MFA **M. Flom Associates, Inc. - Global Compliance Center**
3356 North San Marcos Place, Suite 107, Chandler, Arizona 85225-7176
www.mflom.com general@mflom.com (480) 926-3100, FAX: 926-3598

Transmitter Certification

of

FCC ID: B95-NL6000-VHF
Model: NL6000-VHF

to

Federal Communications Commission

Rule Part(s) 2, 22, 74, 90

Date of Amended Report: September 24, 2003

On the Behalf of the Applicant:

RF Neulink

At the Request of: P.O. Part of NPO-072503DL

RF Neulink
A Division of RF Industries
7610 Miramar Road
San Diego, CA 92126-4202

Attention of: John Austin, Applications Engineer
(800) 233-1728; (858) 549-6340; FAX: -6349
E-mail: rfneulink@rfindustries.com
David Lamb
Email: dlamb@rfneulink.com

Supervised by: Morton Flom, P. Eng.

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

c) Report Number: d0390019

d) Client: RF Neulink
A Division of RF Industries
7610 Miramar Road
San Diego, CA 92126-4202

e) Identification: NL6000-VHF
FCC ID: B95-NL6000-VHF
EUT Description: VHF/FM Modem

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

g) Report Date: September 4, 2003
EUT Received:

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:

Morton Flom, P. Eng.

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

2, 22, 74, 90, 90.210

Sub-part 2.1033

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

RF Neulink
A Division of RF Industries
7610 Miramar Road
San Diego, CA 92126-4202

Manufacturer:

Applicant

(c)(2): **FCC ID**: B95-NL6000-VHF

Model Number: NL6000-VHF

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

Please see attached exhibits

(c)(4): **Type of Emission**: 11K0F1D, 16K0F1D

(c)(5): **Frequency Range, MHz**: 148.000 to 174.000

(c)(6): **Power Rating, Watts**: 1 to 6

____ Switchable __x__ Variable ____ N/A

FCC Grant Note: BE - The output power is continuously variable from the value listed in this entry to 15%-20% of the value listed.

(c)(7): **Maximum Power Rating, Watts**: 300

DUT Results: Passes ___x___ Fails _____

M. Flom Associates, Inc. is accredited by the American Association for Laboratory Association (A2LA) as shown in the scope below.

THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

M. FLOM ASSOCIATES, INC.
Chandler, AZ

for technical competence in the field of

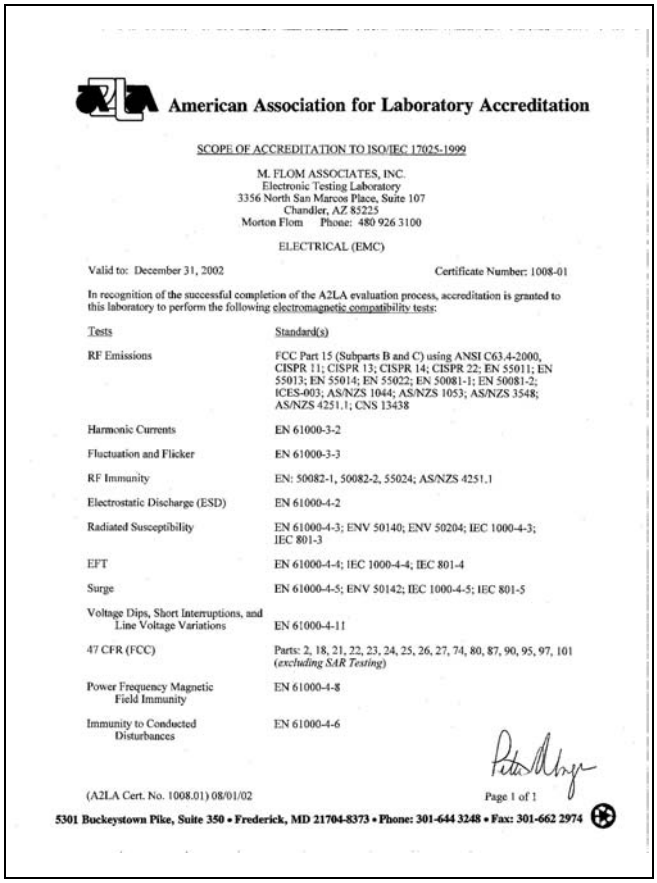
Electrical (EMC) Testing

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. Testing and calibration laboratories that comply with this International Standard also operate in accordance with ISO 9001 or ISO 9002.

Presented this 2nd day of March, 2001.

President
For the Accreditation Council
Certificate Number 1008.01
Valid to December 31, 2002

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



American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025-1999

M. FLOM ASSOCIATES, INC.
Electronic Testing Laboratory
3356 North San Marcos Place, Suite 107
Chandler, AZ 85225
Morton Flom Phone: 480 926 3100

ELECTRICAL (EMC)

Valid to: December 31, 2002 Certificate Number: 1008-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electromagnetic compatibility tests:

Tests	Standard(s)
RF Emissions	FCC Part 15 (Subparts B and C) using ANSI C63.4-2000, CISPR 11; CISPR 13; CISPR 14; CISPR 22; EN 55011; EN 55013; EN 55014; EN 55022; EN 50081-1; EN 50081-2; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1; CNS 13438
Harmonic Currents	EN 61000-3-2
Fluctuation and Flicker	EN 61000-3-3
RF Immunity	EN: 50082-1, 50082-2, 55024; AS/NZS 4251.1
Electrostatic Discharge (ESD)	EN 61000-4-2
Radiated Susceptibility	EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3
EFT	EN 61000-4-4; IEC 1000-4-4; IEC 801-4
Surge	EN 61000-4-5; ENV 50142; IEC 1000-4-5; IEC 801-5
Voltage Dips, Short Interruptions, and Line Voltage Variations	EN 61000-4-11
47 CFR (FCC)	Parts: 2, 18, 21, 22, 23, 24, 25, 26, 27, 74, 80, 87, 90, 95, 97, 101 *(excluding SAR Testing)*
Power Frequency Magnetic Field Immunity	EN 61000-4-8
Immunity to Conducted Disturbances	EN 61000-4-6

(A2LA Cert. No. 1008.01) 08/01/02 Page 1 of 1

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8373 • Phone: 301-644 3248 • Fax: 301-662 2974

"This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report."

Should this report contain any data for tests for which we are not accredited, or which have been undertaken by a subcontractor that is not A2LA accredited, such data would not covered by this laboratory's A2LA accreditation.

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	=	per manual
Collector Voltage, Vdc	=	per manual
Supply Voltage, Vdc	=	12

(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

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
x 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 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 C63.4-1992/2000 Draft, section 6.1.9, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

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.

Page Number 7 of 64.

Name of Test: Carrier Output Power (Conducted)

Specification: 47 CFR 2.1046(a)

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

Test Equipment: As per attached page

Measurement Procedure

1. 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.

2. Measurement accuracy is ±3%.

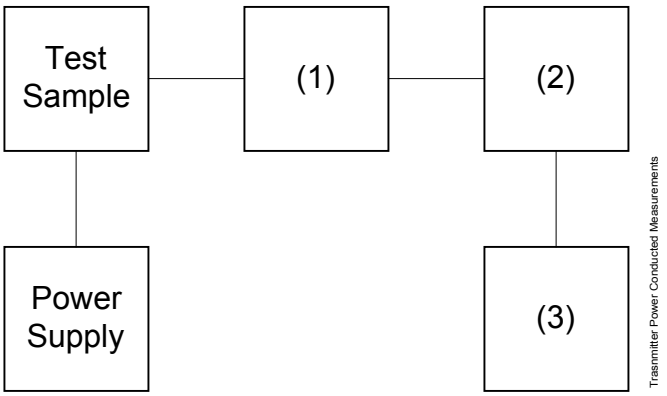
Measurement Results
(Worst case)

Frequency of Carrier, MHz = 161.000, 151.000, 171.000
Ambient Temperature = 23°C ± 3°C

Power Setting	RF Power, Watts
High	6
Low	1

Performed by: David Lee

Transmitter Power Conducted Measurements



Asset (as applicable)	Description	s/n
(1) **Coaxial Attenuator**		
i00122	Narda 766-10	7802
i00123	Narda 766-10	7802A
i00231	Pasternack PE7021	N/A
i00232	Pasternack PE7021	N/A
(2) **Power Meters**		
i00020	HP 8901A Power Mode	2105A01087
(3) **Frequency Counter**		
i00020	HP 8901A Frequency Mode	2105A01087

Name of Test: Field Strength of Spurious Radiation

Specification: 47 CFR 2.1053(a)

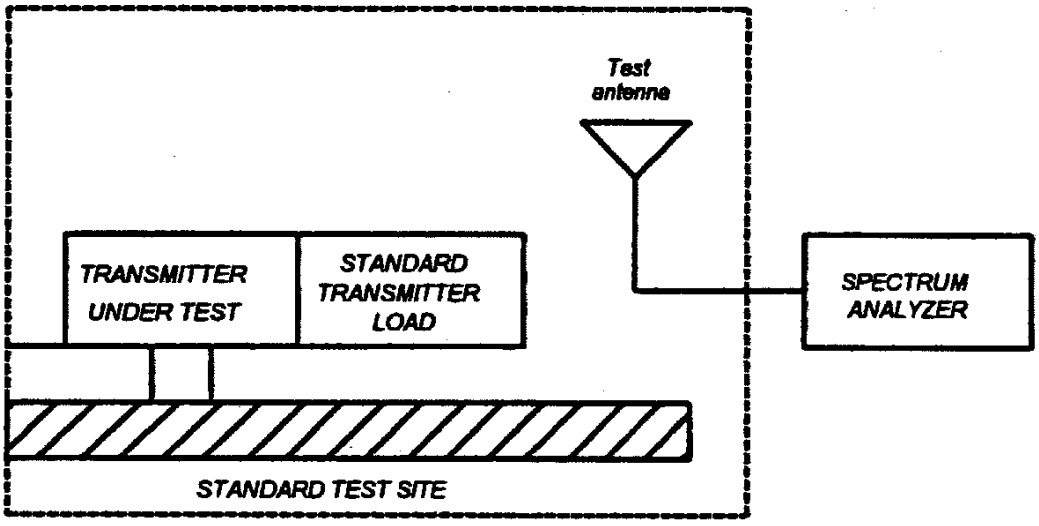
Guide: ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16, 47 CFR 22.917

Measurement Procedure

1.2.12.1 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.

1.2.12.2 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 which is placed on the turntable. The RF cable to this load should be of minimum length.

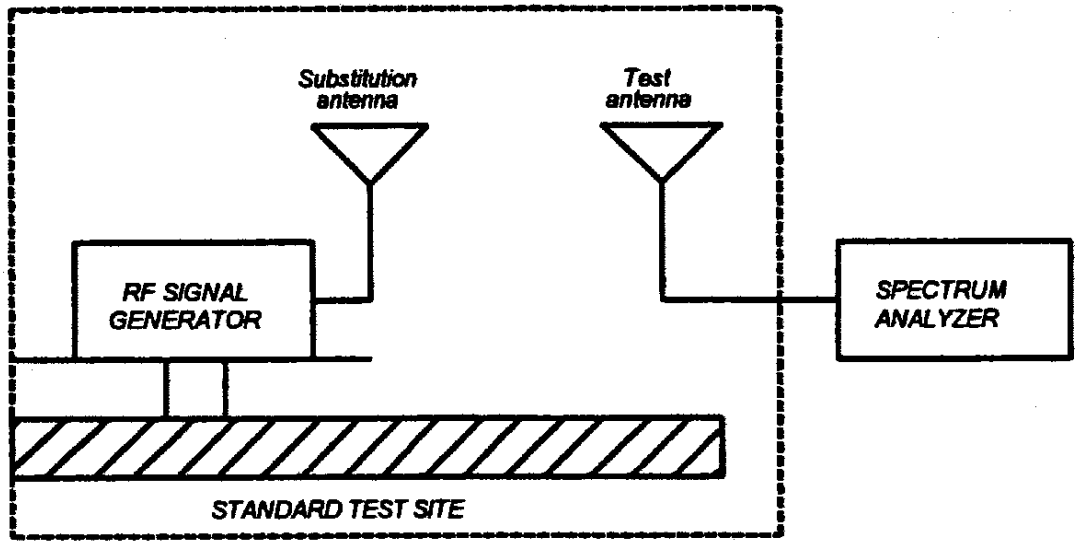


Name of Test: Field Strength of Spurious Radiation (Cont.)

