Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

a) TEST REPORT

b) Laboratory: (FCC: 31040/SIT) (Canada: IC 2044)
M. Flom Associates, Inc.
3356 N. San Marcos Place, Suite 107
Chandler, AZ 85224

c) Report Number: d9940028

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

e) Identification: LT-100E
FCC ID: B5DB111E
Description: Digital Wireless Microphone

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

g) Report Date: April 14, 1999
EUT Received: April 8, 1999

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.

PAGE NO. 2 of 19.

LIST OF GENERAL INFORMATION REQUIRED FOR CERTIFICATION

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

74

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

MANUFACTURER:

Applicant

(c)(2): FCC ID: B5DB111E

MODEL NO: LT-100E

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

PLEASE SEE ATTACHED EXHIBITS

(c)(4): TYPE OF EMISSION: 200KF3D

(c)(5): FREQUENCY RANGE, MHz: 688 to 746

(c)(6): POWER RATING, Watts: 10mW

___ Switchable ___ Variable x N/A

(c)(7): MAXIMUM POWER RATING, Watts: 0.25

PAGE NO. 3 of 19.

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 V

(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

PAGE NO. 4 of 19.

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
__x__ 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
____ 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

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 19.

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 $P_t=((E \times R)^2/49.2)$ watts, where R = 3m.

2. Measurement accuracy is ±1.5 dB.

MEASUREMENT RESULTS

FREQUENCY OF CARRIER, MHz = 739.5, 734.1, 745.5

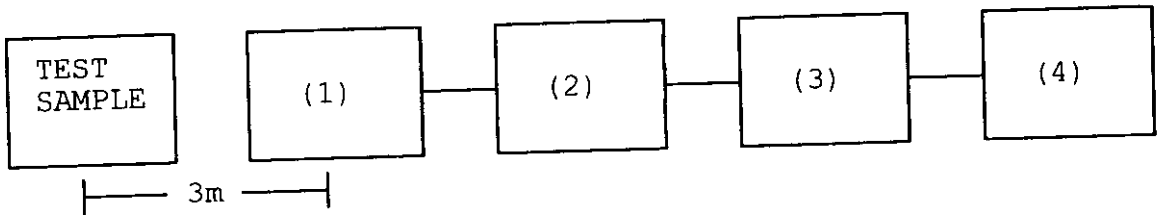
POWER SETTING	R. F. POWER, ERP, WATTS
High	10mW

Morton Flom, P. Eng.

SUPERVISED BY:

PAGE NO. 7 of 19.

TRANSMITTER RADIATED MEASUREMENTS



	Asset	Description	s/n
(1) TRANSDUCER			
x	i00091	Emco 3115	001469
x	i00089	Aprel Log Periodic	001500
(2) HIGH PASS FILTER			
___	i00	Narda μPAD (In-Band Only)	
___	i00	Trilithic (Out-Of-Band Only)	
(3) PREAMP			
x	i00028	HP 8449 (+30 dB)	2749A00121
(4) SPECTRUM ANALYZER			
___	i00048	HP 8566B	2511A01467
___	i00043	HP 8558B	2004A02076
___	i00057	HP 8557A	1531A00191
x	i00029	HP 8563E	3213A00104

PAGE NO. 8 of 19.

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.

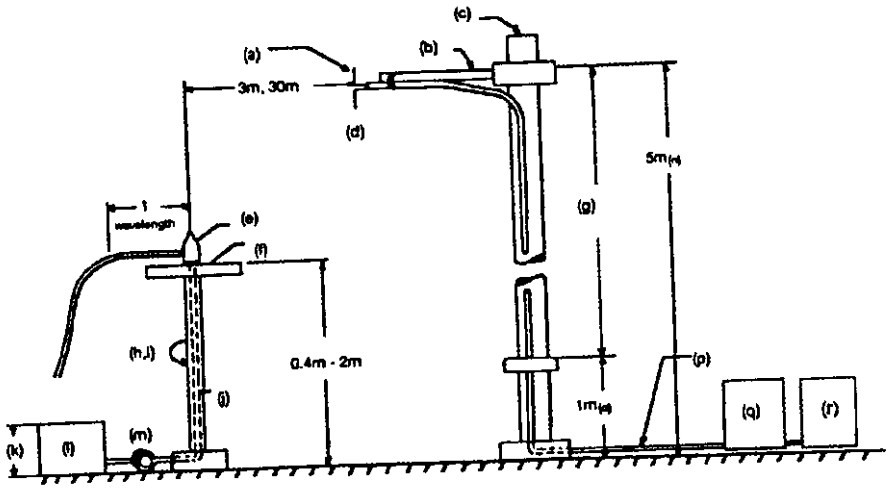
6. The field strength of each emission within 20 dB of the limit was recorded and corrected with the appropriate cable and transducer factors.

