TEST REPORT

For

P.Q.L., Inc.

2285 Ward Avenue / Simi Valley, CA 93065

Model Number:	HLM14P4002CUW - 4000K HLM14P4002CUW - 5000K	
Report Type:	Electrical, Photometric and ISTMT tests according to the following standards and show the compliance to DLC Technical Requirements for LED Lighting SSL V6.0	
Standards:	ANSI/IES LM-79-19: Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products ANSI C82.77-10-2014: Harmonic Emission Limits – Related Power Quality Requirements for Lighting ANSI/UL 1598-2008: Standard for Safety of Luminaires CIE 190:2010 Calculation and presentation of unified glare rating tables for indoor lighting luminaires IES TM-30-18★: IES Method for Evaluating Light Source Color Rendition	
Project Engineer:	Allen Pan	Allen Pan
Report Number:	RKSB260318004-10	
Sample Size:	One sample was received on 2026-03-18 and used for testing.	
Test Date:	2026-03-20 to 2026-04-01	
Report Date:	2026-04-14	
Reviewed By:	Seven Xia/ EE Engineer	Seven.Xia
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan). No. 248 Chenghu Road, Kunshan, Jiangsu, People's Republic of China Tel: +86-0512-86175000 Fax: +86-0512-88934268	

1. Product Information and Description

Product Primary Use:	High-Bay Luminaires for Commercial and Industrial Buildings
Voltage and Frequency:	120-277VAC, 60Hz
LED Source Manufacturer:	Seoul Semiconductor Co., LTD
LED Source Model:	STW8A32E-D6
Driver Model:	SIG400 120-277 W D1S
Auxiliary Ballast Model:	NA
Auxiliary Housing Model:	NA
Field Adjustable Color Temperature:	Yes
Field-Adjustable Light Output:	Yes

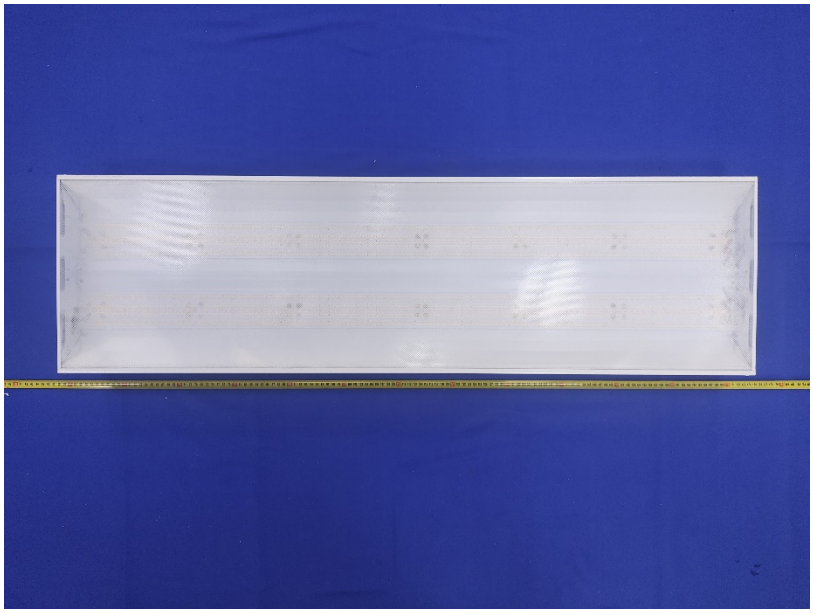
2. Product Rated Values#

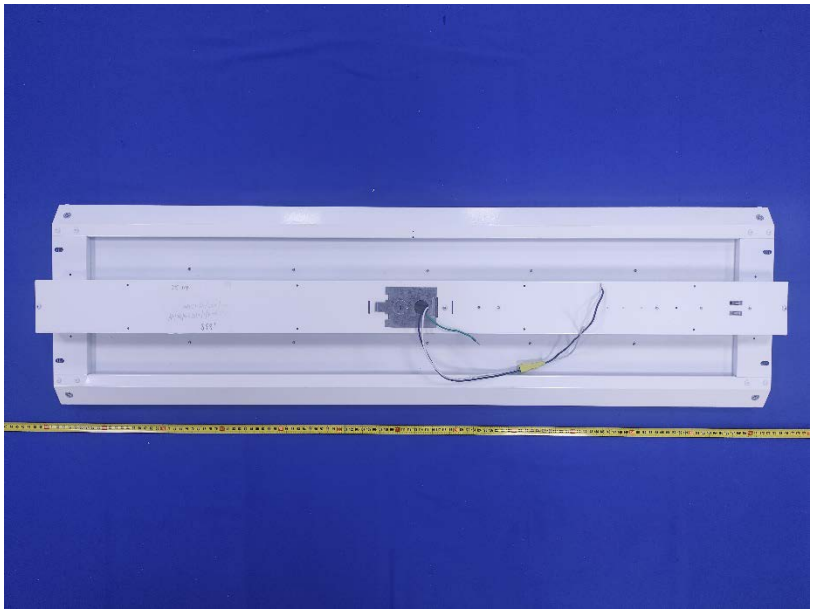
Test Model	CCT(K)	Light Output (lm)	Power(W)	Luminous Efficacy (lm/W)
HLM14P4002CUW 4000K	4000	60000	400	150
		51680	340	152
		41580	270	154
HLM14P4002CUW 5000K	5000	60000	400	150
		51680	340	152
		41580	270	154

3. Test List

Test Model	Power(W)	Test Item			
		Goniophotometer Test	Integrating Sphere Test	THDi and PF Test	In-Situ Temperature Measurement Test
HLM14P4002CUW 4000K	400	Yes	Yes	Yes	Yes
	340	NA	Yes	Yes	NA
	270	NA	Yes	Yes	NA
HLM14P4002CUW 5000K	400	NA	Yes	Yes	NA

4. Product Photo





LED Driver Photo

5. Test Result

Test Model: HLM14P4002CUW - 4000K
Control setting: 400W

Integrating Sphere Test; Orientation: Downward; Test Voltage: 120V 60Hz;

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	55982.5	≥10000	≥9000	Pass
Power(W)	383.69	None.	None.	N/A
Total Efficacy(lm/W)	145.9	≥150	≥145.5	Pass
CCT(K)	4215	3710~4260	No tolerances	Pass
Duv	-0.00068	-0.005~0.007	No tolerances	Pass
IES R_f	82	70	69	Pass
IES R_g	94	89	88	
IES Rcs,h1	-13%	-18%~23%	-19%~24%	
R_a	82.5	≥70	≥69	
R9	7	≥-40	≥-41	

Goniophotometer Test; Orientation: Downward; Test Voltage: 120V 60Hz;

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	55982.8	≥10000	≥9000	Pass
Power(W)	383.44	None.	None.	N/A
Total Efficacy(lm/W)	146.05	≥150	≥145.5	Pass
Zonal Lumen Distribution(20-50°)	60.68%	20-50°≥30%	20-50°≥20%	Pass

Integrating Sphere THDi、PF Test; Orientation: Downward;

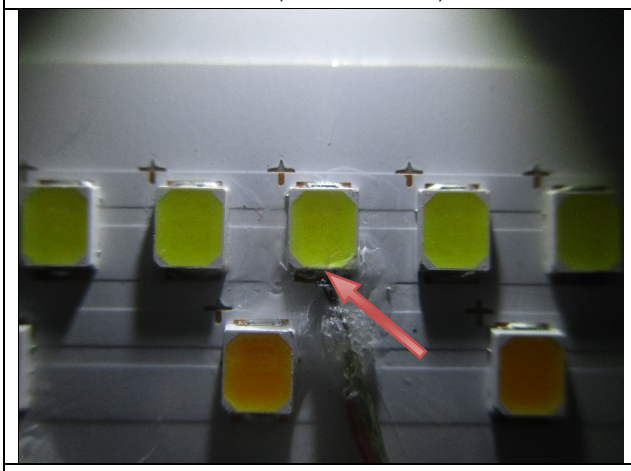
Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9918	≥0.9	⩾0.87	Pass
120	THDi	6.77%	≤20%	⩽25%	Pass
277	Power Factor	0.9701	≥0.9	⩾0.87	Pass
277	THDi	8.39%	≤20%	⩽25%	Pass

In-Situ Temperature Measurement Test: Test Voltage: 120V 60Hz;

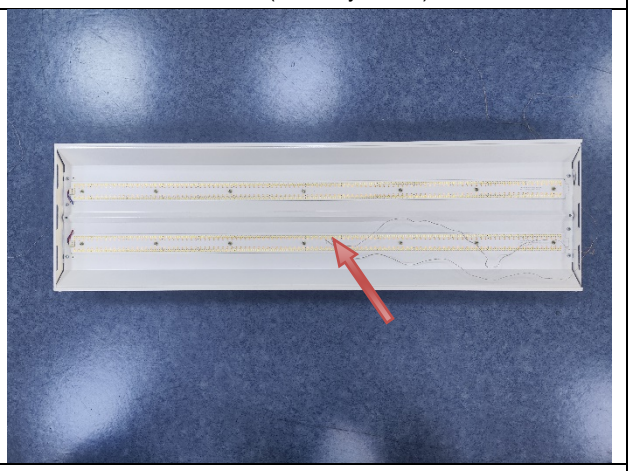
Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
TMP_{LED1}(°C)	87.8	≤105	With tolerance of ⩽ 1.1°C or 0.4%, whichever is greater due to thermocouple tolerance	Pass
TMP_{LED2}(°C)	86.6	≤105	With tolerance of ⩽ 1.1°C or 0.4%, whichever is greater due to thermocouple tolerance	Pass
TMP_c(°C)	62	≤90	With tolerance of ⩽ 1.1°C or 0.4%, whichever is greater due to thermocouple tolerance	Pass
Drive Current/Individual LED source(mA)#1	37.3	≤120	With +5% tolerance	Pass
Drive Current/Individual LED source(mA)#2	27.5	≤120	With +5% tolerance	Pass
L_{70} Lumen Maintenance Life (Hours)	>54000	⩾50000	None.	Pass
L_{90} Lumen Maintenance Life (Hours)	40000	≥36000	None.	Pass
Color Maintenance	0.0032	≤0.007	≤0.0074	Pass

Note:
1. The test results were measured directly from the test equipment.
2. The DLC requirements were listed according to DLC Technical Requirements V6.0.
3. The conclusion is for reference only. Test report that indicate product performance meets DLC Technical Requirements do not represent official DLC product qualification. All decisions regarding product qualification are made by the DLC.

