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DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR OSCILLOSCOPE TEKTRONIX, TYPES SC501, SC502, AND SC504

Headquarters, Department of the Army, Washington, DC

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SECTION I

IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Oscilloscope, Tektronix, Types SC501, SC502, and SC504. 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 among models are indicated in the 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 the sentence in which they appear. When adjustments are in tables, the (R) follows the designated adjustment. 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
Type SC501	
Vertical sensitivity	Range: 10,100 and 1000 mV/div Accuracy: $\pm 3\%$
Vertical bandwidth	dc to 5 MHz
Horizontal sweep	Range: 1 μ s to 100 ms in a 10 to 1 ratio Accuracy: $\pm 5\%$ Magnifier: X5 $\pm 5\%$
Type SC502	
Vertical sensitivity	Range: 1 mV to 20 V/div; 14 steps in a 1-2-5-sequence Accuracy: 5 mV to 20 V/div: $\pm 2\%$ 1 and 2 mV/div: $\pm 5\%$
Vertical bandwidth	dc to 15 MHz
Horizontal sweep	Range: .2 μ s to .5 s/div; 20 steps in a 1-2-5 sequence Accuracy: Measured over center 8 divisions 50 ms/div to 1 ms/div: $\pm 2\%$ unmagnified; $\pm 3\%$ magnified .5 s/div to .1 s/div, and .5 μ s/div to .2 μ s/div: $\pm 3\%$ unmagnified; $\pm 4\%$ magnified
Calibrator voltage	Range: 0.6 V square wave Accuracy: $\pm 1\%$
Type SC504	
Vertical sensitivity	Range: 5 mV to 10 V/div; 11 steps in a 1-2-5-sequence Accuracy: $\pm 2\%$
Aberrations	$\pm 5\%$
Vertical bandwidth	dc to 80 MHz

Table 1. Calibration Description - Continued

Test instrument parameters	Performance specifications
Type SC504 - Continued	
Horizontal sweep	Range: 50 ns to .2 s/div: 21 steps in a 1-2-5 sequence Accuracy: Measured over center 8 div, excluding first 50 ns and all after first 100 div of magnified sweep: 20 ms to .2 μ s/div: $\pm 2\%$ unmagnified, $\pm 3\%$ X10 magnified 0.2 s to 50 ms/div: 0.1 μ s/div and 50 ns div: $\pm 3\%$ unmagnified, $\pm 4\%$ X10 magnified
Calibrator	Range: 0.6 V $\pm 1\%$ Frequency: Approximately 1 kHz

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, or 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 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: Power Module Tektronix Type TM 500 Series and Standardizer 5 to 80 pF (7916146).

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
DIGITAL MULTIMETER	Range: -20.6 to +20.6 V Accuracy: $\pm 0.3\%$	John Fluke, Model 8840A/AF-05/09 (AN/GSM-64D)
OSCILLOSCOPE CALIBRATOR	Volts out: Range: 5 mV to 100 V at 1 kHz Accuracy: $\pm 0.5\%$ Time markers: Range: 5 ns to 0.5 s Accuracy: $\pm 0.5\%$ Leveled sine wave frequency: Range: 10 Hz to 80 MHz	John Fluke, Model 5820A (5820A-5C-GHZ) (MIS 38938)