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**Midland 13-881B Owner's Manual**

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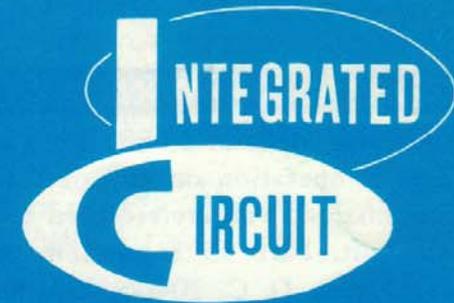
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**MIDLAND**  
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**MODEL 13-881B**

**23 CHANNEL AM CITIZENS BAND TRANSCEIVER**

**OWNER'S GUIDE**



## FEDERAL COMMUNICATIONS COMMISSION'S REQUIREMENTS

Your new Midland 13-881B is a combination receiver-transmitter designed, built, and F.C.C. type accepted 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 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 user's 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.

When service is performed by an authorized and licensed person, care must be taken in the replacement of parts to use only authorized parts, in order not to void the type acceptance of this model.

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

# OPERATION OF CONTROLS

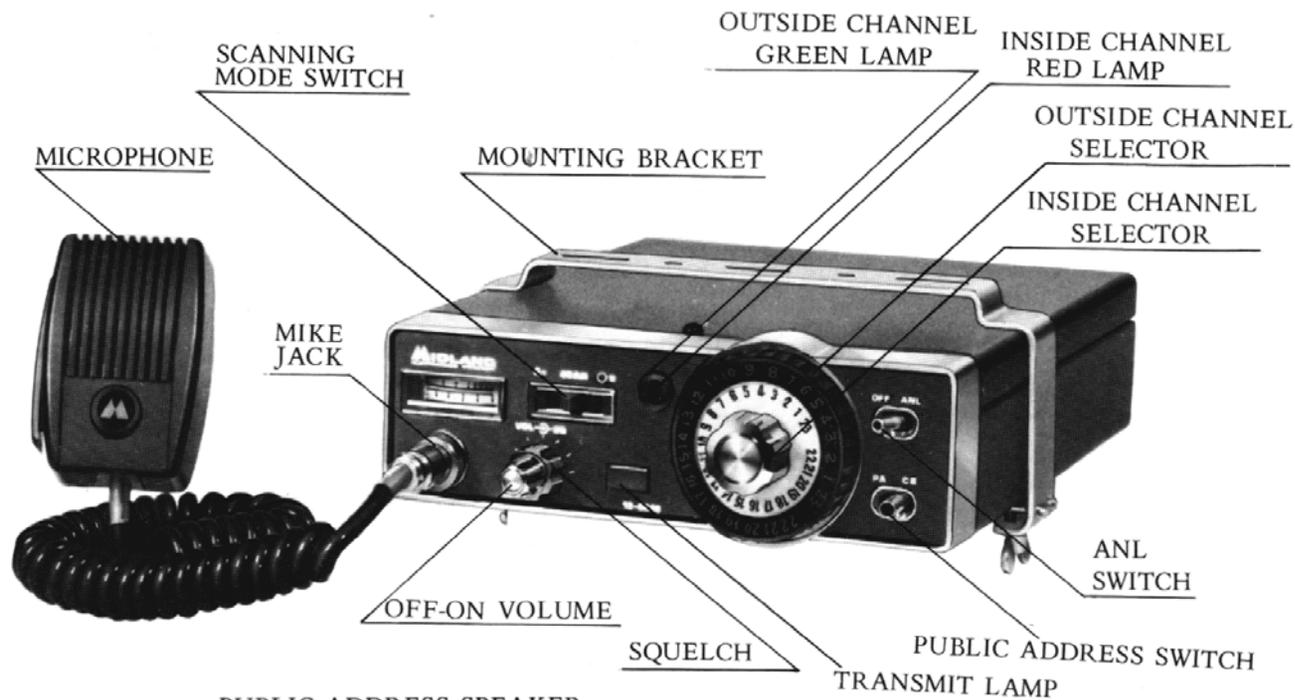


FIGURE 1

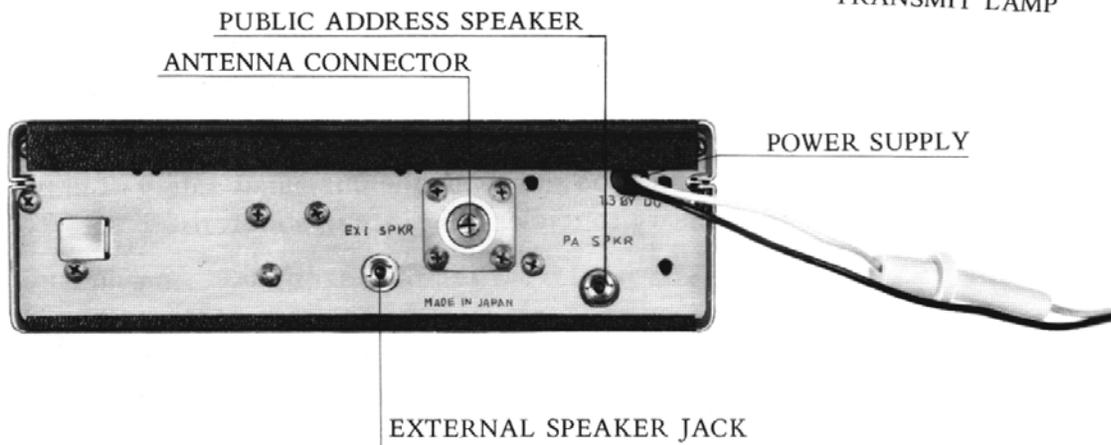


FIGURE 2

## **OPERATING CONTROLS AND FUNCTIONS (FIGURES 1 & 2)**

### **VOLUME-ON/OFF**

This is the power on/off switch and speaker volume control. Rotate to the right to turn the set on and increase the volume. This control does not affect the transmitting output.

### **ANY CHANNEL SCANNING FEATURE**

This provides you with the unique feature of allowing you to monitor any two channels of all 23 channels in Class D Citizens Band Radio Service.

When all other controls are adjusted for normal operation and the channel selectors are set to any two channels, (one on the inside channel selector and another on the outside channel selector), which you desire the receiver to scan. Set the scanning mode switch to the position "SCAN". Then, turn the squelch control knob clockwise until receiver noise is muted (squelched) for automatic scanning. When