EIT® LEDCURE® UV RADIOMETERS - STANDARD VERSION

EIT's LEDCURE® family of instruments are highly portable and accurate radiometers designed specifically to measure the UV generated by industrial UV LED systems. The instruments take measurements in the same environment as the work pieces undergoing UV curing or treatment and provide irradiance (W/cm^2), energy density (J/cm^2) as well as an irradiance profile. The LEDCURE is easy to use, compact and affordable. With its patented Total Measured Optic Response (TMOR™) the LEDCURE provides absolute energy measurements with accuracy and repeatability comparable to larger, cabled, metrology-based instruments that are much more expensive.

LEDCURE® STANDARD VERSION FEATURES

- **Easy to Use:** Single push button operation to turn the unit on, collect & view the data (irradiance & energy density) and irradiance profile
- **Single EIT LED (L)- Band:** Specified at the time of order (L-365, L-385, L-395 or L-405)
- **Full Specification Operating Range:** 200 mW/cm^2- 40 W/cm^2, 0-250 J/cm^2
- **User Selectable Sample (Smooth) Modes:** Adjustable between 25/128/2048 equivalent samples/second
- **User Selectable Screens:** Graph, Reference or Setup Screens
- **User Replaceable Batteries:** Two alkaline AAA cells

Top: Easy to Use; with Single Push button operation

Bottom: Graph View showing data collected on three LEDs

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LEDCURE® PRODUCT FEATURES

LEDCURE Display Side

LEDCURE Measurement Side

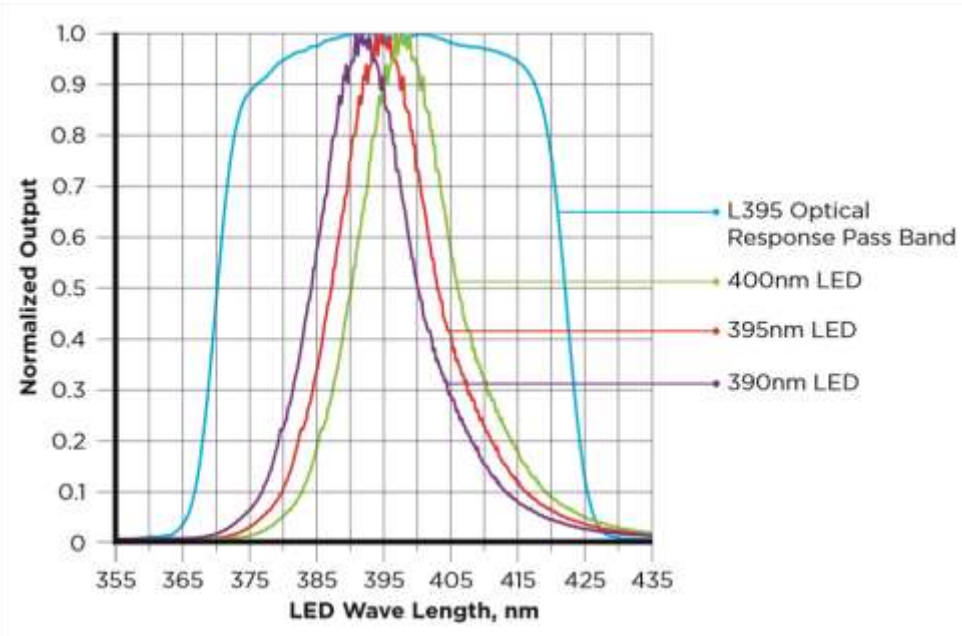
Durable Housing
4.6" (diameter) x 0.5" (height)
117 x 12.7 mm

EIT TOTAL MEASURED OPTICAL RESPONSE (TMOR™)

Patented[1] optics in the EIT LEDCURE are designed specifically to support UV LED Measurements. Each L-Band response is nearly flat over the range of its optic response. ALL optical components in the instrument are included in each LEDCURE L-Band response. The LEDCURE with this patented Total Measured Optical Response (TMOR™) is the only portable radiometer that measures absolute LED energy without requiring extraordinary calibration methods. The TMOR in the LEDCURE provides:

- Highly accurate readings run-to-run
- Highly repeatable results and unit-to-unit matching
- Absolute energy measurement allows easy unit-to-unit and source-to-source comparisons

The Total Measured Optical Response (TMOR) for each of EIT's L-Bands is nearly rectangular (blue line). Each EIT L-Band response (L-365, L-385, L-395, L-405) covers a wavelength range that accurately captures all of the energy emitted by that type of LED source. This optical response is the characteristic that provides each LEDCURE with excellent performance including measuring of absolute energy, and outstanding resolution, matching and repeatability.



