

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: 7T8/2F/8CCTS/UEB

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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

Tel: +86571 86376106

www.ltlqa.com

Report No.: HZ23040022a

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

Review by:

April Zou

Engineer: April Zou
Apr. 26, 2023



Approved by:

Jim Zhang

Manager: Jim Zhang
Apr. 26, 2023

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	7T8/2F/8CCTS/UEB (3000K Setting)	7T8/2F/8CCTS/UEB (3500K Setting)	7T8/2F/8CCTS/UEB (4000K Setting)
Luminous Efficacy (Lumens /Watt)	144.5	151.6	154.7
Total Luminous Flux (Lumens)	1011.3	1058.1	1070.4
Power (Watts)	7.00	6.98	6.92
Power Factor	0.9736	0.9738	0.9743
CCT (K)	3038	3590	3898
CRI	83.1	85.6	86.3
Stabilization Time (Light & Power)	50 mins	50 mins	50 mins
Note	3000K	3500K	4000K

Tested Model	7T8/2F/8CCTS/UEB (5000K Setting)	7T8/2F/8CCTS/UEB (6500K Setting)
Luminous Efficacy (Lumens /Watt)	155.2	150.1
Total Luminous Flux (Lumens)	1086.2	1055.2
Power (Watts)	7.00	7.03
Power Factor	0.9737	0.9732
CCT (K)	4991	6714
CRI	86.3	83.8
Stabilization Time (Light & Power)	50 mins	50 mins
Note	5000K	6500K

Table 1: Executive Data Summary

Test specifications:

Date of Receipt	: Apr. 21, 2023
Date of Test	: Apr. 21, 2023
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 ANSI/UL 8750 Light Emitting Diode (LED) Equipment for Use in Lighting Products UL 1993 Self-Ballasted Lamps and Lamp Adapters

TABLE OF CONTENT

LM-79-19 TEST REPORT.....	1
TEST SUMMARY	2
SAMPLE PHOTO	6
TEST RESULTS of Model 7T8/2F/8CCTS/UEB (3000K Setting).....	7
Sphere-Spectroradiometer Method.....	7
Spectral Power Distribution - Sphere Spectroradiometer Method	8
Chromaticity Diagram - Sphere Spectroradiometer Method.....	9
Nominal CCT Quadrangles – Sphere Spectroradiometer Method	10
Color Rendition Report – Sphere Spectroradiometer Method	11
Goniophotometer Method	12
Zonal Lumen Tabulation- Goniophotometer Method	13
Illuminance Plots- Goniophotometer Method	14
Luminous Intensity Distribution Plots- Goniophotometer Method.....	15
Luminous Intensity Data- Goniophotometer Method	16
TEST RESULTS of Model 7T8/2F/8CCTS/UEB (3500K Setting).....	18
Sphere-Spectroradiometer Method.....	18
Spectral Power Distribution - Sphere Spectroradiometer Method	19
Chromaticity Diagram - Sphere Spectroradiometer Method.....	20
Nominal CCT Quadrangles – Sphere Spectroradiometer Method	21
Color Rendition Report – Sphere Spectroradiometer Method	22
Goniophotometer Method	23
Zonal Lumen Tabulation- Goniophotometer Method	24
Illuminance Plots- Goniophotometer Method	25
Luminous Intensity Distribution Plots- Goniophotometer Method.....	26
Luminous Intensity Data- Goniophotometer Method	27
TEST RESULTS of Model 7T8/2F/8CCTS/UEB (4000K Setting).....	29
Sphere-Spectroradiometer Method.....	29
Spectral Power Distribution - Sphere Spectroradiometer Method	30

Chromaticity Diagram - Sphere Spectroradiometer Method.....	31
Nominal CCT Quadrangles – Sphere Spectroradiometer Method	32
Color Rendition Report – Sphere Spectroradiometer Method	33
Goniophotometer Method	34
Zonal Lumen Tabulation- Goniophotometer Method	35
Illuminance Plots- Goniophotometer Method.....	36
Luminous Intensity Distribution Plots- Goniophotometer Method.....	37
Luminous Intensity Data- Goniophotometer Method	38
TEST RESULTS of Model 7T8/2F/8CCTS/UEB (5000K Setting).....	40
Sphere-Spectroradiometer Method.....	40
Spectral Power Distribution - Sphere Spectroradiometer Method	41
Chromaticity Diagram - Sphere Spectroradiometer Method.....	42
Nominal CCT Quadrangles – Sphere Spectroradiometer Method	43
Color Rendition Report – Sphere Spectroradiometer Method	44
Goniophotometer Method	45
Zonal Lumen Tabulation- Goniophotometer Method	46
Illuminance Plots- Goniophotometer Method.....	47
Luminous Intensity Distribution Plots- Goniophotometer Method.....	48
Luminous Intensity Data- Goniophotometer Method	49
TEST RESULTS of Model 7T8/2F/8CCTS/UEB (6500K Setting).....	51
Sphere-Spectroradiometer Method.....	51
Spectral Power Distribution - Sphere Spectroradiometer Method	52
Chromaticity Diagram - Sphere Spectroradiometer Method.....	53
Nominal CCT Quadrangles – Sphere Spectroradiometer Method	54
Color Rendition Report – Sphere Spectroradiometer Method	55
Goniophotometer Method	56
Zonal Lumen Tabulation- Goniophotometer Method	57
Illuminance Plots- Goniophotometer Method.....	58
Luminous Intensity Distribution Plots- Goniophotometer Method.....	59
Luminous Intensity Data- Goniophotometer Method	60

ISTMT Test Results of Model 7T8/2F/8CCTS/UEB (3000K Setting)	62
EQUIPMENT LIST	63
TEST METHODS	63
Seasoning of SSL Product.....	63
Sphere-Spectroradiometer Method- Photometric and Electrical Measurements.....	63
Goniophotometer Method	64
Photometric and Electrical Measurements	64
Color Characteristics Measurements.....	64
ISTMT Measurements.....	64

SAMPLE PHOTO

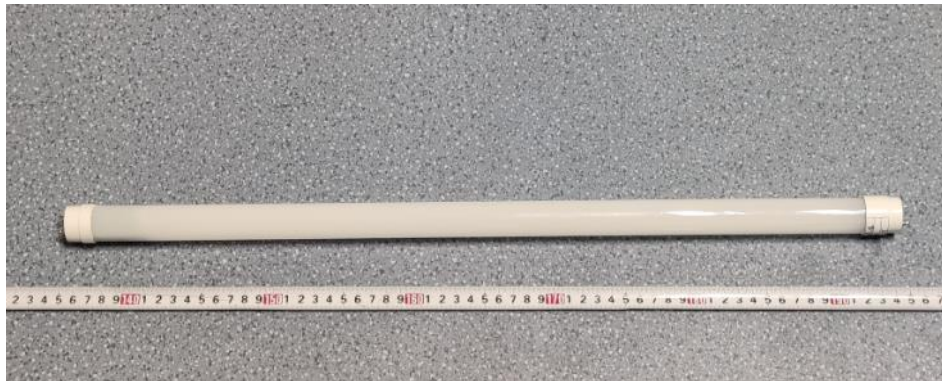


Figure 1- Overview of the sample

Equipment Under Test(EUT)	
Name	: LED Tube
Model	: 7T8/2F/8CCTS/UEB
Electrical Ratings	: 120-277V, 50/60Hz, 7W Color- Tunable 3000K/3500K/4000K/5000K/6500K
Product Description	: Manufacturer of light source: Lumileds Holding B.V. Model of LED light source: L128-3080RA35003J3 (3000K) L128-6580RA35003J3 (6500K)
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 of Model 7T8/2F/8CCTS/UEB (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)	0.060	0.029
Power Factor	0.9736	0.9066
Test Power (W)	7.00	7.33
THD A%	20.55	19.36
Luminous Efficacy (lm/W)	144.5	140.2
Total Luminous Flux (lm)	1011.3	1027.6
Color Rendering Index (CRI)	83.1	
R9	8.4	
Correlated Color Temperature (CCT)(K)	3038	
Chromaticity Chroma x	0.4364	
Chromaticity Chroma y	0.4079	
Chromaticity Chroma u	0.2486	
Chromaticity Chroma v	0.3485	
Duv	0.0016	
Chromaticity Chroma u'	0.2486	
Chromaticity Chroma v'	0.5228	

Special Color Rendering Indices	
R1	81.7
R2	92.2
R3	95.5
R4	80.5
R5	81.9
R6	90.9
R7	82.7
R8	59.3
R9	8.4
R10	82.3
R11	80.1
R12	71.1
R13	84.3
R14	98.1

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

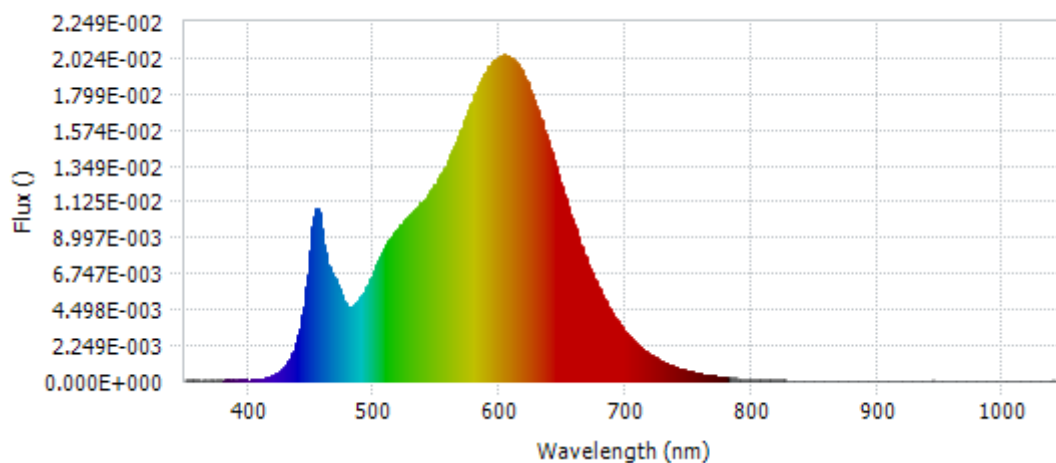
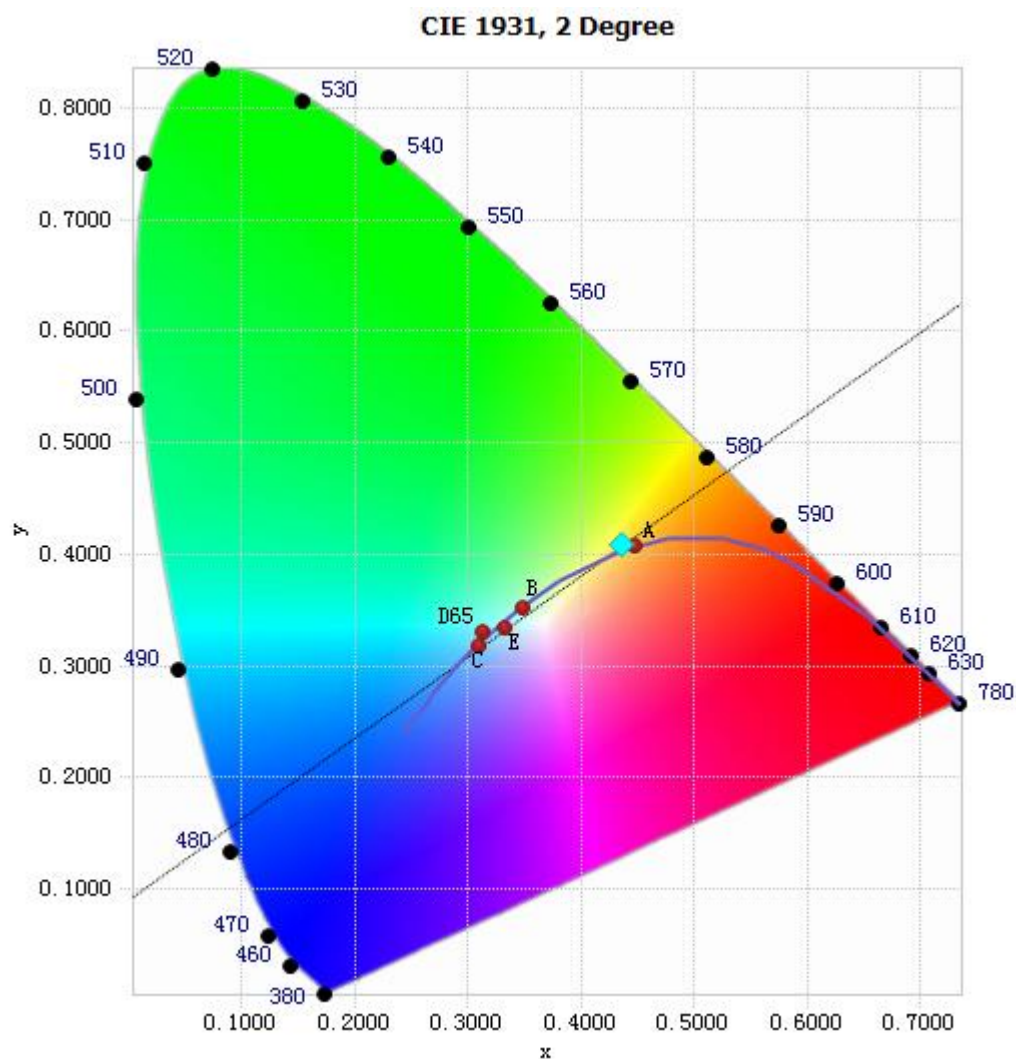


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	5.86E-05	485	4.86E-03	590	1.96E-02	695	3.58E-03
385	5.95E-05	490	5.37E-03	595	2.01E-02	700	3.07E-03
390	5.76E-05	495	6.07E-03	600	2.04E-02	705	2.62E-03
395	5.35E-05	500	6.93E-03	605	2.04E-02	710	2.25E-03
400	6.19E-05	505	7.80E-03	610	2.02E-02	715	1.92E-03
405	7.32E-05	510	8.57E-03	615	1.97E-02	720	1.64E-03
410	1.15E-04	515	9.23E-03	620	1.89E-02	725	1.40E-03
415	2.15E-04	520	9.61E-03	625	1.80E-02	730	1.18E-03
420	3.59E-04	525	1.01E-02	630	1.69E-02	735	1.01E-03
425	6.09E-04	530	1.05E-02	635	1.58E-02	740	8.65E-04
430	1.03E-03	535	1.09E-02	640	1.46E-02	745	7.29E-04
435	1.71E-03	540	1.14E-02	645	1.32E-02	750	6.27E-04
440	2.94E-03	545	1.19E-02	650	1.19E-02	755	5.30E-04
445	5.26E-03	550	1.25E-02	655	1.07E-02	760	4.52E-04
450	9.02E-03	555	1.32E-02	660	9.50E-03	765	3.91E-04
455	1.08E-02	560	1.40E-02	665	8.37E-03	770	3.32E-04
460	8.56E-03	565	1.49E-02	670	7.33E-03	775	2.81E-04
465	6.96E-03	570	1.59E-02	675	6.42E-03	780	2.38E-04
470	6.22E-03	575	1.69E-02	680	5.57E-03		
475	5.12E-03	580	1.79E-02	685	4.84E-03		
480	4.63E-03	585	1.89E-02	690	4.18E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4364, 0.4079)

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

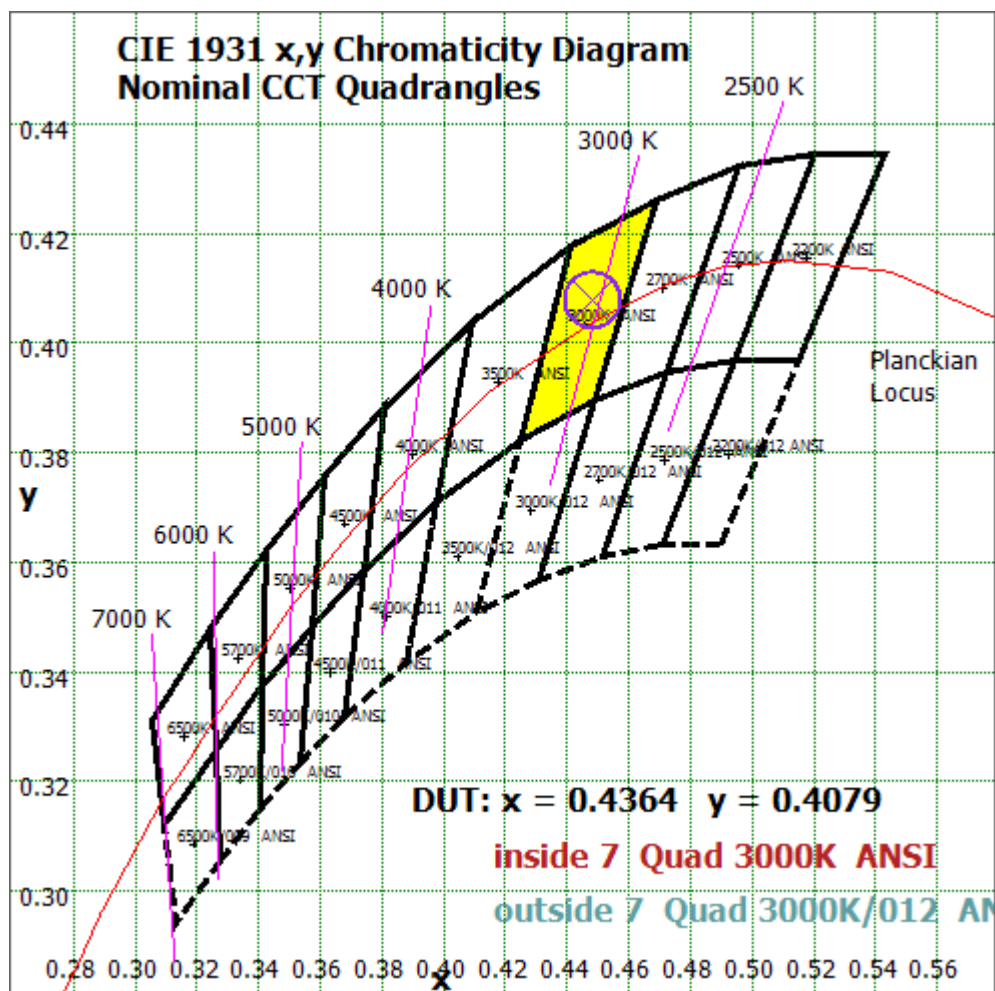


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Color Rendition Report – Sphere Spectroradiometer Method

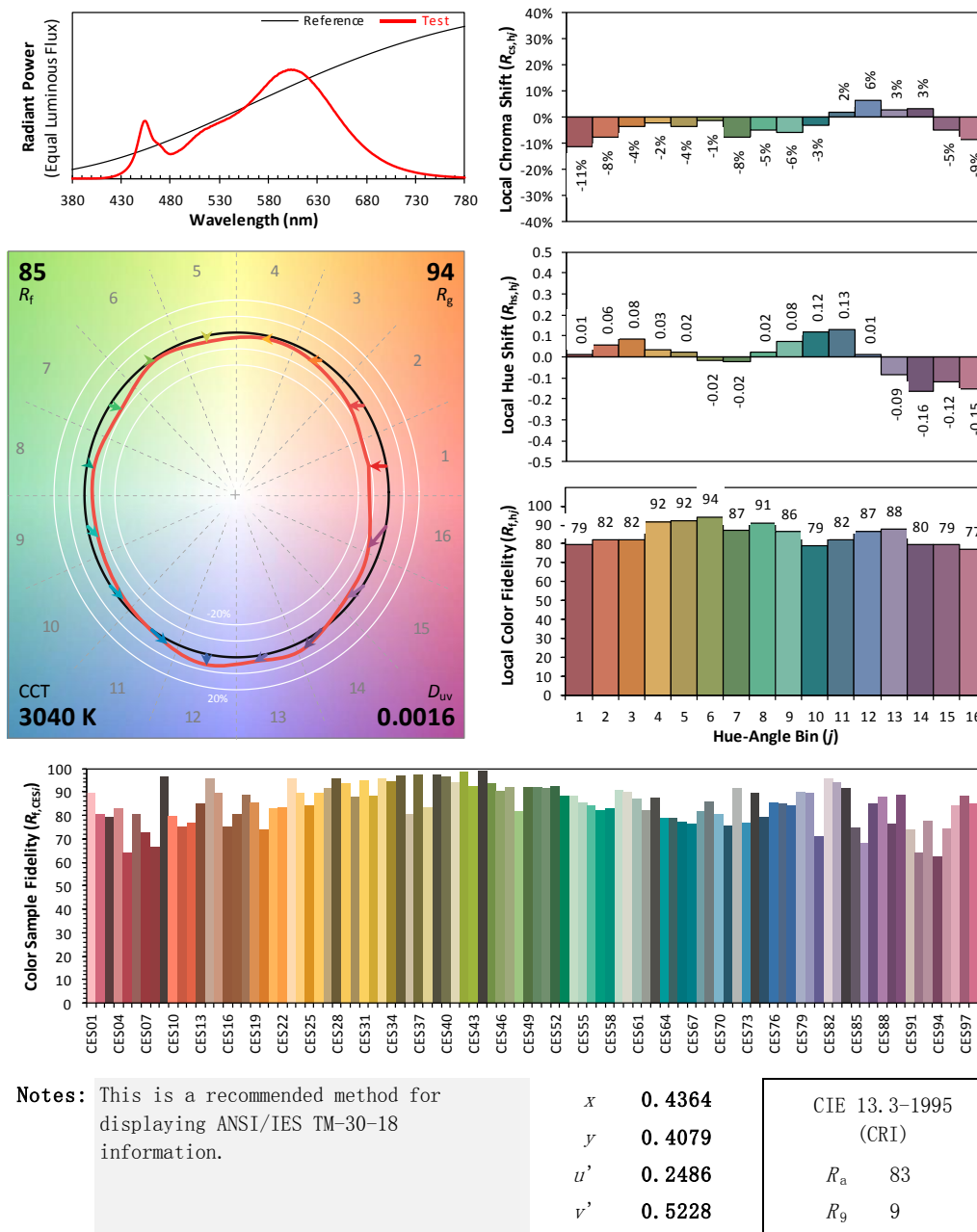
ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2023/04/21

Model: 7T8/2F/8CCTS/UEB



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)	0.060
Power Factor	0.9738
Power (W)	6.97
Luminous Efficacy (lm/W)	146.5
Total Luminous Flux (lm)	1020.9
Beam Angle (°)	106.4 (0°-180°) / 196.0 (90°-270°)
Center Beam Candle Power (cd)	192
Maximum Beam Candle Power (cd)	192.7 (At: C=110.0, Gamma=3.5)
Spacing Criteria	1.24 (0°-180°) / 1.39 (90°-270°)
Zonal Lumens in the 0 °-60 °Zone	46.27%
Zonal Lumens in the 60 °-90 °Zone	26.39%
Zonal Lumens in the 90 °-120 °Zone	16.58%
Zonal Lumens in the 120 °-180 °Zone	10.76%

