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

toll-free: (866) 311-3268
fax: (480) 926-3598
http://www.ComplianceTesting.com
info@ComplianceTesting.com

Date:	December 1, 2010
Applicant:	Nautel Limited 10089 Peggy's Cove Rd Hackett's Cove, NS B3Z 3J4 Canada
Attention of:	Tim Harry, Head of Engineering Ph: (902) 823-2233 Fax: (902) 823-3183 E-Mail: thardy@nautel.com
Equipment:	VS300
FCC ID:	B3W-VS300
FCC Rules:	Part 74

Enclosed please find your copy of the Engineering Test Report for which you are subject to the restrictions as listed on the attached summary.
This report may not be reproduced, except in full, without written permission from Compliance Testing, LLC.
Please retain a copy of this report for your archival purposes.

Once a Telecommunication Certification Body (TCB) issues a Grant the Federal Communication Commission (FCC) has 30 days to review the application and request added information. It is your decision whether or not to market the equipment subject to a possible recall before the end of the 30 days.

If your equipment is still retained by us, it will be returned to you 30 days after approval is achieved.
Our invoice for services has been directed to your Accounts Payable Department.

For any additional information please contact us.

Sincerely,

Compliance Testing

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Previously Flom Test Lab
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Test Report

for

FCC ID: B3WVS300

Model: VS300

Description: Low Power FM Broadcaster

to

Federal Communications Commission

Rule Part(s) 74

Date of Report: December 1, 2010

On the Behalf of the Applicant:	Nautel Limited
At the Request of:	Nautel Limited 10089 Peggy's Cove Rd Hackett's Cove, NS B3Z 3J4 Canada
Attention of:	Tim Harry, Head of Engineering Ph: (902) 823-2233 Fax: (902) 823-3183 E-Mail: thardy@nautel.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	December 1, 2010	J. Erhard	Original Document

The Applicant has been cautioned as to the following:

15.21 **Information to the 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:

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, the facts set forth in the application and accompanying technical data is true and correct to the best of my knowledge and belief.

Certifying Engineer: John Erhard: Engineering Manager

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Sub-part 2.1033(c)(14):

Test and Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub-part J, Sections 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1079, 2.1051, 2.1053, 2.1055, 2.1057 and the following individual Parts: 74.

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**	**Pressure**
79 degrees Fahrenheit	21%	30.5 in HG

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 Reg. # 2044A-1

List of General Information Required for Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to Part 74

Sub-part 2.1033
(c)(1):

Name and Address of Applicant: Nautel Limited
10089 Peggy's Cove Rd
Hackett's Cove, NS B3Z 3J4
Canada

Manufacturer: Nautel Limited
10089 Peggy's Cove Rd
Hackett's Cove, NS B3Z 3J4
Canada

(c)(2):**FCC ID**: B3W-VS300

Model Number: VS300

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

Please see attached exhibits

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

(c)(5): **Frequency Range, MHz**: 88 – 108

(c)(6): **Power Rating, Watts:** 100

____ Switchable **X** Variable ____ N/A

FCC Grant Note:

(c)(7): **Maximum Allowable Power, Watts:** 100

DUT Results: Passes **X** Fails _____

Subpart 2.1033 (continued)

(c)(8): **Voltages & currents in all elements in final RF stage, including final transistor or solid-state device**:

Collector Current, A	=	4
Collector Voltage, Vdc	=	48
Supply Voltage,	=	220 VAC

(c)(9): **Tune-Up Procedure**:

Please see attached exhibits

(c)(10): **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)(11): **Label Information**:

Please see attached exhibits

(c)(12): **Photographs**:

Please see attached exhibits

(c)(13): **Digital Modulation Description**:

___ Attached Exhibits
_X_ N/A

(c)(14): **Test and Measurement Data**:

Follows

Test Results Summary

Specification	Test Name	Pass, Fail, N/A	Comments
74.1235	Carrier Output Power (Conducted)	Pass	
74.1236	Unwanted Emissions (Transmitter Conducted)	Pass	
74.1236	Field Strength of Spurious Radiation	Pass	
74.1236	Emission Masks (Occupied Bandwidth)	Pass	
74.1261	Frequency Stability (Temperature Variation)	Pass	
74.1261	Frequency Stability (Voltage Variation)	Pass	

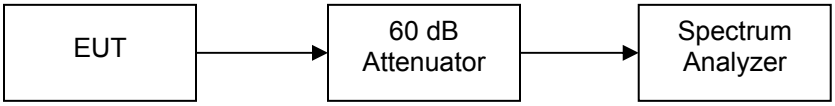
Name of Test: Carrier Output Power (Conducted)
Specification: 74.1235
Test Equipment Utilized: i00331, i00347

Engineer: J. Erhard
Test Date: 11/12/2010

Test Procedure

The Equipment Under Test (EUT) was connected To a Spectrum analyzer through 60 dB of attenuation to protect the measurement equipment. The RBW was set to 1 MHz with the VBW set 3X the RBW. The peak power readings were measured and compares to the limit.

