



Flom Test Labs
EMI, EMC, RF Testing Experts Since 1963

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Date: August 15, 2006

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Telex Communications, Inc.
Equipment: REV-H C1, C3, C5
FCC ID: B5DH221
FCC Rules: Radiofrequency Radiation Exposure Limits
47 CFR 1.1310
MPE - Mobiles _____ Fixed Based Station _____

Gentlemen:

On behalf of the Applicant, enclosed please find the Supplemental Test Data Report, the whole for Environmental Assessment (MPE) of the referenced equipment as shown.

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,

Hoosamuddin S Bandukwala, Senior Test Engineer

Flom Test Labs
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

FCC ID: B5DH221
MFA p0650013, d0680040



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Environmental Assessment
for
Mobiles/Fixed Base Station
for
FCC ID: FCC ID: B5DH221
Model:REV-H C1, C3, C5
to
Federal Communications Commission
47 CFR 1.1310 (MPE)

Radiofrequency Radiation Exposure Limits

Date Of Report: August 15, 2006

On the Behalf of the Applicant:

Telex Communications, Inc.

At the Request of:

P.O. 346167

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@us.telex.com
Jim Andersen
Email: jim.andersen@us.telex.com

Supervised By:

Hoosamuddin S Bandukwala, Senior Test
Engineer

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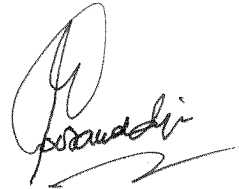
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Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

- a) **Test Report (Supplemental)**
- 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: d0680040
- d) Client: Telex Communications, Inc.
 8601 E. Cornhusker Highway
 P.O. Box 5579
 Lincoln, NE 68505-5579
- e) Identification: REV-H C1, C3, C5
 FCC ID: B5DH221
 Description: Handheld Microphone Transmitter
- f) EUT Condition: Not required unless specified in individual tests.
- g) Report Date: August 15, 2006
 EUT Received: 2006-May-23
- 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:



Hoosamuddin S Bandukwala, Senior Test Engineer

- 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.

Identification of the Equipment Under Test (EUT)

Name and Address of Applicant:

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

Manufacturer:

Telex Communications, Inc.

FCC ID:

B5DH221

Model Number:

REV-H C1, C3, C5

Description:

Handheld Microphone Transmitter

Type of Emission:**Frequency Range, MHz:**

614.1 to
6xx to
722 to 746.000

Power Rating, Watts:

_____ Switchable

_____ Variable

_____ N/A

Modulation:

_____ AMPS

_____ TDMA

_____ CDMA

_____ OTHER

Antenna:

_____ Helical

_____ Monopole

_____ Whip

_____ Other

Note: For RF Safety test antenna gain taken at the upper range of expected gain (i.e. 0 dBd) and RF Power set to highest nominal power across all channels.




Standard Test Conditions and Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-2003 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° 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.

 <p style="text-align: center;">AZLA</p> <p style="text-align: center;">THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION</p> <p style="text-align: center;">ACCREDITED LABORATORY</p> <p>AZLA has accredited</p> <p style="text-align: center;">M. FLOM ASSOCIATES, INC. Chandler, AZ</p> <p>for technical competence in the field of</p> <p style="text-align: center;">Electrical Testing</p> <p><small>The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025:1999 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing.</small></p> <p><small>Presented this 14th day of June 2004</small></p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;">  <small>President For the Accreditation Council Certificate Number: 2152-01 Valid to August 31, 2006</small> </div> </div> <p><small>For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.</small></p>	<p>A2LA</p> <hr/> <p>“A2LA has accredited M. Flom Associates, Inc. Chandler, AZ for technical competence in the field of Electrical Testing. The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 – 1999 ‘General Requirements for the Competence of Testing and Calibration Laboratories’ and any additional program requirements in the identified field of testing.”</p> <hr/> <p>Certificate Number: 2152-01</p>
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Name of Test: Environmental Assessment

