



## LM-79-08 Test Report

for

**ABBlighting, Inc.**

3 Adams St Belvidere, NJ 07823.

**30W DS WALLPACK**

**Model: ABWP30LED50DS**

**Laboratory: Leading Testing Laboratories**

**NVLAP CODE: 200960-0**

No.1805, DongLiu road, BinJiang District, Hangzhou, China

Tel: +86-571-56680806

www.ledtestlab.com

Report No.: HZ15050028a/R1

This report is replaced the old report No. HZ15050028a dated Jun. 02, 2015

The laboratory that conducted the testing detailed in this report has been accredited for SSL by NVLAP.

Reviewed by:

Engineer: April Zou  
Oct. 21, 2015

Approved by:

Manager: Jim Zhang  
Oct. 21, 2015

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

## Test Summary

Sample Tested: **ABWP30LED50DS**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
111.0	3141.3	28.31	0.9958
CCT (K)	CRI	Stabilization Time (Light & Power)	
4986	76.3	60	

Table 1: Executive Data Summary

### Test specifications:

**Date of Receipt** : May 25, 2015

**Date of Test** : May 28, 2015

**Test item** : Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters

**Reference Standard** : IESNA LM-79-2008 Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products

## TABLE OF CONTENT

LM-79-08 Test Report.....	1
Test Summary.....	2
Photo.....	4
TEST RESULTS .....	5
Spectral Power Distribution .....	6
Zonal Lumen Tabulation .....	7
Illuminance Plots.....	8
Luminous Intensity Distribution Plots.....	10
Luminous Intensity Data .....	11
EQUIPMENT LIST .....	13
TEST METHODS .....	13
Seasoning of SSL Product.....	13
Goniophotometer Method .....	13
Photometric and Electrical Measurements.....	13
Color Characteristics Measurements.....	14
Color Spatial Uniformity .....	14

## Photo



Figure 1- Overview of the sample

### Equipment Under Test (EUT)

<b>Name</b>	: 30W DS WALLPACK
<b>Model</b>	: ABWP30LED50DS
<b>Electrical Ratings</b>	: 100~277VAC, 50/60Hz, 30W
<b>Product Description</b>	: 5000K, Outdoor Wall-Mounted Area Luminaires Manufacturer of light source: Philips Lumileds Model of light source: LUXEON 3030 2D Quantity of light source: 40pcs
<b>Manufacturer</b>	: ABB Lighting (shanghai) Co., Ltd.
<b>Address</b>	: Room 1012, North Minch Fortune 108 Plaza, # 1839 Qixin road, Shanghai

## TEST RESULTS

Test ambient temperature was 24.5°C.

Base orientation was Light down. Test was conducted without a dimmer in the circuit.

The stabilization time of the sample was 60 minutes, and the total operating time including stabilization was 85 minutes.

The photometric distance of Goniophotometer is 2.475 m.

Luminous data was taken at 0.5° vertical intervals and 10.0° horizontal intervals.

Parameter	Result			Special Color Rendering Indices	
Test Voltage (V)	120.0	100.0	277.0	R1	74
Voltage frequency (Hz)	60	60	60	R2	83
Test Current (A)	0.237	0.288	0.113	R3	86
Power Factor	0.9958	0.9914	0.9204	R4	75
Test Power (W)	28.31	28.50	28.86	R5	74
THD A%	6.24	6.27	10.62	R6	74
Luminous Efficacy (lm/W)	111.0	110.0	108.7	R7	84
Total Luminous Flux (lm)	3141.3	3135.8	3135.9	R8	61
Color Rendering Index (CRI)	76.3			R9	-13
R9	-13			R10	56
Correlated Color Temperature (CCT) (K)	4986			R11	70
Chromaticity (Chroma x, Chroma y)	(0.3459, 0.3557)			R12	46
Chromaticity (Chroma u, Chroma v)	(0.2104, 0.3245)			R13	76
Chromaticity (Chroma u', Chroma v')	(0.2104, 0.4868)			R14	92
Duv	0.0017				
Average Beam Angle (°)	111.2				
Center Beam Candle Power (cd)	1131				
Spacing Criteria	1.31 (0°-180°)/ 1.32 (90°-270°)				
Zonal Lumens in the 0°-60°Zone	83.81%				
Zonal Lumens in the 60°-90°Zone	16.11%				
Zonal Lumens in the 90°-120°Zone	0.03%				
Zonal Lumens in the 120°-180°Zone	0.05%				

Table 2: Test data per Goniophotometer Method

Note: According to CIE 1976 (u', v') diagram,  $u' = u = 4x/(-2x+12y+3)$ ,  $v' = 3v/2 = 9y/(-2x+12y+3)$ .

