Press Information

Kyocera announces breakthrough in underwater wireless optical communication (UWOC): data speeds up to 5.2 Gbps[1]

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

Kyoto/London, 27th November 2025. Kyocera Corporation has successfully demonstrated underwater wireless optical communication (UWOC) technology capable of short-range data transmission at 5.2 Gbps, among the fastest fibreless 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, 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

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

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 5.2 Gbps transmission in a freshwater laboratory setting.

Features of Kyocera's ultra high-speed UWOC technology

1. **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.

2. **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[2] 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.

---

[2] Conversion is provided based on TTM as of March 31, 2025.

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. 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.

Overview: Kyocera at CES 2026

Show	CES 2026
Date	6 to 9 January 2026
Location	Las Vegas, Nevada, USA
Kyocera’s booth	West Hall Vehicle Tech and Advanced Mobility Zone Booth #6501

The press material is available for download via the following link:
https://spgroup.box.com/s/r2jxf4pvlewee0ap6r2nir5jru81u0ue

For more information on Kyocera: uk.kyocera.com

About Kyocera

Kyocera has been successful in Europe for over 50 years. From its European headquarters in Esslingen am Neckar, KYOCERA Europe GmbH operates 29 sites including manufacturing facilities, with products ranging from fine ceramics, automotive, semiconductor and optical components to components for medical products, industrial tools, LCDs, touch solutions, industrial printing components, and consumer goods such as kitchen and office products.

KYOCERA Europe GmbH is a company of the KYOCERA Corporation headquartered in Kyoto/Japan, a renowned supplier in semiconductor, industrial and automotive components as well as electronic components, printing and multifunction systems, smart energy systems, and communications technology. Kyocera is one of the most experienced technology producers, with more than 65 years of industry expertise. The Kyocera Group comprises 288 subsidiaries (31 March 2025). With around 77,200 employees, Kyocera generated net annual sales of around EUR 12.43 billion in the 2024/2025 fiscal year.

Kyocera is ranked 874 on Forbes magazine's 'Global 2000' list for 2024 and ranked as 'The 100 Most Sustainably Managed Companies in the World' according to the Wall Street Journal. For the second year in a row, Kyocera qualified for the Dow Jones Sustainability Index (Asia-Pacific). As well, Kyocera receives a Bronze rating on EcoVadis Sustainability Survey and was acknowledged as a 'Top 100 Global Innovator 2025' for the ninth time by Clarivate, being one of the world's leading innovators.

Kyocera also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr Kazuo Inamori — to individuals worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (equivalent to approximately €596,500 per prize category).

Contact
KYOCERA Fineceramics Ltd.
Allan Martin
General Manager
Prospect House, Archipelago,
Lyon Way, Frimley, Surrey.
GU16 7ER United Kingdom
Tel: +44 1276 693450
E-mail: PR@kyocera.de
uk.kyocera.com