



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/T5HO Lamps--1-Lamp External Driver (UL Type C) Lamps

Product Model No.:

RP-T5C-G2-15W-4FT-1L-830-[OCN, Blank]-10V,
RP-T5C-G2-15W-4FT-1L-850-[OCN, Blank]-10V,
RP-T5C-G2-18W-4FT-1L-830-[OCN, Blank]-10V,
RP-T5C-G2-18W-4FT-1L-850-[OCN, Blank]-10V,
RP-T5C-G2-20W-4FT-1L-830-[OCN, Blank]-10V,
RP-T5C-G2-20W-4FT-1L-850-[OCN, Blank]-10V,
RP-T5CHO-G2-25W-4FT-1L-830-[OCN, Blank]-10V,
RP-T5CHO-G2-25W-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.

Jarvis zhang

Jason zhou

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

Manufacturer	LIGHT EFFICIENT DESIGN
Manufacturer Address	188 S. Northwest Highway Cary, IL 60013 USA
Brand Name	REMPHOS OR LIGHT EFFICIENT DESIGN
Luminaire Type	Linear Replacement Lamps -- 4' T5/T5HO Lamps--1-Lamp External Driver (UL Type C) Lamps
Test Model Number	RP-T5C-G2-15W-4FT-1L-830-[OCN, Blank]-10V, RP-T5C-G2-15W-4FT-1L-850-[OCN, Blank]-10V, RP-T5C-G2-18W-4FT-1L-830-[OCN, Blank]-10V, RP-T5C-G2-18W-4FT-1L-850-[OCN, Blank]-10V, RP-T5C-G2-20W-4FT-1L-830-[OCN, Blank]-10V, RP-T5C-G2-20W-4FT-1L-850-[OCN, Blank]-10V, RP-T5CHO-G2-25W-4FT-1L-830-[OCN, Blank]-10V, RP-T5CHO-G2-25W-4FT-1L-850-[OCN, Blank]-10V
Rated Inputs	AC 100-277V 50/60Hz
Field-Adjustable Product	Yes, Wattage setting: 15W, 18W, 20W, 25W
Nominal CCT	3000K, 5000K
Dimming Capability	Continuous
Integral Control Sensors	Optional
Date of Receipt Samples	2020-12-21
Date of test	2020-12-22 to 2021-01-21
Burning Time Before Test	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 ± 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. 4π 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-G2-15W-4FT-1L-830-[OCN, Blank]-10V

Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.11	60	0.126	14.99	0.993

Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
1978.68	132.0	2991

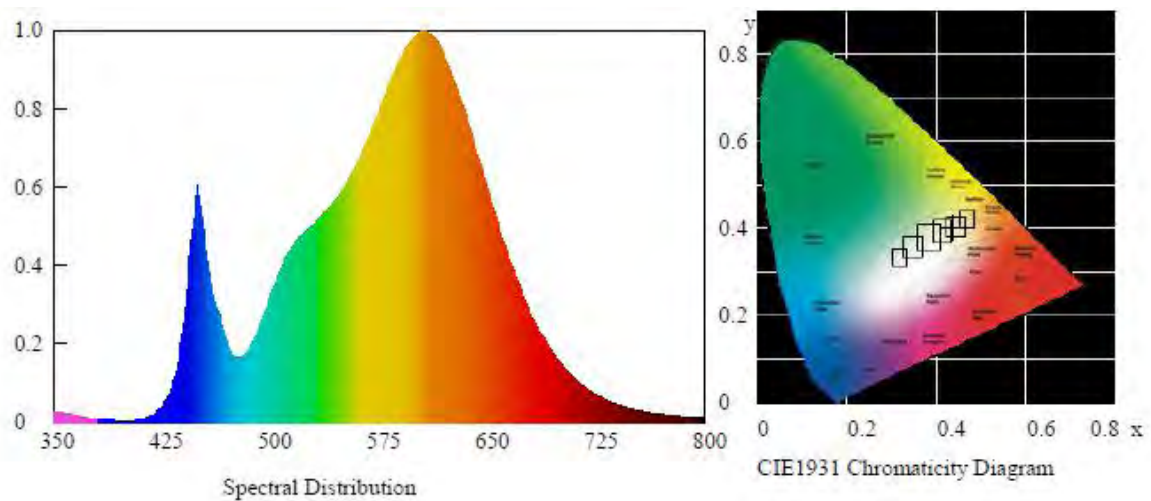
Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00118	0.4359	0.4008	0.2513	0.5199

Color Rendering

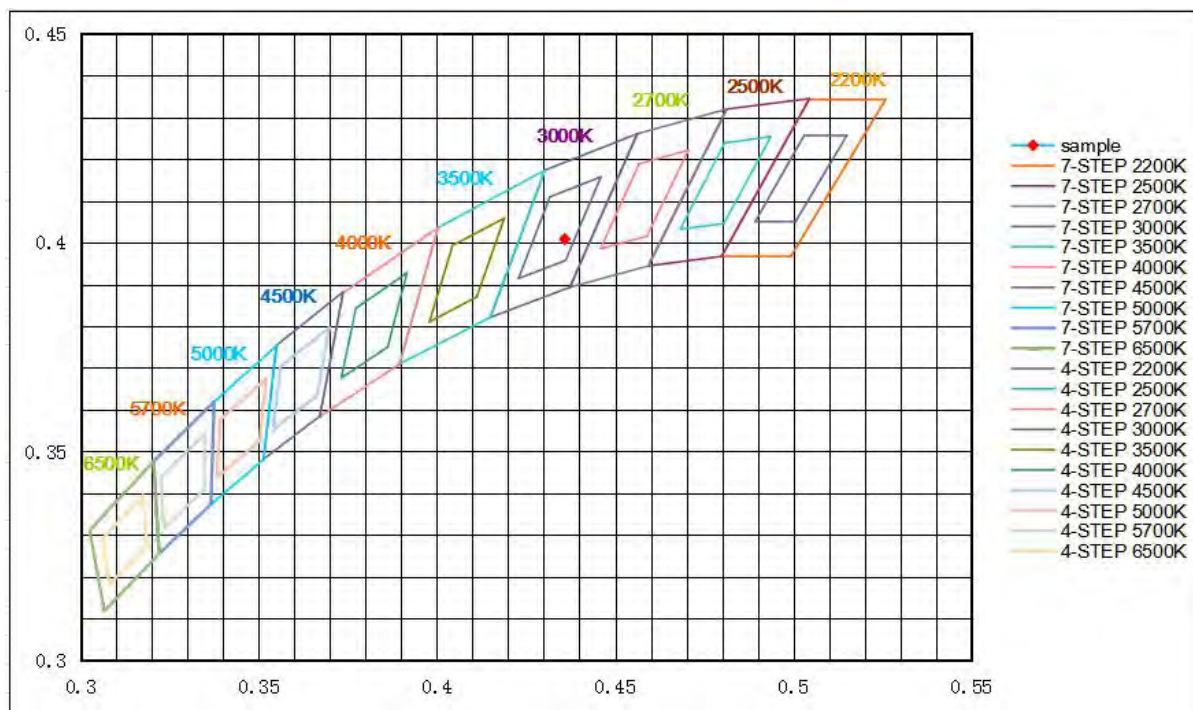
CRI	R9	Rf	Rg	Rcs,h1(%)
84.2	13	85	98	-10

Spectral Distribution





7/4 Step Quadrangle





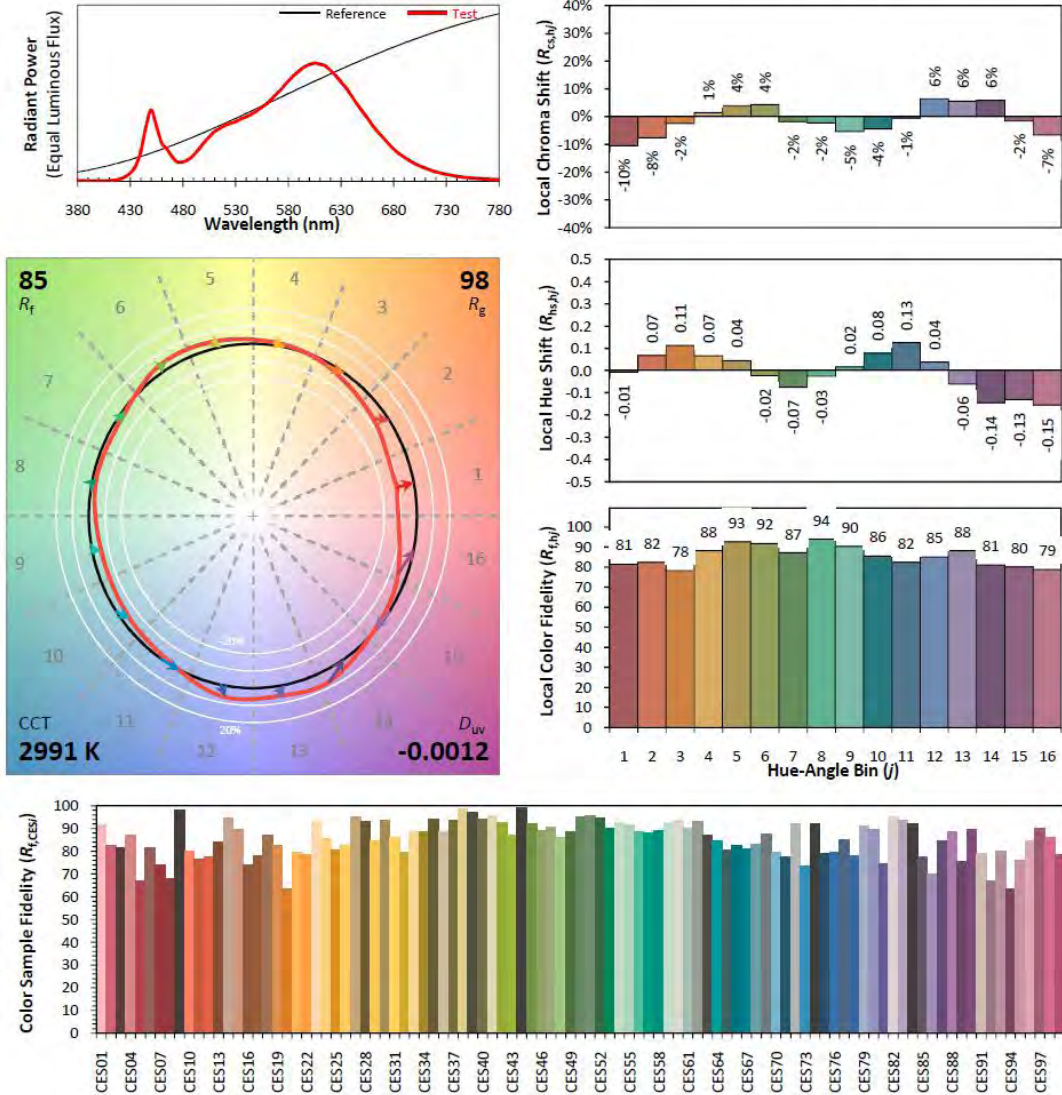
ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201003-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-15W-4FT-1L-830-[OCN, Blank]-10V



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

 x 0.4359 y 0.4008 u' 0.2513 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.

