PRO-94 Trunking Scanner Tutorials (200-0524)

(PRO-94)

General Scanner Tutorial

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What is a scanner and why would I want / need one?

A scanner is a radio receiver designed to allow you to listen to radio transmissions from the various agencies and companies using radio communications in your area, such as police and fire departments, ambulance services, government agencies, air, and amateur radio services. Scanners let you scan these transmissions and are often preprogrammed with service search banks for convenience. By pressing a single button, you can quickly search those frequencies most commonly used by public service and other agencies without tedious and complicated programming. Scanning is a growing hobby that lets you "listen in" on public radio conversations and keep up on current local events as they are happening.

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What different types of scanners are available?

Scanners are broken down by physical types and scanning methods.

The three physical types of scanners are Handheld, Mobile and Desktop.The primary differences between them are shown in the table below. Range is dependent on the antenna used, and a handheld scanner can usually be used in a mobile or desktop environment by attaching it to a vehicle-mounted or base-station antenna (see Scanner Antennas and Other Accessories).

Scanner Type	Primary Usage	Power Source	Antenna	Advantages	Disadvantages
Handheld Scanners	for Personal use	Battery, AC/DC Jack	Small Rubber Antenna	Portability, Small size	Shortest Range
Mobile Scanners	for use in Vehicles	DC Power Connections	Vehicle-mounted Antenna	Optimized for Vehicle Use	Vehicle Only
Desktop Scanners	for use at Home	AC Power Connections	Base-station Antenna	Optimized for Desktop Use	AC Power Only

The three basic scanning methods are Crystal-controlled, Conventional Programmable and Trunk Tracking Programmable.

Early scanners were crystal-controlled. These scanners had one or more internal slots for a crystal which allowed the radio to receive a single frequency. Crystal-controlled scanners are not currently being sold. However, a number of them turn up in pawn shops and garage sales. For example, the PRO-25 (Cat. No. 200-0106), PRO-27 (Cat. No. 200-0108), and PRO-53 (Cat. No. 200-0122) scanners were of this type. Generally, if you are looking at a RadioShack scanner and it does not have a keypad or program button, it is probably crystal-controlled. The disadvantage of crystal-controlled scanners is that they were slow to tune, expensive to set-up for new frequency/channel activity, and they can not follow the new trunked radio activity.

In the mid-80's, programmable scanners were introduced. These use integrated circuits to allow the radio to tune to a range of frequencies and were a marked improvement over crystal-controlled scanners, which required the purchase and installation of different crystals. Programmable scanners come with a wide range of features and capabilities and are distinguished from one another by the following features:

- The number of channels
- The frequency ranges they can pick up
- Frequency band and/or service band search
- Scan speed (channels per second and/or steps per second)
- Whether they are conventional or trunking

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Conventional Programmable Scanners:

RadioShack Scanners	Features
PRO-79 Handheld Scanner (Cat. No. 20-314) 	Memory Channels: 200 Computer Interface: Scanner PC Programming Kit (Cat. No. 20-048) Conversion System: Dual Conversion Size: 5 11/16" x 2 3/8" x 1 3/8" Weather Alert: Yes Frequency Range: 29-54 MHz, 108-174 MHz, 380-512 MHz User's Manual Available On-line **Back to Top** **Back to Main Index**
PRO-89 Handheld Racing Scanner (Cat. No. 20-514)	Memory Channels: 200 Computer Interface: Scanner PC Programming Kit (Cat. No. 20-048) or Over-the-Air Programming Conversion System: Triple Conversion Size: 5 7/8" x 2 1/2" x 1 3/8" Weather Alert: Yes Race Car Number On Display Frequency Range: 29-54 MHz, 108-174 MHz, 380-512, 806-960 MHz (less cellular) User's Manual Available On-line Tutorials Available On-line **Back to Top** **Back to Main Index**

[PRO-2017 Desktop Scanner (Cat. No. 20-423)]

Memory Channels: 200

Computer Interface: Scanner PC Programming Kit (Cat. No. 20-048)

Conversion System: Dual Conversion

Size: 2 1/8" x 8 1/2" x 7"

Weather Alert: Yes

Frequency Range:
29-54 MHz, 108-174 MHz, 380-512 MHz

User's Manual Available On-line

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Trunking Programmable Scanners:

The newest innovation in scanners is Trunking Scanners. Trunking scanners are designed to track Motorola® Type I and Type II (such as Smartnet™ and Privacy Plus™) and hybrid analog trunking systems, plus GE/Ericsson (EDACS®) and EF Johnson® (LTR®) type systems, which are extensively used in many communication systems. Trunking communications systems let a large group of 2-way radio users (or even different groups of 2-way radio users) efficiently use a set of frequencies. Instead of selecting a specific frequency for a transmission, the user simply selects a talk group. The trunking system automatically transmits the call on the first available frequency, and also sends a code that uniquely identifies that transmission. Since the trunking system might send a call and its response on different frequencies, it is difficult to listen to trunked communications using a regular scanner. Trunking scanners monitor the data sent with a 2-way radio transmission so you can hear the call and response for that user and more easily "follow" the conversation.

PRO-93 Handheld Trunking Scanner (Cat. No. 20-523) 	Memory Channels: 300 Computer Interface: Can clone another PRO-93 Conversion System: Triple Conversion Weather Alert: Yes Frequency Range: 25-54, 108-174, 216-225, 406-512, 806-960 (excluding cellular) and 1240-1300 MHz User's Manual Available On-line **Back to Top** **Back to Main Index**
PRO-94 Handheld Trunking Scanner (Cat. No. 20-524) 	Memory Channels: 1000 Computer Interface: No Conversion System: Triple Conversion Size: 6 5/16" x 2 5/8" x 1 3/4" Weather Alert: Yes Frequency Range: 29-54, 108-174, 216-225, 406-512, 806-960 (excluding cellular) and 1240-1300 MHz User's Manual Available On-line **Back to Top** **Back to Main Index**
PRO-2067 Mobile Trunking Scanner (Cat. No. 20-196)	Memory Channels: 500 Computer Interface: Can clone from a PRO-92 Handheld with included cable or by using the Software and Cable (Available as Cat. No. 940-1223 or RSU 12204327). RSU items can be ordered through your local RadioShack Store or by calling the RadioShack Order Center at 800-843-7422. Conversion System: Triple Conversion Size: 2" x 6 7/8" x 6 3/8" Weather Alert: Yes Frequency Range: 29-54, 108-174, 380-512, 806-960 MHz (excluding cellular) User's Manual Available On-line **Back to Top** **Back to Main Index**

[PRO-2053 Desktop Trunking Scanner (Cat. No. 20-466)](#) 	Memory Channels: 300 Computer Interface: [Scanner PC Programming Kit (Cat. No. 20-048)](#) Conversion System: [Triple Conversion](#) Size: 3 3/8" x 8 7/16" x 6 9/16" Weather Alert: Yes Frequency Range: 29-54, 108-174, 216-225, 406-512, 806-960 (excluding cellular) and 1240-1300 MHz [User's Manual Available On-line](#) **Back to Top** **Back to Main Index**
[PRO-2052 Desktop Trunking Scanner (Cat. No. 20-432)](#) 	Memory Channels: 1000 Computer Interface: with [Cable (Cat. No. 26-117)](#) and the Software (Available as Cat. No. 940-1222 or RSU 12236857). RSU items can be ordered through [your local RadioShack Store](#) or by calling the RadioShack Order Center at 800-843-7422. Conversion System: [Triple Conversion](#) Size: 2 3/4" x 8 1/16" x 7 11/16" Weather Alert: Yes Frequency Range: 29-54, 108-174, 179.75-512, 806-956 (excluding cellular) and 1240-1300 MHz [User's Manual Available On-line](#) **Back to Top** **Back to Main Index**

What can I legally listen to?

You can hear police and fire departments, ambulance services, government agencies, private companies, amateur radio services, aircraft, and military operations. It is legal to listen to almost every transmission your scanner can receive. However, there are some electronic and wire communications that are illegal to intentionally intercept. These include: telephone conversations (cellular, cordless, or other private means of telephone signal transmission), pager transmissions, and scrambled or encrypted transmissions. According to the Federal Electronic Communications Privacy Act (ECPA), as amended, you could be fined and possibly imprisoned for intentionally listening to, using, or disclosing the contents of such a transmission unless you have the consent of a party to the communication (unless such activity is otherwise illegal). These laws change from time to time and there might be state or local laws that also affect legal scanner usage.

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What accessories are available to improve my scanning?

We offer several accessories for our scanners, such as snoise-blocking headphones, antenna mounts and antennas.

Headphones

Noise-Reducing Race Scanner Headphones
(Cat. No. 33-1158)

These RadioShack Noise-Blocking Race Scanner Headphones are ideal for use in noisy locations like race tracks. They effectively block out external noise —- up to 20 dB. Perfect for use with the RadioShack Race Scanner. Easily adjustable volume control is conveniently located on the left ear cup. The heavy-duty cord is tightly coiled so it stays out of your way. Soft fluid-filled ear cushions and adjustable hook-and-loop headband provide a comfortable fit for hours of listening comfort. Specifically designed for voice transmissions —- wide 40-20,000Hz frequency response provides crisp, clear sound.

Product Features:

- For use with all mono sources
- 1/8” gold-plated mono plug
- Neodymium magnets
- 8-foot cord

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Antenna Mounts

Clip-On Antenna Mount
(Cat. No. 20-023)

Product Features:

- Window clip mounts antenna on glass
- Works with scanner or handy-talkie flex antennas
- For car, home, and travel
- 6 foot cord with BNC plug

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Antennas for Base Stations

Outdoor Scanner/Ham Discone Antenna
(Cat. No. 20-043)

Product Features:

- Omnidirectional, rugged stainless steel construction
- Wide 25 - 1300 MHz receive coverage
- Transmits on 50, 144, 220, 440, 900 and 1296 MHz Ham bands
- Resonator and tunable whip for best 50 MHz performance
- About 44" high, overall
- Fits mast up to 1" in diameter
- Accepts PL-259 connector
  (Use plug adapter 278-117 for scanners that have BNC connector)

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Outdoor VHF-Hi/UHF Scanner Antenna
(Cat. No. 20-176)

Product Features:

- Chrome-plated brass vertical element
- Covers 108 to 1300 MHz with peak performance in 152-470 MHz
- About 20" high
- Accepts PL-259 connector
  (Use plug adapter 278-117 for scanners that have BNC connector)

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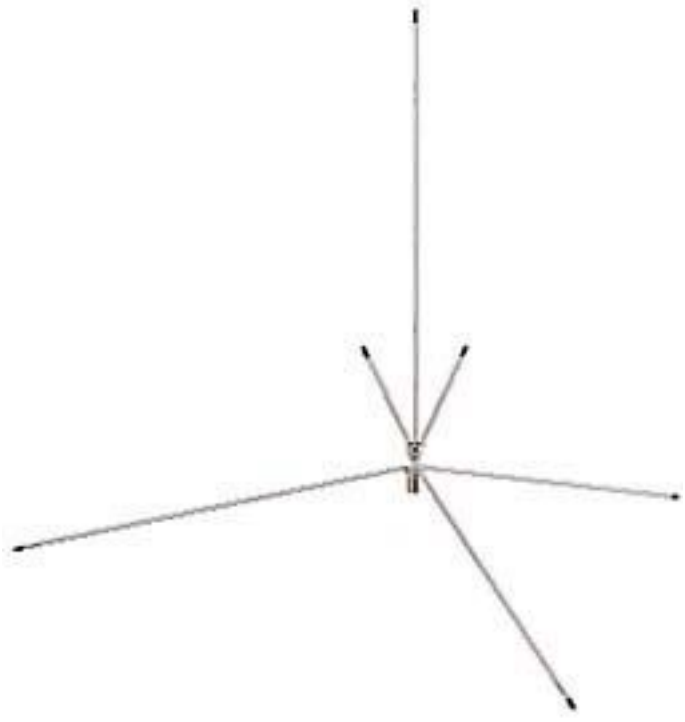

Indoor Scanner Antenna
(Cat. No. 20-161)

Product Features:

- Covers 30 to 512MHz
- Extends to 40"
- Accepts PL-259 connector
  (Use plug adapter 278-117 for scanners that have BNC connector)

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Antennas for Mobile Stations

Magnet-Mount Mobile Scanner Antenna
(Cat. No. 20-032)

Product Features:

- Covers 25 to 1300 MHz
- About 36" high
- Includes 16 foot cable with BNC type adapter connector

Note: Magnetic-mount antennas are not recommended for use on vinyl roofs.

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Antennas for Handheld Stations

Deluxe Antenna for Handheld Scanner
(Cat. No. 20-034)

Product Features:

- Longer 9" length helps improve reception of marginal signals
- BNC connector fits all RadioShack and most other handheld scanners
- Can also be used with Ham HT's for transmitting on the 144 MHz or 440 MHz Ham bands.

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Center-Loaded Telescoping Whip Antenna (Cat. No. 20-006) **Product Features:** • Receives 25 to 1300MHz • Transmits on 144 MHz, 220 MHz and 440MHz Ham bands • Nine sections **Back to Top** **Back to Main Index**	

A broadcaster in my area now uses a digital system; why can't I find a digital scanner?

Currently, most radio systems are analog systems; however, some areas have begun using digital radio systems. At this time, all of our scanners are analog only; we do not currently sell a digital scanner.

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What are birdies?

Birdies are frequencies your scanner uses when it operates. These operating frequencies might interfere with broadcasts on the same frequencies. If you program one of these frequencies, you will hear only noise on that frequency. If the interference is not severe, you might be able to turn up the squelch to cut out the birdie. The most common birdies to watch for are listed below.

Birdie Frequencies

31.05 MHz	124.20 MHz
41.40 MHz	134.55 MHz
51.75 MHz	144.90 MHz
113.85 MHz	155.25 MHz

You can use the following procedure to check for birdies in your particular scanner.

1. Remove the antenna.
2. Turn the scanner on and set up a limit search for all bands on the scanner.
3. Be sure that the scanner is separated from possible signal sources such as a PC, other transceivers, etc.
4. Write down the frequencies where the scan stops or detects a continuous noise signal. These are the Birdies.

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Reception Notes

Reception of the frequencies covered by your scanner is mainly "line of sight". That means you usually cannot hear stations that are beyond the horizon. During the summer months you may be able to hear stations in the 30-50 MHz range located several hundred or even thousands of miles away. This is because of summer atmospheric conditions. This type of reception is unpredictable but often very interesting! One very useful service is the National Weather Service's continuous weather broadcast. These broadcasts contain weather forecasts and data for the areas around the station, plus bulletins on any threatening weather conditions. These stations use several frequencies; and in most areas of the country, you can receive one of these frequencies.

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General Troubleshooting

Check that you are following the correct steps per the manual.

Check the frequency to be sure you are entering it correctly.

Check the scanner's frequency coverage to be sure that the scanner can receive that frequency.

Check the scanner's reception ability by programming a known continuous voice broadcast such as NOAA on 162.4Mhz – 162.55Mhz.

You can do this by going to the Weather service band (if available on your scanner) or by programming a limit search from 160Mhz – 170Mhz.

Reset the scanner as a last resort; this erases all memory contents and resets the radio back to factory settings. The reset for most RadioShack scanners is given below; however, for some models there is no reset and the only way to reset the scanner is to remove power.

1. Turn the scanner off.
2. Push the 2 and 9 buttons and hold them down.
3. Turn the scanner on while holding down the buttons.
4. Release the 2 and 9 after the display shows CLEAR.

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A Guide To The Action Bands

With the right frequencies programmed into your scanner, you can monitor exciting events. With a little investigation, you can find active frequencies in your community. We can give you some general pointers, and you can take it from there. Please use caution and common sense when you hear an emergency call. Never go to the scene of an emergency. It could be very dangerous. Find out if there is a local club that monitors your community's frequencies. Perhaps a local electronics repair shop that works on equipment similar to your scanner can give you frequencies used by local radio services. A volunteer police department or fire department can also be a good source for this information.

As a general rule on VHF, most activity is concentrated between 153.785 and 155.98 MHz and then again from 158.73 to 159.46 MHz. Here you find local government, police, fire and most such emergency services. If you are near a railroad yard or major railroad tracks, look around 160.0 to 161.9 MHz for signals.

In some larger cities, there has been a move to the UHF bands for emergency service. Here, most of the activity is between 453.025 and 453.95 MHz and between 456.025 and 467.925 MHz.

In the UHF band, frequencies between 456.025 and 459.95 MHz and between 465.025 and 469.975 MHz are used by mobile units and control stations associated with base and repeater units that operate 5 MHz lower (that is, 451.025 to 454.950 and 460.025 to 464.975 MHz). This means that if you find an active frequency inside one of these spreads, you can look 5 MHz lower (or higher) to find the base station/repeater for that service.

Typical Band Usage

The following is a brief listing of the typical services that use bands that a scanner can receive. This listing helps you decide which ranges you would like to scan. These frequencies are subject to change, and might vary from area to area. For a more complete listing refer to the Police Call Radio Guide available at your local RadioShack store.

Abbreviations

MARS Military Affiliate Radio System	**Ham** Amateur Radio	**Auto Emer.** Automobile Emergency	**BC.R** Broadcast Remote	**Bur.Recl.** Bureau of Reclamation	**CAP** Civil Air Patrol
Agr. And For. Department of Agriculture & Forestry.	**F.D.** Fire Department	**For.Prod.** Forest Products	**Fors.Cons.** Forestry Conservation	**Govt.** Government	**Hwy.** Highway Maintenance
Land Tr. Land Transportation	**L.Govt.** Local Government	**Mfg.** Manufacturers	**MIL** Military	**Mob.Tel.** Mobile Telephone	**Mot.P.** Motion Picture
Buses.Trucks Motor Carrier	**Nat.Park** National Parks	**Pet.** Petroleum	**P.D.** Police	**Power** Power Utilities	**Page** Radio Paging
R.R. Railroad	**Press** Relay Press	**St.P.D.** State Police	**Sp.Emer.** Special Emergency	**Sp.Ind.** Special Industry	**Taxi** Taxicab Radio

Tel.Maint. Telephone Maintenance	**U.S.C.G.S.** U.S. Coastal & Geodetic Survey	**USN** U.S. Navy	**U.S.W.B.** U.S. Weather Bureau		

Attention: Your scanner may not be able to receive all frequencies and/or modes of reception that are contained within this document. For complete information of your scanner's capabilities, be sure to read your owner's manual completely.