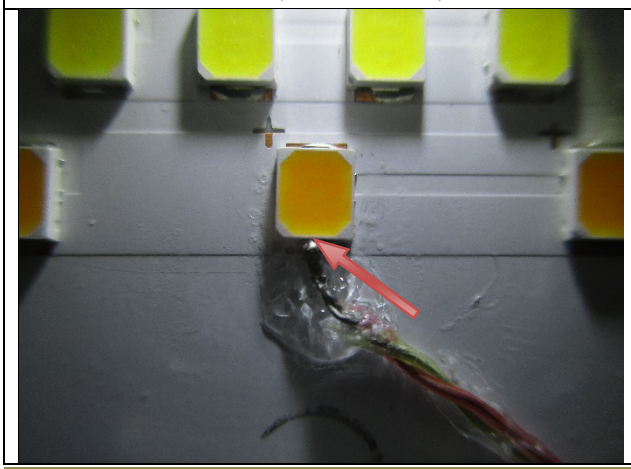
TMP_{LED1}(Zoomed-in View)



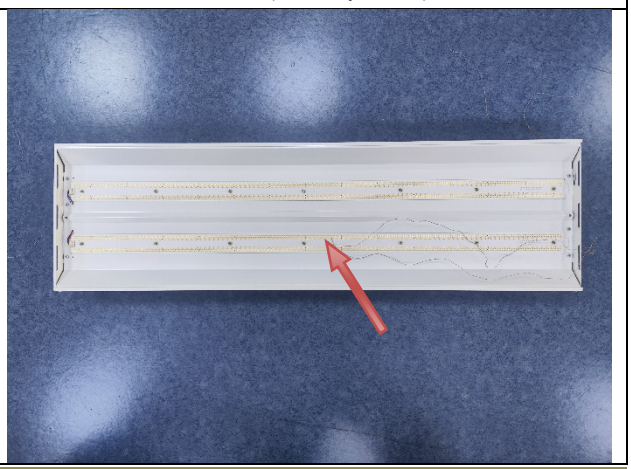
TMP_{LED1}(Bird's-eye View)

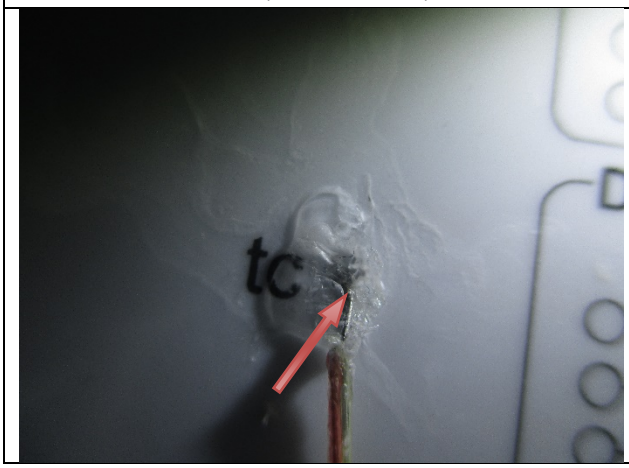
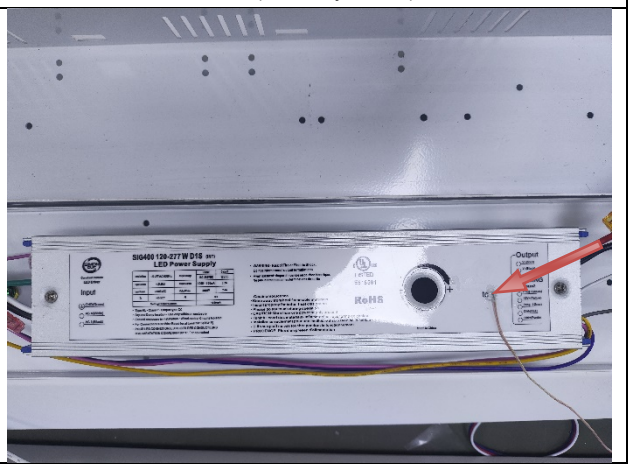


TMP_{LED2}(Zoomed-in View)



TMP_{LED2}(Bird's-eye View)



TMP_c(Zoomed-in View)	TMP_c(Bird's-eye View)
	

Test Data

[Integrating Sphere System]

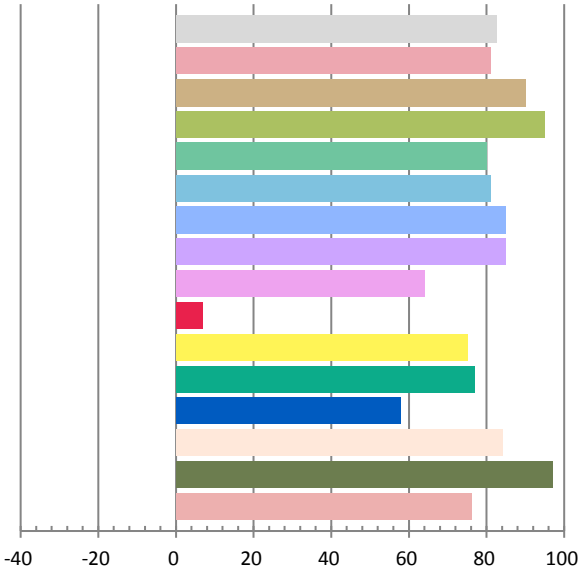
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	3.2249	383.69	0.9918	55982.5	145.9

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
169.979	4215	-0.00068	0.3710	0.3693	0.2219	0.4968

Color Rendering Index

Ra			
82.5			
R1	R2	R3	R4
81	90	95	80
R5	R6	R7	R8
81	85	85	64
R9	R10	R11	R12
7	75	77	58
R13	R14	R15	
84	97	76	



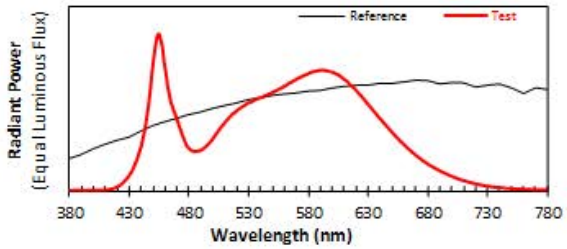
ANSI/IES TM-30-18 Color Rendition Report

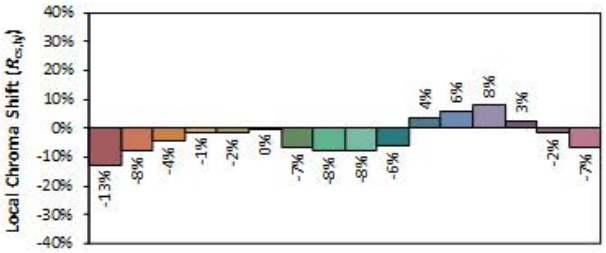
Source: User SPD

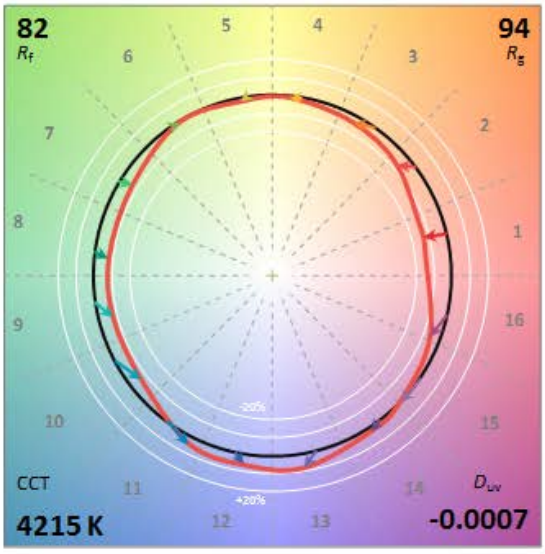
Manufacturer: P.Q.L., Inc.

