

L-3 ESSCO's Metal Space Frame (MSF) radomes are rigid, self-supporting structures that consist of a structural framework with thin, electromagnetically transparent membranes that are permanently bonded to the framework.

KEY FEATURES

- Easy to install
- Hydrophobic coatings for enhanced high-frequency performance in rain
- Electrostatic (Faraday) cage is included to protect against lightning
- Low IMP-free designs for military SATCOM applications
- Customized shapes, including sheds, barns and cylindrical structures

CONSTRUCTION AND MATERIALS

L-3 ESSCO's MSF radomes consist of triangular panels bolted together to form a geodesic dome. For smaller radomes up to 30 ft. (9.1m) in diameter, panels can be either the same basic size and shape (creating a regular geometry); or different sizes and shapes (creating a randomized geometry). For larger radomes, randomized geometries are used. The frame material is a metal aluminum extrusion.

We permanently bond a thin electromagnetically transmissive membrane material to the frame to create a finished panel. The most commonly used material is ESSCOLAM™, a proprietary plastics laminate we developed and utilize specifically for radome applications.

APPLICATIONS

Excellent broadband performance in SATCOM applications at all military and commercial frequency bands, including the C-, X-, Ku-, K- and Ka-bands.

Other Applications:

- Intelligence gathering
- Radio astronomy
- Weather radar
- 2-D surveillance radar

Standard wind speed design is 150 mph (240 km/hr.); optional designs of up to 250 mph (400 km/hr.) are available.

Other membrane materials, such as Gore-Tex® or Teflon®-coated fiberglass, are also available for special applications. Regardless of the application, we can optimize membrane materials and thickness for enhanced performance at specific frequencies, such as millimeter wave.



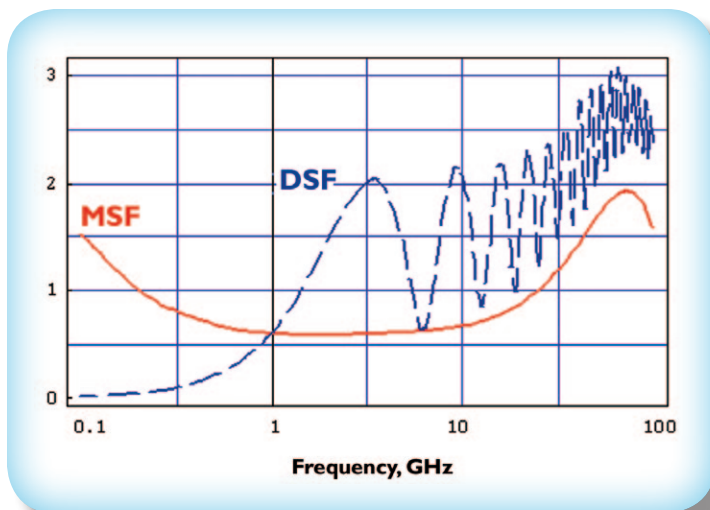
ELECTROMAGNETIC PERFORMANCE

L-3 ESSCO's MSF radomes perform well over very broad frequency bands. With standard membranes, good performance is obtained from 0.5 to 100 GHz using a metal framework. With high-performance membranes, the operational range is extended to 1,000 GHz. At broadband frequencies that go below 0.5 GHz, a dielectric framework may improve overall performance.

The electromagnetic performance of an MSF radome is made up of loss or scattering, attributable to 1) the panel frames and 2) the membrane material. The chart below provides typical electromagnetic performance data. Note the low and relatively constant transmission loss over very wide bandwidths, up through short-millimeter wavelengths.

STANDARD SIZES

Sizes range from 6 to 200 ft. (1.8 to 60.9m) in diameter. Please contact us for detailed size information.



Metal Space Frame (MSF) vs. Dielectric Space Frame (DSF) Transmission Loss, dB.



Typical 48-ft. (14.7m) diameter MSF radome installation.



100-ft. (30.6m) diameter MSF radome.

ESSCO

90 Nemco Way
Ayer, MA 01432, USA
Tel: 978.568.5100
Fax: 978.772.7581
Email: Web.Ayer@L-3com.com

www.L-3com.com/ESSCO

ESSCO Collins, Ltd.

Kilkishen, Co. Clare, Ireland
Tel: 353.61.367244
Fax: 353.61.311044
Email: Web.ECL@L-3com.com

This technical data and software is considered as Technology Software Publicly Available (TSPA). No license required (NLR) as defined in Export Administration Regulations (EAR) Part 734.7-11. SND. Data, including specifications, contained within this document are summary in nature and subject to change at any time without notice at L-3 Communications' discretion. Call for latest revision. All brand names and product names referenced are trademarks, registered trademarks, or trade names of their respective holders. 12/14