

## The NA4IT "CHEAP" Dual Band Ground Plane Antenna

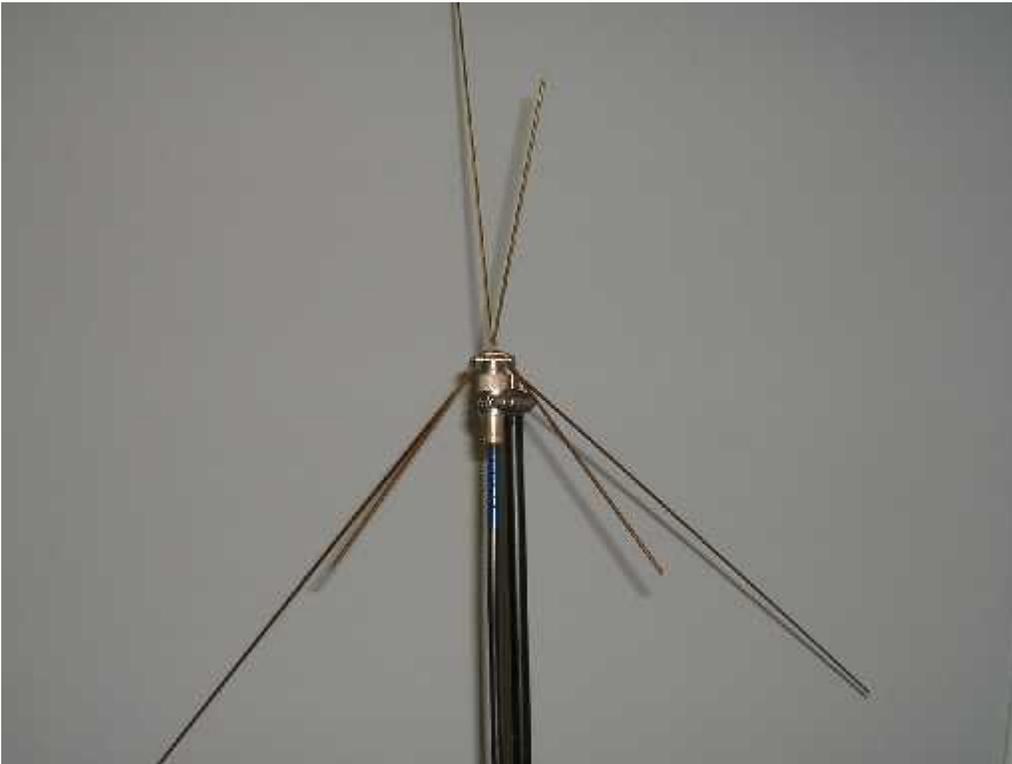
### Materials needed:

- (1) SO-239 4 hole chassis mount connector
- (3) 3/32 bare welding rods (copper or brass)
- Rosin Core Electrical Solder
- Clear Silicone Sealant

### Tools Needed:

- Heavy duty soldering gun
- Wire cutters
- Vise or "Third Hand" or another human.

