

TEST REPORT

Report No.: SET2015-12984

Product: LED Down Light

Model No. : EQS-39V-PC

Applicant: A-Bright Electronical & Hardware (Huizhou) Co.Ltd

Issued by: CCIC Southern Electronic Product Testing

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NVLAP LAB CODE 201008-0

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Test Report

Product.....: LED Down Light

Model No......: EQS-39V-PC

Applicant.....: A-Bright Electronical & Hardware (Huizhou) Co.Ltd

Applicant Address.....: Hengling Developing District, Satian Town,
Huiyang,Huizhou,Guangdong, China

Manufacturer.....: A-Bright Electronical & Hardware (Huizhou) Co.Ltd

Manufacturer Address.....: Hengling Developing District, Satian Town,
Huiyang,Huizhou,Guangdong, China

Rating.....: 120V 60Hz 45W

Test Standards.....: IES LM-79-08: Electrical and Photometric
Measurements of Solid-State Lighting Products

“☆” item cannot be Accredited by NVLAP.

Tested by

Nanny Chen

2015.12.21

Signature, Date

Reviewed by.....

[Signature]

2015.12.21

Signature, Date

Approved by.....

[Signature]

2015.12.21

Signature, Date



Test Method

The method according to IESNA LM-79-08 following chapter

4.0 SENSING OF SSL PRODUCTS

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

5.0 STABILIZATION OF SSL PRODUCT

Before measurements are taken, the SSL product under test shall be operated long enough to reach stabilization and temperature equilibrium. The time required for stabilization depends on the type of SSL products under test. The stabilization time typically ranges from 30 min. (small integrated LED lamps) to 2 or more hours for (large SSL luminaries). The SSL product during stabilization shall be operated in the ambient temperature as specified in section 2.1. 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 min. apart, is less than 0.5%. The stabilization time used for each SSL product shall be reported.

9.0 TEST METHODS FOR TOTAL LUMINOUS FLUX MEASUREMENT

The total luminous flux (lumen) of SSL products shall be measured with an integrating sphere system or goniophotometer. Spectral radiant flux measurements are made using High-precision spectral radiometer attached to the detector port of the integrating sphere. Luminous flux, chromaticity coordinates, correlated color temperature, u' , v' and color rendering index for each lamp are calculated from the spectral radiant flux measurement taken at 1 nm intervals over the range 380 to 780 nm. Lamp efficacy (lumens per watts) for each lamp model is computed based on this luminous flux result. Sphere size of 1.5m/2 m is used for compact lamps (size of typical incandescent and compact fluorescent lamps) or larger for larger lamps (size of 4-foot linear fluorescent lamps and HID lamps). 2 m sphere is used for measurement of light sources of 500 W or larger. The total uncertainty of the light output measurements is estimated, at the 95% confidence level, $k=2$.

10.0 LUMINOUS INTENSITY DISTRIBUTION

Goniophotometers used to measure luminous intensity distribution. For measurement of luminous intensity distribution, a sufficient photometric distance should be used – generally, more than five times of the largest dimension of the test SSL product having broad angular distributions. Electronic



data of measured luminous intensity distributions shall be prepared in the “IES file” format for absolute photometry specified in IES LM-63.¹⁸ IES file is an electronic data format that can be used by specifiers and designers to reliably predict illuminance levels in design applications.

11.0 LUMINOUS EFFICACY

The luminous efficacy (lm/W) of the SSL product, η , is given as the quotient of measured total luminous flux Φ_{TEST} (lumen) and the measured electrical input power P_{TEST} (watt) of the SSL product under test as

$$\eta = \Phi_{\text{TEST}}(\text{lumen}) / P_{\text{TEST}}(\text{watt}) [\text{lm/W}]$$

12.0 TEST METHODS FOR COLOR CHARACTERISTICS OF SSL PRODUCTS

The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. Using High-precision spectral radiometer system to measure luminous flux, chromaticity coordinates, correlated color temperature, u' , v' and color rendering index. Using Goniophotometer system to measure chromaticity. The SSL product under test in different directions. This can be achieved most efficiently by mounting the color-measuring instrument on a goniometer.

