CQ REVIEWS:

Ten-Tec's Model 562, Omni V HF Transceiver

BY JOHN J. SCHULTZ*, W4FA/SV0DX

Ten-Tec certainly achieved an American "first" with their Paragon transceiver. Ten-Tec will continue to produce that transceiver, and certainly I highly recommend it to any amateur who desires an all-around, excellent quality HF transceiver incorporating general-coverage receive. The Omni V, on the other hand, can be regarded as an exclusive edition of the Paragon for those who desire optimized amateur-band-only performance from a transceiver in the $2,000 price range.

The optimized performance of the Omni V revolves around a unique idea that the engineers at Ten-Tec developed which combines the best features of frequency synthesizer technology with the features of what might be called analog frequency mixing. The former, in conjunction with microprocessor-based control, allows the bells-and-whistles features like frequency memories and dual VFOs, while the latter feature recreates the clean receive signal performance of a bygone era before transceivers went digital.

Although I dubbed the Omni V an exclusive edition of the Paragon transceiver, it is not simply a Paragon with a few internal circuitry changes. Various features are significantly different between the two series of transceivers both internally and externally. Many operators will probably more than welcome the exceptional receive performance of the Omni V as a trade-off for some reduced convenience features as compared to the Paragon.

Specifications

Table I presents the detailed specifications for the Omni V as given by Ten-Tec. The general specifications note that the unit covers all amateur bands from 160 through 10 meters with an over-shoot at each band end suitable for most MARS operation. The frequency readout is down to 10 Hz. The almost all aluminum construction of the Omni V, like the Paragon, produces an almost unbelievably lightweight transceiver for its power class. It really is hard to imagine that a 16 pound package could enclose such a full-featured transceiver. If you have ever lugged around some of the larger steel box transceivers for portable operation, you'll appreciate what I mean by this.

The transmitter specifications are very much state-of-the-art. The carrier and sideband suppression figures are excellent, as is the spurious output specification. The key-down, 200 watt input specification for up to 20 minutes is achieved without any cooling fan being used. A small external cooling fan can be used if you want to operate key-down forever (e.g., beacon operation). And, if I may jump a bit ahead with my story, the fact that the Omni V has no cooling fan that might periodically cycle on and off (even during receive periods as is the case with some other transceivers) plus its extremely electrically quiet operation on receive make it one of the most fatigue-free transceivers I have ever operated while trying to copy weak signals.

The receiver specifications are also very much state-of-the-art. The dynamic range and third-order intercept figures are excellent (more about those later). There is a full range of anti-QRM controls from the IF passband tuning to audio bandpass tuning to an audio notch filter and even a tone control. Both the standard and optional IF filter specifications are given. Unfortunately, the optional filter specifications do not indicate a special feature of the Omni V in that a further optional filter (for CW, SSB, or FSK) may be installed in the 9 MHz IF which will work in series with the optional filters shown in the table for the 6 MHz IF. The to-

General	
Frequency Range	Transmit and receive on all ham bands from 160 through 10 meters in their entirety. Twelve 500 kHz segments plus 30 kHz over-shoot at each band end.
Frequency Control	Microprocessor-controlled digital PLL synthesizer with crystal mixed oscillator. 10 Hz resolution.
Frequency Readout	7 digit 10 Hz vacuum fluorescent readout.
Frequency Stability	Worst case, 1 PPM per degree C at 29.999 MHz.
Frequency Accuracy	±100 Hz at 25° C.
Antenna Impedance	50Ω unbalanced.
Power Required	Receive = approx. 1.5 A Transmit = approx. 20 A at 13.8 VDC.
Construction	Rigid aluminum chassis. Extruded aluminum front panel. Textured top and bottom, snap up stainless steel bail. Printed circuit boards G-10 epoxy glass.
Dimensions	HWD 5¾" × 14¾" × 17"(14.6 × 37.4 × 43.2 cm).
Net Weight	16 lbs.(7.25 kg).
Transmitter	
Modes	USB, LSB, CW, RTTY (FSK or AFSK), (FM optional).
DC Power Input	Maximum 200 watts at 14 VDC CW, SSB, (FM). 100% duty cycle for up to 20 minutes. Continuous with auxiliary air cooling of Omni V amplifier heatsink.
RF Power Output	25 to 100 watts adjustable with front-panel RF PWR control.
Microphone Input	Low impedance. Four-pin front-panel connector accepts microphones with 5 mV (−62 dB) output. Polarizing voltage is provided for electrets.
T/R Switching	VOX or PTT on SSB. Switchable FAST or SLOW QSK on CW.
CW Sidetone	Internally generated, adjustable tone and volume independent of AF GAIN control.
SSB Generation	9 MHz, 8-pole crystal ladder filter. Balanced modulator.
Carrier Suppression	60 dB typical.
Unwanted Sideband Suppression	60 dB typical at 1.5 kHz tone.
Spurious Output	More than 45 dB below peak power output.
Meter	Switchable forward power, SWR, collector current, audio processing level.
CW Offset	600 Hz automatic.
FSK Shift	170 Hz.
SSB Monitor	External monitor jack output.

Table I– Specifications of the Ten-Tec Omni V HF Transceiver.

*c/o CQ magazine

The front-panel layout of the Omni V is very well balanced with an easy-on-the-eyes frequency display, the analog controls on the left, and the large keypad around the main tuning control.

tal result is that you could end up with an outstanding 24 poles of filtering for one mode, depending upon which optional filters are installed!

As impressive as the specification table for the Omni V is, now that I have used the transceiver for a reasonable period, I rather feel that the table does not do justice to the rig. It makes no mention of the fact that 25 tunable memories are available, computer control interface is standard, fast QSK turn-around is less than 30 ms, etc.