**3.1.2 Model Number: RP-T5C-G2-15W-4FT-1L-850-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.13	60	0.125	14.85	0.993

Photometric data

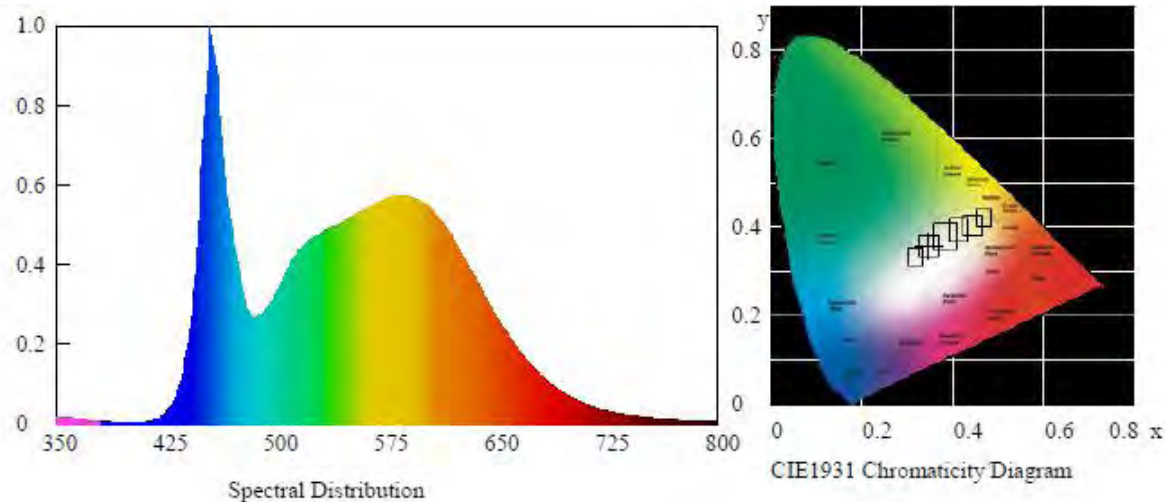
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
2009.21	135.3	4997

Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00217	0.3456	0.3564	0.2099	0.4871

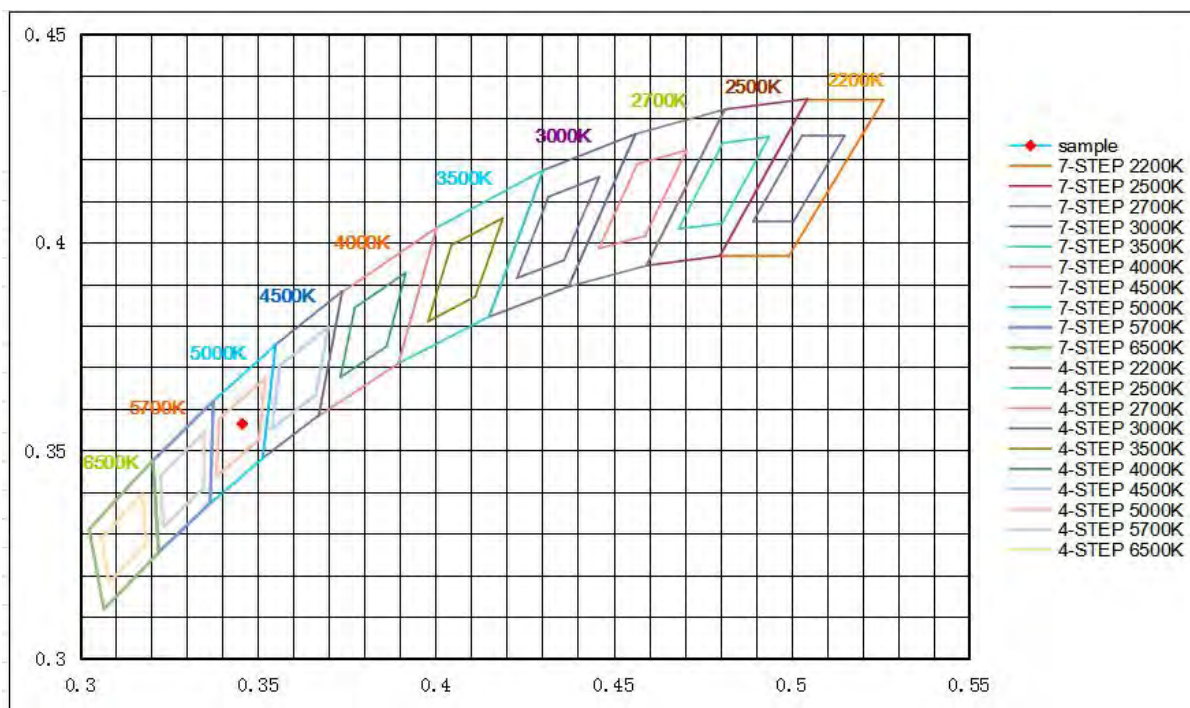
Color Rendering

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

Spectral Distribution



7/4 Step Quadrangle





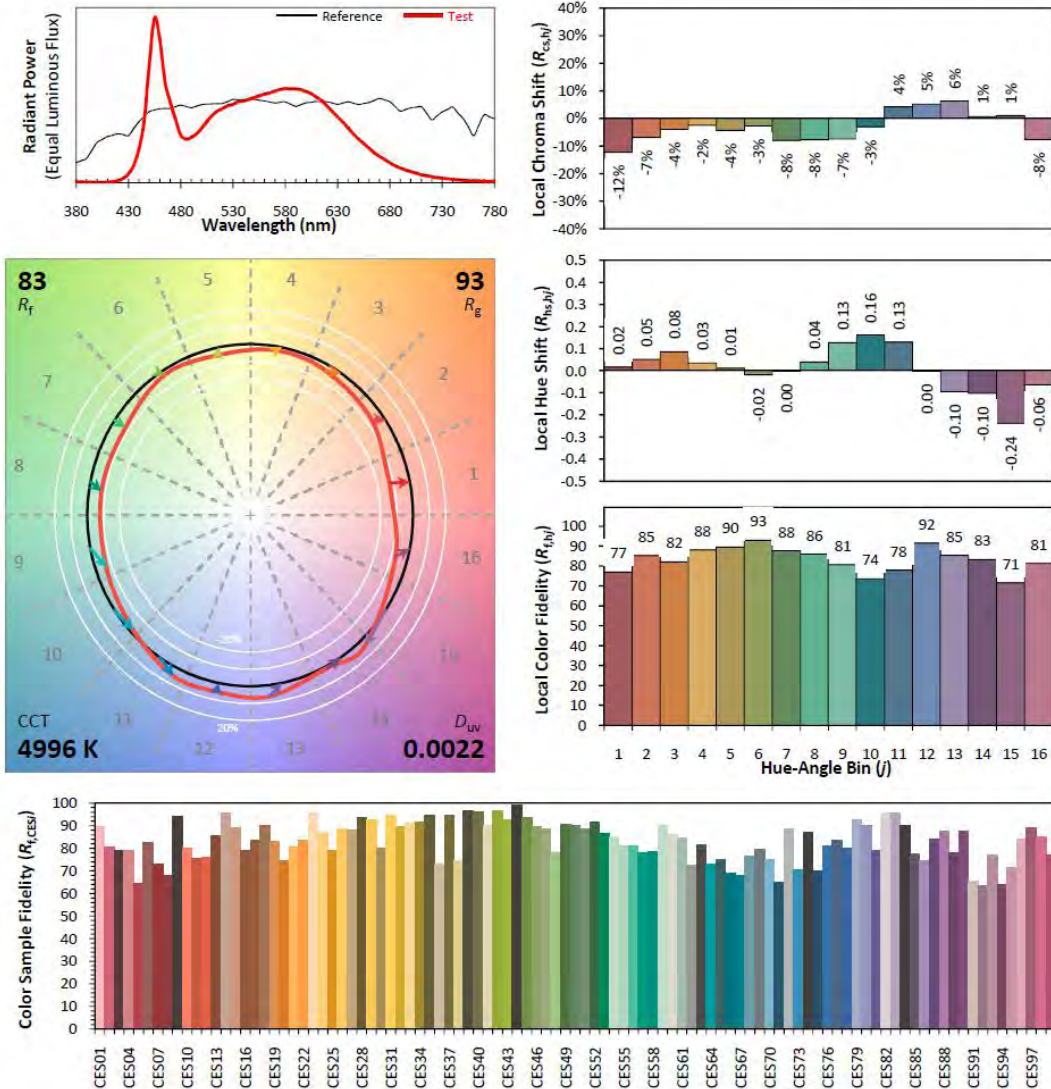
ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201003-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-15W-4FT-1L-850-[OCN, Blank]-10V



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

 x 0.3456 y 0.3564 u' 0.2099 v' 0.4871

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-T5C-G2-18W-4FT-1L-830-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.06	60	0.151	17.97	0.994

Photometric data

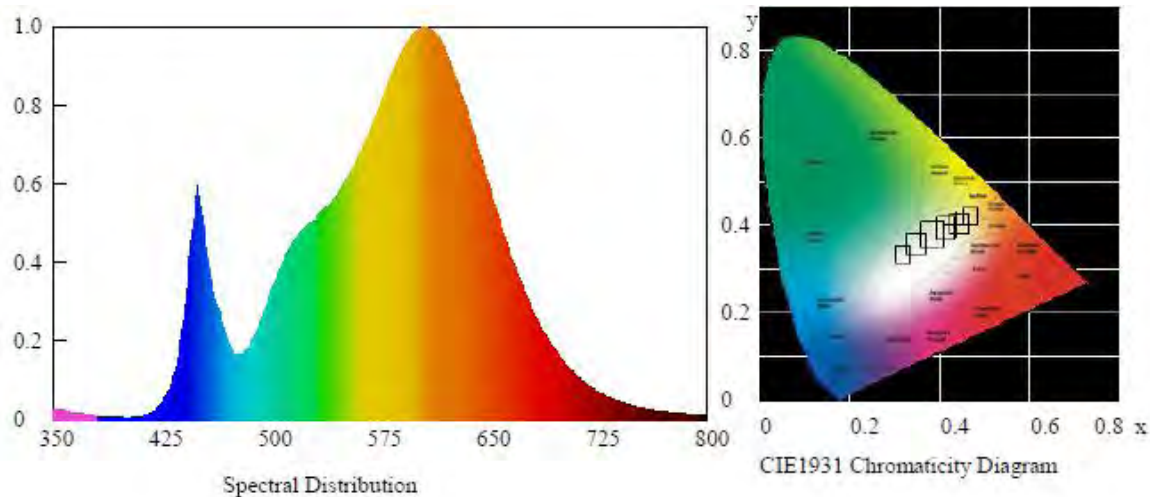
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
2343.29	130.4	2994

Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00099	0.4359	0.4013	0.2511	0.5201

