

Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: HALO COMMERCIAL

Report Number: P776448

Luminaire Tested: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-4000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P776448
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B048)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBS3040CSD-HCD81TRH-HCD81TRLWW-4000lm-4000K
Description: 8 INCH ROUND SHALLOW-WIDE LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 4000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4945.3 lumens
Efficiency: N/A
Efficacy: 128.4 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.17 / 1.27
Luminous Opening: Circular (Dia: 0.67' x H: 0')
CIE Type: Direct

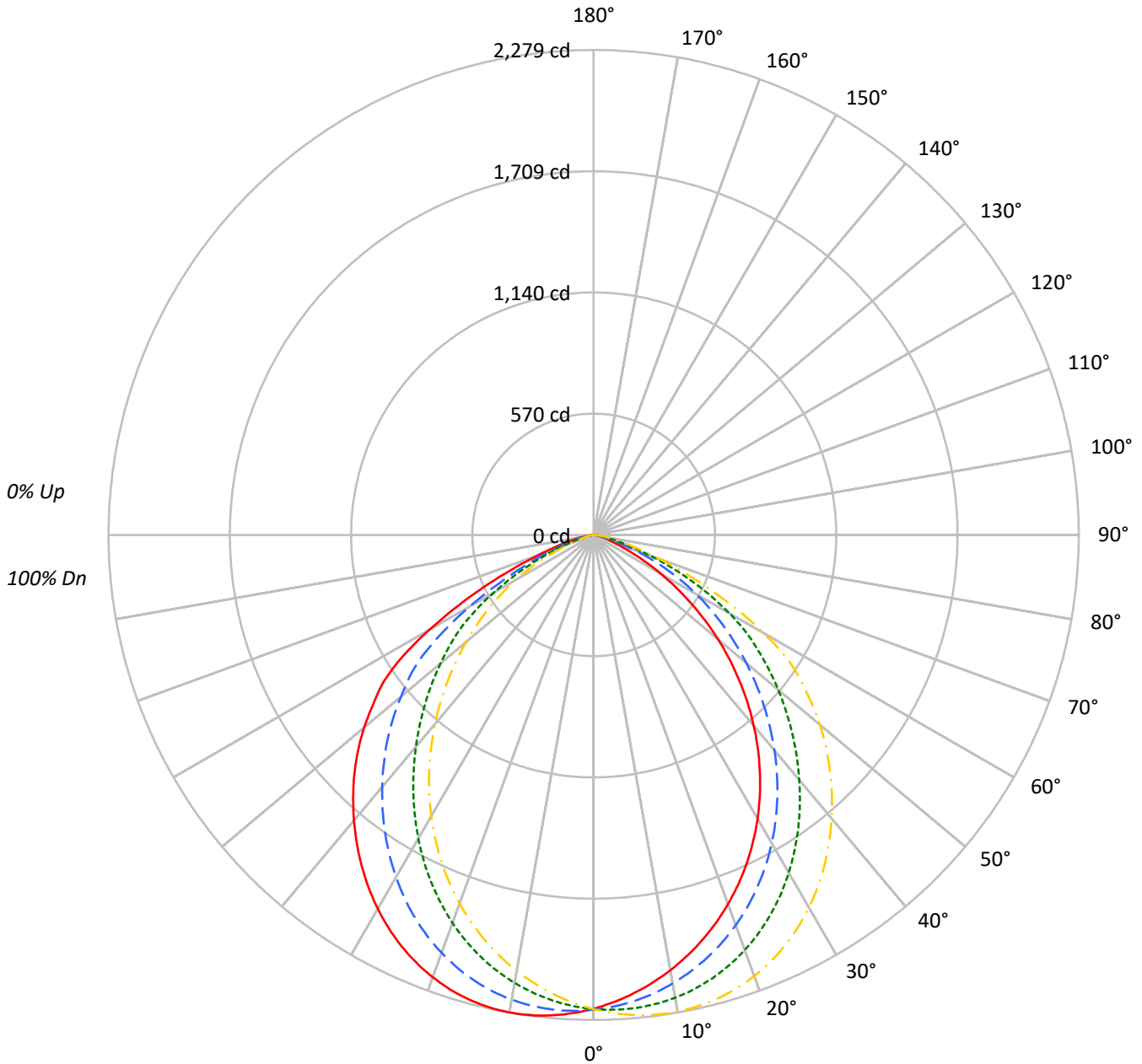
Input Watts (W): 38.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20										
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	50	30	10	0					
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100								
1	111	107	103	100	108	105	101	98	100	98	95	97	94	92	93	91	90	88								
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	83	80	78	76								
3	94	85	77	72	92	83	76	71	80	74	70	77	73	69	75	71	67	65								
4	87	76	68	62	84	74	67	61	72	66	61	70	64	60	68	63	59	57								
5	80	68	60	54	78	67	59	54	65	58	53	63	57	52	61	56	52	50								
6	74	62	53	48	72	61	53	47	59	52	47	57	51	47	56	50	46	44								
7	69	56	48	42	67	55	48	42	54	47	42	53	46	42	51	46	41	39								
8	64	52	44	38	63	51	43	38	50	43	38	48	42	37	47	42	37	35								
9	60	47	40	34	59	47	39	34	46	39	34	45	38	34	44	38	34	32								
10	56	44	36	31	55	43	36	31	42	36	31	41	35	31	41	35	31	29								

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	68052	68052	68052	68052
5°	66262	68410	69461	67322
10°	64380	68451	70649	66265
15°	62301	68161	71445	64861
20°	59982	67445	71857	63020
25°	57334	66278	71870	60740
30°	54290	64616	71504	58097
35°	50744	62473	70792	55052
40°	46602	59881	69821	51771
45°	41803	56958	68612	48293
50°	36188	53757	66828	44590
55°	29637	50098	64193	40490
60°	22214	44922	54350	33113
65°	14231	36178	39386	23695
70°	8061	24851	24351	14282
75°	6134	14544	15394	7750
80°	4325	8000	8791	3692
85°	2557	4379	2242	1541

