

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: P776449

Luminaire Tested: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-5000K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P776449  
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-5000K  
Description: 8 INCH ROUND SHALLOW-WIDE LENSED WALLWASH KIT  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 5000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5018.5 lumens  
Efficiency: N/A  
Efficacy: 130.4 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

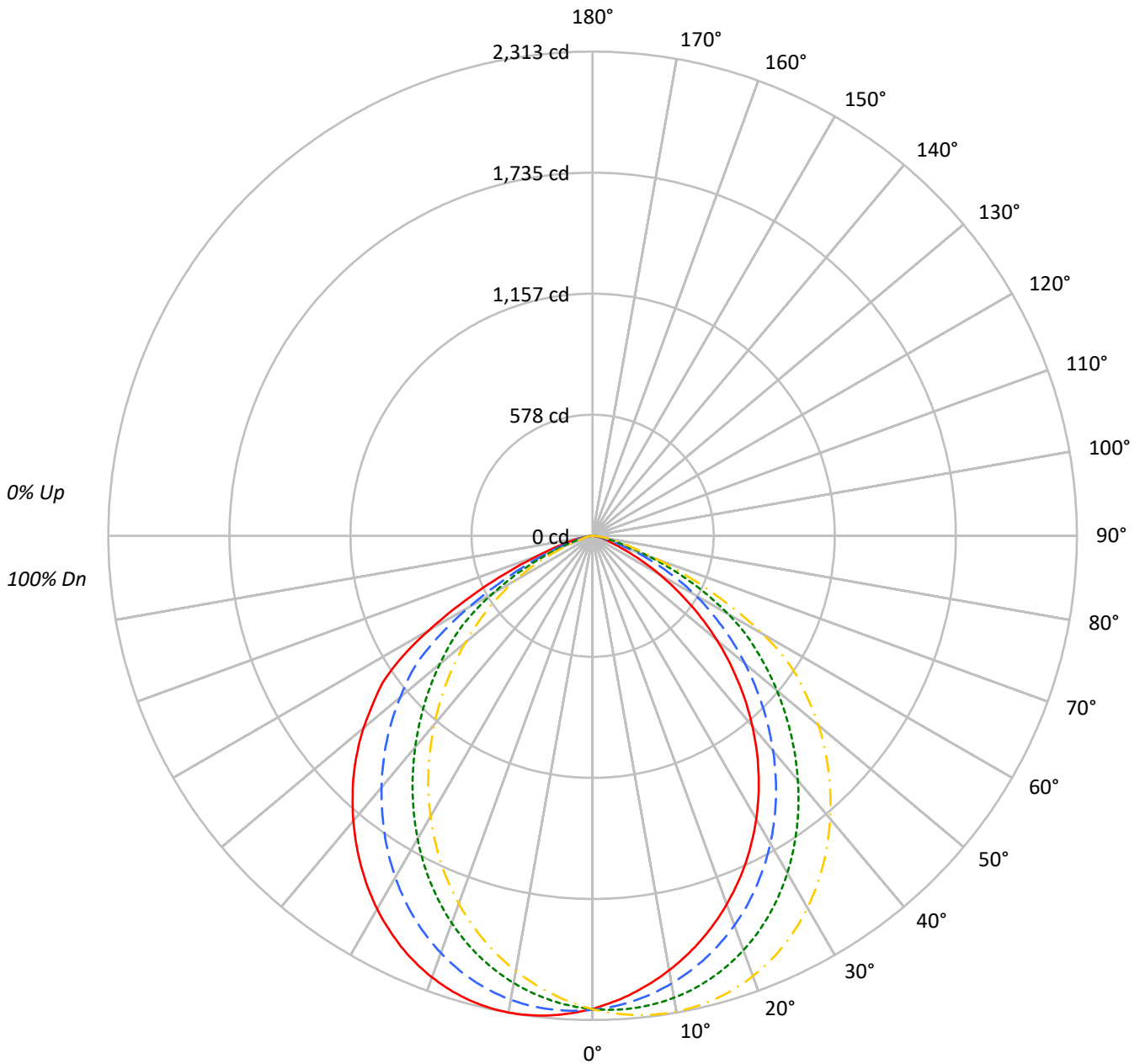
Input Watts (W): 38.5  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°	270°
0°	69059	69059	69059	69059
5°	67242	69424	70488	68321
10°	65332	69465	71697	67248
15°	63224	69169	72504	65822
20°	60869	68443	72920	63953
25°	58183	67258	72935	61639
30°	55094	65571	72565	58958
35°	51493	63397	71839	55869
40°	47291	60770	70857	52540
45°	42425	57800	69630	49009
50°	36724	54555	67816	45250
55°	30079	50843	65140	41092
60°	22544	45588	55150	33608
65°	14441	36720	39964	24042
70°	8177	25217	24708	14488
75°	6216	14757	15630	7856
80°	4378	8123	8914	3745
85°	2592	4449	2277	1576

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 157.5°  
 Vertical Angle: 45°  
 Luminance: 70602 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	213.4	4.3
10°-20°	603.8	12.0
20°-30°	889.1	17.7
30°-40°	1019.4	20.3
40°-50°	981.0	19.5
50°-60°	782.2	15.6
60°-70°	406.0	8.1
70°-80°	109.5	2.2
80°-90°	14.0	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°	1706.3	34.0
0°-40°	2725.7	54.3
0°-60°	4488.9	89.4
0°-90°	5018.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5018.5	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2262	2262	2262	2262	2262	
5°	2194	2265	2300	2229	2194	207
15°	2000	2188	2294	2082	2000	562
25°	1727	1997	2165	1830	1727	794
35°	1382	1701	1928	1499	1382	862
45°	983	1339	1613	1135	983	756
55°	565	955	1224	772	565	505
65°	200	508	553	333	200	206
75°	53	125	132	67	53	58
