

## 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: 3.5PLS/8CCTS/HYBM/G23**

**3.5PLS/8CCTS/BYP/2G7**

### Laboratory: Leading Testing Laboratories

**NVLAP CODE: 200960-0**

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Report No.: HZ25080010a

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

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Aug. 27, 2025

Approved by:



*April Zou*

Manager: April Zou  
Aug. 27, 2025

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

## TEST SUMMARY

Tested Model	3.5PLS/8CCTS/ HYBM/G23 2700K Setting	3.5PLS/8CCTS/ HYBM/G23 3000K Setting	3.5PLS/8CCTS/ HYBM/G23 3500K Setting	3.5PLS/8CCTS/ HYBM/G23 4000K Setting
Luminous Efficacy (Lumens /Watt)	131.4	135.2	143.8	142.3
Total Luminous Flux (Lumens)	415.3	423.1	445.8	449.7
Power (Watts)	3.16	3.13	3.10	3.16
Power Factor	0.9701	0.9703	0.9684	0.9702
CCT (K)	2745	3015	3451	4039
CRI	82.4	83.9	84.9	84.2
Stabilization Time (Light & Power)	50 mins	50 mins	50 mins	50 mins
Note	2700K	3000K	3500K	4000K

Table 1: Executive Data Summary

### Test specifications:

Date of Receipt	: Aug. 07, 2025
Date of Test	: Aug. 15, 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

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## SAMPLE PHOTO



Figure 1- Overview of the sample

### Equipment Under Test(EUT)

<b>Name</b>	: LED Lamp
<b>Model</b>	: 3.5PLS/8CCTS/HYBM/G23 3.5PLS/8CCTS/BYP/2G7
<b>Electrical Ratings</b>	: 120-277V, 60Hz, 3.5W
<b>Product Description</b>	: Color- Tunable 2700K/3000K/3500K/4000K
<b>Manufacturer</b>	: GREEN CREATIVE LTD
<b>Address</b>	: Room 3603, Level 36, Tower 1, Enterprise Square Five, 38 Wang Chiu Road, Kowloon Bay, KL, Hong Kong

## TEST RESULTS (2700K Setting)

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	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.027	0.013
Power Factor	0.9701	0.9057
Test Power (W)	3.16	3.32
THD A%	10.64	12.87
Luminous Efficacy (lm/W)	131.4	125.6
Total Luminous Flux (lm)	415.3	417.0
Color Rendering Index (CRI)	82.4	
R9	7.7	
Correlated Color Temperature (CCT)(K)	2745	
Chromaticity Chroma x	0.4525	
Chromaticity Chroma y	0.4032	
Chromaticity Chroma u	0.2610	
Chromaticity Chroma v	0.3489	
Duv	-0.0021	
Chromaticity Chroma u'	0.2610	
Chromaticity Chroma v'	0.5234	

Special Color Rendering Indices	
R1	81.4
R2	92.7
R3	93.8
R4	79.9
R5	82.1
R6	92.1
R7	80.3
R8	56.7
R9	7.7
R10	84
R11	79.9
R12	78.5
R13	84.2
R14	97.3

Table 2: Test data per Sphere-Spectroradiometer Method

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

### Spectral Power Distribution - Sphere Spectroradiometer Method

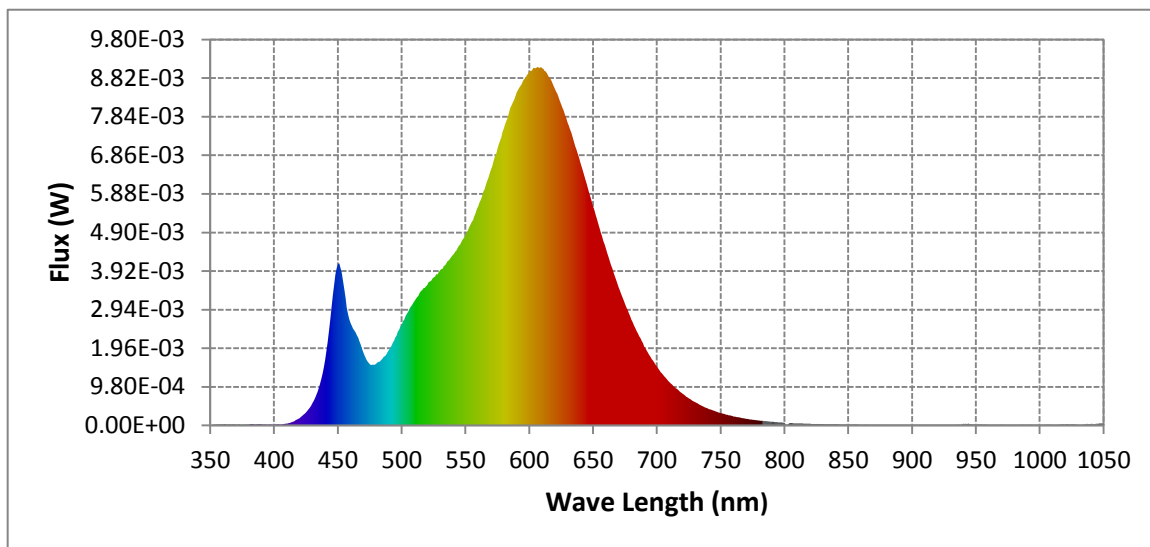


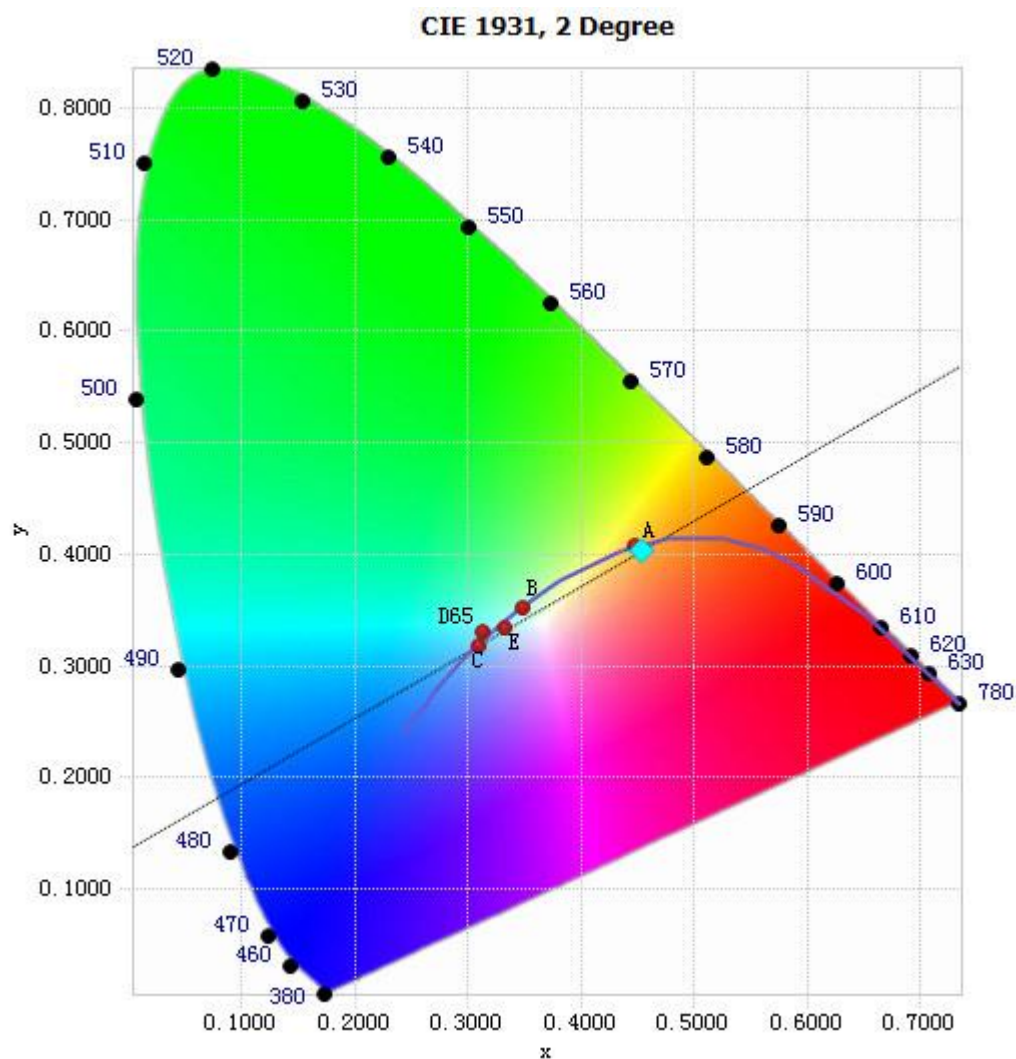
Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	2.60E-05	485	1.69E-03	590	8.45E-03	695	1.74E-03
385	2.16E-05	490	1.91E-03	595	8.75E-03	700	1.50E-03
390	2.61E-05	495	2.23E-03	600	8.99E-03	705	1.28E-03
395	1.61E-05	500	2.56E-03	605	9.06E-03	710	1.10E-03
400	1.99E-05	505	2.88E-03	610	9.06E-03	715	9.40E-04
405	2.25E-05	510	3.16E-03	615	8.87E-03	720	8.09E-04
410	4.18E-05	515	3.41E-03	620	8.56E-03	725	6.89E-04
415	9.59E-05	520	3.56E-03	625	8.16E-03	730	5.89E-04
420	1.85E-04	525	3.75E-03	630	7.70E-03	735	5.01E-04
425	3.33E-04	530	3.94E-03	635	7.20E-03	740	4.30E-04
430	5.66E-04	535	4.11E-03	640	6.68E-03	745	3.69E-04
435	9.46E-04	540	4.32E-03	645	6.13E-03	750	3.13E-04
440	1.67E-03	545	4.57E-03	650	5.55E-03	755	2.69E-04
445	3.01E-03	550	4.82E-03	655	5.01E-03	760	2.27E-04
450	4.09E-03	555	5.16E-03	660	4.49E-03	765	1.99E-04
455	3.44E-03	560	5.56E-03	665	3.99E-03	770	1.67E-04
460	2.60E-03	565	5.99E-03	670	3.50E-03	775	1.44E-04
465	2.29E-03	570	6.49E-03	675	3.08E-03	780	1.25E-04
470	1.86E-03	575	7.02E-03	680	2.68E-03		
475	1.55E-03	580	7.54E-03	685	2.33E-03		
480	1.56E-03	585	8.06E-03	690	2.01E-03		

Table 3: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method



## Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4525, 0.4032)

