

# OWNER MANUAL

## BUSINESS BAND RADIO

19-1210

### FEATURES

Your PLL-controlled VHF Transceiver is a two-way business band radio service transceiver that you can mount it in vehicle for mobile use, or in your office as desk service.

Your transceiver has these advances features:

**Programmable Frequencies** ---- You can select one of the nine preset frequencies for channel 1 and channel 2. Or, an authorized service facility can program the transceiver to any VHF business band frequency you have a license to use --- No crystals to buy!

**38-Tone CTCSS (Continuous Tone Control Squelch System)** ---- helps reduce interference from other transceiver which are operating on the same frequency, in the same area.

**Channel 1/2 Sliding Switch** ---- lets you use one of the nine preset frequencies as channel 1 and channel 2.

**PLL-Controlled Circuitry** ---- provides accurate and stable channel selection.

**SO239 Antenna Socket** ---- provides convenience connection with base antenna.

**Earphone/Microphone Jack** ---- lets you connect an external earphone or microphone.

**External Hand Microphone/ PTT Jack** ---- let you connect an external hand microphone to ensure understandable communication in noisy areas.

**External Speaker Jacks** ---- lets you connect your radio to all external speaker.

**Built-in Modulation Limiter Circuit** ---- automatically adjusts for a wide variety of voice levels to ensure an understandable transmission.

**PL259 → BNC Right Angle Connector** --- provides connection with rubber duck antenna.

**Digit Channel LED Display** ---- displays the channel number when channel switch.

**CTCSS Switch** ---- lets you activate/deactivate CTCSS function.

We recommend you record your transceiver's serial number here. This number is on the transceiver's back panel.

Serial Number \_\_\_\_\_

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EXHIBIT #: 8A

## FCC REGULATIONS

### FCC LICENSE REQUIRED

This transceiver is intended for use in the operation of commercial activities, educational, philanthropic, or ecclesiastical institutions, and hospitals, clinics, or medical associations.

The Federal Communications Commission (FCC) requires you to have a license before you operate this transceiver. Unless you qualify to operate on the supplied frequencies, you must apply for a frequency through the PCIA (Personal Communication Industry Association), a non-profit organization that assigns frequencies nationwide to help prevent conflicts between different businesses using transceivers in the same area. For more information about getting a license, contact the PCIA at 800-759-0300, extension 3068 (in Virginia 703-739-0300, extension 3068).

For other questions concerning the license application, contact the FCC at 717-337-1212, or write:

FCC

P.O. Box 1040

Gettysburg, PA 17325

For the latest FCC application form and instructions, call the FCC fax fax-on-demand service from a fax machine at 1-202-418-0177 and request one or more of the following documents:

All forms and instructions	000600
Form 600 instructions only	006001
Main Form 600 only	006002
Form 600 schedules only	006003

If you do not have a fax machine, you can call the Government Forms Distribution Center at 1-800-418-FORM and request that the form and instructions be mailed to you.

### FCC PART 90 RULES

You must be familiar with Part 90 of FCC Rules before you operate your transceiver. The operation instructions in this manual conform to Part 90, but do not cover all items in Part 90.

Overall, Part 90 states that:

- You must have a valid license before you use the transceiver.
- As licensee, you are responsible for proper operation of all transceivers operating under your license authority.
- You can let unlicensed persons operate this transmitter, as long as you take precautions to prevent unauthorized transmissions.
- You must use this transceiver only for the commercial use of your business, and only when other commercial channels ( such as the telephone ) are either not available or not practical.
- You must always yield the operating frequency to communications that involve the safety of life or property.
- You must take reasonable precautions to prevent harmful interference to other services operating on the same frequency.
- You must not transmit program material of any kind used in connection with commercial broadcasting.
- You must not provide a service that is normally handled by telephone or telegraph unless such broadcasts involve the safety of life or property or in emergencies such as an earthquake, hurricane, flood or a similar

disaster where normal communication channels are disrupted.

