



LM-79-08 Test Report

for

GREEN CREATIVE LTD

756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

WALL PACK

Model: 54HIDWP/850/277V/EX39

54HIDWP/850/277V/E26

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.: HZ18020011f

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

Review by:

Engineer: April Zou

Feb. 11, 2018

Manager: Jim Zhang

Feb. 11, 2018

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: **54HIDWP/850/277V/EX39**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
152.7	7973.4	52.21	0.9886
CCT (K)	CRI	Stabilization Time (Light & Power)	
5084	84.6	60	

Table 1: Executive Data Summary

Note: The above results are recorded/ derived from measurements made using an Integrating Sphere.

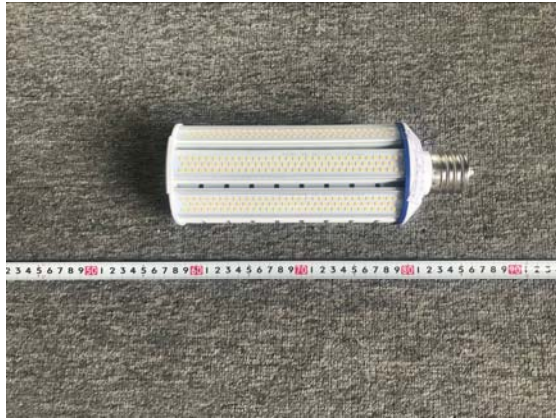
Test specifications:

Date of Receipt	: Feb. 06, 2018
Date of Test	: Feb. 09, 2018
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

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Sample Photos



54HIDWP/850/277V/EX39



54HIDWP/850/277V/E26

Equipment Under Test (EUT)

Name	: WALL PACK
Model	: 54HIDWP/850/277V/EX39
Electrical Ratings	: 120-277V, 60Hz
Product Description	: EX39/E26 base, 5000K
Manufacturer	: GREEN CREATIVE LTD
Address	: 756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

Note: Model 54HIDWP/850/277V/EX39 and model 54HIDWP/850/277V/E26 are identical except their different screw base. Model 54HIDWP/850/277V/EX39 is EX39 base. 54HIDWP/850/277V/E26 is E26 base. Model 54HIDWP/850/277V/EX39 was chosen to be representative model in this report.

TEST RESULTS

Test ambient temperature was 24.8°C.

Base orientation was base up. 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 95 minutes.

The photometric distance of Goniophotometer is 2.47 m.

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

Parameter	Result	
Test Voltage (V)	120.0	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.440	0.209
Power Factor	0.9886	0.9030
Test Power (W)	52.21	52.26
THD A%	13.96	21.48
Luminous Efficacy (lm/W)	152.7	154.2
Total Luminous Flux (lm)	7973.4	8059.1
Color Rendering Index (CRI)	84.6	
R9	16	
Correlated Color Temperature (CCT) (K)	5084	
Chromaticity (Chroma x, Chroma y)	(0.3429, 0.3508)	
Chromaticity (Chroma u, Chroma v)	(0.2102, 0.3227)	
Chromaticity (Chroma u', Chroma v')	(0.2102, 0.4840)	
Duv	0.0006	
Average Beam Angle (°)	120.2	
Center Beam Candle Power (cd)	2304	
Spacing Criteria	1.24 (0°-180°)/ 1.24 (90°-270°)	
Zonal Lumens in the 0°-60°Zone	66.22%	
Zonal Lumens in the 60°-90°Zone	26.94%	
Zonal Lumens in the 90°-120°Zone	6.52%	
Zonal Lumens in the 120°-180°Zone	0.32%	

Special Color Rendering Indices	
R1	83
R2	89
R3	93
R4	85
R5	84
R6	85
R7	88
R8	70
R9	16
R10	74
R11	84
R12	65
R13	85
R14	96
Rf	83
Rg	96

