

TABLE OF CONTENTS

<u>Paragraph</u>		<u>Page</u>
SECTION I		
GENERAL DESCRIPTION		
1.1.	General	1-1
1.2.	Major Units	1-1
1.3.	General Characteristics and Description	1-1
	1.3.1. Exciter/Power Amplifier.	1-1
	1.3.2. Power Supplies	1-3
1.4.	Reference Data.	1-3
1.5.	Modification for Canada	1-3
1.6.	Tube Complement	1-4
1.7.	Accessories (Not Supplied)	1-4
SECTION II		
INSTALLATION AND INITIAL ADJUSTMENT		
2.1.	Installation	2-1
	2.1.1. Unpacking	2-1
	2.1.2. Placement of Units	2-1
2.2.	External Connections	2-1
SECTION III		
OPERATION		
3.1.	Initial Adjustments	3-0
3.2.	Tuning Procedure	3-0
	3.2.1. CW Operation	3-0
	3.2.2. SSB Operation	3-2
	3.2.3. AM. Operation	3-2
SECTION IV		
THEORY OF OPERATION		
4.1.	General Circuit Description	4-0
	4.1.1. Circuit Description, SSB Signals	4-1
	4.1.2. Circuit Description, AM. Signals	4-1
	4.1.3. Circuit Description, CW Signals	4-1
	4.1.4. Circuit Description, FSK Signals	4-1
4.2.	Detailed Circuit Description	4-1
	4.2.1. Exciter/Power Amplifier Circuits	4-1
	4.2.2. Power Supply Circuits	4-17
	4.2.3. Control Circuits	4-19
	4.2.4. Function of Operating Controls	4-20
	4.2.5. External Connections	4-22

TABLE OF CONTENTS (Cont.)

<u>Paragraph</u>		<u>Page</u>
SECTION V MAINTENANCE AND ALIGNMENT		
5.1.	Maintenance	5-1
	5.1.1. General	5-1
	5.1.2. Cleanliness	5-1
	5.1.3. Trouble Shooting	5-1
	5.1.4. Trouble Shooting Procedure	5-3
5.2.	Electrical Maintenance	5-6
	5.2.1. Test Conditions	5-6
	5.2.2. Exciter and Power Amplifier	5-7
	5.2.3. Alignment of KWS-1	5-8
5.3.	Mechanical Maintenance	5-13
	5.3.1. Dial Cord Replacement	5-13
SECTION VI PARTS LIST		
SECTION VII ILLUSTRATIONS		
SECTION VIII ANTENNAS WITH 52-OHM COAXIAL FEED LINES		
8.1.	General	8-1
8.2.	Antenna Details	8-1
8.3.	Transmission Line	8-2
8.4.	Test Information	8-2

