*TB 9-6625-2003-24

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR OUTPUT METERS TS-585A/U, TS-585B/U, TS-585C/U, AND TS-585D/U

Headquarters, Department of the Army, Washington, DC
11 October 2007

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also send in your comments electronically to our E-mail address: 2028@redstone.army.mil or by fax 256-842-6546/DSN 788-6546. For the World Wide Web use: https://amcom2028.redstone.army.mil. Instructions for sending an electronic 2028 can be found at the back of this manual.

*This bulletin supersedes TB 9-6625-2003-35, 18 September 1985.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Output Meters TS-585A/U, TS-585B/U, TS-585C/U, and TS-585D/U. The manufacturers' manuals were used as the prime data sources in compiling these instructions. The equipment being calibrated will be referred to as the TI (test instrument) throughout this bulletin.

a. Model Variations. Variations are described in the text.

b. Time and Technique. The time required for this calibration is approximately 2 hours, using the dc and low frequency technique.

2. Forms, Records, and Reports

a. Forms, records, and reports required for calibration personnel at all levels are prescribed by TB 750-25.

b. Adjustments to be reported are designated (R) at the end of the sentence in which they appear. Report only those adjustments made and designated with (R).

3. Calibration Description. TI parameters and performance applications which pertain to this calibration are listed in table 1.

Table 1. Calibration Description

Test instrument parameters	Performance specifications
Power	Range: 0.1 to 5000 mW (-10 to +37 dBm) Accuracy: ± 6% for TS-585A/U ± 5% for other models
Input impedance	Range: 2.5 to 20,000Ω Accuracy: ± 7% for TS-585A/U ± 5% for other models
Frequency	Range: 20 to 10,000 Hz for TS-585A/U 30 to 10,000 Hz for other models Accuracy: ± 0.5 dB, 150 to 2500 Hz ± 1.5 dB, 20 and 10,000 Hz

SECTION II
EQUIPMENT REQUIREMENTS

4. Equipment Required. Table 2 identifies the specific equipment to be used in this calibration procedure. This equipment is issued with Secondary Transfer Calibration Standards Sets AN/GSM-286, AN/GSM-287 and AN/GSM-705. Alternate items may be used by the calibrating activity. The items selected must be verified to perform satisfactorily prior to use and must bear evidence of current calibration. The equipment must meet or exceed the minimum use specifications listed in table 2. The accuracies listed in table 2 provide a four-to-one ratio between the standard and TI. Where the four-to-one

ratio cannot be met, the four-to-one accuracy of the equipment selected is shown in parenthesis.

5. Accessories Required. The accessories required for this calibration are common usage accessories, issued as indicated in paragraph **4** above, and are not listed in this calibration procedure. When necessary, these items may be substituted by equivalent items, unless specifically prohibited.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
CALIBRATOR	Range: 1 to 246.47 V 35 Hz to 15 kHz Accuracy: ± 0.5%	Fluke, Model 5720A (5720A) (p/o MIS-35947); w amplifier, Fluke 5725A/AR (5725A/AR)
MULTIMETER	Range: 1 to 246.47 v ac Accuracy: [1]	Agilent, Model 3458A (3458A)
RESISTANCE STANDARD	Range: 0 to 20,400 Ω Accuracy: [1]	Biddle-Gray, Model 71-650 (71-650)

[1]Combined accuracy of multimeter and resistance standard, ± 0.5%.

SECTION III
CALIBRATION PROCESS

6. Preliminary Instructions

a. The instructions outlined in paragraphs **6** and **7** are preparatory to the calibration process. Personnel should become familiar with the entire bulletin before beginning the calibration.

b. Items of equipment used in this procedure are referenced within the text by common name as listed in tables 2.

c. Unless otherwise specified, verify the result of each test and, whenever the test requirement is not met, take corrective action before continuing with the calibration. Adjustments required to calibrate the TI are included in this procedure. Additional maintenance information is contained in the manufacturer's manual for this TI.

d. Unless otherwise specified, all controls and control settings refer to the TI.

7. Equipment Setup

WARNING

HIGH VOLTAGE is used or exposed during the performance of this calibration. DEATH ON CONTACT may result if personnel fail to observe safety precautions. REDUCE OUTPUT(S) to minimum after each step within the performance check where applicable.

a. Remove TI from protective cover only if necessary to make adjustments.

b. Adjust meter mechanical zero, if necessary. (Not on some models.)

c. Set impedance switches to **X1-25** and **DECIBELS MULTIPLY BY** switch to **+ 20-100.**

d. Connect equipment as shown in figure 1.

