

LM-79-19 TEST REPORT

for

GREEN CREATIVE LTD

Room 3603, Level 36, Tower 1, Enterprise Square Five, 38 Wang Chiu Road, Kowloon Bay, KL,
Hong Kong

LED LUMINAIRES

Model: PXCYLDI6/XX/LELD/LELI/9035/KDIM010UNV/MD/MD/WH/CC

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.: HZ24040033b

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

Review by:

Wei Fei

Engineer: Wei Fei
May 30, 2024

Approve by:



April Zou

1 Manager: April Zou
May 30, 2024

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: **PXCYLDI6/PM/LELD/LELI/9035/KDIM010UNV/MD/MD/WH/CC**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
103.4	5967.2	57.73	0.9920
CCT (K)	CRI	Stabilization Time (Light & Power)	
3447	94.8	50	

Table 1: Executive Data Summary

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

Test specifications:

Date of Receipt	: Apr. 29, 2024
Date of Test	: May 28, 2024
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	: IESNA LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products ANSI/IES TM-30-18 IES Method for Evaluating Light Source Color Rendition

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SAMPLE PHOTO

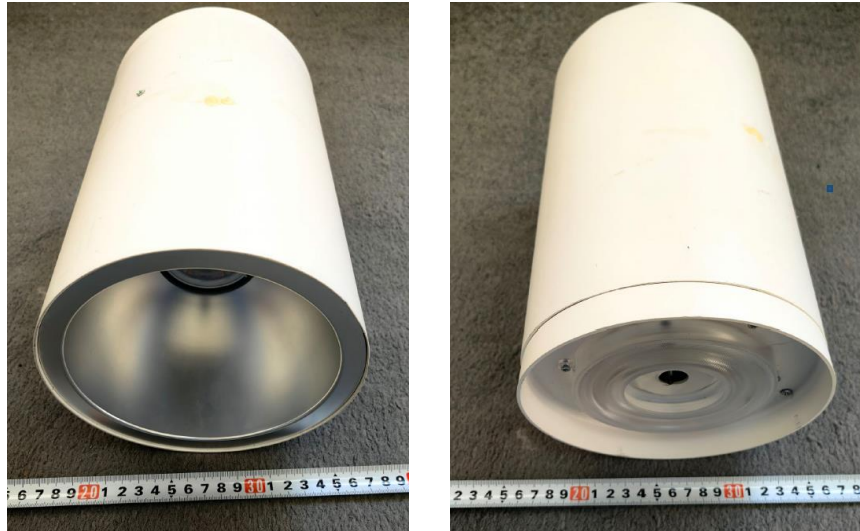


Figure 1- Overview of the sample

Equipment Under Test(EUT)

Name	: LED LUMINAIRES
Model	: PXCYLDI6/PM/LELD/LELI/9035/KDIM010UNV/MD/MD/WH/CC
Electrical Ratings	: 120V, 60Hz
Product Description	: 3500K
Manufacturer	: GREEN CREATIVE LTD
Address	: Room 3603, Level 36, Tower 1, Enterprise Square Five, 38 Wang Chiu Road, Kowloon Bay, KL, Hong Kong

TEST RESULTS

Test ambient temperature was 26.0 °C.

Base orientation was base up. Test was conducted without a dimmer in the circuit.

The stabilization time of the sample was 50 minutes, and the total operating time including stabilization was 55 minutes.

Sphere-Spectroradiometer Method

Parameter	Result
Test Voltage (V)	120.0
Voltage frequency (Hz)	60
Test Current (A)	0.485
Power Factor	0.9920
Test Power (W)	57.73
THD A%	12.26
Luminous Efficacy (lm/W)	103.4
Total Luminous Flux (lm)	5967.2
Color Rendering Index (CRI)	94.8
R9	77.3
Correlated Color Temperature (CCT)(K)	3447
Chromaticity Chroma x	0.4065
Chromaticity Chroma y	0.3877
Chromaticity Chroma u	0.2377
Chromaticity Chroma v	0.3401
Duv	-0.0016
Chromaticity Chroma u'	0.2377
Chromaticity Chroma v'	0.5102

Special Color Rendering Indices	
R1	96
R2	96.4
R3	94.7
R4	95.3
R5	95.2
R6	94.2
R7	95.5
R8	90.9
R9	77.3
R10	90
R11	95.2
R12	80.1
R13	96.2
R14	96.4

Table 2: Test data per Sphere-Spectroradiometer Method

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

Goniophotometer Method

Test ambient temperature was 24.8 °C.

The photometric distance is 30 m.

Luminous data was taken at 0.5 vertical intervals and 10 horizontal intervals.