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

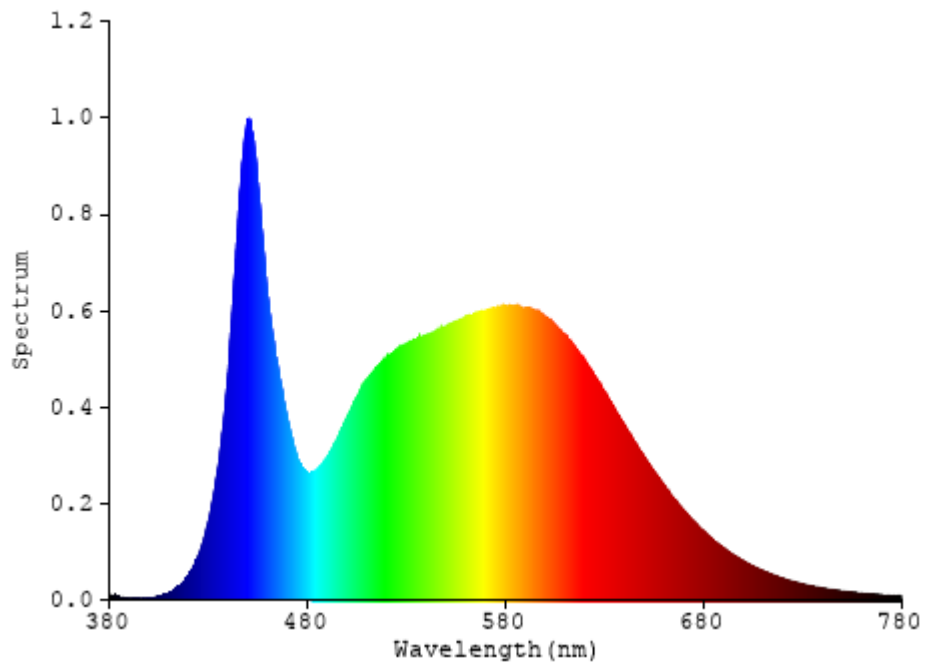


Chart 1: Spectral Power Distribution

Zonal Lumen Tabulation

$\gamma(^{\circ})$	Lumens	% Total
0- 10	218.535	2.74%
10- 20	625.377	7.84%
20- 30	947.17	11.88%
30- 40	1138.662	14.28%
40- 50	1205.675	15.12%
50- 60	1144.336	14.35%
60- 70	966.748	12.12%
70- 80	708.001	8.88%
80- 90	473.554	5.94%
90-100	287.28	3.60%
100-110	164.267	2.06%
110-120	68.111	0.85%
120-130	15.426	0.19%
130-140	4.66	0.06%
140-150	2.803	0.04%
150-160	1.735	0.02%
160-170	0.812	0.01%
170-180	0.255	0.00%
Total	7973.4	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	5279.755	66.22%
60- 90	2148.303	26.94%
0-90	7428.058	93.16%
90- 180	545.349	6.84%
0- 180	7973.4	100%

