

## LM-79-08 Test Report

for

### GREEN CREATIVE LTD

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

### LED Strip Light

**Model: 38.5STRIPDIM/830/277V/R**

### Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

3rd Floor, Bld. 2, NO. 96 Longchuanwu Rd Qianjiang Economy Dev. Zone, Yuhang Dist,  
Hangzhou, Zhejiang Province, China 311100


Tel: +86 571 86376106

[www.ledtestlab.com](http://www.ledtestlab.com)


Report No.: HZ18110058b


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

Review by:



Engineer: April Zou  
Dec. 06, 2018



Approved by: 

Manager: Jim Zhang  
Dec. 06, 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: **38.5STRIPDIM/830/277V/R**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
134.5	5267.3	39.15	0.9953
CCT (K)	CRI	Stabilization Time (Light & Power)	
3063	83.5	60	

Table 1: Executive Data Summary

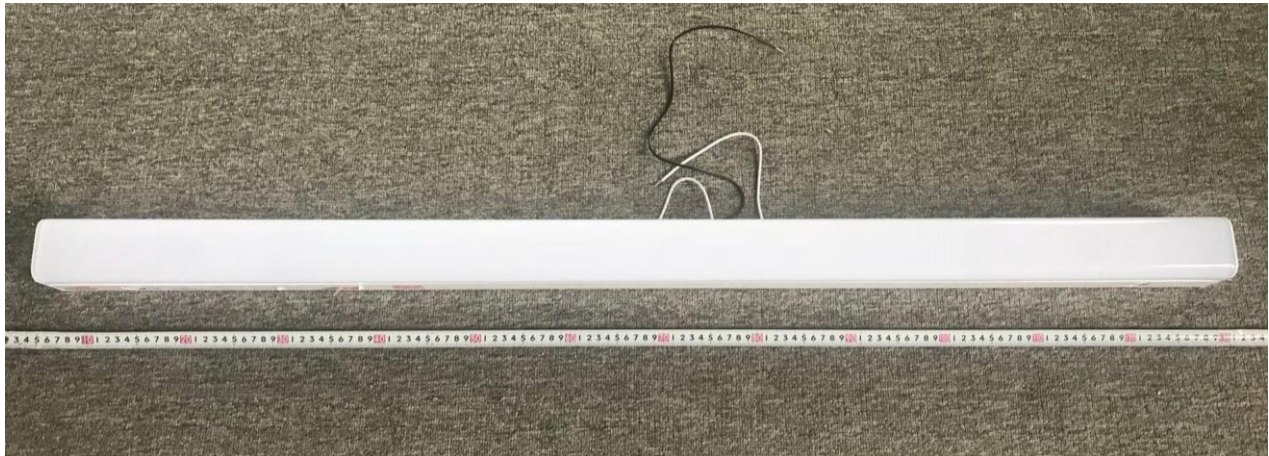
### Test specifications:

<b>Date of Receipt</b>	: Nov. 30, 2018
<b>Date of Test</b>	: Dec. 03, 2018
<b>Test item</b>	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
<b>Reference Standard</b>	: 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



Overview of the sample

### Equipment Under Test (EUT)

<b>Name</b>	: LED Strip Light
<b>Model</b>	: 38.5STRIPDIM/830/277V/R
<b>Electrical Ratings</b>	: 120-277V, 50/60Hz
<b>Product Description</b>	: 3000K
<b>Manufacturer</b>	: GREEN CREATIVE LTD
<b>Address</b>	: 756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

## TEST RESULTS

Test ambient temperature was 24.7°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 30 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	277.0	R1	82
Voltage frequency (Hz)	60	60	R2	90
Test Current (A)	0.328	0.149	R3	97
Power Factor	0.9953	0.9477	R4	82
Test Power (W)	39.15	39.08	R5	82
THD A%	7.91	9.94	R6	88
Luminous Efficacy (lm/W)	134.5	134.7	R7	84
Total Luminous Flux (lm)	5267.3	5265.0	R8	62
Color Rendering Index (CRI)	83.5		R9	13
R9	13		R10	78
Correlated Color Temperature (CCT) (K)	3063		R11	82
Chromaticity (Chroma x, Chroma y)	(0.4312, 0.3996)		R12	71
Chromaticity (Chroma u, Chroma v)	(0.2488, 0.3459)		R13	84
Chromaticity (Chroma u', Chroma v')	(0.2488, 0.5188)		R14	98
Duv	-0.0010			
Average Beam Angle ( ° )	122.8			
Center Beam Candle Power (cd)	1419			
Spacing Criteria	1.28 (0 °-180 °)/ 1.30 (90 °-270 °)			
Zonal Lumens in the 0 °-60 °Zone	63.90%			
Zonal Lumens in the 60 °-90 °Zone	25.45%			
Zonal Lumens in the 90 °-120 °Zone	7.81%			
Zonal Lumens in the 120 °-180 °Zone	2.83%			

