Model C240M Mobile Antenna

Mobile Antennas

The Strength to Perform

Description

The General Dynamics SATCOM Technologies 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-azimuth 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

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
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^2 (1000 Kcal/h/m^2)	
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 tolerant to 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 2-Port Linear Polarized		C-Band 2-Port Circular Polarized		X-Band 2-Port Circular Polarized		Ku-Band 2-Port Linear Polarized		Ka-Band 2-Port Circular Polarized		Ka-Band 2-Port Circular Polarized	
	Receive	Transmit	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	7.250 - 7.750	7.900 - 8.400	10.950 - 12.750	13.750 - 14.500	20.200 - 21.200	30.000 - 31.000	17.700 - 21.200	27.500 - 31.000
Antenna Gain at Midband, dBi	38.20	42.00	38.06	42.10	43.0	43.8	47.19	49.00	52.30	55.20	51.30	54.30
VSWR	1.30:1 (17.7 dB)	1.30:1 (17.7 dB)	1.30:1 (17.7 dB)	1.30:1 (17.7 dB)	1.30:1 (17.7 dB)	1.30:1 (17.7 dB)	1.35:1 (16.5 dB)	1.25:1 (19.0 dB)	1.30:1 (17.7 dB)	1.30:1 (17.7 dB)	1.30:1 (17.7 dB)	1.30:1 (17.7 dB)
Pattern Beamwidth (in degrees at midband)												
-3 dB Beamwidth	2.12	1.37	2.09	1.35	1.15	1.05	0.72	0.60	0.40	0.29	0.42	0.29
Sidelobe Performance [3]												
For Angle A from 2° to 30° (typical)							29-25 Log A		29-25 Log A		29-25 Log A	
For Angle A beyond mainbeam to 20°	29-25 Log A		29-25 Log A		29-25 Log A							
For Angle A from 30° to 140°							-10 dBi	-10 dBi	-10 dBi	-10 dBi	-10 dBi	-10 dBi
For Angle A from 140° to 180°							0 dBi	0 dBi	0 dBi	0 dBi	0 dBi	0 dBi
Antenna Noise Temperature												
5° Elevation	49 K		51 K		78 K		63 K		143 K		176 K	
10° Elevation	38 K		50 K		68 K		60 K		123 K		149 K	
20° Elevation	33 K		49 K		65 K		56 K		109 K		129 K	
40° Elevation	34 K		48 K		65 K		55 K		101 K		117 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	30.0 dB	30.0 dB	19.7 dB	27.3 dB	18.8 dB	18.8 dB	35.0 dB	35.0 dB	24.8 dB	24.8 dB	27.3 dB	27.3 dB
Within 1.0 dB BW	28.0 dB	28.0 dB	19.7 dB	27.3 dB	18.8 dB	18.8 dB	27.0 dB	35.0 dB	24.8 dB	24.8 dB	27.3 dB	27.3 dB
Port-to-Port Isolation												
Rx/Tx (Rx frequency)	0 dB	-30 dB	0 dB	-50 dB	0 dB	-125 dB	0 dB	-30 dB	0 dB	-50 dB	0 dB	-85 dB
Tx/Rx (Tx frequency)	-60 dB	0 dB	-100 dB	0 dB	-120 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB
Feed Insertion Loss	0.15 dB	0.15 dB	0.40 dB	0.20 dB	0.65 dB	0.60 dB [5]	0.30 dB	0.20 dB	0.30 dB	0.30 dB	0.80 dB	0.80 dB
RF Specification	975-2837		975-2712		975-4223 [5]		975-1575 [4]		975-2901		975-5014	