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 l)

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

Test Equipment:

Asset (as applicable)	Description	s/n	Cycle (Per ANSI C63.4-1992/2000 Draft, 10.1.4)	Last Cal
Transducer				
i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Sep-01
Amplifier				
i00028	HP 8449A	2749A00121	12 mo.	Mar-03
Spectrum Analyzer				
i00029	HP 8563E	3213A00104	12 mo.	Mar-03

Microphone, Antenna Port, and Cabling

Antenna Port Terminated: Yes Antenna Gain: 0 dBd
All Ports Terminated by Load: Yes

Name of Test: Field Strength of Spurious Radiation
g0380393: 2003-Aug-20 Wed 12:34:00
STATE: 2:High Power Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	ERP, dBm	ERP, dBc
151.000000	301.994333	-16.6	≤ -54.57
151.000000	452.995333	-19.8	≤ -54.57
151.000000	604.005832	-19.3	≤ -54.57
151.000000	754.995000	-35.1	≤ -54.57
151.000000	905.997333	-36.9	≤ -54.57
151.000000	1056.999000	-35.6	≤ -54.57
151.000000	1207.999000	-34	≤ -54.57
151.000000	1358.999000	-32.4	≤ -54.57
151.000000	1509.999000	-31.7	≤ -54.57

Supervised by: David Lee

Name of Test: Emission Masks (Occupied Bandwidth)

Specification: 47 CFR 2.1049(c)(1)

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

Test Equipment: As per previous page

Measurement Procedure

1. The EUT and test equipment were set up as shown on the following page, with the Spectrum Analyzer connected.

2. 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.

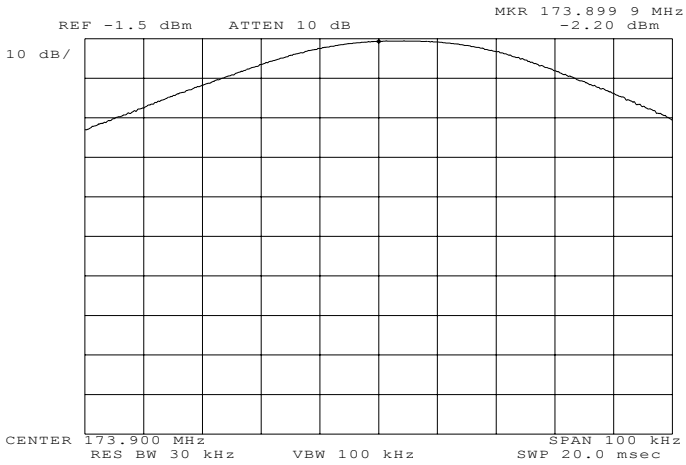
3. For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.

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

5. Measurement Results: Attached

Page Number 14 of 64.

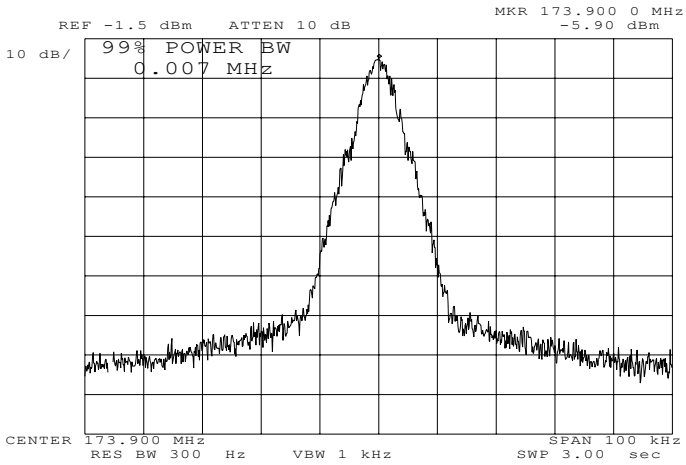
Name of Test: Emission Masks (Occupied Bandwidth)
g0380412: 2003-Aug-28 Thu 15:07:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C



Power: LOW
Modulation: NONE

Performed by: David Lee

Name of Test: Emission Masks (Occupied Bandwidth)
g0380413: 2003-Aug-28 Thu 15:12:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C

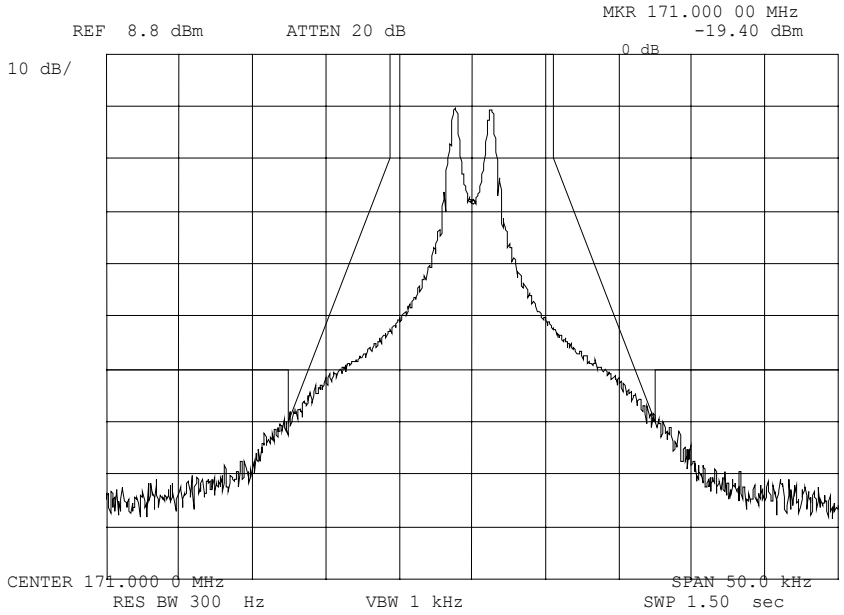


Power: LOW
Modulation: RANDOM DATA

Performed by: David Lee

Page Number 16 of 64.

Name of Test: Emission Masks (Occupied Bandwidth)
g0390023: 2003-Sep-08 Mon 11:22:00
State: 1:Low Power Ambient Temperature: 22°C ± 3°C



Power: LOW
Modulation: 100HZ SQUARE WAVE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

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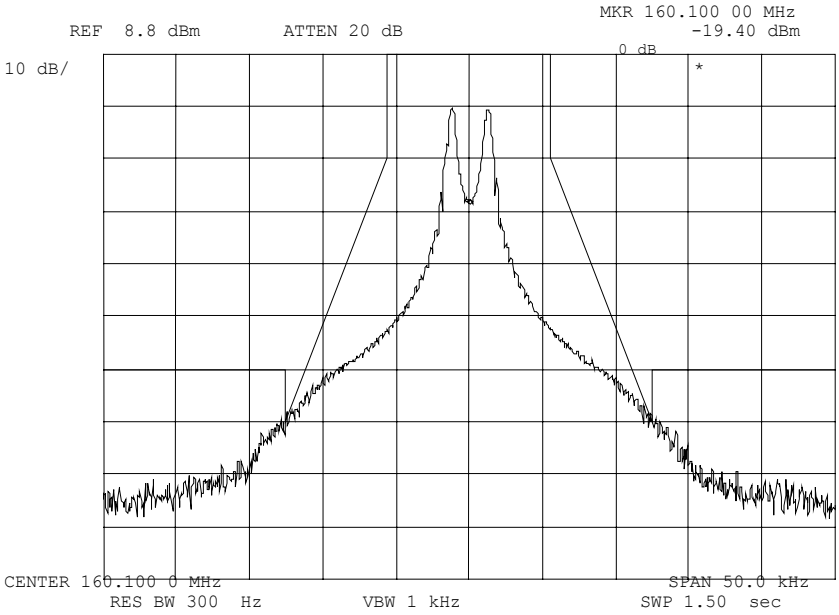
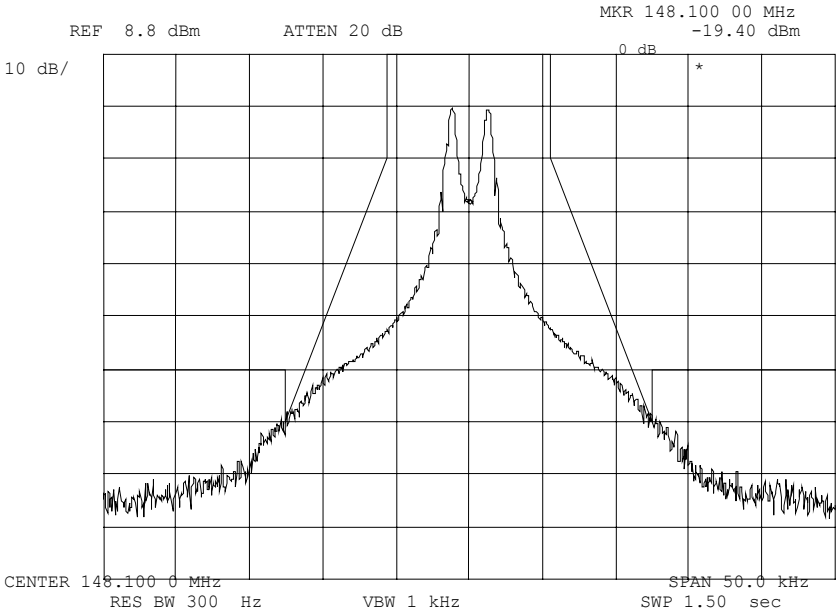
Name of Test: Emission Masks (Occupied Bandwidth)
g0390024: 2003-Sep-08 Mon 11:22:00
State: 1:Low Power Ambient Temperature: 22°C ± 3°C



Power: LOW
Modulation: 100HZ SQUARE WAVE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

Name of Test: Emission Masks (Occupied Bandwidth)
g0390025: 2003-Sep-08 Mon 11:23:00
State: 1:Low Power Ambient Temperature: 22°C ± 3°C



Power: LOW
Modulation: 100HZ SQUARE WAVE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

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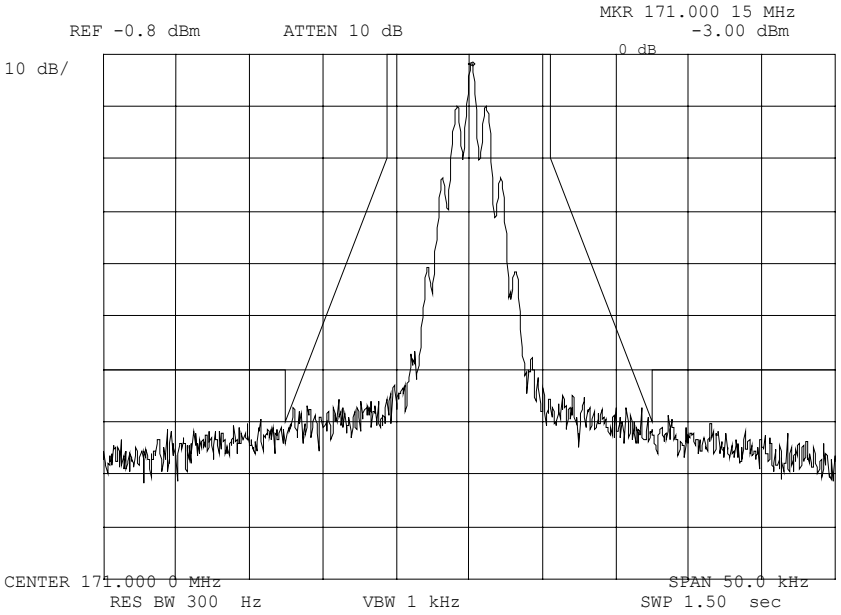
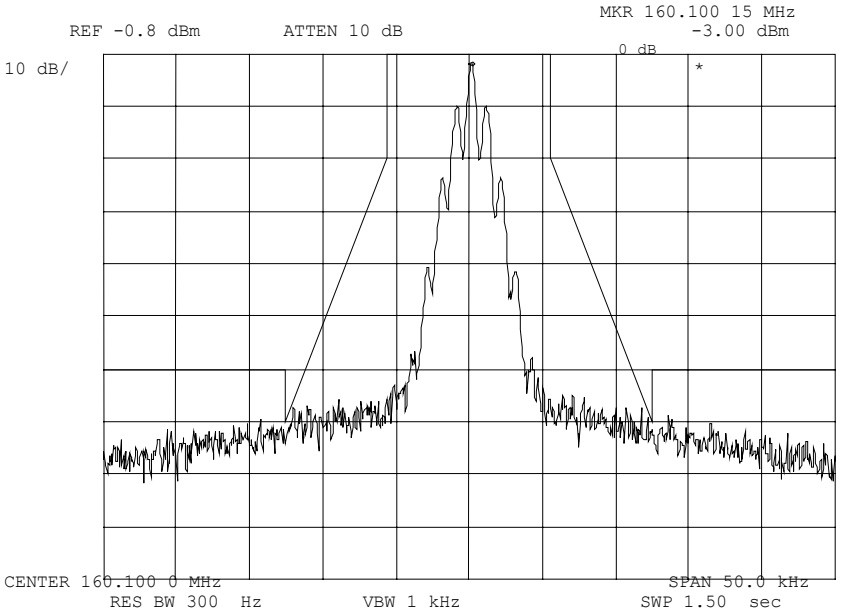
Name of Test: Emission Masks (Occupied Bandwidth)
g0390037: 2003-Sep-08 Mon 11:28:00
State: 1:Low Power Ambient Temperature: 22°C ± 3°C



