



NVLAP LAB CODE 500080-0

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## Test report of

## IES LM-79-08

## Approved Method: Electrical and Photometric

## Measurements of Solid-State Lighting Products

Rendered to: Premium Quality Lighting, Inc.  
2285 Ward Avenue  
Simi Valley, CA 93065

For products: LED Lamps

Models: 90795

**Test date:** Mar 13, 2015 to Mar 16, 2015  
**Test laboratory:** LCTECH (Zhongshan) Testing Service Co., Ltd  
2/F., Technology and Enterprise Development Center, Guangyuan Road,  
Xiaolan, Zhongshan, Guangdong, China  
**Laboratory note:** N/A

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**Mar 17, 2015**

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## 1 General

### 1.1 Product Information

Brand Name	Superior Life
Trade Mark	-
Luminaire Type	LED Lamp
Model Number	90795
Rated Inputs	100-277VAC,50/60Hz
Rated Power	45 W
Rated Initial Lamp Lumens	5400 lm
Declared CCT	5000 K
LED Package, Array or Module	Not pivoted
Date of Receipt Samples	Mar 12, 2015
Quantity of Receipt Samples	1 unit

#### Photo



Picture 1



Picture 2

## 1.2 Standards or methods

The following standards are partly or totally used or referenced for test:

No.	Name
ANSI/NEMA/ ANSLG C78.377-2011	Specifications for the Chromaticity of Solid State Lighting Products
ANSI C82.77-2002	Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment
CIE Pub. No. 13.3-1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. No. 15:2004	Colorimetry
IES LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products

## 1.3 Equipment list

ID	Instrument	Model name	Cal. date	Next cal. Date
AC Power supply	LC-I-923	CHP-500	2015-02-05	2016-02-04
AC Power supply	LC-I-987	APW-110N	2015-02-05	2016-02-04
Power analyzer	LC-I-928	WT210	2015-02-09	2016-02-08
Power analyzer	LC-I-954	WT210	2015-03-04	2016-03-03
Multimeter	LC-I-972	Fluke 17B	2014-08-15	2015-08-14
Photometric colorimetric electric system (2 meter sphere)	LC-I-900	SPR3000	Before use	Before use
Standard lamp	LC-I-971	STD-ESN	2014-05-16	2015-05-15
Goniophotometer(with mirror)	LC-I-902	GMS2000	2014-05-14	2015-05-13
Wireless temperature transmitter	LC-I-958	DWRP-B(0)	2014-08-19	2015-08-18
Wireless temperature transmitter	LC-I-959	DWRP-B(0)	2014-08-19	2015-08-18

## 2 Test conducted and method

### 2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , the air flow around the sample(s) being tested did not affect the performance.

### 2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within  $\pm 0.2$  percent under load.

### 2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

### 2.4 Electrical Instrumentation

The calibration uncertainties of the instruments for AC voltage and current were less than 0.2 percent, and the calibration uncertainty of the AC power meter was less than 0.5 percent (95 % confidence interval,  $k=2$ ).

### 2.5 Color Measurement Method

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the color characteristics (Color rendering index, correlated color temperature, chromaticity coordinate) were calculated from these by software automatically.

### 2.6 Total Luminous Flux Measurement Method

Total luminous flux was measured by both sphere-spectroradiometer system and goniophotometer.

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the total luminous flux was calculated from these by software automatically.

Luminous intensity distribution was measured by a mirror-type goniophotometer (Type C) which can keep the sample in burn position when the tests conduct, and the total luminous flux was calculated from the intensity data by software automatically.

### 2.7 Luminous Intensity Distribution Measurement Method

Luminous intensity distribution was measured by a mirror-type goniophotometer (Type C) which can keep the sample in burn position when the tests conduct, and the kinds of graph were generated by software automatically.

### 2.8 Spatial Non-uniformity of Chromaticity

The customer did not require this measurement.

