

TEST REPORT

Report No.: SET2015-18397

Product: LED Down Light

Model No. : QDR-48P-PC

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

Issued by: CCIC Southern Electronic Product Testing

Lab Location: Electronic Testing Building, Shahe Road, Xili, Nanshan District,
Shenzhen, 518055, P. R. China

Tel: 86 755 26627338 **Fax:** 86 755 26627238



NVLAP LAB CODE 201008-0

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Test Report

Product.....: LED Down Light

Model No......: QDR-48P-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 36W

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	QDR-48P-PC
Burning time before test	0 Hours (For new products)

Rating	
Rated input	120V 60Hz
Rated power	36W
Nominal CCT	3000K



Test Result

1. Integrating Sphere System

1.1 Electrical data

Model	Input Voltage (V)	Input Current (A)	Power (W)	Power Factor
QDR-48P-PC	120.04	0.302	36.15	0.997

1.2 Photometric data

Model	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	Duv	R9	CRI
QDR-48P-PC	1826.85	50.53	2739	0.00003	57	92.7

1.3 Chromaticity Coordinate

Model	x	y	u'	v'
QDR-48P-PC	0.4568	0.4100	0.2608	0.5266

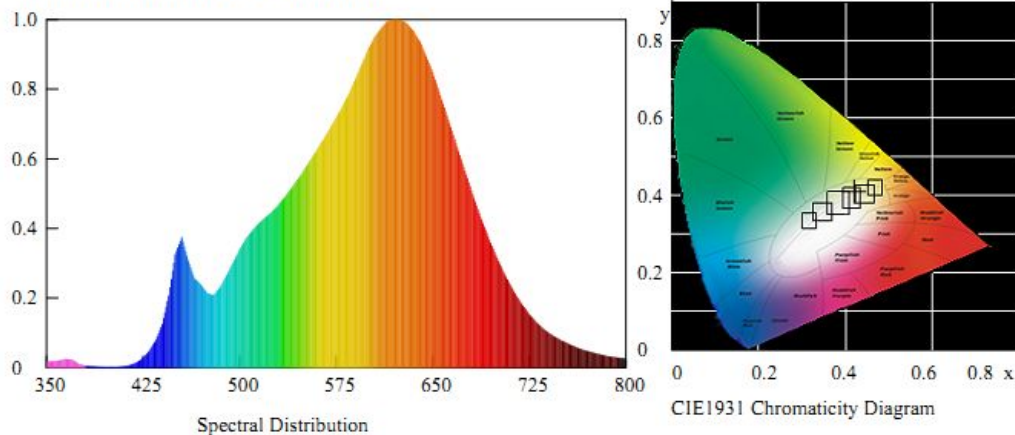
Report of Spectroradiometric & Electric Analysis for Light Source

Test Condition

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

RH: 56%
Scan Step: 5 nm

Spectroradiometric Parameters



Chromaticity Coordinates: $x=0.4568$ $y=0.4100$ $u'=0.2608$ $v'=0.5266$

Correlated Color Temperature: 2739 K

Dominant Wavelength: 583.0 nm(E)

Luminous Flux: 1826.852 lm

Purity: 0.6020

Chromaticity Difference: +0.00003Duv

Peak Wavelength: 621.6 nm

Color Ratio: $K_r=46.4\%$ $K_g=46.0\%$ $K_b=7.6\%$

Color Tolerance: 8.8 SDCM

Bandwidth: 143.6nm

Radiant Flux: 6.224 W

Rendering Index: $R_a=92.7$

$R_1=93$ $R_2=98$ $R_3=98$ $R_4=92$ $R_5=93$ $R_6=97$ $R_7=90$ $R_8=80$

$R_9=57$ $R_{10}=94$ $R_{11}=94$ $R_{12}=86$ $R_{13}=95$ $R_{14}=100$ $R_{15}=88$

Electric Parameters

Voltage: 120.04 V

Current: 0.3021 A

Power Factor: 0.997

Power: 36.151 W

Luminous Efficacy: 50.534 lm/W

2. Goniophotometer System

2.1 Electrical data

Model	Input Voltage (V)	Input Current (A)	Power (W)	Power Factor
QDR-48P-PC	120.1	0.2989	35.78	0.997

2.2 Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	I max (cd)	Beam angle
1826.9	51.06	569.8	125.4°



