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FEDERAL COMMUNICATIONS COMMISSIONS REQUIREMENTS

Your new Midland 13-862 is a combination receiver-transmitter designed and built for licensed Class D operation on any of the 23 frequencies designated as citizens band channels by the Federal Communications Commission. You are required to read and understand Part 95 of the F.C.C. rules and regulations prior to operation of this unit. Part 95 regulations are available for \$2.00 from the Superintendent of Documents, Government Printing Office, Washington. D. C. 20402. You are also required to complete F.C.C. form 505 and submit it to the F.C.C. in order to receive your license to operate this unit. F.C.C. regulations will be violated if you transmit with this unit prior to receipt of your license.

NOTE

The technical information, diagrams, and charts provided in this manual are supplied for the use of a qualified holder of a first or second class radiotelephone license in servicing this transceiver. It is the users responsibility to see that this unit is operating at all times in accordance with the F.C.C. Citizens Radio Service regulations.

If you install or service your own transceiver, do not attempt to make any transmitter tuning adjustment. Transmitter adjustments are prohibited by the F.C.C. unless you hold a first or second class radiotelephone license or are in the presence of a person holding such a license. A Citizens Band or Amateur license is not sufficient.

MIDLAND ELECTRONICS COMPANY HEREBY
CERTIFIES THAT THIS UNIT HAS BEEN DESIGNED
AND MANUFACTURED IN ACCORDANCE WITH VOL. 6,
PART 95 OF THE CURRENT F.C.C. RULES AND REGULATIONS
AS OF THE DATE OF MANUFACTURE.

UNDERSTANDING YOUR NEW 13-862

RECEIVER :

Sensitive dual conversion circuit with all crystals supplied for 23-channel reception. One microvolt sensitivity, built-in controlled squelch circuit and noise limiting give noise-free operation. Active AGC circuit eliminates **fading and over driving**.

TRANSMITTER :

Precision crystal-controlled oscillator circuit with all 23 Citizens Band channels built in. A full 5-watt RF input power is effectively converted into radiated output power with a minimum of loss for a stronger signal. A maximum of TVI filtering is employed. Pi-network matching for exact loading to any standard CB antenna.

SIGNAL-TRANSMIT POWER METER :

A combination meter on front panel provides a constant visual monitor of incoming "Signal Strength" when receiving and "Relative Output Power" when transmitting.

CONTROLS :

A full set of controls is employed, including volume ON-OFF switch, 23-channel selector switch, full variable squelch.

POWER SUPPLY :

The 13-862 is designed to operate on 12 volts DC. Any 12-volt (negative ground) automobile system is adequate. For base station application, use Midland 18-805 (optional extra) power supply which plugs into 110 volts AC and delivers 12 volts DC to your transceiver.

ANTENNA REQUIREMENT :

This transceiver will operate with any standard 52 ohm ground-plane, vertical, mobile whip, or other CB antenna. A standard SO 239 type connector is provided on the back panel for use with popular PL259 antenna plug. An adjustable loading network is provided to match antenna impedance exactly.

FREQUENCY :

Each unit is completely equipped with crystals for operation on any of the 23 Citizens Band channels. It is not necessary to purchase any additional crystals for this unit. Refer to part 95 of the F.C.C. rules and regulations to determine which channels may be used for various kinds of communication.

MOBILE INSTALLATIONS

A location in the car or truck should be chosen carefully for convenience of operation and non-interference with normal driving functions. Mounting may be under the dash or instrument panel or any place a secure installation can be made. The carrying handle again serves as the mounting bracket or additional perforated straps or brackets may be used as desired. The 12-volt cable may be connected to any convenient terminal but preferably to the ignition switch to prevent unauthorized persons from operation of your unit. With this method the unit will only operate when your key is turned on. Engine ignition interference should not be a problem and vehicles equipped with standard broadcast radio will have enough suppression to eliminate ignition interference. If interference is present, a skilled auto radio repairman should be able to eliminate it for you. A 1.0 mfd condenser connected between the generator armature post and ground will help greatly.

