



# Integrating Sphere Spectroradiometer System for LED LPCE-2(LMS-8000)

## Brochure

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**Leader in Lighting & Electrical Test Instruments**

Rev. 9/23/2020



## CONTENT TABLE

Name	Model	Remark	Page
CCD Spectroradiometer	LMS-8000A	also can choose LMS-8000AS	-----2
Optical Fiber	CFO-1.5M	CFO-1.5MY is for LMS-8000AS	-----3
Digital Power Meter	LS2008R	Option can be LS2012 or LS2010	-----3
AC Power Source	LSP-500VA	Option can be LSP-500VAR	-----5
Intensity Test Device	ITD-8000	Intensity test for single LED (Option)	-----5
Big Integrating Sphere with side opening	IS-1.5MA	Can do $2\pi$ and $4\pi$ for luminaire test	-----6
Small Integrating Sphere	IS-0.3M	For single LEDs test (Option)	-----6
Standard Lamp Source (24V/50W)	SLS-50W	Calibrate for big sphere	-----7
Standard Lamp Source (12V/10W)	SLS-10W	Calibrate for small sphere (Option)	-----7
19 Inch Cabinet	CASE-19IN	Option	-----7
LED Luminaire Test Report (Test in big Integrating Sphere)			-----8
Single LED Test Report (Test in small Integrating Sphere)			-----8

### Note the following:

If you need to test LED luminaire and Single LEDs both, you need to choose LMS-8000AS and the **Blue** items instruments

If you only need to test LED luminaire or Single LED, you can choose LMS-8000A but no need the **Blue** items instruments

## 1、 CCD Spectroradiometer



LPCE-2(LMS-8000) is according to CIE 127-1997 and IES LM 79-08 standard.

LMS-8000AS is updated version for LMS-8000A, LMS-8000AS can connect two integrating sphere at the same time. That's mean LMS-8000AS be switch between the two spheres conveniently, but no need to take out the detector cable and optical fiber between the big sphere and small sphere

### Measures:

- Colorimetric: Total Radiant Intensity, Dominant Wavelength, Peak Wavelength, Color Coordinates, Half-Bandwidth, Spectral Purity, Correlated Color Temperature (CCT), Color Rendering Index (CRI).
- Photometric: Total Luminous Flux, Luminous Efficiency, Radiant
- Electrical: Forward Voltage, Reverse Voltage, Forward Current, Reverse Current, Voltage, Current, Power, Power Factor

### Specification:

- Spectral Range Wavelength: 380nm~800nm (Option is 200~800nm and 380nm~1050nm)
- Spectral Wavelength Accuracy:  $\pm 0.3\text{nm}$ , Wavelength Reproducibility:  $\pm 0.1\text{nm}$ , Sample Scanning Steps:  $\pm 0.1\text{nm}$
- Accuracy of Chromaticity Coordinate ( $\Delta x$ ,  $\Delta y$ ):  $\pm 0.003$
- Correlated Color Temperature CCT: 1, 500K~25, 000K, CCT Accuracy:  $\pm 0.5\%$
- Color Rendering Index Range: 0~100.0, Accuracy:  $\pm(0.3\% \text{rd} \pm 0.3)$
- Photometric linear:  $\pm 0.5\%$ , Stray light:  $< 0.015\%$ (600nm) and  $< 0.03\%$ (435nm), Time of integration: 0.1mS~20S
- Built-in a 5000.0mA Constant Current DC Power Source which can light on LED and standard lamp
- It can work with an intensity device (ITD-8000) to test the single LED intensity directly
- Connect with PC via USB, English version software can be run under Win7, Win8 and Win10

## 2、 Optical Fiber (CFO-1.5M)



CFO-1.5M is 1.5m length optical fiber used to connect the spectroradiometer and integrating sphere. CFO-1.5MY is Y type optical fiber which can connect with two integrating spheres at the same time.

