UNPRECEDENTED RESOLUTION AND ACCURACY
FOR CAMERA AND IMAGE SENSOR CALIBRATION

Gamma Scientific is proud to introduce its next generation

Uniform LED Light Source, the SpectralLED™

Don’t let the complexity of other light sources slow you down

Simple, Versatile, and Bright

The SpectralLED™ solves all your requirements with one compact device

Make Light Work For You
Incorporating some of the newest and brightest surface-mount LEDs available, the SpectralLED™ delivers a nearly continuous spectrum comprised of 35 discrete wavelength LEDs. This allows for an unprecedented color gamut and applications otherwise impossible for traditional halogen or LED light sources.

SpectralLED™ light sources simplify the calibration process by allowing you to quickly simulate and change between a huge variety of traditional light sources. Select a preset CIE Illuminant or X-RITE™ (Macbeth™) color patch, or import your own spectrum and let the internal RMS spectral fitting find the best match instantly.

Light sources are only as accurate as the calibration. As a world leader in high performance spectroradiometers, and with an in-house ISO/IEC 17025 NVLAP Accredited Calibration Laboratory (Lab Code 200823-0), you can trust the NIST-traceable calibration that comes programmed into every SpectralLED™ source.

Replace multiple instruments with a single device. With a fully spectrally tunable output spectrum, all you need is one SpectralLED™ to generate any spectral power distribution. Whether it be blackbody, daylight, fluorescent, LED, or something completely unique, the SpectralLED™ can give you an accurate match.
INDUSTRY APPLICATIONS

- Camera and Image Sensor Calibration (CCD, CMOS, etc.)
- Ambient Light Sensor Calibration
- Photodiode Detector Responsivity
- OEM Camera Manufacturing
- Spectrum/Illuminant Simulation
- Diagnostic Medical Imaging
- Technical and Industrial Photography

UNLIMITED POSSIBILITIES FOR LIMITLESS SPECTRA.

- With independent **16-bit control on 35 LED channels**, there are virtually infinite possibilities for what the SpectralLED™ can do for you.

- Compared with other “next-gen” LED light sources, the SpectralLED™ offers **more channels, brighter output, higher accuracy**, and more powerful features for simulation.

- **No external software is required**: the device firmware controls RMS fitting, stores calibration data, and allows for presets to be created.

- Direct integration into production lines or test systems is easy with **universally compatible USB and RS-232 interfaces**.

**SpectralLED™ Illuminant A (Blackbody 2856K)**

Simulation using RMS Spectrum Fitting. Target (Blue) Output (White)

Proprietary electrical design for superior accuracy and reliability.

- The completely redesigned drive electronics provide a pure DC constant current LED drive with floating differential sensing.

- This means there is **no flicker and no uncertainty** in the drive current.

- Couple that with **built-in optical feedback**, and the SpectralLED™ is able to accurately control optical output power to within a fraction of a percent.

- **On-board thermal control** maintains the LED substrate temperature to ensure spectrum is always stable even at high drive currents.

**SpectralLED™ Illuminant D65 (Daylight 6500K)**

Simulation using RMS Spectrum Fitting. Target (Blue) Output (White)
Spatial Non-Uniformity Testing for Array Sensors

Find defects or variation in pixel response on 1D and 2D sensors. SpectralLED™ sources offer a highly uniform output in a variety of optical geometries. Whether you need a radiance or an irradiance light source, there is a configuration perfectly suited for your application.

Sensor Linearity Characterization

Accurately characterize sensor linearity with high dynamic range. Using a proprietary calibration technique and high precision optical feedback, the SpectralLED™ offers unsurpassed output linearity. This makes it the perfect choice for characterizing an unknown sensor’s performance.

Test Quantum Efficiency and Responsivity

Replace monochromators with a solid state design. By sweeping through individual LED channels, the SpectralLED™ can emulate a traditional monochromator light source. With no moving parts and no halogen input illumination, the solid state SpectralLED™ is the clear choice for demanding applications.

### Optics Specifications

<table>
<thead>
<tr>
<th>Spectral Range</th>
<th>380nm - 1000nm (Standard Version, Custom Configurations Available)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectral Output</td>
<td>32 Discrete LED Channels, 3 Broadband LED Channels</td>
</tr>
<tr>
<td></td>
<td>Visible Resolution ≈15nm, NIR Resolution ≈50nm (Typical Channel Spacing)</td>
</tr>
</tbody>
</table>

### Accuracy Specifications

<table>
<thead>
<tr>
<th>Illumination Stability</th>
<th>≥ 99.99% after settling (Channel Dependent, Settling Occurs After ≈50ms for Radiance and ≈2000ms for Color)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illumination Accuracy</td>
<td>≤ 1% Absolute NIST Traceable, Calibration Stored Internally</td>
</tr>
<tr>
<td>Spectral Accuracy</td>
<td>≤ 1nm Centroid Wavelength</td>
</tr>
<tr>
<td>Color Accuracy</td>
<td>CIE 1931 x,y = ±0.003</td>
</tr>
</tbody>
</table>

### General Specifications

<table>
<thead>
<tr>
<th>Supported Operating Systems</th>
<th>USB Drivers for Windows, OSX, and Linux via FTDI virtual COM port</th>
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</thead>
<tbody>
<tr>
<td>Input Voltage and Power</td>
<td>110-240 VAC, 50-60Hz, 600W Maximum</td>
</tr>
<tr>
<td>System Dimensions</td>
<td>Height: 405mm (16in), Width: 460mm (18.1in), Depth: 305mm (12in), Weight: 17.5kg (38.6lbs)</td>
</tr>
</tbody>
</table>

### Part Number Configurations

<table>
<thead>
<tr>
<th>RS-7-1</th>
<th>SpectralLED Tunable Light Source - 75mm Output, Radiance</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-7-2</td>
<td>SpectralLED Tunable Light Source - 300mm Output, Radiance, 1 Meter Sphere with 1 to 4 LED light engines, Radiance Calibration</td>
</tr>
<tr>
<td>RS-7-3</td>
<td>SpectralLED Tunable Light Source - Custom Fiber Optic Output, Configuration Required, Inquire for Details</td>
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