

# Commercial Aircraft Radomes

*Nose Radomes, IFEC Fuselage and Tail Radomes*



Over 75 years of radome design, manufacturing and test experience

Single and multi-band radomes for weather and IFEC SatCom applications

## Overview

General Dynamics Mission Systems has an extensive and successful history in designing and developing performance critical radomes for military platforms. This experience and tool set has been successfully leveraged to develop and produce nose radomes for large commercial aircraft and business jets; as well as Fuselage and Tail Mounted Radomes for the In-Flight Entertainment and Connectivity (IFEC) market.

General Dynamics Mission Systems is capable of designing and manufacturing single and dual-band, low-reflection radomes for optimum performance of various radar systems, such as weather radar. These capabilities extend to the development and production of both single and multi-band radomes that provide excellent cross-polarization discrimination and transmission performance across X-, Ku-, K-, and Ka-bands for SatCom applications.

Designing radomes for Electronically Scanned Antennas (ESA) introduces new challenges beyond those for existing mechanically steered antennas. With over two decades of experience designing radomes for the most advanced Active Electronically Scanned Array (AESA) radars and over 1,700 of these radomes in service, General Dynamics Mission Systems is uniquely positioned to provide these radomes for the IFEC market. Our extensive experience allows us to apply real world knowledge to the design, qualification and manufacturing processes of radomes for successful overall system performance and minimal life cycle cost.

# Commercial Aircraft Radomes

## Radome Background

- Over 75 years of radome design, manufacturing and test experience
- General Dynamics Mission Systems has designed radomes for over 50 platforms and produced over 65,000 radomes

## Commercial Radome Experience (Partial List)

- Previous Programs: Boeing Ku ; B737 / 747 / 757 Nose Radomes; G500/600 Tail Radomes
- Current Programs: Thales Tri-Band, Boeing Tri-Band; G500 / 600 Nose Radomes

## Key Capabilities

- Electrical (RF) design/analysis
- Structural design/analysis
- Lightning direct effects protection
- Mechanical design
- Tool design
- Material and process engineering
- High precision machining
- Radio frequency (RF) testing
- Non-destructive testing (NDT)
- Repair

## Radome Design Approach

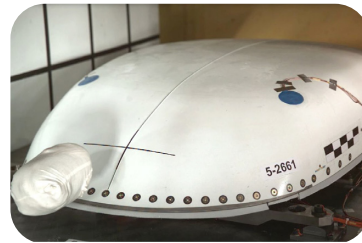
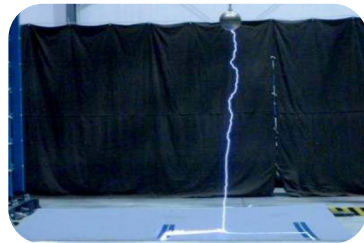
General Dynamics Mission Systems collaborates closely with our customers to choose the best design, process and materials to fit their needs for cost and performance. Employing an extensive analytical tool set, we are capable of coupling accurate RF performance predictions with FEA structural analysis to ensure a high integrity, optimal solution for your system needs. These tools can be applied early in the design process to aid in radome shape selection trade studies. When radome performance matters, our design experience, analytic and measurement tools, and manufacturing know-how provide for low-risk, high performance radome solutions.

## Radome Qualification Experience

- Material Allowables
- Static Loads
- Mechanical Shock & Vibration
- Fatigue
- Bird Strike
- Low Velocity Impact Damage (LVID)
- Fluids Resistance
- Rain Impact/Erosion
- Lightning Protection
- Other Environmental Qualification
- Electrical (RF) Performance
- Supplemental Type Certification

## Facilities

- Approximately one million square feet of manufacturing space in Marion, Virginia
- Indoor and outdoor RF test ranges and equipment
- Large autoclaves (up to 11 feet in diameter and 50 feet in length)
- FAA Repair Station Certification Number VQBR980L



Radome Qualification Testing, Material Qualification, - Lightning Protection and Bird Strike

## GENERAL DYNAMICS

Mission Systems

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