BASE STATION INSTALLATIONS

For base station use, the Midland model 18-802 power supply is recommended. When this power supply is used, simply connect the red (+) and black (-) terminals on the power supply to the (+) and (-) leads on your 13-862. Do not attempt to operate this transceiver by connecting it directly to 110 Volts AC.

ANTENNA INSTALLATION

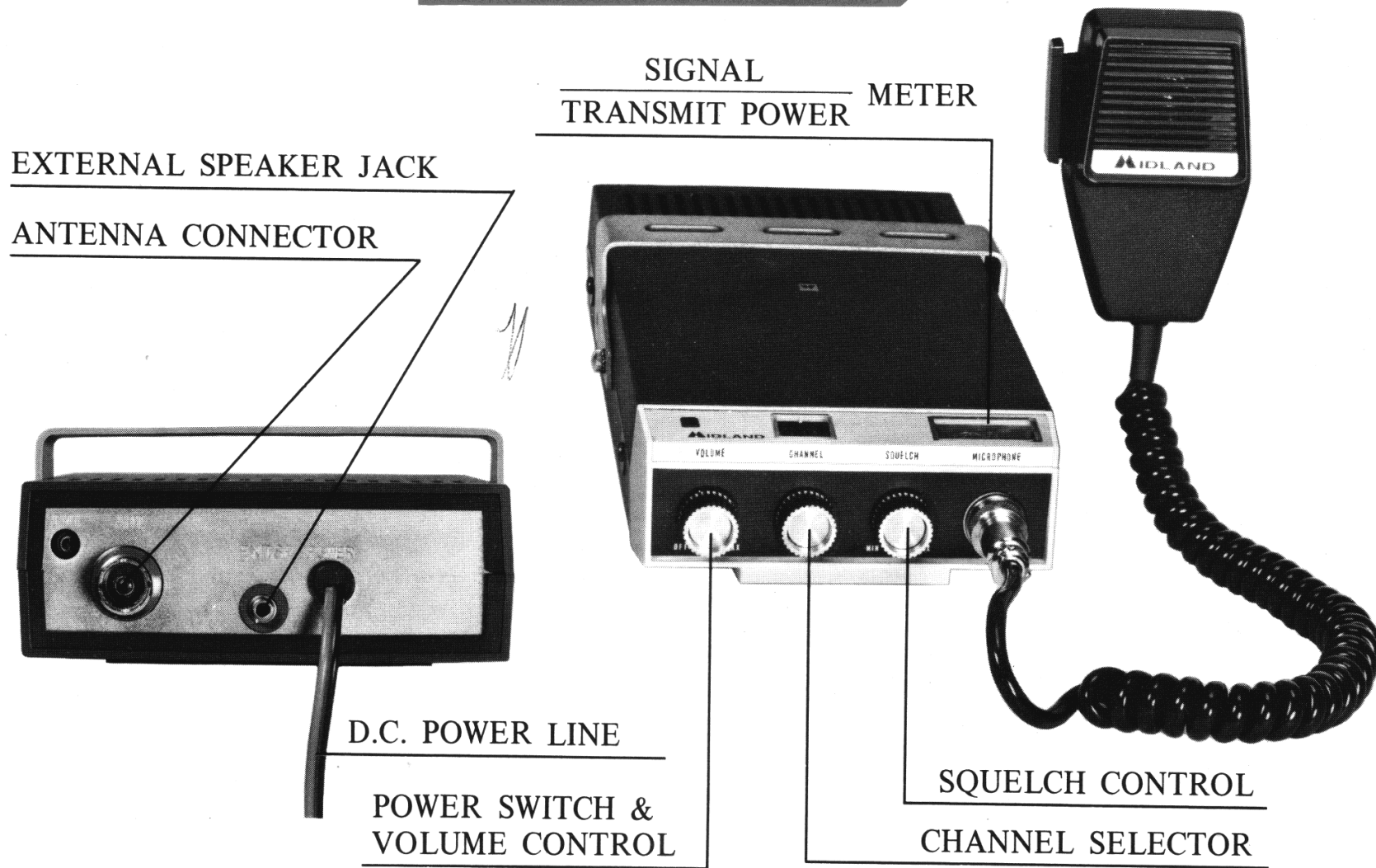
BASE STATION :

