

## 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 hear only noise on that frequency.

### 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

## 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 might 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.

## A GUIDE TO THE ACTION BANDS

With a little investigation, you can find the active frequencies in your community. We can give you some general pointers on finding these frequencies 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 services. A volunteer police department or fire department employee can also be a good source for this information.

As a general rule on VHF, most activity concentrates between 153.785 and 155.98 MHz and between 153.73 and 159.46 MHz. Here you find local government, police, fire, and most other emergency services. If you are near major railroad tracks, listen between 160.0 and 161.9 for signals.

In some larger cities, there has been a move to the UHF bands for emergency services. Here, most of the activity is between 453.025 and 453.95 MHz and between 456.025 and 459.95 MHz.

In the UHF band, mobile units operate between 456.025 and 459.95 MHz and between 465.025 and 469.975 MHz. A repeater picks up the mobile units' transmissions on one frequency, then rebroadcasts (or repeats) the transmission 5 MHz lower, but at a higher power level, than the mobile units (that is, 451.025 - 454.95 MHz and 460.025 - 464.975 MHz.) This means that if you find an active frequency inside one of the mobile unit's frequency spreads, you can look 5 MHz lower to find the repeater frequency.

A system called trunked radio lets several services use the same set of frequencies in the 800 MHz band without interference. Several frequencies are allocated to two or more services (like fire, police, and water departments). As each service transmits, a separate control signal activates other radios in the same service, so that only that service hears the transmission. The frequency is selected as soon as the unit begins to transmit, and could be any one of the allocated frequencies.

One very useful service is the National Weather Service's continuous weather broadcasts. These broadcasts contain weather forecasts and data for the area around the station, plus bulletins on any threatening weather conditions. These stations use three frequencies: 162.40, 162.475, or 162.55 MHz. In most areas of the country, you can receive on of these frequencies.

#### TYPICAL BAND USAGE

The following is a brief listing of the services typical of the bands received by your scanner. This listing can help you decide which ranges you would like to scan.

#### Abbreviations

Affiliate Radio System.....MARS  
Amateur.....Ham  
Automobile Emergency.....Auto Emer.  
Broadcast Remote.....BC. R.  
Bureau of Reclamation.....Bur. Recl.  
Civil Air Patrol.....CAP  
Department of Agriculture  
and Forestry.....Agr. and For.  
Fire Department.....F.D.  
Forest Products.....For. Prod.  
Forestry Conservation.....Fors. Cons.  
Government.....Govt.  
Highway Maintenance.....Hwy.  
Land Transportation.....Land Tr.  
Local Government.....L. Govt.

Manufacturers.....Mfg.  
 Military.....MIL  
 Mobile Telephone.....Mob. Tel.  
 Motion Picture.....Mot. P.  
 Motor Carrier.....Buses. Trucks  
 National Parks.....Nat. Park  
 Petroleum.....Pet.  
 Police.....P.D.  
 Power Utilities.....Power  
 Radio Paging.....Page  
 Railroad.....R.R.  
 Relay Press.....Press  
 State Police.....St. P.D.  
 Special Emergency.....Sp. Emer  
 Special Industry.....Sp. Ind.  
 Taxicab Radio.....Taxi  
 Telephone Maintenance.....Tel. Maint.  
 U.S. Costal and  
 Geodetic Survey.....U.S.C.G.S.  
 U.S. Navy.....USN  
 U.S. Weather Bureau.....U.S.W.B.

29-53 MHz

29.00 - 29.70.....10HAM  
 29.70 - 29.80.....For. Prod.  
 29.80 - 30.00.....Aero.  
 30.01 - 30.56.....Govt.  
 30.56 - 30.62.....Sp. Ind.  
 30.66 - 31.24...Ind. (Pet., For. Cons.,  
                   Bus., For. Prod.)  
 31.26 - 31.98.....Sp. Ind., For. Cons.  
  
 32.00 - 33.00.....Govt.  
 33.02 - 33.16....Hwy., Sp. Emer., Bus.  
 33.18 - 33.38.....Pet.  
 33.42 - 33.98.....F.D.  
 34.00 - 35.00.....Govt.  
 35.02 - 35.18.....Bus.  
 35.22 - 35.66.....Mob. Tel. & Page  
 35.70 - 35.72.....Bus.  
 35.74 - 35.98.....Sp. Ind. & Bus.  
 36.00 - 37.00.....Govt.  
 37.02 - 37.44.....P.D., L.Govt.  
 37.46 - 37.86.....Power  
 37.90 - 37.98.....Hwy. & Sp. Emer.  
 38.00 - 39.00.....Govt.  
 39.02 - 39.98.....P.D., L. Govt.  
 40.00 - 42.00.....Govt.  
 42.02 - 42.94.....St. P.D.  
 42.96 - 43.18.....Sp. Ind. & Bus.  
 43.22 - 43.68.....Mob. Tel. Page  
 43.70 - 44.60.....Trucks. Bus.  
 44.62 - 45.06.....St. P.D., For. Cons.  
 45.08 - 45.66.....P.D.  
 45.68 - 46.04.....P.D. Hwy., Sp. Emer.  
 46.06 - 46.50.....F.D.

46.52 - 46.58.....L. Govt.  
46.60 - 47.00.....Govt.  
47.02 - 47.40.....St. Hwy.  
47.42.....Red Cross  
47.44 - 47.68.....Sp. Ind. Sp. Emer.  
47.70 - 48.54.....Power  
48.56 - 49.58.....For. Prod., Pet.  
49.60 - 50.00.....Govt.  
50.00 - 54.00....6 Meter Amateur (Ham)  
Band

108 - 136.975 MHz BAND

108.000 - 118.000.....Air Navigation  
118.000 - 136.975.....Aircraft

137 - 174 MHz BAND

137.000 - 144.000 .....Govt.  
144.000 - 148.000 .....HAM  
148.010.....MARS  
148.155 - 148.250.....MIL  
148.290 - 150.750.....USN  
150.815 - 150.995.....Bus.  
151.010 - 151.130.....HWY  
151.145 - 151.475.....For. Cons.  
151.505 - 151.595.....Sp. Ind.  
151.625 - 151.955.....Bus.  
151.985 - 152.240.....Mob. Tel. (RCC)  
152.270 - 152.450.....Taxi  
152.480 - 152.840.....Mob. Tel. Page  
152.870 - 153.020.....Sp. Ind. Mot. P.  
153.050 - 153.440.....Pet., For. Prod.  
153.470 - 153.710.....Power  
153.740 - 154.115.....L. Govt.  
154.450 - 154.600.Sp. Ind., Pet., Bus.  
154.655 - 155.145...P.D., L. Govt., St.  
P.D.  
155.160 - 155.400.....Sp. Emer. P.D.  
155.415 - 156.030.....P.D., L. Govt.  
156.045 - 156.240.....Hwy., P.D.  
156.275 - 157.425.....Marine  
157.456 - 157.500.....Auto Emer.  
157.530 - 157.710.....Taxi  
157.740 - 158.100.....Mob. Tel., Page  
158.130 - 158.460.Power, For. Prod., Pet.  
158.490 - 158.700.....Mob. Tel. (RCC)  
158.730 - 158.970.....P.D., L. Govt.  
158.985 - 159.210.....P.D. Hwy.  
159.225 - 159.465.....For. Cons.  
159.510 - 160.200.....Trucks  
160.215 - 161.565.....R.R.  
161.600 - 162.000.....Marine  
162.026 - 162.175.....Bur. Recl.  
162.400.....U.S.W.B.  
162.550.....U.S.W.B.  
163.125.....Indian Affairs

