

TECHNICAL MANUAL

**DIRECT SUPPORT AND GENERAL SUPPORT
MAINTENANCE MANUAL**

**TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT
AN/ARM-87 (NSN 6625-00-908-0358)**

HEADQUARTERS, DEPARTMENT OF THE ARMY

16 SEPTEMBER 1981

**DIRECT SUPPORT AND GENERAL SUPPORT
 MAINTENANCE MANUAL**

**TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT
 AN/ARM-87 (NSN 6625-00-908-0358)**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703.

In either case, a reply will be furnished direct to you.

	Para graph	Page
CHAPTER 1. INTRODUCTION	1-1	1-1
2. FUNCTION OF EQUIPMENT		
Section I. Block Diagram Functioning	2-1	2-2
II. Detailed Circuit Functioning	2-21	
CHAPTER 3. DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS		
Section I. Troubleshooting	3-1	3-1
II. Maintenance of Test Set, Electronic Circuit Plug-In Unit AN/ARM-87	3-9	
APPENDIX A. REFERENCES		4-1
INDEX		Index-1

LIST OF ILLUSTRATIONS:

<i>Figure No.</i>	<i>Title</i>	<i>Page</i>
2-1	Frequency Selector Switch Circuit, Functional Diagram	2-3
2-2	Test Set Voltmeter Circuit, Functional Diagram	2-4
2-3	150-Hz oscillator Counter Circuit, Functional Diagram	2-5
2-4	1-kHz Oscillator Circuit, Functional Diagram	2-6
2-5	10-kHz oscillator Circuit, Functional Diagram	2-6
2-6	500-kHz FM Oscillator Circuit, Functional Diagram	2-7
2-7	3.975-MHz Oscillator Circuit, Functional Diagram	2-8
2-8	5.925-MHz Oscillator Circuit, Functional Diagram	2-9
2-9	30-MHz Oscillator Circuit, Functional Diagram	2-10
2-10	68-MHz Oscillator Circuit, Functional Diagram	2-11
2-11	500-kHz Switch Circuit, Functional Diagram	2-12
2-12	30-MHz Switch Circuit, Functional Diagram	2-12
2-13	500-kHz Filter Circuit, Functional Diagram	2-13
2-14	Distortion Detector Circuit, Functional Diagram	2-13
2-15	500-kHz Discriminator Circuit, Functional Diagram	2-14
2-16	RF Power Detector Circuit, Functional Diagram	2-14
2-17	150-Hz Oscillator/Counter Circuit. Simplified Schematic Diagram	2-58
2-18	1-kHz Oscillator Circuit, Simplified Schematic Diagram	2-59
2-19	10-kHz Oscillator Circuit, Simplified Schematic Diagram	2-60
2-20	500-kHz FM Oscillator Circuit, Simplified Schematic Diagram	2-61

*This manual supersedes TM 11-6625-467-45, 29 December 1965 including all changes.

