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DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR AMPLIFIER, AUDIO FREQUENCY-RADIO FREQUENCY AM-4825/U AND AM-4825A/U (HEWLETT-PACKARD MODEL 461A) (NSN 6625-00-982-2977)

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REPORTING OF ERRORS

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SECTION I IDENTIFICATION AND DESCRIPTION

1. Test Instrument. This bulletin provides instructions for the calibration of Audio Frequency-Radio Frequency Amplifier AM-4825/U and AM-4825A/U (Hewlett-Packard Model 461A). 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. All data herein applies to both models of the amplifier.

b. Time and Technique. The time required for this calibration is approximately 2 hours, using dc and

low frequency technique.

2. DA Form 2416 (Calibration Data Card). a. 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. 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

TI parameters	Performance specifications
Frequency range	1 kHz to 150 MHz.
Frequency response	+ 1 db, 1 kHz to 150 MHz, into 50 ohms (500 kHz reference).
Gain at 500 kHz	40 db +0.5 db, 20 db + 1.0 db
Output	0.5 volts rms into 50 ohms
Distortion	Less than 5% at maximum output and rated load.
Maximum input*	1 volt rms or 2 volts p-p.
Input impedance*	50 ohms, nominal
Equivalent input noise	Less than 40 microvolts (40 db position).
Power requirements*	115 or 230 volts $\pm 10\%$, 50 to 100 Hz, 5 watts.

*For information only; not necessarily verified in this procedure.

SECTION II EQUIPMENT REQUIREMENTS

4. **Equipment** Required Table 2 identifies the specific equipment used in this calibration procedure. This equipment was selected from those known to be available in AN/TSM-55(V)2 and AN/TSM-55(V)5. 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 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 accuracy ratio cannot be met, the actual accuracy of the equipment selected is shown in parenthesis.

5. **Accessories** Required. The accessories used for the calibration was selected from those known to be available in AN/TSM-55(V)2 and AN/TSM-55(V)5. The listing by make or model number carries no implication of preference, recommendation, or approval by the Department of Defense for use by other agencies. Equivalent equipment produced by other manufacturers may be capable of equally satisfactory performance in the procedure.

Table 2. Minimum Specification of

Item	Common name	Minimum use specifications	Manufacturer, model, and part number
A1	AUTOTRANSFORMER	105 to 125 vac $\pm 3\%$.	Variable Power Transformer TF-510/U (General Radio, Model W10MT3A).
A2	STEP ATTENUATOR	0 to 60 db ± 0.3 db, at 1 kHz.	Variable Attenuator CN-1128/U (Hewlett-Packard, Model 355D).
A3	VOLTMETER	-60 to +10 db $\pm 1\%$, 1 kHz to 500 kHz.	Electronic Voltmeter AN/USM-265 (Hewlett-Packard, Model 400EL-02).
A4	SIGNAL GENERATOR	1 kHz to 10 MHz $\pm 2\%$, 0 to 3 vrms, less than 1% distortion.	Signal Generator AN/USM-264 (Hewlett-Packard, Model 652A).
A5	DISTORTION ANALYZER	5% at 600 kHz.	Distortion Indicator AN/URM-180 (Hewlett-Packard, Model 333A).
A6	MULTIMETER	0 to 0.5 vac $\pm 3\%$, 1 kHz to 100 MHz.	Multimeter ME-338/U (Ballantine, Model 345).
A7	OSCILLATOR	10 MHz to 50 MHz, 0 to 0.3 vrms.	Signal Generator AN/USM-313 (General Radio, Model 1211C).
A8	OSCILLATOR	50 MHz to 150 MHz, 0 to 0.3 vrms.	Signal Generator AN/USM-252 (General Radio, Model 1215C).
A9	POWER SUPPLY	6.3 vac, 4A and 300 vdc, 70 mA.	Power Supply PP-6239/U (General Radio, Model 1201C).
A10	POWER METER	0 to 10 mw, 10 MHz to 150 MHz.	Radio Frequency Power Test Set AN/USM-260 (Hewlett-Packard, Model 431C) with Thermistor Mount MX-7772/U (Hewlett- Packard, Model 478A).