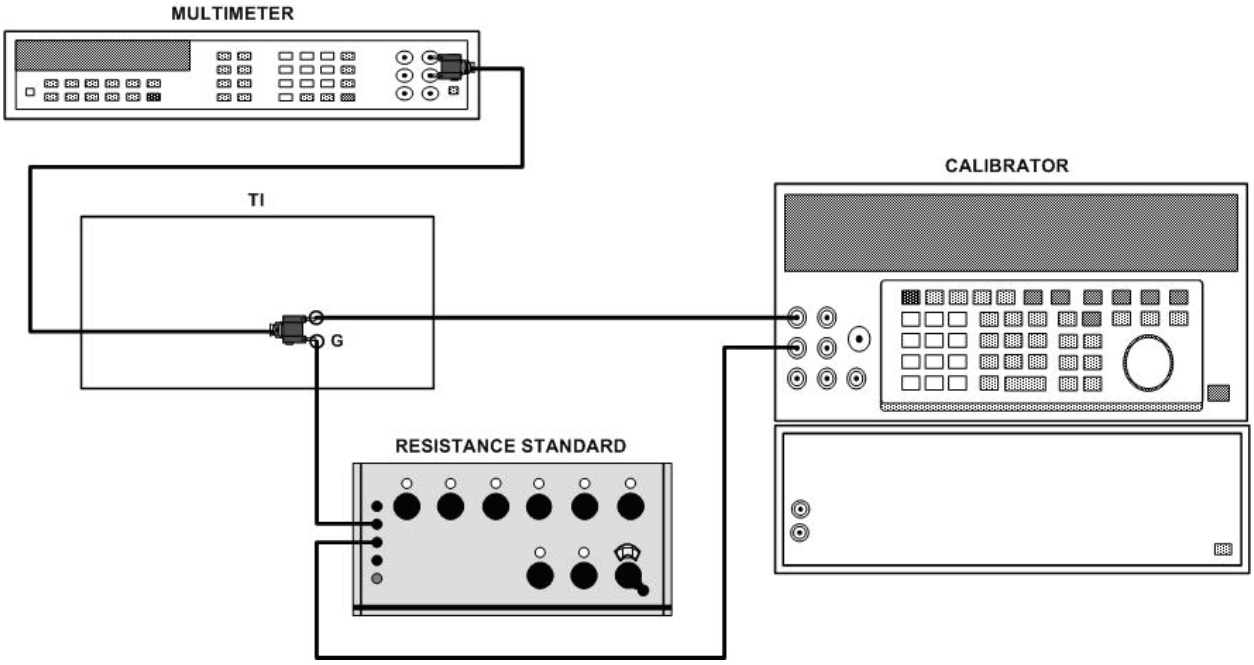


Figure 1. Impedance accuracy - equipment setup.

8. Impedance Accuracy

a. Performance Check

(1) Adjust resistance standard for 0 ohms.

(2) Adjust calibrator frequency for 1 kHz and 1.000 V ac indication on multimeter.

(3) Adjust resistance standard until multimeter indicates 0.500 V. Resistance standard indication will be between 23.75 and 26.25 ohms (23.25 and 26.75 ohms for TS-585A/U).

(4) Repeat technique of (1) through (3) above for TI switch settings listed in table 3. Resistance standard indications will be within limits specified.

Table 3. Impedance Accuracy Check

Test instrument impedance switch settings	Resistance standard indications (Ω)[1]	
	Min	Max
X1 30	28.50 (27.90)	31.50 (32.10)
X1 40	38.00 (37.20)	42.00 (42.80)
X1 50	47.50 (46.50)	52.50 (53.50)
X1 60	57.00 (55.80)	63.00 (64.20)
X1 80	76.00 (74.40)	84.00 (85.60)
X1 100	95.00 (93.00)	105.00 (107.00)
X1 125	118.75 (116.25)	131.25 (133.25)
X1 150	142.50 (139.50)	157.50 (160.50)
X1 200	190.00 (186.00)	210.00 (214.00)
X.1 100	9.500 (9.300)	10.50 (10.70)
X10 100	950.0 (930.0)	1050.0 (1070.0)
X100 100	9500 (9300)	10,500 (10,700)

[1]Indications in parentheses for TS-585A/U.

b. Adjustments. No adjustments can be made.

9. Meter Range

a. Performance Check

(1) Connect calibrator to TI input terminals.

(2) Adjust calibrator frequency for 1 kHz and output for a full-scale (50) indication on TI. If calibrator does not indicate between 201.65 and 246.47 V (209.62 and 236.38 for TS-585A/U, perform **b** below.

(3) Repeat technique of (2) above for TI switch settings listed in table 4. If calibrator does not indicate within limits specified, and **b** was not performed in (2) above, perform **b** below.