Receiver

Modes — USB, LSB, CW, FSK/AFSK, (FM optional)

Sensitivity

FREQUENCY MHz / MODE	1.8 - 29.999	
SSB, CW, RTTY	.15 µV	10 db S/N @ 2.4 kHz
(FM)	.30 µV	12 db SINAD @ 15 kHz

Selectivity

SELECTIVITY / FILTER	-6 dB	-60 dB
STANDARD	2.40 kHz	3.36 kHz
OPTIONAL	1.80 kHz	2.90 kHz
OPTIONAL	.50 kHz	1.40 kHz
OPTIONAL	.25 kHz	.85 kHz
(FM)	15 kHz	30 kHz

Attenuator	Approx. −20 dB for 1.8 to 29.999 MHz.
IF Frequencies	1st = 9.0 MHz, 2nd = 6.3 MHz, (FM 2nd = 455 kHz).
RX Antenna Input	Switchable 50Ω phono jack.
Image Rejection	> 60 dB.
IF Rejection	> 60 dB.
Noise Blanker	Switchable on/off with adjustable width.
S Meter	Automatically switched on during receive. Calibrated to 50µV at S9.
Dynamic Range	97 dB typical.
3rd Order ICP	+12 dBm.
Squelch Sensitivity	FM, CW, SSB, FSK (1.8–29.999 MHz) = Less than .6µV.
Passband Tuning	±1.2 kHz.
Audio Output	1.5 watts at 8Ω with less than 2% distortion.
Notch Filter	250 to 2.2 kHz, 50 dB notch typical.
Audio Bandpass Filter	4 pole, variable center frequency 220 to 1.7 kHz, 35% bandwidth at −6 dB. Variable fader control selects filtered or flat audio response.
Tone Control	Variable 15 dB rolloff at 5 kHz.

Displays and Controls

The most obvious display feature is the large frequency readout. It's a green fluorescent type with about ⅝ inch high numerals. It's very comfortable to work with over extended operating periods. The display is permanently set to display down to 10 Hz. The display is also used to call up either the current time (hours and minutes) or a calendar feature (month and day) derived from a built-in clock/calendar. To the left of the display there are three annunciators for VFO A, VFO B, or SPLIT.

All the rest of the displays and controls, except those associated with the keypad around the main tuning knob, are the same as in the Paragon transceiver. It's what I call the analog side of the front panel. These controls were all described in detail in Part II of my Paragon review (*CQ*, May 1988), so I won't go into them in detail here but will just highlight a few features.

1. The metering is quite complete for all functions including power output, SWR, collector current, and speech processing level.

2. The microphone gain control has an LED associated with it for monitoring the ALC level, which is very convenient when the processor is used, since the meter can be dedicated to check the processing level.

3. The RF power output level is continuously variable from about 20 to 100 watts.

4. A separate RF gain control is provided and there is all-mode squelch.

5. The AF gain control is associated with a tone control to roll-off the higher frequencies.

6. There is an audio bandpass filter with variable bandwidth. One control sets the center frequency of the filter (200 to 1700 Hz) while another concentric control pulls in the skirts of the filter (around the center frequency) from an essentially flat response to a fairly sharp response (35% bandwidth).

7. The passband tuning control is essentially a variable bandwidth control operating over ±1.2 kHz.

8. A notch filter operates over the 250 to 2200 Hz range and provides a fixed notch depth of 40–50 dBm.

9. The rest of the pushbuttons are for the usual functions such as receive input attenuator, AGC on/off, VOX or PTT operation, QSK fast or slow, etc. The noise-blanker switch is associated with a variable width control.

The keypad around the main tuning knob has a few features similar to those on the Paragon, but many features are different. There are the usual keys for mode except that an FSK key replaces the AM key on the Paragon. The very useful TUNE key is still present above the mode keys. The filter selection keys are above the tuning knob and are marked 2.4, 1.8, 0.5, .25, and NAR. There is no 6.0 key since the Omni V does not have an AM mode. The 1.8, 0.5, and .25 keys select any of the optional filters installed in the 6 MHz IF. The NAR key selects *the* optional filter installed in the 9 MHz IF which can be either a 1.8, 0.5, or .25 kHz type.

The keys to the immediate right center of the tuning knob control the selection of VFO A or B, equalizing the frequency in them and setting them up for split-frequency operation. There is also a REV key which temporarily reverses the VFOs when in split operation so you can listen on your transmitting frequency.

A FAST key below the VFO keys changes the tuning rate by a factor of 5 (from 10 Hz to 50 Hz steps except in the FM mode where it

