

# Model 2.4m SF Flyaway Antenna

## *Flyaway Antennas*



*The Strength to Perform*

### Description

The VertexRSI lightweight 2.4-meter flyaway antenna is designed for worldwide transmit and receive operation in C, X and Ku-band. This portable antenna consists of a carbon fiber composite reflector and aluminum support structures. 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 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 complete antenna system, including a single feed, is packaged in nine robust portable cases.

### Features

- Carbon fiber reflector
  - Lightweight, precision surface and high stiffness
- Easy deployment
  - Two-person assembly, captive hardware, precision alignment
- INTELSAT type approved, EUTELSAT compliant
- High performance
  - Low sidelobes and high E.I.R.P. capability

### Options

- Finishes
  - Green, tan or per customer spec
- Feeds
  - Four-port, Co pol, CP/LP switchable, DBS, Ka-band
  - Motorized polarization
- Motorization
  - Az/EI motorized, tracking using pulse sensors or resolvers

## Technical Specifications

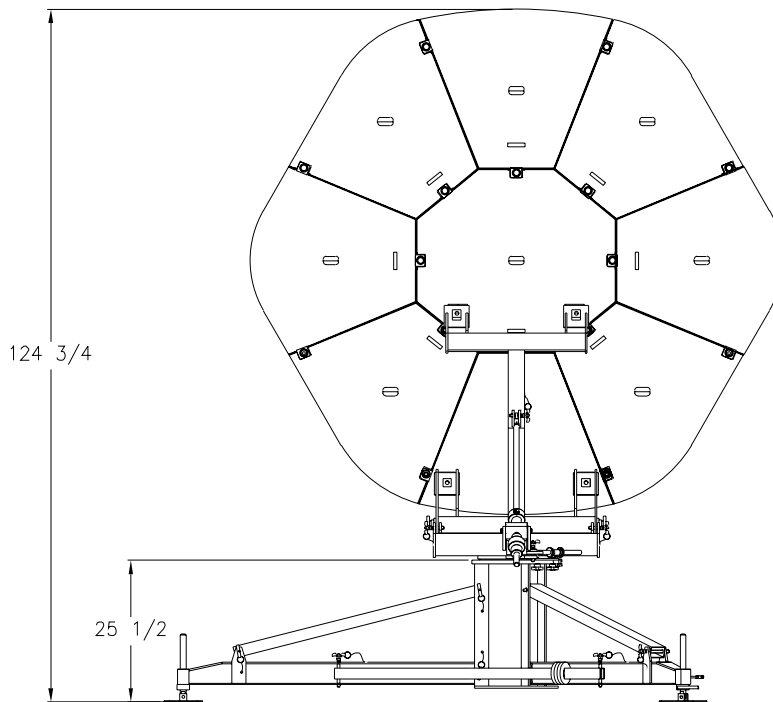
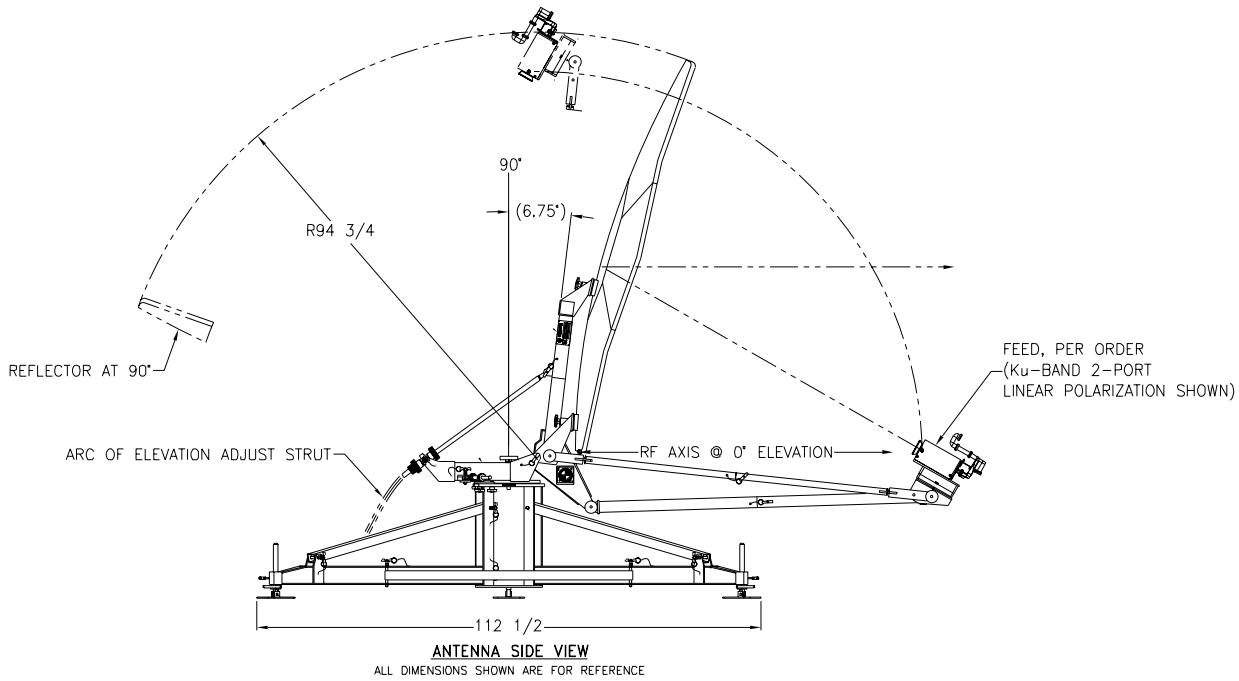
Mechanical				
Azimuth Travel	±360° coarse, ±15° fine adjustment			
Elevation Travel	0° - 90° with fine adjustment			
Polarization Travel	±95° (linear polarization), optional motorized polarization available			
Reflector Structure	Carbon fiber composite			
Pedestal Structure	Aluminum			
Shipping Specifications				
Case	Contents	Case size L x W x H	Component weight lbs. (kg)	Total weight (components and case) lbs. (kg)
1	Pedestal, Az Axis Strut	35" x 29" x 24"	57 (25.9)	107 (48.5)
2	T-Head, Feed Mounting Plate	39" x 36" x 12"	37 (16.8)	86 (39)
3	Outrigger, Feed Boom	60" x 20" x 12"	63 (28.6)	111 (50.4)
4	Outrigger, Feed Boom	60" x 20" x 12"	60 (27.2)	111 (50.4)
5	Reflector Panels 1, 2 and 6	39" x 36" x 12"	54 (24.5)	99 (44.9)
6	Reflector Panels 3, 4 and 5	39" x 36" x 12"	36 (16.3)	82 (37.2)
7	Reflector Panels 7, 8 and 9	39" x 36" x 12"	35 (15.9)	81 (36.7)
8	Upper and Lower Backspine	38" x 37" x 24"	46 (20.9)	122 (55.3)
	<i>Total System</i>	<i>8 Cases</i>	<i>388 (176)</i>	<i>799 (362.4)</i>
•	Ku-Band LP Feed (includes space for C-band LP feed)	34" x 28" x 24"	15 (6.8)	67 (30.4)
•	X-Band CP Feed	34" x 28" x 24"	34 (15.4)	89 (40.4)
•	C-Band CP Feed	34" x 28" x 24"	30 (13.6)	70 (31.8)
Finish (standard)		White reflector and gray (powdercoated) positioner assembly		

