



Shenzhen Belling Efficiency Testing Lab Co.,Ltd



Report No.:BL210126010-9A

Date of issue 2021-05-25

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:**

4'T8 Lamps -- 2-Lamp External Driver (UL Type C) Lamps

### **Product Model No.:**

RP-T8C-G2-15W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830,  
RP-T8C-G2-15W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850,  
RP-T8C-G2-18W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830,  
RP-T8C-G2-18W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850,  
RP-T8C-G2-20W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830,  
RP-T8C-G2-20W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850,  
RP-T8C-G2-25W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830,  
RP-T8C-G2-25W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850

**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.

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**Complied by:** Jarvis zhang

**Review by:** Jason zhou

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**Project Engineer**

**Technical Manager**

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**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>	4'T8 Lamps -- 2-Lamp External Driver (UL Type C) Lamps
<b>Test Model Number</b>	RP-T8C-G2-15W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830, RP-T8C-G2-15W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850, RP-T8C-G2-18W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830, RP-T8C-G2-18W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850, RP-T8C-G2-20W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830, RP-T8C-G2-20W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850, RP-T8C-G2-25W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830, RP-T8C-G2-25W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850
<b>Rated Inputs</b>	AC 100-277V 50/60Hz
<b>Field-Adjustable Product</b>	Yes, Wattage setting: 15W, 18W, 20W, 25W
<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>	2020-12-23 to 2021-05-17
<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	2022-03-31
AC Power Source	ALL POWER	APW-110N	992257	2022-03-31
Total Luminous Flux Standard Lamp	SENSING	110V/100W	S1510065	2022-04-07
Total Spectral Radiant Flux Standard Lamp	SENSING	12V/20W	LSD12201731	2022-04-07
Digital Power Meter	YOKOGAWA	WT310	C2QM02030V	2022-03-31
Integral Sphere	SENSING	SPR-600M	N.A	2022-03-31
Digital Power Meter	YOKOGAWA	WT210	91L929742	2022-03-31
Optical Color and Electrical Measurement System	SENSING	SPR-3000	S1101108	2022-03-31
Environment Measurer	XUYAO	HS-1	N/A	2022-04-03
Environment Measurer	XUYAO	HS-1	N/A	2022-04-03
Stop watch	KISLO	K610	N/A	2022-04-20
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).

### 1.4 Report Revision

Original report BL210126010-9 dated at 2021-02-20 was recalled and declared as invalid by Shenzhen Belling Efficiency Testing Laboratory Co.,Ltd. Report BL210126010-9A was issued on to replace report BL210126010-9.

Report Number	Report Data	Contents
BL210126010-9	2021-02-20	Original report
BL210126010-9A	2021-05-25	Updated the Light distribution data,



## 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-T8C-G2-15W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830(Bare lamp)

##### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.12	60	0.060	7.19	0.994

##### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
996.02	138.62	2989

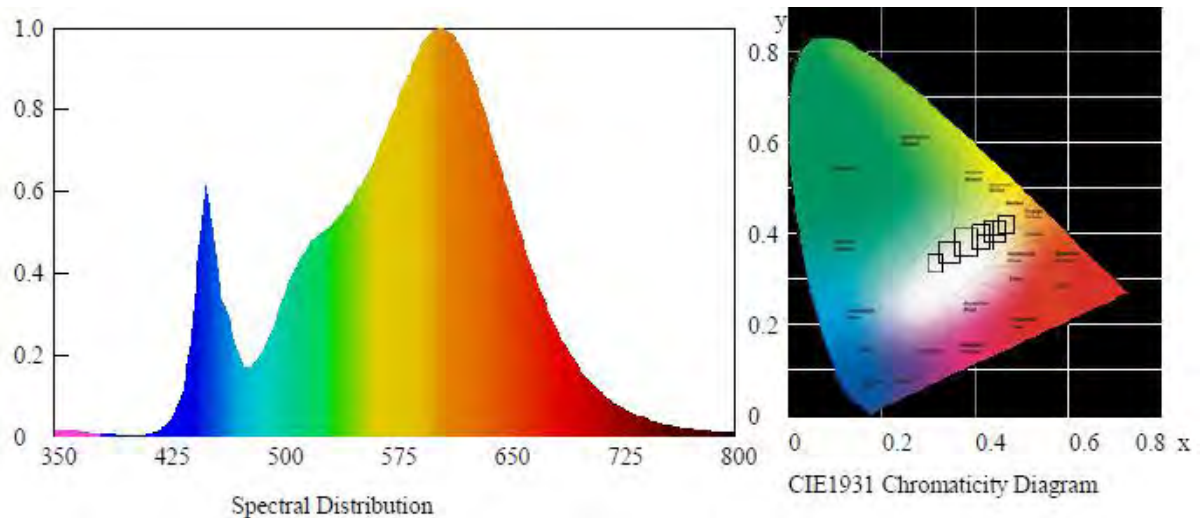
##### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00136	0.4358	0.4003	0.2514	0.5197

##### Color Rendering

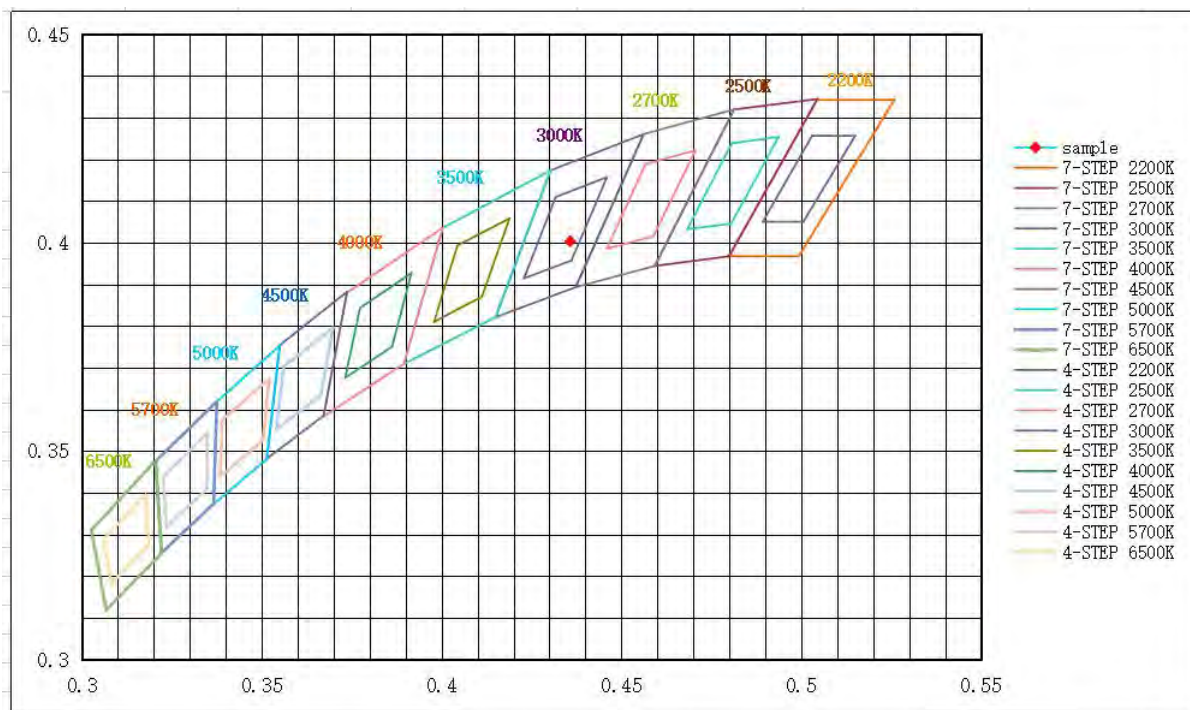
CRI	R9	Rf	Rg	Rcs,h1(%)
84.4	15	86	97	-10

##### Spectral Distribution





## 7/4 Step Quadrangle







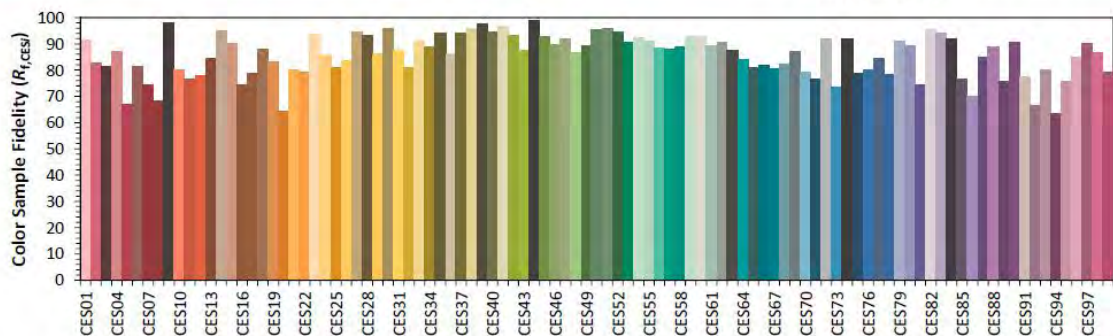
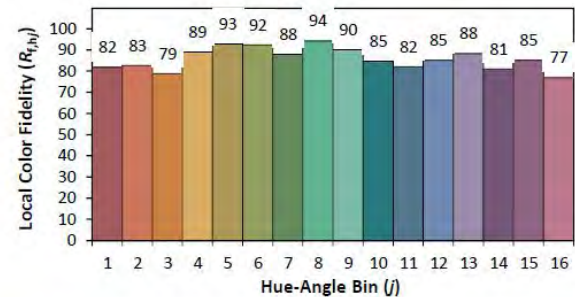
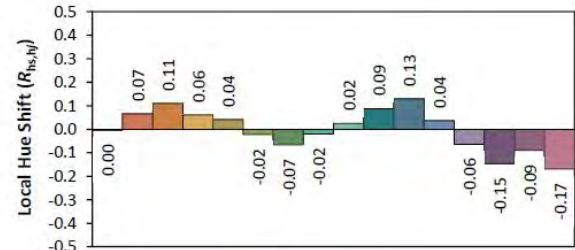
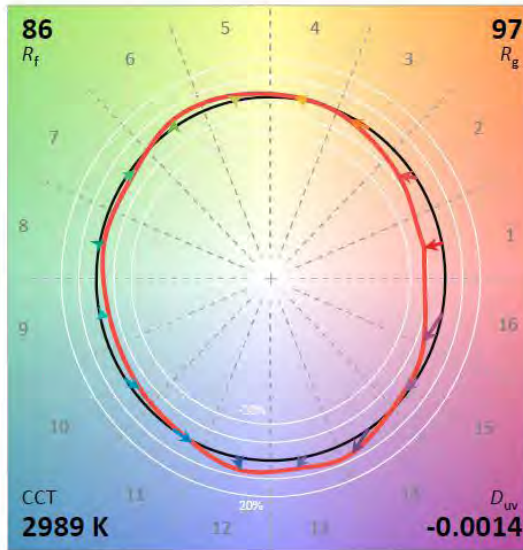
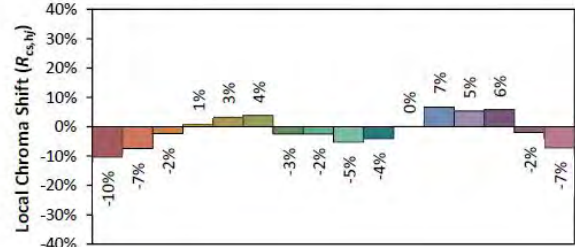
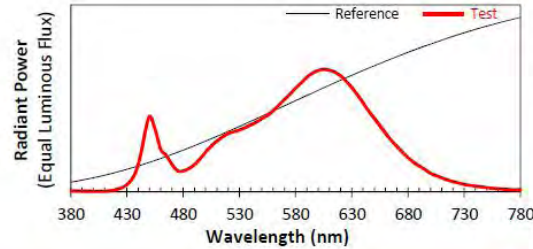
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126010-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-15W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830



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

 $x$  0.4358 $y$  0.4003 $u'$  0.2515 $v'$  0.5197CIE 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.