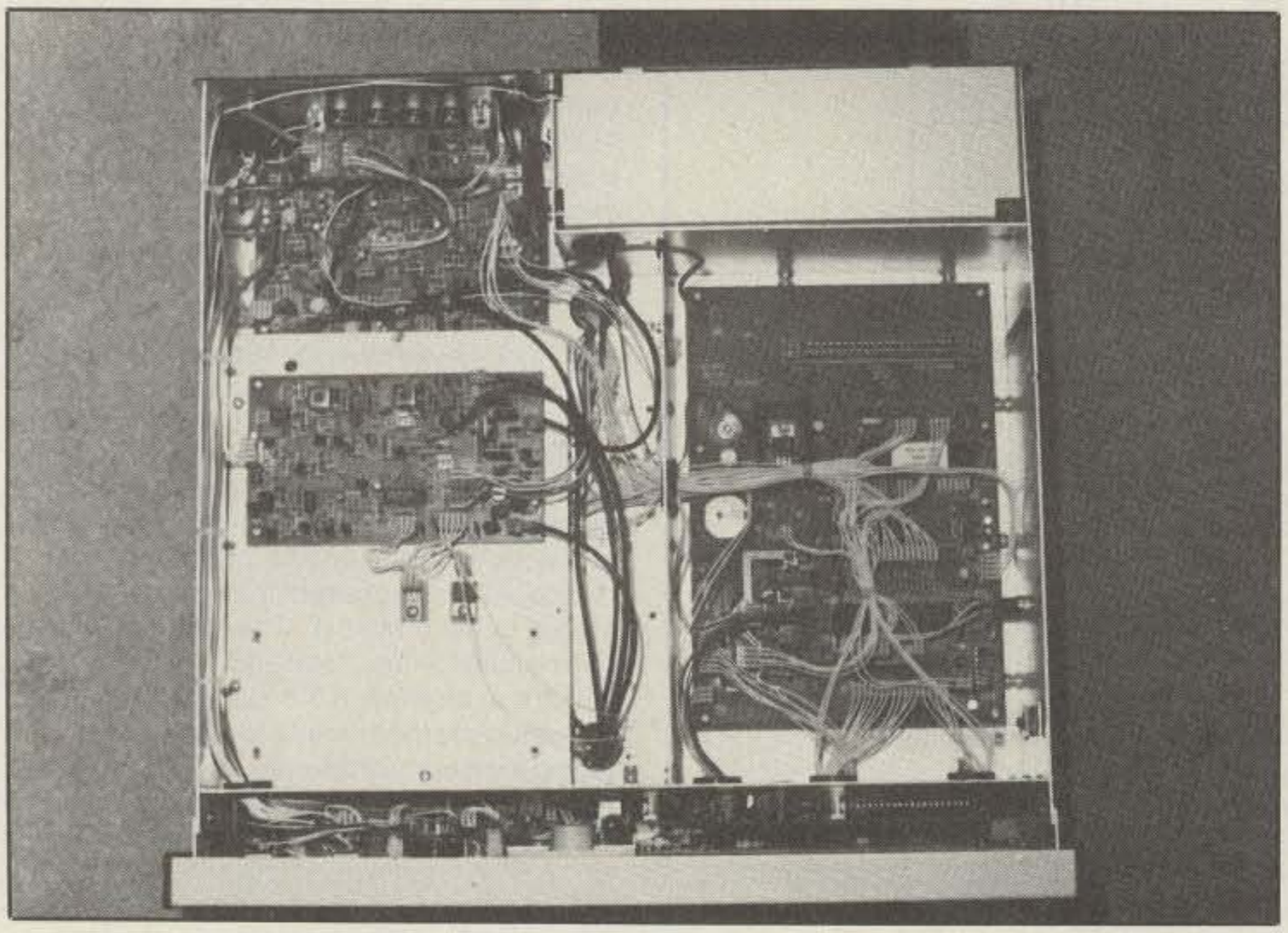
A closer look at the keypad. Except for two keys, each key has a single dedicated function to avoid confusion in operation. It's a very user-friendly arrangement.

changes from 100 Hz to 500 Hz steps). Immediately to the right of the FAST key are "down" and "up" arrow keys. These keys change the frequency in 10 kHz steps, or if the FAST key is activated, in 30 kHz steps.

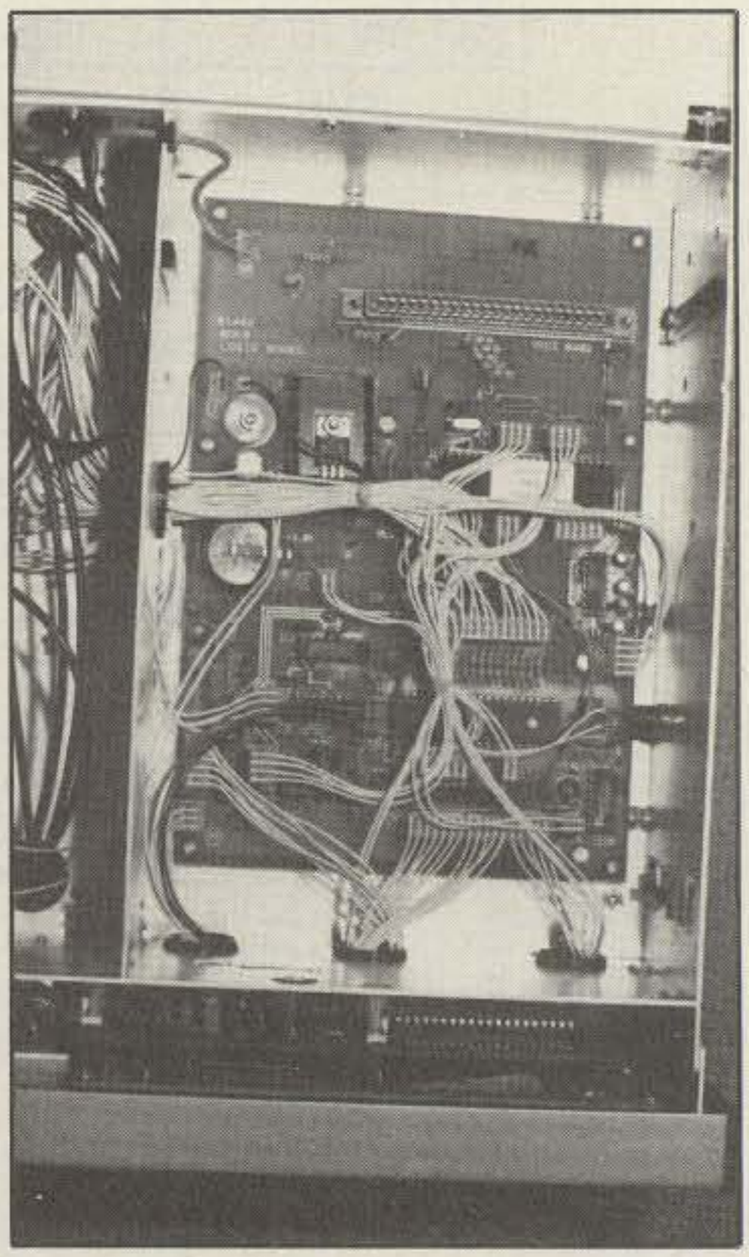
Although the keyboard so far has resembled that of the Paragon in general terms, the rest of the keyboard in the Omni V is completely different. The center right grouping of keys consists of 12 keys which are band-switching keys. There is one key for each band, except that 10 meters has four keys for four 500 kHz band segments. You can QSY immediately between any band in a very clear, unambiguous manner. When going from one band to the other, the operating frequency will automatically be located at the same position relative to each band edge. For instance, if you are on 7020 kHz and go to 20 meters, the 20 meter frequency will appear as 14020 kHz. Even though 10 meters is divided into four 500 kHz segments, all of the band can be tuned without pressing any of the band-segment keys once you start out tuning in any desired band segment. There is no numeric frequency entry keypad, so to get to a specific operating frequency within a band you have to choose that band and then tune a VFO to the desired frequency or have the specific frequency stored in a memory.

