

Satcom & Antenna Technologies Division



Overview

The General Dynamics SATCOM Technologies lightweight 1.8 meter manual flyaway antenna is designed for worldwide transmit and receive operation in C, X, Ku and Ka-band. This flyaway antenna consists of a carbon fiber composite reflector, an ACME threaded locking rod elevation-over-azimuth positioner and an aluminum support structure. This results in a low-weight, manual 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 meeting INTELSAT and EUTELSAT requirements. Repeatability is maintained with precision registration of the nine reflector segments and the feed 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 complete antenna system, including a single feed and a manual positioner, is packaged in robust, portable cases.

FEATURES

- Simple manual satellite acquisition
- Superior stiffness and high performance under wind loading conditions
- Easy 2-person deployment in less than 30 minutes
- Carbon fiber reflector: Lightweight, precision surface and high stiffness
- Low profile EL over AZ positioner installed: Composite/aluminum lightweight, sturdy
- Easy deployment: Two-person assembly in less than 30 minutes, captive hardware and precision alignment. No tools required for assembly
- High performance: Low sidelobes and high EIRP capability - FCC, ITU, DISA, ARSTRAT sidelobe compliant

OPTIONS:

- Finishes
 - Standard Ford Polar White reflector / feed
 - Options Green Fed Std 595 34094 or Desert Sand Fed Std 595 33303
- Feeds
 - 4-port, Co-Pol or CP/LP switchable
 - Bands L, C, X, Ku, DBS and/or Ka
- Integration
 - SSPB and/or LNB
 - Specify at time of order

BENEFITS:

- Lightweight
- Designed for worldwide transmit and receive

APPLICATIONS:

- Superior stiffness and high performance under wind loading conditions

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Specifications

Mechanical					
Azimuth Travel	±180° Fine adjust +/-15°				
Elevation Travel	5° to 90°				
Polarization Travel	±90° (linear polarization)				
Reflector Structure	Carbon fiber composite				
Pedestal Structure	Aluminum positioner elevation over azimuth positioner				
Antenna Weight (by component)	Weight	Quantity	Reflector Total	Weight	Quantity
Pedestal Total	185 lbs (84 kg)		Petals	146 lbs (66.2 kg)	
Pedestal w/ Legs	90 lbs (41 kg)	1	Petal Case	56 lbs (25.4 kg)	1
Pedestal Case (55 x 35 X 27" / 140 X 89 X 68.6 cm)	95 lbs (43 kg)	1	(37.4 X 37.4 X 38.4" / 95 X 95 X 97.5 cm)	90 lbs (40.8 kg)	1
Positioner Total					
Manual Positioner	128 lbs (58 kg)				Ku Band Feed Case 28 x 21 x 15"
Positioner Case	66 lbs (29.9 kg)	1			X-Band Feed Case 28 x 21 x 15"
(43 X 27.56 X 20" / 109.2 X 70 X 50.8 cm)	62 lbs (28.1 kg)	1			C-Band CP/LP Feed 29.8 x 20.8 x 17.8"
					C-Band CP Feed 40 x 18 x 13.2"
Backbeam + Feed Boom Total	198 lbs (89.8 kg)	1	Ku-Band Feed	15 lbs (6.8 kg)	Ku Band Feed Case 36 lbs (16.3 kg)
Backbeam + Feed Boom	89 lbs (40.4 kg)	1	X-Band Feed	26 lbs (11.8 kg)	X-Band Feed Case 36 lbs (16.3 kg)
Backbeam / Feed Boom Case	109 lbs (49.4 kg)		C-Band CP/LP Feed	25 lbs (11.3 kg)	C-Band CP/LP Feed 45 lbs (20.4 kg)
(35 x 27 X 55" / 88.9 X 68.6 X 139.7 cm)			C-Band CP Feed	30 lbs (13.6 kg)	C-Band CP Feed 36 lbs (16.3 kg)
Antenna Total	301 lbs (136.5 kg) without feed and cases				
Loading					
Operational (with ballast)	30 mph (48 km/h) gusting to 45 mph (72 km/h)				
Survival (with tie-downs)	60 mph (96 km/h) gusting to 70 mph (113 km/h); antenna must be at stow position (90° elevation)				
Pointing Loss (operational winds)	Maximum 2.0 dB peak loss				
Temperature					
Operational	-40° to +140° F (-40° to +60° C)				
Survival	-40° to +160° F (-40° to +71° C)				
Relative Humidity (operational and survival)	0% to 95%, +86° to +140°F (+30° to +60°C)				
Solar Radiation	355 BTU/h/ft2 (964 Kcal/h/m2)				
Shock and vibration	As encountered during shipment by commercial air, sea or land				
Corrosive Atmosphere	As encountered in coastal regions and/or heavily industrialized areas				

