



Date of issue 2021-02-01

Version 1.0

Total pages 39

## Test report of

## IES LM-79-08

## Approved Method: Electrical and Photometric

## Measurements of Solid-State Lighting Products

### Applicant:

LIGHT EFFICIENT DESIGN

### Address:

188 S. Northwest Highway Cary, IL 60013 USA

### For Product:

Linear Replacement Lamps -- 4' T5 Lamps--1-Lamp External Driver (UL Type C) Lamps

### Product Model No.:

RP-T5C-G2-6W-4FT-1L-830-[OCN, Blank]-10V,  
RP-T5C-G2-6W-4FT-1L-850-[OCN, Blank]-10V,  
RP-T5C-G2-8W-4FT-1L-830-[OCN, Blank]-10V,  
RP-T5C-G2-8W-4FT-1L-850-[OCN, Blank]-10V,  
RP-T5C-G2-10W-4FT-1L-830-[OCN, Blank]-10V,  
RP-T5C-G2-10W-4FT-1L-850-[OCN, Blank]-10V,  
RP-T5C-G2-12W-4FT-1L-830-[OCN, Blank]-10V,  
RP-T5C-G2-12W-4FT-1L-850-[OCN, Blank]-10V

Test laboratory: Shenzhen Belling Efficiency Testing Lab Co.,Ltd, 1Floor, No.1 Building, Meibaohe Industrial Park, Dalang Street, Longhua District, Shenzhen, Guangdong Prov.518101 China.

Complied by: Jarvis zhang

Review by: Jason zhou

Project Engineer

Technical Manager

Note: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Belling Efficiency Testing Lab Co.,Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the U.S. Government.



# 1 General

## 1.1 Product Information

<b>Manufacturer</b>	LIGHT EFFICIENT DESIGN
<b>Manufacturer Address</b>	188 S. Northwest Highway Cary, IL 60013 USA
<b>Brand Name</b>	REMPHOS OR LIGHT EFFICIENT DESIGN
<b>Luminaire Type</b>	Linear Replacement Lamps -- 4' T5 Lamps--1-Lamp External Driver (UL Type C) Lamps
<b>Test Model Number</b>	RP-T5C-G2-6W-4FT-1L-830-[OCN, Blank]-10V, RP-T5C-G2-6W-4FT-1L-850-[OCN, Blank]-10V, RP-T5C-G2-8W-4FT-1L-830-[OCN, Blank]-10V, RP-T5C-G2-8W-4FT-1L-850-[OCN, Blank]-10V, RP-T5C-G2-10W-4FT-1L-830-[OCN, Blank]-10V, RP-T5C-G2-10W-4FT-1L-850-[OCN, Blank]-10V, RP-T5C-G2-12W-4FT-1L-830-[OCN, Blank]-10V, RP-T5C-G2-12W-4FT-1L-850-[OCN, Blank]-10V
<b>Rated Inputs</b>	AC 100-277V 50/60Hz
<b>Field-Adjustable Product</b>	Yes, Wattage setting: 6W, 8W, 10W, 12W
<b>Nominal CCT</b>	3000K, 5000K
<b>Dimming Capability</b>	Continuous
<b>Integral Control Sensors</b>	Optional
<b>Date of Receipt Samples</b>	2020-12-21
<b>Date of test</b>	2020-12-22 to 2021-01-21
<b>Burning Time Before Test</b>	0hour(For New Products)

## 1.2 Standards or methods

- ANSI C78.377-2017:Specifications for the Chromaticity of Solid State Lighting Products
- ANSI C82.77-10:2014:Harmonic Emission Limits - Related Power Quality Requirements for Lighting Equipment - Solid State
- CIE Publication No.13.3-1995:Method of Measuring and Specifying Color Rendering of Light Sources
- IESNA LM-79-08 Approved Method: Electric & Photometric Measurement of Solid-state Lighting Products



### 1.3 Equipment list

Device	Manufacture	Model No.	Serial No.	Calibration due date
Goniophotometric System	SENSING	GMS-3000	N.A	2021-04-02
AC Power Source	ALL POWER	APW-110N	992257	2021-04-02
Total Luminous Flux Standard Lamp	SENSING	110V/100W	S1510065	2021-04-08
Total Spectral Radiant Flux Standard Lamp	SENSING	12V/20W	LSD12201731	2021-04-08
Digital Power Meter	YOKOGAWA	WT310	C2QM02030V	2021-04-02
Integral Sphere	SENSING	SPR-600M	N.A	2021-04-02
Digital Power Meter	YOKOGAWA	WT210	91L929742	2021-04-02
Optical Color and Electrical Measurement System	SENSING	SPR-3000	S1101108	2021-04-02
Environment Measurer	XUYAO	HS-1	N/A	2021-04-08
Environment Measurer	XUYAO	HS-1	N/A	2021-04-08
Stop watch	KISLO	K610	N/A	2021-04-27
Digital Anemometer	TECMAN	TD8901	026141	2021-09-09

Statement of Traceability: Shenzhen Belling Efficiency Testing Lab Co.,Ltd attests that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit (SI).



## 2 Test conducted and method

### 2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , the air flow around the sample(s) being tested did not affect the performance.

### 2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within  $\pm 0.2$  percent under load.

### 2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

### 2.4 Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The integrating sphere system is calibrated by standard light source before measurement. The system and standard light source has been calibrated regularly and traceable to the National Primary Standards.  $4\pi$  geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

Integrating Sphere Uncertainty: The uncertainty of the light output (luminous flux) measurements is  $U=1.8\%$  ( $K=2$ ), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is  $U=20\text{K}$  ( $K=2$ ), at the 95% confidence level. The uncertainty of the CRI is  $U=1.8(K=2)$ , at the 95% confidence level. The uncertainty of power meter AC current  $U=0.18\%$  of rdg, AC Voltage  $U=0.16\%$  of rdg, Power  $U=0.20\%$  ( $K=2$ ), at the 95% confidence level.



## 2.5 Goniophotometer System

The goniophotometer system is calibrated by standard light source before measurement. The standard light source has been calibrated regularly and traceable to the National Primary Standards.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. The method according to IESNA LM-79-08 following chapter.

Goniophotometer Uncertainty :The uncertainty of the luminous intensity is  $U=1.6\%$  ( $K=2$ ), at the 95% confidence level.



## 3 Test Result Summary

### 3.1 Integrating Sphere System (Total operating time for integrating sphere test: 1.0 hour)

#### 3.1.1 Model Number: RP-T5C-G2-6W-4FT-1L-830-[OCN, Blank]-10V

##### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.12	60	0.049	5.70	0.977

##### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
794.58	139.4	2988

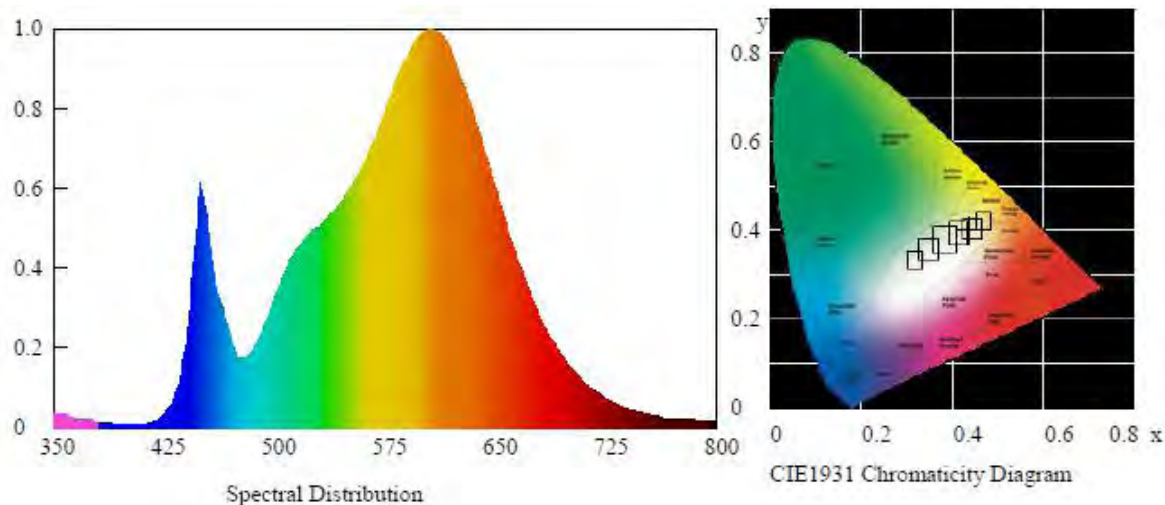
##### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00149	0.4357	0.3999	0.2515	0.5195

##### Color Rendering

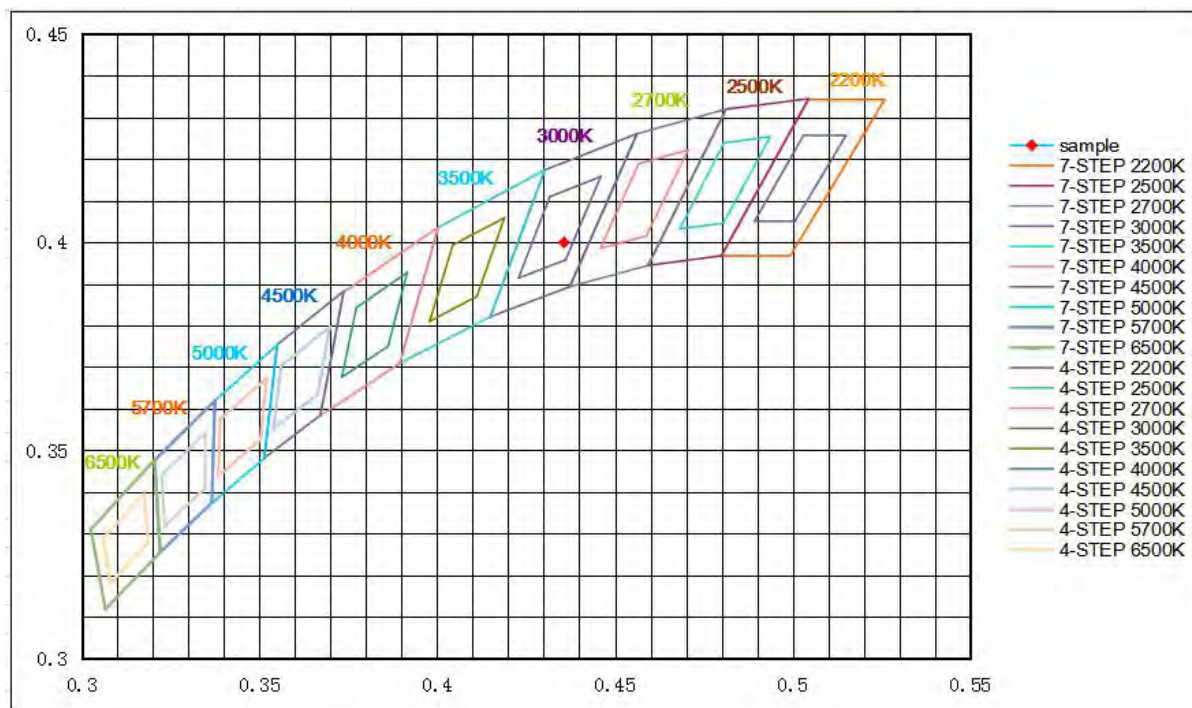
CRI	R9	Rf	Rg	Rcs,h1(%)
84.5	15	86	97	-10