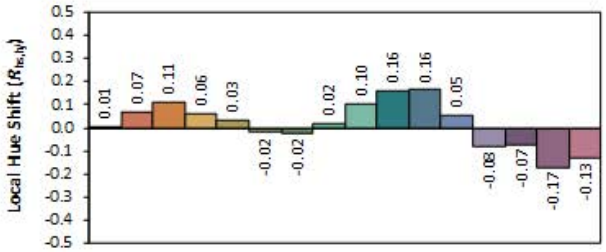
Date: 2026/4/9

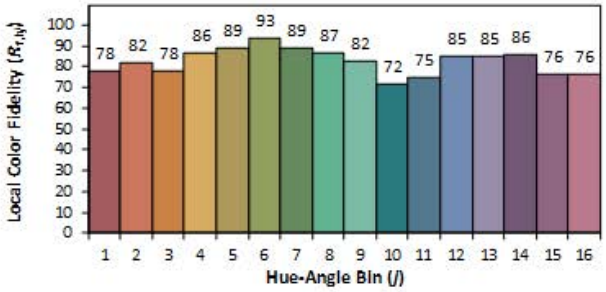
Model: HLM14P4002CUW - 4000K

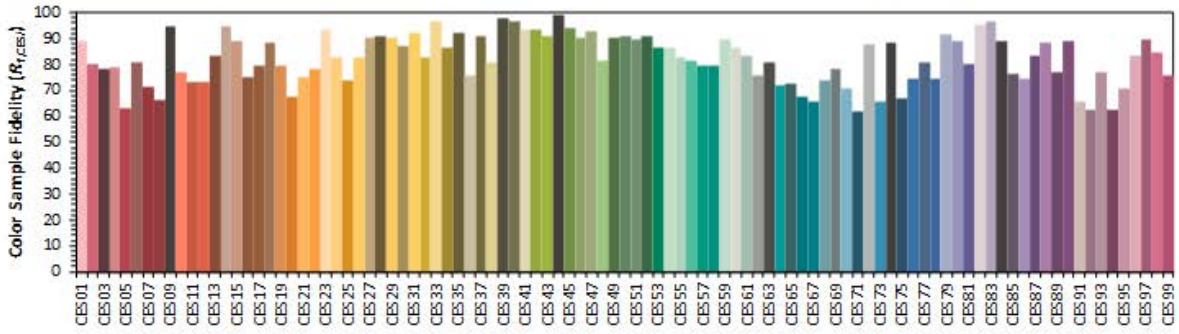












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

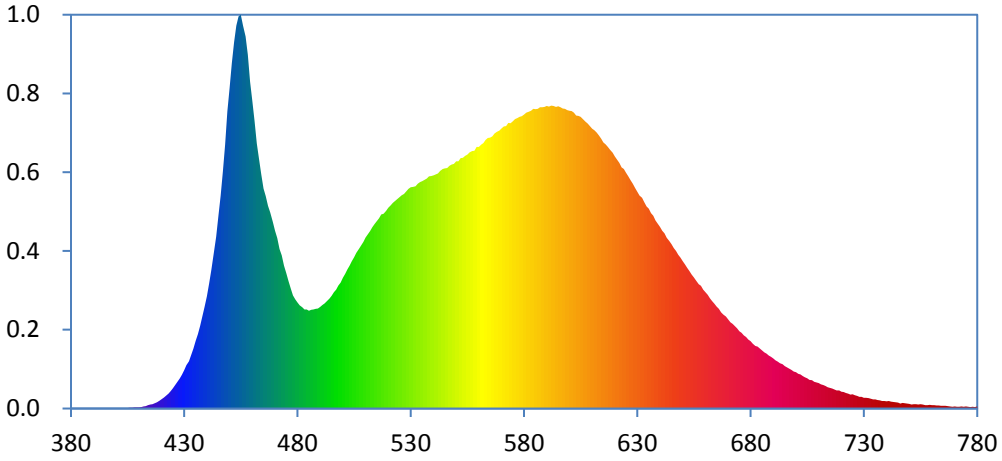
x	0.3711
y	0.3693
u'	0.2219
v'	0.4968

CIE 13.3-1995 (CRI)

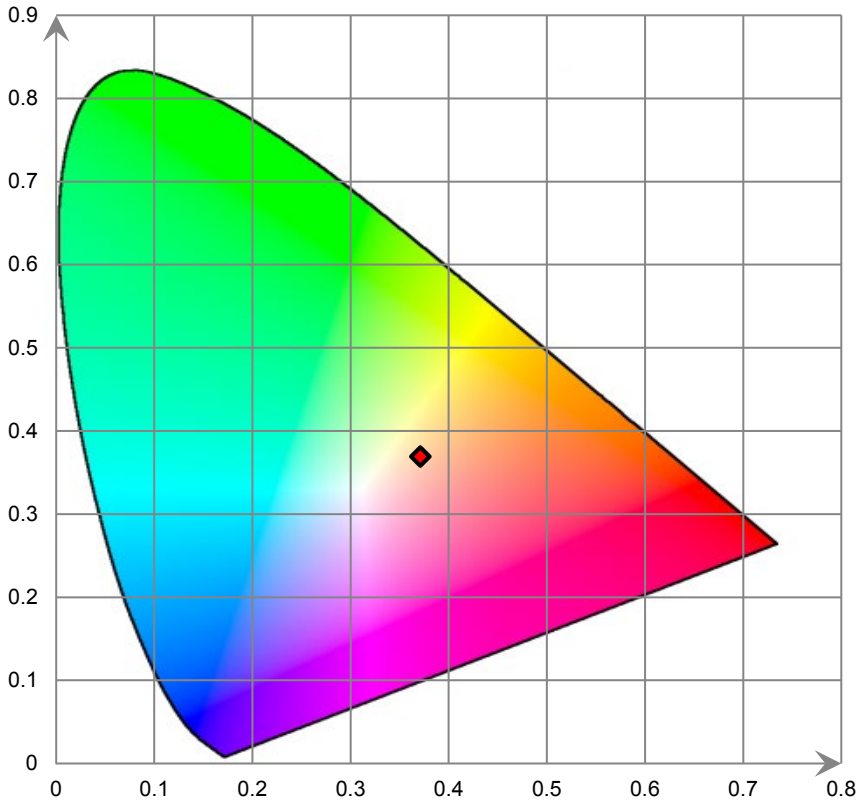
R_a	82
R_9	6

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

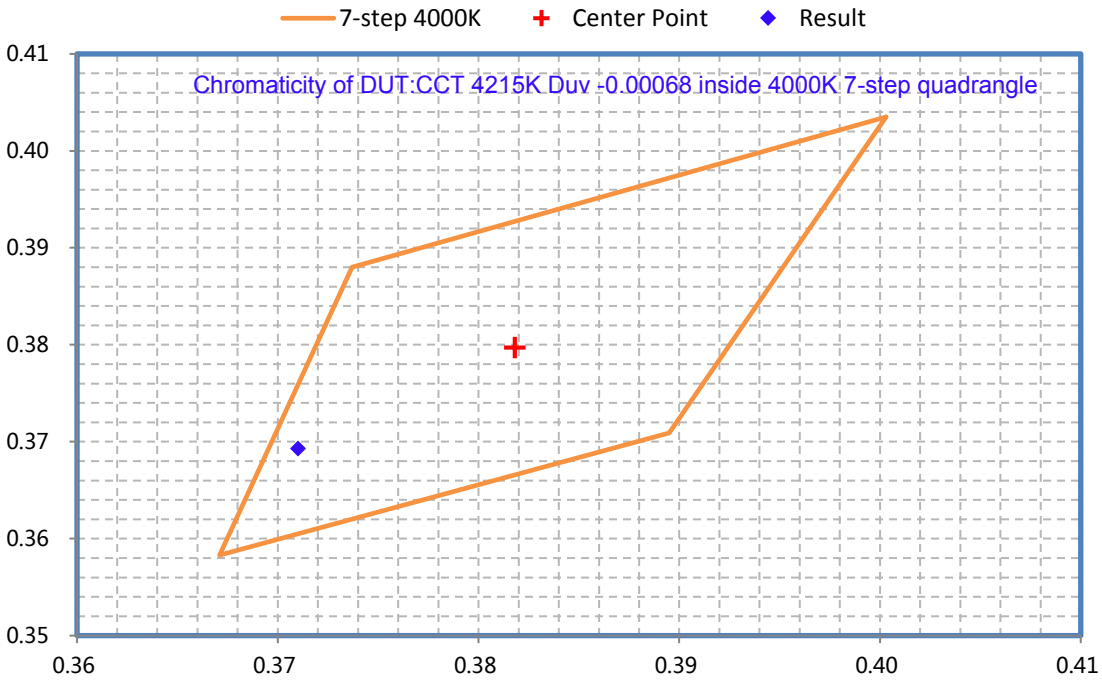
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



[Goniophotometer System]

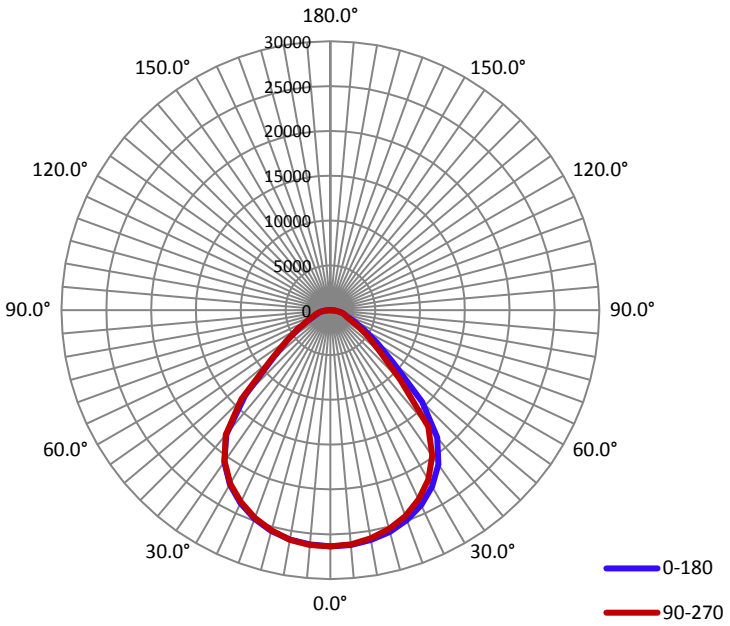
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	3.211	383.44	0.995

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	Imax (cd)	S/MH (C0/180)	S/MH (C90/270)
55982.8	146.05	26393.0	1.27	1.24

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	91.5	90.0	89.1	90.1	90.2
Field Angle (10% I_{max}):	131.4	141.1	129.2	141.6	135.8

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	26344.3	26344.3	26344.3	26344.3	26344.3	26344.3	26344.3	26344.3
5.0°	26280.2	26235.5	26209.8	26188.3	26219.3	26180.6	26223.6	26239.4
10.0°	26012.5	25931.1	25862.1	25850.0	25841.7	25826.1	25847.8	25952.6
15.0°	25593.5	25431.7	25359.3	25272.3	25264.2	25293.3	25294.0	25407.0
20.0°	24919.8	24707.9	24606.0	24498.9	24457.0	24501.8	24523.8	24646.2
25.0°	23983.7	23690.6	23526.5	23443.6	23273.5	23440.5	23473.5	23654.5
30.0°	22696.8	22416.1	22151.1	22047.2	21824.2	22056.6	22106.1	22309.9
35.0°	20999.8	20645.0	20261.7	20082.8	19804.4	20130.9	20193.2	20501.5
40.0°	18535.0	18003.0	17341.2	17095.1	16977.3	16763.7	17008.0	17757.9
45.0°	14488.3	13497.4	12774.8	12078.9	11121.0	12075.1	12578.1	13200.4
50.0°	9171.1	9634.3	9772.9	7951.7	7257.6	8093.3	9864.5	9598.6
55.0°	6353.4	6343.0	7068.9	6079.8	5114.9	6124.6	7251.7	6471.5
60.0°	4324.0	4899.6	4653.3	4909.7	3513.6	4968.2	4740.2	5005.7
65.0°	2818.4	3998.6	3502.0	3553.6	2298.2	3683.5	3584.5	4013.2
70.0°	1932.1	3170.2	2603.3	2359.8	1799.1	2537.5	2663.9	3103.9
75.0°	1501.5	1957.9	1952.1	1525.9	1583.3	1632.9	2015.0	1946.7
80.0°	1150.0	1202.0	1452.7	1040.7	1046.7	1073.1	1446.8	1212.4
85.0°	637.0	697.1	842.9	532.5	447.0	552.9	849.6	720.6
90.0°	0.0	0.0	35.2	33.4	33.3	36.1	35.2	9.5
95.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Luminous Intensity (cd) Distribution Data (cont.)

