GRE PSR-800 Review

By Bob Grove, W8JHD

General Research of Electronics (GRE America) has evolved from its former subordinate position as a radio accessories manufacturer and producer of private-labeled scanners for Radio Shack to a major contender in their own right. Previous scanners like the PSR-100, 200, 300, 400, 500, and 600 have enjoyed wide acceptance.

The recent introduction of Uniden's HP-1 HomePatrol™ has set a new standard in scanner architecture with its enormous, internal, nationwide database, as well as its easy, intuitive, automatic loading of local frequencies just by entering a zip code or geographical location.

In our February issue we took a look at GRE's introductory, hand-held PSR-700 which, like Uniden's cutting-edge HP-1 HomePatrol, comes with factory-loaded, U.S.-wide frequencies downloaded from Radioreference.com, the same private source utilized by Uniden. As with the Uniden, frequencies can be autoloaded simply by selecting the geographical location without the traditional, manual loading of discrete frequencies, channel by channel.

But there are some profound differences between the PSR-800 and its competitors which provide more features than any other scanner ever made. However, be aware that a sizeable amount of time will be spent learning how to use this scanner.

❖ PSR-800 Specifications

The new PSR-800 "EZ Scan-SD Digital" looks identical to its hand-held predecessor, the 700. Its solid aluminum front and back panels provide durability along with light weight (7-1/2 oz.); it fits an adult hand comfortably, measuring 2-5/8"W x 1-1/16"D, and it's only 5-1/4" tall.

The PSR-800 is designed to operate from any reasonably-current Windows platform: 2000, XP, Vista or 7.

The frequency range is 25-54, 108-174, 216-512, 764-782, 791-797, 806-960 (less cellular), and 1240-1300 MHz. This provides all the communications bands in the VHF/UHF spectrum except for commercial broadcasting. The down-conversion is provided by triple-conversion architecture.

Selectivity specifications are impressive: AM bandwidth for -6 and -50 dB attenuation is at 4 and 6 kHz; FM bandwidth for the same sideband attenuation is at 7 and 13 kHz. This is tight, providing excellent adjacent-channel interference rejection.

Sensitivity is certainly on par with the competitors: depending on the mode chosen, 0.2-0.5 microvolts, with the singular exception of the high end of the military aircraft band (300-400 MHz), 0.8 microvolts.

While the scan/search rate is nowhere near the 100-200 channels per second of most Uniden scanners, it is a healthy 70-80 steps per second, still fast when compared to early scanning radios, and likely to capture transmissions quickly, especially if not too many memory channels have been activated. Programmable delay is a nominal 2 seconds.

Although the internal speaker measures only 1-1/4" wide, it produces high-volume, relatively-undistorted audio with its half-watt audio power. With the mix of normal FM and narrow-band FM now utilized on the air, audio levels often vary on conventional scanners; the 800 offers automatic gain control (AGC) to average the levels for uniform loudness.

Up to 30 continuous hours of off-air recording can be internally stored on the SD card and played back for review of message contents.

Power is supplied by four AA cells (not provided), alkaline or rechargeable NiMH. A mini switch in the battery compartment allows the selection of either chemistry. The NiMH cells can be overnight-recharged from any USB source such as a computer, or from a low-cost AC/USB power supply which can additionally operate the radio.

(Photo by Judy Grove)

Since the minimum current drain of the radio when squelched is about 170 mA, the average play time for fully-charged batteries is guesstimated to be about eight hours; this varies, of course, with the type of battery selected. A battery icon displays the charge state so that the user can elect to charge the unit when the solid black, full-charge indication becomes increasingly clear.

The earphone jack on the top panel allows for private listening with a user-supplied headset or earphone, and it also doubles as an unfiltered, unsquelched, IF discriminator output, useful for signal analysis and decoding when used with third-party software/hardware like Unitrunker (**http://wiki.radioreference.com/index.php/UniTrunker**), Trunk88 (**www.trunk88.com/index.php?title=Main_Page**), and Treport (**www.thebriarpatch.org/treport/**).