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

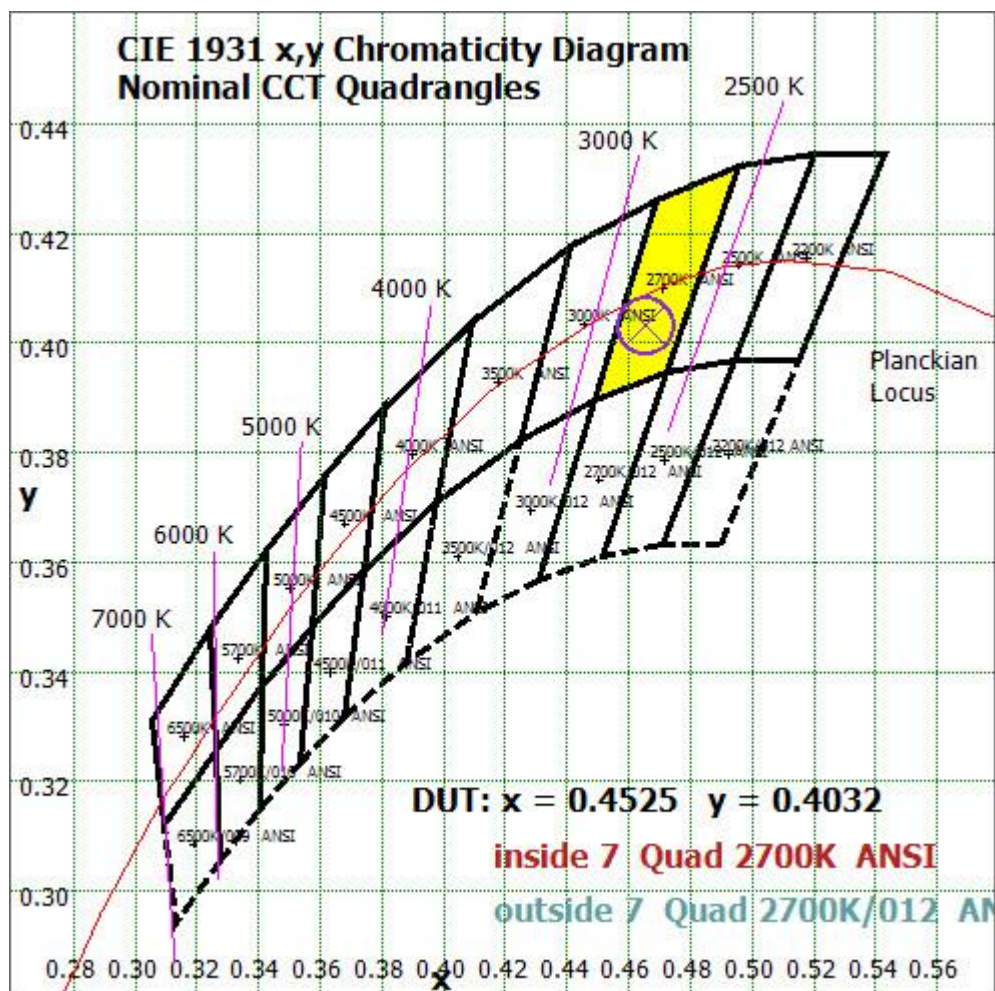


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

# Color Rendition Report – Sphere Spectroradiometer Method

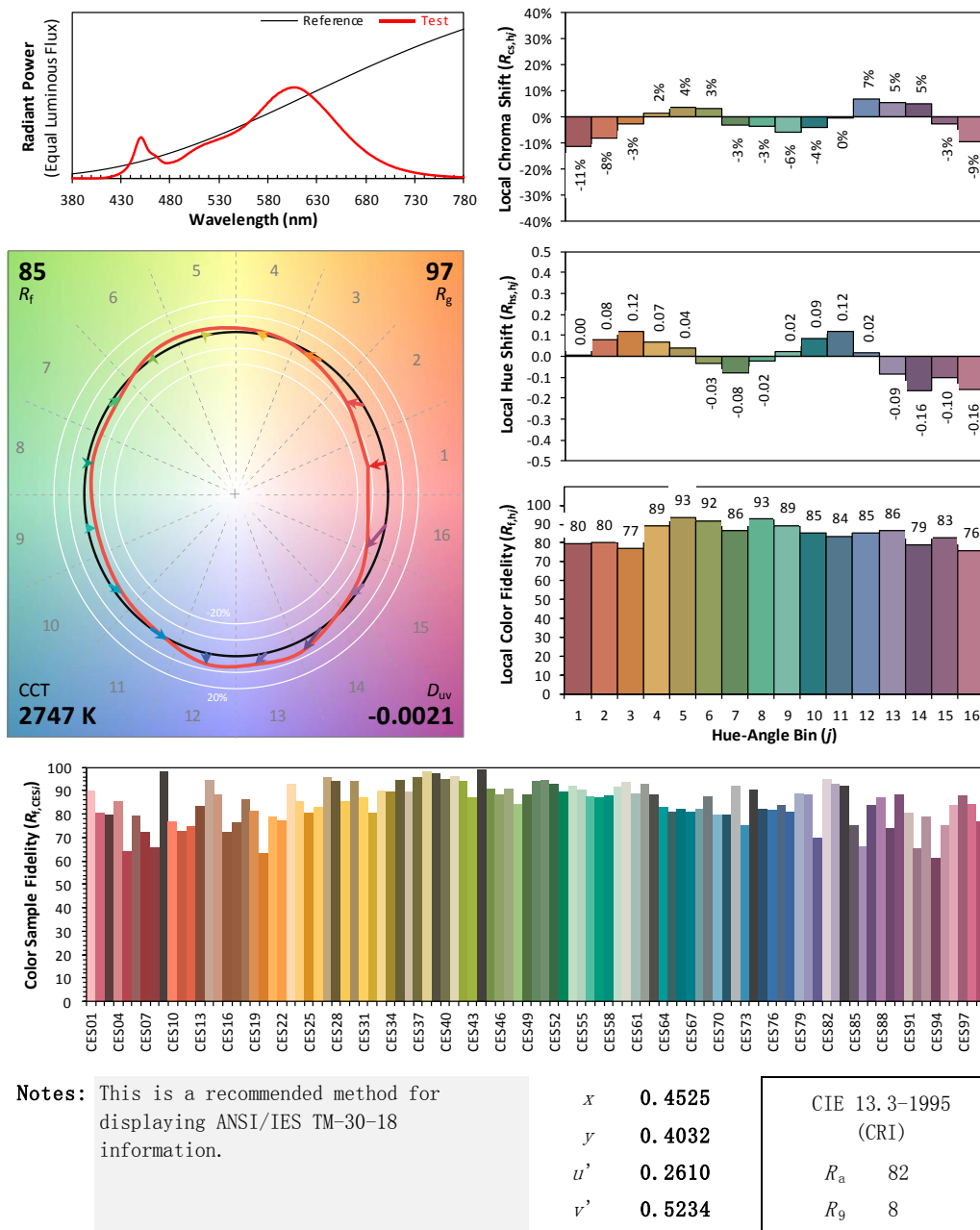
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2025/08/15

Model: 3.5PLS/8CCTS/HYBM/G23



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.

### Goniophotometer Method

Test ambient temperature was 25.1 °C.

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)	0.027
Power Factor	0.9790
Power (W)	3.17
Luminous Efficacy (lm/W)	132.1
Total Luminous Flux (lm)	418.8
Beam Angle (°)	102.6 (0°-180°) / 123.3 (90°-270°)
Center Beam Candle Power (cd)	129
Maximum Beam Candle Power (cd)	129.3 (At: C=90.0, Gamma=1.5)
Spacing Criteria	1.20 (0°-180°) / 1.29 (90°-270°)
Zonal Lumens in the 0 °-60 °Zone	68.15%
Zonal Lumens in the 60 °-90 °Zone	24.94%
Zonal Lumens in the 90 °-120 °Zone	5.55%
Zonal Lumens in the 120 °-180 °Zone	1.35%

Table 4: Test data per Goniophotometer Method

**Zonal Lumen Tabulation- Goniophotometer Method**

$\gamma(^{\circ})$	Lumens	% Total
0- 10	12.201	2.91%
10- 20	34.749	8.30%
20- 30	52.17	12.46%
30- 40	62.326	14.88%
40- 50	64.533	15.41%
50- 60	59.433	14.19%
60- 70	48.63	11.61%
70- 80	34.591	8.26%
80- 90	21.239	5.07%
90-100	13.082	3.12%
100-110	7.194	1.72%
110-120	2.968	0.71%
120-130	1.766	0.42%
130-140	1.37	0.33%
140-150	1.095	0.26%
150-160	0.821	0.20%
160-170	0.498	0.12%
170-180	0.121	0.03%
Total	418.8	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	285.412	68.15%
60- 90	104.46	24.94%
0-90	389.872	93.10%
90- 180	28.915	6.90%
0- 180	418.8	100%

Table 5: Zonal Lumen

## Illuminance Plots- Goniophotometer Method

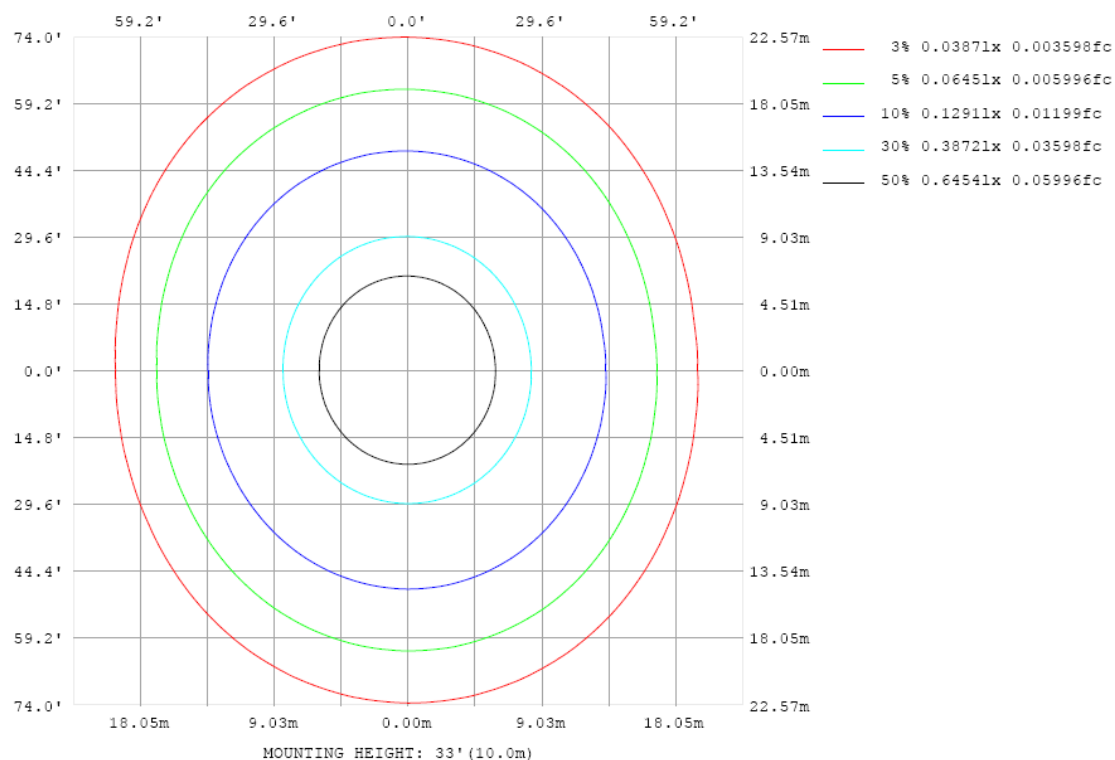


Chart 5: Illuminance Plot (Footcandles)

