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 Lamp

Model: 24PAR38HODIM/9CCTS/277V/SD

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

Room 803, 8th floor, Building 1, No.603-2 Kangxin Road, Tangqi Town, Linping District, Hangzhou, Zhejiang, China

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Report No.: HZ25120006a

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

Review by: Wei Fei

Engineer: Wei Fei

Dec. 24, 2025

Approve by:

Manager: April Zou

Dec. 24, 2025

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

TEST SUMMARY

Sample Tested: **24PAR38HODIM/9CCTS/277V/SD**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
128.5	3007.6	23.41	0.9747

CCT (K)	CRI	Stabilization Time (Light & Power)
2773	91.4	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 : Dec. 09, 2025

Date of Test : Dec.12, 2025

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

TABLE OF CONTENT

SAMPLE PHOTO

Figure 1- Overview of the sample

Equipment Under Test(EUT)	Customer provided information
Name	: LED Lamp
Model	: 24PAR38HODIM/9CCTS/277V/SD
Electrical Ratings	: 120-277V, 50/60Hz, Field-Adjustable 24W/19W/14W
Product Description	: Color- Tunable 2700K/3000K/3500K/4000K/5000K
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 ℃.

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)	0.200
Power Factor	0.9747
Test Power (W)	23.41
THD A%	13.43
Luminous Efficacy (lm/W)	128.5
Total Luminous Flux (lm)	3007.6
Color Rendering Index (CRI)	91.4
R9	50.9
Correlated Color Temperature (CCT)(K)	2773
Chromaticity Chroma x	0.4584
Chromaticity Chroma y	0.4177
Chromaticity Chroma u	0.2584
Chromaticity Chroma v	0.3532
Duv	0.0028
Chromaticity Chroma u ’	0.2584
Chromaticity Chroma v’	0.5298

Special Color Rendering Indices	
R1	91.8
R2	94.3
R3	95.8
R4	92.8
R5	90.9
R6	94.8
R7	91.7
R8	79.3
R9	50.9
R10	85
R11	93.7
R12	80.5
R13	91.8
R14	96.3

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 ℃.

The photometric distance is 2.47 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)	0.200
Power Factor	0.9756
Power (W)	23.46
Luminous Efficacy (lm/W)	128.4
Total Luminous Flux (lm)	3013.0
Beam Angle (°)	34.7 (0^o-180^o) / 33.9 (90^o-270^o)
Center Beam Candle Power (cd)	5688
Maximum Beam Candle Power (cd)	5688 (At: C=0.0, Gamma=0.0)
Spacing Criteria	0.54 (0^o-180^o) / 0.57 (90^o-270^o)
Zonal Lumens in the 0 °-60 °Zone	96.13%
Zonal Lumens in the 60 °-90 °Zone	3.73%
Zonal Lumens in the 90 °-120 °Zone	0.02%
Zonal Lumens in the 120 °-180 °Zone	0.12%

Table 3: Test data per Goniophotometer Method

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Spectral Power Distribution - Sphere Spectroradiometer Method

