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## Newsletter June 2011

### Sapphire SF – the Ultra-Narrow Linewidth OPSLs

Cher Client,

Since their launch in 2001 Sapphire™ lasers with their Optically Pumped Semiconductor Laser (OPSL) technology are writing a success story. Today Sapphire covers a broad spectrum of legacy laser as well as customized wavelengths from 458 nm to 568 nm.

Now Coherent has expanded their Sapphire line with an ultra-narrow linewidth series: [Sapphire SF](#). These lasers are available at wavelengths of

- 488 nm with output powers of 20 mW, 50 mW, and 100 mW and
- 532 nm with output powers of 20 mW, 50 mW, 100 mW and 150 mW.



Independent of wavelength and power class: all Sapphire SF products come with the same optical parameters, mechanical and electrical requirements, and the same interfacing/controlling:

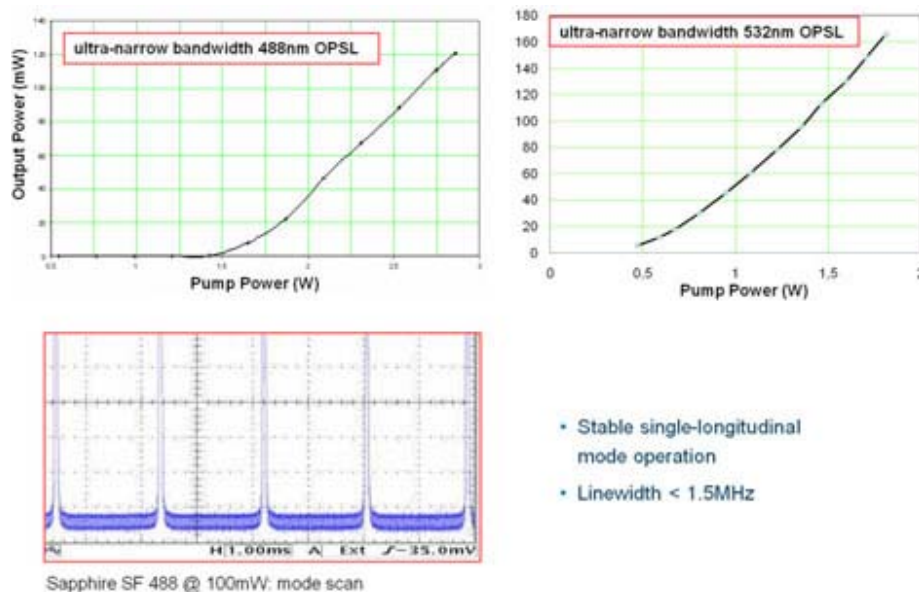
- Ultra-narrow linewidth ( $< 1.5$  MHz), stable single-frequency operation
- High quality, diffraction-limited beam ( $TEM_{00}$ ,  $M^2 < 1.1$ ) with excellent pointing stability ( $< 5 \mu\text{rad}/^\circ\text{C}$ )
- High single-frequency output powers
- High power stability ( $< 2\%$ ) and low noise ( $< 0.25\%$  rms from 20 Hz to 2 MHz)
- No Green Noise, a phenomenon causing power instabilities due to intracavity frequency-doubling mechanisms (cf. e.g. Nd:YAG/ Nd:YVO4 type lasers)
- No thermal lensing (cf. rod or slab-type lasers)
- Compact modules: the laser head for example is measuring just 125x70x34 mm (4.9x2.8x1.3 in.)
- Superior interface concept with Analog,



RS232 and USB connect: it is up to the user to select his communication mode

- OEM and CDRH compliant versions.

In the figure below the output power of a 488 nm and a 532 nm Sapphire SF are given as function of pump power plus the mode scan for the 488 nm laser.



Sapphire SF lasers are based on Coherent's unique OPSL technology. This well-proven technology is now realized in more than 25,000 units operating in the field.

- The lasers are built according to proven Sapphire standards.
- The semi-automated manufacture takes place in true cleanrooms.
- Coherent's PermAlign™ technology is utilized, a special process for alignment of the optical components to optimum and then fixation by a soldering process. This guarantees best optical alignment and stability over the whole lifetime of the product plus a unit-to-unit consistency which is unsurpassed in the field.
- Hermetic sealing of the laser head
- Extensive burn-in and end testing of every laser.

The result: excellent laser parameters, superior reliability, lifetime and unit-to-unit consistency, downtime-free operation over thousands of hours and low cost of ownership.

Sapphire SF lasers are ideal for OEM applications and research that require a (ultra) narrow spectral linewidth and/or a long coherence length. Primary applications include Raman spectroscopy, Brillouin scattering, holography, interferometry, metrology, inspection, and remote optical sensing.

The Sapphire SF line will not be restricted to the 488/532 nm products but expanded by further wavelength products.

You have an application – standard or delicate, industrial or scientific – for which Sapphire SF might be the right choice? Then do not hesitate and contact us. Volker Pfeufer, Product Manager of the

Sapphire SF series, is looking forward discussing with you the possibilities but also limits of our technology for your specific application.

Dr. Volker Pfeufer

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### **About Coherent, Inc.**

Founded in 1966, Coherent, Inc. is a world leader in providing laser-based solutions to the commercial and scientific research markets.

To find out more about Coherent, visit our website at [www.coherent.fr](http://www.coherent.fr) or call +33 (0)1 80 38 10 00.

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### Superior Reliability & Performance

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