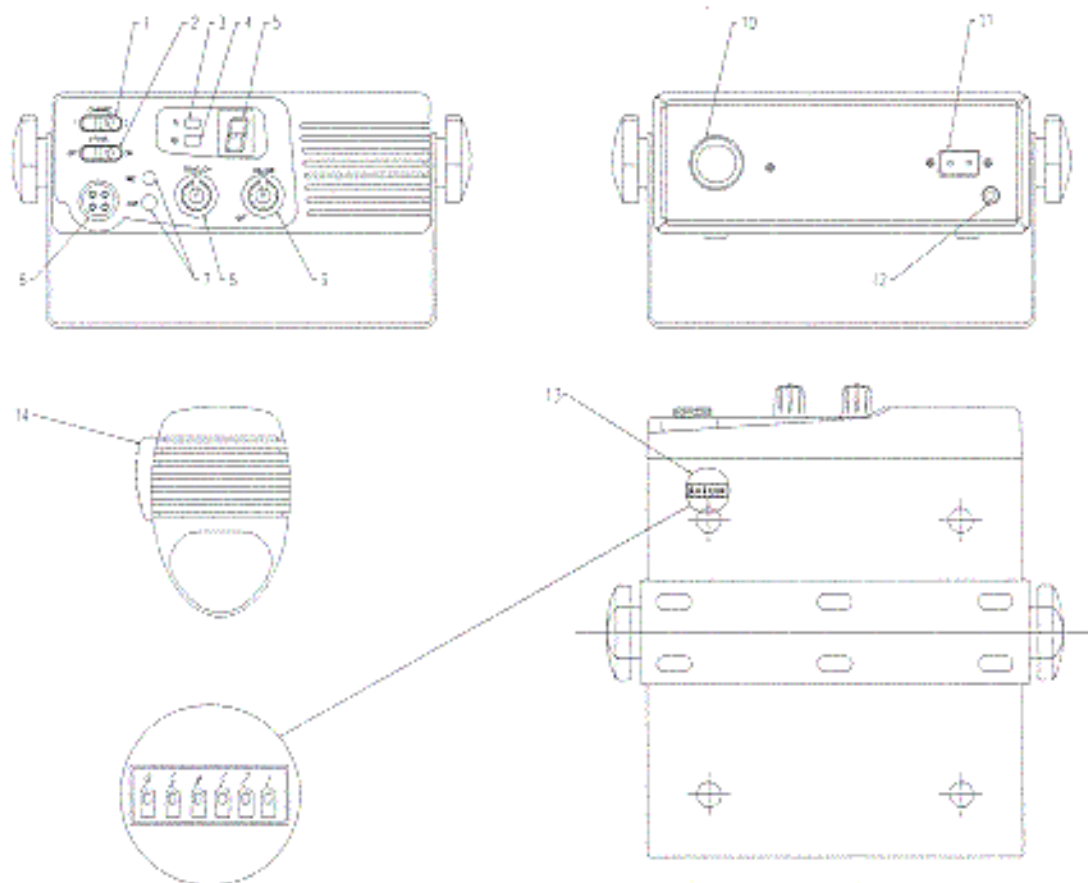
- During each transmission or exchange of transmissions, you must identify your station with the call sign issued to you by the FCC, or once each 15 minutes during periods of continuous operation.
- You must keep a written record of any maintenance or modification made to the transceiver, and you must make this record available for inspection upon demand by the FCC.

Violating any of the provisions of Part 90 can result in fines and/or confiscation of equipment.

Your transceiver might cause TV or radio interference even when it is operating properly. To determine whether your transceiver is causing the interference, turn off your transceiver. If the interference goes away, your transceiver is causing it. Try to eliminate the interference by:

- Moving your transceiver away from the receiver
- Contacting your local RadioShack store for help

## FUNCTION AND LOCATION OF THE CONTROLS



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**1. Channel 1/2 Sliding Switch**

You can slide this switch to select one of the nine preset frequencies as channel 1 or channel 2.

**2. CTCSS On/Off Switch**

Slides the switch to activate/deactivate the CTCSS function.

**3. TX Indicator**

The red LED indicator lights up when the PTT switch is pressed down and transmission starts.

**4. RX Indicator**

The green LED indicator lights up when the unit receives a signal.

**5. Digit Channel LED Display (Red)**

Digit channel LED will display the channel number when channel switch.

**6. External Hand Microphone/PTT Jack**

Lets you connect an external hand microphone to this jack.

**7. Earphone/Microphone Jack**

Connect an external earphone or microphone.

