

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

FIELD AND DEPOT MAINTENANCE

RADAR TEST SET

AN/UPM-60A

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RADAR TEST SET AN/UPM-60A

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CHAPTER 1

THEORY

Section I. BLOCK DIAGRAM

1. Scope

a. Manual.

- (1) This manual covers field and depot maintenance for Radar Test Set AN/UPM-60A. It includes instructions appropriate to third, fourth, and fifth echelons for troubleshooting, testing, alining, and repairing the equipment, replacing maintenance parts, and repairing specified maintenance parts. It also lists test equipment for third, fourth, and fifth echelon maintenance. Detailed functions of the equipment are covered in the theory section.
- (2) The complete technical manual for this equipment includes two other publications—
TM 11-6625-228-12.
TM 11-6625-228-12P.
- (3) Forward comments concerning this manual to the Commanding Officer, U. S. Army Signal Publications Agency, Fort Monmouth, N. J.

Note. For applicable forms and records, see paragraph 2, TM 11-6625-228-12.

b. Theory.

- (1) *Signal paths in power-meter operation* (fig. 1).
 - (a) When the test set is used to measure the output power of a radar transmitter, input signals are coupled to the input-output waveguide section through the RF connector and through a calibrated variable attenuator (AT2) to a temperature compensated power monitor. The power monitor consists of a bridge circuit and a power-level indicating meter calibrated in milliwatts and dbm (decibels relative to 1 milliwatt).
 - (b) The radio frequency (RF) shutter prevents the output power of the radar transmitter from reaching the

klystron oscillator. The frequency meter (Z2) is detuned to insure an accurate power reading.

- (2) *Signal paths in frequency-meter operation* (fig. 1).

- (a) When the test set is used as a frequency meter, an absorption type frequency meter is tuned to resonance. The resonant frequency meter cavity causes a reduction of power level in the microwave section. This reduction of power at the resonant frequency shows up as a dip on the power meter (power monitor bridge). The resonant frequency (in megacycles) is indicated directly on a front panel counter which is geared to the tuning mechanism of the cavity.
- (b) When measuring the frequency of a radar transmitter, the signal path is the same as described in (1) (a) above. When a sharp deflection occurs on the power meter, the frequency meter is tuned to the transmitter frequency. The frequency of the transmitter can be determined by reading the frequency on the WAVEMETER FREQUENCY dial.
- (c) When measuring an external signal of unknown frequency, the signal path and method are the same as described in (b) above.
- (d) When measuring the frequency of the klystron oscillator, the output signals from the klystron oscillator pass through the power set attenuator (AT3) to the RF shutter; this allows the klystron signals to reach the frequency meter (Z2), the power monitor bridge, and the RF connector. The frequency of the