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

Transmitter Certification

of

FCC ID: T04-RMTX-2025

Model: Rack Mount TX

to

Federal Communications Commission

Rule Parts 74(F), 90.202

Date of report: January 26, 2006
Date of Amended report: March 12, 2006

On the Behalf of the Applicant:

Gigawave US

At the Request of:

Total RF
777 American Drive
Bensalem, PA 19020

Attention of: Tom Sharkoski
215-633-1000; fax: 215-633-1085
Email: tsharkoski@totalrf.com

Supervised by: David E. Lee, FCC Compliance Manager

List of Exhibits

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

Applicant: Gigawave US

FCC ID: T04-RMTX-2025

By Applicant:

1. Letter of Authorization

2. Confidentiality Request: 0.457 And 0.459

5. Identification Drawings, 2.1033(c)(11)
   - Label
   - Location of Label
   - Compliance Statement
   - Location of Compliance Statement

6. Photographs, 2.1033(c)(12)

7. Documentation: 2.1033(c)
   - (3) User Manual
   - (9) Alignment/Tune Up Info
   - (10) Schematic Diagram
   - (10) Operational/Circuit Description
   - Block Diagram
   - Parts List

8. MPE Report

By M.F.A. Inc.:

A. Testimonial & Statement of Certification

The Applicant has been cautioned as to the following:

15.21 **Information to the 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.

Table of Contents

Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

a)	**Test Report**
b) Laboratory: (FCC: 31040/SIT) (Canada: IC 2044)	M. Flom Associates, Inc. 3356 N. San Marcos Place, Suite 107 Chandler, AZ 85225
c) Report Number:	d0610037
d) Client:	Gigawave US 777 American Drive Bensalem, PA 19020
e) Identification: EUT Description:	FCC ID: T04-RMTX-2025 Rack Mount TX
f) EUT Condition:	Not required unless specified in individual tests.
g) Report Date: EUT Received:	January 26, 2006 December 12, 2006
h, j, k):	As indicated in individual tests.
i) Sampling method:	No sampling procedure used.
l) Uncertainty:	In accordance with MFA internal quality manual.
m) Supervised by:	 David E. Lee, FCC Compliance Manager
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.

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:

____	21 – Domestic Public Fixed Radio Services
____	22 – Public Mobile Services
____	22 Subpart H - Cellular Radiotelephone Service
____	22.901(d) - Alternative technologies and auxiliary services
____	23 – International Fixed Public Radiocommunication services
____	24 – Personal Communications Services
X	74 Subpart F – Television Broadcast Auxiliary Stations
____	74 Subpart H - Low Power Auxiliary Stations
____	80 – Stations in the Maritime Services
____	80 Subpart E - General Technical Standards
____	80 Subpart F - Equipment Authorization for Compulsory Ships
____	80 Subpart K - Private Coast Stations and Marine Utility Stations
____	80 Subpart S - Compulsory Radiotelephone Installations for Small Passenger Boats
____	80 Subpart T - Radiotelephone Installation Required for Vessels on the Great Lakes
____	80 Subpart U - Radiotelephone Installations Required by the Bridge-to-Bridge Act
____	80 Subpart V - Emergency Position Indicating Radio Beacons (EPIRB'S)
____	80 Subpart W - Global Maritime Distress and Safety System (GMDSS)
____	80 Subpart X - Voluntary Radio Installations
____	87 – Aviation Services
X	90 – Private Land Mobile Radio Services
____	94 – Private Operational-Fixed Microwave Service
____	95 Subpart A - General Mobile Radio Service (GMRS)
____	95 Subpart C - Radio Control (R/C) Radio Service
____	95 Subpart D - Citizens Band (CB) Radio Service
____	95 Subpart E - Family Radio Service
____	95 Subpart F - Interactive Video and Data Service (IVDS)
____	97 - Amateur Radio Service
____	101 – Fixed Microwave Services

Standard Test Conditions and Engineering Practices

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

In accordance with ANSI C63.4-2003, 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.


THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

M. FLOM ASSOCIATES, 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/IEC 17025 - 1999 "General Requirements for the Competence of Testing and Calibration Laboratories" and any additional program requirements in the identified field of testing.

Presented this 16th day of June 2004.

President
For the Accreditation Council
Certificate Number 2152-01
Valid to August 31, 2006

A2LA

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

A2LA

"A2LA has accredited M. Flom Associates, 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/IEC 17025 – 1999 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing."

Certificate Number: **2152-01**

List of General Information Required for Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to 74(F), 90.202 and Confidentiality

Sub-part 2.1033

(c)(1): **Name and Address of Applicant**:

Gigawave US
777 American Drive
Bensalem, PA 19020

Manufacturer:

Applicant

(c)(2): **FCC ID**: T04-RMTX-2025

Model Number: Rack Mount TX

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

Please see attached exhibits

(c)(4): **Type of Emission**: 12M0W7D, 12M0F8W, 7M75F3W

(c)(5): **Frequency Range, MHz**: 1990 to 2492

(c)(6): **Power Rating, Watts**: 0.500

__X__ Switchable ____ Variable ____ N/A

(c)(7): **Maximum Power Rating, 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	=	3.0
Collector Voltage, Vdc	=	8.0
Supply Voltage, Vdc	=	12V

(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

Name of Test: Carrier Output Power (Conducted)

Specification: 47 CFR 2.1046(a)

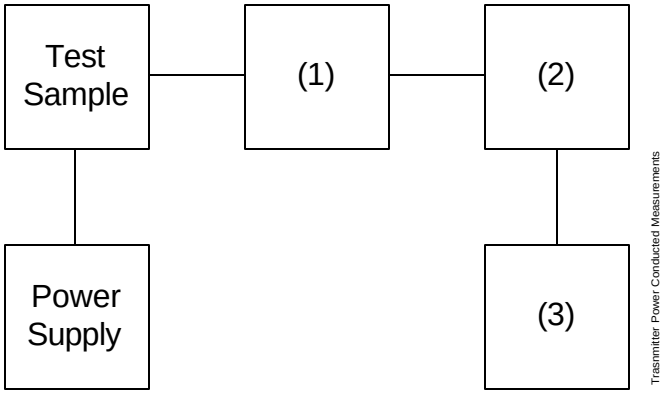
Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.1

Measurement Procedure

A) The EUT was connected to a resistive coaxial attenuator of normal load impedance, and the unmodulated output power was measured by means of an RF Power Meter.

B) Measurement accuracy is ±3%.

