

CrossBeam[®]

Optical Communication Terminal



Flexible Free Space Optical (FSO) Satellite Crosslink System

CACI's CrossBeam is a fully integrated, compact, and robust FSO communication system designed for compliance with the Space Development Agency's (SDA) Tranche 0, Tranche 1, and Tranche 2 satellite crosslinks in low-earth orbit (LEO). CrossBeam features a common hemispherical beam steering optical head with a fine tracking mechanism designed to support the Space Development Agency's Proliferated Warfighter Space Architecture (PWSA) next-generation satellite network. CrossBeam also supports a range of other LEO, medium-earth orbit (MEO), and geosynchronous-earth orbit (GEO) applications.

Designed for low-cost, high-volume manufacturing, CrossBeam is equipped with a patented all-fiber-optic-based transmit and receive optics design, along with CACI's high-performance FSO communications modem technology, to provide reliable data communications for long-distance crosslink applications. CrossBeam's optical communication terminal (OCT) architecture is highly scalable and tailorable for other crosslink and other link applications for aircraft or ground terminals.

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For more information about our optical and photonics expertise and technology, visit:
www.caci.com/photonics-solutions

Features

- SDA Tranche 0/1/2 compliant.
- Low cost and low size, weight, and power (SWaP).
- Designed for manufacturability.
- High technology readiness level (TRL) and manufacturing readiness level (MRL).
- Variable data rate modem supports operation up to 2.5 Gbps.
- Launched, deployed, and functioning on orbit with DARPA's Mandrake 2 program.

Benefits

- Delivers highly secure communications that are immune to RF interference and jamming.
- Very low probability of interception and detection.
- Enables secure communication in a radio frequency (RF)-denied environment.
- High-performance throughput for LEO space.
- Effectively unlimited use of optical spectrum, unlike limited RF communication.

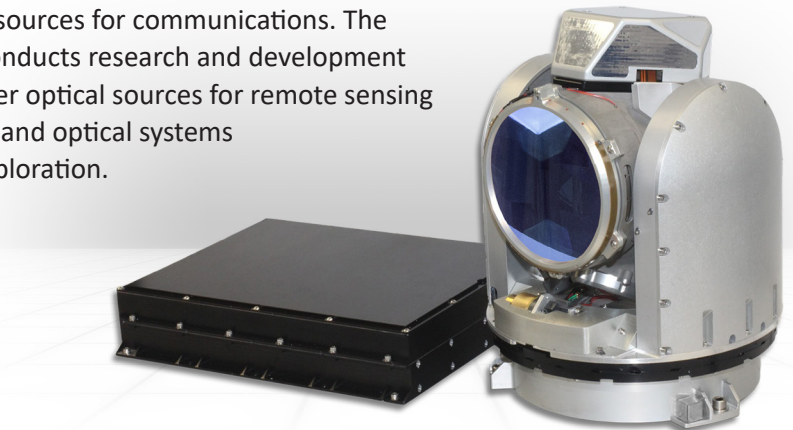
CrossBeam

Feature	CrossBeam-ST0	CrossBeam-ST1
Link Distance	6,500 km	6,750 km
Field of Regard	Full Hemispherical	
Data Rate	1.25 Gbps	2.5 Gbps
Transmit Optical Power	1.25 W	2.5 W
Aperture Size	10.5 cm	
Optical Link Margin	3 dB	
Position/Time Accuracy	<1 cm / <1 nsec	
Acquisition Time	~10 sec after on orbit calibration	
Beam Director Size/Mass	10.3 in. H x 8.2 in. diam 10 kg	
Power	50 W (typical)	75 W (typical)

CACI Optical and Photonic Solutions—Delivering Flexible, Adaptable, Secure High-Rate Communications

CrossBeam terminals are operating today as part of the Mandrake 2 mission by DARPA, with two units launched in June 2021. Both terminals have maintained orbit functionality since then, with over 25 successful crosslink experiments and space-to-ground link testing as of early 2023. CrossBeam is also part of SDA's Tranche 0 and Tranche 1 programs, as well as DARPA's Blackjack constellation.

Our FSO communications programs are conducted by CACI's multi-disciplinary Optical and Photonic Solutions team, composed of physicists and material scientists, as well as optical, electrical, and mechanical engineers. This team is focused on developing the most advanced photonics-based solutions, including optical modems, optical terminals, and high-power sources for communications. The team also conducts research and development of high-power optical sources for remote sensing applications and optical systems for space exploration.



This material consists of CACI International Inc general capabilities information that does not contain controlled technical data as defined within the International Traffic in Arms (ITAR) Part 120.10 or Export Administration Regulations (EAR) Part 734.7-10. (PRR 701) 03/2023



EXPERTISE and TECHNOLOGY
for National Security

At CACI International Inc (NYSE: CACI), our 23,000 talented and dynamic employees are ever vigilant in delivering distinctive expertise and differentiated technology to meet our customers' greatest challenges in national security and government modernization. We are a company of good character, relentless innovation, and long-standing excellence. Our culture drives our success and earns us recognition as a *Fortune* World's Most Admired Company. CACI is a member of the *Fortune* 1000 Largest Companies, the Russell 1000 Index, and the S&P MidCap 400 Index. For more information, visit us at caci.com.

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