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 157.5°
 Vertical Angle: 45°
 Luminance: 69570 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	210.3	4.3
10°-20°	595.0	12.0
20°-30°	876.1	17.7
30°-40°	1004.5	20.3
40°-50°	966.7	19.5
50°-60°	770.8	15.6
60°-70°	400.1	8.1
70°-80°	107.9	2.2
80°-90°	13.8	0.3
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	1681.4	34.0
0°-40°	2685.9	54.3
0°-60°	4423.4	89.4
0°-90°	4945.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4945.3	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2229	2229	2229	2229	2229	
5°	2162	2232	2266	2197	2162	204
15°	1971	2156	2260	2052	1971	554
25°	1702	1968	2134	1803	1702	782
35°	1362	1676	1899	1477	1362	849
45°	968	1319	1589	1118	968	745
55°	557	941	1206	761	557	498
65°	197	501	545	328	197	203
75°	52	123	130	66	52	57
85°	7	12	6	4	7	10
90°	0	1	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2229.0	2229.0	2229.0	2229.0	2229.0	2229.0	2229.0	2229.0	2229.0	2229.0	2229.0
0.5°	2220.9	2230.6	2229.8	2228.6	2229.8	2231.8	2233.0	2233.0	2231.4	2238.2	2233.4
1°	2215.3	2226.6	2227.4	2228.2	2231.4	2235.4	2237.8	2237.8	2236.2	2241.5	2235.4
1.5°	2209.2	2222.1	2224.5	2227.8	2232.2	2237.8	2241.9	2241.9	2241.1	2244.3	2236.6
2°	2203.2	2217.7	2221.7	2226.6	2233.0	2240.7	2245.9	2245.9	2245.5	2247.1	2237.8
2.5°	2196.7	2212.9	2218.1	2225.8	2233.4	2243.1	2249.9	2249.9	2249.5	2249.9	2238.6
3°	2190.3	2207.6	2214.9	2224.1	2233.8	2245.5	2253.6	2253.6	2253.2	2252.3	2239.1
3.5°	2183.9	2202.4	2211.3	2222.5	2233.8	2247.5	2256.8	2256.8	2257.2	2254.4	2239.5
4°	2176.6	2196.7	2207.2	2220.5	2233.4	2249.1	2259.6	2259.6	2260.4	2256.0	2239.5
4.5°	2169.7	2191.1	2202.8	2218.1	2233.0	2250.3	2262.4	2262.4	2263.6	2257.6	2239.1
5°	2162.1	2185.1	2198.4	2215.7	2232.2	2251.1	2264.8	2264.8	2266.5	2258.8	2238.6
5.5°	2154.8	2179.0	2193.9	2212.9	2231.0	2251.9	2266.9	2266.9	2268.9	2259.6	2237.4
6°	2146.8	2172.6	2188.7	2209.6	2229.8	2252.3	2268.9	2268.9	2271.3	2260.0	2236.6
6.5°	2138.7	2165.7	2183.4	2206.4	2227.8	2252.8	2270.5	2270.5	2273.3	2260.4	2235.4
7°	2130.7	2158.9	2178.2	2202.8	2225.8	2252.8	2272.1	2272.1	2274.9	2260.4	2233.8
7.5°	2122.2	2151.6	2172.6	2199.2	2223.3	2252.3	2272.9	2272.9	2276.1	2260.0	2231.8
8°	2113.3	2144.4	2166.5	2194.7	2221.3	2251.9	2273.7	2273.7	2277.3	2259.6	2229.4
8.5°	2104.5	2136.7	2160.1	2190.3	2218.5	2250.7	2274.5	2274.5	2278.1	2258.4	2227.0
9°	2095.2	2129.1	2153.6	2185.5	2215.3	2249.9	2274.5	2274.5	2278.9	2257.6	2224.1
9.5°	2086.3	2121.0	2147.2	2180.6	2212.1	2248.3	2274.5	2274.5	2278.9	2256.0	2220.9
10°	2076.7	2112.9	2139.9	2175.4	2208.0	2246.3	2274.1	2274.1	2278.9	2254.0	2217.7
10.5°	2067.4	2104.5	2132.7	2169.7	2204.4	2244.7	2273.7	2273.7	2278.1	2251.9	2214.1
11°	2057.3	2095.6	2125.4	2163.7	2200.0	2242.3	2272.5	2272.5	2277.3	2249.5	2210.0
11.5°	2047.3	2087.1	2117.8	2158.1	2195.5	2239.9	2271.3	2271.3	2276.5	2247.1	2205.6
12°	2036.8	2077.9	2110.1	2151.6	2190.7	2237.0	2270.1	2270.1	2274.9	2243.9	2201.2
12.5°	2026.7	2068.6	2101.7	2144.8	2185.9	2233.8	2268.1	2268.1	2273.3	2240.7	2196.3
13°	2015.8	2058.9	2093.6	2137.9	2180.6	2230.6	2266.0	2266.0	2271.3	2237.0	2191.1
13.5°	2005.0	2049.3	2084.7	2131.1	2175.0	2227.0	2263.6	2263.6	2269.3	2233.4	2185.9
14°	1994.1	2039.6	2075.9	2123.4	2168.9	2222.9	2260.8	2260.8	2266.9	2229.0	2179.8
14.5°	1982.4	2029.5	2067.0	2116.2	2162.9	2218.5	2258.0	2258.0	2263.6	2224.5	2174.2
15°	1971.1	2019.5	2057.7	2108.1	2156.5	2213.7	2254.8	2254.8	2260.4	2219.7	2167.7
15.5°	1959.4	2008.6	2048.1	2100.0	2149.6	2209.2	2251.1	2251.1	2256.8	2214.9	2161.3
16°	1947.7	1997.7	2038.0	2091.6	2142.4	2204.0	2247.1	2247.1	2253.2	2209.2	2154.8
16.5°	1935.6	1986.8	2027.9	2082.7	2135.1	2198.4	2243.1	2243.1	2249.1	2203.6	2147.6
17°	1923.2	1975.5	2017.8	2073.5	2127.4	2192.7	2238.6	2238.6	2244.7	2197.6	2139.9