2.3 Zonal Flux Diagram

ZONAL FLUX DIAGRAM

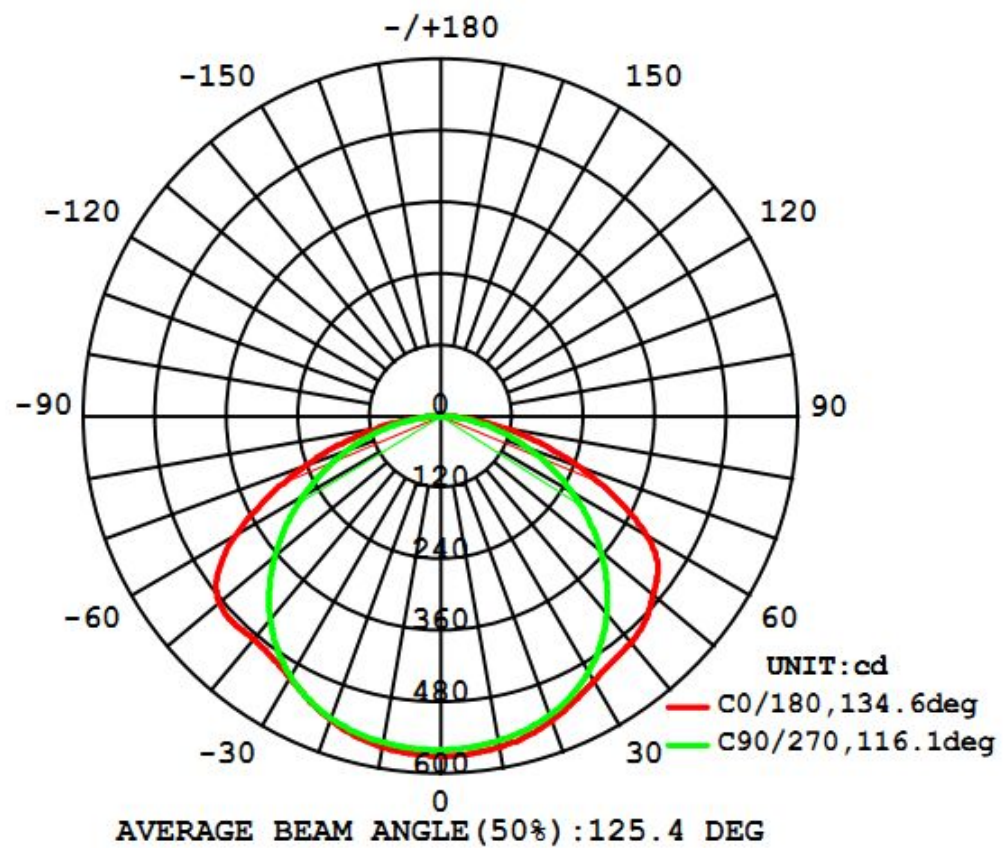
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum
5	568.8	560.9	557.8	560.7	568.3	561.6	559.3	561.6	0- 5	13.46	13.46	0.74
10	564.5	556.8	553.3	555.3	563.9	558.3	556.1	558.1	5- 10	40.07	53.53	2.93
15	556.7	549.3	545.9	546.6	555.7	551.6	549.9	550.2	10- 15	65.76	119.3	6.53
20	543.9	537.6	534.2	533.5	542.9	541.0	539.9	538.3	15- 20	89.80	209.1	11.4
25	528.7	520.3	518.1	515.9	525.8	525.2	525.2	521.3	20- 25	111.4	320.5	17.5
30	513.7	498.1	496.4	492.3	507.8	502.9	505.0	498.7	25- 30	129.9	450.4	24.7
35	503.1	475.4	468.4	463.0	494.7	476.4	478.9	470.6	30- 35	144.8	595.2	32.6
40	496.8	452.9	434.4	427.9	489.5	448.8	446.3	436.7	35- 40	156.1	751.3	41.1
45	485.9	429.6	394.6	387.7	492.3	421.0	407.7	397.5	40- 45	163.0	914.3	50
50	466.1	399.8	350.6	343.4	486.7	390.7	364.1	353.6	45- 50	164.7	1079	59.1
55	445.3	362.0	303.4	296.2	457.9	359.2	316.8	307.0	50- 55	161.1	1240	67.9
60	399.2	314.9	254.7	247.5	397.6	323.6	267.0	258.2	55- 60	152.0	1392	76.2
65	323.2	261.9	204.9	198.2	318.9	279.1	216.4	209.0	60- 65	135.4	1528	83.6
70	245.3	206.0	155.8	149.5	241.5	225.1	166.1	160.2	65- 70	112.6	1640	89.8
75	170.8	147.3	108.4	102.8	167.0	162.9	117.5	112.7	70- 75	86.14	1726	94.5
80	101.7	88.52	64.40	59.81	98.83	99.84	72.68	68.96	75- 80	58.08	1784	97.7
85	41.59	36.11	25.56	22.13	39.21	41.54	33.03	30.45	80- 85	30.96	1815	99.4
90	2.608	1.227	0.0914	0.1212	2.134	1.522	0.3551	0.7130	85- 90	7.849	1823	99.8