Table 4. Meter Range Check

Test instrument		Calibrator indications (V)			
DECIBELS switch settings	Meter indications	TS-585B/U, TS-585C/U. and TS-585D/U		TS-585A/U	
		Min	Max	Min	Max
100	40	180.36	220.44	188	212
100	30	156.19	190.91	162.62	184.38
100	20	127.53	155.88	132.34	149.46
100[1]	10	90.180	110.22	96	106
100	5	63.766	77.937	66.74	75.26
10	50	63.766	77.937	66.74	75.26
1[2]	50	20.165	24.647	21.96	23.63
0.1[2]	50	6.3767	7.7938	6.64	7.52

[1]Use 24 in. leads below 100 V.

[2]Decrease output voltage of calibrator before turning **DECIBELS** switch to **1** and **0.1**.

b. Adjustments

(1) Adjust calibrator for 224.06 V.

(2) Adjust R3 (fig. 2) for a full-scale (50) indication on TI (R).

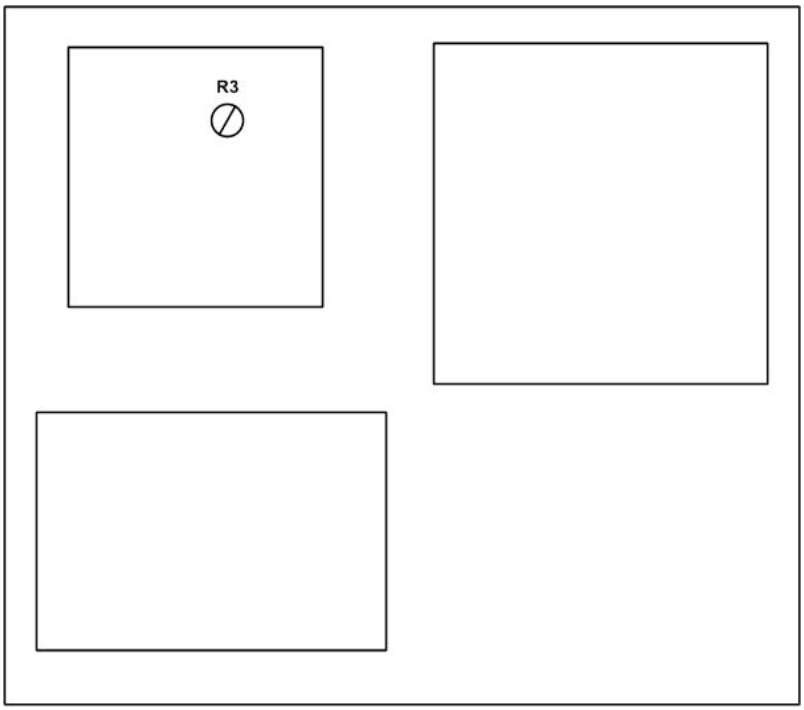


Figure 2. Adjustment location.

10. Frequency Response

a. Performance Check

(1) Set impedance switches to **X10 60** and **DECIBELS MULTIPLY BY** switches to **0-1**.

(2) Adjust calibrator frequency for 1 kHz and output for an 11 dB indication on TI meter. Record calibrator indication.

(3) Adjust calibrator frequency for 150 Hz and output for calibrator indication recorded in (2) above. TI meter will indicate between 10.5 and 11.5 dB.

(4) Repeat technique of (3) above for frequencies of 20, 500, 2500, and 10,000 Hz. TI meter indication will be between 10.5 and 11.5 dB at 500 and 2500 Hz, and between 9.5 and 12.5 at 20 and 10,000 Hz.

b. Adjustments. No adjustments can be made.

11. Final Procedure

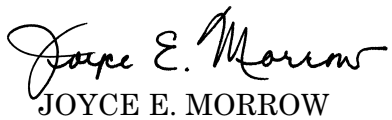
a. Deenergize and disconnect all equipment and reinstall TI protective cover.

b. Annotate and affix DA label/form in accordance with TB 750-25.

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:



JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

0722503

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 343468, requirements for calibration procedure TB 9-6625-2003-24.

INSTRUCTIONS FOR SUBMITTING AN ELECTRONIC 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however, only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" whomever@redstone.army.mil
To: <2028@redstone.army.mil

Subject: DA Form 2028

1. **From**: Joe Smith
2. Unit: home
3. **Address**: 4300 Park
4. **City**: Hometown
5. **St**: MO
6. **Zip**: 77777
7. **Date Sent**: 19-OCT –93
8. **Pub no:** 55-2840-229-23
9. **Pub Title**: TM
10. **Publication Date**: 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. **Submitter FName**: Joe
14. Submitter MName: T
15. **Submitter LName**: Smith
16. **Submitter Phone**: 123-123-1234
17. **Problem**: 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. **Text**

This is the text for the problem below line 27.