Model 13.1m 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 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 13.1-meter antenna delivers exceptional performance for transmit/receive and receive only applications in L through DBS-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, B, C) and Eutelsat requirements.

Options

- L, S, C, X, Ku and DBS-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
- Continuous bullgear azimuth travel
- High wind configuration
- Low operating temperatures
- High power configurations

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Technical Specifications

Electrical [1]	C-Band 4-Port Linear Polarized Receive	C-Band 4-Port Linear Polarized Transmit	C-Band 4-Port Circular Polarized Receive	C-Band 4-Port Circular Polarized Transmit	Ext. C-Band 4-Port Linear Polarized Receive	Ext. C-Band 4-Port Linear Polarized Transmit	C-Band 4-Port CP/LP Switchable Receive	C-Band 4-Port CP/LP Switchable Transmit	Ext. Ku-Band 4-Port Linear Polarized Receive	Ext. Ku-Band 4-Port Linear Polarized 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	3.625 - 4.200	5.850 - 6.425	10.700 - 12.750	13.750 - 14.500
Antenna Gain, Midband dBi [2]	53.60	57.20	53.50	57.30	53.40	57.20	53.40	57.10	61.90	63.50
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	0.35°	0.24°	0.36°	0.23°	0.36°	0.23°	0.36°	0.24°	0.12°	0.11°
-15 dB, at midband	0.73°	0.50°	0.76°	0.48°	0.76°	0.48°	0.76°	0.50°	0.25°	0.23°
Antenna Noise Temperature										
5° Elevation	50 K		53 K		58 K		61 K		90 K	
10° Elevation	40 K		43 K		49 K		52 K		76 K	
20° Elevation	35 K		37 K		43 K		46 K		67 K	
40° Elevation	32 K		35 K		41 K		44 K		63 K	
Typical G/T (dB/K) [3]										
Midband	35.1 (35 K LNA)		35.2 (35 K LNA)		34.5 (35 K LNA)		34.0 (35 K LNA)		40.5 (70 K LNA)	
Axial Ratio			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		2 kW CW
Cross Polarization Isolation										
On Axis (dB)	35.0	35.0	30.8	30.8	35.0	35.0	30.8/35.0	30.8/35.0	35.0	35.0
Within 1.0 dB BW (dB)	30.0	30.0	30.8	30.8	30.0	30.0	30.8/30.0	30.8/30.0	35.0	35.0
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	-70 dB
Tx/Rx (Tx frequency)	-30 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB	-30 dB	0 dB	-85 dB	0 dB
Rx/Rx, Tx/Tx (CP mode)			20 dB	23 dB			19 dB	21 dB		
Rx/Rx, Tx/Tx (LP mode)	30 dB	30 dB			30 dB	30 dB	30 dB	30 dB	30 dB	30 dB
Sidelobe Performance	Meets FCC 25.209, Intelsat or ITU-RS-580								Meets ITU-RS-580	
RF Specification	975-1271		975-1065		975-1786		975-1417		975-2993	

(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)	High Wind Kingpost Pedestal (KP-HW)
Antenna Diameter	13.1 meters (43.0 feet)	
Antenna Type	Cassegrain design	
Reflector Construction	36 (two-tier) (for C-band) or 50 (three-tier) (for Ku-band) precision-formed aluminum panels with heat-diffusing white paint Galvanized steel back-up structure	
Hub Dimensions	89 in (226 cm) OD, 48 in (122 cm) depth	90 in (228 cm) OD, 49 in (124 cm) depth
Mount Configuration	Elevation over azimuth pedestal, constructed of galvanized steel	
Drive Type	Machine jack screws	
Azimuth Travel	180° (3 segments @ 70°)	180° (3 segments @ 66°)
Elevation Travel	0 to 90° continuous	0 to 90° continuous
Foundation (L x W x D)	30.0 x 30.0 x 2.0 ft (9.1 x 9.1 x 0.6 m)	41.3 x 36 x 2.5 ft (12.5 x 11 x 0.8 m)
Concrete	67.0 yds³ (51.2 m³)	138 yds³ (106 m³)
Reinforcing Steel	7,500 lbs. (3,402 kg)	18,630 lbs. (8,450 kg)
Shipping Containers	Two 40 ft open top, two 40 ft standard	Three 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)	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/ft² (1,000 Kcal/h/m²)	
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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