Table 4: Test data per Goniophotometer Method

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	18.235	1.79%
10- 20	52.585	5.15%
20- 30	80.889	7.92%
30- 40	100.497	9.84%
40- 50	110.135	10.79%
50- 60	110.092	10.78%
60- 70	102.45	10.03%
70- 80	90.128	8.83%
80- 90	76.817	7.52%
90-100	65.734	6.44%
100-110	56.159	5.50%
110-120	47.368	4.64%
120-130	38.871	3.81%
130-140	30.358	2.97%
140-150	21.517	2.11%
150-160	12.8	1.25%
160-170	5.262	0.52%
170-180	1.045	0.10%
Total	1020.9	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	472.433	46.27%
60- 90	269.395	26.39%
0-90	741.828	72.66%
90- 180	279.114	27.34%
0- 180	1020.9	100%

Table 5: Zonal Lumen

Illuminance Plots- Goniophotometer Method

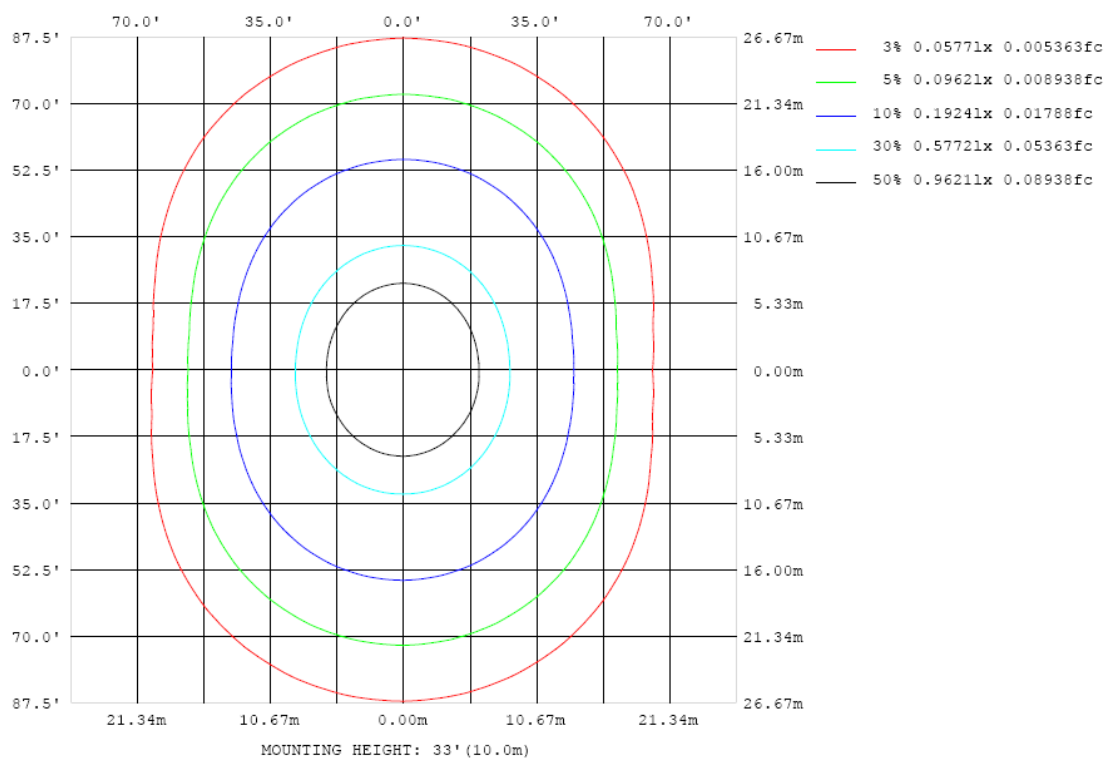


Chart 5: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

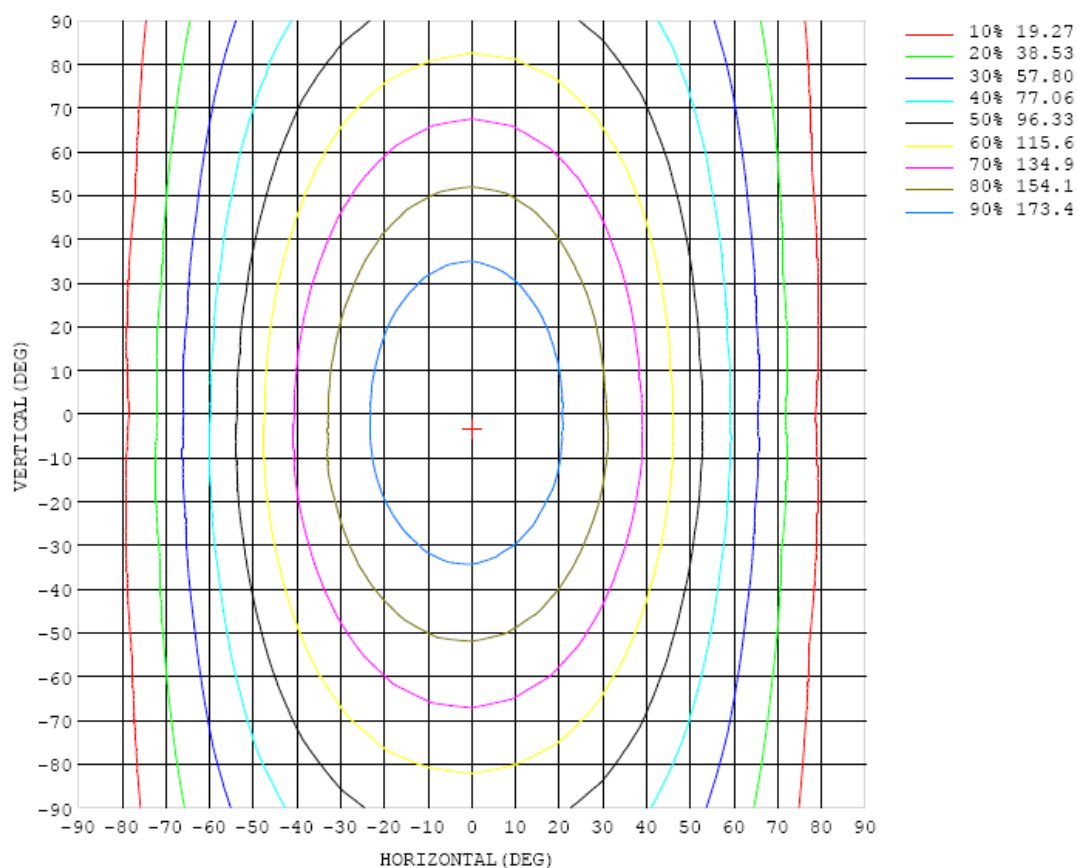


Chart 6: Isocandela Plot

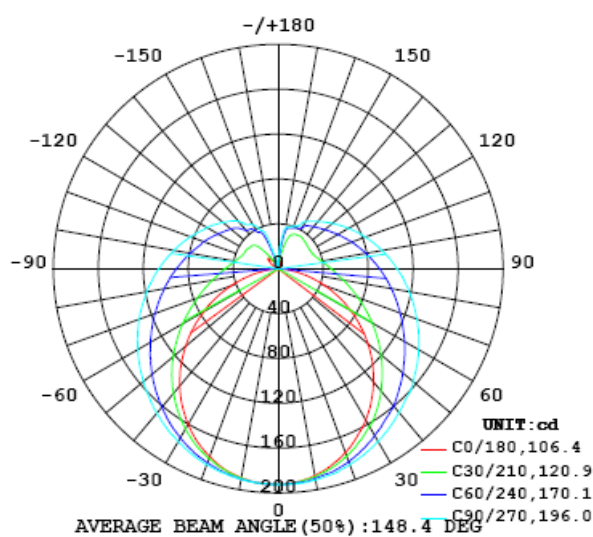


Chart 7: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1																UNIT: cd				
γ	C (DEG) (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0		192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192
5		191	191	191	191	191	191	192	192	192	192	192	192	192	192	192	192	192	192	192
10		187	187	188	188	189	190	190	191	191	191	191	191	191	191	190	190	190	190	189
15		182	182	183	184	185	186	187	188	189	189	190	189	189	188	187	186	186	185	185
20		174	175	176	178	180	181	183	185	185	186	186	186	185	184	183	181	180	179	178
25		166	167	168	170	173	175	178	180	181	182	182	182	180	178	177	174	172	171	170
30		156	158	160	162	165	168	172	175	177	178	178	176	175	172	169	166	164	162	160
35		144	147	149	153	157	162	165	169	171	173	173	171	168	165	161	158	155	151	149
40		132	134	137	142	148	154	160	163	166	167	167	165	162	158	153	147	143	139	136
45		118	121	125	131	138	145	152	158	161	162	162	160	155	150	143	136	130	125	122
50		104	107	112	119	128	137	145	151	155	157	156	153	148	141	133	124	117	111	108
55		89.4	92.1	98.5	108	118	128	137	144	149	151	150	146	140	132	123	112	103	95.9	92.3
60		74.4	77.4	85.2	96.4	108	120	130	137	142	144	143	139	133	124	113	100	89.3	80.6	76.2
65		59.1	62.7	72.5	85.6	99.0	112	122	130	136	138	137	133	125	115	103	89.3	75.9	65.5	60.8
70		43.9	48.5	60.5	75.6	90.6	104	115	124	129	131	130	126	118	108	94.1	79.0	63.5	50.6	44.5
75		29.2	35.1	49.6	66.7	82.8	97.2	109	117	123	125	124	119	111	100	86.2	69.7	52.3	36.8	29.1
80		15.8	23.4	40.3	58.9	75.7	90.4	102	111	116	118	117	113	104	93.2	78.9	61.8	42.8	25.0	15.2
85		5.17	14.7	33.2	52.3	69.4	84.3	96.1	105	110	112	111	106	98.0	86.8	72.5	55.1	35.5	16.1	4.42
90		0.20	9.80	28.2	47.1	64.0	78.5	90.1	98.6	104	106	104	99.9	92.0	80.9	66.6	49.6	30.3	11.3	0.25
95		0.15	7.35	24.7	42.7	59.2	73.3	84.5	92.7	97.7	99.9	98.5	94.1	86.1	75.4	61.6	45.1	27.0	9.69	0.38
100		0.07	6.28	22.1	39.2	54.9	68.5	79.2	87.1	91.9	93.7	92.5	88.3	80.8	70.5	57.2	41.8	25.0	9.98	0.59
105		0.22	7.20	20.5	36.4	51.2	64.0	74.3	81.6	86.4	88.2	86.8	82.9	75.8	65.8	53.5	39.2	24.2	11.4	1.02
110		0.50	8.75	20.4	34.3	48.0	60.0	69.5	76.5	80.9	82.7	81.4	77.5	70.9	61.8	50.4	37.4	24.2	13.5	1.82
115		0.99	10.6	21.2	33.1	45.4	56.3	65.1	71.6	75.7	77.3	76.3	72.7	66.5	58.1	47.7	36.2	24.8	16.0	3.07
120		1.48	12.5	22.5	32.7	43.3	53.1	61.1	67.0	70.8	72.2	71.2	67.9	62.3	54.7	45.6	35.5	25.8	18.7	5.13
125		0.99	12.3	24.2	32.8	41.9	50.4	57.4	62.8	66.2	67.4	66.6	63.6	58.6	51.8	43.8	35.3	27.2	21.4	7.52
130		0.22	11.2	26.3	33.1	40.9	48.1	54.2	58.9	61.8	62.8	62.2	59.6	55.2	49.3	42.5	35.4	28.7	24.0	10.7
135		0.26	12.5	28.3	33.8	40.2	46.2	51.4	55.3	57.8	58.7	58.0	55.9	52.1	47.2	41.5	35.6	30.3	25.9	13.2
140		1.87	16.1	30.1	34.4	39.7	44.7	48.9	52.1	54.2	54.9	54.4	52.6	49.4	45.5	40.4	35.6	32.2	25.4	11.1
145		2.74	16.8	30.5	35.2	38.3	42.3	46.7	49.2	51.0	51.6	51.0	49.6	47.3	42.3	37.3	34.6	33.0	25.6	8.48
150		4.52	11.8	28.5	34.3	36.5	38.9	42.4	46.2	47.8	48.5	48.0	46.4	42.4	39.3	36.9	34.4	32.2	25.9	7.60
155		4.32	7.49	25.9	34.0	36.5	38.4	39.9	41.1	42.0	42.3	42.0	41.1	40.0	38.5	36.8	34.7	31.8	22.6	7.12
160		6.69	6.47	18.7	32.0	36.2	37.8	38.7	39.5	40.0	40.2	40.0	39.5	38.7	37.7	36.4	34.9	31.5	18.7	6.94
165		6.57	4.79	11.1	22.8	31.0	36.5	37.6	38.0	38.4	38.6	38.5	38.2	37.6	36.7	36.2	33.9	26.6	15.5	7.75
170		5.61	5.19	4.61	9.87	18.2	25.6	32.1	35.7	37.0	37.2	37.2	37.0	36.3	34.0	30.7	26.2	18.4	11.8	7.10
175		4.98	5.30	4.42	3.73	5.08	8.35	12.6	16.6	18.8	19.9	20.1	19.7	18.6	16.9	14.4	11.9	9.43	8.10	6.51
180		4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90

Table 6: Luminous Intensity Data

C (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
γ (DEG)																			
0	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192		
5	192	192	192	192	192	192	192	192	192	192	192	191	191	191	191	191	191		
10	189	189	190	190	190	190	190	191	191	190	190	190	189	188	188	188	187		
15	185	185	185	187	187	188	188	189	188	188	188	187	185	184	183	182	182		
20	179	179	180	182	183	184	185	186	186	185	184	183	181	179	177	176	175		
25	171	172	173	175	178	180	181	182	182	182	180	178	175	173	170	168	166		
30	161	163	165	168	171	174	176	178	178	177	175	172	169	165	161	158	156		
35	150	152	155	160	164	168	171	173	173	172	170	166	161	157	152	148	145		
40	137	140	145	150	156	161	165	167	168	167	164	159	154	147	141	136	133		
45	124	128	134	141	148	154	159	162	162	161	158	152	145	138	130	124	119		
50	109	114	122	130	139	147	152	156	157	155	151	145	137	128	119	111	106		
55	94.2	101	110	120	130	139	145	149	151	149	145	138	129	119	108	98.3	91.4		
60	78.8	87.0	98.2	110	122	131	139	143	144	143	138	131	121	109	97.2	85.7	76.9		
65	64.0	73.8	86.7	101	113	124	132	136	138	137	132	124	113	100	86.7	73.8	63.4		
70	49.1	61.4	76.3	91.6	106	117	125	130	132	130	125	117	106	92.3	77.1	62.2	49.4		
75	34.9	50.1	67.5	83.4	98.1	110	118	123	125	124	118	110	98.9	84.6	69.0	51.8	36.2		
80	22.7	40.4	59.4	76.0	91.2	103	112	117	119	117	112	104	92.3	77.8	61.6	42.8	24.9		
85	13.7	32.9	52.7	70.4	84.6	96.6	105	110	112	111	106	97.6	86.3	72.4	55.3	36.0	16.6		
90	9.06	27.7	47.2	64.7	78.9	90.7	99.1	104	106	105	100	91.8	80.6	67.1	50.1	31.0	12.1		
95	6.80	24.0	42.7	59.7	73.4	84.9	93.2	98.3	100	98.9	94.3	86.3	75.4	62.2	45.9	27.8	10.5		
100	6.19	21.7	39.2	55.2	69.3	79.6	87.6	92.4	94.3	93.0	88.7	81.2	71.6	58.2	42.6	26.0	10.3		
105	6.74	20.4	36.4	51.5	64.7	74.5	82.2	86.9	88.7	87.5	83.3	76.1	67.1	54.6	40.2	25.2	10.8		
110	7.54	20.2	34.4	48.2	60.6	70.6	76.9	81.4	83.2	82.1	78.1	71.9	63.1	51.6	38.5	25.2	11.5		
115	7.68	20.4	33.3	45.7	56.9	66.0	72.5	76.2	77.9	76.8	73.4	67.9	59.5	49.1	37.4	25.5	11.5		
120	0.82	18.2	33.1	43.6	53.7	62.0	68.2	72.0	73.2	72.7	69.4	63.8	56.3	47.0	36.5	25.2	11.0		
125	0.00	17.5	32.0	41.5	50.9	58.2	63.9	67.2	68.8	68.0	65.0	60.1	53.4	45.0	35.4	26.3	12.5		
130	0.95	16.9	31.4	39.1	47.8	55.1	59.8	62.8	64.3	63.6	61.0	56.7	50.7	42.7	34.2	24.3	9.99		
135	0.44	12.5	29.4	36.3	43.3	51.2	56.2	58.8	60.1	59.4	57.2	53.2	47.0	39.9	34.3	21.1	6.53		
140	0.26	6.51	22.0	36.1	40.4	44.8	50.2	53.9	55.3	54.7	52.0	47.6	43.4	39.2	34.7	14.9	3.60		
145	1.88	1.88	12.7	33.7	38.2	43.3	45.5	46.8	47.7	47.6	46.7	44.7	41.8	37.7	30.4	8.67	3.29		
150	3.30	5.31	8.08	24.1	36.0	38.2	42.4	44.6	45.3	45.2	44.0	42.3	39.4	37.1	17.3	5.47	5.76		
155	3.08	5.82	6.24	6.92	25.8	35.4	36.9	37.4	38.2	38.0	37.6	36.7	34.9	20.4	3.35	4.69	6.80		
160	2.92	4.53	2.93	6.84	5.93	16.1	26.3	31.2	32.6	32.4	29.4	22.4	11.4	3.53	3.77	4.10	7.33		
165	3.52	3.74	6.88	5.50	4.26	6.91	7.05	6.81	8.26	7.04	4.54	3.01	4.87	4.33	3.26	7.61	11.6		
170	4.07	5.34	3.51	6.36	5.70	5.13	6.42	5.81	3.95	2.37	2.28	1.68	2.81	8.68	8.20	9.57	7.38		
175	3.60	3.47	4.76	5.15	4.57	3.90	3.53	4.28	0.90	7.77	7.85	8.88	10.1	9.39	6.66	4.09	3.67		
180	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90		

Table 7: Luminous Intensity Data

TEST RESULTS of Model 7T8/2F/8CCTS/UEB (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)	0.060	0.029
Power Factor	0.9738	0.9063
Test Power (W)	6.98	7.32
THD A%	20.32	19.44
Luminous Efficacy (lm/W)	151.6	147.0
Total Luminous Flux (lm)	1058.1	1076.3
Color Rendering Index (CRI)	85.6	
R9	19.6	
Correlated Color Temperature (CCT)(K)	3590	
Chromaticity Chroma x	0.3987	
Chromaticity Chroma y	0.3837	
Chromaticity Chroma u	0.2343	
Chromaticity Chroma v	0.3382	
Duv	-0.0016	
Chromaticity Chroma u'	0.2343	
Chromaticity Chroma v'	0.5073	

Special Color Rendering Indices	
R1	85.1
R2	93.6
R3	96
R4	83.5
R5	85.1
R6	90.8
R7	84.9
R8	65.9
R9	19.6
R10	84.6
R11	83.4
R12	69.2
R13	87.6
R14	98.6

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

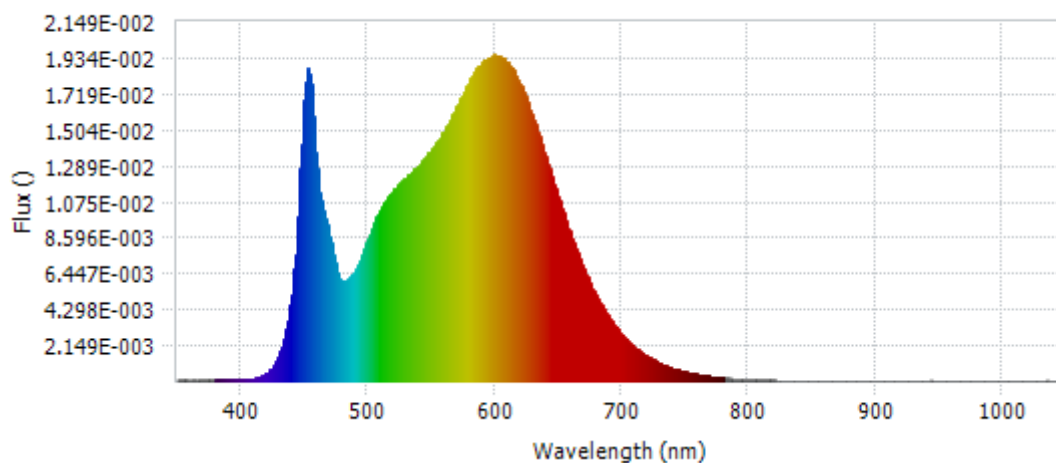
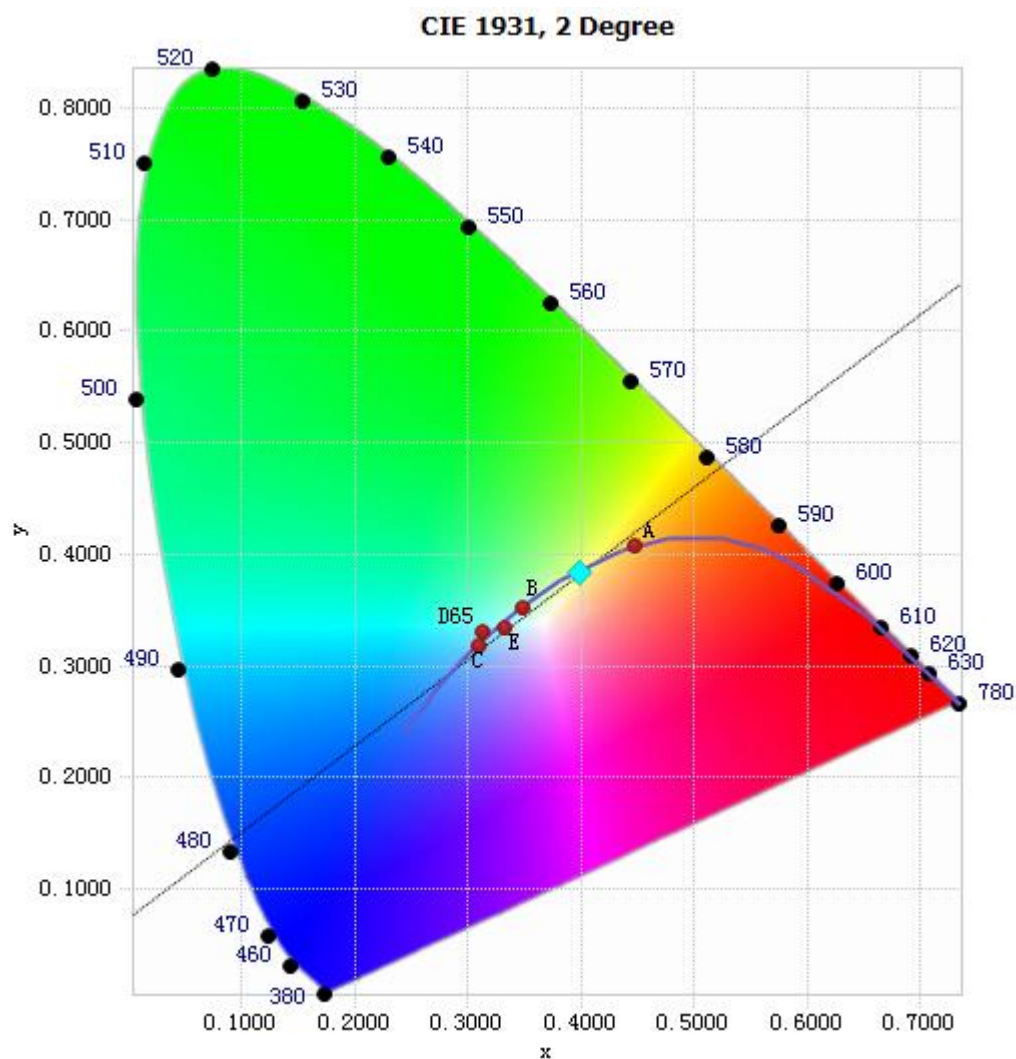


