TEST REPORT

For

P.Q.L., Inc.

2285 Ward Avenue / Simi Valley, CA 93065

Model Number:	LA24P405CU[K,W]-2700K LA24P405CU[K,W]-3000K LA24P405CU[K,W]-3500K LA24P405CU[K,W]-4000K LA24P405CU[K,W]-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:	RKSB260312005-10	
Sample Size:	One sample was received on 2026-03-12 and used for testing.	
Test Date:	2026-03-13 to 2026-03-31	
Report Date:	2026-04-07	
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:	Direct Linear Ambient Luminaires
Voltage and Frequency:	120-277VAC, 60Hz
LED Source Manufacturer:	Seoul Semiconductor Co., LTD
LED Source Model:	STW8A2PD-D1-RNP
Driver Model:	SIF40-I0900 120-277 W D1 F
Luminaire length:	4ft
Auxiliary Ballast Model:	NA
Auxiliary Housing Model:	NA
Field Adjustable Color Temperature:	Yes
Field-Adjustable Light Output:	Yes

Family Declaration

Test Model	Covered Models	Variations	Detail
LA24P405CUW-2700K	LA24P405CUK-2700K	Lamp Color	"W" mean "White", "K" means "Black" Except for the different color of the lamp, LA24P405CUW-2700K and LA24P405CUK-2700K are identical in every other way

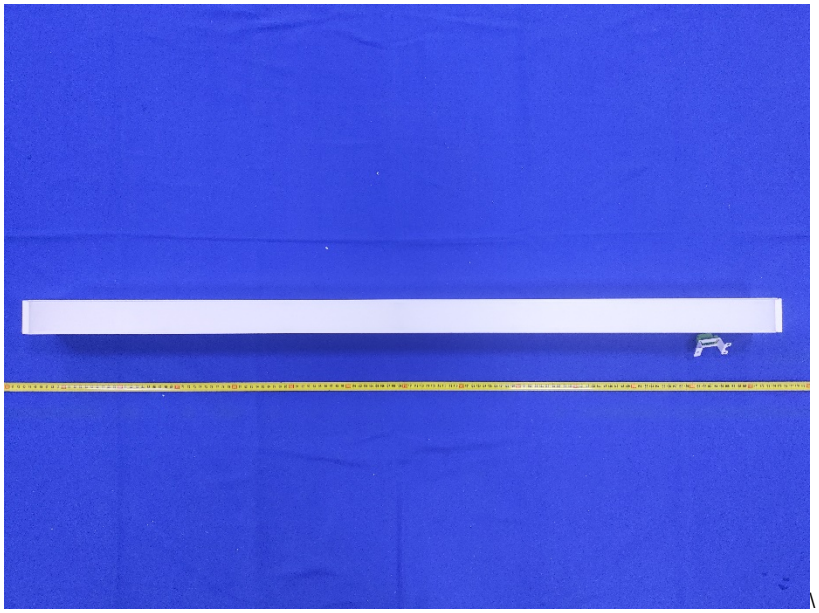
2. Product Rated Values#

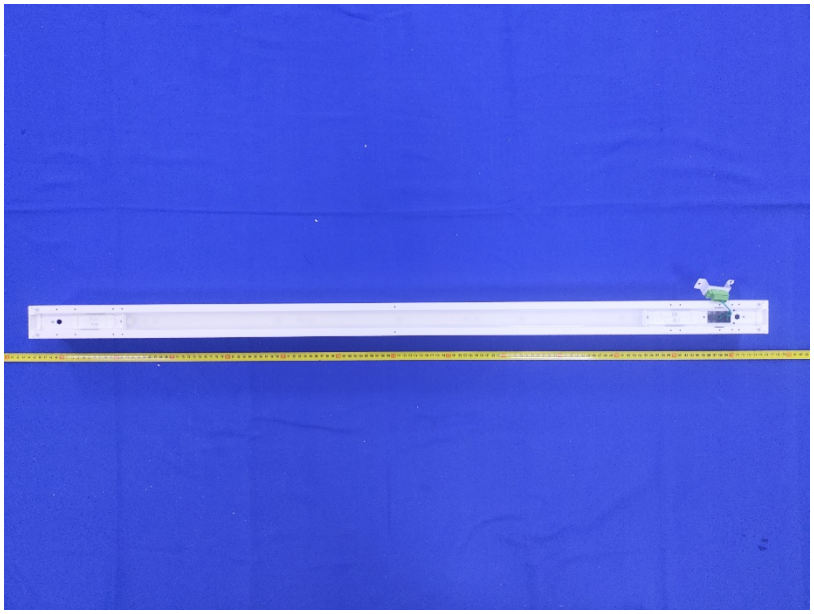
Test Model	CCT(K)	Light Output (lm)	Power(W)	Luminous Efficacy (lm/W)
LA24P405CUW-2700K	2700	5000	40	125
		4096	32	128
		3144	24	131
		2680	20	134
LA24P405CUW-3000K	3000	5000	40	125
		4096	32	128
		3144	24	131
		2680	20	134
LA24P405CUW-3500K	3500	5200	40	130
		4192	32	131
		3168	24	132
		2660	20	133
LA24P405CUW-4000K	4000	5200	40	130
		4192	32	131
		3168	24	132
		2660	20	133
LA24P405CUW-5000K	5000	5400	40	135
		4352	32	136
		3288	24	137
		2760	20	138

3. Test List

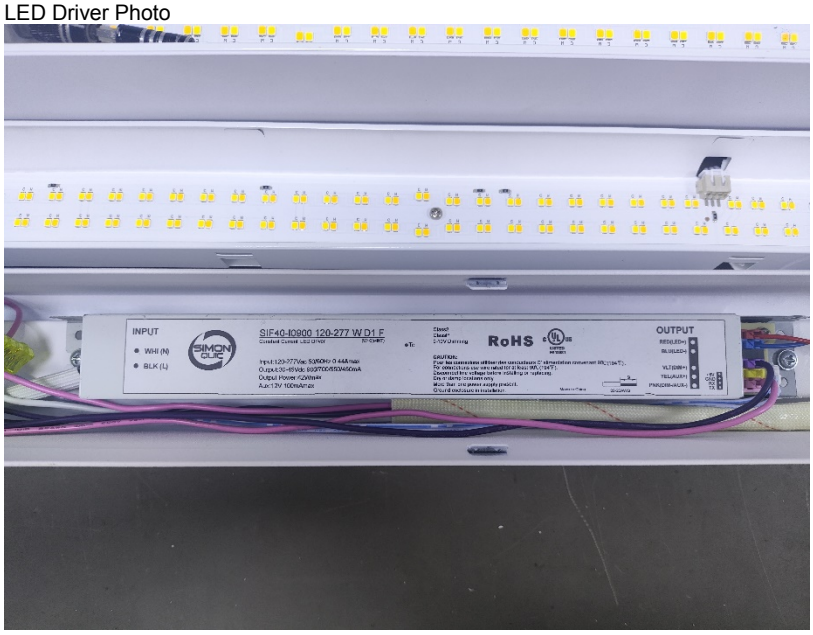
Test Model	Total Power(W)	Control Setting		Test Item			
		CCT(K)	Power(W)	Goniophotometer Test	Integrating Sphere Test	THDi and PF Test	In-Situ Temperature Measurement Test
LA24P405CUW-2700K	40	2700	100% down light	Yes	Yes	Yes	Yes
			50% up light+50% down light	Yes	Yes	Yes	NA
			30% up light+70% down light	Yes	Yes	Yes	NA
	32		50% up light+50% down light	NA	Yes	Yes	NA
	24		50% up light+50% down light	NA	Yes	Yes	NA
	20		50% up light+50% down light	NA	Yes	Yes	NA
LA24P405CUW-3500K	40	3500	100% down light	NA	Yes	Yes	NA
			50% up light+50% down light	NA	Yes	Yes	NA
			30% up light+70% down light	NA	Yes	Yes	NA
LA24P405CUW-5000K	40	5000	100% down light	NA	Yes	Yes	NA
			50% up light+50% down light	NA	Yes	Yes	NA
			30% up light+70% down light	NA	Yes	Yes	NA

4. Product Photo





LED Driver Photo



5. Test Result

Test Model: LA24P405CUW
Control setting: 2700K & 40W 100% down light

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5474.8	≥1500	≥1350	Pass
Power(W)	41.64	None.	None.	N/A
Total Efficacy(lm/W)	131.48	≥125	≥121.25	Pass
CCT(K)	2597	2580~2870	No tolerances	Pass
Duv	-0.00091	-0.006~0.006	No tolerances	Pass
IES R_f	84	70	69	Pass
IES R_g	98	89	88	
IES Rcs,h1	-11%	-12%~23%	-13%~24%	
R_a	83.5	≥80	≥79	
R9	17	≥0	≥-1	

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5475.1	≥1500	≥1350	Pass
Power(W)	41.8	None.	None.	N/A
Total Efficacy(lm/W)	131.03	≥125	≥121.25	Pass
Zonal Lumen Distribution(0-60°)	79.77%	0-60°≥40%	0-60°≥37%	Pass

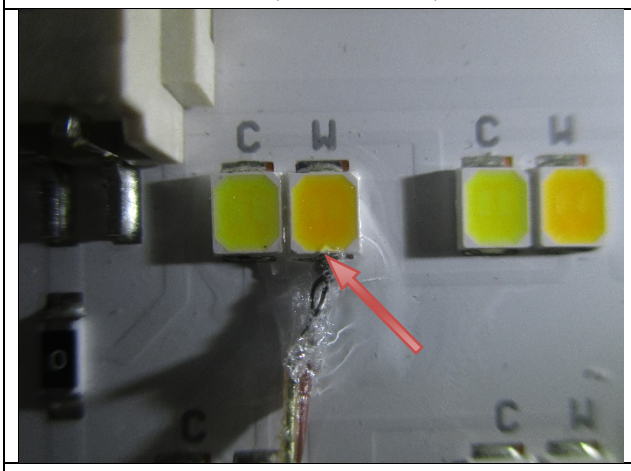
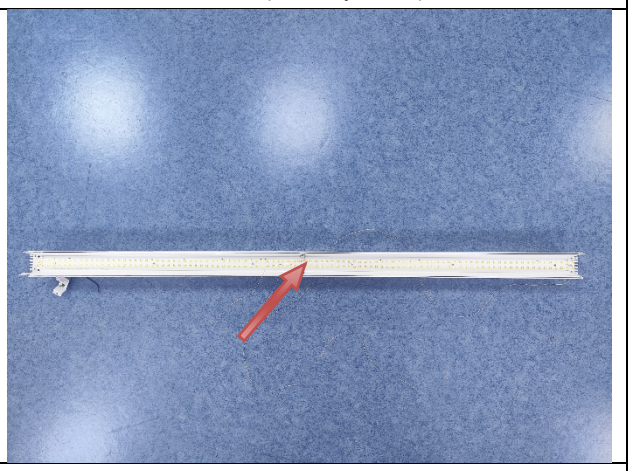
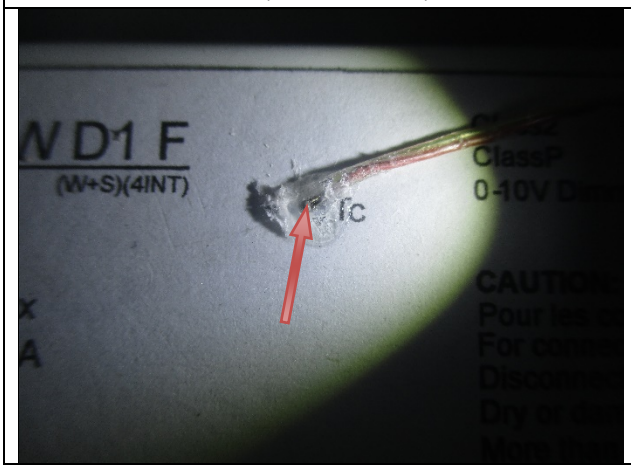
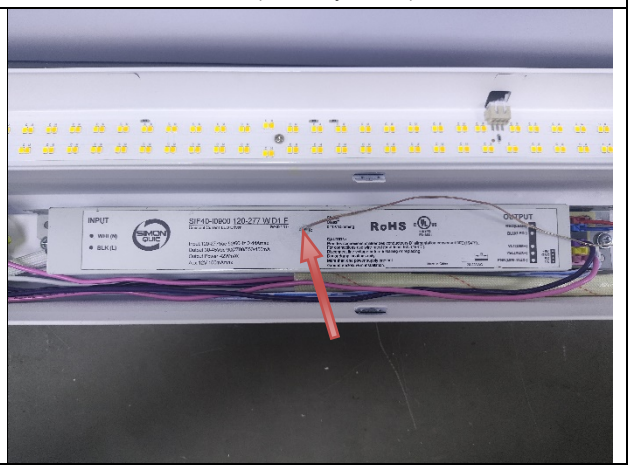
Integrating Sphere THDi、PF Test; Orientation: Downward;

Test Voltage	Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances and/or allowances)	Conclusion
120	Power Factor	0.9959	≥0.9	⩾0.87	Pass
120	THDi	5.59%	≤20%	⩽25%	Pass
277	Power Factor	0.9749	≥0.9	⩾0.87	Pass
277	THDi	11.19%	≤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_{LED}(°C)	54.8	≤105	With tolerance of ⩽ 1.1°C or 0.4%, whichever is greater due to thermocouple tolerance	Pass
TMP_c(°C)	63.7	≤90	With tolerance of ⩽ 1.1°C or 0.4%, whichever is greater due to thermocouple tolerance	Pass
Drive Current/Individual LED source(mA)	65.4	≤300	With +5% tolerance	Pass
L_{70} Lumen Maintenance Life (Hours)	>78000	⩾50000	None.	Pass
Color Maintenance	0.0014	≤0.004	≤0.0044	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_{LED}(Zoomed-in View)	TMP_{LED}(Bird's-eye View)
	
TMP_c(Zoomed-in View)	TMP_c(Bird's-eye View)
	

Test Data

[Integrating Sphere System]

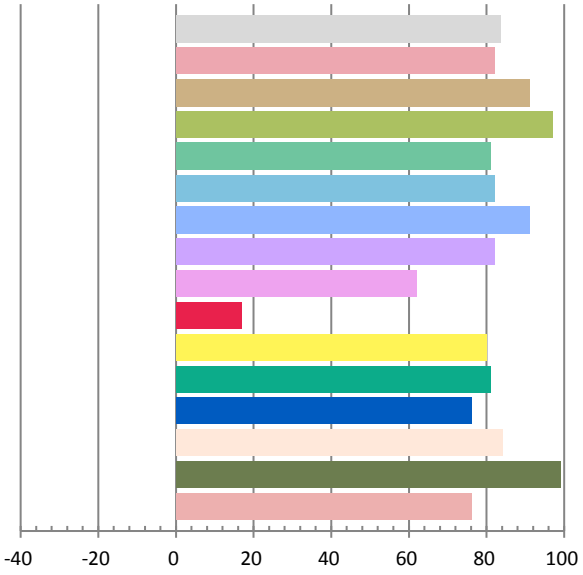
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3484	41.64	0.9959	5474.8	131.48

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
15.673	2597	-0.00091	0.4668	0.4095	0.2675	0.5280

Color Rendering Index

Ra			
83.5			
R1	R2	R3	R4
82	91	97	81
R5	R6	R7	R8
82	91	82	62
R9	R10	R11	R12
17	80	81	76
R13	R14	R15	
84	99	76	



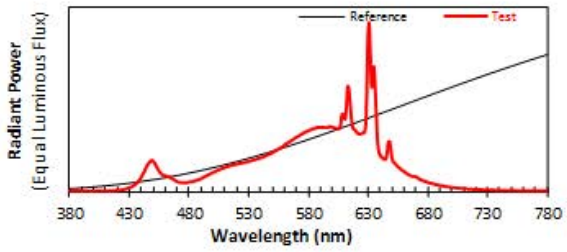
ANSI/IES TM-30-18 Color Rendition Report

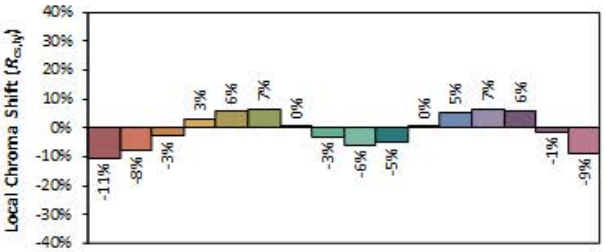
Source: User SPD

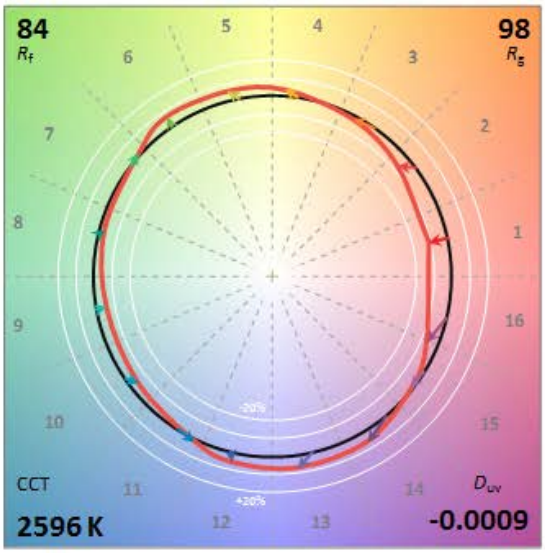
Manufacturer: P.Q.L., Inc.

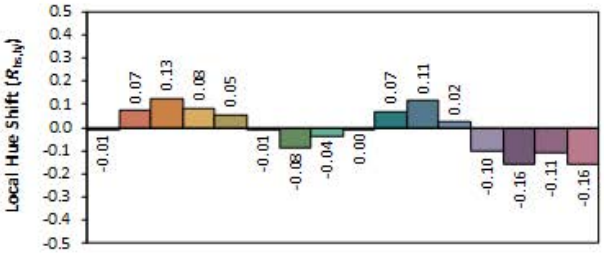
Date: 2026/3/23

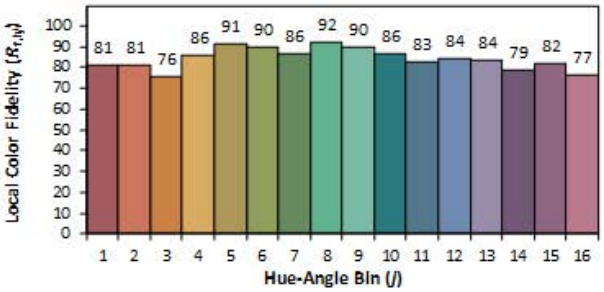
Model: LA24P405CUW-2700K

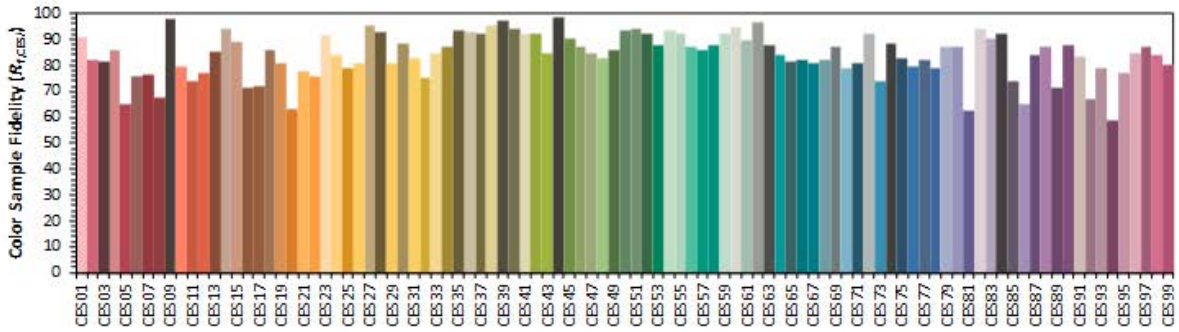












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

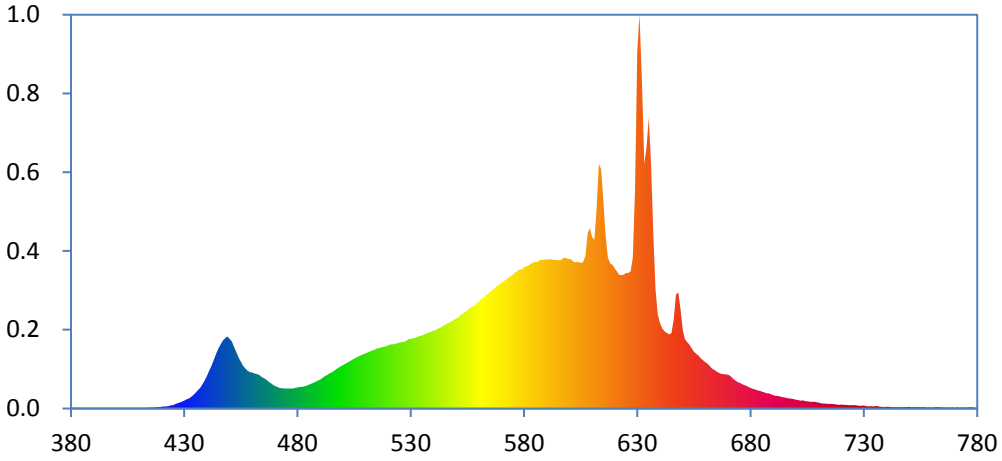
x	0.4669
y	0.4095
u'	0.2676
v'	0.5280

CIE 13.3-1995 (CRI)

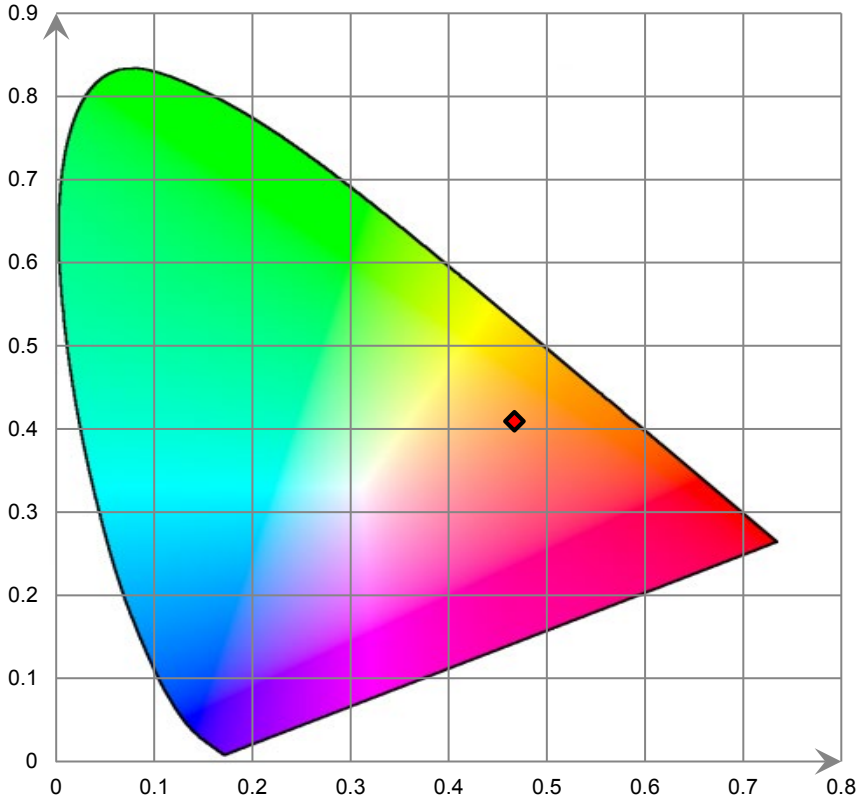
R_a	84
R_9	18

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

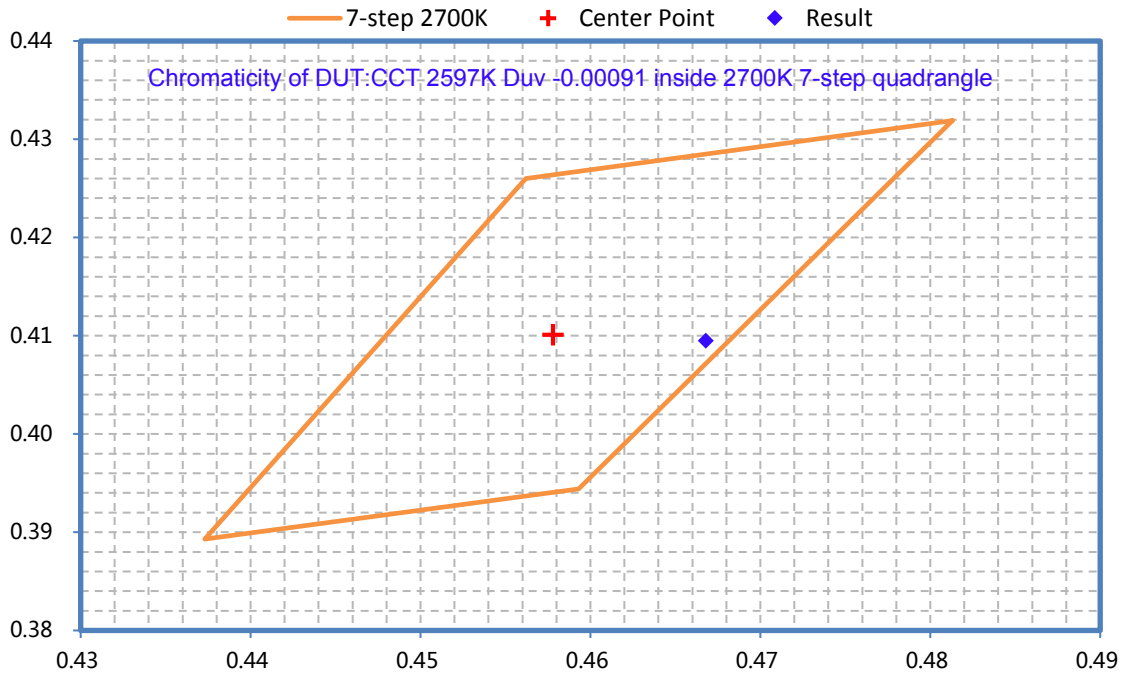
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



[Goniophotometer System]

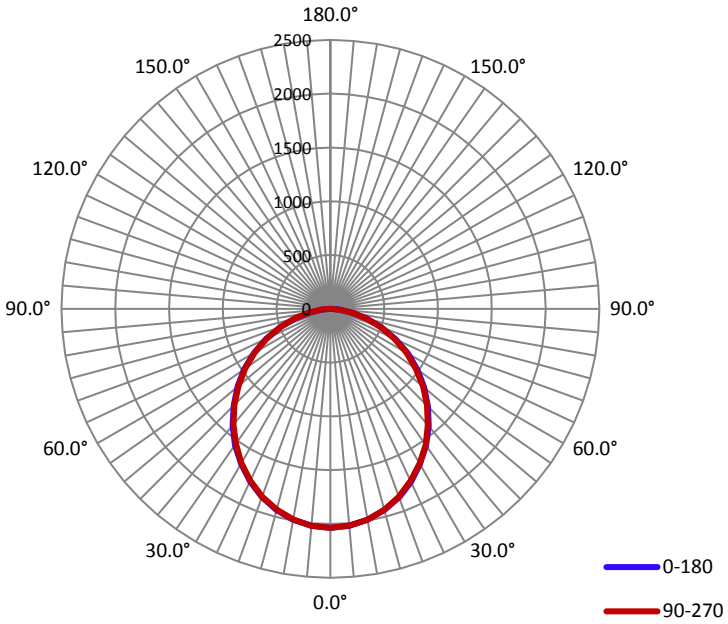
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.349	41.8	0.998

