TECHNICAL MANUAL

GENERAL SUPPORT MAINTENANCE MANUAL

RADIO SET
AN / PRC- 1 04(A)
(NSN 5820-01-141-7953)

HEADQUARTERS, DEPARTMENT OF THE ARMY
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Technical Manual

No. 11-5820-919-40-2

HEADQUARTERS
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GENERAL SUPPORT MAINTENANCE MANUAL
RADIO SET
AN/PRC-104A
(NSN 5820-01-141-7953)

REPORTING OF 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-Electronics Command and Fort Monmouth, ATTN: AMSELME-MP, Fort Monmouth, NJ 07703-5007. A reply will be furnished to you.

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NOTE

Maintenance Kit,OA-9169/GRC-213,ls available for Army use In maintaining this equipment.

LIST OF ILLUSTRATIONS

SECTION 0

GENERAL

0-1. SCOPE. This manual covers Radio Set AN/PRC-104(A). This manual provides instructions for general support maintenance. Throughout this manual AN/PRC-104 should be AN/PRC-104(A).

0-2. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

0-3. 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 DA Pam 738-750 as contained in Maintenance Management Update.

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.74AJAFR400-54/MCO 4430.3F.

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

0-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR). If your Radio Set AN/PRC-104(A) needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monrnouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. We'll send you a reply.

0-5. ADMINISTRATIVE STORAGE. Administrative Storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in TM 740-90 1.

0-6. DESTRUCTION OF ARMY ELECTRONICS MATERIEL. Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244 2.

INTRODUCTION

This technical manual provides maintenance prints for Radio Set ANtPRC-104 (radio set). It is used in conjunction with the general instructions, maintenance information, and theory contained with the general instructions, maintenance information, and theory contained in TM 11-5820-919-40-1. For parts ordering information refer to TM 11-5820-919-24P

Maintenance prints are provided for the radio set; the receiver/exciter unit and its 5 modules; and the amplifier/coupler unit and its 2 modules. The maintenance prints radio set and the two units are the same as those contained in TM 11-5820-919-40-lo The maintenance prints include schematics, power distribution; component location; test and alignment setup; performance test; and alignment procedures.

Schematic diagrams contain pertinent voltage and waveform reference data to assist in fault isolation and are used an conjunction with the performance test flowcharts.

Component location diagrams locate and list every replaceable component, and identify the location of test points and pins required to monitor voltages and waveforms on performance test flowcharts.

Test and alignment setup diagrams provide a list of test equipment, a list of special tools and materials, fabricated cables and fixtures, and initial connections for the test setup, They are used in conjunction with the performance test flowcharts. Module performance tests may be performed more easily if the module is tested while inside the radio set, rather than extended via cables. Once a fault is indicated, the module should be removed from the radio set and connected via appropriate extender cables.

Performance test flowcharts provide performance test (heavy flow line) and troubleshoot mug procedures (light flow line) for fault isolating to a component or group of components. The flowcharts are supported by the reference information provided in the other diagrams.

Alignment procedures are used in conjunction with the performance test flowcharts.

NOTE

Poor electrical connection due to dirty or bent connector plus may often be the cause of equipment malfunction or faulty test indication. All electrical connections should be double-checked before proceeding with test or fault isolation.

TECHNICAL CHARACTERISTICS

CharacterIstIc	Description
RADIO SET AN/PRC-104 (Radio Set)	
Frequency Range	2.0000 to 29.9999 MHz in. 0.0001 MHz (100 Hz) increments (280,000 possible frequency settings)
Frequency Accuracy	±1 ppm for -51°F (-46°C) to +160°F (+71°C) (±2 to 30 Hz of setting) from 2 to 30 MHz respectively.
Operating Modes	- Slngle sideband (selectable USB or LSB) - Voice/cw (Morse or burst cw at 300 wpm) - Data (FSK or DPSK up to 2400 bps) compatible with 75 baud military teletype - Receive only (inhibits transmit operation)
Audio Input Impedance and Level	150 ohms, -56 dbm (voice) or, 6 mv. RMS. 600 ohms, 0 dbm (data) or, 77 v. RMS,
RP Output Power	20w (PEP), 0.25w (PEP) exciter output
RF Output Impedance	50-ohms, unbalanced. Output protected to infinite VSWR due to antenna short or open.
Antenna Tuning	Automatic to 1.5:1 VSWR (3 seconds tuning time, typical)

