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Two Channels UHF Handheld Business Band Transceiver w/CTCSS (1W)

Owner's Manual  
Please read before using this equipment.

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## FEATURES

Your RadioShack Two Channels UHF Handheld Business Band Transceiver w/CTCSS (1W) is a portable, two-way business radio service transceiver that you can carry almost anywhere. The transceiver is compact and light, making it an ideal choice for your business needs.

Programmable Frequencies – an authorized service facility can program the transceiver to any UHF business band frequency you have a license to use – no crystals to buy!

Note: Your local RadioShack store must send the transceiver to an authorized service facility to program the transceiver with a frequency. You must show your license to store personnel.

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

Rechargeable Long-Life Battery Pack and Battery Charger – the supplied battery charger lets you conveniently recharge your transceiver's long-life battery pack while it is on the transceiver.

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

2 Operation Channels- lets you select either channel at your convenience.

Earphone/Speaker Jack and External Microphone Jack – let you connect an external earphone or speaker and an external microphone to help ensure understandable communications in noisy areas.

TX/BATT Indicator – flashes green while the transceiver is turned on, lights green while transmitting and turns red when battery is low.

Belt Clip – lets you attach the transceiver to your belt or waistband.

## 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 are already licensed to operate on one of the preset 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's fax-on-demand service at 1-202-418-0177 from a fax machine and request one or more of the following documents:

To receive:	You enter:
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:

o. You must have a valid license before you use the transceiver.

o. 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

If you cannot eliminate the interference, the FCC requires that you stop using your transceiver.  
Additional FCC Regulations

The Business Radio Service is under the jurisdiction of the Federal Communications Commission (FCC). Any adjustments or alterations that would alter the performance of the transceiver so it no longer meets the original FCC type acceptance or would change the frequency-determining method are strictly prohibited.

Replacement or substitution of crystals, transistors, ICS, regulator diodes, or any other component that is of a unique nature with components other than those recommended can violate the technical regulations of the FCC rules or violate type acceptance requirement of the rules.

Before you operate the transceiver, you must obtain your license. It is illegal to transmit without the appropriate license, which you can get by submitting a completed FCC Form 600 to the FCC (or through the PCIA). Furthermore, you are required to understand Part 90 of the FCC Rules and Regulations prior to operating your transceiver. It is the user's responsibility to see that this unit is operating at all times in accordance with the FCC Rules and Regulations.

## **PREPARATION**

### **INSTALLING THE BATTERY PACK**

The supplied Ni-MH battery pack, when fully charged, provides power to your transceiver for up to 10 hours. You must install the battery pack into your transceiver, then charge it.

Caution: Do not remove the plastic wrap from the battery pack. Doing so can permanently damage the battery.

Follow these steps to install the battery pack.

1. If the belt clip is attached on the transceiver, remove it by pulling on the middle tab of the clip and slide down.
2. Unlock the tab on the battery compartment. Then slide the battery compartment cover in the direction of the arrows and lift it off.
3. Plug the connector of the battery pack into the connector inside the battery compartment. Then place the battery pack into the compartment.

Note: The connector fits only one way. Do not force it.

4. Replace the battery compartment cover, then slide the tab on the compartment cover to LOCK to lock the cover.

**(Back view illus showing the lock switch)**

### **CHARGING THE BATTERY PACK**

Before you use the battery pack for the first time, you must use the supplied battery charger to charge it for about 14 hours.

You cannot use the transceiver while you charge the battery pack.

Caution: The supplied 12V DC, 200mA battery charger was designed specifically for your transceiver. Use only the supplied battery charger.

Follow these steps to charge the battery pack.

1. Turn VOLUME/OFF fully counterclockwise to OFF to turn off the transceiver.
2. Pull out the rubber cover on the DC 12V jack on the lower side of the transceiver, and insert the charger's barrel plug into the jack. Then plug the other end of the charger into a standard AC outlet.

If TX/BATT lights red when the transceiver is on, recharge the battery pack.

3. Unplug the AC adapter from AC outlet after the battery is fully charged.

Caution: Do not overcharge the battery pack, it may shorten the useful life of your battery pack.

## **CONNECTING THE ANTENNA**

Follow these steps to attach the supplied rubber duck antenna to your transceiver.

1. Align the slots around the antenna's connector with the tabs on the antenna jack on the top of the transceiver.
2. Press the antenna down over the jack and turn the antenna's base clockwise until it locks into place.

### **Connecting an Optional Antenna**

Although the supplied rubber duck antenna provides excellent local reception, you can connect an optional external mobile antenna or outdoor base station antenna to your transceiver for better reception of weak signals. The antenna jack on the top of the transceiver makes it easy to use the transceiver with a variety of antennas. Your local RadioShack store sells a variety of antennas.

## **USING THE BELT CLIP**

The supplied belt clip lets you easily clip the transceiver to your belt.

