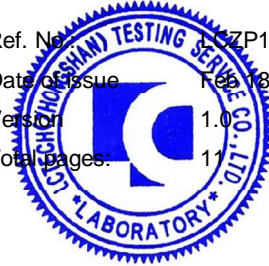




IESNA  
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## Test report of

## IES LM-79-08

## Approved Method: Electrical and Photometric

## Measurements of Solid-State Lighting Products

Rendered to:

Ableled Lighting Co.,Ltd  
4th & 5th Fl, Bldg B, Charbridge Park Baolong 6th Rd Baolong Community  
Longgang St,Longgang District Shenzhen Guangdong 518116, Cn

For products:

Tri-proof light

Models:

A3-AX4-40W

**Test date:** From Feb 15, 2014 to Feb 16, 2014

**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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**Complied by:**

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Feb 18, 2014

*Alston Bai*

**Reviewed by:**

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Feb 18, 2014

*Richard Li*

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## 1 General

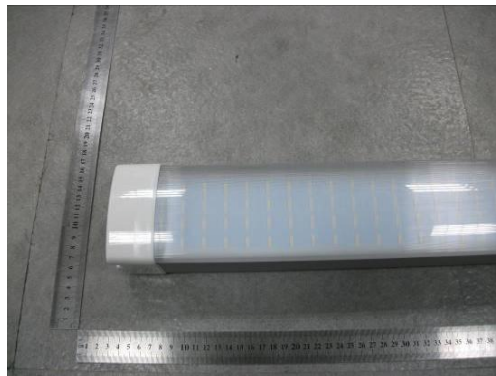
### 1.1 Product Information

Brand Name	Ableled
Trade Mark	
Luminaire Type	Tri-proof light
Model Number	A3-AX4-40W
Rated Inputs	100-240V 50/60Hz
Rated Power	40 W
Rated Initial Lamp Lumens	4700 lm
Declared CCT	5000 K
Power Supply	Integral LED driver
Date of Receipt Samples	Feb 14,2014
Quantity of Receipt Samples	1 unit

#### Photo



Picture 1



Picture 2



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### 1.2 Standards or methods

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

No.	Name
ANSI/NEMA/ ANSLG C78.377-2008 <sup>#</sup>	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

# For reference only.

### 1.3 Equipment list

ID	Instrument	Model name	Cal. date	Next cal. Date
AC Power supply	LC-I-923	CHP-500	2013-03-06	2014-03-05
AC Power supply	LC-I-953	APW-110N	2013-03-06	2014-03-05
Power analyzer	LC-I-928	WT210	2013-03-21	2014-03-20
Power analyzer	LC-I-954	WT210	2013-03-05	2014-03-04
Multimeter	LC-I-024	Fluke 17B	2013-03-19	2014-03-18
Photometric colorimetric electric system (2 meter sphere)	LC-I-900	SPR3000	Before use	Before use
Standard lamp	LC-I-971	STD-ESN	2013-04-22	2014-04-21
Goniophotometer(with mirror)	LC-I-902	GMS2000	2013-05-13	2014-05-12
Wireless temperature transmitter	LC-I-958	DWRP-B(0)	2013-08-22	2014-08-21
Wireless temperature transmitter	LC-I-959	DWRP-B(0)	2013-08-22	2014-08-21



## 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

Light intensity distribution was measured by a type C goniophotometer (with mirror) 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	219.98 V~50Hz	220.01 V~50Hz
Input Current	0.186 A	0.186 A
Total Power	39.06 W	39.16 W
Power Factor	0.956	0.956
I-THD	18.99 %	-

