CALIAN
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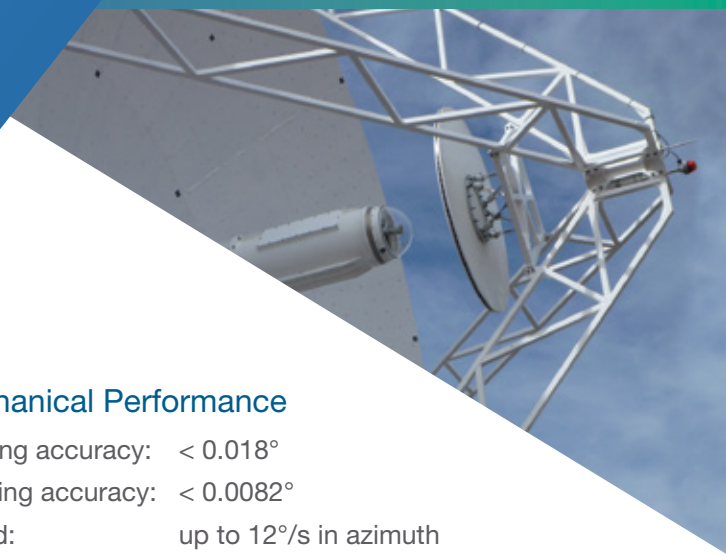
Advanced Technologies

4m LEO Earth Station Antenna



The Calian 4m LEO Earth Station antenna combines high accuracy, high efficiency Cassegrain optics with high-speed slewing to track faster targets, including LEO and MEO satellites. The third tilt axis ensures uninterrupted tracking through overhead passes. This design approach combined with advanced manufacturing techniques results in a major step forward in affordable precision antenna design. Several different feeds can be fitted to support your band of operation. Calian's experience in ground station system engineering and integration has been incorporated into making this product better suited to a terminal or gateway application; examples include ease of maintenance for mechanical components and a hub designed to support a higher level of integration.

Specifications

General Configuration

Configuration:	Dual reflector Cassegrain design 3 axis motion (no keyhole), elevation over azimuth, with tilt
Main reflector:	4m diameter Precision formed aluminum Surface accuracy < 0.008" RMS
Sub reflector:	High 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 240 VAC and 380 to 430 VAC 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)

Feed Options

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, and step track

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

Ka-band Performance

	Rx	Tx
Frequency (GHZ)	17.70 - 21.50	27.50 - 31.00
Feed Ports	2*	2
Antenna Gain	56.8 dBi @21.5 GHz	59.9 dBi @31 GHz
Beamwidth @ -3dB	0.28°	0.19°
G/Ts at Clear Sky with 120 K LNA @ 20° Elevation		
17.70 GHz	31.1 dB/K	
19.60 GHz	32.9 dB/K	
21.50 GHz	33.1 dB/K	
Power handling, per port (CW)		650 W
VSWR (Feed interface)	1.25	1.25
Cross Pol Isolation	32.78 dB	32.78 dB
Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$	85 dB	85 dB
Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$	20 dB	20 dB
Sidelobes	Meets ITU-R S-580-6	Meets ITU-R S-580-6

*Additional tracking ports available

Ku-band Performance

	Rx	Tx
Frequency (GHZ)	10.70 – 12.75	12.70 – 14.50
Feed Ports	2	2
Antenna Gain	52.2 dBi @12.75 GHz	53.5 dBi @14.50 GHz
Beamwidth @ -3dB	0.47°	0.40°
G/Ts at Clear Sky with 30 K LNA @ 20° Elevation		
10.70 GHz	29.8 dB/K	
11.75 GHz	30.6 dB/K	
12.75 GHz	31.3 dB/K	
Power handling, per port (CW)		1.5 KW
VSWR (Feed interface)	1.25	1.25
Cross Pol Isolation (Axial Ratio)	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

X-band Performance

	Rx	Tx
Frequency (GHz)	7.25 – 7.75	7.90 – 8.40
Feed Ports	2	2
Antenna Gain	48.0 dBi @7.75 GHz	48.7 dBi @8.40 GHz
Beamwidth @ -3dB	0.73°	0.67°
G/Ts at clear sky with 50 K LNA @ 10° elevation		
7.25 GHz	27.0 dB/K	
7.50 GHz	27.3 dB/K	
7.75 GHz	27.6 dB/K	
Power handling, per port (CW)		2 KW
VSWR (Feed interface)	1.30	1.30
Cross Pol Isolation	32.78 dB	32.78 dB
Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$	85 dB	85 dB
Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$	18 dB	18 dB
Sidelobes	Meets ITU-R S-580-6	Meets ITU-R S-580-6

C-band Performance

	Rx	Tx
Frequency (GHZ)	3.400 – 4.200	5.725 – 6.725
Feed Ports	2	2
Antenna Gain	42.9 dBi @4.200 GHz	47.0 dBi @6.725 GHz
Beamwidth @ -3dB	1.44°	0.88°
G/Ts at Clear Sky with 30 K LNA @ 20° Elevation		
3.400 GHz	21.8 dB/K	
3.800 GHz	22.8 dB/K	
4.200 GHz	23.7 dB/K	
Power handling, per port (CW)		2.5 KW
VSWR (Feed interface)	1.25	1.25
Cross Pol Isolation	32.78 dB	32.78 dB
Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$	85 dB	85 dB
Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$	20 dB	20 dB
Sidelobes	Meets ITU-R S-580-6	Meets ITU-R S-580-6

S-band Performance

	Rx	Tx
Frequency (GHZ)	2.170 – 2.300	1.980 – 2.120
Feed Ports	2	2
Antenna Gain	37.7 dBi @2.300 GHz	37.0 dBi @2.120 GHz
Beamwidth @ -3dB	2.44°	2.66°
G/Ts at Clear Sky with 45 K LNA @ 20° Elevation		
2.170 GHz	17.0 dB/K	
2.235 GHz	17.2 dB/K	
2.300 GHz	17.5 dB/K	
Power handling, per port (CW)		5 KW
VSWR (Feed interface)	1.25	1.25
Cross Pol Isolation	32.78 dB	32.78 dB
Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$	85 dB	85 dB
Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$	20 dB	20 dB
Sidelobes	Meets ITU-R S-580-6	Meets ITU-R S-580-6

Contact Rob or Mohamed today.

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