

ePulse: Laser Measurement News

The true measurement of laser performance



ePulse: Laser Measurement News September 2025

Welcome to **ePulse: Laser Measurement News**, a review of new developments in laser beam measurement, 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](#).

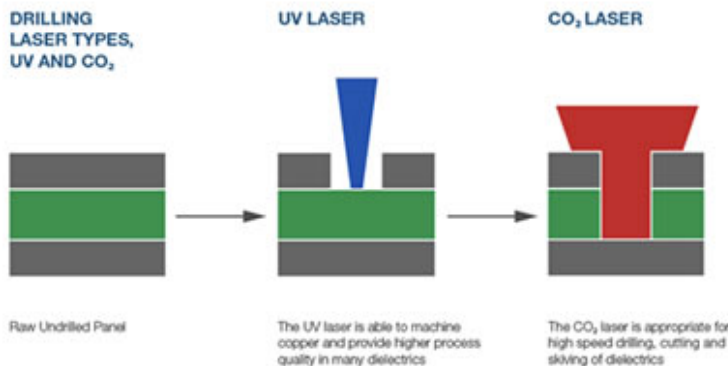
Features

Laser Technologies in PCB Manufacturing: Evolution, Applications, and Diagnostics

By Sneha Patil, Sr. Product Marketing Specialist, MKS Ophir

As PCB designs grow increasingly complex, the role of laser technologies has shifted from optional enhancement to essential infrastructure. Laser measurement tools are no longer just diagnostic aids, they are integral to maintaining process integrity across UV, CO₂, and hybrid laser systems.

By enabling real-time beam profiling, alignment verification, and closed-loop control, they support consistent via quality, minimize defects, and ensure repeatable performance in high-volume production. Here's how. [PCB Manufacturing](#).



Measuring Ultra High-Power Laser Pulse: Why Power from Pulse Matters

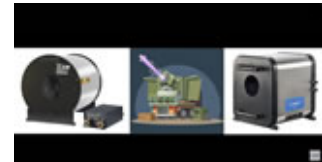
By Danny Stein, Director of Product Marketing, MKS Ophir

Accurately measuring the power output of ultra-high-power lasers is important but not always easy. This is especially true for lasers that operate in short bursts rather than continuously, such as those used in defense and directed energy applications. Traditional power meters are built for continuous-wave lasers and require the laser to run steadily for extended periods to deliver reliable results. But what happens when your laser can only fire for a few seconds, or less? That's where the Power from Pulse method comes in. [Power from Pulse](#).

Video of the Month

Laser Measurement Solutions for Directed Energy Applications

The development and commissioning of these high-power laser systems present many unique challenges. In this video, you'll get a brief introduction to the issues involved and to some of the solutions offered by MKS Ophir. [Directed Energy](#).



Meet the Helios Pro Industrial Laser Power Meter Family

Designed with factory automation in mind, the Helios Pro family of laser power meters features a robust, industrial design for harsh environments, and a range of communication interfaces that make them easy to integrate into factory networks. [Helios Pro Power Meters](#).



Frequently Asked Questions

Q. I just updated my BeamGage software to the latest version and my camera is no longer being recognized. Why?

A. Over time cameras become obsolete because we can no longer service or verify operation with these older cameras. Please review the Readme document that is associated with your version of BeamGage software to see if your camera has been

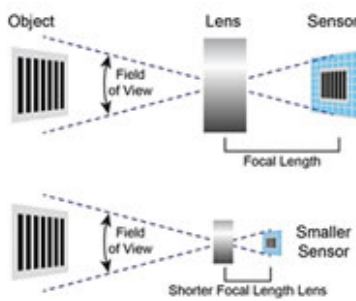
Shrinking Pixels and Maintaining Performance in Infrared Imaging Systems

The infrared imaging market is undergoing a significant transformation driven by the miniaturization of pixel pitch in MWIR and LWIR detectors. Over the past decade, pixel sizes have shrunk from 17 μm to as small as 5 μm , enabling more compact, lightweight, and cost-effective imaging systems. But they also require more sophisticated optics, precisely matched to their characteristics - otherwise, the end result is actually lower performance. [Next Gen Optics](#).