C / γ	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	26344.3	26344.3	26344.3	26344.3	26344.3	26344.3	26344.3	26344.3
5.0°	26238.7	26277.2	26282.2	26328.3	26281.1	26275.6	26280.1	26274.8
10.0°	25983.9	26024.8	26009.0	26003.2	26004.9	25958.6	25992.6	25985.3
15.0°	25495.4	25515.8	25508.9	25562.5	25428.0	25482.7	25474.7	25553.5
20.0°	24748.1	24783.8	24780.5	24874.8	24662.4	24797.3	24781.0	24802.9
25.0°	23760.9	23793.9	23852.8	23893.3	23606.0	23866.4	23815.6	23815.9
30.0°	22444.1	22512.6	22649.8	22607.6	22343.4	22580.3	22570.2	22536.0
35.0°	20641.5	20811.9	20844.6	20888.2	20572.0	20896.7	20855.9	20882.9
40.0°	18061.5	18191.8	18127.6	18295.2	18176.0	18414.7	18372.0	18410.4
45.0°	13435.1	13756.0	13599.1	13739.1	14046.7	14048.6	13987.6	14339.9
50.0°	8436.7	9816.9	10486.8	9587.5	8725.7	9554.9	10558.9	9847.2
55.0°	5938.5	6655.7	8055.3	6713.3	6001.3	6728.1	7944.7	6547.1
60.0°	4136.6	5230.7	5436.2	5322.5	4193.8	5394.8	5307.1	5137.8
65.0°	2749.6	4060.9	3791.1	4158.6	2807.7	4096.9	3683.1	4110.6
70.0°	1936.8	3128.4	2856.4	3072.6	2013.6	2797.7	2865.9	3136.6
75.0°	1489.9	2035.9	2120.4	2008.3	1716.5	1860.5	2088.8	2085.6
80.0°	1090.0	1267.6	1585.1	1282.2	1326.4	1245.2	1597.8	1288.0
85.0°	544.3	766.9	1070.5	777.6	724.0	765.1	1082.0	767.6
90.0°	0.0	46.5	180.7	202.6	186.7	201.9	211.0	56.5
95.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Test Model: HLM14P4002CUW - 4000K

Control setting: 340W

Test Data

[Integrating Sphere System]

Photometric and Electrical Measurement Result

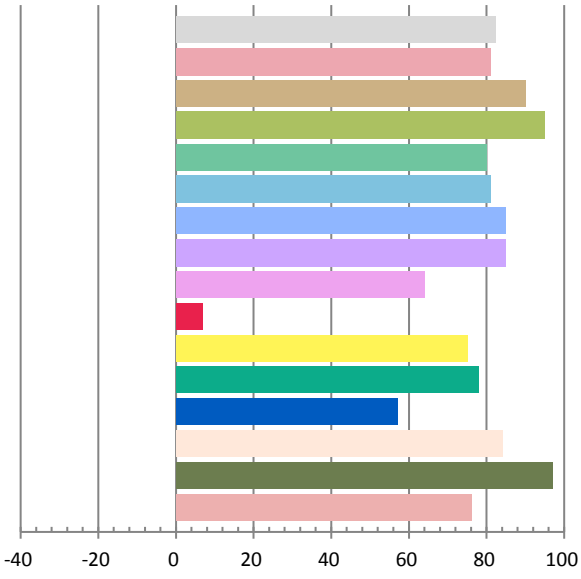
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	2.6584	316.14	0.9911	47887	151.47

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
145.013	4215	-0.00045	0.3712	0.3698	0.2218	0.4971

Test Voltage(V)	Power Factor	THDi
120	0.9911	7.61%
277	0.9606	8.92%

Color Rendering Index

Ra			
82.4			
R1	R2	R3	R4
81	90	95	80
R5	R6	R7	R8
81	85	85	64
R9	R10	R11	R12
7	75	78	57
R13	R14	R15	
84	97	76	



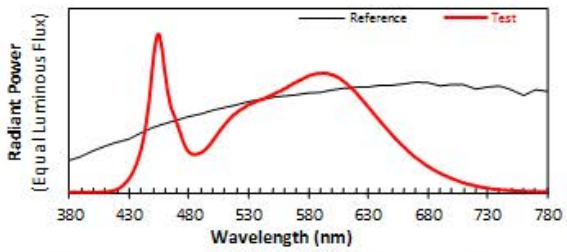
ANSI/IES TM-30-18 Color Rendition Report

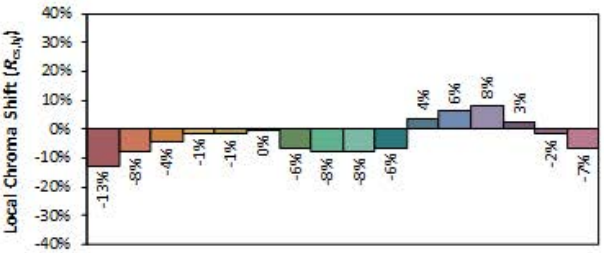
Source: User SPD

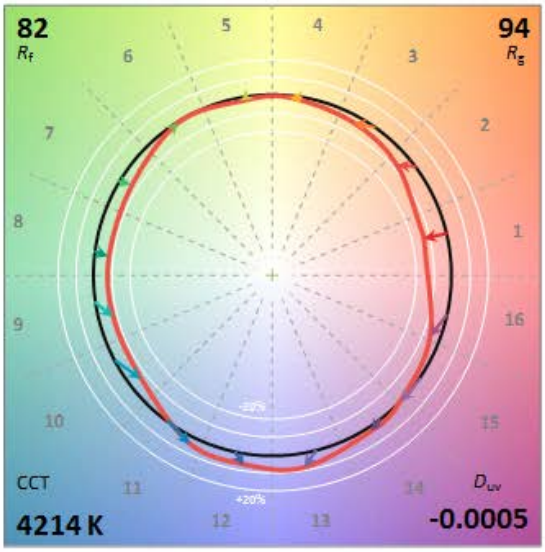
Manufacturer: P.Q.L., Inc.

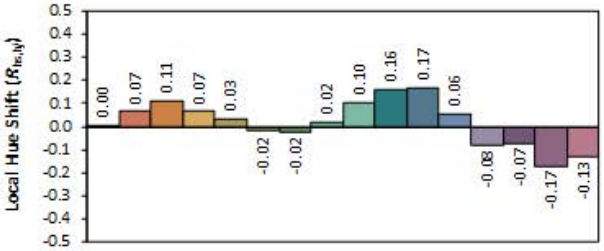
Date: 2026/4/9

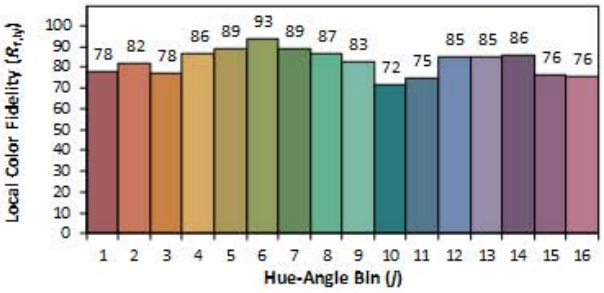
Model: HLM14P4002CUW - 4000K

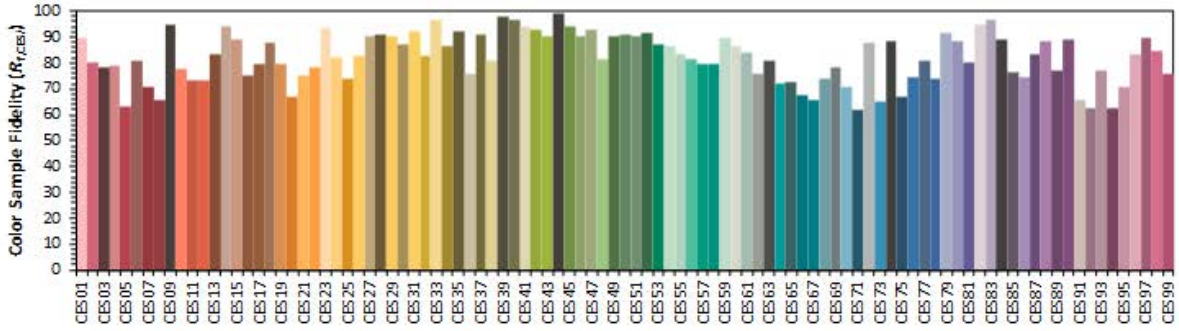












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

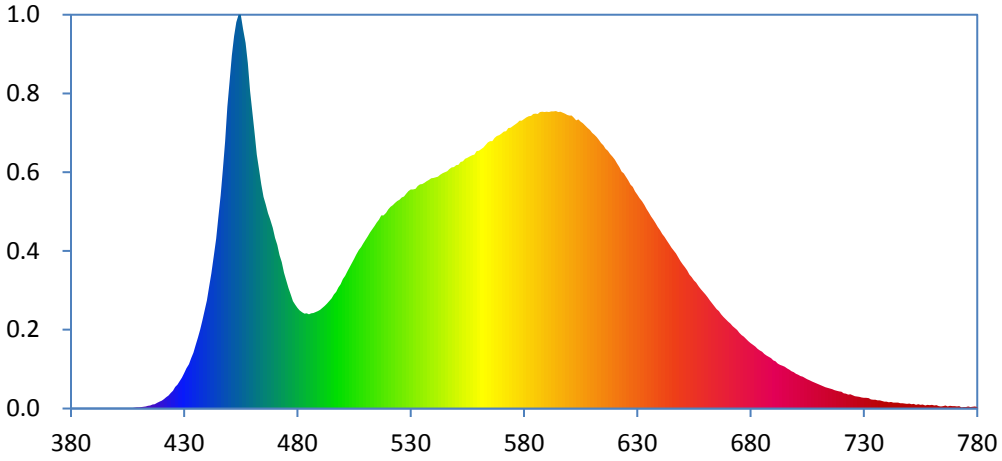
x	**0.3712**
y	**0.3698**
u'	**0.2218**
v'	**0.4971**

