



LM-79-08 Test Report

for

ELEC-TECH INTERNATIONAL CO LTD

No.1 Jinfeng Road, Tangjiawan Town, Xiangzhou District, Zhuhai City, Guangdong Province, P.R. China 519085

LED Cabinet Light

Model: 535021##(##=11-30)

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.: HZ17070067f/R1

This report is replaced the old report No. HZ17070067f dated Jul. 25, 2017

The laboratory that conducted the testing detailed in this report has been accredited for SSL by NVLAP.

Review by:

Engineer: April Zou

Jul. 25, 2017

Approved by



Manager: Jim Zhang

Jul. 25, 2017

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government

Test Summary

Model	535021##(##=11-30)
Luminous Efficacy (Lumens /Watt)	65.0
Total Luminous Flux (Lumens)	329.8
Power (Watts)	5.07
Power Factor	0.8573
CCT (K)	2967
CRI	93.0
Stabilization Time (Light & Power)	60 mins
Note	3000K

Table 1: Executive Data Summary

Test specifications:

Date of Receipt	: Jul. 23, 2017
Date of Test	: Jul. 25, 2017
Test item	: Total Luminous Flux, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	: IESNA LM-79-2008 Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products

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Sample Photo



Sample view

Equipment Under Test (EUT)

Name	: LED Cabinet Light
Model	: 535021##(##=11-30)
Electrical Ratings	: 120V, 60Hz
Product Description	: 3000K, Dimmable
Manufacturer	: ELEC-TECH INTERNATIONAL CO LTD
Address	: No.1 Jinfeng Road, Tangjiawan Town, Xiangzhou District, ZhuhaiCity, Guangdong Province, P.R. China 519085

TEST RESULTS

Test ambient temperature was 25.0°C.

Test orientation was Horizontal. Test was conducted without a dimmer in the circuit.

The stabilization time of the sample was 60 minutes, and the total operating time including stabilization was 65 minutes.

Parameter	Result
Test Voltage (V)	120.0
Voltage frequency (Hz)	60
Test Current (A)	0.049
Power Factor	0.8573
Test Power (W)	5.07
THD A%	42.11
Luminous Efficacy (lm/W)	65.0
Total Luminous Flux (lm)	329.8
Color Rendering Index (CRI)	93
R9	60.3
Correlated Color Temperature (CCT)(K)	2967
Chromaticity Chroma x	0.4359
Chromaticity Chroma y	0.3981
Chromaticity Chroma u	0.2525
Chromaticity Chroma v	0.3459
Duv	0.0024
Chromaticity Chroma u'	0.2525
Chromaticity Chroma v'	0.5189

Special Color Rendering Indices	
R1	94.4
R2	99
R3	96.6
R4	92.6
R5	94.6
R6	96.2
R7	89.8
R8	80.8
R9	60.3
R10	97.2
R11	94.1
R12	83.9
R13	96.2
R14	99.1

Table 2: Test data per Sphere-Spectroradiometer Method

Note: According to CIE 1976 (u',v') diagram, $u' = u = 4x/(-2x+12y+3)$, $v' = 3v/2 = 9y/(-2x+12y+3)$.