## 3、 Digital Power Meter



- Measure Voltage, Current, Power and Power Factor.
- Voltage range:10~600V; Current range: 0.005~20A
- Accuracy:  $\pm(0.4\% \text{reading} + 0.1\% \text{range} + 1 \text{digit})$
- Communicate with PC. It can communicate with LISUN spectroradiometer

Model	Measure	Remark
LS2008R	AC Parameters: U, I, P, PF	
LS2010	AC Parameters: U, I, P, PF and harmonic	Special Software can show harmonic in Win7 or Win8
LS2012	AC+DC Parameters: : U, I, P, PF	DC: 1~600v, DC Current Range: 0.005~20A, out of limit alarming

## 4、 AC Power Source



- AC-DC-AC frequency conversion technology, Controlled & tested by 16 bits MCU
- Protection for over hot, thundering voltage and current
- Total voltage distortion:  $\leq 0.6\%$ ; Voltage stability:  $\leq 0.1\%/30\text{min}$
- Load adjust rate:  $\leq 0.1\%$ ; Frequency stability:  $\leq 0.05\%/30\text{min}$
- Output voltage range: AC 0.0~300.0V, Output Frequency Range: 45~70Hz, 100Hz, 200Hz and 400Hz
- Input Power: 220V and 50/60Hz
- Communicate with PC via software, the Voltage & Current set by the software and Power Output can be remote controlled.

Lisun Model	Output Power	Remark
LSP-500VAS	500W	0~150V: 4.2A, 150~300V: 2.1A
LSP-1KVAS	1000W	0~150V: 8.4A, 150~300V: 4.2A

## 5、 Intensity Test Device



Work with LMS-8000A to measure the single LED's intensity value: 1mcd~999.9cd with Class 1 detector

## 6、 New Design Integrating Sphere

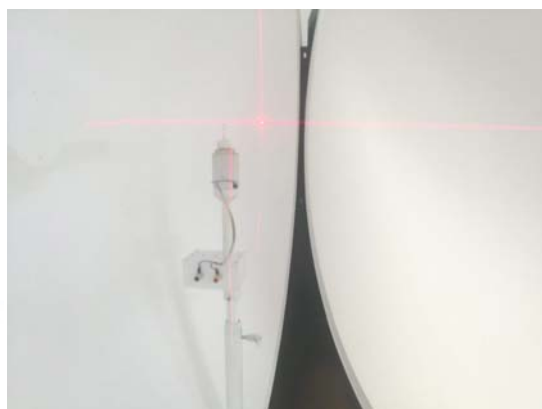
Due to the LED luminaires such as LED street luminaires developed, to do 4π geometry testing, it is hard to be hold in the traditional integrating sphere design. To solve this problem, LISUN design a new kind of sphere.



A Molding Integrating Sphere VS the traditional Integrating Sphere

LISUN new Integrating sphere has the following advantages:

- The hold base can bear max 20kg, it can test all kinds of luminaires and light source such as E27/E40, all tubes such as T5/T8/T12 and all kinds of luminaires
- The hold base can be installed in the ceiling or down, height can be adjustable
- The test hold base has four power cables connect to the outside Power Supply and max is 5KW
- Build-in Cross laser system which help to install the standard lamp and testing lamp in the center of the integrating sphere



Build-in Cross Laser System

**Specification:**

- Diameter: 0.3m, 0.5m, 1.0m, 1.5m, 1.75m, 2.0m, 2.5m and 3.0m
- The painting of integrating spheres is according to CIE Pub.No.84(1989)

- BaSO4 coating:  $\rho(\lambda) \geq 0.96(450\text{nm} \sim 800\text{nm})$  and  $\rho(\lambda) \geq 0.92(380\text{nm} \sim 450\text{nm})$
- Fine diffuse reflection: Reflectance  $\rho \approx 0.8$  and accuracy of  $\rho(\lambda) < 1.5\%$

**Order Number:**

<b>Sphere Diameter</b>	1.0m	1.5m	1.75m	2m
<b>LISUN Model</b>	IS-1.0MA	IS-1.5MA	IS-1.75MA	IS-2.0MA
<b>Cycle side opening</b>	IS-1.0MA33C	IS-1.5MA55C	IS-1.75MA66C	IS-2.0MA77C