The frequency memory system is controlled by just three keys on the upper right of the keypad. They are the MT (memory tune), VFO-M (VFO to memory), and M-VFO (memory to VFO) keys. If you're operating on a frequency you would like stored, you depress the VFO-M key twice. You do not have to choose a memory location. That is done automatically unless all 25 memory locations are filled. In such a case, a decimal point in the frequency display will turn on, and you have to go through a simple procedure to clear out one of the memory locations. Each memory stores band, frequency, mode, and filter selected data. To see what frequencies are stored in memory, depress the MT key, and then as you rotate the main tuning knob, you will scroll through and have displayed on the frequency display the frequency stored in each memory slot. During this process, the operating frequency you were using before depressing the MT key will not change. Therefore, you can continue to operate while scrolling through the frequencies in memory. If you find a memory position on which you would like to operate, the M-VFO key is used, and the transceiver will switch to that frequency along with the stored mode and filter information. Once such a stored frequency is transferred to a VFO, you can, of course, tune the frequency as desired and change mode or filter selection as desired.

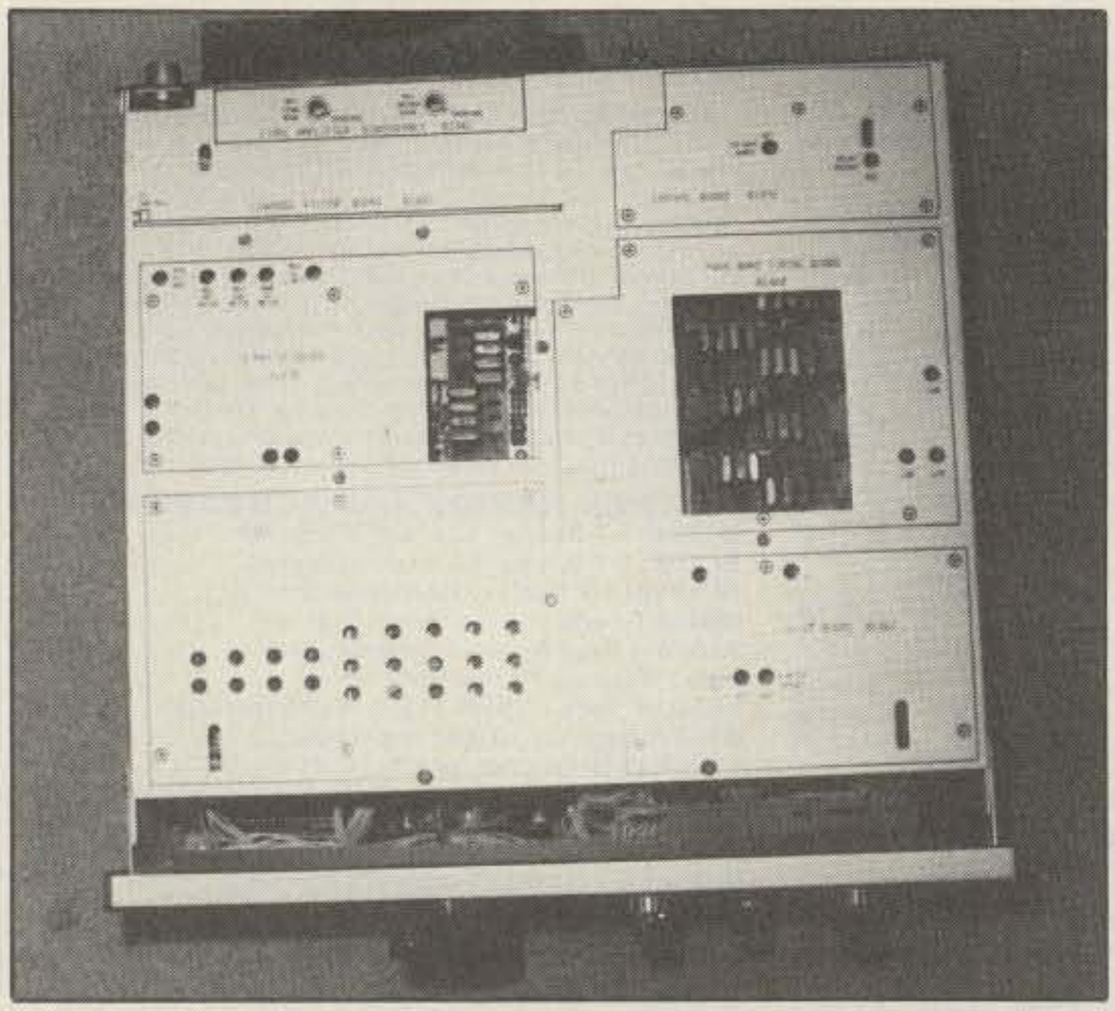
A scratch-pad memory is available by pressing the VFO-M key only once, instead of twice as just mentioned. In this case the current band, frequency, mode, and filter setting will be stored, but the information will not go into one of the regular 25 memory slots. The scratch-pad memory is recalled by pressing



