C240M Mobile Antenna

Satcom & Antenna Technologies Division

Overview

The CPI Satcom & Antenna Technologies Inc. (CPI SAT) lightweight 2.4-meter mobile antenna is designed for worldwide transmit and receive operation in C, X, Ku and Ka-band. This mobile antenna consists of a carbon fiber composite reflector and back beam mounted on a cable-driven, elevation-over-azmuth positioning system. This results in an antenna with superior stiffness and high performance under wind loading conditions.

The unique shape and the accurate reflector surface provide exceptionally low sidelobe and cross-polarization performance well within INTELSAT and EUTELSAT requirements. 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 complete antenna system can be interfaced with most light weight vehicle structures for the purpose of mobile applications.

FEATURES

- Aluminum/carbon fiber composite construction
  - -Precision surface
  - -High stiffness
  - -Robust design for vehicle mounting
- High performance
  - -Low sidelobes, high EIRP capability
  - -Compliant under operational wind conditions
- Stow/Deployment
  - -Low profile
  - -Stow position on vehicle
  - -Precision alignment

OPTIONS

- Finishes
  - -Standard color Ford Polar White
  - -Options Green Fed Std 595 34094 or Desert Sand Fed Std 595 33303
  - -please specify at order
- Boom-mounted electronics integration kits
- Tx waveguide run

BENEFITS:

- Lightweight
- Designed for worldwide transmit and receive

APPLICATIONS:

- Superior stiffness and high performance under wind loading conditions

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Technical Specifications

Mechanical	
Antennna Diameter	2.4 meter (94.5 in)
Antenna Type	Single Offset
Reflector Construction	Carbon fiber, single or 3 segment
Mount Type	Elevation over Azimuth
Antenna Travel	
Azimuth	±150° continuous standard, ±180° available for additional cost
Elevation	0° to 90° of reflector boresight
Polarization	±90°
Stow Height	24 in (61 cm)
Antenna Weight	560 lbs (254 kg) without feed
Integration	150 lbs (68 kg) feed boom mounted 300 lbs (136 kg) positioner mounted

Environmental		
Wind Loading[1]	Ka-Band	Ku-Band
Pointing Loss 2 dB Rx Pk	30 mph (48 km/h) gusting to 45 mph (72 km/h)	45 mph (72 km/h) gusting to 60 mph (97 km/h)
Drive	45 mph (72 km/h) gusting to 60 mph (97 km/h)	60 mph (97 km/h) gusting to 75 mph (121 km/h)
Survival	75 mph (121 km/h) any position	75 mph (121 km/h) any position
	Up to 90 mph (145 km/h) at stow	Up to 90 mph (145 km/h) at stow
Temperature		
Operational	-22° to +130° F (-30° to +55° C)	
Survival	-40° to +158° F (-40° to +70° C)	
Rain		
Operational	4 in/h (10 cm/h)	
Survival	6 in/h (15 cm/h)	
Relative Humidity	0% to 100% with condensation	
Solar Radiation	360 BTU/h/ft (1000 Kcal/h/m²)	
Radial Ice (survival)	1 in (2.5 cm) on all surfaces	
Tolerances	Shock and vibration tolerant to conditions encountered during shipment by airplane, ship or truck. Atmospheric tol conditions encountered in coastal regions and/or heavily industrialized areas.	

1 Depending on vehicle capabilities.
2 Vehicle capabilities directly affect antenna performance during and following transportation.
3 Angular values for Ka-band are 1° to 30°, 30° to 130° and 130° to 180°.
4 Ku-band is Intelsat compliant with the following note on Noise Temperature: 73.7 K, 10° elevation, 11 GHz.
5 X-band feed includes high isolation filter.

