D E P A R T M E N T O F T H E A R M Y T E C H N I C A L B U L L E T I N

CALIBRATION PROCEDURE FOR
SIGNAL GENERATOR
POLARAD MODEL 1709

Headquarters, Department of the Army, Washington, D.C.
17 May 1978

REPORTING OF ERRORS

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SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Signal Generator, Polarad Model 1709. The manufacturer's instruction 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. None.

b. Time and Technique. The time required for this calibration is approximately 5 hours, using dc (direct current) and low frequency, and microwave techniques.

2. Calibration Data Card, (DA Form 2418). a C Forms records, and reports required for calibration personnel at all levels are prescribed by TM 38-750. DA Form 2416 must be annotated in accordance with TM 38-750 for each calibration performed.

b. Adjustments to be reported on DA Form 2416 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
Frequency range.	3.80 to 15.5 GHz
Accuracy.	± 0.5% of reading
Stability	0.0008% per volt change in line voltage.
Power output	1.0 mW (0 dBm).
Accuracy	± 2 dB.
Attenuator range	0 to -100 dB
Accuracy.	± 2% of dial reading or ± 0.2 dB (± 0..5 dB from 10 to 10.8 GHz), whichever is greater
Internal square wave	800 to 1200 Hz.

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 Standards Calibration Sets NSN 6695-00-621-7877 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 must bear evidence of current calibration. The equipment must meet or exceed the minimum use specification 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 listed in table 3 are issued as indicated in paragraph 4 above 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	Common name and/or (official nomenclature)	Minimum use specifications	Manufacturer, model, and part number
A1	AUTOTRANSFORMER (TRANSFORMER, VARIABLE, POWER)	Range: 105 to 125 V ac Accuracy ±1%	General Radio, Model W10MT3AS3 (7910809)
A2	DECADE RESISTOR	Range: 20 ohms Accuracy:±.3%	Winslow, Model 336 (7907234)
A3	FREQUENCY COUNTER (COUNTER, ELECTRONIC DIGITAL)	Range: 380 to 15.5 GHz (1709A) 6.95 to 21.0 GHz (1710A) Accuracy: ±.13% of reading	Systron-Donner, Model 1037M (7910823) w/Frequency Converter Systron-Donner, Model 1292 (7910648) (p/o 7910628)
A4	OSCILLOSCOPE	Range: 0 to 15 V peak, 800 to 1200 Hz Accuracy: ± 3%	Tektronix, Model RM-S561AMOD177910655-4) w/plug-in, Models 3A6MOD(7911441-2) and 3B4MOD (7912040-2) (p/o 7923120)
A5	POWER METER	Range: 0 to 10 mW Accuracy: ± 6%	Hewlett-Packard, Model Y10-431C (7910462-3) w/Thermister Mount, Models 478A (7910461) and X 486 (7910460)
A6	SWR METER	Range: 0 to 50 dB Accuracy: ± 0.2 dB	Hewlett-Packard, Model Y10-415E (7910160-3)
A7	VOLTMETER (VOLTMETER, DIGITAL)	Range: 390 to 490 mV dc and -1200 to -1800 V dc Accuracy: ± 0.3%-	Dana, Model 5703-S-2127 (7912606) w/High Voltage Probe