

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.

| NWIEE 13M DUAL SHAPED CASSEGRAIN ANTENNA With 4-PORT 2Tx/2Rx LINEAR POL FEED | | |
|---|---|-----------------------------------|
| R.F. Spec. | Receive | Transmit |
| 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 ² (1000 kcal/h/m ²) |
| 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 |