Power: LOW
Modulation: 1KHZ TONE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

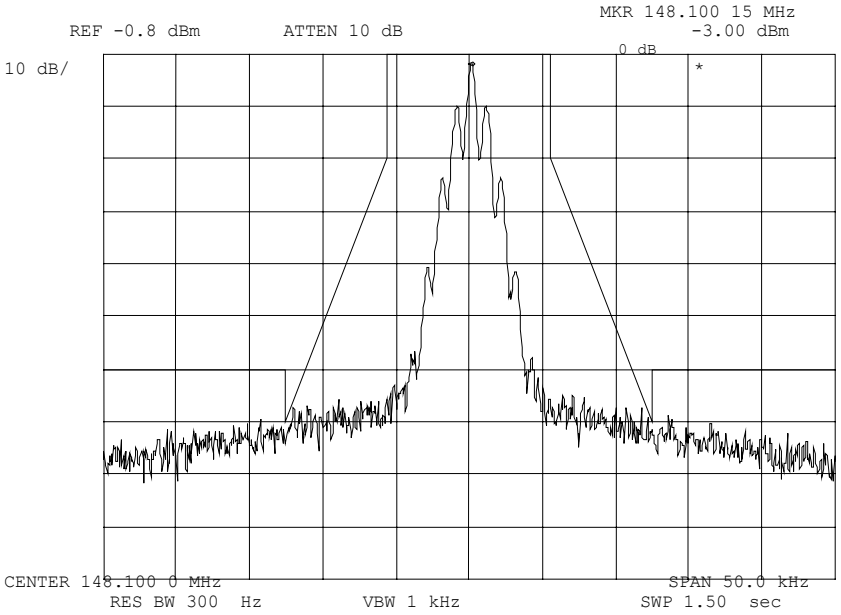
Name of Test: Emission Masks (Occupied Bandwidth)
g0390038: 2003-Sep-08 Mon 15:32:00
State: 1:Low Power Ambient Temperature: 22°C ± 3°C



Power: LOW
Modulation: 1KHZ TONE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

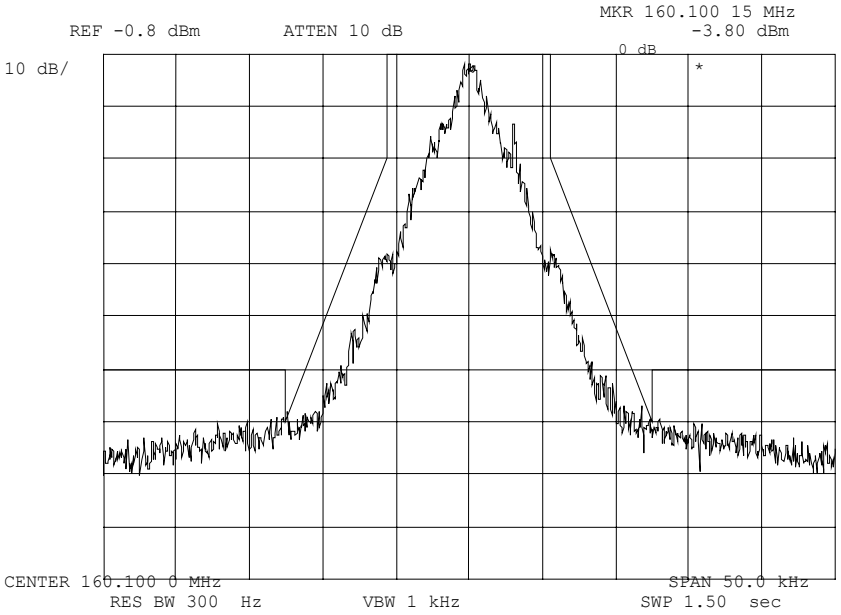
Name of Test: Emission Masks (Occupied Bandwidth)
g0390039: 2003-Sep-08 Mon 15:33:00
State: 1:Low Power Ambient Temperature: 22°C ± 3°C



Power: LOW
Modulation: 1KHZ TONE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

Name of Test: Emission Masks (Occupied Bandwidth)
g0390040: 2003-Sep-08 Mon 15:34:00
State: 1:Low Power Ambient Temperature: 22°C ± 3°C



Power: LOW
Modulation: RANDOM DATA
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

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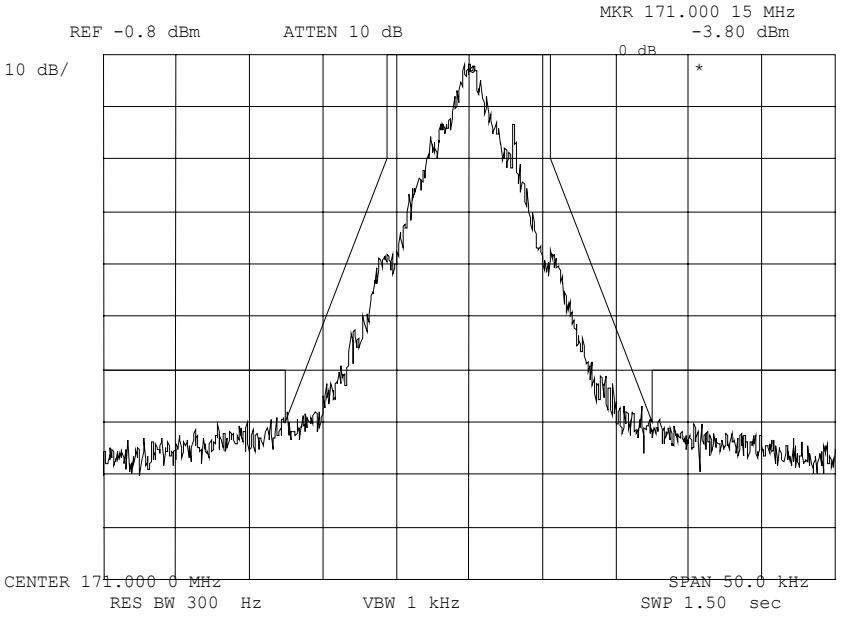
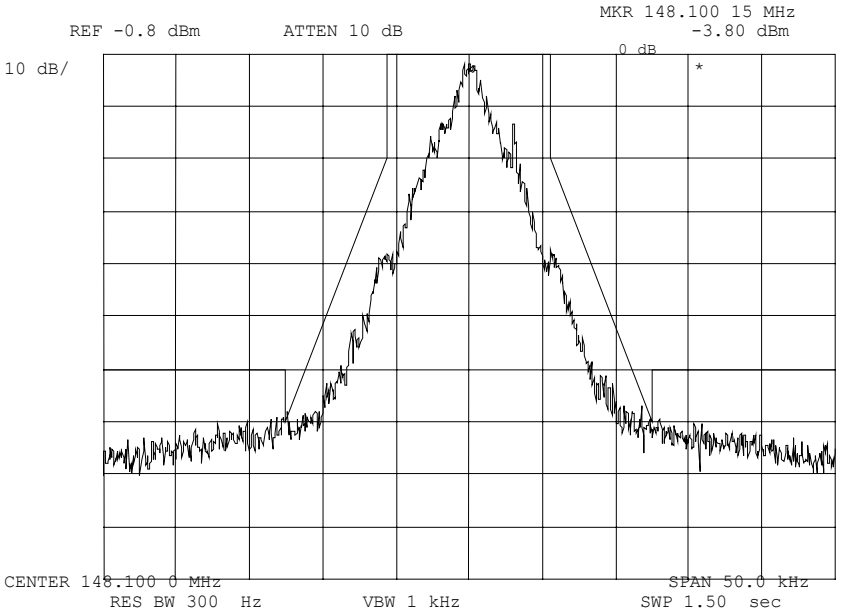
Name of Test: Emission Masks (Occupied Bandwidth)
g0390041: 2003-Sep-08 Mon 15:35:00
State: 1:Low Power Ambient Temperature: 22°C ± 3°C



Power: LOW
Modulation: RANDOM DATA
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

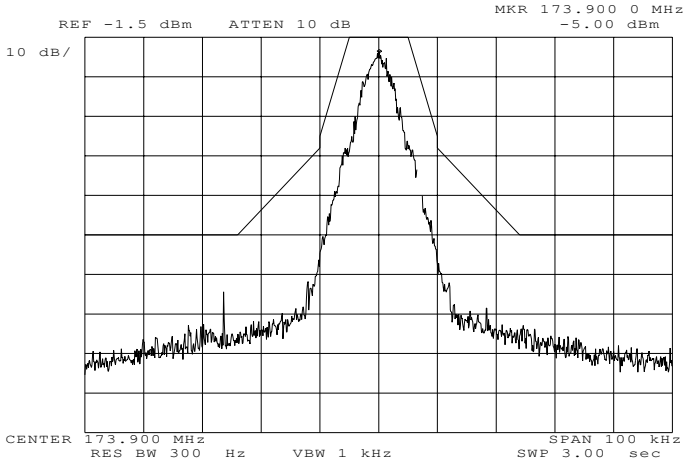
Name of Test: Emission Masks (Occupied Bandwidth)
g0390042: 2003-Sep-08 Mon 15:35:00
State: 1:Low Power Ambient Temperature: 22°C ± 3°C



Power: LOW
Modulation: RANDOM DATA
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

Name of Test: Emission Masks (Occupied Bandwidth)
G0380414: 2003-Aug-28 Thu 15:13:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C



Power: LOW
Modulation: RANDOM DATA
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

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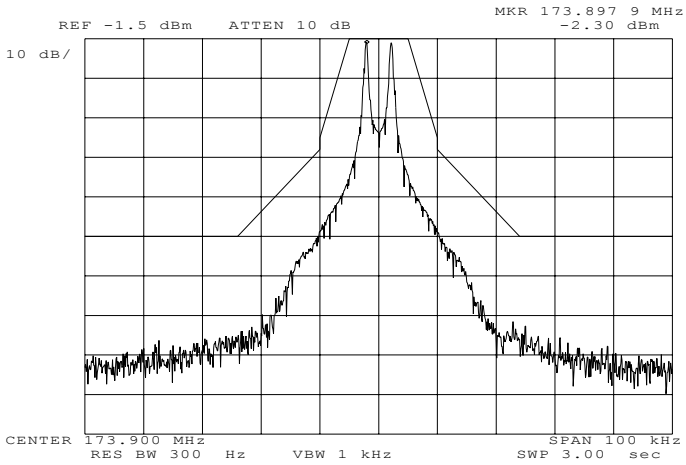
Name of Test: Emission Masks (Occupied Bandwidth)
g0380415: 2003-Aug-28 Thu 15:14:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C



Power: LOW
Modulation: 100HZ SQUARE WAVE
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