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A Guide To Frequencies

- National Weather Frequencies
- Ham Radio Frequencies
- Citizens Band
- United States Broadcast Bands
- International Broadcast Bands

National Weather Frequencies

161.650 MHz	161.775 MHz	162.400 MHz	162.425 MHz
162.440 MHz	162.450 MHz	162.475 MHz	162.500 MHz
162.525 MHz	162.550 MHz	163.275 MHz	

Ham Radio Frequencies

Ham operators often transmit emergency information when other communication methods break down. The following chart shows some of the frequencies that Hams use.

Wavelength (Meters)	**Frequency**
10-meter	28.000-29.700 MHz
6-meter	50.000-54.000 MHz
2-meter	144.000-148.000 MHz
70-cm	420.000-450.000 MHz

Citizens Band

1) 26.965 MHz	9) 27.065 MHz	17) 27.165 MHz	25) 27.245 MHz	33) 27.335 MHz
2) 26.975 MHz	10) 27.075 MHz	18) 27.175 MHz	26) 27.265 MHz	34) 27.345 MHz
3) 26.985 MHz	11) 27.085 MHz	19) 27.185 MHz	27) 27.275 MHz	35) 27.355 MHz
4) 27.005 MHz	12) 27.105 MHz	20) 27.205 MHz	28) 27.285 MHz	36) 27.365 MHz
5) 27.015 MHz	13) 27.115 MHz	21) 27.215 MHz	29) 27.295 MHz	37) 27.375 MHz
6) 27.025 MHz	14) 27.125 MHz	22) 27.225 MHz	30) 27.305 MHz	38) 27.385 MHz
7) 27.035 MHz	15) 27.135 MHz	23) 27.255 MHz	31) 27.315 MHz	39) 27.395 MHz
8) 27.055 MHz	16) 27.155 MHz	24) 27.235 MHz	32) 27.325 MHz	40) 27.405 MHz

United States Broadcast Bands

In the United States, there are several broadcast bands. The standard AM and FM bands are probably the most well known. There are also four television audio broadcast bands -- the lower three transmit on the VHF band and the fourth transmits on the UHF band.

Frequency Range Allocation

VHF Television	54.0 - 72.0 MHz
VHF Television	76.0 - 88.0 MHz
Standard FM	88.0 - 108.0 MHz
VHF Television	174.0 - 216.0 MHz
UHF Television	470.0 - 805.75 MHz

International Broadcast Bands

Several short-wave bands are allocated for international broadcasting because of the nature of propagation of high frequencies. The bands are sometimes identified according to the approximate wavelength of the signals in meters. Your scanner may receive the 11-meter band, from 25.6 - 26.10 MHz.

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Typical and Primary Band Usage, and Specified Intervals

Typical Band Usage

HF Band (3.0 - 30.0 MHz)	
25.00 - 28.63 MHz	**Mid Range**
25.00 - 28.63 MHz	**Mid Range**
28.00 - 29.70 MHz	**10-Meter Amateur Band**
29.70 - 29.90 MHz	**High Range**
VHF Band (30.00 - 300.0 MHz)	
30.00 - 50.00 MHz	**Low range**
50.00 - 54.00 MHz	**6-Meter Amateur**
54.00 - 72.00 MHz	**FM-TV Audio Broadcast, Wide Band**
88.00 - 108.00 MHz	**FM Radio Broadcast, Wide Band**
108.00 - 136.00 MHz	**Aircraft**
138.00 - 144.00 MHz	**U.S. Government**
144.00 - 148.00 MHz	**2-Meter Amateur**
148.00 - 174.00 MHz	**High Range**
220.00 - 222.00 MHz	**New Mobile Narrow Band**
222.00 - 225.00 MHz	**1.3-Meter Amateur**
225.00 - 287.80 MHz	**Military Aircraft**
UHF Band (300.00 MHz - 3.0 GHz)	
311.00 - 384.00 MHz	**Military Aircraft**
406.00 - 470.00 MHz	**U.S. Government**
420.00 - 450.00 MHz	**0.6-Meter Amateur**
450.00 - 470.00 MHz	**Low Range**
470.00 - 806.00 MHz	**FM-TV Audio Broadcast, Wide Band**
851.00 - 856.00 MHz	**Conventional Systems**
856.00 - 861.00 MHz	**Conventional/Trunked Systems**
861.00 - 866.00 MHz	**Trunked Systems**
866.00 - 869.00 MHz	**Public Safety**
869.00 - 894.00 MHz	**Common Carrier**
935.00 - 940.00 MHz	**Private Trunked**
940.00 - 941.00 MHz	**General Trunked**

Primary Usage

As a general rule, most of the radio activity is concentrated on the following frequencies:

VHF Band (30.00 - 300.0 MHz)	
144.00 - 148.00 MHz	**2-Meter Amateur**
153.785 - 155.980 MHz	**Government, Police, and Fire**
158.730 - 159.460 MHz	**Emergency Services**
160.000 - 161.900 MHz	**Railroad**
UHF Band (300.00 MHz - 3.0 GHz)	
440.00 - 450.00 MHz	**0.6-Meter Amateur Band FM Repeaters**
450.000 - 470.000 MHz	**Land Mobile "Paired" Frequencies**
451.025 - 454.950 MHz	**Base Stations**
456.025 - 459.950 MHz	**Mobile Units**
460.025 - 464.975 MHz	**Repeater Units**
465.025 - 469.975 MHz	**Control Stations**

Note: UHF remote control stations and mobile units typically operate at 5 MHz higher than their associated base and relay repeater units.

Specified Intervals

Frequencies in different bands are accessible only at specific intervals. For example:

VHF, HAM, and Government	5.0 kHz steps
All Others	12.5 kHz steps
Aircraft	25.0 kHz steps

Note: Your scanner rounds the entered frequency to the nearest valid frequency. For example, if you try to enter 151.473, the scanner might accept this as 151.470.

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Band Allocation

To help you decide which frequency ranges to search, use the following listing of the typical services that use the frequencies your scanner receives. These frequencies are subject to change, and might vary from area to area. For a more complete listing, refer to the "Police-Call Radio Guide including Fire and Emergency Services", as well as "Beyond Police Call", "Aeronautical Directory", "Nautical Directory" and "Now you're Talking" texts available at your local RadioShack store.

Abbreviations

AIR Aircraft	**BIFC** Boise (ID) Interagency Fire Cache	**BUS** Business	**CAP** Civil Air Patrol	**CB** Citizens Band	**CCA** Common Carrier
CSB Conventional Systems	**CTSB** Conventional/Trunked Systems	**FIRE** Fire Department	**HAM** Amateur (HAM) Radio	**GOVT** Federal Government	**GMR** General Mobile Radio
GTR General Trunked	**IND** Industrial Services	**MARI** Maritime Limited Coast	**MARS** Military Affiliate Radio System	**MED** Emergency/Medical Services	**MIL** U.S. Military
MOV Motion Picture/Video Industry	**NEW** Mobile Narrow	**NEWS** Relay Press	**OIL** Oil/Petroleum Industry	**POL** Police Department	**PUB** Public Services
PSB Public Safety	**PTR** Private Trunked	**ROAD** Road & Highway Maintenance	**RTV** Radio/TV Remote Broadcast Pickup	**TAXI** Taxi Services	**TELB** Mobile Telephone
TELC Cordless Telephones	**TELM** Telephone Maintenance	**TOW** Tow Trucks	**TRAN** Transportation Services	**TSB** Trunked Systems	**TVn** FM-TV Audio Broadcast

USXX Government Classified	**UTIL** Power & Water Utilities	**WTHR** Weather			

Frequency Bands

High Frequency (HF) - (3 - 30 MHz)

Very High Frequency (VHF) - (30 - 300 MHz)

Ultra High Frequency (UHF) - (300 MHz - 3 GHz)

High Band - (25.00 - 27.36 MHz)	
25.020 - 25.320	**IND**
25.870 - 26.470	**RTV**
26.62	**CAP**
26.966 - 27.405	**CB**
27.430 - 27.630	**BUS**

10-Meter Amateur Band - (28.0 - 29.7 MHz)	
28.000 - 29.700	**HAM**

Low Band - (29.7 - 50 MHz - in 5 kHz steps)	
29.700 - 29.790	**IND**
29.900 - 30.550	**GOVT**, **MIL**
30.580 - 31.980	**IND**, **PUB**
32.000 - 32.990	**GOVT**, **MIL**
33.020 - 33.980	**BUS**, **IND**, **PUB**
34.010 - 34.990	**GOVT**, **MIL**
35.020 - 35.980	**BUS**, **PUB**, **IND**, **TELM**
36.000 - 36.230	**GOVT**, **MIL**
36.250	**Oil spill clean up**
36.270 - 36.990	**GOVT**, **MIL**
37.020 - 37.980	**PUB**, **IND**
38.000 - 39.000	**GOVT**, **MIL**
39.020 - 39.980	**PUB**
40.000 - 42.000	**GOVT**, **MIL**, **MARI**
42.020 - 42.940	**POL**
42.960 - 43.180	**IND**
43.220 - 43.680	**TELM**, **IND**, **PUB**
43.700 - 44.600	**TRAN**
44.620 - 46.580	**POL**, **PUB**
46.600 - 46.990	**GOVT**, **TELC**
47.020 - 47.400	**PUB**
47.420	**American Red Cross**
47.440 - 49.580	**IND**, **PUB**
49.610 - 49.990	**MIL**, **TELC**

6-Meter Amateur Band (50 - 54 MHz)	
50.00 - 54.00	HAM

FM-TV Audio Broadcast, Wide Band (54 - 72 MHz)		
59.750	TV	Channel 2
65.750	TV	Channel 3
71.750	TV	Channel 4

Land Mobile Service Band (72 - 76 MHz)

FM-TV Audio Broadcast, Wide Band (76 - 88 MHz)		
81.750	TV	Channel 5
87.750	TV	Channel 6

FM Radio Broadcast, Wide Band (88 - 108 MHz)

Aircraft Band (108 - 136 MHz)	
108.000 - 121.490	AIR
121.500	AIR Emergency
121.510 - 136.000	AIR

U. S. Government Band (138 - 144 MHz)	
137.000 - 144.000	GOVT, MIL

VHF-Hi Band (148 - 174 MHz)	
148.050 - 150.345	CAP, MARS, MIL
150.775 - 150.790	MED
150.815 - 150.965	TOW
150.980	Oil Spill Clean Up
150.995 - 151.130	ROAD
151.145 - 151.475	POL
151.490 - 151.955	IND, BUS
151.985	TELM
152.030 - 152.240	TELB
152.270 - 152.465	IND, TAXI
152.480	BUS
152.510 - 152.840	TELB
152.870 - 153.020	IND, MOV
153.035 - 153.175	IND, OIL, UTIL
153.740 - 154.445	PUB, FIRE
154.490 - 154.570	IND, BUS
154.585	Oil Spill Clean Up

154.600 - 154.625	**BUS**
154.665 - 156.240	**MED**, **ROAD**, **POL**, **PUB**
165.255	**OIL**
156.275 - 157.425	**MARI**
157.450	**MED**
157.470 - 157.515	**TOW**
157.530 - 157.725	**IND**, **TAXI**
157.740	**BUS**
157.770 - 158.100	**TELB**
158.130 - 158.460	**BUS**, **IND**, **OIL**, **TELM**, **UTIL**
158.490 - 158.700	**TELB**
158.730 - 159.465	**POL**, **PUB**, **ROAD**
159.480	**OIL**
159.495 - 161.565	**TRAN**
161.580	**OIL**
161.600 - 162.000	**MARI**, **RTV**
162.0125 - 162.35	**GOVT**, **MIL**, **USXX**
162.400 - 162.550	**WTHR**
162.5625 - 162.6375	**GOVT**, **MIL**, **USXX**
162.6625	**MED**
162.6875 - 163.225	**GOVT**, **MIL**, **USXX**
163.250	**MED**
163.275 - 166.225	**GOVT**, **MIL**, **USXX**
166.250	**GOVT**, **RTV**, **FIRE**
166.275 - 169.400	**GOVT**, **BIFC**
169.445	**Wireless Microphones**
169.500	**GOVT**
169.505	**Wireless Microphones**
169.55 - 169.9875	**GOVT**, **MIL**, **USXX**
170.000	**BIFC**
170.025 - 170.150	**GOVT**, **RTV**, **FIRE**
170.175 - 170.225	**GOVT**
170.245 - 170.305	**Wireless Microphones**
170.350 - 170.400	**GOVT**, **MIL**
170.425 - 170.450	**BIFC**
170.475	**PUB**
170.4875 - 173.175	**GOVT**, **PUB**, **Wireless Microphones**
173.225 - 173.375	**MOV**, **NEWS**, **UTIL**
173.3875 - 178.5375	**MIL**
173.5625 - 173.5875	**MIL** **Medical/Crash Crews**
173.60 - 173.9875	**GOVT**

FM-TV Audio Broadcast, VHF Wide Band (174 - 216 MHz)		
179.750	**TV**	**Channel 7**
185.750	**TV**	**Channel 8**
191.750	**TV**	**Channel 9**
197.750	**TV**	**Channel 10**

203.750	TV	Channel 11
209.750	TV	Channel 12
215.750	TV	Channel 13

New Mobile Narrow Band (220 - 222 MHz)	
220.000 - 222.000	NEW

1.3-Meter Amateur Band (222 - 225 MHz)	
222.000 - 225.000	HAM

Military Aircraft Band (237.9 - 287.8 MHz)	
237.900	Coast Guard Search & Rescue
239.800	FAA Weather
241.000	Army Aircraft
243.000	Military Aircraft Emergency
255.400	FAA Flight Service
257.800	Civilian Towers
287.800	Coast Guard Air/Sea Rescue

Military Aircraft Band (319.1 - 383.9 MHz)	
319.100	FAA Traffic Control
321.000 - 336.600	Air Force
342.500 - 344.600	FAA Weather
346.400 - 364.200	Air Force Traffic Control
381.800 - 383.900	Coast Guard

U.S. Government Band (406 - 420 MHz)	
406.125 - 419.975	GOVT, USXX

70-cm Amateur Band (420 - 450 MHz)	
420.000 - 450.000	HAM

Low Band (450 - 470 MHz)	
450.050 - 450.925	RTV
451.025 - 452.025	IND, OIL, TELM, UTIL
452.0375 - 453.00	IND, TAXI, TRAN, TOW, NEWS
453.0125 - 453.9875	PUB
454.000	OIL
454.025 - 454.975	TELB
455.050 - 455.925	RTV
457.525 - 457.600	BUS
458.025 - 458.175	MED
460.0125 - 460.6375	FIRE, POL, PUB
460.650 - 462.175	BUS
462.1875 - 462.450	BUS, IND

462.4625 - 462.525	**IND**, **OIL**, **TELM**, **UTIL**
462.550 - 462.725	**GMR**
462.750 - 462.925	**BUS**
462.9375 - 463.1875	**MED**
463.200 - 467.925	**BUS**

Family Radio Service (462.5625 - 467.7125 MHz) (Channels 1 - 14)		
462.5625	**FRS**	**Channel 1**
462.5875	**FRS**	**Channel 2**
462.6125	**FRS**	**Channel 3**
462.6375	**FRS**	**Channel 4**
462.6625	**FRS**	**Channel 5**
462.6875	**FRS**	**Channel 6**
462.7125	**FRS**	**Channel 7**
467.5625	**FRS**	**Channel 8**
467.5875	**FRS**	**Channel 9**
467.6125	**FRS**	**Channel 10**
467.6375	**FRS**	**Channel 11**
467.6625	**FRS**	**Channel 12**
467.6875	**FRS**	**Channel 13**
467.7125	**FRS**	**Channel 14**

FM-TV Audio Broadcast, UHF Wide Band (470 - 805.750 MHz) (Channels 14 - 69 in 6 MHz steps)		
475.750	**TV**	**Channel 14**
481.750	**TV**	**Channel 15**
487.750	**TV**	**Channel 16**
493.750	**TV**	**Channel 17**
499.750	**TV**	**Channel 18**
505.750	**TV**	**Channel 19**
511.750	**TV**	**Channel 20**
517.750	**TV**	**Channel 21**
523.750	**TV**	**Channel 22**
529.750	**TV**	**Channel 23**
535.750	**TV**	**Channel 24**
541.750	**TV**	**Channel 25**
547.750	**TV**	**Channel 26**
553.750	**TV**	**Channel 27**
559.750	**TV**	**Channel 28**
565.750	**TV**	**Channel 29**
571.750	**TV**	**Channel 30**

577.750	TV	**Channel 31**
583.750	TV	**Channel 32**
589.750	TV	**Channel 33**
595.750	TV	**Channel 34**
601.750	TV	**Channel 35**
607.750	TV	**Channel 36**
613.750	TV	**Channel 37**
619.750	TV	**Channel 38**
625.750	TV	**Channel 39**
631.750	TV	**Channel 40**
637.750	TV	**Channel 41**
643.750	TV	**Channel 42**
649.750	TV	**Channel 43**
655.750	TV	**Channel 44**
661.750	TV	**Channel 45**
667.750	TV	**Channel 46**
673.750	TV	**Channel 47**
679.750	TV	**Channel 48**
685.750	TV	**Channel 49**
691.750	TV	**Channel 50**
697.750	TV	**Channel 51**
703.750	TV	**Channel 52**
709.750	TV	**Channel 53**
715.750	TV	**Channel 54**
721.750	TV	**Channel 55**
717.750	TV	**Channel 56**
733.750	TV	**Channel 57**
739.750	TV	**Channel 58**
745.750	TV	**Channel 59**
751.750	TV	**Channel 60**
757.750	TV	**Channel 61**
763.750	TV	**Channel 62**
769.750	TV	**Channel 63**

775.750	TV	**Channel 64**
781.750	TV	**Channel 65**
787.750	TV	**Channel 66**
793.750	TV	**Channel 67**
799.750	TV	**Channel 68**
805.750	TV	**Channel 69**

Note: Some cities use the 470 - 512 MHz band for land/mobile service.