7. The worst case for all channels is shown.

8. Measurement results: ATTACHED FOR WORST CASE

PAGE NO. 9 of 19.

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 (Per ANSI C63.4-1992, 10.1.4)	Last Cal
TRANSDUCER					
___	i00065	EMCO 3109B 100Hz-50MHz	2336	12 mo.	
___	i00033	Singer 94593-1 10kHz-32MHz	0219	12 mo.	
x	i00088	EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Oct-98
x	i00089	Aprel 2001 200MHz-1GHz	001500	12 mo.	Oct-98
x	i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Oct-98
___	i00085	EMCO 3116 10GHz-40GHz	2076	12 mo.	
AMPLIFIER					
___	i00028	HP 8449A	2749A00121	12 mo.	Mar-98
SPECTRUM ANALYZER					
___	i00029	HP 8563E	3213A00104	12 mo.	Aug-98
x	i00033	HP 85462A	3625A00357	12 mo.	Dec-98
___	i00048	HP 8566B	2511AD1467	6 mo.	Dec-98

PAGE NO. 10 of 19.

NAME OF TEST: Field Strength of Spurious Radiation
g9940023: 1999-Apr-09 Fri 10:47:00
STATE: 2:High Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	ERP, dBm	MARGIN, dB
739.500000	1479.083333	32.17	30.84	1414.16	-34.35	-21.4
739.500000	2218.643333	60.67	5.48	2030.02	-31.25	-18.3
739.500000	2957.806667	55.17	8.64	1550.6	-33.55	-20.6
739.500000	3697.241667	45.83	10.55	659.17	-40.95	-28
739.500000	4437.308333	30	11.21	114.95	-56.15	-43.2
739.500000	5176.525000	28.83	13.99	138.36	-54.55	-41.6
739.500000	5916.025000	28.67	15.84	168.07	-52.85	-39.9
739.500000	6655.525000	27.33	16.96	163.87	-53.05	-40.1
739.500000	7395.025000	29	19.16	255.86	-49.25	-36.2

PAGE NO. 11 of 19.

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.

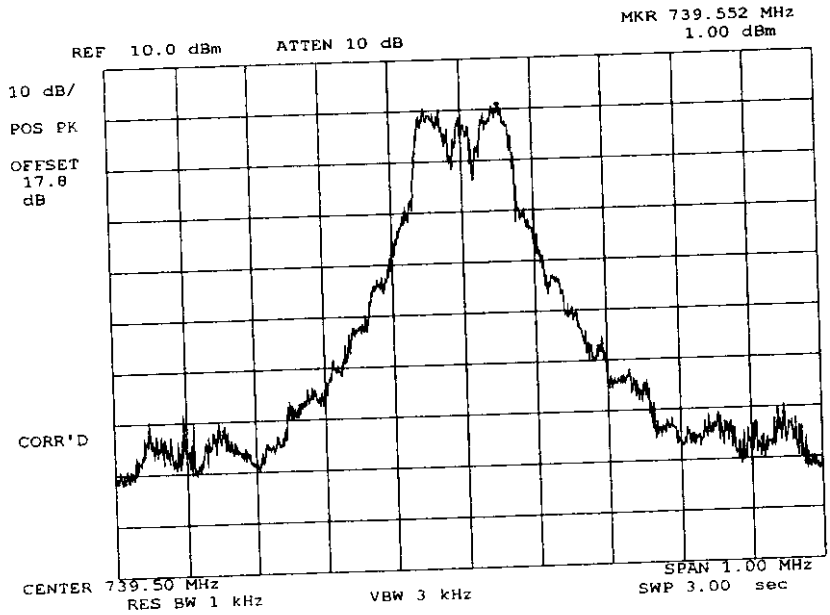
3. For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.

