Product Review & Short Takes Columns from *QST* Magazine

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ICOM IC-V8 2-Meter FM Handheld Transceiver

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I've always been a fan of elegant simplicity. When I was a Novice, my first transceiver was a 222 MHz handheld that was about as simple as you can imagine; three thumb-wheel dials and a pushbutton controlled the operating frequency, a three-position slide switch selected the offset and a pair of knobs handled volume and squelch. The rig did have its drawbacks, however (a tiny battery, low RF output and a near total lack of features—to name a few), so it has been succeeded by other H-Ts, each one having advantages and disadvantages.

Modern handheld transceivers are very feature-laden, but they also tend to be somewhat complex to use (or perhaps I should say a challenge to remember how to use!). When operating the H-T I currently own (admittedly 6 years old) I often confuse the button combination used to access the settings menu with a diabolically similar combination that performs a full reset—which clears all of the memories and settings! Needless to say, it's in times like these that I long for those simpler days.

A few of the more recent H-T offerings have promised ease of use, at least in regard to working the more basic features. When I saw the relatively uncomplicated façade of the ICOM IC-V8 2-meter handheld, I was intrigued enough to volunteer to take on this review. The fact that the radio's enclosure is green (my favorite color) just added to the attraction.

A Tough Exterior

The first thing that I noticed when I took the IC-V8 out of its box was its rugged look and feel. Some browsing around on ICOM's Web site revealed—as I had suspected—that the 'V8 bears a striking resemblance to a series of handhelds in their "Land Mobile" communications product line.

Although the rig is a bit tall and deep when compared to some other contemporary H-Ts, it is somewhat narrow in width, so it fits well in average size hands. With its rounded case edges, gripping it feels very much like holding a flashlight. At slightly more than 12 ounces, it's a bit too heavy to carry in a shirt pocket. A large plastic clip that snaps onto the back of the battery pack is supplied, and does a good job of securely holding the radio on a belt.

The 'V8's simple appearance belies its well-rounded list of features. These include, but are not limited to, 100 regular memory channels, alphanumeric memory naming; scan edge memories; a "Call" channel; CTCSS and DTCS (most often referred to as DCS) encode, decode and tone scan; automatic repeater offset; 5.5 W of RF power output; DTMF autodial memories; multiple scan modes and extended receive.

Bottom Line

The ICOM IC-V8 is a tough, easy-to-use single-band handheld with a full range of features.

An Overview

The top of the rig supports a standard BNC antenna connector and a single knob. VOL is molded into the case adjacent to the knob, and this is indeed its default function, but this assignment can be changed via a menu setting (more on this later). The right side of the rig has separate three-conductor speaker and microphone jacks. The "ring" of the speaker jack is normally not used, but serves as the connection point for a "cloning" cable. The "ring" of the mike jack supplies a 5 V output (for providing power to optional speaker-mikes).

There are three rubberized buttons located on the right side of the rig. The top button is a red power button. Beneath that is a large oblong push-to-talk button, and just below that is a small monitor button (both of these are black).

A large speaker grill takes up the top third of the front panel. The LCD display is a bit on the small side, and while the frequency digits or alphanumeric characters that appear in the window are of sufficient size to be reasonably legible, the various icons and the four-segment receive signal strength indicator are downright tiny. The display background can be illuminated. In the default setting the light remains on for 5 seconds after any button is pushed, but it can alternatively be disabled or set to stay on continuously.

Four buttons are located in a row below the bottom edge of the display window. These include a function button and three additional keys that are used for call channel, memory and VFO mode operations. These same keys are used to generate DTMF "digits" A, B, C and D. A four-row/three-column DTMF keypad is located below these. The keys are large and their assignments are marked in black directly on their surfaces. They are not backlit, however. Keypad buttons are used to directly input frequencies, manually transmit DTMF tones and control

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Table 1
ICOM IC-V8, serial number 01702

