



Date of issue 2021-02-20

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 -- 4-Lamp External Driver (UL Type C) Lamps

### Product Model No.:

RP-T8C-G2-30W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830,  
RP-T8C-G2-30W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850,  
RP-T8C-G2-35W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830,  
RP-T8C-G2-35W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850,  
RP-T8C-G2-40W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830,  
RP-T8C-G2-40W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850,  
RP-T8C-G2-45W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830,  
RP-T8C-G2-45W-4FT-4L-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.

*Jarvis Zhang*

*Jason Zhou*

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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 -- 4-Lamp External Driver (UL Type C) Lamps
<b>Test Model Number</b>	RP-T8C-G2-30W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830, RP-T8C-G2-30W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850, RP-T8C-G2-35W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830, RP-T8C-G2-35W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850, RP-T8C-G2-40W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830, RP-T8C-G2-40W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850, RP-T8C-G2-45W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830, RP-T8C-G2-45W-4FT-4L-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: 30W, 35W, 40W, 45W
<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 2021-01-22
<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-T8C-G2-30W-4FT-4L-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
120.06	60	0.063	7.57	0.996

##### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1087.00	143.55	2997

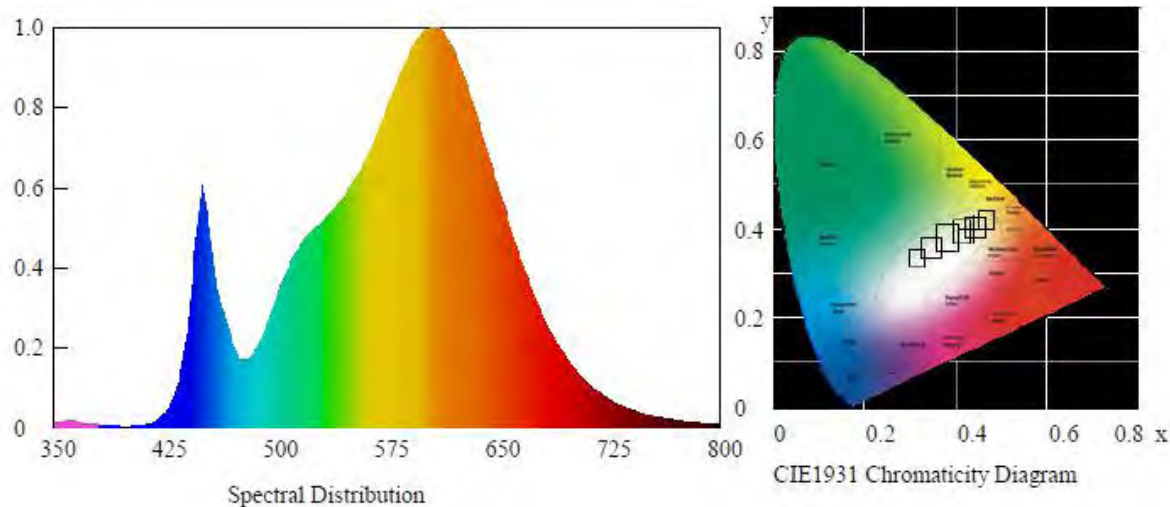
##### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00125	0.4353	0.4004	0.2511	0.5197

##### Color Rendering

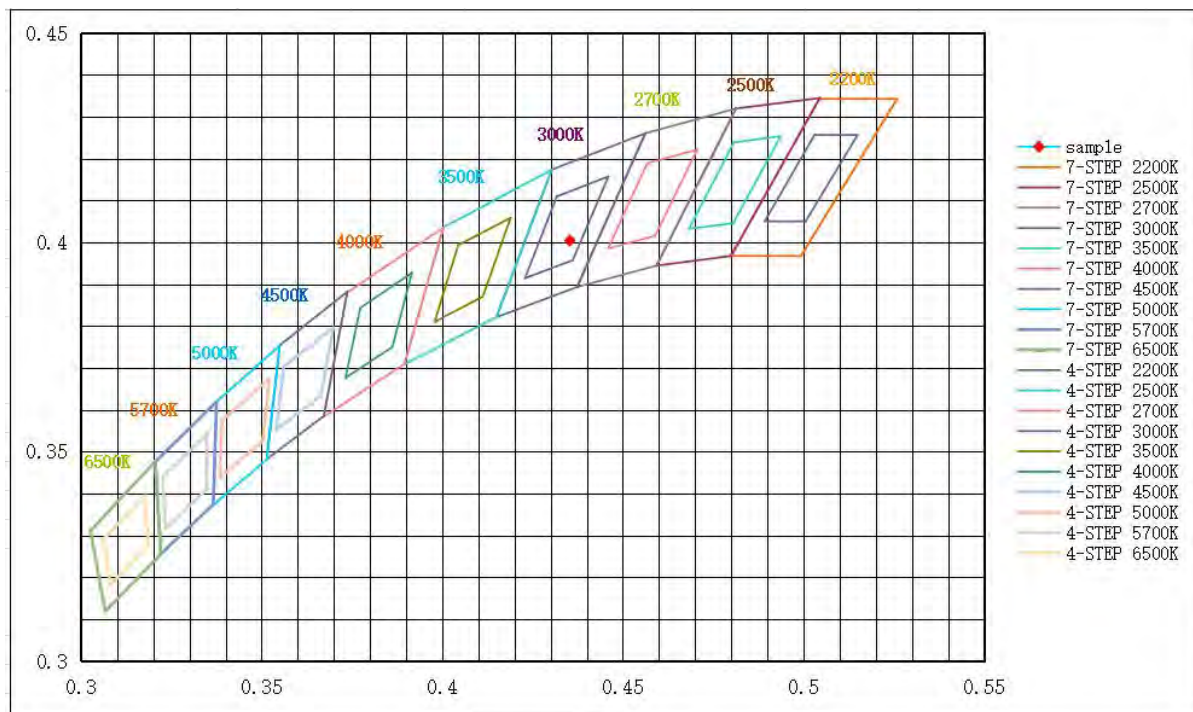
CRI	R9	Rf	Rg	Rcs,h1(%)
84.3	14	85	98	-10

##### Spectral Distribution





## 7/4 Step Quadrangle







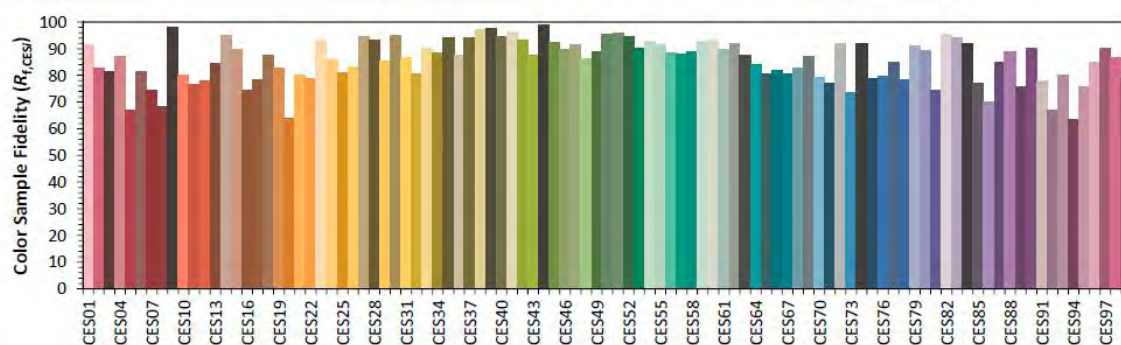
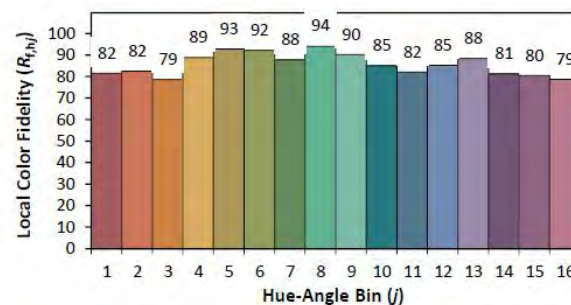
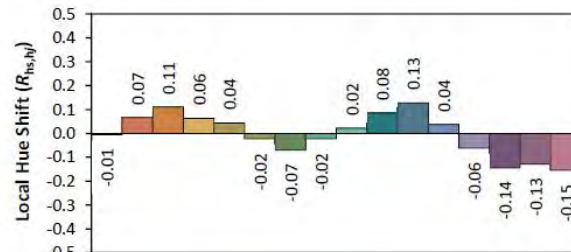
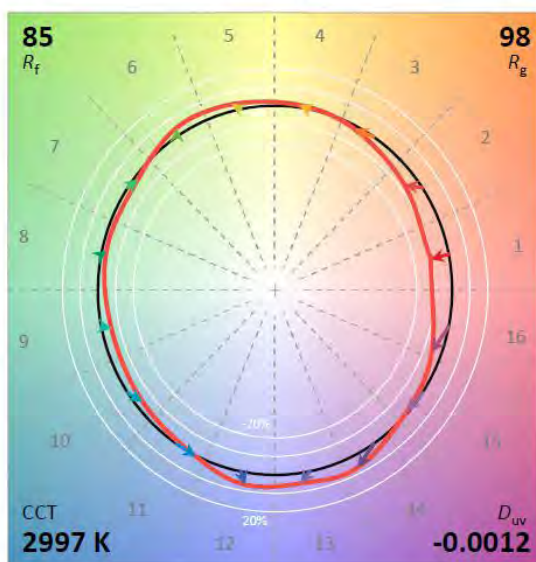
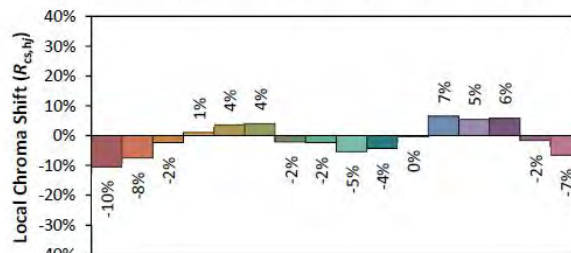
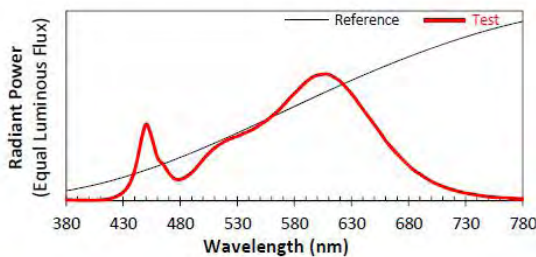
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126016-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-30W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830



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

$x$  0.4353  
 $y$  0.4004  
 $u'$  0.2511  
 $v'$  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.





