



M. Flom Associates, Inc. - Global Compliance Center

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Transmitter Certification

of

FCC ID: B95-NL6000-VHF1

Model: NL6000-VHF1

to

Federal Communications Commission

Rule Part(s) 2, 22, 74, 90, 90.210

Date of report: October 24, 2003

On the Behalf of the Applicant:

RF Neulink

At the Request of:

P.O. Part of N081403DL

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:

A handwritten signature in black ink that reads 'M. Flom P. Eng.' The signature is written in a cursive, flowing style.

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.

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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:

d03a0057

d) Client:

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

e) Identification:

NL6000-VHF1
FCC ID: B95-NL6000-VHF1
VHF/FM Modem

EUT Description:

f) EUT Condition:

Not required unless specified in individual tests.

g) Report Date:

October 24, 2003

EUT Received:

October 6, 2003

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:

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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-VHF1

Model Number:

NL6000-VHF1

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

Please see attached exhibits

(c)(4): Type of Emission:

16K0F1D, 11K0F1D

(c)(5): Frequency Range, MHz:

136.000 to 162.000

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

____ Switchable

____ x ____ Variable

1 to 6

____ 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 ____

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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	=	1.5
Collector Voltage, Vdc	=	12
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
☒ N/A

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

Follows

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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:

- ☐ 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
- ☒ 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
- ☒ 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**

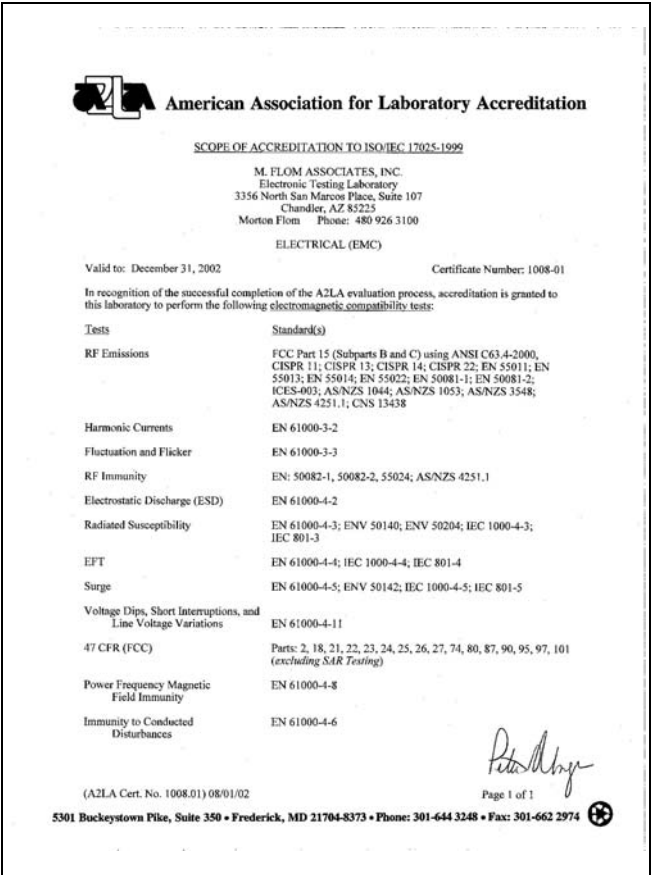
Except as noted herein, the following conditions and procedures were observed during the testing:

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.

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



"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.

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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 $\pm 3\%$.

Measurement Results
(Worst case)

Frequency of Carrier, MHz = 149.000, 136.000, 162.000
Ambient Temperature = 23°C $\pm$ 3°C

Power Setting	RF Power, Watts
High	6
Low	1

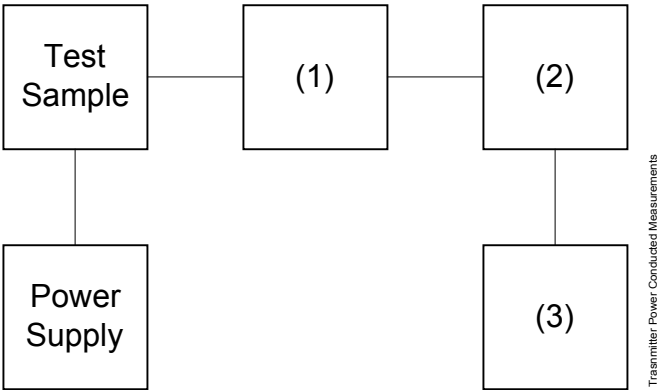
Performed by:



Dan Dillon

Transmitter Power Conducted Measurements

Test A. RF Power Output
Test B. Frequency Stability



Asset (as applicable)	Description	s/n
(1)	Coaxial Attenuator	
i00027	Tenney Temp. Chamber	9083-765-234
i00122	Narda 766-10	7802
i00123	Narda 766-10	7802A
i00231	Pasternack (30 dB)	
i00232	Pasternack (30 dB)	
(2)	Power Meters	
i00020	HP 8901A Power Mode	2105A01087
(3)	Frequency Counter	
i00020	HP 8901A Frequency Mode	2105A01087

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Name of Test: Field Strength of Spurious Radiation

Specification: 47 CFR 2.1053(a)

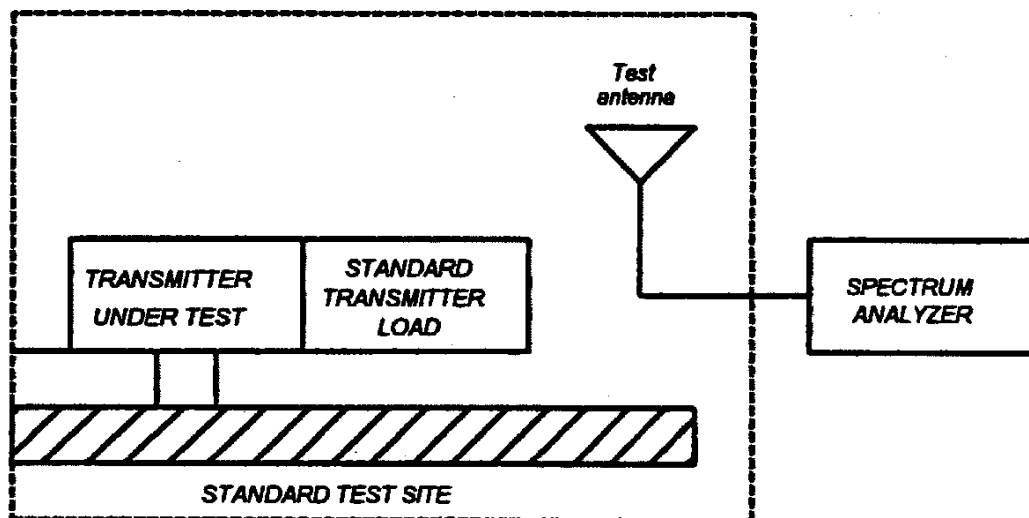
Guide: ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16, 47 CFR 22.917

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.

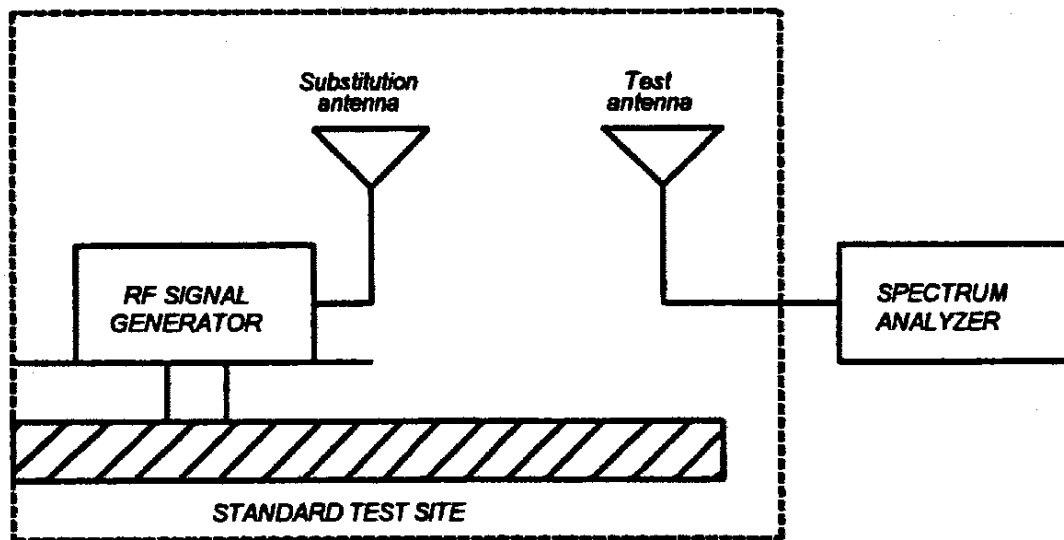
1.2.12.2 Method of Measurement

- 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 $\pm$ 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.