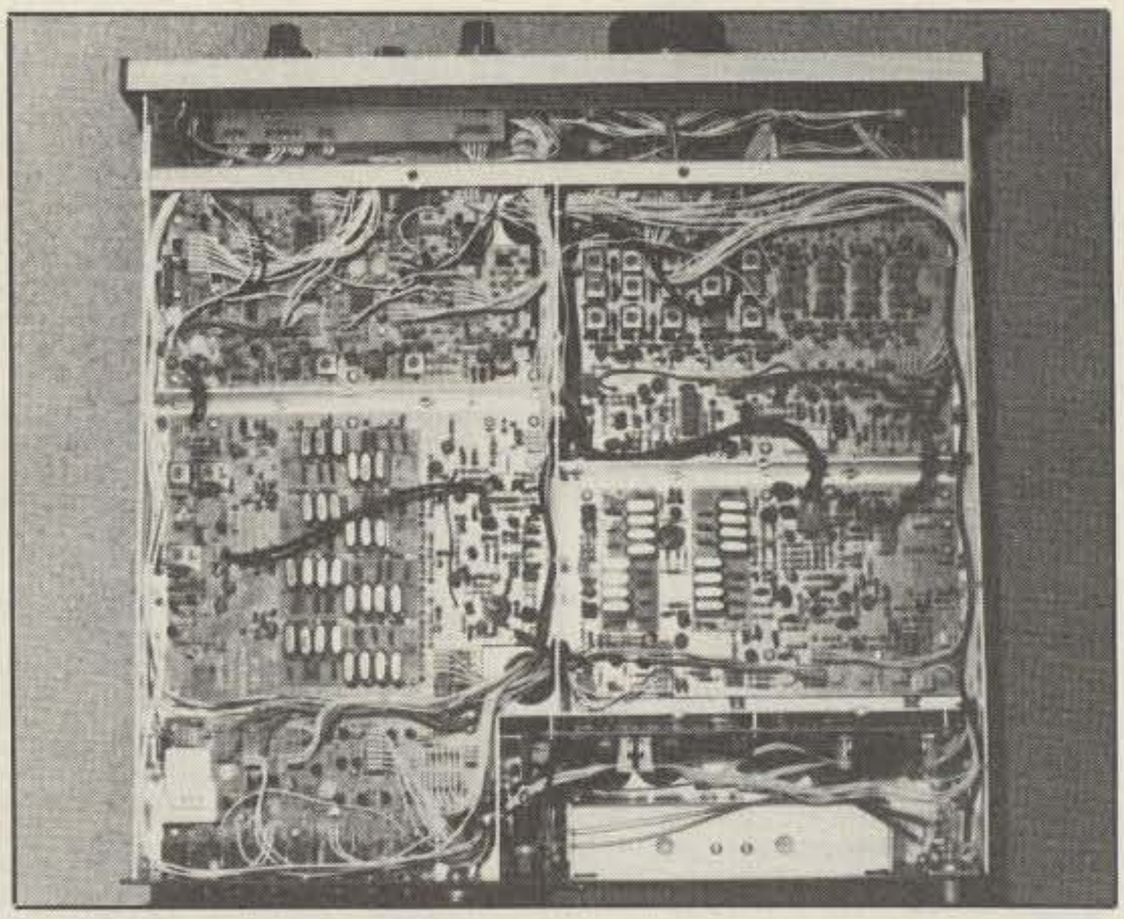
Taking off the top cover, I was immediately impressed by the very neat construction and the spaciousness of the layout. The oscillator circuitry of the 12-band mixer is located in a shielded compartment on the left. The logic board is to the right.



A closer look at the logic board. The round disc to the center left is the lithium memory back-up battery which will last about two years. It is easily user-replaceable. The connector to the top of the board is for an optional voice frequency readout board.



Taking off the bottom cover, you encounter a large internal shield. It has cutouts so you can easily exchange or add various IF filters. Also, there are access holes so you can adjust things such as S-meter calibration, CW keying waveshape, ALC range, carrier balance, etc. Neat!



Taking off the internal bottom shield, quite a formidable array of neatly arranged, mostly double-sided PC boards are visible. The IF filter board is to the center left, the mixer board to the upper right, and below it is the passband tuning board. Below the latter is part of the final amplifier, which is housed in its own completely shielded enclosure. There is no built-in fan for the amplifier. None is necessary unless you operate key-down modes for very extended periods or do quite heavy contest operating in any mode.

the M-VFO key. If you don't wish at the moment to operate on the scratch-pad recalled frequency (e.g., an impossible pileup), you can again enter the frequency into the scratch-pad memory and tune around that band or another band.

There are no keys for receive or transmit frequency offset tuning. Such operations have to be accomplished by using the split-operation feature of the two VFOs (more on that later).

Overall, the keypad on the Omni V is very clearly laid out. Basically, all of the keys have a clearly defined single function.

Construction

As usual, I couldn't resist taking all of the covers off the Omni-V to see how things looked inside. The photographs tell most of the story. The PC boards are well balanced with regard to the amount of circuitry on each one, and each board is fully serviced by multiple connectors so any individual board can easily be removed for possible servicing. The almost total aluminum frame construction should make the transceiver essentially immune to environmental factors just about anyplace in the world. In spite of the transceiver's sophisticated circuitry features, its overall size is quite in line with that of HF transceivers in the 100 watt output class. However, the feature that amazes me is the amount of free space that is still available within the unit. For instance, when you take off the top cover, only about half of the exposed volume is filled by circuitry.

