

Report Number: PL16874-001A
Model: C-SW-A-S66L-SCCT-US-UC-WH (55W/4000K)
Date: 07/11/2022

Cree Racine Engineering Services Testing Laboratory (RESTL) Photometric Testing and Evaluation Report

Prepared For:

Tammy Lehrmann

Cree Lighting

9201 Washington Avenue

Racine, WI 53406

Prepared By:



Meranda Hubbard, Photometric Test Technician

Approved By:



Jonathan Vollers, Technical Manager

Product Information

Manufacturer	Cree Lighting
Model Number (SKU)	C-SW-A-S66L-SCCT-US-UC-WH (55W/4000K)
Serial Number	16874-001
LED Type	SSC STW8A2PD

Product Description

C-Lite Stairwell Light with selectable CCT & Wattage 120V-347V

Driver Information (Where Applicable)

SIL60-I1200 120-347 W D1S+D3 P

Length	Width	Height
48.0"	4.87"	5.5"

Sample

The following sample was submitted for evaluation



Key Photometric Data	Sphere Output	Goniophotometer	
Luminous Flux	7483.1	7291	lm
Efficacy	124.06	122.09	lm/W
Correlated Color Temperature (CCT)	4182	K	
Color Rendering Index (CRI)	86		
R ₉	25		
Duv	-0.0005		
S/P Ratio*	1.81		
CIE Type	Direct		

	Sphere		Goniophotometer		
Electrical Measurements	120V	277V	120V	277V	
Input Wattage	60.32	61.27	59.72	59.25	W
Input Current	0.514	0.245	0.507	0.235	A
Input Voltage	120.11	277.15	120.12	277.18	V
Power Factor	0.978	0.903	0.981	0.909	
Off-State Power	0	0	0	0	W
Total Harmonic Distortion (Voltage)	0.14	0.18	0.20	0.21	%
Total Harmonic Distortion (Amperage)	16.15	23.81	16.00	24.34	%

Note: All photometric measurements taken at 120VAC.

Key Test Parameters	Sphere Output	Goniophotometer	
Stabilization Time	56	30	min
Total Operating Time (Stabilization + Test)	66	50	min
Ambient Temperature	24.65	25.0	°C

Spacing Criteria

Spacing Criterion (0 - 180)	1.68
Spacing Criterion (90 - 270)	1.24
Spacing Criterion (Diagonal)	1.40

