August 2023

Greetings!!

We hope that you are all enjoying a well-deserved break this summer but still find time to catch up on some exciting product news in this July newsletter.

In our last edition, we hinted that new offerings to the Carmel X-series would be coming soon. Well, it's official: **Introducing the Carmel X-515, the first high power, "hand-held" green femtosecond fiber laser, targeted for applications in multiphoton microscopy, 3D-photopolymerization, optical metrology, ophthalmology, etc.**

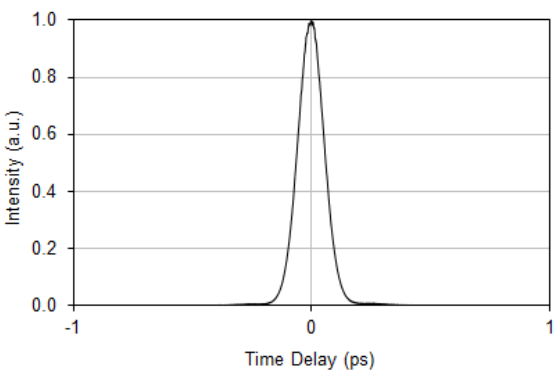
- **High power at 515 nm (> 0.4 W)**
- **< 100 fs ultrashort pulse widths**
- **Outstanding beam quality, $M^2 < 1.2$**
- **All air-cooled, no chiller required**
- **Ultra-compact laser head with armored cable**
- **2U rack mountable controller**
- **Remote system diagnostics**
- **OEM and scientific versions**

Carmel X-515 Ultra-compact Laser Head

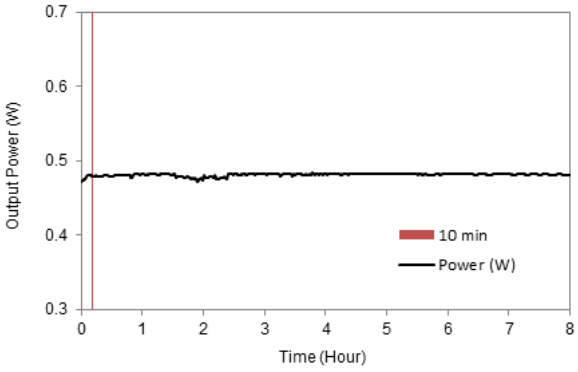
For those of you not familiar with the Carmel X-series, it represents the most compact, highest power, fiber-based femtosecond lasers on the market today. Each version features an all air-cooled architecture with a small 2U rackmount controller connected via a robust armored cable to an ultra-compact laser head. The user-friendly package facilitates its integration into OEM designs and scientific microscopy systems. With a power range from 0.25 W to over 2.5 W and pulse widths of less than 90 fs, **the product family now includes the first visible source with an output at 515 nm.**

The Carmel X-515 is offered as both a scientific (CDRH compliant) version with front panel control knobs and an OEM version, controlled through an RS-232 interface. The latter offers full remote access with the capability for data logging, power monitoring, system diagnostics, and automated adjustments for prolonged lifetime.

Like other members of the product family, the Carmel X-515 leverages Calmar's renowned ultrafast fiber seed laser platform, which utilizes the proprietary Mendocino saturable absorber technology developed and perfected over a twenty-year period to deliver reproducible and reliable mode-locking at turn-on. The system delivers over 0.4 W of power and a 515 nm, sub 100 fs output pulse with minimal pulse pedestal and excellent long-term stability (< 1% rms) over a wide operating temperature range (17-38°C). An exceptional output beam quality ($M^2 < 1.2$) enables a near diffraction-limited spot size with suitable microscope objectives for demanding bio-imaging and 3D microprinting applications.



(a)



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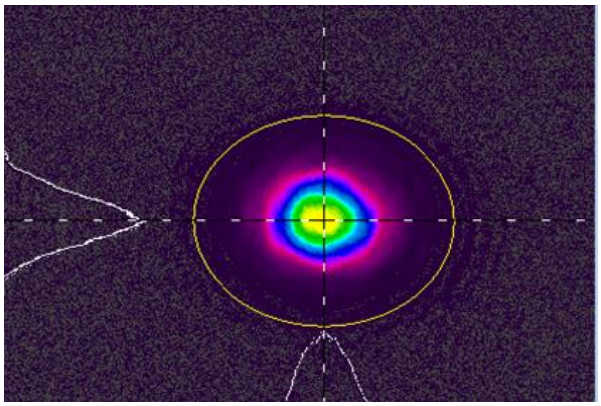

(c)

Typical performance parameters of the Carmel X-515, (a) second harmonic autocorrelation data with an interpolated pulse width of 84 fs based upon a sech² pulse shape, (b) power stability from a cold turn-on, (c) beam profile with M^2 measurement of < 1.2.

Carmel X-515 OEM Version

And for those of you interested in high power 1030 nm output, please feel free to contact us. The X-1030 system will be the subject of a future newsletter. If you have any questions, interest in customized features or other ultrafast fiber laser solutions, you can reach us at sales@calmarlaser.com.

Regards,

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About Calmar Laser

Calmar Laser is an ISO 9001:2015 manufacturer of innovative ultrafast fiber laser and fiber amplifier solutions for the needs of industry, research institutions and universities. Since 1996 Calmar has been a key supplier and reliable OEM partner to customers for advanced high-speed test and measurement applications, optical communications, component characterization, material diagnosis, biomedicine and micromachining. Today, Calmar is an industry leader in supplying robust, compact, ultrafast fiber lasers designed for simple hands-off reliable operation. For more information about Calmar Laser, visit the Company's Web site at https://www.calmarlaser.com for product updates.