



Comet CHA-250B Vertical Antenna

What if I said that you could buy a vertical antenna that works on 80 through 6 meters without radial wires and offers an SWR of less than 1.6:1 throughout each band? Would you believe me?

If this description triggers alarm bells in your head, good for you. It shows that you've been paying attention to antenna articles in *QST* and elsewhere. Maybe you even own a copy of the *ARRL Antenna Book*. Heed those alarm bells well. They're telling you that there is no such thing as a miracle antenna or a free lunch (well, maybe a free lunch).

Most vertical antennas require ground returns for RF currents, either through elevated radial wires or radial wires in (or on) the soil. An efficient vertical antenna will *not* offer an SWR of 1.6:1 across each band. In fact, the 2:1 SWR bandwidth of a highly efficient vertical can be quite narrow.

So what is going on with the Comet CHA-250B? This new vertical antenna promises an SWR less than 1.6:1 from 3.5 to 54 MHz without using radials. Is it a miracle or a fraud?

Assembly and Setup

The Comet CHA-250B is easy to assemble. There is little more to do than fit one aluminum tube into another. The CHA-250B we purchased for this review came with assembly instructions in Japanese (current models have English instructions). I don't read Japanese, but I was still able to put the antenna together by simply following the diagram. When you're finished (15 minutes later, in my case), you have a 23½-foot long antenna that's ready for use.

Comet recommends that the CHA-250B be mounted at a height of 35 feet for best performance, but I opted to test the antenna in a more typical near-ground installation using a short tripod in my backyard. The antenna only weighs about 7 pounds, but its length makes it unwieldy for one person to handle alone. I'd strongly recommend a helper because the '250B has a tendency to sway at the top. It is difficult to hold the base still while the top is oscillating!

On-Air Performance

True to its specifications, our CHA-250B really did deliver a low SWR on every band. Regardless of the frequency, I never measured an SWR higher than 1.3:1. The CHA-250B achieves this through a sealed "matching unit" in an aluminum cylinder at the base of the antenna. According to Comet, the matching circuit is basically a network of resistors and capacitors. A toroid balun is present as well.

But the concept of a "radialess" low-SWR vertical antenna meets hard reality when you actually get on the air. Using an A/B coax switch, I toggled between the CHA-250B and a Fluidmotion SteppIR vertical antenna with a conventional radial system. On 20 through 6 meters, the CHA-250B and the SteppIR were comparable when it came to reception. On transmission, the SteppIR clearly outperformed

the CHA-250B. I received reports of my signal being down as much as 3 S units when I switched to the Comet.

On 80, 40 and 30 meters, I switched between the CHA-250B and an inverted V antenna. I didn't expect stellar performance from the '250B on these bands, so I wasn't disappointed. The CHA-250B, at best, equaled the performance of a mobile whip antenna.

Claims vs Reality

If Comet had claimed that the CHA-250B was a world-beating miracle antenna, we would have blasted it with both barrels. Comet doesn't make such claims, however.

Their literature merely states that the antenna will radiate a signal and provide a low SWR on all bands without the use of radials. In this respect, the CHA-250B performs as advertised. It is neither a miracle nor a fraud.

The CHA-250B's performance is mediocre to poor on 80, 40 and 30 meters, but it does an *adequate* job on the other bands. At a list price of \$469, this is hardly an inexpensive antenna. Frankly, a small antenna tuner, a length of 450-Ω ladder line and a wire dipole will yield superior performance at less than half the price.

But not everyone has room for a dipole antenna. Some people are confined to very small spaces that will hardly accommodate a wire antenna of any kind, and certainly not a vertical antenna with a network of radial wires. In circumstances where choices are extremely limited and cost isn't a major consideration, the Comet CHA-250B may be a contender, especially if the alternative is not getting on the air at all. In addition, the CHA-250B may also be a viable option in emergencies when you need a multiband HF antenna that can be deployed in a matter of minutes. In those situations you just want to get a signal on the air, not work the world.

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A close-up view of the base of the CHA-250B.