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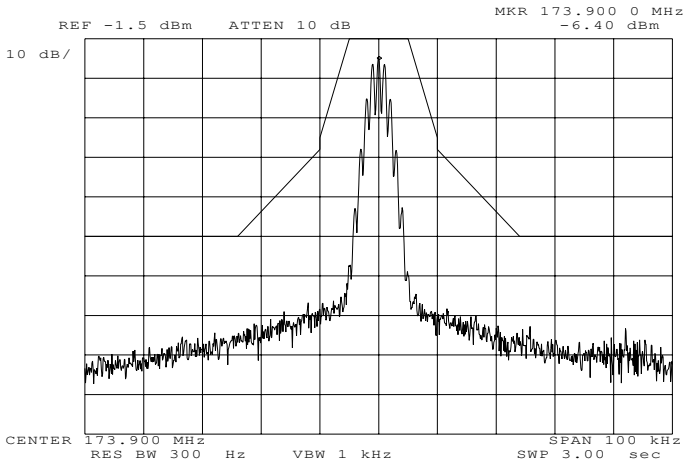
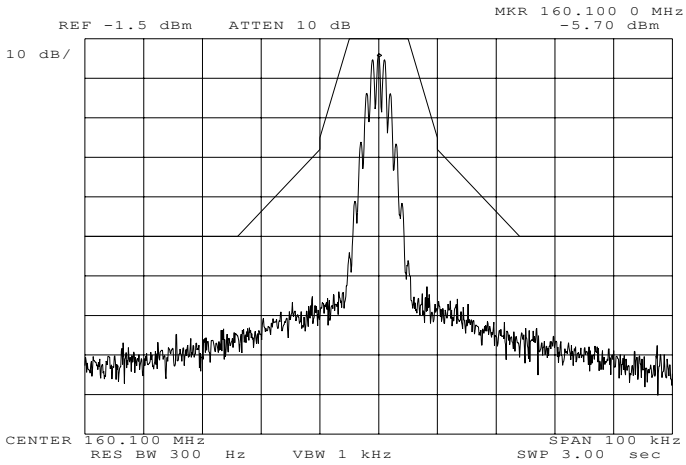
Name of Test: Emission Masks (Occupied Bandwidth)
g0380416: 2003-Aug-28 Thu 15:15:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C



Power: LOW
Modulation: 1KHZ TONE 60% DEV
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

Name of Test: Emission Masks (Occupied Bandwidth)
g0380417: 2003-Aug-28 Thu 15:17:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C



Power: LOW
Modulation: 1KHZ TONE 60% DEV
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

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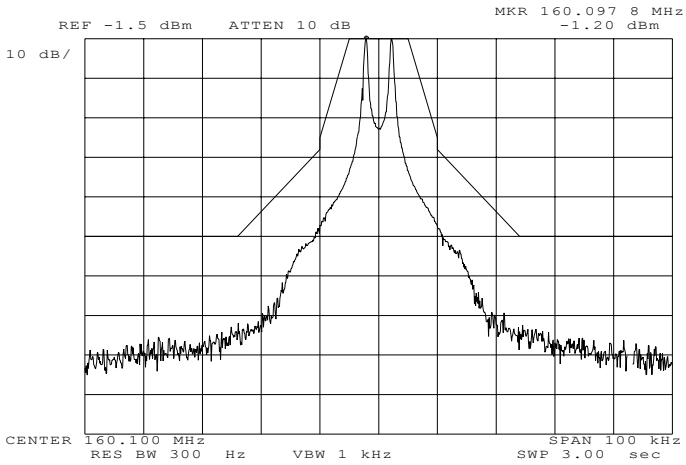
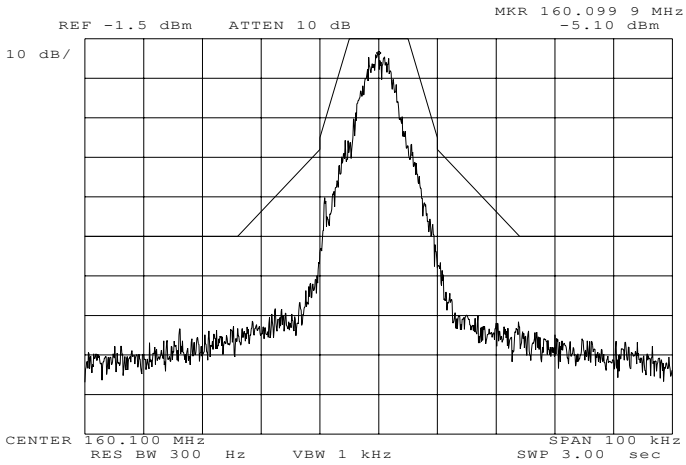
Name of Test: Emission Masks (Occupied Bandwidth)
g0380418: 2003-Aug-28 Thu 15:17:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C



Power: LOW
Modulation: 100HZ SQUARE WAVE
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

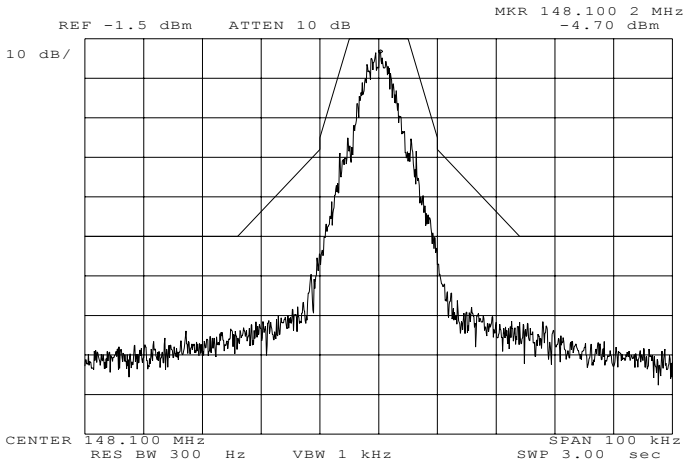
Name of Test: Emission Masks (Occupied Bandwidth)
g0380419: 2003-Aug-28 Thu 15:18:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C



Power: LOW
Modulation: RANDOM DATA
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

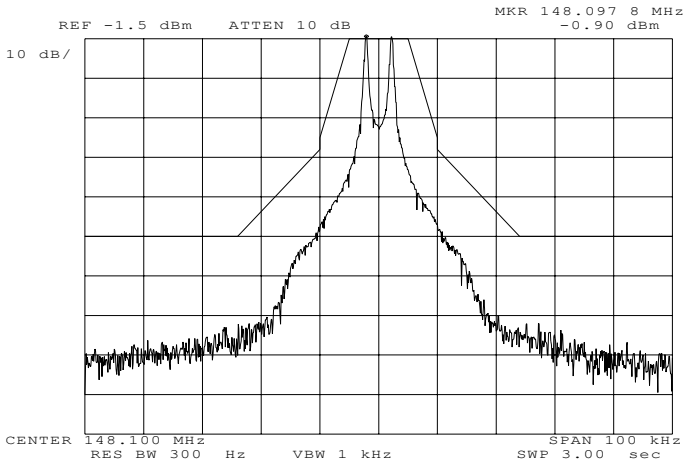
Name of Test: Emission Masks (Occupied Bandwidth)
g0380420: 2003-Aug-28 Thu 15:19:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C



Power: LOW
Modulation: RANDOM DATA
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

Name of Test: Emission Masks (Occupied Bandwidth)
g0380421: 2003-Aug-28 Thu 15:43:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C



Power: LOW
Modulation: 100HZ SQUARE WAVE
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

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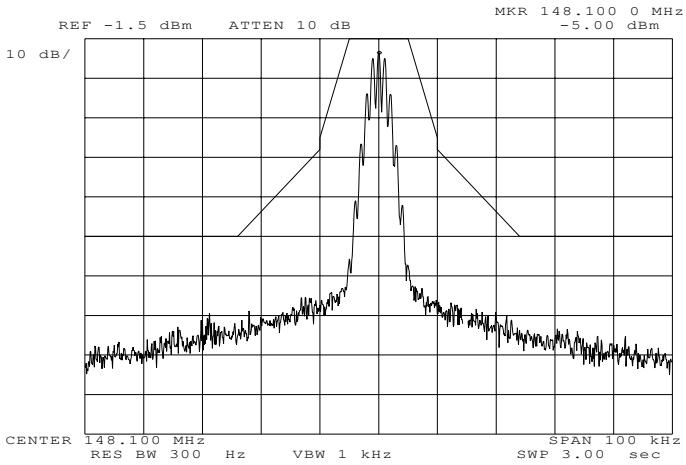
Name of Test: Emission Masks (Occupied Bandwidth)
g0380422: 2003-Aug-28 Thu 15:43:00
State: 1:Low Power Ambient Temperature: 23°C ± 3°C



Power: LOW
Modulation: 1KHZ TONE 60% DEV
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

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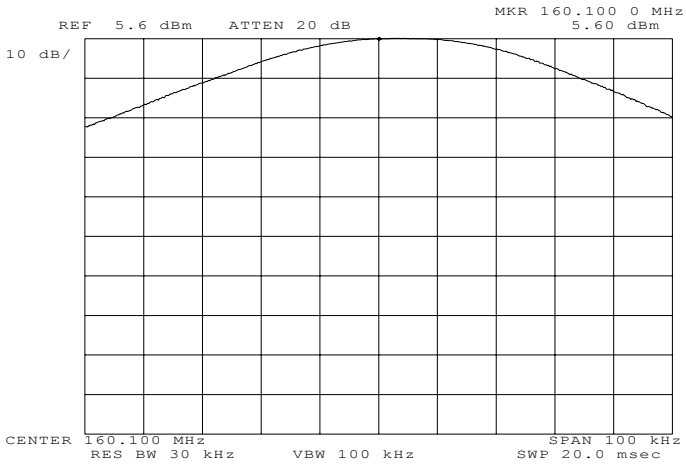
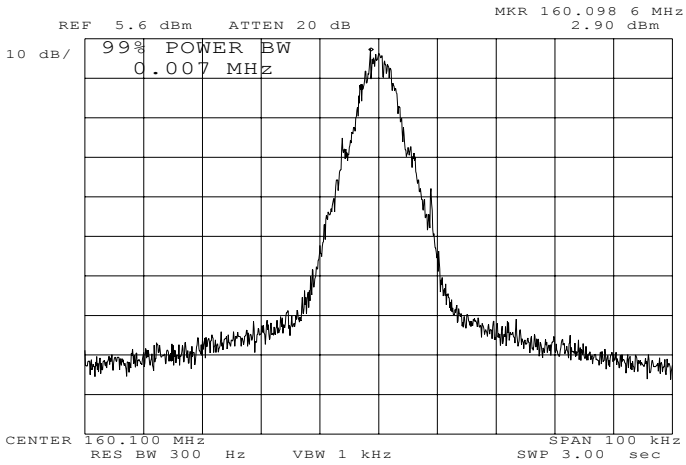
Name of Test: Emission Masks (Occupied Bandwidth)
g0380401: 2003-Aug-28 Thu 14:55:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: NONE

Performed by: David Lee

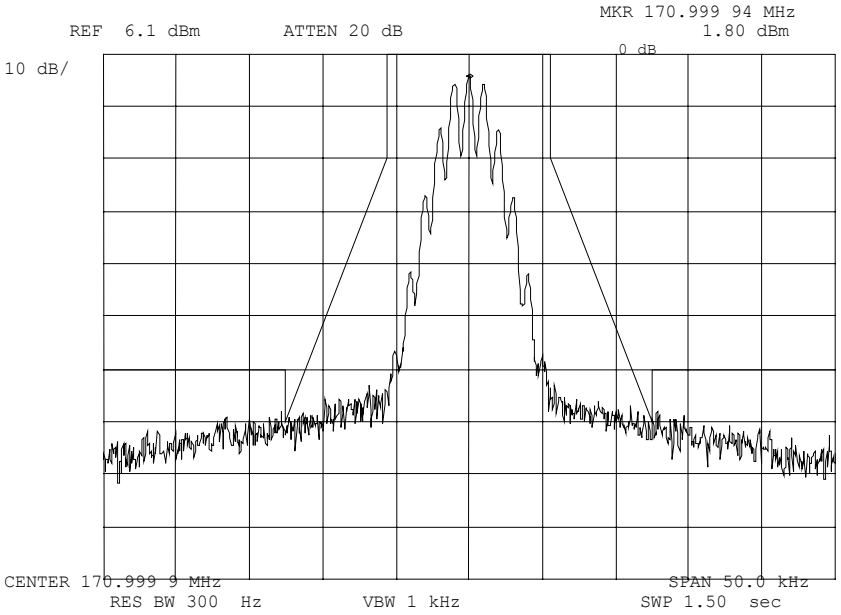
Name of Test: Emission Masks (Occupied Bandwidth)
g0380402: 2003-Aug-28 Thu 14:57:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: RANDOM DATA

