



LM-79-08 Test Report

for

GREEN CREATIVE LTD

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

WALL PACK

Model: 54HIDWP/840/277V/EX39

54HIDWP/840/277V/E26

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.: HZ18020011e

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

Approved by 


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/840/277V/EX39**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
153.2	7934.9	51.78	0.9887
CCT (K)	CRI	Stabilization Time (Light & Power)	
3989	84.8	60	

Table 1: Executive Data Summary

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

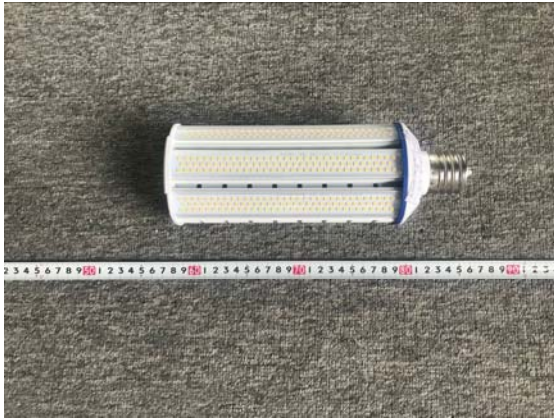
Test specifications:

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

TABLE OF CONTENT

LM-79-08 Test Report.....	1
Sample Photos.....	4
TEST RESULTS.....	5
Spectral Power Distribution.....	6
Zonal Lumen Tabulation.....	7
Luminous Intensity Distribution Plots.....	9
Luminous Intensity Data.....	10
EQUIPMENT LIST.....	12
TEST METHODS.....	12
Seasoning of SSL Product.....	12
Goniophotometer Method.....	12
Photometric and Electrical Measurements.....	12
Color Characteristics Measurements.....	13
Color Spatial Uniformity.....	13

Sample Photos



54HIDWP/840/277V/EX39



54HIDWP/840/277V/E26

Equipment Under Test (EUT)

Name	: WALL PACK
Model	: 54HIDWP/840/277V/EX39
Electrical Ratings	: 120-277V, 60Hz
Product Description	: EX39/E26 base, 4000K
Manufacturer	: GREEN CREATIVE LTD
Address	: 756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

Note: Model 54HIDWP/840/277V/EX39 and model 54HIDWP/840/277V/E26 are identical except their different screw base. Model 54HIDWP/840/277V/EX39 is EX39 base. 54HIDWP/840/277V/E26 is E26 base. Model 54HIDWP/840/277V/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)	0.436	0.209
Power Factor	0.9887	0.9020
Test Power (W)	51.78	52.19
THD A%	13.89	21.17
Luminous Efficacy (lm/W)	153.2	153.5
Total Luminous Flux (lm)	7934.9	8011.5
Color Rendering Index (CRI)	84.8	
R9	17	
Correlated Color Temperature (CCT) (K)	3989	
Chromaticity (Chroma x, Chroma y)	(0.3807, 0.3761)	
Chromaticity (Chroma u, Chroma v)	(0.2255, 0.3342)	
Chromaticity (Chroma u', Chroma v')	(0.2255, 0.5013)	
Duv	-0.0004	
Average Beam Angle (°)	120.2	
Center Beam Candle Power (cd)	2286	
Spacing Criteria	1.25 (0°-180°)/ 1.25 (90°-270°)	
Zonal Lumens in the 0°-60°Zone	66.27%	
Zonal Lumens in the 60°-90°Zone	26.79%	
Zonal Lumens in the 90°-120°Zone	6.55%	
Zonal Lumens in the 120°-180°Zone	0.40%	

Special Color Rendering Indices	
R1	84
R2	92
R3	96
R4	82
R5	83
R6	89
R7	86
R8	66
R9	17
R10	81
R11	81
R12	64
R13	86
R14	98
Rf	83
Rg	94