When the 13-862 is used as a base station, any Citizens Band beam, dipole, ground plane or vertical antenna may be used. A ground plane type will provide greater coverage and, since it is essentially non-directional, it is ideal in base station to mobile operation. From base station to base station, or point to point operation, a directional beam will give greater distance even under adverse condition. The range of the transceiver depends basically on the height of the antenna and, whenever possible, select the highest location within F.C.C. limits. (These regulations limit the antenna height to 20 feet above an existing structure). Generally a maximum of 26 feet of lead-in cable should be used due to line losses. However, a desirable antenna location may justify the loss in extra lead-in length.

MOBILE ANTENNAS :

A vertical whip antenna is best suited for mobile use. A non-directional antenna must be used for best results in any case. The base loaded whip antenna will normally provide effective communication. For greater range and more reliable operation, a full quarter-wavewhip should be used. Either of these antennas use the metal car body as a ground plane and the shield of the base lead as well as the metal case of the transceiver should be grounded. A standard antenna connector (type SO 239) is provided on the transceiver for easy connection to a standard PL 259 cable termination.

OPERATION OF CONTROLS



VOLUME CONTROL AND OFF-ON SWITCH:

The volume control varies the sound output of the loudspeaker. It also functions as “off-on” switch. Clockwise rotation increases volume.

CHANNEL SELECTOR SWITCH :

Tuning the receiver and transmitter is simultaneous by rotating the 23 channel selector switch. Set switch to desired channel 1 to 23 as indicated directly on switch knob.

SQUELCH CONTROL :

The squelch control is designed to maintain a quiet standby operation. This control must be set when only noise, no signal is heard. Turn the control fully counterclockwise and increase the volume until noise or a signal is heard. When only noise is present, turn the squelch control clockwise until the noise is blanked out.

PRESS-TO-TALK MICROPHONE :

The receiver and transmitter are controlled by the press-to-talk switch on the microphone. Press in this switch and the transmitter is activated. Release this switch to receive. When transmitting, hold microphone 3 to 4 inches from mouth and speak clearly and in a normal voice.

GENERAL OPERATING INSTRUCTIONS

CAUTION :

Before operating this transceiver, you are required by law to read and thoroughly understand part 95 of the F.C.C. rules and regulations.

Check to see if the proper connections have been made on power cable, antenna system and microphone and that the correct cables have been used. Be sure that the transceiver is adequately grounded (if not mounted directly to a metal surface).

To transmit, press the push-to-talk switch and hold it down. Speak directly into microphone. Release this switch to receive. Actual receive and transmitting power should be monitored by watching the SIGNAL-TRANSMIT POWER METER and using the switch provided for this purpose.

Select the channel on which you wish to operate by rotating the Channel Selector Switch to the desired channel.

The microphone should be held approximately 3 to 4 inches away from your mouth. Use a normal speaking voice. Speak slowly and clearly. Talking louder does not increase transmitting power and will only cause distortion. You will notice the SIGNAL-TRANSMIT POWER meter moving as you transmit. This indicates that you are transmitting. Always release the microphone switch when you complete your transmission.

SERVICING YOUR TRANSCEIVER

The technical information, diagrams and charts provided in this manual are supplied for the use of a qualified holder of a first or second class radiotelephone license in servicing this transceiver. It is the users responsibility to see that this unit is operating at all times in accordance with the F.C.C. citizens radio service regulation.

