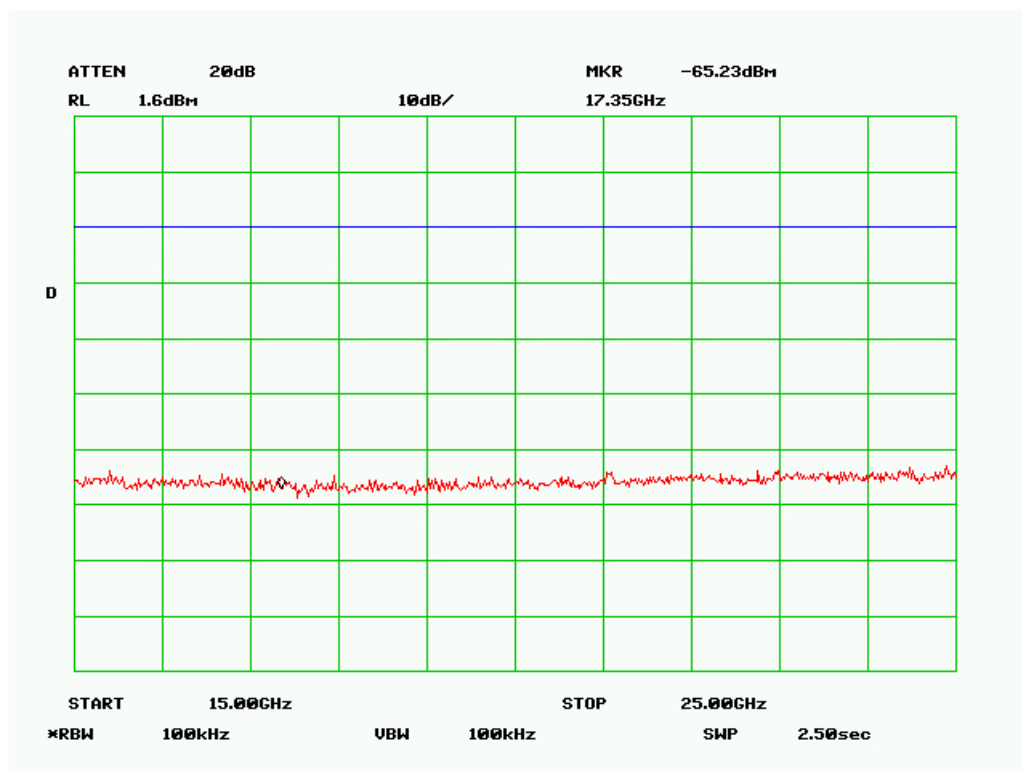
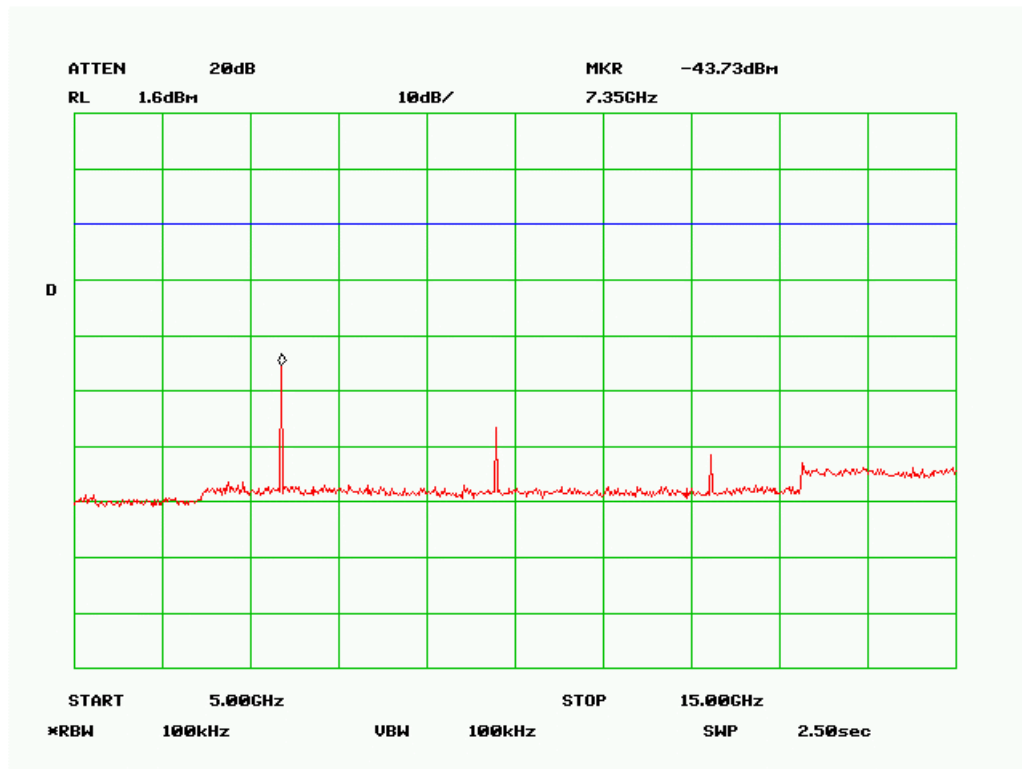




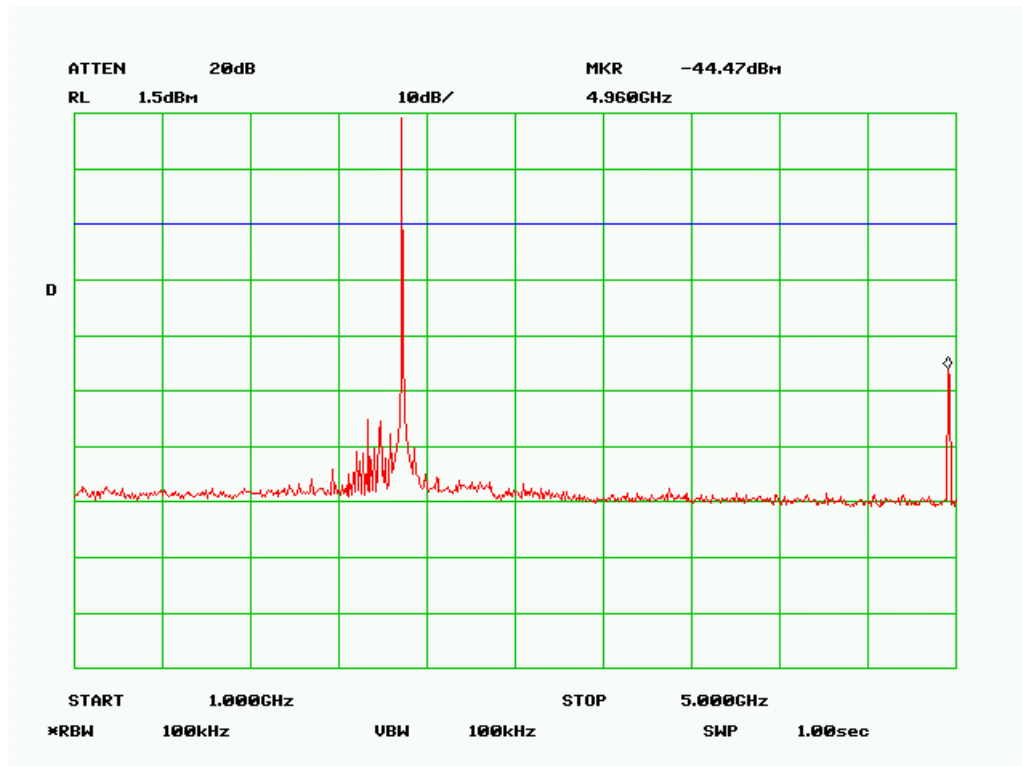
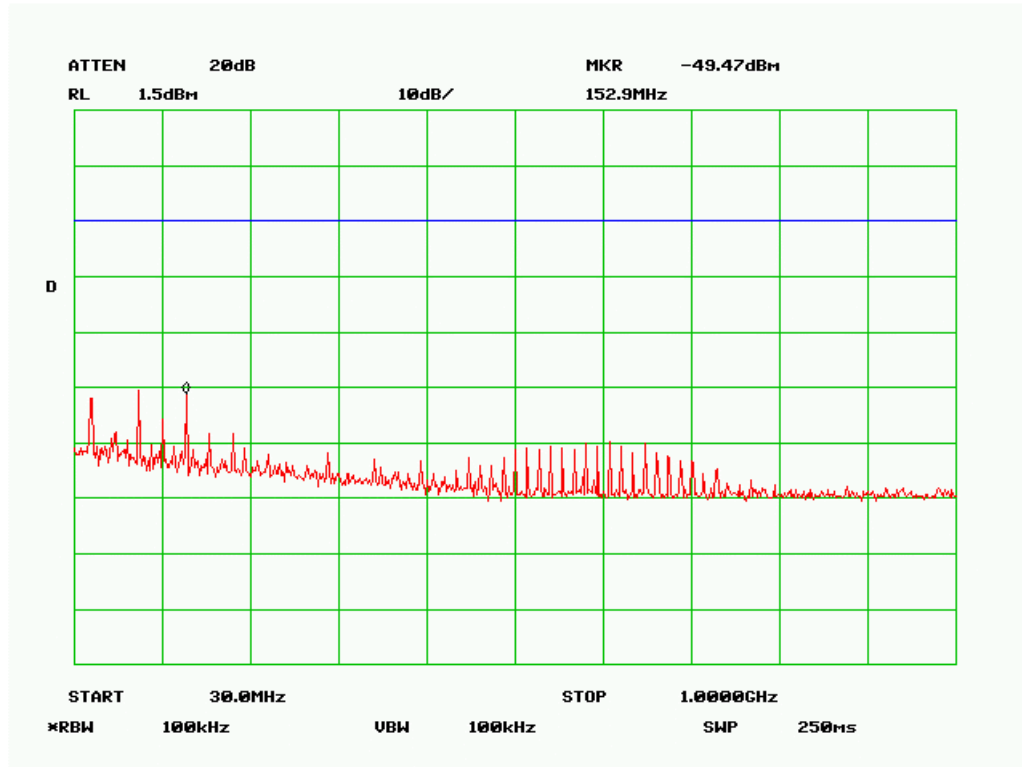
## Conducted Spurious Emissions 2441.6 MHz