Conventional Systems Band - Locally Assigned	
851.0125 - 855.9875	CSB

Conventional/Trunked Systems Band - Locally Assigned	
856.0125 - 860.9875	CTSB

Trunked Systems Band - Locally Assigned	
861.0125 - 865.9875	TSB

Public Safety Band - Locally Assigned	
866.0125 - 868.9875	PSB

Common Carrier	
869.010 - 894.000	CCA

Private Trunked	
935.0125 - 939.9875	PTR

General Trunked	
940.0125 - 940.9875	GTR

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Frequency Conversion

The tuning of a station can be expressed in frequency (kHz or MHz) or in wavelength (meters). The following information can help you make the necessary conversions.

- 1 MHz (million) = 1,000 kHz (thousand)

To convert MHz to kHz, multiply by 1,000:

- 9.62 MHz x 1000 = 9620 kHz

To convert from kHz to MHz, divide by 1,000

- 2780 kHz / 1000 = 2.780 MHz

To convert MHz to meters, divide 300 by the number of megahertz

- 300 / 7.1 MHz = 42.25 meters

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Image Reception

Radios work by simple mathematics. For example, most tune to a frequency by mixing that frequency with another (local oscillator) frequency which is slightly different. This mixing process primarily gives us the two original frequencies, their sum, and their difference. Well, the radio's Intermediate Frequency (IF) filter normally passes either the sum or difference frequency, and this is then processed into the sound we hear.

Because nothing is perfect, certain "harmonics" will also get through if they are strong enough. For example, if a radio's IF is 10.7 MHz, we might be able to tune to a frequency 21.4 MHz (2 x IF) above (or below, depending on the radio's design) a strong signal and hear it! This is more evident in a dual-conversion radio than a triple-conversion radio, because the triple-conversion radio's 1st intermediate frequency is quite high. This causes the image to be so far off frequency that it is easy to effectively filter it out.

Just because a radio doesn't receive something which another does is not necessarily an indication of a problem. The one radio may simply not be "tricked" into picking up an image! This rejection of undesired signals is one reason that a triple-conversion receiver costs more than a similar dual-conversion model. If you are more interested in finding more out about radios and radio operation, a good location to start looking is your local public library. You might also wish to contact the ARRL, as they are an excellent source of informative texts on the subject.

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Additional On-line Information

ARRL Amateur Radio Relay League	http://www.arrl.org/
Strong Signals© (by Richard J. Wells, N2MCA)	http://www.strongsignals.net/
TrunkTracker™ (by Uniden®)	http://www.trunktracker.com/

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Glossary

Base Station: A scanner or other two-way radio which is non-mobile, often connected to a larger, outdoor antenna.

Birdie: A false/unwanted signal produced inside the scanner.

Channel: A memory location used to store a single frequency.

Conventional Scanning: Following conversations that are broadcast on manually tuned radios.

Crystal: A component which allows a crystal-controlled scanner to receive a particular frequency.

dB, decibel: Unit used to express relative differences in noise level or signal strength.

Discone: An antenna which has the horizontal elements connected to the shield and the cone connected to the coax center conductor, so that the actual configuration is an upside down half-bow-tie.

Dual-conversion: A method using a receive circuit with two stages and two intermediate frequencies to extract the data signal from the carrier.

Frequency: The number of cycles (Hertz) used as a carrier for a particular data signal.

Frequency Band: A particular frequency range used for a particular purpose.

Frequency Step: The increment between displayed frequencies on a digitally-tuned scanner.

Harmonic: Describes a frequency which has a smaller amplitude and is a multiple of a larger frequency (for example, 480 MHz is the second harmonic of 240 MHz and the third harmonic of 120 MHz).

Hyperscan: A faster scan method available on some scanners.

GHz (gigahertz): A unit of frequency equal to 1000 MHz, 1,000,000 kHz or 1,000,000,000 Hz.

Hz (Hertz): A unit of frequency equal to one cycle per second.

Image: A "false" signal generated by the scanner during reception and demodulation.

Intermediate Frequency (IF): A frequency used in the demodulation process (see Dual-conversion and Triple-conversion).

kHz (kilohertz): A unit of frequency equal to 1000 Hz.

Lock-out: To mark a channel to not be scanned.

MHz (megahertz): A unit of frequency equal to 1000 kHz or 1,000,000 Hz.

Priority Channel: A channel which is scanned regularly during normal scanning.

Reset: Return the scanner to factory settings.

Reinitialize: Return the scanner to factory settings.

RX: Shorthand for Receive or Receiving.

Scanner: A radio that can tune quickly and/or automatically to a wide range of frequencies used by hobbyists to monitor police, fire, and other emergency services.

Service Band: A particular frequency range used for a particular purpose.

SMR: Acronym for "**S**ervice **M**aintenance **R**epeater", indicating that radio operators must be a member of that club to transmit to that repeater.

Squelch: Allows you to set the minimum strength signal that will be received.

Super-heterodyne: Describes a transmitting encoding method which mixes a carrier and oscillator frequency.

Triple-conversion: A method using a receive circuit with three stages and three intermediate frequencies to extract the data signal from the carrier.

Trunk tracking: Following conversations that are broadcast on radios automatically tuned by a computer.

TX: Shorthand for Transmit or Transmitting.

UHF: The frequencies between 300 MHz and 3 GHz.

VHF: The frequencies between 30 MHz and 300 MHz.

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Scanner Frequently Asked Questions
Section 2 - General Information and Accessories

GENERAL SCANNER INFORMATION

Programming

Do you have scanner frequency lists available?

How do I enter a 7-digit frequency when the scanner only takes 6 digits?

Terminology

What is meant by the "step-rate" of a scanner?

How do I tell if my scanner uses dual or triple conversion?

What does "SMR" mean in call book lists?

Troubleshooting

My scanner hangs up on a particular frequency; however, the problem goes away when I remove the antenna.

Why does my RadioShack scanner pick up the same transmission on a different frequency from the frequency I receive on a super-heterodyne or dual-conversion scanner?

I need a service manual, and the local store said there isn't one for my scanner. Why?

Why do I get constant noise on a particular channel?

When I plug a speaker into the earphone jack, the audio volume cuts down a lot & I have to turn the volume up - is this normal?

My scanner will accept 821.2620 but then rounds it off the 821.250? Why can't I enter the right frequency?

I tried charging NiMH batteries in my scanner & the batteries appear to be expanding.

I put new batteries in my scanner but it shuts off after a few seconds.

My scanner stops on a particular channel or frequency when using the DC adapter and the engine is running; it works fine when the engine is not running.

Usage

What scanner antenna should I use?

How can I record my scanner's broadcasts?

I am going out of the country; do you have frequency lists for (country)?

Do you sell a scanner to pick up cellular or cordless telephone frequencies?

How do I use stereo headphones with my scanner?

Can I use an external CB antenna with my scanner?

What kind of cable should I use to connect an outside antenna to my scanner?

What is the range in miles?

SCANNER ANTENNAS AND ACCESSORIES

200-0009 Extension Speaker: Do you carry a speaker adapter from 1/8" to 3/32"?

200-0011 Antenna: Will this work on tinted windows?

200-0011 Antenna: Can I use this to transmit?

200-0013 Antenna: Is there a replacement?

200-0034 Antenna: What is the frequency coverage and length?

200-0042 Antenna: What connector do I use to connect this to a scanner? F to Motorola?

200-0042 Antenna: What is this made of?

200-0043 Antenna: Is this directional?

200-0043 Antenna: What is the length and diameter of the lower 8 rods?

200-0043 Antenna: What are the frequencies of the bottom radials?

200-0176 Antenna: How is it mounted and does it come with cable?

200-0188 Adapter: What replaces this adapter?

200-0282 Headphones: How much noise do these block out?

200-0282 Headphones: What is the sensitivity (dB rating)?

200-0284 Headphones: How much noise do these block out and what is it designed for?

200-0284 Headphones: What are the specifications on these headphones?

GENERAL SCANNER INFORMATION

Product: Programming

Question: Do you have scanner frequency lists available?

Answer: The only source we have for scanner frequencies is the "Police Call" directory for your area, which should be available through your local RadioShack store and can also be ordered on-line or by calling 800-843-7422. The catalog numbers for the "Police Call" books are as follows:

620-2518 - CT, ME, MA, NH, NY, RI, VT
620-2519 - DE, MD, NJ, PA
620-2520 - IL, IN, KY, MI, OH, WI
620-2521 - IA, KS, MN, MO, NE, ND, SD, AZ, CO, ID, MT, NM, NV, WY, UT
620-2522 - DC, FL, GA, NC, SC, VA, WV, PR
620-2523 - AL, AR, LA, MS, OK, TN, TX
620-2524 - CA, OR, WA

The Police Call Directories are also available as a single Compact Disc (Cat. No. 620-2502).

These can be purchased on-line by clicking on the number link to go to the catalog page.

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Product: Programming

Question: How do I enter a 7-digit frequency when the scanner only takes 6 digits?

Answer: You will need to round off the last digit.

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Product: Terminology

Question: What is meant by the "step-rate" of a scanner?

Answer: This is the function of the step rate of the scanner:

856.2675 less the beginning frequency of the band, which, in this case, is 851.0000 MHz equals 5.2675 divided by the step rate, which is 0.0125 (12.5 kHz) equals 421.4. Since this number is not an even full number, the scanner will drop back. To find out how much - multiply the full number portion (421) times 0.0125 which equals 5.2625 plus the beginning frequency in the band, 851.0000 equals 856.2625. Use either that number or that number plus 0.0125 which equals 856.2750.

Usually, one of the two calculated values will be close enough to pick up the desired channel.

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Product: Terminology

Question: How do I tell if my scanner uses dual or triple conversion?

Answer: Look at the number of IF Frequencies. Dual-conversion scanners have only 2 IF frequencies; triple-conversion scanners have 3 IF frequencies.

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Product: Terminology

Question: What does "SMR" mean in call book lists?

Answer: "SMR" indicates a Service Maintenance Repeater. Radio operators must be a member of that club to transmit to that repeater.

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Product: Troubleshooting

Question: My scanner hangs up on a particular frequency; however, the problem goes away when I remove the antenna.

Answer: If you remove the antenna and it goes away, this indicates that the problem is either a signal in the air OR a strong nearby signal is mixing with something else and forming an IMD (Intermodulation) product at that/those frequencies. To fix this, you will need to either:

- Use the lockout key to program that/those frequencies as "search skip". When the scanner stops on the undesired frequency during a search, hit the lockout button to store the undesired frequency, and the scanner will automatically skip over it after that.
- Use an external antenna with either high shielding OR an external antenna with an attenuator (such as the 6 dB Attenuator 150-1257) and the appropriate adapters.

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Product: Troubleshooting

Question: Why does my RadioShack scanner pick up the same transmission up on a different frequency from the frequency I receive on a super-heterodyne or dual-conversion scanner?

Answer: The frequencies that you're picking up on your original scanner are images or harmonics of the frequency that you are actually listening to. This is a common result when changing from a scanner that utilizes simple super-heterodyne versus a scanner with triple conversion. The actual frequency that your original scanner is picking up is a second or third harmonic away from the actual frequency being transmitted. The RadioShack scanner should be picking up the correct frequency.

For example, 145.000 MHz has the following harmonics:

F (tx) = 145.000 MHz
F (image) = 144.545 MHz and 145.455 MHz (1st order harmonics).
F (image) = 144.090 MHz and 145.910 MHz (2nd order harmonics).
F (rx super-heterodyne) ~ 144.090, 144.545, 145.455, or 145.910MHz
F (rx triple-conversion) ~ 145.000 MHz

This is an example of triple conversion versus simple super-heterodyne, or dual conversion methods of receiving. The frequency received will be truer to the actual frequency transmitted on a scanner/receiver with triple conversion than on one with dual conversion and much the same when comparing dual conversion to simple super-heterodyne. The methods of using double or triple conversion aid in eliminating unwanted images (ghost frequencies) and other types of noise present in the different band of frequencies.

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Product: Troubleshooting

Question: I need a service manual, and the local store said there isn't one for my scanner. Why?

Answer: Early in 1997, representatives from the scanner industry, including RadioShack, met informally with the FCC to discuss current problems in the scanning hobby. Identified as a major problem was the ability of some scanner hobbyists to develop illegal modifications that allow scanners to receive cellular telephone transmissions. Among the possibilities discussed for eliminating this problem were the total epoxying of all circuit boards, which would render scanners both unmodifiable and unserviceable, or the restriction of technical information regarding scanner circuit design.

As a result of this meeting, RadioShack limited the availability of scanner service manuals to RadioShack Service Centers only.

While RadioShack understands the desire of the do-it-yourself community to have easy access to service information, we feel the interests of the scanning hobby as a whole are best served by making it more difficult to develop illegal modifications by restricting access to some service manuals containing schematics. Therefore, in response to industry concerns, RadioShack is implementing the following policy in regards to the release of service information and the servicing of scanners.

RadioShack will withhold schematics (service manuals) for all scanners that can receive 800 MHz or above which were submitted for FCC certification after April, 1997. As of December 12, 1997, this means that service manuals for the following RadioShack scanners will not be available: 20-417 (PRO-2048), 20-430 (PRO-2050), 20-512 (PRO-67), and 20-520 (PRO-90), along with all future service manuals within the stated criteria.

To the extent that service manuals exist and are in stock, schematics (service manuals) for scanners that can receive 800 MHz or above that were submitted for FCC certification before May, 1997 will continue to be available to customers and others.

To the extent that service manuals exist and are in stock, schematics (service manuals) for scanners that cannot receive 800 MHz or above will continue to be available to customers and others.

Modified scanners (regardless of frequency or date of manufacture) will not be serviced by RadioShack. These scanners will be returned to the customer with a notice indicating that the unit appears to have been modified and if the scanner is returned to its original specifications, RadioShack will use reasonable efforts to repair it.

To the extent that scanner parts are available and in stock, scanner replacement parts will continue to be available regardless of the scanner's frequency range or date of manufacture.

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Product: Troubleshooting

Question: Why do I get constant noise on a particular channel?

Answer: It may be a birdie channel. Birdies are frequencies your scanner uses when it operates. The most common birdies to watch for are listed below.

31.05 MHz	124.20 MHz
41.40 MHz	134.55 MHz
51.75 MHz	144.90 MHz
113.85 MHz	155.25 MHz

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Product: Troubleshooting

Question: When I plug a speaker into the earphone jack, the audio volume cuts down a lot & I have to turn the volume up - is this normal?

Answer: To connect to an earphone jack requires an amplified extension speaker; if your speaker is not amplified, you get significantly lower volume as you describe.

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Product: Troubleshooting

Question: My scanner will accept 821.2620 but then rounds it off to 821.250 (for example)? Why can't I enter the correct frequency?

Answer: The scanner frequencies must correspond to the preprogrammed step rate; this is normal operation.

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Product: Troubleshooting

Question: I tried charging NiMH batteries in my scanner & the batteries appear to be getting very hot/expanding/etc.

Answer: NiMH batteries require a different charging circuit from NiCd. You should never charge NiMH batteries in any device or charger unless it clearly specifies that it will charge NiMH batteries.

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Product: Troubleshooting

Question: I put new batteries in my scanner but it shuts off after a few seconds.

Answer: Clean the battery contacts using a rubber eraser. If the problem continues, try different batteries. If the problem still continues, you would need to have the radio serviced.

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Product: Troubleshooting

Question: My scanner stops on a particular channel or frequency when using the DC adapter and the engine is running; it works fine when the engine is not running.

Answer: Something in the engine is generating RF interference. You would need to determine where this is coming from and install a filter. The best place to start is with a noise filter on the DC line, such as:

270-030 Basic Noise Eliminator
270-051 10-amp Noise Filter
270-055 20-amp Heavy-duty Noise Filter

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Product: Usage

Question: What scanner antenna should I use?

Answer: The antenna which will be best for you will depend on what type of scanner you have and the signal strengths. The table below lists our range of antennas available.

Antenna Details

Cat. No.	Type of Scanner	Frequency Range	Connector on Antenna
200-0043	Outdoor	25-1300 MHz (Receive) 50, 144, 200, 440, 900 & 1296 Ham (Transmit)	SO-259 connector
200-0176	Outdoor	108-1300 MHz	SO-259 connector
200-0161	Desktop	30-512 MHz	Motorola connector
200-0032	Mobile (Magnet-mount)	25-1300 MHz	BNC connector
200-0011	Mobile (Glass-mount)	25-1300 MHz	BNC connector
200-0006	Handheld	25-1300 MHz	BNC connector
200-0034	Handheld	27-50, 138-174, 406-512, 806-940 MHz (Receive) 144-148 (2M), 438-450 MHz (70 cm) (Transmit)	BNC connector

Adapters Required

Connector on Antenna	Scanner Requires	Adapter
Motorola	BNC	278-117 Adapter
BNC	Motorola	278-160 Adapter
SO-259	PL-259	278-192 SO-259 Coupler
SO-259	BNC	PL-259 to PL-259 Cable PL-259 to BNC Adapter

PL-259 Cables

Length	Cable Type	Cat. No.
2 feet	RG-58	278-968
5 feet	RG-8	278-969
10 feet	RG-8M	278-979
20 feet	RG-58	278-967
50 feet	RG-58	278-971
50 feet	RG-8	278-980

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Product: Usage

Question: How can I record my scanner's broadcasts?