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
5475.1	131.03	2037.3	1.22	1.21

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	107.7	106.7	106.8	106.9	107.0
Field Angle (10% I_{max}):	159.4	159.5	160.4	159.8	159.8

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	2035.3	2035.3	2035.3	2035.3	2035.3	2035.3	2035.3	2035.3
5.0°	2024.6	2026.6	2023.7	2023.0	2022.2	2023.0	2026.4	2022.8
10.0°	1991.3	1991.9	1989.2	1990.2	1991.1	1987.5	1994.7	1995.6
15.0°	1935.2	1941.9	1933.7	1936.3	1935.3	1937.4	1936.4	1944.5
20.0°	1866.0	1876.1	1856.1	1859.1	1859.3	1861.6	1862.3	1871.8
25.0°	1774.5	1778.5	1773.1	1766.7	1763.4	1768.9	1766.0	1781.4
30.0°	1666.6	1672.7	1658.6	1657.3	1658.1	1662.3	1662.1	1677.0
35.0°	1550.3	1553.2	1536.8	1538.0	1543.5	1541.3	1546.1	1557.8
40.0°	1421.9	1424.2	1406.6	1407.7	1408.3	1410.6	1412.8	1425.1
45.0°	1282.2	1286.3	1263.2	1265.3	1271.2	1271.4	1276.5	1287.7
50.0°	1136.0	1141.8	1119.8	1120.9	1124.4	1120.5	1129.8	1143.8
55.0°	987.7	995.5	967.2	966.7	970.7	973.7	975.1	989.9
60.0°	833.5	837.2	811.5	809.5	817.5	815.4	824.4	835.0
65.0°	669.4	671.8	653.1	653.9	658.7	660.3	663.1	670.8
70.0°	506.1	506.2	493.7	500.1	501.3	500.5	503.9	506.1
75.0°	348.0	351.4	340.4	344.6	351.4	349.2	348.1	349.1
80.0°	203.3	205.9	201.3	204.6	211.6	205.4	205.6	203.2
85.0°	82.3	84.1	84.9	87.2	89.4	86.8	86.8	83.9
90.0°	1.7	3.2	4.9	5.2	4.9	4.9	4.4	2.9
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°	2035.3	2035.3	2035.3	2035.3	2035.3	2035.3	2035.3	2035.3
5.0°	2023.8	2026.3	2026.0	2024.6	2024.7	2019.7	2020.2	2021.9
10.0°	1990.0	1994.5	1993.1	1990.3	1988.7	1987.0	1985.6	1989.2
15.0°	1935.6	1940.8	1936.1	1937.3	1932.2	1928.9	1928.7	1935.6
20.0°	1861.2	1870.3	1863.4	1858.5	1856.6	1852.6	1852.6	1866.0
25.0°	1770.3	1780.3	1768.0	1764.3	1761.0	1759.1	1761.0	1768.3
30.0°	1663.3	1671.1	1660.0	1658.3	1654.1	1649.9	1650.5	1660.8
35.0°	1545.6	1553.8	1536.5	1535.0	1532.6	1530.1	1527.3	1539.8
40.0°	1414.4	1421.3	1406.0	1404.0	1401.9	1395.8	1396.5	1410.0
45.0°	1271.7	1279.6	1266.9	1264.5	1262.0	1256.2	1259.6	1272.6
50.0°	1126.0	1136.1	1119.8	1113.0	1114.8	1108.8	1112.7	1125.0
55.0°	975.6	985.9	963.7	960.4	964.5	959.8	965.2	974.3
60.0°	817.4	823.8	807.7	805.6	809.9	802.2	807.0	816.4
65.0°	656.0	661.9	647.7	645.0	654.0	644.3	648.0	655.9
70.0°	491.6	497.4	487.6	488.7	495.4	484.7	488.5	494.7
75.0°	332.2	338.1	333.1	335.3	344.6	332.6	333.3	335.4
80.0°	188.5	192.0	191.5	195.8	205.7	193.3	195.3	193.2
85.0°	72.3	75.4	74.6	77.5	82.7	79.9	77.2	76.1
90.0°	0.7	2.1	2.3	2.4	1.8	2.3	2.3	2.2
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:LA24P405CUW
Control setting: 2700K & 40W 50% up light+50% down light

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5478.7	≥1500	≥1350	Pass
Power(W)	42.94	None.	None.	N/A
Total Efficacy(lm/W)	127.58	≥125	≥121.25	Pass
CCT(K)	2623	2580~2870	No tolerances	Pass
Duv	-0.0007	-0.006~0.006	No tolerances	Pass
IES R_f	84	70	69	Pass
IES R_g	98	89	88	
IES Rcs,h1	-11%	-12%~23%	-13%~24%	
R_a	83.2	≥80	≥79	
R_9	16	≥0	≥-1	

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5481.6	≥1500	≥1350	Pass
Power(W)	43.09	None.	None.	N/A
Total Efficacy(lm/W)	127.21	≥125	≥121.25	Pass
Zonal Lumen Distribution(0-60°)	40.40%	0-60°≥40%	0-60°≥37%	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	0.9962	≥0.9	⩾0.87	Pass
120	THDi	5.39%	≤20%	⩽25%	Pass
277	Power Factor	0.9762	≥0.9	⩾0.87	Pass
277	THDi	11.08%	≤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]

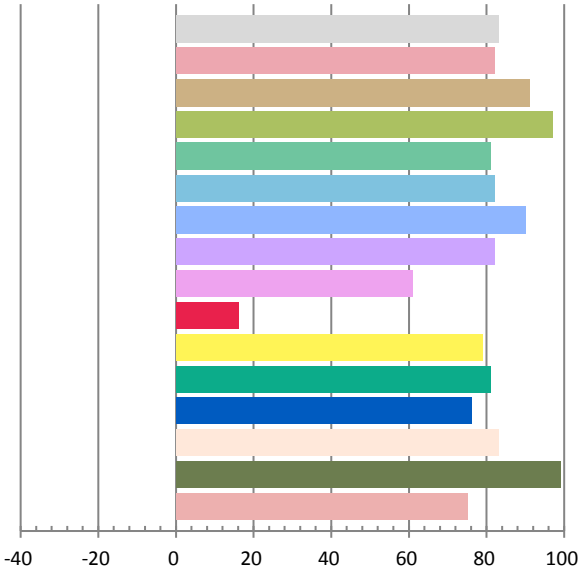
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3593	42.94	0.9962	5478.7	127.58

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
15.621	2623	-0.0007	0.4650	0.4098	0.2662	0.5278

Color Rendering Index

Ra			
83.2			
R1	R2	R3	R4
82	91	97	81
R5	R6	R7	R8
82	90	82	61
R9	R10	R11	R12
16	79	81	76
R13	R14	R15	
83	99	75	



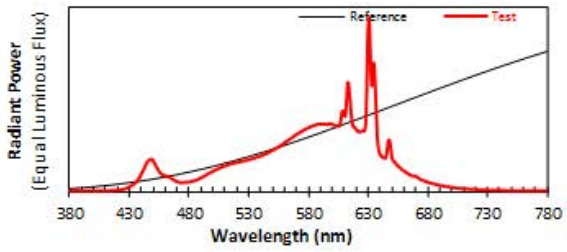
ANSI/IES TM-30-18 Color Rendition Report

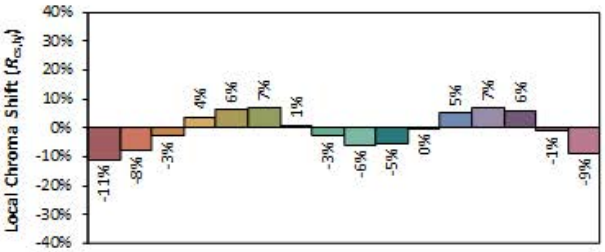
Source: User SPD

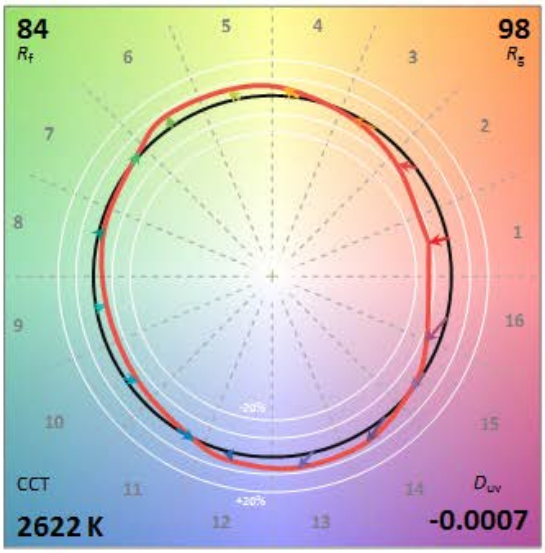
Manufacturer: P.Q.L., Inc.

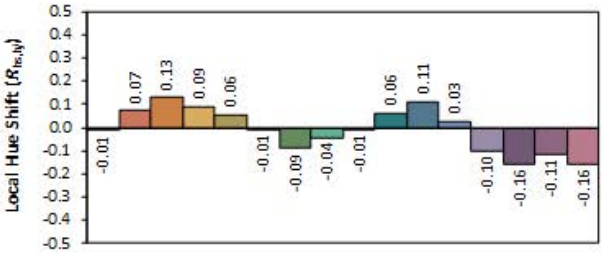
Date: 2026/3/23

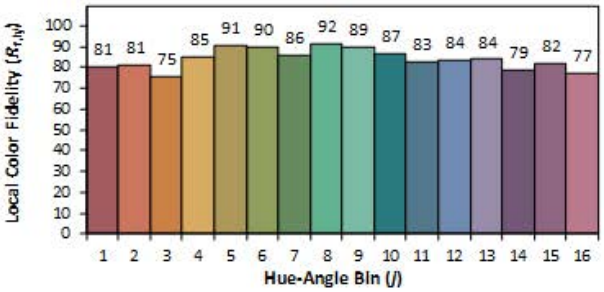
Model: LA24P405CUW-2700K

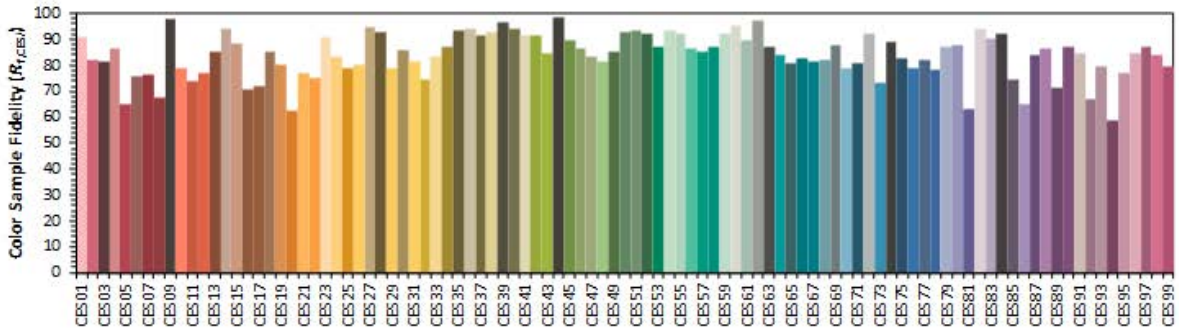












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

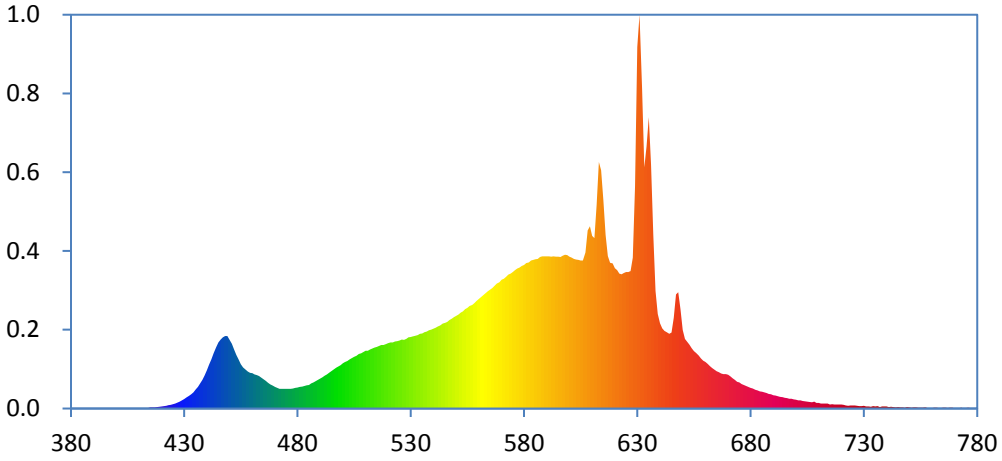
x	0.4651
y	0.4097
u'	0.2663
v'	0.5278

CIE 13.3-1995 (CRI)

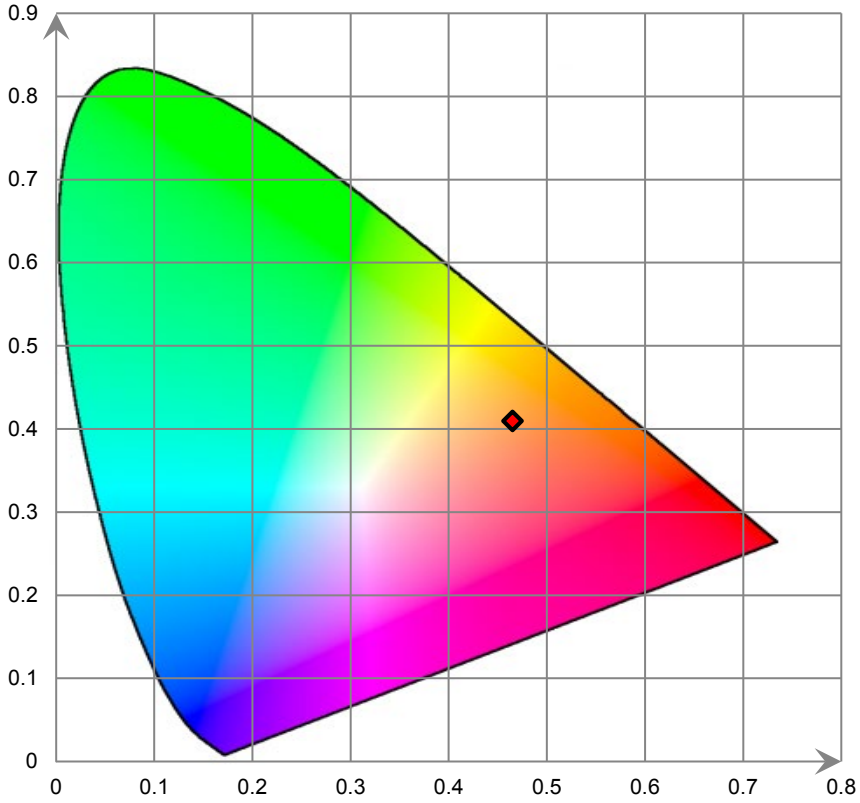
R_a	83
R_9	16

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

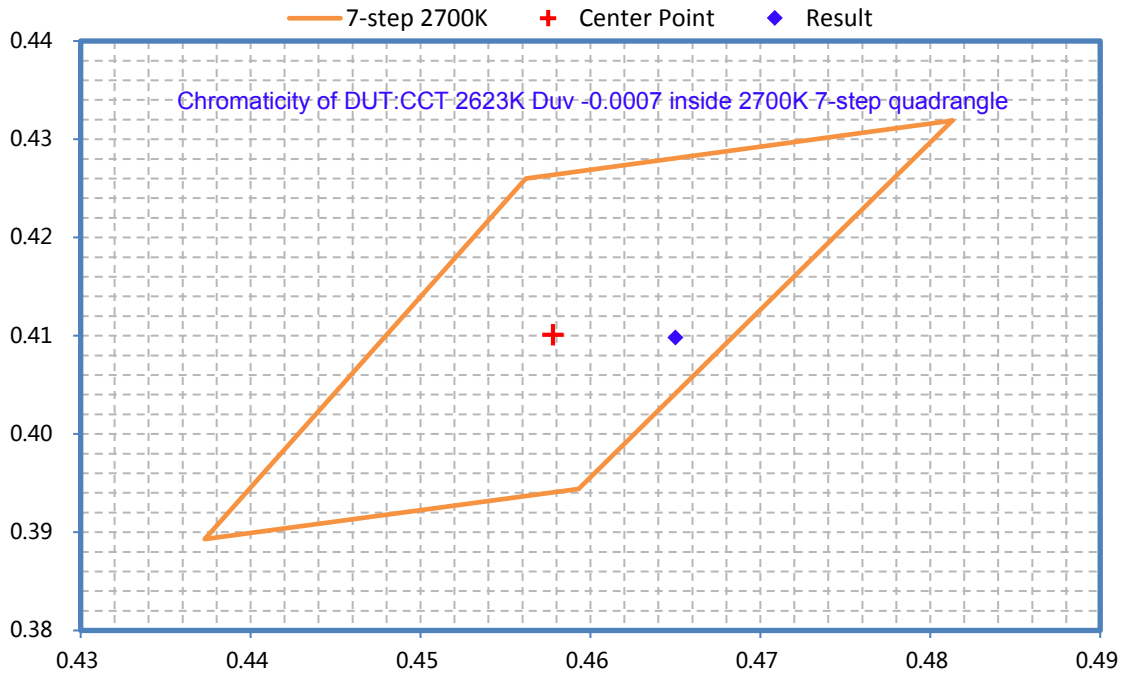
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



[Goniophotometer System]

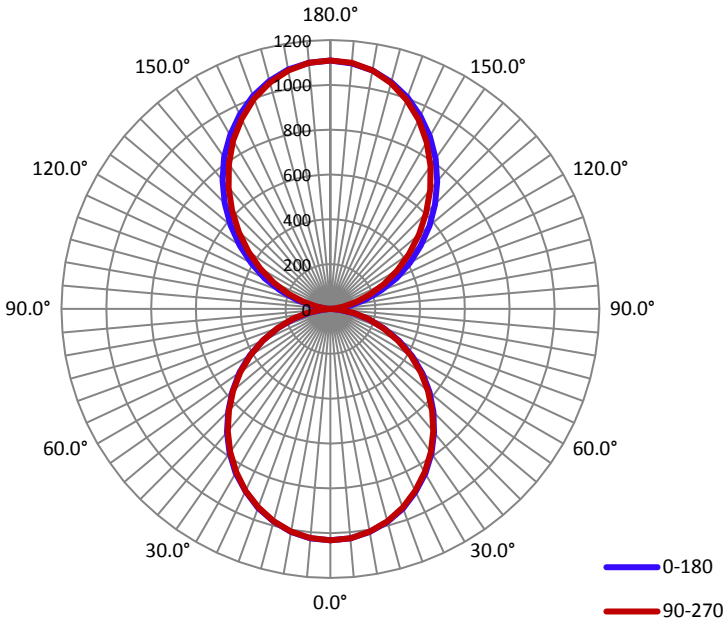
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.36	43.09	0.998

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
5481.6	127.21	1109.3	1.22	1.22

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	180.0	180.7	263.4	181.7	201.5
Field Angle (10% I_{max}):	203.7	206.5	183.6	182.8	194.2

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	1031.9	1031.9	1031.9	1031.9	1031.9	1031.9	1031.9	1031.9
5.0°	1027.0	1026.0	1026.1	1026.5	1027.0	1026.8	1026.6	1026.9
10.0°	1009.8	1010.5	1008.4	1009.5	1008.9	1010.0	1009.1	1011.5
15.0°	983.7	982.9	979.8	980.7	980.2	982.1	980.3	985.6
20.0°	947.3	951.6	941.1	942.5	942.5	944.2	942.6	948.6
25.0°	899.7	900.9	899.8	895.1	895.8	896.9	895.8	902.9
30.0°	847.1	849.1	841.5	841.3	840.7	843.3	843.1	850.8
35.0°	786.7	787.1	779.7	780.0	780.6	782.4	782.5	789.5
40.0°	719.5	720.8	712.2	714.1	713.8	716.1	716.6	723.5
45.0°	649.6	652.0	641.3	641.4	642.5	644.8	644.3	652.1
50.0°	577.7	579.1	567.3	568.1	568.9	569.8	572.9	579.8
55.0°	501.7	503.9	490.1	490.7	493.8	493.3	495.5	501.8
60.0°	421.7	423.3	411.2	410.6	413.6	414.0	415.6	422.0
65.0°	340.7	341.7	330.6	330.8	332.8	334.1	334.6	340.2
70.0°	257.0	258.6	250.6	251.9	252.5	253.8	253.3	256.7
75.0°	176.4	176.9	173.0	174.2	177.1	176.8	175.5	176.5
80.0°	102.6	104.0	102.9	104.7	107.1	104.3	103.6	103.1
85.0°	41.1	42.0	42.5	42.9	45.2	43.4	42.3	41.7
90.0°	0.0	1.6	2.5	2.7	2.2	2.1	2.0	1.2
95.0°	28.2	25.8	22.2	16.8	15.6	16.1	19.8	24.1
100.0°	87.9	81.5	66.3	59.5	58.5	59.3	64.2	80.0
105.0°	162.1	153.1	132.2	117.7	115.9	116.1	129.7	152.3
110.0°	241.8	231.8	208.4	187.7	185.0	187.0	206.2	232.0
115.0°	326.2	314.7	290.9	266.9	262.3	267.6	289.7	316.0
120.0°	408.2	399.6	372.1	347.4	344.4	348.3	372.8	402.8
125.0°	491.7	485.2	457.5	431.9	428.7	434.9	460.1	490.1
130.0°	577.2	569.3	541.8	518.1	515.5	521.2	548.3	576.6
135.0°	659.7	654.3	627.8	606.1	604.2	609.1	636.1	662.1
140.0°	741.2	737.8	713.0	693.4	693.6	697.6	720.4	746.8
145.0°	818.0	816.1	793.9	781.6	778.2	785.6	804.2	824.8
150.0°	888.4	886.3	871.6	861.5	859.3	865.7	879.6	897.2
155.0°	950.4	950.4	938.9	931.3	932.0	935.6	946.4	960.7
160.0°	1004.7	1005.5	998.1	992.9	992.7	996.7	1004.8	1013.9
165.0°	1048.2	1049.0	1045.0	1041.6	1044.0	1045.2	1050.9	1055.7
170.0°	1081.0	1082.7	1080.6	1078.6	1080.1	1081.1	1084.3	1087.1
175.0°	1100.2	1101.5	1101.8	1101.8	1102.5	1102.8	1103.3	1104.1
180.0°	1108.6	1108.6	1108.6	1108.6	1108.6	1108.6	1108.6	1108.6

Luminous Intensity (cd) Distribution Data (cont.)

C / γ	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	1031.9	1031.9	1031.9	1031.9	1031.9	1031.9	1031.9	1031.9
5.0°	1026.8	1026.2	1025.7	1026.6	1026.1	1026.1	1025.0	1024.9
10.0°	1010.1	1010.3	1010.0	1009.1	1008.7	1008.4	1006.9	1008.3
15.0°	981.3	983.6	982.9	981.2	979.8	979.2	978.4	981.2
20.0°	944.6	946.4	944.8	942.6	941.1	940.7	939.8	946.5
25.0°	896.8	900.9	896.2	893.9	895.0	892.5	893.3	896.3
30.0°	845.1	847.8	841.6	841.5	839.6	838.4	837.4	844.2
35.0°	783.7	787.1	779.2	778.9	778.9	777.1	774.4	781.4
40.0°	717.6	719.8	713.0	712.7	712.1	710.2	708.1	714.7
45.0°	645.2	648.7	642.2	641.3	641.0	638.0	639.2	645.8
50.0°	571.4	575.8	567.6	564.7	567.1	563.9	565.3	572.5
55.0°	495.1	498.9	488.9	487.9	490.3	488.1	489.0	494.2
60.0°	415.0	418.9	409.5	408.9	411.5	409.5	409.1	414.3
65.0°	332.6	336.5	329.0	327.5	332.1	329.4	328.8	332.7
70.0°	248.9	252.1	247.4	248.3	251.9	246.6	248.0	251.3
75.0°	168.5	170.6	168.9	170.6	175.8	169.6	170.6	171.9
80.0°	95.3	98.1	97.6	99.8	105.4	99.8	99.4	98.2
85.0°	36.3	37.9	37.4	40.0	42.7	40.8	39.5	38.4
90.0°	0.0	0.0	1.0	1.1	1.3	1.1	0.8	1.1
95.0°	22.1	23.5	23.0	20.5	19.8	20.4	23.6	25.0
100.0°	80.4	80.8	69.5	63.7	65.6	63.9	68.9	79.7
105.0°	156.0	153.3	138.4	125.6	126.8	124.0	134.6	149.5
110.0°	237.8	233.1	216.7	199.4	199.2	196.8	211.3	227.8
115.0°	322.5	319.6	300.4	279.0	278.4	275.4	293.4	310.5
120.0°	407.9	405.6	384.7	363.9	361.6	358.1	376.0	394.0
125.0°	493.9	492.4	470.6	448.9	446.3	441.1	459.7	477.9
130.0°	582.0	578.4	556.4	537.4	534.1	528.0	544.8	562.7
135.0°	667.2	664.1	641.6	624.4	620.9	614.3	629.9	646.3
140.0°	748.4	749.4	727.7	711.9	706.6	699.6	715.2	730.3
145.0°	826.4	827.6	807.5	794.0	789.2	783.0	795.0	807.7
150.0°	894.9	898.9	881.1	871.2	868.1	862.5	869.3	879.5
155.0°	957.4	960.7	950.2	939.8	936.2	930.6	938.0	945.1
160.0°	1010.9	1014.3	1006.7	999.5	997.2	993.6	996.6	1000.4
165.0°	1053.3	1055.4	1051.3	1047.4	1045.1	1042.3	1043.7	1045.9
170.0°	1084.4	1085.5	1084.4	1082.1	1080.8	1078.6	1079.9	1079.4
175.0°	1102.9	1103.7	1104.0	1103.3	1102.3	1101.1	1101.8	1099.6
180.0°	1108.6	1108.6	1108.6	1108.6	1108.6	1108.6	1108.6	1108.6

Test Model: LA24P405CUW
Control setting: 2700K & 40W 30% up light+70% down light

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5501	≥1500	≥1350	Pass
Power(W)	42.49	None.	None.	N/A
Total Efficacy(lm/W)	129.45	≥125	≥121.25	Pass
CCT(K)	2613	2580~2870	No tolerances	Pass
Duv	-0.00066	-0.006~0.006	No tolerances	Pass
IES R_f	84	70	69	Pass
IES R_g	98	89	88	
IES Rcs,h1	-11%	-12%~23%	-13%~24%	
R_a	83.3	≥80	≥79	
R_9	16	≥0	≥-1	

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5503.5	≥1500	≥1350	Pass
Power(W)	42.66	None.	None.	N/A
Total Efficacy(lm/W)	129	≥125	≥121.25	Pass
Zonal Lumen Distribution(0-60°)	56.83%	0-60°≥40%	0-60°≥37%	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	0.9961	≥0.9	⩾0.87	Pass
120	THDi	5.45%	≤20%	⩽25%	Pass
277	Power Factor	0.9757	≥0.9	⩾0.87	Pass
277	THDi	11.18%	≤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]

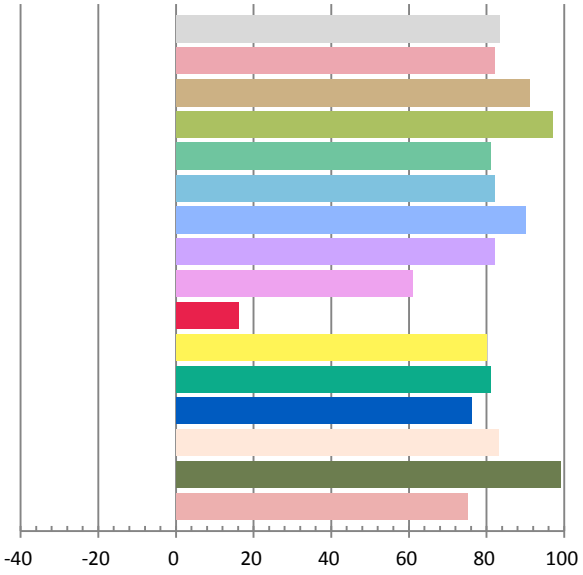
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3556	42.49	0.9961	5501	129.45

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
15.699	2613	-0.00066	0.4660	0.4101	0.2667	0.5281

Color Rendering Index

Ra			
83.3			
R1	R2	R3	R4
82	91	97	81
R5	R6	R7	R8
82	90	82	61
R9	R10	R11	R12
16	80	81	76
R13	R14	R15	
83	99	75	



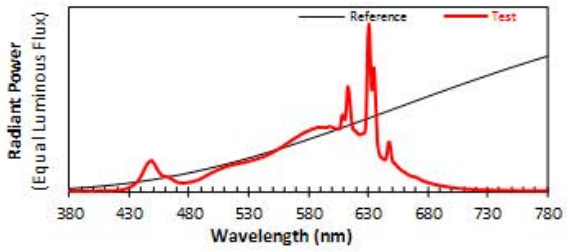
ANSI/IES TM-30-18 Color Rendition Report

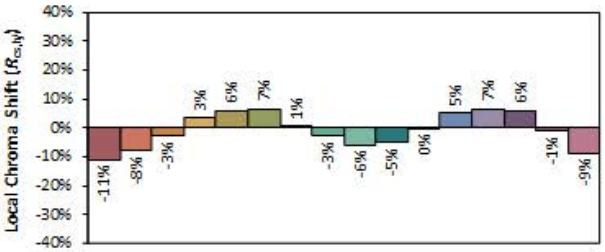
Source: User SPD

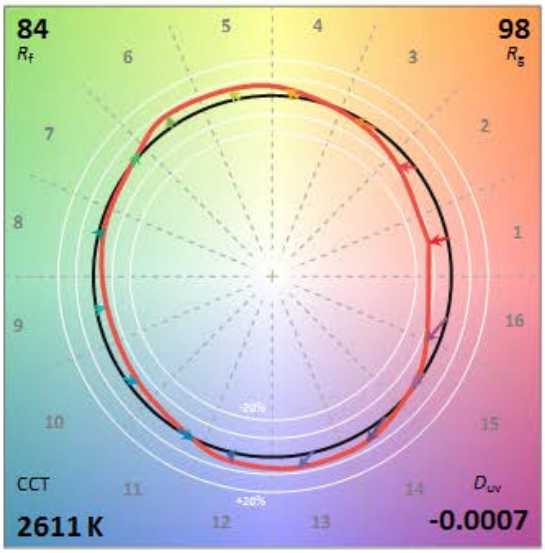
Manufacturer: P.Q.L., Inc.