#### 3.2 Photometric data

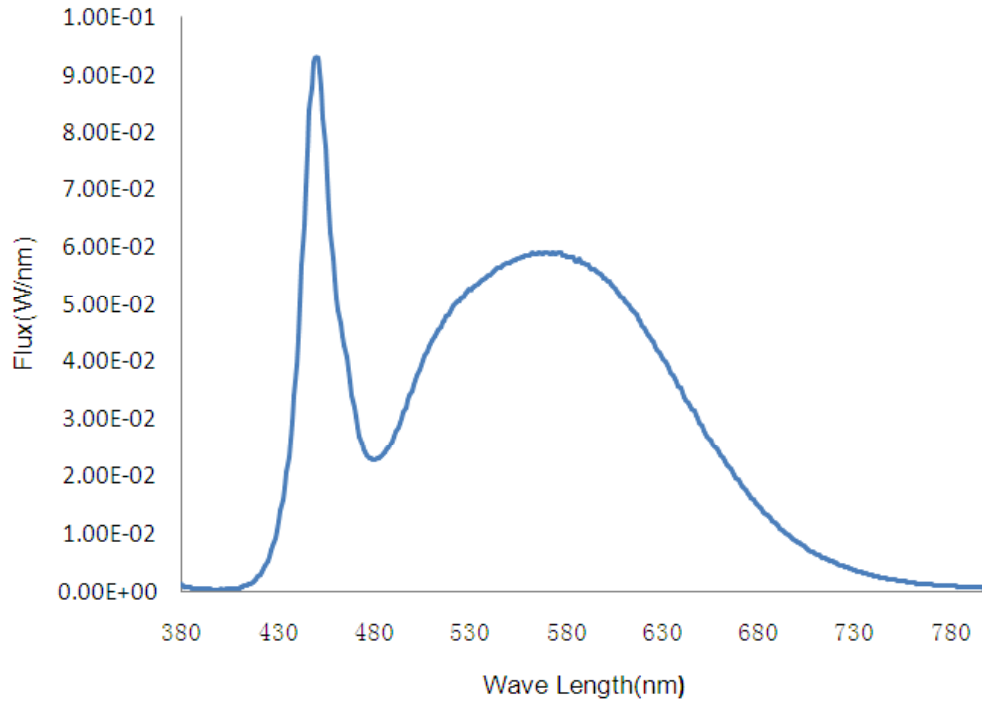
Criteria Item	Result (Sphere)	Result (Goniophotometer)
Total Lumens	-	4737.80 lm
Luminaire Efficacy	-	120.99 lm/W
Correlated Color Temperature (CCT)	4974 K	-
Color Rendering Index (CRI)	81.6	-
R9	8	-
Chromaticity Coordinate (x,y)	x=0.3470 y=0.3641	-
Chromaticity Coordinate (u,v)	u= 0.2079 v=0.3273	-
Chromaticity Coordinate (u',v')	u'=0.2079 v'=0.4909	-
Duv	+0.00542	-
Spacing Criteria (0-180)	-	1.22
Spacing Criteria (90-270)	-	1.26

Note: N.A.