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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:

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

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

Test Equipment:

Asset (as applicable)	Description	s/n	Cycle	Last Cal
Transducer				
i00088	EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Sep-03
i00089	Aprcl 2001 200MHz-1GHz	001500	12 mo.	Sep-03
i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Sep-03
Amplifier				
i00028	HP 8449A	2749A00121	12 mo.	Mar-03
Spectrum Analyzer				
i00029	HP 8563E	3213A00104	12 mo.	Jan-03
i00033	HP 85462A	3625A00357	12 mo.	Jan-03
Microphone, Antenna Port, and Cabling				
Microphone	<u>No</u>	Load	<u>50 ohms</u>	
Antenna Port Terminated	<u>Yes</u>			
All Ports Terminated by Load	<u>No</u>			

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Name of Test: Field Strength of Spurious Radiation

g03a0233: 2003-Oct-22 Wed 10:40:00

STATE: 2:High Power

Ambient Temperature, 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	ERP, dBm	ERP, dBc
149.000000	298.008000	-34.5	-19.3
149.000000	447.000000	-24.6	-9.5
149.000000	596.003000	-27	-11.8
149.000000	745.005000	-37.9	-22.7
149.000000	894.005000	-49.5	-34.3
149.000000	1043.012000	-65.7	-50.5
149.000000	1192.017500	-60.7	-45.5
149.000000	1341.024800	-65.8	-50.6
149.000000	1490.029800	-63.9	-48.7

Performed by:



Dan Dillon

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Name of Test: Emission Masks (Occupied Bandwidth)

Specification: 47 CFR 2.1049(c)(1)

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

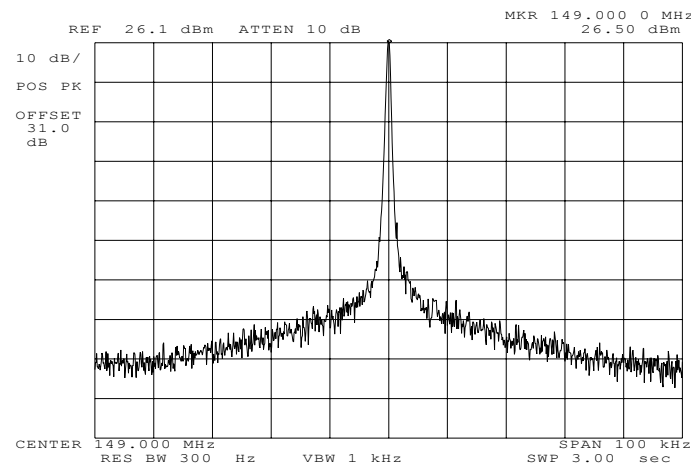
Test Equipment: As per previous page

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 $\pm 2.5/\pm 1.25$ 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

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Name of Test: Emission Masks (Occupied Bandwidth)
g03a0211: 2003-Oct-20 Mon 15:29:00
State: 1:Low Power Ambient Temperature, 23°C ± 3°C



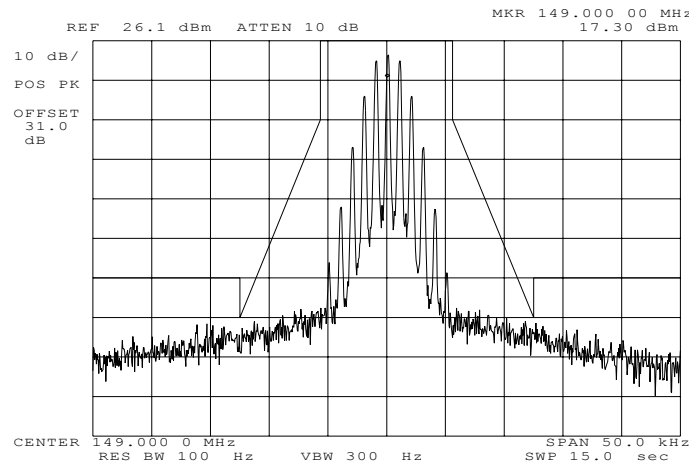
Power: LOW
Modulation: NONE

Performed by:

Dan Dillon

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Name of Test: Emission Masks (Occupied Bandwidth)
g03a0215: 2003-Oct-20 Mon 15:46:00
State: 1:Low Power Ambient Temperature, 23°C ± 3°C



