The Calian 13.5m Q/V–band GEO Earth station antenna is a very structurally stiff system with high surface accuracy and high efficiency Cassegrain optics making it ideal for high frequency applications in harsh environmental conditions.

It 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

- Dual reflector Cassegrain design
- 2 axis motion, elevation over azimuth
- 13.5m diameter
- Precision formed aluminum
- Surface accuracy below 0.006” RMS
- High accuracy composite
- Surface accuracy below 0.002” RMS
- Up to 10 ft. diameter for RF equipment (Integration available upon request)
- State of the art cable wrap systems with ample space for customer cables and electronics
- Platform with staircase and hoist
- De-icing system
- Environmentally controlled hub
- Adjustable polarization

Mechanical performance

- Pointing accuracy: 0.007°
- Tracking accuracy: < 0.0029°
- Speed: up to 1°/s in azimuth, up to 0.5°/s in elevation
- Acceleration: 0.5°/s² in both axes
- Travel range: ±270° in azimuth (540° continuous), 0°– 90° in elevation
- Drive system 1: Dual torque biased backlash-free drives in azimuth, Heavy duty jack in elevation
- Drive system 2: Dual torque biased backlash-free drives in both axes

Power

- Drive systems: 480VAC 50/60Hz 3-phase
- De-icing system: 208/220 3 phase
- Auxiliary circuits: 208VAC split phase 60 Hz, 220VAC single phase 50 Hz (optional)

Feed options

- Supports single, dual, tri-band feeds, e.g., Q/V, Ka/Q/V, etc.
- CP and LP Broadband feed options available

Tracking options

- Multiple open and closed loop tracking options include:
  - Table track
  - NORAD TLE
  - IESS-412
  - Monopulse (optional)
  - Step Track (optional)
**Environmental performance**

- **Temperature**
  - Operational: -30 to +60 °C
  - Survival: -40 to +70 °C

- **Seismic**
  - 0.3g horizontal and vertical

- **Wind speed**
  - Operational, up to 100 kph gusting (62 mph gusting)
  - Survival: 208 kph (130 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 containers
- Rapid deployment, assembly, and commissioning at customer site

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**QV-band performance**

<table>
<thead>
<tr>
<th></th>
<th>Rx</th>
<th>Tx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency (GHz)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37.500 GHz</td>
<td>37.500 – 42.500</td>
<td>47.200 - 52.400</td>
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<tr>
<td>40.000 GHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42.500 GHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Feed ports</strong></td>
<td>2 + 2 Monopulse</td>
<td>2</td>
</tr>
<tr>
<td><strong>Antenna gain</strong></td>
<td>73.1 dBi @ 42.50 GHz</td>
<td>74.8 dBi @ 52.40 GHz</td>
</tr>
<tr>
<td><strong>Beamwidth @ -3dB</strong></td>
<td>0.04°</td>
<td>0.03°</td>
</tr>
<tr>
<td><strong>G/T with 226 K LNA @ 10° Elevation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Includes feed to LNA losses with LNA redundancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37.500 GHz</td>
<td>45.2 dB/K</td>
<td></td>
</tr>
<tr>
<td>40.000 GHz</td>
<td>45.6 dB/K</td>
<td></td>
</tr>
<tr>
<td>42.500 GHz</td>
<td>46.0 dB/K</td>
<td></td>
</tr>
<tr>
<td><strong>Power handling, per port (CW)</strong></td>
<td></td>
<td>250 W</td>
</tr>
<tr>
<td><strong>VSWR (Feed interface)</strong></td>
<td>1.30</td>
<td>1.30</td>
</tr>
<tr>
<td><strong>Cross Pol Isolation</strong></td>
<td>32.78 dB</td>
<td>32.78 dB</td>
</tr>
<tr>
<td><strong>Port to Port Isolation: Rx→Tx, Tx→Rx</strong></td>
<td>85 dB</td>
<td>85 dB</td>
</tr>
<tr>
<td><strong>Port to Port Isolation: Rx→Rx, Tx→Tx</strong></td>
<td>16 dB</td>
<td>16 dB</td>
</tr>
</tbody>
</table>

QV-band performance includes feed to LNA losses with LNA redundancy.