Test Setup



High Power Transmitter Peak Output Power

Tuned Frequency (MHz)	Recorded Measurement (dBm)	Recorded Measurement (Watts)	Limit (Watts)	Result
88.1	49.97	99.3	100	Pass
98.1	50	100	100	Pass
107.9	49.97	99.3	100	Pass

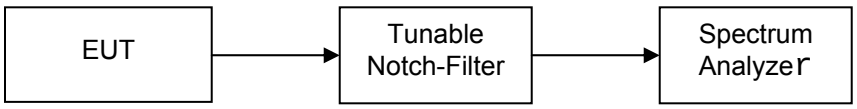
Name of Test: Conducted Spurious Emissions
Specification: 74.1236
Test Equipment Utilized: i00331, i00347, i00176

Engineer: J. Erhard
Test Date:11/12/2010

Test Procedure

The EUT was connected to a spectrum analyzer to verify that the UUT met the requirements for spurious emissions. Power attenuators and a tunable notch filter were utilized to ensure the fundamental did not put the spectrum analyzer into compression. The resolution bandwidth set for 100 kHz and the reference level was adjusted to ensure the system had sufficient dynamic range to measure spurious emissions. The frequency range from 30 MHz to the 10th harmonic of the fundamental transmitter was observed and plotted.

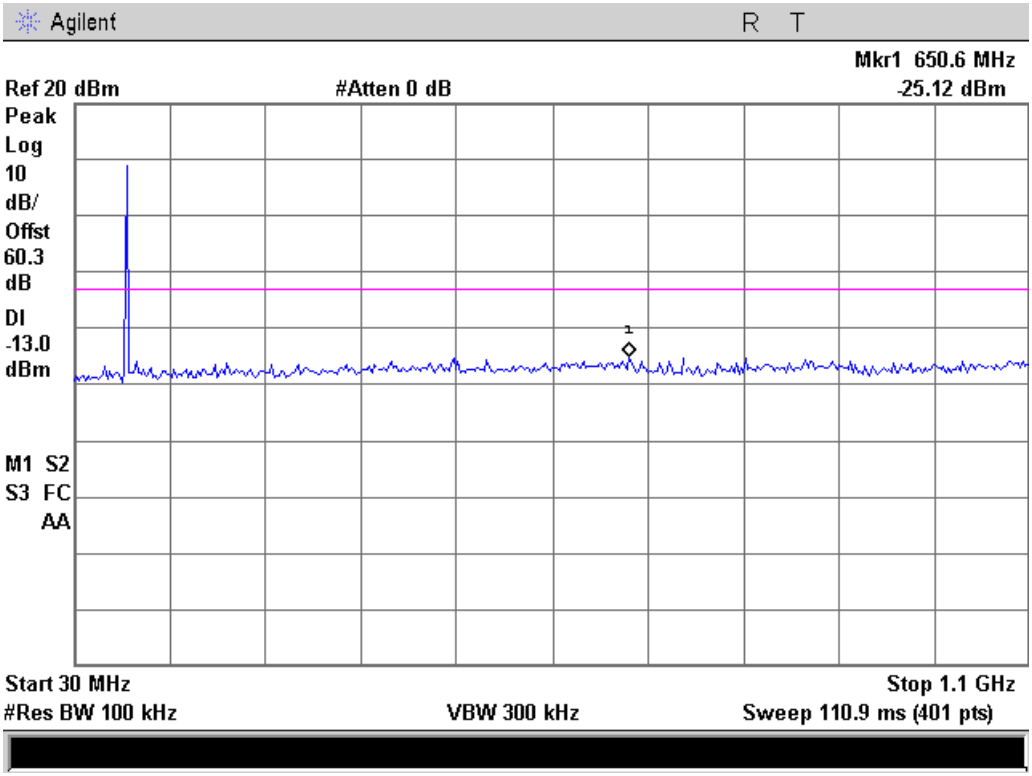
Test Setup



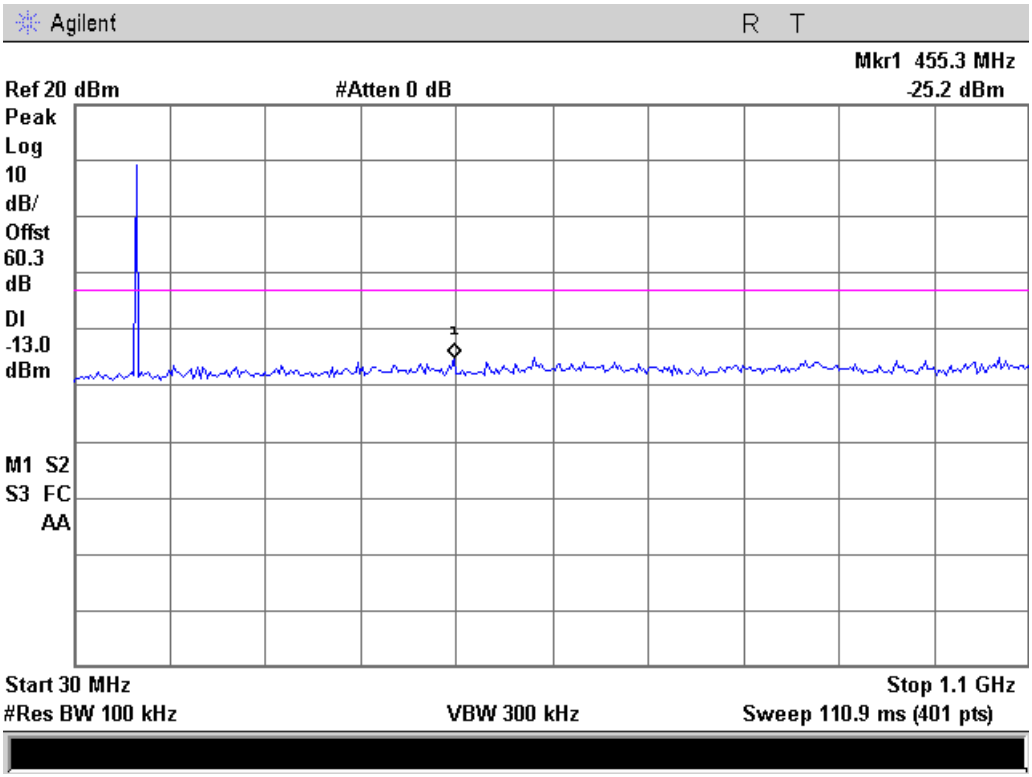
High Power Conducted Spurious Emissions Summary Test Table