## Luminous Intensity Distribution Plots- Goniophotometer Method

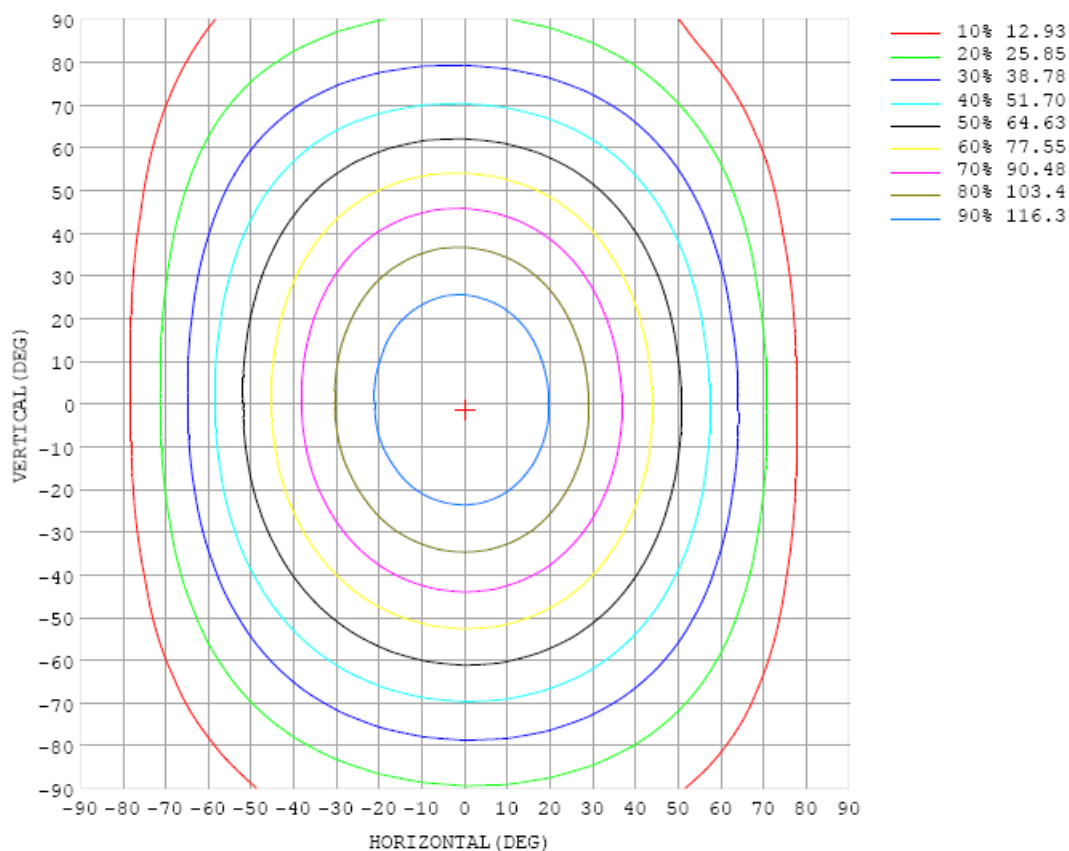


Chart 6: Isocandela Plot

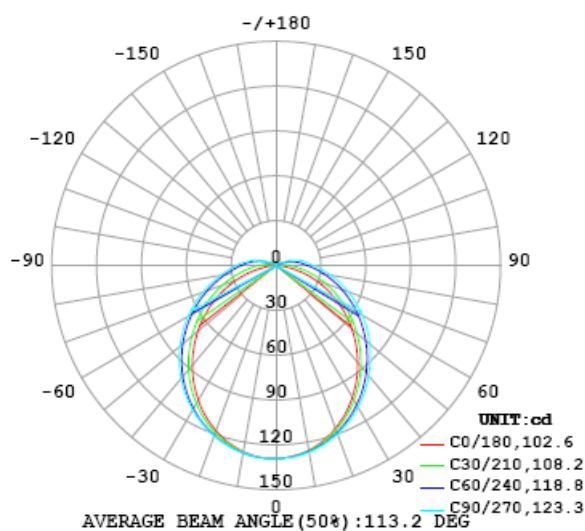


Chart 7: Polar Candela Distribution

## 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	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129
5	128	128	128	128	128	128	128	128	128	128	129	129	128	128	129	129	129	128	129
10	126	125	126	126	126	126	126	126	127	127	126	127	127	127	127	126	126	126	126
15	121	122	122	122	122	123	123	124	124	124	124	124	124	123	123	123	123	123	123
20	116	116	117	117	118	118	119	119	120	120	120	120	119	119	118	118	118	118	118
25	109	110	110	111	112	113	114	114	115	115	115	115	114	113	113	112	112	111	111
30	102	102	103	104	105	106	108	109	109	109	109	109	108	107	106	105	105	104	104
35	93.7	94.2	95.0	96.2	97.7	99.4	101	102	103	103	103	102	101	99.9	98.5	97.4	96.6	96.0	95.9
40	84.8	85.4	86.3	87.9	89.8	91.8	93.7	95.0	96.0	96.2	95.9	95.0	93.8	92.2	90.4	89.0	88.0	87.3	87.1
45	75.6	76.3	77.4	79.3	81.4	83.8	86.0	87.7	88.8	89.1	88.7	87.5	85.9	83.9	81.9	80.2	78.9	78.1	77.8
50	66.1	66.8	68.3	70.4	72.9	75.6	78.1	80.0	81.4	81.7	81.2	79.8	77.9	75.5	73.1	71.0	69.5	68.6	68.3
55	56.5	57.3	58.9	61.3	64.2	67.3	70.1	72.3	73.8	74.1	73.4	71.9	69.7	66.9	64.1	61.6	59.8	58.8	58.4
60	46.7	47.6	49.6	52.3	55.6	59.1	62.2	64.5	66.1	66.4	65.7	64.0	61.5	58.4	55.1	52.2	50.1	48.8	48.4
65	37.0	38.1	40.3	43.5	47.2	51.0	54.4	56.9	58.5	58.9	58.1	56.2	53.4	50.0	46.3	42.8	40.3	38.8	38.3
70	27.3	28.7	31.3	35.0	39.1	43.1	46.7	49.4	51.0	51.4	50.5	48.6	45.6	41.9	37.8	33.9	30.7	28.8	28.3
75	18.0	19.7	23.0	27.1	31.5	35.7	39.4	42.1	43.7	44.1	43.2	41.2	38.1	34.2	29.9	25.5	21.8	19.3	18.6
80	9.17	11.4	15.3	20.0	24.5	28.8	32.5	35.2	36.8	37.1	36.3	34.3	31.2	27.3	22.8	18.2	13.8	10.8	10.0
85	2.69	5.36	9.38	13.9	18.5	22.7	26.3	28.9	30.5	30.8	29.9	28.0	25.0	21.2	16.9	12.2	8.04	4.79	3.85
90	0.22	2.26	5.56	9.50	13.6	17.7	21.0	23.5	25.0	25.3	24.6	22.8	20.0	16.5	12.4	8.41	4.69	1.61	0.59
95	0.20	1.44	3.67	6.95	10.5	14.0	17.3	19.6	21.0	21.3	20.6	19.0	16.5	13.3	9.82	6.28	3.14	1.03	0.59
100	0.11	0.49	1.90	4.31	7.59	10.9	13.9	16.2	17.7	18.1	17.5	15.8	13.6	10.8	7.69	4.73	2.35	0.97	0.70
105	0.11	0.15	0.48	1.64	4.46	7.44	10.2	12.3	13.8	14.2	13.8	12.5	10.6	8.20	5.68	3.40	1.79	0.97	0.83
110	0.12	0.12	0.15	0.40	1.54	3.80	6.43	8.50	9.90	10.5	10.2	9.11	7.52	5.64	3.81	2.36	1.49	1.09	1.03
115	0.12	0.12	0.13	0.26	0.81	1.65	2.83	4.12	5.34	6.03	6.08	5.67	4.85	3.82	2.82	2.03	1.52	1.26	1.23
120	0.14	0.15	0.21	0.38	0.76	1.30	1.98	2.74	3.45	3.96	4.15	4.01	3.59	3.00	2.41	1.93	1.59	1.42	1.41
125	0.23	0.23	0.34	0.50	0.79	1.22	1.71	2.23	2.70	3.05	3.21	3.16	2.92	2.58	2.21	1.90	1.68	1.56	1.57
130	0.32	0.33	0.46	0.63	0.86	1.20	1.58	1.96	2.30	2.55	2.68	2.68	2.55	2.35	2.12	1.92	1.77	1.70	1.71
135	0.43	0.41	0.57	0.76	0.95	1.23	1.53	1.82	2.07	2.26	2.38	2.40	2.34	2.22	2.09	1.96	1.86	1.82	1.84
140	0.52	0.51	0.63	0.84	1.06	1.27	1.52	1.75	1.95	2.10	2.20	2.24	2.22	2.16	2.08	2.00	1.95	1.93	1.95
145	0.61	0.61	0.73	0.92	1.15	1.34	1.54	1.73	1.88	2.01	2.10	2.15	2.15	2.13	2.09	2.04	2.02	2.02	2.03
150	0.69	0.71	0.84	0.99	1.20	1.41	1.58	1.72	1.85	1.96	2.04	2.09	2.11	2.11	2.09	2.08	2.07	2.08	2.10
155	0.74	0.83	0.96	1.08	1.25	1.42	1.60	1.73	1.84	1.92	1.99	2.04	2.07	2.09	2.09	2.09	2.10	2.12	2.14
160	0.80	0.90	1.09	1.18	1.30	1.44	1.58	1.71	1.82	1.90	1.96	2.01	2.04	2.07	2.08	2.09	2.11	2.13	2.15
165	0.86	1.01	1.26	1.31	1.39	1.48	1.58	1.68	1.77	1.85	1.92	1.98	2.01	2.04	2.06	2.08	2.10	2.11	2.14
170	0.63	0.95	1.12	1.31	1.48	1.57	1.62	1.69	1.75	1.81	1.87	1.92	1.97	2.01	2.01	1.92	2.00	2.09	2.09
175	0.12	0.28	0.59	0.78	0.79	0.84	0.96	1.14	1.32	1.41	1.37	1.34	1.43	1.50	1.72	1.82	1.90	1.99	2.01
180	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08