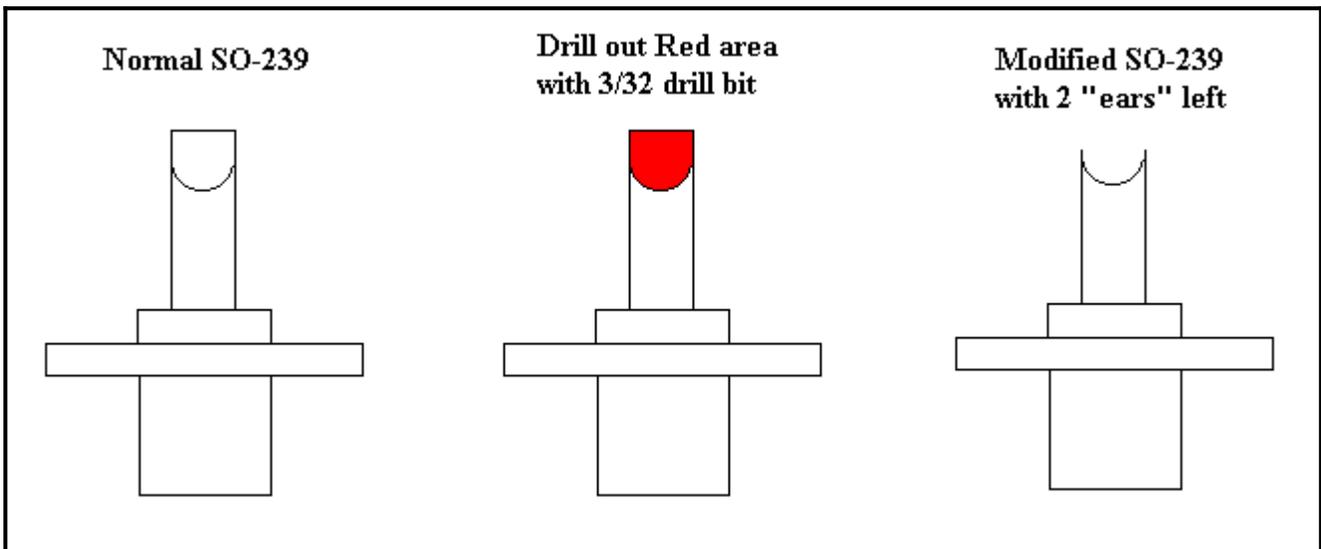
This little antenna is cheap and easy to build, lightweight, and very functional on 2 meters and 70 centimeters. The finished product will look like this:



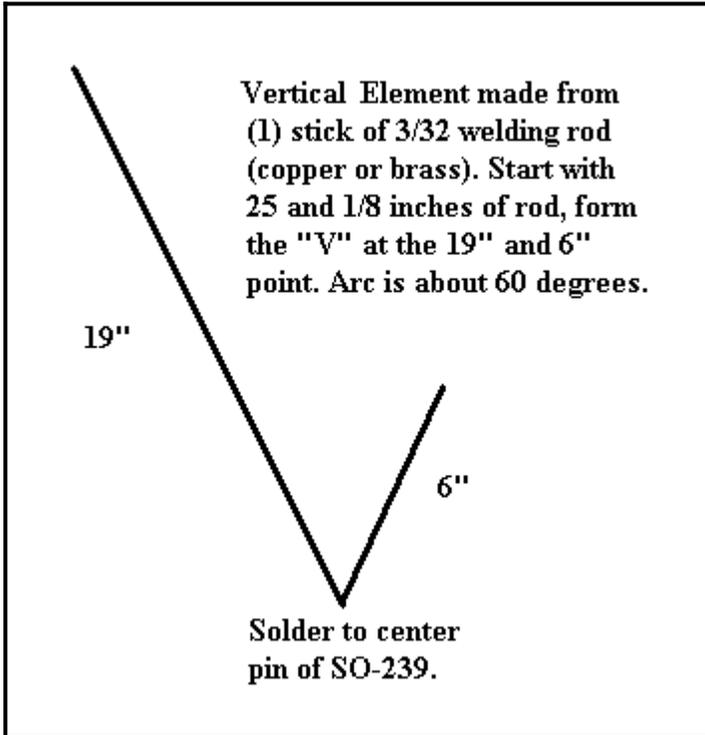
Let's get started! From the welding rods you need the following:

- (1) piece 25 & 1/8 inches long
- (2) pieces 6 & 1/2 inches long
- (2) pieces 19 & 1/2 inches long

