

November 11, 2025

Kyocera Announces Breakthrough in Underwater Wireless Optical Communication: Data Speeds up to 5.2Gbps*

New UWOC technology unveiled ahead of CES 2026 promises real-time ocean data transmission for marine research, industry, and next-gen marine exploration

**In short-range underwater optical wireless communication (based on Kyocera's research: November 11, 2025)*

Kyocera Corporation (President: Hideo Tanimoto; "Kyocera") today announced it has successfully demonstrated Underwater Wireless Optical Communication (UWOC) technology capable of short-range data transmission at 5.2Gbps, among the fastest fiberless UWOC technologies ever demonstrated. Kyocera's new development could enable real-time, large-volume data transmission for ocean exploration and underwater robot operations, providing immediate access to high-resolution images, video feeds, and sensor data, and supporting more efficient underwater research and robot control. This UWOC technology will be featured at CES 2026, a cutting-edge technology exhibition in Las Vegas, United States, January 6 – 9, 2026 (local time), in Kyocera's booth (**West Hall #6501**).



Kyocera's Ultra High-Speed Underwater Wireless Optical Communication Technology

■Development Background

The world beneath the waves is rapidly transforming. Today, autonomous underwater vehicles (AUVs) and drones are redefining marine surveys, structural inspections, and resource exploration. Yet, mainstream audio communications for these frontiers of discovery face a major bottleneck: their speed. Capped at just a few Mbps, slow transmission restricts instantaneous sharing of high-resolution video and big data. Determined to overcome these limits, Kyocera has propelled research and development of specialized UWOC, achieving a remarkable 5.2Gbps transmission in a freshwater laboratory setting.



■ Features of Kyocera's Ultra High-Speed UWOC Technology

● Development of a Proprietary PHY (Physical) Layer

Imagine converting streams of digital data into beams of laser light—this is the core mission of the PHY (physical) layer in underwater wireless optical communication. Unlike standard specifications, which draw heavily on wired and general wireless technologies and often falter underwater, Kyocera's original communication standards provide stability and capacity for underwater data transfer. With advanced, high-speed systems custom-tailored to the challenges of underwater environments, Kyocera enables reliable, large-scale transmission even in the most demanding settings.

● Successful Expansion of Underwater Bandwidth to 1 GHz

By applying Kyocera's original communication specifications, the company developed an optical front-end circuit with a wide bandwidth exceeding 1 GHz that fully leverages the bandwidth characteristics of optical semiconductor components. This characteristic enables users to transmit significantly more information in the same timeframe, making activities such as live underwater video streaming, sensor data transfer, and collaborative inspections much faster and more reliable. This process achieves a data transfer speed approximately 2.5 times* that of conventional underwater optical communications, allowing critical data to be accessed and shared almost instantly.

■ Future Developments

Kyocera's technology has the potential to be used across a wide range of fields, including real-time sharing of high-definition video from AUVs, high-precision inspection of underwater structures, immediate acquisition of large-volume data in ocean research, and simultaneous data collection from multiple underwater sensors. Users benefit from rapid, uninterrupted data transmission, enabling underwater tasks to be more efficient and responsive. Future development to increase communication distance and capacity could accelerate technological innovation in the marine industry and academic research and contribute to the construction of next-generation marine ICT infrastructure.

■ Featured Technology at CES 2026

This technology will be exhibited at one of the world's largest trade shows, CES 2026, held in Las Vegas, Nevada, USA, January 6 -9, 2026 (local time). Kyocera's latest innovations in AI-Based Depth Sensors, Millimeter-Wave Sensors, Phased Array Antenna Modules, and other technologies to support safe, autonomous driving will be showcased at Kyocera's booth #6501, West Hall.

Date	January 6-9, 2026
Venue	Las Vegas Convention Center
Booth Location	Vehicle Tech & Advanced Mobility Zone, West Hall
Booth Number	#6501



About KYOCERA

Kyocera Corporation (TOKYO:6971,<https://global.kyocera.com/>), the parent and global headquarters of the Kyocera Group, was founded in 1959 as a producer of fine ceramics (also known as “advanced ceramics”). By combining these engineered materials with metals and integrating them with other technologies, Kyocera has become a leading supplier of industrial and automotive components, semiconductor packages, electronic devices, smart energy systems, printers, copiers, and mobile phones. During the year ended March 31, 2025, the company’s consolidated sales revenue totaled 2 trillion yen (approx. US\$13.5 billion*). Kyocera is ranked #1,123 on Forbes magazine’s 2025 “Global 2000” list of the world’s largest publicly traded companies, and has been named among “The World’s 100 Most Sustainably Managed Companies” by The Wall Street Journal

*Conversion is provided based on TTM as of March 31, 2025

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