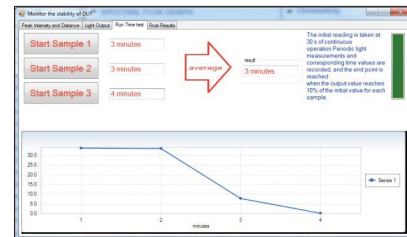
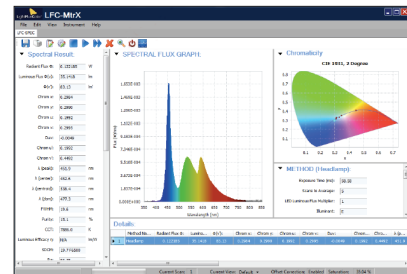


# Flashlight Performance Test System

Turnkey solution to meet industry standards



## Designed for the portable light industry

Designed specifically for this application, the system evaluates lamp efficiency for development and manufacture of LED, tungsten, xenon and krypton portable lighting assemblies.

## Easy to use

Turnkey system includes LabSphere's fast and accurate mini spectrometer, flashlight measurement integrating sphere spectrometer, lamp standard spectral flux, absorption correction lamp and switch box for directing electrical current to either the lamp standard or auxiliary absorption correction using the same lamp power supply.

## Fast and accurate test results

Facilitate accurate spectroradiometric, photometric and colorimetric characterization meeting ANSI/NEMA FL1 standard requirements for run time and light output measurements.

## Measure (using included FPT software)

- Total Luminous Flux (lumens)
- Total Forward Spectral Flux (watts/nm)
- Total Radiant Flux (watts)
- Color (CCT)
- Lamp Performance vs Time
- Peak and Dominant Wavelength
- Spectral Purity
- Color Rendering Index (CRI)
- Chromaticity Coordinates
- Half-Bandwidth, Run Time

## Ordering Information

<b>Model Number:</b>	<b>FPT-600-050</b>	<b>FPT-600-100</b>	<b>FPT-610-050</b>	<b>FPT-610-100</b>
Order Number:	AA-90041-050	AA-90041-100	AA-90043-050	AA-90043-100

### Above Systems Include:

Sphere:	LMS-050	LMS-100	LMS-050	LMS-100
Spectrometer:	CDS-600	CDS-600	CDS-610	CDS-610
Spectrally-Calibrated Lamp: (2π and 4π are not interchangeable)				
2π	2PI-1-INT-650	2PI-1-INT-650	2PI-1-INT-650	2PI-1-INT-650
Lamp Socket Assembly:	2π	2π	2π	2π
Photometry Module: (includes Cube Computer)				
Aux Lamp:	AUX-650	AUX-650	AUX-650	AUX-650
Software:	FPT Software	FPT Software	FPT Software	FPT Software

All systems include Retouch 6080 and Tool Kit

### FPT Replacement Parts

2PI-1-INT-650 2π Reference Lamp, internal mount - NVLAP*	AS-80003-100
AUX-650 Absorption Correction Lamp	AS-02986-650
CDS-600 Mini Spectrometer	AS-02767-000

### Extended Warranties

Extended Warranty:	Software (12 Months)	AA-01375-000
Extended Warranty:	Parts Only (12 Months) (not including lamps)	AA-01375-001
Extended Warranty:	Parts and Labor (12 Months) (not including lamps)	AA-01375-002

\*ISO/IEC 17025:2005 Lab Code 200951-0

## Performance Specifications (lumens)

	min	max	min	max	min	max	min	max
Tungsten Filament:	0.05	7500	0.20	16300	0.05	7500	0.20	16300
Cool White LED:	0.04	7100	0.16	14500	0.04	7100	0.16	14500
Warm White LED:	0.03	4500	0.13	13800	0.03	4500	0.13	13800
Blue LED:	0.05	300	0.20	1200	0.05	300	0.20	1200
Red LED:	0.05	300	0.12	1100	0.05	300	0.12	1100
Upper Range:	Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C	



Advancing the Technology of Light: Measure. Create. Reflect.

