Applications

• Optimize visual appearance of LED video screens and modules
• Correct LED video screens in manufacturing
• Correct LED video screens on-site at stadiums, events, or roadside
• Correct a single panel (module) or an entire display

Benefits

• Calibrate LED video screens for objective quality in appearance
• Maintain visual performance in LED video screens with regular recalibrations
• Reduce manufacturing cost and waste of poorly performing components
• Apply the latest proprietary methods for screen registration and correction
• Access professional training and technical support

The variability of each emissive element in an LED panel necessitates that LED video screens be properly calibrated for luminance (brightness) and chromaticity (color) uniformity. Without calibration, modules may not match, pixel-to-pixel variation may result in scintillation, and colors may appear inaccurate (shifted away from true white and often oversaturated). These problems can occur at any point in the lifecycle of the screen, because of manufacturing variations, aging of the LEDs, or module replacements.

The Radiant Vision Systems VisionCAL solution combines hardware and software for comprehensive LED screen measurement, analysis, and correction. A complete VisionCAL system applies a high-resolution ProMetric® Imaging Colorimeter to measure the brightness and color of each individual LED in a screen. VisionCAL Software utilizes these measurements to compute correction coefficients for each LED to drive calibration of LED output, resulting in screens with an entirely uniform brightness and color. For LED video screens that use a screen controller that supports correction, correction coefficients can be downloaded directly to the screen on-site.

VisionCAL automates the process of LED screen calibration, including screen registration, screen control, measurement, correction coefficient calculation, and uploading correction coefficients to the LED video screen controller. Correction coefficients in VisionCAL are sophisticated calculations that address edge effects, gradients, dim LEDs, multiple screen geometries, and customer-specified targets.

VisionCAL screen correction can be used for both on-site and factory applications, on a single panel or an entire screen. The VisionCAL system has been used to optimize the visual appearance of LED video screens in thousands of installations around the world.
Key Features

- Complete measurement system for LED video screen correction
- ProMetric® Imaging Colorimeter measures the brightness and color of all LEDs in the screen
- VisionCAL® Software manages the correction process, including: auto registration, data acquisition, computations, and direct download of correction parameters to the screen controller
- Spaced-pixel mode facilitates display pixel registration

Examples of VisionCAL Software features:

Pixel-level measurements are captured by a high-resolution ProMetric Imaging Colorimeter (right). VisionCAL Software (above) outputs illuminance, chromaticity, and correction coefficients for each pixel to achieve uniformity for red, green, blue, and white within LED modules.

Results can be analyzed for each LED module, and with chromaticity values of each pixel plotted to the CIE color space (above). A Chromaticity Target Calculator (right) determines if a chromaticity target can be achieved for a measured set of LEDs.

Spaced-pixel Mode: Illuminates every nth pixel in a series of patterns, enabling the camera to measure all pixels in the screen from a single position, without panning.

System Recommendations

- ProMetric® Imaging Colorimeter (high resolution recommended)
- Windows® 10, 64 bit
- 16-32 GB RAM
- Additional system requirements vary by camera. See hardware specification sheet for more information.