

Ka Band AESA with Pan and Tilt

Overview

Satellite users today need the flexibility, resilience and security of being able to switch between orbits. At the same time, Flat Panel Antennas are crucial for a number of applications where space is a premium or in on-the-move environments. Our FPA, developed in conjunction with Satwave Arrays, features groundbreaking motorised pan and tilt capability, enabling it to seamlessly switch between LEO, MEO, and GEO orbits, without any signal degradation due to scan loss. This ensures true multi orbit capability with enhanced operating flexibility and availability.

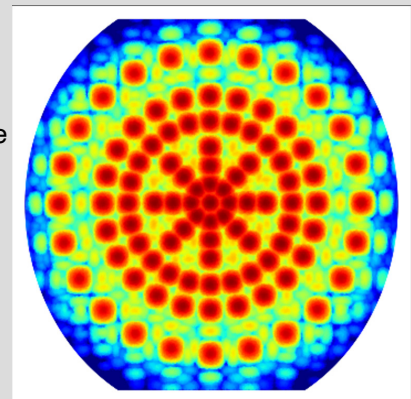
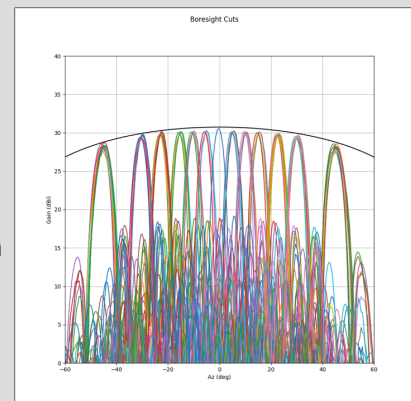
The Ku-band and Ka-band AESAs have been designed and developed for high-performance on mission-specific applications for both commercial and defence.

The antennas are compact, lightweight, and designed to withstand being in constant motion. They are also ruggedised to meet the demands of defence and commercial applications where reliability and performance must be maintained even in the most challenging conditions.



Product Features

- AESA fast beam switching for constellation networks
- Design is scalable to custom sizes and multi-panel antennas
- Pan and tilt capability, enabling it to seamlessly switch between LEO, MEO and GEO orbits without signal loss, true multi orbit capable
- Compact, lightweight, and designed to withstand being in constant motion
- Stacked patch radiating elements with proprietary, ML optimized, inner layers for wideband performance, enhanced crosspolarisation, and improved efficiency at large scan angles
- No custom parts, utilizes commercially available BFICs
- PCB-based design, manufacturable at lower cost at scale
- IP67 compliant and to operate in MIL-STD-810H and MIL-STD 461G environments
- Full system - Antenna Control Unit and Auto tracking algorithm to integrate with external modem
- Pan and Tilt provides mechanical help to minimize scan loss, whilst maintaining electronic beam pointing to stay on satellite when in motion



Specifications (Typical Performance)

RF

Frequency Band	Ka Band	
	Rx	Tx
Operating Frequency, GHz	17.7 – 21.2	27.5 - 31
Polarisation	Circular or Linear selectable via API	
G/T, dB/K (0° - Broadside, @25oC)	10	
EIRP, dBW (Plin, - Broadside)	49 circular, 46 linear	
Scan Range, Deg	60 without Grating lobes	
Scan Loss	2dB/k @45°, 4dB @ 60°	
Beam Steering, mS	<1	
Antenna Cross Pol Isolation, dB	Tx 25/ Rx 21	
Antenna Sidelobe Envelope	Compliant to current and proposed mask of GSOA-201 FPA-ESA Project	

Mechanical

Positioner	2axis pan and tilt
Travel Ranges	0 - 360o Az, 0 – 45° Elevation
Antenna Speed/Acceleration	6deg/sec, 3 deg/sec/sec
Power	375W antenna, 30W motors
Size	50 x 50 x 7.8 cm (19.7" x 19.7" x 3") antenna, 40 x 40 x 10 cm (16" x 16" x 4") positioner
Weight	<16kg (35lbs) antenna, <15kg (33lbs) positioner

Environmental

Wind Speed, km/hr	125 with no tilt 90 with tilt (wind shield fitted)
Operating Temperature, oC	-20 to 55
Storage Temperature, °C	-40 to 70