Tuned Frequency (MHz)	Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Specification Limit (dBm)	Result
88.1	650.6	-25.12	-13	Pass
98.1	455.3	-25.20	-13	Pass
107.9	240.0	-20.00	-13	Pass

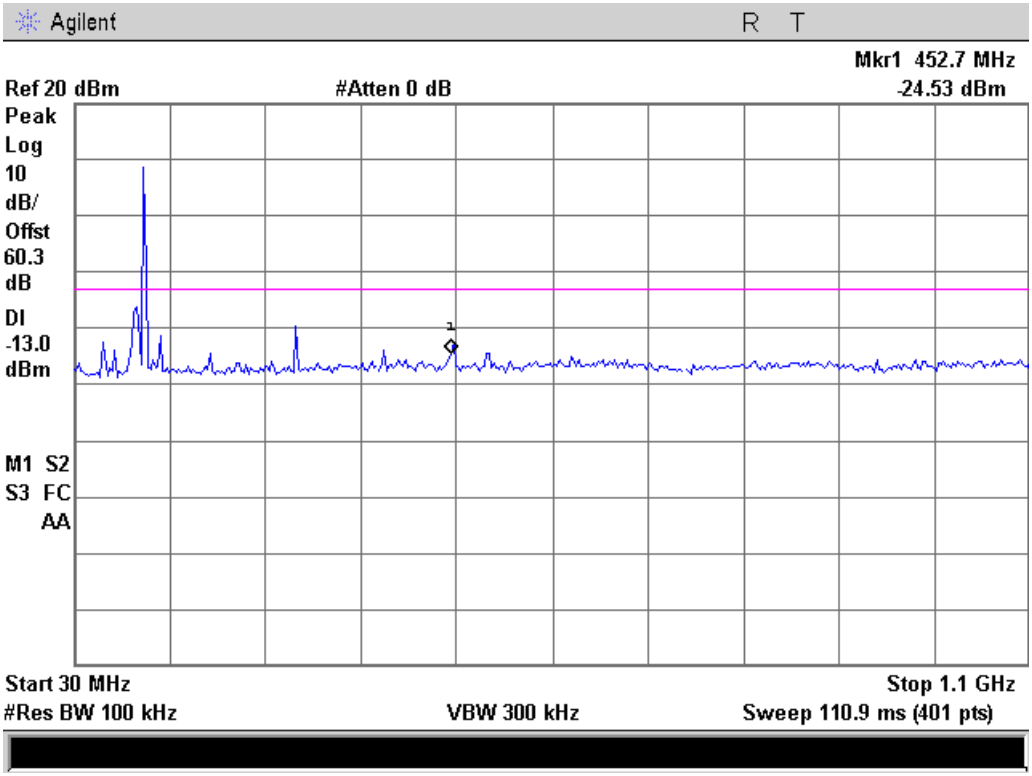
88.1 MHz Plots



98.1 MHz Plots



107.9 MHz Plots



Name of Test: Field Strength of Spurious Radiation
Specification: 74.1236 **Engineer**: J. Erhard
Test Equipment Utilized: i00033, i00267, i00134 **Test Date**: 11/19/2010

