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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 85224
- c) Report Number: d98a0067
- d) Client: Telex Communications, Inc.
 8601 E. Cornhusker Highway
 P.O. Box 5579
 Lincoln, NE 68505-5579
- e) Identification: SoundMate Model PST-16
 FCC ID: B5DM509
 Description: Auditory Assistance Transmitter
- f) EUT Condition: Not required unless specified in individual tests.
- g) Report Date: October 30, 1998
 EUT Received: October 22, 1998
- 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.

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LIST OF GENERAL INFORMATION REQUIRED FOR CERTIFICATION

IN ACCORDANCE WITH FCC RULES AND REGULATIONS,
VOLUME II, PART 2 AND TO

15.237

Sub-part 2.1033

(c) (1): NAME AND ADDRESS OF APPLICANT:

Telex Communications, Inc.
8601 E. Cornhusker Highway
P.O. Box 5579
Lincoln, NE 68505-5579

VENDOR:

Applicant

(c) (2): FCC ID: B5DM509MODEL NO: SoundMate Model PST-16(c) (3): INSTRUCTION MANUAL(S):

PLEASE SEE ATTACHED EXHIBITS

(c) (4): TYPE OF EMISSION: 74K0F3E(c) (5): FREQUENCY RANGE, MHz: 72 to 76(c) (6): POWER RATING, Watts: 0.000122
Switchable Variable x N/A(c) (7): MAXIMUM POWER RATING, Watts: 80 mv/m @ 3m15.203: ANTENNA REQUIREMENT:

- x 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

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Subpart 2.1033 (continued)

(c) (8): VOLTAGES & CURRENTS IN ALL ELEMENTS IN FINAL R. F. STAGE,
INCLUDING FINAL TRANSISTOR OR SOLID STATE DEVICE:

COLLECTOR CURRENT, A = per manual
 COLLECTOR VOLTAGE, Vdc = per manual
 SUPPLY VOLTAGE, Vdc = 3

(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

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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
- x _____ 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)

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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, 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 NO. 6 of 31.
NAME OF TEST: Restricted Use
SPECIFICATION: 47 CFR 15.23(b)
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:


Morton Flom, P. Eng.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
SPECIFICATION: 47 CFR 2.1049(c)(1), 15.237(b)
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.11
TEST EQUIPMENT: As per attached page

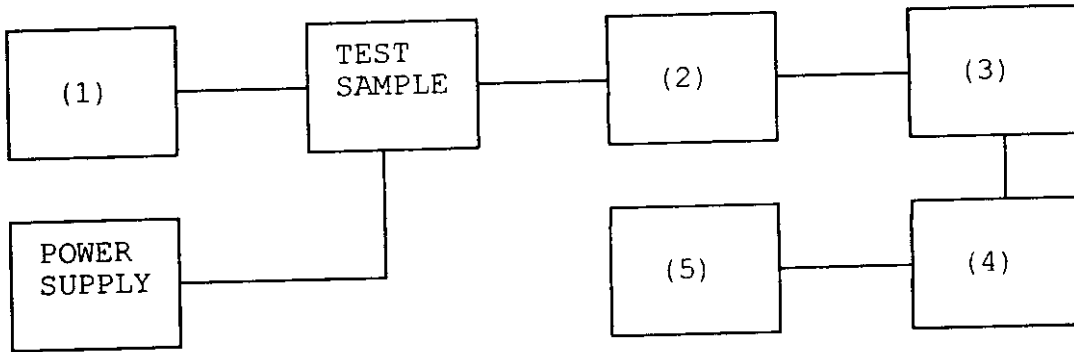
MEASUREMENT PROCEDURE

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

TRANSMITTER SPURIOUS EMISSION

TEST A. OCCUPIED BANDWIDTH (IN-BAND SPURIOUS)

TEST B. OUT-OF-BAND SPURIOUS



Asset Description

s/n

(1) AUDIO OSCILLATOR/GENERATOR

—	i00010	HP 204D	1105A04683
—	i00017	HP 8903A	2216A01753
<u>x</u>	i00012	HP 3312A	1432A11250

(2) COAXIAL ATTENUATOR

—	i00122	Narda 766-10	7802
—	i00123	Narda 766-10	7802A
<u>x</u>	i00069	Bird 8329 (30 dB)	1006
<u>x</u>	i00113	Sierra 661A-3D	1059

(3) FILTERS; NOTCH, HP, LP, BP

<u>x</u>	i00126	Eagle TNF-1	100-250
<u>x</u>	i00125	Eagle TNF-1	50-60
<u>x</u>	i00124	Eagle TNF-1	250-850

(4) SPECTRUM ANALYZER

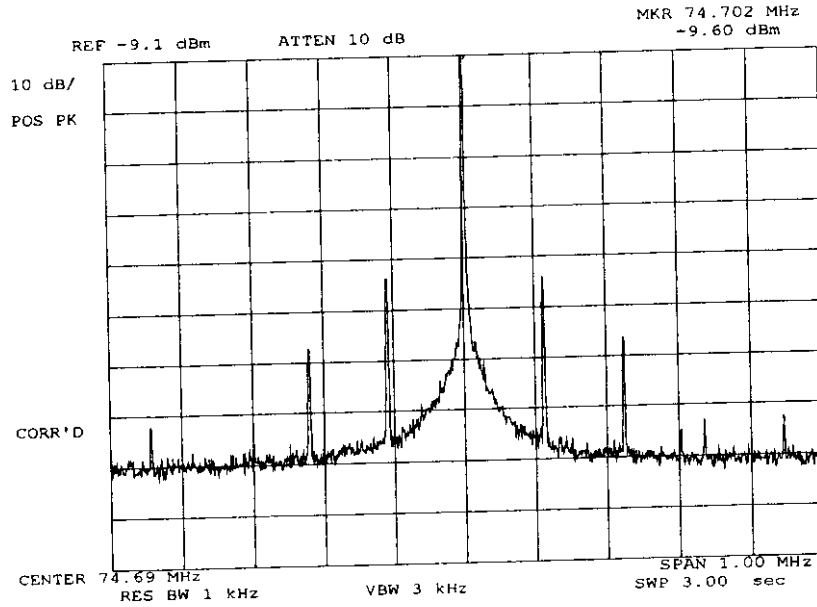
<u>x</u>	i00048	HP 8566B	2511A01467
—	i00029	HP 8563E	3213A00104

(5) SCOPE

—	i00058	HP 1741A	2251A09356
—	i00030	HP 54502A	2927A00209
—	i00071	Tektronix 935	1935-B011343

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98a0199: 1998-Oct-22 Thu 11:20:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
NONE

SUPERVISED BY:

Morton Flom P. Eng.
Morton Flom, P. Eng.

PAGE NO.

