



TEST REPORT

For

RENO LED LIGHTING INC

9133 Leslie St #120, Richmond Hill, ON L4B 4N1

Model Number:	RENO-LSN4-DV-MW-MCCT-MS	
Report Type:	Electrical, Photometric and ISTMT tests according to the following standards and show the compliance to DLC Program SSL Technical Requirements V5.1	
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:	Bay Wang	
Report Number:	RKSB230801005-10-1	
Sample Size:	One sample was received on 2023-08-01 and used for testing.	
Test Date:	2023-08-04 to 2023-08-05	
Report Date:	2023-08-12	
Reviewed By:	Seven Xia / EE Engineer	
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:	Stairwell and Passageway Luminaires
Voltage and Frequency:	120-347VAC, 50/60Hz
LED Source Manufacturer:	Lumileds Holding B.V.
LED Source Model:	L128-xx80RA35000Q1
Driver Model:	SDC42CS100V42DN3B
Auxiliary Ballast Model:	NA
Auxiliary Housing Model:	NA
White Tunable:	Yes
Field-Adjustable Light Output:	Yes

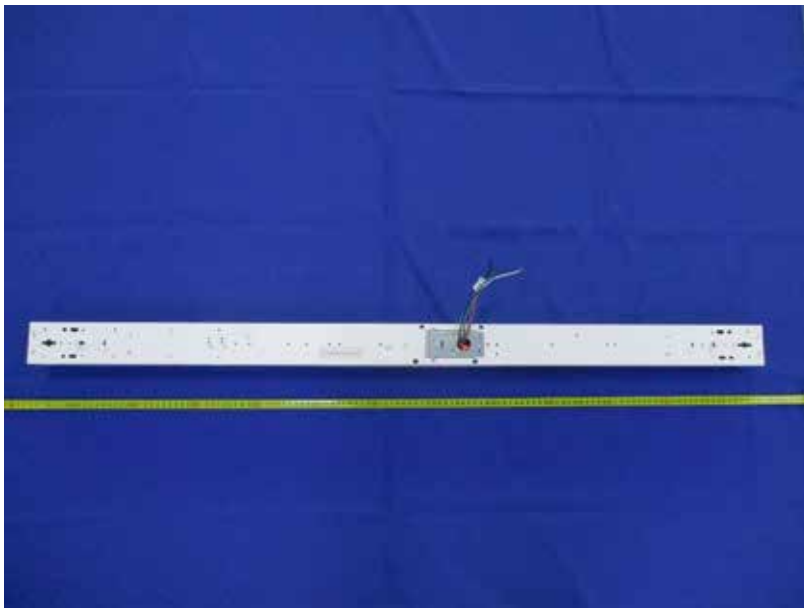
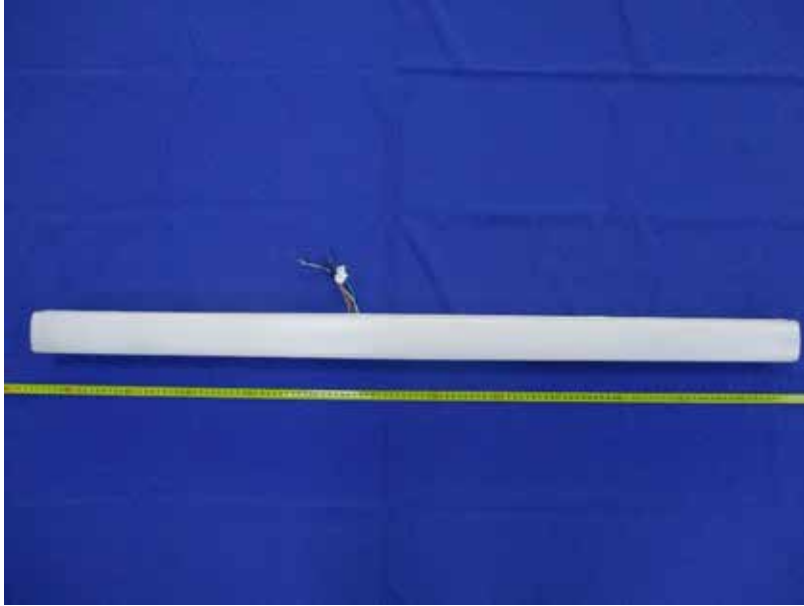
2. Product Rated Values[#]