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

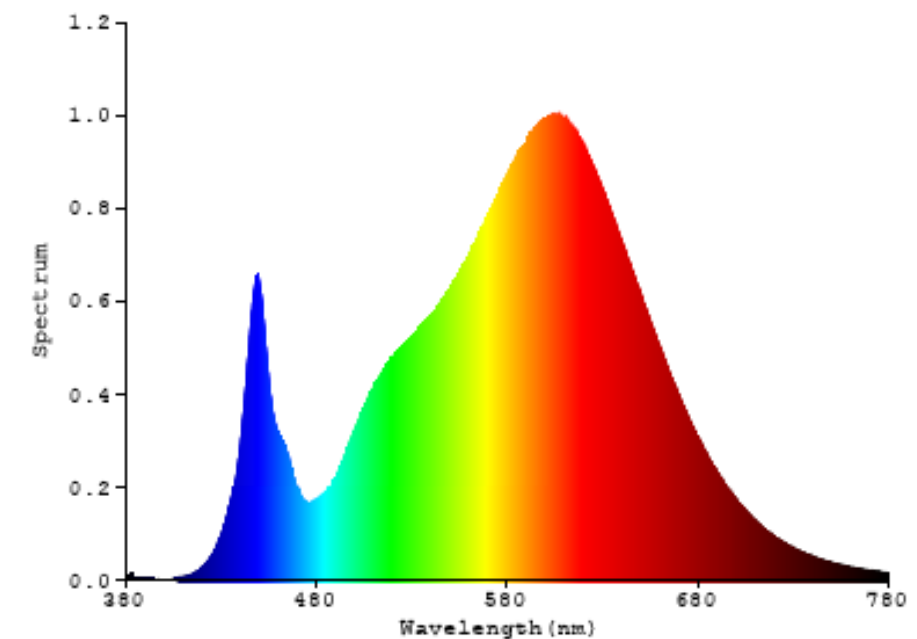


Chart 1: Spectral Power Distribution

## Zonal Lumen Tabulation

$\gamma(^{\circ})$	Lumens	% Total
0- 10	134.436	2.55%
10- 20	387.114	7.35%
20- 30	593.056	11.26%
30- 40	728.389	13.83%
40- 50	779.594	14.80%
50- 60	743.483	14.12%
60- 70	626.406	11.89%
70- 80	448.229	8.51%
80- 90	266.103	5.05%
90-100	181.135	3.44%
100-110	134.612	2.56%
110-120	95.484	1.81%
120-130	66.133	1.26%
130-140	42.853	0.81%
140-150	24.565	0.47%
150-160	11.548	0.22%
160-170	3.689	0.07%
170-180	0.484	0.01%
Total	5267.3	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	3366.072	63.90%
60- 90	1340.738	25.45%
0-90	4706.81	89.36%
90- 180	560.503	10.64%
0- 180	5267.3	100%

