

ePulse: Laser Measurement News

The true measurement of laser performance



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September 2018

Welcome to **ePulse: Laser Measurement News**, a review of new developments in laser beam measurements, beam diagnostics, and beam profiling. Each issue contains industry news, product information, and technical tips to help you solve challenging laser measurement and spectral analysis requirements. Please forward to interested colleagues or have them [subscribe](#).



Feature

e-Mobility and Laser Welding in Automotive Production

By Christian Dini, Director, Global Business Development, Ophir

Regardless of the laser welding process involved, the quality of the weld spots or seams exerts a decisive influence on the safety and reliability of the parts produced, which in turn has a significant impact on the overall quality of a vehicle. But how can the manufacturers and operators of such equipment ensure that the laser systems are working correctly when they're often embedded in automated production lines? This article explores where the challenges lie and why the quality of the laser beam is so important. [Laser Welding](#).



Applications

How to Ensure Laser Measurement Accuracy in Medical Devices

Medical devices have to be accurate for the health of the patient. As you design the laser aspect of your medical device, there are a few things you must think about to make sure the laser measurement sensor will be accurate and will continue to remain so. Is the power or energy where you expected? Is there a slow drift in power level? What about aperture size, ambient temperature, and recalibration? Here's how to approach the accuracy issue. [Medical Device Accuracy](#).

Research News

Demonstration of Terahertz Pure Vector Beam by Tailoring Geometric Phase

The creation of a vector beam by tailoring geometric phase of left- and right-circularly polarized beams is demonstrated. Proof-of-principle experiments are conducted for producing a vector beam with radial polarization and uniform phase at 0.36THz. The polarization analysis for the vector beams consists of an axially-symmetric wave plate, a wire-grid polarizer, a THz lens, and an Ophir Pyrocam IV Beam Profiling Camera. The extended range of the proposed techniques could lead to

Videos of the Month

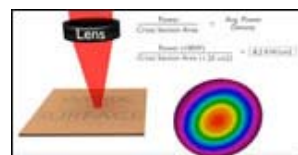
LP2 Laser Sensor Coating: Very High Damage Threshold, Very Low Reflection

The new LP2 type laser power sensors from Ophir feature even higher damage threshold, flat spectral response, and absorption up to 96%. [LP2 Coating](#).



Award-Winning Laser Monitoring for Additive Manufacturing

Ophir has been honored with a 2018 *Laser Focus World* Platinum Innovators Award for BeamWatch® AM, the first non-contact laser beam monitoring system for additive manufacturing. In this video, Ophir engineers explain why the system is so revolutionary, how it works, and why it will help additive manufacturers. [BeamWatch AM](#).



Laser Puzzle

[Try your hand at this month's Laser Puzzle](#). All submissions will receive an 8GB USB pen drive. The grand prize winner will receive a 16GB iPad. E-mail answers to sales@us.ophiropt.com. Need a hint? E-mail john.mcelandowney@us.ophiropt.com

[Here's the answer to last issue's puzzle](#). The winner of last issue's puzzle is Brian Johansen, Electro Scientific Industries, Inc.

Social Media: Blog

Finding the Right Tool for the Right Job

Ophir's products are precision scientific instruments with world-class acceptance, reliability, and accuracy. Here's the best way to

breakthroughs in the fields of microscopy, chiral nano-materials, and quantum information science. [Terahertz Vector](#).

Blue Light Excited Retinal Intercepts Cellular Signaling

Using live cell imaging and optogenetic signaling control, this research uncovered that blue light-excited all-trans retinal (ATR) and 11-cis retinal (11CR) irreversibly change/distort the plasma membrane bound phospholipid phosphatidylinositol 4,5 bisphosphate (PIP2) and disrupt its function. The laser power of light exposure was measured using an Ophir PD300-UV light meter. These findings suggest that retinal exerts light sensitivity to both photoreceptor and non-photoreceptor cells, and intercepts crucial signaling events, altering the cellular fate. [Blue Light Signaling](#).