##### Spectral Distribution





### 7/4 Step Quadrangle







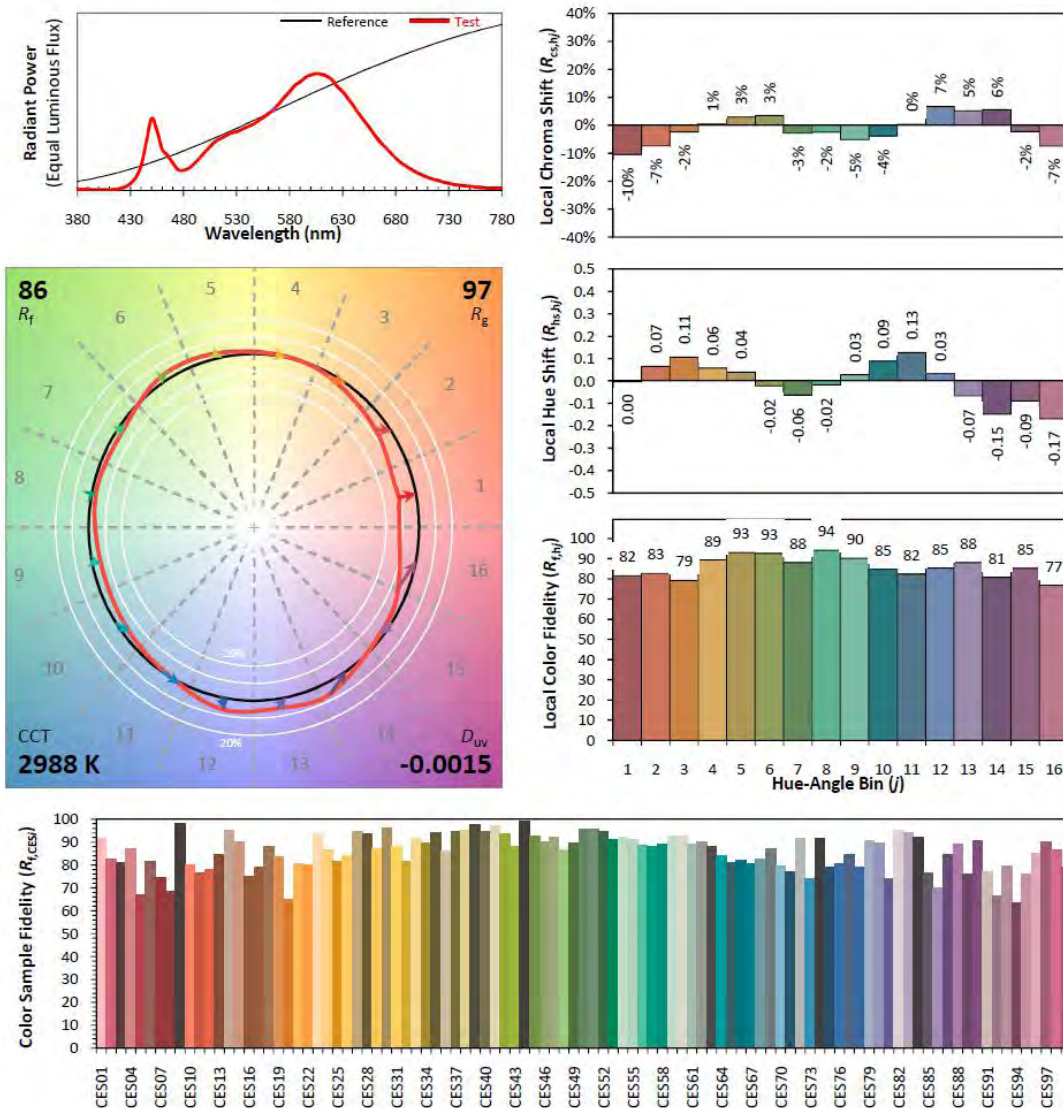
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201002-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-6W-4FT-1L-830-[OCN, Blank]-10V



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

$x$  0.4357  
 $y$  0.3999  
 $u'$  0.2515  
 $v'$  0.5195

CIE 13.3-1995  
(CRI)

$R_a$  85  
 $R_g$  14

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



**3.1.2 Model Number: RP-T5C-G2-6W-4FT-1L-850-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.10	60	0.048	5.65	0.976

**Photometric data**

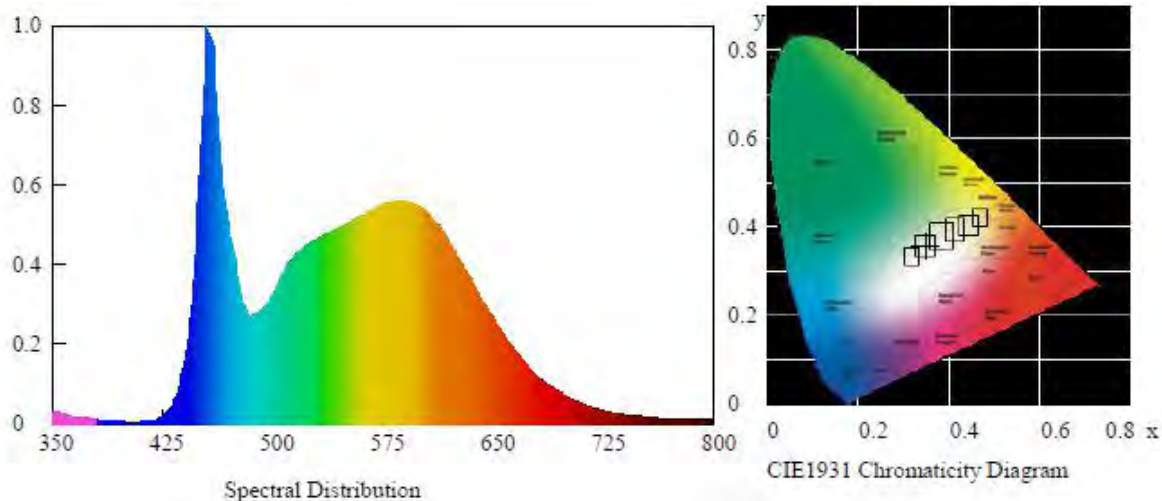
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
807.39	142.9	4988

**Chromaticity Coordinate**

Duv	x	y	u'	v'
+0.00237	0.3459	0.3570	0.2099	0.4874

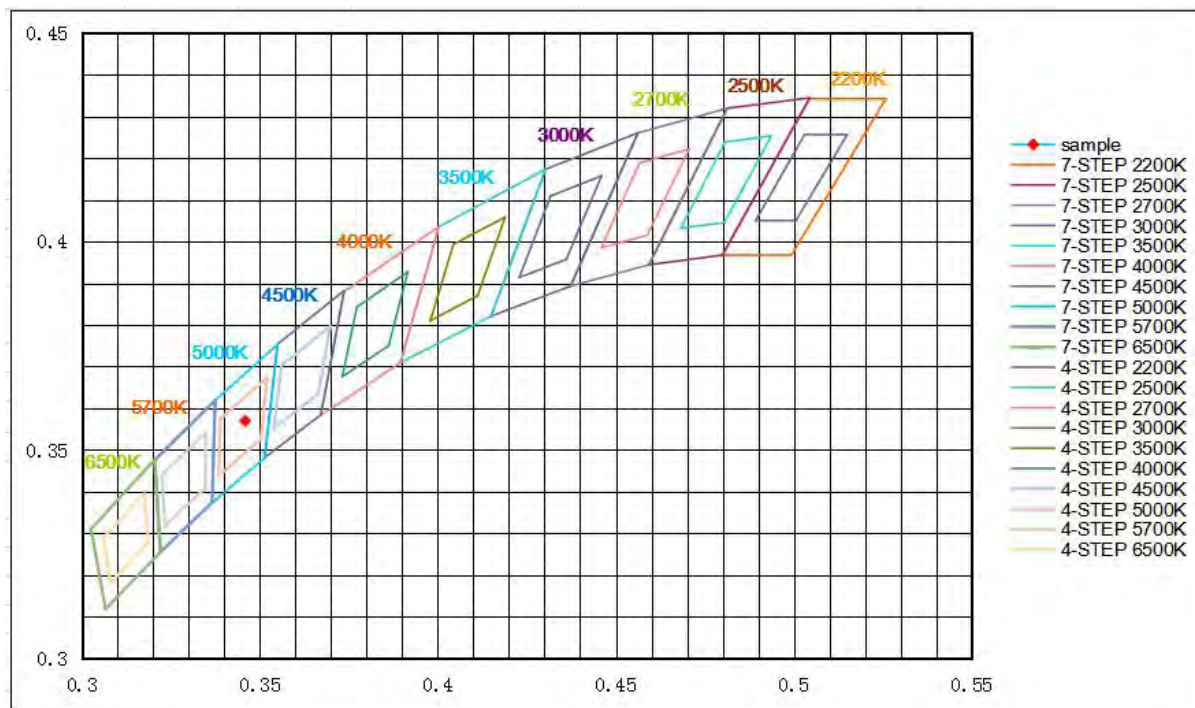
**Color Rendering**

CRI	R9	Rf	Rg	Rcs,h1(%)
84.1	16	83	92	-12

**Spectral Distribution**



### 7/4 Step Quadrangle





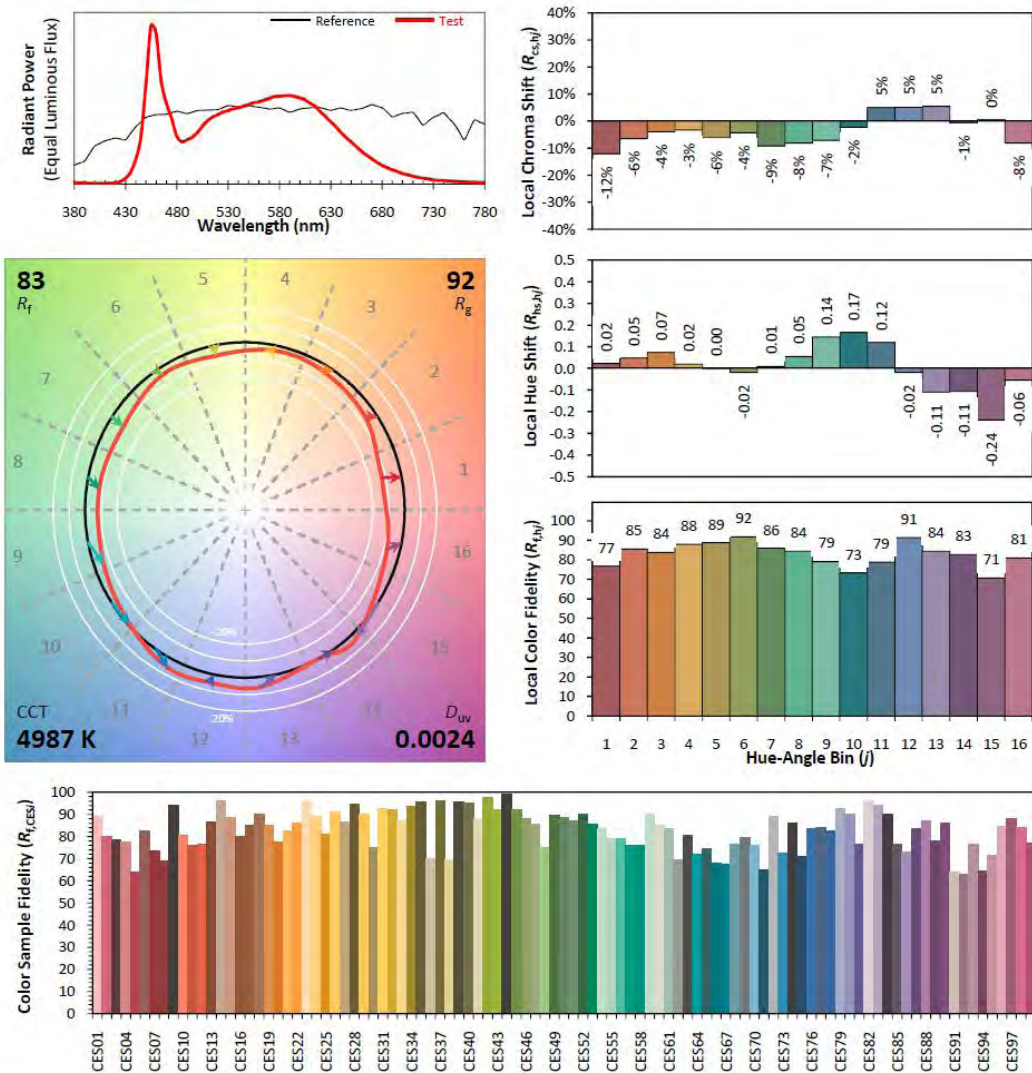
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201002-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-6W-4FT-1L-850-[OCN, Blank]-10V



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

 $x$  0.3459 $y$  0.3570 $u'$  0.2099 $v'$  0.4874CIE 13.3-1995  
(CRI) $R_a$  84 $R_9$  16

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

**3.1.3 Model Number: RP-T5C-G2-8W-4FT-1L-830-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.08	60	0.066	7.80	0.986

**Photometric data**

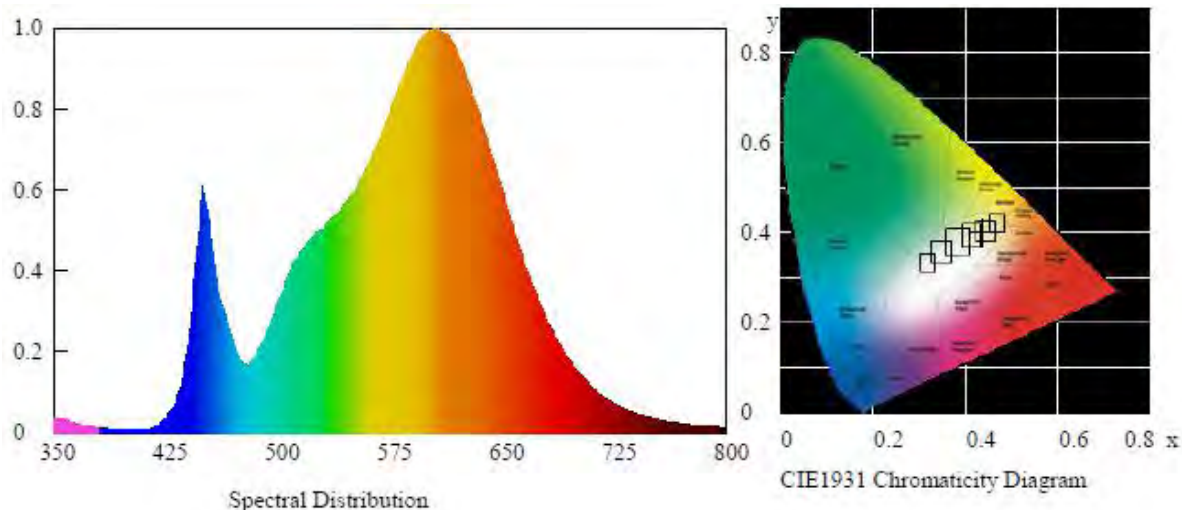
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1074.06	137.7	2986

