

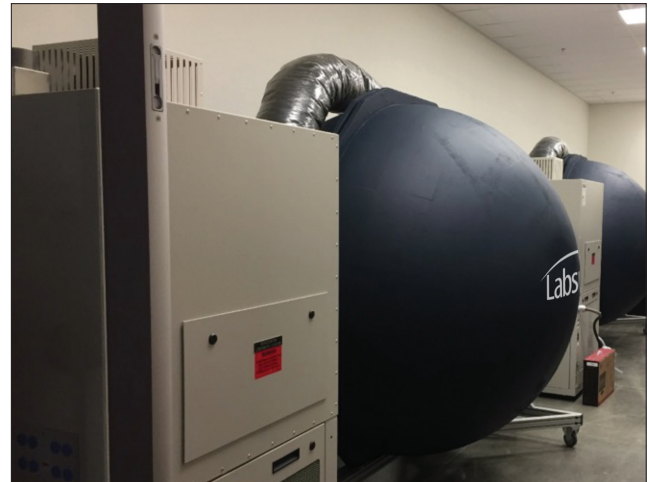
illumia[®]Plus2 Elevated Temperature Integrating Sphere Spectroradiometers

Allows testing over a broad range of temperatures

Measure with confidence

When a solid-state light engine is used in a luminaire or fixture, the thermal environment near the LEDs are altered by both the design and the application environment. By measuring the performance characteristics of a luminaire or fixture at various temperatures, one can model the expected light output by measuring the operating temperature.

Labsphere's illumiaPlus2 Elevated Temperature Integrating Sphere Spectroradiometers are designed specifically to test photometric and colorimetric performance over a broad dynamic range of temperatures per IES LM-82 and LM-79-19 recommended practices. Systems include a choice of integrating sphere sizes 1.65 m and 2 m with temperature controlled feedback loop, application-specific modules, accredited reference lamps and Integral[®] Software that drives it all.



Improve productivity:

- Add-on electronic modules increase functionality and simplify compliance with IES LM-79-19, IES LM-78, LM-82 and equivalent measurement guidelines
- Automated calibration routines ensure ease-of-use and improved efficiency
- Automated IES LM-79-19 and S025 stabilization routines
- Generate reports using Excel templates: data where you want it, how you want it, formatted for language and style

Measure:

- Indoor Lighting
- Outdoor Lighting
- Roadway Lighting
- Lamps and Luminaires
- LEDs
- Entertainment Lighting
- Automotive Lighting
- Troffers
- CFLs
- Fluorescent Lamps
- OLEDs
- Low Power LEDs

Features:

- Fast, low noise; TE cooled back – thinned CCD array detector
- Shutter for dark measurements in real time
- Hardware triggering capability
- Exceptional stability at long exposure time
- High dynamic range
- Ambient temperature control and monitoring
- Light source temperature monitors
- LIV and temperature stability

Every illumiaPlus2 Elevated Temperature System features these standard products

Programmable DC Power Supplies

Designed to accurately provide DC current to reference lamp, auxiliary lamp, and DCV devices under test.

The current output is selected, set and controlled using Integral Software included with the power supply.

- Programmable regulated DC current
- Programmable regulated DC voltage
- Controlled current ramp up
- Lamp operation timer
- Easy on/off operation
- Front panel or remote control
- Current, voltage readback

ICM-500 Control Module

The illumiaPlus2 Control Module is the routing module that ties Labsphere's powerful Integral Software to the illumiaPlus2 total spectral flux measurement hardware. When the ICM-500 is controlled by Integral, this user friendly, turn key system automatically routes power and metering.