### 3.1.2 Model Number: RP-T8C-G2-30W-4FT-4L-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
120.05	60	0.063	7.58	0.996

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1106.92	146.08	4999

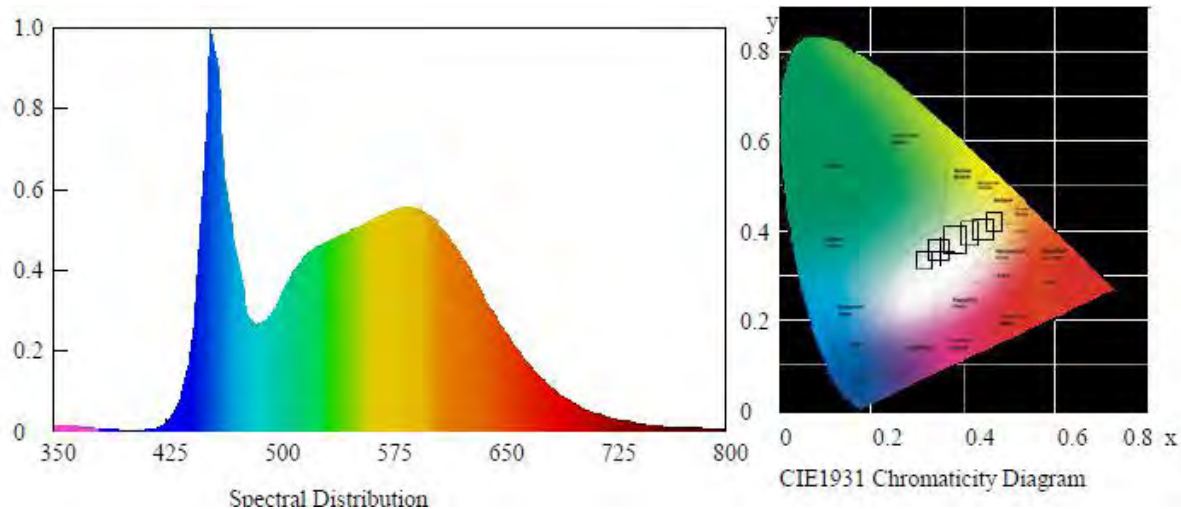
#### Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00243	0.3456	0.3569	0.2097	0.4873

#### Color Rendering

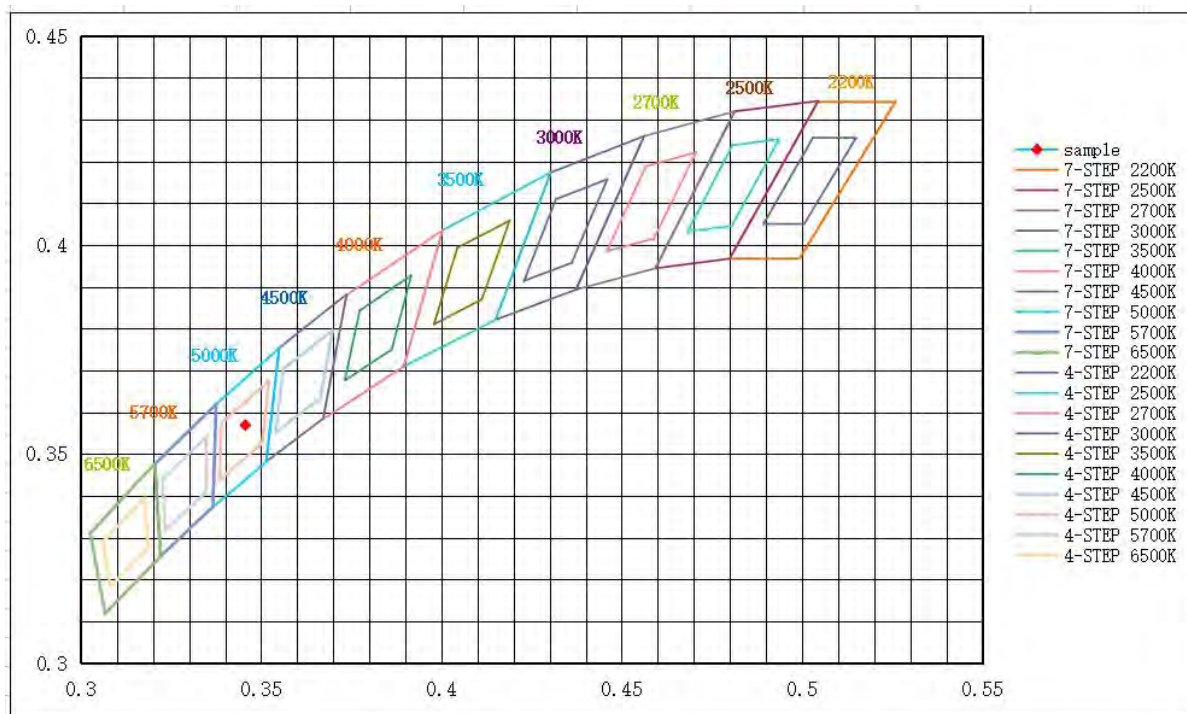
CRI	R9	Rf	Rg	Rcs,h1(%)
84.1	15	83	93	-12

#### Spectral Distribution





### 7/4 Step Quadrangle





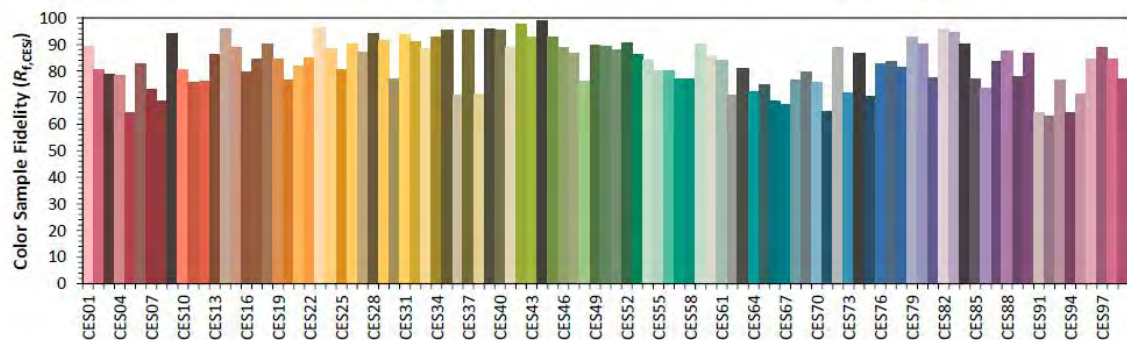
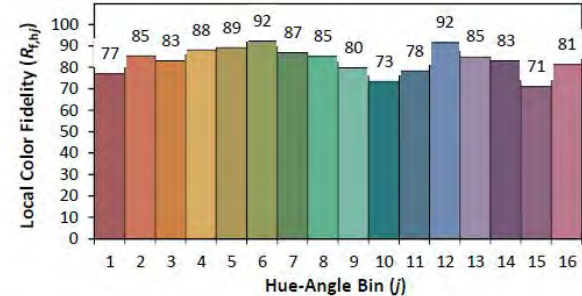
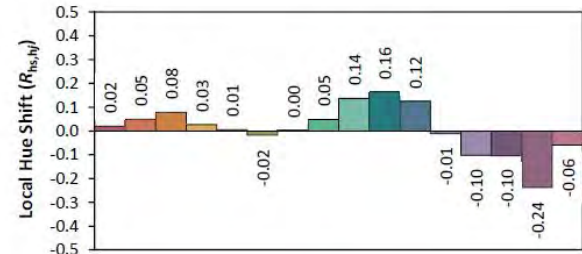
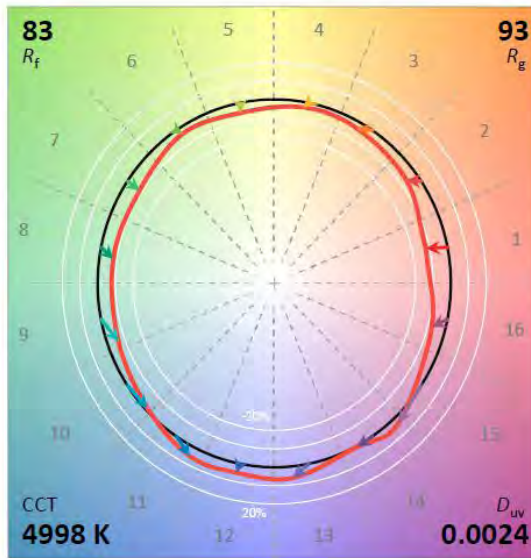
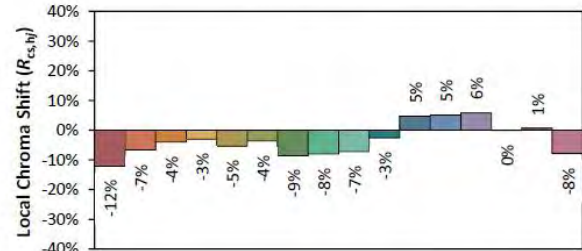
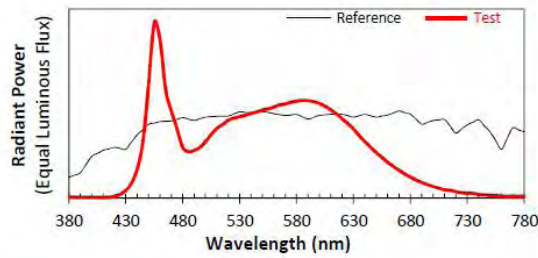
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126016-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-30W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850



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

$x$  0.3456  
 $y$  0.3569  
 $u'$  0.2097  
 $v'$  0.4873

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.



### 3.1.3 Model Number: RP-T8C-G2-35W-4FT-4L-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
120.03	60	0.072	8.65	0.996

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1223.41	141.43	2996

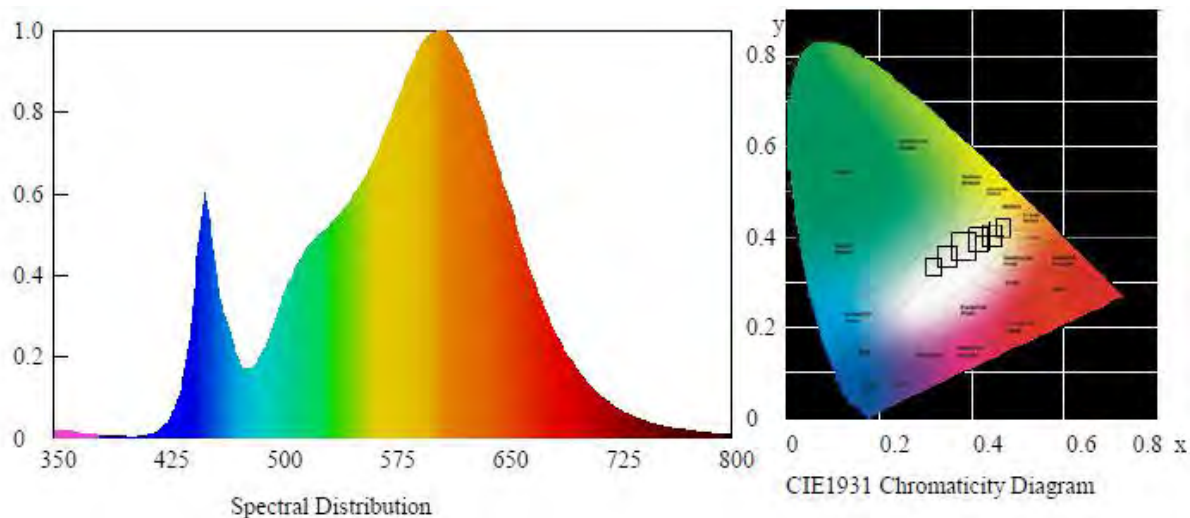
#### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00122	0.4354	0.4005	0.2511	0.5198

