



The 7.3 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.

High precision stretch formed panels are supported by strong radial trusses attached to a large central hub. Spars support a high-precision machined subreflector.

Thermal effects at Ka-band are minimized by aluminum reflector materials coated with solar diffusive white paint. The reflector back structure and subreflector spars are designed to stringent 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. The large extended work platform provides easy access to the hub. Transmit path losses are improved by storing the HPAs in the hub.

The precision steel mount delivers extremely accurate Ka-band pointing even under 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.

7.3 METER AT-A-GLANCE

- » Antenna patterns compliant with FCC, ITU, and Eutelsat regulations
- » High efficiency shaped Cassegrain optics
- » 2-port and 4-port circularly and linearly polarized feeds available
- » Precision structural steel mount
- » CE compliant Antenna Controller with adaptive step tracking or monopulse autotrack options available
- » Roll-up door provides easy access to electronics packages
- » 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
- » Large riser with HVAC for equipment mounting

Model VA-73-KA 7.3 Meter Ka-Band Broadband Gateway Earth Station Antenna Specifications

ELECTRICAL

OPERATING FREQUENCY (GHz)

Receive	17.7 – 20.2
Transmit	27.5 – 30.0

GAIN (REF FEED HORN)

17.70 GHz	61.0 dBi
18.95 GHz	61.6 dBi
20.20 GHz	62.3 dBi
27.50 GHz	64.5 dBi
28.75 GHz	64.8 dBi
30.00 GHz	65.2 dBi

FEED INSERTION LOSS (dB, 4-PT CP, TRACKING)

Receive	<0.65 dB
Transmit	<0.63 dB

BEAMWIDTH (3 dB)

Receive	0.14° nominal
Transmit	0.09° nominal

Feed System

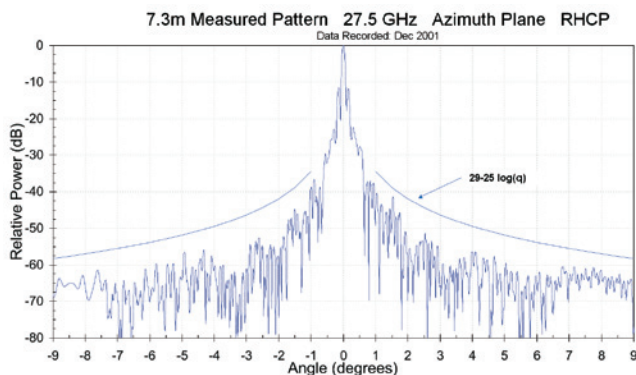
4-port Tx/Rx circular polarization
TE21 tracking coupler
WR34 Tx ports / WR42 Rx ports
500 W CW transmit power per port
85 dB Tx/Rx isolation
18 dB Tx/Tx and Rx/Rx isolation

VSWR (Tx/Rx)	1.25:1
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POLARIZATION

Sense	Simultaneous RHCP & LHCP
Axial Ratio	1.06:1 (0.50 dB)

Pattern Envelope	Compliant to ITU 580-5, FCC 25.209
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ANTENNA NOISE TEMPERATURE

Clear sky, 20° C, ref feed horn:

Elevation	@17.7 GHz	@20.2 GHz
10°	61 K	102 K
30°	34 K	51 K
40°	31 K	45 K

Note: Other 2.5 GHz wide frequency bands within 17.7 – 21.2 GHz and 27.5 – 31.0 GHz bands available

MECHANICAL

OPTICS

Dual reflector, axis-symmetric

REFLECTOR

Diameter	7.3 meters (288 inches)
Panels	16, precision aluminum

MOUNT TYPE

Elevation over Azimuth

AXIS DRIVES

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

ANTENNA TRAVEL

Elevation	0° to 90° continuous
Azimuth	180° continuous

HUB ENCLOSURE

Width	82 in (208 cm)
Depth	44 in (121 cm)

ENVIRONMENTAL

TEMPERATURE

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

WIND

Operational	72 km/hr gusting to 97 km/h
Survival	200 km/hr (stow mode)

