



Overview

The Advantech Wireless A-Line Series model 3913TKATHA, 13.5M antenna system, designed and manufactured with CAD, is designed to meet the most stringent requirements of high throughput, high power, Ka-Band Satellite Transmission links. The antenna design meets the CCIR 580-5 mandatory requirements

The antenna system consists of dual shaped Cassegrain reflectors, RF subsystem, with Advanced Satellite Tracking, antenna structure subsystem, safety devices, motorization kits per AZ, El, and Pol. Axis and foundation anchoring kits. The backup structure for the reflector, the hub connecting the main reflector with mount and the pedestal provides the guaranteed pointing accuracy required in normal operation.

The main reflector diameter includes back panels for enclosure with incorporated deicing system, and temperature controlled heaters. The main purpose is to ensure temperature conformity on reflector assembly and prevent deformations caused by temperature changes.

Advantech Wireless A-Line Series antenna system is characteristic of high gain, low sidelobes, low cross polarization, capable for frequency reuse both in transmit and receive bands, high driving/control accuracy with angle position display in high resolution.



Antenna Specifications

R.F Specifications		
13.5 M Ka-band 4-port Frequency Reuse Dual CP Feed	Ka-Band	
	Receive	Transmit
Frequency in GHz	18.1-19.7	27.5-29.6
Tracking Frequency	18.1-19.7 GHz	
Gain (dBi)	66.67+ 20lg[f(GHz)/19.7]	70.18 + 20lg[f(GHz)/29.5]
G/T (dB/k) at El.=20 Deg, Clear Sky and Light Wind (Temp LNA=150K)	> 41.93+ 20LgF/19.7 dBk (Ta=150K)	
Sidelobe Patterns	First Sidelobe level ≤-14 +/- 2dB Wide Angle Sidelobes : Comply with ITU R-S.580-6	
VSWR	1.35:1	
Axial Ratio	1.06:1	
3dB Beamwidth	0.078Deg at 19.7 GHz	0.053Deg at 29.5 GHz
Polarization	RHCP/LHCP	LHCP/RHCP
Feed Insertion or Ohmic Loss	0.75 dB	0.50dB
Power Handling Capability	500W CW at Transmit per port	
Port to Port Isolation		
Tx to Rx	≥85dB(Provided by the feed itself)	
Rx to Rx	≥20dB	
Tx to Tx	≥20dB	
Rx to TX	≥50dB	
Tx to Tracking	85 dB min	
Feed Interfaces	WR42	WR34
Tracking	N-type	
Air Pressure	Max: 1.5 PSI, Normal : 0.5 PSI	

A-Line Series 13.5 m Ka-band ANTENNA



Antenna Specifications

Mechanical Specifications	
Antenna Type	Modified Cassegrain Antenna
Diameter of main reflector	13.5 meters
Surface accuracy of main reflector	< 0.3 mm
Surface accuracy of sub reflector	< 0.15 mm
Feed Type: RX: 2-port TX: 2-port	4 port Frequency Reuse Dual CP Feed
Antenna Drive	Az: Dual motor anti-backlash El: Jackscrew
Azimuth Travel	+/- 110° continuous
Elevation Travel	5° to 90° continuous
Hub Air-conditioning	2P
Power De-icing for reflector	54 KW
Physical	
Ambient Temperature	-40°C to 55°C Operational
Operational Wind	72Km/h gusting to 100km/h
Survival Wind	200Km/h at El = 90 deg
Degraded Operation Wind	72 Km/h gusting to 100 Km/h
Rain	up to 4 in/h(10cm/h), lasting 10 minutes
Relative Humidity	100%
Solar Radiation	1.2 Kw/sqm
Seismic(Survival)	0.3G's horizontal 0.1G's vertical

Tracking/Pointing Specifications

No.	Item Description	Specifications
1	Tracking Frequency Range	19.7–20.2GHz
2	Travel Range	Az: ±110° continuous El: 0° to 90° continuous
3	Axis Velocity	Max: Az. 0.5°/s, El: 0.2°/s;
4	Position Read-out	≤ 0.001°
5	Tracking accuracy,	≤0.0024° (at Monopluse Track for GEO), No wind ≤0.0027° (at Monopluse Track for GEO), with wind gusting to 72km/h
6	Pointing accuracy	≤0.008° rms No wind ≤0.012° rms wind gusting to 72km/h
7	Power supply	220V+/- 10% single phase ,50Hz within 4.5%; 380V+/- 10% three phase ,50Hz within 4.5%; Other power requirement available.

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Ref.: PB-AW-ALINE-13.5m-Ka-13310