

**Triple Trunking
Handheld Radio Scanner**

20-164

*Thank you for purchasing your Triple Trunking Handheld Radio Scanner from **RadioShack**. Your scanner scans conventional frequencies and trunked systems. Please read this user's guide before installing, setting up and using your new scanner.*



What's Included

- Scanner
- Antenna
- Belt Clip
- Non-rechargeable Battery Holder
- Rechargeable Battery Holder
- Preprogrammed Frequency Addendum
- User's Guide

Contents

| | | |
|---------------------------------|-----------|----------|
| Your Scanner | 4 | 1 |
| Connecting the Antenna..... | 5 | |
| Attaching the Belt Clip..... | 5 | |
| Powering Your Scanner..... | 6 | |
| Headphones and Speakers | 9 | |
| Keytones and Keylock | 10 | |
| Backlight and Contrast | 10 | |
| Squelch and Attenuator..... | 11 | |
| Delay | 13 | |
| Scanner Setup | 13 | 1 |
| Defining a Channel..... | 14 | |
| Copying a Frequency..... | 15 | |
| Deleting Saved Frequencies..... | 16 | |
| CTCSS AND DCS..... | 16 | |
| Scanner Cloning..... | 17 | |
| Searching | 18 | 1 |
| Seek Search..... | 18 | |
| Search Banks | 19 | |
| Zeromatic..... | 20 | |
| Programming a Search Range..... | 21 | |
| Signal Stalker II | 21 | |
| Locking Out Frequencies..... | 23 | |
| Saving Found Frequencies | 24 | |
| Scanning..... | 25 | 1 |
| Locking Out Channels..... | 25 | |
| Priority Scanning..... | 26 | |
| Weather Alerts | 27 | |
| SAME Standby Mode | 28 | |
| Skywarn | 30 | |
| Monitoring | 31 | |

Contents

Trunking Setup32

| | |
|------------------------------------|----|
| Defining a Trunking Bank..... | 32 |
| Trunking Modes | 33 |
| Motorola Trunking Setup..... | 33 |
| EDACS Trunking Setup..... | 36 |
| LTR Trunking Setup..... | 37 |
| Searching for Talk Group IDs | 38 |
| Saving a Talk Group ID | 38 |
| Deleting Talk Group IDs..... | 39 |
| Saving Trunking Channels..... | 40 |

Trunk Scanning.....41

| | |
|----------------------------------|----|
| Trunking Delay | 42 |
| Locking Out Talk Group IDs | 42 |
| Turning Off Sub-Banks..... | 43 |
| Talk Group ID Hold | 44 |

Scanner Maintenance.....44

| | |
|-------------------------------|----|
| Text Tags..... | 44 |
| Troubleshooting | 46 |
| Birdie Frequencies | 48 |
| Initializing the Scanner..... | 49 |
| Service and Repair | 49 |
| Scanning Legally | 40 |
| FCC Notice | 51 |

References.....52

| | |
|---|----|
| Appendix A: Glossary | 52 |
| Appendix B: Search Banks..... | 52 |
| Appendix C: CTCSS and DCS Codes..... | 56 |
| Appendix D: Signal Stalker II Bands | 57 |
| Appendix E: Talk Group ID Formats..... | 59 |
| Appendix F: Specifications..... | 60 |

Your Scanner



PRI – Priority

TEXT – Activates text buttons.

PSE – Pause

MODE – Changes receive mode.

KEY/LIGHT – Keypad lock and backlight.

TUNE – Enters Tune mode.

ATT – Attenuator.

▲▼ – Navigates functions.

SRCH – Search.

👁️ — Signal Stalker.

SCAN — Starts a scan.

FUNC — Function

MAN — Manually select a channel or enter a channel number.

TRUNK — Accesses trunking functions.

WX/🌩️ — Weather search and Skywarn.



1-9 / A-Z – Numbers and letters. Zero enters special characters.

./DELAY – Decimal point, space, delay functions.

CL – Clear.

L/OUT – Locks out channels, frequencies, or Talk Group IDs.

PGM – Program.

ENT – Enter.

Connecting the Antenna

To connect an external antenna, always follow the installation instructions supplied with the antenna. Use 50-ohm, RG-58, or RG-8, coaxial cable. If the antenna is over 50 feet from the scanner, use RG-8 low-loss dielectric coaxial cable. If necessary, **RadioShack** carries a variety of adapters.

To attach the supplied antenna:

1. Align the antenna slots with the tabs on the scanner, and slide the antenna into place.
2. Turn while pushing down until the antenna locks into place.



Warning: Use extreme caution when installing or removing an outdoor antenna. If the antenna starts to fall, let it go! It could contact overhead power lines. If the antenna touches a power line, touching the antenna, mast, cable, or guy wires can cause electrocution and death. Call the power company to remove the antenna. DO NOT attempt to do so yourself.

Attaching the Belt Clip

To carry your scanner, slide the supplied belt clip down on the back of the scanner. To remove the belt clip, pull the tab out and slide the clip upward.



Powering Your Scanner

You can power your scanner with four AA batteries (not supplied), or an external power source.

Batteries

When battery power is low, battery symbol flashes and the scanner beeps every 30 seconds. When battery power is depleted, the scanner turns itself off.

For the longest operation and best performance, use alkaline batteries, available at your local **RadioShack** store, or use **RadioShack** 1600 mAh nickel-metal hydride (Ni-MH) rechargeable batteries.

Rechargeable batteries last longer and deliver more power if you let them fully discharge once a month. To do this, use the scanner until battery symbol flashes.

Warning: Never install non-rechargeable batteries in the yellow rechargeable battery holder. Non-rechargeable batteries can get hot or explode if you try to recharge them.



To install batteries:

1. Slide open the battery compartment cover on the back of the scanner.
2. Place 4 AA batteries into the correct battery holder matching polarity symbols (+ / -):
 - **Black** – Alkaline (non-rechargeable)
 - **Yellow** – Rechargeable.
3. Place the battery holder into the battery compartment and replace the cover.

To charge batteries:

1. Install rechargeable batteries.
2. Connect an external power source to the **PWR DC 9V** jack. Using the scanner while charging will increase charge time.

| Battery | Current | Charge Time |
|---------|----------|-------------|
| Ni-MH | 1600 mAh | 16 hours |
| Ni-Cd | 600 mAh | 6 hours |
| Ni-Cd | 850 mAh | 8 hours |

Do not overcharge batteries. Overcharging shortens battery life.

- Each battery holder fits only one way. Do not force it.
- Use only fresh batteries of the required size and recommended type. Do not mix old and new batteries, different types (alkaline or rechargeable), or rechargeable batteries of different capacities.
- Remove old or weak batteries. If you will not use the scanner with batteries for a month, remove the batteries. Batteries can leak chemicals that destroy electronic circuits.
- Always dispose of old batteries promptly and properly. Do not bury or burn them.



The EPA certified RBRC® Battery Recycling Seal on the nickel-cadmium (Ni-Cd) battery indicates RadioShack voluntarily participates in an industry program to collect and recycle these batteries at the end of their useful life, when taken out of service in the United States or Canada. The RBRC program provides a convenient alternative to placing used Ni-Cd batteries into the trash or the municipal waste stream, which may be illegal in your area. Please call 1-800-THE-SHACK (1-800-843-7422) for information on Ni-Cd battery recycling and disposal band/restrictions in your area. RadioShack's involvement in this program is part of the company's commitment to preserving our environment and conserving our natural resources.

External Power

You can power your scanner using a 9V, 400mA AC/DC adaptor and size C adaptaplug™ (neither supplied).

To use an external power source:

1. Always connect the adapter (not supplied) to the scanner first.
2. Plug the adapter into the power source.
3. To disconnect, unplug the adapter from the power source first.



POWER DC 9V — External power source (not included).

If you use an external power source for regular operation, install alkaline batteries for emergencies. Rechargeable batteries will self-discharge, even when not used, and could have no usable power.

Caution: You must use a Class 2 power source that supplies 9V DC and delivers at least 400 mA. Its center tip must be set to positive and its plug must fit the scanner's **PWR DC 9V** jack. Using an adaptor that does not meet these specifications could damage the scanner or the adaptor.

Headphones and Speakers

You can plug headphones or an amplified speaker (neither included) into your scanner's headphone jack. This automatically mutes the scanner's speaker.

Even though some earphones/headphones let you hear some outside sounds when listening at normal volume levels, they still can present a traffic hazard.

To protect your hearing, follow these earphone or headphones guidelines:

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

Keytones and Keylock

The scanner sounds a tone each time you press a key. To prevent accidental changes, you can lock the keypad.

To set the keytone:

1. Turn on the scanner. "Multi-system Trunking Scanner" appears.
2. While "Multi-system Trunking Scanner" appears, press **1** to turn on the keytone or **2** to turn it off.

To lock the keypad:

1. Press **FUNC** then **KEY/LIGHT**. "Key locked" appears briefly and the keypad is locked. When locked, the only controls that operate are **FUNC**, **LIGHT/KEY**, **SQ**, and **VOL**.
2. To unlock the keypad, press **FUNC** then **KEY/LIGHT** again. "Key unlocked" appears.

Backlight and Contrast

Your scanner features a backlit keypad and display for easy viewing. You can select from three backlight modes:

Normal – Press **LIGHT** to activate the backlight.

