

## NWIEE 13 METER EARTH STATION ANTENNA



The model 3913TC&K, 13M antenna system, designed and manufactured by NWIEE 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.

Antenna system is characteristic of high gain, low side lobes, 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.

<b>NWIEE 13M DUAL SHAPED CASSEGRAIN ANTENNA With 4-PORT 2Tx/2Rx LINEAR POL FEED</b>		
<b>R.F. Spec.</b>	<b>Receive</b>	<b>Transmit</b>
Frequency in GHz*	10.95-12.75	13.75-14.5Ghz
Gain	$62.6+20\lg[f(\text{GHz})/12.5]$	$63.6+20\lg[f(\text{GHz})/14.25]$
Antenna Noise Temp. 5° Elevation 10° Elevation 20° Elevation 40° Elevation	87k 73k 65k 50k	
Antenna Sidelobe Pattern	First sidelobe level $\leq -14\text{dB}$ . Wide sidelobes meets IESS, Eutelsat and CCIR 580-4.	
Cross Pol. Discrimination on Axis Within 1dB Beamwidth	35dB 30dB	35dB 30dB
VSWR	1.30:1	1.30:1
-3dB Beamwidth	0.13°	0.11°
Feed Insertion or Ohmic Loss	0.5dB	0.6dB
Power Handling Capability	1kw cw (2kw High power Option) per port	
Port to Port Isolation	Tx - Rx $\geq 85\text{dB}$ (with TRF) Tx - Tx $\geq 30\text{dB}$ Rx - Rx $\geq 30\text{dB}$	
Feed Interfaces	WR75	WR75

\*DBS Frequency Band available.

NWIEE 13M DUAL SHAPED CASSEGRAIN ANTENNA With 4-PORT 2Tx/2Rx Linear and Circular Pol FEED		
R.F. Spec.	Receive	Transmit
Frequency in GHz	3.625-4.200 3.400-4.200	5.850-6.425 5.850-6.650
Gain	$53.1+20\lg[f(\text{GHz})/4]$	$56.6+20\lg[f(\text{GHz})/6]$
Antenna Noise Temp. 5° Elevation 10° Elevation 20° Elevation 40° Elevation	54k with TRF 46k with TRF 36k with TRF 30k with TRF	
Antenna Sidelobe Pattern	First sidelobe level $\leq -14\text{dB}$ . Wide sidelobes meets IESS, Eutelsat and CCIR 580-4.	
Cross Pol. Discrimination on Axis Within 1dB Beamwidth	35dB 30dB	35dB 30dB
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	0.3 dB	0.3dB
Total Power Handling Capability	3kw cw per Tx port (5KW CW high power per port Optional)	
Port to Port Isolation	Tx - Rx $\geq 85\text{dB}$ (with TRF) Tx - Tx $\geq 30\text{dB}$ (LP) Tx - Tx $\geq 22\text{dB}$ (CP)	
Feed Interfaces	CPR-229	CPR-137

### NWIEE 13-METER 3913TCK MECHANICAL SPECIFICATIONS

Azimuth Travel	180° (in two 100° overlapped sectors)
*Azimuth Travel Rate	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
Polarization Travel Rate	1.0°/second
Reflector Structure	Steel
Pedestal Structure	Steel
Finishes	Aluminum panels with high-diffusive white paint, steel part with Hot-Zinc Spray

\* Dual Rates Available, Low Travel Rate 0.02°/s, High Travel Rate 0.2°/s. Optional for customers.

### 13-METER 3913TCK ENVIRONMENTAL SPECIFICATIONS

Operational Winds	45mph (72km/h) gusts to 60mph(97km/h)
Survival Winds	125mph (200km/h)
Ambient Temperature (Survival)	-30°C to +60°C(survival) -15°C to +50°C(Operational)
Rain	up to 4 in/h(10cm/h), lasting 10 minutes
Relative Humidity	up to 100% with condensation
Solar Radiation	360BTU/h/ft <sup>2</sup> (1000 kcal/h/m <sup>2</sup> )
Radial Ice (Survival)	1 inch (25mm) on all surface or 1/2 inch(13mm) on all surface with 130km/h wind gusts.
Shock and Vibration	As encountered during shipment by commercial air, rail or truck
Corrosive Atmosphere	As encountered in coastal regions and/or heavily industrialized areas
Seismic(Survival)	0.3G's horizontal 0.1G's vertical