## Spectral Power Distribution

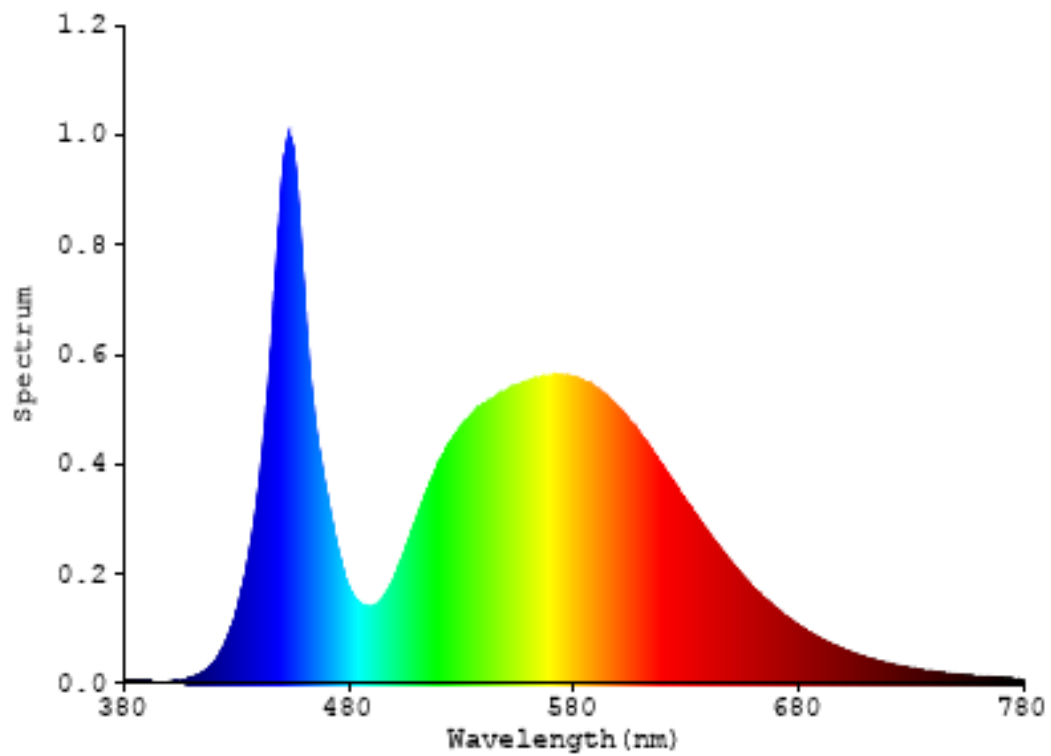


Chart 1: Spectral Power Distribution

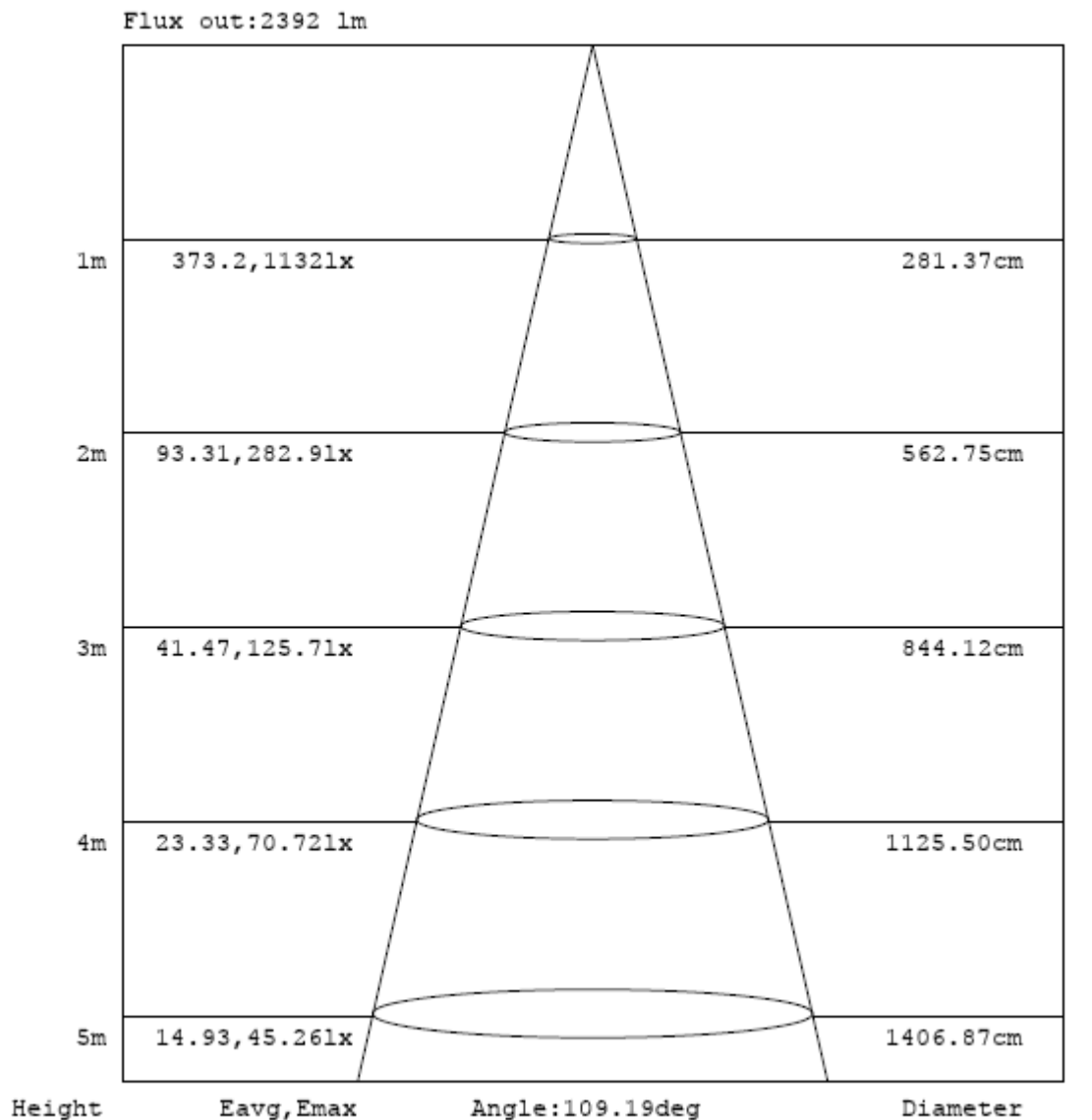
## Zonal Lumen Tabulation

$\gamma(^{\circ})$	Lumens	% Total
0- 10	107.498	3.42%
10- 20	311.68	9.92%
20- 30	482.176	15.35%
30- 40	594.594	18.93%
40- 50	616.75	19.63%
50- 60	520.08	16.56%
60- 70	334.773	10.66%
70- 80	145.773	4.64%
80- 90	25.595	0.81%
90-100	0.277	0.01%
100-110	0.281	0.01%
110-120	0.296	0.01%
120-130	0.308	0.01%
130-140	0.34	0.01%
140-150	0.338	0.01%
150-160	0.284	0.01%
160-170	0.189	0.01%
170-180	0.068	0.00%
Total	3141.3	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	2632.778	83.81%
60- 90	506.141	16.11%
0-90	3138.919	99.92%
90- 180	2.381	0.08%
0- 180	3141.3	100%