Transmitter Test Set-Up: RF Power Output



	Asset	Description	s/n	Cycle	Last Cal
(1)	**Coaxial Attenuator**				
X	i00231/2	PASTERNACK PE7021-30 (30 dB)	231 or 232	NCR	
	i00122/3	NARDA 766 (10 dB)	7802 or 7802A	NCR	
(2)	**Filters; Notch, HP, LP, BP**				
		None required	nsn	NCR	
(3)	**Spectrum Analyzer**				
X	i00048	HP 8566B Spectrum Analyzer	2511A01467	12 mo.	Jun-05
	i00029	HP 8563E Spectrum Analyzer	3213A00104	12 mo.	Jan-06

Name of Test: Carrier Output Power (Conducted)

Measurement Results
(Worst case)

Frequency of Carrier, MHz	=	2200
Ambient Temperature	=	23°C ± 3°C

Power Setting	RF Power, dBm	RF Power, Watts
High	27.0	0.500

Performed by: Fred Chastain, Test Technician

Name of Test: Unwanted Emissions (Transmitter Conducted)

Specification: 47 CFR 2.1051

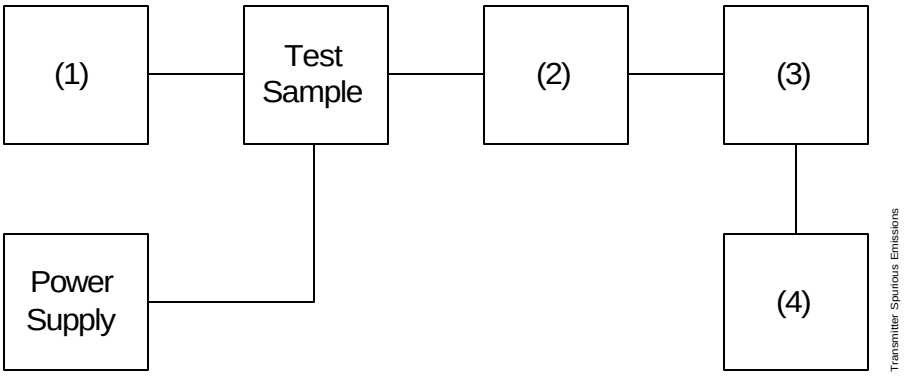
Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.13

Measurement Procedure

A) The emissions were measured for the worst case as follows:
   1). within a band of frequencies defined by the carrier frequency plus and minus one channel.
   2). from the lowest frequency generated in the EUT and to at least the 10th harmonic of the carrier frequency, or 40 GHz, whichever is lower.

B) The magnitude of spurious emissions that are attenuated more than 20 dB below the permissible value need not be specified.

Transmitter Test Set-Up: Spurious Emission



	Asset	Description	s/n		
(1) **Audio Oscillator/Generator**					
X	i00017	HP 8903A Audio Analyzer	2216A01753	12 mo.	Apr-05
	i00002	HP 3336B Synthesizer / Level Gen.	1931A01465	12 mo.	Apr-05
(2) **Coaxial Attenuator**					
X	i00231/2	PASTERNACK PE7021-30 (30 dB)	231 or 232	NCR	
	i0012/3	NARDA 766 (10 dB)	7802 or 7802A	NCR	
(3) **Filters; Notch, HP, LP, BP**					
		None required			
(4) **Spectrum Analyzer**					
X	i00048	HP 8566B Spectrum Analyzer	2511A01467	12 mo.	Oct-05
	i00029	HP 8563E Spectrum Analyzer	3213A00104	12 mo.	Jan-06

Name of Test: Unwanted Emissions (Transmitter Conducted)

Measurement Results
(Worst Case)

Summary:

Frequency of carrier, MHz	=	2200
Spectrum Searched, GHz	=	0 to 10 x F_C
Maximum Response, Hz	=	4500
All Other Emissions Limit(s), dBc	=	= 20 dB Below Limit

Tabulated Results follow:

Measurement Results

g0610275: 2006-Jan-23 Thu 08:53:00
STATE: 2:High Power Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	ERP, dBm	ERP, dBc
1990.000000	3980.000000	-49.00	-69.00
2016.500000	4033.000000	-35.80	-55.80
2101.500000	4203.000000	-56.40	-76.40
2458.000000	4916.000000	-33.40	-53.40
2492.000000	4984.000000	-57.10	-77.10
1990.000000	5970.000000	-50.40	-70.40
2016.500000	6049.500000	-35.00	-55.00
2101.500000	6304.500000	-55.30	-75.30
2458.000000	7374.000000	-52.70	-72.70
2492.000000	7476.000000	-52.00	-72.00
1990.000000	7960.000000	-46.90	-66.90
2101.500000	8406.000000	-47.30	-67.30
2458.000000	9832.000000	-45.40	-65.40
1990.000000	9950.000000	-46.50	-66.50
2492.000000	9968.000000	-47.90	-67.90
2101.500000	10507.500000	-47.00	-67.00
1990.000000	11940.000000	-43.30	-63.30
2458.000000	12290.000000	-44.80	-64.80
2492.000000	12460.000000	-46.80	-66.80
2101.500000	12609.000000	-46.00	-66.00
1990.000000	13930.000000	-43.80	-63.80
2101.500000	14710.500000	-44.40	-64.40
2458.000000	14748.000000	-43.10	-63.10
2492.000000	14952.000000	-41.60	-61.60
1990.000000	15920.000000	-47.30	-67.30
2101.500000	16812.000000	-47.30	-67.30
2458.000000	17206.000000	-48.60	-68.60
2492.000000	17444.000000	-48.50	-68.50
1990.000000	17910.000000	-43.60	-63.60

Performed by: Fred Chastain, Test Technician

Name of Test: Field Strength of Spurious Radiation

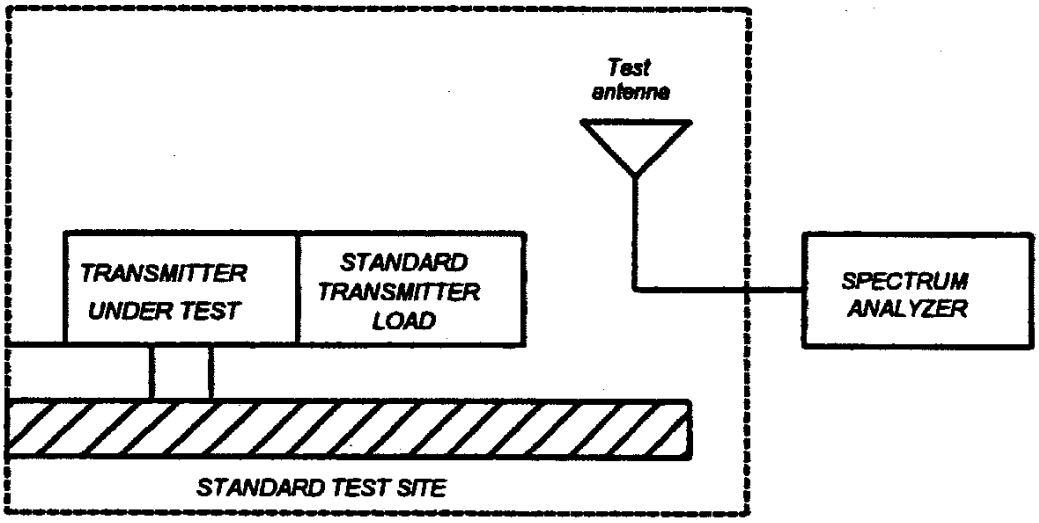
Specification: 47 CFR 2.1053(a)

Guide: ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16, 47 CFR 22.917

Measurement Procedure

Definition:
Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

Method of Measurement:
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 (22.917)
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.