External Connections

The external connections are almost exactly the same as those used on the Paragon. The front panel has connectors for a headphone and microphone. The rear panel of the transceiver contains a whole range of connectors to provide interface with a linear amplifier, FSK equipment, phonepatch, transverter, separate receive antenna, PTT footswitch, etc. Just about every contingency has been provided for in addition to the standard antenna and power-supply connectors.

The Omni V does, however, have as standard a DB-25 connector on the rear panel for computer control, since RS-232 interface is built into the transceiver.

The rear panel also contains various controls that normally would be infrequently adjusted, such as those for VOX, CW sidetone level and pitch, SSB/FM phone sidetone level, and beep tone level.

Bench Checks

Since the Paragon transceiver was previously quite thoroughly checked out, and since most of the RF path circuitry is the same for both the Paragon and Omni V, only a few spot checks were made to confirm that the Omni V has at least the same excellent characteristics as the Paragon. I thought it a bit more useful to spend more time checking out actual on-the-air operation of the Omni V. Besides, that's more fun.

Let me at least indicate that spot checks on the Omni V proved that it does indeed have outstanding characteristics. There is no question that its published minimum specifications are quite conservative. On the transmit side, the Omni V has just about one of the cleanest signals possible with third-order IMD (14.2 MHz, 100 watts PEP) down almost −40 dB. The power output is almost exactly 100 watts across each band. Rise and fall times for CW keying are about 4 ms and turn-around times less than 20 ms, well below that required for any digital mode of operation. With key-down periods of 20 minutes, the final heatsink does get warm, but it must be far, far away from exceeding its total key-down capability (without using any external cooling). Overall spurious emissions (harmonics, etc.) are down 50 to 55 dB with higher harmonics (3 to 5×) going down to about 70 dB.

On the receive side, the Omni V does indeed have the "quiet" edge. The minimum discernible signal on 10 meters was an outstanding −140 to 142 dBm. That doesn't mean that the transceiver has an overload-proof front-end, since the measurement is made using a single signal source. It does, however, indicate that internal noise is very low indeed. The third-order intercept point (14.2 MHz, 20 kHz signal spacing) plotted out to a very good +18 dBm. All of the IF filters measured out as good as or better than specified with regard to shape factor. The standard 2.4 kHz SSB filter with a shape factor of 1:1.4 would have been considered an expensive option in many transceivers only a few years ago. The various optional filters all checked out exactly as specified, and I would heartily recommend the optional 1.8 kHz filter to an SSB enthusiast or one of the optional CW filters for a CW buff.

How about phase-noise? The topic of phase-noise as it affects the receive performance of a transceiver has received a lot of publicity lately. What is phase-noise? Allow me to present the idea to you in a simple manner, and I'll suggest some references if you really want to explore the subject.

Fig. 1(A) shows a mixer (there could be several in series) fed by a local oscillator which produces either an almost pure sine wave (e.g., crystal oscillator) or some form of distorted waveform approaching a square wave. If the sine wave feeds the mixer, the signal coming out of the mixer will ideally look like those in fig. 1(B)—that is, a signal with clean flanks or, as seen on a spectrum analyzer, just a single carrier frequency. If the local oscillator produces a distorted waveform, the output from the mixer starts to look as in fig. 1(C). The basic signal has fuzzy flanks, and if observed

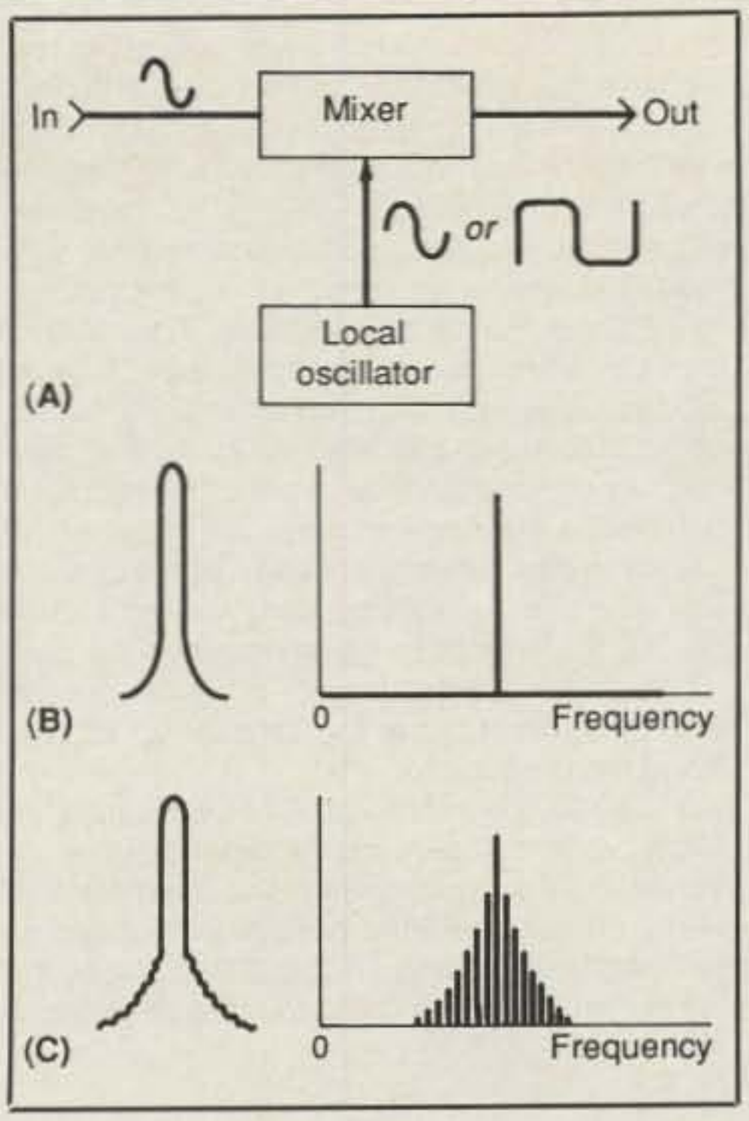


Fig. 1– Depending upon whether a local oscillator injects a sinewave or distorted waveshape into a mixer stage (A), the output of the mixer will be a basically "clean" signal (B) or one with "fuzzy" skirts representing noise (C). (B) and (C) show a close-up of an output signal and a representation of how the signals might look on a spectrum analyzer. The noise on either side of the signal at (C) can be measured in terms of noise density.

