

## 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 Tube

**Model: 10T8/4F/8CCTS/UEB/C**

### Laboratory: Leading Testing Laboratories

**NVLAP CODE: 200960-0**

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Report No.: HZ25080001b

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

Review by:

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Sep. 17, 2025

Approved by:



*April Zou*

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Sep. 17, 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	10T8/4F/8CCTS/UEB/C 3000K Setting	10T8/4F/8CCTS/UEB/C 3500K Setting	10T8/4F/8CCTS/UEB/C 4000K Setting
Luminous Efficacy (Lumens /Watt)	163.1	167.9	176.1
Total Luminous Flux (Lumens)	1604.8	1641.8	1715.7
Power (Watts)	9.84	9.78	9.74
Power Factor	0.9719	0.9722	0.9724
CCT (K)	3055	3575	4018
CRI	83.3	85.3	85.9
Stabilization Time (Light & Power)	50 mins	50 mins	50 mins
Note	3000K	3500K	4000K

Tested Model	10T8/4F/8CCTS/UEB/C 5000K Setting	10T8/4F/8CCTS/UEB/C 6500K Setting
Luminous Efficacy (Lumens /Watt)	175.9	174.3
Total Luminous Flux (Lumens)	1709.3	1706.8
Power (Watts)	9.72	9.79
Power Factor	0.9725	0.9719
CCT (K)	5218	6368
CRI	85.5	83.6
Stabilization Time (Light & Power)	50 mins	50 mins
Note	5000K	6500K

Table 1: Executive Data Summary

### Test specifications:

Date of Receipt	: Aug. 01, 2025
Date of Test	: Sep. 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

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## SAMPLE PHOTO

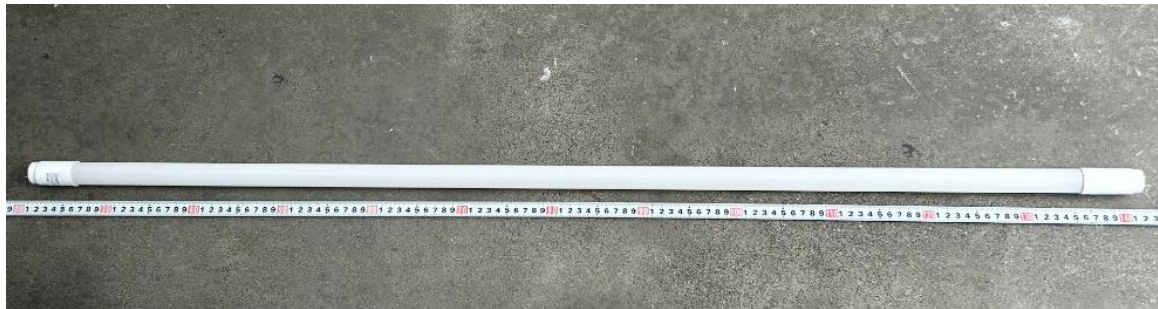


Figure 1- Overview of the sample

### Equipment Under Test(EUT)

<b>Name</b>	: LED Tube
<b>Model</b>	: 10T8/4F/8CCTS/UEB/C
<b>Electrical Ratings</b>	: 120-277V, 50/60Hz, 10W
<b>Product Description</b>	: Color- Tunable 3000K/3500K/4000K/5000K/6500K
<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 (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)	0.084	0.041
Power Factor	0.9719	0.9087
Test Power (W)	9.84	10.27
THD A%	17.86	19.43
Luminous Efficacy (lm/W)	163.1	158.2
Total Luminous Flux (lm)	1604.8	1625.0
Color Rendering Index (CRI)	83.3	
R9	10.5	
Correlated Color Temperature (CCT)(K)	3055	
Chromaticity Chroma x	0.4310	
Chromaticity Chroma y	0.3984	
Chromaticity Chroma u	0.2491	
Chromaticity Chroma v	0.3455	
Duv	-0.0014	
Chromaticity Chroma u'	0.2491	
Chromaticity Chroma v'	0.5183	

Special Color Rendering Indices	
R1	82
R2	91.2
R3	96.3
R4	81.8
R5	82.3
R6	89.3
R7	83.1
R8	60.6
R9	10.5
R10	80.2
R11	81.7
R12	72.2
R13	84.2
R14	98.6

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

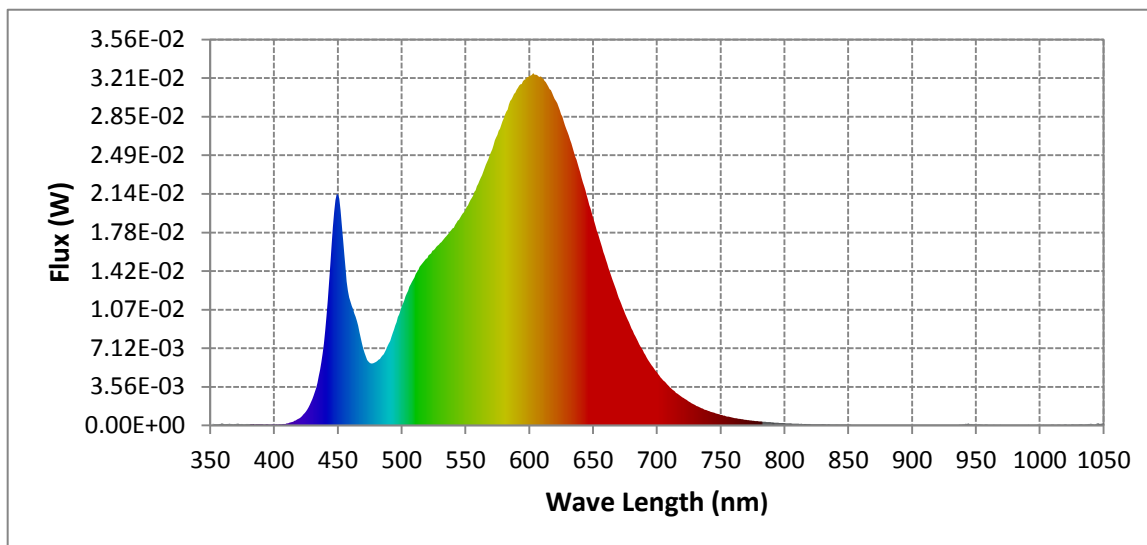


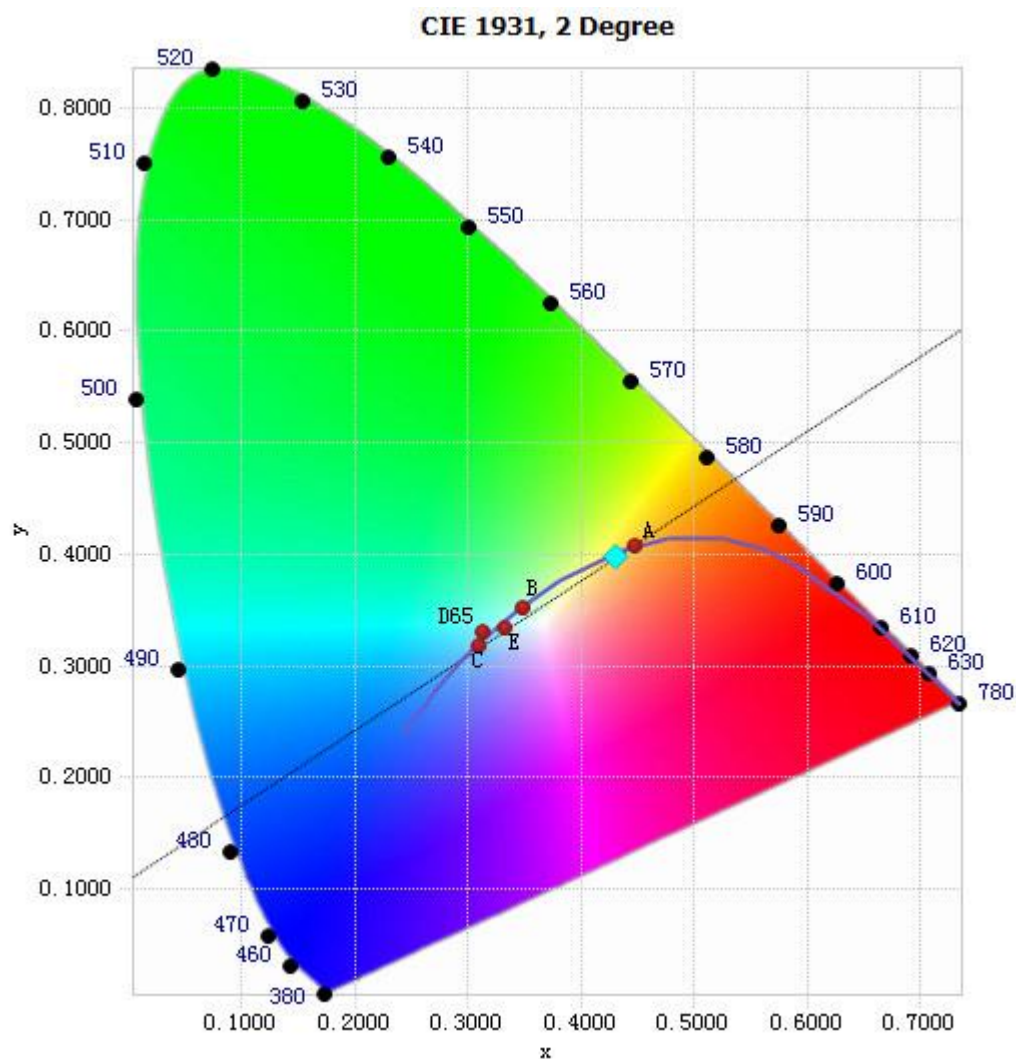
Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.32E-04	485	6.47E-03	590	3.10E-02	695	5.72E-03
385	8.67E-05	490	7.58E-03	595	3.18E-02	700	4.91E-03
390	8.98E-05	495	9.21E-03	600	3.23E-02	705	4.16E-03
395	9.35E-05	500	1.10E-02	605	3.24E-02	710	3.54E-03
400	1.03E-04	505	1.24E-02	610	3.20E-02	715	3.01E-03
405	9.52E-05	510	1.37E-02	615	3.13E-02	720	2.58E-03
410	1.78E-04	515	1.48E-02	620	3.01E-02	725	2.20E-03
415	3.46E-04	520	1.54E-02	625	2.87E-02	730	1.87E-03
420	6.75E-04	525	1.62E-02	630	2.71E-02	735	1.58E-03
425	1.30E-03	530	1.68E-02	635	2.52E-02	740	1.35E-03
430	2.45E-03	535	1.74E-02	640	2.33E-02	745	1.15E-03
435	4.56E-03	540	1.82E-02	645	2.12E-02	750	9.74E-04
440	8.72E-03	545	1.90E-02	650	1.91E-02	755	8.25E-04
445	1.66E-02	550	1.99E-02	655	1.72E-02	760	6.93E-04
450	2.13E-02	555	2.10E-02	660	1.53E-02	765	6.01E-04
455	1.57E-02	560	2.23E-02	665	1.35E-02	770	5.11E-04
460	1.14E-02	565	2.37E-02	670	1.18E-02	775	4.41E-04
465	9.64E-03	570	2.52E-02	675	1.03E-02	780	3.70E-04
470	7.09E-03	575	2.68E-02	680	8.95E-03		
475	5.77E-03	580	2.83E-02	685	7.76E-03		
480	5.85E-03	585	2.99E-02	690	6.69E-03		

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



## Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4310, 0.3984)