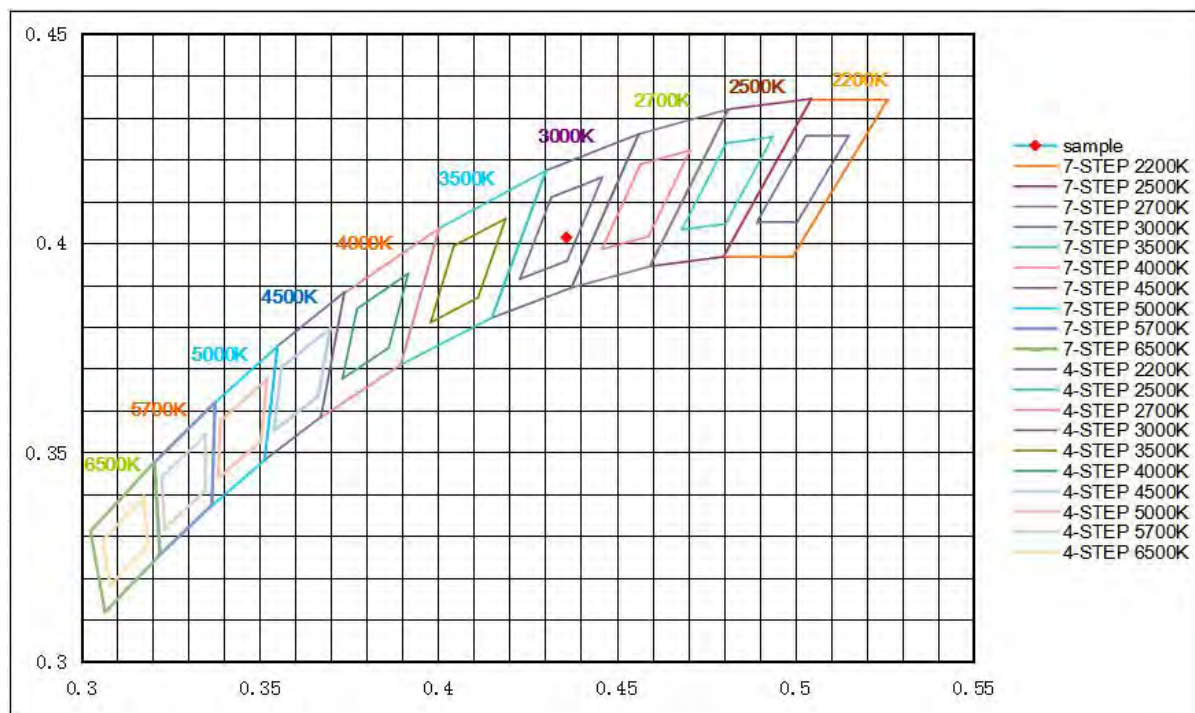
Color Rendering

CRI	R9	Rf	Rg	Rcs,h1(%)
84.0	13	85	98	-11

Spectral Distribution



7/4 Step Quadrangle





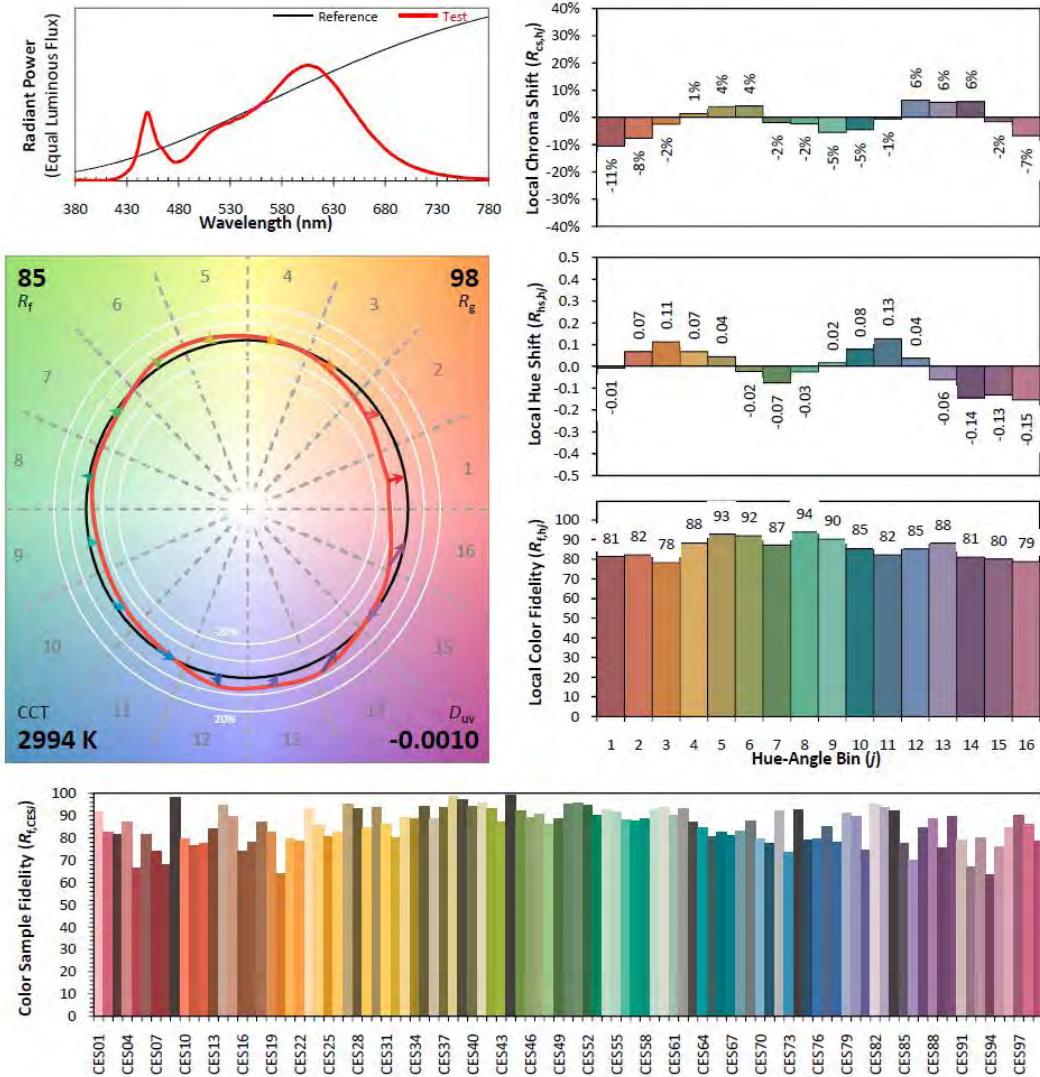
ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201003-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-18W-4FT-1L-830-[OCN, Blank]-10V



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

x 0.4359
 y 0.4013
 u' 0.2511
 v' 0.5201

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.

**3.1.4 Model Number: RP-T5C-G2-18W-4FT-1L-850-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.08	60	0.149	17.81	0.994

Photometric data

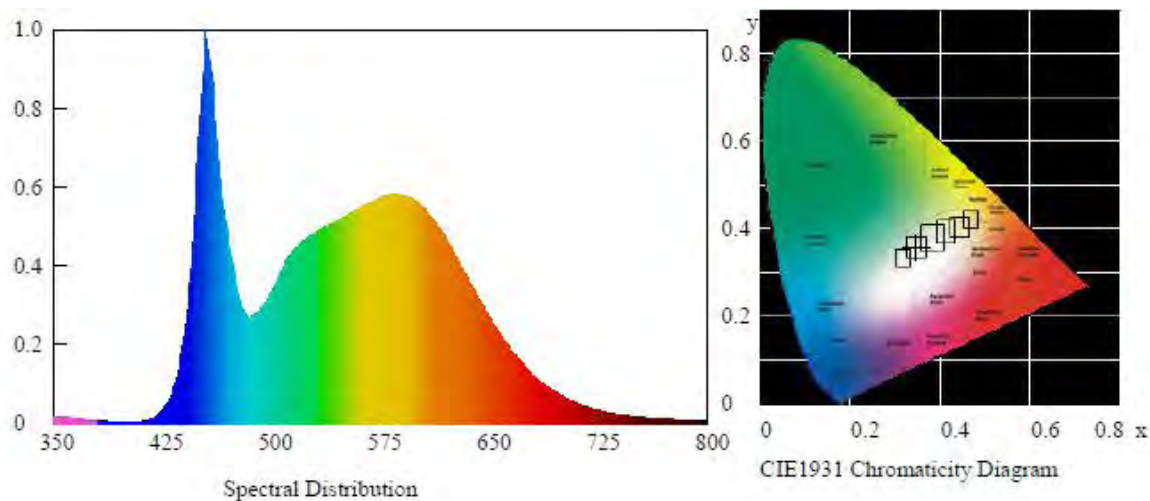
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
2381.20	133.7	4990

Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00202	0.3458	0.3562	0.2101	0.487

