CALIAN
Confidence. Engineered.

Advanced Technologies

13.2m High-Performance Antenna

The Calian 13.2m high-performance antenna is 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:	13.2m diameter Precision formed aluminum Surface accuracy below 0.008” RMS
Sub reflector:	High accuracy composite Surface accuracy below 0.002” 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:	Platform with staircase and hoist
	De-icing system
	Environmentally controlled hub
	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 12°/s in azimuth
	up to 6°/s in elevation
Acceleration:	3°/s2 in both axis
Travel range:	±270° in azimuth (540° continuous) 0°-90° in elevation
Drives:	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

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

LP and CP 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, 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.

Ka-band Performance

	Rx	Tx
Frequency (GHZ)	17.70 - 21.50	27.50 - 31.00
Feed Ports	2CP + 2 Monopulse	2CP
Antenna Gain	67.42 dBi @21.5 GHz	70.12 dBi @31 GHz
Beamwidth @ -3dB	0.08°	0.06°
G/Ts at Clear Sky with 120 K LNA @ 20° Elevation		
17.70 GHz	42.85 dB/K	
19.60 GHz	43.54 dB/K	
21.50 GHz	43.76 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

Ku-band Performance

	Rx	Tx
Frequency (GHZ)	10.70 – 12.75	12.70 – 14.50
Feed Ports	2LP + 2 Monopulse	2LP
Antenna Gain	63.13 dBi @12.75 GHz	64.35 dBi @14.50 GHz
Beamwidth @ -3dB	0.14°	0.12°
G/Ts at Clear Sky with 59 K LNA @ 20° Elevation		
10.70 GHz	40.77 dB/K	
11.75 GHz	41.51 dB/K	
12.75 GHz	42.18 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

X-band Performance

	Rx	Tx
Frequency (GHZ)	7.25 – 7.75	7.90 – 8.40
Feed Ports	2CP + 2 Monopulse	2CP
Antenna Gain	58.93 dBi @7.75 GHz	59.62 dBi @8.40 GHz
Beamwidth @ -3dB	0.22°	0.20°
G/Ts at Clear Sky with 50 K LNA @ 10° Elevation		
7.25 GHz	37.97 dB/K	
7.50 GHz	38.26 dB/K	
7.75 GHz	38.55 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

C-band Performance

	Rx	Tx
Frequency (GHZ)	3.400 – 4.200	5.725 – 6.725
Feed Ports	2CP + 2 Monopulse	2CP
Antenna Gain	53.84 dBi @4.200 GHz	57.91 dBi @6.725 GHz
Beamwidth @ -3dB	0.44°	0.27°
G/Ts at Clear Sky with 30 K LNA @ 20° Elevation		
3.400 GHz	32.80 dB/K	
3.800 GHz	33.77 dB/K	
4.200 GHz	34.62 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

S-band Performance

	Rx	Tx
Frequency (GHZ)	2.170 – 2.300	1.980 – 2.120
Feed Ports	2CP + 2 Monopulse	2CP
Antenna Gain	48.63 dBi @2.300 GHz	47.92 dBi @2.120 GHz
Beamwidth @ -3dB	0.74°	0.81°
G/Ts at Clear Sky with 45 K LNA @ 20° Elevation		
2.170 GHz	27.96 dB/K	
2.235 GHz	28.21 dB/K	
2.300 GHz	28.46 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

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