

# Model 4.8m Cassegrain Antenna

## Satcom Antennas



### *The Strength to Perform*

'Type-Approved,' bolt-together

3.4 to 18.4 GHz operation, meeting ITU and FCC

Aluminum reflector, galvanized pedestal

125 mph (200 km/h) wind survival

High-wind option

### Description

The General Dynamics SATCOM Technologies 4.8-meter antenna delivers exceptional performance for transmit/receive and receive-only applications for C through Ku-band frequencies. This antenna offers a deep dish reflector that incorporates precision-formed panels, contoured radials and hub assembly. It features an innovative feed and subreflector design which results in high gain, low noise temperature, high antenna efficiency and excellent rejection of noise and microwave interference. The aluminum reflector is supported by a galvanized 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 ITU and FCC sidelobe specifications. Type approved configurations are available for Intelsat (F1, E2), Eutelsat (L), Asiasat, Hispasat, EuropeStar or Singapore Telecom. All configurations meet SATCOM Technologies' own type-approved quality assurance and performance guarantee.

### Options

- C, X, Ku and DBS-band feed configurations
- C/Ku receive-only feed systems
- Specialized feed systems (e.g. extended, multi-band)
- Improved feed cross-pol performance
- Fixed or motorizable pedestal mounts
- 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
- Load frame or non-penetrating mounts
- Packing for sea and air transport
- Turnkey installation and testing

### Upgrades

- X-band low PIM reflector/feed configurations
- Extended azimuth travel
- High wind configuration
- Low operating temperatures
- High power configurations
- For Ka-band see separate datasheet

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# Technical Specifications

# Model 4.8m Cassegrain Antenna

| Electrical <sup>(1)</sup>                             | C-Band 2-Port<br>Circular Polarized |                  | C-Band 4-Port<br>Circular Polarized <sup>(4)</sup> |                  | X-Band 2-Port<br>Circular Polarized |                  | Ku-Band 4-Port<br>Linear Polarized <sup>(4)</sup> |                    | DBS-Band 4-Port<br>Linear Polarized |                    |
|---|-------------------------------------|------------------|--|------------------|-------------------------------------|------------------|---|--------------------|-------------------------------------|--------------------|
|   | Receive                             | Transmit         | Receive  | Transmit         | Receive                             | Transmit         | Receive   | Transmit           | Receive                             | Transmit           |
| Frequency (GHz)                                       | 3.625 -<br>4.200                    | 5.850 -<br>6.425 | 3.625 -<br>4.200                                   | 5.850 -<br>6.425 | 7.250 -<br>7.750                    | 7.900 -<br>8.400 | 10.950 -<br>12.750                                | 13.750 -<br>14.500 | 10.700 -<br>12.750                  | 17.300 -<br>18.400 |
| Antenna Gain, Midband (dBi) <sup>(2)</sup>            | 44.16                               | 48.10            | 44.00  | 47.90            | 49.50                               | 50.10            | 53.50   | 55.20              | 53.10                               | 56.90              |
| VSWR  | 1.55:1                              | 1.30:1           | 1.25:1   | 1.25:1           | 1.25:1                              | 1.25:1           | 1.30:1  | 1.30:1             | 1.30:1                              | 1.30:1             |
| Pattern Beamwidth <sup>(2)</sup><br>-3 dB, at midband | 1.04°                               | 0.67°            | 1.08°  | 0.69°            | 0.55°                               | 0.52°            | 0.34°   | 0.28°              | 0.36°                               | 0.23°              |
| Antenna Noise Temperature (K)                         |                                     |                  |  |                  |                                     |                  |   |                    |                                     |                    |
| 5° Elevation  | 60                                  |                  | 54   |                  | 61                                  |                  | 80  |                    | 73                                  |                    |
| 10° Elevation   | 57                                  |                  | 44   |                  | 51                                  |                  | 67  |                    | 59                                  |                    |
| 20° Elevation   | 47                                  |                  | 39   |                  | 45                                  |                  | 58  |                    | 50                                  |                    |
| 40° Elevation   | 43                                  |                  | 37   |                  | 42                                  |                  | 53  |                    | 44                                  |                    |
| Typical G/T (dB/K) <sup>(3)</sup>                     | 25.3<br>(4.000 GHz, 30 K LNA)       |                  | 25.6<br>(4.000 GHz, 30 K LNA)                      |                  | 30.0<br>(7.500 GHz, 45 K LNA)       |                  | 32.4<br>(11.850 GHz, 70 K LNA)                    |                    | 32.3<br>(11.725 GHz, 70 K LNA)      |                    |
| Axial Ratio (dB)                                      | 1.80                                | 0.75             | 0.50   | 0.50             | 1.50                                | 1.50             |   |                    |                                     |                    |
| Power Handling (total)                                | 5 kW CW                             |                  | 5 kW CW  |                  | 5 kW CW                             |                  | 2 kW CW   |                    | 2 kW CW                             |                    |
| Cross Polarization Isolation (dB)                     |                                     |                  |  |                  |                                     |                  |   |                    |                                     |                    |
| On Axis   | 19.7                                | 27.3             | 30.8   | 30.8             | 21.3                                | 21.3             | 35.0  | 35.0               | 35.0                                | 35.0               |
| Within 1.0 dB beamwidth                               | 19.7                                | 27.3             | 30.8   | 30.8             | 21.3                                | 21.3             | 35.0  | 35.0               | 35.0                                | 30.0               |
| Port to Port Isolation (dB)                           |                                     |                  |  |                  |                                     |                  |   |                    |                                     |                    |
| Rx/Tx (Rx frequency)                                  | 0                                   | -60              | 0  | -85              | 0                                   | -110             | 0   | -50                | 0                                   | -75                |
| Tx/Rx (Tx frequency)                                  | -100                                | 0                | -85  | 0                | -110                                | 0                | -85   | 0                  | -85                                 | 0                  |
| Sidelobe Performance                                  | ITU-RS-580                          |                  | ITU-RS-580   |                  | ITU-RS-580                          |                  | ITU-RS-580, FCC                                   |                    | ITU-RS-580, FCC                     |                    |
| RF Specification                                      | 975-2635                            |                  | 975-4289   |                  | 975-2427                            |                  | 975-2114  |                    | 975-2446                            |                    |