Keypress – Press any key on the keypad to activate the backlight.

Ignore – Keypress mode, but the scanner ignores the function of the first key pressed to activate the backlight.

The light remains on for a set time after the last button is pressed.

To turn on the backlight:

1. Hold down **LIGHT** until the light turns on.
2. To turn off the backlight, press **LIGHT**.

To change the backlight mode:

1. Turn on the scanner. "Multi-system Trunking Scanner" appears.
2. While "Multi-system Trunking Scanner" appears, press **LIGHT**.
3. Press **▲** or **▼** to select a backlight mode and duration (seconds).

| Normal | Keypress | Ignore |
|--------|----------|--------|
| 3 | K3 | I3 |
| 5 | K5 | I5 |
| 10 | K10 | I10 |
| 20 | K20 | I20 |

4. Press **ENT**.

To change the display contrast:

1. Press **MAN**.
2. Press **FUNC** then **9**.
3. Press **▲** or **▼** to select the contrast.
4. Press **ENT**.

Squelch and Attenuator

The squelch and attenuator help you control your scanner's sensitivity. If you hear a hissing sound, the scanner will remain on an active channel, even after a disconnect tone or a stopped transmission.

If you set the squelch precisely at the threshold where the hissing sound stops, the scanner may pick up unwanted, partial, or very weak transmissions. To prevent this, most users prefer a position a bit past the threshold.

With the attenuator on, the scanner might not receive weak signals. You can reduce interference using two attenuator modes:

- Global – (Default) The attenuator setting is applied to all channels, bands, or groups.
- Normal – Lets you set the attenuator in each channel, band, or group.

To set squelch:

1. Turn off the scanner and turn **SQUELCH** fully counterclockwise.
2. Turn on the scanner. You should hear a hissing sound.
3. Turn the **SQUELCH** clockwise to decrease the scanner's sensitivity, turn counterclockwise to increase its sensitivity.

To set the attenuator mode:

1. To set Global mode, press **FUNC** and then **ATT**. On the display "G" appears."
2. To set the attenuator for each channel, press **FUNC** and then **ATT**. On the display "G" disappears. To turn the attenuator on or off for each channel:
 - On – Press **ATT**. "A" appears.
 - Off – Press **ATT** again. "A" disappears."

You cannot set the attenuator while scanning.

Delay

Some conversations might take several seconds between transmissions. To avoid missing a reply, a delay is automatically set for each channel. The scanner stops for 2 seconds after a transmission stops before it resumes scanning or searching.

To turn the delay on / off:

1. Press **./DELAY**. DLY appears if the delay is on.
2. To turn on the delay, press **./DELAY** again. "dly" appears if the delay is off.

Scanner Setup

A **frequency**, expressed in kHz or MHz, is the tuning location of a station.

Your scanner saves frequencies to **channels** and groups the channels into banks. The scanner's 10 **banks** each hold 100 channels (1,000 channels total).

The scanner is preset to the most common AM or FM receive modes for each frequency range. However, some amateur transmissions may operate in a different mode. If the transmission sounds weak or distorted, you may have the channel set to the wrong **receive mode**:

AM – Amplitude Modulation, primarily used for aircraft, military, some amateur and government transmissions.

FM – Frequency Modulation, used for most public safety transmissions, broadcast, business, and amateur radio transmissions.

CT – FM transmissions with Continuous Tone Coded Squelch System (CTCSS)

DC – FM transmissions with Digital Coded Squelch (DCS)

MO – Motorola Trunking System

ED – EDACS Trunking System

LT – LTR Trunking System

*If you change the receive mode using **MODE** key, the scanner shows the receive mode for small caps (ex. fm, am, ct, or dc). If you want to change the default setting, press **FUNC** then press **MODE**.*

Defining a Channel

Go to www.radioreference.com for the latest frequency references.

To define a channel:

1. Press **MAN**.
2. Enter the bank (0-9) and channel number (00-99) where you want to store the frequency (Example: 101 for Bank 1, Channel 1).
3. Press **MAN** again. M and the bank and channel number appear.
4. Press **PGM**. M changes to P.
5. Use the number keys to enter the frequency (including the decimal point). If you make a mistake, press **CL** to delete a single digit or hold **CL** about 2 seconds to start over.

Your scanner automatically rounds to the nearest valid frequency. For example, if you enter 151.553, your scanner rounds to 151.550.

6. If necessary, press **MODE** to change the receiving mode.

7. Press **ENT**.

If the frequency is already stored in the bank, "Dupl.Freq. ChXXX" appears. To copy the duplicate frequency anyway, press **ENT** or press **CL** to cancel.

If you made a mistake in Step 5, "Invalid Freq." briefly appears and the scanner beeps when you press **ENT**. Go back to step 5 again.

8. Press **MAN** again. M and the bank and channel number appear.

For information about adding text tags to a channel or bank, see "Text Tags" on Page 44.

Copying a Frequency

When you copy a frequency, all the channel conditions, including mode, are also copied.

To copy a frequency:

1. Press **TUNE**.
2. Tune the frequency you want to copy.
3. If necessary, press **MODE** to change the receiving mode.
4. Press **FUNC** then **ENT**. "Bank 9 Store?" appears.
5. To select a new bank, press the bank number.
6. Press **ENT**. "Channel Stored!" appears briefly.

If the frequency is already stored in the bank, "Dupl.Freq. ChXXX" appears. To copy the duplicate frequency anyway, press **ENT** or press **CL** to cancel.

7. Press **MAN**.

Deleting Saved Frequencies

To delete a saved frequency:

1. Press **MAN**.
2. Use the number keys to enter the frequency's channel number.
3. Press **MAN**.
4. Press **PGM**. M changes to P.
5. Press **FUNC**.
6. Press **CL**. "0.0000" appears.

To delete all saved frequencies in a bank:

1. Press **PGM**. M changes to P.
2. Press **FUNC**.
3. Use the number keys to enter the bank number.
4. Press **FUNC** then **CL**. "Clear entire bank?" appears.
5. Press **1** to clear all. Any other key aborts.

CTCSS AND DCS

CTCSS and DCS allow multiple users to share a single radio frequency without hearing each other's transmissions. Your scanner features an advanced, DSP-based CTCSS and DCS decoder that displays CTCSS or DCS codes when available.

CTCSS, DCS, and digital voice

transmissions operate independently of each other. Your scanner will not decode digital voice transmissions for CTCSS or DCS channels. Use FM mode for mixed analog and digital voice transmissions.

To define a channel's CTCSS or DCS code:

1. Press **PGM**. M changes to P.
2. Navigate to the channel.
3. Enter a conventional frequency.
4. Press **MODE** until the desired mode (CT or DC) appears with the default search code value.
5. Press **FUNC**, then **MODE**.
6. Use the **▲** or **▼** to select the desired CTCSS or DCS code.

You can enter the code manually. The scanner automatically fills in the code. See Appendix B for a list of codes.

6. Press **ENT**.

To save a CTCSS or DCS code:

Press **ENT** while the code appears.

Scanner Cloning

You can transfer the programmed data to and from another PRO-164 (or PRO-163) scanner using a connecting cable which has 1/8-inch stereo (TRS) phone plugs on both ends (not supplied).

You can also upload or download the programmed data to or from a PC using an optional USB cable and application software available through your local **RadioShack** store.

The application software is also available online at www.starrsoft.com and www.scancat.com.

To clone the scanner data:

1. Turn on both scanners.

PC/IF — PC interface cable for use with your computer.



2. Connect the connecting cable to each scanner's **PC/IF** jack. **** CLONE MODE **** appears.
3. Press **▲**. "Confirm to send data?" appears.
4. Press **1** to send the data to the other unit or press any other key to cancel.
5. To exit the clone mode, remove the cable.

"CLONE MODE Incorrect Model" appears if you connect a scanner other than a PRO-164 (or PRO-163).

Searching

You can search for transmissions using the preprogrammed search bank, which is divided into eight search bands.

Seek Search

When Seek Search is active, the scanner stops on active frequencies for five seconds and then resumes searching automatically.

To activate Seek Search:

1. Press **FUNC** then **7**. "Seek Search ON" appears briefly and "S" appears on the

display.

2. To turn off Seek Search, press **FUNC** then 7 again. "Seek Search OFF" appears briefly.

Search Banks

To search preprogrammed search banks:

1. Press **SRCH** repeatedly to select a bank.

| Bank | Band |
|------|--------------------------------|
| SR0 | Marine |
| SR1 | CB |
| SR2 | FRS/GMRS/MURS |
| SR3 | Public Safety |
| SR4 | Aircraft |
| SR5 | Amateur Bands |
| SR6 | Railroad |
| SR7 | Limit search (User changeable) |

For SR0-SR2, you can directly select a channel or search through the band.

SR3 to SR5 banks contain several groups. To turn off a group, press the group number; the group number disappears. To turn the group back on, press the group number again.

2. Adjust the Squelch. After the set delay, the scanner starts searching. When the scanner finds an active frequency, it stops searching.
3. To pause while searching, press **PSE**. The scanner stops searching and ***** PAUSED ***** appears. To resume, press **PSE** again.
4. If the scanner stops on an unwanted frequency, you can press **L/OUT** to lock out the frequency.