Manufacturer's Claimed Specifications	Measured in the ARRL Lab
Frequency coverage: Receive, 136-174 MHz; transmit, 144-148 MHz.	Receive and transmit, as specified.
Power requirements: 6.0-10.3 V dc[1]; receive, 0.25 A (maximum); transmit, 2.0 A.	Receive, 0.17 A (maximum volume, no signal); transmit, 1.9 A, tested at 10 V.
Size (HWD): 5.2 × 2.1 × 1.4 inches; weight, 12.3 ounces.	
Receiver	**Receiver Dynamic Testing**
Sensitivity: 12 dB SINAD, 0.16 μV.	For 12 dB SINAD: 0.13 μV.
Adjacent-channel rejection: Not specified.	20-kHz offset from 146 MHz, 64 dB.
Two-tone, third-order IMD dynamic range: 65 dB, (spacing not specified).	20-kHz offset from 146 MHz, 64 dB*, 10-MHz offset from 146 MHz, 93 dB.
Two-tone, second-order IMD dynamic range: Not specified.	86 dB.
Spurious and image rejection: 75 dB.	IF rejection, 105 dB; image rejection, 73 dB.
Squelch sensitivity: 0.1 μV.	0.11 μV at threshold.
Audio output: 300 mW at 10% THD into 8 Ω.	410 mW at 10% THD into 8 Ω.
Transmitter	**Transmitter Dynamic Testing**
Power output: 5.5 W high, 0.5 W low.	5.4 W high, 0.4 W low (batteries), 6.0 W high, 0.4 W low (at 10 V dc).
Spurious signal and harmonic suppression: 60 dB.	70 dB. Meets FCC requirements for spectral purity.
Transmit-receive turnaround time (PTT release to 50% of full audio output): Not specified.	Squelch on, S9 signal, 200 ms.
Receive-transmit turnaround time ("tx delay"): Not specified.	124 ms.
Unless otherwise noted, all dynamic range measurements are taken at the ARRL Lab standard spacing of 20 kHz.	

*Measurement was noise limited at the value indicated.
[1]Using ICOM's battery packs only.

those settings that are varied often (duplex direction, tone, RF power output level and scan settings, for example).

A pair of small triangular up/down buttons is positioned to the left of the display window. By default, these are used to change the operating frequency or memory channel, or to scroll through the menu selections while in the set modes. Due to their size and placement, I found them inconvenient to use—in spite of my somewhat skinny fingers. Fortunately, the operating assignments of these buttons can be swapped with those of the top-mounted VOL knob. I find that I typically don't adjust the volume as often as I change frequency, so I performed the exchange as soon as I read about it in the *Instruction Manual*.

Some Preliminaries

Speaking of the manual, it's compact and concise—at 4 × 6 inches and 68 pages. This makes it very easy to bring along (it fits nicely in a shirt pocket), but its brevity does come at the expense of user-friendliness. While nothing important is left out, there aren't any detailed repeater operating tips for beginners, nor are there any whimsical diagrams of H-T-shaped cartoon characters to guide you along. There has been a noticeable trend toward larger, more detailed manuals in recent years. It should be said though, that the ARRL Lab has received a good number of requests for assistance from folks having trouble finding the desired programming steps in some of those lengthier manuals!

As with most handhelds, before you can initially put this rig on the air, you'll have to charge the battery pack. The supplied charger is a "drop in" trickle charger. A slide-in plastic adapter is included that allows you to charge the battery pack when it's removed from the H-T (of course, you'll need a second pack if you intend to operate the radio and charge a battery simultaneously).

The BP-222 battery pack that's supplied with the rig is a 600 mAh NiCd. Among the optional packs listed in the manual are a 1650 mAH NiMh and a battery case for alkalines. The high-capacity rechargeable pack would significantly extend your operating time between charges, and a battery case is always a valuable accessory to have on hand—especially when you find yourself out in the field with expired rechargeable batteries.

All of the available rechargeable packs are 7.2 V, although the rig's published specifications allow for supply voltages up to 10.3 V (but since you get a full 5½ W at 7.2 V, there isn't any particular reason to feed it a higher voltage). While on the subject of power source options, it's important to note that the IC-V8 lacks a dc input jack for powering the rig from an external supply or vehicle cigarette lighter socket. A few of the after-market replacement battery manufacturers offer "battery eliminators" for the 'V8. These are essentially an empty battery pack enclosure with a built-in regulator and a cigarette lighter cable attached.

My Way

Once I got the batteries charged up, I programmed a number of local repeaters into the memories. I like to set the memories up in order of frequency (yes, I know it's a compulsion, but it's one I can live with...). I made a mistake with

the ordering and thought that I'd have to go through a lot of reprogramming to fix it, but then I discovered a neat programming feature that makes repositioning memories easy—"memory copying." This feature allows you to copy the contents of a memory directly from one location to another without having to use the VFO. I think this is a great capability for folks like me who like to keep things "organized."