95	1.825	0.7274	0.0757	0.1208	1.299	0.2941	0	0	90- 95	0.3623	1824	99.8
100	1.995	0.7120	0.0757	0.1208	1.267	0.2786	0	0	95-100	0.3062	1824	99.8
105	1.995	0.7415	0.0757	0.2396	1.159	0.2786	0.0466	0.0906	100-105	0.3036	1824	99.9
110	2.009	0.8509	0.0757	0.2264	0.9270	0.2941	0.0757	0.1057	105-110	0.2975	1824	99.9
115	1.624	0.9750	0.1058	0.3017	0.5250	0.3405	0.0908	0.1660	110-115	0.2632	1825	99.9
120	1.639	1.068	0.2271	0.3019	0.5103	0.4024	0.0908	0.1811	115-120	0.2472	1825	99.9
125	1.223	1.192	0.2422	0.4377	0.5103	0.4179	0.1060	0.1962	120-125	0.2385	1825	99.9
130	0.9896	1.222	0.2871	0.4529	0.5419	0.4643	0.1818	0.2122	125-130	0.2217	1825	99.9
135	1.021	0.8057	0.4239	0.5283	0.5412	0.4798	0.2129	0.2566	130-135	0.2075	1826	99.9
140	1.021	0.7584	0.4390	0.5887	0.5412	0.4953	0.2427	0.2871	135-140	0.1948	1826	99.9
145	1.176	0.9902	0.4390	0.6943	0.5566	0.5108	0.3331	0.3019	140-145	0.1907	1826	100
150	1.268	1.176	0.4542	0.7094	0.6500	0.5417	0.3331	0.3170	145-150	0.1819	1826	100
155	1.391	1.176	0.4845	0.7094	0.7741	0.5579	0.3337	0.3326	150-155	0.1629	1826	100
160	1.392	1.099	0.4845	0.7094	1.283	0.8513	0.4390	0.3923	155-160	0.1471	1827	100
165	1.437	1.037	0.4845	0.7094	1.423	0.8822	0.5147	0.4679	160-165	0.1256	1827	100
170	1.562	1.037	0.5450	0.7094	1.500	0.8822	0.5147	0.5132	165-170	0.0935	1827	100
175	1.670	1.022	0.5602	0.6943	1.500	0.8822	0.5147	0.5132	170-175	0.0591	1827	100
180	1.639	0.9132	0.5602	0.5887	1.500	0.8822	0.5147	0.5132	175-180	0.0200	1827	100
DEG	LUMINOUS INTENSITY:cd								UNIT:lm			