To search banks SR0-SR2:

1. Press **SRCH** repeatedly to select SR0, SR1, or SR2.
2. To search the entire band, press **FUNC** then **SRCH**. "MAN" (Manual select) or "SRCH" (searches through the band) appears. The scanner starts searching while "SRCH" appears on the display. When the scanner finds an active frequency, it stops searching.

Press **FUNC** then **SRCH** again to return to the previous mode.
3. To select a channel while "MAN" appears on the display, press a channel number or use ▲ or ▼.
4. Adjust the Squelch.
5. If the scanner stops on an unwanted frequency, you can press **L/OUT** to lock out the frequency. For more information, see Locking Out Frequencies....
6. To pause while searching, press **PSE**. The scanner stops searching and *** PAUSED *** appears. To resume, press **PSE** again.

Zeromatic

While searching, the scanner stops if a transmission triggers the squelch setting. A narrow-band FM transmission can have a deviation of +/- 5 Khz, and the actual total bandwidth, including the tails of the sidebands, can be even greater. However, search intervals smaller than that can stop your scanner short of the correct (center) frequency.

The Zeromatic function allows the scanner to find the correct center frequency for search banks SR3, SR4, SR5, SR6 and SR7. When active, Zeromatic automatically tunes to the

frequency that is the closest step increment to the correct center frequency.

To activate Zeromatic:

1. Press **FUNC** then **0**. "Zeromatic ON." appears briefly, then ZM appears.
2. To turn Zeromatic off, press **FUNC** then **0** again. "ZM" changes to "zm."

Programming a Search Range

To program the search range of Bank SR7:

1. Repeatedly press **SRCH** to select SR7.
2. Press **PGM** then **SRCH**. "Enter SR7 Search Range Limits" appears. L blinks for the lower-limit of the range.
3. Use the number keys to enter the lower-limit frequency (including the decimal point).
4. Press **ENT**. U appears.
5. Use the number keys to enter the upper-limit frequency (including the decimal point), then press **ENT**.

If either entered frequency is incorrect, "Invalid Freq" appears briefly.

6. Press **SRCH** to start searching.
7. Adjust the Squelch. After the set delay, the scanner starts searching. When the scanner finds an active frequency, it stops searching.

Signal Stalker II



Signal Stalker II provides a powerful tool to rapidly detect, monitor and save frequencies of nearby or high-power transmissions. Signal Stalker II resembles more expensive portable frequency counters, but provides many

advantages over typical portable frequency counters.

Signal Stalker II is more sensitive than portable frequency counters and will detect transmissions at a greater distance. Signal Stalker II rapidly searches the RF spectrum in 1 MHz segments. If it detects a signal, Signal Stalker II searches in finer steps until the signal source is found.

Signal Stalker II can search all frequencies, or you can define frequency ranges, to avoid ranges with constant activity, such as paging or broadcast transmitters.

To use Signal Stalker II:

1. Hold the Signal Stalker button () for approximately 1 second.
2. To change the scanned band (All Band or Police/Fire), press **FUNC** then Signal Stalker (). For a list of Signal Stalker Bands, see Appendix D.
3. To turn off a bank, press the bank or group number while Signal Stalker II is active.
4. To turn off Signal Stalker, hold the Signal Stalker button () again.

Priority mode is not available while using the Signal Stalker II.

Special Signal Stalker

Special Signal Stalker II divides the frequency range by 1 MHz segments. If you lock out 5 frequencies within 1 MHz segment, the scanner will skip that segment in subsequent sweeps.

To use Special Signal Stalker II:

1. Press **FUNC**.
2. Use ▲ or ▼ to select “Sp. Stalker” appears for Special Signal Stalker II.
3. To turn off Special Signal Stalker II, press **FUNC** and then ▲ or ▼ again.

Locking Out Frequencies

When you lock out frequencies during a search, the scanner continues searching, but ignores the locked out frequencies. You can lock out up to 50 frequencies in each bank. If you try to lock out more, “L/O Memory Full!” appears.

While using Signal Stalker II, you can lock out 150 frequencies if searching all bands and 50 frequencies while searching PubSafety frequencies. If you lock out 5 frequencies within a 1 MHz segment, the scanner will skip that segment in subsequent sweeps.

If you lock out all the frequencies in a search bank and only that search bank is activated, “All ranges Locked out!” appears and the scanner does not search.

Signal Stalker II still performs a fine step search for locked out signals. Signal Stalker II will not stop on the signal, but scan may take longer.

To lock out a frequency:

When the scanner stops on a frequency, press **L/OUT**.

To review and unlock frequencies:

1. Press **SRCH** to enter search mode.

-
2. Press **FUNC** then **L/OUT**. The first locked-out frequency and lockout list appear. If the search bank has no locked-out frequencies, "No Lockout" appears.
 3. Press **▲** or **▼** to review the list. The current position and the total locked-out number also appear as "Lockout XX of YY." (Example: Lockout 10 of 30.)
 4. (Optional) To unlock a frequency, select the frequency then press **CL**.
 5. Press **FUNC** then **L/OUT** again to exit.

To unlock all frequencies in a search bank:

1. Press **SRCH**.
2. Select the search bank.
3. Press **FUNC** then press **L/OUT**. The Lockout list appears.
4. Press **FUNC** then **6**. "Clear entire list?" appears.
5. Press **1**. "List cleared" appears. Pressing any other key cancels the clearing.

Saving Found Frequencies

To save a frequency found during a search:

1. When the scanner stops on a frequency, press **FUNC** then **PGM**. "Store in ChXXX?" appears and the frequency flashes.
2. To change the target channel, enter the bank and channel number.
3. Press **ENT**. "Channel Stored!" appears briefly, then the search resumes.

Scanning

Scanning sequentially checks all saved channels for activity. You must save frequencies into channels to scan. The scanner does not scan empty channels or unsaved frequencies.

You can increase the scanning speed by locking out channels with continuous transmissions, such as a weather channel or turning off entire banks. Turning off a bank prevents the scanner from scanning any channels within the bank. You cannot turn off all banks. There must be at least one active bank to scan.

To scan:

1. Press **SCAN**. The scanner checks all unlocked channels in the active banks.
2. To change the scan direction, press **▲** or **▼**.
3. To lock out a channel, when the scanner stops on the channel, press **L/OUT**. The scan resumes.
4. To turn off a bank, press the bank's number so the bank's number disappears. To turn on a bank, press the number key so the bank's number appears.
5. To stop on a channel, press **PSE**.

Locking Out Channels

You can increase the scanning speed by locking out channels with continuous transmissions.

To locked out a channel:

1. Press **MAN**.
2. Enter the bank and channel number or use **▲** or **▼** to select the channel.

-
3. Press **L/OUT**. On the display, "lo" changes to "LO."
 4. To unlock a locked-out channel, press **L/OUT** again.

To review all locked out channels:

1. Press **MAN**.
2. Repeatedly pressing **FUNC** and then **L/OUT** to view each locked-out channel.
3. To unlock a channel, press **L/OUT**. "LO" changes to "lo."
4. When you finish reviewing locked-out channels, press **MAN**.

You can manually select any channel in a bank, even in turned-off banks.

Priority Scanning

In addition to the 1,000 programmable memory channels, your scanner has one Priority channel. When Priority is turned on, the scanner checks the Priority channel every 2 seconds. This lets you scan without missing a transmission on the Priority channel.

Priority scanning does not operate if the scanner stops on a trunking transmission. Priority check seems random during peak hours.

To turn on the priority feature:

1. Press **PRI** so "pri" changes "PRI" on the display during scanning.
2. To turn off the priority feature, press **PRI** again.

To make an existing channel a Priority channel:

1. Press **MAN**.
2. Use the number keys to enter the bank and channel number.

The Priority channel cannot be a trunking channel (MOT, ED, or LTR).

3. Press **MAN**.
4. Press **FUNC**, then hold **PRI** until the display blinks.

To modify the Priority channel:

1. Press **PGM**.
2. Press **PRI**.
3. Use the number keys to enter the frequency.
4. Press **ENT**.

If the frequency is incorrect, "Invalid Freq" appears briefly.

Weather Alerts

The Federal Communications Commission (FCC) has allocated channels for use by the National Oceanic and Atmospheric Administration (NOAA). NOAA broadcasts Specific Area Message Encoding (SAME) alerts that include digitally encoded data about the severity of the alert.

Regulatory agencies in other countries have also allocated channels for use by their weather reporting authorities.

If you program a weather channel as the Priority channel, your scanner can detect the 1050 Hz weather alert tone. All alerts are received (FIPS settings are ignored), and the scanner stays on

the Priority channel only if the scanner detects a weather alert.

To perform a weather scan:

Press **WX**. Your scanner scans through the weather bands then stops on the next available weather broadcast.

To program a weather channel into priority channel:

1. Press **WX**.
2. Select the weather channel.
3. Press **FUNC** and then **PRI**.

SAME Standby Mode

SAME alerts include FIPS codes to identify areas, established by the US Census bureau. You can set your scanner to alert for all areas or limit weather alerts to up to 10 specific areas by FIPS code.

The National Weather Service maintains a current list of FIPS codes at www.nws.noaa.gov/nwr/.