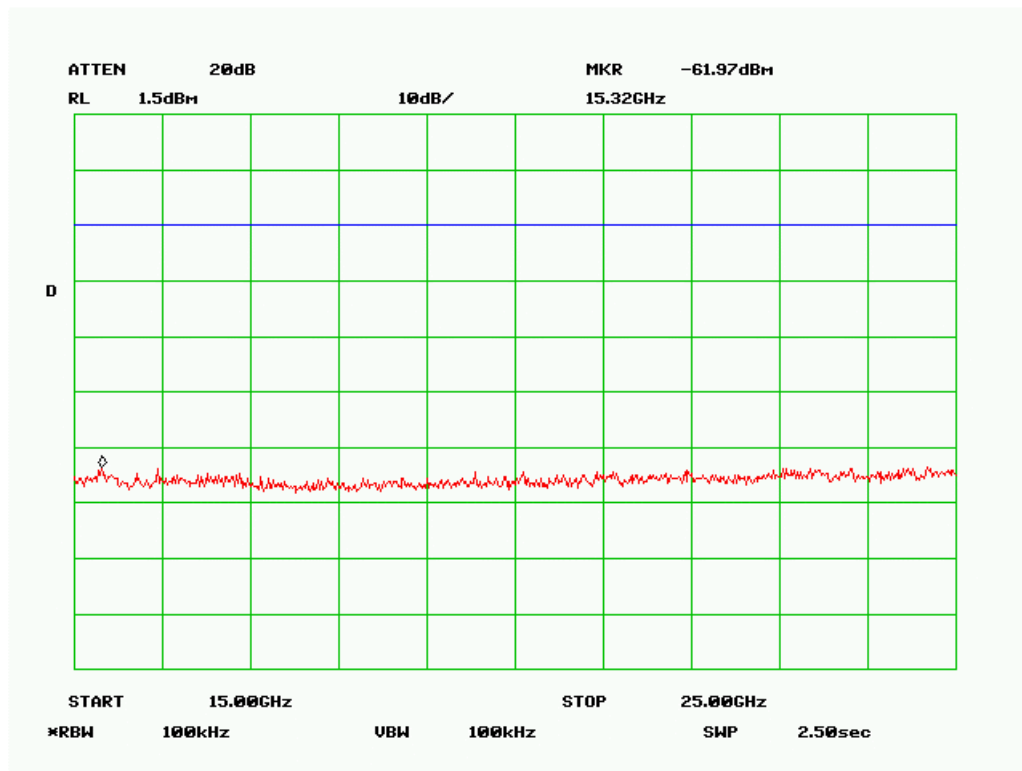
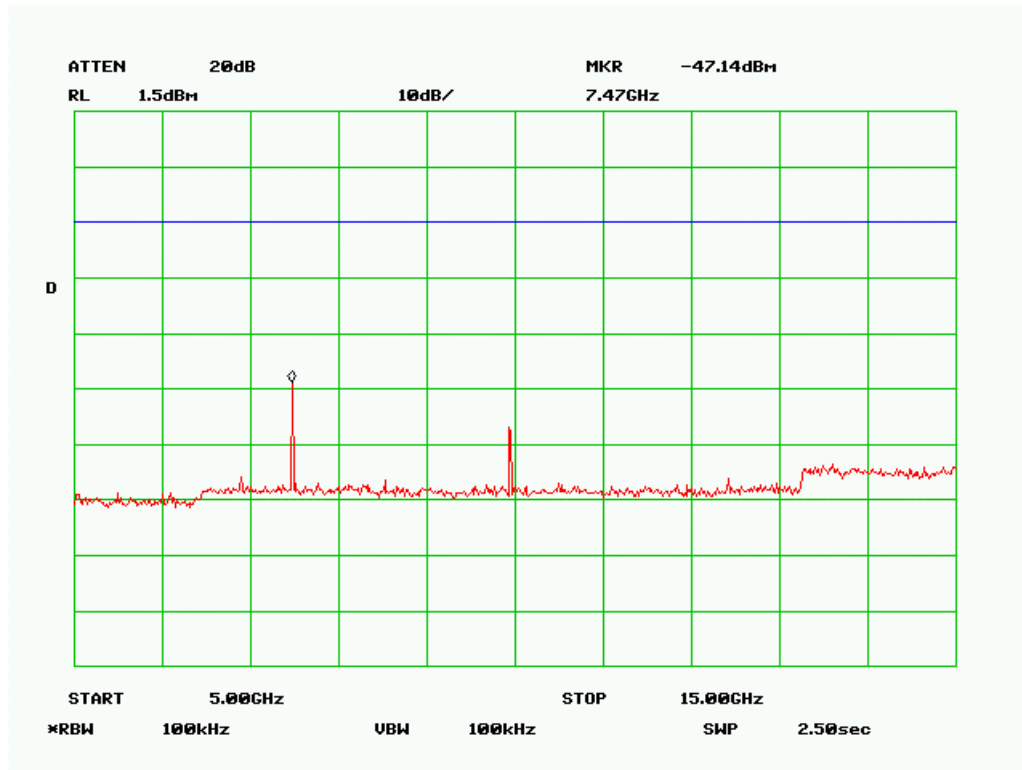






## Conducted Spurious Emissions 2482.25 MHz



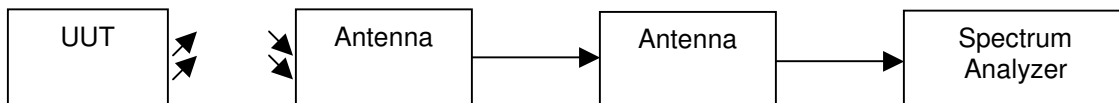


**Name of Test:** Radiated Spurious Emissions  
**Specification:** 15.247(d), 15.209(a), 15.205  
**Spec. Limit:** See Table  
**Test Equipment Utilized** i00028, i00029, i00103

### Test Procedure

The UUT was tested in a semi-anechoic chamber set 3m from the receiving antenna. A spectrum analyzer was used to verify that the UUT met the requirements for Radiated Spurious Emissions. 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 10<sup>th</sup> harmonic.