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	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129		
5	129	129	129	129	129	129	129	129	129	129	129	129	129	128	128	128	128		
10	126	127	127	127	127	127	127	127	127	127	127	127	127	126	126	126	125		
15	123	123	123	124	124	125	125	125	125	125	124	124	123	123	122	122	122		
20	118	118	119	120	120	121	121	121	121	121	120	120	119	118	117	117	116		
25	112	112	113	114	115	116	117	117	117	116	116	115	114	112	111	110	110		
30	105	106	107	108	109	111	111	112	112	111	110	109	107	106	104	103	102		
35	96.7	97.7	99.2	101	103	104	105	106	106	105	104	102	100	98.1	96.1	94.8	93.8		
40	87.9	89.3	91.1	93.1	95.3	97.1	98.3	98.9	98.9	98.0	96.7	94.7	92.4	90.0	87.8	86.1	85.0		
45	78.8	80.3	82.5	84.8	87.4	89.4	90.9	91.8	91.6	90.7	89.2	87.0	84.3	81.5	79.0	77.0	75.7		
50	69.4	71.1	73.6	76.3	79.1	81.4	83.1	84.1	84.0	83.0	81.3	78.9	75.9	72.9	69.9	67.8	66.2		
55	59.6	61.7	64.5	67.6	70.7	73.3	75.1	76.1	76.0	75.1	73.2	70.6	67.5	64.0	60.8	58.4	56.6		
60	49.8	52.3	55.5	58.9	62.2	65.0	66.9	68.0	68.0	67.0	65.1	62.4	59.1	55.3	51.8	48.9	46.9		
65	40.0	42.9	46.6	50.3	53.9	56.9	58.8	60.0	59.9	59.0	57.1	54.3	50.7	46.7	42.8	39.6	37.3		
70	30.3	33.8	37.9	42.0	45.9	48.9	51.0	52.2	52.2	51.3	49.3	46.4	42.7	38.3	34.0	30.4	27.7		
75	21.1	25.2	29.8	34.3	38.3	41.4	43.5	44.7	44.7	43.9	41.9	39.0	35.2	30.4	25.7	21.6	18.5		
80	12.9	17.5	22.5	27.2	31.3	34.5	36.6	37.8	37.9	37.0	35.1	32.2	28.3	23.3	18.2	13.5	9.98		
85	6.83	11.5	16.5	21.2	25.2	28.4	30.6	31.7	31.7	30.9	29.1	26.2	22.3	17.2	11.9	7.10	3.34		
90	3.49	7.61	12.2	16.7	20.6	23.6	25.7	26.8	26.9	26.1	24.3	21.5	17.8	13.0	8.01	3.42	0.61		
95	2.25	5.24	9.14	13.1	16.7	19.5	21.5	22.5	22.6	21.9	20.2	17.5	14.0	9.78	5.46	2.19	0.53		
100	1.71	3.68	6.56	9.88	13.0	15.5	17.3	18.2	18.2	17.5	15.8	13.3	10.00	6.04	2.43	0.48	0.11		
105	1.38	2.56	4.48	6.95	9.51	11.7	13.2	13.9	13.9	13.1	11.5	9.08	5.87	2.15	0.41	0.15	0.08		
110	1.35	1.98	3.02	4.50	6.13	7.74	8.97	9.57	9.47	8.59	6.80	4.33	2.25	0.95	0.25	0.08	0.09		
115	1.47	1.93	2.59	3.44	4.37	5.20	5.69	5.74	5.33	4.59	3.59	2.53	1.55	0.82	0.30	0.12	0.10		
120	1.60	1.95	2.41	2.96	3.54	4.03	4.31	4.30	4.01	3.47	2.79	2.09	1.42	0.82	0.42	0.23	0.15		
125	1.72	2.00	2.35	2.72	3.09	3.40	3.55	3.52	3.29	2.91	2.42	1.90	1.36	0.84	0.53	0.35	0.22		
130	1.84	2.05	2.31	2.59	2.84	3.03	3.11	3.06	2.88	2.58	2.21	1.80	1.30	0.86	0.61	0.45	0.30		
135	1.93	2.10	2.30	2.50	2.68	2.80	2.84	2.78	2.63	2.39	2.09	1.69	1.24	0.89	0.69	0.55	0.39		
140	2.01	2.13	2.28	2.43	2.56	2.64	2.66	2.60	2.47	2.26	1.96	1.61	1.24	0.93	0.79	0.65	0.49		
145	2.07	2.16	2.27	2.38	2.47	2.52	2.53	2.49	2.37	2.15	1.88	1.57	1.26	1.01	0.93	0.76	0.60		
150	2.12	2.18	2.26	2.33	2.39	2.43	2.43	2.39	2.28	2.06	1.83	1.58	1.33	1.17	1.17	0.85	0.72		
155	2.14	2.19	2.24	2.29	2.33	2.35	2.35	2.30	2.21	2.04	1.69	1.66	1.50	1.43	1.25	0.84	0.83		
160	2.15	2.19	2.22	2.26	2.28	2.29	2.28	2.25	2.18	2.07	1.86	1.72	1.71	1.43	1.46	0.87	1.08		
165	2.15	2.16	2.18	2.22	2.22	2.25	2.22	2.18	2.13	2.06	1.96	1.69	1.77	1.32	1.19	0.90	0.95		
170	2.11	2.13	2.15	1.33	1.70	2.04	1.48	1.56	1.84	1.92	1.89	1.44	1.10	0.66	0.56	0.14	0.33		
175	2.03	1.95	1.64	1.69	1.84	1.41	1.83	1.34	0.26	0.12	0.12	0.13	0.13	0.14	0.14	0.14	0.14		
180	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08		

Table 7: Luminous Intensity Data

## TEST RESULTS (3000K Setting)

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	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.027	0.013
Power Factor	0.9703	0.9053
Test Power (W)	3.13	3.28
THD A%	10.93	12.86
Luminous Efficacy (lm/W)	135.2	129.2
Total Luminous Flux (lm)	423.1	423.8
Color Rendering Index (CRI)	83.9	
R9	13.2	
Correlated Color Temperature (CCT)(K)	3015	
Chromaticity Chroma x	0.4314	
Chromaticity Chroma y	0.3947	
Chromaticity Chroma u	0.2511	
Chromaticity Chroma v	0.3445	
Duv	-0.0030	
Chromaticity Chroma u'	0.2511	
Chromaticity Chroma v'	0.5168	

Special Color Rendering Indices	
R1	83.2
R2	93.4
R3	94.5
R4	81.7
R5	83.9
R6	91.9
R7	81.9
R8	60.5
R9	13.2
R10	85
R11	81.7
R12	76.5
R13	86
R14	97.8

Table 8: Test data per Sphere-Spectroradiometer Method

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

### Spectral Power Distribution - Sphere Spectroradiometer Method

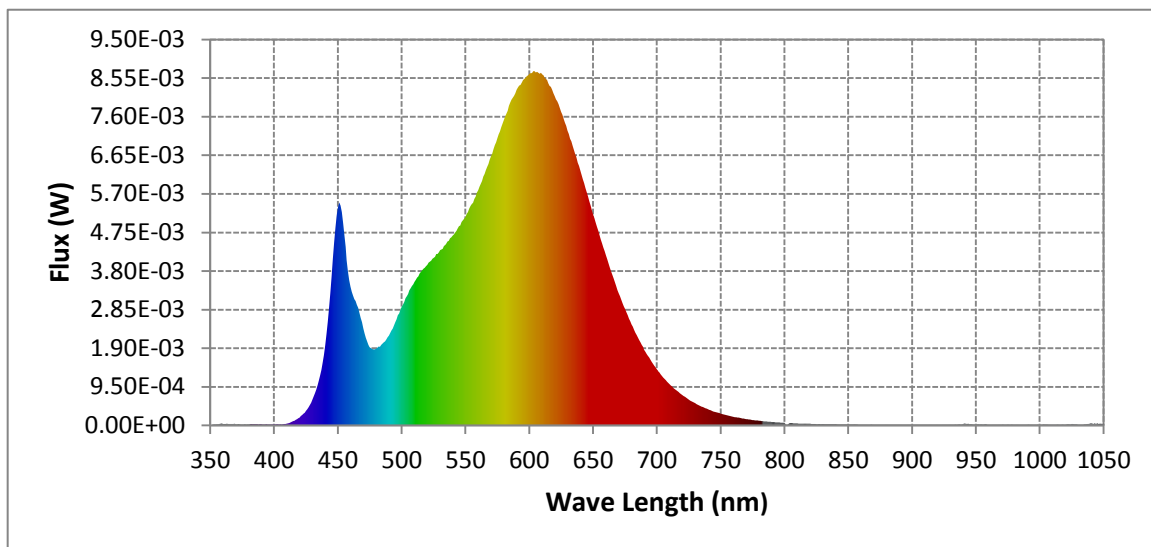
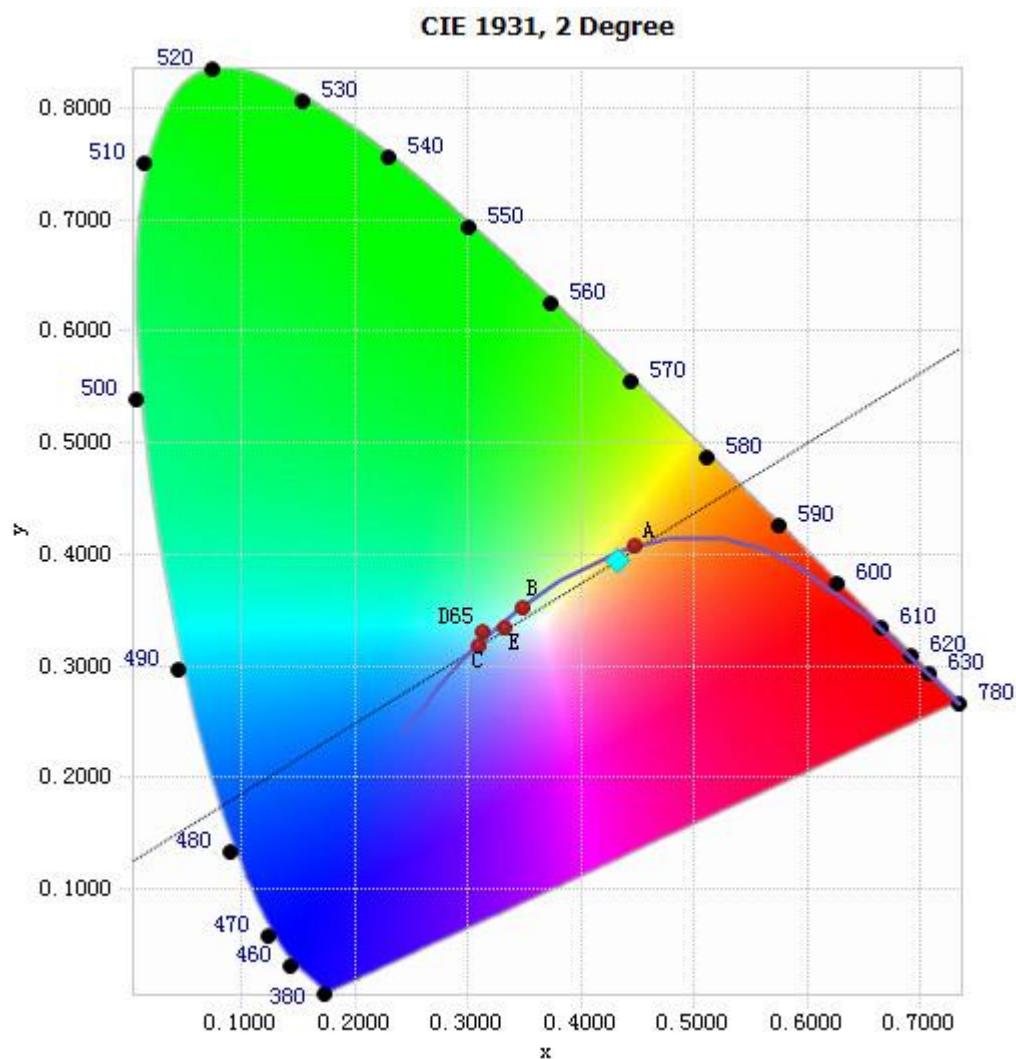


