Polariton Releases 400G/lane IMDD Eye Diagrams for 1310 nm Operation

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Polariton Technologies AG, the technology leader for high-speed electro-optic (EO) devices for optical communications, releases today optical eye diagrams obtained in the optical O-band at 200 GBaud, PAM4 modulation. Having demonstrated 400G/lane operation at 1550 nm in the recent past, the exceptional performance of plasmonics and silicon photonics is now confirmed also on modulators operating in the O-band.

Polariton has successfully demonstrated 400G per lane operation in the O-band using plasmonics. This milestone not only showcases a significant technological advancement but also reaffirms silicon photonics as a vital and forward-looking solution for the transceiver market, ensuring its continued relevance well into the next decade. Technologies like plasmonics ensure the competitiveness of silicon photonics for high-end transceiver products.

As the industry is working towards ramping 3.2T-DR8 transceivers as early as 2027, plasmonic modulators provide the required performance today. Together with the right combination of electronics, drivers and digital signal processor, plasmonic ring resonator modulators (RRMs) provide a sweet spot of high-speed operation (above 145 GHz), low insertion loss (sub 2 dB device loss) and low power dissipation (by driving a capacitive load). “Industry leaders have released their plans to advance high-speed optical connectivity using microring modulators on silicon photonics. However, to meet the demands of next generation optical interfaces, a new technology is needed to overcome the inherent bandwidth limitation. Polariton’s plasmonic technology addresses this challenge by delivering unprecedented electro-optical bandwidth while maintaining scalability and integration benefits of silicon photonics”, comments Benedikt Baeuerle, co-CTO of Polariton.

Modifying modulators to work in other optical bands may be challenging for some technologies, but not for plasmonics. All passive components exist as part of PDKs by 3rd party silicon photonics vendors, and Polariton’s key plasmonic technology is added in the backend. “Plasmonics is inherently broadband, operating across a wide range of wavelengths spanning from 1200 nm to over 1600 nm. Indeed, plasmonic phase shifters are even more efficient in the O-band than in the C-band. By integrating these phase shifters with silicon photonics, we can tailor devices for specific applications and operating wavelengths”, adds Wolfgang Heni, also co-CTO of Polariton.

With this recent demonstration, Polariton provides further proof for the viability of plasmonic modulators for the data center applications in 2027 and beyond. Technical achievements can be discussed with Polariton this week at booth #4042 at the OFC exhibition in San Francisco, USA.

About Polariton Technologies

Polariton is a Swiss designer and manufacturer of high-performance photonic integrated circuits (PICs) for ultra-high-bandwidth and low-power applications in communication, computing, test & measurement, space and quantum technologies markets. Exceptional performance is achieved by combining the established silicon photonics platform with plasmonic active devices enabling operation in sub-THz and THz regimes, in particular with Mach-Zehnder and ring resonator modulators.

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Media Contact
Helena Echeverri
info@polariton.ch
+41 44 589 51 51