Environmental	
Wind Loading	
Operational (with ballast)	30 mph (48 km/h) gusting to 45 mph (73 km/h)
Survival (with tie-downs)	60 mph (97 km/h) gusting to 75 mph (121 km/h)
Pointing Loss	2 dB peak at Ku-band (Rx) with control system
Temperature	
Operational	-30° to +122° F (-34° to +50° C)
Survival	-40° to +140° F (-40° to +60° C)
Relative Humidity (operational and survival)	0% to 100%
Solar Radiation	360 BTU/h/ft <sup>2</sup> (1000 Kcal/h/m <sup>2</sup> )
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

# Model 2.4m SF Flyaway Antenna

Electrical	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	
	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
Antenna Gain at Midband	38.20 dBi	42.00 dBi	38.06 dBi	42.10 dBi	43.50 dBi	44.20 dBi	47.19 dBi	49.00 dBi	47.10 dBi	48.80 dBi
Antenna Noise Temperature										
5° Elevation	49 K		51 K		65 K		63 K		85 K	
10° Elevation	38 K		50 K		55 K		60 K		75 K	
20° Elevation	33 K		49 K		51 K		56 K		69 K	
40° Elevation	34 K		48 K		52 K		55 K		68 K	
Typical G/T at 4.0 and 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 and 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	
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
-15 dB Beamwidth	4.45	2.88	4.39	2.84	2.35	2.16	1.51	1.26	1.49	1.26
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)	
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
For Angle A from 140° to 180°									0 dBi	0 dBi
Cross Polarization										
On Axis	30 dB	30 dB	19.7 dB	27.3 dB	21.3 dB	21.3 dB	35 dB	35 dB	35 dB	35 dB
Within 1.0 dB Beamwidth	28 dB	28 dB	19.7 dB	27.3 dB	21.3 dB	21.3 dB	27 dB	35 dB	27 dB	35 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
Axial Ratio			1.81 dB	0.75 dB	1.50 dB	1.50 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
Tx/Rx (Tx frequency)	-60 dB	0 dB	-100 dB	0 dB	-110 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
Output Waveguide Flange Interface	CPR-229G	CPR-137G	CPR-229G	CPR-137G	CPR-112G	CPR-112G	WR-75 Flat	WR-75 Flat	WR-75 Flat	WR-75 Flat
Total Power Handling Capability	2 kW CW		2 kW CW		2 kW CW		1 kW CW		2 kW CW	
RF Specification	975-2837		975-2712		975-1701		975-1575		975-1708	

# Model 2.4m SF Flyaway Antenna



## GENERAL DYNAMICS SATCOM Technologies

1104 Energy Drive • Kilgore, TX 75662 USA • Tel: (903) 984-7811 • Fax: (903) 984-7597 • Email: kilgore-sales@gdsatcom.com  
Website: www.gdsatcom.com 655-0016B, 02/09