



A Konica Minolta Company

Test & Measurement Solutions for Automotive Lighting & Displays



Complete Solutions for Advanced Technologies

In today's automobiles, versatile touchpads have replaced gauges and knobs, modern smart lighting adjusts to changing conditions, and head-up displays (HUDs) are becoming an automotive standard. Advanced LED, display, and augmented reality technologies are enhancing the driving experience and increasing safety. At the same time, they present new challenges to automakers and suppliers, who must quickly learn and adapt them for in-car use, while ensuring they meet customers' high quality expectations.

Radiant Vision Systems is a global provider of Automated Visual Inspection systems for automotive lighting, displays, and illuminated controls and indicators, with turnkey test solutions to help manufacturers like you accelerate development, control costs, and ensure that these critical components reflect the high quality of your brand. Designed around high-resolution CCD cameras with specialized software, our fully integrated systems are improving R&D, quality control, and production operations worldwide.





System Components

A Radiant measurement system starts with two key components: a ProMetric imaging colorimeter or photometer, and application software. Built around scientific-grade, cooled interline CCD sensors, the ProMetric I imaging colorimeters and ProMetric Y imaging photometers are available in 2 to 29MP resolution models. They are specially calibrated to replicate human spatial response to brightness (and color, in the case of ProMetric I), enabling high-precision luminance and chromaticity measurement. Multiple interchangeable lenses can accommodate measurements over a wide range of working distances and viewing angles.

ProMetric software, standard with each Radiant camera, includes a powerful feature set for high-accuracy measurement in R&D and quality control applications, with specialized add-ons such as Radiant's PM-HL headlamp evaluation module for specific applications. TrueTest Automated Visual Inspection software is designed for use in automated production applications.

We work closely with you to determine the optimal camera, software, and lens combination for your application and deliver a complete, integrated solution. The flexibility of Radiant's technology makes it ideal for suppliers looking to test multiple products with a single system.





In-Vehicle Displays

Instrumentation, information, navigation and entertainment systems have moved to fully graphical, touch-enhanced displays, and customers expect the quality of these displays to be on par with that of their consumer electronics. Makers of in-vehicle displays must keep pace with improvements in display quality, increasing screen sizes, and higher resolutions—all while ensuring consistent performance of the display throughout the lifespan of the vehicle.

Automated visual inspection with ProMetric imaging colorimeters and TrueTest™ software helps to detect quality issues during the design or production process, allowing manufacturers to identify potential process improvements, improve yield, and prevent

flawed products from reaching customers. With a built-in library of tests for luminance, chromaticity, uniformity, contrast, mura, pixel defects, display sparkle and image sticking, TrueTest is easily configured to meet your specific needs, or to test to established standards such as the German Automotive Black Mura Standard. Additionally, our conoscopic lens may be incorporated into any system to provide high precision viewing angle measurements—critical to automotive displays, which must be flawless when viewed at an angle. The high angular accuracy of this lens makes it advantageous over other lens options, particularly as displays move to higher resolutions and new technologies such as OLED.



Internal & External Lighting

Modern LED technology has created new opportunities for in-vehicle and external lighting systems, enabling safer, more comfortable, and more stylish automobiles. From sophisticated ambient lighting to intelligent adaptive headlamps, Radiant offers measurement solutions to optimize the design and performance of simple to advanced lighting systems.

LED headlamps, taillights, and interior lights can be inspected for luminance and color uniformity and luminous intensity distribution with a ProMetric imaging colorimeter. Regions of interest can be overlaid on the image in the ProMetric software interface, allowing users to evaluate individual LED performance and identify failures. Luminance and color profiles can be recorded along a path following the curves of a light strip.

A Radiant system can be indispensable in headlamp evaluation applications, particularly as they grow in complexity. Today's smart headlamps benefit from multiple measurements to ensure proper illumination at all settings. An effective and efficient method for evaluating headlamp performance is to project the light source onto a prepared flat surface, where the imaging colorimeter captures the illumination distribution in a single measurement. The assembly can then be analyzed on a number of user-defined criteria in our PM-HL software, designed specifically for headlamp evaluation.

This test setup is well suited for benchmarking headlights against different suppliers. A vehicle may be driven into the laboratory, and headlights tested while keeping the vehicle intact.

Head-Up Displays (HUDs)

Head-up displays have rapidly evolved from simple, monochromatic digital speedometers to full-blown augmented reality systems projecting enhanced navigation and infotainment information. As HUDs shift from an aftermarket product to a standard feature in production automobiles, suppliers and OEMs require reliable solutions to ensure consistently sharp, legible displays as seen within the driver's field of view.

HUDs pose unique measurement challenges for manufacturers, who must take into account potential luminance changes in an infinite plane. ProMetric imaging colorimeters and photometers feature an electronically controlled lens that is highly effective at identifying and focusing on an image projected into infinity. This enables our analysis software to provide accurate luminance and chromaticity measurements at any working distance. Testing in nighttime, normal, and daytime settings ensures consistent legibility in varying conditions. Moreover, the high-resolution ProMetric cameras allow alignment of the HUD optical assembly and photometric measurements within the same test setup.



Instrument Cluster, Controls, Tell-Tales, & Indicators

Illuminated characters, controls, tell-tales, and indicators relay essential information to drivers, and must meet the specific requirements for brightness, contrast, and color outlined by OEMs. Differences in materials, manufacturing processes, and LED bins can significantly impact the performance of these illuminated symbols in a completed assembly. Suppliers need tools to confirm that their products meet customer requirements during the design phase, as well as end-of-line testing solutions to ensure consistency in production.

A ProMetric® system comprised of an imaging colorimeter with ProMetric software is a simple and accurate solution for testing illuminated characters. The software features a powerful tool that allows users to automatically select points of interest based on location or color/luminance values. Calculations can then be run on a single character, or a group of characters, to ensure uniformity within or between symbols. The system provides comprehensive data, including average luminance across characters, points of minimum and maximum luminance, color value, and dominant wavelength.



Radiant Vision Systems enables you to truly See The Difference™

Radiant partners with leaders in displays, lighting, and controls to help them stay in the lead. Our breakthrough tools and systems for R&D and production testing reduce cost, lower risk, and shorten time-to-innovation.

North America

Radiant Vision Systems Global HQ

22908 NE Alder Crest Drive
Suite 100
Redmond, WA 98053 USA
T. +1 (425) 844-0152
F. +1 (425) 844-0153

Korea

Radiant Vision Systems Korea, LLC

12F, Seokun Tower 646
Sampeong-dong, Bundang-gu
Seongnam-si, Kyunggi-do
463-400, Korea
T. +82 31 8017-6797

Europe

European Headquarter

Konica Minolta Sensing Europe BV
Edisonbaan 14-F
3439 MN Nieuwegein, Netherlands
T. +31 (0) 30 248-1193
info.sensing@seu.konicaminolta.eu
www.konicaminolta.eu



A Konica Minolta Company



RadiantVisionSystems.com | Info@RadiantVS.com