163.175.....Bur. Recl.  
 163.275.....U.S.W.B.  
 163.388 - 163.538.....MIL  
 163.825 - 163.975.....Govt.  
 164.025 - 164.075.....U.S.C.G.S.  
 164.175 - 165.188..Bur. Recl. Nat. Pk.  
                   Govt., Agr. & For.  
 169.300.....F.A.A.  
 169.450 - 169.725.....Ind., Data  
 170.150.....F.D., BC. R.  
 170.200 - 170.220.....U.S.C.G.S.  
 170.225 - 170.325.....Ind., Land Tr.  
 170.425 - 170.575.....For. Cons.  
 170.975 - 171.250.Govt. Ind., Land Tr.  
 171.388 - 172.725.....Bur. Recl., For.  
                   Cons., Ind., Dept.  
                   Ag. & For., Govt.  
 172.775.....Nat. Park  
 173.025.....U.S.W.B.  
 173.075.....U.S.C.G.S.  
 173.204.....Mot. P., Pet., Bur. Recl.,  
                   Press Relay

406 - 512 MHz BAND

406.000 - 420.000.....Govt.  
 420.000 - 450.000.....HAM  
 450.050 - 450.950.....Remote Br.  
 451.000 - 451.150.....Util.  
 451.175 - 451.750....For. Prod., Pet.,  
                   Power, Tel. Maint.  
 451.775 - 451.975.....Sp. Ind.  
 452.000 - 452.500..Taxi, Mot. Carrier,  
                   R.R.  
 452.525 - 452.600.....Auto Club  
 452.625 - 452.975....Motor Carr., R.R.  
 453.000 - 453.975..L. Govt, P.D., F.D.  
 454.000 - 454.975.....Mob. Tel.  
 455.000 - 455.975.....Remote Br.  
 456.000 - 458.975....P.D., F.D., Ind.,  
                   Lan. Tr.  
 459.000 - 459.975.....Domestic Public  
 460.000 - 460.625.....P.D., F.D.  
 460.650 - 462.175.....Bus.  
 462.200 - 462.450.....Taxi  
 462.750 - 462.975.....Bus.  
 463.000 - 463.175.....Medical  
 463.200 - 464.975.....Bus.  
 465.000 - 467.500....P.D., F.D., Ind.,  
                   Land Tr.  
 467.750 - 467.925.....Bus.  
 467.7375 - 469.975...Pub. Safety Ind.,  
                   Land Tr.

TV Bands for Special Communications

470 - 476 T.V. Channel 14

476 - 482 T.V. Channel 15  
482 - 488 T.V. Channel 16  
488 - 494 T.V. Channel 17  
494 - 500 T.V. Channel 18  
500 - 506 T.V. Channel 19  
506 - 512 T.V. Channel 20

6 MHz Segment is allocated for  
Channel 14

470.0125 - 470.2875...Domestic Public,  
(Base, Mob.)  
470.3125 - 471.1375.....Public Safety  
471.1625 - 471.2875.....Reserve Pool A  
471.3125 - 471.4125..Pwr., Tel. Maint.  
471.4375 - 471.6375.....Sp. Ind.  
471.6625 - 471.7875.....Reserve Pool B  
471.8125 - 472.3375.....Bus.  
472.3625 - 472.4375.....Taxi  
472.4675 - 472.7875.....R.R., Motor  
Carrier, Auto Emer.  
472.8125 - 472.9875..Pet., For. Prod.,  
Mfg.  
473.0125 - 473.2875....Domestic Public  
473.3125 - 474.1375.....Public Safety  
474.1625 - 474.2875.....Reserve Pool A  
474.3125 - 474.4125..Pwr., Tel. Maint.  
474.4375 - 474.6375..Spec.Ind.(Mobile)  
474.6625 - 474.7875.....Reserve Pool B  
474.8125 - 475.3375.....Bus.  
475.3625 - 475.4375.....Taxi  
475.4625 - 475.7875.....R.R., Motor  
Carrier, Auto Emer.  
475.8125 - 475.9876...Pet., For. Prod.  
Mfg.

These frequencies are subject to change and might vary some from area to area. For a more complete listing, refer to Radio Shack "Police Call Radio guide Including Fire and Emergency Services" available at your local Radio Shack.

You might discover one of your regular stations on a frequency that is not listed. this could be what is known as an image. For example, if you suddenly find you hear the same broadcats on 453.2750 as you hear on 474.9750, do a little math to see if it is an image. Take this unit's intermediate frequency of 10.7 MHz and double it. Then, subtract it from the new frequency. If the answer is the regular frequency, you have tuned to an image. Occasionally, you might get interference on a weak or distant channel from a strong broadcast 21.7 MHz (10.85 MHz x 2) below the tuned frequency. This is rare and the image signal is usually cleared whenever a broadcast on the actual frequency is in progress.

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Fire Department.....	F.D.
Forest Products.....	For. Prod.
Forestry Conservation.....	Fors. Cons.
Government.....	Govt.
Highway Maintenance.....	Hwy.
Land Transportation.....	Land Tr.

Local Government.....L. Govt.  
 Manufacturers.....Mfg.  
 Military.....MIL  
 Mobile Telephone.....Mob. Tel.  
 Motion Picture.....Mot. P.  
 Motor Carrier.....Buses. Trucks  
 National Parks.....Nat. Park  
 Petroleum.....Pet.  
 Police.....P.D.  
 Power Utilities.....Power  
 Radio Paging.....Page  
 Railroad.....R.R.  
 Relay Press.....Press  
 State Police.....St. P.D.  
 Special Emergency.....Sp. Emer  
 Special Industry.....Sp. Ind.  
 Taxicab Radio.....Taxi  
 Telephone Maintenance.....Tel. Maint.  
 U.S. Costal and  
 Geodetic Survey.....U.S.C.G.S.  
 U.S. Navy.....USN  
 U.S. Weather Bureau.....U.S.W.B.

29-53 MHz

29.00 - 29.70.....10HAM  
 29.70 - 29.80.....For. Prod.  
 29.80 - 30.00.....Aero.  
 30.01 - 30.56.....Govt.  
 30.56 - 30.62.....Sp. Ind.  
 30.66 - 31.24...Ind. (Pet., For. Cons.,  
                   Bus., For. Prod.)  
 31.26 - 31.98.....Sp. Ind., For. Cons.  
  