Spectral Power Distribution - Sphere Spectroradiometer Method

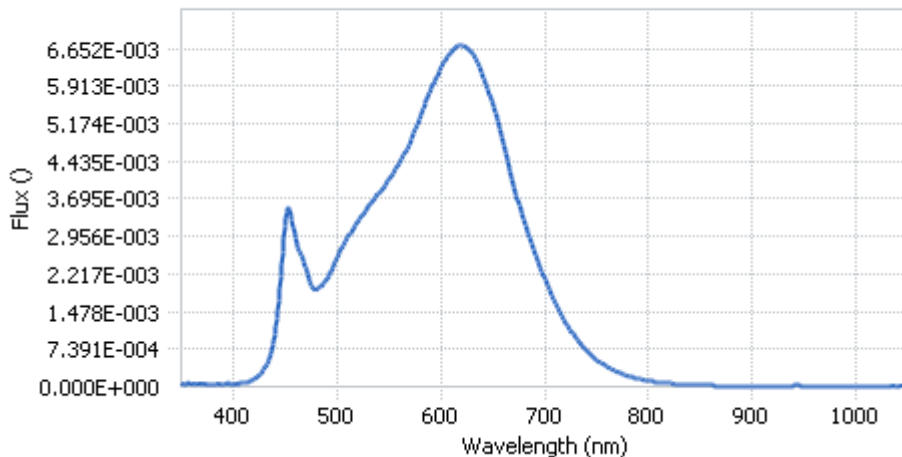
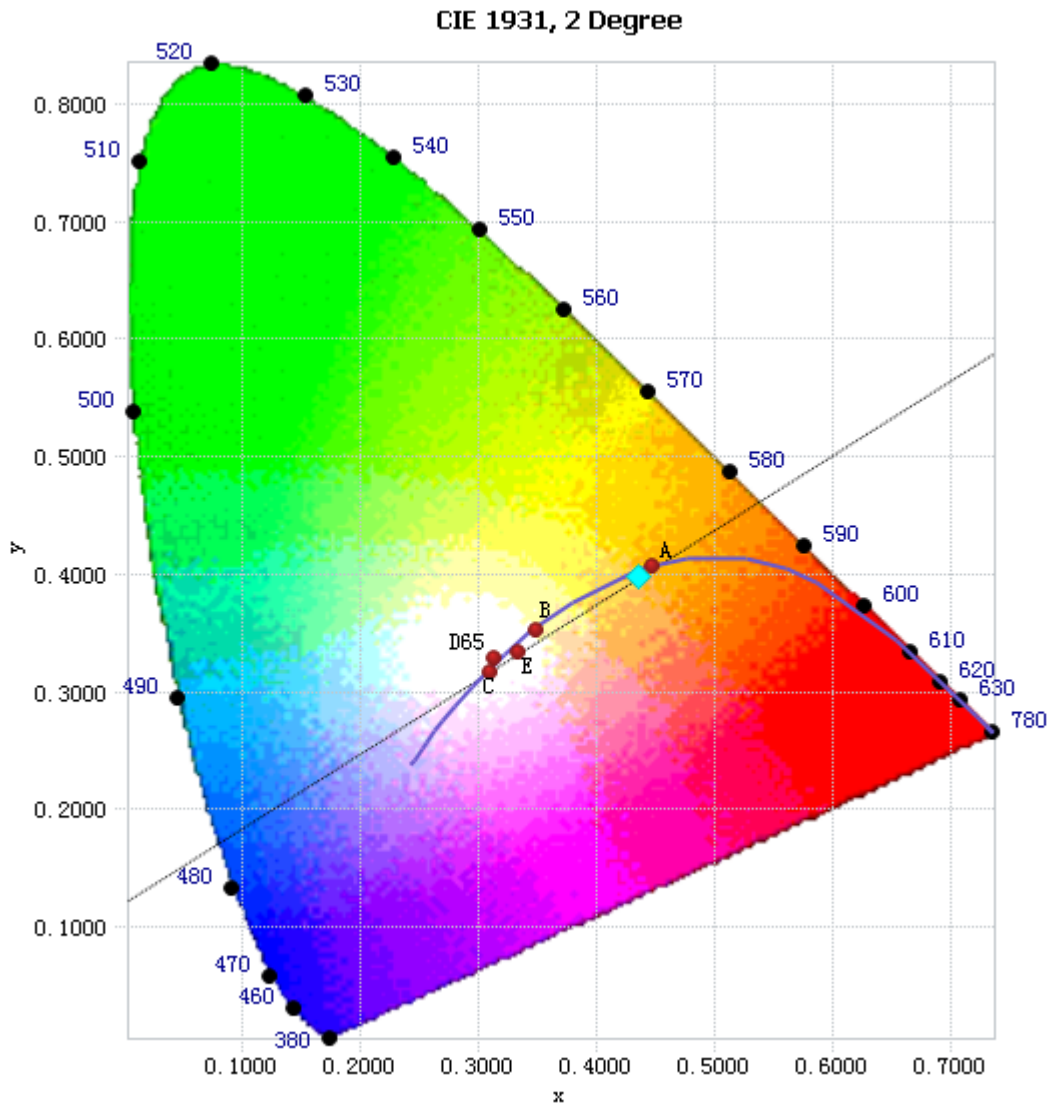