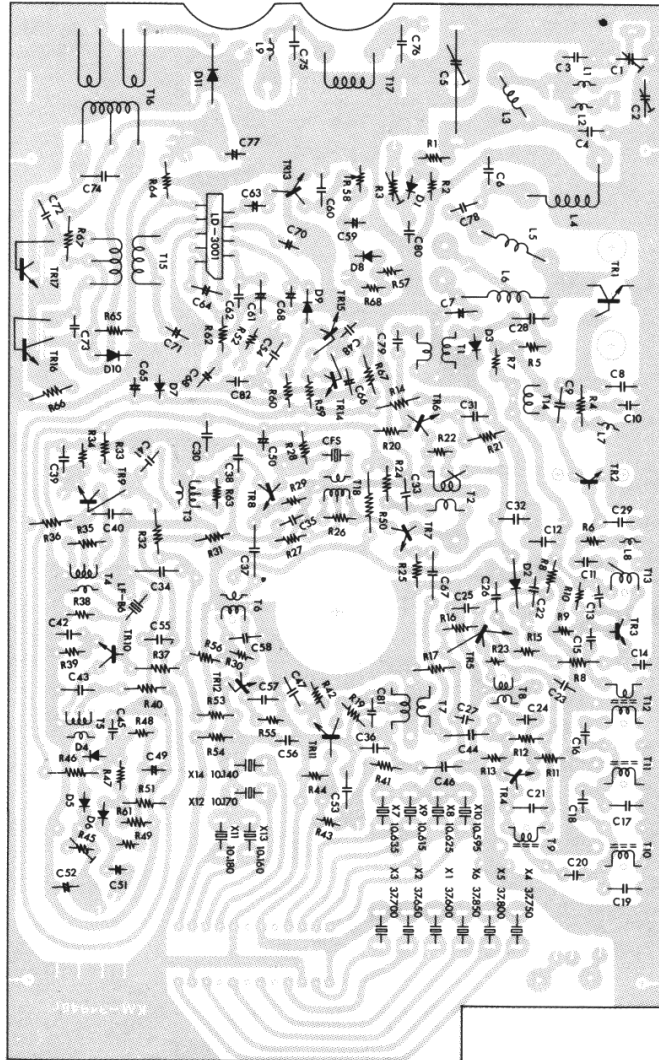
If you install your own transceiver, do not attempt to make any transmitter tuning adjustments are prohibited by the F.C.C. unless you hold or are in the presence and under the supervision of a first or second class radiotelephone licensed person. A Citizens Band or Amateur license is not sufficient.

ANTENNA LOADING ADJUSTMENT

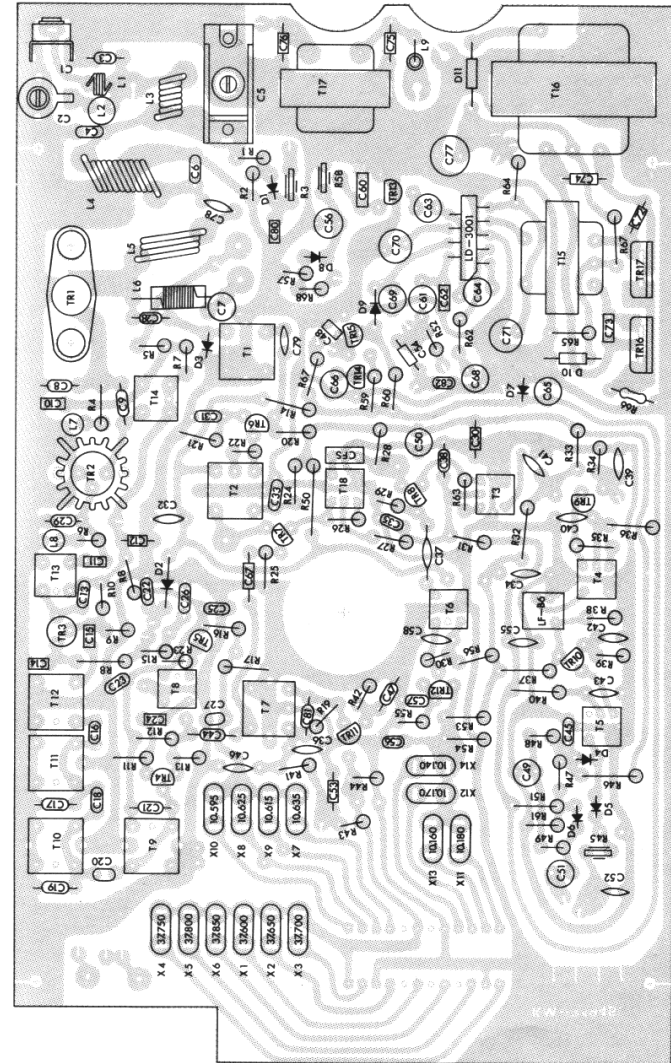
In order to insure maximum power transfer to the antenna, a loading adjustment is provided. For best results, disconnect the antenna and connect a number 47 lamp to the antenna receptacle. The center terminal of the lamp should make contact with the center jack of the receptacle and the outer shell of the lamp should be connected to ground. With an alignment tool, adjust the antenna load coil for maximum reading on the SIGNAL-TRANSMIT POWER METER and maximum brilliance of the lamp. Readjust antenna output for maximum reading and lamp brilliance.