**8. SQUELCH Control**

Turn squelch clockwise until background noise is just quieted. This control allows you to listen to weak or distant station. It can also decrease the transceiver's sensitivity to unwanted, partial or very weak signals.

**9. "N/OFF" Volume Control**

In "OFF" position, your transceiver is off. Turn this control clockwise to turn on the unit and adjusts the volume until you get a comfortable listening level.

**10. SO239 Antenna Socket (at the back)**

Connect a base station into this socket.

**11. Power Socket**

Connect a 13.8 VDC power plug into this socket.

**12. External Speaker Jack**

Connect an external speaker in this jack.

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### 13. 6-Digit Switch

Used to select the desired channel and to set the CTCSS code.

### 14. Push-To-Talk Button In Hand Microphone

To transmit, hold down push-to-talk, then hold the hand microphone about 3 inches from your mouth and speak slowly in a normal tone of voice. The TX indicator lights red. When you finish your message, release push-to-talk button. The RX indicator lights green when you receive a transmission.

## SETTING FREQUENCY OPTIONS

**Note:** The default for CTCSS frequency is 100Hz, and channel 1 and channel 2 are preset to 151.6250MHz and 151.9550MHz separately. If you do not want to change the default frequencies, you can skip below steps and proceed to **OPERATION** (see **OPERATION** on page 8) directly.

You can select a CTCSS (Continuous Tone Control Squelch System) frequency and two business band frequencies for channel 1 and 2 and set your transceiver to use it.

Here is the steps that you need to do to select a CTCSS frequency and to select two business band frequencies for channel 1 and 2.

1. Set the DIP switches for a CTCSS frequency (see **Setting a CTCSS Frequency** below)
2. Set the DIP switches for a business band frequency (see **Setting two Business Band Frequencies for Channel 1 and 2** on page 7).

You can select one CTCSS frequency at a time. If you do not want to use a CTCSS frequency, skip Step 1.

#### Importance:

- ✧ Make sure the first-digit DIP switch position is always set to 0 (down) when you finish the above steps before operation.
- ✧ The second-digit DIP switch should be set to 0 (down) when you are using one of the 9 preset frequencies; It should be set to 1 (up) when using another frequency programmed into channel 1 by an authorized service facility.

## SETTING A CTCSS FREQUENCY

You can select one CTCSS frequency at a time. If you do not want to use a CTCSS frequency, skip this step.



Follow these steps to set your transceiver to a CTCSS frequency and then activate or deactivate CTCSS.

1. Turn VOLUME fully counterclockwise to make sure power is turned off.
2. Set the CTCSS sliding switch on the front panel to position of OFF.
3. Choose a CTCSS code from the following table. Then use a pointed object such as a straightened paper clip, to set the position of each digit DIP switch at the bottom of transceiver to 1 (up) or 0 (down) corresponding to the setting for that CTCSS code.



Dip switch Setting Key:  
0=down 1=up

CTCSS		Dip Switch Setting	CTCSS		Dip Switch Setting
Code	Freq. Hz		Code	Freq. Hz	
none	without CTCSS	000000			
1	67.0	000001	20	131.8	010100
2	71.9	000010	21	136.5	010101
3	74.4	000011	22	141.3	010110
4	77.0	000100	23	146.2	010111
5	79.7	000101	24	151.4	011000
6	82.5	000110	25	156.7	011001
7	85.4	000111	26	162.2	011010
8	88.5	001000	27	167.9	011011
9	91.5	001001	28	173.8	011100
10	94.8	001010	29	179.9	011101
11	97.4	001011	30	186.2	011110
12	100.0	001100	31	192.8	011111
13	103.5	001101	32	203.5	100000
14	107.2	001110	33	210.7	100001
15	110.9	001111	34	218.1	100010
16	114.8	010000	35	225.7	100011
17	118.8	010001	36	233.6	100100
18	123.0	010010	37	241.8	100101
19	127.3	010011	38	250.3	100110

4. Hold down PUSH TO TALK, then turn VOLUME clockwise. The transceiver sets the CTCSS codes.

If the transceiver beeps once and RX lights green for about 2 seconds, that means the CTCSS setting was successful.

If the transceiver beeps 3 times and TX lights red for about 2 seconds, the CTCSS setting did not work. Start over at Step 1.

