

ePulse: Laser Measurement News

The true measurement of laser performance



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May 2020

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](#).

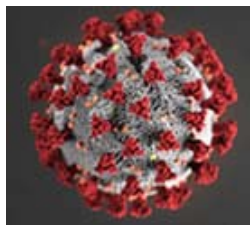
COVID-19 Coronavirus Update

In light of recent developments related to the coronavirus (COVID-19) pandemic, we want to let you know that Ophir is working hard to continue to deliver our high-performance products on-schedule. We're operating at full capacity, while adhering to Government guidelines. We've implemented a range of measures to ensure the safety and well-being of our employees, so that we can keep our manufacturing capabilities intact. We appreciate your continued support and are here to provide any help or answer any questions related to Ophir. Many thanks to our employees for the incredible cooperation, collaboration, perseverance, and flexibility during this time of crisis. [Latest Update](#).

Features

Fighting Viruses: UV-C LED, Will All the Research Pay Off Soon?

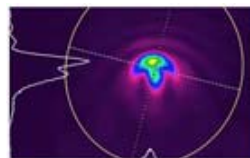
The world remains in a continuing state of uncertainty due to the new COVID-19 coronavirus. Face masks and disinfectants are selling very well. Disinfection with UV light could offer a way of disinfecting larger areas without the use of chemical disinfectants, especially in hospitals where patients are being treated. [UV-LED Technology](#).



Keeping Your Additive Manufacturing Laser in Spec

By John McCauley, Key Accounts Manager, Ophir

There is little debate about how Additive Manufacturing is adding benefits and changing the face of manufacturing in our modern age. Additive Manufacturing allows for the manufacturing of more customized parts, using more specialized materials, and will eventually create a more localized, rapid, and agile



distribution network than what we have been used to. Here's a look at the laser characteristics that must be measured to ensure consistent performance. [Additive Manufacturing](#).

Applications

Laser Forensics: The Invisible Revealed and Measured

According to the developers at Scanovis - a start-up in Germany - brushes, powder and chemicals will soon be tools of the past for securing evidence at crime scenes. The company has developed a laser-based solution that uses IR laser radiation to detect fingerprints at the scene of a crime, quickly making them visible in a 3D scan and recording them digitally. They needed to combine several measurement methods to be able to adjust the optics of a low-power MIR laser. [Laser Forensics](#).

Videos of the Month

Measuring LED Luminaires

See the new Ophir FluxGage 604 in action as it measures the color and overall uniformity of LED Luminaires. [Video: FluxGage 604](#).



LBS-300HP-NIR Beam Splitter

The new LBS-300HP-NIR beam splitter allows camera-based beam profiling for high power lasers, an industry first. [Video: Beam Splitter](#).



SupIR MWIR Lens for Small Pixel VGA and HD IR Cameras

This thermal imaging video of safari animals was taken with the Ophir SupIR 50-1350mm f/5.5, long-range, folded-optics, HD zoom lens. [Video: SupIR Lens](#).



Laser Puzzle

[Try your hand at this month's Laser Puzzle](#). This month we're playing chess. Are you up for the challenge? Try to figure out how many times the white king can move before being placed in check.

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@enigmaturge.com.

[Here's the answer to last issue's puzzle](#).

Using Ophir's Integrating Sphere for VCSEL Measurements

Ophir's new IS1.5VIS-FPD-800 is a multi-function sensor for measuring the power and pulse shape of VCSEL's. In this paper we discuss how to use the sensor for VCSEL characterization in both CW and pulsed operation modes. [VCSEL Measurement](#).

Antireflection Optical Coatings for High Power Fiber Lasers

As Continuous Wave (CW) fiber lasers reach power levels that exceed 10kW with diffraction-limited beam quality, the absorption in the optical components' coatings is one of the main limitations of the power-handling capabilities of the optical components. To avoid such effects as temperature increases and modifications of the properties of the propagated laser beam, coatings and substrate materials with very low absorption rates should be used. [Optical Coatings](#).

