Date of Report: August 2, 2001
Date of Submission: August 21, 2001

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Telex Communications, Inc.
Equipment: Telex WT-1000
Electro Voice CSB-1000
FCC ID: B5DB113
FCC Rules: 74H

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,

Morton Flom, P. Eng.

enclosure(s)
cc: Applicant
MF/cvr
LIST OF EXHIBITS
(FCC CERTIFICATION (TRANSMITTERS) - REVISED 9/28/98)

APPLICANT: Telex Communications, Inc.

FCC ID: B5DB113

BY APPLICANT:

1. LETTER OF AUTHORIZATION

2. IDENTIFICATION DRAWINGS, 2.1033(c)(11)
- LABEL
- LOCATION OF LABEL
- COMPLIANCE STATEMENT
- LOCATION OF COMPLIANCE STATEMENT

3. PHOTOGRAPHS, 2.1033(c)(12)

4. DOCUMENTATION: 2.1033(c)
   (3) USER MANUAL
   (9) TUNE UP INFO
   (10) SCHEMATIC DIAGRAM
   (10) CIRCUIT DESCRIPTION
       BLOCK DIAGRAM
       PARTS LIST
       ACTIVE DEVICES

5. PART 90.203(e) & (g) ATTESTATION

BY M.F.A. INC.

A. TESTIMONIAL & STATEMENT OF CERTIFICATION

B. STATEMENT OF QUALIFICATIONS
TRANSMITTER CERTIFICATION

of

FCC ID: B5DB113
MODELS: Telex WT-1000 and Electro Voice CSB-1000

to

FEDERAL COMMUNICATIONS COMMISSION

Rule Part(s) 74H

DATE OF REPORT: August 2, 2001

ON THE BEHALF OF THE APPLICANT:

Telex Communications, Inc.

AT THE REQUEST OF: P.O. 238029

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

Attention of: Charles E. Conner, Project Engineer
(402) 467-5321; FAX: -3279
E-mail: charlie.conner@telex.com

SUPERVISED BY: Morton Flom, P. Eng.
THE APPLICANT HAS BEEN CAUTIONED AS TO THE FOLLOWING:

15.21 INFORMATION TO USER.

The user's 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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<td>34</td>
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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: d0180002

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

e) Identification: FCC ID: B5DB113
   Models: Telex WT-1000
   Electro Voice CSB-1000

   EUT Description: UHF FM Beltpack Transceiver

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

g) Report Date: August 2, 2001
   EUT Received: June 8, 2001

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.
LIST OF GENERAL INFORMATION REQUIRED FOR CERTIFICATION

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

74H

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: B5DB113

MODEL NOs: Telex WT-1000
Electro Voice CSB-1000

(c)(3): INSTRUCTION MANUAL(S):
PLEASE SEE ATTACHED EXHIBITS

(c)(4): TYPE OF EMISSION: 92K0F3E

(c)(5): FREQUENCY RANGE, MHz:
520 to 608
614 to 746

(c)(6): POWER RATING:
10 mw to 50 mw
__ Switchable ___ Variable ___ N/A

FCC GRANT NOTE: BE - The output power is continuously variable from the value listed in this entry to 15%-20% of the value listed.

(c)(7): MAXIMUM POWER RATING, Watts: .250

DUT RESULTS: Passes __x__ Fails ______
M. Flom Associates, Inc. is accredited by the American Association for Laboratory Association (A2LA) as shown in the scope below.

"This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report."

Should this report contain any data for tests for which we are not accredited, or which have been undertaken by a subcontractor that is not A2LA accredited, such data would not covered by this laboratory's A2LA accreditation.
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
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
____ 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)
____ 97 - Amateur Radio Service
____ 101 - Fixed Microwave Services
Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-1992/2000 Draft, 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°C to 40°C (50°F 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: R. F. Power Output (Radiated)

SPECIFICATION: 47 CFR 2.1046(a)

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 was calculated from the equation \( P_t = \frac{(E \times R)^2}{49.2} \) watts, where \( R = 3\text{m} \).