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

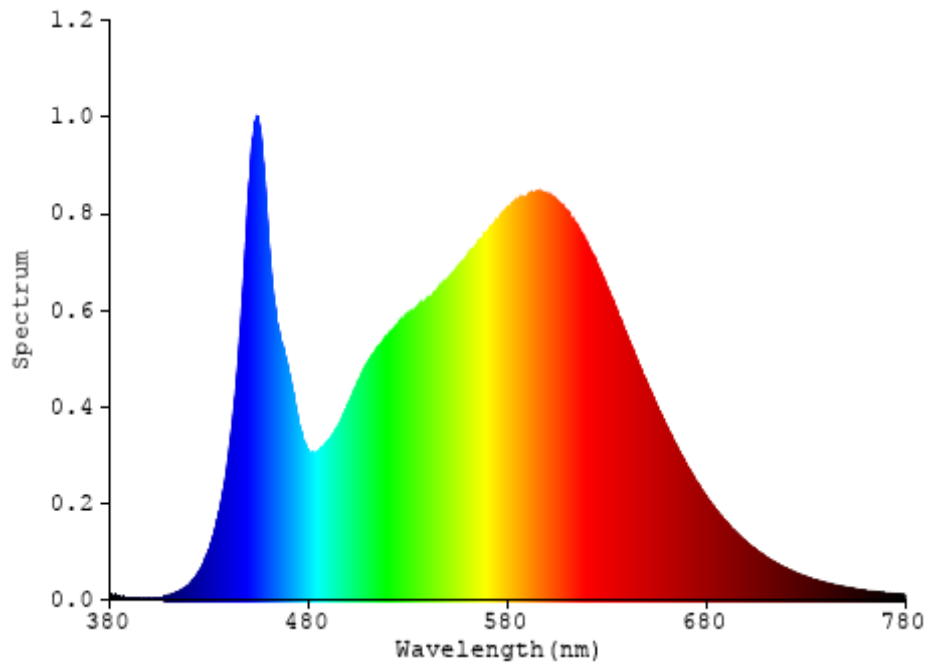


Chart 1: Spectral Power Distribution

Zonal Lumen Tabulation

$\gamma(^{\circ})$	Lumens	% Total
0- 10	216.83	2.73%
10- 20	621.17	7.83%
20- 30	945.174	11.91%
30- 40	1140.603	14.37%
40- 50	1201.093	15.14%
50- 60	1133.237	14.28%
60- 70	956.037	12.05%
70- 80	698.914	8.81%
80- 90	470.406	5.93%
90-100	293.253	3.70%
100-110	161.478	2.04%
110-120	64.734	0.82%
120-130	19.081	0.24%
130-140	6.591	0.08%
140-150	3.297	0.04%
150-160	1.842	0.02%
160-170	0.854	0.01%
170-180	0.262	0.00%
Total	7934.9	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	5258.107	66.27%
60- 90	2125.357	26.79%
0-90	7383.464	93.05%
90- 180	551.392	6.95%
0- 180	7934.9	100%