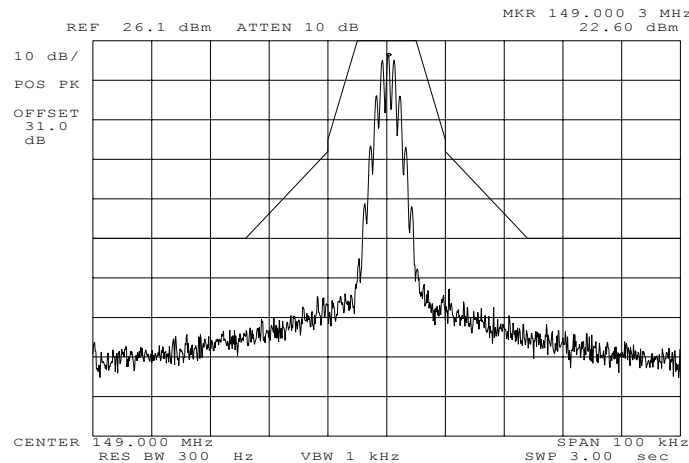
Power: LOW
Modulation: 1000
MASK: D, VHF/UHF 12.5kHz BW

Performed by:

Dan Dillon

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Name of Test: Emission Masks (Occupied Bandwidth)
g03a0236: 2003-Oct-23 Thu 12:06:00
State: 1:Low Power Ambient Temperature, 23°C ± 3°C



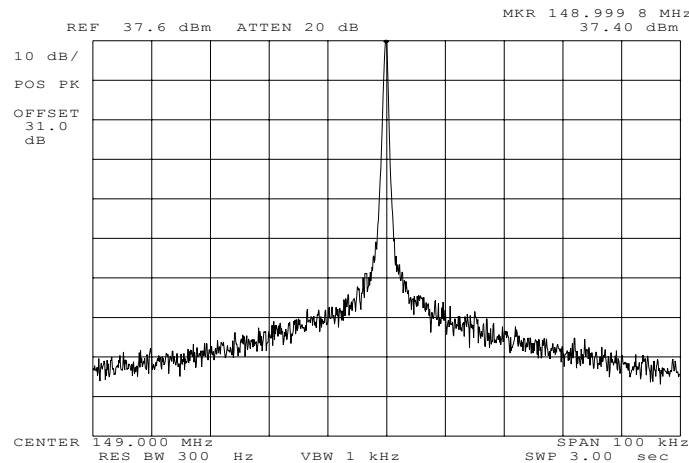
Power: LOW
Modulation: 1000
MASK: C, VHF/UHF 25kHz, no LPF

Performed by:

Dan Dillon

Page Number 17 of 30.

Name of Test: Emission Masks (Occupied Bandwidth)
g03a0210: 2003-Oct-20 Mon 15:28:00
State: 2:High Power Ambient Temperature, 23°C ± 3°C



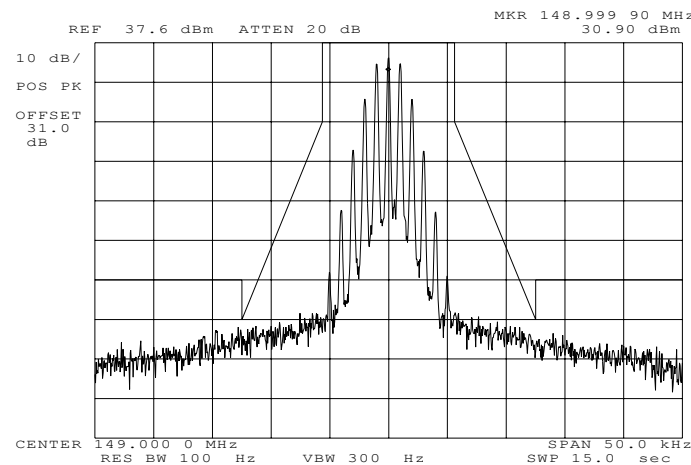
Power: HIGH
Modulation: NONE

Performed by:

Dan Dillon

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Name of Test: Emission Masks (Occupied Bandwidth)
g03a0213: 2003-Oct-20 Mon 15:42:00
State: 2:High Power Ambient Temperature, 23°C ± 3°C