Technical Tips

Calibration of L50(300)A-IPL for Use with IPL Sources

The Ophir® L50(300)A-IPL energy sensor, when used in GEL mode, is designed to measure the energy output of IPL type sources coupled to the skin of a patient with optical index matching gel. The IPL sensor is calibrated by exposing it to a known energy from a collimated 755nm laser. When exposed to a divergent and multispectral IPL source, however, the sensor absorbs less of the radiation. So we have to know how to calculate how much less the IPL sensor will read when exposed to an IPL source as compared to the calibrating laser. [Sensor Calibration](#).

What's New

PD300-MS Power Meter for Fluorescence Microscope Measurements

The Ophir® PD300-MS microscope slide power meter provides accurate measurements of light emitted from fluorescence microscopes. It measures power levels of high numerical aperture (NA) objectives, from 5µW to 1W. A special filter provides low angular dependence, enabling higher accuracy measurements. NIST-traceable calibration allows for measurement of wavelengths from 350nm to 1100nm. Designed to accommodate limited space, it has the same footprint as a standard microscope slide. [PD300-MS](#).



Intuitive, Feature Rich, Full Color Touchscreen Laser Power/Energy Meter

The Ophir® Centauri is a compact, portable laser power/energy meter for precise measurements of laser performance over time. It features a large, full-color, seven-inch touchscreen for visual review of data using a wide range of graphical display formats, such as Digital with Bargraph, Pulse Chart, and Real Time Statistics Displays. Advanced math functions include Density, Scale Factor, and Normalize Against Baseline. Available in single and dual-channel versions, the Centauri is compatible with all standard Ophir thermal, photodiode, and pyroelectric sensors. [Centauri](#).



Ophir Photonics Receives ISO/IEC 17025 Accreditation

Ophir® Photonics has received ISO/IEC 17025 accreditation for its Jerusalem, Israel Calibration Laboratory. ISO/IEC 17025 is given to calibration laboratories who have achieved the highest standards of quality, administration, and technical operations. The scope of the

select the optimum power meter and sensor for your laser application using the Sensor Finder and Laser Fluence Calculator. [Laser Tools](#).

Catalogs: Power Meters & Beam Profiling

Download the new 2018 Ophir Laser Measurement Catalogs today. Tutorials and product specifications for [Power Meters](#) and [Beam Profiling](#). [Beam Profiling Magalog](#) includes application notes, technology articles, and reference algorithms.

Trade Shows

[Frontiers in Optics](#)

September 16-20, 2018
Washington, DC

[Micronora](#)

September 25-28, 2018
Besancon, France

[LpS 2018](#)

September 25-27, 2018
Bregenz, Austria

[TCT Show](#)

September 25-27, 2018
Birmingham, UK

[Laser World of Photonics India](#)

September 26-28, 2018
Bangalore, India

[IEEE Photonics Conference](#)

September 30-October 4, 2018
Reston, VA

[Lighting Technology](#)

October 9-11, 2018
Essen, Germany

[HPLS&A 2018](#)

October 9-12, 2018
Rome, Italy

[Photonex Europe](#)

October 10-11, 2018
Coventry, UK

[Materials IT](#)

October 22-26, 2018
Bologna, Italy

[Aviation Forum](#)

November 5-7, 2018
Hamburg, Germany

[FABTECH](#)

November 6-8, 2018
Atlanta, GA

[Precisiebeurs](#)

November 14-15, 2018
Veldhoven, Netherlands

[Lasertagung Jena](#)

November 22-23, 2018
Jena, Germany

[LAF Laser Anwenderforum](#)

November 28-29, 2018
Bremen, Germany

accreditation covers Ophir's photodiode, pyroelectric, and thermopile laser power and energy sensors, as well as its power and energy displays and PC interfaces. Ophir's Jerusalem, Israel and North Logan, Utah Calibration Laboratories are now both ISO/IEC 17025 accredited. [ISO/IEC 17025](#).

