

Just as a chameleon can change colors to blend in with its background, the Chameleon CHA MPAS 2.0 antenna system can change configurations to best meet portable operation needs no matter where you set it up. ZS1ML gave it a field test.

CQ Reviews: Chameleon Antenna™ CHA MPAS 2.0 System

BY MARTIN LUBBE,* ZS1ML

I ordered the Chameleon Antenna™ CHA MPAS 2.0 system directly from the manufacturer in Nevada, USA. Because the package had to come via courier to Cape Town, South Africa, I received an invoice directly from the company instead of ordering on their website. I paid the invoice by PayPal for ease, although other options are available. If you live in the U.S., delivery is free at the time of writing this article. I received the order within a few days via FedEx in a tall, sturdy box.

As I started unpacking the box, I was immediately impressed by the fantastic quality of the various products (*Photo A*). First out of the box came the backpack / multi-function military bag. This pack is constructed of very high-quality canvas material and well manufactured. You will find it difficult to buy a similar quality and more suitable bag on the open market. This bag is of truly military specification and will last you a lifetime and then some. It is also large enough to gobble up all your portable equipment for Parks on the Air (POTA) or similar excursions, such as batteries, a small computer or tablet and radio and some extra wire antennas if you would need it to. Packing only the MPAS 2.0 system and a small radio, tuner, and battery, it will be light enough to make it suitable for Summits on the Air (SOTA) backpacking.

Unpacking the CHA MPAS 2.0 System

Components of the system include:

1. Military style multi-use pack (*Photo B*), which is made from durable and high-quality canvas. It can be configured as either a carry bag, a shoulder bag, or a backpack. It weighs 4-1/2

pounds and measures 25.6 x 13.4 x 9.8 inches, features Molle straps and is double-layer water resistant with an extra waterproof rain cover for extreme weather. Although this bag is included in the MPAS2 system, it can also be

bought separately. It is worth every penny of the \$50 cost as a separate item on the Chameleon website <<https://tinyurl.com/4882zu9n>>. As of this writing (January 2022), it was on sale for \$35.



Photo A. The contents of the Chameleon antenna package include a backpack for storage / transport, a shock-corded collapsible mast, antenna wires and feedline, a spike-mounted feedpoint / base and two winders.

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Photo B. There's space for the antenna, feedline, a small radio and some accessories in the included bag, which can be configured as a carry-bag, shoulder bag, or backpack.

Photo C. The Hybrid-Micro impedance transformer is the heart of the Chameleon antenna system. The feedline and antenna elements attach to it and it serves as a base for several configurations.



Photo D. The Chameleon system includes two rolls of Kevlar®-coated Teflon® wire, which is very flexible, even in extreme temperatures.

2. CHA Hybrid-Micro — The Hybrid Micro (Photo C) is an impedance-matching unit for the various CHA MPAS 2.0 antenna setups and additionally provides a mounting base for some setups, such as the portable, sloper, or manpack versions. This seems to be the heart of the system, to which all other elements connect to form the various antenna options. The Hybrid Micro will handle up to 100 watts SSB or 50 watts CW. If you need to run

higher power, the Hybrid Mini is also available. With a different transformer and a larger enclosure, it can take up to 500 watts SSB or 250 watts CW.

3. 2X antenna wires — The package includes two rolls of antenna wire (Photo D), one 73 feet (22.25 meters) long and the other 25 feet (7.62 meters) long. The wire provided is of very high-quality copper-clad Kevlar® PTFE (Teflon®). It is flexible and very slick to the touch to will be a great help with easy

passage through trees and such obstacles. It can also withstand extreme temperatures, ranging from -94° to 302°F (-70° to 150°C).

4. CHA MIL 2.0 — 113-inch (2.9-meter)-long whip — The CHA MIL 2.0 whip (Photo E) is a collapsible brass based broadband monopole antenna whip designed for portable or manpack radios requiring compact but rugged antenna systems. It can be used in a stand-alone setup, with the CHA Hybrid-Micro, in which the whip as an antenna will cover 28-54 MHz by using an external antenna tuner. It is advised that, to enhance RF propagation and antenna performance, a ground-plane (radial wire) should be used together with it. Although it is recommended to handle with care, it is very well constructed and hardy.

