

TABLE OF CONTENTS

<u>Paragraph</u>	<u>Page</u>
SECTION 1 - GENERAL DESCRIPTION	
1.1. GENERAL	1-1
1.1.1. Purpose of Book	1-1
1.1.2. Purpose of Equipment	1-1
1.1.3. Description	1-1
1.1.4. Equipment Supplied	1-2
1.1.5. Accessories Available	1-2
1.2. VACUUM TUBE TABLE	1-3
1.3. REFERENCE DATA	1-3
SECTION 2 - INSTALLATION	
2.1. UNPACKING	2-0
2.1.1. Procedure	2-0
2.2. INSTALLATION	2-0
2.2.1. General	2-0
2.2.2. Antenna Connection	2-0
2.2.3. Audio Output Connections	2-0
2.2.4. I-F Output Connection	2-0
2.2.5. Remote Standby Connections	2-0
2.2.6. Power Connection	2-0
2.2.7. Tubes.	2-0
2.2.8. Fuse	2-2
SECTION 3 - ADJUSTMENT AND OPERATION	
3.1. ADJUSTMENT	3-1
3.1.1. General	3-1
3.2. OPERATION	3-1
3.2.1. Function of Controls	3-1
3.2.2. Tuning AM Signals	3-3
3.2.3. Tuning Single-Sideband Signals	3-4
3.2.4. Tuning CW Signals	3-4
3.2.5. Frequency Measuring	3-5
3.3. NOTES ON MECHANICAL FILTERS	3-5
3.3.1. General	3-5
SECTION 4 - CIRCUIT DESCRIPTION	
4.1. MECHANICAL DESCRIPTION.	4-0
4.1.1. Band Change	4-0
4.1.2. Tuning	4-0
4.1.3. Frequency Indication	4-3

SECTION 4 - CIRCUIT DESCRIPTION (CONT.)

<u>Paragraph</u>		<u>Page</u>
4.2.	ELECTRICAL DESCRIPTION	4-3
4.2.1.	General	4-3
4.2.2.	Radio Frequency Amplification	4-3
4.2.3.	Mixer Stages	4-5
4.2.4.	High Frequency Oscillator	4-5
4.2.5.	Variable Intermediate Frequency	4-7
4.2.6.	Variable Frequency Oscillator	4-7
4.2.7.	Crystal Filter	4-7
4.2.8.	Second Intermediate Frequency	4-9
4.2.9.	Detector	4-9
4.2.10.	Noise Limiter	4-9
4.2.11.	Automatic Volume Control	4-11
4.2.12.	Audio Amplifier	4-11
4.2.13.	50 Ohm I-F Output	4-11
4.2.14.	100 KC Calibrator	4-11
4.2.15.	Power Supply	4-12
4.2.16.	Beat Frequency Oscillator	4-12
4.2.17.	Mechanical Filter	4-12

SECTION 5 - MAINTENANCE

5.1.	INSPECTION	5-1
5.1.1.	General	5-1
5.1.2.	Routine Inspection	5-1
5.1.3.	Cleaning	5-1
5.1.4.	Vacuum Tubes	5-1
5.1.5.	Tube Replacement Precautions	5-1
5.1.6.	Tube Table	5-1
5.2.	TROUBLE SHOOTING	5-2
5.2.1.	General	5-2
5.2.2.	Fuses	5-2
5.3.	ALIGNMENT	5-2
5.3.1.	General	5-2
5.3.2.	Equipment and Tools Used for Alignment	5-2
5.3.3.	Crystal Oscillator Trimmer Adjustment	5-2
5.3.4.	100 KC Oscillator Alignment	5-3
5.3.5.	Fixed 500 KC I-F Amplifier Alignment	5-3
5.3.6.	Alternate BFO Alignment Method	5-5
5.3.7.	500 KC I-F Performance Measurements	5-5
5.3.8.	Alignment of Dials with VFO	5-6
5.3.9.	Variable I-F Alignment and RF Alignment Band 2	5-9
5.3.10.	Variable I-F Alignment and RF Alignment Band 3	5-9
5.3.11.	RF Alignment Bands 4-7	5-10
5.3.12.	RF Alignment Bands 8-15	5-10
5.3.13.	RF Alignment Bands 16-30	5-10
5.3.14.	RF Alignment Band 1	5-10
5.3.15.	VFO Alignment	5-10
5.3.16.	Adjustment of L-124	5-12
5.3.17.	Intermediate Amplifier Gain Adjustment	5-12

SECTION 5 - MAINTENANCE (CONT.)