MODEL 13-862 PARTS LAYOUT

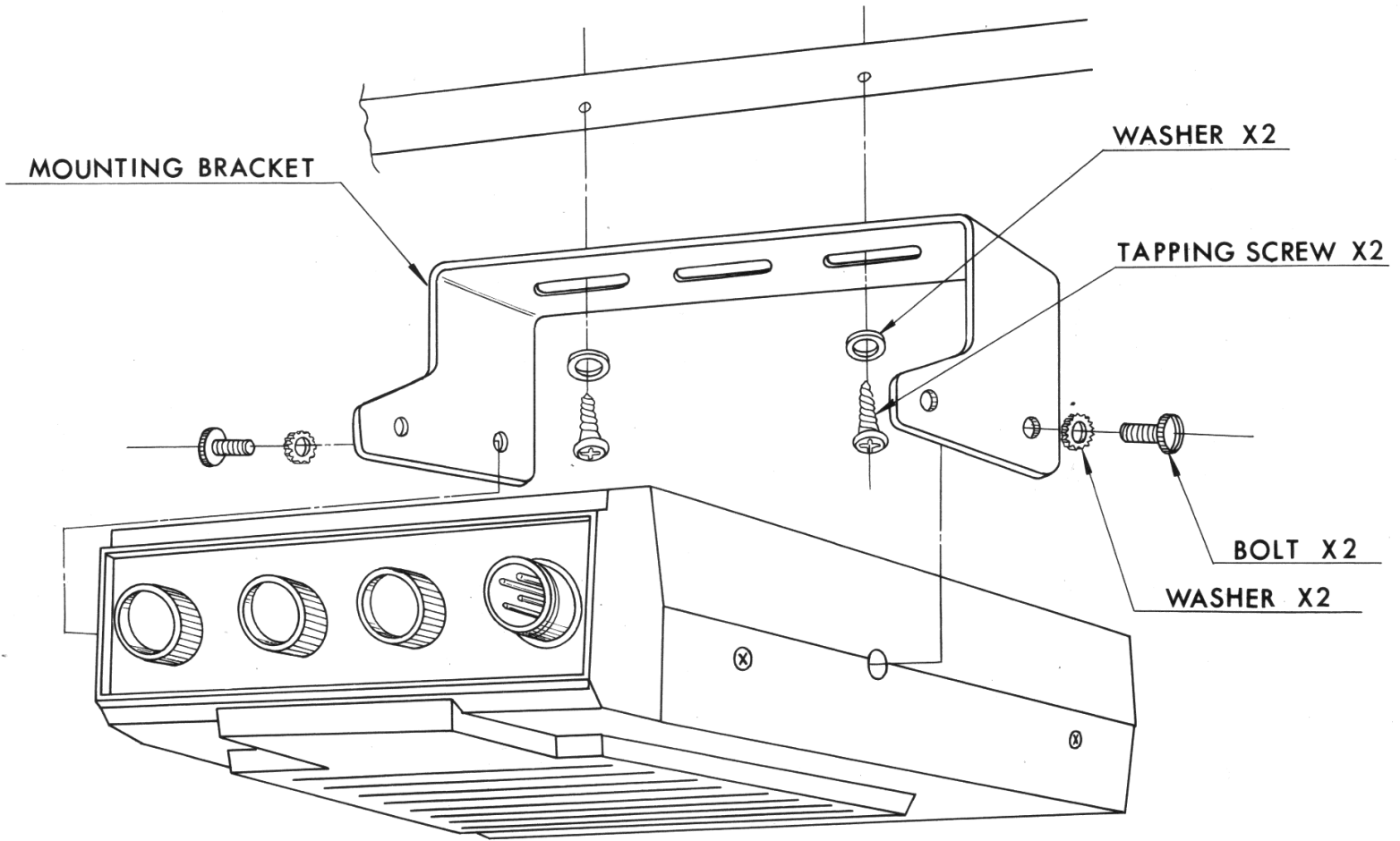
BACK VIEW



FRONT VIEW



MOUNTING INSTRUCTIONS



SPECIFICATIONS FOR 13-862

Circuitry : 17-transistor , 1 IC
and 11 diode

Receiver Section :

Sensitivity at 10 db S/N	:	1 μ V
Image Rejection Ratio	:	40 db
1st IF Rejection Ratio at 10.635 MHz	:	45 db
2nd IF Rejection Ratio at 455 KHz	:	100 db
Squelch sensitivity at maximum	:	300 μ V
Squelch sensitivity at threshold	:	0.5 μ V
A.G.C. (input 5,000 μ V, output 10 db down)	:	75 db
IF Response at 6 db down bandwidth	:	8 KHz
Adjacent channel selectivity	:	35 db
Audio output power at maximum (input 60 db)	:	4W
Audio output power at 10% distortion	:	2.8W
Distortion at input 60 db	:	10%
Audio fidelity at 1,000 Hz 0 db (6 db down)	:	300 -2,000 Hz
Current drain at no signal	:	200 mA
Current drain at maximum output power	:	900 mA