5. This design has been borrowed from similar antennas utilized by many armies all over the world. The difference, in my opinion, is that the CHA MIL 2.0 whip is very hardy, sturdy, made entirely of brass and portable (being collapsible). Unmounted and folded up, the entire antenna length is less than 20 inches (51 centimeters). The seven brass sections of 17 inches (43 centimeters) each are held together by a piece of military shock cord, which facilitates easy setup and collapse of the whip.

6. CHA MIL EXT 2.0 extension — 105.5 inches (2.7 meters) long — This collapsible antenna extension (Photo F) needs to be used with the CHA MIL 2.0 to create an 18-foot-2-inch (5.5-meter) long portable antenna. When combined with the CHA Hybrid-Micro, the CHA MIL EXT 2.0 will extend the antenna to operate at all frequencies in the 1.8- to 54-MHz band without any adjustment except an antenna tuner.

7. These four 28-inch (71 centimeter) long, 3/4-inch (19-millimeter) diameter, sections of high quality and beautifully green anodized aluminum alloy tubing are designed for portable HF communication where rapid deployment and simplicity of operation is essential, but compactness is of primary importance.

8. The aluminum tubing walls of the CHA MIL 2.0 are quite thick and rigid for the purpose. Also, the joint inserts and the main tubing are made of a single piece, thus reducing the signal losses.

9. 1 X CHA Stainless Steel Spike — The CHA spike mount (Photo G) is an innovative product built exclusively by skilled machinists at Chameleon Antenna™ factory. It is a precision-fabricated heavy-duty stainless-steel stake with a fitting for attaching the CHA Hybrid HF antenna base and for fitting

Table 1.

Configuration	Ground	Short	Medium	Long	Directionality
Manpack Vertical	↓				Omnidirectional
Portable Vertical	↓		↑		Omnidirectional
Horizontal NVIS		↓	↑		Omnidirectional
Sloping Wire	↓		↓		Unidirectional
End-Fed Inverted "L"		↓	↓		Bidirectional
End-Fed Inverted "V"	↓		↓	↑	Bidirectional

Table 1. Various configurations available with the Chameleon CHA MPAS 2.0 system.

a counterpoise. It is rugged and highly portable and with its conically sharpened point, enables easy ground mounting of the CHA Hybrid Micro. We recommend you get a plastic mallet (to protect the screw-in point) to pound the stake into the ground.

10. CHA 50-foot (15.24-meter) coax with RFI choke — Having thought of everything, Chameleon Antenna also provides a high-quality length of RG58A coax with a RFI choke inline (Photo H). The coax is rated at 300 watts.

11. 2 X 3/8-24 (M10) stainless steel nuts for the Hybrid Micro, to attach wires.

12. 2X line winders.

Different Antenna Setup Options

Table 1 shows the multiple configuration options for the Chameleon antenna system, including vertical setups, inverted-V, inverted-L, and NVIS (near-vertical incidence sky-wave). This is a truly great system for portable operations and if used correctly will give you great coverage and last a lifetime.

Here are the details of the different setups and antenna options:

Portable Vertical

The first and most obvious use for rapid portable and military deployment is the complete portable vertical setup (Figure 1). This took me about 5 to 7 minutes to setup at my first try and is not complicated at all. It uses the stainless steel stake (spike), with the Hybrid Micro screwed into it and on top of that the CHA MIL EXT 2.0 and then finished off with the CHA Mil Whip on top. Add the included 25-foot (7.62-meter) counterpoise "tail wire" for improved performance.

With an external antenna tuner, you should be able to work anything in the 1.8- to 54-MHz range. Upon testing, I was surprised by how close to ideal the SWR readings were and suggests that it will only need a small touch-up with an antenna tuner to get perfect.