13.0 UNCERTAINTY STATEMENT

The uncertainty of the light output measurements is $U=1.5\%$ ($K=2$), the uncertainty of correlated color temperature measurements is $U=14\text{K}$ ($K=2$), at the 95% confidence level. This calibration results traceable to the NATIONAL INSTITUTE OF METROLOGY (NIM).

Remark :

1. 0 hour season, Pre-heating the lamp for 45 minutes at least ;
2. Ambient : $\geq 45\%$ RH, 25 ± 1 °C.



Product Description

General Information	
Manufacture	A-Bright Electronical & Hardware (Huizhou) Co.Ltd
Test model number	EQS-39V-PC
Burning time before test	0 Hours (For new products)

Rating	
Rated input	120V 60Hz
Rated power	45W
Nominal CCT	3000K



Test Result

1. Integrating Sphere System

1.1 Electrical data

Model	Input Voltage (V)	Input Current (A)	Power (W)	Power Factor
EQS-39V-PC	120	0.37	44.28	0.998

1.2 Photometric data

Model	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	Duv	R9	CRI
EQS-39V-PC	2173.18	49.07	3052	-0.00171	79	95.5

1.3 Chromaticity Coordinate

Model	x	y	u'	v'
EQS-39V-PC	0.4309	0.3977	0.2494	0.5180

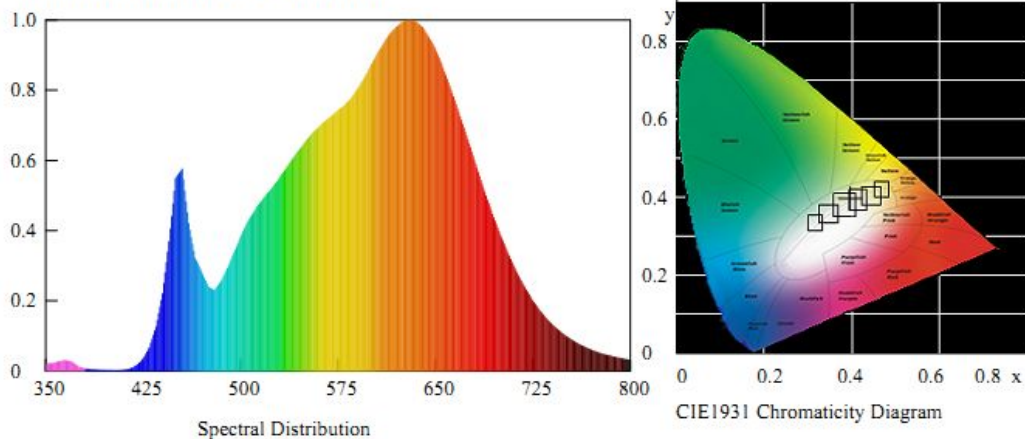
Report of Spectroradiometric & Electric Analysis for Light Source

Test Condition

Temperature: 25.1°C
Spectrum Range: 350-800 nm

RH: 56%
Scan Step: 5 nm

Spectroradiometric Parameters



Chromaticity Coordinates: $x=0.4309$ $y=0.3977$ $u'=0.2494$ $v'=0.518$

Correlated Color Temperature: 3052 K

Dominant Wavelength: 582.0 nm(E)

Luminous Flux: 2173.178 lm

Purity: 0.4880

Chromaticity Difference: -0.00171 Duv

Peak Wavelength: 630.1 nm

Color Ratio: $K_r=43.0\%$ $K_g=48.7\%$ $K_b=8.3\%$

Color Tolerance: 4.6 SDCM

Bandwidth: 169.5nm

Radiant Flux: 7.885 W

Rendering Index: $R_a=95.5$

$R_1=97$ $R_2=98$ $R_3=96$ $R_4=96$ $R_5=96$ $R_6=96$ $R_7=96$ $R_8=91$

$R_9=79$ $R_{10}=93$ $R_{11}=96$ $R_{12}=82$ $R_{13}=97$ $R_{14}=97$ $R_{15}=95$

Electric Parameters

Voltage: 120.02 V

Current: 0.3697 A

Power Factor: 0.998

Power: 44.284 W

Luminous Efficacy: 49.074 lm/W



2. Goniophotometer System

2.1 Electrical data

Model	Input Voltage (V)	Input Current (A)	Power (W)	Power Factor
EQS-39V-PC	120	0.3623	43.37	0.998