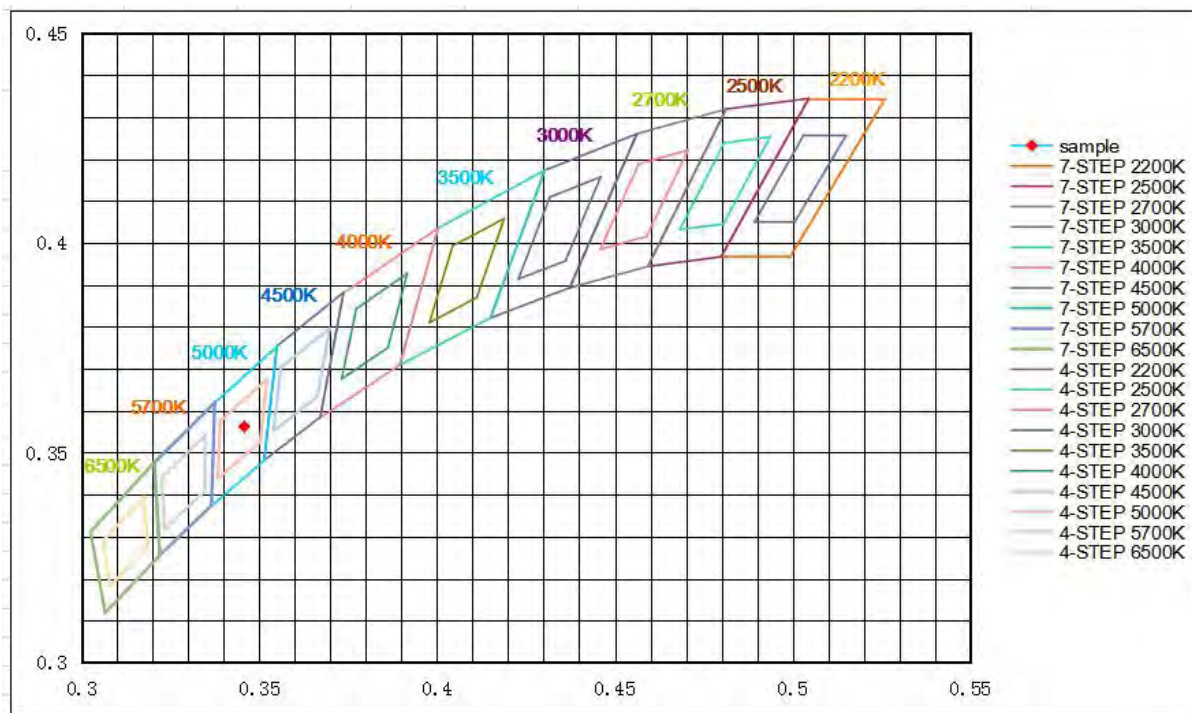
Color Rendering

CRI	R9	Rf	Rg	Rcs,h1(%)
83.9	13	83	93	-12

Spectral Distribution



7/4 Step Quadrangle





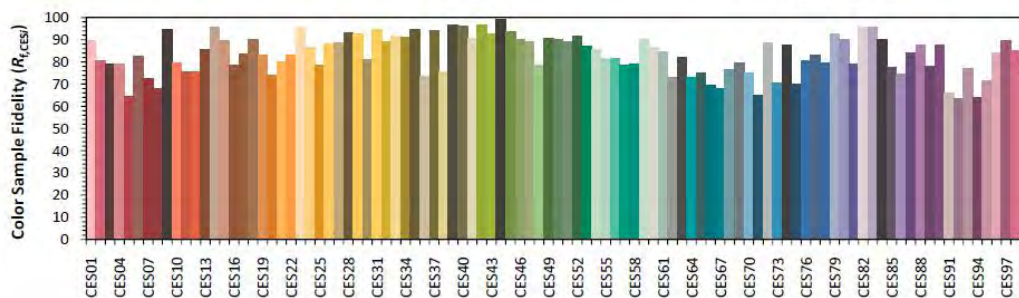
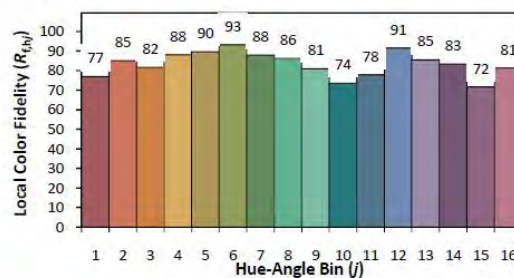
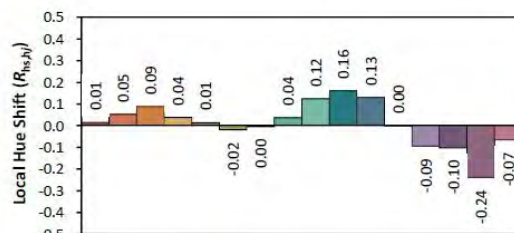
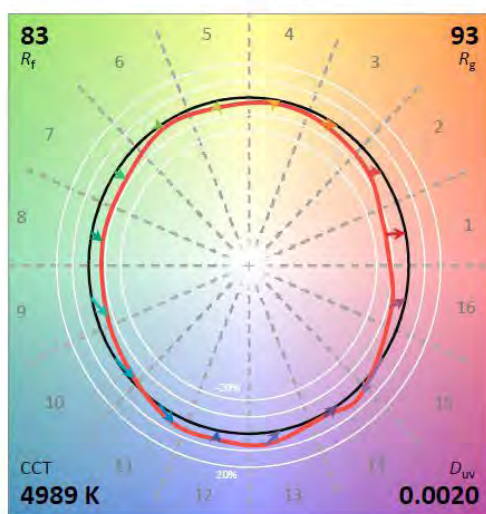
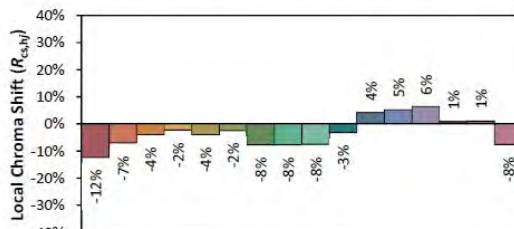
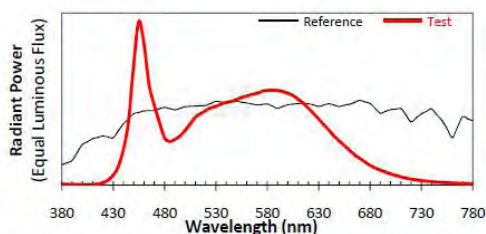
ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201003-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-18W-4FT-1L-850-[OCN, Blank]-10V



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

 x 0.3458 y 0.3562 u' 0.2101 v' 0.4870CIE 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-T5C-G2-20W-4FT-1L-830-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.03	60	0.168	20.11	0.995

Photometric data

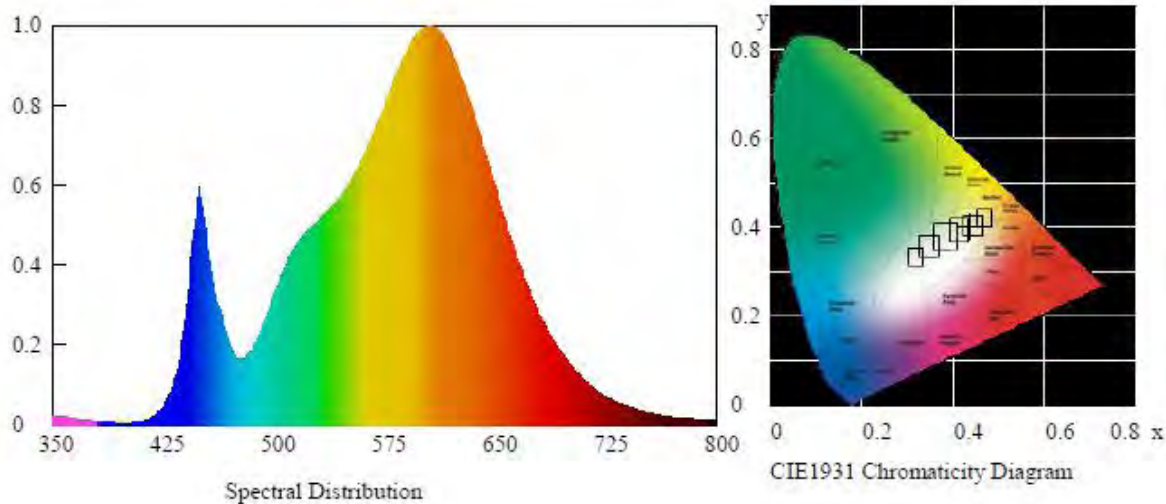
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
2608.27	129.7	2998

Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00114	0.4354	0.4007	0.251	0.5198

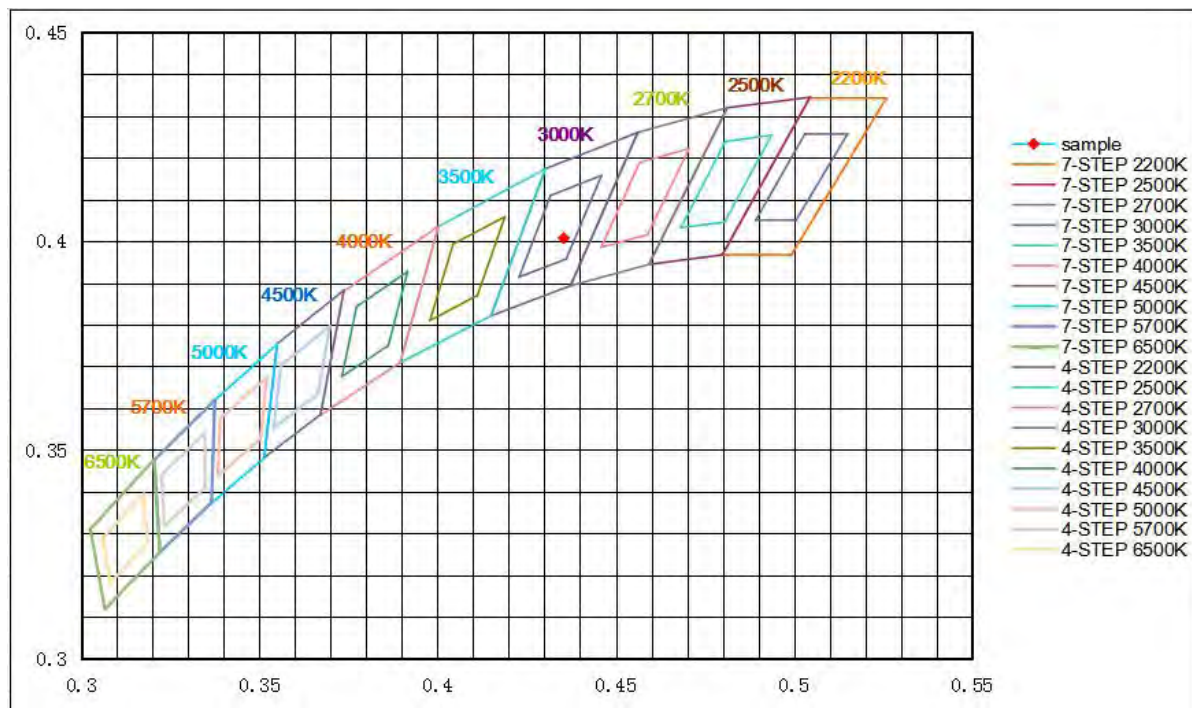
Color Rendering

CRI	R9	Rf	Rg	Rcs,h1(%)
84.0	12	85	98	-11

Spectral Distribution



7/4 Step Quadrangle





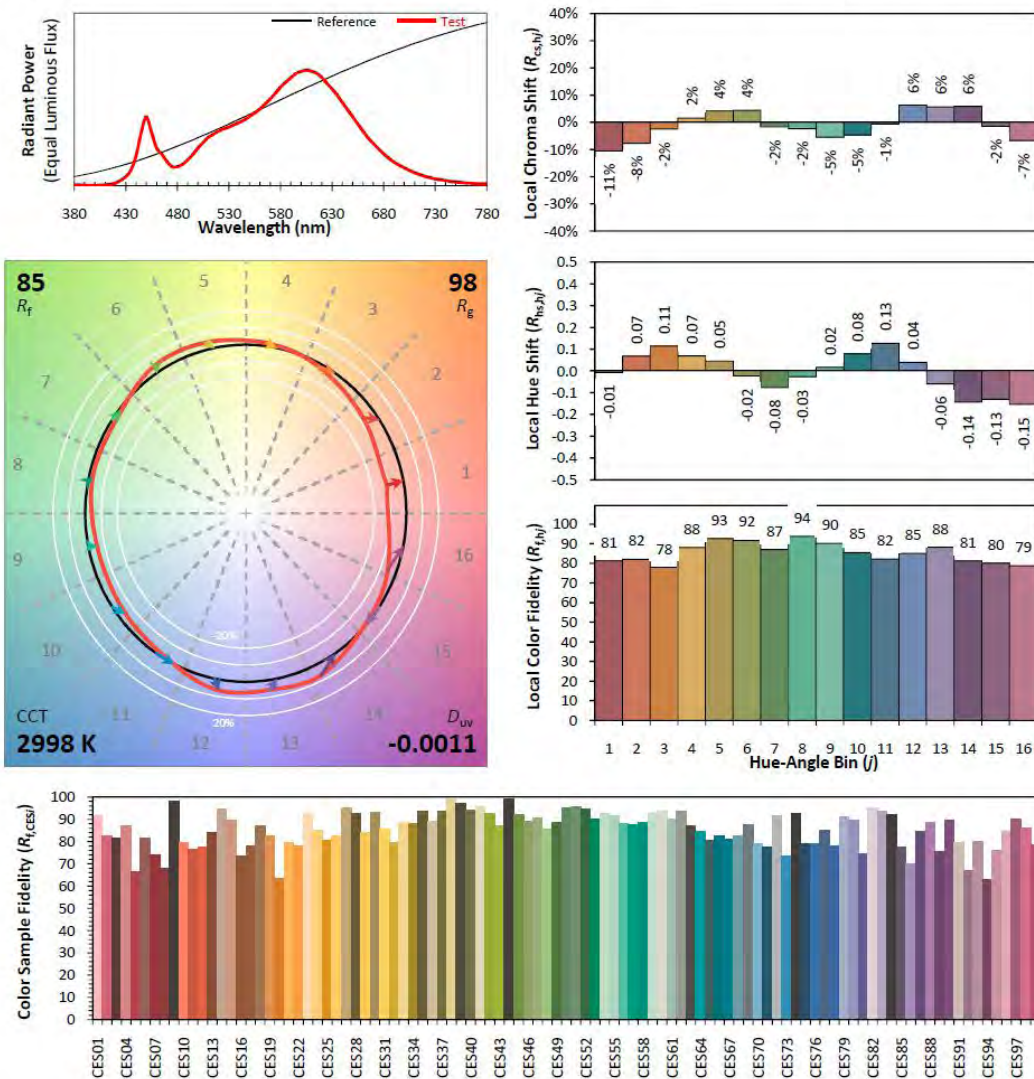
ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201003-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-20W-4FT-1L-830-[OCN, Blank]-10V