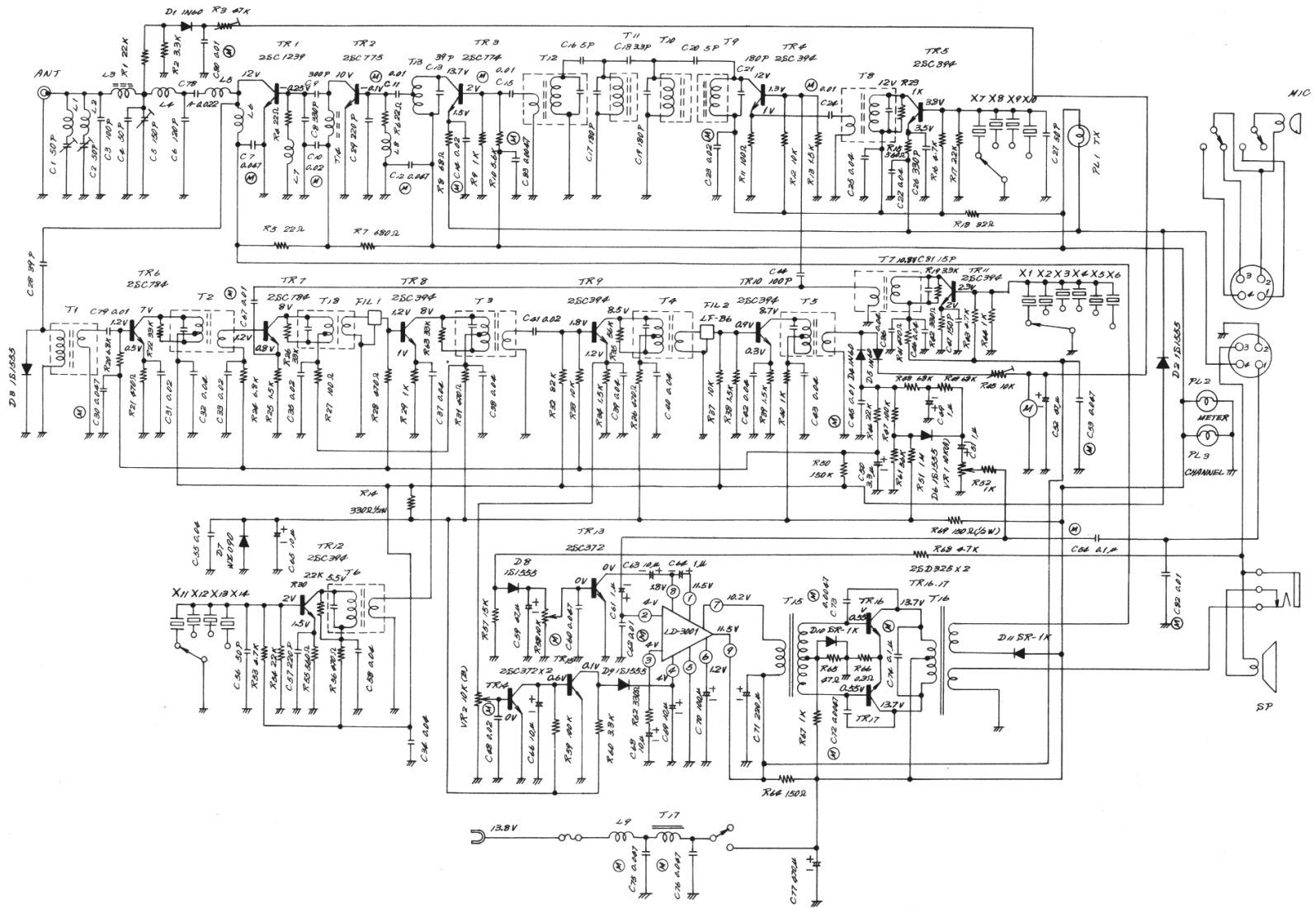
Transmitter Section :

RF output power	:	3W
Modulation capability	:	90%
Frequency tolerance	:	0.005%
Spurious ratio	:	50 db
Current drain at no modulation	:	800 mA
Current drain at maximum modulation	:	1,300 mA

