

Yaesu VR5000 Wide Coverage Receiver

Following quickly the release of AOR's AR8600, Yaesu has begun shipments of their VR5000 wide-frequency coverage (100 kHz-2600 MHz, less cellular) receiver. Intended for mobile or desktop operation, as is the AOR competitor, the VR5000 is also quite compact (7"W x 3"H x 8"D) and lightweight as well (4-1/2 lbs). Its front-lift legs tilt the viewing angle up to the user for desktop operation, revealing the bottom-mounted speaker which delivers its 1 watt of audio loud and clear.

This multi-mode receiver offers a selection of WAM, AM, NAM, WFM, NFM, FMN, USB, LSB, and CW. Depending upon the mode selected, a variety of tuning steps may be chosen, from as fine as 20 Hz to as coarse as 500 kHz.

An optional digital signal processor (DSP) module is available as an extra-cost option from your dealer. It is a very useful accessory, providing tunable notch filter, bandpass filter, CW peaking filter, noise reduction, and CW pitch change. Other cost options include an 8 second digital audio recorder and a digital voice annunciator for the current frequency setting.

A rear-panel connector accommodates one PL-259 coax antenna line for the entire frequency range; alternatively, an A/B switch selects a pair of spring terminals to attach either a balanced ("twin lead") or separate antenna and ground wires. If separate antennas are preferred for above and below 30 MHz, an external antenna switch or multicoupler will be necessary.

Also on the rear panel are RCA jacks for +8VDC @ 100 mA to power external accessories, a mute feature, and a 10.7 MHz IF output for an external spectrum display unit. A pair of 3.5 mm (1/8") audio jacks provide 4-16 ohms output for an external

speaker and 1000 ohm line output for a recorder or data demodulator.

A nine-pin sub-D connector invites computer control via the user's own RS232C cable; Yaesu does not produce software for this product.

◆ A Multitude of Functions

Yes, the front panel is quite busy. Keys are small, and nearly all of the 35 buttons and knobs have two functions. A key-lock-out command disables all front panel controls from accidental resets.

The backlit LCD is easy to read, with custom brightness and contrast user-selectable. Two volume controls are a clue that this rig allows dual reception; a second frequency may be selected within +/- 20 MHz of the primary receive frequency for instant

◆ Sensitivity

Tested alongside an ICOM R8500, we could detect little difference in weak signal reception between it and the VR5000. Published specifications show typical sensitivity in the HF range to be 0.3 microvolts for SSB, and 1 microvolt for AM; at VHF/UHF, 0.3-0.4 microvolts for SSB and NFM. These are quite respectable.

An "RF Tune" function allows a manual peaking of the desired signal, a sort of preselector. Its effectiveness in our test was marginal at best.

◆ Selectivity

As with virtually every hand-held and mobile wide-frequency-coverage receiver on the market, the IF filters are modicum. They do a fair job, but there are many instances where you wish the skirts were steeper and deeper to reject adjacent-frequency interference. The VR5000 is certainly no worse in this respect, and is actually a little better than some competitors, especially the hand-helds. Understandably, the manufacturer does not provide selectivity specifications.

An attenuator may be invoked for instances of strong-signal overload, and a noise blanker effectively reduces pulse (spark) interference.

◆ Dynamic Range

One common feature of all wide-frequency-coverage consumer receivers and scanners in the low- to mid-price class is their limited dynamic range, compromising their ability to handle strong signals without overloading. This produces unwanted products like intermodulation ("intermod") or desensitization.

The VR5000 is no exception. Connected to an efficient outdoor antenna, spurious signals will be heard on various parts

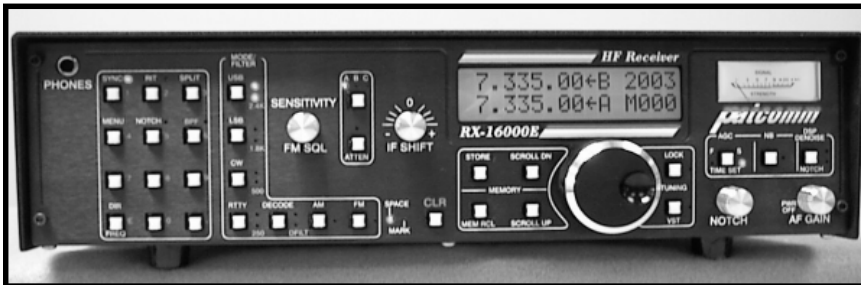


priority watch or simultaneous monitoring.

Both signals are activated by one squelch control; a separate tone control allows comfortable bass/treble adjustment.

The VR5000 memorizes the contents of up to 2000 channels in 100 banks, and allows up to 50 stop/start search ranges to be stored as well. One bank comes factory loaded with an erasable assortment of international broadcast frequencies. The scanning speed is approximately 16 steps per second, and channel identifications can be alphabetical or numeric.

A clock alarm sleep/timer also provides a world time clock function, displaying a global map with time zones.



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of the spectrum where they shouldn't be. While invoking the attenuator dramatically reduces the interference, it also reduces desired signal strengths.

◆ Spectrum Display

Small, wide-coverage receivers lend themselves particularly well to spectrum surveillance, and the VR5000 fits the task. Its built-in spectrum display unit presents a panorama up to 10 MHz wide, with simultaneous audio recovery in any mode appropriate for that step/range.

One apparent software glitch that is very irritating is that even though the user can enter his choice of sweep step, as soon as the tuning dial is turned to access a frequency, the step immediately reverts to its factory default.

As with all affordable LCD bandscope, sweeps are sluggish, not "real time," so on/off keying is likely to be missed, especially on wider sweep spans. But for finding continuous signals, or searching small spans, it is excellent and intuitive to use.

At first thought, an option for real-time display would seem to be the use of an external CRT-type spectrum display unit (SDU) like the popular AVCOM SDM-42A plugged into the 5000's 10.7 MHz IF output jack. But the bandwidth of the VR5000 filters is quite narrow, limiting the display to a few hundred kilohertz, too narrow for reasonable spectrum analysis.

The dynamic range limitation is quite visible in the bandscope mode, filling the display with background noise when the receiver is connected to a good antenna. With the attenuator in place, the noise disappears, but so do spikes that would indicate the weaker signals.

◆ The Bottom Line

It's easy to be critical of any product, but the fact remains that the Yaesu VR5000 offers a great deal for the money. It is small, easy to operate, has wide frequency coverage, exhibits acceptable dynamic range and selec-

tivity, excellent sensitivity, and clear audio. The display is easy to read, the radio has direct frequency entry as well as a tuning knob, and an abundant variety of supportive features. An AC adaptor, DC cord, and full manual are included.

The VR5000 retails for around \$900 from MT advertisers including Grove Enterprises. Bob Parnass will be reviewing its performance on VHF/UHF in an upcoming column.



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