



# M. Flom Associates, Inc.

## International Compliance Testing Laboratory

3356 N. San Marcos Place, Suite 107  
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<http://www.mflom.com>  
[info@mflom.com](mailto:info@mflom.com)

Date: November 15, 2005

Federal Communications Commission  
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Landmark Audio Technologies LLC  
Equipment: FM720  
FCC ID: STK-FM720  
FCC Rules: 15.237, Confidentiality

Gentlemen:

On behalf of the Applicant, enclosed please find Application Form 731, Engineering Test Report and all pertinent documentation, the whole for approval of the referenced equipment as shown.

Filing fees are attached.

We trust the same is in order. Should you need any further information, kindly contact the writer who is authorized to act as agent.

Sincerely yours,

David E. Lee, Quality Assurance Manager

enclosure(s)  
cc: Applicant  
DEL/del



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## Transmitter Certification

of

FCC ID: STK-FM720  
Model: FM720

to

**Federal Communications Commission**

Rule Part 15.237

Date of report: November 15, 2005

**On the Behalf of the Applicant:**

Landmark Audio Technologies LLC

**At the Request of:**

Landmark Audio Technologies LLC  
159 Jay Street  
Albany, NY 12210

Attention of:

Donald Person, Vice President  
888-677-4387; fax: (518) 426-0172  
E-mail: [dperson@landmarkfm.com](mailto:dperson@landmarkfm.com)

Supervised by:

David E. Lee, Quality Assurance Manager

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

Applicant: Landmark Audio Technologies LLC

FCC ID: STK-FM720

**By Applicant:**

1. Letter Of Authorization
2. Identification Drawings, 2.1033(c)(11)
  - Label
  - Location of Label
  - Compliance Statement
  - Location of Compliance Statement
3. Documentation: 2.1033(B)
  - (3) User Manual
  - (4) Operational Description
  - (5) Block Diagram
  - (5) Schematic Diagram
  - (7) Photographs
  - Parts List
  - Active Devices
4. Draft Specification Information

**By M.F.A. Inc.**

- A. Testimonial & Statement of Certification

**The Applicant Has Been Cautioned As To The Following:**

15.21 Information to 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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15.237(c)	Field Strength of In-Band/Spurious Emissions	16
15.207	A/C Powerline Conducted Emissions	20

*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: d05b0028

d) Client: Landmark Audio Technologies LLC  
159 Jay Street  
Albany, NY 12210

e) Identification: FM720  
FCC ID: STK-FM720  
Description: Auditory Assistance

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

g) Report Date: November 15, 2005  
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:



David E. Lee, Quality Assurance 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 15.237**

2.1033(b):

**Name and Address of Applicant:**

Landmark Audio Technologies LLC  
159 Jay Street  
Albany, NY 12210

(b)(1)

**Manufacturer:**

Landmark Audio Technologies LLC  
159 Jay Street  
Albany, NY 12210

(b)(2)

**FCC ID:**

STK-FM720

**Model Number:**

FM720

(b)(3) to  
(b)(8)

**Accompanying Information:**

See List Of Exhibits

(b)(9)

**Regarding 15.37:**

This device has shown compliance with new rules adopted under Docket 87-389  
and is not affected by Section 15.37, transition rule.

## Expository Statement (Transmitter)

Type Of Emission: 164KF3E

Frequency Range, MHz: 72.0 to 73.0  
74.6 to 74.8  
75.2 to 76.0

Power Rating, mV/m @ 3m: 46.238  
☐ Switchable ☐ Variable ☒ N/A

Maximum Permissible Power: 80 mV/m @ 3m

**Voltages & currents in all elements in final RF Stage, including final transistor or solid-state device:**

Collector Current, A = 0.75  
 Collector Voltage, Vdc = 12.0  
 Supply Voltage, Vdc = 12.0

### 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



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
_____	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)
X _____	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 C63.4-1992/2003, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.



## 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**

**Name of Test:** Restricted Use  
**Specification:** 47 CFR 15.237(a)  
**Guide:** N/A  
**Standard:** Must Comply  
**Test Equipment:** N/A

### Results

The transmitter will be used exclusively as an auditory assistance device per 15.237(a) requirements.



