

TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL

MAINTENANCE MANUAL

INCLUDING REPAIR PARTS

AND SPECIAL TOOLS LISTS

TEST SET,

INTERMEDIATE FREQUENCY

AN/GRM-63

**This copy is a reprint which includes current pages
from Changes 1 through 3.**

HEADQUARTERS, DEPARTMENT OF THE ARMY

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OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL

**TEST SET, INTERMEDIATE FREQUENCY AN/GRM-63
 (NSN 6625-00-089-4653)**

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CHAPTER 1 INTRODUCTION

Section I. GENERAL

1-1. Scope

a. Throughout this manual describes Test Set, Intermediate Frequency AN/GRM-63 (fig. 1-1) and covers the installation, limited operation, and operator and organizational maintenance. It includes instructions for operation under usual conditions, cleaning, and inspection of the equipment, and replacement of parts available to the operator and organizational repairman.

b. Operation of the AN/GRM-63, in conjunction with other test equipment (para 1-10) to test components of Radio Set AN/GRC-50(*) (V) (para 1-5a), is covered in the maintenance manual for Radio Set AN/GRC-50(*) (V), TM 11-5820-461-35.

c. Official nomenclature followed by (*) is used to indicate all models of the equipment items covered in this manual.

(1) Radio set AN/GRC-50(*) (V) represents Radio Sets AN/GRC-50(V)1, 2, 3, 4, 5, and Radio Sets AN/GRC-50A(V)1, 2, 3, 4, 5, 6, and 7.

(2) Amplifier-Converter AM-1955(*)/GRC represents Amplifier-Converters AM-1955/GRC and AM-1955A/GRC (assemblies 3A1).

(3) Amplifier-Converter AM-1956(*)/GRC represents Amplifier-Converters AM-1956/GRC and AM-1956A/GRC (assemblies 3A2).

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 editions, changes, or additional publications pertaining to the 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.

1-3. Forms and Records

a. *Reports of Maintenance and Unsatisfactory Equipment.* Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. *Report of Packaging and Handling Deficiencies.*

Fill out and forward DD Form 6-(Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 71- 13/MCO P4030.29A, and DSAR 4145.8.

c. *Discrepancy in Shipment Report (DISREP) (SF 361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33/ AFR 75-18/MCO P4610.19B and DSAR 4500.15.

1-4. Reporting of Errors

You can help improve this manual by calling attention to errors and by recommending improvements and stating your reasons for the recommendations. Your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) should be mailed direct to Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, New Jersey 07703. A reply will be furnished direct to you.

1-4.1. Reporting Equipment Improvement Recommendations (EIR)

EIR's will be prepared using DA Form 2407 (Maintenance Request). Instructions for preparing EIR's are provided in TM 38-750, The Army Maintenance Management System. EIR's should be mailed direct to Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, New Jersey 07703. A reply will be furnished direct to you.

1-4.2. Administrative Storage

Administrative storage of equipment issued to and used by Army activities shall be in accordance with TM 740-90-1.