Webinars

Advances in IR Zoom Lenses for Long-Range Security and Surveillance Applications

By Dr. Kobi Lasri, General Manager, Ophir Optics

Date: May 26, 2020 at 11:00am EDT/3:00pm GMT

Long-range observation systems operate under harsh environmental conditions, while demanding outstanding detection, recognition and identification (DRI) range capabilities, superb image quality, and accurate line-of-sight (LOS). In this webinar you will learn how our innovative technologies provide high resolution thermal imaging over long distances in harsh environmental conditions and on constrained platforms. Hosted by *Laser Focus World*. [Register here](#).

A System Integrator's Guide to Laser Measurement Systems

By Eric Craven, Sr. Sales Territory Manager, Ophir

Date: June 3, 2020 at 1:00pm EDT/5:00pm GMT

Measuring and controlling your laser is the only way to achieve reproducible results. Figuring out which equipment best fits your requirements can be a challenge, as there is a myriad of options available to get you there. This presentation will provide you with a 4-step guide to integrating laser measurement systems. We will discuss the choices available for measuring laser power and beam characteristics, how to extract the data you need and put it to use, and strategies for deployment. Hosted by *Laser Focus World*. [Register here](#).

Principles of Laser Power/Energy Measurement

By Mark Slutzki, Product Manager, Ophir

Date: June 24, 2020 at 12:00pm EDT/4:00pm GMT

Understanding laser behavior requires quantifying key laser characteristics. Regardless of how long you've been working with lasers, the subtle differences between the many measurement methods can be confounding. In this webinar, Mark Slutzki will define the various beam parameters and look at the technologies typically used for measuring each. You will see how these are implemented in various types of instruments and what type of equipment is best for what type of measurement. Hosted by *Photonics Spectra*. [Register here](#).

Getting the Most Out of Your 1 Micron Fiber Lasers

By Dr. Nissim Asida, Director of R&D & Engineering, Ophir Optics

In this video, we deep-dive into the details of recent optics developments in laser cutting machines, the design and technology used, and discuss how to get the best out of your laser system for more efficient cutting using 1 micron lasers. [1 Micron Lasers](#).

Research News

Differential Responses of Myoblasts and Myotubes to Photobiomodulation

This study assesses the biological response of cells to photobiomodulation (PBM) with varying mitochondrial contents. DNA was isolated from myoblasts and myotubes. An Ophir SP620 beam profiling camera was

Social Media: Blog

Measuring Laser Power with a Photodiode Sensor

There are many ways to measure laser output: photodiode, thermopile, or pyroelectric sensors. Here we discuss how a photodiode measures your laser and what types of lasers it is suitable for. [Photodiode Sensor](#).

VCSEL Measurement: Challenges and Solutions

Measuring any aspect of a VCSEL can be challenging. Is the system too power-hungry? Is the beam highly diverging, or a pulsed or modulated laser? Dr. Efi Rotem walks you through, step by step, how to tackle each challenge. [VCSEL Measurement](#).

Meet the Team: Efi Rotem, CTO

Efi Rotem, our CTO, shares his thoughts on the laser industry and reveals best practices when working with Ophir sensors. [Meet the Team](#).

Catalogs: Power Meters, Beam Profiling, IR Optics

Download the 2020 Ophir Laser Measurement Catalogs today.

Includes tutorials and product specifications for power meters and beam profiling. Beam Profiling Magalog features application notes, technology articles, and reference algorithms.

The Ophir IR Optics Thermal Imaging Lenses Catalog 2020

covers IR components and complex lens assemblies with fixed or motorized focus and zoom lenses.

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.

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employed to measure spatial distribution of power emitted from each LED in the array. [Photobiomodulation](#).