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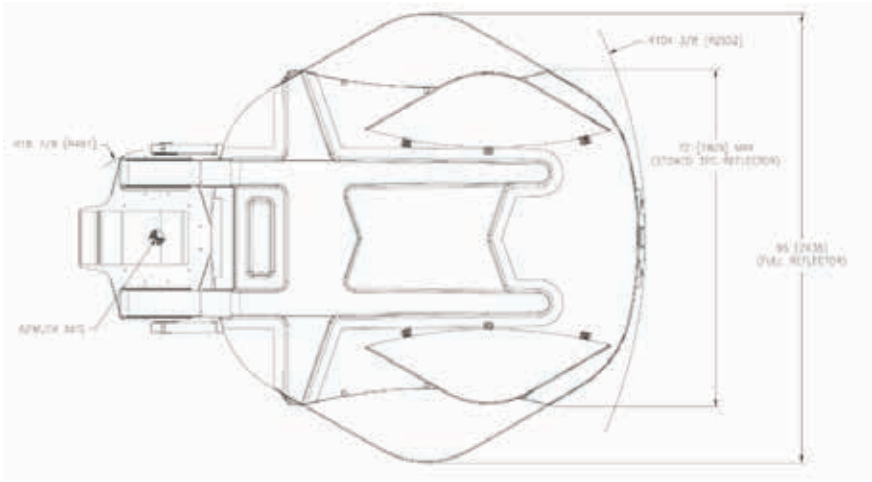
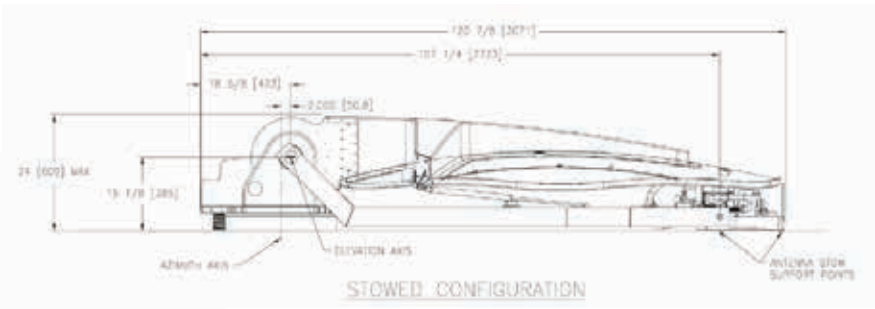
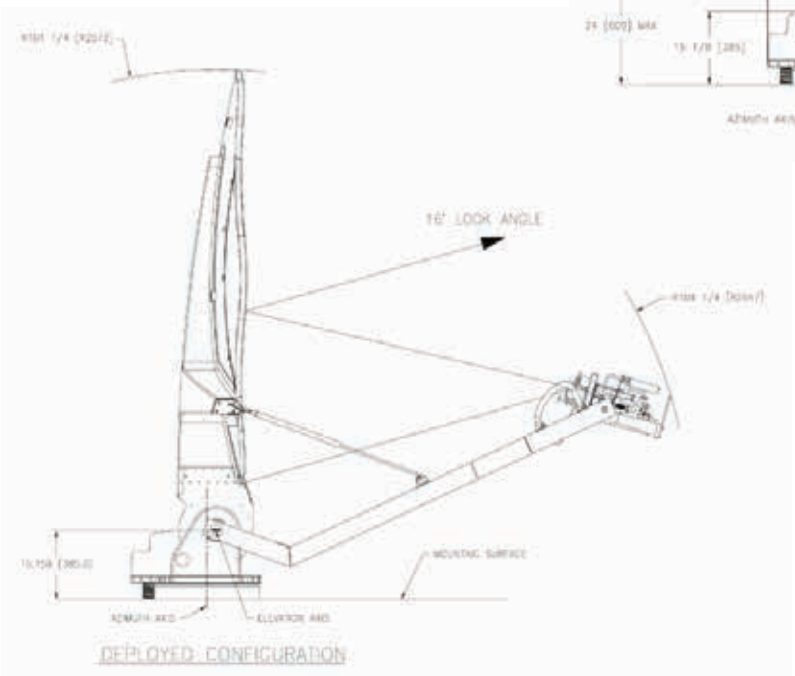
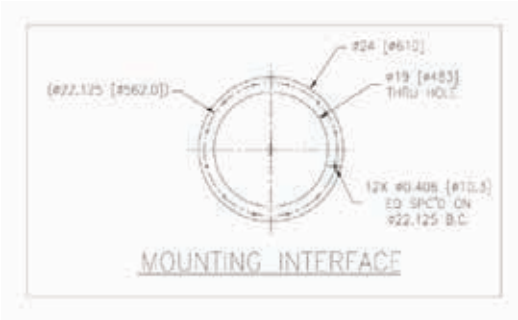
Electrical[2]	C-Band Linear Polarized		C-Band Circular Polarized		X-Band Circular Polarized		Ku-Band 2-Port XPC Linear Polarized		Ka-Band Mil/Com Circular Polarized		Ka-Band Com Circular Polarized	
	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit
Frequency (GHz)	3.400 - 4.200	5.850 - 6.725	3.625 - 4.200	5.850 - 6.425	7.250 - 7.750	7.900 - 8.400	10.700 - 12.750	13.750 - 14.500	19.200 - 21.200	29.000 - 31.000	19.200 - 20.200	29.000 - 30.000
Antenna Gain at Midband, dBi	38.10	42.20	38.06	42.10	43.00	43.80	47.40	48.80	52.30	55.70	51.90	55.40
VSWR	1.43:1 (15.0 dB)	1.33:1 (17.0 dB)	1.30:1 (17.7 dB)	1.30:1 (17.7 dB)	1.33:1 (17.0 dB)	1.33:1 (17.0 dB)	1.43:1 (15.0 dB)	1.33:1 (17.0 dB)	1.33:1 (17.0 dB)	1.33:1 (17.0 dB)	1.43:1 (15.0 dB)	1.33:1 (17.0 dB)
Pattern Beamwidth (in degrees at midband)												
-3 dB Beamwidth	2.25	1.36	2.09	1.35	1.17	1.07	0.78	0.66	0.43	0.28	0.45	0.30
Sidelobe Performance[3]												
For Angle A from 2° to 30° (typical)												
For Angle A beyond mainbeam to 20°	29-25 Log A		29-25 Log A		29-25 Log A		29-25 Log A		29-25 Log A		29-25 Log A	
