

# OCT

OPTICAL COMMUNICATION TERMINAL



General Atomics Electromagnetic Systems' (GA-EMS) Optical Communication Terminals (OCTs) are enabling faster, higher fidelity optical communication. OCTs support vast networking of satellites, the sharing of data and information, and collective on-orbit computing resources in space. GA-EMS' OCTs are facilitating the next evolution of modular, space-based communication services, providing a more resilient architecture to ensure 24/7 total connectivity from earth, to space, and beyond.

# OPTICAL COMMUNICATION TERMINAL

## OVERVIEW

GA-EMS' OCTs enable robust space-to-space, space-to-air, and space-to-ground communication between multiple spacecraft in a variety of orbits. The OCTs improve resiliency and security as well as providing increased satellite crosslink and downlink data rates when compared to legacy radio-frequency (RF) systems.

## 2021 EXPERIMENT DATA

### OCT

**Wavelength:** 1550 nm  
**Data Rate:** Up to 5GB per sec  
**Max Range:** 5000 km

### SATELLITE

**Mission:** Department of Defense contracted OCT payload technology experiment  
**Satellites:** Two GA-EMS 12U CubeSats  
**Orbit:** Low Earth Orbit (LEO)

## OPERATIONAL CHARACTERISTICS

### Higher Directivity with Less Power and Lower Mass

The smaller aperture size required for optical communication relative to conventional RF technology, allows for a smaller, lighter OCT package with the additional benefit of less beam spreading.

### High Bandwidth

The optical system's higher carrier frequency increases its information carrying capacity.

### Less Crowded Spectrum

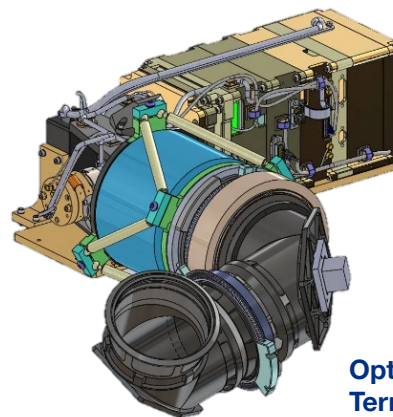
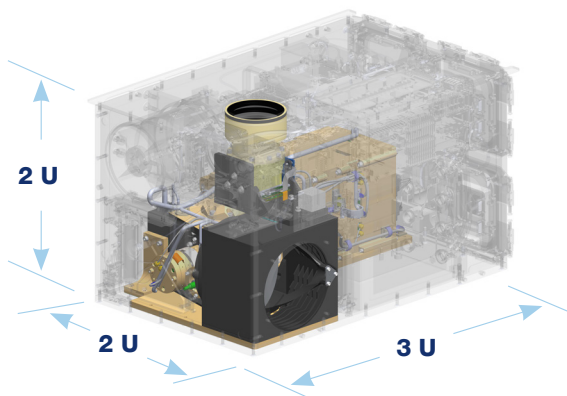
Narrow, optical beams reduce interference with adjacent carriers, reducing overall spectrum congestion.

### High Security

The highly directional, narrow beam divergence of optical communication has inherent low probability of intercept and detection (LPI/LPD).

### Scalable for Cislunar Operation

GA-EMS' OCTs provide communication throughout the cislunar environment to support Space Domain Awareness and other missions.



**Optical Communication Terminal (OCT)**