

Model 8.1m Cassegrain Antenna

VertexRSI Antenna Products - Satcom

The VertexRSI 8.1-meter antenna delivers exceptional performance for transmit/receive and receive only applications for L to Ka-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 25.209 regulations, ITU-RS-580 sidelobe specifications and Intelsat (F3) and Eutelsat requirements.

Features

- All-aluminum reflector system
- Fully interchangeable reflector components
- Compliant with FCC 25.209, ITU-RS-580 requirements
- Designed for 1.5 to 31 GHz operation
- Standard two and four port Tx/Rx and Rx only systems
- Feed systems are factory assembled and tested
- Jack screws in azimuth and elevation
- Galvanized steel elevation over azimuth pedestal
- Survives 125 mph winds in any position
- Lightning arrest rods included
- Foundation hardware kit included

Options

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

Upgrades

- Extended azimuth travel
- Low operating temperatures
- High power configurations



Technical Specifications

<i>Electrical</i> ⁽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⁾	49.40	53.10	49.40	53.20	49.30	53.20	58.00	59.70	58.30	61.30
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	0.58°	0.38°	0.58°	0.37°	0.58°	0.37°	0.20°	0.16°	0.19°	0.14°
-15 dB, at midband	1.22°	0.80°	1.22°	0.78°	1.22°	0.78°	0.42°	0.34°	0.40°	0.29°
Antenna Noise Temperature										
5° Elevation	52 K		50 K		55 K		90 K		81 K	
10° Elevation	43 K		40 K		46 K		76 K		66 K	
20° Elevation	37 K		35 K		40 K		68 K		57 K	
40° Elevation	35 K		33 K		38 K		64 K		53 K	
Typical G/T (dB/K) ⁽³⁾										
4.000 GHz, 30 K LNA	31.1		31.3		30.8					
11.725 GHz, 70 K LNA							36.6		37.3	
Axial Ratio	0.50 dB	0.50 dB								
Power Handling (total)		10 kW CW		10 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	30.0 dB	30.0 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	-50 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	975-1045		975-1327		975-1931		975-2914		975-2073	

(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.

<i>Mechanical/Environmental</i> ⁽⁴⁾	Motorizable Kingpost Pedestal (KX120)	Motorizable Kingpost Pedestal (KX200)
Antenna Diameter	8.1 meters (26.67 feet)	
Antenna Type	Cassegrain design	
Reflector Construction	16 precision-formed aluminum panels with heat-diffusing white paint Clean and brightened aluminum back-up 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°)
Elevation Travel	5 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)
Concrete	36.0 yds ³ (27.5 m ³)	27.0 yds ³ (20.6 m ³)
Reinforcing Steel	6,100 lbs. (2,767 kg)	3,560 lbs. (1,615 kg)
Shipping Containers	One 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