Table 3: Zonal Lumen Data

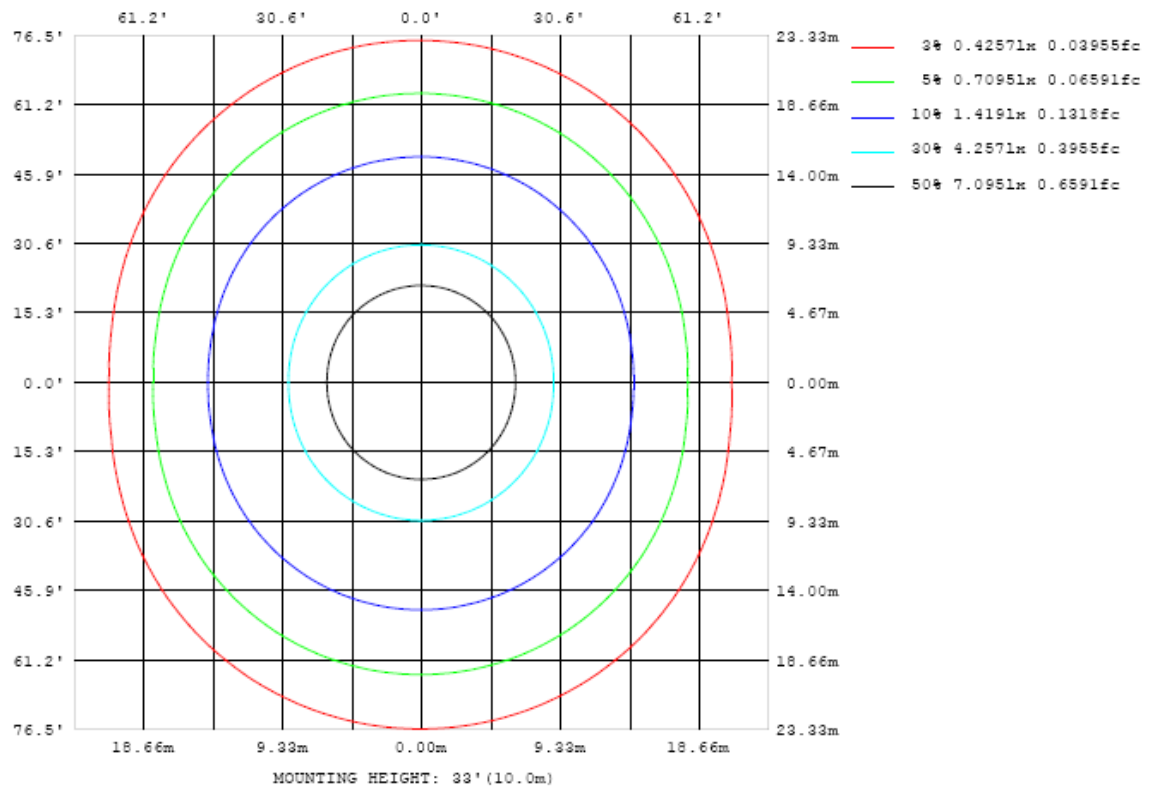


Chart 2: Illuminance Plot (Footcandles)