Chart 8: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	9.08E-05	485	6.16E-03	590	1.91E-02	695	3.28E-03
385	8.80E-05	490	6.64E-03	595	1.94E-02	700	2.81E-03
390	8.78E-05	495	7.43E-03	600	1.95E-02	705	2.41E-03
395	8.77E-05	500	8.48E-03	605	1.94E-02	710	2.04E-03
400	8.73E-05	505	9.44E-03	610	1.90E-02	715	1.75E-03
405	1.05E-04	510	1.02E-02	615	1.86E-02	720	1.49E-03
410	1.47E-04	515	1.09E-02	620	1.78E-02	725	1.28E-03
415	2.61E-04	520	1.13E-02	625	1.68E-02	730	1.08E-03
420	4.78E-04	525	1.18E-02	630	1.58E-02	735	9.23E-04
425	8.88E-04	530	1.22E-02	635	1.47E-02	740	7.82E-04
430	1.59E-03	535	1.25E-02	640	1.35E-02	745	6.70E-04
435	2.81E-03	540	1.29E-02	645	1.22E-02	750	5.72E-04
440	5.13E-03	545	1.33E-02	650	1.10E-02	755	4.84E-04
445	9.86E-03	550	1.38E-02	655	9.86E-03	760	4.06E-04
450	1.68E-02	555	1.43E-02	660	8.74E-03	765	3.56E-04
455	1.78E-02	560	1.49E-02	665	7.71E-03	770	3.03E-04
460	1.28E-02	565	1.57E-02	670	6.74E-03	775	2.57E-04
465	1.02E-02	570	1.64E-02	675	5.89E-03	780	2.24E-04
470	8.70E-03	575	1.72E-02	680	5.13E-03		
475	6.72E-03	580	1.79E-02	685	4.43E-03		
480	5.96E-03	585	1.86E-02	690	3.83E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3987, 0.3837)

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

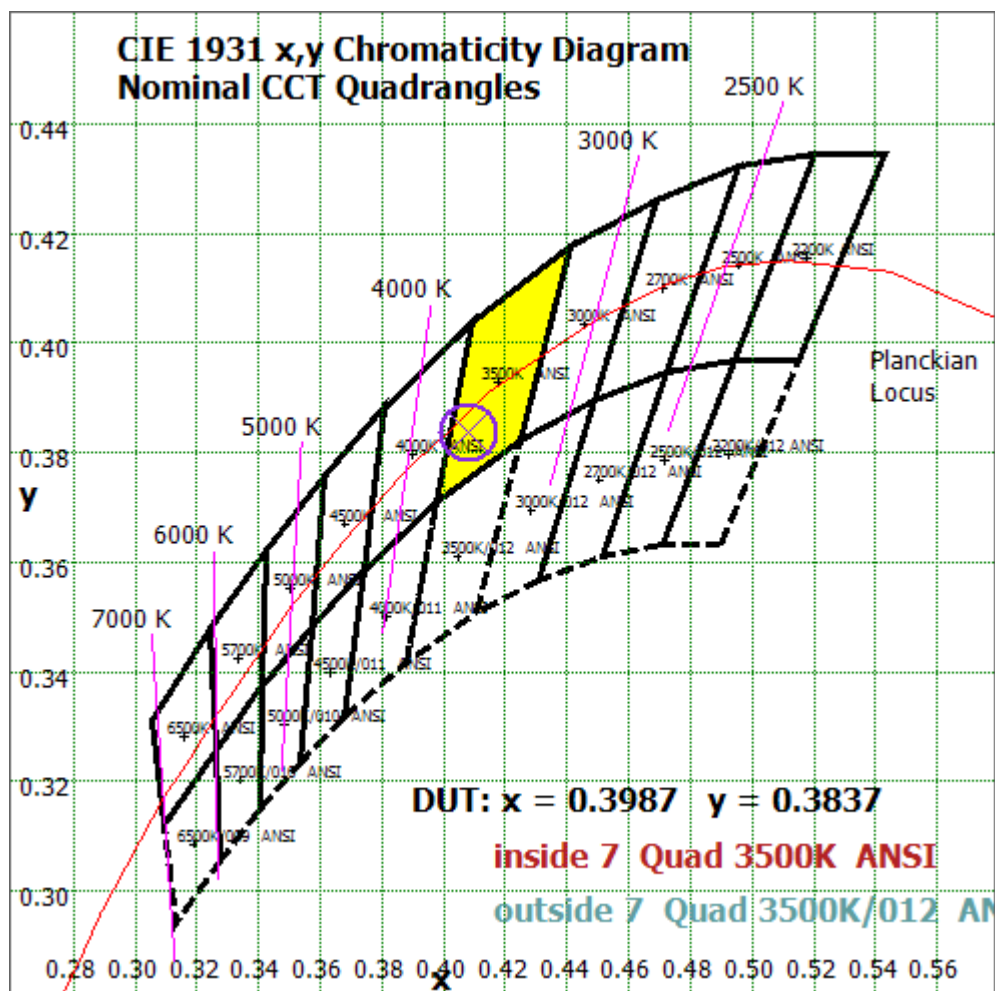


Chart 10: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Color Rendition Report – Sphere Spectroradiometer Method

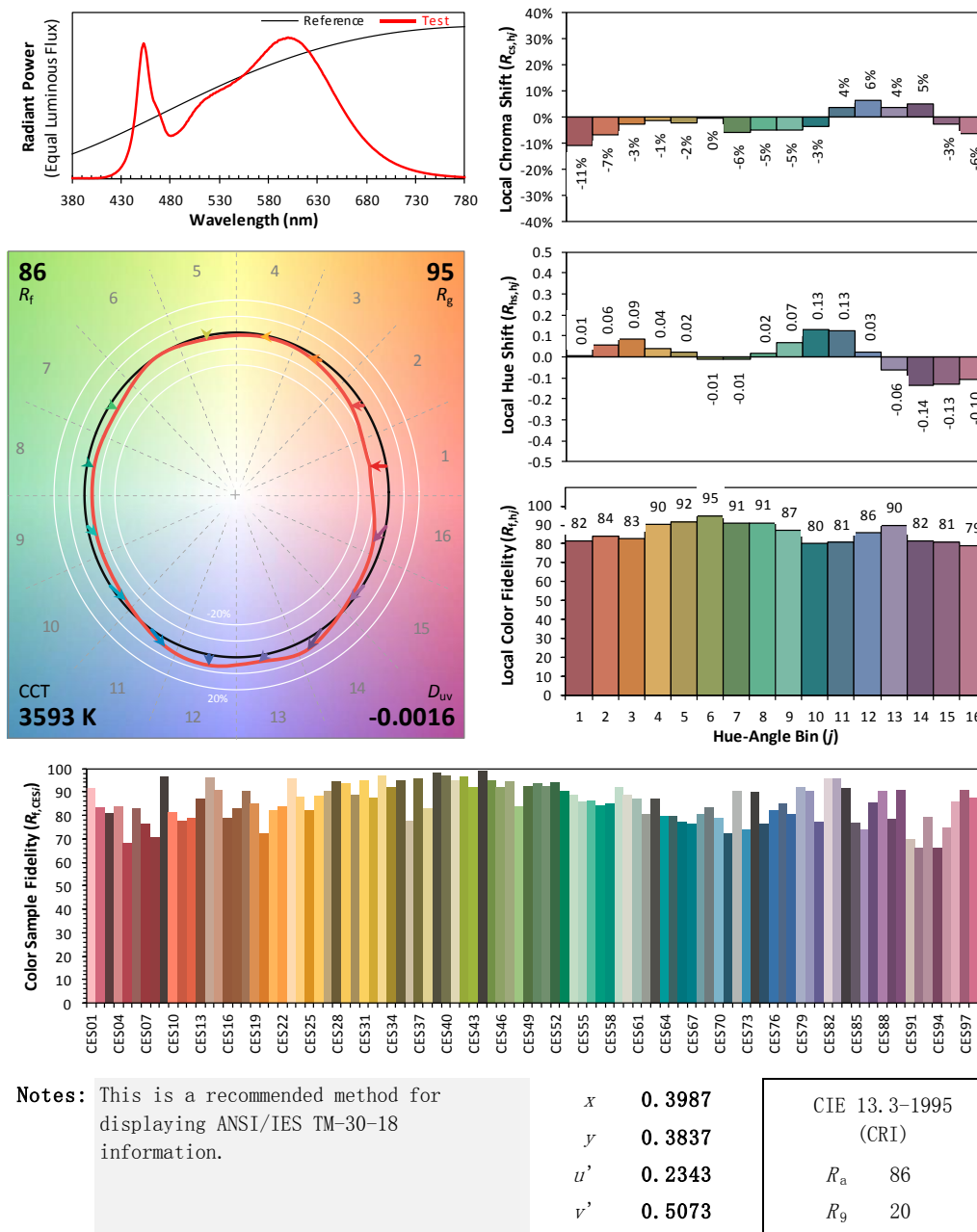
ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2023/04/21

Model: 7T8/2F/8CCTS/UEB



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.

Goniophotometer Method

Test ambient temperature was 24.9 °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)	0.060
Power Factor	0.9737
Power (W)	6.98
Luminous Efficacy (lm/W)	152.9
Total Luminous Flux (lm)	1067.3
Beam Angle (°)	106.5 (0°-180°) / 197.0 (90°-270°)
Center Beam Candle Power (cd)	201
Maximum Beam Candle Power (cd)	201.0 (At: C=90.0, Gamma=1.5)
Spacing Criteria	1.24 (0°-180°) / 1.40 (90°-270°)
Zonal Lumens in the 0°-60° Zone	46.21%
Zonal Lumens in the 60°-90° Zone	26.42%
Zonal Lumens in the 90°-120° Zone	16.61%
Zonal Lumens in the 120°-180° Zone	10.77%

Table 10: Test data per Goniophotometer Method

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	19.02	1.78%
10- 20	54.869	5.14%
20- 30	84.424	7.91%
30- 40	104.869	9.83%
40- 50	114.981	10.77%
50- 60	115.073	10.78%
60- 70	107.155	10.04%
70- 80	94.335	8.84%
80- 90	80.455	7.54%
90-100	68.858	6.45%
100-110	58.814	5.51%
110-120	49.575	4.64%
120-130	40.665	3.81%
130-140	31.696	2.97%
140-150	22.45	2.10%
150-160	13.239	1.24%
160-170	5.576	0.52%
170-180	1.294	0.12%
Total	1067.3	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	493.236	46.21%
60- 90	281.945	26.42%
0-90	775.181	72.63%
90- 180	292.167	27.37%
0- 180	1067.3	100%

Table 11: Zonal Lumen

Illuminance Plots- Goniophotometer Method

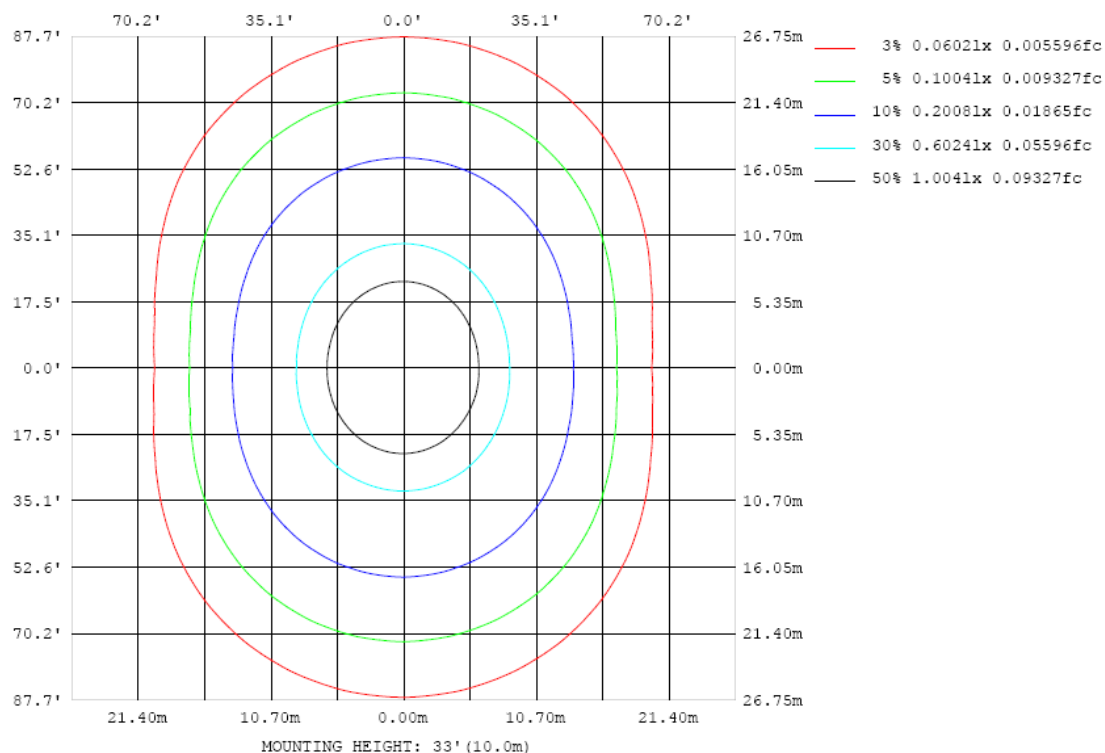


Chart 12: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

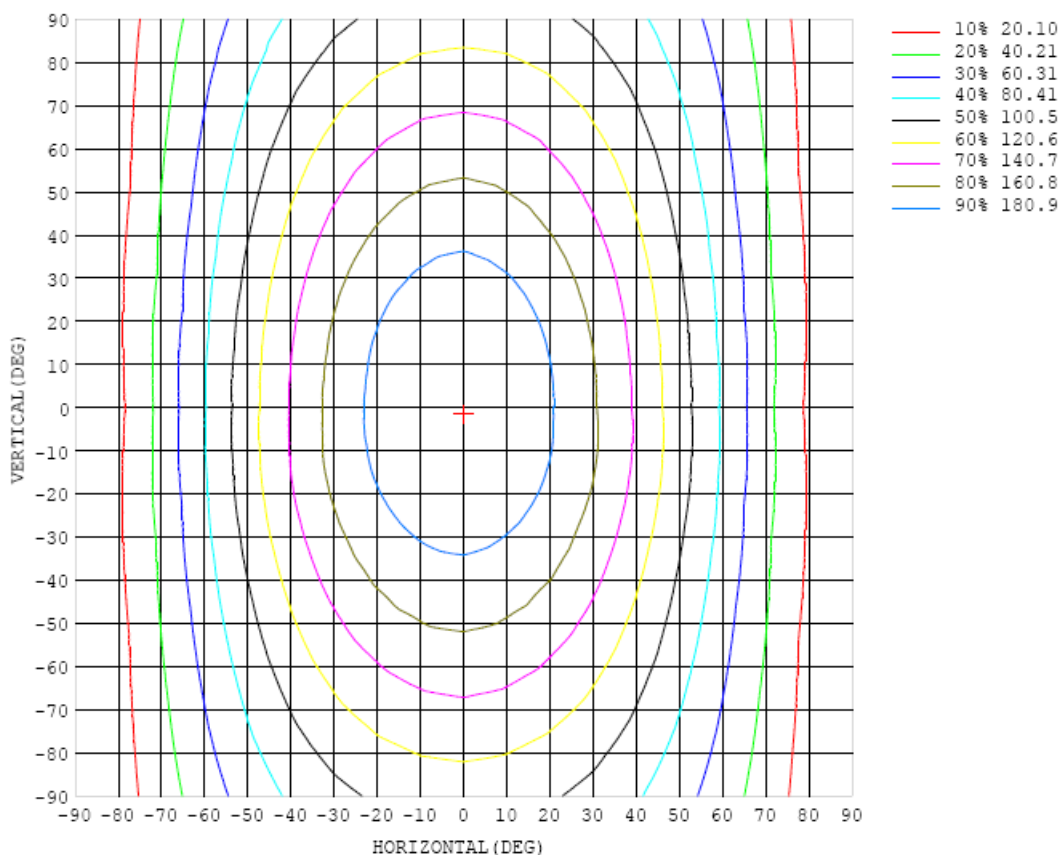


Chart 13: Isocandela Plot

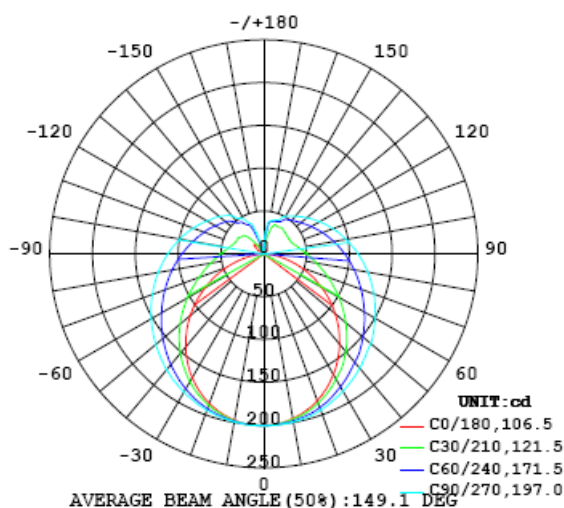


Chart 14: Polar Candela Distribution

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	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201
5	199	199	199	200	200	200	200	200	200	200	200	200	201	201	200	200	200	200	200
10	195	195	196	196	197	198	198	199	199	200	199	199	199	199	198	198	198	197	197
15	190	190	191	192	193	194	195	196	197	197	197	197	197	196	195	194	193	193	192
20	182	182	184	186	187	189	191	192	193	194	194	193	193	191	190	189	187	187	186
25	174	174	176	178	180	183	186	187	189	190	190	189	187	186	183	181	179	178	177
30	163	164	166	169	172	176	179	182	184	185	185	184	181	179	175	173	170	168	167
35	151	153	156	160	164	168	172	176	179	180	179	178	175	171	167	163	160	157	155
40	138	140	144	149	155	161	165	169	173	174	174	171	167	163	158	153	148	144	142
45	124	127	131	137	145	152	159	163	167	168	167	165	161	155	148	141	135	130	128
50	109	112	117	125	134	143	151	157	161	163	162	159	153	146	137	128	121	115	112
55	93.7	96.9	103	113	124	134	143	150	155	157	156	152	145	137	126	116	106	99.1	95.9
60	77.9	81.6	89.9	101	114	126	136	143	148	150	149	145	137	128	116	104	92.0	83.2	79.3
65	62.2	66.3	76.6	90.2	104	117	128	136	141	143	142	137	130	119	106	92.0	78.2	67.4	63.3
70	46.1	51.4	64.2	79.9	95.5	110	121	129	135	137	135	130	122	111	97.0	81.2	65.1	51.9	46.4
75	30.8	37.5	52.9	70.6	87.5	102	114	122	128	130	128	123	115	103	88.7	71.5	53.4	37.5	30.2
80	16.8	25.5	43.3	62.5	80.2	95.2	107	116	121	123	122	117	108	96.3	81.1	63.2	43.5	25.1	15.9
85	5.58	16.4	35.8	55.7	73.7	88.6	101	109	115	117	115	110	101	89.6	74.4	56.2	35.9	15.9	4.79
90	0.27	11.2	30.5	50.1	67.8	82.8	94.5	103	108	110	109	103	95.2	83.4	68.4	50.5	30.6	10.9	0.26
95	0.16	8.32	26.7	45.5	62.7	77.1	88.6	96.9	102	104	102	97.4	89.2	77.8	63.2	46.0	27.2	9.39	0.39
100	0.08	6.81	23.6	41.7	58.1	72.0	83.1	91.0	96.0	97.7	96.2	91.4	83.6	72.6	58.7	42.5	25.3	9.85	0.64
105	0.29	7.69	21.5	38.4	54.0	67.3	77.9	85.5	90.0	91.8	90.3	85.7	78.3	67.9	55.0	40.0	24.5	11.5	1.22
110	0.70	9.32	21.4	36.0	50.5	63.0	72.8	80.0	84.4	86.1	84.8	80.3	73.3	63.7	51.7	38.2	24.6	13.8	2.28
115	1.44	11.3	22.2	34.6	47.6	59.1	68.2	74.9	79.0	80.5	79.3	75.2	68.7	59.9	49.0	37.1	25.4	16.5	3.95
120	2.14	13.4	23.5	34.2	45.4	55.7	63.9	70.0	73.9	75.3	74.1	70.4	64.5	56.5	46.9	36.4	26.6	19.4	6.64
125	1.27	13.6	25.3	34.3	43.9	52.8	60.1	65.5	68.9	70.3	69.2	66.0	60.7	53.6	45.2	36.3	28.1	22.3	9.71
130	0.26	13.8	27.4	34.6	42.8	50.3	56.7	61.4	64.5	65.5	64.7	61.8	57.1	51.1	44.0	36.5	29.8	25.1	13.7
135	0.09	16.1	29.4	35.2	42.0	48.3	53.7	57.7	60.3	61.3	60.5	58.0	54.0	49.0	43.0	36.9	31.5	27.0	15.8
140	2.18	20.4	31.1	36.0	41.6	46.7	51.1	54.3	56.6	57.4	56.7	54.6	51.3	47.1	42.2	37.1	33.5	27.8	13.1
145	3.64	20.9	32.1	37.0	40.7	45.1	48.8	51.4	53.1	53.9	53.3	51.6	49.0	45.0	39.3	36.0	34.3	29.6	11.3
150	4.77	15.5	32.0	35.9	38.1	40.9	45.5	48.7	50.1	50.6	50.2	48.8	45.1	40.9	38.4	36.0	33.5	29.7	11.5
155	3.95	12.6	30.6	36.0	38.2	39.9	41.4	43.0	44.1	44.6	44.0	42.9	41.6	40.2	38.4	36.4	34.0	26.7	11.8
160	5.40	9.56	24.3	36.2	38.1	39.4	40.5	41.3	41.8	42.1	41.8	41.2	40.4	39.4	38.1	36.6	34.4	24.8	10.6
165	4.81	7.17	16.7	28.3	36.6	38.7	39.3	39.9	40.3	40.5	40.3	40.0	39.4	38.6	37.9	36.8	31.7	21.5	11.8
170	5.41	5.21	8.74	16.3	24.2	32.4	37.3	38.7	38.9	39.0	38.9	38.7	38.5	37.8	35.3	31.4	25.3	17.1	11.1
175	5.09	4.49	4.97	6.98	9.60	14.2	19.5	23.4	25.4	26.5	26.8	26.3	25.1	23.2	20.7	17.8	14.5	11.2	9.54
180	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98