### 3.1.2 Model Number: RP-T8C-G2-15W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850(Bare lamp)

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.13	60	0.060	7.20	0.994

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1013.35	140.84	5016

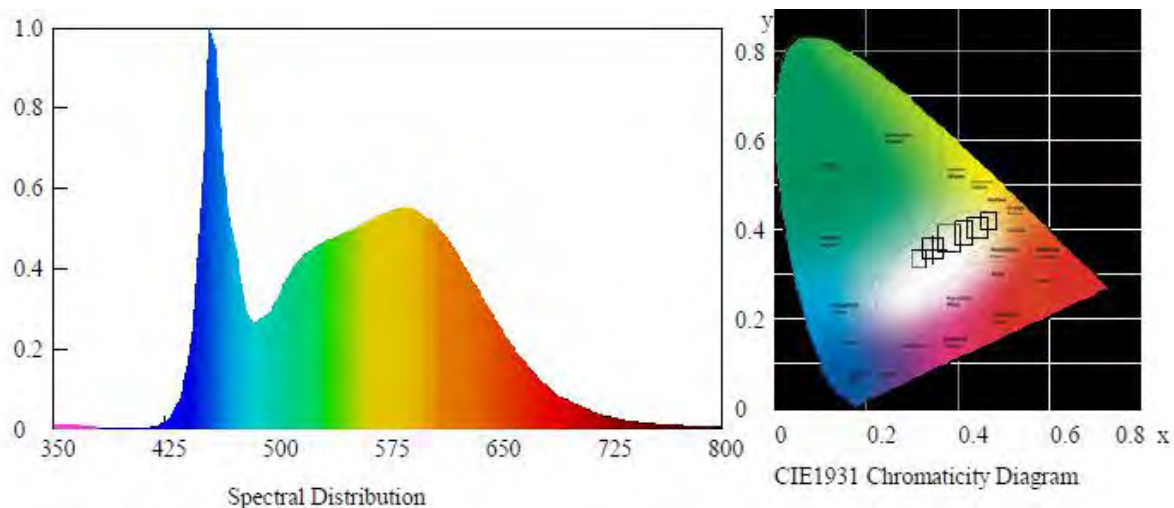
#### Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00257	0.3452	0.3568	0.2095	0.4872

#### Color Rendering

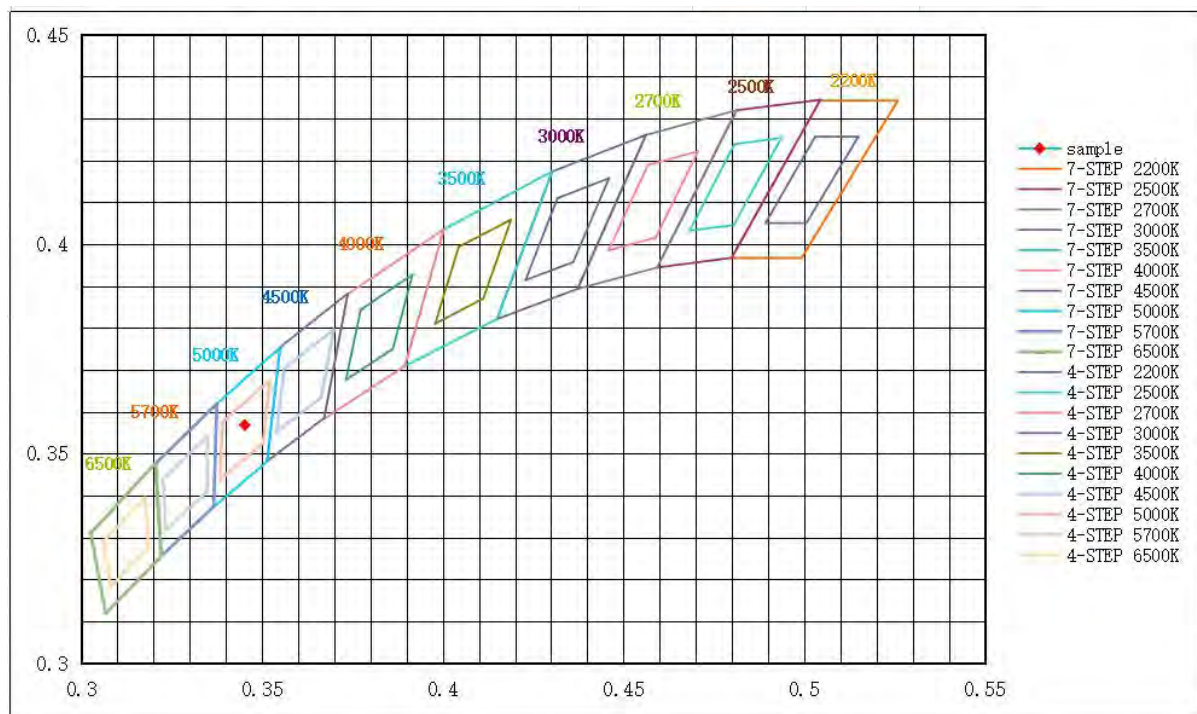
CRI	R9	Rf	Rg	Rcs,h1(%)
84.4	14	83	92	-12

#### Spectral Distribution





### 7/4 Step Quadrangle





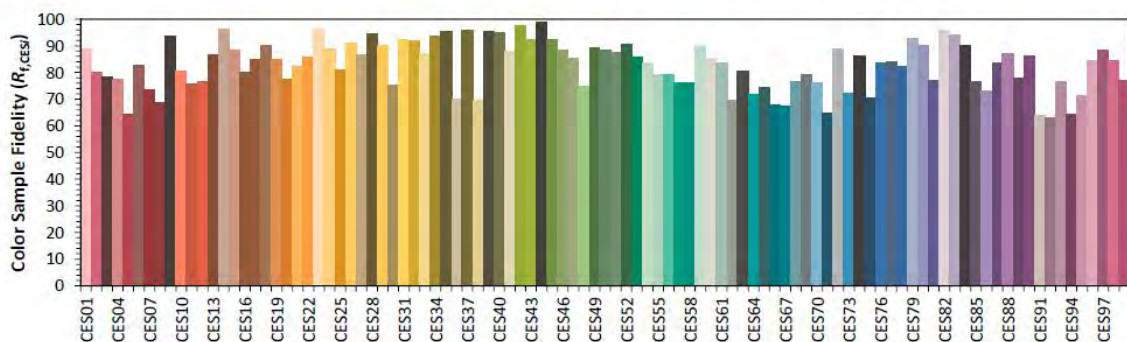
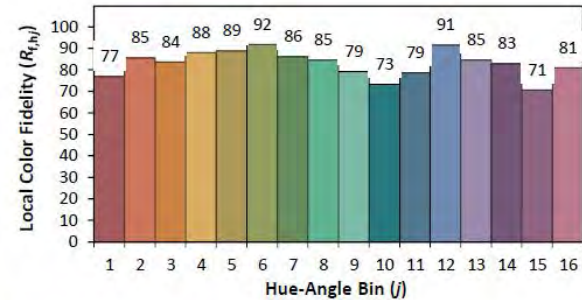
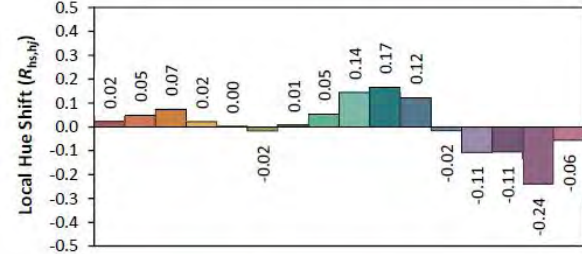
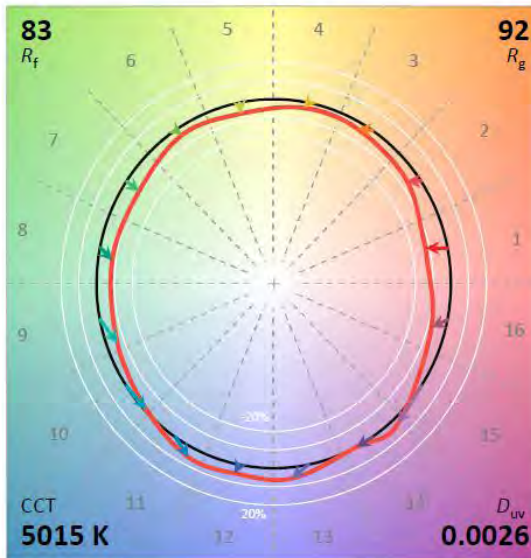
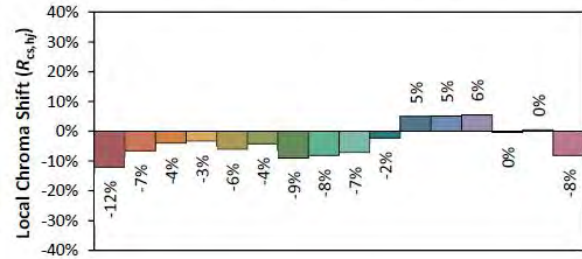
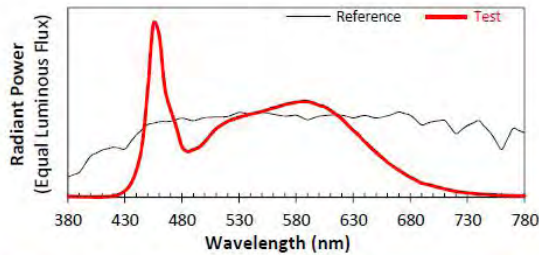
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126010-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-15W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850



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

$x$  0.3452  
 $y$  0.3568  
 $u'$  0.2095  
 $v'$  0.4872

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.



### 3.1.3 Model Number: RP-T8C-G2-18W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830(Bare lamp)

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.08	60	0.072	8.54	0.995

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1163.14	136.12	2996

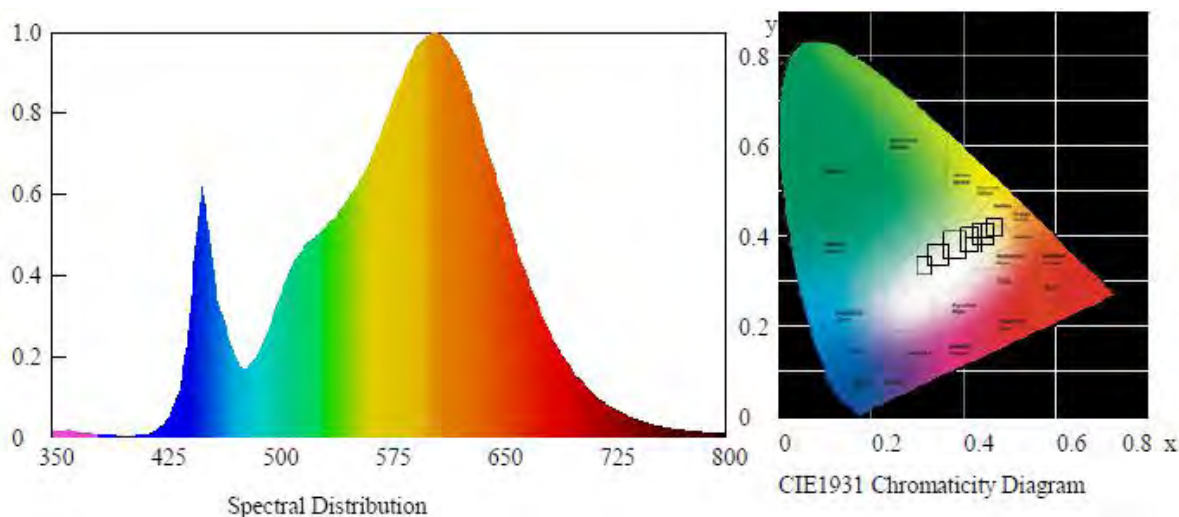
#### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00126	0.4354	0.4004	0.2512	0.5197