Test Model	CCT(K)	Light Output (lm)	Power(W)	Luminous Efficacy (lm/W)
RENO-LSN4-DV-MW-MCCT-MS	3500	3593	22	163
		4544	28	162
		5807	36	161
		7053	44	160.3
	4000	3806	22	173
		4816	28	172
		6156	36	171
		7480	44	170
	5000	3608	22	164
		4564	28	163
		5832	36	162
		7084	44	161

3. Test List

Test Model	CCT(K)	Power(W)	Test Item			
			Goniophotometer Test	Integrating Sphere Test	THDi and PF Test	In-Situ Temperature Measurement Test
RENO-LSN4-DV-MW-MCCT-MS	3500	44	Yes	Yes	Yes	NA

4. Product Photo



5. Test Result

Test Model: RENO-LSN4-DV-MW-MCCT-MS

Control Setting: 3500K/ 44W

Integrating Sphere Test; Orientation: Downward; Test Voltage: 120V 60Hz;				
Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	7265.9	5000~10000	4500~11000	Pass
Power(W)	44.95	None.	None.	N/A
Total Efficacy(lm/W)	161.64	≥120	≥116.4	Pass
CCT(K)	3395	None ⁱ	None.	N/A
Duv	0.00315	None ⁱ	None.	N/A
IES R _r	82	70	69	Pass
IES R _g	98	89	88	
IES R _{cs,h1}	-11%	-18%~23%	-19%~24%	
R _a	81	≥70	≥69	
R ₉	21	/	/	

Note:

- i. White-tunable products are not required to meet the chromaticity requirements in DLC V5.1.

Goniophotometer Test; Orientation: Downward; Test Voltage: 120V 60Hz;				
Test Item	Test Result	DLC Requirements	DLC Requirements(With tolerances only)	Conclusion
Light Output(lm)	7271.4	5000~10000	4500~11000	Pass
Power(W)	44.98	None.	None.	N/A
Total Efficacy(lm/W)	161.71	≥120	≥116.4	Pass
Zonal Lumen Distribution(0-90°)	89.06%	0-90°≥85%	0-90°≥82%	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	0.9974	≥0.9	≥0.87	Pass
120	THDi	3.58%	≤20%	≤25%	Pass
277	Power Factor	0.9601	≥0.9	≥0.87	Pass
277	THDi	7.04%	≤20%	≤25%	Pass
347	Power Factor	0.9212	≥0.9	≥0.87	Pass
347	THDi	12.50%	≤20%	≤25%	Pass

Note:

- The test results were measured directly from the test equipment.
- The DLC requirements were listed according to DLC Technical Requirements V5.1.
- 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]

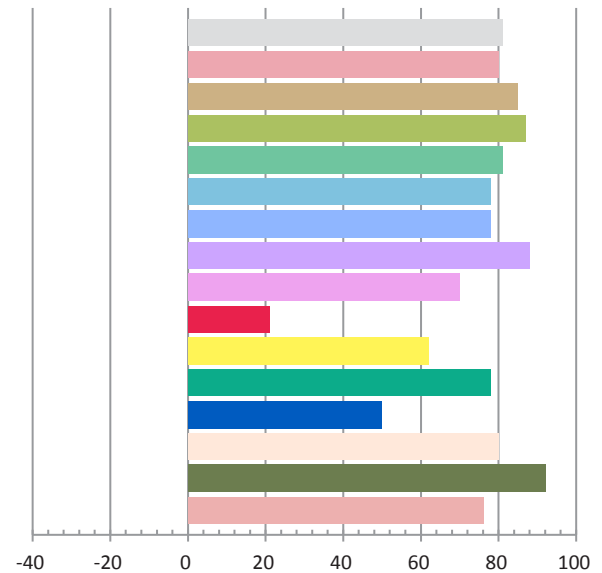
Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.3756	44.95	0.9974	7265.9	161.64

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
20.226	3395	0.00315	0.4150	0.4028	0.2370	0.5176