Answer: You would need to connect the headphone output jack to a tape player using the 274-889 1/8" Mono Plug to Two RCA Jacks Adapter and RCA A/V Patch Cables.

Good (two nickel-plated RCA Plugs on each end)

- 420-2351 3-foot Cable
- 420-2352 6-foot Cable
- 420-2356 12-foot Cable

Better (RCA Plugs with gold-plated contacts, two straight on one end, two right-angle on the other)

- 420-2650 18-inch Cable
- 420-2651 3-foot Cable
- 420-2652 6-foot Cable
- 420-2654 12-foot Cable
- 420-2653 20-foot Cable
- 420-2655 36-foot Cable

Best (Gold-plated RCA Plugs on each end)

- 420-2601 3-foot Cable
- 420-2605 6-foot Cable
- 420-2606 12-foot Cable
- 420-2614 20-foot Cable

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Product: Usage

Question: I am going out of the country; will my scanner work and do you have frequency lists for (country)?

Answer: RadioShack products sold in the US are not intended for use and may not function properly outside of the US due to power and other issues.

Additionally, your radio scanner may be illegal to use in your destination. We cannot recommend using a US scanner outside of the United States and strongly suggest that you contact a reliable source of information (travel agency, government body) to determine the legality of this use. We do not have a source for frequency lists outside the United States.

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Product: Usage

Question: Do you sell a scanner to pick up cellular or cordless telephone frequencies?

Answer: No! It is illegal to use a scanner for this purpose, and RadioShack scanners are designed to be unable to do this. The legal issues are covered under the Electronics Communications Privacy Act of 1996 as amended under Section 2511. This information can be found at the local public library under US Code 2511.

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Product: Usage

Question: How do I use stereo headphones with my scanner?

Answer: You need a mono to stereo adapter such as 274-368 (nickel-plated) or 274-882 (gold-plated to minimize signal loss).

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Product: Usage

Question: Can I use an external CB antenna with my scanner?

Answer: CB antennas are optimized for the low end of the spectrum; CB frequencies are 26-28 MHz. While it may work, your reception in the higher frequencies would not be equivalent to what you would get with a scanner antenna.

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Product: Usage

Question: What kind of cable should I use to connect an outside antenna to my scanner?

Answer: You need to use 50-Ohm cable, such as either RG-58, RG-59, RG-8 or RG-8M. For cable lengths greater than 80', you should use RG-8 to counteract signal loss. We sell the following cables:

				Loss in dB per 100'			
Cat. No.	RG Type	OD	Velocity Factor	@ 100 MHz	@ 400 MHz	Capacitance per Foot	Center Conductor
278-1314	RG-58	.196"	66%	4.5	10.0	28.5 pF	20-gauge (solid)
278-1313	RG-8M	.242"	78%	3.7	8.0	25.2 pF	16-gauge (19x29)
278-1312	RG-8	.408	66%	1.9	4.1	26.4	13-gauge (7x21)

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Product: Usage

Question: What is the range in miles?

Answer: Range for a scanner cannot be specified, as it depends on the level of interference and the transmitter strength, which can vary widely.

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SCANNER ANTENNAS AND ACCESSORIES

Product: Extension Speaker **Cat. No.**: 200-0009

Question: Do you carry a speaker adapter from 1/8" to 3/32"?

Answer: Yes, it is available as Cat. No. 274-0327.

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Product: Scanner On-Glass Antenna Kit **Cat. No.**: 200-0011

Question: Will this work on tinted windows?

Answer: No.

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Product: Scanner On-Glass Antenna Kit **Cat. No.**: 200-0011

Question: Can I use this to transmit?

Answer: No.

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Product: Base Scanner Antenna **Cat. No.**: 200-0013

Question: Is there a replacement?

Answer: Yes, it is available as Cat. No. 200-0043.

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Product: Rubber Duckie Antenna	**Cat. No.**: 200-0034

Question: What is the frequency coverage and length?

Answer: The frequencies are given below:

Receive Only

27 - 50 MHz, Lo VHF
138 - 174 MHz, Hi VHF
406 - 512 MHz, UHF and "T" band
806 - 940 MHz, 800 MHz Band

Receive/Transmit

144 - 148 MHz, 2M Band
438 - 450 MHz, 70 cm Band

Length: 240 mm

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Product: Scanner Antenna (30 MHz to 1300 MHz)	**Cat. No.**: 200-0042

Question: What connector do I use to connect this to a scanner?

Answer: The connector for this antenna is an F jack. There are two methods for connecting it to a scanner:

- You can use an RG-6 cable with an F plug on each end and then use the F to BNC adapter (Cat. No. 278-0251) between the cable and the scanner.
- You can use an RG-6 cable with an F plug on one end and a BNC plug on the other. We do not sell this cable pre-built.

To construct the cable in the second option, you would need the following:

- a sufficient length of RG-6 coaxial 75-ohm cable.
- an RG-6 F plug such as the Weatherproof Crimp-on F Plug - 278-0236 (for outdoor use), or the Standard Twist-on F Plug - 278-0229 (for indoor use).
- an RG-6 BNC plug such as the Solderless Right-angle BNC Plug - 278-0126.

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Product: Scanner Antenna (30 MHz to 1300 MHz)	**Cat. No.**: 200-0042

Question: What is this made of?

Answer: The antenna is made out of aluminum.

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Product: Discone Scanner / Ham Base Station Antenna	**Cat. No.**: 200-0043

Question: Is this directional?

Answer: No, it is omnidirectional.

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Product: Discone Scanner / Ham Base Station Antenna	**Cat. No.**: 200-0043

Question: What is the length and diameter of the lower 8 rods?

Answer: The diameter is 0.190"; the length is 31.875".

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Product: Discone Scanner / Ham Base Station Antenna	**Cat. No.**: 200-0043

Question: What are the frequencies of the bottom radials?

Answer: What is being referred to as "radials" are the radiating (or center) elements. In a discone antenna, the horizontal elements are connected to the shield and the cone is connected to the coax center conductor. The actual configuration is an upside down half-bow-tie. It is the width of the cone (vs. the cone's length) that gives this antenna its broad band performance (the discone is 30 - 1300 MHz; the vertical whip is resonant in the 10M ham and 11M CB bands, for total 25 - 1300 MHz performance).

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Product: UHF/VHF Base Antenna	**Cat. No.**: 200-0176

Question: How is it mounted and does it come with cable?

Answer: You can use other mast mounts to mount this; it uses U bolts. It does not include cable.

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Product: 9-Volt Scanner Adapter	**Cat. No.**: 200-0188

Question: What replaces this adapter?

Answer: This was a 9V, 300 mA (minimum) adapter with a 1.3 mm / 3.4 mm plug. The 273-1810 DC/DC adapter meets these requirements and includes the correct plug. The 273-1767 AC/DC adapter meets these requirements and comes with your choice of one free adaptaplug. You will need the "H" size adaptaplug, Cat. No. 273-1711.

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Product: Headphones with Earpad	**Cat. No.**: 200-0282

Question: How much noise do these block out?

Answer: These use passive noise reduction and are not rated in dB.

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Product: Headphones with Earpad	**Cat. No.**: 200-0282

Question: What is the sensitivity (dB rating)?

Answer: Sensitivity = 100dB +/- 5dB @ 1khz

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Product: Koss Speedzone Headset	**Cat. No.**: 200-0284

Question: How much noise do these block out and what is it designed for?

Answer: These use passive noise reduction and are not rated in dB. They are ideal for hand-held race scanners.

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Product: Koss Speedzone Headset	**Cat. No.**: 200-0284

Question: What are the specifications on these headphones?

Answer: The headphones are rated at:

Impedance: 60 ohms
Frequency Range: 40 Hz - 20 kHz
Sensitivity: 102 1 M / 1 mW

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Scanner Frequently Asked Questions
Section 3 - Racing & Conventional Scanners

RACING SCANNERS

General Questions

- How is a racing scanner different from a regular scanner?
- What racing scanners does RadioShack currently sell?
- What accessories are available to improve my day at the races?
- How do I get the most out of my scanner on race day?
- Do you have lists of racing frequencies?

Product-specific Questions

- 200-0513 / PRO-74: What is the impedance of the headphone jack?
- 200-0513 / PRO-74: How do I use limit search?
- 200-0514 / PRO-89: Is there a cable for wired programming for my Racing Scanner?
- 200-0514 / PRO-89: How do I get On-air Programming to work with my computer?

CONVENTIONAL SCANNERS

- 200-0106 / PRO-25: How do you program this?
- 200-0106 / PRO-25: What is the frequency range?
- 200-0108 / PRO-27: How do I change frequencies?
- 200-0110 / COMP-100: What is the formula to convert a frequency for use with this scanner?
- 200-0112 / PRO-2020: What is the frequency range?
- 200-0113 / PRO-2021: How many channels and what is the frequency range?
- 200-0115 / PRO-2001: How do I program frequencies?
- 200-0118 / PRO-2011: Where is the backup battery located and what battery does it use?
- 200-0122 / PRO-53: How do I identify which crystal is installed?
- 200-0123 / PRO-54: What crystals did this come with?
- 200-0124 / PRO-55: How do I program this?
- 200-0130 / PRO-1: I need a replacement AC adapter.
- 200-0131 / PRO-30: I need a replacement AC adapter.
- 200-0132 / PRO-31: How do I program this scanner?
- 200-0136 / PRO-35: What jack does the power cord go into? There are two jacks.
- 200-0137 / PRO-36: What is the recommended power adapter?
- 200-0137 / PRO-36: What is the recommended power adapter/charger?
- 200-0139 / PRO-38: What battery pack and charger are used for this?
- 200-0144 / PRO-2005: Why does this scanner keep beeping?
- 200-0145 / PRO-2006: What is the ATT switch for?
- 200-0147 / PRO-2056: Is there a chip to allow 800 MHz range?
- 200-0148 / PRO-2026: How do I lock out service frequencies?
- 200-0149 / PRO-2046: Is it triple conversion? What are the IF frequencies?

200-0149 / PRO-2046: Is it digital or analog?
200-0195 / PRO-2066: I need a replacement DC adapter.
200-0195 / PRO-2066: Does this have a backlight?
200-0195 / PRO-2066: What are the specifications on micro volt reception on the VHF high band (108-176 MHz)?
200-0300 / PRO-43: What is the impedance of the external speaker jack?
200-0303 / PRO-39: Is this dual or triple conversion and what are the IF frequencies?
200-0305 / PRO-46: Why won't this scanner won't pick up the Blue Angels frequencies?
200-0305 / PRO-46: What adapter works with this?
200-0308 / PRO-51: What charger does this require?
200-0308 / PRO-51: Is this a Trunking scanner?
200-0313 / PRO-76: Is there a cable for wired programming for my scanner?
200-0314 / PRO-79: Is there a cable for wired programming for my scanner?
200-0314 / PRO-79: How do I get the scanner into Wired mode for programming?
200-0404 / PRO-2029: How do I program frequencies into this scanner?
200-0411 / PRO-2034: Why am I not getting the last digit on the display between 29-54 MHz and 137-174 MHz?
200-0412 / PRO-2036: I need a replacement lithium battery for this scanner.
200-0413 / PRO-2038: Why am I not getting some frequencies in the 450-470 MHz; is it due to rounding?
200-0415 / PRO-2043: Does this have a backlight display?
200-0415 / PRO-2043: This has lockout showing on all channels, and it won't go out.
200-0430 / PRO-2050: Why is it giving an error once the frequencies have been programmed in?
200-0430 / PRO-2050: What does this use for memory backup and how long will it hold memory?
200-0430 / PRO-2050: What type of antenna does it come with?
200-0430 / PRO-2050: Why do I have to turn squelch all the way for aircraft channels?
200-0461 / PRO-2037: How do I program frequencies?
200-0461 / PRO-2037: I can't program 867.7870 - it programs as 867.7750 and 867.437 programs in as 867.425. Why?
200-0464 / PRO-2042: Can you dim the backlight?
200-0505 / PRO-25: What adapter is required?
200-0508 / PRO-28: What is the difference between 200-0508UV and 200-0508UW?
200-0511 / PRO-66: What is the power adapter tip size & polarity for this scanner?
200-0512 / PRO-67: Can you charge NiMH in this scanner?
200-0561 / PRO-63: How do I set the scanner so that it does not use priority scanning?
200-0564 / PRO-64: How do I charge the batteries?
200-0564 / PRO-64: How do I get a replacement battery pack?
200-0564 / PRO-64: Do you sell an adapter for using the PRO-64 with a computer?
200-0564 / PRO-64: In the computer interface, how do I get information on commands not on the CD?

RACING SCANNERS

General Questions

Product: Racing Scanners	

Question: Do you have lists of racing frequencies?

Answer: We regret we do not have on-line lists of racing frequencies. However, you can find links to on-line lists by doing a web-search for the words RACING FREQUENCIES and the specific race. We are aware of the following sites which have scanner frequencies; however, please note that these internet sites are not affiliated with RadioShack Corporation and off-site information is neither created, maintained nor verified by RadioShack Corporation. Responsibility for the content rests solely with the page owner(s).

AmMotorSports
http://www.ammotorsports.com/ForRaceFans.htm
SpeedFX: Nascar
http://www.speedworld.net/
About.com Auto Racing
http://autoracing.about.com/cs/scanner/index.htm

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RACING SCANNERS

Product-specific Questions

Product: PRO-74 Scanner	**Cat. No.**: 200-0513

Question: What is the impedance of the headphone jack?

Answer: The jack is rated at 16 ohms.

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Product: PRO-74 Scanner	**Cat. No.**: 200-0513

Question: How do I use limit search?

Answer: This is not a feature on this scanner. You can do a band search, but not a limit search.

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Product: PRO-89 Racing Scanner	**Cat. No.**: 200-0514, 200-0048

Question: Is there a cable for wired programming for my racing scanner?

Answer: Yes; this cable and software is available as catalog number 20-048. This is a store-stocked item and can be either purchased through your local store, ordered through our Catalog Order Center at 800-843-7422, Option 2, (Catalog, Parts and Accessory Ordering) or ordered on-line by clicking on the catalog number.

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Product: PRO-89 Racing Scanner	**Cat. No.:** 200-0514, 200-0048

Question: How do I get On-air Programming to work with my computer?

Answer: The steps in the manual are incorrect; On-air programming allows you to program your scanner by tuning to a particular frequency provided by the racetrack. It does not use a computer. The correct steps for doing this are given below:

1. Turn off the scanner.
2. While pressing **ENT** and **8**, turn on the scanner. **On Air** and **PGM** appear and the scanner automatically receives 154.600 MHz in FM mode. Then **On Air** and the frequency alternate.
3. If you do not want to use 154.600 MHz to receive programming, press **PGM**. **PGM** flashes. Then, use the number keys to enter the frequency you want to receive and press **ENT**.
4. To change the frequency back to the default (154.600 MHz), hold down **ENT** then press **CL**.
   Note: You cannot use an AM frequency during on-air programming. Do not enter a frequency between 108.000 and 136.9875 MHz.
5. When the scanner successfully receives all data, **End** and **FiniSh** appear. If the scanner received an error while receiving data, **End** and **d-Err** appear. If the scanner received a checksum error while receiving data, **C-Err** and a number appear. The number shown next to **C-Err** indicates the packet number where the error occurred.

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CONVENTIONAL SCANNERS

Product: PRO-25 Portable Scanner	**Cat. No.:** 200-0106

Question: How do you program this?

Answer: This is crystal-controlled, rather than programmable. While RadioShack no longer carries crystals, you may find what you need by contacting International Crystal Manufacturing Co., Inc. for assistance.

International Crystal Manufacturing Co., Inc.
10 North Lee Street
Oklahoma City, OK 73102

Customer Service: 606-283-5000
Technical Assistance: 800-725-1426

Please note: this company is not affiliated with RadioShack Corporation.

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Product: PRO-25 Portable Scanner	**Cat. No.:** 200-0106

Question: What is the frequency range?

Answer: This scanner requires crystals for each individual frequency and supports a maximum of 8 crystals installed at any time. The frequency range is:

30-50 MHz
118-139 MHz
144-174 MHz
450-512 MHz

While RadioShack no longer carries crystals, you may find what you need by contacting International Crystal Manufacturing Co., Inc. for assistance.

International Crystal Manufacturing Co., Inc.
10 North Lee Street
Oklahoma City, OK 73102

Customer Service: 606-283-5000
Technical Assistance: 800-725-1426

Please note: this company is not affiliated with RadioShack Corporation.

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Product: PRO-27 2-Channel Pocket Scanner	**Cat. No.:** 200-0108

Question: How do I change frequencies?

Answer: This scanner is crystal-controlled. While RadioShack no longer carries crystals, you may find what you need by contacting International Crystal Manufacturing Co., Inc. for assistance.

International Crystal Manufacturing Co., Inc.
10 North Lee Street
Oklahoma City, OK 73102

Customer Service: 606-283-5000
Technical Assistance: 800-725-1426

Please note: this company is not affiliated with RadioShack Corporation.

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Product: COMP-100 Scanner	**Cat. No.:** 200-0110

Question: What is the formula to convert a frequency for use with this scanner?

Answer: This scanner uses 16 switches set to either 1 or 0 to program the frequency. Here is the formula, with an example to work with:

Take the display and divide it into groups of 4 bits each:

01 02 03 04	05 06 07 08	09 10 11 12	13 14 15 16
1	2	3	4

Group 1 is as follows:

Band	MHz	1	2	3	X
VHF Lo	30-50	0	0	0	0
VHF Hi	150-172	0	0	1	120
UHF LO	450-470	0	1	0	420
UHF Mid	470-490	0	1	1	440.0025
UHF Hi	490-512	1	0	0	460.0025

Bits 1, 2, and 3 are from the column 1, 2, and 3 above. To find bit 4, do the following:

(Freq - X +10.7) / 12.8

The answer is between 3 and 5. If the answer is 4 or greater, then bit 4=0. If the answer is less than 4, bit 4=1.

