*TB 9-6625-2282-35

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR TEST SET, ELECTRONIC SYSTEMS TS-4348/UV

Headquarters, Department of the Army, Washington, DC
29 July 2002

Approved for public release; distribution is unlimited

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, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028, 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 provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our FAX number is: DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is: 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028. For the World Wide Web, use: https://amcom2028.redstone.army.mil.

This bulletin supersedes TB 9-6625-2282-35, 7 February 1995.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Test Set, Electronic Systems, TS-4348/UV. TM 11-5855-299-12 was used as the prime data source in compiling these instructions. The equipment being calibrated will be referred to as the TI (test instrument) throughout this bulletin.

a. Model Variations. Variations among models are described in text.

b. Time and Technique. The time required for this calibration is approximately 1 hour, 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 a sentence in which they appear. Report only those adjustments made and designated with (R).

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

Table 1. Calibration Description

Test instrument parameters	Performance specifications[1, 2]
High light:	
GEN II	3.03×10^{-8} w/sr $\pm$50%
GEN III	1.43×10^{-8} w/sr $\pm$50%
Low light:	
GEN II	1.25×10^{-10} w/sr $\pm$32%
GEN III	5.55×10^{-11} w/sr $\pm$32%

[1]Intensity levels reduced by 4% to account for reticle obscuration.
[2]Intensity level at 810 nm.

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 Set, AN/GSM-286. 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 will be listed and the actual accuracy of the equipment selected is shown in parenthesis.

5. Accessories Required. The accessories required for the calibration are common usage accessories, issued as indicated in paragraph **4** above and are not listed in this calibration procedure.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
NIGHT VISION DEVICE DETECTOR STANDARD	Wavelength range: 305 to 1000 nm Wavelength peak response: 720 nm ±50 Responsitivity: 1.51×10^{7} V/W sr^{-1} at 810 nm ±8% (±11%) Dynamic range: 6.6×10^{-13} to 4.6×10^{-7} Gain (elect): 10^{9} V/A	(13335470)
MULTIMETER	Range: 0.62 to 732 mV Resolution: .01 mV Accuracy: ±1.6%	John Fluke, Model 8840A/AF-05/09 (AN/GSM-64D)
MULTIMETER	Range: 0.62 to 732 mV Resolution: .01 mV Accuracy: ±1.6%	Hewlett Packard, Model 3458A (3458A)

SECTION III
CALIBRATION PROCESS (USING 8840A/AF-05/09)

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 table 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 technical manual for this TI.

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

7. Equipment Setup

a. Remove TI from protective case.

b. Ensure TI **II**, **III**, **OFF** switch is set to **OFF** position.

c. Set multimeter to measure dc volts and for auto-ranging.

8. Light Level Accuracy

NOTE

If the night vision device detector standard is exposed to overload light conditions, several minutes are needed in low light level conditions for the night vision device detector standard to recover.

a. Performance Check

(1) Connect multimeter **HI** and **LO** input terminals to night vision device detector standard **OUTPUT** terminals using BNC CONNECTOR (fig. 1).