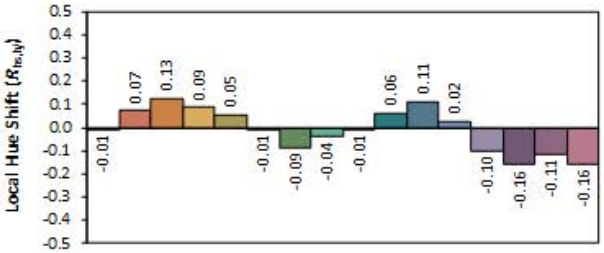
Date: 2026/3/23

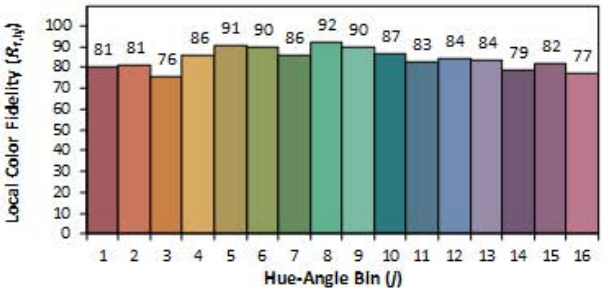
Model: LA24P405CUW-2700K

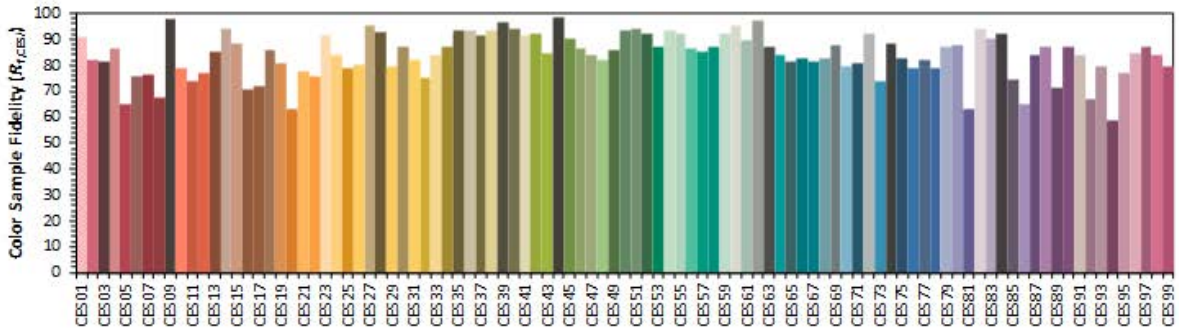












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

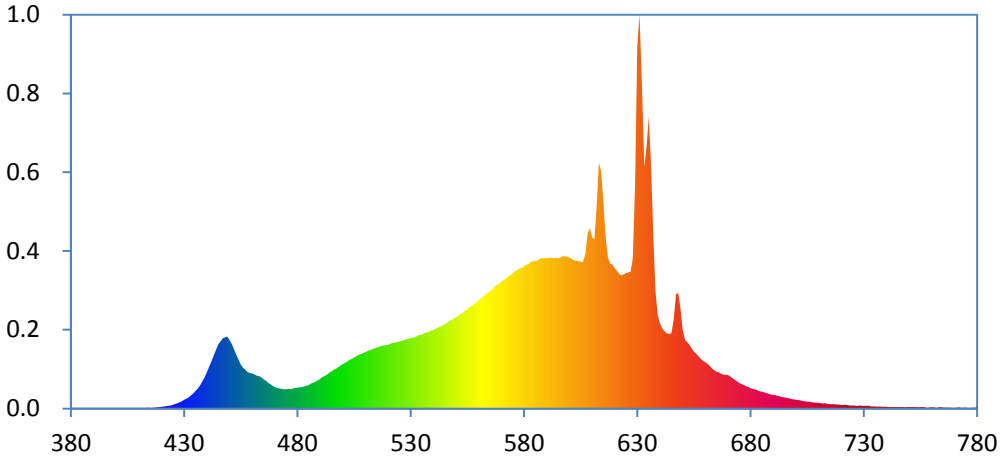
x	0.4660
y	0.4100
u'	0.2668
v'	0.5281

CIE 13.3-1995 (CRI)

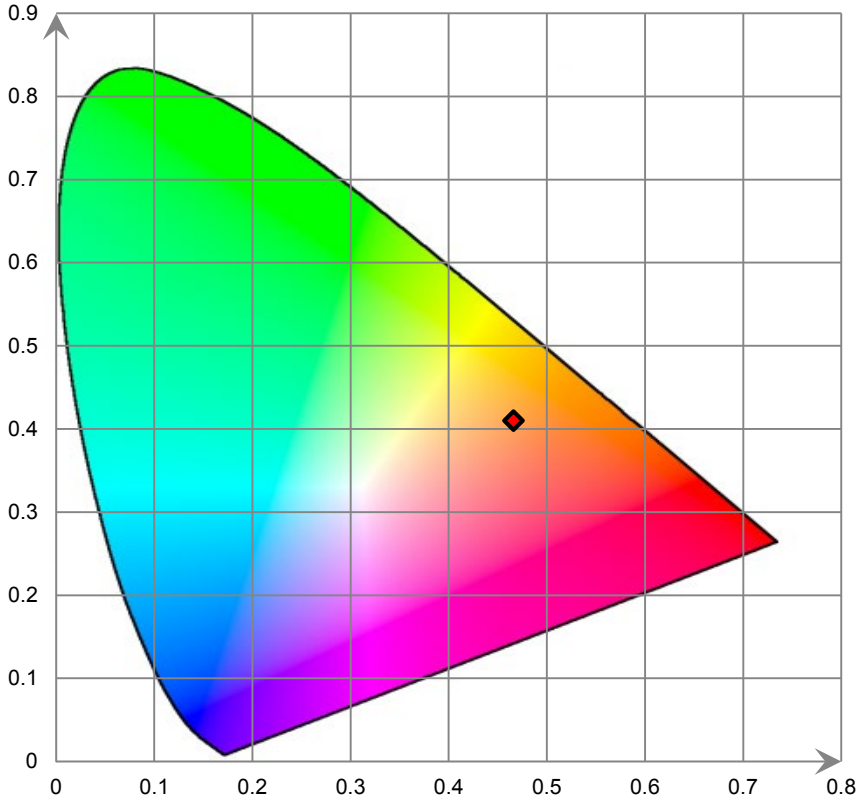
R_a	83
R_9	17

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

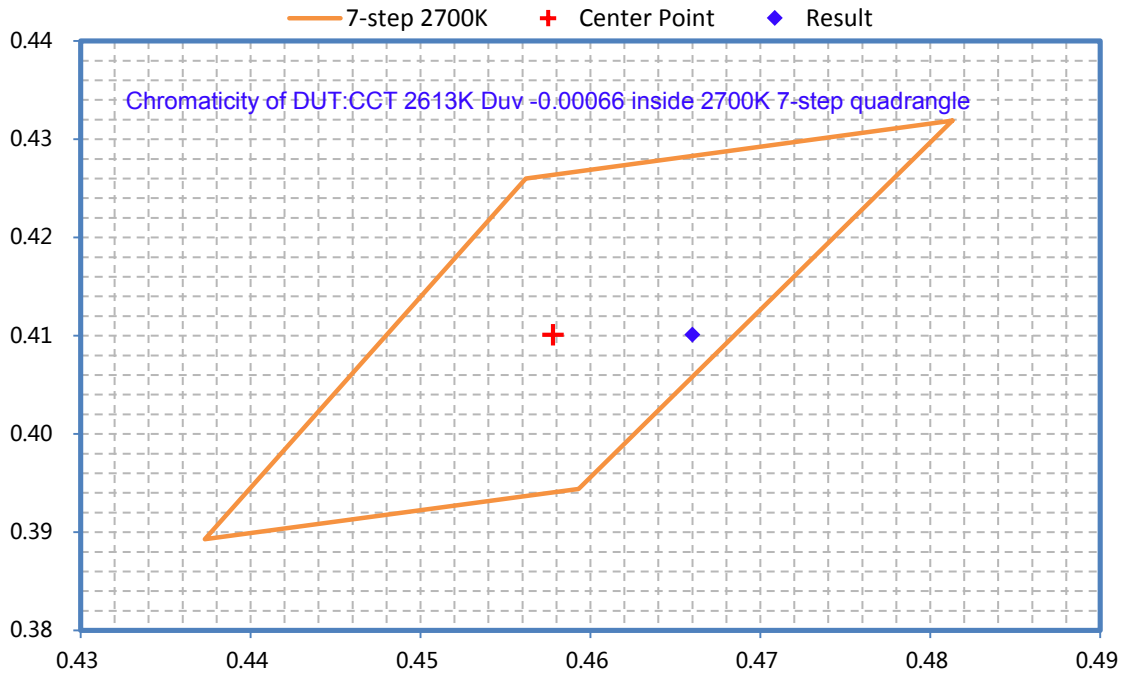
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



[Goniophotometer System]

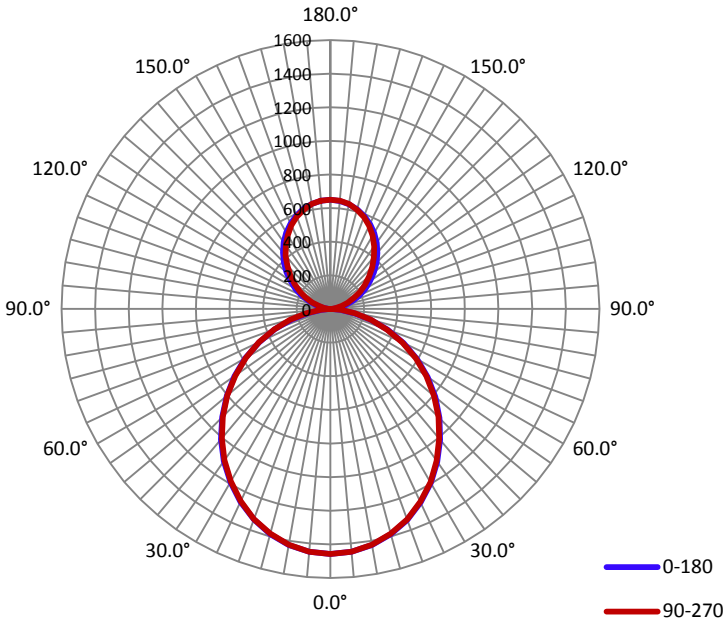
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.356	42.66	0.998

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	Imax (cd)	S/MH (C0/180)	S/MH (C90/270)
5503.5	129	1457.8	1.22	1.21

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	107.6	106.7	106.9	107.0	107.1
Field Angle (10% I_{max}):	221.2	192.1	227.4	225.0	216.4

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	1457.4	1457.4	1457.4	1457.4	1457.4	1457.4	1457.4	1457.4
5.0°	1448.7	1448.8	1448.8	1449.1	1449.3	1449.5	1450.1	1452.3
10.0°	1425.7	1425.9	1424.3	1425.0	1424.8	1425.1	1425.7	1429.7
15.0°	1386.8	1387.7	1384.9	1386.4	1385.3	1386.2	1386.0	1392.2
20.0°	1337.1	1343.0	1330.2	1331.7	1332.3	1333.5	1332.2	1340.7
25.0°	1268.9	1274.2	1271.5	1265.1	1264.7	1268.4	1266.8	1276.4
30.0°	1194.2	1197.8	1189.1	1188.7	1190.2	1192.0	1189.5	1200.6
35.0°	1109.1	1112.2	1101.0	1101.6	1103.0	1106.9	1105.3	1115.3
40.0°	1015.8	1019.2	1005.9	1009.7	1007.4	1011.4	1013.2	1022.6
45.0°	917.4	920.8	905.3	905.8	909.5	912.7	913.2	922.3
50.0°	814.6	818.3	802.1	802.6	804.7	806.2	808.7	818.4
55.0°	707.1	712.8	693.9	695.3	696.6	697.1	701.1	710.7
60.0°	595.8	597.9	582.2	581.4	585.6	584.6	588.4	596.5
65.0°	480.3	482.7	469.5	470.6	471.7	472.3	474.5	480.9
70.0°	362.2	363.8	354.9	356.7	358.3	359.7	359.5	363.2
75.0°	248.7	250.6	244.8	247.2	250.6	251.1	248.1	250.7
80.0°	144.3	147.6	145.9	148.5	151.4	148.1	148.2	146.8
85.0°	59.0	59.9	62.2	63.5	65.2	62.7	62.3	59.6
90.0°	0.7	2.3	3.3	4.2	3.6	3.8	3.5	2.7
95.0°	16.0	15.0	13.0	10.2	9.4	9.1	11.2	13.9
100.0°	50.9	47.3	38.9	35.0	34.3	34.1	37.7	46.1
105.0°	94.0	89.4	77.5	68.8	67.9	68.6	76.1	88.8
110.0°	140.9	135.0	122.4	110.0	108.7	109.8	120.9	135.3
115.0°	190.0	183.6	169.0	155.7	154.0	155.7	167.9	185.5
120.0°	238.8	233.9	217.4	202.7	201.0	203.8	217.4	235.7
125.0°	288.6	283.6	266.6	251.6	249.9	253.4	268.5	286.4
130.0°	337.7	333.3	316.3	302.0	301.2	303.3	318.9	336.6
135.0°	386.9	383.0	367.0	353.9	352.6	355.1	370.6	388.8
140.0°	434.1	431.6	417.0	406.0	403.8	408.2	421.3	436.5
145.0°	479.9	477.5	464.8	455.8	455.0	458.3	469.2	483.8
150.0°	520.7	519.5	509.6	502.8	503.9	505.6	514.0	525.2
155.0°	556.9	556.1	549.5	544.6	546.0	548.2	554.1	562.2
160.0°	588.5	589.5	583.6	581.3	581.6	583.9	587.8	593.4
165.0°	614.2	615.3	611.7	610.7	612.2	612.7	615.0	618.6
170.0°	633.4	634.3	632.8	631.4	633.7	633.6	634.4	635.7
175.0°	645.1	645.6	645.8	645.7	646.8	645.3	646.1	646.9
180.0°	649.6	649.6	649.6	649.6	649.6	649.6	649.6	649.6

Luminous Intensity (cd) Distribution Data (cont.)

C / γ	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	1457.4	1457.4	1457.4	1457.4	1457.4	1457.4	1457.4	1457.4
5.0°	1449.0	1448.7	1449.6	1449.0	1449.2	1448.3	1447.0	1449.4
10.0°	1425.6	1426.0	1426.0	1424.2	1423.9	1422.8	1421.8	1424.0
15.0°	1386.5	1389.0	1387.3	1384.8	1383.3	1381.5	1380.6	1386.3
20.0°	1332.3	1337.3	1333.7	1331.4	1329.8	1327.9	1326.8	1336.7
25.0°	1266.2	1272.8	1266.4	1263.1	1262.4	1260.8	1259.7	1266.1
30.0°	1190.1	1196.2	1187.6	1187.3	1184.6	1182.9	1180.4	1190.5
35.0°	1105.3	1109.9	1099.5	1099.4	1098.8	1096.2	1093.2	1102.4
40.0°	1011.9	1015.6	1006.2	1005.1	1005.0	1001.5	1000.2	1010.7
45.0°	910.0	915.0	906.1	904.0	905.3	899.1	901.6	909.5
50.0°	806.2	812.7	801.2	799.1	799.5	795.7	796.1	806.3
55.0°	697.6	704.5	692.1	688.3	691.1	688.3	688.2	697.9
60.0°	586.0	591.4	578.2	576.3	580.7	577.4	577.4	585.1
65.0°	469.5	474.8	462.9	462.0	468.4	464.2	464.0	469.9
70.0°	351.0	355.0	348.7	349.9	354.9	347.9	350.1	352.7
75.0°	237.5	241.0	238.3	240.3	247.7	238.7	239.2	240.1
80.0°	134.3	138.6	136.9	140.5	147.9	141.2	140.5	138.4
85.0°	51.1	53.1	54.9	56.0	60.3	57.8	56.2	54.4
90.0°	0.0	1.2	1.7	1.8	1.7	2.0	2.2	2.0
95.0°	12.3	13.9	13.8	11.8	11.6	12.0	13.6	14.8
100.0°	47.1	46.9	40.0	37.2	38.5	37.9	39.8	45.8
105.0°	90.7	90.2	80.9	72.8	73.8	72.3	78.0	87.2
110.0°	138.3	136.8	127.0	115.6	115.8	114.3	123.3	133.9
115.0°	189.0	185.9	174.2	162.9	163.3	160.1	170.2	180.9
120.0°	239.0	236.6	223.9	211.2	211.1	208.3	218.7	229.9
125.0°	289.5	288.0	274.7	261.2	260.7	258.2	267.2	278.8
130.0°	340.0	339.1	325.3	312.9	311.3	308.0	318.5	329.5
135.0°	389.8	389.3	374.2	363.9	362.4	358.0	367.8	378.1
140.0°	439.2	438.8	424.3	415.3	413.5	409.2	416.4	426.2
145.0°	483.9	484.4	471.7	463.5	462.2	458.0	463.8	472.6
150.0°	524.5	527.0	516.1	508.2	507.4	502.9	508.1	516.0
155.0°	561.2	563.0	555.6	548.9	548.7	545.4	548.6	552.8
160.0°	592.1	594.2	589.2	583.8	584.2	580.9	582.6	586.6
165.0°	617.3	618.7	615.2	613.3	612.5	610.0	610.6	612.3
170.0°	635.0	635.9	636.0	634.4	634.3	631.5	631.5	632.5
175.0°	646.4	646.9	647.1	645.7	647.2	645.4	645.1	644.3
180.0°	649.6	649.6	649.6	649.6	649.6	649.6	649.6	649.6

Test Model: LA24P405CUW
Control setting: 2700K & 32W 50% up light+50% down light

Test Data

[Integrating Sphere System]

Photometric and Electrical Measurement Result

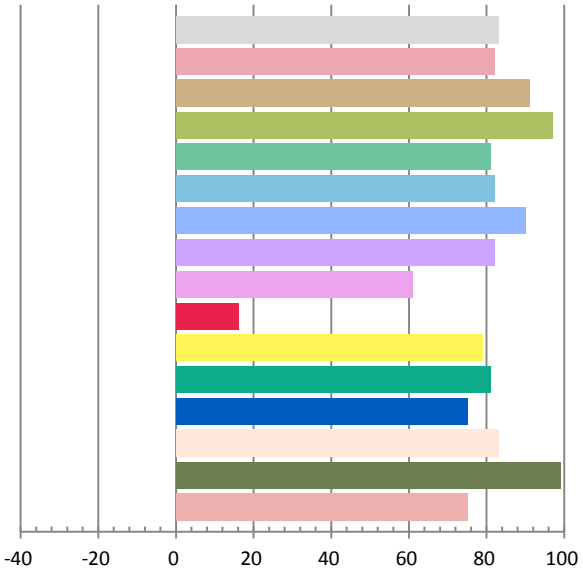
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.1	60	0.274	32.74	0.9955	4369	133.44

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
12.450	2630	-0.00052	0.4647	0.4102	0.2658	0.5279

Test Voltage(V)	Power Factor	THDi
120	0.9955	5.55%
277	0.971	9.13%

Color Rendering Index

Ra			
83.2			
R1	R2	R3	R4
82	91	97	81
R5	R6	R7	R8
82	90	82	61
R9	R10	R11	R12
16	79	81	75
R13	R14	R15	
83	99	75	



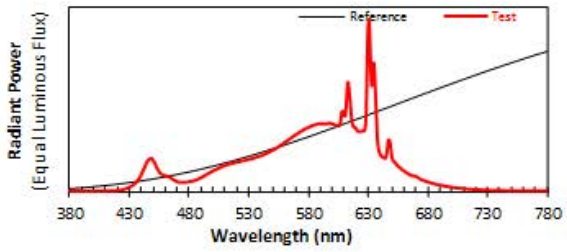
ANSI/IES TM-30-18 Color Rendition Report

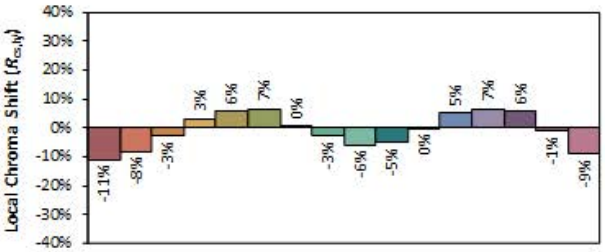
Source: User SPD

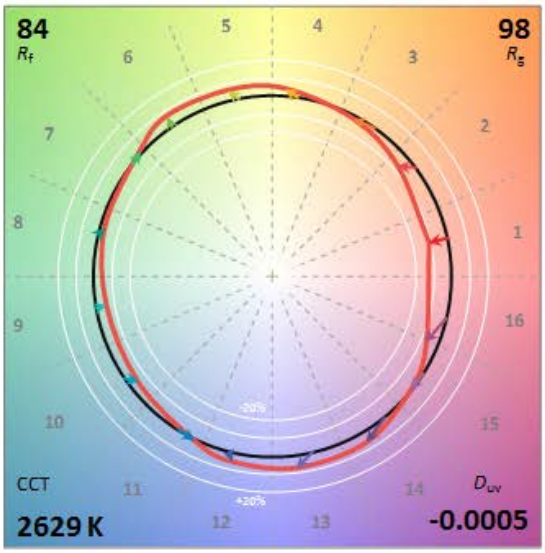
Manufacturer: P.Q.L., Inc.