Setting up the portable vertical configuration:

1. Select a clear area where the best ground wave communication can occur. This will be optimum when the full-



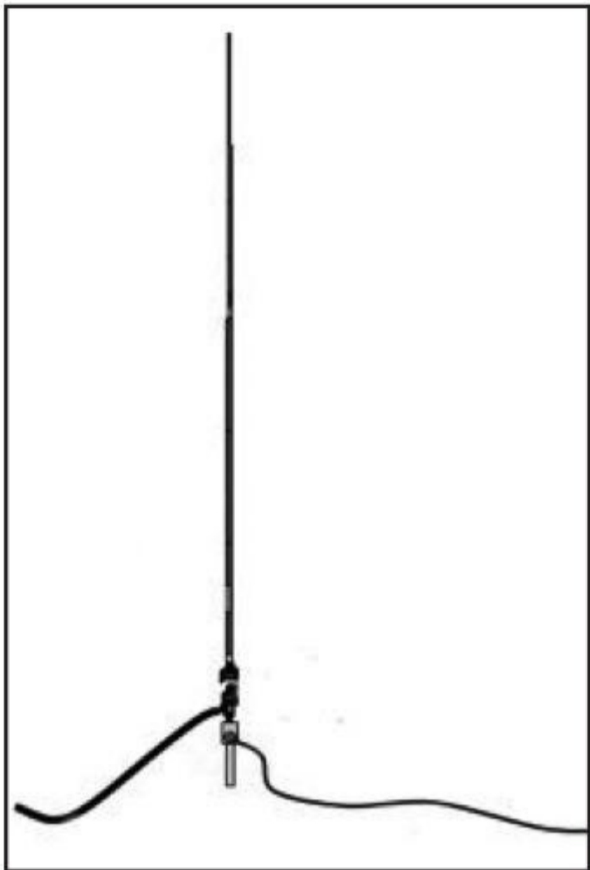
Photo E. The shock-corded CHA MIL 2.0 whip is a collapsible brass-based broadband monopole antenna whip designed for portable or manpack radios.



Photo F. The collapsible whip extension allows operation on 1.8-54 MHz with just an antenna tuner.



Photo G. This spike includes a connector on top for mounting the Hybrid-Micro for use in a ground-mounted antenna configuration.



length antenna is mounted as close to vertical as possible.

2. Attach the shorter counterpoise wire to the Hybrid Micro by placing the wire connector ring over the base connection of the Hybrid Micro. Tighten with one of the nuts until snug.

3. Connect the UHF connector plug at the integrated RFI choke end of the coaxial cable to the SO-239 socket on the Hybrid Micro.

4. Connect the Hybrid Micro and its connection to the stainless-steel spike.

5. Unfold the and connect the anten-

na extension to the Hybrid Micro by threading the extension base on the bottom of the antenna extension into the antenna connection on top of the Hybrid Micro until finger tight. Do this carefully to avoid cross-threading the connection.

6. Extend the whip antenna by unfolding its sections, starting at the bottom.

7. Connect the whip antenna to the Hybrid Micro by carefully threading the whip base into the antenna connection at the top of the Hybrid Micro until finger tight.

8. Now, with the complete antenna together, screw it into the stainless-steel spike and push into the ground. If the ground is not soft enough. You may have to hammer in the stake first with a plastic or wooden mallet and then carefully screw the whole assembly into it.

9. Finally, extend the counterpoise wire along the ground in any convenient direction.

Figure 1. The simple configuration of the portable vertical makes use of the stainless-steel spike, the Hybrid-MICRO, the collapsible whips, and the 25-foot wire as a counterpoise. (Configuration drawings courtesy Chameleon Antennas website; used by permission)