Creature Features

There are 100 standard memory channels, three pairs of scan edge limits and one call channel, for a grand total of 107. Memories hold the frequency, offset, RF power output setting and tone information and can also be assigned alphanumeric names up to five characters long.

I consider direct keypad frequency entry a must, and the 'V8 supports this feature. The 100-MHz digit has to be punched in each time (although "1" is your only choice). This took some getting used to as my current 2-meter rig accepts the first button press as the 10-MHz digit. You skip the decimal point (the keypad doesn't have one anyway) and you can alternatively hit the # ENT key if the remaining digits to be entered are all zeros (so 147.000 is most efficiently entered by pressing 1, 4, 7, # ENT).

The keystrokes required for moving between memory mode, call channel and VFO mode all seem logical and are easy to remember. Just one caveat here though—the key used to enter the VFO mode is labeled D CLR. (This key is also used to cancel a key entry, so the legend makes sense.)

As with many recent transceivers, there's a "set mode" and an "initial set mode." The set mode is entered by pressing the A FUNC button and the 8 SET button. This menu contains commonly varied settings such as the tone frequency, the offset, the tuning step, etc.

The initial set mode is entered by pressing and holding the up and down arrow buttons while turning the power on. This procedure is easy to remember once you've done it a couple of times, but it is somewhat awkward. Fortunately, you won't need to make changes to the settings in this menu very often. Features activated or adjusted here include automatic repeater offset, automatic power off, time-out timer, DTMF autodial speed, top knob function assignment and display type (frequency, channel number or alphanumeric name). Most of the mnemonics for the menu selections in the two menus are reasonably decipherable, but you'll probably want to keep the manual handy for your first few forays into them—a few are initially somewhat cryptic.

Extended Receive and Scanning Tools

Should you ever grow tired of chatting it up on the 2-meter ham band, you could always use the IC-V8 to monitor the NOAA Weather Radio or the public service and commercial bands located just above and below our frequencies. The lower limit of the receive coverage is 136 MHz, though, so you won't be able to listen to aircraft band activity (the AM receive mode is not included anyway). The upper frequency limit is 174 MHz.

Scan types include "programmed scan" (VFO scanning between the scan limit memories), "memory (skip) scan" (scanning the standard memory channels in sequence, omitting any you've marked to be skipped), "priority watch" (briefly checking memory channel number 3 every 5 seconds) and "priority memory channel scan" (which is similar to priority watch, except that the "priority" channel changes to the next higher standard memory channel on each memory channel check). The scan resume condition can be set to either "timer" (the scan remains on an active channel for 5, 10 or 15 seconds) or "pause" (the scan remains on the channel for 2 seconds after the squelch drops). The scan speed is a brisk 40 channels per second.

Tone and Code Squelch

The 'V8 includes CTCSS encode and decode (aka "tone squelch"), and can scan for the tone on signals it receives for those occasions when you don't have your *ARRL Repeater Directory* handy. I tried this out on a handful of repeaters. As long as the receive signal was strong and clear the tone would be identified within a couple of seconds. Marginal receive signal strength can prevent the system from finding a proper match.

Fifty CTCSS tones are supported, and different tones for transmit and for receive can be assigned to the same frequency or repeater pair. For those who plan on traveling abroad, the rig can even generate the standard 1750-Hz tone used to open the "tone burst" squelch systems in use on some of those repeaters.

The IC-V8 is set up for digital code squelch operation as well. Most of the other manufacturers refer to this as "DCS," but for some reason ICOM has decided to use the abbreviation "DTCS." (Have no fear; the systems are compatible.) The manual provides very little specific information on this feature, but its operation is similar to that used for CTCSS. All 104 of the standard DCS codes are available, and codes can be "inverted."

There's also an optional board—the UT-108—that adds a DTMF "Pager/Code Squelch" system. This uses three-digit DTMF codes to control the squelch.

A "Pocket Beep" paging feature is included. This system works in conjunction with the CTCSS, DTCS or DTMF tone squelch systems to silence the radio until a signal from a calling station containing the proper tone, code or DTMF sequence is received. At that point the radio will emit a beeping sound for thirty seconds and a small flashing icon will appear in the display. The icon continues to flash until the PTT button is pressed.

Five DTMF memories for autopatch and remote control applications are provided. Each of these memories will hold up to 24 digits.