Parameter	Result
Test Voltage (V)	120.0
Voltage frequency (Hz)	60
Test Current (A)	0.485
Power Factor	0.9929
Power (W)	57.80
Luminous Efficacy (lm/W)	103.7
Total Luminous Flux (lm)	5994.3
Beam Angle (°)	55.4 (0°-180°) / 55.3 (90°-270°)
Center Beam Candle Power (cd)	5508
Maximum Beam Candle Power (cd)	5543 (At: C=220.0, Gamma=1.5)
Spacing Criteria	0.85 (0°-180°) / 0.79 (90°-270°)
Zonal Lumens in the 0°-60° Zone	67.89%
Zonal Lumens in the 60°-90° Zone	0.56%
Zonal Lumens in the 90°-120° Zone	3.03%
Zonal Lumens in the 120°-180° Zone	28.52%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

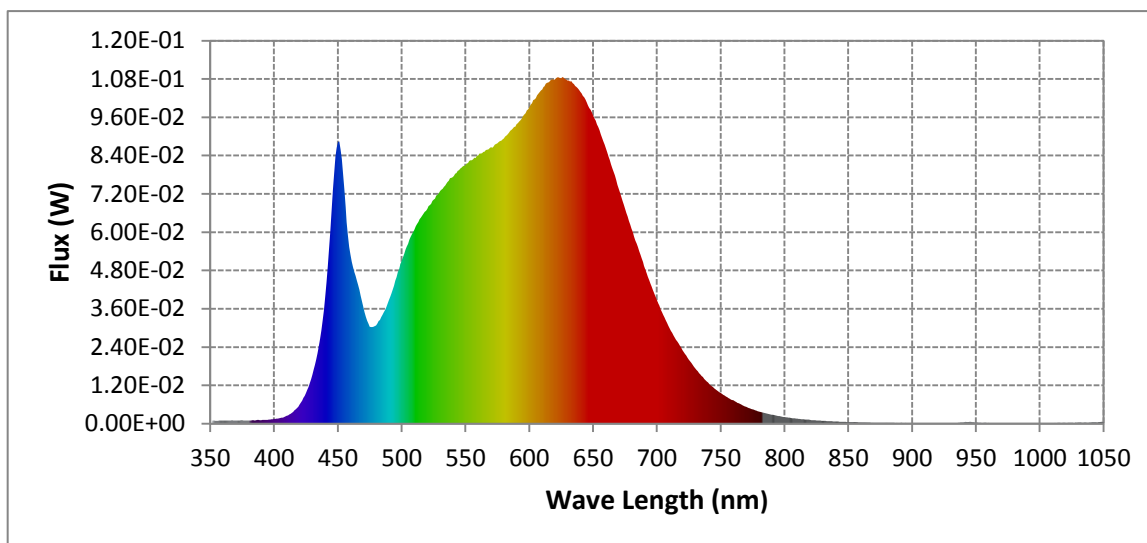
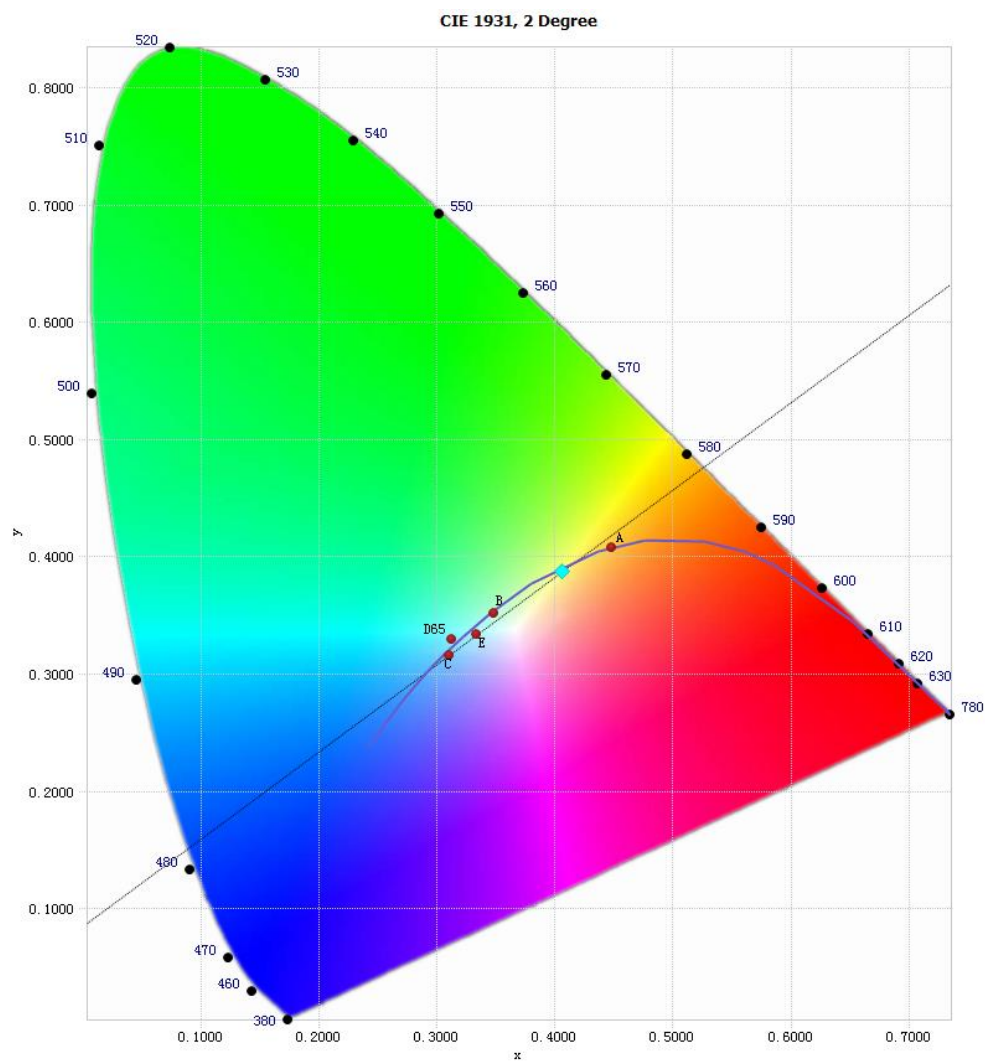