### Test Setup



Detector Settings	RBW	VBW	Span
Peak	1 MHz	1 MHz	as necessary
Average	1 MHz	10 Hz	0 Hz

### 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
2400.1	4800.2	53.0	74.0	41.1	54.0	Pass
2400.1	7200.3	43.6	74.0	33.8	54.0	Pass
2441.6	4883.2	45.4	74.0	35.7	54.0	Pass
2441.6	7324.8	44.2	74.0	33.7	54.0	Pass
2482.25	4964.5	47.4	74.0	36.1	54.0	Pass
2482.25	7446.75	42.7	74.0	33.5	54.0	Pass

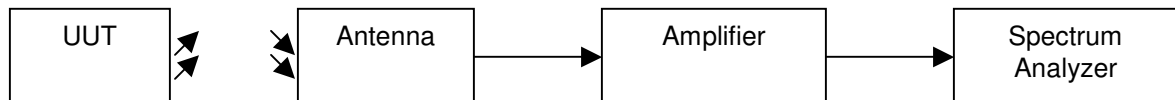
All emissions were greater than -20 dBc. No other emissions were detectable.

**Name of Test:** Emissions At Band Edges  
**Specification:** 15.247(d), 15.209(a), 15.205  
**Limit:** -20 dBc and for restricted band 54 dBuV average and 74 dBuV peak  
**Test Equipment Utilized** i00028, i00290, i00103

### Test Procedure

The UUT was tested in a semi-anechoic chamber set 3m from the receiving transducer. A spectrum analyzer was used to verify that the UUT 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



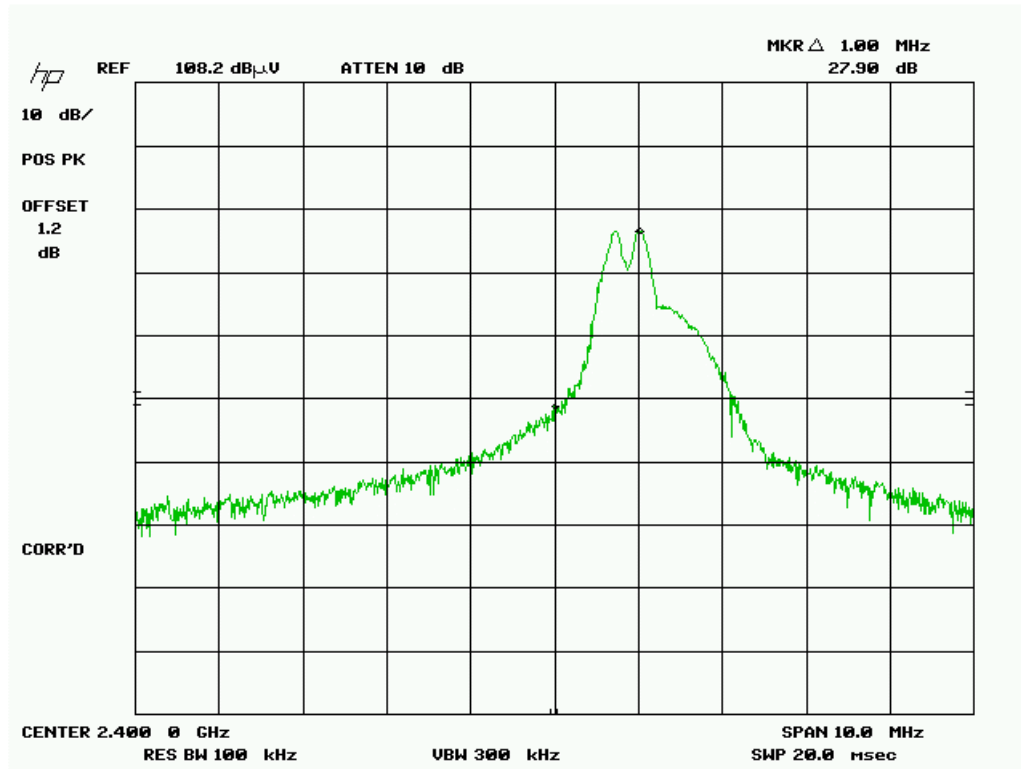
### Band Edge Emissions Summary

Tuned Freq (MHz)	Emission Freq (MHz)	Monitored Level (-dBc)	Limit	Result
2400.1	2400	-27.9	-20 dBc	Pass
2482.25	2483.5	-31.6	-20 dBc	Pass

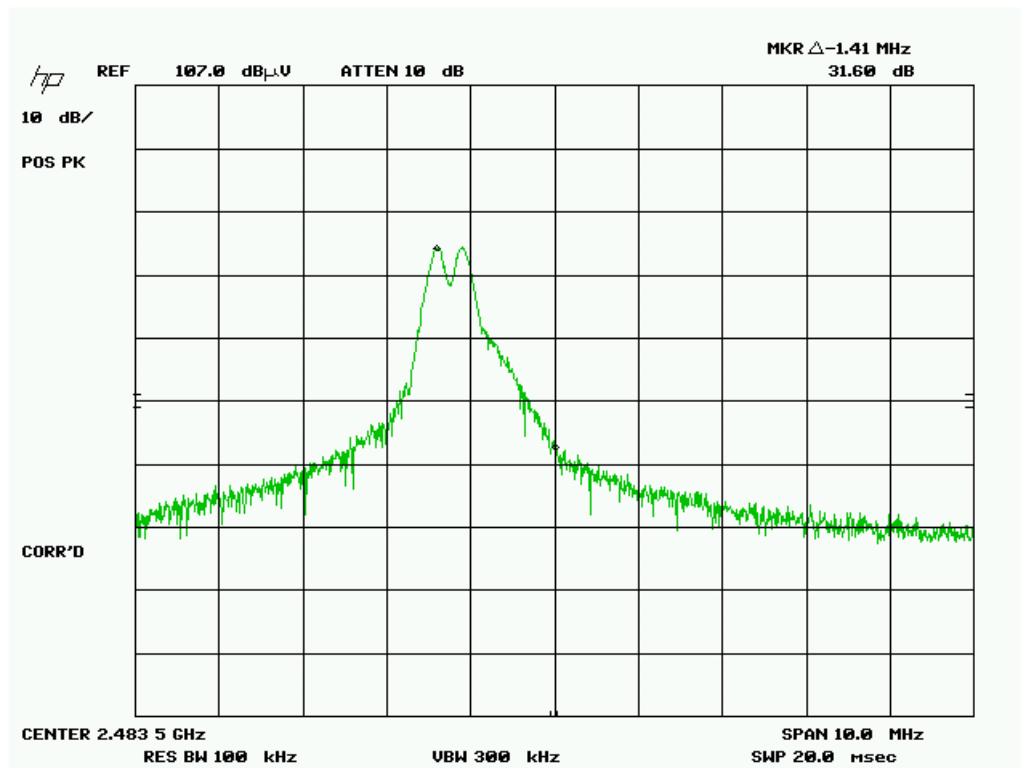
### Restricted Band Emissions Summary

Tuned Freq (MHz)	Emission Freq (MHz)	Monitored Level (dBuV/m)	Detector	Limit (dBuV/m)	Result
2400.1	2390	49.2	Peak	74	Pass
2400.1	2390	34.1	Average	54	Pass
2482.25	2483.5	72.7	Peak	74	Pass
2482.25	2483.5	46.7	Average	54	Pass

