

EIT2.0™ LLC LEDCURE® UV RADIOMETERS - STANDARD VERSION



The EIT 2.0 family of LEDCURE® 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 surpassing larger, more complex and higher-cost metrology-based instruments that require additional components and cables to function.

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 or Four LED “L” Band Instruments Available**
 - ◇ **Single “L” Band:** Specified at the time of order (L-365, L-385, L-395 or L-405)
 - ◇ **Four “L” Band:** Includes L-365, L-385, L-395 and L-405
- **Single “L” Band available in Two Dynamic Ranges**
 - ◇ **High Power:** 200 mW/cm^2 - 40 W/cm^2 , 0-250 J/cm^2
 - ◇ **Low Power:** 4 mW/cm^2 - 400 mW/cm^2 , 0-50 J/cm^2 **NEW!**
 - ◇ Four Band unit available only in high power
- **User Selectable Sample (Smooth) Modes:** Adjustable between 25 (legacy)/128/2048 equivalent samples/second
- **User Selectable Screens:** Graph, Reference or Setup Screen
- **User Replaceable Batteries:** Two alkaline AAA cells



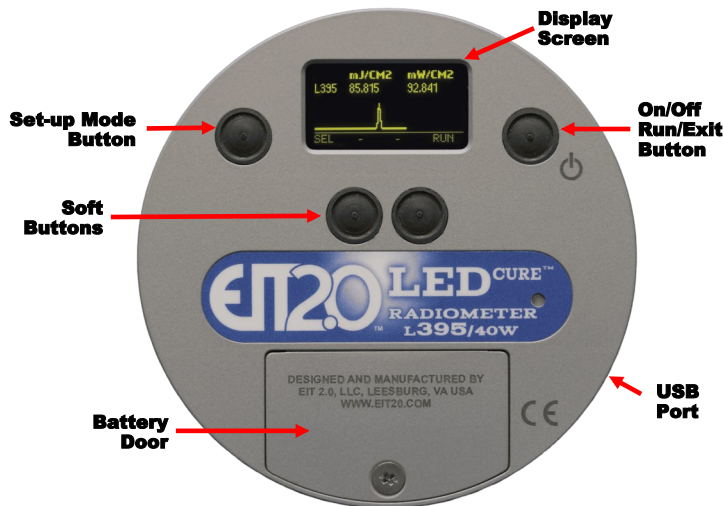
Easy to Use; with Single Push button operation



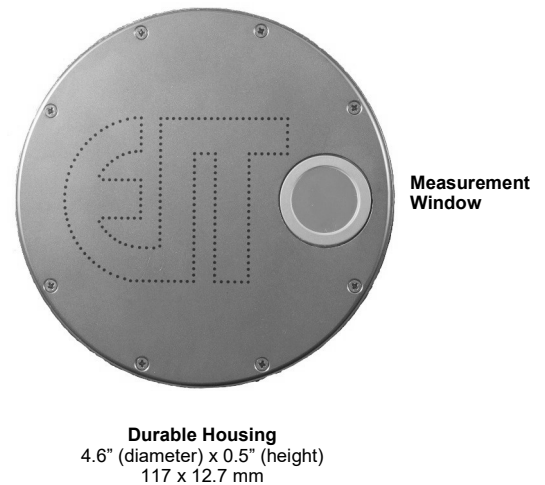
Graph View showing data collected on three LEDs