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

x 0.4354
 y 0.4007
 u' 0.2510
 v' 0.5198

CIE 13.3-1995
(CRI)

R_a 84
 R_g 12

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-G2-20W-4FT-1L-850-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.05	60	0.167	19.96	0.995

Photometric data

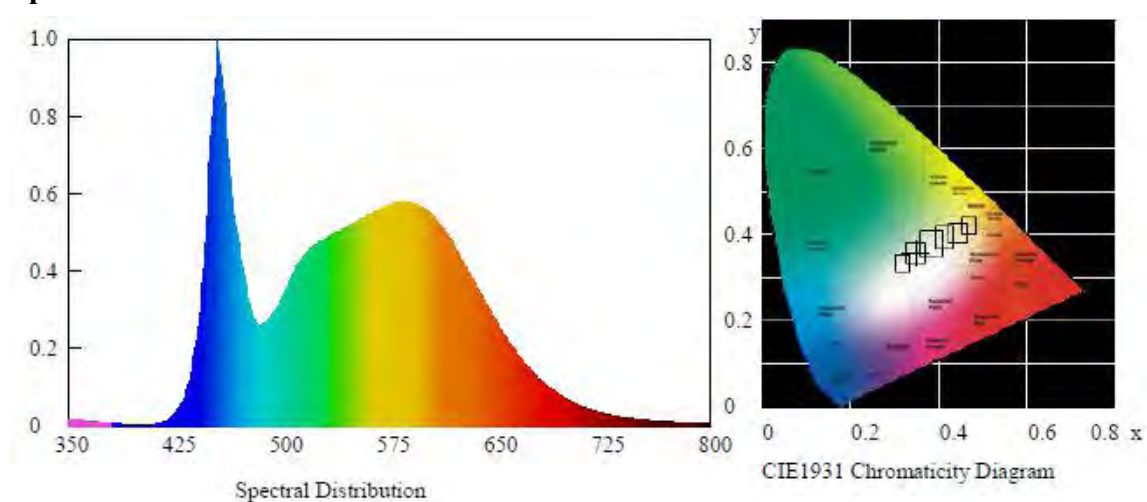
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
2652.68	132.9	4974

Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00224	0.3463	0.3571	0.2101	0.4875

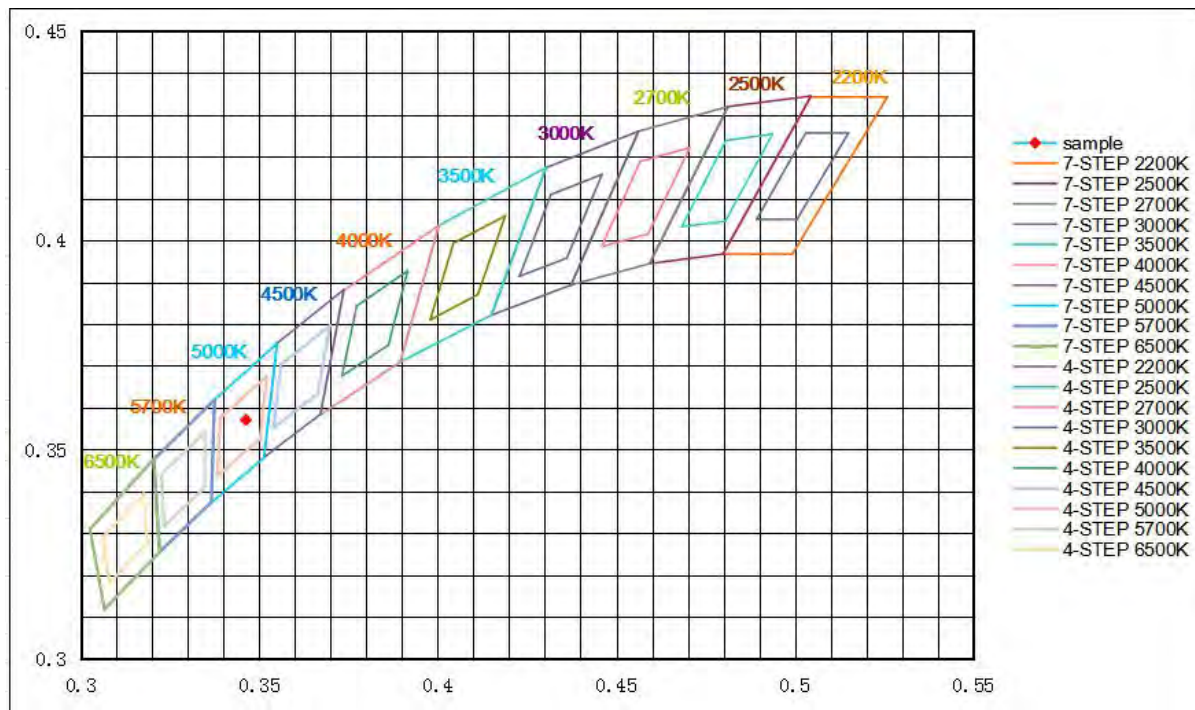
Color Rendering

CRI	R9	Rf	Rg	Rcs,h1(%)
83.8	12	83	93	-12

Spectral Distribution



7/4 Step Quadrangle





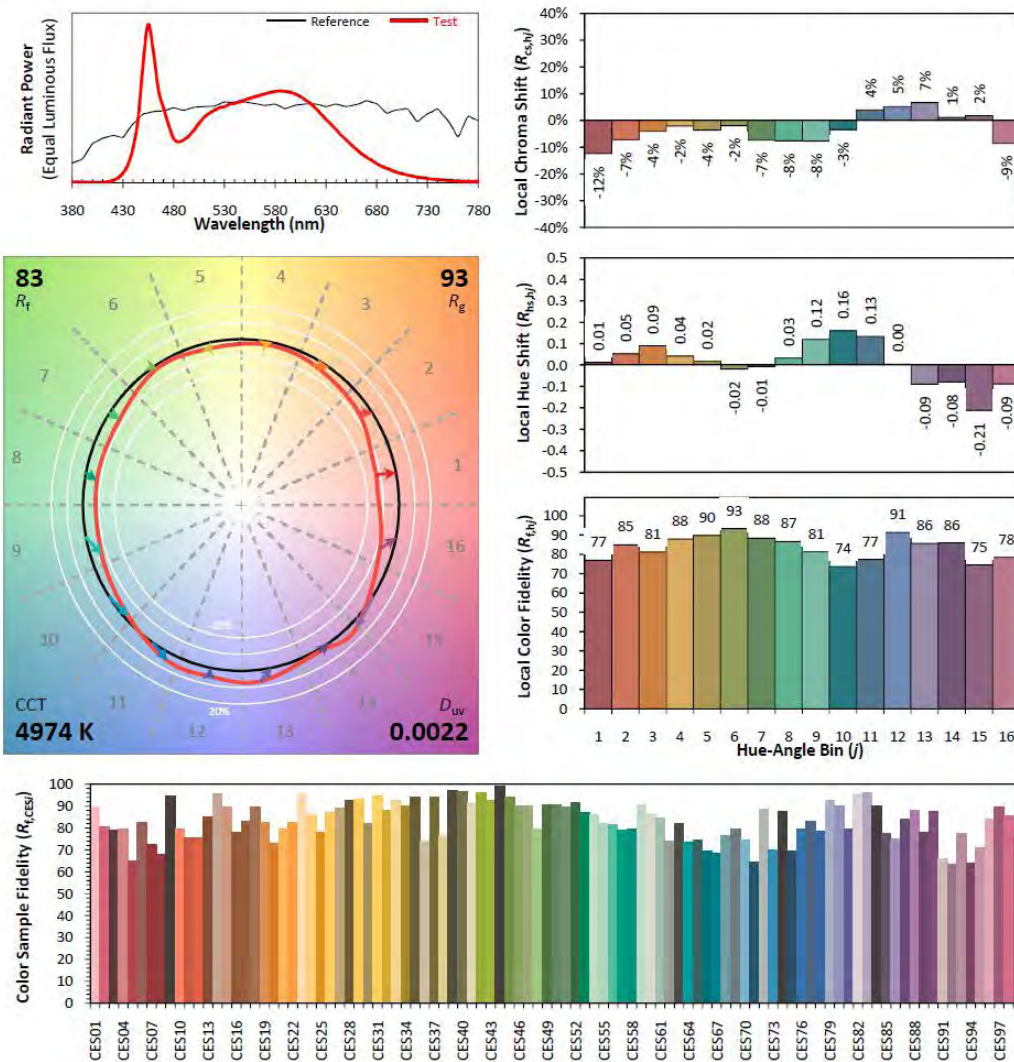
ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201003-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5C-G2-20W-4FT-1L-850-[OCN, Blank]-10V



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

x 0.3463
 y 0.3571
 u' 0.2101
 v' 0.4875

CIE 13.3-1995
(CRI)

R_a 84
 R_g 12

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-T5CHO-G2-25W-4FT-1L-830-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
119.96	60	0.210	25.09	0.996

Photometric data

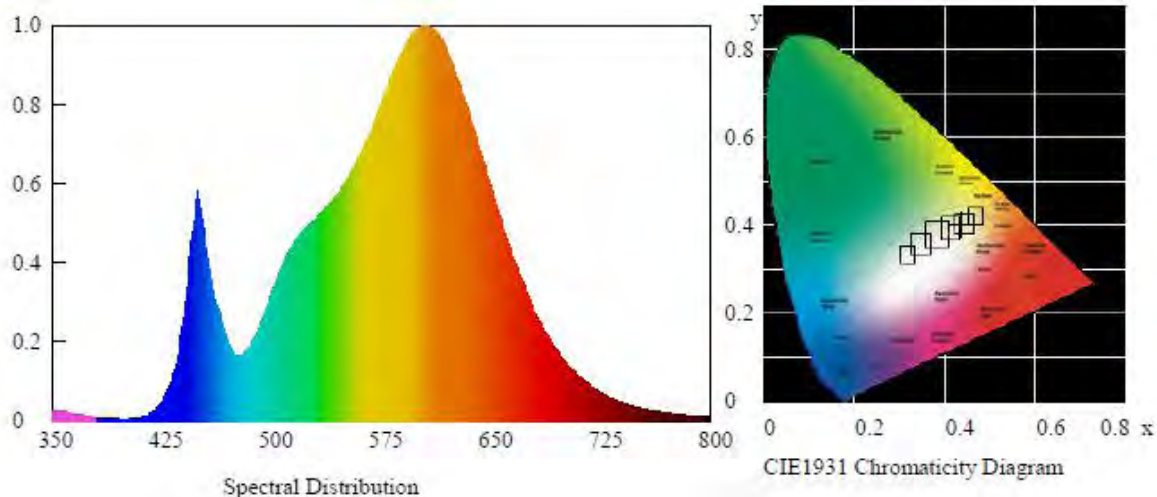
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
3098.61	123.5	3001

Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00097	0.4355	0.4011	0.2509	0.52