85°	7	13	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°	2262.0	2262.0	2262.0	2262.0	2262.0	2262.0	2262.0	2262.0	2262.0	2262.0	2262.0
0.5°	2253.8	2263.6	2262.8	2261.6	2262.8	2264.8	2266.1	2266.1	2264.4	2271.4	2266.5
1°	2248.1	2259.5	2260.3	2261.2	2264.4	2268.5	2271.0	2271.0	2269.3	2274.7	2268.5
1.5°	2241.9	2255.0	2257.5	2260.8	2265.3	2271.0	2275.1	2275.9	2274.3	2277.5	2269.8
2°	2235.8	2250.5	2254.6	2259.5	2266.1	2273.8	2279.2	2280.8	2278.7	2280.4	2271.0
2.5°	2229.3	2245.6	2250.9	2258.7	2266.5	2276.3	2283.2	2285.3	2282.8	2283.2	2271.8
3°	2222.7	2240.3	2247.7	2257.1	2266.9	2278.7	2286.9	2289.4	2286.5	2285.7	2272.2
3.5°	2216.2	2235.0	2244.0	2255.4	2266.9	2280.8	2290.2	2293.5	2290.6	2287.7	2272.6
4°	2208.8	2229.3	2239.9	2253.4	2266.5	2282.4	2293.1	2297.1	2293.9	2289.4	2272.6
4.5°	2201.9	2223.5	2235.4	2250.9	2266.1	2283.7	2295.9	2300.4	2297.1	2291.0	2272.2
5°	2194.1	2217.4	2230.9	2248.5	2265.3	2284.5	2298.4	2303.7	2300.0	2292.2	2271.8
5.5°	2186.7	2211.3	2226.4	2245.6	2264.0	2285.3	2300.4	2306.6	2302.5	2293.1	2270.6
6°	2178.6	2204.7	2221.1	2242.4	2262.8	2285.7	2302.5	2309.0	2304.9	2293.5	2269.8
6.5°	2170.4	2197.8	2215.8	2239.1	2260.8	2286.1	2304.1	2311.1	2307.0	2293.9	2268.5
7°	2162.2	2190.8	2210.5	2235.4	2258.7	2286.1	2305.7	2313.5	2308.6	2293.9	2266.9
7.5°	2153.6	2183.5	2204.7	2231.7	2256.3	2285.7	2306.6	2315.1	2309.8	2293.5	2264.8
8°	2144.6	2176.1	2198.6	2227.2	2254.2	2285.3	2307.4	2316.4	2311.1	2293.1	2262.4
8.5°	2135.6	2168.3	2192.1	2222.7	2251.4	2284.1	2308.2	2317.6	2311.9	2291.8	2259.9
9°	2126.2	2160.6	2185.5	2217.8	2248.1	2283.2	2308.2	2318.4	2312.7	2291.0	2257.1
9.5°	2117.2	2152.4	2179.0	2212.9	2244.8	2281.6	2308.2	2318.8	2312.7	2289.4	2253.8
10°	2107.4	2144.2	2171.6	2207.6	2240.7	2279.6	2307.8	2319.2	2312.7	2287.3	2250.5
10.5°	2098.0	2135.6	2164.3	2201.9	2237.0	2277.9	2307.4	2318.8	2311.9	2285.3	2246.9
11°	2087.8	2126.6	2156.9	2195.7	2232.5	2275.5	2306.1	2318.4	2311.1	2282.8	2242.8
11.5°	2077.6	2118.1	2149.1	2190.0	2228.0	2273.0	2304.9	2317.6	2310.2	2280.4	2238.3
12°	2066.9	2108.7	2141.4	2183.5	2223.1	2270.2	2303.7	2316.8	2308.6	2277.1	2233.8