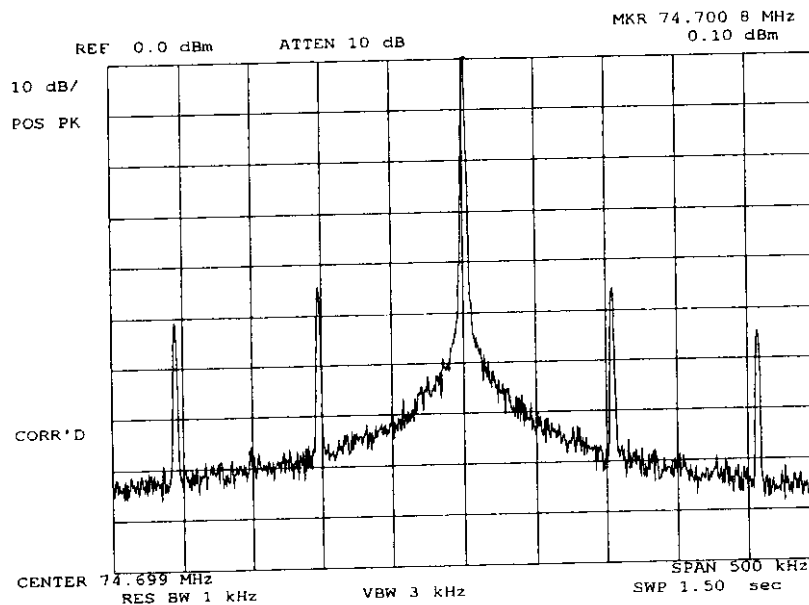
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PAGE INTENTIONALLY LEFT BLANK

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98a0226: 1998-Oct-22 Thu 13:53:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
NONE

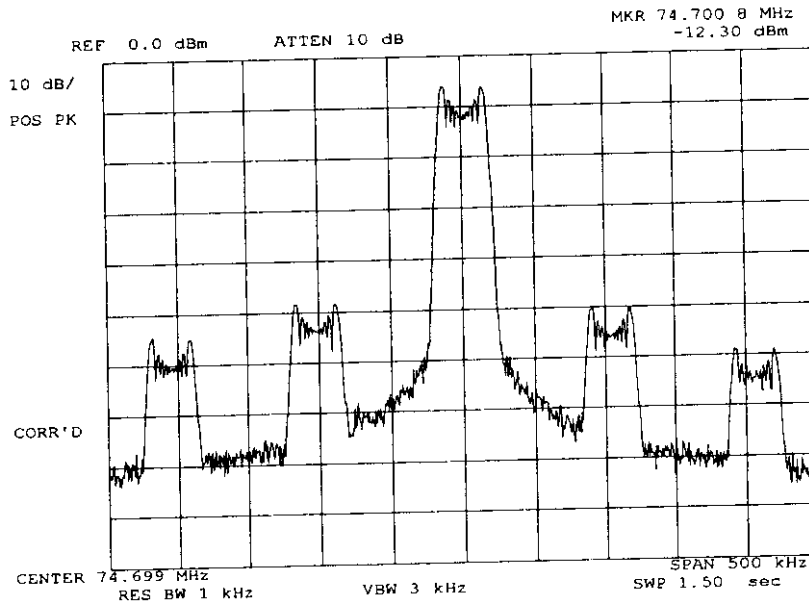
SUPERVISED BY:

Morton Flom, P. Eng.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98a0227: 1998-Oct-22 Thu 13:54:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
REFERENCE
1KHZ TONE @ 15KHZ DEVIATION

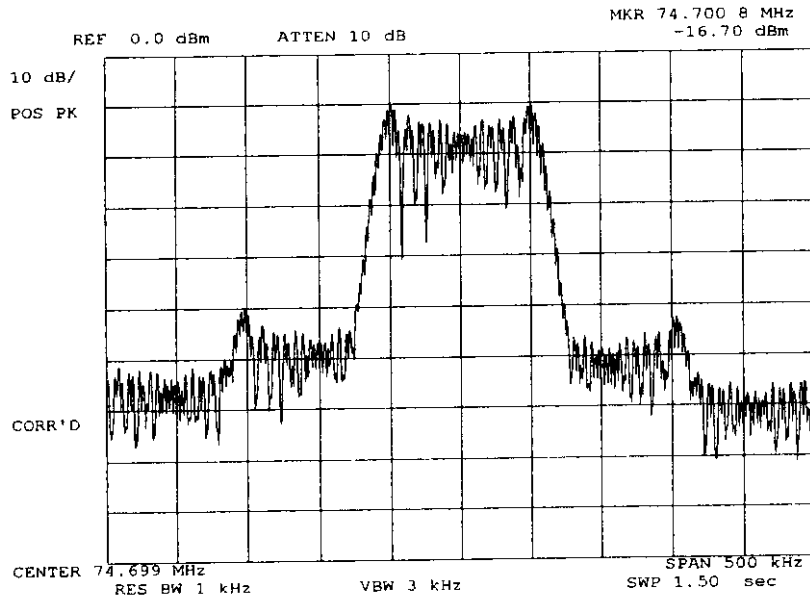
SUPERVISED BY:

Morton Flom, P. Eng.

PAGE NO.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98a0229: 1998-Oct-22 Thu 13:59:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
VOICE
2.5KHZ TONE @ 20 DB ABOVE
REFERENCE INPUT

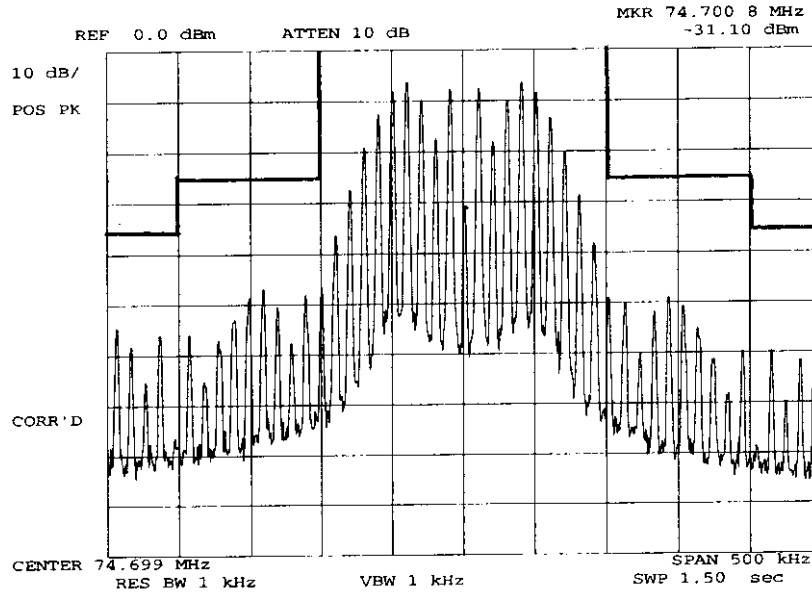
SUPERVISED BY:

Morton Flom P. Eng.
Morton Flom, P. Eng.