Table 3: Zonal Lumen Data

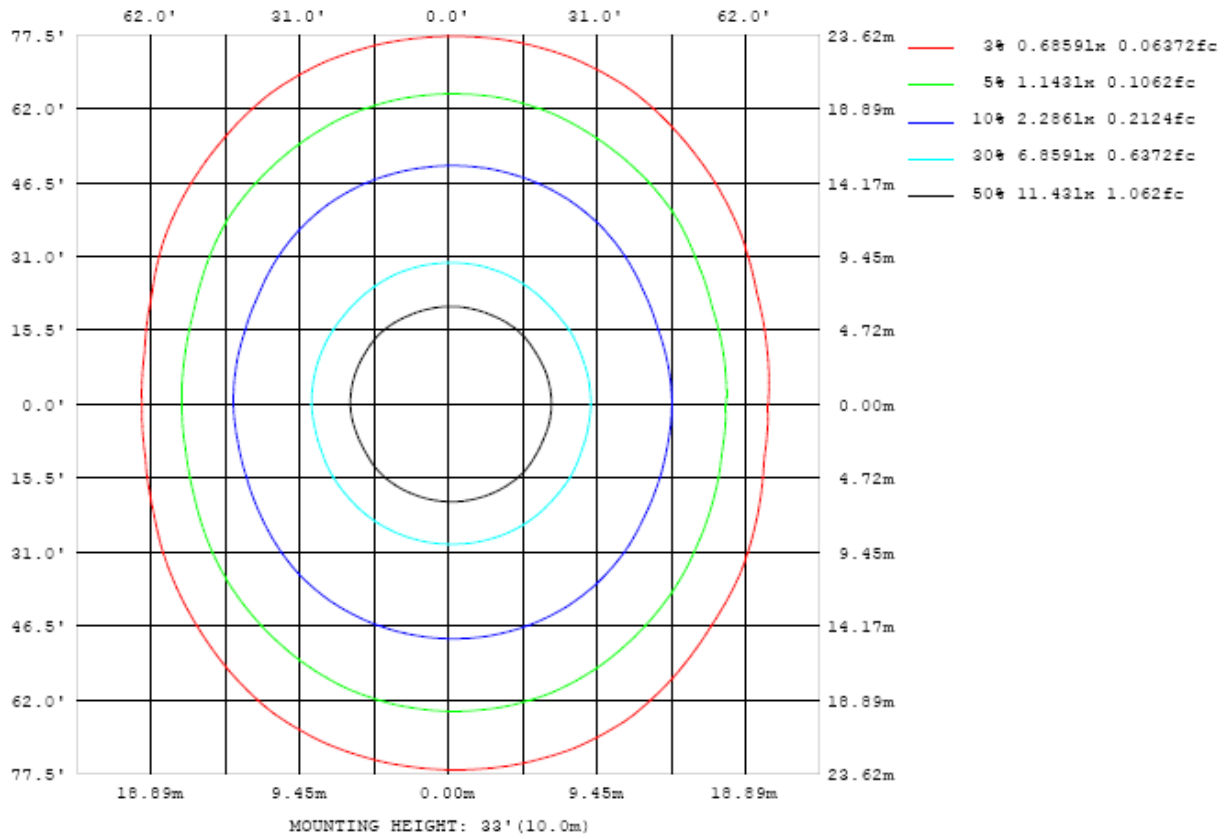


Chart 2: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots

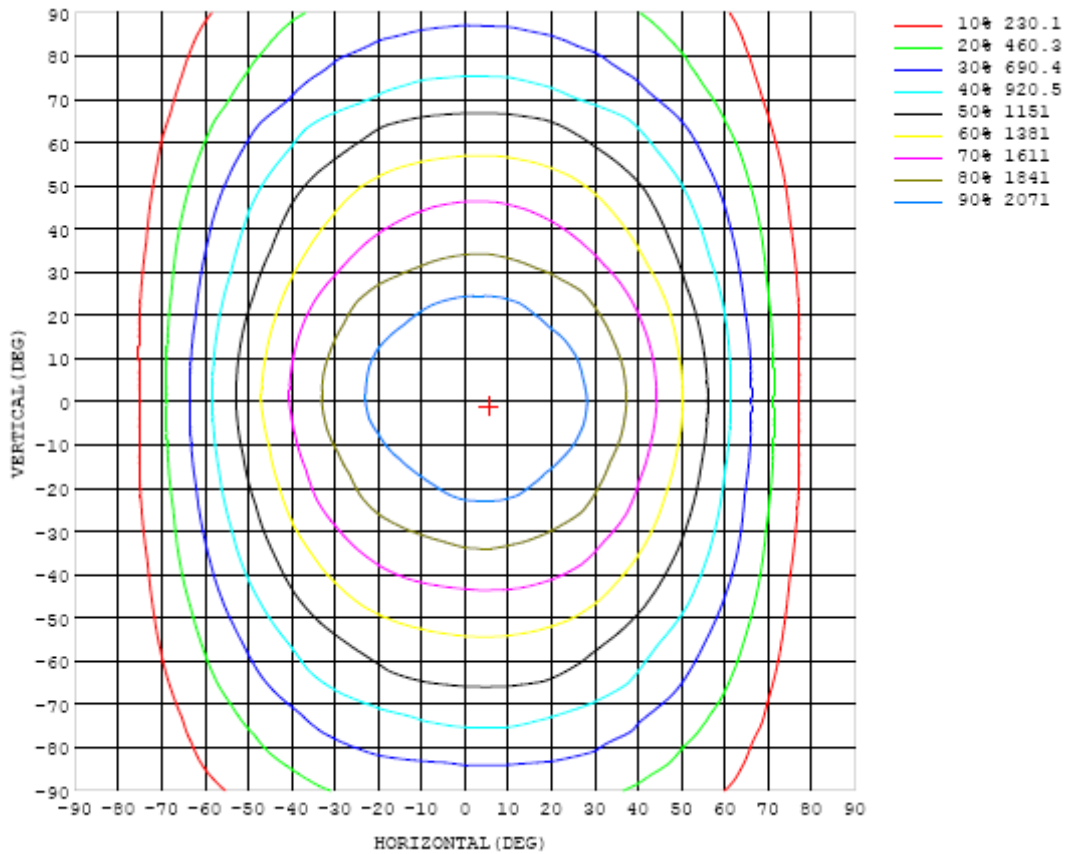


Chart 3: Isocandela Plot

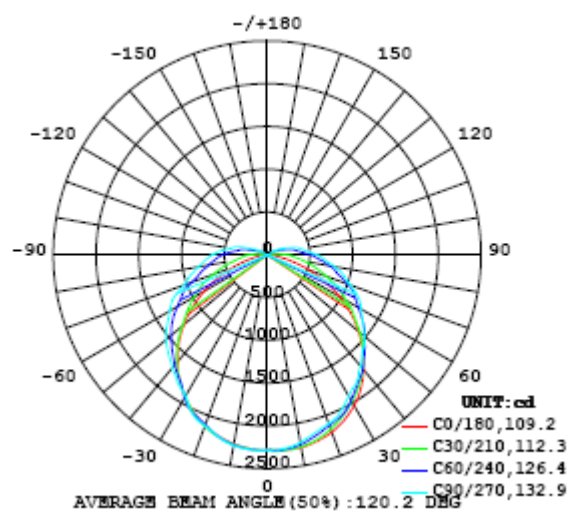


Chart 4: Polar Candela Distribution

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	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286
5	2287	2302	2299	2298	2295	2288	2285	2281	2274	2272	2268	2263	2263	2261	2259	2257	2267	2278	2275
10	2287	2288	2283	2279	2270	2260	2251	2241	2231	2226	2221	2218	2219	2220	2224	2224	2225	2243	2245
15	2255	2254	2245	2238	2220	2204	2189	2174	2163	2157	2150	2146	2147	2151	2158	2167	2170	2189	2194
20	2206	2202	2190	2169	2146	2132	2125	2115	2107	2100	2089	2078	2071	2069	2071	2084	2094	2113	2122
25	2132	2126	2110	2084	2065	2064	2067	2055	2037	2027	2018	2014	2009	1992	1977	1981	1997	2021	2033
30	2034	2023	1999	1980	1966	1988	1963	1937	1921	1908	1898	1894	1900	1902	1884	1869	1878	1906	1922
35	1909	1894	1868	1870	1881	1857	1842	1836	1832	1817	1805	1789	1771	1769	1770	1752	1740	1767	1786
40	1756	1741	1725	1742	1734	1731	1739	1722	1709	1698	1683	1673	1666	1644	1628	1620	1597	1606	1630
45	1583	1565	1560	1586	1588	1613	1611	1601	1593	1581	1566	1554	1538	1517	1488	1464	1433	1426	1460