#### Color Rendering

CRI	R9	Rf	Rg	Rcs,h1(%)
84.4	14	86	97	-10

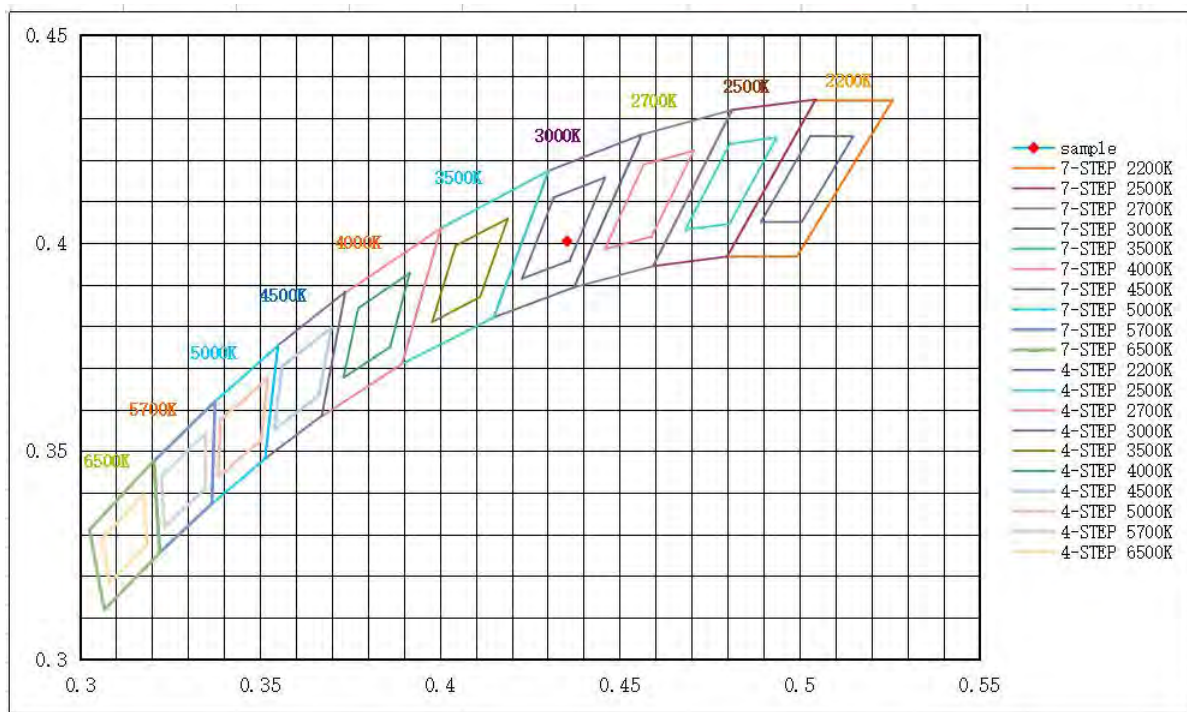
#### Spectral Distribution







### 7/4 Step Quadrangle





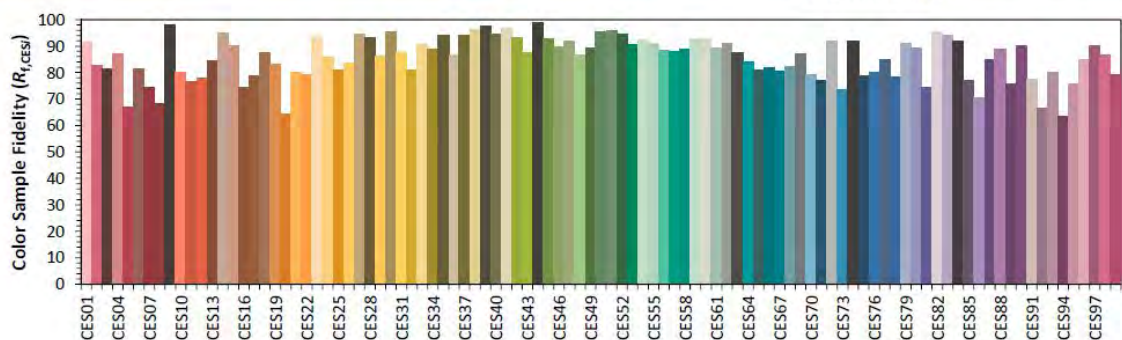
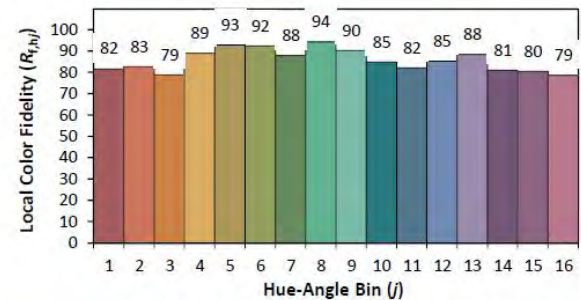
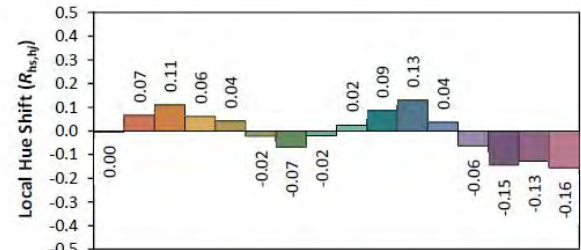
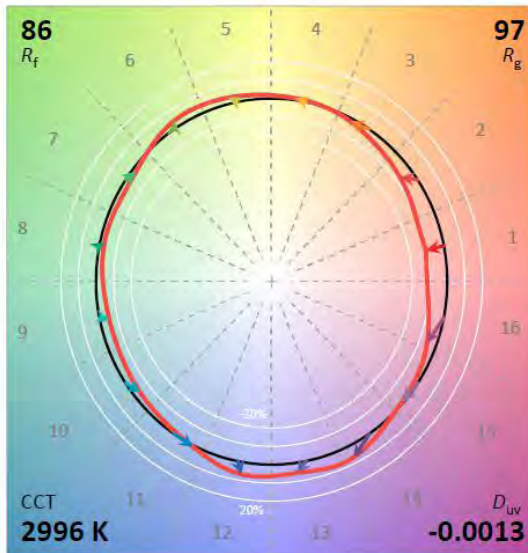
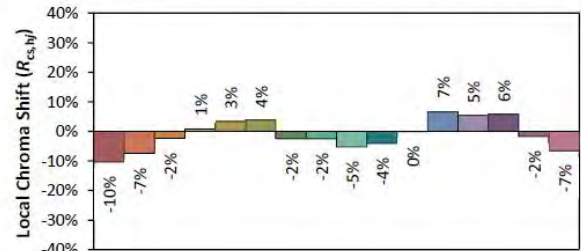
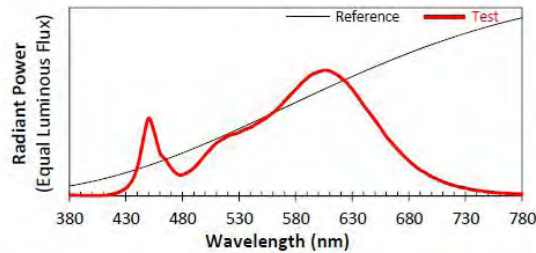
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126010-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-18W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830



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

$x$  0.4354  
 $y$  0.4004  
 $u'$  0.2512  
 $v'$  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-T8C-G2-18W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850(Bare lamp)

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.10	60	0.071	8.54	0.995

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1183.18	138.55	5008

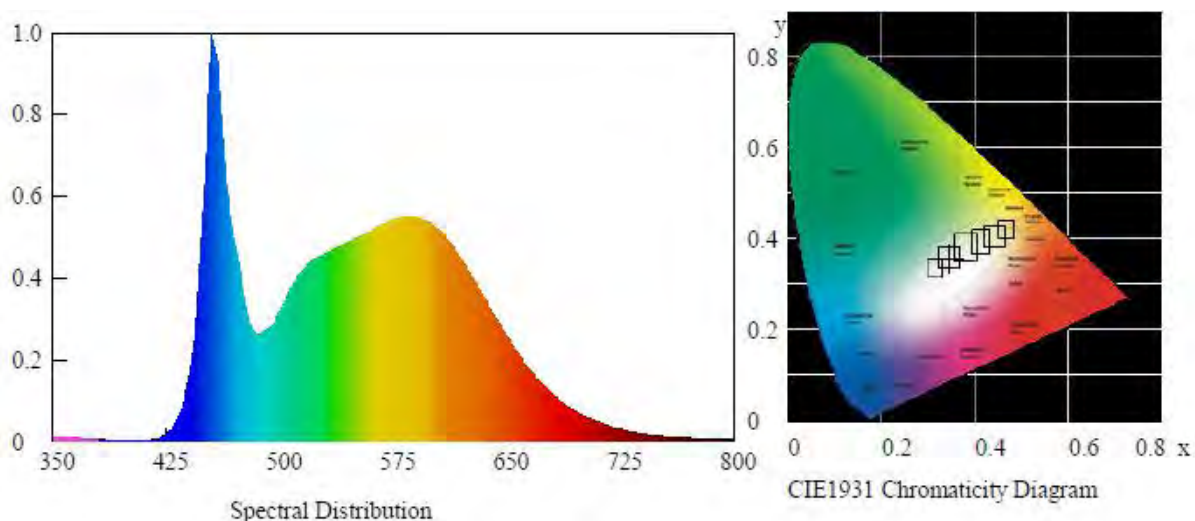
#### Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00256	0.3454	0.3570	0.2095	0.4873

#### Color Rendering

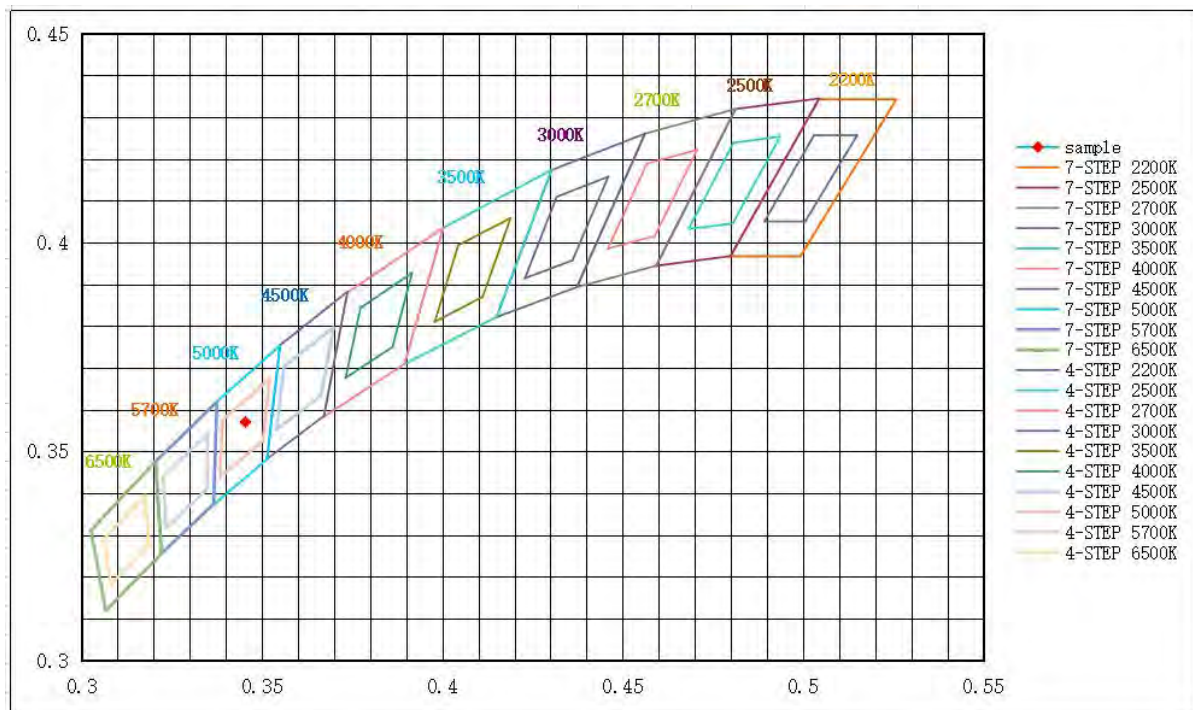
CRI	R9	Rf	Rg	Rcs,h1(%)
84.3	14	83	92	-12