Slide the belt clip onto the tab at the back of the transceiver until it clicks. To remove the clip, pull up on the middle tab of the clip and slide down.

## **CONNECTING AN EARPHONE/EXTERNAL SPEAKER**

To listen privately or to hear better in a large area such as a warehouse, you can pull up the rubber cover on the EAR and MIC jacks, then plug a monaural earphone or an external speaker with a 3.5mm plug (not supplied) into the EAR jack on the side of the transceiver. This automatically disconnects the built-in speaker.

### **Listening Safely**

To protect your hearing, follow these guidelines when you use an earphone.

- Set the volume to the lowest setting before you begin listening. After you begin listening, adjust the volume to a comfortable level.
- Do not listen at extremely high volume levels. Extended high-volume listening can lead to permanent hearing loss.
- Once you set the volume do not increase it. Over time, your ears adapt to the volume level that does not cause discomfort might still damage your hearing.

## **Traffic Safety**

Do not use an earphone with your transceiver when operating a motor vehicle or riding a bicycle in or near traffic. Doing so can create a traffic hazard and could be illegal in some areas.

If you use an earphone with your transceiver while riding a bicycle, be very careful. Do not listen to a continuous broadcast. Even though some earphones let you hear some outside sounds when listening at normal volume levels, they still can present a traffic hazard.

## **USING AN EXTERNAL SPEAKER/MICROPHONE**

An external speaker/microphone can make it easier to use the transceiver when you clip it to your belt, so you do not have to lift the transceiver to your mouth each time you transmit. Lift up the rubber cover on the EAR and MIC jacks, and plug the speaker/microphone's plug into the EAR jack and the MIC jack on the side of the transceiver. This automatically disconnects the transceiver's built-in speaker and microphone.

## **SETTING FREQUENCY OPTIONS**

Before you can use your transceiver, you must set your transceiver to a UHF business band frequency you have a license to use. Then you can select a preset quiet tone CTCSS (Continuous Tone Control Squelch System) frequency and set your transceiver to use it.

Here is what you need to do to set your transceiver to use a business band frequency and quiet tone.

1. Set your transceiver to a UHF business band frequency. (See "Setting a UHF Business Band Frequency")
2. Set the DIP switches for a quiet tone frequency (See "Using a Quiet Tone Frequency").
3. Set your transceiver to that quiet tone frequency.

You can select one quiet tone frequency at a time. If you do not want to use a quiet tone frequency, skip Steps 2-3 above.

## **SETTING A UHF BUSINESS BAND FREQUENCY**

There are eight UHF business band frequencies available in your transceiver.

464.50 MHz (Brown Dot)  
 464.550 MHz (Yellow Dot)  
 467.7625 MHz (J Dot)  
 467.8125 MHz (K Dot)  
 467.850 MHz (Silver Star)  
 467.875 MHz (Gold Star)  
 467.900 MHz (Red Star)  
 467.925 MHz (Blue Star)

Note: Some manufacturers identify some business band frequencies by color. These "Dot" frequencies are shown above.

Channel A is preset to 464.50 MHz, and Channel B is preset to 464.550 MHz. You can set Channel A or B to other frequencies listed above.

1. Turn VOLUME/OFF fully counterclockwise to turn off the transceiver.
2. Remove the battery compartment cover. Then lift up the plastic cover marked QUIET.

Note: Be sure the battery pack is connected.

3. Hold down PTT and MON while turning on the radio. The transceiver beeps once.
4. Press MON once. The transceiver beeps once.
5. Rotate CHANNEL A/B to select the channel you want to set.
6. Choose UHF dot frequency from the table as below. Then use a pointed object such as a straightened paper clip to set the position of each DIP switch to 1 (up) or 0 (down) corresponding to the setting for that dot frequency code.

(Illus showing the dip switches)

Dip Switch Setting Key:

0 = down

1 = up

#### UHF Business Band Frequency

Channel No. UHF Business Band Freq (MHz) DIP Switch Setting

1	464.5000	000001
2	464.5500	000010
3	467.7625	000011
4	467.8125	000100
5	467.8500	000101
6	467.8750	000110
7	467.9000	000111
8	467.9250	001000

7. Press MON once.
8. Turn the transceiver off then on. If the dip switch setting is correct, the transceiver beeps three times. If the dip switch setting incorrect, the transceiver beeps twice.

If you want to set your transceiver to a UHF business band frequency other than the eight frequencies listed above, you can take your transceiver to an authorized facility to set your transceiver to a frequency you have a license to use.

## ABOUT QUIET TONE

Quiet tone helps eliminate interference between different users of the same frequency, letting you talk and listen to people who are using other transceivers set to the same frequency and quiet tone code. This is like having a sub-channel within a channel, giving you greater communication flexibility. When you set a quiet tone code – there are 38 to choose from – and turn on your transceiver's quiet tone, the transceiver transmits a tone with your transmission, letting you communicate with anyone who has a transceiver set to the same frequency and code. This tone is too low for you to hear, but other transceivers can detect it.