Up and Running

Several folks I spoke with on the air reported that the transmit audio "sounded very good," and one of these comments was completely unsolicited, so I'll award the rig high marks in this area. Receive audio clarity was also very good, although operating mobile in a fairly noisy vehicle still warrants use of an external speaker. With 300 mW of available audio output, there is sufficient audio on tap. (We measured over 400 mW of audio output on our unit.)

Transmit power on high is 5½ W, which is pretty respectable for a 7.2 V battery pack. Low power is about ½ W. The lower output level is often sufficient to work nearby repeaters and will greatly extend the operating time between charges. The voltage level or battery state indicators that are found on many of the other H-Ts is absent on the 'V8, so you won't get any warning when the battery is about to run out of steam.

Lab test data for 10-MHz spacing IMD dynamic range performance for this rig was higher than any other 2-meter handheld we've tested in recent years (see Table 1). This is a good indication that the 'V8 will be particularly resistant to interference from out-of-band signals that can result from nearby VHF commercial communications and paging systems. This type of interference is known to plague H-T users that live and work in urban areas.

In My Opinion...

Overall, I found the ICOM IC-V8 a pleasure to use, and—at its current price—it seems to be good value in a "basic" handheld. In spite of the fairly extensive list of included features, the radio is easy to program and operate. Un-

like some recent handheld transceivers I've encountered, the buttons on this rig typically perform only two functions, and those are clearly marked on the button face, so there are few operations that involve pressing buttons that are not labeled accordingly.

While the IC-V8 is certainly not as simple to operate as my first handheld, I feel the advantage of having access to such a good selection of tone, scanning and convenience features made the short time I spent becoming familiar with its simple control and programming operations seem well worth the effort.

Manufacturer: ICOM America, 2380 116th Ave NE, Bellevue, WA 98004; 425-454-8155, fax 425-454-1509; **amateur@icomamerica.com**; **www.icomamerica.com**. Manufacturer's suggested list price: $199.99. Typical current street price: $165. List prices of selected optional accessories: BP-208 alkaline battery case, $18; BP-210 NiMH 7.2 V/1650 mAh battery pack, $80; BC-144 desktop rapid charger, $101; CP-12L mobile charging adapter, $24; CS-V8 *Windows 95/98* programming software (on CD-ROM), $35; OPC-487 computer programming cable, $45; OPC-474 radio-to-radio cloning cable, $18.

Super Antennas MP-1 Portable Travel Antenna

Reviewed by Ed Hare, W1RFI
ARRL Lab Supervisor

When Vern Wright, W6MMA, the owner of Super Antennas, and Vern Dawson, K6RRC, came up with the concept for the MP-1, they clearly had one goal in mind—an antenna for all types of portable operation! The result is a family of compact antennas that can be configured for use in nearly any situation. The kit and its optional accessories allow assembly of a variety of antenna systems that range from one that breaks down into a handful of pieces under 12 inches long, to somewhat larger—and more efficient—fixed and mobile antennas.

Whether you're a business or vacation traveler, a backpacker or an apartment dweller, it's likely that this system can be configured to fit your site requirements. Though designed primarily with temporary operation in mind, the antenna could conceivably be employed in more permanent installations by hams who just can't put up bigger, more conspicuous antennas.

The MP-1

The basic MP-1 kit covers 40 through 6 meters and is rated for up to 150 W of RF power (see Figure 1). An 80-meter add-on coil is one of several available options (see Figure 2). Don't let the word "kit" scare you though, assembly is simple. It is a kit only in that it quickly breaks down into several small components that can be tucked into a briefcase, suitcase or backpack. The MP-1 package includes an 8½-inch aluminum rod base section; an adjustable coil (more on that later); a 4-foot telescoping whip; a radial kit and a support bracket that Super Antennas dubs the "universal base." The universal base, the base section, the coil and the whip all thread together like a pool cue. A conventional C-clamp is provided to secure the assembled antenna to nearly anything.

The Universal Base

Figure 3 is a close-up of the universal base. This photo shows it mounted to a balcony railing. The provided clamp has a jaw span of 2 inches, but a trip to the nearest hardware store would net you a larger version if necessary. The radial kit connects easily. The radial wires are spread out around the balcony and serve as a ground plane.

In most instances, you'll want to set the antenna up as near to vertical as possible. The universal base has two adjustment points that can be used to compensate for any unusual angles that result from the mounting surface. This feature also facilitates mounting in locations where you need to tilt the antenna at an angle—on a windowsill or below an overhang, for example. During this evaluation, the antenna was set up in several hotel, apartment and portable situations, and this capacity for adjustment almost always came in handy.

