

Big Blue Ceiling Opens ISO-5 (Class 100) Optical Cleanroom to Support Advanced Computational Optics Research

ISO-5 optical cleanroom enabling precision computational-optics research, sensor characterization, and next-generation imaging workflows.

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Eddie Offermann

announced the completion and activation of its new ISO-5 (Class 100) optical cleanroom, a controlled research environment built to support next-generation work in computational optics, sensor characterization, and precision imaging workflows. The facility marks a significant expansion of the company's core R&D infrastructure and formalizes several years of internal investment into experimental optics, multimodal sensing, and GPU-accelerated computational imaging.

The cleanroom was engineered as a high-stability test environment for exploratory work requiring strict particulate control, consistent airflow, and repeatable optical conditions. Designed with sub-micron particulate limits, positive-pressure isolation, and tight temperature and humidity stability, the space enables research that cannot be conducted reliably in standard laboratory conditions. These constraints underpin the controlled measurements needed for algorithmic imaging, spectral workflows, and characterization of modern commercial and prototype sensors.

At the center of the facility is a modular optical bench that supports interchangeable test assemblies, computational-imaging rigs, and custom sensor fixtures. The space integrates broadband and narrowband light sources, precision monochromators, long-pass filters, reference reflectance standards, optical fibers, and calibrated illumination geometries for controlled experimental setups. This equipment enables consistent measurement of sensor response, optical throughput, lens and filter behavior, and spectral signatures across visible and near-infrared ranges.

The cleanroom is designed to support the company's ongoing investigations into experimental imaging pipelines including multimodal sensing, data-driven calibration methods, and

exploratory approaches that merge software, optics, and sensor physics. While specific research programs remain confidential, the facility is already being used for early-stage experiments involving multi-band illumination, controlled optical-path measurements, and new forms of computational-aided calibration. These workflows are part of a broader long-term initiative exploring unconventional imaging architectures that operate at the intersection of applied optics and modern machine learning.

“Our work increasingly depends on generating controlled, measurement-grade data, something traditional lab spaces aren’t built for,” said Eddie Offermann, Founder and CTO of Big Blue Ceiling. “This cleanroom provides the stability and repeatability needed to evaluate sensors, optical components, and computational methods under conditions we can trust. It’s the foundation for a decade of planned research into advanced imaging and sensing.”

The facility also fills a strategic gap in the company’s portfolio, connecting Big Blue Ceiling’s established strengths in GPU-accelerated AI, XR prototyping, and spatial computing with the physical measurement and calibration capabilities required for emerging computational-optics systems. Many of the company’s ongoing engineering efforts ranging from XR hardware prototyping to ML-driven processing pipelines benefit directly from controlled optical data and the ability to treat imaging systems as rigorously measurable instruments.

The cleanroom will continue to evolve through 2026, with planned additions including expanded monochromator capacity, automated optical-path alignment tools, enhanced spectral reference standards, and integrated workflows for end-to-end sensor testing. Big Blue Ceiling is also evaluating limited collaborations with external partners in fields that depend on precise imaging and measurement.

Robert Offermann
Big Blue Ceiling
contact@bigblueceiling.com

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