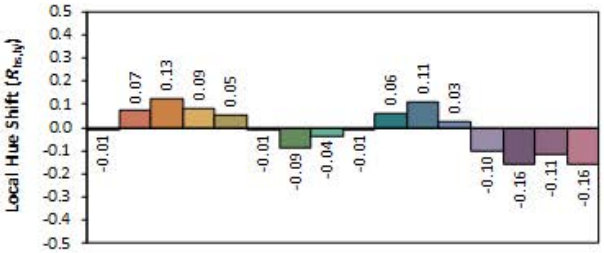
Date: 2026/3/23

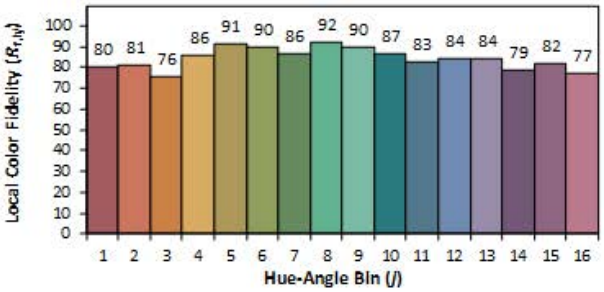
Model: LA24P405CUW-2700K

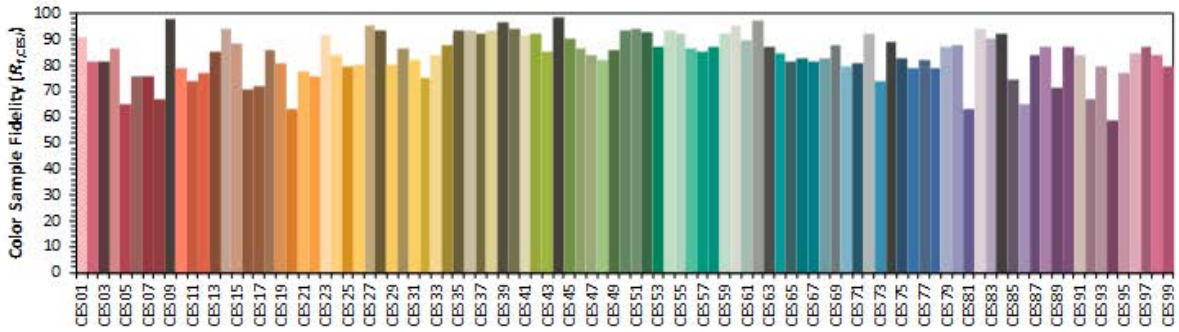












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

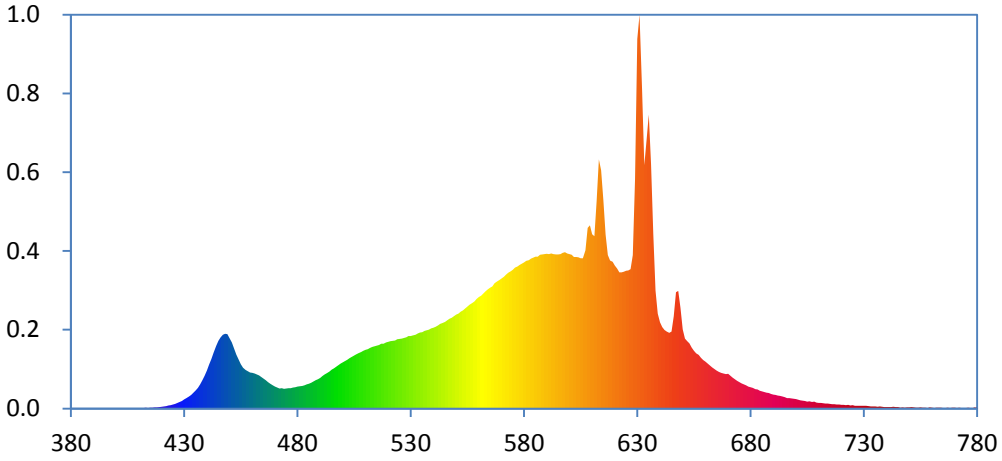
x	0.4648
y	0.4102
u'	0.2659
v'	0.5279

CIE 13.3-1995 (CRI)

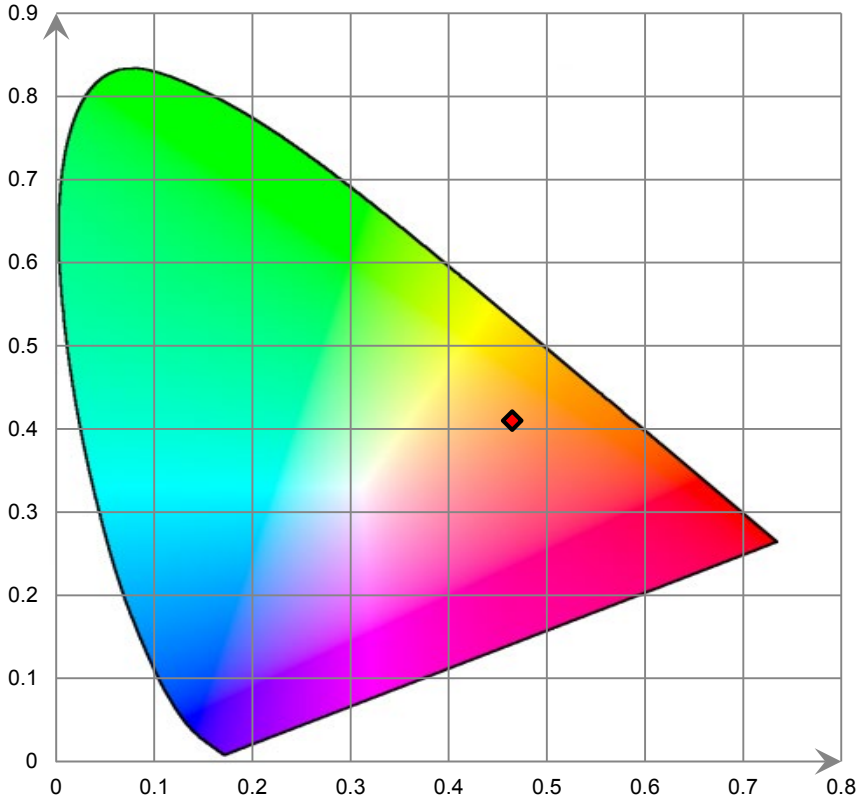
R_a	83
R_9	16

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

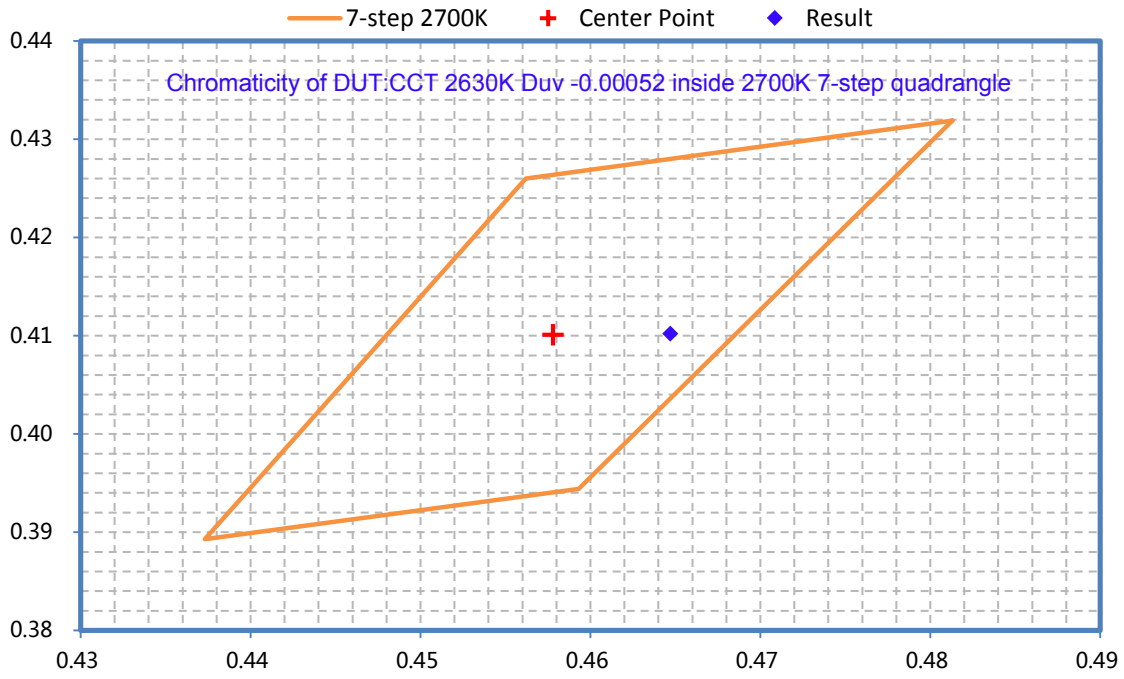
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



Test Model: LA24P405CUW
Control setting: 2700K & 24W 50% up light+50% down light

Test Data

[Integrating Sphere System]

Photometric and Electrical Measurement Result

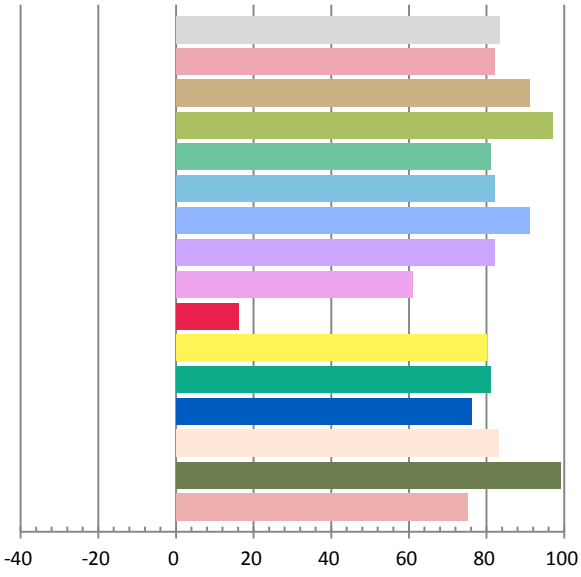
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.2129	25.38	0.9936	3441.2	135.57

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
9.798	2623	-0.00055	0.4653	0.4102	0.2662	0.5280

Test Voltage(V)	Power Factor	THDi
120	0.9936	6.93%
277	0.9604	9.29%

Color Rendering Index

Ra			
83.3			
R1	R2	R3	R4
82	91	97	81
R5	R6	R7	R8
82	91	82	61
R9	R10	R11	R12
16	80	81	76
R13	R14	R15	
83	99	75	



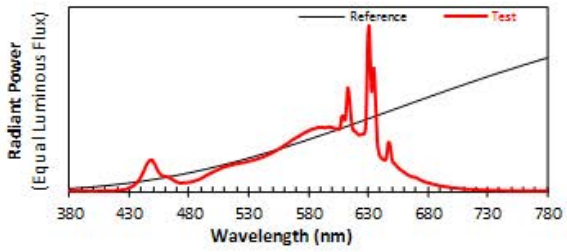
ANSI/IES TM-30-18 Color Rendition Report

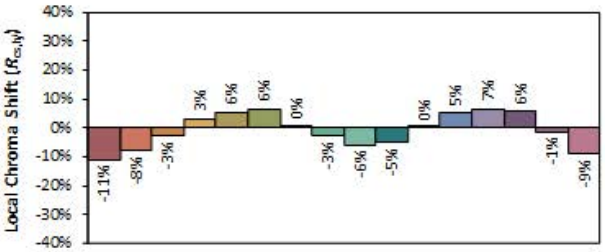
Source: User SPD

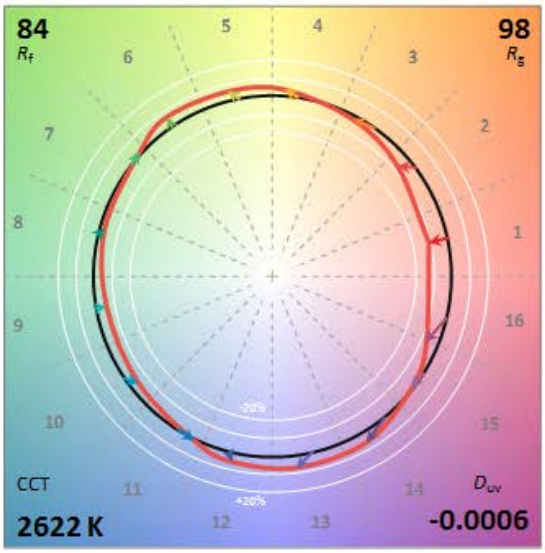
Manufacturer: P.Q.L., Inc.

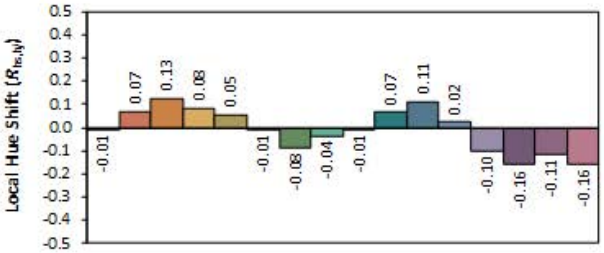
Date: 2026/3/23

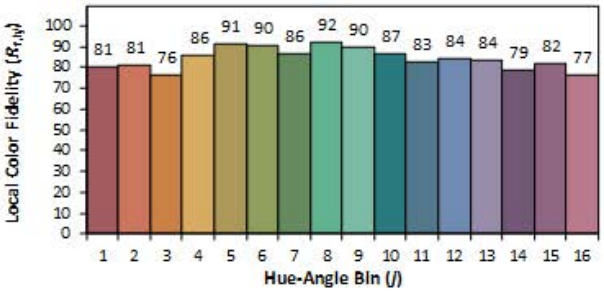
Model: LA24P405CUW-2700K

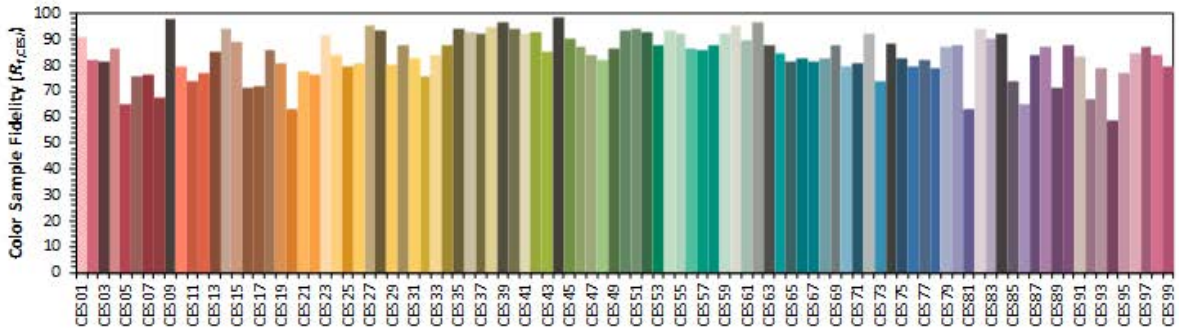












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

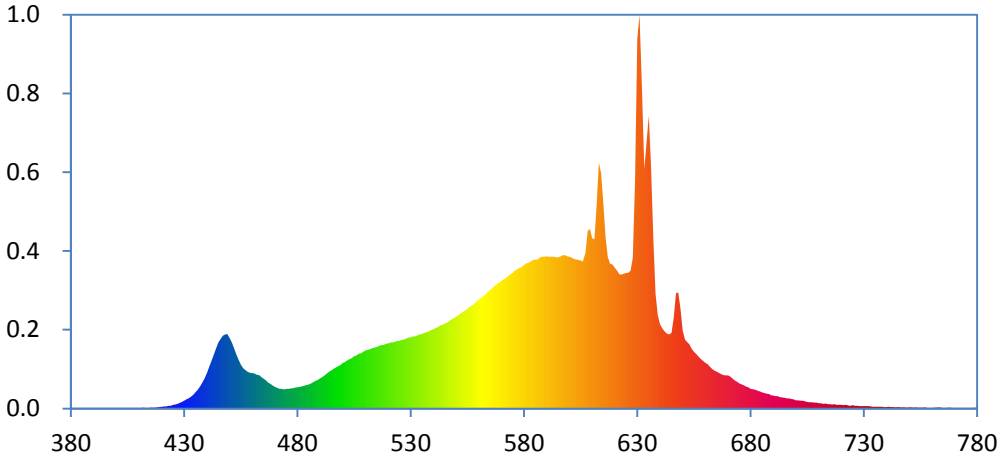
x	0.4654
y	0.4102
u'	0.2662
v'	0.5280

CIE 13.3-1995 (CRI)

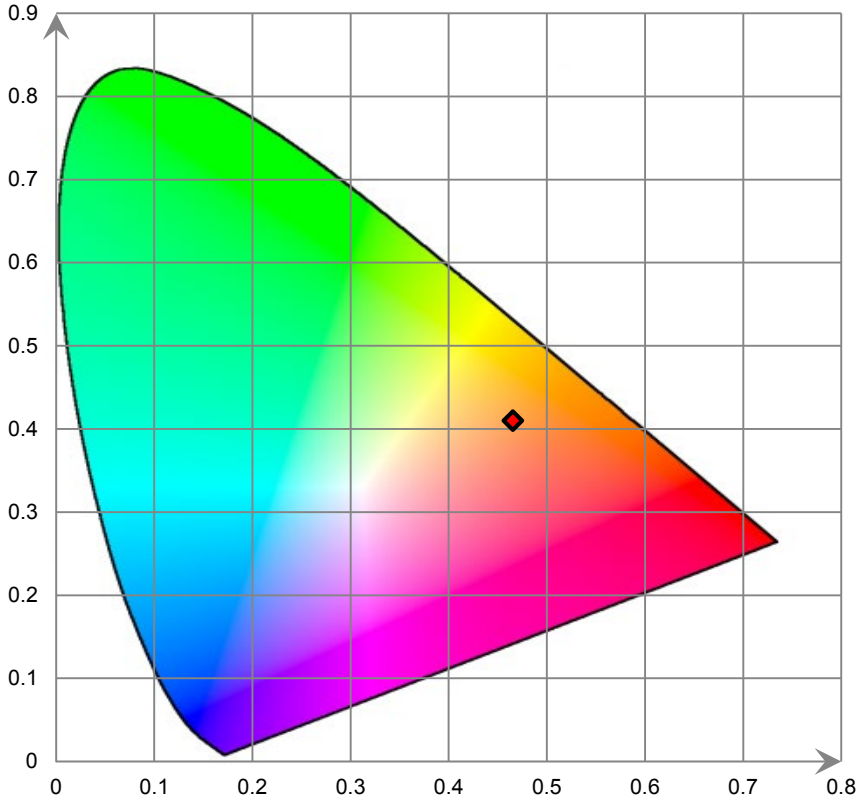
R_a	83
R_9	17

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

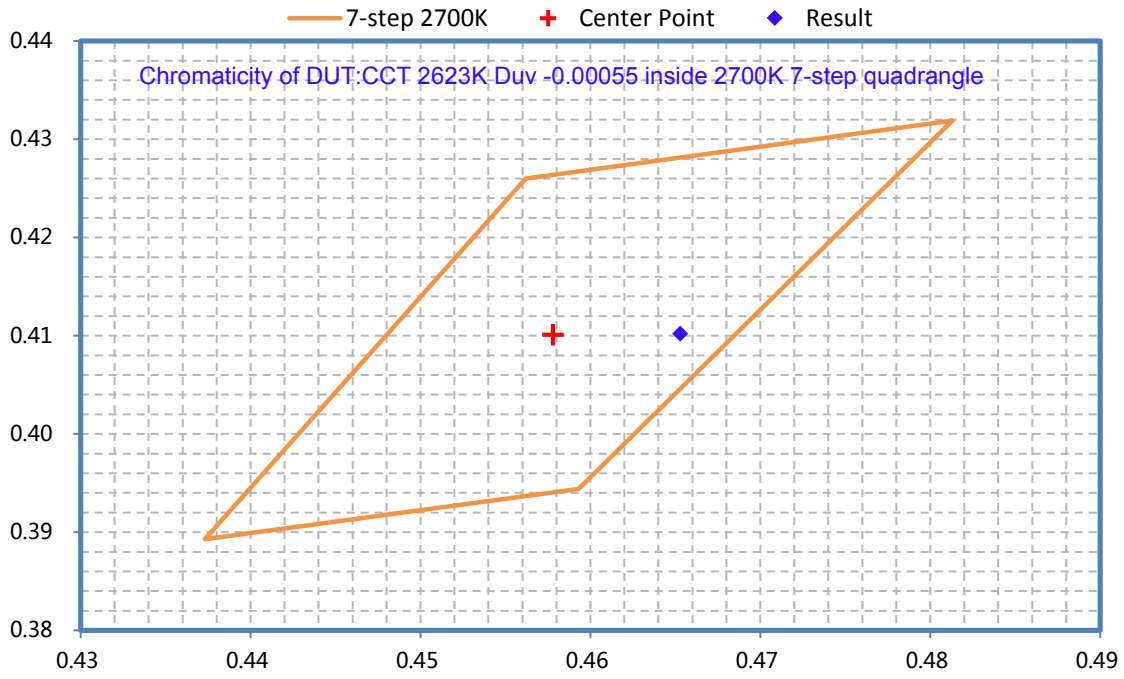
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



Test Model: LA24P405CUW
Control setting: 2700K & 20W 50% up light+50% down light

Test Data

[Integrating Sphere System]

Photometric and Electrical Measurement Result

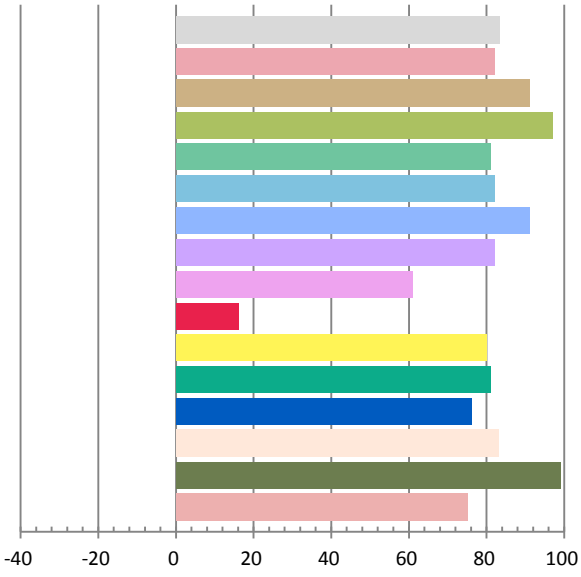
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.1	60	0.1729	20.57	0.9912	2794.1	135.82

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
7.954	2627	-0.00048	0.4651	0.4104	0.2660	0.5281

Test Voltage(V)	Power Factor	THDi
120	0.9912	8.59%
277	0.9436	12.22%

Color Rendering Index

Ra			
83.3			
R1	R2	R3	R4
82	91	97	81
R5	R6	R7	R8
82	91	82	61
R9	R10	R11	R12
16	80	81	76
R13	R14	R15	
83	99	75	



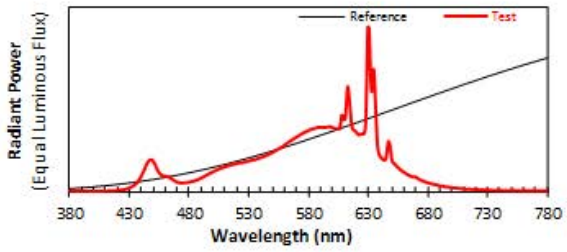
ANSI/IES TM-30-18 Color Rendition Report

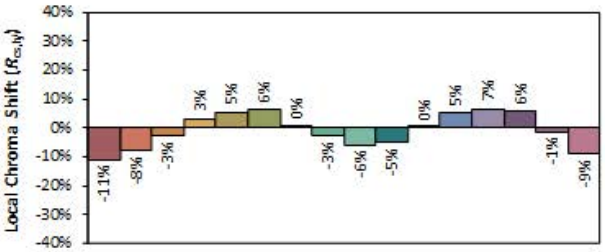
Source: User SPD

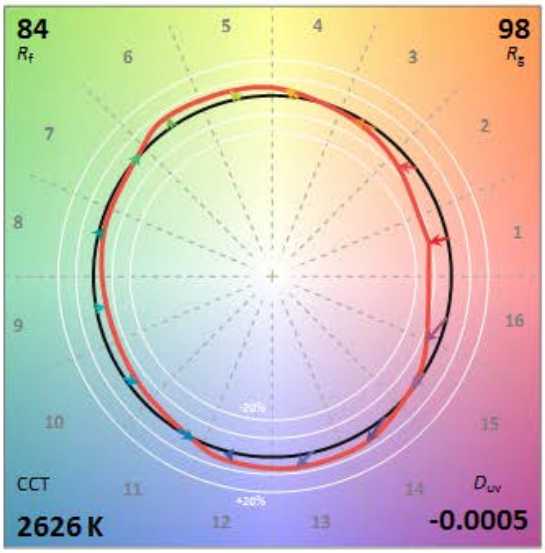
Manufacturer: P.Q.L., Inc.

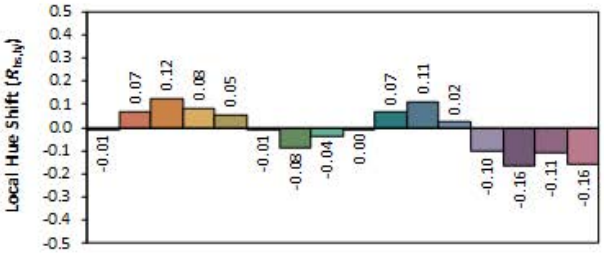
Date: 2026/3/23

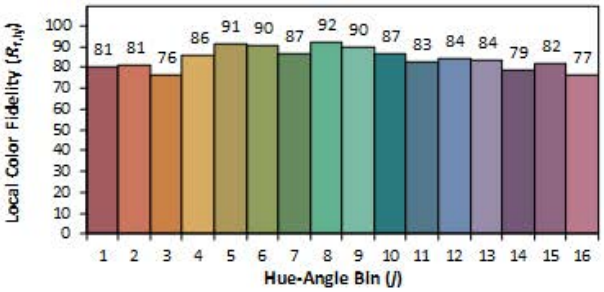
Model: LA24P405CUW-2700K

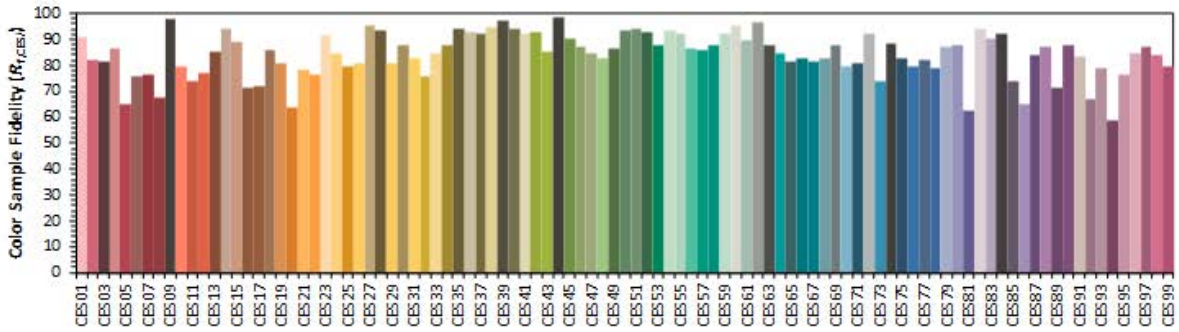












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

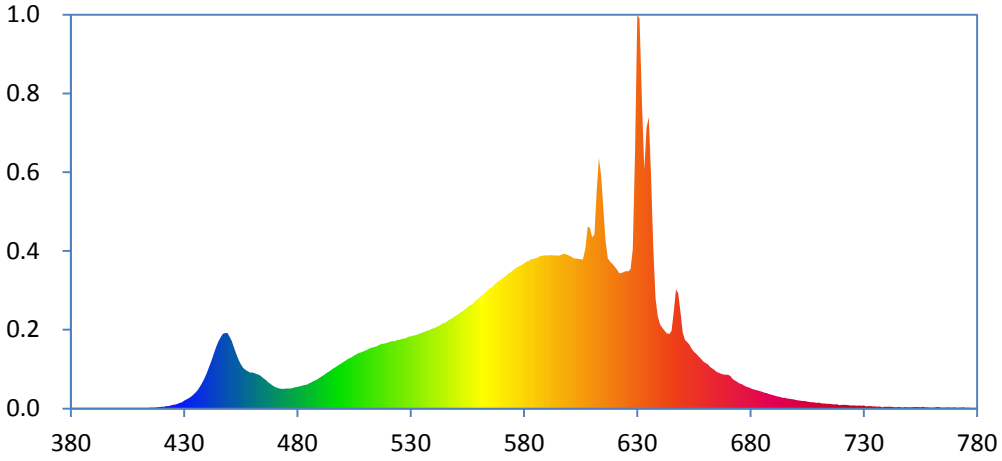
x	0.4651
y	0.4103
u'	0.2660
v'	0.5280

CIE 13.3-1995 (CRI)