17.5°	1910.7	1964.3	2007.4	2064.6	2119.8	2186.7	2233.8	2233.8	2239.9	2191.1	2132.3
18°	1898.6	1952.6	1996.9	2054.9	2111.3	2180.2	2229.0	2229.0	2234.6	2184.7	2124.2
18.5°	1885.7	1940.9	1985.6	2045.2	2102.9	2173.4	2223.7	2223.7	2229.0	2177.8	2116.2
19°	1872.0	1928.8	1974.3	2035.2	2094.0	2166.9	2218.1	2218.1	2223.7	2171.0	2107.7
19.5°	1859.1	1916.3	1963.0	2024.7	2085.1	2159.7	2212.1	2212.1	2217.7	2163.3	2098.8
20°	1846.2	1904.2	1951.4	2014.6	2075.9	2152.0	2206.0	2206.0	2211.7	2155.6	2089.6
20.5°	1832.5	1891.3	1939.7	2003.7	2065.8	2144.4	2199.6	2199.6	2205.2	2147.6	2080.7
21°	1818.0	1878.8	1927.6	1992.9	2056.1	2136.3	2192.7	2192.7	2198.4	2139.5	2071.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
22.5°	1776.5	1838.9	1889.7	1957.8	2025.1	2110.5	2170.6	2190.7	2175.8	2113.3	2040.8
23°	1762.0	1825.2	1876.8	1945.7	2014.2	2101.3	2162.5	2183.4	2167.7	2103.7	2029.9
23.5°	1747.1	1811.5	1863.5	1933.6	2002.5	2092.0	2154.4	2175.4	2159.7	2094.4	2019.5
24°	1732.2	1797.4	1849.8	1921.1	1991.3	2081.9	2146.0	2167.3	2151.2	2084.3	2008.2
24.5°	1717.3	1783.3	1836.1	1907.8	1979.6	2071.8	2137.1	2158.9	2142.4	2074.3	1996.9
25°	1702.0	1768.8	1822.4	1895.0	1967.5	2061.8	2127.8	2150.0	2133.5	2063.8	1985.2
25.5°	1686.6	1753.9	1808.3	1881.7	1955.0	2050.9	2118.6	2141.1	2123.8	2053.3	1973.5
26°	1670.9	1739.4	1793.8	1868.0	1942.5	2040.0	2108.9	2131.9	2114.1	2042.4	1961.4
26.5°	1655.2	1724.5	1779.3	1853.9	1929.6	2029.1	2099.2	2122.2	2104.5	2031.1	1949.3
27°	1639.1	1709.6	1764.8	1840.2	1916.7	2017.8	2088.8	2112.1	2094.4	2019.9	1936.5
27.5°	1623.0	1694.3	1749.9	1826.1	1903.4	2006.2	2078.3	2102.5	2083.9	2008.6	1924.0
28°	1606.9	1678.6	1735.0	1811.5	1889.3	1993.7	2067.8	2092.0	2073.5	1996.5	1910.7
28.5°	1589.9	1662.5	1719.7	1796.6	1875.6	1982.0	2056.9	2081.1	2062.2	1984.4	1897.8
29°	1573.4	1646.8	1704.0	1781.3	1861.5	1969.1	2045.2	2070.2	2051.3	1971.9	1884.1
29.5°	1556.9	1630.6	1688.7	1766.4	1847.4	1956.6	2034.0	2059.3	2039.6	1959.4	1870.4
30°	1540.0	1614.9	1672.5	1751.1	1832.9	1943.7	2022.3	2048.1	2028.3	1946.9	1856.3
30.5°	1522.7	1598.0	1656.4	1735.8	1818.0	1930.0	2010.2	2036.4	2016.2	1933.6	1842.6
31°	1505.3	1581.5	1640.3	1720.5	1803.5	1916.7	1998.1	2024.3	2004.1	1920.7	1828.5
31.5°	1487.6	1565.0	1623.8	1704.0	1788.2	1903.0	1985.2	2012.2	1991.7	1907.4	1814.0
32°	1470.3	1548.0	1607.3	1687.9	1772.5	1888.9	1972.7	1999.7	1979.2	1894.1	1799.5
32.5°	1452.5	1530.3	1590.3	1671.3	1756.8	1874.8	1959.8	1987.6	1966.3	1880.0	1785.0
33°	1434.8	1513.4	1573.0	1655.2	1741.0	1859.9	1946.5	1975.1	1953.4	1866.3	1769.6
33.5°	1416.7	1496.1	1556.1	1638.3	1724.9	1845.4	1933.2	1961.4	1940.1	1851.8	1754.7
34°	1398.1	1478.7	1539.2	1621.8	1709.2	1830.9	1919.1	1948.1	1926.8	1837.7	1739.4
34.5°	1380.0	1461.0	1521.8	1604.4	1692.7	1815.6	1905.4	1934.8	1913.1	1823.6	1724.1
35°	1361.5	1442.9	1504.5	1587.9	1676.2	1800.3	1891.3	1921.5	1899.4	1808.7	1708.4
35.5°	1342.9	1424.7	1486.4	1570.2	1659.2	1785.0	1876.8	1907.4	1885.7	1793.8	1693.1
36°	1324.0	1406.6	1468.7	1552.9	1642.7	1769.2	1862.7	1892.9	1871.2	1778.5	1676.6
36.5°	1305.1	1388.5	1450.5	1534.7	1625.8	1753.5	1847.4	1878.8	1857.1	1764.0	1660.5
37°	1286.1	1369.9	1432.8	1517.8	1608.9	1737.0	1832.5	1864.7	1842.2	1748.3	1644.7
37.5°	1267.2	1351.4	1414.3	1500.1	1591.1	1720.9	1817.2	1849.8	1827.7	1733.0	1628.6
38°	1247.5	1332.9	1395.7	1482.0	1573.8	1704.4	1801.9	1834.9	1812.8	1717.3	1612.1
38.5°	1228.1	1313.9	1377.2	1463.0	1556.1	1687.9	1786.6	1820.0	1797.8	1702.0	1595.6
39°	1209.2	1294.6	1358.7	1445.7	1539.2	1671.3	1770.9	1805.5	1782.5	1685.8	1579.1
39.5°	1189.8	1276.1	1340.1	1427.2	1520.6	1654.4	1754.7	1789.8	1767.6	1669.7	1562.5
40°	1169.3	1257.1	1321.2	1409.0	1502.5	1637.1	1739.0	1774.1	1751.9	1653.6	1545.2
40.5°	1149.9	1237.8	1302.3	1390.1	1484.4	1620.2	1722.9	1758.4	1736.2	1637.5	1528.7