Subtract either 3 or 4 from the number to leave a positive number 0 and less than 1. Multiply by 16. Enter the whole part of the number as HEX in group 2 above.

Subtract the whole number to leave a value again greater than 0 and less than 1. Multiply by 16 again. Enter the whole part of the number as HEX in group 3 above.

Subtract the whole number to leave a value again greater than 0 and less than 1. Multiply by 10 this time. Enter the whole part of the number as HEX in group 4 above.

Example: 40.125 MHz

The 1 2 3 bits = 0 0 0
000x xxxx xxxx xxxx

The formula yields 3.9707031, making bit 4 = 1
0001 xxxx xxxx xxxx

Subtract 3 from 3.9707031, yielding 0.9707031

Multiply 0.9707031 by 16, yielding 15.53125, and making group 2 = 15 (1111)
0001 1111 xxxx xxxx

Subtract 15 from 15.53125, yielding 0.53125

Multiply 0.53125 by 16, yielding 8.5, making group 3 = 8 (1000)
0001 1111 1000 xxxx

Subtract 8 from 8.5, yielding 0.5

Multiply 0.5 by 10, yielding 5, and making group 4 = 5 (0101)

The coding for 40.125 MHz is 0001 1111 1000 0101.

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Product: PRO-2020 Scanner **Cat. No.:** 200-0112

Question: What is the frequency range?

Answer: The frequency ranges are as follows:

VHF Mid: 30-50 MHz
Aircraft: 108-136 MHz
VHF High: 138-174 MHz
UHF: 410-512 MHz

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Product: PRO-2021 Programmable Scanner	**Cat. No.:** 200-0113

Question: How many channels and what is the frequency range?

Answer: This has 200 channels. The frequency ranges are given below:

VHF Low: 68-88 MHz in 5 kHz steps
VHF Mid: 30-50 MHz in 5 kHz steps
Aircraft: 108-136 MHz in 25 kHz steps
VHF High: 138-174 MHz in 5 kHz steps
UHF: 410-512 MHz in 1.25 kHz steps

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Product: PRO-2001 Scanner	**Cat. No.:** 200-0115

Question: How do I program frequencies?

Answer: It is programmed as below:

1. Turn on the scanner.
2. Turn Squelch clockwise
3. Press the channel switch.
4. Select the channel you want to program.
5. Press **Manual**, then **Program**, and the Program LED will light up.
6. Enter the frequency.
7. Monitor until you hear a station.
8. Press **Enter**.

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Product: PRO-2011 20-Channel Programmable Scanner	**Cat. No.:** 200-0118

Question: Where is the backup battery located and what battery does it use?

Answer: This scanner does not have a battery backup.

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Product: PRO-53 Crystal-controlled Scanner	**Cat. No.:** 200-0122

Question: How do I identify which crystal is installed?

Answer: The frequency is written on the crystal.

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Product: PRO-54 FM Scanner	**Cat. No.:** 200-0123

Question: What crystals did this come with?

Answer: This scanner did not come with crystals installed. While RadioShack no longer carries crystals, you may find what you need by contacting International Crystal Manufacturing Co., Inc. for assistance.

International Crystal Manufacturing Co., Inc.
10 North Lee Street
Oklahoma City, OK 73102

Customer Service: 606-283-5000
Technical Assistance: 800-725-1426

Please note: this company is not affiliated with RadioShack Corporation.

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Product: PRO-55 VHF/UHF Scanner	**Cat. No.:** 200-0124

Question: How do I program this?

Answer: This is not a programmable scanner; it is crystal controlled. While RadioShack no longer carries crystals, you may find what you need by contacting International Crystal Manufacturing Co., Inc. for assistance.

International Crystal Manufacturing Co., Inc.
10 North Lee Street
Oklahoma City, OK 73102

Customer Service: 606-283-5000
Technical Assistance: 800-725-1426

Please note: this company is not affiliated with RadioShack Corporation.

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Product: PRO-1 Patrolman Scanner	**Cat. No.:** 200-0130

Question: I need a replacement AC adapter.

Answer: This used the 200-1501 adapter, which is no longer available due to the age of this scanner (it was discontinued in 1970). It was a specially designed adapter with 2 positive and 1 negative.

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Product: PRO-30 Scanner	**Cat. No.:** 200-0131

Question: I need a replacement AC adapter.

Answer: This requires a 9V, 300 mA (minimum) adapter with a 2.1 mm / 5.5 mm plug. The 273-1810 DC/DC adapter meets these requirements and includes the correct plug. The 273-1767 AC/DC adapter meets these requirements and comes with your choice of one free adaptaplug. You will need the "M" size adaptaplug, Cat. No. 273-1716.

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Product: PRO-31 Portable Scanner	**Cat. No.:** 200-0132

Question: How do I program this scanner?

Answer: The scanner is programmed as below:

1. Press **Manual**.
2. Press the channel number you want to program.
3. Press **Manual**.
4. Press **Program**.
5. Enter the frequency.
6. Press **Enter**.

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Product: PRO-35 100-Channel Portable Programmable Scanner	**Cat. No.:** 200-0136

Question: What jack does the power cord go into? There are two jacks.

Answer: For either a DC or AC power source, connect the barrel plug to the jack on the left side of the antenna - the jack on the back side of the battery pack is for charging only.

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Product: PRO-36 Programmable Scanner	**Cat. No.:** 200-0137

Question: What is the recommended power adapter?

Answer: This requires a 9V, 300 mA (minimum) adapter with a 2.1 mm / 5.5 mm plug. The 273-1810 DC/DC adapter meets these requirements and includes the correct plug. The 273-1767 AC/DC adapter meets these requirements and comes with your choice of one free adaptaplug. You will need the "M" size adaptaplug, Cat. No. 273-1716.

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Product: PRO-36 Programmable Scanner	**Cat. No.:** 200-0137

Question: What is the recommended power adapter/charger?

Answer: This requires a 9V, 300 mA (minimum) adapter with a 2.1 mm / 5.5 mm plug. The 273-1810 DC/DC adapter meets these requirements and includes the correct plug. The 273-1767 AC/DC adapter meets these requirements and comes with your choice of one free adaptaplug. You will need the "M" size adaptaplug, Cat. No. 273-1716.

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Product: PRO-38 10-Channel Programmable Scanner	**Cat. No.:** 200-0139

Question: What battery pack and charger are used for this?

Answer: The battery pack is no longer available as the PRO-38 was discontinued in 1991. The charger for this pack is a 9V, 300 mA (minimum) adapter with a 1.3 mm / 3.4 mm plug. The 273-1810 DC/DC adapter meets these requirements and includes the correct plug. The 273-1767 AC/DC adapter meets these requirements and comes with your choice of one free adaptaplug. You will need the "H" size adaptaplug, Cat. No. 273-1711.

When charging, be sure to change the switch in the battery compartment (Alk/Chg) to Chg.

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Product: PRO-2005 AM/FM Programmable Scanner	**Cat. No.:** 200-0144

Question: Why does this scanner keep beeping?

Answer: If it shows a battery symbol and it beeps -- it is the low battery indicator and either the battery pack or internal lithium battery is low.

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Product: PRO-2006 Scanner	**Cat. No.:** 200-0145

Question: What is the ATT switch for?

Answer: The ATT switch toggles the built-in attenuator.

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Product: PRO-2056 Mobile Scanner	**Cat. No.:** 200-0147

Question: Is there a chip to allow 800 MHz range?

Answer: We do not have an update for the PRO-2056. We have no information on and cannot support modification of our scanners.

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Product: PRO-2026 100-Channel Mobile VHF/UHF Programmable Scanner	**Cat. No.:** 200-0148

Question: How do I lock out service frequencies?

Answer: The priority and lock-out features do not function in this mode.

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Product: PRO-2046 100-Channel Programmable Mobile Scanner	**Cat. No.:** 200-0149

Question: Is it triple conversion? What are the IF frequencies?

Answer: No, it is dual-conversion. The IF Frequencies are 10.85 MHz and 450 kHz.

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Product: PRO-2046 100-Channel Programmable Mobile Scanner	**Cat. No.:** 200-0149

Question: Is this a digital or analog scanner?

Answer: This is an analog scanner.

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Product: PRO-2066 Trunk-Mounted Mobile Scanner	**Cat. No.:** 200-0195

Question: I need a replacement DC adapter.

Answer: This is available by special order as part number RSU 11122827. You can order this through your local store or by calling the order center at 800-843-7422.

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Product: PRO-2066 Trunk-Mounted Mobile Scanner	**Cat. No.:** 200-0195

Question: Does this have a backlight?

Answer: Yes, this scanner includes a backlit liquid crystal display.

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Product: PRO-2066 Trunk-Mounted Mobile Scanner	**Cat. No.:** 200-0195

Question: What are the specifications on micro volt reception on the VHF high band (108-176 MHz)?

Answer: The PRO-2066 is rated at 0.5 mV.

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Product: PRO-43 200-Channel Portable Scanner	**Cat. No.:** 200-0300

Question: What is the impedance of the external speaker jack?

Answer: The jack is rated for an 8 ohm speaker, such as Cat. No. 210-0549 and 210-0541.

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Product: PRO-39 VHF/UHF Hand-Held Scanner	**Cat. No.:** 200-0303

Question: Is this dual or triple conversion and what are the IF frequencies?

Answer: This uses dual-conversion. The IF frequencies are 10.7 MHz and 455 kHz

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Product: PRO-46 VHF/UHF 100-Channel Scanner	**Cat. No.:** 200-0305

Question: Why won't this scanner pick up the Blue Angels frequencies?

Answer: The frequencies are outside of the scanner's reception band.

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Product: PRO-46 VHF/UHF 100-Channel Scanner	**Cat. No.:** 200-0305

Question: What adapter works with this?

Answer: This requires a 9V, 300 mA (minimum) adapter set to tip negative. The 273-1767 AC/DC adapter meets these requirements and comes with your choice of one free adaptaplug. The 273-1767 AC/DC adapter meets these requirements and comes with your choice of one free plug (plug "H", Cat. No. 273-1711)..

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Product: PRO-51 200-Channel Scanner	**Cat. No.:** 200-0308

Question: What charger does this require?

Answer: This requires a 9V, 300 mA (minimum) adapter with a 1.3 mm / 3.4 mm plug. The 273-1810 DC/DC adapter meets these requirements and includes the correct adaptaplug. The 273-1767 AC/DC adapter meets these requirements and comes with your choice of one free plug (plug "H", Cat. No. 273-1711).

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Product: PRO-51 200-Channel Scanner	**Cat. No.:** 200-0308

Question: Is this a trunking scanner?

Answer: No.

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Product: PRO-76 Scanners	**Cat. No.:** 200-0313, 200-0048

Question: Is there a cable for wired programming for my scanner?

Answer: Yes; this cable and software is available as catalog number 20-048. This is a store-stocked item and can be either purchased through your local store, ordered through our Catalog Order Center at 800-843-7422, Option 2, (Catalog, Parts and Accessory Ordering) or ordered on-line by clicking on the catalog number.

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Product: PRO-79 Scanners	**Cat. No.:** 200-0314, 200-0048

Question: Is there a cable for wired programming for my scanner?

Answer: Yes; this cable and software is available as catalog number 20-048. This is a store-stocked item and can be either purchased through your local store, ordered through our Catalog Order Center at 800-843-7422, Option 2, (Catalog, Parts and Accessory Ordering) or ordered on-line by clicking on the catalog number.

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Product: PRO-79 Scanners	**Cat. No.:** 200-0314

Question: How do I get the scanner into Wired mode for programming?

Answer: To use the Wired Programming for the PRO-79, you will need to follow the steps below:

Note: Wired programming stops if the scanner receives an empty channel number.

1. Turn off the scanner.
2. Connect the scanner to the PC using a PC cable.
3. While pressing ENT and 9, turn on the scanner. PGM and WirEd appear. Then send the data from the PC. StArt and the data being received by the scanner appears in the order it is received.
   Note: If the scanner receives no data from the PC for more than 20 seconds or if you press any key, wired programming stops. If the scanner did not receive a start bit from the PC, StArt does not appear.
4. When the scanner successfully receives all data, End and FiniSh appear. If the scanner received an error while receiving data, End and d-Err appear. If the scanner received a checksum error while receiving data, C-Err and a number appear. The number shown next to C-Err indicates the packet number where the error occurred.
   Note: If the scanner did not receive an end bit from the PC, End does not appear.

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Product: PRO-2029 60-Channel Scanner	**Cat. No.:** 200-0404

Question: How do I program frequencies into this scanner?

Answer: This is programmed as below:

1. Press **Manual**.
2. Press **Program**.
3. Enter the frequency.
4. Press **Enter**.

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Product: PRO-2034 60-Channel Programmable Base Scanner **Cat. No.:** 200-0411

Question: Why am I not getting the last digit on the display between 29-54 MHz and 137-174 MHz?

Answer: In order to enter the last digit, you need to enter frequency manually. However, you will not see the last digit -- you will see a (0) for it instead. These frequencies have a step rate of 5 kHz.

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Product: PRO-2036 200-Channel Scanner **Cat. No.:** 200-0412

Question: I need a replacement lithium battery for this scanner.

Answer: The 3-Volt, 180 mAh lithium battery is available as part number RSU 10586923. Because this is available as special order only, you would need to order it through either your local RadioShack store or by calling 800-843-7422.

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Product: PRO-2038 50-Channel Scanner **Cat. No.:** 200-0413

Question: Why am I not getting some frequencies in the 450-470 MHz; is it due to rounding?

Answer: Yes, the step frequency (12.5 kHz) is automatic and will always do this.

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Product: PRO-2043 30-Channel Direct Entry Programmable Scanner **Cat. No.:** 200-0415

Question: Does this have a backlight display?

Answer: No.

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Product: PRO-2043 30-Channel Direct Entry Programmable Scanner **Cat. No.:** 200-0415

Question: This has lockout showing on all channels, and it won't go out.

Answer: If 000.000 is displayed on the channel, then there is no frequency stored. When you program a new frequency, the lockout is automatically removed. You cannot remove lockout before programming a channel. If this is not the case, then you may need to reset the scanner.

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Product: PRO-2050 VHF/UHF/Air/800 MHz 300-Channel Scanner **Cat. No.:** 200-0430

Question: Why is it giving an error once the frequencies have been programmed in?

Answer: It should not do this. Try resetting, then program the frequencies in different banks and try again.

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Product: PRO-2050 VHF/UHF/Air/800 MHz 300-Channel Scanner **Cat. No.:** 200-0430

Question: What does this use for memory backup and how long will it hold memory?

Answer: It uses an EEPROM for memory backup and should last years.

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Product: PRO-2050 VHF/UHF/Air/800 MHz 300-Channel Scanner	**Cat. No.:** 200-0430

Question: What type of antenna does it come with?

Answer: This comes with a telescoping antenna.

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Product: PRO-2050 VHF/UHF/Air/800 MHz 300-Channel Scanner	**Cat. No.:** 200-0430

Question: Why do I have to turn squelch all the way for aircraft channels?

Answer: Aircraft frequencies have limited access.

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Product: PRO-2037 200-Channel Programmable Scanner	**Cat. No.:** 200-0461

Question: How do I program frequencies?

Answer: You can program the frequencies using the steps below:

1. Press **Manual**.
2. Enter the channel number you want to program.
3. Press **Program**.
4. Enter the frequency.
5. Press **Enter**.

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Product: PRO-2037 200-Channel Programmable Scanner	**Cat. No.:** 200-0461

Question: I can't program 867.7870 - it programs as 867.7750 and 867.437 programs in as 867.425. Why?

Answer: These frequencies have a step rate of 12.5 KHz.

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Product: PRO-2042 1000-Channel Programmable Scanner	**Cat. No.:** 200-0464

Question: Can you dim the backlight?

Answer: No.

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Product: PRO-25 100-Channel Programmable Scanner	**Cat. No.:** 200-0505

Question: What adapter is required?

Answer: This has a power requirement of 6 Volts DC and a minimum of 300 mA.

The 273-1805 DC/DC adapter meets these requirements and comes with your choice of one free adaptaplug. The 273-1758 AC/DC adapter meets these requirements and also comes with your choice of one free adaptaplug.

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Product: PRO-28 30-Channel Hand-Held Scanner	**Cat. No.:** 200-0508

Question: What is the difference between 200-0508UV and 200-0508UW?

Answer: The only difference is the manufacturing date.

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Product: PRO-66 Scanner	**Cat. No.:** 200-0511

Question: What is the power adapter tip size & polarity for this scanner?

Answer: 5.5 mm (Outer), 2.1 mm (Inner), Tip = Positive. This tip is available as the "M" size adaptaplug for our adapters, sold as Cat. No. 273-1716.

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Product: PRO-67 200-Channel 800 MHz Scanner	**Cat. No.:** 200-0512

Question: Can you charge NiMH batteries in this scanner?

Answer: No.

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Product: PRO-63 100-Channel Hand-Held Scanner	**Cat. No.:** 200-0561

Question: How do I set the scanner so that it does not use priority scanning?

Answer: If you don't want to use priority, then you need to enter zeroes for each priority channel. If you enter a frequency in a priority channel, then it will go to that channel when someone talks on that frequency.

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Product: PRO-64 400-Channel Hand-Held Scanner	**Cat. No.:** 200-0564

Question: How do I charge the batteries?

Answer: While you can use rechargeable batteries to power the scanner, you must remove them from the scanner and use an external charger. You cannot charge the batteries in the scanner.

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Product: PRO-64 400-Channel Hand-Held Scanner	**Cat. No.:** 200-0564

Question: How do I get a replacement battery pack?