Specification: FCC: 47 CFR 1.1310

Measurement Guide: ANSI/IEEE C95.1 1992

Test Equipment: Maximum Permissible Exposure (MPE) measurement system, consisting of:
Narda 8717-1174R, Radiation meter
Narda 8761D, E-field probe (300 kHz – 3 GHz)
(Calibrated Nov-98)

Measurement Procedure:

1. The following measurements were performed with a Narda probe using ANSI/IEEE C95.1 as a guide.
2. Prior to making any measurements, the measurements system was calibrated in accordance with the manufacturer's procedures.
3. The EUT's radiating element (antenna) was placed on a 1 m tall table for ease of testing. For equipment normally operated on a metal surface, a ground plane was used.
4. The remaining equipment necessary to operate the EUT was maintained at a distance from the measurement arrangement suitable to minimize interference with the measurements.
5. The minimum safe distance was calculated from the formula Power Density = $EIRP / 4\pi R^2$ (Peak Watts/m²). The calculation is shown with the measurement data.
6. With the EUT operating at maximum power, a search was initiated for worst case emissions with the probe raised and lowered over a range of 0.2 to 2 meters in height and over a horizontal plane of 0° to 360°.
7. Average values were calculated for the whole body (0.2-2.0m), lower body (0.2-0.8m) and upper body (1.0-2.0m).

Results: Attached.

Name of Test: R.F. Radiation Exposure

FCC Rules: 1.1307, 1.1310, 1.1311, 2.1091
Description, EUT: See page 2 of Test Report

Limits: Controlled Exposure
 47 CFR 1.1310
 Table 1, (A)

0.3-3.0 MHz:	Limit [mW/cm ²] = 100
3.0-30 MHz:	Limit [mW/cm ²] = (900/f ²)
30-300 MHz:	Limit [mW/cm ²] = 1.0
300-1500 MHz:	Limit [mW/cm ²] = f/300
1500-100,000 MHz:	Limit [mW/cm ²] = 5.0

Limits: Uncontrolled Exposure
 47 CFR 1.1310
 Table 1, (B)

0.3-1.234 MHz:	Limit [mW/cm ²] = 100
1.34-30 MHz:	Limit [mW/cm ²] = (180/f ²)
30-300 MHz:	Limit [mW/cm ²] = 0.2
300-1500 MHz:	Limit [mW/cm ²] = f/1500
1500-100,000 MHz:	Limit [mW/cm ²] = 1.0

Test Frequencies, MHz
Power, Conducted, W =
Antenna Gain = 0 dB
Antenna Model ¼ Wave Whip

Pre-test Calculations

$$\text{Power}_{[W \text{ EIRP}]} = P_{[\text{conducted}]} \times G_{[\text{antenna}]} =$$

$$\text{Limit}_{[mW/cm^2]} =$$

$$\text{Limit}_{[W/m^2]} = 10 \times \text{Limit}_{[mW/cm^2]} =$$

$$R_{[m]} = [P_{[W \text{ EIRP}]} / (4\pi \times \text{Limit}_{[W/m^2]})]^{1/2} =$$

Results at tested distances	Probe Height, m	Power Density, mW/cm ²		
		Freq. MHz Distance cm	Freq. MHz Distance cm	Freq. MHz Distance cm
	2.0			
	1.8			
	1.6			
	1.4			
	1.2			
	1.0			
	0.8			
	0.6			
	0.4			
	0.2			

Power Density Calculations: The measured power density readings were summed and the results divided by the number of readings to calculate the average.

	MHz	MHz	MHz
Whole body average (0.2 - 0.8 m, mW/cm ²) =			
Lower body average (0.2 - 0.8 m, mW/cm ²) =			
Upper body average (1.0 - 2.0 m, mW/cm ²) =			

Name of Test: R.F. Radiation Exposure

FCC Rules: 1.1307, 1.1310, 1.1311, 2.1091
Description, EUT: See page 2 of Test Report

Test Frequency, MHz: =
Antenna Gain: = 0 dB
Antenna Model:

¼ Wave _____ ? Wave _____ Other dBd _____ Other _____

Limits: Controlled Exposure
 47 CFR 1.1310
 Table 1, (A)