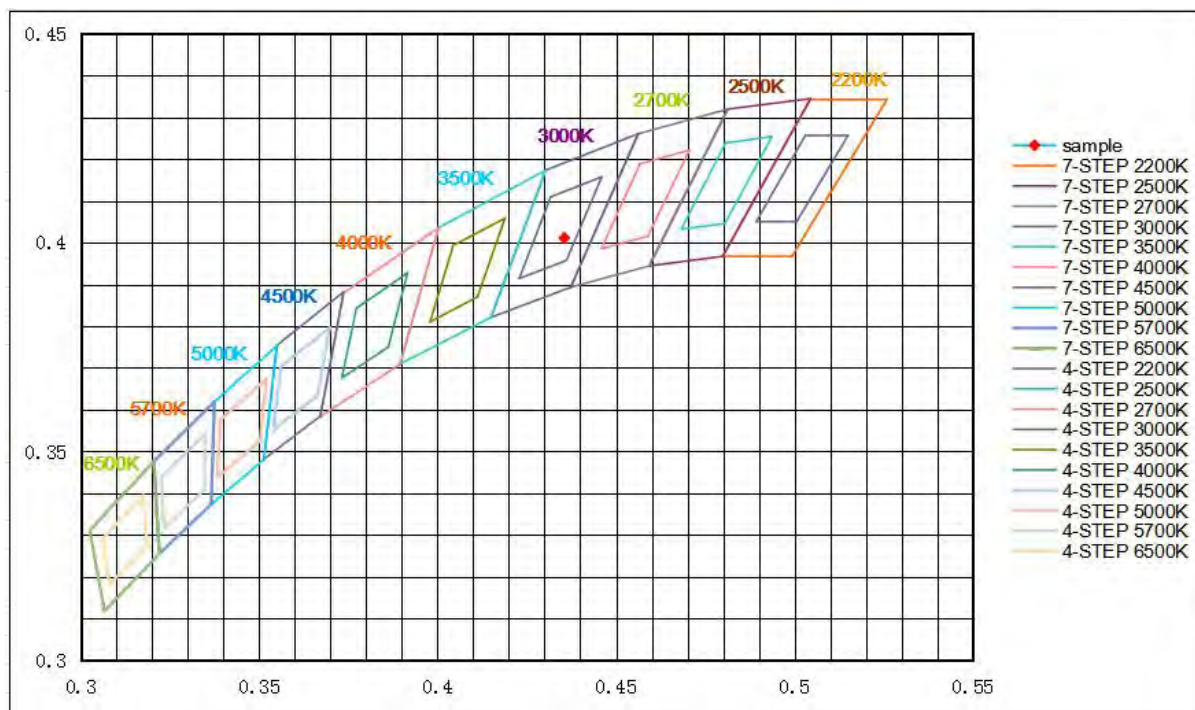
Color Rendering

CRI	R9	Rf	Rg	Rcs,h1(%)
83.8	12	85	98	-11

Spectral Distribution



7/4 Step Quadrangle





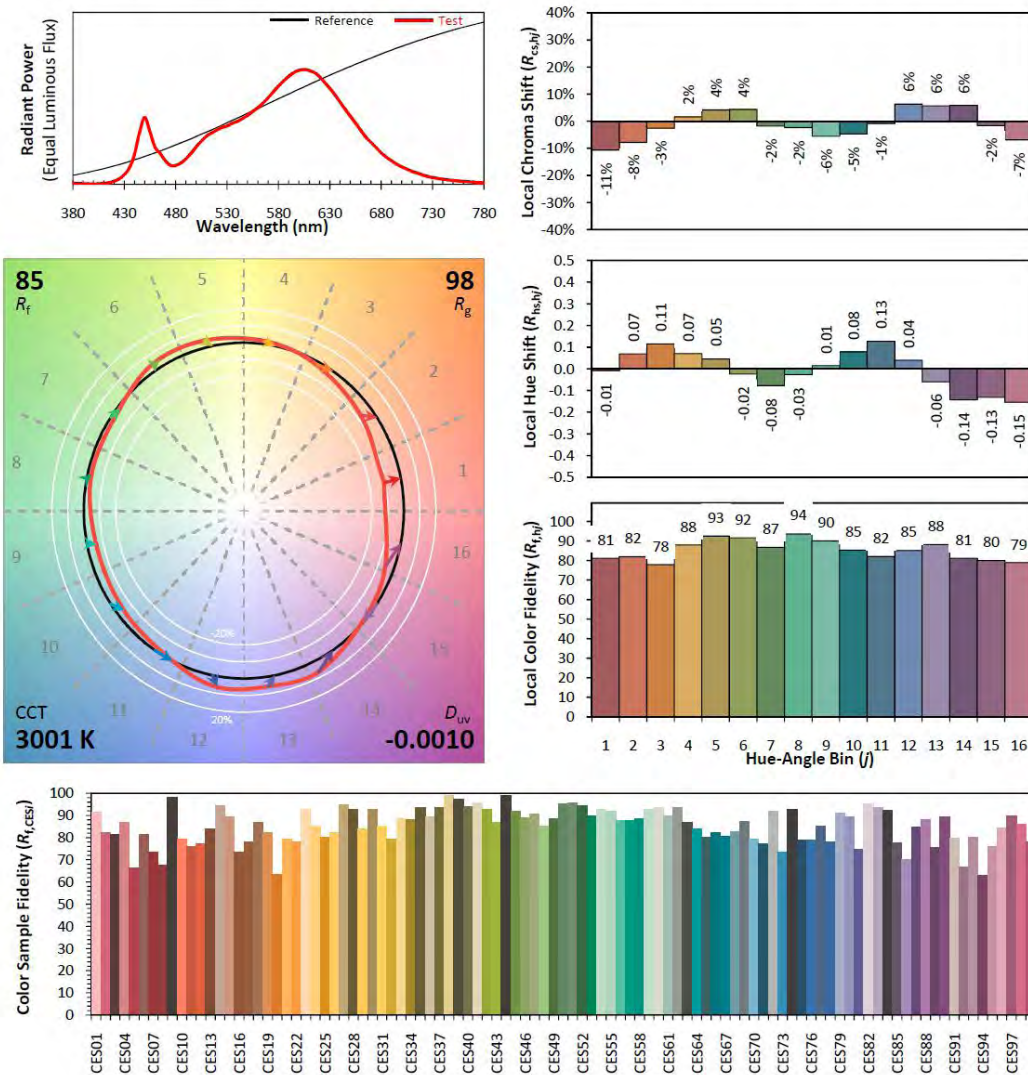
ANSI/IES TM-30-18 Color Rendition Report

Source: BL210201003-9

Manufacturer: LIGHT EFFICIENT DESIGN

Date: 2021/2/1

Model: RP-T5CH0-G2-25W-4FT-1L-830-[OCN, Blank]-10V



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

x 0.4355
 y 0.4011
 u' 0.2509
 v' 0.5200

CIE 13.3-1995
(CRI)

R_a 84
 R_g 11

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-T5CHO-G2-25W-4FT-1L-850-[OCN, Blank]-10V****Electrical data**

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
119.98	60	0.209	24.98	0.996

Photometric data

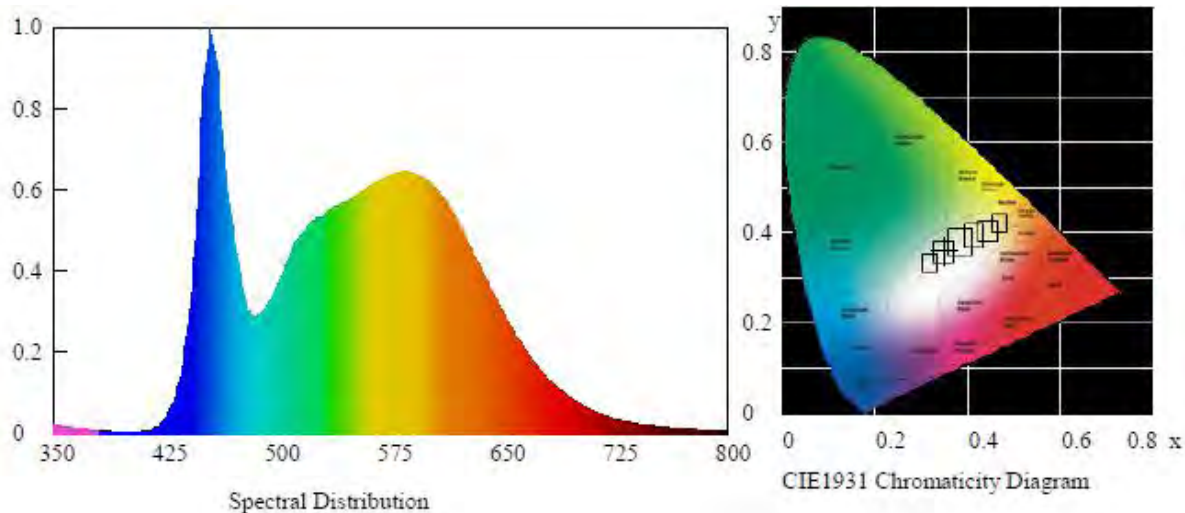
Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
3187.45	127.6	4940

Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00278	0.3474	0.3591	0.2101	0.4886

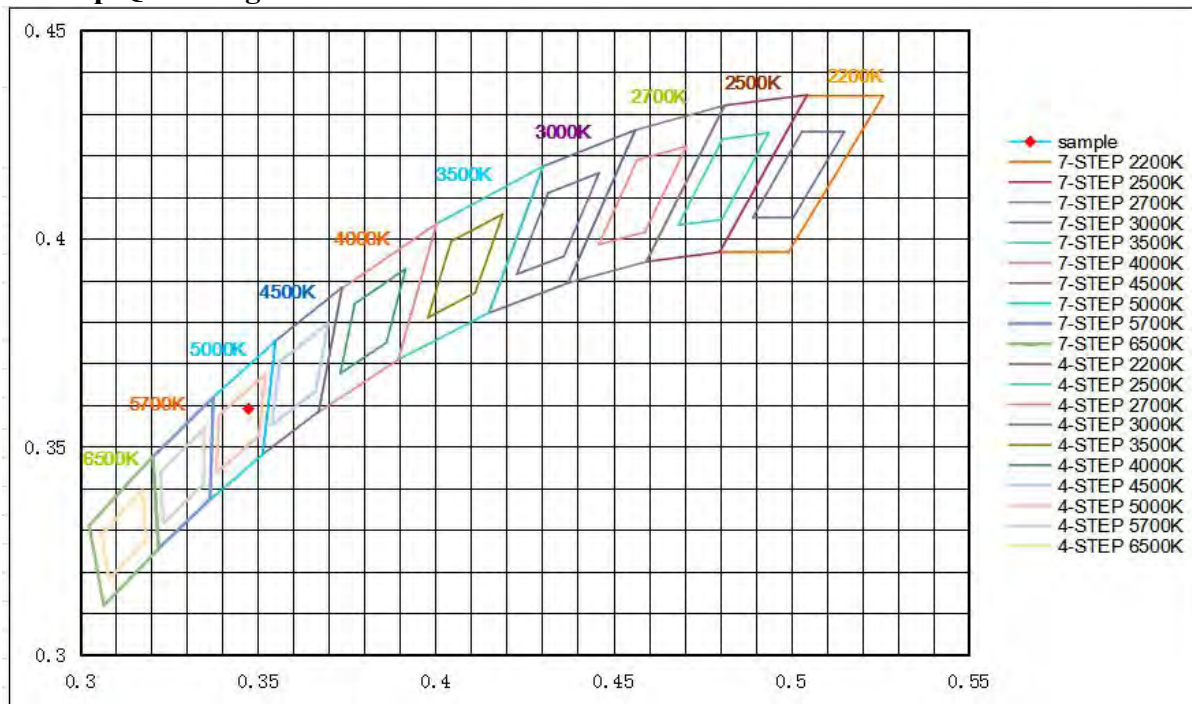
Color Rendering

CRI	R9	Rf	Rg	Rcs,h1(%)
83.5	11	83	93	-12

Spectral Distribution



7/4 Step Quadrangle







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

3.2.1 Model Number: RP-T5CHO-G2-25W-4FT-1L-830-[OCN, Blank]-10V

Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.01	60	0.209	24.93	0.9951

Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	Beam Angle (°)
3088.59	123.89	186.8