Specifications

Electrical	C-Band 2-Port Linear Polarized		C-Band 2-Port Circular Polarized		X-Band 2-Port Circular Polarized		Ka-Band 2-Port Linear Polarized		Ka-Band 4-Port Linear 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	10.750 - 12.750	13.750 - 14.500	20.200 - 21.200	30.000 - 31.000
Antenna Gain at Midband, dBi	35.6	39.3	35.3	39.3	41.3	42.0	45.0	47.1	44.6	46.3	49.1	52.3
Antenna Noise Temperature												
5° Elevation	56K		73K		65K		85K		80K		155K	
10° Elevation	42K		59K		55K		71K		68K		133K	
20° Elevation	37K		54K		51K		64K		62K		117K	
40° Elevation	38K		55K		52K		64K		61K		108K	
Pattern Beamwidth (in degrees at midband) -3 dB Beamwidth	2.84	1.87	2.88	1.86	1.44	1.33	0.94	0.75	0.96	0.80	0.55	0.38
Sidelobe Performance** For Angle A from 2° to 30° (typical)									24-25 Log A (AZ PLANE) 29-25 Log A (in General)		29 - 25 Log A	
For Angle A beyond mainbeam to 48°	32-25 Log A		32-25 Log A		*29-25 Log A *32-25 Log A		Meets ITU-RS580 / FCC 25.209					
For Angle A from 48° to 140°	-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	
Cross Polarization On Axis	30.0 dB	30.0 dB	19.7 dB	27.3 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 BW	26.0 dB	26.0 dB	19.7 dB	24.0 dB	21.3 dB	21.3 dB	27.0 dB	35.0 dB	27.0 dB	35.0 dB	24.8 dB	24.8 dB
VSWR	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.35:1	1.30:1	1.35:1	1.30:1	1.30:1	1.30:1
Axial Ratio			1.81 dB	0.75 dB	1.50 dB	1.50 dB					1.00 dB	1.00 dB
Port-to-Port Isolation Rx/Tx (Rx frequency)	0 dBi	-30 dB	0 dBi	-50 dB	0 dBi	-110 dB	0 dBi	-30 dB	0 dBi	-50 dB	0 dB	-70 dB
Tx/Rx (Tx frequency)	-70 dB	0 dB	-100 dB	0 dB	-110 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB
Feed Insertion Loss	0.20 dB	0.15 dB	0.40 dB	0.20 dB	0.40 dB	0.40 dB	0.30 dB	0.20 dB	0.55 dB	0.40 dB	0.30 dB	0.30 dB
Waveguide Interface Flange	CPR-229G	CPR-137G	CPR-229G	CPR-137G	CPR-112G	CPR-112G	WR-75 Flat	WR-75 Flat	WR-75	WR-75	WR-42	WR-28
Total Power Handling Capability		2 kW CW		2 kW CW		2 kW CW		1 kW CW		1 kW CW		500 W CW
RF Specification	975-3381		975-2849		975-3125		975-5380		975-4414		975-2985	

* Angular values for X-band are A° to 20°, 20° to 40° for main beam.
* Angular values for Ka-band are 1° to 30°, 30° to 130° and 130° to 180°.

Other feeds available. Contact factory for information.
Low axial ratio feed available.
Low axial ratio feed available. X-band dual polarization switch available.