❖ PSR-800 Operation

The simplified control panel utilizes the familiar "joystick navigation" layout which is endemic on digital devices like video games, cameras, MP3 players, and more. Up and down arrows allow volume adjustment as well as scrolling functions; left and right arrows permit selection options on the menu.

The main key is the MENU key; pressing it allows access to all the adjustable parameters and selectable features and functions. These are scrolled and separated into sub routines. Full alphanumerics of upper and lower case text, numbers, and punctuations are accessible.

The PSR-800 utilizes a 2 GB SD-card loaded with 50 states plus Canada, allowing for the storage of at least ten million records. To select the listening frequencies in any area, the user scrolls to "Browse Library," then selects U.S. or Canada, next the state. Once there, the user selects among topics such as agencies, public safety, railroads, federal, trunking systems, and others that may be available. The list is further refined by city.

Dozens of listening combinations may be individually or collectively chosen, such as local licensees, neighboring cities or states, and various types of services, so that suddenly-occurring events like tornadoes, hurricanes, earthquakes, forest fires, major crimes, air disasters, and other frequency-changing requirements can have immediate access by selection of the specific scanlist.

Scanlists are what we traditionally know as memory banks, and they can be scanned individually or in any combination; thus, in the event of disasters as outlined above, a user might wish to select local law enforcement on one list, area-wide on another, forestry service during fire season, medical services following a natural disaster, and so on.

A service search feature provides for the selection of eight different, high-interest listening targets looking for activity on their allocated channels: Marine, CB, FRS/GMRS/MURS, public safety, aircraft, amateur, and railroad.

The PSR-800 will track all conventional and trunked radio systems, and will decode P25 digital voice transmissions as well. This is an important asset, as the government has specified P25 as the digital system of preference for intercommunication among various agencies, and increasing numbers of metropolitan public safety systems are integrating this mode.

While P25 does have encryption levels that can be opted by the user, the vast majority of the communications are conducted in the basic digital mode which is not considered a privacy configuration, so it is lawful to be accessible to scanners.

New data can be downloaded off the Internet by computer interface with the USB cable (provided). All data can be modified, amended, and deleted on screen with the computer, including the manual entry of new frequencies and associated data.

A bargraph-style signal strength meter displays relative levels of received transmissions. While such bargraphs don't really provide absolute signal intensity values, their relative readings can provide information regarding relative distances of signals, and how well an antenna is working, as well as whether it is in the clear and positioned properly.

The spectrum sweeper function will capture any unknown nearby signal in its frequency range in less than one second and will monitor its contents while displaying its frequency. This is very handy for sleuthing for unregistered or unlicensed transmitters and listening devices.

The 800 decodes and displays CTCSS, DCS, and NAC encoding, and follows all major trunking systems like Motorola Types I/II/hybrid, EDACS, and LTR. With the database ability of talk group IDs, there's no having to tinker with all that manual loading formerly encountered in other scanners; it does it all automatically.

In the event of detecting a digitally-encrypted signal which cannot be decoded, the user may select to hear the noise, a tone, or silence.

NOAA National Weather Service broadcasts can be immediately brought up with their own key, and a SAME weather alert mode can be selected for your area. If desired, an automatic interrupt can be selected so that if your local weather broadcast sends the alert tone, you will hear the emergency message regardless of other signals currently being received.

A multi-color, super-bright LED can be programmed to visually flash the service color chosen by the user, such as blue for police, red for fire, yellow for EMS, green for forestry/conservation agencies, and white for business. The colors can be strobed, solid, or even alternated like a Christmas tree for more imaginative users!

A USB data cable really opens up the flexibility of the 800. Plugged into your computer, you can see all of the channels you've selected in a chart, and you can selectively amend the files. You can make it a routine to download the latest database library or upgrade to the latest CPU firmware with a simple press of the mouse key.

❖ A Lot of Reading

Perhaps the single negative aspect of a scanner with such enormous capability is the daunting task of absorbing the instruction manual to understand all the options available and what all the abbreviations on the LCD screen mean. Initial turn-on is easy, but complete control is not intuitive. Prepare for a substantial learning curve.

