

# Ku-Band SATCOM Antennas

Our industry-leading line of electronically steerable antennas (ESA) provide reliable and high-speed communications spanning networks, frequencies and platforms. Leveraging decades of phased array design and manufacturing experience, we are transforming how we connect and share information across government, military and commercial markets.



**BAE SYSTEMS**

## Product Overview

Our Ku-Band phased array antennas are fully electronic with no moving parts. The antennas are modem agnostic to support access to GEO, MEO and LEO networks with a single antenna. The electronic steering provides beam speed and agility, which easily supports LEO satellite tracking and makes the antenna ideal for mobile platforms. Our electronically steered antennas (ESA) have an integrated radome, eliminating the cost, drag and RF performance degradation of a separate radome.

The antennas are built using our innovative subarray antenna architecture. The subarray is an antenna building block that allows the transmit and receive antenna sizes to be optimized separately by tiling subarrays together to meet performance requirements. This modularity allows the antennas to be assembled in volume, leverage economies of scale and quickly ramp production. We are offering two standard antennas—multi-orbit performance and multi-orbit LEO optimized. We also have the ability to build different size antennas based on customer needs.

## The Value of ESAs

- Enabling multi-orbit terminal solutions for mobile platforms
- Ensuring high performance communications by keeping mobile platforms locked onto the satellite in the most extreme environments
- Delivering unobstructed 360-degree field of view, supporting LEO satellite tracking from horizon to horizon
- Supporting communications requirements of today and tomorrow with a single future proof antenna

## Multi-Orbit Performance Antenna

Our multi-orbit ESA connects with GEO, MEO and LEO satellites. This full-duplex antenna gives the user the ability to dynamically optimize communication link performance by switching between networks, ensuring connectivity across all constellations and scan angles. The multi-orbit performance antenna was the first antenna to demonstrate multi-orbit operations on a commercial aircraft, showcasing high performance communication while switching between GEO and LEO satellites. This product has been certified on the SpaceX and OneWeb networks.

Ku-Band Multi-Orbit Performance Antenna Specification Overview	
Configuration/ Size	9 Transmit: 20 in x 20 in (52 cm x 52 cm) 9 Receive: 24 in x 24 in (61 cm x 61 cm)
Frequency	Transmit: 13.75* – 14.5 GHz *Extendible to 12.75 Receive: 10.7 – 12.75 GHz
Polarization	RHCP/LHCP/H/V (electronically selectable)
Axial Ratio/ XPD	<2.0 dB AR / >20 dB XPD
EIRP	53.6 dBW at boresight** 51.5 dBW at 45° elevation**
G/T	13.2 dB/K at boresight** 11.1 dB/K at 45° elevation**
Array Power	Rx: 315W Tx: <650W typical, 765W Max @P1 dB
Array Weight	Rx: 48 lb (22 kg), Tx: 36 lb (16 kg)

## Multi-Orbit LEO Optimized Antenna

Our LEO optimized ESA is smaller for platforms that need reduced size, weight and power. This full-duplex antenna provides maximum LEO performance while still connecting with GEO satellites with reduced link speeds. This product has been certified on the SpaceX and OneWeb networks.

Ku-Band Multi-Orbit LEO Optimized Antenna Specification Overview	
Configuration/ Size	4 Transmit Subarrays: 12 in x 12 in (30 cm x 30cm) 6 Receive Subarrays: 15 in x 22 in (38 cm x 55 cm)
Frequency	Transmit: 13.75* – 14.5 GHz *extendible to 12.75 Receive: 10.7 – 12.75 GHz
Polarization	RHCP/LHCP/H/V (electronically selectable)
Axial Ratio/ XPD	<2.0 dB AR / >20 dB XPD
EIRP	46.5 dBW at boresight** 44.4 dBW at 45° elevation**
G/T	11.5 dB/K at boresight** 9.4 dB/K at 45° elevation**
Array Power	Rx: 210W Tx: <300W Typical, 340W Max @P1 dB
Array Weight	Rx: 35 lb (16 kg), Tx: 16 lb (7 kg)

\*\* Our antennas do not require a radome, so EIRP and G/T performance do not need to be derated.