

An example of Air Force supported SBIR/STTR technology that has been transitioned into an Air Force or other DoD system or subsystem or used by Air Force test ranges and facilities or maintenance depots.

SBIR Topic Number:

AF99-029

SBIR Title:

Optical Interconnects for Satellite Applications

Contract Number:

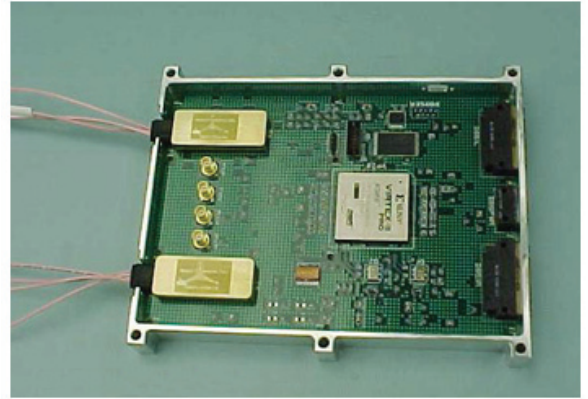
F29601-00-C-0019

SBIR Company Name:

Space Photonics Inc.
 Fayetteville, AR

Technical Project Office:

AFRL Space Vehicles
 Directorate, Kirtland
 AFB, NM



Left: International Space Station; Right: Space Photonics' Fiber Optic Network Interface Card

Fiber Optic Components Support International Space Station (ISS) Mission

- The Air Force needs improved technologies for high-speed optical interconnects for space
- Space Photonics' fiber optic transceivers provide the data link between ISS's experimental platforms' backbone electronics and the ISS's embedded fiber optic network
- SBIR-developed fiber optics technology was instrumental in winning a contract to supply fiber optic components to the ISS

Commercialization Pilot
 Program Series

PRS-08-096

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DISTRIBUTION A:
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 unlimited.

Air Force Requirement

The Air Force needs improved technologies for high-speed optical interconnects for space. Optical interconnects can relieve data bottlenecks that occur between chips, boards, or modules. They have the potential for reducing the latency, excessive weight, and electromagnetic interference (EMI) found in hardware systems and increasing computing speed.

The thrust of this SBIR topic was to make optical interconnects more readily applicable in space or to improve the performance of interconnects that are already applicable. Improvements might include decreased power consumption, increased data rates, lower susceptibility to upset due to space radiation, lower weight, and applicability in new systems.

SBIR Technology

Space Photonics' SBIR-developed fiber optics technology was instrumental in its winning a contract to supply fiber optic components to the International Space Station (ISS). The first planned launch of the systems on board the Space Shuttle is scheduled for 2010. The company will provide optical communications modules for high-speed data transfer between a wide range of test pallets and the ISS.

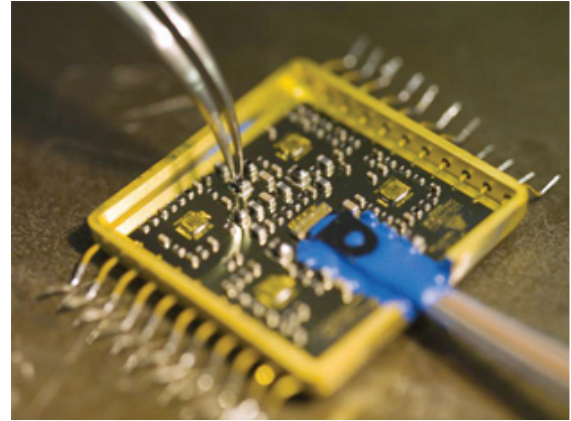


This will be the first time that optical communications have been used in the ISS. The ISS has a built-in fiber optic network, but it is not used at the moment because at the time the ISS was built, optical technologies were not mature enough. Six experimental platforms for the ISS, referred to as the Express Logistics Carrier, are under development. These provide space-product developers with a platform that exposes new components to the environment in orbit. The platforms provide several slots for experiments. Space Photonics' fiber optic transceivers provide the data link between the platforms' backbone electronics

and the ISS's embedded fiber optic network. The company's primary products operate at speeds of 2.5 Gbit s-1, but the transceivers for the ISS only require speeds of 125 Mbit s-1.

Transition Impact

In support of the ISS program, Space Photonics will be working under a contract from Orbital Sciences Corporation and NASA's Goddard Space Flight Center (GSFC), both located in Greenbelt, MD. The total amount for the contract award is expected to reach \$1.2 million over the course of the two and a half year program.



Company Impact

Chuck Chalfant, President and CEO, said, "The International Space Station project is an important step for our company. Space Photonics has worked for years to develop the manufacturing processes required for building space flight-worthy electronics and optoelectronics. This R&D focus was made possible, in large part, due to project funding from the SBIR program."

Space Photonics develops, markets, and sells optical networking systems and components specifically designed to address the reliability and bandwidth limitations of military and commercial aircraft and spacecraft. The company's products enable aerospace designers to embed high-capacity, optical networking capabilities into their systems.



SBIR/STTR

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