on a spectrum analyzer, there is the carrier signal plus a hazy cluster of spurious signals around the carrier signal. The latter signals are noise. If several "noisy" mixers are used in a row, the noise buildup is cumulative and noise will mask weak signals. There is more to it than that, of course, especially if the same mixer stage or stages are used to process the received as well as the transmitted signal, as is the case in most transceivers. The March/April 1988 edition of *QST* discusses the subject in detail.

Unfortunately, there is no *simple* way, as yet, to quantify phase noise. You can compare spectrum analyzer pictures of the phase noise in various transceivers or produce a table or graph of noise density as you go out in frequency from a carrier frequency, but that's about it. I did look at the IF signal of the Omni V on a spectrum analyzer using an HP-8640B signal generator as a signal source. The IF signal looked very clean, but I have no "numbers" to present. The exceptional minimum discernable signal level of the Omni V, as previously noted, at least hints at the fact that self-generated noise within the unit must be extremely low.

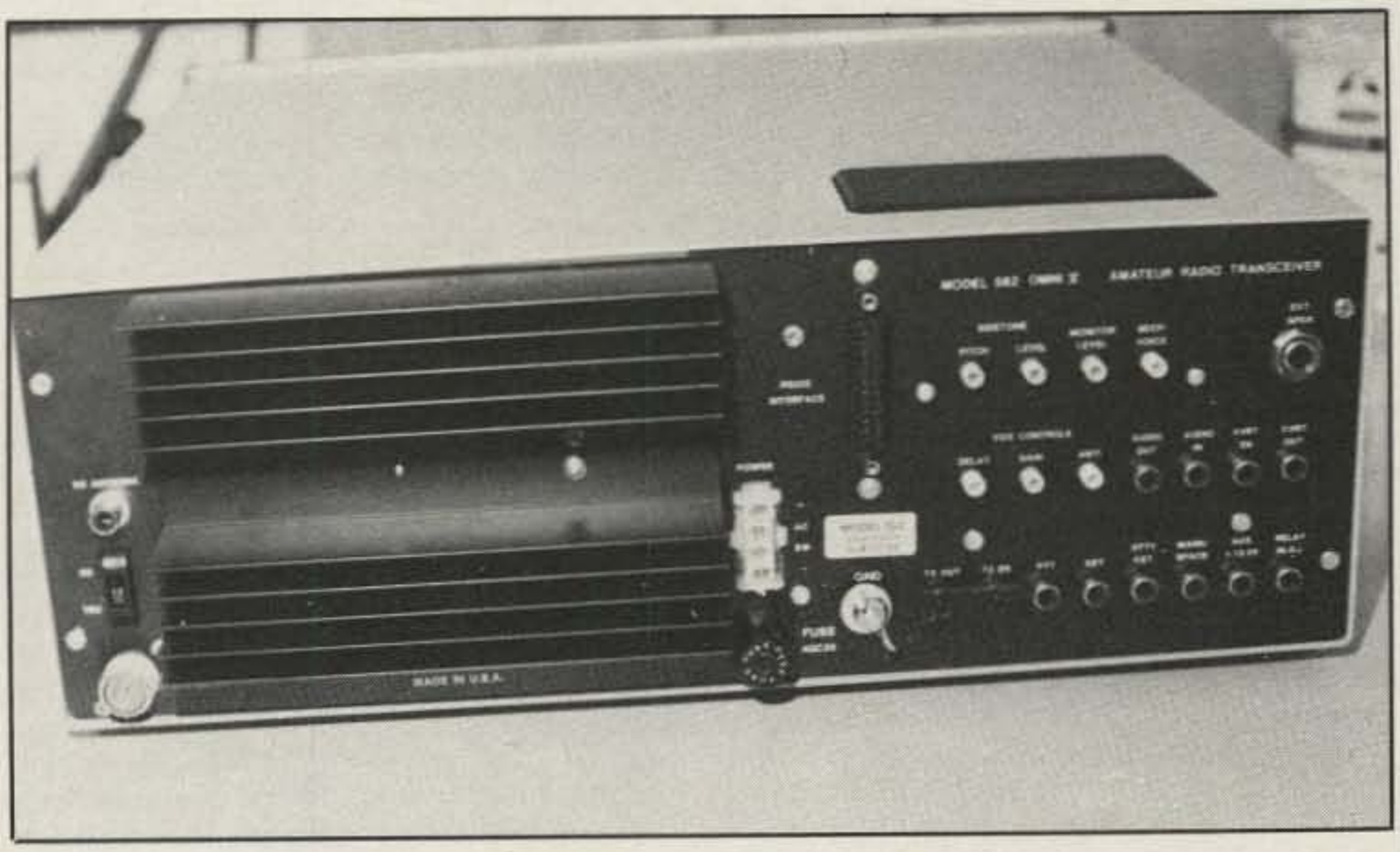
Memory Retention

No, you don't have to keep the power supply turned on to retain memory information in the Omni V. The memories are nonvolatile RAM and retained until changed. The status registers (and clock) are backed with a standard 3 volt lithium battery. The battery is easily *user* replaceable, and the manual for the Omni V describes a simple procedure as to how it can be done without losing the information in the memories. Normally a battery lasts at least two years, and a soft battery is first indicated when the clock no longer keeps correct time.