Supervised By:

David E. Lee, Quality Assurance Manager

**Name of Test:** Emission Masks (Occupied Bandwidth)  
**Specification:** 47 CFR 15.237(b)  
**Test Equipment:** As per attached page

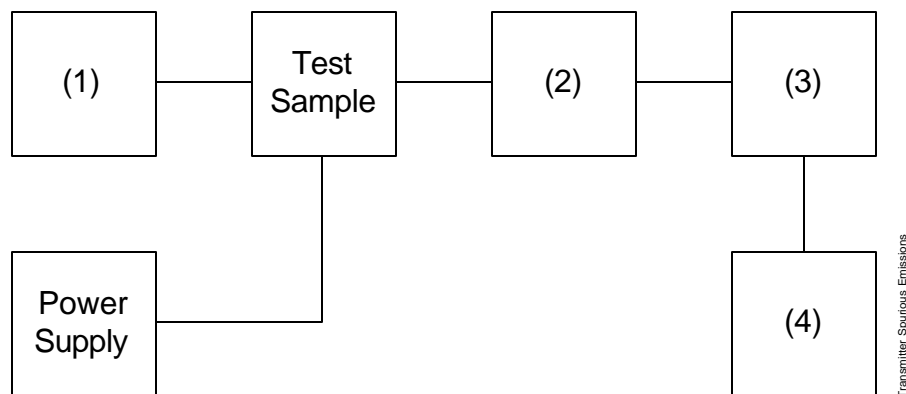
#### **Measurement Procedure**

1. The EUT and test equipment were set up as shown on the following page, with the Spectrum Analyzer 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 50% modulation. With level constant, the signal level was increased 20 dB.
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

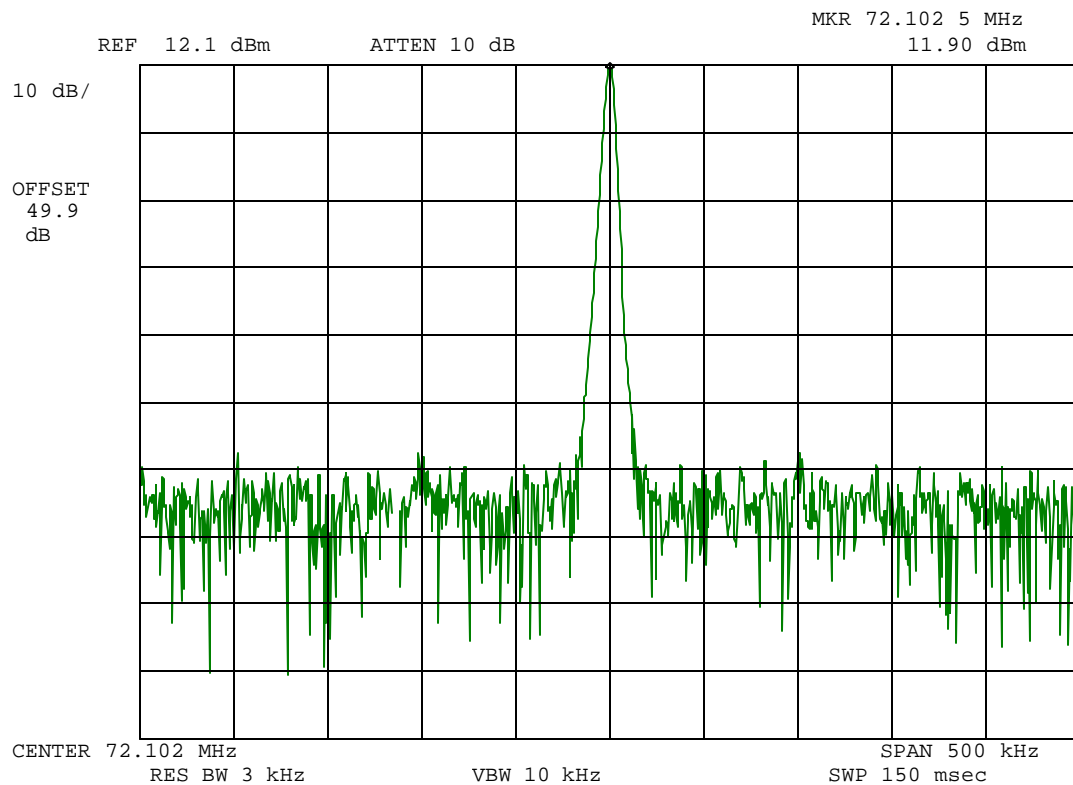


Asset (as applicable)	Description	s/n		
<b>(1) Audio Oscillator/Generator</b>				
X i00017	HP 8903A Audio Analyzer	2216A01753	12 mo.	Apr-05
i00002	HP 3336B Synthesizer / Level Gen.	1931A01465	12 mo.	Apr-05
<b>(2) Coaxial Attenuator</b>				
X i00231/2	PASTERNAK PE7021-30 (30 dB)	231 or 232	NCR	
i0012/3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

**Name of Test:** Emission Masks (Occupied Bandwidth)

g05b0076: 2005-Nov-15 Tue 14:19:00

State: 2:High Power



Power:  
Modulation:

HIGH  
NONE

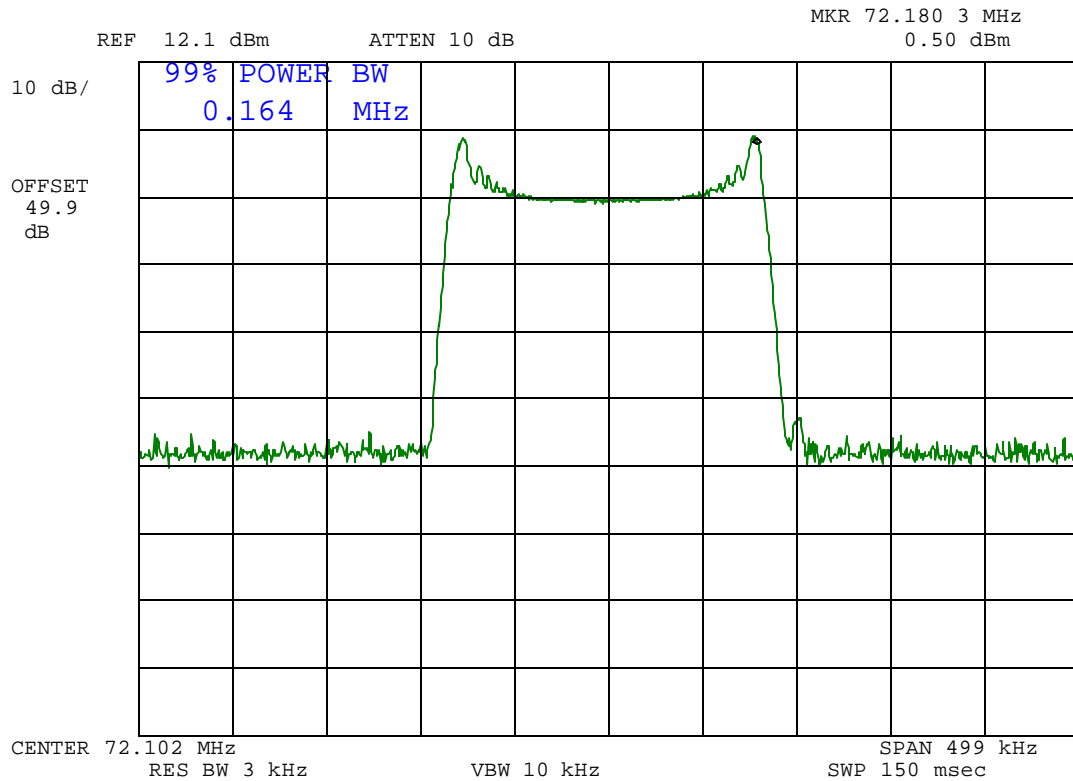


Performed by:

Fred Chastain, Test Technician

**Name of Test:** Emission Masks (Occupied Bandwidth)

g05b0077: 2005-Nov-15 Tue 14:23:00  
State: 2:High Power



Power:  
Modulation:

HIGH  
VOICE: 1000 HZ SINE WAVE  
LOW BAND



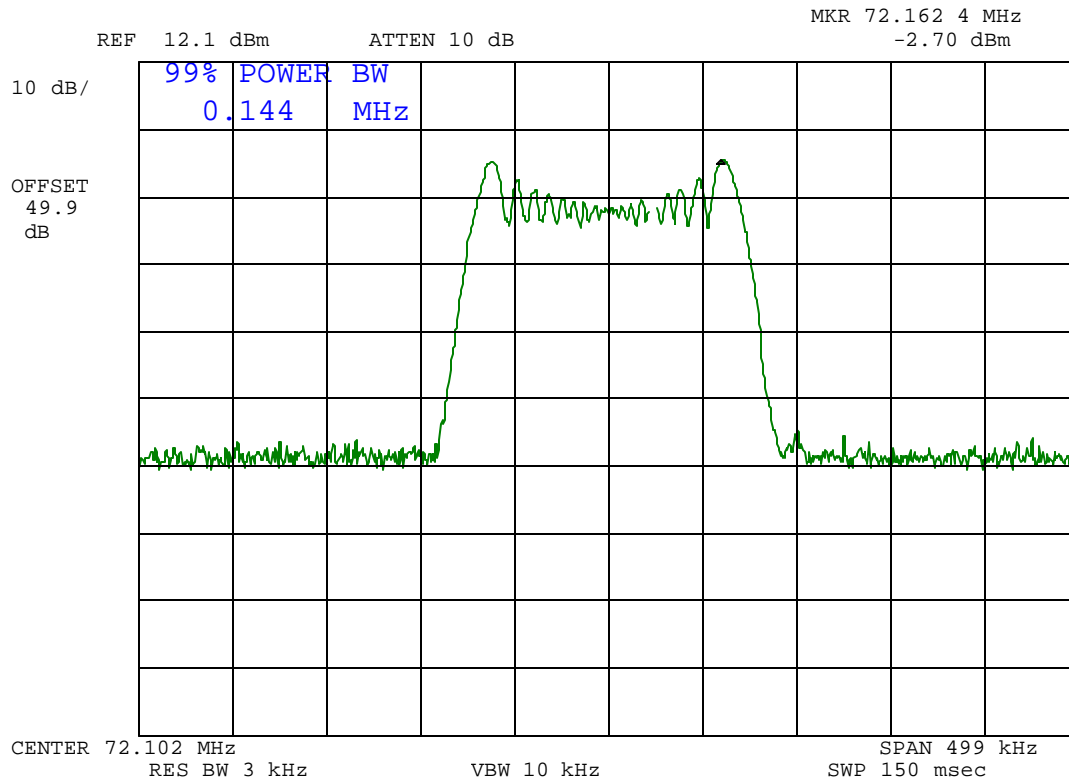
Performed by:

Fred Chastain, Test Technician

Name of Test: Emission Masks (Occupied Bandwidth)

g05b0078: 2005-Nov-15 Tue 14:24:00

State: 2:High Power



Power:  
Modulation:

HIGH  
VOICE: 2500 HZ SINE WAVE  
LOW BAND



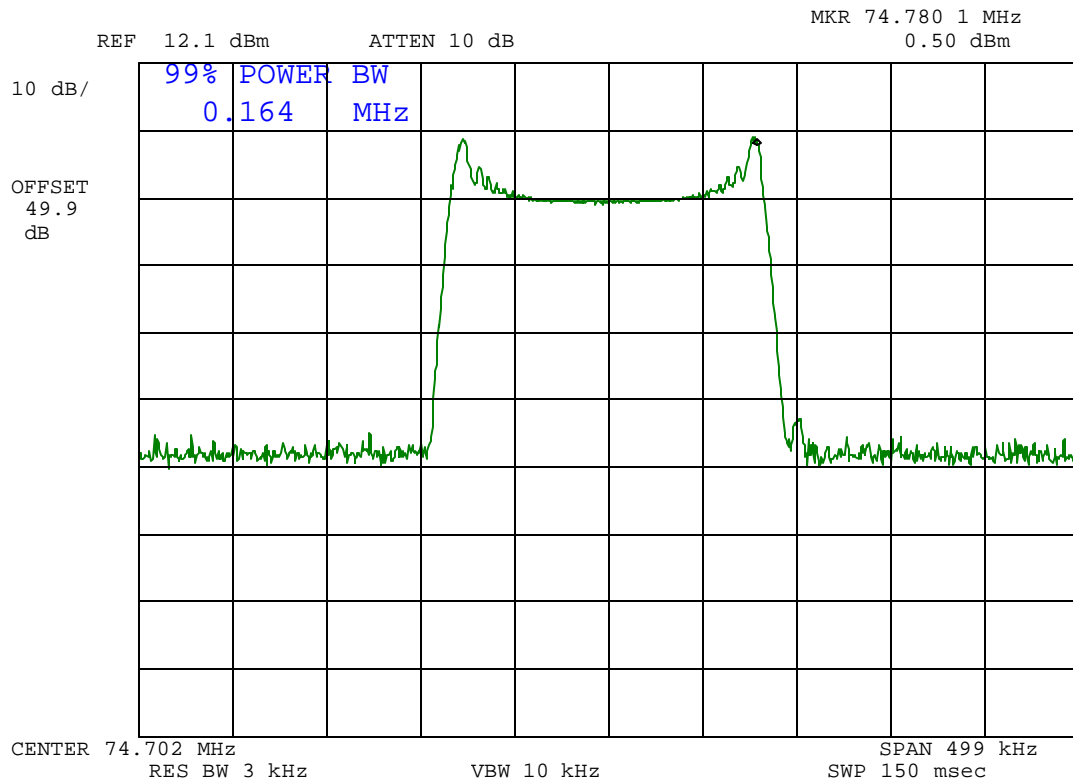
Performed by:

Fred Chastain, Test Technician



**Name of Test:** Emission Masks (Occupied Bandwidth)

g05b0067: 2005-Nov-15 Tue 11:45:00  
State: 2:High Power



Power:  
Modulation:

HIGH  
VOICE: 1000 HZ SINE WAVE  
MID BAND

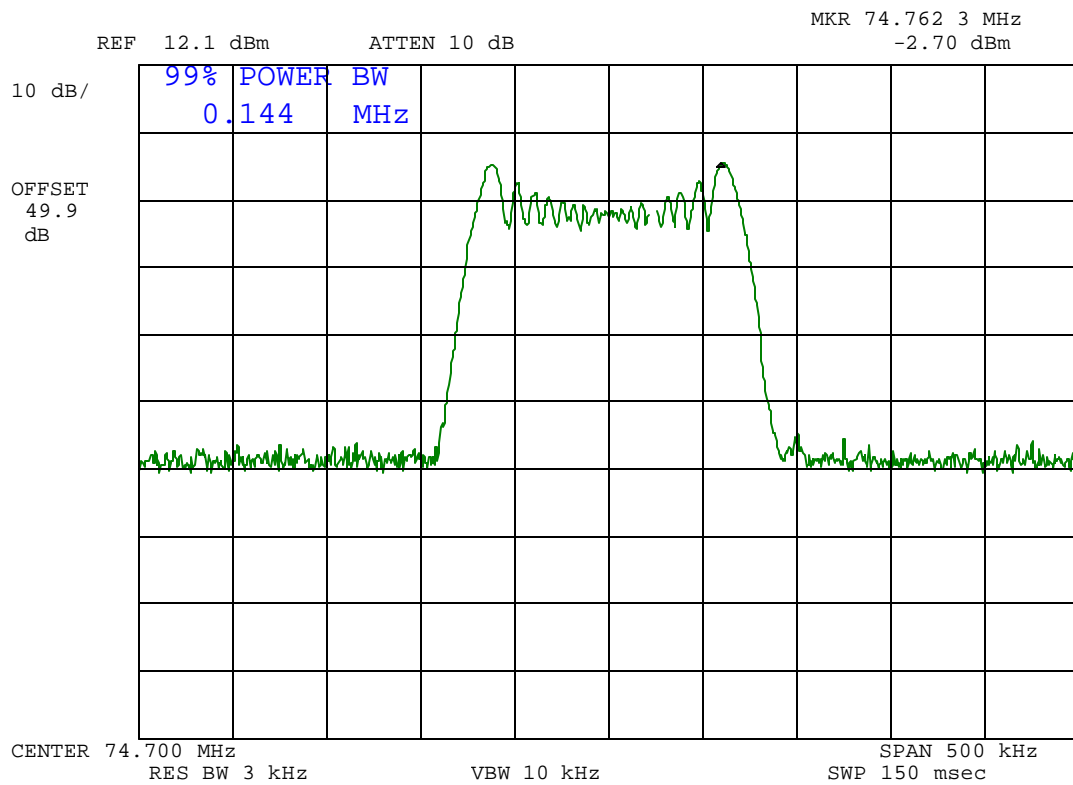


Performed by:

Fred Chastain, Test Technician

**Name of Test:** Emission Masks (Occupied Bandwidth)

g05b0066: 2005-Nov-15 Tue 11:25:00  
State: 2:High Power



Power:  
Modulation:

HIGH  
VOICE: 2500 HZ SINE WAVE  
MID BAND

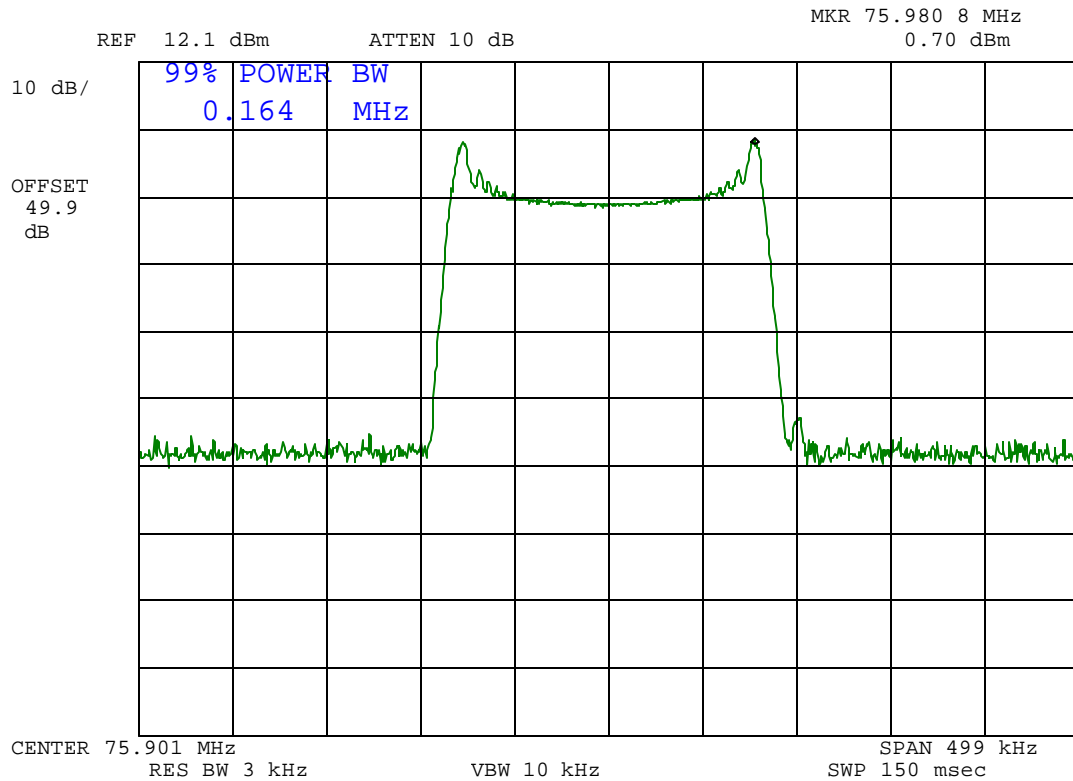


Performed by:

Fred Chastain, Test Technician

**Name of Test:** Emission Masks (Occupied Bandwidth)

g05b0068: 2005-Nov-15 Tue 11:46:00  
State: 2:High Power



Power:  
Modulation:

HIGH  
VOICE: 1000 HZ SINE WAVE  
MID BAND

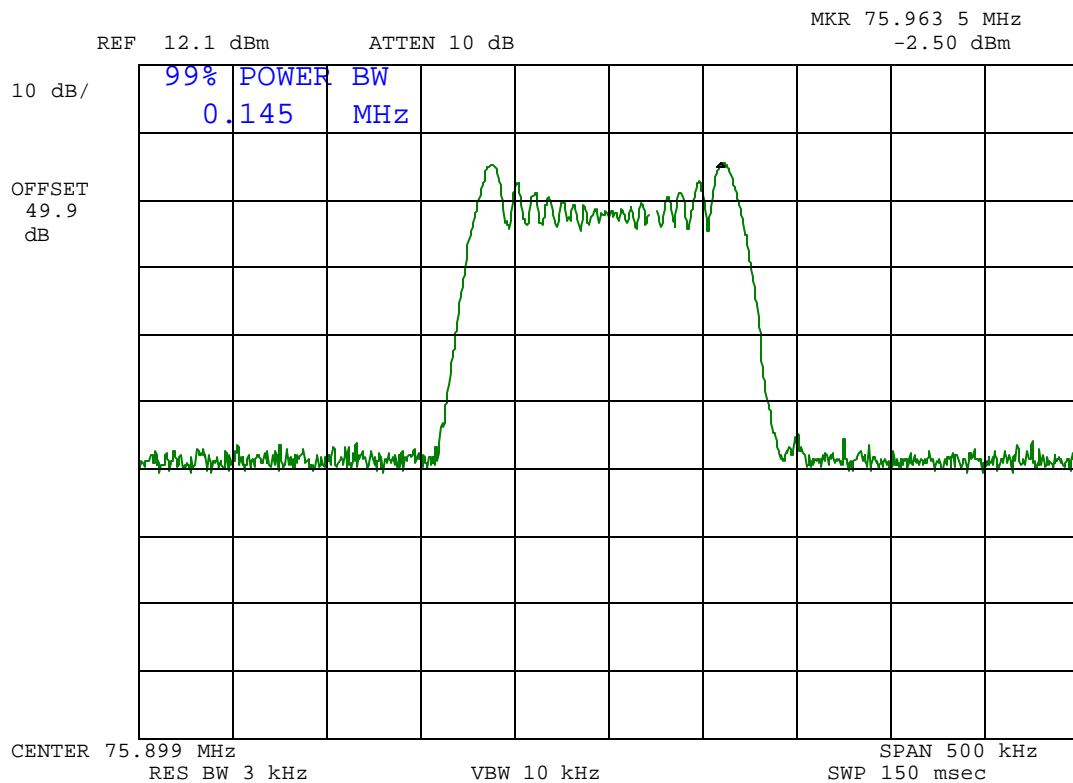


Performed by:

Fred Chastain, Test Technician

**Name of Test:** Emission Masks (Occupied Bandwidth)

g05b0069: 2005-Nov-15 Tue 11:47:00  
State: 2:High Power



Power:  
Modulation:

HIGH  
VOICE: 2500 HZ SINE WAVE  
HIGH BAND

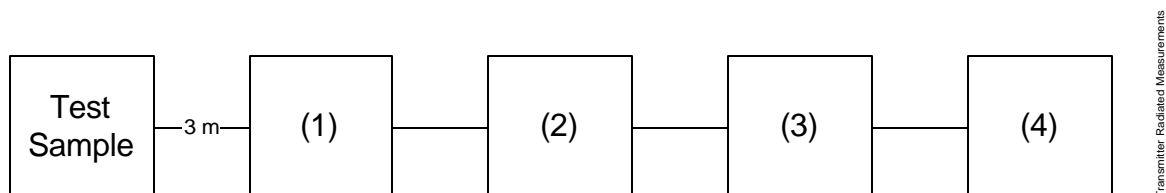


Performed by:

Fred Chastain, Test Technician

Name of Test: Transmitter Radiated Measurements

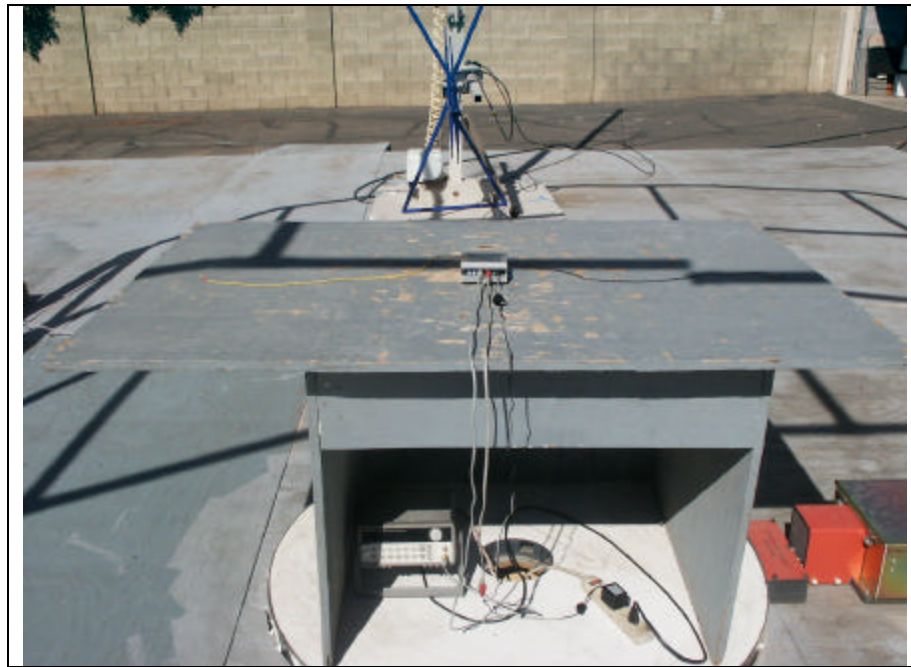
### Measurement Setup



Asset (as applicable)	Description	s/n	Cycle	Last Cal
<small>Per ANSI C63.4-1992, 10.1.4</small>				
<b>(1) Transducer</b>				
i00088	EMCO 3109-B 25MHz-300MHz	2336	24 mo.	Oct-05
i00089	Apriel 2001 200MHz-1GHz	001500	24 mo.	Oct-05
X i00265	Schafner Bi-Log CBL6111C	2610	12 mo.	Oct-05
<b>(2) Coaxial Attenuator</b>				
i00122	NARDA 766-10	7802		
i00123	NARDA 766-10	7802A		
<b>(3) Preamp</b>				
i00028	HP 8449A (+30 dB)	2749A00121	12 mo.	May-05
<b>(4) Spectrum Analyzer</b>				
i00048	HP 8566B	2511A01467	12 mo.	Jun-05
X i00029	HP 8563E	3213A00104	12 mo.	May-05

**Test Setup:** Field Strength Radiated Emissions

State:



State:



**Name of Test:** Field Strength of Emissions (In Band)  
g05b0061: 2005-Nov-11 Fri 12:04:00  
STATE: 2:High Power

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	uV/m @ 3m	Margin, dB
72.100000	72.110000	82.67	8.17	34833.73	-7.3
72.800000	72.813000	83.53	7.96	37540.50	-6.6
75.300000	75.313000	85.96	7.34	46238.10	-4.8
75.980000	75.913000	84.38	7.22	38018.94	-6.5



Performed by:

Fred Chastain, Test Technician

**Name of Test:** Field Strength of Emissions (Spurious)  
g05a0037: 2005-Oct-27 Thu 11:34:00  
State: 2:High Power

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	uV/m @ 3m	Margin, dB
72.100000	144.220000	43.06	12.78	619.44	-7.7
72.800000	145.613000	42.17	12.70	553.99	-8.6
75.300000	150.613000	31.96	12.60	169.04	-18.9
75.900000	151.813000	27.98	12.60	106.91	-22.9
72.100000	216.330000	18.65	14.98	48.03	-29.9
72.800000	218.413000	16.25	14.99	36.48	-32.3
75.300000	225.913000	18.09	15.09	45.60	-30.3
72.100000	288.400000	17.88	13.39	36.60	-32.2
72.800000	291.200000	16.58	13.48	31.84	-33.4
75.900000	303.610000	20.11	13.77	49.43	-29.6
72.100000	360.500000	15.15	15.90	35.69	-32.5
72.800000	364.000000	15.63	15.87	37.58	-32.0
75.900000	379.510000	20.50	16.14	67.92	-26.9
72.100000	432.600000	14.94	17.42	41.50	-31.1
72.800000	436.800000	15.92	17.34	46.03	-30.2
75.900000	455.400000	16.85	17.91	54.70	-28.7
72.800000	509.600000	15.53	18.80	52.06	-29.2
75.900000	531.300000	15.79	19.02	55.02	-28.7
72.100000	540.700000	13.89	19.87	48.75	-29.7
72.100000	576.800000	13.39	20.58	49.95	-29.5
72.800000	582.400000	14.32	20.56	55.46	-28.6
75.900000	607.200000	14.72	20.84	59.98	-27.9
72.100000	648.900000	14.88	21.39	65.09	-27.2
72.800000	655.200000	14.97	21.37	65.61	-27.2
75.900000	683.100000	14.72	21.70	66.22	-27.1
72.100000	721.000000	16.07	23.19	91.83	-24.2
72.800000	728.000000	14.52	23.56	80.17	-25.4
75.900000	759.000000	15.44	23.63	89.85	-24.4