41°	1129.8	1218.4	1283.3	1372.0	1466.2	1602.8	1706.0	1743.1	1720.5	1621.0	1511.4
41.5°	1110.1	1199.1	1264.4	1353.4	1448.1	1585.1	1689.9	1726.9	1704.4	1605.3	1494.4
42°	1089.5	1179.8	1244.6	1334.9	1430.0	1567.4	1672.9	1710.4	1688.3	1588.3	1477.5
42.5°	1070.2	1160.0	1226.1	1316.4	1411.8	1550.1	1656.8	1694.3	1672.1	1571.4	1459.8
43°	1049.6	1140.3	1206.8	1297.8	1393.3	1532.3	1639.5	1678.2	1656.0	1554.1	1442.5
43.5°	1029.1	1120.5	1187.8	1278.5	1374.8	1514.6	1622.6	1661.7	1639.5	1537.6	1425.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	968.2	1060.5	1129.4	1222.1	1319.2	1460.2	1570.6	1611.3	1589.1	1485.2	1371.6
45.5°	947.7	1040.8	1110.5	1203.5	1300.6	1442.1	1552.9	1594.4	1572.2	1467.0	1353.4
46°	927.1	1020.6	1090.7	1184.2	1282.1	1423.9	1535.1	1576.6	1554.9	1449.3	1335.3
46.5°	906.6	1000.5	1071.8	1165.3	1263.6	1405.4	1517.4	1559.3	1537.6	1431.2	1316.8
47°	886.4	980.7	1052.0	1146.3	1245.0	1386.9	1498.9	1541.6	1519.4	1412.7	1298.2
47.5°	865.5	960.6	1032.7	1127.4	1225.7	1368.3	1481.2	1523.5	1501.3	1394.1	1278.9
48°	844.1	940.4	1013.0	1108.8	1207.2	1349.8	1462.6	1505.3	1483.6	1374.4	1259.9
48.5°	824.0	919.9	993.6	1089.5	1188.6	1331.3	1444.1	1486.8	1465.0	1355.0	1240.6
49°	803.4	900.1	973.9	1070.6	1169.7	1311.9	1425.1	1468.3	1446.1	1335.3	1220.9
49.5°	782.9	880.0	954.9	1051.6	1150.3	1293.0	1406.6	1449.3	1426.4	1315.1	1201.1
50°	761.9	859.8	936.0	1032.3	1131.8	1274.0	1386.9	1430.0	1407.0	1295.0	1181.4
50.5°	741.0	839.7	916.3	1013.8	1112.9	1254.7	1367.1	1410.2	1386.9	1274.0	1162.0
51°	720.4	819.1	896.9	994.8	1093.9	1235.4	1347.4	1390.1	1366.7	1253.9	1142.7
51.5°	700.3	799.0	877.6	975.9	1075.0	1216.0	1327.2	1369.5	1346.2	1234.2	1123.8
52°	679.3	779.3	858.2	956.9	1055.7	1195.9	1306.7	1348.6	1325.2	1215.2	1105.6
52.5°	659.2	759.1	838.9	938.0	1036.3	1176.1	1286.1	1327.6	1304.3	1196.7	1086.7
53°	638.2	739.0	820.0	919.1	1017.0	1155.6	1265.2	1307.5	1284.5	1176.9	1067.8
53.5°	617.7	719.2	800.6	900.5	998.0	1135.4	1244.2	1286.1	1265.2	1156.4	1045.6
54°	597.5	699.5	781.7	880.8	978.7	1115.3	1224.1	1266.8	1246.2	1133.0	1023.0
54.5°	577.4	679.7	762.3	862.3	959.8	1096.0	1204.3	1248.3	1226.5	1107.2	997.2
55°	556.8	660.0	743.4	843.3	941.2	1076.6	1185.4	1229.3	1206.0	1078.2	970.6
55.5°	537.1	639.8	724.9	825.2	923.1	1058.1	1165.7	1208.0	1181.4	1050.0	942.8
56°	517.0	620.9	705.5	806.7	904.6	1038.7	1145.1	1184.2	1154.4	1018.6	914.2
56.5°	497.2	601.6	687.0	788.1	886.0	1018.2	1122.1	1157.6	1126.2	987.2	885.6
57°	477.5	581.8	668.9	770.4	865.9	996.0	1097.6	1130.6	1096.0	954.9	856.6
57.5°	457.7	562.9	650.7	752.3	845.7	973.9	1071.4	1100.4	1063.3	923.1	825.6
58°	439.2	543.9	631.8	734.1	824.4	949.7	1044.4	1069.4	1030.3	888.4	795.0
58.5°	419.8	525.4	613.3	714.8	803.4	925.1	1016.2	1036.3	996.8	853.8	764.3
59°	400.9	506.9	595.1	695.4	780.9	899.7	985.6	1002.9	961.8	820.0	733.7
59.5°	382.0	488.3	576.6	675.7	758.7	873.1	954.9	967.0	925.9	786.5	702.7
60°	363.8	469.4	558.1	656.0	735.7	846.9	923.5	932.4	890.1	751.5	672.5
60.5°	345.7	451.3	538.7	636.2	713.6	820.0	891.7	896.5	854.2	717.6	642.3
61°	328.0	433.5	520.2	615.7	689.8	792.6	858.6	861.9	818.7	684.2	612.4
61.5°	309.8	415.0	501.2	595.9	666.4	764.8	825.2	826.0	782.5	649.9	582.6
62°	292.9	396.9	482.3	575.4	643.5	736.5	793.0	791.3	747.4	616.9	552.8
62.5°	276.0	378.7	463.8	555.2	619.3	708.3	759.1	756.3	711.6	584.6	524.2
63°	259.5	361.0	444.4	535.1	595.5	679.3	726.1	721.2	677.3	554.4	496.4
63.5°	242.6	343.3	425.9	513.7	571.8	650.7	693.4	686.6	643.1	523.8	469.0
64°	227.2	326.4	407.4	493.6	548.4	622.5	662.0	653.1	610.0	494.8	442.4
64.5°	211.9	309.0	388.8	473.0	524.6	593.9	629.8	620.1	577.8	466.6	416.6
65°	197.0	291.7	370.7	452.9	500.8	565.7	599.1	587.9	545.2	439.2	392.0
65.5°	182.5	275.2	352.2	432.3	477.1	537.9	568.5	556.0	513.3	413.4	370.3
66°	168.8	259.1	334.0	412.2	453.3	510.5	538.3	525.0	481.9	388.4	348.9