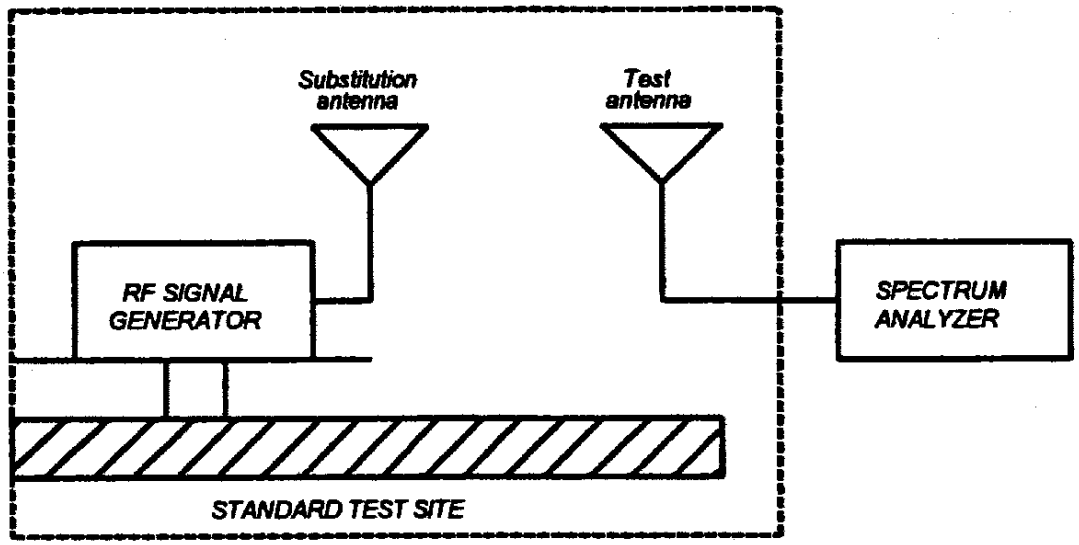


Name of Test: Field Strength of Spurious Radiation (Cont.)

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.

Name of Test: Field Strength of Spurious Radiation (Cont.)

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 I)

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

Test Equipment

	Asset	Description	s/n	Cycle	Last Cal
Transducer					
X	i00088	EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Sep-03
X	i00089	Aprel 2001 200MHz-1GHz	001500	12 mo.	Sep-03
X	i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Jan-04
Amplifier					
X	i00028	HP 8449A	2749A00121	12 mo.	May-04
Spectrum Analyzer					
X	i00029	HP 8563E	3213A00104	12 mo.	May-04
X	i00033	HP 85462A	3625A00357	12 mo.	Sep-04
Substitution Generator					
X	i00067	HP 8920A Communication TS	3345U01242	12 mo.	Jun-04
X	i00207	HP 8753D Network Analyzer	3410A08514	12 mo.	Jul-04

All ports terminated.

Test Setup Photos: Radiated Emissions

State:

State:

Name of Test: Radiated Spurious Emissions

g0610280: 2006-Jan-30 Thu 08:53:00
State: 0:

Frequency Emission, MHz	Level, dBuV		@ m	C.F., dB	dbm	dBc
73.373000	17.72	V	3	6.14	-83.14	-110.14
73.732800	24.63	H	3	7.07	-75.30	-102.30
122.876000	13.66	H	3	12.02	-81.32	-108.32
122.876000	14.91	V	3	12.67	-79.42	-106.42
172.030000	23.66	V	3	9.96	-73.38	-100.38
172.038000	13.69	H	3	9.95	-83.36	-110.36
240.030000	22.63	V	3	12.10	-72.27	-99.27
240.039000	14.23	H	3	12.10	-80.67	-107.67
614.505000	9.57	H	3	21.05	-76.38	-103.38
614.505000	15.83	V	3	21.05	-70.12	-97.12
663.253000	15.73	V	3	21.55	-69.72	-96.72
712.700000	15.43	H	3	22.14	-69.43	-96.43
712.700000	15.50	V	3	22.14	-69.36	-96.36

Tests performed up to 10 x Fc

All other emissions in the required measurement range were more that 20 dB below the required limits.

Performed By: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Specification: 47 CFR 2.1049(c)(1)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.11

Measurement Procedure

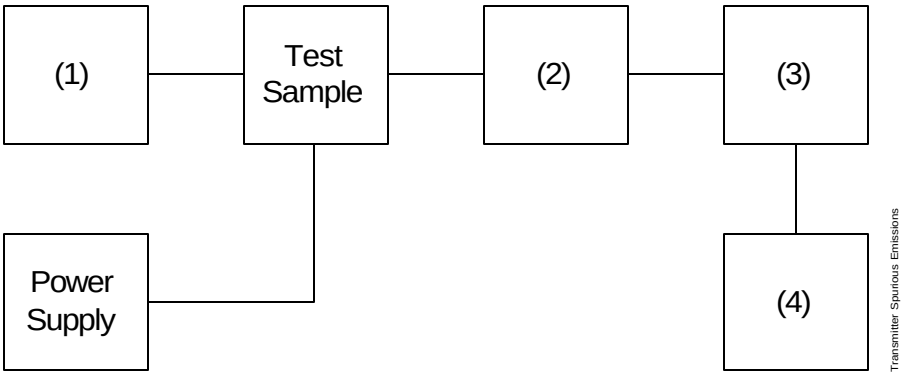
A) The EUT and test equipment were set up as shown below

B) For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for ±2.5/±1.25 kHz deviation (or 50% modulation). With level constant, the signal level was increased 16 dB.

C) For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.

D) The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.

Transmitter Test Set-Up: Occupied Bandwidth



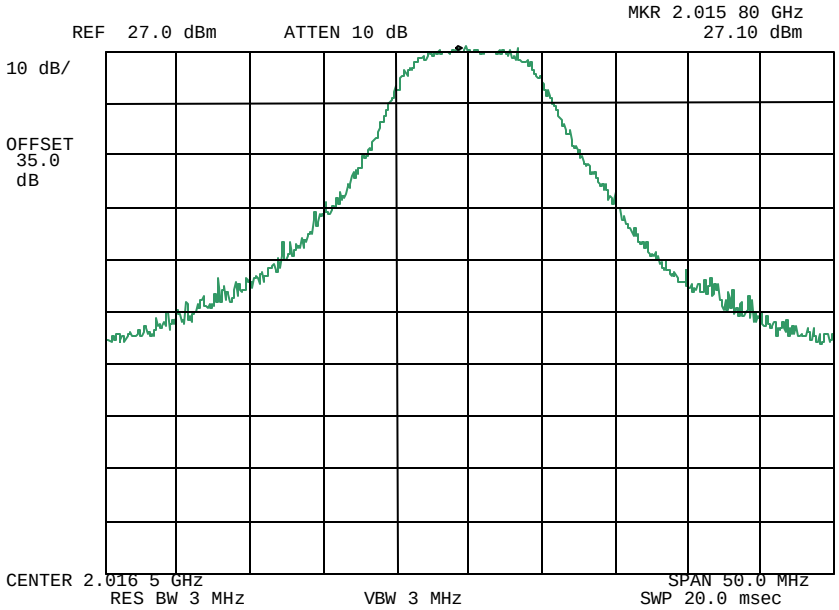
	Asset	Description	s/n	Cycle	Last Cal
(1) **Audio Oscillator/Generator**					
X	i00017	HP 8903A Modulation Meter	2216A01753	12 mo.	Apr-05
(2) **Coaxial Attenuator**					
X	i00231/2	PASTERNACK PE7021-30 (30 dB)	231 or 232	NCR	
	i00123	NARDA 766 (10 dB)	7802A	NCR	
(3) **Interface**					
X	i00021	HP 8954A Transceiver Interface	2146A00159	NCR	
(4) **Spectrum Analyzer**					
X	i00048	HP 8566B Spectrum Analyzer	2511A01467	12 mo.	Oct-05
	i00029	HP 8563E Spectrum Analyzer	3213A00104	12 mo.	Jan-06