**Chromaticity Coordinate**

Duv	x	y	u'	v'
-0.0014	0.4359	0.4002	0.2516	0.5197

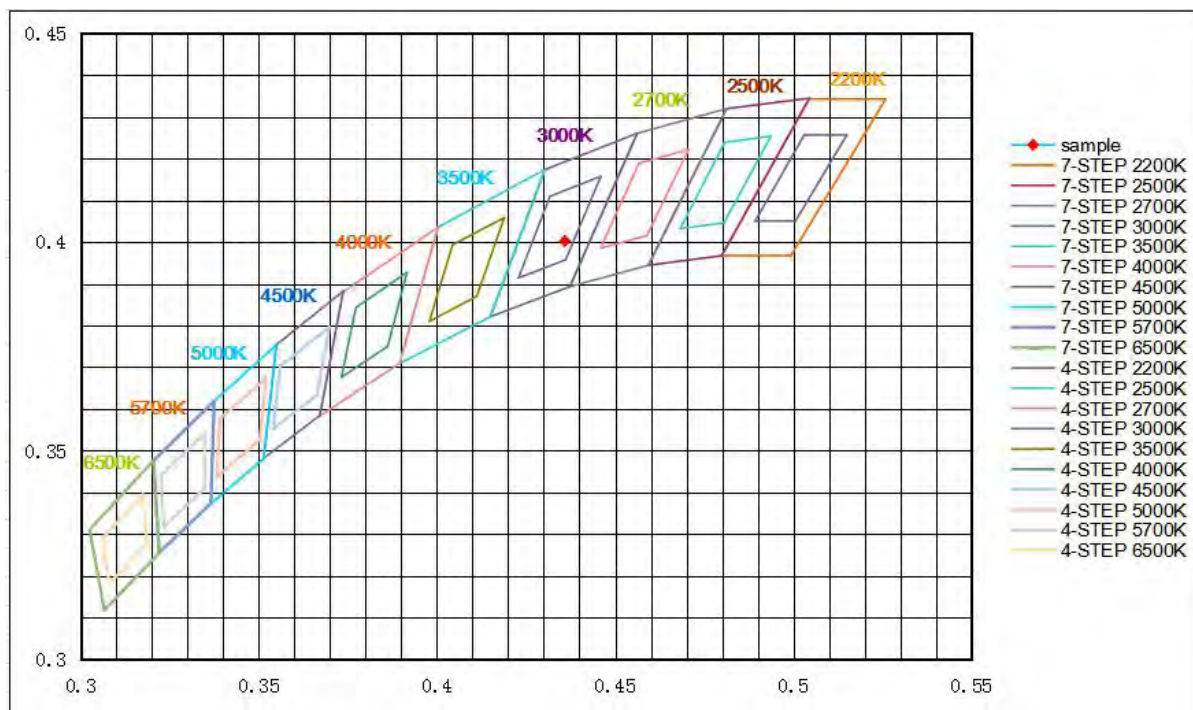
**Color Rendering**

CRI	R9	Rf	Rg	Rcs,h1(%)
84.3	14	86	97	-10

**Spectral Distribution**



### 7/4 Step Quadrangle







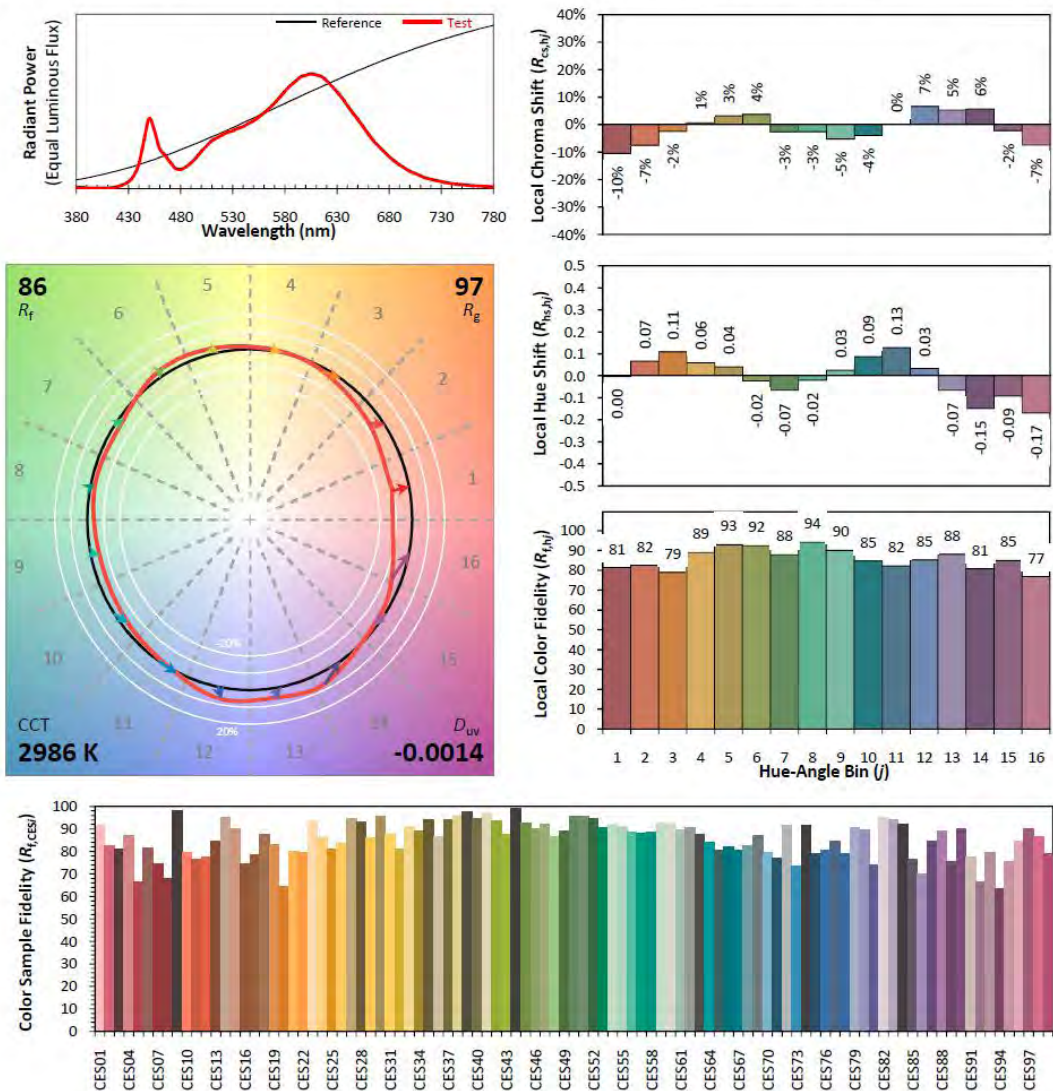
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201002-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-SW-4FT-1L-830-[OCN, Blank]-10V



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

$x$  0.4359  
 $y$  0.4002  
 $u'$  0.2516  
 $v'$  0.5197

CIE 13.3-1995  
(CRI)

$R_a$  84  
 $R_g$  14

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

**3.1.4 Model Number: RP-T5C-G2-8W-4FT-1L-850-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.08	60	0.065	7.73	0.986

**Photometric data**

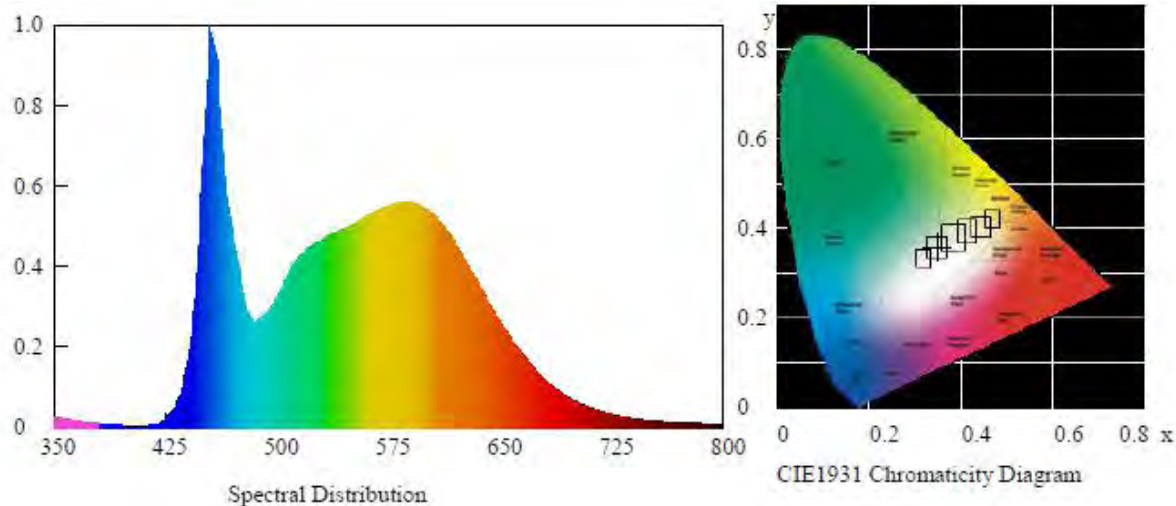
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1091.48	141.2	4977

**Chromaticity Coordinate**

Duv	x	y	u'	v'
+0.00243	0.3463	0.3574	0.21	0.4876

**Color Rendering**

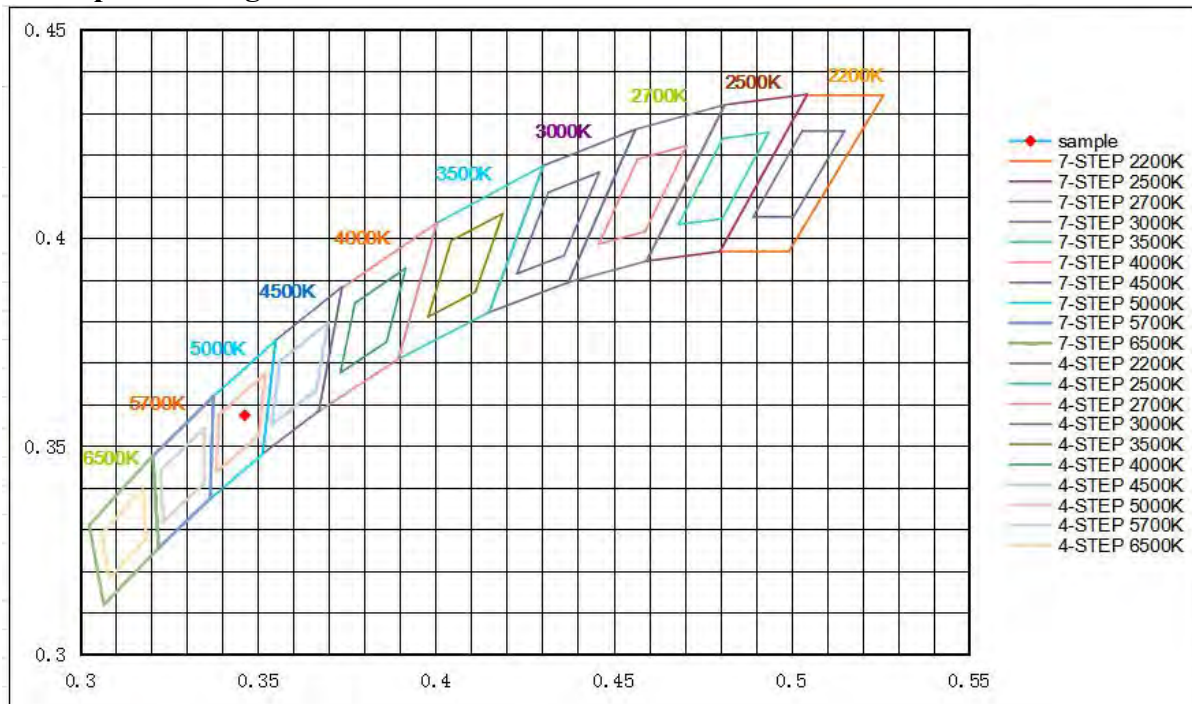
CRI	R9	Rf	Rg	Rcs,h1(%)
84.0	15	83	93	-12