## Luminous Intensity Distribution Plots

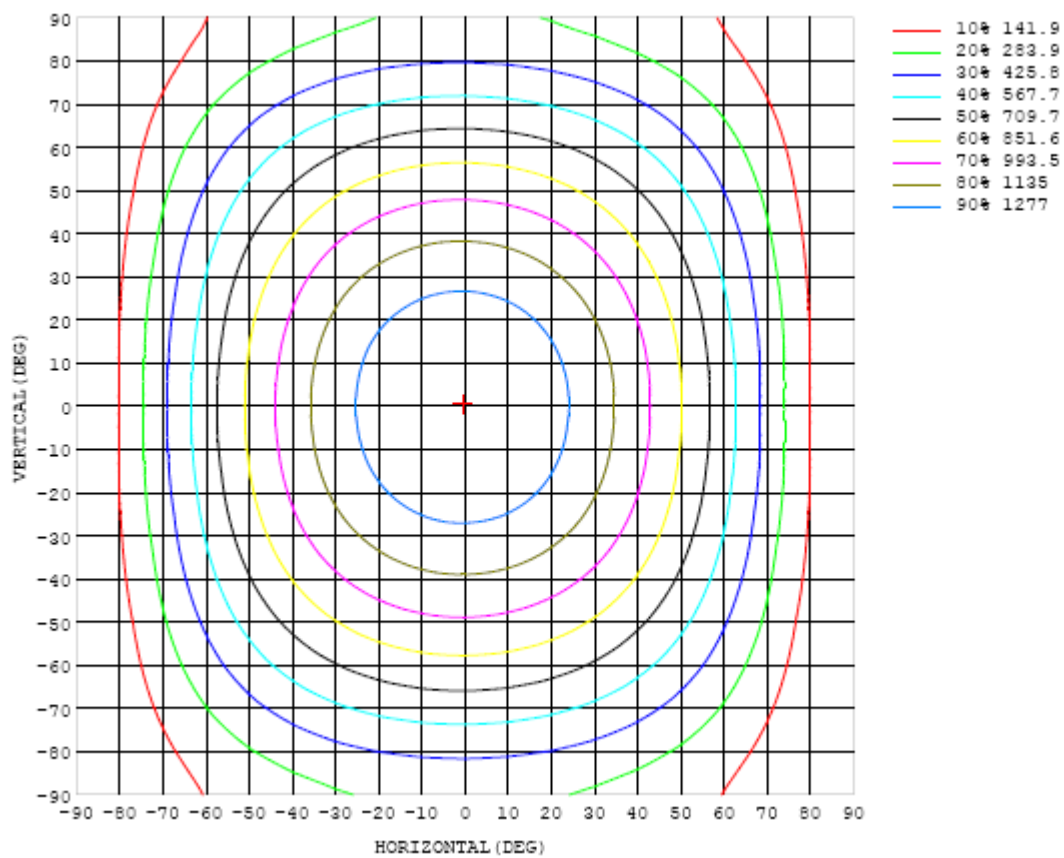


Chart 3: Isocandela Plot

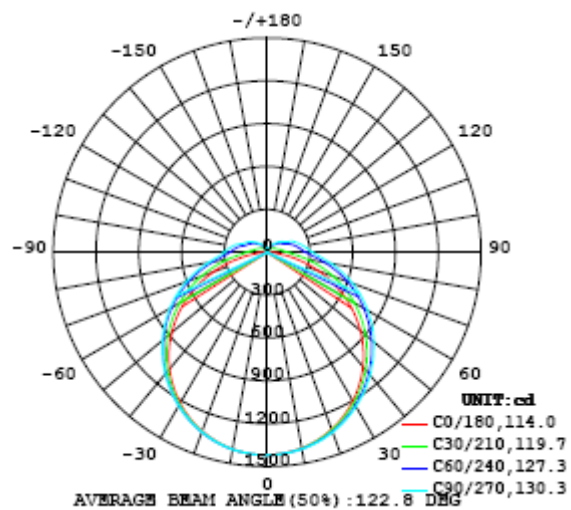


Chart 4: Polar Candela Distribution

## 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	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419
5	1411	1411	1411	1412	1412	1413	1413	1413	1414	1414	1414	1414	1415	1415	1415	1415	1414	1414	1415
10	1392	1393	1392	1394	1394	1395	1397	1398	1399	1400	1401	1401	1400	1400	1399	1399	1399	1398	1398
15	1361	1362	1362	1364	1367	1370	1372	1373	1375	1376	1376	1377	1376	1375	1373	1372	1371	1371	1370
20	1319	1319	1321	1324	1329	1332	1336	1338	1340	1341	1342	1342	1341	1339	1337	1335	1333	1332	1332
25	1266	1266	1270	1275	1281	1286	1290	1294	1297	1298	1299	1298	1296	1294	1291	1288	1284	1282	1282
30	1202	1204	1209	1217	1224	1231	1236	1241	1244	1246	1247	1246	1244	1240	1236	1231	1225	1221	1220
35	1128	1131	1139	1149	1158	1167	1175	1181	1184	1187	1188	1186	1183	1178	1172	1164	1156	1149	1148
40	1045	1049	1060	1073	1086	1097	1107	1114	1119	1122	1122	1120	1115	1109	1100	1089	1078	1069	1066
45	953	959	973	990	1006	1021	1033	1042	1048	1052	1052	1048	1042	1032	1020	1006	991	978	975
50	853	861	879	900	921	939	954	965	973	977	976	972	963	951	935	917	897	880	874
55	745	755	779	804	830	852	870	884	893	897	896	890	880	864	844	821	796	774	766
60	630	643	672	704	735	761	783	799	809	814	812	805	792	772	749	719	688	661	650
65	510	526	561	600	636	667	691	710	722	727	725	716	700	677	649	614	576	542	527
70	384	405	448	493	534	570	598	619	631	636	634	624	605	580	546	506	461	419	399
75	258	284	334	386	432	472	502	525	539	544	541	530	510	481	443	398	346	295	270
80	139	169	226	283	334	376	410	434	449	455	451	438	416	384	343	293	236	178	148
85	44.0	75.5	135	194	247	292	327	352	367	373	369	356	332	299	255	203	143	82.2	47.1