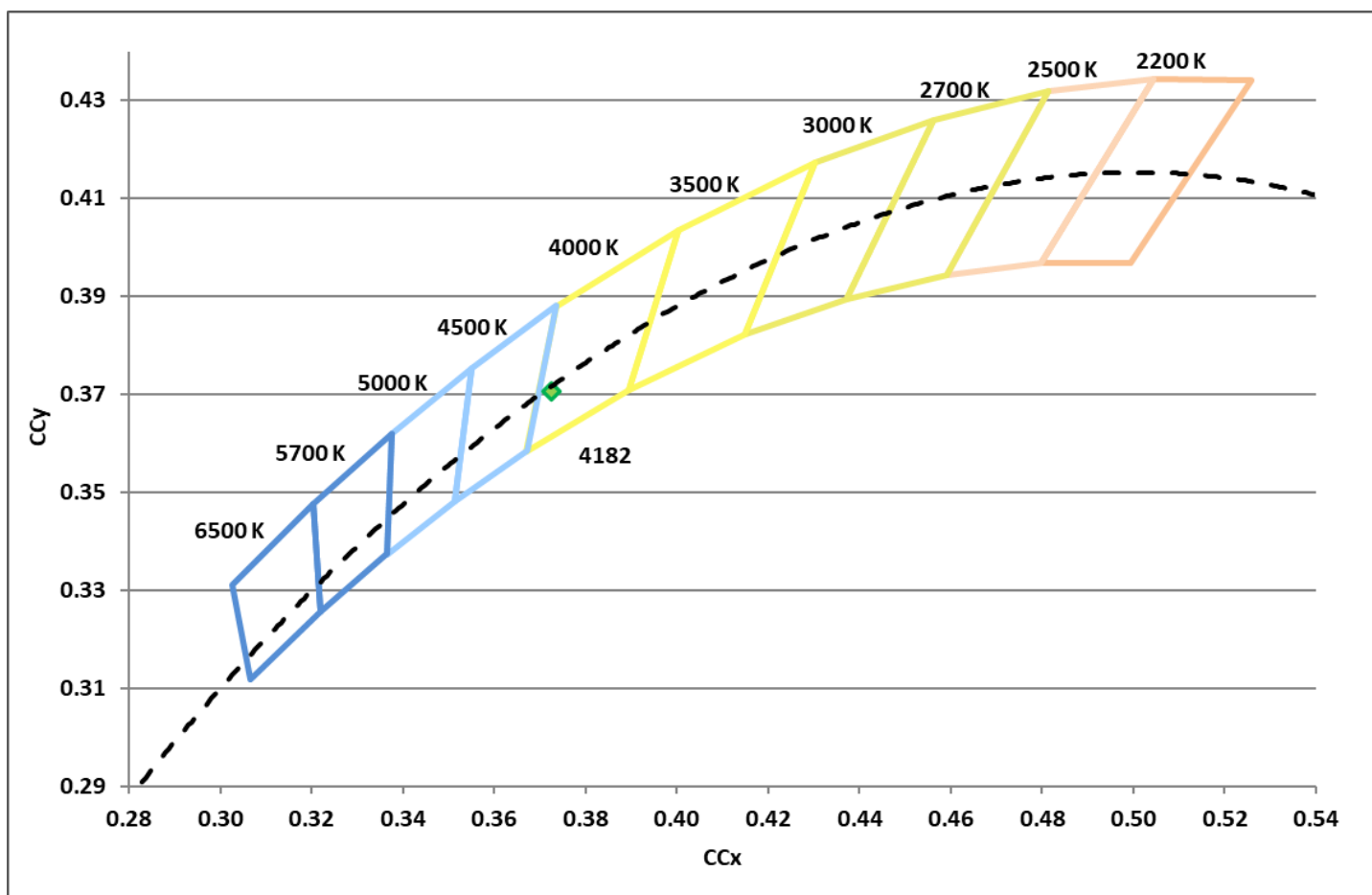
Chromaticity Coordinates

x	y	u	v	u'	v'	Duv
0.3725	0.3706	0.2223	0.3318	0.2223	0.4976	-0.0005

Color Rendering Index Details

Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
86	86	94	96	81	84	89	86	69	25	84	80	59	89	99

Chromaticity Diagram



Spectral Distribution

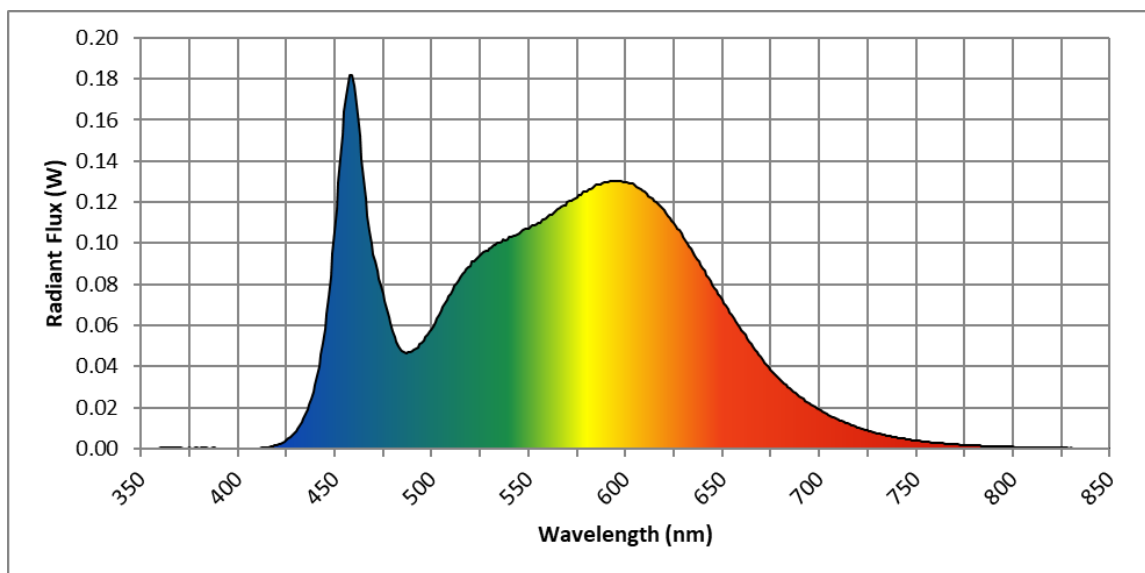
$\lambda(\text{nm})$	W/nm
360	0.000391
370	0.000268
380	0.000255
390	0.000156
400	0.000145
410	0.000151
420	0.001789
430	0.008607
440	0.031365
450	0.105682
460	0.176539
470	0.094408
480	0.057437
490	0.047607
500	0.057769
510	0.075550
520	0.089129