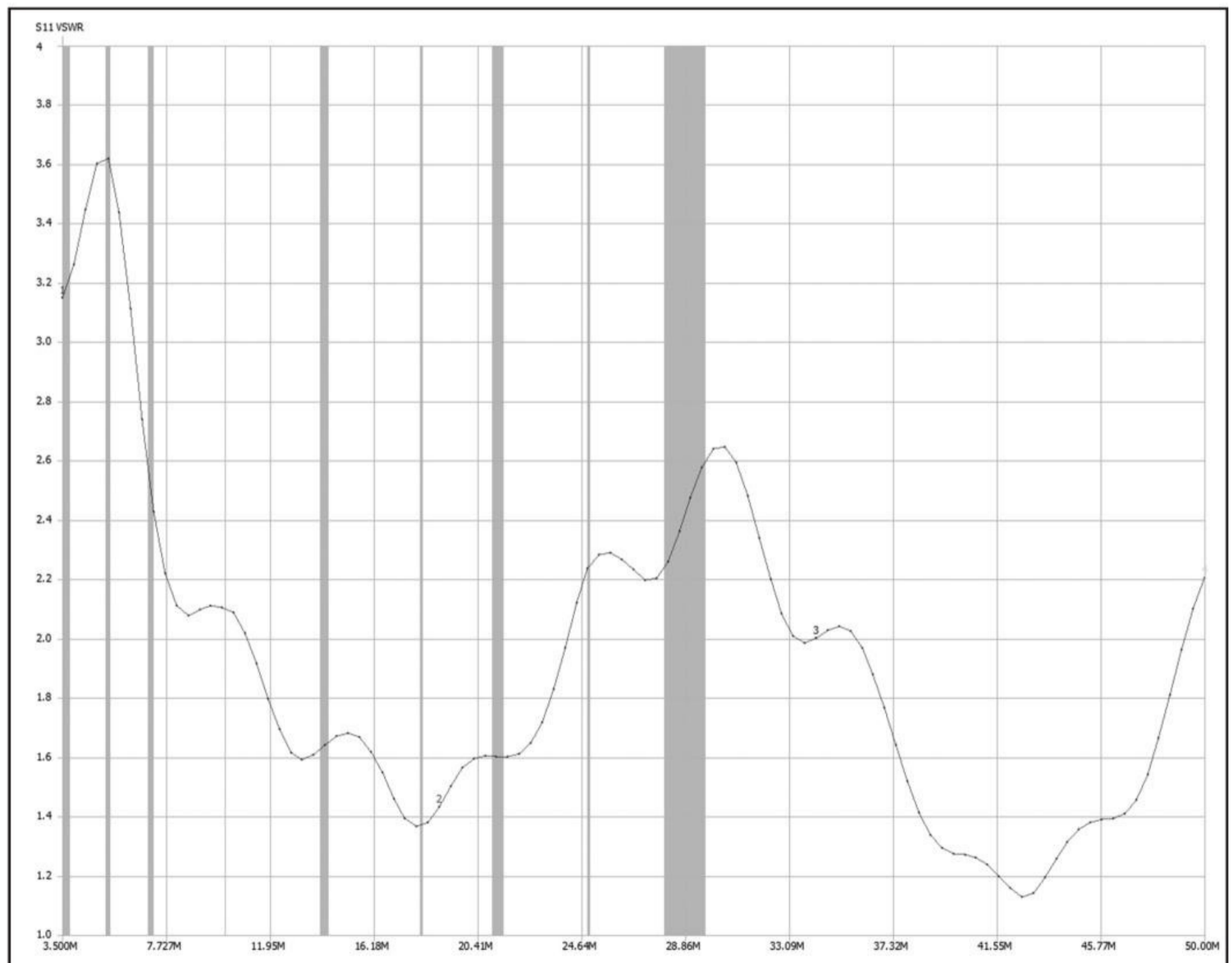


Figure 2. NanoVNA SWR sweep of the portable vertical configuration between 3.5 and 50 MHz. Your results may vary, depending on location. As you will notice, this antenna is close to resonance on all bands (except 80 and 60 meters), but easily within the ability of most antenna tuners to touch up the VSWR. Sweeps for other configurations are similar.



Photo H. The kit even includes a length of coax with a built-in RFI choke.

