16.4 Meter Cassegrain Antenna

Satcom & Antenna Technologies Division

Overview

The CPI Satcom & Antenna Technologies Inc. (CPI SAT) 16.4-meter antenna delivers exceptional performance for transmit/ receive and receive only applications in L through Ku-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.

FEATURES

- Fully interchangeable reflector components with aluminum reflector panels and galva nized steel backup structure
- Designed for 1.5 to 15 GHz operation, meeting FCC and ITU-RS- 580 requirements
- Galvanized steel elevation-over-azimuth pedestal with jackscrews
- Survives 125 mph winds in any position

OPTIONS

- L, S, C, X and Ku-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
- Bullgear azimuth drive
- High wind configuration
- Low operating temperatures
- High power configurations

BENEFITS:

- High antenna efficiency
- Excellent rejection of noise and microwave interference

APPLICATIONS:

- Communications, Data transfer, Broadcast

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Technical specifications

Electrical[1]	C-Band 4-Port Linear Polarized		C-Band 4-Port Circular Polarized		Ext. C-Band 4-Port Linear Polarized		Ext. C-Band 4-Port Linear Polarized		C-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	3.400 - 4.200	5.850 - 6.650	3.625 - 4.200	5.850 - 6.425
Antenna Gain, Midband dBi	55.10	59.00	55.20	58.80	55.20	59.00	54.80	58.80	55.00	58.80
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	0.30°	0.19°	0.29°	0.19°	0.29°	0.19°	0.31°	0.19°	0.30°	0.19°
- 15 dB, at midband	0.63°	0.40°	0.61°	0.40°	0.61°	0.40°	0.65°	0.40°	0.63°	0.40°
Antenna Noise Temperature										
5° Elevation	53 K		58 K		57 K		64 K		63 K	
10° Elevation	44 K		49 K		48 K		48 K		54 K	
20° Elevation	38 K		43 K		42 K		42 K		48 K	
40° Elevation	35 K		41 K		40 K		40 K		46 K	
Typical G/T (dB/K) [3]										
Midband, 35 K LNA	36.5		36.3		36.3		35.3		35.5 (10° elevation)	
Axial Ratio			0.50 dB	0.50 dB			0.51 dB	0.51 dB	0.51 dB	0.51 dB
Power Handling (total)		10 kW CW		10 kW CW		10 kW CW		10 kW CW		10 kW CW
Cross Polarization Isolation										
On Axis (dB)	35.0	35.0	30.8	30.8	35.0	35.0	30.7	30.7	30.7/35.0	30.7/35.0
Within 1.0 dB BW (db)	30.0	30.0	30.8	30.8	30.0	30.0	30.7	30.7	30.7/30.0	30.7/30.0
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	-30 dB
Tx/Rx (Tx frequency)	-85 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB	-30 dB	0 dB
Rx/Rx, Tx/Tx (CP mode)			20 dB	23 dB			17 dB	17 dB	19 dB	19 dB
Rx/Rx, Tx/Tx (LP mode)	30 dB	30 dB			30 dB	30 dB			30 dB	30 dB
Sidelobe Performance	Meets FCC 25.209, Intelsat or ITU-RS-580						Meets Intelsat or ITU-RS-580			
RF Specification	975-1365		975-1237		975-1792		975-1924		975-2490	

[1] All values are at rear feed flange. [2] Rx values are at 4 GHz. [3] Typical G/T at 20° elevation with clear horizon using single bolt-on LNA to feed.

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Mechanical/Environmental[4]	Turning Head Pedestal (TH)	Turning Head - Full Motion (TH-BG)	High Wind Turning Head Pedestal (TH-HW)
Antenna Diameter	16.4 meters (53.8 feet)		
Antenna Type	Cassegrain design		
Reflector Construction	40 precision-formed aluminum panels with heat-diffusing white paint, galvanized steel back-up structure		
Hub Dimensions	86 in (218 cm) OD, 55.5 in (141 cm) depth		
Mount Configuration	Elevation over azimuth pedestal, constructed of galvanized steel		
Drive Type	Manual jack screws	Machine jack screw (EL), gear drive (AZ)	Machine jack screws
Azimuth Travel	205° (3 segments @ 85°)	205° continuous	205° (3 segments @ 85°)
Elevation Travel	0 to 90° continuous	0 to 90° continuous	0 to 90° continuous
Foundation (L x W x D) Concrete Reinforcing Steel	31.5 x 31.5 x 3.5 ft (9.6 x 9.6 x 1.0 m) 128.6 yds³ (98.3 m³) 14,575 lbs. (6,611 kg)		36.5 x 36.5 x 3.5 ft (11.1 x 11.1 x 1.0 m) 173 yds³ (132.3 m³) 16,838 lbs. (7,638 kg)
Shipping Containers	One 40 ft flatrack, six 40 ft HC containers		
Operational Wind Loading Survival Wind Loading Any Position At Zenith	45 mph (72 km/h) gusting to 60 mph (97 km/h) 125 mph (200 km/h) @ 58° F (15° C) 150 mph		Up to 60 mph (97 km/h) 135 mph (217 km/h) @ 58° F (15° C) 180 mph (290 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

Contact us at CustomerCareSAT@cpii.com or call us at +1 770-689-2040.

The data should be used for basic information only.

Formal, controlled specifications may be obtained from CPI for use in equipment design.

Communications & Power Industries

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