Characteristic	Description
Power Requirements	20.0 to 32.0 vdc with input at 3.5 amp (24 vdc) for transmit (typical). 200 ma for receive (typical).
Operating Temperature Range	-51°F (-46°C) to +160°F (+71°C)
Environmental	Meets applicable provisions of MIL-STD-810B
Mean Time Between Failure (MTBF)	2500 hours (demonstrated per MIL-STD-785)
Mean Time to Repair (MTTR)	15 minutes (module replacement)
Dimensions	12 1/2 x 10 1/2 x 2 5/8 (31.75 cm x 26.67 cm x 6.66 cm) D x U x H
Weight	14 pounds (6.36 Kg), including 4.8 AN silver zinc battery (without accessories)
	RECEIVER
Sensitivity	
SSB, Cal, FSK	0.7 v for 10 db SINAD (-110 dbm voice, -70 dbm data)
Selectivity	2.5 kHz Bandwidth at -3 db
SSB, CW, FSR	6.0 kHz Bandwidth at -60 db
Image Rejection	70 db
I.F. Rejection	60 db
Audio Output	25 tow into 500 (nominal)

Characteristic	Description
Audio Distortion	5 percent at 5 mw, 350 to 3000 Hz
Desensitization (signal to degrade SINAD 3 db)	±2.5% to -29 dbm; ±10% to -15 dbm; ±50% to +17 dbm
	TRANSMITTER
RF Output Power	0.3 W (PEP) for RT-1209, 20W (PEP or average) with AM-6874
Intermodulation Distortion (IMD)	-25 db (two equal tones at rated output power
Harmonic Radiation	-50 db
Carrier Suppression	-42 db
Unwanted Sideband Suppression	-45 db
All Other Spurious	-45 to -60 db
Duty Cycle	1 minute continuous keydown, 9:1 transmit/receive ratio
	BATTERY PACK
Battery	Silver-zinc (AgZn), rechargeable 4.8 AH