2.4 Luminous Intensity Distribution Diagram

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM





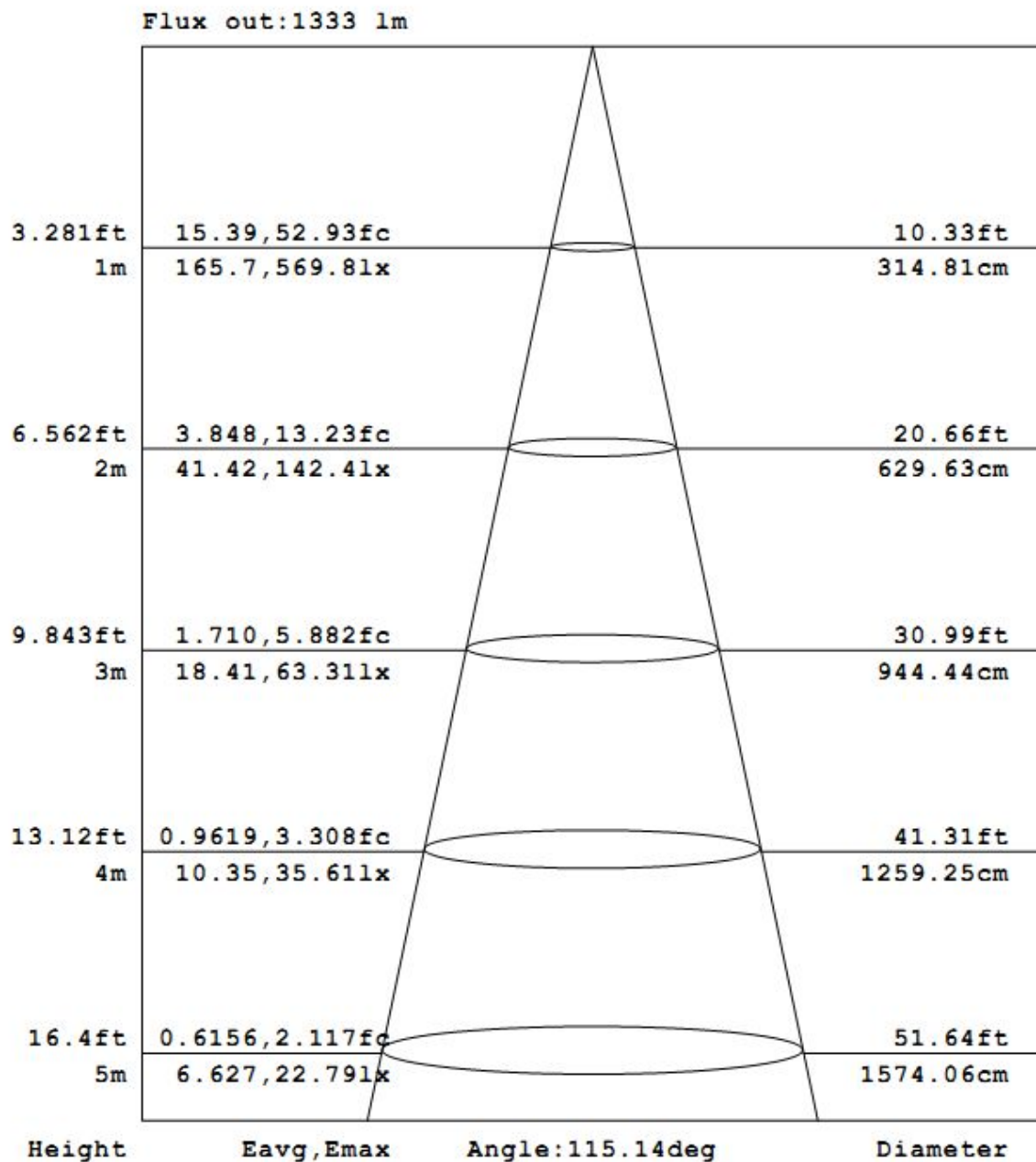
2.5 Luminous Intensity Distribution Data

