



Date of issue 2024-09-06

Version 1.0

Total pages 29

**Test report of  
IES LM-79-08**

**Approved Method: Electrical and Photometric  
Measurements of Solid-State Lighting Products**

**Applicant:**

P.Q.L., Inc.

**Address:**

2285 Ward Avenue  
Simi Valley, CA 93065

**For Product:**

High Bay Luminaires (Commercial and Industrial)

**Model No.:**

HCO2UKCP3003CG

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: Sam Chen

Review by: Jason Zhou

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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 used 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>	P.Q.L., Inc.
<b>Manufacturer Address</b>	2285 Ward Avenue Simi Valley, CA 93065
<b>Brand Name</b>	PQL
<b>Luminaire Type</b>	High Bay Luminaires (Commercial and Industrial)
<b>Model Number</b>	HCO2UKCP3003CG, HCO2XKCP3003CG, HCO2HKCP3003CG
<b>Rated Inputs</b>	AC 100-277V, AC 120-347V, AC 200-480V, 50/60Hz
<b>Field-Adjustable Product</b>	Yes, Wattage setting: 200W, 240W, 300W
<b>Color-Tunable Product</b>	Yes, CCT setting: 3000K, 4000K, 5000K
<b>Dimming Capability</b>	Continuous
<b>Integral Control Sensors</b>	Optional
<b>Date of Receipt Samples</b>	2024-08-16
<b>Date of test</b>	2024-08-19 to 2024-08-28
<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	M101758514120011	2025-04-09
AC Power Source	ALL POWER	ALL POWER	970780	2025-04-17
Total Luminous Flux Standard Lamp	SENSING	110V/100W	S13100188	2025-04-16
Total Luminous Flux Standard Lamp	OSRAM	12V/20W	LSD12201737	2025-04-16
Total Spectral Radiant Flux Standard Lamp	Everfine	D204	M133806CA1411205	2025-04-16
Digital Power Meter	YOKOGAWA	WT310	C2QM02030V	2025-04-17
Thermostatic stabilized photometric sphere	SENSING	SPR-600M	N.A	2025-04-09
Plant spectral photosynthetically radiometer	Everfine	SP-20	P612946CF1411115	2025-04-09
Digital Power Meter	YOKOGAWA	WT210	91L929742	2025-04-17
Spectral radiometer	SENSING	SPR-3000	S1101108	2025-04-09
Environment Measurer	XUYAO	HS-1	N/A	2025-04-11
Environment Measurer	XUYAO	HS-1	N/A	2025-04-11
Stop watch	KISLO	K610	N/A	2025-04-17
Digital Anemometer	TECMAN	TD8901	026141	2024-09-06

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: HCO2UKCP3003CG, 3000K

##### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.17	60	2.498	299.51	0.998

##### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
41961.73	140.1	2937

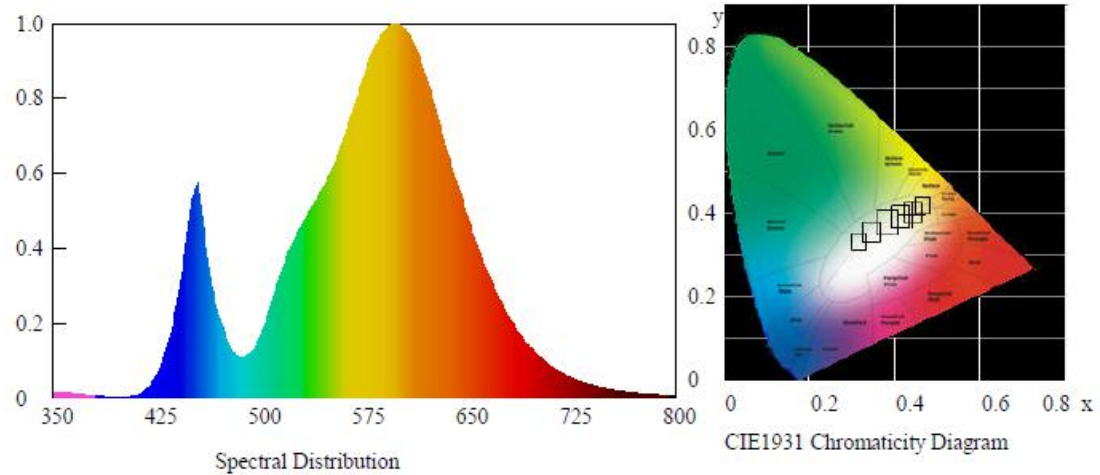
##### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.0031	0.4368	0.3963	0.2539	0.5183

##### Color Rendering

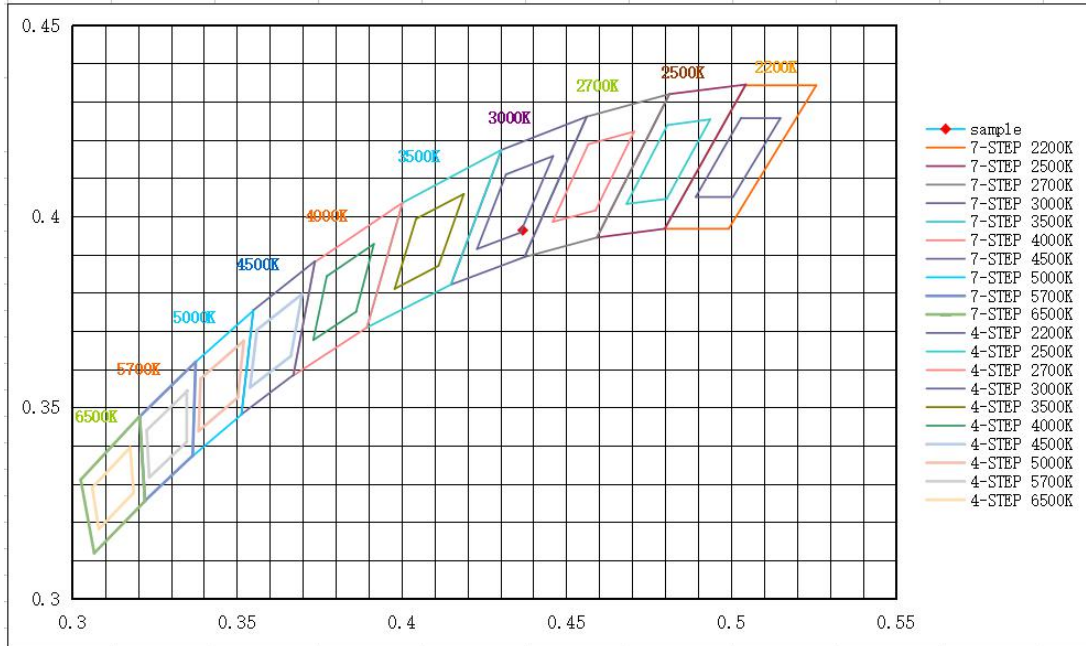
CRI	R9	Rf	Rg	Rcs,h1(%)
73.6	-25	76	95	-16

