



Overview

The Advantech Wireless A-Line Series models 3913TCX, 3913TCK, 13M antenna system, designed and manufactured with CAD, can be applied to the newly updated INTELSAT (IESS) standard earth station.

The antenna system consists of dual shaped Cassegrain reflectors, a frequency reuse feed network with corrugated horn, an elevation-over-azimuth limit motion kingpost pedestal. 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 consists of 80 precision stretch formed aluminum panels riveted with the rings and radials in three rings.

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.

The radiation patterns meet the associated requirements of INTELSAT (IESS), FCC and CCIR for 2 degree spacing location of geostationary satellites.

A-Line Series 13m ANTENNA

Antenna Specifications

R.F Specifications		
GREGORAIN ANTENNA With 4-PORT 2Tx/2Rx Circular Pol FEED	X-Band	
	Receive	Transmit
Frequency in GHz	7.25-7.75	7.9-8.4Ghz
Gain	57.9+ 20lg[f(GHz)/7.5]	58.8 + 20lg[f(GHz)/8.25]
Antenna Noise Temp.		
5°Elevation	74k with TRF	
10°Elevation	65k with TRF	
20°Elevation	58k with TRF	
40°Elevation	45k with TRF	
Sidelobe Pattern	First sidelobe level \leq -14dB Beyond first sidelobe meet IESS(Intelsat) or CCIR 580 Recommendation	
VSWR	1.25:1	
Axial Ratio (CP only)	1.09:1	1.09:1
3dB Beamwidth	0.215Deg	0.196Deg
Polarization	RHCP/LHCP	LHCP/RHCP
Feed Insertion or Ohmic Loss	0.70 dB	0.70dB
Power Handling Capability	1kw cw	
Port to Port Isolation		
Tx to Rx	\geq 70dB(with TRF)	
Rx to Rx	\geq 20dB	
Tx to Tx	\geq 20dB	
Feed Interfaces	WR112	WR112
R.F Specifications		
Dual Shaped Cassegrain Antenna With 4-PORT 2Tx/2Rx Linear POL Feed	Ku-Band	
	Receive	Transmit
Frequency in GHz*	10.95-12.75	13.75-14.5 Ghz
Gain	62.6+ 20lg[f(GHz)/12.5]	63.6+ 20lg[f(GHz)/14.25]
Antenna Noise Temp.		
5°Elevation	87k with TRF	
10°Elevation	73k with TRF	
20°Elevation	65k with TRF	
40°Elevation	50k with TRF	
Sidelobe Pattern	First sidelobe level \leq -14dB Beyond first sidelobe meet IESS(Intelsat) or CCIR 580-4 Recommendation	
Cross Pol. Discrimination	35dB (On axis)	30dB (within 1 dB Beamwidth)
VSWR	1.30:1	1.30:1
3dB Beamwidth	0.13°	0.11°
Feed Insertion or Ohmic Loss	0.50dB	0.60dB
Power Handling Capability	1kw cw (2kw High power Option) per port	
Port to Port Isolation		
Tx to Rx	\geq 85dB(with TRF)	
Rx to Rx	\geq 30dB	
Tx to Tx	\geq 30dB	
Feed Interfaces	WR75	WR75

A-Line Series 13m ANTENNA



Antenna Specifications

R.F Specifications		
Dual Shaped Cassegrain Antenna With 4-PORT 2Tx/2Rx Linear POL Feed	C-Band	
	Receive	Transmit
Frequency in GHz*	3.625-4.200 3.400-4.200 (optional)	5.850-6.425 5.850- 6.650 (optional)
Gain	53.1+ 20lg[f(GHz)/4]	56.6+ 20lg[f(GHz)/6]
Antenna Noise Temp	Standard C-Band	Extended C-Band optional
5°Elevation	48k with TRF	54k with TRF
10°Elevation	36k with TRF	46k with TRF
20°Elevation	29k with TRF	36k with TRF
40°Elevation	24k with TRF	30k with TRF
Sidelobe Pattern	First sidelobe level ≤ -14 dB Beyond first sidelobe meet IESS(Intelsat) or CCIR 580-4 Recommendation	
Cross Pol. Discrimination	35dB (On axis) 30dB (within 1 dB Beamwidth)	
VSWR	1.30:1(LP) 1.25:1(CP)	1.30:1(LP) 1.25:1(CP)
Axial Ratio (CP only)	1.06:1	1.06:1
Feed Insertion or Ohmic Loss	0.30dB	0.30dB
Power Handling Capability	3kw cw per Tx port (5KW CW high power per port Optional)	
Port to Port Isolation		
Tx to Rx	≥ 85 dB(with TRF)	
Rx to Rx	≥ 30 dB	
Tx to Tx	≥ 22 dB	
Feed Interfaces	CPR-229	CPR-137

A-Line Series 13m ANTENNA

Antenna Specifications

Mechanical Specifications	
Azimuth Travel	180°(in two overlapped 100°deg sectors)
Travel Rate for Az and El	0.1°/second
Elevation Travel	0°to 90°Continuous
Elevation Travel Rate	0.1°/second *
Polarization Travel	±45°
Tracking travel rate for Az and El	0.012°/second
Reflector	Steel
Pedestal Structure	Steel
Finish	Aluminium panels with high-diffusive white paint, steel part with Hot-Zinc Spray
Antenna Drive Mode	
Physical	
Ambient Temperature	-40°C to 60°C (survival) , -15°C to 50°C (Operational)
Operational Wind	72km/h gusts to 97km/h
Survival Wind	200km/hm
Rain	up to 4 in/h(10cm/h), lasting 10 minutes
Relative Humidity	up to 100% with condensation
Solar Radiation	1000 kcal/M ² /h
Radial Ice (Survival)	25mm on all surface or 13mm on all surface with 130km/h wind gusts
Shock and Vibration	As encountered during shipment by commercial air, sea or truck
Corrosive atmosphere	As encountered in coastal regions and/or heavily industrialized areas
Seismic(Survival)	0.3G's horizontal 0.1G's vertical

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