0.3-3.0 MHz:	Limit [mW/cm ²] = 100
3.0-30 MHz:	Limit [mW/cm ²] = (900/f ²)
30-300 MHz:	Limit [mW/cm ²] = 1.0
300-1500 MHz:	Limit [mW/cm ²] = f/300
1500-100,000 MHz:	Limit [mW/cm ²] = 5.0

Limits: Uncontrolled Exposure
 47 CFR 1.1310
 Table 1, (B)

0.3-1.234 MHz:	Limit [mW/cm ²] = 100
1.34-30 MHz:	Limit [mW/cm ²] = (180/f ²)
30-300 MHz:	Limit [mW/cm ²] = 0.2
300-1500 MHz:	Limit [mW/cm ²] = f/1500
1500-100,000 MHz:	Limit [mW/cm ²] = 1.0

Pre-test Calculations

$$\text{Power}_{[W \text{ EIRP}]} = P_{[\text{conducted}]} \times G_{[\text{antenna}]} =$$

$$\text{Limit}_{[mW/cm^2]} =$$

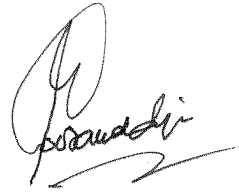
$$\text{Limit}_{[W/m^2]} = 10 \times \text{Limit}_{[mW/cm^2]} =$$

$$R_{[m]} = [P_{[W \text{ EIRP}]} / (4\pi \times \text{Limit}_{[W/m^2]})]^{1/2} =$$

Results: at tested distance	Probe Height, m	Power Density, mW/cm ²
	2.0	
	1.8	
	1.6	
	1.4	
	1.2	
	1.0	
	0.8	
	0.6	
	0.4	
	0.2	

Power Density Calculations: The measured power density readings were summed and the results divided by the number of readings to calculate the average.

For whole body: Average of 0.2 to 2.0 m, mW/cm² =
 For lower body: Average of 0.2 to 0.8 m, mW/cm² =
 For upper body: Average of 1.0 to 2.0 m, mW/cm² =



Supervised By:

Hoosamuddin S Bandukwala, Senior Test
Engineer

(The following will be placed in the Instruction Manual)

Mandatory Safety Instructions to Installers & Users

Use only manufacturer or dealer supplied antenna.

Antenna Minimum Safe Distance: .

Antenna Gain: zero dBd referenced to a dipole.

The Federal Communications Commission has adopted a safety standard for human exposure to RF (Radio Frequency) energy which is below the OSHA (Occupational Safety and Health Act) limits.

Antenna Mounting: The antenna supplied by the manufacturer or radio dealer must not be mounted at a location such that during radio transmission, any person or persons can come closer than the above indicated minimum safe distance to the antenna i.e. .

To comply with current FCC RF Exposure limits, the antenna must be installed at or exceeding the minimum safe distance shown above, and in accordance with the requirements of the antenna manufacturer or supplier.

Base Station Installation: The antenna should be fixed-mounted on an outdoor permanent structure. RF Exposure compliance must be addressed at the time of installation.

Antenna Substitution: Do not substitute any antenna for the one supplied or recommended by the manufacturer or radio dealer. You may be exposing person or persons to excess radio frequency radiation. You may contact your radio dealer or the manufacturer for further instructions.

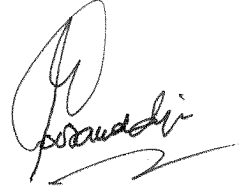
Warning: Maintain a separation distance from the antenna to a person(s) of at least .

You, as the qualified end-user of this radio device must control the exposure conditions of bystanders to ensure the minimum separation distance (above) is maintained between the antenna and nearby persons for satisfying RF Exposure compliance. The operation of this transmitter must satisfy the requirements of Occupational/Controlled Exposure Environment, for work-related use. Transmit only when person(s) are at least the minimum distance from the properly installed, externally mounted antenna.

**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:

Hoosamuddin S Bandukwala, Senior Test
Engineer