High-capacity wireless optical communication equipment

Overview

We are researching two new technologies for sustainably and economically responding to the exponentially increasing demand for data communications: (i) optical-fiber technology for space-division multiplexing transmission overcoming the capacity limitations of existing optical. We are researching two new technologies for sustainably and economically responding to the exponentially increasing demand for data communications: (i) optical-fiber technology for space-division multiplexing transmission overcoming the capacity limitations of existing optical. In this paper, we present recent advancements in transmitter and receiver technologies for Optical Wireless Communication (OWC). OWC offers very wide license-free optical spectrum which enables very high capacity transmission. Additionally, beam-steered OWC is more power-efficient and more secure. Evolving towards the 2030 optical communications network system and architecture is a key issue facing the optical communications industry and requires viable technical options for building future-oriented and novel optical communications network systems. Thus far, the transmission capacity per optical fiber has been drastically increased by multiplexing, signal density and multi-leveling, via methods such as “time. Taara Lightbridge enables high-speed data transmission of up to 20 gigabits per second across distances of up to 20 km. Each Taara Lightbridge link comprises two terminals equipped with mirrors and sensors that continuously align and track beams of light to maintain a stable connection.

Article Content

Nov 09, 2025

Acacia Communications, Inc.

High-speed coherent optical interconnect products that transform communications networks, relied upon by network equipment providers, hyperscalers, service

Nov 05, 2025

High-Capacity Optical Wireless Communication by Directed Narrow

Optical wireless communication (OWC) by means of 2D-steered narrow infrared beams can provide non-shared secure high-capacity connections to individual users, at high user densities.

Jun 05, 2026

Multi-target and ultra-high-speed optical wireless communication using ...

In this contribution, we propose and demonstrate a multi-target and ultra-high-speed OWC system based on a thin-film lithium niobate (TFLN) OPA. It enables real-time multi-target

Mar 24, 2026

Underwater Wireless Optical Communications: From the Lab Tank to

Underwater wireless optical communication (UWOC) is a competitive candidate for ocean information transmission due to its high bandwidth and low latency. UWOC has already achieved transmission

Jul 31, 2025

Optical Inter-satellite Communication Technology for

NEC Corporation is building a network based on optical inter-satellite communication technology to achieve inter-satellite data communications with a higher speed

Jul 26, 2025

Transmitters and Receivers for High Capacity Indoor Optical Wireless ...

OWC offers very wide license-free optical spectrum which enables very high capacity transmission. Additionally, beam-steered OWC is more power-efficient and more secure due to low divergence of

Oct 05, 2025

High-capacity and secure inter-satellite optical wireless communication ...

Abstract Inter-satellite optical wireless communication (IsOWC) has emerged as a promising technology for high-capacity and secure links in next-generation satellite networks.

Dec 19, 2025

High-Speed Large Capacity Optical Fiber Communications

The concluding chapter synthesizes key advancements and anticipates future challenges, positioning this book as an indispensable resource for researchers, engineers and graduate students seeking to

Mar 18, 2026

Ultra-high-capacity Optical Communication Technology

Our research on ultra-high-capacity transmission technologies, namely, optical-fiber technology for SDM transmission and high-speed optical transmission with

Sep 30, 2025

Wireless Optical Communications %

Even in challenging conditions—such as tower movement due to wind or temporary obstructions like birds—Taara''s system ensures uninterrupted communication.

Mar 07, 2026

Recent Progress in High-capacity Optical Wireless Communication

Abstract: Optical wireless communication can surpass the capabilities of radio-based wireless communication in many respects. When using accurately steered infrared beams, it can offer fiber

Jan 10, 2026

Future All-optical Network Architecture and Key Technologies

Optical networks form infrastructure that deliver ultra-broadband, large-capacity, and low-latency connectivity for the digital world.

Sep 22, 2025

Optical Wireless Communication

Optical wireless communication (OWC) is able to significantly enhance network capabilities towards KPIs by targeting data rate, connection density, latency, energy footprint, and security.

May 18, 2026

Recent Progress in High-capacity Optical Wireless Communication

This keynote talk presents recent advances in our indoor high-capacity beam-steering technologies for all-optical bi-directional wireless communication including accurate automatic self-calibrated user

Apr 28, 2026

Optical Wireless Communication | Springer Nature Link

Optical wireless communication (OWC) is a powerful data transmission technology due to the availability of its vast unlicensed spectrum, ultra-high data rates, and inherent security. In this

Jan 05, 2026

What is high-capacity optical transmission technology? Infrastructure ...

What is high-capacity optical transmission technology? High-capacity optical transmission technology expands the transmission capacity per hour compared to conventional optical transmission.

Sep 29, 2025

Transmitters and Receivers for High Capacity Indoor Optical Wireless ...

Abstract In this paper, we present recent advancements in transmitter and receiver technologies for Optical Wireless Communication (OWC). OWC offers very wide license-free optical spectrum which

Feb 23, 2026

Future All-optical Network Architecture and Key Technologies

Evolving towards the 2030 optical communications network system and architecture is a key issue facing the optical communications industry and requires viable technical options for building future

Apr 09, 2026

Key Technologies in Underwater Optical Wireless Communication

Its advantages include a high communication speed, small time delay, good security, and low cost. In recent years, researchers have conducted extensive research on key technologies in underwater

May 12, 2026

Inside Ciena''s Ottawa lab: The path to 1.2 TBps and

Building from the chip-level While fiber and data center structures often capture the infrastructure investment headlines, high-speed networking

Apr 22, 2026

High-Speed Large Capacity Optical Fiber Communications

Extend Wavelength Division Multiplexing Technology: The optical fiber capacity is approaching the Shannon limit, ultra Tb/s optical transmission has become a research hotspot for high-speed large

Nov 02, 2025

High-Speed Large Capacity Optical Fiber Communications

From foundational principles to experimental validations, this book bridges theoretical concepts with practical implementations, offering a holistic view of scalable solutions for next-generation optical

Aug 07, 2025

Enabling high-speed and large-capacity data transmission in optical ...

Abstract Inter-satellite optical wireless communication (IsOWC) has drawn a lot of interest previously mainly because there is a rising demand for large-capacity, high-speed data transfer between

Feb 15, 2026

High-speed multi-user optical wireless communication between

Considering indoor communication network composed by multiple terminals, the demonstration of the proposed VCSEL-based OWC system is plausible to realize a high-speed direct

Oct 17, 2025

Recent Progress in High-capacity Optical Wireless Communication

All-optical bidirectional beam-steered wireless communication will be able to offer the ultimate in wireless capacity to the user while minimizing power consumption.

Oct 03, 2025

Optical Wireless Communication | Springer Nature Link

Compared with traditional radio-frequency (RF) communication, optical wireless communication has the advantages of high capacity, good confidentiality, light weight, low power consumption, strong anti

Oct 04, 2025

Fiber-optic communication

Modern fiber-optic communication systems generally include optical transmitters that convert electrical signals into optical signals, optical fiber cables to carry the

Jun 28, 2025

Multi-target and ultra-high-speed optical wireless communication using ...

This work enables multi-target, ultra-fast optical wireless communication with a chip-scale device. The system delivers 320 Gbps speeds and robust video transmission, providing a solid

Contact Us

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