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.04E-03	485	3.41E-02	590	9.39E-02	695	4.39E-02
385	1.02E-03	490	3.87E-02	595	9.64E-02	700	3.89E-02
390	1.14E-03	495	4.48E-02	600	9.92E-02	705	3.41E-02
395	1.23E-03	500	5.10E-02	605	1.02E-01	710	2.99E-02
400	1.45E-03	505	5.63E-02	610	1.05E-01	715	2.63E-02
405	1.80E-03	510	6.09E-02	615	1.07E-01	720	2.31E-02
410	2.47E-03	515	6.46E-02	620	1.08E-01	725	2.01E-02
415	3.74E-03	520	6.73E-02	625	1.08E-01	730	1.74E-02
420	5.99E-03	525	7.02E-02	630	1.07E-01	735	1.49E-02
425	9.63E-03	530	7.29E-02	635	1.06E-01	740	1.29E-02
430	1.54E-02	535	7.51E-02	640	1.04E-01	745	1.10E-02
435	2.43E-02	540	7.73E-02	645	1.01E-01	750	9.60E-03
440	3.97E-02	545	7.94E-02	650	9.66E-02	755	8.29E-03
445	6.67E-02	550	8.10E-02	655	9.20E-02	760	7.30E-03
450	8.83E-02	555	8.26E-02	660	8.62E-02	765	6.19E-03
455	7.33E-02	560	8.41E-02	665	8.01E-02	770	5.27E-03
460	5.29E-02	565	8.52E-02	670	7.37E-02	775	4.50E-03
465	4.48E-02	570	8.66E-02	675	6.73E-02	780	3.85E-03
470	3.66E-02	575	8.79E-02	680	6.11E-02		
475	3.04E-02	580	8.93E-02	685	5.53E-02		
480	3.08E-02	585	9.18E-02	690	4.95E-02		