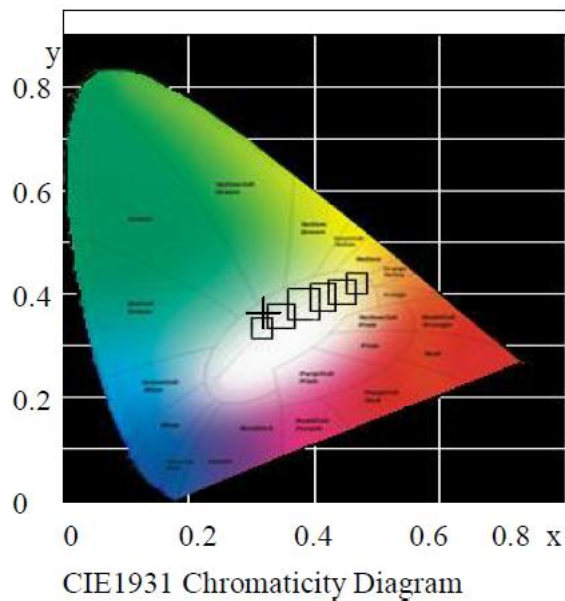


## 4 Test Data

### 4.1 Spectral Distribution

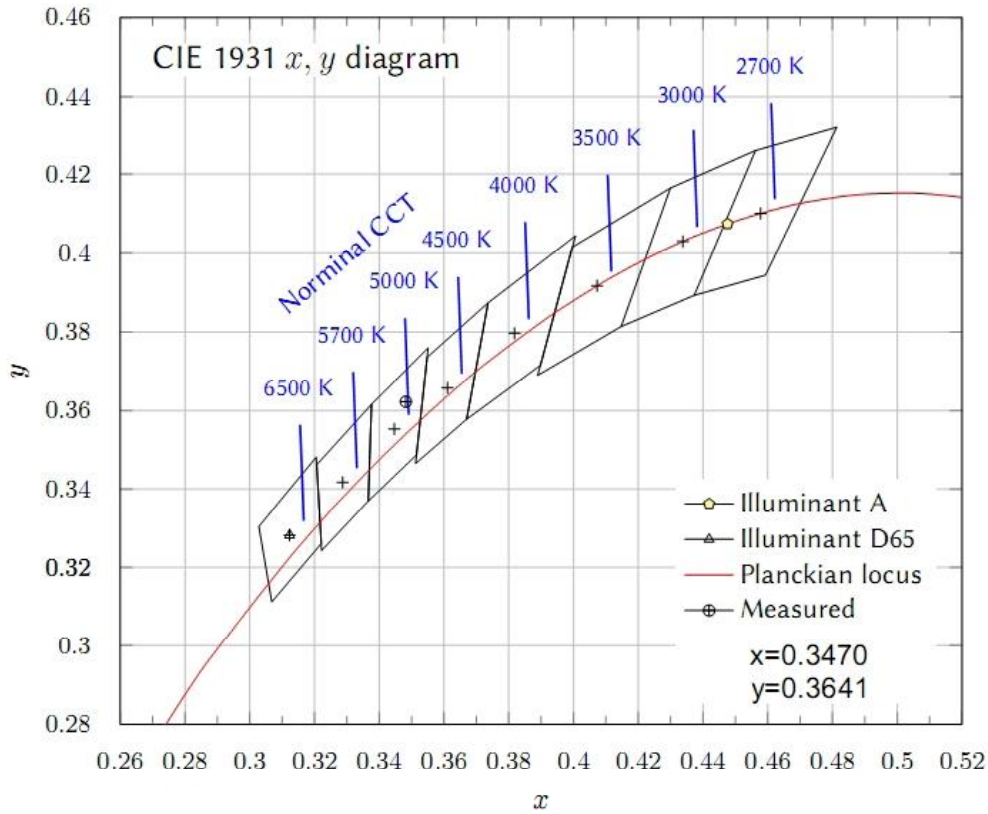


### 4.2 Chromaticity Diagram (CIE 1931)





**4.3 ANSI Chromaticity Quadrangles Diagram**



**4.4 Color Rendering Details**

R1	R2	R3	R4	R5
79	86	92	80	79
R6	R7	R8	R9	R10
80	89	68	8	67
R11	R12	R13	R14	R15
78	52	81	95	74





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**4.5 Goniometry Test Data**

CIE Type	Direct	Basic Luminous Shape	Rectangular
Spacing Criteria (0-180)	1.26	Luminous Length	1.12 m
Spacing Criteria (90-270)	1.24	Luminous Width	0.09 m
Spacing Criteria (Diagonal)	1.34	Luminous Height	0.02 m
Test Distance	18.65 m		

**4.6 Zonal Lumen Summary**

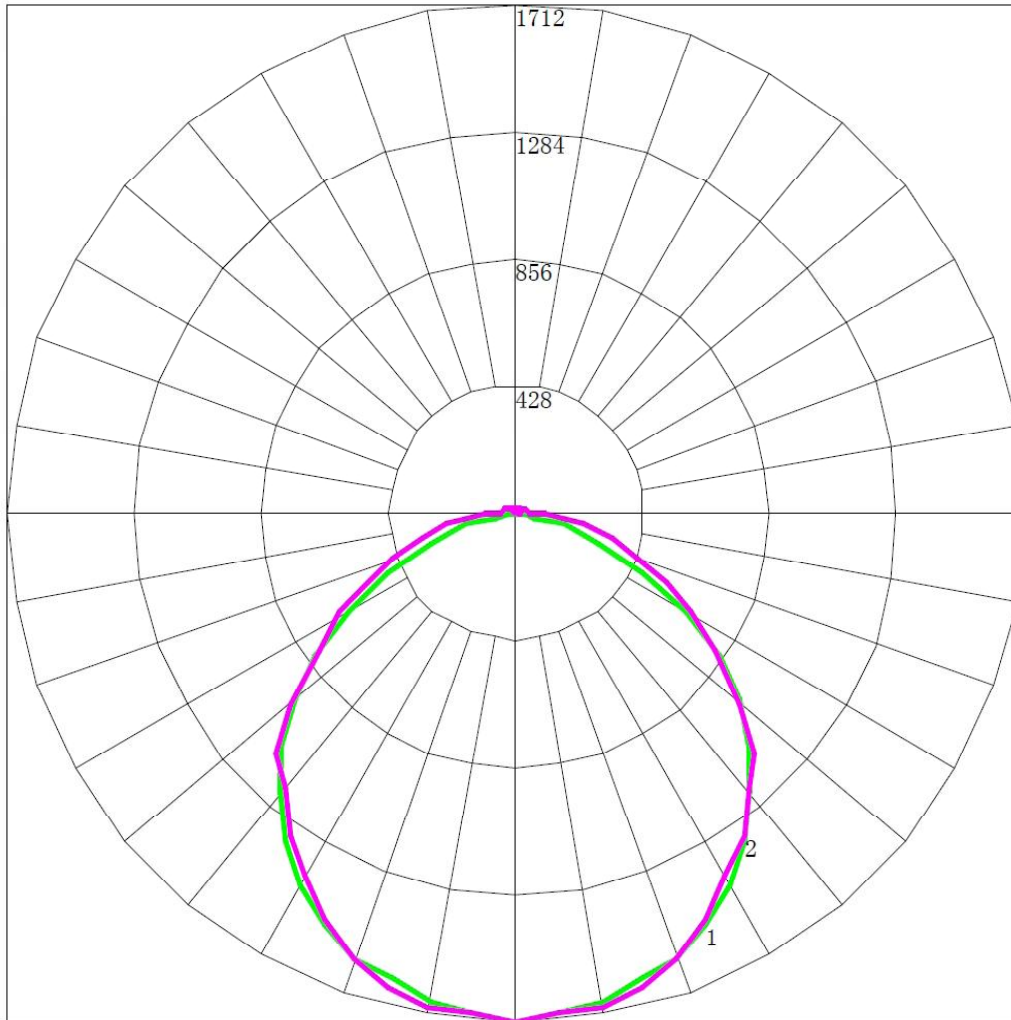
Zone	Lumens	%Lamp	%Fixt
0-30	1307.06	27.6	27.6
0-40	2131.73	45	45
0-60	3697.62	78	78
0-90	4623.32	97.6	97.6
90-120	77.51	1.6	1.6
90-130	89.89	1.9	1.9
90-150	102.3	2.2	2.2
90-180	114.48	2.4	2.4
0-180	4737.8	100	100