2. Measurement accuracy is ±1.5 dB.

MEASUREMENT RESULTS

g0170374: 2001-Jul-31 Tue 08:27:00
STATE: 2:High Power
AMPS MODE:

<table>
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<tr>
<th>FREQUENCY TUNED, MHz</th>
<th>FREQUENCY EMISSION, MHz</th>
<th>METER, dBuV/m</th>
<th>CF, dB</th>
<th>ERP, dBm</th>
<th>ERP, Milliwatts</th>
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<td>≤47.01</td>
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</table>
TRANSMITTER RADIATED MEASUREMENTS

Asset Description s/n
(as applicable)

(1) TRANSUDER
   i00091 EmCo 3115 001469
   i00089 Aprel Log Periodic 001500

(2) HIGH PASS FILTER
   i00 Narda µPAD (In-Band Only)
   Trilithic (Out-Of-Band Only)

(3) PREAMP
   i00028 HP 8449 (+30 dB) 2749A00121

(4) SPECTRUM ANALYZER
   i00048 HP 8566B 2511A01467
   i00057 HP 8557A 1531A00191
   i00029 HP 8563E 3213A00104
NAME OF TEST: Carrier Output Power (Conducted)

SPECIFICATION: 47 CFR 2.1046(a)

GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.1

TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The EUT was connected to a resistive coaxial attenuator of normal load impedance, and the unmodulated output power was measured by means of an R. F. Power Meter.

2. Measurement accuracy is ±3%.

MEASUREMENT RESULTS
(Worst case)

FREQUENCY OF CARRIER, MHz = 727.00, 722.2, 738.4

<table>
<thead>
<tr>
<th>POWER SETTING</th>
<th>R. F. POWER, MILLIWATTS</th>
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<td>ERP</td>
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<tr>
<td>ERP</td>
<td>50</td>
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</table>
TRANSMITTER POWER CONDUCTED MEASUREMENTS

TEST 1: R. F. POWER OUTPUT
TEST 2: FREQUENCY STABILITY

Asset Description                               s/n
(as applicable)

(1) COAXIAL ATTENUATOR
    i00122 Narda 766-10                     7802
    i00123 Narda 766-10                     7802A
    i00069 Bird 8329 (30 dB)                1006
    i00113 Sierra 661A-3D                   1059

(2) POWER METERS
    i00014 HP 435A                         1733A05836
    i00039 HP 436A                         2709A26776
    i00020 HP 8901A POWER MODE              2105A01087

(3) FREQUENCY COUNTER
    i00042 HP 5383A                         1628A00959
    i00019 HP 5334B                         2704A00347
    i00020 HP 8901A FREQUENCY MODE          2105A01087
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 = 727.00, 722.2, 738.4
   SPECTRUM SEARCHED, GHz = 0 to 10 x Fc
   MAXIMUM RESPONSE, Hz = 12600
   ALL OTHER EMISSIONS = ≥ 20 dB BELOW LIMIT

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
TRANSMITTER SPURIOUS EMISSION

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

<table>
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<tr>
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<th>Sample</th>
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<tr>
<td>(1)</td>
<td>Test Sample</td>
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<tr>
<td>(2)</td>
<td>Power Supply</td>
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<td>(3)</td>
<td>(4)</td>
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Asset Description s/n
(as applicable)

(1) AUDIO OSCILLATOR/GENERATOR
i00010 HP 204D 1105A04683
i00017 HP 8903A 2216A01753
i00012 HP 3312A 1432A11250

(2) COAXIAL ATTENUATOR
i00122 Narda 766-10 7802
i00123 Narda 766-10 7802A
i00069 Bird 8329 (30 dB) 1006
i00113 Sierra 661A-3D 1059

(3) FILTERS; NOTCH, HP, LP, BP
i00126 Eagle TNF-1 100-250
i00125 Eagle TNF-1 50-60
i00124 Eagle TNF-1 250-850

(4) SPECTRUM ANALYZER
i00048 HP 8566B 2511A01467
i00029 HP 8563E 3213A00104

MFA p0170012, d0180002
NAME OF TEST: Unwanted Emissions (Transmitter Conducted)

LIMIT(S), dBC: \( -(43+10\times\log P) = -30 \) (0 Watts)

STATE: 2: High Power  g0170373: 2001-Jul-30 Mon 14:25:00

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<th>FREQUENCY TUNED, MHz</th>
<th>FREQUENCY EMISSION, MHz</th>
<th>LEVEL, dBm</th>
<th>LEVEL, dBC</th>
<th>MARGIN, dB</th>
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<tr>
<td>727.000000</td>
<td>10177.984000</td>
<td>-59.9</td>
<td>-76.8</td>
<td>-46.9</td>
</tr>
<tr>
<td>738.400000</td>
<td>10337.778000</td>
<td>-60.8</td>
<td>-77.7</td>
<td>-47.8</td>
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<td>722.200000</td>
<td>10833.357000</td>
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<tr>
<td>727.000000</td>
<td>10905.075000</td>
<td>-60</td>
<td>-76.9</td>
<td>-47</td>
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<tr>
<td>738.400000</td>
<td>11075.756000</td>
<td>-60.5</td>
<td>-77.4</td>
<td>-47.5</td>
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</tbody>
</table>