Table 4: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method

Chromaticity Diagram - Sphere Spectroradiometer Method

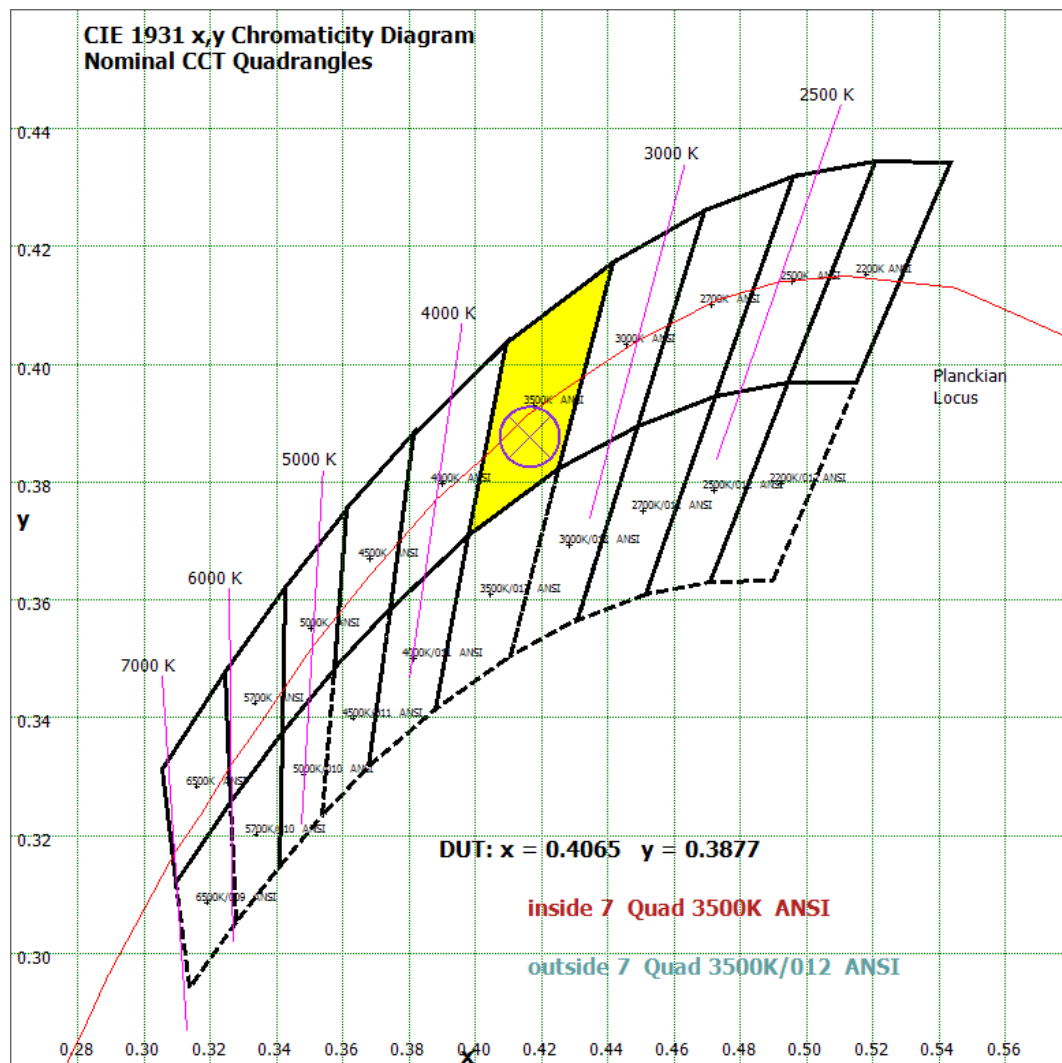


Tristimulus values(x, y): (0.4065, 0.3877)

Chart 2: Chromaticity Diagram per Sphere - Spectroradiometer Method

Note: The location on the diagram of the tristimulus coordinates are indicated by the blue diamond.

Nominal CCT Quadrangles – Sphere Spectroradiometer Method



Color Rendition Report – Sphere Spectroradiometer Method