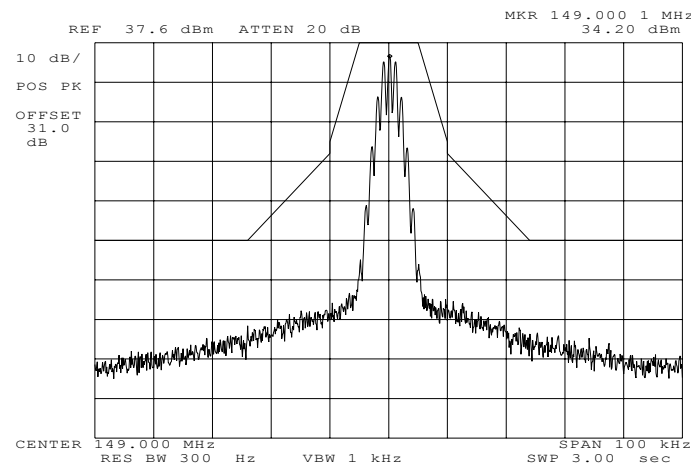
Power: HIGH
Modulation: 1000
MASK: D, VHF/UHF 12.5kHz BW

Performed by:

Dan Dillon

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Name of Test: Emission Masks (Occupied Bandwidth)
g03a0235: 2003-Oct-23 Thu 12:03:00
State: 2:High Power Ambient Temperature, 23°C ± 3°C



Power: HIGH
Modulation: 1000
MASK: C, VHF/UHF 25kHz, no LPF

Performed by:

Dan Dillon

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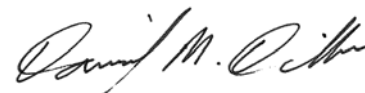
Name of Test: Transient Frequency Behavior
Specification: 47 CFR 90.214
Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.19

Test Equipment: As per attached page

Measurement Procedure

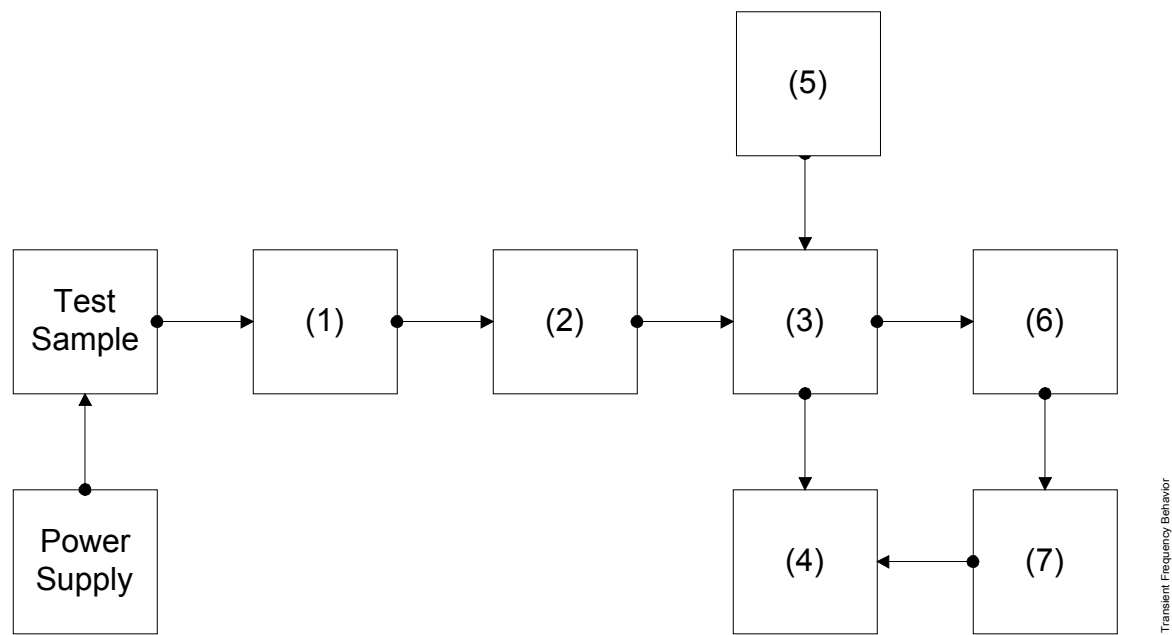
1. The EUT was setup as shown on the attached page, following TIA/EIA-603 steps a, b, and c as a *guide*.
2. The transmitter was turned on.
3. Sufficient attenuation was provided so that the transmitter carrier level measured at the output of the combiner was 40 dB below the maximum input level of the 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 noted 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:



Dan Dillon

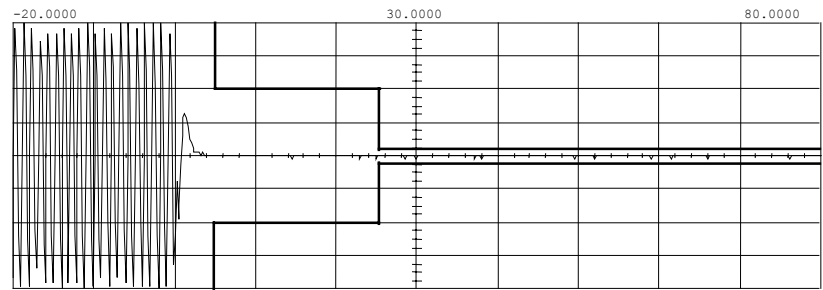
Transient Frequency Behavior



Asset (as applicable)	Description	s/n
(1) Attenuator	(Removed after 1st step)	
i00112	Philco 30 dB	989
i00231	Pasternack (30 dB)	
(2) Attenuator		
i00112	Philco 30 dB	989
i00172	Bird 30 dB	989
i00232	Pasternack (30 dB)	
(3) Combiner		
i00154	4 x 25 Ω Combiner	154
(4) Crystal Decoder		
i00159	HP 8470B	1822A10054
(5) RF Signal Generator		
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
g03a0223: 2003-Oct-21 Tue 09:28:00
State: 0:General Ambient Temperature, 23°C ± 3°C



Main	Timebase	Delay/Pos	Reference	Measurements
	10.0 ms/div	-20.0000 ms	Left	V rms (c1) = 347.834 mV
Channel 1	Sensitivity	Offset	Probe	
	120 mV/div	0.00000 V	1.000 :1 dc	

Trigger mode :
On Negative Edge Of
Trigger
Chan2 = -25.000 mV (noise reject)
Holdoff = 40.000

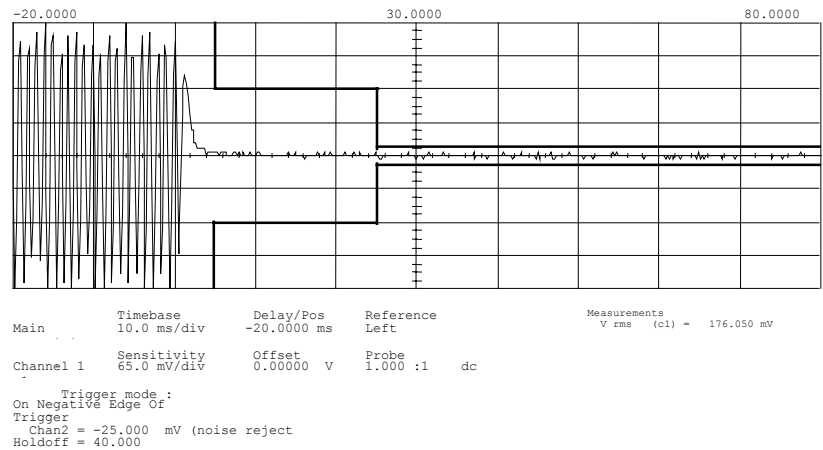
Power:	n/a
Modulation:	Ref Gen=25 kHz Deviation
Description:	CARRIER ON TIME

Performed by:

Dan Dillon

Page Number 23 of 30.

Name of Test: Transient Frequency Behavior
g03a0224: 2003-Oct-21 Tue 09:31:00
State: 0:General Ambient Temperature, 23°C ± 3°C



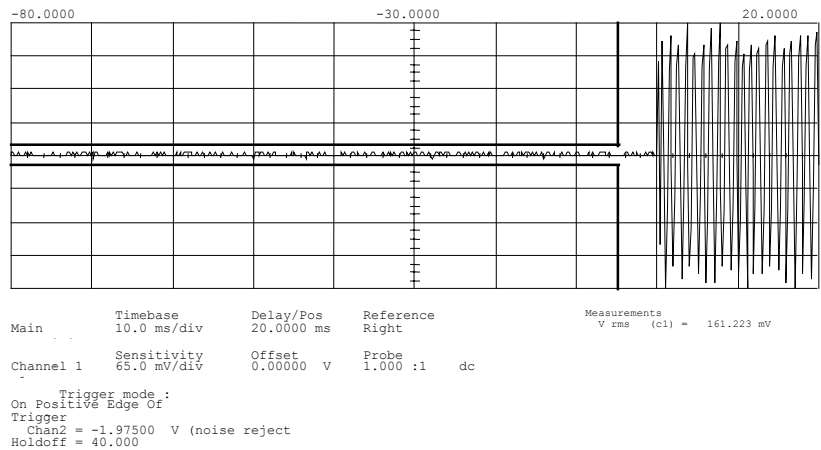
Power: n/a
Modulation: Ref Gen=12.5 kHz Deviation
Description: CARRIER ON TIME