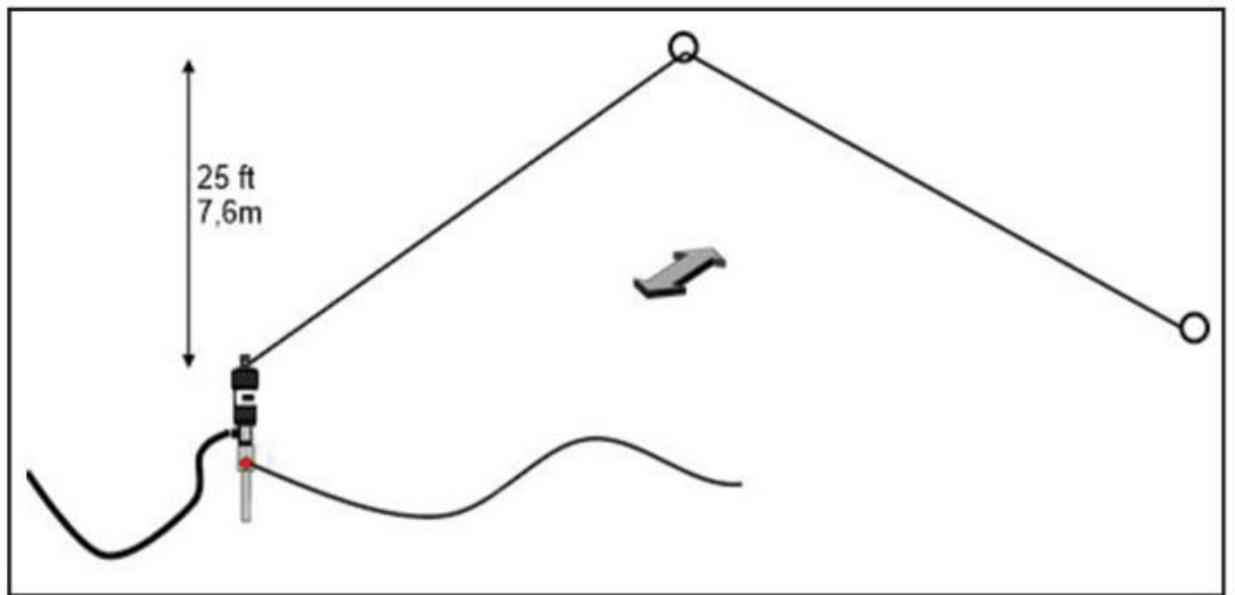


Figure 4. In the Chameleon system, the inverted-V configuration is end-fed.

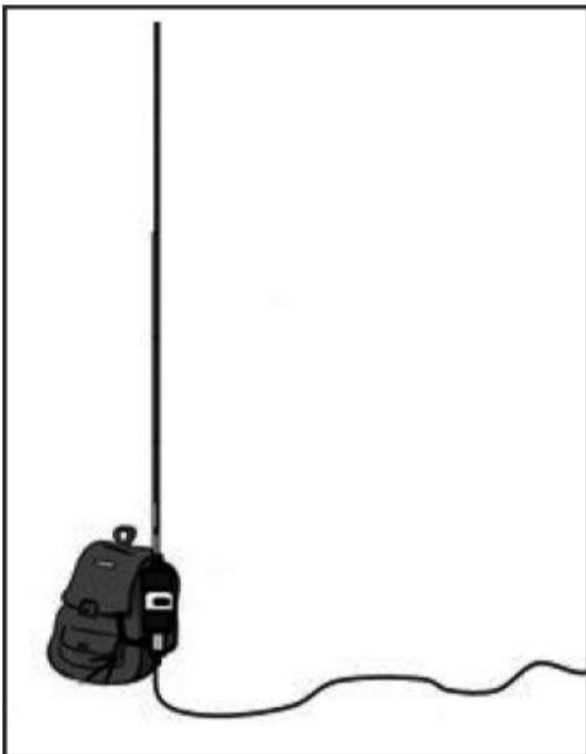


Figure 3. The manpack configuration is ideal for QRP or emergency communications work.

Figure 2 shows a sample NanoVNA sweep of the antenna's SWR on all amateur bands between 3.5 and 50 MHz. It is either below 3:1 or within easy tweaking range of a portable antenna tuner on all bands. This applies to all of the other configurations as well

Vertical Manpack

A quick and shorter-range setup for military and emergency communications on the move, usually by foot, will be the vertical manpack option. The deployment is designed to be rapid and takes about 4 to 5 minutes at most. In my estimation, this is well suited to QRP and up to 20 watts where 100-watt operation is not available. Paired with a portable radio like the Xiegu G90, this



Photo I. The CHA MPAS 2.0 system set up in the manpack configuration.

