CALIAN
Confidence. Engineered.

Advanced Technologies

12m Satcom Antenna

The Calian 12m satcom antenna combines high accuracy, high efficiency Cassegrain optics with precision motion control systems to accurately track GEO and MEO satellites. Precision bearings and dual-drives in the azimuth axis ensure the stiff structure necessary for precise tracking in higher frequency systems—such as Ka-band. 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 2 axis motion, elevation over azimuth
Main reflector:	12m 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°
Tracking accuracy:	< 0.0029°
Speed:	1°/s in azimuth, 0.5°/s in elevation
Acceleration:	0.5°/s2 in both axis
Travel range:	±270° in azimuth 0°-90° in elevation
Drives:	Dual torque biased in azimuth Precision jack drive in elevation

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)

Shipping Configuration and Features

Modular design to allow for easy shipping in standard 40ft containers.

Rapid deployment, assembly, and commissioning at customer site.

Environmental Performance

Temperature:	Operational -30 to +60 °C Survival -40 to +70 °C
Seismic:	0.3g horizontal and vertical
Wind speed:	Operational 72kph (45 mph) 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.

Ka-band Performance

	Rx	Tx
Frequency (GHZ)	17.70 - 21.50	27.50 - 31.00
Feed Ports	2CP + 2 Monopulse	2CP
Antenna Gain	66.63 dBi @21.5 GHz	69.32 dBi @31 GHz
Beamwidth @ -3dB	0.09°	0.06°
G/Ts at Clear Sky with 120 K LNA @ 20° Elevation		
17.70 GHz	42.04 dB/K	
19.60 GHz	42.74 dB/K	
21.50 GHz	44.96 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	62.31 dBi @12.75 GHz	63.54 dBi @14.50 GHz
Beamwidth @ -3dB	0.16°	0.13°
G/Ts at Clear Sky with 59 K LNA @ 20° Elevation		
10.70 GHz	39.94 dB/K	
11.75 GHz	40.69 dB/K	
12.75 GHz	41.36 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	58.10 dBi @7.75 GHz	58.79 dBi @8.40 GHz
Beamwidth @ -3dB	0.24°	0.22°
G/Ts at Clear Sky with 50 K LNA @ 10° Elevation		
7.25 GHz	37.15 dB/K	
7.50 GHz	37.44 dB/K	
7.75 GHz	37.71 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	53.01 dBi @4.200 GHz	57.08 dBi @6.725 GHz
Beamwidth @ -3dB	0.48°	0.29°
G/Ts at Clear Sky with 30 K LNA @ 20° Elevation		
3.400 GHz	31.97 dB/K	
3.800 GHz	32.94 dB/K	
4.200 GHz	33.98 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	47.80 dBi @2.300 GHz	47.09 dBi @2.120 GHz
Beamwidth @ -3dB	0.81°	0.89°
G/Ts at Clear Sky with 45 K LNA @ 20° Elevation		
2.170 GHz	27.12 dB/K	
2.235 GHz	27.38 dB/K	
2.300 GHz	27.63 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

Contact Rob or Mohamed today.

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