CIE 13.3-1995 (CRI)

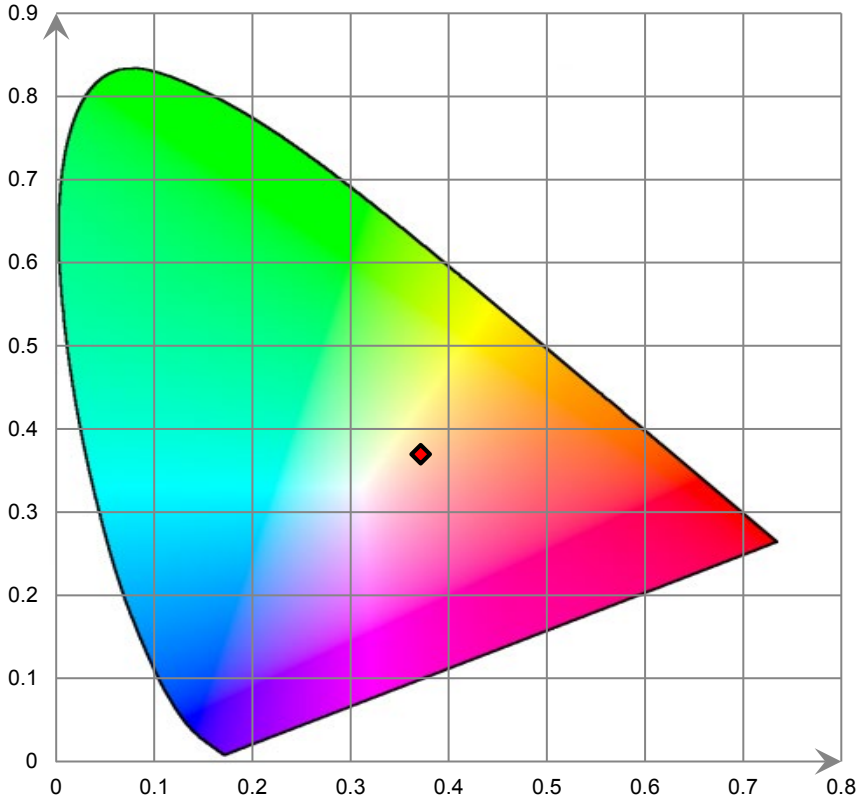
R_a	82
R_9	5

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

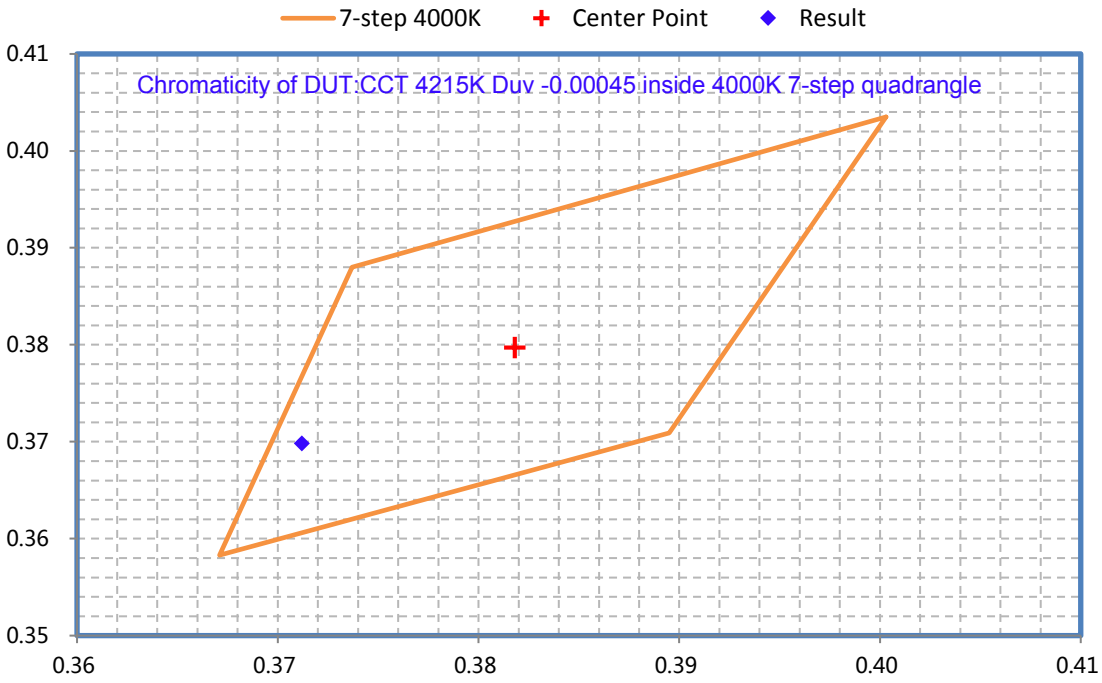
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



Test Model: HLM14P4002CUW - 4000K

Control setting: 270W

Test Data

[Integrating Sphere System]

Photometric and Electrical Measurement Result

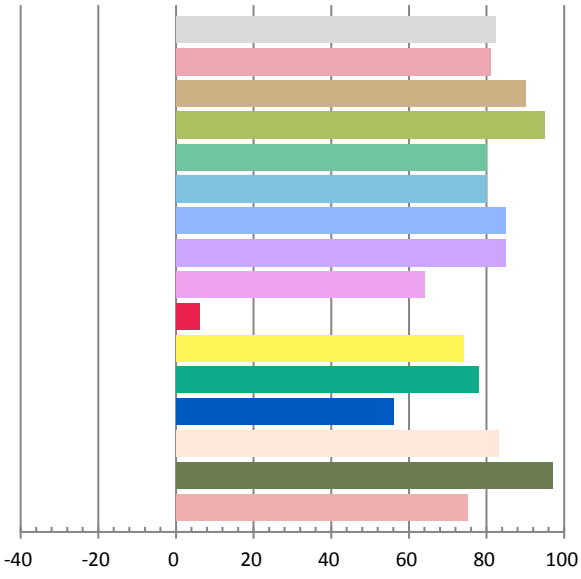
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.1	60	2.0749	247.04	0.9917	38438.9	155.6

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
116.167	4237	-0.00016	0.3705	0.3700	0.2212	0.4971

Test Voltage(V)	Power Factor	THDi
120	0.9917	7.91%
277	0.9454	9.47%

Color Rendering Index

Ra			
82.3			
R1	R2	R3	R4
81	90	95	80
R5	R6	R7	R8
80	85	85	64
R9	R10	R11	R12
6	74	78	56
R13	R14	R15	
83	97	75	



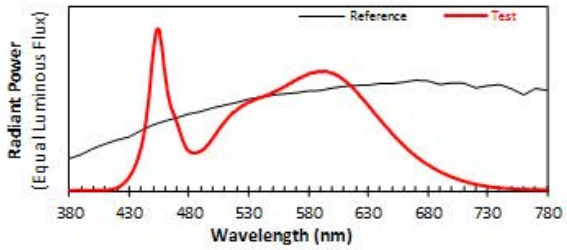
ANSI/IES TM-30-18 Color Rendition Report

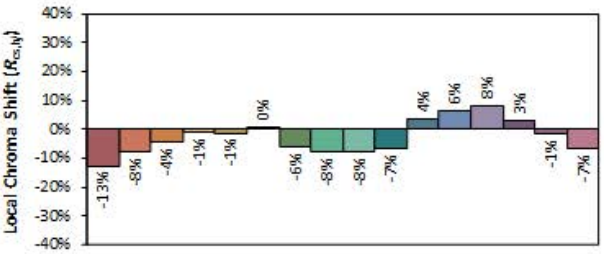
Source: User SPD

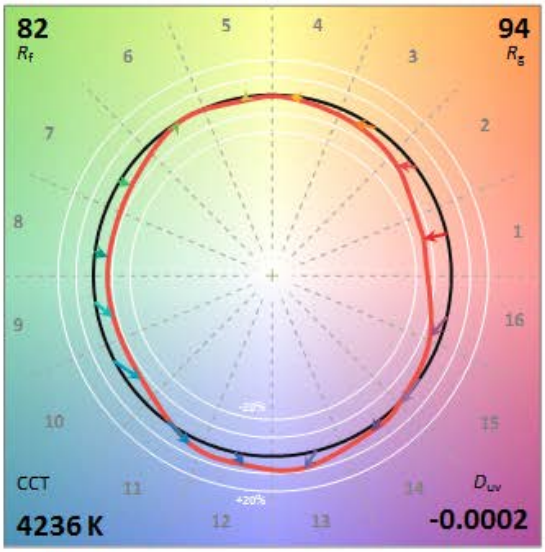
Manufacturer: P.Q.L., Inc.