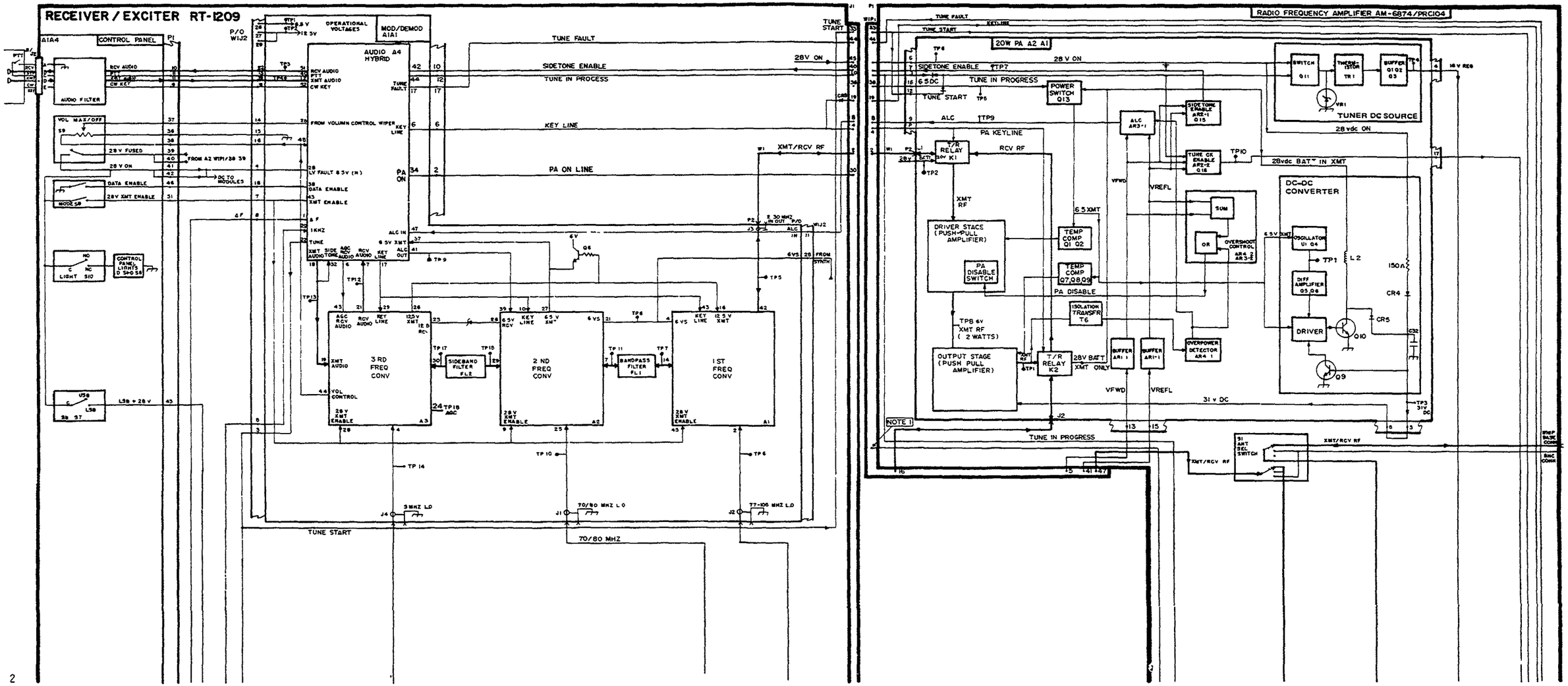

Figure 1-1. Radio Set Block Diagram (Sheet 1 of 2)

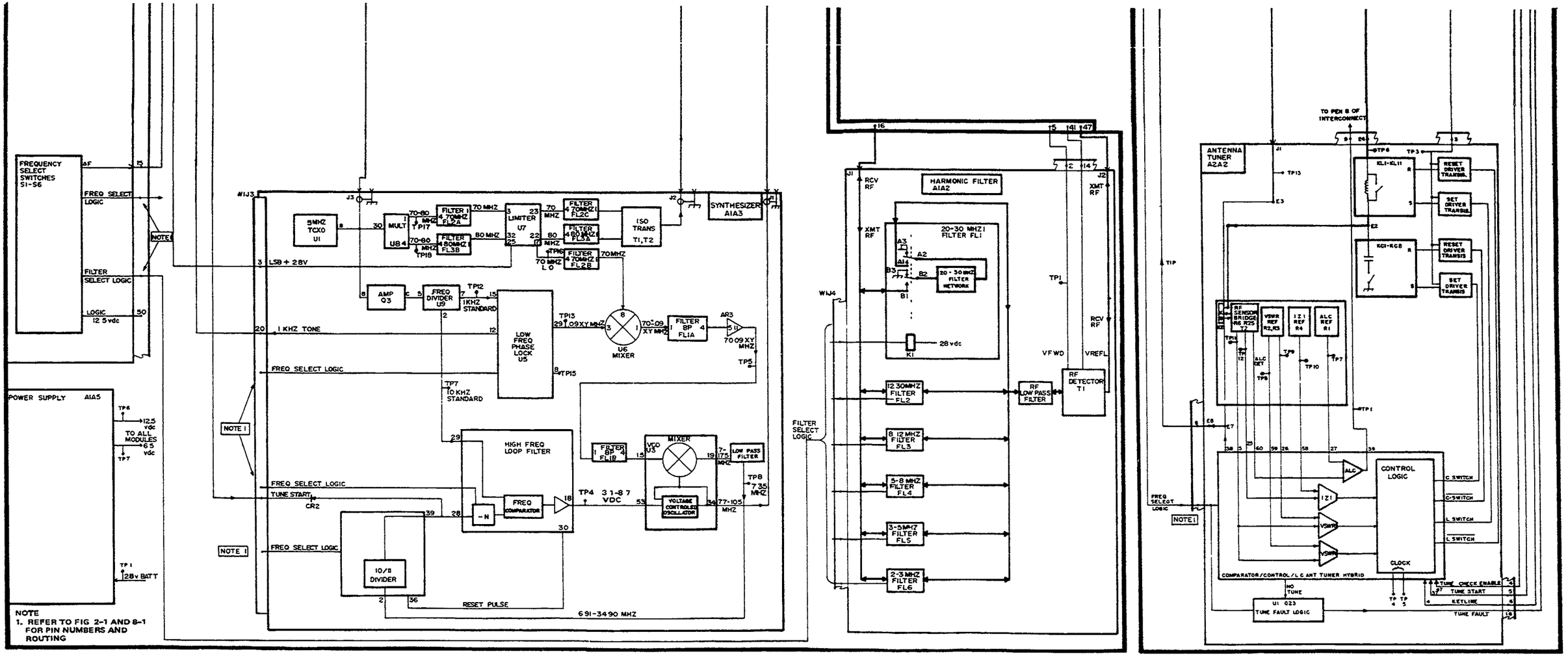

Figure 1-1. Radio Set Block Diagram (Sheet 2 of 2)