PAGE NO.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98a0215: 1998-Oct-22 Thu 14:02:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
MAX RESPONSE (10KHZ)
2.5KHZ TONE @ 20 DB ABOVE
REFERENCE INPUT

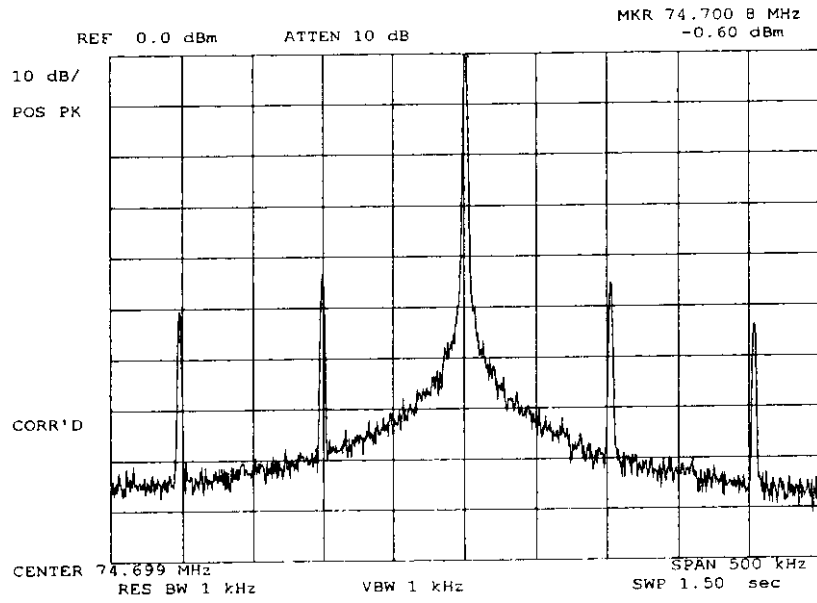
SUPERVISED BY:

Morton Flom, P. Eng.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98a0231: 1998-Oct-22 Thu 14:05:00
STATE: 2:High Power



POWER:
MODULATION:

HIGH
NONE

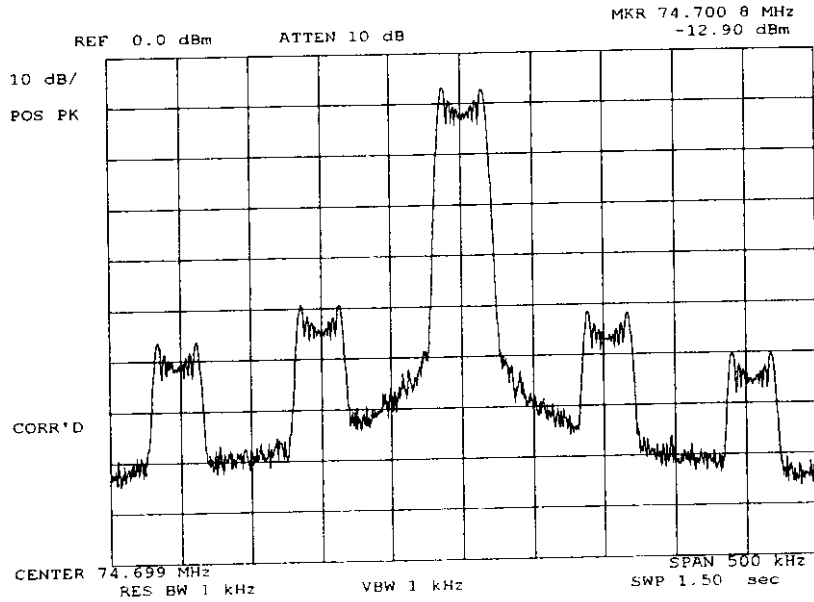
SUPERVISED BY:

Morton Flom, P. Eng.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g98a0217: 1998-Oct-22 Thu 14:07:00
STATE: 2:High Power

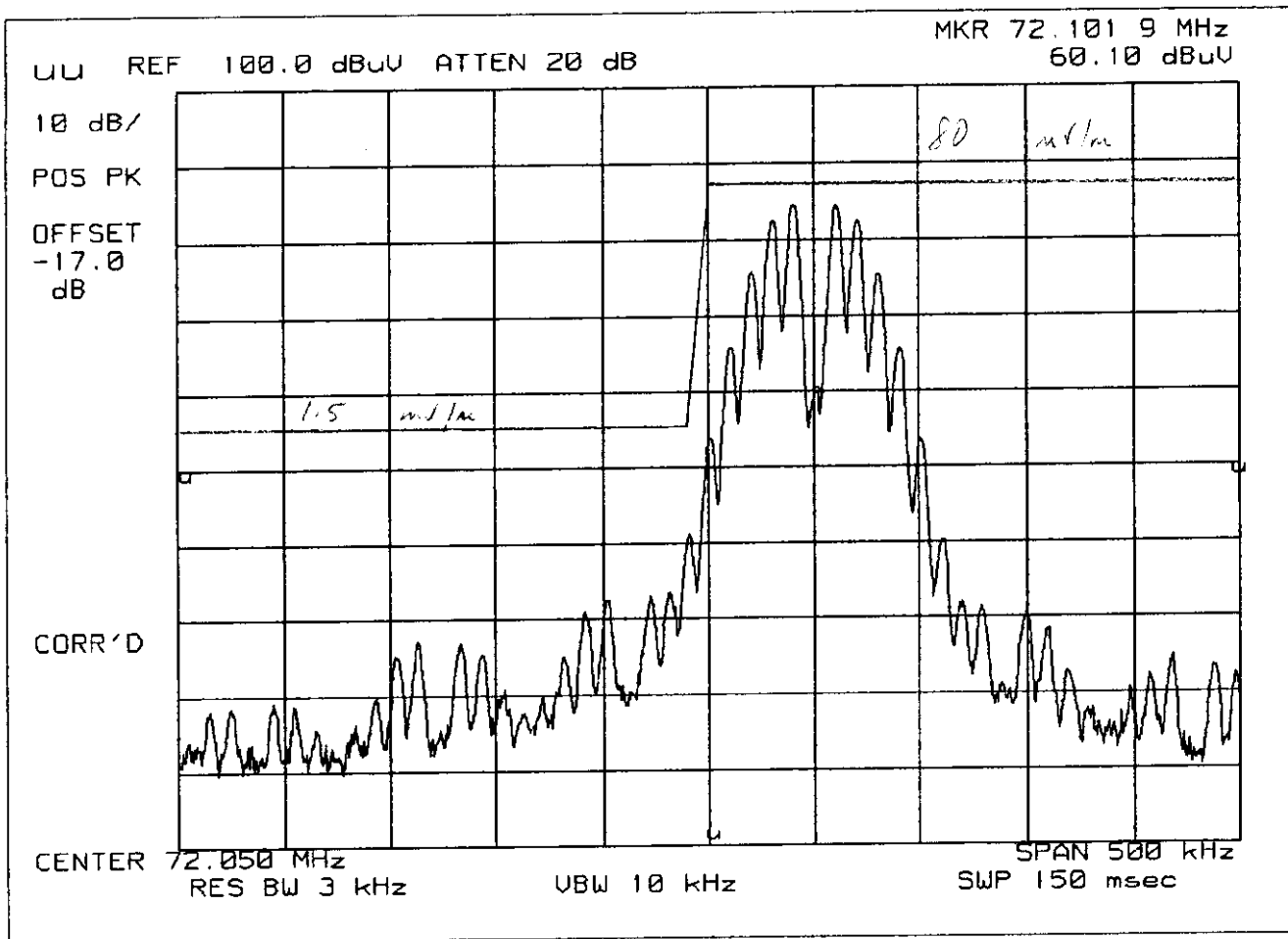


POWER:
MODULATION:

HIGH
REFERENCE
1KHZ TONE @ 15KHZ DEVIATION

SUPERVISED BY:

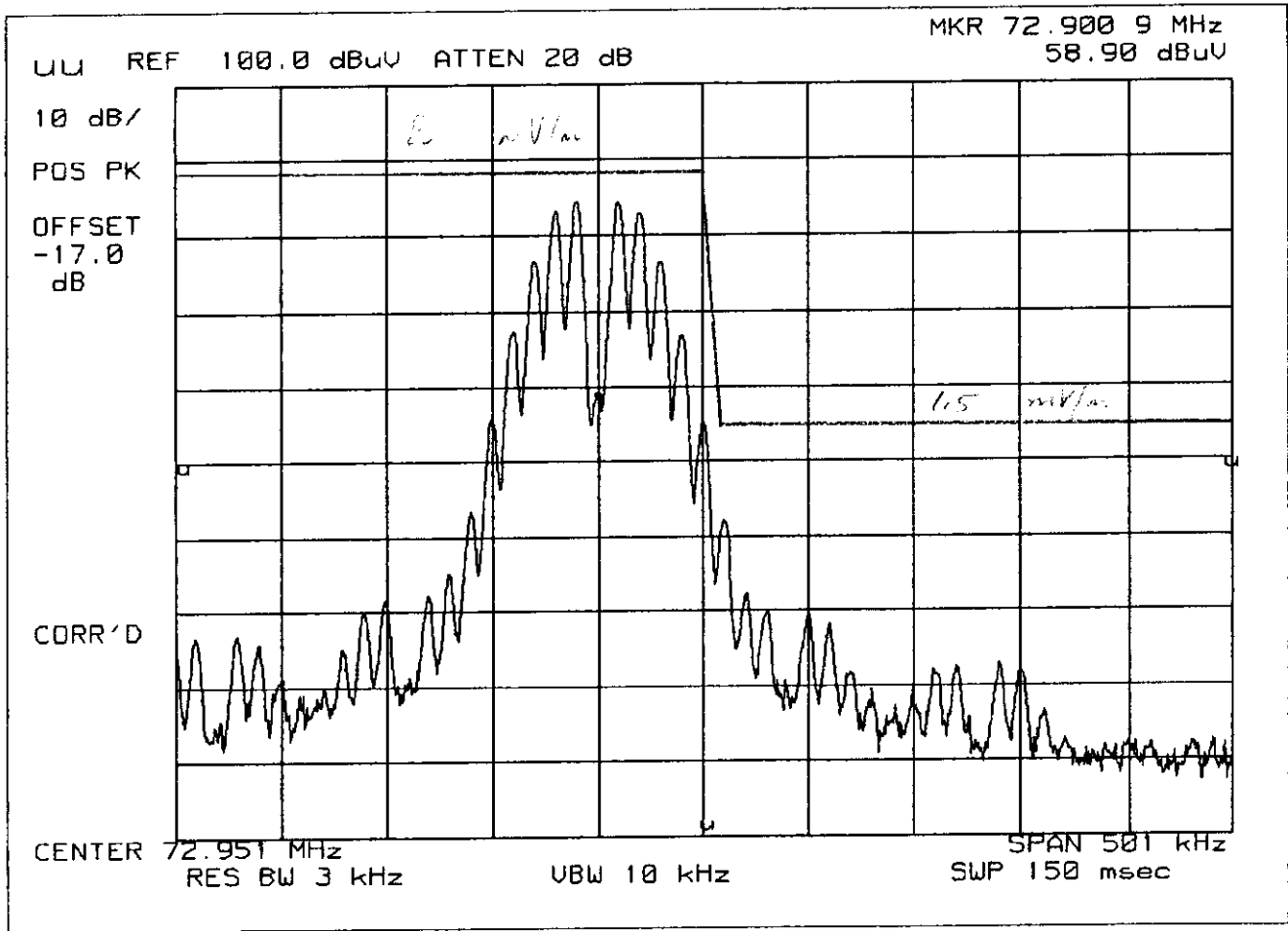
Morton Flom P. Eng.
Morton Flom, P. Eng.



