



ELECTRICAL INSTRUMENTATION CALIBRATION REPORT

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/NC SL Z540.1-1994 and ANSI/NC SL Z540.3-2006, subclause 5.3

Date: 17-Oct-22 Certificate #: 2210171404E SO#: 177778

Temp: 23 Degrees C Humidity: 45 % Procedure: TP-0113:08NOV2011

Rendered To: Quantum Design GmbH

InstrumentModel-S/N: IL1700 #330

Calibration/Repair Remarks: None

Parts (If Needed): None

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 checked="" type="checkbox"/> <input type="checkbox"/>	1.001E-3	+/- 0.5%	1.000E-3	1.001E-3	+/- 0.2%	<input checked="" type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/> <input type="checkbox"/>	1.001E-4	+/-0.5%	1.000E-4	1.001E-4	+/- 0.2%	<input checked="" type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/> <input type="checkbox"/>	9.99E-6	+/-0.7%	1.000E-5	9.99E-6	+/- 0.2%	<input checked="" type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/> <input type="checkbox"/>	1.005E-6	+/-1.0%	1.000E-6	1.000E-6	+/- 0.2%	<input checked="" type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/> <input type="checkbox"/>	1.004E-7	+/-1.0%	1.000E-7	9.97E-8	+/- 0.5%	<input checked="" type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/> <input type="checkbox"/>	1.010E-8	+/-1.0%	1.000E-8	1.000E-8	+/- 0.5%	<input checked="" type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/> <input type="checkbox"/>	1.010E-9	+/-1.0%	1.000E-9	1.002E-9	+/- 0.5%	<input checked="" type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/> <input type="checkbox"/>	1.012E-10	+/-1.5%	1.000E-10	1.00E-10	+/- 1.0%	<input checked="" type="checkbox"/> <input type="checkbox"/>

Tolerance after repair and/or calibration: In Out

Measurement Uncertainty: 1mA=±0.065%, 100uA=±0.062% , 10uA=±0.062%, 1uA=±0.065%, 100nA=±0.073%, 10nA=±0.079%, 1nA=±0.084%, 100pA=0.26%. 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 263 S/N 0730631 calibrated on 3/23/2022. Calibration Due: 3/23/2023

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.





OPTICAL CALIBRATION CERTIFICATE

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Rendered-to: QUANTUM DESIGN GMBH

Detector: SED038 #1386 Input Optic: W #3728

Filter: Y #5485 Misc.: N/A #

Calibrated With: IL1700 #330 +5V Bias Off

(YIS)PHOTOPIC ILLUMINANCE RESPONSE SENSITIVITY FACTOR AS CALIBRATED ON: 18-Oct-2022

3.60E-8 (A)(ft2)(lm-1) assuming 3215 K Color Temperature

3.344E-09 (A)(lux-1) assuming 3215 K Color Temperature

-2.17% *Change In Sensitivity From Previous Calibration Dated: 29-Oct-2018

Tolerance As Found: In Out Tolerance As Left: In Out

Unit will read directly in lumens per square foot (footcandles) or lux when used with the sensitivity factor above.

REFERENCE PLANE: Groove ONE formed by filter or diffuser elements and next element, counted from front surface of assembly.

* ILT's Simple Accept Decision Rule Applies, Unless Stated Above. Difference includes intrinsic detector change, NIST recertification updates, lab experimental error or modifications to the hardware adjustments.

PRIMARY STANDARD: U.S. National Institute of Standards and Technology Detector Response

SED033 #4528 / Y #16218 - November 5, 2015 - NIST Test No.: 685/287261-15/1 - Calibration Due: November 5, 2025

ILT Transfer Uncertainty to Customer = +/- 4.3% plus NIST Uncertainty of: +/- 0.5% Confidence Level of Uncertainty is 95% (k=2)

LIGHT SOURCE: 1T 1000W QTH LAMP OUTPUT: 248 lm/ft2

INSTRUMENTATION: #6400/Y PROCEDURE: OP-0070

TEMPERATURE: 22.8 degrees C HUMIDITY: 30%

CALIBRATED BY: J. Hoyt

Calibration Technician: Jon Hoyt

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: 10/18/2022 Certificate No: 210183223 Sales Order #: 177778





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Rendered-to: QUANTUM DESIGN GMBH

Detector: SED038 #1386

Input Optic: R #172

Filter: Y #5485

Misc.: N/A #

Calibrated With: IL1700 #330

+5V Bias Off

(YLS) PHOTOPIC LUMINANCE RESPONSE SENSITIVITY FACTOR AS CALIBRATED ON: 18-Oct-2022

5.88E-10 (A)(fL-1) assuming 3215 K Color Temperature

1.716E-10 (A)(m2)(cd-1) assuming 3215 K Color Temperature

-2.00% *Change In Sensitivity From Previous Calibration Dated: 29-Oct-2018

Tolerance As Found: In

Out

Tolerance As Left: In

Out

Unit will read directly in foot-Lamberts when used with the sensitivity factor above.

REFERENCE PLANE: Average F.O.V. +/-0.75 Degrees

* ILT's Simple Accept Decision Rule Applies, Unless Stated Above. Difference includes intrinsic detector change, NIST recertification updates, lab experimental error or modifications to the hardware adjustments.

PRIMARY STANDARD: U.S. National Institute of Standards and Technology Detector Response

SED033#4528/Y#16218 - November 5, 2015 - NIST Test No.: 685/287261-15/1 - Calibration Due: November 5, 2025

ILT Transfer Uncertainty to Customer = +/- 4.3% plus NIST Uncertainty of: +/- 0.5% Confidence Level of Uncertainty is 95% (k=2)

LIGHT SOURCE: 1T 1000W QTH/Reflectance Tablet

LAMP OUTPUT: 241 fL

INSTRUMENTATION: #6400/Y

PROCEDURE: OP-0071

TEMPERATURE: 22.8 degrees C

HUMIDITY: 30%

CALIBRATED BY: J. Hoyt

Calibration Technician: Jon Hoyt

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Calibration Date: 10/18/2022 Certificate No: 210183222

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