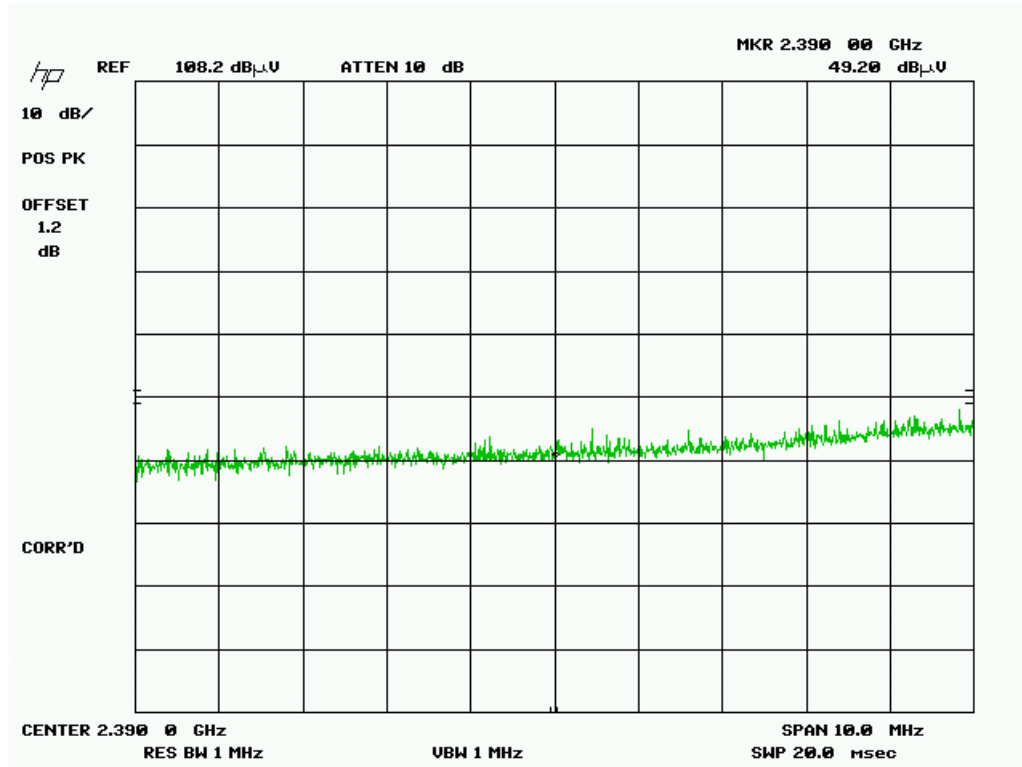
## Band Edge 2400 MHz



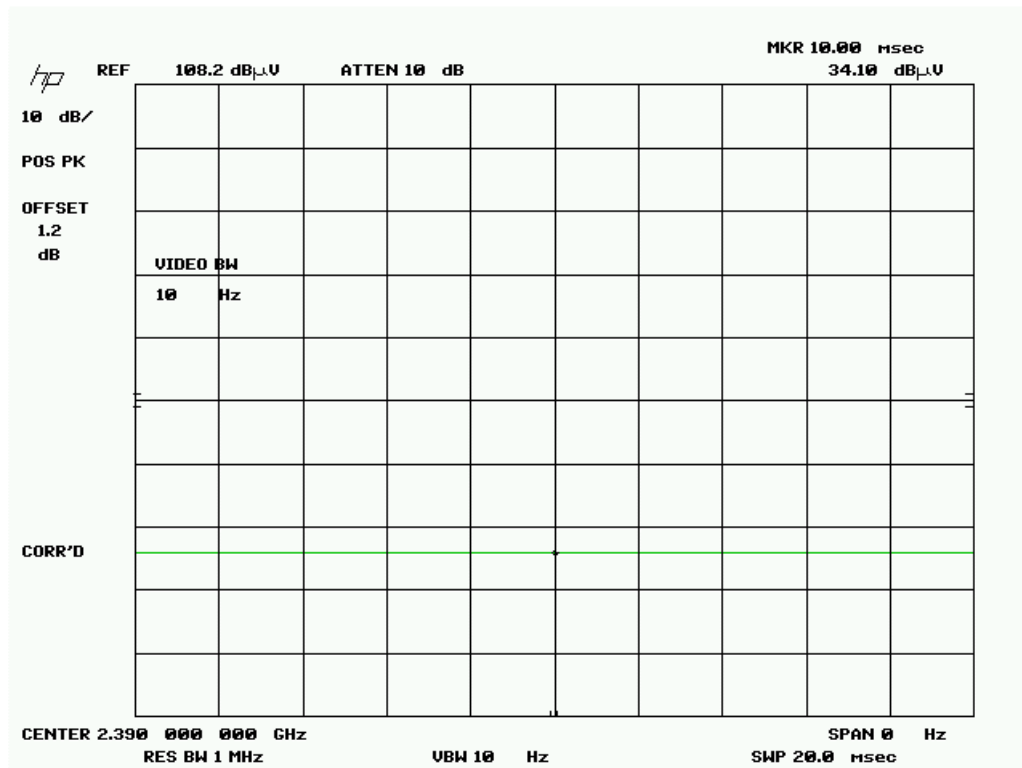
## Band Edge 2483.5 MHz



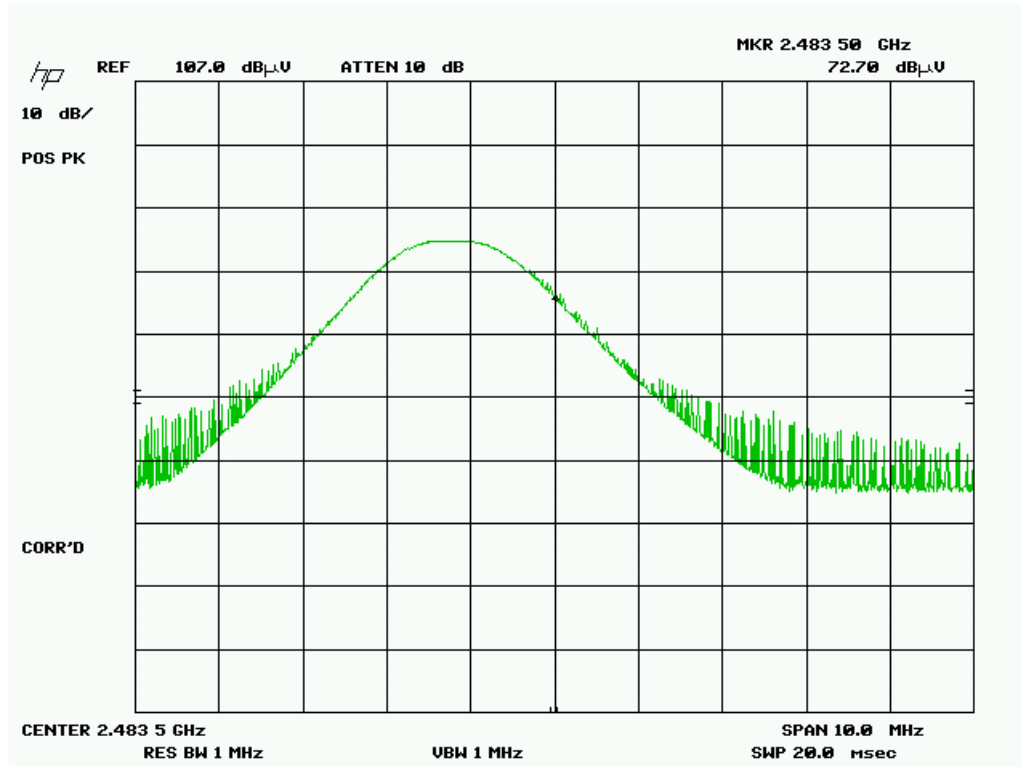
## Restricted Band 2390 Peak MHz



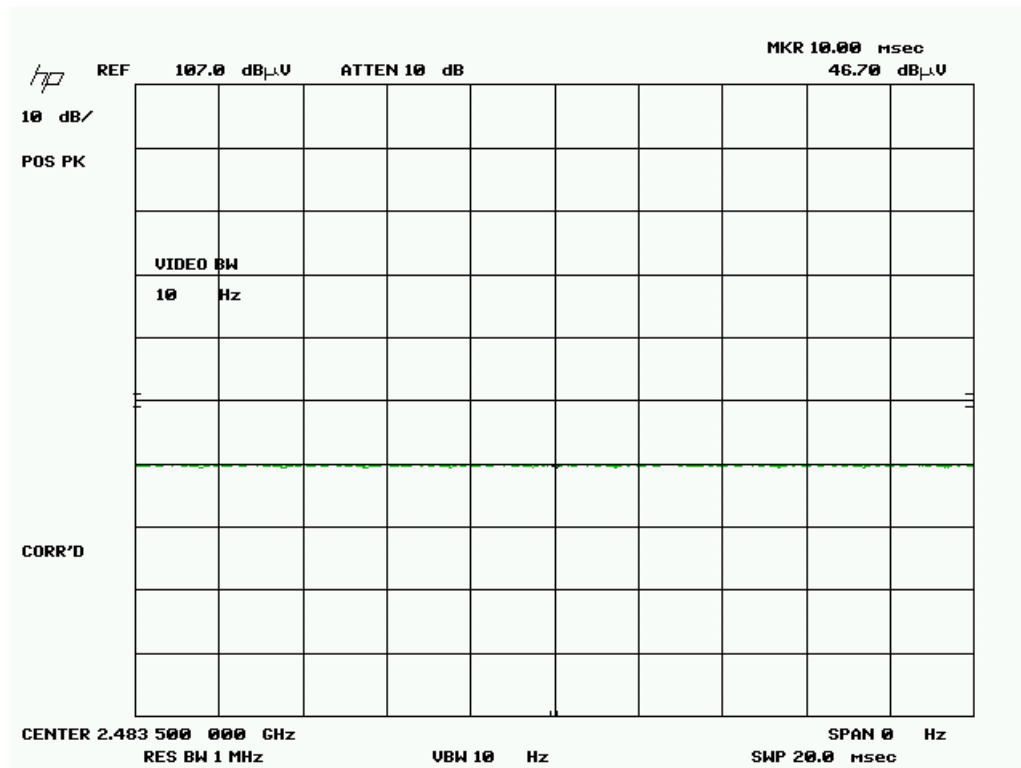
## Restricted Band 2390 Average MHz



## Restricted Band 2483.5 Peak MHz



## Restricted Band 2483.5 Average MHz



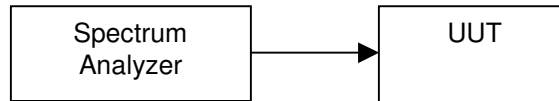


**Name of Test:** Occupied Bandwidth  
**Specification:** 15.247(a)(2)  
**Limit:** BW  $\geq$  500 KHz  
**Test Equipment Utilized** i00329

### Test Procedure

The UUT 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.