The Total Measured Optical Response (TMOR) for the EIT L-395 band shown above accurately captures all of the energy wavelengths emitted by a nominal 395 nm ± 5 nm LED (purple, red, green). The same is true for the response of all EIT L-Bands.

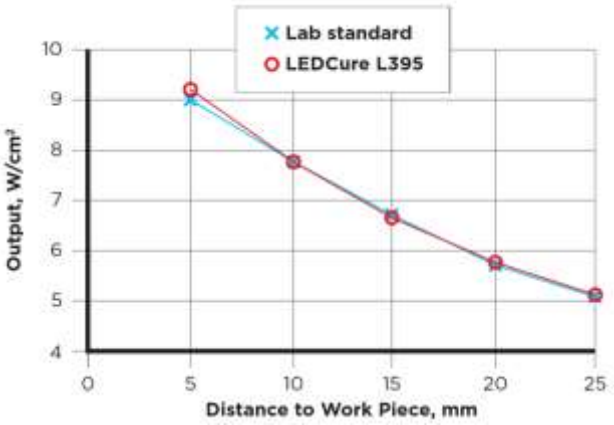
1: May, J.T. and Lawrence, M., inventors "Radiometry Instruments and Technology" U.S. Patent 9,778,103 issued 10/3/2017

LEDCURE® PERFORMANCE: ACCURACY

ACCURACY: A 395 nm, 10 Watt LED source was set up so that the source output power could be measured by an L395 LEDCURE and the results compared to those obtained from a Laboratory standard with integrating sphere.

LEDCURE performance[2] is indistinguishable from the larger, less convenient, and more expensive Laboratory standard which cannot be used in a typical UV curing environment.

The source intensity was varied by changing the working distance between the source and measurement point. The graphic results are nearly coincident. A detailed examination of the numerical data demonstrated and average difference between Laboratory standard and the L395 LEDCURE of 0.1% with a maximum difference of 2.4%.



Comparison of LEDCURE values to Lab standard at different working distances

LEDCURE® PERFORMANCE: RESOLUTION, MATCHING & REPEATABILITY

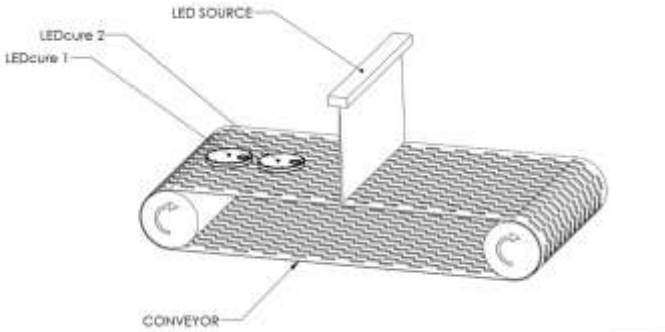
Two production LEDCURE radiometers were passed under an LED source, one behind the other on a conveyorized system as shown to the right. Analysis of the data demonstrates:

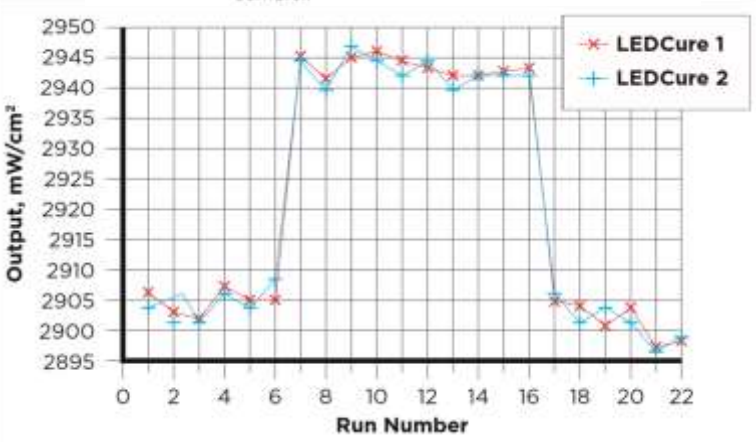
RESOLUTION: LEDCURE resolution for a 40 W unit is 3 mW (0.0075%)

MATCHING: Readings from the two LEDCURE radiometers compared show that the units matched to within ± 0.021% of standard deviation