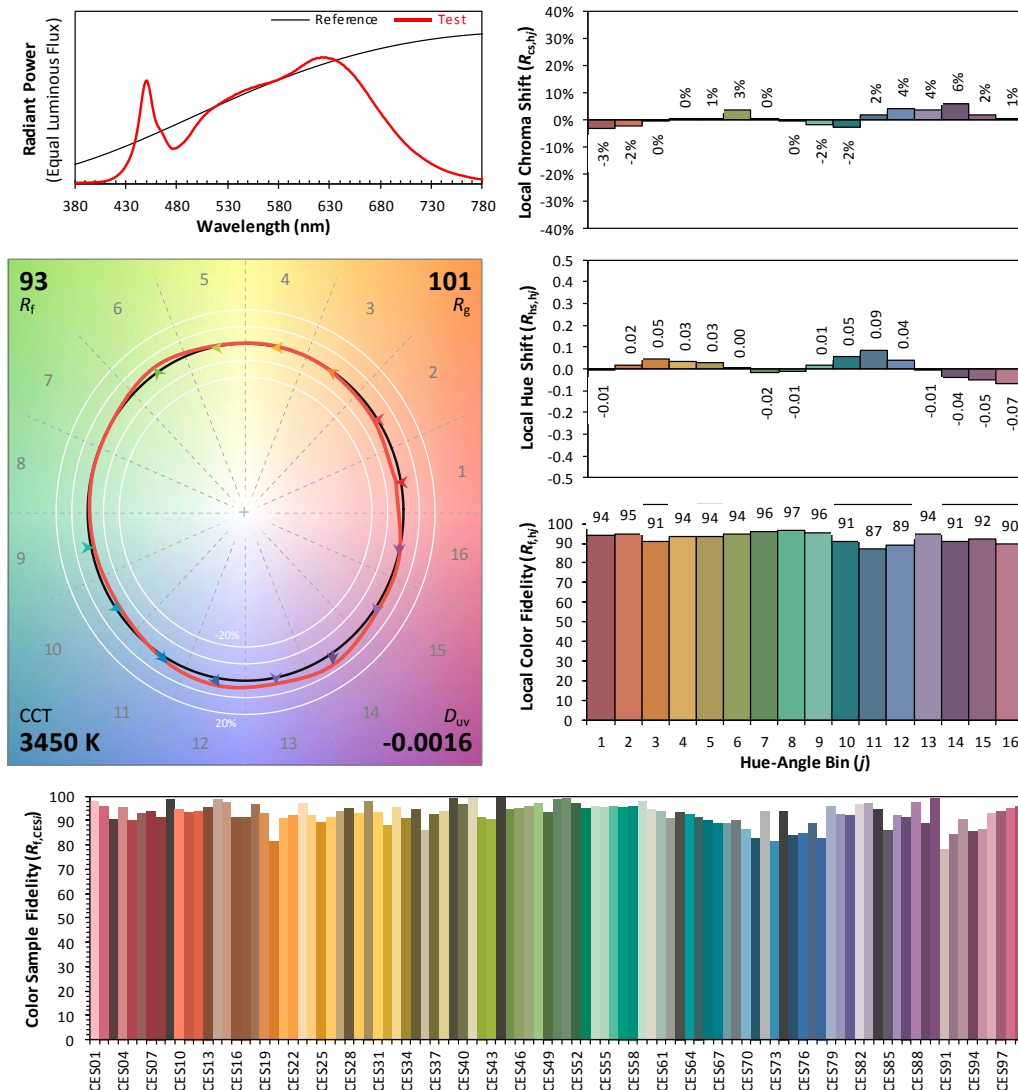
ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2024/05/28

Model: PXCYLDI6/PM/LELD/LELI/9035/KDIM010UNV/MD/MD/WH/CC



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4065
 y 0.3877
 u' 0.2377
 v' 0.5102

CIE 13.3-1995
(CRI)
 R_a 95
 R_9 78

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Chart 4: Full Report Created with the IES TM-30 Calculator

Note: The values in this diagram might be a little different from the values in Table 2 due to rounding.