Table 3: Zonal Lumen Data

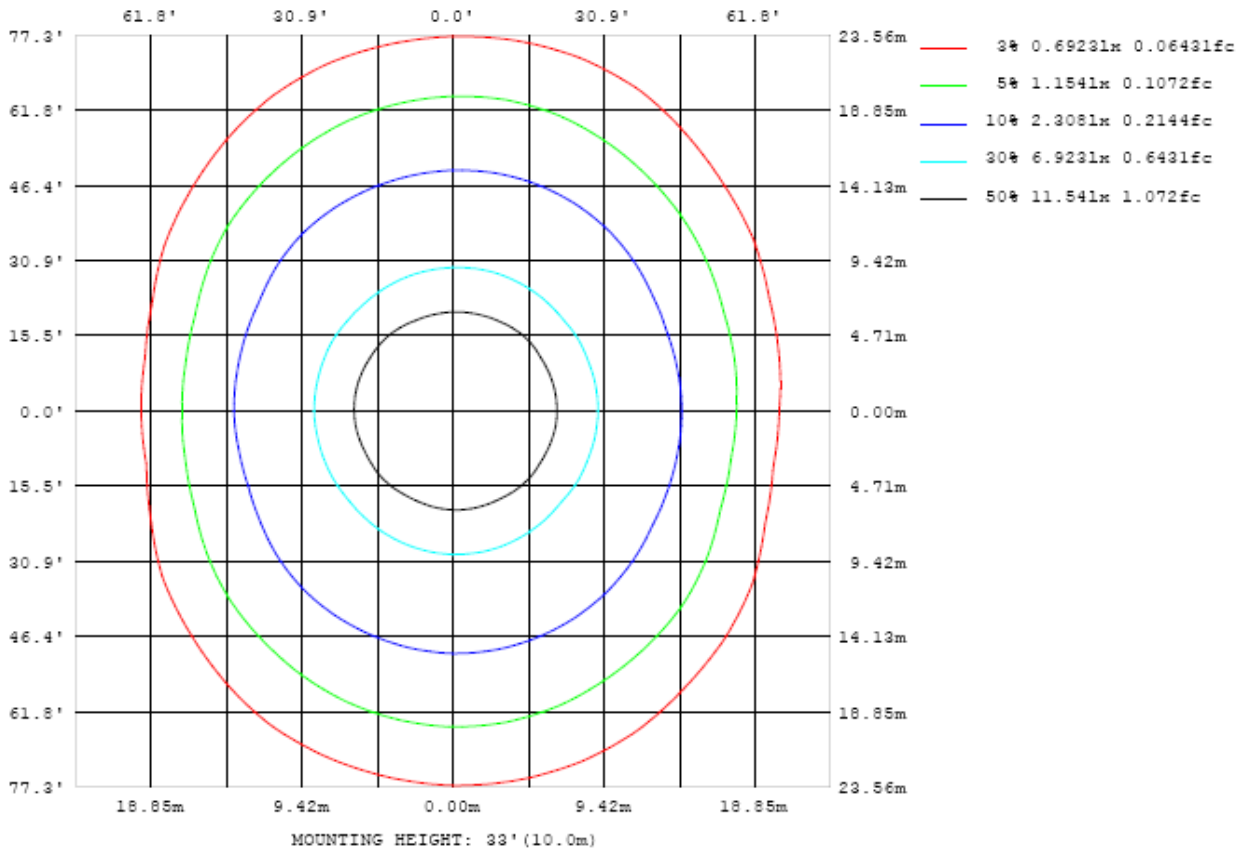


Chart 2: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots

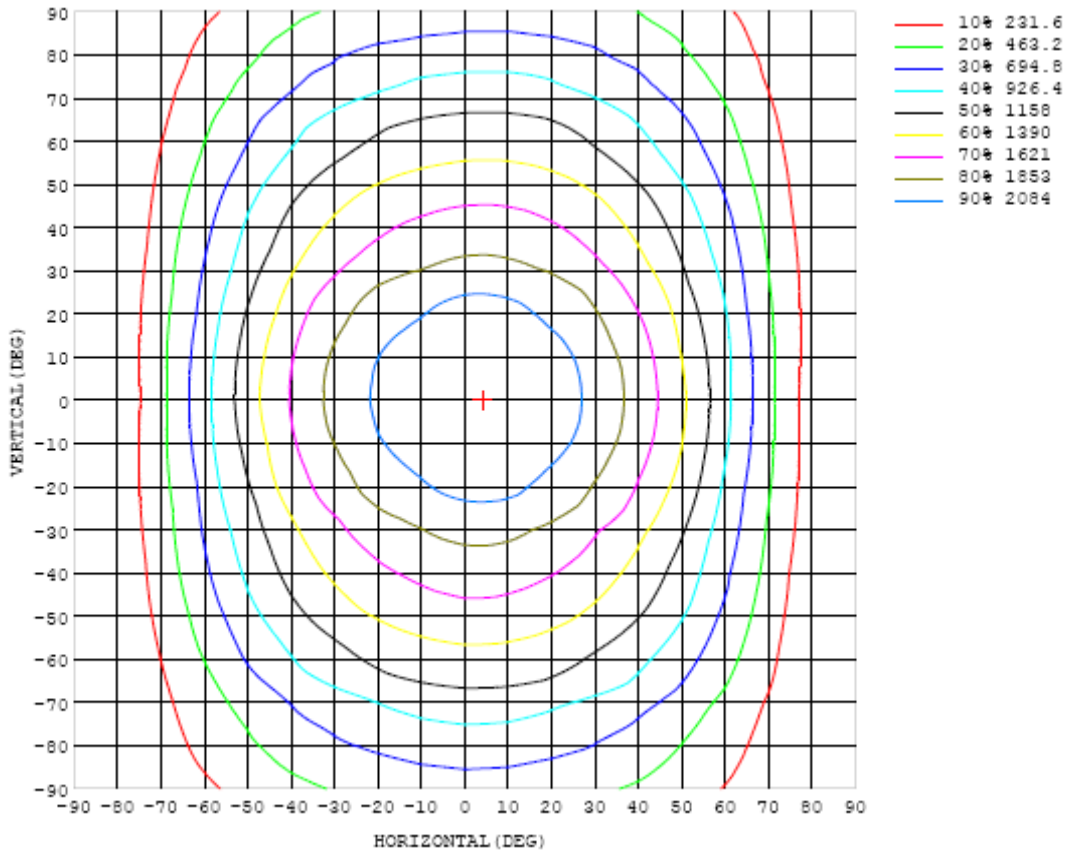


Chart 3: Isocandela Plot

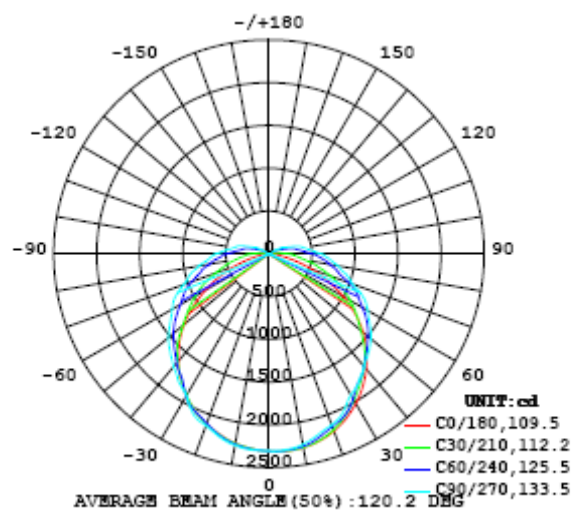


Chart 4: Polar Candela Distribution

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	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304
5	2316	2314	2314	2314	2312	2309	2307	2304	2301	2299	2295	2292	2290	2288	2284	2284	2281	2282	2289
10	2302	2301	2299	2298	2293	2286	2283	2277	2269	2264	2258	2253	2249	2249	2245	2243	2243	2243	2250
15	2265	2264	2262	2259	2251	2237	2225	2213	2201	2194	2185	2179	2178	2181	2182	2182	2185	2186	2191
20	2205	2204	2200	2192	2174	2158	2148	2145	2140	2130	2119	2105	2093	2089	2093	2101	2108	2109	2117
25	2123	2121	2111	2091	2073	2076	2084	2075	2056	2041	2029	2023	2020	2008	1990	1995	2012	2019	2028
30	2020	2016	1996	1973	1975	1980	1956	1928	1915	1906	1891	1878	1883	1901	1893	1875	1891	1909	1918
35	1899	1892	1866	1849	1856	1824	1823	1837	1834	1820	1806	1789	1762	1740	1755	1757	1747	1776	1789
40	1758	1748	1726	1720	1696	1699	1719	1729	1733	1721	1705	1684	1654	1630	1603	1616	1612	1622	1638
45	1604	1592	1568	1571	1550	1579	1608	1627	1639	1634	1614	1584	1550	1517	1475	1448	1463	1445	1473
50	1428	1419	1398	1394	1429	1464	1502	1531	1550	1548	1525	1490	1449	1403	1350	1297	1255	1253	1287
55	1223	1217	1224	1241	1302	1351	1392	1418	1433	1429	1406	1375	1337	1287	1221	1138	1071	1061	1073
60	994	977	1004	1089	1168	1219	1255	1289	1318	1323	1297	1253	1202	1147	1083	997	906	862	853
65	753	745	814	937	1016	1069	1138	1188	1213	1213	1186	1149	1093	1012	927	847	734	638	629
70	523	540	646	762	857	952	994	1018	1032	1033	1009	972	928	879	798	676	564	450	412
75	304	342	473	591	707	765	833	889	923	930	907	863	799	717	625	531	404	290	224
80	144	189	309	428	545	648	718	772	808	815	793	751	690	609	502	388	266	155	97.8