**Remark:**

The code 55C in IS-1.5MA55C means the side opening is diameter=50cm cycle size

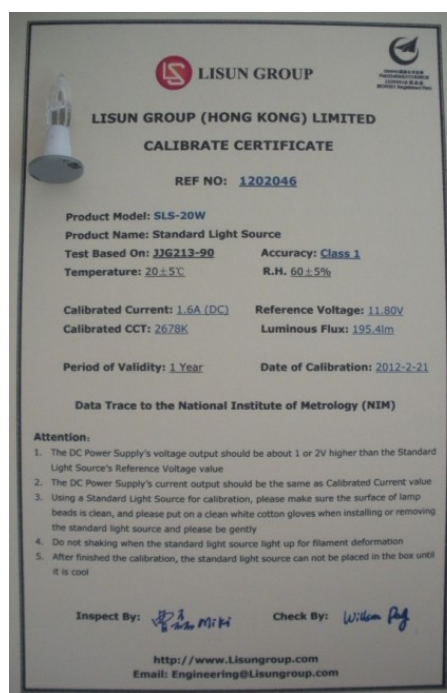
**7、 Auxiliary Lamp (RLS-50W)**

Due to the luminaires material has self-absorption, the test flux will be a bit difference than the original flux when test the luminaires in the integrating sphere, according to CIE request, it is necessary use an Auxiliary lamp to do flux self-absorption revise.

**8、 Standard Lamp Source**

OSRAM Standard Lamp to calibrate the spectrum and luminous flux with Lisun Lab certification. The data can be traced NIM. The Standard Lamp Source is used to calibrate the integrating sphere system. The different size of Integrating Sphere should choose the right power of standard lamp source

<b>Integrating Sphere Size</b>	<b>Standard Lamp Source</b>
0.3m/0.5m	SLS-10W
1m/1.5m/1.75m	SLS-50W
2m/2.5m/3m	SLS-100W

**9、 19Inch Cabinet (Option)**

Combine all of the test instruments in a 19 inch standard Cabinet, makes the whole systems looks nice and is simple to use

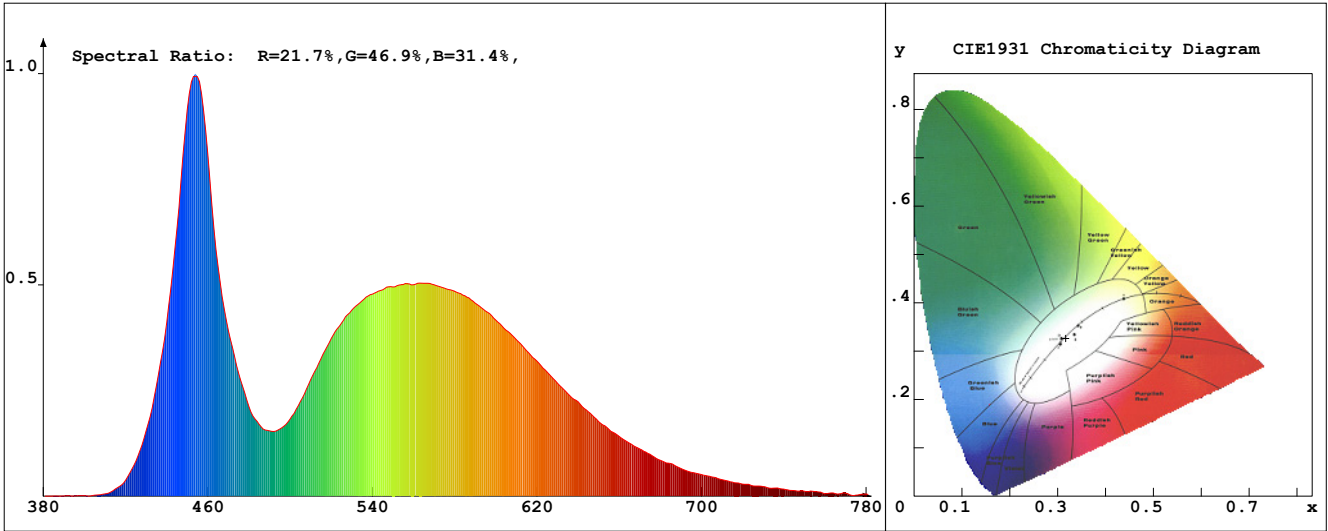
Next pages are the test report for LED lamp & Single LED

