

# Model 1.8m SF-LT Motorized Flyaway Antenna

## *VertexRSI Antenna Products - Flyaway Antennas*

The VertexRSI lightweight 1.8-meter motorized 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, a cable-driven elevation-over-azimuth positioner and an aluminum/CFRP 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 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 motorized positioner, is packaged in four robust, portable cases.



### **Features**

- Carbon fiber reflector
  - Light weight, precision surface, high stiffness
- Cable-driven positioner
  - Composite/aluminum construction, light weight, sturdy
- Easy deployment
  - Two-person assembly in less than 15 minutes, captive hardware, precision alignment
- High performance
  - Low sidelobes, high EIRP capability

### **Options**

- Feeds
  - Four-port, Co-Pol, CP/LP switchable
- L, C, X, Ku, Ka and DBS-band
- Finishes
  - White, green, tan or per customer spec
- C-band CP/LP switchable also available

## Technical Specifications

<i>Mechanical</i>		
Azimuth Travel	±120° (up to ±200° optional)	
Elevation Travel	0° to 90°	
Polarization Travel	±95° (linear polarization only)	
Reflector Structure	Carbon fiber composite	
Pedestal Structure	Aluminum/composite cable-driven azimuth-over-elevation positioner on carbon fiber structural case	
Boom Mounted HPA Loading <sup>1</sup>	60 lbs. (27.2 kg)	
Transport Configuration		
<u>Case</u>	<u>Case Size (L x W x H)</u>	<u>Total weight (component and case)</u>
Component Case 1	42.8 x 30.8 x 29.2 in (108.7 x 78.2 x 74.2 cm)	170.3 lbs. (77.2 kg)
Component Case 2	42.8 x 30.8 x 29.2 in (108.7 x 78.2 x 74.2 cm)	167.0 lbs. (75.7 kg)
Reflector Case 1	39.3 x 36.3 x 11.8 in (99.8 x 92.2 x 30.0 cm)	69.0 lbs. (31.3 kg)
Reflector Case 2	37.0 x 30.5 x 33.2 in (94.0 x 77.5 x 84.3 cm)	120.1 lbs. (54.4 kg)
Composite Case	24.0 x 26.0 x 24.0 in (61.0 x 66.0 x 61.0 cm)	140.3 lbs. (63.6 kg)
Controller Box	24.5 x 14.0 x 27.5 in (62.2 x 35.6 x 69.9 cm)	32.0 lbs. (14.5 kg)
<b>Total System (feeds cased separately)</b>	<b>90.1 ft<sup>2</sup> (2.55 m<sup>2</sup>)</b>	<b>698.7 lbs. (316.9 kg)</b>
X-band Feed	37.8 x 37.8 x 22.4 in (96.0 x 96.0 x 56.9 cm)	112.2 lbs. (50.9 kg)
Feeds <sup>2</sup>	Multiple configurations and options available (L, C, X, Ku, Ka or DBS-band)	

Environmental		
Wind 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)	
Pointing Loss (operational winds)	Maximum 2.0 dB peak Rx loss at Ku	
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 tolerant to conditions encountered during shipment by airplane, ship or truck. Atmospheric tolerant to conditions encountered in coastal regions and/or heavily industrialized areas.		

<sup>1</sup> Contact factory for mounting locations.

<sup>2</sup> Contact factory for details.