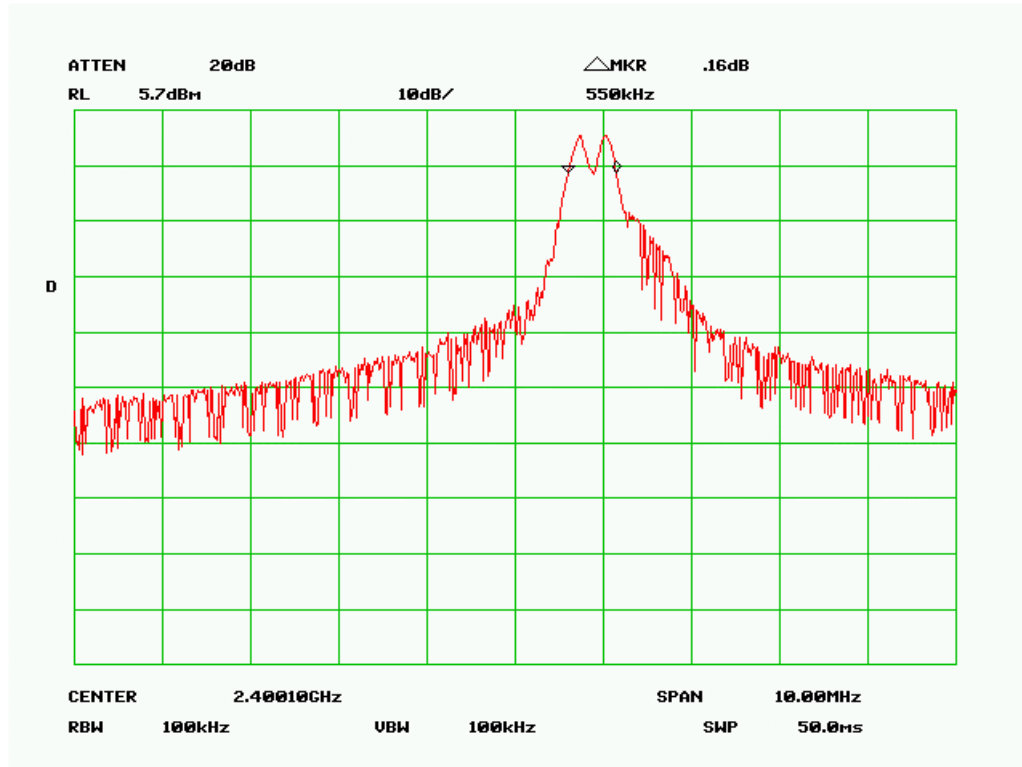
### Test Setup



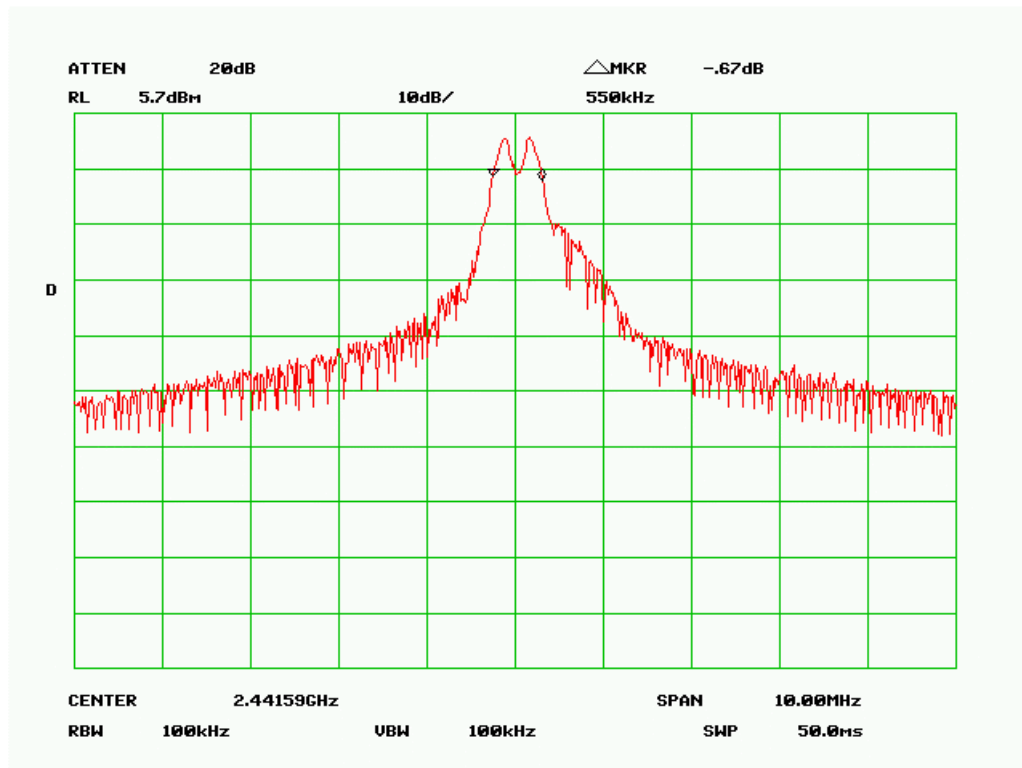
### Occupied Bandwidth Summary

Frequency MHz	Recorded Measurement	Specification Limit	Result
2400.1	550 kHz	$\geq$ 500 KHz	Pass
2441.6	550 kHz	$\geq$ 500 KHz	Pass
2482.25	550 kHz	$\geq$ 500 KHz	Pass