2.2 Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	I max (cd)	Beam angle
2098.2	48.37	517.7	130.5°



2.3 Zonal Flux Diagram

ZONAL FLUX DIAGRAM

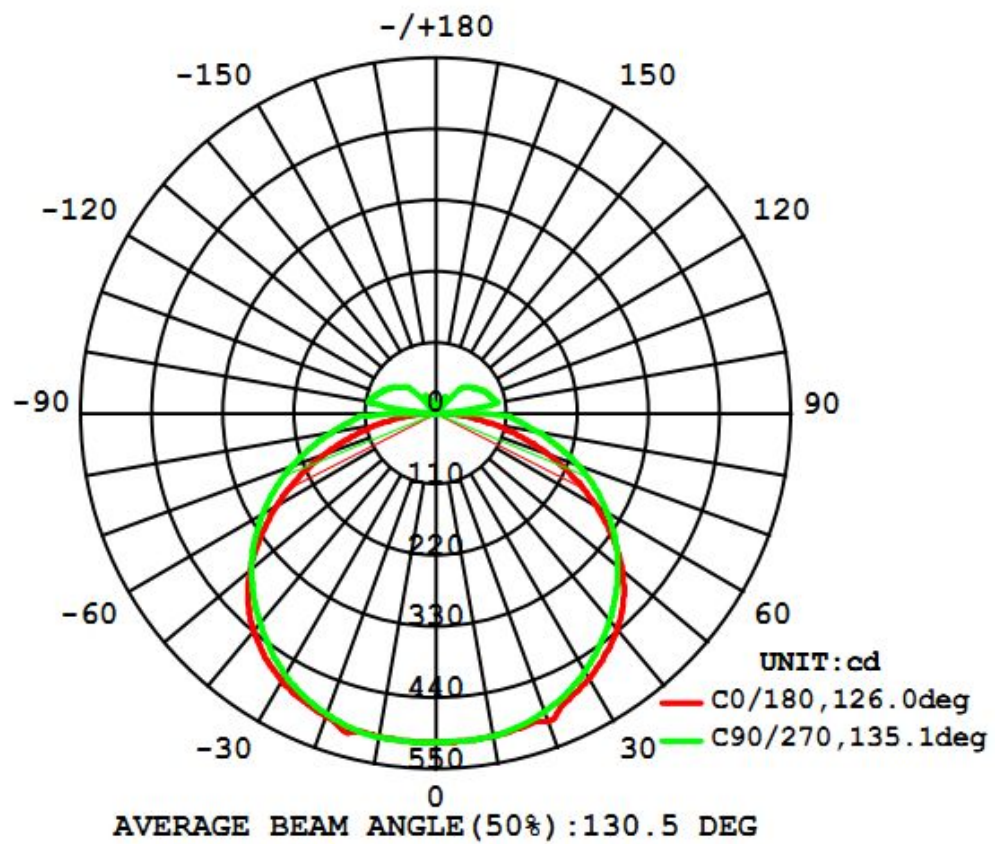
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum
5	508.5	516.1	508.1	498.9	508.7	517.1	509.0	499.1	0- 5	12.14	12.14	0.58
10	506.9	515.2	507.0	498.4	507.3	516.0	508.6	498.3	5- 10	36.28	48.41	2.31
15	503.4	512.1	500.8	495.4	510.4	513.8	504.4	496.1	10- 15	59.92	108.3	5.16
20	506.6	507.1	491.3	487.5	499.0	510.0	495.2	488.8	15- 20	82.50	190.8	9.1
25	487.5	497.8	478.3	477.6	490.3	502.4	483.2	479.0	20- 25	103.2	294.0	14
30	473.6	484.5	461.1	465.5	478.1	491.6	467.4	466.7	25- 30	121.5	415.6	19.8
35	456.5	467.6	440.6	447.4	461.6	477.8	447.4	450.1	30- 35	136.8	552.4	26.3
40	436.5	447.1	418.5	426.5	440.1	459.1	424.3	429.9	35- 40	148.8	701.2	33.4
45	410.8	423.0	394.5	403.4	412.3	435.2	400.5	406.1	40- 45	156.9	858.1	40.9
50	376.7	394.6	368.2	377.6	376.1	406.2	373.7	380.6	45- 50	160.5	1019	48.5
55	334.3	362.4	339.1	348.1	332.3	371.3	343.7	351.9	50- 55	158.9	1178	56.1
60	286.9	325.3	306.7	314.7	285.3	332.0	310.5	318.7	55- 60	152.1	1330	63.4
65	236.7	282.5	271.6	277.5	235.7	287.3	275.0	281.8	60- 65	140.6	1470	70.1
70	184.7	235.6	234.2	236.9	183.9	238.5	237.8	242.3	65- 70	124.6	1595	76
75	131.9	187.1	195.5	194.3	131.2	189.1	199.4	200.8	70- 75	105.1	1700	81
80	82.16	140.6	157.6	152.5	81.68	142.4	162.1	159.5	75- 80	83.64	1784	85
85	41.35	99.24	125.6	116.3	40.94	101.8	130.9	124.7	80- 85	62.63	1846	88
