

# Gulf Alpha Dual-Band Satellite Antenna

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For years I have been using long-boom KLM CP antennas with full azimuth and elevation control for satellite work at home. For portable operation, I have my trusty Arrow antenna purchased back in 1997. The only thing missing was a permanent satellite antenna that I could use at my camp. I'd seen several posts on the AMSAT e-mail reflector about satellite antennas from a company in Nebraska called Gulf Alpha, so when the ARRL called about doing a "Short Take" review of one of their products, I jumped at it.

The Gulf Alpha model 2M-70CMSAT is dual-band Yagi with six elements on 2 meters and eight elements on 70 cm. Both are linearly polarized. They are mounted on a 72 inch boom at right angles to each other. In a typical mounting arrangement, the 2 meter elements would be horizontally polarized and the 70 cm elements would be vertically polarized. The 2 meter coax connector is UHF while the 70 cm connector is N.

When I received the antenna I was immediately impressed with the construction. Living in Vermont, I know what a typical winter can do to any antenna. My camp is located in Northern Vermont where 4 to 5 feet of snow and ice are normal. Even so, I wouldn't hesitate mounting this antenna on my tower. All the parts are machined and all hardware is stainless except for the U bolts. The elements are  $\frac{3}{16}$  inches in diameter, except for the driven elements that are  $\frac{1}{4}$  inch in diameter.

### Time for Assembly

I was a little concerned after I opened the box and realized that the instructions were absent. I finally located them on the Gulf Alpha Web site. There has been a small change in the design from what's shown on the Web, by the way. The boom is no longer square, but instead is round and  $1\frac{1}{2}$  inches in diameter; the element mounting blocks are  $\frac{5}{8}$  inch square.

Assembly was straightforward, but beware of overtightening the hardware. The element blocks have two screws that go through the boom for precise alignment. If you over tighten, it can actually pull the element block out of alignment. I can tell you this from experience! Pay particular attention to the photos for placement of the 70 cm balun around the 2 meter feed system. I set the shorting blocks on the driven elements to the dimensions recommended in the instructions.

The boom-to-mast clamp is predrilled so that you can mount the antenna level with the horizon for use with systems that have elevation control, or at a fixed elevation of  $15^\circ$  for use with an azimuth rotor only. I ap-

uplink. I employed an old trick of using the 70 cm side of my Diamond duplexer as a 2 meter filter. It was inserted in front of my 70 cm preamp. Desense wasn't an issue. I also mounted the antenna on a non-conductive mast (closet dowel) so I wouldn't potentially skew the 70 cm pattern.

The feed line routing might be a bit confusing. Both of the RF input connectors point toward the center of the antenna where the boom to mast clamp is located. On 70 cm, simply tie the coax to the boom and route it down the mast. The confusion tends to occur with the 2 meter coax. If you look, you'll see it's very close to the 70 cm driven element. The way to route this coax is right through the center of the 70 cm driven element following along the boom.

The Gulf Alpha antenna performed very well. The gain and pattern seemed well suited for a fixed elevation. I did experience some signal loss on several very high elevation passes. As the satellite approached maximum elevation the signal degraded, but picked back up quickly as it descended. Overall I might have lost 30 seconds or so. I bet with elevation control I could have tracked it full-time, but I have to wonder whether the added cost and complexity would really be worth it.



plaud Gulf Alpha for using 2 inch U bolts on the mast mount. I can recall fondly trying to mount my old KLM's to my 2 inch M<sup>2</sup> cross boom only to find out the KLM U bolts were  $1\frac{1}{2}$  inch.

### So How Does It Play?

I decided to try the antenna with a fixed  $15^\circ$  elevation. My primary testing was done over the July 4 weekend when OSCAR 51, the FM repeater satellite, was operating with a downlink output power of only 290 mW. The radio I used was my Yaesu FT-847 in full duplex satellite mode. I chose FM so I could watch receive signal levels consistently through the passes. Even with 8 elements on 70 cm for the downlink, I still used my preamp on the receive side. Since the dual-band elements are interwoven, I was concerned about desense on the downlink caused by my

### Suggestions?

My only suggestion for this antenna is to include instructions in the package and add a diagram of the elements with centering dimensions. Having that dimension for each element would have decreased my build time considerably. It would also be helpful to include feed line coax routing in the photographs.

If you're considering a dual band 2 meter/70 cm satellite antenna for either permanent installation or even Field Day, make sure you take a look at the Gulf Alpha. This antenna has found a permanent home on my tower!

*Manufacturer: Gulf Alpha Communication Antennas, 690 South Howard St, Kimball, NE 69145; [www.gulfalphaantennas.com](http://www.gulfalphaantennas.com); tel 308-235-8347, 9 AM to 5 PM MT Monday through Friday. \$239.*

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