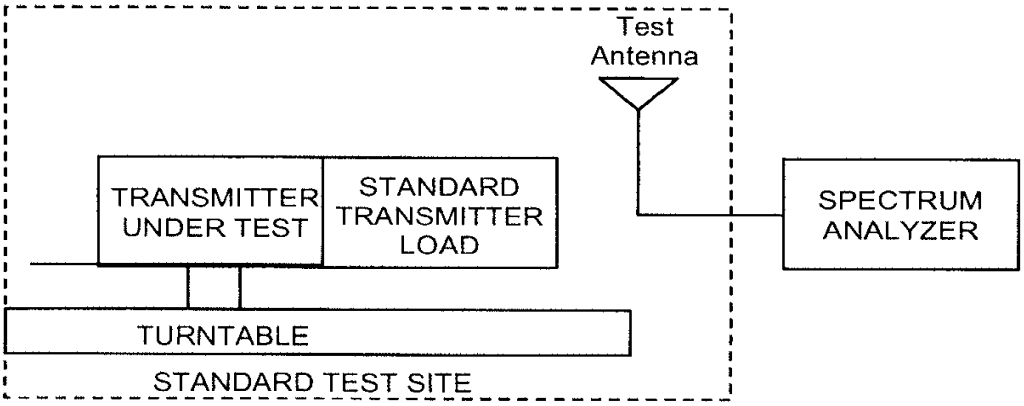
Test Procedure

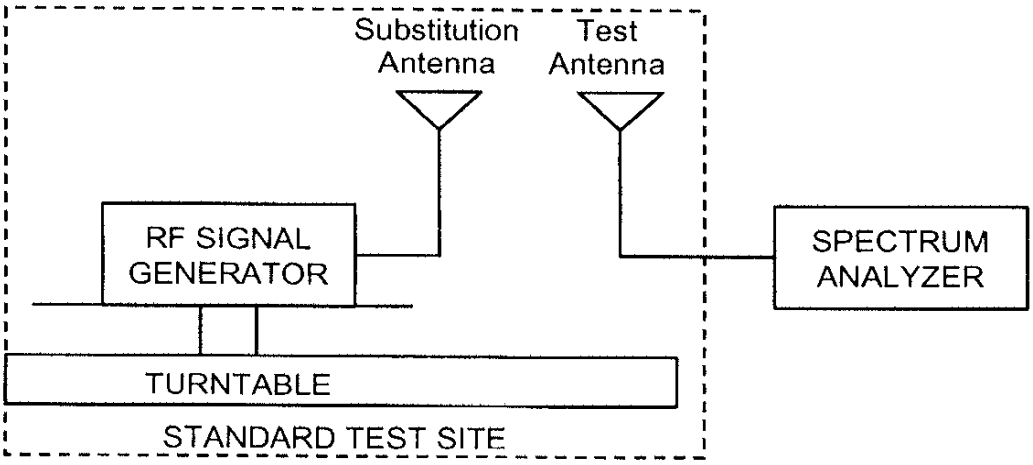
A) Connect the equipment as illustrated
B) Adjust the spectrum analyzer for the following settings:
1) Resolution Bandwidth 100 kHz (<1 GHZ), 1 MHZ (> 1GHz).
2) Video Bandwidth ≥ 3 times Resolution Bandwidth, or 30 kHz
3) Sweep Speed ≤2000 Hz/second
4) Detector Mode = Mean or Average Power
C) Place the transmitter to be tested on the turntable in the standard test site. The transmitter is transmitting into a non-radiating load that is placed on the turntable. The RF cable to this load should be of minimum length.
D) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the equipment. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier, except for the region close to the carrier equal to ± the test bandwidth (see section 1.3.4.4).
E) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.
F) Repeat step E) for each spurious frequency with the test antenna polarized vertically.
G) Reconnect the equipment as illustrated.
H) Keep the spectrum analyzer adjusted as in step B).
I) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.
J) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.
K) Repeat step J) with both antennas vertically polarized for each spurious frequency.
L) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps J) and K) by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna.
M) The levels recorded in step L) are absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following:

Radiated spurious emissions dB = $10\log_{10}$ (TX power in watts/0.001) – the levels in step l)

NOTE: It is permissible that other antennas provided can be referenced to a dipole.

Test Setup


Test
Antenna
TRANSMITTER
UNDER TEST
STANDARD
TRANSMITTER
LOAD
SPECTRUM
ANALYZER
TURNTABLE
STANDARD TEST SITE


Substitution
Antenna
Test
Antenna
RF SIGNAL
GENERATOR
SPECTRUM
ANALYZER
TURNTABLE
STANDARD TEST SITE

88.1 MHz Test Results

Emission Frequency (MHz)	Measured Level (dBm)	Correction Factor (dB)	Corrected Value (dBm)	Limit (dBm) ERP/EIRP	Result
176.2	-78	11.4	-66.6	-13	Pass
264.3	-77.9	15.2	-62.7	-13	Pass
352.4	-73.1	17	-56.1	-13	Pass

98.1 MHz Test Results

Emission Frequency (MHz)	Measured Level (dBm)	Correction Factor (dB)	Corrected Value (dBm)	Limit (dBm) ERP/EIRP	Result
392.4	-81.7	18.3	-63.4	-13	Pass
686.7	-86.4	23	-63.4	-13	Pass
784.8	-93.3	24.5	-68.8	-13	Pass

107.9 MHz Test Results

Emission Frequency (MHz)	Measured Level (dBm)	Correction Factor (dB)	Corrected Value (dBm)	Limit (dBm) ERP/EIRP	Result
215.8	-76.7	12.8	-63.9	-13	Pass
323.7	-67.5	16.1	-51.4	-13	Pass
431.6	-81.5	19.5	-62	-13	Pass

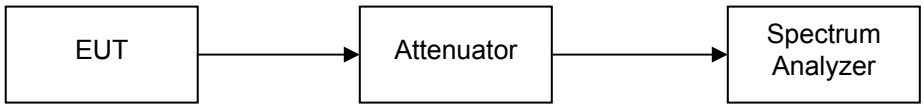
No other emissions were detected. All emissions were greater than –13 dBm.

Name of Test: Emission Masks (Occupied Bandwidth)
Specification: 74.1236 **Engineer**: J. Erhard
Test Equipment Utilized: i00347, i00331 **Test Date**: 11/22/2010