Table 3: Zonal Lumen Data

## Illuminance Plots



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

Chart 2: Beam Angle



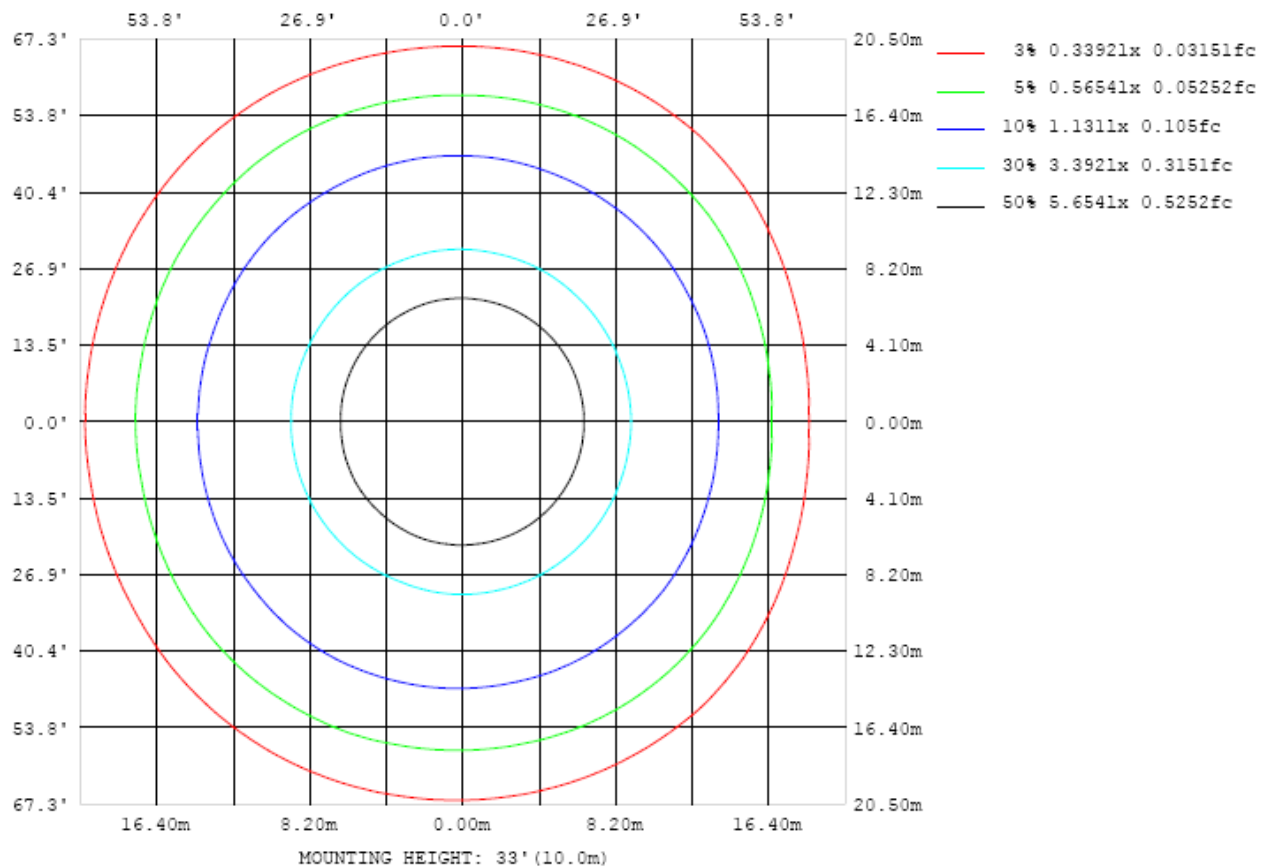


Chart 3: Illuminance Plot (Footcandles)