#### Spectral Distribution





### 7/4 Step Quadrangle





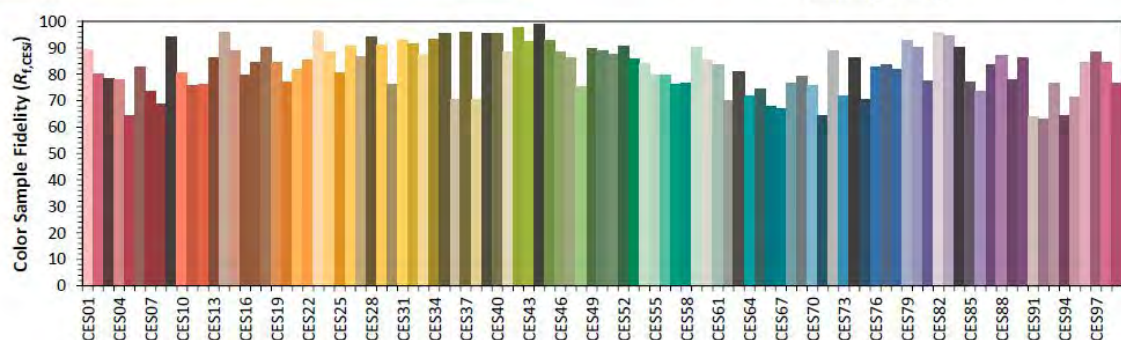
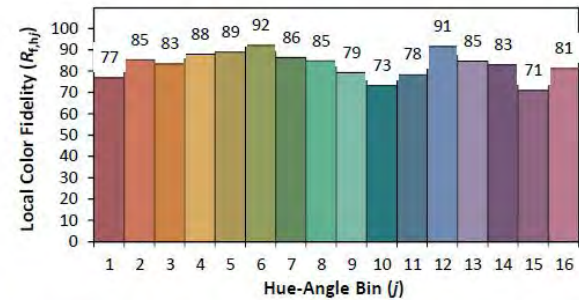
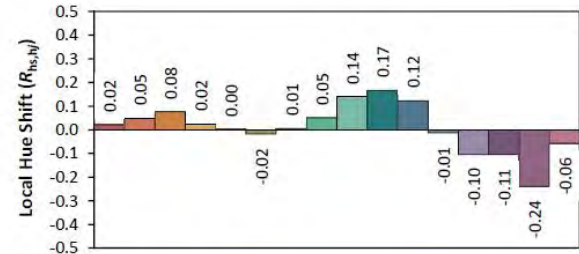
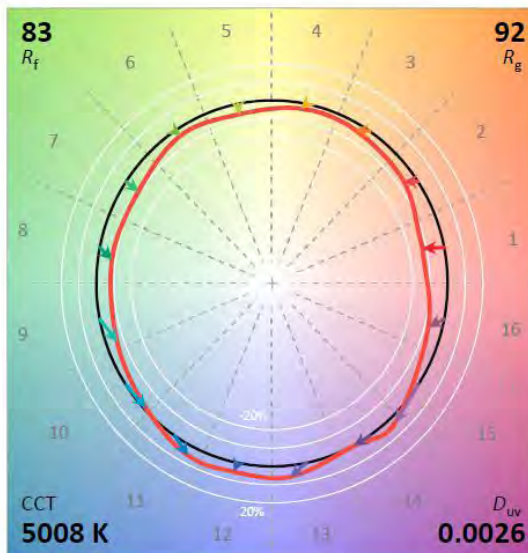
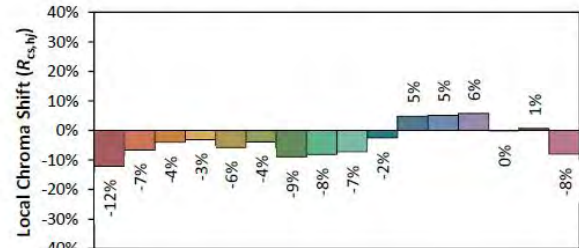
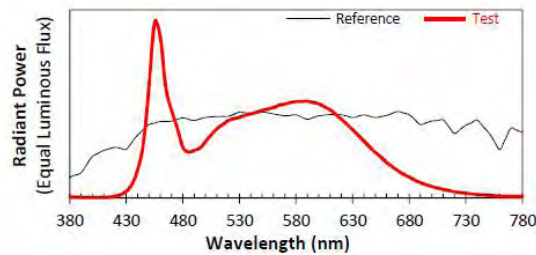
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126010-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-18W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850



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

$x$  0.3454  
 $y$  0.3570  
 $u'$  0.2095  
 $v'$  0.4873

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.



### 3.1.5 Model Number: RP-T8C-G2-20W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830(Bare lamp)

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.05	60	0.080	9.53	0.996

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1277.31	134.10	2993

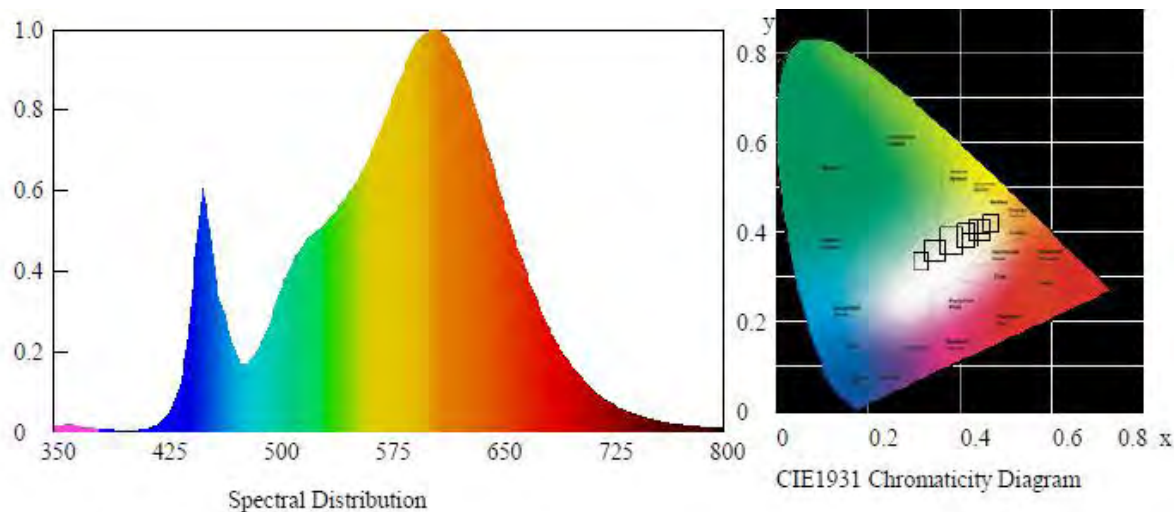
#### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.0012	0.4357	0.4007	0.2513	0.5199

#### Color Rendering

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

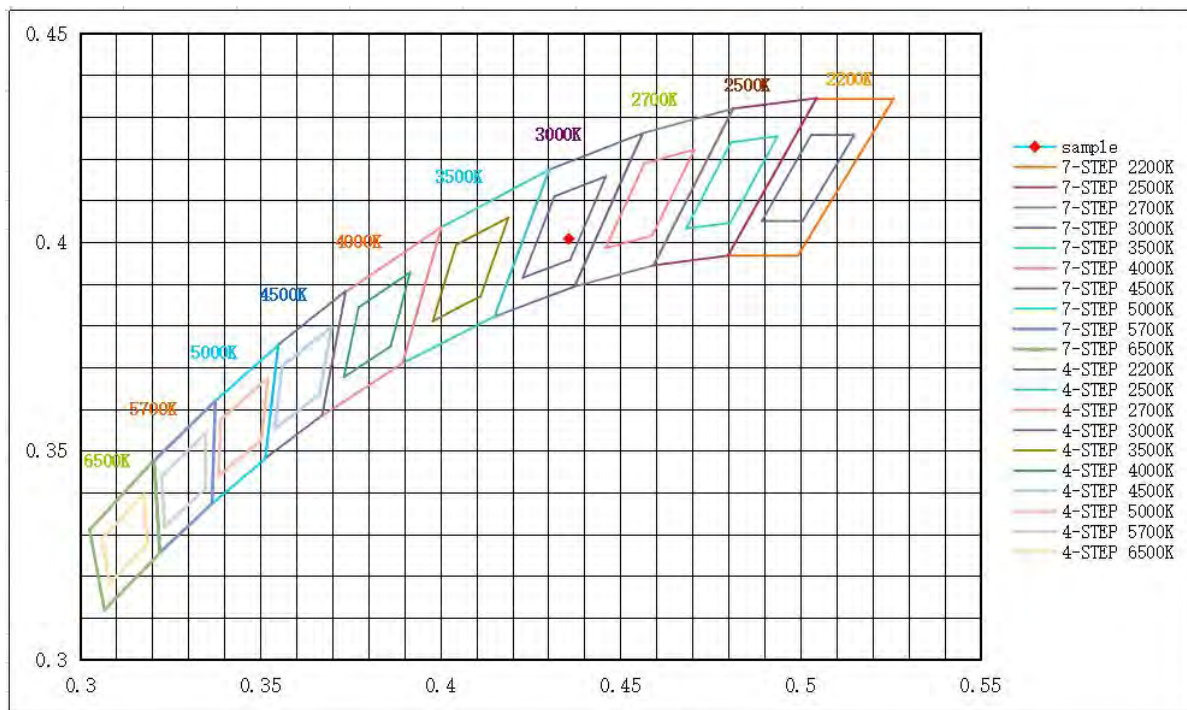
#### Spectral Distribution







## 7/4 Step Quadrangle





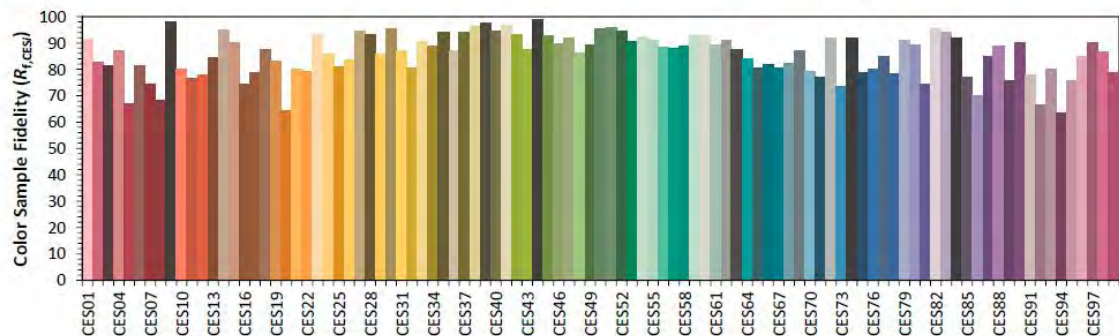
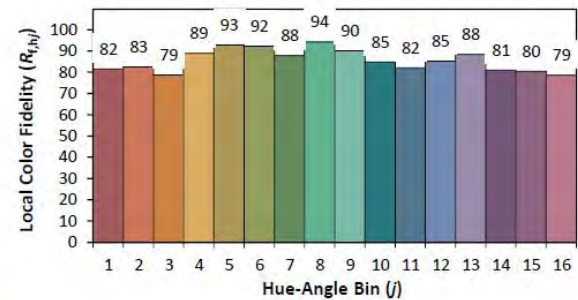
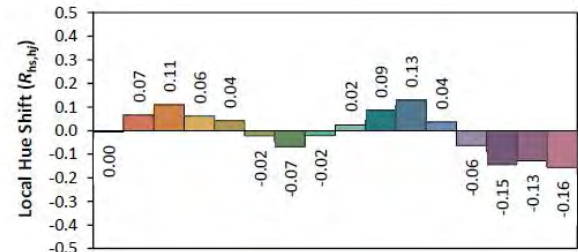
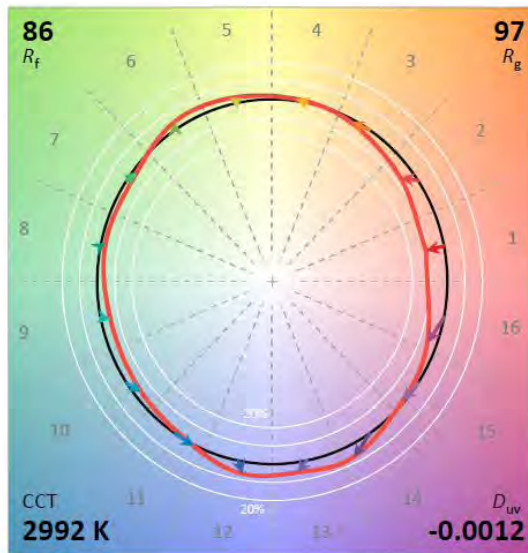
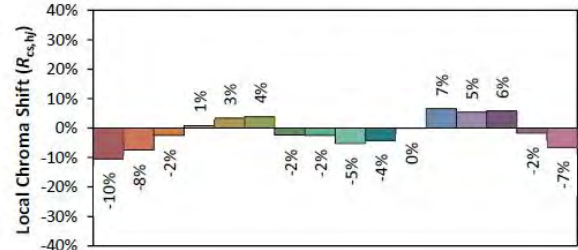
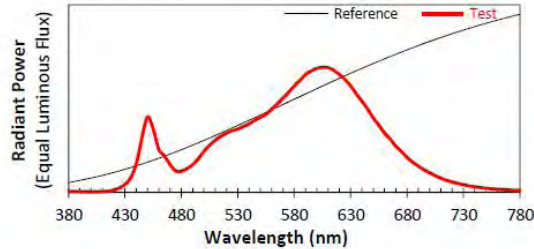
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126010-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-20W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830



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

$x$  0.4357  
 $y$  0.4007  
 $u'$  0.2513  
 $v'$  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-T8C-G2-20W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850(Bare lamp)