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	491.608	8.20%
10- 20	1163.877	19.42%
20- 30	1387.073	23.14%
30- 40	895.347	14.94%
40- 50	114.384	1.91%
50- 60	17.162	0.29%
60- 70	12.573	0.21%
70- 80	11.166	0.19%
80- 90	10.044	0.17%
90-100	25.964	0.43%
100-110	53.795	0.90%
110-120	101.775	1.70%
120-130	180.539	3.01%
130-140	283.528	4.73%
140-150	379.18	6.33%
150-160	421.954	7.04%
160-170	327.536	5.46%
170-180	116.796	1.95%
Total	5994.3	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	4069.45	67.89%
60- 90	33.783	0.56%
0-90	4103.23	68.45%
90- 180	1891.07	31.55%
0- 180	5994.3	100%

Table 5: Zonal Lumen

Illuminance Plots- Goniophotometer Method

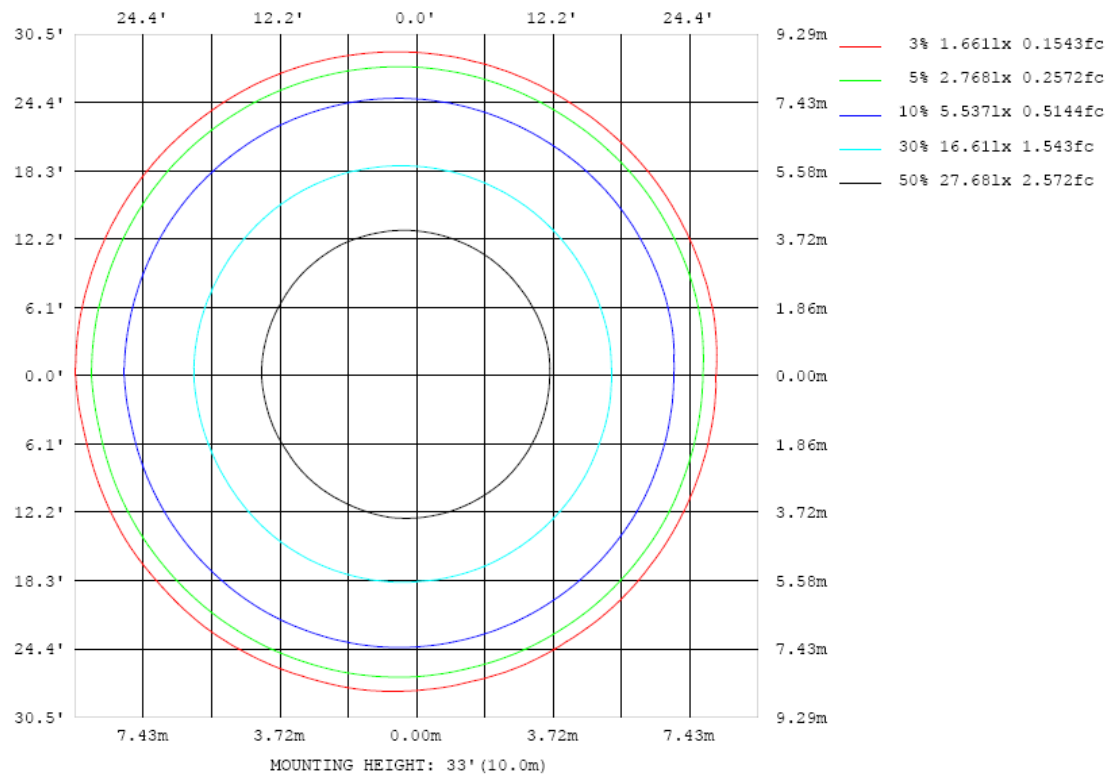


Chart 5: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

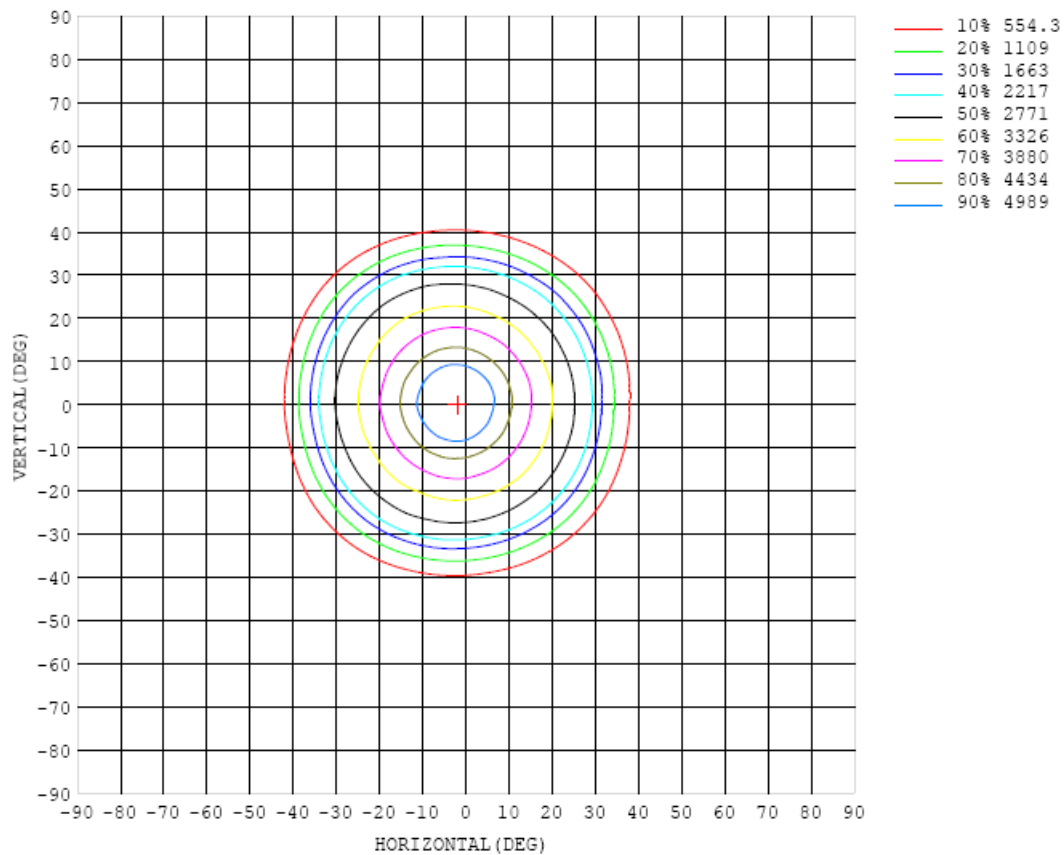


Chart 6: Isocandela Plot

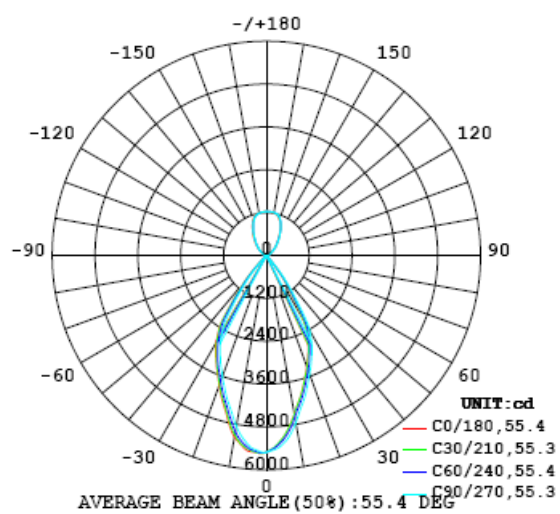


Chart 7: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508
5	5154	5146	5141	5147	5171	5182	5207	5232	5260	5304	5333	5362	5399	5441	5466	5479	5488	5496	5501
10	4516	4513	4506	4523	4544	4564	4604	4651	4695	4754	4809	4856	4898	4950	5000	5045	5087	5115	5158
15	3898	3892	3893	3908	3933	3964	3992	4034	4081	4129	4184	4217	4252	4298	4333	4366	4402	4431	4467
20	3322	3322	3330	3342	3372	3398	3423	3451	3497	3531	3567	3605	3634	3677	3714	3749	3792	3823	3872
25	2785	2796	2794	2814	2826	2863	2895	2936	2975	3011	3058	3089	3123	3162	3189	3217	3255	3293	3326
30	2055	2059	2071	2105	2158	2208	2260	2317	2357	2417	2474	2521	2577	2620	2652	2678	2709	2758	2814
35	1001	1001	1006	1033	1058	1094	1135	1190	1244	1311	1382	1445	1510	1596	1660	1740	1803	1856	1952
40	256	255	252	261	277	290	315	374	411	481	543	592	650	696	747	787	815	845	910
45	39.7	39.7	39.3	39.3	39.9	40.8	45.1	46.9	53.4	56.8	58.4	67.4	67.5	84.2	98.7	117	133	149	185
50	22.6	22.9	22.5	22.4	22.9	23.1	23.7	24.6	25.6	26.9	28.2	28.4	28.1	28.4	28.5	28.9	28.9	30.0	31.9
55	16.6	16.8	16.5	16.4	16.7	17.0	17.1	17.8	18.1	18.9	19.6	19.4	18.9	18.8	18.7	18.8	18.1	18.7	19.4
60	13.5	13.7	13.4	13.2	13.6	13.7	13.9	14.5	14.7	15.1	15.7	15.3	14.8	14.8	14.6	14.8	14.1	14.0	14.4