12.5°	2056.7	2099.2	2132.8	2176.5	2218.2	2266.9	2301.6	2315.1	2307.0	2273.8	2228.9
13°	2045.7	2089.4	2124.6	2169.6	2212.9	2263.6	2299.6	2313.5	2304.9	2270.2	2223.5
13.5°	2034.6	2079.6	2115.6	2162.6	2207.2	2259.9	2297.1	2311.5	2302.9	2266.5	2218.2
14°	2023.6	2069.8	2106.6	2154.9	2201.1	2255.9	2294.3	2309.4	2300.4	2262.0	2212.1
14.5°	2011.7	2059.6	2097.6	2147.5	2194.9	2251.4	2291.4	2307.0	2297.1	2257.5	2206.4
15°	2000.3	2049.4	2088.2	2139.3	2188.4	2246.4	2288.2	2303.7	2293.9	2252.6	2199.8
15.5°	1988.4	2038.3	2078.4	2131.1	2181.4	2241.9	2284.5	2300.4	2290.2	2247.7	2193.3
16°	1976.6	2027.3	2068.2	2122.6	2174.1	2236.6	2280.4	2297.1	2286.5	2241.9	2186.7
16.5°	1964.3	2016.2	2057.9	2113.6	2166.7	2230.9	2276.3	2293.1	2282.4	2236.2	2179.4
17°	1951.6	2004.8	2047.7	2104.2	2158.9	2225.2	2271.8	2289.0	2277.9	2230.1	2171.6
17.5°	1939.0	1993.3	2037.1	2095.2	2151.2	2219.1	2266.9	2284.5	2273.0	2223.5	2163.9
18°	1926.7	1981.5	2026.5	2085.3	2142.6	2212.5	2262.0	2279.6	2267.7	2217.0	2155.7
18.5°	1913.6	1969.6	2015.0	2075.5	2134.0	2205.6	2256.7	2274.7	2262.0	2210.1	2147.5
19°	1899.7	1957.4	2003.6	2065.3	2125.0	2199.0	2250.9	2269.3	2256.7	2203.1	2138.9
19.5°	1886.6	1944.7	1992.1	2054.7	2116.0	2191.7	2244.8	2263.6	2250.5	2195.3	2129.9
20°	1873.5	1932.4	1980.3	2044.5	2106.6	2183.9	2238.7	2257.5	2244.4	2187.6	2120.5
20.5°	1859.6	1919.3	1968.4	2033.4	2096.4	2176.1	2232.1	2251.4	2237.9	2179.4	2111.5
21°	1844.9	1906.7	1956.1	2022.4	2086.6	2167.9	2225.2	2244.8	2230.9	2171.2	2101.7



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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°	1802.8	1866.2	1917.7	1986.8	2055.1	2141.8	2202.7	2223.1	2208.0	2144.6	2071.0
23°	1788.1	1852.3	1904.6	1974.5	2044.0	2132.4	2194.5	2215.8	2199.8	2134.8	2060.0
23.5°	1773.0	1838.4	1891.1	1962.3	2032.2	2123.0	2186.3	2207.6	2191.7	2125.4	2049.4
24°	1757.8	1824.1	1877.2	1949.6	2020.7	2112.7	2177.8	2199.4	2183.1	2115.2	2037.9
24.5°	1742.7	1809.8	1863.3	1936.1	2008.9	2102.5	2168.8	2190.8	2174.1	2105.0	2026.5
25°	1727.2	1795.0	1849.4	1923.0	1996.6	2092.3	2159.4	2181.8	2165.1	2094.3	2014.6