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.06	60	0.080	9.53	0.996

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1300.41	136.45	4985

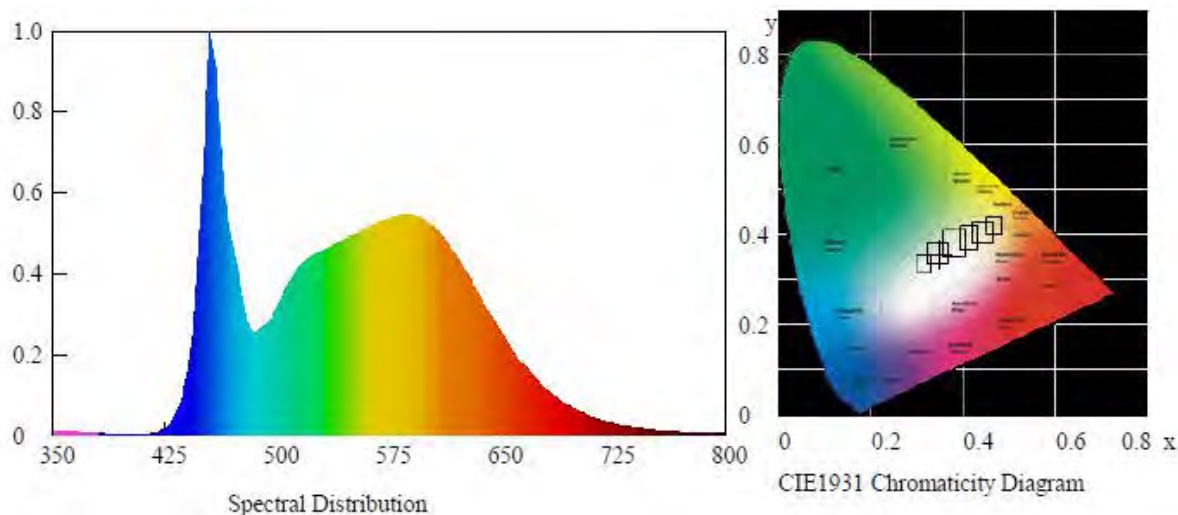
#### Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00269	0.3461	0.3578	0.2097	0.4878

#### Color Rendering

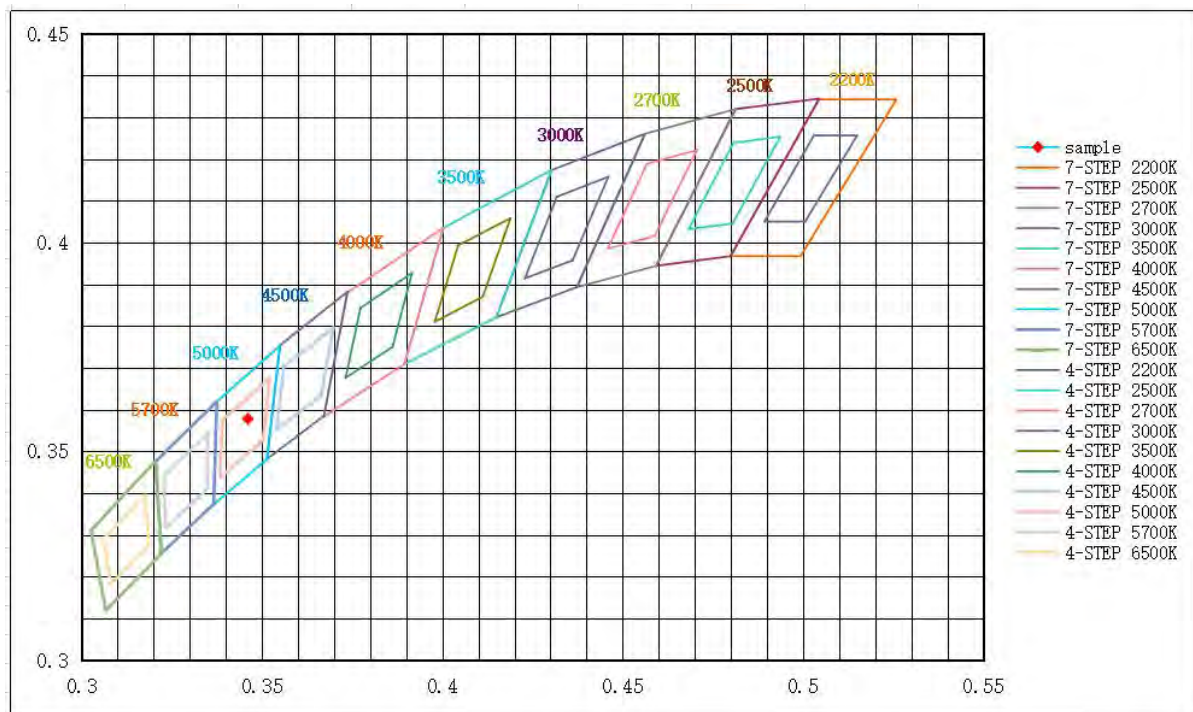
CRI	R9	Rf	Rg	Rcs,h1(%)
84.0	15	83	92	-12

#### Spectral Distribution





### 7/4 Step Quadrangle





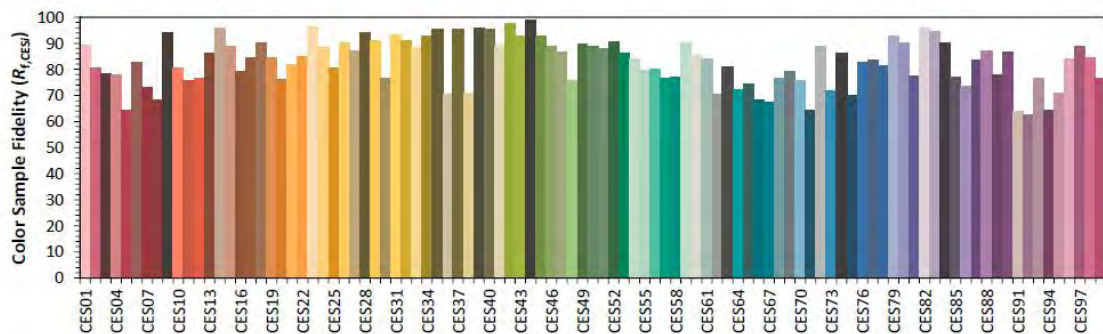
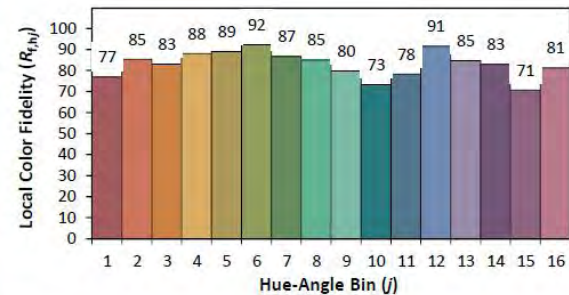
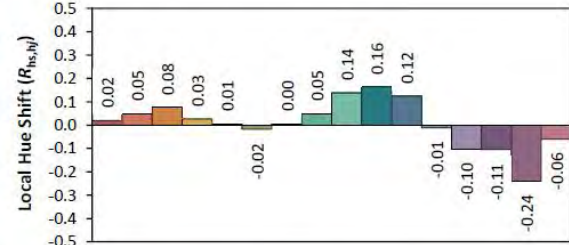
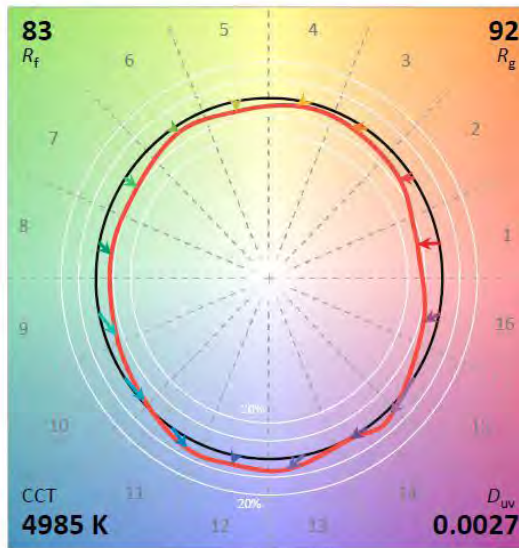
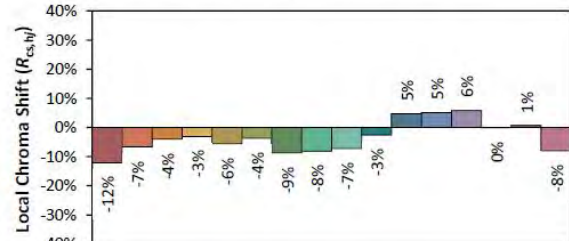
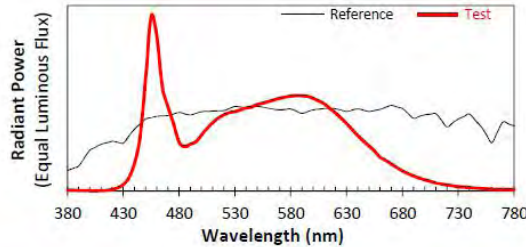
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126010-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-20W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850



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

$x$  0.3461  
 $y$  0.3578  
 $u'$  0.2097  
 $v'$  0.4878

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-T8C-G2-25W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830(Bare lamp)****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.02	60	0.103	12.30	0.997

**Photometric data**

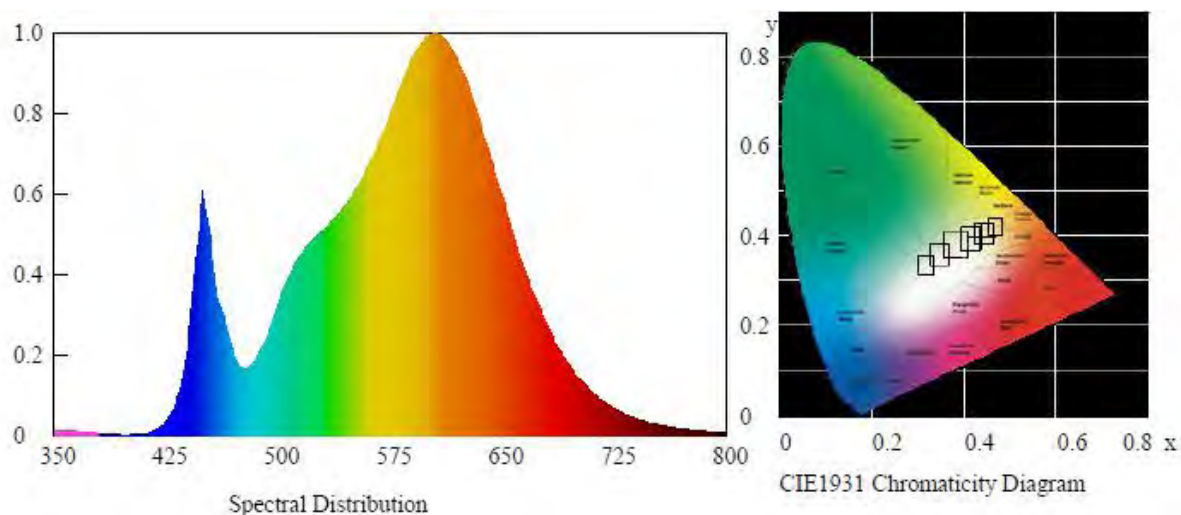
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1614.37	131.20	2996

