CALIAN
Confidence. Engineered.

Advanced Technologies

# 10m High-Performance Antenna

The Calian 10m high-performance antenna system provides high accuracy, high efficiency Cassegrain optics and high-speed slewing, making it suitable for tracking faster targets, including low-earth-orbit (LEO) or medium-earth-orbit (MEO). The use of advanced manufacturing techniques results in a major step forward in affordable precision antenna design. This antenna has been deployed widely and is field-proven. The antenna can be fitted with several different feeds to support your application. Our ground station integration experience in the satellite industry means this antenna is designed to meet the needs of your network.

## Specifications

### General Configuration

| | |
|---|---|
| Configuration: | Dual reflector Cassegrain design<br>2 axis motion, elevation over azimuth |
| Main reflector: | 10m diameter<br>Precision formed aluminum<br>Surface accuracy below 0.008 RMS |
| Sub reflector: | High accuracy composite<br>Surface accuracy below 0.001 RMS |
| Hub: | Up to 10 ft/3.05m diameter for RF equipment integration |
| Pedestal: | State-of-the-art cable wrap systems with ample space for customer cables |
| Optional: | De-icing system<br>Environmentally controlled hub<br>Adjustable polarization |

### M&C Interface

Ethernet interface for M&C and user interface.

Full remote operation and monitoring with multiple tracking options.

The antenna can be controlled via the provided computer software application or via a customer interface.

### Mechanical Performance

| | |
|---|---|
| Pointing accuracy: | 0.005° |
| Speed: | up to 15°/s in azimuth<br>up to 15°/s in elevation |
| Acceleration: | up to 15°/s$^2$ in both axis |
| Travel range: | ±270° in azimuth (540° continuous)<br>0°-180° in elevation |
| Drives: | Dual torque biased backlash-free in both axes |

### Power

| | |
|---|---|
| Drive Systems: | 208VAC 50/60Hz 3-phase |
| De-icing System: | 208/220 3 phase |
| Auxiliary Circuits: | 208VAC split phase 60 Hz<br>220VAC single phase 50 Hz (optional) |

### Feed

Supports single, dual, tri-band feeds, e.g., S to Ka, S/X, C/Ku, X/Ku, X/Ka, Ku/Ka, Q/V, S/X/Ka, etc.

LP and CP broadband feed options available

### Tracking

2-channel monopulse, step track, program track

Integrated tracking receiver

## Environmental Performance

| | |
|---|---|
| Temperature: | Operational -30 to +60 °C<br>Survival -40 to +70 °C |
| Seismic: | 0.3g horizontal and vertical |
| Wind speed: | Operational, up to 100 kph gusting (62 mph gusting) |
| | Survival, up to 200 km/hr (125 mph) in stow position wind |
| | Drive-to-stow wind, 125 kph (77 mph) |
| Humidity: | 0 to 100% with condensation |
| Ice Accumulation: | 30mm thick on all exposed surfaces |
| Corrosion: | Galvanized ASTM-A123, stainless and galvanized fasteners, multi-layer epoxy-based paint. |

## Shipping Configuration and Features

Modular design to allow for easy shipping in standard 40ft containers.

Rapid deployment, assembly, and commissioning at customer site.

## RF Ka-Band Performance

| | Rx | Tx |
|---|---|---|
| Frequency (GHZ) | 17.70 - 21.50 | 27.50 - 31.00 |
| Feed Ports | 2CP + 2 Monopulse | 2CP |
| Antenna Gain | 65.08 dBi @21.5 GHz | 67.89 dBi @31 GHz |
| Beamwidth @ -3dB | 0.11° | 0.07° |
| G/Ts at Clear Sky with 120 K LNA @ 20° Elevation | | |
| 17.70 GHz | 40.48 dB/K | |
| 19.60 GHz | 41.19 dB/K | |
| 21.50 GHz | 41.42 dB/K | |
| Power handling, per port (CW) | 500 watts | 500 watts |
| VSWR (Feed interface) | 1.25 | 1.25 |
| Cross Pol Isolation (Axial Ratio) | 32.78 dB (1.047) | 32.78 dB (1.047) |
| Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$ | 85 dB | 85 dB |
| Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$ | 20 dB | 20 dB |
| Sidelobes | Meets ITU-R S-580-6 | Meets ITU-R S-580-6 |

