



Transmitter Certification

of

FCC ID: S35-433
Model: 433

to

Federal Communications Commission

Rule Part 15.231(e)

Date of report: May 9, 2005
AMENDED BY ADDING PAGE MISSING PAGE 18 - March 11, 2006

On the Behalf of the Applicant:

NocWatch International, Inc.

At the Request of:

P.O. Deposit Check #1111

NocWatch International, Inc.
PO Box 1367
Crystal Bay, NV 89402

Attention of:

Kathryn E. Kelly, Dr. P.H., President
(877) 614-5616; (775) 833-4142; Fax: -0270
Email: kek@nocwatch.com

Supervised by:

Michael Findley, Laboratory Manager

List of Exhibits

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

Applicant: NocWatch International, Inc.

FCC ID: S35-433

By Applicant:

1. Letter of Authorization
2. Confidentiality Request: 0.457 And 0.459
3. Identification Drawings, 2.1033(c)(11)
 - Label
 - Location of Label
 - Compliance Statement
 - Location of Compliance Statement
4. Photographs, 2.1033(c)(12)
5. Documentation: 2.1033(c)
 - (3) User Manual
 - (9) Tune Up Info
 - (10) Schematic Diagram
 - (10) Circuit Description
 - Block Diagram
 - Parts List
 - Active Devices

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.

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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: d0530025
- d) Client: NocWatch International, Inc.
PO Box 1367
Crystal Bay, NV 89402
- e) Identification: 433
FCC ID: S35-433
Description: Alarm Transmitter
- f) EUT Condition: Not required unless specified in individual tests.
- g) Report Date: March 14, 2005
EUT Received: January 17, 2005
- 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:
- 
- Michael Findley, Laboratory 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.

List Of General Information Required For Certification

In Accordance With FCC Rules And Regulations,
Volume II, Part 2 and to 15.231(e)

Sub-part 2.1033

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

NocWatch International, Inc.
PO Box 1367
Crystal Bay, NV 89402

Manufacturer :

Applicant

(c)(2): **FCC ID:** S35-433

Model Number : 433

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

Please See Attached Exhibits

(c)(4): **Type of Emission:** Digital, PCM

(c)(5): **Frequency Range, MHz:** 433.00

(c)(6): **Power Rating:** 1,513 uv/m @ 3m
 Switchable Variable N/A

(c)(7): **Maximum Power Rating (15.231(e))** 4,383uv/m @ 3m

15.203: Antenna Requirement:

- The antenna is permanently attached to the EUT
- The antenna uses a unique coupling
- The EUT must be professionally installed
- The antenna requirement does not apply

Subpart 2.1033 (continued)

(c)(8): **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	=	3.0

(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



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**



NIST

I am pleased to inform you that your laboratory has been validated by the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Your laboratory is now formally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA between the American Institute in Taiwan (AIT) and the Taipei Economic and Cultural Representative Office (TECRO) in the United States, covering equipment subject to Electro-Magnetic Compatibility (EMC) requirements. The names of all validated and nominated laboratories will be posted on the NIST website at <http://ts.nist.gov/mra> under the 'Asia' category."

BSMI Number: **SL2-IN-E-041R**

Sub-part

2.1033(b):

Test And Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub-part J, Sections 2.1031, 2.1033, 2.1035, 2.1041, 2.1043, 2.1045, and the following individual Parts:

_____	15.209	Radiated emission limits; general requirements
_____	15.211	Tunnel radio systems
_____	15.213	Cable locating equipment
_____	15.214	Cordless telephones
_____	15.217	Operation in the band 160-190 kHz
_____	15.219	Operation in the band 510-1705 kHz
_____	15.221	Operation in the band 525-1705 kHz (leaky coax)
_____	15.223	Operation in the band 1.705-10 MHz
_____	15.225	Operation in the band 13.553-13.567 MHz
_____	15.227	Operation in the band 26-27.28 MHz (remote control)
_____	15.229	Operation in the band 40.66-40.70 MHz
X _____	15.231	Periodic operation in the band 40.66-40.70 MHz and above 70 MHz
_____	15.233	Operation within the bands 43.71-44.49, 46.60-46.98 MHz 48.75-49.51 MHz and 49.66-50.0 MHz
_____	15.235	Operation within the band 49.82-49.90 MHz
_____	15.237	Operation within the bands 72.0-73.0 MHz, 74.6-74.8 MHz and 75.2-76.0 MHz (auditory assistance)
_____	15.239	Operation in band 88-108 MHz
_____	15.241	Operation in the band 174-216 MHz (biomedical)
_____	15.243	Operation in the band 890-940 MHz (materials)
_____	15.245	Operation within the bands 902-928 MHz, 2435-2465 MHz, 5785-5815 MHz, 10500-10550 MHz, and 24075-24175 MHz (filed disturbance sensors)
_____	15.247	Operation within bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz (spread spectrum)
_____	15.249	Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0- 24.25 GHz
_____	15.251	Operation within the bands 2.9-3.26 GHz, 3.267-3.332 GHz, 3.339-3.3458 GHz, and 3.358- 3.6 GHz (vehicle identification systems)
_____	15.321	Specific requirements for asynchronous devices operating in the 1910-1920 MHz and 2390- 2400 MHz bands (Unlicensed PCS)
_____	15.323	Specific requirements for isochronous devices operating in the 1920-1930 MHz sub-band (Unlicensed PCS)

Standard Test Conditions and Engineering Practices

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

In accordance with ANSI C63.4-1992/2001, 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.

Name of Test: RF Power Output (Radiated)

Specification: 47 CFR 2.1046(a)

Measurement Procedure (Radiated)

- The EUT was placed on an open-field site and its radiated field strength at a known distance was measured by means of a spectrum analyzer. Equivalent loading was calculated from the equation $P_t = ((E \times R)^2 / 49.2)$ watts, where $R = 3m$.
- Measurement accuracy is ± 1.5 dB.

Measurement Results

g0530020: 2005-Mar-04 Fri 10:42:00

State: 2:High Power

Ambient Temperature: 23°C \pm 3°C

Limit = 4,383uV/m at 3m

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	Calc, dBuV/m	uV/m
433.000000	433.925700	45.54	18.07	63.61	1,513.00

Test Equipment:

Asset (as applicable)	Description	s/n	Cycle Per ANSI C63.4-1992/2001, 10.1.4	Last Cal
Transducer				
X i00088	EMCO 3109-B 25MHz-300MHz	2336	24 mo.	Sep-03
	i00065 EMCO 3301-B Active Monopole	2635	24 mo.	Sep-03
X i00089	ApriL 2001 200MHz-1GHz	001500	24 mo.	Sep-03
	i00103 EMCO 3115 1GHz-18GHz	9208-3925	24 mo.	Jan-04
Amplifier				
i00028	HP 8449A	2749A00121	12 mo.	May-04
Spectrum Analyzer				
	i00029 HP 8563E	3213A00104	12 mo.	May-04
X i00033	HP 85462A	3625A00357	12 mo.	Jul-04
	i00048 HP 8566B	2511AD1467	12 mo.	Aug-04



Supervised by:

Michael Findley, Laboratory Manager

Name of Test: Signaling Restriction

Specification: 47 CFR 15.231(a)

Provisions

To Paragraph 15.231

(a) Types of momentary signals

- The EUT only transmits a control signal.
 The EUT meets the requirements provided in (e).

(a)(1) Manually operated transmitters

- The EUT can not be manually activated.
 The EUT ceases transmission within 5 seconds or deactivation.
 The EUT is employed during emergencies.

(a)(2) Automatically activated transmitters

- The EUT can not be automatically activated.
 The EUT does not transmit for more than 5 seconds.
 The EUT only operates during an alarm condition.

(a)(3) Automatically activated transmitters

- The EUT does not transmit at regular predetermined intervals.
 The EUT meets the requirements provided in (e).
 The EUT does not transmit more than one, one second per hour.

(a)(4) Emergency transmitters

- The EUT is not an emergency transmitter.
 The EUT only operates during an alarm condition.