 32.00 - 33.00.....Govt.  
 33.02 - 33.16....Hwy., Sp. Emer., Bus.  
 33.18 - 33.38.....Pet.  
 33.42 - 33.98.....F.D.  
 34.00 - 35.00.....Govt.  
 35.02 - 35.18.....Bus.  
 35.22 - 35.66.....Mob. Tel. & Page  
 35.70 - 35.72.....Bus.  
 35.74 - 35.98.....Sp. Ind. & Bus.  
 36.00 - 37.00.....Govt.  
 37.02 - 37.44.....P.D., L. Govt.  
 37.46 - 37.86.....Power  
 37.90 - 37.98.....Hwy. & Sp. Emer.  
 38.00 - 39.00.....Govt.  
 39.02 - 39.98.....P.D., L. Govt.  
 40.00 - 42.00.....Govt.  
 42.02 - 42.94.....St. P.D.  
 42.96 - 43.18.....Sp. Ind. & Bus.  
 43.22 - 43.68.....Mob. Tel. Page  
 43.70 - 44.60.....Trucks. Bus.  
 44.62 - 45.06.....St. P.D., For. Cons.  
 45.08 - 45.66.....P.D.  
 45.68 - 46.04.....P.D. Hwy., Sp. Emer.

46.06 - 46.50.....F.D.  
46.52 - 46.58.....L. Govt.  
46.60 - 47.00.....Govt.  
47.02 - 47.40.....St. Hwy.  
47.42.....Red Cross  
47.44 - 47.68.....Sp. Ind. Sp. Emer.  
47.70 - 48.54.....Power  
48.56 - 49.58.....For. Prod., Pet.  
49.60 - 50.00.....Govt.  
50.00 - 54.00.....6 Meter Amateur (Ham)  
Band

108 - 136.975 MHz BAND

108.000 - 118.000.....Air Navigation  
118.000 - 136.975.....Aircraft

137 - 174 MHz BAND

137.000 - 144.000 .....Govt.  
144.000 - 148.000 .....HAM  
148.010.....MARS  
148.155 - 148.250.....MIL  
148.290 - 150.750.....USN  
150.815 - 150.995.....Bus.  
151.010 - 151.130.....HWY  
151.145 - 151.475.....For. Cons.  
151.505 - 151.595.....Sp. Ind.  
151.625 - 151.955.....Bus.  
151.985 - 152.240.....Mob. Tel. (RCC)  
152.270 - 152.450.....Taxi  
152.480 - 152.840.....Mob. Tel. Page  
152.870 - 153.020.....Sp. Ind. Mot. P.  
153.050 - 153.440.....Pet., For. Prod.  
153.470 - 153.710.....Power  
153.740 - 154.115.....L. Govt.  
154.450 - 154.600.....Sp. Ind., Pet., Bus.  
154.655 - 155.145...P.D., L. Govt., St.  
P.D.  
155.160 - 155.400.....Sp. Emer. P.D.  
155.415 - 156.030.....P.D., L. Govt.  
156.045 - 156.240.....Hwy., P.D.  
156.275 - 157.425.....Marine  
157.456 - 157.500.....Auto Emer.  
157.530 - 157.710.....Taxi  
157.740 - 158.100.....Mob. Tel., Page  
158.130 - 158.460.....Power, For. Prod., Pet.  
158.490 - 158.700.....Mob. Tel. (RCC)  
158.730 - 158.970.....P.D., L. Govt.  
158.985 - 159.210.....P.D. Hwy.  
159.225 - 159.465.....For. Cons.  
159.510 - 160.200.....Trucks  
160.215 - 161.565.....R.R.  
161.600 - 162.000.....Marine  
162.026 - 162.175.....Bur. Recl.  
162.400.....U.S.W.B.  
162.550.....U.S.W.B.

163.125.....Indian Affairs  
 163.175.....Bur. Recl.  
 163.275.....U.S.W.B.  
 163.388 - 163.538.....MIL  
 163.825 - 163.975.....Govt.  
 164.025 - 164.075.....U.S.C.G.S.  
 164.175 - 165.188..Bur. Recl. Nat. Pk.  
                   Govt., Agr. & For.  
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 169.450 - 169.725.....Ind., Data  
 170.150.....F.D., BC. R.  
 170.200 - 170.220.....U.S.C.G.S.  
 170.225 - 170.325.....Ind., Land Tr.  
 170.425 - 170.575.....For. Cons.  
 170.975 - 171.250.Govt. Ind., Land Tr.  
 171.388 - 172.725.....Bur. Recl., For.  
                   Cons., Ind., Dept.  
                   Ag. & For., Govt.  
 172.775.....Nat. Park  
 173.025.....U.S.W.B.  
 173.075.....U.S.C.G.S.  
 173.204.....Mot. P., Pet., Bur. Recl.,  
                   Press Relay

406 - 512 MHz BAND

406.000 - 420.000.....Govt.  
 420.000 - 450.000.....HAM  
 450.050 - 450.950.....Remote Br.  
 451.000 - 451.150.....Util.  
 451.175 - 451.750....For. Prod., Pet.,  
                   Power, Tel. Maint.  
 451.775 - 451.975.....Sp. Ind.  
 452.000 - 452.500..Taxi, Mot. Carrier,  
                   R.R.  
 452.525 - 452.600.....Auto Club  
 452.625 - 452.975....Motor Carr., R.R.  
 453.000 - 453.975..L. Govt, P.D., F.D.  
 454.000 - 454.975.....Mob. Tel.  
 455.000 - 455.975.....Remote Br.  
 456.000 - 458.975....P.D., F.D., Ind.,  
                   Lan. Tr.  
 459.000 - 459.975.....Domestic Public  
 460.000 - 460.625.....P.D., F.D.  
 460.650 - 462.175.....Bus.  
 462.200 - 462.450.....Taxi  
 462.750 - 462.975.....Bus.  
 463.000 - 463.175.....Medical  
 463.200 - 464.975.....Bus.  
 465.000 - 467.500....P.D., F.D., Ind.,  
                   Land Tr.  
 467.750 - 467.925.....Bus.  
 467.7375 - 469.975...Pub. Safety Ind.,  
                   Land Tr.

TV Bands for Special Communications

470 - 476 T.V. Channel 14  
476 - 482 T.V. Channel 15  
482 - 488 T.V. Channel 16  
488 - 494 T.V. Channel 17  
494 - 500 T.V. Channel 18  
500 - 506 T.V. Channel 19  
506 - 512 T.V. Channel 20

6 MHz Segment is allocated for  
Channel 14

470.0125 - 470.2875...Domestic Public,  
(Base, Mob.)  
470.3125 - 471.1375.....Public Safety  
471.1625 - 471.2875.....Reserve Pool A  
471.3125 - 471.4125..Pwr., Tel. Maint.  
471.4375 - 471.6375.....Sp. Ind.  
471.6625 - 471.7875.....Reserve Pool B  
471.8125 - 472.3375.....Bus.  
472.3625 - 472.4375.....Taxi  
472.4675 - 472.7875.....R.R., Motor  
Carrier, Auto Emer.  
472.8125 - 472.9875..Pet., For. Prod.,  
Mfg.  
473.0125 - 473.2875....Domestic Public  
473.3125 - 474.1375.....Public Safety  
474.1625 - 474.2875.....Reserve Pool A  
474.3125 - 474.4125..Pwr., Tel. Maint.  
474.4375 - 474.6375..Spec.Ind.(Mobile)  
474.6625 - 474.7875.....Reserve Pool B  
474.8125 - 475.3375.....Bus.  
475.3625 - 475.4375.....Taxi  
475.4625 - 475.7875.....R.R., Motor  
Carrier, Auto Emer.  
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whenever a broadcast on the actual frequency is in progress.