Color Rendering Index

Ra			
81.0			
R1	R2	R3	R4
80	85	87	81
R5	R6	R7	R8
78	78	88	70
R9	R10	R11	R12
21	62	78	50
R13	R14	R15	
80	92	76	



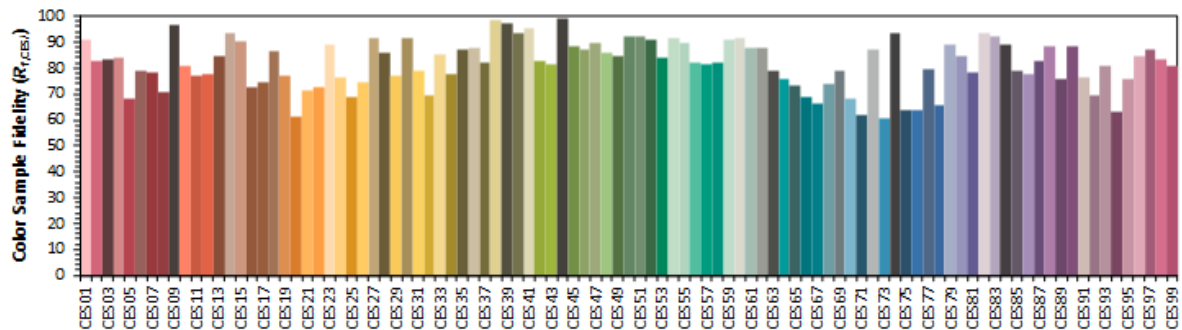
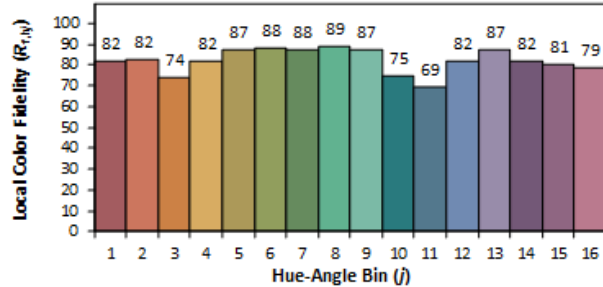
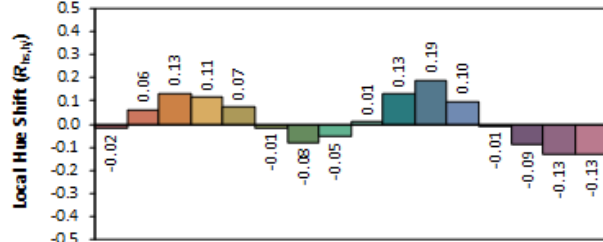
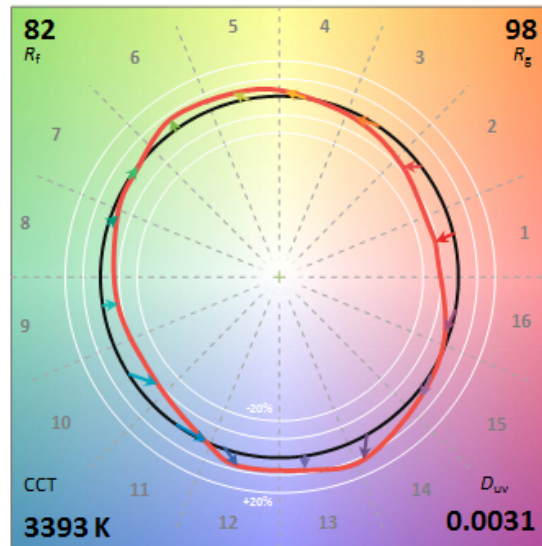
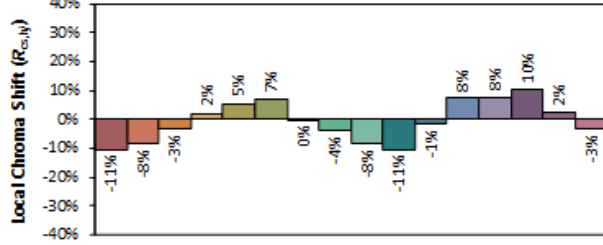
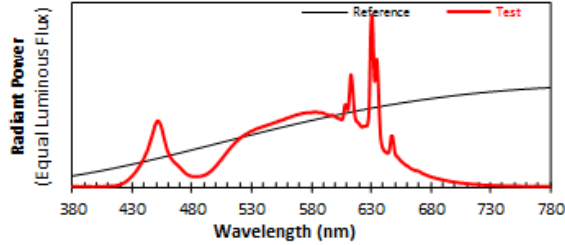
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: RENO LED LIGHTING INC