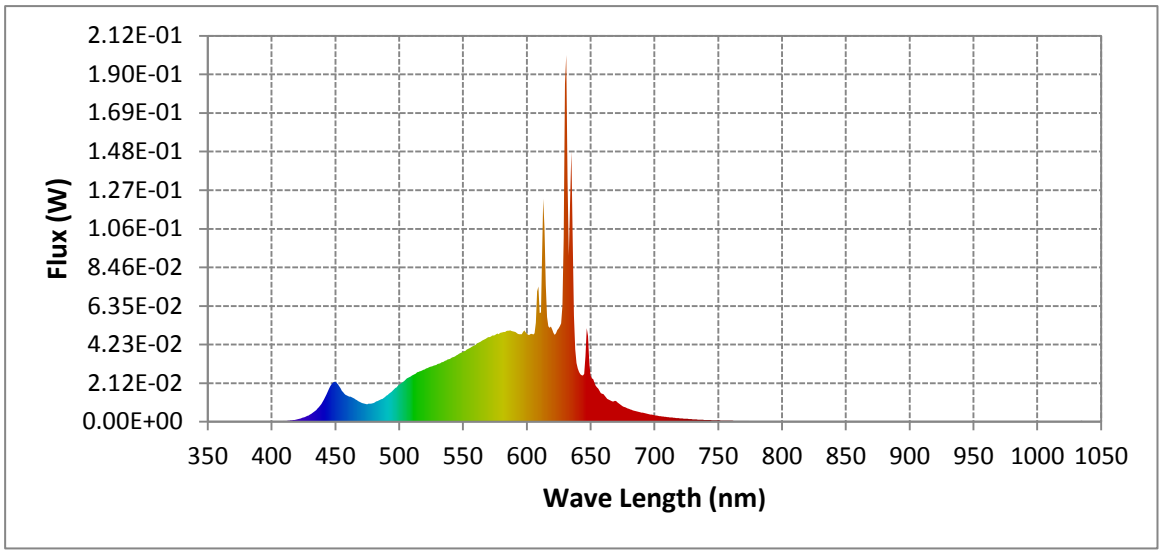

Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	5.28E-05	485	1.19E-02	590	4.94E-02	695	4.32E-03
385	1.65E-04	490	1.42E-02	595	4.79E-02	700	3.59E-03
390	2.35E-04	495	1.72E-02	600	4.83E-02	705	3.02E-03
395	2.53E-04	500	2.02E-02	605	4.79E-02	710	2.60E-03
400	1.26E-04	505	2.31E-02	610	5.96E-02	715	2.20E-03
405	1.99E-04	510	2.53E-02	615	7.50E-02	720	1.87E-03
410	3.92E-04	515	2.73E-02	620	5.05E-02	725	1.64E-03
415	7.23E-04	520	2.87E-02	625	5.11E-02	730	1.36E-03
420	1.38E-03	525	3.02E-02	630	1.85E-01	735	1.15E-03
425	2.34E-03	530	3.17E-02	635	1.48E-01	740	1.02E-03
430	3.98E-03	535	3.29E-02	640	2.91E-02	745	8.18E-04
435	6.36E-03	540	3.45E-02	645	2.61E-02	750	7.34E-04
440	1.10E-02	545	3.64E-02	650	2.53E-02	755	6.34E-04
445	1.81E-02	550	3.82E-02	655	1.89E-02	760	5.68E-04
450	2.18E-02	555	4.02E-02	660	1.51E-02	765	4.75E-04
455	1.70E-02	560	4.22E-02	665	1.18E-02	770	4.07E-04
460	1.41E-02	565	4.45E-02	670	1.14E-02	775	3.41E-04
465	1.27E-02	570	4.64E-02	675	8.59E-03	780	2.78E-04
470	1.06E-02	575	4.75E-02	680	7.13E-03		
475	9.62E-03	580	4.88E-02	685	5.93E-03		
480	1.03E-02	585	4.99E-02	690	5.04E-03		

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

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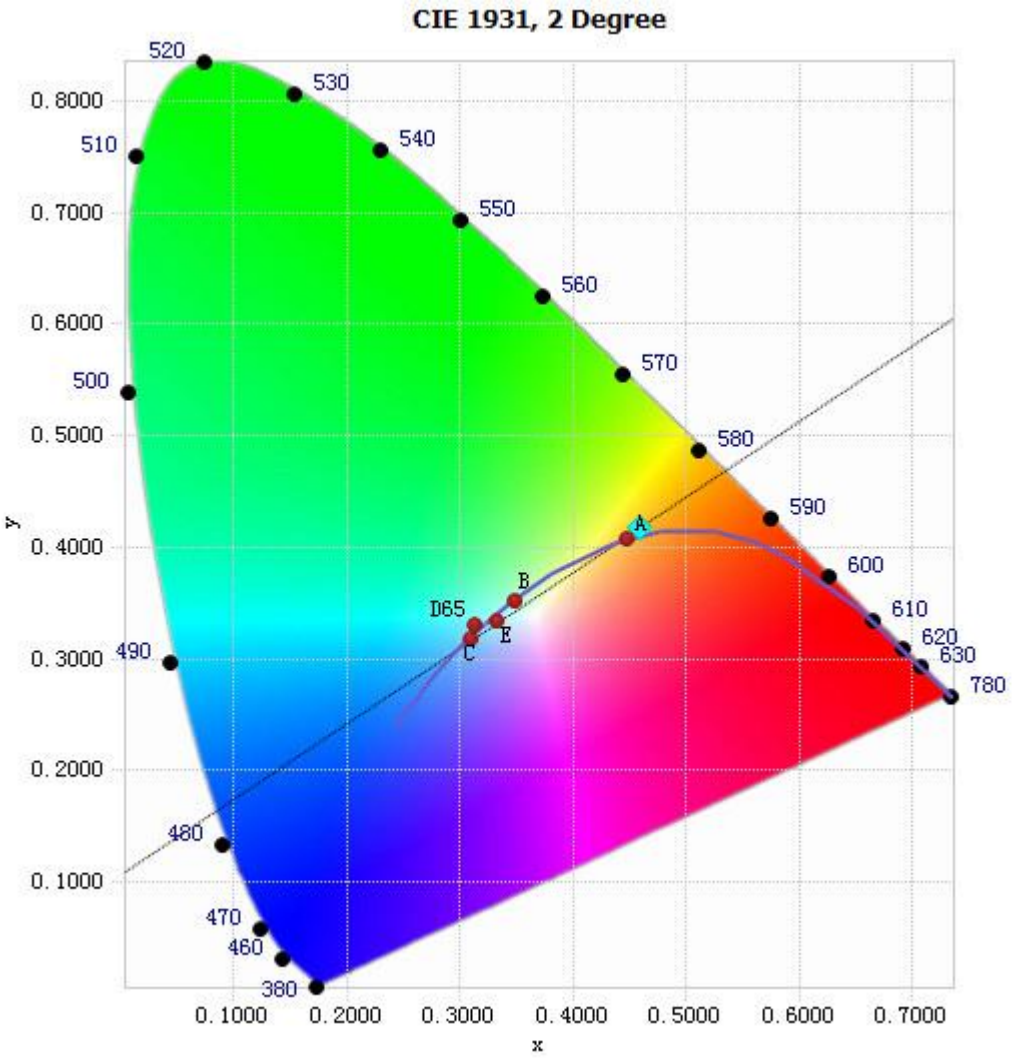
Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4584, 0.4177)