$\lambda(\text{nm})$	W/nm
530	0.097384
540	0.102742
550	0.107139
560	0.113255
570	0.119724
580	0.125334
590	0.129801
600	0.129623
610	0.124928
620	0.116059
630	0.103010
640	0.087939
650	0.072496
660	0.057880
670	0.044448
680	0.033577
690	0.025491

$\lambda(\text{nm})$	W/nm
700	0.019103
710	0.014145
720	0.010400
730	0.007582
740	0.005469
750	0.003962
760	0.002904
770	0.002070
780	0.001538
790	0.001108
800	0.000843
810	0.000581
820	0.000406
830	0.000293

Dominant Wavelength	578	nm
Peak Wavelength	458	nm

Spectral Power Distribution (W/nm)



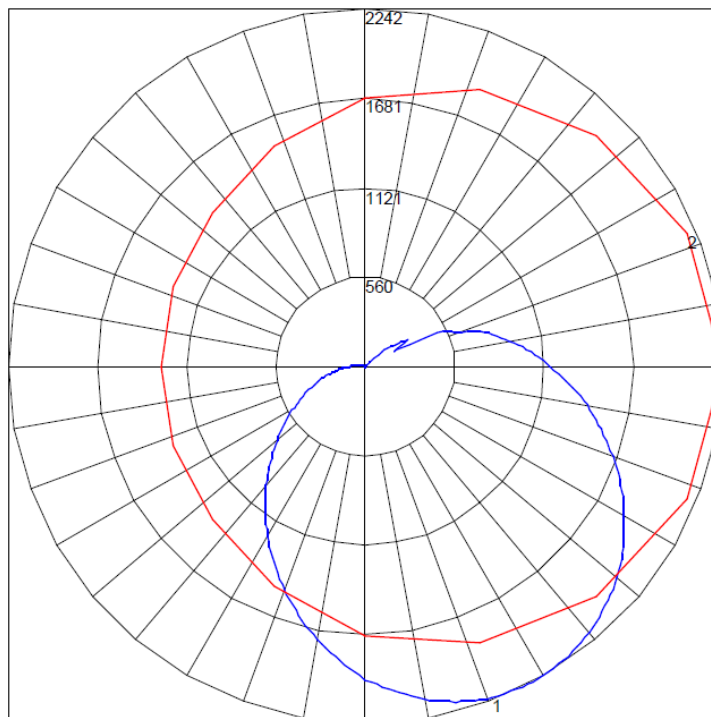
Zonal Lumen Summary

Zone	Lumens	% of Total	Zone	Lumens
0-20	723.07	9.9	0-10	187.07
0-30	1537.92	21.1	10-20	536.00
0-40	2529.09	34.7	20-30	814.84
0-60	4585.43	62.9	30-40	991.17
0-80	6130.41	84.1	40-50	1052.07
0-90	6614.4	90.7	50-60	1004.27
10-90	6427.33	88.2	60-70	867.37
20-40	1806.02	24.8	70-80	677.61
20-50	2858.08	39.2	80-90	483.99
40-70	2923.7	40.1	90-100	333.60
60-80	1544.98	21.2	100-110	211.28
70-80	677.61	9.3	110-120	89.73
80-90	483.99	6.6	120-130	37.76
90-110	544.88	7.5	130-140	4.38
90-120	634.61	8.7	140-150	0.00
90-130	672.37	9.2	150-160	0.02
90-150	676.75	9.3	160-170	0.09
90-180	676.91	9.3	170-180	0.05
110-180	132.03	1.8		
Total	7291.31	100		

Luminance Data (Cd./Sq.M)

Average in Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	16201	15009	13669
55	16238	14612	12563
65	16351	14220	10891
75	16690	14079	8216
85	17761	14635	3054

Candela Plots



Maximum Candela = 2241.95 Located At Horizontal Angle = 0, Vertical Angle = 28
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (28) (Through Max. Cd.)