PRO-46 (200-0305)  
8556

Features

Faxback Doc. #

Your new Realistic PRO-46 100-Channel Direct Entry Programmable Scanner lets you in on all the action! This scanner gives you direct access to over 30,000 exciting frequencies that include the police department, fire department, ambulance, amateur radio, and transportation services. You can select up to 100 channels for your scanner to scan and you can change your selection at any time.

The secret to your scanner's ability to scan so many frequencies is its custom-designed microprocessor—a tiny, built-in computer. Your scanner also has these special features:

2-Second Scan Delay—delays the scanning mode for two seconds before moving to another channel so you can hear more replies.

Memory Backup—keeps the channel frequencies stored in memory for up to 1 hour during power loss.

Lock-Out Function—keeps channels you select from being scanned.

Priority Channel—checks your most important channel every 2 seconds so you don't miss important calls on a channel you specify.

Weather Band Key—scans the 7 preprogrammed weather frequencies to keep you informed of the most current weather conditions

Ten Channel Storage Banks—let you store 10 channels in each of 10 banks to group frequencies so you can easily identify calls.

Monitor Memories—let you temporarily save up to ten channels you locate during a frequency search.

Frequency Search—scans through every available frequency to find interesting broadcasts.

Your scanner can receive all of these bands:

- \*.....29-29.7 MHz (ham radio 10 m)
- \*.....29.7-50 MHz (VHF Lo)
- \*.....50-54 MHz (ham radio 6m)
- \*.....108-136.975 MHz (aircraft)
- \*.....137-144 MHz (government)
- \*.....144-148 MHz (ham radio 2m)

- \*.....148-174 MHz (VHF Hi)
- \*.....406-450 MHz (ham radio and government)
- \*.....450-470 MHz (UHF Lo)
- \*.....470-512 MHz (UHF TV)
- \*.....806-823.9375 MHz (UHF Hi)
- \*.....851-868.9375 MHz (UHF Hi)
- \*.....896.1125-956 MHz (UHF Hi)

PRO-Series Direct Entry Programmable Scanners  
 General Guide To Scanning  
 17653

Faxback Doc. #

### 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 hear only noise on that frequency.

If the interference is not severe, you might be able to turn SQUELCH clockwise 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

### 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 thousand 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 three frequencies - 162.40, 162.475 or 162.55 MHz. In most areas of the country, you can receive one of these frequencies.

### A Guide To The Action Bands

With the right frequencies programmed into your PRO-Series 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 the bands your 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:

Affiliate Radio System: .....  
Mars  
Amateur: .....  
Ham  
Automobile Emergency: ..... Auto  
Emer.

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

U.S. Coastal and Geodetic Survey: .....  
 U.S.C.G.S.  
 U.S. Navy: .....  
 USN  
 U.S. Weather Bureau: .....  
 U.S.W.B.

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.

Guide To Frequencies

National Weather Frequencies:

- |            |            |             |
|------------|------------|-------------|
| 1) 161.650 | 5) 162.440 | 9) 162.525  |
| 2) 161.775 | 6) 162.450 | 10) 162.550 |
| 3) 162.400 | 7) 162.475 | 11) 163.275 |
| 4) 162.425 | 8) 162.500 |             |

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

The following are the channels and frequencies of the Citizens Band:

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

- 19) 27.185            39) 27.395
- 20) 27.205            40) 27.405

Guide To The Action Bands

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

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.

Typical Band Usage

HF Band (3.0 - 30.0 MHz):

Mid Range: .....	25.00 - 28.63
MHz	
10-Meter Amateur Band: .....	28.00 - 29.70
MHz	
High Range: .....	29.70 - 29.90
MHz	

VHF Band (30.00 - 300.0 MHz):

Low range: .....	30.00 - 50.00
MHz	
6-Meter Amateur: .....	50.00 - 54.00
MHz	
FM-TV Audio Broadcast, Wide Band: .....	54.00 - 72.00
MHz	
FM Radio Broadcast, Wide Band: .....	88.00 - 108.00
MHz	

Aircraft: .....	108.00	-	136.00
MHz			
U.S. Government: .....	138.00	-	144.00
MHz			
2-Meter Amateur: .....	144.00	-	148.00
MHz			
High Range: .....	148.00	-	174.00
MHz			
New Mobile Narrow Band: .....	220.00	-	222.00
MHz			
1.3-Meter Amateur: .....	222.00	-	225.00
MHz			
Military Aircraft: .....	225.00	-	287.80
MHz			

UHF Band (300.00 MHz - 3.0 GHz):

Military Aircraft: .....	311.00	-	384.00
MHz			
U.S. Government: .....	406.00	-	470.00
MHz			
0.6-Meter Amateur: .....	420.00	-	450.00
MHz			
Low Range: .....	450.00	-	470.00
MHz			
FM-TV Audio Broadcast, Wide Band: .....	470.00	-	806.00
MHz			
Conventional Systems: .....	851.00	-	856.00
MHz			
Conventional/Trunked Systems: .....	856.00	-	861.00
MHz			
Trunked Systems: .....	861.00	-	866.00
MHz			
Public Safety: .....	866.00	-	869.00
MHz			
Common Carrier: .....	869.00	-	894.00
MHz			
Private Trunked: .....	935.00	-	940.00
MHz			
General Trunked: .....	940.00	-	941.00
MHz			

Primary Usage:

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

VHF Band:

2-Meter Amateur Band: .....	144.000	-	148.000
MHz			
Government, police, and Fire: .....	153.785	-	155.980
MHz			
Emergency Services: .....	158.730	-	159.460
MHz			
Railroad: .....	160.000	-	161.900
MHz			

UHF Band:

.6 cm Amateur Band FM Repeaters: ..... 440.000 - 450.000  
 MHz  
 Land Mobile "Paired" Frequencies: ..... 450.000 - 470.000  
 MHz  
 Base Stations: ..... 451.025 - 454.950  
 MHz  
 Mobile Units: ..... 456.025 - 459.950  
 MHz  
 Repeater Units: ..... 460.025 - 464.975  
 MHz  
 Control Stations: ..... 465.025 - 469.975  
 MHz

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.