Supervised by:



Michael Findley, Laboratory Manager

Name of Test: Field Strength of Spurious Radiation

Specification: 47 CFR 2.1053(a)

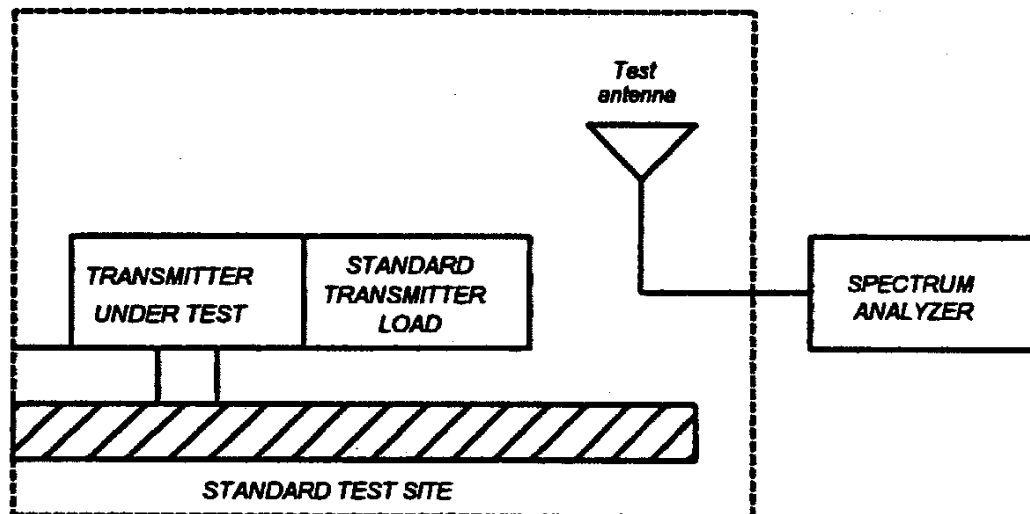
Guide: ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16, 47 CFR 22.917

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.

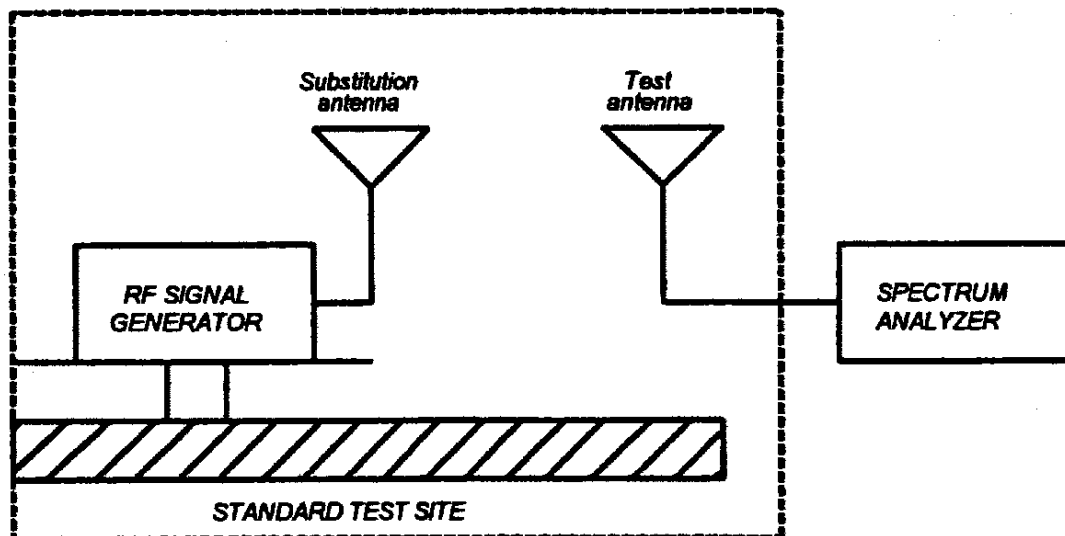
1.2.12.2 Method of Measurement

- 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.