Coefficients of Utilization

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	117	117	117	117	113	113	113	113	106	106	106	99	99	99	94	94	94	91
1	104	98	93	88	100	95	90	86	89	85	82	84	80	78	78	76	74	71
2	94	85	77	70	90	82	75	69	77	71	66	72	67	63	67	64	60	57
3	85	74	65	58	82	71	63	56	67	60	54	63	57	52	59	54	50	47
4	78	65	55	48	75	63	54	47	59	52	46	56	49	44	52	47	42	40
5	71	58	48	41	68	56	47	41	53	45	39	50	43	38	47	41	37	34
6	66	52	42	36	63	50	42	35	47	40	34	45	38	33	42	37	32	30
7	61	47	38	31	58	46	37	31	43	36	30	41	34	29	39	33	28	26
8	57	43	34	28	54	41	33	27	39	32	27	37	31	26	36	30	25	23
9	53	39	31	25	51	38	30	25	36	29	24	34	28	23	33	27	23	21
10	49	36	28	23	48	35	27	22	33	26	22	32	26	21	30	25	21	19

Candela Tabulations

	0	22.5	45	67.5	90	112.5	135	157.5	180
0	1978.0	1978.0	1978.0	1978.0	1978.0	1978.0	1978.0	1978.0	1978.0
1	1979.4	1981.3	1983.0	2001.1	2009.8	1985.5	1955.1	1944.6	1939.9
2	1997.8	1998.3	1995.7	2007.5	2008.6	1976.4	1940.3	1925.6	1919.4
3	2014.9	2014.5	2008.3	2012.6	2006.7	1966.5	1924.6	1906.2	1897.9
4	2031.6	2030.6	2019.3	2016.5	2003.2	1956.0	1908.7	1886.2	1876.2
5	2048.1	2045.5	2029.2	2019.7	1998.7	1944.8	1891.6	1866.0	1854.3
6	2064.1	2059.7	2038.5	2022.4	1994.0	1932.6	1874.4	1845.8	1832.9
7	2079.2	2073.3	2047.2	2024.7	1988.6	1920.3	1856.5	1825.1	1809.9
8	2093.8	2086.5	2055.3	2025.7	1981.9	1907.1	1837.9	1803.5	1787.9
9	2108.6	2098.2	2062.4	2026.1	1974.4	1892.9	1818.8	1782.1	1764.9
10	2122.2	2109.1	2069.3	2025.4	1966.2	1878.7	1799.3	1759.2	1741.7
11	2136.1	2120.1	2075.3	2023.9	1957.4	1862.7	1779.0	1736.7	1718.1
12	2148.8	2129.8	2080.1	2021.8	1946.8	1846.7	1758.3	1712.9	1694.3
13	2160.8	2139.5	2084.5	2018.9	1935.8	1829.0	1736.2	1689.3	1670.1
14	2171.1	2148.4	2087.8	2015.7	1924.3	1810.7	1713.9	1664.8	1644.8
15	2181.8	2156.4	2090.7	2010.7	1911.9	1791.3	1691.4	1640.4	1619.7
16	2190.9	2163.8	2092.5	2005.3	1898.5	1771.5	1668.0	1614.9	1594.1
17	2200.0	2170.2	2093.5	1999.3	1884.6	1750.8	1643.9	1590.3	1568.1
18	2207.7	2175.5	2093.7	1992.3	1869.8	1730.7	1619.9	1565.4	1541.7
19	2214.3	2180.1	2093.0	1984.5	1854.7	1709.3	1596.1	1540.0	1515.8
20	2220.3	2183.5	2091.4	1976.5	1838.5	1687.3	1571.2	1514.9	1489.7
21	2225.7	2186.7	2088.9	1967.3	1822.5	1665.3	1546.9	1490.0	1463.8
22	2230.0	2188.5	2086.4	1957.1	1805.5	1643.2	1521.8	1465.0	1437.8
23	2233.8	2189.9	2082.1	1946.8	1787.3	1620.2	1496.7	1439.1	1412.4
24	2236.1	2190.0	2077.4	1935.4	1768.2	1597.0	1471.6	1413.1	1387.2
25	2238.7	2190.3	2072.4	1922.9	1750.0	1573.0	1446.2	1387.4	1361.3
26	2240.7	2189.4	2066.0	1909.4	1730.5	1548.4	1419.8	1361.1	1335.1
27	2241.0	2188.6	2059.5	1895.7	1709.6	1524.2	1393.1	1334.3	1309.1
28	2242.0	2186.6	2052.0	1881.3	1688.8	1498.5	1366.0	1307.2	1283.0
29	2240.8	2183.8	2043.7	1866.8	1665.8	1471.9	1339.0	1280.4	1256.2
30	2238.8	2179.7	2034.3	1850.6	1642.1	1445.3	1311.2	1253.5	1228.9
31	2236.8	2175.0	2024.6	1832.9	1618.9	1418.1	1283.9	1226.5	1202.6
32	2234.0	2169.8	2013.6	1814.6	1594.8	1390.2	1256.0	1199.8	1175.9
33	2229.8	2163.5	2001.9	1797.1	1570.3	1362.4	1229.2	1173.2	1148.8
34	2224.5	2156.7	1989.5	1778.6	1545.7	1334.9	1202.2	1146.6	1122.8
35	2219.0	2148.8	1977.0	1760.2	1520.7	1307.1	1174.9	1120.6	1096.3
36	2212.9	2140.2	1963.6	1740.6	1495.2	1279.5	1147.2	1094.3	1070.1