Operating Results

Simply stated, the Omni V is a thoroughly enjoyable radio to operate. I won't go so far as to state that every feature is perfect, or I'll be out of the business of writing product reviews, but the Omni V comes pretty close.

First of all, it is a comfortable radio to operate. The large frequency display is extremely pleasant to view, and its operation is perfectly smooth both visually and electrically. There are no clicks or pops as you tune through any portion of any amateur band. The tuning "feel" is very good—firm but not soft. Ten-Tec sup-



The back panel has enough in/out connectors for any type of accessory equipment. The panel also contains the VOX controls and the CW/phone monitor level controls. The RS232 interface connector is standard.

plies an Allen wrench with the radio if you would like to reposition the tuning knob on its shaft for a different "feel."

The filter selection keys above the main tuning knob allow you to choose any desired filter (in any mode, by the way, except FM) with a finger without taking the same hand off of the tuning knob—very convenient. And, I'll reverse myself as to some comments I made in a previous article on the Paragon about preferring some of the "analog" controls to be located on the right side of the front panel. I found the controls on the Omni V extremely well arranged. It is quite convenient to be able to adjust the main tuning with your right hand while various level or selectivity controls can be adjusted with your left hand. This impression may be a mental adjustment to the fact that the frequency display on the Omni V is shifted to the right of the tuning knob as compared to being centered above the knob on the Paragon.

Of course, the real beauty in using the Omni V on receive is its superb quiet. No radio can eliminate atmospheric noise or totally eliminate QRN, but when those noises are not a factor, the Omni V really shines. It becomes fun to work quite weak stations and still be able to have an intelligible QSO. I had some nice experiences by being able to work weak South American stations from SV0DX when apparently other European stations could not copy them well enough for a QSO. Of course, propagation always plays a role in such situations.

I found the keypad on the Omni V very easy to learn to use basically because each key, with two minor exceptions, has a single dedicated function. There is a separate key for each band so that is the "bandswitch."

I did become annoyed after some time that the starting frequency on each band shifted according to how a VFO had been set on the last previously used band. The solution was to put my desired band start frequencies in some of the memory locations.

Surprise department: At first glance there would seem to be no receiver or offset tuning possibilities. In reality, those features exist although Ten-Tec decided to implement them in a slightly different, and perhaps better, way. Basically, the operations are achieved by using the dual VFOs in the split mode. This can be done in various ways. You could, for instance, without being in a split mode, use VFO A only to tune about a band and find a clear spot to call CQ. Then if a station came back to your call but was slightly off frequency, you would press the A = B key, the A/B key, and the SPLIT key (they are all arranged vertically on the keypad in that order). The transmit frequency is then fixed to VFO A while VFO B is tunable on receive. That procedure is workable but awkward. A better idea is to always operate in the split mode. Then you only have to press one key, A = B, to have one VFO control the transmit frequency and the other VFO control the receive frequency. Since either VFO is fully tunable, any receive or transmit offset is possible. The reverse key (REV) allows you to temporarily exchange the VFO frequencies so when operating split you can quickly receive the frequency on which you are set up to transmit. Obviously, when a DX station is operating split and "tuning 5 to 15 kHz up," you can check that you are not transmitting on a pileup frequency, or if you are agile enough, you can track the transmitting frequency of the last station to which the DX station came back and get ready to transmit on that frequency.

I admit that it took me a few operating sessions to get used to offset tuning "a la Ten-Tec," but then I rather got to like it. If you set up in the split mode to start with, you only have to press the A = B key when calling CQ or answering a station to have complete flexibility with regard to receive or transmit frequency movement about the initial frequency. The more or less traditional use of having dual VFOs (storing the frequency of a station in QSO, tuning about a band with the other VFO, and then periodically switching VFOs to check if the QSO is finished) is not negated because of the extra' "scratch pad" memory feature of the Omni V. Using Ten-Tec's offset system I worked XT2CW on the first try after he announced his split mode on 10. I'm sure many other Europeans were still trying to get the split set up as I finished the contact.

I used the Omni V primarily on SSB and CW. Many very complimentary reports were received on the audio quality and clean keying. Many friendly inquiries were also received as to what the radio was all about. Judging by the latter, the Omni V is going to have an interesting future.

Options and Accessories

The Omni V I used had all of the optional 6 MHz IF filters installed and the optional 1.8 kHz 9 MHz IF filter. All of the filters are highly recommended, especially if you wish to optimize performance on any given mode. However, the standard 2.4 kHz SSB filter in conjunction with the use of passband tuning and the audio selectivity features will provide more than satisfactory operation for the casual operator on any mode. The voice readout and FM options are available for those who desire those features. I understand that an optional remote optical encoder is in the works. This is basically a box that brings the main tuning to wherever you want it. You can have the radio on a slightly elevated shelf while tuning it in a comfortable manner as you spend hours searching for a "new one."

Ten-Tec has available a complete line of accessory items for the Omni V ranging from microphones to power supplies to linear amplifiers. I have not tested them as part of this review, but I have presented many of them in previous reviews. They certainly should all mate perfectly with the Omni V, especially QSK with amplifiers such as the Hercules II or Titan.

Summary

The Omni V is a delightfully exciting radio. Is it worth the price? Sure. Why does it cost as much as the Paragon, which seems to have more features, such as general-coverage receive? The answer to the latter is that the cost of incorporating a 12-band crystal mixer local oscillator board in the Omni V plus the cost of the nonvolatile RAM memory system plus the cost of the standard RS-232 interface all add up.

The receive performance of the Omni V is a definite cut above any other transceiver in its price class. I think that factor alone will make the Omni V extremely popular, especially with serious DX and contest operators and also with all-around operators who simply want every edge they can get in an amateur-band-only transceiver. CQ