- Main hub for power supplies and power meters
- Routes DC voltage to 2π and 4π reference locations
- Routes power to absorption correction lamp
- Routes DC or AC power to devices under test
- USB inputs

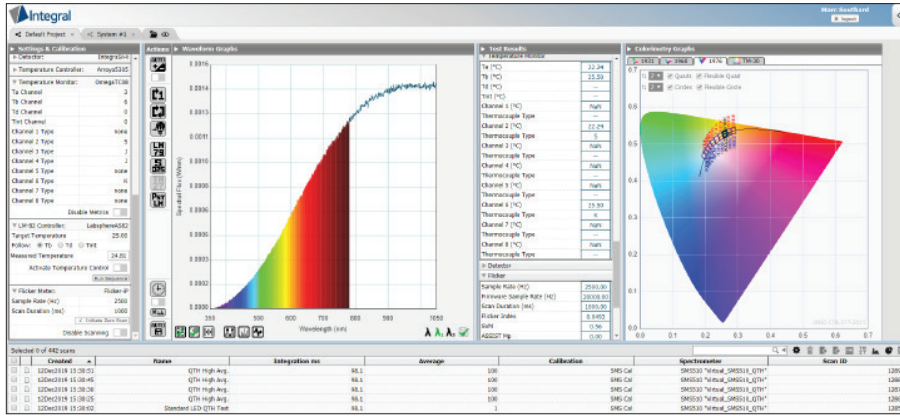
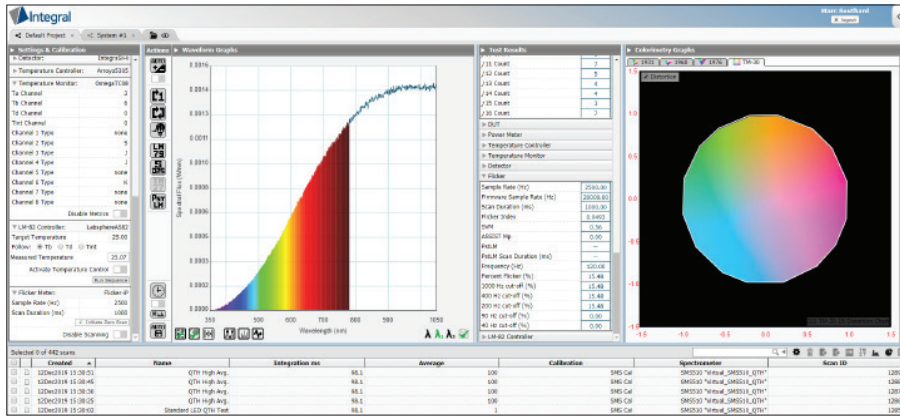
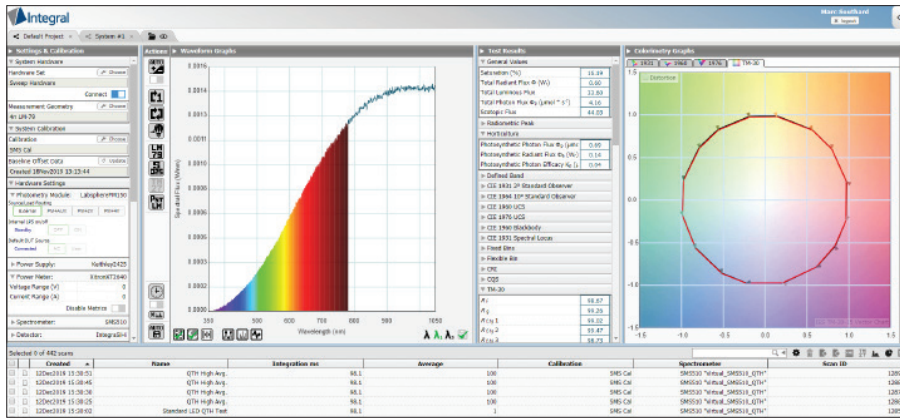


Calibrated Spectral and Luminous Flux Standards

Each standard has been carefully screened, seasoned, and calibrated at our manufacturing facility under the guidelines recommended by the NVLAP accredited ISO 17025 practices for the highest degree of confidence.



