



M. Flom Associates, Inc. - Global Compliance Center

3356 North San Marcos Place, Suite 107, Chandler, Arizona 85224-1571

www.goodnet.com/~mflom, (602) 926-3100, FAX: 926-3598

Sub-part
2.1033(c):

EQUIPMENT IDENTIFICATION

FCC ID: B5DB110

NAMEPLATE DRAWING

ATTACHED, EXHIBIT 1.

LOCATION

AS PER LABEL DRAWING(S)

DATE OF REPORT

October 23, 1998

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 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 85224
- c) Report Number: d98a0052
- d) Client: Telex Communications, Inc.
8601 E. Cornhusker Highway
P.O. Box 5579
Lincoln, NE 68505-5579
- e) Identification: PB-1
FCC ID: B5DB110
Description: VHF Beltpack Transmitter
- f) EUT Condition: Not required unless specified in individual tests.
- g) Report Date: October 23, 1998
EUT Received: October 2, 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 11, PART 2 AND TO

90.265b

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: B5DB110

MODEL NO: PB-1

(c) (3): INSTRUCTION MANUAL(S):

PLEASE SEE ATTACHED EXHIBITS

(c) (4): TYPE OF EMISSION: 54K0F3E

(c) (5): FREQUENCY RANGE, MHz: 169 to 172

(c) (6): POWER RATING, Watts: 0.045
Switchable Variable x N/A

(c) (7): MAXIMUM POWER RATING, Watts: 0.05

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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 = 9

(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 Radiobeacons (EPIRB'S)
- ___ 80 Subpart W - Global Maritime Distress and Safety System (GMDSS)
- ___ 80 Subpart X - Voluntary Radio Installations
- ___ 87 - Aviation Services
- x ___ 90 - Private Land Mobile Radio Services
- ___ 94 - Private Operational-Fixed Microwave Service
- ___ 95 Subpart A - General Mobile Radio Service (GMRS)
- ___ 95 Subpart C - Radio Control (R/C) Radio Service
- ___ 95 Subpart D - Citizens Band (CB) Radio Service
- ___ 95 Subpart E - Family Radio Service
- ___ 95 Subpart F - Interactive Video and Data Service (IVDS)
- ___ 101 - Fixed Microwave Services

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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.

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NAME OF TEST: Carrier Output Power (Radiated)
SPECIFICATION: 47 CFR 2.1046(a)
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.1
TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE (RADIATED)

1. 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 of a dipole was calculated from the equation $P = ((E \times R) / 49.2)$ watts, where $R = 3m$.
2. Measurement accuracy is ± 1.5 dB.

MEASUREMENT RESULTS

FREQUENCY OF CARRIER, MHz = 171.905

<u>POWER SETTING</u>	<u>R. F. POWER, ERP, WATTS</u>
High	0.045

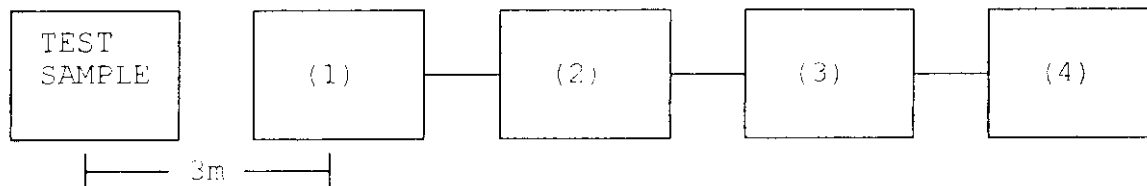
SUPERVISED BY:

M. Flom P. Eng.

Morton Flom, P. Eng.

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TRANSMITTER RADIATED MEASUREMENTS

Asset Description

s/n

(1) TRANSDUCER

<u>x</u>	i00091	Emco 3115	001469
<u>x</u>	i00089	Apriel Log Periodic	001500

(2) HIGH PASS FILTER

<u>x</u>	i00	Narda μ PAD (In-Band Only)
<u>x</u>	i00	Trilithic
		(Cut-Of-Band Only)

(3) PREAMP

<u>x</u>	i00028	HP 8449 (+30 dB)	2749A00121
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(4) SPECTRUM ANALYZER

<u>x</u>	i00048	HP 8566B	2511A01467
	i00043	HP 8558B	2004A02076
	i00057	HP 8557A	1531A00191
<u>x</u>	i00029	HP 8563E	3213A00104

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NAME OF TEST: Unwanted Emissions (Transmitter Conducted)

SPECIFICATION: 47 CFR 2.1051

GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.13

TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The emissions were measured for the worst case as follows:
 - (a): within a band of frequencies defined by the carrier frequency plus and minus one channel.
 - (b): from the lowest frequency generated in the EUT and to at least the 10th harmonic of the carrier frequency, or 40 GHz, whichever is lower.
2. The magnitude of spurious emissions that are attenuated more than 20 dB below the permissible value need not be specified.
3. MEASUREMENT RESULTS: ATTACHED FOR WORST CASE

FREQUENCY OF CARRIER, MHz = 171.905

SPECTRUM SEARCHED, GHz = 0 to 10 x F_c

MAXIMUM RESPONSE, Hz = 11200

ALL OTHER EMISSIONS = > 20 dB BELOW LIMIT

LIMIT(S), dBc
 $-(43+10 \times \log P) = -29.5$ (0 Watts)