Chart 8: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	2.53E-05	485	2.01E-03	590	8.26E-03	695	1.62E-03
385	2.54E-05	490	2.21E-03	595	8.50E-03	700	1.38E-03
390	2.51E-05	495	2.54E-03	600	8.65E-03	705	1.18E-03
395	1.57E-05	500	2.92E-03	605	8.69E-03	710	1.02E-03
400	2.37E-05	505	3.23E-03	610	8.63E-03	715	8.69E-04
405	2.40E-05	510	3.53E-03	615	8.42E-03	720	7.48E-04
410	4.25E-05	515	3.78E-03	620	8.10E-03	725	6.37E-04
415	1.03E-04	520	3.95E-03	625	7.72E-03	730	5.46E-04
420	1.97E-04	525	4.13E-03	630	7.25E-03	735	4.58E-04
425	3.58E-04	530	4.31E-03	635	6.78E-03	740	3.94E-04
430	6.37E-04	535	4.47E-03	640	6.27E-03	745	3.35E-04
435	1.10E-03	540	4.67E-03	645	5.74E-03	750	2.88E-04
440	1.96E-03	545	4.91E-03	650	5.18E-03	755	2.47E-04
445	3.66E-03	550	5.13E-03	655	4.68E-03	760	2.12E-04
450	5.37E-03	555	5.45E-03	660	4.18E-03	765	1.84E-04
455	4.69E-03	560	5.79E-03	665	3.71E-03	770	1.55E-04
460	3.42E-03	565	6.18E-03	670	3.25E-03	775	1.30E-04
465	2.97E-03	570	6.62E-03	675	2.86E-03	780	1.14E-04
470	2.39E-03	575	7.07E-03	680	2.49E-03		
475	1.92E-03	580	7.51E-03	685	2.16E-03		
480	1.88E-03	585	7.95E-03	690	1.87E-03		

Table 9: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method

# Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4314, 0.3947)

Chart 9: 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

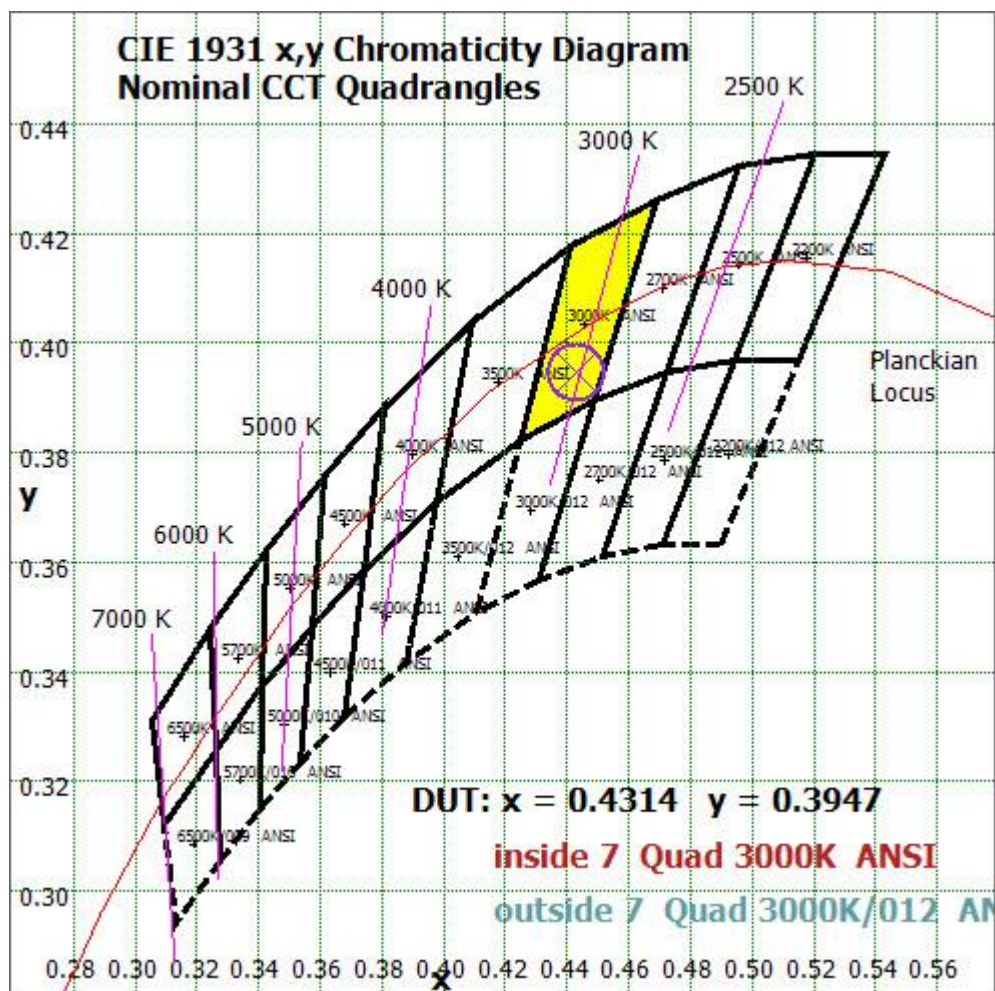


Chart 10: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram



# Color Rendition Report – Sphere Spectroradiometer Method

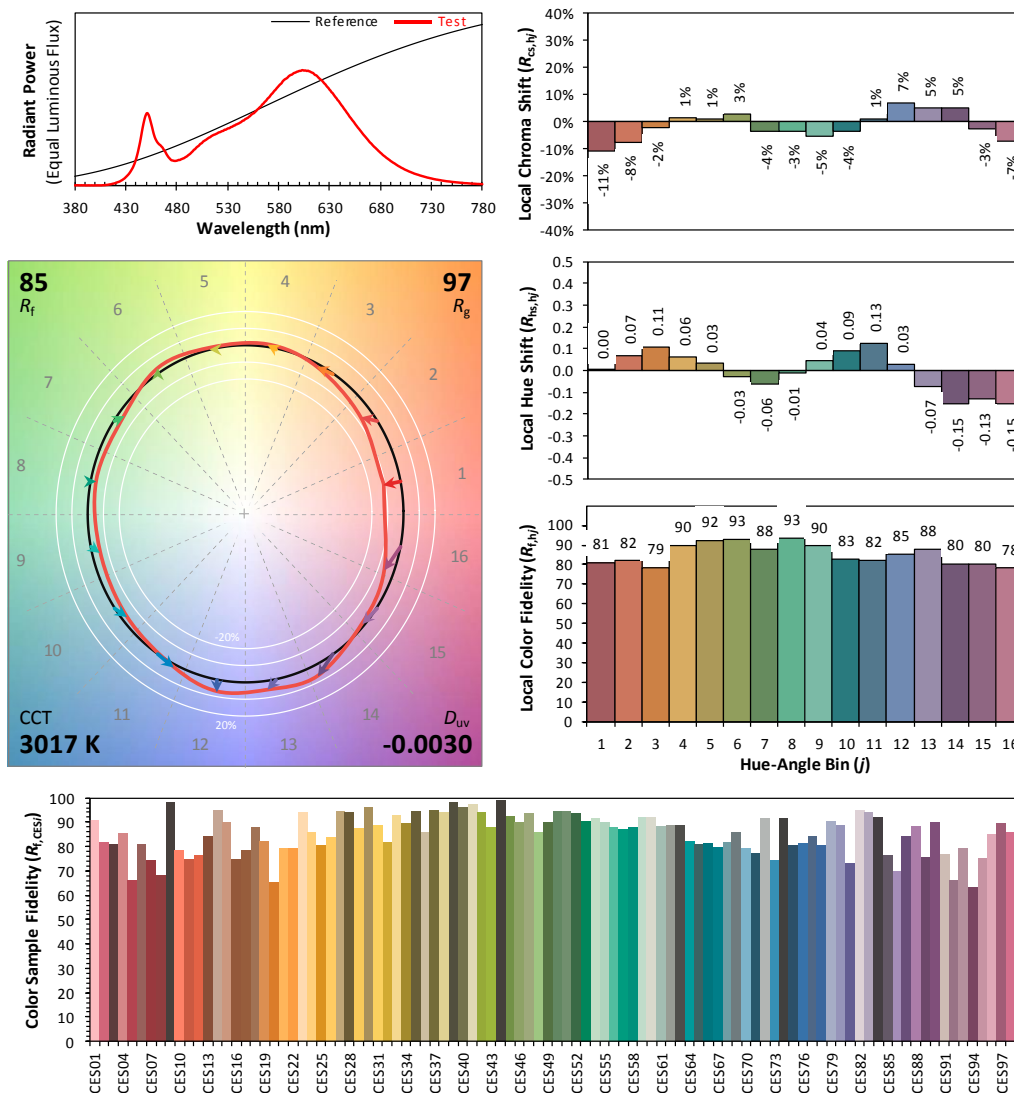
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2025/08/15

Model: 3.5PLS/8CCTS/HYBM/G23



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

$x$  0.4314  
 $y$  0.3947  
 $u'$  0.2511  
 $v'$  0.5168

CIE 13.3-1995  
(CRI)  
 $R_a$  84  
 $R_g$  13

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

Chart 11: 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 8 due to rounding.

