

TM11-6625-586-45

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

**GS, AND DEPOT
MAINTENANCE MANUAL
GENERATOR, SIGNAL
AN/URM-103**



HEADQUARTERS, DEPARTMENT OF THE ARMY

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General Support and Depot Maintenance Manual

GENERATOR, SIGNAL AN/URM-103

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*This manual supersedes TM 11-6625-586-45, 6 November 1968, including all changes.

CHAPTER 1 FUNCTIONING

Section I. GENERAL

1-1. Scope

a. This manual contains general support and depot maintenance instructions for Generator, Signal AN/URM-103. It includes instructions appropriate to general support and depot maintenance for troubleshooting, testing, calibrating, and repair of the equipment. It also lists test equipment required for general support and depot maintenance. Functional analysis of the equipment is covered in this chapter.

b. The complete technical manual for this equipment includes two other publications, TM 11-6625-586-12 and TM 11-6625-586-25P.

1-2. Indexes of Publications.

a. *DA Pam 310-4.* Refer to the latest issue of DA Pam 310-4 to determine whether there are new edi-

tions, changes, or additional publications pertaining to this equipment.

b. *DA Pam 310-7.* Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO'S) pertaining to the equipment.

NOTE

For other applicable forms and records, refer to paragraph 1-3, TM 11-6625-586-12.

1-2.1. Reporting of Errors

The reporting of errors, omissions, and recommendations for improving this manual by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-Q, Fort Monmouth, NJ 07703.

Section II. BLOCK DIAGRAM FUNCTIONING

1-3. Block Diagram

The AN/URM-103 consists of Generator, Signal SG 297/U housed in Case, Signal Generator CY-4695/URM-103. Generator, Signal SG-297/U (signal generator) consists of a panel-chassis assembly in an aluminum dust cover. The front panel has two handles to facilitate movement of the equipment and to protect the controls. All operating controls, power cable, and receptacles for interconnecting the signal generator are front-panel mounted. The signal generator is a portable, all-transistorized FM signal generator which provides both modulated and unmodulated RF signals over the frequency range from 18 to 80 MHz. It produces power level outputs from 0.05 microvolt to 500,000 microvolt across the output impedance matching network in use, which provides a nominal 50-ohm output impedance. The generator has provisions for internal or external sine wave modulation. The deviation from the center frequency produced by the modulating signal can be controlled and measured by the deviation metering section. The generator also produces IF alignment frequencies which are crystal controlled. The unit is equipped with crystals for operation at 4.3, 5.60, 5.625, 5.65, 10.00, and 11.50 MHz. Two additional crystal positions are provided for other IF's. A direct-reading RF' attenuator dial is provided for power level outputs from 0.05 to 10,000 microvolt. Fixed

RF power level outputs of 62,500; 125,000; 250,000; and 500,000 microvolt are also provided. Fixed IF power level outputs from 10 microvolt to 1.0 volts in decade steps are provided. A power monitor bridge is used to calibrate the RF and IF power level outputs by setting a constant power reference level. A 1 MHz crystal calibrator provides precise frequency calibration of the RF signals at 1 MHz intervals throughout the frequency range of 18 to 80 MHz. Signal paths are shown in the block diagram (fig. 6-7) and are discussed in *a* through *p* below. For complete circuit details, refer to the over-all schematic diagram (fig. 6-8).

a. AF Oscillator. The AF oscillator, transistors Q1, Q14, and Q15, supplies the internal modulating frequencies for the RF oscillator. The FUNCTION switch S1 selects the desired internal modulation frequency, a frequency calibration function, no modulation or external modulation, or an IF function. The selected function determines the input to the modulation amplifier.

b. Modulation Amplifier. When internal or external modulation is selected, the modulation amplifier transistors Q3 and Q4, amplify the selected modulation frequency. The external modulation frequency is applied to the modulation amplifier. When the internal modulation is used, it is available at INT MOD OUT jack J4, at a level set by DEVIATION