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

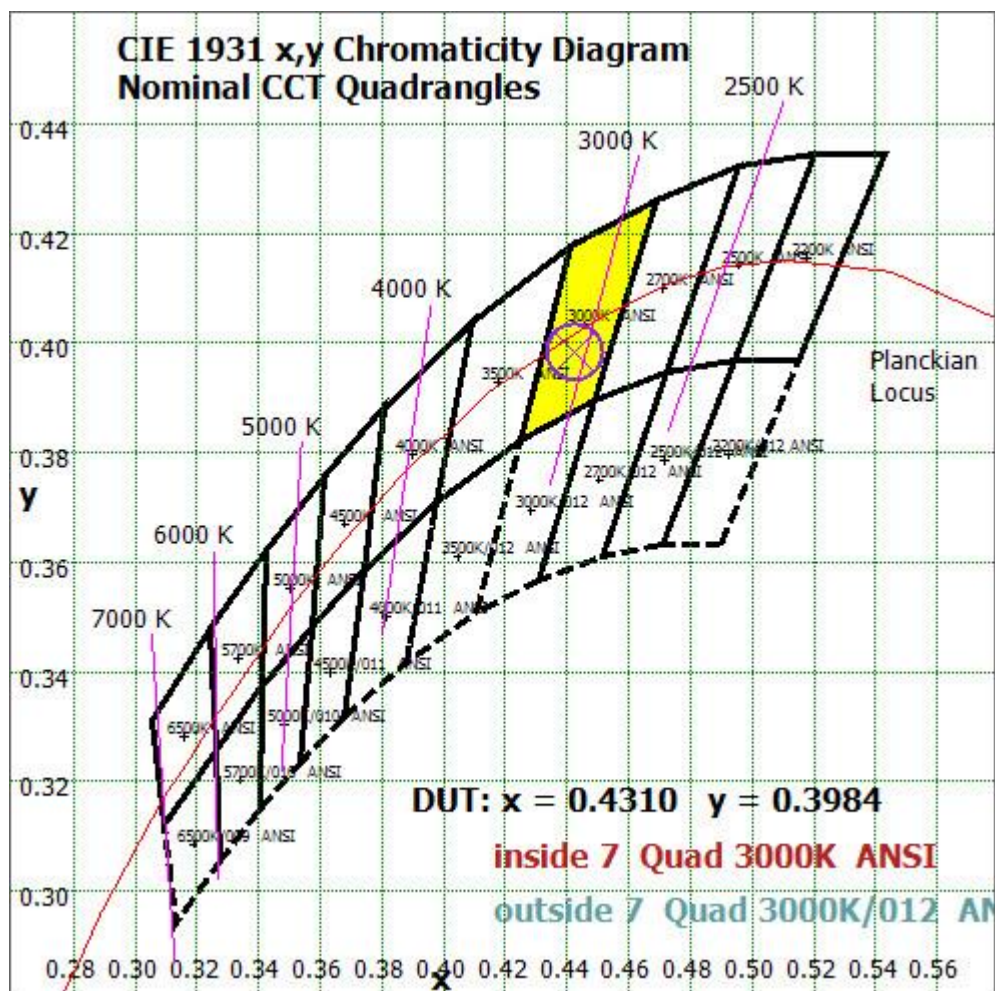


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

# Color Rendition Report – Sphere Spectroradiometer Method

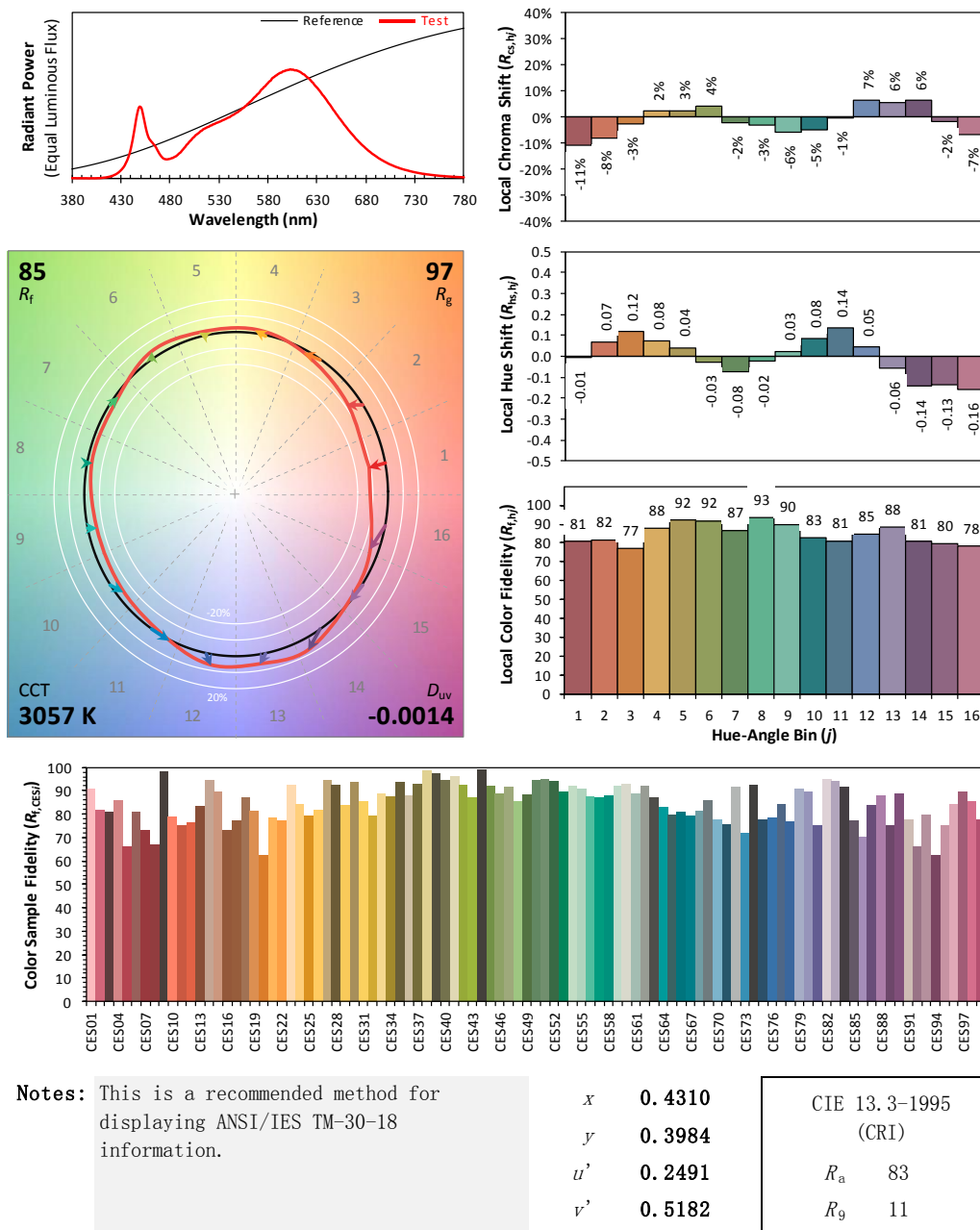
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2025/09/12

Model: 10T8/4F/8CCTS/UEB/C



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 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)	0.084
Power Factor	0.9736
Power (W)	9.86
Luminous Efficacy (lm/W)	164.3
Total Luminous Flux (lm)	1620.0
Beam Angle (°)	116.6 (0°-180°) / 227.3 (90°-270°)
Center Beam Candle Power (cd)	260
Maximum Beam Candle Power (cd)	261.9 (At: C=90.0, Gamma=13.0)
Spacing Criteria	1.29 (0°-180°) / 1.43 (90°-270°)
Zonal Lumens in the 0 °-60 °Zone	42.48%
Zonal Lumens in the 60 °-90 °Zone	27.67%
Zonal Lumens in the 90 °-120 °Zone	17.88%
Zonal Lumens in the 120 °-180 °Zone	11.97%

Table 4: Test data per Goniophotometer Method

**Zonal Lumen Tabulation- Goniophotometer Method**

$\gamma(^{\circ})$	Lumens	% Total
0- 10	24.665	1.52%
10- 20	71.86	4.44%
20- 30	112.86	6.97%
30- 40	144.262	8.91%
40- 50	163.805	10.11%
50- 60	170.706	10.54%
60- 70	165.595	10.22%
70- 80	151.051	9.32%
80- 90	131.645	8.13%
90-100	113.428	7.00%
100-110	96.433	5.95%
110-120	79.715	4.92%
120-130	64.109	3.96%
130-140	50.122	3.09%
140-150	37.425	2.31%
150-160	25.267	1.56%
160-170	13.287	0.82%
170-180	3.733	0.23%
Total	1620.0	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	688.158	42.48%
60- 90	448.291	27.67%
0-90	1136.449	70.15%
90- 180	483.519	29.85%
0- 180	1620.0	100%

Table 5: Zonal Lumen

### Illuminance Plots- Goniophotometer Method

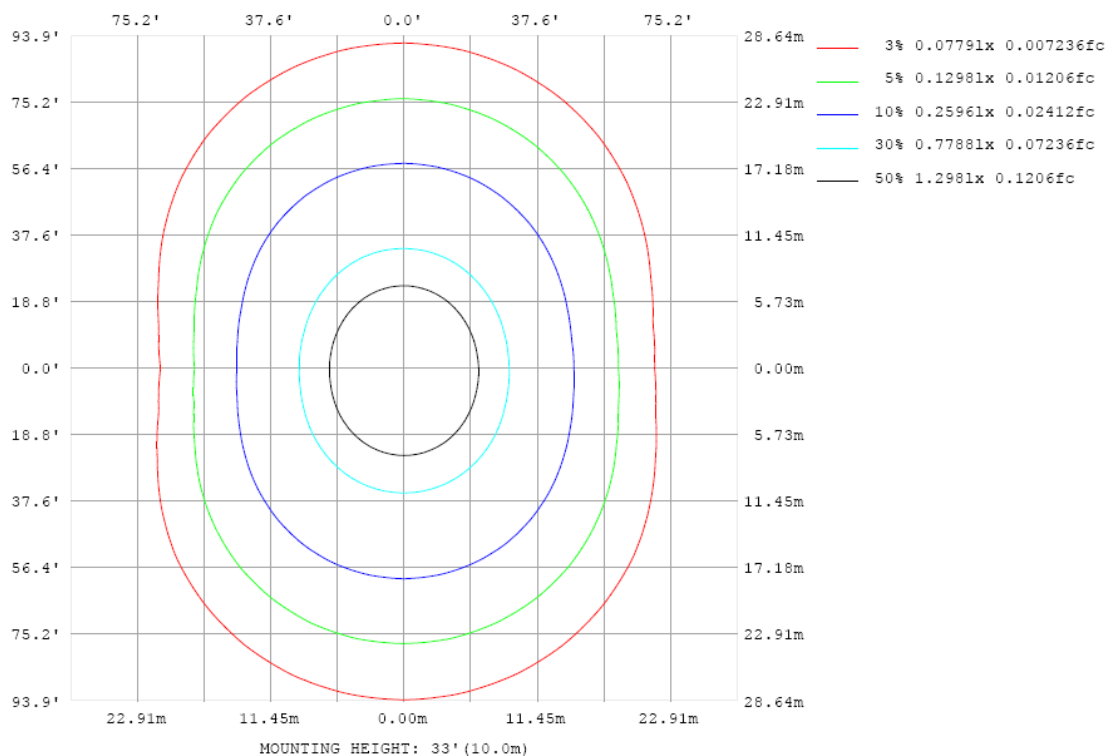


Chart 5: Illuminance Plot (Footcandles)