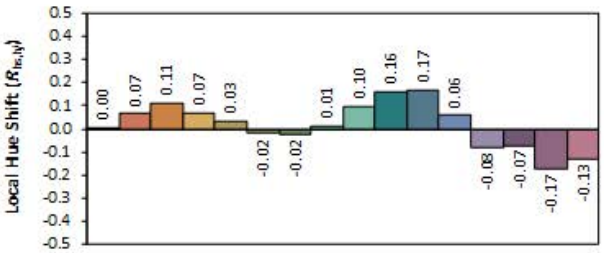
Date: 2026/4/9

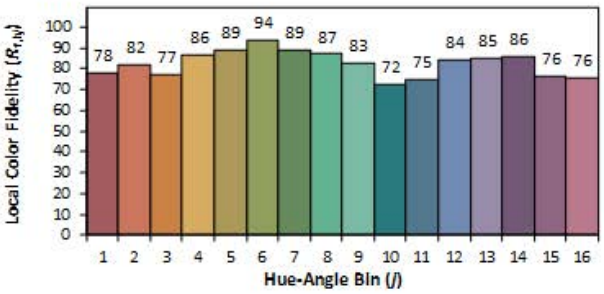
Model: HLM14P4002CUW - 4000K

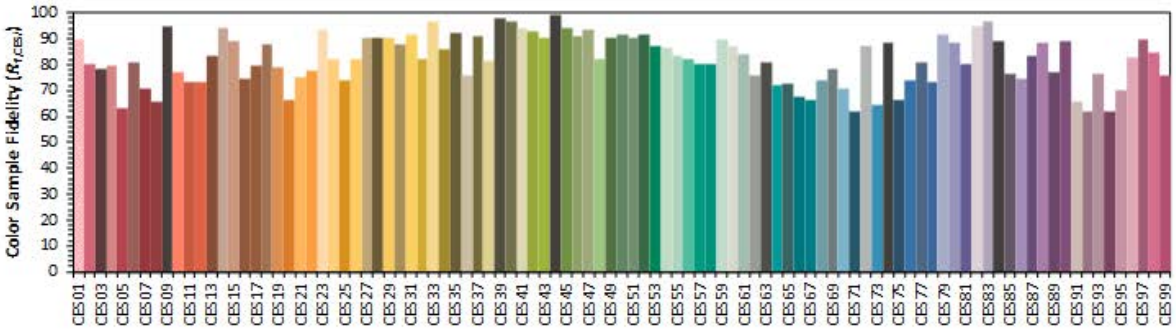












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

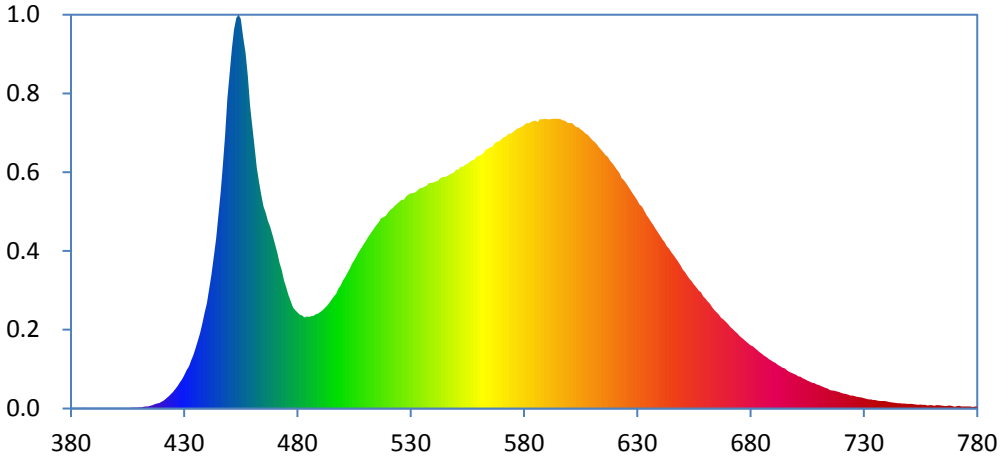
x	0.3705
y	0.3700
u'	0.2212
v'	0.4971

CIE 13.3-1995 (CRI)

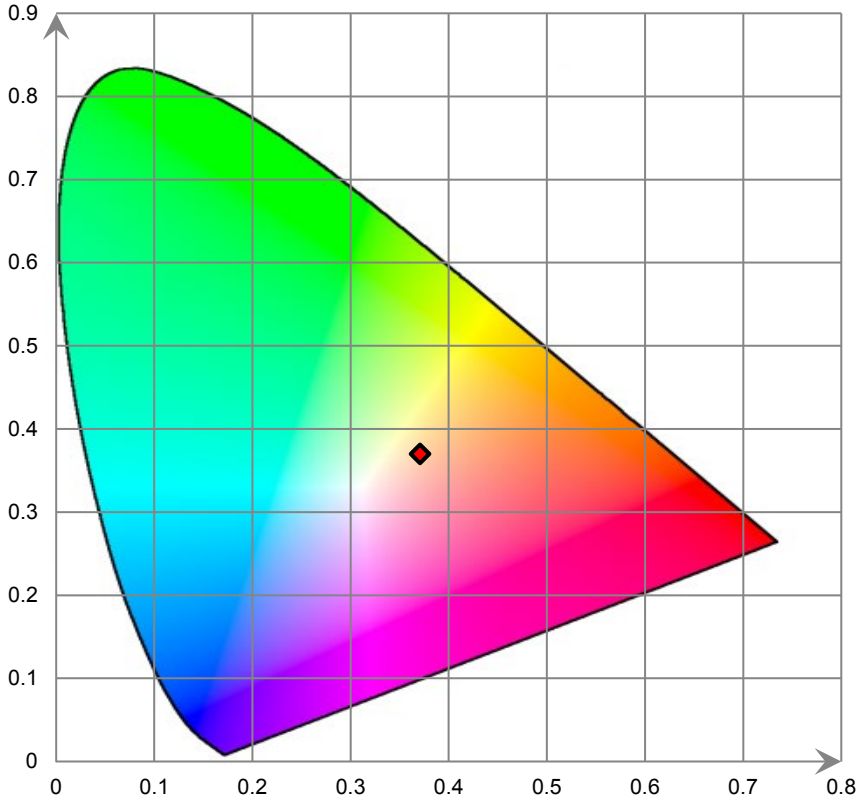
R_a	82
R_9	4

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

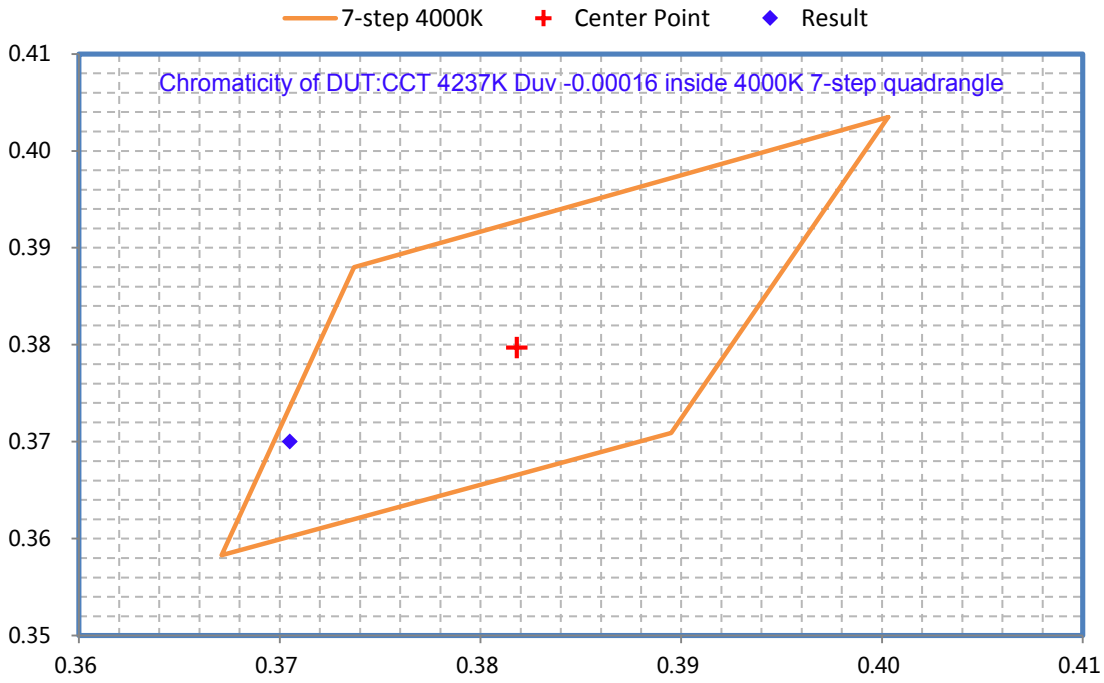
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



Test Model: HLM14P4002CUW - 5000K
Control setting: 400W

Integrating Sphere Test; Orientation: Downward; Test Voltage: 120V 60Hz;

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	57130.9	≥10000	≥9000	Pass
Power(W)	391.04	None.	None.	N/A
Total Efficacy(lm/W)	146.1	≥150	≥145.5	Pass
CCT(K)	5076	4746~5312	No tolerances	N/A
Duv	0.00296	-0.004~0.008	No tolerances	N/A
IES R_f	81	70	69	Pass
IES R_g	93	89	88	
IES Rcs,h1	-14%	-18%~23%	-19%~24%	
R_a	80.7	≥70	≥69	
R9	-6	≥-40	≥-41	

Goniophotometer Test; Orientation: Downward; Test Voltage: 120V 60Hz;

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	57158.44	≥10000	≥9000	Pass
Power(W)	391.04	None.	None.	N/A
Total Efficacy(lm/W)	146.17	≥150	≥145.5	Pass
Zonal Lumen Distribution(20-50°)	60.68%	20-50°≥30%	20-50°≥20%	Pass

Integrating Sphere THDi、PF Test; Orientation: Downward;

Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9918	≥0.9	⩾0.87	Pass
120	THDi	6.70%	≤20%	⩽25%	Pass
277	Power Factor	0.9708	≥0.9	⩾0.87	Pass
277	THDi	8.36%	≤20%	⩽25%	Pass

Note:
1. The test results were measured directly from the test equipment.
2. The DLC requirements were listed according to DLC Technical Requirements V6.0.
3. The conclusion is for reference only. Test report that indicate product performance meets DLC Technical Requirements do not represent official DLC product qualification. All decisions regarding product qualification are made by the DLC.