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
NAME OF TEST: Field Strength of Spurious Radiation
SPECIFICATION: 47 CFR 2.1053(a)

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 \( \leq 3 \text{ kHz} \).
   2) Video Bandwidth \( \geq 10 \text{ kHz} \)
   3) Sweep Speed \( \leq 2000 \text{ Hz/second} \)
   4) Detector Mode = Positive Peak

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.
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 ± 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:

Radiated spurious emissions dB = 10log_{10}(TX power in watts/0.001) - the levels in step L)

NOTE: It is permissible that other antennas provided can be referenced to a dipole.

Test Equipment:

<table>
<thead>
<tr>
<th>Asset Description</th>
<th>s/n</th>
<th>Cycle</th>
<th>Last Cal</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSDUCER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMCO 3109-B 25MHz-300MHz</td>
<td>2336</td>
<td>12 mo.</td>
<td>Sep-00</td>
</tr>
<tr>
<td>EMCO 3301-B Active Monopole</td>
<td>2635</td>
<td>12 mo.</td>
<td>Sep-00</td>
</tr>
<tr>
<td>Aprel 2001 200MHz-1GHz</td>
<td>001500</td>
<td>12 mo.</td>
<td>Sep-00</td>
</tr>
<tr>
<td>EMCO 3115 1GHz-18GHz</td>
<td>9208-3925</td>
<td>12 mo.</td>
<td>Sep-00</td>
</tr>
<tr>
<td>AMPLIFIER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HP 8449A</td>
<td>2749A00121</td>
<td>12 mo.</td>
<td>Mar-01</td>
</tr>
<tr>
<td>SPECTRUM ANALYZER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HP 8563E</td>
<td>3213A00104</td>
<td>12 mo.</td>
<td>Aug-01</td>
</tr>
<tr>
<td>HP 85462A</td>
<td>3625A00357</td>
<td>12 mo.</td>
<td>May-01</td>
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<tr>
<td>HP 8566B</td>
<td>2511AD1467</td>
<td>6 mo.</td>
<td>Nov-00</td>
</tr>
<tr>
<td>MICROPHONE, ANTENNA PORT, AND CABELING</td>
<td>Cable Length ______ Meters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microphone</td>
<td>Yes/No Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antenna Port Terminated</td>
<td>Yes/No Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Ports Terminated by Load</td>
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FCC ID: B5DB113
NAME OF TEST: Field Strength of Spurious Radiation

g0170375: 2001-Jul-31 Tue 09:10:00
STATE: 2:High Power

<table>
<thead>
<tr>
<th>FREQUENCY TUNED, MHz</th>
<th>FREQUENCY EMISSION, MHz</th>
<th>METER, dBuV</th>
<th>CF, dB</th>
<th>ERP, dBm</th>
<th>ERP, dbc</th>
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</thead>
<tbody>
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<td>727.0000000</td>
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<td>60.33</td>
<td>1.66</td>
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<td>≤-46.2</td>
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<td>727.0000000</td>
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<td>13.11</td>
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</table>

SUPERVISED BY: Doug Noble, B.A.S. E.E.T.
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/±1.25 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
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170366: 2001-Jul-30 Mon 14:05:00
STATE: 2:High Power

POWER: HIGH
MODULATION: NONE

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170367: 2001-Jul-30 Mon 14:08:00
STATE: 2:High Power

PAGE NO. 20 of 34.