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610027: 2006-Jan-26 Thu 14:07:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: NONE (MAX BW)
REF LEVEL (+27dBm)

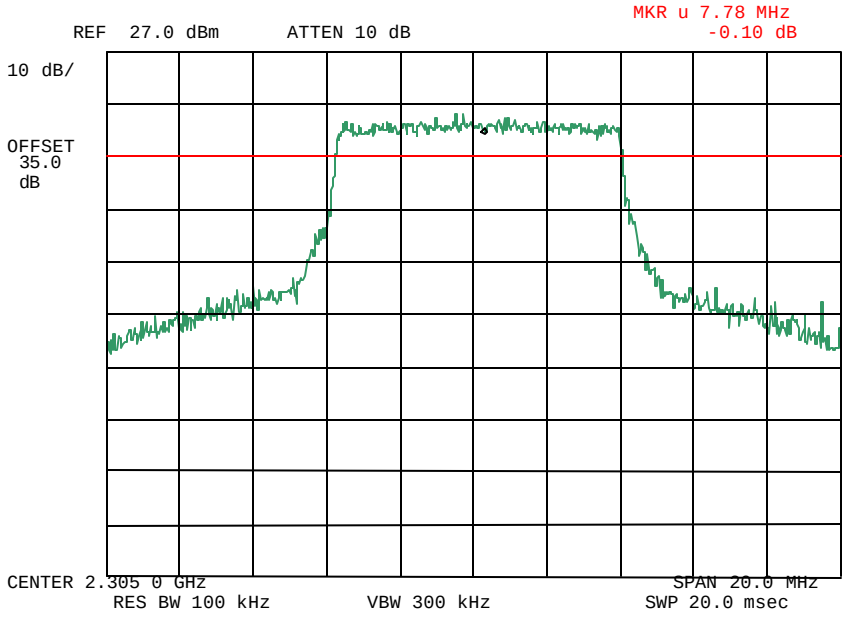
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610029: 2006-Jan-26 Thu 14:10:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 64QAM
MID CHANNEL
(OCC BW @ 6dB = 7.61MHz)

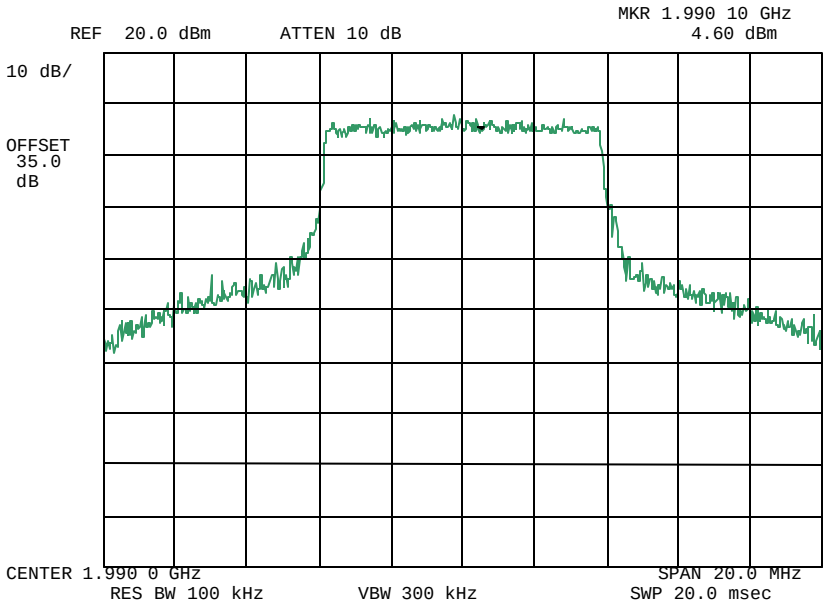
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610028: 2006-Jan-26 Thu 14:08:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 64QAM
LOW CHANNEL

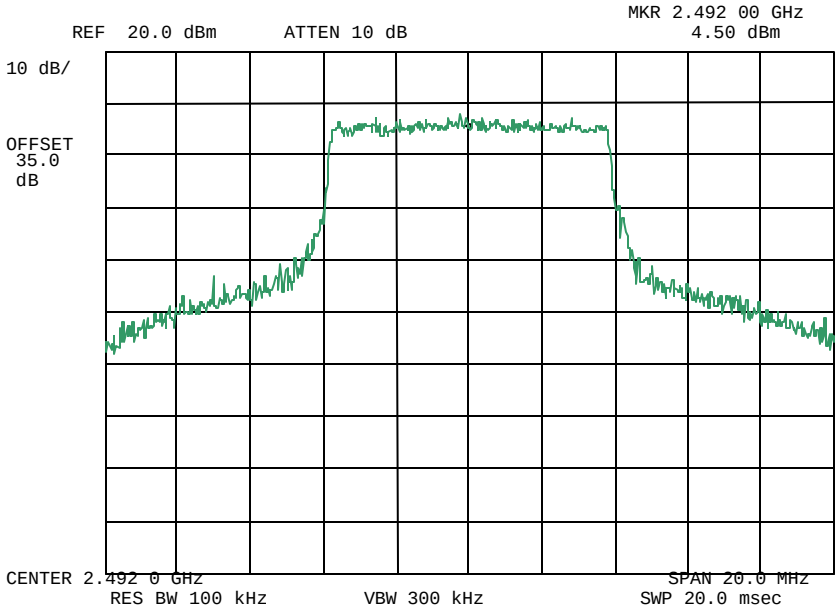
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610030: 2006-Jan-26 Thu 14:11:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 64QAM
HIGH CHANNEL