Table 12: 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	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201		
5	200	200	200	200	200	200	201	201	201	201	200	200	200	200	199	199	199		
10	198	198	198	198	199	199	199	199	199	199	198	198	197	197	196	196	195		
15	193	193	194	195	195	196	197	197	197	197	196	195	194	193	192	191	190		
20	186	187	188	190	191	193	194	194	195	194	192	191	189	187	185	184	183		
25	177	179	181	183	186	188	189	191	191	190	188	186	183	180	178	175	174		
30	168	169	172	176	179	182	185	186	187	186	183	180	177	173	169	165	163		
35	156	159	163	167	172	176	179	181	182	181	178	174	169	164	159	154	152		
40	143	146	152	158	164	169	173	176	177	175	172	167	161	154	148	142	139		
45	129	133	140	148	155	161	167	170	171	169	165	159	153	145	137	130	125		
50	114	120	128	137	146	154	160	164	165	163	159	152	144	134	125	116	110		
55	98.4	105	115	126	137	146	153	157	158	157	152	145	135	124	113	103	95.7		
60	82.3	91.0	103	116	128	138	146	150	152	150	145	137	127	114	102	89.6	80.6		
65	66.9	77.2	91.2	106	119	130	139	144	146	143	138	130	119	105	90.5	76.7	66.1		
70	51.5	64.7	80.4	96.7	111	123	132	137	139	137	131	123	111	96.5	80.3	64.8	51.5		
75	36.9	53.0	71.4	88.3	103	116	124	130	132	130	125	116	104	88.5	71.9	53.7	37.6		
80	24.3	43.1	63.0	80.8	96.3	109	118	123	125	123	118	109	96.8	81.3	64.0	44.2	25.5		
85	15.1	35.4	56.1	73.9	89.7	102	111	117	119	117	112	102	90.3	74.9	57.3	36.9	16.5		
90	10.2	29.9	50.3	68.8	83.4	95.8	105	110	112	111	105	96.5	84.4	70.1	51.8	31.8	11.9		
95	7.71	25.9	45.5	63.5	77.9	89.8	98.5	104	106	104	99.2	90.8	79.1	65.1	47.6	28.5	10.3		
100	6.97	23.3	41.7	58.9	72.3	84.0	92.4	97.8	99.8	98.1	93.3	85.2	74.1	60.8	44.3	26.7	10.3		
105	7.33	21.9	38.7	54.8	68.7	78.8	86.8	91.8	93.8	92.3	87.6	80.1	70.4	57.1	41.8	26.1	10.9		
110	7.94	21.6	36.6	51.4	64.3	73.9	81.3	86.0	87.9	86.7	82.3	75.3	66.2	53.9	40.2	26.1	11.4		
115	7.84	21.5	35.4	48.5	60.3	70.1	76.2	80.5	82.4	81.1	77.2	71.4	62.4	51.3	39.0	26.5	11.1		
120	0.79	17.8	35.3	46.2	56.9	65.6	72.0	75.3	76.9	75.9	72.7	67.3	59.1	49.2	37.9	26.8	11.0		
125	0.00	16.2	33.9	43.5	54.1	61.7	67.4	71.3	72.6	71.8	68.5	63.3	56.1	47.0	36.4	27.9	11.7		
130	0.00	14.7	32.6	41.1	50.3	58.4	63.3	66.6	68.0	67.1	64.3	59.7	53.2	44.4	35.8	25.0	9.08		
135	0.29	10.6	29.5	38.3	45.2	53.6	59.3	62.2	63.4	62.7	60.3	55.7	48.7	41.4	36.0	20.2	6.07		
140	0.97	4.28	18.9	37.5	42.7	46.9	51.9	56.1	57.8	57.0	53.8	49.6	45.4	40.7	36.4	12.2	4.52		
145	2.76	2.14	8.86	33.6	39.3	45.1	48.2	49.7	50.5	50.4	49.3	46.7	43.4	39.6	29.9	5.33	4.75		
150	3.48	5.15	6.25	18.8	36.0	39.2	42.9	46.0	46.9	46.5	45.6	44.1	41.3	35.7	13.0	4.33	6.42		
155	3.74	5.57	6.21	5.96	19.0	34.9	38.2	39.3	39.5	39.0	38.7	38.0	31.3	14.1	3.14	6.50	6.40		
160	3.95	4.31	4.81	5.14	6.81	9.55	19.1	25.7	28.3	27.8	23.6	15.3	6.16	4.29	2.45	7.18	8.41		
165	5.69	3.64	5.42	6.89	5.14	3.84	6.73	7.35	7.14	6.11	4.21	5.00	4.64	3.99	5.38	10.6	8.91		
170	7.21	4.19	5.34	4.38	6.41	6.31	4.74	4.20	1.25	1.29	1.58	3.72	8.10	7.62	8.45	9.78	6.66		
175	8.64	5.86	3.84	3.65	4.90	5.85	6.42	4.29	4.79	8.98	9.81	8.89	7.09	5.13	4.06	4.55	5.43		
180	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98		

Table 13: Luminous Intensity Data

TEST RESULTS of Model 7T8/2F/8CCTS/UEB (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)	0.059	0.029
Power Factor	0.9743	0.9049
Test Power (W)	6.92	7.28
THD A%	20.08	19.36
Luminous Efficacy (lm/W)	154.7	149.8
Total Luminous Flux (lm)	1070.4	1090.4
Color Rendering Index (CRI)	86.3	
R9	23.2	
Correlated Color Temperature (CCT)(K)	3898	
Chromaticity Chroma x	0.3833	
Chromaticity Chroma y	0.3738	
Chromaticity Chroma u	0.2282	
Chromaticity Chroma v	0.3338	
Duv	-0.0022	
Chromaticity Chroma u'	0.2282	
Chromaticity Chroma v'	0.5007	

Special Color Rendering Indices	
R1	85.9
R2	93.6
R3	96.2
R4	84.5
R5	85.8
R6	90.1
R7	86.1
R8	68.4
R9	23.2
R10	84.1
R11	84.4
R12	67.4
R13	88.3
R14	98.7

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

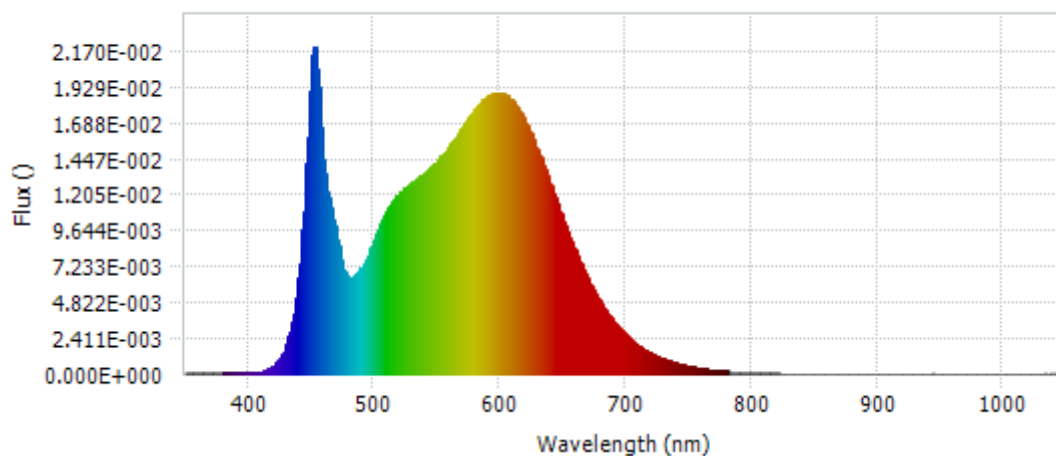
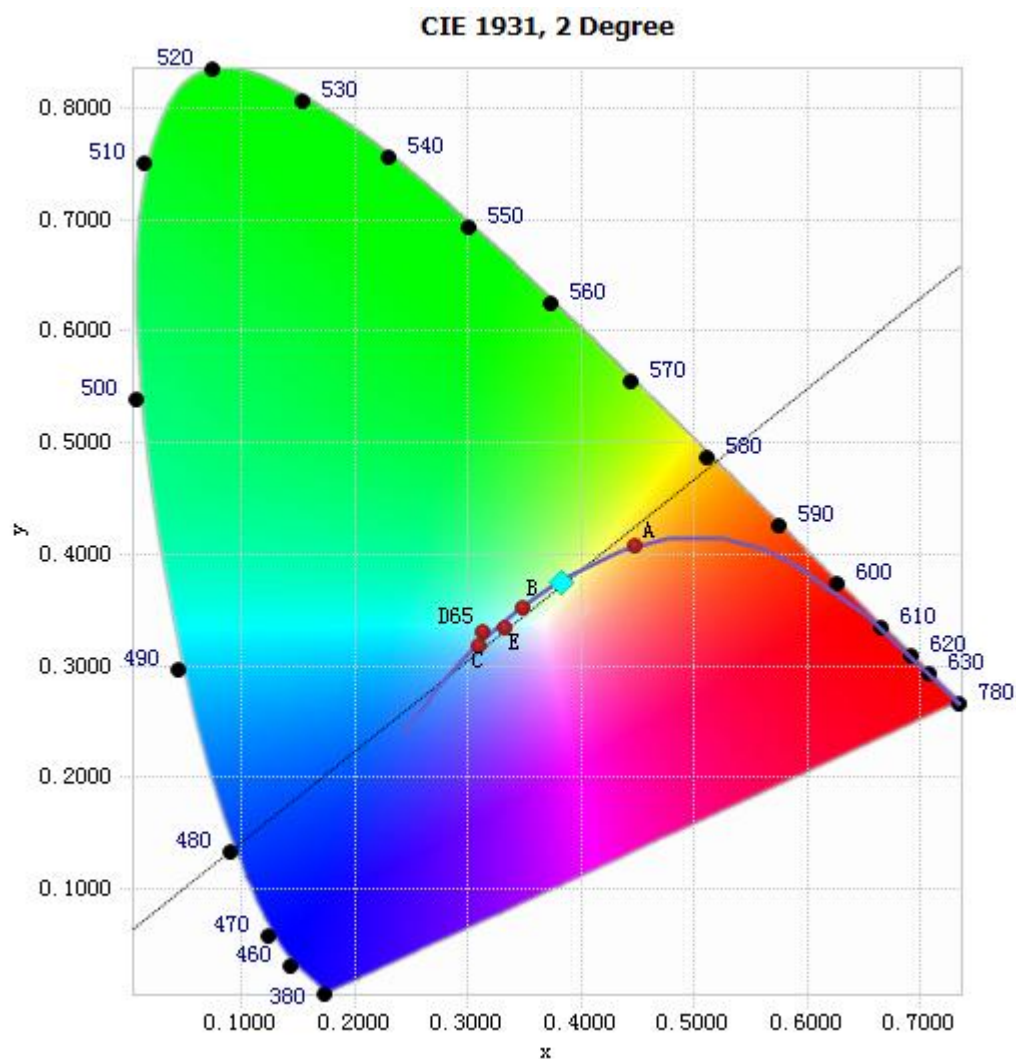


Chart 15: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.10E-04	485	6.67E-03	590	1.87E-02	695	3.11E-03
385	1.02E-04	490	7.13E-03	595	1.88E-02	700	2.67E-03
390	9.90E-05	495	7.98E-03	600	1.89E-02	705	2.27E-03
395	9.65E-05	500	9.07E-03	605	1.87E-02	710	1.94E-03
400	8.49E-05	505	1.01E-02	610	1.83E-02	715	1.66E-03
405	1.02E-04	510	1.09E-02	615	1.78E-02	720	1.41E-03
410	1.75E-04	515	1.17E-02	620	1.70E-02	725	1.20E-03
415	3.16E-04	520	1.21E-02	625	1.61E-02	730	1.03E-03
420	5.90E-04	525	1.25E-02	630	1.51E-02	735	8.71E-04
425	1.09E-03	530	1.29E-02	635	1.40E-02	740	7.45E-04
430	1.98E-03	535	1.31E-02	640	1.29E-02	745	6.35E-04
435	3.53E-03	540	1.35E-02	645	1.16E-02	750	5.42E-04
440	6.48E-03	545	1.39E-02	650	1.05E-02	755	4.60E-04
445	1.25E-02	550	1.43E-02	655	9.38E-03	760	3.90E-04
450	2.04E-02	555	1.48E-02	660	8.32E-03	765	3.35E-04
455	2.05E-02	560	1.53E-02	665	7.34E-03	770	2.84E-04
460	1.44E-02	565	1.59E-02	670	6.40E-03	775	2.51E-04
465	1.15E-02	570	1.65E-02	675	5.60E-03	780	2.12E-04
470	9.57E-03	575	1.72E-02	680	4.85E-03		
475	7.31E-03	580	1.78E-02	685	4.21E-03		
480	6.47E-03	585	1.84E-02	690	3.63E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3833, 0.3738)

Chart 16: 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

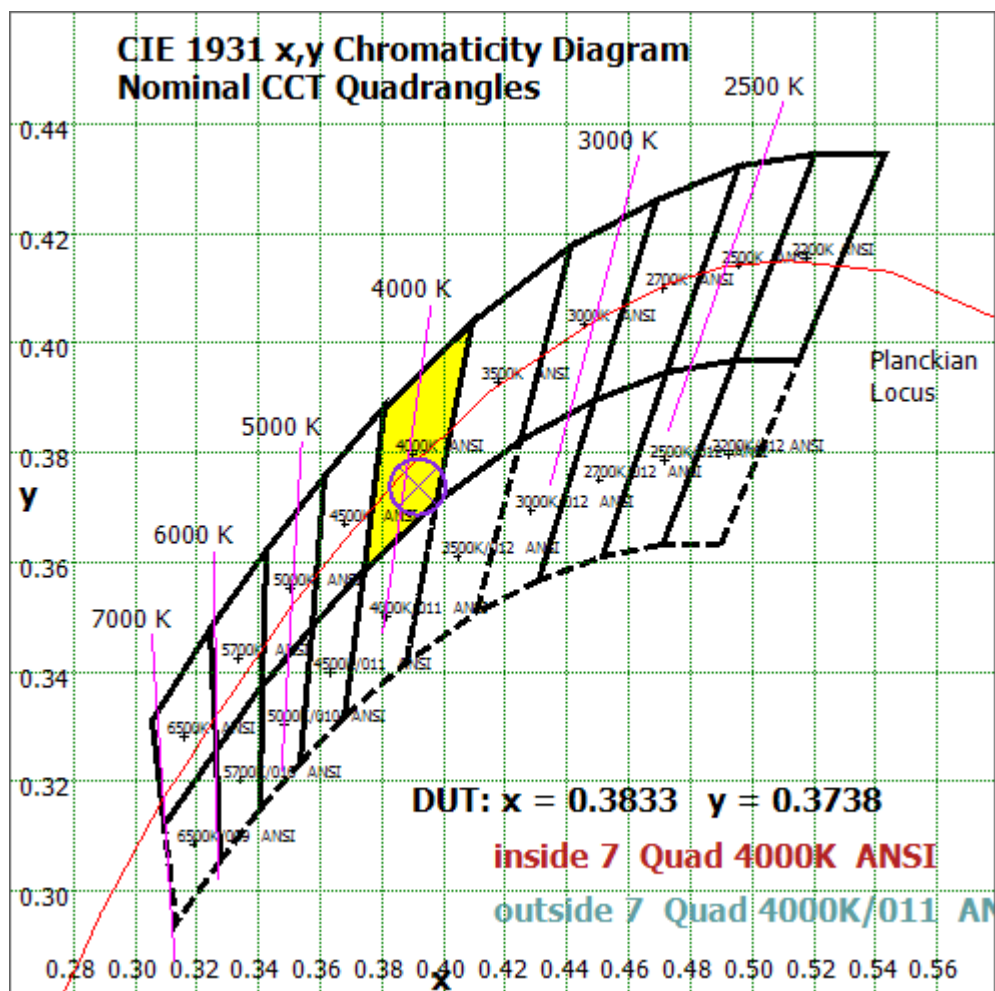


Chart17: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Color Rendition Report – Sphere Spectroradiometer Method

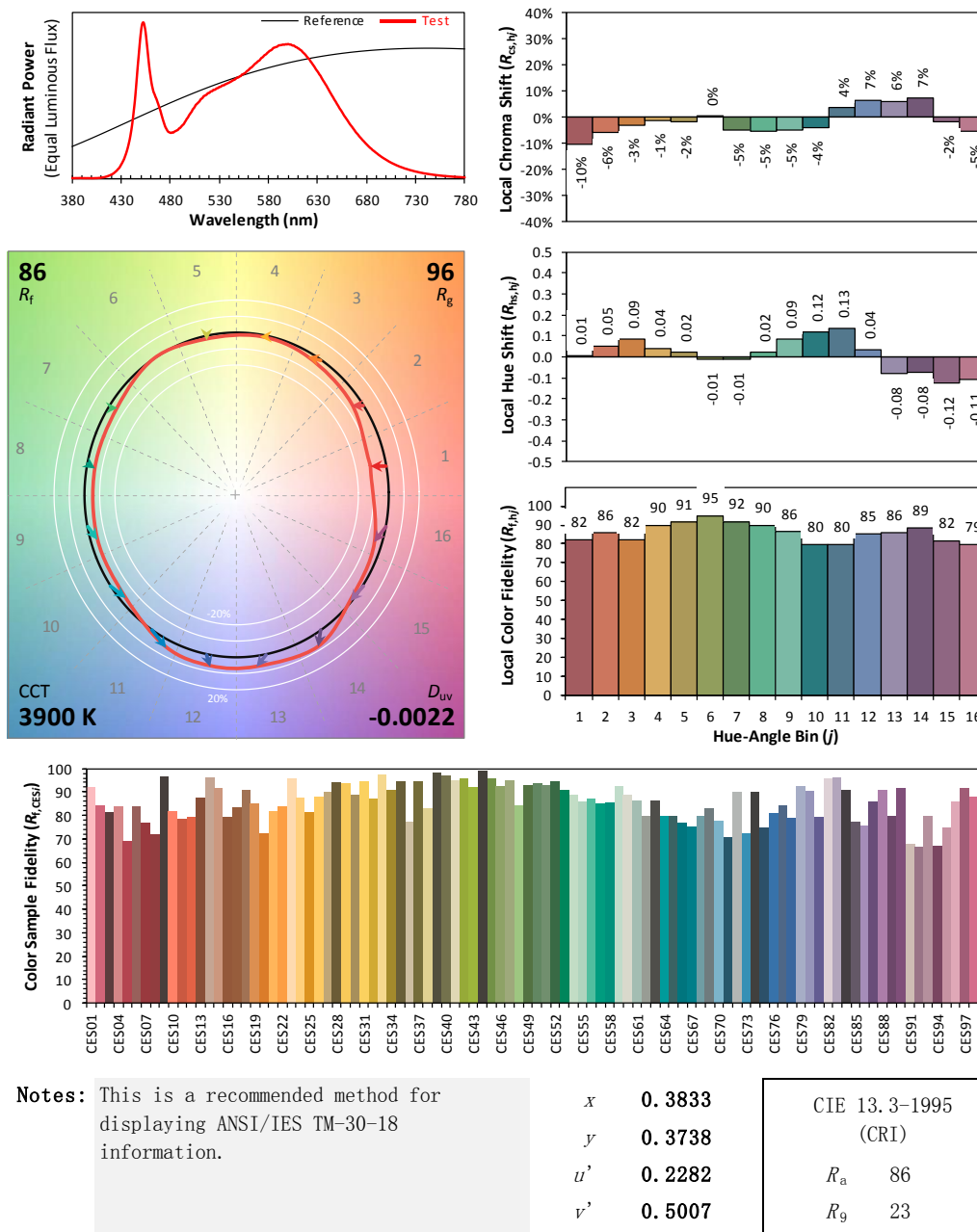
ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2023/04/21

Model: 7T8/2F/8CCTS/UEB



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

Chart 18: 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.

