Overview

The Advantech Wireless A-Line Series models 3920TCX, 3920TC: 20M and 3916TCX, 3916TC: 16M antenna systems are designed and manufactured with CAD and can be applied to the newly updated INTELSAT (IESS) standard A earth station.

The Advantech Wireless A-Line Series antenna system consists of dual shaped Cassegrain reflectors, a frequency reuse feed network with corrugated horn, an elevation-over-azimuth limit motion kingpost pedestal for limit motion or a turntable mount for full motion. 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 precision stretch formed aluminium panels riveted with the rings and radials in three rings.

The 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 16m-20m ANTENNA

Antenna Specifications

R.F Specifications		
20M 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	61.7+ 20lg[f(GHz)/7.5]	62.5 + 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	54k with TRF	
Sidelobe Pattern	First sidelobe level ≤-14dB Beyond first sidelobe meet IESS(Intelsat) or CCIR 580	
VSWR	1.25:1	
Axial Ratio (CP only)	1.09:1	1.09:1
3dB Beamwidth	0.14Deg	0.127Deg
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	≥70dB(with TRF)	
Rx to Rx	≥20dB	
Tx to Tx	≥20dB	
Feed Interfaces	WR112	WR112

R.F Specifications		
16M Dual Shaped Cassegrain 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	59.7+ 20lg[f(GHz)/7.5]	60.5 + 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	54k with TRF	
Sidelobe Pattern	First sidelobe level ≤-14dB Beyond first sidelobe meet IESS(Intelsat) or CCIR 580	
VSWR	1.25:1	1.25:1
3dB Beamwidth	0.175Deg	0.159Deg
Axial Ratio (CP only)	1.09:1	1.09:1
Feed Insertion or Ohmic Loss	0.70dB	0.70dB
Power Handling Capability	1kw	
Port to Port Isolation		
Tx to Rx	≥70dB(with TRF)	
Rx to Rx	≥20dB	
Tx to Tx	≥20dB	
Feed Interfaces	WR112	WR112

A-Line Series 16m-20m ANTENNA

Antenna Specifications

R.F Specifications		
16M Dual Shaped Cassegrain Antenna With 4-PORT 2Tx/2Rx Linear POL Feed	C-Band	
	Receive	Transmit
Frequency in GHz*	3.625-4.200	5.850-6.425
Gain	55+ 20lg[f(GHz)/4]	58.2+ 20lg[f(GHz)/6]
Antenna Noise Temp.		
5°Elevation	48k with TRF	
10°Elevation	36k with TRF	
20°Elevation	29k with TRF	
40°Elevation	24k with TRF	
Sidelobe Pattern	First sidelobe level ≤-14dB Beyond first sidelobe meet IESS(Intelsat) or CCIR 580-5	
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)
3dB Beamwidth	0.30°	0.20°
Axial Ratio (CP only)	1.06:1	1.06:1
Feed Insertion or Ohmic Loss	0.30dB	0.30dB
Power Handling Capability	5kw cw per port	
Port to Port Isolation		
Tx to Rx	≥85dB(with TRF)	
Rx to Rx	≥30dB	
Tx to Tx	≥30dB	
Feed Interfaces	CPR-229G	CPR-137G

R.F Specifications		
16M Dual Shaped Cassegrain Antenna With 4-PORT 2Tx/2Rx Linear POL Feed	Full C-Band	
	Receive	Transmit
Frequency in GHz	3.4 -4.200	5.850-6.65
Gain	54.8+ 20lg[f(GHz)/4]	58.2+ 20lg[f(GHz)/6]
Antenna Noise Temp.		
5°Elevation	54k with TRF	
10°Elevation	46k with TRF	
20°Elevation	36k with TRF	
40°Elevation	30k with TRF	
Sidelobe Pattern	First sidelobe level ≤-14dB Wide sidelobes meets IESS, Eutelsat and CCIR 580.	
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)
3dB Beamwidth	0.30°	0.20°
Axial Ratio (CP only)	1.06:1	1.06:1
Feed Insertion or Ohmic Loss	0.30dB	0.30dB
Power Handling Capability	5kw cw per port	
Port to Port Isolation		
Tx to Rx	≥85dB(with TRF)	
Rx to Rx	≥30dB	
Tx to Tx	≥20dB	
Feed Interfaces	CPR-229G	CPR-137G

A-Line Series 16m-20m 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 *
Tracking travel rate for Az and El	0.01°/second
Reflector	Steel
Pedestal Structure	Steel
Finish	Aluminium panels with high-diffusive white paint, steel part with Hot-Zinc Spray
Physical	
Ambient Temperature	-40ºC to 60°C (survival) , -15ºC 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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