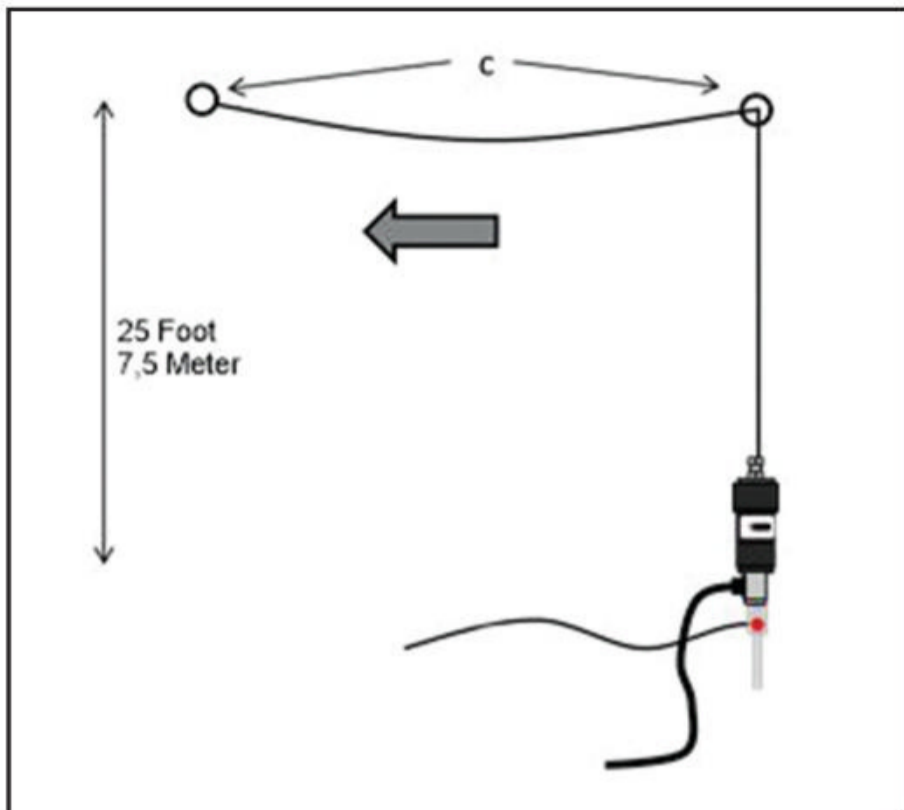


Figure 5. The inverted-L configuration.