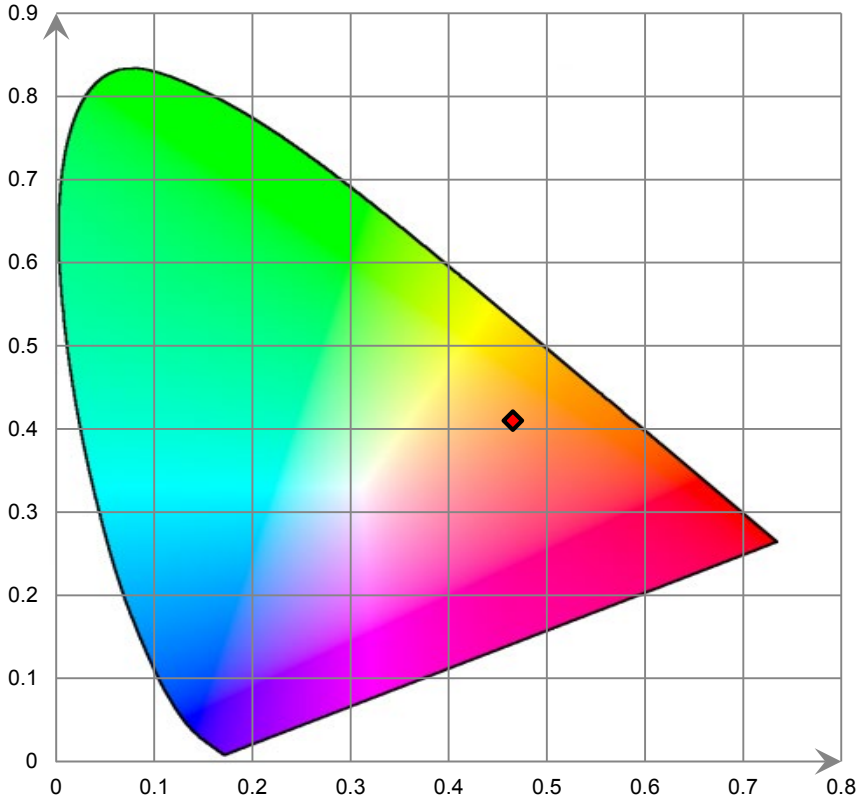
R_a	83
R_9	17

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

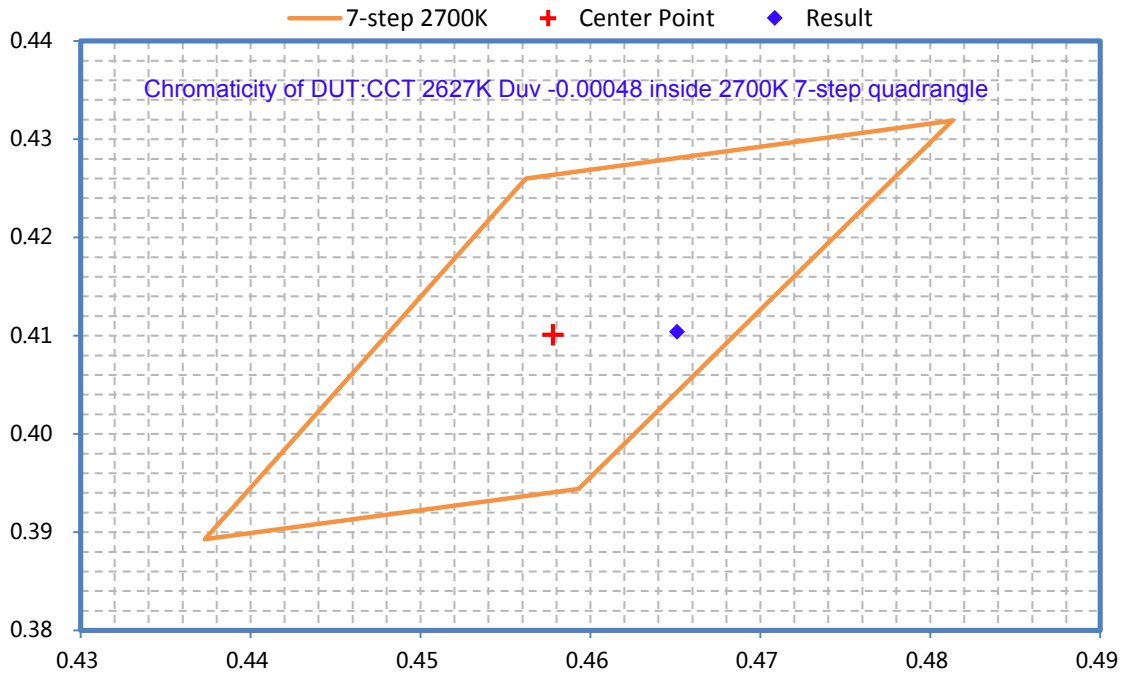
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



Test Model: LA24P405CUW
Control setting: 3500K & 40W 100% down light

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5630.3	≥1500	≥1350	Pass
Power(W)	41.64	None.	None.	N/A
Total Efficacy(lm/W)	135.21	≥125	≥121.25	Pass
CCT(K)	3359	3220~3710	No tolerances	Pass
Duv	-0.00356	-0.0055~0.0065	No tolerances	Pass
IES R_f	86	70	69	Pass
IES R_g	98	89	88	
IES Rcs,h1	-10%	-12%~23%	-13%~24%	
R_a	86.3	≥80	≥79	
R_9	29	≥0	≥-1	

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	0.9959	≥0.9	⩾0.87	Pass
120	THDi	5.63%	≤20%	⩽25%	Pass
277	Power Factor	0.9749	≥0.9	⩾0.87	Pass
277	THDi	11.26%	≤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]

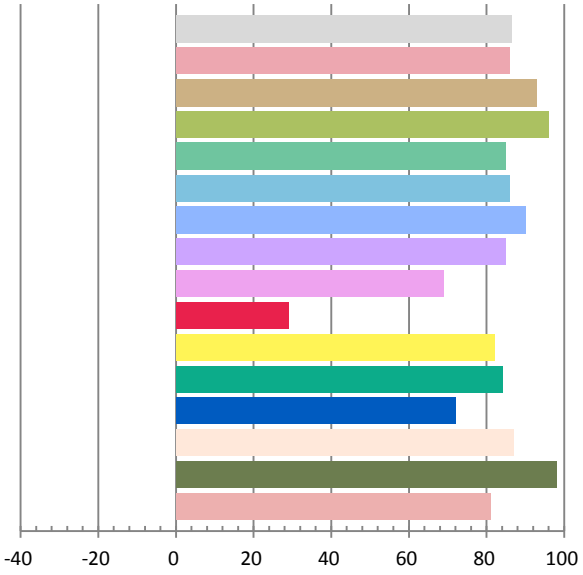
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.1	60	0.3483	41.64	0.9959	5630.3	135.21

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
16.464	3359	-0.00356	0.4094	0.3846	0.2410	0.5093

Color Rendering Index

Ra			
86.3			
R1	R2	R3	R4
86	93	96	85
R5	R6	R7	R8
86	90	85	69
R9	R10	R11	R12
29	82	84	72
R13	R14	R15	
87	98	81	



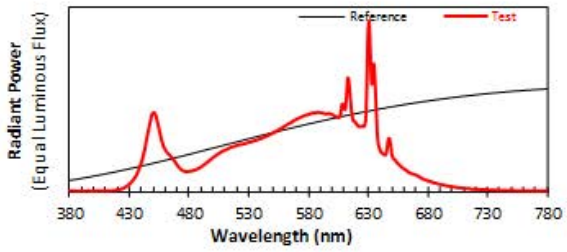
ANSI/IES TM-30-18 Color Rendition Report

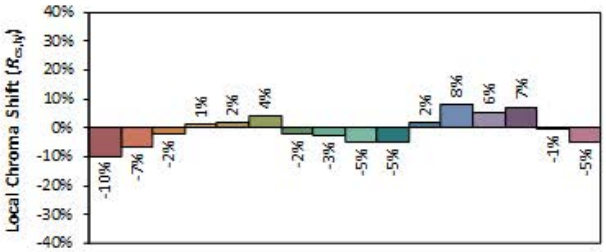
Source: User SPD

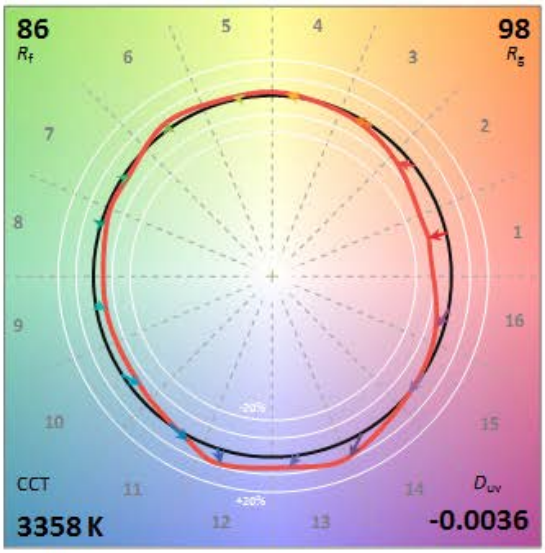
Manufacturer: P.Q.L., Inc.

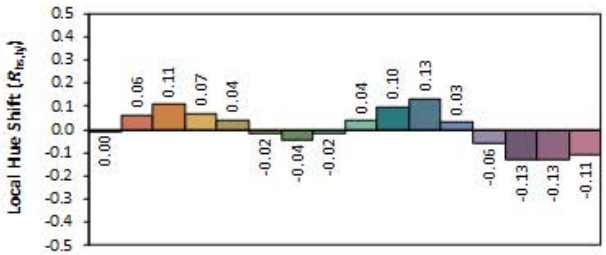
Date: 2026/3/23

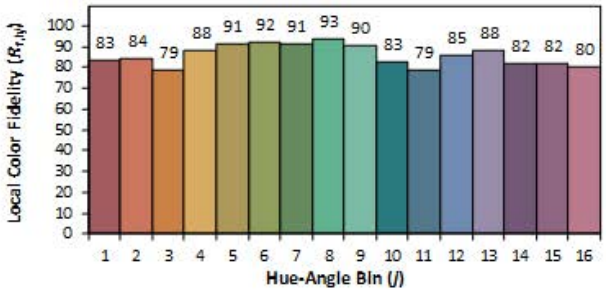
Model: LA24P405CUW-3500K

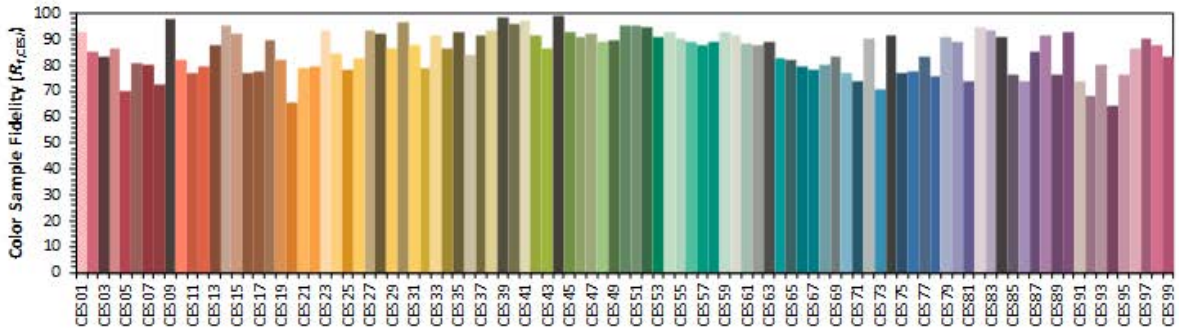












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

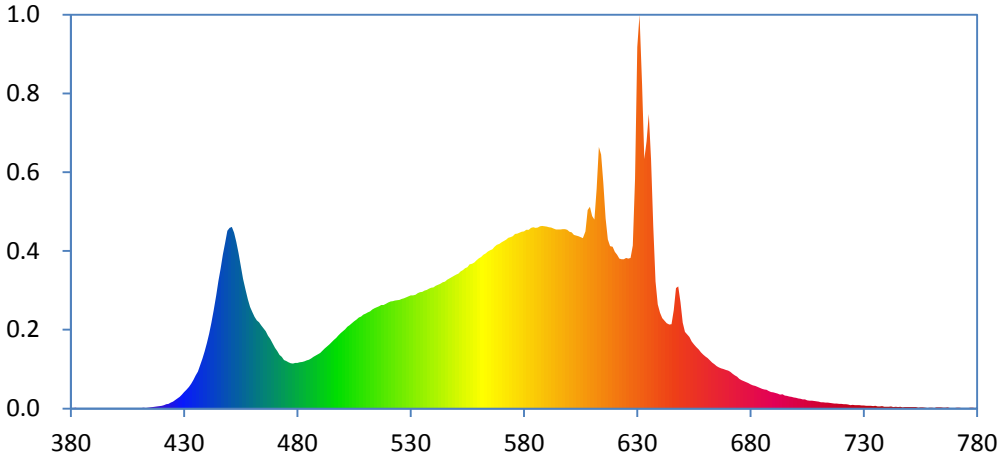
x	0.4095
y	0.3846
u'	0.2410
v'	0.5093

CIE 13.3-1995 (CRI)

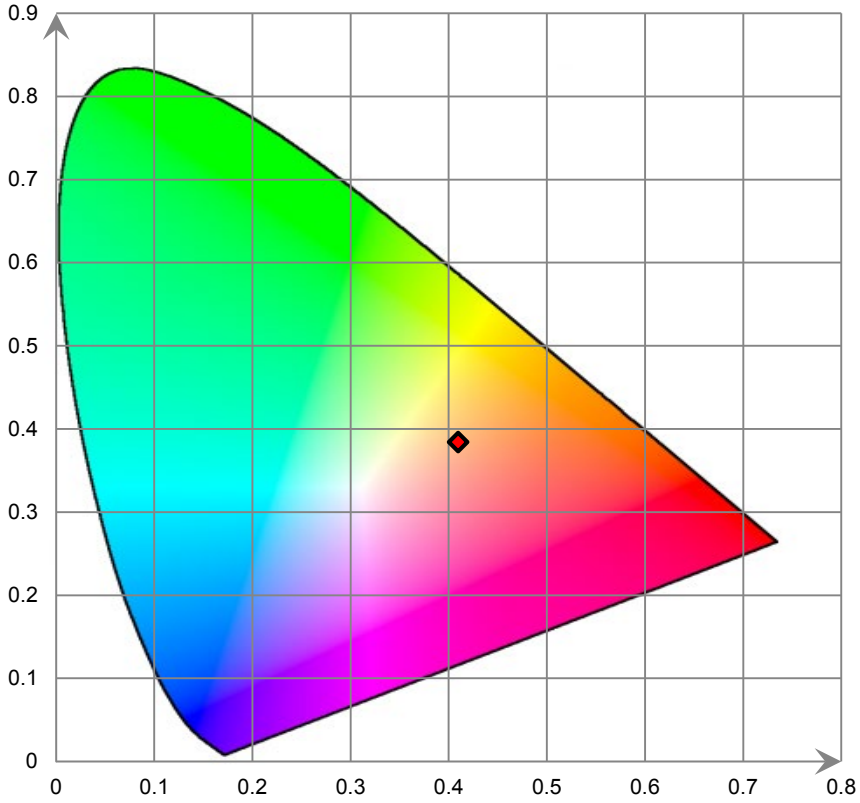
R_a	86
R_9	29

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

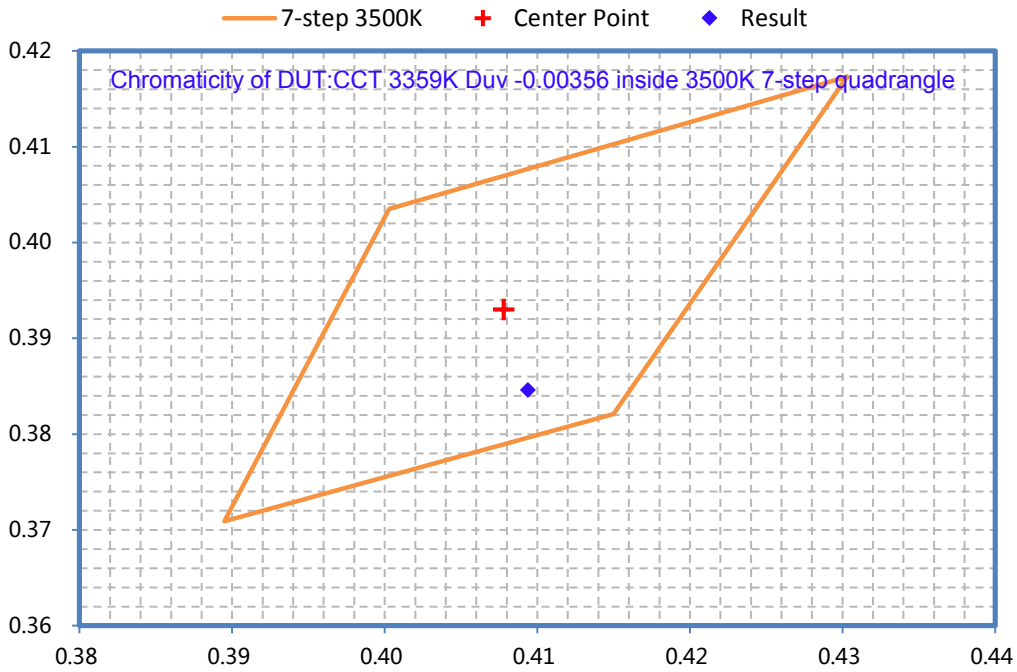
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



Test Model: LA24P405CUW
Control setting: 3500K & 40W 50% up light+50% down light

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5638.9	≥1500	≥1350	Pass
Power(W)	42.92	None.	None.	N/A
Total Efficacy(lm/W)	131.39	≥125	≥121.25	Pass
CCT(K)	3404	3220~3710	No tolerances	Pass
Duv	-0.00372	-0.0055~0.0065	No tolerances	Pass
IES R_f	85	70	69	Pass
IES R_g	99	89	88	
IES Rcs,h1	-10%	-12%~23%	-13%~24%	
R_a	86	≥80	≥79	
R_9	27	≥0	≥-1	

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	0.9961	≥0.9	⩾0.87	Pass
120	THDi	5.39%	≤20%	⩽25%	Pass
277	Power Factor	0.9762	≥0.9	⩾0.87	Pass
277	THDi	11.08%	≤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]

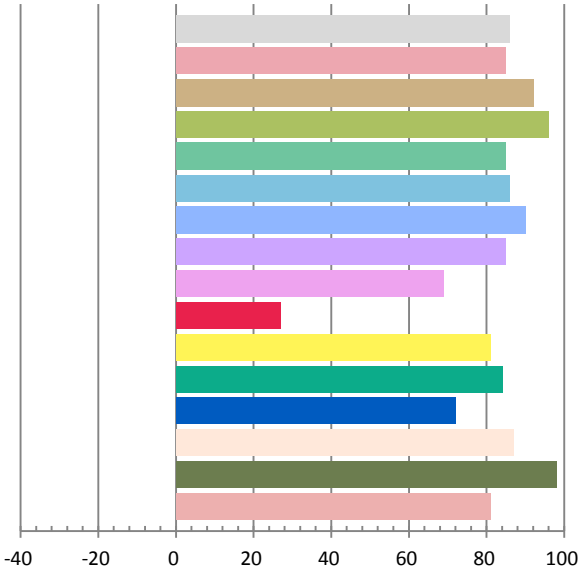
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3589	42.92	0.9961	5638.9	131.39

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
16.488	3404	-0.00372	0.4067	0.3830	0.2399	0.5082

Color Rendering Index

Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
86.0	85	92	96	85	86	90	85	69	27	81	84	72	87	98	81



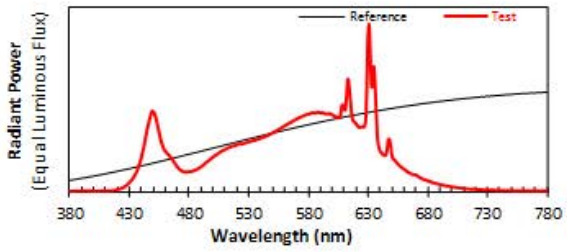
ANSI/IES TM-30-18 Color Rendition Report

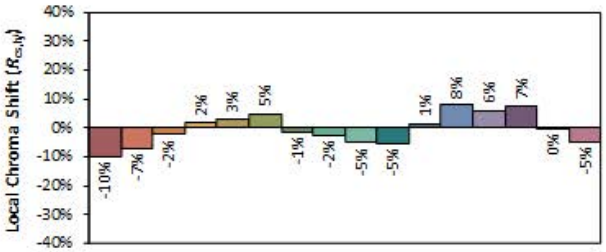
Source: User SPD

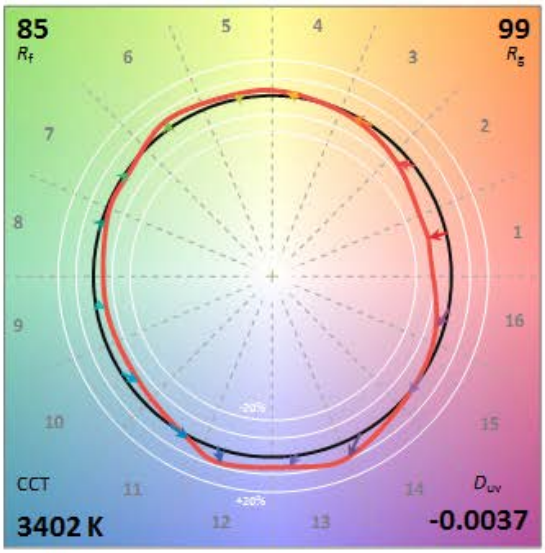
Manufacturer: P.Q.L., Inc.

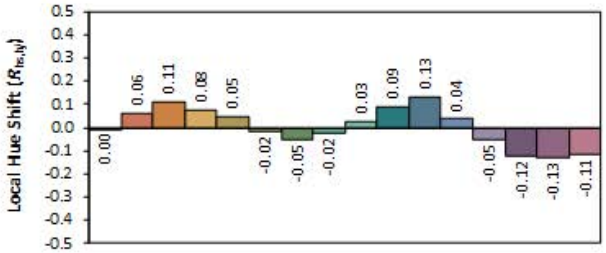
Date: 2026/3/23

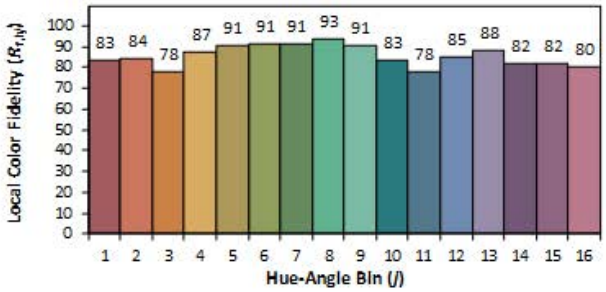
Model: LA24P405CUW-3500K

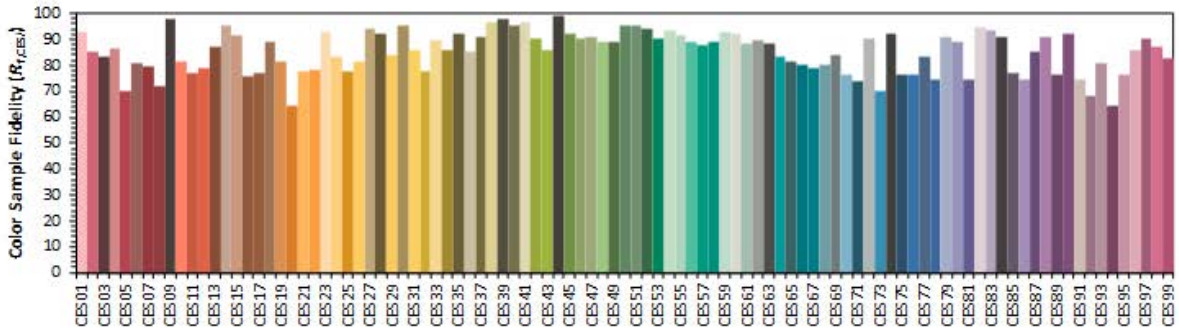












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

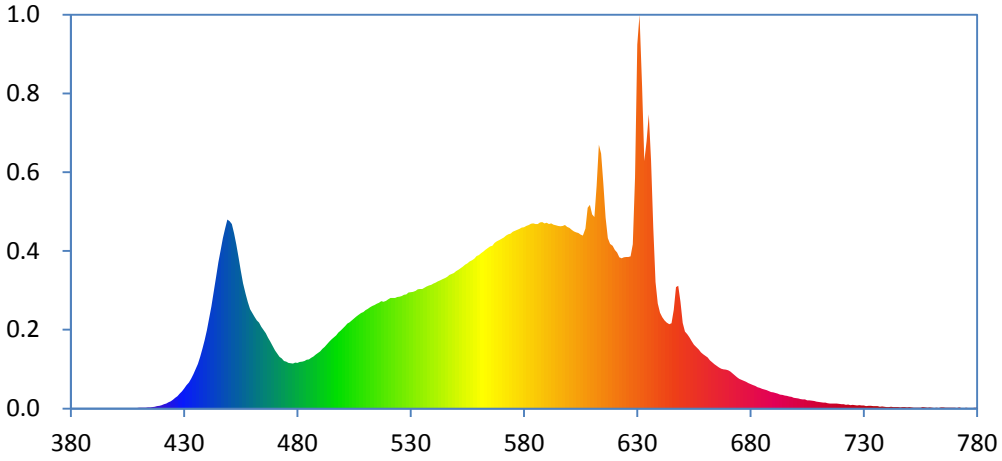
x	0.4068
y	0.3830
u'	0.2399
v'	0.5082

CIE 13.3-1995 (CRI)