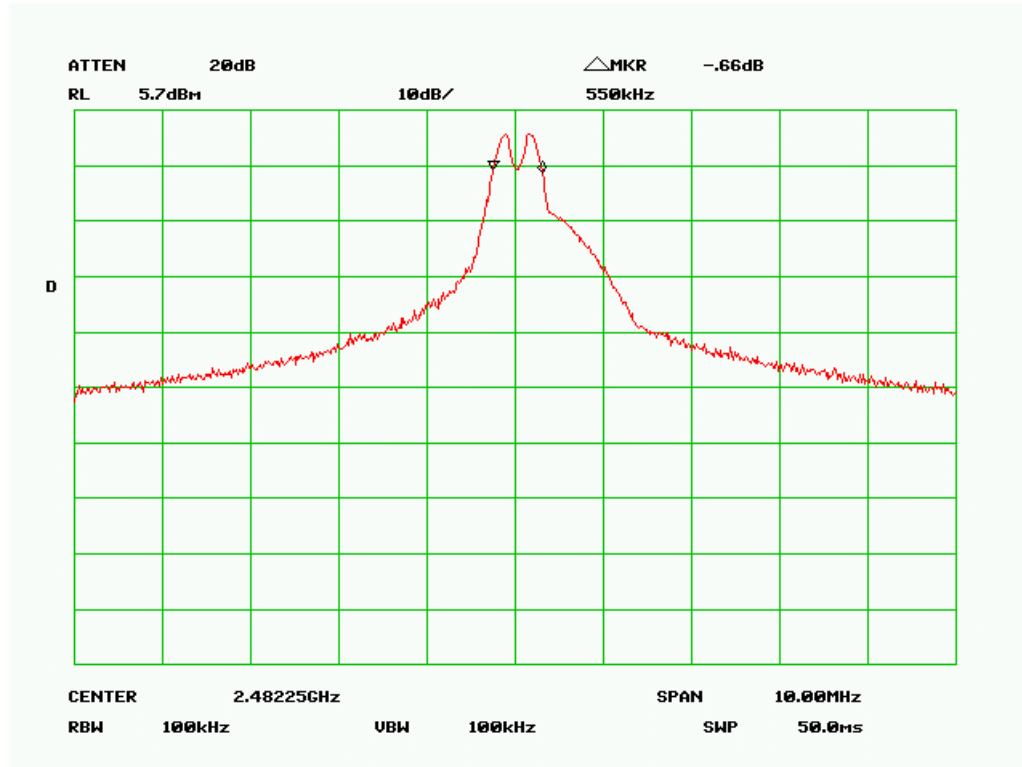
## 6dB Bandwidth 2400.1 MHz



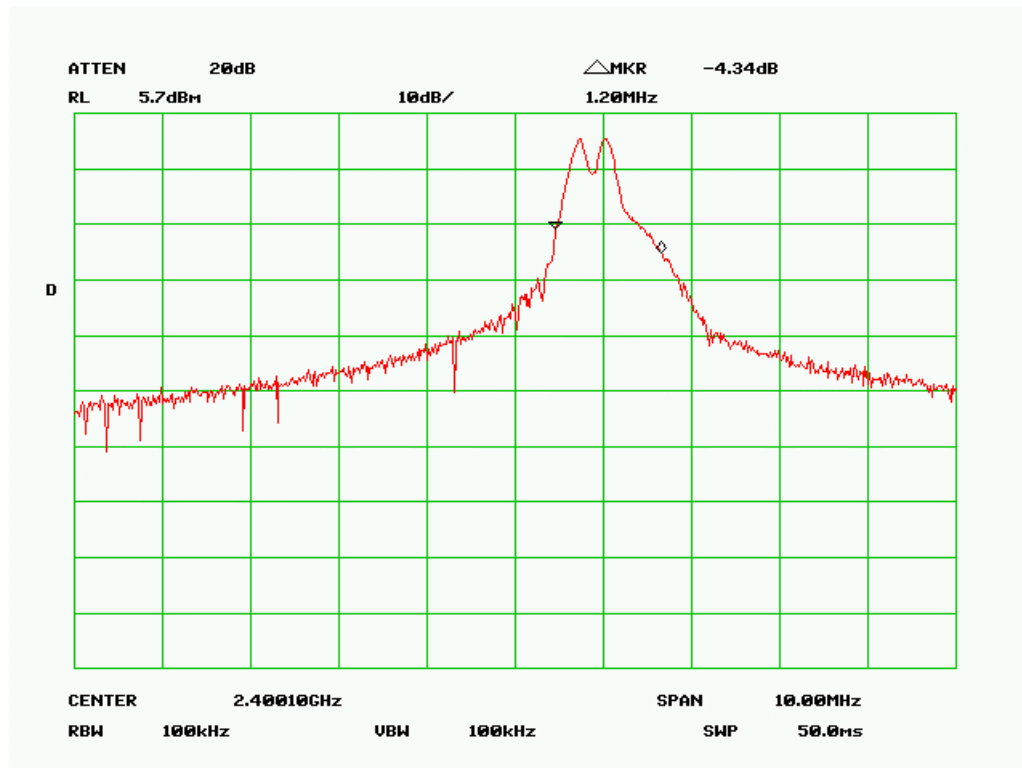
## 6dB Bandwidth 2441.6 MHz



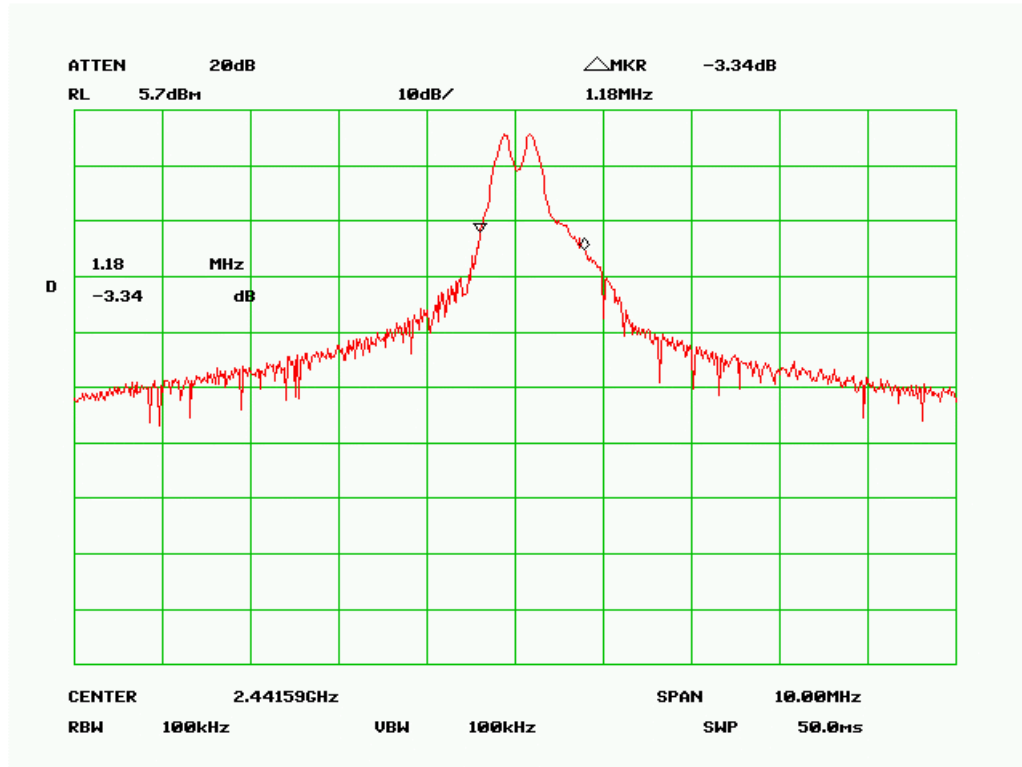
## 6dB Bandwidth 2482.25 MHz



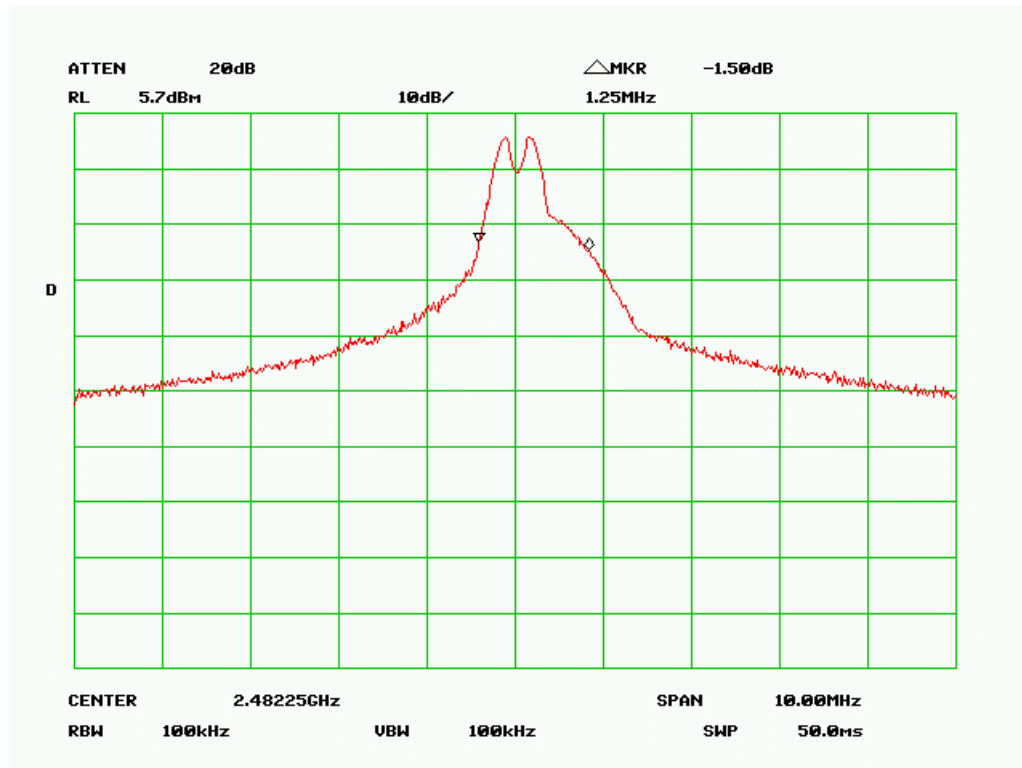
## 99% Bandwidth 2400.1 MHz



## 99% Bandwidth 2441.6 MHz



## 99% Bandwidth 2482.25 MHz

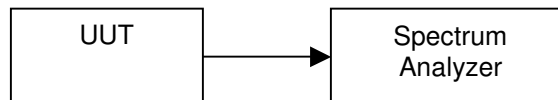