TEST NUMBER: P776448

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	133.4	211.9	280.0	352.2	384.8	431.9	452.5	438.4	392.9	323.1	284.5
68°	123.3	197.0	262.7	332.4	363.4	407.0	425.5	411.4	367.9	301.0	265.5
68.5°	113.6	182.5	245.8	312.7	342.1	382.4	398.9	385.2	342.9	279.2	248.2
69°	103.6	168.0	228.5	293.3	320.7	359.8	375.9	361.8	317.9	260.7	231.7
69.5°	95.9	153.9	211.5	273.6	299.8	337.7	353.0	338.9	293.3	243.4	216.0
70°	90.3	141.4	195.0	255.5	278.4	315.1	330.4	315.5	272.8	226.8	201.5
70.5°	86.6	129.3	178.9	236.9	259.5	292.5	307.4	292.5	253.4	211.5	187.8
71°	82.6	117.7	163.6	218.8	241.4	273.2	284.5	272.8	235.3	197.0	174.5
71.5°	78.6	106.0	148.7	201.5	223.6	253.4	264.7	253.8	218.4	183.3	162.4
72°	74.5	94.3	136.6	184.9	206.7	235.3	245.8	236.1	203.1	170.8	151.1
72.5°	70.5	85.8	124.9	169.2	190.2	218.0	228.5	219.6	188.6	158.8	139.8
73°	66.5	79.8	113.2	154.7	174.9	201.9	212.3	203.9	175.3	147.5	129.7
73.5°	62.9	75.7	101.5	140.6	160.8	186.6	197.0	189.4	163.2	137.0	120.1
74°	59.2	71.7	89.4	129.3	147.5	172.5	182.5	176.1	151.5	126.9	110.8
74.5°	55.6	68.1	81.0	117.7	134.6	159.2	169.2	163.6	140.6	117.7	102.3
75°	52.0	64.5	73.3	106.4	123.3	146.7	156.7	151.9	130.5	108.8	93.9
75.5°	48.8	60.8	67.3	95.1	112.4	135.0	145.1	141.0	120.5	99.9	86.2
76°	45.5	57.2	61.6	85.8	102.3	124.1	134.2	130.5	111.2	91.9	78.6
76.5°	42.7	54.0	56.8	77.4	92.7	113.6	124.1	121.3	102.3	84.2	71.7
77°	39.9	50.4	52.8	70.1	84.6	104.8	114.4	112.0	93.5	77.0	64.9
77.5°	37.1	47.1	49.2	63.3	76.6	95.5	105.6	103.6	85.4	69.7	58.4
78°	34.2	44.3	46.3	57.2	69.3	87.0	96.7	95.1	77.8	63.3	52.4
78.5°	31.8	41.5	43.1	52.0	62.5	79.4	88.6	87.0	70.1	57.2	46.7
79°	29.4	38.7	40.7	47.1	56.4	72.1	81.0	79.8	62.9	51.2	41.5
79.5°	27.0	35.9	37.9	42.7	50.8	65.3	73.7	72.5	56.4	45.9	37.5
80°	24.6	33.0	35.5	38.7	45.5	58.8	66.9	65.7	50.0	41.5	33.0
80.5°	22.6	30.6	32.6	35.1	40.7	53.2	60.4	59.6	43.9	36.7	28.6
81°	20.5	28.2	30.6	31.8	37.1	47.1	54.4	53.6	39.1	32.2	24.6
81.5°	18.5	26.2	28.2	29.0	33.0	42.3	48.4	47.9	34.2	27.8	20.1
82°	16.5	23.8	26.2	26.2	29.4	37.9	43.1	42.3	29.4	23.4	16.9
82.5°	14.9	21.8	23.8	23.8	25.4	33.8	38.7	37.9	24.2	18.9	14.1
83°	12.9	19.3	21.8	21.4	21.8	29.8	34.2	33.4	19.3	15.7	11.3
83.5°	11.3	17.7	20.1	19.7	18.9	25.4	29.8	29.0	15.7	12.5	8.9
84°	10.1	15.7	18.1	17.7	16.5	21.4	25.4	24.6	12.1	9.7	6.8
84.5°	8.5	14.1	16.1	16.1	14.5	18.5	21.0	20.1	9.3	7.3	5.2
85°	7.3	12.5	14.5	14.5	12.5	15.7	17.7	16.5	6.4	4.8	3.6
85.5°	6.0	10.9	13.3	12.9	10.5	12.9	14.5	13.3	4.0	3.2	2.4
86°	4.8	9.3	11.7	11.7	9.3	10.9	11.7	10.5	2.4	2.0	1.2
86.5°	3.6	7.7	10.1	10.1	7.7	8.9	9.3	7.7	1.6	0.8	0.4
87°	2.8	6.4	8.5	8.9	6.4	6.8	7.3	5.6	1.2	0.4	0.0
87.5°	2.0	5.2	7.3	7.7	5.2	5.6	5.2	4.0	0.8	0.0	0.0
88°	1.6	4.0	6.0	6.4	4.4	4.0	3.6	2.4	0.4	0.0	0.0
88.5°	0.8	3.2	4.8	5.2	3.2	2.8	2.4	1.2	0.4	0.0	0.0



