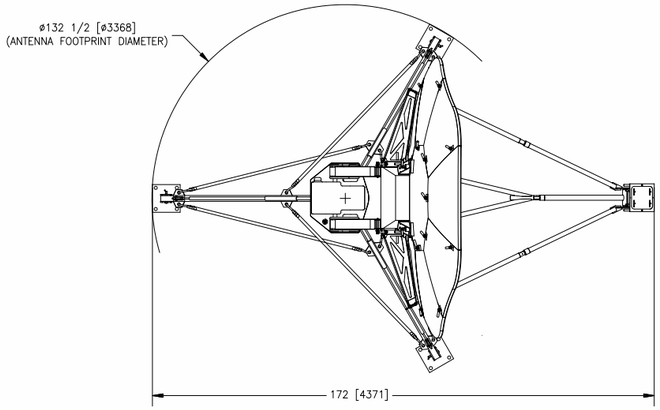
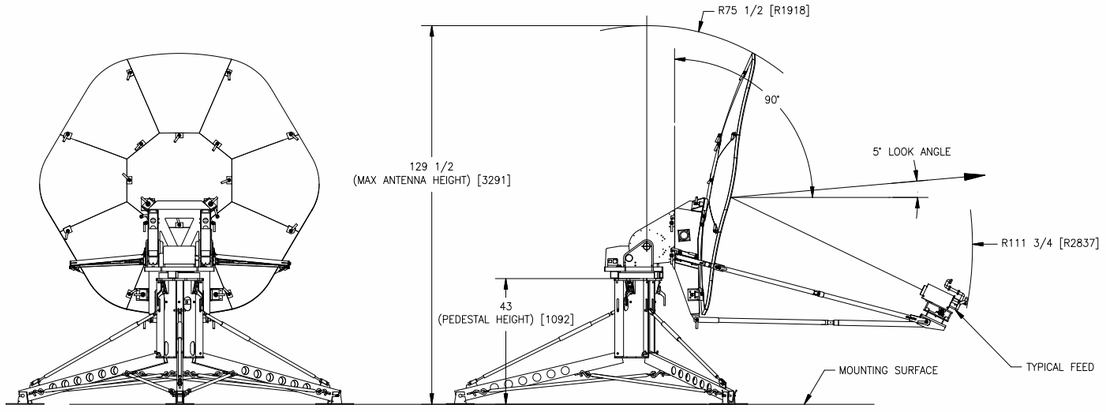


ASSEMBLED TOP VIEW



ASSEMBLED BACK VIEW

ASSEMBLED SIDE VIEW

GENERAL DYNAMICS
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655-0055B, 02/09

Model 2.4m SF-LT Motorized Flyaway Antenna

Flyaway Antennas

The Strength to Perform

Description

The General Dynamics SATCOM Technologies lightweight 2.4-meter motorized flyaway 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, a cable-driven elevation-over-azimuth positioner and an aluminum support structure. This results in a low-weight, motorized 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. 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 motorized positioner, is packaged in eight robust, portable cases.

Features

- Carbon fiber reflector
  - Lightweight, precision surface and high stiffness
- Cable-driven positioner
  - Carbon fiber/aluminum construction, lightweight, sturdy
- Easy deployment
  - Two-person assembly in less than 15 minutes, captive hardware and precision alignment
- INTELSAT type approved and EUTELSAT compliant
- High performance
  - Low sidelobes and high EIRP capability

Options

- Finishes
  - Green, tan or per customer spec
- Feeds
  - Four-port, co-pol, CP/LP switchable, motorized polarization, DBS or Ka-band

GENERAL DYNAMICS
SATCOM Technologies

Model 2.4m SF-LT Motorized Flyaway Antenna

Technical Specifications

Mechanical					
Azimuth Travel	±120°				
Elevation Travel	0° to 90°				
Polarization Travel	±95° (linear polarization), optional motorized polarization available				
Reflector Structure	Carbon fiber composite				
Pedestal Structure	Aluminum/carbon fiber composite/cable drive azimuth over elevation positioner				
Antenna Weight (by component)					
Component	Weight	Quantity	Component	Weight	Quantity
Pedestal Total	153 lbs (69.5 kg)	1	Reflector Total	129 lbs (58.5 kg)	1
Pedestal	49 lbs (22.2 kg)	1	Center Panel #1	25 lbs (11.3 kg)	1
Pedestal Legs	30 lbs (13.6 kg)	3	180° Panel #2	19 lbs (8.6 kg)	1
Turnbuckle Struts	16 lbs (7.3 kg)	3	45° Panels (#3 and #9)	26 lbs (11.8 kg)	2
Struts with S-hooks	22 lbs (10 kg)	6	90° and 270° Panels (#4 and #8)	24 lbs (10.9 kg)	2
Foot Pads	9 lbs (4.1 kg)	3	45° Upper Panels (#5 and #7)	22 lbs (10 kg)	2
Feed Boom	15 lbs (6.8 kg)	1	0° Panel #6	13 lbs (5.9 kg)	1
Feed Boom Side Struts	12 lbs (5.5 kg)	4			
			Ka-Band Feed	10 lbs (4.5 kg)	
Backbeam Total	41 lbs (18.6 kg)	1	Ku-Band Feed	15 lbs (6.8 kg)	
Backbeam	36 lbs (16.3 kg)	1	X-Band Feed	26 lbs (11.8 kg)	
Wings	5 lbs (2.3 kg)	2	C-Band CP/LP Fteed	25 lbs (11.3 kg)	
			C-Band CP Feed	30 lbs (13.6 kg)	
Positioner	114 lbs (51.7 kg)	1			
Antenna Total	437 lbs (198.2 kg)				

