

Model 11.1m Cassegrain Antenna

VertexRSI Antenna Products - Satcom

The VertexRSI 11.1-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 (B, C) and Eutelsat requirements.



Features

- Aluminum reflector panels
- Galvanized steel backup structure
- Fully interchangeable reflector components
- Compliant with FCC and ITU-RS-580 requirements
- Designed for 1.5 to 18 GHz operation
- Standard two and four port Tx/Rx and Rx only feeds
- 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, 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 or assistance

Upgrades

- X-band low PIM reflector/feed configurations
- Extended azimuth travel
- High wind configuration
- Low operating temperatures
- High power configurations
- Extended continuous azimuth travel

Technical Specifications

| <i>Electrical</i> ⁽¹⁾ | C-Band 4-Port Linear Polarized | | C-Band 4-Port Circular Polarized | | Ext. C-Band 4-Port Linear Polarized | | C-Band 4-Port CP/LP Switchable | | Ext. Ku-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 | 3.625 - 4.200 | 5.850 - 6.425 | 10.700 - 12.750 | 13.750 - 14.500 |
| Antenna Gain, Midband dBi ⁽²⁾ | 52.00 | 55.70 | 51.90 | 55.60 | 51.90 | 55.70 | 51.70 | 55.50 | 60.30 | 62.00 |
| 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 | 0.44° | 0.28° | 0.43° | 0.28° | 0.43° | 0.28° | 0.44° | 0.28° | 0.15° | 0.13° |
| -15 dB, at midband | 0.92° | 0.59° | 0.90° | 0.59° | 0.90° | 0.59° | 0.92° | 0.59° | 0.32° | 0.27° |
| Antenna Noise Temperature | | | | | | | | | | |
| 5° Elevation | 53 K | | 55 K | | 57 K | | 61 K | | 95 K | |
| 10° Elevation | 44 K | | 46 K | | 48 K | | 52 K | | 82 K | |
| 20° Elevation | 38 K | | 40 K | | 42 K | | 47 K | | 73 K | |
| 40° Elevation | 36 K | | 38 K | | 40 K | | 44 K | | 69 K | |
| Typical G/T (dB/K) ⁽³⁾ | | | | | | | | | | |
| Midband | 33.0 (35 K LNA) | | 33.1 (35 K LNA) | | 33.0 (35 K LNA) | | 32.3 (35 K LNA) | | 38.7 (70 K LNA) | |
| Axial Ratio | | | 0.50 dB | 0.50 dB | | | 0.51 dB | 0.51 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 | 30.7/35.0 | 30.7/35.0 | 35.0 | 35.0 |
| Within 1.0 dB BW (dB) | 30.0 | 30.0 | 30.8 | 30.8 | 30.0 | 30.0 | 30.7/30.0 | 30.7/30.0 | 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) | | | | | | | 19 dB | 23 dB | | |
| Rx/Rx, Tx/Tx (LP mode) | | | | | | | 30 dB | 30 dB | | |
| Sidelobe Performance | Meets FCC 25.209, Intelsat or ITU-RS-580 | | | | | | | | | |
| RF Specification | 975-1276 | | 975-1058 | | 975-1864 | | 975-1250 | | 975-1942 | |

(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) | High Wind Kingpost Pedestal (KX180-HW) |
|--|--|--|---|
| Antenna Diameter | 11.1 meters (36.42 feet) | | |
| Antenna Type | Cassegrain design | | |
| Reflector Construction | 36 precision-formed aluminum panels (two-tier) with heat-diffusing white paint, galvanized steel back-up structure | | |
| Hub Dimensions | 80 in (203 cm) OD, 48 in (122 cm) depth | | 88 in (224 cm) OD, 48 in (122 cm) depth |
| Mount Configuration | Elevation over azimuth pedestal, constructed of galvanized steel | | |
| Drive Type | Machine jack screws | | |
| Azimuth Travel | 120° continuous | 200° (2 segments @ 110°) | 180° (3 segments @ 70°) |
| Elevation Travel | 0 to 90° continuous | 0 to 90° continuous | 0 to 90° continuous |
| Foundation (L x W x D) | 24.0 x 24.0 x 2.0 ft (7.3 x 7.3 x 0.6 m) | | 30.0 x 30.0 x 2.0 ft (9.1 x 9.1 x 0.6 m) |
| Concrete | 43.0 yds ³ (32.9 m ³) | | 100 yds ³ (77 m ³) |
| Reinforcing Steel | 6,000 lbs. (2,722 kg) | | 7,730 lbs. (3,500 kg) |
| Shipping Containers | Two 40 ft open top, one 40 ft standard | | Three 40 ft open top, one 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) | | 180 mph (290 km/h) @ 58° F (15° C) |
| At Zenith | 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/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