TEST NUMBER: P776448

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	1.2	2.0	2.4	1.2	0.8	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776448

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2229.0	2229.0	2229.0	2229.0	2229.0	2229.0
0.5°	2228.6	2226.6	2224.5	2223.3	2221.7	2220.9
1°	2228.2	2224.1	2220.5	2218.1	2215.7	2215.3
1.5°	2227.4	2221.7	2216.1	2212.1	2209.6	2209.2
2°	2226.6	2218.9	2211.7	2206.4	2203.2	2203.2
2.5°	2224.9	2215.7	2206.8	2200.4	2196.7	2196.7
3°	2223.3	2212.5	2201.6	2193.9	2189.9	2190.3
3.5°	2221.7	2209.2	2196.3	2187.5	2183.0	2183.9
4°	2219.3	2205.2	2190.7	2180.6	2175.4	2176.6
4.5°	2217.3	2201.2	2184.7	2173.4	2168.1	2169.7
5°	2214.5	2196.7	2178.6	2166.1	2160.1	2162.1
5.5°	2211.7	2191.9	2172.2	2158.5	2152.4	2154.8
6°	2208.4	2187.1	2165.3	2150.8	2144.4	2146.8
6.5°	2204.8	2181.8	2158.5	2142.8	2135.9	2138.7
7°	2201.2	2176.6	2151.2	2134.7	2127.4	2130.7
7.5°	2197.1	2170.6	2144.0	2126.2	2118.6	2122.2
8°	2192.7	2164.5	2136.3	2117.4	2109.7	2113.3
8.5°	2188.3	2158.1	2128.2	2108.5	2100.4	2104.5
9°	2183.0	2151.6	2120.2	2099.2	2090.8	2095.2
9.5°	2178.2	2144.8	2111.7	2090.0	2081.1	2086.3
10°	2172.6	2137.5	2102.9	2080.3	2071.4	2076.7
10.5°	2166.9	2130.7	2094.0	2070.2	2061.4	2067.4
11°	2160.9	2122.6	2084.7	2060.6	2051.3	2057.3
11.5°	2154.8	2114.5	2075.1	2050.1	2040.8	2047.3
12°	2148.0	2106.5	2065.4	2039.6	2029.9	2036.8
12.5°	2141.1	2098.0	2055.3	2028.7	2019.1	2026.7
13°	2133.9	2089.6	2045.2	2017.8	2008.2	2015.8
13.5°	2126.6	2080.3	2034.8	2006.6	1997.3	2005.0
14°	2119.0	2071.0	2023.9	1995.7	1985.6	1994.1
14.5°	2111.3	2061.8	2013.4	1984.0	1973.9	1982.4
15°	2102.9	2052.1	2002.1	1971.9	1962.2	1971.1
15.5°	2094.4	2042.0	1990.4	1959.8	1949.8	1959.4
16°	2085.5	2031.5	1979.2	1947.7	1938.1	1947.7
16.5°	2076.7	2021.1	1967.1	1935.2	1925.6	1935.6
17°	2067.4	2010.2	1955.0	1922.8	1913.1	1923.2
17.5°	2057.7	1998.9	1942.5	1909.5	1900.2	1910.7
18°	2047.7	1987.6	1930.0	1897.0	1887.3	1898.6
18.5°	2037.6	1975.9	1917.1	1883.3	1873.6	1885.7
19°	2027.5	1964.3	1903.8	1870.4	1860.7	1872.0
19.5°	2016.6	1952.2	1890.5	1856.3	1847.0	1859.1
20°	2005.8	1939.7	1876.8	1842.6	1833.3	1846.2
20.5°	1994.5	1927.2	1863.1	1828.1	1819.6	1832.5
21°	1983.2	1914.3	1849.0	1814.0	1805.1	1818.0