To program a FIPS code:

1. Press **WX** and listen to identify the weather station with the strongest signal.
2. Press **FUNC**, and then **PGM** to access the FIPS code entry table.
3. Use **▲** or **▼** to select the desired FIPS code positions (0-9).

-
4. Use the number keys to enter the FIPS code. The format of a FIPS code is:

| Subdivisions | State Code | County Code |
|---------------------------------------|-----------------|--------------------|
| 0-9 | 01-50 | XXX |
| (0=entire area) | (00=all states) | (000=all counties) |
| Example: 048439 | | |
| (0=All; 48=Texas; 439=Tarrant County) | | |

5. (Optional) To label the code, press **TEXT** and use the letter buttons to enter text.
6. Press **ENT** to store the code. Repeat this process to program additional FIPS codes.
7. Press **L/OUT** to lock out or enable specific FIPS entries.
8. Press **WX** to exit the FIPS code entry table.

To review stored FIPS codes:

1. Press **WX** then a number key.
2. Press **L/OUT** to change the lockout status.

The scanner sounds an alert or beep when it receives the SAME code. If you do not stop the alert (or beep) for five minutes, the alert stops and the scanner beeps every ten seconds. If the scanner receives a new message after five minutes, it sounds the alert or beep. Press any key except LIGHT to stop the alert and allow the scanner to receive a new alert signal before the five minute time out.

For information about adding text tags to a FIPS code, see "Text Tags" on Page 44.

To enter SAME standby:

1. Press **FUNC**, and then **WX**. The scanner will monitor the selected weather radio station for alerts with FIPS codes that match the codes you entered in the FIPS entry table.
2. To exit SAME standby, press **FUNC**, and then **WX**.

The scanner searches the weather frequencies while SAME standby mode when squelch is off.

To test the weather alert:

1. Press **WX**. Your scanner scans through the weather bands.
2. Set the Squelch to the lowest setting so that you hear static.
3. Press **FUNC** and then **WX**. "SAME Standby" appears.
4. Hold **ENT** for about 2 seconds. The display indicates the type of message, and the scanner sounds an alert or series of beeps.
5. Press any key except **LIGHT** to stop testing.

Skywarn

Skywarn is an organized group of trained weather observers. Using Skywarn, you can hear trained observers in your area call in official reports to a control station that relays those reports to NOAA and other emergency agencies.

Before using this feature, save local Skywarn frequencies for your area into Channel 999.

To use Skywarn:

Hold the Skywarn button (). "SKY" appears.

If the skywarn channel is empty, "Not programmed" appears.

Monitoring

When *monitoring*, the scanner remains on a single channel.

Your scanner features a power save circuit that allows the scanner to "sleep" briefly while waiting for a call on a monitored channel.

To monitor a channel:

1. Press **MAN**.
2. Use the number keys to enter the channel number and press **MAN**.

To find a frequency to monitor:

1. Press **TUNE**. The currently-tuned frequency and *** PAUSED *** appear.
2. (Optional) Use the number keys to change the frequency and press **ENT**.
3. Press **PSE**. The scanner searches for a frequency. To change the tune direction, press **▲** or **▼**. When the scanner finds an active frequency, it stops.
4. Press **PSE** to monitor the frequency.

The transmission signal level is indicated by the 5 dots.

To set a default tuning frequency:

1. Press **MAN**.
2. (Optional) Use the number keys to enter the frequency number.
3. Press **FUNC**, then **TUNE**. The scanner saves the frequency. For example, if you save 145.31000 MHz, when you press **TUNE**, the scanner starts tuning at 145.31000 MHz.

Trunking Setup

Instead of transmitting on a specific frequency, trunking systems choose one of several frequencies during a 2-way radio transmission and simultaneously transmit a Talk Group ID that identifies the 2-way radio user. This allows trunking systems to allocate fewer frequencies to multiple 2-way radio users.

Defining a Trunking Bank

You can define any of the 10 banks as a trunking bank, but each bank can only scan for one system: Motorola, EDACS (GE/Ericsson), or LTR (EF Johnson).

Trunking banks can contain both trunking and non-trunking channels.

To define a Trunking Bank:

1. Press **PGM**, then press **TRUNK** to enter the ID program mode.
2. Press **FUNC**, then use ▲ or ▼ to select a bank.
3. Repeatedly press **MODE** to select a trunking mode (Motorola, EDACS, or LTR).
4. Press **PGM**.

Trunking Modes

In **Closed** mode, the scanner stops only on transmissions with saved and unlocked Talk Group IDs. This lets you focus a scan on the frequencies you have identified, ignoring other transmissions.

In **Open** mode, the scanner stops for transmissions on any unlocked channel. This lets you search for Talk Group IDs that you can then save.

While scanning, “-” appears for Closed mode and “+” appears for Open mode under the channel storage bank’s number. When the scanner stops on a channel, “OPEN” or “CLOSED” appears.

To set Open or Closed mode for a bank:

1. Press **MAN**.
2. Use ▲ or ▼ to select a bank.
3. Press **FUNC** then **DELAY**. “Bank OPEN” or “Bank CLOSED” appears.

Motorola Trunking Setup

Motorola systems can allocate as few as five frequencies to up to several thousand groups of users in three categories:

- Type I – User groups are assigned to fleets. To scan, you must program a fleet map into the scanner.
- Type II – The Talk Group ID contains 4 or 5 digit numbers.
- Hybrid – Combines Type I and Type II formats.

Fleet Maps

For Motorola Type I and hybrid systems, you must program a fleet map before saving Talk Group IDs.

To program a fleet map:

1. Press **PGM** then **TRUNK**.
2. Press **FUNC**, then press **▲** or **▼** to select the bank.
3. If necessary, repeatedly press **MODE** to select "Motorola."
4. Press **FUNC**, then press **8**. "Size Code Setting" appears, with Block 0 selected.
5. Enter the size code for Block 0, supplied with the Type I system information, or try one of the following common fleet maps.

| Size Codes | BLOCKS | | | | | | | |
|------------|--------|-----|-----|-----|-----|-----|-----|-----|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | S11 | S11 | S11 | S11 | S11 | S11 | S11 | S11 |
| 2 | S4 | S4 | S4 | S4 | S4 | S4 | S4 | S4 |
| 3 | S4 | S4 | S4 | S4 | S4 | S4 | S12 | — |
| 4 | S12 | — | S4 | S4 | S4 | S4 | S4 | S4 |
| 5 | S4 | S4 | S12 | — | S4 | S4 | S4 | S4 |
| 6 | S3 | S10 | S4 | S4 | S12 | — | S12 | — |
| 7 | S10 | S10 | S11 | S4 | S4 | S4 | S4 | S4 |
| 8 | S1 | S1 | S2 | S2 | S3 | S3 | S4 | S4 |
| 9 | S4 | S4 | S0 | S0 | S0 | S0 | S0 | S0 |
| 10 | S0 | S0 | S0 | S0 | S0 | S0 | S4 | S4 |
| 11 | S4 | S0 | S0 | S0 | S0 | S0 | S0 | S0 |
| 12 | S0 | S0 | S0 | S0 | S0 | S0 | S0 | S4 |
| 13 | S3 | S3 | S11 | S4 | S4 | S0 | S0 | S0 |
| 14 | S4 | S3 | S10 | S4 | S4 | S4 | S12 | — |
| 15 | S4 | S4 | S4 | S11 | S11 | S0 | S12 | — |
| 16 | S3 | S10 | S10 | S11 | S0 | S0 | S12 | — |

For Motorola Type II, enter 15.

6. Press **ENT**. The next block appears.
7. Repeat steps 5-6 for each block. If you make a mistake, press **CL** and enter the correct size code.

Base and Offset Frequencies

To receive Motorola VHF and UHF system transmissions, you must program applicable *base* and *offset* frequencies. In the 800 MHz trunking band, you can select a base frequency (normal or offset), but in the 900 MHz trunking band, you do not need to set the base frequency.

You can get information about base and offset frequencies from www.trunkscanner.com.

UHF-Lo (406-512 MHz)

To program Motorola base and offset frequencies:

1. Press **PGM** then **TRUNK** to enter the ID program mode.
2. Press **FUNC**, then press **▲** or **▼**. The bank number increases or decreases by one. If you hold down **▲** or **▼**, the bank number increases or decreases continuously.
3. If necessary, repeatedly press **MODE** to select "Motorola."
4. Press **FUNC** then **2**. The screen displays the Base, Offset, and Step with the B in Base blinking.
5. If necessary, use the number keys to enter a new Base frequency and press **ENT**. The O in Offset blinks.

-
6. If necessary, use the number keys to enter a new Offset frequency and press **ENT**. The S in Step blinks.

If you try to program an offset frequency in the UHF-Hi bands (806-960 MHz), the scanner ignores the entry.

7. While the S in Step blinks, repeatedly press **▲** or **▼** to select the step number: 5.0, 6.25, 10.0, 12.5, 15.0, 18.75, 20.0, 25.0, 30.0, 31.25, 35.0, 37.5, 40.0, 43.75, or 50.0 kHz, then press **ENT**.
8. Press **PGM**.