Date: 2023/8/5

Model: RENO-LSN4-DV-MW-MCCT-MS



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

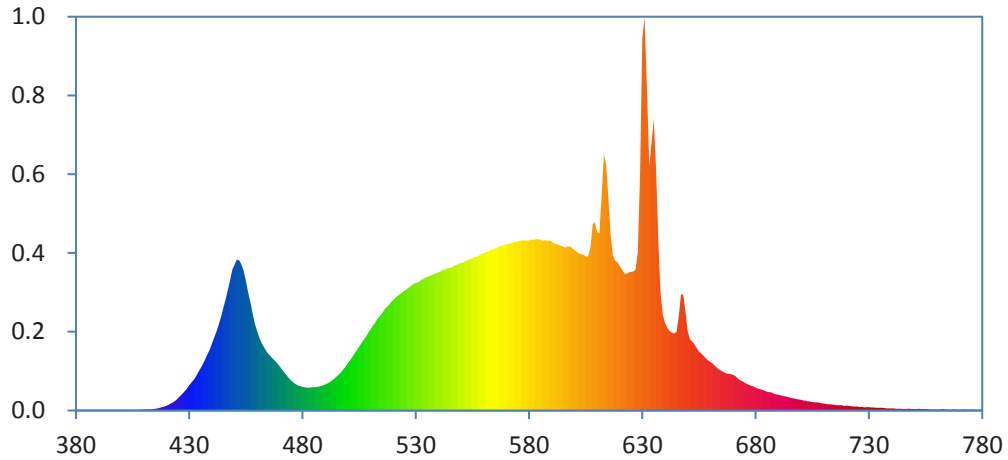
x 0.4150
 y 0.4027
 u' 0.2371
 v' 0.5176

CIE 13.3-1995
(CRI)