### 3 Test Result Summary

#### 3.1 Electrical data

Criteria Item	Result (Sphere)	Result (Goniophotometer)
Input Voltage	277.0 V~60Hz	277.27 V~60Hz
Input Current	0.177 A	0.176 A
Total Power	44.26 W	44.11 W
Power Factor	0.906	0.904
I-THD	14.94 %	-
Off-state Power	0.0 W	-

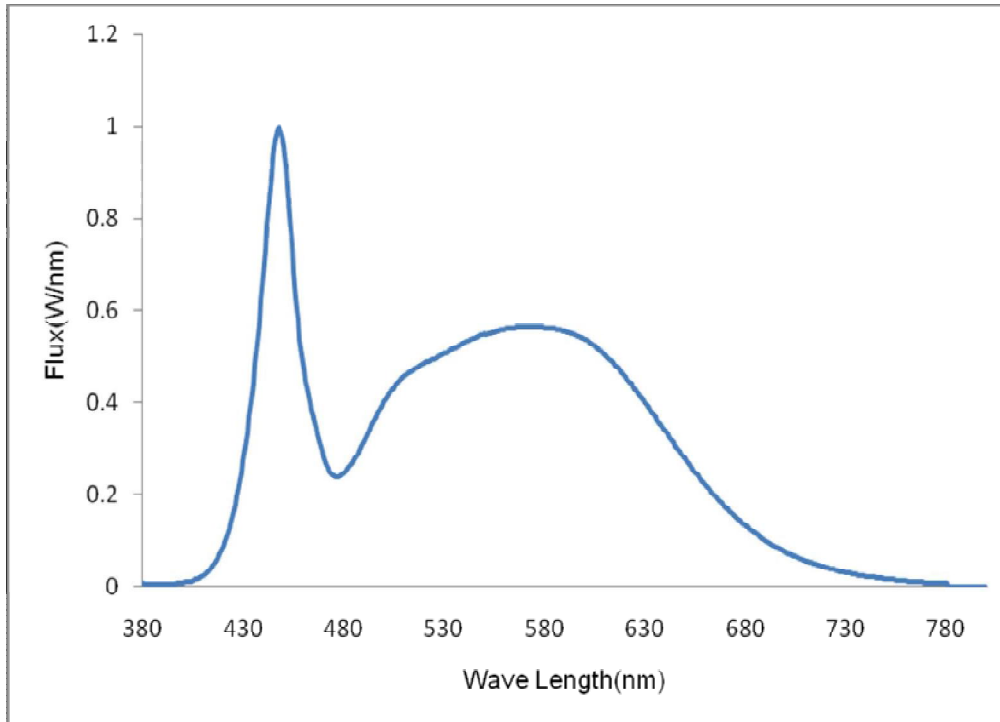
#### 3.2 Photometric data

Criteria Item	Result (Sphere)	Result (Goniophotometer)
Total Lumens	5394.00 lm	5431.65 lm
Luminaire Efficacy	121.87 lm/W	123.14 lm/W
Correlated Color Temperature (CCT)	5433K	-
Color Rendering Index (CRI)	84.6	-
R9	20	-
Chromaticity Coordinate (x,y)	x= 0.3340 y= 0.3431	-
Chromaticity Coordinate (u,v)	u= 0.2072 v= 0.3192	-
Chromaticity Coordinate (u',v')	u'= 0.2072 v'= 0.4788	-
Duv	0.0004	-

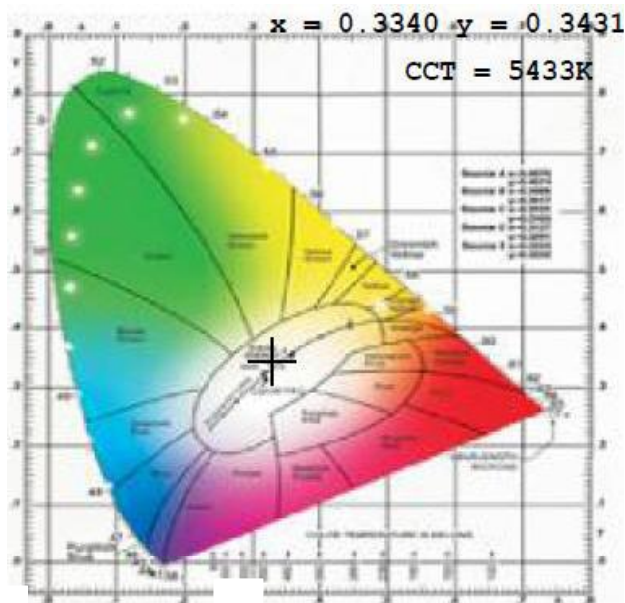
Note: N.A.