UHF-Hi (806-960 MHz)

To program 800 MHz Motorola trunking:

1. Press **PGM** then **TRUNK** to enter the ID program mode.
2. Press **FUNC**, then press **▲** or **▼**. The bank number increases or decreases by one. If you hold down **▲** or **▼**, the bank number increases or decreases continuously.
3. If necessary, repeatedly press **MODE** to select "Motorola."
4. Press **FUNC** then **3**. **NORMAL** appears.
5. Press **▲** or **▼** to select **NORMAL** or **SPLINTER** and press **ENT**. If you are uncertain about the base frequency, use **NORMAL**.

The base frequency in **NORMAL** is 851.0125 MHz. The base frequency in **SPLINTER** is 851.0000 MHz. . If you cannot receive with the **NORMAL** setting, change to **SPLINTER**.

EDACS Trunking Setup

EDACS (GE/Ericsson) systems transmit Talk

Group ID data on a dedicated control channel. Scanning requires clear reception of the control channel at all times, so EDACS systems generally have a smaller usable area. You can manually select the data channel, but an external antenna can greatly improve EDACS scanning. If you are programming frequencies for an EDACS system, you must store them in the Logical Channel Number order (usually listed as LCN#).

LTR Trunking Setup

LTR systems, assign each frequency a Home Repeater (HR) number, and are frequently programmed with unique ID codes for each radio. LTR Talk Group IDs are organized in a specific order, and to scan, you must program the frequencies in HR order. LTR systems are used primarily by businesses, such as taxicabs, delivery trucks, and repair services.

LTR systems use a Home Repeater as part of their Talk Group ID.

To save a correct Home Repeater:

1. Save the LTR channels in any order.
2. Set the bank to Open mode.
3. Manually select LT channels and watch the LTR data on the display.

Your scanner displays the LTR Talk Group ID and a number preceded by "R." The "R" number is the Home Repeater number for the transmission.

4. The assigned Home Repeater channel must equal the Home Repeater number. For example, R12 must be programmed into Channel 12.

Searching for Talk Group IDs

If you tune the scanner to an active Motorola control channel, the Motorola System ID and the approximate control channel message decode success rate appears. This helps you identify the system and the reception quality. When the scanner decodes control channel data from a Motorola system, COTRL appears on the display.

To search for Talk Group IDs:

1. Set the bank to Open mode.
2. Press **SCAN**. The scanner scans through all unlocked channels in the active banks.
3. When the scanner stops on a transmission, press **TRUNK**. The scanner displays the ID location:

| Sub-bank. | ID Location |
|---------------|-------------|
| 0-4 | 00-29 |
| Example: 2-01 | |

If the ID has already been saved, "ID was saved" appears.

If you try to store more than 150 talk group IDs in a bank, "Memory Full!" appears.

Saving a Talk Group ID

Each of the 10 banks contains 5 **sub-banks** that each hold 30 Talk Group IDs. (You can save up to 1,500 Talk Group IDs.) When the scanner receives a trunked transmission, it searches the associated sub-bank for the Talk Group ID to decode data for Motorola, EDACS (GE/ Ericsson), and LTR (EF Johnson) systems.

To define a Talk Group ID:

1. Press **PGM**, then press **TRUNK** to enter the ID program mode.
2. Press **FUNC**, then use **▲** or **▼** to select a bank.
3. Repeatedly press **MODE** to select a trunking mode (Motorola, EDACS, or LTR).
4. Repeatedly press **TRUNK** to select the sub-bank.
5. Press **▲** or **▼** to select the location where to store the Talk Group ID.
6. Use the number and decimal point keys to enter the Talk Group ID:

For ED Talk Group IDs, you can enter either a decimal or AFS code. The default setting is decimal ID entry.

To use the AFS code, press **FUNC** then **2**, "AFS Format" appears for about 2 seconds. You can then enter the AFS code.

If you make a mistake, "Invalid ID value" appears when you press **ENT**. Go back to Step 3.

If you entered an ID that is already stored in same bank, "Dupl. ID of X-XX appears." To store the ID code, press **ENT**. To cancel, press **CL**.

7. Press **ENT**.

For information about adding text tags to a Talk Group ID, see "Text Tags" on Page 44.

Deleting Talk Group IDs

You can delete an individual Talk Group ID or all Talk Group IDs in a bank.

To delete a Talk Group ID:

1. Press **PGM** then **TRUNK**.
2. Press **FUNC**, **▲** or **▼** to select ID memory.
3. Press **FUNC** then **CL**.

To delete ALL talk group IDs in a bank:

1. Press **PGM**.
2. Press **TRUNK** to enter a Talk Group ID memory mode.
3. Select a Talk Group ID bank using **FUNC**, **▲** or **▼**.
4. Press **FUNC** then **6**. "Clear entire list? Press **1** to clear all, any other key aborts" appears.
5. To clear the Talk Group IDs, Press **1**. To cancel the deletion, press any key except **1**.

Saving Trunking Channels

Trunking channels are defined using the same procedure for non-trunking channels. In each bank, you can mix channel modes, including conventional, but you can scan only one trunking mode at a time, either EDACS, Motorola, or LTR.

Because Motorola control frequencies change daily, you should save all the control frequencies in the same bank. If you do not know the control frequency, save all the Motorola frequencies in the same bank.

EDACS frequencies are assigned Logical Channel Numbers (LCN) and organized in a specific order. To scan correctly, you must program the frequencies in LCN order, starting with Memory 01.

Trunked modes (MO, ED, and LT) can only be selected for frequencies above 137 MHz that use trunking operations.

For information about adding text tags to a channel, see “Text Tags” on Page 44.

Trunk Scanning

In each bank, you can mix conventional channels and frequencies in a bank. However, you can scan only one trunking mode at a time, either EDACS, Motorola, or LTR.

To focus on trunk scanning, during a normal scan, you turn off banks that contain only conventional channels.

For Motorola channels, your scanner displays the Talk Group ID memory location, received frequency, voice channel (VC), and the Motorola ID number.

To change the scanning direction, press ▲ or ▼.

Your scanner automatically mutes the audio while it decodes control channel data. However, we recommend you turn SQ clockwise and leave it set to a point just after the hiss stops. This lets the scanner quickly acquire the data channel.

For Motorola trunking systems, more than one talk group can transmit at a time. If you manually tune the scanner, you will hear the talk group on that channel, but the display will alternate between all active Talk Group IDs.

For EDACS and Motorola (above 406 MHz range), the scanner monitors the control channel between each transmission to identify talk groups. For some Motorola (under 512 MHz range) and LTR systems, the scanner uses the subaudible data sent with each transmission to identify talk groups.

Trunking Delay

You can set a Talk Group ID delay separately from the channel delay. When active, the scanner checks the Talk Group ID for the delay time when a transmission ends.

To set a Talk Group ID delay:

1. Press **FUNC** then **./DELAY** while you are programming the Trunk Group ID. "ENTER key saves. 2.0 seconds" appears.
2. Use **▲** or **▼** to set ID Delay: None, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, or 4.0 seconds.
3. Press **ENT**.

Locking Out Talk Group IDs

You can only lock out Talk Group IDs when the scanner is in the Closed mode.

To lock out Talk Group IDs:

1. Press **PGM** then **TRUNK**.
2. Press **FUNC**, **▲** or **▼** to move to the desired bank.
3. Press **▲** or **▼** to select the ID.
4. Press **L/OUT** to lock out the ID. "lo" changes to "LO."
5. To remove the lockout from a trunking ID,

manually select the ID memory, and press **L/OUT**. LO changes to lo.

You cannot clear all lockouts from a talk group at the same time.

To review locked-out Talk Group IDs:

1. Press **PGM** then **TRUNK**.
2. Press **FUNC**. Then **L/OUT**. The first locked out ID appears. If the ID memory bank has no locked-out ID, you hear the low beep tone.
3. Press **▲** or **▼** to scroll through the list.
4. Press **PGM** to exit.

Turning Off Sub-Banks

To turn off a sub-bank:

1. Press **TRUNK** repeatedly to select the desired sub-bank.
2. Press **FUNC** then **1** to turn the sub-bank on if it is off or off if it is on.

To turn off a sub-bank while scanning:

1. When the scanner stops on a transmission, press **FUNC**.
2. Press **TRUNK**. The display indicates which sub-bank is turned on or off. The active sub-bank number appears.
3. Press **FUNC** and the number of the sub-bank you desire to turn on or off. For example to turn sub-bank 4 on or off, press **FUNC**. Then press **4**.

This function activates when the receiving channel bank is Closed mode.

Talk Group ID Hold

You can set your scanner to follow a trunking signal that you want to track during scanning.

To set Talk Group ID Hold:

1. While the scanner is stopped on a voice channel (VC appears), hold down **TRUNK** until "ID hold ON" appears.

When the scanner receives a transmission, the "S" on the display changes to "H."

2. To release ID hold, press **SCAN** or **TRUNK**.

Scanner Maintenance

- Handle the scanner carefully; do not drop it.
- Use and store the scanner only in normal temperature environments.
- Keep the scanner dry; if it gets wet, wipe it dry immediately.
- Keep the scanner away from dust and dirt, and wipe it with a damp cloth occasionally to keep it looking new.

Text Tags

While scanning, if the scanner stops on a channel with a saved text tag, the text appears on the display. Otherwise, the Talk Group ID appears on the display.

You can define text tags to identify channels, Talk Group IDs, banks or FIPS Codes.