Candela Tabulations (Continued)

	0	22.5	45	67.5	90	112.5	135	157.5	180
37	2205.5	2130.6	1949.9	1720.9	1469.5	1251.4	1120.0	1068.2	1044.6
38	2198.2	2121.5	1935.0	1700.7	1443.4	1223.0	1092.1	1042.0	1019.4
39	2189.7	2111.2	1920.7	1679.8	1417.0	1194.2	1064.5	1016.0	993.9
40	2181.1	2100.2	1905.4	1658.0	1389.9	1164.9	1037.4	990.1	968.4
41	2171.3	2088.8	1888.7	1636.3	1361.7	1135.4	1009.1	964.3	944.3
42	2161.0	2076.8	1871.7	1613.3	1333.9	1105.3	981.1	938.5	919.3
43	2150.1	2063.8	1854.0	1590.0	1305.4	1075.1	952.9	912.4	891.3
44	2138.3	2050.3	1835.4	1566.2	1276.3	1044.5	924.9	884.8	867.1
45	2126.2	2036.3	1816.5	1542.0	1246.8	1014.0	895.6	860.5	843.1
46	2114.5	2021.9	1797.4	1517.5	1217.1	984.2	867.4	836.3	818.8
47	2102.4	2006.7	1778.0	1492.7	1187.2	954.2	841.4	812.3	795.4
48	2089.2	1991.1	1757.4	1467.4	1157.7	924.8	814.8	788.8	772.6
49	2074.8	1975.2	1737.4	1442.3	1128.0	891.9	788.8	765.6	749.3
50	2059.9	1958.8	1716.6	1416.7	1098.1	862.9	763.3	742.6	726.8
51	2044.8	1941.0	1695.0	1390.7	1068.4	833.7	737.7	719.7	705.2
52	2028.0	1923.8	1673.4	1364.7	1037.9	805.0	712.3	697.0	683.3
53	2011.0	1905.3	1651.2	1337.6	1007.7	775.4	687.9	674.6	661.8
54	1993.1	1886.4	1627.8	1310.3	976.6	745.9	663.3	652.8	641.0
55	1974.9	1866.9	1604.2	1282.2	945.4	716.6	638.9	630.8	620.1
56	1955.4	1847.3	1580.9	1254.1	912.2	686.9	614.6	609.0	599.0
57	1935.6	1825.6	1556.3	1225.4	878.5	657.1	590.9	588.4	578.5
58	1916.1	1804.1	1531.0	1196.0	846.5	627.9	567.4	567.2	558.0
59	1895.7	1782.8	1506.9	1167.1	814.1	599.3	544.3	546.6	538.1
60	1877.0	1761.1	1480.8	1138.3	781.8	570.5	521.2	526.2	518.2
61	1855.7	1738.5	1455.6	1109.5	749.3	542.6	499.6	506.6	499.4
62	1835.2	1716.6	1430.5	1080.4	716.9	514.9	477.7	487.0	481.1
63	1813.9	1695.0	1405.3	1051.8	684.8	487.7	456.8	468.4	463.3
64	1792.8	1672.3	1379.1	1022.4	652.6	461.2	436.1	450.1	446.2
65	1770.9	1649.6	1353.9	992.6	620.8	435.2	416.3	432.1	429.7
66	1748.7	1627.8	1328.8	963.9	589.5	409.4	396.3	414.1	412.7
67	1726.0	1604.5	1303.0	933.7	558.0	384.3	376.8	397.1	396.9
68	1702.4	1580.3	1276.5	899.9	526.2	360.1	357.7	380.0	381.3
69	1677.5	1556.7	1250.6	869.4	494.4	336.0	339.1	363.0	365.0
70	1654.1	1532.5	1224.7	839.2	462.3	312.7	320.8	346.4	350.0
71	1627.6	1506.5	1198.6	808.2	430.2	289.9	303.4	331.0	335.3
72	1602.7	1481.9	1172.1	778.1	398.3	267.8	286.2	314.9	320.1
73	1579.0	1457.2	1146.5	748.8	366.4	246.0	269.2	300.1	305.9

Candela Tabulations (Continued)