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## Optional Accessories Ordering Information

4 $\pi$ Kit FPT-600-050, FPT-610-050 Enhances FPT-600-050-US for 4 $\pi$ measurements Includes lamp holder, lamp post, connector box cables and tools. SCL-650 not included	AA-90042-050
4 $\pi$ Kit FPT-600-100, FPT-610-100 Enhances FPT-600-100-US for 4 $\pi$ measurements Includes lamp holder, lamp post, connector box cables and tools. SCL-650 not included	AA-90042-100
SCL-650 35W 4 $\pi$ Spectral Flux Standard - NVLAP*	AS-01335-100
CSFS-650 35W 4 $\pi$ Spectral Flux Standards, set of 3 - NVLAP*	AS-01336-100
2PI-3-INT-650 2 $\pi$ Reference Lamp Kit, internal mount, set of 3 - NVLAP*	AS-80003-101
FPT-FLH-050 Universal Flashlight Holder for 2 $\pi$ port for 0.5m FPT	-
FPT-FLH-100 Universal Flashlight Holder for 2 $\pi$ port for 1.0m FPT	-



# System Spectrometer Specifications

<b>Model Number:</b>	<b>CDS 600</b>	<b>CDS-610</b>
Detector:	2048 element Linear CCD	2048 element Linear CCD
Spectral Range: (spectrograph)	200 - 850 nm	350 - 1100 nm
Resolution: (FWHM)	1.5 nm	1.5 nm
Integration Time:	1 ms - 5 sec	1 ms - 5 sec
Cooling:	n/a	n/a
Linearity:	± 0.13%	± 0.13%
Wavelength Accuracy:	< ± 0.3 nm	< ± 0.3 nm
Average % Noise on 100% Line:	0.20%	0.20%
Stray Light: (Y-50 filter)	1.66%	1.66%
Stray Light LED/Laser:	2.6E-5 from 450 - 550 nm w/633 nm laser	1.8E-5 from 450 - 550 nm w/633 nm laser
Optical Input:	600 um, 3 m long SMA Connection	600 um, 3 m long SMA Connection
Measurement Dynamic Range:	15K	15K
x, y Chromaticity Accuracy:	<0.001 for x, y	<0.001 for x, y
Mechanical Shutter:	No	No
AD Converter:	16 bit	16 bit
PC Interface:	USB 2.0	USB 2.0
Trigger: hardware	No	No
Trigger: software	Yes	Yes
OD Filters:	No	No
Shutter:	No	No

## NOTES:

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



# Integrating Sphere Specifications

<b>Model Number:</b>	<b>LMS-050</b>	<b>LMS-100</b>
Order Number:	AA-30000-050	AA-30000-100
Sphere Size:	50 cm	100 cm
Required Footprint:		
closed	74.1 cm x 50.4 cm x 74.0 cm	128.0 cm x 98.1 cm x 166.7 cm
open	103.7 cm x 89.9 cm x 74.0 cm	174.4 cm x 165.9 cm x 166.7 cm
Sphere Weight:	20 Kg	92 Kg
Sphere Color:	Labsphere Blue	Labsphere Blue
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)
Total Number of Ports:	6	6
SMA Adapter:	Included	Included
Cosine Corrector:	Included	Included
External DUT 2π Port Size:	15 cm	33 cm
Detector Port Dimension:	1.25 cm	1.25 cm
Detector Port Quantity:	2	2
Port Frame Reducer:	15 - 2.5 cm; 15 cm - 2.5 cm	33 cm - 15 cm; 15 cm - 2.5 cm
Temperature Probe Port:	2.5 cm	2.5 cm
Max Recommended Lamp Size: (LM-79) 4π geometry	<7 cm diameter, 33 cm long	<14 cm diameter, 67 cm long
Max Port or DUT Area: (2π)	15 cm diameter; 71 cm <sup>2</sup>	33 cm diameter; 337 cm <sup>2</sup>
Max Recommended Linear DUT Dimension: (2/3 sphere diameter)	33 cm	66 cm
Max Recommended Internal Surface Size: (2% Rule) (cm <sup>2</sup> )	50 cm <sup>2</sup>	200 cm <sup>2</sup>
Maximum Sphere Coating Temp:	100°C	100°C

