Brilliance and OQmented Present Joint Laser Beam Scanning Demonstrator for AR Applications

Itzehoe, Germany & Enschede, the Netherlands – December 22, 2025

The partnership between microdisplay brand **OQmented** and integrated laser company **Brilliance** aims to disrupt the manufacturing process of laser beam scanning (LBS) light engines and promises further improvements regarding system size and projection quality. **Brilliance B.V.**, a developer of compact and efficient RGB laserchips for Augmented Reality (AR) smart glasses, and **OQmented**, a provider of MEMS-based LBS light engines, have jointly developed a LBS demonstrator for AR applications. The demonstrator shows brightness and image quality achieved by combining a laser photonic integrated circuit (PIC) and Coherent LBS MEMS into a compact light engine for AR projection.

The joint demonstrator integrates Brilliance's proprietary RGB laserchip Neptune with OQmented's MEMS-based LBS light engine. Brilliance provides compact RGB laserchips where passive flip-chip assembly processes are optimized for bare visible-wavelength laser diodes on photonic integrated circuits, maintaining stability and polarization. In parallel, OQmented provides the LBS architecture, as well as the MEMS mirror with Coherent Lissajous Scanning technology – an industry first. This technology enables precise and perception-artifact-free beam control in a compact AR display system.

The integrated approach minimizes light engine size by consolidating key optical functions into Brilliance's PIC. Compared to conventional assembly approaches with volumes of approximately 1.3 cc, the demonstrator achieves volumes below 0.8 cc, with further reduction to below 0.5 cc enabled by OQmented's proprietary wafer-level light engine design. By shifting the optical path from discrete components to wafer-level PIC integration, the approach significantly simplifies assembly and reduces manufacturing costs.

"OQmented's expertise in MEMS-based laser beam scanning engines complements Brilliance's compact RGB laserchip technology, enabling the generation of bright and consistent images within a compact laser beam scanning architecture," said Tim Tiek, CEO of Brilliance. "The joint demonstrator enables a compact projector architecture, addressing form factor constraints common in AR display systems."

"Brilliance's wafer-scale laserchip technology aligns well with our MEMS-based laser beam scanning architecture, particularly in addressing the market's scalability and efficiency requirements," said Thomas von Wantoch, co-CEO of OQmented. "This integration demonstrates a viable approach for AR display systems and marks an important milestone for further technical development."

The cooperation will continue with further research and development, focusing on application-specific requirements and refinement of the system architecture. This milestone represents an important step toward the development of AR display systems aligned with real-world application needs.

About Brilliance B.V.

Brilliance B.V. manufactures laserchips for AR by using cutting-edge photonic technologies. Leveraging a patented silicon-nitride-based platform and laser integration techniques, the company delivers innovative solutions for next-generation AR laser displays and optical systems. With over 20 years of expertise ranging from PIC design to the automotive industry, manufacturing and high-volume scaling, Brilliance combines technical excellence with scalable, highly efficient, and cost-effective volume production capabilities. Brilliance's mission is to redefine the standards of photonic integration and enable everyday AR by solving the problems of today's bulky and complex projectors with the Brilliance fully integrated laserchips. Further information can be found at www.brilliancergb.com.

About OQmented

OQmented is a brand of kiiz Technologies GmbH, developing and selling ultra-compact LBS displays for Augmented and Mixed Reality devices and best-in-class 3D sensing solutions for mobile and stationary applications. The company offers complete solutions, including in-house developed ASICs that are highly customized and optimized to work with OQmented MEMS mirrors. The unique Lissajous scan pattern in combination with the vacuum encapsulation technology and proprietary electronics, algorithms and software enables new product categories in consumer, automotive and various other industries; the company's extensive know-how and IP provide for numerous competitive advantages. With significant MEMS manufacturing experience, OQmented effectively designs for high-volume production. Further information can be found at www.oqmented.com.

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