LUMINOUS DISTRIBUTION INTENSITY DATA

Table--1

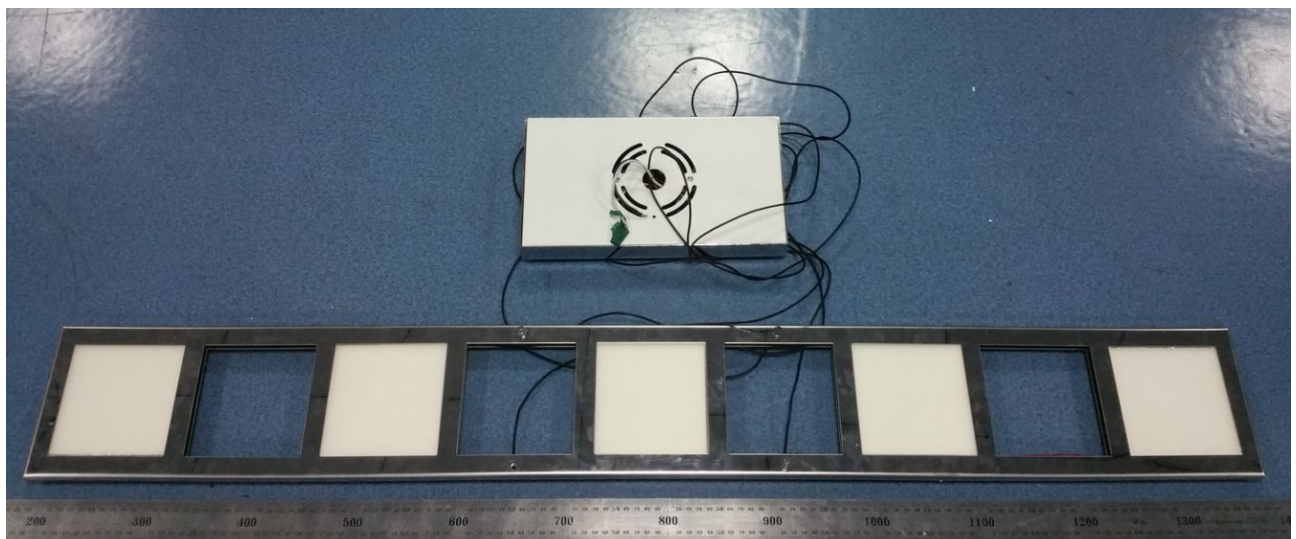
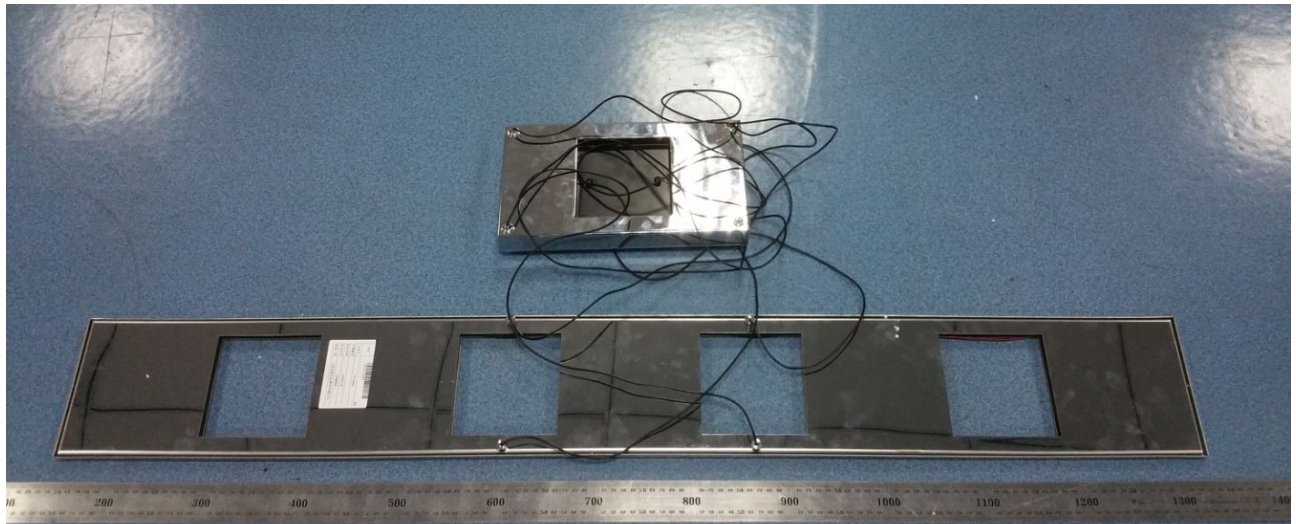
UNIT: cd