There are two large (#3) Phillips-head machine screws that must be loosened to allow adjustment. A screwdriver is not included with the kit, so for portable operations you'll want to remember to bring one along. Make it a hefty one though; the screws must be locked down tight to secure the antenna at an angle.

The Adjustable Coil

The mounting base is the foundation of the antenna, but the coil is its heart. As with any short vertical antenna, inductance is needed to bring it to resonance.

The MP-1 coil borrows an idea from the popular "screwdriver" mobile antennas (like Super Antennas own KW-3 mobile screwdriver antenna). It uses an aluminum cylinder with finger stock contacts inside that is moved up or down over a coil to achieve the desired amount of inductance. The mobile screwdriver antennas use a motor to make this adjustment from the driver's seat. But in true "minimalist" style—adopted by nearly every backpacker—the MP-1 is adjusted manually. One end of the cylinder has a collar that supports a wing nut set screw. When this is loosened, the cylinder slides freely over the coil. Once properly posi-

Bottom Line

The MP-1 and its accessories make up a portable antenna system that's designed for the backpacker, traveler or condo dweller. With a maximum power rating of 150 W, it can serve the needs of both QRPers and "barefoot" operators alike.

Figure 1—The components provided in the basic MP-1 kit. The package includes a universal base, a C-clamp, an aluminum rod base section, an adjustable coil, a telescoping whip and a radial kit.

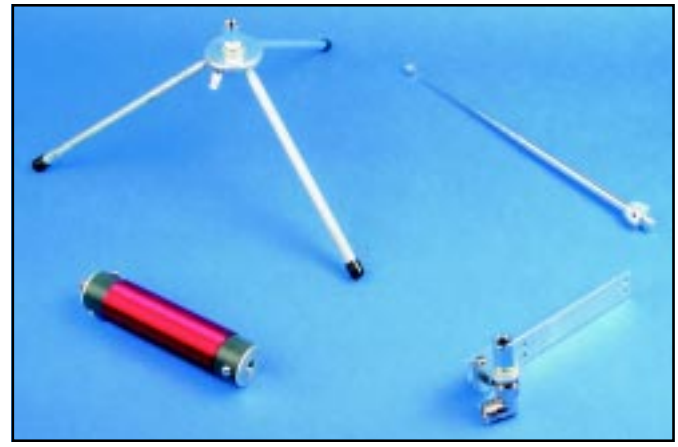


Figure 2—Some of the optional accessories for the MP-1. These include a tripod mount, an 80-meter add-on coil, an FT-817 mounting bracket and a replacement telescoping whip. An additional accessory pack that contains a longer (2-foot) aluminum base rod and a thin stainless steel whip is also available.

tioned for resonance, the set screw is tightened to retain the setting.

Adjusting the MP-1 for resonance has been reported by some to be very easy—by others as somewhat difficult. Super Antennas provides a template that shows the approximate position of the collar on the coil for each band. I found that the template settings worked out nearly exactly in most cases, and close enough in others. A few minor adjustments and some SWR checks at various points on the band usually got me tuned up in relatively short order.

Of course—as Murphy would have it—there was an occasion when I forgot to pack the template in my suitcase, so I had to resort to a bit of ham ingenuity. In that instance, I found it fairly easy to tune the antenna using a good ear and my rig's SWR meter. I turned the rig on and cranked up the receive volume a bit. I set the rig to the desired operating frequency, adjusted the coil for maximum band noise and then used the rig's built-in SWR meter for the final touchup.

Those who own an antenna analyzer can put it to good use here. I brought along an MFJ-259B on one of my trips; it greatly simplified tuning. The analyzer eliminates a lot of the "back and forth" of making adjustments and taking SWR readings. The analyzer method is particularly handy on the lower frequencies, where the tuning becomes rather sharp.

While tuning the coil manually is not as convenient as motorized tuning, it is a lot easier to backpack a manual system than a motor-driven system and the power source needed to run it. The manually adjustable coil is certainly a simple and economical alternative.

The Ground Plane

As is the case with all electrically quarter-wave verticals, the MP-1 needs a good ground or ground plane to function well. The radial kit that's included with the MP-1 is as simple as it gets—it consists of four multi-conductor wires that all terminate in a single female spade connector. Each wire is a bit longer than 16 feet—around a quarter-wave on 20 meters. The radial kit connects to the uni-

Figure 3—A close up of the universal base. In this instance, the antenna system is attached to a balcony railing. The radial wires are spread out on the floor below.

