SCANNER EQUIPMENT

Radio Shack PRO-96 Scanner

The Radio Shack PRO-96 is a portable, 5500 channel scanner, built in China by GRE for Radio Shack. It can receive AM and FM signals and track conversations in Motorola, APCO-25, and EDACS trunked systems.

The PRO-96 is a newer, more sophisticated version of the 1000 channel trunk-tracking PRO-95. The most important enhancements include the ability to demodulate APCO-25 C4FM digital signals and track conversations in APCO-25 digital trunked systems, CTCSS ("PL") and DCS ("DPL") decoding and display, and the ability to choose among several configurations.

At time of writing, most APCO-25 digital systems use C4FM modulation. A few APCO-25 systems are starting to employ a new CQPSK digital modulation scheme. Our early PRO-96 (s/n C012993) is designed to demodulate C4FM but not CQPSK signals.

The PRO-96 runs on four simple AA batteries (not included). The scanner is furnished with two battery trays, a black colored tray for alkaline cells and a yellow tray for rechargeable cells.

You may power the scanner and charge the batteries (in the yellow tray) using an optional 9 VDC 300 mA wall wart.

◆ Frequency Coverage

The PRO-96 receives AM and FM signals on the most popular scanner bands plus Citizens Band, 216 - 225, and 1240 - 1300 MHz. The 225 - 400 MHz military air band is not included.

Like the PRO-2053 (see May 2002 *MT*) and PRO-95, the new PRO-96 tunes the 137 - 174 MHz band using factory-selected steps of 5, 6.25, or 7.5 kHz, and the user cannot change the step size. The PRO-96 coerces VHF-high frequencies to fit a preset FCC bandplan which doesn't account for federal government assignments. For instance, the PRO-96 rounds off the 165.2375 MHz US Customs frequency to 165.2400 MHz.

◆ Memory and Modes

We need to explain our earlier comment that the PRO-96 has 5500 memory channels. You can select from among 11 different configurations. There are 500 memory channels which you can scan at one time in a given configuration, but a total of 5500 memory channels across

the 11 configurations.

Each configuration supports 10 banks of 50 memory channels apiece, a set of six preprogrammed service search banks, one user programmable limit search bank, talk groups, text labels, and other settings.

Radio Shack terms the PRO-96 a "virtual scanner" due to the multiple configuration scheme and calls a configuration a "folder." The folders are preprogrammed at the factory with trunked system frequencies and talk groups for several major metropolitan areas, though the user may override these settings.

The scanner alerts you when programming a channel with a frequency which is already programmed into another channel within the same bank.

Each channel has a mode: AM, FM, CT (CTCSS), DC (DCS), MO (Motorola trunked), or ED (EDACS trunked). The PRO-96 does not support LTR trunking.

For trunking purposes, both Motorola 3600 bps (bits per second) and APCO-25 9600 bps control channels are supported.

You would normally dedicate a separate 50 channel bank for each trunked system. Each bank supports a total of 150 talk group IDs, organized in up to five sub-banks of up to 30 IDs each.

You can program a 12-character label for each memory bank, memory channel, and talk group. Both the channel label and frequency are displayed simultaneously when stopped on a conventional channel.

The PRO-96's attenuator can be enabled on a per-channel, per-search bank basis or globally.

◆ Scanning and Searching

The PRO-96 scans a mixture of both conventional and trunked systems very well, with no perceptible hesitation when switching between banks.

Memory banks may be scanned in open or closed mode, a distinction which makes sense only for trunked systems. When scanning

trunked systems in the closed mode, the talk group lists are used as filters to tell the PRO-96 which talk groups to ignore and which to monitor. In open mode, the PRO-96 will stop for conversations in any talk group.

There is only one pair of user programmable search limits. There are preprogrammed service search banks for VHF-marine, citizens band, police/fire, civil aviation, GMRS/MURS/FRS, and ham radio. CB, FRS, and marine channel designations are displayed as well as frequency. The police/fire and ham banks are further divided into sub-banks by frequency. Therefore, you can choose to limit your search to preprogrammed VHF-low band police/fire, 2 meter hams, etc. Up to 50 frequencies may be locked out.

A single priority frequency may be sampled approximately every two seconds, though the PRO-96 will not interrupt a trunked transmission to sample the priority channel.

◆ Manual

The PRO-96 user manual prose is easier understand than earlier manuals, but that is offset by a lack of display diagrams. The manual is only 3-3/4 inches wide and difficult to hold open while reading.

