

Chameleon Antenna CHA FSR System

Reviewed by John Leonardelli, VE3IPS

jleonardelli@arrl.net

We aren't going on a magic carpet ride today, but we are looking at something arguably better for the portable operator: the Chameleon Antenna CHA Faraday Strip Radial (FSR) System.

I've experimented with Faraday cloth "magic carpets" before. In practice, they often became a wind-blown hassle, especially on 40 meters where performance felt

Bottom Line

The Chameleon CHA FSR is a rugged, field-proven radial system that prioritizes deployment speed, safety, and durability, making it an excellent choice for portable vertical antenna operations with no trade-offs in performance.





Figure 10 — The Chameleon CHA FSR with the Chelegance MC-750 antenna installed on the mobile roof using a magnetic mount.

more like luck rather than magic. For 40 meters, I use the preferred four 32-foot wires, but I also have been pleased with the results using shorter radials. I tried my own DIY copper tape and Faraday tape versions, but those presented their own headaches: constant tangles and adhesive failure in the heat and rain. I did find that it provided a ground alternative and an interesting use case.

Chameleon solves this problem with the FSR, offering an innovative approach to cloth-based radials. It replaces tangled messes of thin wire with wide, high-surface-area conductive Faraday cloth strips. The FSR is an “MPAS-ready” radial system engineered for rugged durability and portability in the field. It works with all Chameleon MPAS system components and anything with a $\frac{3}{8}$ -24 thread. My antenna investments must be multi-purpose and adaptable across various components. The CHA FSR suggests superior performance with a 23% – 28% improvement over wire radials while remaining somewhat compact and easy to transport. Chameleon states, “In initial field tests conducted in Northern Alabama, the CHA FSR demonstrated a median increase in relative field strength between 23% and 28% compared to the standard four 12.5 ft. wire radials included with the Basic Vertical (BV) and Portable Resonant Vertical (PRV) antennas. With further testing and refinement, performance efficiency is expected to increase.”

Well-known for his technical experimentation and measurements, Joeri Van Dooren, ON6URE, did a technical analysis that demonstrates improvement (+2 dB in field strength). My criteria are simpler: performance, practicality, field durability, and multi-purpose usability.

Build Quality and Design

Chameleon is well-known for over-engineering; the FSR lives up to that reputation, and this high quality trickles down to the consumer. Made in Nevada, it's rugged and carefully built.

The FSR is built using a multi-layered composite design for electrical performance. At its core, each radial strip features a Faraday conductive fabric composed of copper/nickel/polyester fibers woven in a diamond pattern for multi-directional conductivity and mechanical strength. It is encapsulated in two layers of double-stitched 900D Oxford cloth. This design offers rugged field durability. It is UV-resistant, water-repellent, and tough enough to be stepped on or driven over. The dual-color design (high-visibility orange and stealth green) is a brilliant feature. It's perfect for public parks and public safety events where you need to avoid trip wire, or for a stealthy approach in a forest. It features large heavy-duty brass grommets ensuring conductivity and stainless-steel hardware, including a custom $\frac{3}{8}$ -24 coupling adapter that integrates seamlessly with the Chameleon MPAS line. I can mount it on the ground spike, a Jaws clamp, a tripod, or anything with a $\frac{3}{8}$ -24 thread. You now can add the FSR to the current offering of 12.5-, 25-, and 33-foot kits and the variable-length counterpoise.

The FSR is 20 feet long and deploys in an X pattern, offering an untuned radial to the vertical radiator. This pattern offers balanced current distribution during operation. You can also deploy the FSR as two long radials spaced at 180 degrees. Being untuned, and based on ground conditions, the radials will affect the antenna resonance, and additional radiator adjustments may be necessary. It's heavy for the SOTA folks to carry, but for everyone else it's ideal, as it offers an easy roll-out and roll-up process. Each FSR rolls into a 7 × 4-inch bundle.

You will find the manufacturer's specifications in Table 4.