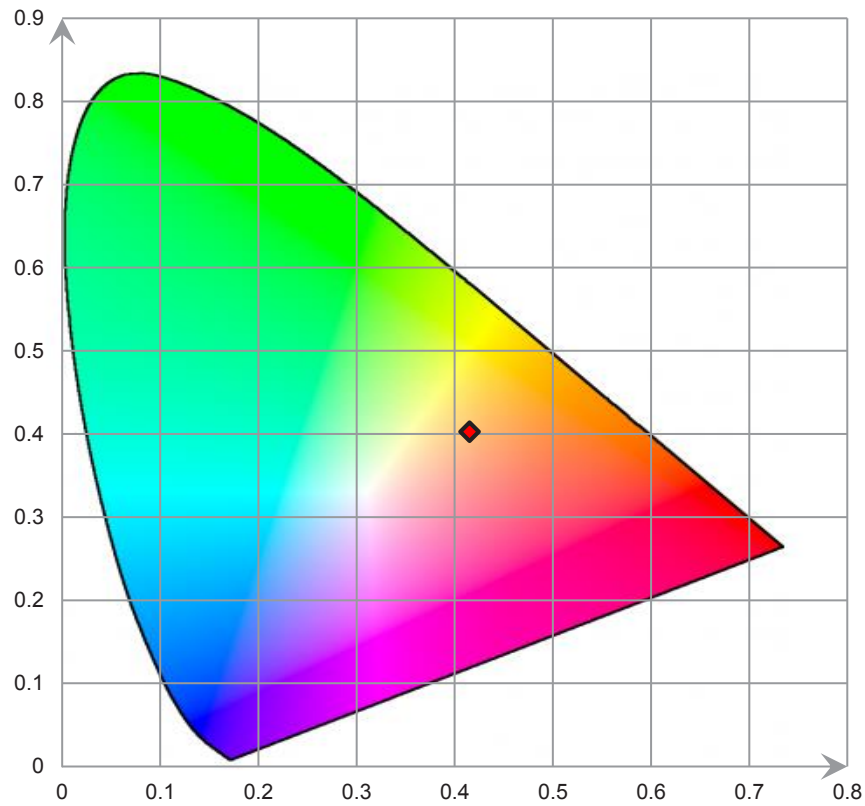
R_a 81
 R_g 21

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

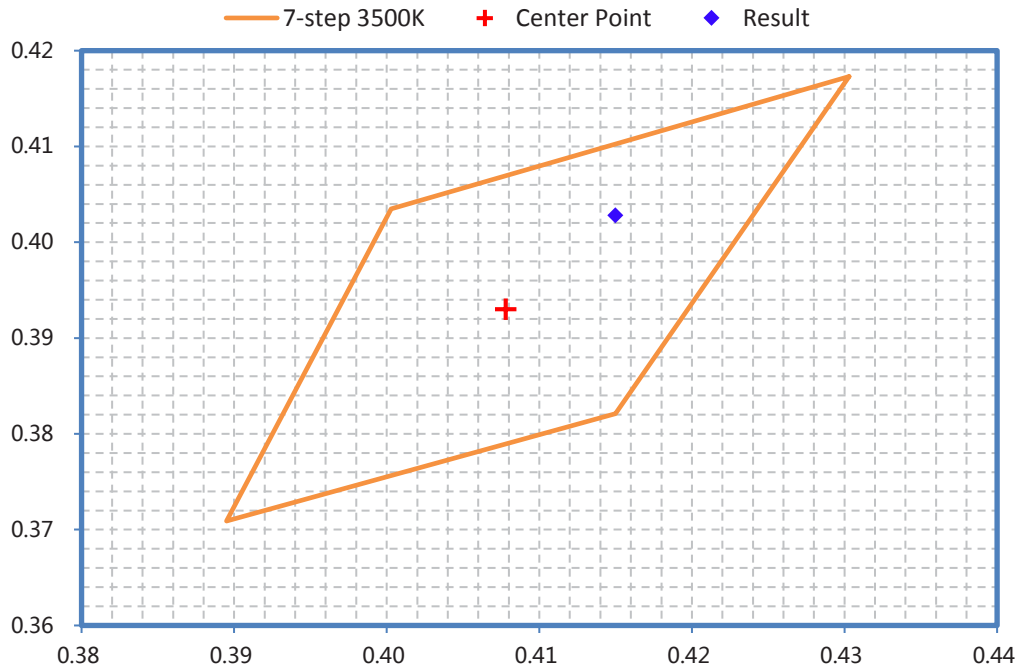
Relative Spectral Power Distribution



CIE 1931 x y Chromaticity Diagram



ANSI C78.377-2017 Chromaticity Quadrangles



[Goniophotometer System]

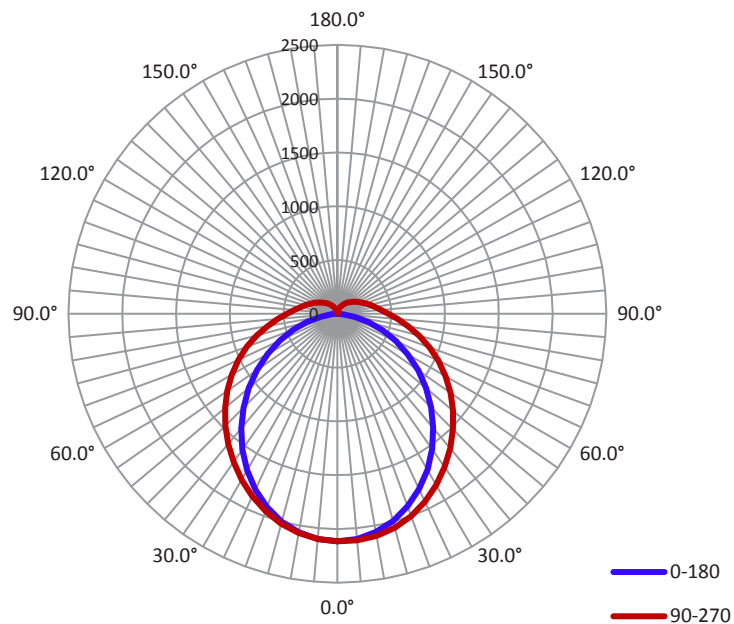
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60	0.375	44.98	0.999

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I _{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
7271.4	161.71	2117.5	1.18	1.27

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I _{max}):	101.1	113.0	127.4	114.4	114.0
Field Angle (10% I _{max}):	156.0	198.2	241.6	204.3	200.0