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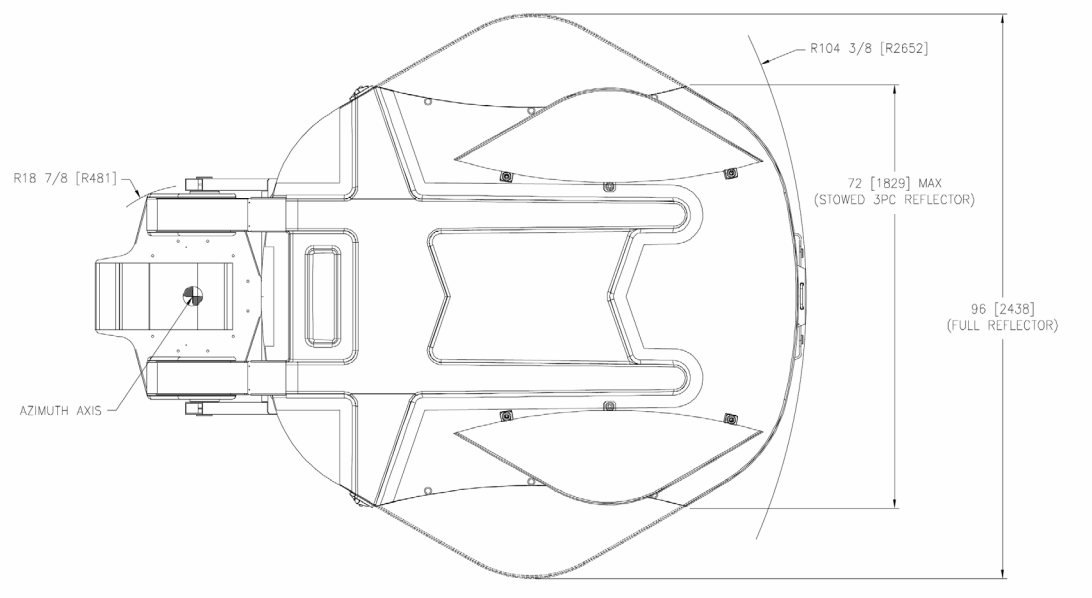
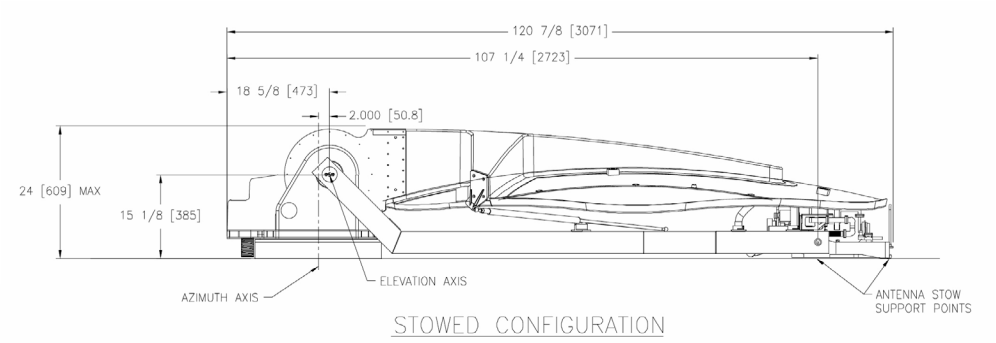
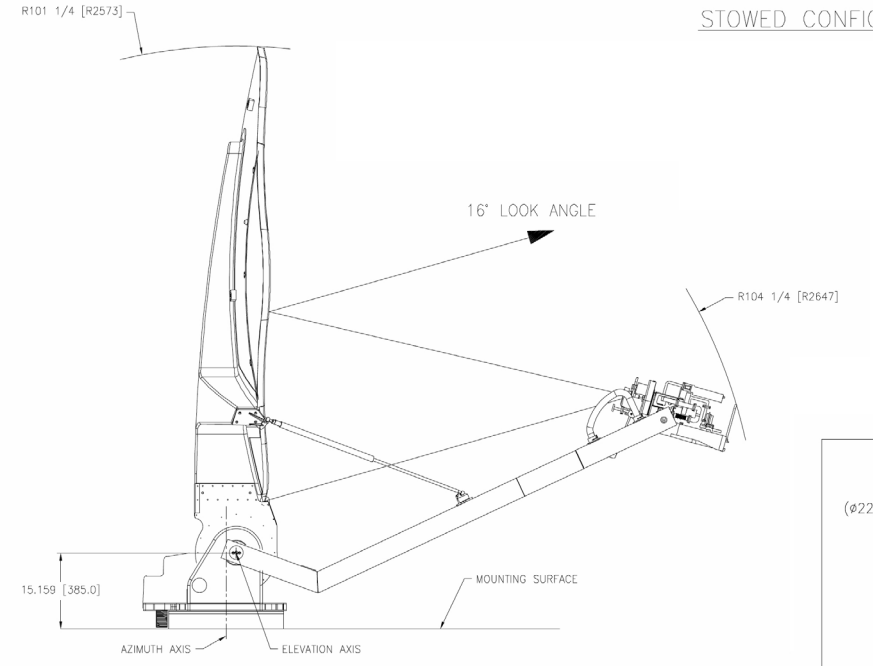
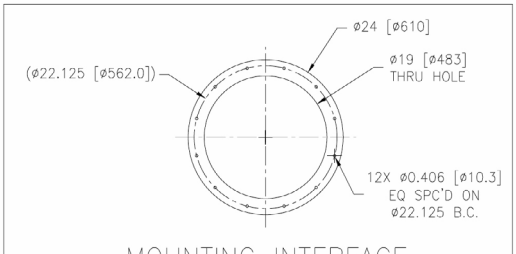




STOWED CONFIGURATION



DEPLOYED CONFIGURATION



MOUNTING INTERFACE

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655-0083E, 8/16