LEDCURE[®] PRODUCT FEATURES

LEDCURE Display Side



LEDCURE Measurement Side

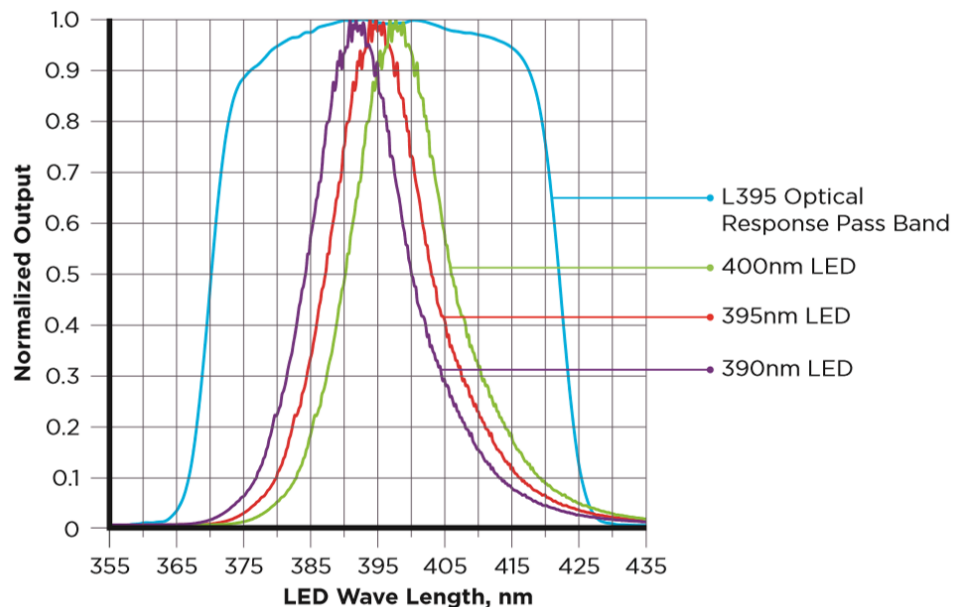


EIT 2.0 TOTAL MEASURED OPTICAL RESPONSE (TMOR[™])

Patented¹ optics in the EIT 2.0 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 2.0 L-395 band shown above accurately captures all of the energy wavelengths emitted by a nominal 395 nm $\pm$ 5 nm LED (purple, red, green). The same is true for the response of all EIT 2.0 L-Bands.

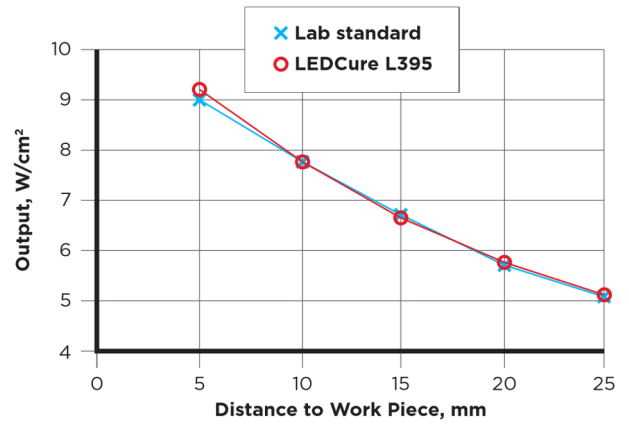
¹: May, J.T. and Lawrence, M., inventors "Radiometry Instruments and Technology" U.S. Patent 9,778,103 issued 10/3/2017

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 performance² 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 an 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

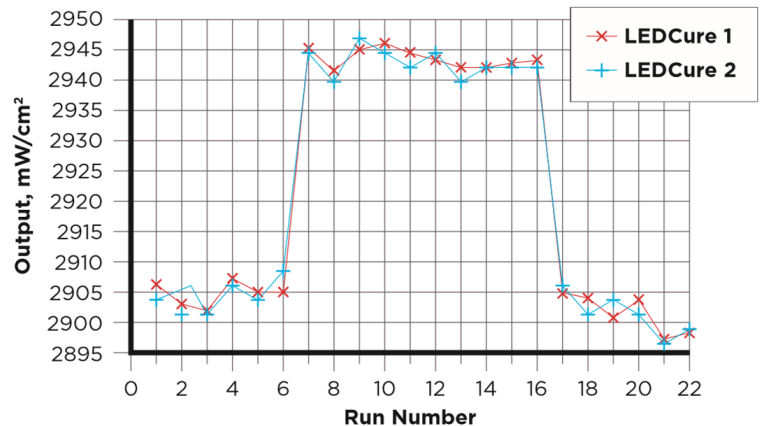
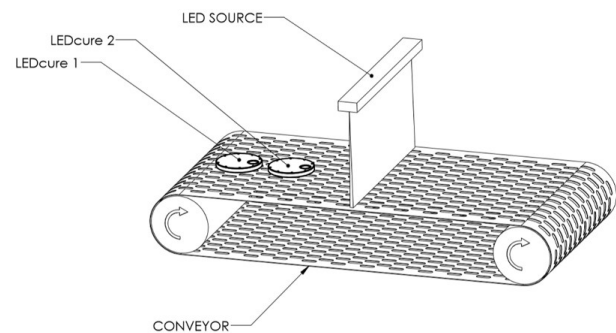
Two production LEDCURE radiometers were passed under an LED source, one behind the other on a conveyorized system as shown to the right. Analysis of the data demonstrates:

RESOLUTION: LEDCURE resolution is 3 mW for a 40 W unit and 1 µW for a 400 mW unit

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

REPEATABILITY: The measurements in mW/cm², 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/cm²) from two different LEDCURE instruments

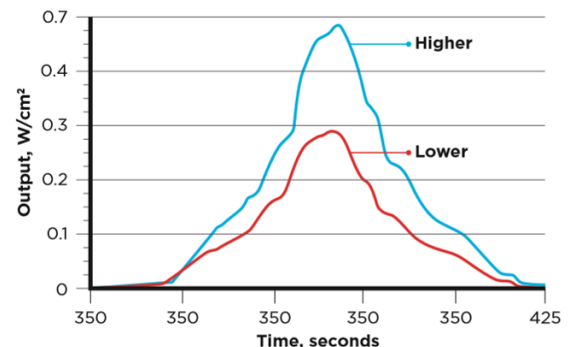
The two curves track each other closely. The LEDCURE is able to track small output changes in the LED run-to-run. Repeatability is typically better than $\pm 0.2\%$



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 the EIT 2.0 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

Spectral Responses All 4 OD Blocking	L365: 340-392 nm: +/- 2 nm (FWHM, 52 nm); L385: 360-412 nm: +/- 2 nm (FWHM, 52 nm); L395: 370-422 nm: +/- 2 nm (FWHM, 52 nm); L405: 380-432 nm: +/- 2 nm (FWHM, 52 nm);
High Power Operating Range Accuracy	High Power LEDCure 40W 200 mW/cm ² -40 W/cm ² , Maximum Reading up to 250 J/cm ² Typically ± 2% or better; ± 10% of reading plus ± 0.2% of full scale
Resolution	3 mW/cm ²
Low Power NEW! Operating Range Accuracy	Low Power LEDCure 400mW 4 mW/cm ² -400 mW/cm ² , Maximum Reading up to 50 J/cm ² Typically, ± 2% or better; ± 10% of reading plus ± 0.2% of full scale
Resolution	1 microWatt/cm ² (1µW/cm ²)
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 for comparison to legacy products Smooth PROFILER: Effective Sample rate of 128 equivalent samples/second* Smooth OFF: Effective Sample rate of 2048 equivalent samples/second *Recommended sample rate for most applications
Display	Easy to Read OLED, 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 without key activity in DISPLAY mode (not during readings)
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)

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.



ABOUT EIT 2.0 LLC

Originally established in 1977 to provide contract engineering & electronic manufacturing services EIT's UV measurement products which include radiometers and on-line measurement systems have been sold worldwide since 1986. EIT 2.0 LLC was established in 2022 under the same ownership and key management team to focus and accelerate the development of EIT's proprietary UV measurement products. Over 113,000 EIT measurement solutions have been sold to measure LED, broadband and UV germicidal sources.

*For more information
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*EIT Products are designed and manufactured in the USA
Product Specifications Subject to Change without Notice
Product & Educational Videos are available at www.eit20.com*

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