## TEST RESULTS (3500K Setting)

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	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.027	0.013
Power Factor	0.9684	0.9011
Test Power (W)	3.10	3.26
THD A%	10.84	12.78
Luminous Efficacy (lm/W)	143.8	137.0
Total Luminous Flux (lm)	445.8	446.6
Color Rendering Index (CRI)	84.9	
R9	16.4	
Correlated Color Temperature (CCT)(K)	3451	
Chromaticity Chroma x	0.4051	
Chromaticity Chroma y	0.3845	
Chromaticity Chroma u	0.2381	
Chromaticity Chroma v	0.3391	
Duv	-0.0027	
Chromaticity Chroma u'	0.2381	
Chromaticity Chroma v'	0.5086	

Special Color Rendering Indices	
R1	84
R2	92.8
R3	95.9
R4	83
R5	84.5
R6	90.2
R7	84.2
R8	64.2
R9	16.4
R10	83.1
R11	82.8
R12	71.9
R13	86.5
R14	98.5

Table 10: Test data per Sphere-Spectroradiometer Method

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



### Spectral Power Distribution - Sphere Spectroradiometer Method

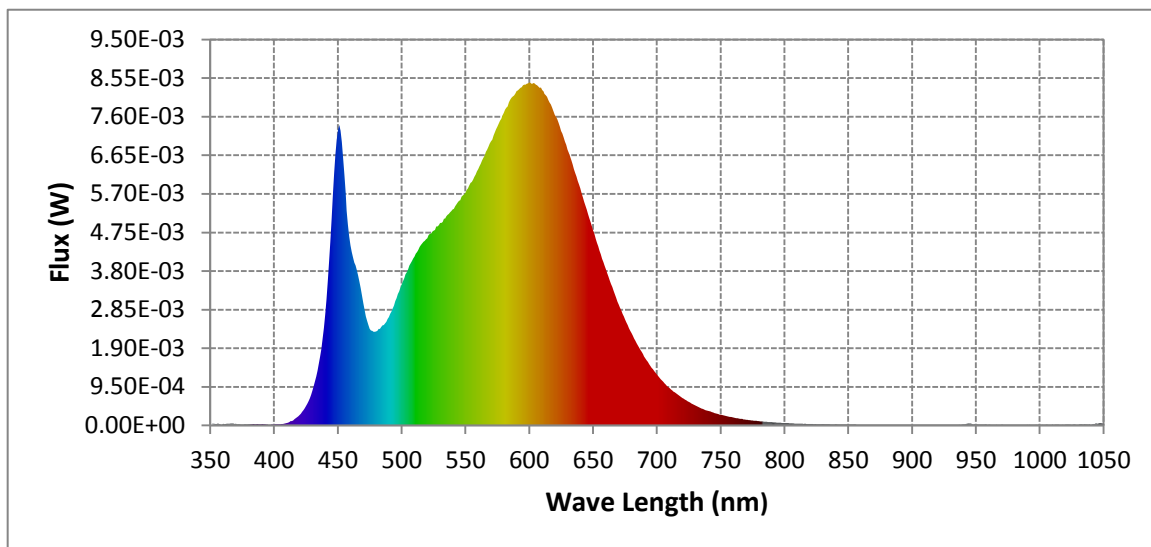
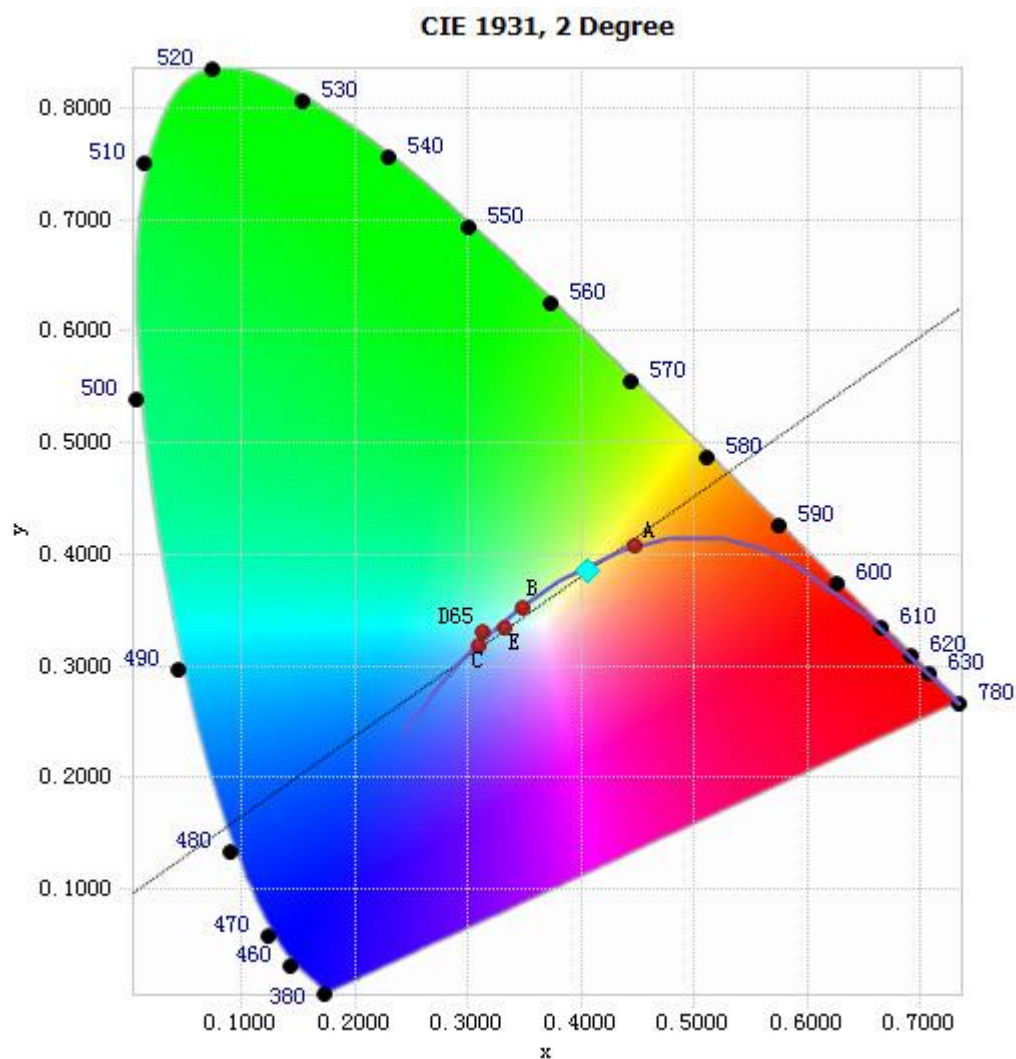


Chart 12: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	3.43E-05	485	2.46E-03	590	8.22E-03	695	1.46E-03
385	2.96E-05	490	2.67E-03	595	8.37E-03	700	1.25E-03
390	3.11E-05	495	3.06E-03	600	8.43E-03	705	1.08E-03
395	2.01E-05	500	3.47E-03	605	8.38E-03	710	9.17E-04
400	2.05E-05	505	3.84E-03	610	8.25E-03	715	7.91E-04
405	3.06E-05	510	4.15E-03	615	8.00E-03	720	6.72E-04
410	5.60E-05	515	4.44E-03	620	7.64E-03	725	5.77E-04
415	1.26E-04	520	4.60E-03	625	7.24E-03	730	4.94E-04
420	2.54E-04	525	4.79E-03	630	6.79E-03	735	4.16E-04
425	4.79E-04	530	4.98E-03	635	6.30E-03	740	3.59E-04
430	8.57E-04	535	5.14E-03	640	5.83E-03	745	3.07E-04
435	1.52E-03	540	5.31E-03	645	5.31E-03	750	2.61E-04
440	2.72E-03	545	5.53E-03	650	4.79E-03	755	2.24E-04
445	5.06E-03	550	5.72E-03	655	4.30E-03	760	1.91E-04
450	7.27E-03	555	5.99E-03	660	3.84E-03	765	1.64E-04
455	6.17E-03	560	6.31E-03	665	3.40E-03	770	1.41E-04
460	4.43E-03	565	6.63E-03	670	2.97E-03	775	1.21E-04
465	3.81E-03	570	6.99E-03	675	2.60E-03	780	1.04E-04
470	3.01E-03	575	7.35E-03	680	2.27E-03		
475	2.38E-03	580	7.69E-03	685	1.97E-03		
480	2.31E-03	585	8.01E-03	690	1.69E-03		

Table 11: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method

### Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4051, 0.3845)