Test Data

[Integrating Sphere System]

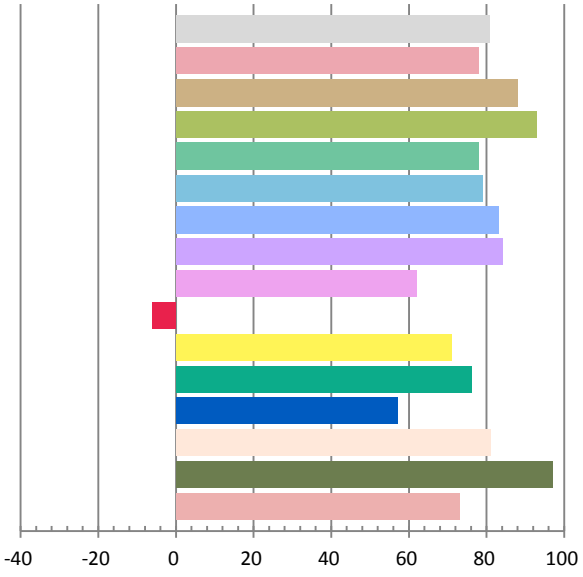
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	3.2863	391.04	0.9918	57130.9	146.1

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
173.842	5076	0.00296	0.3435	0.3563	0.2086	0.4867

Color Rendering Index

Ra			
80.7			
R1	R2	R3	R4
78	88	93	78
R5	R6	R7	R8
79	83	84	62
R9	R10	R11	R12
-6	71	76	57
R13	R14	R15	
81	97	73	



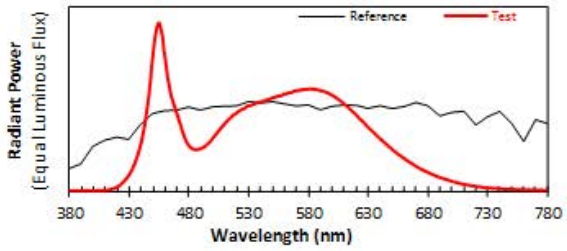
ANSI/IES TM-30-18 Color Rendition Report

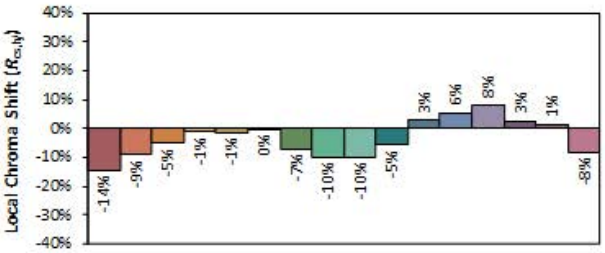
Source: User SPD

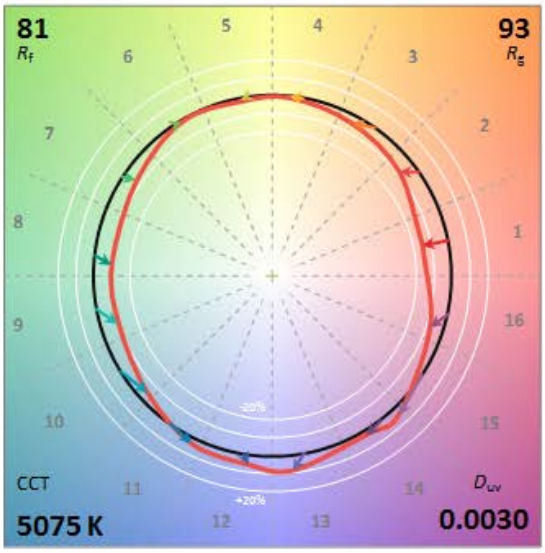
Manufacturer: P.Q.L., Inc.

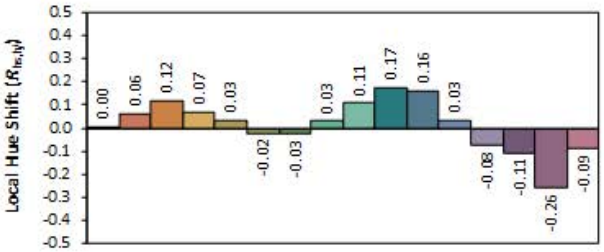
Date: 2026/4/9

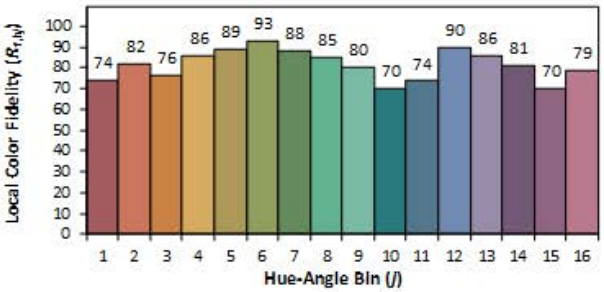
Model: HLM14P4002CUW - 5000K

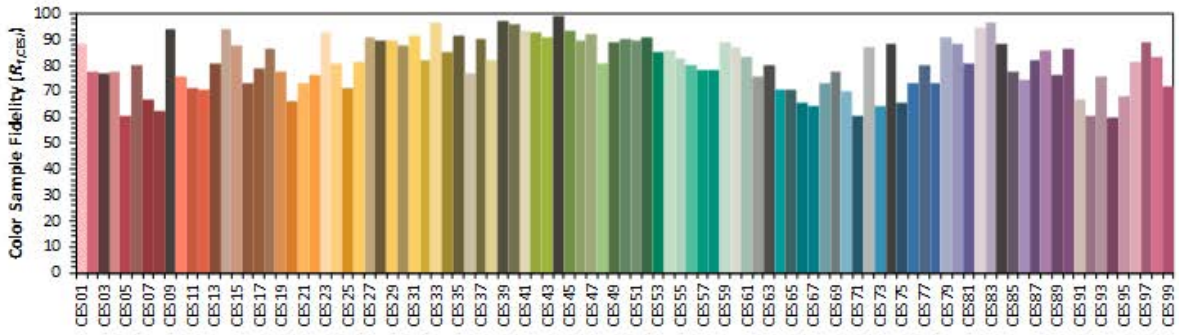












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

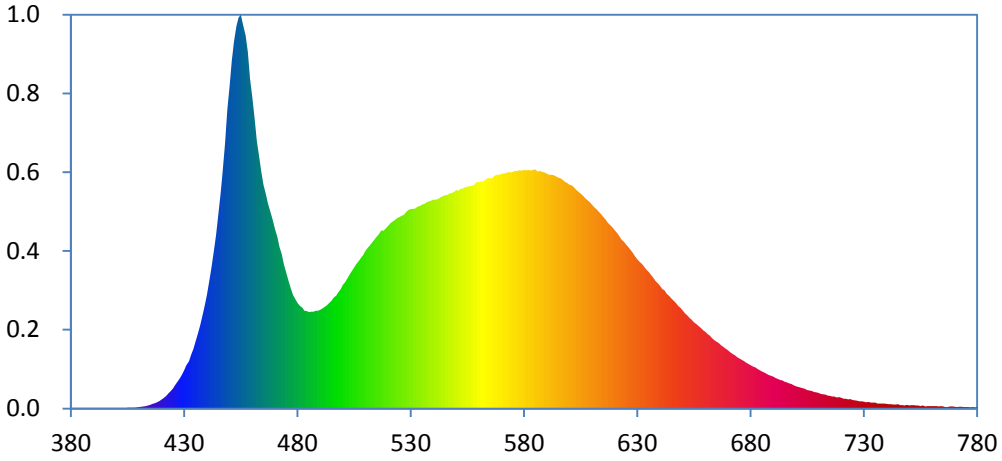
x	0.3435
y	0.3563
u'	0.2086
v'	0.4867

CIE 13.3-1995 (CRI)

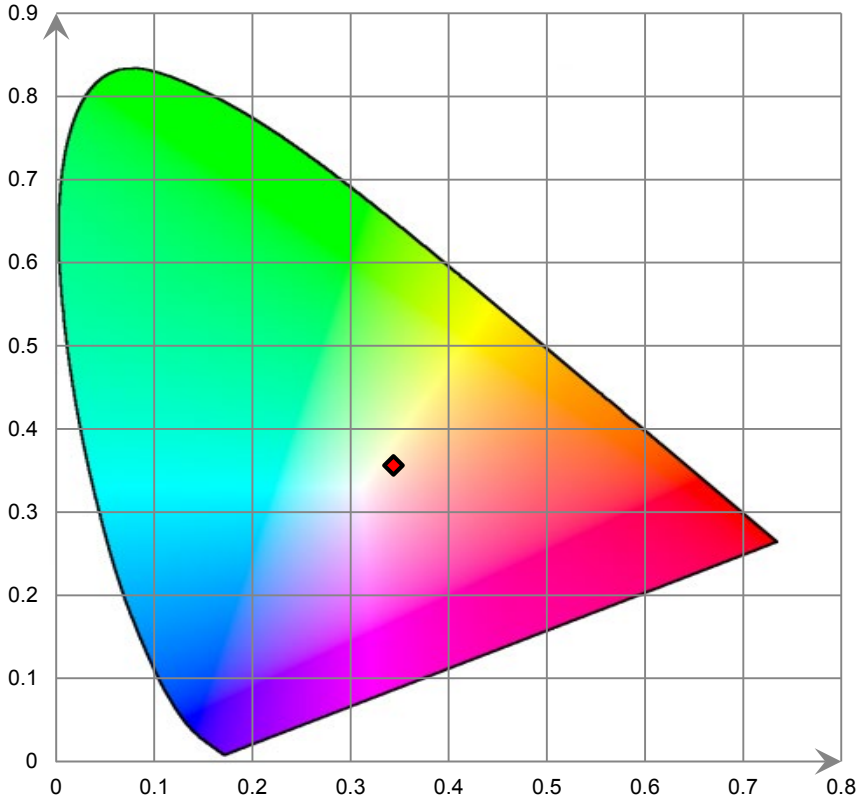
R_a	81
R_9	-6

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

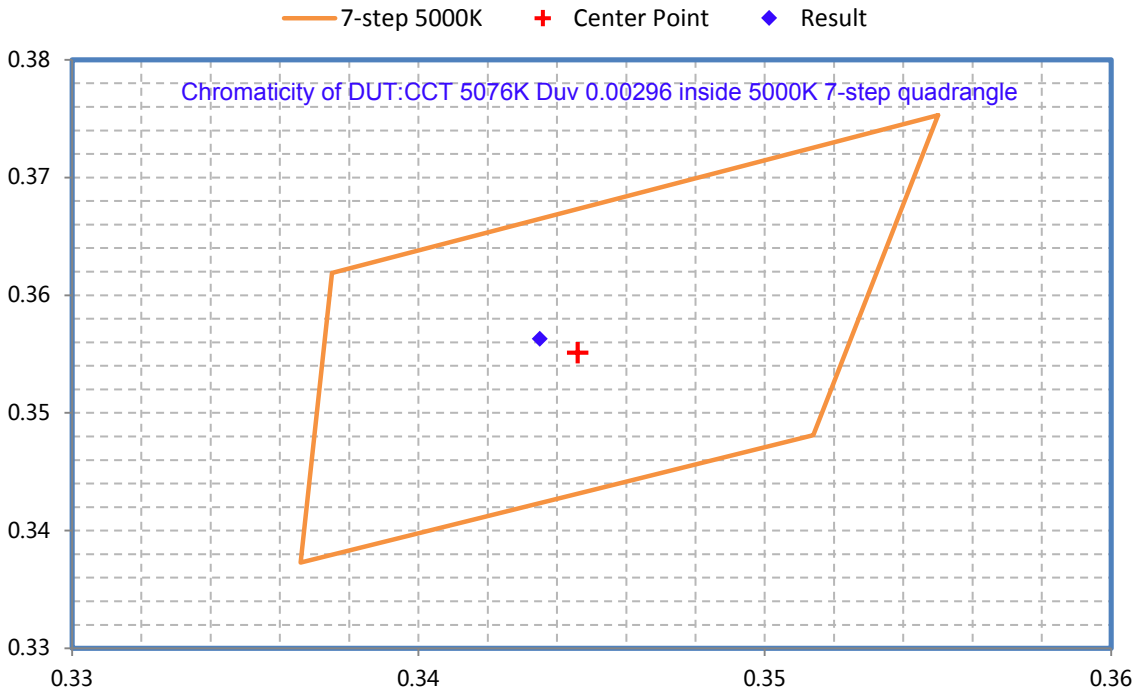
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