Performed by: David Lee

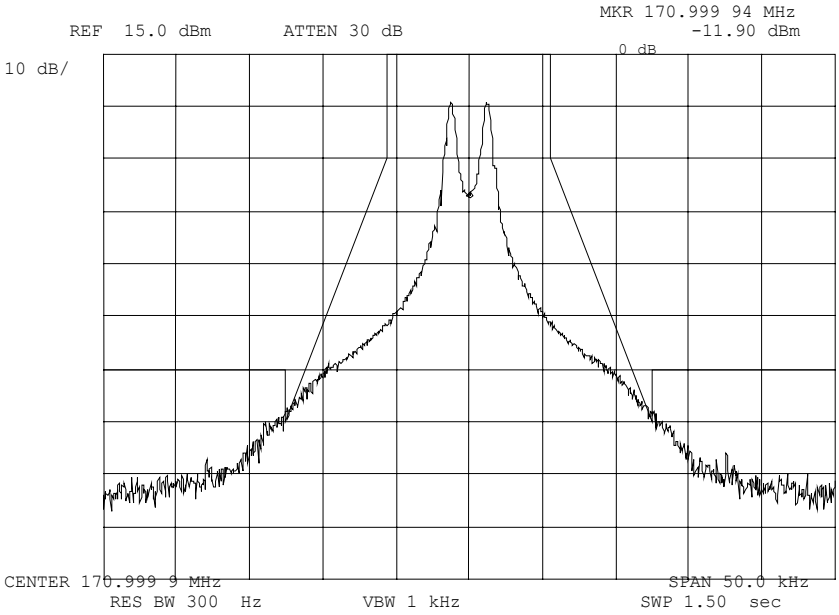
Name of Test: Emission Masks (Occupied Bandwidth)
g0390019: 2003-Sep-08 Mon 11:15:00
State: 2:High Power Ambient Temperature: 22°C ± 3°C



Power: HIGH
Modulation: 1KHZ TONE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

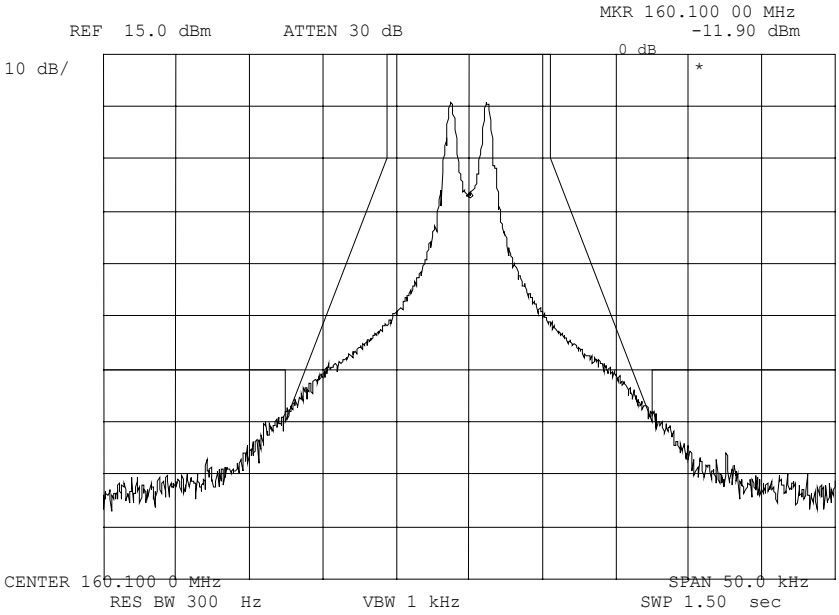
Name of Test: Emission Masks (Occupied Bandwidth)
g0390020: 2003-Sep-08 Mon 11:18:00
State: 2:High Power Ambient Temperature: 22°C ± 3°C



Power: HIGH
Modulation: 100HZ SQUARE WAVE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

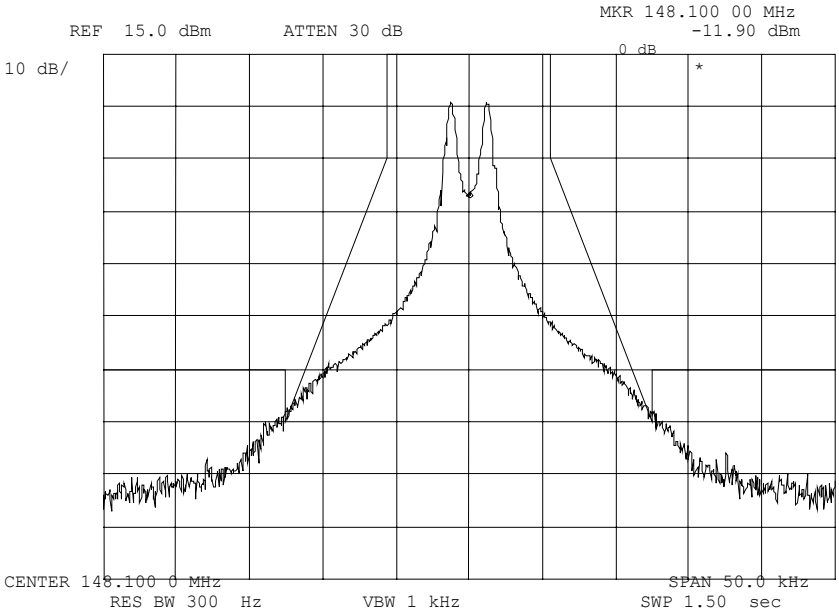
Name of Test: Emission Masks (Occupied Bandwidth)
g0390021: 2003-Sep-08 Mon 11:19:00
State: 2:High Power Ambient Temperature: 22°C ± 3°C



Power: HIGH
Modulation: 100HZ SQUARE WAVE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

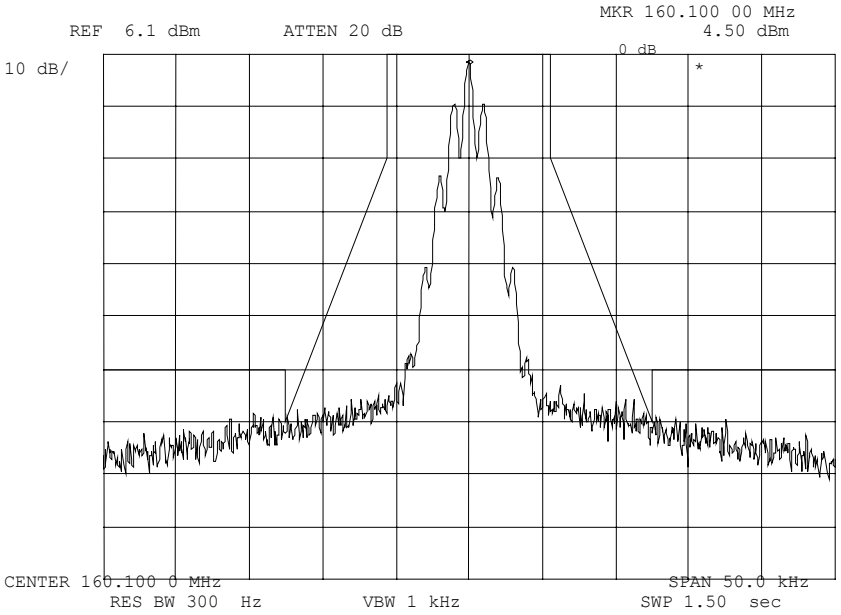
Name of Test: Emission Masks (Occupied Bandwidth)
g0390022: 2003-Sep-08 Mon 11:20:00
State: 2:High Power Ambient Temperature: 22°C ± 3°C



Power: HIGH
Modulation: 100HZ SQUARE WAVE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

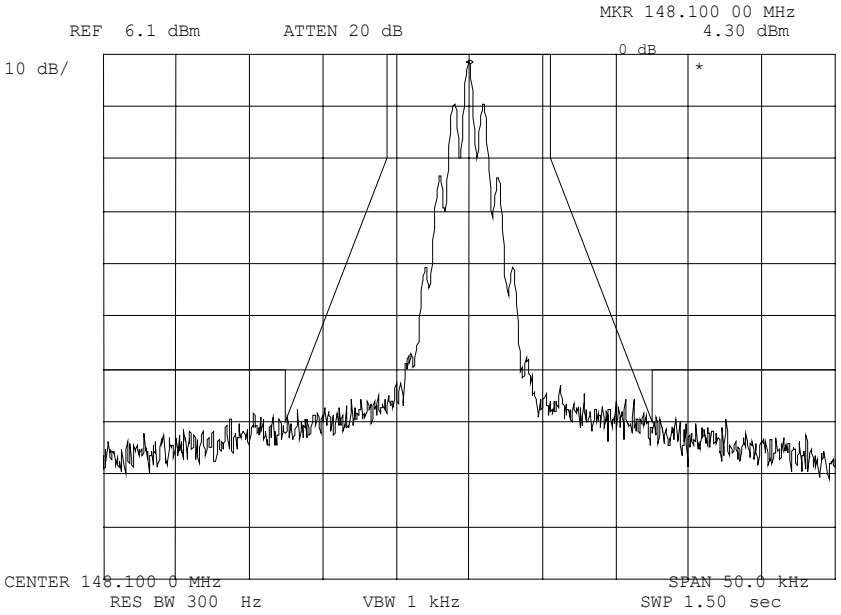
Name of Test: Emission Masks (Occupied Bandwidth)
g0390026: 2003-Sep-08 Mon 11:26:00
State: 2:High Power Ambient Temperature: 22°C ± 3°C



Power: HIGH
Modulation: 1KHZ TONE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

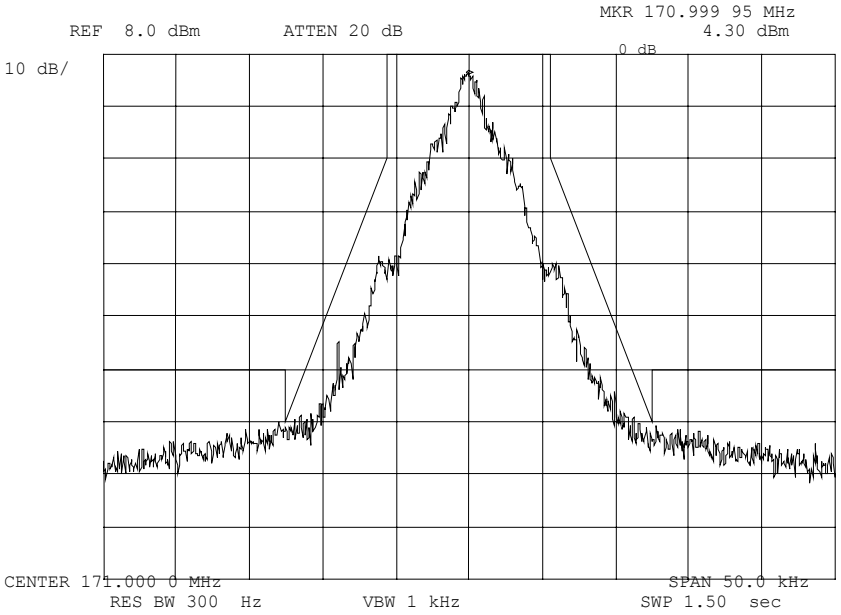
Name of Test: Emission Masks (Occupied Bandwidth)
g0390027: 2003-Sep-08 Mon 11:27:00
State: 2:High Power Ambient Temperature: 22°C ± 3°C



Power: HIGH
Modulation: 1KHZ TONE
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

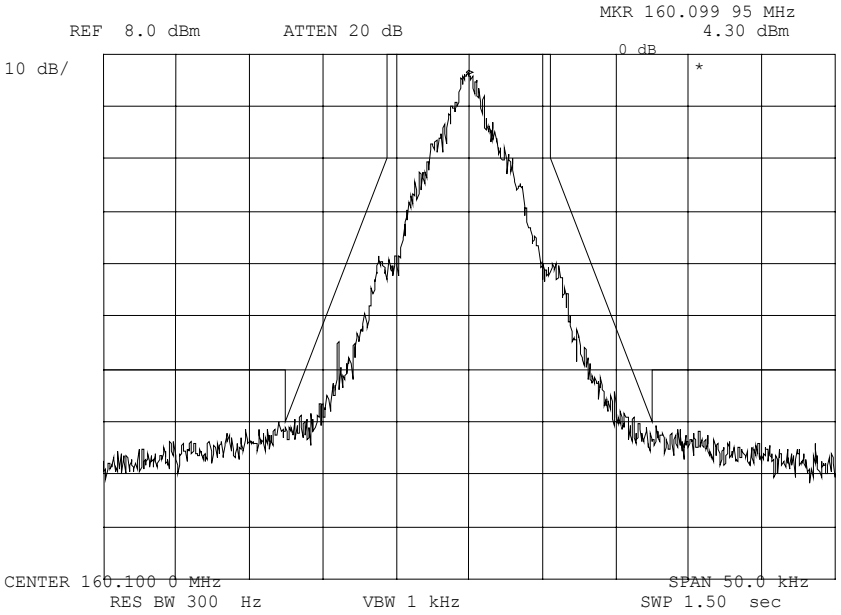
Name of Test: Emission Masks (Occupied Bandwidth)
g0390043: 2003-Sep-08 Mon 15:37:00
State: 2:High Power Ambient Temperature: 22°C ± 3°C