#### Color Rendering

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

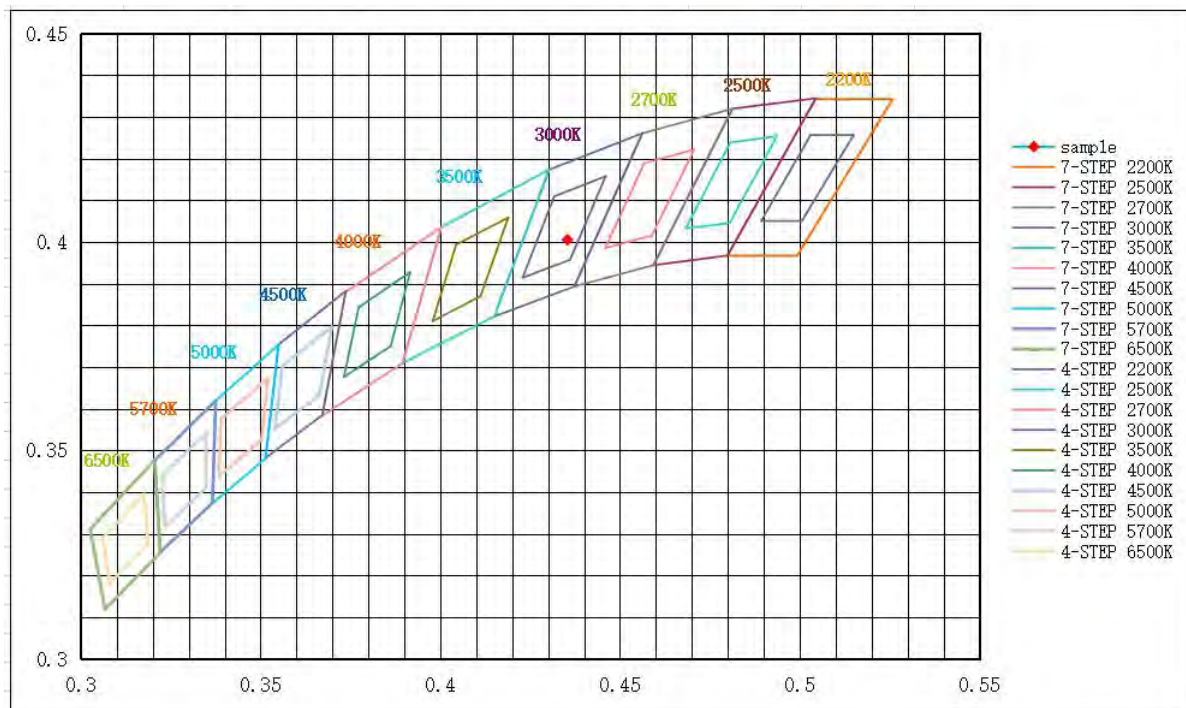
#### Spectral Distribution







## 7/4 Step Quadrangle





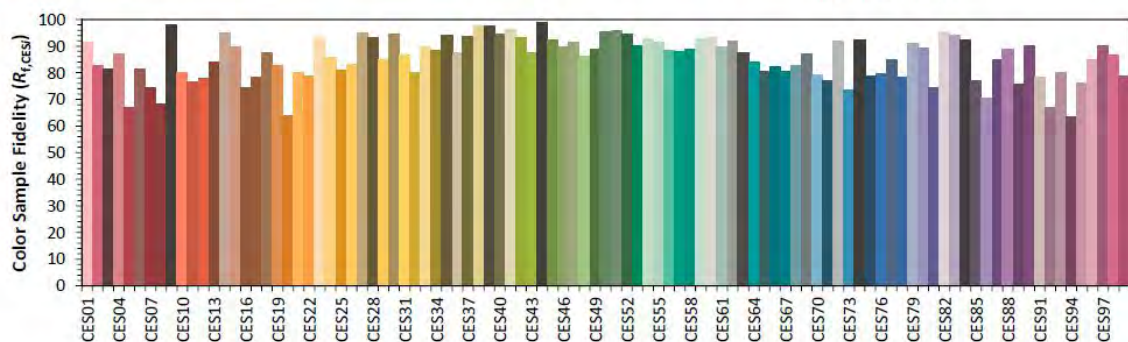
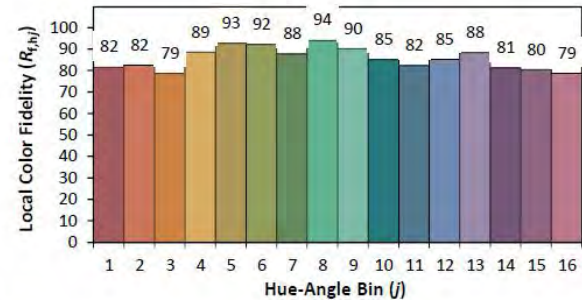
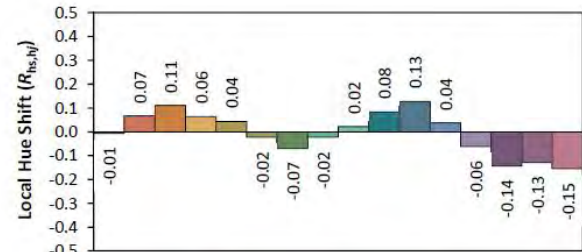
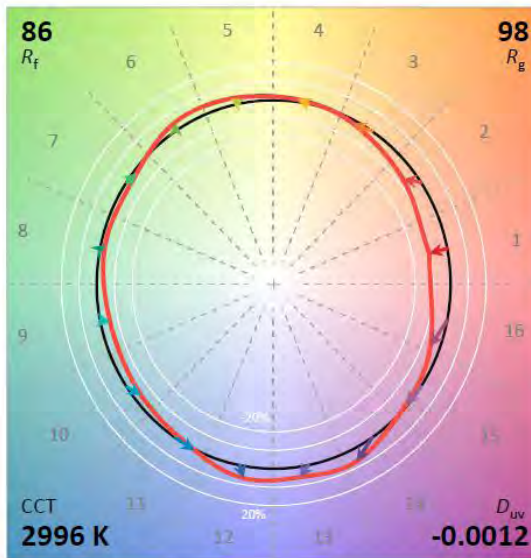
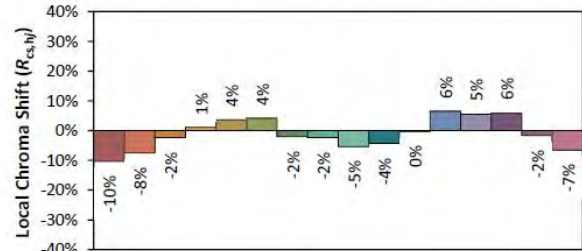
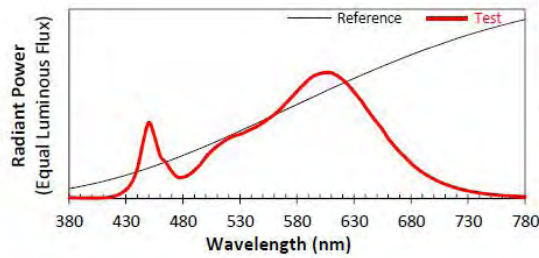
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126016-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-35W-4FT-4L-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  
 $y$  0.4005  
 $u'$  0.2511  
 $v'$  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.





### 3.1.4 Model Number: RP-T8C-G2-35W-4FT-4L-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
120.02	60	0.072	8.64	0.996

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1241.56	143.66	5002

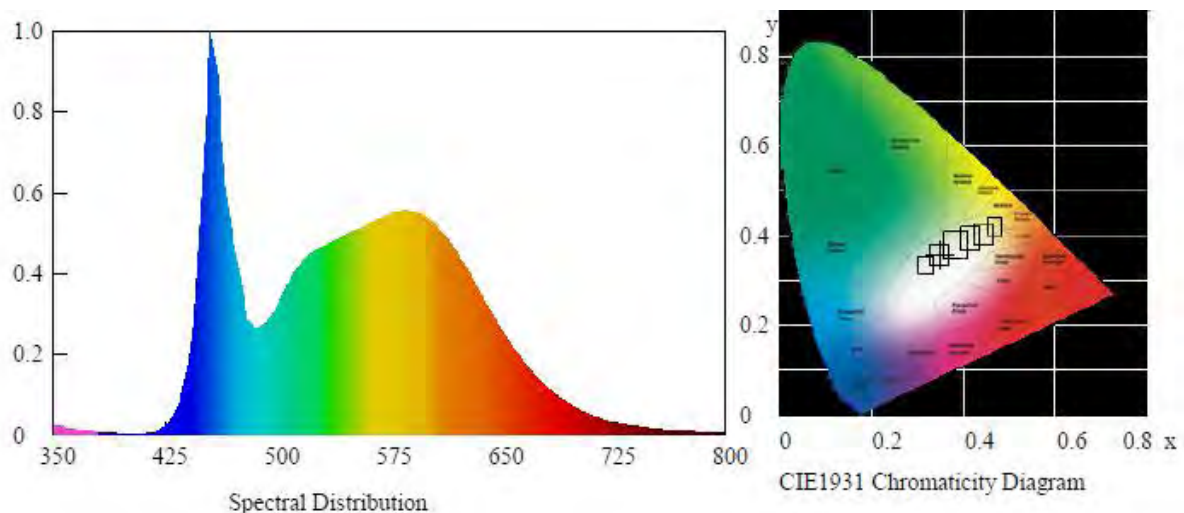
#### Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00266	0.3456	0.3573	0.2095	0.4875

#### Color Rendering

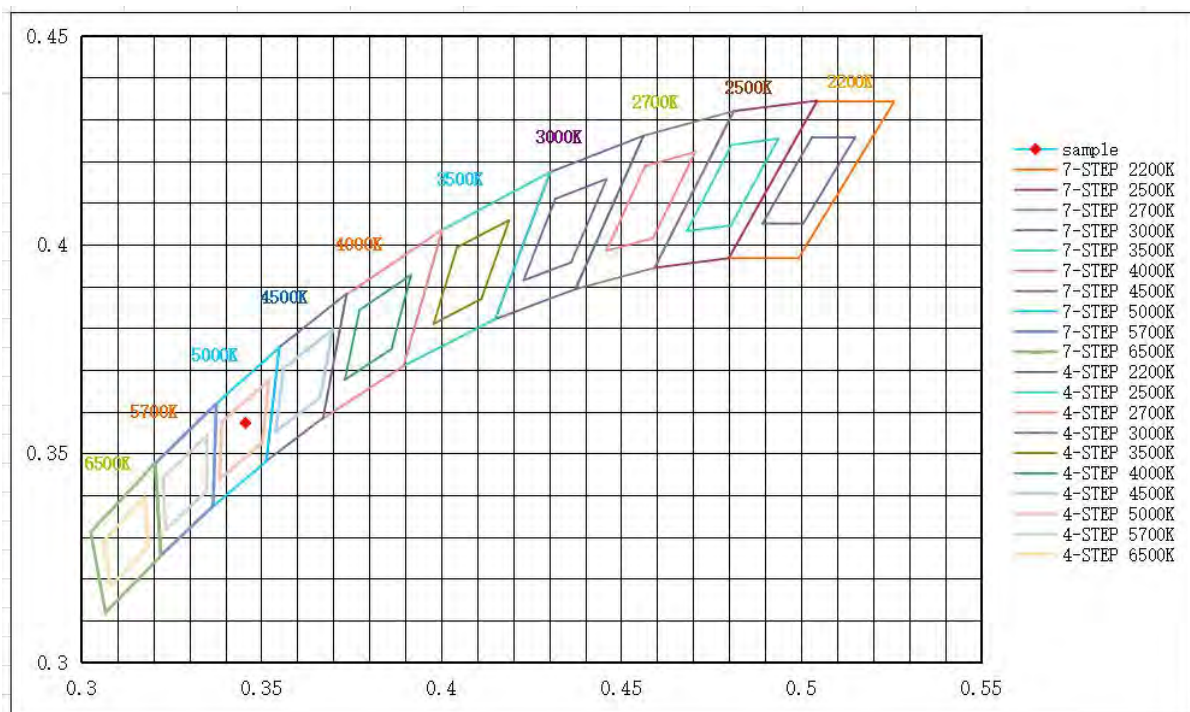
CRI	R9	Rf	Rg	Rcs,h1(%)
84.3	13	83	93	-12

