

# Model 16.4m Cassegrain Antenna

## Satcom Antennas



### *The Strength to Perform*

Fully interchangeable reflector components with aluminum reflector panels and galvanized steel backup structure

Designed for 1.5 to 15 GHz operation, meeting FCC and ITU-RS-580 requirements

Galvanized steel elevation over azimuth pedestal with jackscrews

Survives 125 mph winds in any position

### Description

The General Dynamics SATCOM Technologies 16.4-meter antenna delivers exceptional performance for transmit/receive and receive only applications in L through Ku-band frequencies. This antenna offers a reflector design that incorporates precision-formed panels, truss radials and hub assembly. It features an innovative Cassegrain feed and subreflector design which results in high gain, low noise temperature, high antenna efficiency and excellent rejection of noise and microwave interference. A large center hub provides spacious accommodation for equipment mounting. The reflector is supported by a galvanized elevation over azimuth kingpost pedestal that provides the required stiffness for pointing and tracking accuracy. The pedestals are designed for full orbital arc coverage and are readily adaptable to ground or rooftop installations. The electrical performance is compliant with FCC and ITU-RS-580 sidelobe specifications and Intelsat (A) and Eutelsat requirements.

### Options

- L, S, C, X and Ku-band feed configurations
- C/Ku receive only feed systems
- CP/LP manual or remote switchable feeds
- Specialized feed systems (e.g., extended, multi-band)
- Antenna control system with tracking
- Reflector and feed deicing systems
- Environmental hub configurations
- Integrated transmit cross-axis kits
- Integrated LNA or LNB systems
- HPAs, converters and M&C systems
- Packing for sea and air transport
- Turnkey installation and testing

### Upgrades

- X-band low PIM reflector/feed configurations
- Bullgear azimuth drive
- High wind configuration
- Low operating temperatures
- High power configurations

# Technical Specifications

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| Electrical <sup>(1)</sup>                | C-Band 4-Port<br>Linear Polarized        |               | C-Band 4-Port<br>Circular Polarized |               | Ext. C-Band 4-Port<br>Linear Polarized |               | Ext. C-Band 4-Port<br>Circular Polarized |               | C-Band 4-Port<br>CP/LP Switchable |               |
|--|--|---------------|-------------------------------------|---------------|--|---------------|--|---------------|-----------------------------------|---------------|
|  | Receive                                  | Transmit      | Receive                             | Transmit      | Receive                                | Transmit      | Receive                                  | Transmit      | Receive                           | Transmit      |
| Frequency (GHz)                          | 3.625 - 4.200                            | 5.850 - 6.425 | 3.625 - 4.200                       | 5.850 - 6.425 | 3.400 - 4.200                          | 5.850 - 6.725 | 3.400 - 4.200                            | 5.850 - 6.650 | 3.625 - 4.200                     | 5.850 - 6.425 |
| Antenna Gain, Midband dBi <sup>(2)</sup> | 55.10                                    | 59.00         | 55.20                               | 58.80         | 55.20                                  | 59.00         | 54.80                                    | 58.80         | 55.00                             | 58.80         |
| VSWR                                     | 1.25:1                                   | 1.25:1        | 1.25:1                              | 1.25:1        | 1.30:1                                 | 1.30:1        | 1.30:1                                   | 1.30:1        | 1.30:1                            | 1.30:1        |
| Pattern Beamwidth <sup>(2)</sup>         |  |               |                                     |               |  |               |  |               |                                   |               |
| -3 dB, at midband                        | 0.30°                                    | 0.19°         | 0.29°                               | 0.19°         | 0.29°                                  | 0.19°         | 0.31°                                    | 0.19°         | 0.30°                             | 0.19°         |
| -15 dB, at midband                       | 0.63°                                    | 0.40°         | 0.61°                               | 0.40°         | 0.61°                                  | 0.40°         | 0.65°                                    | 0.40°         | 0.63°                             | 0.40°         |
| Antenna Noise Temperature                |  |               |                                     |               |  |               |  |               |                                   |               |
| 5° Elevation                             | 53 K                                     |               | 58 K                                |               | 57 K                                   |               | 64 K                                     |               | 63 K                              |               |
| 10° Elevation                            | 44 K                                     |               | 49 K                                |               | 48 K                                   |               | 54 K                                     |               | 54 K                              |               |
| 20° Elevation                            | 38 K                                     |               | 43 K                                |               | 42 K                                   |               | 49 K                                     |               | 48 K                              |               |
| 40° Elevation                            | 35 K                                     |               | 41 K                                |               | 40 K                                   |               | 46 K                                     |               | 46 K                              |               |
| Typical G/T (dB/K) <sup>(3)</sup>        |  |               |                                     |               |  |               |  |               |                                   |               |
| Midband, 35 K LNA                        | 36.5                                     |               | 36.3                                |               | 36.3                                   |               | 35.3                                     |               | 35.5 (10° elevation)              |               |
| Axial Ratio                              |  |               | 0.50 dB                             | 0.50 dB       |  |               | 0.51 dB                                  | 0.51 dB       | 0.51 dB                           | 0.51 dB       |
| Power Handling (total)                   |  | 10 kW CW      |                                     | 10 kW CW      |  | 10 kW CW      |  | 10 kW CW      |                                   | 10 kW CW      |
| Cross Polarization Isolation             |  |               |                                     |               |  |               |  |               |                                   |               |
| On Axis (dB)                             | 35.0                                     | 35.0          | 30.8                                | 30.8          | 35.0                                   | 35.0          | 30.7                                     | 30.7          | 30.7/35.0                         | 30.7/35.0     |
| Within 1.0 dB BW (dB)                    | 30.0                                     | 30.0          | 30.8                                | 30.8          | 30.0                                   | 30.0          | 30.7                                     | 30.7          | 30.7/30.0                         | 30.7/30.0     |
| Port to Port Isolation                   |  |               |                                     |               |  |               |  |               |                                   |               |
| Rx/Tx (Rx frequency)                     | 0 dB                                     | -30 dB        | 0 dB                                | -70 dB        | 0 dB                                   | -70 dB        | 0 dB                                     | -30 dB        | 0 dB                              | -30 dB        |
| Tx/Rx (Tx frequency)                     | -85 dB                                   | 0 dB          | -85 dB                              | 0 dB          | -85 dB                                 | 0 dB          | -30 dB                                   | 0 dB          | -30 dB                            | 0 dB          |
| Rx/Rx, Tx/Tx (CP mode)                   |  |               | 20 dB                               | 23 dB         |  |               | 17 dB                                    | 17 dB         | 19 dB                             | 19 dB         |
| Rx/Rx, Tx/Tx (LP mode)                   | 30 dB                                    | 30 dB         |                                     |               | 30 dB                                  | 30 dB         |  |               | 30 dB                             | 30 dB         |
| Sidelobe Performance                     | Meets FCC 25.209, Intelsat or ITU-RS-580 |               |                                     |               |  |               | Meets Intelsat or ITU-RS-580             |               |                                   |               |
| RF Specification                         | 975-1365                                 |               | 975-1237                            |               | 975-1792                               |               | 975-1924                                 |               | 975-2490                          |               |