**Spectral Distribution**





### 7/4 Step Quadrangle





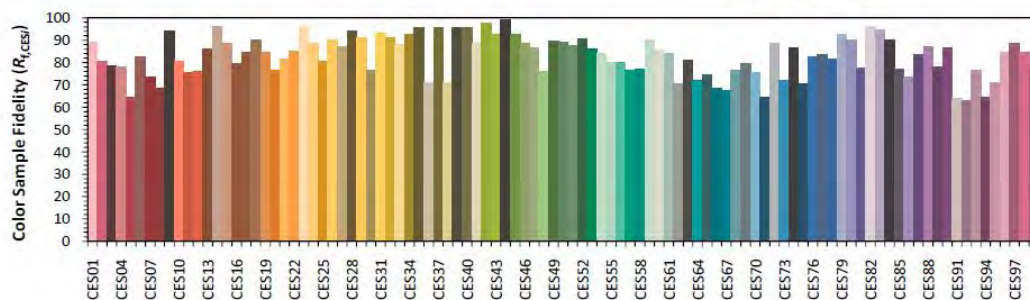
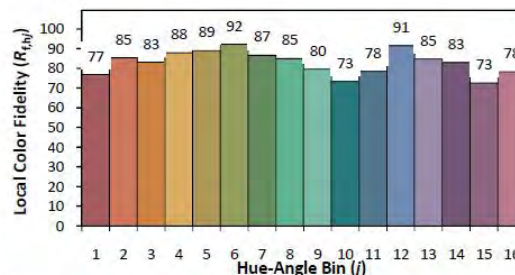
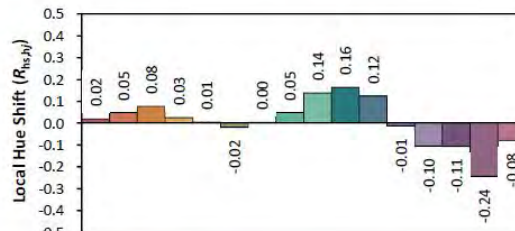
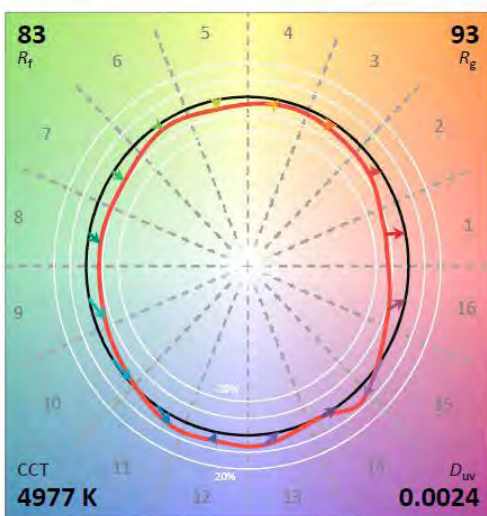
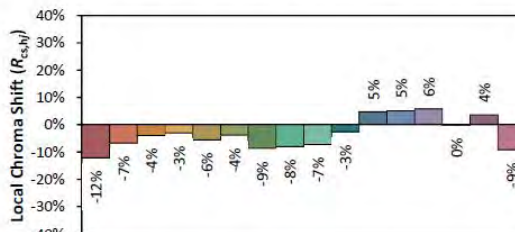
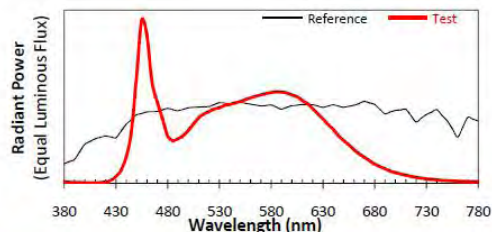
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201002-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-8W-4FT-1L-850-[OCN, Blank]-10V



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

$x$  0.3462  
 $y$  0.3574  
 $u'$  0.2100  
 $v'$  0.4876

CIE 13.3-1995  
(CRI)  
 $R_a$  84  
 $R_g$  15

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

**3.1.5 Model Number: RP-T5C-G2-10W-4FT-1L-830-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.05	60	0.081	9.64	0.988

**Photometric data**

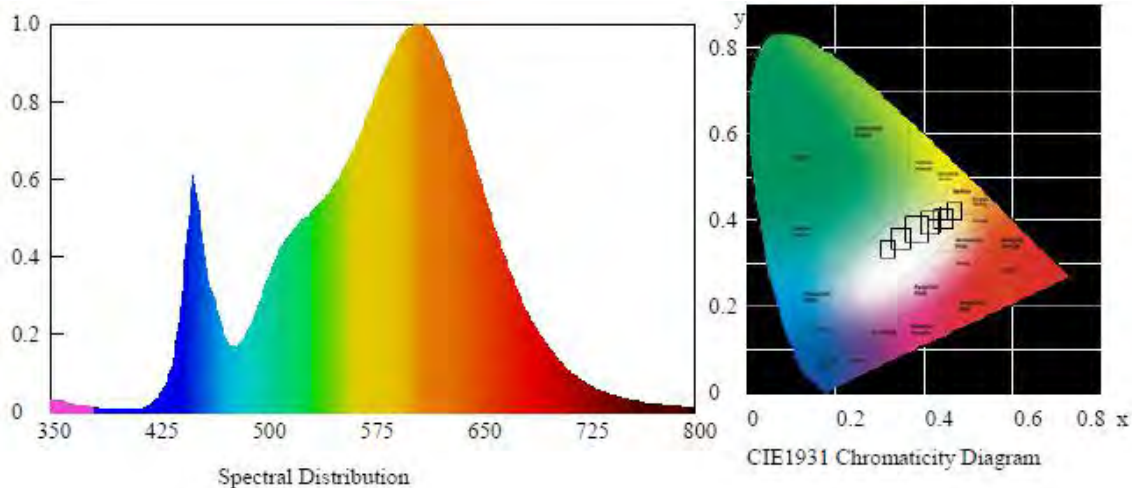
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1320.68	137.0	2986

**Chromaticity Coordinate**

Duv	x	y	u'	v'
-0.00125	0.4361	0.4007	0.2515	0.5199

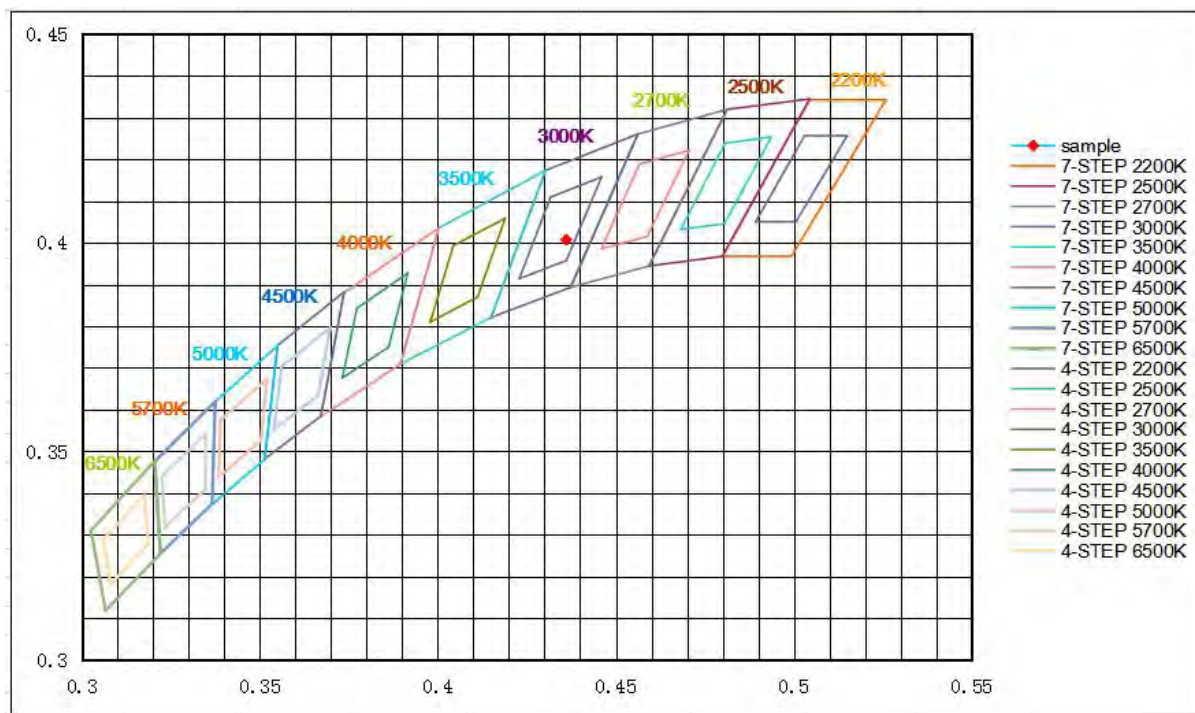
**Color Rendering**

CRI	R9	Rf	Rg	Rcs,h1(%)
84.3	14	86	97	-10

**Spectral Distribution**



### 7/4 Step Quadrangle







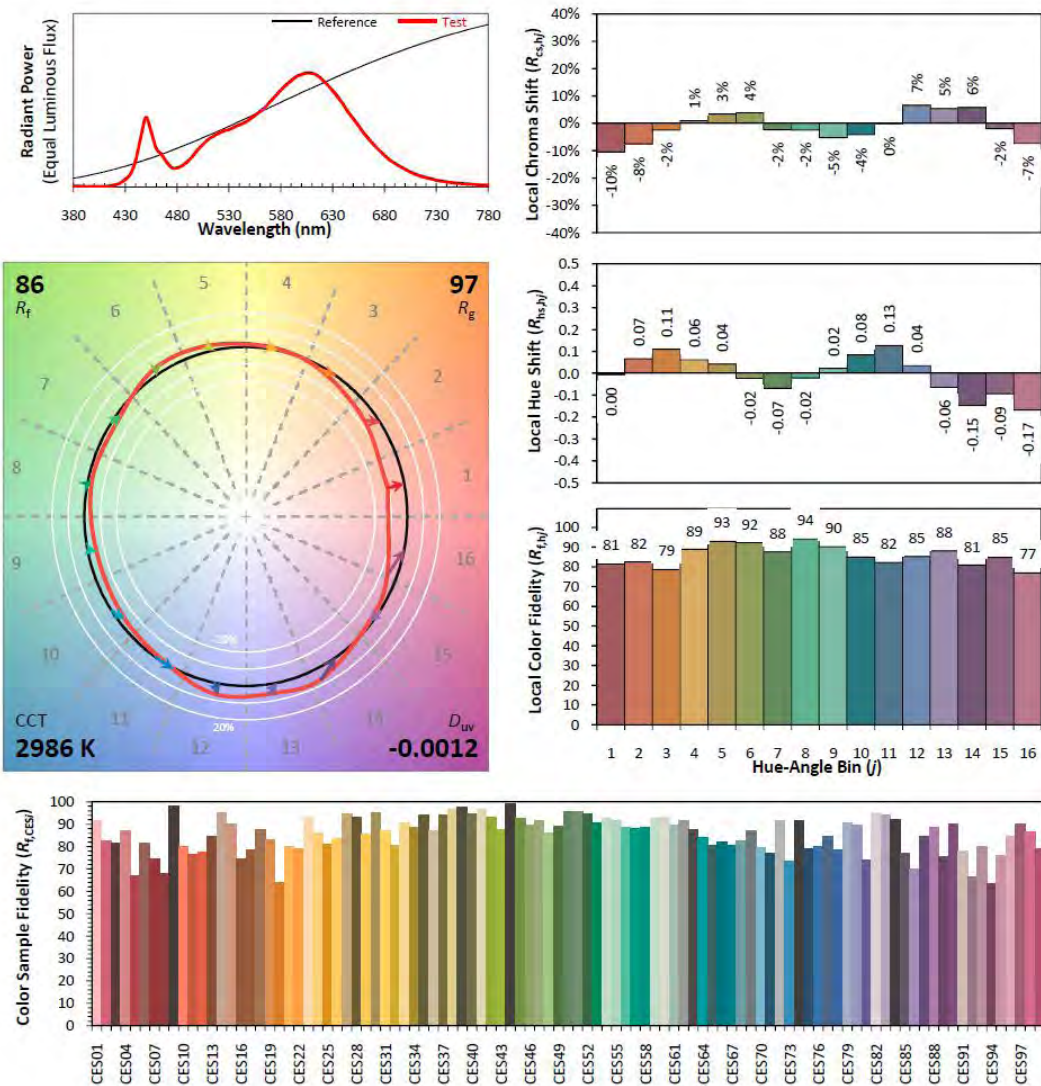
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201002-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-10W-4FT-1L-830-[OCN, Blank]-10V