# LED Test Report

**Product Mark**

Product Type : LD12KQ  
 Temperature : 25'C  
 Operator : Peter  
 Remark :

Manufacturer : AB Lighting  
 Humidity : 65%  
 Test Date : 2019-11-5



**Chroma Parameters**

Chro.Coor.:x=0.3168 y=0.3262 u=0.2018 v=0.3116 duv=-0.0004  
 CCT: 6301K Dominant Wave.:486.0nm Purity:6.1%  
 Flux RGB Ratio:R=12.5%,G=83.7%,B=3.9% Peak Wave:453.1nm Half Width:23.9nm

**Rendering Index:Ra= 76.3 CRI= 68.5**

R1 =74	R2 =82	R3 =84	R4 =74	R5 =73	R6 =73	R7 =86	R8 =64
R9 =-12	R10=54	R11=68	R12=41	R13=76	R14=91	R15=0	
PPF:0.100umol/s (400-700nm)			PRF:0.0mW (400-700nm)			PAR:0.0mW (400-700nm)	

**Photo Parameters**

Flux:7.260lm      Effi.:122.2lm/W      Radiant:22.6mW      Iv:0.0mcd  
 Scotopic Flux:15.1Plm      Effi.:0.0Plm/W      S/P:2.1  
 Efficiency:0.00      Effi Level:A++ (EU 874-2012)      Photon Flux:102.073umol/s (380-780nm)

**Ele. Parameters**

Forward Current:If=0.0mA      Reverse Voltage:Vr=5.00V  
 Forward Voltage:Vf=0.00V      Reverse Current:Ir=0.00uA  
 Power:P=0.000W

**Instrument state**

Instrument:Lisun LMS-8000      Integral Time: 122.581ms      VPeak: 14253  
 VDark: 1412      Scan Range: 380-780nm      Product ID: 0