Applications

Laser Power Through Aperture Calculator

Gaussian laser beams have power intensities in the shape of a bell curve (Gaussian). This means that the nominal diameter doesn't include 100% of the laser beam's power. A small portion of the power is contained in the edges, or wings, that spread past the nominal beam diameter. Check out this easy-to-use calculator to see how much of the laser beam will pass through a given aperture. [Laser Power Calculator](#).



Laser Parameters

Power (W): Required

Beam Diameter (1/e²) (mm): Required

Aperture Diameter (mm): Required

What's New

Advanced 70K-W Power Laser Sensor for High Energy Laser Weapon Systems, Measuring Up to 100kW

The enhanced Ophir® 70K-W Ultra-High Power Laser Sensor is designed to meet the stringent demands of industrial and defense environments. It delivers precise CW laser power measurements up to 70 kW and features a unique Power from Pulse™ capability, that enables accurate power measurements from short-duration laser exposures - extending measurement capacity up to 100 kW. This breakthrough makes it exceptionally well-suited for High Energy Laser Weapon Systems (HELWS), where lasers typically operate in fast, high-energy bursts. [70K-W Laser Sensor - Power from Pulse](#).



New UV Sensors: Ophir PD300R-UV-193 and Ophir PD10-C-193

Testing in the UV range - especially with prolonged exposure - presents unique challenges. Intense UV radiation can degrade sensor materials, leading to inaccurate power or energy readings. Long burn-in tests, which are essential for assessing laser stability, can exacerbate this issue, potentially damaging the sensor and compromising data integrity. To address these challenges, we've



removed in the version you are using.

Q. Where can I get the latest version of my Ophir beam profiler software?

A. The latest version of Ophir beam profiler software can be obtained from <https://www.ophiropt.com/en/g/software-download>.

Blog Posts

Ensuring Precision in Advanced Packaging with Ophir Laser Power Meters

In laser applications in microelectronics packaging, precision and reliability are paramount. The goal is to develop processes that maximize energy absorption where it is needed and minimize the HAZ. [Advanced Packaging](#).

New 'Power from Pulse' Capability Supercharges the 70K-W Sensor

The new "Power from Pulse" feature broadens the capabilities of the Ophir 70K-W Ultra-High-Power Laser Sensor, enabling it to accurately measure laser pulses with power levels up to 100 kW in directed energy applications. [70K-W Laser Sensor](#).

Introducing Ariel-USB Power Meter: A New Option for Wireless-Restricted Environments

Ariel-USB is designed for environments where wireless connectivity is not permitted. This new variant offers USB-only communication, while maintaining all the powerful measurement capabilities of the original Ariel. [Ariel-USB](#).

Catalogs: Power Meters, Beam Profiling, IR Optics

The [2025 Ophir Laser Measurement Catalogs](#) include tutorials and product specifications for laser power meters and beam profiling systems.

The [2025 Ophir IR Optics Thermal Imaging Lenses Catalog](#) includes a wide range of LWIR, MWIR, and SWIR continuous zoom lenses compatible with 5 μm , 10 μm SXGA & 15 μm VGA detectors. Also features a wide selection of 1-FOV and multiple FOV IR lenses. Includes new product specs, extended range of lens DRIs, and detailed H-FOVs

developed sensors that are not only highly accurate but also exceptionally durable. The Ophir PD300R-UV-193 and Ophir PD10-C-193 offer a broad spectral range from 193 nm to 400 nm, making them versatile for various UV applications; UV-hardened photodiodes to withstand the harsh conditions of UV testing, ensuring long-term reliability; and 10x10 mm photodiodes, providing a stable and consistent measurement area.



Specific Applications

- [PD300R-UV-193](#) (7Z07151): Optimized for precise laser power measurement, this sensor delivers reliable performance even under extended UV exposure.
- [PD10-C-193](#) (7Z07150): Tailored for measuring the energy of each laser pulse, this sensor ensures consistent and accurate readings - ideal for demanding UV applications.