Performed by:

Fred Chastain, Test Technician



**Name of Test:** A/C Powerline Conducted Emissions

**Specification:** FCC: 47 CFR 15.207

**Guide:** IEEE Standard 213

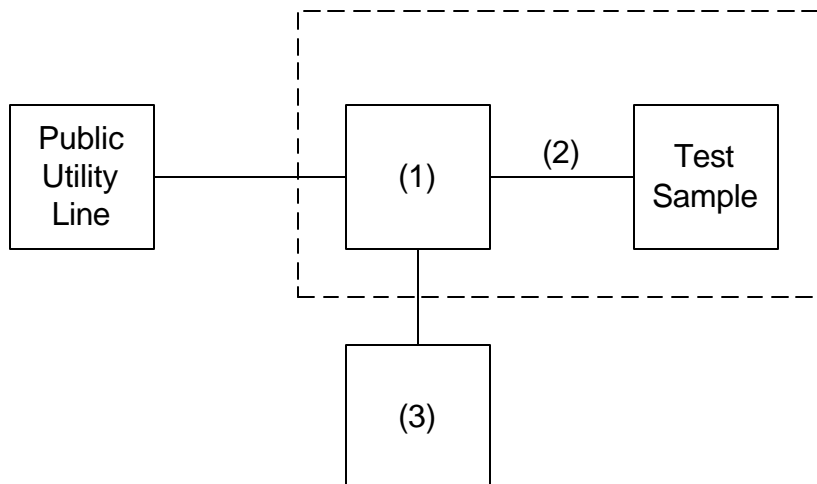
**Test Conditions:** S. T. & H.

**Test Equipment:** As per attached page

#### Measurement Procedure

1. A test sample was connected to the Public Utility lines through a LISN (50  $\mu$ H).
2. A reference level of 250  $\mu$ V was set on the Spectrum Analyzer. The spectrum was searched over the range of 150 kHz to 30 MHz.
3. All other emissions were 20 dB or more below limit.
4. ☐ The test sample used a charger.  
☒ The test sample does not use a charger.
5. Measurement Results: Attached.

### AC Powerline Conducted Measurements



Asset (as applicable)	Description	s/n	Cycle	Last Cal
<small>Per ANSI C63.4-1992/2000 DRAFT, 10.1.4</small>				
<b>(1) Line Impedance Stabilization Network</b>				
X	i00244	Fischer 50-20-2-01	2047	NCR
<b>(2) Screen Room</b>				
X	i00170	Lindgren LG170	4999	NCR
<b>(3) Spectrum Analyzer</b>				
X	i00033	HP 85462A	3625A00357	12 mo.
	i00048	HP 8566B	2511AD1467	12 mo.
				Sep-05
				Jun-05

**Test Setup:**

A/C Powerline Conducted Emissions

State:



State:



### FCC B Conducted Limits

Frequency of Emission, MHz	dBμV 150kHz - 500KHz	dBμV 500kHz - 5MHz	dBuV 5MHz - 30Mhz
Quasi-Peak	66 - 56	56	60
Average	56 - 46	46	50

g05a0017: 2005-Oct-22 Sat 17:22:00

State: 0: Line Side

Frequency Tuned, MHz	Frequency Emission, Hz	Level, dBuV	C.F., dB	Margin, dB	dBuV
759.000000	150000	45.15	1.35	-19.50	46.50
759.000000	520000	29.44	0.61	-26.00	30.05
759.000000	670000	13.28	0.60	-42.10	13.88
759.000000	820000	18.54	0.59	-36.90	19.13
759.000000	1120000	12.20	0.58	-43.20	12.78
759.000000	4180000	7.61	0.65	-47.70	8.26
759.000000	15370000	7.38	1.20	-51.40	8.58

g05a0018: 2005-Oct-22 Sat 17:42:00

State: 0: Neutral Side

Frequency Tuned, MHz	Frequency Emission, Hz	Level, dBuV	C.F., dB	Margin, dB	dBuV
759.000000	150000	34.70	1.35	-30.00	36.05
759.000000	220000	45.77	0.86	-17.40	46.63
759.000000	370000	43.60	0.60	-15.50	44.20
759.000000	600000	23.23	0.60	-32.20	23.83
759.000000	1490000	7.84	0.58	-47.60	8.42
759.000000	4180000	8.67	0.65	-46.70	9.32
759.000000	15450000	2.42	1.20	-56.40	3.62



Performed By:

Fred Chastain, Test Technician

## 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 C63.4-2003

### 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:

David E. Lee, Quality Assurance Manager