## 4 Test Data

### 4.1 Spectral Distribution



### 4.2 Chromaticity Diagram (CIE 1931)



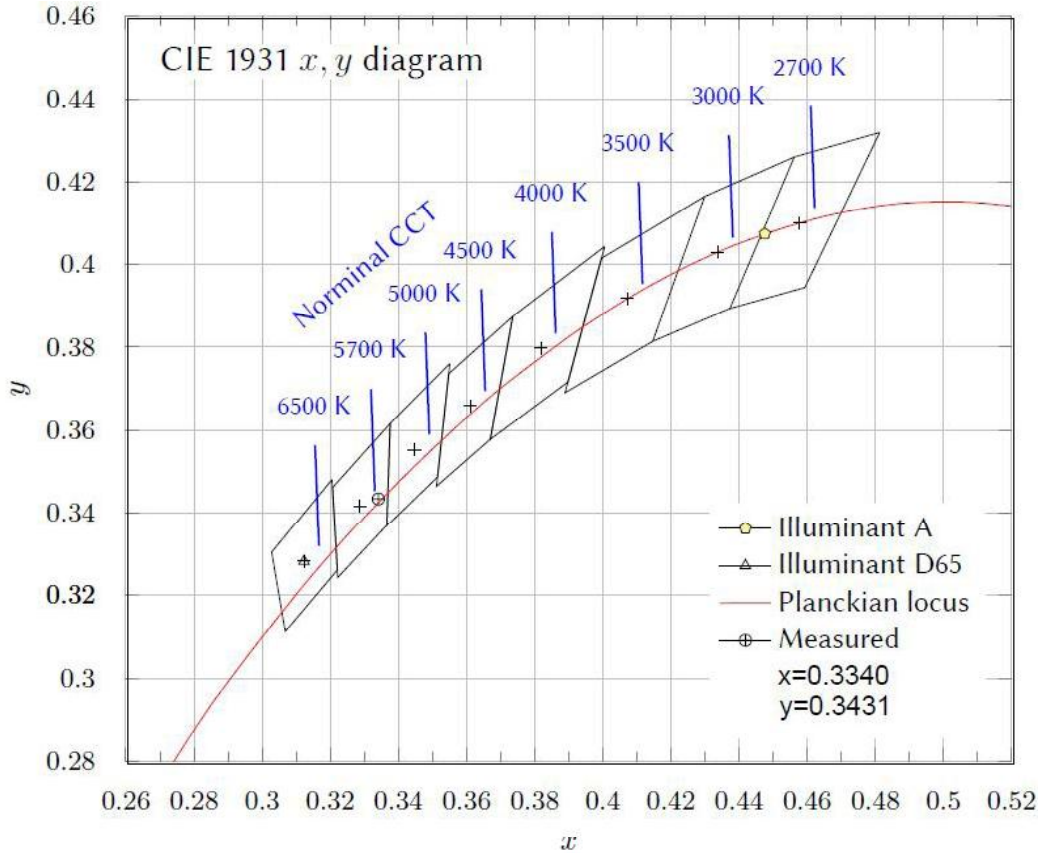




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**4.3 ANSI Chromaticity Quadrangles Diagram**



**4.4 Color Rendering Details**

R1	R2	R3	R4	R5
84	88	90	86	85
R6	R7	R8	R9	R10
84	88	73	20	71
R11	R12	R13	R14	R15
86	69	84	95	79





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**4.5 Goniometry Test Data**