Power: HIGH
Modulation: RANDOM DATA
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

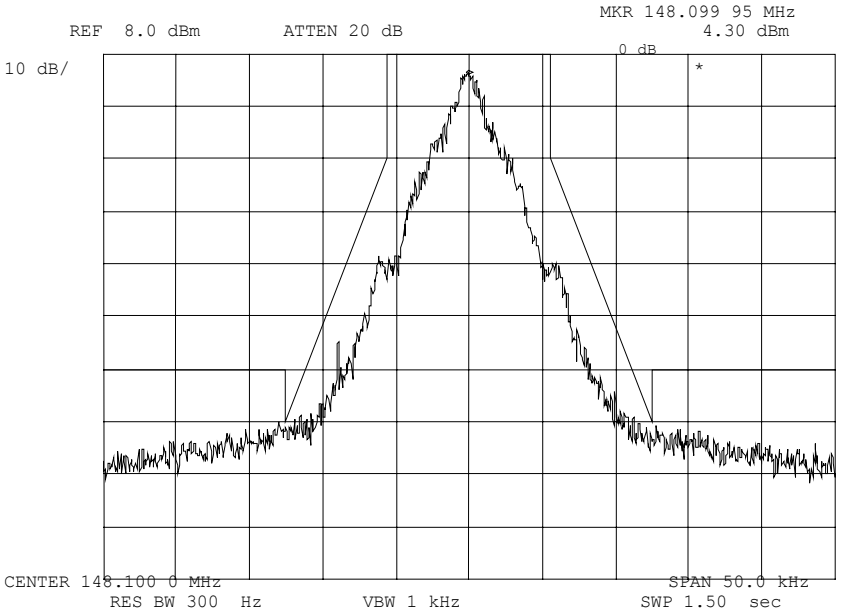
Name of Test: Emission Masks (Occupied Bandwidth)
g0390044: 2003-Sep-08 Mon 15:37:00
State: 2:High Power Ambient Temperature: 22°C ± 3°C



Power: HIGH
Modulation: RANDOM DATA
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

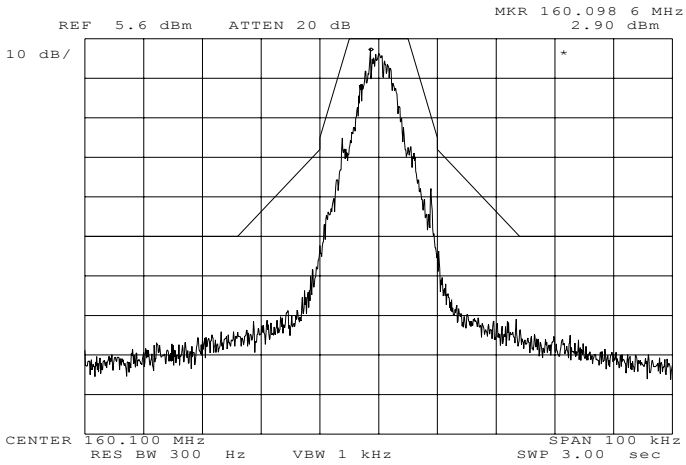
Name of Test: Emission Masks (Occupied Bandwidth)
g0390045: 2003-Sep-08 Mon 15:38:00
State: 2:High Power Ambient Temperature: 22°C ± 3°C



Power: HIGH
Modulation: RANDOM DATA
MASK: D, VHF/UHF 12.5kHz BW

Performed by: David Lee

Name of Test: Emission Masks (Occupied Bandwidth)
g0380403: 2003-Aug-28 Thu 14:57:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: RANDOM DATA
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

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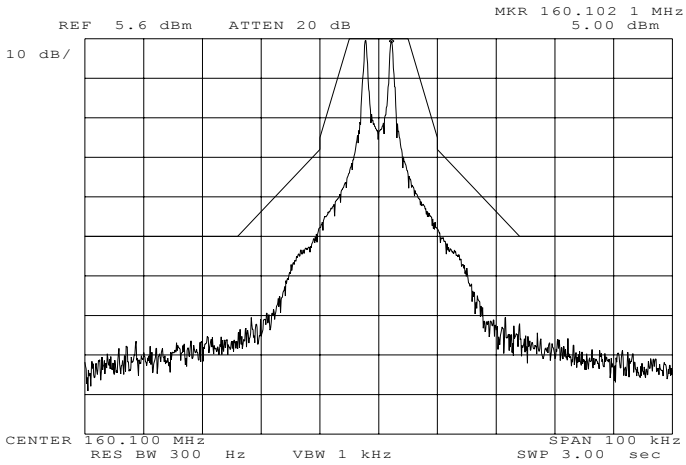
Name of Test: Emission Masks (Occupied Bandwidth)
g0380404: 2003-Aug-28 Thu 14:58:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 100HZ SQUARE WAVE
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

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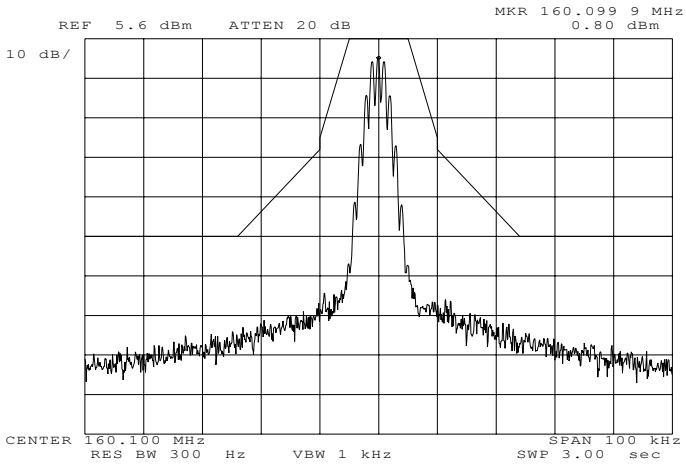
Name of Test: Emission Masks (Occupied Bandwidth)
g0380405: 2003-Aug-28 Thu 14:59:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 1KHZ TONE 60% DEV
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

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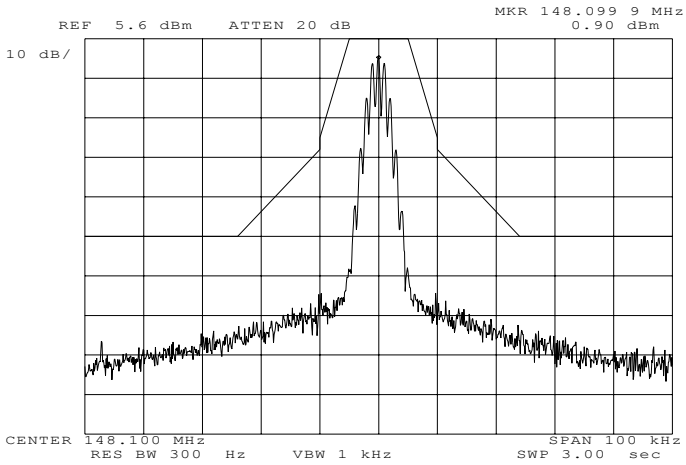
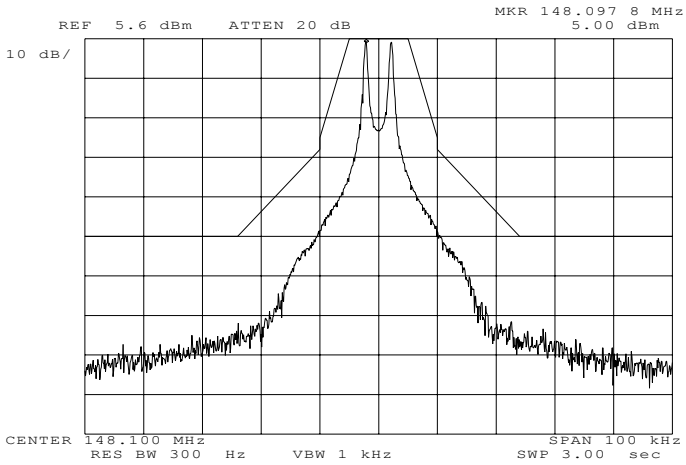
Name of Test: Emission Masks (Occupied Bandwidth)
g0380406: 2003-Aug-28 Thu 15:01:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 1KHZ TONE 60% DEV
MASK: C, VHF/UHF 25kHz, no LPF

Performed by: David Lee

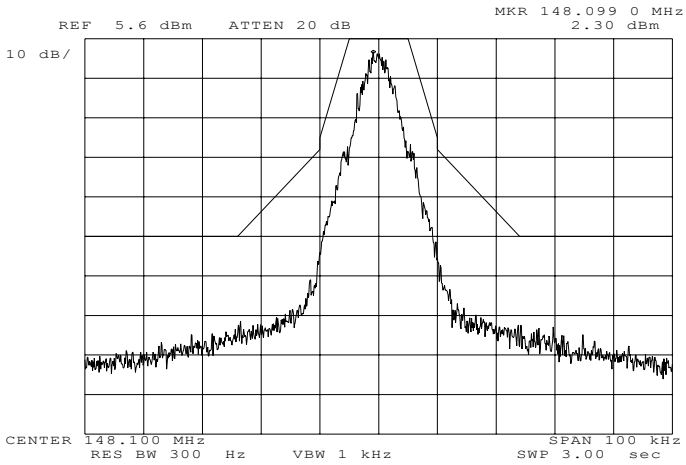
Name of Test: Emission Masks (Occupied Bandwidth)
g0380407: 2003-Aug-28 Thu 15:02:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 100HZ SQUARE WAVE
MASK: C, VHF/UHF 25KHZ, NO LPF

Performed by: David Lee

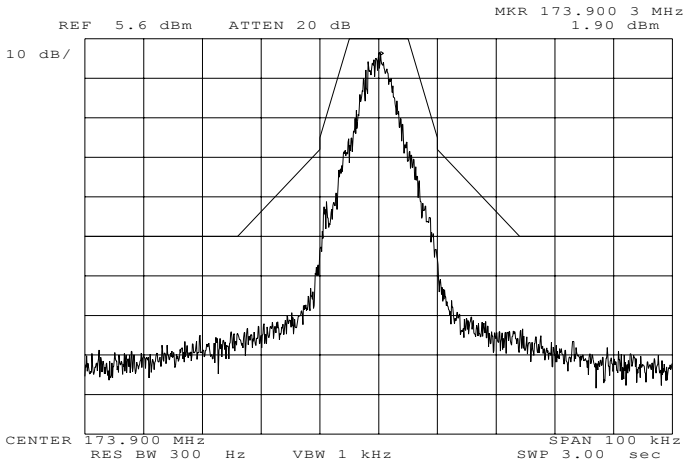
Name of Test: Emission Masks (Occupied Bandwidth)
g0380408: 2003-Aug-28 Thu 15:03:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: RANDOM DATA
MASK: C, VHF/UHF 25KHZ, NO LPF

Performed by: David Lee

Name of Test: Emission Masks (Occupied Bandwidth)
g0380409: 2003-Aug-28 Thu 15:04:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: RANDOM DATA
MASK: C, VHF/UHF 25KHZ, NO LPF

