*TB 9-6625-2117-35

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR OSCILLOSCOPE TEKTRONIX, TYPE 434

Headquarters, Department of the Army, Washington, DC
15 October 2003

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 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. For the World Wide Web, use https://amcom2028.redstone.army.mil.

*This technical bulletin supersedes TB 9-6625-2117-35, dated 18 September 1985, including all changes.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Oscilloscope, Tektronix, Type 434. The manufacturer's manual 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. Adjustments vary with serial numbers which are indicated in text.

b. Time and Technique. The time required for this calibration is approximately 3 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. When adjustments are in tables the (R) follows the designated adjustments. 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
Power input requirement	115 V ac at 60 Hz
Calibrator output	Range: 0.6 V at 1000 Hz Accuracy: ±1%
Vertical gain and attenuation	Range: 1 mV to 10 V/div Accuracy: ±3%
Risetime	14 ns or less
Sweeptime	Range: 5 s/div to 0.2 μs/div Accuracy: Unmag ±3%, mag ±4%

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, 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.

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. The following peculiar accessories are also required for this calibration: Standardizer 5-80 pF and Probe HV.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
DIGITAL MULTIMETER	Range: 0 to -4018 V dc Accuracy: ±0.125%	John Fluke, Model 8840A/AF-05/09 (AN/GSM-64D)
FREQUENCY COUNTER	Range: 9990 to 1010 Hz Accuracy: ±0.25%	John Fluke, Model PM6681/656 (PM6681/656)
OSCILLOSCOPE CALIBRATOR	Time markers: Range: 20 ns to 5 s Accuracy: ±0.75% Voltage amplitude: Range: 5 mV to 50 V p-p at 1 kHz Accuracy: ±0.5% Pulses: Range: 1 ms and 10 μs Risetime: 14 ns or less	John Fluke, Model 5820A, MIS-38938 (5820A-5C-GHZ)

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 table 2.

c. Unless otherwise specified, verify the results 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. When indications specified in paragraphs **8** through **13** are not within tolerance, perform the power supply check prior to making adjustments. After adjustments are made, repeat paragraphs **8** through **13**. Do not perform power supply check if all other parameters are within tolerance.

e. 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 the 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 protective cover from TI as required to make adjustments. Replace cover after completing the adjustments.

b. Position controls as listed in (1) through (20) below:

(1) **INTENSITY** control fully ccw.

(2) **UPPER** and **LOWER SCREEN** store pushbutton to non-store (out).

(3) **UPPER** and **LOWER SCREEN ENHANCE** pushbutton to off (out).

(4) **LOCATE/ENHANCE LEVEL** control fully ccw.

(5) **MODE** pushbutton to **AUTO** (in).

(6) **TIME/DIV** switch to **.5 ms**.

(7) **TIME/DIV VAR** control to **CAL** (detent).

(8) **TIME/DIV MAG** switch to **X1** (out).

(9) **SLOPE/LEVEL** switch to **+** (positive).

(10) **SLOPE/LEVEL** control to midrange.

(11) **TRIGGER SOURCE** pushbutton to **CH 1** (in).

(12) ⇔ **POSITION** control to midrange.

(13) **EXT ATTEN** pushbutton to **OUT**.

(14) **5 MHz BW** pushbutton in.

(15) **CH 1** and **CH 2** coupling pushbuttons to **DC** (out).

(16) **CH 1** and **CH 2 VOLTS/DIV** switches **1 mV**.

(17) **CH 1** and **CH 2 VOLTS/DIV VAR** control to **CAL** (detent).

(18) **CH 1** and **CH 2 POSITION** controls to midrange.

(19) Vertical mode pushbutton to **CH 1** (in).

(20) **INVERT** pushbutton in.

c. Connect TI to a 115-V ac source.

d. Pull **POWER** switch to on and allow at least 20 minutes for warmup.

e. Adjust **INTENSITY**, **CH 1** and ⇔ **POSITION** controls to center an optimum display on TI.