Answer: The 7.2-Volt / 600 mAh battery pack is no longer available as the PRO-64 was discontinued in 1997.

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Product: PRO-64 400-Channel Hand-Held Scanner	**Cat. No.:** 200-0564

Question: Do you sell an adapter for using the PRO-64 with a computer?

Answer: The adapter is no longer available as the PRO-64 was discontinued in 1997.

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Product: PRO-64 400-Channel Hand-Held Scanner	**Cat. No.:** 200-0564

Question: In the computer interface, how do I get information on commands not on the CD?

Answer: We do not have this information and can only recommend that you contact the software designer at:

Computer Aided Technology
Mail: P.O. Box 18285, Sports City, LA 71138
Tech Support: 318-687-2555 or 888-722-6228
Fax: 318-686-0449
E-mail: scancat@scancat.com

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Scanner Frequently Asked Questions
Section 4 - TrunkTracking Scanners

TRUNKTRACKING SCANNERS

General Questions

What is trunktracking and where can I get more information?

How do I convert EDACS SYSTEM ID format (decimal to AFS)?

I can't scan an EDACS system, and I know the frequencies are right.

Why does my scanner take so long to pick up data channels?

Product-specific Questions

200-0196 / PRO-2067: What is the attenuation for this scanner, when ATT is active?

200-0196 / PRO-2067: Why doesn't this auto-scan?

200-0310 / PRO-70: The scanner is locked and I cannot unlock it; what do I do?

200-0310 / PRO-70: Can I use NiMH batteries with this scanner and charger?

200-0310 / PRO-70: What does this use for memory backup?

200-0314 / PRO-79: Why can't I use a DC Adapter to charge batteries and why can't I use High-Capacity NiCd's?

200-0432 / PRO-2052: How do I get information on the software for this scanner?

200-0466 / PRO-2053: How do I get the software & cable for this scanner?

200-0520 / PRO-90: What is the estimated battery life?

200-0520 / PRO-90: The scanner battery life has dropped to about 20 min; how can I fix this?

200-0520 / PRO-90: How should I maintain my battery pack in the best condition?

200-0520 / PRO-90: How long does it take to charge the battery when it is fully discharged?

200-0520 / PRO-90: Can you use alkaline batteries?

200-0520 / PRO-90: What adapter is used with this scanner?

200-0520 / PRO-90: What is the average range?

200-0520 / PRO-90: What is the IF frequency range?

200-0520 / PRO-90: Does it have real bandbase on the earphone jack?

200-0520 / PRO-90: How do I remove the ***P*** which displays when I am on a priority channel?

200-0520 / PRO-90: Can you store a limit search in a bank?

200-0520 / PRO-90: How do I reset this scanner?

200-0520 / PRO-90: How do I make it trunk and listen to regular scanning at the same time?

200-0520 / PRO-90: Can you trunktrack 2 banks at the same time?

200-0520 / PRO-90: Can I listen to type 1 and type 2 at the same time?

200-0520 / PRO-90: Why can't I add a data frequency to more than five banks?

200-0520 / PRO-90: I am having problems getting it to trunk; I have verified the steps and it is still not working.

200-0520 / PRO-90: How do I program a fleetmap?

200-0520 / PRO-90: Is there a way to determine which fleetmap is correct other than trial and error?

200-0520 / PRO-90: I am having problems programming the fleetmap; I can't find the data channel.

200-0522 / PRO-92: What is the difference between the 200-0522, 200-0522A and 200-0522B versions of the PRO-92?

200-0522 / PRO-92: How do I program and store text tags?

200-0522 / PRO-92: How do I assign a two-line text tag?

200-0522 / PRO-92: What are the system requirements for the software package for the PRO-92?

200-0522 / PRO-92: How do I get this scanner to simultaneously track both Motorola II & conventional frequencies?

200-0522 / PRO-92: What are the differences between the PRO-92 and the PRO-94 scanners?

200-0522 / PRO-92: Between the PRO-92 and PRO-94, which has the better scanning scheme?

200-0523 / PRO-93: How do I get the software & cable for this scanner?

200-0524 / PRO-94: What are the differences between the PRO-92 and the PRO-94 scanners?

200-0524 / PRO-94: Between the PRO-92 and PRO-94, which has the better scanning scheme?

200-0524 / PRO-94: How do I calculate Base Frequency? I am looking for the mathematical formula used to calculate the BASE frequency as required.

200-0524 / PRO-94: How do I get the software & cable for this scanner?

200-0524 / PRO-94: How do I turn off Hypersearch? I can't get **HYPER** off of the display.

TRUNKTRACKING SCANNERS

General Questions

Product: General Information

Question: What is trunktracking and where can I get more information?

Answer: Trunking communications systems let a large group of 2-way radio users (or even different groups of 2-way radio users) efficiently use a large range of frequencies. Instead of selecting a specific frequency for a transmission, the user simply selects a talk group. The trunking system automatically transmits the call on the first available frequency and also sends (on a different frequency called a data channel) a code that uniquely identifies that transmission.

Since the trunking system might send a call and its response on different frequencies, it is difficult to listen to trunked communications using a regular scanner. Trunking scanners let you select and monitor the data channel frequency sent with a 2-way radio transmission, so you can hear the call and response for that user and more easily "follow" the conversation.

You can access on-line information on Trunk-tracking at:

http://www.trunktracker.com/

Please note, this internet site is not affiliated with RadioShack Corporation and off-site information is neither created, maintained nor verified by RadioShack Corporation. Responsibility for the content rests solely with the page owner.

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Product: General Information

Question: How do I convert EDACS SYSTEM ID format (decimal to AFS)?

Answer: Our scanners use either decimal format or decimal and AFS format. You can convert decimal EDACS IDs to the AFS (Agency-Fleet-Subfleet) format as follows:

The example below starts with the Decimal ID 0586.

1. Convert Decimal to Binary
   586 decimal = 01001001010 binary
   ID's are 11-bit binary. If you get a binary that isn't 11 bits,
   just add leading zeroes until you get 11 bits.

2. Split the binary as follows #### / #### / ###
   0100 / 1001 / 010
3. Convert each GID to decimal
   04 09 2
4. Format as ##-###
   04-092

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Product: Troubleshooting

Question: I can't scan an EDACS system, and I know the frequencies are right.

Answer: With an EDACS system, the frequencies have to be in a particular order. Also, unless indicated otherwise in the scanner's manual, you should not mix other frequencies in the same bank as the EDACS frequencies. We do not have information on the correct order for specific EDACS frequencies.

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Product: Troubleshooting

Question: Why does my scanner take so long to pick up data channels?

Answer: You are probably operating in a fringe area for the transmission. You would need to improve the signal strength, either by changing locations or using a larger antenna.

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TRUNKTRACKING SCANNERS

Product-specific Questions

Product: PRO-2067 Scanner **Cat. No.:** 200-0196

Question: What is the attenuation for this scanner, when ATT is active?

Answer: Attenuation is as follows:

- FM (Nominal): 25 dB
- FM (Minimum): 15 dB
- AM (Nominal): 20 dB
- AM (Minimum): 10 dB

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Product: PRO-2067 Scanner **Cat. No.:** 200-0196

Question: Why doesn't this auto-scan?

Answer: The PRO-2067 only auto-scans when set up for trunking mode. A valid trunking system is required for the PRO-2067 trunk-tracking scanner (Cat. No. 200-0196) to auto scan.

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Product: PRO-70 50-Channel Scanner **Cat. No.:** 200-0310

Question: The scanner is locked and I cannot unlock it; what do I do?

Answer: You will need to do either reset or initialize the scanner. You should try to reset first; initialization clears all information in memory.

Resetting the Scanner

1. Turn off the scanner, then turn it on again.
2. Insert a pointed object, such as a straightened paper clip, into the reset opening on the side of the scanner and gently press then release the reset button inside the opening.
   Note: If the scanner still does not work properly, you might need to initialize the scanner.

Initializing the Scanner

Caution: This procedure clears all information you stored in the scanner's memory. Initialize the scanner only when you are sure the scanner is not working properly.

1. Turn off the scanner, then turn it on again.
2. Press and hold CLEAR.
3. While holding down CLEAR, insert a pointed object, such as a straightened paper clip, into the reset opening on the side of the scanner and gently press then release the reset button inside the opening.
4. When the display reappears, release CLEAR.
   Note: You must release RESET before releasing CLEAR, otherwise the memory might not clear.

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Product: PRO-70 50-Channel Scanner	**Cat. No.:** 200-0310

Question: Can I use NiMH batteries with this scanner and charger?

Answer: You can use NiMH batteries; however, you will need to use an external charger. The charger is for NiCD batteries only.

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Product: PRO-70 Scanner	**Cat. No.:** 200-0310

Question: What does this use for memory backup?

Answer: The PRO-70 does not have an internal battery. The memory backup is an RC circuit and keeps the channel frequencies stored in memory for about 1 hour during a power loss.

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Product: PRO-79 200 Channel Handheld Scanner	**Cat. No.:** 200-0314

Question: Page 10 of the user's manual states that you must recharge high-capacity Ni-Cd batteries in an external charger and that "You cannot use a DC adapter to recharge batteries in the scanner due to limitations in the scanner's recharging circuit"... What exactly are these limitations and why can't I charge high-capacity Ni-Cd batteries?

Answer: We do not recommend that you use the DC adapter for charging because the DC from a vehicle tends to have voltage fluctuations and noise in the signal. When charging, these fluctuations and noise can cause the battery to not take a charge as well and lessens the battery's capacity and effective life span. The charging circuit is not designed to compensate for these problems, so it should only be used with an AC adapter. Standard life Ni-Cd's take 14 to 16 hours to recharge in the internal charger; this charger is not designed to charge for the extended period required for high capacity batteries. Using it in this way can damage the internal charger, the batteries or both.

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Product: PRO-2052 Scanner	**Cat. No.:** 200-0432

Question: How do I get information on the software for this scanner?

Answer: The WinScan RS software for PRO-2052 Scanner was supported by Pozilla Software. Information and support options are available at the links below. This software is no longer available through RadioShack.

Software Information

http://www.pozillasoft.com/winscanrs.htm

Support Options

http://www.pozillasoft.com/rssupport.htm

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Product: PRO-2053 Desktop Scanner	**Cat. No.:** 200-0466

Question: How do I get the software & cable for this scanner?

Answer: The PC interface for the PRO-2053 is not currently available, and it will not work with any of our currently-available interfaces. While this software is in development, we do not have a due date; however, it is currently expected to be sold under part number 940-1666. When the interface is available, it will be listed on our website.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: What is the estimated battery life?

Answer: Approximately ten hours.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: The scanner battery life has dropped to about 20 min; how can I fix this?

Answer: We recommend that you deep cycle the battery (fully discharge, then fully recharge the battery). It may have developed a memory; you may have to do this more than once to return to normal functionality.

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Product: PRO-90 300-Channel TrunkTracker Scanner | **Cat. No.:** 200-0520

Question: How should I maintain my battery pack in the best condition?

Answer: To keep the battery in good condition, run the batteries completely down once a month and then recharge fully.

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Product: PRO-90 300-Channel TrunkTracker Scanner | **Cat. No.:** 200-0520

Question: How long does it take to charge the battery when it is fully discharged?

Answer: It takes about 14-16 hours to recharge.

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Product: PRO-90 300-Channel TrunkTracker Scanner | **Cat. No.:** 200-0520

Question: Can you use alkaline batteries?

Answer: No.

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Product: PRO-90 300-Channel TrunkTracker Scanner | **Cat. No.:** 200-0520

Question: What adapter is used with this scanner?

Answer: This uses the DC adapter 270-0031. The AC Adapter is available by special order as part number RSU 11975679. This can be ordered through your local Radioshack store or by calling 800-843-7422.

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Product: PRO-90 300-Channel TrunkTracker Scanner | **Cat. No.:** 200-0520

Question: What is the average range?

Answer: We can't give an average range for scanners; it depends on the transmitter output.

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Product: PRO-90 300-Channel TrunkTracker Scanner | **Cat. No.:** 200-0520

Question: What is the IF frequency range?

Answer: The IF frequency ranges are given below:

1st Heterodyne:

29-174 (upper)	380.6050 - 380.7000 MHz
406-513 (upper)	360.6125 - 380-7000 MHz
806-956 (lower)	380.7000 - 380.7875 MHz

2nd Heterodyne: 10.85 (all bands)

3rd Heterodyne: 450 (all bands)

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Product: PRO-90 300-Channel TrunkTracker Scanner | **Cat. No.:** 200-0520

Question: Does it have real bandbase on the earphone jack?

Answer: This has 38 mW nominal into 32 Ohm Stereo Headphones, and 9 mW nominal into 64 Ohm Earphones.

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Product: PRO-90 300-Channel TrunkTracker Scanner | **Cat. No.:** 200-0520

Question: How do I remove the ***P*** which displays when I am on a priority channel?

Answer: The P will always display when you are on a priority channel.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: Can you store a limit search in a bank?

Answer: No.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: How do I reset this scanner?

Answer: Turn the scanner off, hold down 2 & 9 and turn it back on.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: How do I make it trunk and listen to regular scanning at the same time?

Answer: Your scanner cannot track an 800 MHz trunked system and scan frequencies in conventional mode at the same time.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: Can you trunktrack 2 banks at the same time?

Answer: No.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: Can I listen to type 1 and type 2 at the same time?

Answer: No.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: Why can't I add a data frequency to more than five banks?

Answer: This scanner only handles up to 5 trunked banks at a time.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: I am having problems getting it to trunk; I have verified the steps and it is still not working.

Answer: Be sure that you are trying to scan a Motorola® system.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: How do I program a fleetmap?

Answer: You will need to be in the bank where the trunked frequencies are stored, and then use trial-and-error to go through the possible fleetmaps.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: Is there a way to determine which fleetmap is correct other than trial and error?

Answer: No.

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Product: PRO-90 300-Channel TrunkTracker Scanner	**Cat. No.:** 200-0520

Question: I am having problems programming the fleetmap; I can't find the data channel.

Answer: You need to scan until you find the data channel; until you have a data channel, you won't be able to trunktrack or program a fleetmap.

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Product: PRO-92 Multi-trunking Scanner	**Cat. No.:** 200-0522

Question: What is the difference between the 200-0522, 200-0522A and 200-0522B versions of the PRO-92?

Answer: The primary differences are either in the firmware version and/or the trunked scanning method.

PRO-92 200-0522
- Firmware: Version 1.0
- Trunked Scanning: Low Speed Handshake

PRO-92 200-0522A
- Firmware: Version 3.xx
- Trunked Scanning: Control Channel

After introduction of the PRO-92, we learned of some instances where it didn't perform to expectations on some Motorola trunked systems. Based on this, a few customers have raised concerns about the quality of the PRO-92. An update to the software (changing the scanning method from "Low Speed Handshake" to "Control Channel") improves performance with these "troublesome" trunking systems. Effective immediately, we are offering this upgrade for the price of labor only. You would need to take the radio to your local RadioShack store and have them send it to the service center. Through cloning, reasonable efforts will be made to retain the programming in the scanner's memory.

Warning: Do not send a scanner that currently works fine on your local trunked systems just because it has version 1.00! If the scanner already works well in your area, this update is not needed.

The only significant difference between the 200-0522A and the 200-0522B is that the manufacturing location changed.

PRO-92 200-0522B
- Firmware: Version 3.xx
- Trunked Scanning: Control Channel

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Product: PRO-92 Multi-trunking Scanner	**Cat. No.:** 200-0522

Question: How do I program and store text tags?

Answer: Storing Text Tags

1. Press **MANUAL**, enter the channel number where you want to enter the text, then press **MANUAL** again. **M** and the channel number appear at the upper left corner of the display.
2. Press **PGM**. **M** changes to **P**.
3. Press **TEXT**. The cursor appears at the third line.
4. Enter the text using the numeral keys (see "Text Input Chart" below).

NOTE: If you make a mistake, press [down arrow] or [up arrow] to move to the character you want to change.

To enter "Police # 1", the procedure would be:

"P" is the first letter associated with 7 on the keypad. Press **7** then 1.
"o" is the third letter associated with 6 on the keypad, but it is lowercase. Press **6**, **FUNC**, **3**.
"l" is the third letter associated with 5 on the keypad, but it is lowercase. Press **5**, **FUNC**, **3**.
"i" is the third letter associated with 4 on the keypad, but it is lowercase. Press **4**, **FUNC**, **3**.
"c" is the third letter associated with 2 on the keypad, but it is lowercase. Press **2**, **FUNC**, **3**.
"e" is the second letter associated with 3 on the keypad, but it is lowercase. Press **3**, **FUNC**, **2**.
To enter a space, press **.** (period symbol).
To enter a "#", press **0**, **3**.
To enter a space, press **.** (period symbol).
To enter a "1", press **1**, **1**.

Press **ENTER** to input the text.

Text Input Chart

- To access the numbers, press **1** then the number.
- To enter a lowercase letter, after choosing the group it belongs to, press **FUNC** then the number corresponding to the position of the letter.

Press	To Enter a Character from this Group		Press	To Enter a Character from this Group
1	1 2 3 4 5 6 7 8 9 0		7	P Q R S
2	A B C		7 FUNC	p q r s
2 FUNC	a b c		8	T U V
3	D E F		8 FUNC	t u v
3 FUNC	d e f		9	W X Y Z
4	G H I		9 FUNC	w x y z
4 FUNC	g h i		0	. - # _ @ + * / '
5	J K L		0 FUNC	$ % ! ^ (,) ? -> `
5 FUNC	j k l		.	[SPACE]
6	M N O		CL	[BACKSPACE]
6 FUNC	m n o			

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Product: PRO-92 Multi-trunking Scanner **Cat. No.:** 200-0522

Question: How do I assign a two-line text tag?

Answer: When programming a text tag, it only allows you to put one line in. To have two lines of text as tags, you must also assign a text tag to the bank.