If quiet tone is turned on and set to the same tone on the receiving transceiver, it only receives those transmissions that include the tone. If two different groups operate transceivers in the same area on the same frequency, they do not hear each other's broadcast if they both use quiet tone and each select a different quiet tone.

## USING A QUIET TONE FREQUENCY

Follow these steps to set your transceiver to a quiet tone frequency.

1. Turn VOLUME/OFF fully counterclockwise to turn off the transceiver.
2. Remove the battery compartment cover. Then lift up the plastic cover marked QUIET.
3. Choose a quiet tone code from the table as below. Then use a pointed object such as a straightened paper clip to set the position of each DIP switch to 1 (up) or 0 (down) corresponding to the setting for that quiet tone code.

Dip Switch Setting Key:

0 = down

1 = up

### QUIET TONE

Code	Freq (Hz)	DIP Switch Setting
none		000000
1	67.0	000001
2	71.9	000010
3	74.4	000011
4	77.0	000100
5	79.7	000101
6	82.5	000110
7	85.4	000111
8	88.5	001000
9	91.5	001001
10	94.8	001010
11	97.4	001011
12	100.0	001100
13	103.5	001101
14	107.2	001110
15	110.9	001111
16	114.8	010000
17	118.8	010001
18	123.0	010010
19	127.3	010011
20	131.8	010100
21	136.5	010101
22	141.3	010110
23	146.2	010111
24	151.4	011000
25	156.7	011001
26	162.2	011010
27	167.9	011011
28	173.8	011100
29	179.9	011101
30	186.2	011110
31	192.8	011111
32	203.5	100000
33	210.7	100001

34	218.1	100010
35	225.7	100011
36	233.6	100100
37	241.8	100101
38	250.3	100110

4. Replace the plastic cover and the battery compartment cover. Then turn VOLUME/OFF clockwise until it clicks. The transceiver sets the quiet tone code.

Note: If the dip switch setting is not listed in the table above, it results in no tone.

## OPERATION

### (Front View Illus showing all switches, buttons, and jacks)

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

1. Turn VOLUME/OFF clockwise to turn on the transceiver. The TX/BATT indicator flashes green every second.
2. Rotate CHANNEL/A/B to select the preset channel A or B.
3. To transmit, hold down PTT. Then hold the transceiver about 3 inches from your mouth and speak slowly in a normal voice. The TX/BATT indicator lights green. Release PTT when you finish your transmission.

Note: If you hold down PTT for more than 2 minutes, the transceiver automatically stops transmission and sounds an alert tone. The TX/BATT indicator flashes green.

4. To hear everything happens on the channel, even the weak transmission, press MON. Release MON to turn the auto-squelch back on.
5. To turn off the transceiver, turn VOLUME/OFF counterclockwise.

Note: When you are using disabled channels, the transceiver beeps periodically when you press PTT or MON.

## OPERATIONAL HINTS

Your transceiver's range varies depending on factors such as position, terrain, and battery condition. Buildings absorb transmitted signals and, if they contain metal, might completely block the signals. Trees and heavy cloud formations have a similar effect, though not as severe. If you are near a lake or the ocean, you might get excellent range.

To ensure maximum range, operate the transceiver with the battery pack fully charged. As the voltage decreases, the range decreases.

## CARE AND MAINTENANCE

To enjoy your transceiver for a long time:

- Keep the transceiver dry. If it gets wet, wipe it dry immediately.
- Use and store the transceiver only in normal temperature environments.



- Handle the transceiver gently and carefully. Do not drop it.
- Keep the transceiver away from dust and dirt.
- Wipe the transceiver with a damp cloth occasionally to keep it looking new.

Modifying or tampering with the transceiver's internal components can cause malfunction and invalidate its warranty. If your transceiver is not performing as it should, take it to your local RadioShack store for assistance.

## SPECIFICATIONS

Frequency Range ..... 461.0375 to 469.5625 MHz  
 Channels ..... 2  
 Modulation Type ..... FM  
 Power Supply ..... 6V, 1400mAh NiMH battery pack  
 Channel Bandwidth ..... 12.5kHz  
 Transmit Power ..... 1W ERP  
 External Speaker Jack ..... 1/8 inch (3.5mm)  
 External Earphone Jack ..... 3/32 inch (2.5mm)  
 Dimensions ... 2 5/8 x 5 1/8 x 1 1/4 inch (66 x 130 x 32 mm)  
 Weight (with battery pack) ..... 11.6 oz (0.33 kg)

Specifications are typical; individual units might vary. Specifications are subject to change and improvement without notice.

RS 1-Year Warranty.

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