65	11.8	12.1	11.8	11.4	11.8	12.0	11.9	12.7	12.8	13.2	13.4	13.1	12.6	12.7	12.5	12.9	11.9	11.6	12.0
70	10.8	11.0	10.8	10.1	10.8	10.9	10.8	11.5	11.6	12.0	12.3	11.6	11.2	11.4	11.4	11.7	10.7	10.3	10.8
75	10.1	10.2	10.0	9.09	10.1	10.2	10.1	10.9	10.6	11.1	11.1	10.5	10.3	10.4	10.5	11.2	9.90	9.43	10.1
80	9.26	9.32	9.01	7.91	9.16	9.27	9.10	10.2	10.1	10.8	10.5	9.45	9.31	9.42	9.71	10.9	10.1	9.04	9.73
85	8.78	8.68	8.36	6.82	8.31	8.54	8.32	9.55	9.66	10.4	10.3	9.66	9.77	9.55	9.34	10.6	9.56	8.18	8.81
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	22.6	23.2	23.8	25.6	25.4	27.7	25.8	25.7	24.7	24.6	25.6	24.9	25.1	25.6	26.4	25.1	24.0	24.4	23.4
100	35.1	35.8	35.2	36.2	37.0	39.9	39.7	38.6	38.2	37.9	38.9	38.1	38.1	38.5	39.4	38.2	37.1	37.0	35.9
105	50.3	50.8	50.5	50.9	51.2	53.9	54.5	53.9	54.0	53.6	54.5	53.3	53.4	53.7	54.1	53.5	52.8	52.3	51.2
110	71.2	73.4	72.8	73.1	73.0	75.5	77.0	76.7	77.3	77.0	77.5	76.2	76.6	76.6	76.7	75.7	74.6	74.1	72.6
115	102	105	105	104	104	106	109	109	110	110	110	109	109	109	109	107	106	105	103
120	144	149	149	147	146	149	153	155	155	154	154	154	155	155	154	152	151	148	147
125	201	207	208	207	204	206	211	213	214	213	213	213	215	215	214	211	210	207	205
130	275	282	284	284	281	280	286	290	292	290	290	291	293	294	293	290	289	286	283
135	367	374	377	377	375	374	376	383	386	384	384	386	388	388	389	387	386	383	377
140	475	485	488	489	488	486	488	494	499	499	498	499	501	503	503	502	500	497	491
145	607	617	620	623	623	624	624	630	634	636	634	636	637	637	637	638	635	630	625
150	760	771	775	781	782	783	786	792	794	795	794	794	792	792	793	792	790	784	775
155	923	934	941	945	948	955	960	964	966	964	966	964	962	960	958	955	951	943	937
160	1073	1081	1084	1090	1094	1098	1104	1111	1109	1110	1113	1111	1108	1104	1102	1098	1094	1087	1082
165	1171	1177	1179	1181	1183	1188	1191	1195	1197	1199	1200	1201	1194	1192	1187	1185	1181	1178	1177
170	1214	1215	1217	1219	1219	1222	1225	1227	1228	1227	1230	1228	1227	1223	1220	1215	1213	1212	1210
175	1228	1229	1230	1233	1233	1233	1234	1236	1236	1234	1235	1236	1232	1232	1229	1227	1226	1227	1226
180	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232

