

Chameleon Antenna MPAS 2.0 Portable Antenna System

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I enjoy operating outdoors, whether it's for Parks on the Air (POTA), Summits on the Air (SOTA), Field Day, or just "playing radio." I have various low- and regular-power radios to use, and of course, an antenna or two. I usually pack a wire-based antenna, like a dipole, doublet, or long wire, with a 9:1 balun. I also use mobile antennas, verticals, and telescopic masts to hold up wires. Many times, the dipole or long-wire antenna cannot be used due to a lack of a nearby supporting structure.

Every outing has its challenges with how to place the antenna for the best performance. I bring out a box and bagful of antenna bits and pieces, as every radio site has different antenna requirements. I always look to deploy antennas quickly, because no one wants to spend an hour fiddling and untangling wires to get their communications out.

I always wanted an antenna go-kit that included a well-thought-out, versatile antenna system that covers all types of configurations. I have seen various Special Operations Group antenna kits for HF radios that are out of my price range. So, I tried to build my own backpack full of antennas that can be used as needed. The challenge was that everything would be ad hoc and needed to be designed so it could work together with the $\frac{3}{8}$ inch \times 24 threaded stud common with amateur radio, CB antennas, and mounts. I wanted versatility. Why? Well, I may show up at a beach and can use only a vertical antenna. A picnic table operation usually has nearby trees into which to throw a paracord for the antenna. A roadside rest stop with an operating window of only 20 minutes calls for an antenna that can be rapidly deployed.

Description

The Chameleon Antenna Modular Portable Antenna System (MPAS) 2.0 kit has various antenna components packed into a military-style backpack. I could buy what the military signals teams were using for HF communications in an affordable package. This is an MPAS that allows for quick and easy deployment of various types of antennas in the field. It comes with a range of components, including a proprietary balun, wire and whip radiators, a counterpoise, and different mounting options, allowing you to set up a vertical whip, horizontal whip, sloper wire, inverted V or L wire, near vertical incidence



[Photo courtesy of Chameleon Antenna]

skywave (NVIS) configuration, or balcony rail mount. The system covers a frequency range of 1.8 to 54 MHz. Additionally, the system is available in two power levels — the Micro (100 W PEP, reviewed unit) and the Mini (500 W PEP) — so you can choose the one that best fits your power needs (see the specifications in Table 3). The system is designed for use in portable and mobile operations, and is not recommended for fixed outdoor locations, although you can use it in a stationary vehicle

Bottom Line

The Chameleon MPAS 2.0 gives the operator all the necessary versatility of configurations, allowing the antenna to be installed almost anywhere. This makes it an ideal antenna for portable and emergency operations.

Table 3	
Chameleon MPAS 2.0 Antenna System	
Manufacturer's Advertised Specifications (not tested by the ARRL Lab)	
Frequency coverage	6 to 160 meters (all configurations require a wide-range antenna tuner)
Maximum power rating (Micro version, reviewed unit)	100 W SSB, 50 W CW, and 25 W high duty cycle digital modes
Maximum power rating (Mini version, not reviewed)	500 W SSB, 250 W CW, and 100 W high duty cycle digital modes
Connector	UHF female, SO-239
Antenna type	Vertical whip configuration using one or both whips Horizontal whip configuration for NVIS operations Sloper wire configuration; inverted V wire configuration; inverted L wire configuration NVIS wire configuration; balcony rail mount using one or both whips Vehicle mounted (stationary use only) Manpack vertical whip configuration
Antenna length	Radiator wire, 73 feet Counterpoise wire, 25 feet CHA MIL 2.0 whip: 9.40 feet extended; 17 inches collapsed CHA MIL EXT 2.0: 8.75 feet extended; 28.75 inches collapsed Total CHA MIL 2.0 whip with CHA MIL EXT 2.0: 18.15 feet extended
Antenna package weight	Not specified
Mounting configuration	$\frac{3}{8}$ – 24 thread

mount. An antenna tuner may be required, depending on the frequency and the antenna configuration deployed. Chameleon took customers' feedback on the original MPAS and made improvements in the new version. I now have a solution to my problem and can bring the backpack out to the field to deploy whatever antenna I need.

I chose the Micro Balun, as I typically run between 5 and 50 W out in the field. I strongly recommend that those who plan to use this antenna system in a fixed outdoor location use an antioxidant compound on the joints to aid in waterproofing. I have operated the antenna in rain and snow and always wipe and dry all components before putting them away for their next use.