## Luminous Intensity Distribution Plots- Goniophotometer Method

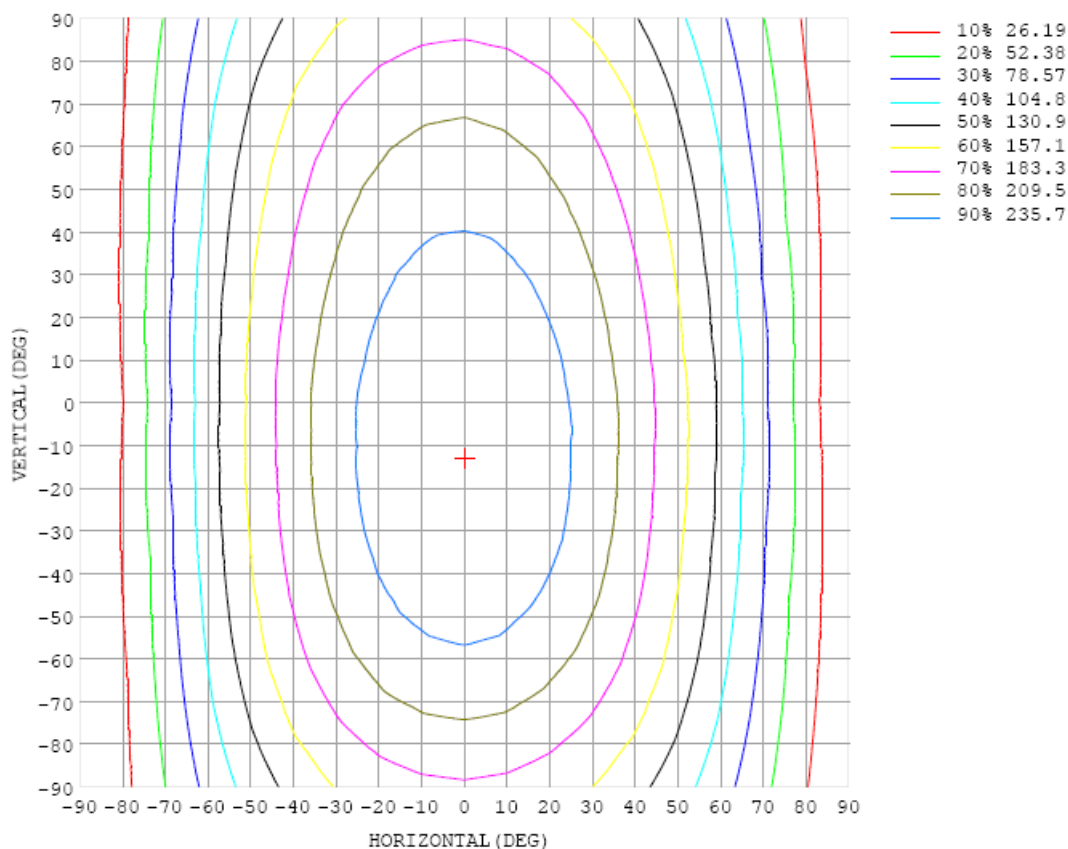


Chart 6: Isocandela Plot

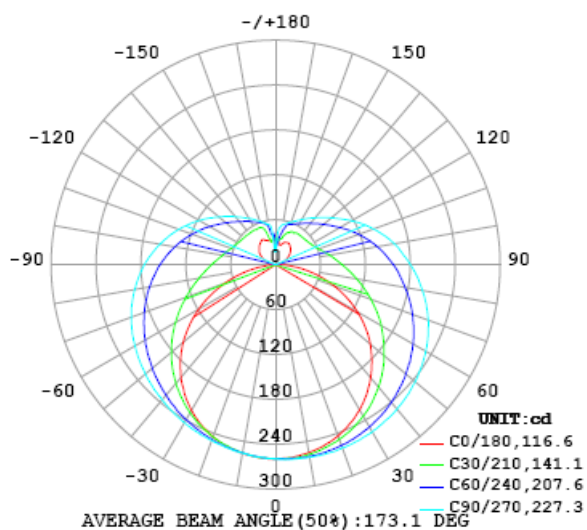


Chart 7: Polar Candela Distribution



## 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	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260
5	259	259	259	260	260	260	260	260	261	261	261	260	261	260	260	260	259	259	259
10	255	256	257	258	258	259	260	261	261	261	261	261	260	260	259	258	257	257	256
15	250	251	252	253	256	257	259	261	261	262	261	261	259	258	256	255	253	253	252
20	244	245	246	249	252	254	257	259	260	261	261	259	257	255	253	249	247	245	245
25	235	236	239	242	246	251	254	257	259	260	259	258	254	251	247	243	239	237	236
30	224	226	229	234	240	246	251	254	257	258	257	255	251	246	240	235	230	226	225
35	212	214	218	225	232	239	246	251	254	255	254	251	246	240	232	225	218	214	212
40	197	200	206	214	223	233	240	246	251	252	250	247	241	232	223	214	205	199	197
45	182	185	192	202	214	225	234	241	246	248	246	242	234	225	213	202	191	183	180
50	165	168	177	189	203	216	227	236	241	244	242	236	228	216	202	188	175	166	161
55	146	151	162	176	192	207	220	229	236	238	236	230	220	207	191	174	158	146	141
60	126	132	145	163	181	197	212	222	229	232	230	223	212	197	180	161	140	125	118
65	105	112	128	149	169	188	204	215	222	225	223	216	204	188	168	146	122	103	95.4
70	83.2	91.4	111	136	159	178	195	207	214	217	215	208	195	178	157	131	104	80.9	71.7
75	61.2	71.6	95.3	122	148	168	185	198	206	209	206	199	186	168	146	118	87.1	59.7	48.3
80	39.4	53.3	81.0	110	137	159	176	188	196	199	197	189	177	159	135	106	72.5	40.8	25.4
85	19.3	38.1	68.6	98.8	126	149	166	179	187	190	188	180	167	149	125	94.8	60.8	26.5	6.52
90	3.74	27.3	58.6	88.8	116	139	157	169	177	180	178	170	158	140	115	85.6	52.2	19.1	0.62
95	1.32	21.6	51.1	80.5	107	130	148	160	168	170	168	162	149	130	107	78.2	46.3	16.2	3.20
100	3.78	19.0	45.4	73.4	99.0	121	138	151	158	161	159	152	139	121	98.3	71.2	42.0	17.1	6.80
105	7.26	19.2	41.3	66.8	90.9	112	128	140	148	151	148	141	129	112	90.5	65.5	39.9	20.2	10.7
110	11.1	21.4	39.4	61.3	83.4	103	118	130	137	139	137	131	119	103	83.3	61.2	39.5	23.9	14.6
115	15.2	24.3	38.9	57.4	76.6	94.2	109	119	126	129	126	120	109	94.8	77.2	58.3	40.1	27.6	18.7
120	18.7	27.4	39.3	54.8	71.2	86.3	99.3	109	115	117	116	110	100.0	87.3	72.5	56.3	41.7	30.8	22.4
125	22.3	30.5	40.2	53.0	66.8	79.8	90.9	99.2	105	107	105	100	92.0	81.4	68.5	55.1	43.5	34.5	25.9
130	25.7	33.5	41.5	51.8	63.2	74.4	83.9	91.0	95.8	97.5	96.1	92.1	85.1	76.1	65.4	54.6	45.3	37.4	29.0
135	28.1	36.6	42.9	51.3	60.6	69.7	77.6	83.8	87.7	89.2	88.3	84.8	79.0	71.6	62.9	54.3	47.1	39.8	31.3
140	30.6	38.8	43.8	51.0	58.4	65.7	72.2	77.2	80.6	81.8	81.1	78.3	73.7	67.6	60.9	54.3	48.3	42.5	33.7
145	32.6	41.5	45.4	51.0	56.7	62.4	67.6	71.6	74.3	75.4	74.7	72.5	68.9	64.3	59.2	54.3	49.7	44.4	35.6
150	33.6	43.1	44.9	48.4	55.5	59.7	63.5	66.6	68.7	69.6	69.1	67.6	64.9	61.5	57.9	54.2	50.5	45.8	37.6
155	33.0	41.4	45.8	49.0	53.6	57.4	60.1	62.4	63.9	64.5	64.4	63.4	61.6	59.3	56.9	54.2	51.3	46.1	36.9
160	30.9	36.9	42.8	45.3	50.3	55.1	57.2	58.8	59.9	60.5	60.5	60.0	58.9	57.6	55.7	53.9	52.2	47.0	34.4
165	27.3	31.2	35.3	39.7	42.2	47.0	53.4	56.2	56.8	57.2	57.4	57.2	56.5	55.5	54.7	53.7	51.6	46.2	33.1
170	27.7	29.9	32.3	34.5	34.8	38.3	42.1	48.0	53.2	54.3	54.5	54.4	54.2	53.9	52.8	51.6	48.6	40.7	31.9
175	35.3	35.3	34.8	34.0	31.8	28.5	28.1	32.5	40.4	48.4	49.3	49.0	49.2	48.4	46.7	44.4	41.4	37.5	36.9
180	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4

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	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260		
5	259	259	258	258	258	258	258	258	258	258	258	258	258	258	257	258	259		
10	255	255	255	256	255	255	256	256	256	256	256	256	255	255	255	255	255		
15	251	250	251	251	252	253	253	253	253	253	253	252	251	251	250	250	250		
20	244	244	245	246	248	249	250	250	250	250	249	248	247	245	244	243	243		
25	235	236	237	240	242	244	246	247	247	247	245	243	241	239	236	235	234		
30	225	226	229	232	236	239	242	243	244	243	241	238	234	231	227	225	223		
35	213	214	218	224	229	234	237	240	240	239	236	232	227	222	217	213	211		
40	198	201	207	214	222	228	233	235	236	235	231	226	219	213	206	201	197		
45	182	187	195	205	214	222	227	231	232	230	226	220	211	203	194	187	182		
50	164	171	182	194	206	215	222	226	228	225	220	212	203	192	181	171	165		
55	145	154	169	183	197	208	216	221	222	220	214	205	194	181	168	155	147		
60	125	137	155	173	189	201	211	215	217	214	208	198	185	170	154	138	128		
65	103	120	141	162	180	194	204	210	212	208	202	191	176	159	140	121	108		
70	81.8	102	128	151	171	187	198	204	205	203	195	183	168	148	127	105	87.8		
75	61.8	86.7	115	141	163	179	191	197	199	196	188	175	159	138	114	88.7	68.8		
80	43.4	73.4	104	131	154	171	183	190	191	188	180	167	150	128	102	73.8	49.8		
85	29.5	62.6	93.9	122	145	163	175	182	184	180	172	159	141	118	91.6	62.7	33.8		
90	21.7	54.3	85.7	114	137	154	166	174	175	172	164	151	133	110	82.6	53.0	22.6		
95	18.8	48.4	78.4	106	128	146	158	165	166	163	155	142	124	102	75.0	46.1	17.2		
100	19.0	44.6	72.1	98.3	120	137	149	155	157	154	146	133	116	94.0	69.2	41.3	15.6		
105	21.0	42.3	67.8	91.5	112	128	139	146	148	145	137	125	108	87.2	63.9	38.4	16.8		
110	23.7	41.5	63.5	84.9	104	119	130	136	138	135	128	116	100	80.9	59.5	37.2	19.1		
115	26.9	41.8	60.5	79.1	96.3	110	120	126	128	125	118	107	92.8	75.2	56.1	37.3	22.2		
120	30.9	42.8	58.3	74.1	89.2	102	111	117	118	116	109	99.3	85.9	70.0	54.1	38.1	25.4		
125	34.1	44.1	56.8	70.4	83.1	94.0	102	107	108	106	100	91.4	79.9	67.1	52.7	39.4	28.5		
130	36.6	45.2	55.6	67.4	77.8	87.0	94.0	98.1	99.3	97.3	92.5	84.5	74.9	64.0	51.9	40.9	31.2		
135	37.2	46.6	55.2	64.6	73.1	80.7	86.5	90.0	91.1	89.3	85.1	78.7	70.6	61.3	51.4	42.3	32.6		
140	40.1	48.7	54.6	62.1	69.7	75.4	79.9	82.8	83.6	82.2	78.7	73.3	66.9	59.2	51.3	44.0	34.4		
145	40.4	49.5	54.5	60.0	66.0	70.9	74.0	76.2	76.8	75.7	73.1	69.2	63.6	57.5	51.2	45.0	34.7		
150	40.1	50.0	54.0	58.7	62.7	66.6	69.6	71.2	71.3	70.6	68.4	65.0	60.7	56.1	50.8	45.5	34.4		
155	36.7	48.8	53.9	57.2	60.3	62.9	64.8	65.9	66.3	65.5	63.9	61.5	58.3	52.2	45.6	41.5	31.5		
160	31.9	42.9	52.4	55.6	58.1	59.8	61.1	61.7	61.9	61.3	60.4	57.8	49.9	44.0	39.7	35.9	28.2		
165	29.5	33.5	40.7	52.9	55.5	56.9	57.6	57.9	57.9	57.6	53.3	43.7	38.0	37.5	32.6	29.7	25.5		
170	30.0	29.8	30.7	34.4	42.5	49.2	52.5	54.8	54.5	46.6	33.7	36.5	36.7	34.6	30.9	28.5	28.3		
175	37.0	37.4	38.2	39.2	38.9	38.4	40.1	38.8	25.6	35.4	39.7	40.2	38.8	38.0	37.5	36.5	35.4		
180	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4		