5. Then use a pointed object such as a straightened paper clip to set 6-DIP switch position to "000000".
6. To activate the CTCSS code you set, set the CTCSS switch at the front panel position to **ON**. To deactivate the code, set the switch to **OFF**.

Note: If the CTCSS code is set to "000000", which means CTCSS function is deactivate, even if the CTCSS switch on front panel is set to **ON**.

## Setting Two Business Band Frequencies

**Note:** If you are licensed to use one or more business band frequencies that are not one of the transceiver's 9 preset frequencies, an authorized service facility can add any VHF business band frequencies you have a license to use to the frequencies in the transceiver.

Follow these steps to use the DIP switches at the bottom of transceiver to 1 (up) or 0 (down) to set the transceiver to two business band frequencies (the frequency for channel 1 can be set to be same with that for channel 2).

1. Turn VOLUME fully counterclockwise to make sure power is turned off.
2. Set the CTCSS sliding switch on the front panel to position of **OFF**.
3. Use a pointed object such as a straightened paper clip to set DIP switch position 1-6 to "101010" and hold down PUSH TO TALK, then turn VOLUME clockwise. If the transceiver beeps once, that means entering into the setting of Channel 1/2.
4. Select channel switch on the front panel to position of 1 or 2.
5. Choose a preset frequency from the following table or from the information given to you by the service center (if you had additional frequencies programmed into the transceiver). Then use a pointed object such as a straightened paper clip to set DIP switch position 3-6 to 1(up) or 0 (down) corresponding to the setting for the frequency you choose.

### Important:

✧ The second-digit DIP switch position shows if your transceiver is set to use one of the 9 preset frequencies or another frequency programmed into the transceiver as channel 1 by an authorized service facility. If you are using one of the 9 preset frequencies, make sure the second-digit DIP switch position is always set to 0 (down).

✧ If DIP switch 1-6 is set to "111111", hold down PTT while turning on the transceiver to reset MCU. When the second DIP switch position is set to 0, the channel 1 is preset to 151.6250MHz and channel 2 is preset to 151.9550MHz.

Dip switch Setting Key:  
0=down 1=up

Preset Frequency (In MHz)	DIP Switch Setting
151.625 (Red)	XX0000
151.700	XX0100
151.760	XX0101
151.820	XX0110
151.880	XX0111
151.940	XX1000
151.955 (Purple)	XX0001
154.570 (Blue)	XX0010
154.600 (Green)	XX0011

Hold down **PUSH TO TALK**, if the transceiver beeps once, that means the frequency setting was successful. Then turn **VOLUME** clockwise.

- Then use a pointed object such as a straightened paper clip to set 6-digit DIP switch position to "000000".

## OPERATION

**Note:** You can only communicate with another radio that is using the same channel and/or the same CTCSS code as your transceiver.

- Connect hand microphone, power cable and antenna cable.
- Turn **VOLUME** clockwise to turn on the transceiver, turn **SQUELCH** fully counterclockwise until you hear a hissing sound, then adjust to a comfortable listening level.
- If you did not set the transceiver to use a CTCSS code, wait until there is no signal on the channel. Then turn **SQUELCH** clockwise until the background noise between signal stops.
- To transmit, hold down **PUSH TO TALK**. Then hold the hand microphone about 3 inches from your mouth and speak slowly in a normal voice. The **TX** indicator lights red.
- Release **PUSH TO TALK** when you finish your transmission.
- To turn off the transceiver, turn **VOLUME** counterclockwise until it clicks.

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## SPECIFICATION

Frequency Range:.....150.775-157.740MHz  
Channels.....2 channels of the 9 preset frequencies  
1 channel programmed by authorized service facility  
Modulation type.....FM  
Antenna Impedance.....50ohm  
Microphone.....Condenser Type  
Power Supply.....13.8 VDC  
Sensitivity at 12dB SINAD.....0.5µV  
Channel Spacing.....12.5 KHz  
Audio Output Power.....2W @ 8 ohm ( 10% distortion)  
RF Output Power......5W  
Harmonic Emission.....more than 55dB  
Dimensions (HWD).....2 1/5 x 6 x 7 1/10  
(56 x 152 x 180 mm)  
Weight .....Approx. 7/8 pound  
( 1400g )

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