**Zonal Flux Diagram**

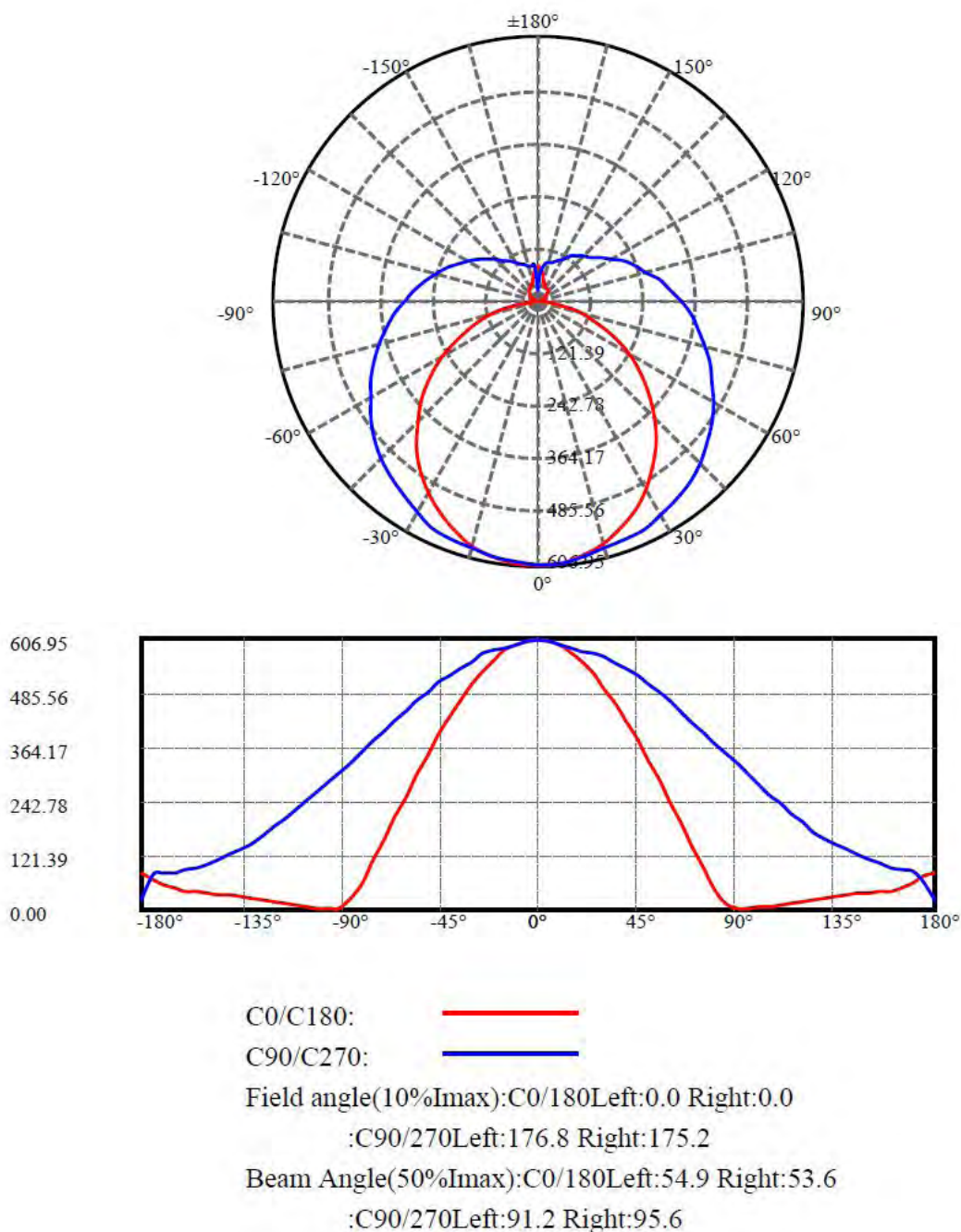
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	603.842	0.000	0	0.00%	0.00%
5.0	601.590	14.411	14.411	0.00%	0.47%
10.0	595.506	42.828	57.239	0.00%	1.85%
15.0	585.192	70.051	127.29	0.00%	4.12%
20.0	571.539	95.357	222.646	0.00%	7.21%
25.0	554.330	118.124	340.771	0.00%	11.03%
30.0	532.863	137.645	478.416	0.00%	15.49%
35.0	508.806	153.473	631.889	0.00%	20.46%
40.0	482.599	165.519	797.408	0.00%	25.82%
45.0	454.062	173.564	970.972	0.00%	31.44%
50.0	423.049	177.376	1148.349	0.00%	37.18%
55.0	391.785	177.337	1325.686	0.00%	42.92%
60.0	359.933	173.942	1499.628	0.00%	48.55%
65.0	328.116	167.459	1667.086	0.00%	53.98%
70.0	296.487	158.356	1825.442	0.00%	59.10%
75.0	266.572	147.382	1972.824	0.00%	63.87%
80.0	238.260	135.289	2108.113	0.00%	68.25%
85.0	213.444	122.919	2231.032	0.00%	72.23%
90.0	191.982	111.089	2342.122	0.00%	75.83%
95.0	174.378	100.318	2442.439	0.00%	79.08%
100.0	158.567	90.457	2532.896	0.00%	82.01%
105.0	144.354	81.038	2613.934	0.00%	84.63%
110.0	132.461	72.342	2686.276	0.00%	86.97%
115.0	121.712	64.347	2750.623	0.00%	89.06%
120.0	111.991	56.806	2807.429	0.00%	90.90%
125.0	103.577	49.822	2857.251	0.00%	92.51%
130.0	97.296	43.670	2900.921	0.00%	93.92%
135.0	92.519	38.350	2939.27	0.00%	95.17%
140.0	88.440	33.501	2972.772	0.00%	96.25%
145.0	84.901	28.914	3001.686	0.00%	97.19%
150.0	80.813	24.400	3026.086	0.00%	97.98%
155.0	76.978	19.969	3046.055	0.00%	98.62%
160.0	73.983	15.832	3061.887	0.00%	99.14%
165.0	71.238	11.970	3073.856	0.00%	99.52%
170.0	67.808	8.247	3082.104	0.00%	99.79%
175.0	67.968	4.851	3086.955	0.00%	99.95%
180.0	69.146	1.638	3088.592	0.00%	100.00%



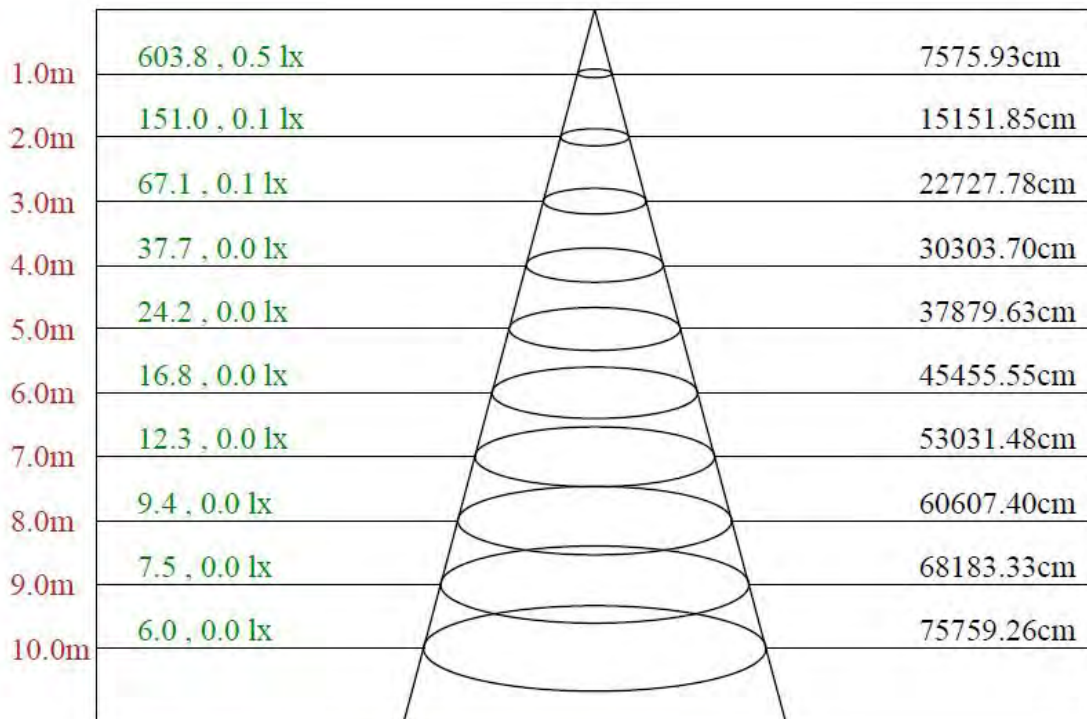
Luminous Intensity Distribution Diagram

Light Distribution Curve [Unit:cd]