##### Spectral Distribution





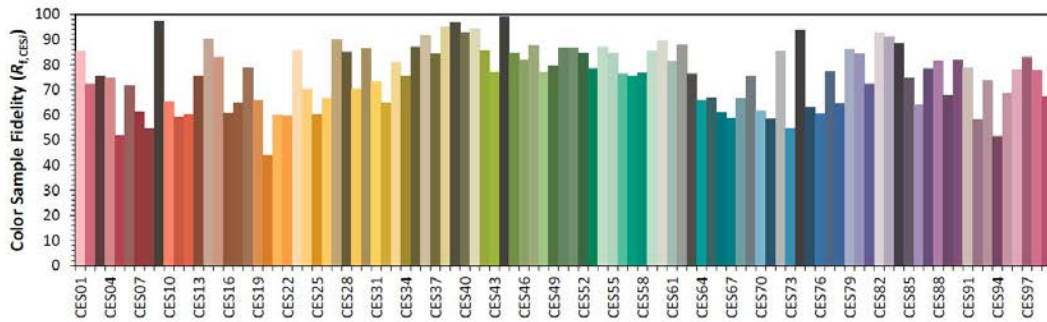
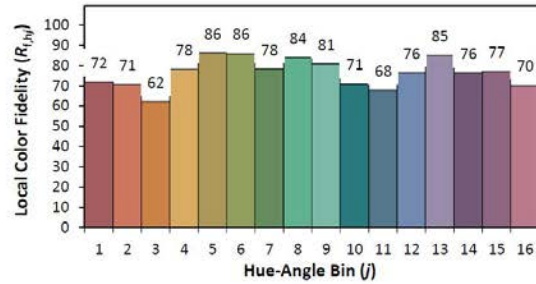
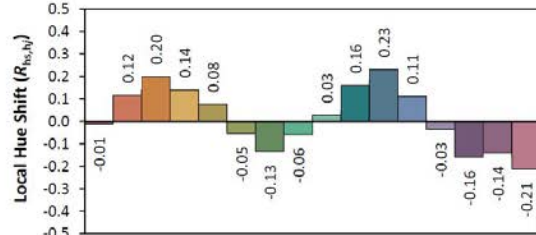
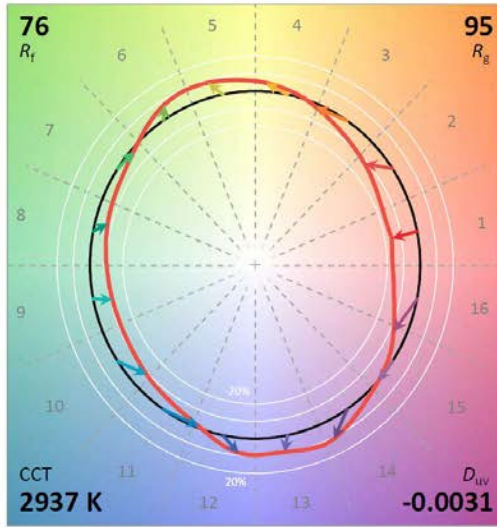
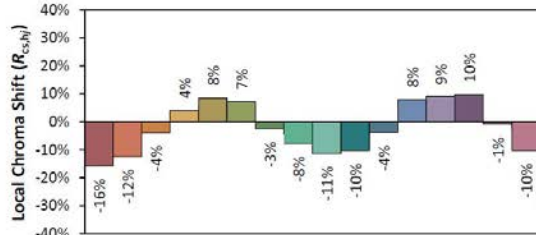
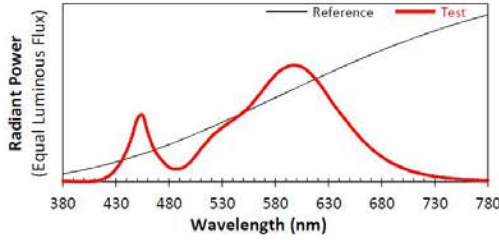
### 7/4 Step Quadrangle





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

<b>Source:</b>	BL240816005-9	<b>Manufacturer:</b>	P.Q.L., Inc.
<b>Date:</b>	2024-09-06	<b>Model:</b>	HCO2UKCP3003CG, 3000K



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

$x$	0.4368
$y$	0.3963
$u'$	0.2539
$v'$	0.5183

CIE 13.3-1995 (CRI)	
$R_a$	74
$R_g$	-25

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



### 3.1.2 Model Number: HCO2UKCP3003CG, 4000K

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.12	60	2.463	295.31	0.998

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
47781.63	161.8	3824

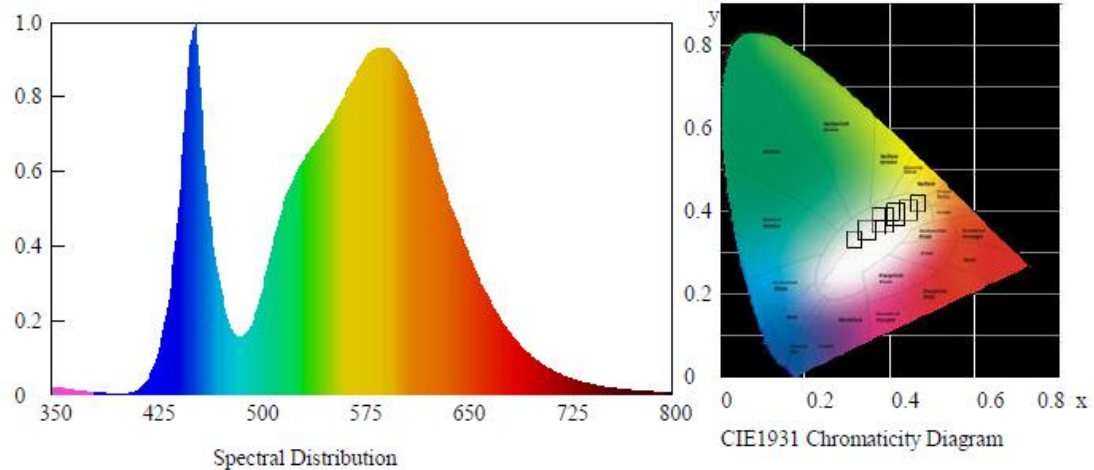
#### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00241	0.3866	0.3753	0.2298	0.5019

#### Color Rendering

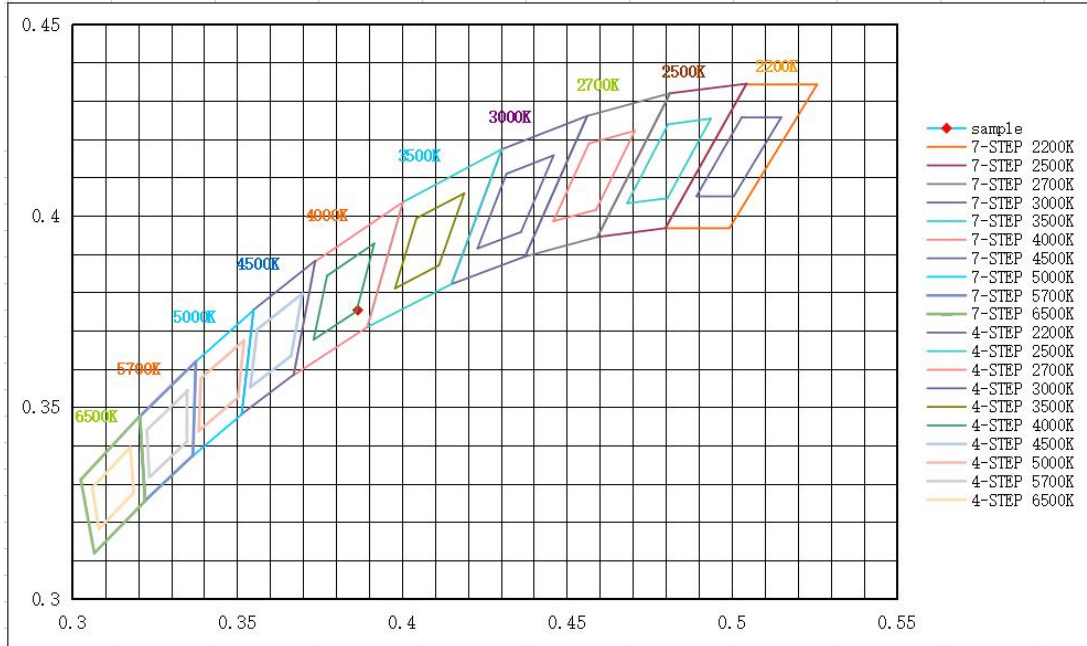
CRI	R9	Rf	Rg	Rcs,h1(%)
75.9	-17	77	94	-16