To define a Text Tag:

1. To define a text tag for a channel:

-
- Press **MAN**.
 - Enter the bank and channel number.
 - Press **PGM**. M changes to P.
 2. To define a text tag for a Talk Group ID:
 - Press **PGM**.
 - Press **TRUNK**.
 - Press **FUNC** then ▲ or ▼ to select the desired bank.
 - Press **TRUNK** to select the desired sub-bank.
 - Press or hold down ▲ or ▼ to select the desired group ID.
 3. To define a text tag for a bank:
 - Press **PGM**.
 - Press **FUNC** then press bank number.
“Bank X (0 through 9) selected” appears.
 4. To define a text tag for a FIPS code, first access the FIPS code definition. See “SAME Standby Mode” on Page 28.
 5. Press **TEXT**.
 6. Enter the text using the text keys (up to 16 characters).

When you press a key, the associated letters appear on the screen. Press the corresponding number. For example, when you press ABC, A, B, and C appear on the display. To select A, press **1**. To select B, press **2**. To select C, press **3**.

To enter a number, press **1**, then press the number key.

To enter lowercase character or second-set character for the 0 key, press the number key and then press **FUNC**.

7. If you make a mistake, press ▲ or ▼ to move to the character you want to change.
 8. Press **ENT** to save the text.
-

To display the Talk Group ID:

1. If the scanner displays the text tag for a transmission, press **TEXT**. The ID code appears.
2. Press **TEXT** again to cancel.

Troubleshooting

| Problem | Solution |
|--|--|
| The scanner is not working at all. Cause: The AC or DC adaptor might not be connected. The batteries might be dead or need to be recharged. If the scanner does not operate when you connect a DC adaptor, the DC adaptor socket might be dirty. | Be sure the adaptor's barrel plug is fully inserted into the PWR DC 9V jack. The center tip of the adaptor's barrel plug must be set to positive. Recharge the rechargeable batteries or replace the standard batteries. Unplug the DC adaptor from the power source and clean the socket, or check the adaptor's internal fuse. |

| Problem | Solution |
|---|--|
| <p>The scanner does not receive any stations or reception is poor.</p> <p>Cause:</p> <p>Antenna might not be connected correctly.</p> <p>Squelch setting might be too sensitive causing it to pick up unwanted, partial or weak transmissions.</p> <p>Attenuator might be on so your scanner might not receive weak signals.</p> <p>The scanner might need to be initialized.</p> | <p>Check the antenna.</p> <p>Check the squelch.</p> <p>Check the Attenuator.</p> <p>Turn the scanner off then on again, or initialize the scanner.</p> |
| <p>The scanner is on but does not scan.</p> <p>Cause:</p> <p>The squelch might not be adjusted correctly.</p> <p>There might only be one channel or no channels stored in the scanner.</p> <p>The keylock might be turned on.</p> | <p>Turn SQ clockwise.</p> <p>Save more frequencies into channels.</p> <p>Turn off keylock.</p> |

| Problem | Solution |
|---|---|
| <p>Error message appears when trying to upload or download from a computer.</p> <p>Cause: Your computer is using Windows XP and does not have the necessary USB cable driver.</p> | <p>Download and install the "Windows XP Driver to resolve PC connection error" file from your scanner's Product Support page or the Software Download page on www.RadioShack.com.</p> <p>Then make your connection and try again. Be sure the correct COM port is selected in device manager.</p> |

Birdie Frequencies

All scanners have signals created inside the scanner's receiver. These birdie frequencies can interfere with transmissions on the same frequencies. If the interference is not severe, you might be able to turn SQ clockwise to omit the birdie.

To find the birdies:

1. Disconnect the antenna and moving it away from the scanner. Make sure that no other nearby radio or TV sets are turned on near the scanner.
2. Start a search of every frequency range from its lowest frequency to the highest. When the search stops, often without any sound, this is a birdie.
3. Make a list of all the birdies in your scanner for future reference.

Initializing the Scanner

If the scanner's display locks up or does not work properly after you connect a power source or install batteries, you might need to initialize it.

Caution: *This procedure clears the scanner's memory. Initialize the scanner only after trying all other methods to correct issues.*

To initialize the scanner:

1. Turn off the scanner, then turn it on again. "Multi-system Trunking Scanner" appears.
2. While "Multi-system Trunking Scanner" appears, press **0**.
3. Press **1**.
4. Press **ENT**. "Initializing please stand by" appears for about 5 seconds. When the initialization is complete, M000 appears on the second line of the display. Bank 0 Ch 00 appears.

Do not turn off the scanner until the initialization is complete.

Service and Repair

If your scanner is not performing as it should, take it to your local RadioShack store for assistance. To locate your nearest RadioShack, use the store locator feature on RadioShack's web site (www.radioshack.com), or call 1-800-The Shack (800-843-7422) and follow the menu options. Modifying or tampering with the scanner's internal components can cause a malfunction and might invalidate its warranty and void your FCC authorization to operate it.

Scanning Legally

Your scanner covers frequencies used by many different groups including police and fire departments, ambulance services, government agencies, private companies, amateur radio services, military operations, pager services, and wireline (telephone and telegraph) service providers. It is legal to listen to almost every transmission your scanner can receive.

However, there are some transmissions you should never intentionally listen to. These include:

- telephone conversations (cellular, cordless, or other private means of telephone signal transmission)
- pager transmissions
- any scrambled or encrypted transmissions

According to the Electronic Communications Privacy Act (ECPA), as amended, you are subject to fines and possible imprisonment for intentionally listening to, using, or divulging the contents of such a transmission unless you have the consent of a party to the communication (unless such activity is otherwise illegal).

This scanner is designed to prevent reception of illegal transmissions, in compliance with the law which requires that scanners be manufactured in such a way as to not be easily modifiable to pick up those transmissions. Do not open your scanner's case to make any modifications that could allow it to pick up transmissions that it is not legal to listen to. Doing so could subject you to legal penalties.

In some areas, mobile use of this scanner is unlawful or requires a permit. Check the laws in your area. It is also illegal in many areas to interfere with the duties of public safety officials

by traveling to the scene of an incident without authorization.

We encourage responsible, legal scanner use.

FCC Notice

This equipment has been tested and found to comply with the limits for a scanning receiver, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

References

Appendix A: Glossary

Frequency – The signal (expressed in MHz) used by broadcasting radios. To find active frequencies, you can use frequency guides available from your local RadioShack store, frequency lists posted on the Internet, or your scanner's search function.

Bank – A storage unit for a group of channels. A channel contains one frequency, and a bank can hold up to 100 channels.

Channel – A programmable memory locations for a single frequency.

Talk Group ID – A simultaneous trunking transmission that identifies 2-way radio users. This allows trunking systems to allocate a few frequencies to multiple 2-way radio users.

Sub-bank – Each bank has an associated Talk Group ID sub-bank. In Closed mode, the scanner only stops if a transmission has a Talk Group ID saved in the associated Talk Group ID sub-bank. In Open Mode, the scanner stops on all transmissions, except those you lock out.

Appendix B: Search Banks

Note: All scanners tune by steps. Your RadioShack scanner uses steps consistent with the latest US or worldwide standards. If you enter a non-valid step frequency, any scanner will tune to the next step. Some scanner designs do this without showing the correct step in the display. This scanner will show the actual tuned frequency in the display. Because steps are so close together, the audio quality will not be affected by the offset.

Search bank: SR0 Marine band
 Receive mode: FM

| Ch. | Freq. (MHz) | Ch. | Freq. (MHz) | Ch. | Freq. (MHz) |
|-----|----------------------|-----|----------------------|-----|----------------------|
| 01 | 156.0500 | 21 | 157.0500 | 72 | 156.6250 |
| 05 | 156.2500 | 22 | 157.1000 | 73 | 156.6750 |
| 06 | 156.3000 | 23 | 157.1500 | 74 | 156.7250 |
| 07 | 156.3500 | 24 | 157.2000 161.8000 | 77 | 156.8750 |
| 08 | 156.4000 | 25 | 157.2500 161.8500 | 78 | 156.9250 |
| 09 | 156.4500 | 26 | 157.3000 161.9000 | 79 | 156.9750 |
| 10 | 156.5000 | 27 | 157.3500 161.9500 | 80 | 157.0250 |
| 11 | 156.5500 | 28 | 157.4000 162.0000 | 81 | 157.0750 |
| 12 | 156.6000 | 63 | 156.1750 | 82 | 157.1250 |
| 13 | 156.6500 | 64 | 156.2250 160.8250 | 83 | 157.1750 |
| 14 | 156.7000 | 65 | 156.2750 | 84 | 157.2250 161.8250 |
| 15 | 156.7500 | 66 | 156.3250 | 85 | 157.2750 161.8750 |
| 16 | 156.8000 | 67 | 156.3750 | 86 | 157.3250 161.9250 |
| 17 | 156.8500 | 68 | 156.4250 | 87 | 157.3750 161.9750 |
| 18 | 156.9000 | 69 | 156.4750 | 88 | 157.4250 |
| 19 | 156.9500 | 70 | 156.5250 | | |
| 20 | 157.0000 161.6000 | 71 | 156.5750 | | |

Note: Some Marine frequencies assign two frequencies to one channel. For example, 157.000 and 161.600 are assigned in Channel 20.