**Chromaticity Coordinate**

Duv	x	y	u'	v'
-0.00119	0.4355	0.4006	0.2512	0.5198

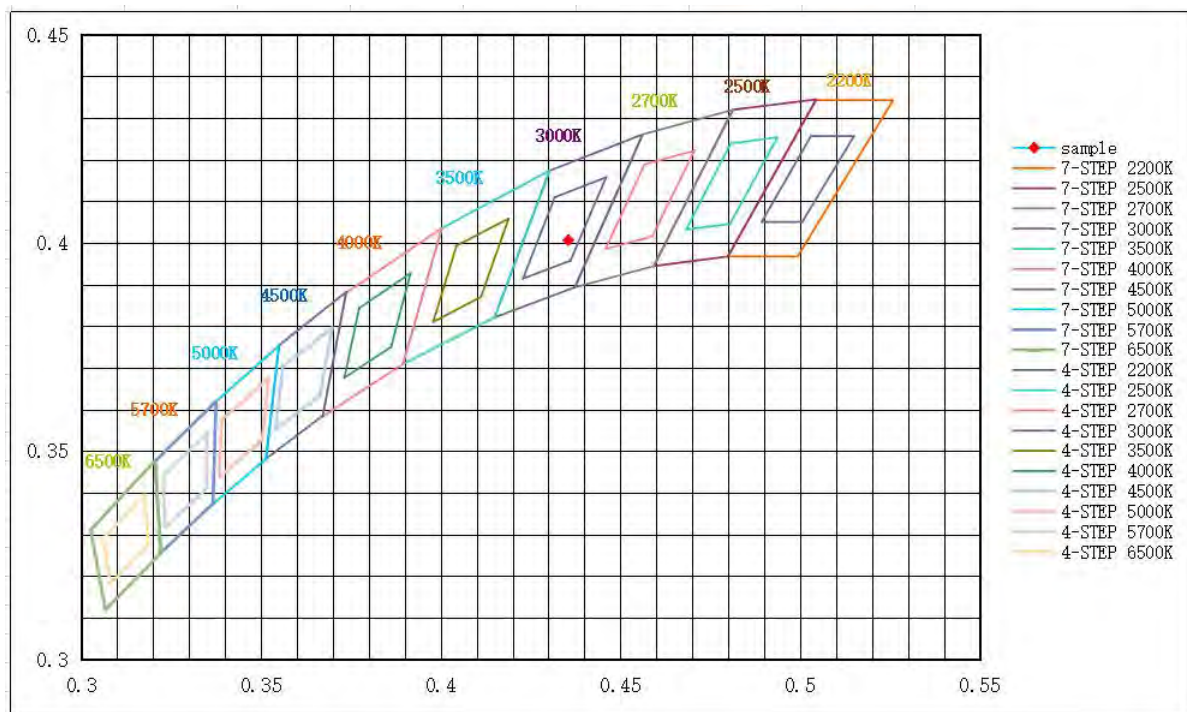
**Color Rendering**

CRI	R9	Rf	Rg	Rcs,h1(%)
84.3	14	86	98	-10

**Spectral Distribution**



## 7/4 Step Quadrangle







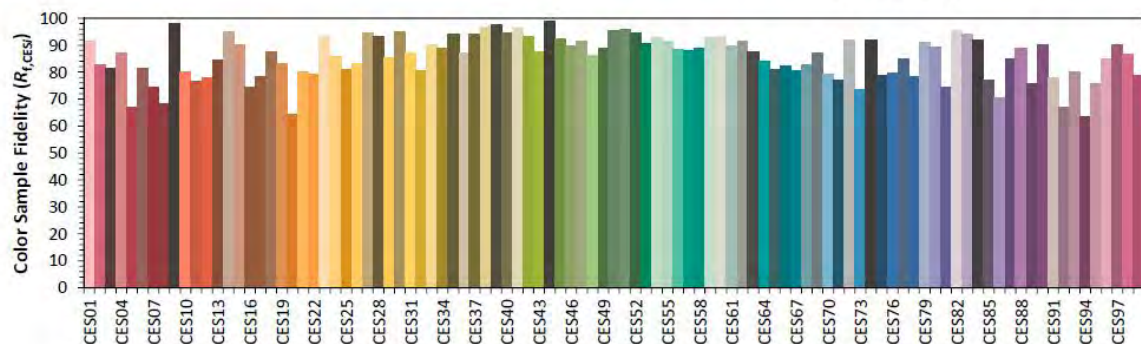
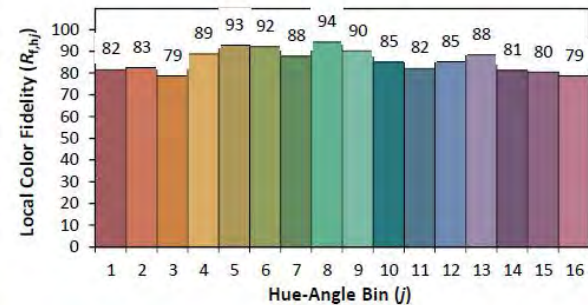
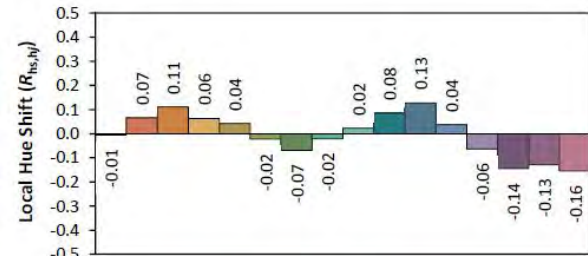
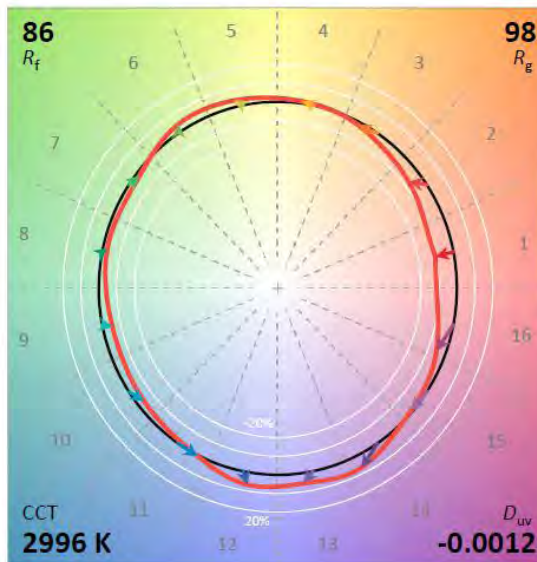
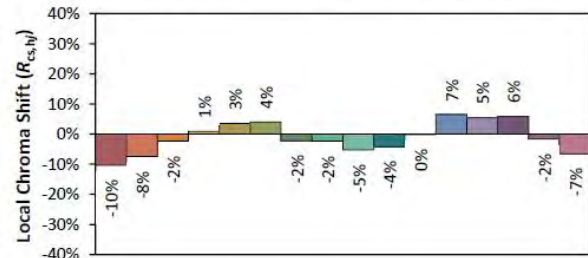
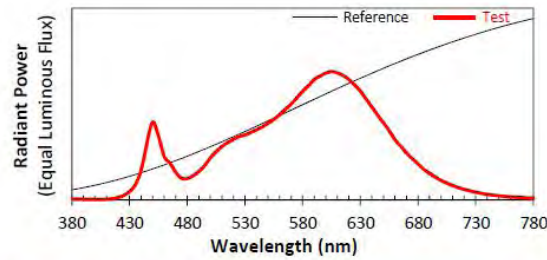
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126010-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-25W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830



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

$x$  0.4355  
 $y$  0.4006  
 $u'$  0.2512  
 $v'$  0.5198

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.





### 3.1.8 Model Number: RP-T8C-G2-25W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850(Bare lamp)

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.01	60	0.102	12.20	0.997

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1636.41	134.08	5014

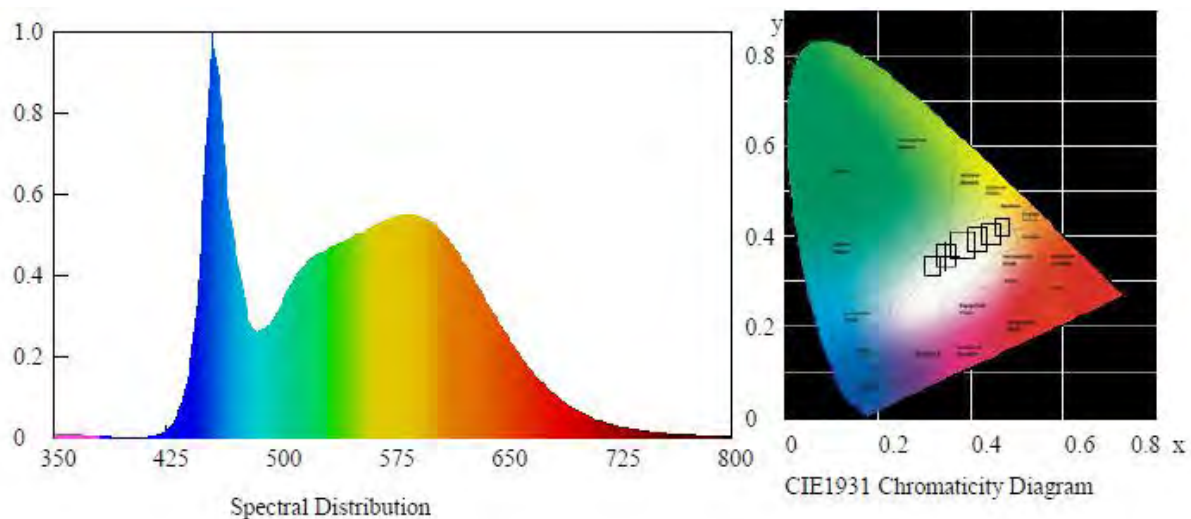
#### Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00247	0.3452	0.3567	0.2096	0.4871

#### Color Rendering

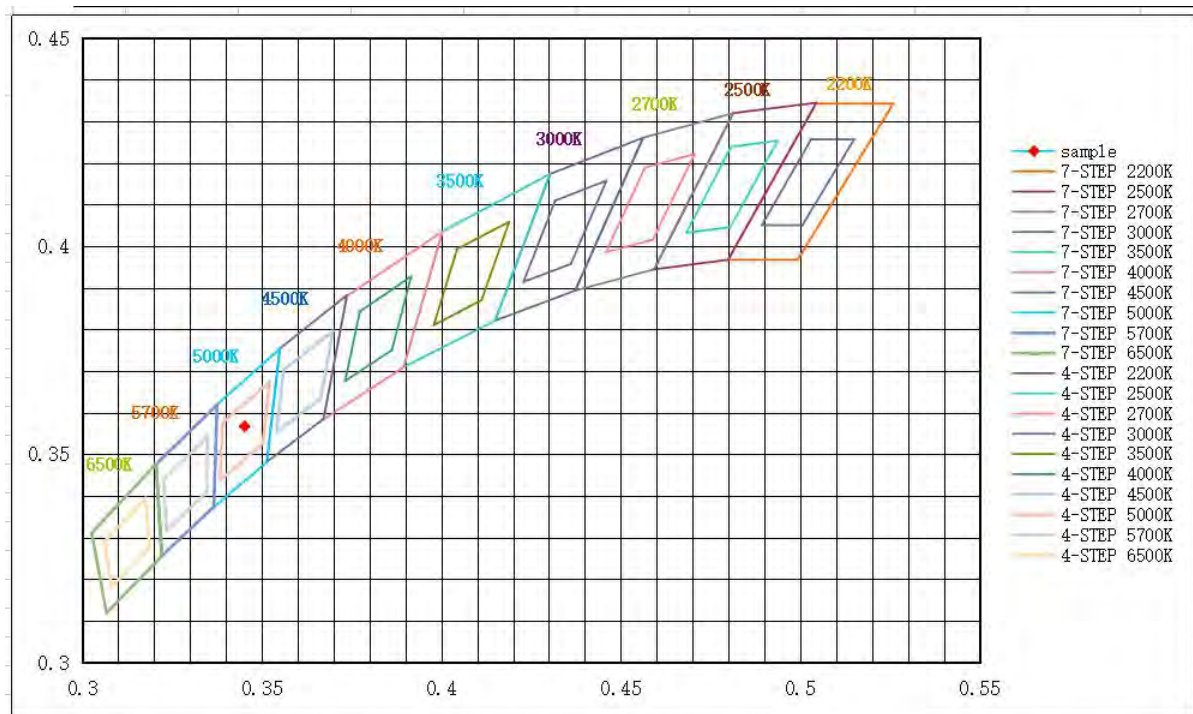
CRI	R9	Rf	Rg	Rcs,h1(%)
84.4	14	83	93	-12