90	15.02	42.76	51.44	43.30	14.37	34.46	47.49	51.85	85- 90	42.19	1888	90
95	5.130	27.41	0.6846	7.467	2.839	37.48	0.6678	7.744	90- 95	5.853	1894	90.3
100	7.410	48.64	95.92	80.19	5.986	57.16	107.5	93.87	95-100	22.32	1917	91.3
105	8.703	53.48	92.16	81.56	6.027	58.91	101.7	91.04	100-105	33.28	1950	92.9
110	9.262	52.01	88.13	78.81	7.252	56.03	95.11	84.31	105-110	31.29	1981	94.4
115	8.164	48.10	83.50	72.93	6.961	50.74	88.46	76.75	110-115	28.66	2010	95.8
120	7.192	44.11	77.34	65.87	5.920	39.84	81.09	68.81	115-120	25.07	2035	97
125	5.801	2.180	70.84	59.23	4.277	0.7379	73.05	61.25	120-125	18.40	2053	97.9
130	5.000	1.565	64.23	53.04	3.149	1.021	65.58	37.61	125-130	14.56	2068	98.6
135	4.184	25.87	57.63	1.183	2.594	27.11	48.30	0.5243	130-135	10.53	2078	99.1
140	3.505	23.66	0.9836	0.9737	2.158	23.01	0.4213	0.8638	135-140	4.429	2083	99.3
145	3.565	20.23	0.8165	28.03	1.976	18.57	0.5056	30.12	140-145	3.111	2086	99.4
150	3.227	15.90	31.18	24.46	1.599	8.204	33.36	25.33	145-150	4.595	2090	99.6
155	2.706	7.124	25.64	18.78	1.491	4.677	26.44	16.37	150-155	3.988	2094	99.8
160	2.378	4.898	18.50	11.73	1.589	3.163	13.02	7.715	155-160	2.215	2097	99.9
165	2.219	3.554	6.402	3.379	1.674	2.976	5.935	4.436	160-165	0.9461	2098	100
170	2.134	2.705	3.335	2.099	1.564	2.401	3.102	2.294	165-170	0.3628	2098	100
175	1.892	2.015	1.634	1.461	1.625	1.938	1.316	1.460	170-175	0.1426	2098	100
180	1.661	1.739	1.067	1.149	1.674	1.664	1.067	1.086	175-180	0.0360	2098	100
DEG	LUMINOUS INTENSITY:cd								UNIT:lm			