## Luminous Intensity Distribution Plots

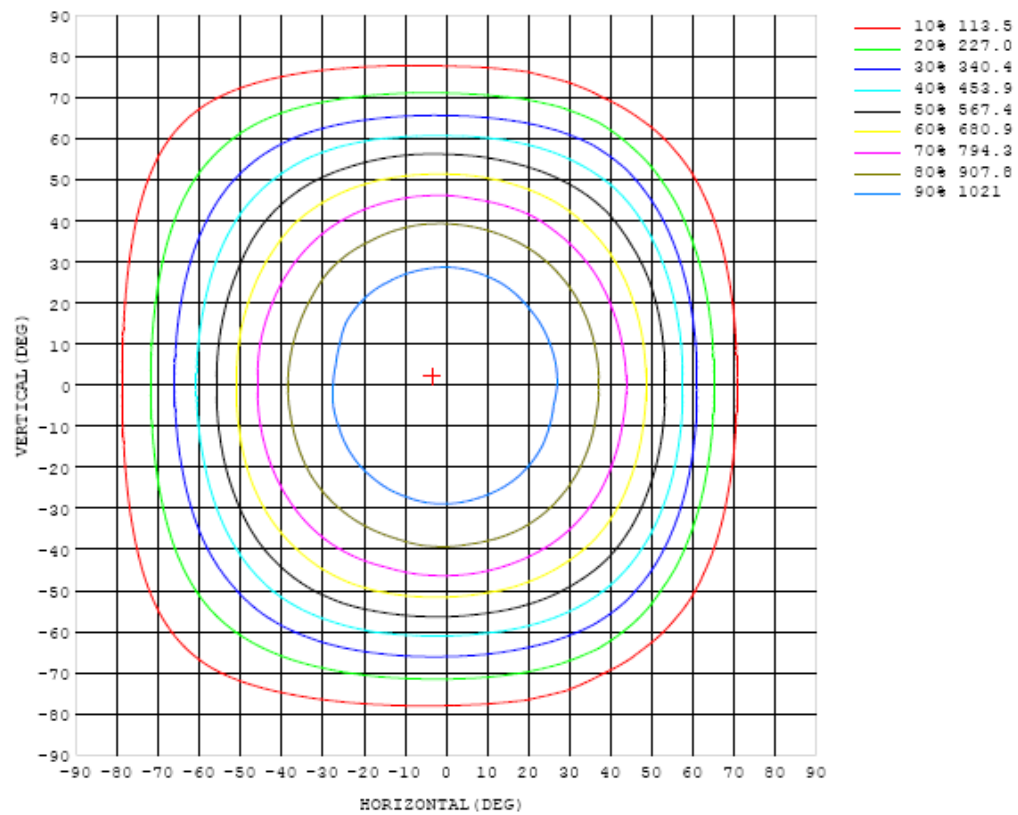


Chart 4: Isocandela Plot

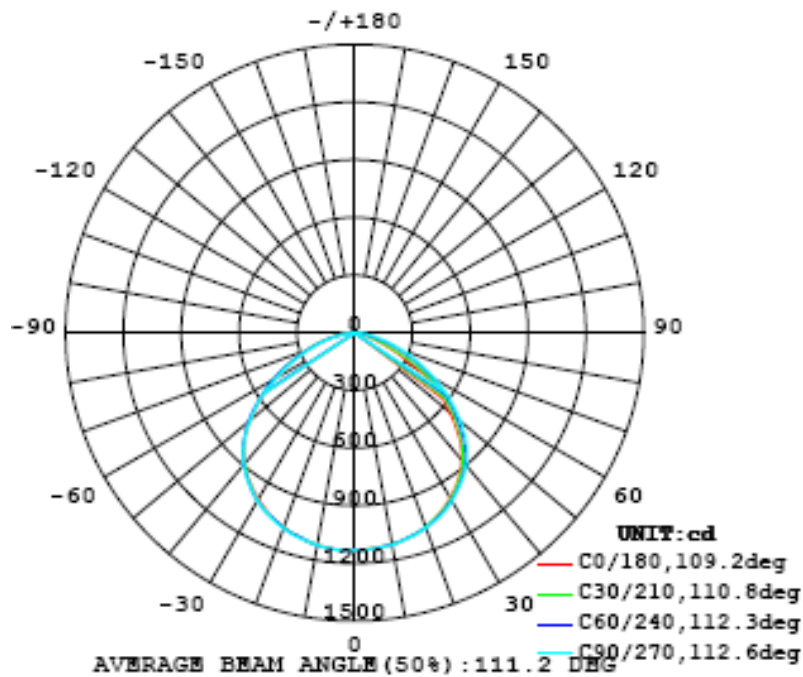


Chart 5: Polar Candela Distribution

## Luminous Intensity Data

Table--1 UNIT: cd

C (DEG) y (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131
5	1125	1126	1127	1127	1127	1127	1128	1128	1128	1128	1129	1129	1129	1129	1129	1130	1129	1129	1131
10	1117	1118	1118	1117	1116	1115	1117	1119	1120	1120	1120	1118	1118	1117	1118	1122	1121	1121	1122
15	1100	1101	1101	1100	1103	1103	1101	1100	1102	1103	1104	1103	1102	1102	1100	1101	1103	1103	1104
20	1076	1073	1074	1075	1076	1078	1079	1079	1080	1080	1083	1084	1083	1078	1077	1077	1077	1079	1078
25	1039	1034	1037	1041	1044	1047	1047	1049	1051	1053	1053	1052	1052	1050	1049	1048	1045	1045	1043
30	992	991	993	998	1002	1004	1006	1008	1009	1010	1012	1011	1009	1008	1007	1005	1003	1001	998
35	936	935	938	943	946	950	955	956	957	960	961	961	959	956	957	958	952	949	949
40	865	863	867	873	880	886	892	896	896	900	900	894	894	894	893	893	891	889	890
45	767	766	772	783	789	797	804	812	819	823	822	816	818	820	818	815	814	814	813
50	646	651	659	674	684	691	699	706	712	718	723	728	727	726	721	717	714	710	707
55	521	528	537	553	568	576	585	592	595	601	607	612	619	618	611	607	599	593	588
60	373	384	402	421	441	455	466	473	475	480	485	494	495	498	494	486	476	471	473
65	228	233	247	277	314	336	347	354	361	365	369	373	377	376	373	365	363	361	364
70	125	126	136	153	178	218	237	249	255	259	262	264	265	265	262	262	261	261	262
75	51.9	54.4	59.7	68.6	83.2	105	140	155	160	163	166	168	169	169	170	171	171	171	173
80	3.31	4.10	5.57	13.4	23.5	35.0	52.5	75.5	82.1	84.9	88.0	89.8	90.9	91.9	94.1	95.6	95.4	95.7	97.8
85	0.11	0.11	0.13	0.15	0.18	1.82	5.25	11.7	22.7	25.3	27.8	30.6	33.2	35.2	36.8	37.9	38.0	37.9	38.7
