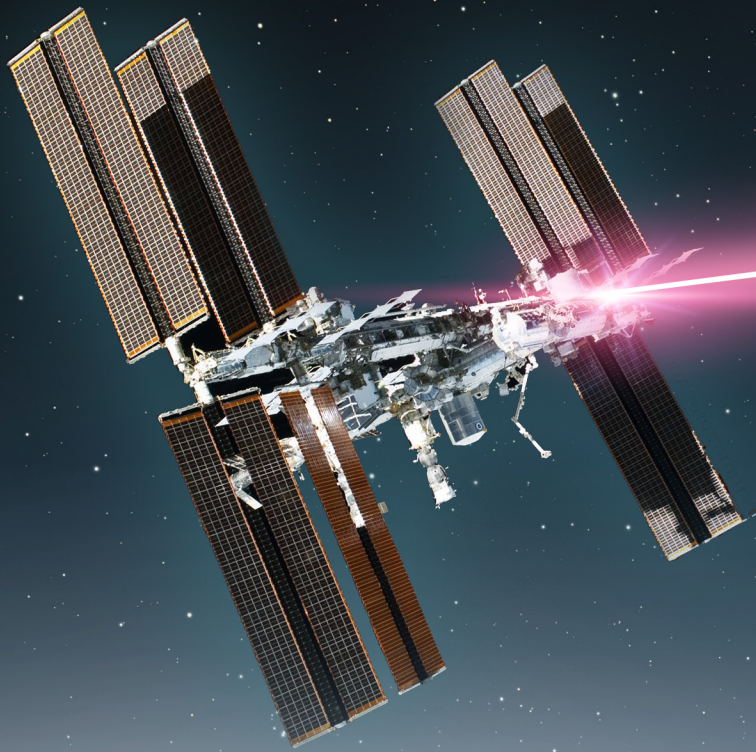


ILLUMA-T

INTEGRATED LCRD LEO USER MODEM AND AMPLIFIER - TERMINAL



1.2

GBPS

EMPOWERING ASTRONAUTS WITH LASER COMMUNICATIONS

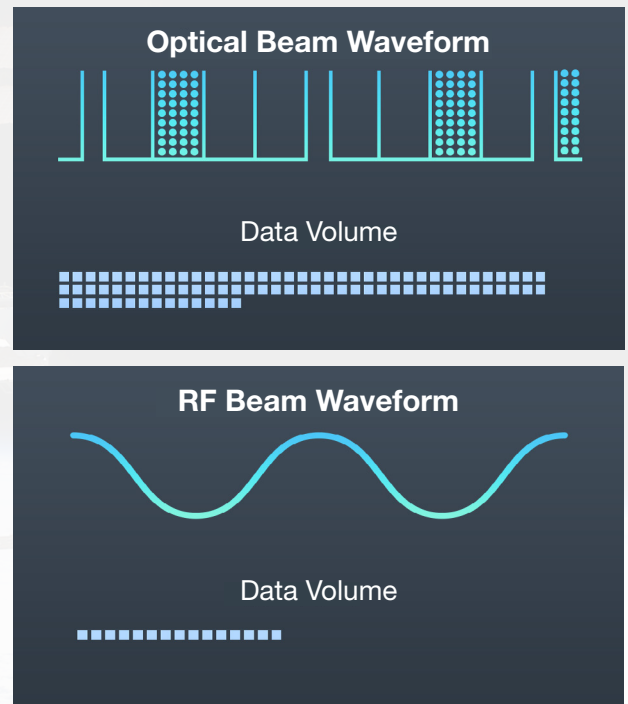
NASA is bringing laser communications to the International Space Station. Laser communications uses invisible infrared light and communicates more data in a single transmission than traditional radio frequency systems. With more data from science and exploration missions, NASA can make more discoveries about our planet, the solar system, and beyond.

The laser terminal on the space station is known as ILLUMA-T, which will send data to NASA's Laser Communications Relay Demonstration (LCRD) at 1.2 gigabits per second. LCRD, being a relay, will then send this information down to ground stations in Haleakalā, Hawaii or Table Mountain, California. ILLUMA-T and LCRD will be the first system to demonstrate low-Earth orbit to geosynchronous orbit to Earth laser communications.

BENEFITS OF LASER COMMUNICATIONS

NASA is infusing laser communications into future missions. ILLUMA-T is the next step, and will eventually empower the astronauts living and working on the International Space Station with new capabilities.

ILLUMA-T will be the first demonstration of an end-to-end laser communications system. It will provide the station with a state-of-the-art laser communications terminal with improved size, weight, and power requirements over comparable radio systems. A smaller communications system means more room for science instruments. Less power drain means longer lasting batteries. These benefits are essential on a spacecraft where room is at a premium.



Laser communications sends more data in a transmission over comparable radio systems.

MISSION PARTNERS

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and Navigation (SCaN)

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EVOLVING COMMUNICATIONS CAPABILITIES



NASA has been leveraging communications relay satellites since 1983 when the first Tracking and Data Relay Satellite (TDRS) launched. With relays, missions are not required to have direct line-of-sight to antennas on Earth, increasing communications coverage. The space station typically uses the Near Space Network's TDRS relays for radio frequency communications to and from Earth. With ILLUMA-T's laser communications capabilities, the space station could send more science data in a single downlink for investigation and discovery.

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