Performed by:


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Name of Test: Transient Frequency Behavior
g03a0225: 2003-Oct-21 Tue 09:35:00
State: 0:General Ambient Temperature, 23°C ± 3°C



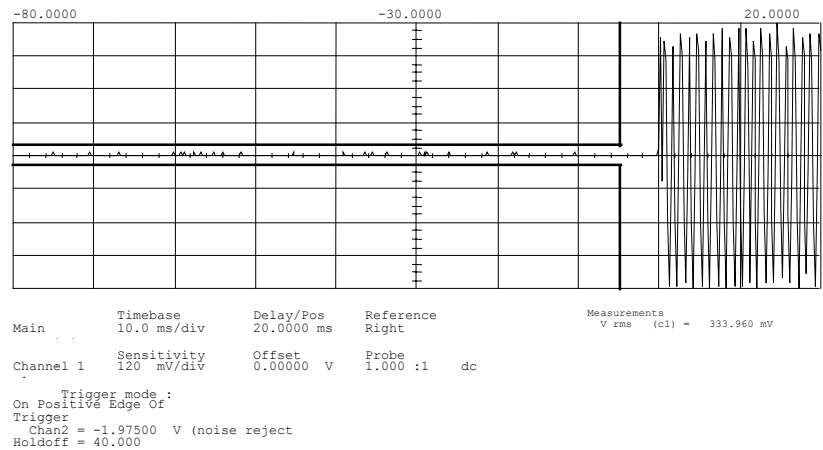
Power: n/a
Modulation: Ref Gen=12.5 kHz Deviation
Description: CARRIER OFF TIME

Performed by:


Dan Dillon

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Name of Test: Transient Frequency Behavior
g03a0226: 2003-Oct-21 Tue 09:36:00
State: 0:General Ambient Temperature, 23°C ± 3°C



Power:	n/a
Modulation:	Ref Gen=25 kHz Deviation
Description:	CARRIER OFF TIME

Performed by:

Dan Dillon

Page Number 26 of 30.

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

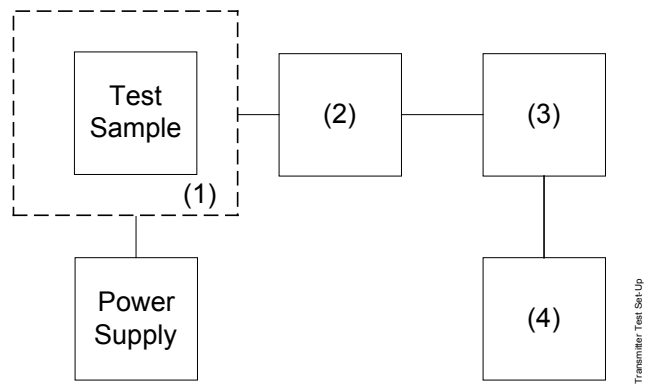
Test Equipment: As per previous page

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

Frequency Stability: Temperature Variation
Frequency Stability: Voltage Variation