SUPERVISED BY:

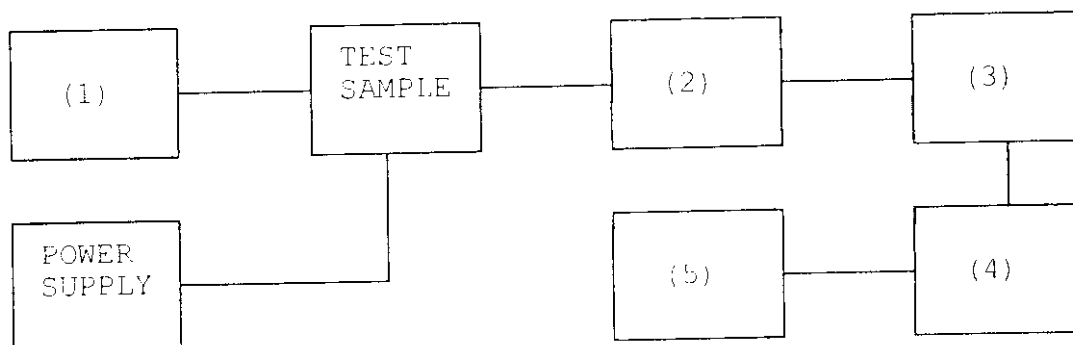

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TRANSMITTER SPURIOUS EMISSION

TEST A. OCCUPIED BANDWIDTH (IN-BAND SPURIOUS)
 TEST B. OUT-OF-BAND SPURIOUS



Asset	Description	s/n
(1) <u>AUDIO OSCILLATOR/GENERATOR</u>		
100010	HP 204D	1105A04683
100017	HP 8903A	2216A01753
x 100012	HP 3312A	1432A11250
(2) <u>COAXIAL ATTENUATOR</u>		
100122	Narda 766-10	7802
100123	Narda 766-10	7802A
x 100069	Bird 8329 (30 dB)	1006
x 100113	Sierra 661A-3D	1059
(3) <u>FILTERS; NOTCH, HP, LP, BP</u>		
x 100126	Eagle TNF-1	100-250
x 100125	Eagle TNF-1	50-60
x 100124	Eagle TNF-1	250-850
(4) <u>SPECTRUM ANALYZER</u>		
x 100048	HP 8566B	2511A01467
100029	HP 8563E	3213A00104
(5) <u>SCOPE</u>		
100058	HP 1741A	2251A09356
100030	HP 54502A	2927A00209
100071	Tektronix 925	1935-B011343

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NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
 g98a0051: 1998-Oct-12 Mon 13:47:00
 STATE: 2:High Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBm	LEVEL, dBc	MARGIN, dB
171.905000	100.750000	-52	-68.5	-39
171.905000	343.811000	-61.8	-78.3	-48.8
171.905000	457.510000	-23.8	-40.3	-10.8
171.905000	515.686000	-61.9	-78.4	-48.9
171.905000	687.980000	-66.1	-82.6	-53.1
171.905000	859.483000	-62.9	-79.4	-49.9
171.905000	1031.247000	-65.5	-82	-52.5
171.905000	1202.983000	-65.9	-82.4	-52.9
171.905000	1375.137000	-65	-81.5	-52
171.905000	1547.270000	-64.8	-81.3	-51.8
171.905000	1718.840000	-63.5	-80	-50.5
171.905000	1890.826000	-65.1	-81.6	-52.1
171.905000	2062.666000	-64.1	-80.6	-51.1
171.905000	2234.277000	-62.7	-79.2	-49.7
171.905000	2406.533000	-64.6	-81.1	-51.6
171.905000	2578.081000	-66	-82.5	-53

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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

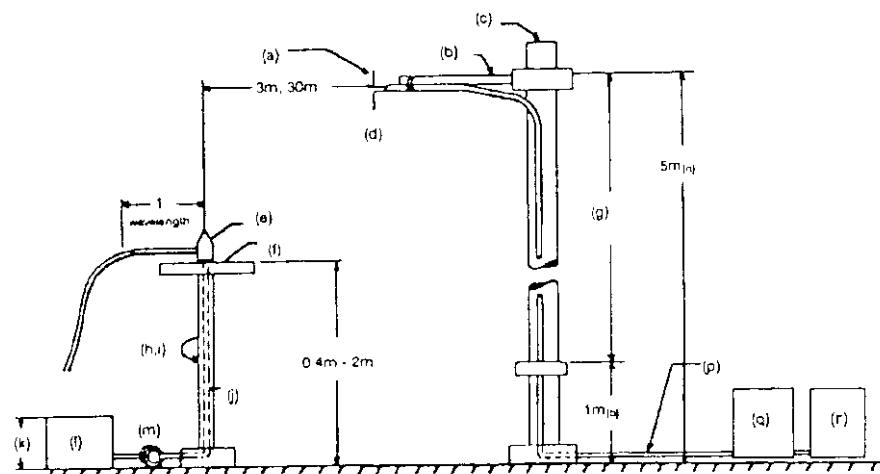
MEASUREMENT PROCEDURE

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

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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)
 (o) 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
<u>TRANSDUCER</u>				
100065	EMCO 3109B 100Hz-50MHz	2336	12 mo.	
100033	Singer 94593-1 10kHz-32MHz	0219	12 mo.	
x 100088	EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Oct-98
x 100089	Apriel 2001 200MHz-1GHz	001500	12 mo.	Oct-98
x 100103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Oct-98
100085	EMCO 3116 10GHz-40GHz	2076	12 mo.	
<u>AMPLIFIER</u>				
100028	HP 8449A	2749A00121	12 mo.	Mar-98
<u>SPECTRUM ANALYZER</u>				
100029	HP 8563E	3213A00104	12 mo.	
x 100033	HP 85462A	3625A00357	12 mo.	Dec-97
100048	HP 8566B	2511AD1467	6 mo.	Mar-98