Search bank: SR1 CB band
 Receive mode: AM

| Ch. | Freq. (MHz) | Ch. | Freq. (MHz) | Ch. | Freq. (MHz) |
|-----|----------------|-----|----------------|-----|----------------|
| 01 | 26.9650 | 15 | 27.1350 | 29 | 27.2950 |
| 02 | 26.9750 | 16 | 27.1550 | 30 | 27.3050 |
| 03 | 26.9850 | 17 | 27.1650 | 31 | 27.3150 |
| 04 | 27.0050 | 18 | 27.1750 | 32 | 27.3250 |
| 05 | 27.0150 | 19 | 27.1850 | 33 | 27.3350 |
| 06 | 27.0250 | 20 | 27.2050 | 34 | 27.3450 |
| 07 | 27.0350 | 21 | 27.2150 | 35 | 27.3550 |
| 08 | 27.0550 | 22 | 27.2250 | 36 | 27.3650 |
| 09 | 27.0650 | 23 | 27.2550 | 37 | 27.3750 |
| 10 | 27.0750 | 24 | 27.2350 | 38 | 27.3850 |
| 11 | 27.0850 | 25 | 27.2450 | 39 | 27.3950 |
| 12 | 27.1050 | 26 | 27.2650 | 40 | 27.4050 |
| 13 | 27.1150 | 27 | 27.2750 | | |
| 14 | 27.1250 | 28 | 27.2850 | | |

Search bank: SR2 FRS/GMRS/MURS band
 Receive Mode: FM, CT, or DC

| Ch. | Freq. (MHz) | Ch. | Freq. (MHz) | Ch. | Freq. (MHz) |
|-----|----------------|-----|----------------|-----|----------------|
| 01 | 462.56250 | 13 | 467.68750 | 25 | 151.94000 |
| 02 | 462.58750 | 14 | 467.71250 | 26 | 154.57000 |
| 03 | 462.61250 | 15 | 462.55000 | 27 | 154.60000 |
| 04 | 462.63750 | 16 | 462.57500 | 28 | 154.62500 |
| 05 | 462.66250 | 17 | 462.60000 | 29 | 464.50000 |
| 06 | 462.68750 | 18 | 462.62500 | 30 | 464.55000 |
| 07 | 462.71250 | 19 | 462.65000 | 31 | 467.85000 |
| 08 | 467.56250 | 20 | 462.67500 | 32 | 467.87500 |
| 09 | 467.58750 | 21 | 462.70000 | 33 | 467.90000 |
| 10 | 467.61250 | 22 | 462.72500 | 34 | 467.92500 |
| 11 | 467.63750 | 23 | 151.82000 | | |
| 12 | 467.66250 | 24 | 151.88000 | | |

Search bank: SR3 Public Safety band
 Receive Mode: FM, CT, or DC

| Freq. (MHz) | Step (kHz) | Freq. (MHz) | Step (kHz) |
|-----------------|------------|-----------------------|------------|
| Group 0 | | Group 2 | |
| 33.420-33.980 | 10 | 453.0375-453.9625 | 6.25 |
| 37.020-37.420 | 10 | 458.0375-458.9625 | 6.25 |
| 39.020-39.980 | 10 | 460.0125-460.6375 | 6.25 |
| 42.020-42.940 | 10 | 462.5500-462.7250 | 6.25 |
| 44.620-45.860 | 10 | 465.0125-465.6375 | 6.25 |
| 45.880 | | 467.5625-467.7125 | 6.25 |
| 45.900 | | Group 3 | |
| 45.940-46.060 | 10 | 764.003125-766.996875 | 3.125 |
| 46.080-46.500 | 10 | 773.003125-775.996875 | 3.125 |
| Group 1 | | 794.003125-796.996875 | 3.125 |
| 151.820-151.940 | 7.5 | 803.003125-805.996875 | 3.125 |
| 153.770-154.130 | 7.5 | Group 4 | |
| 154.145-154.445 | 7.5 | 851.0125-852.0125 | 12.5 |
| 154.570 | | 852.0375-853.0375 | 12.5 |
| 154.600 | | 853.0625-854.0625 | 12.5 |
| 154.650-154.770 | 7.5 | 854.0875-855.0875 | 12.5 |
| 154.785-154.950 | 7.5 | 855.1125-856.1125 | 12.5 |
| 155.010-155.370 | 7.5 | 856.1375-857.1375 | 12.5 |
| 155.415-155.700 | 7.5 | 857.1625-858.1625 | 12.5 |
| 155.730-156.210 | 7.5 | 858.1875-859.1875 | 12.5 |
| 158.730-159.210 | 7.5 | 859.2125-860.2125 | 12.5 |
| 166.250 | | 860.2375-860.9875 | 12.5 |
| 170.150 | | 866.0125-868.9875 | 12.5 |

Search bank: SR4 Aircraft
 Receive mode: AM, FM

| Group | Frequency (MHz) | Step (kHz) |
|-------|-------------------|------------|
| 0 | 108.000-117.99166 | 8.33 |
| 1 | 118.000-136.99166 | 8.33 |

| Group | Frequency (MHz) | Step (kHz) |
|-------|------------------|------------|
| 2 | 138.000-143.9875 | 12.5 |
| | 148.000-150.7875 | 12.5 |
| 3 | 225.000-379.975 | 25 |
| | 380.000-400.000 | 12.5 |

Search bank: SR5 Amateur band
 Receive mode: FM, CT, or DC

| Group | Frequency (MHz) | Step (kHz) |
|-------|---------------------|------------|
| 0 | 28.0000-29.7000 | 5 |
| 1 | 50.0000-54.0000 | 5 |
| 2 | 144.0000-148.0000 | 5 |
| 3 | 222.0000-224.9950 | 5 |
| 4 | 420.0000-450.0000 | 5 |
| 5 | 902.000-927.9875 | 12.5 |
| 6 | 1240.0000-1300.0000 | 6.25 |

Search bank: SR6 Railroad
 Receive mode: FM, CT, or DC

| Frequency (MHz) | Step (kHz) |
|------------------|------------|
| 159.810-161.5650 | 7.5 |

Search bank: SR7 Programmable limit search
 Receive mode: FM, AM, CT, or DC

Appendix C: CTCSS / DCS Codes

You can program any of the following codes:

CTCSS Codes:

| | | | | |
|---------|----------|----------|----------|----------|
| 67.0 Hz | 94.8 Hz | 131.8 Hz | 171.3 Hz | 203.5 Hz |
| 69.3 Hz | 97.4 Hz | 136.5 Hz | 173.8 Hz | 206.5 Hz |
| 71.9 Hz | 100.0 Hz | 141.3 Hz | 177.3 Hz | 210.7 Hz |
| 74.4 Hz | 103.5 Hz | 146.2 Hz | 179.9 Hz | 218.1 Hz |
| 77.0 Hz | 107.2 Hz | 151.4 Hz | 183.5 Hz | 225.7 Hz |
| 79.7 Hz | 110.9 Hz | 156.7 Hz | 186.2 Hz | 229.1 Hz |
| 82.5 Hz | 114.8 Hz | 159.8 Hz | 189.9 Hz | 233.6 Hz |

| | | | | |
|---------|----------|----------|----------|----------|
| 85.4 Hz | 118.8 Hz | 162.2 Hz | 192.8 Hz | 241.8 Hz |
| 88.5 Hz | 123.0 Hz | 165.5 Hz | 196.6 Hz | 250.3 Hz |
| 91.5 Hz | 127.3 Hz | 167.9 Hz | 199.5 Hz | 254.1 Hz |

DCS Codes:

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 006 | 050 | 125 | 174 | 255 | 343 | 445 | 526 | 703 |
| 007 | 051 | 131 | 205 | 261 | 346 | 446 | 532 | 712 |
| 015 | 053 | 132 | 212 | 263 | 351 | 452 | 546 | 723 |
| 017 | 054 | 134 | 214 | 265 | 356 | 454 | 565 | 731 |
| 021 | 065 | 141 | 223 | 266 | 364 | 455 | 606 | 732 |
| 023 | 071 | 143 | 225 | 271 | 365 | 462 | 612 | 734 |
| 025 | 072 | 145 | 226 | 274 | 371 | 464 | 624 | 743 |
| 026 | 073 | 152 | 243 | 306 | 411 | 465 | 627 | 754 |
| 031 | 074 | 155 | 244 | 311 | 412 | 466 | 631 | |
| 032 | 114 | 156 | 245 | 315 | 413 | 503 | 632 | |
| 036 | 115 | 162 | 246 | 325 | 423 | 506 | 654 | |
| 043 | 116 | 165 | 251 | 331 | 431 | 516 | 662 | |
| 047 | 122 | 172 | 252 | 332 | 432 | 523 | 664 | |

Appendix D: Signal Stalker Bands

Signal Stalker can search the following bands:

All Band

| Bnk. | Freq. (MHz) | Bnk. | Freq. (MHz) |
|------|-------------------|------|----------------------------|
| 0 | 25.000-54.000 | 5 | 406.000-470.000 |
| 1 | 108.000-136.99166 | 6 | 470.0125-512.000 |
| 2 | 137.000-174.000 | 7 | 764.000-805.996875 |
| 3 | 216.0025-299.975 | 8 | 806.000-868.9875 |
| 4 | 300.000-405.9875 | 9 | 894.000-960, 1240-1300.000 |