C (DEG) γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338			
0	570	566	562	561	560	561	563	565	570	566	562	561	560	561	563	565			
5	569	565	561	559	558	560	561	563	568	565	562	560	559	561	562	563			
10	565	561	557	554	553	555	555	558	564	561	558	557	556	557	558	558			
15	557	554	549	547	546	547	547	549	556	554	552	551	550	551	550	549			
20	544	546	538	535	534	535	533	535	543	544	541	540	540	540	538	536			
25	529	537	520	519	518	519	516	515	526	533	525	525	525	525	521	517			
30	514	529	498	497	496	497	492	489	508	523	503	504	505	504	499	493			
35	503	524	475	468	468	469	463	458	495	519	476	477	479	477	471	463			
40	497	519	453	434	434	435	428	425	490	519	449	443	446	444	437	427			
45	486	492	430	394	395	396	388	392	492	512	421	403	408	406	397	390			
50	466	454	400	349	351	352	343	362	487	485	391	359	364	362	354	358			
55	445	425	362	301	303	305	296	334	458	449	359	311	317	315	307	328			
60	399	390	315	252	255	256	247	303	398	397	324	261	267	265	258	300			
65	323	324	262	202	205	206	198	262	319	322	279	211	216	215	209	264			
70	245	246	206	153	156	157	149	209	241	244	225	161	166	164	160	215			
75	171	171	147	106	108	110	103	150	167	170	163	113	117	116	113	156			
80	102	102	88.5	62.8	64.4	65.4	59.8	89.1	98.8	99.9	99.8	68.2	72.7	71.4	69.0	95.6			
85	41.6	41.9	36.1	24.7	25.6	26.3	22.1	34.5	39.2	39.8	41.5	29.0	33.0	32.2	30.4	40.3			
90	2.61	3.03	1.23	0.09	0.09	0.05	0.12	1.38	2.13	1.82	1.52	0.10	0.36	0.45	0.71	1.97			
95	1.82	2.30	0.73	0.12	0.08	0.06	0.12	0.47	1.30	1.31	0.29	0.00	0.00	0.00	0.00	0.40			
100	1.99	2.15	0.71	0.15	0.08	0.14	0.12	0.61	1.27	1.31	0.28	0.00	0.00	0.00	0.00	0.29			
105	1.99	1.98	0.74	0.20	0.08	0.21	0.24	0.76	1.16	1.09	0.28	0.00	0.05	0.00	0.09	0.29			
110	2.01	1.53	0.85	0.35	0.08	0.27	0.23	0.90	0.93	1.07	0.29	0.06	0.08	0.00	0.11	0.26			
115	1.62	1.20	0.98	0.46	0.11	0.27	0.30	1.10	0.52	0.56	0.34	0.06	0.09	0.00	0.17	0.24			
120	1.64	1.03	1.07	0.51	0.23	0.32	0.30	1.17	0.51	0.50	0.40	0.06	0.09	0.00	0.18	0.24			
125	1.22	0.89	1.19	0.55	0.24	0.44	0.44	1.19	0.51	0.50	0.42	0.06	0.11	0.00	0.20	0.24			
130	0.99	0.92	1.22	0.63	0.29	0.50	0.45	0.96	0.54	0.53	0.46	0.08	0.18	0.00	0.21	0.24			
135	1.02	1.00	0.81	0.72	0.42	0.56	0.53	0.76	0.54	0.56	0.48	0.15	0.21	0.02	0.26	0.24			
140	1.02	1.03	0.76	0.74	0.44	0.56	0.59	0.93	0.54	0.56	0.50	0.20	0.24	0.02	0.29	0.24			
145	1.18	1.06	0.99	0.74	0.44	0.56	0.69	1.22	0.56	0.56	0.51	0.24	0.33	0.03	0.30	0.24			
150	1.27	1.06	1.18	0.69	0.45	0.56	0.71	1.20	0.65	0.56	0.54	0.25	0.33	0.06	0.32	0.24			
155	1.39	1.06	1.18	0.69	0.48	0.56	0.71	1.20	0.77	0.56	0.56	0.25	0.33	0.23	0.33	0.27			
160	1.39	1.06	1.10	0.58	0.48	0.56	0.71	1.20	1.28	0.76	0.85	0.44	0.44	0.24	0.39	0.44			
165	1.44	1.06	1.04	0.58	0.48	0.56	0.71	1.13	1.42	0.81	0.88	0.44	0.51	0.36	0.47	0.49			
170	1.56	1.06	1.04	0.58	0.55	0.56	0.71	1.02	1.50	0.95	0.88	0.48	0.51	0.45	0.51	0.61			
175	1.67	1.10	1.02	0.58	0.56	0.56	0.69	0.93	1.50	1.15	0.88	0.49	0.51	0.50	0.51	0.70			
180	1.64	1.10	0.91	0.58	0.56	0.56	0.59	0.82	1.50	1.20	0.88	0.51	0.51	0.50	0.51	0.78			

**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****