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	5.03E-05	485	1.98E-03	590	5.82E-03	695	2.40E-03
385	4.91E-05	490	2.12E-03	595	6.07E-03	700	2.13E-03
390	5.40E-05	495	2.30E-03	600	6.26E-03	705	1.89E-03
395	5.95E-05	500	2.55E-03	605	6.44E-03	710	1.66E-03
400	5.45E-05	505	2.74E-03	610	6.58E-03	715	1.46E-03
405	5.79E-05	510	2.92E-03	615	6.69E-03	720	1.28E-03
410	6.83E-05	515	3.10E-03	620	6.71E-03	725	1.11E-03
415	9.60E-05	520	3.26E-03	625	6.69E-03	730	9.63E-04
420	1.38E-04	525	3.39E-03	630	6.58E-03	735	8.35E-04
425	2.23E-04	530	3.54E-03	635	6.40E-03	740	7.14E-04
430	3.49E-04	535	3.66E-03	640	6.16E-03	745	6.17E-04
435	5.82E-04	540	3.80E-03	645	5.87E-03	750	5.31E-04
440	1.02E-03	545	3.93E-03	650	5.58E-03	755	4.59E-04
445	1.92E-03	550	4.08E-03	655	5.22E-03	760	3.92E-04
450	3.15E-03	555	4.23E-03	660	4.82E-03	765	3.39E-04
455	3.48E-03	560	4.40E-03	665	4.41E-03	770	2.90E-04
460	2.92E-03	565	4.58E-03	670	3.99E-03	775	2.45E-04
465	2.62E-03	570	4.80E-03	675	3.61E-03	780	2.11E-04
470	2.34E-03	575	5.05E-03	680	3.27E-03		
475	2.02E-03	580	5.30E-03	685	2.97E-03		
480	1.91E-03	585	5.57E-03	690	2.67E-03		

Table 3: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y) : (0.4359, 0.3981)

Chart 2: Chromaticity Diagram per Sphere - Spectroradiometer Method

Note: The location on the diagram of the tristimulus coordinates are indicated by the blue diamond.

