DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR TRANSMITTER TEST SET LITCOM MODEL NO. 4400

Headquarters, Department of the Army, Washington, D. C.
23 February 1972

Section I. GENERAL

1.Purpose and Scope

a. This bulletin contains calibration instructions for Transmitter Test Set, Litcom Model No. 4400 (transmitter test set), and is used by maintenance calibration personnel. Since maintenance calibration personnel are trained and qualified in the use of test and measuring equipment, detailed instructions concerning the operation and use of these equipments are not contained in this bulletin.

b. Integrated within this bulletin is an illustration which shows front panel controls and indicators.

2. Reporting of Technical Bulletin Improvements

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commanding General, US Army Electronics Command, ATTN: AMSEL-MA-CFA, Fort Monmouth, N. J. 07703.

3. Description

The transmitter test set is a portable equipment that provides maintenance support for subassemblies contained in Transmitting Set, Radio AN/"FRT-76 and Transmitting Set, Radio AN/FRT-77. The transmitter test set enables direct support maintenance

personnel to test and troubleshoot servomotors and overload protection circuits in the AN. FRT-76 and AN FRT-77. The subassemblies under test are activated by stimuli, generated in the transmitter test set, which simulate actual operating conditions. A front panel meter and indicator are provided for monitoring. The transmitter test set overall assembly is housed in an aluminum transit case. The transit case consists of a base and detachable cover. The cover contains a removable plate which stores the accessory items supplied with the transmitter test set such as cables. The plate is secured to the cover by four fasteners. All operating controls of the transmitter test set are mounted on the front panel assembly. Two handles are provided on the front panel assembly for convenience in removal of the transmitter test set overall assembly from the transit case for servicing. The front panel controls and indicators of the transmitter test set are illustrated in figure 1. Additional data is listed in a, b, and c below.

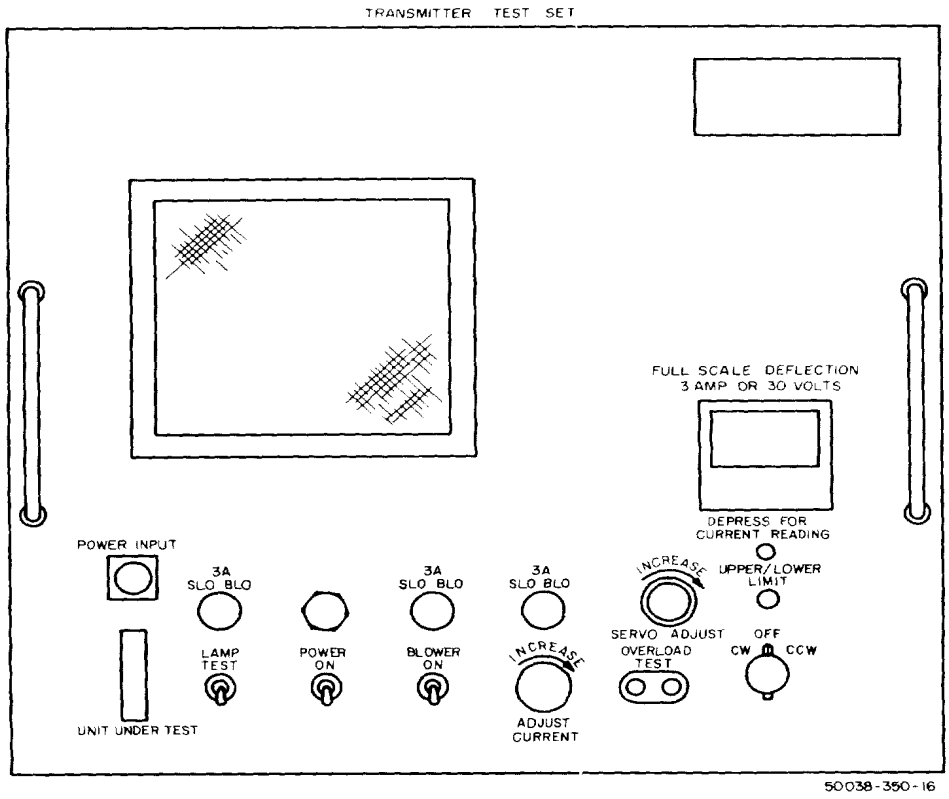

Figure 1. Transmitter test set controls and indicators.

a. Identification.