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NAME OF TEST: Field Strength of Spurious Radiation

ALL OTHER EMISSIONS = ≥ 20 dB BELOW LIMIT

<u>EMISSION, MHz/HARMONIC</u>	<u>SPURIOUS LEVEL, dBc</u>
	High
2nd to 10th	<-40

SUPERVISED BY:



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NAME OF TEST: Field Strength of Spurious Radiation
 g98a0124: 1998-Oct-20 Tue 11:29:00
 STATE: 2:High Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	ERP, dBm	MARGIN, dB
171.905000	343.803000	47.61	20.98	2688.44	-28.75	-15.8
171.905000	515.698000	39.91	24.77	1713.96	-32.65	-19.7
171.905000	687.610000	28.63	29.06	766.48	-39.65	-26.7
171.905000	859.513000	27.89	30.76	856.05	-38.75	-25.8
171.905000	1031.390000	19.49	28.11	239.88	-49.75	-36.8
171.905000	1203.350000	16.53	29.16	242.38	-49.65	-36.7
171.905000	1375.150000	17.9	30.07	250.32	-49.45	-36.4
171.905000	1547.050000	21.19	30.98	405.98	-45.25	-32.2
171.905000	1718.980000	17.4	32.1	298.54	-47.85	-34.9

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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

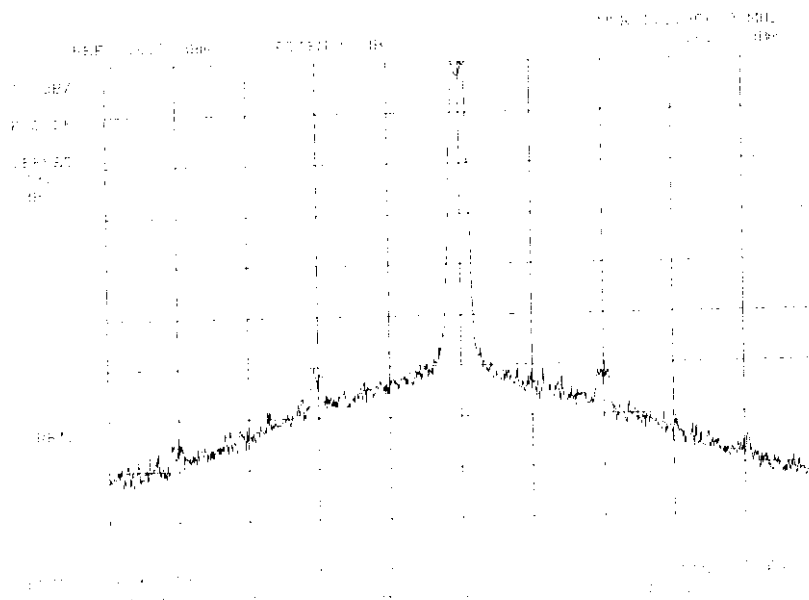
MEASUREMENT PROCEDURE

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 ± 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

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
 g98a0045: 1998-Oct-12 Mon 12:02:00
 STATE: 2:High Power



POWER:
 MODULATION:

HIGH
 NONE

SUPERVISED BY:

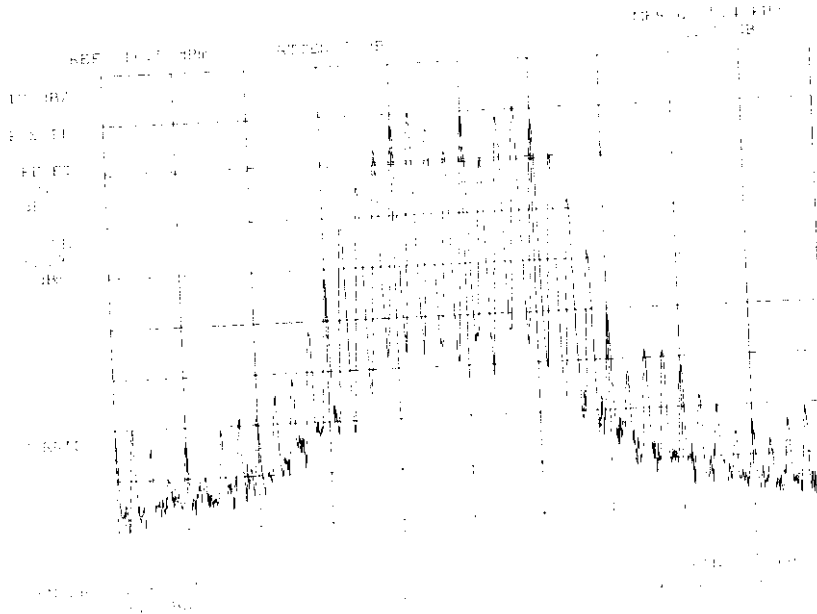
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
 g98a0048: 1998-Oct-12 Mon 12:21:00
 STATE: 2:High Power