Table 7: Luminous Intensity Data

## 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)	0.084	0.047
Power Factor	0.9722	0.9072
Test Power (W)	9.78	10.22
THD A%	17.71	19.53
Luminous Efficacy (lm/W)	167.9	162.3
Total Luminous Flux (lm)	1641.8	1659.0
Color Rendering Index (CRI)	85.3	
R9	19	
Correlated Color Temperature (CCT)(K)	3575	
Chromaticity Chroma x	0.3976	
Chromaticity Chroma y	0.3788	
Chromaticity Chroma u	0.2356	
Chromaticity Chroma v	0.3367	
Duv	-0.0036	
Chromaticity Chroma u'	0.2356	
Chromaticity Chroma v'	0.5050	

Special Color Rendering Indices	
R1	84.7
R2	92.8
R3	95.9
R4	83.7
R5	85
R6	89.6
R7	84.7
R8	65.8
R9	19
R10	82.7
R11	83.5
R12	69.1
R13	87.1
R14	98.5

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

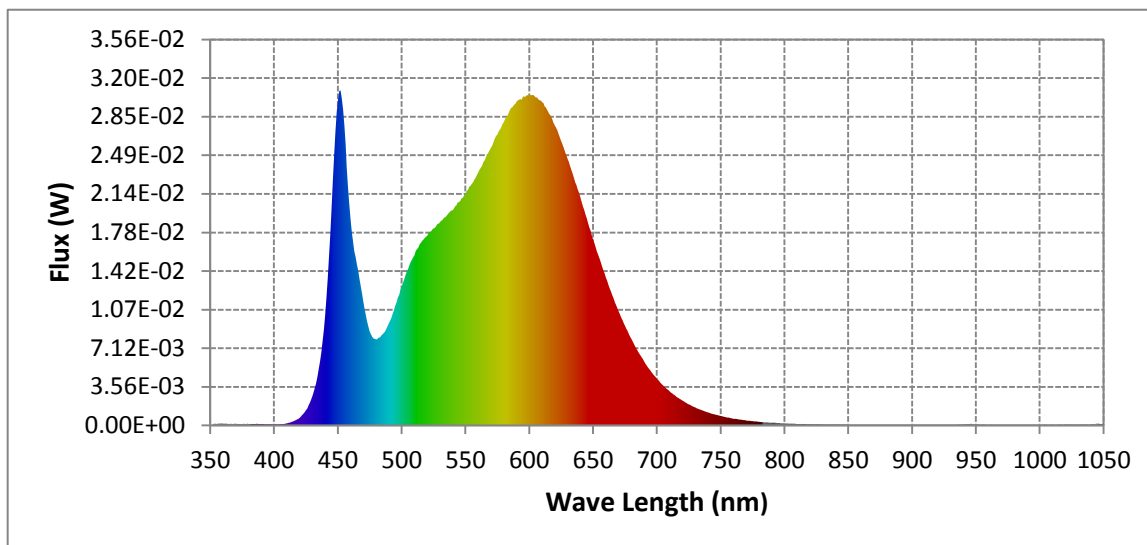
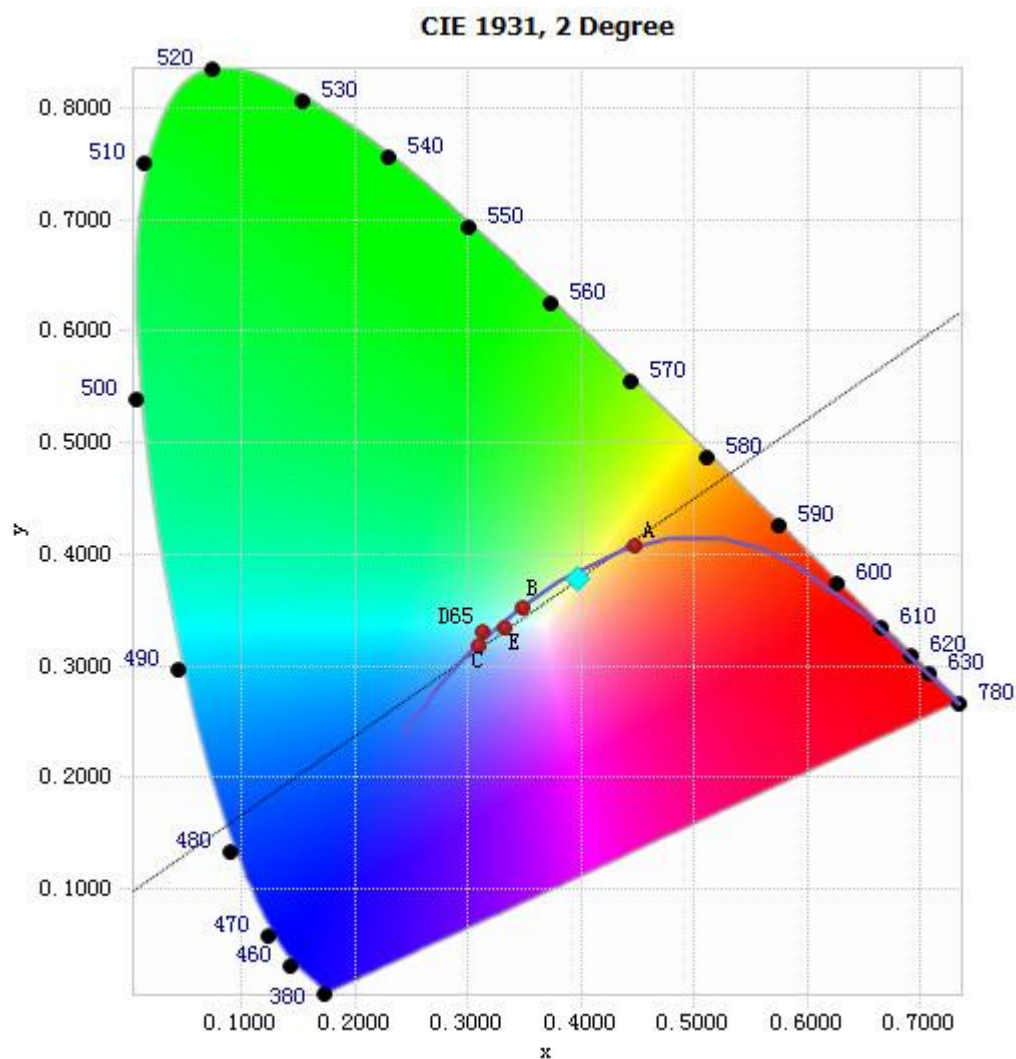


Chart 8: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.43E-04	485	8.39E-03	590	2.98E-02	695	5.06E-03
385	1.20E-04	490	9.43E-03	595	3.03E-02	700	4.31E-03
390	1.20E-04	495	1.10E-02	600	3.05E-02	705	3.69E-03
395	1.01E-04	500	1.28E-02	605	3.02E-02	710	3.15E-03
400	9.43E-05	505	1.44E-02	610	2.98E-02	715	2.68E-03
405	1.06E-04	510	1.57E-02	615	2.89E-02	720	2.30E-03
410	2.05E-04	515	1.69E-02	620	2.77E-02	725	1.94E-03
415	3.68E-04	520	1.75E-02	625	2.62E-02	730	1.67E-03
420	7.07E-04	525	1.82E-02	630	2.46E-02	735	1.39E-03
425	1.39E-03	530	1.87E-02	635	2.28E-02	740	1.20E-03
430	2.70E-03	535	1.93E-02	640	2.11E-02	745	1.01E-03
435	5.25E-03	540	1.98E-02	645	1.91E-02	750	8.61E-04
440	1.02E-02	545	2.06E-02	650	1.71E-02	755	7.28E-04
445	2.00E-02	550	2.13E-02	655	1.54E-02	760	6.18E-04
450	3.00E-02	555	2.23E-02	660	1.36E-02	765	5.42E-04
455	2.77E-02	560	2.33E-02	665	1.20E-02	770	4.64E-04
460	1.91E-02	565	2.44E-02	670	1.05E-02	775	3.93E-04
465	1.49E-02	570	2.56E-02	675	9.16E-03	780	3.36E-04
470	1.14E-02	575	2.68E-02	680	7.95E-03		
475	8.67E-03	580	2.80E-02	685	6.84E-03		
480	7.93E-03	585	2.92E-02	690	5.91E-03		

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

# Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3976, 0.3788)

