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DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR IMPEDANCE MATCHING TRANSFORMER, ANZAC ELECTRONICS CO MODELS TP-75 AND TP-93

Headquarters, Department of the Army, Washington, DC
9 November 1971

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*This bulletin supersedes TB 9-6625-1873-50, 13 March 1970.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Impedance Matching Transformer, Anzac Electronics Company, Models TP-75 and TP-93. The manufacturer's manual was used as the prime data source in compiling these instructions. The impedance matching transformer will be referred to as the "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 microwave technique.

2. Calibration Data Card (DA Form 2416). Maintenance forms, records, and reports which are to be used by calibration personnel at all calibration levels are listed in and prescribed by TM 38-750.

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

Table 1. Calibration Description

Test Instrument Parameters	Performance Specifications
VSWR	Less than 1.2 to 1 from 100 to 200 MHz.
Insertion loss	Less than 0.25 db (0.4 db for TP-93) from 1 to 200 MHz.
Impedance	Input, 50 ohms. Output, 75 ohms for TP75 and 93 ohms for TP-93.

SECTION II
EQUIPMENT REQUIREMENTS

4. Equipment Required. Table 2 identifies the specific equipment used in this calibration procedure. This equipment is issued with secondary transfer calibration standards set 4931-621-7877 and is to be used in performing this procedure. Alternate items may be used by the calibrating activity when the equipment listed in table 2 is not available. The items selected must be verified to perform satisfactorily prior to use and 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 accuracy ratio between the standard and test instrument. Where the four-to-one ratio cannot be met the actual accuracy of the equipment selected is shown in parenthesis.

5. Accessories Required. The accessories listed in table 3 are issued with secondary transfer calibration standards set 4931-621-7877 and are to be used in this calibration procedure. When necessary, these items may be substituted by equivalent items unless specifically prohibited.

Table 2. Minimum Specifications of Equipment Required

Item number	Common name	Minimum use specifications	Manufacturer, model and part number
A1	SIGNAL GENERATOR	RANGE: 200 MHz with external square-wave modulation capability.	Hewlett-Packard, 608CR (8598927-3)
A2	SQUARE-WAVE GENERATOR	RANGE: 1 kHz	Hewlett-Packard, 211AR (Generator, Signal 8598968-2)
A3	STANDING-WAVE DETECTOR	RANGE: 1.2 to 1 at 200 MHz. RESIDUAL VSWR: Less than 1.2 to 1.	PRD, 219 (8579359)
A4	SWR METER	SWR RANGE: 0 to 1.05 DB RANGE: 0.5 to 0.8	Hewlett-Packard, Y10-415E (7910160-3)

Table 3. Required Accessories

Item number	Common name	Description and part number
B1	ADAPTER [1]	BNC plug to BNC plug (MS 35176-491B)
B2	ADAPTER	BNC plug to PRD, 219 (10519446)
B3	ADAPTER	BNC jack to N plug (10519457)
B4	ADAPTER	BNC plug to N jack (10519458)
B5	ATTENUATOR [1]	6 db, BNC terminations (7923143)
B6	CABLE [1]	24-in., RG-58()/U; BNC plug terminations (10519141)
B7	CABLE	36-in., RG-58 () /U; BNC plug and double banana plug terminations (7907471).
B8	CRYSTAL DETECTOR	Hewlett-Packard, Model 423A (7923182) or equivalent.
B9	TERMINATION	BNC plug connector, 72-ohm (7913356-2) and 93-ohm (7913356-3).

[1]Two required.

SECTION III
CALIBRATION PROCESS

6. Preliminary Instructions

a. 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 and item identification number as listed in tables 2 and 3. For the identification of equipment referenced by item numbers prefixed with A, see table 2, and for prefix B, see table 3.

NOTE

Unless otherwise specified, verify the results of each test and take corrective action whenever the test requirement is not met before continuing with the calibration.

7. VSWR

a. Performance Check

(1) Connect equipment as shown in figure 1.