an incoming signal releases the squelch, the receiver will lock on that channel. When the message on that channel is ended, the receiver will automatically resume scanning the two channels you have set. Or if you desire to respond to the message on that channel, it is necessary to turn the scanning mode switch position. "A" or "B", to which that channel belongs. For your convenience the 13-881B has been so designed you can transmit on the inside channel when the scanning mode switch is on "Scan".

### **CHANNEL SELECTORS**

Both inside and outside channel selectors control both transmitter and receiver frequencies simultaneously when scanning mode switch is in position "A" or "B". In connection with the scanning mode switch, either inside or outside channel selector may be set to any of the 23 positions desired in the Class D Citizens Band Radio Service.

Channel 9 has been specified by the FCC for emergency communications involving the immediate safety of individuals or the immediate protection of property, or communications necessary to render assistance to a motorist.

## SCANNING MODE SWITCH

A 3-position slide switch provides selecting the following scanning modes.

Position A	Transmit/Receive on inside channel selector. (Red Light)
Position SCAN	Receive scan of inside and outside channel selector, and Transmit on inside channel selector.
Position B	Transmit/Receive on outside channel Selector. (Green Light)

## SQUELCH

Quiets the receiver when signals are not being received and allows a quiet standby operation. It functions only in the receive mode and does not affect the receiver volume when signals are being received. To adjust: When no signals are present, rotate the squelch control clockwise until the receiver is quieted. Incoming signals will automatically release the squelch. Careful adjustment is necessary, as settings too far to the right will not allow weaker signals to release the squelch.