Field Test 1: Portable

The snow was heavy, and QRP levels were at 5 W for the 20-meter band. I had a Venus SW-6B radio at 5 W, with an Elecraft T1 tuner and a Chameleon 17-foot whip.

The bands were still feeling the effects of the class-C flares, with low solar activity proven by the Reverse Beacon Network (RBN). The RBN has worldwide

Table 4 — Chameleon Antenna CHA FSR System

Manufacturer's Specifications (not tested in the ARRL Lab)

Length:	20 feet by 4 inches
Surface resistance:	Below 0.05 Ω
Material composition:	Copper, nickel, polyester fibers
Weight:	5 pounds

Included Parts

Qty	Description
2	20-foot Faraday radial strips
4	Tent stakes
1	CHA FSR-A stainless-steel $\frac{3}{8}$ -24 coupling adapter
3	Stainless-steel washers
2	Bungee balls

See Figure 11.

software-defined radio receivers skimming the bands for stations calling CQ and reporting the data to the website. Within minutes, useful reception data can be obtained, providing insight into the stations' performance and allowing A/B antenna evaluations on the fly.

I pre-built the FSR, attaching it to the adapter and rolling each leg separately, and tied it with the bungee ball. I used a 30-pound weight with a Jaws clamp as the base. I connected the clamp to the adapter, unrolled the radials, and then deployed the telescopic whip. The antenna resonance was off (it acts like a $\frac{3}{8}$ -wave 15-meter antenna) due to its shorter radial length, and also it was on a foot of snow. The FSR strips "floated" on the surface nicely, as expected. They even repelled the snow that got kicked on top during deployment.

I pressed the Venus radio memory button and started calling CQ. After a few minutes, I checked the RBN, and sure enough, I had three reports from stations about 550 miles away. The levels were 2 to 10 dB, which is workable on CW.

I replaced the FSR with silicone wire radials. The SWR was similar, but 20 minutes later, only one of the three stations could still hear me. The Wisconsin station's report was 4 dB better.

The wider surface area provided a clear advantage on difficult terrain, and the radials stayed on top of the snow. This would be my first choice when deploying at a beach or in a very sandy environment. Managing wires in the sand was stressful when I was activating POTA on public beaches in Aruba.

I initially tried using the FSR as a counterpoise, but its weight and bulkiness didn't inspire me to try further. A surveyor tripod would give stability and allow the FSR to drape down the legs and support the heavier radial.

Field Test 2: Fixed Mobile

The sky was blue, with a temperature of -10°C with wind chill. I secured the Chelegance MC-750 antenna to

the vehicle roof mag mount, using a Venus SW-6B with 5 W on CW and Icom 703+ at 10 W SSB. The 20-meter band was in good condition, and noise levels were quiet with continent-wide coverage.

In environments where you can't use ground stakes (like a parking lot), the FSR can be laid across the pavement or a vehicle roof in an X pattern. The FSR would have been ideal for my Arizona POTA activations where all I had was desert rock and cactus to work with (a ground spike only works on grass and sand). So, I adapted, leaving the ground spike in the trunk, and I had great results with the MC-750 roof-mounted antenna (see Figure 10). I found using wire radials draped over the rental car improved resonance, so I was anxious to compare how the wide Faraday strips would work on my own car. TSA had no issues with my magnetic mounts, wires, and whips in my checked baggage during air travel.

Again, I had the Venus start calling CQ, and I went to the RBN website to view my data set.

Interestingly, for CW performance, the RBN spots were neck and neck. The wires actually snagged a better SNR (8 dB higher) report at a farther distance (4,229 miles vs 3,402 miles) with 17 reports. The FSR provided 18 reports but consistently showed to be similar and in some cases a few dB stronger, and a California station reported a 2 that was not picked up on the wire's transmission.

The RBN showed a high probability that the band would support SSB contacts. I switched to the Icom 703+ at 10 W. Using the FSR, I made 18 contacts ranging from Florida and Bermuda to the south, and Oklahoma and California to the west. Despite the QRP+ power level, the reports were solid.