Goniophotometer Method

Test ambient temperature was 24.9 °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)	0.059
Power Factor	0.9742
Power (W)	6.89
Luminous Efficacy (lm/W)	156.6
Total Luminous Flux (lm)	1078.9
Beam Angle (°)	106.4 (0°-180°) / 197.5 (90°-270°)
Center Beam Candle Power (cd)	203
Maximum Beam Candle Power (cd)	202.9 (At: C=100.0, Gamma=1.0)
Spacing Criteria	1.24 (0°-180°) / 1.41 (90°-270°)
Zonal Lumens in the 0 °-60 °Zone	46.15%
Zonal Lumens in the 60 °-90 °Zone	26.43%
Zonal Lumens in the 90 °-120 °Zone	16.63%
Zonal Lumens in the 120 °-180 °Zone	10.79%

Table 16: Test data per Goniophotometer Method

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	19.185	1.78%
10- 20	55.363	5.13%
20- 30	85.203	7.90%
30- 40	105.842	9.81%
40- 50	116.078	10.76%
50- 60	116.275	10.78%
60- 70	108.332	10.04%
70- 80	95.421	8.84%
80- 90	81.407	7.55%
90-100	69.706	6.46%
100-110	59.528	5.52%
110-120	50.191	4.65%
120-130	41.166	3.82%
130-140	32.163	2.98%
140-150	22.754	2.11%
150-160	13.491	1.25%
160-170	5.584	0.52%
170-180	1.211	0.11%
Total	1078.9	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	497.946	46.15%
60- 90	285.16	26.43%
0-90	783.106	72.58%
90- 180	295.794	27.42%
0- 180	1078.9	100%

Table 17: Zonal Lumen

Illuminance Plots- Goniophotometer Method

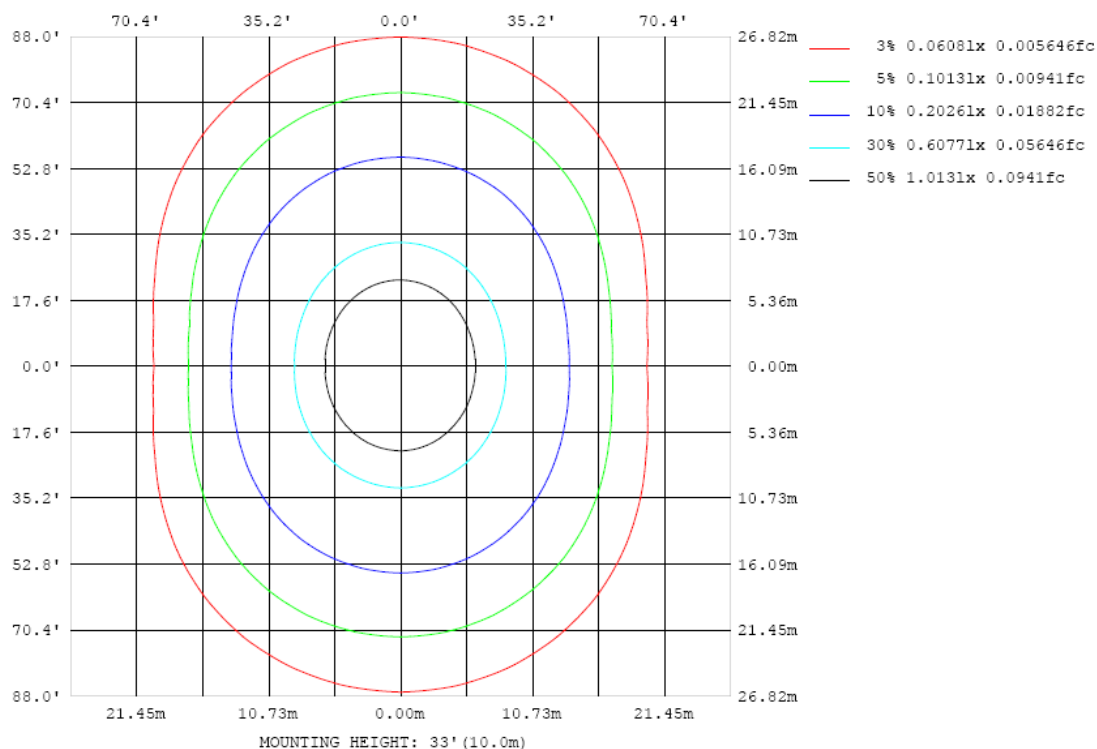


Chart 19: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

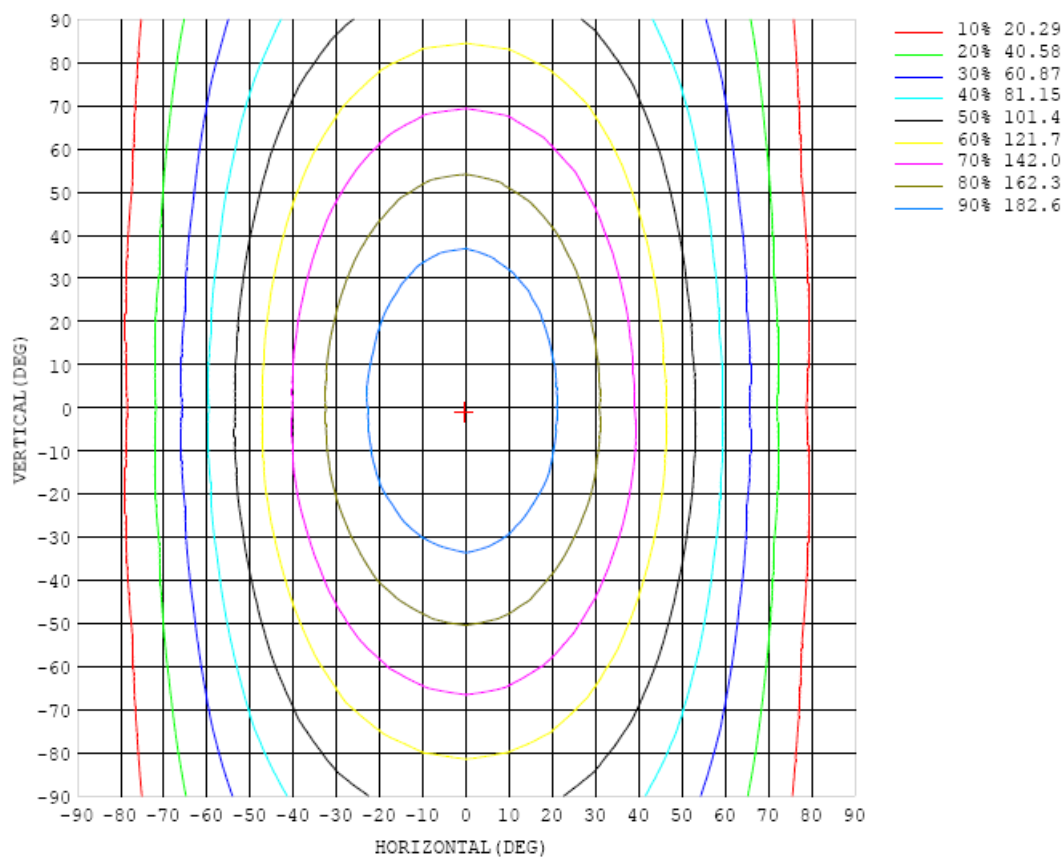


Chart 20: Isocandela Plot

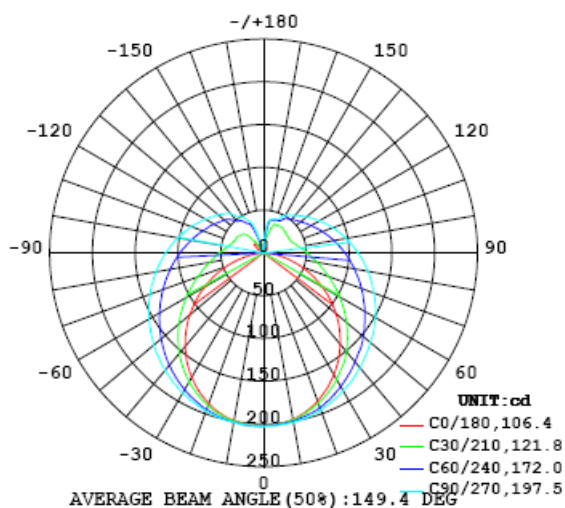


Chart 21: Polar Candela Distribution

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	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203
5	201	201	201	201	201	201	201	202	202	202	202	202	202	202	202	202	202	202	202
10	197	197	197	198	199	199	200	200	201	201	201	201	200	200	200	199	199	199	199
15	192	192	193	193	195	195	196	198	199	199	199	199	198	197	196	196	195	194	194
20	184	185	186	187	189	191	192	194	195	195	195	195	194	193	191	190	189	187	187
25	175	176	177	180	182	184	187	189	190	191	191	190	188	186	184	182	180	179	179
30	164	166	167	171	174	177	180	183	185	186	186	184	182	179	177	174	171	169	168
35	153	155	157	161	165	169	174	177	180	181	180	179	176	172	167	164	160	157	156
40	139	142	145	150	156	161	166	171	174	175	174	172	168	163	159	153	149	145	143
45	125	128	132	139	146	153	159	164	168	169	168	165	161	156	148	141	135	130	128
50	110	113	119	127	135	144	152	159	161	163	162	159	154	146	138	129	121	115	113
55	94.8	98.1	105	114	125	135	144	151	156	157	156	152	146	137	127	116	107	99.8	96.4
60	78.9	82.5	91.0	103	115	127	137	145	149	151	149	145	138	128	116	104	92.3	83.5	79.7
65	63.0	67.1	77.7	91.4	105	118	129	137	142	144	142	138	130	120	106	92.2	78.2	67.6	63.5
70	46.8	52.1	65.1	80.9	96.6	110	122	130	136	137	136	131	123	111	97.1	81.3	65.0	51.9	46.5
75	31.3	38.1	53.8	71.6	88.4	103	115	123	129	131	129	124	116	103	88.7	71.5	53.3	37.4	30.4
80	17.1	26.0	44.1	63.3	80.9	96.1	108	117	122	124	122	117	108	96.3	81.0	63.1	43.3	24.9	15.9
85	5.75	16.8	36.6	56.5	74.3	89.5	101	110	115	117	115	110	102	89.6	74.2	56.0	35.6	15.6	4.74
90	0.32	11.6	31.2	50.8	68.5	83.4	95.1	104	109	111	109	104	95.4	83.4	68.2	50.3	30.3	10.6	0.27
95	0.17	8.43	27.1	46.1	63.3	77.7	89.2	97.5	102	104	102	97.4	89.3	77.6	63.1	45.8	26.9	9.12	0.37
100	0.08	6.77	23.8	42.0	58.4	72.5	83.5	91.6	96.4	97.9	96.2	91.5	83.5	72.5	58.5	42.3	25.0	9.61	0.60
105	0.24	7.62	21.5	38.6	54.2	67.7	78.2	85.8	90.6	92.0	90.4	85.8	78.4	67.8	54.7	39.7	24.2	11.3	1.15
110	0.58	9.18	21.4	35.9	50.5	63.2	73.1	80.4	84.7	86.2	84.6	80.3	73.2	63.5	51.4	37.9	24.4	13.7	2.19
115	1.16	11.1	22.2	34.7	47.5	59.2	68.5	75.3	79.3	80.6	79.3	75.1	68.7	59.7	48.8	36.9	25.2	16.4	3.84
120	1.61	13.0	23.5	34.2	45.4	55.7	64.2	70.4	74.0	75.3	74.1	70.3	64.5	56.4	46.7	36.3	26.5	19.4	6.41
125	0.76	13.0	25.2	34.3	43.9	52.9	60.3	65.9	69.1	70.3	69.2	65.9	60.7	53.5	45.1	36.2	28.1	22.3	9.44
130	0.16	13.0	27.3	34.6	42.8	50.5	56.9	61.7	64.6	65.7	64.7	61.8	57.2	51.0	43.9	36.4	29.7	25.2	13.4
135	0.36	15.1	29.3	35.3	42.1	48.5	53.8	58.0	60.5	61.4	60.5	58.0	54.1	48.9	42.9	36.9	31.6	26.9	14.8
140	2.07	19.3	31.2	36.0	41.6	46.8	51.3	54.6	56.7	57.4	56.7	54.6	51.4	47.2	42.1	37.0	33.7	27.4	11.9
145	3.10	19.6	32.0	36.9	40.5	45.2	49.0	51.7	53.3	54.0	53.4	51.7	49.1	44.7	38.9	36.0	34.5	29.1	10.0
150	4.56	13.3	31.6	36.0	38.3	40.9	45.3	49.0	50.4	50.8	50.4	48.9	44.8	41.0	38.7	36.1	33.5	29.1	9.74
155	3.92	10.6	29.4	35.9	38.4	40.2	41.6	43.2	44.3	44.5	44.0	43.0	41.9	40.3	38.6	36.6	34.1	25.3	10.4
160	6.03	8.49	21.6	35.1	38.2	39.7	40.7	41.6	42.1	42.3	42.1	41.5	40.6	39.6	38.3	36.9	34.0	22.7	9.26
165	4.72	6.62	14.2	25.3	35.4	39.0	39.7	40.3	40.6	40.7	40.6	40.3	39.6	38.8	38.4	36.5	30.1	19.5	10.6
170	5.50	5.13	7.17	13.5	20.9	29.6	35.9	38.5	39.2	39.3	39.2	39.1	38.5	36.8	33.6	29.7	22.7	15.1	10.2
175	5.45	4.96	4.64	5.82	8.05	11.4	16.5	20.7	22.7	23.6	23.9	23.4	22.2	20.6	18.3	15.7	12.7	10.2	9.45
180	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27

Table 18: 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	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203		
5	202	202	202	202	202	202	202	202	202	202	202	201	201	201	201	201	201		
10	199	199	200	200	201	201	202	201	201	201	200	200	200	199	199	198	197		
15	194	195	196	197	198	198	199	200	200	199	198	197	196	195	194	192	192		
20	188	189	190	192	193	195	196	197	197	196	195	193	192	189	187	186	185		
25	180	181	183	185	188	190	192	193	193	192	191	189	186	183	180	177	176		
30	169	171	174	178	181	185	187	189	189	188	186	183	179	175	171	168	165		
35	157	160	164	169	174	178	182	184	185	183	180	176	171	166	161	156	153		
40	144	148	153	160	166	172	176	179	179	177	174	170	163	157	150	144	141		
45	130	135	142	149	157	164	169	173	173	172	168	162	155	146	138	132	127		
50	115	121	129	139	148	156	163	167	168	165	161	155	146	136	127	118	112		
55	99.1	107	117	128	139	148	156	160	161	159	154	147	137	126	115	105	96.8		
60	83.0	92.2	104	118	130	140	148	153	155	153	147	140	129	116	103	90.8	81.6		
65	67.6	78.2	92.8	108	121	133	141	147	148	146	141	132	121	107	91.8	77.4	67.0		
70	52.0	65.8	81.7	98.3	113	125	134	140	141	139	134	125	113	97.9	81.4	65.6	52.1		
75	37.4	54.0	72.7	89.8	105	118	127	133	135	132	127	118	105	89.7	72.7	54.3	38.0		
80	24.7	44.0	64.3	82.2	98.3	111	121	126	128	126	120	111	98.3	82.5	64.9	44.7	25.6		
85	15.5	36.3	57.4	75.4	91.5	104	114	119	121	119	114	105	91.9	76.0	58.1	37.3	16.6		
90	10.7	30.8	51.6	70.3	85.4	97.7	107	113	114	113	107	98.6	85.8	71.0	52.7	32.1	11.8		
95	8.14	26.8	46.8	64.9	79.7	91.7	101	106	108	106	101	92.6	80.5	66.2	48.3	28.8	10.3		
100	7.36	24.2	42.9	60.3	74.3	86.0	94.7	100	102	100	95.3	87.0	75.6	62.0	45.1	27.1	10.5		
105	7.81	22.7	39.9	56.2	70.4	80.7	89.0	94.1	95.9	94.2	89.6	82.0	71.1	58.3	42.7	26.5	11.3		
110	8.53	22.4	37.8	52.8	66.0	75.7	83.4	88.4	89.9	88.4	84.1	77.0	67.7	55.1	41.0	26.6	11.5		
115	8.69	22.4	36.6	49.8	61.9	71.8	78.3	82.7	84.2	82.9	78.9	72.4	63.8	52.5	39.8	27.2	11.8		
120	1.46	19.1	36.3	47.5	58.4	67.3	73.3	77.4	78.8	77.5	74.0	68.9	60.4	50.3	38.8	27.4	12.4		
125	0.00	17.5	35.1	45.0	55.5	63.3	69.3	72.5	73.6	72.7	70.2	64.8	57.3	48.2	37.3	28.2	12.9		
130	0.34	16.0	33.2	42.5	52.1	59.8	65.0	68.4	69.5	68.6	65.8	61.1	54.5	45.4	36.3	26.0	10.3		
135	0.30	12.1	30.9	39.1	46.9	55.5	60.9	63.9	65.0	64.2	61.7	57.2	50.1	42.1	37.3	22.3	6.83		
140	0.74	5.39	21.0	38.6	43.6	48.4	54.1	58.5	59.8	58.8	55.7	50.9	45.9	41.3	37.7	14.6	4.98		
145	2.69	2.33	10.9	35.6	40.4	46.2	49.2	50.6	51.5	51.1	50.0	47.4	44.0	41.1	32.9	6.27	5.33		
150	3.57	5.20	6.39	21.6	37.7	40.3	44.3	47.6	48.3	47.7	46.6	45.2	42.6	38.7	15.0	3.85	7.18		
155	3.77	6.06	6.10	6.52	22.5	37.2	39.1	40.4	41.0	40.5	40.1	39.5	35.2	18.1	4.13	6.38	6.92		
160	3.82	4.79	4.70	5.39	6.98	13.2	23.1	29.7	32.4	31.9	28.0	19.6	8.78	4.36	2.85	6.59	9.07		
165	5.01	3.88	5.82	6.87	4.77	4.85	7.07	7.54	7.20	6.67	4.08	4.57	4.62	4.88	4.02	9.89	9.88		
170	6.13	4.51	5.22	5.32	6.62	5.40	4.90	5.31	2.46	1.98	1.81	1.93	5.55	7.71	8.00	9.90	8.13		
175	7.13	4.36	3.75	4.37	5.41	5.40	4.72	4.22	2.93	9.20	10.2	10.4	9.76	7.98	5.71	4.47	4.93		
180	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27		

Table 19: Luminous Intensity Data

TEST RESULTS of Model 7T8/2F/8CCTS/UEB (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)	0.060	0.029
Power Factor	0.9737	0.9065
Test Power (W)	7.00	7.33
THD A%	20.46	19.45
Luminous Efficacy (lm/W)	155.2	150.8
Total Luminous Flux (lm)	1086.2	1105.2
Color Rendering Index (CRI)	86.3	
R9	24.9	
Correlated Color Temperature (CCT)(K)	4991	
Chromaticity Chroma x	0.3451	
Chromaticity Chroma y	0.3495	
Chromaticity Chroma u	0.2122	
Chromaticity Chroma v	0.3224	
Duv	-0.0011	
Chromaticity Chroma u'	0.2122	
Chromaticity Chroma v'	0.4836	

Special Color Rendering Indices	
R1	85.6
R2	92
R3	94.7
R4	85.1
R5	85.2
R6	86.8
R7	88.7
R8	72.4
R9	24.9
R10	79.6
R11	84.7
R12	60.8
R13	87.8
R14	97.4

Table 20: 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

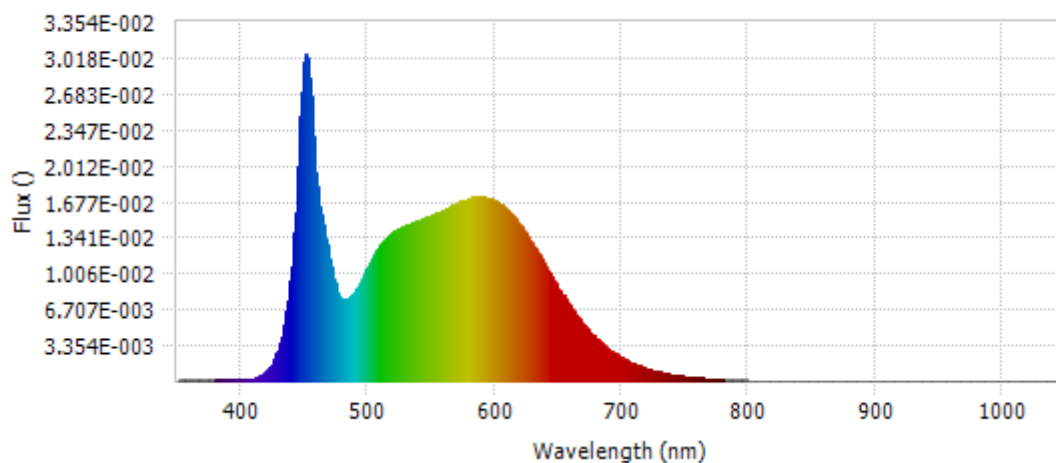
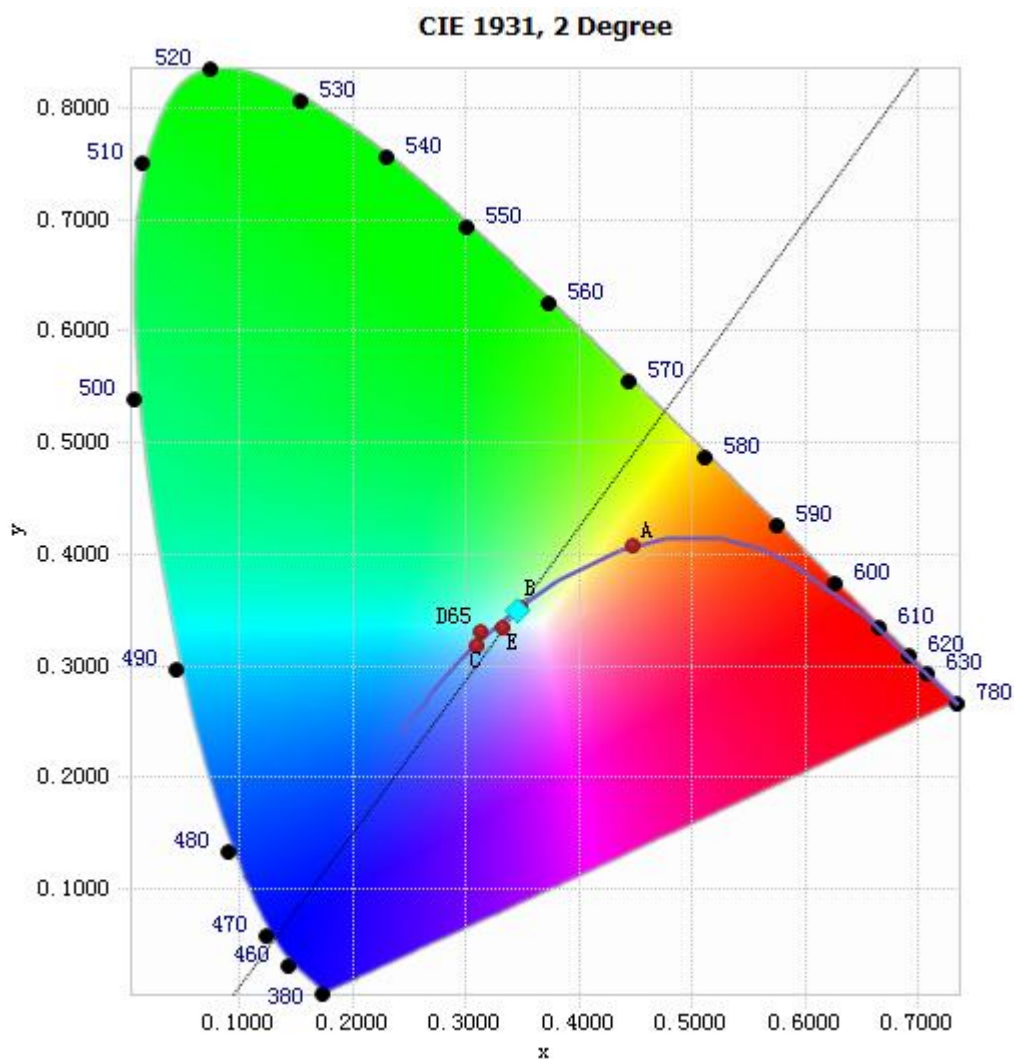