POWER:
 MODULATION:

HIGH
 VOICE: 2500 Hz SINE WAVE
 LOOSE COUPLED 20 DB
 BANDWIDTH

SUPERVISED BY:

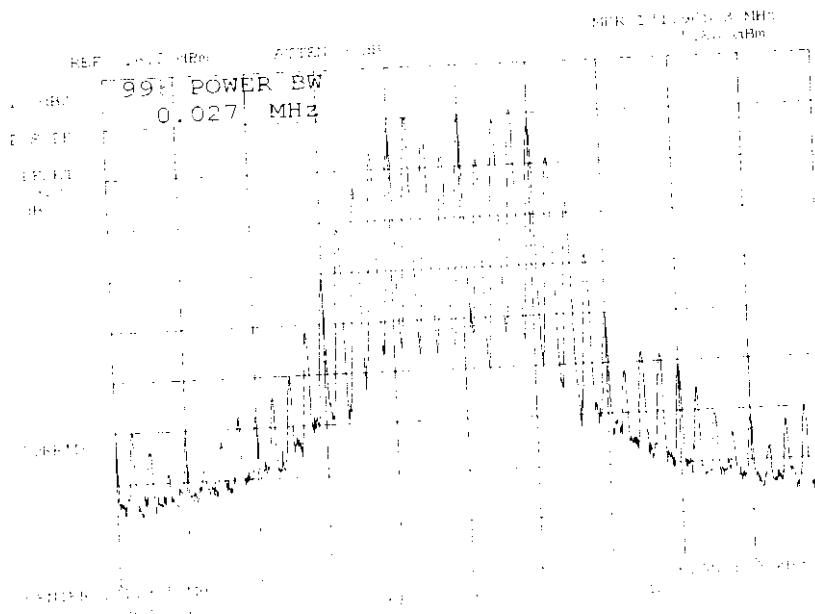
M. Flom P. Eng.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
 g98a0047: 1998-Oct-12 Mon 12:12:00
 STATE: 2:High Power



POWER:
 MODULATION:

HIGH
 VOICE: 2500 Hz SINE WAVE
 LOOSE COUPLED 99%
 BANDWIDTH

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PAGE NO. 19 of 29.
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

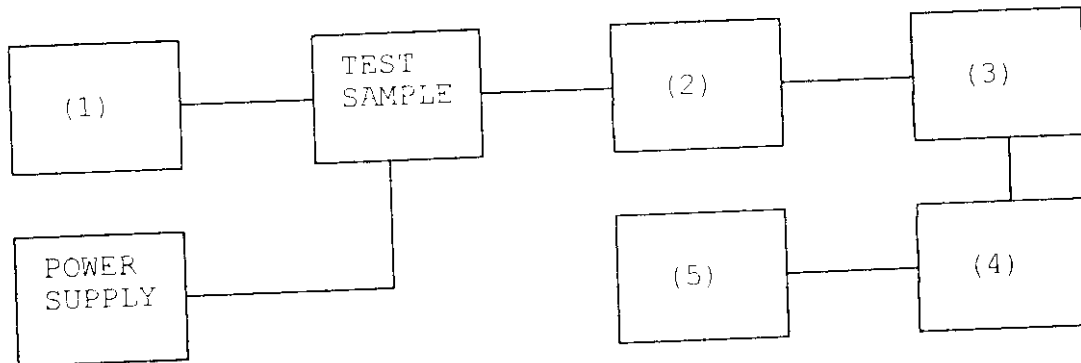
1. The EUT and test equipment were set up as shown on the following page.
2. The audio signal generator was connected to the audio input circuit/microphone of the EUT.
3. The audio signal input was adjusted to obtain 20% modulation at 1 kHz, and this point was taken as the 0 dB reference level.
4. With 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

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TRANSMITTER TEST SET-UP

TEST A. MODULATION CAPABILITY/DISTORTION
 TEST B. AUDIO FREQUENCY RESPONSE
 TEST C. HUM AND NOISE LEVEL
 TEST D. RESPONSE OF LOW PASS FILTER
 TEST E. MODULATION LIMITING