85	46.2	80.7	189	315	439	541	615	665	697	704	684	644	587	509	408	292	170	73.6	33.6
90	6.51	30.7	110	221	335	432	503	558	591	602	579	538	479	398	301	193	93.8	28.2	2.93
95	0.00	11.1	54.2	133	227	317	389	446	480	490	473	433	377	301	216	131	55.8	11.4	0.00
100	0.00	4.56	27.1	84.7	173	258	321	372	402	413	400	367	318	245	157	78.0	33.5	6.87	0.10
105	0.10	3.24	15.6	42.6	96.6	168	237	294	327	338	323	285	228	155	90.7	50.5	18.2	4.83	0.36
110	0.50	2.12	8.82	25.9	64.2	118	154	191	220	228	216	189	155	114	55.8	24.9	10.2	3.44	0.62
115	0.70	1.69	5.75	12.9	26.4	56.7	99.3	146	169	178	169	142	89.1	54.0	23.4	15.3	6.82	2.74	0.79
120	0.86	1.52	4.10	7.69	14.6	26.1	36.8	60.3	78.7	86.2	77.7	56.7	33.6	25.6	15.2	8.97	5.27	2.15	0.96
125	1.05	1.51	3.35	5.78	8.32	12.1	20.9	30.3	33.7	34.5	34.1	30.0	19.3	12.8	9.77	6.97	4.30	2.12	1.19
130	1.26	1.58	2.92	4.64	6.43	8.26	9.91	11.1	12.4	13.4	12.7	11.8	10.8	9.44	7.50	5.60	3.68	1.88	1.52
135	1.51	1.65	2.48	4.01	5.22	6.39	7.30	7.90	8.13	8.10	8.33	8.36	8.03	7.31	6.12	4.70	3.23	1.88	1.89
140	1.73	1.78	2.29	3.54	4.49	5.39	5.94	6.15	6.14	6.06	6.34	6.58	6.50	6.06	5.22	4.16	2.84	1.99	2.25
145	1.89	1.90	2.20	3.23	4.16	4.65	5.01	5.12	5.05	4.97	5.18	5.38	5.36	5.12	4.64	3.77	2.38	2.11	2.56
150	1.99	2.00	2.06	2.50	3.70	4.30	4.43	4.44	4.42	4.39	4.52	4.63	4.66	4.63	4.29	3.21	2.17	2.19	2.77
155	2.11	2.12	2.15	2.23	2.69	3.82	4.10	4.24	4.18	4.17	4.27	4.39	4.38	4.12	3.47	2.34	2.21	2.28	2.88
160	2.24	2.24	2.25	2.27	2.30	2.44	3.15	4.04	3.98	4.02	4.08	4.15	3.89	2.70	2.41	2.35	2.26	2.38	2.91
165	2.38	2.38	2.38	2.37	2.37	2.37	2.35	2.32	2.32	2.35	2.38	2.38	2.40	2.41	2.40	2.39	2.37	2.48	2.90
170	2.53	2.53	2.53	2.51	2.50	2.49	2.49	2.48	2.42	2.43	2.44	2.43	2.46	2.48	2.49	2.51	2.50	2.58	2.86
175	2.71	2.71	2.71	2.70	2.69	2.67	2.65	2.63	2.61	2.61	2.61	2.63	2.65	2.67	2.69	2.70	2.70	2.71	2.76
180	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62