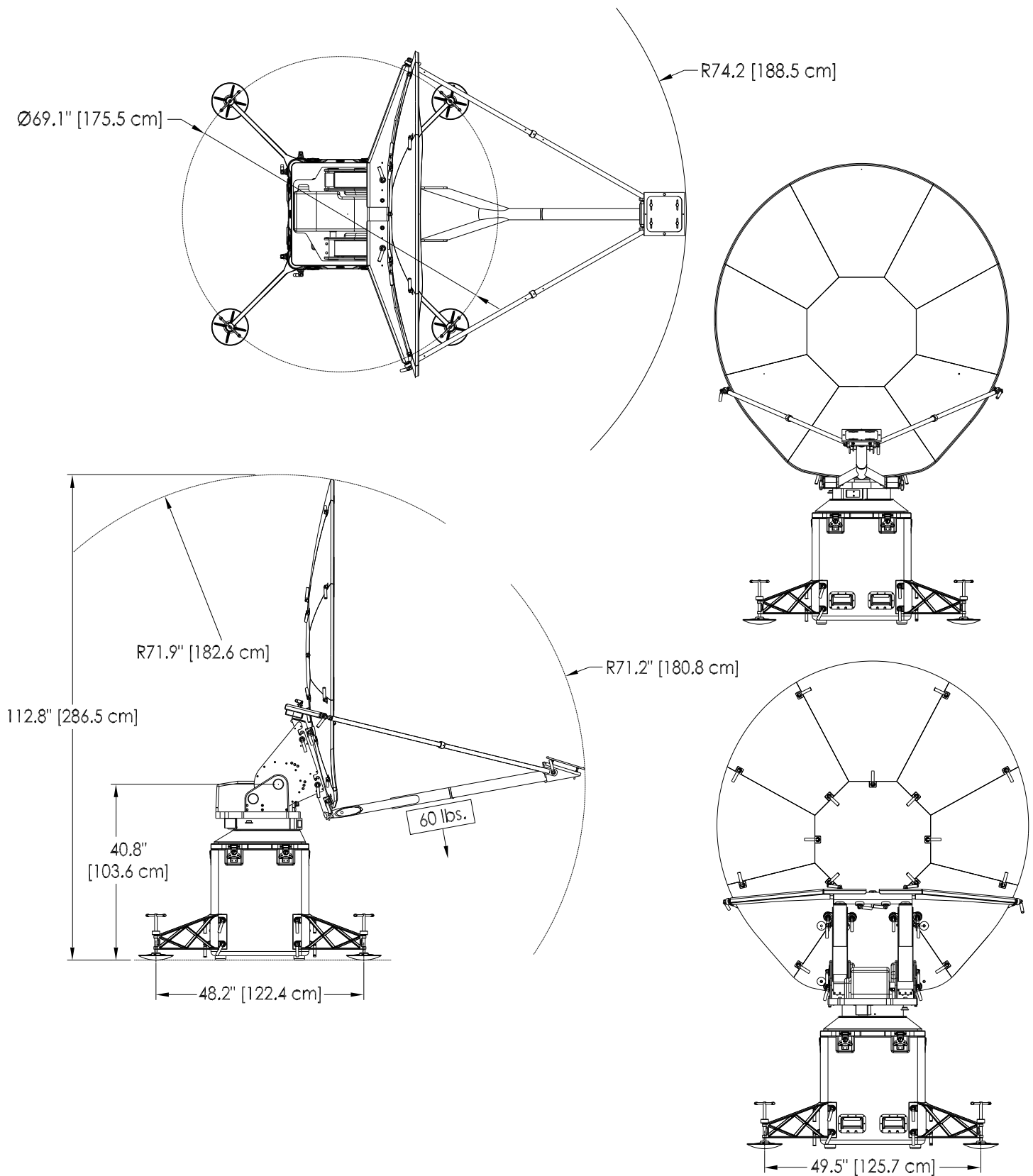
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<i>Electrical</i> <sup>3</sup>	C-Band 2-Port Linear Polarized Feed		C-Band 2-Port Circular Polarized Feed		X-Band 2-Port Circular Polarized Feed		Ku-Band 2-Port Linear Polarized Feed		Ku-Band 2-Port Linear Polarized Feed (Cross-Pol Compensated)	
	Receive	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	35.60 dBi	39.30 dBi	35.30 dBi	39.30 dBi	41.30 dBi	42.00 dBi	45.10 dBi	46.10 dBi	44.90 dBi	46.50 dBi
Antenna Noise Temperature										
5° Elevation	56 K		73 K		67 K		73 K		69 K	
10° Elevation	42 K		59 K		57 K		61 K		57 K	
20° Elevation	37 K		54 K		52 K		54 K		50 K	
40° Elevation	38 K		55 K		54 K		53 K		49 K	
Typical G/T at 4.000 GHz, 20° Elevation, Clear Horizon										
C-Band 35° K LNA	17.0 dB/K		15.8 dB/K							
C-Band 50° K LNA	16.2 dB/K		15.1 dB/K							
Typical G/T at 7.500 GHz, 20° Elevation, Clear Horizon										
X-Band 60° K LNA					20.8 dB/K					
X-Band 80° K LNA					20.1 dB/K					
Typical G/T at 11.850 GHz, 20° Elevation, Clear Horizon										
Ku-Band 70° K LNA							24.2 dB/K		24.1 dB/K	
Ku-Band 90° K LNA							23.5 dB/K		23.4 dB/K	
Pattern Beamwidth (in degrees at midband)										
-3 dB Beamwidth	2.84	1.87	2.88	1.86	1.44	1.33	0.92	0.83	0.95	0.80
-15 dB Beamwidth	5.96	3.93	6.05	3.91	3.02	2.79	1.93	1.74	1.99	1.68
Sidelobe Performance										
For Angle A beyond Mainbeam to 20°					29-25 log A	29-25 log A				
For Angles from 20°-48°					32-25 log A	32-25 log A				
For Angle A from 1°-30°							29-25 log A		29-25 log A	
For Angle A beyond Mainbeam to 48°	32-25 log A	32-25 log A	32-25 log A	32-25 log A						
For Angles from 48°-140°	-10 dBi	-10 dBi	-10 dBi	-10 dBi	-10 dBi	-10 dBi				
For Angles from 140°-180°	0 dBi	0 dBi	0 dBi	0 dBi	0 dBi	0 dBi				
For Angle A from 30°-130°							-10 dBi	-10 dBi	-10 dBi	-10 dBi
For Angles from 130°-180°							0 dBi	0 dBi	0 dBi	0 dBi
Cross Polarization										
On Axis	30.0 dB	30.0 dB	15.3 dB	17.7 dB	21.3 dB	21.3 dB	30.0 dB	30.0 dB	35.0 dB	35.0 dB
Within 1.0 dB Beamwidth	26.0 dB	26.0 dB	15.3 dB	17.7 dB	21.3 dB	21.3 dB	27.0 dB	27.0 dB	27.0 dB	35.0 dB
VSWR	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.35:1	1.30:1
Axial Ratio			3.01 dB <sup>4</sup>	2.28 dB	1.50 dB <sup>5</sup>	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	-35 dB	0 dB	-30 dB
Tx/Rx (Tx frequency)	-70 dB	0 dB	-85 dB	0 dB	-110 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	0.40 dB	0.25 dB	0.30 dB	0.20 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	2.00 kW CW		2.00 kW CW		5.00 kW CW		2.00 kW CW		2.00 kW CW	
RF Specification	975-3381		975-3380		975-3125		975-3379		975-3437	

<sup>3</sup> Ka-band feeds available. Contact factory for information.

<sup>4</sup> Low axial ratio feed available.

<sup>5</sup> Low axial ratio feed available. X-band dual polarization switch available.



**GENERAL DYNAMICS**