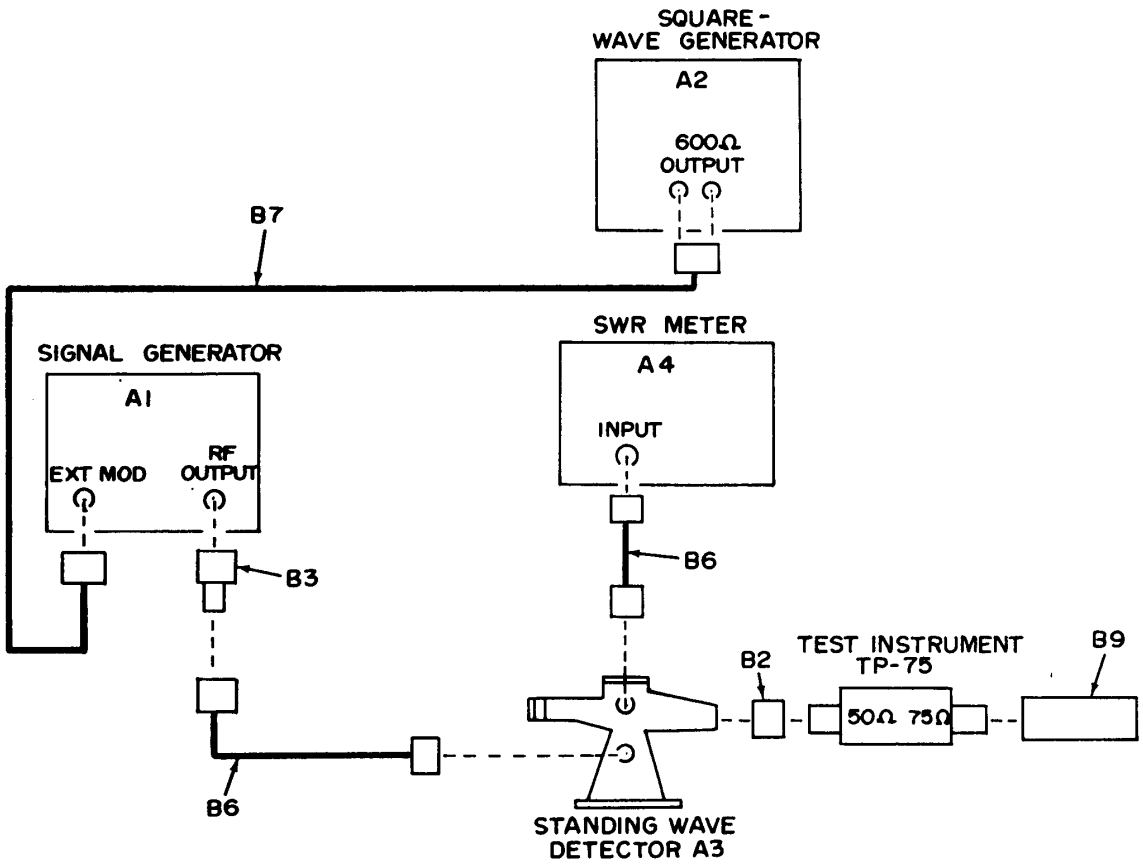

Figure 1. VSWR - equipment setup.

(2) Adjust signal generator and square-wave generator (A1 and A2) for 200 MHz output, square-wave modulated at 1 kHz. Standardize equipment for VSWR measurement.

(3) Measure VSWR. VSWR will not exceed 1.2.

(4) Repeat technique of (1) through (3) above for model TP-93.

b. Adjustments. No adjustments can be made.

8. Insertion Loss

a. Performance Check

(1) Connect equipment as shown in figure 2. Connect points A and B together.

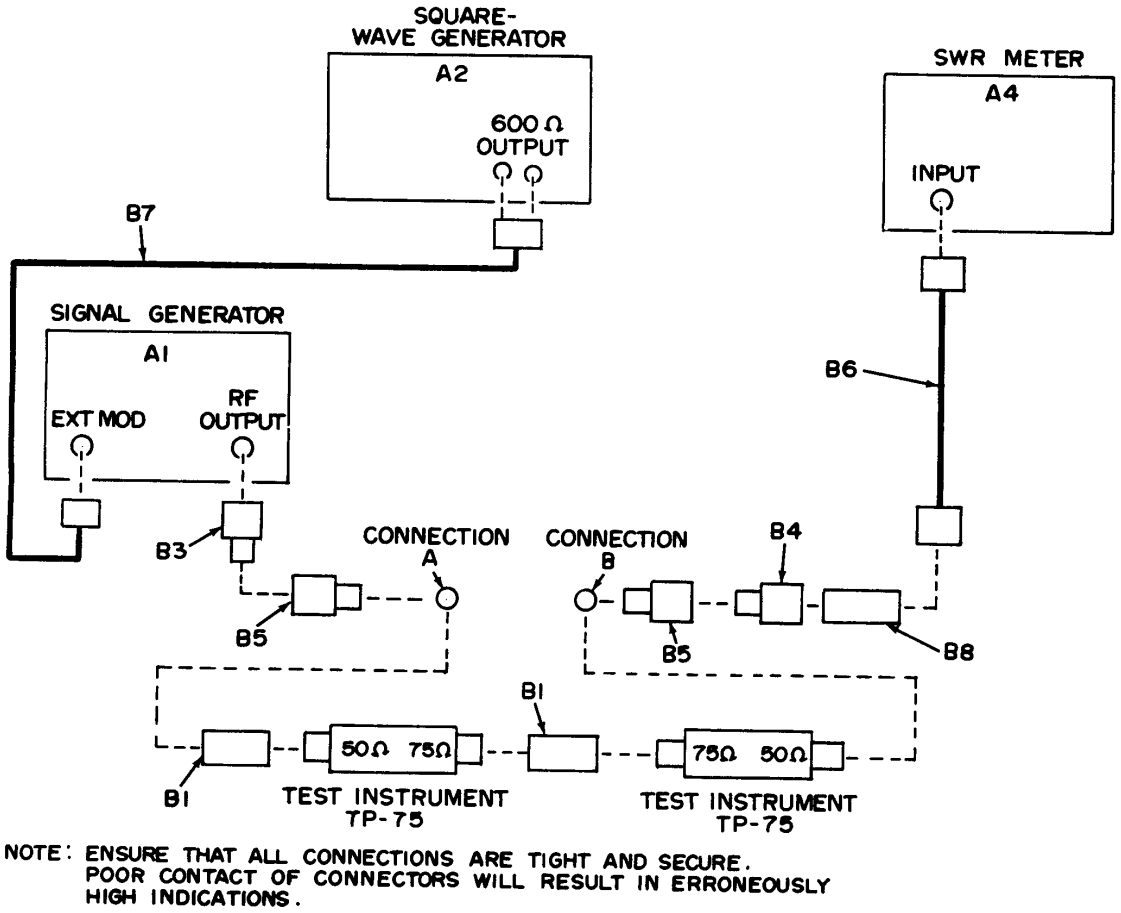

Figure 2. Insertion loss - equipment setup.

(2) Adjust equipment for reference-level indication on swr meter (A4).

(3) Insert UUT models TP-75 between points A and B in equipment setup. Insertion loss will not exceed 0.5 db.

(4) Substitute UUT models TP-93 in equipment setup. Insertion loss will not exceed 0.8 db.

b. Adjustments. No adjustments can be made.

9. Final Procedure

a. Deenergize and disconnect all equipment.

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

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