These were all park-to-park (and a park-to-Colorado) SOTA summit contacts. I was elated by the great QRP+ activation and validating the benefits of the FSR.

I see the FSR as an ideal setup for drive-up deployments to parking lots, rest stops, and narrow driveways. A 17-foot mobile antenna is a game changer.

Field Test 3: Man-Pack Portable

I wanted to test out a typical deployment where operating anywhere between 40 and 6 meters was required. I chose to operate my Icom 703+ Man-Pack with the Chameleon MPAS Hybrid-Micro balun with the SS17 telescopic whip (MPAS Lite). I did not want to deploy the standard 25-foot counterpoise. A Manfrotto backlight stand provided support. I also added two 10-pound plates to secure the antenna and prevent it from tipping



Figure 11 — The Chameleon CHA FSR included hardware.
[Photo courtesy of Chameleon Antenna]

over. I chose a local urban park where the bicycle trails in the Toronto area were cleared of snow, offering an asphalt-friendly ground surface. The heavy FSR components were not an issue for the short-duration hike. I found a suitable clearing and set up in minutes.

The FSR offered visibility and protection if someone ran over it, and with minus wind chill, the deployment had to be fast and easy. I know what it's like untangling wires in these conditions, and it's not fun.

I made several SSB contacts with no difficulty. The tuner operated smoothly, finding a match quickly on the higher bands.

I collapsed the antenna to 9 feet and made contact with Yury, VA3GKX, and Edwin, VE3XVN, on FM with good signals. I had no luck on 10 meters due to the distance.

I rolled up each leg and secured them with the bungee ball, removed the adapter, and was in motion in minutes.

The FSR is a viable alternative to wire radials, providing comparable performance while being significantly easier to deploy.

ARES/EmComm

From an ARES or emergency management perspective, the FSR is a no-brainer. It looks professional, deploys in minutes, and is essentially foolproof. You can focus on the communication mission rather than untangling wires or worrying about counterpoises. Anybody can deploy this with simple instructions.

For my last EmComm experience, I was located in a parking space at a local fire station. I could easily deploy the FSR in the parking space beside me, on the grass or sidewalk in front of me, or on top of my car.

I now have another radial option in my EmComm-ready backpack that is not a compromise. It will integrate

with any portable vertical antenna to complete mission objectives in a safe and secure manner when time is of the essence.

Improvements

An instruction sheet included in the box saves one the hassle of downloading instructions and then printing them.

A nut to secure the washers to the adapter would prevent washer loss, and having these extra parts included as a repair kit would also save the trouble of trying to source similar-quality parts. The prime source of failure will be in the center grommets and the adapter plate holding everything tightly to make a ground connection to the base.

Extra bungee balls would also keep everything together when rolling them toward the adapter to contain four rolls, not two.

Final Verdict

While the weight might deter extreme SOTA hikers, for anyone operating near a vehicle or setting up a base camp, the CHA FSR is a rugged alternative that removes the tangle from portable verticals. After 10 deployments, the grommets are fine, the stitching is fine, and the fabric is relatively clean. Rolling out each leg from the center adapter seems to be the best way to do it. Then, you must screw the base onto the adapter, not vice versa. I found an antenna tuner to be useful, as well as the shorter radial length at times, for de-tuning the resonance based on the ground conditions. It's easier to use the tuner than fiddle with the telescopic antenna length and a measuring tape.

Built to last and operate in various environments with a fast and easy rollout, the FSR also offers a safer, more practical solution for portable and semi-permanent installations in public or group settings. The FSR delivers field-tested performance without compromise, universal compatibility, and rugged portability, making it an innovative radial solution for today's portable vertical antenna systems.

Both radial configurations performed well, making either one a viable option. The choice simply depends on your specific deployment needs. Because there's no compromise in performance, the FSR is a welcome addition to my MPAS kit.

Manufacturer: Chameleon Antenna, 155 Glendale Ave., Ste. 17-B, Sparks, NV 89431, www.chameleonantenna.com. Price: \$130; optional shoulder pack, additional \$40.