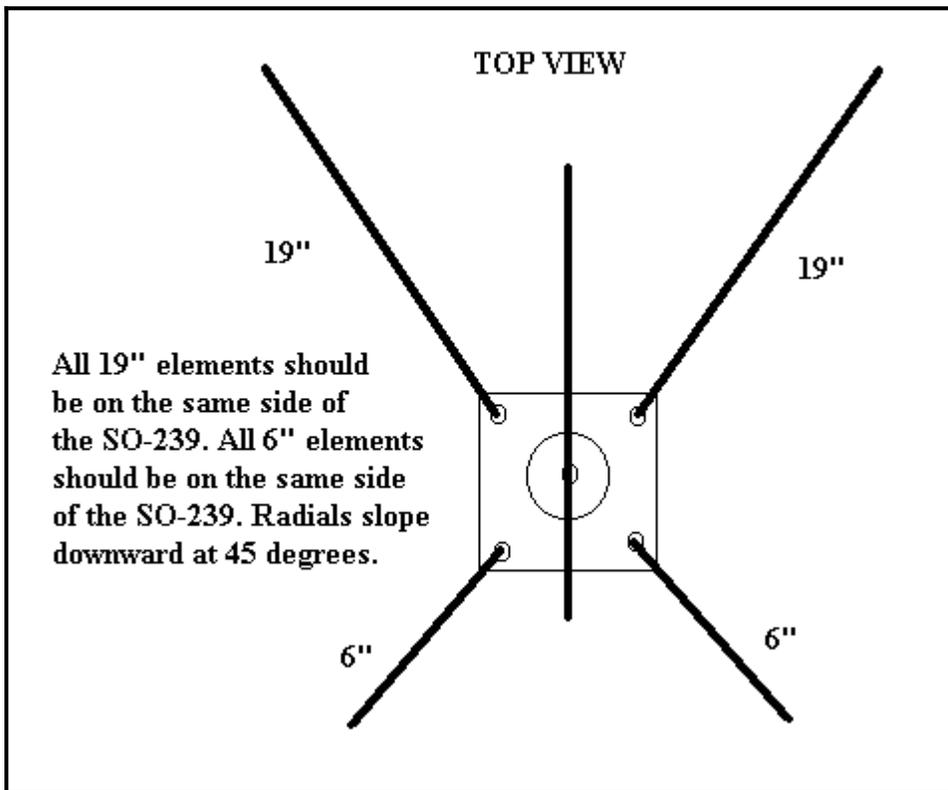
Here is how to prep the SO-239 connector:



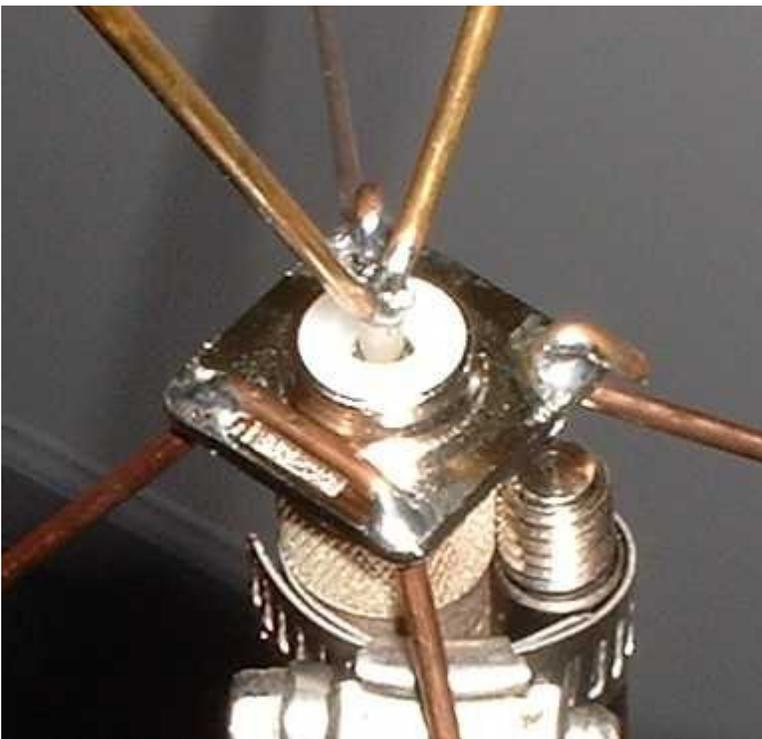
Now to make the vertical element:



Now take the 19 & 1/2" and the 6 & 1/2" pieces and make a "ring" on one end, placing each on into one of the mounting holes of the SO-239 and crimp it tightly, then solder, filling the hole. The arrangement should look like this:

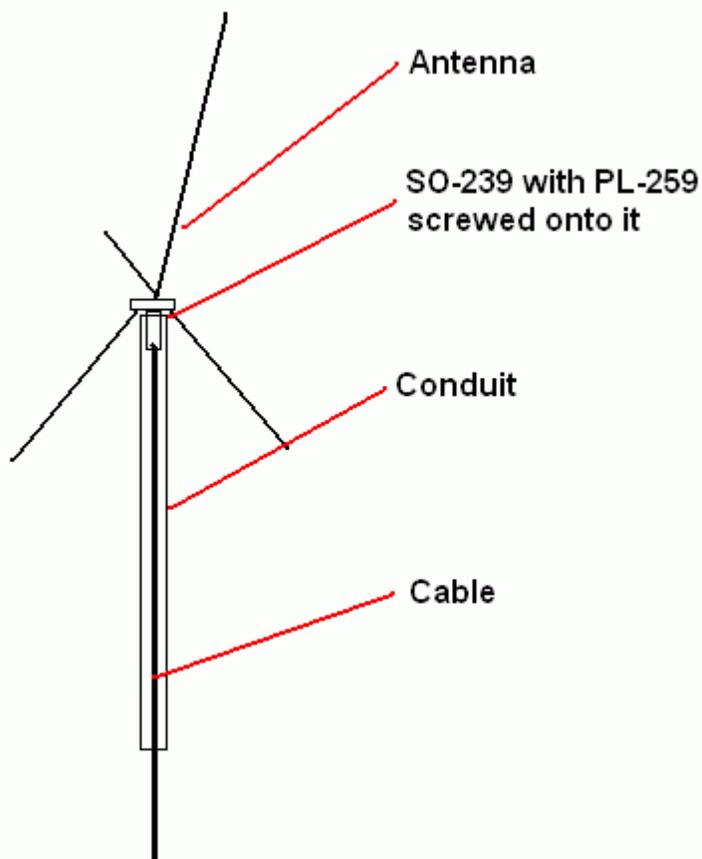


Here is a close up photo of the first one I did: (My 6" radials were made from a welding rod 12 & 3/4" long, bent into a "C" shape and run down through 2 of the mounting holes, then bent back out to the proper angles and soldered.



Finish by covering the entire center pin and insulator area on the "top" of the SO-239 with Clear Silicone Caulk.

To mount the antenna, use a 1 foot piece of 3/4 EMT conduit. Slide the coax and PL-259 connector up through the piece of conduit, connect the antenna to the coax, and let it sit down into the conduit. Use stainless steel hose clamps to attach it to a mast. I'm sure you can come up with other ways to mount the little antenna also. (An alternate way is to use 1/2" conduit, and a 1/2" conduit connector. You can tighten the set screw against the PL-259. But you have to leave one PL-259 off until the cable is run.) This antenna makes a great Severe Weather antenna, so that you can maintain communications, by mounting it in the attic or even below the eaves of your house.



The first time this one was used, it was used at a RACES drill. It was mounted to a small telescopic speaker stand by clamping the PL-259 to the stand with a single hose clamp. It was inside the building, and with 10 watts, we could hit both 2M and 70Cm repeaters up to 30 miles away (and that's in East TN, the "Heart of the Smokies"!).

SWR results of the prototype were less than 1.5-1 on across both bands with 55 watts input. Your results may vary. Also, this antenna may be somewhat directional. Experiment with it. I would welcome computer plotting results if some one would like to do it. Let me know how it works for you!

NA4IT, Scott Duckworth

**[na4ittn@gmail.com](mailto:na4ittn@gmail.com)**