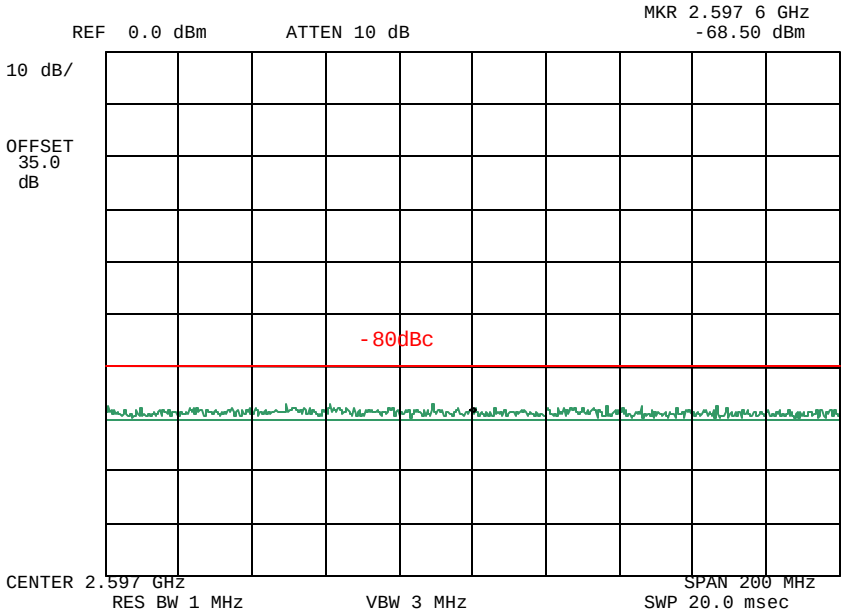
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610031: 2006-Jan-26 Thu 14:12:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 64QAM
UPPER BAND EDGE

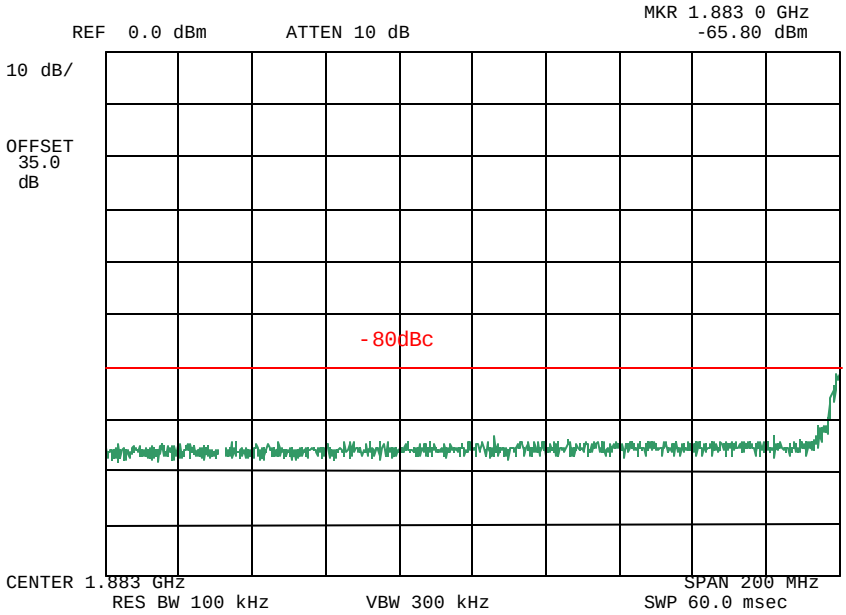
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610032: 2006-Jan-26 Thu 14:13:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 64QAM
LOWER BAND EDGE

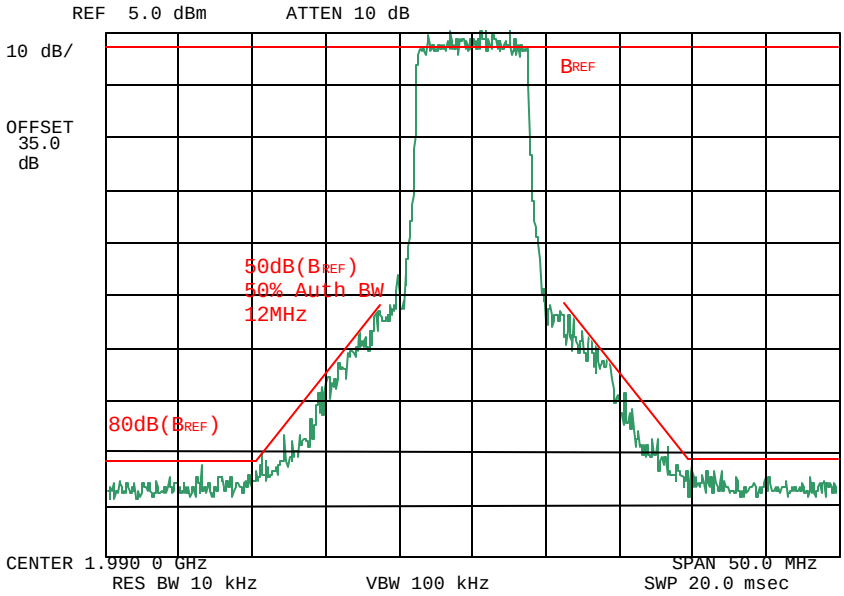
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610033: 2006-Jan-26 Thu 14:14:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 16QAM
LOW CHANNEL
MASK 74.637(a)(2)(i)

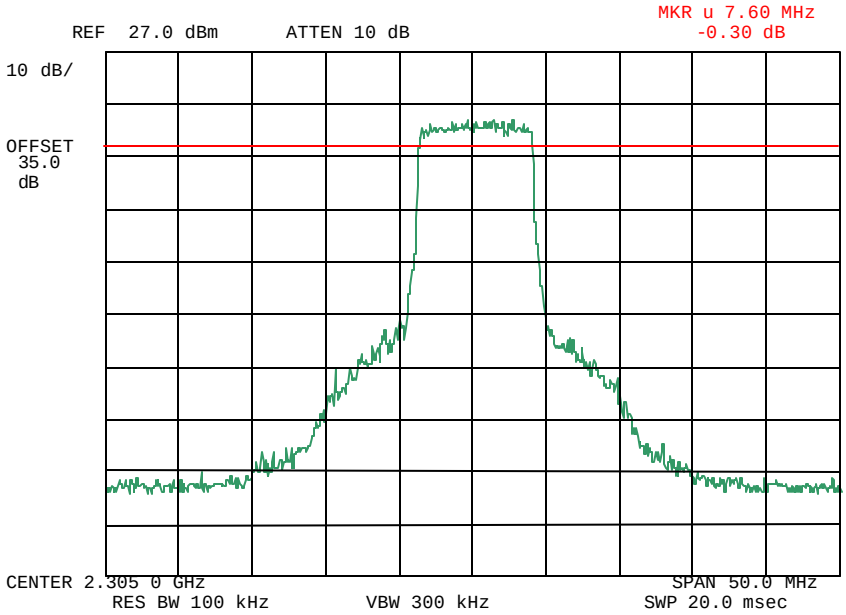
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610034: 2006-Jan-26 Thu 14:15:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 16QAM
MID CHANNEL
(OCC BW @ 6dB = 7.60MHz)