Nomenclature	Transmitter Test Set Litcom model 4400.
Size	21 1/2 by 22½ by 24 1/2
Weight	70 lbs (approx)

b. Specifications.

Input requirement	103.5 to 126.5 volts ac, 54 to 66 Hz, single-phase.
Power supply output voltage	+24 volts, de (+ 2 percent)

c. Program Data.

Calibration interval	In accordance with TB 750-236
Time required for calibration	30 minutes.
Calibration level	Maintenance

4. General Instructions

a. Calibration Reporting. During the performance of the calibration procedures included in this manual, annotate DA Form 2416 (Calibration Data Card) in accordance with TM 38-750.

b. Removal. Remove unit under test main assembly from its protective case to perform calibration procedures.

c. Unit Under Test. Transmitter test set will be referred to as "unit under test" throughout this procedure.

Section II. CALIBRATION

5. Equipment Required

Equipment required for calibration performance checks and adjustments is listed in table 1.

NOTE

Minimum use specifications are the principal parameters required for performance of the calibration and are included to assist in the selection of alternate equipment which may be used at the discretion of the calibrating activity. Satisfactory performance of alternate items shall be verified prior to use. All applicable equipment must bear evidence of current calibration.

Table 1. Equipment Required

Item	Minimum use specification if	Calibration equipment	Military equivalent
Dc voltmeter----------	24 Volts dc, + 1 percent.	John Fluke model 803B.	ME-202/U

1 The calibration equipment utilized in this procedure was selected from those known to be available at Department of Defense facilities and the listing by make or model number carries no implication of preference, recommendation, or approval by the Department of Defense for use by other agencies. It is recognized that equivalent equipment produced by other manufacturers may be capable of equally satisfactory performance in the procedure.

NOTE

It is recommended that personnel familiarize themselves with the entire procedure before performing calibration.

6. Preliminary Procedure

This section includes instructions to prepare the unit under test for the calibration procedures outlined in paragraph 7. This preliminary operating procedure places the power supply (PS1) in the unit under test in a turned-on condition. Verify the results of the following turn-on and take corrective action if the requirements are not met, before proceeding.

a. Remove screws securing main assembly to protective case.

b. Carefully remove main assembly from protective case and place on workbench up side down to expose terminal board TB2 and circuit card.

c. Operate CW/CCW switch to OFF and BLOWER switch to off (down) position.

d. Set ADJUST CURRENT and SERVO ADJUST controls fully counterclockwise.

e. Operate POWER switch to ON. Observe that POWER indicator illuminates.

NOTE

The following paragraph is divided into subparagraph *a, Performance Check*, and subparagraph *b, Adjustments*. When the performance check is within tolerance do not perform the corresponding adjustment. When the performance check is not within tolerance, perform the corresponding adjustment before continuing with the calibration procedure. When the performance check is not within tolerance and the adjustment cannot bring it into tolerance, the deficiency must be corrected before continuing with the procedure.

7. Power Supply PSI Calibration

a. Performance Check.

(1) Connect dc voltmeter to test points TB2-1 (+) and TB2-3 (-) on unit under test.

(2) Observe that dc voltmeter indicates between 23.5 and 24.5 volts dc.

b. Adjustments. Rotate voltage adjust potentiometer on power supply circuit card to obtain 24-volts dc indication on dc voltmeter.

8. Final Procedure

a. Deenergize unit under test, disconnect dc voltmeter, and reinstall main assembly in protective case.

b. In accordance with TM 38-750, annotate and affix calibration DA Label 80 (U.S. Army Calibration System). When the unit under test cannot be adjusted to within tolerance, annotate and affix DA Form 2417 (Unserviceable Test Instrument or Limited Use Tag).

By Order of the Secretary of the Army:

W. C. WESTMORELAND,
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Chief of Staff.

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The Adjutant General.

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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