

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

FIELD AND DEPOT MAINTENANCE MANUAL

SIGNAL GENERATOR SG-336/U

HEADQUARTERS, DEPARTMENT OF THE ARMY
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SIGNAL GENERATOR SG-336/U

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CHAPTER 1 THEORY

Section I. GENERAL

1. Scope

a. This manual covers field and depot maintenance for Signal Generator SG366/U. It includes instructions appropriate to fourth and fifth echelons for troubleshooting, testing, aligning, and repairing the equipment, replacing maintenance parts, and repairing specified maintenance parts. It also lists tools, materials, and test equipment for fourth and fifth echelon maintenance. Detailed functions of the equipment are covered in paragraphs 3 through 12.

Note: There are no maintenance functions assigned to third echelon.

b. The complete technical manual for this equipment includes TM 11-6625-40612.

c. Refer to DA Pamphlet 310-4 to determine what Changes to or revisions of this publication are current.

d. Forward comments concerning this manual direct to the Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: , SIGMS-PA2d, Fort Monmouth, N. J.

Note: For applicable forms and records, see paragraph 2, TM 11-6625-406-12.

2. Block Diagram

(fig. 1)

The signal generator incorporates a wide-band sweeping oscillator signal source with crystal-controlled, pulse-type frequency markers. It is used for testing, aligning, and repairing radar intermediate-frequency (if.) circuits. Signal paths and waveforms are shown in the block diagram (fig. 1) and are described in a through below. For complete circuit details, refer to the overall schematic diagram (fig. 30).

a. *Sweep, Generator VI.* Sweep generator V1

develops a square-wave output voltage from which a linear sawtooth sweep voltage is derived. The sweep generator is essentially a free-running multivibrator, normally synchronized to the line frequency. The repetition rate may be varied slightly above or below the line frequency by means of the front panel SWEEP RATE control. The square-wave output voltage of the sweep generator is applied to a shaping network and to the sweeping oscillator.

b. *Shaping Network.* The shaping network consists of a resistive-capacitive integrating circuit, which shapes the square-wave voltage applied from sweep generator V1 into a symmetrical, linear sawtooth voltage. The sawtooth output voltage is applied to the SWEEP OUTPUT terminals for connection to the horizontal deflection circuits of an external oscilloscope, and is also applied to sawtooth amplifier V2 and compensating modulator V3.

c. *Sawtooth Amplifier V2.* Sawtooth amplifier V2 is a single-stage power amplifier, which develops a linear sawtooth current in its plate circuit. The sawtooth current is applied to the control winding of a saturable reactor in the tuned circuit of sweeping oscillator V4, causing the reactance of the saturable reactor and the output frequency of the sweeping oscillator to vary at a linear rate.

d. *Sweeping Oscillator V4.* Sweeping oscillator V4 consists of a push-pull negative-resistance oscillator circuit that is used to generate a sweeping output in the 20- to 40-megacycle (mc) or the 50- to 70-mc range. The frequency of oscillation depends on the inductance of a saturable reactor in the oscillator tuned circuit. The inductance of the saturable reactor is varied at a linear rate by the sawtooth current applied from sawtooth amplifier V2, and the output frequency of the sweeping oscillator thus varies linearly at the