TEST NUMBER: P776448

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1947.7	1874.4	1805.9	1769.6	1761.6	1776.5
23°	1935.2	1860.7	1791.4	1754.7	1746.7	1762.0
23.5°	1922.8	1846.6	1776.5	1739.8	1731.8	1747.1
24°	1909.5	1832.1	1761.2	1724.5	1716.5	1732.2
24.5°	1896.6	1818.0	1745.9	1708.4	1701.1	1717.3
25°	1883.3	1803.1	1729.8	1692.7	1685.4	1702.0
25.5°	1869.6	1789.0	1714.4	1677.0	1669.7	1686.6
26°	1855.9	1773.7	1698.7	1660.9	1654.0	1670.9
26.5°	1841.8	1758.8	1682.6	1644.3	1637.9	1655.2
27°	1827.7	1743.1	1666.5	1627.8	1621.8	1639.1
27.5°	1813.2	1727.7	1650.0	1611.3	1605.3	1623.0
28°	1798.7	1712.0	1633.5	1594.8	1588.3	1606.9
28.5°	1783.7	1695.9	1616.9	1577.9	1571.8	1589.9
29°	1768.8	1680.2	1600.0	1560.5	1555.3	1573.4
29.5°	1753.5	1664.1	1583.1	1543.2	1538.0	1556.9
30°	1738.2	1648.0	1566.2	1526.3	1520.6	1540.0
30.5°	1722.9	1631.0	1548.8	1508.5	1503.7	1522.7
31°	1707.6	1614.5	1531.5	1491.2	1486.0	1505.3
31.5°	1691.5	1597.6	1513.8	1473.5	1468.7	1487.6
32°	1675.8	1580.7	1496.1	1455.4	1450.5	1470.3
32.5°	1659.2	1563.8	1478.7	1437.6	1432.8	1452.5
33°	1643.1	1546.8	1461.0	1419.5	1414.7	1434.8
33.5°	1626.6	1529.1	1443.3	1401.4	1396.5	1416.7
34°	1610.1	1512.2	1424.7	1383.2	1378.0	1398.1
34.5°	1594.0	1494.4	1407.0	1365.1	1359.9	1380.0
35°	1577.0	1477.1	1388.5	1346.6	1340.9	1361.5
35.5°	1560.1	1459.8	1370.3	1327.6	1322.8	1342.9
36°	1543.2	1441.7	1352.6	1309.5	1303.5	1324.0
36.5°	1526.3	1424.3	1334.1	1291.0	1285.3	1305.1
37°	1509.0	1406.6	1316.0	1272.0	1266.0	1286.1
37.5°	1491.6	1388.9	1297.8	1253.1	1247.1	1267.2
38°	1474.3	1370.7	1279.3	1234.2	1227.7	1247.5
38.5°	1457.0	1352.6	1261.2	1215.6	1208.8	1228.1
39°	1440.1	1334.9	1242.2	1196.7	1189.4	1209.2
39.5°	1422.3	1317.2	1224.1	1177.7	1170.1	1189.8
40°	1404.6	1299.0	1205.6	1158.8	1150.8	1169.3
40.5°	1387.3	1280.9	1187.4	1139.9	1131.4	1149.9
41°	1369.5	1262.4	1168.9	1120.9	1111.3	1129.8
41.5°	1352.2	1245.0	1149.9	1102.0	1091.9	1110.1
42°	1334.5	1227.3	1131.8	1082.7	1072.6	1089.5
42.5°	1316.4	1208.8	1113.7	1063.7	1052.8	1070.2
43°	1298.6	1190.6	1095.6	1044.4	1032.7	1049.6
43.5°	1280.9	1172.9	1076.6	1025.8	1013.4	1029.1

TEST NUMBER: P776448

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1226.9	1118.5	1021.8	968.6	953.3	968.2
45.5°	1208.8	1101.2	1003.3	950.1	934.0	947.7
46°	1191.0	1083.5	985.6	931.2	914.2	927.1
46.5°	1172.5	1064.9	967.0	912.2	894.1	906.6
47°	1154.0	1046.8	949.3	893.3	874.3	886.4
47.5°	1135.4	1029.1	930.4	874.3	854.2	865.5
48°	1116.5	1010.9	913.0	855.8	834.5	844.1
48.5°	1098.0	992.8	894.5	836.9	814.7	824.0
49°	1079.0	975.1	876.8	818.3	795.0	803.4
49.5°	1059.7	956.9	858.6	799.4	775.6	782.9
50°	1041.2	938.8	840.5	780.9	755.5	761.9
50.5°	1022.6	920.3	822.4	762.7	735.7	741.0
51°	1004.5	902.1	804.6	744.2	716.4	720.4
51.5°	986.4	884.8	786.9	725.3	697.1	700.3
52°	969.4	867.9	769.6	707.5	677.7	679.3
52.5°	951.3	851.0	752.3	689.4	658.0	659.2
53°	932.4	834.1	735.7	671.7	638.6	638.2
53.5°	912.2	816.7	718.4	653.5	619.7	617.7
54°	890.5	798.6	701.5	635.8	600.4	597.5
54.5°	868.7	780.1	684.2	618.9	581.4	577.4
55°	844.5	760.7	666.4	601.6	562.9	556.8
55.5°	820.4	740.2	647.9	583.4	544.4	537.1
56°	795.0	719.6	629.8	566.1	526.2	517.0
56.5°	770.0	698.7	611.2	548.0	507.7	497.2
57°	743.4	676.9	592.7	530.2	489.6	477.5
57.5°	717.6	654.8	573.8	512.1	471.4	457.7
58°	691.0	632.6	555.2	494.8	453.7	439.2
58.5°	664.4	610.4	535.5	477.1	436.0	419.8
59°	638.2	587.5	516.5	459.3	418.2	400.9
59.5°	612.0	564.9	497.2	441.6	400.5	382.0
60°	585.4	542.3	477.5	424.3	382.8	363.8
60.5°	559.7	519.8	457.7	406.1	365.5	345.7
61°	534.3	497.2	438.0	388.8	348.1	328.0
61.5°	508.5	475.0	418.2	371.5	331.2	309.8
62°	483.1	452.9	398.9	354.2	314.7	292.9
62.5°	458.9	431.1	379.2	336.4	297.8	276.0
63°	434.8	409.8	359.4	319.1	281.6	259.5
63.5°	411.4	388.4	340.5	301.0	265.5	242.6
64°	389.2	367.5	321.5	283.7	250.2	227.2
64.5°	367.9	347.7	303.0	266.3	234.9	211.9
65°	346.5	328.0	284.5	249.8	220.0	197.0
65.5°	325.6	307.8	267.1	232.5	204.7	182.5
66°	304.2	288.5	249.0	215.6	190.6	168.8