Lux distance Curve



Max , Ave

Beam angle of C247.5 plane 176.98

**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	603.84	599.96	590.36	574.42	552.76	525.99	495.33	459.98	420.34
22.5	603.84	600.40	591.68	577.91	559.06	535.35	507.39	477.81	443.56
45.0	603.84	602.00	595.67	585.87	573.81	558.90	540.52	518.86	494.55
67.5	603.84	606.53	605.50	602.81	594.33	583.57	570.33	553.16	534.54
90.0	603.84	600.69	591.43	583.23	578.18	574.82	563.67	552.10	540.96
112.5	603.84	603.23	600.14	592.95	584.52	571.57	555.95	537.87	517.73
135.0	603.84	601.56	596.80	587.07	574.23	556.63	535.92	512.73	484.36
157.5	603.84	600.54	591.66	577.82	559.03	534.66	505.54	472.71	438.22
180.0	603.84	601.19	592.81	578.71	558.48	532.93	503.51	469.18	432.40
202.5	603.84	600.80	592.70	578.31	559.26	535.15	506.98	475.37	441.94
225.0	603.84	601.80	595.26	584.84	570.14	552.16	531.12	506.40	480.46
247.5	603.84	606.95	602.19	593.91	584.19	571.78	555.64	539.51	519.85
270.0	603.84	598.37	592.27	585.33	581.34	572.29	555.68	538.43	524.76
292.5	603.84	598.09	599.94	593.57	582.67	571.78	555.75	538.28	518.96
315.0	603.84	601.56	595.77	585.41	570.30	552.49	530.12	506.10	481.25
337.5	603.84	601.78	593.93	580.92	562.33	539.20	512.36	482.41	447.72
360.0	603.84	599.96	590.36	574.42	552.76	525.99	495.33	459.98	420.34
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	379.68	335.13	288.74	240.11	193.72	143.45	95.23	48.63	16.14
22.5	406.48	367.57	329.07	288.14	250.45	210.13	174.87	145.90	123.20
45.0	465.75	435.93	404.88	374.44	343.39	315.81	289.87	266.99	246.36
67.5	511.99	487.58	464.00	442.28	420.56	398.63	376.70	353.74	332.85
90.0	524.97	503.73	485.64	466.29	441.05	417.92	397.51	374.80	351.45
112.5	495.12	472.51	451.55	429.55	408.59	386.39	365.02	342.41	319.80
135.0	457.44	426.79	394.69	364.46	334.43	308.55	282.25	259.26	237.31
157.5	400.84	362.02	322.57	282.30	240.38	198.05	162.32	134.23	114.00
180.0	390.71	346.78	301.41	252.98	206.19	156.53	107.49	61.51	24.52
202.5	406.88	367.37	327.86	290.98	251.67	212.56	178.92	144.88	118.13
225.0	452.47	422.85	392.42	364.63	335.22	308.46	281.09	254.53	230.02
247.5	498.75	475.59	452.62	428.01	405.66	382.50	356.84	332.64	308.23
270.0	508.57	487.95	468.39	443.79	421.49	399.41	375.64	354.40	329.58
292.5	498.41	476.41	454.01	431.61	405.30	378.38	355.77	330.28	306.85
315.0	454.54	427.20	399.04	368.60	339.82	312.07	284.53	257.81	233.38
337.5	412.41	373.37	331.66	290.77	251.95	214.98	181.11	150.13	123.29
360.0	379.68	335.13	288.74	240.11	193.72	143.45	95.23	48.63	16.14
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	3.07	4.29	6.54	9.40	12.67	16.55	19.82	23.30	26.97
22.5	103.55	87.94	77.00	66.87	63.22	61.80	61.40	60.79	63.22
45.0	222.25	199.78	181.19	164.24	149.74	134.21	122.36	114.40	108.27
67.5	308.44	282.58	258.17	236.24	215.35	196.94	177.70	159.08	143.77
90.0	329.16	304.55	280.78	258.07	236.62	216.21	195.39	172.89	158.16
112.5	301.72	276.02	251.57	231.22	210.46	190.73	171.82	155.59	142.02
135.0	219.50	196.31	177.05	161.11	145.16	130.87	121.14	115.55	108.30
157.5	97.27	81.99	71.45	61.95	61.13	58.65	59.68	60.92	63.19
180.0	4.09	3.88	5.52	8.58	11.85	15.94	19.41	22.89	26.36
202.5	97.26	81.26	69.50	58.56	52.89	50.66	49.85	51.06	53.09
225.0	205.30	188.14	170.16	152.80	138.50	124.41	112.35	102.96	94.99
247.5	282.79	263.55	241.62	222.38	203.14	185.35	167.36	150.60	135.91
270.0	307.07	285.62	263.75	243.56	222.94	203.81	184.88	165.32	148.07
292.5	281.16	261.02	240.88	220.94	201.62	183.95	165.04	146.75	132.98
315.0	209.98	190.93	171.67	155.31	140.81	125.08	111.82	102.50	96.50
337.5	99.13	82.19	70.21	58.44	53.28	52.25	51.84	52.66	54.93
360.0	3.07	4.29	6.54	9.40	12.67	16.55	19.82	23.30	26.97



C/ γ (°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	30.24	33.51	35.97	37.80	39.64	43.32	48.63	59.06	73.57
22.5	64.64	66.87	68.69	69.71	72.95	75.99	73.15	64.23	70.72
45.0	101.93	96.42	92.74	89.27	87.02	84.37	82.73	73.54	69.45
67.5	133.84	124.12	114.40	105.71	99.09	93.71	88.95	85.64	62.89
90.0	148.49	137.34	125.77	113.58	104.32	95.91	91.49	86.44	62.26
112.5	132.98	122.91	114.07	104.20	97.83	86.53	74.20	54.88	62.07
135.0	102.50	96.91	94.01	89.04	75.58	65.85	58.40	58.40	72.48
157.5	63.61	66.70	70.01	64.23	60.10	61.95	58.65	63.40	75.38
180.0	30.04	32.90	35.35	37.80	39.85	42.71	49.86	57.42	69.68
202.5	56.74	59.98	63.22	61.80	57.95	58.16	56.74	57.95	67.27
225.0	88.04	83.55	79.67	78.44	72.31	63.12	60.47	55.77	61.28
247.5	123.09	112.12	102.81	95.16	89.16	83.78	73.44	60.41	47.17
270.0	133.98	122.83	111.26	100.75	94.02	89.18	84.76	82.66	80.77
292.5	122.29	111.40	102.35	95.16	89.61	85.09	82.42	81.18	79.95
315.0	90.08	85.94	83.66	82.21	80.97	79.73	79.31	79.52	67.30
337.5	57.82	61.54	64.43	68.15	71.25	74.34	76.62	64.43	65.26
360.0	30.24	33.51	35.97	37.80	39.64	43.32	48.63	59.06	73.57
C/ γ (°)	180.0								
0.0	82.15								
22.5	78.62								
45.0	74.97								
67.5	71.58								
90.0	23.35								
112.5	67.62								
135.0	76.62								
157.5	78.27								
180.0	82.15								
202.5	78.62								
225.0	74.97								
247.5	71.58								
270.0	23.35								
292.5	67.62								
315.0	76.62								
337.5	78.27								
360.0	82.15								



4 Additional Test

Electrical data at 277V

Model Number	Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
RP-T5CHO-G2-25W-4FT-1L-830-[OCN, Blank]-10V	Power Factor	277	60	0.914
	THD	277	60	11.7%

5 Performance Assessment

Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T5C-G2-15W-4FT-1L-830-[OCN, Blank]-10V	3000K	1978.68	14.99	132.0
RP-T5C-G2-15W-4FT-1L-835-[OCN, Blank]-10V	3500K	1986.31 ^{*1}	14.92 ^{*2}	133.1 ^{*3}
RP-T5C-G2-15W-4FT-1L-840-[OCN, Blank]-10V	4000K	1993.95 ^{*1}	14.92 ^{*2}	133.6 ^{*3}
RP-T5C-G2-15W-4FT-1L-850-[OCN, Blank]-10V	5000K	2009.21	14.85	135.3

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

$$1986.31 = (2009.21 - 1978.68) / 4 + 1978.68$$

$$1993.95 = (2009.21 - 1978.68) / 4 + 1986.31$$

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

$$14.92 = (14.99 + 14.85) / 2$$

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

$$133.1 = 1986.31 / 14.92$$

$$133.6 = 1993.95 / 14.92$$



Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T5C-G2-18W-4FT-1L -830-[OCN, Blank]-10V	3000K	2343.29	17.97	130.4
RP-T5C-G2-18W-4FT-1L -835-[OCN, Blank]-10V	3500K	2352.77 * ¹	17.89 * ²	131.5 * ³
RP-T5C-G2-18W-4FT-1L -840-[OCN, Blank]-10V	4000K	2362.25 * ¹	17.89 * ²	132.0 * ³
RP-T5C-G2-18W-4FT-1L -850-[OCN, Blank]-10V	5000K	2381.20	17.81	133.7

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

$$2352.77 = (2381.20 - 2343.29) / 4 + 2343.29$$

$$2362.25 = (2381.20 - 2343.29) / 4 + 2352.77$$

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

$$17.89 = (17.97 + 17.81) / 2$$

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

$$131.5 = 2352.77 / 17.89$$

$$132.0 = 2362.25 / 17.89$$

Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T5C-G2-20W-4FT-1L -830-[OCN, Blank]-10V	3000K	2608.27	20.11	129.7
RP-T5C-G2-20W-4FT-1L -835-[OCN, Blank]-10V	3500K	2619.37 * ¹	20.04 * ²	130.7 * ³
RP-T5C-G2-20W-4FT-1L -840-[OCN, Blank]-10V	4000K	2630.48 * ¹	20.04 * ²	131.3 * ³
RP-T5C-G2-20W-4FT-1L -850-[OCN, Blank]-10V	5000K	2652.68	19.96	132.9

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

$$2619.37 = (2652.68 - 2608.27) / 4 + 2608.27$$

$$2630.48 = (2652.68 - 2608.27) / 4 + 2619.37$$

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

$$20.04 = (20.11 + 19.96) / 2$$

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

$$130.7 = 2619.37 / 20.04$$

$$131.3 = 2630.48 / 20.04$$



Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
RP-T5CHO-G2-25W-4FT -1L-830-[OCN, Blank]-10V	3000K	3098.61	25.09	123.5
RP-T5CHO-G2-25W-4FT -1L-835-[OCN, Blank]-10V	3500K	3120.82 * ¹	25.04 * ²	124.7 * ³
RP-T5CHO-G2-25W-4FT -1L-840-[OCN, Blank]-10V	4000K	3143.03 * ¹	25.04 * ²	125.5 * ³
RP-T5CHO-G2-25W-4FT -1L-850-[OCN, Blank]-10V	5000K	3187.45	24.98	127.6

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

$$3120.82 = (3187.45 - 3098.61) / 4 + 3098.61$$

$$3143.03 = (3187.45 - 3098.61) / 4 + 3120.82$$

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

$$25.04 = (25.09 + 24.98) / 2$$

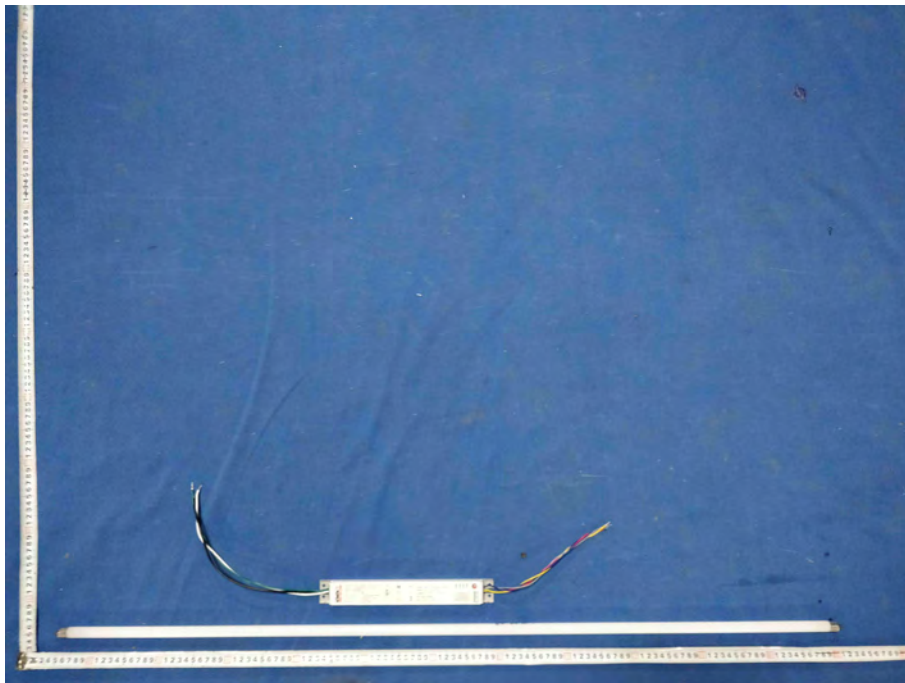
*3: This value is calculated and the calculation formula is as below:

$$124.7 = 3120.82 / 25.04$$

$$125.5 = 3143.03 / 25.04$$



Photo Document



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