**Name of Test:** Transmitter Power Spectral Density (PSD)  
**Specification:** 15.247(d)  
**Limit:** 8 dBm in any 3 kHz Bandwidth  
**Test Equipment Utilized** i00329

### Test Procedure

The UUT 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



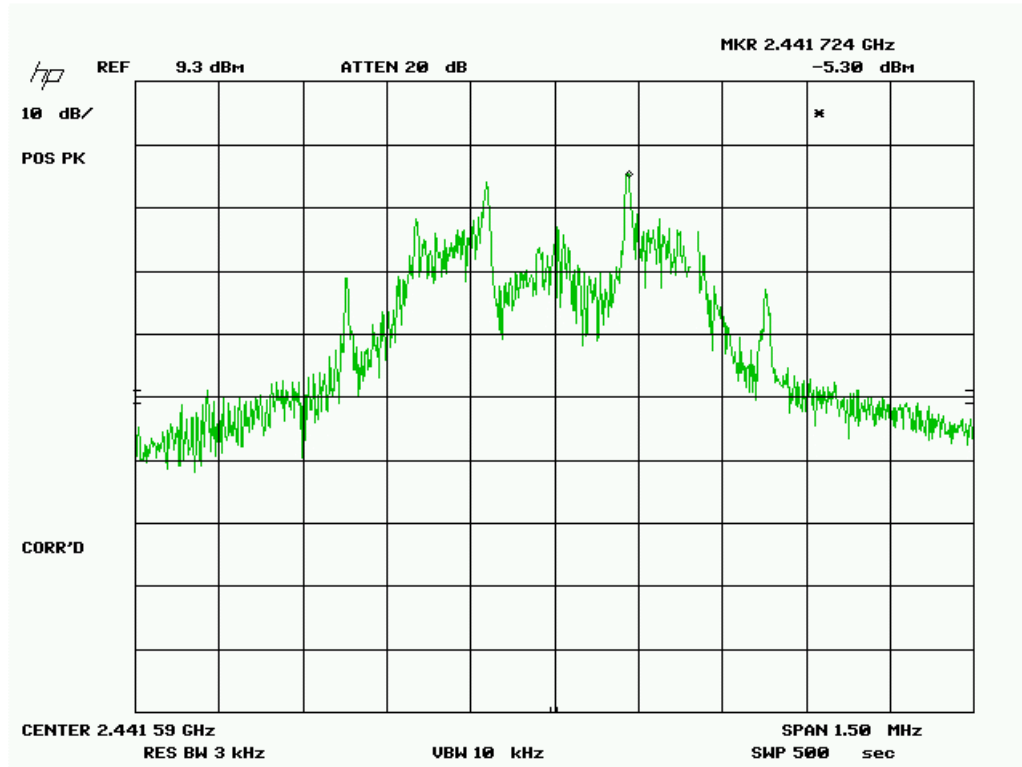
### PSD Summary

Frequency MHz	Recorded Measurement	Specification Limit	Result
2400.1	-4.4 dBm	8 dBm	Pass
2441.6	-5.3 dBm	8 dBm	Pass
2482.25	-5.4 dBm	8 dBm	Pass