50	1393	1376	1381	1415	1450	1472	1490	1504	1494	1485	1468	1448	1420	1380	1342	1296	1246	1239	1270
55	1196	1185	1203	1234	1295	1336	1367	1375	1375	1364	1347	1325	1296	1254	1186	1119	1065	1048	1062
60	977	978	1018	1061	1136	1189	1232	1265	1275	1267	1247	1214	1164	1108	1045	968	894	850	849
65	743	751	831	913	972	1050	1127	1176	1185	1175	1156	1124	1062	975	884	797	711	645	625
70	513	546	644	737	830	938	1002	1033	1040	1034	1015	983	936	864	752	637	538	446	415
75	306	357	467	587	702	782	852	907	932	928	908	865	797	714	620	505	378	279	233
80	139	193	318	449	551	662	739	785	804	800	781	745	687	606	495	371	257	144	105
85	42.2	88.0	202	327	445	544	611	659	681	677	659	624	568	490	392	272	157	68.6	36.1
90	4.79	35.2	118	230	339	434	511	562	587	585	567	531	469	386	287	182	88.4	24.2	4.72
95	0.00	13.6	61.9	143	234	318	393	450	476	475	461	425	365	287	200	119	50.3	9.41	0.46
100	0.00	4.93	30.4	93.2	181	262	328	376	399	399	387	358	305	237	148	73.2	25.8	5.19	0.26
105	0.23	4.30	16.1	46.7	104	176	247	301	330	335	319	281	221	152	83.7	42.2	15.8	3.97	0.54
110	0.56	2.92	10.6	30.4	68.6	118	160	201	226	230	218	186	146	104	51.2	26.1	9.28	3.06	0.81
115	0.80	2.28	6.95	14.3	32.0	66.6	107	148	166	170	160	133	90.5	55.9	24.7	14.7	6.73	2.63	0.99