90	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.12	0.12	0.12	0.53	0.98	2.40	2.35	2.92	3.79	2.79	2.40	1.13
95	0.11	0.11	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.11	0.11	0.11	0.10	0.10	0.22
100	0.14	0.13	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.15	0.16	0.16	0.15	0.15	0.14	0.12	0.11	0.11	0.27
105	0.17	0.16	0.16	0.15	0.16	0.16	0.16	0.16	0.17	0.17	0.18	0.19	0.18	0.17	0.16	0.14	0.14	0.14	0.33
110	0.21	0.20	0.20	0.19	0.19	0.19	0.20	0.21	0.21	0.21	0.21	0.21	0.20	0.19	0.18	0.17	0.16	0.16	0.36
115	0.26	0.25	0.24	0.24	0.23	0.24	0.24	0.26	0.24	0.25	0.25	0.24	0.23	0.22	0.21	0.21	0.20	0.20	0.36
120	0.32	0.31	0.30	0.29	0.29	0.30	0.30	0.30	0.29	0.29	0.29	0.29	0.28	0.27	0.26	0.26	0.25	0.25	0.34
125	0.37	0.37	0.35	0.34	0.34	0.36	0.37	0.35	0.35	0.34	0.34	0.34	0.33	0.32	0.32	0.32	0.31	0.31	0.35
130	0.42	0.42	0.41	0.40	0.39	0.41	0.42	0.41	0.40	0.40	0.40	0.39	0.39	0.38	0.37	0.38	0.37	0.37	0.36
135	0.46	0.47	0.46	0.46	0.45	0.45	0.46	0.45	0.44	0.45	0.45	0.44	0.44	0.43	0.42	0.44	0.43	0.42	0.41
140	0.52	0.52	0.51	0.50	0.49	0.50	0.49	0.48	0.48	0.49	0.48	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.46
145	0.57	0.57	0.57	0.55	0.53	0.53	0.52	0.52	0.52	0.52	0.51	0.51	0.51	0.51	0.50	0.51	0.51	0.51	0.52
150	0.61	0.61	0.62	0.60	0.56	0.55	0.55	0.54	0.56	0.56	0.55	0.55	0.55	0.55	0.55	0.55	0.56	0.55	0.57
155	0.65	0.64	0.64	0.62	0.57	0.56	0.56	0.56	0.57	0.57	0.57	0.57	0.57	0.58	0.60	0.61	0.61	0.61	0.63
160	0.67	0.66	0.65	0.64	0.59	0.57	0.56	0.57	0.55	0.58	0.59	0.60	0.61	0.64	0.65	0.65	0.63	0.63	0.66
165	0.70	0.70	0.69	0.67	0.62	0.61	0.61	0.59	0.58	0.61	0.62	0.64	0.66	0.67	0.67	0.66	0.66	0.66	0.69
170	0.73	0.72	0.71	0.66	0.62	0.63	0.65	0.62	0.61	0.64	0.67	0.69	0.70	0.70	0.69	0.69	0.69	0.69	0.70
175	0.76	0.74	0.71	0.71	0.70	0.68	0.68	0.68	0.68	0.68	0.69	0.69	0.69	0.69	0.69	0.69	0.68	0.68	0.71
180	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77

