



**InternationalLight**  
TECHNOLOGIES

ELECTRICAL INSTRUMENTATION CALIBRATION REPORT

**CALIBRATION  
CERTIFICATE**

This document states that the instrument described below meets or exceeds all manufacturer specifications. The calibration results published in this certificate were obtained using equipment capable of producing results that are traceable through NIST to the International System of Units (SI). ILT is Accredited to ISO/IEC 17025:2017. Calibration conforms to ANSI/NCSL Z540.1-1994 and ANSI/NCSL Z540.3-2006. subclause 5.3

Date: 22-Sep-21 Certificate #: 2109220402E SO#: 173405  
Temp: 23 Degrees C Humidity: 54 % Procedure: TP-0135:12APR2016

Rendered To: Quantum Design GmbH

InstrumentModel-S/N: ILT2400 #11761

Calibration/Repair Remarks: New Instrument

Parts (If Needed):

| As Found Tolerance In Out                         | As Found Readings | As Found Permissible Error | Applied Current | Adjusted Readings | Permissible Adjustment Error | As Left Tolerance In Out                                     |
|---------------------------------------------------|-------------------|----------------------------|-----------------|-------------------|------------------------------|--------------------------------------------------------------|
| <input type="checkbox"/> <input type="checkbox"/> |                   | +/-1.0%                    | 1.000E-3        | 1.000E-03         | +/- 0.5%                     | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| <input type="checkbox"/> <input type="checkbox"/> |                   | +/-1.0%                    | 1.000E-4        | 9.998E-05         | +/- 0.5%                     | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| <input type="checkbox"/> <input type="checkbox"/> |                   | +/-1.0%                    | 1.000E-5        | 1.000E-05         | +/- 0.5%                     | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| <input type="checkbox"/> <input type="checkbox"/> |                   | +/-1.0%                    | 1.000E-6        | 1.000E-06         | +/- 0.5%                     | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| <input type="checkbox"/> <input type="checkbox"/> |                   | +/-1.0%                    | 1.000E-7        | 1.000E-07         | +/- 0.5%                     | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| <input type="checkbox"/> <input type="checkbox"/> |                   | +/-1.0%                    | 1.000E-8        | 9.997E-09         | +/- 0.5%                     | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| <input type="checkbox"/> <input type="checkbox"/> |                   | +/-1.0%                    | 1.000E-9        | 1.000E-09         | +/- 0.5%                     | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| <input type="checkbox"/> <input type="checkbox"/> |                   | +/-5.0%                    | 1.000E-10       | 9.997E-11         | +/- 1.0%                     | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| <input type="checkbox"/> <input type="checkbox"/> |                   | +/-10.0%                   | 5.000E-11       | 5.010E-11         | +/- 5.0%                     | <input checked="" type="checkbox"/> <input type="checkbox"/> |

Tolerance after repair and/or calibration:  In  Out

Measurement Uncertainty: 1mA=±0.04%, 100uA=±0.03%, 10uA=±0.05%, 1uA=±0.06%, 100nA=±0.05%, 10nA=±0.06%, 1nA=±0.25%, 100pA=±0.30%, 50pA=±0.52%. Confidence Level of Uncertainty is 95% (K=2).

ILT's Simple Accept Decision Rule applies, unless stated above.

The above Instrument was compared to the Keithley Current Calibrator/Source Model 6430 S/N 4080572 calibrated on 1/15/2021 Calibration Due: 1/15/2022

Calibrated By:   
Electrical Calibration Tech. Chris Kucy

This certificate applies only to the item identified and shall not be reproduced other than in full, without the specific written approval by International Light Technologies, Inc.





**InternationalLight**  
TECHNOLOGIES

**OPTICAL CALIBRATION CERTIFICATE**

**CALIBRATION  
CERTIFICATE**

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Rendered-to: QUANTUM DESIGN GmbH

Detector: SUD270-100 #00050 Input Optic: WU #00067

Filter: N/A # Misc.: N/A #

Calibrated With: ILT2400 #11761 +5V Bias Off

(XIR) PEAK IRRADIANCE RESPONSE SENSITIVITY FACTOR AS CALIBRATED ON: 23-Sep-2021

8.46E-4 (A)(cm<sup>2</sup>)(W-1) assuming monochromatic irradiance at 275nm

8.460E-07 (A)(cm<sup>2</sup>)(mW-1) assuming monochromatic irradiance at 275nm

Unit will read directly in watts per square centimeter or milliWatts per square centimeter when used with the sensitivity factor above.

REFERENCE PLANE: Front

PRIMARY STANDARD: U.S. National Institute of Standards and Technology Detector Response  
I219 - December 3, 2015 - NIST Test No. 685/287304-15/2 Calibration Due: December 3, 2025  
D204 - December 2, 2015 - NIST Test No. 685/287304-15/1 Calibration Due: December 2, 2025

INTERNATIONAL LIGHT TECHNOLOGIES PRIMARY TRANSFER STANDARDS:

ILT Transfer Uncertainty to Customer = +/- 4.5% plus NIST Uncertainty of: +/- 1.56 Confidence Level of Uncertainty is 95% (k=2)

LIGHT SOURCE: Triax 180/LDLS LAMP OUTPUT: 1.552E-5 W/cm2

INSTRUMENTATION: U1023 @275nm PROCEDURE: OP-0036

TEMPERATURE: 20.0 degrees C HUMIDITY: 61%

CALIBRATED BY: *Cathy Olson*

Calibration Technician: Cathy Olson

THIS CERTIFICATE APPLIES ONLY TO THE ITEMS IDENTIFIED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE SPECIFIC WRITTEN APPROVAL BY INTERNATIONAL LIGHT TECHNOLOGIES, INC.

Calibration Date: 9/23/2021 Certificate No: 109231801 Sales Order #: 173405