Chart 2: Chromaticity Diagram per Sphere - Spectroradiometer Method

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

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Nominal CCT Quadrangles – Sphere Spectroradiometer Method

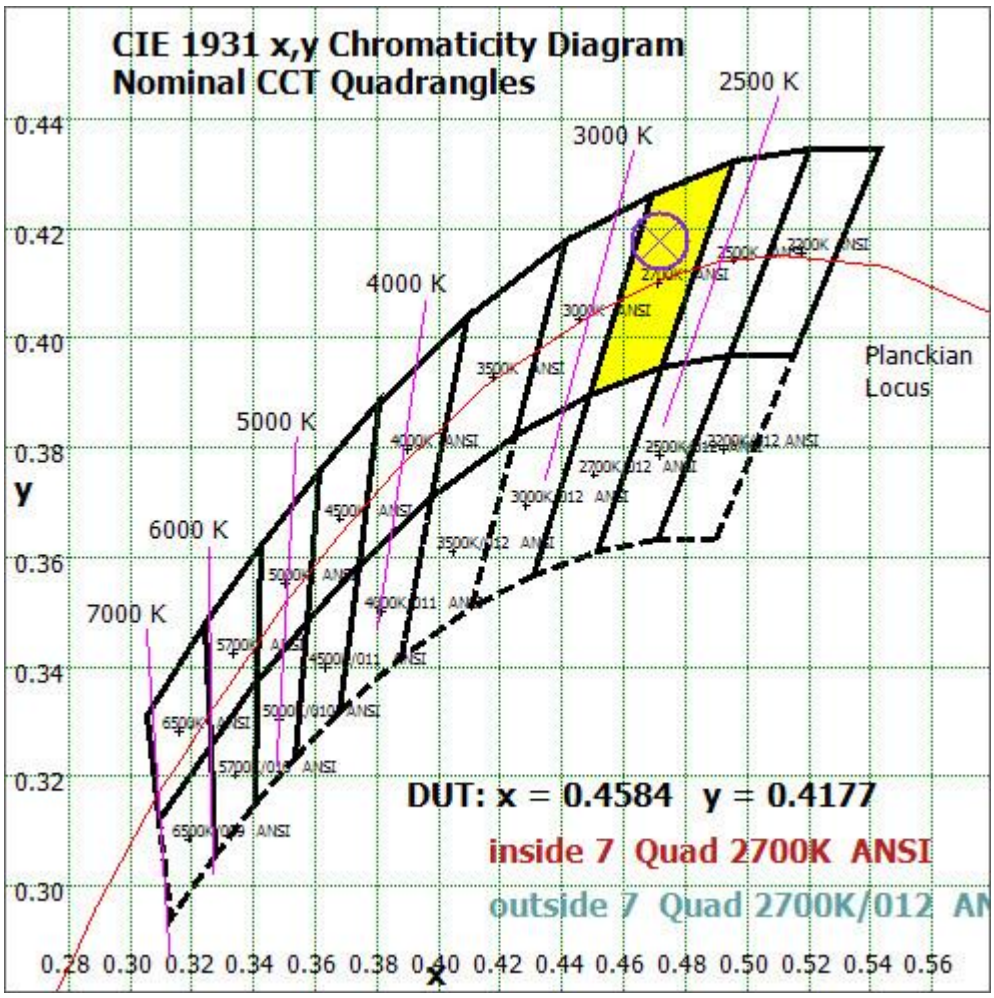

Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

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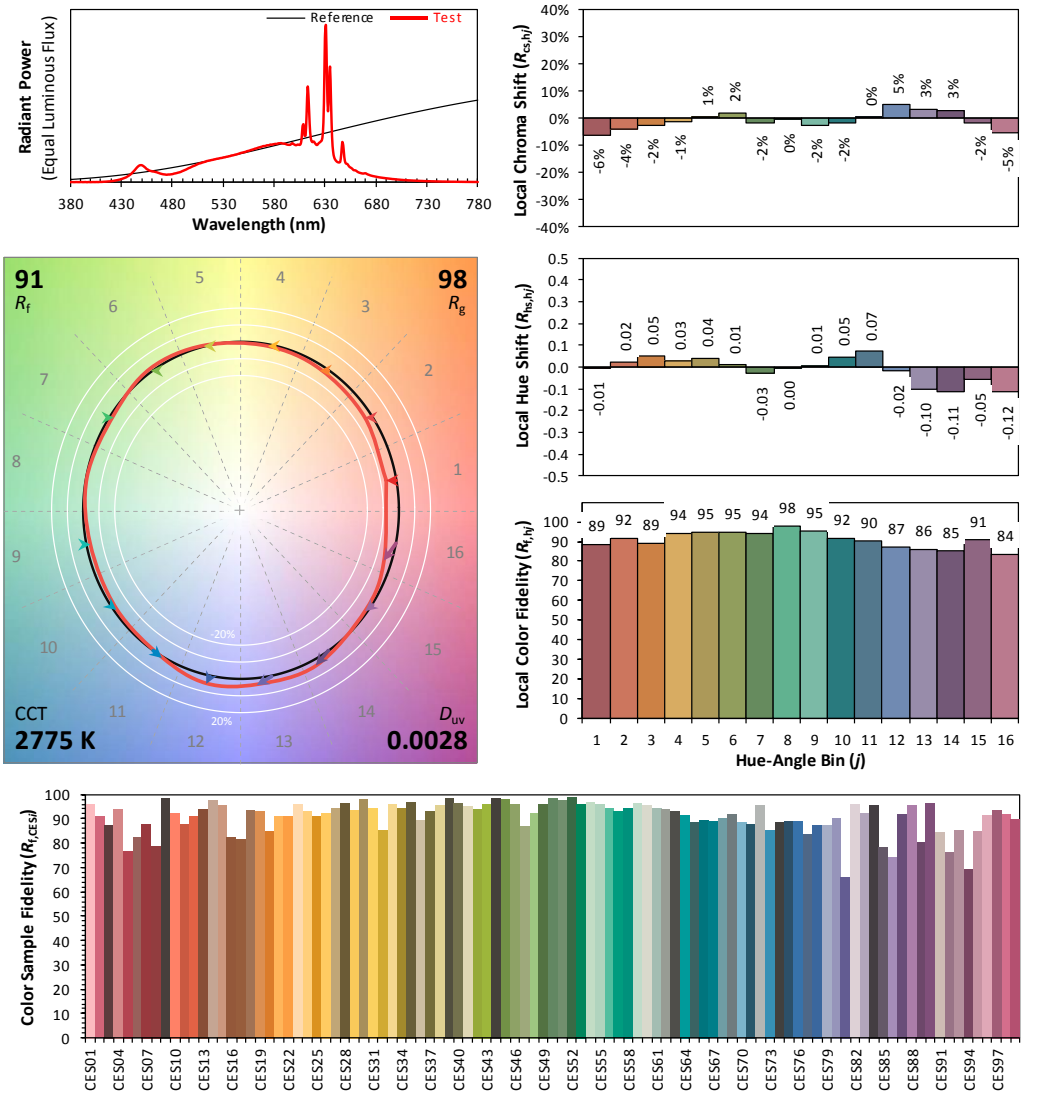
Color Rendition Report – Sphere Spectroradiometer Method

ANSI/IES TM-30-18 Color Rendition Report

Source: LED **Manufacturer:** GREEN CREATIVE LTD

Date: 2025/12/12 **Model:** 24PAR38HODIM/9CCTS/277V/SD



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

x	0.4584
y	0.4177
u'	0.2584
v'	0.5298

CIE 13.3-1995 (CRI)

R_a	91
R_9	51

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

γ(°)	Lumens	% Total
0- 10	478.935	15.90%
10- 20	914.188	30.34%
20- 30	726.521	24.11%
30- 40	432.445	14.35%
40- 50	220.458	7.32%
50- 60	123.931	4.11%
60- 70	68.794	2.28%
70- 80	34.602	1.15%
80- 90	8.924	0.30%
90-100	0.212	0.01%
100-110	0.109	0.00%
110-120	0.151	0.01%
120-130	0.286	0.01%
130-140	0.637	0.02%
140-150	0.965	0.03%
150-160	0.975	0.03%
160-170	0.665	0.02%
170-180	0.21	0.01%
Total	3013.0	100%