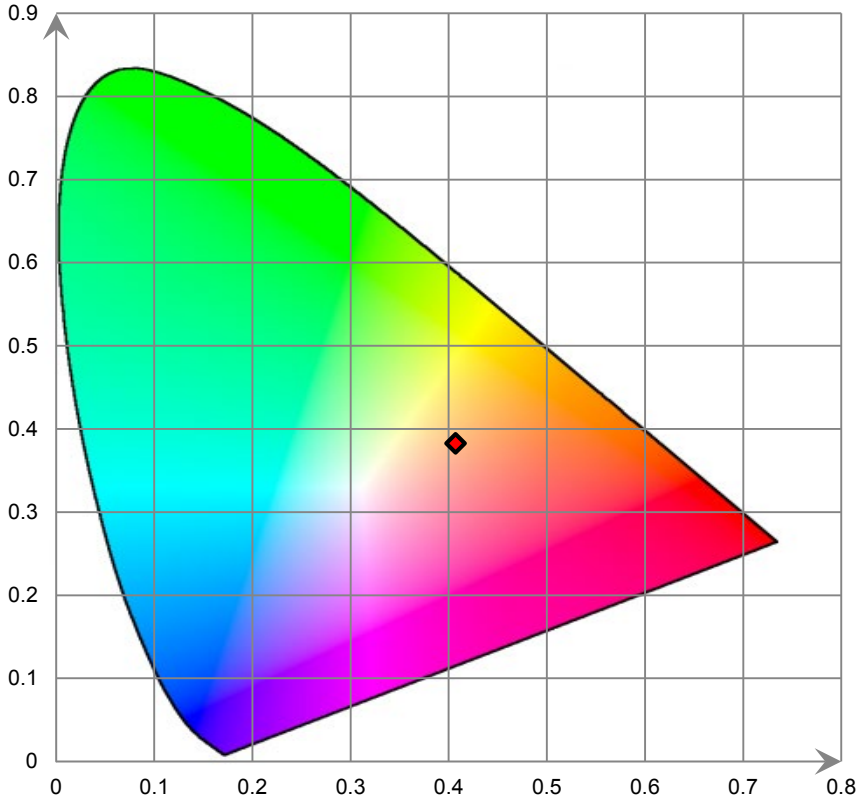
R_a	86
R_9	28

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

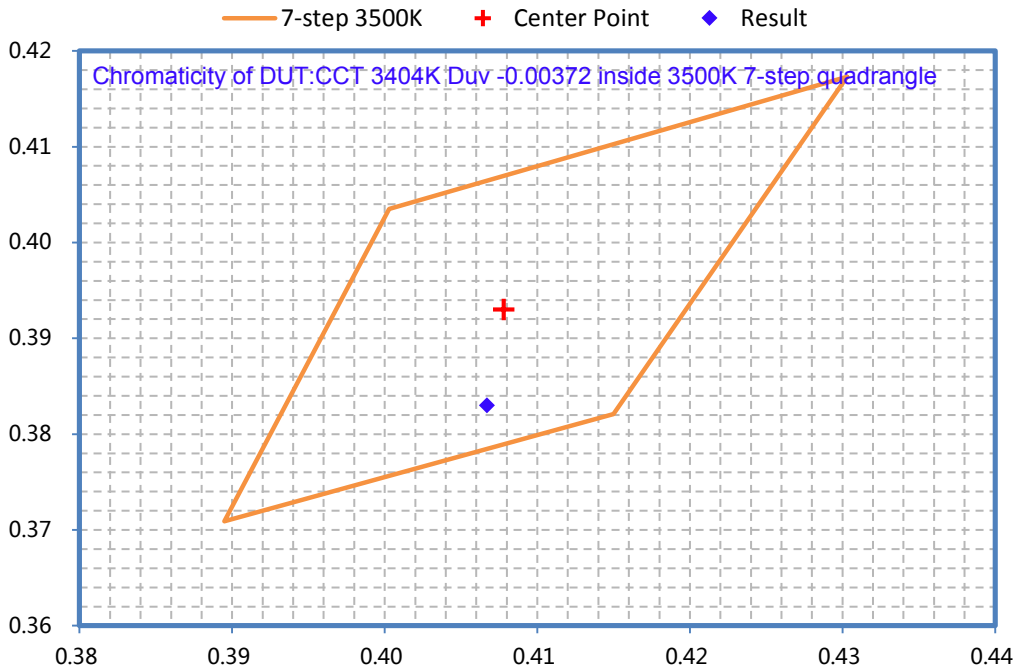
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



Test Model: LA24P405CUW
Control setting: 3500K & 40W 30% up light+70% down light

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5653	≥1500	≥1350	Pass
Power(W)	42.47	None.	None.	N/A
Total Efficacy(lm/W)	133.12	≥125	≥121.25	Pass
CCT(K)	3360	3220~3710	No tolerances	Pass
Duv	-0.00351	-0.0055~0.0065	No tolerances	Pass
IES R_f	85	70	69	Pass
IES R_g	99	89	88	
IES Rcs,h1	-10%	-12%~23%	-13%~24%	
R_a	86	≥80	≥79	
R_9	27	≥0	≥-1	

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	0.996	≥0.9	⩾0.87	Pass
120	THDi	5.46%	≤20%	⩽25%	Pass
277	Power Factor	0.9757	≥0.9	⩾0.87	Pass
277	THDi	11.12%	≤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]

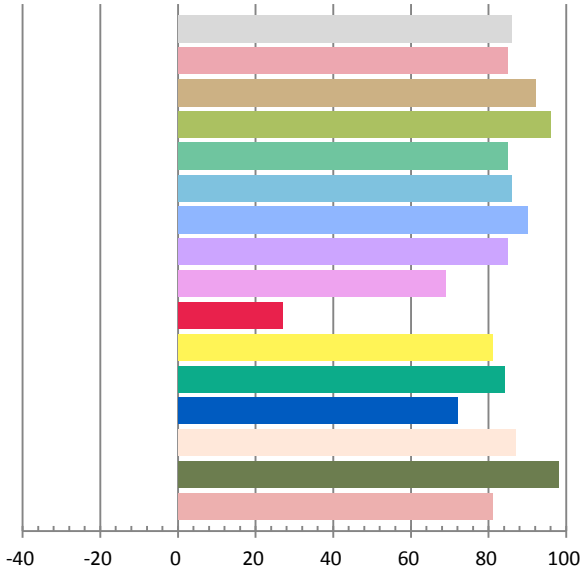
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3552	42.47	0.996	5653	133.12

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
16.499	3360	-0.00351	0.4094	0.3847	0.2409	0.5094

Color Rendering Index

Ra			
86.0			
R1	R2	R3	R4
85	92	96	85
R5	R6	R7	R8
86	90	85	69
R9	R10	R11	R12
27	81	84	72
R13	R14	R15	
87	98	81	



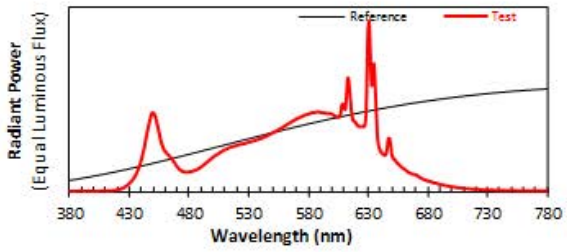
ANSI/IES TM-30-18 Color Rendition Report

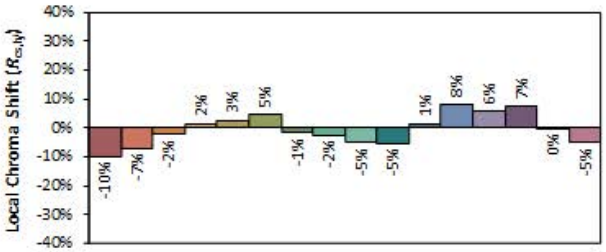
Source: User SPD

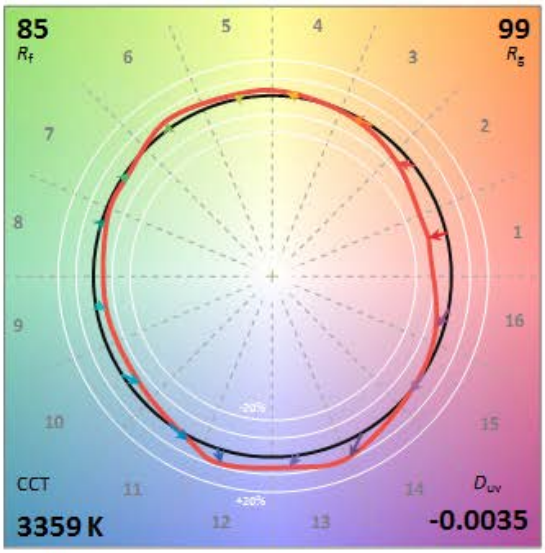
Manufacturer: P.Q.L., Inc.

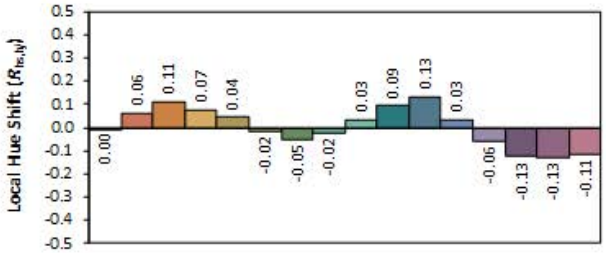
Date: 2026/3/23

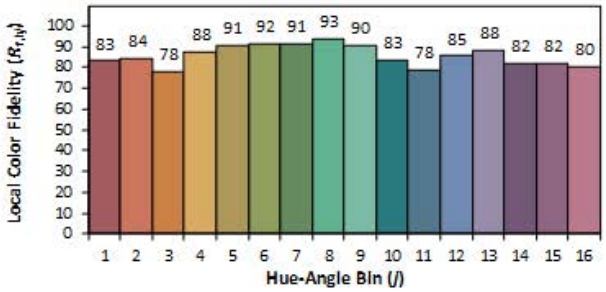
Model: LA24P405CUW-3500K

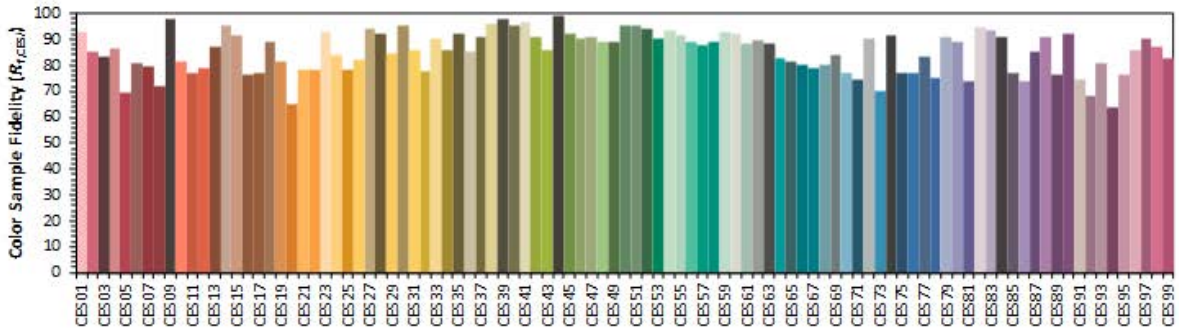












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

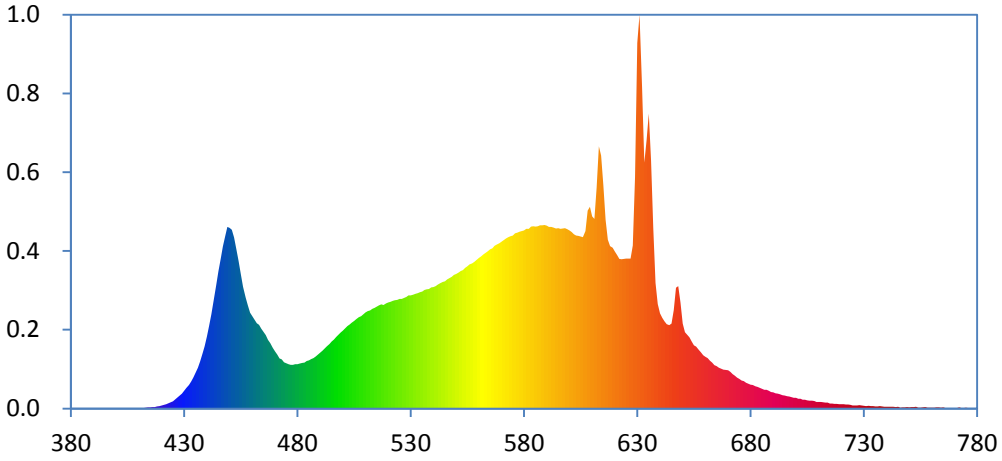
x	0.4095
y	0.3847
u'	0.2410
v'	0.5093

CIE 13.3-1995 (CRI)

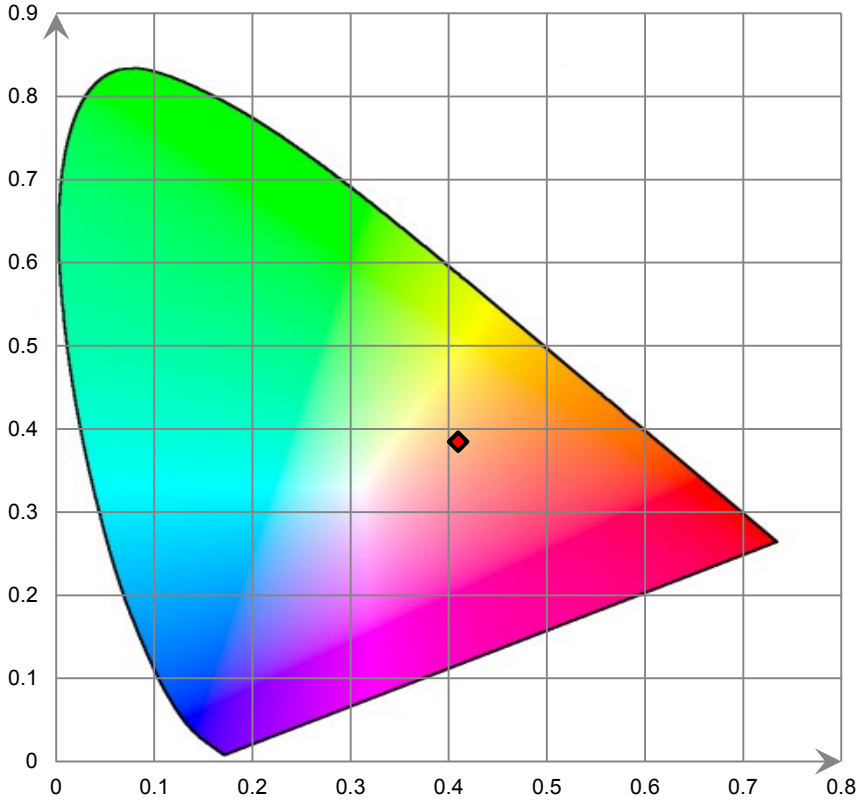
R_a	86
R_9	28

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

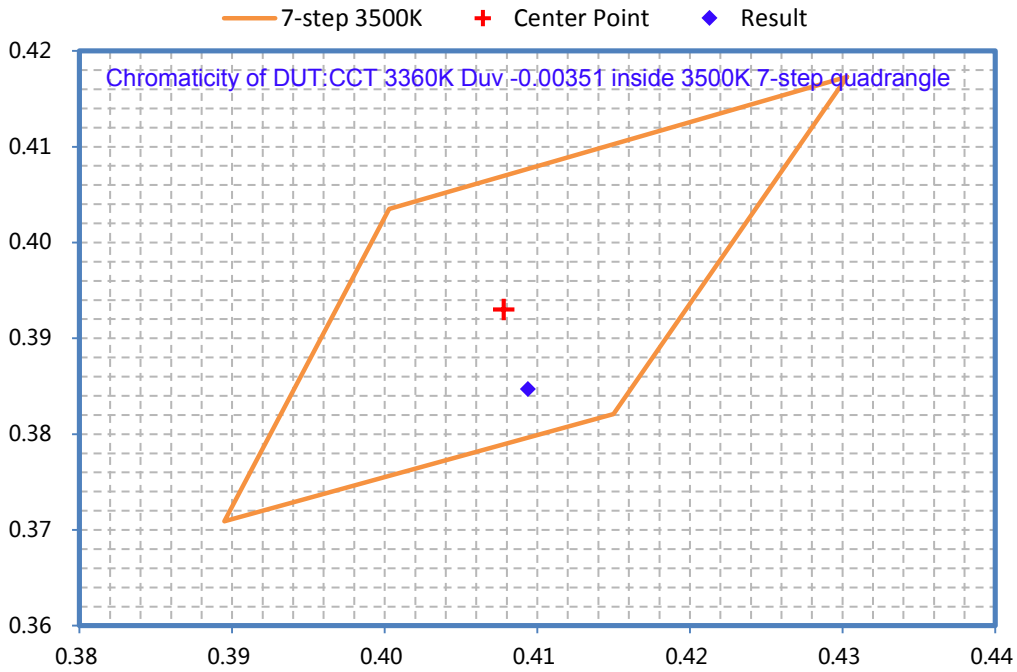
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



Test Model: LA24P405CUW
Control setting: 5000K & 40W 100% down light

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5879.5	≥1500	≥1350	Pass
Power(W)	41.48	None.	None.	N/A
Total Efficacy(lm/W)	141.75	≥125	≥121.25	Pass
CCT(K)	4779	4746~5312	No tolerances	Pass
Duv	0.00182	-0.004~0.008	No tolerances	Pass
IES R_f	84	70	69	Pass
IES R_g	96	89	88	
IES Rcs,h1	-12%	-12%~23%	-13%~24%	
R_a	83.9	≥80	≥79	
R9	15	≥0	≥-1	

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5880.26	≥1500	≥1350	Pass
Power(W)	41.48	None.	None.	N/A
Total Efficacy(lm/W)	141.76	≥125	≥121.25	Pass
Zonal Lumen Distribution(0-60°)	79.77%	0-60°≥40%	0-60°≥37%	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	0.9959	≥0.9	⩾0.87	Pass
120	THDi	5.62%	≤20%	⩽25%	Pass
277	Power Factor	0.9746	≥0.9	⩾0.87	Pass
277	THDi	11.32%	≤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]

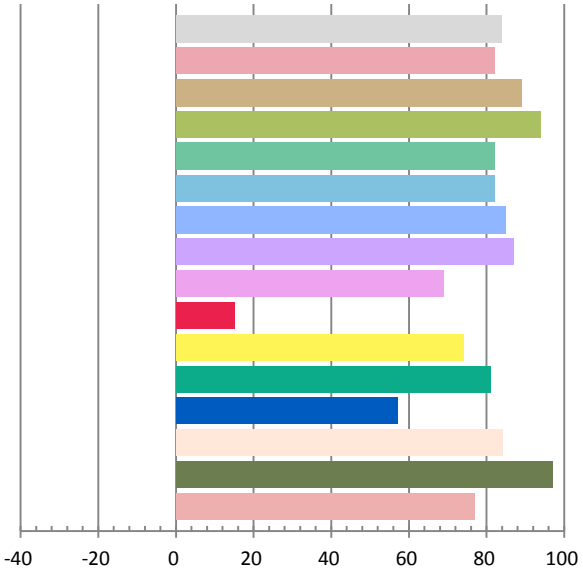
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3471	41.48	0.9959	5879.5	141.75

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
17.544	4779	0.00182	0.3522	0.3608	0.2126	0.4901

Color Rendering Index

Ra			
83.9			
R1	R2	R3	R4
82	89	94	82
R5	R6	R7	R8
82	85	87	69
R9	R10	R11	R12
15	74	81	57
R13	R14	R15	
84	97	77	



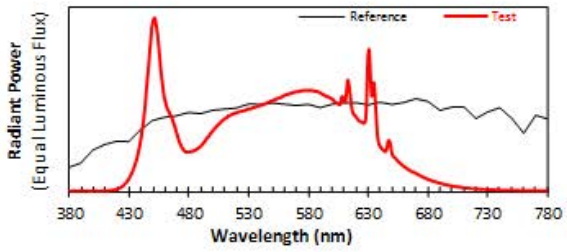
ANSI/IES TM-30-18 Color Rendition Report

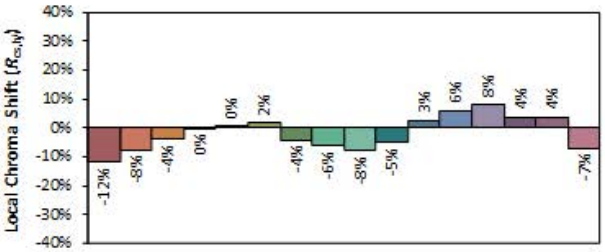
Source: User SPD

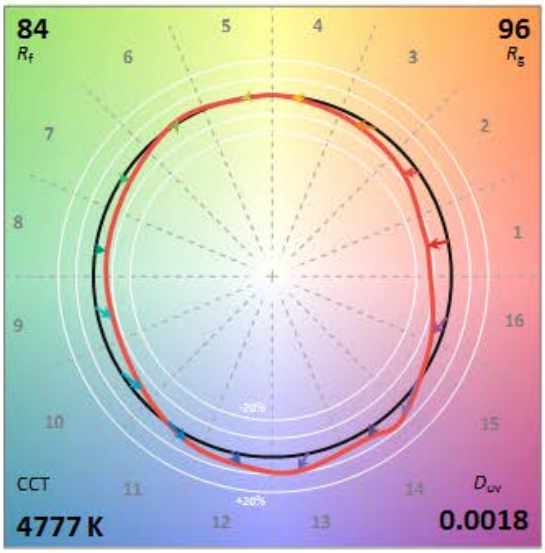
Manufacturer: P.Q.L., Inc.

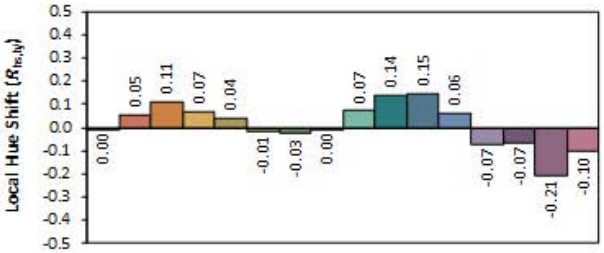
Date: 2026/3/23

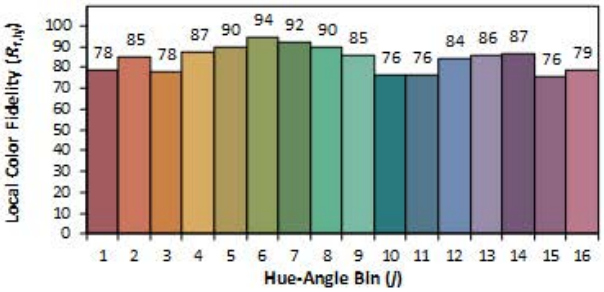
Model: LA24P405CUW-5000K

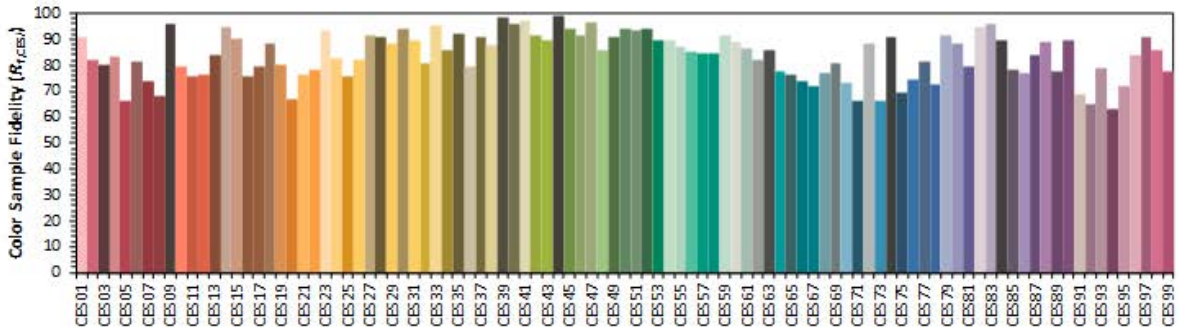












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

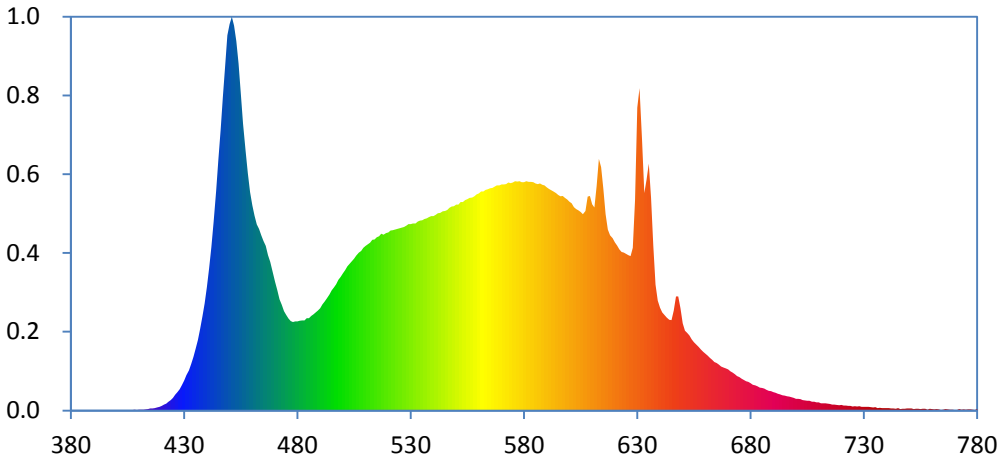
x	0.3522
y	0.3608
u'	0.2126
v'	0.4901

CIE 13.3-1995 (CRI)

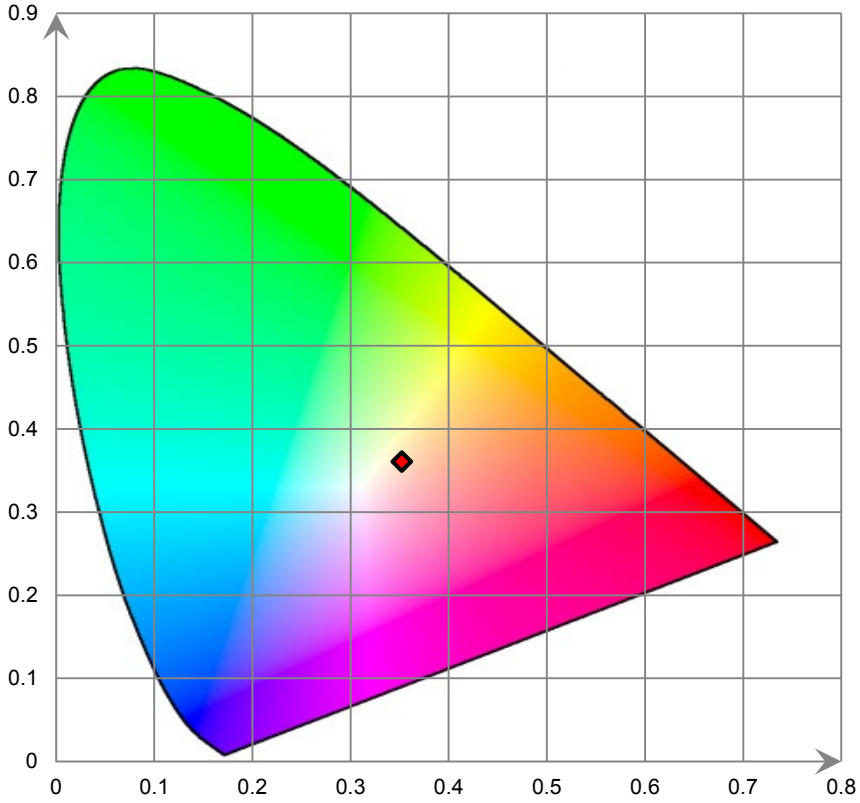
R_a	84
R_9	13

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

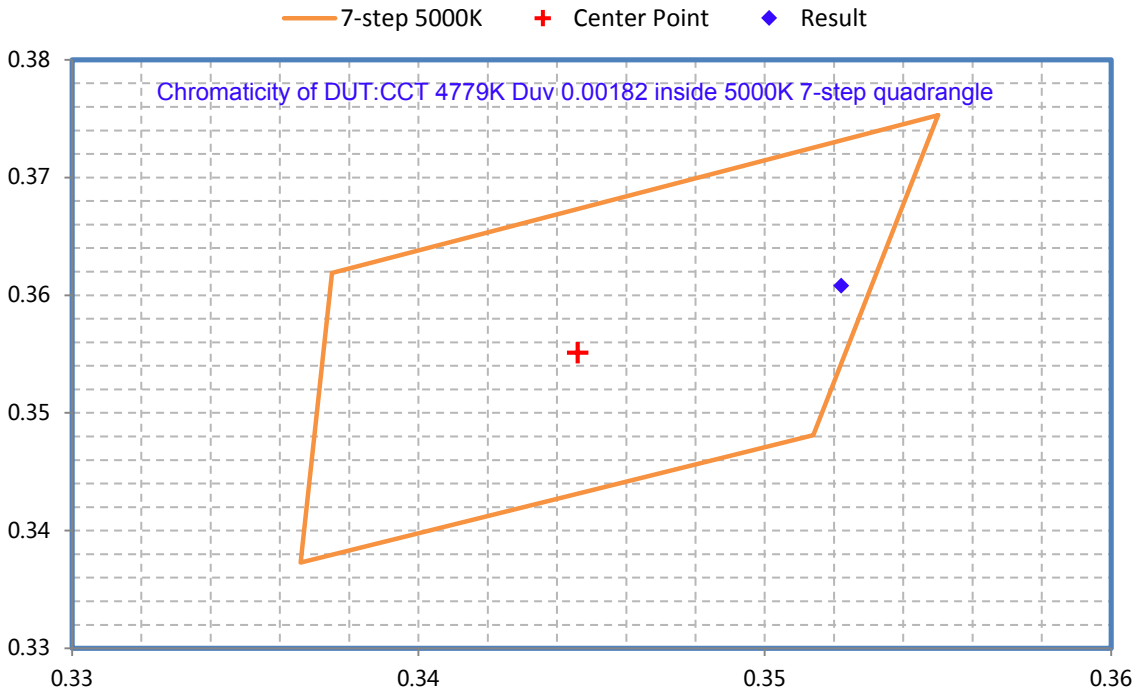
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



[Goniophotometer System]

Electrical Measurement

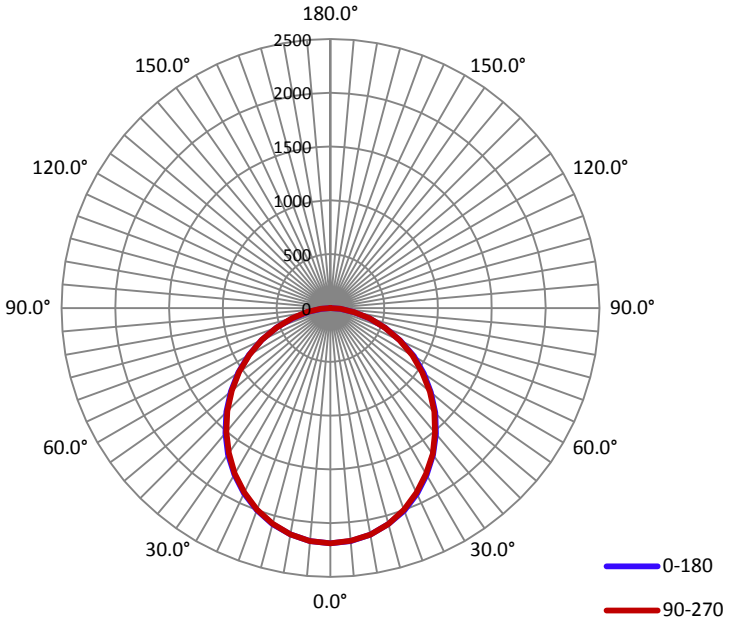
Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.347	41.48	0.996

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
5880.26	141.76	2188.1	1.22	1.21

Note: The electrical characteristics come from Integrating Sphere test result, Luminous intensity distribution derived from the goniophotometer testing of 40W 27K control setting.