4. The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.

5. MEASUREMENT RESULTS: ATTACHED

PAGE NO. 12 of 19.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g9940067: 1999-Apr-12 Mon 11:06:00
STATE: 2:High Power

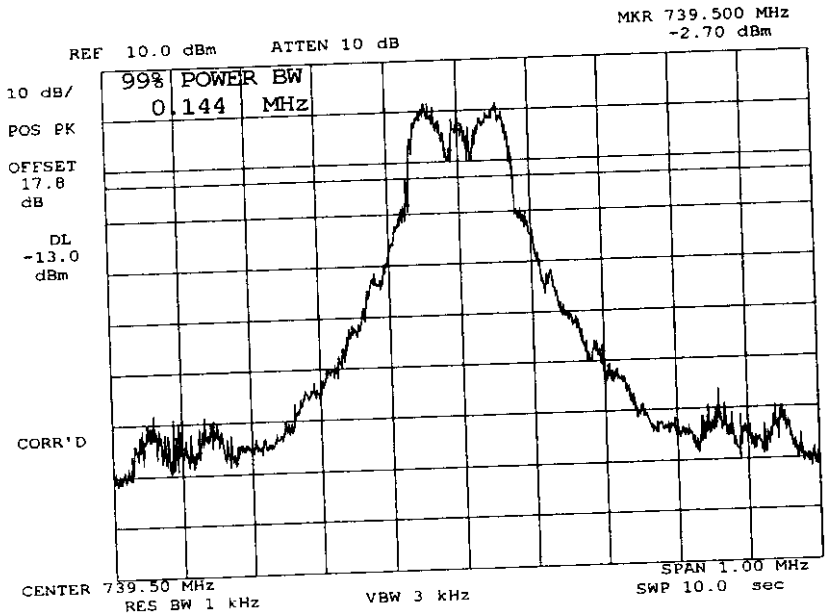


POWER: HIGH
MODULATION: DIGITAL

SUPERVISED BY: Morton Flom, P. Eng.

PAGE NO. 13 of 19.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g9940070: 1999-Apr-12 Mon 11:27:00
STATE: 2:High Power



POWER: HIGH
MODULATION: DIGITAL
99 % POWER BANDWIDTH

SUPERVISED BY: Morton Flom, P. Eng.

PAGE NO. 14 of 19.

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.

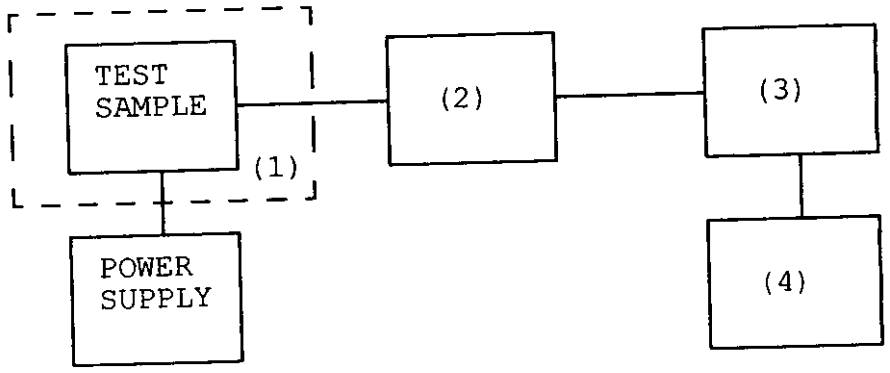
4. The temperature tests were performed for the worst case.

5. MEASUREMENT RESULTS: ATTACHED

PAGE NO. 15 of 19.