Asset Description

s/n

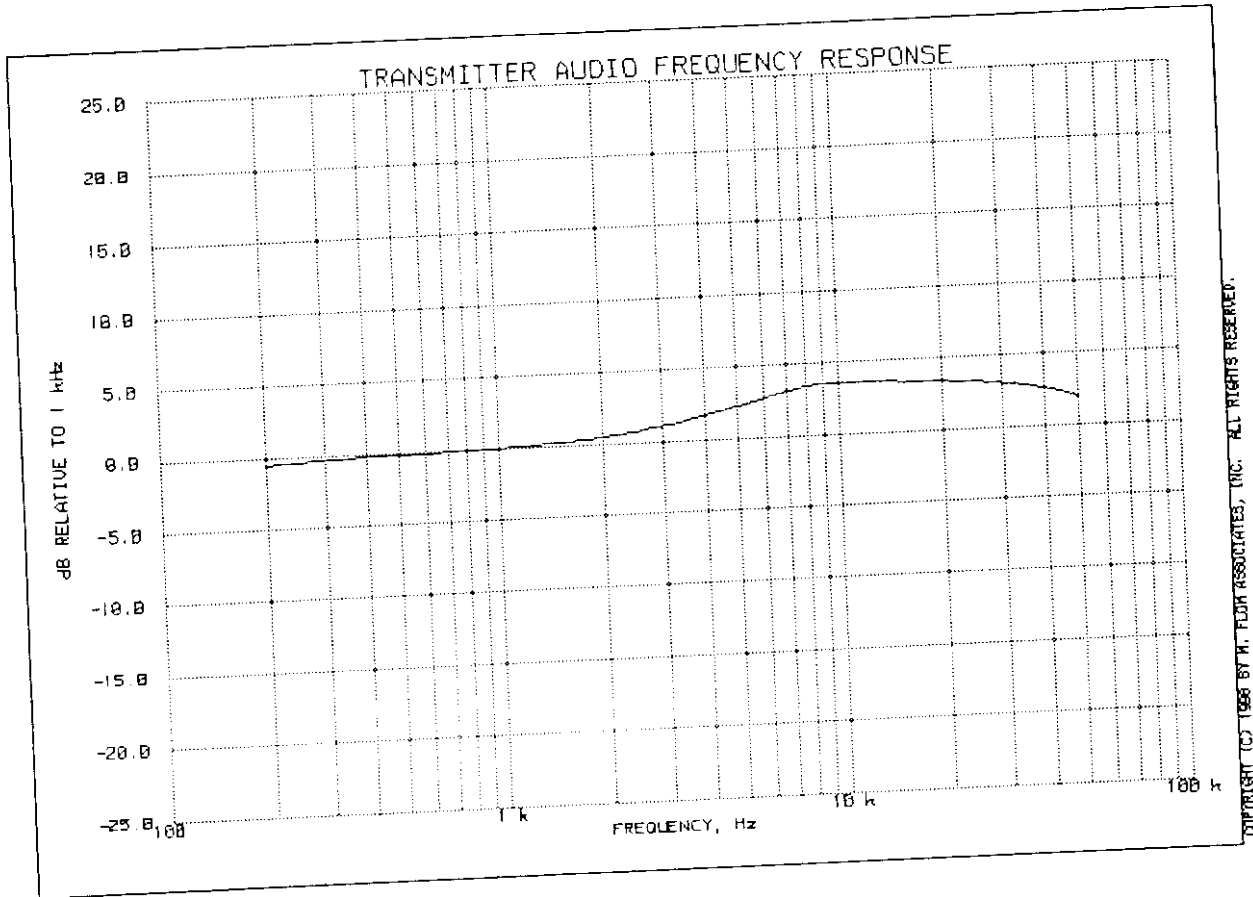
(1) <u>LINE IMPEDANCE STABILIZATION NETWORK</u>		
	100010 HP 204D	1105A04683
x	100017 HP 8903A	2216A01753
x	100118 HP 33120A	US36002064
(2) <u>COAXIAL ATTENUATOR</u>		
	100122 NARDA 766-10	7802
	100123 NARDA 766-10	7802A
x	100113 SIERRA 661A-3D	1059
	100069 BIRD 8329 (30 dB)	10066
(3) <u>MODULATION ANALYZER</u>		
x	100020 HP 8901A	2105A01087
(4) <u>AUDIO ANALYZER</u>		
x	100017 HP 8903A	2216A01753
(5) <u>SCOPE</u>		
	100058 HP 1741A	2215A09356
	100071 Tektronix 935	1935-B011343

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TRANSMITTER AUDIO FREQUENCY RESPONSE

TELEX, PB-1

12 OCT 1998, 14:16



PEAK AUDIO FREQUENCY, Hz: 11200

TABLE VALUES:

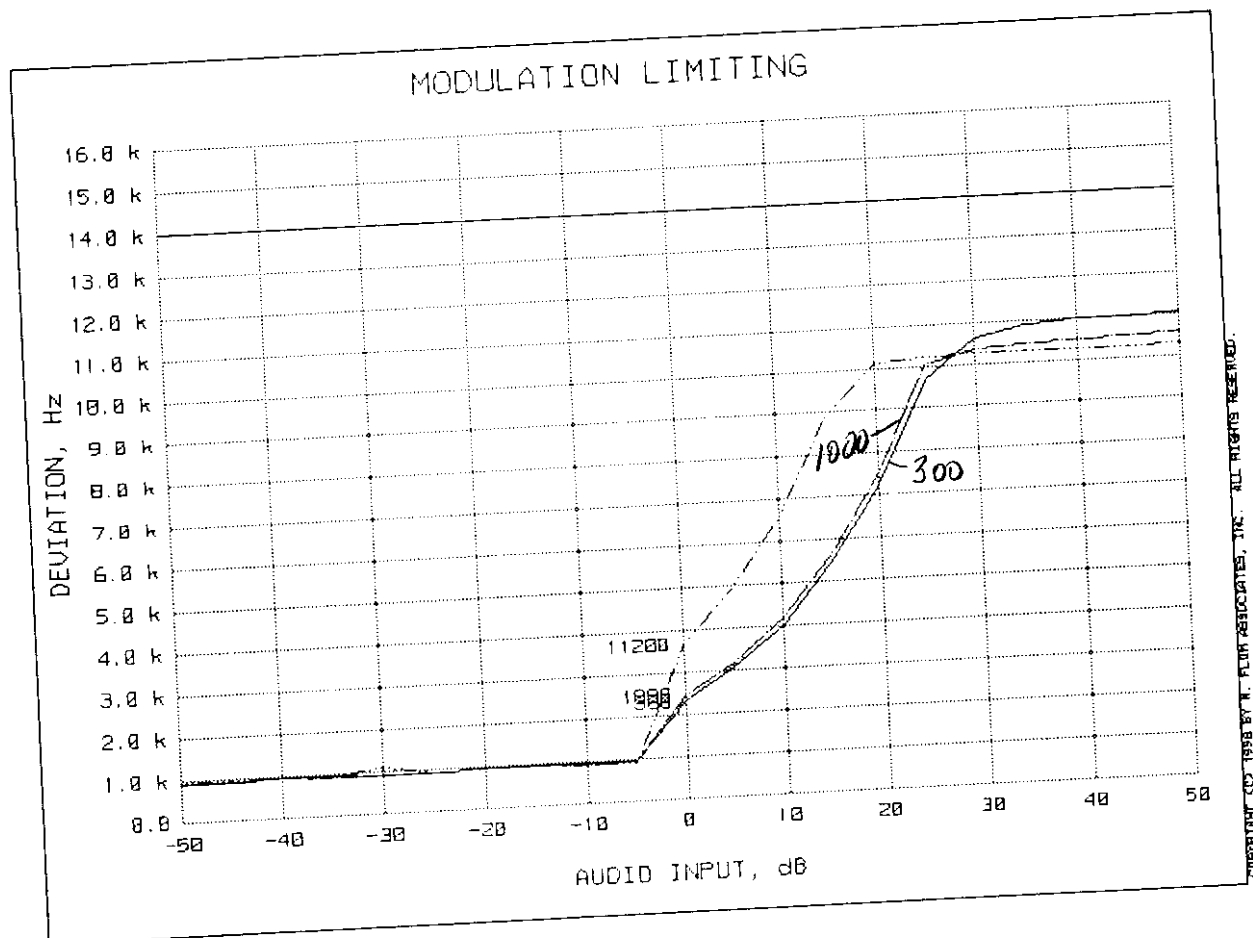
FREQUENCY, LEVEL, Hz dB	FREQUENCY, LEVEL, Hz dB	FREQUENCY, LEVEL, Hz dB
300 -1.4	30000 3.1	
20000 3.4	50000 1.9	

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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

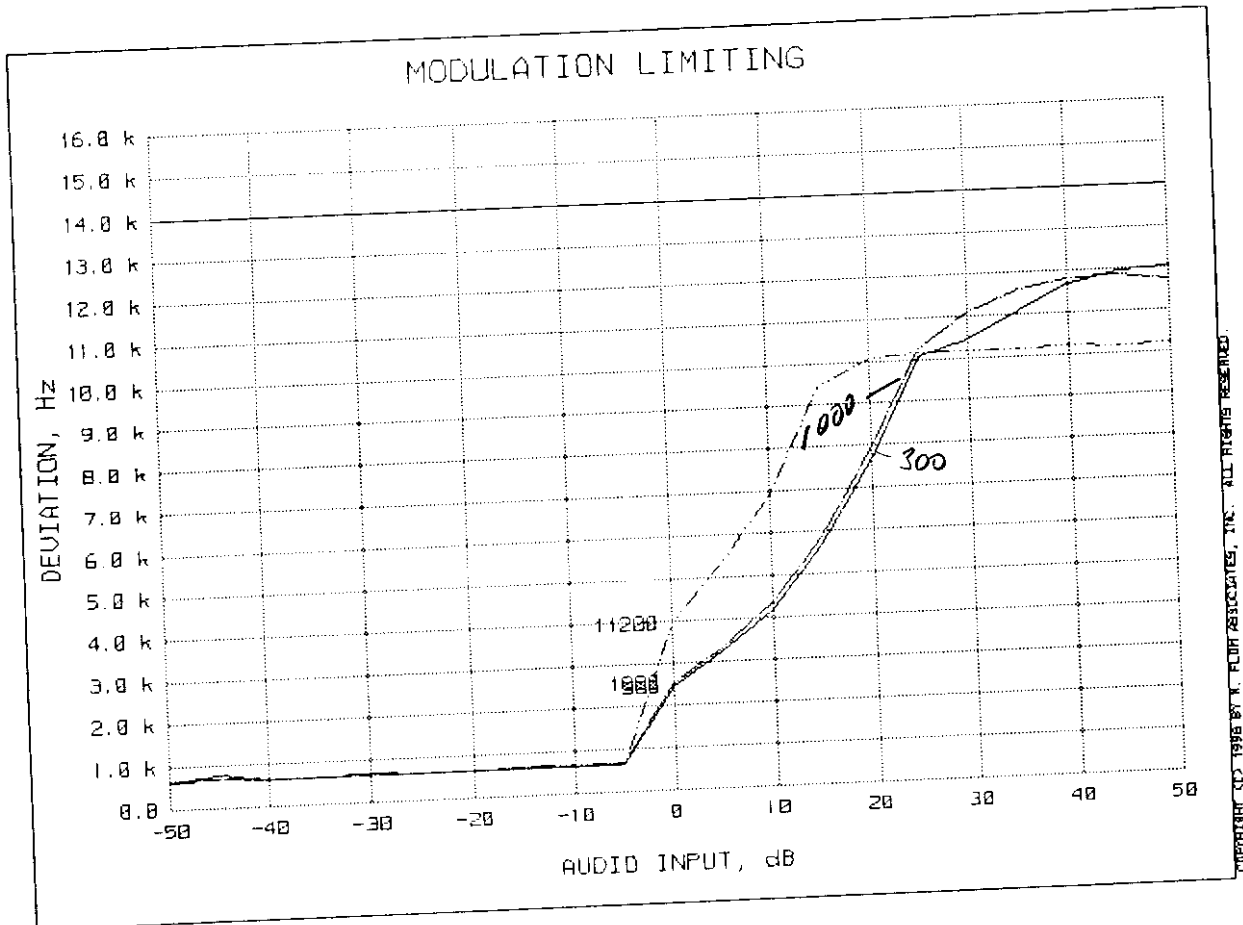
1. The signal generator was connected to the input of the EUT as for "Frequency Response of the Modulating Circuit."
2. The modulation response was measured for each of three frequencies (one of which was the frequency of maximum response), and the input voltage was varied and was observed on an HP 8901A 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

