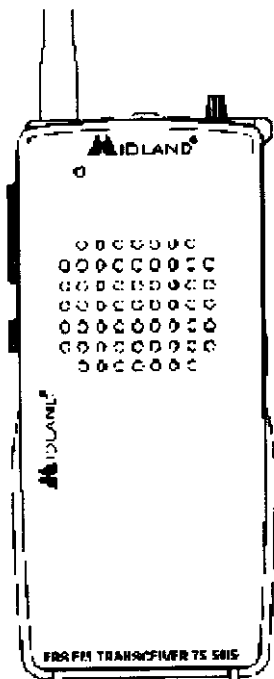


APPENDIX 5  
USERS MANUAL

EIGHT (8) PAGE USER INSTRUCTIONS FOLLOW THIS SHEET

USERS MANUAL  
FCC ID: MMA75503

APPENDIX 5



## **MODEL 75-503**

**NEW FRS "FAMILY RADIO SERVICE"**

**MAXIMUM POWER**

**MICRO-SIZE 3 CHANNEL,  
WITH POWER SAVE CIRCUIT**

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### OPTIONAL ACCESSORIES FOR YOUR RADIO

<b>Accessory Name</b>	<b>Model Number</b>
Standard Ni-Cad Charger .....	18-395
Lapel Microphone with Earbud Speaker.....	22-405
Speaker/Microphone.....	22-411
Stealth Type Noise Canceling Throat Mic with Earbud.....	22-430
Boom Microphone Headset .....	22-540

Call 1 816 241 8500 ext. 200 to order accessories

THIS RADIO COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE CONDITION THAT THIS DEVICE DOES NOT CAUSE HARMFUL INTERFERENCE.

Your Midland model 75-503 brings the new FRS (Family Radio Service) to your fingertips. The Family Radio Service is provided for by the FCC and is totally license free. For the first time business and the general public can use the quiet UHF FM band for personal communications at no charge. The 75-503 uses maximum allowable power for range up to 2 miles. Use for fishing, hunting, picnics, biking, business, or any other activity where communications are needed for convenience or safety. The model 75-503 operates on 3 channels to provide the best in quiet and private communication. Also this radio offers power save, and auto-squelch.

### **TIPS FOR GETTING THE MOST FROM YOUR 75-503**

Due to the band of operation (462/467 MHz) the 75-503 provides communications that are virtually free of atmospheric interference (skip) that is common on lower frequency bands. Along with this and an antenna system that is very efficient as compared to other unlicensed radio bands, communications range is surprisingly good. Many times the limits to maximum possible range are environmental factors such as blockage caused by trees, buildings, hills, or other obstructions. If you find communication is not possible, many times this can be overcome by moving only a few feet to a new location. Range may be reduced while operating in a vehicle or from inside to outside a metal building. Battery condition also affects range. The 75-503 operates best on alkaline batteries. While this unit has been designed with gaskets for water resistance and ruggedness it is a precision piece of electronic equipment that should not be exposed to water or handled carelessly. Normal care should result in years of trouble free operation. Do not leave batteries installed over a long period of time as leakage may occur that can destroy the radio. Always save your receipt, as it is required for warranty consideration.

## **PREPARATION**

### **BATTERIES**

75-503 radios operate with 3 AA alkaline batteries or Ni-cad batteries (batteries not supplied). Alkaline batteries will provide about 24 hours of use. Ni-cad batteries provide about 8 hours of use. **Ni-Cad batteries must be charged prior to use.** Charge time is 10 hours with the wall charger (not supplied). Do not mix battery types in the radio.

#### **To Install Batteries:**

1. Hold the radio face down. Press the latch so it swings away from the cover.
2. Lift the battery cover off the unit.
3. Insert 3 AA batteries observing the proper polarity.
4. Replace the battery cover over the batteries and fasten with the latch.

#### **Low Battery/Transmit Indicator:**

The "TX/BATT" LED on the front of the radio will light when the unit is transmitting and when not transmitting if the batteries are low.

## **BELT CLIP**

The 75-503 comes standard with a belt clip. Attach it to the radio back by sliding the top of the clip up over the two rectangular bosses on the back of the radio until it snaps into place. To detach the belt clip, press the lever inside the top of the clip away from the radio body and slide the clip toward the bottom of the radio.