EMISSIONS

TELEX, PST-16

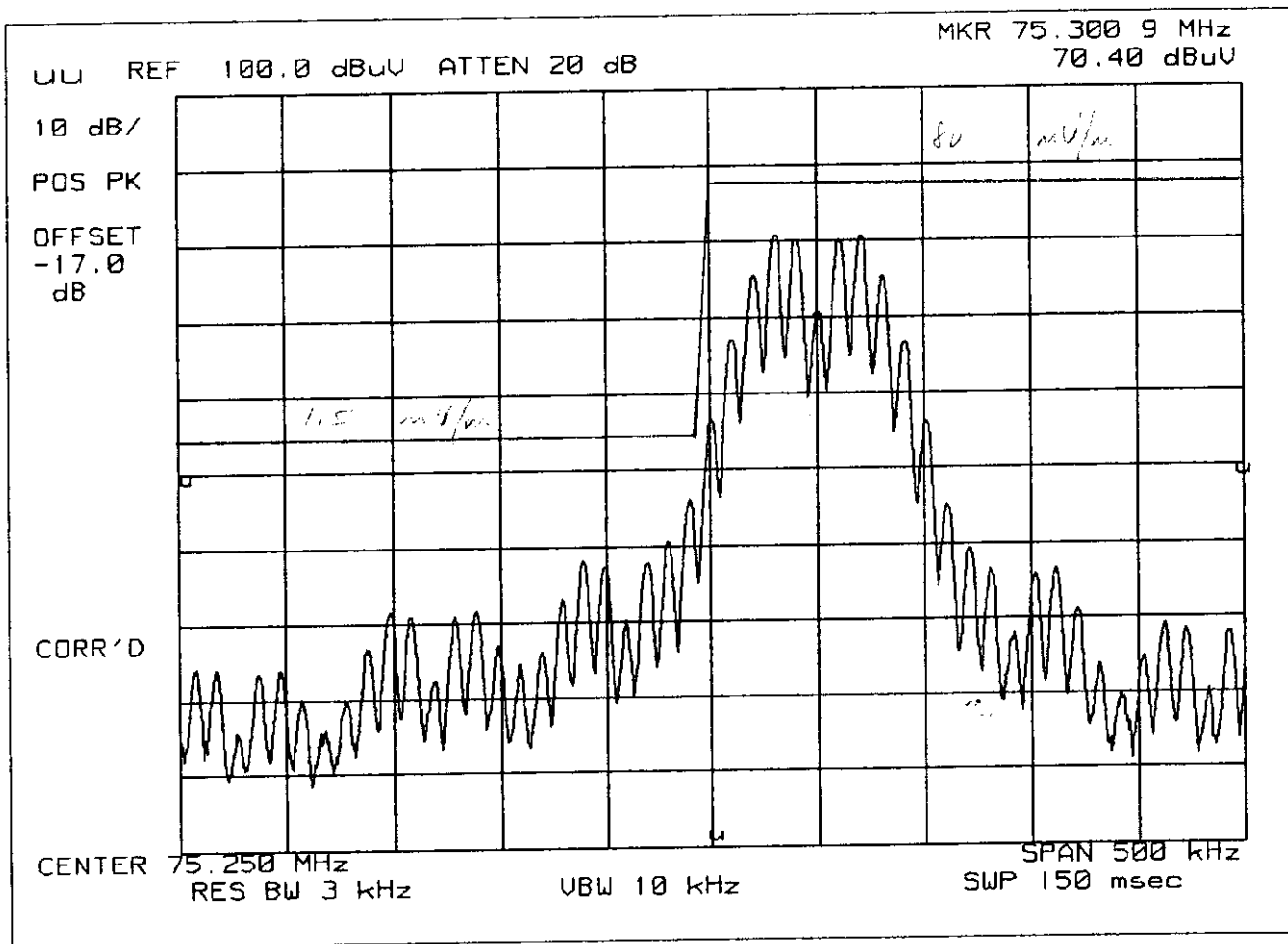
1998-OCT-27, 14:13, TUE



EMISSIONS

TELEX, PST-16

1998-OCT-27, 14:08, TUE

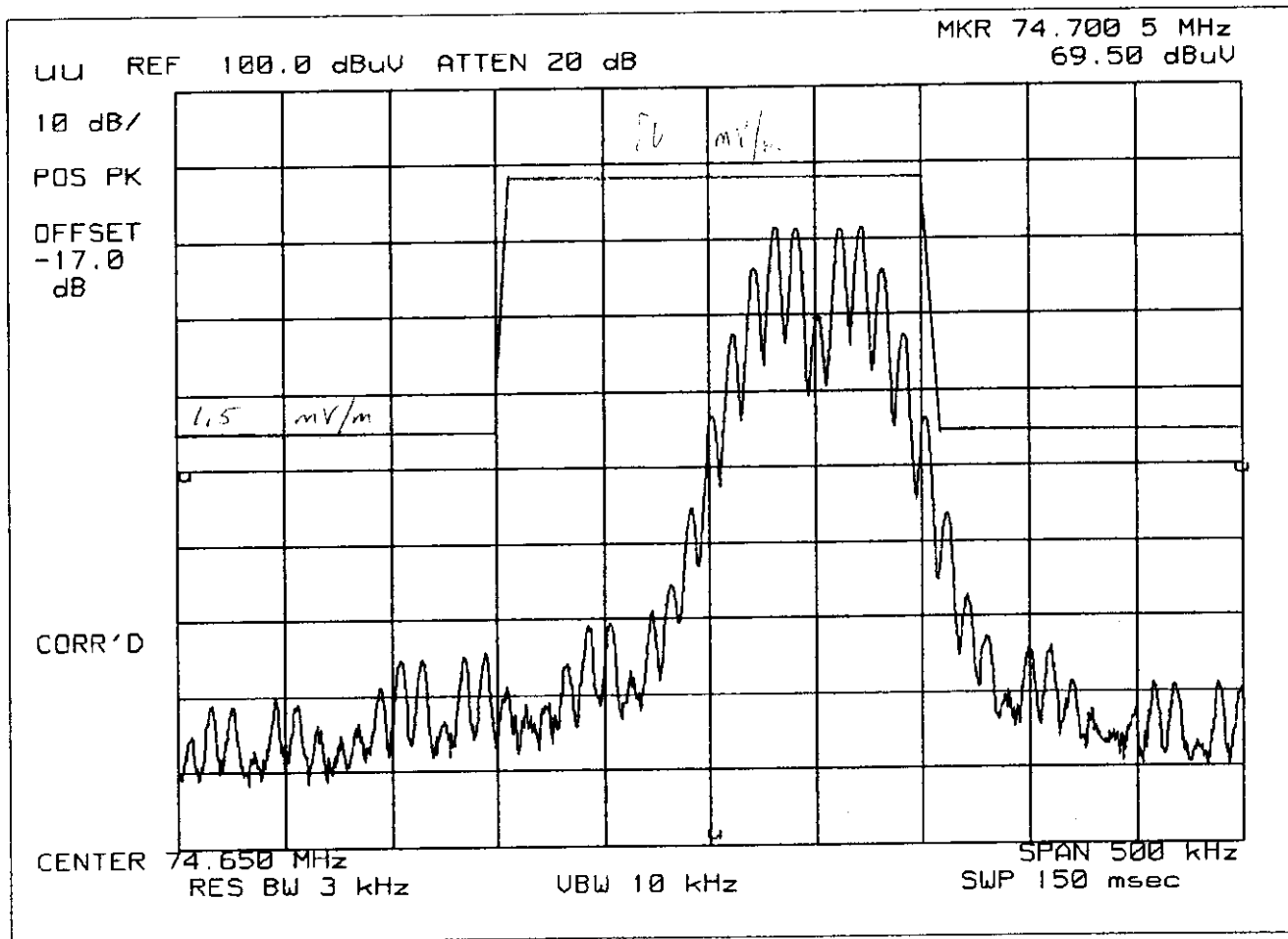


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EMISSIONS

TELEX, PST-16

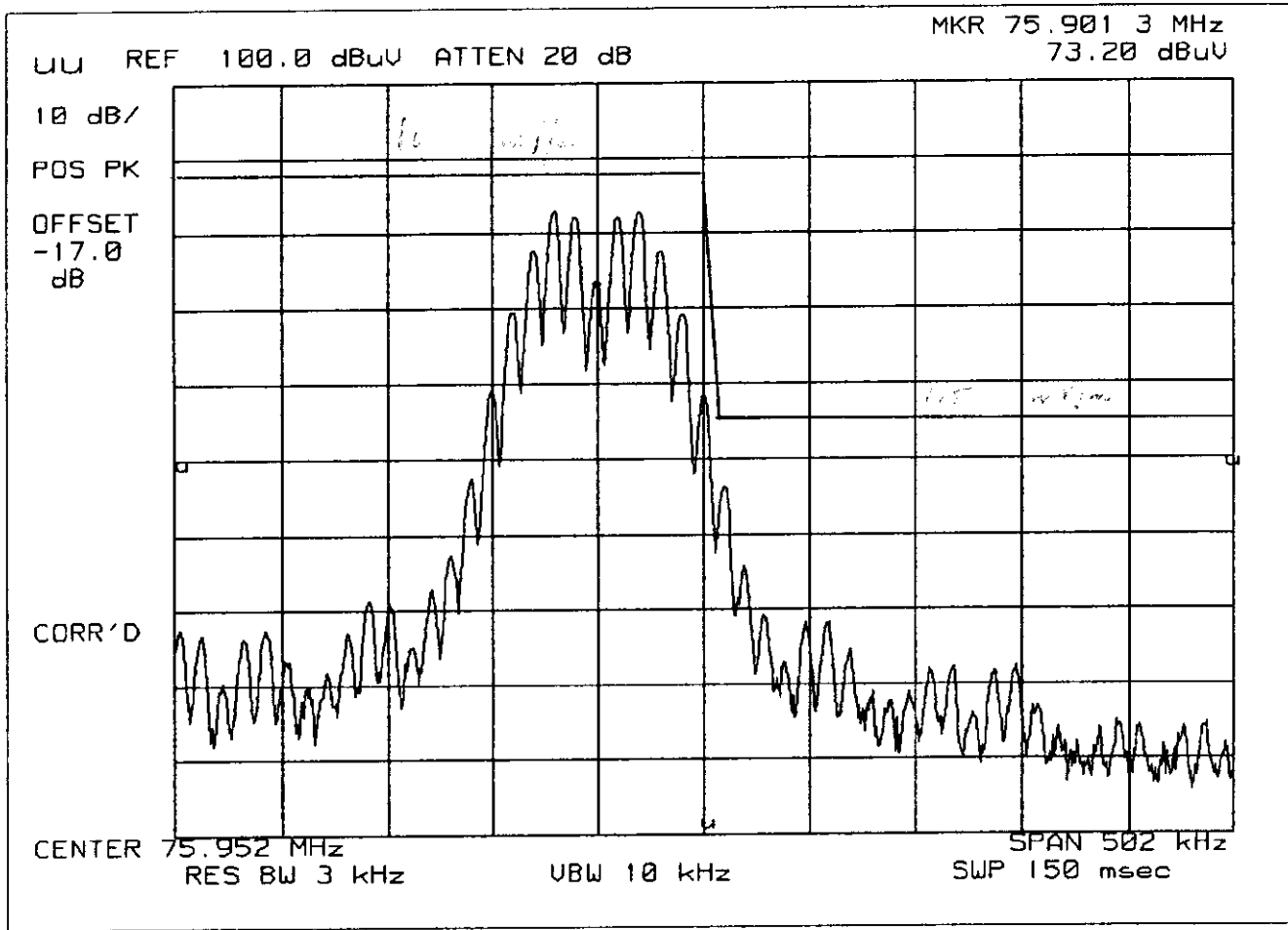
1998-OCT-27, 14:43, TUE



EMISSIONS

TELEX, PST-16

1998-OCT-27, 14:36, TUE



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NAME OF TEST: Field Strength of Spurious Radiation

SPECIFICATION: 47 CFR 2.1053(a)

GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.12

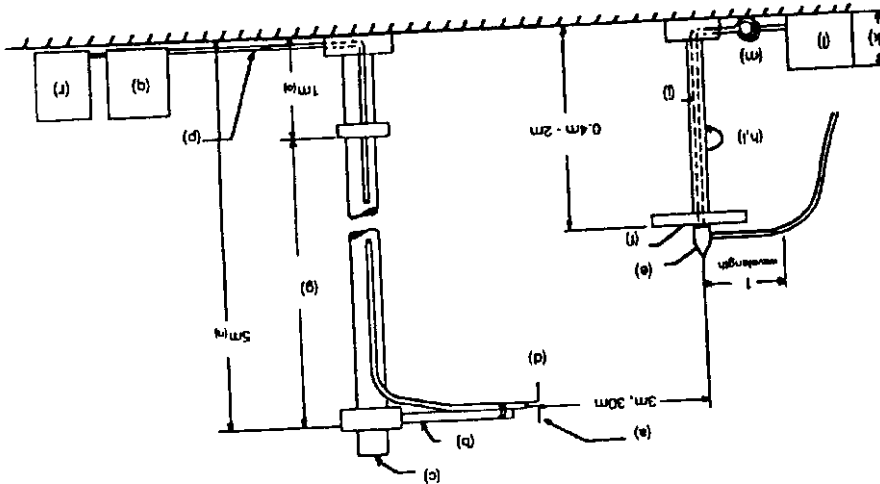
TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. A description of the measurement facilities was filed with the FCC and was found to be in compliance with the requirements of Section 15.38, by letter from the FCC dated March 3, 1997, FILE 31040/SIT. All pertinent changes will be reported to the Commission by up-date prior to March 2000.
2. At first, in order to locate all spurious frequencies and approximate amplitudes, and to determine proper equipment functioning, the test sample was set up at a distance of three meters from the test instrument. Valid spurious signals were determined by switching the power on and off.
3. In the field, the test sample was placed on a wooden turntable above ground at three (or thirty) meters away from the search antenna. Excess power leads were coiled near the power supply.

The cables were oriented in order to obtain the maximum response. At each emission frequency, the turntable was rotated and the search antennas were raised and lowered vertically.