Luminous Intensity (cd) Distribution Data

$\begin{matrix} C \\ \backslash \\ Y \end{matrix}$	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	2114.6	2114.6	2114.6	2114.6	2114.6	2114.6	2114.6	2114.6
5.0°	2100.8	2103.1	2105.7	2111.6	2113.2	2115.2	2111.2	2108.8
10.0°	2060.6	2066.8	2079.8	2090.5	2096.2	2097.3	2087.5	2078.6
15.0°	1994.2	2008.5	2030.0	2049.4	2059.3	2058.4	2040.2	2024.8
20.0°	1905.0	1927.3	1957.3	1986.2	2002.7	1996.3	1970.1	1945.5
25.0°	1797.0	1827.1	1866.9	1905.5	1926.8	1921.1	1883.0	1849.6
30.0°	1673.9	1706.2	1760.4	1809.2	1837.5	1827.9	1779.5	1734.1
35.0°	1534.0	1572.8	1638.5	1702.0	1737.9	1722.8	1665.0	1602.5
40.0°	1384.7	1432.6	1510.9	1586.2	1631.1	1613.1	1540.7	1461.0
45.0°	1230.7	1285.0	1374.9	1467.3	1518.2	1494.3	1411.5	1314.3
50.0°	1074.3	1135.7	1239.9	1343.6	1403.1	1371.2	1276.1	1166.3
55.0°	916.6	987.4	1101.8	1218.7	1284.2	1247.5	1140.3	1012.0
60.0°	755.6	836.8	963.3	1091.4	1159.9	1121.1	1004.3	860.3
65.0°	600.3	689.9	827.7	965.2	1036.8	994.6	868.3	713.5
70.0°	448.4	540.8	692.5	836.7	911.7	863.5	733.4	570.1
75.0°	299.1	404.8	563.9	711.4	788.4	740.1	603.1	431.1
80.0°	164.6	281.9	447.4	593.4	666.4	618.0	483.0	305.4
85.0°	55.7	177.1	346.7	489.3	559.6	511.1	378.8	199.8
90.0°	1.1	113.0	274.0	406.0	471.5	425.3	302.4	134.6
95.0°	0.0	90.3	230.6	348.4	404.7	364.1	255.5	109.6
100.0°	0.0	77.9	205.8	308.5	356.9	321.8	226.0	95.1
105.0°	0.0	68.0	182.3	276.4	317.5	286.7	200.0	83.3
110.0°	0.0	60.6	162.9	246.2	281.9	255.3	177.8	73.0
115.0°	0.0	55.3	145.3	219.4	250.1	226.2	157.9	66.1
120.0°	0.7	50.7	129.9	195.2	221.3	201.0	140.5	59.1
125.0°	1.9	46.4	115.9	172.9	195.7	177.4	124.8	54.0
130.0°	3.0	43.2	103.2	152.5	172.4	156.1	110.4	48.2
135.0°	4.1	39.2	91.3	134.4	151.2	136.8	97.0	43.6
140.0°	5.4	36.7	81.2	117.5	130.6	118.0	84.2	37.6
145.0°	7.4	35.0	72.2	101.9	112.2	101.0	71.2	31.0
150.0°	9.4	33.7	63.7	87.2	93.8	82.9	52.2	26.9
155.0°	10.7	32.3	55.5	72.2	76.6	65.3	39.5	23.4
160.0°	13.0	30.0	46.5	58.1	60.3	44.7	30.0	19.5
165.0°	14.3	27.2	37.3	44.6	43.8	29.0	21.3	16.4
170.0°	14.2	21.0	28.4	30.8	27.2	20.7	15.8	14.2
175.0°	13.7	15.9	17.8	19.8	13.7	14.6	13.6	13.4
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Luminous Intensity (cd) Distribution Data (cont.)