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

$x$  0.4361  
 $y$  0.4007  
 $u'$  0.2515  
 $v'$  0.5199

CIE 13.3-1995  
(CRI)

$R_a$  84  
 $R_g$  14

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

**3.1.6 Model Number: RP-T5C-G2-10W-4FT-1L-850-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.05	60	0.081	9.57	0.988

**Photometric data**

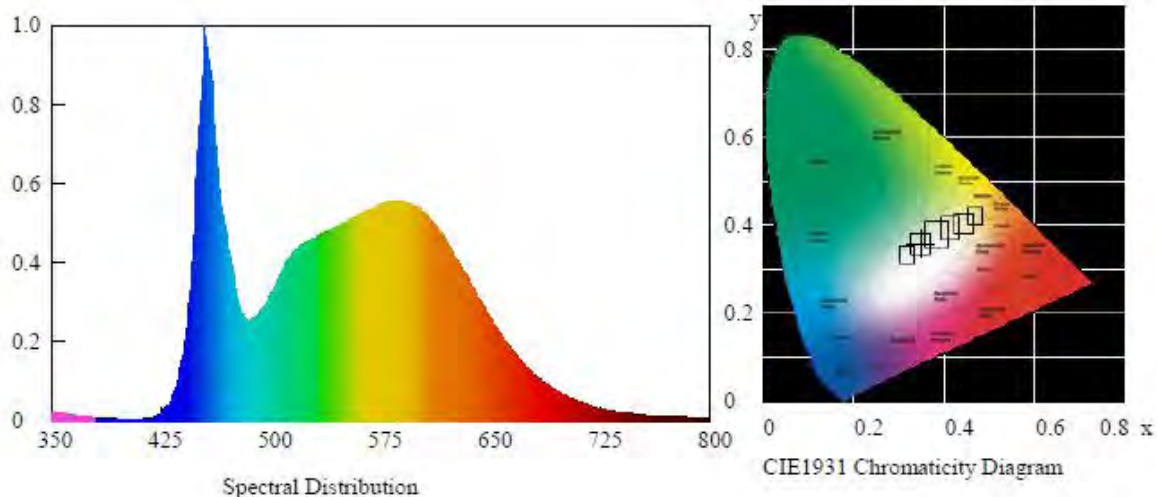
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1343.63	140.4	4949

**Chromaticity Coordinate**

Duv	x	y	u'	v'
+0.00256	0.3471	0.3584	0.2102	0.4882

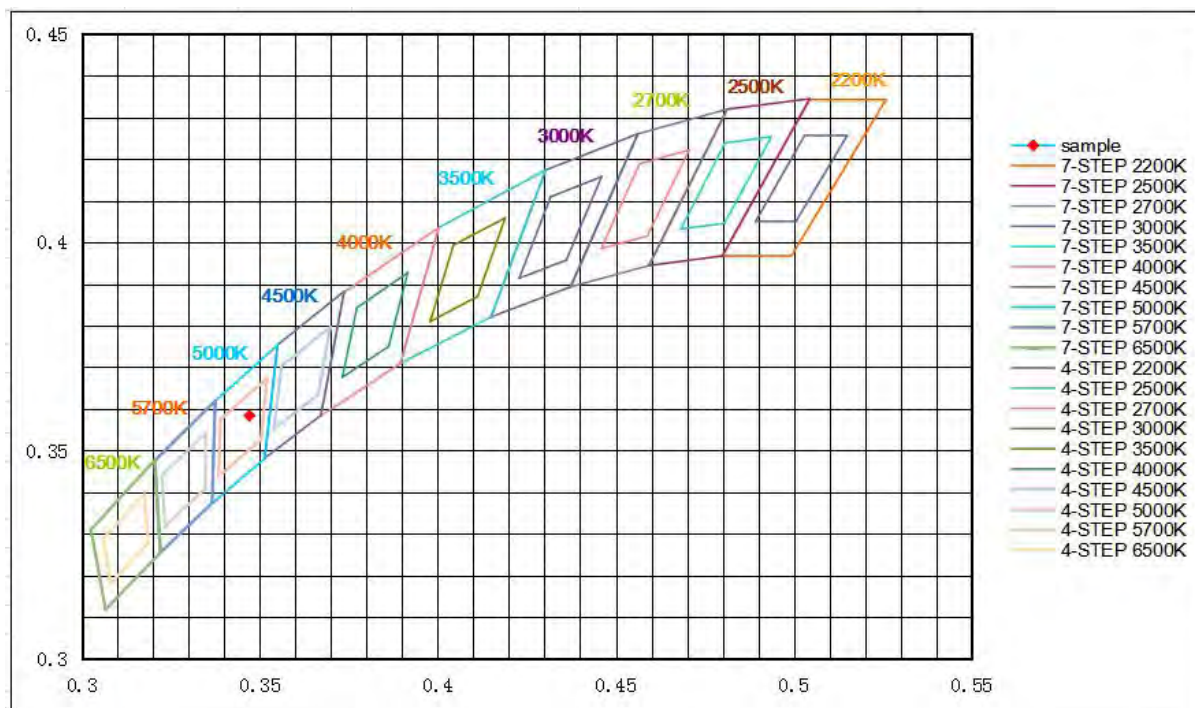
**Color Rendering**

CRI	R9	Rf	Rg	Rcs,h1(%)
84.0	14	83	93	-12

**Spectral Distribution**



### 7/4 Step Quadrangle







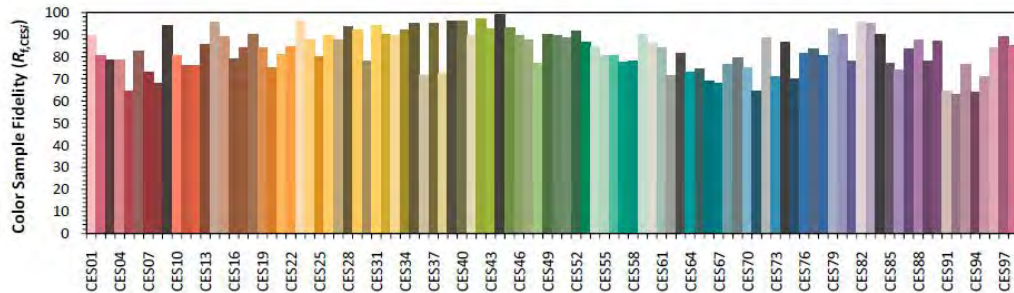
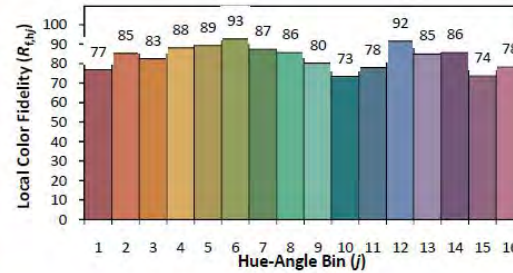
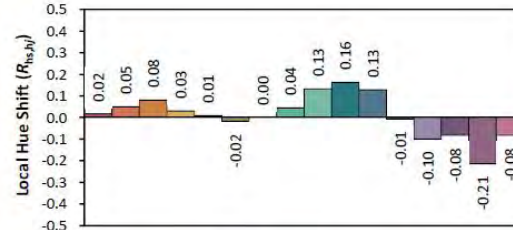
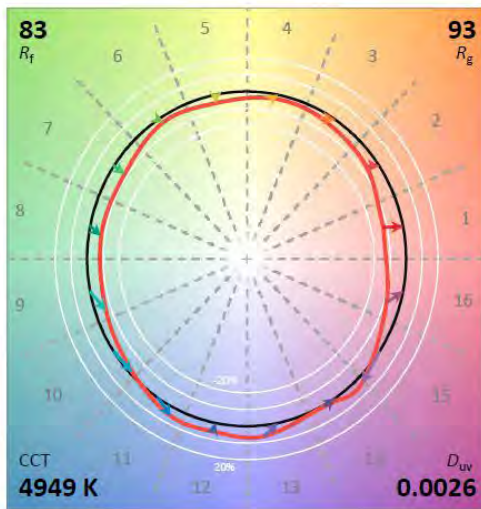
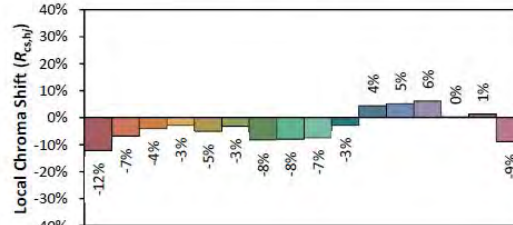
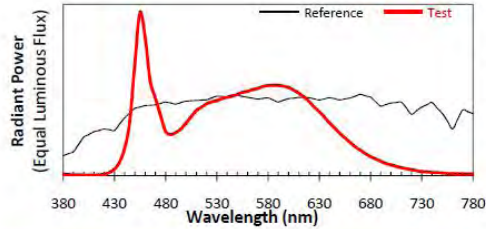
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201002-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-10W-4FT-1L-850-[OCN, Blank]-10V



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

$x$  0.3471  
 $y$  0.3584  
 $u'$  0.2102  
 $v'$  0.4882

CIE 13.3-1995  
(CRI)

$R_a$  84  
 $R_g$  14

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

**3.1.7 Model Number: RP-T5C-G2-12W-4FT-1L-830-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.01	60	0.100	11.87	0.992

**Photometric data**

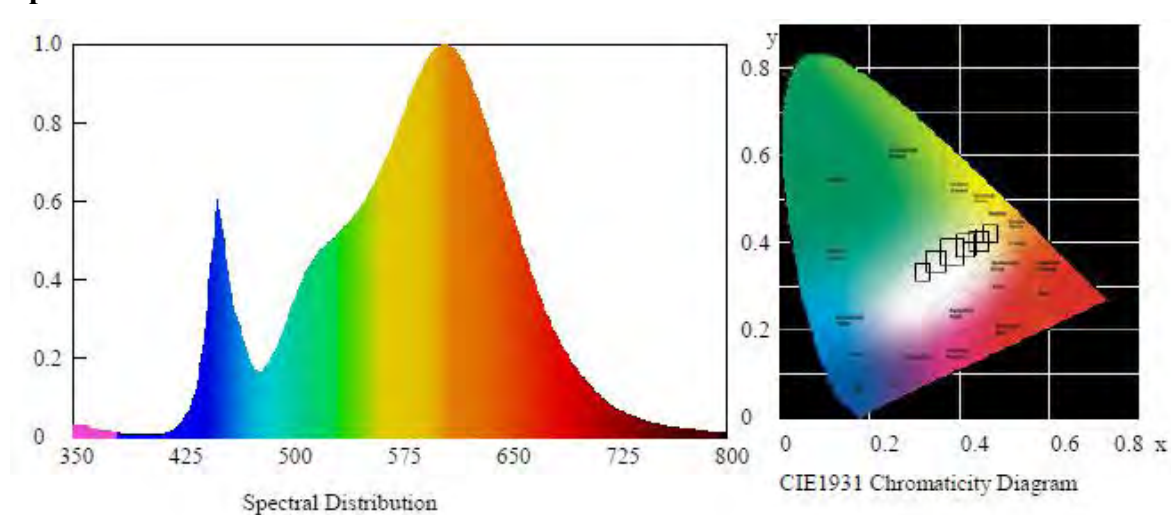
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1554.06	130.9	2988