## PA-CB SWITCH

This unit may also be used as a paging amplifier by connecting a suitable 8–16 ohm speaker to the P.A. output jack (Figure 2) and setting the PA-CB switch to the PA position. Press and hold the push-to-talk bar on the microphone and speak into the microphone in a normal tone of voice.

## ANL (AUTOMATIC NOISE LIMITER) SWITCH

This switch controls the noise limiter circuit which has been designed to reduce excessive electrical interference, ignition noise, etc. Generally, in mobile operation with the engine running, the ANL should be on.

## TX LIGHT

This is a transmit indicator light and will glow red when the push-to-talk bar on the microphone is pressed.

## S-RFO METER

This is a dual purpose meter that measures the relative strength of incoming signals when receiving and the relative power output when transmitting.

## **MOBILE INSTALLATION**

Safety and operating convenience are the primary factors to consider when mounting any piece of equipment in an automobile. Be sure that the transceiver controls may be easily reached by the operator. Also be sure that connecting cables do not interfere with the operation of the brake, accelerator, etc.

## **POWER CONNECTION**

The Model 13-881B may be installed and used in any 12 volt DC negative or positive ground system vehicle. Most newer U.S. and foreign-made cars and small trucks use a negative ground system while some older cars and some newer large trucks may use a positive ground system.

A negative ground system is generally identified by the –battery terminal being connected to the vehicle motor block, but if you cannot determine the polarity system of your vehicle, it is suggested that you consult your vehicle dealer for definite information.

## **NEGATIVE GROUND SYSTEM**

In the case of a negative ground system, connect the red DC power cord from the transceiver to the positive or +battery terminal or other convenient point and connect the black power cord to the chassis or vehicle frame or –battery terminal.

## **POSITIVE GROUND SYSTEM**

In the case of a positive ground system, connect the black power cord from the transceiver to the negative or –battery terminal or other convenient point and connect the red power cord to the chassis or vehicle frame or +battery terminal.

With regard to the connection of the power cords, it may be possible or desirable to connect the (red cord for negative ground system) or (black cord for positive ground system) to the ignition switch accessory terminal, so that the transceiver is automatically turned off when the ignition switch (key) is turned off.

Alternately, the power cord may be connected to an available terminal on the fuse block or even to a point in the wiring harness. Care must be taken, however, to guard against a short circuit condition so when in doubt, please contact your vehicle dealer for specific information for your vehicle.

## **MOBILE ANTENNAS**

A vertical whip antenna is best suited for mobile operation. A nondirectional antenna should be used for best results in any case. The base-loaded whip antenna will normally provide effective communication or for greater range and more reliable operation a full quarter-wave whip may 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 coax plug. Following the antenna manufacturer's instructions carefully will insure proper operation.

## **BASE STATION OPERATION**

Although the 13-881B is designed for mobile operation, it will work equally well as a base station when connected to a suitable base station power supply.

When the 13-881B is used as a base station, any Citizens Band beam, dipole, ground plane or vertical antenna may be used. A ground plane type antenna will provide good 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 conditions. The range of the transceiver also depends on the height of the antenna so 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 coax lead-in cable should be used to minimize line losses, however, a desirable antenna location may justify the slight loss developed by longer cable length.

## GENERAL OPERATING INSTRUCTIONS

The explanations of operating controls and functions should be read and understood before actual operation of this transceiver.

1. Plug in the microphone and check to be sure that the antenna and power cables are properly connected.  
CAUTION: Do not transmit until an antenna or suitable dummy load has been connected to the coax antenna output jack.
2. Set the synthesizer mode switch position to "A" or "B", the channel selector to the desired channel.
3. Initially, set the squelch control fully counterclockwise.
4. Set the PA-CB switch to the CB position.
5. Turn the set on and adjust the volume control to the desired level.
6. To transmit, press the push-to-talk bar on the microphone.
7. For scanning any channel you desire, see ANY CHANNEL SCANNING FEATURE on page 3.