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 MODULATION LIMITING
 TELEX, PB-1
 1998-OCT-12, 14:24



REFERENCE DEVIATION, kHz	= 2.5
REFERENCE MODULATION, Hz	= 1000
PEAKS	= POSITIVE
AUDIO AMPLITUDE, mV	= 0.88

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 MODULATION LIMITING
 TELEX, PB-1
 1998-OCT-12, 14:24



REFERENCE DEVIATION, kHz	= 2.5
REFERENCE MODULATION, Hz	= 1000
PEAKS	= NEGATIVE
AUDIO AMPLITUDE, mV	= 1.01

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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

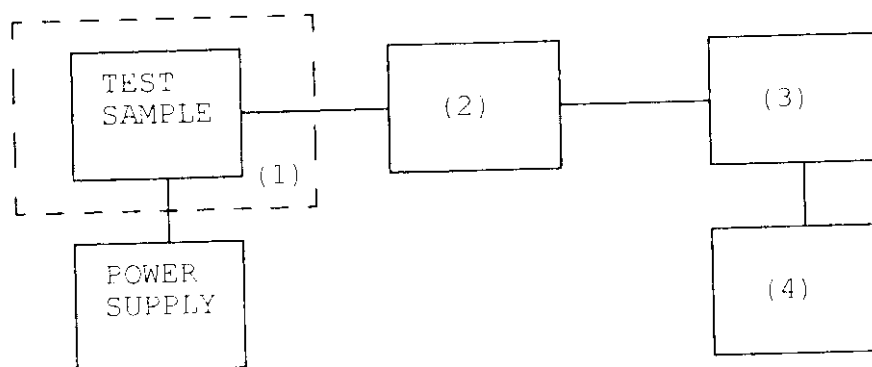
1. The EUT and test equipment were set up as shown on the following page.
2. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
3. With power OFF, the temperature 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

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TRANSMITTER TEST SET-UP

TEST A. OPERATIONAL STABILITY
 TEST B. CARRIER FREQUENCY STABILITY
 TEST C. OPERATIONAL PERFORMANCE STABILITY
 TEST D. HUMIDITY
 TEST E. VIBRATION
 TEST F. ENVIRONMENTAL TEMPERATURE
 TEST G. FREQUENCY STABILITY: TEMPERATURE VARIATION
 TEST H. FREQUENCY STABILITY: VOLTAGE VARIATION