The operational manual is provided on a CD, which also includes the utility management software programs for reconfiguring the radio's settings, as well as updating the firmware and database.

Included with the 800 are a USB data cable, compact 4" rubber whip, 2 GB SD memory card, CD-ROM disk, and a removable, rotatable belt clip.

❖ Let's Take a Listen

From turn-on until reception there is about a 12 second delay for data loading. The brightly-backlit LCD screen shows the progress during this time. The display is large with multiple alphanumeric text lines and adjustable brightness and contrast for easy viewing under any conditions. Although changes and additions to the factory text is readily done, since there are no direct-entry keys the scrolling technique of selection letters, numbers, and punctuations can be tiresome. Such text changes can be made either directly to the scanner or on the screen of a USB-attached computer.

The data display can be called up in two different formats: a simple presentation simply identifies the station currently being received, while a fully-informational presentation is far more informative, revealing frequency, squelch tone, mode, battery charge condition, simplex or repeater, and many other characteristics.

For seasoned scanner and computer users (especially gamers!) the arrow-key operation is intuitive, as are the first few levels of MENU selections. However, there are quite a few acronyms and abbreviations that require familiarity. Fortunately, the computer readout provides a glossary and other reference explanations. They aren't all there, however, and downloading the latest software version from time to time is highly recommended.

With our review model fully loaded and ready, we found it very sensitive. Of course, sensitivity in this case is dependent upon the antenna, and this one is small. Thankfully, GRE opted for the traditional BNC connector. This makes it easier to substitute antennas.

If extended range of coverage is desired, there are bigger whips available like the Condor (**www.grove-ent.com/ANT14B.html**) and Diamond RH77CA (**www.grove-ent.com/rh77ca.html**). And if someone wants to perfect the impedance match on any particular frequency in the high VHF/UHF range, there's always a telescoping antenna (**www.grove-ent.com/ANT6.html**).

If used with a rooftop antenna in an RF-dense environment, or if strong-signal overload becomes a problem by producing images or desensitizing weak-signal reception, there is an attenuation option that is key-selected.

Speed of scanning was adequate even though roughly half as fast as the recent Uniden hand-helds. Audio delivered a strong punch with admirable voice-frequency contouring.

The backlit display is excellent: large, strongly-contrasted characters against a white background are easy to read, and both the backlight illumination and the character contrast can be adjusted to suit the user's environment. Even the key legends are bright and sharp.

Because backlighting drains battery power, multiple options for on/off are provided, such as on times triggered by the reception of a signal and first turn-on of the radio. Programming the illumination of the function keys is also addressable.

The spectrum sweeper is fast, and by selecting the type of sweep you want to do, it can be even faster. It will look for unknown signals through its entire spectrum in about two seconds, and will look through smaller chunks of spectrum like all allocatable public safety channels in less than a second. If you want only specific swaths of spectrum, it's even faster.

Scrolling through the menu options – and there are a lot of them – is inconsistent. Sometimes you can back up with the arrows, sometimes you can't. Sometimes you can use the up/down arrows, sometimes you can't. This is very frustrating to conventional scanner owners, but may be a familiar routine for many users of multi-function, hand-held, digital-devices in the iPod age.

Finally, there is one glitch that can really throw you, but it's solvable. If you decide it's time for a firmware update, follow the directions *explicitly*. If the power switch is accidentally turned on, the scanner locks up and stays on. Even removing the batteries doesn't help. It's dead as a doornail, totally unresponsive to any commands including power off.

However, simply follow the template directions under "Updates," then "Check for CPU Firmware Update." The reload will restore everything back to normal.

❖ The Bottom Line

The overall performance of the new GRE PSR-800 is truly remarkable. After a short period of use, selecting its myriad custom functions, and knowing that new data libraries as well as firmware improvements are downloadable, it leaves the owner wondering if there really is anything left to be added to scanning receivers.

The new GRE PSR-800 is available from Grove Enterprises for $449.95 (1-800-438-8155 or **www.grove-ent.com/product535.html**) plus shipping.