

## SpectralLED® RS-7-1-SWIR Tunable Uniform Light Source

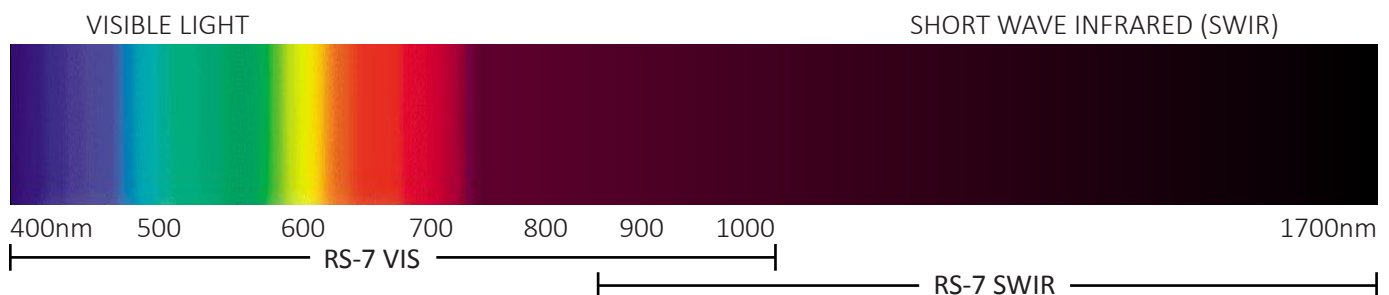
For the ultimate in resolution and accuracy, the SpectralLED® Tunable SWIR source incorporates 10 shortwave infrared wavelengths for synthesis of commercially available light sources or based on spectra that you import.

The platform is easily adaptable for automated test systems and production line integration, with integrated optical feedback and temperature control to ensure rock-solid stability and consistent results.



### Unprecedented Resolution and Accuracy For Camera and Image Sensor Calibration

- Integrating Sphere with 75mm Output port
- Constant Current Drivers and Built-in Optical Feedback
- Accurate & Flicker-free Output in Real Time
- All Solid-State Design for Rapid Start-up & Repeatable Performance
- ISO/IEC 17025 Accredited by NVLAP (NVLAP lab code 200823-0) for Calibration Accuracy
- Camera and Image Sensor Calibration
- Photodiode Detector Responsivity Characterization
- Diagnostic Medical Imaging
- Technical and Industrial Imaging

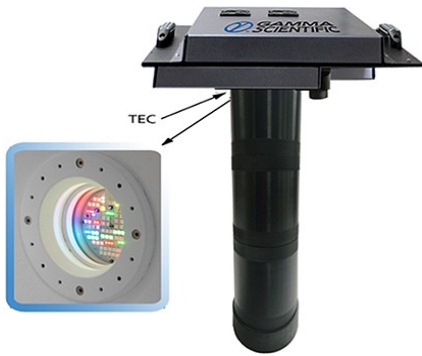


## RS-7-3-SWIR Fiber Optic Output



- Flexible illumination for applications where space is limited
- Can be configured with multiple outputs enabling several devices to be simultaneously illuminated at different locations
- Integrated collimating optics at fiber distal end
- Custom fiber diameters and lengths available

## RS-7-4-SWIR Wafer Probe



- Directly replaces lamp-based sensor testers already deployed in the field
- Easily programmed to deliver virtually any desired spectral power distribution of SWIR light
- All solid-state design maintains calibration & eliminates downtime associated with lamp replacement

## RS-7-5-SWIR Baffle Output



- 150mm output with irradiance calibration
- Includes an integrated baffle tube with 150mm clear aperture
- User adjustable f-numbers including f/1, f/2, f/3 and f/4
- Ideal for testing of bare sensors

## RS-7-6-SWIR Wide Field of View

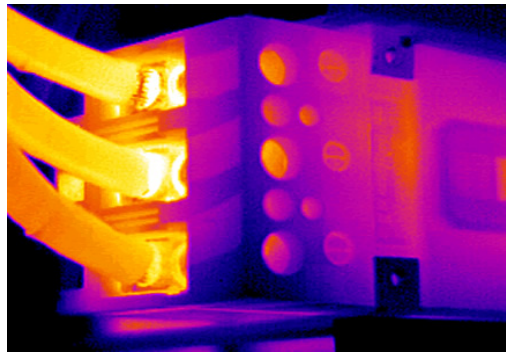


- For applications requiring Wide Field of View (up to 180 degrees)
- Optical design delivers equal radiance over the entire Field of View
- Ideal for flat fielding fish eye or ultra-wide field of view lens designs
- 75mm output port with > 95% uniformity

