



The 13.5 meter Earth station antenna is ideally suited to high-performance Ka-band geostationary applications. The shaped Cassegrain reflector provides superior gain and sidelobe performance at Ka-band frequencies.

The 13.5 M Ka-band Antenna is designed for high-performance Ka-band Geo-stationary satellite applications. The shaped cassegrain reflector provides superior gain and sidelobe performance at Ka-band frequencies. Improved high precision stretch formed panels are supported by strong radial trusses attached to a large central hub. Spars support a precision machined subreflector.

All aluminum reflector materials, coated with a solar diffusive white paint, minimize thermal effects at Ka-band. The reflector back structure and subreflector spars are designed to exacting Ka-band rigidity requirements under wind and gravity loads.

The oversized hub provides a protective enclosure for sensitive electronics with ample space for equipment such as HPAs, with easy access from the large extended work platform. Locating HPAs within the hub minimizes TX path losses.

The precision steel mount delivers Ka-band pointing accuracy in adverse wind conditions. The pedestal design features a precision azimuth bearing and very low backlash for high performance.

ViaSat's Antenna Control Units are ideally suited for controlling the Ka-band antenna, offering full DC servo performance and adaptive step tracking or monopulse autotrack options depending on the desired tracking accuracy.

### 13.5 METER AT-A-GLANCE

- » Antenna patterns compliant with FCC, ITU, and Eutelsat regulations
- » High efficiency shaped Cassegrain optics
- » Both 2-port and 4-port circularly and linearly polarized feeds available
- » Precision structural steel mount
- » CE compliant Antenna Controller and tracking options available
- » Easily accessible space for electronics packages with roll-up door access
- » Standard accessories include large work platform and ladder, foundation template and anchor bolts, lightning protection kit

### OPTIONS

- » De-icing
- » HPA/LNA mounting
- » Environmentally controlled hub
- » Alternate Frequency Band

## ELECTRICAL

### OPERATING FREQUENCY<sup>1</sup> (GHz)

Receive	17.7 – 20.2
Transmit	27.5 – 30.0

### GAIN (REF FEED HORN)

17.70 GHz	66.6 dBi
18.95 GHz	67.2 dBi
20.20 GHz	67.7 dBi
27.50 GHz	70.2 dBi
28.75 GHz	70.5 dBi
30.00 GHz	70.7 dBi

### FEED INSERTION LOSS<sup>2</sup> (dB, 4-pt CP, TRACKING):

Receive	< 0.65 dB
Transmit	< 0.63 dB

### BEAMWIDTH (3 dB)

Receive	0.08° nominal
Transmit	0.05° nominal

### FEED SYSTEM

4-port Tx/Rx circular polarization  
TE21 tracking coupler  
WR34 Tx ports / WR42 Rx ports  
500 W CW transmit power per port  
85 dB Tx/Rx isolation  
18 dB Tx/Tx and Rx/Rx isolation

VSWR (Tx/Rx) 1.25:1

### POLARIZATION

Sense	Simultaneous RHC & LHC
Axial Ratio	1.06:1 (0.50 dB)

Pattern Envelope Compliant to ITU 580-5, FCC 25.209

### ANTENNA NOISE TEMPERATURE

Clear sky, 20° C, ref feed horn:

Elevation	@17.7 GHz	@20.2 GHz
10°	62 K	103 K
30°	30 K	47 K
40°	25 K	39 K

## MECHANICAL

OPTICS Dual reflector, axis-symmetric

### REFLECTOR

Diameter:	13.56 meters (44.5 ft)
Panels:	36, precision aluminum, 2 tiers
Alignment:	Optical

MOUNT TYPE EL-over-AZ

### AXIS DRIVES

Elevation	Jackscrew, 0.25°/sec, Options to 0.5°/sec
Azimuth	Geared Bearing Dual Drive, 0.5°/sec, Options to 1.0°/sec

### ANTENNA TRAVEL

Elevation	0° to 90° continuous
Azimuth	70° sectors (jackscrew) or ±180° continuous (gear driven)

### HUB ENCLOSURE

Width	82 in (208 cm)
Depth	48 in (121 cm)

## ENVIRONMENTAL

### TEMPERATURE

Operational	-30° C to +55° C
Optional Range	-40° C to +55° C

### WIND

Operational	72 km/h gusting to 97 km/h
Survival	70° Az: 200 km/h any position ±180° Az: 130 km/h any position, 200 km/h stow

### ATMOSPHERIC CONDITIONS

Salt, pollutants, and corrosive contaminants as found in coastal and industrial areas

### DEICING (Optional)

Main reflector	Hot air
Subreflector	Resistive heaters
Feed	Resistive heaters

## NOTES

<sup>1</sup> Other 2.5 GHz wide frequency bands within 17.7 – 21.2 GHz and 27.5 – 31.0 GHz bands available

<sup>2</sup> Waveguide to hub not included



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