#### Spectral Distribution





## 7/4 Step Quadrangle





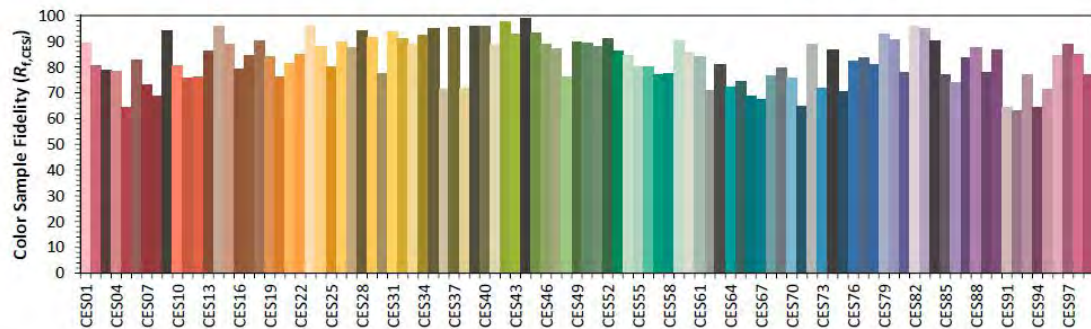
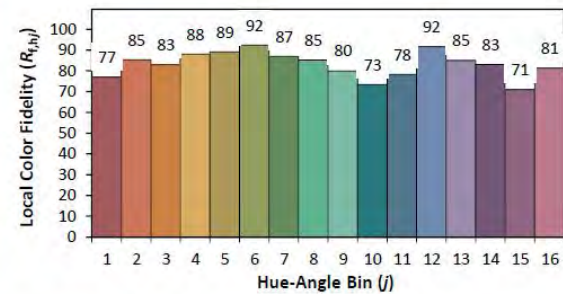
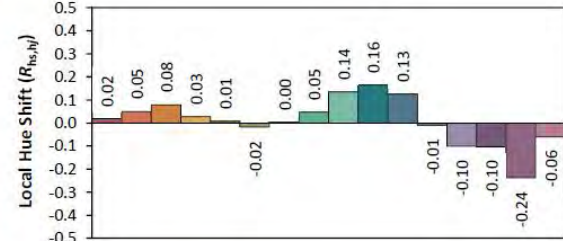
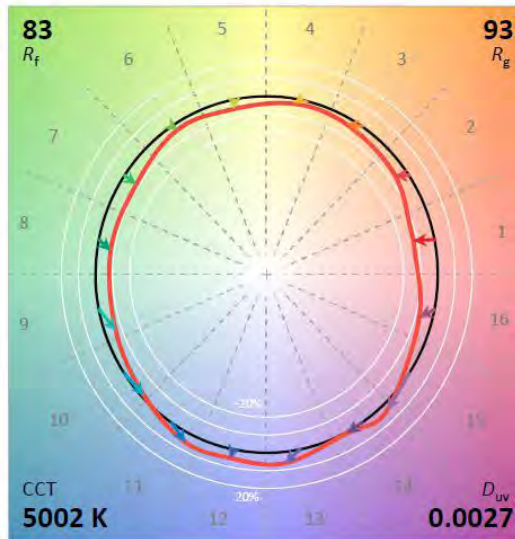
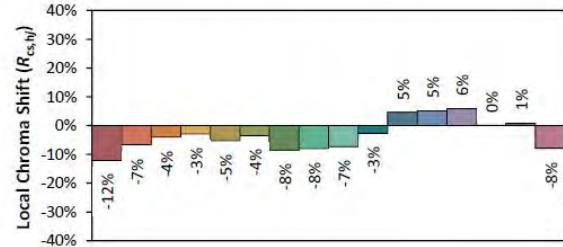
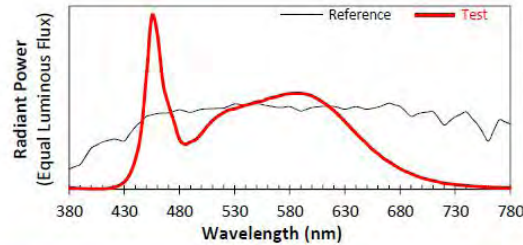
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126016-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-35W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850



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

 $x$  0.3456 $y$  0.3573 $u'$  0.2095 $v'$  0.4875CIE 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.



### 3.1.5 Model Number: RP-T8C-G2-40W-4FT-4L-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
119.99	60	0.081	9.69	0.996

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1350.17	139.30	2999

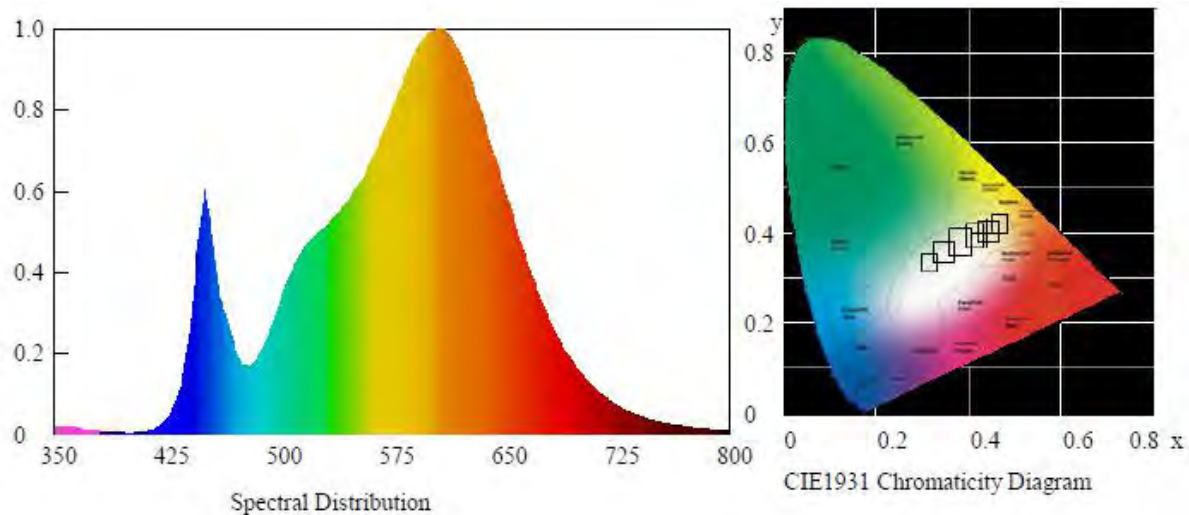
#### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.0012	0.4353	0.4005	0.2510	0.5197

#### Color Rendering

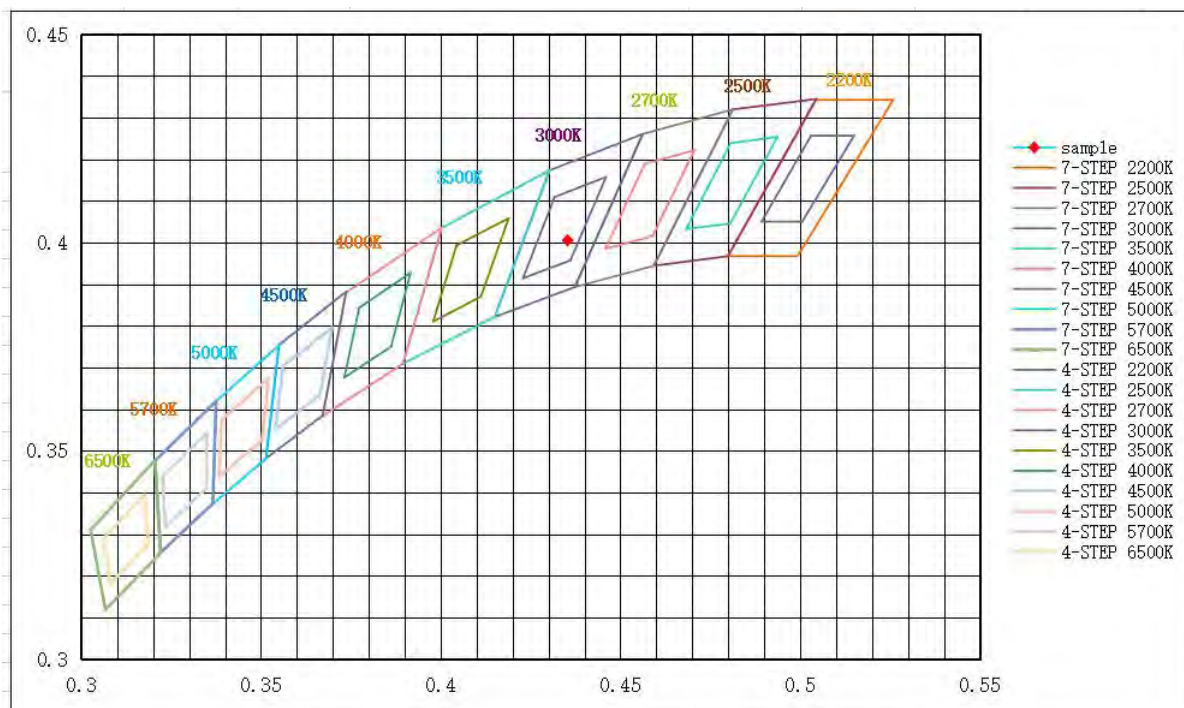
CRI	R9	Rf	Rg	Rcs,h1(%)
84.2	14	85	98	-10

#### Spectral Distribution





## 7/4 Step Quadrangle







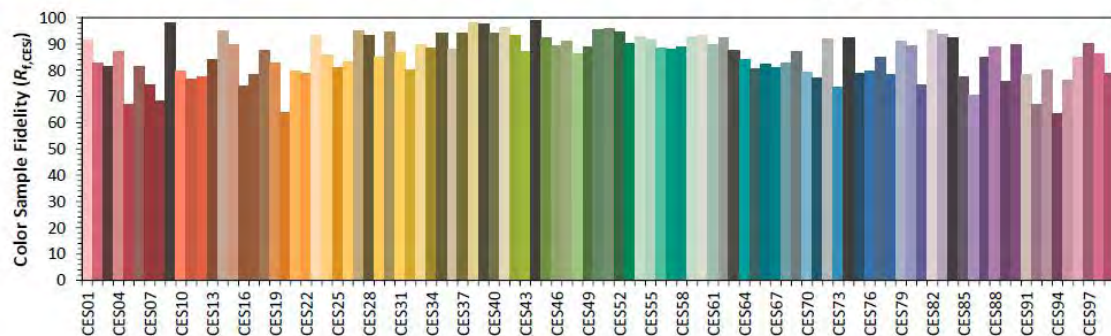
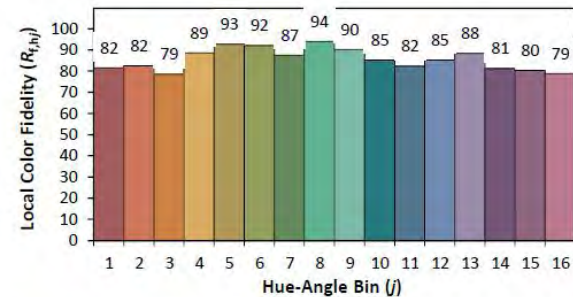
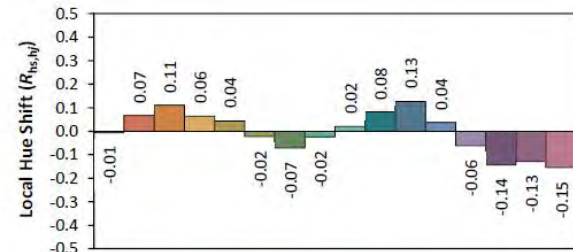
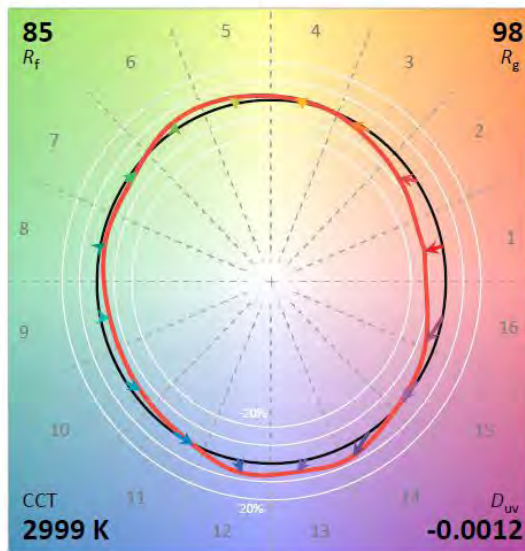
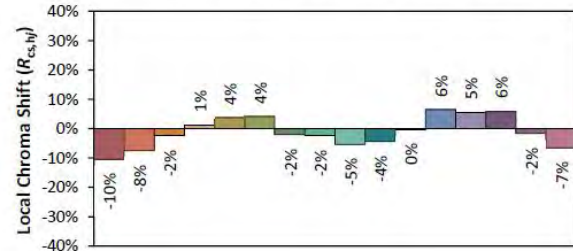
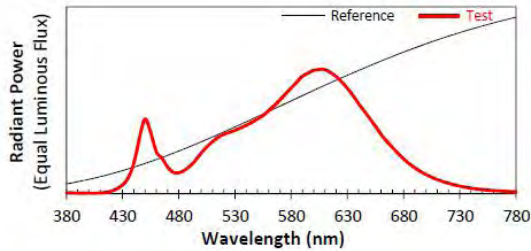
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126016-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-40W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830



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

$x$  0.4353  
 $y$  0.4005  
 $u'$  0.2510  
 $v'$  0.5197

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.