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

(4) Also available in extended frequency bands.

| Mechanical/Environmental <sup>(5)</sup> | Fixed Post Mount (PM) Pedestal   | Motorizable Kingpost Pedestal (KP)        | Motorizable High Wind Kingpost Pedestal (KP-HW) |
|---|--|---|---|
| Antenna Diameter                        | 4.8 meters (15.83 feet)  |   |   |
| Antenna Type                            | Compact Cassegrain design  |   |   |
| Reflector Construction                  | 16 precision-formed aluminum panels with heat-diffusing white paint<br>Cleaned and brightened aluminum back-up structure |   |   |
| Hub Dimensions                          | 48 in (122 cm) OD, 29 in (74 cm) depth   |   |   |
| Mount Configuration                     | Elevation over azimuth pedestal, constructed of galvanized A36 steel   |   |   |
| Drive Type                              | Manual strut   | Manual strut or jack screw                | Manual jack screws                              |
| Azimuth Travel                          | 360° coarse, 40° fine adjustment   | 120° continuous                           | 120° continuous                                 |
| Elevation Travel                        | 0 to 90° continuous  | 0 to 90° continuous                       | 0 to 90° continuous                             |
| Foundation (L x W x D)                  | 12.5 x 12.5 x 1.5 ft (3.8 x 3.8 x 0.38 m)  |   | 16.5 x 16.5 x 2.5 ft (5.0 x 5.0 x 0.76 m)       |
| Concrete                                | 8.7 yds <sup>3</sup> (6.65 m <sup>3</sup> )  |   | 25.5 yds <sup>3</sup> (19.5 m <sup>3</sup> )    |
| Reinforcing Steel                       | 1,125 lbs. (510 kg)  |   | 1,680 lbs. (762 kg)                             |
| Shipping Containers                     | One 20 ft standard (4 units in one 40 ft)  | One 20 ft standard (2 units in one 40 ft) | Two units in one 40 ft standard                 |
| Operational Wind Loading                | 45 mph (72 km/h) gusting to 60 mph (97 km/h)   |   | Up to 62 mph (100 km/h)                         |
| Survival Wind Loading                   |  |   |   |
| Any Position                            | 125 mph (200 km/h) @ 58° F (15° C)   |   | 180 mph (290 km/h) @ 58° F (15° C)              |
| At Zenith                               | n/a  |   | 210 mph (338 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  |   |   |

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

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