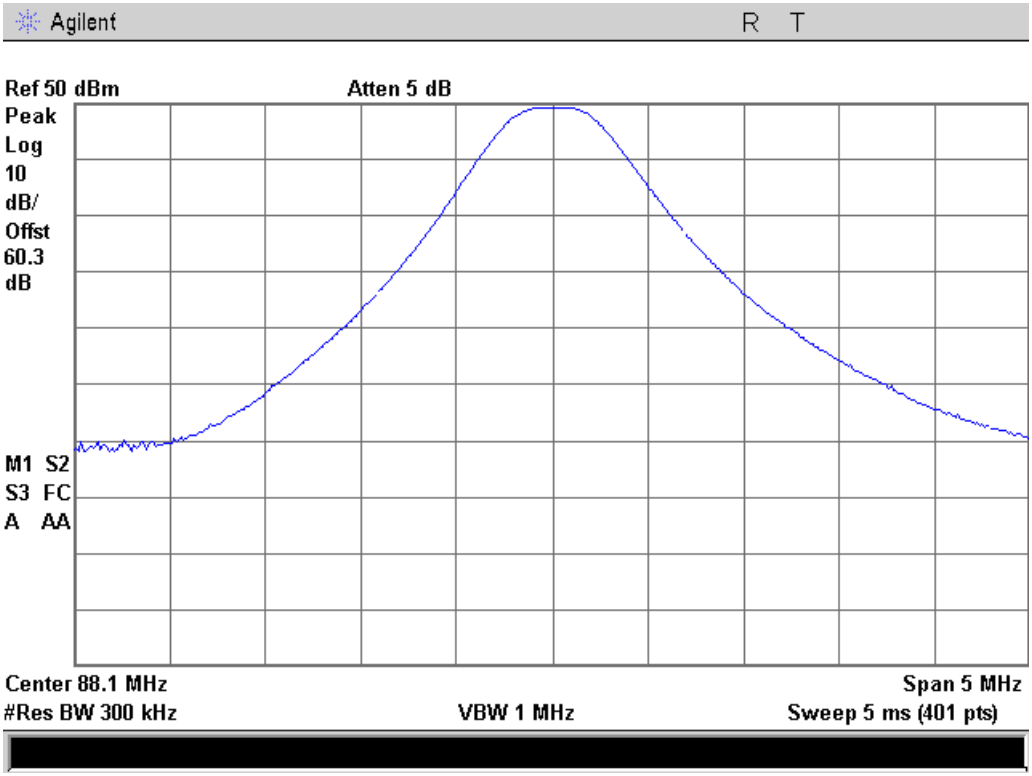
Test Procedure

The EUT was connected to a spectrum analyzer through a power attenuator to verify that the EUT meets the required emissions mask. A reference level plot is provided to verify that the peak power was established prior to testing the mask. A swept audio frequency of 1 kHz to 15 kHz at 3 VPP was input into the EUT.