#### Spectral Distribution





### 7/4 Step Quadrangle





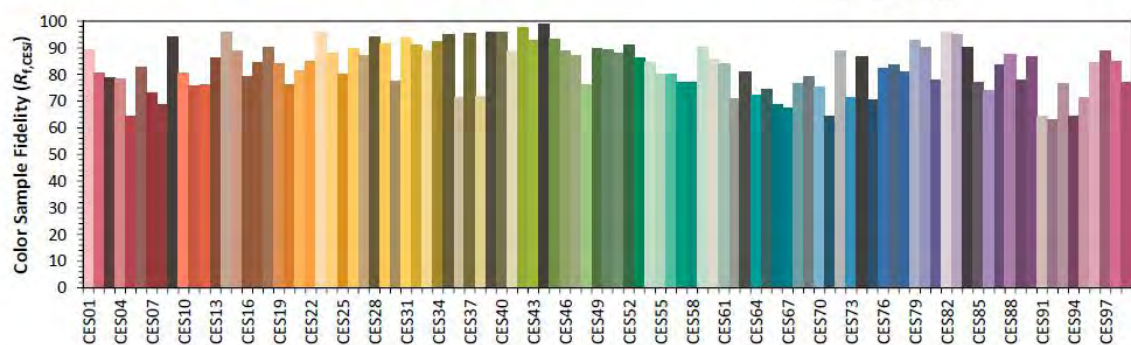
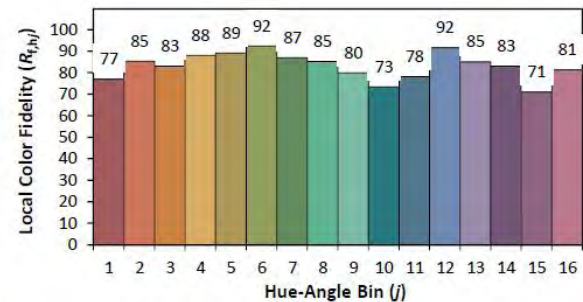
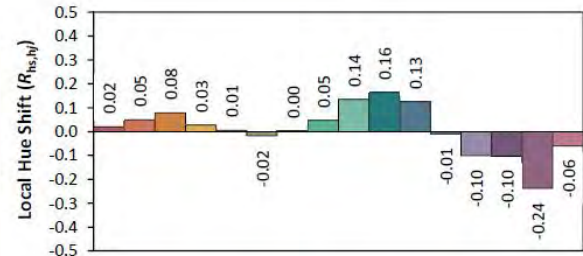
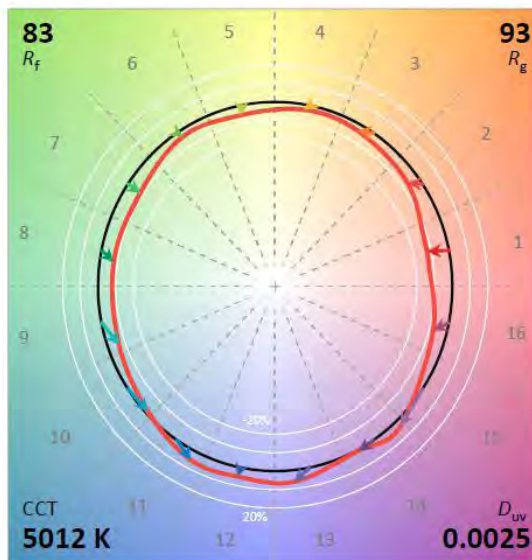
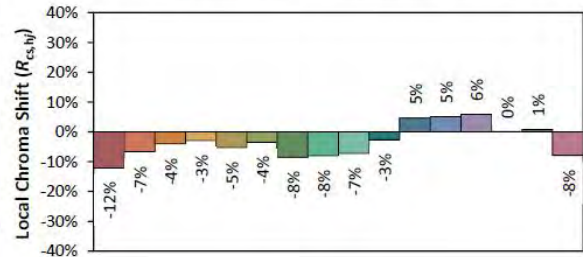
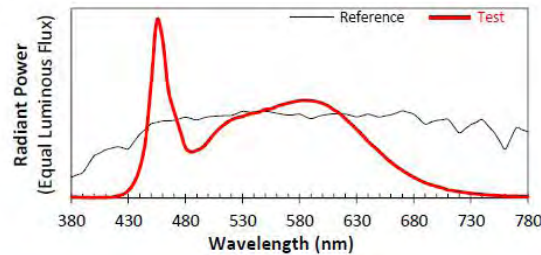
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126010-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-25W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850



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

$x$  0.3452  
 $y$  0.3567  
 $u'$  0.2096  
 $v'$  0.4871

CIE 13.3-1995  
(CRI)

$R_a$  84  
 $R_g$  13

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



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

**3.2.1 Model Number: RP-T8C-G2-25W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830(Bare lamp)**

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.14	60	0.1030	12.36	0.9961

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	Beam Angle(° )
1636.89	132.43	193.6



**Zonal Flux Diagram**

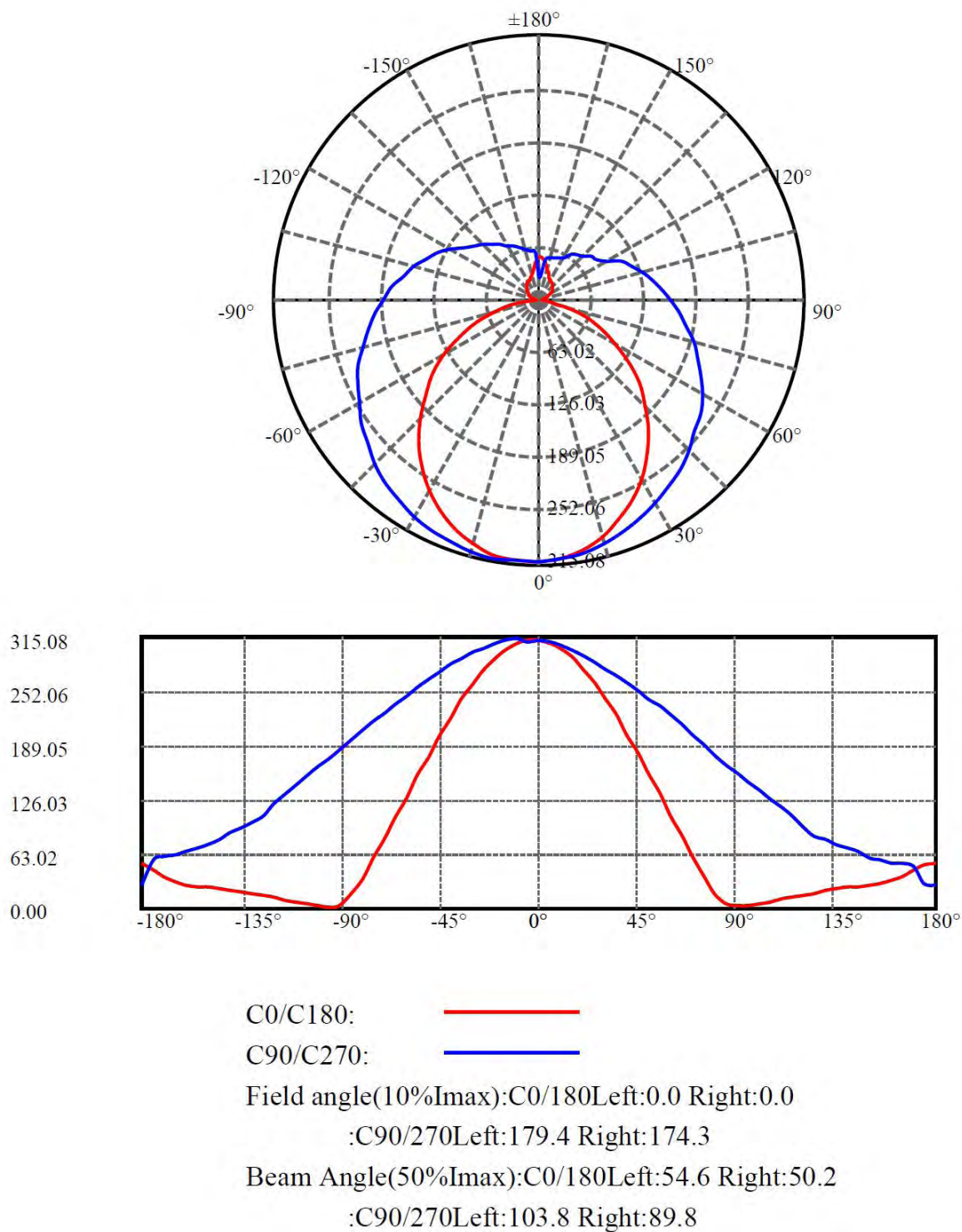
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	311.016	0.000	0	0.00%	0.00%
5.0	310.013	7.425	7.425	0.00%	0.45%
10.0	306.810	22.075	29.5	0.00%	1.80%
15.0	300.931	36.077	65.578	0.00%	4.01%
20.0	292.720	48.977	114.555	0.00%	7.00%
25.0	282.635	60.425	174.98	0.00%	10.69%
30.0	270.897	70.164	245.143	0.00%	14.98%
35.0	257.589	77.973	323.117	0.00%	19.74%
40.0	243.147	83.733	406.85	0.00%	24.86%
45.0	227.954	87.454	494.304	0.00%	30.20%
50.0	212.470	89.249	583.553	0.00%	35.65%
55.0	197.252	89.369	672.922	0.00%	41.11%
60.0	181.821	87.932	760.854	0.00%	46.48%
65.0	166.576	85.017	845.871	0.00%	51.68%
70.0	151.853	80.960	926.831	0.00%	56.62%
75.0	137.763	76.040	1002.871	0.00%	61.27%
80.0	124.729	70.551	1073.421	0.00%	65.58%
85.0	113.209	64.899	1138.321	0.00%	69.54%
90.0	103.740	59.513	1197.834	0.00%	73.18%
95.0	96.153	54.729	1252.563	0.00%	76.52%
100.0	89.325	50.364	1302.927	0.00%	79.60%
105.0	83.870	46.298	1349.225	0.00%	82.43%
110.0	78.525	42.396	1391.621	0.00%	85.02%
115.0	73.034	38.325	1429.946	0.00%	87.36%
120.0	66.837	33.954	1463.9	0.00%	89.43%
125.0	61.161	29.543	1493.442	0.00%	91.24%
130.0	58.777	26.041	1519.484	0.00%	92.83%
135.0	56.508	23.262	1542.746	0.00%	94.25%
140.0	54.550	20.530	1563.276	0.00%	95.50%
145.0	52.964	17.907	1581.183	0.00%	96.60%
150.0	50.915	15.273	1596.456	0.00%	97.53%
155.0	49.446	12.681	1609.137	0.00%	98.30%
160.0	48.389	10.231	1619.368	0.00%	98.93%
165.0	46.640	7.802	1627.17	0.00%	99.41%
170.0	44.954	5.409	1632.579	0.00%	99.74%
175.0	45.298	3.213	1635.792	0.00%	99.93%
180.0	46.761	1.098	1636.89	0.00%	100.00%



## Luminous Intensity Distribution Diagram

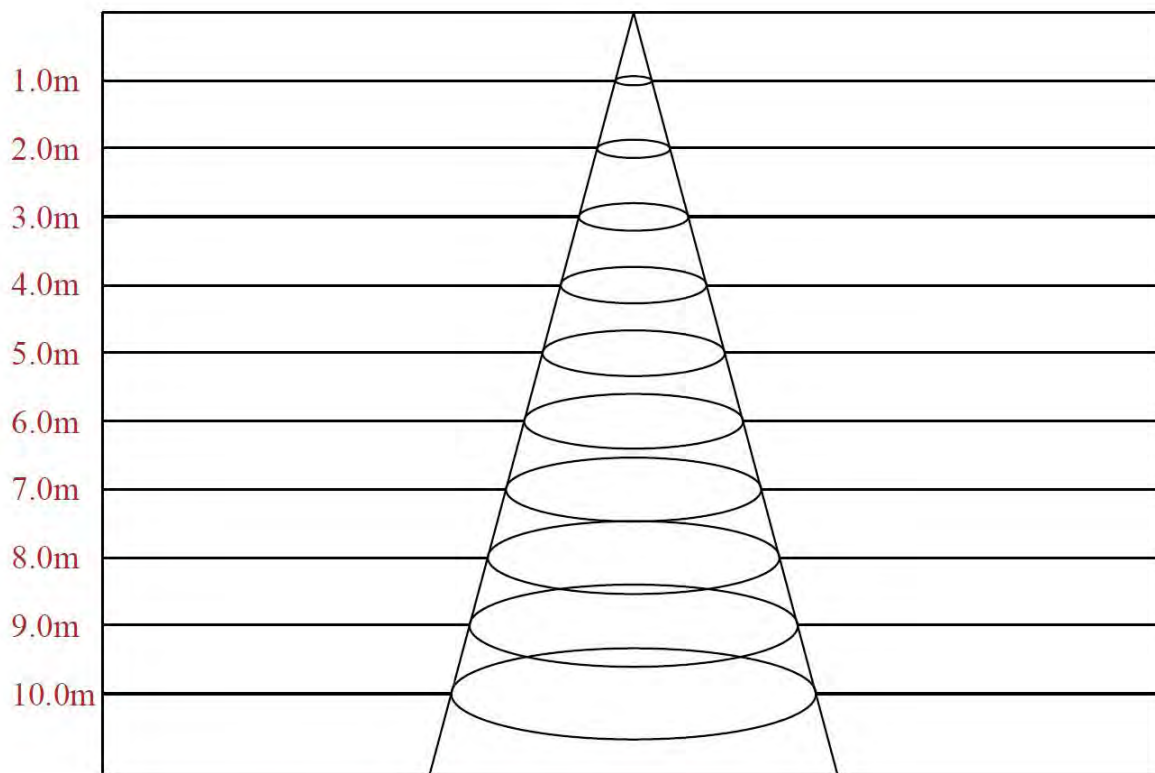
Light Distribution Curve [Unit:cd]