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 Per ANSI C63.4-1992/2000 Draft, 10.1.4	Last Cal
Transducer				
X i00088	EMCO 3109-B 25MHz-300MHz	2336	24 mo.	Sep-03
	i00065 EMCO 3301-B Active Monopole	2635	24 mo.	Sep-03
X i00089	Apriel 2001 200MHz-1GHz	001500	24 mo.	Sep-03
	i00103 EMCO 3115 1GHz-18GHz	9208-3925	24 mo.	Jan-04
Amplifier				
i00028	HP 8449A	2749A00121	12 mo.	May-04
Spectrum Analyzer				
	i00029 HP 8563E	3213A00104	12 mo.	May-04
X i00033	HP 85462A	3625A00357	12 mo.	Jul-04
	i00048 HP 8566B	2511AD1467	12 mo.	Aug-04

Test Setup: Radiated Emissions

State:



State:



Name of Test: Field Strength of Spurious Radiation
 g0530021: 2005-Mar-04 Fri 10:54:00
 State: 2:High Power

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV		CF, dB	uV/m @ 3m	ERP, dBm	Margin, dB
433.000000	867.801000	18.54	P	25.81	165.01	-53.0	-17.6
433.000000	1301.763000	23.71	P	26.76	333.81	-46.9	-11.4
433.000000	1735.695000	16.52	P	30.94	236.05	-49.9	-14.4
433.000000	2169.661667	24.20	P	1.69	19.70	-71.5	-36.0
433.000000	2603.593667	24.70	P	2.19	22.11	-70.5	-35.0
433.000000	3037.525667	23.20	P	2.29	18.81	-71.9	-36.4
433.000000	3471.457667	24.53	P	5.00	29.96	-67.8	-32.4
433.000000	3905.389667	24.70	P	8.78	47.21	-63.9	-28.4
433.000000	4339.321667	23.37	P	9.30	43.00	-64.7	-29.2

(P: Peak reading, A: Average reading)



Supervised by:

Michael Findley, Laboratory Manager

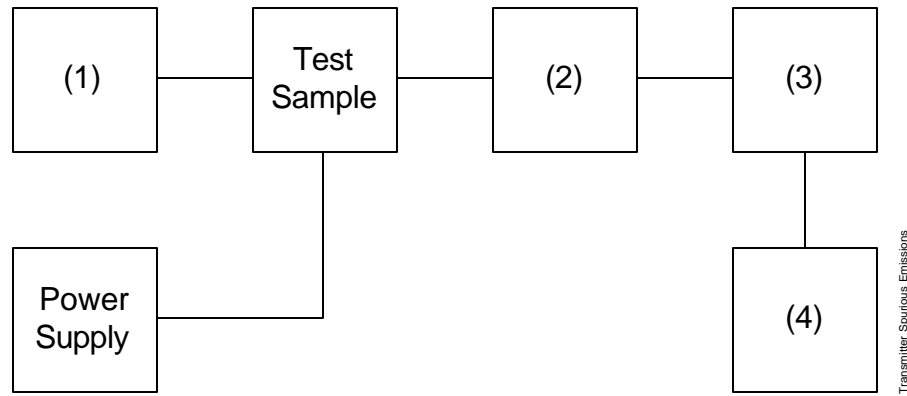
Name of Test: Emission Masks (Occupied Bandwidth)
Specification: 47 CFR 2.1049(c)(1)
Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.11
Test Equipment: As per attached page

Measurement Procedure

1. The EUT and test equipment were set up as shown on the following page, with the Spectrum Analyzer loosely coupled.
2. The transmit function was enabled.
3. The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.
4. Measurement Results: Attached

