

Polariton and Nokia collaboration sets world record for high-speed datacenter communication

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Polariton Technologies announces a new world-record data transmission using a packaged Mach-Zehnder modulator in a direct-detection scenario. The world record was set by **Nokia Bell Labs** in Stuttgart, Germany, using Polariton's fully-packaged >110 GHz C-band plasmonic Mach-Zehnder modulator. The team demonstrated ultra-high-symbol-rate modulation of 304 GBd and a record-high data rate of 432 Gbit/s on a single wavelength and polarization.

"This is an important step towards making data communication more energy- and cost-efficient," says Dr. Benedikt Baeuerle, co-CTO at Polariton Technologies. "By increasing the single-lane speed, we can reduce the number of parallel communication channels and therefore can save on components, deployed fibers, and in the end, the power consumed by the system."

"The ultra-broadband modulator from Polariton Technologies allowed us to achieve symbol rates exceeding 300 GBd in our lab. This record symbol rate is an important milestone towards the realization of high-speed optical lanes, which are the basic ingredients of future datacenter interconnects," says Dr. Qian Hu, the principal investigator on this project from Nokia Bell Labs, who presented this world record trial during the post-deadline session of the 47th European Conference on Optical Communication (ECOC) in September 2021.

The outlook for plasmonic technology is even more exciting after reaching such records, especially in the datacenter industry. Moreover, due to the expansive growth of cloud computing, there is even more of an urgent need for developing better, efficient, and faster ways to connect.

Polariton Technologies' plasmonic modulator was the key element to achieving this record. With its high bandwidth and small footprint, it is especially interesting for data centers since it makes it possible to keep parallel lanes while increasing the total data rate of the optical interface. This enables low complexity chips with low power consumption, which is essential to achieve a high degree of integration and a high faceplate density in the case of pluggable form factors.

This achievement was obtained by a multi-company team, bringing together the best expertise, innovation, and knowledge from Polariton and Nokia Bell Labs.

We especially want to thank the researchers and scientists that made this achievement possible.

About Polariton Technologies Ltd.

Polariton Technologies is on a mission to revolutionize the future of telecommunications by accelerating information transport and reducing its power consumption. Polariton is providing the world's fastest, most compact, and energy-efficient electro-optic devices with applications in telecommunications, datacenters, wireless communications (5G/6G), space, and sensing. Founded in

2019, Polariton is a spin-off of ETH Zurich, taking pride in teamwork, clear and effective communication, and curiosity.

About Nokia

At Nokia, we create technology that helps the world act together.

As a trusted partner for critical networks, we are committed to innovation and technology leadership across mobile, fixed and cloud networks. We create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Adhering to the highest standards of integrity and security, we help build the capabilities needed for a more productive, sustainable and inclusive world.

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