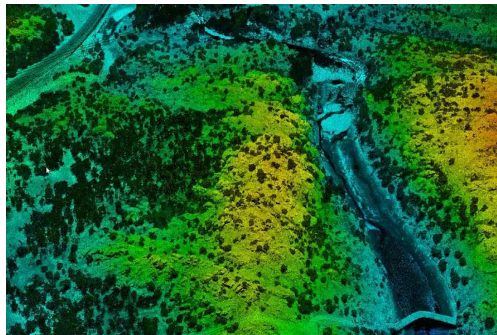
## Calibration & Test of Night Vision Equipment



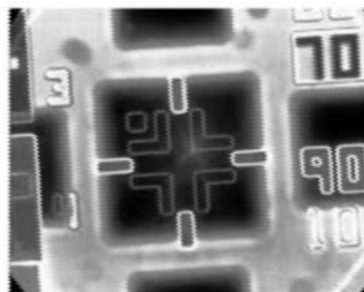
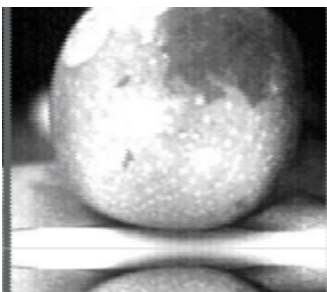
## Remote Sensing Image Calibration



## Remote Sensing Equipment Manufacturing



## Industrial monitoring, Security & Defense, Semiconductor Equipment



## Measurement Applications

- White Balance
- Quantum Efficiency
- Spatial Non-uniformity
- Pixel Defects
- Crosstalk
- Vignetting Correction
- Sensitivity
- Responsivity
- Signal to noise
- Linearity
- ISO Speed
- Saturation Exposure
- Dynamic range

Gamma Scientific is ISO/IEC 17025 accredited by NVLAP (NVLAP lab code 200823-0) and performs LM-79/LM-80 LED testing.

| Optical Specifications      |  |
|-----------------------------|--|
| Spectral Range              | 855 nm to 1,700 nm (Custom ranges available on request)  |
| Spectral Output             | 10 discrete LED channels<br>SWIR resolution ~ 50 nm (typical channel spacing)  |
| Spectral Peaks              | 855nm, 910nm, 940nm, 980nm, 1050nm, 1200nm, 1300nm, 1450nm, 1550nm, 1650nm<br>(custom configurations available)                            |
| Spectral Bandwidth          | Typical of 50-100nm FWHM (channel dependent)   |
| Custom Preset Spectra       | Configurable at time of order via API. Contact factory for details   |
| Accuracy Specifications     |  |
| Illumination Stability      | ≥ 99.99% after 50 ms for radiance or after 2,000 ms for spectrum   |
| Illumination Accuracy       | ± 3% Absolute, NIST traceable  |
| Spectral Accuracy           | ± 2.5 nm centroid wavelength   |
| Linearity                   | < 0.1 % RMS of full scale  |
| Temperature Stability       | Within ± 1° C via active TEC   |
| Electrical Specifications   |  |
| Electrical Resolution       | 16 bit DAC for channel current drivers 24 bit ADC for internal radiance monitor feedback   |
| Dynamic Range Adjustment    | 4-5 decades typical (spectrum dependent)   |
| LED Control                 | Pure DC constant current with floating differential sensing  |
| General Specifications      |  |
| Software                    | Firmware includes full spectral calibration with spectral fitting, preset storage, real-time optical feedback, radiometric units supported |
| Interface Connectors        | USB 2.0 type B and DB-9  |
| Interface Protocol          | Simple ASCII commands with optional binary block transfer  |
| Supported Operating Systems | USB drivers for Windows, OSX and Linux via FTDI virtual COM port<br>Legacy RS-232 serial port for integration (no OS required)             |
| Input Voltage and Power     | 110 to 240 VAC at 50-60Hz, 600W maximum  |
| Dimensions                  | Varies according to specific part number configuration, please contact factory for details   |
| Part Number Configurations  |  |
| RS-7-1-SWIR                 | 75mm output port, 200mm integrating sphere   |
| RS-7-3-SWIR                 | Fiber Optic Output light delivery via one or more fiber bundles  |
| RS-7-4-SWIR                 | Wafer Probe Illuminator for wafer level testing of CCD and CMOS sensors  |
| RS-7-5-SWIR                 | Baffle Tube Output with 150 mm clear aperture with user adjustable f-number  |
| RS-7-6-SWIR                 | Wide Field of View with Gold coating providing high uniformity at up to 180° degree viewing angle  |

Specifications are subject to change without notice.