Table 6: 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	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508	5508		
5	5492	5474	5453	5456	5438	5428	5405	5383	5367	5332	5294	5269	5239	5219	5198	5181	5173		
10	5137	5119	5102	5077	5044	5010	4966	4900	4849	4776	4742	4679	4639	4605	4573	4556	4536		
15	4460	4454	4415	4400	4364	4333	4295	4247	4206	4146	4092	4054	4016	3990	3961	3948	3923		
20	3855	3843	3832	3815	3780	3749	3695	3647	3602	3539	3493	3449	3408	3377	3358	3356	3350		
25	3320	3313	3302	3286	3263	3224	3178	3120	3066	3012	2959	2913	2875	2848	2821	2817	2801		
30	2818	2797	2768	2745	2712	2665	2613	2550	2482	2419	2357	2315	2264	2220	2182	2142	2120		
35	1965	1936	1900	1860	1791	1734	1650	1538	1474	1379	1287	1219	1182	1140	1102	1079	1055		
40	905	892	874	853	816	772	718	668	615	553	495	442	401	366	327	306	295		
45	187	181	174	159	141	127	97.9	80.6	69.5	59.6	53.5	48.5	45.2	43.1	41.8	41.4	41.4		
50	32.8	32.5	32.0	31.5	31.2	31.3	31.4	31.0	30.6	28.8	26.9	25.0	24.0	23.5	23.1	23.1	23.1		
55	20.2	20.1	20.0	19.9	19.9	20.1	20.3	20.0	20.4	19.3	18.9	18.2	17.5	17.5	17.0	16.9	17.1		
60	15.4	15.4	15.4	15.3	15.3	15.6	15.9	15.3	15.8	15.1	15.0	14.7	14.3	14.4	13.9	13.8	14.0		
65	12.9	13.1	13.2	13.1	13.0	13.2	13.3	12.5	13.3	12.6	12.8	12.7	12.4	12.8	12.1	12.0	12.1		
70	11.5	11.9	11.9	11.7	12.0	12.0	11.9	10.9	11.9	11.2	11.5	11.6	11.2	11.8	11.2	11.0	11.1		
75	10.8	11.3	11.4	11.3	11.3	11.1	10.9	9.80	11.0	10.2	10.6	10.7	10.6	11.3	10.6	10.3	10.5		
80	10.5	10.8	10.7	10.5	10.5	10.5	10.5	9.48	10.8	9.65	9.99	10.1	9.55	10.9	9.85	9.58	9.61		
85	9.70	9.91	9.81	9.52	9.56	9.51	9.60	8.80	10.1	9.55	10.1	9.86	9.51	10.7	9.66	9.40	9.26		
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
95	21.7	20.4	19.8	21.8	21.6	23.3	23.2	22.4	21.1	20.5	19.5	18.7	18.5	18.6	16.7	18.9	20.2		
100	34.1	32.3	31.6	33.1	32.5	33.8	33.8	33.5	31.4	31.2	30.5	29.6	29.0	29.1	29.1	31.9	33.4		
105	49.6	47.8	47.1	48.0	48.9	48.4	48.9	47.9	46.1	45.7	44.9	43.8	42.2	43.2	44.8	47.9	48.9		
110	69.9	68.3	67.4	67.3	70.6	67.2	68.1	67.0	65.5	64.7	63.8	62.2	61.6	62.9	65.1	68.8	70.3		
115	99.7	97.6	96.2	96.1	97.9	95.4	95.7	94.8	93.0	91.3	90.1	88.6	88.7	91.1	94.1	98.1	99.1		
120	141	139	137	137	136	134	134	133	131	129	127	127	127	131	135	139	141		
125	198	195	192	191	189	188	187	185	184	181	179	178	181	186	191	195	198		
130	274	269	265	262	260	258	257	256	254	251	249	248	254	261	264	268	272		
135	369	363	355	351	347	345	344	343	341	336	335	338	344	352	354	358	363		
140	479	472	462	457	452	447	446	445	442	438	439	444	450	455	460	466	471		
145	608	596	589	582	574	570	569	567	566	564	565	569	574	580	588	595	600		
150	758	747	741	730	722	717	716	713	711	712	714	717	721	728	737	745	753		
155	922	911	902	894	885	881	881	880	878	879	882	880	884	891	899	907	914		
160	1074	1064	1056	1048	1047	1043	1041	1037	1037	1039	1039	1041	1045	1047	1051	1058	1066		
165	1172	1168	1164	1159	1156	1155	1153	1151	1147	1147	1149	1150	1152	1155	1159	1165	1168		
170	1209	1208	1209	1208	1206	1204	1202	1200	1198	1198	1198	1200	1202	1204	1206	1209	1211		
175	1224	1224	1226	1224	1223	1225	1226	1226	1224	1226	1227	1225	1227	1225	1225	1227	1229		
180	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232		

Table 7: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Feb. 18, 2024	-
Digital Power Meter	PF2010A	HZTE028-01	Aug. 01, 2023	Jul. 31, 2024
AC Power Supply	DPS1060	HZTE001-06	Aug. 01, 2023	Jul. 31, 2024
DC Power Supply	WY12010	HZTE004-03	Aug. 01, 2023	Jul. 31, 2024
Temperature recorder	JM624U	HZTE018-08	Aug. 04, 2023	Aug. 03, 2024
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 04, 2023	Aug. 03, 2024
Standard source	D908	HZTE012-01	Aug. 14, 2018	-
Integrate Sphere system	3M	HZTE015-04	Feb. 18, 2024	-
Digital Power Meter	WT210	HZTE008-01	Aug. 01, 2023	Jul. 31, 2024
AC Power Supply	PCR 500L	HZTE001-07	Aug. 01, 2023	Jul.31, 2024
DC Power Supply	IT6154	HZTE004-04	Aug. 01, 2023	Jul. 31, 2024
Standard source	SCL-1400	HZTE012-06	Nov. 04, 2021	-
Temperature and humidity recorder	JR900	HZTE018-02	Aug. 04, 2023	Aug. 03, 2024
Temperature Meter	TES1310	HZTE017-01	Aug. 04, 2023	Aug. 03, 2024

Table 8: 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.

Sphere-Spectroradiometer Method- Photometric and Electrical Measurements

A Labsphere Model CDS 2100 Spectroradiometer and 3 Meter Sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit. The coating reflectance of each sphere is 98%. The measure geometry is 4π . Self-absorption correction is conducted in testing. Bandwidth of spectroradiometer is 350nm-1050nm.

Ambient temperature was measured at a position inside the sphere. 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 20 min, taken 10 minutes apart, is less than 0.5 %.

Electrical measurements including voltage, current, and power were measured using the Yokogawa Power Analyzer.

The standard reference of the integrated sphere system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Standards and Technology.

The uncertainty of integrating sphere system reported in this document is expanded uncertainty is 2.1% with a coverage factor $k=2$.

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 20 min, taken 10 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.

*** End of Report ***

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