	0	22.5	45	67.5	90	112.5	135	157.5	180
74	1555.2	1431.2	1120.3	718.9	334.8	225.8	253.3	285.6	292.4
75	1530.5	1406.3	1094.5	689.8	304.2	206.3	237.8	271.4	278.6
76	1507.1	1382.8	1069.2	661.4	274.1	187.6	222.6	257.5	265.2
77	1483.3	1357.5	1044.2	633.2	244.4	170.0	208.3	244.8	252.8
78	1458.9	1332.6	1018.8	605.7	215.7	153.3	194.4	231.6	240.0
79	1435.8	1309.8	994.8	578.9	188.4	137.3	180.9	218.8	227.1
80	1412.1	1285.4	970.4	552.8	161.9	122.5	168.2	206.5	215.1
81	1386.5	1259.6	946.0	526.8	136.3	108.6	155.7	194.5	203.5
82	1361.3	1236.0	922.5	502.0	112.0	95.1	143.5	182.3	191.2
83	1336.9	1212.1	895.5	477.4	89.1	82.5	131.7	170.5	179.9
84	1309.6	1185.3	871.1	452.9	67.7	70.8	120.6	159.4	169.3
85	1284.2	1161.0	847.5	429.6	48.6	59.8	109.5	148.1	158.4
86	1259.5	1136.1	824.7	407.2	31.9	49.7	98.9	137.5	147.9
87	1234.0	1110.7	800.7	384.9	18.2	40.6	89.5	127.7	138.8
88	1208.1	1086.2	777.9	364.2	7.7	32.6	80.3	117.9	128.9
89	1185.1	1063.6	756.2	344.5	1.4	25.5	71.1	107.8	118.6
90	1160.5	1039.1	734.1	325.4	0.0	19.2	62.7	99.1	109.4
91	1136.2	1016.1	712.7	307.5	0.0	13.8	54.4	89.5	99.6
92	1113.4	994.0	692.1	290.6	0.0	9.5	46.6	80.4	90.2
93	1089.5	970.4	671.3	273.8	0.0	6.0	39.9	72.2	81.8
94	1064.0	947.0	650.4	257.8	0.0	2.9	33.8	64.3	73.2
95	1041.0	924.6	630.9	243.0	0.0	0.3	27.7	56.3	64.8
96	1016.5	898.4	610.7	228.5	0.0	0.0	22.1	49.2	57.4
97	991.0	874.4	590.9	214.2	0.0	0.0	16.9	42.2	49.8
98	967.7	852.6	571.8	201.2	0.0	0.0	11.8	35.0	42.2
99	943.8	829.5	552.7	188.4	0.0	0.0	7.4	28.5	35.6
100	918.6	806.3	532.7	175.9	0.0	0.0	3.5	22.5	29.1
101	891.9	784.2	514.3	164.2	0.0	0.0	0.3	16.4	22.5
102	868.9	762.7	495.7	150.8	0.0	0.0	0.0	11.2	16.8
103	844.2	739.5	475.8	133.5	0.0	0.0	0.0	6.4	11.4
104	821.4	718.3	452.8	114.7	0.0	0.0	0.0	2.1	6.1
105	799.8	696.3	426.1	96.8	0.0	0.0	0.0	0.0	1.8
106	776.7	665.8	395.6	80.4	0.0	0.0	0.0	0.0	0.0
107	752.5	625.9	363.6	65.8	0.0	0.0	0.0	0.0	0.0
108	720.8	582.3	324.5	53.2	0.0	0.0	0.0	0.0	0.0
109	677.5	546.6	273.8	41.2	0.0	0.0	0.0	0.0	0.0
110	631.8	520.4	227.5	30.4	0.0	0.0	0.0	0.0	0.0

Candela Tabulations (Continued)

