Lightmatter Achieves Record 1.6 Tbps Per Fiber to Accelerate AI Optical Interconnect

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Strategic collaboration combines Qualcomm's high-performance connectivity with Lightmatter's photonic engine to achieve an 8X bandwidth-density advantage

MOUNTAIN VIEW, Calif. – March 11, 2026 – Lightmatter, the leader in photonic (super)computing, today announced a historic milestone in AI interconnect performance: the successful sampling of Passage™ Co-Packaged Optics (CPO) chiplet, demonstrating a record-breaking 1.6 Tbps throughput per fiber. By leveraging a 16-wavelength DWDM (dense wavelength division multiplexing) architecture at 112G per SerDes lane, this platform provides up to 8X more bandwidth per fiber than existing Near-Packaged Optics (NPO) and CPO solutions.

This integration of Lightmatter's industry-leading Passage photonic engine with Qualcomm Technologies' advanced 112G PAM4 optical SerDes chiplet creates the first photonic interconnect architecture to reach this unprecedented bandwidth density. The result is a silicon-proven, high-volume ready technology built for hyperscaler deployment that directly addresses the interconnect bottleneck limiting frontier AI model scaling. As generative AI clusters grow, this architecture reduces power consumption over existing interconnect technologies while enabling both scale-up and scale-out connectivity for next-generation XPUs and switches.

Building on the initiative established with Alphawave Semi—now part of Qualcomm Technologies—this collaboration sets a new industry standard for optical bandwidth density and power efficiency, advancing next?generation AI infrastructure performance. By maximizing throughput per fiber, this architecture sharply increases system throughput while reducing the fiber count required in the data center, streamlining cable management and lowering optical infrastructure costs. The results demonstrate that Passage L?Series photonic engines are on track to deliver 100 Tbps and beyond for next?generation XPUs and switches, with industry?leading power efficiency.

"The successful validation of our 112G/106G PAM4 connectivity technology within the Passage L-Series CPO architecture is a critical step forward for the industry," said Tony Pialis, Executive Vice President and General Manager of Qualcomm Technologies, Inc. "As generative AI models grow in size and complexity, they demand a fundamental shift in data movement. Our strategic work with Lightmatter meets this challenge head-on by providing a clear path to 100 Tbps of total I/O per package. We are focused on delivering the best-in-class power efficiency and throughput required to build the world's most advanced AI superclusters."

"By combining Qualcomm Technologies' industry-leading 112Gbps SerDes with our Passage L-Series technology, we have achieved a record-breaking 1.6 Tbps per fiber," said Nick Harris, Ph.D., Founder and CEO of Lightmatter. "This milestone proves that our photonic engines are delivering the massive throughput and power efficiency that hyperscale data centers demand today to overcome the physical limitations of traditional copper and legacy interconnects. We are providing a validated interconnect foundation that moves the industry beyond the levels of existing performance and into high-volume, high-performance CPO for the AI era."

“The industry has reached a point where incremental bandwidth density improvements are insufficient to keep pace with the growth in AI cluster size,” said Vlad Kozlov, Founder and CEO of LightCounting. “By delivering 1.6 Tbps per fiber through a 16-wavelength DWDM architecture, this collaboration between Lightmatter and Qualcomm Technologies represents a significant advancement in addressing fiber cabling and physical space constraints of data center infrastructure. Moving toward a 100 Tbps per-package I/O threshold is a key milestone for the ecosystem in the development of next-generation XPUs and switches.”

These record-breaking Passage L-Series photonic interconnects are available through Passage Evaluation Kits for lead customer testing.

Lightmatter will showcase its latest innovations at the Optical Fiber Communication conference in Los Angeles, from March 15-19, 2026, in booth 4817. Qualcomm Technologies’ Retimer DSP will be featured at booth 2100 at the event. For more information, please visit https://lightmatter.co/event/ofc-2026/.

About Lightmatter

Lightmatter is leading the revolution in AI data center infrastructure, enabling the next giant leaps in human progress. The company’s groundbreaking Passage™ platform—the world’s first 3D-stacked silicon photonics engine—and Guide® VLSP™—the industry’s leading high-bandwidth light engine—connect thousands to millions of processors. Designed to eliminate critical data bottlenecks, Lightmatter’s technology delivers unprecedented bandwidth density and energy efficiency for the most advanced AI and high-performance computing workloads, fundamentally redefining the architecture of next-generation AI infrastructure.

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