## **QUICK USE INSTRUCTIONS:**

1. Install fresh alkaline or fully charged Ni-cad batteries.
2. Turn the unit on by turning the volume control clockwise.
3. To talk press the PTT (push-to-talk) button on the side of the radio and talk into the front of the radio.
4. To listen release the PTT button.
5. Volume and other functions maybe adjusted as described later.

## **POWER SAVE CIRCUIT**

This part of the operation of the radio is completely automatic and not adjustable. When the radio has not transmitted or received a signal for about 8 seconds it will begin to cycle from a sleep mode to fully on. This occurs about once a second. If a signal is received or you cause the unit to transmit the radio will become fully awake. This cycling from sleep to fully on increases the standby battery life more than 50%.

## **FEATURES AND LOCATION OF CONTROLS**

### **TO TURN THE RADIO ON OR OFF**

The ON/OFF/VOLUME control at the top of the radio controls power and volume. A series of tones will be heard confirming that radio is on.

### **TO CHANGE THE CHANNEL IN USE**

Select the channel by sliding the channel switch to position 1, 2, or 3. These selections correspond to channels 1, 3, and 5 on any 14 channel FRS radio.

### TO USE CALL BUTTON

Press and release the CALL button. A call signal will be sent for about 2 seconds. The signal will also be heard in the speaker.

### TO ADJUST THE VOLUME

Use the ON/OFF/VOLUME control to adjust the volume. To test the volume setting, press the "MON" button so static noise can be heard. The noise can be used as a reference level for volume setting.

### TROUBLESHOOTING

PROBLEM	SOLUTION
No Power	1. Check battery installation and/or replace batteries
Cannot Receive Messages	1. Make sure the volume is set high enough. 2. Change your location, you may be out of range. 3. Install batteries properly or replace.
Range is Short	1. Operating the radio in a vehicle or metal building will decrease the range. If possible operate outside of vehicles or buildings. 2. Carrying the radio so that the antenna is very near the body will decrease the range. Hold the radio in the open for the best range.
Interference/Static	1. Change your location. The interference may be caused by nearby electronic or electrical equipment.

## CARE OF RECHARGEABLE NI-CAD BATTERIES

### ALWAYS DISPOSE OF BATTERIES PROPERLY

Always follow the battery manufactures recommendations for charging and disposing of Ni-Cad batteries.

The following is meant as general information regarding Ni-Cad batteries.

1. Occasionally allow the batteries to fully discharge before recharging. Full discharge will be indicated by the low battery indicator coming on during receive operation.
2. Always allow the battery to fully charge before using. This requires 10 hours with the optional charger.
3. The above will prevent the batteries from developing "memory" which effectively reduces their capacity.
4. It is better to store Ni-Cad batteries that are discharged rather than charged.

### **SERVICE:**

If it ever becomes necessary to return your unit for service:

Pack the unit in its original box and packing. Improper packing may result in damage during shipment.

Include a full description of any problems and a daytime telephone number. For warranty service include a photocopy of the bill of sale or other proof of purchase showing the date of sale.

Include a money order for \$7.50 to cover shipping and handling (this may not be required in some states).

You do not need to return accessory items (brackets, screws, power cord, antenna, etc.) unless they maybe directly related to the problem.

A flat rate of \$45.00 will apply to repairs not covered by warranty. Send only cashiers check, money order or Master Card or Visa card number.

**TECHNICAL SPECIFICATIONS\***

**GENERAL**

Frequency range.....462/467 MHz  
Channels.....3  
Modulation type..... FM  
Antenna impedance .....50 Ohm  
Loudspeaker.....8 Ohm 0.5W  
Microphone.....electret type  
Power supply.....3 AA Ni-cads or Alkaline (3.6/4.5 VDC)

**RECEIVER**

Sensitivity at 12dB Sinad.....0.25µV  
Selectivity.....50 dB  
Squelch range.....automatic  
Audio output power.....0.15W @ 8 Ohm (10% distortion)  
Distortion at 1000 mV.....7%  
Audio frequency response.....400-2400 Hz

**TRANSMITTER**

RF Output Power..... nominal 500 mW @ 4.50VDC  
Frequency Tolerance.....0.00025%  
Harmonic Suppression.....more than 50 dB  
Modulation.....FM +/- 2.5 kHz

**\*Specifications are nominal and subject to change**

**CHANNEL FREQUENCIES**

1=01=462.5625 MHz	2=03=462.6125 MHz	3=05=462.6625 MHz
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## LIMITED WARRANTY

Midland Consumer Radio Inc. will repair or replace, at its option without charge, any Midland Mobile, 4 watt portable, Base Station Citizens Band, or FRS transceiver which fails due to a defect in material or workmanship within one year following the initial consumer purchase.