Shipping Specifications

Case	Contents	Case Size (L x W x H)	Total weight (component and case)
1	Pedestal	36″ x 21″ x 20″	83 lbs (37.6 kg)
2	Legs, Struts, Turnbuckles	79″ x 20″ x 16″	160 lbs (72.6 kg)
3	Feed Boom End, Feet, Wings, Feed	49″ x 25″ x 18″	96 lbs (43.5 kg)
4	Back Beam, Ballast Plate, Feed Boom 'Y' End	54″ x 29″ x 24″	52 lbs (68.9 kg)
5	Positioner (with Ku-band feed)	26″ x 26″ x 24″	58 lbs (71.7 kg)
6	Reflector Panels 1, 2 and 6	39″ x 36″ x 12″	100 lbs (45.4 kg)
7	Reflector Panels 3, 4 and 5	39″ x 36″ x 12″	79 lbs (35.8 kg)
8	Reflector Panels 7, 8 and 9	39″ x 36″ x 12″	75 lbs (34.0 kg)
Total System		8 Cases	903 lbs (410.0 kg)
Ku-Band LP Feed		Included in Case #3	
X-Band CP Feed		34″ x 28″ x 24″	89 lbs (40.4 kg)
C-Band CP Feed		34″ x 28″ x 24″	70 lbs (31.8 kg)

Environmental	
Wind Loading	
Operational (with ballast)	20 mph (32 km/h) gusting to 30 mph (48 km/h)
Survival (with tie-downs)	45 mph (72 km/h) gusting to 60 mph (97 km/h); antenna must be driven to stow position (90° elevation) with the 123T control system during these wind conditions
Pointing Loss (operational winds)	Maximum 2.0 dB peak loss
Temperature	
Operational	-22° to +122° F (-30° to +50° C)
Survival	-40° to +158° F (-40° to +70° C)
Relative Humidity (operational and survival)	0% to 100%
Solar Radiation	360 BTU/h/ft² (1000 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

	C-Band 2-Port Linear Polarized		C-Band 2-Port Circular Polarized		X-Band 2-Port Circular Polarized		Ku-Band 2-Port Linear Polarized		Ku-Band 4-Port Linear Polarized		Ka-Band 2-Port Circular Polarized	
Electrical	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	10.950 - 12.750	13.750 - 14.500	20.200 - 21.200	30.000 - 31.000
Antenna Gain at Midband, dBi	38.20	42.00	38.06	42.10	43.50	44.20	47.19	49.00	47.10	48.80	52.30	55.20
Antenna Noise Temperature												
5° Elevation	49 K		51 K		65 K		63 K		85 K		143 K	
10° Elevation	38 K		50 K		55 K		60 K		75 K		123 K	
20° Elevation	33 K		49 K		51 K		56 K		69 K		109 K	
40° Elevation	34 K		48 K		52 K		55 K		68 K		101 K	
Typical G/T at 4.0 & 7.5 GHz												
20° Elevation, Clear Horizon												
C-Band 35° K LNA	19.5 dB/K											
X-Band 55° K LNA					23.2 dB/K							
Typical G/T at 4.0 & 10.95 GHz												
10° Elevation, Clear Horizon												
C-Band 35° K LNA			18.8 dB/K									
C-Band 50° K LNA			18.1 dB/K									
Ku-Band 70° K LNA							25.4 dB/K					
Ku-Band 90° K LNA							24.7 dB/K					
Typical G/T at 11.85 GHz												
20° Elevation, Clear Horizon												
Ku-Band 70° K LNA									25.7 dB/K			
Ku-Band 90° K LNA									25.1 dB/K			
Typical G/T at 20.70 GHz												
20° Elevation, Clear Horizon												
Ka-Band 120° K LNA											28.7 dB/K	
Ka-Band 200° K LNA											27.4 dB/K	
Pattern Beamwidth (in degrees at midband)												
-3 dB Beamwidth	2.12	1.37	2.09	1.35	1.12	1.03	0.72	0.60	0.71	0.60	0.40	0.29
-15 dB Beamwidth	4.45	2.88	4.39	2.84	2.35	2.16	1.51	1.26	1.49	1.26	0.84	0.61
Sidelobe Performance*												
For Angle A from 2° to 30° (typical)							24-25 Log A (Az plane) 29-25 Log A (in general)		24-25 Log A (Az plane) 29-25 Log A (in general)		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
For Angle A from 140° to 180°									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	28.0 dB	28.0 dB	19.7 dB	27.3 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	1.25:1	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 dB	-30 dB	0 dB	-50 dB	0 dB	-110 dB	0 dB	-30 dB	0 dB	-50 dB	0 dB	-50 dB
Tx/Rx (Tx frequency)	-60 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	0.15 dB	0.15 dB	0.40 dB	0.20 dB	0.40 dB	0.40 dB	0.30 dB	0.20 dB	0.60 dB	0.45 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 Flat	WR-75 Flat	WR-42	WR-28
Total Power Handling Capability	2 kW CW		2 kW CW		2 kW CW		1 kW CW		2 kW CW		250 W CW	
RF Specification	975-2837		975-2712		975-1701		975-1575		975-1708		975-2901	

* Angular values for Ka-band are 1° to 30°, 30° to 130° and 130° to 180°.