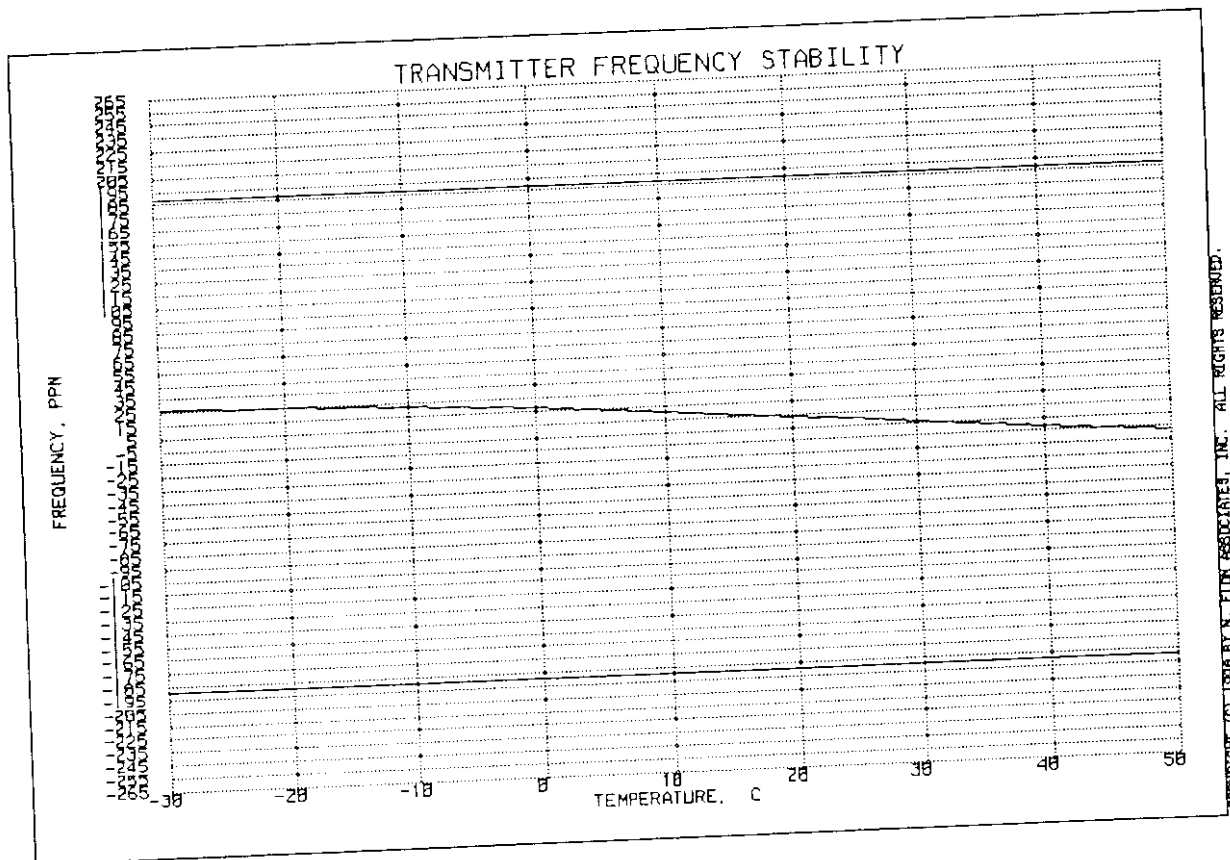
Asset	Description	s/n
(1)	TEMPERATURE, HUMIDITY, VIBRATION	
<u>x</u>	i00027 Tenny Temp. Chamber	9083-765-234
<u> </u>	i00 Weber Humidity Chamber	
<u> </u>	i00 L.A.B. RVH 18-100	
(2)	COAXIAL ATTENUATOR	
<u> </u>	i00122 NARDA 766-10	7802
<u> </u>	i00123 NARDA 766-10	7802A
<u>x</u>	i00113 SIERRA 661A-3D	1059
<u> </u>	i00069 BIRD 8329 (30 dB)	10066
(3)	R.F. POWER	
<u> </u>	i00014 HP 435A POWER METER	1733A05839
<u>x</u>	i00039 HP 436A POWER METER	2709A26776
<u>x</u>	i00020 HP 8901A POWER METER	2105A01087
(4)	FREQUENCY COUNTER	
<u> </u>	i00042 HP 5333A	1628A00959
<u>x</u>	i00019 HP 5334B	2704A00347
<u>x</u>	i00020 HP 8901A	2105A01087

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TRANSMITTER FREQUENCY STABILITY

TELEX, PB-1

12 OCT 1998, 16:01



FREQUENCY OF CARRIER, MHz = 171.90589

LIMIT, ppm = 189

LIMIT, Hz = 32490

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NAME OF TEST: Frequency Stability (Voltage Variation)

SPECIFICATION: 47 CFR 2.1055(b)(1)

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

TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The EUT was placed in a temperature chamber at 25±5°C and connected as for "Frequency Stability - Temperature Variation" test.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

RESULTS: Frequency Stability (Voltage Variation)

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STATE: C:General

LIMIT, ppm = 5

LIMIT, Hz = 860

BATTERY END POINT (Voltage) = 7.7

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
85	7.65	171.905170	170	0.99
100	9	171.905000	0	0.00
115	10.35	171.904850	-150	-0.87
86	7.7	171.905150	150	0.87

Morton Flom P. Eng.

Morton Flom, P. Eng.

SUPERVISED BY:

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NAME OF TEST: Necessary Bandwidth and Emission Bandwidth

SPECIFICATION: 47 CFR 2.202(g)

99% BANDWIDTH	= 47 kHz
TEMPERATURE	= 3.3
VOLTAGE	= 0.17
	= 30.47 kHz

SUPERVISED BY:


Morton Flom, P. Eng.

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:



Morton Flom, P. Eng.

STATEMENT OF QUALIFICATIONS

EDUCATION:

1. B. ENG. in ENGINEERING PHYSICS, 1949, McGill University, Montreal, Canada.
2. Post Graduate Studies, McGill University & Sir George Williams University, Montreal.

PROFESSIONAL AFFILIATIONS:

1. ARIZONA SOCIETY OF PROFESSIONAL ENGINEERS (NSPE), #026 031 821.
2. ORDER OF ENGINEERS (QUEBEC) 1949. #4534.
3. ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOPHYSICISTS & GEOLOGISTS OF ALBERTA #5916.
4. REGISTERED ENGINEERING CONSULTANT - GOVERNMENT OF CANADA, DEPARTMENT OF COMMUNICATIONS. Radio Equipment Approvals.
5. IEEE, Lifetime Member No. 0417204 (member since 1947).

EXPERIENCE:

1. Research/Development/Senior Project Engineer, R.C.A. LIMITED (4 years).
2. Owner/Chief Engineer of Electronics. Design/Manufacturing & Cable TV Companies (10 years).
3. CONSULTING ENGINEER (over 25 years).


MORTON FLOM, P. Eng.