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14

Stealth 6-Meter Wire Beam

This is a portable 3-element beam antenna. We will use dimensions very close to those of the 6-Meter Special beam in Chapter 3, but this one is made of wire instead of aluminum tubing. It can be rolled up, stashed in the trunk of your car, and off you go. I had one of these antennas under my deck for two years, suspended on hooks. It's completely hidden. No one can see it. I would just walk out of the garage, move it a bit if I wanted to work someone in a different direction, and go back to operating. It worked wonderfully, and I still have one in the back of my SUV for portable operations.

This portable 6-meter beam antenna provides great coverage for the SSB portion of the 6-meter band. You can tune it for any frequency of your choice, but since most DX is near the low end of the band that was my choice. This antenna is tuned for 50.200 MHz. However, I have found it covers a much wider section of the band. As with the 6-Meter Special, this antenna is shorter than normal, but please do try it. I found the performance to be similar to larger beams.

Antenna Construction

Table 14.1 shows the needed materials, and **Figure 14.1** shows the dimensions. When building this antenna, I use no. 12 AWG wire for the elements and boom, but use what you have available. As with the 6-Meter Special, I have spaced the elements tightly to limit the size, which is great

Table 14.1
Materials for the Stealth 6-Meter Wire Beam

<i>Quantity</i>	<i>Description</i>
35 feet	No. 12 AWG copper wire for the elements and boom.
15 feet	Thin nylon rope for the element supports.
10 inches	Coaxial cable (such as RG-8) for the gamma match. Remove the braid and outer jacket, leaving the center conductor and dielectric. Strip one end to expose the center conductor.
12 inches	$\frac{3}{8}$ inch copper or aluminum tubing for the gamma match. (This is for RG-8 size coax.) Adjust the tubing size if you use something different. It must just barely slide over the coax.)
1	SO-239 connector.
2	Aluminum or copper strips, 1 × 3 inches, for the gamma match shorting strap.
3	1-inch long no. 10-32 stainless-steel machine screws with nuts and lock washers for the gamma match shorting strap.

for working in a restricted airspace such as having to deal with trees or other obstructions. The boom here is slightly less than 5 feet long and the longest element is only 10 feet, which makes a small footprint to help hide this antenna if you are going for a stealth installation.

Now let's get started. Roll out your wire and get the cutters ready.

There are a couple ways to build this antenna. You can use rope (nylon or similar material) to support and space the wire elements properly. The other way is to make your boom and element supports from PVC pipe, and use wire ties to attach the element and boom wires to the PVC. We'll focus on the wire/rope version.

Cut pieces of no. 12 AWG wire to the following lengths:

- The director is 111 inches long.
- The driven element is 116 inches long.
- The reflector is 122 inches long.
- The boom is 68 inches long.

Now grab your soldering iron and solder wires together according to the following measurements. Lay out the boom and the three elements as shown in Figure 14.1. Space your reflector element wire about 2 inches from the end of the boom wire, and then space your reflector and driven element 31 inches apart. Solder the reflector element wire to the boom wire. Now bend the end of the boom wire over the reflector wire, making a loop, and solder that to the reflector/boom joint. Solder the driven element wire to the boom wire.