γ(°)	Lumens	% Total
0- 60	2896.478	96.13%
60- 90	112.32	3.73%
0-90	3008.798	99.86%
90- 180	4.21	0.14%
0- 180	3013.0	100%

Table 5: Zonal Lumen

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Illuminance Plots- Goniophotometer Method

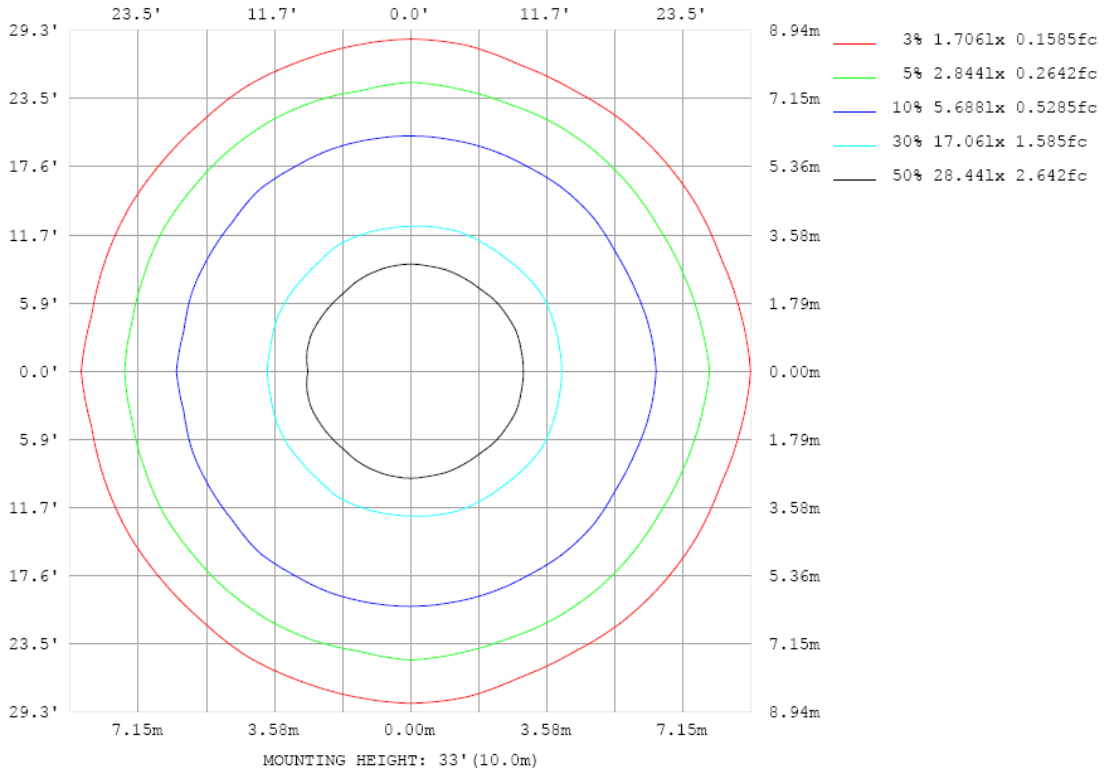

Chart 5: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

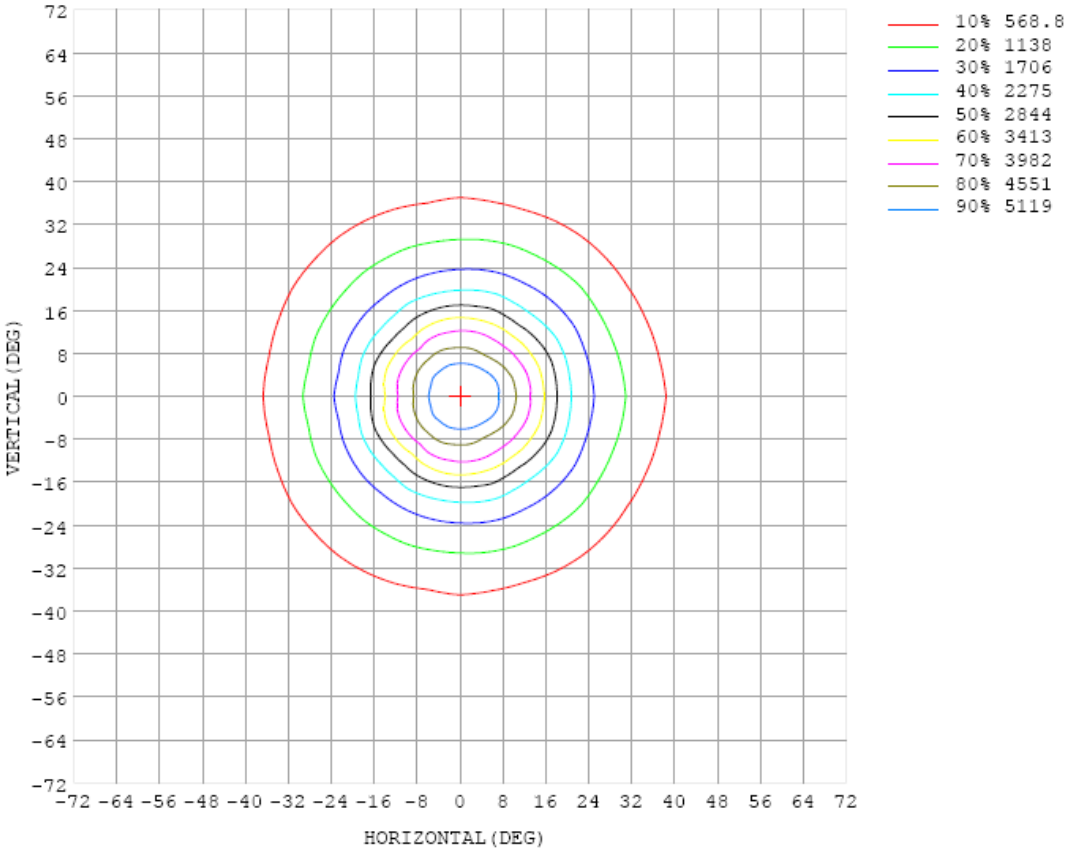

Chart 6: Isocandela Plot

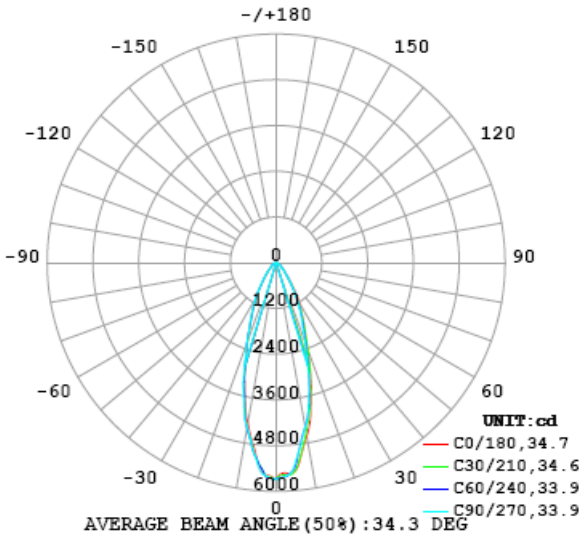

Chart 7: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688
5	5503	5535	5557	5515	5459	5438	5427	5433	5418	5374	5338	5318	5290	5267	5286	5291	5283	5315	5341
10	4626	4608	4603	4535	4464	4392	4377	4396	4400	4379	4414	4425	4407	4361	4397	4402	4382	4357	4272
15	3557	3555	3552	3497	3440	3373	3364	3345	3335	3345	3335	3304	3277	3194	3227	3264	3326	3291	3182
20	2431	2429	2435	2430	2348	2290	2282	2311	2275	2231	2213	2226	2235	2156	2145	2184	2197	2154	2186
25	1706	1677	1669	1683	1657	1627	1594	1598	1592	1559	1530	1527	1492	1471	1489	1510	1513	1503	1551
30	1217	1180	1143	1126	1136	1112	1094	1095	1080	1066	1066	1073	1055	1067	1029	1028	1040	1018	1069
35	781	759	714	680	683	672	662	666	671	686	654	661	652	685	677	661	648	630	671
40	484	445	424	423	422	413	401	402	420	434	429	426	421	408	405	412	406	398	423