LIST OF ILLUSTRATIONS—Continued

<i>Figure</i>	<i>No.</i>	<i>Title</i>	<i>Page</i>
2-21	3.975 MHz	Oscillator Circuit, Simplified Schematic Diagram	2-62
2-22	30 MHz	Oscillator Circuit, Simplified Schematic Diagram	2-63
2-23		Distortion Detector Circuit, Simplified Schematic Diagram	2-64
2-24		Audio Amplifier/Detector Circuit, Simplified Schematic Diagram	2-65
2-25		RF Amplifier/Detector Circuit, Simplified Schematic Diagram	2-66
2-26	500-kHz	Filter Circuit, Simplified Schematic Diagram	2-67
2-27	500-kHz	Switch Circuit, Simplified Schematic Diagram	2-69
2-28	500-kHz	Discriminator Circuit, Simplified Schematic Diagram	2 70
2-29	30 MHz	Switch Circuit, Simplified Schematic Diagram	2-72
2-30		Four-Wire Reentrant Tuning System, Simplified Schematic Diagram	2-73
2-31		Frequency Selector Switch Circuit, Simplified Schematic Diagram	2-74
2-32	0.05-MHz	Selector Switch Typical Drive Circuit, Simplified Schematic Diagram	2-79
3-1		DC Power Distribution, Schematic Diagram	3-5
3-2		Test Set, Front Panel Component Identification	3-6
3-3		Test Set Parts Location, Right Side View	3-7
3-4		Test Set Parts Location, Left Side View	3-8
3-5		Test Set Parts Location Top View	3-9
3-6		Test Set Parts Location, Rear Subpanel	3-10
3-7		Test Set Parts Location, Card Cage (Cards Removed)	3-11
3-8		Test Set Parts Location, Case	3-12
3-9		Test Set Circuit Card Location	3-12
3-10		Blower Well Parts Location, Top View	3-13
3-11	Load/500-kHz	Filter Circuit Card HV7, Parts Location	3-14
3-12	150-Hz	Oscillator/Counter Circuit Card HU8, Parts Location	3-15
3-13	1-kHz/10-	kHz Oscillator Circuit Card HU9, Parts Location	3-16
3-14	500-kHz	FM Oscillator Circuit Card HV2, Parts Location	3-17
3-15		Audio Amplifier/Detector Circuit Card HU7, Parts Location	3-18
3-16	+ 28-Volt	Regulator Circuit Card HU4, Parts Location	3-19
3-17		High Voltage Power Supply Circuit Card HU5, Parts Location	3-20
3-18		28-volt Regulator Circuit Card HU3, Parts Location	3-21
3-19	Load No. 1	Circuit Card HV5, Parts Location	3-22
3-20	3.975/5,925	MHz Oscillator Circuit Card HV4, Parts Location	3-23
3-21	30-MHz	Oscillator Circuit Card HV8, Parts Location	3-24
3-22	68-MHz	Oscillator Circuit Card HW2, Parts Location	3-25
3-23		RF Amplifier/Detector Switch Circuit Card HV3, Parts Location	3-26
3-24		Power Detector Assembly A14, Parts Location	3-27
3-25		Oscilloscope Waveforms	3-38
3-26		Insulated Mounting of Stud Type Diodes	3-39
3-27		Blower Well Assembly, Exploded View	3-41
3-28	500-kHz	Oscillator Deviation Sensitivity Adjustment, Test Setup	3-47
3-29	500 kHz	Discriminator Adjustment, Test Equipment Setup	3-47
3-30		Oscilloscope Pattern of Despiking Pulses When Despiking Circuit Is Properly Adjusted	3-48
3-31		Power Detector Adjustment, Test Equipment Setup	3-50
3-32	Load/500 kHz	Filter Circuit Card, Schematic Diagram (Assembly A1)	3-51
3-33	150-Hz	Oscillator/Counter Circuit Card, Schematic Diagram (Assembly A21)	3-52
3-34	1-kHz/10-kHz	Oscillator Circuit Card, Schematic Diagram (Assembly A31)	3-53
3-35	500-kHz	FM Oscillator Circuit Card, Schematic Diagram (Assembly A4)	3-54
3-36		Audio Amplifier/Detector Circuit Card, Schematic Diagram (Assembly A5)	3-55
3-37	+ 28 Volt	Regulator Circuit Card, Schematic Diagram (Assembly A6)	3-56
3-38		High Voltage Power Supply Circuit Card, Schematic Diagram (Assembly A7)	3-57
3-39	-28 Volt	Regulator Circuit Card, Schematic Diagram (Assembly A8)	3-58
3-40	Load No. 1	Circuit Card, Schematic Diagram (Assembly A9)	3-59
3-41	3.975/5.925	MHz Oscillator Circuit Card, Schematic Diagram (Assembly A10)	3-60
3-42	30-MHz	Oscillator Circuit Card, Schematic Diagram (Assembly A11)	3-61
3-43	68 MHz	Oscillator Circuit Card, Schematic Diagram (Assembly A12)	3-62
3-44		RF Amplifier/Detector Switch Circuit Card, Schematic Diagram (Assembly A13)	3-63
FO-1		Resistor and Capacitor Color Code Chart	
FO-2		Power Supply Circuits, Simplified Schematic Diagram	
FO-3	①	Circuit Selector Switches Circuit, Functional Diagram (Sheet 1 of 2)	
FO-3	②	Circuit Selector Switches Circuit, Functional Diagram (Sheet 2 of 2)	
FO-4		Card Cage, Exploded View	
FO-5	①	Test Set Chassis, Schematic Diagram (Sheet 1 of 3)	
FO-5	②	Test Set Chassis, Schematic Diagram (Sheet 2 of 3)	
FO-5	③	Test Set Chassis, Schematic Diagram (Sheet 3 of 3)	

LIST OF ILLUSTRATIONS—Continued

Figure

<i>No.</i>	<i>Title</i>
FO-6 ①	Test Set Chassis, Schematic Diagram For Serial-Numbered Sets 14 and Higher (Sheet 1 of 3)
FO-6 ②	Test Set Chassis, Schematic Diagram For Serial-Numbered Sets 14 and Higher (Sheet 2 of 3)
FO-6 ③	Test Set Chassis, Schematic Diagram For Serial-Numbered Sets 14 and Higher (Sheet 3 of 3)

LIST OF TABLES

Table

<i>No.</i>	<i>Title</i>	<i>Page</i>
2-1	RF Subchassis Test Switch Positions	2-15
2-2	Homer Module Test Switch Positions	2-26
2-3	Receive Audio Module Test Switch Positions	2-30
2-4	Transmit Audio Module Test Switch Positions	2-35
2-5	Fixed IF Module Test Switch Positions	2-41
2-6	Sel-Call Module Test Switch Positions	2-46
2-7	Power Supply Module Test Switch Positions.	2-49
2-8	Circuit Selector Switches Signal Paths	2-53
2-9	0.05 Megahertz Selector Switch Coding	2-75
2-10	Whole Megahertz Selector Switch Coding	2-77
3-1	Tools and Test Equipment	3-1
3-2	Voltage and Resistance Readings	3-29
3-3	Circuit Card Adjustment Procedures	3-37
3-4	Circuit Card Connector Keying Codes	3-43
3-5	Capacitor Frequency Adjustment	3-44
3-6	Capacitance Frequency Adjustment	3-45

CHAPTER 1

INTRODUCTION

1-1. Scope

This manual covers the overall functioning of Test Set, Electronics Circuit Plug-In Unit AN/ARM-87, and contains instructions for direct support and general support maintenance of the test set.

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. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System.

b. Report of Item and Packaging Discrepancies. Fill out and forward SF 364 (Report of Discrepancy

(ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVNATINST 4355.73/AFR 400.54/MCO 4430.3E.

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 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4500.15.

1-4. Reporting Equipment Improvement Recommendations (EIR)

If your AN/ARM-87 needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

1-5. Calibration

The calibration bulletin pertinent to the AN/ARM-87 is TB 11-6625-467-35.