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

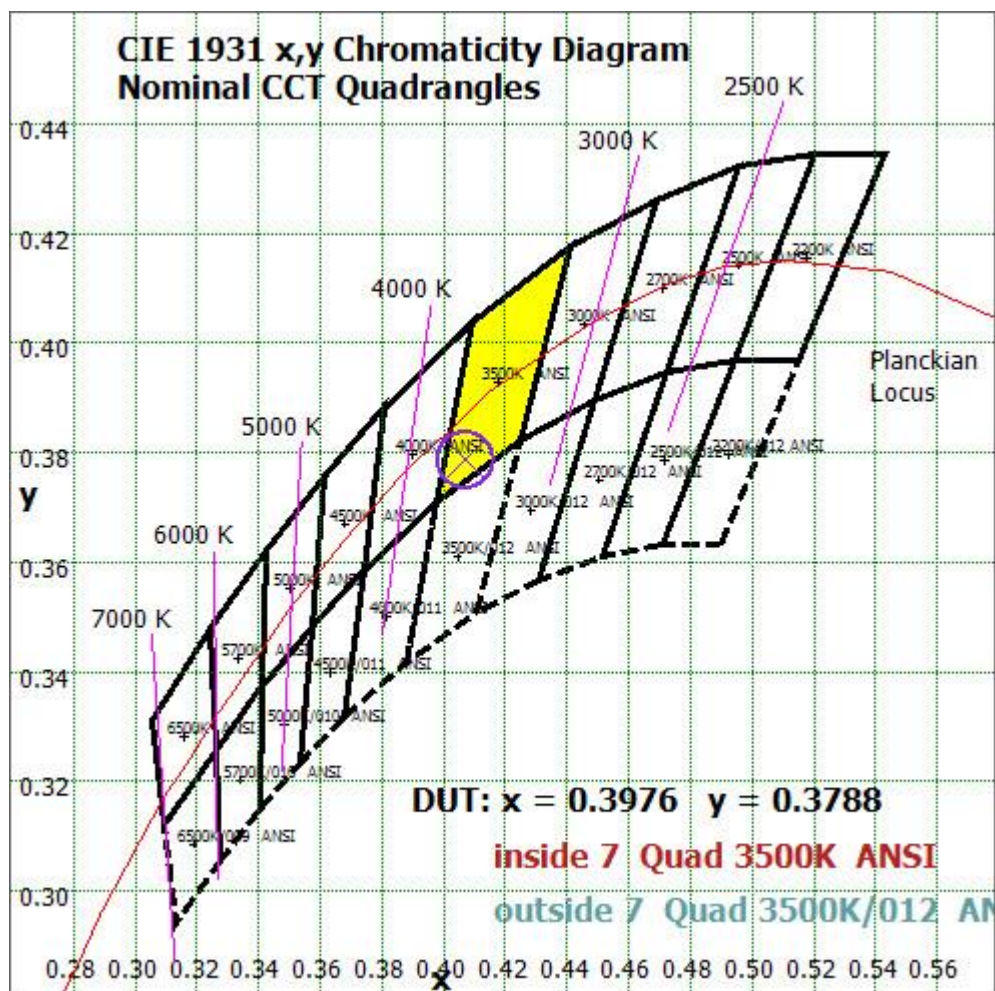


Chart 10: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram



# Color Rendition Report – Sphere Spectroradiometer Method

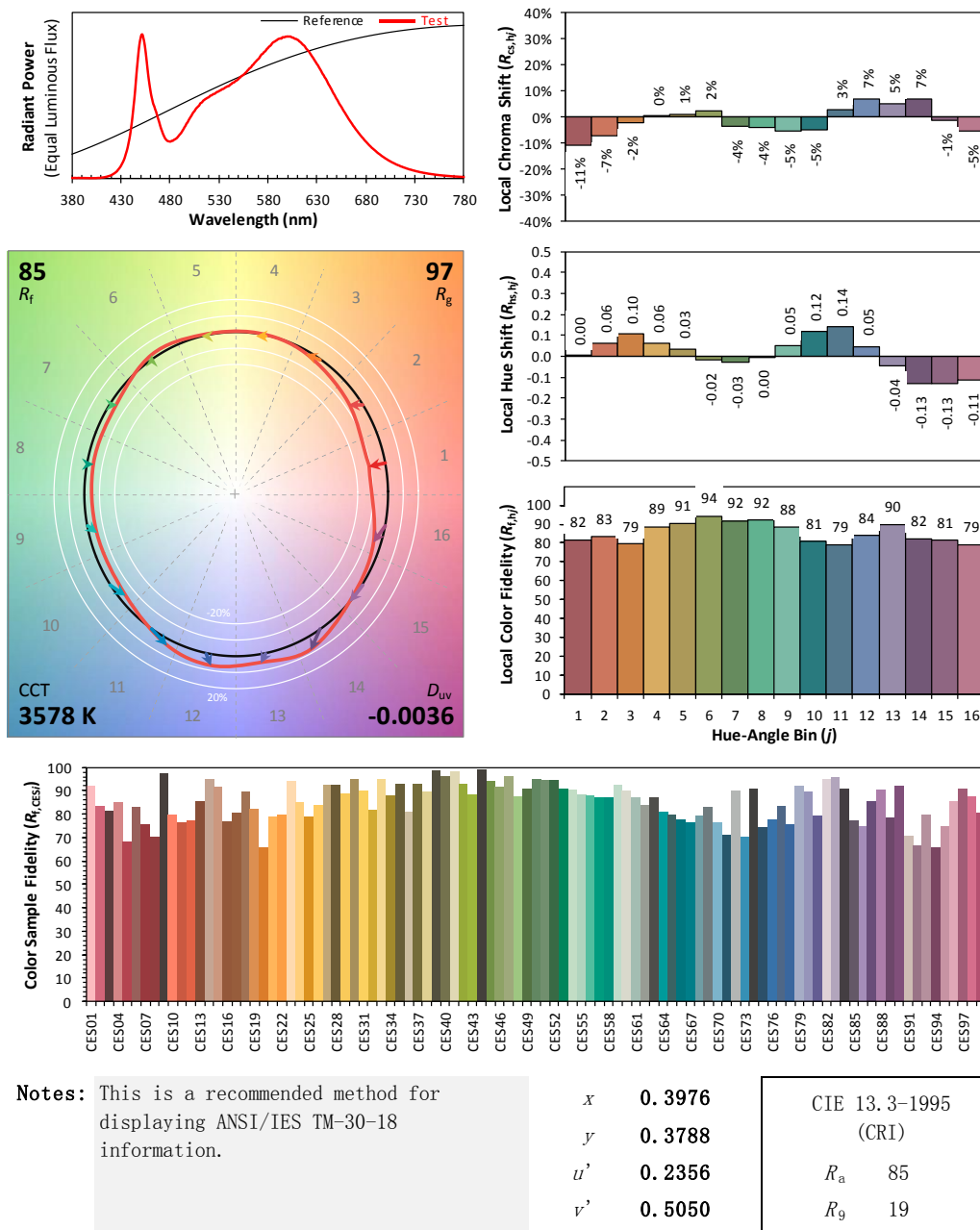
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2025/09/12

Model: 10T8/4F/8CCTS/UEB/C



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 (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)	0.083	0.041
Power Factor	0.9724	0.9063
Test Power (W)	9.74	10.17
THD A%	17.51	19.63
Luminous Efficacy (lm/W)	176.1	170.2
Total Luminous Flux (lm)	1715.7	1731.1
Color Rendering Index (CRI)	85.9	
R9	22.2	
Correlated Color Temperature (CCT)(K)	4018	
Chromaticity Chroma x	0.3770	
Chromaticity Chroma y	0.3668	
Chromaticity Chroma u	0.2269	
Chromaticity Chroma v	0.3311	
Duv	-0.0037	
Chromaticity Chroma u'	0.2269	
Chromaticity Chroma v'	0.4966	

Special Color Rendering Indices	
R1	85.6
R2	93
R3	95.7
R4	84.3
R5	85.5
R6	88.8
R7	86
R8	68.4
R9	22.2
R10	82.6
R11	84.1
R12	65.3
R13	87.9
R14	98.4

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

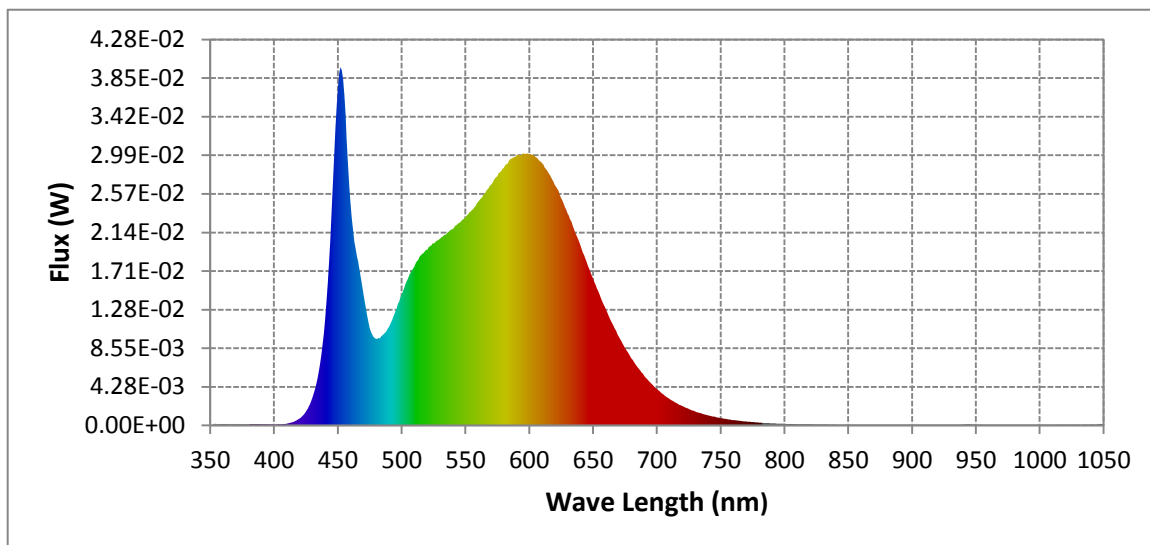
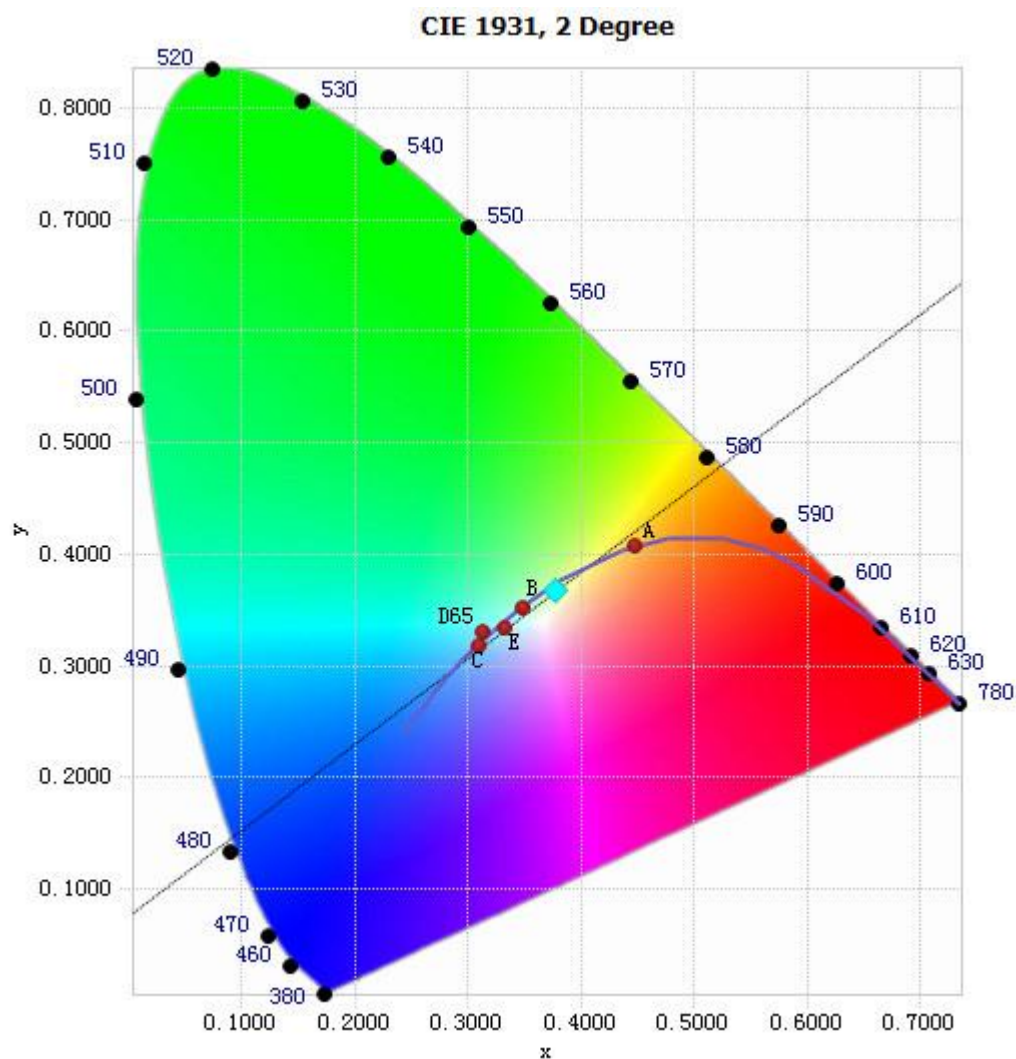


Chart 12: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.66E-04	485	9.97E-03	590	3.00E-02	695	4.74E-03
385	1.13E-04	490	1.09E-02	595	3.01E-02	700	4.03E-03
390	1.33E-04	495	1.26E-02	600	3.00E-02	705	3.44E-03
395	1.10E-04	500	1.45E-02	605	2.97E-02	710	2.93E-03
400	1.02E-04	505	1.63E-02	610	2.90E-02	715	2.49E-03
405	1.23E-04	510	1.76E-02	615	2.80E-02	720	2.14E-03
410	2.02E-04	515	1.88E-02	620	2.67E-02	725	1.82E-03
415	3.89E-04	520	1.95E-02	625	2.52E-02	730	1.53E-03
420	7.63E-04	525	2.01E-02	630	2.35E-02	735	1.32E-03
425	1.54E-03	530	2.07E-02	635	2.17E-02	740	1.10E-03
430	3.05E-03	535	2.11E-02	640	2.00E-02	745	9.63E-04
435	5.98E-03	540	2.17E-02	645	1.81E-02	750	8.06E-04
440	1.18E-02	545	2.24E-02	650	1.62E-02	755	6.88E-04
445	2.36E-02	550	2.30E-02	655	1.45E-02	760	5.83E-04
450	3.74E-02	555	2.38E-02	660	1.28E-02	765	5.04E-04
455	3.66E-02	560	2.47E-02	665	1.13E-02	770	4.26E-04
460	2.47E-02	565	2.56E-02	670	9.85E-03	775	3.67E-04
465	1.88E-02	570	2.66E-02	675	8.57E-03	780	3.10E-04
470	1.47E-02	575	2.76E-02	680	7.40E-03		
475	1.08E-02	580	2.85E-02	685	6.41E-03		
480	9.59E-03	585	2.95E-02	690	5.51E-03		

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

# Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3770, 0.3668)