TRANSMITTER TEST SET-UP

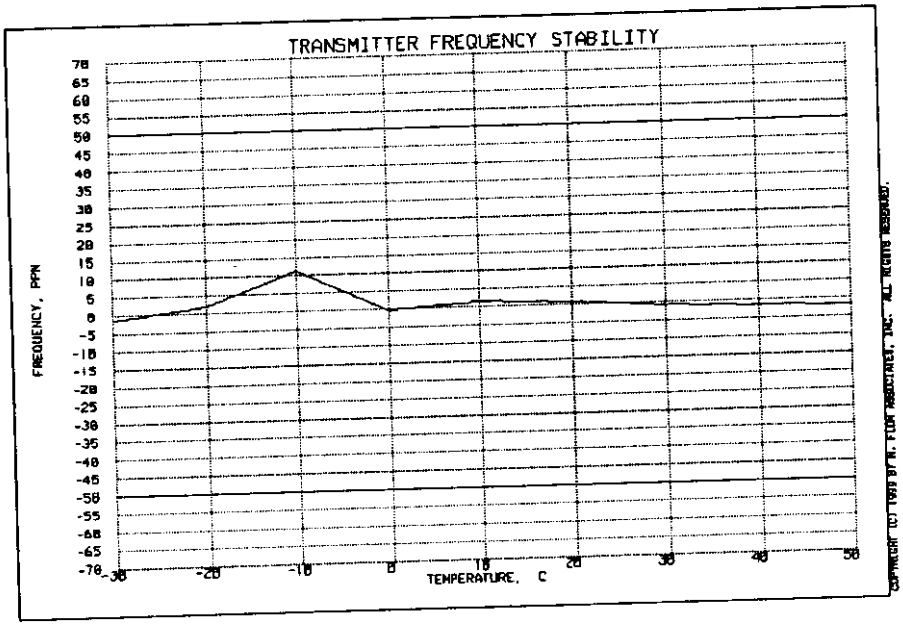
TEST A. OPERATIONAL STABILITY
TEST B. CARRIER FREQUENCY STABILITY
TEST C. OPERATIONAL PERFORMANCE STABILITY
TEST D. HUMIDITY
TEST E. VIBRATION
TEST F. ENVIRONMENTAL TEMPERATURE
TEST G. FREQUENCY STABILITY: TEMPERATURE VARIATION
TEST H. FREQUENCY STABILITY: VOLTAGE VARIATION



	Asset	Description	s/n
(1)		TEMPERATURE, HUMIDITY, VIBRATION	
x	i00027	Tenny Temp. Chamber	9083-765-234
	i00	Weber Humidity Chamber	
	i00	L.A.B. RVH 18-100	
(2)		COAXIAL ATTENUATOR	
	i00122	NARDA 766-10	7802
	i00123	NARDA 766-10	7802A
x	i00113	SIERRA 661A-3D	1059
	i00069	BIRD 8329 (30 dB)	10066
(3)		R.F. POWER	
	i00014	HP 435A POWER METER	1733A05839
x	i00039	HP 436A POWER METER	2709A26776
x	i00020	HP 8901A POWER MODE	2105A01087
(4)		FREQUENCY COUNTER	
	i00042	HP 5383A	1628A00959
x	i00019	HP 5334B	2704A00347
x	i00020	HP 8901A	2105A01087

PAGE NO. 16 of 19.

NAME OF TEST: Frequency Stability (Temperature Variation)
g9940054: 1999-Apr-12 Mon 14:24:00
STATE: 0:General



SUPERVISED BY:

Morton Flom, P. Eng.

PAGE NO. 17 of 19.

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)

g9940092: 1999-Apr-14 Wed 10:54:40
STATE: 0:General

LIMIT, ppm = 50
LIMIT, Hz = 33675
BATTERY END POINT (Voltage) = 2.3

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
85	2.55	739.499980	-20	-0.03
100	3	739.500000	0	0.00
115	3.45	739.499990	-10	-0.01
77	2.3	739.499910	-90	-0.12

SUPERVISED BY: Morton Flom, P. Eng.

PAGE NO. 18 of 19.

