

Model LRF-3 9m Long Range Fixed Antenna

Troposcatter Antennas



The Strength to Perform

Description

The VertexRSI Model LRF-3 Long Range Fixed Troposcatter Antenna (LRF-3) is used for troposcatter or high-volume microwave applications. The LRF-3 has a parabolic reflector with a diameter of 29.5 feet (9 meters).

The antenna is comprised of sixteen panels and trusses, interlocked both radially and circumferentially and interconnected at intervals with a system of diagonal braces. The assembly is terminated in the center upon a vertex hub and A-frame that is mounted on the modular steel tower. This creates a rigid, strong antenna that maintains its structural integrity and electrical performance over the broad range of specified conditions.

The process of assembly and deployment is engineered for simplicity. The reflector and feed system are assembled on the ground before being raised for attachment to the support structure.

The feed system is a dual-polarized feed that can operate in various frequency bands. The reflector is prefitted with fixture-controlled attachment points for locating the feed assembly. The position of the focal point for the feed can be restored reliably even after numerous installations and removals of the feed system. This feature also ensures that, if desired, the operating frequency band of the antenna system may be shifted by substituting another feed assembly.

Features

- Sidelobe performance meets all international and domestic specifications
- Easy assembly and deployment
- Meets TIA/EIA-222-F-1996

Options

- Additional frequency bands available
- De-iced feed
- Tower design with 7 ft (2.1 m) incremental height options

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Technical Specifications

Electrical*	
Frequency (GHz)	4.40 - 5.00
Antenna Gain at Feed Flange	
4.4 GHz	49.8 dBi
4.7 GHz	50.4 dBi
5.0 GHz	50.9 dBi
Beamwidth (in degrees at midband)	0.50
Cross Polarization Isolation (on axis)	30.0 dB
VSWR (at feed flange)	1.30:1
Power	5 kW CW
1st Sidelobe Performance	-20 dB minimum
RF Specification	975-1359

Mechanical	
Reflector Material	Aluminum
Antenna Optics	Dual polarized prime focus
Adjustment Range	
Elevation	±2°
Azimuth	±5°
Antenna and Tower Weight	16,000 lbs. (7,300 kg)
Shipping Weight	17,000 lbs. (7,700 kg)
Tower Cross Section	8 ft x 10 ft (2.4 m x 3 m)
Height to Center of Reflector (nominal)	24.6 ft (7.5 m)
Reflector RMS	0.060 in (1.5 mm)
Estimated Installation Time	5 days (3-person crew, excluding foundation)

Environmental	
Wind Loading (no ice)	
Operational	100 mph (161 km/h)
Survival	125 mph (201 km/h)
Temperature Range	+14° to +140° F (-10° to +60° C)
Atmospheric Conditions	Salt, pollutants and contaminants as encountered in coastal and industrial areas
Solar Radiation	360 BTU/h/ft ² (1000 Kcal/h/m ²)
Rain	4.0 in/h (100 mm/h) @ 40 mph (65 km/h) wind speed
Altitude	
Operating	10,000 ft (3,000 m)
Non-Operating	40,000 ft (12,000 m)
Sand and Dust	1.1 ± 0.3 g/m ³ with wind speed 59 ft/s (18 m/s) with particle sizes ranging from 150 to 850 micrometers

* Patterns available upon request.

GENERAL DYNAMICS

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