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

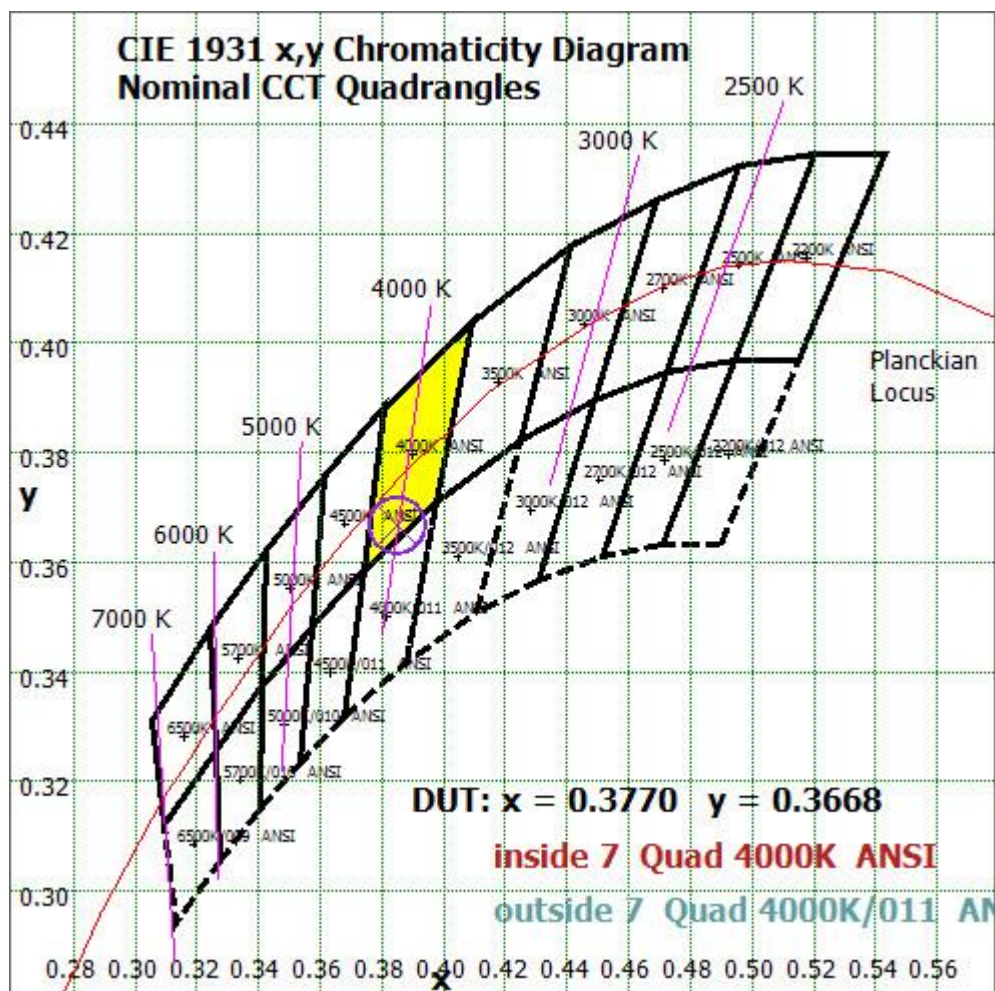


Chart14: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

# Color Rendition Report – Sphere Spectroradiometer Method

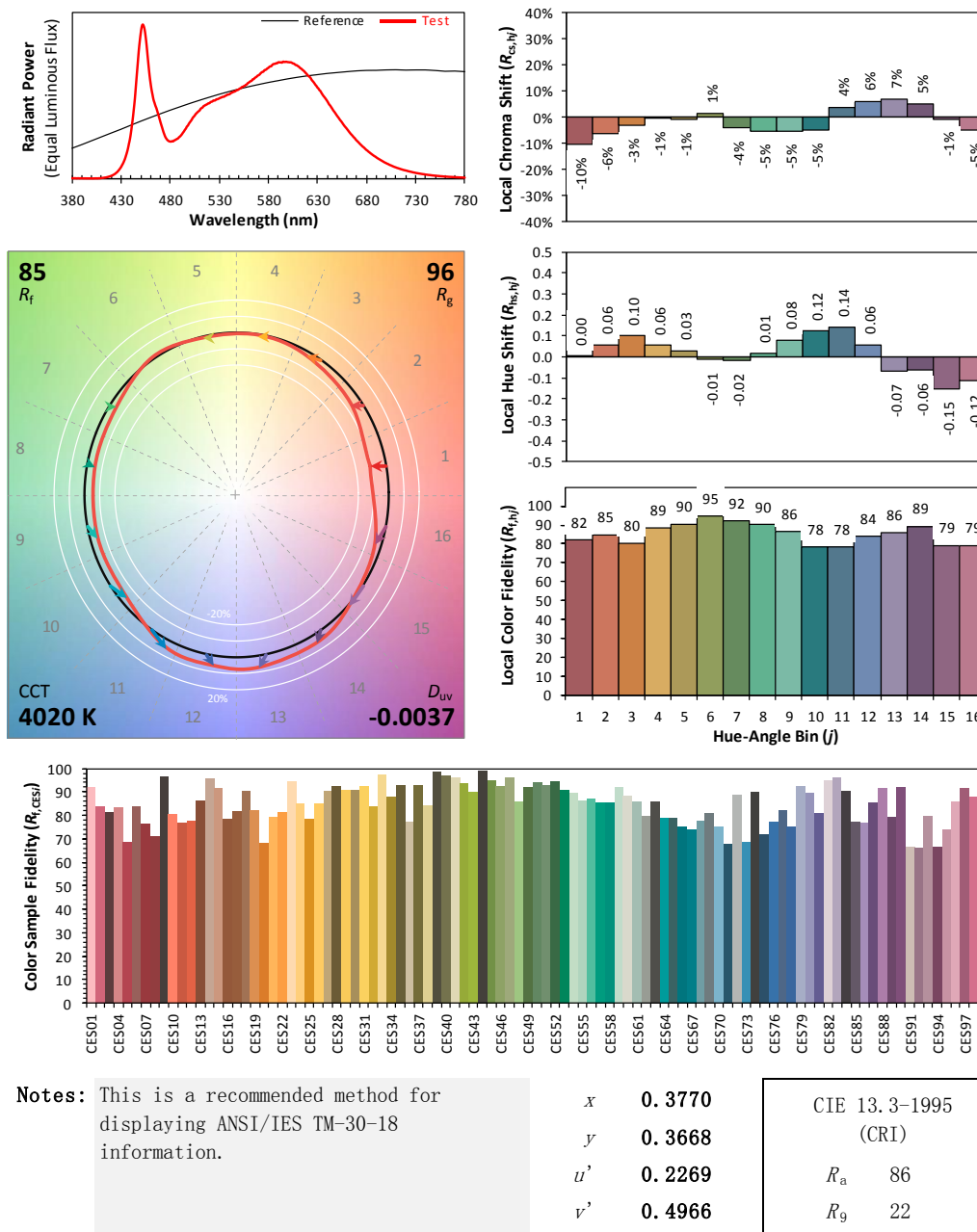
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2025/09/12

Model: 10T8/4F/8CCTS/UEB/C



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 (5000K 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)	0.083	0.041
Power Factor	0.9725	0.9057
Test Power (W)	9.72	10.15
THD A%	17.48	19.36
Luminous Efficacy (lm/W)	175.9	170.2
Total Luminous Flux (lm)	1709.3	1727.3
Color Rendering Index (CRI)	85.5	
R9	18.3	
Correlated Color Temperature (CCT)(K)	5218	
Chromaticity Chroma x	0.3390	
Chromaticity Chroma y	0.3447	
Chromaticity Chroma u	0.2100	
Chromaticity Chroma v	0.3202	
Duv	-0.0010	
Chromaticity Chroma u'	0.2100	
Chromaticity Chroma v'	0.4803	

Special Color Rendering Indices	
R1	84.9
R2	91.7
R3	94.2
R4	84.6
R5	85
R6	86.3
R7	87
R8	70.1
R9	18.3
R10	79.2
R11	84.4
R12	62.2
R13	87.2
R14	97.3

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

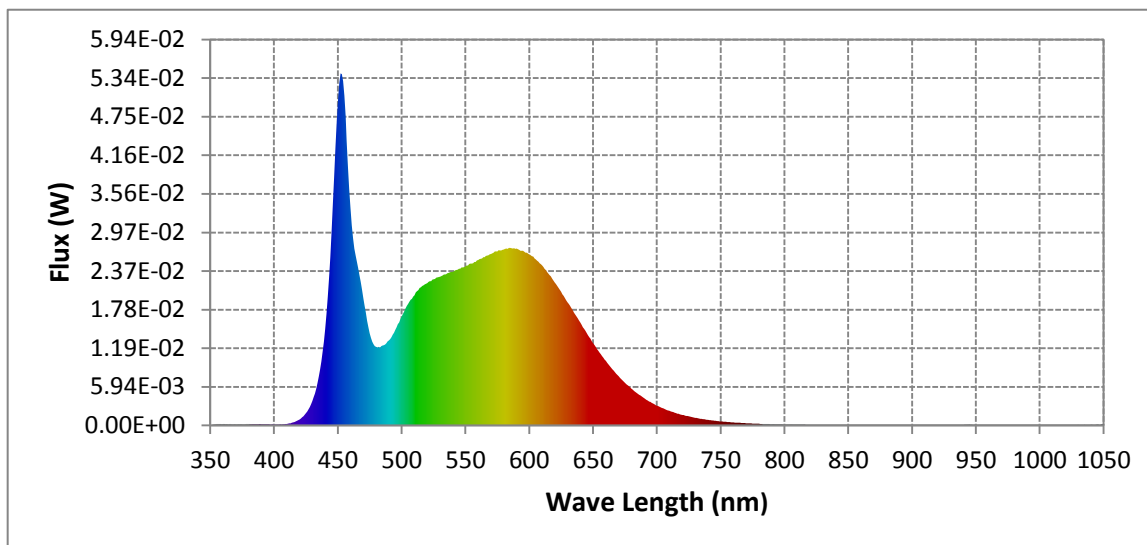


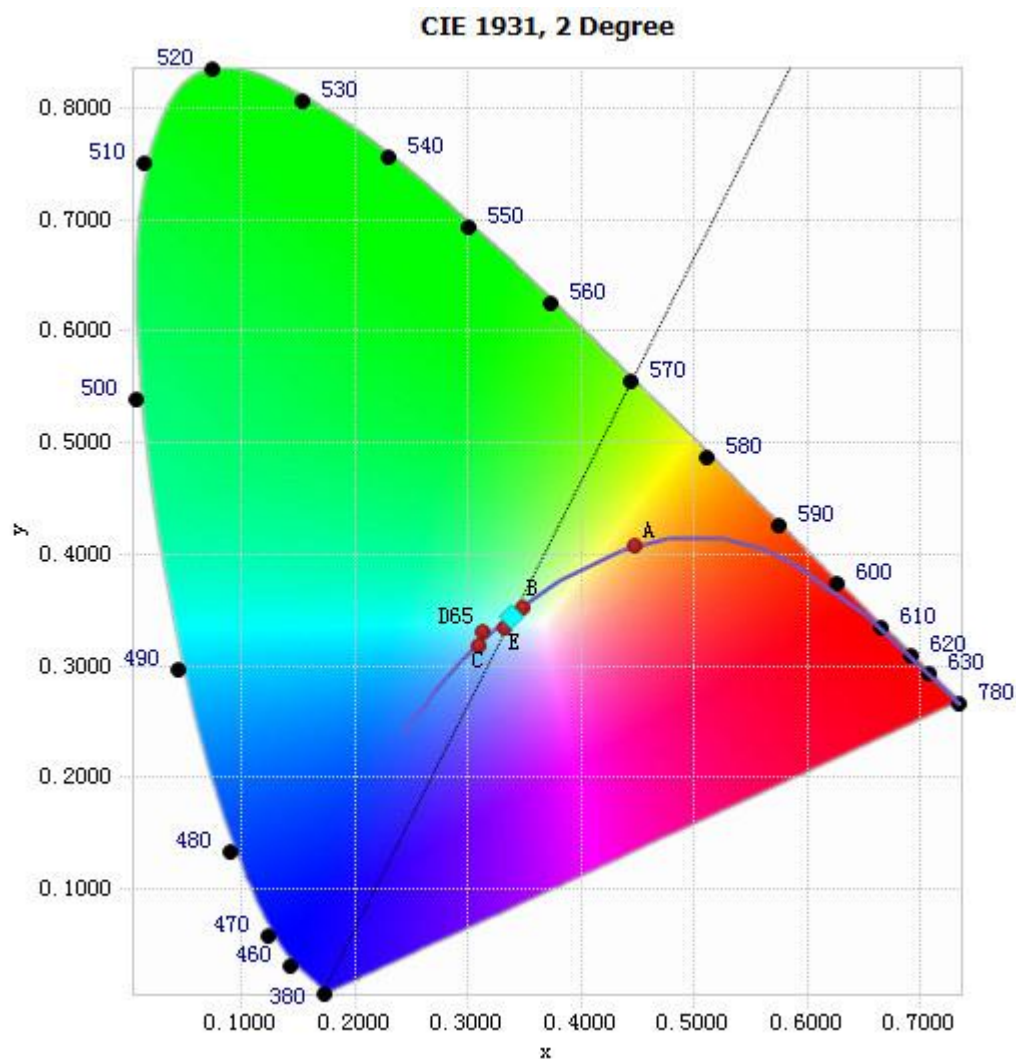
Chart16: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	2.22E-04	485	1.23E-02	590	2.72E-02	695	3.59E-03
385	1.72E-04	490	1.31E-02	595	2.69E-02	700	3.03E-03
390	1.78E-04	495	1.47E-02	600	2.63E-02	705	2.62E-03
395	1.55E-04	500	1.68E-02	605	2.55E-02	710	2.22E-03
400	1.42E-04	505	1.87E-02	610	2.46E-02	715	1.89E-03
405	1.59E-04	510	2.00E-02	615	2.34E-02	720	1.61E-03
410	2.26E-04	515	2.12E-02	620	2.20E-02	725	1.38E-03
415	4.66E-04	520	2.19E-02	625	2.05E-02	730	1.17E-03
420	9.28E-04	525	2.25E-02	630	1.89E-02	735	1.00E-03
425	1.88E-03	530	2.29E-02	635	1.74E-02	740	8.52E-04
430	3.77E-03	535	2.32E-02	640	1.58E-02	745	7.36E-04
435	7.52E-03	540	2.36E-02	645	1.42E-02	750	6.24E-04
440	1.48E-02	545	2.41E-02	650	1.26E-02	755	5.32E-04
445	2.98E-02	550	2.44E-02	655	1.12E-02	760	4.56E-04
450	5.00E-02	555	2.49E-02	660	9.90E-03	765	3.98E-04
455	5.07E-02	560	2.54E-02	665	8.65E-03	770	3.36E-04
460	3.34E-02	565	2.59E-02	670	7.53E-03	775	2.89E-04
465	2.52E-02	570	2.64E-02	675	6.53E-03	780	2.54E-04
470	1.96E-02	575	2.67E-02	680	5.63E-03		
475	1.41E-02	580	2.71E-02	685	4.86E-03		
480	1.21E-02	585	2.73E-02	690	4.19E-03		