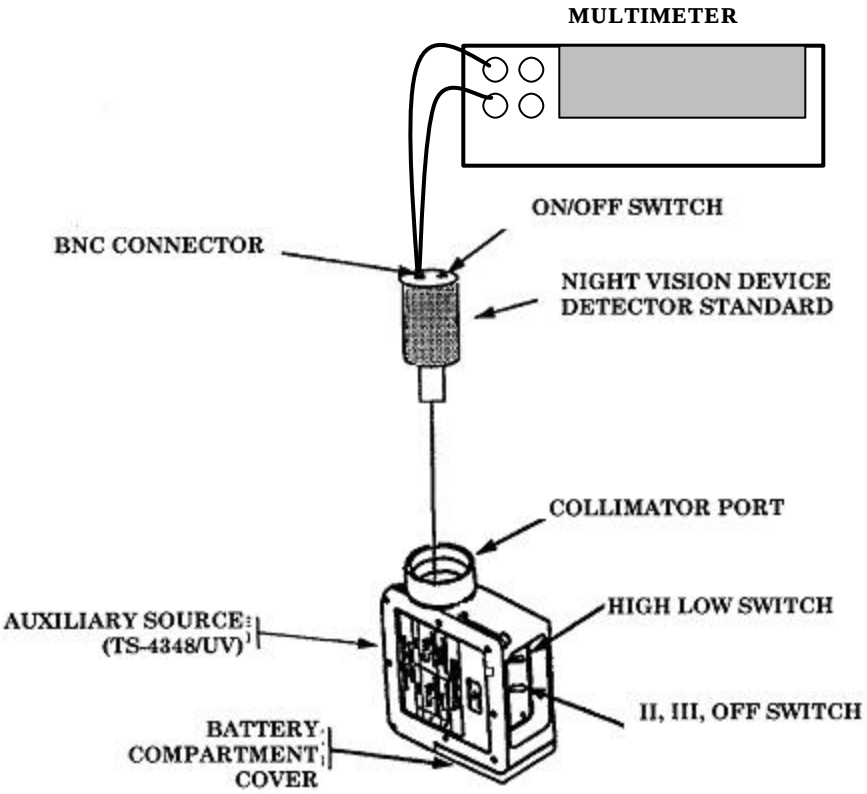

Figure 1. TS-4348/UV controls.

(2) Install night vision device detector standard into TI COLLIMATOR PORT (fig. 1).

(3) Turn night vision device detector standard power ON/OFF SWITCH (fig. 1) to ON and allow night vision detector standard to warm up 15 minutes.

(4) Press **OFFSET** pushbutton on multimeter to zero dark level of night vision detector standard.

(5) Set TI **II**, **III**, **OFF** switch to **II**. Power indicator will illuminate.

NOTE

The night vision detector standard must always be rotated in the clockwise direction to prevent unscrewing the lens. Rotate the night vision detector standard a few degrees at a time then remove hand to allow reading to stabilize. Continue until maximum indication is obtained.

(6) Set TI **HIGH LOW** switch to **HIGH** and rotate night vision detector standard in TI collimator port to obtain peak output voltage. Multimeter will indicate between 229 and 686 mV dc.

(7) Set **II**, **III**, **OFF** switch to **OFF.**

(8) Press **OFFSET** pushbutton on multimeter twice to zero dark level again.

(9) Set **II**, **III**, **OFF** switch to **III**. Multimeter will indicate between 108 and 323 mV dc.

(10) Set **HIGH LOW** switch to **LOW** and **II**, **III**, **OFF** switch to **OFF.**

NOTE

The dark level reading is critical in the remaining tests. Allow 15 seconds before taking measurement after pressing OFFSET.

(11) Press **OFFSET** pushbutton on multimeter twice and check dark level. If dark level is $> \pm 0.05$ mV, record reading and polarity.

(12) Set **II**, **III**, **OFF** switch to **II**. Multimeter will indicate between 1.28 and 2.49 mV dc after algebraically adding excessive dark level recorded in (11) above.

(13) Set **II**, **III**, **OFF** switch to **OFF.**

(14) Press **OFFSET** pushbutton on multimeter twice and check dark level again. If dark level is $> \pm 0.05$ mV, record reading and polarity.

(15) Set **II**, **III**, **OFF** switch to **III.** Multimeter will indicate between .57 and 1.11 mV dc after algebraically adding excessive dark level recorded in (14) above.

(16) Set **II**, **III**, **OFF** switch to **OFF**.

b. Adjustments. No adjustments can be made.

9. Final Procedure

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

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

SECTION IV
CALIBRATION PROCESS (USING 3458A)

10. Preliminary Instructions

a. The instructions outlined in paragraphs **10** and **11** 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 table 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 technical manual for this TI.

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

11. Equipment Setup

a. Remove TI from protective case.

b. Ensure TI **II**, **III**, **OFF** switch is set to **OFF** position.

c. Set multimeter to measure dc volts and for auto-ranging.

12. Light Level Accuracy

NOTE

If the night vision device detector standard is exposed to overload light conditions, several minutes are needed in low light level conditions for the night vision device detector standard to recover.

a. Performance Check

(1) Connect multimeter **HI** and **LO** input terminals to night vision device detector standard **OUTPUT** terminals using BNC CONNECTOR (fig. 2.)