4. The emission was observed with both a vertically polarized and a horizontally polarized search antenna and the worst case was used.
6. The field strength of each emission within 20 dB of the limit was recorded and corrected with the appropriate cable and transducer factors.
7. The worst case for all channels is shown.
8. Measurement results: ATTACHED FOR WORST CASE

RADIATED TEST SETUP



NOTES:
 (a) Search Antenna - Rotatable on boom
 (b) Non-metallic boom
 (c) Non-metallic mast
 (d) Adjustable horizontally
 (e) Equipment Under Test
 (f) Turntable
 (g) Boom adjustable in height.
 (h) External control cables routed horizontally at least one wavelength.
 (i) Rotatable

(j) Cables routed through hollow turntable center
 (k) 30 cm or less
 (l) External power source
 (m) 10 cm diameter coil of excess cable
 (n) 25 cm (V), 1 m-7 m (V, H) 25 cm from bottom end of 'V', 1m normally
 (p) Calibrated cable at least 10m in length
 (q) Amplifier (optional)
 (r) Spectrum Analyzer

Asset Description s/n Cycle Last Cal

Asset	Description	s/n	Cycle	Last Cal
TRANSDUCER	EMCO 3109B 100HZ-50MHZ	100065	12 mo.	12 mo.
X	Singer 94593-1 10KHZ-32MHZ	100033	12 mo.	12 mo.
X	EMCO 3109-B 25MHZ-300MHZ	100088	12 mo.	12 mo.
X	Apral 2001 200MHZ-1GHZ	100089	12 mo.	12 mo.
X	EMCO 3115 1GHZ-18GHZ	100103	12 mo.	12 mo.
X	EMCO 3116 10GHZ-40GHZ	100085	12 mo.	12 mo.
AMPLIFIER	HP 8449A	100028	12 mo.	12 mo.
SPECTRUM ANALYZER	HP 8563E	100029	12 mo.	12 mo.
X	HP 85462A	100033	12 mo.	12 mo.
X	HP 8566B	100048	6 mo.	6 mo.
		3213A00104	12 mo.	12 mo.
		3625A00357	12 mo.	12 mo.
		2511AD1467	12 mo.	12 mo.
		2749A00121	12 mo.	12 mo.
		2076	12 mo.	12 mo.
		9208-3925	12 mo.	12 mo.
		001500	12 mo.	12 mo.
		2336	12 mo.	12 mo.
		0219	12 mo.	12 mo.
		2336	12 mo.	12 mo.