Webinars

Laser Measurement Accuracy: When, Where, and How

October 24, 2025, 12:00pm eastern

Speaker: Mark Slutzki, Product Manager, MKS Ophir

Accurately measuring a laser's output is fundamental to ensuring that it performs reliably and correctly - from when the laser is first manufactured to its integration into a system, and to its final application. In this session, we discuss when and why absolute calibration accuracy matters (and when it doesn't). We share best practices for maximizing the accuracy of readings, and an overview of how to understand a power meter's accuracy specifications and where the numbers come from.

[Measurement Accuracy.](#)

How to Ensure Laser Accuracy for Precise Micromachining

On Demand

Speaker: John McCauley, Sr. Business Development Manager, MKS Ophir

Using highly repeatable, high-quality, micron-sized laser light to process materials in micromachining is becoming more common practice. However, processing at these sizes presents a unique set of challenges for developing the application of the laser and keeping the process consistent over long periods of time. Maintaining laser consistency depends on the measurement and analysis of key laser performance parameters to understand how the laser is interacting with the materials being processed. In this webinar, McCauley examines key performance parameters of lasers being used for micromachining and how changes in these parameters will adversely affect the processes in which they are involved. [Micromachining.](#)

Laser Beam Characterization with BeamGage: Innovations and Best Practices

On Demand

Speaker: Yoni Groisman, Sr. Applications Engineer, MKS Ophir

Do you need to analyze and optimize your laser beam performance with precision and flexibility? This webinar presents the latest innovations and best practices in laser beam characterization using BeamGage Profilers.

[Beam Characterization.](#)

Research News

Laser Micro Ablation of Pigment

Q-switched Nd: YAG lasers have been widely employed to treat deeply

charts per detector.

MKS Newsletters

[TECHinnovations Newsletter](#) for the latest on vacuum, power solutions, gas delivery and analysis, plasma generation, and ozone solutions for semiconductor and advanced markets.

[Focus on Photonics Newsletter](#) for innovations in lasers, opto-mechanical components, vibration and motion control, and laser characterization.

[Ophir IR Optics Newsletter](#) for the latest developments in thermal imaging optics.

Trade Shows

[Seoul ADEX 2025 \(Aerospace & Defense Exhibition\)](#)

20-24 October 2025

Goyang-Si, Republic of Korea

[Photonix](#)

12-14 November 2025

Tokyo, Japan

[Milipol](#)

18-21 November 2025

Paris, France

[Formnext](#)

18-21 November 2025

Frankfurt, Germany

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located pigmented lesions by confining the incident laser energy to a target. The current study investigated the effect of the dual-optical-pulse scheme with an energy distribution ratio of 8:2 (D8:2) on laser micro-ablation of pigment, compared to single pulse and the dual pulses with the equivalent energies. An [Ophir PE50BF-DIFH-C](#) energy sensor conjugated with an [Ophir Nova II](#) energy meter was used to measure the output energy from the laser system. [Pigmented Lesions](#).

Laser Emission From Rhodamine 6g Infused Peafowl Tail Feathers

The light-emissive properties of dye-infused barbules from Indian Peafowl (*Pavo cristatus*) tail feathers is investigated at high intensities pumped at 532 nm. Findings suggest a critical structure inside the barbules which persists through different color regions of the eyespot. Laser pulse energy was tracked by separating a small fraction of the beam and directing it onto a pyroelectric reference detector, [Ophir PE9-ES-C](#). [Laser Emission from Feathers](#).

About Ophir Products

Ophir is a brand within the MKS Inc. Instruments Photonics Solutions 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, OEM and replacement high-quality optics and sub-assemblies for CO₂ and high-power fiber laser material processing applications. Ophir products enhance our customers' capabilities and productivity in the semiconductor, advanced electronics, and specialty industrial markets. For more information, visit www.ophiropt.com.

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