90	2.07	27.4	82.0	139	191	235	269	294	310	315	312	298	275	241	198	147	89.0	32.5	0.46
95	0.53	17.8	64.8	117	166	208	241	265	280	285	282	269	246	214	173	124	71.1	21.9	0.45
100	0.72	13.6	49.9	100	145	185	216	239	253	259	256	243	221	191	152	107	55.2	16.7	0.70
105	1.12	12.1	41.7	79.9	126	164	193	215	228	234	231	218	198	169	133	85.1	46.4	14.7	0.98
110	1.52	11.1	36.8	70.5	101	139	170	192	204	209	206	195	175	144	106	73.9	41.0	13.5	1.41
115	2.01	10.2	32.3	61.5	90.8	115	137	160	174	180	176	162	140	117	94.4	66.0	36.2	12.5	1.97
120	2.27	9.49	28.9	53.8	80.2	103	121	133	141	145	142	135	124	107	83.6	58.0	32.1	11.5	2.35
125	2.44	8.74	25.6	47.1	70.5	90.1	108	120	128	131	129	122	110	93.7	73.3	50.7	28.5	10.5	2.68
130	2.70	7.99	22.6	41.0	60.6	78.0	93.6	105	112	115	114	107	96.2	81.2	63.4	44.2	25.3	9.55	3.07
135	2.75	7.19	19.8	35.4	51.8	67.1	80.3	90.6	96.8	99.4	97.8	91.9	82.4	69.9	54.3	38.5	22.3	8.60	3.27
140	2.63	6.37	17.1	30.2	43.9	56.8	68.1	76.5	81.8	84.0	82.6	77.7	69.9	58.9	46.2	33.0	19.2	7.43	3.39
145	2.40	5.50	14.5	25.3	36.7	47.4	56.4	63.8	68.0	69.7	68.5	64.6	57.8	49.0	38.7	27.7	16.1	6.28	3.22
150	2.10	4.97	11.7	20.3	30.0	38.6	45.7	51.4	55.1	56.5	55.6	52.4	47.1	39.9	31.5	22.4	13.3	5.81	2.93
155	1.91	4.23	9.44	15.9	23.6	30.3	35.7	40.2	43.3	44.2	43.5	41.1	36.9	31.4	24.9	17.6	10.6	4.97	2.57
160	2.01	3.60	7.52	12.0	16.9	22.2	26.5	29.9	32.1	32.9	32.3	30.6	27.5	23.4	18.4	13.2	8.17	4.01	2.05
165	2.03	2.85	5.35	8.56	11.8	14.8	17.8	20.3	21.8	22.4	22.1	20.7	18.5	15.8	12.8	8.81	5.53	3.05	1.89
170	1.94	2.36	3.60	5.35	7.32	9.16	10.7	11.9	12.7	13.1	12.9	12.2	11.2	9.57	7.23	5.08	3.54	2.50	1.97
175	1.88	2.05	2.43	2.93	3.53	4.19	4.81	5.33	5.66	5.80	5.79	5.50	4.88	4.06	3.26	2.76	2.41	2.15	2.01
180	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03

