

## TEST REPORT

The following tested product(s) were submitted and identified by the vendor as:

Applicant : HK Lighting Group  
Address of Applicant : 3529 Old Conejo Road, #118 Newbury Park, CA 91320  
Testing Laboratory : SGS Taiwan Ltd., Optics Laboratory  
Testing Address : No. 33, Wu Chyuan Road, New Taipei Industrial Park, Wu Ku District, New Taipei City 24886, Taiwan (R.O.C.)  
Product Name : Image Projector  
Model / Serial Number : ZXL16i-IP  
Manufacturer : HK Lighting Group  
Test Standard/Method : CIE 70-1987 THE MEASUREMENT OF ABSOLUTE LUMINOUS INTENSITY DISTRIBUTIONS  
Rating : AC 120 V 60 Hz  
Tested Voltage / Frequency : AC 120 V 60 Hz  
Date of Issue : Oct. 30, 2018

- ◆ The test results are solely accountable for the testing samples.
- ◆ All reported contents shall not be used for advertising, publication, marketing strategies and legal proceedings.
- ◆ Excerpts taken from the report will not be valid unless otherwise stated in the laboratory agreement

Test Results : -PLEASE SEE ATTACHED SHEETS-

Signed for and on behalf of  
SGS TAIWAN Ltd.



Benson DENG  
Supervisor

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## 1 DATE(S) OF PERFORMANCE OF THE TEST

Oct. 26, 2018

## 2 IDENTITY OF SAMPLES

Quantity	Model	Serial Number
1	ZXL16i-IP	# 1

## 3 TEST ITEMS

### 3.1 Luminous Efficacy ( $\eta$ )

The test results were implemented referring to CIE 70-1987 THE MEASUREMENT OF ABSOLUTE LUMINOUS INTENSITY DISTRIBUTIONS.

### 3.2 Total Luminous Flux ( $\phi_v$ )

The test results were implemented referring to CIE 70-1987 THE MEASUREMENT OF ABSOLUTE LUMINOUS INTENSITY DISTRIBUTIONS.

### 3.3 Electrical Quantities

The test results were implemented referring to CIE 70-1987 THE MEASUREMENT OF ABSOLUTE LUMINOUS INTENSITY DISTRIBUTIONS.

### 3.4 Luminous Intensity Distribution

The test results of luminous intensity distribution were implemented referring to CIE 70-1987 THE MEASUREMENT OF ABSOLUTE LUMINOUS INTENSITY DISTRIBUTIONS.

#### 3.4.1 Polar Luminous Intensity Distribution

#### 3.4.2 Cartesian Coordinates Luminous Intensity Distribution

#### 3.4.3 AAI Figure

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#### 4 TEST CONDITIONS

##### Main Test Equipment:

Name	Brand	Model	S/N	Calibration Due Date
Digital Power Meter / AC Source	YOKOGAWA / apc	WT-310 / AFC-500W	OPT-0125 / OPT-0128	2019/09/03
Goniophotometer System	SGS Define (CZIBULA & GRUNDMANN GMBH / everfine)	GO-R5000-GS-PLUS	OPT-0038	2018/12/28

##### Environmental Conditions:

Ambient temperature: (25 ± 1) °C

Relative humidity: (60 ± 20) %RH

Dark room: < 0.05 lx

##### DUT Conditions:

Power input: AC 120 V 60 Hz

Aging time: 0 h

Stabilization time: > 60 minutes

Control Gear: DUT Built-in

Dimension: L 280 mm x W 185 mm x H 70 mm

##### Measurement Conditions:

Goniophotometer: 2.115 m (N.F.)