### 3.1.6 Model Number: RP-T8C-G2-40W-4FT-4L-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
120.00	60	0.081	9.72	0.996

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1375.86	141.59	4995

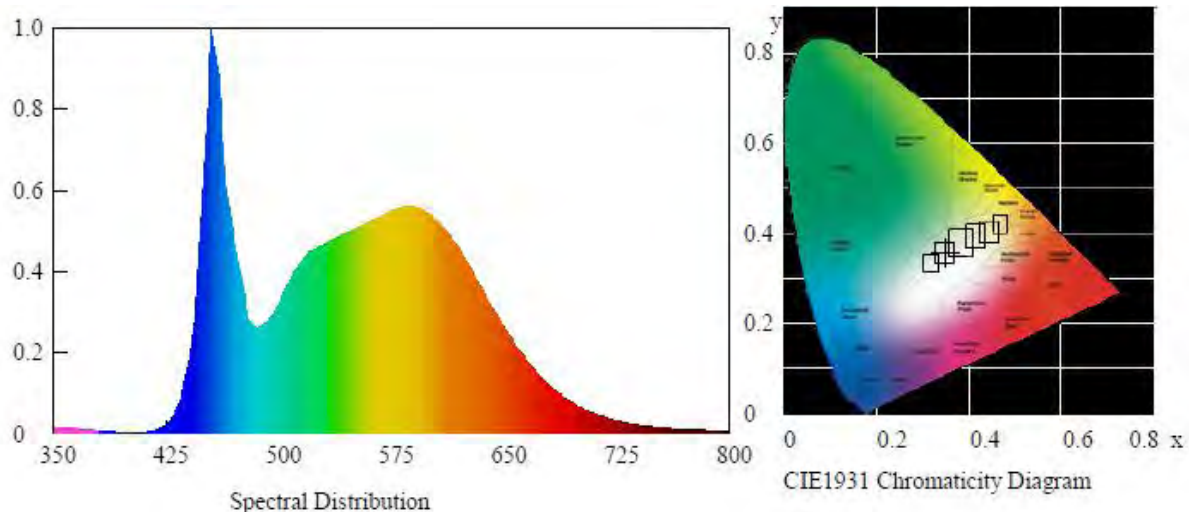
#### Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00249	0.3457	0.3571	0.2097	0.4874

#### Color Rendering

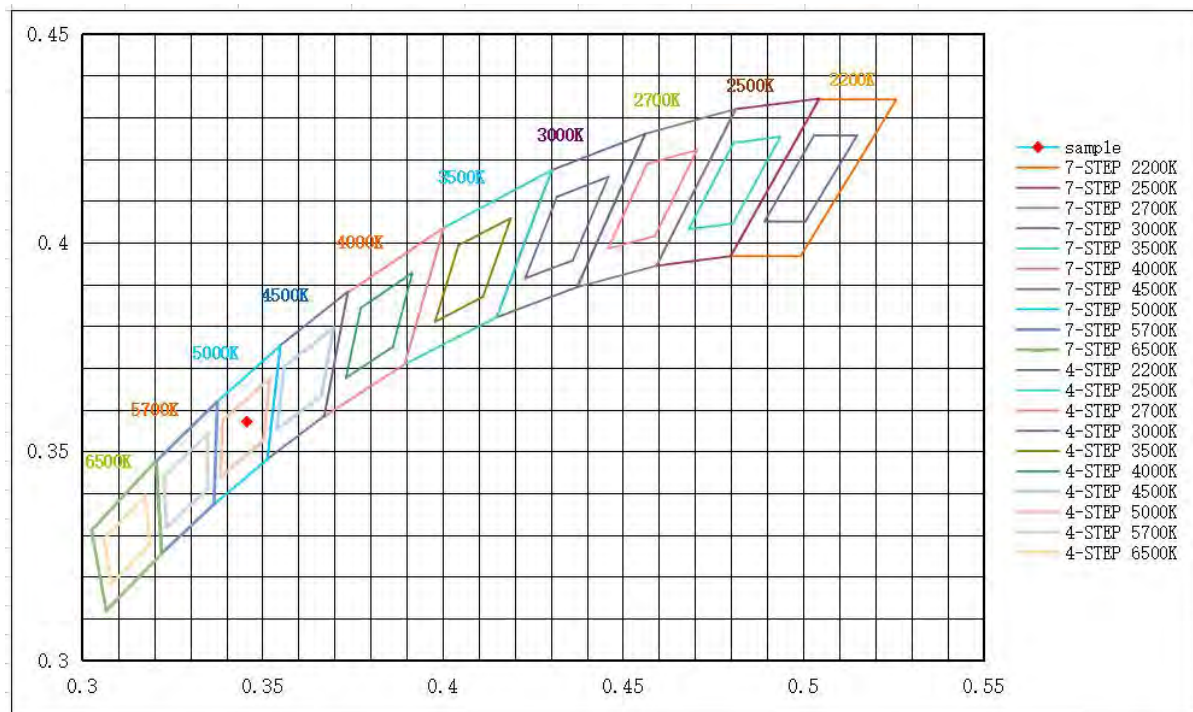
CRI	R9	Rf	Rg	Rcs,h1(%)
84.0	15	83	93	-12

#### Spectral Distribution





## 7/4 Step Quadrangle





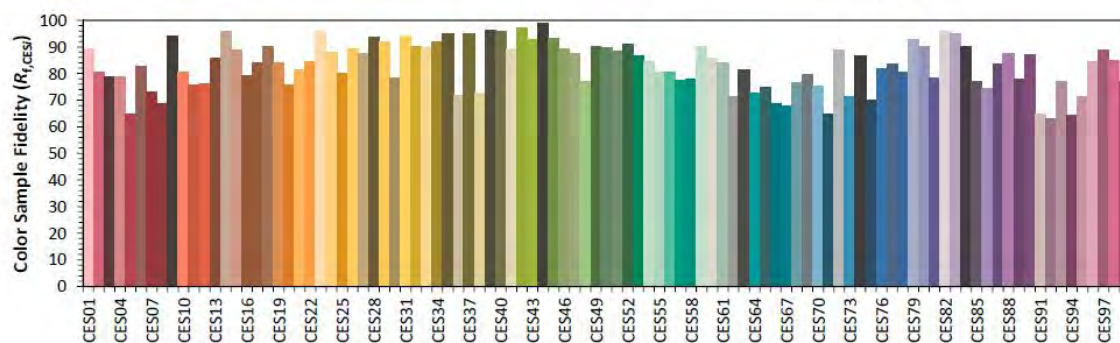
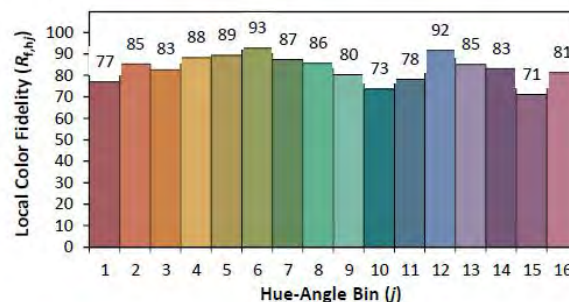
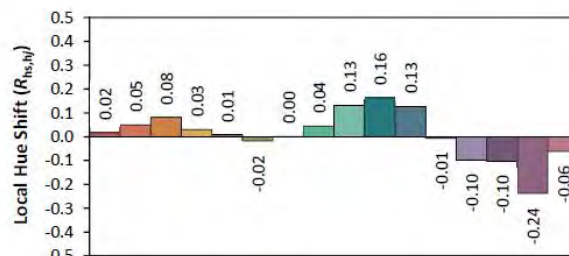
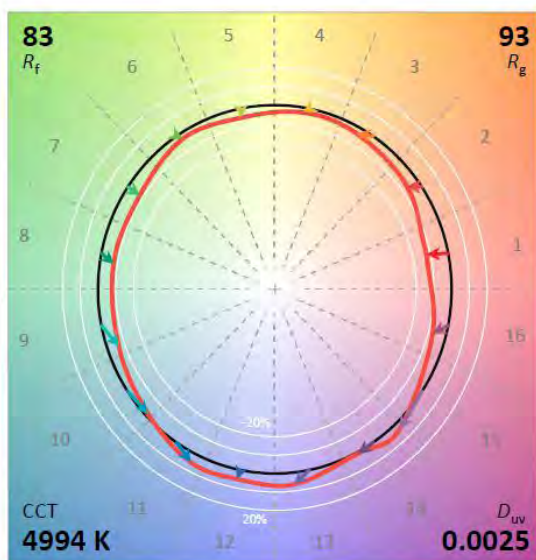
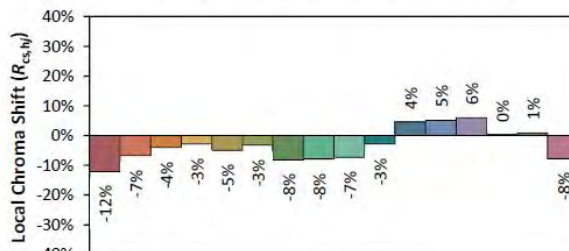
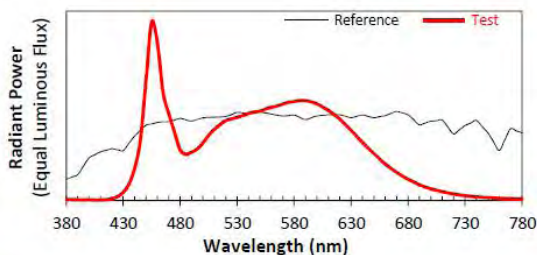
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126016-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-40W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850



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

$x$  0.3457  
 $y$  0.3571  
 $u'$  0.2097  
 $v'$  0.4874

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-G2-45W-4FT-4L-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
119.97	60	0.089	10.58	0.996

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1448.74	136.90	2996

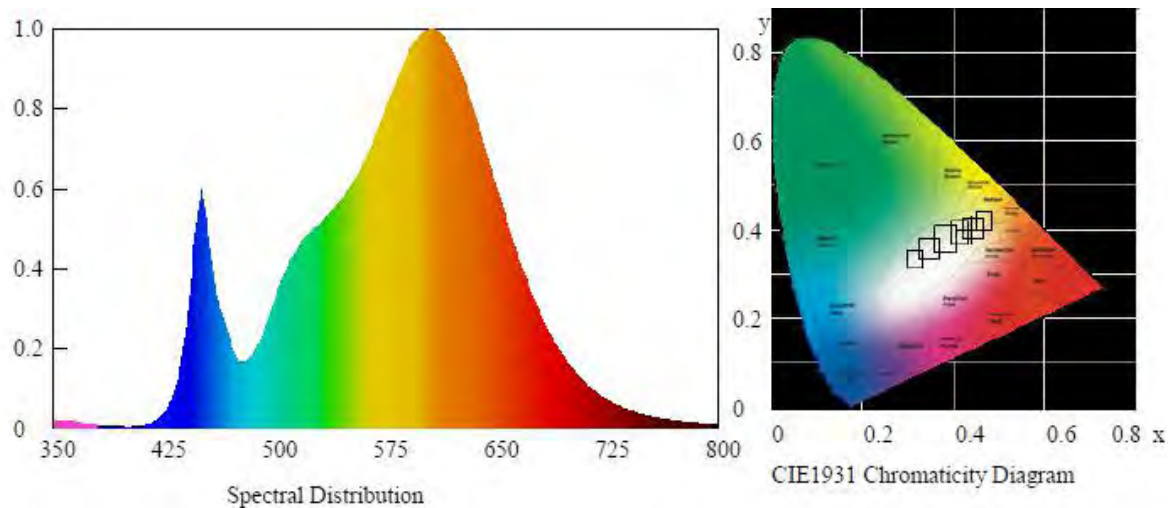
#### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00112	0.4356	0.4008	0.2511	0.5199

