

NWIEE 9 METER EARTH STATION ANTENNA



NWIEE developed the high performance 9M antenna which can operate at C-band or Ku band for world wide application.

The 9M antenna system, designed and manufactured by NWIEE with CAD, can be applied to the newly updated INTELSAT (IESS) standard B and E earth station.

The antenna system consists of dual shaped Cassegrain reflectors, a frequency reused 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 C band and Ku band operations.

The main reflector consists of 48 precision stretch formed aluminum panels riveted with the rings and radials in three rings.

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° spacing location of geostationary satellites.

NWIEE 9M DUAL SAHAPED CASSEGRAIN ANTENNA IN C-OR KU-BAND WITH 4-PORT. LINEAR/CIRCULAR POL. FEED				
R.F. Specification	C-Band		Full C band	
	Receive	Transmit	Receive	Transmit
Frequency in GHz	3.625-4.2	5.850-6.425	3.4-4.200	5.85-6.65
Gain at mid band	50.00	53.20	49.90	53.10
Ant. Noise Temp.				
5° Elevation	48K		54K	
10° Elevation	36K		46K	
20° Elevation	29K		36K	
40° Elevation	24K		30K	
-3dB beamwidth	0.56°	0.36°	0.56°	0.36°
Sidelobe Pattern	First sidelobe level \square -14dB Beyond first sidelobe meet IESS(Intelsat) or CCIR 580-5 Recommendation			
Cross-Pol. Discrimination	35dB (On axis) 30dB (within 1 dB Beamwidth)			
VSWR	1.3:1 (LP) 1.25:1 (CP)	1.3:1 (LP) 1.25:1 (CP)	1.3:1 (LP) 1.25:1 (CP)	1.3:1 (LP) 1.25:1 (CP)
Axial Ratio (CP only)	0.50dB	0.50dB	0.50dB	0.50dB
Feed Insertion or Ohmic Loss	0.30 dB	0.30dB	0.30dB	0.30dB
Power Handling Capability	5 Kw per port		5Kw per port	
Port to Port Isolation				
Tx/Rx	85dB		85 dB	
Rx/Rx , Tx/Tx	20dB (CP) 30dB(LP)		20dB (CP) 30dB(LP)	

Feed Interfaces	CPR-229F	CPR-137F	CPR-229F	CPR-137F
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NWIEE 9M CASSEGRAIN ANTENNA IN Ku-BAND WITH 4-PORT FEED		
R.F. SPECIFICATION	RECEIVE	TRANSMIT
Frequency in GHz	10.95-12.75	13.75-14.50
Gain	59.20+20lg[f(GHz)/12.5]	60.20+20lg[f(GHz)/14.25]
Antenna Noise Temperature		
5° Elevation	87k	
10° Elevation	73k	
20°Elevation	65k	
40°Elevation	50k	
Sidelobe	First sidelobe level <= - 14dB Beyond first sidelobe meet IESS(Intelsat) or CCIR 580-5 Recommendation	
Cross Polarization Isolation(LP only)		
On Axis	35dB	35dB
Within 1 dB Beamwidth	30dB	30dB
Axial Ratio(CP only) ,dB	0.5dB	0.5dB
-3dB Beamwidth	0.19°	0.16°
VSWR	1.3:1 (LP) 1.25:1(CP)	1.3:1(LP) 1.25:1(CP)
Feed Insertion or Ohmic Loss	0.50dB	0.60dB
Port to Port Isolation		
Tx to Rx	85dB	
Rx to Rx	CP: 20dB LP: 30dB	
Tx to Tx	CP: 20dB LP: 30dB	
Feed Interfaces	WR 75	WR 75
Total Power Handling Capability	1kw cw	

NWIEE 9M ANTENNA MECHANICAL SPECIFICATIONS	
Pedestal Type	Limited Motion, El.over Az., Kingpost
Azimuth Travel	180° in two 100° overlapping sectors
Elevation Travel	0° to 90°
Polarization Travel	± 90°
Reflector	Stretch-formed aluminum panel
Backup Structure	Steel
Pedestal Structure	Steel
Finish	
Reflector Surface	Aluminum panels with heat-diffusing white
Pedestal and Steel Structure	Hot-dipped galvanization
Antenna Drive Mode	AC motor Drive per Az, El and Pol.

NWIEE 9M ANTENNA ENVIRONMENTAL SPECIFICATIONS	
Operation Wind	50km/h gusts to 97km/h
Survival Wind	200km/h
Ambient Temperature	-30°C to 50°C
Rain	up to 100mm/h Operational and Survival
Relative Humidity	up to 100% Operational and Survival
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
Corrosive atmosphere	As encountered in coastal regions and/or heavily industrialized areas
Seismic(Survival)	0.3G's horizontal 0.1G's vertical