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	107.6	106.7	106.8	106.9	107.0
Field Angle (10% I_{max}):	159.4	159.5	160.4	159.8	159.8

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	2185.9	2185.9	2185.9	2185.9	2185.9	2185.9	2185.9	2185.9
5.0°	2174.4	2176.6	2173.5	2172.7	2171.8	2172.7	2176.4	2172.5
10.0°	2138.7	2139.3	2136.4	2137.5	2138.4	2134.6	2142.3	2143.3
15.0°	2078.4	2085.6	2076.8	2079.6	2078.5	2080.8	2079.7	2088.4
20.0°	2004.1	2014.9	1993.5	1996.7	1996.9	1999.4	2000.1	2010.3
25.0°	1905.8	1910.1	1904.3	1897.4	1893.9	1899.8	1896.7	1913.2
30.0°	1789.9	1796.5	1781.3	1779.9	1780.8	1785.3	1785.1	1801.1
35.0°	1665.0	1668.1	1650.5	1651.8	1657.7	1655.4	1660.5	1673.1
40.0°	1527.1	1529.6	1510.7	1511.9	1512.5	1515.0	1517.3	1530.6
45.0°	1377.1	1381.5	1356.7	1358.9	1365.3	1365.5	1371.0	1383.0
50.0°	1220.1	1226.3	1202.7	1203.8	1207.6	1203.4	1213.4	1228.4
55.0°	1060.8	1069.2	1038.8	1038.2	1042.5	1045.8	1047.3	1063.2
60.0°	895.2	899.2	871.6	869.4	878.0	875.7	885.4	896.8
65.0°	718.9	721.5	701.4	702.3	707.4	709.2	712.2	720.4
70.0°	543.6	543.7	530.2	537.1	538.4	537.5	541.2	543.6
75.0°	373.8	377.4	365.6	370.1	377.4	375.0	373.9	374.9
80.0°	218.3	221.1	216.2	219.7	227.3	220.6	220.8	218.2
85.0°	88.4	90.3	91.2	93.7	96.0	93.2	93.2	90.1
90.0°	1.8	3.4	5.3	5.6	5.3	5.3	4.7	3.1
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°	2185.9	2185.9	2185.9	2185.9	2185.9	2185.9	2185.9	2185.9
5.0°	2173.6	2176.2	2175.9	2174.4	2174.5	2169.2	2169.7	2171.5
10.0°	2137.3	2142.1	2140.6	2137.6	2135.9	2134.0	2132.5	2136.4
15.0°	2078.8	2084.4	2079.4	2080.7	2075.2	2071.6	2071.4	2078.8
20.0°	1998.9	2008.7	2001.3	1996.0	1994.0	1989.7	1989.7	2004.1
25.0°	1901.3	1912.0	1898.8	1894.9	1891.3	1889.3	1891.3	1899.2
30.0°	1786.4	1794.8	1782.8	1781.0	1776.5	1772.0	1772.6	1783.7
35.0°	1660.0	1668.8	1650.2	1648.6	1646.0	1643.3	1640.3	1653.7
40.0°	1519.1	1526.5	1510.0	1507.9	1505.6	1499.1	1499.8	1514.3
45.0°	1365.8	1374.3	1360.7	1358.1	1355.4	1349.2	1352.8	1366.8
50.0°	1209.3	1220.2	1202.7	1195.4	1197.3	1190.9	1195.0	1208.3
55.0°	1047.8	1058.9	1035.0	1031.5	1035.9	1030.8	1036.6	1046.4
60.0°	877.9	884.8	867.5	865.2	869.8	861.6	866.7	876.8
65.0°	704.5	710.9	695.6	692.7	702.4	692.0	696.0	704.4
70.0°	528.0	534.2	523.7	524.9	532.1	520.6	524.6	531.3
75.0°	356.8	363.1	357.7	360.1	370.1	357.2	358.0	360.2
80.0°	202.4	206.2	205.7	210.3	220.9	207.6	209.8	207.5
85.0°	77.7	81.0	80.1	83.2	88.8	85.8	82.9	81.7
90.0°	0.8	2.3	2.5	2.6	1.9	2.5	2.5	2.4
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: LA24P405CUW
Control setting: 5000K & 40W 50% up light+50% down light

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5879.6	≥1500	≥1350	Pass
Power(W)	42.71	None.	None.	N/A
Total Efficacy(lm/W)	137.65	≥125	≥121.25	Pass
CCT(K)	4857	4746~5312	No tolerances	Pass
Duv	0.00137	-0.004~0.008	No tolerances	Pass
IES R_f	84	70	69	Pass
IES R_g	96	89	88	
IES Rcs,h1	-12%	-12%~23%	-13%~24%	
R_a	83.7	≥80	≥79	
R_9	14	≥0	≥-1	

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5881.76	≥1500	≥1350	Pass
Power(W)	42.71	None.	None.	N/A
Total Efficacy(lm/W)	137.71	≥125	≥121.25	Pass
Zonal Lumen Distribution(0-60°)	40.40%	0-60°≥40%	0-60°≥37%	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	0.9961	≥0.9	⩾0.87	Pass
120	THDi	5.47%	≤20%	⩽25%	Pass
277	Power Factor	0.9759	≥0.9	⩾0.87	Pass
277	THDi	11.06%	≤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]

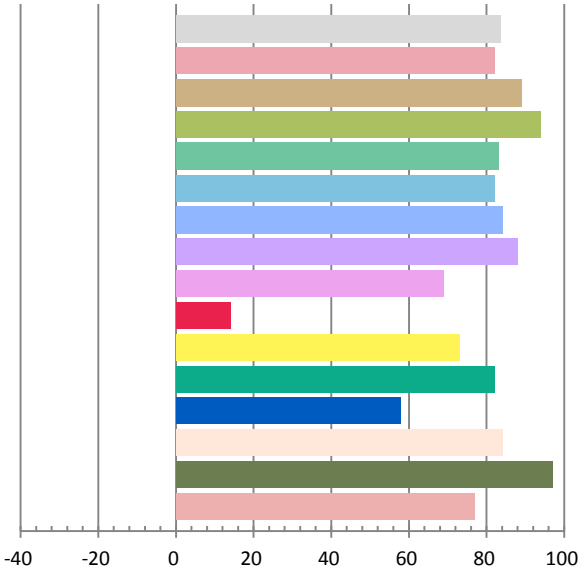
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3574	42.71	0.9961	5879.6	137.65

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
17.607	4857	0.00137	0.3496	0.3580	0.2120	0.4884

Color Rendering Index

Ra			
83.7			
R1	R2	R3	R4
82	89	94	83
R5	R6	R7	R8
82	84	88	69
R9	R10	R11	R12
14	73	82	58
R13	R14	R15	
84	97	77	



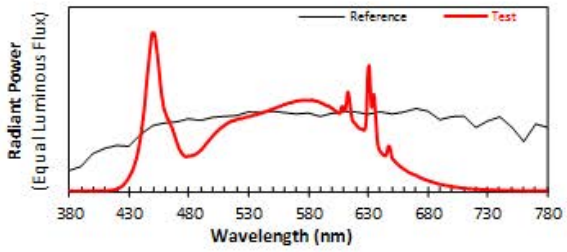
ANSI/IES TM-30-18 Color Rendition Report

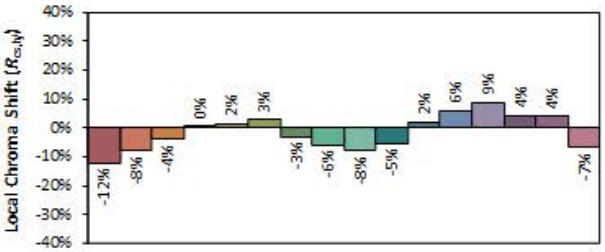
Source: User SPD

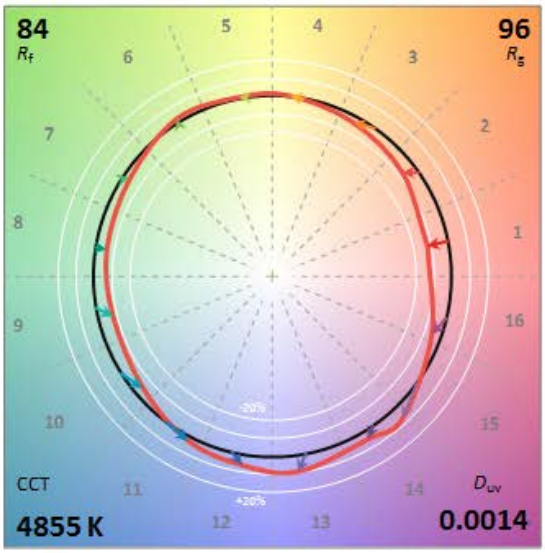
Manufacturer: P.Q.L., Inc.

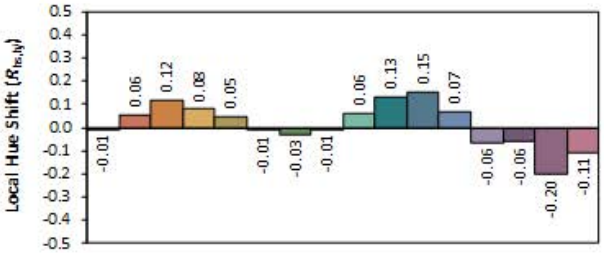
Date: 2026/3/23

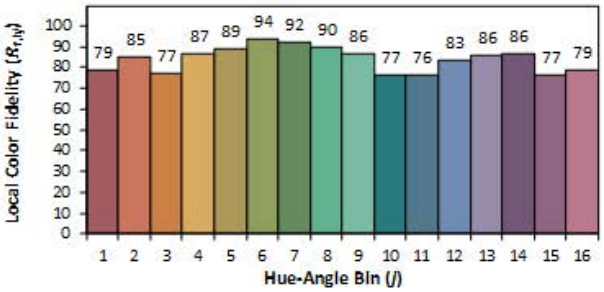
Model: LA24P405CUW-5000K

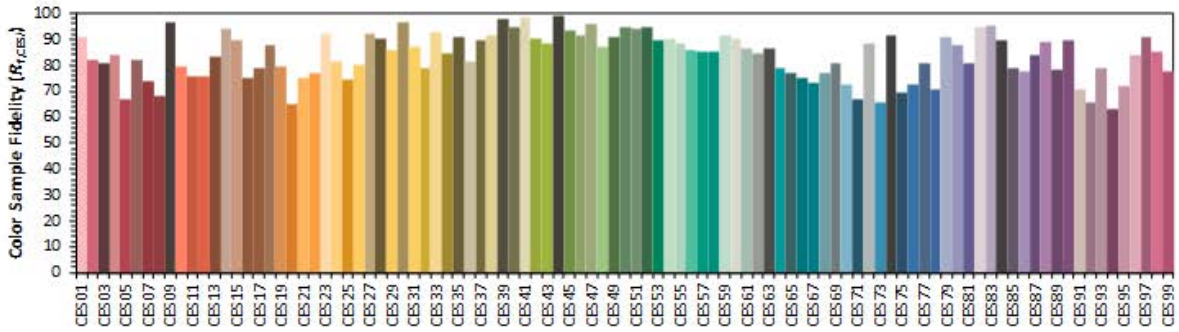












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

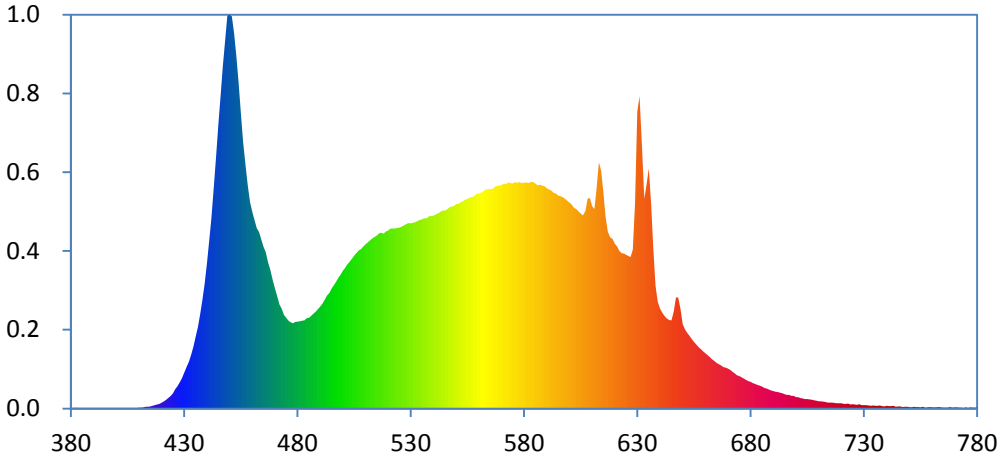
x	0.3496
y	0.3579
u'	0.2120
v'	0.4884

CIE 13.3-1995 (CRI)

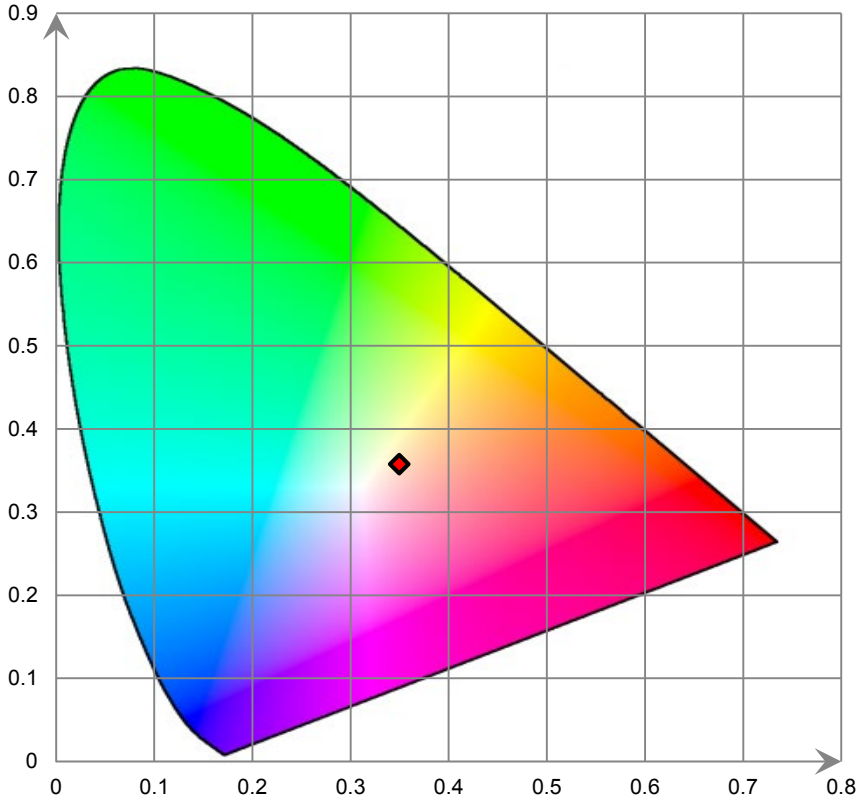
R_a	84
R_9	12

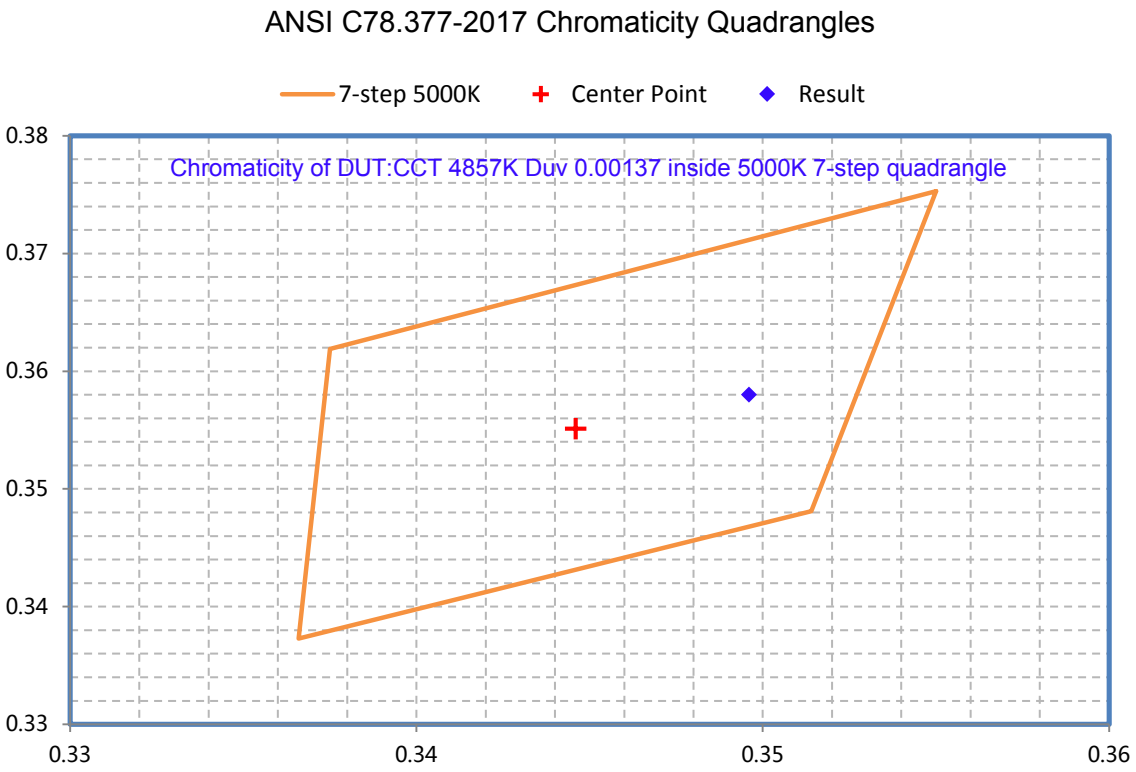
Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram




ANSI C78.377-2017 Chromaticity Quadrangles
7-step 5000K
Center Point
Result
Chromaticity of DUT:CCT 4857K Duv 0.00137 inside 5000K 7-step quadrangle
0.38
0.37
0.36
0.35
0.34
0.33
0.33
0.34
0.35
0.36

[Goniophotometer System]

Electrical Measurement

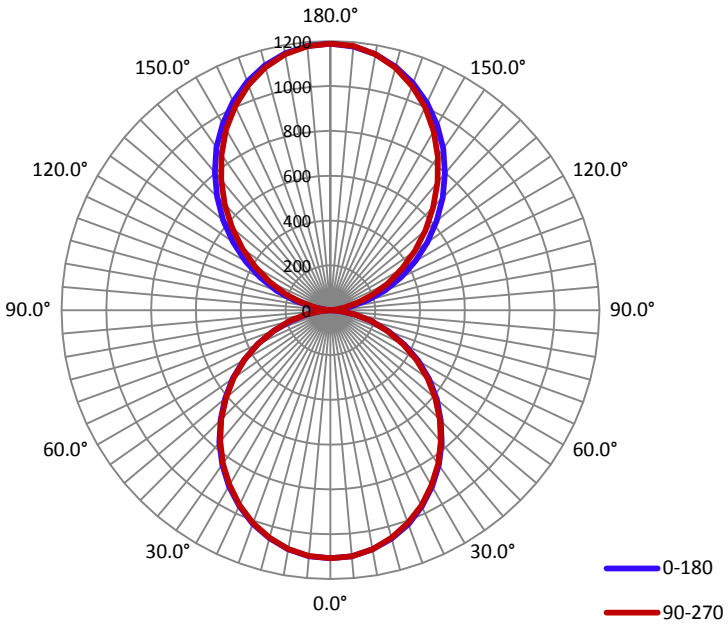
Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.357	42.71	0.996

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
5881.76	137.71	1190.3	1.22	1.22

Note: The electrical characteristics come from Integrating Sphere test result, Luminous intensity distribution derived from the goniophotometer testing of 40W 27K control setting.

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	180.0	180.7	263.4	181.7	201.5
Field Angle (10% I_{max}):	203.7	182.5	183.6	182.8	188.2

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	1107.2	1107.2	1107.2	1107.2	1107.2	1107.2	1107.2	1107.2
5.0°	1102.0	1100.9	1101.0	1101.4	1102.0	1101.8	1101.5	1101.9
10.0°	1083.5	1084.3	1082.0	1083.2	1082.6	1083.7	1082.8	1085.3
15.0°	1055.5	1054.7	1051.3	1052.3	1051.8	1053.8	1051.9	1057.5
20.0°	1016.5	1021.1	1009.8	1011.3	1011.3	1013.1	1011.4	1017.8
25.0°	965.4	966.7	965.5	960.4	961.2	962.4	961.2	968.8
30.0°	908.9	911.1	902.9	902.7	902.1	904.9	904.6	912.9
35.0°	844.1	844.6	836.6	836.9	837.6	839.5	839.6	847.1
40.0°	772.0	773.4	764.2	766.2	765.9	768.4	768.9	776.3
45.0°	697.0	699.6	688.1	688.2	689.4	691.9	691.3	699.7
50.0°	619.9	621.4	608.7	609.6	610.4	611.4	614.7	622.1
55.0°	538.3	540.7	525.9	526.5	529.8	529.3	531.7	538.4
60.0°	452.5	454.2	441.2	440.6	443.8	444.2	445.9	452.8
65.0°	365.6	366.6	354.7	354.9	357.1	358.5	359.0	365.0
70.0°	275.8	277.5	268.9	270.3	270.9	272.3	271.8	275.4
75.0°	189.3	189.8	185.6	186.9	190.0	189.7	188.3	189.4
80.0°	110.1	111.6	110.4	112.3	114.9	111.9	111.2	110.6
85.0°	44.1	45.1	45.6	46.0	48.5	46.6	45.4	44.7
90.0°	0.0	1.7	2.7	2.9	2.4	2.3	2.1	1.3
95.0°	30.3	27.7	23.8	18.0	16.7	17.3	21.2	25.9
100.0°	94.3	87.4	71.1	63.8	62.8	63.6	68.9	85.8
105.0°	173.9	164.3	141.9	126.3	124.4	124.6	139.2	163.4
110.0°	259.5	248.7	223.6	201.4	198.5	200.7	221.3	248.9
115.0°	350.0	337.7	312.1	286.4	281.4	287.1	310.8	339.1
120.0°	438.0	428.8	399.3	372.8	369.5	373.7	400.0	432.2
125.0°	527.6	520.6	490.9	463.4	460.0	466.6	493.7	525.9
130.0°	619.3	610.9	581.4	555.9	553.1	559.2	588.3	618.7
135.0°	707.9	702.1	673.6	650.3	648.3	653.6	682.5	710.4
140.0°	795.3	791.7	765.0	744.0	744.2	748.5	773.0	801.3
145.0°	877.7	875.7	851.9	838.7	835.0	842.9	862.9	885.0
150.0°	953.3	951.0	935.2	924.4	922.0	928.9	943.8	962.7
155.0°	1019.8	1019.8	1007.4	999.3	1000.0	1003.9	1015.5	1030.8
160.0°	1078.0	1078.9	1071.0	1065.4	1065.2	1069.5	1078.2	1087.9
165.0°	1124.7	1125.6	1121.3	1117.6	1120.2	1121.5	1127.6	1132.8
170.0°	1159.9	1161.7	1159.5	1157.3	1158.9	1160.0	1163.5	1166.5
175.0°	1180.5	1181.9	1182.2	1182.2	1183.0	1183.3	1183.8	1184.7
180.0°	1189.5	1189.5	1189.5	1189.5	1189.5	1189.5	1189.5	1189.5

Luminous Intensity (cd) Distribution Data (cont.)