#### Spectral Distribution





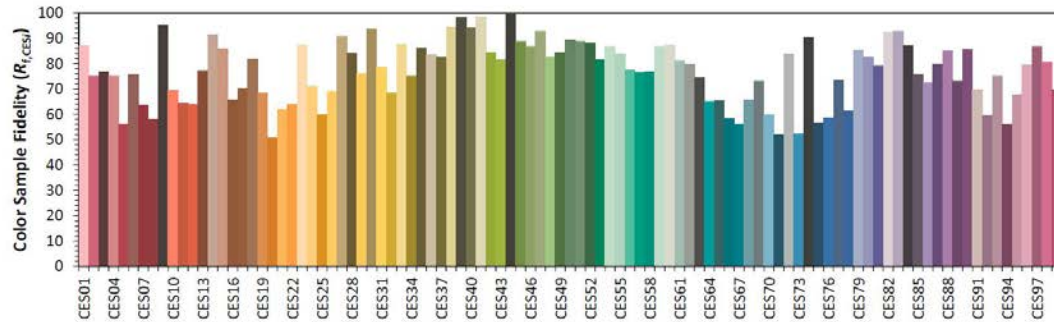
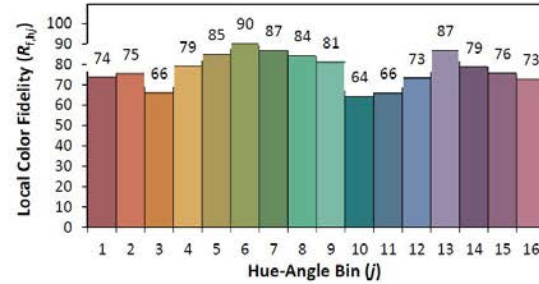
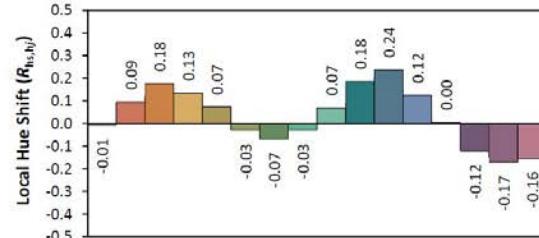
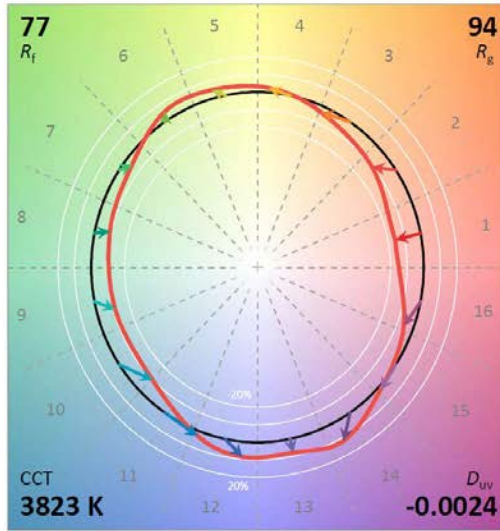
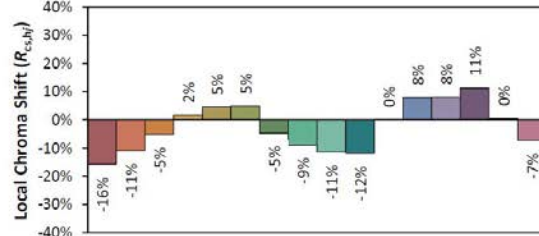
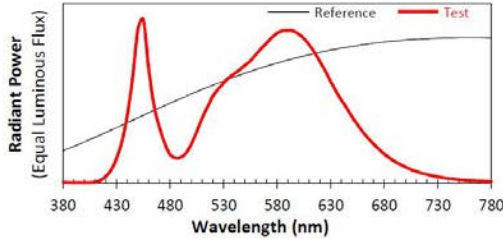
### 7/4 Step Quadrangle





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

Source: BL240816005-9      Manufacturer: P.Q.L., Inc.  
 Date: 2024-09-06      Model: HCO2UKCP3003CG, 4000K



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

$x$	0.3866	CIE 13.3-1995 (CRI)  $R_a$ 76 $R_g$ -17
$y$	0.3753	
$u'$	0.2298	
$v'$	0.5019	

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



### 3.1.3 Model Number: HCO2UKCP3003CG, 5000K

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.05	60	2.498	299.34	0.998

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
43913.13	146.7	5174

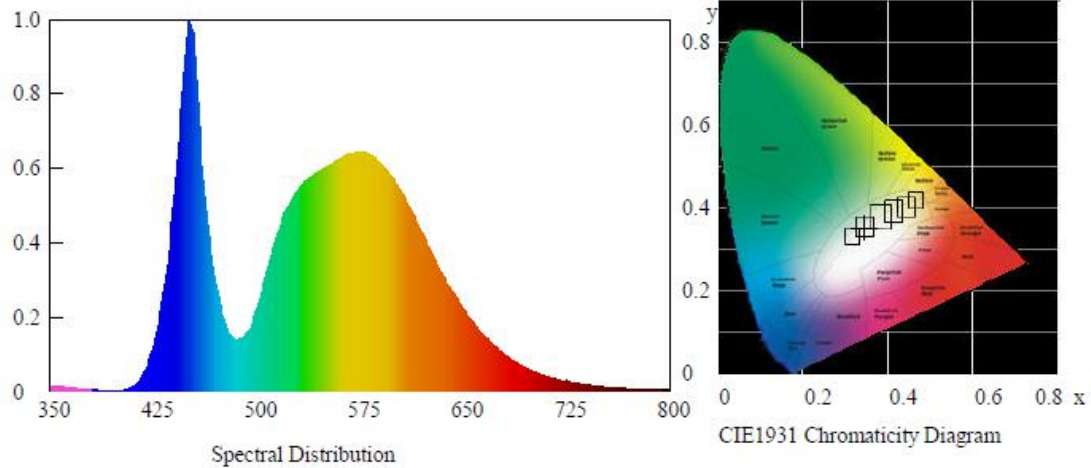
#### Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00143	0.3406	0.3508	0.2087	0.4836

#### Color Rendering

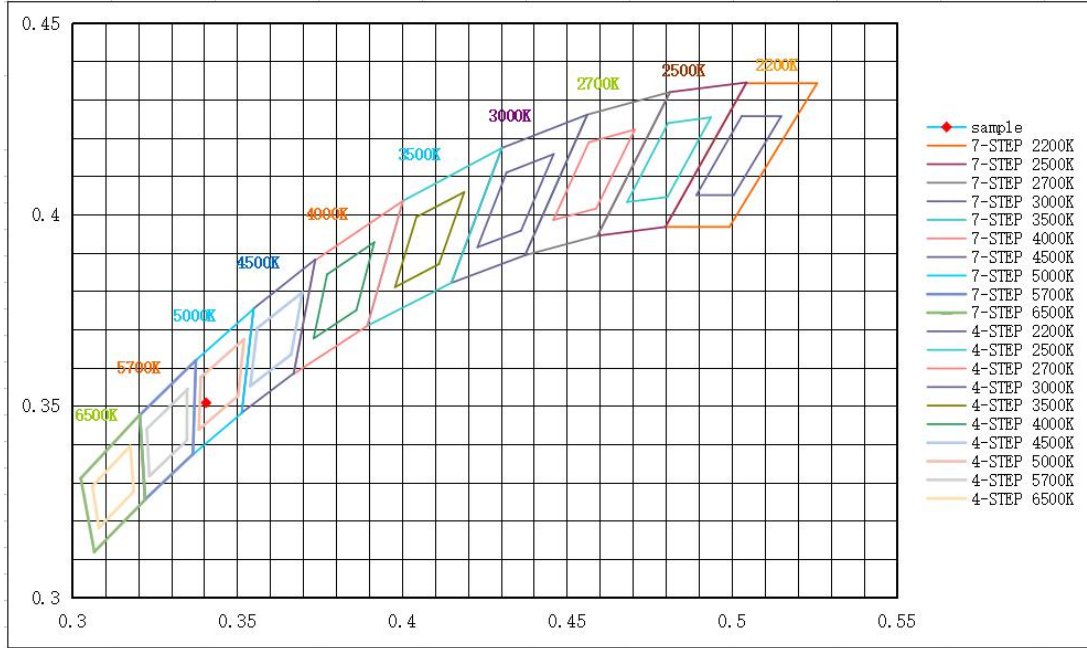
CRI	R9	Rf	Rg	Rcs,h1(%)
73.8	-28	75	94	-18