Table 4: Luminous Intensity Data

Table--2

UNIT: cd

C (DEG) y (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131		
5	1132	1133	1133	1133	1133	1132	1132	1132	1132	1132	1131	1131	1130	1130	1129	1128	1126		
10	1124	1122	1120	1120	1122	1123	1125	1125	1122	1123	1123	1122	1121	1121	1122	1121	1119		
15	1104	1101	1101	1102	1101	1101	1103	1105	1106	1107	1103	1103	1105	1105	1104	1103	1102		
20	1078	1078	1078	1077	1079	1080	1081	1083	1083	1084	1080	1080	1079	1078	1077	1076	1078		
25	1041	1043	1047	1050	1049	1048	1050	1049	1049	1050	1048	1045	1042	1039	1039	1039	1041		
30	1000	1004	1006	1009	1008	1009	1011	1009	1008	1006	1003	1001	998	996	995	992	991		
35	948	951	953	955	958	957	960	962	958	954	952	951	947	942	940	938	935		
40	889	886	889	894	895	895	898	900	897	893	888	883	877	871	868	864	864		
45	815	812	811	813	817	819	820	819	815	805	802	799	786	778	773	767	766		
50	711	710	711	717	721	720	718	714	710	705	699	692	683	672	663	655	650		
55	590	589	598	605	607	603	604	601	595	589	581	576	570	562	547	539	529		
60	472	479	486	486	491	489	484	474	468	468	466	462	452	441	420	400	382		
65	365	367	371	374	374	370	362	356	352	350	348	343	334	310	273	246	234		
70	263	264	265	267	265	261	256	251	246	242	240	232	212	175	153	137	129		
75	173	173	173	172	171	167	164	159	155	152	147	131	100	81.3	67.9	59.0	52.8		
80	97.4	97.3	96.5	94.6	92.2	89.9	85.8	82.3	78.1	74.9	67.5	44.9	31.3	19.9	9.44	3.23	1.50		
85	38.4	38.0	36.9	35.3	33.0	30.2	27.2	23.9	21.2	18.5	9.05	0.82	0.35	0.26	0.23	0.21	0.21		
90	1.12	1.13	1.07	1.05	0.94	0.70	0.40	0.29	0.25	0.25	0.25	0.25	0.25	0.24	0.24	0.24	0.23		
95	0.22	0.23	0.24	0.26	0.27	0.28	0.29	0.30	0.30	0.30	0.30	0.29	0.29	0.29	0.29	0.29	0.28		
100	0.28	0.29	0.30	0.35	0.36	0.37	0.38	0.37	0.36	0.35	0.35	0.34	0.34	0.34	0.34	0.33	0.33		
105	0.34	0.35	0.37	0.39	0.41	0.42	0.42	0.41	0.40	0.40	0.38	0.37	0.36	0.36	0.35	0.34	0.34		
110	0.38	0.38	0.39	0.40	0.41	0.42	0.42	0.41	0.40	0.39	0.38	0.36	0.36	0.34	0.34	0.34	0.33		
115	0.37	0.37	0.37	0.38	0.39	0.39	0.39	0.38	0.38	0.37	0.36	0.34	0.33	0.32	0.32	0.33	0.33		
120	0.35	0.35	0.35	0.35	0.35	0.35	0.36	0.35	0.34	0.33	0.33	0.32	0.31	0.31	0.31	0.32	0.33		
125	0.35	0.35	0.34	0.33	0.33	0.34	0.35	0.35	0.35	0.34	0.34	0.33	0.33	0.33	0.34	0.35	0.36		
130	0.36	0.36	0.36	0.35	0.36	0.37	0.37	0.38	0.38	0.38	0.39	0.38	0.38	0.39	0.40	0.40	0.41		
135	0.41	0.41	0.42	0.42	0.42	0.43	0.44	0.45	0.45	0.44	0.43	0.44	0.45	0.45	0.45	0.46	0.46		
140	0.47	0.48	0.49	0.50	0.50	0.50	0.50	0.50	0.51	0.49	0.49	0.50	0.51	0.51	0.51	0.52	0.51		
145	0.53	0.54	0.55	0.55	0.56	0.56	0.56	0.56	0.57	0.54	0.53	0.55	0.56	0.57	0.57	0.59	0.58		
150	0.59	0.60	0.60	0.60	0.61	0.60	0.60	0.60	0.59	0.59	0.59	0.59	0.60	0.62	0.65	0.64	0.63		
155	0.64	0.65	0.65	0.66	0.65	0.64	0.62	0.62	0.62	0.61	0.62	0.62	0.63	0.65	0.69	0.69	0.68		
160	0.67	0.68	0.69	0.70	0.69	0.68	0.66	0.66	0.65	0.62	0.64	0.63	0.65	0.68	0.70	0.70	0.69		
165	0.71	0.71	0.71	0.71	0.72	0.72	0.71	0.69	0.67	0.66	0.67	0.68	0.68	0.69	0.72	0.74	0.72		
170	0.72	0.72	0.72	0.73	0.74	0.75	0.75	0.74	0.73	0.69	0.69	0.72	0.72	0.70	0.76	0.77	0.76		
175	0.74	0.75	0.75	0.76	0.76	0.76	0.77	0.77	0.76	0.75	0.74	0.72	0.70	0.70	0.70	0.74	0.76		
180	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77		