$\begin{matrix} C \\ \backslash \\ Y \end{matrix}$	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	2114.6	2114.6	2114.6	2114.6	2114.6	2114.6	2114.6	2114.6
5.0°	2102.8	2102.8	2102.6	2103.4	2102.2	2101.0	2099.5	2097.5
10.0°	2063.4	2066.1	2070.6	2071.1	2069.8	2067.1	2060.5	2056.5
15.0°	2000.1	2005.6	2013.2	2019.4	2019.3	2014.5	2000.4	1992.3
20.0°	1912.3	1923.0	1937.7	1948.6	1952.8	1943.4	1920.8	1905.3
25.0°	1805.4	1819.0	1843.3	1863.8	1870.4	1858.1	1825.3	1801.2
30.0°	1679.3	1700.9	1735.6	1767.1	1781.1	1761.7	1716.8	1680.5
35.0°	1538.8	1566.7	1616.6	1663.4	1680.9	1657.9	1600.3	1549.8
40.0°	1389.7	1426.0	1490.9	1552.3	1578.1	1547.9	1478.2	1409.6
45.0°	1233.9	1282.1	1358.8	1434.6	1471.4	1435.5	1350.3	1264.4
50.0°	1074.8	1135.0	1226.3	1318.5	1362.0	1316.7	1220.8	1119.3
55.0°	913.3	983.0	1093.7	1200.9	1250.0	1199.7	1092.5	972.9
60.0°	750.5	833.1	960.1	1079.4	1132.9	1081.5	962.8	830.0
65.0°	591.5	685.7	827.9	956.2	1015.2	959.5	835.8	687.7
70.0°	438.0	541.9	695.0	832.9	894.9	838.8	704.7	548.0
75.0°	289.4	405.1	567.6	711.8	775.8	713.4	581.2	416.7
80.0°	152.5	278.8	452.5	596.1	659.1	598.2	467.8	296.2
85.0°	47.3	174.5	353.0	494.2	554.9	496.6	367.7	195.5
90.0°	0.9	113.5	281.1	411.6	468.3	416.0	295.2	133.1
95.0°	0.0	90.5	237.1	352.2	400.5	357.7	250.6	108.6
100.0°	0.9	76.2	208.0	310.7	351.6	315.1	220.3	93.4
105.0°	1.5	64.6	182.1	275.1	309.7	278.0	193.2	79.9
110.0°	1.5	56.0	159.3	241.9	272.7	245.5	170.6	69.5
115.0°	1.7	48.2	139.1	212.2	239.3	216.4	149.8	61.5
120.0°	2.2	41.6	121.4	185.6	209.7	189.7	131.4	54.0
125.0°	3.0	36.4	105.2	161.7	183.4	165.7	115.2	46.8
130.0°	3.8	31.3	90.9	140.7	159.6	144.4	100.3	41.3
135.0°	4.2	26.7	77.6	120.7	137.4	124.9	86.3	35.5
140.0°	4.6	21.4	65.5	101.7	116.5	105.6	74.0	30.4
145.0°	5.3	16.4	53.6	84.5	97.3	88.3	61.7	26.0
150.0°	5.2	13.1	39.5	68.0	78.4	71.3	50.4	21.3
155.0°	7.4	10.4	29.4	52.5	61.4	55.3	39.7	16.5
160.0°	9.1	7.8	22.1	36.3	44.6	40.9	29.9	12.9
165.0°	9.5	6.9	14.5	21.7	29.4	27.7	20.1	9.0
170.0°	10.5	8.0	9.2	12.9	16.7	16.0	11.5	7.4
175.0°	11.7	10.4	8.5	8.5	8.6	8.3	8.1	9.4
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

6. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Integrating Sphere	INVENTFINE	Dia 1.5m	JWWCV090112	2023-05-19	2024-05-18
Power Meter	INVENTFINE	WT500	GSJWQ20009	2022-11-03	2023-11-02
Spectral photometer	INVENTFINE	CMS-3S	GSGSE100017	2023-05-19	2024-05-18
AC Power Supply	INVENTFINE	CHP500	JWJSD010071	2023-05-19	2024-05-18
Standard Light Source	Osram	24V/50W	JWWCR020104	2021-09-15	2023-09-14
Thermal Meter	ANYMETRE	TH-20E	N/A	2022-11-11	2023-11-10
DC Power Supply	INVENTFINE	WL3005	JWWCP020069	2023-05-19	2024-05-18
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2023-05-22	2024-05-21
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2023-05-22	2024-05-21
Power Meter	INVENTFINE	WT500	GSDSQ200007	2022-11-03	2023-11-02
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2022-11-14	2023-11-13
Wireless Weather Station	ZHONGXING	KG218	N/A	2023-05-22	2024-05-21
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2021-12-23	2023-12-22
Variable-Voltage Transformer	Guangfa	TDGC2-1KVA	N/A	N/A	N/A

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. 4 π 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.

Directions

1. The information marked "superscript #" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk "★"
3. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
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