



Showing valuable customer insights into applications that use a TOPTICA EAGLEYARD laser diode

Customer: CareGlance
Product: RWE 810 nm

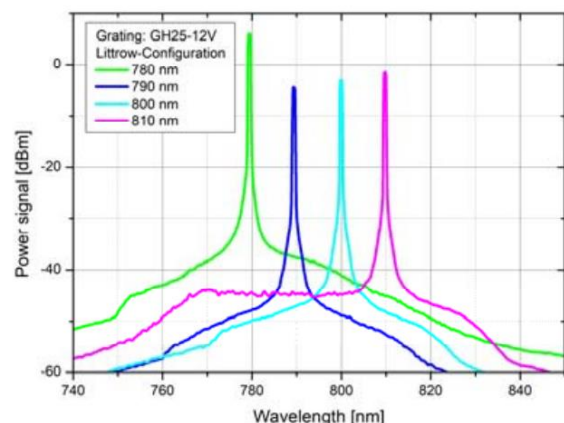
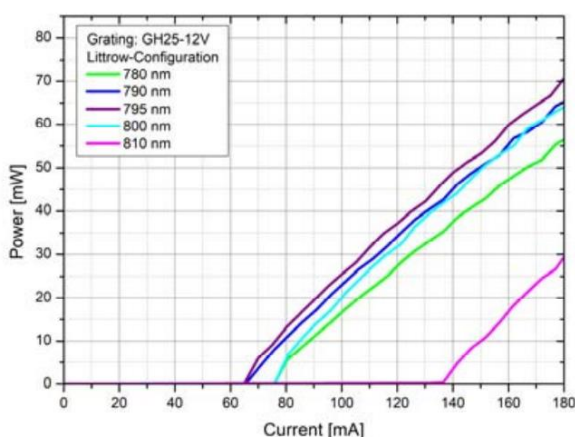
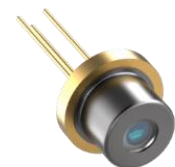
About CareGlance:

CareGlance s.r.l. is a technology startup from Italy that develops photonic devices for real-time monitoring of industrial applications since 2019. The company's mission is to transform Optical Coherent Tomography (OCT) in a real time, portable technique by MHz - Swept Sources and Optical Integration. Hereby they focus on laser welding, additive manufacturing, quality monitoring, automotive and aviation.



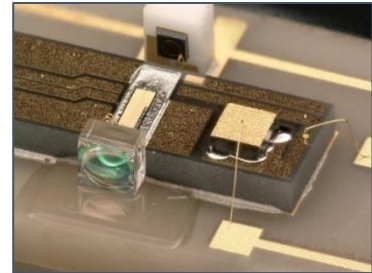
About the laser diode:

CareGlance is using the "RWE 810 nm" laser diode from TOPTICA EAGLEYARD. These RWE series gain chips are Fabry-Perot laser diodes featuring an excellent AR-coated output facet. Designed for operation in external cavity laser (ECLD) setups, such as Littman or Littrow configurations, these gain chips offer narrow single-frequency operation with a linewidth of less than 100 kHz when external feedback is applied. They also provide superior tuning capabilities across their entire gain range and high output power. EAGLEYARD offers these laser diodes typically packaged in a standard industrial TO-can (as shown in picture). Because of the innovative approach by CareGlance's technology, a customized carrier for the laser diode was developed to enable higher integration.



In which product does CareGlance use EAGLEYARD's laser diode? For which application is your product used for?

CareGlance: "In its swept source based optical coherent tomography system, developed for real-time monitoring of industrial processes. In particular, the semiconductor gain chip is used as active medium of our external cavity tunable source."



Can you give some insights on how your product works and what role EAGLEYARD's laser plays?

CareGlance: "CareGlance product is an Optical Coherent Tomography (OCT) system whose performance is enabled by a fast tunable swept source, that exploits a non-mechanical, electro-optic effect. The source is based on EAGLEYARD's gain chip which is used as the semiconductor active medium of an external cavity laser structure.

This system is especially designed to perform real-time monitoring (using a wavelength around 800 nm) of industrial processes: above all, the ones based on high power lasers, such as laser welding, laser cutting, additive manufacturing. This thanks to the "collaboration" between the laser source and a patented non-linear image reconstruction algorithm able to provide great accuracy even in highly noisy environment.

All the newly developed features are IP protected and enable multi MHz A-scan frequencies, accuracy of few tens of microns, high reliability, and competitive price, in an underpopulated competitor landscape."

If you have used a different laser diode before using the one from EAGLEYARD in your product, what was your motivation to switch? What is the advantage of using the selected EAGLEYARD laser diode compared to alternatives/prior solutions?

CareGlance: "The main motivation is related to the overall superior performance of the laser diode as far as concerning CareGlance's application. EAGLEYARD's product provides an optical beam with very low ellipticity and divergence: these features are mandatory to get an optimal laser performance and fiber recoupling to enter the interferometric section of the OCT. It's easier to collimate such a beam inside the cavity with reduced astigmatism and ellipticity, both to avoid losses and favor coupling of the output to a fiber system."

Can you share insights on the decision making process towards EAGLEYARD's laser diode?

CareGlance: "The process was simply led by comparative analysis of the performance datasheets of some competitors' products, together with experimental tests on few sample units to confirm datasheet indications and internal simulation about the chip behavior in CareGlance laser."

How did you experience the collaboration with EAGLEYARD from the first request until the whole order was built into your product?

CareGlance: “In 2024 there has been a highly interactive collaboration with fast response from EAGLEYARD, both concerning extra tests to be performed on the diodes and customizations (i.e. soldering a thermistor on top of the gain chip carrier).”

How satisfied are you with EAGLEYARD in total?

CareGlance: “CareGlance is pretty satisfied with EAGLEYARD’s collaboration in this prototyping phase and aims at strengthening the collaboration in order to set EAGLEYARD as a stable industrial partner for its future product lines. There could be room for customized development to get chips with golden performances, for example in amplified spontaneous emission power.”

We thank CareGlance and Maria Chiara Ubaldi (CEO) for these great insights!