For example, assign a text tag to the bank as "Arlington", then assign a text tag to an ID (or frequency) such as 'South Police'. When the scanner picks up that ID (or a transmission on the frequency) it will display both tags.

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Product: PRO-92 Multi-trunking Scanner **Cat. No.:** 200-0522

Question: What are the system requirements for the software package for the PRO-92?

Answer: The 940-1223 GRE Scanner Data Manager includes the following items:

- PC Software Diskette (1 each)
- PC Interface Cable Assembly (1 each)
- Getting Started Manual (1 each)

The interface cable supplied with the GRE Scanner Data Manager is a 9-pin serial cable (female) designed specifically for use with the PRO-92 and PRO-series scanners and will not operate with other scanners. This cable assembly includes a special voltage converter circuit. Do not plug this cable into any other equipment and do not attempt to use any other cable with your scanner.

The minimum operating requirements for the software are as follows:

- 486, 586 Pentium Processor
- Windows 95, Windows 98, Windows ME, Windows 2000 or Windows NT
- 16 MB RAM minimum, 23 MB RAM recommended (for good Windows performance)
- 2 MB hard disk space minimum
- Any video card and monitor supported
- Windows Mouse with 2 buttons (minimum)
- Serial port for the interface cable assembly

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Product: PRO-92 Multi-trunking Scanner **Cat. No.:** 200-0522

Question: How do I get this scanner to simultaneously track both Motorola II & Conventional frequencies?

Answer: This procedure will only work on the PRO-92, since it tracks by the SID's, and not the data channel, and only in the open mode. In closed mode, the scanner will look for programmed SID's before it stops on a transmission. Here are the steps to set this up:

1. Enter all the frequencies (both conventional and Motorola II) in the same bank with the manual programming.

   a. For the Motorola II frequencies, press **Mode** to designate the RF as MOT then press **/** (up arrow) for the next channel to be programmed.
   b. For conventional frequencies, do not use the **Mode** button; press **/** (up arrow) to go to the next channel.

2. Once all of the frequencies are programmed in the Bank then:

   a. Press **Man**.
   b. Press **Scan**; the PRO-92 will start scanning and stop on the first data channel.
   c. Lock Out any/each data channel when the PRO-92 stops on it. After the data channels are locked out the PRO-92 will continue to scan and will show SIDs on the Motorola II channels. The Motorola II channels have a sub-audible tone that equates to the SID, and the PRO-92 will pick this up and display the SID even with the data channels locked out.

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Product: PRO-92 Multi-trunking Scanner **Cat. No.:** 200-0522

Question: What are the differences between the PRO-92 (Cat. No. 200-0522) and the PRO-94 (Cat. No. 200-0524) Scanners?

Answer: The differences are outlined below:

	PRO-92 / 200-0522	PRO-94 / 200-0524
Trunk Scanning Type	Multi-Trunk Scanning (allows simultaneous scanning of up to 10 trunked systems or trunked and analog systems)	Single-Trunk Scanning (can scan one system at a time)
Trunking Type	Multi-Trunking: Scans Analog Motorola I, II, I/II; GE/Ericsson (EDACS) and Johnson/Uniden systems	Dual-Trunking: Scans Analog Motorola I, II, I/II and GE/Ericsson (EDACS)
Channels	500 Channels	1000 Channels
Frequencies	29-54 MHz, 108-174 MHz, 380-512 MHz, 806-960 MHz (excluding cellular)	29-54 MHz, 108-174 MHz, 216-225 MHz, 406-512 MHz, 806-960 MHz (excluding cellular), 1240-1300 MHz
SAME (Specific Area Message Encoding)	Weather alert with display	Weather alert, no display
CTCSS/DSC Decode	Yes	No
Cloning Interface (with optional cable)	Yes	No
Display	4-line, displays frequency, alphanumeric name	1-line (fixed indicators), displays frequency

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Product: PRO-92 Multi-trunking Scanner **Cat. No.:** 200-0522

Question: Between the PRO-92 and PRO-94, which has the better scanning scheme?

Answer: In our testing, we placed a PRO-94 side by side with a PRO-92 and found each radio missed *a few* (and only a few) hops. The missed hops were about the same - neither radio got everything. The significant difference was that if the PRO-94 model holds on a specific ID and misses a hop, the hop is completely missed, where the PRO-92 typically picks it back up after a second of delay. The reason for this is that the PRO-94 scheme looks only at the data channel; if it misses the data, that transmission is completely lost. In contrast, the PRO-92 reads the subaudible data on each transmission. If it misses the hop, it continues to check active channels and easily finds the conversation again.

While the schemes are different, we did not find that either design was significantly better than the other.

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Product: PRO-93 Scanner **Cat. No.:** 200-0523

Question: How do I get the software & cable for this scanner?

Answer: The PC interface for the PRO-93 is not available, and it will not work with any of our currently-available interfaces. While this software is in development, we do not have a due date; however, it is currently expected to be sold under part number 940-1666. When the interface is available, it will be listed on our website.

A cable and software which will work with the PRO-93 is available on-line through http://www.pro93.com/. Please note: this website is not associated with RadioShack Corporation.

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Product: PRO-94 Scanner **Cat. No.:** 200-0524

Question: What are the differences between the PRO-92 (Cat. No. 200-0522) and the PRO-94 (Cat. No. 200-0524) Scanners?

Answer: The differences are outlined below:

	PRO-92 / 200-0522	PRO-94 / 200-0524
Trunk Scanning Type	Multi-Trunk Scanning (allows simultaneous scanning of up to 10 trunked systems or trunked and analog systems)	Single-Trunk Scanning (can scan one system at a time)
Trunking Type	Multi-Trunking: Scans Analog Motorola I, II, I/II; GE/Ericsson (EDACS) and Johnson/Uniden systems	Dual-Trunking: Scans Analog Motorola I, II, I/II and GE/Ericsson (EDACS)
Channels	500 Channels	1000 Channels
Frequencies	29-54 MHz, 108-174 MHz, 380-512 MHz, 806-960 MHz (excluding cellular)	29-54 MHz, 108-174 MHz, 216-225 MHz, 406-512 MHz, 806-960 MHz (excluding cellular), 1240-1300 MHz
SAME (Specific Area Message Encoding)	Weather alert with display	Weather alert, no display
CTCSS/DSC Decode	Yes	No
Cloning Interface (with optional cable)	Yes	No
Display	4-line, displays frequency, alphanumeric name	1-line (fixed indicators), displays frequency

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Product: PRO-94 Scanner **Cat. No.:** 200-0524

Question: Between the PRO-92 and PRO-94, which has the better scanning scheme?

Answer: In our testing, we placed a PRO-94 side by side with a PRO-92 and found each radio missed *a few* (and only a few) hops. The missed hops were about the same - neither radio got everything. The significant difference was that if the PRO-94 model holds on a specific ID and misses a hop, the hop is completely missed, where the PRO-92 typically picks it back up after a second of delay. The reason for this is that the PRO-94 scheme looks only at the data channel; if it misses the data, that transmission is completely lost. In contrast, the PRO-92 reads the subaudible data on each transmission. If it misses the hop, it continues to check active channels and easily finds the conversation again.

While the schemes are different, we did not find that either design was significantly better than the other.

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Product: PRO-94 Scanner **Cat. No.:** 200-0524

Question: How do I calculate Base Frequency? I am looking for the mathematical formula used to calculate the BASE frequency as required.

Answer: We do not have this information. If it is available to the public, you may be able to get what you want by searching the Motorola (or applicable) patents.

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Product: PRO-94 Scanner **Cat. No.:** 200-0524

Question: How do I get the Software & Cable for this scanner?

Answer: The Cable and Software are sold separately. While the cable is sold under 260-0117, the software is not presently available.

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Product: PRO-94 Scanner	**Cat. No.:** 200-0524

Question: How do I turn off Hypersearch? I can't get **HYPER** off of the display.

Answer: Hypersearch can only be turned on and off through a limit or direct search. To turn it off, you should do the following:

Through Limit Search:

1. Press **PROG**, then **LIMIT (SRC)**. **Lo** and **29.000 MHz** appear. 29.000 MHz is the low end of the scanner's range.
2. Enter the frequency that is the lower limit of the range you want to search (including the decimal point), then press **E (SVC)**.
3. Press **LIMIT (SRC)**. **Hi** and **1300.00 MHz** appear. 1300.000 MHz is the upper limit of the scanner's range.
4. Enter the frequency that is the upper limit of the range you want to search (including the decimal point), then press **E (SVC)** again.
5. Press **\/** to search from the upper to the lower limit or **/** to search from the lower to the upper limit.
6. While the scanner is searching or is on a transmission, press **H/S**.
7. **HYPER** should disappear from the display.

Through Direct Search:

1. Press **MAN**.
2. Enter the frequency you want to start from using the number keys. (Press **.** to enter a decimal point).

   NOTE: To start the search from a frequency already stored in one of your scanner's channels, press **MAN** or **PROG**. Then use the number keys to enter the channel number and then press **MAN** or **PROG** again. If you enter an invalid frequency, the scanner displays **Error**. Press **MON/CLR (.)**.
3. Press **\/** to search downward or **/** to search upward from the selected frequency. **-d-**, **SEARCH**, and either **\/** or **/** appear.
4. While the scanner is searching or is on a transmission, press **H/S**.
5. **HYPER** should disappear from the display.

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PRO-94 Tutorial: Programming Conventional Frequencies

This is an introduction to programming conventional (non-trunking) frequencies into your PRO-94 scanner. This tutorial will involve programming a frequency into either Bank "A" or "B", selecting which channel number to store a frequency in and storing the frequency. It will also show you how to set the delay to the "on" or "off" mode. For this tutorial, frequency 866.1625 will be stored in Bank A with delay off.

For additional information on this product, see the links below:

- 200-0524 PRO-94 User's Manual
- 200-0524A PRO-94 User's Manual
- Scanner Basics
- Scanner FAQ's

Step 1: Entering Manual Mode

BankA-1ch-000.000-MAN

Pro94-keypad-MAN

Press **MAN.** ***MAN*** will appear on the display.

Step 2: Selecting the Bank

Hold down **A/B (HOLD)** for about 2 seconds to select either main group "A" or "B".

Note: When you are first programming the scanner (or after you reinitialize), it defaults to main group **A**; pressing **A/B (HOLD)** will changes to main group **B**, as above. For our example, we will be working in main group **A**. If **B** is displayed, press **A/B (HOLD)** to go to main group **A**.

Step 3: Selecting the Channel

Use the number keys (**0**-**9**) to enter the channel number where you want to store a frequency.

Step 4: Entering Program Mode

Pro94-keypad-PROG

Press **PROG**. The channel number you chose and ***PGM*** appear on the display. ***L/O*** (lock-out) appears at the bottom of the screen when a channel is locked out or empty (***000.000***).

Step 5: Entering the Frequency

BankA-1ch-866.1625-PGM

Use the number keys **(0-9)** and **MON/CLR (.)** to enter the frequency (including the decimal point) you want to store. We have entered the frequency ***866.1625***.

Click Here for the Police Call Frequency Lists on CD

Step 6: Storing the Frequency

BankA-1ch-866.1625-PGM

Pro94-keypad-SVC(E)

Press **E (SVC)** to the store the frequency into the channel.

Step 7: Clearing a Mistake

If you entered an invalid frequency in Step 5, ***Error*** appears and the scanner beeps three times. Use the number keys (**0**-**9**) to enter a valid frequency.

Step 8: Storing the Delay Setting

Press **DELAY** to pause scanning 2 seconds after the end of a transmission before scanning proceeds to the next channel. The scanner stores the setting for each channel individually. When delay is set to "on", ***DLY*** will appear on display as above. The rest of the tutorial is in the delay "off" mode. You will need to press **DELAY** again to remove ***DLY***.

Step 9: Programming Additional Frequencies

Pro94-keypad-PROG

To program the next channel in sequence, press **PROG** and repeat from Step 3.

Step 10: Returning to Manual Mode

Press the last channel number that you programmed, then press **MAN** to exit the programming mode.

PRO-94 Tutorial: Service Bank Search

The Service Bank Search allows you to search for weather, ham, marine, aircraft, or police (fire/emergency) transmissions without knowing the specific frequencies used in your area. The scanner is programmed with all the frequencies allocated to these services. "A Guide to the Action Bands" under Scanner Basics has detailed information on the frequencies allocated to each service band.

For additional information on this product, see the links below:

- 20-524 PRO-94 User's Manual
- 20-524A PRO-94 User's Manual
- Scanner Basics
- Scanner FAQ's

Step 1: Searching Service Bank

Pro94-keypad-SVC(E)

Press **SVC (E).** ***SEARCH*** appears and the scanner starts searching the weather service bank.

Step 2: Searching More Service Banks

Pro94-keypad-SVC(E)

To select a different service bank, repeatedly press **SVC (E)**. A black block appears above the selected bank. In the example above, the Ham bank is selected.

Step 3: Holding a Search

When the scanner stops on a transmission, quickly press **HOLD (A/B)** to stop searching and to listen to the transmission. ***HOLD*** will appear on the display.

Step 4: Storing a Frequency

Press **MON/CLR (.)** to store the displayed frequency from the previous step into the current monitor memory.

Step 5: Searching for Additional Frequencies

Press **HOLD (A/B)** or **UP** or **DOWN** arrow keys for at least 1 second to continue searching. Or if you didn't press **MON/CLR (.)**, simply press the **UP** or **DOWN** arrow keys for at least one second to continue searching.

Step 6: Exiting the Service Bank

Pro94-keypad-MAN

Press **MAN** to exit the service bank.

PRO-94 Tutorial: Direct Search

This tutorial covers running a direct search on your PRO-94. A direct search lets you search up or down from the currently displayed frequency. ***-d-*** appears during searching until the scanner stops.

For additional information on this product, see the links below:

- 20-524 PRO-94 User's Manual
- 20-524A PRO-94 User's Manual
- Scanner Basics
- Scanner FAQ's

Step 1: Entering Direct Search Mode

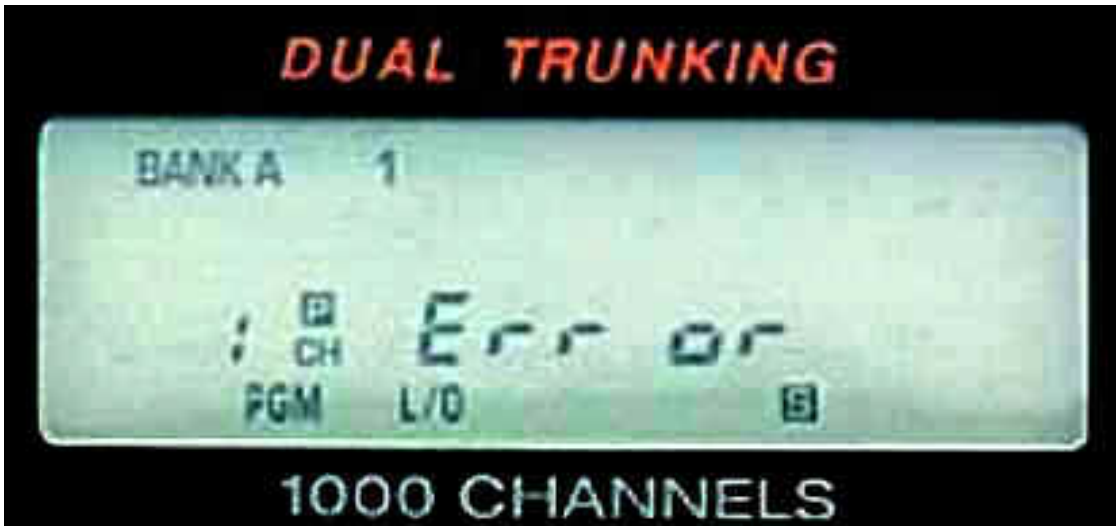
Press **MAN.** ***MAN*** appears in the display. You can either choose to enter a frequency to search from (Steps 2-4, next) or search from a specific channel (Steps 5-7).

Step 2: Searching from a Specific Frequency

Enter the frequency you want to start from using the number keys **(0-9)**. Press **MON/CLR (.)** to enter a decimal point.

Click Here for the Police Call Frequency Lists on CD

Step 3: If You Receive An Error Message...



If you enter an invalid frequency, the scanner displays ***Error.*** Press **MON/CLR (.)** and return to Step 2 to re-enter the frequency or enter a new frequency.

Step 4: Searching for Frequencies

Press the **DOWN** arrow to search down or the **UP** arrow to search up from the selected frequency. ***-d-***, ***SEARCH***, and an ***UP*** or ***DOWN*** arrow appear. Go to Step 8 for information on listening to and storing frequencies.

Step 5: Searching from a Stored Frequency

To start the search from a frequency already stored in one of your scanner's channels, press **MAN** or **PROG**.

Step 6: Entering the Channel Number

Use the number keys **(0-9)** to enter the channel number, then press **MAN** or **PROG** again.

Step 7: Searching for Frequencies

The frequency in that channel appears on the display. Press the **DOWN** arrow to search down or the **UP** arrow to search up from the selected frequency. ***-d-***, ***SEARCH***, and an ***UP*** or ***DOWN*** arrow appear.

Step 8: Stopping on a Frequency

When the scanner stops on a transmission you want to listen to, quickly press **HOLD**. ***HOLD*** appears on the display.

Step 9: Storing the Frequency in Monitor Memory

Press **MON/CLR (.)** to store the display frequency into the current monitor memory. The scanner remains in **HOLD** mode.

Step 10: Searching for Additional Frequencies

Press **HOLD (A/B)** or either the **UP** or **DOWN** arrow keys for at least 1 second to continue searching. If you didn't press **MON/CLR (.)**, simply press the **UP** or **DOWN** arrow keys to continue searching.

Step 11: Exiting Direct Search Mode

Pro94-keypad-MAN

Press **MAN** to exit search mode. ***MAN*** appears on the display.

