Lightwave Logic and Polariton Technologies Announce World-Class Figure of Merit for Plasmonic Polymer Optical Modulators

Latest Figure of Merit Results Achieved Ultra-Low Drive Voltages and Ultra-High Bandwidths – Which are Extremely Well Suited for Next Generation Internet and Optical Networking Transceivers Beyond 800Gbps

ENGLEWOOD, Colo., and RUSCHLIKON, Switzerland, December 13, 2022 -- Lightwave Logic, Inc. (NASDAQ: LWLG), a technology platform company leveraging its proprietary electro-optic polymers to transmit data at higher speeds with less power, today provided a world-class figure-of merit performance for modulators using electro-optical polymers and a plasmonic device design in conjunction with Polariton Technologies. Building from the world record performance and demonstration of a 250 GHz super high bandwidth electro-optical-electrical (EOE) link that was presented at ECOC[1] through a collaboration with ETH Zurich, these latest figures of merit results show the potential for extreme power savings for optical network equipment and demonstrate clearly that polymer-based technology platforms are positioned well for general implementation.

These results were achieved using Polariton's electro-optic polymer-based plasmonic devices with Lightwave's electro-optic materials, with a bandwidth greater than 250 GHz. While these high-speed results have been reported previously, here Lightwave Logic reports for the first time that the voltage-length product Figure of Merit (FoM) for this modulator is just 60 Vum, which is approximately 10X better than the performance of the optical semiconductor modulators that are incumbent in the optical network and internet today. This figure of merit will allow ultra-low voltage operation and, enabled by Polariton's plasmonic modulator, the ability to carry significantly more data per modulator while consuming much less power. The net positive effect on system level equipment is expected not only to be significant, but perhaps more importantly, also a strong driver of a ''green photonics" platform.

Dr. Michael Lebby, Chief Executive Officer of Lightwave Logic, said: "These results position us extremely well for next generation ultra-high-capacity interconnects for the hyper-scale market. The combination of electro-optic polymers and plasmonics is becoming an ideal sunrise technology platform to address the 'Achilles heel' of the data industry: high power consumption. As the industry contemplates the implementation of PAM4 200G lanes for 2023 and 2024, these optical devices already have shown capability for at least 2X these lane speeds."

Dr. Wolfgang Heni, Co-CTO at Polariton, added: "At Polariton we are excited about this achievement. With a decade of experience in plasmonic circuits, we value the collaboration with Lightwave Logic having supplied this excellent high-performance electro-optic material. We are looking forward to a solid product roadmap aimed at next-generation photonic devices, modulators, and transceivers."

[1] The groundbreaking results were presented by Stefan Koepfli (ETH Zurich) as part of a peer-reviewed post-deadline paper presented at the prestigious 2022 European Conference on Optical Communications (ECOC) in Basel, Switzerland on September 22, 2022. The post-deadline paper is titled

">500 GHz Bandwidth Graphene Photodetector Enabling Highest-Capacity Plasmonic-to-Plasmonic Links".

About Lightwave Logic, Inc.
Lightwave Logic, Inc. (NASDAQ: LWLG) is developing a platform leveraging its proprietary engineered electro-optic (EO) polymers to transmit data at higher speeds with less power. The company's high-activity and high-stability organic polymers allow Lightwave Logic to create next-generation photonic EO devices, which convert data from electrical signals into optical signals, for applications in data communications and telecommunications markets. For more information, please visit the company's website at lightwavelogic.com.

About Polariton Technologies Ltd.
Polariton Technologies Ltd. designs and manufactures plasmonic PICs, featuring the world's fastest and smallest electro-optic modulators, thus creating a solution that overcomes the interconnect bottleneck in optical communications. Follow us on LinkedIn @polariton-technologies and visit us at polariton.ch.

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The information posted in this release may contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. You can identify these statements by use of the words "may," "will," "should," "plans," "explores," "expects," "anticipates," "continue," "estimate," "project," "intend," and similar expressions. Forward-looking statements involve risks and uncertainties that could cause actual results to differ materially from those projected or anticipated. These risks and uncertainties include, but are not limited to, lack of available funding; general economic and business conditions; competition from third parties; intellectual property rights of third parties; regulatory constraints; changes in technology and methods of marketing; delays in completing various engineering and manufacturing programs; changes in customer order patterns; changes in product mix; success in technological advances and delivering technological innovations; shortages in components; production delays due to performance quality issues with outsourced components; those events and factors described by us in Item 1.A "Risk Factors" in our most recent Form 10-K and Form 10-Q; other risks to which our company is subject; other factors beyond the company's control.

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