CIE Type	General Diffuse	Basic Luminous Shape	Rectangular w/Sides
Spacing Criteria (0-180)	N.A.	Luminous Length	0.08 m (Diameter)
Spacing Criteria (90-270)	N.A.	Luminous Width	0.08 m (Diameter)
Spacing Criteria (Diagonal)	N.A.	Luminous Height	0.15 m
Test Distance	30.00 m		

**4.6 Zonal Lumen Summary**

Zone	Lumens	%Lamp	%Fixt
0-30	271.91	5	5
0-40	540.3	9.9	9.9
0-60	1384.02	25.5	25.5
0-90	3051.1	56.2	56.2
90-120	1543.87	28.4	28.4
90-130	1895.73	34.9	34.9
90-150	2294.28	42.2	42.2
90-180	2380.54	43.8	43.8
0-180	5431.65	100	100

Total Luminaire Efficiency = 100%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	23.21
10-20	81.58
20-30	167.12
30-40	268.39
40-50	373.28
50-60	470.44
60-70	535.88
70-80	563.08
80-90	568.12
90-100	564.04
100-110	526.94
110-120	452.89
120-130	351.86
130-140	248.38
140-150	150.17
150-160	68.04
160-170	17.15
170-180	1.08

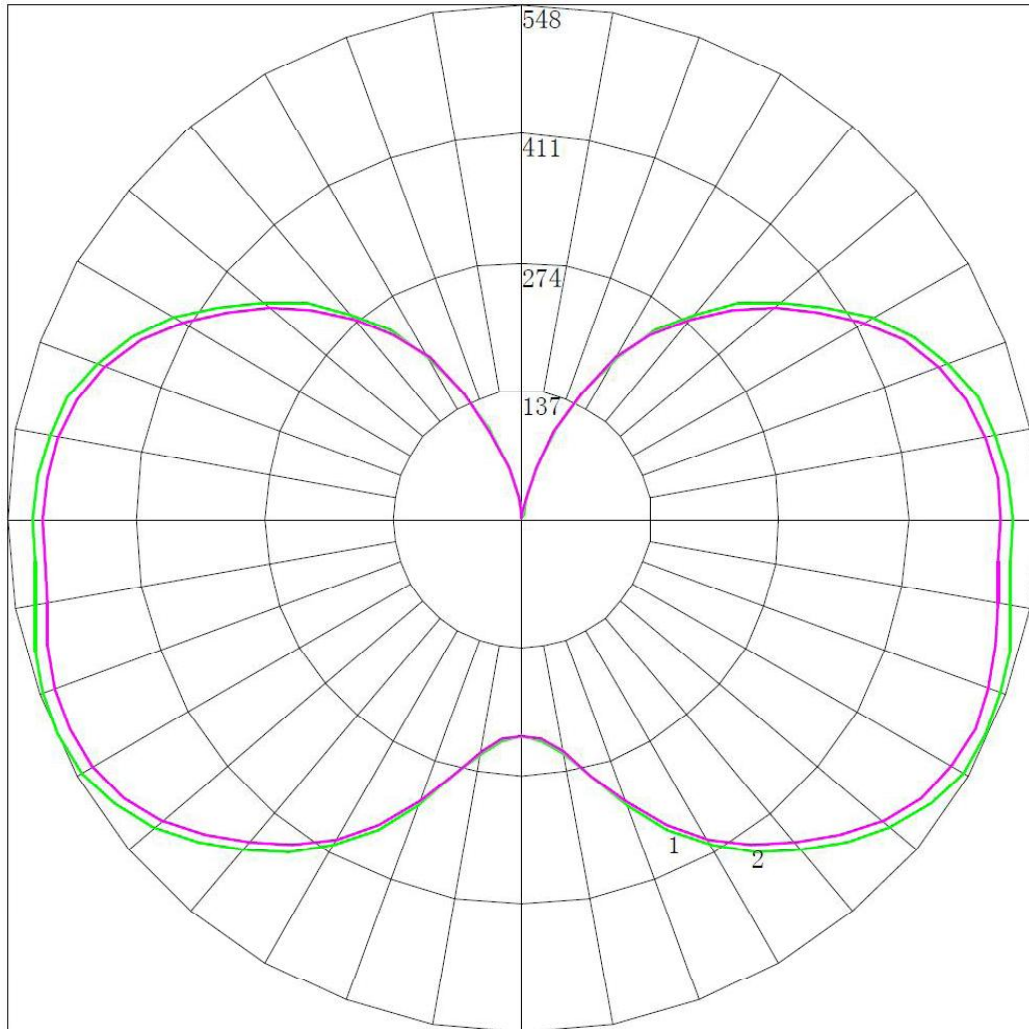


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4.7 Polar Curves



Ref. No. LCCP16030689



Maximum Candela = 547.91 Located At Horizontal Angle = 15, Vertical Angle = 65

# 1 - Vertical Plane Through Horizontal Angles (0 - 180)

# 2 - Vertical Plane Through Horizontal Angles (90 - 270)



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4.8 Candela Tabulation

	<u>0</u>	<u>15</u>	<u>30</u>	<u>45</u>	<u>60</u>	<u>75</u>	<u>90</u>
0	232.94	232.94	232.94	232.94	232.94	232.94	232.94
5	237.94	238.06	238.39	237.72	237.90	237.11	236.59
10	254.68	254.62	253.56	254.73	252.61	253.65	252.03
15	285.06	282.96	282.85	285.42	281.75	281.28	284.02
20	325.24	319.61	319.73	323.55	318.51	318.08	319.84
25	365.87	359.71	359.05	365.26	358.51	357.34	362.00