High-Order Mode Suppression in Double-Clad Optical Fibers

This research demonstrates a technique for the suppression of unwanted modes in double-clad fibers with a high core-to-clad diameter ratio by introducing high-index absorbing inclusions into the first cladding of the fibers. The mode composition of the fiber near $1.55\mu\text{m}$ was investigated by scanning an excited beam across the fiber diameter and observing the output mode shape with an Ophir SP620-1550 camera. [Optical Fibers](#).

What's New

Measuring UV Lamps with Dosage Sensor

In many industries, LEDs are replacing broadband light sources. Measuring the optical power of a LED with a radiometer can lead to large errors. The Ophir PD300RM-UV LED and laser radiometer replaces traditional radiometers which are calibrated to a single wavelength (254nm, 365nm, etc.), instead offering calibration over a broad spectral range. The sensor has an 8mm aperture and cosine corrected diffuser. Its spectral range is 200-850nm and its irradiance measuring range is $100\text{nW}/\text{cm}^2$ - $300\text{mW}/\text{cm}^2$. [PD300-UV](#).



Fever Screening Optics for High Traffic Areas

Ophir's infrared thermal imaging lenses help provide a quick, inexpensive, non-invasive solution to surveying crowds and identifying people with elevated skin temperature who require further investigation. Suitable for crowded public places, such as airports, transportation hubs, shopping centers, business facilities and schools, Ophir's thermal imaging lenses provide a safer, more secure environment for everyone. [IR Thermal Lenses](#).



Simulator for Centauri Touchscreen Laser Power Meter

The Centauri Web simulator allows you to experience most of the extensive functionality of the Centauri touchscreen laser power meter, from multilingual interface to display types to math functions. Advanced measurement modes include pulsed power, low frequency power, fast power, and energy summing. [Centauri Simulator](#).



Power/Energy Sensor for High Power, Narrow Lasers

The Ophir L40(500)A-LP2-DIF-35 is a compact, high damage threshold laser power/energy sensor capable of measuring up to 4kW without the need for water cooling. The sensor can measure CW lasers up to 500W and pulsed lasers up to 2kJ. The compact design makes it easy to place between optical components when troubleshooting a beam path. The sensor can handle large, unfocused beams of 35mm diameter, as well as narrow, high density beams down to 1mm @ 1kW. [High Power Laser Sensor](#).



Measure Uniformity of LED Luminaires in Seconds

The Ophir FluxGage™ 604 compact measurement system for LED luminaires features four additional color sensors evenly arranged in the bottom of the device delivering further x,y, and CCT data as well as the illuminance. Within seconds the user gets an overview of the color and overall uniformity of the measured light. This allows direct evaluation of LED chips or optical assemblies used for color



mixing and beam shaping within the design process in order to find the optics that provide the optimal light for a particular application. [LED Luminaires](#).

Optics for Night-Vision (NV) and Advanced Driver Assistance Systems (ADAS)

For maximum performance and minimal collision risk, thermal imaging night vision systems must achieve high accuracy and allow for long distance object detection. The key is high sensitivity and high resolution optics – such as Ophir's athermalized lenses. Using innovative optical and mechanical designs, Ophir's lenses allow for full operation in all environmental conditions, while also featuring a compact size and competitive costs. Ophir's lenses are integrated in the night visions systems of top European cars, with an installed base of hundreds of thousands of lenses. [NV & ADAS Lenses](#).



FAQs

Power Meters

Can I use my BeamTrack sensor with a pulsed laser? [Read the FAQ](#).

Why do photodiode-based power sensors like the PD300 have a specified "max pulse energy"? [Read the FAQ](#).

What is the expected difference in readings between two correctly calibrated Ophir sensors? [Read the FAQ](#).

I need to embed the EA-1 Adapter into my laser system. Can it be controlled from a PLC? [Read the FAQ](#).

Beam Profiling

How do you prevent the BeamGage Video Trigger from free running when no beam is present? [Read the FAQ](#).

How can I control my new NanoScan 2 Standard system with another program? [Read the FAQ](#).

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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