PubSafety Band

| Freq. (MHz) | Step (kHz) | Freq. (MHz) | Step (kHz) |
|-----------------|------------|-----------------------|------------|
| Group 0 | | Group 2 | |
| 33.420-33.980 | 10 | 453.0375-453.9625 | 6.25 |
| 37.020-37.420 | 10 | 458.0375-458.9625 | 6.25 |
| 39.020-39.980 | 10 | 460.0125-460.6375 | 6.25 |
| 42.020-42.940 | 10 | 462.5500-462.7250 | 6.25 |
| 44.620-45.860 | 10 | 465.0125-465.6375 | 6.25 |
| 45.880 | | 467.5625-467.7125 | 6.25 |
| 45.900 | | Group 3 | |
| 45.940-46.060 | 10 | 764.003125-766.996875 | 3.125 |
| 46.080-46.500 | 10 | 773.003125-775.996875 | 3.125 |
| Group 1 | | 794.003125-796.996875 | 3.125 |
| 151.820-151.940 | 7.5 | 803.003125-805.996875 | 3.125 |
| 153.770-154.130 | 7.5 | Group 4 | |
| 154.145-154.445 | 7.5 | 851.0125-852.0125 | 12.5 |
| 154.570 | | 852.0375-853.0375 | 12.5 |
| 154.600 | | 853.0625-854.0625 | 12.5 |
| 154.650-154.770 | 7.5 | 854.0875-855.0875 | 12.5 |
| 154.785-154.950 | 7.5 | 855.1125-856.1125 | 12.5 |
| 155.010-155.370 | 7.5 | 856.1375-857.1375 | 12.5 |
| 155.415-155.700 | 7.5 | 857.1625-858.1625 | 12.5 |
| 155.730-156.210 | 7.5 | 858.1875-859.1875 | 12.5 |
| 158.730-159.210 | 7.5 | 859.2125-860.2125 | 12.5 |
| 166.250 | | 860.2375-860.9875 | 12.5 |
| 170.150 | | 866.0125-868.9875 | 12.5 |

Appendix E: Talk Group Format

Motorola

For *Motorola Type I*, enter the block number, fleet number and subfleet number.

| Fleet No. | Subfleet No. |
|-----------------|--------------|
| XXX | XX |
| Example: XXX-XX | |

Motorola Type II talk group IDs are 4- or 5-digit numbers, divisible by 16.

EDACS

Enter either a four-digit *decimal* number from 0001 to 2047.

Agency Fleet Subfleet (AFS) numbers range from 00-001 to 15-157. The default EDACS setting is decimal.

To use AFS format:

1. Press **FUNC** then 2. "AFS Format" appears briefly.
2. Enter the AFS number:

| Agency No. | Fleet No. | Subfleet No. |
|----------------------|-----------|--------------|
| XX | XXXX | XXXX |
| Example: XXXXXX-XXXX | | |

LTR

Enter the area code, home repeater and user ID.

| Area Code | Home Repeater | User ID |
|-----------------|---------------|---------|
| 0-1 | 01-20 | 000-254 |
| Example: 010123 | | |

Appendix F: Specifications

Frequency Coverage:

| | |
|-----------------------------------|-------------------------|
| 25.000-26.960 MHz | (in 10 kHz steps/AM) |
| 26.965-27.405 MHz | (in 10 kHz steps/AM) |
| 27.410-29.505 MHz | (in 5 kHz steps/AM) |
| 29.510-29.700 MHz | (in 5 kHz steps/FM) |
| 29.710-49.830 MHz | (in 10 kHz steps/FM) |
| 49.835-54.000 MHz | (in 5 kHz steps/FM) |
| 108.000-136.9916 MHz | (in 8.33 kHz steps/AM) |
| 137.000-137.995 MHz | (in 5 kHz steps/FM) |
| 138.000-143.9875 MHz | (in 12.5 kHz steps/FM) |
| 144.000-147.995 MHz | (in 5 kHz steps/FM) |
| 148.000-150.7875 MHz | (in 12.5 kHz steps/FM) |
| 150.800-150.845 MHz | (in 5 kHz steps/FM) |
| 150.8525-154.4975 MHz | (in 7.5 kHz steps/FM) |
| 154.515-154.640 MHz | (in 5 kHz steps/FM) |
| 154.650-156.255 MHz | (in 7.5 kHz steps/FM) |
| 156.275-157.450 MHz | (in 25 kHz steps/FM) |
| 157.470-161.5725 MHz | (in 7.5 kHz steps/FM) |
| 161.600-161.975 MHz | (in 5 kHz steps/FM) |
| 162.000-174.000 MHz | (in 12.5 kHz steps/FM) |
| 216.0025-219.9975 MHz | (in 5 kHz steps/FM) |
| 220.000-224.995 MHz | (in 5 kHz steps/FM) |
| 225.000-379.975 MHz | (in 25 kHz steps/AM) |
| 380.000-419.9875 MHz | (in 12.5 kHz steps/FM) |
| 420.000-450.000 MHz | (in 5 kHz steps/FM) |
| 450.00625-469.99375 MHz | (in 6.25 kHz steps/FM) |
| 470.000-512.000 MHz | (in 12.5 kHz steps/FM) |
| 764.000-766.996875 MHz | (in 3.125 kHz steps/FM) |
| 773.000-775.996875 MHz | (in 3.125 kHz steps/FM) |
| 794.000-796.996875 MHz | (in 3.125 kHz steps/FM) |
| 803.000-805.996875 MHz | (in 3.125 kHz steps/FM) |
| 806.000-823.9875 MHz | (in 12.5 kHz steps/FM) |
| 849.000-868.9875 MHz | (in 12.5 kHz steps/FM) |
| 894.000-939.9875 MHz | (in 12.5 kHz steps/FM) |
| 940.000-960.000 MHz | (in 6.25 kHz steps/FM) |
| 1240.000-1300.000 MHz | (in 6.25 kHz steps/FM) |
| Memory Channels / Banks | 1000 / 10 |
| Talk group ID memories | 1,500 |
| ID memory banks / Sub-banks | 10 / 5 |
| Number of memory IDs per sub-bank | 30 |
| Sensitivity (20 dB S/N): | |
| FM: | |
| 25–54 MHz | 0.3 uV |
| 108–136.99166 MHz | 0.3 uV |
| 137–174 MHz | 0.5 uV |
| 216.0025–224.975MHz | 0.5 uV |
| 225-299.975 MHz | 0.5 uV |
| 300-405.975 MHz | 0.8 uV |
| 406–512 MHz | 0.5 uV |
| 764–960 MHz | 0.7 uV |

| | |
|--|-------------------------------|
| 1240–1300 MHz | 0.7 uV |
| AM: | |
| 25–54 MHz | 1 uV |
| 108–136.99166 MHz | 1 uV |
| 137–174 MHz | 1.5 uV |
| 216.0025–224.975MHz | 1.5 uV |
| 225–299.975 MHz | 2 uV |
| 300–405.975 MHz | 3 uV |
| 406–512 MHz | 2 uV |
| 764–960 MHz | 2 uV |
| 1240–1300 MHz | 3 uV |
| Selectivity: | |
| All AM and FM (except AM 25 – 27.995 MHz) | |
| | 6 dB +/-7 kHz |
| | -50 dB +/-13 kHz |
| AM 25 – 27.995 MHz | |
| | -6 dB +/-4 kHz |
| | -50 dB +/-6 kHz |
| Spurious Rejection (at 154.1 MHz FM) | |
| Scanning Rate..... | Up to 60 Channels per Second |
| Search Rate..... | Up to 78 Steps per Second |
| Delay Time..... | 2 seconds |
| Intermediate Frequencies (IF): | |
| 1st..... | 380.8 MHz |
| 2nd | 21.4 MHz |
| 3rd | 455 kHz |
| Priority Sampling..... | 2 seconds |
| Operating Temperature | 14 to 140° F |
| | (-10 to 60° C) |
| IF Rejection | |
| 380.8 MHz at 154.1 MHz..... | 60 dB |
| 21.4 MHz at 154.1 MHz..... | 100 dB |
| Squelch Sensitivity: | |
| Threshold (FM and AM) | 0.5 uV |
| Tight (FM)..... | 25 dB |
| Tight (AM)..... | 20 dB |
| Antenna Impedance | 50 Ohms |
| Audio Output Power (10% THD) | 170 mW |
| Built-in Speaker | 1 3/8 Inches (36 mm) |
| | (8-ohm, Dynamic Type) |
| Power Requirements: | |
| Batteries | 4 AA |
| External Power..... | 9V DC |
| Current Drain (Squelched) | 90 mA |
| Battery Charge Current | 150 mA |
| Dimensions (HWD).... | 5 3/4 x 2 9/16 x 1 5/8 Inches |
| | (145 x 65 x 42 mm) |
| Weight (without antenna and batteries) | 8.5 oz. |
| | (240 g) |

Specifications and depictions are subject to change and improvement without notice. Actual product may vary from the images found in this document.



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This product is warranted by **RadioShack** against manufacturing defects in material and workmanship under normal use for one (1) year from the date of purchase from **RadioShack** company-owned stores and authorized **RadioShack** franchisees and dealers. For complete warranty details and exclusions, check with your local **RadioShack** store.

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