[Goniophotometer System]

Electrical Measurement

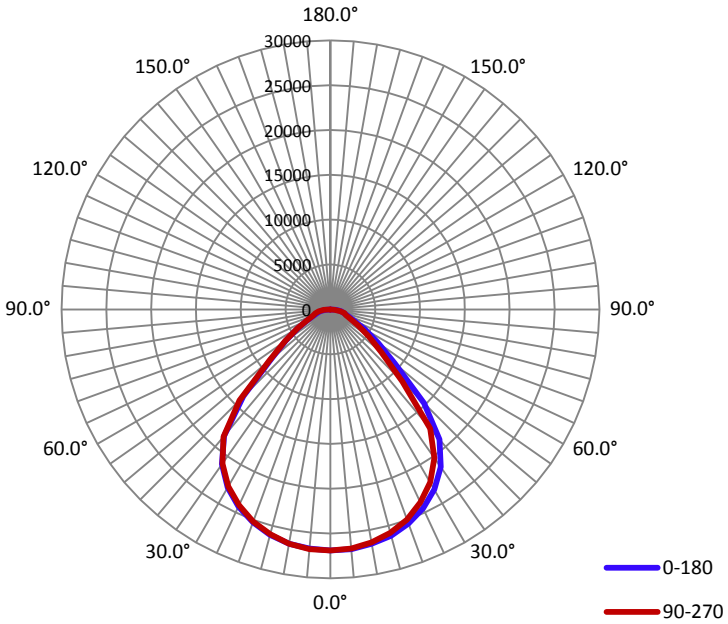
Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	3.286	391.04	0.992

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
57158.44	146.17	26947.3	1.26	1.24

Note: The electrical characteristics come from Integrating Sphere test result, Luminous intensity distribution derived from the goniophotometer testing of 400W 40K product.

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	91.4	89.9	89.1	90.1	90.1
Field Angle (10% I_{max}):	131.4	141.1	129.2	141.6	135.8

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	26897.5	26897.5	26897.5	26897.5	26897.5	26897.5	26897.5	26897.5
5.0°	26832.1	26786.4	26760.2	26738.3	26769.9	26730.4	26774.3	26790.4
10.0°	26558.8	26475.7	26405.2	26392.9	26384.4	26368.4	26390.6	26497.6
15.0°	26131.0	25965.8	25891.8	25803.0	25794.7	25824.5	25825.2	25940.5
20.0°	25443.1	25226.8	25122.7	25013.4	24970.6	25016.3	25038.8	25163.8
25.0°	24487.4	24188.1	24020.6	23935.9	23762.2	23932.8	23966.4	24151.2
30.0°	23173.4	22886.8	22616.3	22510.2	22282.5	22519.8	22570.3	22778.4
35.0°	21440.8	21078.5	20687.2	20504.5	20220.3	20553.6	20617.3	20932.0
40.0°	18924.2	18381.1	17705.4	17454.1	17333.8	17115.7	17365.2	18130.8
45.0°	14792.6	13780.8	13043.1	12332.6	11354.5	12328.7	12842.2	13477.6
50.0°	9363.7	9836.6	9978.1	8118.7	7410.0	8263.3	10071.7	9800.2
55.0°	6486.8	6476.2	7217.3	6207.5	5222.3	6253.2	7404.0	6607.4
60.0°	4414.8	5002.5	4751.0	5012.8	3587.4	5072.5	4839.7	5110.8
65.0°	2877.6	4082.6	3575.5	3628.2	2346.5	3760.9	3659.8	4097.5
70.0°	1972.7	3236.8	2658.0	2409.4	1836.9	2590.8	2719.8	3169.1
75.0°	1533.0	1999.0	1993.1	1557.9	1616.5	1667.2	2057.3	1987.6
80.0°	1174.2	1227.2	1483.2	1062.6	1068.7	1095.6	1477.2	1237.9
85.0°	650.4	711.7	860.6	543.7	456.4	564.5	867.4	735.7
90.0°	0.0	0.0	35.9	34.1	34.0	36.9	35.9	9.7
95.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Luminous Intensity (cd) Distribution Data (cont.)

C / γ	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	26897.5	26897.5	26897.5	26897.5	26897.5	26897.5	26897.5	26897.5
5.0°	26789.7	26829.0	26834.1	26881.2	26833.0	26827.4	26832.0	26826.6
10.0°	26529.6	26571.3	26555.2	26549.3	26551.0	26503.7	26538.4	26531.0
15.0°	26030.8	26051.6	26044.6	26099.3	25962.0	26017.8	26009.7	26090.1
20.0°	25267.8	25304.3	25300.9	25397.2	25180.3	25318.0	25301.4	25323.8
25.0°	24259.9	24293.6	24353.7	24395.1	24101.7	24367.6	24315.7	24316.0
30.0°	22915.4	22985.4	23125.4	23082.4	22812.6	23054.5	23044.2	23009.3
35.0°	21075.0	21249.0	21282.3	21326.9	21004.0	21335.5	21293.9	21321.4
40.0°	18440.8	18573.8	18508.3	18679.4	18557.7	18801.4	18757.8	18797.0
45.0°	13717.2	14044.9	13884.7	14027.6	14341.7	14343.6	14281.3	14641.0
50.0°	8613.9	10023.1	10707.0	9788.8	8908.9	9755.6	10780.6	10054.0
55.0°	6063.2	6795.5	8224.5	6854.3	6127.3	6869.4	8111.5	6684.6
60.0°	4223.5	5340.5	5550.4	5434.3	4281.9	5508.1	5418.5	5245.7
65.0°	2807.3	4146.2	3870.7	4245.9	2866.7	4182.9	3760.4	4196.9
70.0°	1977.5	3194.1	2916.4	3137.1	2055.9	2856.5	2926.1	3202.5
75.0°	1521.2	2078.7	2164.9	2050.5	1752.5	1899.6	2132.7	2129.4
80.0°	1112.9	1294.2	1618.4	1309.1	1354.3	1271.3	1631.4	1315.0
85.0°	555.7	783.0	1093.0	793.9	739.2	781.2	1104.7	783.7
90.0°	0.0	47.5	184.5	206.9	190.6	206.1	215.4	57.7
95.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

6. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Integrating Sphere	INVENTFINE	Dia 1.5m	JWWCV090112	2026-03-16	2027-03-15
Power Meter	INVENTFINE	WT500	GSJWQ20009	2026-03-16	2027-03-15
Spectral photometer	INVENTFINE	CMS-3S	GSGSE100017	2026-03-16	2027-03-15
AC Power Supply	INVENTFINE	CHP500	JWJSD010071	2026-03-16	2027-03-15
Standard Light Source	Osram	24V/50W	JWWCR020104	2025-07-10	2027-07-09
Thermal Meter	ANYMETRE	TH-20E	N/A	2025-07-29	2026-07-28
DC Power Supply	INVENTFINE	WL3005	JWWCP020069	2026-03-16	2027-03-15
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2026-03-13	2027-03-12
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2026-03-13	2027-03-12
Power Meter	INVENTFINE	WT500	GSDSQ200007	2026-03-13	2027-03-12
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2025-06-03	2026-06-02
Wireless Weather Station	ZHONGXING	KG218	N/A	2026-03-13	2027-03-12
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2025-11-02	2027-11-01
Digital Multimeter	FLUKE	115C	37840512WS	2026-03-12	2027-03-11
Hybrid Recorder	YOKOGAWA	DR230	47JH0903	2026-03-16	2027-03-15
Power Supply	SC	SC/BP-11003	1608110030553	2026-03-16	2027-03-15

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

7. Test Method

Product was tested with no seasoning. All stabilization and measurements were made in compliance with IES LM-79-19. The ambient temperature of the sample was maintained at 25°C±1°C during measurement. And relative humidity is less than 65%. The product was operated in its intended orientation in application during all testing.

Integrating Sphere System
The system includes AC power source, digital power meter, DC power supply, Spectroradiometer, and integrating sphere. The integrating sphere system is calibrated by standard spectrum light source before measurement. 4π geometry was used during measurement.

Goniophotometer System
Type C goniophotometer was used for measuring luminous intensity distribution. The vertical angle (γ) test intervals were set no more than 1 degree while data for 5 degree intervals is reported. The horizontal angle (C plane) test intervals were set no more than 22.5 degree.

ISTMT Test
The LED which has the highest temperature was measured at the location of LED case which is specified by LED source manufacturer and detailed by LM-80 report. The drive current of LED package/module/ array was calculated as the total output current of the driver measured by multimeter, divided by the number of branches in parallel of LEDs.

Declarations

1. The laboratory is not responsible for the authenticity of any information provided by the applicant. Information from the applicant that may affect test results is marked with "#".
2. The test data was only valid for the test sample(s). This report must not be duplicated or used in part without prior written consent from the laboratory.
3. This report may contain data that are not covered by the accreditation scope and marked with "★".
4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.
6. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

**********END OF REPORT**********