2.4 Luminous Intensity Distribution Diagram

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM

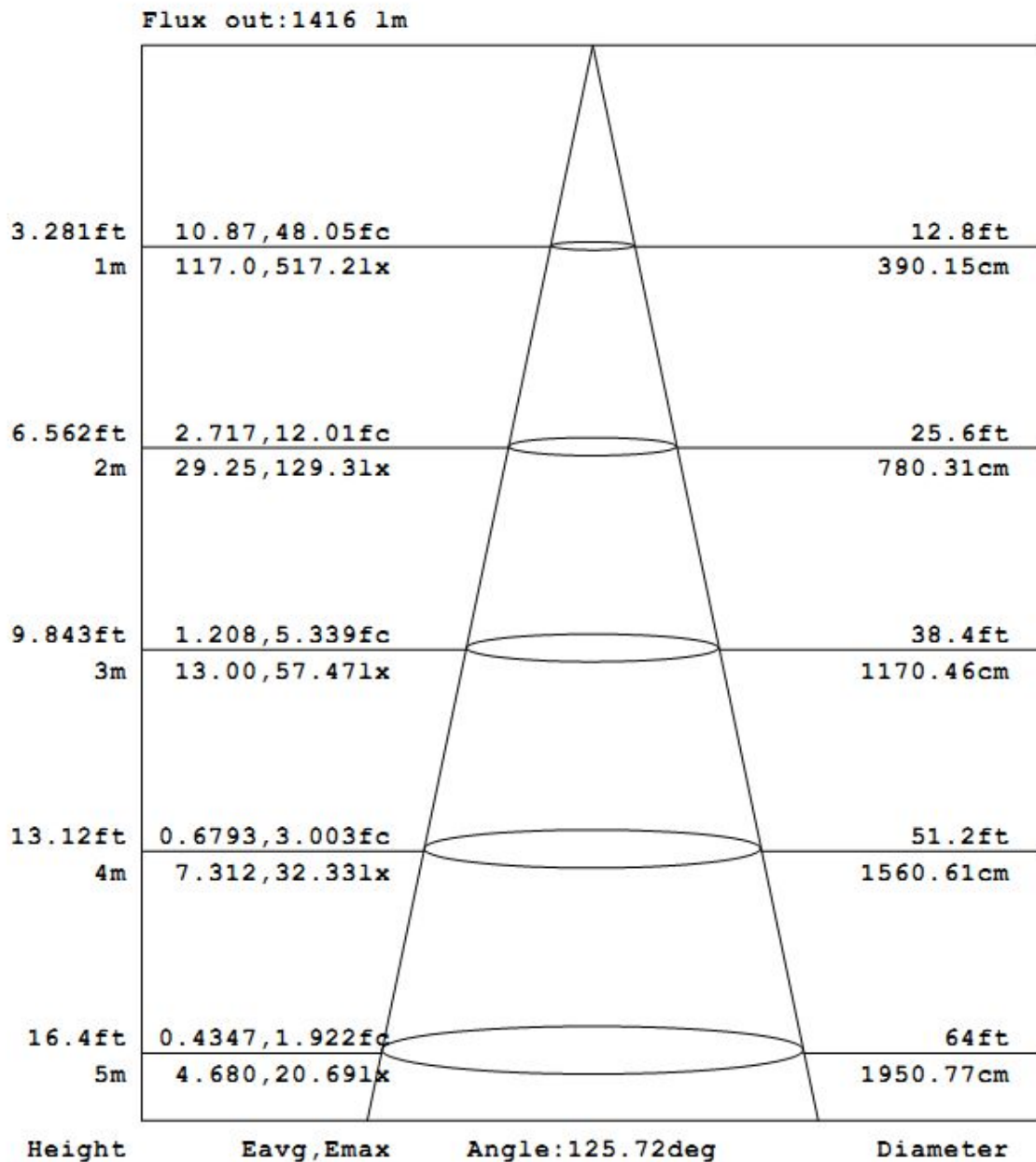


**2.5 Luminous Intensity Distribution Data****LUMINOUS DISTRIBUTION INTENSITY DATA**

Table--1

UNIT: cd

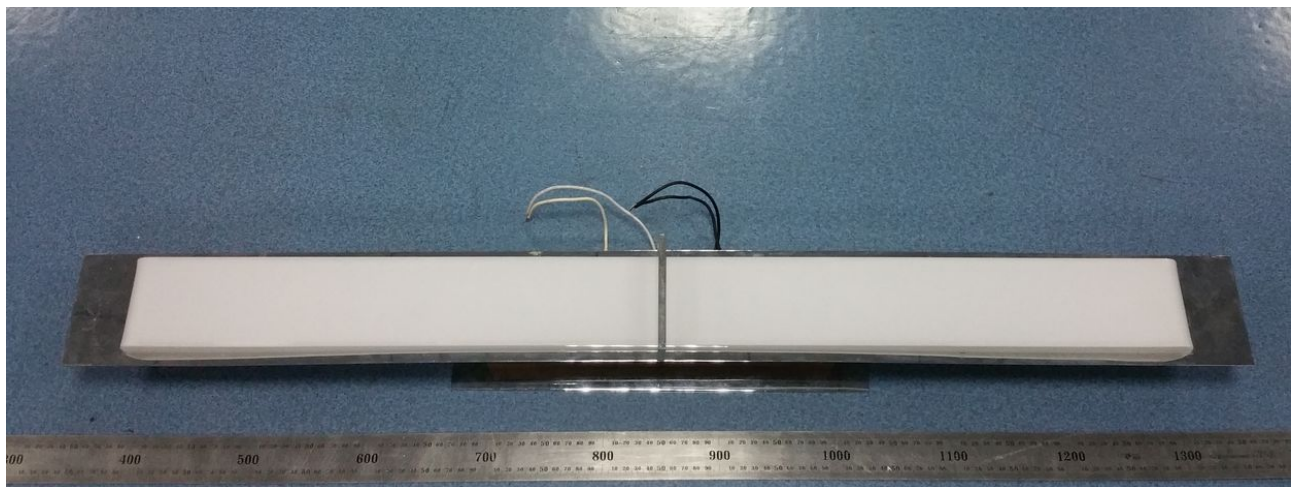
C (DEG) γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338			
0	509	510	517	517	509	500	499	502	509	510	517	517	509	500	499	502			
5	509	509	516	517	508	499	499	501	509	510	517	518	509	500	499	502			
10	507	506	515	515	507	498	498	501	507	508	516	517	509	499	498	500			
15	503	502	512	512	501	492	495	499	510	514	514	515	504	495	496	498			
20	507	503	507	503	491	482	488	496	499	499	510	507	495	486	489	495			
25	488	485	498	493	478	470	478	489	490	489	502	498	483	474	479	489			
30	474	470	485	479	461	453	466	480	478	476	492	483	467	458	467	480			
35	457	453	468	460	441	433	447	469	462	459	478	465	447	438	450	469			
40	436	433	447	439	418	412	426	452	440	439	459	443	424	415	430	454			
45	411	408	423	416	394	389	403	428	412	413	435	419	401	392	406	433			
50	377	376	395	389	368	362	378	397	376	379	406	392	374	365	381	403			
55	334	336	362	359	339	333	348	360	332	336	371	362	344	336	352	365			
60	287	290	325	326	307	301	315	318	285	289	332	328	310	303	319	322			
65	237	241	282	289	272	266	277	272	236	240	287	290	275	269	282	276			