C / γ	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	1107.2	1107.2	1107.2	1107.2	1107.2	1107.2	1107.2	1107.2
5.0°	1101.8	1101.1	1100.6	1101.5	1101.0	1101.0	1099.8	1099.7
10.0°	1083.8	1084.1	1083.7	1082.8	1082.3	1082.0	1080.4	1081.9
15.0°	1052.9	1055.4	1054.7	1052.8	1051.3	1050.7	1049.8	1052.8
20.0°	1013.6	1015.5	1013.8	1011.4	1009.8	1009.4	1008.4	1015.6
25.0°	962.3	966.7	961.6	959.2	960.3	957.7	958.5	961.7
30.0°	906.8	909.7	903.0	902.9	900.9	899.6	898.5	905.8
35.0°	840.9	844.6	836.1	835.8	835.8	833.8	830.9	838.4
40.0°	770.0	772.3	765.0	764.7	764.1	762.0	759.8	766.9
45.0°	692.3	696.1	689.1	688.1	687.8	684.6	685.9	692.9
50.0°	613.1	617.8	609.0	605.9	608.5	605.1	606.6	614.3
55.0°	531.2	535.3	524.6	523.5	526.1	523.7	524.7	530.3
60.0°	445.3	449.5	439.4	438.8	441.5	439.4	439.0	444.5
65.0°	356.9	361.1	353.0	351.4	356.3	353.4	352.8	357.0
70.0°	267.1	270.5	265.5	266.4	270.3	264.6	266.1	269.6
75.0°	180.8	183.1	181.2	183.1	188.6	182.0	183.1	184.4
80.0°	102.3	105.3	104.7	107.1	113.1	107.1	106.7	105.4
85.0°	39.0	40.7	40.1	42.9	45.8	43.8	42.4	41.2
90.0°	0.0	0.0	1.1	1.2	1.4	1.2	0.9	1.2
95.0°	23.7	25.2	24.7	22.0	21.2	21.9	25.3	26.8
100.0°	86.3	86.7	74.6	68.4	70.4	68.6	73.9	85.5
105.0°	167.4	164.5	148.5	134.8	136.1	133.1	144.4	160.4
110.0°	255.2	250.1	232.5	214.0	213.7	211.2	226.7	244.4
115.0°	346.0	342.9	322.3	299.4	298.7	295.5	314.8	333.2
120.0°	437.7	435.2	412.8	390.5	388.0	384.2	403.4	422.8
125.0°	530.0	528.3	505.0	481.7	478.9	473.3	493.3	512.8
130.0°	624.5	620.6	597.0	576.6	573.1	566.5	584.6	603.8
135.0°	715.9	712.6	688.4	670.0	666.2	659.1	675.9	693.5
140.0°	803.0	804.1	780.8	763.9	758.2	750.7	767.4	783.6
145.0°	886.7	888.0	866.4	852.0	846.8	840.2	853.0	866.7
150.0°	960.2	964.5	945.4	934.8	931.5	925.5	932.8	943.7
155.0°	1027.3	1030.8	1019.6	1008.4	1004.5	998.5	1006.5	1014.1
160.0°	1084.7	1088.3	1080.2	1072.5	1070.0	1066.1	1069.4	1073.4
165.0°	1130.2	1132.4	1128.0	1123.9	1121.4	1118.4	1119.9	1122.3
170.0°	1163.6	1164.7	1163.6	1161.1	1159.7	1157.3	1158.7	1158.2
175.0°	1183.4	1184.3	1184.6	1183.8	1182.8	1181.5	1182.2	1179.9
180.0°	1189.5	1189.5	1189.5	1189.5	1189.5	1189.5	1189.5	1189.5

Test Model: LA24P405CUW
Control setting: 5000K & 40W 30% up light+70% down light

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5902.9	≥1500	≥1350	Pass
Power(W)	42.28	None.	None.	N/A
Total Efficacy(lm/W)	139.62	≥125	≥121.25	Pass
CCT(K)	4821	4746~5312	No tolerances	Pass
Duv	0.00167	-0.004~0.008	No tolerances	Pass
IES R_f	84	70	69	Pass
IES R_g	96	89	88	
IES Rcs,h1	-12%	-12%~23%	-13%~24%	
R_a	83.7	≥80	≥79	
R9	14	≥0	≥-1	

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

Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	5905.26	≥1500	≥1350	Pass
Power(W)	42.28	None.	None.	N/A
Total Efficacy(lm/W)	139.67	≥125	≥121.25	Pass
Zonal Lumen Distribution(0-60°)	56.83%	0-60°≥40%	0-60°≥37%	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	0.9961	≥0.9	⩾0.87	Pass
120	THDi	5.50%	≤20%	⩽25%	Pass
277	Power Factor	0.9755	≥0.9	⩾0.87	Pass
277	THDi	11.09%	≤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]

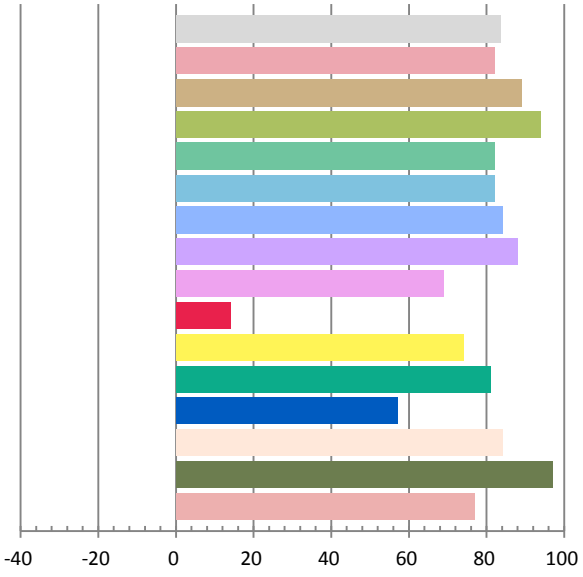
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3538	42.28	0.9961	5902.9	139.62

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
17.640	4821	0.00167	0.3508	0.3595	0.2122	0.4893

Color Rendering Index

Ra			
83.7			
R1	R2	R3	R4
82	89	94	82
R5	R6	R7	R8
82	84	88	69
R9	R10	R11	R12
14	74	81	57
R13	R14	R15	
84	97	77	



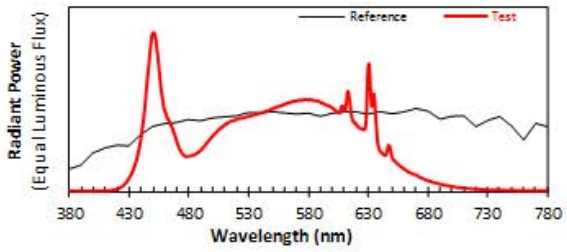
ANSI/IES TM-30-18 Color Rendition Report

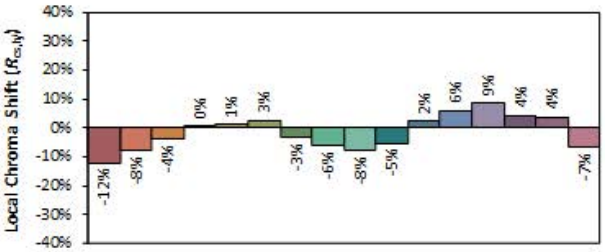
Source: User SPD

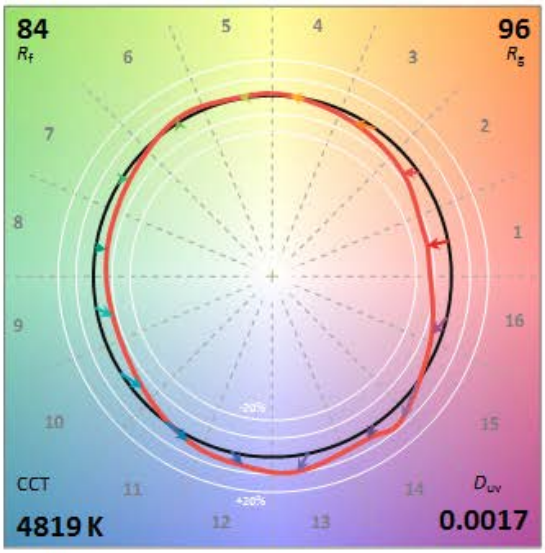
Manufacturer: P.Q.L., Inc.

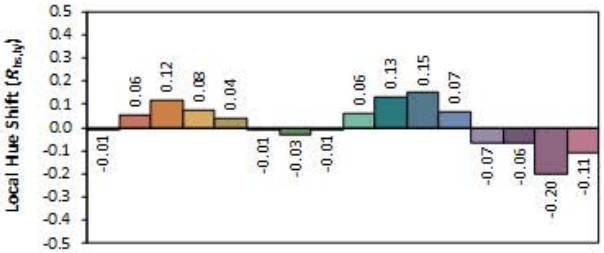
Date: 2026/3/23

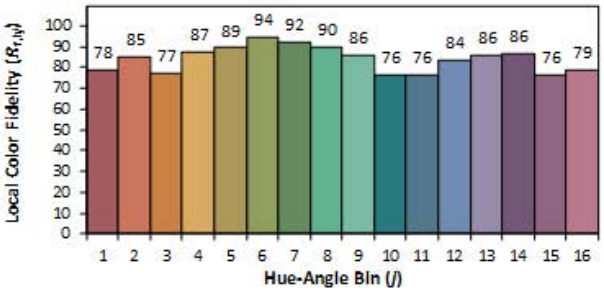
Model: LA24P405CUW-5000K

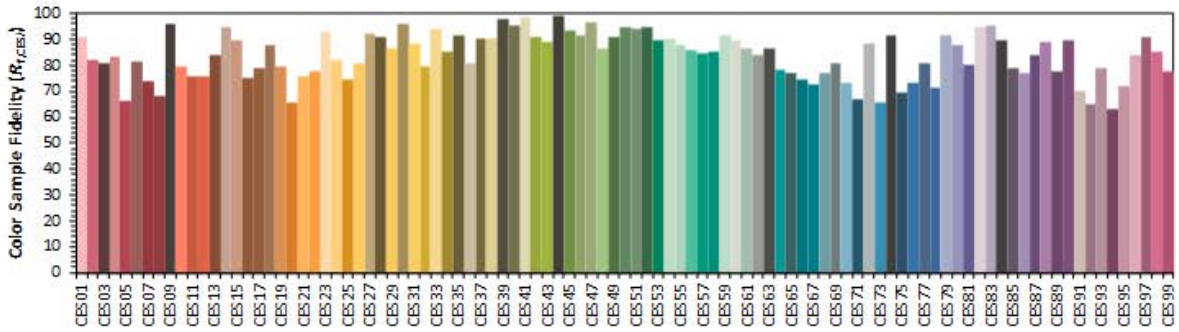












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

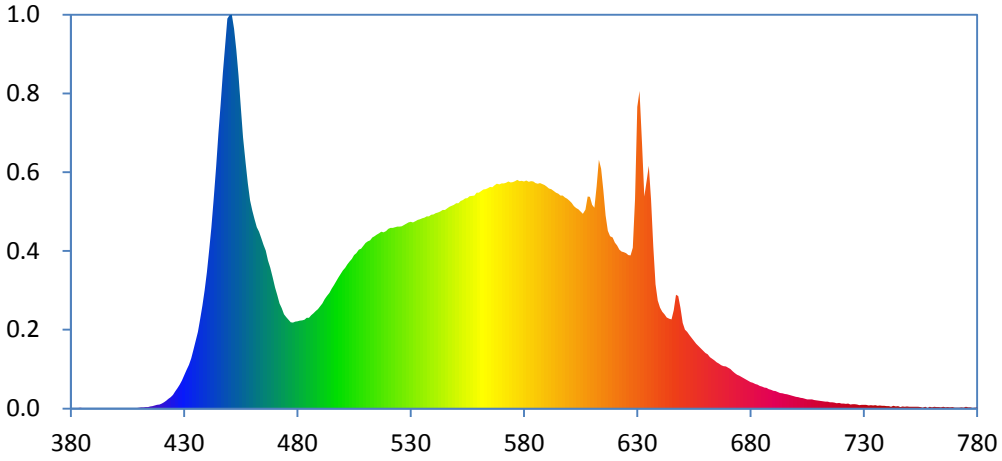
x	0.3508
y	0.3595
u'	0.2122
v'	0.4893

CIE 13.3-1995 (CRI)

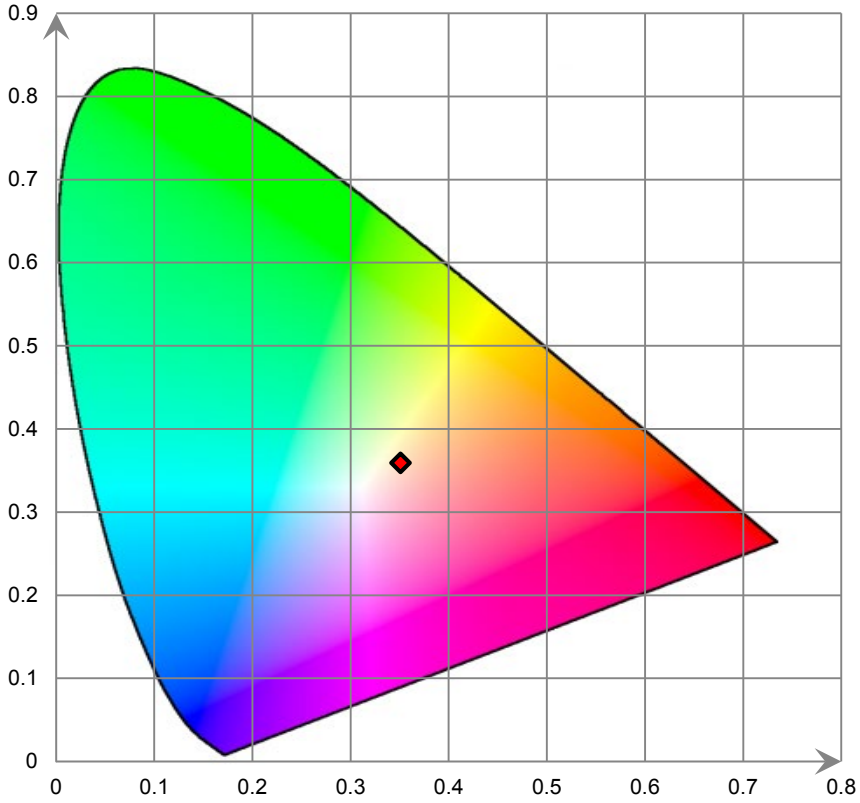
R_a	84
R_9	12

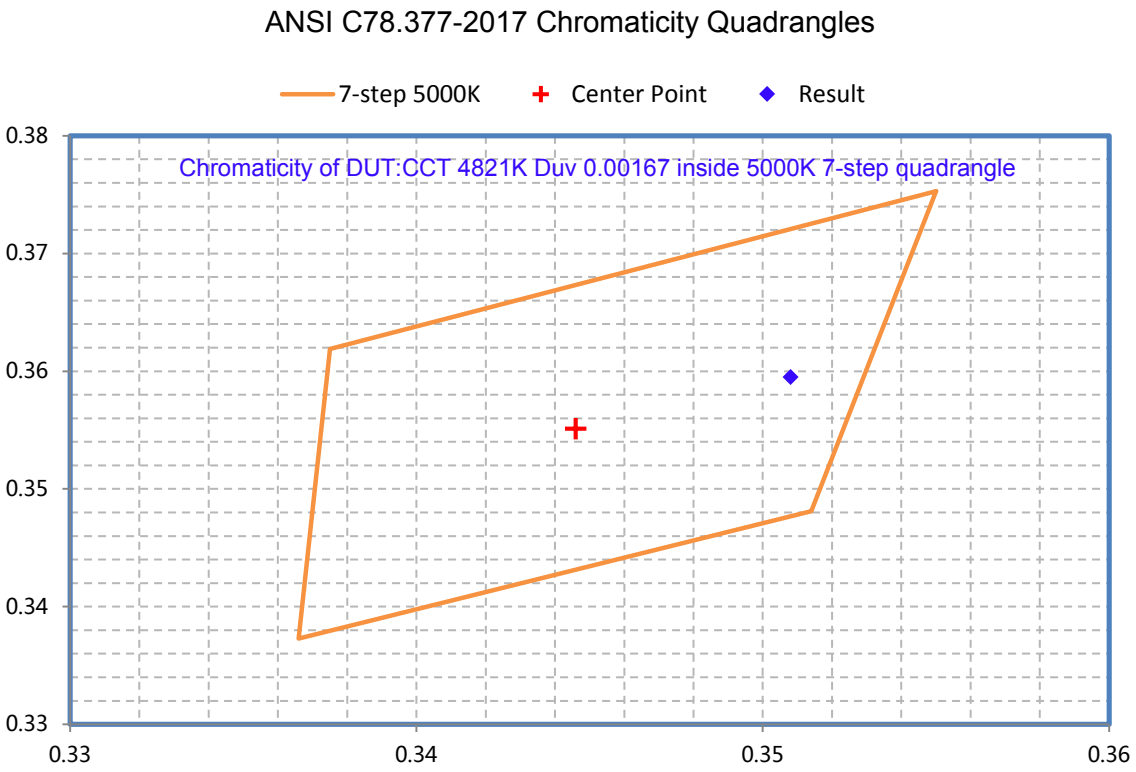
Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram




ANSI C78.377-2017 Chromaticity Quadrangles
7-step 5000K
Center Point
Result
Chromaticity of DUT:CCT 4821K Duv 0.00167 inside 5000K 7-step quadrangle
0.38
0.37
0.36
0.35
0.34
0.33
0.33
0.34
0.35
0.36

[Goniophotometer System]

Electrical Measurement

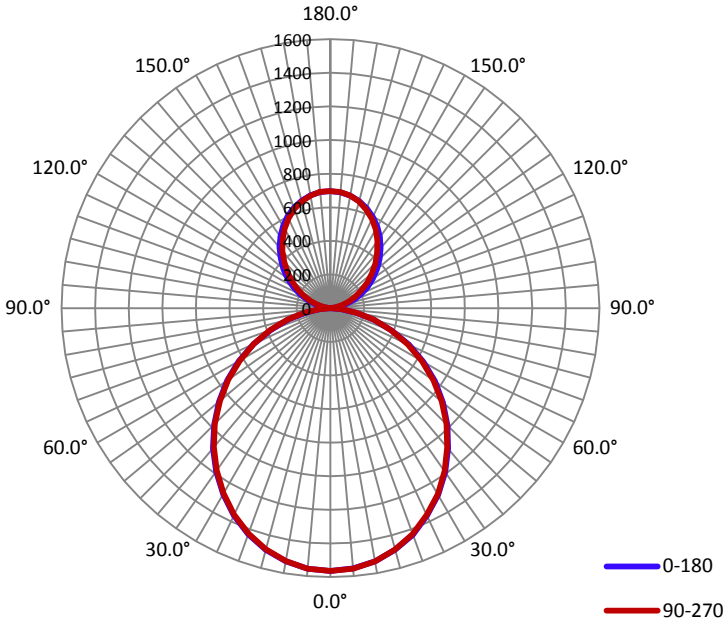
Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.354	42.28	0.996

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
5905.26	139.67	1564.2	1.22	1.21

Note: The electrical characteristics come from Integrating Sphere test result, Luminous intensity distribution derived from the goniophotometer testing of 40W 27K control setting.

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	107.6	106.7	106.9	107.0	107.1
Field Angle (10% I_{max}):	221.2	192.1	227.4	225.0	216.4

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	1563.8	1563.8	1563.8	1563.8	1563.8	1563.8	1563.8	1563.8
5.0°	1554.5	1554.6	1554.6	1554.9	1555.1	1555.3	1556.0	1558.3
10.0°	1529.8	1530.0	1528.3	1529.0	1528.8	1529.1	1529.8	1534.1
15.0°	1488.0	1489.0	1486.0	1487.6	1486.4	1487.4	1487.2	1493.8
20.0°	1434.7	1441.0	1427.3	1428.9	1429.6	1430.8	1429.5	1438.6
25.0°	1361.5	1367.2	1364.3	1357.5	1357.0	1361.0	1359.3	1369.6
30.0°	1281.4	1285.2	1275.9	1275.5	1277.1	1279.0	1276.3	1288.2
35.0°	1190.1	1193.4	1181.4	1182.0	1183.5	1187.7	1186.0	1196.7
40.0°	1090.0	1093.6	1079.3	1083.4	1080.9	1085.2	1087.2	1097.3
45.0°	984.4	988.0	971.4	971.9	975.9	979.3	979.9	989.6
50.0°	874.1	878.0	860.7	861.2	863.4	865.1	867.7	878.1
55.0°	758.7	764.8	744.6	746.1	747.5	748.0	752.3	762.6
60.0°	639.3	641.5	624.7	623.8	628.3	627.3	631.4	640.0
65.0°	515.4	517.9	503.8	505.0	506.1	506.8	509.1	516.0
70.0°	388.6	390.4	380.8	382.7	384.5	386.0	385.7	389.7
75.0°	266.9	268.9	262.7	265.2	268.9	269.4	266.2	269.0
80.0°	154.8	158.4	156.6	159.3	162.5	158.9	159.0	157.5
85.0°	63.3	64.3	66.7	68.1	70.0	67.3	66.8	64.0
90.0°	0.8	2.5	3.5	4.5	3.9	4.1	3.8	2.9
95.0°	17.2	16.1	13.9	10.9	10.1	9.8	12.0	14.9
100.0°	54.6	50.8	41.7	37.6	36.8	36.6	40.5	49.5
105.0°	100.9	95.9	83.2	73.8	72.9	73.6	81.7	95.3
110.0°	151.2	144.9	131.3	118.0	116.6	117.8	129.7	145.2
115.0°	203.9	197.0	181.3	167.1	165.2	167.1	180.2	199.0
120.0°	256.2	251.0	233.3	217.5	215.7	218.7	233.3	252.9
125.0°	309.7	304.3	286.1	270.0	268.1	271.9	288.1	307.3
130.0°	362.4	357.6	339.4	324.0	323.2	325.4	342.2	361.2
135.0°	415.1	411.0	393.8	379.7	378.3	381.0	397.7	417.2
140.0°	465.8	463.1	447.4	435.6	433.3	438.0	452.1	468.4
145.0°	514.9	512.4	498.7	489.1	488.2	491.8	503.5	519.1
150.0°	558.7	557.4	546.8	539.5	540.7	542.5	551.5	563.5
155.0°	597.6	596.7	589.6	584.4	585.9	588.2	594.5	603.2
160.0°	631.5	632.5	626.2	623.7	624.1	626.5	630.7	636.7
165.0°	659.0	660.2	656.4	655.3	656.9	657.4	659.9	663.8
170.0°	679.6	680.6	679.0	677.5	680.0	679.9	680.7	682.1
175.0°	692.2	692.7	692.9	692.8	694.0	692.4	693.3	694.1
180.0°	697.0	697.0	697.0	697.0	697.0	697.0	697.0	697.0

Luminous Intensity (cd) Distribution Data (cont.)

C / γ	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	1563.8	1563.8	1563.8	1563.8	1563.8	1563.8	1563.8	1563.8
5.0°	1554.8	1554.5	1555.4	1554.8	1555.0	1554.0	1552.6	1555.2
10.0°	1529.7	1530.1	1530.1	1528.2	1527.8	1526.7	1525.6	1528.0
15.0°	1487.7	1490.4	1488.6	1485.9	1484.3	1482.3	1481.4	1487.5
20.0°	1429.6	1434.9	1431.1	1428.6	1426.9	1424.8	1423.7	1434.3
25.0°	1358.6	1365.7	1358.8	1355.3	1354.6	1352.8	1351.7	1358.5
30.0°	1277.0	1283.5	1274.3	1274.0	1271.1	1269.3	1266.6	1277.4
35.0°	1186.0	1190.9	1179.8	1179.7	1179.0	1176.2	1173.0	1182.9
40.0°	1085.8	1089.7	1079.7	1078.5	1078.4	1074.6	1073.2	1084.5
45.0°	976.4	981.8	972.2	970.0	971.4	964.7	967.4	975.9
50.0°	865.1	872.0	859.7	857.4	857.9	853.8	854.2	865.2
55.0°	748.5	755.9	742.6	738.5	741.6	738.5	738.4	748.8
60.0°	628.8	634.6	620.4	618.4	623.1	619.6	619.6	627.8
65.0°	503.8	509.5	496.7	495.7	502.6	498.1	497.9	504.2
70.0°	376.6	380.9	374.2	375.4	380.8	373.3	375.7	378.4
75.0°	254.8	258.6	255.7	257.8	265.8	256.1	256.7	257.6
80.0°	144.1	148.7	146.9	150.8	158.7	151.5	150.8	148.5
85.0°	54.8	57.0	58.9	60.1	64.7	62.0	60.3	58.4
90.0°	0.0	1.3	1.8	1.9	1.8	2.1	2.4	2.1
95.0°	13.2	14.9	14.8	12.7	12.4	12.9	14.6	15.9
100.0°	50.5	50.3	42.9	39.9	41.3	40.7	42.7	49.1
105.0°	97.3	96.8	86.8	78.1	79.2	77.6	83.7	93.6
110.0°	148.4	146.8	136.3	124.0	124.3	122.6	132.3	143.7
115.0°	202.8	199.5	186.9	174.8	175.2	171.8	182.6	194.1
120.0°	256.4	253.9	240.2	226.6	226.5	223.5	234.7	246.7
125.0°	310.6	309.0	294.8	280.3	279.7	277.0	286.7	299.2
130.0°	364.8	363.9	349.0	335.7	334.0	330.5	341.8	353.6
135.0°	418.3	417.7	401.5	390.5	388.9	384.1	394.6	405.7
140.0°	471.3	470.8	455.3	445.6	443.7	439.1	446.8	457.3
145.0°	519.2	519.8	506.1	497.3	495.9	491.4	497.7	507.1
150.0°	562.8	565.5	553.8	545.3	544.4	539.6	545.2	553.7
155.0°	602.2	604.1	596.2	589.0	588.8	585.2	588.6	593.2
160.0°	635.3	637.6	632.2	626.4	626.8	623.3	625.1	629.4
165.0°	662.4	663.9	660.1	658.1	657.2	654.5	655.2	657.0
170.0°	681.4	682.3	682.4	680.7	680.6	677.6	677.6	678.7
175.0°	693.6	694.1	694.3	692.8	694.4	692.5	692.2	691.3
180.0°	697.0	697.0	697.0	697.0	697.0	697.0	697.0	697.0

6. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Integrating Sphere	INVENTFINE	Dia 1.5m	JWWCV090112	2025-06-18	2026-06-17
Power Meter	INVENTFINE	WT500	GSJWQ20009	2025-04-10	2026-04-09
Spectral photometer	INVENTFINE	CMS-3S	GSGSE100017	2025-06-18	2026-06-17
AC Power Supply	INVENTFINE	CHP500	JWJSD010071	2025-04-10	2026-04-09
Standard Light Source	Osram	24V/50W	JWWCR020105	2025-07-10	2027-07-09
Thermal Meter	ANYMETRE	TH-20E	N/A	2025-06-10	2026-06-09
DC Power Supply	INVENTFINE	WL3005	JWWCP020069	2025-04-10	2026-04-09
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2025-04-10	2026-04-09
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2025-04-10	2026-04-09
Power Meter	INVENTFINE	WT500	GSDSQ200007	2025-04-10	2026-04-09
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2025-06-03	2026-06-02
Wireless Weather Station	ZHONGXING	KG218	N/A	2025-04-08	2026-04-07
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2025-11-02	2027-11-01
Digital Multimeter	FLUKE	115C	37840512WS	2025-04-10	2026-04-09
Hybrid Recorder	YOKOGAWA	DR230	47JH0903	2025-04-10	2026-04-09
Power Supply	SC	SC/BP-11003	1608110030553	2025-04-10	2026-04-09

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**********