First Lightweight, Continuous Zoom Lens Optimized for 10-12 Micron Pixel Size Uncooled LWIR Cameras

The Ophir® LightIR™ 15-75mm f/1.2 zoom lens is a new member of the LightIR family of lightweight, continuous zoom lenses. It is the first compact, thermal imaging lens optimized specifically for uncooled 10-12µm pixel size long-wave infrared (LWIR) detectors. It has a focal length of 15-75mm and, at only 320g, it is one of the lightest weight, continuous zoom lenses on the market. It maintains sharp focus over the entire zoom range. [LightIR 15-75mm f/1.2 Zoom Lens](#).



SupIR Lenses Optimized for 10-12 Micron Pixel Size Uncooled Cameras

The Ophir® SupIR™ family of compact infrared lenses is designed for use in 10-12µm pixel size uncooled cameras. The new collection includes 11 lenses optimized to meet reduced size, weight, and power (SWaP) standards. They deliver high MTF and range from 2.4mm f/1.0 athermalized fixed focus, to the new LightIR 15-75mm f/1.2 motorized continuous zoom, with fields of view (FOV) from 91.9 to 2.4 degrees. Targeted for use in air, marine, and land applications, such as UAS and UAV's. [SupIR Lenses](#).

Ophir Portfolio Brochure

Get more out of your laser with Ophir's high precision laser and LED measurement products. We deliver the widest range of sensors for measuring the power or energy of laser beams. Our laser beam profilers provide key measurements - such as beam width, beam size, or M2 - during laser design or when your laser system no longer meets specs. For measuring key light parameters of LED luminaires, our compact systems simplify measurement for production environments. [Ophir Portfolio Brochure](#).

FAQs

Beam Profiling

Why does the Windows 10 Device Manager sometimes report an error Code-52, "Windows cannot verify the digital signature of this application," upon first-time connection of the NanoScan 2 or 2s scan head? [Read the FAQ](#).

Does the NanoModeScan operate with Windows 10? [Read the FAQ](#).

What wavelengths can the NanoModeScan measure? [Read the FAQ](#).

Power Meters

Is it possible to get higher calibration accuracy for an Ophir sensor by a special nonstandard calibration? [Read the FAQ](#).

What are the advantages of the new LP2 absorber coating vs the previous LP1 coating? [Read the FAQ](#).

For my water-cooled sensor, do you have any guidelines for proper cooling - water, temperature, pressure, and so on? [Read the FAQ](#).

Does measurement accuracy depend on the beam diameter? [Read the FAQ](#).

Fast Ship Program

Ophir's [Fast Ship program](#) provides one-day shipment of the most popular power/energy, beam profiling, and M2 laser measurement equipment across the U.S.

How to Get a 15% Discount

If you're an end user of our laser equipment, we'd like to know more about how you use it. Provide us with 500 words and a few images. In exchange, we will give you a 15% discount on your Ophir laser measurement equipment. Here's a [sample application article](#) to get you started. We'll showcase your application in our ePulse newsletter and you'll get recognition by the industry for your commitment to providing high quality laser services. And you'll get the discount! E-mail kevin.kirkham@us.ophiropt.com

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www.ophiropt.com/photonics

About Ophir

Ophir is a brand within the MKS Instruments Light & Motion division. The Ophir product portfolio consists of laser and LED measurement products, including laser power and energy meters, laser beam profilers measuring femto-watt to hundred-kilowatt lasers, high-performance IR and visible optical elements, IR thermal imaging lenses and zoom lenses for defense and commercial applications, and OEM and replacement high-quality optics and sub-assemblies for CO2 and high-power fiber laser material processing applications. Dedicated to continuous innovation in laser measurement, the product portfolio includes the **R&D 100** award-winning **BeamTrack** power/position/size meters and Spiricon **Ultracal™**, the baseline correction algorithm that helped establish the ISO 11146-3 standard for beam measurement accuracy. The company is **ISO/IEC 17025:2005** accredited for calibration of laser measurement instruments. The company's modular, customizable solutions serve semiconductor, industrial, life and health sciences, research, and defense industries throughout the world. An ISO 9001:2008 Registered Company.

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