1-4.3. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

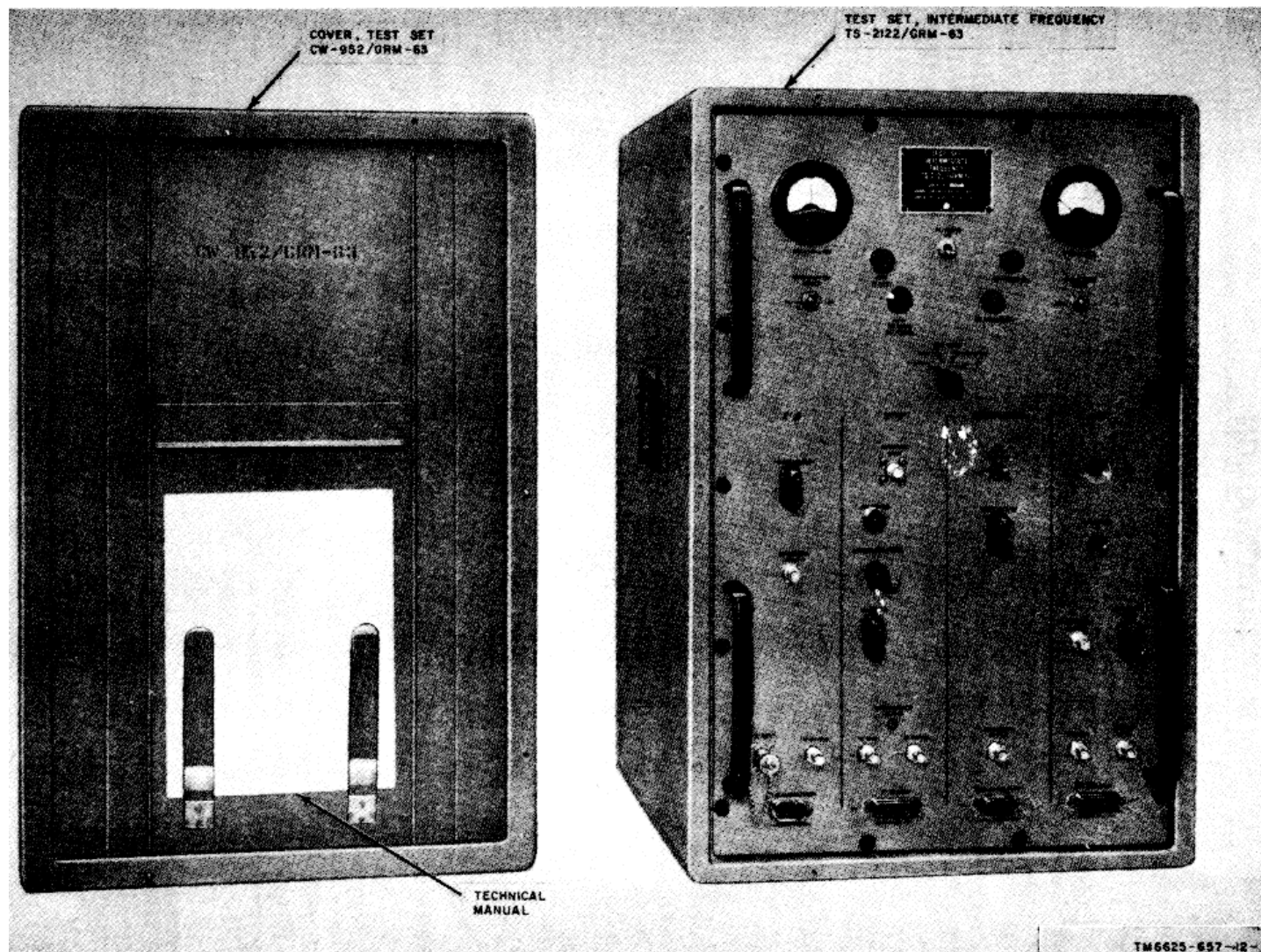


Figure 1-1. Test set, Intermediate Frequency AN/GRM-63, less running spares and minor assemblies.

Section II. DESCRIPTION AND DATA

1-5. Purpose and Use

NOTE

Throughout this manual, the AN/GRC50(*) (V) assembly under test is referred to as AUT.

a. Test Set, Intermediate Frequency AN/GRM-63 (hereafter referred to as IF test set), when used in conjunction with additional equipment (para 1-10), comprises a test set which enables the operator to check and perform alignment, check operation, and troubleshoot the following assemblies of Radio Set AN/GRC-50(*) (V) (TM 11-5820-461-35).

<i>Assembly</i>	<i>Used on</i>
Modulator assembly 2A5.	Transmitter, Radio T-893(P)/GRC.
Afc assembly 2A4/3A4.	T-893(P)/GRC and Receiver, Radio R-1148(P)/GRC.
First if. assembly 3A1A1/3A2A1.	AN-1955(*)/GRC (3A1) and AM-1956(*)/GRC(3A2).
Second IF assembly 3A5.	Receivers, Radio R-1148 (P)/GRC and R-1331(P)/GRC.

b. The IF test set consists of a metal cabinet that houses an automatic frequency control (afc) simulator assembly, two mixer simulator assemblies, a first IF assembly, a second IF simulator assembly, a modulator detector assembly, an afc error indicator, and a power supply. Also included are signal cables and adapters attached to the inside of the rear cover.

c. The IF test set provides a means of interfacing Radio Set AN/GRC-50(*) (V) assemblies with the IF test set facilities and additional test equipment. A self-contained, solid-state power supply provides regulated direct-current (dc) out-puts of + 108, + 150, and + 250 volts, as well as an unregulated dc voltage of + 360, and both balanced and unbalanced filament voltages of 6.3 volts alternating current (ac). The power supply is controlled by a relay that prevents the application of B+ voltages to an assembly plugged into the wrong panel connector. The relay is controlled by interlock circuits that permit it to energize only when TEST SELECT switch is at 1st IF. Other settings of the TEST SELECT switch require connecting the proper AUT to the appropriate connector (J6, J15, or J17) to complete the interlock circuit.

d. When used with an external oscilloscope and radiofrequency (rf) sweep generator, it will provide a pictorial representation of the frequency response characteristics of IF amplifiers. Continuously variable-frequency markers are supplied from an external rf signal generator and used in conjunction with a frequency meter to indicate the frequency of the marker.

e. Operation of afc assembly 2A4/3A4 is checked with a motor attached to an indicator dial for indicating afc error. An external rf signal generator provides the rf signal required to check afc assembly 2A4/3A4, and its output is checked with an external meter.

1-6. Technical Characteristics

a. *1st IF/2d IF Interface.* Overall bandwidth (mixer simulator A4, first IF amplifier A5, and second IF simulator A3 in cascade.

Input stimulus:
 Center frequency..... 60 MHz.
 Sweep width..... 55-65 MHz.
 Detected output response characteristics:
 Center frequency..... 60 MHz ± 0.5.
 Bandwidth 5.0 MHz ± 0.5 (3-db points).

b. *Afc Simulator.*

Input stimulus:
 Input stimulus 20.5 MHz ± 10 kHz.
 Input level..... 300 millivolts rms.
 Output frequency..... 20.5 MHz ± 10 kHz.
 Output level 3 millivolts minimum across 50-ohm load.

Load simulator section:
 Input impedance (measured at 90 MHz with Boonton, Model 250 RX meter):
 Resistive component 33 ohms ± 5.
 Capacitance component 8 pf ±5.

c. *Modulator Interface.* Overall bandwidth (AUT modulator assembly 3A5 through modulator detector A6):

Input stimulus required:
 Center frequency..... 50 MHz.
 Sweep width 45 to 55 MHz.