

## MFJ-8322 Hand-Held Scanner

By Bob Grove, W8JHD

For many years, General Radio and Electronics (GRE) has released products under their own label as well as private-labeled their electronics items, such as Radio Shack® scanners, for the consumer market. Now, a prominent supplier of electronics products for amateur radio, MFJ Enterprises, is marketing some of these scanners under their own brand.

The new MFJ-8322 hand-held scanner is such a product. Sharp-eyed hobbyists will notice the remarkable similarity of this model to the GRE PRS-300. They should; it's identical.

With wide-frequency coverage 25-54, 108-174, 216-512, 764-960 (less cellular), and 1240-1300 MHz, the 8322 is ready for virtually any VHF/UHF communications. Three major trunking systems – Motorola types I and II (Smartnet and Privacy Plus), and analog hybrid systems from GE-Ericsson (EDACS) and EF Johnson (LTR) – are fully supported.

Note that the frequency range includes the new public safety portion of the 700 MHz VHF band, retired from service by the FCC with the refarming of digital TV channels.

The wide frequency range of the 8322 provides comprehensive coverage of U.S. VHF/UHF mobile communications in the aircraft, public safety, business, marine, government, military, weather, emergency, and ham radio services.

The package includes a 62 page manual, rubber duckie antenna, belt clip, adapter for rechargeable batteries, and an AC wall adapter which not only powers the scanner, but will recharge NiMH batteries while in the radio.

The radio is powered by either four AA alkaline or rechargeable NiMH cells (not included) or by the 120VAC/9VDC wall adapter.

The multiband rubber duckie antenna does a good job of reception over the radio's wide spectrum; a BNC connector allows the use of a base or mobile antenna when desired.

### ❖ A word about trunking

For those listening enthusiasts who are just cutting their teeth on trunking, a brief introduction is in order. Older radio systems simply applied for a license and operated on the specific frequencies allocated by the Federal Communications Commission (FCC).

Busy licensees made efficient use of these frequencies, but many authorized frequencies found rare implementation by licensees with little need for them. This was especially noticeable in metropolitan areas, where a law enforcement channel often became overcrowded, while infrequent users like the tax collection department

rarely came on the air.

Trunking reduces or even eliminates this disparity by sharing all the frequencies. When a departmental agency applies to the FCC for a trunked system, the users are awarded a pool of frequencies. The police, fire department, dog catcher, road department, and many other departments all utilize the same group of frequencies. When one of the radios is keyed up, an unused frequency from the pool is automatically chosen.

In the early days of trunking, scanner hobbyists were bewildered when they heard a police chase on a specific frequency, then, moments later, they would hear a dump truck on the same frequency! The urgent traffic was hopping back and forth through the frequency pool with each transmission to select a different unused frequency.

New, smart scanners are capable of tracking specific "talk groups" (departments) in the trunked system as they rotate frequencies, so that important two-way transmissions aren't missed.

### ❖ Spectrum sweeper

One of the handiest functions to be added to scanners in recent times is the ability to continuously sweep the spectrum, listening for unknown transmission frequencies, and monitoring them as well as displaying their frequencies. Once found, these frequencies may be entered into the scanner's memory bank.

This feature comes in handy when driving in an unfamiliar area. The Spectrum Sweeper will capture and identify nearby transmissions with one second from any signal in its frequency range.

In order to prevent the unit from constantly

stopping on paging transmissions, NOAA weather broadcasts, and other unwanted signals, the user may elect to remove factory-entered frequencies or lock out discrete frequencies of his own.

### ❖ Squelch decoder

In radio congested areas, licensees will frequently program their two-way radios with either a continuous sub-audible tone (CTCSS) or a digital code (DCS). This prevents their radios from receiving transmissions from co-channel users, only responding to those signals which contain the inaudible encoding for their own units.

The 8322 may be programmed to do the same thing, receiving only those signals on any particular channel that are encoded for desired reception.

### ❖ Preprogrammed search ranges

The factory has selected several common services for signal searching: marine, CB, FRS/GMRS/MURS, public safety, aircraft, amateur, and railroad; additionally, one range may be customized by the user. This feature is quite handy, since it allows much faster signal acquisition of communications of interest, rather than having to wait for the scanner to search through its entire spectrum.