Figure 4—The MP-1 set up on the optional tripod in a portable application.

versal base via a spade lug. The radials are then spread out in whatever space is available below the antenna.

On the 20-meter band and above, this radial kit provides a sufficient RF ground for the antenna. On the 30-meter band and below, however, the radial wires are not long enough to serve as a good ground plane. I tried using the antenna with the stock radial kit on 40 meters, but I encountered some "RF in the shack." At the QRP level I was using, this wasn't really a problem, but I did notice that the SWR changed when I put my hand near the rig or the feed line. I found that adding a single 33-foot radial cured the stray RF problems, although the floor of the hotel was a bit crowded with wire when I tried this test. I pretty much stuck to 20 meters and above when I was operating from hotels.

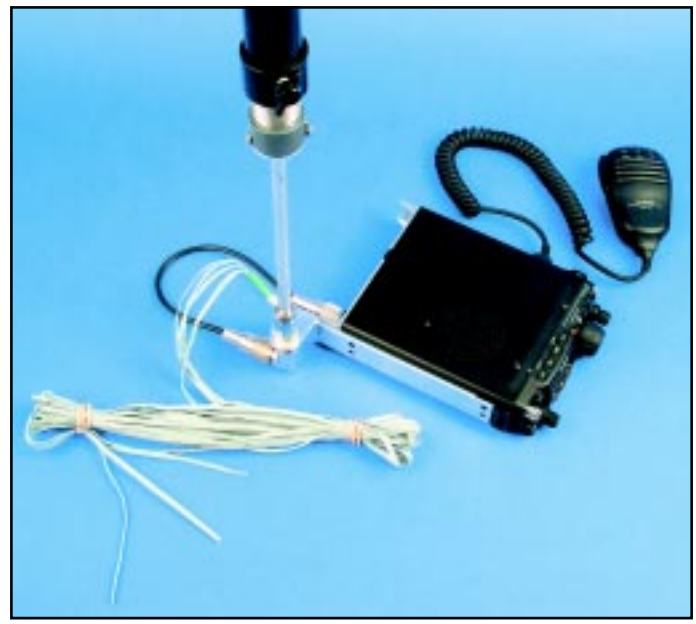


Figure 5—The MP-1 FT817MBT. This option package includes replacement screws that are used to secure the mount to the Yaesu FT-817. The short length of coax is not supplied.

Whip Section

I especially like the 4-foot telescoping whip that's supplied with the MP-1. Not only does it make it convenient to transport the dismantled MP-1 system, but it also makes it simple to fine tune the SWR. The whip looks very sturdy, but in the event that it does get damaged, Super Antennas offers replacements at a reasonable price. (I may purchase a few of these to use in the construction of some entirely unrelated antenna projects.)

Options

The MP-80

The optional 80-meter add-on coil—the MP-80—is shown in Figure 2. This is installed just below the adjustable coil section. I used it to make a few 100-W contacts on that band, but—as I would expect for such a short antenna—signals were not very strong.

The Tripod

Super Antennas also offers a neat little tripod kit—the TRPD—that breaks down into briefcase-size components (see Figures 2 and 4). It easily held any of the antenna configurations I tried. As with the other bases, this mount has a spade lug on it for attaching the radial kit.

I've had it set up on a small table and also directly on the ground. It might get a bit tippy in a strong breeze, but it worked out okay under the conditions I encountered. A single tent stake and a short piece of cord could be used to secure the mount to the ground in windy locations.

Bigger is Better

Old timers probably already know this, but for new hams, it must be said—when it comes to antennas, there is usually no magic. This antenna is no exception. The very nature of physics, ground losses and inductor Q make short, inductively loaded verticals relatively inefficient. This is especially true on 80 and 40 meters, where efficiencies of a few percent for short verticals are the norm.

Although the ARRL lacks the antenna range facilities to make any quantified measurements, I did a bit of antenna modeling that predicts that this antenna will not fall outside the expected range. Even on 20 meters, the overall efficiency won't be much better than about 50% or so. This is not a bad thing—it just tells you that the antenna works as should be expected for a short vertical. At 50% efficiency, that means that if you run 100 W into this antenna, it should work about as well as if you were running 50 W into a "perfect" quarter-wave vertical antenna.