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: ..... 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  
TELBL: ..... 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

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

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

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: .....  
TV2  
65.750: .....  
TV3  
71.750: .....  
TV4

Land Mobile Service Band (72-76 MHz):

FM-TV Audio Broadcast, Wide Band (76-88 MHz):

81.750: .....  
TV5  
87.750: .....  
TV6

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  
MIKES  
169.500: .....  
GOVT  
169.505: ..... WIRELESS  
MIKES  
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  
 MIKES  
 170.350 - 170.400: ..... GOVT,  
 MIL  
 170.425 - 170.450: .....  
 BIFC  
 170.475: .....  
 PUB  
 170.4875 - 173.175: ..... GOVT, PUB, WIRELESS  
 MIKES  
 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: .....  
 TV7  
 185.750: .....  
 TV8  
 191.750: .....  
 TV9  
 197.750: .....  
 TV10  
 203.750: .....  
 TV11  
 209.750: .....  
 TV12  
 215.750: .....  
 TV13

New Mobil 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

243.000: .....  
EMERGENCY  
255.400: ..... FAA FLIGHT  
SERVICE  
257.800: ..... CIVILIAN  
TOWERS  
287.800: ..... Coast Guard  
Air/Sea  
Rescue

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

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

FM-TV Audio Broadcast, UHF Wide Band (470-512 MHz):  
(Channels 14-69 in 6 MHz steps):

475.750: ..... Channel  
14  
481.750: ..... Channel  
15  
487.750: ..... Channel  
16  
805.750: ..... 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

### 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

### A Note on 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 (I.F.) 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 I.F. is 10.7 MHz, we might be able to tune to a frequency 21.4 MHz (2 x I.F.) above (or below, depending on the radio's design) a strong signal and hear it! This is more evident in a double-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.

So remember that 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.

You might be interested in finding more out about radio. One good location to start looking is your local public library. You might also wish to contact the A.R.R.L., as they are an excellent source of informative texts on the subject.

Contact:  
Amateur Radio Relay League  
225 Main St.,  
Newington, CT 06111-1494  
USA

(CD EB 2/22/00)

PRO-46 (200-0305)                      Operation                      Faxback Doc. #  
3597

#### SETTING VOLUME AND SQUELCH

Follow these steps to set VOLUME and SQUELCH.

1. Turn VOLUME 1/4 turn clockwise and SQUELCH fully clockwise.
2. Slowly turn SQUELCH counterclockwise until you hear a hissing sound.
3. Slowly turn SQUELCH clockwise until the hissing stops.

NOTE: If you want to listen to a weak or distant station, turn SQUELCH counterclockwise. You might hear hissing between transmissions.

#### USING THE KEYLOCK

Once you program your scanner, you can protect it from accidental program changes by turning on the keylock feature. In this mode, the only controls that operate are SCAN, MANUAL, LIGHT, VOLUME, and SQUELCH.

To turn on the keylock, press K-LOCK until KEYLOCK appears on the display.

To turn it off, press K-LOCK until KEYLOCK disappears.

#### STORING FREQUENCIES

Following these steps to store a frequency into a channel.

1. Press MANUAL. Enter the channel number you want to program.
2. Press PROG. PGM appears on the display to indicate the scanner is in the programming mode.

3. Enter a frequency.
4. Press ENTER to store the frequency.

NOTES: If you made a mistake in Step 3, ERROR appears on the display and the scanner sounds three beeps. To clear the display, press CLEAR. Then proceed again from Step 3.

Your scanner automatically rounds the entered frequency to the nearest valid frequency. For example, if you try to enter a frequency of 151.473, your scanner accepts it as 151.475.

5. Repeat Steps 1 through 4 to program more channels.

NOTE: If you want to program the next channel in sequence, repeat Steps 2 through 4.

#### SEARCHING FOR AND TEMPORARILY STORING ACTIVE FREQUENCIES

Good references for active frequencies are Radio Shack's "Police Call Guide Including Fire and Emergency Services," "Official Aeronautical Frequency Directory," and "Maritime Frequency Directory." We update these directories every year, so be sure to get a current copy.

If you do not have a reference to frequencies in your area, use a Limit or direct search to find a transmission. See also "A Guide to the Action Bands" in this manual.

NOTE: Press DELAY if you want to make the scanner pause 2 seconds after a transmission ends before it proceeds to the next frequency.

#### Limit Search

Limit Search lets you search within a specific range of frequencies. - L- appears on the display during a limit search.

1. Press PROG, then LIMIT.
2. Enter the lower limit of the frequency range you want to search.
3. Press ENTER, then LIMIT.
4. Enter the upper limit of the frequency range.
5. Press ENTER, then LIMIT.
6. Press \ / to search from the upper to the lower limit or press / \ to search from the lower to the upper limit.

7. When the scanner stops on a transmission, press MONITOR to store the frequency in the current monitor memory, or press \ / or / \ to continue the search.

#### Direct Search

When you listen to a channel, you can search up or down from the currently displayed frequency. -d- appears on the display during a direct search.

1. Press MANUAL, the channel number and MANUAL, in sequence to select a frequency stored in a channel.
2. Press \ / or / \ to search up or down from the selected frequency.
3. When the scanner stops on a transmission, press MONITOR to store that frequency in the current monitor memory. Or press \ / or / \ to continue the search.

#### MOVING A FREQUENCY FROM A MONITOR MEMORY TO A CHANNEL

Follow these steps to move a frequency from a monitor memory to a channel.

1. Press MANUAL.
2. Enter the channel number you want to store the monitor frequency in; then press PROG.
3. Press MONITOR and enter the monitor memory number that has the frequency you want to store.
4. Press ENTER. The scanner stores the frequency in the selected channel.

#### SCANNING THE CHANNELS

To begin scanning, press SCAN. Your scanner scans through non-locked channels in the activated banks. Set SQUELCH so you do not hear the hissing sound between transmissions.

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3599

Preparation

Faxback Doc. #

#### POWER SOURCES

You can power your scanner from any of three sources:

Internal battery power

Standard AC power (using an optional AC adapter [273-1665])

Vehicle battery power (using an optional DC adapter [270-1560])

#### USING BATTERIES

You can operate your scanner from four AA batteries. For longest operation and best performance, we recommend alkaline batteries (Radio Shack Cat. No. 23-552). Or, you can use rechargeable nickel-cadmium batteries (Cat. No. 23-125).

**WARNING:** The scanner has a built-in circuit that lets you recharge nickel-cadmium batteries inside the battery compartment. However, you must never use this circuit when you have installed non-rechargeable batteries in the scanner.

To install batteries in your scanner, follow these steps.

1. Press down on the arrow and slide the cover in the direction of the arrow to remove the battery compartment cover.
2. Pull the ribbon to remove the battery holder from the compartment and remove any old batteries.
3. Install four AA batteries, as indicated by the polarity symbols (+ and -) marked on the battery holder.
4. Place the battery holder in the compartment so the holder's metal contacts line up with the metal contacts in the battery compartment.
5. Replace the battery compartment cover.

Your scanner beeps every 15 to 30 seconds when the batteries are low.

When this happens, immediately replace or recharge all four.

#### CONNECTING THE ANTENNA

Follow these steps to attach the supplied flexible antenna to the connector on the top of your scanner.

1. Slip the slot in the antenna's connector over the protrusion on the jack.
2. Press down and rotate the antenna's base until it locks into place.

#### Connecting an Optional Antenna

The antenna connector on your scanner makes it easy to use your scanner with a variety of antennas. You can remove the supplied antenna, if you want, and attach a different one, such as an external mobile antenna or

outdoor base antenna. Your local Radio Shack store sells a variety of antennas.

Use coaxial cable to connect an outdoor antenna. Always use 50-ohm coaxial cable, such as RG-58 or RG-8. For lengths over 50 feet, use RG8 low-loss dielectric coaxial cable. You will also need a BNC connector to connect an optional antenna (Cat. No. 278-103 or 278-185).