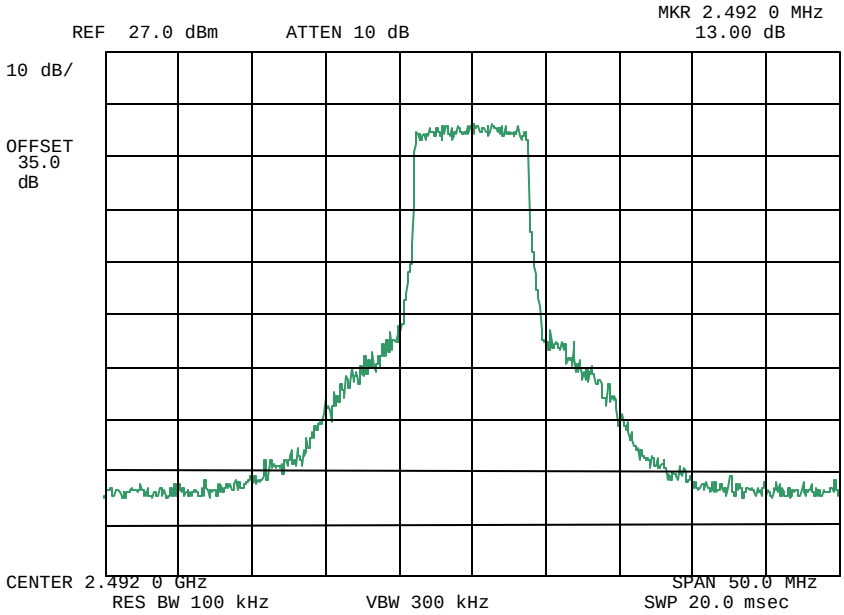
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610035: 2006-Jan-26 Thu 14:15:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 16QAM
HIGH CHANNEL

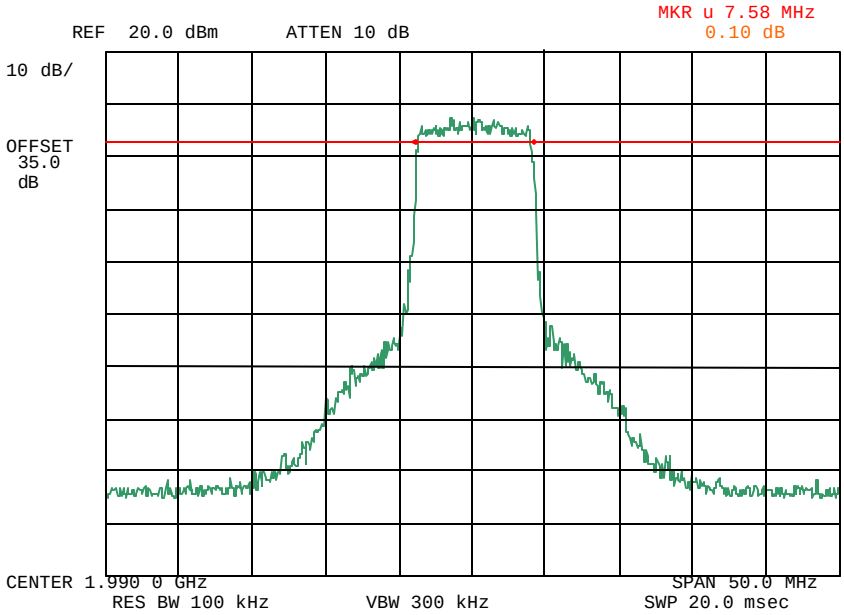
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610246: 2006-Jan-27 Fri 10:18:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: QPSK
LOW CHANNEL
(OCC BW @ 6dB = 7.58MHz)

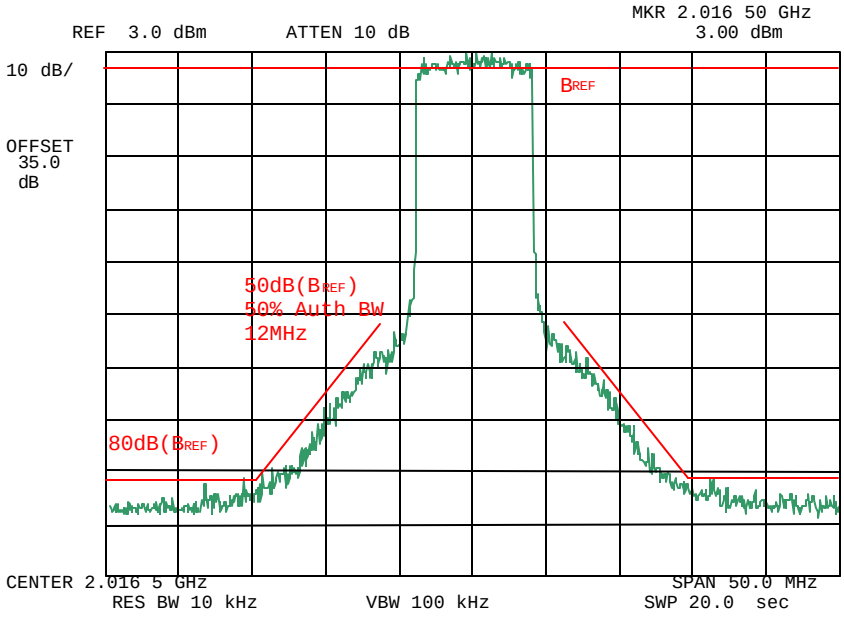
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610213: 2006-Jan-27 Fri 09:07:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: QPSK
MID CHANNEL
MASK 74.637(a)(2)(i)

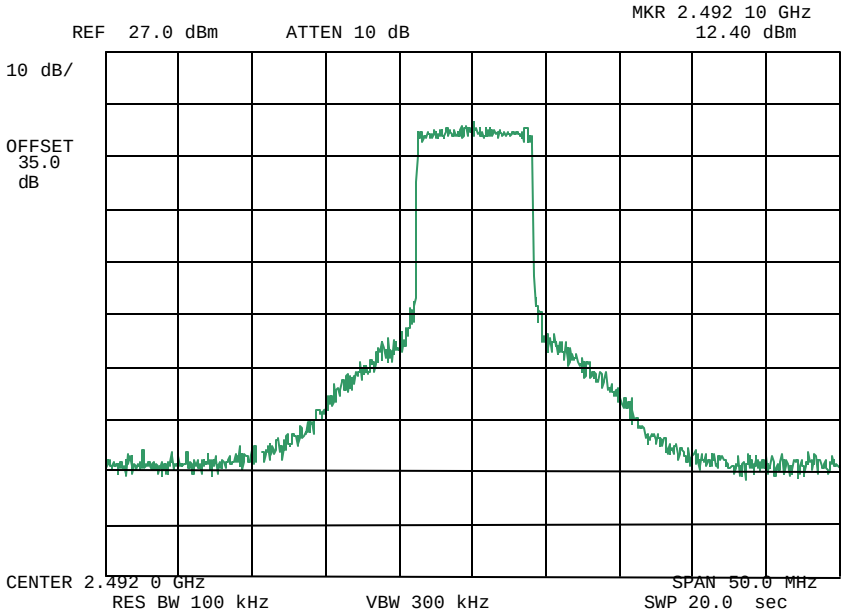
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610249: 2006-Jan-27 Fri 10:07:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: QPSK
HIGH CHANNEL