Chart 22: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.34E-04	485	7.87E-03	590	1.72E-02	695	2.56E-03
385	1.11E-04	490	8.42E-03	595	1.71E-02	700	2.19E-03
390	1.23E-04	495	9.40E-03	600	1.69E-02	705	1.88E-03
395	1.20E-04	500	1.06E-02	605	1.65E-02	710	1.60E-03
400	1.18E-04	505	1.18E-02	610	1.59E-02	715	1.37E-03
405	1.34E-04	510	1.27E-02	615	1.54E-02	720	1.16E-03
410	2.56E-04	515	1.35E-02	620	1.45E-02	725	9.95E-04
415	4.85E-04	520	1.39E-02	625	1.37E-02	730	8.48E-04
420	9.40E-04	525	1.43E-02	630	1.27E-02	735	7.27E-04
425	1.78E-03	530	1.46E-02	635	1.17E-02	740	6.16E-04
430	3.25E-03	535	1.48E-02	640	1.08E-02	745	5.27E-04
435	5.87E-03	540	1.50E-02	645	9.72E-03	750	4.49E-04
440	1.07E-02	545	1.53E-02	650	8.71E-03	755	3.85E-04
445	2.01E-02	550	1.54E-02	655	7.76E-03	760	3.30E-04
450	2.98E-02	555	1.57E-02	660	6.88E-03	765	2.82E-04
455	2.66E-02	560	1.60E-02	665	6.06E-03	770	2.44E-04
460	1.82E-02	565	1.63E-02	670	5.28E-03	775	2.08E-04
465	1.46E-02	570	1.66E-02	675	4.59E-03	780	1.77E-04
470	1.14E-02	575	1.68E-02	680	3.99E-03		
475	8.62E-03	580	1.70E-02	685	3.47E-03		
480	7.73E-03	585	1.73E-02	690	3.00E-03		

Table 21: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3451, 0.3495)

Chart 23: 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

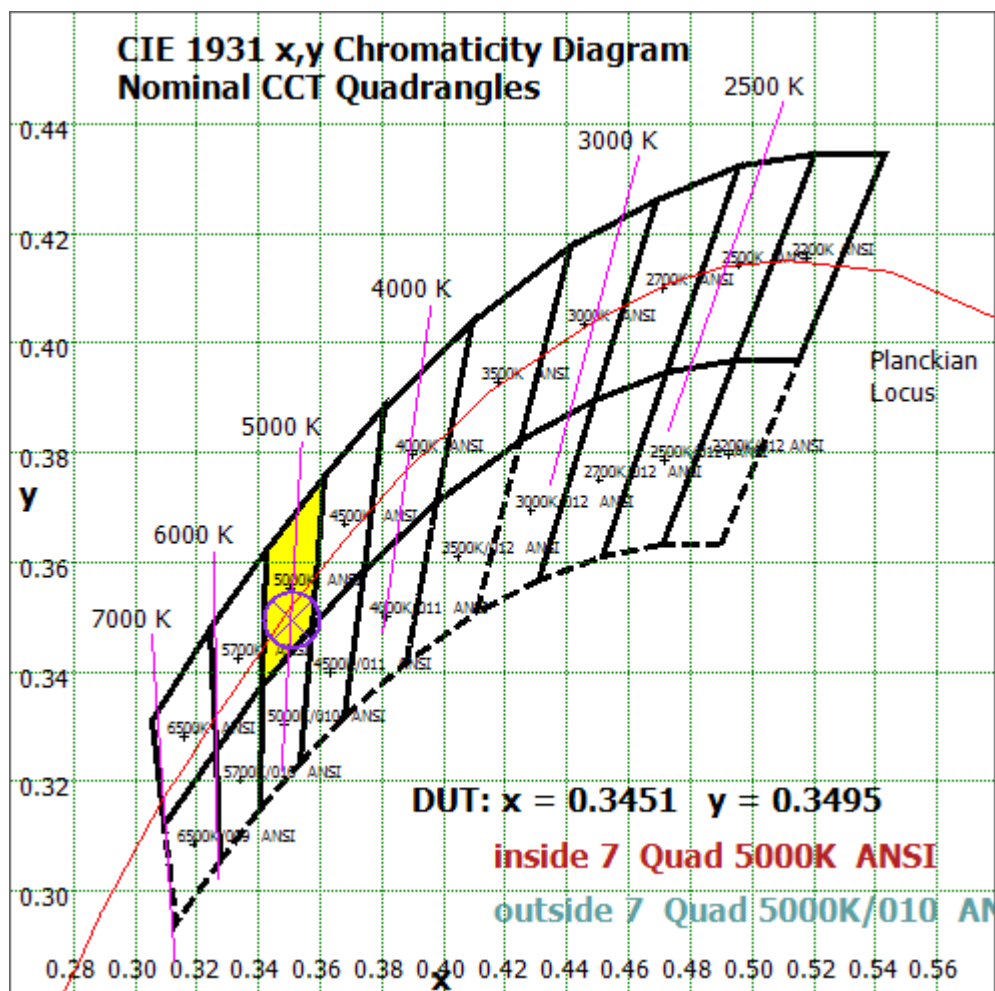


Chart 24: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Color Rendition Report – Sphere Spectroradiometer Method

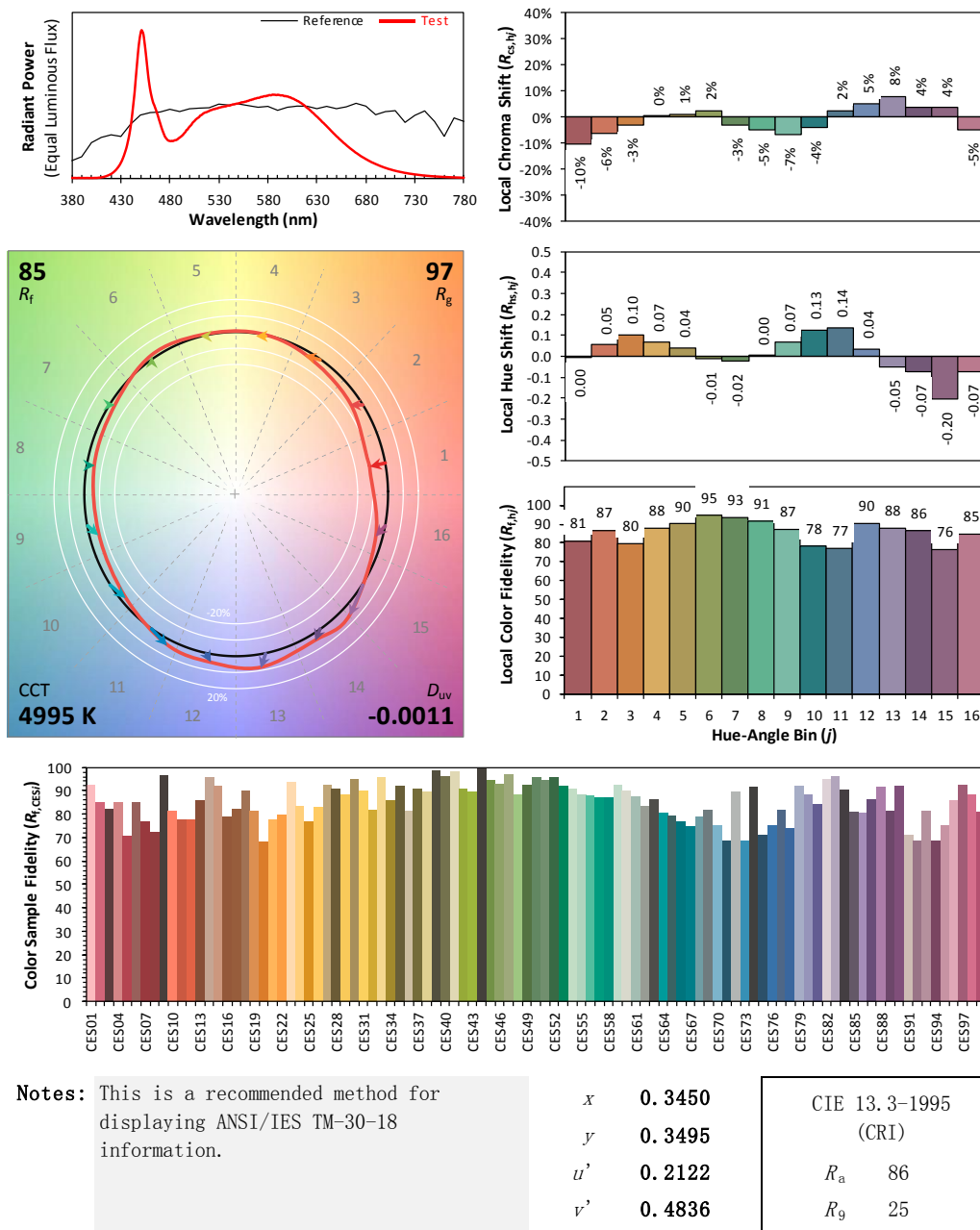
ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2023/04/21

Model: 7T8/2F/8CCTS/UEB



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

Chart 25: 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 20 due to rounding.

Goniophotometer Method

Test ambient temperature was 25.8 °C.

The photometric distance is 30 m.

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

Parameter	Result
Test Voltage (V)	120.0
Voltage frequency (Hz)	60
Test Current (A)	0.060
Power Factor	0.9737
Power (W)	6.97
Luminous Efficacy (lm/W)	157.2
Total Luminous Flux (lm)	1095.3
Beam Angle (°)	106.6 (0°-180°) / 198.7 (90°-270°)
Center Beam Candle Power (cd)	205
Maximum Beam Candle Power (cd)	205.1 (At: C=200.0, Gamma=1.5)
Spacing Criteria	1.24 (0°-180°) / 1.41 (90°-270°)
Zonal Lumens in the 0°-60° Zone	46.06%
Zonal Lumens in the 60°-90° Zone	26.45%
Zonal Lumens in the 90°-120° Zone	16.67%
Zonal Lumens in the 120°-180° Zone	10.82%

Table 22: Test data per Goniophotometer Method

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	19.407	1.77%
10- 20	56.017	5.11%
20- 30	86.252	7.87%
30- 40	107.209	9.79%
40- 50	117.654	10.74%
50- 60	117.94	10.77%
60- 70	109.997	10.04%
70- 80	96.971	8.85%
80- 90	82.795	7.56%
90-100	70.934	6.48%
100-110	60.583	5.53%
110-120	51.101	4.67%
120-130	41.886	3.82%
130-140	32.742	2.99%
140-150	23.195	2.12%
150-160	13.743	1.25%
160-170	5.683	0.52%
170-180	1.232	0.11%
Total	1095.3	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	504.479	46.06%
60- 90	289.763	26.45%
0-90	794.242	72.51%
90- 180	301.099	27.49%
0- 180	1095.3	100%

Table 23: Zonal Lumen

Illuminance Plots- Goniophotometer Method

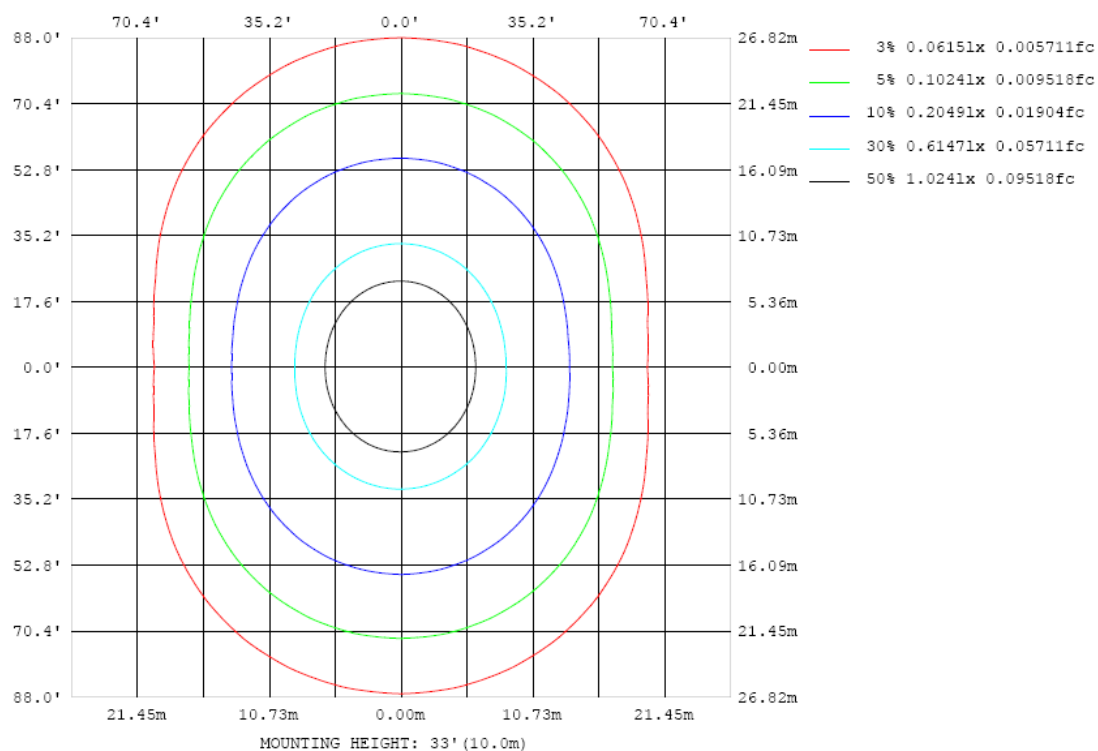


Chart 26: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

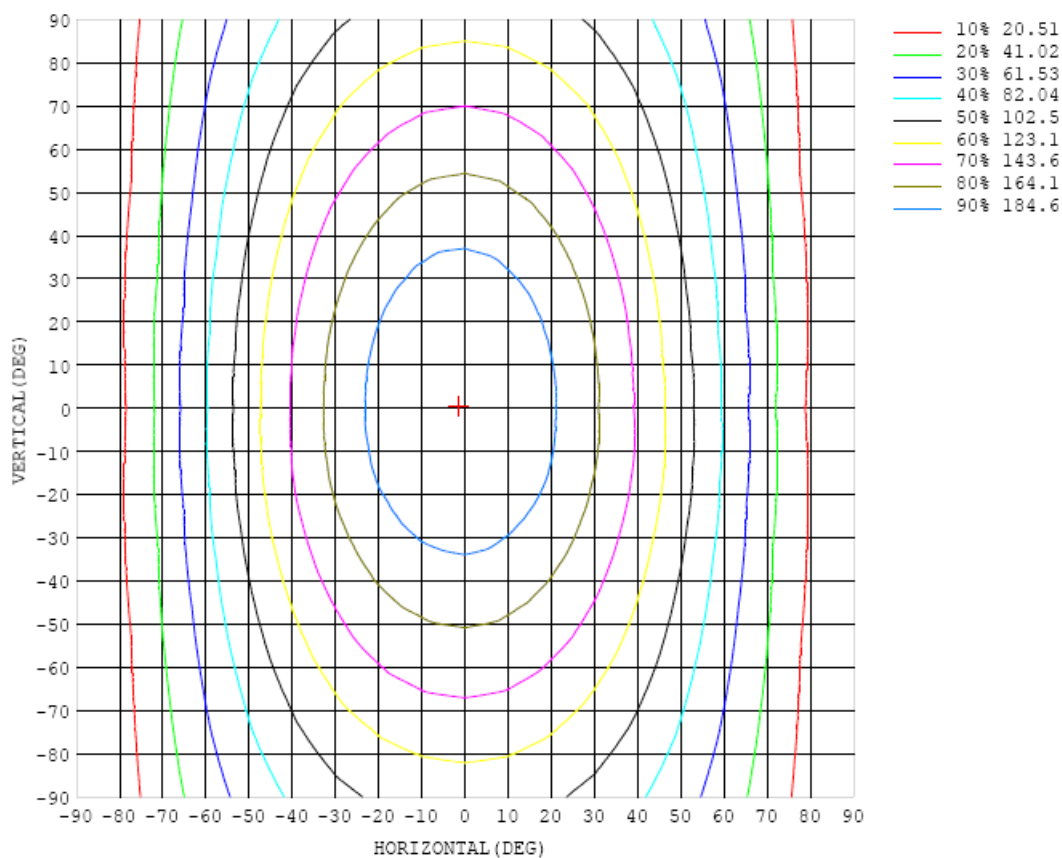


Chart 27: Isocandela Plot

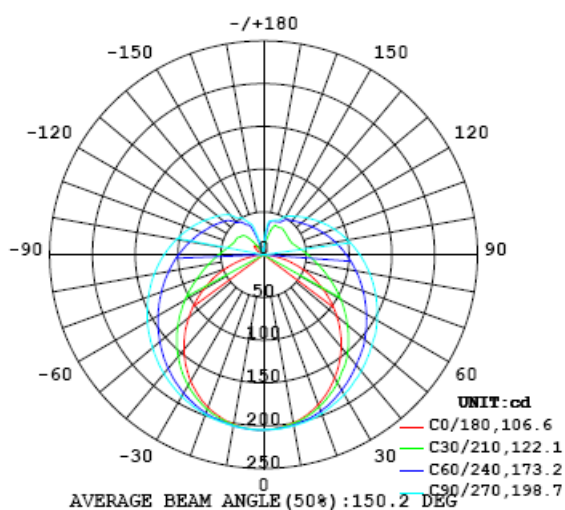


Chart 28: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1		UNIT: cd																	
<div>C (DEG) γ (DEG)</div>	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205
5	203	203	203	203	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204
10	200	200	200	200	201	202	202	203	203	203	203	203	203	203	203	202	202	202	202
15	194	194	195	196	197	198	199	200	201	201	201	201	201	200	200	199	198	197	197
20	187	187	188	189	191	193	195	196	197	198	198	197	196	195	194	192	191	190	190
25	177	178	179	182	184	187	189	191	193	193	193	192	191	189	187	185	183	182	181
30	166	167	169	173	176	180	183	186	188	189	188	187	185	182	179	176	173	171	171
35	154	157	160	163	167	172	176	179	182	183	183	181	178	174	170	166	162	160	158
40	141	144	147	152	158	164	168	173	176	177	177	174	171	165	161	156	151	147	145
45	127	130	134	140	148	156	161	166	170	171	171	168	163	158	151	143	137	132	130
50	112	115	120	128	137	147	154	161	164	165	164	161	156	148	140	131	123	117	114
55	96.0	99.4	106	116	127	138	147	154	158	160	159	155	148	139	129	118	108	101	97.8
60	80.0	83.8	92.3	104	117	129	139	146	152	153	152	148	140	130	118	106	93.7	84.6	80.8
65	63.8	68.1	78.8	92.8	107	120	131	139	145	146	145	140	132	121	108	93.7	79.4	68.5	64.5
70	47.4	52.9	66.1	82.3	98.2	112	124	132	138	140	138	133	125	113	98.8	82.7	66.1	52.7	47.3
75	31.6	38.8	54.6	72.8	89.9	105	117	125	131	133	131	126	117	105	90.3	72.9	54.1	38.0	30.8
80	17.3	26.5	44.9	64.5	82.3	97.8	110	119	124	126	124	119	110	98.0	82.5	64.4	44.0	25.3	16.2
85	5.82	17.2	37.3	57.5	75.8	91.0	103	112	117	119	117	112	104	91.1	75.7	57.2	36.3	15.8	4.81
90	0.35	11.8	31.8	51.8	69.8	84.8	96.8	106	111	113	111	106	97.3	84.9	69.5	51.3	30.9	10.8	0.28
95	0.17	8.62	27.7	47.0	64.5	79.1	90.8	99.4	104	106	104	99.3	91.1	79.1	64.2	46.7	27.4	9.27	0.38
100	0.09	6.96	24.3	42.8	59.6	74.0	85.2	93.1	98.2	99.8	98.2	93.2	85.3	73.9	59.6	43.2	25.5	9.77	0.62
105	0.28	7.84	22.0	39.4	55.4	69.0	79.7	87.3	92.2	93.7	92.2	87.5	79.9	69.0	55.8	40.5	24.7	11.5	1.18
110	0.59	9.45	21.9	36.7	51.7	64.6	74.5	81.9	86.3	87.8	86.4	82.1	74.9	64.8	52.5	38.7	24.9	13.9	2.22
115	1.14	11.4	22.7	35.5	48.6	60.4	69.9	76.6	80.8	82.2	80.8	76.8	70.2	60.9	49.8	37.6	25.7	16.7	3.89
120	1.62	13.4	24.0	35.0	46.5	56.9	65.4	71.7	75.5	76.7	75.6	71.8	65.8	57.5	47.7	37.1	27.0	19.7	6.52
125	0.77	13.3	25.8	35.1	45.0	54.0	61.4	67.0	70.5	71.7	70.6	67.2	61.9	54.6	46.0	37.0	28.6	22.7	9.59
130	0.21	13.3	28.0	35.4	43.8	51.6	58.0	62.9	65.9	66.9	66.0	63.0	58.3	52.0	44.7	37.2	30.4	25.6	13.6
135	0.40	15.4	30.0	36.1	43.1	49.5	54.9	59.0	61.7	62.5	61.8	59.2	55.2	49.9	43.8	37.7	32.2	27.3	14.9
140	2.11	19.8	31.9	36.9	42.5	47.8	52.2	55.6	57.9	58.5	57.8	55.7	52.5	48.1	42.9	37.8	34.4	27.8	12.1
145	3.17	20.0	32.7	37.8	41.4	46.0	49.8	52.6	54.4	55.0	54.4	52.7	50.1	45.4	39.6	36.9	35.2	29.6	10.2
150	4.69	13.5	32.2	36.8	39.0	41.7	46.1	49.8	51.3	51.8	51.3	49.8	45.7	41.7	39.3	36.8	34.2	29.6	9.91
155	3.99	10.7	29.9	36.6	39.1	40.9	42.4	43.9	45.1	45.3	44.9	43.9	42.6	41.0	39.2	37.2	34.7	25.8	10.6
160	6.25	8.66	21.9	35.8	39.0	40.3	41.4	42.3	42.9	43.0	42.9	42.3	41.4	40.4	38.9	37.5	34.5	23.0	9.39
165	4.76	6.75	14.3	25.7	35.9	39.7	40.4	40.9	41.4	41.5	41.4	41.0	40.3	39.6	39.1	37.1	30.6	19.9	10.8
170	5.53	5.20	7.26	13.7	21.2	30.1	36.3	39.0	39.9	40.0	40.0	39.8	39.2	37.4	34.3	30.2	23.1	15.4	10.4
175	5.53	5.04	4.67	5.81	8.08	12.3	17.4	21.2	23.1	23.9	24.3	23.9	22.6	20.9	18.6	15.9	12.8	10.4	9.63
180	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35

