

Model 21.0m 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 8.4 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 21.0-meter antenna delivers exceptional performance for transmit/receive and receive only applications in L through X-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 and X-band feed configurations
- 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
- Low operating temperatures
- High power configurations

Technical Specifications

Model 21.0m Cassegrain Antenna

Electrical ⁽¹⁾	C-Band 4-Port Circular Polarized		C-Band 4-Port CP/LP Switchable		Ext. C-Band 4-Port Linear Polarized		Ext. C-Band 4-Port CP/LP Switchable		X-Band 4-Port Circular Polarized	
	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	7.250 - 7.750	7.900 - 8.400
Antenna Gain, Midband dBi ⁽²⁾	57.60	61.00	57.70	61.00	57.70	61.10	57.80	61.00	62.70	63.40
VSWR	1.25:1	1.25:1	1.30:1	1.30:1	1.30:1	1.30:1	1.33:1	1.30:1	1.30:1	1.30:1
Pattern Beamwidth ⁽²⁾										
-3 dB, at midband	0.22°	0.15°	0.22°	0.15°	0.22°	0.15°	0.22°	0.15°	0.12°	0.11°
-15 dB, at midband	0.46°	0.32°	0.46°	0.32°	0.46°	0.32°	0.46°	0.32°	0.25°	0.23°
Antenna Noise Temperature										
5° Elevation	55 K		58 K		58 K		66 K		80 K	
10° Elevation	46 K		49 K		48 K		57 K		69 K	
20° Elevation	40 K		44 K		43 K		51 K		64 K	
40° Elevation	38 K		42 K		41 K		49 K		62 K	
Typical G/T (dB/K) ⁽³⁾										
Midband, 35 K LNA	38.8		38.4		38.8		38.2		42.3 (45 K LNA)	
Axial Ratio	0.50 dB	0.50 dB	0.50 dB	0.50 dB			0.50 dB	0.50 dB	0.50 dB	0.50 dB
Power Handling (total)		10 kW CW		10 kW CW		10 kW CW		10 kW CW		5 kW CW
Cross Polarization Isolation										
On Axis (dB)	30.7	30.7	30.7/35.0	30.7/35.0	35.0	35.0	30.7/35.0	30.7/35.0	30.8	30.8
Within 1.0 dB BW (dB)	30.7	30.7	30.7/30.0	30.7/30.0	30.0	30.0	30.7/30.0	30.7/30.0	30.8	30.8
Port to Port Isolation										
Rx/Tx (Rx frequency)	0 dB	-30 dB	0 dB	-30 dB	0 dB	-70 dB	0 dB	-30 dB	0 dB	-110 dB
Tx/Rx (Tx frequency)	-85 dB	0 dB	-30 dB	0 dB	-85 dB	0 dB	-30 dB	0 dB	-110 dB	0 dB
Rx/Rx, Tx/Tx (CP mode)	20 dB	23 dB	21 dB	23 dB			17 dB	17 dB	17dB	17dB
Rx/Rx, Tx/Tx (LP mode)			30 dB	30 dB	30dB	30 dB	30 dB	30 dB		
Sidelobe Performance	Meets FCC 25.209, Intelsat or ITU-RS-580						Meets ITU-RS-580			
RF Specification	975-1085		975-1569		975-2888		975-2033		975-2195	

(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.

Mechanical/Environmental ⁽⁴⁾	Kingpost Pedestal (KP)
Antenna Diameter	21.0 meters (69.0 feet)
Antenna Type	Cassegrain design
Reflector Construction	128 precision-formed aluminum panels with heat-diffusing white paint (four-tier) Galvanized steel back-up structure
Hub Dimensions	96 in (244 cm) OD, 65 in (165 cm) depth
Mount Configuration	Elevation over azimuth pedestal, constructed of galvanized steel
Drive Type	Machine jack screws
Azimuth Travel	180° (3 segments @ 65°)
Elevation Travel	5 to 90° continuous
Foundation (L x W x D)	42 x 42 x 2.5 ft (12.8 x 12.8 x 0.76 m)
Concrete	165 yds ³ (126 m ³)
Reinforcing Steel	21,550 lbs. (9,775 kg)
Shipping Containers	Two 40 ft flatrack, six 40 ft open top, two 40 ft standard
Operational Wind Loading	45 mph (72 km/h) gusting to 60 mph (97 km/h)
Survival Wind Loading	125 mph (200 km/h) @ 58° F (15° C), any position
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 ² (1,000 Kcal/h/m ²)
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