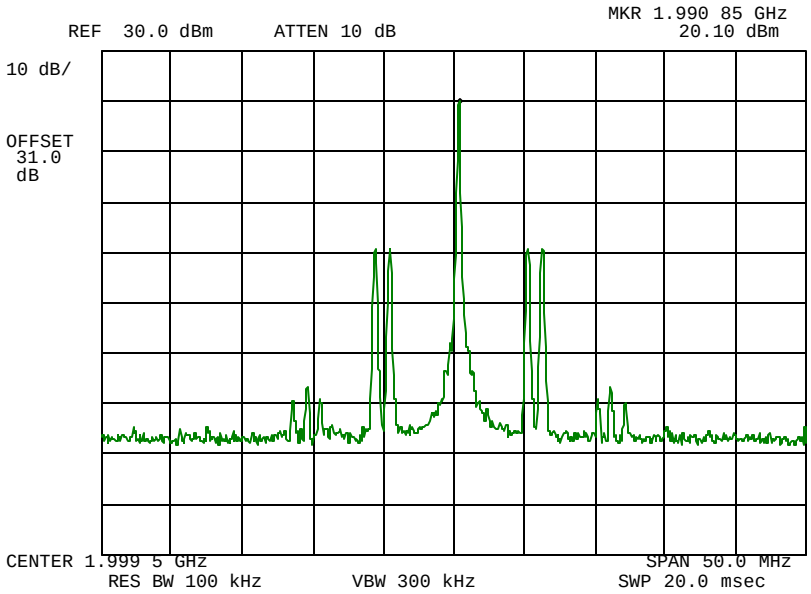
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610037: 2006-Jan-26 Thu 14:16:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: ANALOG
LOW CHANNEL

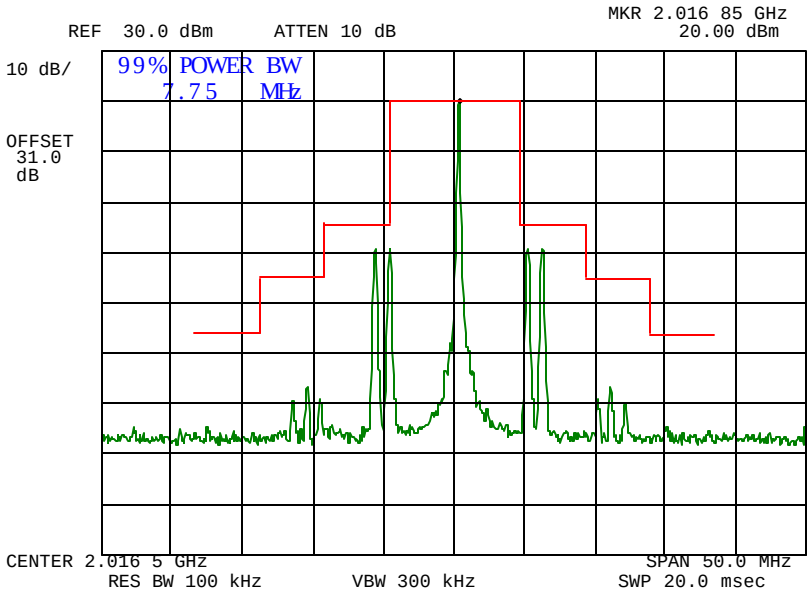
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610038: 2006-Jan-26 Thu 14:16:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: ANALOG
MID CHANNEL
MASK 74.637(a)

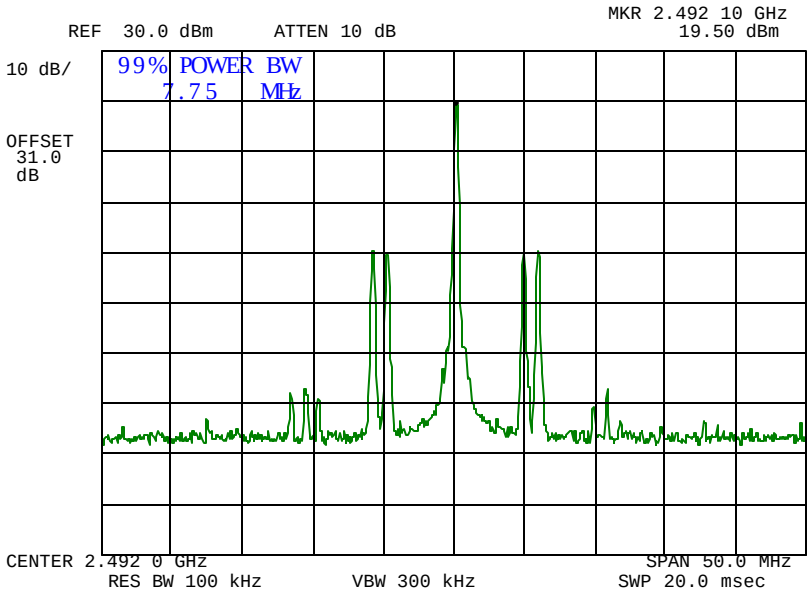
Performed by: Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0610039: 2006-Jan-26 Thu 14:17:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: ANALOG
HIGH CHANNEL

Performed by: Fred Chastain, Test Technician

Name of Test: Frequency Stability (Temperature Variation)

Specification: 47 CFR 2.1055(a)(1)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.2

Measurement Procedure

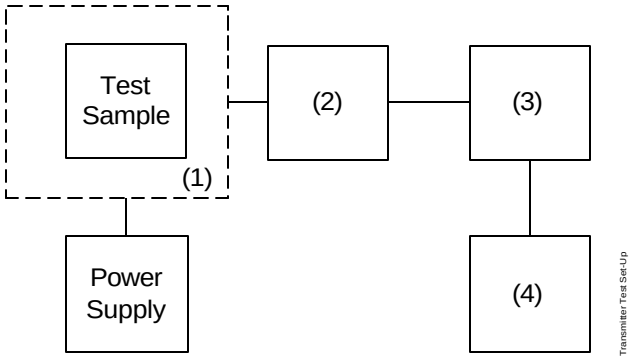
A) The EUT and test equipment were set up as shown on the following page.

B) With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.

C) With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.

D) The temperature tests were performed for the worst case.