#### Spectral Distribution





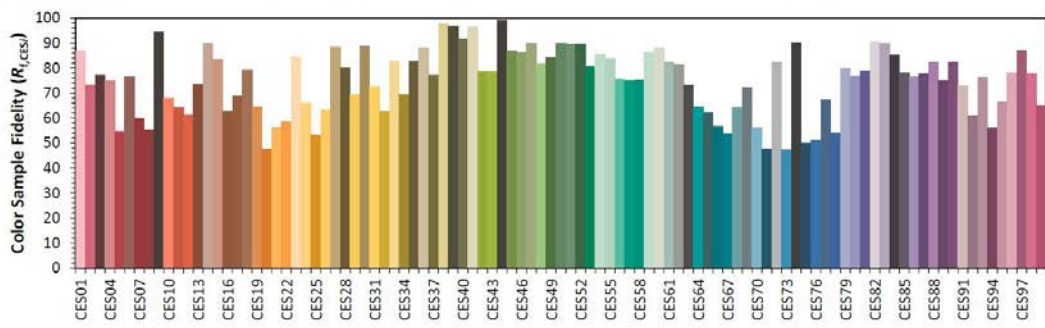
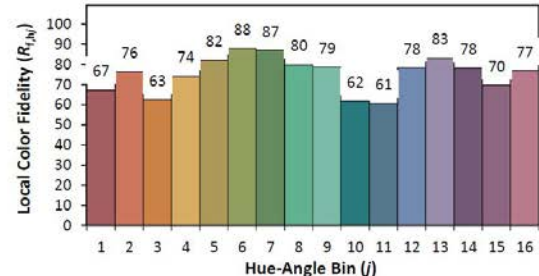
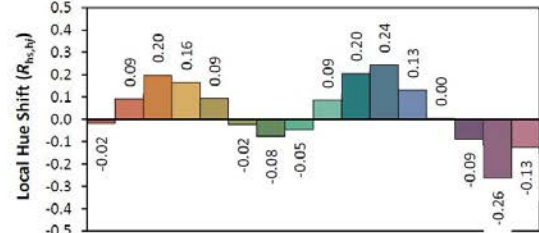
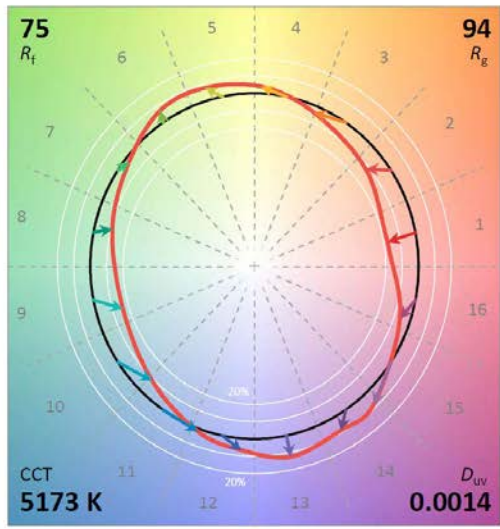
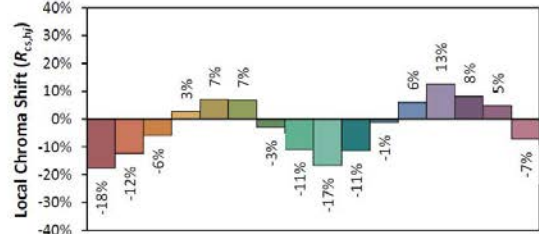
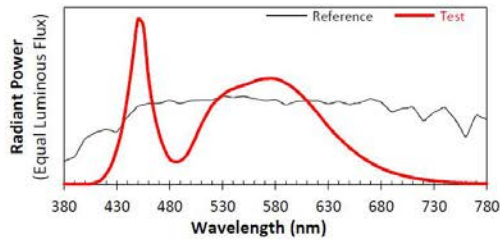
### 7/4 Step Quadrangle





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

Source: BL240816005-9      Manufacturer: P.Q.L., Inc.  
 Date: 2024-09-06      Model: HCO2UKCP3003CG, 5000K



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

$x$	0.3406	CIE 13.3-1995 (CRI)	
$y$	0.3508		
$u'$	0.2087		
$v'$	0.4836		
		$R_a$	74
		$R_g$	-28

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



### 3.1.4 Model Number: HCO2XKCP3003CG, 3000K

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.04	60	2.501	299.33	0.997

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
42265.57	141.2	2950

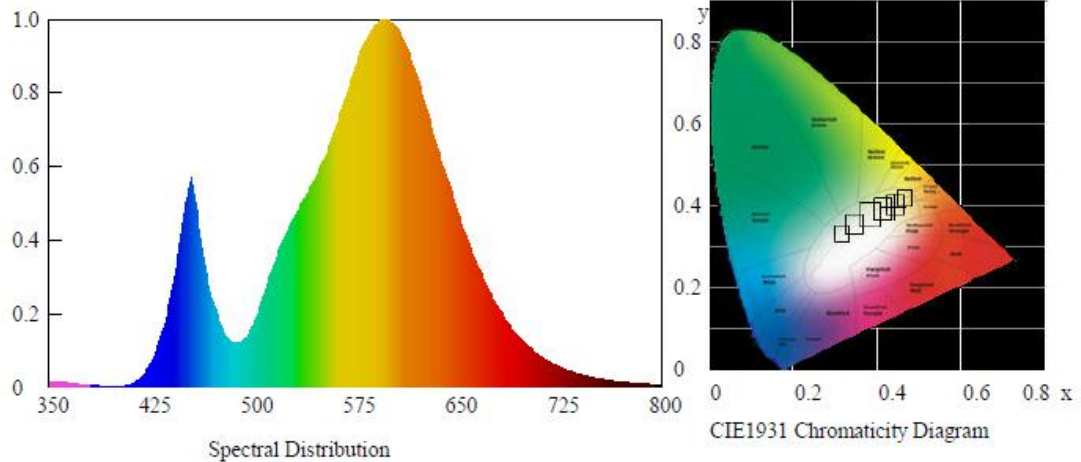
#### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00323	0.4358	0.3957	0.2535	0.5179

#### Color Rendering

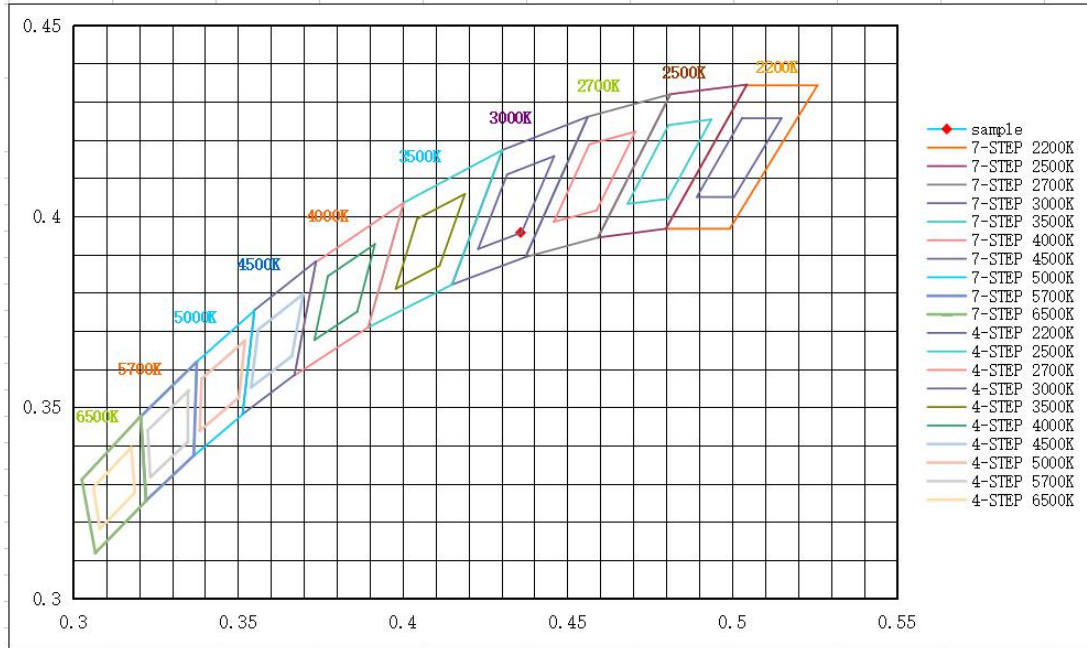
CRI	R9	Rf	Rg	Rcs,h1(%)
73.6	-25	76	94	-16