# IES TM-30-2015 Test Report

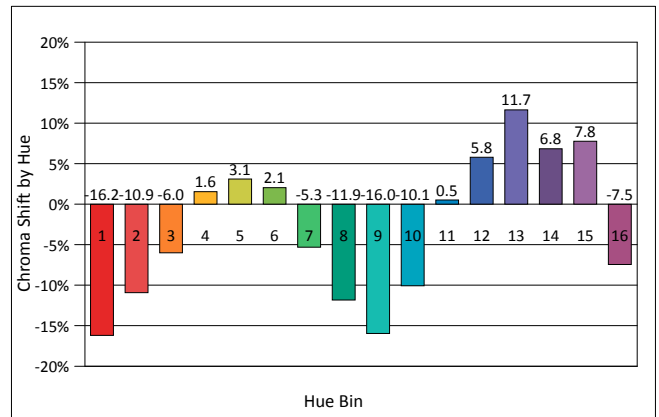
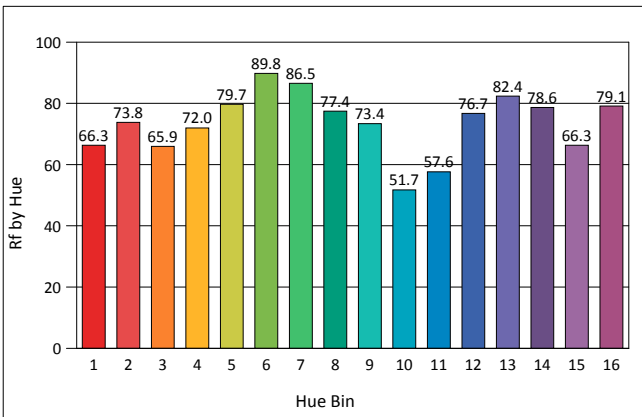
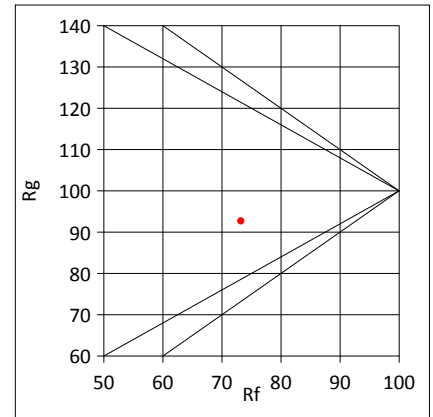
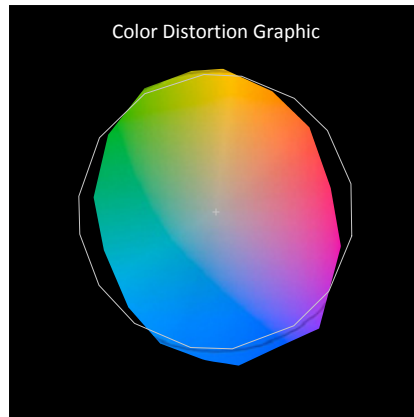
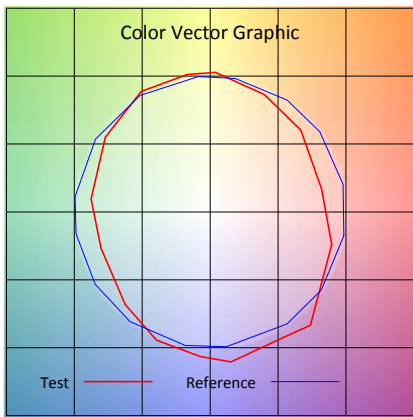
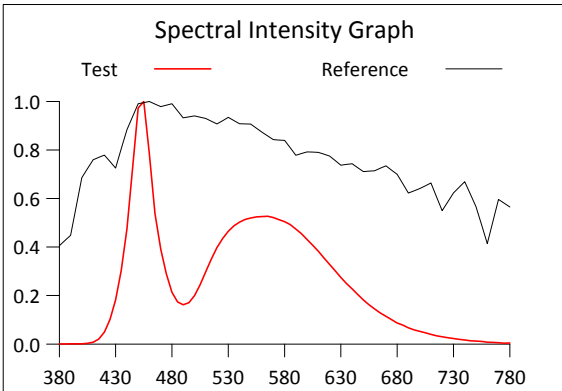
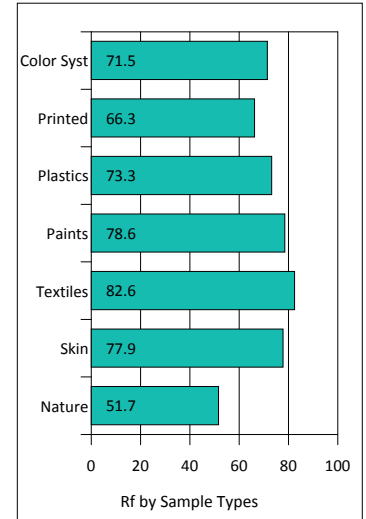
**Product Mark**

Product Type : LD12KQ  
 Temperature : 25'C  
 Operator : Peter  
 Remark :

Manufacturer : AB Lighting  
 Humidity : 65%  
 Test Date : 2019-11-5

Rf: 73.2                      CCT(K): 6301              u': 0.2018  
 Rg: 92.7      LER: 315.0      Duv: -0.0004              v': 0.3116

Hue Bin	Rf	Graphic Shifts (%)	
		Chroma	Hue
1	66.3	-16.2%	-0.8%
2	73.8	-10.9%	8.9%
3	65.9	-6.0%	16.3%
4	72.0	1.6%	15.2%
5	79.7	3.1%	7.6%
6	89.8	2.1%	-2.3%
7	86.5	-5.3%	-5.1%
8	77.4	-11.9%	-0.5%
9	73.4	-16.0%	13.9%
10	51.7	-10.1%	24.8%
11	57.6	0.5%	23.8%
12	76.7	5.8%	12.5%
13	82.4	11.7%	1.3%
14	78.6	6.8%	-7.9%
15	66.3	7.8%	-26.1%
16	79.1	-7.5%	-8.2%



# IES TM-30-2015 Test Report

**Product Mark**

Product Type : LD12KQ

Manufacturer : AB Lighting

Temperature : 25'C

Humidity : 65%

Operator : Peter

Test Date : 2019-11-5

Remark :