Performed by: David Lee

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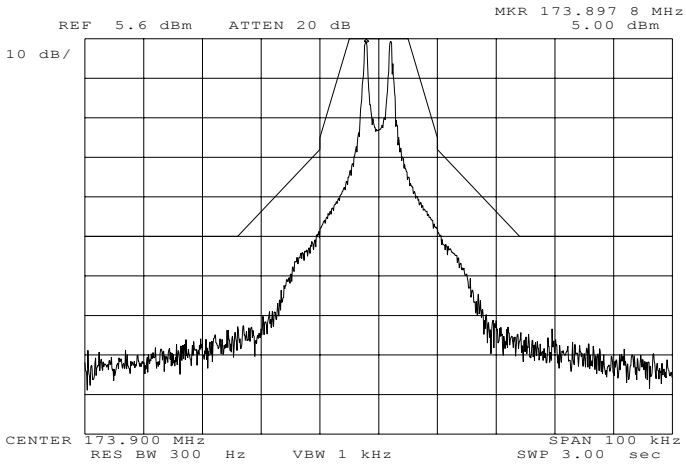
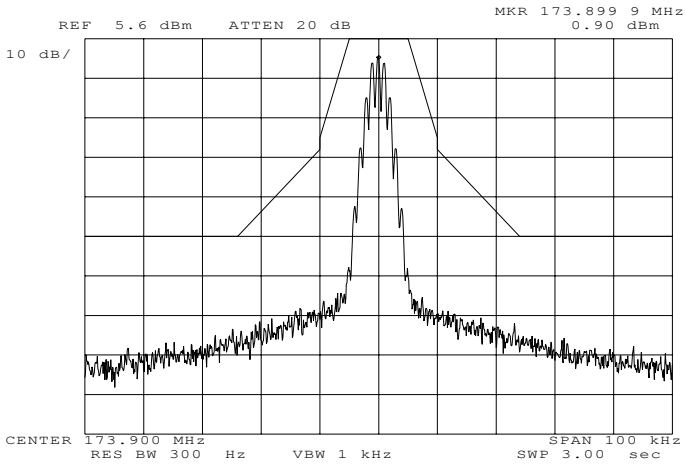
Name of Test: Emission Masks (Occupied Bandwidth)
g0380410: 2003-Aug-28 Thu 15:05:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 100HZ SQUARE WAVE
MASK: C, VHF/UHF 25KHZ, NO LPF

Performed by: David Lee

Name of Test: Emission Masks (Occupied Bandwidth)
g0380411: 2003-Aug-28 Thu 15:06:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 1KHZ TONE 60% DEV
MASK: C, VHF/UHF 25KHZ, NO LPF

Performed by: David Lee

Name of Test: Transient Frequency Behavior
Specification: 47 CFR 90.214
Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.19

Test Equipment: As per attached page

Measurement Procedure

1. The EUT was setup as shown on the attached page, following TIA/EIA-603 steps a, b, and c as a *guide*.

2. The transmitter was turned on.

3. Sufficient attenuation was provided so that the transmitter carrier level measured at the output of the combiner was 40 dB below the maximum input level of the test receiver. This level was noted.

4. The transmitter was turned off.

5. An RF signal generator (1) modulated with a 1 kHz tone at either 25, 12.5, or 6.25 kHz deviation, and set to the same frequency as the assigned transmitter frequency, (2) was adjusted to a level -20 dB below the level recorded in step 3, as measured at the output of the combiner. This level was then fixed for the remainder of the test.

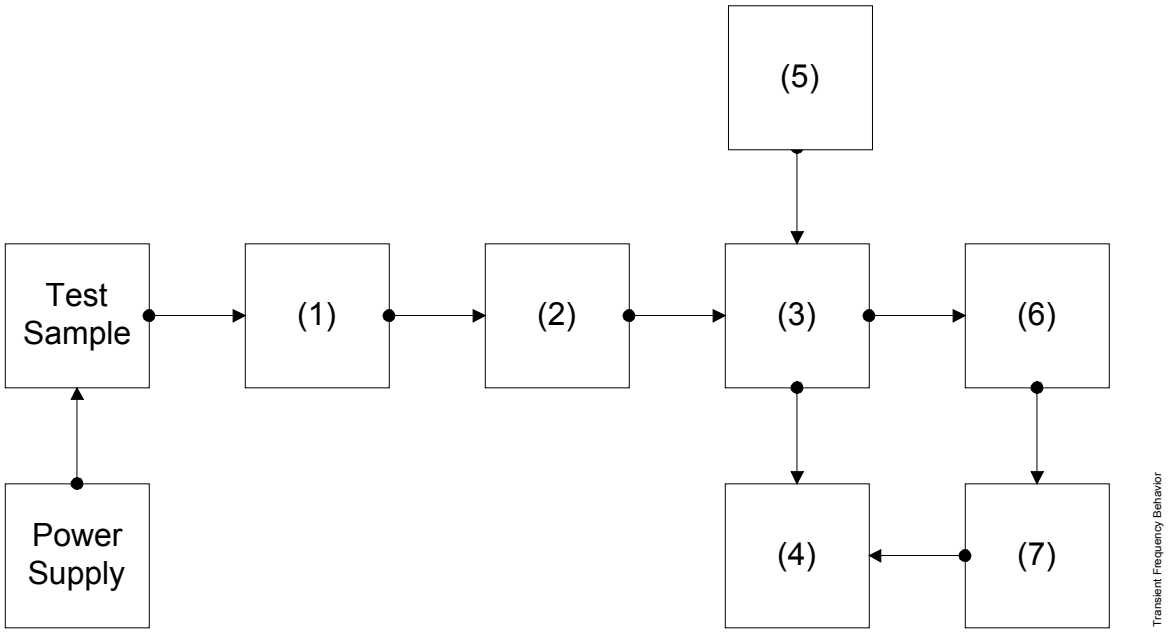
6. The oscilloscope was setup using TIA/EIA-603 steps j and k as a guide, and to either 10 ms/div (UHF) or 5 ms/div (VHF).

7. The 30 dB attenuator was removed, the transmitter was turned on.

8. The carrier on-time as referenced in TIA/EIA-603 steps m, n, and o was captured and plotted. The carrier off-time as referenced in TIA/EIA-603 steps p, q, r, and s was captured and plotted.

Performed by: David Lee

Transient Frequency Behavior



Asset (as applicable)	Description	s/n
(1) **Attenuator** (Removed after 1st step)		
i00112	Philco 30 dB	989
(2) **Attenuator**		
i00112	Philco 30 dB	989
i00172	Bird 30 dB	989
i00122	Narda 10 dB	7802
i00123	Narda 10 dB	7802A
i00110	Kay Variable	145-387
(3) **Combiner**		
i00154	4 x 25 Ω Combiner	154
(4) **Crystal Decoder**		
i00159	HP 8470B	1822A10054
(5) **RF Signal Generator**		
i00018	HP 8656A	2228A03472
i00031	HP 8656A	2402A06180
i00067	HP 8920A	3345U01242
(6) **Modulation Analyzer**		
i00020	HP 8901A	2105A01087
(7) **Scope**		
i00030	HP 54502A	2927A00209

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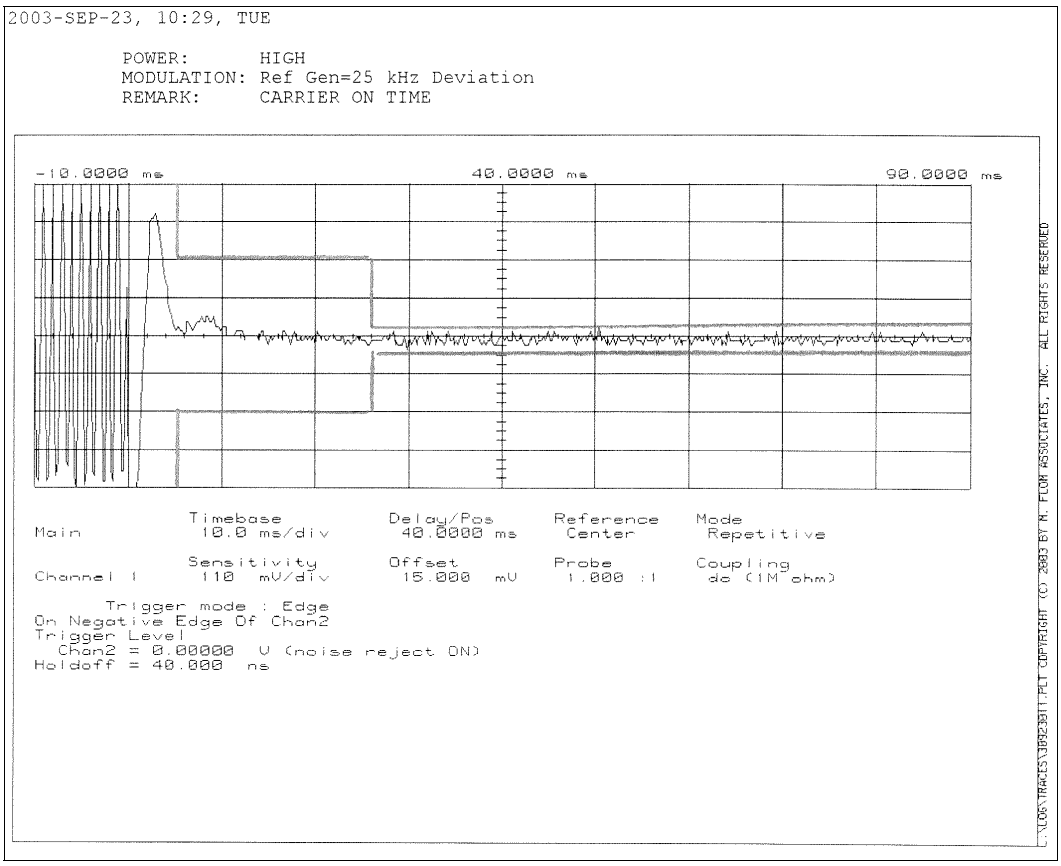
Name of Test: Transient Frequency Behavior

Ambient Temperature: 23°C ± 3°C



Performed by: David Lee

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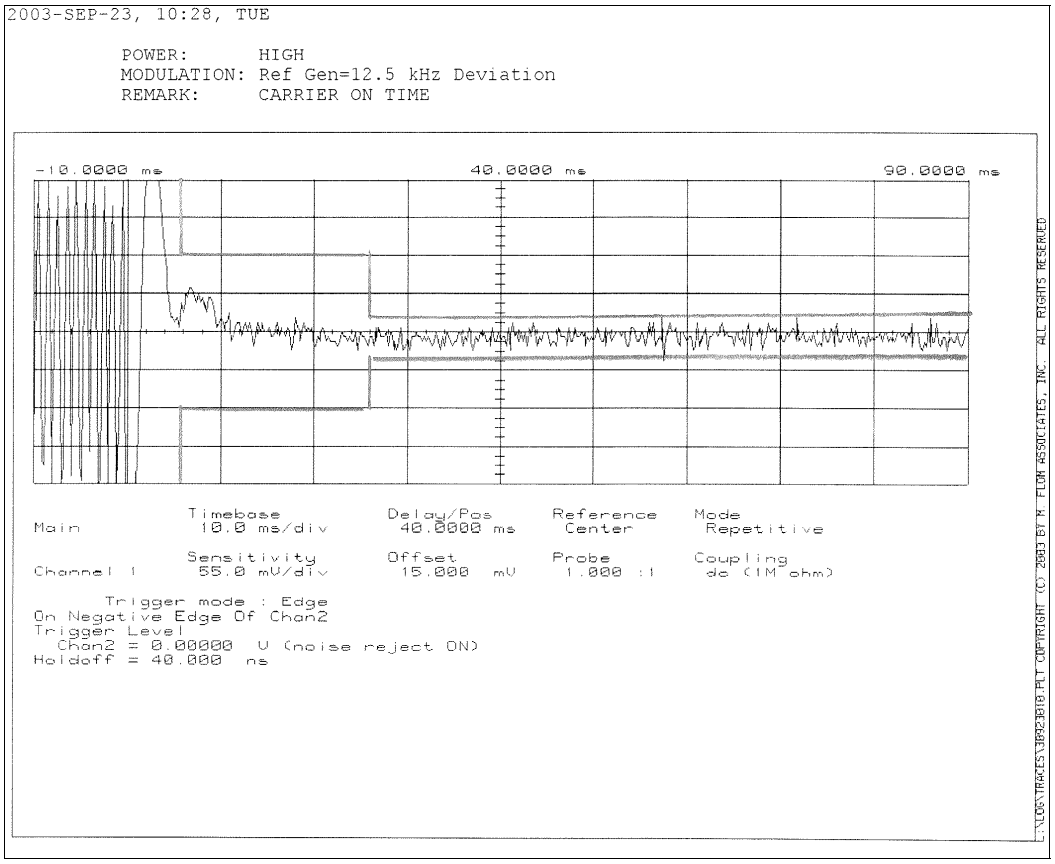
Name of Test: Transient Frequency Behavior