#### Spectral Distribution





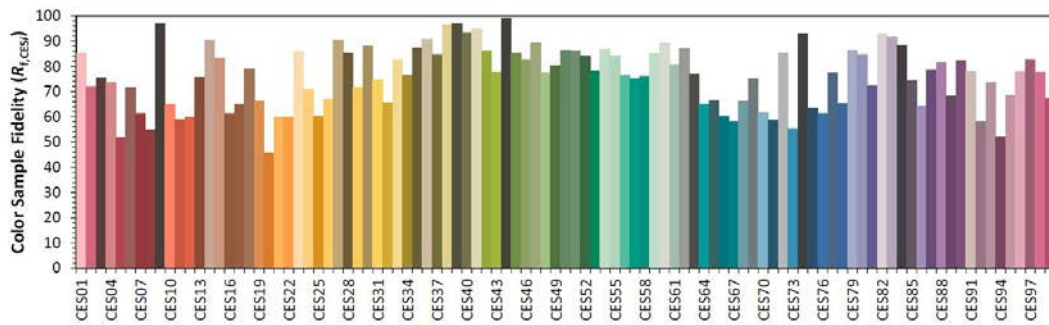
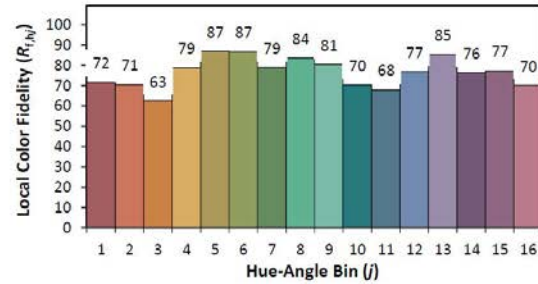
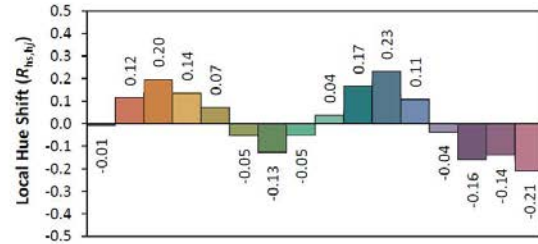
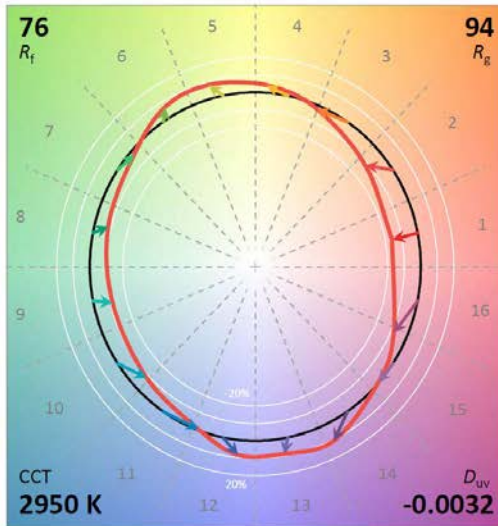
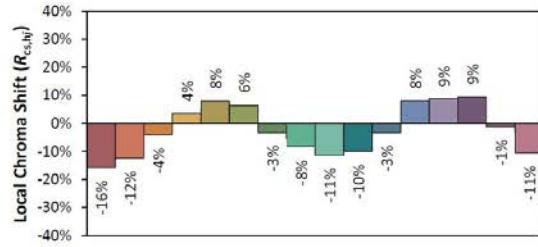
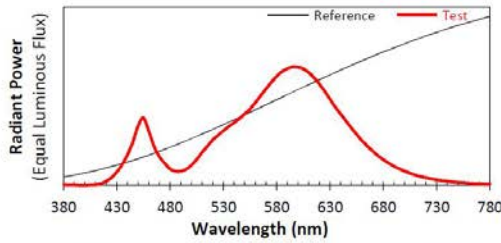
### 7/4 Step Quadrangle





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

<b>Source:</b>	BL240816005-9	<b>Manufacturer:</b>	P.Q.L., Inc.
<b>Date:</b>	2024-09-06	<b>Model:</b>	HCO2XKCP3003CG, 3000K



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

$x$	0.4358
$y$	0.3957
$u'$	0.2535
$v'$	0.5179

CIE 13.3-1995 (CRI)	
$R_a$	74
$R_g$	-25

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



### 3.1.5 Model Number: HCO2HKCP3003CG, 3000K

#### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
277.08	60	1.083	299.23	0.997

#### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
42460.37	141.9	2931

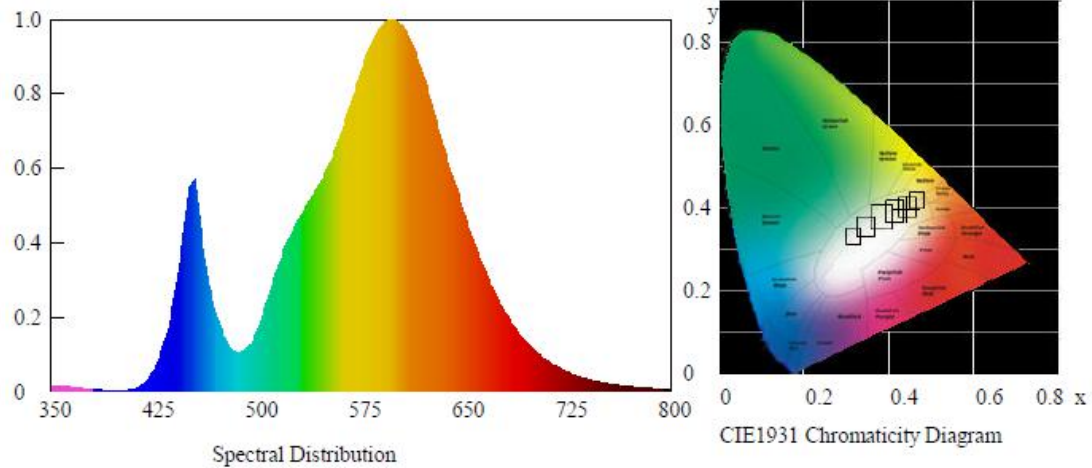
#### Chromaticity Coordinate

Duv	x	y	u'	v'
-0.00304	0.4374	0.3966	0.2541	0.5185

#### Color Rendering

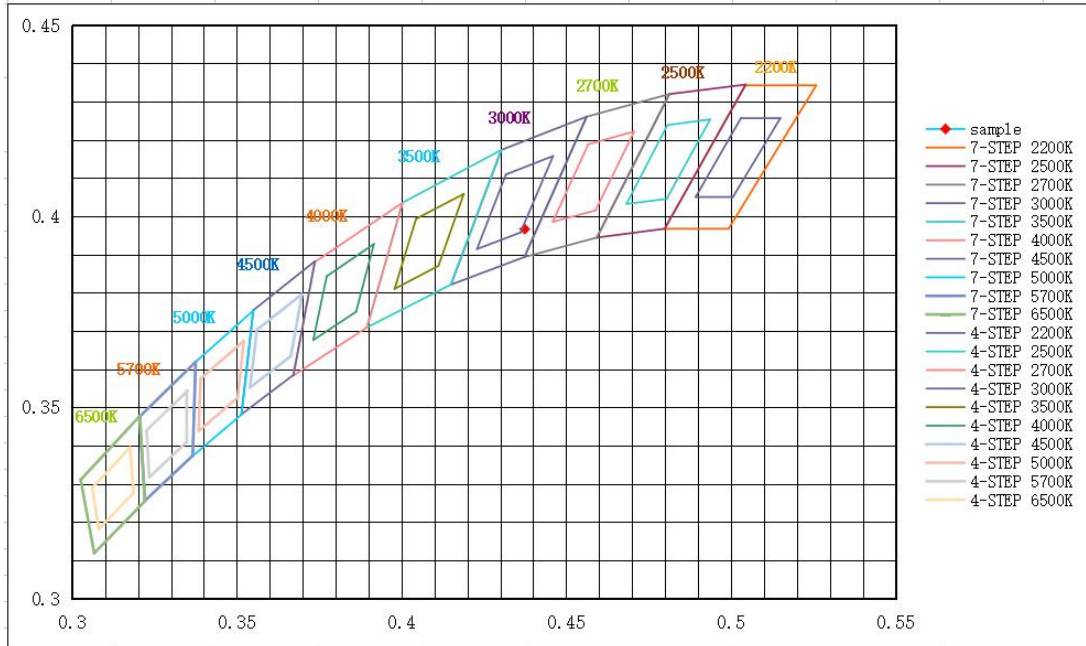
CRI	R9	Rf	Rg	Rcs,h1(%)
73.6	-25	76	95	-16