45	314	306	304	293	286	283	279	286	293	286	290	287	274	267	267	264	269	267	295
50	209	198	192	187	184	184	189	193	190	192	186	184	182	175	179	179	185	179	185
55	150	146	144	143	138	140	139	135	142	146	146	142	142	135	139	137	137	134	136
60	102	101	98.9	97.3	96.5	96.2	95.7	94.9	95.2	96.3	95.0	95.6	94.6	90.8	90.8	91.6	95.2	92.5	94.4
65	72.1	71.8	71.1	70.1	69.4	68.7	68.7	68.0	68.8	67.5	67.9	68.4	67.8	65.8	66.0	66.4	68.2	66.6	69.7
70	51.1	51.2	50.8	50.4	49.5	48.9	48.9	48.5	48.8	48.5	48.6	48.8	48.4	47.2	47.1	47.3	47.8	46.8	49.6
75	34.7	34.7	34.5	34.2	33.6	33.3	33.2	32.8	32.6	32.5	32.1	32.2	32.1	30.5	30.7	31.1	31.5	30.8	33.5
80	20.1	20.0	19.7	19.5	19.0	18.8	18.6	18.3	18.0	17.8	17.6	17.8	17.7	16.5	16.6	16.9	17.2	16.4	18.5
85	8.81	8.73	8.57	8.38	8.20	7.92	7.68	7.50	7.24	7.16	7.16	7.01	7.02	6.32	6.38	6.57	6.74	6.22	7.72
90	1.98	1.92	1.87	1.77	1.71	1.60	1.49	1.43	1.32	1.31	1.29	1.24	1.24	0.88	0.90	0.96	1.02	0.74	1.39
95	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.02
100	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.03
105	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.04
110	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.05
115	0.15	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.16	0.15	0.15	0.15	0.15	0.08