Integral Light Measurement Software



Supported Devices		
Spectrometer	Power Supply	Power Meter
CDS1100	Agilent8811B	Q/INOZHB775C1
CDS2100	Agilent8812B	TETP62201
CDS2400	AgilentE3632A	Xbrun2801
CDS2600	AgilentE3633A	YonogawaWT210
CDS3000	AgilentE3634A	YonogawaWT3080
CDS3810	AgilentE3751A	YonogawaWT310
CDS3820	AmelKX9	
CDS3830	AmelKX_1501X	
CDS800	Chroma61601	
CDS810	Chroma61602	
QEPrometric	Chroma61603	
SMSS500	Chroma61604	
SMSS500ULS	Chroma61605	
SMSS10	Kentley4400	
	Kentley2110	
	Kentley2120	
	Kentley2425	
	Kentley2430	
	Kentley2440	
Photometry Module		
LabSpherePM100	LabSphereLP5	
LabSpherePM150	LabSphereAS82	
	LabSphereATC82	
LM-82 Controller		
CSZ_CP	Magnum80811	
LabSphereAS82	FormaAP50600	
LabSphereATC82	Guadach31015	
	TDKLambda_GEN100_7_5	
	TDKLambda_GEN150_10	
	TDKLambda_GEN40_10	
	TDKLambda_2Series	
	Temperature Controller	
	Arroyo5300	
	Arroyo5305	
	Arroyo5805	
	LandTEC	
	Temperature Monitor	
	OmegaTC08	
	Flicker Meter	
	Flicker-P	
	GottliebInfraredFK38InGaAs	
	Detector	
	IntegratingGasAsExtended	
	IntegratingGasAsStandard	
	IntegraSHi	
	IntegraSiLo	
	Kentley6485	
	Kentley6514	

List of Integral Supported Devices

- HTML5-enabled web browser based light measurement software
- Operation from any device, any platform, any location and in any language
- Instantly switch between English, Mandarin Chinese, Japanese, Korean, and French
- Large assortment of test hardware configurations are supported (spectrometer, AC and DC power supplies, temperature controls and monitors)
- Powerful, easy-to-use Application Programming Interface (API) supports LabVIEW, .NET, C, and VBA
- One user can control many test stations and multiple users can access the same test station from anywhere
- Meets LM-79-19 and LM-78 integrating sphere spectrometer recommended measurement methods
- Automated calibration routines
- Built-in report generator with the ability to create custom reports
- All Industry standard color calculations including:
 - x, y, u, v, u', v', CCT, CRI (1-15 and general), CQS, luminous flux (lumens), scotopic lumens, Duv, dominant wavelength, peak wavelength, FWHM, Centroid, Purity, ANSI SSL 2015 binning, TM-30-18 fidelity and gamut data, distortion and vector graphics, and horticulture

illumiaPlus2 Elevated Temperature System Specifications

System:	illumiaPlus2 2600
Spectral Flux Measurements:	325 nm - 1050 nm
Exposure Time Range:	8 ms – 900 sec
(Actual exposure time depends on sphere size and source type)	

Performance Specifications (lumens)

System:	illumiaPlus2 2600-165		illumiaPlus2 2600-195	
	min	max	min	max
Tungsten Filament:	0.33	89000	0.47	124000
Cool White LED:	0.13	114000	0.18	160000
Warm White LED:	0.09	98500	0.14	138000
Blue LED:	0.02	6000	0.04	8300
Red LED:	0.07	7600	0.11	11000
Upper Range:	Ambient temp cannot exceed 100°C		Ambient temp cannot exceed 100°C	

Thermal Performance with Cincinnati Sub-Zero ZPRCS-1816-6-SC/AC Z Plus Remote Conditioner

Temperature Range:	15°C to 80°C
Typical Temperature Rate of Change:	From 20°C to 80°C 52 minutes From 80°C to 20°C 45 minutes

illumiaPlus2 Elevated Temperature System Ordering Information

System:	illumiaPlus2-2600-165-4pi-LM82	illumiaPlus2-2600-195-4pi-LM82
Order Number:	AA-40059-165	AA-40059-195
Above Systems Include:		
Insulated Light Measurement Sphere:	165 cm	195 cm
Spectrally-Calibrated 4π Lamp:	SCL-1400	SCL-1400
Lamp Socket Assembly:	4π	4π
Control Module:	ICM-500	ICM-500
Aux Lamp:	AUX-1400	AUX-1400
Software:	Integral	Integral