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170372: 2001-Jul-30 Mon 14:14:00
STATE: 2:High Power

POWER: HIGH
MODULATION: 15000 HZ @ 20 DB ABOVE REFERENCE LEVEL
99 % POWER BANDWIDTH

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170369: 2001-Jul-30 Mon 14:10:00
STATE: 2:High Power

POWER: HIGH
MODULATION: 2500 HZ @ 20 DB ABOVE REFERENCE LEVEL
MASK: Wireless Mic, 74.861

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170370: 2001-Jul-30 Mon 14:12:00
STATE: 2:High Power

POWER: HIGH
MODULATION: 2500 HZ @ 20 DB ABOVE REFERENCE LEVEL
99 % POWER BANDWIDTH

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170368: 2001-Jul-30 Mon 14:09:00
STATE: 2:High Power

POWER: HIGH
MODULATION: 5000 HZ @ 20 DB ABOVE
REFERENCE LEVEL
MASK: Wireless Mic, 74.861

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170371: 2001-Jul-30 Mon 14:13:00
STATE: 2:High Power

POWER:
MODULATION: HIGH
5000 HZ @ 20 DB ABOVE REFERENCE LEVEL
99 % POWER BANDWIDTH

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
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
NAME OF TEST: Audio Frequency Response

g0170299: 2001-Jul-30 Mon 10:53:00
STATE: 0:General

Frequency of Maximum Audio Response, Hz = 12600

Additional points:

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<thead>
<tr>
<th>FREQUENCY, Hz</th>
<th>LEVEL, dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
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<td>20000</td>
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<td>30000</td>
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<tr>
<td>50000</td>
<td>-24.58</td>
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</tbody>
</table>

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
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
NAME OF TEST: Modulation Limiting

g0170304: 2001-Jul-30 Mon 11:27:00
STATE: 0:General

Positive Peaks:

Negative Peaks:

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
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 \(-30^\circ C\) 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 \(10^\circ C\) 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
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

<table>
<thead>
<tr>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>(1) TEMPERATURE, HUMIDITY, VIBRATION</td>
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<tr>
<td>i00027 Tenney Temp. Chamber</td>
<td>9083-765-234</td>
</tr>
<tr>
<td>i00 Weber Humidity Chamber</td>
<td></td>
</tr>
<tr>
<td>i00 L.A.B. RVH 18-100</td>
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<tr>
<td>(2) COAXIAL ATTENUATOR</td>
<td></td>
</tr>
<tr>
<td>i00122 NARDA 766-10</td>
<td>7802</td>
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<td>i00123 NARDA 766-10</td>
<td>7802A</td>
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<tr>
<td>i00113 SIERRA 661A-3D</td>
<td>1059</td>
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<tr>
<td>i00069 BIRD 8329 (30 dB)</td>
<td>10066</td>
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<td>(3) R.F. POWER</td>
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<tr>
<td>i00014 HP 435A POWER METER</td>
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<td>i00039 HP 436A POWER METER</td>
<td>2709A26776</td>
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<td>i00020 HP 8901A POWER MODE</td>
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<td>(4) FREQUENCY COUNTER</td>
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<td>i00042 HP 5383A</td>
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<td>i00019 HP 5334B</td>
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<tr>
<td>i00020 HP 8901A</td>
<td>2105A01087</td>
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</table>
NAME OF TEST: Frequency Stability (Temperature Variation)
g0170352: 2001-Jul-30 Mon 20:07:47
STATE: 0:General

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
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)

STATE: 0:General

<table>
<thead>
<tr>
<th>% of STV</th>
<th>Voltage</th>
<th>Frequency, MHz</th>
<th>Change, Hz</th>
<th>Change, ppm</th>
</tr>
</thead>
<tbody>
<tr>
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<td>726.999970</td>
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<td>-0.04</td>
</tr>
<tr>
<td>100</td>
<td>9</td>
<td>727.000000</td>
<td>0</td>
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<tr>
<td>115</td>
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<td>-0.04</td>
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<td>80</td>
<td>7.2</td>
<td>726.999950</td>
<td>-50</td>
<td>-0.07</td>
</tr>
</tbody>
</table>

LIMIT, ppm = 50
LIMIT, Hz = 36350
BATTERY END POINT (Voltage) = 7.2

PERFORMED BY: Doug Noble, B.A.S. E.E.T.
NAME OF TEST: Necessary Bandwidth and Emission Bandwidth

SPECIFICATION: 47 CFR 2.202(g)

MODULATION = 92K0F3E

NECESSARY BANDWIDTH CALCULATION:

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<th>Value</th>
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<tr>
<td>MAXIMUM DEVIATION (D), kHz</td>
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<tr>
<td>CONSTANT FACTOR (K)</td>
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<td>NECESSARY BANDWIDTH (B_N), kHz</td>
<td>(2xM)+(2xDxK)</td>
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<tr>
<td></td>
<td>92, Measured</td>
</tr>
</tbody>
</table>

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

END OF TEST REPORT
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.