

# CUMING MICROWAVE

## MODEL COA

RoHS  
Compliant

### TECHNICAL BULLETIN 520

#### OMNIAZIMUTH RADAR REFLECTOR

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The Model COA Omniazimuth Radar Reflector is made by combining three spherical dielectric reflectors in such a way as to provide a large, uniform radar cross section across a full 360° in the horizontal plane and a large viewing angle, up to 120°, in the vertical plane. The device is intended to enhance the radar signature of all kinds of targets, including aircraft, ships, and military vehicles.

The Model COA's three spherical dielectric reflectors are similar in construction to Cuming Corporation's standard "Model C" radar targets as described in Technical Bulletin 510. The reflector assembly is inherently rugged and weatherproof, and needs no radome. The unit is supplied with a 2 inch diameter x 6 inch long fiberglass mounting post for attachment purposes, and should be mounted with its long axis vertical. The COA-04.5x3 unit illustrated in Figure 1, based on three 4.50" spheres, weights about 10 lbs.

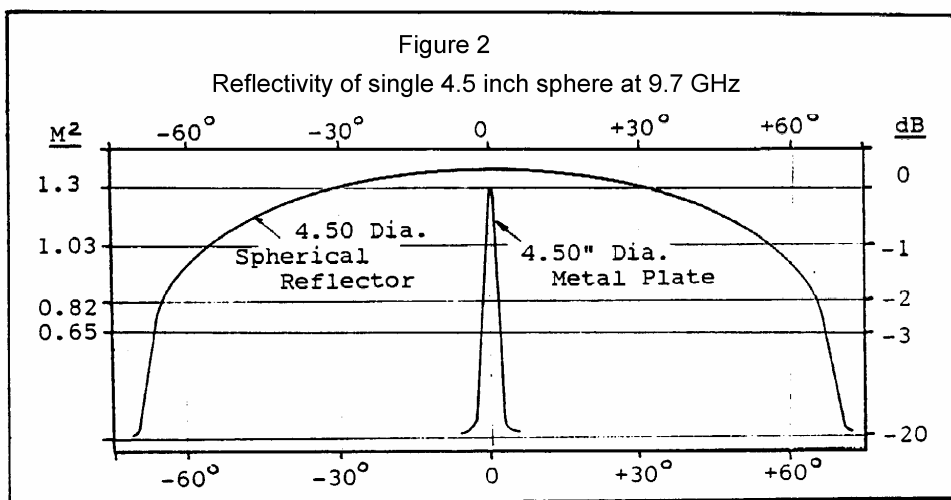
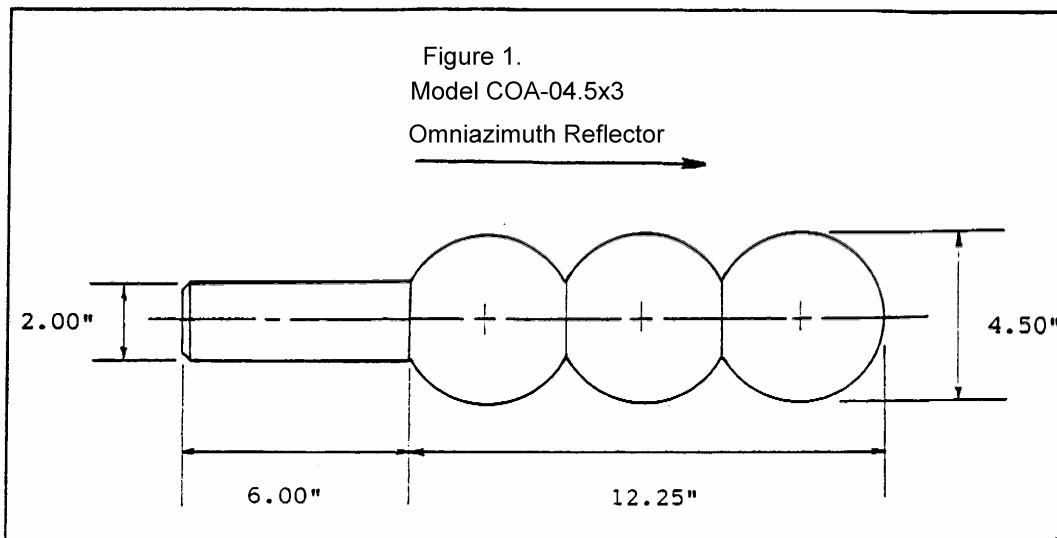
The COA-04.5x3 unit provides a radar cross section of at least 1.0 square meter a 9.7 GHz over the entire viewing angle of 360° horizontal and 120° vertical. The three 4.50" spheres are fitted with integral reflector caps to give the required angular coverage. The spheres are marked to indicate the centers of their respective viewing cones for aiming and calibration. The reflector assembly is normally supplied painted with a weather-resistant high-visibility paint.

Figure 2 illustrates the performance of a single 4.50" sphere over its 120° horizontal sector, as compared to a flat metal plate of the same diameter. The three reflector caps are arranged to provide continuous reflection around the full 360°. Other sizes of reflectors will provide different radar cross sections. The table in Figure 3 gives the relationship between size, RCS and weight of individual spherical reflectors. Multiplying the tabular weights by three and adding three pounds gives a good estimate of total assembled weight.

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The information in this technical bulletin, although believed to be accurate, is not to be taken as a warranty for which Cuming Microwave assumes legal responsibility, nor as permission or recommendation to practice any patented invention without license; it is offered for verification by the customer, who must make the final judgment of suitability for any application.

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**Figure 3.  
RCS and Weights of Individual Reflector Spheres**

Diameter in inches (mm) of Sphere	Theoretical RCS (m <sup>2</sup> ) at 3 GHz	Theoretical RCS (m <sup>2</sup> ) at 10 GHz	Theoretical RCS (m <sup>2</sup> ) at 16 GHz	Weight Lbs. (kg)
3.0 (76)	0.03	0.25	1.16	0.6 (0.26)
4.0 (102)	0.08	0.81	3.67	1.6 (0.72)
4.5 (115)	0.12	1.30	5.51	2.3 (1.03)
5.0 (122)	0.20	2.20	9.00	3.3 (1.50)
6.0 (152)	0.42	4.08	18.60	6.0 (2.72)