#### Spectral Distribution





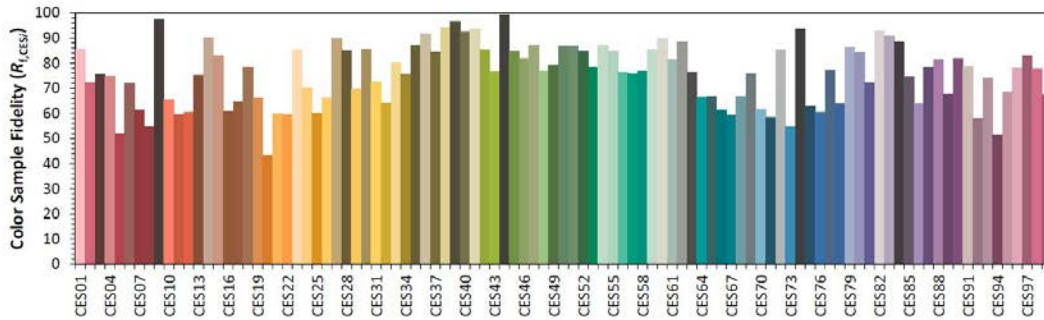
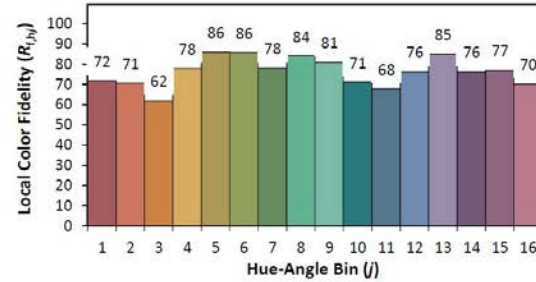
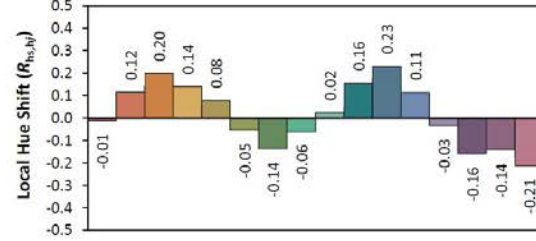
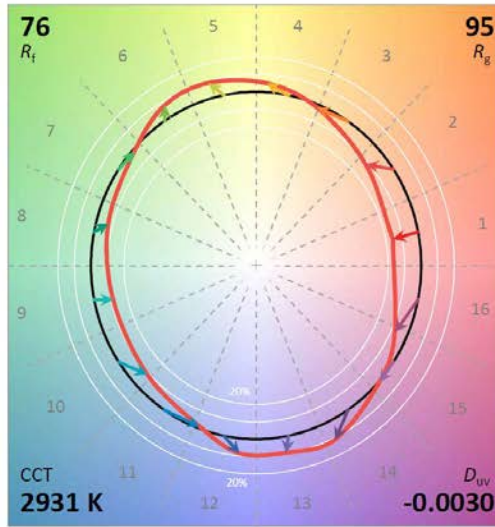
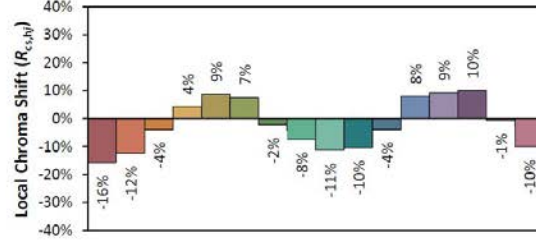
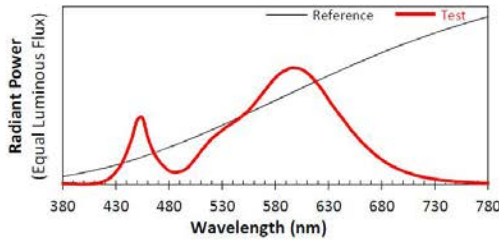
### 7/4 Step Quadrangle





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

<b>Source:</b>	BL240816005-9	<b>Manufacturer:</b>	P.Q.L., Inc.
<b>Date:</b>	2024-09-06	<b>Model:</b>	HCO2HKCP3003CG, 3000K



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

$x$	0.4374	CIE 13.3-1995 (CRI) $R_a$ 74 $R_g$ -25
$y$	0.3966	
$u'$	0.2541	
$v'$	0.5185	

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: HCO2UKCP3003CG, 3000K

##### Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.08	60	2.5010	299.54	0.9976

##### Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	Zonal Lumen in 20-50°(%lm)
42049.93	140.38	64.85

**Zonal Flux Diagram**

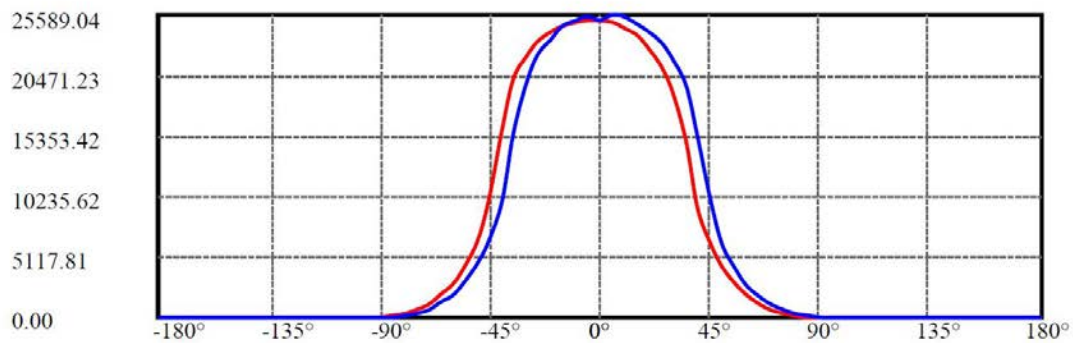
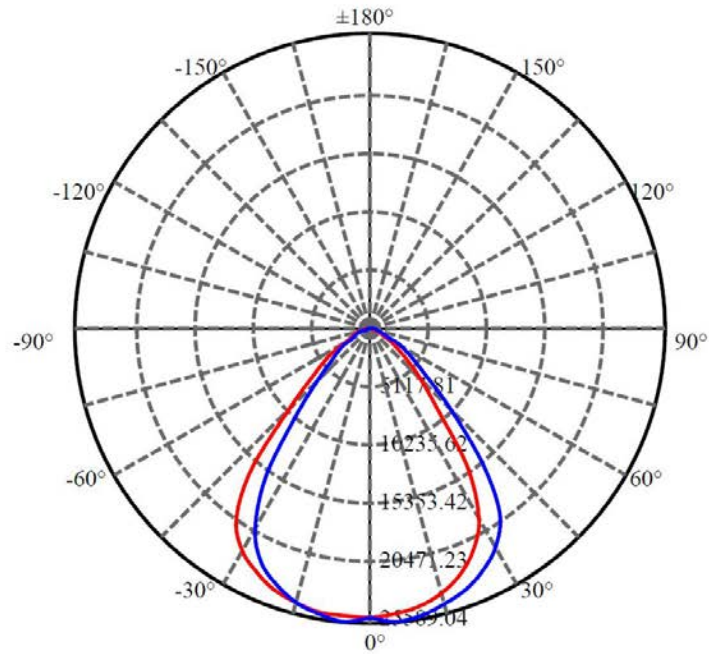
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	25170.770	0.000	0	0.00%	0.00%
5.0	25100.096	600.974	600.974	0.00%	1.43%
10.0	24814.070	1785.587	2386.561	0.00%	5.68%
15.0	24272.100	2911.758	5298.319	0.00%	12.60%
20.0	23488.627	3936.155	9234.474	0.00%	21.96%
25.0	22285.043	4800.813	14035.287	0.00%	33.38%
30.0	20486.801	5412.812	19448.099	0.00%	46.25%
35.0	17288.000	5562.604	25010.703	0.00%	59.48%
40.0	12442.044	4960.233	29970.936	0.00%	71.27%
45.0	8118.685	3806.986	33777.922	0.00%	80.33%
50.0	5376.744	2726.949	36504.871	0.00%	86.81%
55.0	3530.662	1936.767	38441.637	0.00%	91.42%
60.0	2308.959	1349.812	39791.449	0.00%	94.63%
65.0	1487.182	922.849	40714.298	0.00%	96.82%
70.0	903.659	605.376	41319.674	0.00%	98.26%
75.0	477.594	361.037	41680.711	0.00%	99.12%
80.0	211.724	184.442	41865.153	0.00%	99.56%
85.0	53.721	72.128	41937.281	0.00%	99.73%
90.0	2.974	15.524	41952.805	0.00%	99.77%
95.0	2.634	1.536	41954.34	0.00%	99.77%
100.0	2.838	1.487	41955.827	0.00%	99.78%
105.0	3.416	1.673	41957.501	0.00%	99.78%
110.0	4.351	2.030	41959.531	0.00%	99.79%
115.0	5.982	2.616	41962.147	0.00%	99.79%
120.0	8.277	3.466	41965.613	0.00%	99.80%
125.0	12.134	4.718	41970.331	0.00%	99.81%
130.0	16.791	6.289	41976.621	0.00%	99.83%
135.0	21.363	7.710	41984.33	0.00%	99.84%
140.0	26.121	8.792	41993.122	0.00%	99.86%
145.0	31.203	9.564	42002.686	0.00%	99.89%
150.0	36.573	9.980	42012.667	0.00%	99.91%
155.0	41.638	9.898	42022.565	0.00%	99.93%
160.0	45.428	9.132	42031.696	0.00%	99.96%
165.0	47.518	7.660	42039.356	0.00%	99.97%
170.0	49.081	5.730	42045.086	0.00%	99.99%
175.0	51.257	3.589	42048.676	0.00%	100.00%
180.0	53.840	1.256	42049.932	0.00%	100.00%