	0	22.5	45	67.5	90	112.5	135	157.5	180
111	601.2	498.1	207.1	20.7	0.0	0.0	0.0	0.0	0.0
112	581.3	471.5	201.7	11.6	0.0	0.0	0.0	0.0	0.0
113	558.2	423.3	201.3	4.2	0.0	0.0	0.0	0.0	0.0
114	536.1	343.2	191.5	0.8	0.0	0.0	0.0	0.0	0.0
115	495.7	250.6	176.3	0.1	0.0	0.0	0.0	0.0	0.0
116	412.9	193.5	161.0	0.0	0.0	0.0	0.0	0.0	0.0
117	307.3	197.4	147.2	0.0	0.0	0.0	0.0	0.0	0.0
118	215.5	228.5	133.7	0.0	0.0	0.0	0.0	0.0	0.0
119	200.1	257.0	120.2	0.0	0.0	0.0	0.0	0.0	0.0
120	232.2	257.4	106.9	0.0	0.0	0.0	0.0	0.0	0.0
121	279.1	242.6	94.0	0.0	0.0	0.0	0.0	0.0	0.0
122	308.7	226.5	76.6	0.0	0.0	0.0	0.0	0.0	0.0
123	292.3	209.9	53.5	0.0	0.0	0.0	0.0	0.0	0.0
124	273.7	193.1	36.0	0.0	0.0	0.0	0.0	0.0	0.0
125	254.5	176.6	27.0	0.0	0.0	0.0	0.0	0.0	0.0
126	234.4	159.3	18.5	0.0	0.0	0.0	0.0	0.0	0.0
127	214.4	141.8	11.2	0.0	0.0	0.0	0.0	0.0	0.0
128	195.2	124.8	4.9	0.0	0.0	0.0	0.0	0.0	0.0
129	175.2	104.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
130	154.4	74.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
131	134.7	46.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132	111.5	34.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
133	73.2	25.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
134	44.1	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135	33.8	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
136	24.4	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137	14.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
138	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
139	0.0	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	0.0
141	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
142	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
143	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
144	0.0	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	0.0
145	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Candela Tabulations (Continued)

	0	22.5	45	67.5	90	112.5	135	157.5	180
148	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
149	0.0	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	0.0
151	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
153	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
154	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
155	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0
156	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0
157	0.0	0.0	0.0	0.0	0.4	0.3	0.0	0.0	0.0
158	0.0	0.0	0.0	0.0	0.5	0.4	0.0	0.0	0.0
159	0.0	0.0	0.0	0.0	0.6	0.5	0.0	0.0	0.0
160	0.0	0.0	0.0	0.1	0.7	0.6	0.0	0.0	0.0
161	0.0	0.0	0.0	0.2	0.7	0.7	0.0	0.0	0.0
162	0.0	0.0	0.0	0.3	0.8	0.8	0.0	0.0	0.0
163	0.0	0.0	0.0	0.4	0.9	0.9	0.0	0.0	0.0
164	0.0	0.0	0.0	0.4	1.0	1.0	0.1	0.0	0.0
165	0.0	0.0	0.0	0.5	1.0	1.1	0.2	0.0	0.0
166	0.0	0.0	0.0	0.6	1.1	1.1	0.2	0.0	0.0
167	0.0	0.0	0.0	0.7	1.2	1.2	0.3	0.0	0.0
168	0.0	0.0	0.0	0.7	1.2	1.2	0.4	0.0	0.0
169	0.0	0.0	0.0	0.8	1.3	1.2	0.4	0.0	0.0
170	0.0	0.0	0.0	0.8	1.3	1.2	0.4	0.0	0.0
171	0.0	0.0	0.0	0.8	1.3	1.2	0.4	0.0	0.0
172	0.0	0.0	0.0	0.9	1.3	1.2	0.4	0.0	0.0
173	0.0	0.0	0.0	0.9	1.4	1.2	0.5	0.0	0.0
174	0.0	0.0	0.0	0.9	1.4	1.2	0.5	0.0	0.0
175	0.0	0.0	0.1	0.9	1.4	1.2	0.5	0.0	0.0
176	0.0	0.0	0.1	1.0	1.4	1.2	0.5	0.0	0.0
177	0.0	0.0	0.1	1.0	1.4	1.2	0.5	0.0	0.0
178	0.0	0.0	0.2	1.0	1.5	1.2	0.4	0.0	0.0
179	0.0	0.0	0.2	1.1	1.5	1.2	0.4	0.0	0.0
180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Integrating Sphere Equipment List

Description	Manufacturer	Model	Serial Number
3M Sphere	Labsphere	ILLUMIA PLUS 3020-300 4PI	1109184535
CCD Array Spectrometer	Labsphere	MC-9801:3683L	98011077
Programmable AC Source	Chroma	61602	616020003699
Power Analyzer	Xitron	XT2640	264AD2006001

Goniophotometer Equipment List

Description	Manufacturer	Model	Serial Number
AC Power Source	Chroma	61602	616020002300
Type C Goniophotometer	LSI / UL	6440T	6440PN2028
Spectroradiometer	Gooch & Housego	770VIS/NIR	12415189
Spectrometer	Inphora, Inc	PDET 31	130627
Power Meter	Xitron	XT2640	M20140823

Test Methods Used:

Title	Description
ANSI C82.77:2002	Harmonic Emission Limits- Related Power Quality Reqt's for Lighting Equipment
CIE Pub. 13.3:1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. 15:2004	Colorimetry
IES LM-58:1994	Spectroradiometric Measurements
IES LM-79:2008	Electrical and Photometric Measurements of Solid-State Lighting Products

Reference Standard Used:

Equipment	Description
3m Sphere	Tungsten Halogen Omni-Directional 35W Calibration Lamp, Serial Number E4
Type C Goniophotometer and Spectrometer	Tungsten Halogen Omni-Directional 500W Calibration Lamp, Serial Numbers 16C293, 16C294, 16C295. For color calibration of spectrometer, 13C074.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the federal government.