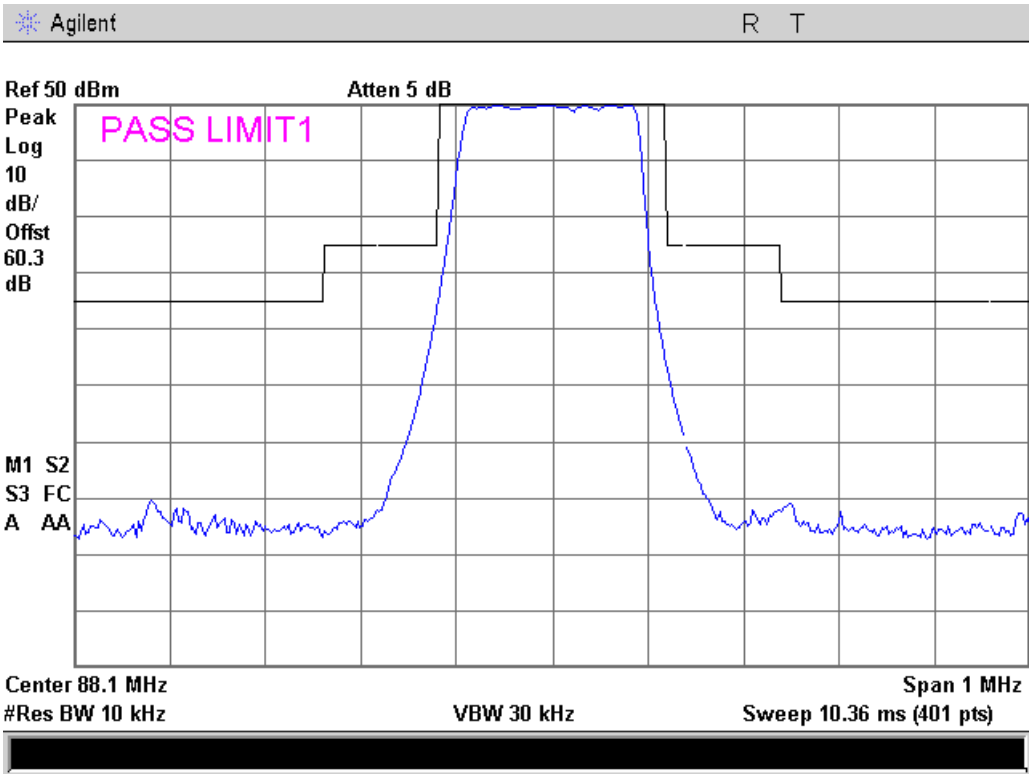
Test Setup



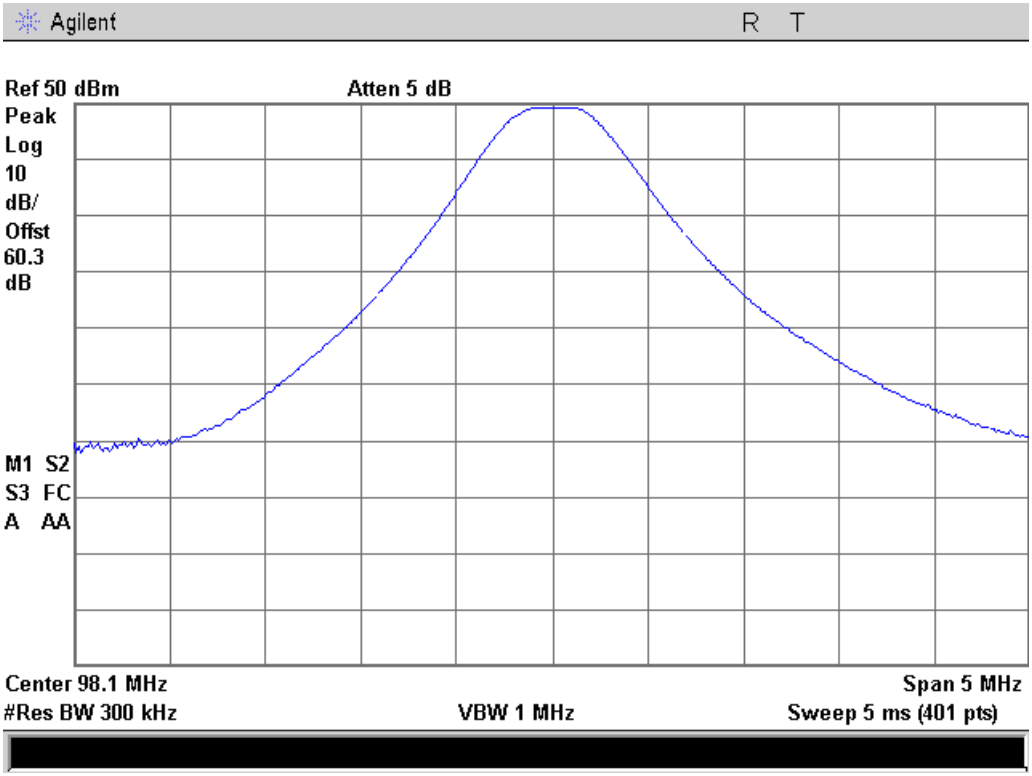
88.1 MHz Reference



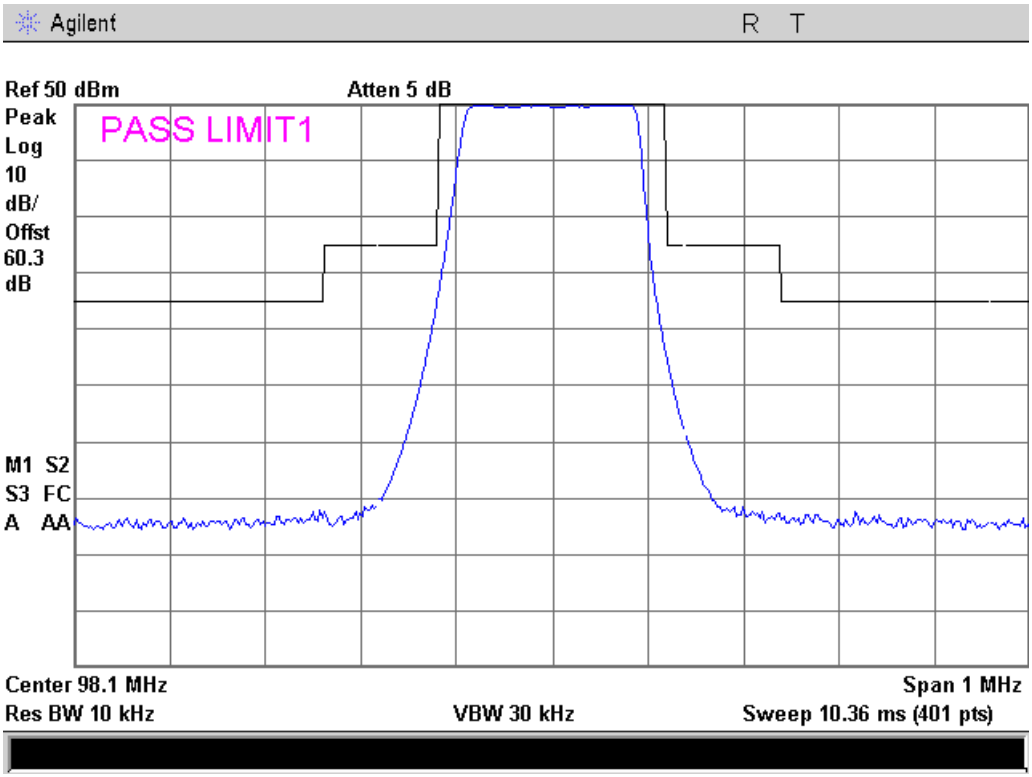
88.1 MHz Mask



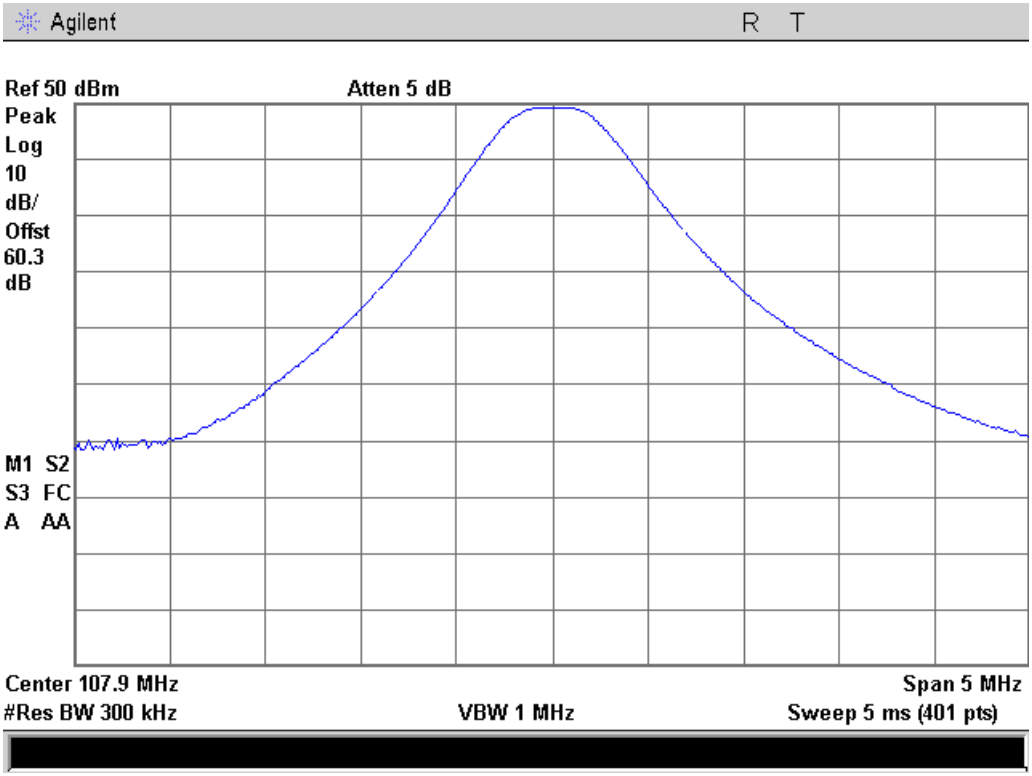
98.1 MHz Reference



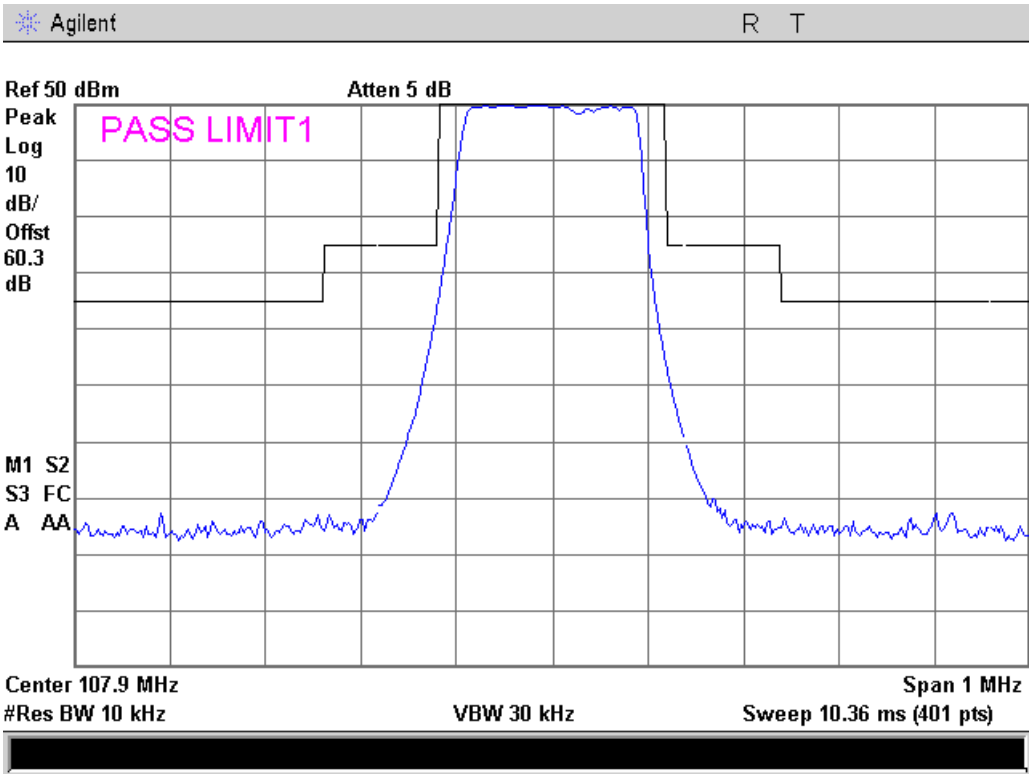
98.1 MHz Mask



107.9 MHz Reference



107.9 MHz Mask

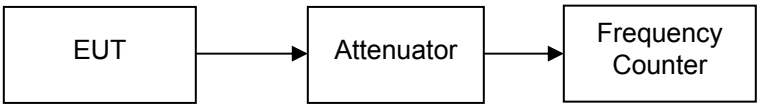


Name of Test: Frequency Stability (Temperature Variation)
Specification: 74.1261 **Engineer**: J. Erhard
Test Equipment Utilized: i00287, i00331, i00362 **Test Date**: 11/12/2010