### Luminous Intensity Distribution Diagram

Light Distribution Curve [Unit:cd]



C0/C180: —

C90/C270: —

Field angle(10%Imax):C0/180Left:61.7 Right:56.7

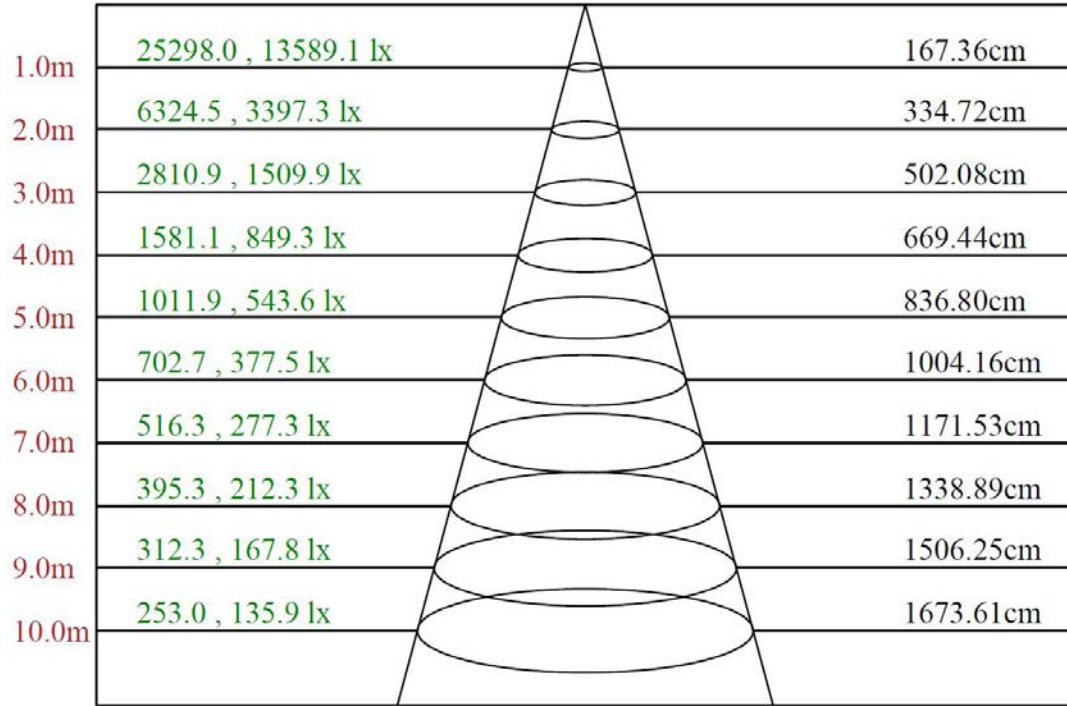
:C90/270Left:57.1 Right:61.2

Beam Angle(50%Imax):C0/180Left:42.8 Right:37.0

:C90/270Left:37.6 Right:42.5



### Lux distance Curve



Max , Ave      Beam angle of C90 plane 79.85



**UGR Glare**

Illumination assessment according UGR											
Rf of Ceiling	70	70	50	50	30	70	70	50	50	30	
Rf of Wall	50	30	50	30	30	50	30	50	30	30	
Rf of Floor	20	20	20	20	20	20	20	20	20	20	
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	22.14	23.42	22.51	23.73	24.05	23.53	24.80	23.89	25.12	25.44
	3H	22.79	23.92	23.18	24.26	24.61	24.37	25.50	24.76	25.85	26.20
	4H	22.90	23.95	23.30	24.31	24.68	24.59	25.64	24.99	26.00	26.37
	6H	22.93	23.90	23.35	24.27	24.68	24.71	25.68	25.13	26.05	26.46
	8H	22.88	23.81	23.30	24.19	24.60	24.71	25.63	25.13	26.02	26.43
	12H	22.82	23.70	23.25	24.10	24.52	24.68	25.56	25.11	25.96	26.38
4H	2H	22.52	23.57	22.92	23.92	24.29	23.71	24.76	24.11	25.11	25.49
	3H	23.24	24.11	23.66	24.51	24.93	24.60	25.47	25.03	25.87	26.29
	4H	23.43	24.19	23.87	24.61	25.06	24.88	25.64	25.32	26.06	26.51
	6H	23.44	24.11	23.91	24.56	25.01	24.98	25.65	25.46	26.11	26.56
	8H	23.41	24.03	23.90	24.49	24.97	25.01	25.63	25.50	26.09	26.57
	12H	23.37	23.95	23.86	24.40	24.92	25.02	25.59	25.51	26.05	26.56
8H	4H	23.42	24.04	23.90	24.50	24.97	24.81	25.43	25.30	25.89	26.37
	6H	23.44	23.95	23.94	24.43	24.94	24.92	25.44	25.42	25.91	26.43
	8H	23.47	23.91	23.99	24.43	24.93	25.00	25.44	25.53	25.96	26.46
	12H	23.42	23.79	23.96	24.30	24.82	25.01	25.37	25.54	25.89	26.41
12H	4H	23.39	23.96	23.87	24.41	24.93	24.78	25.35	25.26	25.80	26.32
	6H	23.45	23.89	23.98	24.41	24.91	24.92	25.37	25.45	25.89	26.39
	8H	23.44	23.80	23.97	24.32	24.84	24.96	25.33	25.50	25.84	26.37
Variation with the observer position at spacings:											
S = 1.0H		1.3/-1.9					1.5/-2.1				
S = 1.5H		2.8/-3.3					3.1/-3.4				
S = 2.0H		5.3/-4.7					5.5/-4.7				
Standard tables:		BK1					BK1				
Uncorrected UGR		9.1					7.8				

