CALIAN | SED

# Composite Carbon Fiber Antenna

## Meet Demanding Requirements of Q/V Frequency Bands & Beyond

CALIAN SED offers medium and large composite carbon fiber reflector antennas with exceptional performance for the most demanding applications.

This ultra-modern antenna system includes a 10 or 6 meter precision composite carbon fiber reflector complete with a large equipment hub that reduces distance between equipment and feed. Its unique pedestal and control system design minimizes maintenance and optimizes performance.

This composite antenna system is designed to meet the demanding performance and operational requirements needed for Ka-band frequencies, Q/V-band frequencies and beyond. The innovative design minimizes time required to build, install and maintain the antenna.

**Features:**

- Cutting-edge carbon fiber reflector and back structure offer superior surface accuracies, with low thermal distortion
- Large equipment hub with roll-up access door
- High stiffness turning head antenna, dual motor anti-backlash azimuth drive with a DC motor jackscrew in elevation
- New compact all-digital Antenna Control System including monopulse tracking and a complete monitor and control remote software interface
- Innovative in-panel de-ice system
- Mechanical and control system designed for increased availability and decreased maintenance requirements
- Decreased site installation time
- Lightning protection and access stairway

**Material Distortions vs Temperature Relative to V-band Wavelengths**

| Reflector Material | Typical CTE (x 10-6 /°K) | Distortion of 5m Panel Over 40°K (mm) | % of V-Band Wavelength |
|---|---|---|---|
| Aluminum | 22.2 | 4.4 | 82.2% |
| Steel | 11.7 | 2.3 | 43.3% |
| **Composite Carbon Fiber (Calian SED)** | **5** | **1** | **18.5%** |

# 10M Composite Antenna Specifications

| RF Specifications | Q-Rx | V-Tx | Ka-Tx |
|---|---|---|---|
| Frequency (GHz) | 37.5 – 42.5 | 47.2 – 51.4 | 27.5 - 31.0 |
| Antenna Gain (dBi) (0.25 dB margin) 40.0 / 50.0 / 30.0 | 69.2 | 71.4 | 66.9 |
| Antenna Noise Temp (K) (30° El) | 130K @ 40.0 GHz | | |
| G/T (dB/K): 30° El, 230K LNA, and input losses (coupler, etc) | 42.8 @ 40.0 GHz | | |
| Polarization (Transmit & Receive) | Dual circular | Dual circular | Dual circular |
| Crosspol (Axial Ratio) (dB) | 30.0 (0.5) | 30.0 (0.5) | 30.0 (0.5) |
| VSWR (Return Loss) | 1.25:1 (19 dB) | 1.25:1 (19 dB) | 1.25:1 (19 dB) |
| Sidelobe Performance (Tx/Rx) | | FCC CRF-47 §25.209 | |
| Port-Port Isolation (Rx/Rx, Tx/Tx) | 17.0 | 17.0 | |
| Port-Port Isolation | | | |
| VTx → QRx | 85 + TRF | | |
| KaTx → QRx | 85 + TRF | | |
| VTx → KaTx | | 40 | |
| VTx → Qtrack | | 80 | |
| KaTx → QTrack | | | 80 |
| Flange Interface | WR-22 (UG-599/U) | WR-22 (UG-383/U) | WR-34 (UG-1530/U) |
| Power Handling (W) | | 250 | 250 |



| General Mechanical Specifications | |
|---|---|
| **Item** | **Specification** |
| Elevation Travel (continuous) | 3 – 90 deg |
| Azimuth travel (continuous) | +/- 225 deg |
| Avg. Velocity (az or el) | 1 deg/sec |
| Avg. Acceleration (az or el) | 0.4 deg/sec2 |
| Azimuth Drive Configuration | Gear & pinion dual AZ motor drives (internally housed) |
| Elevation Drive Configuration | Jackscrew single EL motor drive (enclosed, no boot) |
| Tracking Modes | Program Track, Step Track, Monopulse |

**To learn more, please contact:**

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