Table 5: Luminous Intensity Data

## EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Sep. 18, 2014	Sep. 17, 2015
Digital Power Meter	PF2010A	HZTE028-01	Sep. 18, 2014	Sep. 17, 2015
AC Power Supply	PCR 500L	HZTE001-08	Sep. 18, 2014	Sep. 17, 2015
DC Power Supply	WY12010	HZTE004-03	Sep. 18, 2014	Sep. 17, 2015
Temperature Meter	TES1310	HZTE017-01	Sep. 18, 2014	Sep. 17, 2015
Standard Source	D908	HZTE012-01	Sep. 18, 2014	Sep. 17, 2015
Standard source	SCL-1400	HZTE012-02	Sep. 18, 2014	Sep. 17, 2015

Table 6: Test Equipment List

## TEST METHODS

### Seasoning of SSL Product

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

### Goniophotometer Method

#### Photometric and Electrical Measurements

An EVERFINE Type C Model GO-R5000 Goniophotometer was used to measure the intensity at each angle of distribution for each sample. The photometric distance is 2.475m for near-field measurement or 30m for far-field measurement. Bandwidth of spectroradiometer is 380nm-780nm.

Ambient temperature was measured at the same height of the sample mounted on the Goniophotometer equipment. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.

The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaires). 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 minutes apart, is less than 0.5 %.

Electrical measurements including voltage, current, and power were measured using the Everfine Digital Power Meter.

Some graphics were created with Photometric Plus software.

The standard reference of the Goniophotometer system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Metrology P.R. China.

The uncertainty of goniophotometer system reported in this document is expanded uncertainty is 1.94% with a coverage factor k=2.

## Color Characteristics Measurements

The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as values that are spatially average, weighted to intensity, over the angular range where light is intentionally emitted from the SSL product. The color characteristics measurements are using gonio-spectroradiometer.

## Color Spatial Uniformity

The characteristics of SSL products may be spatially non-uniform, the chromaticity coordinate shall be measured at two vertical planes ( $C=0^\circ/180^\circ$  and  $C=90^\circ/270^\circ$ ) and at  $10^\circ$  or less intervals for vertical angle until the light output dropped to below 10% of the peak intensity. The averaged weighted chromaticity coordinate was calculated from these points. The data was then analyzed to check for delta color differences of the  $u'$ ,  $v'$  chromaticity coordinates. The spatial non-uniformity of chromaticity,  $\Delta u'v'$ , is determined as the maximum deviation (distance on the CIE ( $u'$ ,  $v'$ ) diagram) among all measured points from the spatially averaged chromaticity coordinate.

The geometry for the chromaticity measurement using gonio-spectroradiometer is shown as following.



\*\*\* End of Report \*\*\*

This report is considered invalidated without the Special Seal for Inspection of the LTL. This report shall not be altered, increased or deleted. The results shown in this test report refer only to the sample(s) tested. Without written approval of LTL, this test report shall not be copied except in full and published as advertisement.