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



# Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3390, 0.3447)

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

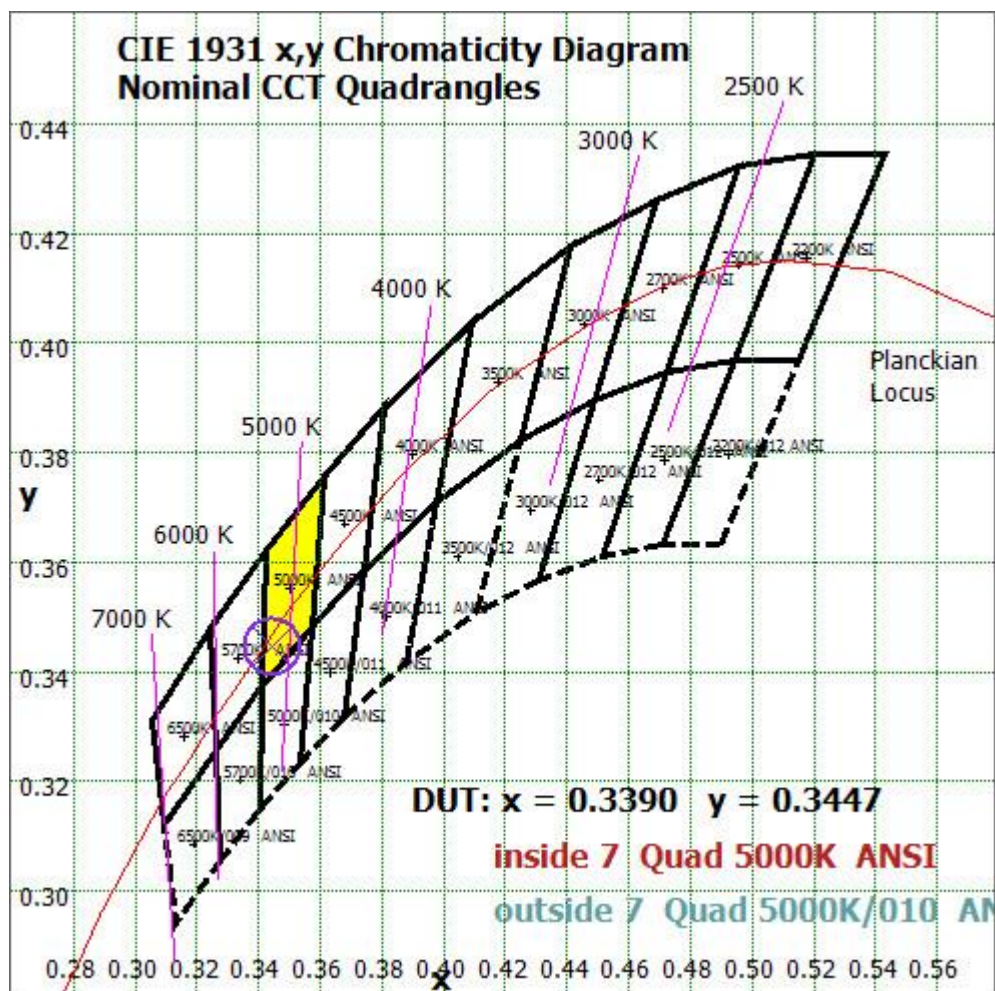


Chart 18: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

# Color Rendition Report – Sphere Spectroradiometer Method

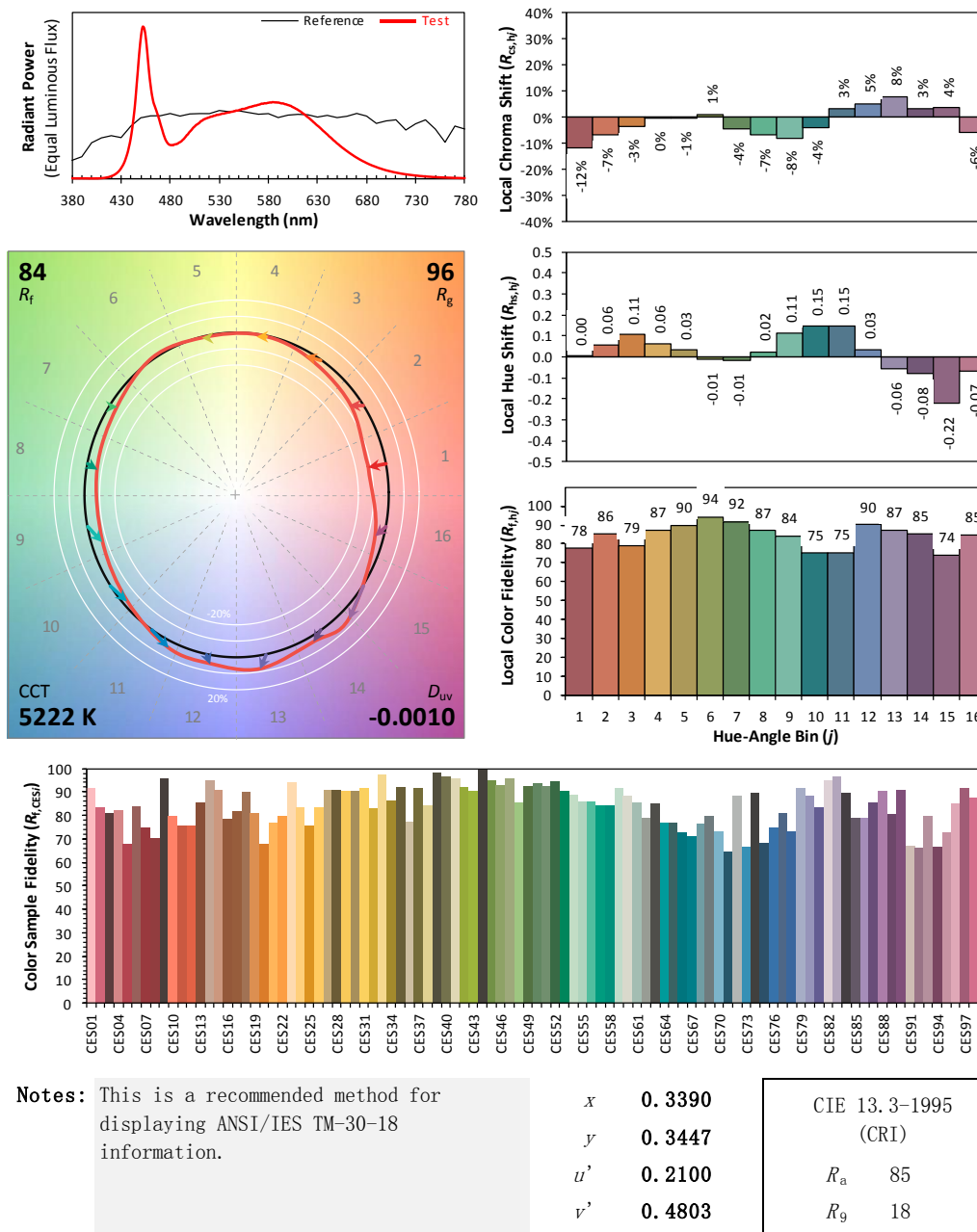
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2025/09/12

Model: 10T8/4F/8CCTS/UEB/C



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.

## TEST RESULTS (6500K 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)	0.084	0.041
Power Factor	0.9719	0.9069
Test Power (W)	9.79	10.22
THD A%	17.79	19.57
Luminous Efficacy (lm/W)	174.3	169.2
Total Luminous Flux (lm)	1706.8	1729.2
Color Rendering Index (CRI)	83.6	
R9	7.4	
Correlated Color Temperature (CCT)(K)	6368	
Chromaticity Chroma x	0.3149	
Chromaticity Chroma y	0.3307	
Chromaticity Chroma u	0.1987	
Chromaticity Chroma v	0.3131	
Duv	0.0030	
Chromaticity Chroma u'	0.1987	
Chromaticity Chroma v'	0.4696	

Special Color Rendering Indices	
R1	82
R2	89.8
R3	92.9
R4	81.8
R5	82.1
R6	83.7
R7	87.5
R8	68.8
R9	7.4
R10	74.6
R11	81.3
R12	55.7
R13	84.7
R14	96.6