Nominal CCT Quadrangles – Sphere Spectroradiometer Method

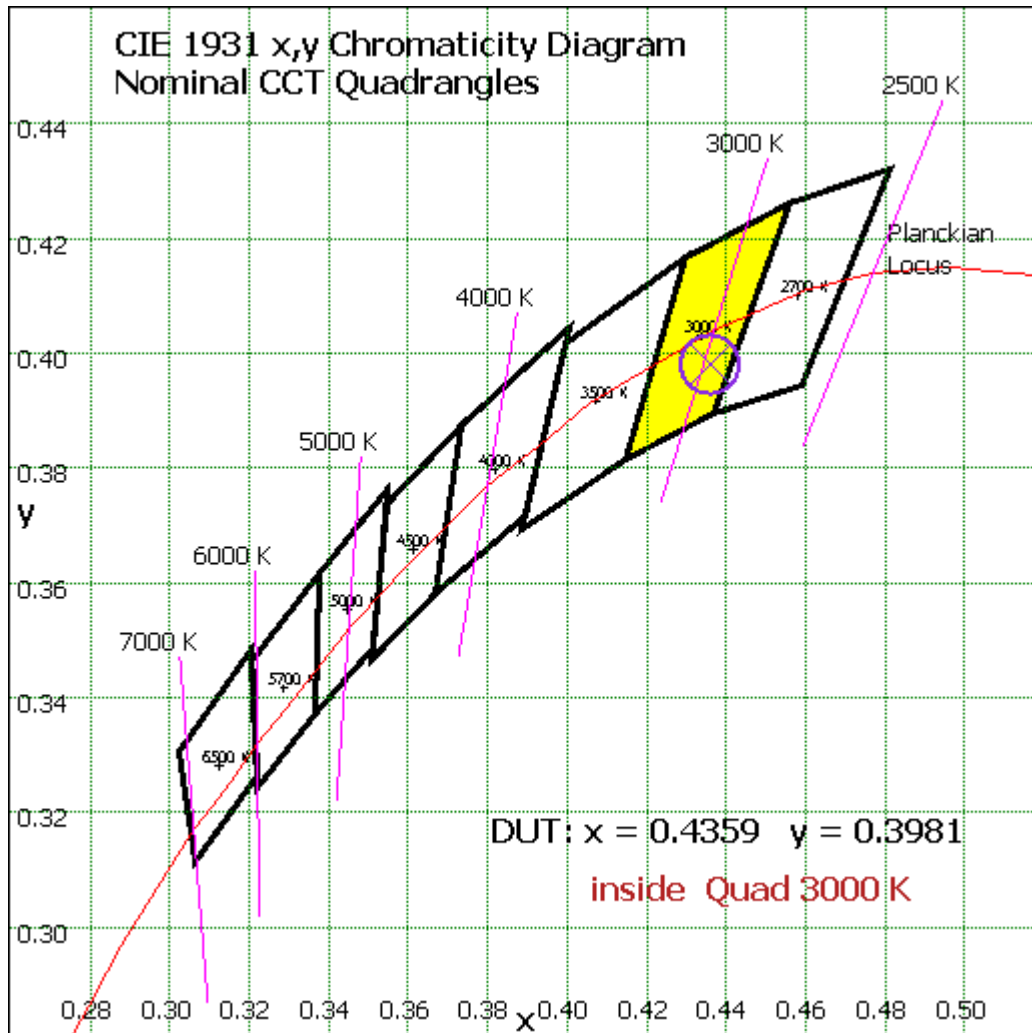


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Integrate Sphere system	2M	HZTE015-01	Jul. 26, 2016	Jul. 25, 2017
Digital Power Meter	WT210	HZTE008-01	Jul. 26, 2016	Jul. 25, 2017
AC Power Supply	PCR 500L	HZTE001-07	Dec. 25, 2016	Dec. 24, 2017
DC Power Supply	IT6154	HZTE004-04	Jul. 27, 2016	Jul. 26, 2017
Temperature and humidity recorder	JR900	HZTE018-01	Dec. 25, 2016	Dec. 24, 2017
Standard source	SCL-1400	HZTE012-02	Jul. 28, 2016	Jul. 27, 2017

Table 4: Test Equipment List

TEST METHODS

Seasoning of SSL Product

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning. Therefore, no seasoning was performed.

Sphere-Spectroradiometer Method- Photometric and Electrical Measurements

A Labsphere Model CDS 2100 Spectroradiometer and Two Meter Sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit. The coating reflectance of each sphere is 98%. The measure geometry is 4π . Self-absorption correction is conducted in testing. Bandwidth of spectroradiometer is 350nm-1050nm.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.

The stabilization time typically ranges from 30 min (small integrated T8 DIY TUBEs) to 2 or more hours for large SSL luminaires). It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 30 min, taken 15 minutes apart, is less than 0.5 %.

Electrical measurements including voltage, current, and power were measured using the Yokogawa Power Analyzer.

The standard reference of the integrated sphere system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Standards and Technology.

The uncertainty of integrating sphere system reported in this document is expanded uncertainty is 2.1% with a coverage factor $k=2$.

*** End of Report ***

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