Table 4: Luminous Intensity Data

Table--2

UNIT: cd

C (DEG) γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419	1419		
5	1415	1415	1415	1415	1415	1415	1415	1415	1414	1414	1414	1413	1413	1413	1412	1412	1411		
10	1398	1399	1400	1400	1401	1401	1401	1401	1400	1400	1399	1398	1396	1394	1394	1393	1392		
15	1371	1371	1374	1375	1375	1376	1376	1376	1375	1375	1373	1371	1369	1366	1365	1362	1361		
20	1332	1333	1336	1338	1339	1340	1341	1341	1340	1338	1336	1334	1331	1327	1325	1321	1320		
25	1282	1285	1289	1292	1293	1295	1296	1296	1293	1292	1290	1287	1282	1278	1274	1270	1268		
30	1221	1225	1231	1235	1238	1240	1242	1242	1240	1238	1235	1231	1225	1219	1213	1208	1204		
35	1150	1156	1163	1169	1174	1177	1180	1180	1179	1176	1172	1167	1159	1152	1144	1137	1131		
40	1069	1077	1086	1095	1103	1108	1111	1113	1111	1108	1103	1096	1086	1077	1066	1057	1049		
45	978	989	1002	1014	1024	1031	1036	1039	1038	1034	1028	1019	1007	995	981	969	959		
50	880	893	910	926	940	950	957	960	959	955	948	937	922	907	890	873	860		
55	773	791	812	833	850	863	872	877	876	872	863	850	833	813	792	772	754		
60	659	682	708	734	755	772	783	789	789	784	774	759	739	715	690	664	641		
65	539	568	601	631	657	677	690	697	698	692	681	664	641	614	584	552	524		
70	415	452	491	526	556	579	595	603	605	598	586	567	542	511	475	437	402		
75	291	335	380	421	455	481	499	509	510	504	490	470	441	407	367	323	281		
80	175	225	276	321	358	387	407	418	421	414	400	377	346	309	265	216	168		
85	78.6	134	188	237	277	308	330	342	345	339	324	300	267	227	180	127	74.8		
90	30.3	85.0	141	190	231	263	286	298	301	295	280	256	223	182	134	80.7	28.8		
95	19.5	66.5	119	166	205	236	258	271	274	268	253	230	198	159	113	62.7	18.4		
100	14.9	52.0	94.1	142	181	211	232	244	247	242	228	205	174	135	88.3	48.6	14.3		
105	12.9	43.3	82.1	118	148	177	199	212	216	210	195	172	141	112	77.7	40.5	12.5		
110	11.2	37.6	70.5	105	134	155	166	174	177	173	163	150	129	99.9	66.6	35.1	11.1		
115	10.4	33.2	61.6	90.8	118	140	155	162	164	160	151	136	114	86.8	57.9	30.8	9.94		
120	9.48	29.3	54.0	79.4	103	122	136	145	147	143	134	120	99.4	75.3	50.6	27.1	9.03		
125	8.57	25.4	47.1	69.1	89.4	106	119	126	128	125	117	104	86.2	65.4	44.1	23.6	8.23		
130	7.98	21.4	40.6	59.9	77.3	91.9	103	109	111	108	102	90.2	74.1	56.6	38.2	20.5	7.65		
135	7.41	18.6	34.7	51.3	66.3	78.7	87.9	93.6	95.0	92.7	87.1	77.1	63.3	48.5	32.7	17.8	7.22		
140	7.13	16.2	28.2	42.8	56.0	66.4	74.2	79.1	80.3	78.3	73.6	64.9	53.3	40.9	27.4	14.9	6.89		
145	7.09	13.6	23.1	35.0	45.9	54.9	61.4	65.5	66.5	64.9	61.1	53.5	44.1	33.9	22.9	13.1	6.35		
150	6.60	11.9	18.8	27.7	36.6	43.4	48.8	52.4	53.5	52.2	48.9	42.8	35.9	27.5	18.1	10.7	5.75		
155	5.93	9.75	14.0	19.8	27.1	32.6	37.5	40.6	41.3	40.7	38.6	33.4	27.8	20.6	14.6	9.65	4.99		
160	5.12	7.11	9.89	12.9	17.5	23.0	26.3	28.0	28.8	29.3	28.5	25.0	20.3	16.4	12.6	8.32	3.88		
165	3.97	5.60	6.82	8.54	10.5	12.6	16.2	18.9	19.6	19.4	18.7	17.4	15.2	12.8	9.77	5.96	2.88		
170	2.38	4.52	4.71	6.00	7.32	8.34	8.72	9.72	12.1	12.4	11.9	10.8	9.81	8.17	5.49	3.28	2.40		
175	2.11	2.36	2.92	4.10	4.72	4.92	5.19	5.31	4.17	4.50	4.66	4.14	3.94	3.65	3.10	2.53	2.04		
180	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03		

Table 5: Luminous Intensity Data

## EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Aug. 14, 2018	Aug. 13, 2019
Digital Power Meter	PF2010A	HZTE028-01	Sep. 12, 2018	Sep. 11, 2019
AC Power Supply	DPS1060	HZTE001-06	Aug. 09, 2018	Aug. 08, 2019
DC Power Supply	WY12010	HZTE004-03	Aug. 09, 2018	Aug. 08, 2019
Standard Source	D908	HZTE012-01	Aug. 14, 2018	Aug. 13, 2019
Standard source	SCL-1400	HZTE012-02	Aug. 16, 2018	Aug. 15, 2019
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 09, 2018	Aug. 08, 2019
Temperature recorder	JM624U	HZTE018-08	Aug. 09, 2018	Aug. 08, 2019

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  $k=2$ .

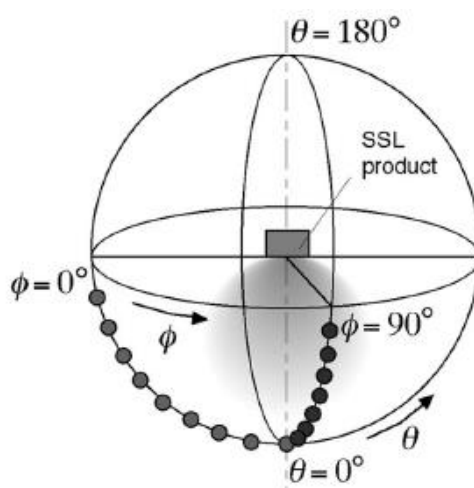
## Color Characteristics Measurements

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  $10^\circ$  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.