Calian high performance antennas are platforms intended for a wider variety of applications beyond satcom, including electronic warfare, radar, astronomy, and fast-target tracking. These antenna platforms combine high-slew-rate motion systems, and adaptable antenna interfaces to accommodate different applications and frequencies. We offer high accuracy optics with optimized reflector shaping for elevated efficiency. Advanced control systems can be adapted to user requirements, enabling a variety of tracking or targeting capabilities.

**Specifications**

**General Configuration**
- **Configuration:** Dual reflector Cassegrain design
  - 2 axis motion, elevation over azimuth
- **Main reflector:** 3 - 5m diameter
  - Precision formed aluminum
  - Surface accuracy < 0.008" RMS
- **Sub reflector:** High surface accuracy construction
- **Hub:** 2 ft. diameter with additional RF equipment mounting provisions
- **Pedestal:** High stiffness reinforced pedestal
- **Optional:** 4 ft. diameter hub for internal RF equipment integration
  - De-icing system
  - Active 3rd Axis

**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:** < 0.018°
- **Tracking accuracy:** < 0.0082°
- **Speed:** up to 12°/s in azimuth
  - up to 12°/s in elevation
- **Acceleration:** up to 6°/s² in both axis
- **Travel range:** ±270° in azimuth (540° continuous)
  - 0°- 90° in elevation
- **Tilt options:** Active or Fixed Tilt (up to 8.5°)
- **Drives:** Dual torque biased backlash-free drives in both axes

### Power
- **Drive Systems:** 200 to 240VAC and 380 to 430VAC 3-phase, frequency 50/60Hz
- **De-icing System:** 208/220 3-phase
- **Auxiliary Circuits:** 208VAC split phase 60 Hz
  - 220VAC single phase 50 Hz (optional)

### Optional Frequency Bands
- Supports single, dual, and multi-band feeds, e.g., S to Ka, S/X, C/Ku, X/Ku, X/Ka, Ku/Ka, etc.
- CP and LP Broadband feed options available

### Tracking Options
- Multiple open and closed loop tracking options include:
  - Program 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 72kph (45mph)  
             Gusting up to 100 kph (62 mph)  
             Survival, 200 kph (125 mph) in stow position

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 or crates

Rapid deployment, assembly, and commissioning at customer site

**4m Ka-band Performance**

<table>
<thead>
<tr>
<th></th>
<th>Rx</th>
<th>Tx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency (GHz)</strong></td>
<td>17.70 - 21.50</td>
<td>27.50 - 31.00</td>
</tr>
<tr>
<td><strong>Feed Ports</strong></td>
<td>2*</td>
<td>2</td>
</tr>
<tr>
<td><strong>Antenna Gain</strong></td>
<td>56.8 dBi @21.5 GHz</td>
<td>59.9 dBi @31 GHz</td>
</tr>
<tr>
<td><strong>Beamwidth @ -3dB</strong></td>
<td>0.28°</td>
<td>0.19°</td>
</tr>
<tr>
<td><strong>G/Ts at Clear Sky with 120 K LNA @ 20° Elevation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.70 GHz</td>
<td>31.1 dB/K</td>
<td></td>
</tr>
<tr>
<td>19.60 GHz</td>
<td>32.9 dB/K</td>
<td></td>
</tr>
<tr>
<td>21.50 GHz</td>
<td>33.1 dB/K</td>
<td></td>
</tr>
<tr>
<td><strong>Power handling, per port (CW)</strong></td>
<td></td>
<td>650 W</td>
</tr>
<tr>
<td><strong>VSWR (Feed interface)</strong></td>
<td>1.25</td>
<td>1.25</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 R_s → T_p, T_r → R_t</strong></td>
<td>85 dB</td>
<td>85 dB</td>
</tr>
<tr>
<td><strong>Port to Port Isolation R_s → R_p, T_r → T_s</strong></td>
<td>20 dB</td>
<td>20 dB</td>
</tr>
<tr>
<td><strong>Sidelobes</strong></td>
<td>Meets ITU-R S-580-6</td>
<td>Meets ITU-R S-580-6</td>
</tr>
</tbody>
</table>

*Additional tracking ports available*
### 4m Ku-band Performance

<table>
<thead>
<tr>
<th></th>
<th>Rx</th>
<th>Tx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency (GHz)</strong></td>
<td>10.70 – 12.75</td>
<td>12.70 – 14.50</td>
</tr>
<tr>
<td><strong>Feed Ports</strong></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Antenna Gain</strong></td>
<td>52.2 dBi @12.75 GHz</td>
<td>53.5 dBi @14.50 GHz</td>
</tr>
<tr>
<td><strong>Beamwidth @ -3dB</strong></td>
<td>0.47°</td>
<td>0.40°</td>
</tr>
<tr>
<td><strong>G/Ts at Clear Sky with 59 K LNA @ 20° Elevation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.70 GHz</td>
<td>29.8 dB/K</td>
<td></td>
</tr>
<tr>
<td>11.75 GHz</td>
<td>30.6 dB/K</td>
<td></td>
</tr>
<tr>
<td>12.75 GHz</td>
<td>31.3 dB/K</td>
<td></td>
</tr>
<tr>
<td><strong>Power handling, per port (CW)</strong></td>
<td>1.5 KW</td>
<td></td>
</tr>
<tr>
<td><strong>VSWR (Feed interface)</strong></td>
<td>1.25</td>
<td>1.25</td>
</tr>
<tr>
<td><strong>Cross Pol Isolation</strong></td>
<td>35 dB</td>
<td>35 dB</td>
</tr>
<tr>
<td><strong>Port to Port Isolation</strong></td>
<td>85 dB</td>
<td>85 dB</td>
</tr>
<tr>
<td><strong>Port to Port Isolation</strong></td>
<td>35 dB</td>
<td>35 dB</td>
</tr>
<tr>
<td><strong>Sidelobes</strong></td>
<td>Meets ITU-R S-580-6</td>
<td>Meets ITU-R S-580-6</td>
</tr>
</tbody>
</table>