## SPECIFICATIONS

### GENERAL

Circuitry <sup>3/4</sup>	28 transistors, 35 diodes, 1 Integrated Circuit ,1 FET
Frequency Control:	±0.005% crystal
Channels:	23 – all supplied
Controls:	On/off/volume; PA/CB; variable squelch; ANL on/off; channel selectors; scan mode switch knob
Jacks & Connections:	Provided for 8-ohm speaker, 52-ohm antenna, microphone
Power Source:	12–15 volts, DC
Speaker:	Bottom-mounted 3", 8Ω

Microphone: 2,000 ohm, dynamic, low impedance  
PA Audio Output: 2.5 watts  
Size: 7-3/4" x 2-1/4 x 9-3/4"  
Weight: 4-1/2 lbs.  
Accessories Included: Mike and cord, mobile mounting bracket, mike hanger  
fused DC auto cable, mounting hardware

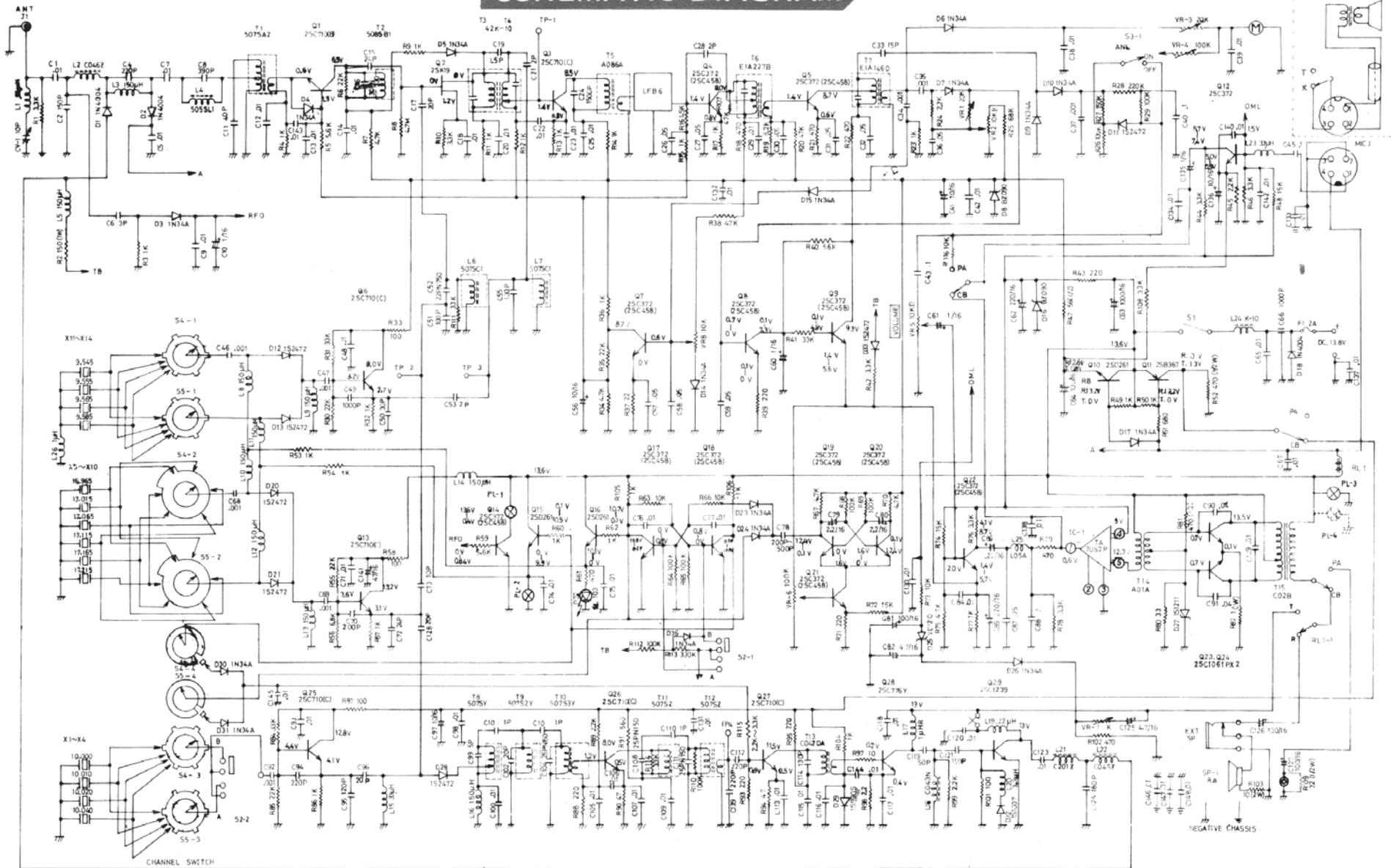
### **RECEIVER**

Receiving System: Dual conversion superheterodyne  
Sensitivity: 0.5 uv for 6 db (S + N)/N  
Selectivity:  $\pm 5$  KHz at 6 db  
Spurious Rejection: 50 db  
Audio Output Power: 2.5 watts  
Squelch Range: 1 to 500 uv  
Intermediate Frequency: 1st Conversion: 10.635 MHz  
2nd Conversion: 455 KHz

