

Choosing the Right Ka-Band Antenna to Meet Your Needs

Choosing the right antenna to meet your current and future Ka-Band requirements can be difficult. You need high performance, quality components and the flexibility to adjust your terminals to meet changing requirements.

General Dynamics' SATCOM Technologies, the world's leading supplier of satellite communications earth stations, offers two 9-Meter Ka-Band antenna products that provide the very best transmit and receive capability you can buy.

SATCOM Technologies' 9.0 and 9.2-Meter Ka-Band antennas offer world-class transmit and receive

performance, but there the similarities end. The 9.0-Meter antenna is ideally suitable for on-satellite operation where good, stable video, voice and data communications is required. The 9.2-Meter antenna is the right choice for such requirements as precise TT&C applications, higher axis velocities, or where a very high level of HPA integration is needed in an atmosphere-controlled hub enclosure.

For Ka-Band transmission and reception, General Dynamics SATCOM Technologies has the right antenna to meet your needs.



Comparison

Feature	"Better" 9.0m - Kilgore	"Best" 9.2m - San Jose
Reflector	9.0m	9.2m, counterweighted reflector
Operating Frequency (GHz)		
Receive	17.7 to 21.2 GHz	17.7 to 21.2 (customizable)
Transmit	27.5 - 31.0 GHz	27.5 to 31.0 (customizable)
Feeds Available	2-port and 4-port, circular or linear polarization with optional monopulse tracking ports	2-port and 4-port, circular, linear or CP/LP switchable polarization options plus 2-ports for optional monopulse tracking
Antenna Gain (Typical)		
Tx@Feed Port Input - Typical at 30.00 GHz	65.6 dBi	66.5 dBi
Rx@Feed Flange - Typical at 20.2 GHz	63.2 dBi	63.6 dBi
System G/T (Typical at 20.2 GHz @ 30° Elevation and 1:2 redundant, 120K LNA (Standard Band)	39.6 dBi/K	39.7 dBi/K
Linear EIRP: -19 dB NPR @ 4 dB OBO, 30 GHz, 500 W HPA		
Single HPA per POL (typical)	86.8 dBW	87.8 dBW
Dual HPA per POL (typical, phase-combined)	N/A	90.3 dBW
3 dB Beamwidth		
Tx	0.08°	0.08°
Rx	0.12°	0.12°
Axial Ratio @ 1dB BW (X-POL Isolation in dB)	0.5 dB (30.7 dB)	0.5 dB (30.7 dB)
Port-to Port Isolation (CP)		
TX/TX and RX/RX	17.0 dB	20 dB
RX/TX and TX/RX	85 dB	85 dB
Feed RF Power Handling	400W CW Per Port, 0.8 kW Total	1 kW CW Per Port, 2 kW Total



TECHNICAL SPECIFICATIONS

Feature	"Better" 9.0m - Kilgore	"Best" 9.2m - San Jose
Reflector	<ul style="list-style-type: none"> Standard Steel back-up structure, painted white Optional Enclosed with blower for reduced thermal effects High Precision Ka Panels 	<ul style="list-style-type: none"> Steel back-up structure painted white Enclosed for Anti-Icing Option Counter-weighted to reduce jack wear and provide fail-safe operation Heavy duty panels for better stiffness which provides better thermal and wind performance
Pedestal	<ul style="list-style-type: none"> Kingpost, painted white Limited continuous AZ travel Good azimuth vertically and AZ/EL orthogonality 	<ul style="list-style-type: none"> Turning head, painted white Continuous AZ travel ($\pm 100^\circ$) Best azimuth vertically and AZ/EL orthogonality due to AZ turn table bearings
Travel Ranges	EL: 0 to 90° AZ: 180° (2 - 95° segments)	EL: 0 to 90° AZ: $\pm 100^\circ$ continuous from Neutral Position
Axis Velocity & Acceleration	EL (average): $0.1^\circ/s$; $0.1^\circ/s^2$ AZ: $0.1^\circ/s$; $0.1^\circ/s^2$	EL (average): $0.2^\circ/s$; $0.2^\circ/s^2$ AZ: $0.5^\circ/s$; $0.2^\circ/s^2$
Antenna Drive Configuration	EL: Machine Screw Actuator AZ: Machine Screw Actuator	EL: Machine Screw Actuator AZ: Dual Geared Drive with Anti-Bachlash
Primary Antenna Tracking Mode	Step Track/OpTrack (Monopulse optional)	Monopulse and Step Track/OpTrack
Anti-Ice Solution	Feed Blower; Heated Subreflector; Optional Primary Reflector - Gas or Electric	Feed Blower; Heated Subreflector; Optional Primary Reflector - Gas or Electric
Anti-Ice Performance	1.6" (4 cm) of snow per hour at temperatures above -12°C .	Snow & Ice: 4 in/hr (10 cm/hr) and up to 1" buildup on structure with less than a 3/4 db of signal Loss with all heaters on
Hub Size	70 inch diameter which can accommodate up to 3 HPAs and associated converters	Large 9 foot hub with roll-up, lockable hub door which can accommodate up to 8 HPAs and associated converters with online component replacement
Hub Environmental Control	Ventilation System	Redundant, closed Air-conditioning Systems for Various Environmental Conditions
Customization/Integration	Standard Product	Designed to be customized or tailored to Customer Requirements
Elevation Platform and Access	Elevation Platform with access via Stairway	Large Working Platform with access via Stairway with handrails and electric hoist to ground level
Limited Driving Wind Speed:	62 mph (100 km/hr)	85 mph (135 km/hr)
Survival Wind Speed	125 mph (200 km/hr)	125 mph (200 km/hr)
Antenna Control System	Model 950, Predictive Tracking	Model 970, Monopulse Tracking
Antenna Two-Axis Pointing Performance (over 10 degrees of travel)	0.0140° rms, No Wind 0.0209° rms Winds 30 mph gusting to 45 mph	0.0066° rms, No Wind 0.0140° rms Winds 30 mph gusting to 45 mph
Tracking Performance	0.0075° rms, No Wind 0.0096° rms Winds 30 mph gusting to 45 mph	0.0041° rms, No Wind 0.0047° rms Winds 45 mph gusting to 60 mph
Antenna Radiation Patterns	Compliant with FCC, ITU, ANATEL, and Eutelsat regulations, ARSTRAT capable	Compliant with FCC, ITU, ANATEL, and Eutelsat regulations, ARSTRAT capable
Temperature Range	Operational: -15° to $+50^\circ\text{C}$ (optional -40°C)	Operational: -30° to $+55^\circ\text{C}$ (optional -40°C)
History	Numerous 4.8m, 6.3m, 8.0m and 9.0m Ka systems since 2000	Over 100 systems sold and operational since 2005
Delivery and Installation	Ship: 4 Months; Install/Test: 3 weeks	Ship: 4 Months; Install/Test: 2 Months
High Level Summary	Very good cost-effective performance	Highest Performing Antenna on the Market