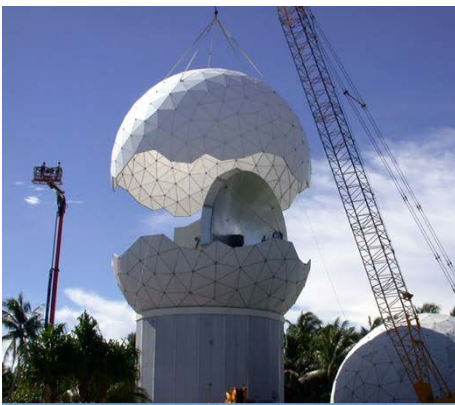
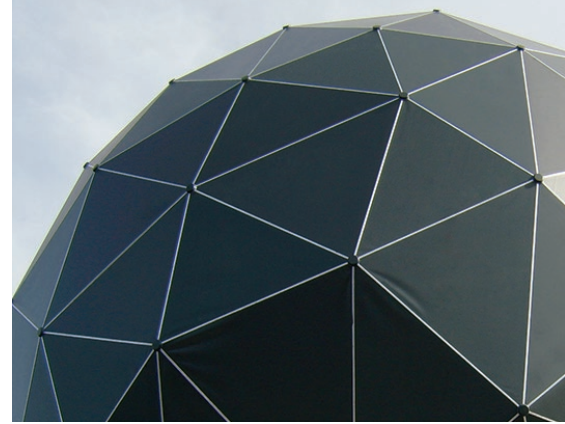


CPI Metal Space Frame Radomes

CPI Metal Space Frame (MSF) radomes are a continuation of the ESSCO brand and its 50-year legacy of serving the ground-based radome market with MSF radomes.

CPI 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.



CONSTRUCTION AND MATERIALS

CPI 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.

CPI permanently bonds a thin, electromagnetically transmissive membrane material to the frame to create a finished panel. The most commonly used material is ESSCOLAM™, CPI's proprietary plastics laminate developed and utilized specifically for radome applications.

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

KEY FEATURES

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

APPLICATIONS

Excellent broadband performance in satcom applications at all military and commercial frequency bands, including 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.

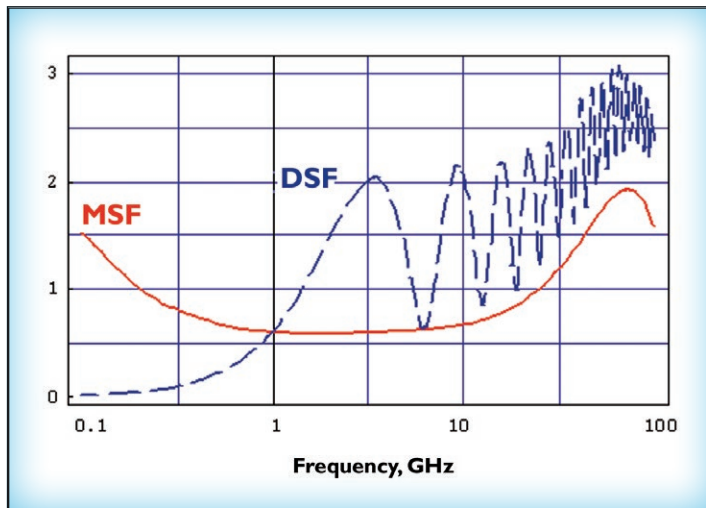
CPI Metal Space Frame Radomes

ELECTROMAGNETIC PERFORMANCE

CPI Metal Space Frame 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.

METAL SPACE FRAME (MSF) VS. DIELECTRIC SPACE FRAME (DSF) TRANSMISSION LOSS, DB.



STANDARD SIZES

Sizes range from 6 to 200 ft. (1.8 to 60.9m) in diameter.

Please contact CPI for detailed size information.



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



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

To learn more, contact your Antenna Technologies sales person or visit www.cpii.com.



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For more detailed information, please refer to the corresponding CPI technical description if one has been published, or contact CPI. Specifications may change without notice as a result of additional data or product refinement. Please contact CPI before using this information for system design.

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MKT-MSF Revision B dated Feb 2025