**Chromaticity Coordinate**

Duv	x	y	u'	v'
-0.00113	0.4361	0.4010	0.2514	0.52

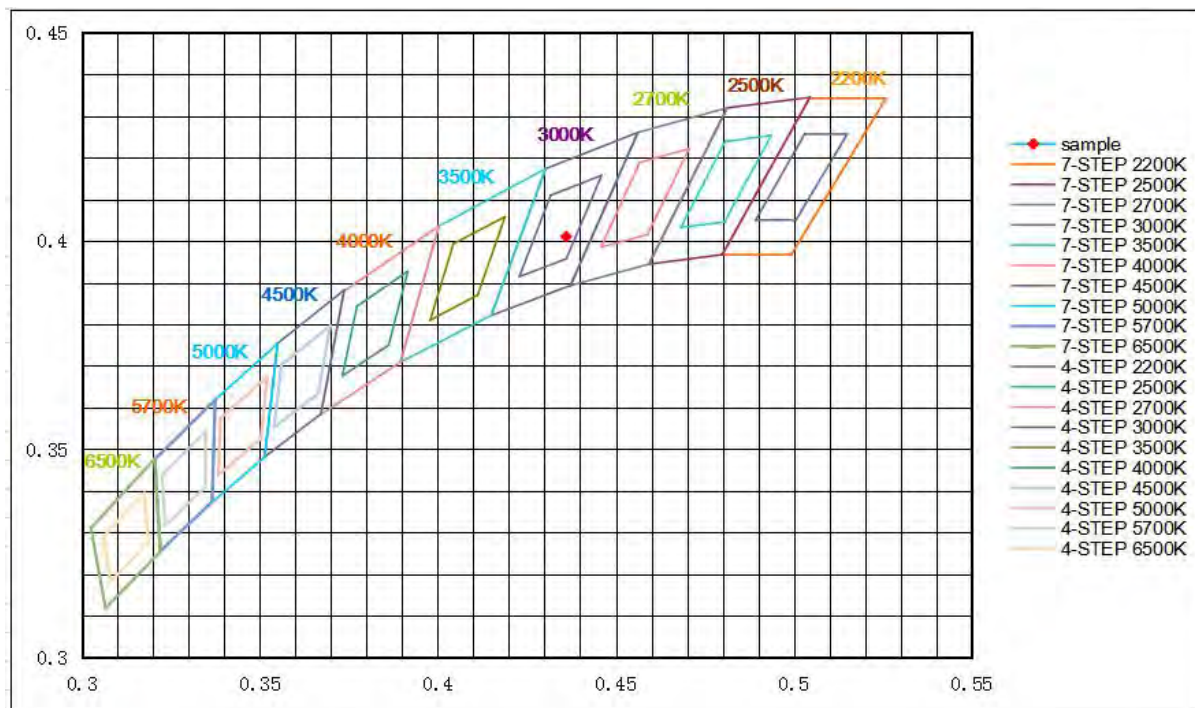
**Color Rendering**

CRI	R9	Rf	Rg	Rcs,h1(%)
84.2	13	86	97	-10

**Spectral Distribution**



### 7/4 Step Quadrangle





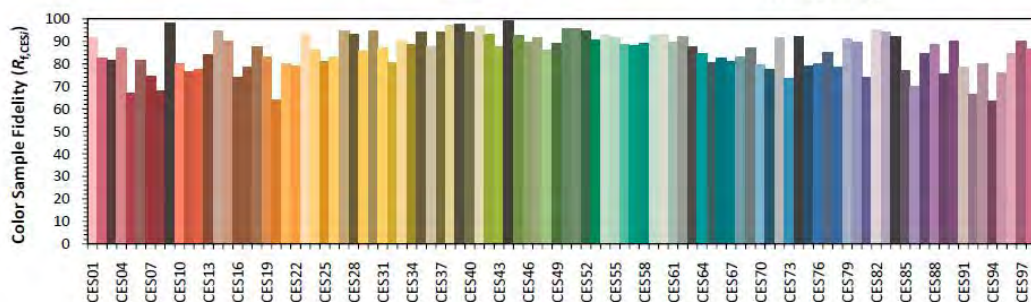
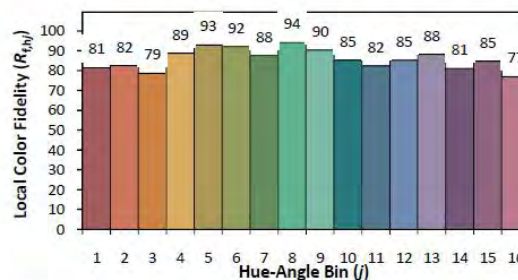
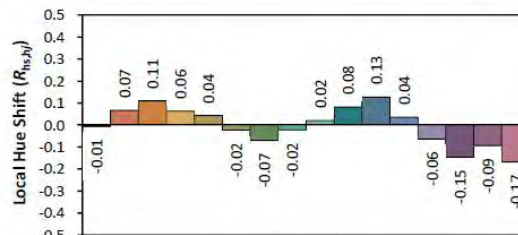
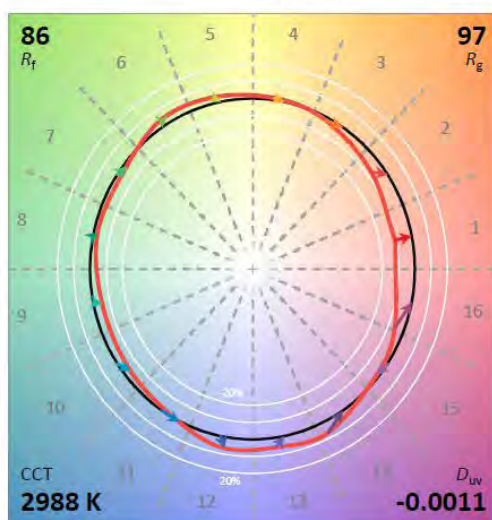
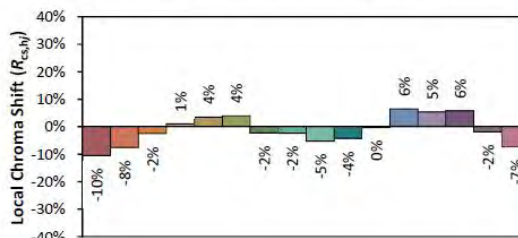
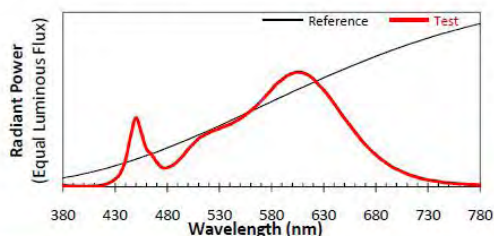
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201002-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-12W-4FT-1L-830-[OCN, Blank]-10V



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

 $x$  0.4361 $y$  0.4010 $u'$  0.2514 $v'$  0.5200CIE 13.3-1995  
(CRI) $R_a$  84 $R_g$  13

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



**3.1.8 Model Number: RP-T5C-G2-12W-4FT-1L-850-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.01	60	0.099	11.81	0.992

**Photometric data**

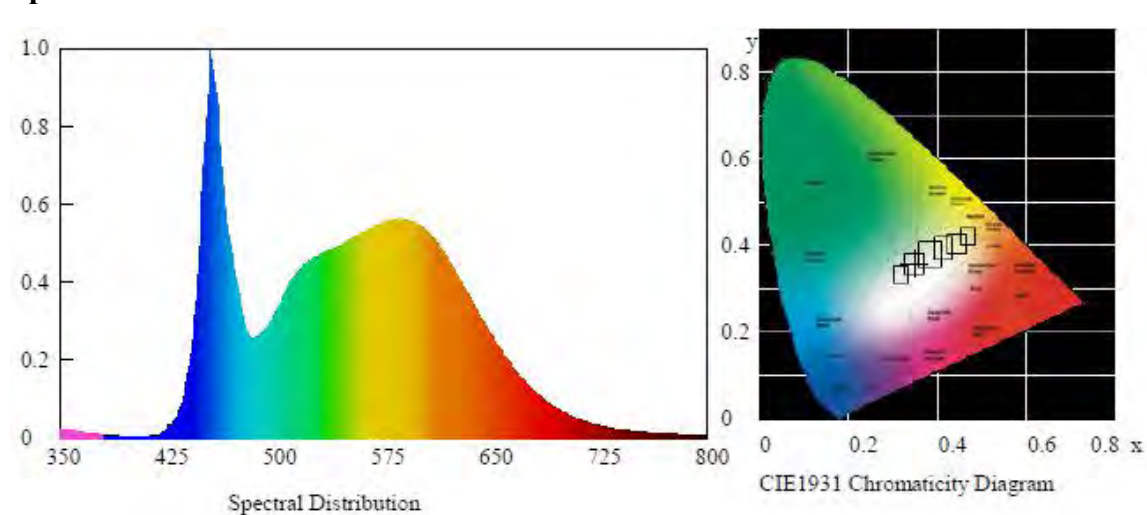
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1591.99	134.8	4955

**Chromaticity Coordinate**

Duv	x	y	u'	v'
+0.00236	0.3469	0.3578	0.2103	0.4879

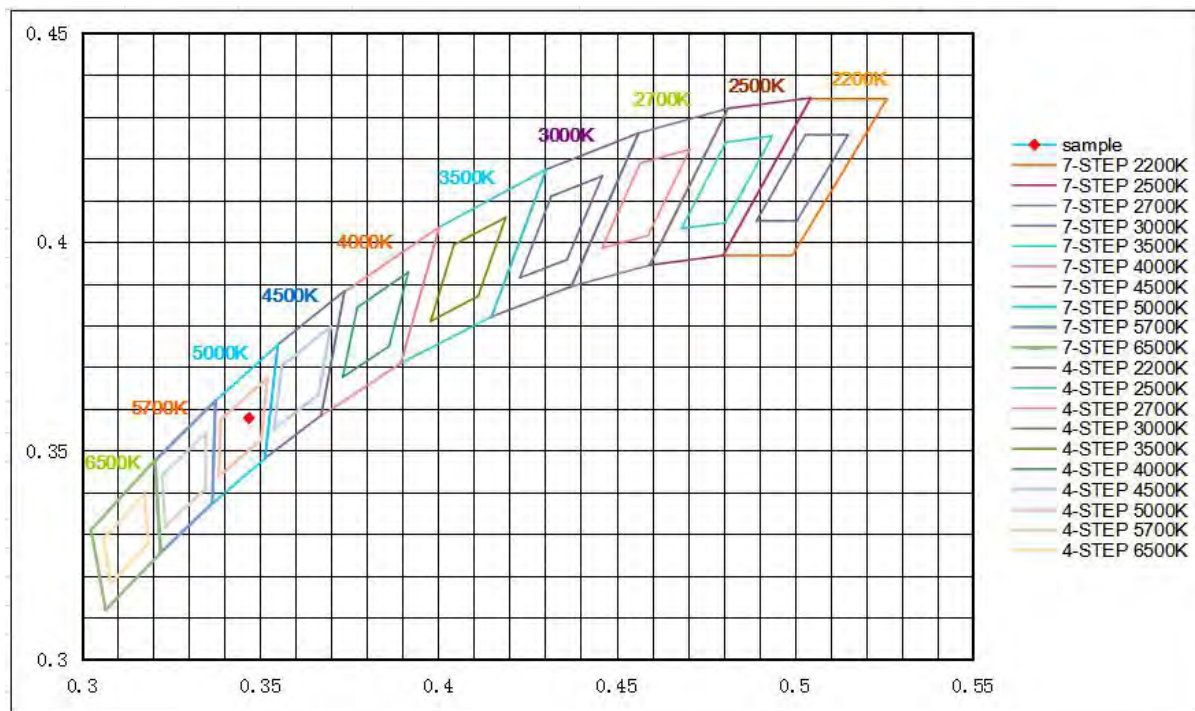
**Color Rendering**

CRI	R9	Rf	Rg	Rcs,h1(%)
83.9	14	83	93	-12

**Spectral Distribution**



### 7/4 Step Quadrangle





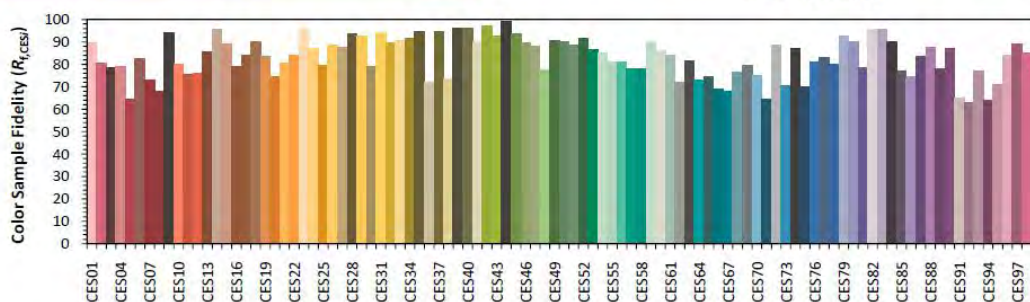
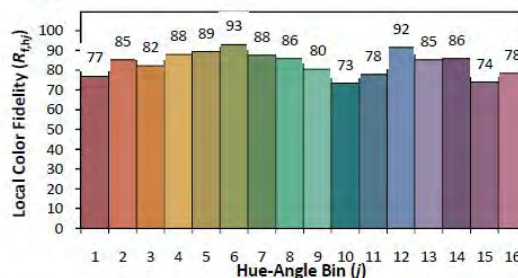
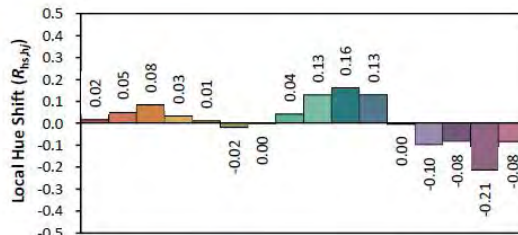
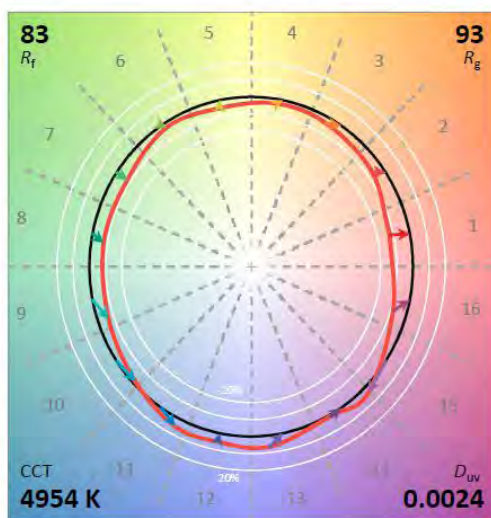
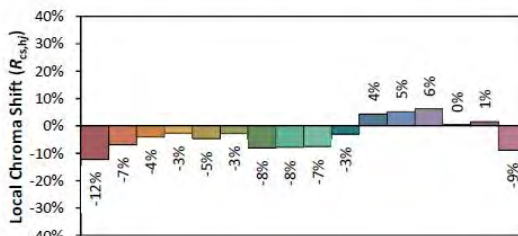
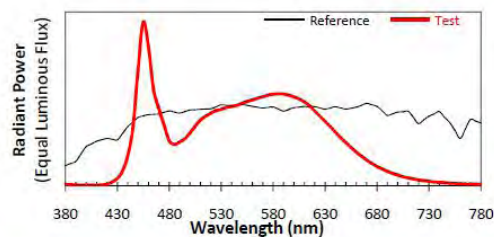
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201002-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-12W-4FT-1L-850-[OCN, Blank]-10V