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



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		ViaSat-1 7.3M Ka-Band Pattern Summary								* FCC Envelope	
	Transmit Patterns	Freq	AUT Pol	AUT Plane	SPAN	Amp Scale	Tx Pol	Tx Dia. (Ft)	Range Setup	Pattern #	Notes:
1		27.5	RHC	Az	90	80	RHC	Corr hrn	Elevated	112192	Page 3
2		27.5	RHC	Az	18	80	RHC	Corr hrn	Elevated	112191	
3		28.4	RHC	Az	90	80	RHC	Corr hrn	Elevated	112198	
4		28.4	RHC	Az	18	80	RHC	Corr hrn	Elevated	112199	
5		29.10	RHC	Az	90	80	RHC	Corr hrn	Elevated	112202	Page 4
6		29.10	RHC	Az	18	80	RHC	Corr hrn	Elevated	112203	
7		30	RHC	Az	90	80	RHC	Corr hrn	Elevated	112183	
8		30	RHC	Az	18	80	RHC	Corr hrn	Elevated	112186	
9		27.5	RHC	EI	90	80	RHC	Corr hrn	Elevated	112206	Page 5
10		27.5	RHC	EI	18	80	RHC	Corr hrn	Elevated	112207	
11		28.4	RHC	EI	90	80	RHC	Corr hrn	Elevated	112211	
12		28.4	RHC	EI	18	80	RHC	Corr hrn	Elevated	112222	
13		29.10	RHC	EI	90	80	RHC	Corr hrn	Elevated	112225	Page 6
14		29.10	RHC	EI	18	80	RHC	Corr hrn	Elevated	112226	
15		30	RHC	EI	90	80	RHC	Corr hrn	Elevated	112642	
16		30	RHC	EI	18	80	RHC	Corr hrn	Elevated	112643	
17		27.5	LHC	Az	90	80	LHC	Corr hrn	Elevated	112601	Page 7
18		27.5	LHC	Az	18	80	LHC	Corr hrn	Elevated	112602	
19		28.4	LHC	Az	90	80	LHC	Corr hrn	Elevated	112607	
20		28.4	LHC	Az	18	80	LHC	Corr hrn	Elevated	112608	
21		29.10	LHC	Az	90	80	LHC	Corr hrn	Elevated	112611	Page 8
22		29.10	LHC	Az	18	80	LHC	Corr hrn	Elevated	112613	
23		30	LHC	Az	90	80	LHC	Corr hrn	Elevated	112616	
24		30	LHC	Az	18	80	LHC	Corr hrn	Elevated	112617	
25		27.5	LHC	EI	90	80	LHC	Corr hrn	Elevated	112620	Page 9
26		27.5	LHC	EI	18	80	LHC	Corr hrn	Elevated	112621	
27		28.4	LHC	EI	90	80	LHC	Corr hrn	Elevated	112624	
28		28.4	LHC	EI	18	80	LHC	Corr hrn	Elevated	112625	
29		29.10	LHC	EI	90	80	LHC	Corr hrn	Elevated	112628	Page 10
30		29.10	LHC	EI	18	80	LHC	Corr hrn	Elevated	112629	
31		30	LHC	EI	90	80	LHC	Corr hrn	Elevated	112632	
32		30	LHC	EI	18	80	LHC	Corr hrn	Elevated	112633	

* FCC envelope added per FCC 25.209

	Test	Freq	AUT Pol	AUT Plane	SPAN	Amp Scale	Tx Pol	Tx Dia. (Ft)	Range Setup	Pattern #	Notes:
	Receive Patterns										
33		17.7	RHC	Az	90	80	RHC	Corr hrn	Elevated	112547	Page 11
34		17.7	RHC	Az	18	80	RHC	Corr hrn	Elevated	112548	
35		18.6	RHC	Az	90	80	RHC	Corr hrn	Elevated	112552	
36		18.6	RHC	Az	18	80	RHC	Corr hrn	Elevated	112551	
37		19.30	RHC	Az	90	80	RHC	Corr hrn	Elevated	112556	Page 12
38		19.30	RHC	Az	18	80	RHC	Corr hrn	Elevated	112557	
39		20.2	RHC	Az	90	80	RHC	Corr hrn	Elevated	112561	
40		20.2	RHC	Az	18	80	RHC	Corr hrn	Elevated	112560	
41		17.7	RHC	EI	90	80	RHC	Corr hrn	Elevated	112575	Page 13
42		17.7	RHC	EI	18	80	RHC	Corr hrn	Elevated	112576	
43		18.6	RHC	EI	90	80	RHC	Corr hrn	Elevated	112580	
44		18.6	RHC	EI	18	80	RHC	Corr hrn	Elevated	112579	
45		19.30	RHC	EI	90	80	RHC	Corr hrn	Elevated	112585	Page 14
46		19.30	RHC	EI	18	80	RHC	Corr hrn	Elevated	112586	
47		20.2	RHC	EI	90	80	RHC	Corr hrn	Elevated	112590	
48		20.2	RHC	EI	18	80	RHC	Corr hrn	Elevated	112589	
49		17.7	LHC	Az	90	80	LHC	Corr hrn	Elevated	112510	Page 15
50		17.7	LHC	Az	18	80	LHC	Corr hrn	Elevated	112511	
51		18.6	LHC	Az	90	80	LHC	Corr hrn	Elevated	112514	
52		18.6	LHC	Az	18	80	LHC	Corr hrn	Elevated	112515	
53		19.30	LHC	Az	90	80	LHC	Corr hrn	Elevated	112519	Page 16
54		19.30	LHC	Az	18	80	LHC	Corr hrn	Elevated	112520	
55		20.2	LHC	Az	90	80	LHC	Corr hrn	Elevated	112523	
56		20.2	LHC	Az	18	80	LHC	Corr hrn	Elevated	112524	
57		17.7	LHC	EI	90	80	LHC	Corr hrn	Elevated	112527	Page 17
58		17.7	LHC	EI	18	80	LHC	Corr hrn	Elevated	112529	
59		18.6	LHC	EI	90	80	LHC	Corr hrn	Elevated	112533	
60		18.6	LHC	EI	18	80	LHC	Corr hrn	Elevated	112534	
61		19.30	LHC	EI	90	80	LHC	Corr hrn	Elevated	112539	Page 18
62		19.30	LHC	EI	18	80	LHC	Corr hrn	Elevated	112540	
63		20.2	LHC	EI	90	80	LHC	Corr hrn	Elevated	112544	
64		20.2	LHC	EI	18	80	LHC	Corr hrn	Elevated	112543	