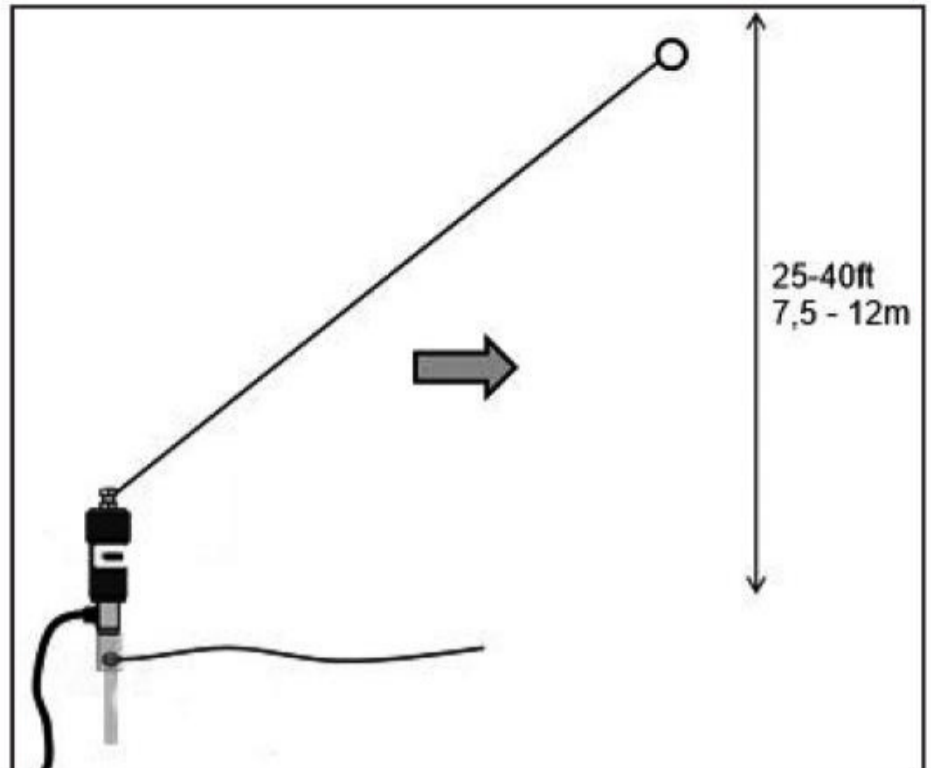


Figure 6. The sloper is a diagonal dipole with one end going up at an angle and the other stretched out on the ground.

will be very efficient. On SOTA it will be spectacular. You will probably have a battery with a lightweight radio, along with an internal or external tuner in the bag. Fix the coax to the stake, with the Hybrid Micro screwed into it and on top of that the CHA Mil Whip.

Performance is limited below 3.5 MHz, but very good above 24 MHz. The included 25-foot (7.62-meter) counterpoise "tail wire" provides a good compromise between portability and performance. A counterpoise is simply a long, insulated wire that attaches to the ground connection on your antenna tuner. The counterpoise acts as the other "terminal" of your antenna system, effectively balancing it from an electrical standpoint.

Setting up the vertical manpack configuration:

1. Select a clear area where the best ground wave communication can occur. This will be optimum when the whip antenna is mounted as close to vertical as possible.

2. Attach the shorter counterpoise wire to the Hybrid Micro by placing the wire connector ring over the base connection of the Hybrid Micro. Hand-tighten with one of the nuts until snug.

3. Connect the UHF connector plug (PL-259) at the integrated RFI choke end of the coaxial cable to the UHF connector (SO-239) socket on the Hybrid Micro.