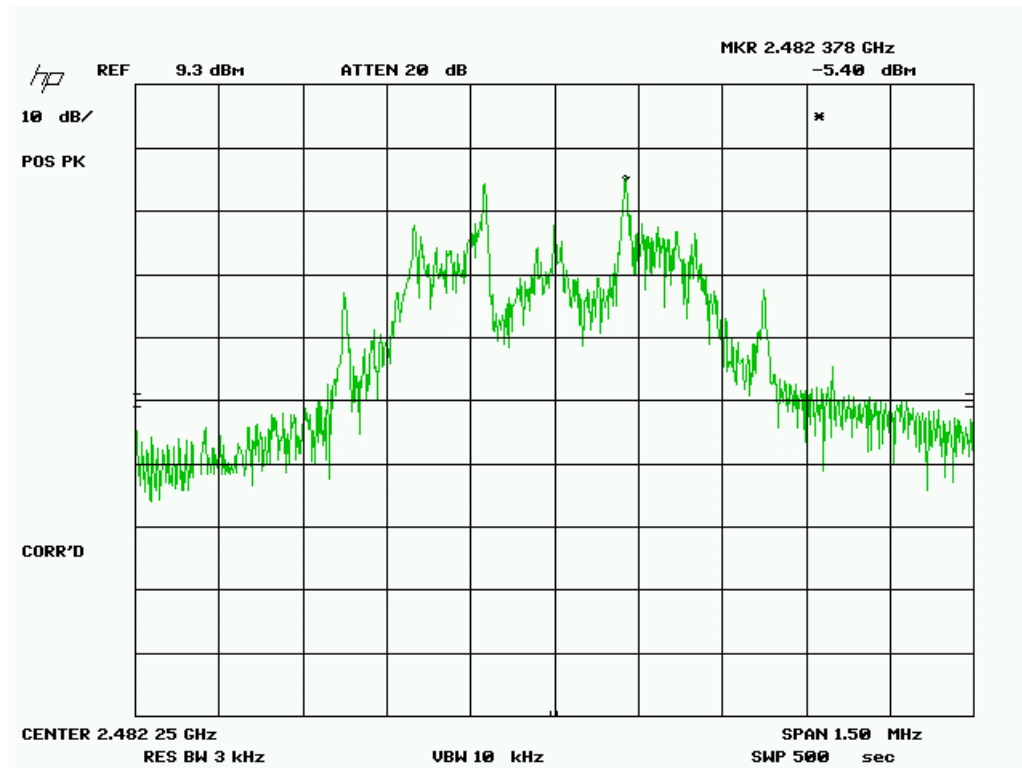
### PSD 2400.1 MHz



## PSD 2441.6 MHz



## PSD 2482.25 MHz

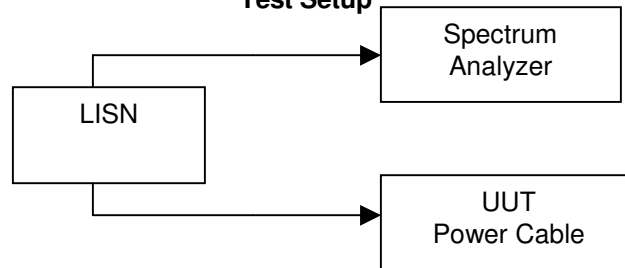


**Name of Test:** A/C Powerline Conducted Emissions  
**Specification:** 15.207  
**Test Equipment Utilized** i00033, i00270

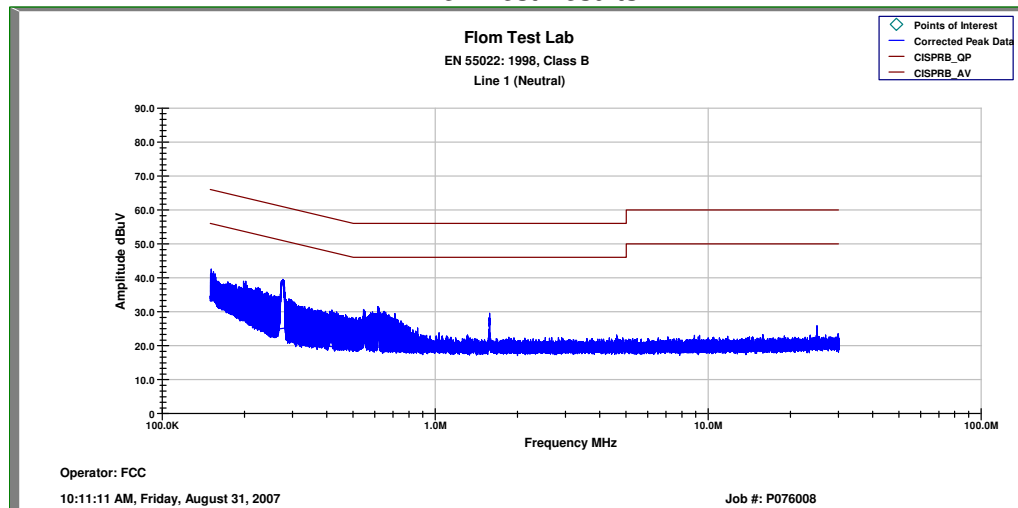
### Test Procedure

The UUT power cable connected to a LISN and the monitored output of the LISN was connected directly to a spectrum analyzer. The conducted emissions from 150 kHz to 30 MHz were monitored and compared to the specification limits. The peak values were below the Quasi-peak limits therefore only the peak values are recorded.

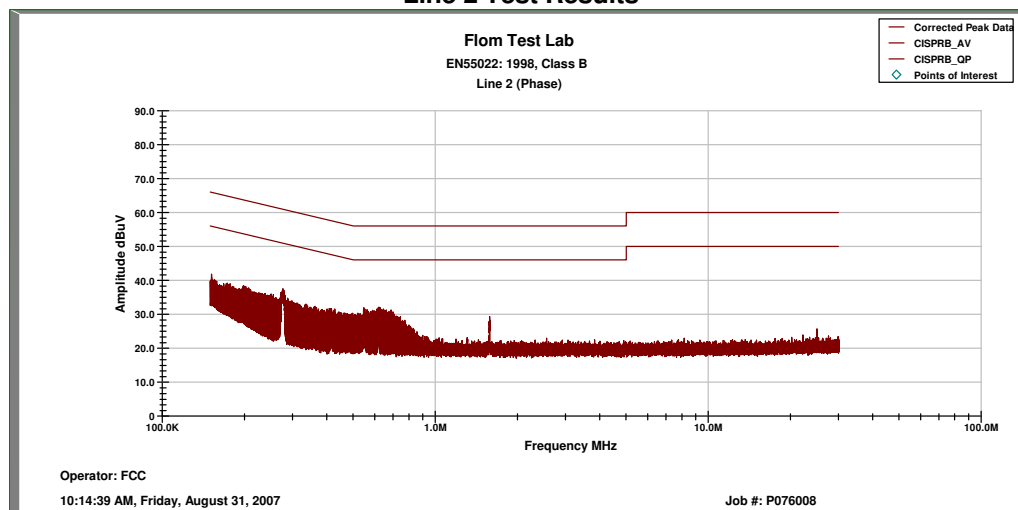
### Test Setup



### Line 1 Test Results



### Line 2 Test Results



### Test Equipment Utilized

Description	MFG	Model Number	FTL Asset Number	Last Cal Date	Cal Due Date
RF Pre-Amplifier	HP	8449	i00028	1/23/07	1/23/09
Spectrum Analyzer	HP	8563E	i00029	3/9/07	3/9/08
Spectrum Analyzer	HP	85462A	i00033	11/03/06	11/03/07
Bi-conical Antenna	EMCO	3109B	i00088	10/14/05	10/14/07
Log Periodic Antenna	Apriel	2001	i00089	10/20/05	10/20/07
Horn Antenna	EMCO	3115	i00103	9/5/06	9/5/07
Power Sensor	HP	E4418B	i00228	8/1/06	8/1/07
LISN	FCC	FCC-LISN-50-32-2-01	i00270	10/25/05	10/25/07
Power Meter	HP	8481A	i00317	10/1/06	10/1/07
Spectrum Analyzer	HP	8566B	i00329	4/16/07	4/16/08

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