#### Color Rendering

CRI	R9	Rf	Rg	Rcs,h1(%)
84.2	13	85	98	-10

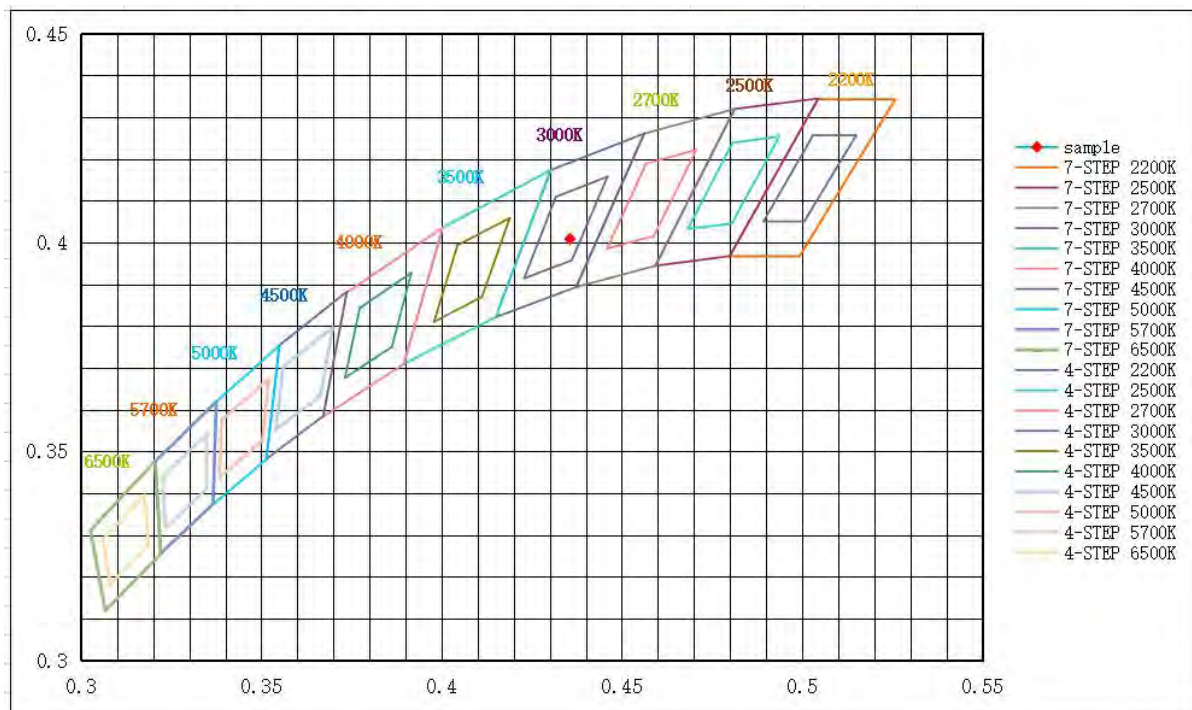
#### Spectral Distribution







## 7/4 Step Quadrangle





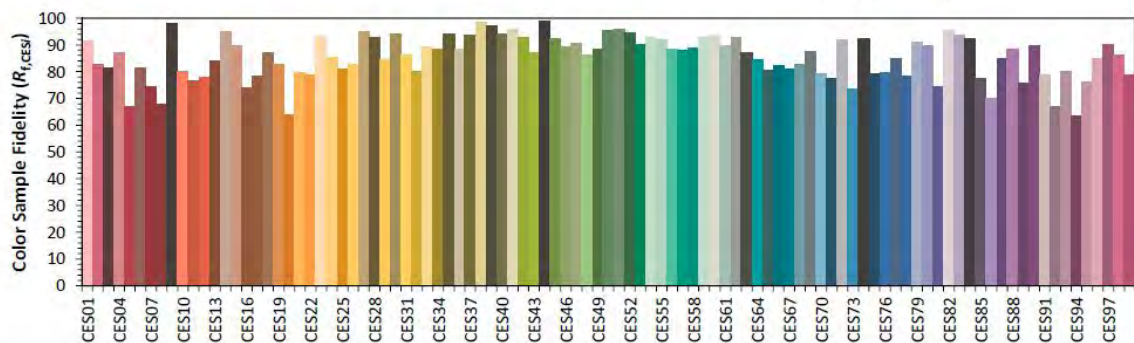
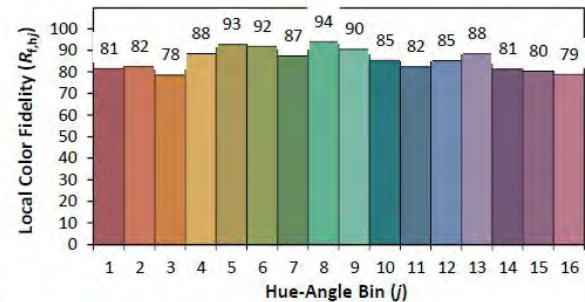
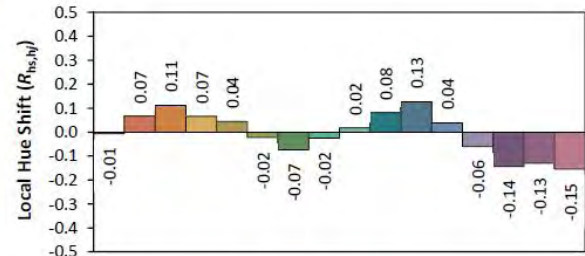
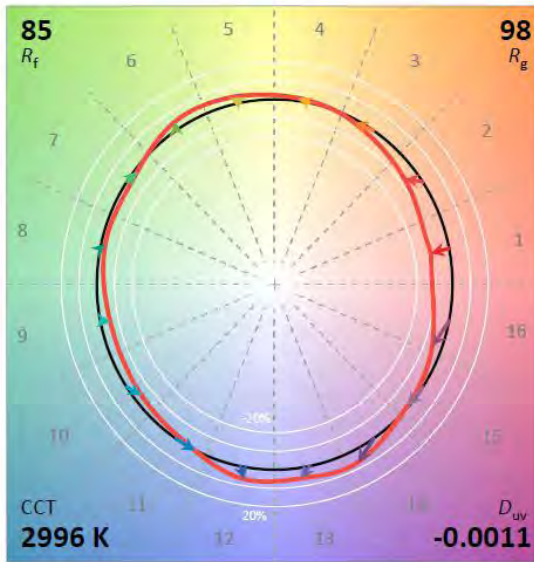
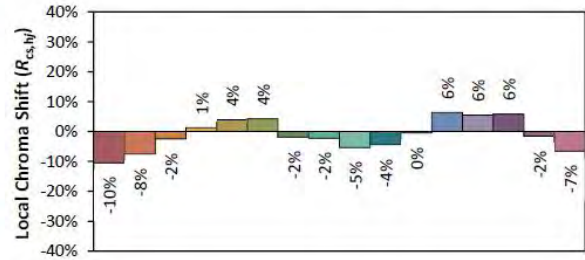
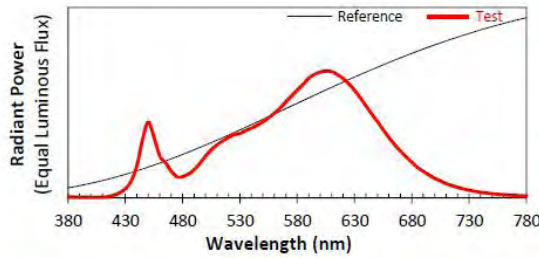
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126016-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-45W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830



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

$x$  0.4356  
 $y$  0.4008  
 $u'$  0.2511  
 $v'$  0.5199

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.





### 3.1.8 Model Number: RP-T8C-G2-45W-4FT-4L-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
119.97	60	0.089	10.68	0.996

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1489.00	139.42	4990

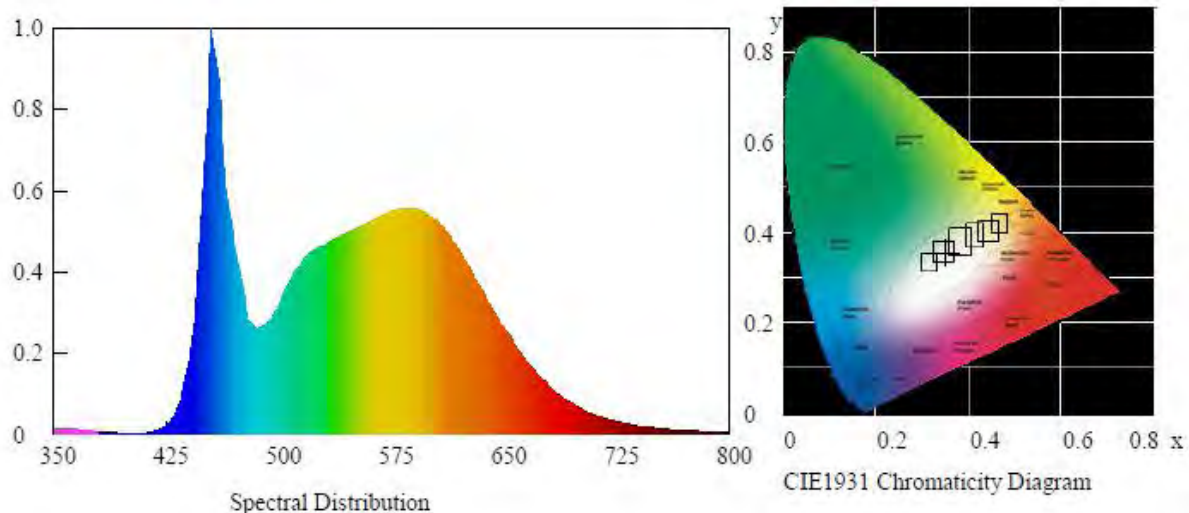
#### Chromaticity Coordinate

Duv	x	y	u'	v'
+0.0026	0.3459	0.3575	0.2097	0.4876

#### Color Rendering

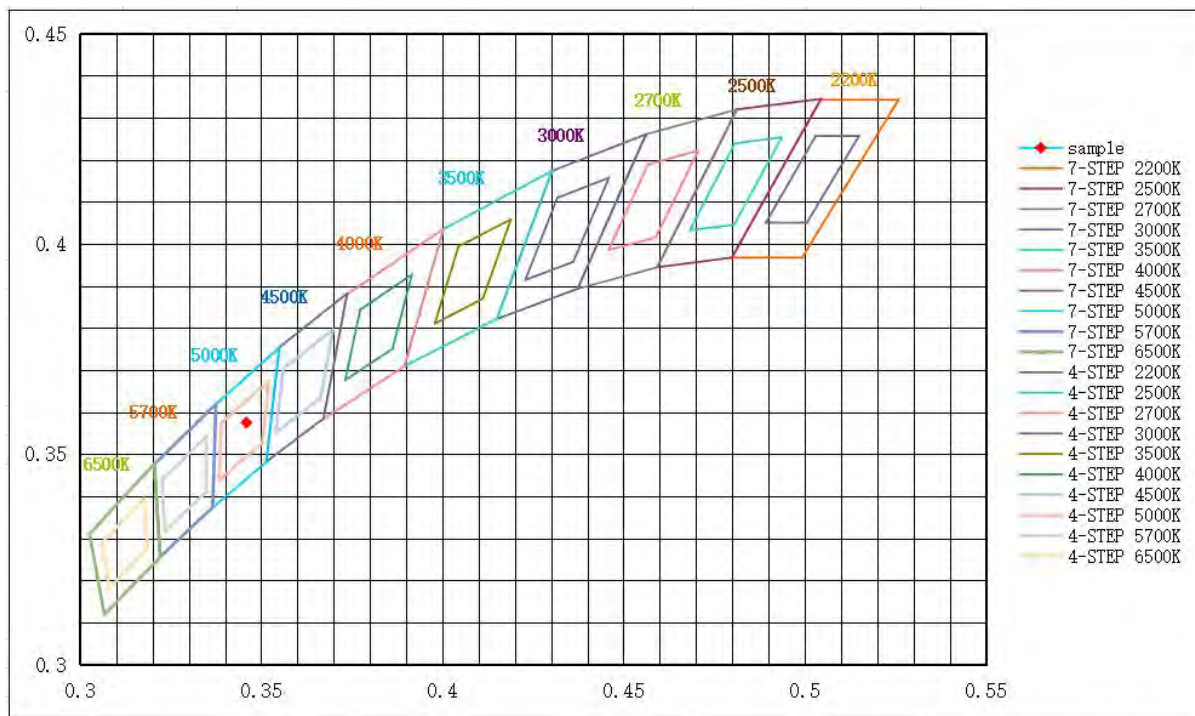
CRI	R9	Rf	Rg	Rcs,h1(%)
83.9	14	83	93	-12