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

$x$  0.3469  
 $y$  0.3578  
 $u'$  0.2103  
 $v'$  0.4879

CIE 13.3-1995  
(CRI)

$R_a$  84

$R_g$  14

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





### 3.2 Goniophotometer System (Total operating time for luminous intensity distribution: 1.0 hour)

#### 3.2.1 Model Number: RP-T5C-G2-12W-4FT-1L-830-[OCN, Blank]-10V

##### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.01	60	0.099	11.81	0.9902

##### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	Beam Angle (°)
1556.62	131.81	185.8

**Zonal Flux Diagram**

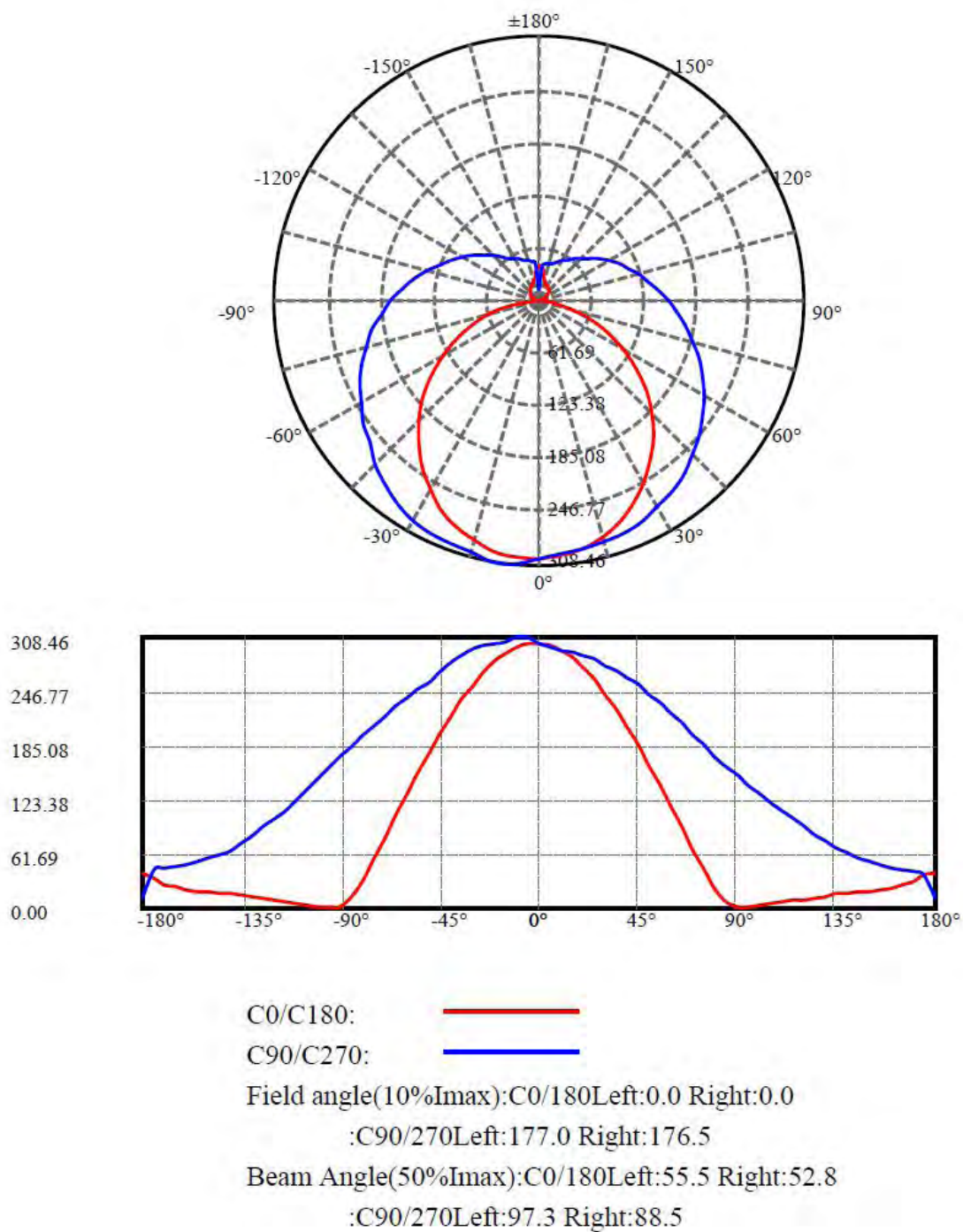
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	301.084	0.000	0	0.00%	0.00%
5.0	300.591	7.193	7.193	0.00%	0.46%
10.0	297.930	21.417	28.61	0.00%	1.84%
15.0	292.929	35.065	63.675	0.00%	4.09%
20.0	286.134	47.754	111.429	0.00%	7.16%
25.0	277.620	59.175	170.604	0.00%	10.96%
30.0	267.213	69.016	239.62	0.00%	15.39%
35.0	255.333	77.042	316.662	0.00%	20.34%
40.0	241.939	83.080	399.742	0.00%	25.68%
45.0	227.381	87.032	486.773	0.00%	31.27%
50.0	211.609	88.860	575.633	0.00%	36.98%
55.0	195.979	88.795	664.428	0.00%	42.68%
60.0	180.346	87.179	751.607	0.00%	48.28%
65.0	164.886	84.132	835.739	0.00%	53.69%
70.0	149.223	79.745	915.485	0.00%	58.81%
75.0	134.243	74.306	989.791	0.00%	63.59%
80.0	120.316	68.312	1058.103	0.00%	67.97%
85.0	107.945	62.177	1120.28	0.00%	71.97%
90.0	96.939	56.159	1176.439	0.00%	75.58%
95.0	88.465	50.757	1227.196	0.00%	78.84%
100.0	80.552	45.907	1273.103	0.00%	81.79%
105.0	73.265	41.135	1314.238	0.00%	84.43%
110.0	67.239	36.697	1350.935	0.00%	86.79%
115.0	61.940	32.682	1383.617	0.00%	88.89%
120.0	57.166	28.930	1412.547	0.00%	90.74%
125.0	53.142	25.478	1438.026	0.00%	92.38%
130.0	49.621	22.326	1460.352	0.00%	93.82%
135.0	46.849	19.472	1479.824	0.00%	95.07%
140.0	44.640	16.922	1496.746	0.00%	96.15%
145.0	43.308	14.663	1511.409	0.00%	97.10%
150.0	41.980	12.553	1523.962	0.00%	97.90%
155.0	40.487	10.432	1534.394	0.00%	98.57%
160.0	38.945	8.320	1542.714	0.00%	99.11%
165.0	37.359	6.279	1548.992	0.00%	99.51%
170.0	35.046	4.286	1553.279	0.00%	99.79%
175.0	35.169	2.502	1555.781	0.00%	99.95%
180.0	35.487	0.843	1556.624	0.00%	100.00%



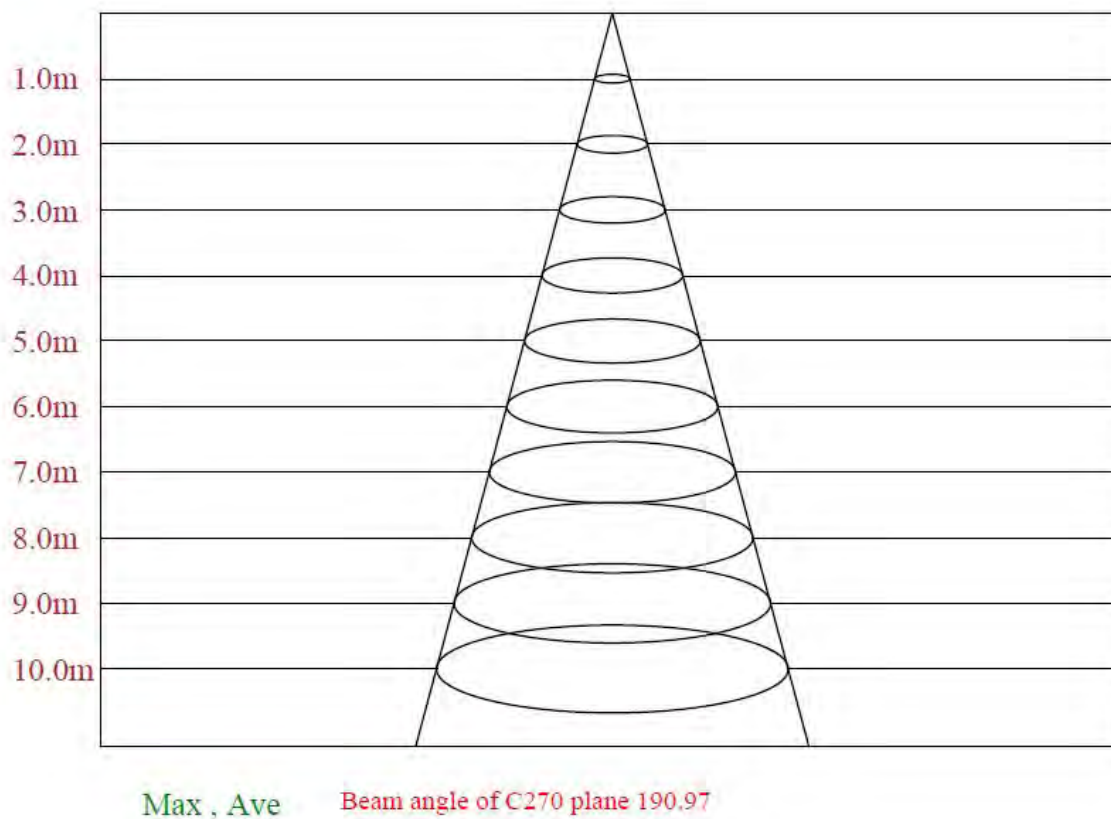
## Luminous Intensity Distribution Diagram

Light Distribution Curve [Unit:cd]