120	0.96	2.14	4.97	9.11	18.2	27.7	43.5	73.0	90.1	94.3	85.9	64.5	39.8	25.1	16.1	9.06	5.28	2.37	1.14
125	1.17	2.05	4.11	6.62	9.40	13.8	26.0	35.0	31.4	33.4	32.6	30.6	23.1	14.6	10.1	7.10	4.32	2.17	1.36
130	1.41	2.00	3.49	5.32	7.23	9.31	11.2	12.5	14.9	16.9	15.0	12.7	11.6	9.89	7.73	5.72	3.73	2.01	1.68
135	1.68	1.96	3.07	4.59	5.81	7.08	8.10	8.64	8.75	8.70	8.96	9.05	8.56	7.63	6.24	4.85	3.32	2.05	2.00
140	1.91	2.01	2.82	4.11	5.06	5.96	6.57	6.71	6.63	6.58	6.80	7.08	6.93	6.34	5.38	4.35	3.03	2.19	2.41
145	2.06	2.11	2.64	3.74	4.63	5.17	5.51	5.59	5.52	5.47	5.62	5.80	5.77	5.48	4.88	3.94	2.63	2.31	2.70
150	2.16	2.20	2.28	3.12	4.29	4.74	4.85	4.85	4.80	4.78	4.87	5.02	5.07	5.00	4.50	3.41	2.40	2.36	2.91
155	2.28	2.29	2.34	2.49	3.48	4.53	4.72	4.66	4.59	4.55	4.63	4.77	4.88	4.70	3.86	2.60	2.40	2.43	3.00
160	2.40	2.40	2.41	2.44	2.48	3.20	4.39	4.84	4.82	4.85	4.85	4.86	4.54	3.29	2.61	2.53	2.45	2.49	3.03
165	2.53	2.52	2.50	2.49	2.48	2.47	2.46	2.53	2.69	2.79	2.76	2.62	2.53	2.53	2.53	2.54	2.52	2.54	2.98
170	2.67	2.67	2.66	2.64	2.62	2.61	2.60	2.57	2.54	2.55	2.57	2.58	2.59	2.60	2.61	2.62	2.62	2.58	2.88
175	2.83	2.81	2.79	2.77	2.75	2.72	2.69	2.67	2.66	2.65	2.66	2.68	2.71	2.74	2.78	2.82	2.84	2.82	2.76
180	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64