Zone	Lumens
0-10	159.77
10-20	455.37
20-30	691.92
30-40	824.67
40-50	843.16
50-60	722.72
60-70	507.79
70-80	289.67
80-90	128.24
90-100	46.53
100-110	16.27
110-120	14.71
120-130	12.38
130-140	7.36
140-150	5.05
150-160	5.62
160-170	4.71
170-180	1.85



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4.7 Polar Curves



Maximum Candela = 1712.39 Located At Horizontal Angle = 0, Vertical Angle = 0

# 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	1712.39	1712.39	1712.39	1712.39	1712.39	1712.39	1712.39
5	1681.72	1687.55	1687.81	1679.2	1669.29	1668.85	1685.03
10	1667.63	1659.37	1642.51	1642.33	1646.59	1655.46	1681.03
15	1614.42	1582.94	1592.77	1613.2	1621.81	1621.29	1648.85
20	1591.46	1548.59	1550.51	1552.68	1571.64	1573.81	1599.64
25	1529.9	1501.29	1515.81	1501.98	1480.07	1499.55	1515.98
30	1442.42	1409.38	1445.9	1421.46	1402.16	1416.16	1411.81
35	1349.03	1329.03	1326.77	1331.29	1288.42	1290.68	1329.72
40	1235.81	1221.47	1215.73	1187.81	1194.68	1208.86	1210.94
45	1113.55	1104.25	1089.38	1072.25	1089.55	1094.94	1134.42
50	979.64	962.42	938.25	956.25	973.73	976.77	990.77
55	834.25	809.56	780.60	795.47	822.16	802.34	814.08
60	655.00	642.88	622.99	669.84	660.34	666.08	679.45
65	472.53	465.94	482.76	514.75	527.71	546.33	550.90
70	300.05	323.10	356.66	381.34	419.37	432.26	441.13
75	168.66	204.35	245.93	283.67	305.36	325.78	330.15
80	71.62	110.80	166.56	194.69	225.87	223.29	232.66
85	24.73	50.45	94.85	135.57	146.89	154.94	161.23
90	4.42	20.48	54.43	82.00	93.51	97.87	96.45
95	3.83	9.92	35.60	51.43	58.51	54.70	53.37
100	3.84	8.84	11.24	31.97	38.03	36.48	35.69
105	4.05	8.03	17.47	8.35	11.66	20.08	24.33
110	4.43	4.80	15.95	22.08	8.59	5.61	5.93
115	4.92	4.67	15.23	21.36	23.96	21.17	19.64
120	5.60	5.01	10.50	19.68	22.56	24.16	24.43
125	5.69	4.96	5.57	16.91	19.62	21.54	21.96
130	5.53	6.29	4.79	9.77	16.91	18.42	18.96
135	6.17	7.50	5.19	5.49	11.35	15.76	16.90
140	6.78	8.12	5.80	5.96	6.66	9.59	10.90
145	7.95	8.87	7.62	7.06	7.14	7.07	7.20
150	10.02	10.58	10.84	9.00	9.03	9.04	9.11
155	12.37	12.66	13.43	12.51	11.53	11.49	11.55
160	14.63	14.76	15.21	15.49	14.93	14.37	13.77
165	16.59	16.48	16.76	17.01	17.24	17.11	17.62
170	18.56	18.36	18.24	18.24	18.31	18.43	18.50
175	20.23	20.09	19.89	19.70	19.58	19.60	19.88
180	20.74	20.74	20.74	20.74	20.74	20.74	20.74

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