70	185	189	236	249	234	229	237	224	184	188	238	249	238	232	242	228			
75	132	137	187	206	195	191	194	176	131	135	189	207	199	194	201	180			
80	82.2	87.6	141	164	158	154	152	130	81.7	86.2	142	165	162	158	160	134			
85	41.3	46.6	99.2	128	126	122	116	90.0	40.9	46.2	102	129	131	127	125	93.9			
90	15.0	18.3	42.8	57.4	51.4	50.8	43.3	34.3	14.4	14.4	34.5	40.4	47.5	46.1	51.9	41.4			
95	5.13	6.92	27.4	1.90	0.68	0.70	7.47	28.1	2.84	6.97	37.5	20.2	0.67	0.50	7.74	31.7			
100	7.41	9.23	48.6	92.1	95.9	93.0	80.2	45.1	5.99	9.80	57.2	97.2	107	104	93.9	50.5			
105	8.70	5.64	53.5	90.4	92.2	90.1	81.6	48.8	6.03	4.93	58.9	96.2	102	98.3	91.0	50.7			
110	9.26	9.41	52.0	84.8	88.1	85.9	78.8	46.8	7.25	10.7	56.0	90.0	95.1	91.8	84.3	46.7			
115	8.16	10.3	48.1	79.0	83.5	81.3	72.9	43.1	6.96	10.6	50.7	82.4	88.5	85.4	76.8	42.6			
120	7.19	9.51	44.1	71.6	77.3	75.1	65.9	31.6	5.92	8.94	39.8	73.8	81.1	78.3	68.8	11.4			
125	5.80	7.73	2.18	64.6	70.8	68.7	59.2	1.71	4.28	7.93	0.74	65.6	73.0	70.5	61.2	1.13			
130	5.00	4.88	1.57	57.7	64.2	62.5	53.0	1.45	3.15	5.51	1.02	55.4	65.6	63.4	37.6	20.1			
135	4.18	4.20	25.9	4.71	57.6	56.1	1.18	24.1	2.59	3.52	27.1	0.63	48.3	38.3	0.52	24.1			
140	3.51	3.66	23.7	1.03	0.98	0.84	0.97	20.7	2.16	2.80	23.0	0.51	0.42	0.49	0.86	21.1			
145	3.57	3.70	20.2	25.7	0.82	0.86	28.0	17.3	1.98	2.28	18.6	32.8	0.51	0.79	30.1	13.3			