Transmitter Spurious Emission

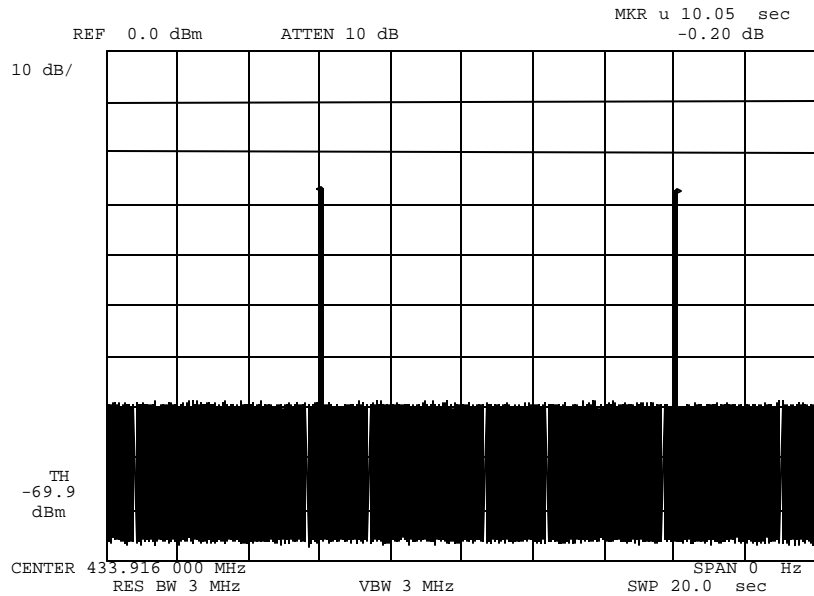
Test A. Occupied Bandwidth (In-Band Spurious)
Test B. Out-of-Band Spurious



Asset	Description	s/n		
(1)	Audio Oscillator/Generator			
_____	i00017 HP 8903A	2216A01753		
(2)	Coaxial Attenuator (if required)			
_____	i00122 Narda 766-10	7802	NCR	
_____	i00123 Narda 766-10	7802A	NCR	
_____	i00069 Bird 8329 (30 dB)	1006	NCR	
_____	i00113 Sierra 661A-3D	1059	NCR	
(3)	Filters; Notch, HP, LP, BP (if required)			
_____	i00126 Eagle TNF-1	100-250	NCR	
_____	i00125 Eagle TNF-1	50-60	NCR	
_____	i00124 Eagle TNF-1	250-850	NCR	
(4)	Spectrum Analyzer			
X	i00048 HP 8566B	2511A01467	12 mo.	Aug-04
_____	i00029 HP 8563E	3213A00104	12 mo.	May-04

Name of Test: Emission Masks (Occupied Bandwidth)

State:



Power:
Comments:

High
Loose Coupled, 15.231(e) Timing

Supervised By:



Michael Findley, Laboratory Manager

Name of Test: Necessary Bandwidth and Emission Bandwidth

Specification: 47 CFR 2.202(g)

Modulation = Digital, Pulse Code

Necessary Bandwidth Measurement: 162kHz



Performed by:

Michael Findley, Laboratory Manager

END OF TEST REPORT

**Radiated Measurements
For Part 15 Transmitters W/ Integral Antennas**

Radiated Measurements

Range Of Measurement	Specification	Resolution B/W	Video B/A
30 to 1000 MHz	CISPR	≥ 100 kHz	≥ 100 kHz
>1000 MHz	FCC, 15.37(b)	1 MHz	≥ 1 MHz
(if averaging)	FCC, 15.37(b)	1 MHz	10 Hz

Measuring Equipment

a. Antennas:

EMCO 3109	20 - 300 MHz
APREL AALP2001	200 - 1000 MHz
APREL AAB20200	20 - 200 MHz
APREL AAH118	1 - 18 GHz

b. Instruments:

HP8566B	Spectrum Analyzer
HP85685A	Preselector, w/ preamp below 2 GHz
HP85650A	Quasi Peak Adapter
HP8449	Preamp, above 2 GHz

Occupied Bandwidth

Occupied Bandwidth is measured as a radiated signal without attenuators and/or filter. RBW, VBW and scan settings as shown were set to produce a meaningful result in accordance with ANSI C63.4, Section 13.1.7.

Part 15.21, Information to User

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly avoided by the party responsible for compliance could void the user's authority to operate the equipment.

§ 15.205 Restricted Bands of Operation

(a) Except as shown in paragraph (b) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.25
0.495-0.505	16.69475-16.69625	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-339.4	3600-4400	
13.36-13.41			

**Testimonial
And
Statement Of Certification**

This is to certify that:

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
2. **That** the technical data supplied with the application was taken under my direction and supervision.
3. **That** the data was obtained on representative units, randomly selected.
4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

Certifying Engineer:



Michael Findley, Laboratory Manager