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	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286	2286		
5	2275	2276	2277	2278	2281	2283	2282	2283	2286	2288	2287	2288	2289	2289	2286	2284	2283		
10	2244	2250	2251	2253	2255	2255	2256	2259	2263	2267	2269	2273	2276	2277	2276	2277	2272		
15	2195	2201	2204	2203	2203	2201	2197	2196	2202	2209	2217	2228	2238	2244	2245	2245	2241		
20	2125	2132	2134	2128	2120	2115	2114	2119	2127	2134	2139	2149	2165	2182	2190	2194	2193		
25	2036	2043	2038	2026	2031	2045	2049	2051	2056	2068	2080	2083	2079	2088	2110	2120	2121		
30	1924	1926	1916	1922	1939	1932	1912	1902	1908	1920	1946	1980	1998	1992	1998	2020	2025		
35	1791	1784	1785	1800	1785	1783	1804	1815	1824	1831	1833	1832	1852	1882	1877	1892	1904		
40	1636	1637	1643	1642	1652	1680	1698	1716	1726	1734	1730	1727	1718	1720	1753	1739	1755		
45	1456	1471	1484	1486	1533	1573	1599	1620	1633	1639	1633	1618	1599	1578	1573	1585	1584		
50	1267	1263	1298	1356	1413	1467	1506	1530	1546	1552	1541	1517	1480	1437	1409	1409	1389		
55	1076	1093	1137	1220	1293	1352	1394	1418	1429	1438	1432	1407	1363	1302	1230	1184	1189		
60	862	900	990	1085	1156	1211	1261	1296	1314	1315	1294	1266	1230	1162	1069	1008	997		
65	650	728	838	926	1006	1096	1162	1194	1211	1216	1194	1141	1071	1005	920	824	771		
70	462	567	673	778	886	939	982	1016	1031	1032	1022	997	949	851	744	644	541		
75	290	405	517	618	713	806	875	913	929	929	900	843	763	687	598	463	359		
80	158	263	380	502	607	699	769	808	823	820	792	731	650	550	428	314	194		
85	71.0	168	291	410	519	607	670	708	725	720	691	635	551	448	323	188	82.9		
90	32.5	103	213	328	434	519	586	628	643	636	605	548	465	362	244	120	32.6		
95	11.9	53.5	136	227	327	415	485	526	542	535	502	442	356	252	151	65.9	7.64		
100	6.91	25.4	70.9	161	261	330	386	422	437	429	396	346	281	185	78.8	26.4	5.52		
105	4.61	16.5	42.3	84.6	148	236	309	352	366	357	321	252	164	91.6	47.0	16.1	3.33		
110	3.54	11.9	27.9	53.5	93.6	141	178	207	219	210	183	148	104	56.0	28.5	11.5	2.52		
115	2.84	8.73	19.4	34.8	58.3	88.9	119	147	153	148	125	92.9	65.1	37.0	20.0	8.15	2.20		
120	2.40	6.51	13.4	23.8	37.7	53.7	71.4	89.5	96.7	90.9	74.4	55.2	38.9	24.4	13.4	5.94	2.05		
125	2.23	5.14	9.56	16.1	24.3	33.0	41.4	48.5	50.6	49.1	42.8	33.7	25.0	16.2	9.23	4.55	1.97		
130	2.24	4.31	7.25	11.4	16.6	22.1	27.1	30.2	31.0	30.6	27.8	22.6	16.6	11.0	6.80	3.71	1.85		
135	2.37	3.84	5.93	8.44	11.5	14.4	17.1	18.7	19.1	18.9	17.3	14.5	11.1	8.01	5.50	3.40	1.95		
140	2.53	3.48	5.28	6.81	8.60	10.3	11.6	12.3	12.5	12.4	11.6	10.1	8.29	6.41	4.69	3.14	2.16		
145	2.73	3.23	4.48	5.78	6.86	7.80	8.53	8.91	8.99	8.87	8.46	7.65	6.58	5.50	4.12	2.97	2.39		
150	2.91	3.07	3.69	4.76	5.66	6.25	6.71	6.93	6.96	6.87	6.63	6.17	5.51	4.60	3.53	2.97	2.54		
155	3.00	3.02	3.25	3.92	4.52	5.16	5.42	5.57	5.57	5.51	5.36	5.10	4.57	3.84	3.23	3.00	2.63		
160	3.06	3.05	3.05	3.15	3.62	4.05	4.26	4.33	4.41	4.33	4.23	4.09	3.76	3.27	3.01	3.04	2.68		
165	3.03	3.01	2.96	2.95	2.95	2.92	3.12	3.41	3.57	3.57	3.36	3.05	2.96	2.98	2.99	3.02	2.69		
170	2.98	2.99	2.93	2.90	2.89	2.87	2.84	2.90	2.87	2.78	2.82	2.91	2.93	2.94	2.97	2.99	2.72		
175	2.82	2.83	2.82	2.79	2.74	2.74	2.76	2.69	2.66	2.65	2.68	2.76	2.83	2.84	2.90	2.90	2.85		
180	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64		

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 $k=2$.

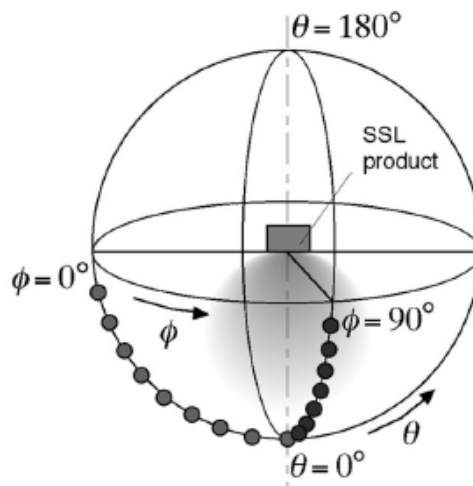
Color Characteristics Measurements

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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