<u>Paragraph</u>	<u>Page</u>
5.4. COMPLETE VFO REMOVAL AND REPLACEMENT	5-12
5.5. DIAL BULB AND STATIC DISCHARGE BULB REPLACEMENT	5-13
5.5.1. Dial Bulb Replacement	5-13
5.5.2. Static Discharge Bulb	5-13
5.6. DIAL AND BAND CHANGE GEAR MAINTENANCE	5-13
5.6.1. General.	5-13
5.6.2. Disassembly of Gear Box.	5-13
5.6.3. Reassembly of Gear Box	5-15
5.7. RF TUNER ASSEMBLY MAINTENANCE	5-17
5.7.1. General.	5-17
5.7.2. Positions of Cams	5-17
5.8. DIAL CORDS	5-18
5.8.1. Megacycle Pointer Cord	5-18
5.8.2. Drum Cord	5-19

SECTION 6 - PARTS LIST

SECTION 7 - PARTS IDENTIFICATION AND SCHEMATIC

LIST OF ILLUSTRATIONS

<u>Figure</u>	<u>Title</u>	<u>Page</u>
1-1	51J-4 Receiver, Front View and Block Diagram (C01-09-P)	1-0
2-1	51J-4 Mounting Dimensions C01-10-P	2-1
2-2	51J-4 Rear Connections C01-11-P.	2-1
2-3	51J-4 On-Off-Standby Functions and Remote Operation Relay Circuit C01-02-3.	2-2
3-1	51J-4 Operating Controls C01-18-P	3-2
3-2	Tuning (A) a Conventional Receiver; (B) and (C) the 51J-4, Using the 3KC Mechanical Filter C01-01-2	3-3
4-1	51J-4 Band Change and Tuning System, Block Diagram C01-03-4	4-1
4-2	51J-4 Mechanical Block Diagram A11-407-4	4-2
4-3	51J-4 Frequency Conversion Circuits A11-401-4.	4-4
4-4	51J-4 Crystal Filter A11-410-3.	4-8
4-5	51J-4 Crystal Filter, Simplified, Position "1" (A11-409-2).	4-8
4-6	51J-4 Crystal Phasing Rejection Notch (A11-408-1)	4-9
4-7	51J-4 Noise Limiter Circuit (A11-404-2).	4-10
4-8	51J-4 A. V. C. Circuit (A11-403-2)	4-10
5-1	51J-4 Alignment Adjustments (C01-19-P)	5-4
5-2	51J-4 Selectivity Curves (C01-04-3)	5-8
5-3	51J-4 Sensitivity Curves (A11-505-2)	5-9
5-4	51J-4 Dial and Bandswitch Gear Box (A11-414-4)	5-14
5-5	51J-4 R-F Slug Rack Drawing (1826-4)	5-18
5-6	51J-4 Dial Cord Arrangement.	5-19
5-7	51J-4 V.F.O. Adjustment Tool (2387-2)	5-23
7-1	51J-4 Top View, Tube and Parts Identification (C01-12-P)	7-1
7-2	51J-4 Bottom View C01-13-P	7-2
7-3	51J-4 Bottom View, Compartment 1, Capacitors (C01-14-P)A	7-3
7-4	51J-4 Bottom View, Compartment 1, General (C01-15-P)B	7-4
7-5	51J-4 Bottom View, Compartment 2 (C01-16-P)	7-5
7-6	51J-4 Bottom View, Compartment 3 (C01-17-P)	7-6
7-7	51J-4 Main Schematic Diagram (540-2710-006).	7-7