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	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304	2304		
5	2287	2286	2288	2287	2289	2295	2297	2297	2301	2302	2303	2306	2306	2304	2304	2305	2306		
10	2247	2247	2254	2258	2258	2262	2265	2268	2273	2279	2283	2286	2290	2292	2294	2292	2292		
15	2189	2192	2197	2197	2201	2202	2205	2208	2217	2225	2231	2240	2250	2254	2258	2261	2258		
20	2116	2121	2121	2119	2113	2111	2117	2128	2139	2148	2153	2163	2178	2190	2198	2202	2202		
25	2026	2032	2030	2018	2014	2032	2048	2062	2074	2085	2090	2095	2090	2095	2112	2120	2121		
30	1920	1920	1913	1910	1929	1924	1910	1905	1915	1931	1957	1991	2011	2000	1997	2016	2018		
35	1792	1789	1783	1803	1783	1768	1790	1810	1827	1838	1840	1840	1861	1894	1878	1886	1899		
40	1637	1639	1649	1644	1638	1669	1681	1705	1725	1734	1735	1734	1725	1722	1756	1737	1760		
45	1465	1470	1502	1488	1522	1556	1580	1603	1623	1634	1636	1625	1605	1585	1578	1600	1598		
50	1283	1280	1305	1363	1406	1446	1476	1499	1523	1536	1535	1518	1488	1446	1421	1435	1411		
55	1081	1107	1141	1224	1286	1324	1354	1378	1401	1414	1415	1400	1367	1314	1249	1209	1214		
60	858	896	987	1080	1142	1189	1234	1267	1296	1305	1292	1262	1219	1168	1097	1037	1020		
65	643	719	829	915	1003	1085	1146	1176	1203	1214	1199	1151	1075	1004	941	850	786		
70	453	550	654	771	891	955	1001	1033	1054	1066	1058	1023	963	864	763	670	559		
75	275	393	518	641	735	819	888	928	952	957	931	876	813	729	618	482	378		
80	146	259	390	514	615	700	767	805	825	832	807	755	691	586	471	346	213		
85	63.4	161	288	410	516	590	648	682	701	706	686	640	573	470	344	217	104		
90	26.0	91.1	194	303	412	490	558	594	612	615	590	541	461	362	255	134	43.9		
95	10.9	50.2	121	207	301	379	446	483	501	499	474	421	339	246	151	66.8	14.7		
100	5.25	23.7	72.8	162	248	311	367	401	414	414	388	336	269	192	104	34.0	6.81		
105	3.87	15.5	41.5	95.6	163	240	302	343	357	356	327	273	195	119	56.9	18.4	4.88		
110	2.66	9.16	24.7	61.7	110	154	200	236	249	246	220	174	122	78.4	33.7	11.4	3.16		
115	2.08	6.29	13.2	28.0	61.0	105	149	176	183	183	164	125	75.2	37.6	14.7	7.07	2.56		
120	1.81	4.93	8.44	15.2	27.4	39.6	71.6	96.9	103	102	86.0	52.6	27.7	20.2	8.32	5.09	2.35		
125	1.80	4.04	6.67	9.40	13.0	22.2	34.0	34.2	35.6	34.9	33.2	27.9	13.9	9.23	6.58	4.13	2.02		
130	1.95	3.66	5.55	7.47	9.33	11.0	12.3	14.6	16.8	15.5	12.7	10.5	8.96	7.18	5.46	3.65	1.90		
135	2.11	3.25	4.96	6.27	7.53	8.40	8.85	8.94	8.67	8.65	8.49	7.90	7.08	6.00	4.81	3.47	1.95		
140	2.33	3.12	4.72	5.59	6.47	7.03	7.17	7.03	6.78	6.85	6.92	6.68	6.20	5.35	4.47	3.21	2.16		
145	2.55	3.02	4.40	5.38	5.91	6.11	6.15	6.06	5.89	5.94	6.00	5.87	5.65	5.19	4.37	3.15	2.39		
150	2.73	2.90	3.64	5.02	5.61	5.70	5.69	5.57	5.45	5.48	5.56	5.60	5.43	4.95	3.85	2.82	2.60		
155	2.83	2.87	3.12	4.03	4.96	5.25	5.35	5.33	5.27	5.29	5.32	5.26	4.96	4.19	3.08	2.88	2.71		
160	2.89	2.90	2.92	2.98	3.51	4.62	4.86	4.90	4.87	4.86	4.83	4.73	4.25	3.08	2.91	2.91	2.78		
165	2.87	2.87	2.87	2.87	2.86	2.88	2.94	3.15	3.31	3.30	3.12	2.92	2.83	2.86	2.87	2.89	2.80		
170	2.84	2.84	2.84	2.83	2.81	2.80	2.78	2.76	2.74	2.74	2.73	2.77	2.79	2.80	2.82	2.86	2.82		
175	2.78	2.77	2.77	2.76	2.75	2.73	2.72	2.69	2.67	2.66	2.67	2.68	2.72	2.74	2.76	2.78	2.78		
180	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62		