### Lux distance Curve





**Luminous Intensity Distribution Data**

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	301.08	298.66	293.21	284.73	273.82	260.50	244.14	226.17	207.19
22.5	301.08	298.88	293.46	285.43	275.19	262.75	248.50	232.24	213.97
45.0	301.08	298.65	294.20	287.92	280.42	271.50	261.37	249.42	235.64
67.5	301.08	300.88	298.36	295.42	289.54	281.98	274.00	264.34	254.26
90.0	301.08	296.53	293.71	290.89	287.64	283.30	276.14	270.72	263.34
112.5	301.08	299.42	296.29	290.88	285.04	276.29	267.54	258.16	247.74
135.0	301.08	299.45	295.57	289.65	282.29	272.49	261.46	248.79	235.11
157.5	301.08	299.25	294.77	287.65	277.06	265.26	249.99	233.30	215.99
180.0	301.08	300.28	296.64	289.78	280.69	268.17	253.43	237.27	217.89
202.5	301.08	301.29	298.48	292.65	284.42	273.39	259.94	244.88	229.03
225.0	301.08	301.69	300.27	297.03	291.97	284.47	275.76	265.42	251.85
247.5	301.08	305.49	304.65	302.76	300.46	296.26	289.12	282.61	273.37
270.0	301.08	307.59	308.46	303.47	300.65	298.92	294.58	286.77	278.96
292.5	301.08	300.04	303.17	302.75	298.79	295.67	291.08	282.96	273.16
315.0	301.08	300.88	299.04	295.16	288.83	280.66	271.26	260.03	247.57
337.5	301.08	300.47	296.61	290.70	281.34	270.35	257.11	242.25	225.97
360.0	301.08	298.66	293.21	284.73	273.82	260.50	244.14	226.17	207.19
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	185.78	163.57	139.94	116.11	91.88	67.24	43.62	22.21	6.87
22.5	195.50	176.03	156.16	135.89	118.43	99.16	82.10	67.24	55.60
45.0	220.44	206.46	192.48	177.49	162.90	148.31	134.94	122.38	112.45
67.5	243.35	230.96	220.67	210.38	198.83	186.66	175.53	163.77	153.27
90.0	254.23	243.38	233.41	222.78	210.41	197.83	185.90	173.10	161.61
112.5	236.28	225.66	216.70	205.65	193.99	181.69	170.44	159.19	148.35
135.0	220.81	206.10	190.99	176.89	162.59	148.70	135.02	122.76	111.12
157.5	197.47	177.31	157.77	138.43	119.09	99.95	82.24	67.18	55.37
180.0	198.10	175.89	152.86	129.84	105.21	80.57	56.34	33.32	13.73
202.5	211.16	191.89	172.22	152.55	131.07	108.59	88.92	75.87	64.43
225.0	237.67	221.86	203.83	187.42	174.25	163.92	151.35	137.98	126.23
247.5	262.03	247.96	236.42	225.71	217.94	207.02	195.47	183.51	170.49
270.0	268.76	257.05	248.37	238.83	229.50	219.09	207.59	196.53	183.51
292.5	262.54	250.87	238.99	229.20	218.36	207.53	195.65	182.94	171.27
315.0	235.52	221.42	205.69	190.17	176.48	163.82	151.77	139.31	127.26
337.5	208.46	189.32	169.17	148.20	127.23	107.49	91.00	77.77	65.55
360.0	185.78	163.57	139.94	116.11	91.88	67.24	43.62	22.21	6.87
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	1.82	2.42	3.23	5.05	7.07	8.68	10.50	12.12	14.14
22.5	45.77	38.54	33.92	30.11	28.70	28.10	27.50	28.30	29.51
45.0	100.09	90.77	82.46	74.97	68.48	62.20	56.94	53.29	49.64
67.5	139.41	129.76	119.05	109.60	100.57	91.33	82.73	74.96	68.45
90.0	151.19	140.35	129.94	120.39	111.71	103.04	94.14	84.82	77.01
112.5	138.56	128.77	117.52	107.52	98.35	90.64	82.51	73.55	66.26
135.0	102.34	91.92	83.54	75.58	68.84	62.30	55.97	51.88	49.02
157.5	46.82	39.09	34.40	29.32	27.08	26.87	27.48	28.50	29.93
180.0	2.02	1.21	2.22	3.43	5.25	7.07	8.89	11.11	12.52
202.5	53.59	44.76	37.33	32.92	30.31	27.30	26.09	27.30	28.90
225.0	114.27	103.94	94.01	83.48	75.37	68.69	62.41	56.33	51.67
247.5	157.26	146.13	134.80	123.04	111.07	101.62	92.17	83.57	74.75
270.0	172.02	160.09	147.29	135.14	122.78	111.93	102.17	93.06	83.30
292.5	157.73	147.31	136.06	123.56	111.89	102.10	93.14	83.97	75.43
315.0	114.18	105.20	94.78	83.95	76.80	70.06	63.73	57.60	52.09
337.5	53.95	45.19	38.27	34.20	31.55	29.11	28.30	29.93	31.35
360.0	1.82	2.42	3.23	5.05	7.07	8.68	10.50	12.12	14.14



C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	16.36	17.57	18.58	19.59	20.40	23.83	26.05	31.50	38.97
22.5	31.11	32.92	34.93	36.13	37.74	38.94	37.33	33.92	36.73
45.0	46.20	44.58	43.56	42.35	41.94	41.54	41.13	35.66	35.86
67.5	62.78	57.32	53.33	49.97	47.24	45.56	43.88	42.62	31.49
90.0	69.41	62.91	57.92	53.36	49.02	46.20	43.82	42.95	39.26
112.5	61.47	57.09	52.92	50.01	47.30	44.80	38.34	28.75	28.75
135.0	47.39	45.35	43.71	42.90	39.01	33.30	30.03	28.39	34.73
157.5	31.35	32.98	34.40	33.39	30.54	30.54	28.70	30.74	36.85
180.0	14.54	16.36	17.77	18.98	19.99	20.80	25.24	27.67	34.13
202.5	31.11	32.32	33.92	33.92	31.31	29.11	29.11	28.70	33.32
225.0	47.61	45.39	44.78	43.77	42.35	36.07	32.42	28.97	31.00
247.5	66.56	61.10	56.27	53.33	51.65	48.71	42.83	32.75	23.73
270.0	74.19	65.94	60.74	56.62	54.01	50.76	48.59	46.20	43.60
292.5	67.72	60.84	56.68	53.97	51.47	48.97	46.26	44.80	42.51
315.0	48.62	47.19	47.59	46.16	45.14	43.92	43.51	42.69	36.56
337.5	33.18	34.40	35.83	37.25	38.68	40.10	40.51	34.40	35.22
360.0	16.36	17.57	18.58	19.59	20.40	23.83	26.05	31.50	38.97
C/γ(°)	180.0								
0.0	40.59								
22.5	39.14								
45.0	38.29								
67.5	37.16								
90.0	11.50								
112.5	36.26								
135.0	39.83								
157.5	41.12								
180.0	40.59								
202.5	39.14								
225.0	38.29								
247.5	37.16								
270.0	11.50								
292.5	36.26								
315.0	39.83								
337.5	41.12								
360.0	40.59								



## 4 Additional Test

### Electrical data at 277V

Model Number	Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
RP-T5C-G2-12W-4FT-1L-830-[OCN, Blank]-10V	Power Factor	277	60	0.916
	THD	277	60	11.7%

## 5 Performance Assessment

Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T5C-G2-6W-4FT-1L-830-[OCN, Blank]-10V	3000K	794.58	5.70	139.4
RP-T5C-G2-6W-4FT-1L-835-[OCN, Blank]-10V	3500K	797.78 <sup>*1</sup>	5.68 <sup>*2</sup>	140.6 <sup>*3</sup>
RP-T5C-G2-6W-4FT-1L-840-[OCN, Blank]-10V	4000K	800.99 <sup>*1</sup>	5.68 <sup>*2</sup>	141.1 <sup>*3</sup>
RP-T5C-G2-6W-4FT-1L-850-[OCN, Blank]-10V	5000K	807.39	5.65	142.9

\*1: This value is calculated and the calculation formula is as below:

$$797.78 = (807.39 - 794.58) / 4 + 794.58$$

$$800.99 = (807.39 - 794.58) / 4 + 797.78$$

\*2: This value is calculated and the calculation formula is as below:

$$5.68 = (5.70 + 5.65) / 2$$

\*3: This value is calculated and the calculation formula is as below:

$$140.6 = 797.78 / 5.68$$

$$141.1 = 800.99 / 5.68$$





Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T5C-G2-8W-4FT-1L-830-[OCN, Blank]-10V	3000K	1074.06	7.80	137.7
RP-T5C-G2-8W-4FT-1L-835-[OCN, Blank]-10V	3500K	1078.42 <sup>*1</sup>	7.77 <sup>*2</sup>	138.9 <sup>*3</sup>
RP-T5C-G2-8W-4FT-1L-840-[OCN, Blank]-10V	4000K	1082.77 <sup>*1</sup>	7.77 <sup>*2</sup>	139.4 <sup>*3</sup>
RP-T5C-G2-8W-4FT-1L-850-[OCN, Blank]-10V	5000K	1091.48	7.73	141.2

\*1: This value is calculated and the calculation formula is as below:

$$1078.42 = (1091.48 - 1074.06) / 4 + 1074.06$$

$$1082.77 = (1091.48 - 1074.06) / 4 + 1078.42$$

\*2: This value is calculated and the calculation formula is as below:

$$7.77 = (7.80 + 7.73) / 2$$

\*3: This value is calculated and the calculation formula is as below:

$$138.9 = 1078.42 / 7.77$$

$$139.4 = 1082.77 / 7.77$$

Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T5C-G2-10W-4FT-1L-830-[OCN, Blank]-10V	3000K	1320.68	9.64	137.0
RP-T5C-G2-10W-4FT-1L-835-[OCN, Blank]-10V	3500K	1326.42 <sup>*1</sup>	9.61 <sup>*2</sup>	138.1 <sup>*3</sup>
RP-T5C-G2-10W-4FT-1L-840-[OCN, Blank]-10V	4000K	1332.16 <sup>*1</sup>	9.61 <sup>*2</sup>	138.7 <sup>*3</sup>
RP-T5C-G2-10W-4FT-1L-850-[OCN, Blank]-10V	5000K	1343.63	9.57	140.4

\*1: This value is calculated and the calculation formula is as below:

$$1326.42 = (1343.63 - 1320.68) / 4 + 1320.68$$

$$1332.16 = (1343.63 - 1320.68) / 4 + 1326.42$$

\*2: This value is calculated and the calculation formula is as below:

$$9.61 = (9.64 + 9.57) / 2$$

\*3: This value is calculated and the calculation formula is as below:

$$138.1 = 1326.42 / 9.61$$

$$138.7 = 1332.16 / 9.61$$



Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T5C-G2-12W-4FT-1L -830-[OCN, Blank]-10V	3000K	1554.06	11.87	130.9
RP-T5C-G2-12W-4FT-1L -835-[OCN, Blank]-10V	3500K	1563.54 <sup>*1</sup>	11.84 <sup>*2</sup>	132.1 <sup>*3</sup>
RP-T5C-G2-12W-4FT-1L -840-[OCN, Blank]-10V	4000K	1573.03 <sup>*1</sup>	11.84 <sup>*2</sup>	132.9 <sup>*3</sup>
RP-T5C-G2-12W-4FT-1L -850-[OCN, Blank]-10V	5000K	1591.99	11.81	134.8

\*1: This value is calculated and the calculation formula is as below:

$$1563.54 = (1591.99 - 1554.06) / 4 + 1554.06$$

$$1573.03 = (1591.99 - 1554.06) / 4 + 1563.54$$

\*2: This value is calculated and the calculation formula is as below:

$$11.84 = (11.87 + 11.81) / 2$$

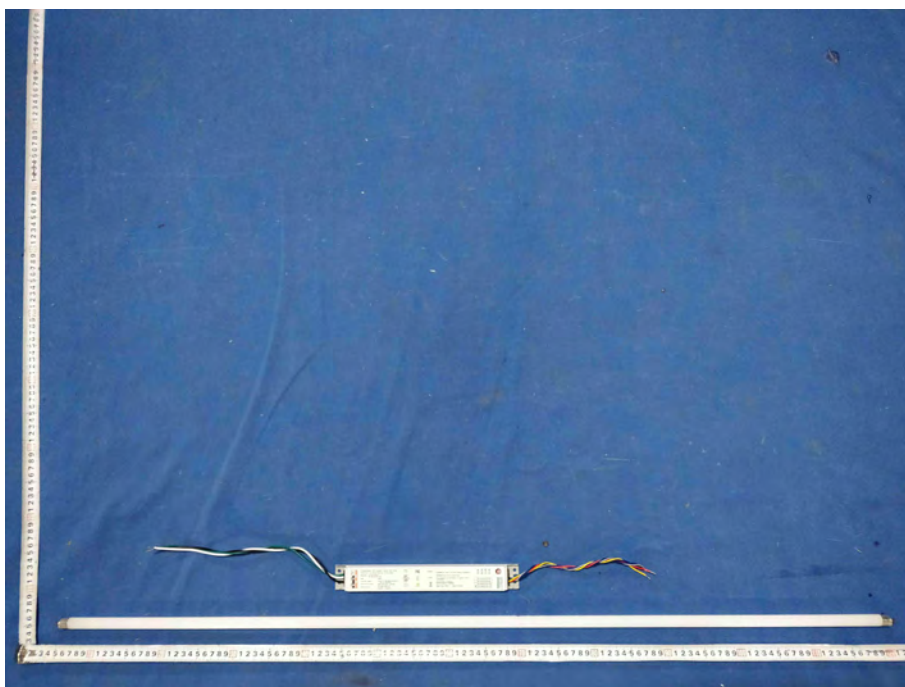
\*3: This value is calculated and the calculation formula is as below:

$$132.1 = 1563.54 / 11.84$$

$$132.9 = 1573.03 / 11.84$$



## Photo Document



\*\*\*\*End of test report\*\*\*\*