120	0.18	0.19	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.21	0.21	0.21	0.21	0.22	0.22	0.21	0.21	0.21	0.12
125	0.24	0.27	0.27	0.27	0.28	0.29	0.30	0.30	0.31	0.32	0.33	0.33	0.33	0.35	0.35	0.34	0.34	0.32	0.19
130	0.37	0.42	0.42	0.44	0.45	0.47	0.48	0.50	0.52	0.54	0.55	0.56	0.57	0.60	0.59	0.58	0.57	0.55	0.34
135	0.62	0.72	0.73	0.76	0.79	0.81	0.83	0.85	0.86	0.87	0.88	0.88	0.88	0.92	0.91	0.90	0.90	0.84	0.43
140	0.94	1.14	1.13	1.15	1.16	1.18	1.20	1.21	1.22	1.22	1.23	1.23	1.23	1.27	1.26	1.25	1.27	1.15	0.60
145	1.25	1.56	1.53	1.55	1.56	1.58	1.59	1.60	1.60	1.61	1.60	1.60	1.60	1.64	1.63	1.62	1.65	1.45	0.82
150	1.51	1.97	1.92	1.92	1.93	1.94	1.94	1.95	1.95	1.95	1.95	1.94	1.94	1.97	1.97	1.96	2.00	1.71	1.10
155	1.71	2.30	2.22	2.21	2.20	2.18	2.17	2.16	2.15	2.15	2.15	2.15	2.15	2.19	2.18	2.18	2.23	1.83	1.34
160	1.75	2.38	2.32	2.32	2.33	2.33	2.34	2.35	2.35	2.34	2.34	2.34	2.34	2.36	2.37	2.36	2.42	1.85	1.56
165	1.76	2.41	2.41	2.39	2.39	2.39	2.40	2.42	2.44	2.45	2.46	2.47	2.47	2.50	2.50	2.50	2.53	1.83	1.83
170	1.87	2.20	2.45	2.40	2.40	2.39	2.38	2.37	2.38	2.38	2.38	2.39	2.40	2.41	2.42	2.43	2.24	1.79	1.77
175	1.86	1.84	1.94	2.19	2.24	2.19	2.18	2.16	2.14	2.13	2.14	2.16	2.20	2.23	2.25	2.08	2.08	2.08	2.07
180	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15