Table 14: 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

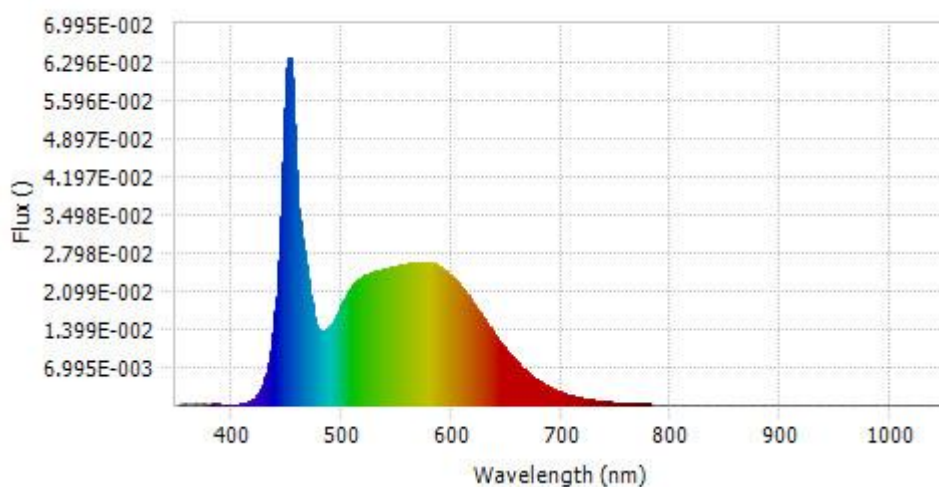
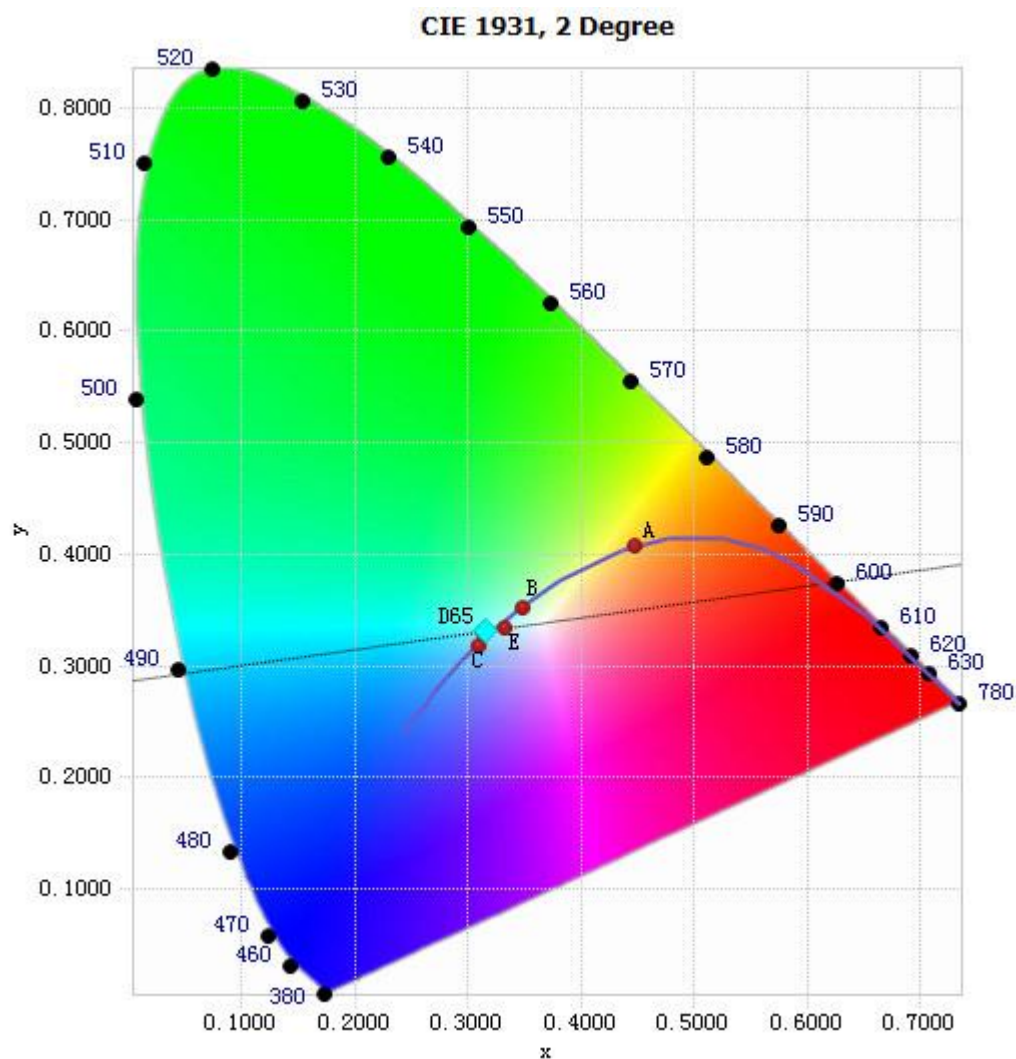


Chart 20: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.91E-04	485	1.38E-02	590	2.53E-02	695	2.78E-03
385	1.92E-04	490	1.46E-02	595	2.46E-02	700	2.36E-03
390	1.77E-04	495	1.62E-02	600	2.37E-02	705	2.01E-03
395	1.67E-04	500	1.84E-02	605	2.26E-02	710	1.71E-03
400	1.33E-04	505	2.03E-02	610	2.14E-02	715	1.46E-03
405	1.34E-04	510	2.17E-02	615	2.01E-02	720	1.25E-03
410	2.47E-04	515	2.30E-02	620	1.86E-02	725	1.08E-03
415	5.16E-04	520	2.36E-02	625	1.72E-02	730	9.19E-04
420	1.05E-03	525	2.41E-02	630	1.57E-02	735	7.79E-04
425	2.18E-03	530	2.45E-02	635	1.43E-02	740	6.65E-04
430	4.41E-03	535	2.47E-02	640	1.28E-02	745	5.75E-04
435	8.87E-03	540	2.50E-02	645	1.14E-02	750	4.89E-04
440	1.74E-02	545	2.53E-02	650	1.01E-02	755	4.21E-04
445	3.45E-02	550	2.54E-02	655	8.91E-03	760	3.63E-04
450	5.85E-02	555	2.57E-02	660	7.81E-03	765	3.12E-04
455	5.99E-02	560	2.59E-02	665	6.81E-03	770	2.62E-04
460	3.94E-02	565	2.61E-02	670	5.90E-03	775	2.35E-04
465	2.93E-02	570	2.62E-02	675	5.09E-03	780	2.06E-04
470	2.30E-02	575	2.62E-02	680	4.35E-03		
475	1.63E-02	580	2.60E-02	685	3.77E-03		
480	1.37E-02	585	2.59E-02	690	3.24E-03		

Table 15: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method

# Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3149, 0.3307)

Chart 21: 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

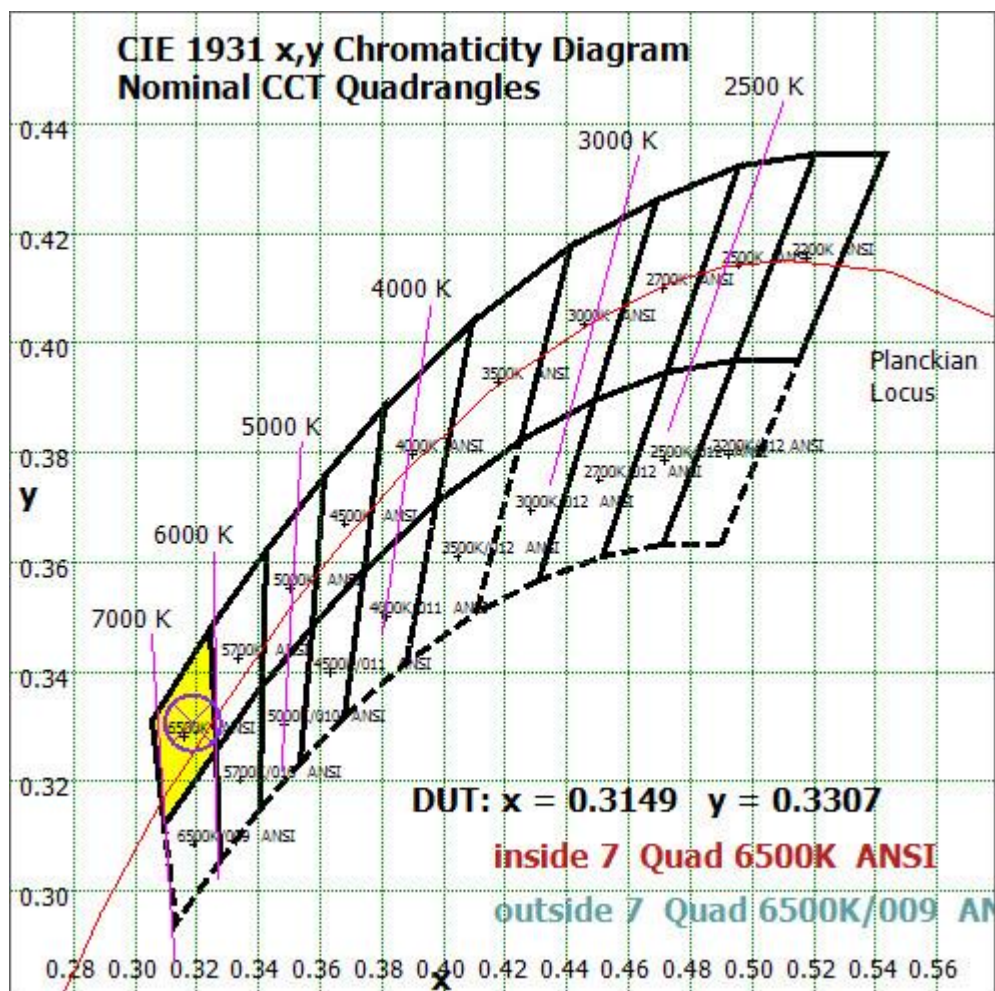


Chart 22: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

# Color Rendition Report – Sphere Spectroradiometer Method

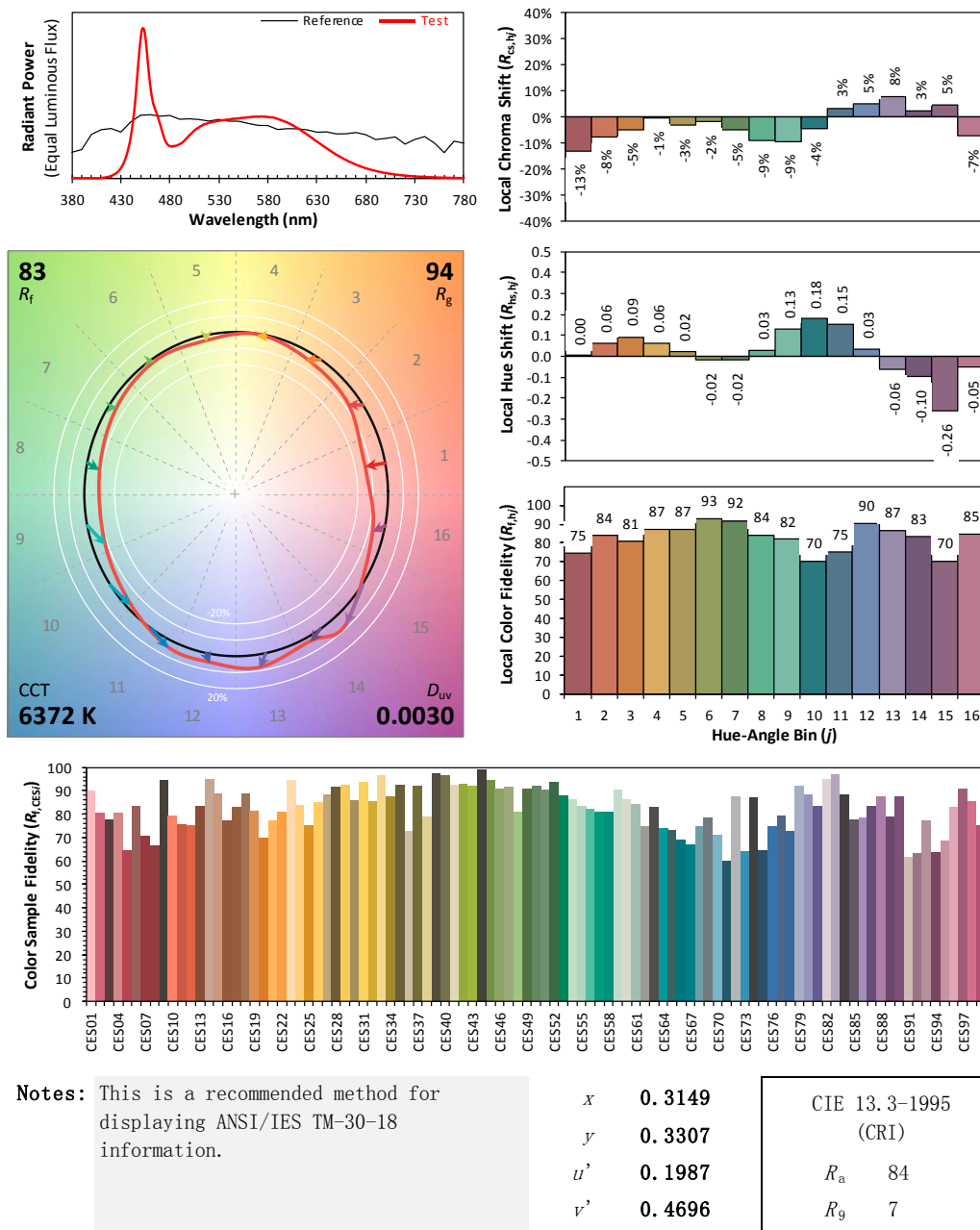
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2025/09/12

Model: 10T8/4F/8CCTS/UEB/C



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

Chart 23: 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 14 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 16: 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

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 \*\*\*

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.