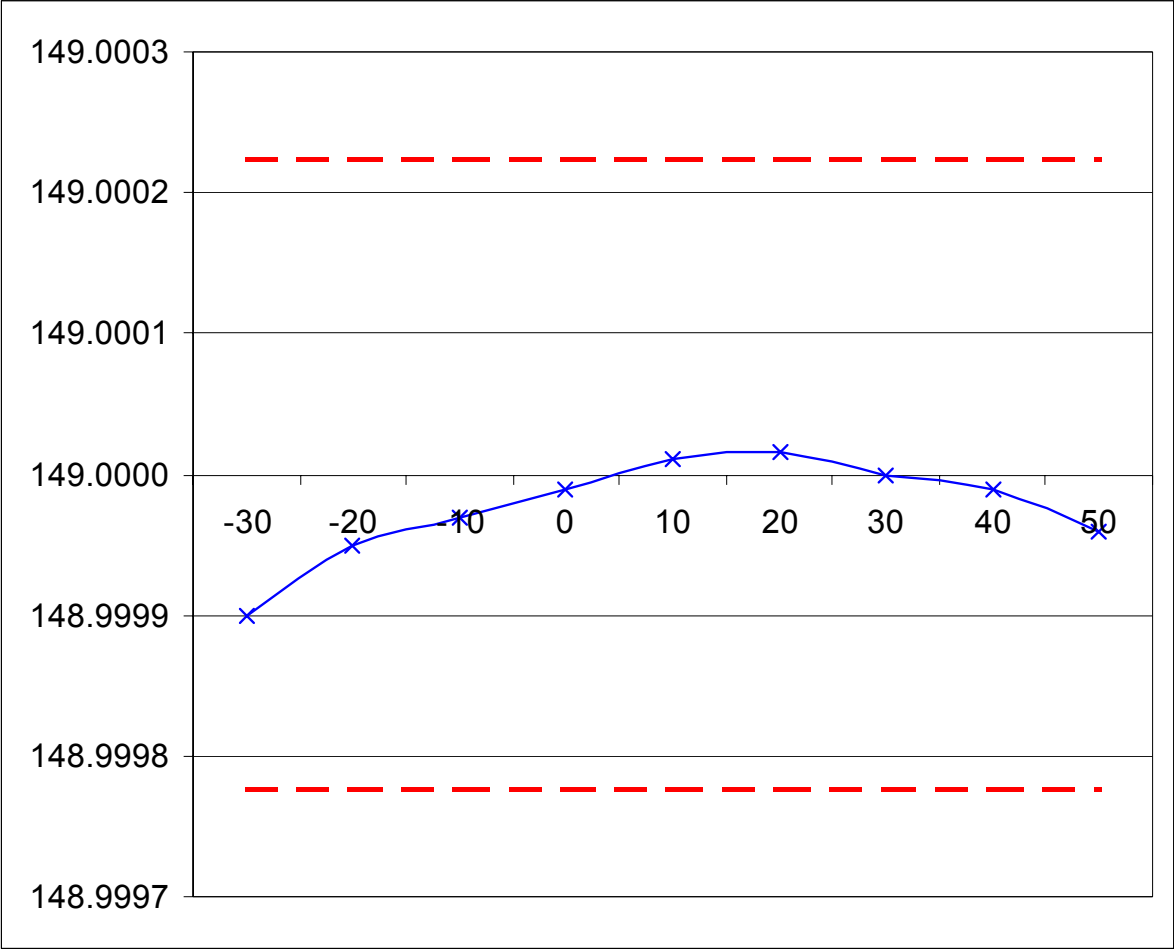


Asset	Description	s/n
(1) Temperature, Humidity, Vibration		
i00027	Tenney Temp. Chamber	9083-765-234
(2) Coaxial Attenuator		
i00122	NARDA 766-10	7802
i00123	NARDA 766-10	7802A
(3) RF Power		
i00020	HP 8901A Power Mode	2105A01087
(4) Frequency Counter		
i00020	HP 8901A	2105A01087

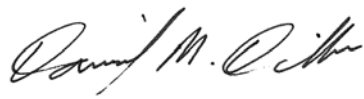
Page Number 28 of 30.

Name of Test: Frequency Stability (Temperature Variation)

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



Performed by:


Dan Dillon

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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 $25 \pm 5^\circ\text{C}$ 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)

g03a0218: 2003-Oct-20 Mon 16:23:49

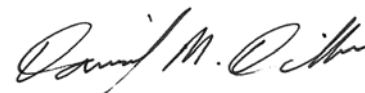
State: 0:General

Ambient Temperature, $23^\circ\text{C} \pm 3^\circ\text{C}$

Limit, ppm = 5
 Limit, Hz = 745
 Battery End Point (Voltage) = 6.2

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
115	13.8	149.00032	320	2.15
100	12	149.00025	250	1.67
85	10.2	149.00034	340	2.28
52	6.2	149.00037	370	2.48

Performed by:



Dan Dillon

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Name of Test: Necessary Bandwidth and Emission Bandwidth

Specification: 47 CFR 2.202(g)

Modulation = 16K0F1D

Necessary Bandwidth Calculation:

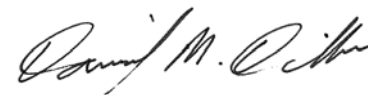
Maximum Modulation (M), kHz	= 3
Maximum Deviation (D), kHz	= 5
Constant Factor (K)	= 1
Necessary Bandwidth (B_N), kHz	= $(2 \times M) + (2 \times D \times K)$
	= 16.0

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	= $(2 \times M) + (2 \times D \times K)$
	= 11.0

Performed by:



Dan Dillon

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:

A handwritten signature in black ink, appearing to read "M. Flom P. Eng.", with a horizontal line drawn underneath the signature.

Morton Flom, P. Eng.