The majority of the radiation from an inductively loaded antenna occurs from the section below the inductor, and the $8\frac{1}{2}$-inch base rod doesn't represent much radiator.

But wait, Super Antennas also offers the MBKT "mobile kit." This option package includes a 2-foot replacement base rod and a thin 4-foot stainless steel whip. These components allow you to convert the basic MP-1 into a taller antenna that's better suited for vehicle mounting and longer-term fixed operations (where extreme portability may not be a major consideration).

As noted above, adding length to the base rod section improves the efficiency of the antenna. I got creative and used a $\frac{3}{8}$-24 coupling to string two 2-foot base rod sections together. Once the coil and the 4-foot stainless steel whip were attached, the overall length was about 9 feet. For some types of fixed and portable operations, this setup could make a lot of sense. The 2-foot sections still fit easily into my suitcase and the mobile whip is flexible enough that I can bend it around and pack it into the same suitcase. I brought these pieces along on some of my trips.

Since the ends of all of the base rods are threaded for $\frac{3}{8}$-24, many of the common mobile mounting systems—such as ball mounts, heavy-duty trunk-lip mounts and multiple-magnet mounts—can be used to secure the basic MP-1 or the MP-1/MBKT combination on a vehicle.

The FT-817 Bracket

At the QRP Four Days in May event in Dayton, Vern (W6MMA) had an opportunity to show off all of his new products. It seemed to me that he was especially proud of one of them, though—the FT817MKT bracket he designed for mounting an MP-1 directly on a Yaesu FT-817 (see Figures 2 and 5).

To install it, one removes the side screws from the '817 and attaches the bracket using slightly longer screws that are supplied (Vern thought of everything). The MP-1 then screws into the $\frac{3}{8}$-24 SO-239 adapter on the back end of the bracket, which in turn is connected to the transceiver's antenna jack through a short length of coax with PL-259s on both ends. The coax is not supplied (okay, Vern thought of *nearly* everything). This

bracket also has a spade lug for connecting the radial kit.

The antenna mounting point pivots, allowing the antenna to be swung up along the side of the rig. This makes it possible to transport the assembled system using the FT-817's shoulder strap. The setup does a sufficient job of supporting the MP-1 with the short base section and the 40- through 6-meter coil, but I'd be hesitant to add the optional longer antenna base section.

Testing 1-2-3

This antenna system can be used in so many different configurations and under such widely different circumstances that no set of tests could be considered complete. I found that I was able to get a reasonable SWR (2:1 or better) under most circumstances, although there were times that I wish I had a bit more ground plane for the antenna.

What Do I Really Think?

I like the antenna. Though not as efficient as a full-size antenna, it more than makes up for that in portability. I've made a number of low power contacts with it. I'll certainly find it useful for those times when I need to take HF measurements in the field. I will also offer it as a "loaner" to my coworkers—not just for "professional" use, but for vacation and fun use from time to time, as well.

It appears to be rugged. It certainly stood up well on the several trips I took it along on, where it got banged around in my suitcase and tossed in the trunks of various rental cars. I like the idea that it enables me to bring along as little antenna as I need if I go backpacking, or to take a bit more antenna when I have the room. Does it work as well as a half-wave dipole up 50 feet in the air? Certainly not. But its performance was just what I expected it would be, and on a par with other mobile/portable antennas of similar size.

Manufacturer: Super Antennas, 1606 Pheasant Way, Placerville, CA 95667; 530-622-6668; **w6mma@jps.net**; **www.superantennas.com**. Manufacturer's suggested prices: MP-1, $150; MP-80 80-meter add-on coil, $25; MP-1 FT817MKT Yaesu FT-817 mounting bracket, $20; MP-1 TRPD tripod, $20; MP-1 MBKT mobile whip and 2-foot base rod section, $15; MP-1 WP4 replacement telescoping whip, $10. QST

HamAlyzer 2.0

Some signals should be heard and *seen*—and that's the allure of *HamAlyzer*. Looking at a visual representation of a signal will reveal characteristics that you may have only guessed by ear alone.

In the good old days many hams used oscilloscopes to view signal waveforms; many still do. But oscilloscopes often were beyond the financial reach of the common amateur. Those days are gone—at least for measuring audio-frequency signals—now that the vast majority of stations include sound-card equipped computers. The computer sound card can take audio from your receiver and convert it to data so that you can analyze it with nifty software such as *HamAlyzer*.