You can download a copy of the user manual from the **http://support.radioshack.com** web site and print it out so you won't have to fight with the binding.
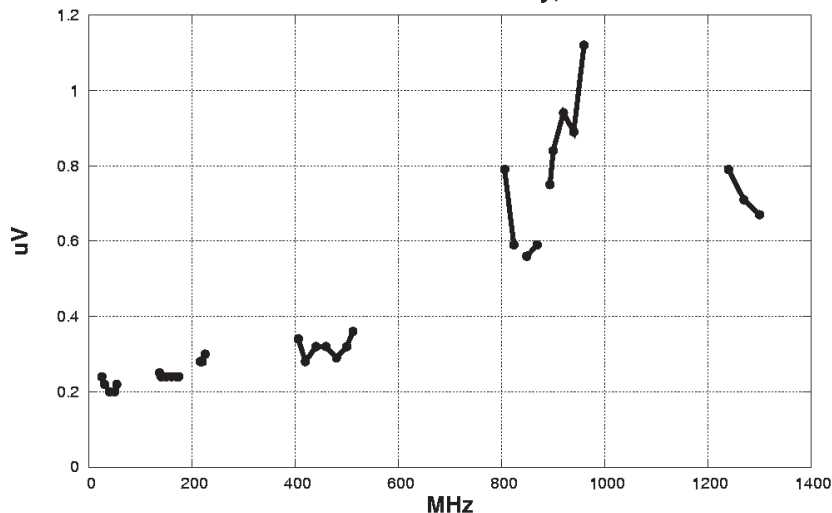
A separate 23 page booklet lists the frequencies preprogrammed into the virtual folders.

◆ Performance

We do not have any APCO-25 digital systems within reception range and were only able to test the PRO-96 on analog trunked and conventional systems.

Like the PRO-95, the PRO-96's speaker audio is good and loud. We measured 138 mW of power at the earphone jack. Audio at this jack is purposely attenuated for use with an earphone.

Radio Shack PRO-96
NFM 12 dB SINAD Sensitivity, s/n C012993

CURRENT CONSUMPTION

Notes:
1) Measurements are approximate and made using one sample of each model.
2) Measurements made while scanning.
Copyright 2003, Bob Parnass, AJ9S

The squelch control has a moderate amount of hysteresis. We measured a brief 6 ms squelch tail, or noise burst as the squelch closed at the end of each conventional transmission. We couldn't hear any squelch tail while monitoring many land mobile transmissions using the CTCSS squelch.

The PRO-96's IF is more selective than the PRO-95. PRO-96 selectivity above 28 MHz is specified as 8/14 kHz vs. 10/18 kHz for the PRO-95 at 6 and 50 dB points. We measured the PRO-96 modulation acceptance at only 8 kHz vs. 12 kHz for the PRO-95.

When connected to an outdoor antenna, our PRO-96 experienced some intermodulation in the VHF aero and VHF-high bands from both television and 162 MHz NWR transmitters.

❖ Other Observations

Unlike earlier GRE models, both the keys and display are recessed to keep them out of harm's way.

The PRO-96 keys are translucent. Both the keypad and display amber color back-lighting are brilliant, making nighttime operation much easier. The green display backlighting in earlier models was dim and the keys were not lit at all.

The PRO-96 usually powers up in the same condition it was when last powered down. For example, if the radio was last listening on channel 104 in Manual mode when you turned the power off, the PRO-96 will power up in Manual mode tuned to channel 104. One exception is that the radio will not remember on power up if you used the Pause key previously to monitor a single talk group in a trunked system.
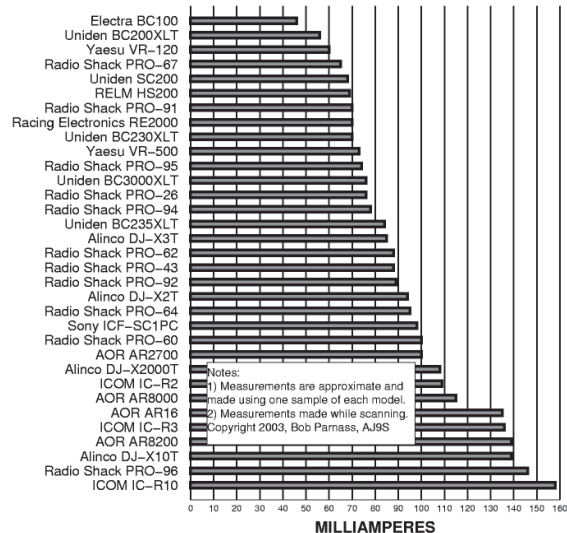
In contrast to the earlier PRO-92 and PRO-2067, the PRO-96's CTCSS/DCS squelch is effective even when the radio is in Manual mode, monitoring one channel.

Our PRO-96 consumes 147 mA at 6 VDC while scanning and that's more current than most of the other portables we've measured (see chart).

❖ Software

Programming the PRO-96's channels, text tags, and trunk IDs entirely through the radio's keyboard could require days of tiresome effort. A computer equipped with the proper cloning software would make the task so much easier.

The PRO-96 is fitted with a serial interface jack and commercial Windows-only software is just now becoming available at the time this review is being written. There is no native cloning software for Linux and Mac computer users yet.

❖ Overall

We were impressed with the PRO-96's performance when scanning a mixture of trunked and conventional signals. The audio is very good and the text labels are great. We appreciate the CTCSS and DCS squelch and instant display. The AA battery arrangement is superior to a monolithic, proprietary pack.

Radio Shack should publish on their web site the information required to write cloning software for their scanners. It would make the scanners more attractive if buyers had more software choices.

For $500, we would like to have military air band coverage, LTR trunking, and selectable step sizes. This is the first Radio Shack (GRE) scanner which can demodulate digital voice signals, a feature which is probably responsible for a good portion of the price tag.