REPEATABILITY: The measurements in mW/cm^2, were recorded and plotted for each radiometer in each of 22 runs through the system.[3] The red and blue lines represent the absolute irradiance (mW/cm^2) from two different LEDCURE instruments

The two curves track each other closely. The LEDCURE is able to track small output changes in the LED run-to-run. Repeatability is typically better than ± 0.2%

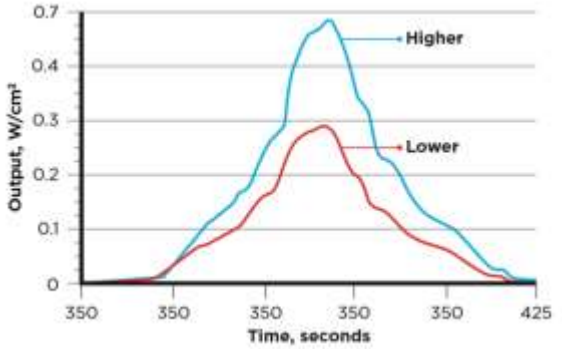




LEDCURE® PROFILER VERSIONS

Single and Four Band Profiler Versions of the LEDCURE are also available that operate in the same manner as the Standard LEDCURE. Profiler versions allow the transfer of the numerical data (irradiance, energy density) values **and** the irradiance profile (Watts as a function of time) to EIT's UV PowerView Software® III Program. This allows the user to:

- Analyze changes over time
- Look at individual arrays
- Compare multi-array systems
- Trouble shoot lines
- View array height changes



Changes in LED Lamp Intensity with Power Setting Changes

2: Testing performed by Excelitas-Lumen Dynamics Group

3: Testing performed by EIT LLC

LEDCURE® PRODUCT SPECIFICATIONS-STANDARD VERSION

(Specifications subject to change without notice)

Spectral Responses	L365: 340-392 nm: +/- 2 nm (FWHM, 52 nm); 4 OD Blocking L385: 360-412 nm: +/- 2 nm (FWHM, 52 nm); 4 OD Blocking L395: 370-422 nm: +/- 2 nm (FWHM, 52 nm); 4 OD Blocking L405: 380-432 nm: +/- 2 nm (FWHM, 52 nm); 4 OD Blocking	
Operating Range **Accuracy**	200 mW/cm^2-40 W/cm^2 and 0-250 J/cm^2 Typically, ± 2% or better; ± 10% of reading plus ± 0.2% of full scale	100-200 mW/cm^2 and 0-50 J/cm^2 Typically, ± 5% or better; ± 10% of reading plus ± 0.1% of full scale. Note: These specifications are based on static (shuttered) exposure systems
Resolution	3 mW/cm^2	
Spatial Response	Approximately Lambertian (cosine)	
Repeatability	Typically better than 0.2% (unit alone); ≤ 1% max	
Calibration	Supplied with NIST traceable calibration certificate	
Smooth Modes	Smooth ON: Effective Sample rate of 25 equivalent samples/second Smooth PROFILER: Effective Sample rate of 128 equivalent samples/second* Smooth OFF: Effective Sample rate of 2048 equivalent samples/second *Recommended for most applications	
Display	Easy to Read, Yellow Text on Black Background	
Operating Temperature	0-75°C Internal temperature; tolerates high external temperatures for short periods Audible alarm indicates when temperature has exceeded tolerance	
Battery/Battery Life	Two user-replaceable AAA Alkaline Cells/Approximately 20 hours with the display “on”	
Time-Out Period	2 minutes DISPLAY mode (no key activity)	
Dimensions **Materials** **Weight**	4.60 x 0.50 inches; 117 mm x 12.7 mm (D x H) Aluminum, stainless steel 10.1 ounces (289 grams)	
Carrying Case	Material: Cut polyurethane interior, scuff resistant nylon exterior cover Size: 10.75 x 3.5 x 7.75 inches; 274 x 89 x 197 mm (W x H x D) Weight: 9 ounces (260 grams)	

Designed and manufactured in the USA

CE

This equipment is in conformity with the following standards and therefore bears CE marking: IEC 61326-1:2005, EN55011: 1998, EN61000-4-2: 1995, A1: 1998, A2: 2001; EN 61000-4-3: 2002, A1: 2002, following the provisions of the applicable directives: 98/34/EEC and amendments, 89/336/EEC and amendments.

For more information contact EIT or:

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