The results contained in this report pertain only to the tested sample.

This report shall not be reproduced, except in full, without written approval of the RESTL.

*Items marked with a single asterisk are not covered by the NVLAP accreditation.

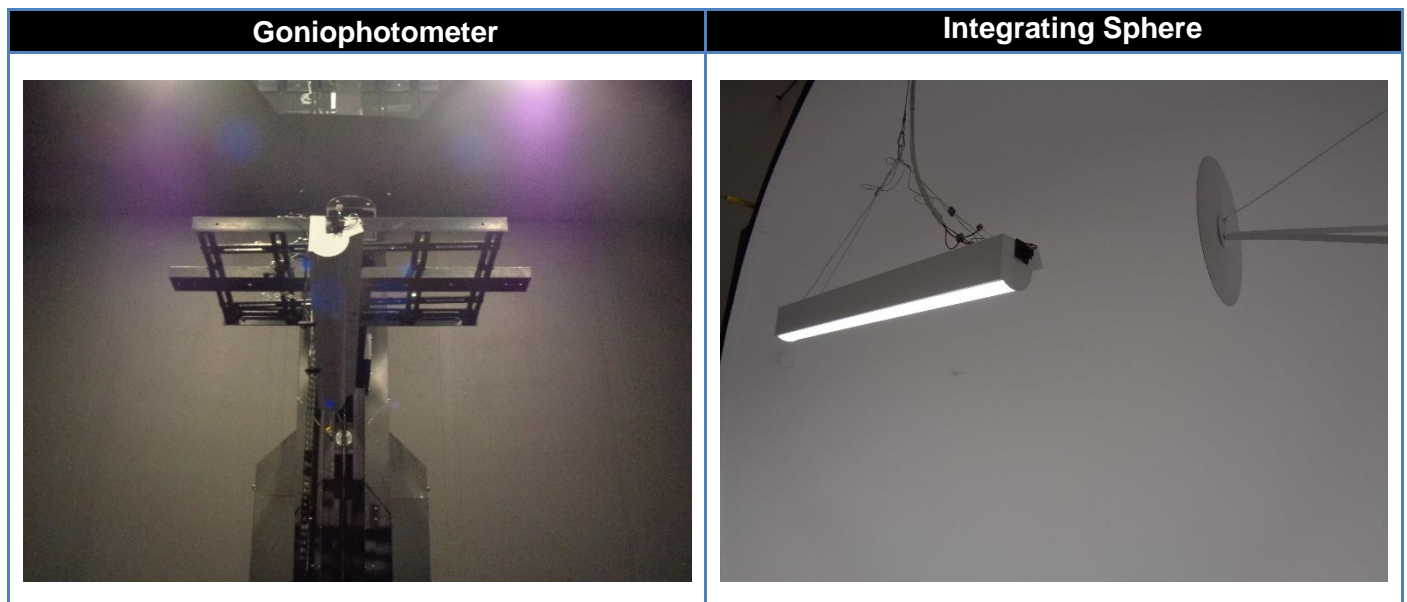
In the event that the recorded temperature is outside of $25 \pm 1^{\circ}\text{C}$, this is considered a non-standard condition.

This report may contain data not covered by the NVLAP accreditation, and are identified with **.

In the event that testing is subcontracted, or subcontracted equipment was used, test results in this report marked with the symbol *, or noted as "Sphere" or "Integrating Sphere" or "Goniophotometer," were performed by the subcontracted laboratory identified in the equipment list of this report.

Additional Comments:

The photos below are intended to show the orientation and fixturing/set-up of the units under test. These are critical to understanding the results of the test given the sensitivity of many products and measurement systems to orientation and set-up considerations, and also for reproducing the conditions of the test.



Document Revision History:

Each subsequent revision of this report replaces the preceding report.

Date	Rev	DCN #	Change at the time of this test	By	Approval
07/11/2022	A	DMS	Origination	M.Hubbard	J. Vollers