**WARNING:** When installing or removing an outdoor antenna, use extreme caution. If the antenna starts to fall, let it go! It could contact overhead power lines. If the antenna touches the power line, contact with the antenna, mast, cable, or guy wires can cause electrocution and death! Call the power company to remove the antenna. Do not attempt to do so yourself.

#### CONNECTING AN EARPHONE/HEADPHONES

For private listening, plug an earphone or headphones into the EARPHONE jack on top of your scanner. This automatically disconnects the internal speaker. We recommend Radio Shack's earphone (Cat. No. 33-175) or mono headphones (Cat. No. 20-210).

#### Hearing Comfort and Your Health

To protect your hearing, follow these guidelines when you use an earphone/headphones:

Do not listen at extremely high volume levels. Extended high-volume listening can lead to permanent hearing loss.

Set the volume to the lowest setting before you begin listening. After you begin listening, adjust the volume to a comfortable level.

Once you set the volume, do not increase it. Over time, your ears adapt to the volume level, so a volume level that does not cause discomfort might still damage your hearing.

#### Traffic Safety

Do not wear headphones or an earphone while you drive a vehicle or ride a bicycle. This can create a traffic hazard and is illegal, in some areas.

Even though some headphones and earphones are designed to let you hear some outside sounds when you listen at normal levels, they still present a traffic hazard.

#### CONNECTING AN EXTENSION SPEAKER

In a noisy area, an extension speaker, such as Radio Shack's Cat. No. 21-539, positioned in the right place, might provide more comfortable listening. Plug the speaker cable's 1/8-inch mini-plug into your scanner's EARPHONE jack.

#### RESETTING THE SCANNER

If the scanner's display locks up or does not work properly after you connect a power source, you might have to reset the scanner.

**CAUTION:** This procedure clears all the information you have programmed into the scanner. Use this procedure only when you are sure your scanner is not working properly.

1. Turn off the scanner.
2. While you press and hold down the 2 and 9 keys, turn on the scanner.

#### USING THE BELT CLIP

You can use the supplied belt clip to make the scanner easier to use when you are on the go. Use the two supplied screws to attach the belt clip to the scanner. Then slide the belt clip over your belt or waistband.

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Special Features

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#### DELAY

Many agencies use a two-way radio system that might have a pause of several seconds between a query and a reply. To program a delay to keep from missing a reply on a specific channel, select the channel and press DELAY so DLY appears on the display. The scanner pauses for two seconds on a channel programmed with DELAY.

#### LOCKING OUT CHANNELS

You can increase the scanning speed by locking out channels that you have not yet programmed. Manually select the empty channel and press L/OUT so L/O appears on the display. This is also handy for locking out channels that have a continuous transmission, such as a weather channel. You can manually select locked-out channels.

To remove the lock-out from a channel, manually select the channel and

press L/OUT so L/O disappears from the display.

NOTE: There must be at least one active channel in each bank. You cannot lock out all channels.

#### TURNING CHANNEL-STORAGE BANKS ON AND OFF

You can turn each channel-storage bank on and off. When you turn off a bank, the scanner does not scan any of the 10 channels in the bank.

While scanning, press the number key corresponding to the bank you want to turn on or off. If the memory bank indicator is on, the bank is turned off and the scanner scans all channels within that bank that are not locked out. If the indicator is off, the scanner does not scan any of the channels within that bank.

You can manually select any channel in a bank, even if the bank is turned off.

NOTE: You cannot turn off all banks. One bank is always active.

#### PRIORITY

You can scan through the programmed channels and still not miss an important or interesting call on a specific channel. To program a stored channel as the priority channel, press PROG, the desired channel number and then PRIORITY. You can only select one channel as the priority channel.

To turn on the priority feature, press PRIORITY during scanning. The scanner now checks the priority channel every two seconds, and stays on the channel if there is activity. PRI appears on the display whenever the scanner is set to the priority channel.

To turn off the priority feature, press PRIORITY until PRI disappears from the display.

#### MANUALLY SELECTING A CHANNEL

You can continuously monitor a specific channel without scanning. This is useful if you hear an emergency broadcast on a channel and do not want to miss any details - even though there might be periods of silence - or if you want to monitor a specific channel.

To manually select a channel, press MANUAL. Enter the channel number, and press MANUAL again. Or, if your scanner is scanning and stops at the

desired channel, press MANUAL one time. Pressing MANUAL additional times causes your scanner to step through the channels.

#### LISTENING TO THE WEATHER BAND

The FCC (Federal Communications Commission) has allocated seven channels for use by the National Oceanic and Atmospheric Administration (NOAA). We have preprogrammed your scanner with all of the frequencies available to NOAA. To hear your local forecast and regional weather information, simply press WX. Your scanner begins scanning through the weather band, and WX appears on the display.

Your scanner should stop within a few seconds, and you hear the local weather broadcast. If the broadcast is weak, you can press WX again to scan through the rest of the weather band.

PRO-46 (200-0305) Specifications Faxback Doc. #  
8557

#### Frequency Coverage:

Ham.....29 - 29.7 MHz (in 5 kHz steps)  
VHF-Lo.....29.7 50 MHz (in 5 kHz steps)  
Ham.....50 - 54 MHz (in 5 kHz steps)  
Aircraft.....108 - 136.975 MHz (in 12.5 kHz steps)  
Government.....137 - 144 MHz (in 5 kHz steps)  
Ham.....144 - 148 MHz (in 5 kHz steps)  
VHF - Hi.....148 - 174 MHz (in 5 kHz steps)  
Government.....406 - 420 MHz (in 12.5 kHz steps)  
Ham.....420 - 450 MHz (in 12.5 kHz steps)  
UHF-Lo.....450 - 470 MHz (in 12.5 kHz steps)  
UHF-TV.....470 - 512 MHz (in 12.5 kHz steps)  
UHF-H.....806.0000 - 823.9375 MHz (in 12.5 kHz steps)  
.....851.0000 - 868.9375 MHz (in 12.5 kHz steps)  
.....896.1125 - - 956 MHz (in 12.5 kHz steps)

Channels of Operation.....Any 100 channels in any band  
.....combinations (10 channels x 10 banks)  
..... and 10 monitor channels

Sensitivity..... (20 dB S/N with 60 % modulation for AM:  
..... 3 kHz deviation for FM):  
29 - 54 MHz.....0.5 microV  
108 - 136.975 MHz.....1.6 microV  
137 - 174 MHz.....0.7 microV  
406 - 512 MHz.....0.7 microV  
806 - 956 MHz.....0.8 microV

Limit Search Speed/Band Search Speed.....19 Steps/Sec.  
Scan Speed.....14 Channels/Sec.  
Priority Sampling.....2 Seconds  
Delay Time.....2 Seconds  
IF Frequencies.....10.8 MHz and 450 kHz  
Audio Power.....220 mW Maximum  
Built-in Speaker.....1 - 7/16-inch (36mm) 8-Ohm, Dynamic Type  
Power Requirement.....+6 VDC, 4AA batteries,  
.....or a suitable 9-volt adapter  
..... (negative ground only)  
Dimensions.....5 7/8 x 2 5/8 x 1 1/2 Inches (HWD)  
.....(151 mm x 66mm x 37mm)  
Weight.....7.76 oz (220 g)

PRO-46 (200-0305) Understanding Your Scanner Faxback Doc. # 3598

A LOOK AT THE DISPLAY

The display has several indicators that show the scanner's current

operating mode. A quick look at the display will help you understand how to operate your scanner.