Chart 13: 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

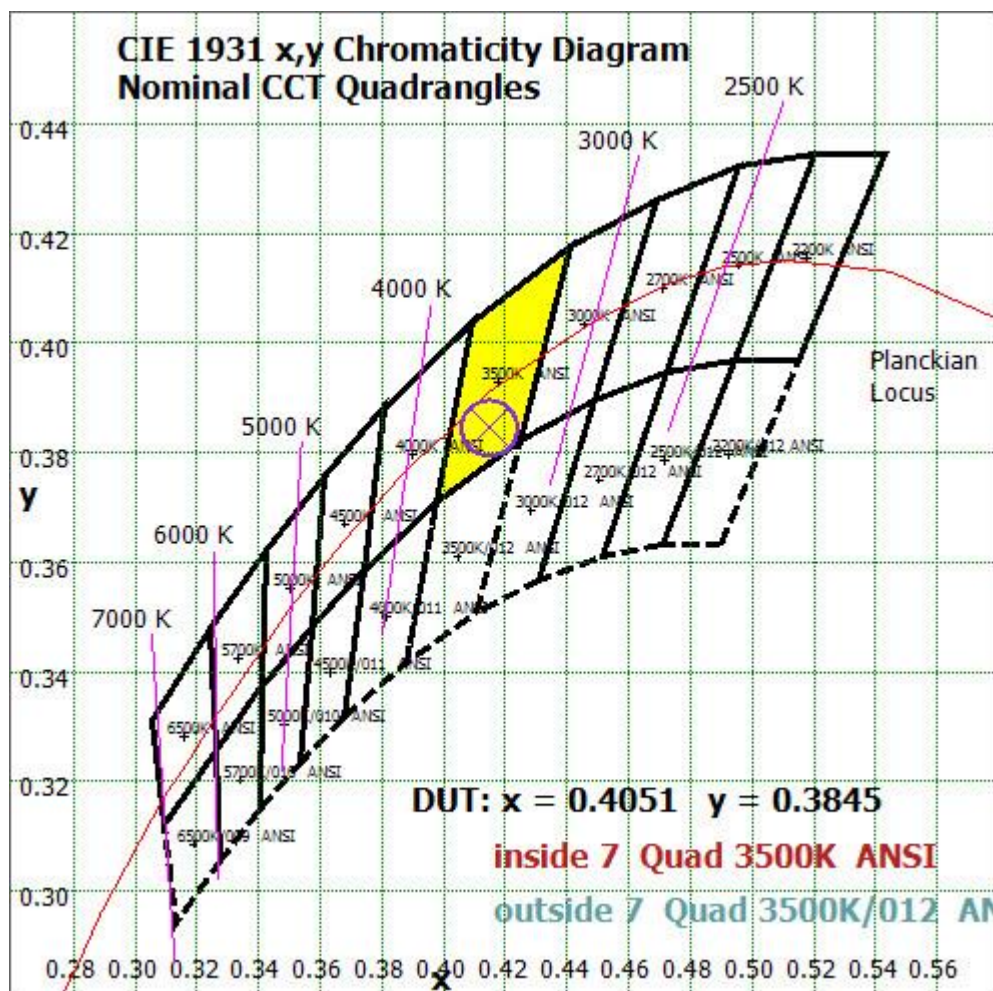


Chart14: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

# Color Rendition Report – Sphere Spectroradiometer Method

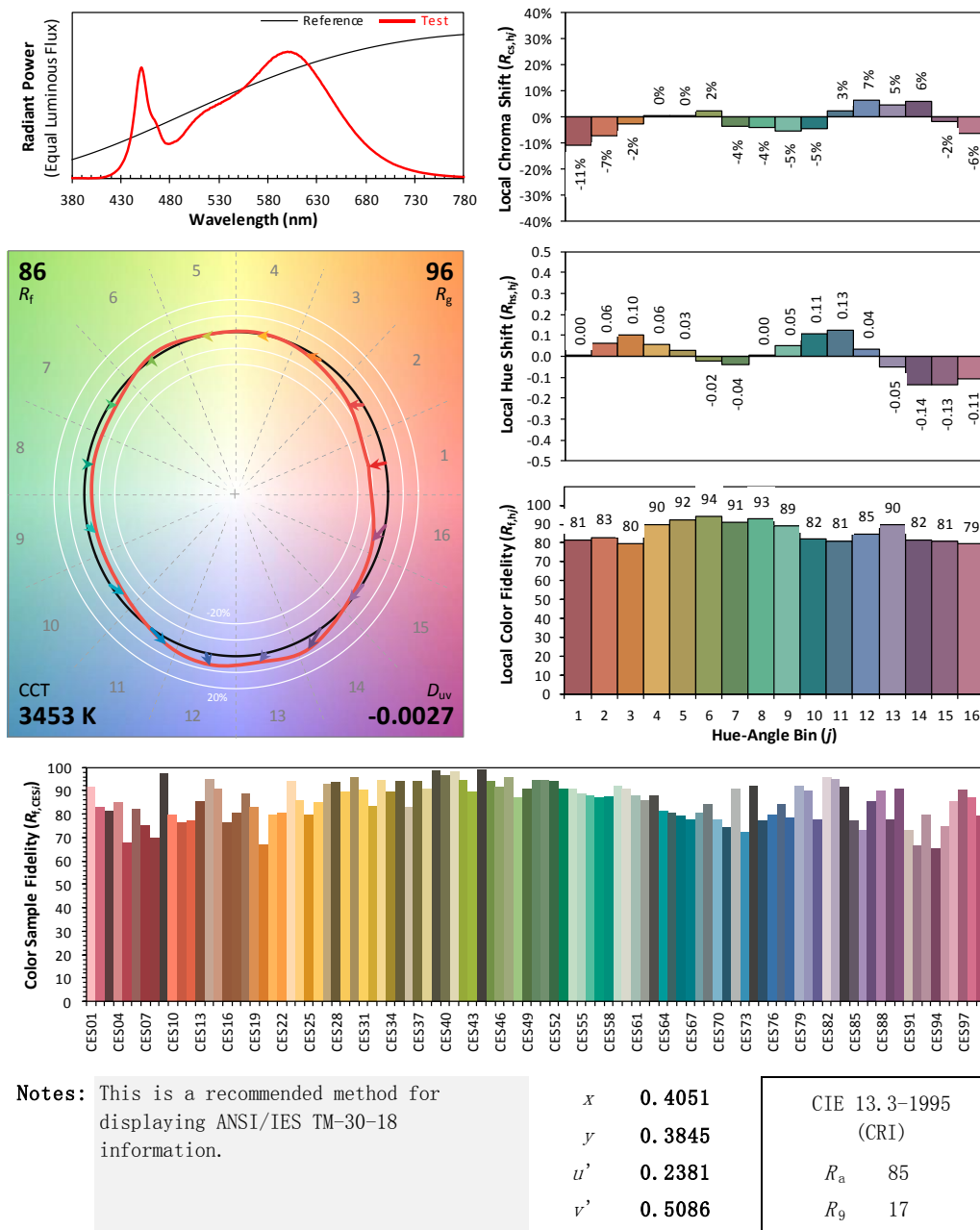
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2025/08/15

Model: 3.5PLS/8CCTS/HYBM/G23



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

Chart 15: 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 10 due to rounding.

## TEST RESULTS (4000K Setting)

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	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.027	0.013
Power Factor	0.9702	0.9063
Test Power (W)	3.16	3.32
THD A%	10.83	12.49
Luminous Efficacy (lm/W)	142.3	135.9
Total Luminous Flux (lm)	449.7	451.3
Color Rendering Index (CRI)	84.2	
R9	12.4	
Correlated Color Temperature (CCT)(K)	4039	
Chromaticity Chroma x	0.3784	
Chromaticity Chroma y	0.3748	
Chromaticity Chroma u	0.2245	
Chromaticity Chroma v	0.3336	
Duv	-0.0003	
Chromaticity Chroma u'	0.2245	
Chromaticity Chroma v'	0.5004	

Special Color Rendering Indices	
R1	82.6
R2	90.8
R3	95.8
R4	82.6
R5	82.9
R6	86.9
R7	86
R8	65.6
R9	12.4
R10	78.1
R11	81.9
R12	65.4
R13	84.8
R14	98.1