30	402.81	394.76	393.50	401.22	392.26	392.01	396.56
35	434.13	427.79	426.75	430.76	424.50	423.56	426.39
40	461.67	455.64	454.36	458.27	452.69	452.85	452.26
45	487.95	483.29	482.91	482.77	479.80	479.29	477.78
50	511.89	509.66	507.59	506.91	505.50	504.80	502.48
55	530.34	530.70	528.47	523.56	524.96	523.16	518.73
60	541.90	543.90	541.88	532.90	537.31	535.55	528.26
65	545.72	547.91	545.99	536.99	540.64	538.79	532.09
70	543.38	543.79	543.09	535.04	537.92	535.42	529.39
75	537.31	539.02	537.58	529.77	532.86	531.39	522.77
80	527.00	529.16	527.34	520.19	522.60	522.48	514.09
85	520.88	523.97	522.82	515.04	519.26	518.70	509.77
90	522.64	526.13	524.71	516.21	520.55	520.14	510.58
95	519.63	523.99	522.14	513.44	518.30	517.26	508.92
100	511.93	516.30	514.72	506.46	509.68	509.55	501.90
105	502.08	505.54	503.88	494.74	499.24	498.81	490.47
110	482.41	487.72	486.10	477.10	481.87	481.27	472.83
115	459.60	463.65	461.47	454.51	456.79	456.79	449.20
120	429.09	431.84	429.65	423.15	424.70	423.67	417.98
125	394.44	396.36	394.42	389.52	390.46	389.36	384.27
130	360.56	360.76	358.96	356.13	356.38	356.02	351.97
135	324.43	322.31	321.44	321.30	320.13	319.23	316.10
140	284.07	281.52	281.21	281.39	279.77	278.78	277.36
145	244.69	238.19	238.01	241.09	235.94	236.80	238.21
150	200.91	192.70	191.62	195.44	189.32	189.08	198.53
155	150.97	144.28	143.36	143.94	141.54	143.14	146.91
160	103.63	97.89	94.45	97.91	97.42	97.01	99.17
165	56.16	55.68	50.37	56.27	53.75	54.02	55.93
170	23.04	24.37	22.27	23.08	24.37	23.24	23.85
175	5.26	4.84	4.41	4.93	4.93	5.02	4.82
180	0.93	0.93	0.93	0.93	0.93	0.93	0.93

\*\*\*\*End of test report\*\*\*\*