- MON - appears when you listen to a monitor memory.
- BANK - shows which channel-storage banks are turned on for the scan mode. See "Understanding Channel Storage Banks."
- KEYLOCK - appears when you lock the keypad.
- BATT. LO - appears when the battery is low.
- CH - digits that precede this indicator show which of the 100 channels the scanner has tuned to.
- P - appears when you listen to the priority channel. This P can be moved around but cannot be eliminated. It can be assigned to a channel which is not used.
- MHz - digits that precede this indicator show which frequency the scanner is tuned to.
- SCAN - appears when you scan channels.
- MAN - appears when you manually select a channel.
- PGM - appears while you program frequencies into the scanner's channels.
- PRI - appears when you program a selected channel for priority.
- L/O - appears when you manually select a locked channel.
- DLY - appears when you program a channel for a two-second delay before scanning or when you listen to a channel that has been programmed with the delay feature.
- WX - appears when you scan the preprogrammed weather channels.
- /\ and \/ - indicate the search direction.
- SRCH - appears during a limit search.

#### A LOOK AT THE KEYBOARD

Your scanner's keys might seem confusing at first, but the following information should help you understand the key's functions.

- SCAN - scans through the programmed channels.
- L/OUT - lets you lock out a selected channel.

WX - scans through the preprogrammed weather channels.

LIGHT - turns on the display light for 15 seconds. Press LIGHT again to turn off the light.

K-LOCK - locks/unlocks the keypad to prevent accidental entries.

MANUAL - stops scanning and lets you directly enter a channel number.

PRIORITY - sets and turns on and off priority for a particular channel.

MONITOR - accesses the 10 monitor memories.

PROG - programs frequencies into channels.

CLEAR - clears an incorrect entry.

NUMBER KEYS - each key has a single-digit label and a range of numbers printed above it. The single digits refer to the number of a channel or frequency entered. The range of numbers (21-30, for example) shows the channels that make up a memory bank. See "Understand Channel-Storage Banks."

DELAY - programs a two second delay for the selected channel.

ENTER - enters frequencies into channels.

LIMIT, /\, - search for active frequencies.  
and \/

. - enters the decimal point necessary when programming frequencies.

#### UNDERSTANDING CHANNEL-STORAGE BANKS

Your scanner can store up to 110 frequencies. You store each frequency in either a permanent memory, called a channel, or a temporary memory, called a monitor. This scanner has 100 channels, and 10 monitor memories.

#### CHANNEL-STORAGE BANKS

To make it easier to identify and select the channels you want to listen to, channels are divided into 10 channel-storage banks of 10 channels each. Use each channel-storage bank to group frequencies, such as the police department, fire department, ambulance services, or aircraft.

For example, the police might use four frequencies, one for each side of town. You could program the fire department into Channel 11 (Bank 2).

## MONITOR MEMORIES

The scanner also has 10 temporary monitor memories. Use these memories to temporarily store frequencies while you decide whether to save them into channels. This is handy for quickly storing an active frequency when you are searching through an entire band.

When you are in the monitor mode, the 10 numbers at the top of the display indicate the 10 monitor memories. MON appears and the number indicates the currently active monitor memory.

PRO-46 (200-0305)                      Using Other Power Sources                      Faxback Doc. #  
3594

## IMPORTANT INFORMATION ABOUT THE EXTERNAL POWER JACKS

The scanner has two external power jacks - POWER and CHARGE. It is important that you understand the purpose of each jack before you connect any adapter to the scanner.

The POWER jack powers the scanner and disconnects the internal batteries. You can use this jack with an external power source (AC or DC Adapter) regardless of the type of batteries you install.

The CHARGE jack supplies power to operate the scanner and also charges the internal batteries. Use the CHARGE jack only when you install rechargeable nickel-cadmium batteries.

**WARNING:** Never use the CHARGE jack with non-rechargeable batteries. If you try to recharge non-rechargeable batteries, they become very hot and could explode.

## USING AN AC POWER SOURCE

To power the scanner from AC power, you need Radio Shack's AC adapter, Cat. No. 273-1665. Plug the adapter's barrel plug into the scanner's POWER jack. Then plug the adapter's power module into a standard AC outlet.

When you finish using the AC adapter, disconnect it from the AC outlet first. Then disconnect it from the scanner.

**NOTE:** If you have installed rechargeable nickel-cadmium batteries in the scanner, you can connect the AC adapter to the CHARGE jack. This

powers the scanner and recharges the batteries at the same time.  
See "Charging Nickel-Cadmium Batteries."

#### USING A DC ADAPTER

NOTE: Mobile use of a scanner may be unlawful or require a permit in some areas. Check the laws in your area.

You can power the scanner from your vehicle's battery power, provided the vehicle has a 12-volt, negative ground electrical system. To do so, you need Radio Shack's DC Universal Adapter, Cat. No. 270-1560A.

1. Connect the adapter's orange barrel-plug to the adapter's cable with the tip set to - (negative).
2. Set the adapter's voltage switch to 9V.
3. Insert the barrel plug into the scanner's POWER jack.
4. Plug the other end of the adapter into your vehicle's cigarette-lighter socket.

When you finish using the DC adapter, disconnect it from the cigarette lighter first. Then disconnect it from the scanner.

NOTE: If the scanner does not operate properly when you use a DC adapter, unplug the adapter from the lighter socket and clean the socket to remove ashes and other debris.

#### CHARGING NICKEL-CADMIUM BATTERIES

The scanner has a built-in charging circuit that lets you recharge nickel-cadmium batteries (Cat. No. 23-125) while they are in the scanner. To charge the batteries, simply connect an AC adapter (Cat. No. 20-188) or a DC Universal Adapter (270-1560) to the scanner's CHARGE jack.

WARNING: Do not connect either adapter to the scanner's CHARGE jack if you have installed non-rechargeable batteries (standard, extra-life, or alkaline). Non-rechargeable batteries become hot and can even explode if you try to recharge them.

It takes about 10 to 18 hours to recharge batteries that are fully discharged. You can operate the scanner while recharging nickel-cadmium batteries, but the charging time is lengthened.

#### Charging Tips

Nickel-cadmium batteries last longer and deliver more power if you occasionally let them fully discharge. To do this, simply use the scanner until the low battery indicator appears on the display. Then fully charge the batteries.

200-0305            100 CH VHF/UHF PORT SCANR                            Faxback Doc. #  
30406

To order parts call 1-800-843-7422 or visit your local RadioShack store.