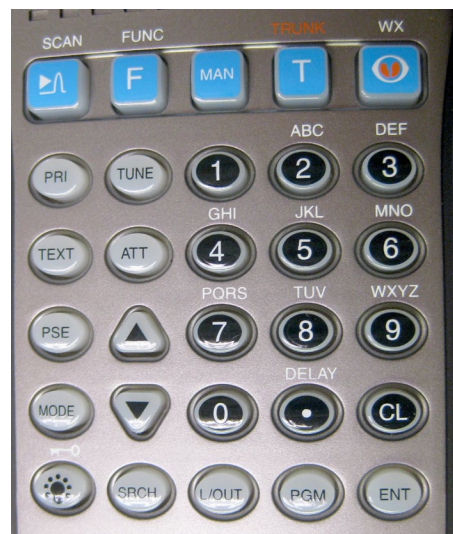
### ❖ Specifications

The 8322 sports a four-row, back lit, high contrast, alphanumeric LCD which displays 16 characters and spaces on each row, showing not only numeric frequency/channel information, but identifying the name of the licensee on that channel as well. The appropriate information is entered by pressing the multi-function keypad buttons.

Up to 1000 separate frequencies may be stored in memory (10 banks of 100 channels each), accommodating up to 10 trunked systems, and 1500 talk groups (10 banks of 5 sub-banks, 30 memory IDs each).

The standard analog AM and FM modes are received, and automatically chosen for the appropriate bands. AM is selected for CB and aircraft, FM for the rest. A mode switch allows manual selection if desired. Digital modes such as the rapidly-emerging APCO P25, widely encountered on federal government channels, are not receivable on the 8322.

FM Sensitivity is average for scanners: 0.3 uV at VHF and 0.5-0.7 uV at UHF (the higher the frequency, the less sensitive the radio). AM sen-



sitivity is 1-3 uV for the same frequency ranges. Since the squelch threshold is 0.15 uV, virtually any readable signal will trigger the squelch, so that the receiver remains silent in the absence of a signal.

IF selectivity – the ability to discriminate between adjacent-channel signals – is good, with -6 dB and -50 dB skirts down +/- 4 and 6 kHz respectively for FM, and 8 and 17 kHz for AM.

Triple-conversion design (380.8, 21.4, and 455 kHz intermediate frequencies) provide excellent image rejection of 60-100 dB depending upon frequency range.

Scan and search speeds are an appreciable 60 and 78 channels per second – much faster than many expensive wide-coverage hand-helds that feature shortwave frequency coverage (10-20 channels per second), but not quite as fast as the competitive Uniden products (100-200 channels per second).

### ❖ Weather warning radio

The 8322 has a full-function weather radio, allowing the standard FIPS (Federal Information Processing Standard) code entry for your county, and responding with National Weather Service SAME (Specific Area Message Encoding) severe weather bulletins, both in voice and text messages on the LCD screen.

### ❖ Free upgrades

As enhancements for this model become available, the user may download the upgrades from the GRE website: [www.greamerica.com](http://www.greamerica.com). A 3.5mm (1/8") cloning interface is provided



for downloads to and from a PC. An optional computer cable is available as the MFJ-5432 for \$29.95.

### ❖ Final thoughts

While the scanner is larger than some pocket models, the considerable list of functions and features justifies its size. The scanner

is roughly 6 inches high, 2-1/2 inches wide and 1-5/8 inches deep, and weighs about a pound with its whip and batteries.

The little 1-3/8-inch speaker provides crisp, room-filling audio with minimal distortion. For listening privacy or unusually noisy environments, a 3.5 mm (1/8") jack is provided for a user's earphone or headset.

The 60-78 channels-per-second scan/search speeds are quite good; obviously, the faster the scanner can acquire a signal, the more likely you'll hear the transmission before it goes off the air. While it would seem logical to command the microprocessor to go as fast as it possibly can, the problem is allowing time for the related circuitry to come up to optimal performance.

The keypad offers tactile response, and the sharp, high contrast LCD provides clear information in sunlight, as well as in darkness, when the display and all the keys are backlit.

Modern scanners have far more programming sophistication than the good old days when all you did was poke the numeric keys to enter a frequency, but we must accommodate the new modes and their requirements, and GRE has done this in their new line of scanners as exemplified by the MFJ-8322.

All in all, the MFJ-8322 hand-held scanner offers excellent performance at a modest price.

*MFJ-8322 is \$199.95 from MFJ Enterprises, Inc., 30 Industrial park Rd., Starkville, MS 39759. For further information, call toll-free (800) 647-1800, or visit their website at [www.mfjenterprises.com](http://www.mfjenterprises.com).*



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