Table 5: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Aug. 23, 2017	Aug. 22, 2018
Digital Power Meter	PF2010A	HZTE028-01	Aug. 10, 2017	Aug. 09, 2018
AC Power Supply	DPS1060	HZTE001-06	Aug. 10, 2017	Aug. 09, 2018
DC Power Supply	WY12010	HZTE004-03	Aug. 10, 2017	Aug. 09, 2018
Standard Source	D908	HZTE012-01	Aug. 20, 2017	Aug. 19, 2018
Standard source	SCL-1400	HZTE012-02	Aug. 20, 2017	Aug. 19, 2018
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 16, 2017	Aug. 15, 2018
Temperature recorder	JM624U	HZTE018-08	Aug. 17, 2017	Aug. 16, 2018

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 2.3% with a coverage factor $k=2$.

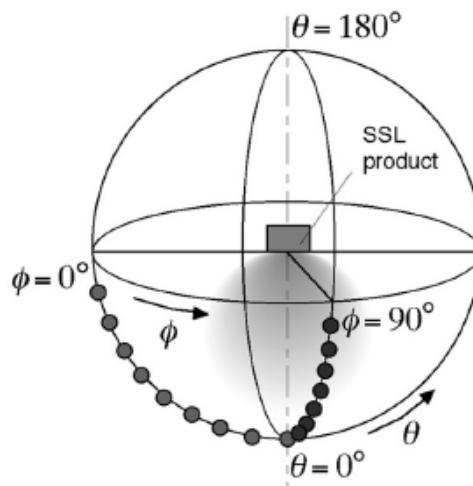
Color Characteristics Measurements

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° 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 ***

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