This warranty does not include any carrying cases, earphones, or antennas which may be a part of or included with the warranted product, or the cost of labor for removal or re-installation of the product in a vehicle or other mounting.

Performance of any obligation under this warranty may be obtained by returning the warranted product, freight prepaid, along with proof of purchase date, to Midland Consumer Radio Inc., Warranty Service Department, 1670 North Topping Avenue, Kansas City, Missouri 64120, or to any "Midland Authorized Warranty Service Station," or to the place of purchase (if a participating dealer).

Warranty information and the location of the nearest "Midland Authorized Warranty Service Station," may be obtained by writing Midland Consumer Radio, Warranty Service Department.

This warranty gives you specific legal rights, and you may also have other rights, which vary, from state to state.

**Note:** The above warranty applies only to merchandise purchased in the United States of America or any of the territories or possessions thereof, or from a U.S. Military exchange. For warranty coverage on merchandise purchased elsewhere, ask your dealer.

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APPENDIX 6  
ALIGNMENT PROCEDURE

ONE (1) PAGE ALIGNMENT PROCEDURE FOLLOWS THIS SHEET

ALIGNMENT PROCEDURE  
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APPENDIX 6

## 7. Alignment instructions

### WARNING

Any repairs or adjustments should be made under the supervision of a qualified radio-telephone technician.

### TRANSMITTER

#### 1. Power Supply Voltage

The Power supply voltage should be set for 4.5 VDC measured at the radio during transmit. Periodically check the power supply voltage during the alignment procedure.

#### 2. Frequency Setting

- A. Connect a frequency counter or Communications Service Monitor to the antenna connector through an RF power attenuator (5 watt minimum rating, 20 dB minimum attenuation).
- B. Depress the PTT switch.
- C. Adjust the CT-1 trimmer capacitor such that the output frequency is equal to the channel frequency with a maximum error of  $\pm 200$  Hz.
- D. Release the PTT switch.

#### 3. Output Power Alignment.

- A. Set the power supply voltage for 4.5 VDC.
- B. Connect a Communications Service Monitor or a watt meter and dummy load to the antenna connector.
- C. Depress the PTT switch.
- D. To be convinced for 0.5 Watt(50 ohm load) output power with a maximum error of  $\pm 0.15$  Watts.
- E. Release the PTT switch.

#### 4. Deviation Adjustment.

- A. Connect an audio generator .  
The audio frequency should be set at 1 KHz.
- B. Connect an FM deviation meter or Communications Service Monitor to the antenna connector through an RF power attenuator (5 watt minimum rating; 20 dB minimum attenuation). Set the monitor to read peak deviation.
- C. Depress the PTT switch.
- D. Adjust RV3 for  $\pm 2.5$ KHz maximum deviation.
- E. Release the PTT switch.

APPENDIX 7

CIRCUITS AND DEVICES TO STABILIZE FREQUENCY

A PLL and 12.8 MHz TCXO determine and stabilize frequency.

CIRCUITS AND DEVICES TO  
STABILIZE FREQUENCY  
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## APPENDIX 8

### CIRCUITS TO SUPPRESS SPURIOUS RADIATION AND LIMIT MODULATION

#### CIRCUITS TO SUPPRESS SPURIOUS EMISSIONS

A low pass filter consisting of L23, C310, L25, C311, L26, C312, C313, L27, C315, and C316 attenuate spurious emissions.

#### CIRCUITS TO LIMIT MODULATION

IC6 provides mike gain, limiting and audio low pass filtering.

CIRCUITS TO SUPPRESS SPURIOUS  
RADIATION AND LIMIT MODULATION

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APPENDIX 8