Transmitter Test Set-Up: Temperature Variation

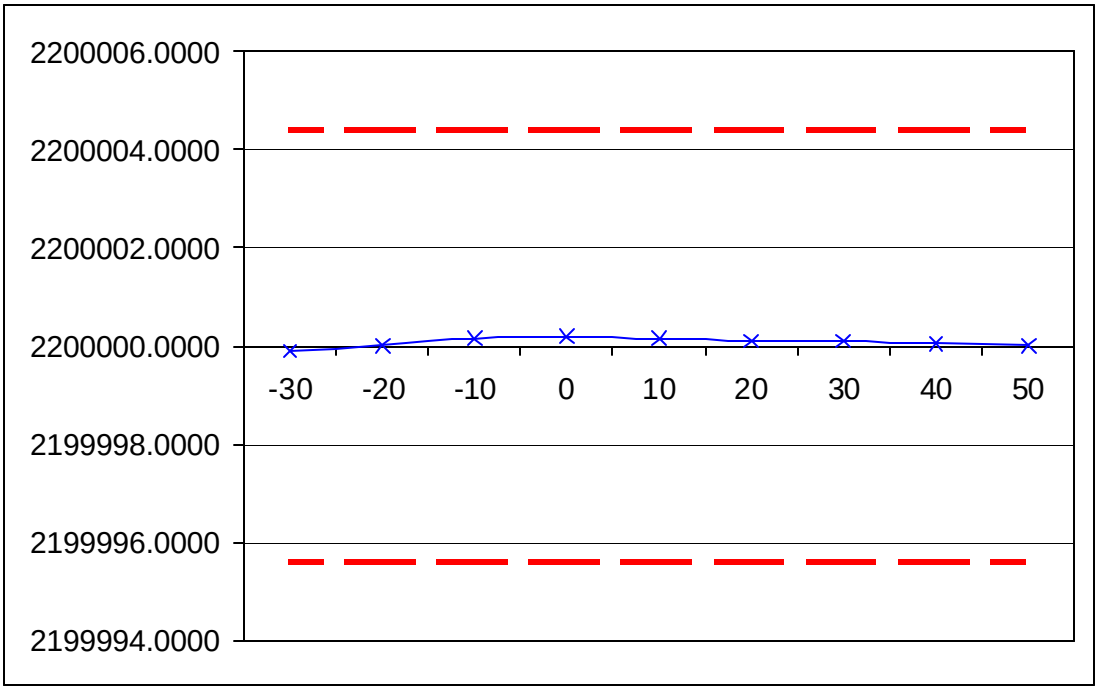


	Asset	Description	s/n	Cycle	Last Cal
(1) **Temperature, Humidity, Vibration**					
X	i00027	Tenney Temp. Chamber	9083-765-234	NCR	
(2) **Coaxial Attenuator**					
X	i00231/2	PASTERNACK PE7021-30 (30 dB)	231 or 232	NCR	
	i00122/3	NARDA 766 (10 dB)	7802 or 7802A	NCR	
(3) **RF Power**					
X	i00067	HP 8920A Communications TS	3345U01242	12 mo.	Jun-05
(4) **Frequency Counter**					
X	i00067	HP 8920A Communications TS	3345U01242	12 mo.	Jun-05

Name of Test: Frequency Stability (Temperature Variation)

Measurement Results

State: Ambient Temperature: 23°C ± 3°C



Vertical Axis kHz / Horizontal Axis Degrees Centigrade

Performed by: Fred Chastain, Test Technician

Name of Test: Frequency Stability (Voltage Variation)

Specification: 47 CFR 2.1055(d)(1)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.2

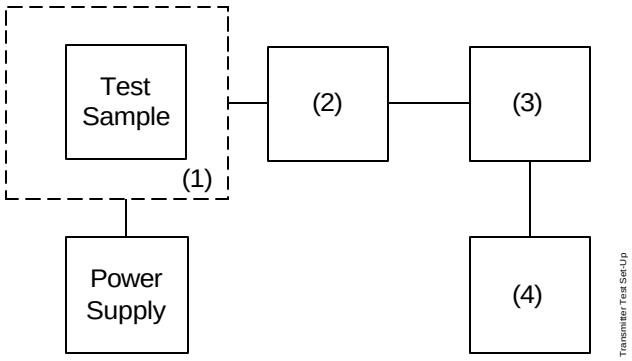
Measurement Procedure

A) The EUT was placed in a temperature chamber (if required) at 25±5°C and connected as shown below.

B) The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.

C) The variation in frequency was measured for the worst case.

Transmitter Test Set-Up: Voltage Variation



	Asset	Description	s/n	Cycle	Last Cal
(1) **Temperature, Humidity, Vibration**					
	i00027	Tenney Temp. Chamber	9083-765-234	NCR	
(2) **Coaxial Attenuator**					
X	i00231/2	PASTERNACK PE7021-30 (30 dB)	231 or 232	NCR	
	i00122/3	NARDA 766 (10 dB)	7802 or 7802A	NCR	
(3) **RF Power**					
X	i00020	HP 8901A Power Mode	2105A01087	12 mo.	Apr-05
(4) **Frequency Counter**					
X	i00020	HP 8901A Frequency Mode	2105A01087	12 mo.	Apr-05

Results: Frequency Stability (Voltage Variation)

State: Ambient Temperature: 23°C ± 3°C

Limit, ppm	=	2.0
Limit, Hz	=	4400.0
Battery End Point (Voltage)	=	8.0

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
115	13.8	2200.000200	200.0	+0.05
100	12.0	2200.000200	200.0	+0.05
85	10.2	2200.000200	200.0	+0.05
75	9.0	2200.000150	150.0	+0.03

Performed by: Fred Chastain, Test Technician

Name of Test: Necessary Bandwidth and Emission Bandwidth

Specification: 47 CFR 2.202(g)

Modulation = QAM, QPSK

Mem	Part Number	Rate (Mbit/s)	COFDM Mode	MPEG	Video Rate (Mbit/)	Video LPF	Low Delay Mode	Audio Rate (kbit/)
0	PBSW-TDVP - 0303-05-00	18.096257	64-QAM, 1/2, 1/32	422P@ML, GOP4	16.59	No	No	192
1	PBSW-TDVP - 0303-05-01	18.096257	64-QAM, 1/2, 1/32	SP@ML, infinite GOP,	11.81	No	Yes	192
2	PBSW-TDVP - 0303-05-02	12.06417	16-QAM, 1/2, 1/32	MP@ML, GOP4	10.00	Yes	No	192
3	PBSW-TDVP - 0303-05-03	12.06417	16-QAM, 1/2, 1/32	SP@ML, Infinite GOP, Intra-slice	8.00	Yes	Yes	160
4	PBSW-TDVP - 0303-05-04	9.048128	QPSK 3/4, 1/32	422P@ML, GOP4	7.79	Yes	No	192
5	PBSW-TDVP - 0303-05-05	9.048128	QPSK 3/4, 1/32	SP@ML, Infinite GOP, Intra-slice	6.00	Yes	Yes	192
6	PBSW-TDVP - 0303-05-06	6.032086	QPSK 1/2, 1/32	SP@ML, Infinite GOP	4.94	Yes	No	128
7	PBSW-TDVP - 0303-05-07	6.032086	QPSK 1/2, 1/32	MP@ML, GOP4	4.94	Yes	No	192

Measured as 7.8MHz Bandwidth worst case for all modes.
12M0 Emission Bandwidth used to comply with Mask 74.637(a)(2)(i)

Modulation = F3

Measured as 7.75MHz Bandwidth for all channel.
Complies with Mask 74.637(a)

Performed by: David E. Lee, FCC Compliance Manager

END OF TEST REPORT

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**, 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: David E. Lee, FCC Compliance Manager