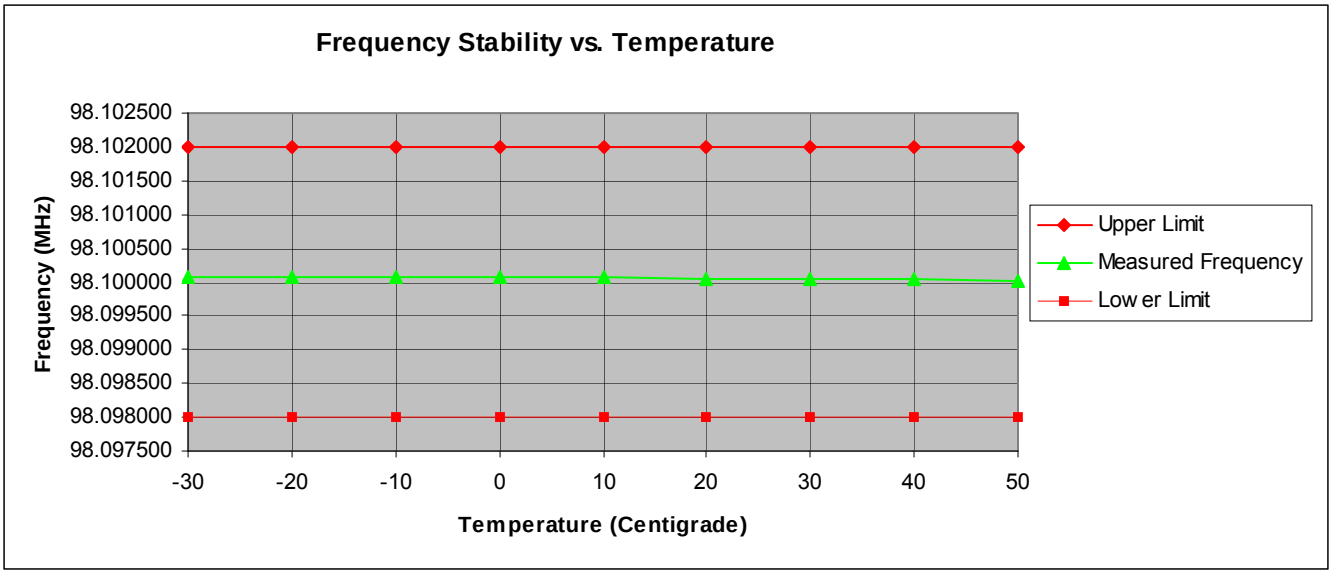
Test Procedure

The EUT was placed in an environmental test chamber and the RF output was connected directly to a frequency counter. The temperature was varied from -30ºC to 50ºC in 10ºC increments. After a sufficient time for temperature stabilization the RF output frequency was measured.

Test Setup



Test Results

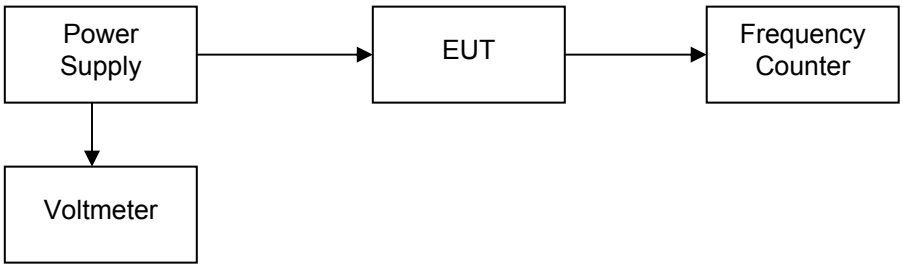


Name of Test: Frequency Stability (Voltage Variation)
Specification: 74.1261 **Engineer**: J. Erhard
Test Equipment Utilized: i00287, i00331, i00362 **Test Date:** 11/12/2010

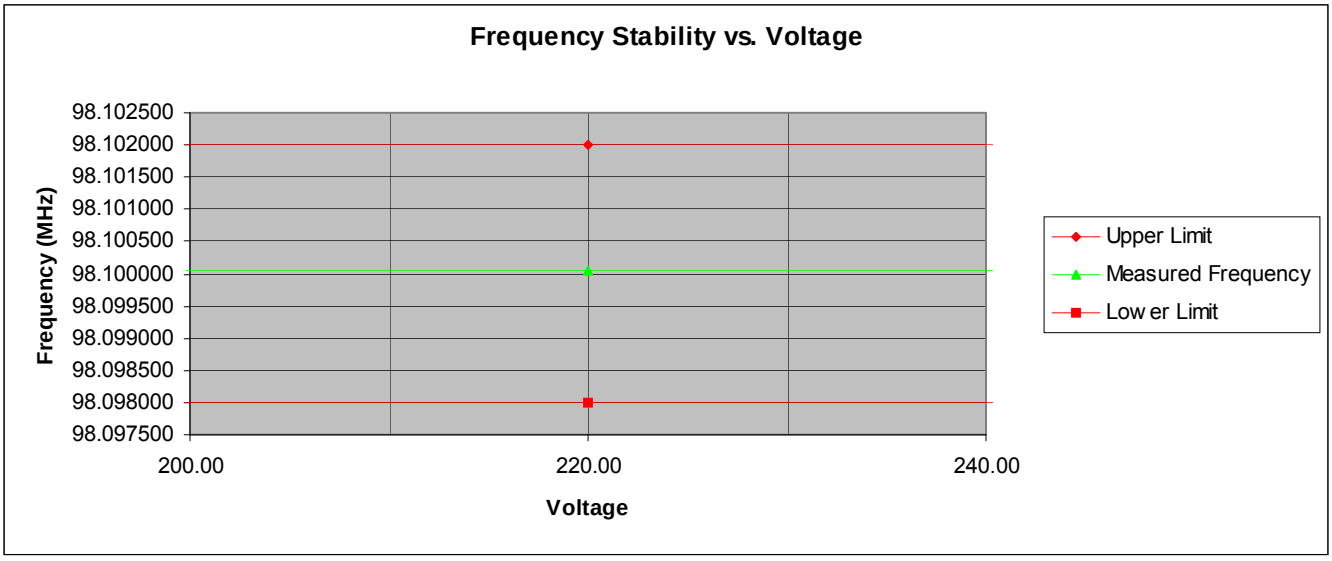
Test Procedure

The EUT was placed in a temperature chamber at 20 °C and connected directly to a frequency counter and variable power supply. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value and the RF output was measured.

Test Setup



Test Results



Test Equipment Utilized

Description	MFG	Model Number	CT Asset Number	Last Cal Date	Cal Due Date
Temperature Chamber	Tenney	BTRS	i00287	7/1/2010	7/1/2011
Tunable Notch Filter	K&L	2TR-30	i00176	NCR	NCR
Power Attenuator	Narda	769-30	i00347	NCR	NCR
Spectrum Analyzer	HP	85426A	i00033	12/03/2010	12/03/2011
Biconilog Antenna	Schaffner	CBL6111C	i00267	11/21/2009	11/21/2011
Non-radiating Load	Termaline	8201	i00134	NCR	NCR
Spectrum Analyzer	Agilent	E4407B	i00331	11/3/2009	11/3/2010**
AC Power Supply	Behlman	BL Series	i00362	NCR	NCR

** 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