

# 4.6 Meter Mobile Antenna

## Satcom & Antenna Technologies Division



### Overview

The CPI Satcom & Antenna Technologies Inc. (CPI SAT) 4.6-meter mobile antenna is designed for worldwide transmit and receive operation in frequencies from C to Ka-band.

This portable antenna consists of a precision dual-skin monocoque reflector with aluminum feed support and base mount. This results in a low-weight antenna with superior stiffness and high performance under wind loading conditions. The unique shape and the accurate reflector surface provide superior sidelobe performance. Repeatability is maintained with precision registration of the three reflector segments and the feed/subreflector support structure. The interchangeable feeds are palletized for quick, easy removal and replacement, allowing the end-user to effectively change frequency bands in the field within minutes. The antenna system utilizes folding side "wings" to achieve a compact stow configuration that is road and air-transportable. The complete 4.6-meter antenna system is designed for rapid deployment and convenient towing when trailer-mounted.

### FEATURES

- Dual offset shaped reflector system
- Multiband antenna system with rapid feed interchange
- Rapid deployment requiring no tools
- Compact stow configuration
- Transportable via road on properly designed trailer, and air (C-130, Transall C-160)

### OPTIONS

- C, X, 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
- Various HPA integration arrangements
- Integrated transmit cross-axis kits

### UPGRADES

- X-band low PIM feed configurations
- Azimuth bullgear drive system
- High wind configuration
- Low operating temperatures

### BENEFITS:

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

### APPLICATIONS:

- Communications, Data transfer, Broadcast

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## Technical Specifications

Electrical <sup>(1)</sup>	C-Band 4-Port Circular Polarized		X-Band 2-Port Circular Polarized		Ku-Band 4-Port Linear Polarized		DBS-Band 4-Port Linear Polarized		Ka-Band 2-Port Circular Polarized	
	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit
Frequency (GHz)	3.625 - 4.200	5.850 - 6.425	7.250 - 7.750	7.900 - 8.400	10.950 - 12.750	13.750 - 14.500	10.700 - 12.750	17.300 - 18.400	20.200 - 21.200	30.000 - 31.000
Antenna Gain, Midband dBi <sup>(2)</sup>	44.10	47.80	49.50	50.10	53.20	54.90	53.40	56.60	58.00	60.70
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 <sup>(2)</sup>										
-3 dB, at midband	1.06°	0.70°	0.55°	0.52°	0.35°	0.29°	0.35°	0.24°	0.20°	0.15°
-15 dB, at midband	2.23°	1.47°	1.16°	1.09°	0.73°	0.61°	0.73°	0.50°	0.42°	0.32°
Antenna Noise Temperature										
5° Elevation	52 K		63 K		80 K		70 K		197 K	
10° Elevation	43 K		52 K		66 K		55 K		149 K	
20° Elevation	37 K		46 K		57 K		45 K		109 K	
40° Elevation	36 K		45 K		53 K		42 K		81 K	
Typical G/T (dB/K) <sup>(3)</sup>										
Midband, 20° Elevation	25.5 (35 K LNA)		29.9 (45 K LNA)		32.2 (70 K LNA)		32.8 (70 K LNA)		34.4 (120 K LNA)	
Axial Ratio	0.50 dB	0.50 dB	1.50 dB	1.50 dB					1.00 dB	1.00 dB
Power Handling (total)	5 kW CW		2 kW CW		2 kW CW		2 kW CW		400 W CW	
Cross Polarization Isolation										
On Axis	30.7 dB	30.7 dB	21.3 dB	21.3 dB	35.0 dB	35.0 dB	35.0 dB	35.0 dB	24.8 dB	24.8 dB
Within 1.0 dB beamwidth	30.7 dB	30.7 dB	21.3 dB	21.3 dB	35.0 dB	35.0 dB	35.0 dB	30.0 dB	24.8 dB	24.8 dB
Port to Port Isolation										
Rx/Tx (Rx frequency)	0 dB	-85 dB	0 dB	-110 dB	0 dB	-50 dB	0 dB	-70 dB	0 dB	-30 dB
Tx/Rx (Tx frequency)	-85 dB	0 dB	-110 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB
Sidelobe Performance	Meets ITU-RS-580									
RF Specification	975-3046		975-3048		975-3047		975-1351		975-2984	

(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 <sup>(4)</sup>	Standard Travel	Extended Travel
Antenna Diameter	4.6 meters (15.09 feet)	
Antenna Type	Offset Gregorian design	
Reflector Construction	Monocoque aluminum composite structure with honeycomb core	
Mount Configuration	Elevation over azimuth pedestal, constructed of aluminum	
Drive Type	Machine screw jacks	Azimuth bullgear
Azimuth Travel	200° (4 segments @ 90°)	270° continuous
Elevation Travel	5 to 85° continuous	5 to 85° continuous
Trailer Size	Consult factory for options	
Shipping Volume	1,766 ft <sup>3</sup> (50 m <sup>3</sup> ) without trailer	
Shipping Weight	4,960 lbs (2,250 kg) without trailer	
Operational Wind Loading	31 mph (50 km/h) gusting to 56 mph (90 km/h)	
Survival Wind Loading		
Any Position	67 mph (108 km/h) @ 58° F (15° C)	
Operational Temperature	-26° to +122° F (-32° to +50° C)	
Survival Temperature	-40° to +140° F (-40° 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 <sup>2</sup> (1,000 Kcal/h/m <sup>2</sup> )	
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](mailto: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.



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For more detailed information, please refer to the corresponding CPI technical description if one has been published, or contact CPI. Specifications may change without notice as a result of additional data or product refinement. Please contact CPI before using this information for system design.

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