NAME OF TEST: Necessary Bandwidth and Emission Bandwidth

SPECIFICATION: 47 CFR 2.202(g)

MODULATION = 200KF3D

MEASURED AT 26 dbc POINTS = 150 kHz

SPECIFIED BY MANUFACTURER = 200 kHz

DE-MODULATED DATA PRESENTATION FOLLOWS

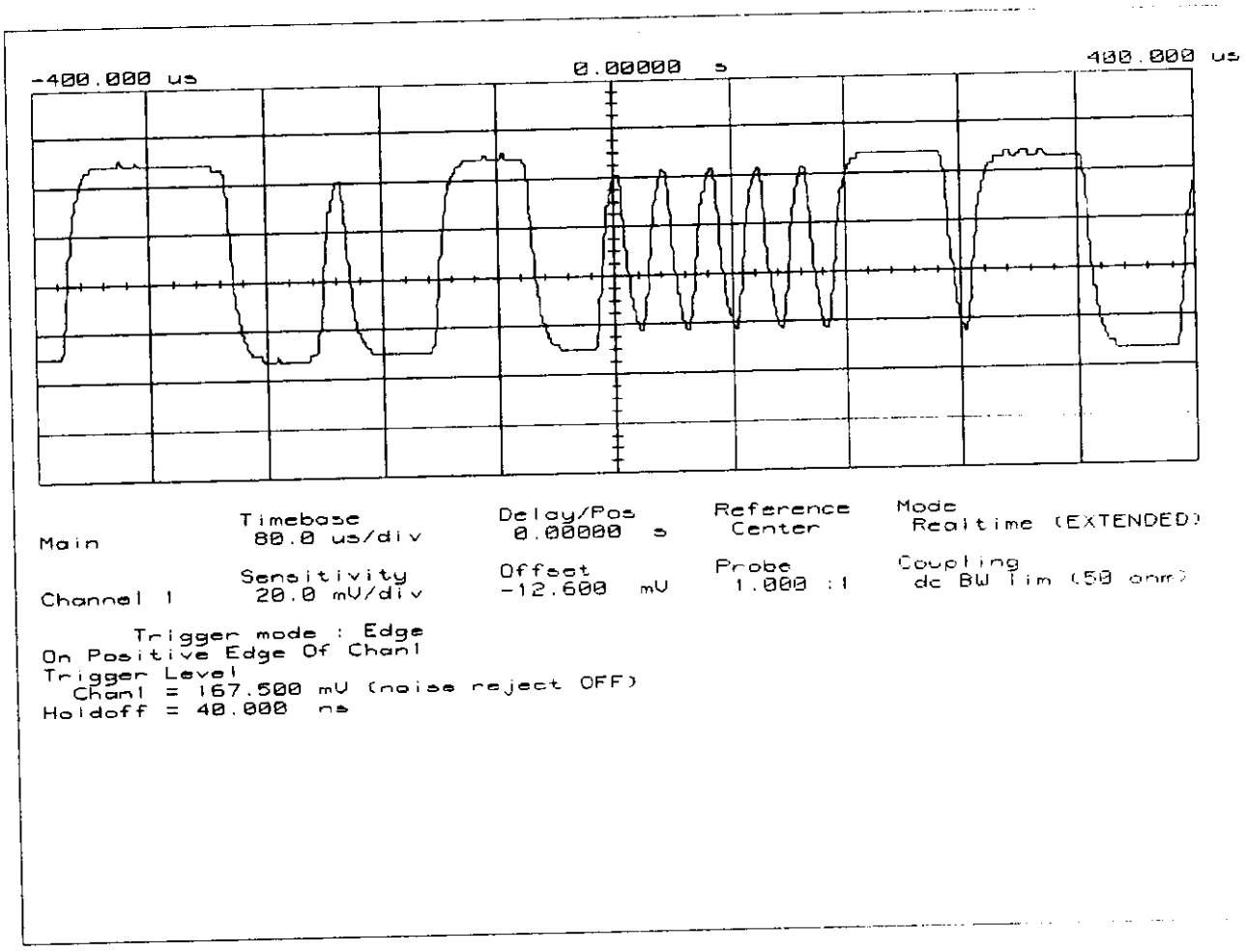
SUPERVISED BY: Morton Flom, P. Eng.

ADDENDUM*

FCC ID: B5DB11E

OSCILLOSCOPE PRESENTATION
TELEX, LT - 100E
1999-APR-12, 11:50, MON

POWER: HIGH
MODULATION: DIGITAL



*DE - MODULATED TRANSMITTER DATA OUTPUT