For Angle A from 30° to 140°												
For Angle A from 140° to 180°												
Antenna Noise Temperature												
5° Elevation	47 K		51 K		33 K		68 K		106 K		97 K	
10° Elevation	40 K		50 K		26 K		50 K		85 K		78 K	
20° Elevation	42 K		49 K		23 K		45 K		73 K		70 K	
40° Elevation	41 K		48 K		23 K		40 K		74 K		71 K	
Total Power Handling Capability		2 kW CW		2 kW CW		2 kW CW		1 kW CW		250 W CW		250 W CW
Cross Polarization												
On Axis	55.0 dB	50.2 dB	19.7 dB	27.3 dB	37.0 dB	40.9 dB	43.1 dB	49.0 dB	33.3 dB	35.2 dB	22.2 dB	25.4 dB
Within 1.0 dB BW	29.2 dB	29.7 dB	19.7 dB	27.3 dB	37.0 dB	38.7 dB	27.0 dB	42.6 dB	32.8 dB	29.8 dB	22.1 dB	25.4 dB
Port-to-Port Isolation												
Rx/Tx (Rx frequency)	0 dB	-55 dB	0 dB	-50 dB	0 dB	-110 dB	0 dB	-35 dB	0 dB	-70 dB	0 dB	-40 dB
Tx/Rx (Tx frequency)	-80 dB	0 dB	-100 dB	0 dB	-110 dB	0 dB	-80 dB	0 dB	-75 dB	0 dB	-80 dB	0 dB
Feed Insertion Loss	0.20 dB	0.20 dB	0.40 dB	0.20 dB	0.80 dB	0.70 dB[5]	0.50 dB	0.35 dB	0.45 dB	0.35 dB	0.50 dB	0.20 dB
Axial Ratio					0.25	0.19			0.40	0.80	1.59	0.92

CPI C240M Mobile Antenna









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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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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