LIST OF ILLUSTRATIONS

<u>Figure</u>		<u>Page</u>
1-1	KWS-1 Transmitter	1-0
1-2	Block Diagram of Single Sideband Development	1-2
2-1	Exciter/Power Amplifier Rear Panel	2-2
2-2	Installation of PA Tubes	2-2
2-3	KWS-1 Connections to Associated Apparatus.	2-3
3-1	Exciter Front Panel	3-1
3-2	Power Supply Front Panel	3-1
4-1	Exciter/Power Amplifier, Block Diagram	4-0
4-2	VOX Circuits, Simplified Schematic Diagram	4-2
4-3	LFO, Balanced Modulator and FL101 Mechanical Filter, Simplified Schematic Diagram	4-3
4-4	Balanced Modulator and FL101 Mechanical Filter, Simplified Schematic Diagram	4-4
4-5	Balanced Modulator Output, Typical Oscilloscope Pattern.	4-5
4-6	FL101 Mechanical Filter, Functional Diagram	4-5
4-7	FL101 Mechanical Filter Output, Typical Oscilloscope Pattern	4-6
4-8	First Mixer V201, Simplified Schematic Diagram	4-7
4-9	6CL6 Driver Feedback and Grid-to-Cathode Neutralization Circuits, Simplified Schematic Diagram	4-10
4-10	6CL6 Driver Grid-to-Cathode Neutralization Bridge Diagram	4-11
4-11	6CL6 Driver Grid-to-Plate Neutralization Circuits (80 Meters), Simplified Schematic Diagram	4-11
4-12	6CL6 Driver Grid-to-Plate Neutralization Bridge Diagram (80 Meters)	4-12
4-13	6CL6 Driver Grid-to-Plate Neutralization Circuits, (40, 20, 15, 11 and 10 Meters), Simplified Schematic Diagram	4-12
4-14	6CL6 Driver Grid-to-Plate Neutralization Bridge Diagram (40, 20, 15, 11 and 10 Meters)	4-13
4-15	4X250B Final Amplifier Grid-to-Plate Neutralization Circuits, Simplified Schematic Diagram	4-13
4-16	4X250B Final Amplifier Grid-to-Plate Neutralization Bridge Diagram	4-14
4-17	Automatic Load Control Circuits, Simplified Schematic Diagram	4-15
4-18	Primary Circuits, Simplified Schematic Diagram	4-16
4-19	Control Circuits, Simplified Schematic Diagram	4-18
5-1	Exciter Test Jacks and Points of Tuned Circuit Adjustments	5-5
5-2	Dial Cord Replacement	5-14
6-1	Exciter/Power Amplifier, Rear Panel	6-31
6-2	Exciter/Power Amplifier, Top View, Top Cover Open	6-32
6-3	Exciter/Power Amplifier, Front Panel, Internal View	6-33
6-4	Exciter/Power Amplifier, Bottom View, Cover Removed	6-34
6-5	Exciter, Bottom View, Upper Right Quarter.	6-35
6-6	Exciter, Bottom View, Lower Right Quarter	6-36
6-7	Exciter, Bottom View, Upper Left Quarter, Including Power Amplifier	6-37
6-8	Exciter, Bottom View, Lower Left Quarter	6-38
6-9	Power Amplifier, Bottom-Rear-Left View.	6-39
6-10	Power Amplifier, Top View, Cover Removed	6-39
6-11	Power Amplifier, Front View, Cover Removed	6-40
6-12	Power Supply, Front Left Oblique View, Panel Removed	6-41
6-13	Power Supply, Front Vertical Oblique View, Panel Removed	6-42
6-14	Power Supply, Front Right Oblique View, Panel Removed	6-43
6-15	Power Supply, Rear View, Panel Removed	6-44
6-16	Power Supply, Rear Oblique View, Panel Removed	6-45

LIST OF ILLUSTRATIONS (Cont.)

<u>Figure</u>		<u>Page</u>
7-1	Exciter/Power Amplifier, Complete Schematic Diagram	7-3/7-4
7-2	Power Supply, Complete Schematic Diagram	7-5/7-6
7-3	Interconnecting Cable, Wiring Diagram	7-7
7-4	RG-8/U Cable Assembly to Connectors	7-8
7-5	RG-58/U Cable Assembly to Connectors	7-9
8-1	Balun With Balanced Open Wire Line for Reduction of Losses on Long Transmission Lines	8-3
8-2	10-Meter Beam With Shortened Unbalanced to Balanced Transformer (Balun) Feed System	8-4
8-3	20-Meter Beam With Shortened Unbalanced to Balanced Transformer (Balun) Feed System	8-5
8-4	Half-Wave Antenna With Quarter-Wave Unbalanced to Balanced Transformer (Balun) Feed System	8-6
8-5	Broadband Antenna With Quarter-Wave Unbalanced to Balanced Transformer (Balun) Feed System	8-7
8-6	Short Balun for 40 and 80 Meters	8-8

LIST OF TABLES

<u>Table</u>		<u>Page</u>
3-1	Approximate PA Tuning and Loading Dial Settings	3-3
4-1	Tuned Circuit Components	4-9
4-2	Typical Meter Readings	4-22
5-1	Fuse Table	5-7
5-2	Test Jacks	5-7
5-3	Driver Plate Alignment	5-11
5-4	Tube Pin Voltage to Ground	5-15
5-5	Tube Pin Resistances to Ground	5-16
8-1	Nominal Antenna Performance Specifications	8-1