On the reflector element, loop back each end by one inch and solder the

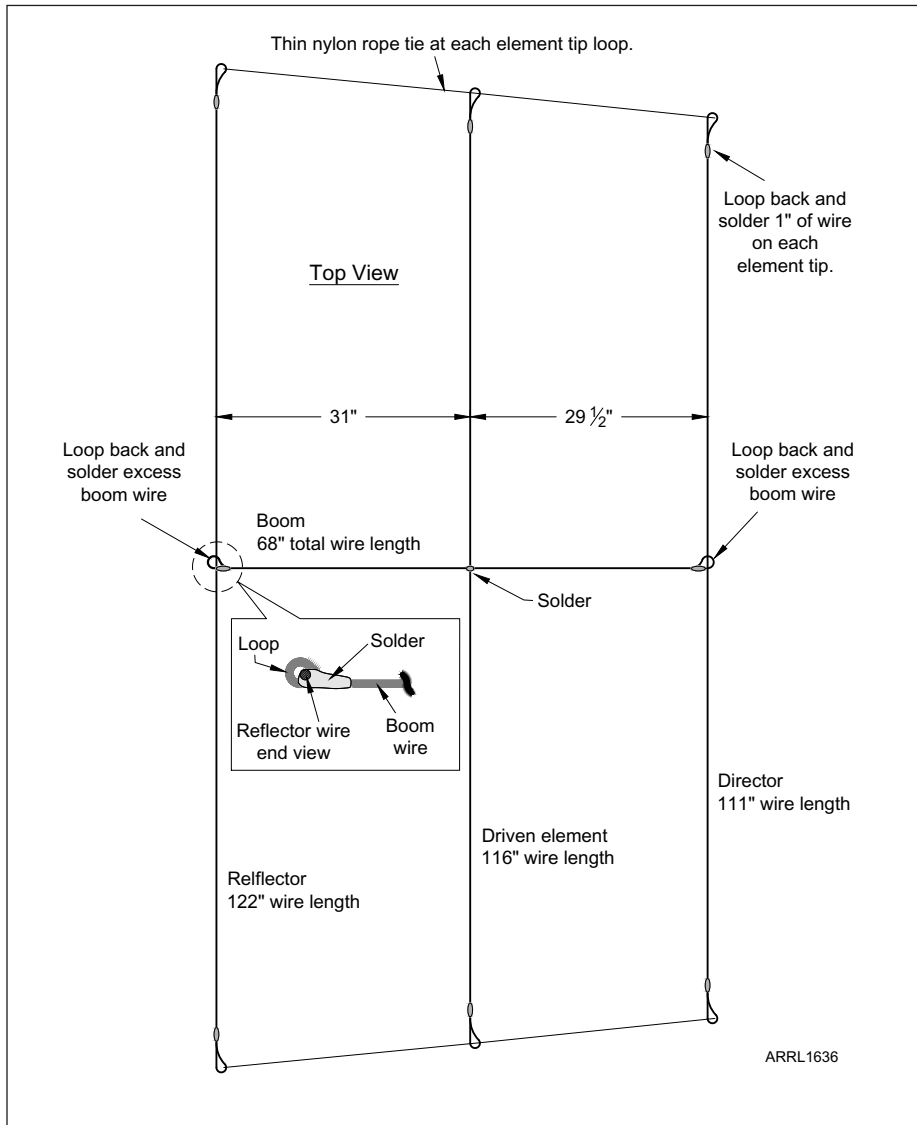


Figure 14.1 — Dimensions of the Stealth 6-Meter Wire Beam.

end to the element. Do the same for the driven element. These loops will be used to support the elements.

Now space the director $29\frac{1}{2}$ inches away from the driven element. Loop back the excess wire at the end of the boom and solder the free end and director element wire to the wire boom. On the director element, fold back 1 inch at each end and solder to form a loop, as you did with the other elements. You now have a beam with three wire elements attached to a wire boom.

The small loops made on the ends of the elements are to support the antenna and keep the wire element tips at the proper spacing. String a thin nylon rope through the loops and tie it off at each element tip. This rope will support the element ends and make sure they stay at the proper spacing. Rope can be attached to the ends of the boom wire as well, and tied off to trees or other supports. Make sure your elements are as straight and level as possible when using the antenna.

Gamma Match

For this antenna I used a gamma match similar in concept to the 6-Meter Special and other beams described in earlier chapters. **Figure 14.2** shows how it's done for this antenna.

Cut a piece of RG-8 coax 10 inches long. Strip off the outer jacket and shield braid, leaving the dielectric and center conductor. Strip one end. Slide the RG-8 inside a piece of $\frac{3}{8}$ inch copper or aluminum tubing about 12 inches long.

Hang the gamma match tubing $1\frac{1}{2}$ to 2 inches below the driven element, supporting the tubing with two small pieces of aluminum or copper sheet or

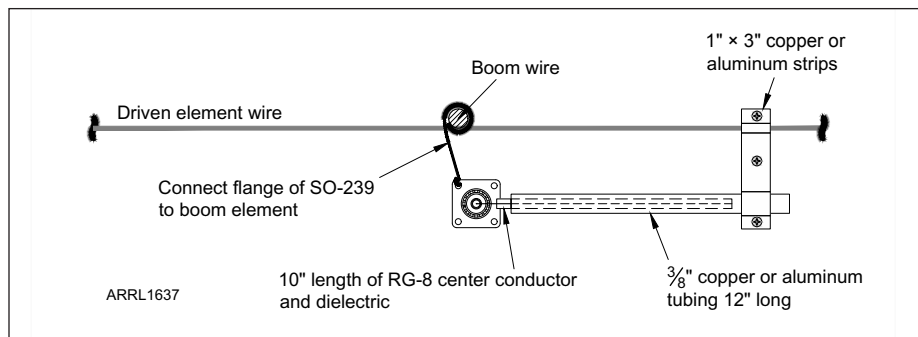


Figure 14.2 — Gamma match details.

bar (about 1 × 3 inches). Sandwich your gamma tubing and driven element wire between these aluminum or copper strips and tighten with three small machine screws. Now take an SO-239 chassis connector and solder the center pin to the stripped end of the RG-8 coax. Connect a short piece of wire between the flange of the SO-239 and the center of the driven element and solder both ends.

Final Steps

If all has gone well and measurements were close, you can now add your 50 Ω coaxial feed line and SWR meter and adjust the antenna for a low SWR. Please make sure the frequency is not in use before tuning up and testing the antenna. If you need to adjust the SWR, try moving the position of the gamma match shorting strap and/or tubing.

If you do this right, you can just roll up the antenna wires and then fold it in half. When you need it, unroll and off you go. Good performance, stealthy, practical.

The final step here is to wait for a band opening and then *enjoy!*