UGR calculation is based on CIE Publ. 117 ,S/H = 1

**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	25170.77	24884.77	24509.52	23810.69	22703.97	21148.59	18921.56	14801.97	9208.58
22.5	25170.77	24917.40	24498.64	23748.14	22736.60	21260.07	18992.26	14910.74	9602.86
45.0	25170.77	24960.91	24476.89	23813.40	22790.98	21322.62	19065.68	15016.79	9738.82
67.5	25170.77	24966.35	24580.22	23962.96	23016.68	21553.75	19362.07	15604.13	10540.98
90.0	25170.77	25589.04	25371.51	24843.98	24185.93	23177.11	21774.00	19566.01	15313.18
112.5	25170.77	25246.42	25096.87	24683.55	24055.41	23098.25	21861.02	19628.55	15631.33
135.0	25170.77	25137.65	24977.22	24615.57	24120.67	23193.43	22013.29	19968.45	16014.74
157.5	25170.77	25085.99	24917.40	24599.25	24128.83	23375.61	22225.39	20150.64	16283.93
180.0	25170.77	25069.67	24941.87	24621.01	24126.11	23315.79	22154.69	20107.13	15925.00
202.5	25170.77	25088.71	24909.24	24520.40	24055.41	23152.64	21866.46	19576.89	15305.02
225.0	25170.77	25056.08	24909.24	24471.45	23889.54	22910.63	21436.82	18891.65	14111.29
247.5	25170.77	25053.36	24835.82	24354.53	23715.51	22573.45	20990.87	18247.20	13477.72
270.0	25170.77	25504.75	25143.09	24574.78	23601.30	22230.83	19859.69	15571.50	9858.46
292.5	25170.77	25153.97	24781.44	24107.08	23103.69	21599.97	19239.71	14970.56	9439.71
315.0	25170.77	24952.75	24572.06	23837.88	22869.84	21385.16	19076.55	14774.78	9431.55
337.5	25170.77	24933.71	24504.08	23788.93	22717.56	21262.79	18948.75	14821.01	9189.54
360.0	25170.77	24884.77	24509.52	23810.69	22703.97	21148.59	18921.56	14801.97	9208.58
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	6198.42	4282.20	2844.83	1854.77	1161.64	657.50	338.00	131.88	4.62
22.5	6331.66	4016.80	2501.94	1672.58	1088.50	632.76	321.14	129.71	6.80
45.0	6948.92	4871.99	3235.31	2076.11	1325.07	752.95	385.04	155.54	10.06
67.5	6736.82	4446.17	2928.58	1923.29	1214.40	722.49	370.08	150.37	14.14
90.0	9929.16	6190.26	4088.32	2750.47	1801.47	1106.99	613.72	295.58	111.22
112.5	9912.85	6878.22	4754.52	3190.98	2141.37	1358.24	693.40	332.29	123.72
135.0	10497.48	6589.98	4080.16	2524.78	1635.60	1028.40	588.16	287.15	107.14
157.5	10282.66	6829.27	4667.51	3095.81	1999.97	1355.52	686.05	327.94	113.66
180.0	9953.64	6456.74	4324.89	2872.84	1850.42	1169.26	632.21	302.65	107.41
202.5	9711.63	6301.75	4091.04	2696.09	1725.33	1062.39	603.66	282.80	90.55
225.0	8914.90	6513.85	4444.53	2900.03	1853.14	1131.19	623.51	286.33	87.01
247.5	8607.63	5377.22	3367.73	2144.09	1415.34	878.30	506.32	236.84	67.98
270.0	6489.37	4548.68	2963.11	1915.68	1217.11	690.41	327.39	116.65	3.81
292.5	6483.94	4516.05	2993.30	1951.03	1214.12	681.70	331.47	119.10	3.54
315.0	6527.44	3778.33	2299.36	1492.30	971.30	566.41	285.52	107.68	3.54
337.5	6372.45	4430.39	2905.47	1882.50	1180.13	664.03	335.82	125.08	4.35
360.0	6198.42	4282.20	2844.83	1854.77	1161.64	657.50	338.00	131.88	4.62
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	2.45	2.99	2.99	3.81	5.17	7.07	9.79	14.41	19.31
22.5	2.45	2.72	2.99	3.81	5.17	7.07	9.52	14.68	19.03
45.0	2.99	2.99	2.72	4.08	4.90	6.80	8.97	13.32	17.68
67.5	2.72	2.72	3.26	3.81	4.35	6.25	8.97	13.32	17.95
90.0	4.08	2.18	2.72	2.99	3.81	4.90	7.07	9.52	14.41
112.5	3.54	2.45	2.72	2.99	3.81	4.62	6.80	9.52	14.14
135.0	3.54	2.45	2.45	2.99	3.54	4.90	6.80	9.52	14.14
157.5	3.26	2.18	2.45	2.99	3.54	4.90	6.53	9.52	14.14
180.0	2.99	2.45	2.72	3.26	3.54	4.90	6.53	9.52	14.41
202.5	2.99	2.45	2.45	2.72	3.54	5.17	6.53	9.79	14.14
225.0	2.99	2.72	2.45	2.99	4.08	5.17	6.80	10.06	14.68
247.5	2.72	2.45	2.45	3.26	3.81	5.17	7.34	10.33	14.68
270.0	2.99	2.99	2.99	3.54	5.17	7.34	10.06	15.50	20.67
292.5	2.72	2.99	3.26	3.54	5.17	7.34	10.06	15.23	20.12
315.0	2.45	2.72	3.54	4.08	4.90	7.07	10.33	14.96	19.58
337.5	2.72	2.72	3.26	3.81	5.17	7.07	10.33	14.96	19.58
360.0	2.45	2.99	2.99	3.81	5.17	7.07	9.79	14.41	19.31



C/ $\gamma$ (°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	24.47	29.10	33.72	38.89	43.51	46.77	48.40	50.03	52.75
22.5	23.39	28.55	32.90	38.07	43.24	46.77	48.40	49.76	52.75
45.0	22.57	27.46	33.45	38.89	43.24	46.50	48.95	50.31	53.02
67.5	22.30	27.46	32.63	38.34	43.24	46.77	48.40	49.76	53.02
90.0	19.03	24.20	29.37	35.35	41.06	45.68	48.13	49.49	50.58
112.5	18.49	23.11	28.28	33.99	40.24	44.32	46.77	48.95	49.76
135.0	18.49	22.57	27.46	33.17	38.61	43.24	45.95	47.86	49.22
157.5	18.49	23.39	27.74	32.36	37.80	42.15	45.14	47.04	48.40
180.0	19.03	23.11	27.74	32.36	37.53	41.88	44.60	46.23	48.67
202.5	19.03	23.39	27.74	32.36	37.53	41.88	44.05	46.50	48.13
225.0	18.49	22.84	27.74	33.45	38.61	42.69	45.14	47.04	48.40
247.5	19.58	23.93	29.10	33.99	39.43	43.78	45.95	47.86	48.40
270.0	25.29	30.73	36.71	42.96	47.59	50.58	52.21	52.75	56.29
292.5	24.75	29.91	35.89	41.06	45.95	48.95	50.31	51.12	54.11
315.0	24.20	29.10	34.53	40.52	44.87	47.86	49.49	50.31	53.57
337.5	24.20	29.10	34.26	39.43	43.78	47.04	48.40	50.31	53.02
360.0	24.47	29.10	33.72	38.89	43.51	46.77	48.40	50.03	52.75
C/ $\gamma$ (°)	180.0								
0.0	53.84								
22.5	53.84								
45.0	53.84								
67.5	53.84								
90.0	53.84								
112.5	53.84								
135.0	53.84								
157.5	53.84								
180.0	53.84								
202.5	53.84								
225.0	53.84								
247.5	53.84								
270.0	53.84								
292.5	53.84								
315.0	53.84								
337.5	53.84								
360.0	53.84								



## 4 Additional Test

### Electrical data

Model Number	CCT(K)	Test Voltage (V)	Frequency (Hz)	Power Factor	THD(%)
HCO2UKCP3003CG	3000	120	60	0.998	1.8
		277	60	0.943	10.1
	4000	277	60	0.944	9.7
	5000	277	60	0.943	9.6
HCO2XKCP3003CG	3000	120	60	0.999	1.4
		277	60	0.968	8.5
		347	60	0.942	10
HCO2HKCP3003CG	3000	200	60	0.999	4.0
		277	60	0.998	4.2
		347	60	0.978	8.6
		480	60	0.968	10.0

## 5 Data reporting for white-tunable submissions

(HCO2UKCP3003CG)

ANSI CCT Quadrangle (omit any outside product range) / Worst-Case Value	Actual CCT (K)	Power Consumption (W)	Lumen Output (lm)	Input Control Signal Applied
3000K	2937	299.51	41961.73	0%
4000K	3824	295.31	47781.63	50%
5000K	5174	299.34	43913.13	100%
Lowest Efficacy	2937	299.51	41961.73	0%
Maximum Power	2937	299.51	41961.73	0%



## Photo Document



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