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## 5 TEST RESULTS

### 5.1 Luminous Efficacy ( $\eta$ )

S/N	Luminous Efficacy ( $\eta$ )	Note
# 1	19.7 lm/W	Stabilization

### 5.2 Total Luminous Flux ( $\phi_v$ )

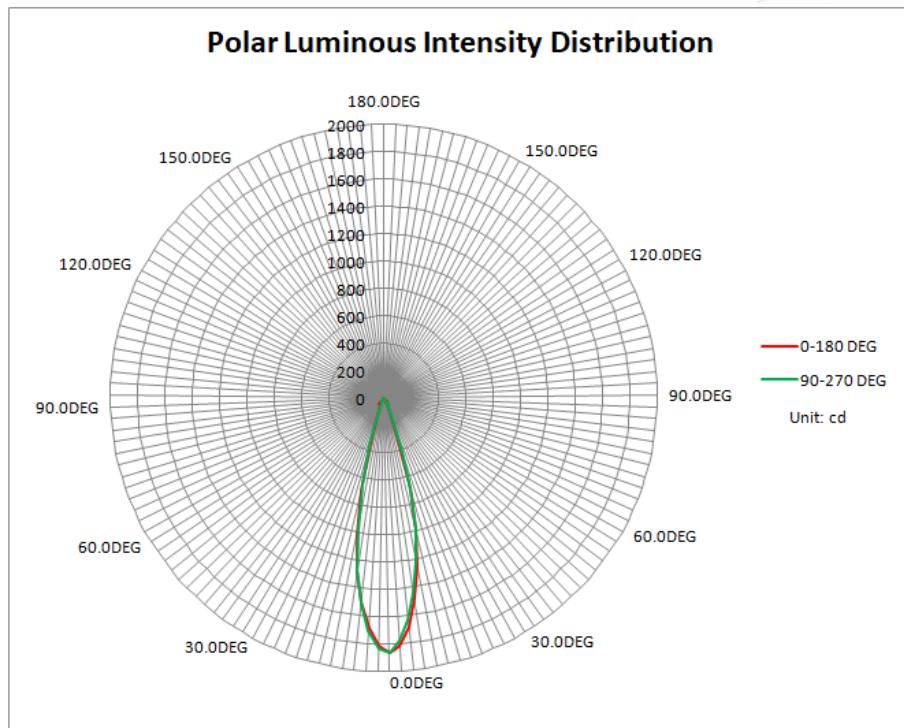
S/N	Total Luminous Flux ( $\phi_v$ )	Note
# 1	392 lm	Stabilization

### 5.3 Electrical Quantities

S/N	Input Voltage	Input Current	Input Power	Power Factor	Note
# 1	119.98 Vac	0.1661 A	19.85 W	0.9963	Stabilization

### 5.4 Luminous Intensity Distribution

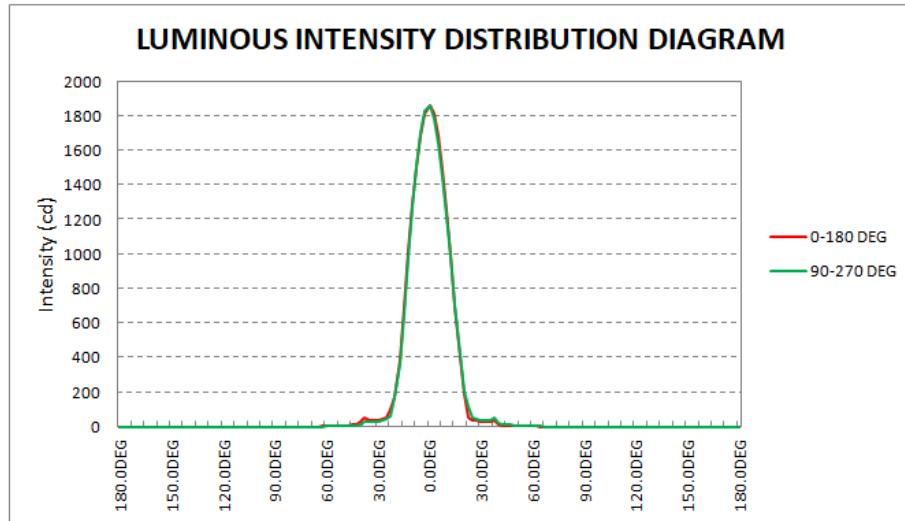
#### 5.4.1 Polar Luminous Intensity Distribution



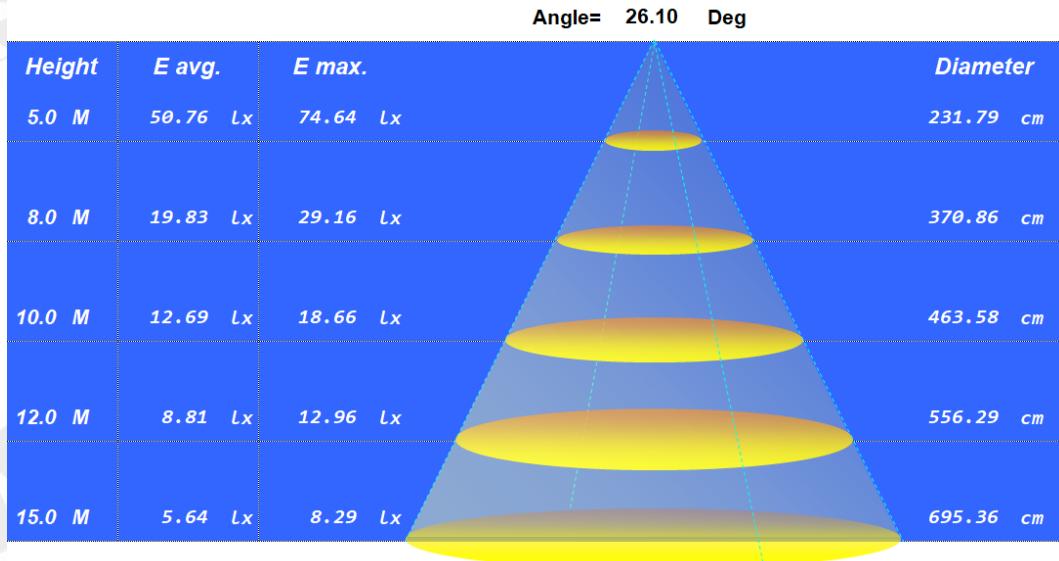
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#### 5.4.2 Cartesian Coordinates Luminous Intensity Distribution



