

# Lumenera Provides Superior Quality Color Images for Paint Inspection Applications Using the Lg11059C & Lm11059C Cameras

## The Challenge: Accurate Color Matching In Manufacturing

How does a manufacturer ensure the products they produce match the exact color requirements for the customer? How does one guarantee color consistency across all components of a product over its life cycle? Manufacturers are often building products months apart that require the exact same color as a previous build.

Recently a well-known car manufacturer, and a large consumer electronics manufacturer turned to Lumenera to obtain the results they needed. The solution is a pantone color matching validation system using high resolution, quality cameras that can provide excellent, consistent color reproduction in the images produced by the camera.

## Lumenera's Cameras Chosen to Ensure Consistent Color Matching

Lumenera provides cameras that match every customer's unique requirements through advanced on-board algorithms within the camera. Lumenera's rapid customization options are among the strongest in the industry and are both ideal and cost-effective solutions for machine vision applications. Excellent sensitivity and high fidelity color reproduction are key to inspection applications and Lumenera was able to provide the right solutions to match the customer requirements for perfect color matching results.

## Paint Inspection for the Automotive Industry

Lumenera recently deployed its Lg11059 camera for pantone color validation as part of a color fault detection system for a large automotive manufacturing facility located in the United States. The solution integrates Lumenera's high performance cameras, and ensures color consistency for all painted vehicle components. High-resolution images are output over a Gigabit Ethernet (GigE) interface that travel 300 feet to a central computer. A computer with Lumenera custom LabVIEW drivers then performs accurate color match analysis. High reliability cameras and responsive North American customer support were also critical factors considered in the decision making process.



## Highlights

- Two North American manufacturers choose Lumenera cameras to fulfill their pantone color matching requirements.
- Lumenera's Lg11059 and Lm11059 offer the high resolution, and quality needed to provide consistent color reproduction in the images.
- Lumenera is able to provide cameras that match every customer's unique requirements through advanced algorithms within the camera. Lumenera's rapid customization options are among the strongest in the industry and are both ideal and cost-effective solutions for machine vision applications.



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### Paint Inspection for the Consumer Electronics Industry

A large consumer electronics manufacturer that produces handheld consumer devices in North America, also chose Lumenera cameras to verify the pantone colors of their product casings. Over 1000 consumer devices are inspected daily via high-resolution images with high dynamic range. Although this product is quite different than a car, the requirements are similar for paint color validation applications in the manufacturing of almost any product. The key difference in this deployment is the number of stations required for many assembly lines producing the products. In this case, Lumenera's Lm11059 camera with a USB 2.0 interface was chosen, as it's easy-to-integrate with plug-and-play technology. The camera's 14-bit pixel depth provides up to 16,384 levels of color ( $2^{14}$ ) for accurate pantone color matching.

### The Lg11059 GigE and Lm11059 USB 2.0 Color Cameras: Ideal for Color Verification

Lumenera's progressive scan Lg11059 and Lm11059 digital cameras are ideally suited for rugged 24/7 use. With a 10.7 megapixel sensor, 3648 x 2670 resolution and 14-bit depth, one of these cameras can be implemented in a system where several cameras were previously required. The cameras produce stunning images with very accurate color rendering, low noise and high resolution - ideal for most industrial applications.

Canon EF lens controls for remote management of focus and iris elements mean that no person on the manufacturing floor ever needs to manually make any adjustments to the camera itself. All aspects of the camera are remotely controlled via Lumenera's software API thus reducing the chances of tampering with the cameras and having to recalibrate.

For high quality images with no smear effect, the Lg11059 and Lm11059 cameras feature a global shutter ideal for capturing objects in high-speed motion. Uncompressed images as streaming video and still image capture are provided across a GigE or USB 2.0 digital interface. Advanced camera control is available through a complete SDK, with sample code available to quickly integrate camera functions.

### Highlights

- Lumenera's Lm11059 used to inspect the color of over 1000 consumer devices daily. The camera provides high-resolution images with high dynamic range.
- The Lm11059 features 14-bit pixel depth, which provides up to 16,384 levels of color ( $2^{14}$ ) for accurate pantone color matching.

### Lumenera Does Color Well

- Customizable color correction matrices (CCM) for high color accuracy.
- Advanced demosaicing methods for truer reproduction.
- Multi-point controls for adjusting color parameters.
- Low noise and high dynamic range for detection of color hues and intensities.
- Excellent color / white balance functions ensure colors are represented correctly in captured images.