Ambient Temperature: 23°C ± 3°C



Performed by: David Lee

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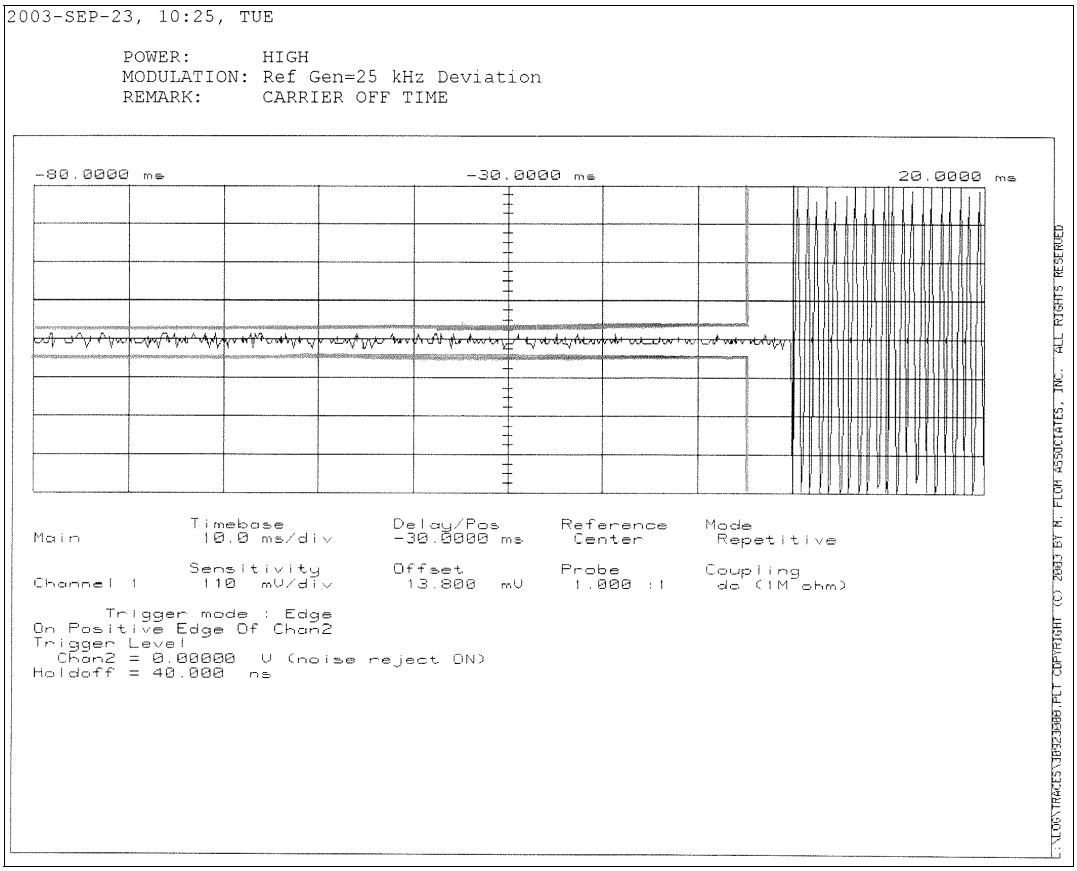
Name of Test: Transient Frequency Behavior

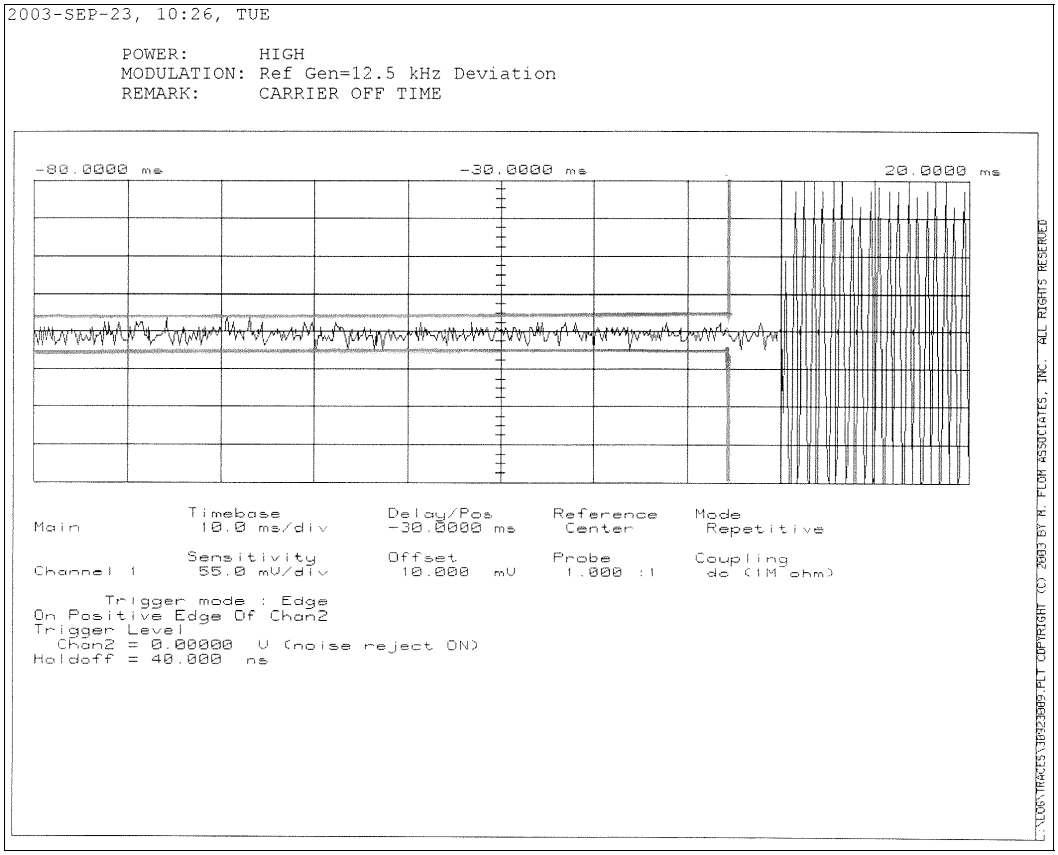
Ambient Temperature: 23°C ± 3°C



Performed by: David Lee

Name of Test: Transient Frequency Behavior

Ambient Temperature: 23°C ± 3°C



Performed by: David Lee

Name of Test: Frequency Stability (Temperature Variation)

Specification: 47 CFR 2.1055(a)(1)

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

Test Conditions: As Indicated

Test Equipment: As per previous page

Measurement Procedure

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

2. 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.

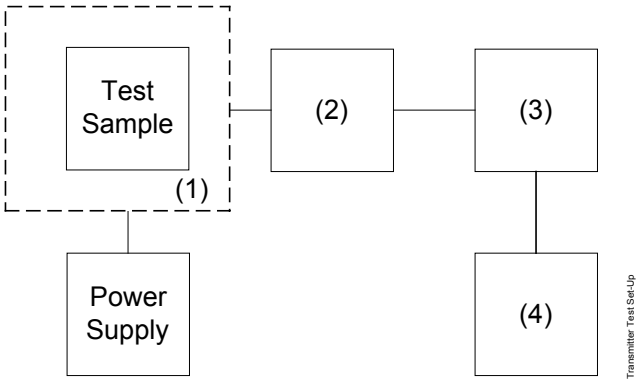
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.

4. The temperature tests were performed for the worst case.

5. Measurement Results: Attached

Transmitter Test Set-Up

Test G. Frequency Stability: Temperature Variation
Test H. Frequency Stability: Voltage Variation



Asset (as applicable)	Description	s/n
(1) **Temperature, Humidity, Vibration**		
i00027	Tenney Temp. Chamber	9083-765-234
(2) **Coaxial Attenuator**		
i00122	NARDA 766-10	7802
i00123	NARDA 766-10	7802A
(3) **RF Power**		
i00020	HP 8901A Power Mode	2105A01087
(4) **Frequency Counter**		
i00020	HP 8901A	2105A01087

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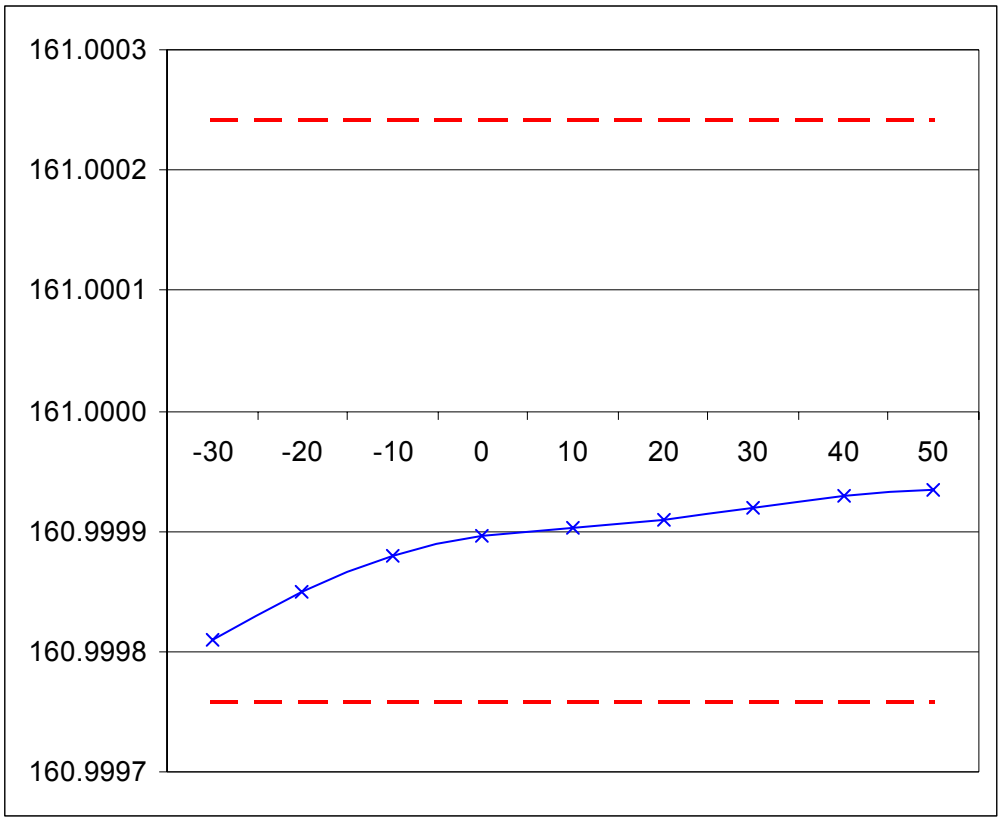
Name of Test: Frequency Stability (Temperature Variation)

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



Performed by: David Lee

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Name of Test: Frequency Stability (Voltage Variation)

Specification: 47 CFR 2.1055(d)(1)

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

Test Equipment: As per previous page

Measurement Procedure

1. The EUT was placed in a temperature chamber at 25±5°C and connected as for "Frequency Stability - Temperature Variation" test.

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

3. The variation in frequency was measured for the worst case.

Results: Frequency Stability (Voltage Variation)

g0380428: 2003-Aug-28 Thu 16:36:11
State: 0:General Ambient Temperature: 23°C ± 3°C

Limit, ppm	=	5
Limit, Hz	=	805
Battery End Point (Voltage)	=	8.5

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
85	10.2	160.99991	-90	>1
100	12	160.99989	-110	>1
115	13.8	160.99991	-90	>1
71	8.5	160.99990	-100	>1

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Name of Test: Necessary Bandwidth and Emission Bandwidth

Specification: 47 CFR 2.202(g)

Modulation = 16K0F1D

Necessary Bandwidth Calculation:

Maximum Modulation (M), kHz	=	3
Maximum Deviation (D), kHz	=	5
Constant Factor (K)	=	1
Necessary Bandwidth (B_N), kHz	=	(2xM)+(2xDxK)
	=	16.0

Modulation = 11K0F1D

Necessary Bandwidth Calculation:

Maximum Modulation (M), kHz	=	3
Maximum Deviation (D), kHz	=	2.5
Constant Factor (K)	=	1
Necessary Bandwidth (B_N), kHz	=	(2xM)+(2xDxK)
	=	11.0

Performed by: David Lee

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: Morton Flom, P. Eng.