150	3.23	3.13	15.9	27.1	31.2	31.0	24.5	13.1	1.60	1.86	8.20	26.9	33.4	31.5	25.3	8.06			
155	2.71	2.65	7.12	20.9	25.6	24.9	18.8	5.82	1.49	1.66	4.68	19.7	26.4	25.2	16.4	5.51			
160	2.38	2.23	4.90	14.0	18.5	17.9	11.7	3.57	1.59	1.80	3.16	7.32	13.0	11.6	7.71	3.81			
165	2.22	1.89	3.55	4.81	6.40	6.37	3.38	2.88	1.67	2.07	2.98	2.94	5.94	6.22	4.44	2.62			
170	2.13	1.79	2.70	2.54	3.34	3.00	2.10	2.08	1.56	1.99	2.40	1.98	3.10	3.18	2.29	1.97			
175	1.89	1.70	2.02	1.38	1.63	1.34	1.46	1.54	1.63	1.83	1.94	1.52	1.32	1.82	1.46	1.63			
180	1.66	1.57	1.74	1.16	1.07	1.08	1.15	1.37	1.67	1.69	1.66	1.16	1.07	1.13	1.09	1.42			

**AAI Figure**

Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.



Photo Document





Test Equipment List

Device	Manufacture	Model No.	Serial No.	Calibration due date
Goniophotometric System	EVERFINE	GO-R5000	YG111493N1 2040001	2015-12-23
AC Power Source	ALL POWER	APW-105N	971499	2016-05-27
Total Luminous Flux Standard Lamp	SENSING	24V/50W	LSD245120	2016-05-06
Digital Power Meter	YOKOGAWA	WT210	91K310011	2016-03-16
Integral Sphere	SENSING	Diameter 2.0M	A130301235	2015-12-23
Optical Color and Electrical Measurement System	SENSING	SPR-3000	A130301237	2015-12-23
Temperature/humidity/clock	Shanghai Meteorological Instrument Factory Co., Ltd.	ZJ1-2B	808187	2016-11-25

****End of report****