Table 6: Luminous Intensity Data

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Table--2 UNIT: cd

γ (DEG) \ C (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688	5688		
5	5315	5283	5291	5286	5267	5290	5318	5338	5374	5418	5433	5427	5438	5459	5515	5557	5535		
10	4357	4382	4402	4397	4361	4407	4425	4414	4379	4400	4396	4377	4392	4464	4535	4603	4608		
15	3291	3326	3264	3227	3194	3277	3304	3335	3345	3335	3345	3364	3373	3440	3497	3552	3555		
20	2154	2197	2184	2145	2156	2235	2226	2213	2231	2275	2311	2282	2290	2348	2430	2435	2429		
25	1503	1513	1510	1489	1471	1492	1527	1530	1559	1592	1598	1594	1627	1657	1683	1669	1677		
30	1018	1040	1028	1029	1067	1055	1073	1066	1066	1080	1095	1094	1112	1136	1126	1143	1180		
35	630	648	661	677	685	652	661	654	686	671	666	662	672	683	680	714	759		
40	398	406	412	405	408	421	426	429	434	420	402	401	413	422	423	424	445		
45	267	269	264	267	267	274	287	290	286	293	286	279	283	286	293	304	306		
50	179	185	179	179	175	182	184	186	192	190	193	189	184	184	187	192	198		
55	134	137	137	139	135	142	142	146	146	142	135	139	140	138	143	144	146		
60	92.5	95.2	91.6	90.8	90.8	94.6	95.6	95.0	96.3	95.2	94.9	95.7	96.2	96.5	97.3	98.9	101		
65	66.6	68.2	66.4	66.0	65.8	67.8	68.4	67.9	67.5	68.8	68.0	68.7	68.7	69.4	70.1	71.1	71.8		
70	46.8	47.8	47.3	47.1	47.2	48.4	48.8	48.6	48.5	48.8	48.5	48.9	48.9	49.5	50.4	50.8	51.2		
75	30.8	31.5	31.1	30.7	30.5	32.1	32.2	32.1	32.5	32.6	32.8	33.2	33.3	33.6	34.2	34.5	34.7		
80	16.4	17.2	16.9	16.6	16.5	17.7	17.8	17.6	17.8	18.0	18.3	18.6	18.8	19.0	19.5	19.7	20.0		
85	6.22	6.74	6.57	6.38	6.32	7.02	7.01	7.16	7.16	7.24	7.50	7.68	7.92	8.20	8.38	8.57	8.73		
90	0.74	1.02	0.96	0.90	0.88	1.24	1.24	1.29	1.31	1.32	1.43	1.49	1.60	1.71	1.77	1.87	1.92		
95	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07		
100	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09		
105	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11		
110	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13		
115	0.15	0.15	0.15	0.15	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.16		
120	0.21	0.21	0.21	0.22	0.22	0.21	0.21	0.21	0.21	0.20	0.20	0.19	0.19	0.19	0.19	0.19	0.19		
125	0.32	0.34	0.34	0.35	0.35	0.33	0.33	0.33	0.32	0.31	0.30	0.30	0.29	0.28	0.27	0.27	0.27		
130	0.55	0.57	0.58	0.59	0.60	0.57	0.56	0.55	0.54	0.52	0.50	0.48	0.47	0.45	0.44	0.42	0.42		
135	0.84	0.90	0.90	0.91	0.92	0.88	0.88	0.88	0.87	0.86	0.85	0.83	0.81	0.79	0.76	0.73	0.72		
140	1.15	1.27	1.25	1.26	1.27	1.23	1.23	1.23	1.22	1.22	1.21	1.20	1.18	1.16	1.15	1.13	1.14		
145	1.45	1.65	1.62	1.63	1.64	1.60	1.60	1.60	1.61	1.60	1.60	1.59	1.58	1.56	1.55	1.53	1.56		
150	1.71	2.00	1.96	1.97	1.97	1.94	1.94	1.95	1.95	1.95	1.95	1.94	1.94	1.93	1.92	1.92	1.97		
155	1.83	2.23	2.18	2.18	2.19	2.15	2.15	2.15	2.15	2.15	2.16	2.17	2.18	2.20	2.21	2.22	2.30		
160	1.85	2.42	2.36	2.37	2.36	2.34	2.34	2.34	2.34	2.35	2.35	2.34	2.33	2.33	2.32	2.32	2.38		
165	1.83	2.53	2.50	2.50	2.50	2.47	2.47	2.46	2.45	2.44	2.42	2.40	2.39	2.39	2.39	2.41	2.41		
170	1.79	2.24	2.43	2.42	2.41	2.40	2.39	2.38	2.38	2.38	2.37	2.38	2.39	2.40	2.40	2.45	2.20		
175	2.08	2.08	2.08	2.25	2.23	2.20	2.16	2.14	2.13	2.14	2.16	2.18	2.19	2.24	2.19	1.94	1.84		
180	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15		

Table 7: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Oct. 09, 2025	-
Digital Power Meter	PF2010A	HZTE028-01	Aug. 07, 2025	Aug. 06, 2026
AC Power Supply	DPS1060	HZTE001-06	Aug. 07, 2025	Aug. 06, 2026
DC Power Supply	WY12010	HZTE004-03	Aug. 07, 2025	Aug. 06, 2026
Temperature recorder	JM624U	HZTE018-08	Aug. 07, 2025	Aug. 06, 2026
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 07, 2025	Aug. 06, 2026
Standard source	D908	HZTE012-01	Aug. 14, 2018	-
Integrate Sphere system	3M	HZTE015-04	Aug. 07, 2025	-
Digital Power Meter	WT210	HZTE008-01	Aug. 07, 2025	Aug. 06, 2026
AC Power Supply	PCR 500L	HZTE001-07	Aug. 07, 2025	Aug. 06, 2026
DC Power Supply	IT6154	HZTE004-04	Aug. 07, 2025	Aug. 06, 2026
Standard source	SCL-1400	HZTE012-06	Nov. 04, 2021	-
Temperature and humidity recorder	JR900	HZTE018-02	Aug. 07, 2025	Aug. 06, 2026
Temperature Meter	TES1310	HZTE017-01	Aug. 07, 2025	Aug. 06, 2026

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 expended 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 expended 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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