#### Spectral Distribution





## 7/4 Step Quadrangle





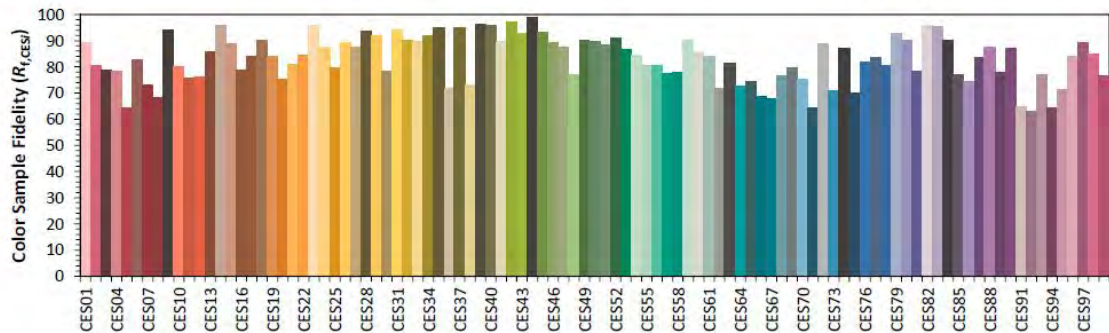
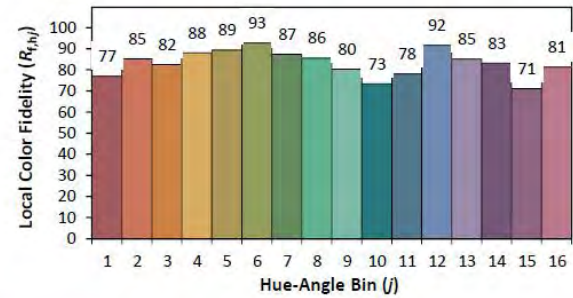
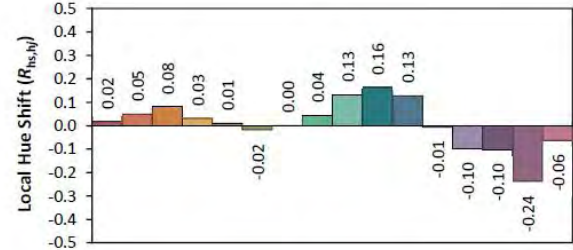
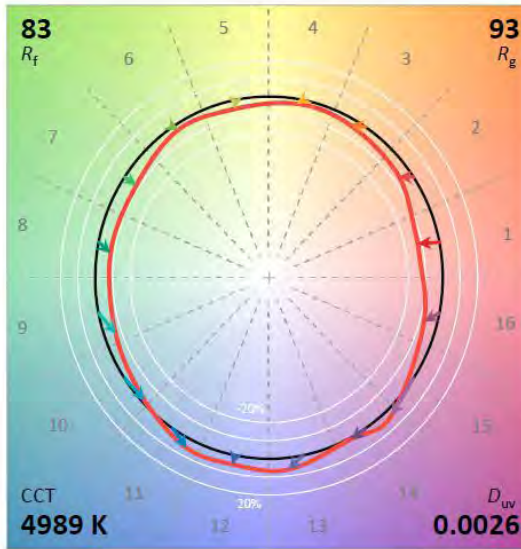
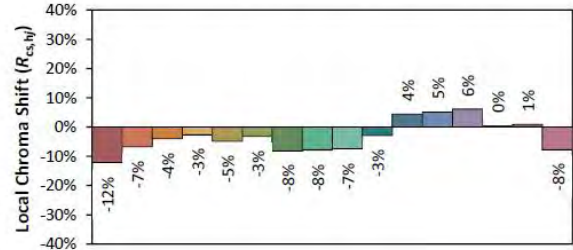
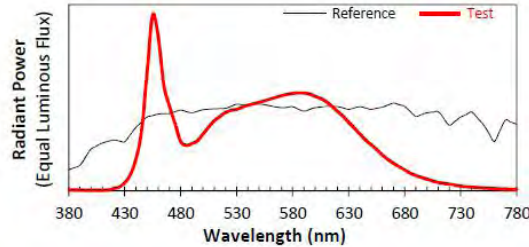
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL210126016-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2020/1/27

Model: RP-T8C-G2-45W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850



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

$x$  0.3459  
 $y$  0.3575  
 $u'$  0.2097  
 $v'$  0.4876

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-T8C-G2-45W-4FT-4L-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
120.090	60	0.088	10.555	0.996

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	Beam Angle(° )
1446.77	137.07	186.0



**Zonal Flux Diagram**

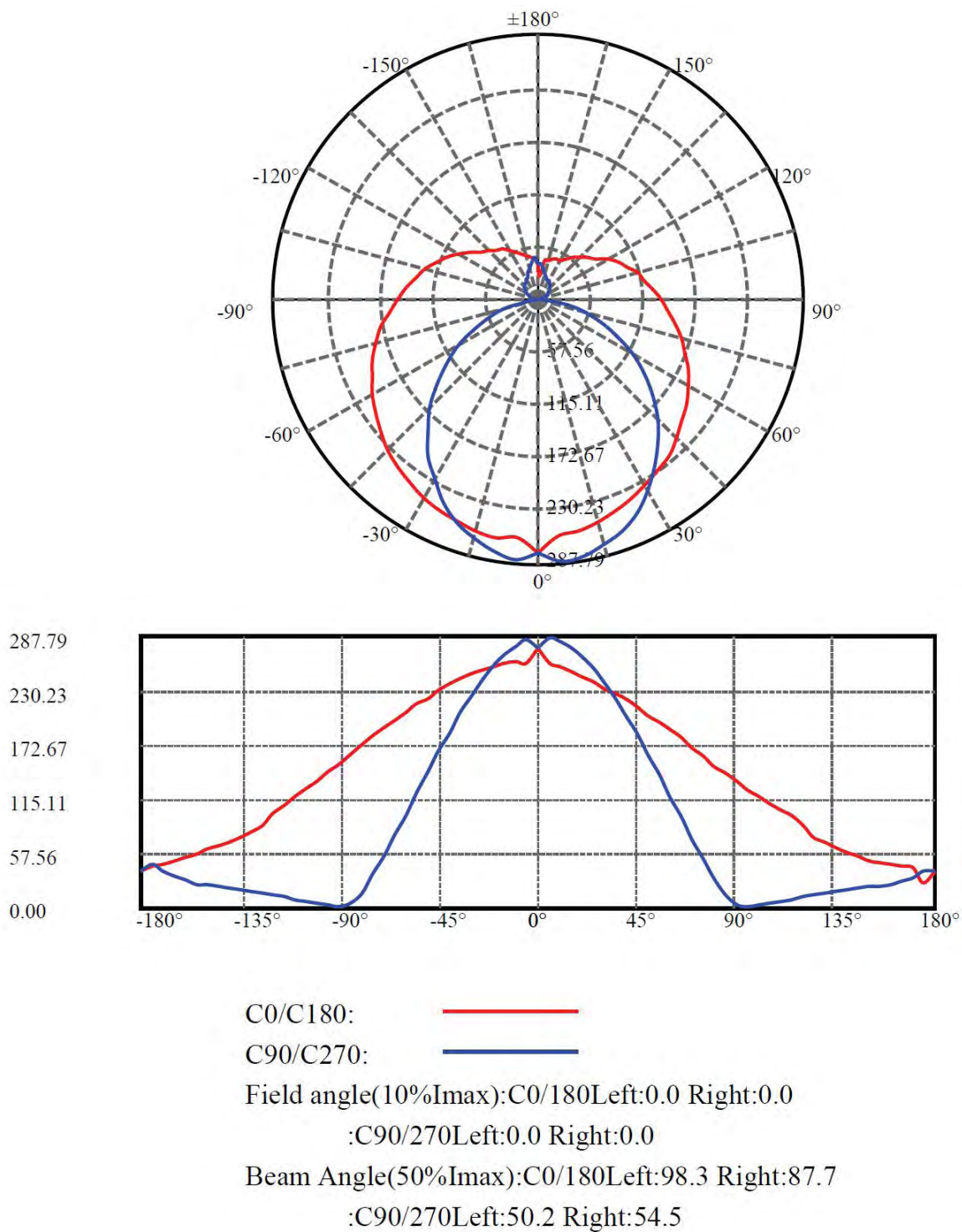
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	275.549	0.000	0	0.00%	0.00%
5.0	275.733	6.590	6.59	0.00%	0.46%
10.0	272.899	19.626	26.217	0.00%	1.81%
15.0	267.589	32.061	58.278	0.00%	4.03%
20.0	260.317	43.507	101.785	0.00%	7.04%
25.0	251.347	53.664	155.449	0.00%	10.74%
30.0	240.757	62.276	217.725	0.00%	15.05%
35.0	228.953	69.168	286.893	0.00%	19.83%
40.0	216.370	74.299	361.192	0.00%	24.97%
45.0	202.728	77.599	438.791	0.00%	30.33%
50.0	188.821	79.118	517.909	0.00%	35.80%
55.0	175.008	79.109	597.018	0.00%	41.27%
60.0	161.226	77.720	674.737	0.00%	46.64%
65.0	147.366	75.019	749.757	0.00%	51.82%
70.0	134.098	71.269	821.025	0.00%	56.75%
75.0	121.687	66.858	887.883	0.00%	61.37%
80.0	110.022	61.999	949.882	0.00%	65.66%
85.0	99.931	57.049	1006.932	0.00%	69.60%
90.0	91.506	52.417	1059.349	0.00%	73.22%
95.0	84.685	48.243	1107.591	0.00%	76.56%
100.0	79.017	44.482	1152.073	0.00%	79.63%
105.0	74.127	40.977	1193.05	0.00%	82.46%
110.0	69.704	37.595	1230.645	0.00%	85.06%
115.0	64.908	34.085	1264.73	0.00%	87.42%
120.0	59.364	30.211	1294.941	0.00%	89.51%
125.0	53.898	26.180	1321.121	0.00%	91.32%
130.0	51.266	22.866	1343.987	0.00%	92.90%
135.0	49.039	20.268	1364.255	0.00%	94.30%
140.0	47.591	17.892	1382.147	0.00%	95.53%
145.0	46.423	15.685	1397.832	0.00%	96.62%
150.0	44.959	13.457	1411.289	0.00%	97.55%
155.0	43.386	11.180	1422.469	0.00%	98.32%
160.0	42.343	8.991	1431.46	0.00%	98.94%
165.0	40.676	6.842	1438.302	0.00%	99.41%
170.0	39.119	4.733	1443.036	0.00%	99.74%
175.0	39.072	2.797	1445.833	0.00%	99.94%
180.0	39.104	0.935	1446.767	0.00%	100.00%



## Luminous Intensity Distribution Diagram

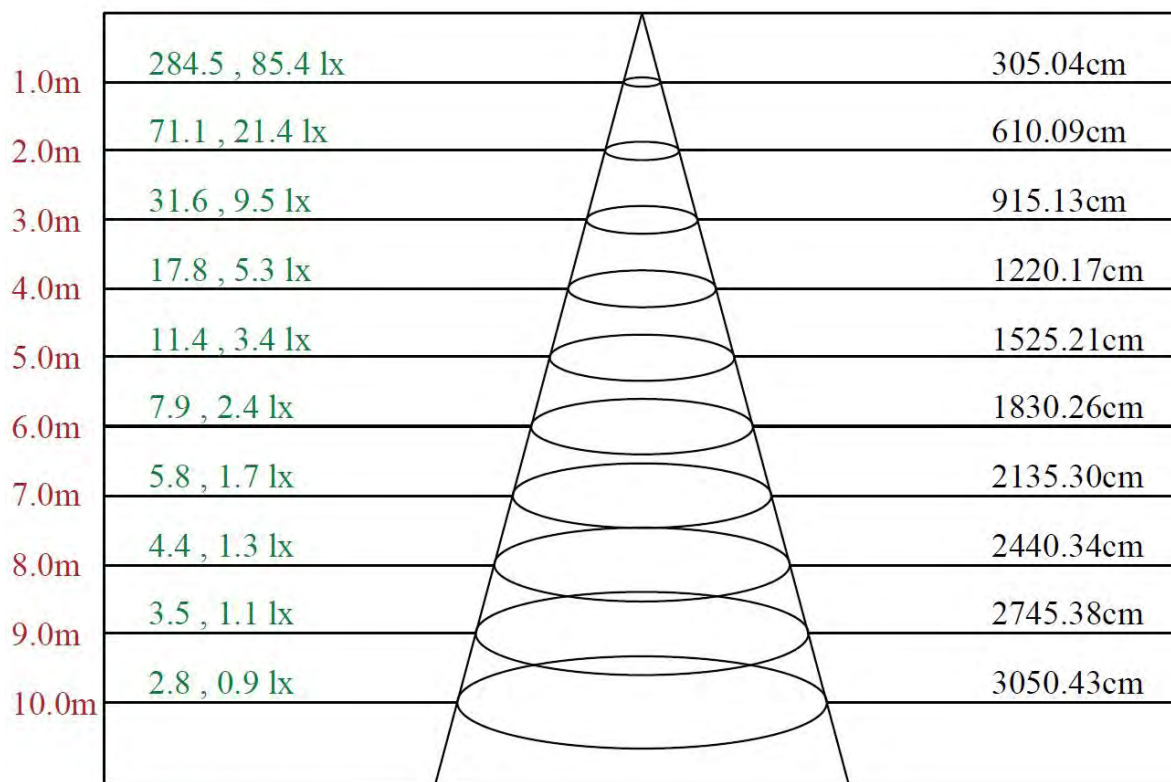
Light Distribution Curve [Unit:cd]