Versatile Software

The *HamAlyzer* package is based on a high-performance digital audio spectrum analyzer originally designed for engineers. Dr Chris Brown created *HamAlyzer* to be user-friendly, and to run on a variety of PCs using as little processor muscle as possible. It will run on just about any Pentium-class PC under *Windows 95*, *98*, *ME* or *2000*.

With *HamAlyzer* I enjoy the ability to select the free running, averaging or peak display modes (or all three together). Free running gives you a constantly changing look at the output of your receiver, second to second. I noticed very little latency. The peak display shows the plot of peak signal energy, while the averaging selection shows average signal power.

With *HamAlyzer* I could study the entire audio output spectra of my receiver and, not surprisingly, I discovered right away that most of the signal energy is concentrated between about 300 and 3000 Hz when I'm not using narrow IF filters. *HamAlyzer* showed that the receive audio from my ICOM IC-706 transceiver peaked between 500 and 700 Hz, then gradually ramped downward, dropping about 15 dB to 3000 Hz.

Easy to Use

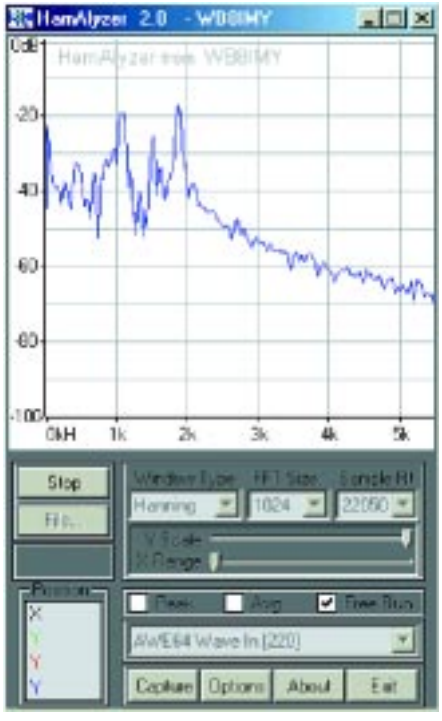
Using *HamAlyzer* is as simple as booting up the software and clicking your mouse on the **START** button. *HamAlyzer* will instantly begin displaying whatever signal is coming into the sound card at that moment. *HamAlyzer* can also analyze a previously recorded WAV file. You can even adjust the amplitude scale for a finer look at the signal.

You can analyze audio directly from your radio by connecting a shielded cable between the fixed-level audio output (usually available at the accessory jack) and either the **LINE** or **MICROPHONE** input of your computer sound card. Cable hookup takes all of about 30 seconds.

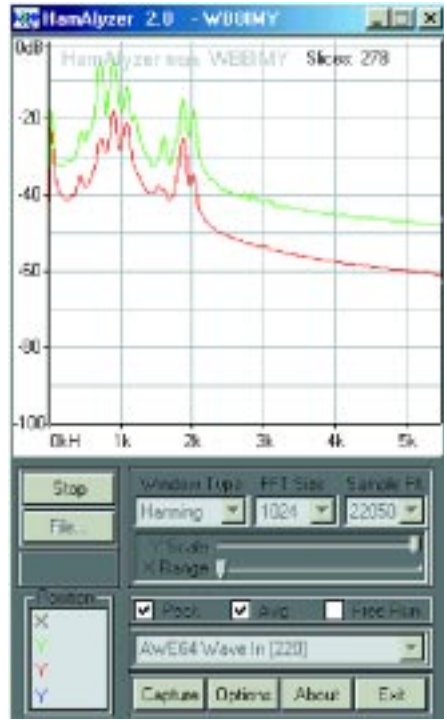
If you'd like to share your analysis of a fellow amateur's signal, *HamAlyzer* makes it easy. Just click on the **CAPTURE** button and *HamAlyzer* will save a snapshot of the display in JPG or BMP format that you can attach to an e-mail message.

Registration

HamAlyzer is shareware. You can download it freely at **www.HamAlyzer.com**, but this is just a 10-day demo version. After the demo period expires, you must register *HamAlyzer* at a cost of $25. You can do this electronically through PayPal, or by check or money order. See the Web site for details.



A *HamAlyzer* view of three PSK31 signals in the free-running mode.



***HamAlyzer* looks at three PSK31 signals in the peak (top trace) and averaging modes.**

All three *HamAlyzer* display modes running simultaneously.

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