4. Connect the Hybrid Micro and its connection to the side of the backpack.

5. Extend the whip antenna by unfolding the sections of the whip, starting with the section at the bottom.

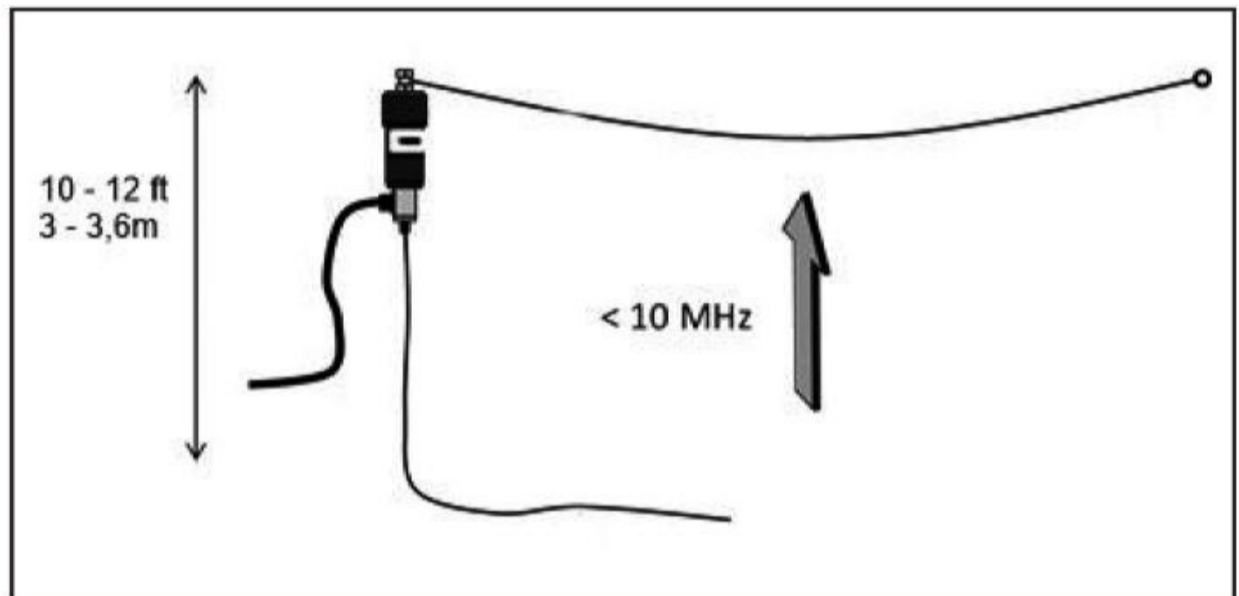


Figure 7. The near-vertical incidence skywave (NVIS) configuration is good for short-to-medium range daytime contacts on the lower HF bands.

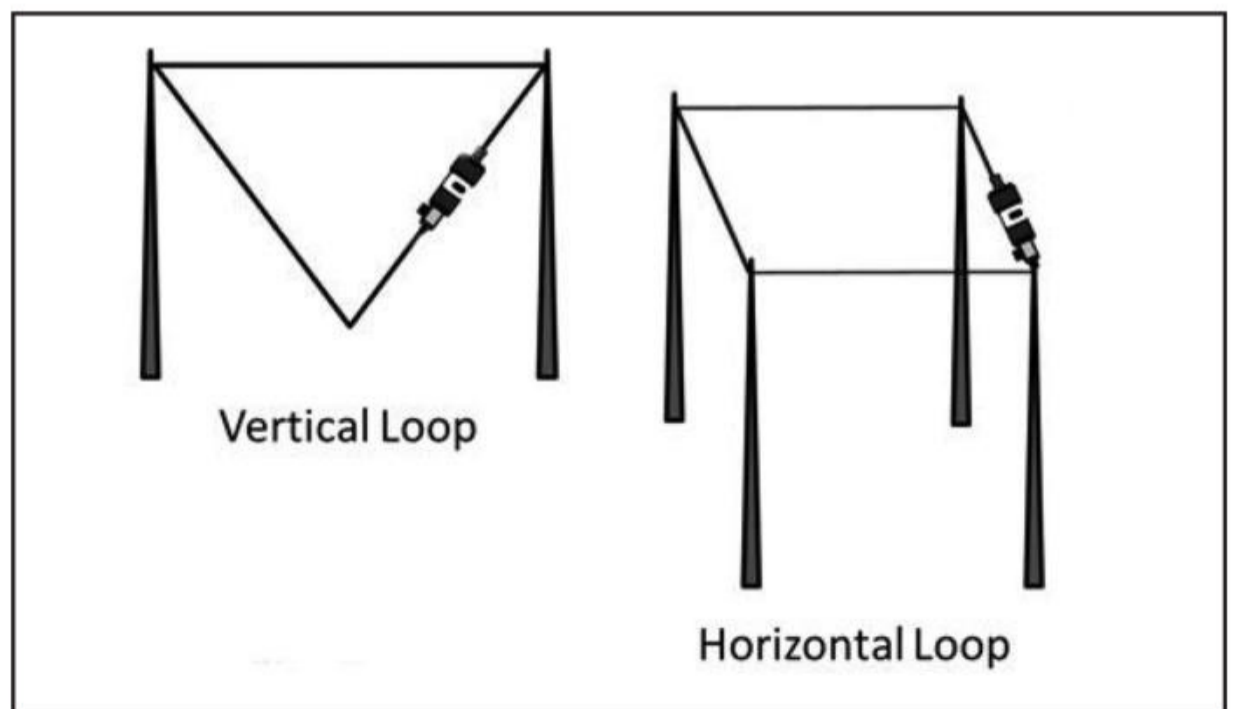


Figure 8. For a more permanent installation, the CHA MPAS 2.0 system may be set up as a loop, either vertically or horizontally. Each arrangement has its own advantages.