Table 24: 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	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205		
5	204	204	204	204	204	205	205	205	204	204	204	204	204	204	204	203	203		
10	202	202	202	202	203	203	203	204	203	203	203	202	202	201	200	200	200		
15	197	197	198	199	200	201	201	202	202	201	200	199	198	197	195	195	194		
20	190	191	192	194	196	197	198	199	199	198	197	195	193	191	190	188	187		
25	182	183	185	188	190	192	194	195	195	195	193	191	188	184	182	180	178		
30	171	174	176	180	184	187	190	191	191	190	188	185	181	176	173	170	167		
35	159	163	166	171	176	181	184	186	187	186	183	179	173	168	163	158	155		
40	146	150	155	162	168	174	178	181	181	180	176	172	165	158	152	146	142		
45	132	137	144	151	159	166	171	175	175	174	170	164	157	148	140	133	128		
50	117	122	131	141	150	159	165	168	169	168	163	157	148	138	128	120	113		
55	101	108	118	130	141	150	158	162	163	162	157	149	139	128	116	106	98.0		
60	84.3	93.5	106	120	132	143	150	156	157	155	150	141	130	118	104	91.9	82.6		
65	68.6	79.2	94.2	110	123	135	143	149	150	148	143	134	122	108	93.1	78.4	67.8		
70	52.8	66.7	83.1	100	115	127	136	142	143	142	136	127	114	99.2	82.6	66.4	52.7		
75	38.0	54.8	73.7	91.3	107	120	129	135	136	135	129	120	107	91.2	73.6	55.0	38.5		
80	25.1	44.7	65.4	83.6	99.8	113	122	128	130	128	122	113	99.7	83.7	65.8	45.3	26.0		
85	15.8	36.9	58.3	76.8	93.1	106	115	121	123	121	116	106	93.3	77.2	58.9	37.8	16.8		
90	10.9	31.3	52.5	71.4	86.8	99.4	109	114	116	114	109	100	87.2	72.2	53.3	32.5	12.0		
95	8.32	27.3	47.6	66.1	80.9	93.3	102	108	110	108	103	94.1	81.7	67.2	49.0	29.2	10.5		
100	7.53	24.7	43.7	61.4	75.6	87.5	96.2	102	104	102	96.9	88.4	76.8	62.9	45.8	27.5	10.7		
105	7.97	23.2	40.7	57.2	71.1	82.1	90.3	95.5	97.3	95.9	91.1	83.2	72.2	59.2	43.3	26.8	10.7		
110	8.71	22.8	38.4	53.6	66.9	76.9	84.7	89.7	91.3	90.0	85.5	78.2	68.6	55.9	41.5	27.0	12.1		
115	8.87	22.8	37.1	50.7	63.0	72.2	79.4	83.9	85.8	84.3	80.2	73.5	64.8	53.3	40.2	27.1	12.9		
120	1.60	19.5	36.9	48.4	59.3	68.4	74.4	78.5	80.1	79.0	75.3	69.9	61.4	50.9	38.8	27.6	13.0		
125	0.00	17.8	35.7	45.7	56.4	64.2	70.4	73.4	74.8	73.9	71.3	65.8	58.0	48.2	37.5	29.3	13.2		
130	0.35	16.3	33.8	43.3	52.9	60.7	66.0	69.4	70.5	69.8	66.8	61.8	54.6	45.5	37.6	27.2	10.4		
135	0.27	12.3	31.3	39.7	47.6	56.4	61.9	64.8	65.9	65.1	62.4	57.5	50.3	43.1	38.6	22.9	6.91		
140	0.76	5.56	21.4	39.2	44.2	49.2	55.1	59.3	60.6	59.6	56.3	51.4	46.9	43.0	38.7	14.7	5.15		
145	2.75	2.34	11.1	36.2	41.1	47.0	49.9	51.4	52.2	52.0	50.8	48.5	45.6	42.2	33.8	6.71	5.52		
150	3.66	5.23	6.44	22.1	38.5	40.9	45.1	48.4	49.2	48.8	47.8	46.5	43.5	39.5	15.5	3.83	7.33		
155	3.86	6.23	6.17	6.80	23.0	37.7	39.7	41.0	41.8	41.3	40.7	39.7	35.8	18.5	4.41	6.52	7.07		
160	3.90	4.92	4.80	5.49	7.15	13.5	23.6	30.2	33.1	32.6	28.7	20.1	9.02	4.40	2.89	6.65	9.35		
165	5.13	3.99	5.89	7.02	4.84	5.00	7.17	7.42	7.41	6.84	4.07	4.61	4.61	5.00	4.01	9.95	9.97		
170	6.24	4.63	5.34	5.46	6.77	5.52	5.07	5.48	2.52	2.04	1.85	1.93	5.52	7.65	7.95	10.00	8.33		
175	7.21	4.43	3.85	4.49	5.54	5.47	4.74	4.20	2.80	9.20	10.3	10.5	9.91	8.16	5.84	4.51	4.95		
180	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35		

Table 25: Luminous Intensity Data

TEST RESULTS of Model 7T8/2F/8CCTS/UEB (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)	0.061	0.029
Power Factor	0.9732	0.9085
Test Power (W)	7.03	7.38
THD A%	20.67	19.21
Luminous Efficacy (lm/W)	150.1	145.5
Total Luminous Flux (lm)	1055.2	1073.9
Color Rendering Index (CRI)	83.8	
R9	12	
Correlated Color Temperature (CCT)(K)	6714	
Chromaticity Chroma x	0.3092	
Chromaticity Chroma y	0.3266	
Chromaticity Chroma u	0.1963	
Chromaticity Chroma v	0.3110	
Duv	0.0038	
Chromaticity Chroma u'	0.1963	
Chromaticity Chroma v'	0.4665	

Special Color Rendering Indices	
R1	82
R2	87.9
R3	90.7
R4	83.7
R5	82.7
R6	82.3
R7	88.9
R8	71.9
R9	12
R10	70.4
R11	83
R12	58
R13	83.8
R14	95.2

Table 26: 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

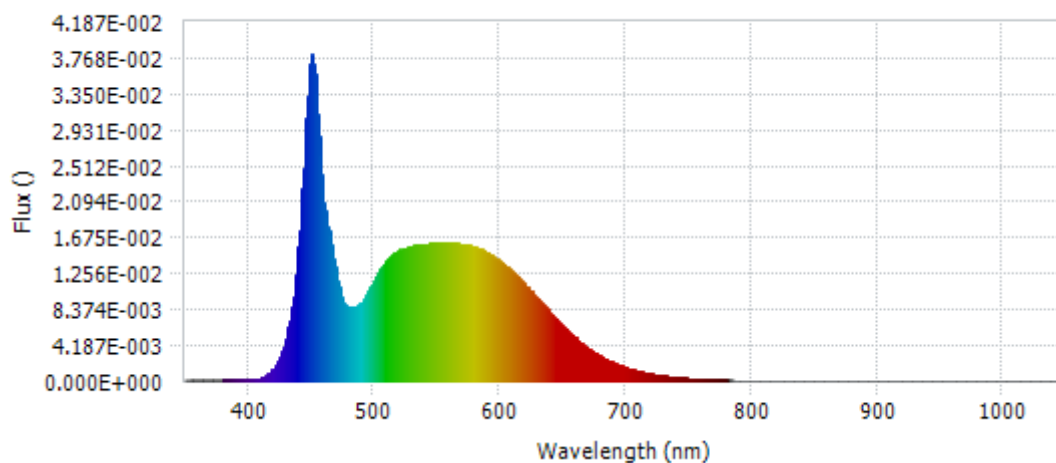
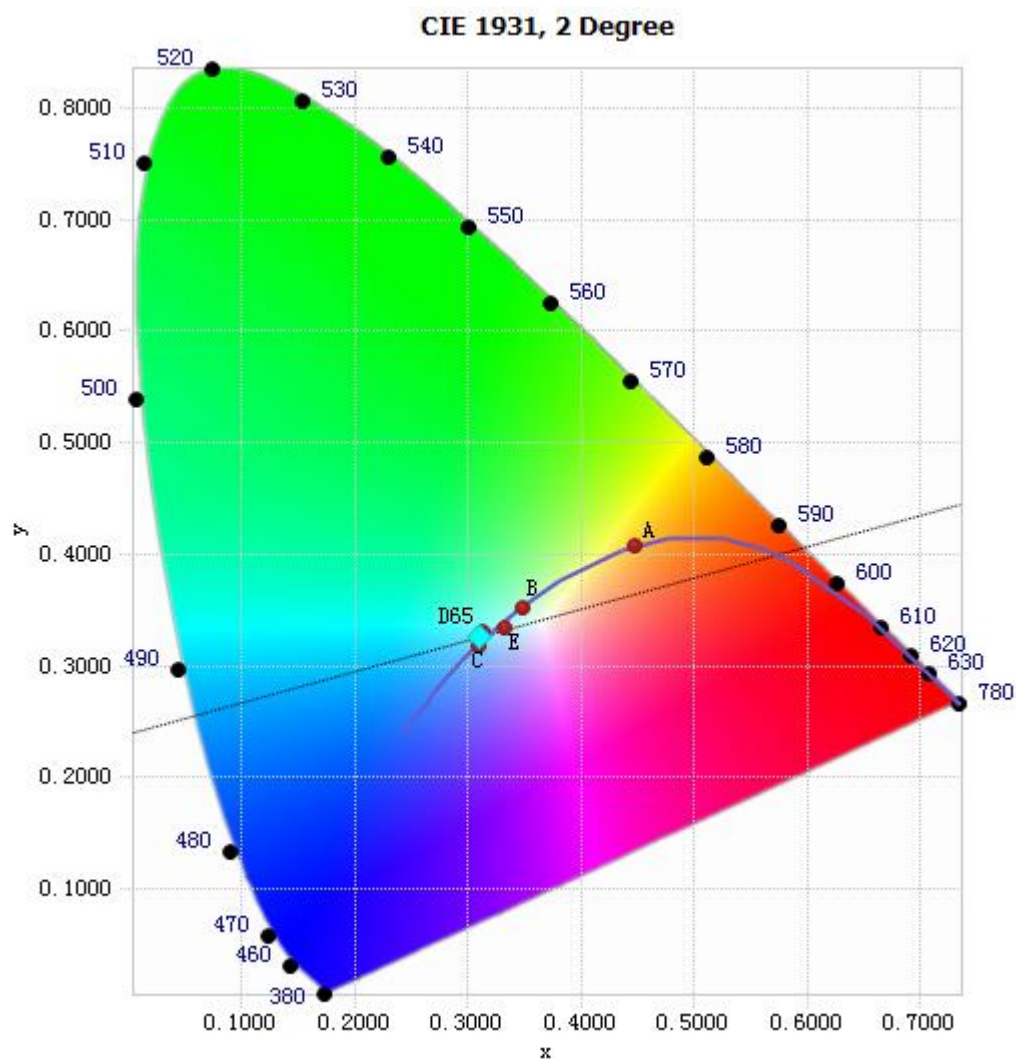


Chart 29: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.55E-04	485	8.69E-03	590	1.50E-02	695	1.87E-03
385	1.42E-04	490	9.24E-03	595	1.45E-02	700	1.60E-03
390	1.39E-04	495	1.04E-02	600	1.40E-02	705	1.37E-03
395	1.24E-04	500	1.18E-02	605	1.33E-02	710	1.17E-03
400	1.37E-04	505	1.30E-02	610	1.27E-02	715	1.01E-03
405	1.93E-04	510	1.40E-02	615	1.20E-02	720	8.63E-04
410	3.59E-04	515	1.48E-02	620	1.12E-02	725	7.43E-04
415	7.60E-04	520	1.51E-02	625	1.04E-02	730	6.37E-04
420	1.46E-03	525	1.55E-02	630	9.62E-03	735	5.42E-04
425	2.75E-03	530	1.57E-02	635	8.79E-03	740	4.61E-04
430	4.97E-03	535	1.58E-02	640	8.00E-03	745	3.97E-04
435	8.75E-03	540	1.60E-02	645	7.18E-03	750	3.40E-04
440	1.57E-02	545	1.60E-02	650	6.41E-03	755	2.88E-04
445	2.78E-02	550	1.61E-02	655	5.70E-03	760	2.54E-04
450	3.79E-02	555	1.61E-02	660	5.03E-03	765	2.17E-04
455	3.10E-02	560	1.60E-02	665	4.41E-03	770	1.86E-04
460	2.09E-02	565	1.60E-02	670	3.85E-03	775	1.60E-04
465	1.68E-02	570	1.59E-02	675	3.36E-03	780	1.36E-04
470	1.26E-02	575	1.58E-02	680	2.92E-03		
475	9.39E-03	580	1.56E-02	685	2.52E-03		
480	8.58E-03	585	1.54E-02	690	2.17E-03		

Table 27: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3092, 0.3266)

Chart 30: 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

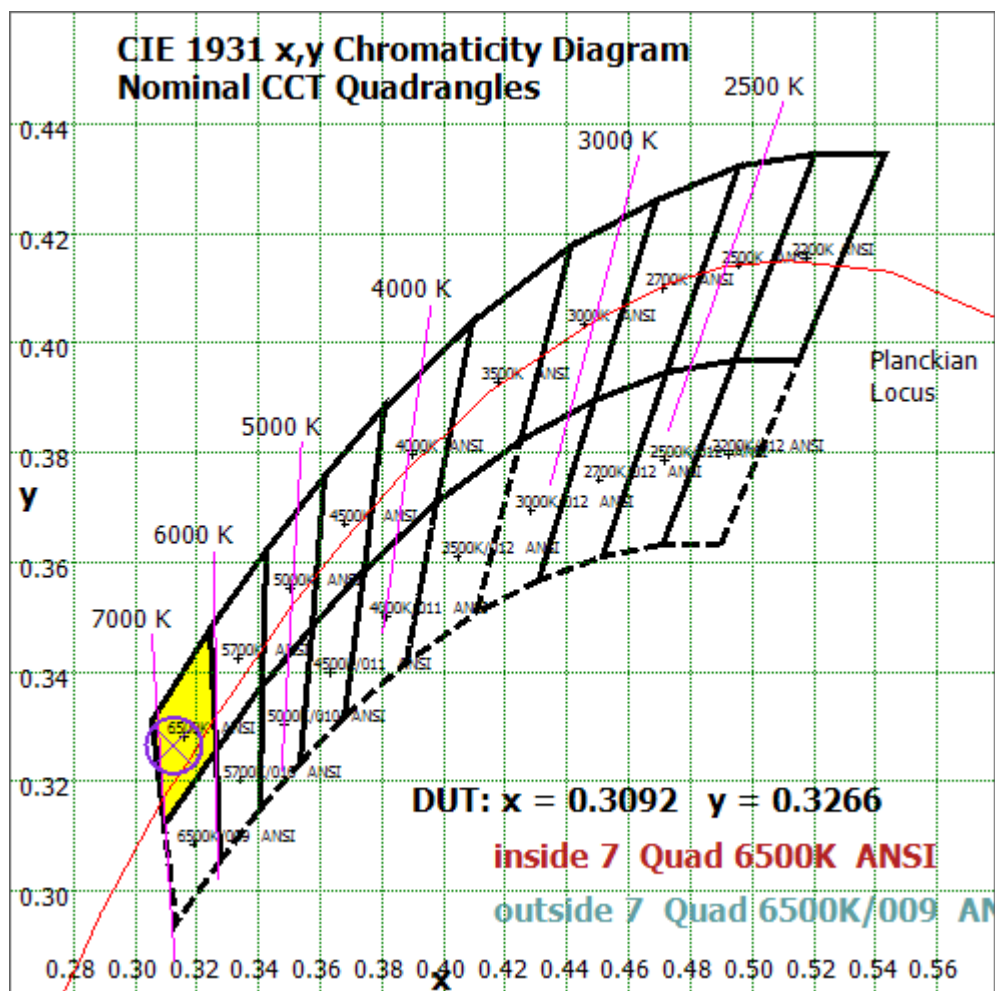


Chart 31: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Color Rendition Report – Sphere Spectroradiometer Method

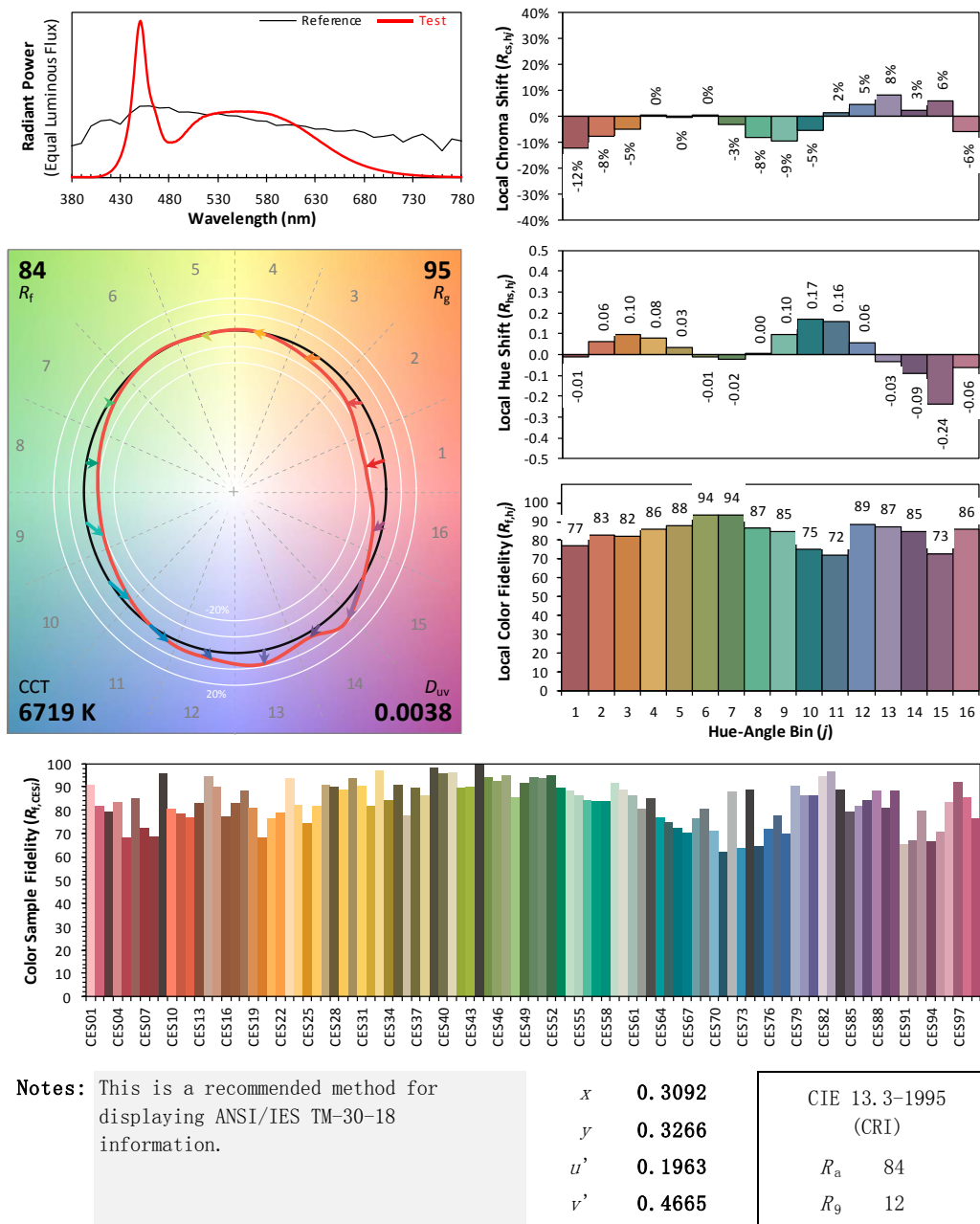
ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2023/04/21

Model: 7T8/2F/8CCTS/UEB



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

Chart 32: 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 26 due to rounding.

Goniophotometer Method

Test ambient temperature was 25.8 °C.

The photometric distance is 30 m.