The antenna system consists of the following components:

- CHA Hybrid-Micro (reviewed version) or Hybrid-Mini balun unit
- 73 feet wire tinned copper Kevlar PTFE radiator
- 25 feet wire tinned copper Kevlar PTFE counterpoise
- CHA line winder (two units)
- CHA MIL 2.0 (113 inches long) telescopic whip

- CHA MIL EXT 2.0 (105.5 inches long) collapsible base extension
- CHA spike mount
- CHA 50 feet coax with RFI choke
- CHA military backpack
- $\frac{3}{8}$ – 24 stainless-steel hardware

There is an optional CHA Jaw Mount clamp and a stainless-steel telescopic whip (SS17, 17 feet) that, to me, are mandatory items to complete the versatility of the kit. Chameleon is offering several variations of the MPAS kit, allowing you to choose the one that best serves your needs. Let's look at each component:

The proprietary balun serves as a mounting base as well as impedance-matching device. It uses standard $\frac{3}{8}$ – 24 threads, so it's usable with other antenna systems and CB mounting brackets. It is used with a wire element or the telescopic whip. The antenna shackle is used with the wire elements to reduce stress with an included carabiner. An SO-239 connector is included. Chameleon plans to introduce a BNC connector version later this year.

The tinned copper wire is in a rugged Kevlar jacket; the longer wire is the radiator, and the shorter wire is the counterpoise. The included line winders are brilliant and make for easy unwinding of the wire. I used the loop configurations (186 feet; see figure 8 in the antenna manual). You can download the manual from the manufacturer's website (see www.chameleonantenna.com).

The military-style main telescopic whip (CHA MIL whip) is 9.4 feet and collapses to a compact 17 inches in length. You can add length if you use the CHA MIL EXT whip for another 8.8 feet. The total length of both is just slightly more than 18 feet.

With the balun mounted to the spike mount, you can deploy a vertical in the grassy field or beach, or use that as a starting point for a sloper. A knurled lug allows the counterpoise wire to be neatly connected to the spike. You can tie-wrap to a backpack or pole if needed.

Coax with an included RFI choke helps keep common mode currents out of the radio and is a thoughtful addition to the kit.

Everything is neat and organized in a true grab-and-go backpack. There is ample room for additional items to ensure you have whatever is needed in your deployment.

I added BNC coax adapters, 2 x 50-foot lengths of paracord with tent spikes, a tripod, the optional Jaws clamp, and the optional SS17 stainless-steel whip to complete the system and meet my needs. I also use a tripod and telescopic mast to round out how I can mount the balun. This is based on hundreds of exercises out in the field. As

a Canadian, I found hockey pucks make a good throw weight, but paracord wrapped around a water bottle also works.

Different Antenna Configurations

Let's explore the different use cases for this antenna system and how it can be deployed in the field quickly and efficiently.

Vertical Whip

This omnidirectional configuration is used with the spike mount or the optional Jaws clamp. I use the whip for any contacts from 20 meters and up, and add the base to increase radiated power on 20 meters and for use on the lower bands. You can also use standard mobile antenna mounts. This worked out well for a recent park picnic table operation (see Figure 8).

Horizontal Whip for NVIS Operations

This typical mobile setup should have the radiating element at a 30- to 45-degree angle for the correct NVIS angle of radiation. The Jaws clamp allows this; however, a Hustler-style ball mount or various CB antenna mounts will also work. I have made solid contacts into Michigan, Sudbury, Ottawa, and Rochester on 60 meters. See Figure 9.

Sloper Wire

I have used this with the spike, the Jaws clamp, and even the balun mounted on a tripod. Usually, the balun is at ground level, and the long wire gets tossed into a tree with the counterpoise laid out on the ground. This is also deployed with the balun up in the tree or on a military mast, and the wire slope is down. I find there tends to be a bit of directivity this way. This is my most-used POTA configuration, and in many cases I can use the Jaws clamp on a picnic table, a fence, or even a guardrail.

Inverted V and L Wire

This is no different from the sloper, except this classic antenna is deployed as the name implies. You can cover 160 meters and up in this configuration. I use this setup for the 80-meter net check-ins with the longer 73-foot radiating element. If you have space constraints, you can coil the antenna up to whatever length you require, but I find a length longer than 25 feet is the minimum to cover 40 meters.

NVIS Wire

The important part is that this antenna has the balun and the radiating wire at a height of 9 to 12 feet for proper NVIS radiation. A short military mast, or even a painter pole, solves this problem, or you can look for a suitable tree. Remember, NVIS works best on 80, 60, and 40 meters. Keep in mind that an antenna tuner is needed to get the SWR below 2:1.

Balcony Rail Mount Using One or Both Whips

A balcony rail mount is perfect for apartment/condo operators, and any antenna mount can be used against a railing. I suggest attaching lightweight paracord to all components and securing them to prevent them from crashing down to the street. I have used the MIL whip by itself with great success, making contacts in Europe on 20 meters. Personally, the use of the SS17 whip or addition of the MIL EXT is physically too cumbersome at nine floors above ground, but a MIL whip set up is ideal for bands from 20 meters and up. Now think about how easy



◀ **Figure 8** — The Chameleon Antenna MPAS 2.0 attached to a picnic table.



▼ **Figure 9** — The Chameleon Antenna MPAS 2.0 attached to a boardwalk.

it is to deploy an antenna on a park boardwalk using the Jaw clamp out in the field.