## RF Ku-Band Performance

| | Rx | Tx |
|---|---|---|
| Frequency (GHZ) | 10.70 – 12.75 | 12.70 – 14.50 |
| Feed Ports | 2LP + 2 Monopulse | 2LP |
| Antenna Gain | 60.73 dBi @12.75 GHz | 61.96 dBi @14.50 GHz |
| Beamwidth @ -3dB | 0.19° | 0.16° |
| G/Ts at Clear Sky with 59 K LNA @ 20° Elevation | | |
| 10.70 GHz | 38.37 dB/K | |
| 11.75 GHz | 39.11 dB/K | |
| 12.75 GHz | 39.78 dB/K | |
| Power handling, per port (CW) | 500 watts | 500 watts |
| VSWR (Feed interface) | 1.25 | 1.25 |
| Cross Pol Isolation | 35 dB | 35 dB |
| Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$ | 85 dB | 85 dB |
| Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$ | 35 dB | 35 dB |
| Sidelobes | Meets ITU-R S-580-6 | Meets ITU-R S-580-6 |

## RF X-Band Performance

| | Rx | Tx |
|---|---|---|
| Frequency (GHZ) | 7.25 – 7.75 | 7.90 – 8.40 |
| Feed Ports | 2CP + 2 Monopulse | 2CP |
| Antenna Gain | 56.50 dBi @7.75 GHz | 57.20 dBi @8.40 GHz |
| Beamwidth @ -3dB | 0.29° | 0.27° |
| G/Ts at Clear Sky with 50 K LNA @ 10° Elevation | | |
| 7.25 GHz | 35.55 dB/K | |
| 7.50 GHz | 35.84 dB/K | |
| 7.75 GHz | 36.12 dB/K | |
| Power handling, per port (CW) | 500 watts | 500 watts |
| VSWR (Feed interface) | 1.30 | 1.30 |
| Cross Pol Isolation (Axial Ratio) | 32.78 dB (1.047) | 32.78 dB (1.047) |
| Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$ | 85 dB | 85 dB |
| Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$ | 18 dB | 18 dB |
| Sidelobes | Meets ITU-R S-580-6 | Meets ITU-R S-580-6 |

## RF C-Band Performance

| | Rx | Tx |
|---|---|---|
| Frequency (GHZ) | 3.400 – 4.200 | 5.725 – 6.725 |
| Feed Ports | 2CP + 2 Monopulse | 2CP |
| Antenna Gain | 51.42 dBi @4.200 GHz | 55.49 dBi @6.725 GHz |
| Beamwidth @ -3dB | 0.57° | 0.35° |
| G/Ts at Clear Sky with 30 K LNA @ 20° Elevation | | |
| 3.400 GHz | 30.37 dB/K | |
| 3.800 GHz | 31.34 dB/K | |
| 4.200 GHz | 32.20 dB/K | |
| Power handling, per port (CW) | 5000 watts | 5000 watts |
| VSWR (Feed interface) | 1.25 | 1.25 |
| Cross Pol Isolation (Axial Ratio) | 32.78 dB (1.047) | 32.78 dB (1.047) |
| Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$ | 85 dB | 85 dB |
| Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$ | 20 dB | 20 dB |
| Sidelobes | Meets ITU-R S-580-6 | Meets ITU-R S-580-6 |

## RF S-Band Performance

| | Rx | Tx |
|---|---|---|
| Frequency (GHZ) | 2.170 – 2.300 | 1.980 – 2.120 |
| Feed Ports | 2CP + 2 Monopulse | 2CP |
| Antenna Gain | 46.20 dBi @2.300 GHz | 45.49 dBi @2.120 GHz |
| Beamwidth @ -3dB | 0.98° | 1.07° |
| G/Ts at Clear Sky with 45 K LNA @ 20° Elevation | | |
| 2.170 GHz | 25.52 dB/K | |
| 2.235 GHz | 25.78 dB/K | |
| 2.300 GHz | 26.03 dB/K | |
| VSWR (Feed interface) | 1.25 | 1.25 |
| Cross Pol Isolation (Axial Ratio) | 32.78 dB (1.047) | 32.78 dB (1.047) |
| Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$ | 85 dB | 85 dB |
| Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$ | 20 dB | 20 dB |
| Sidelobes | Meets ITU-R S-580-6 | Meets ITU-R S-580-6 |

**Contact Rob today.**

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