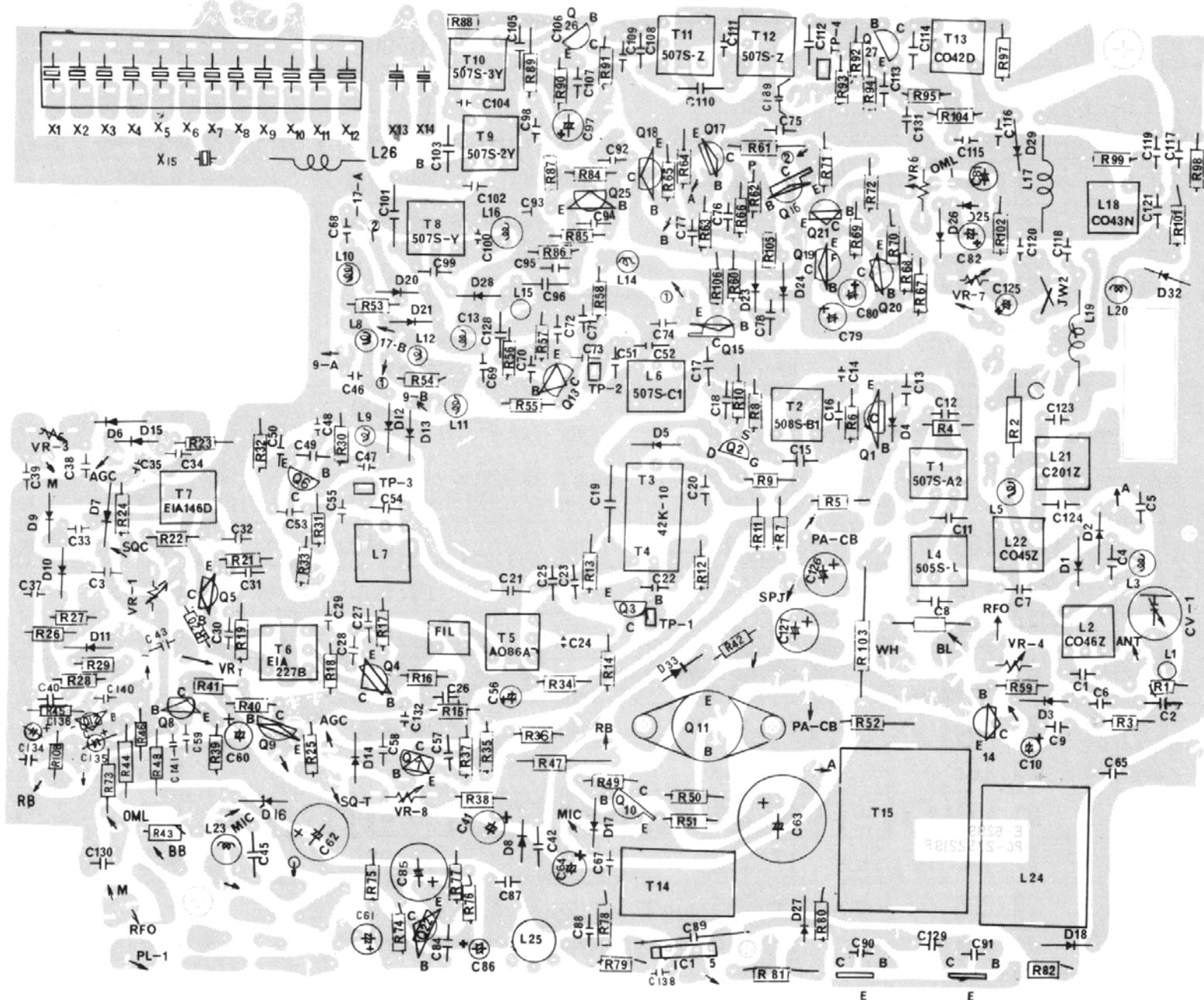
### **TRANSMITTER**

Modulation: High level Class B  
RF Output Power: 4.0 watts

# SCHEMATIC DIAGRAM



# PARTS LAYOUT



## CRYSTAL SYNTHESIZER LIST

CH	Frequency	1 st RX & TX OSC FREQ.			2nd TX OSC FREQ.	2nd RX OSC FREQ.		
1	26.965	26.965	-	16.965	=	10.000	=	9.545 + .455
2	26.975	26.975	-	16.965	=	10.010	=	9.555 + .455
3	26.985	26.985	-	16.965	=	10.020	=	9.565 + .455
4	27.005	27.005	-	16.965	=	10.040	=	9.585 + .455
5	27.015	27.015	-	17.015	=	10.000	=	9.545 + .455
6	27.025	27.025	-	17.015	=	10.010	=	9.555 + .455
7	27.035	27.035	-	17.015	=	10.020	=	9.565 + .455
8	27.055	27.055	-	17.015	=	10.040	=	9.585 + .455
9	27.065	27.065	-	17.065	=	10.000	=	9.545 + .455
10	27.075	27.075	-	17.065	=	10.010	=	9.555 + .455
11	27.085	27.085	-	17.065	=	10.020	=	9.565 + .455
12	27.105	27.105	-	17.065	=	10.040	=	9.585 + .455
13	27.115	27.115	-	17.115	=	10.000	=	9.545 + .455
14	27.125	27.125	-	17.115	=	10.010	=	9.555 + .455
15	27.135	27.135	-	17.115	=	10.020	=	9.565 + .455
16	27.155	27.155	-	17.115	=	10.040	=	9.585 + .455
17	27.165	27.165	-	17.165	=	10.000	=	9.545 + .455
18	27.175	27.175	-	17.165	=	10.010	=	9.555 + .455
19	27.185	27.185	-	17.165	=	10.020	=	9.565 + .455
20	27.205	27.205	-	17.165	=	10.040	=	9.585 + .455
21	27.215	27.215	-	17.215	=	10.000	=	9.545 + .455
22	27.225	27.225	-	17.215	=	10.010	=	9.555 + .455
Vacant	27.235	27.235	-	17.215	=	10.020	=	9.565 + .455
23	27.255	27.255	-	17.215	=	10.040	=	9.585 + .455

**WARRANTY POLICY****LIMITED WARRANTY**

Midland International Corporation 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 of 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**  
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