(1) All values are at rear feed flange. (2) Rx values are at 4 GHz. (3) Typical G/T at 20° elevation with clear horizon using single bolt-on LNA to feed.

| Mechanical/Environmental <sup>(4)</sup> | Turning Head Pedestal (TH)  | Turning Head - Full Motion (TH-BG)       | High Wind Turning Head Pedestal (TH-HW)      |
|---|---|--|--|
| Antenna Diameter                        | 16.4 meters (53.8 feet)   |  |  |
| Antenna Type                            | Cassegrain design   |  |  |
| Reflector Construction                  | 40 precision-formed aluminum panels with heat-diffusing white paint, galvanized steel back-up structure |  |  |
| Hub Dimensions                          | 86 in (218 cm) OD, 55.5 in (141 cm) depth   |  |  |
| Mount Configuration                     | Elevation over azimuth pedestal, constructed of galvanized steel  |  |  |
| Drive Type                              | Machine jack screws   | Machine jack screw (EL), gear drive (AZ) | Machine jack screws                          |
| Azimuth Travel                          | 205° (3 segments @ 85°)   | 205° continuous                          | 205° (3 segments @ 85°)                      |
| Elevation Travel                        | 0 to 90° continuous   | 0 to 90° continuous                      | 0 to 90° continuous                          |
| Foundation (L x W x D)                  | 31.5 x 31.5 x 3.5 ft (9.6 x 9.6 x 1.0 m)  |  | 36.5 x 36.5 x 3.5 ft (11.1 x 11.1 x 1.0 m)   |
| Concrete                                | 128.6 yds <sup>3</sup> (98.3 m <sup>3</sup> )   |  | 173 yds <sup>3</sup> (132.3 m <sup>3</sup> ) |
| Reinforcing Steel                       | 14,575 lbs. (6,611 kg)  |  | 16,838 lbs. (7,638 kg)                       |
| Shipping Containers                     | One 40 ft flatrack, four 40 ft open top, two 40 ft standard   |  |  |
| Operational Wind Loading                | 45 mph (72 km/h) gusting to 60 mph (97 km/h)  |  | Up to 60 mph (97 km/h)                       |
| Survival Wind Loading                   |   |  |  |
| Any Position                            | 125 mph (200 km/h) @ 58° F (15° C)  |  | 135 mph (217 km/h) @ 58° F (15° C)           |
| At Zenith                               | 150 mph   |  | 180 mph (290 km/h) @ 58° F (15° C)           |
| Operational Temperature                 | +5° to +122° F (-15° to +50° C)   |  |  |
| Survival Temperature                    | -22° to +140° F (-30° to +60° C), low temperature options available                                     |  |  |
| Rain                                    | Up to 4 in/h (10 cm/h)  |  |  |
| Relative Humidity                       | 0 to 100% with condensation   |  |  |
| Solar Radiation                         | 360 BTU/h/ft <sup>2</sup> (1,000 Kcal/h/m <sup>2</sup> )  |  |  |
| Ice (survival)                          | 1 in (2.5 cm) on all surfaces or 1/2 in (1.3 cm) on all surfaces with 80 mph (130 km/h) wind gusts      |  |  |
| Atmospheric Conditions                  | As encountered in coastal regions and/or heavily industrialized areas                                   |  |  |
| Shock and Vibration                     | As encountered during shipment by airplane, ship or truck   |  |  |

(4) Some specifications may vary based on the combination of equipment, options and/or upgrades ordered.

## GENERAL DYNAMICS

### SATCOM Technologies

<http://www.SatelliteDish.com> 954-941-8883

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