#### 5.4.3 AAI Figure



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## 6 ANGLE DEFINITION



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**7 PHOTO**Front ViewDUT

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Side View

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Gamma\c	357.5	I min	I max	I mean
0.0	1860.12	1860.12	1860.12	1860.12
2.5	1809.53	1779.93	1836.32	1810.64
5.0	1677.90	1629.11	1715.36	1678.41
7.5	1483.66	1440.74	1528.17	1489.75
10.0	1245.03	1206.70	1298.88	1258.23
12.5	987.62	949.95	1024.49	995.20
15.0	682.85	629.72	733.79	684.19
17.5	395.50	337.01	450.87	393.58
20.0	189.45	152.66	225.88	186.87
22.5	52.42	47.80	123.65	81.92
25.0	38.28	36.46	53.62	45.51
27.5	33.78	31.54	47.34	39.68
30.0	31.55	28.88	43.64	36.18
32.5	28.88	25.98	41.89	33.67
35.0	28.47	24.68	44.08	33.84
37.5	32.69	25.22	57.38	41.32
40.0	12.77	12.31	34.78	19.23
42.5	9.63	8.92	14.50	10.94
45.0	8.73	7.90	11.87	9.73
47.5	7.56	6.63	10.88	8.72
50.0	6.04	5.54	9.05	7.08
52.5	5.02	4.58	7.38	5.80
55.0	4.12	3.70	5.91	4.68
57.5	3.40	3.00	4.68	3.76
60.0	2.80	2.37	3.75	3.01
62.5	2.26	1.86	2.95	2.38
65.0	1.75	1.46	2.28	1.84
67.5	1.31	1.06	1.71	1.37
70.0	0.93	0.71	1.18	0.95
72.5	0.60	0.40	0.75	0.58
75.0	0.33	0.13	0.43	0.30
77.5	0.12	0.00	0.25	0.12
80.0	0.06	0.00	0.13	0.05
82.5	0.05	0.00	0.09	0.04
85.0	0.04	0.00	0.07	0.03
87.5	0.03	0.00	0.06	0.02
90.0	0.00	0.00	0.00	0.00
92.5	0.00	0.00	0.00	0.00
95.0	0.00	0.00	0.00	0.00
97.5	0.00	0.00	0.00	0.00
100.0	0.00	0.00	0.00	0.00
102.5	0.00	0.00	0.00	0.00
105.0	0.00	0.00	0.00	0.00
107.5	0.00	0.00	0.00	0.00
110.0	0.00	0.00	0.00	0.00
112.5	0.00	0.00	0.00	0.00
115.0	0.00	0.00	0.00	0.00
117.5	0.00	0.00	0.00	0.00
120.0	0.00	0.00	0.00	0.00
122.5	0.00	0.00	0.00	0.00
125.0	0.00	0.00	0.00	0.00
127.5	0.00	0.00	0.00	0.00
130.0	0.00	0.00	0.00	0.00
132.5	0.00	0.00	0.00	0.00
135.0	0.00	0.00	0.00	0.00
137.5	0.00	0.00	0.00	0.00
140.0	0.00	0.00	0.00	0.00
142.5	0.00	0.00	0.00	0.00
145.0	0.00	0.00	0.00	0.00
147.5	0.00	0.00	0.00	0.00
150.0	0.00	0.00	0.00	0.00
152.5	0.00	0.00	0.00	0.00
155.0	0.00	0.00	0.00	0.00
157.5	0.00	0.00	0.00	0.00
160.0	0.00	0.00	0.00	0.00
162.5	0.00	0.00	0.00	0.00
165.0	0.00	0.00	0.00	0.00
167.5	0.00	0.00	0.00	0.00
170.0	0.00	0.00	0.00	0.00
172.5	0.00	0.00	0.00	0.00
175.0	0.00	0.00	0.00	0.00
177.5	0.00	0.00	0.00	0.00
180.0	0.00	0.00	0.00	0.00

UNIT: cd  
**- End of Report -**

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