

Model 9.0m Cassegrain Antenna

Satcom Antennas



The Strength to Perform

All-aluminum reflector with fully interchangeable components

Designed for 1.5 to 18 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 9.0-meter antenna delivers exceptional performance for transmit/receive and receive only applications for L through Ka-band frequencies. This antenna offers a reflector design that incorporates precision-formed panels, truss radials and hub assembly using matched tooling for interchangeable components. 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 25.209 regulations, ITU-RS-580 sidelobe specifications and Intelsat (F3) and Eutelsat requirements.

Options

- L, S, C, X, Ku, DBS and Ka-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
- Load frame mounts
- Packing for sea and air transport
- Turnkey installation and testing

Upgrades

- X-band low PIM reflector/feed configurations
- Ku and Ka monopulse tracking available
- Extended azimuth travel, in segments and continuous
- High wind configurations
- Low operating temperatures
- High power configurations
- High stiffness configuration for Ka-band operation

GENERAL DYNAMICS
SATCOM Technologies

Technical Specifications

Model 9.0m Cassegrain Antenna

Electrical ⁽¹⁾	C-Band 4-Port Circular Polarized		C-Band 4-Port Linear Polarized		Ext. C-Band 4-Port Linear Polarized		Ku-Band 4-Port Linear Polarized		DBS-Band 4-Port Linear 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	10.700 - 12.750	13.750 - 14.500	10.700 - 12.750	17.300 - 18.400
Antenna Gain, Midband dBi ⁽²⁾	50.00	53.70	50.10	53.60	49.90	53.70	58.50	60.10	58.80	61.50
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 ⁽²⁾										
-3 dB, at midband	0.54°	0.35°	0.53°	0.36°	0.54°	0.35°	0.18°	0.16°	0.19°	0.14°
-15 dB, at midband	1.13°	0.73°	1.11°	0.76°	1.13°	0.73°	0.38°	0.34°	0.40°	0.29°
Antenna Noise Temperature										
5° Elevation	52 K		47 K		55 K		90 K		81 K	
10° Elevation	43 K		37 K		45 K		76 K		66 K	
20° Elevation	37 K		32 K		40 K		68 K		57 K	
40° Elevation	35 K		30 K		38 K		64 K		53 K	
Typical G/T (dB/K) ⁽³⁾										
4.000 GHz, 30 K LNA	31.7		32.2		31.4					
11.725 GHz, 70 K LNA							37.1		37.8	
Axial Ratio	0.50 dB	0.50 dB								
Power Handling (total)		10 kW CW		5 kW CW		10 kW CW		2 kW CW		2 kW CW
Cross Polarization Isolation										
On Axis	30.8 dB	30.8 dB	35.0 dB	35.0 dB	35.0 dB	35.0 dB	35.0 dB	35.0 dB	35.0 dB	35.0 dB
Within 1.0 dB beamwidth	30.8 dB	30.8 dB	32.0 dB	32.0 dB	30.0 dB	30.0 dB	35.0 dB	35.0 dB	35.0 dB	30.0 dB
Port to Port Isolation										
Rx/Tx (Rx frequency)	0 dB	-70 dB	0 dB	-70 dB	0 dB	-70 dB	0 dB	-70 dB	0 dB	-75 dB
Tx/Rx (Tx frequency)	-85 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB
Sidelobe Performance	Meets ITU-RS-580, FCC									
RF Specification	975-1642		975-1717		975-1789		975-2275		975-2407	

(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 (KP120)	Kingpost Pedestal (KX200)	High Wind Kingpost Pedestal (KX180-HW)
Antenna Diameter	9.0 meters (29.5 feet)		
Antenna Type	Cassegrain design		
Reflector Construction	16 precision-formed aluminum panels with heat-diffusing white paint Cleaned and brightened aluminum back-up structure		Galvanized steel backup structure
Hub Dimensions	70 in (178 cm) OD, 36 in (91 cm) depth		
Mount Configuration	Elevation over azimuth pedestal, constructed of galvanized A36 steel		
Drive Type	Manual jack screws		
Azimuth Travel	120° continuous	200° (2 segments @ 120°)	180° (2 segments @ 95°)
Elevation Travel	5 to 90° continuous	0 to 90° continuous	0 to 90° continuous
Foundation (L x W x D)	22.0 x 22.0 x 2.0 ft (6.7 x 6.7 x 0.61 m)	22.0 x 22.0 x 1.5 ft (6.7 x 6.7 x 0.46 m)	26.5 x 26.5 x 2.5 ft (8.1 x 8.1 x 0.76 m)
Concrete	36.0 yds ³ (27.5 m ³)	27.0 yds ³ (20.6 m ³)	65.0 yds ³ (49.7 m ³)
Reinforcing Steel	6,100 lbs. (2,767 kg)	3,560 lbs. (1,615 kg)	8,335 lbs. (3,799 kg)
Shipping Containers	One 40 ft standard		Two 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		200 mph (322 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 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.

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