TEST NUMBER: P776448

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	246.6	235.7	199.9	169.6	148.7	133.4
68°	230.1	218.8	184.1	155.1	137.4	123.3
68.5°	214.0	202.7	169.2	140.6	126.1	113.6
69°	198.6	187.8	155.1	129.7	115.2	103.6
69.5°	184.5	173.7	141.0	118.9	104.0	95.9
70°	171.6	160.0	130.1	107.6	92.7	90.3
70.5°	158.8	147.5	119.7	96.7	84.6	86.6
71°	146.7	137.0	108.8	87.4	79.0	82.6
71.5°	135.8	126.5	97.9	79.8	74.9	78.6
72°	124.9	116.4	89.0	72.9	71.3	74.5
72.5°	115.6	106.0	81.0	66.9	67.7	70.5
73°	106.4	95.9	73.3	61.6	64.1	66.5
73.5°	97.5	87.0	66.5	56.8	60.4	62.9
74°	89.4	79.4	60.4	52.8	56.8	59.2
74.5°	81.4	72.1	55.2	49.6	53.6	55.6
75°	74.1	65.7	50.0	46.3	50.4	52.0
75.5°	67.3	59.2	45.5	43.5	47.1	48.8
76°	61.2	53.6	41.1	40.7	43.9	45.5
76.5°	54.8	47.9	37.5	38.3	41.1	42.7
77°	49.6	43.1	34.2	35.5	38.3	39.9
77.5°	44.3	38.7	31.0	33.4	35.5	37.1
78°	39.9	34.7	28.2	31.0	33.0	34.2
78.5°	35.9	30.6	25.8	28.6	30.6	31.8
79°	31.4	27.4	23.4	26.6	28.2	29.4
79.5°	27.4	24.2	21.4	24.2	25.8	27.0
80°	23.4	21.0	19.3	22.2	23.4	24.6
80.5°	20.1	18.5	17.7	20.1	21.4	22.6
81°	17.3	16.1	16.1	18.5	19.3	20.5
81.5°	14.5	14.5	14.5	16.5	17.3	18.5
82°	12.1	12.9	12.9	14.9	15.3	16.5
82.5°	10.1	10.9	11.3	13.3	13.7	14.9
83°	8.1	9.3	10.1	11.7	12.1	12.9
83.5°	6.4	7.7	8.5	10.1	10.5	11.3
84°	5.2	6.4	7.3	8.5	8.9	10.1
84.5°	3.6	5.2	6.4	7.3	7.3	8.5
85°	2.8	4.4	5.2	6.0	6.0	7.3
85.5°	2.0	3.2	4.0	5.2	4.8	6.0
86°	1.2	2.4	3.2	4.0	4.0	4.8
86.5°	0.4	1.6	2.0	2.8	3.2	3.6
87°	0.0	0.8	1.2	2.0	2.4	2.8
87.5°	0.0	0.4	0.4	1.2	1.6	2.0
88°	0.0	0.0	0.0	0.4	0.8	1.6
88.5°	0.0	0.0	0.0	0.0	0.4	0.8



TEST NUMBER: P776448

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.0	0.0	0.0	0.0	0.0



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Cooper Lighting Solutions Photometric Lab
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Scaled Data Report





— 0°-180° - - 45°-225° - - - - 90°-270° - · - 135°-315°

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Scaled Data Report



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Scaled Data Report





21.5°	1804.3	1865.5	1915.1	1981.2	2046.1	2127.8	2185.5	2205.2	2191.1	2131.1	2061.4
22°	1790.6	1852.6	1902.6	1969.5	2036.0	2119.4	2178.2	2198.0	2183.9	2122.2	2050.9



44°	1008.9	1100.8	1168.1	1259.9	1356.2	1496.1	1604.8	1644.7	1623.0	1520.2	1407.4
44.5°	988.8	1080.6	1149.1	1241.4	1337.7	1478.3	1587.9	1627.8	1606.5	1502.9	1389.7



66.5°	155.9	243.0	316.3	392.0	430.3	483.9	508.9	495.2	450.9	366.7	327.2
67°	143.0	226.8	298.6	371.9	407.8	457.3	480.7	466.6	421.9	344.9	305.8



89°	0.4	2.4	4.0	4.4	2.4	2.0	1.2	0.4	0.0	0.0	0.0
89.5°	0.0	1.6	2.8	3.2	1.6	1.2	0.4	0.0	0.0	0.0	0.0

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21.5°	1971.5	1901.0	1834.9	1799.5	1790.6	1804.3
22°	1959.4	1887.7	1820.8	1784.6	1776.5	1790.6



44°	1263.2	1155.2	1058.1	1006.5	993.6	1008.9
44.5°	1244.6	1136.7	1039.9	988.0	973.5	988.8



66.5°	283.3	270.8	232.1	199.9	176.1	155.9
67°	263.9	252.6	215.2	184.1	162.0	143.0

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Scaled Data Report



89°	0.0	0.0	0.0	0.0	0.0	0.4
89.5°	0.0	0.0	0.0	0.0	0.0	0.0

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Scaled Data Report



(END OF REPORT)