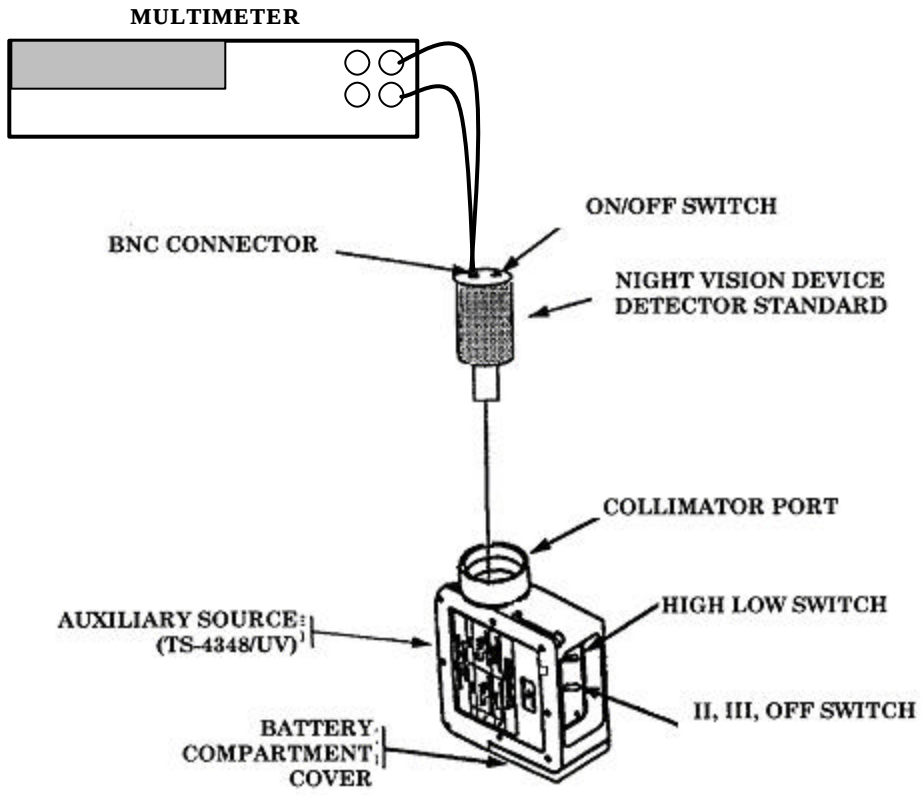

Figure 2. TS-4348/UV controls.

(2) Install night vision device detector standard into TI COLLIMATOR PORT (fig. 2).

(3) Turn night vision device detector standard power ON/OFF SWITCH (fig. 2) to ON and allow night vision detector standard to warm up 15 minutes.

(4) Set TI **II**, **III**, **OFF** switch to **II**. Power indicator will illuminate.

NOTE

The night vision detector standard must always be rotated in the clockwise direction to prevent unscrewing the lens. Rotate the night vision detector standard a few degrees at a time then remove hand to allow reading to stabilize. Continue until maximum indication is obtained.

(5) Set TI **HIGH LOW** switch to **HIGH** and rotate night vision detector standard in TI collimator port to obtain peak output voltage. Multimeter will indicate between 229 and 686 mV dc.

(6) Set **II**, **III**, **OFF** switch to **III**. Multimeter will indicate between 108 and 323 mV dc.

(7) Set **HIGH LOW** switch to **LOW.**

NOTE

The dark level reading is critical in the remaining tests. Allow at least 15 seconds before taking each dark level measurement.

(8) Set **II**, **III**, **OFF** switch to **OFF** and check dark level. If dark level is > ± 0.05 mV dc, record reading and polarity.

(9) Set **II**, **III**, **OFF** switch to **II**. Multimeter will indicate between 1.28 and 2.49 mV dc after algebraically adding excessive dark level recorded in (8) above.

(10) Set **II**, **III**, **OFF** switch to **OFF** and check dark level again. If dark level is > ± 0.05 mV dc, record reading and polarity.

(11) Set **II**, **III**, **OFF** switch to **III.** Multimeter will indicate between .57 and 1.11 mV dc after algebraically adding excessive dark level recorded in (10) above.

(12) Set **II**, **III**, **OFF** switch to **OFF**.

b. Adjustments. No adjustments can be made.

13. Final Procedure

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

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

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

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Distribution:

To be distributed in accordance with IDN 343398, requirements for calibration procedure TB 9-6625-2282-35.

TB 9-6625-2282-35

THESE ARE THE INSTRUCTIONS FOR SENDING 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@avma27.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**: TB 9-6625-xxxx-35
9. **Pub Title**: Calibration Procedure for …
10. **Publication Date**:
11. Change Number:
12. **Submitted Rank**: MSG
13. **Sumitter 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.

PIN: 070167-000