### Lux distance Curve



Max , Ave

Beam angle of C247.5 plane 184.34

**Luminous Intensity Distribution Data**

C/ $\gamma$ (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	311.02	307.78	301.30	291.17	278.21	262.62	244.60	224.56	202.48
22.5	311.02	307.81	301.61	292.60	280.19	265.38	248.97	230.96	211.35
45.0	311.02	308.41	303.39	295.96	287.12	276.48	264.23	251.18	236.52
67.5	311.02	311.66	308.88	305.03	297.11	288.98	279.57	269.09	258.18
90.0	311.02	308.83	305.33	299.21	293.31	286.54	278.23	270.14	261.84
112.5	311.02	309.75	305.75	299.43	292.70	283.01	272.90	262.16	251.00
135.0	311.02	308.99	304.54	297.46	288.35	277.63	265.08	250.72	234.73
157.5	311.02	308.59	302.92	294.21	282.47	268.29	252.30	233.26	213.42
180.0	311.02	310.61	306.97	299.88	289.55	275.99	259.99	241.77	221.52
202.5	311.02	310.82	307.41	301.01	291.40	279.39	265.38	248.97	230.96
225.0	311.02	311.62	309.61	304.79	298.37	289.93	279.49	267.45	254.39
247.5	311.02	315.08	313.58	311.02	307.81	302.89	294.76	287.91	278.93
270.0	311.02	309.70	312.76	310.58	306.43	301.62	297.03	290.25	283.48
292.5	311.02	309.54	310.17	309.54	304.91	300.28	294.80	285.96	276.48
315.0	311.02	310.81	307.98	303.12	295.84	286.13	274.80	262.05	248.89
337.5	311.02	310.21	306.76	299.88	289.76	277.00	262.22	245.01	226.18
360.0	311.02	307.78	301.30	291.17	278.21	262.62	244.60	224.56	202.48
C/ $\gamma$ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	179.81	156.52	132.43	107.72	84.44	60.75	38.07	18.22	5.27
22.5	190.73	170.72	150.70	131.49	113.88	97.07	82.66	69.65	59.64
45.0	220.26	205.40	191.15	176.49	163.44	150.39	138.14	127.30	118.06
67.5	246.85	234.44	224.17	214.55	203.21	191.23	180.11	169.41	158.08
90.0	252.44	242.17	234.74	224.68	213.32	201.52	190.15	178.13	166.55
112.5	238.37	227.63	217.10	206.57	194.57	184.25	173.09	162.77	153.30
135.0	219.55	204.17	188.80	174.23	160.06	147.31	134.77	123.44	113.52
157.5	192.56	171.71	151.86	131.41	112.38	93.55	77.35	63.58	53.05
180.0	199.85	176.77	153.69	129.39	105.09	82.01	58.32	35.64	16.81
202.5	211.55	192.33	172.52	153.71	135.49	116.48	99.07	84.66	72.65
225.0	240.94	226.08	211.63	198.38	184.52	172.68	161.23	148.58	137.74
247.5	269.95	258.82	248.98	237.43	227.81	217.11	205.78	195.29	183.53
270.0	274.30	265.34	256.81	246.54	236.49	227.52	216.82	206.54	195.18
292.5	267.43	257.74	247.00	237.32	224.89	213.73	202.36	192.04	180.25
315.0	235.34	221.98	207.61	193.85	179.69	166.54	154.80	142.66	131.93
337.5	207.34	187.70	166.85	145.38	125.95	107.52	91.52	77.75	65.81
360.0	179.81	156.52	132.43	107.72	84.44	60.75	38.07	18.22	5.27
C/ $\gamma$ (°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	3.04	4.25	5.87	8.50	11.14	13.77	16.20	18.43	20.65
22.5	51.24	44.83	39.23	38.23	38.43	38.03	34.22	34.22	35.63
45.0	108.02	98.39	90.76	82.92	74.89	61.04	60.44	58.83	57.42
67.5	147.81	137.33	127.49	118.08	108.24	98.40	83.21	81.28	78.93
90.0	156.05	146.44	136.82	127.86	118.24	107.53	93.55	84.15	80.65
112.5	143.40	133.50	122.97	114.34	104.02	94.97	81.91	75.81	72.23
135.0	105.02	95.71	88.02	80.13	72.65	69.81	67.38	59.09	54.23
157.5	45.76	39.89	34.22	34.83	35.03	35.03	35.23	34.02	32.40
180.0	4.46	2.43	3.65	5.47	7.90	10.53	12.96	15.59	18.02
202.5	62.64	56.24	51.44	48.23	45.63	44.03	43.03	41.23	38.83
225.0	127.70	118.26	110.83	103.20	96.58	88.15	78.31	70.88	67.46
247.5	172.83	162.35	152.30	143.10	133.90	124.71	113.58	96.90	91.98
270.0	184.47	174.63	163.49	154.09	143.38	133.32	122.18	107.75	100.10
292.5	169.09	160.46	149.93	140.45	131.19	122.13	112.24	94.76	89.49
315.0	122.02	113.72	106.03	98.95	92.48	85.39	74.47	68.19	65.36
337.5	56.29	50.01	46.17	43.53	42.72	41.71	40.50	37.46	37.06
360.0	3.04	4.25	5.87	8.50	11.14	13.77	16.20	18.43	20.65



C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	22.88	24.91	26.12	27.34	28.55	34.02	37.06	44.14	50.62
22.5	36.83	38.83	41.63	44.23	46.43	48.83	44.63	43.03	48.03
45.0	55.02	52.61	52.41	53.01	53.81	53.41	51.80	45.18	45.98
67.5	74.22	70.80	66.52	60.54	57.54	56.04	53.05	51.34	40.21
90.0	74.97	69.94	66.01	58.79	56.17	53.77	52.02	49.83	28.41
112.5	66.33	63.59	59.38	54.96	52.85	46.75	38.32	26.95	41.27
135.0	52.61	48.57	46.95	44.72	40.27	35.61	31.16	36.22	48.16
157.5	33.61	35.84	36.85	34.83	31.99	33.82	35.84	40.90	50.62
180.0	20.25	21.87	23.29	24.91	25.92	27.54	31.99	36.25	44.14
202.5	38.23	38.83	41.03	41.03	37.83	36.03	36.83	39.43	44.03
225.0	63.65	59.43	56.62	55.02	51.00	43.97	39.76	35.74	40.96
247.5	85.56	80.21	74.44	66.74	63.32	60.96	54.12	44.06	31.02
270.0	93.33	87.43	80.87	75.19	70.16	66.44	62.95	60.11	57.26
292.5	84.44	78.54	74.12	70.12	68.23	65.91	63.17	60.22	57.70
315.0	62.73	59.29	56.86	56.66	57.67	58.48	59.09	58.08	49.58
337.5	39.48	42.12	44.34	46.57	49.41	52.65	54.47	47.79	46.77
360.0	22.88	24.91	26.12	27.34	28.55	34.02	37.06	44.14	50.62
C/γ(°)	180.0								
0.0	52.04								
22.5	51.24								
45.0	50.60								
67.5	45.99								
90.0	27.98								
112.5	44.43								
135.0	49.78								
157.5	52.04								
180.0	52.04								
202.5	51.24								
225.0	50.60								
247.5	45.99								
270.0	27.98								
292.5	44.43								
315.0	49.78								
337.5	52.04								
360.0	52.04								





## 4 Additional Test

### Electrical data at 277V

Model Number	Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
RP-T8C-G2-25W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830	Power Factor	277	60	0.959
	THD	277	60	10.4%

## 5 Performance Assessment

Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T8C-G2-15W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830	3000	996.02	7.19	138.62
RP-T8C-G2-15W-4FT-2L-835-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-835	3500	1000.35 * <sup>1</sup>	7.20 * <sup>2</sup>	139.03 * <sup>3</sup>
RP-T8C-G2-15W-4FT-2L-840-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-840	4000	1004.69 * <sup>1</sup>	7.20 * <sup>2</sup>	139.64 * <sup>3</sup>
RP-T8C-G2-15W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850	5000	1013.35	7.20	140.84

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

$$1000.35 = (1013.35 - 996.02) / 4 + 996.02$$

$$1004.69 = (1013.35 - 996.02) / 4 + 1000.35$$

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

$$7.20 = (7.19 + 7.20) / 2$$

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

$$139.03 = 1000.35 / 7.20$$

$$139.64 = 1004.69 / 7.20$$





Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T8C-G2-18W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830	3000	1163.14	8.54	136.12
RP-T8C-G2-18W-4FT-2L-835-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-835	3500	1168.15 <sup>*1</sup>	8.54 <sup>*2</sup>	136.79 <sup>*3</sup>
RP-T8C-G2-18W-4FT-2L-840-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-840	4000	1173.16 <sup>*1</sup>	8.54 <sup>*2</sup>	137.37 <sup>*3</sup>
RP-T8C-G2-18W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850	5000	1183.18	8.54	138.55

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

$$1168.15 = (1183.18 - 1163.14) / 4 + 1163.14$$

$$1173.16 = (1183.18 - 1163.14) / 4 + 1168.15$$

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

$$8.54 = (8.54 + 8.54) / 2$$

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

$$136.79 = 1168.15 / 8.54$$

$$137.37 = 1173.16 / 8.54$$

Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T8C-G2-20W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830	3000	1277.31	9.53	134.10
RP-T8C-G2-20W-4FT-2L-835-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-835	3500	1283.09 <sup>*1</sup>	9.53 <sup>*2</sup>	134.64 <sup>*3</sup>
RP-T8C-G2-20W-4FT-2L-840-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-840	4000	1288.86 <sup>*1</sup>	9.53 <sup>*2</sup>	135.24 <sup>*3</sup>
RP-T8C-G2-20W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850	5000	1300.41	9.53	136.45

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

$$1283.09 = (1300.41 - 1277.31) / 4 + 1277.31$$

$$1288.86 = (1300.41 - 1277.31) / 4 + 1283.09$$

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

$$9.53 = (9.53 + 9.53) / 2$$

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

$$134.64 = 1283.09 / 9.53$$

$$135.24 = 1288.86 / 9.53$$



Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T8C-G2-25W-4FT-2L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830	3000	1614.37	12.30	131.20
RP-T8C-G2-25W-4FT-2L-835-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-835	3500	1619.88 <sup>*1</sup>	12.25 <sup>*2</sup>	132.24 <sup>*3</sup>
RP-T8C-G2-25W-4FT-2L-840-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-840	4000	1625.39 <sup>*1</sup>	12.25 <sup>*2</sup>	132.68 <sup>*3</sup>
RP-T8C-G2-25W-4FT-2L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850	5000	1636.41	12.20	134.08

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

$$1619.88 = (1636.41 - 1614.37) / 4 + 1614.37$$

$$1625.39 = (1636.41 - 1614.37) / 4 + 1619.88$$

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

$$12.25 = (12.30 + 12.20) / 2$$

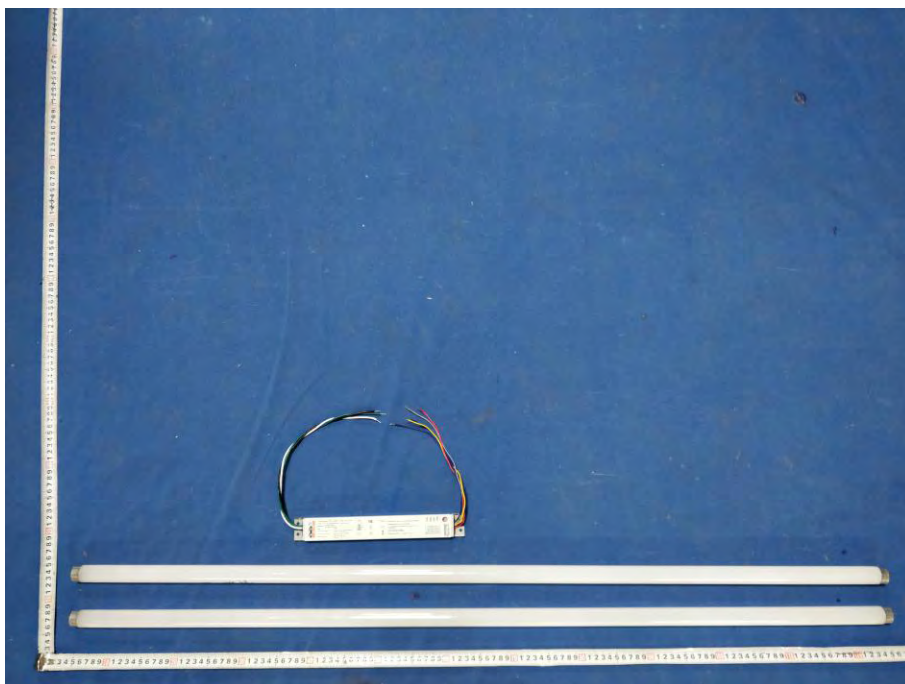
\*3: This value is calculated and the calculation formula is as below:

$$132.24 = 1619.88 / 12.25$$

$$132.68 = 1625.39 / 12.25$$



## Photo Document



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