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NAME OF TEST: Field Strength of Spurious Radiation
 g98a0220: 1998-Oct-23 Fri 14:24:00
 STATE: 2:High Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	ERP, dBm	MARGIN, dB
74.699800	149.400000	30.38	15.95	207.25	-51.05	-38.1
74.699800	224.100000	33.33	19.81	453.94	-44.25	-31.3
74.699800	298.816000	22.8	30.26	449.78	-44.35	-31.3
74.699800	373.506000	24.17	22.52	216.02	-50.65	-37.7
74.699800	448.206000	16.81	23.96	109.27	-56.65	-43.6
74.699800	522.894000	17.05	25.06	127.5	-55.25	-42.3
74.699800	597.594000	13.29	27.86	114.16	-56.25	-43.3
74.699800	672.294000	14.13	28.88	141.42	-54.35	-41.4
74.699800	746.994000	14.21	29.88	160.14	-53.25	-40.3

PAGE NO. 26 of 31.
NAME OF TEST: Necessary Bandwidth and Emission Bandwidth
SPECIFICATION: 47 CFR 2.202(g)

MODULATION = 74K0F3E

NECESSARY BANDWIDTH CALCULATION:

MAXIMUM MODULATION (M), kHz	= 1
MAXIMUM DEVIATION (D), kHz	= 36
CONSTANT FACTOR (K)	= 1
NECESSARY BANDWIDTH (B _N), kHz	= (2 x M) + (2 x D x K)
	= 74

SUPERVISED BY:



Morton Flom, P. Eng.

PAGE NO. 27 of 31.
NAME OF TEST: Audio Frequency Response
SPECIFICATION: 47 CFR 2.1047(a)
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.6
TEST EQUIPMENT: As per previous page

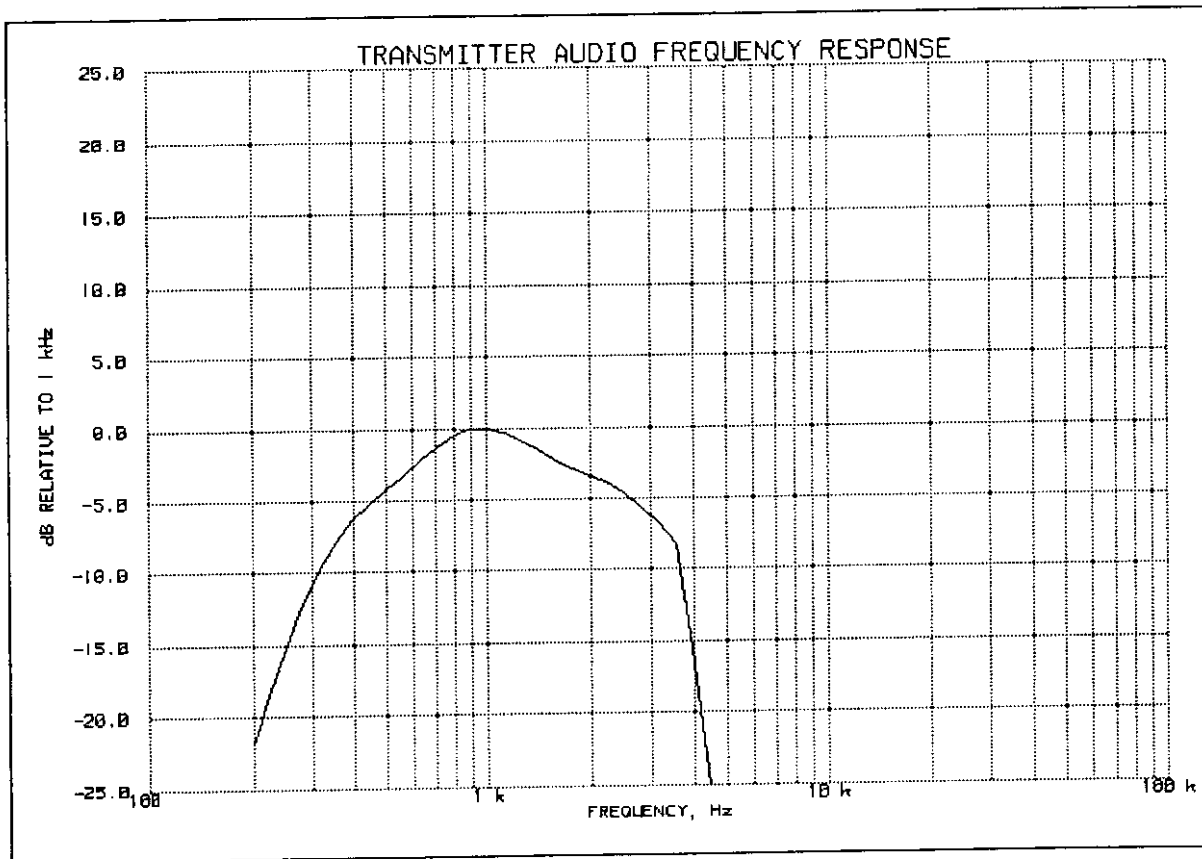
MEASUREMENT PROCEDURE

1. The EUT and test equipment were set up as shown on the following page.
2. The audio signal generator was connected to the audio input circuit/microphone of the EUT.
3. The audio signal input was adjusted to obtain 20% modulation at 1 kHz, and this point was taken as the 0 dB reference level.
4. With input levels held constant and below limiting at all frequencies, the audio signal generator was varied from 100 Hz to 50 kHz.
5. The response in dB relative to 1 kHz was then measured, using the HP 8901A Modulation Analyzer.
6. MEASUREMENT RESULTS: ATTACHED

TRANSMITTER AUDIO FREQUENCY RESPONSE

TELEX, PST-16

22 OCT 1998, 12:20



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PEAK AUDIO FREQUENCY, Hz: 1000

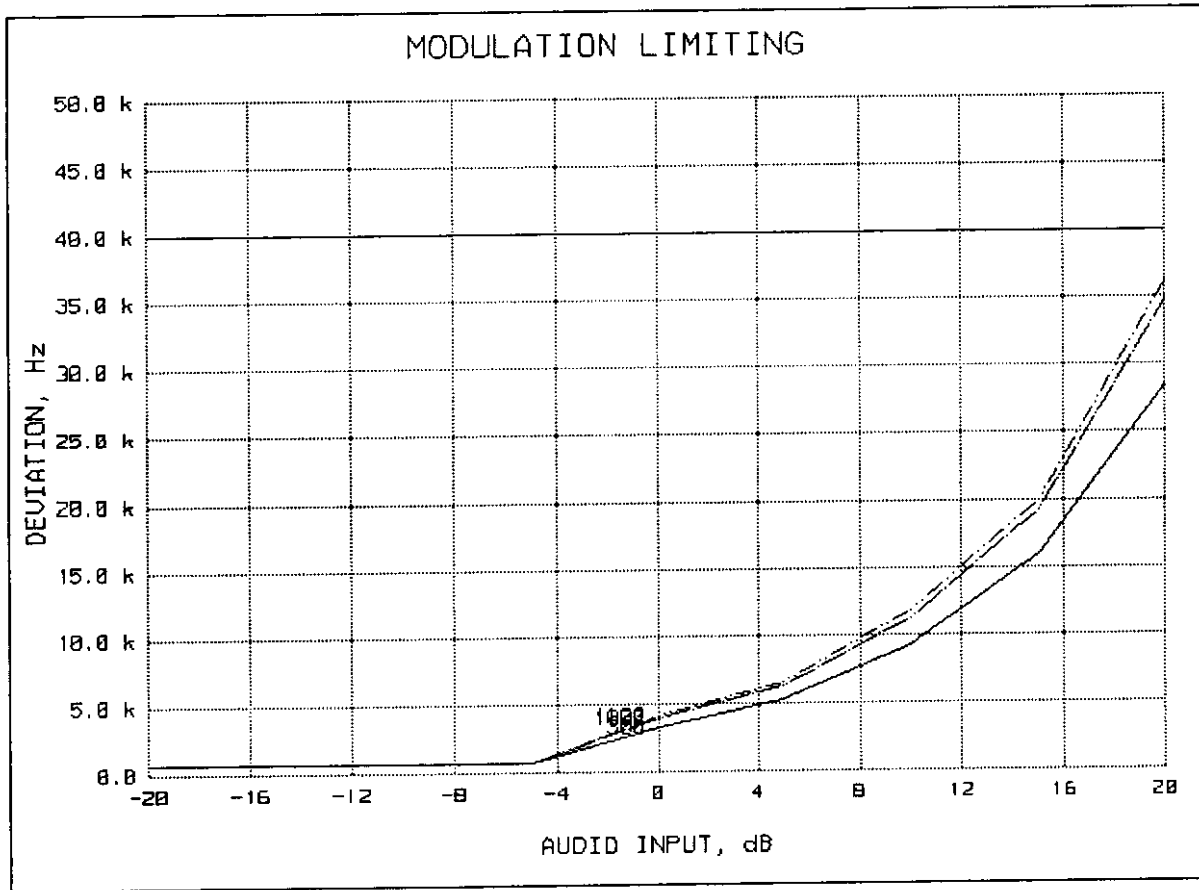
TABLE VALUES:

FREQUENCY, Hz	LEVEL, dB	FREQUENCY, Hz	LEVEL, dB	FREQUENCY, Hz	LEVEL, dB
300	-10.7	30000	-49.6		
20000	-50.0	50000	-49.6		

PAGE NO. 29 of 31.
NAME OF TEST: Modulation Limiting
SPECIFICATION: 47 CFR 2.1047(b)
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.3
TEST EQUIPMENT: As per previous page

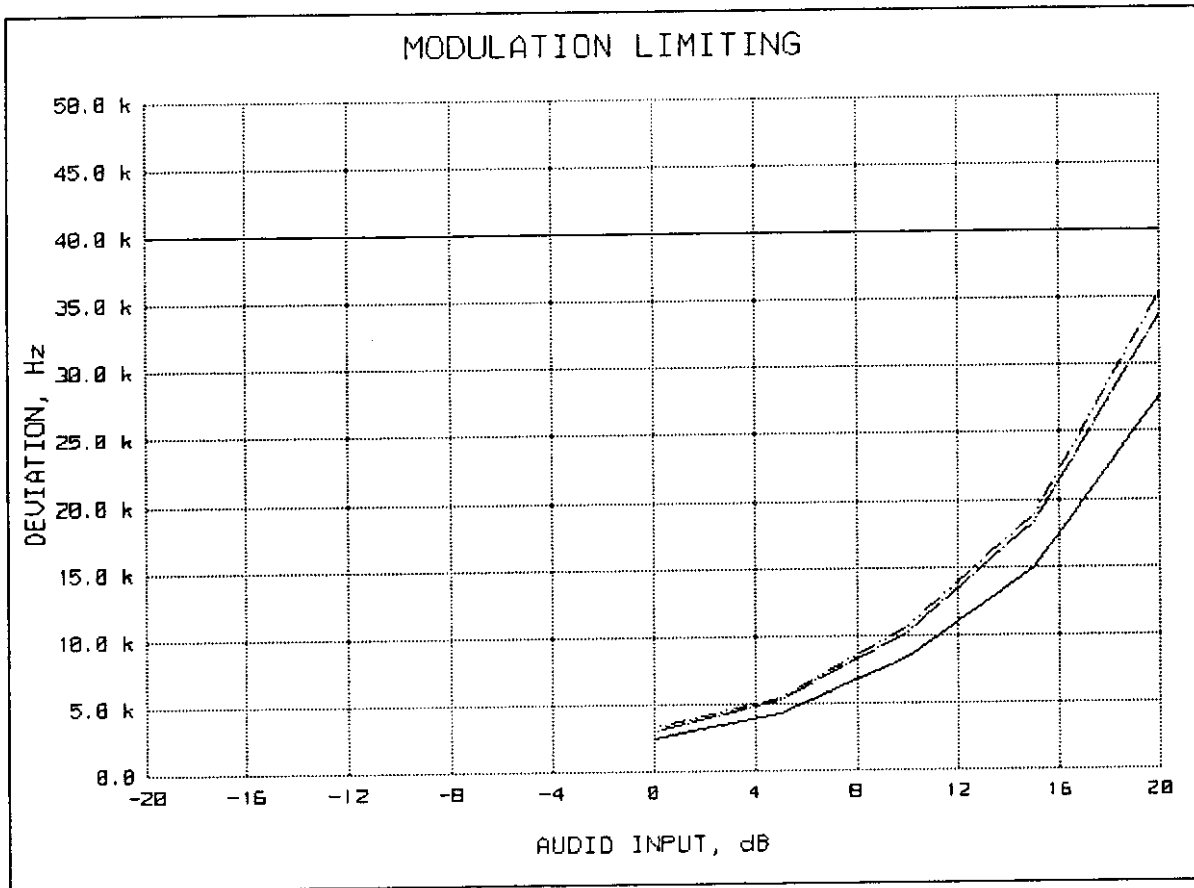
MEASUREMENT PROCEDURE

1. The signal generator was connected to the input of the EUT as for "Frequency Response of the Modulating Circuit."
2. The modulation response was measured for each of three frequencies (one of which was the frequency of maximum response), and the input voltage was varied and was observed on an HP 8901A Modulation Analyzer.
3. The input level was varied from 30% modulation (± 1.5 kHz deviation) to at least 20 dB higher than the saturation point.
4. Measurements were performed for both negative and positive modulation and the respective results were recorded.
5. MEASUREMENT RESULTS: ATTACHED



REFERENCE DEVIATION, kHz = 2.5
REFERENCE MODULATION, Hz = 1000
PEAKS = POSITIVE
AUDIO AMPLITUDE, mV = 0.6

MODULATION LIMITING
TELEX, PST-16
1998-OCT-22, 13:13



REFERENCE DEVIATION, kHz = 2.5
REFERENCE MODULATION, Hz = 1000
PEAKS = NEGATIVE
AUDIO AMPLITUDE, mV = 0.6

RADIATED MEASUREMENTS
FOR PART 15 TRANSMITTERS W/ INTEGRAL ANTENNAS

Radiated Measurements

<u>RANGE OF MEASUREMENT</u>	<u>SPECIFICATION</u>	<u>RESOLUTION B/W</u>	<u>VIDEO B/A</u>
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

All test instrumentation is calibrated every January and every July. In addition, all test instrumentation is calibrated daily, or as required by the manufacturer. A Calibration Agreement is maintained with Hewlett Packard.

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	(2)
13.36-13.41			

Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. Above 38.6