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

Parameter	Result
Test Voltage (V)	120.0
Voltage frequency (Hz)	60
Test Current (A)	0.060
Power Factor	0.9733
Power (W)	7.04
Luminous Efficacy (lm/W)	151.0
Total Luminous Flux (lm)	1063.1
Beam Angle (°)	106.8 (0°-180°) / 199.8 (90°-270°)
Center Beam Candle Power (cd)	198
Maximum Beam Candle Power (cd)	198.1 (At: C=130.0, Gamma=1.5)
Spacing Criteria	1.24 (0°-180°) / 1.40 (90°-270°)
Zonal Lumens in the 0°-60° Zone	45.94%
Zonal Lumens in the 60°-90° Zone	26.47%
Zonal Lumens in the 90°-120° Zone	16.72%
Zonal Lumens in the 120°-180° Zone	10.88%

Table 28: Test data per Goniophotometer Method

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	18.752	1.76%
10- 20	54.132	5.09%
20- 30	83.389	7.84%
30- 40	103.791	9.76%
40- 50	113.986	10.72%
50- 60	114.329	10.75%
60- 70	106.719	10.04%
70- 80	94.168	8.86%
80- 90	80.495	7.57%
90-100	68.99	6.49%
100-110	58.948	5.55%
110-120	49.757	4.68%
120-130	40.856	3.84%
130-140	32.057	3.02%
140-150	22.736	2.14%
150-160	13.658	1.28%
160-170	5.46	0.51%
170-180	0.86	0.08%
Total	1063.1	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	488.379	45.94%
60- 90	281.382	26.47%
0-90	769.761	72.41%
90- 180	293.322	27.59%
0- 180	1063.1	100%

Table 29: Zonal Lumen

Illuminance Plots- Goniophotometer Method

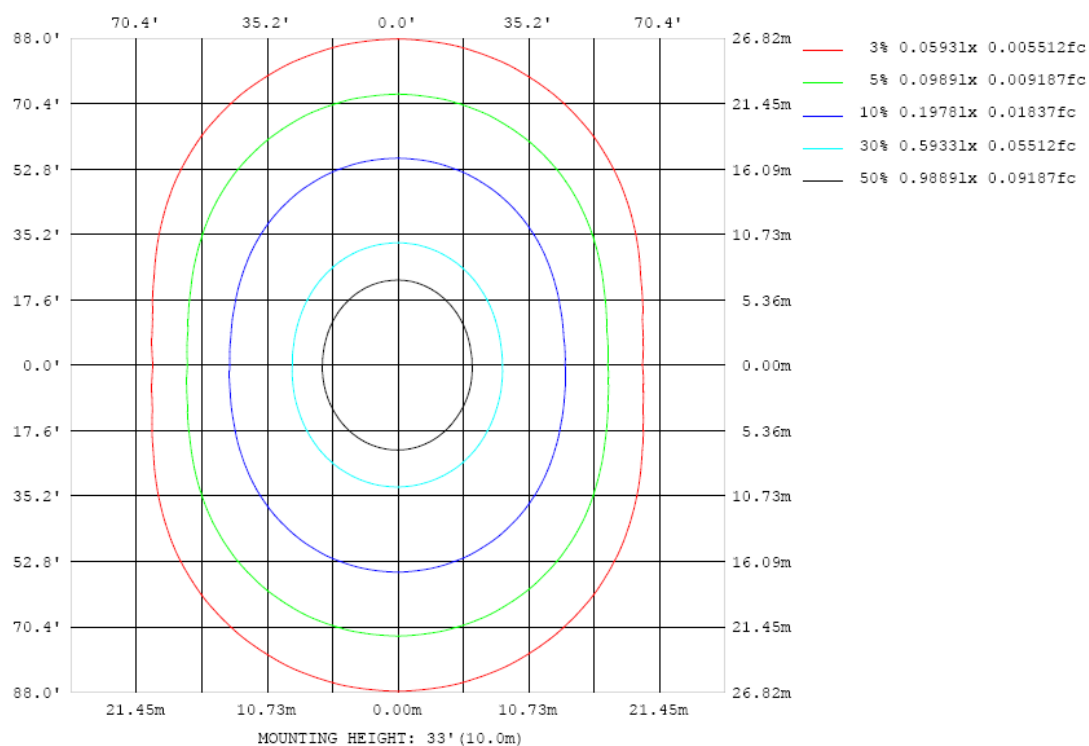


Chart 33: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

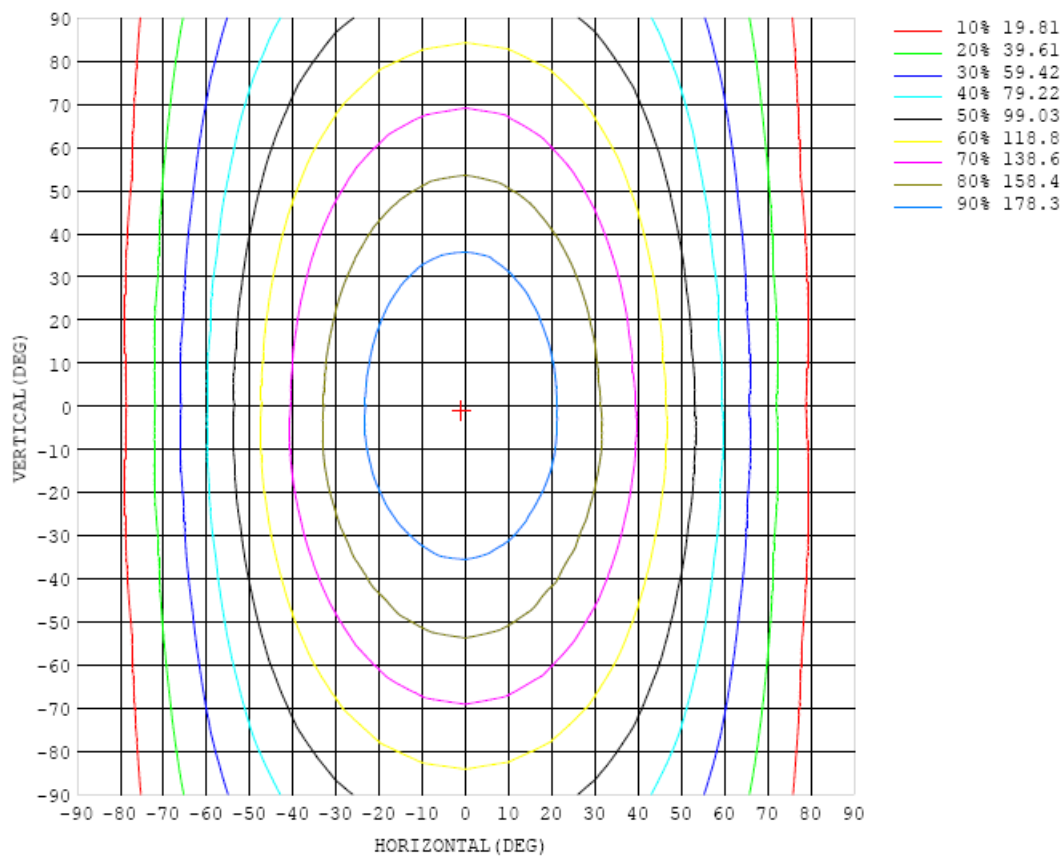


Chart 34: Isocandela Plot

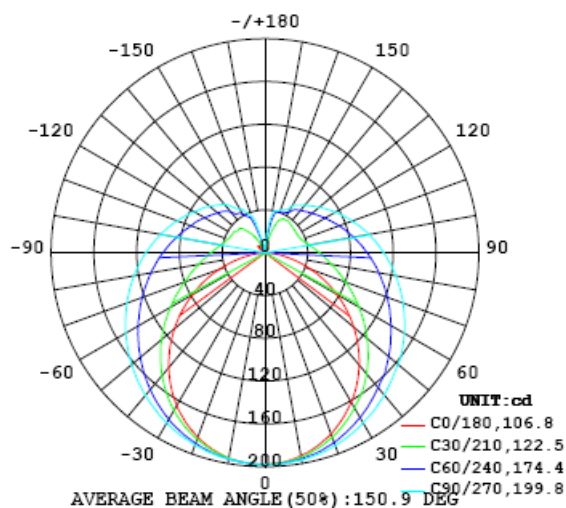


Chart 35: Polar Candela Distribution

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	198	198	198	198	198	198	198	198	198	198	198	198	198	198	198	198	198	198	198
5	197	196	197	197	197	197	198	197	198	198	198	198	198	198	198	198	197	197	197
10	193	193	193	194	195	195	196	196	196	197	197	197	196	196	196	196	195	195	195
15	187	188	188	190	191	192	193	194	194	195	195	195	194	194	193	192	191	190	190
20	180	181	182	184	185	187	189	190	191	192	192	191	190	189	188	186	185	184	184
25	171	172	174	176	179	181	183	186	187	188	188	187	185	183	181	179	178	176	175
30	161	162	164	167	171	174	178	181	183	184	183	182	180	177	174	171	168	166	165
35	150	152	155	159	162	167	171	175	178	179	179	177	174	170	165	162	159	155	153
40	137	139	143	148	154	160	165	169	172	174	173	171	167	162	157	151	147	143	140
45	123	126	130	136	144	152	159	163	166	168	167	164	160	154	147	140	133	129	126
50	108	111	117	125	134	143	151	157	161	162	162	159	153	145	137	128	119	114	111
55	93.1	96.4	103	113	124	134	143	151	155	157	156	152	145	136	126	115	105	98.1	94.6
60	77.5	81.2	89.8	102	114	126	136	144	149	150	149	145	137	128	116	103	91.0	82.2	78.3
65	61.7	66.1	76.7	90.5	105	118	129	137	142	144	143	138	130	119	106	91.5	77.3	66.5	62.4
70	45.9	51.4	64.4	80.3	96.3	110	122	130	135	137	136	131	123	111	96.8	80.9	64.3	51.1	45.6
75	30.6	37.7	53.4	71.2	88.3	103	115	124	129	131	129	124	115	103	88.4	71.2	52.8	36.8	29.9
80	16.7	25.8	44.0	63.3	81.1	96.0	108	117	122	124	122	117	108	96.4	81.0	63.0	42.9	24.4	15.5
85	5.61	16.9	36.6	56.5	74.6	89.7	102	110	116	118	116	111	102	89.7	74.4	56.0	35.4	15.2	4.70
90	0.37	11.7	31.3	51.0	68.8	83.8	95.6	104	109	111	110	104	95.7	83.7	68.6	50.4	30.1	10.4	0.27
95	0.17	8.23	27.1	46.3	63.6	78.1	89.7	98.2	103	105	103	98.3	89.8	78.0	63.3	46.0	26.9	9.04	0.33
100	0.12	6.74	23.7	42.1	58.9	72.9	84.0	92.2	97.0	98.7	97.1	92.2	84.1	73.0	58.9	42.6	25.1	9.58	0.45
105	0.23	7.60	21.7	38.8	54.7	68.2	78.8	86.6	91.2	92.8	91.1	86.7	78.8	68.3	55.1	40.1	24.4	11.3	0.73
110	0.40	9.06	21.7	36.3	51.1	63.7	73.8	81.1	85.4	86.9	85.5	81.1	73.9	64.1	52.0	38.3	24.6	13.6	1.25
115	0.70	10.8	22.5	35.2	48.2	59.8	69.1	75.9	79.9	81.3	80.0	76.0	69.2	60.2	49.3	37.2	25.4	16.2	2.08
120	0.95	12.4	23.6	34.7	46.1	56.4	64.8	70.9	74.7	76.0	74.8	71.1	65.0	56.9	47.2	36.7	26.6	19.0	3.57
125	0.50	11.2	25.3	34.7	44.6	53.6	61.0	66.4	69.8	70.9	69.9	66.5	61.2	53.9	45.5	36.5	28.1	21.9	5.30
130	0.30	9.66	27.3	34.9	43.4	51.1	57.5	62.3	65.2	66.3	65.3	62.4	57.6	51.4	44.2	36.7	29.8	24.7	7.89
135	0.96	9.71	29.4	35.5	42.5	49.0	54.5	58.5	61.0	61.9	61.1	58.6	54.5	49.3	43.3	37.1	31.6	25.6	9.36
140	2.60	12.5	31.2	36.1	42.0	47.2	51.7	55.1	57.2	57.9	57.2	55.1	51.8	47.4	41.6	37.1	33.7	24.0	8.16
145	4.01	12.8	30.3	36.8	40.1	43.8	49.2	52.0	53.6	54.3	53.8	52.1	49.2	43.2	38.9	36.3	34.8	23.0	6.69
150	5.51	8.11	25.1	36.0	38.6	41.0	43.5	46.7	49.8	50.5	49.6	46.2	43.4	41.2	38.7	35.9	33.1	21.4	5.50
155	5.19	4.50	20.3	34.2	38.4	40.3	41.9	43.3	44.3	44.5	44.2	43.2	41.9	40.3	38.4	36.2	31.2	17.9	5.49
160	8.07	5.98	11.9	26.5	36.6	39.6	40.6	41.6	42.1	42.4	42.2	41.6	40.7	39.4	38.0	35.9	28.2	13.4	4.94
165	8.89	4.51	7.02	14.2	25.7	35.3	39.4	39.9	40.2	40.5	40.5	39.9	39.3	38.7	36.7	31.5	21.2	11.7	5.44
170	9.18	5.70	5.14	5.37	8.59	16.1	23.7	30.1	33.4	34.7	35.1	34.4	32.8	30.3	25.2	19.1	13.3	8.88	4.77
175	6.07	4.21	4.86	5.29	4.79	4.28	5.42	9.37	12.3	13.4	13.7	13.3	12.3	11.1	10.3	9.69	7.31	4.33	3.92
180	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03

Table 30: Luminous Intensity Data

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		198	198	198	198	198	198	198	198	198	198	198	198	198	198	198	198	198	
5		197	197	197	197	197	197	197	197	197	197	197	197	197	197	196	196	196	
10		195	195	195	195	196	196	196	196	196	196	195	195	194	194	193	193	193	
15		190	191	191	192	193	193	194	194	194	193	192	191	191	190	189	188	188	
20		184	184	186	187	188	190	191	191	191	190	188	186	186	184	183	181	180	
25		176	177	179	181	183	185	187	188	188	187	186	183	180	178	175	173	172	
30		165	167	170	174	177	180	182	183	184	183	181	178	174	170	166	163	161	
35		154	157	160	165	170	174	177	179	179	178	175	171	167	162	157	153	150	
40		141	145	150	156	162	167	171	173	174	173	170	165	159	152	146	141	137	
45		127	132	138	146	153	160	165	168	169	167	163	157	150	143	135	128	124	
50		112	118	126	136	145	152	158	162	163	161	157	150	142	133	123	115	109	
55		97.0	104	114	125	136	145	152	155	157	155	150	143	134	123	112	102	94.6	
60		81.4	90.2	102	115	127	137	145	149	150	149	143	136	125	113	100	88.4	79.7	
65		66.4	76.6	90.8	105	119	129	138	142	144	142	137	128	117	104	89.5	75.4	65.5	
70		51.1	64.5	80.1	96.3	111	122	131	136	137	136	130	121	110	95.3	79.4	63.9	50.9	
75		36.8	53.0	71.3	88.0	103	115	124	129	131	129	124	115	102	87.4	71.2	53.0	37.1	
80		24.4	43.3	63.1	80.6	96.0	108	117	123	124	123	117	108	95.7	80.3	63.1	43.4	25.1	
85		15.4	35.8	56.2	74.0	89.6	102	111	116	118	116	111	102	89.4	74.0	56.5	36.2	16.1	
90		10.7	30.4	50.7	69.0	83.4	95.4	104	109	112	110	104	95.6	83.7	69.2	51.2	31.1	11.4	
95		8.24	26.6	46.0	63.7	77.7	89.7	98.2	103	105	104	98.5	90.0	78.3	64.3	47.0	27.9	9.96	
100		7.43	24.0	42.2	59.0	72.6	83.9	92.3	97.2	99.1	97.6	92.6	84.6	73.4	60.1	43.7	26.2	10.3	
105		7.98	22.5	39.2	55.0	68.6	78.7	86.7	91.4	93.3	91.8	87.1	79.6	69.8	56.5	41.3	25.5	10.6	
110		8.88	22.2	37.0	51.5	64.2	73.7	81.1	85.7	87.4	86.3	81.8	74.6	65.7	53.4	39.7	25.7	12.5	
115		9.38	22.4	35.7	48.6	60.3	69.9	76.1	80.3	81.9	80.7	76.8	71.0	61.9	50.8	38.5	25.8	14.0	
120		3.06	21.5	35.2	46.3	56.8	65.5	71.7	75.0	76.6	75.6	72.3	66.7	58.6	48.7	37.6	26.1	15.1	
125		0.14	21.0	34.6	44.4	53.9	61.6	67.3	70.9	72.2	71.4	68.2	62.8	55.7	46.7	36.3	27.7	16.2	
130		1.19	20.6	32.6	42.5	51.3	58.1	63.1	66.3	67.6	66.7	63.9	59.2	52.8	44.1	35.4	27.9	14.2	
135		0.82	17.1	32.0	38.2	47.7	54.9	59.2	62.0	63.0	62.4	59.9	55.7	49.3	41.5	36.5	26.5	8.92	
140		0.56	10.4	26.6	37.7	42.3	49.6	55.2	57.8	58.8	58.2	55.7	50.9	45.0	40.8	36.8	22.4	5.77	
145		1.57	3.17	20.8	35.8	40.9	44.8	47.5	50.6	52.1	51.3	48.6	46.1	43.6	40.3	35.5	16.7	3.74	
150		3.76	3.66	13.5	30.3	37.5	41.7	45.4	47.2	47.7	47.5	46.2	44.4	42.3	39.7	25.4	7.67	4.79	
155		4.45	6.23	6.44	17.1	33.2	37.4	39.3	41.2	41.9	41.5	41.1	40.4	38.5	30.8	12.0	4.79	7.31	
160		4.00	5.48	4.11	7.49	13.4	26.4	34.0	35.8	36.5	36.3	35.5	32.4	22.9	9.52	4.53	3.30	8.13	
165		3.75	5.33	6.85	4.47	6.76	7.30	9.05	12.6	14.9	14.2	10.9	6.68	3.76	4.91	4.62	3.94	9.60	
170		5.13	4.05	6.64	5.47	6.05	5.67	4.13	4.51	5.30	3.91	3.40	3.64	3.78	2.17	6.17	7.60	8.39	
175		4.71	5.32	4.64	3.80	4.38	5.93	6.17	5.65	3.41	5.36	8.34	8.64	7.33	5.71	6.55	9.02	8.77	
180		2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	

Table 31: Luminous Intensity Data

ISTMT Test Results of Model 7T8/2F/8CCTS/UEB (3000K Setting)

Test ambient temperature was 24.7 °C.

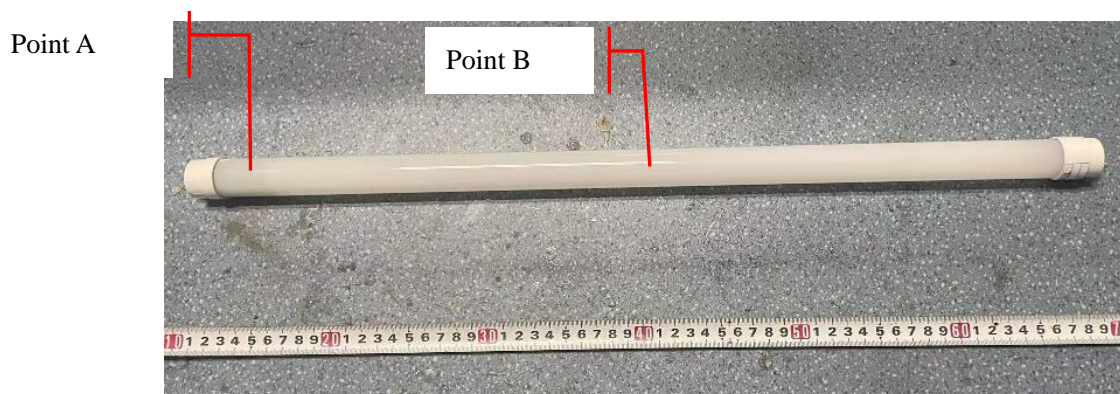
Test orientation was light down.

Model of light source: L128-3080RA35003J3

The stabilization time of the sample was 7.5 hours.



View of In-Situ Point- Ts



Location of In-Situ Point from overall view

Input Voltage (V)	Input Power (W)	Tested LED source current (mA)	Measured In-Situ Maximum Temperature(Corrected to Ta=25°C)	
			Point A	Point B
120.0	7.00	52.3	43.3	50.3
277.0	7.33	53.7	43.9	50.9

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Aug. 05, 2022	Aug. 04, 2023
Digital Power Meter	PF2010A	HZTE028-01	Aug. 05, 2022	Aug. 04, 2023
AC Power Supply	DPS1060	HZTE001-06	Aug. 05, 2022	Aug. 04, 2023
DC Power Supply	WY12010	HZTE004-03	Aug. 05, 2022	Aug. 04, 2023
Temperature recorder	JM624U	HZTE018-08	Aug. 05, 2022	Aug. 04, 2023
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 05, 2022	Aug. 04, 2023
Standard source	D908	HZTE012-01	Aug. 05, 2022	Aug. 04, 2023
Integrate Sphere system	3M	HZTE015-04	Aug. 05, 2022	Aug. 04, 2023
Digital Power Meter	WT210	HZTE008-01	Aug. 05, 2022	Aug. 04, 2023
AC Power Supply	PCR 500L	HZTE001-07	Aug. 05, 2022	Aug. 04, 2023
DC Power Supply	IT6154	HZTE004-04	Aug. 05, 2022	Aug. 04, 2023
Standard source	SCL-1400	HZTE012-02	Aug. 05, 2022	Aug. 04, 2023
Temperature and humidity recorder	JR900	HZTE018-02	Aug. 05, 2022	Aug. 04, 2023
Temperature Meter	TES1310	HZTE017-01	Aug. 05, 2022	Aug. 04, 2023
Multi-Meter	FLUKE15B	HZTE020-01	Aug. 05, 2022	Aug. 04, 2023

Table 32: Test Equipment List

TEST METHODS

Seasoning of SSL Product

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning. Therefore, no seasoning was performed.

Sphere-Spectroradiometer Method- Photometric and Electrical Measurements

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

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.

The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaires). It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 20 min, taken 10 minutes apart, is less than 0.5 %.

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

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

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

Goniophotometer Method

Photometric and Electrical Measurements

An EVERFINE Type C Model GO-R5000 Goniophotometer was used to measure the intensity at each angle of distribution for each sample. The photometric distance is 2.475m for near-field measurement or 30m for far-field measurement. Bandwidth of spectroradiometer is 380nm-780nm.

Ambient temperature was measured at the same height of the sample mounted on the Goniophotometer equipment. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.

The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaires). It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 20 min, taken 10 minutes apart, is less than 0.5 %.

Electrical measurements including voltage, current, and power were measured using the Everfine Digital Power Meter.

Some graphics were created with Photometric Plus software.

The standard reference of the Goniophotometer system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Metrology P.R. China.

The uncertainty of goniophotometer system reported in this document is expanded uncertainty is 2.3% with a coverage factor $k=2$.

Color Characteristics Measurements

The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as values that are spatially average, weighted to intensity, over the angular range where light is intentionally emitted from the SSL product. The color characteristics measurements are using gonio-spectroradiometer.

ISTMT Measurements

The luminaire was installed to simulate intended usage, in accordance with the manufacturer's instructions.

Temperatures were measured after they stabilized, when the test was run for a minimum of 7.5 h.

The tests were conducted in an ambient temperature of 25 ± 5 °C. Ambient temperature variations above or

below 25 °C were respectively subtracted from or added to temperatures recorded at points on the luminaire. Temperatures recorded at points on a luminaire were measured by means of thermocouples.

The thermocouples had conductors no larger than No. 24 AWG (0.21mm²) and no smaller than No. 30 AWG (0.05mm²). Thermocouples complied with the requirements specified in ASTM MNL 12 and thermocouples as listed in the table of the limits of error specified in NIST ITS 90, or ISA MC96.1.

The luminaire was installed in the test box in the configuration that resulted in the highest operating temperatures, considering different trim and maximum lamp wattage combinations, lamp holder adjustment heights, and the like.

The test box was constructed of 12mm thick plywood as described below:

The test box was rectangular and had four sides and a bottom.

The four sides of the test box for a ceiling-mounted luminaire were a minimum distance of 8.5 in (215mm) from the nearest part of the lamp housing or heat-producing parts. The top edge of the sides of the test box were a minimum of 8.5 in (215mm) above the highest point of any permanently attached part of the lamp housing.

Thermal insulation of the loose-fill type was poured into the test box through the open top, until level with the top, without applying any compacting procedure.

The thermal insulation was conditioned to the density specified by the insulation manufacturer to obtain a required rated thermal resistance of Rsi 0.56 to 0.678 (R3.2 to R3.85).

All spaces around the luminaire and between it and the sides of the box were filled with the thermal insulation.

*** 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.