### 4m X-band Performance

<table>
<thead>
<tr>
<th></th>
<th>Rx</th>
<th>Tx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency (GHz)</strong></td>
<td>7.25 – 7.75</td>
<td>7.90 – 8.40</td>
</tr>
<tr>
<td><strong>Feed Ports</strong></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Antenna Gain</strong></td>
<td>48.0 dBi @7.75 GHz</td>
<td>48.7 dBi @8.40 GHz</td>
</tr>
<tr>
<td><strong>Beamwidth @ -3dB</strong></td>
<td>0.73°</td>
<td>0.67°</td>
</tr>
<tr>
<td><strong>G/Ts at Clear Sky with 50 K LNA @ 10° Elevation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.25 GHz</td>
<td>27.0 dB/K</td>
<td></td>
</tr>
<tr>
<td>7.50 GHz</td>
<td>27.3 dB/K</td>
<td></td>
</tr>
<tr>
<td>7.75 GHz</td>
<td>27.6 dB/K</td>
<td></td>
</tr>
<tr>
<td><strong>Power handling, per port (CW)</strong></td>
<td>2 KW</td>
<td></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</strong></td>
<td>85 dB</td>
<td>85 dB</td>
</tr>
<tr>
<td><strong>Port to Port Isolation</strong></td>
<td>18 dB</td>
<td>18 dB</td>
</tr>
<tr>
<td><strong>Sidelobes</strong></td>
<td>Meets ITU-R S-580-6</td>
<td>Meets ITU-R S-580-6</td>
</tr>
</tbody>
</table>
### 4m C-band Performance

<table>
<thead>
<tr>
<th></th>
<th>Rx</th>
<th>Tx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (GHz)</td>
<td>3.400 – 4.200</td>
<td>5.725 – 6.725</td>
</tr>
<tr>
<td>Feed Ports</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Antenna Gain</td>
<td>42.9 dBi @4.200 GHz</td>
<td>47.0 dBi @6.725 GHz</td>
</tr>
<tr>
<td>Beamwidth @ -3dB</td>
<td>1.44°</td>
<td>0.88°</td>
</tr>
<tr>
<td>G/Ts at Clear Sky with 30 K LNA @ 20° Elevation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.400 GHz</td>
<td>21.8 dB/K</td>
<td></td>
</tr>
<tr>
<td>3.800 GHz</td>
<td>22.8 dB/K</td>
<td></td>
</tr>
<tr>
<td>4.200 GHz</td>
<td>23.7 dB/K</td>
<td></td>
</tr>
<tr>
<td>Power handling, per port (CW)</td>
<td></td>
<td>2.5 KW</td>
</tr>
<tr>
<td>VSWR (Feed interface)</td>
<td>1.25</td>
<td>1.25</td>
</tr>
<tr>
<td>Cross Pol Isolation</td>
<td>32.78 dB</td>
<td>32.78 dB</td>
</tr>
<tr>
<td>Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$</td>
<td>85 dB</td>
<td>85 dB</td>
</tr>
<tr>
<td>Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$</td>
<td>20 dB</td>
<td>20 dB</td>
</tr>
</tbody>
</table>

### 4m S-band Performance

<table>
<thead>
<tr>
<th></th>
<th>Rx</th>
<th>Tx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (GHz)</td>
<td>2.170 – 2.300</td>
<td>1.980 – 2.120</td>
</tr>
<tr>
<td>Feed Ports</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Antenna Gain</td>
<td>37.7 dBi @2.300 GHz</td>
<td>37.0 dBi @2.120 GHz</td>
</tr>
<tr>
<td>Beamwidth @ -3dB</td>
<td>2.44°</td>
<td>2.66°</td>
</tr>
<tr>
<td>G/Ts at Clear Sky with 45 K LNA @ 20° Elevation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.170 GHz</td>
<td>17.0 dB/K</td>
<td></td>
</tr>
<tr>
<td>2.235 GHz</td>
<td>17.2 dB/K</td>
<td></td>
</tr>
<tr>
<td>2.300 GHz</td>
<td>17.5 dB/K</td>
<td></td>
</tr>
<tr>
<td>Power handling, per port (CW)</td>
<td></td>
<td>5 KW</td>
</tr>
<tr>
<td>VSWR (Feed interface)</td>
<td>1.25</td>
<td>1.25</td>
</tr>
<tr>
<td>Cross Pol Isolation</td>
<td>32.78 dB</td>
<td>32.78 dB</td>
</tr>
<tr>
<td>Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$</td>
<td>85 dB</td>
<td>85 dB</td>
</tr>
<tr>
<td>Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$</td>
<td>20 dB</td>
<td>20 dB</td>
</tr>
</tbody>
</table>