Vehicle Mounted or Tripod Mounted

This has been used with a stationary mount on a trailer hitch, as well as on a Hustler ball mount. I tried using the large three-magnet mount on the roof of the stationary vehicle, but it needs guying to be safe. I still add the counterpoise wire to improve grounding. Warning: do not drive around with this antenna set up, as you will hit power lines. I also use this with a Manfrotto lighting tripod. You can add additional counterpoise wires as needed. A recent example of my use of this setup involved going out on a snowmobile to an ice hut in the middle of a lake, and then realizing that there were no nearby trees or poles for hanging my antenna. No problem — a tripod and the whip got me up and running quickly (see Figure 10).

Manpack Vertical Whip

This allows the antenna to be attached to a backpack. Just thread the antenna through the MOLLE straps. I have also deployed this on Alice and Icom backpacks in stationary mode (being careful of power lines), or you can simply have the backpack on a picnic table. I have tried this with a CB mirror mount on a Pelican go-box for a simple setup. See Figure 11 for a sloper setup.



Figure 10 — The Chameleon Antenna MPAS 2.0 attached to an ice hut installation.

Dipole or Loop

Using the broadband balun, you can make your own wire elements or adapt with what's included. I could add another 73-foot wire element to make a dipole that would serve the 80- and 160-meter bands nicely. I have tried this with two MIL 2.0 element whips up 16 feet on a mast, with great results. The balun does its job of providing a suitable load impedance across a wide frequency range. Chameleon has indicated that two 60-foot wires can also be used for a broadband dipole. These items can be purchased as accessories.

On-the-Air Results

This is the most versatile antenna system I've ever used, and its components allow basically any antenna configuration you desire. You may not need to use an antenna tuner, as the SWR is typically less than 2:1 across the bands. However, depending on what you are doing, the antenna tuner may be required.

Build quality can be referred to as MIL-SPEC — to me, that means rugged components built to last, and not so flimsy that they break as you use them. I have stepped on the balun many times and thrown it into the trunk after a rainfall, and the Kevlar wire is strong and rust-free. Chameleon ensures that everything is built to be handled roughly and last for a long time. Stainless-steel nuts round out the build quality.

I have used this antenna in all its configurations, from deployment to experimentation, and have always been happy with the results. This is not necessarily a short com-



Figure 11 — The Chameleon Antenna MPAS 2.0 backpack setup.



Figure 12 — The Chameleon Antenna MPAS 2.0 9-foot SWR sweep.

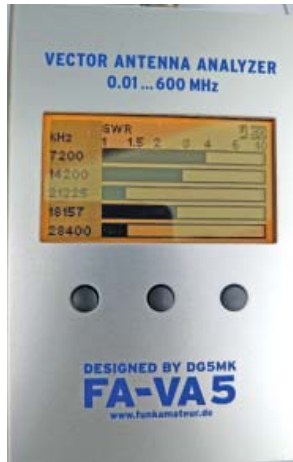


Figure 13 — The Chameleon Antenna MPAS 2.0 73-foot SWR sweep.

promise antenna that will be several S units down from the standard dipole. Compared to a regular dipole or 20-meter vertical, the signal reports show comparable signal strengths. The prime advantage is that I can arrive at a site and see that there are no trees and use the vertical components. If there are trees, then I choose the sloper. If I want to do NVIS, then I can do that with a mast/pole to keep the antenna at the right height. For POTA, Field Day, or EmComm use cases, the MPAS 2.0 is a perfect grab-and-go approach. The antenna deploys very rapidly, and I can be on the air within 5 to 10 minutes — no fiddling around. Just deploy, hit **TUNE**, and make contacts. The Jaws clamp option is a powerful component that allows

the clamp to be used in many ways. I heard on the local repeaters on the way to a park that 6 meters was open. When I got there, I mounted the clamp to a fence, added the telescopic element, and made contacts 5 minutes later. When I decided to switch to 20 meters, I added the counterpoise, and no additional effort was needed.

I also use the balun mount on my trailer hitch for a sloper, and can throw the wire into a tree using my hockey puck throwing aid.

Product Support

Product support has been fantastic, and with years of use, I have never had any issues with other Chameleon Antenna products. Not only does the supplied handbook provide propagation information and best-suited antenna types, but detailed configuration diagrams aid in deployment. The handbook also provides SWR and far-field antenna plots. See Figure 12 for a 9-foot SWR sweep, and Figure 13 for a 73-foot SWR sweep.

Conclusion

Now, I can grab my radio, battery box, and Chameleon MPAS 2.0 backpack, and be on my way to the radio site, knowing that no matter what I encounter, I have everything I need to get on the air quickly. Overall, the Chameleon MPAS 2.0 is a useful tool for maintaining communications in the field, providing a convenient, rugged, and portable solution for any antenna deployment scenario.

Manufacturer: Chameleon Antenna, 155 Glendale Ave. S-17B, Sparks, NV 89431, www.chameleonantenna.com. Price: Hybrid Micro, \$600; Hybrid Mini, \$625; CHA-Jaws mount clamp, \$66; SS17 stainless-steel telescopic whip, \$70.