## Lux distance Curve



Max , Ave

Beam angle of C112.5 plane 113.50

**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	275.55	258.39	255.65	250.41	244.68	239.45	232.72	226.74	221.01
22.5	275.55	266.86	263.62	258.14	252.90	244.68	236.71	227.74	218.02
45.0	275.55	277.82	273.83	267.85	260.13	250.41	238.95	226.99	213.29
67.5	275.55	277.07	271.34	263.62	253.40	240.45	225.25	208.80	192.11
90.0	275.55	286.04	283.05	276.08	266.36	254.40	239.20	222.01	203.57
112.5	275.55	287.79	284.55	278.32	269.85	258.64	244.93	229.48	213.29
135.0	275.55	285.05	283.55	279.56	273.34	265.36	255.65	245.18	232.47
157.5	275.55	270.35	269.35	267.11	264.62	259.63	252.90	246.43	238.95
180.0	275.55	259.63	261.63	259.38	255.65	252.66	248.67	242.69	237.21
202.5	275.55	266.86	268.35	267.61	263.62	259.88	254.65	247.17	239.45
225.0	275.55	279.56	277.32	273.09	266.36	257.64	248.42	236.96	225.50
247.5	275.55	278.57	275.33	268.85	260.13	249.17	235.46	220.01	204.32
270.0	275.55	283.80	277.57	268.35	256.89	242.19	225.00	207.06	186.63
292.5	275.55	285.05	279.07	270.35	259.13	245.18	229.73	213.04	195.35
315.0	275.55	281.81	277.57	271.09	262.37	253.15	242.19	230.48	217.52
337.5	275.55	267.11	264.62	261.63	255.65	248.67	241.69	232.47	223.25
360.0	275.55	258.39	255.65	250.41	244.68	239.45	232.72	226.74	221.01
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	212.54	204.07	196.84	188.62	179.90	169.18	160.71	150.75	142.27
22.5	207.31	198.09	189.62	180.15	170.18	160.96	151.74	142.52	135.55
45.0	199.58	185.63	172.67	159.72	147.26	135.30	124.58	114.37	105.90
67.5	172.92	155.48	137.54	120.60	103.16	86.46	72.51	60.55	51.83
90.0	183.89	162.71	140.78	118.60	95.93	74.00	52.08	32.14	14.45
112.5	195.60	176.41	157.72	140.78	122.59	104.90	89.20	75.25	63.54
135.0	219.27	206.31	192.61	179.65	166.94	156.23	145.26	133.80	123.09
157.5	230.98	222.26	213.29	203.32	194.60	185.63	175.91	166.69	155.98
180.0	229.98	222.51	215.53	207.06	198.09	190.61	181.64	172.92	162.21
202.5	231.23	223.50	214.53	206.06	194.85	185.63	176.16	166.69	155.98
225.0	213.79	201.58	188.87	176.16	163.70	151.99	141.28	130.31	121.34
247.5	187.37	169.43	150.50	132.31	114.87	98.92	84.47	72.76	62.04
270.0	165.70	144.02	121.84	98.92	76.99	55.07	35.13	16.45	4.49
292.5	176.91	157.72	138.79	121.10	104.65	88.70	74.50	62.79	53.82
315.0	203.07	189.12	175.41	161.71	149.25	137.29	126.08	115.86	108.64
337.5	213.54	202.32	193.60	184.88	174.92	164.70	155.73	146.51	137.79
360.0	212.54	204.07	196.84	188.62	179.90	169.18	160.71	150.75	142.27
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	134.05	125.83	118.11	111.13	104.15	97.42	87.21	75.75	70.27
22.5	127.57	119.35	110.13	103.40	96.18	89.95	76.49	69.02	64.29
45.0	99.17	90.95	84.22	77.74	72.76	68.27	64.29	54.32	49.58
67.5	45.85	40.61	37.13	35.13	33.39	32.89	33.39	33.39	32.39
90.0	3.24	1.74	3.24	4.73	6.73	9.47	11.71	13.70	15.95
112.5	54.07	47.59	42.86	39.87	38.12	36.63	36.63	36.13	33.39
135.0	113.62	104.40	97.18	89.70	83.72	75.50	68.52	61.54	59.05
157.5	145.76	136.54	127.82	119.85	111.38	103.65	94.19	80.48	75.50
180.0	152.74	144.02	134.55	126.33	117.11	108.64	100.41	87.96	80.98
202.5	146.26	137.79	128.57	120.35	112.62	104.65	95.18	81.98	76.74
225.0	111.38	103.65	96.43	89.95	84.22	77.24	67.28	61.30	58.80
247.5	53.07	47.09	43.36	40.37	38.87	38.62	38.37	34.39	32.64
270.0	1.99	3.24	4.98	7.23	9.47	11.71	13.95	16.45	18.69
292.5	46.35	41.36	38.37	36.63	35.38	33.14	28.65	29.65	31.15
315.0	99.67	90.95	84.97	78.74	73.75	59.55	56.56	53.57	52.08
337.5	129.32	119.85	112.37	104.90	97.42	91.20	76.99	72.76	68.77
360.0	134.05	125.83	118.11	111.13	104.15	97.42	87.21	75.75	70.27





C/ $\gamma$ (°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	63.54	59.05	54.82	49.34	48.09	46.35	44.35	42.36	26.66
22.5	58.31	55.56	51.83	49.34	47.09	41.11	35.13	25.42	34.14
45.0	48.84	46.59	45.85	43.11	36.88	33.89	30.40	33.64	41.86
67.5	31.89	33.64	34.63	33.14	30.40	31.15	32.39	36.13	44.10
90.0	17.69	19.44	21.43	22.92	23.42	24.67	28.90	32.64	39.37
112.5	34.88	37.13	38.12	36.88	32.64	31.64	32.39	35.13	38.87
135.0	55.81	52.57	49.83	48.34	44.85	39.62	35.63	30.65	35.63
157.5	69.52	65.28	61.54	56.06	52.57	49.58	43.85	35.63	25.17
180.0	75.75	70.51	66.03	62.04	57.31	53.57	49.58	47.09	44.60
202.5	72.26	67.03	63.79	60.30	57.81	55.07	52.08	49.09	46.59
225.0	56.31	53.82	50.83	49.83	50.83	50.83	51.08	49.34	41.86
247.5	33.39	35.13	37.13	39.62	42.11	44.35	45.60	42.86	41.11
270.0	19.93	21.93	23.17	24.42	25.42	30.90	33.64	39.62	45.85
292.5	33.14	36.13	38.87	41.61	43.36	45.10	39.87	39.62	44.10
315.0	49.09	46.59	48.59	49.34	50.58	50.08	48.84	41.61	41.61
337.5	64.29	61.05	56.31	53.07	50.83	49.58	47.09	45.10	33.64
360.0	63.54	59.05	54.82	49.34	48.09	46.35	44.35	42.36	26.66
C/ $\gamma$ (°)	180.0								
0.0	39.10								
22.5	39.10								
45.0	39.10								
67.5	39.10								
90.0	39.10								
112.5	39.10								
135.0	39.10								
157.5	39.10								
180.0	39.10								
202.5	39.10								
225.0	39.10								
247.5	39.10								
270.0	39.10								
292.5	39.10								
315.0	39.10								
337.5	39.10								
360.0	39.10								



## 4 Additional Test

### Electrical data at 277V

Model Number	Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
RP-T8C-G2-45W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830	Power Factor	277	60	0.972
	THD	277	60	6.3%

## 5 Performance Assessment

Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T8C-G2-30W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830	3000	1087.00	7.57	143.55
RP-T8C-G2-30W-4FT-4L-835-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-835	3500	1091.98 <sup>*1</sup>	7.58 <sup>*2</sup>	144.16 <sup>*3</sup>
RP-T8C-G2-30W-4FT-4L-840-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-840	4000	1096.96 <sup>*1</sup>	7.58 <sup>*2</sup>	144.81 <sup>*3</sup>
RP-T8C-G2-30W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850	5000	1106.92	7.58	146.08

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

$$1091.98 = (1106.92 - 1087.00) / 4 + 1087.00$$

$$1096.96 = (1106.92 - 1087.00) / 4 + 1091.98$$

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

$$7.58 = (7.57 + 7.58) / 2$$

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

$$144.16 = 1091.98 / 7.58$$

$$144.81 = 1096.96 / 7.58$$





Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T8C-G2-35W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830	3000	1223.41	8.65	141.43
RP-T8C-G2-35W-4FT-4L-835-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-835	3500	1227.95 * <sup>1</sup>	8.65 * <sup>2</sup>	142.04 * <sup>3</sup>
RP-T8C-G2-35W-4FT-4L-840-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-840	4000	1232.49 * <sup>1</sup>	8.65 * <sup>2</sup>	142.57 * <sup>3</sup>
RP-T8C-G2-35W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850	5000	1241.56	8.64	143.66

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

$$1227.95 = (1241.56 - 1223.41) / 4 + 1223.41$$

$$1232.49 = (1241.56 - 1223.41) / 4 + 1227.95$$

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

$$8.65 = (8.65 + 8.64) / 2$$

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

$$142.04 = 1227.95 / 8.65$$

$$142.57 = 1232.49 / 8.65$$

Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T8C-G2-40W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830	3000	1350.17	9.69	139.30
RP-T8C-G2-40W-4FT-4L-835-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-835	3500	1356.59 * <sup>1</sup>	9.71 * <sup>2</sup>	139.78 * <sup>3</sup>
RP-T8C-G2-40W-4FT-4L-840-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-840	4000	1363.02 * <sup>1</sup>	9.71 * <sup>2</sup>	140.44 * <sup>3</sup>
RP-T8C-G2-40W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850	5000	1375.86	9.72	141.59

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

$$1356.59 = (1375.86 - 1350.17) / 4 + 1350.17$$

$$1363.02 = (1375.86 - 1350.17) / 4 + 1356.59$$

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

$$9.71 = (9.69 + 9.72) / 2$$

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

$$139.78 = 1356.59 / 9.71$$

$$140.44 = 1363.02 / 9.71$$



Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T8C-G2-45W-4FT-4L-830-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-830	3000	1448.74	10.58	136.90
RP-T8C-G2-45W-4FT-4L-835-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-835	3500	1458.81 <sup>*1</sup>	10.63 <sup>*2</sup>	137.23 <sup>*3</sup>
RP-T8C-G2-45W-4FT-4L-840-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-840	4000	1468.87 <sup>*1</sup>	10.63 <sup>*2</sup>	138.18 <sup>*3</sup>
RP-T8C-G2-45W-4FT-4L-850-[OCN, Blank]-10V/RP-T8CHO-G2-4FT-850	5000	1489.00	10.68	139.42

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

$$1458.81 = (1489.00 - 1448.74) / 4 + 1448.74$$

$$1468.87 = (1489.00 - 1448.74) / 4 + 1458.81$$

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

$$10.63 = (10.58 + 10.68) / 2$$

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

$$137.23 = 1458.81 / 10.63$$

$$138.18 = 1468.87 / 10.63$$



## **Photo Document**



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