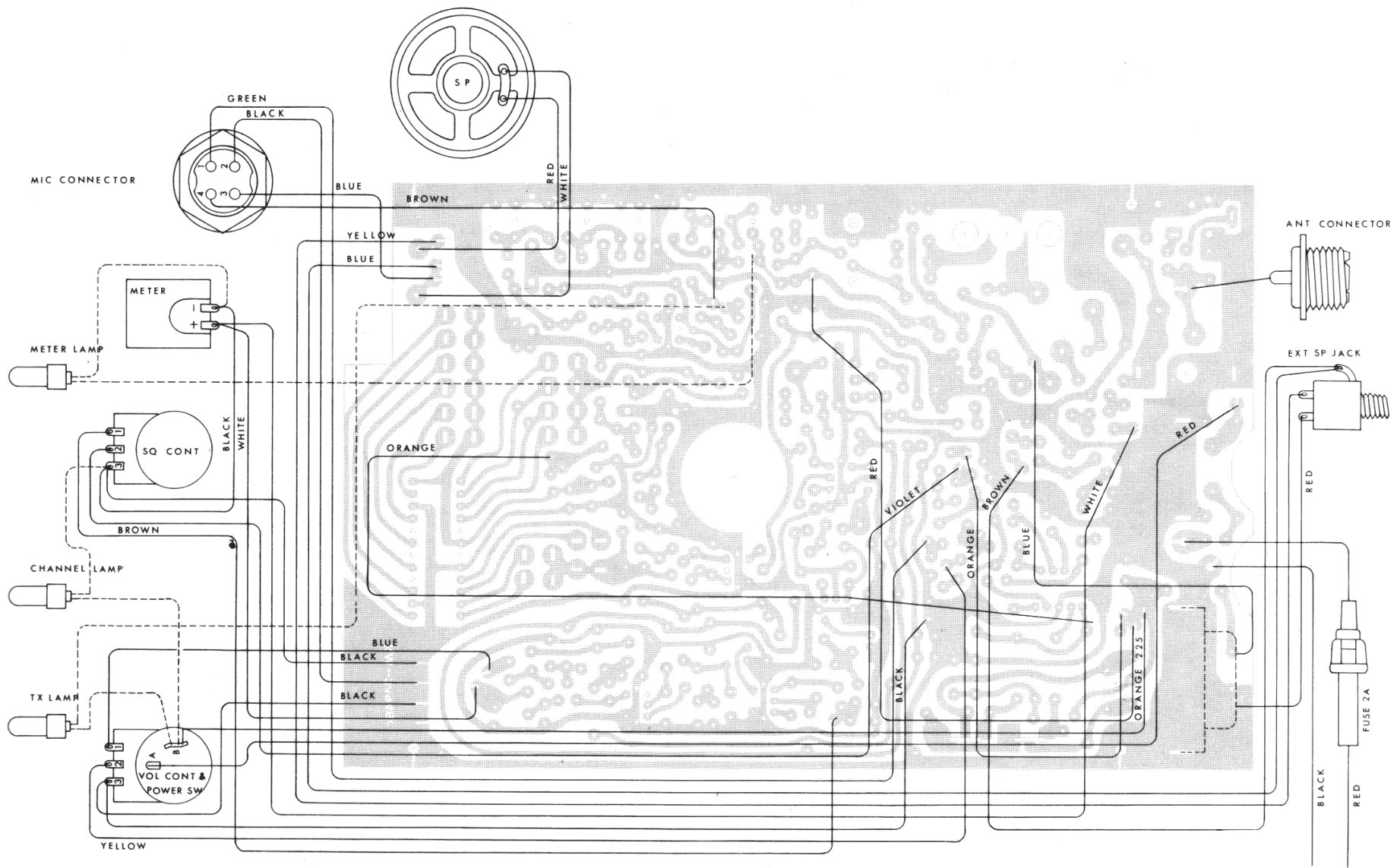
Measurement Condition :

Audio output power	:	0.5W
Audio output load	:	8 ohm
Modulation frequency	:	1,000 Hz
Modulation	:	30%
Antenna impedance	:	50 ohm
Power source	:	13.8V DC

MODEL 13-862 SCHEMATIC DIAGRAM



WIRING DIAGRAM



CRYSTAL FREQUENCY CHART

XTAL	CHANNEL																						
MASTER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
37.600	○	○	○	○																			
37.650					○	○	○	○															
37.700									○	○	○	○											
37.750													○	○	○	○							
37.800																	○	○	○	○			
37.850																					○	○	○
XMTR																							
10.595				○				○				○				○				○			○
10.615			○				○				○				○				○				
10.625		○				○				○				○				○				○	
10.635	○				○				○				○				○				○		
RCVR																							
10.140				○				○				○				○				○			○
10.160			○				○				○				○				○				
10.170		○				○				○				○				○				○	
10.180	○				○				○				○				○				○		

WARRANTY POLICY

Midland Electronics Company warrants each new Midland product to be free from defects in material and workmanship under normal use and service for a period of 90 days after delivery to the ultimate user and will replace or repair the product at our option, at no charge should it become defective and which our examination shall disclose to be defective and under warranty.

This warranty shall not apply to any Midland product which has been subject to misuse, neglect, accident, incorrect wiring not of our own installation, or to use in violation or instructions furnished by us, nor extended to units which have been repaired or altered outside of our factory.

This warranty does not cover carrying cases, earphones, batteries, antenna, broken or cracked cabinets, or any other accessory used in connection with this product.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our products.

Sales receipt must accompany product to validate the date of purchase.

MIDLAND ELECTRONICS COMPANY

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