PRO-94 Tutorial: Limit Search

A Limit Search lets you search with a specific range of frequencies. ***-L-*** appears during a limit search. This tutorial will show you how to set a low frequency and high frequency and then search between those frequencies. Our example shows a search between 822.7375 MHz and 867.8875 MHz.

For additional information on this product, see the links below:

- 200-0524 PRO-94 User's Manual
- 200-0524A PRO-94 User's Manual
- Scanner Basics
- Scanner FAQ's

Step 1: Entering Programming Mode

Pro94-keypad-PROG

Press **PROG.** ***PGM*** will appear on the display.

Step 2: Setting the Lower Limit

Pro94-keypad-SRC(LIMIT)

Press **LIMIT (SRC)**. ***Lo*** and ***29.000 MHz*** (or the previous low limit frequency) will appear on the display. 29.000 MHz is the low end of the scanner's range.

Step 3: Entering the Low Frequency

Using the number pad, enter the frequency that is the lower limit of the range you want to search (including the decimal point). Press **E (SVC**). In this example, the low frequency is 822.7375.

Step 4: Setting the Upper Limit

Hi-1300.000-PGM

Pro94-keypad-SRC(LIMIT)

Press **LIMIT (SRC)**. ***Hi*** and ***1300.000 MHz*** (or the previous high limit frequency) appear. 1300.000 MHz is the upper limit of the scanner's range.

Step 5: Entering the High Frequency

Hi-867.8875-PGM

Using the number pad, enter the frequency that is the upper limit of the range you want to search (including the decimal point). Press **E (SVC)** again. In this example, the high frequency is 867.8875.

Step 6: Selecting the Search Direction

L-867.8375-SEARCH

Press the **DOWN** arrow key to search from the upper to the lower limit, or the **UP** arrow key to search from the lower to the upper limit. ***-L-*** will appear on the display. In this example, we have pressed down to search from the upper limit to the lower limit.

Step 7: Stopping on a Transmission

When the scanner stops on a transmission, quickly press **HOLD (A/B)** to stop searching and listen to the transmission. ***HOLD*** will appear on the display. In the example above, we have stopped on frequency 867.6625 MHz.

Step 8: Storing in Monitor Memory

With the scanner in **HOLD** mode, press **MON/CLR (.)** to store the displayed frequency into the current monitor memory.

Step 9: Searching for Additional Frequencies

To continue searching, press **HOLD (A/B)** or the **UP** or **DOWN** arrow key for at least 1 second. If you didn't press **MON/CLR (.)**, simply press the **UP** or **DOWN** arrow key.

Step 10: Exiting Limit Search Mode

Pro94-keypad-MAN

Press **MAN**. This will return you to manual mode.

PRO-94 Tutorial: Moving a Frequency From a Monitor Memory to a Channel

This tutorial shows how to move the frequencies you have stored in monitor memory to a channel. In this example, we are moving frequency 864.925 from monitor memory 3 to channel 6.

For additional information on this product, see the links below:

- 20-524 PRO-94 User's Manual
- 20-524A PRO-94 User's Manual
- Scanner Basics
- Scanner FAQ's

Step 1: Selecting Manual Mode

Pro94-keypad-MAN

Press **MAN**. ***MAN*** appears in the display.

Step 2: Entering the Channel Number

BankA-1ch-6-MAN

Enter the number (0-9) of the desired target channel where you want move to the frequency that is stored in the monitor memory. For our example, you will press 6.

Step 3: Entering Program Mode

Pro94-keypad-PROG

Press **PROG.** ***PGM*** appears on the display, along with the channel number and the frequency stored in that channel.

Step 4: Entering the Monitor Memory Number

Press **MON/CLR (.)** then enter the number **(0-9)** of the monitor memory containing the frequency that you want to save to the channel. The frequency changes to the new frequency. For our example, you will press **3**.

Step 5: Storing the Frequency

Pro94-keypad-SVC(E)

Press **E (SVC)**. The frequency transfers from the monitor memory into the selected channel.

Step 6: Moving Additional Frequencies

Repeat from Step 2 to store additional monitor memory frequencies into channels, as necessary.

Step 6: Returning to Manual Mode

Pro94-22b.jpg (10683 bytes)

Pro94-keypad-MAN

Press **MAN** to return to manual mode. ***PGM*** on the display changes to ***MAN***.

PRO-94 (20-524) Tutorial: Programming Trunked Frequencies

This tutorial covers programming trunked frequencies into the PRO-94 Scanner (Cat. No. 20-524). For the tutorial on the PRO-94 Scanner (Cat. No. 20-524**A**), click here.

The PRO-94 scanner will allow you to use the following trunk systems: Motorola Type I, Motorola Type II, and EDACS. For this tutorial, Bank A, system E1, and frequency 866.1625 are used.

For additional information on this product, see the links below:

- 20-524 PRO-94 User's Manual
- Scanner Basics
- Scanner FAQ's

Step 1: Initiating Programming Mode

Pro94-keypad-PROG

Press **PROG**. ***PGM*** will appear on the display.

Step 2: Entering Trunk Mode

Press **TRUNK**. ***TRUNK*** will appear on the display and one or more bank numbers ***(0-10)*** flash.

Step 3: Selecting a Bank

Pro94-keypad-UP-DOWN-numberpad

Press the number key **(1-10)** of the desired target storage bank. Select one of the following trunk system types by repeatedly pressing the **UP** or **DOWN** arrow keys. An E (EDACS) or M (Motorola) will also appear on the display depending on the trunk system selected.

You See	Trunk System
E1	Motorola Type I, 800 MHz frequencies
Ed	EDACS frequencies
E2-800	Motorola Type II, 800 MHz frequencies
E2-900	Motorola Type II, 900 MHz frequencies
E2-Hi	Motorola Type II, VHF frequencies
E2-UHF	Motorola Type II, UHF frequencies

Step 4: Storing the System Type

Pro94-keypad-SVC(E)

Press **E (SVC)**. The scanner automatically selects the first channel in the selected bank.

Step 5: Selecting a Frequency within the Trunk System

Use the number keys **(0-9)** to enter a valid frequency within the trunk system.

Click Here for the Police Call Frequency Lists on CD

Step 6: Storing the Frequency within the Trunk System

Pro94-keypad-SVC(E)

Press **E (SVC)**. ***Bank A*** and the bank number (***1***), the channel number, and ***E*** (EDACS) or ***M*** (Motorola) appears depending upon the trunk system selected.

Notes:

- If you enter an invalid frequency (outside the selected range), the scanner beeps, the channel number flashes and ***ERROR*** appears. If this happens, press **MON/CLR (.)** to clear the frequency, then repeat the entry.
- For EDACS systems, you must enter the frequencies in logical channel number (LCN) order.
- If you try to enter a duplicate frequency in a bank, the scanner beeps and the channel which was previously stored appears.
- It is very important that you enter all the listed frequencies for the selected agency in Step 3. Otherwise, trunking will not occur when you press **E (SRC)**.

Step 7: Storing Additional Frequencies

BankA-TRUNK-M-2ch-000.000-PGM

Press **PROG** or the **UP** arrow key to select the next channel in the bank. Repeat from Step 5 until you enter all the desired frequencies in that bank.

Step 8: Activating Trunk Scan and Search

Pro94-keypad-SRC(LIMIT)

Press **SRC** to begin searching for the trunk's data channel (the channel that controls the trunk). ***SEARCH*** flashes in the lower right corner as the scanner searches for the data channel.

Note: As the scanner looks through the frequencies, you will see them on the display. You must have a data channel stored in your trunk channels or the scanner will not trunk. After it finds the data frequency, it will trunk between talk groups.

PRO-94 Tutorial: Using Search Skip Memory

You can skip up to 50 specified frequencies during a limit or direct search and up to 20 specified frequencies during a service bank search. This lets you avoid unwanted frequencies or those already stored in a channel. For information on getting into and using these search modes, see the Limit Search Tutorial, the Direct Search Tutorial, or the Service Bank Search Tutorial. This tutorial starts with the scanner in the Marine (MRN) service bank search mode.

Note: You cannot skip frequencies during WX service search.

For additional information on this product, see the links below:

- 20-524 PRO-94 User's Manual
- 20-524A PRO-94 User's Manual
- Scanner Basics
- Scanner FAQ's

Step 1: Skipping a Frequency

To skip a frequency, press **S/S (L-OUT)** when the scanner stops on the frequency during a limit, direct, or service search. The scanner stores the frequency in memory and automatically resumes the search.

See the next step to review the skipped frequencies.
See Steps 3 through 5 to remove a single frequency from skip memory.
See Step 6 to clear all frequencies from skip memory.

Notes:

- If you select all frequencies to be skipped within the search range, the scanner beeps 3 times and does not search.
- If you select more than 50 frequencies to skip, each new frequency replaces a previously stored frequency, beginning with the first stored frequency.

Step 2: Reviewing the Skipped Frequencies

wx-ham-mrn-air-pol-157.400-l/o-HOLD-SEARCH

To review the skipped frequencies, press **HOLD** to stop the search, and then press and release **UP** or **DOWN** to step through the frequencies while ***HOLD*** appears. ***L/O*** appears when you select a skipped frequency, indicating that the frequency is locked out.

Step 3: Removing a Frequency from Skip

To clear a single frequency from skip memory so that the scanner will stop on it during a limit, direct, or service bank search, press **HOLD (A/B)** to stop the search.

Step 4: Selecting the Frequency To Remove from Skip

Press and release **UP** or **DOWN** to select the frequency. ***L/O*** appears in the display to indicate that the frequency is locked out.

Step 5: Turning Skip Off for the Frequency

Press **S/S (L-OUT)**. ***L/O*** disappears from the display screen.

Step 6: Clearing All Skipped Frequencies

To clear all of the skip frequencies at once while searching, press **HOLD (A/B)**, then hold down **S/S (L-OUT)** until the scanner beeps twice.

PRO-94 Tutorial: Storing Talk Group IDs in Talk Group Lists

This tutorial shows you how to store a talk group ID in a talk group list. For our example, we will use the Motorola Type I as the trunk system in Bank A.

For additional information on this product, see the links below:

- 20-524 PRO-94 User's Manual
- 20-524A PRO-94 User's Manual
- Scanner Basics
- Scanner FAQ's

Step 1: Selecting Trunk Mode

Pro94-man-keypad

After the scanner begins trunk scanning, press **MAN**. ***MAN*** will appear on the display. A number showing the current talk group ID list appears at the top of the display, and bars appear that show activity in other banks.

Step 2: Selecting the Talk Group ID List Location

Pro94-list-trunk-m-2-man

Press **MAN** again, then repeatedly press **UP** or **DOWN** arrows to select the talk group ID list location (shown at the top of the display) where you want to store an ID.

Step 3: Entering Programming Mode

Pro94-prog-keypad

Press **PROG**. ***PGM*** will appear on the display.

Step 4: Entering ID

Pro94-list-trunk-m-2-pgm-000-12

Enter the type of ID number you want to store.

Notes:

- To enter a Type I ID, use the number keys to enter the block number and the fleet number, then press **(.)**. Enter the subfleet number.
- To enter a EDACS ID, use the number keys to enter the agency number, then press **(.)**. Next enter the fleet number and the subfleet number.
- To clear a mistake while entering an ID, press **0** then **E (SVC)**, then start over at Step 1.

Step 5: Storing ID Number

Pro94-list-trunk-m-2-pgm-000-12

Pro94-svce-keypad

Press **E (SVC)**. This will store that ID number you entered in that talk group list.

Step 6: Programming More Talk Group IDs

Repeatedly press **PROG** or **UP** arrow to select the next scan list location you want to program. Then repeat Step 4 to enter another ID.

Step 7: Finishing Manual Storing

Pro94-svce-keypad

When you finish, press **E (SVC)** to store the entries.

Step 8: Exiting Manual Storing

To exit manual storing, press **TRUNK**. This will automatically default to where you left manual scan before trunking.

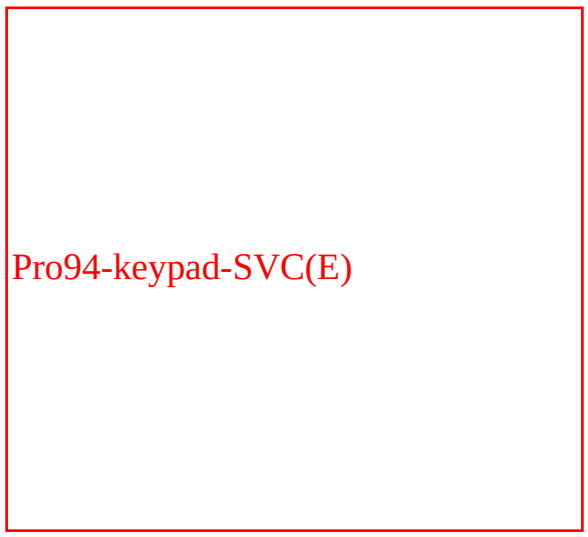
PRO-94 Tutorial: Setting and Testing the WX (Weather) Alert

This tutorial shows you how to turn on and test the SAME (Specific Area Message Encoding) alert feature. The scanner displays this data as codes corresponding to the levels of severity (L1, L2, and L3).

For additional information on this product, see the links below:

- 20-524 PRO-94 User's Manual
- 20-524A PRO-94 User's Manual
- Scanner Basics
- Scanner FAQ's

Step 1: Selecting the Weather Search Mode



Press **SVC (E)** and select the weather search mode. A small black square will be displayed over ***WX*** if weather has been properly selected. The scanner will automatically search the weather frequencies until it finds a station. If the black square is not positioned over WX, repeatedly press ***SVC (E)*** until it is.

Step 2: Initiating Alert Mode

Press **ALT (DATA)**. ***ALERT*** appears on the display. The audio is muted until the scanner receives a SAME-coded signal.

Step 3: Receiving an Alert Signal

When the scanner receives a SAME-coded signal, ***ALERT*** flashes and an associated "***L***" code appears. Press any key to turn off the alarm. The scanner displays one of the following codes to indicate the alert level:

- ***L1***: Warning
- ***L2***: Watch
- ***L3***: Statement
- **----**: Non-emergency

Step 4: Turning Off Alert Mode

Press **ALT (DATA)** to exit Alert mode.

Step 5: Testing the NWR-SAME Alert Tone

Pro94-keypad-SVC(E)

To hear and test the tones for the three alert levels, press **SVC (E)** to select the weather service.

Step 6: Initiating the Test Sequence

Hold down **ALT (DATA)** for about 1 second. The tones sound in order ***L3***, ***L2***, then ***L1***, and ***TEST*** flashes. Each alert code appears as its tone sounds.

Step 7: Turning Off the Test Sequence

Press any key to end the test sequence.

Step 8: Returning to Manual Mode

Pro94-keypad-MAN

Press **MAN** to return to manual mode.

PRO-94 (20-524A) Tutorial: Programming Trunked Frequencies

This tutorial covers programming trunk frequencies into the PRO-94 Scanner (Cat. No. 20-524A). For the tutorial on the PRO-94 Scanner (Cat. No. 20-524), click here.

The PRO-94 scanner will allow you to use the following trunk systems: Motorola Type I, Motorola Type II, and EDACS. For this tutorial, Bank A, system E1, and frequency 866.1625 are used.

For additional information on this product, see the links below:

- 20-524A PRO-94 User's Manual
- Scanner Basics
- Scanner FAQ's

Step 1: Initiating Programming Mode

Pro94-keypad-PROG

Press **PROG**. ***PGM*** will appear on the display.

Step 2: Entering Trunk Mode

Press **TRUNK**. ***TRUNK*** will appear on the display and one or more bank numbers ***(0-10)*** flash.

Step 3: Selecting a Bank

Pro94-keypad-UP-DOWN-numberpad

Press the number key **(1-10)** of the desired target storage bank. Select one of the following trunk system types by repeatedly pressing the **UP** or **DOWN** arrow keys. E (EDACS) or M (Motorola) appear on the display depending on which trunk system you have selected.

You See	Trunk System
E1	Motorola Type I, 800 MHz frequencies
Ed	EDACS frequencies
E2-800	Motorola Type II, 800 MHz frequencies
E2-900	Motorola Type II, 900 MHz frequencies
E2-Hi	Motorola Type II, VHF frequencies
E2-UHF	Motorola Type II, UHF frequencies

Step 4: Storing the Bank

Pro94-keypad-SVC(E)

Press **E (SVC)**. The scanner automatically selects the first channel in the selected banks.

Step 5: Selecting a Frequency within the Trunk System

Use the number keys **(0-9)** to enter a valid frequency within the trunk system.

Click Here for the Police Call Frequency Lists on CD

Step 6: Storing the Frequency within the Trunk System

Pro94-keypad-SVC(E)

Press **E (SVC)**. ***Bank A*** and the bank number (***1***), the channel number, and ***E*** (EDACS) or ***M*** (Motorola) appears depending upon the trunk system selected.

Notes:

- If you enter an invalid frequency (outside the selected range), the scanner beeps, the channel number flashes and ***ERROR*** appears. If this happens, press **MON/CLR (.)** to clear the frequency, then repeat the entry.
- For EDACS systems, you must enter the frequencies in logical channel number (LCN) order.
- If you try to enter a duplicate frequency in a bank, the scanner beeps and the channel which was previously stored appears.
- It is very important that you enter all the listed frequencies for the selected agency in Step 3. Otherwise, trunking will not occur when you press **E (SRC)**.

Step 7: Storing Additional Frequencies

BankA-TRUNK-M-2ch-000.000-PGM

Press **PROG** or the **UP** arrow key to select the next channel in the bank. Repeat from Step 5 until you enter all the desired frequencies in that bank.

Step 8: Activating Trunk Scan and Search

Press **SCAN**, then **SRC** to begin searching for the trunk's data channel and scan conventional frequencies at the same time.

Note: As the scanner looks through the frequencies, you will see them on the display. When the scanner finds the controlling data channel, the scanner begins trunking.