System Spectrometer Specifications

Spectrometer	CDS 2600
Detector:	1044 x 64 CCD (back thinned)
Spectral Range: (spectrograph)	325 - 1050 nm
Resolution: (FWHM)	2.4 nm
Integration Time:	8 ms - 900 sec
Cooling:	-10 ± 0.05°C
Linearity:	± 0.1%
Wavelength Accuracy:	< ± 0.3 nm
Average % Noise on 100% Line:	0.07%
Stray Light: (Y-50 filter)	1.87%
Stray Light LED/Laser:	1.8E-5 from 450-550 nm w/633 nm laser
Optical Input:	600 um, permanently mounted
Measurement Dynamic Range:	475K
x, y Chromaticity Accuracy:	< 0.001 for x, y
Mechanical Shutter:	Yes
AD Converter:	18 bit
PC Interface:	USB 2.0
Trigger: hardware	Yes
Trigger: software	Yes
OD Filters:	No
Shutter:	Yes

NOTES:

1. Values above are the noise equivalent power in W/nm or lumens for the different wavelength ranges sited. They were all taken with a 5W lamp, 10" sphere and 10 ms integration time.

Integrating Sphere Specifications

Interior Sphere Diameter:	165 cm	195 cm
Sphere Open Style:	Clam Shell	Clam Shell
Sphere Assembly:	Spun Aluminum	Spun Aluminum
Frame Style:	Extruded Aluminum	Extruded Aluminum
Sphere Coating:	Spectrafect®	Spectrafect®
Spectrafect Coating Reflectance:	> 97% (nominal)	> 97% (nominal)
SMA Adapter:	Included	Included
Cosine Corrector:	Included	Included
Detector Port Dimension:	1.25 cm	1.25 cm
Detector Port Quantity:	2	2
Temperature Probe Port:	2.5 cm	2.5 cm
Max Recommended Lamp Size: (LM-79) 4π geometry	< 23 cm diameter, 110 cm long	< 27 cm diameter, 130 cm long
Max Recommended Linear DUT Dimension: (2/3 sphere diameter)	110 cm	130 cm
Max Recommended Internal Surface Size: (2% Rule)(cm ²)	545 cm ²	760 cm ²
Maximum Sphere Coating Temp:	100°C	100°C

Upgrade Modules Ordering Information

Model Number: IL-AC1

Order Number: AA-40000-002

Includes:

- Chroma 61603 Programmable Instrument Grade AC Power Source
- Cabling for ICM-500 connections

Model Number: IL-PM1

Order Number: AA-40000-001

Includes:

- XITRON 2640 Precision Multi-Channel Power Analyzer
- Cabling for ICM-500 and AC power source connections

Optional Ambient Temperature Probe and Monitor Ordering Information

Model Number: TPM-400TC-08

Order Number: AS-03003-400

illumiaPlus to illumiaPlus2 Upgrade Kit Ordering Information

Model Number:

ICM-500-175

Order Number:

AS-40000-175

Includes: ICM-500, LPS-175 27 DC Power Supply, jumper cable and documentation for systems using 2PI-INT-050, 2PI-INT-650, SCL-050, SCL-650, AUX-050, AUX-650 and FFS-100-400 lamps

ICM-500-350

AS-40000-350

Includes: ICM-500, LPS-350 28 DC Power Supply, jumper cable and documentation for systems using AUX-75, FFS-100-1000, and AUX-100 lamps

ICM-500-525

AS-40000-525

Includes: ICM-500, LPS-525 42 DC Power Supply, jumper cable and documentation for systems using 2PI-INT-1400, AUX-1400, ISC-1400, and SCL-1400 lamps

Model Number:

Integral LM-User ASM

Order Number:

AS-81021-000

Integral Major Module Software Upgrade to existing illumia and/or Integral installation. Single user, single Integral License and 1 year support and maintenance