Reference #	Cat.No.	Description	NP Part #
-	11318540		1N4003A
Q202 Q205 Q206	10511491	XSTR DTC114EK PRE BIASED	1TD0068
	10511491		1TD0068
Q002	10511608	XSTR 2SC3704 CHIP	1TD0100
	10511608		1TD0100
Q704 Q708	10511673	USE 1TD0760	1TD0120
	10511673		1TD0120
Q201	10511749	XSTR 2SB815-B7 CHIP	1TD0136
	10511749		1TD0136
Q701 Q702 Q703 Q706	10511798	XSTR 2SC3121 BIPOLAR MICR	1TD0144
	10511798		1TD0144
Q007	10512168	XSTR RT1N141C-T12-1	1TD0210
	10512168		1TD0210
Q707 Q709	10512176	XSTR 2SC3121-T5L	1TD0211
	10512176		1TD0211
Q003 Q701 Q703 Q706	11648623	TRANSISTOR 2SC3124 NPN	1TD0215
Q803	11648623	AFTER DATE CODE 10A3	1TD0215
Q704 Q708	10516136	XSTR 2SA1162-Y SI LOW PWR	1TD0760
	10516136		1TD0760
Q005 Q006	10516458	XSTR 2SC2712-Y SI LOW PWR	1TD0793
	10516458		1TD0793
	11334232		2SD1676
	10533065	REPLACED BY 2SD1676	2TR1573
		REPAIR BOARD	A0000X
AT951	10538411	ANTENNA RUBBER DUCKEY	A0146
	10538411		A0146
	10906600		AN7805
CT702		CAP, TRIMMER CT-064 20PF	C2012
CT001 CT002 CT003	10555951	CAP, TRIMMER 35PF	C2013
CT701	10555969	CAP, TRIMMER CT-065 50PF	C2014
L011	11654266	COIL, LB-569 291XN-3504X	CA3063
	11654266	ANTENNA/CENTER ADJ	CA3063
L007	10562320	COIL, LB607 CAN TYPE	CA3064
	10562320	ANT/CENTER ADJ	CA3064
L005	10562346	COIL, LF207 SMALL CAN TYPE	CA3071
	10562346	ANTENNA/CENTER ADJ	CA3071
L704	10563088	COIL, INDUCTOR .56UH	CA3484
FT001	10569929	FILTER, CRYSTAL FL-177	CB0550
		#23-125	CS0000X

		10592426	CRYSTAL, OSCILLATOR 32KHZ	CX0591
Y201		10596138	RESONATOR, CERAMIC YY-1022	CX1197
		10611531	COVER, BATTERY	DB1082
		11655909	DIODE SI LLL4148	DD00005
D708		10617256	USE DD0111	DD0015
		10617256		DD0015
D003 D004 D011 D013		10617546	DIODE VARACTOR ISV201-4	DD0103
D017 D027 D701 D704		10617546	VARICAP	DD0103
D018 D031 D708		10617587	DIODE 1SS184-TE85R SI	DD0111
		10617587		DD0111
D000 D203		10618650	DIODE LED CHIP CL181YC-TS	DD0277
		10618650		DD0277
		10622306	REPLACED BY 1N4003A	DX0207
D009		10625556	DIODE 1SS85	DX1462
		10625556		DX1462
D007 D008 D022 D032		10626216	USE DD00005	DX1673
D301		10626216		DX1673
		10627305		DX2014
D001 D002 D012 D016		10633600	DIODE RLS135 TE11	DX3442
D019 D021 D023 D024		10633600		DX3442
D028 D029 D702 D703		10633600		DX3442
D705		10633600		DX3442
23		10641850	WINDOW, DISPLAY PC 0.5T	G0035
		10641850	SILK	G0035
8		10657716	CASE ASSY, BATTERY	HB1158
		10657716	BATTERY HOLDER	HB1158
37		10681344	PLATE, SPRING KNOB	HC4816
24		10681799	BUSHING, KNOB	HC4900
		10681799	NEOPRENE RUBBER	HC4900
38		10710747	CLIP, BELT	HN0021
		10715100	SCREW FLAT HD M3X4 (2)	HW2000305
J501		10722296	JACK, 9.2 ANTENNA	J0429
		10722296	FOR ANTENNA	J0429
J1		10722353	USE J1304	J0439
		10722353	REPLACED BY J1304	J0439
		10723393	REPLACED BY J-1811	J0565
1		10725505	TERMINAL, PCB SWP-A D0.6	J0785
		10725505	MFNI3	J0785
J002		10728145	JACK 18 PIN JK447	J1097
		10728145	86451-018	J1097
J3		10731495	JACK, POWER/CHARGE	J1811
		10731495	WITH BLACK CONNECTORS	J1811
P201		10739795	PLUG 18P HEADER PG-125	JC0277
		10739795	69746-18	JC0277
20		10767325	KNOB, BLACK	K2756
		10767325		K2756
Y501		10787935	KEYBOARD, RUBBER KE-009	KB0063
		10787935		KB0063
		11390929	9 PIN SIP	LA1186N
		10898146		LA1600
DP201		10801686	LCD	LB0237
		10801686		LB0237
		10823177	MANUAL, SERVICE 20-305	MS2000305
		10845188	XEROX COPY	MU2000305
		10880698		MX1881
IC205 IC204		10894566	IC, S-8054-HN-CB-T1	MX4005
		10894566		MX4005

	10894764	REPLACED BY LA1186N	MX4041
	10898146	REPLACED BY LA1600	MX4637
	10906600	REPLACED BY AN7805	MX6567
IC201	10907574	IC,UC1489A HD40L4818A26H	MX6736
	10907574	W/DATE CODE 1A4	MX6736
IC006	10910396	IC,NJM2073M LINEAR 8 PIN	MX7379
	10910396	8P SURFACE MANT	MX7379
IC701	10911592	IC, PLL2002A1	MX7622
	10911592		MX7622
IC702	10912491	IC, TLC271CP OP	MX7811
	10912491		MX7811
IC005	10912517	IC,TK11806M BIPOL DC-DC C	MX7813
	10912517	8 PIN SMD	MX7813
IC002 IC202	10918449	IC TK11701M 8P SMD	MX8443
	10918449		MX8443
IC201	10918456	IC,UC1489 80P FLAT PAC	MX8444
	10918456		MX8444
IC203	10918472	IC,S-81240 AG-RJ-T1 B82	MX8446
	10918472		MX8446
VR001	10960169	POT,SEMI-FIXD 33KB RT-528	P0254
VR002	10980175	POT,VARIABLE SQUELCH 100K	PA0388
VR003	10982320	POT,VARIABLE VOLUME 100KA	PA0730
SW005 SW006	11081239	SWITCH,KEY TACT	SK0045
	11084274	SPEAKER,SP-286	SP0344
		AVAILABLE	W0000X
		MUST REPAIR BOARD	XB0000X
	11134756	PCB ASSY,KEY W/LCD	XB0583
B401	11158458	PCB ASSY,IF	XB4541
B801	11158466	PCB ASSY,800MHZ	XB4542
B301	11158474	PCB ASSY,WINDOW	XB4544
5	11209293	CASE,LCD	Z5552
	11209293		Z5552
17	11209301	CASE,FRONT BLACK SILK	Z5553
16	11209319	CASE,REAR BLACK INSET	Z5554
18	11209327	CASE, TOP BLACK SILK	Z5555

PRO-46 100-CHANNEL DIRECT ENTRY  
 PROGRAMMABLE SCANNER (20-305)  
 FAXBACK DOC # 10092