Table 12: Test data per Sphere-Spectroradiometer Method

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

### Spectral Power Distribution - Sphere Spectroradiometer Method

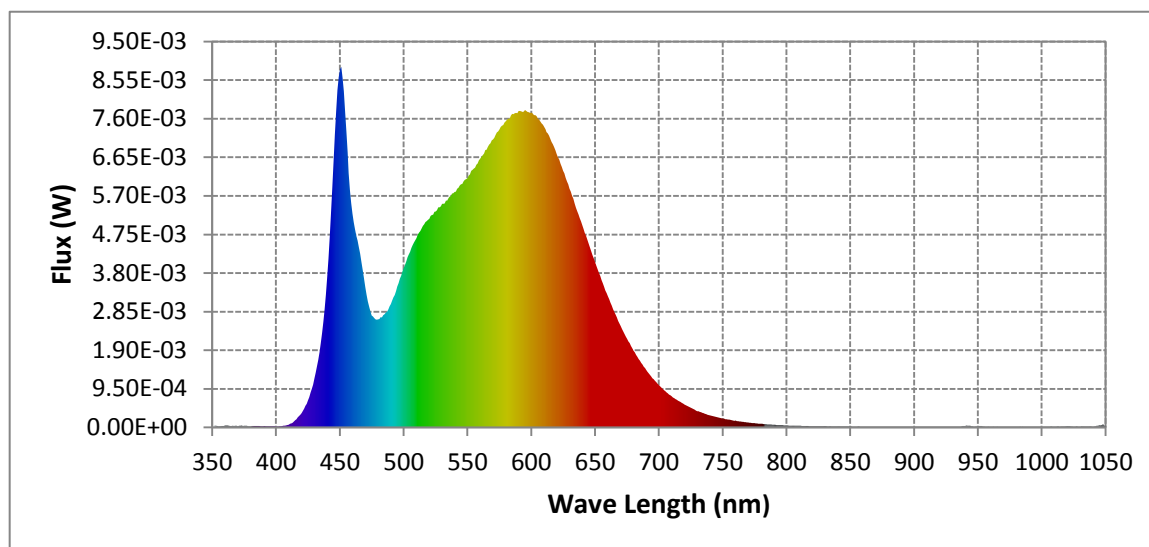


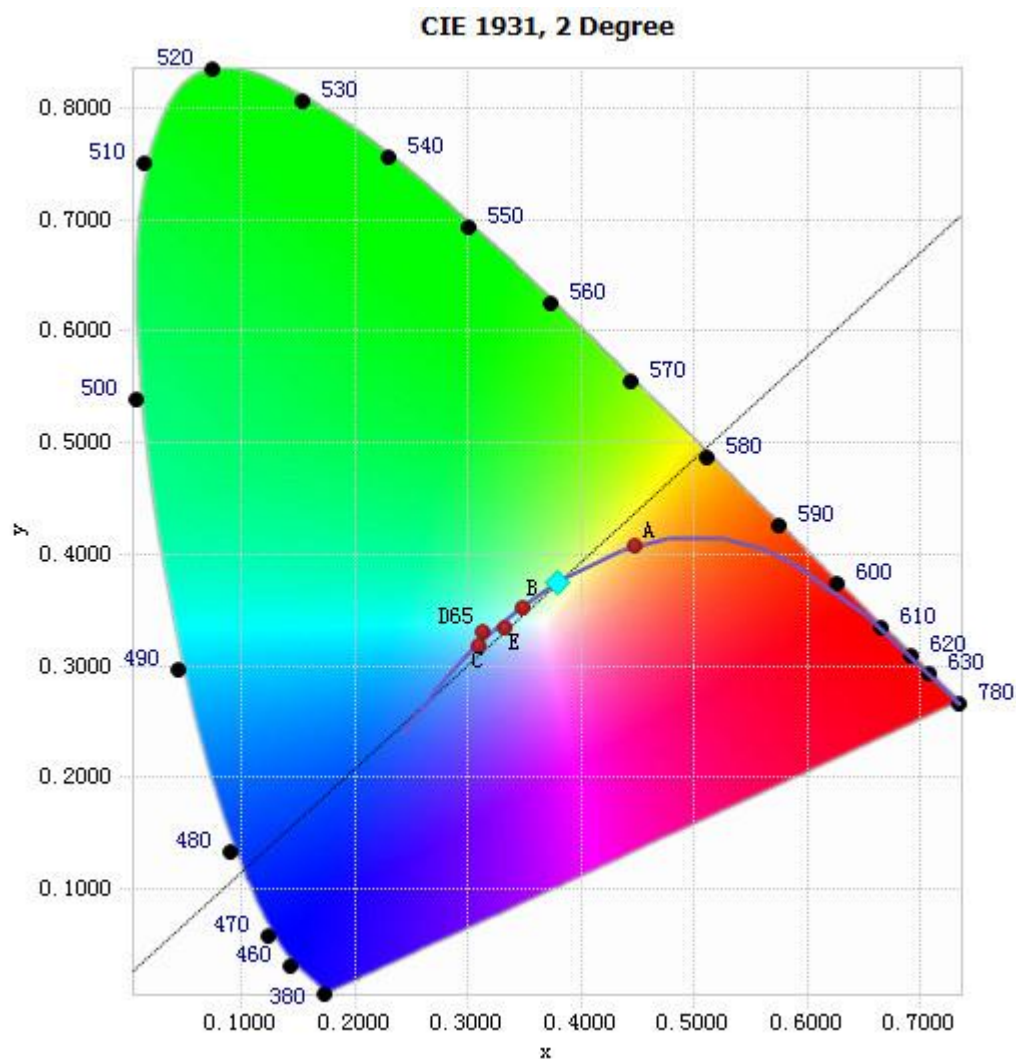
Chart16: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	2.96E-05	485	2.79E-03	590	7.78E-03	695	1.21E-03
385	3.90E-05	490	3.04E-03	595	7.81E-03	700	1.04E-03
390	2.48E-05	495	3.47E-03	600	7.75E-03	705	8.94E-04
395	2.65E-05	500	3.92E-03	605	7.60E-03	710	7.64E-04
400	1.95E-05	505	4.32E-03	610	7.39E-03	715	6.54E-04
405	3.16E-05	510	4.66E-03	615	7.10E-03	720	5.63E-04
410	6.79E-05	515	4.96E-03	620	6.73E-03	725	4.83E-04
415	1.77E-04	520	5.13E-03	625	6.31E-03	730	3.94E-04
420	3.52E-04	525	5.31E-03	630	5.87E-03	735	3.50E-04
425	6.63E-04	530	5.50E-03	635	5.41E-03	740	2.97E-04
430	1.20E-03	535	5.62E-03	640	4.98E-03	745	2.56E-04
435	2.08E-03	540	5.79E-03	645	4.52E-03	750	2.16E-04
440	3.70E-03	545	5.98E-03	650	4.06E-03	755	1.90E-04
445	6.55E-03	550	6.14E-03	655	3.63E-03	760	1.65E-04
450	8.81E-03	555	6.37E-03	660	3.22E-03	765	1.38E-04
455	7.28E-03	560	6.61E-03	665	2.84E-03	770	1.20E-04
460	5.26E-03	565	6.83E-03	670	2.49E-03	775	1.03E-04
465	4.43E-03	570	7.08E-03	675	2.18E-03	780	8.81E-05
470	3.46E-03	575	7.33E-03	680	1.88E-03		
475	2.75E-03	580	7.53E-03	685	1.64E-03		
480	2.66E-03	585	7.72E-03	690	1.42E-03		

Table 13: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method



# Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3784, 0.3748)

Chart 17: 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

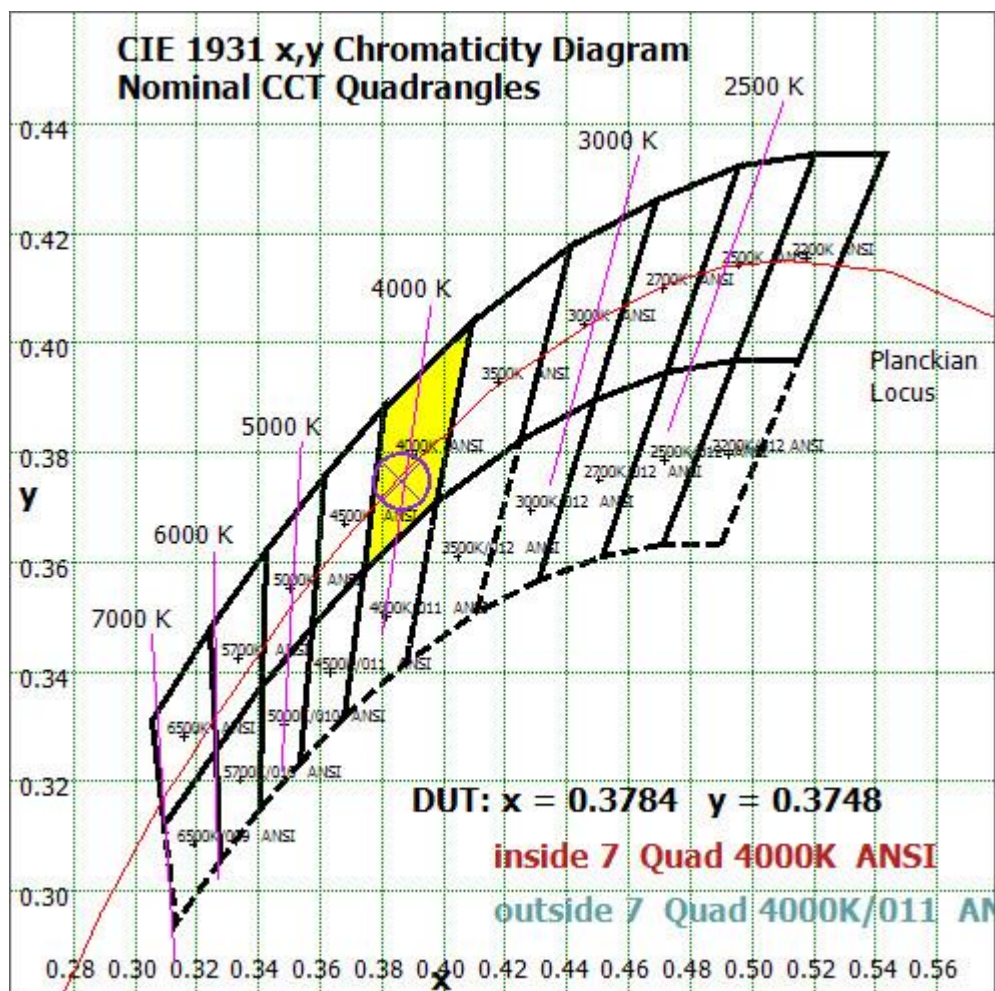


Chart 18: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

# Color Rendition Report – Sphere Spectroradiometer Method

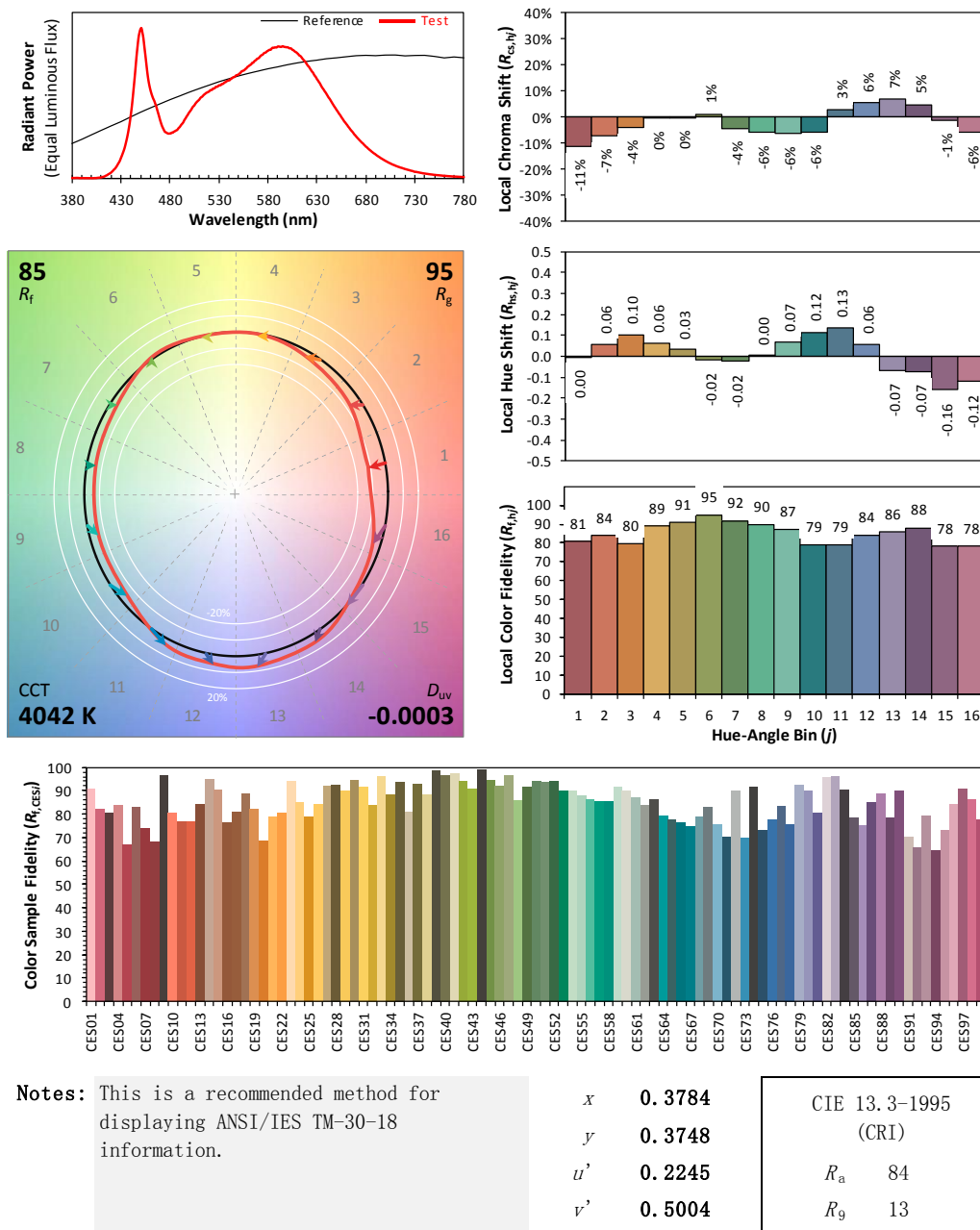
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2025/08/15

Model: 3.5PLS/8CCTS/HYBM/G23



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

Chart 19: 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 12 due to rounding.

## EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Aug.15, 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 14: 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  $4\pi$ . 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

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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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