25.5°	1711.6	1779.9	1835.1	1909.5	1983.9	2081.3	2149.9	2172.8	2155.3	2083.7	2002.7
26°	1695.7	1765.2	1820.4	1895.6	1971.3	2070.2	2140.1	2163.4	2145.5	2072.7	1990.5
26.5°	1679.7	1750.1	1805.7	1881.3	1958.2	2059.2	2130.3	2153.6	2135.6	2061.2	1978.2
27°	1663.4	1734.9	1790.9	1867.4	1945.1	2047.7	2119.7	2143.4	2125.4	2049.8	1965.1
27.5°	1647.0	1719.4	1775.8	1853.1	1931.6	2035.9	2109.1	2133.6	2114.8	2038.3	1952.5
28°	1630.7	1703.4	1760.7	1838.4	1917.3	2023.2	2098.4	2123.0	2104.2	2026.1	1939.0
28.5°	1613.5	1687.1	1745.1	1823.2	1903.4	2011.3	2087.4	2111.9	2092.7	2013.8	1925.9
29°	1596.7	1671.1	1729.2	1807.7	1889.1	1998.3	2075.5	2100.9	2081.7	2001.1	1912.0
29.5°	1580.0	1654.8	1713.7	1792.6	1874.8	1985.6	2064.1	2089.8	2069.8	1988.4	1898.1
30°	1562.8	1638.8	1697.3	1777.0	1860.0	1972.5	2052.2	2078.4	2058.4	1975.8	1883.8
30.5°	1545.2	1621.7	1681.0	1761.5	1844.9	1958.6	2040.0	2066.5	2046.1	1962.3	1869.9
31°	1527.6	1604.9	1664.6	1746.0	1830.2	1945.1	2027.7	2054.3	2033.8	1949.2	1855.5
31.5°	1509.6	1588.1	1647.8	1729.2	1814.7	1931.2	2014.6	2042.0	2021.1	1935.7	1840.8
32°	1492.0	1571.0	1631.1	1712.8	1798.7	1916.9	2001.9	2029.3	2008.5	1922.2	1826.1
32.5°	1474.1	1553.0	1613.9	1696.1	1782.8	1902.6	1988.8	2017.1	1995.4	1907.9	1811.4
33°	1456.1	1535.8	1596.3	1679.7	1766.8	1887.4	1975.4	2004.4	1982.3	1894.0	1795.8
33.5°	1437.7	1518.2	1579.1	1662.6	1750.5	1872.7	1961.9	1990.5	1968.8	1879.3	1780.7
34°	1418.9	1500.6	1562.0	1645.8	1734.5	1858.0	1947.5	1977.0	1955.3	1865.0	1765.2
34.5°	1400.5	1482.6	1544.4	1628.2	1717.8	1842.5	1933.6	1963.5	1941.4	1850.6	1749.6
35°	1381.6	1464.2	1526.8	1611.4	1701.0	1826.9	1919.3	1950.0	1927.5	1835.5	1733.7
35.5°	1362.8	1445.8	1508.4	1593.4	1683.8	1811.4	1904.6	1935.7	1913.6	1820.4	1718.2
36°	1343.6	1427.4	1490.4	1575.9	1667.0	1795.4	1890.3	1921.0	1898.9	1804.8	1701.4
36.5°	1324.4	1409.0	1472.0	1557.5	1649.9	1779.5	1874.8	1906.7	1884.6	1790.1	1685.0
37°	1305.2	1390.2	1454.0	1540.3	1632.7	1762.7	1859.6	1892.3	1869.4	1774.2	1669.1
37.5°	1286.0	1371.4	1435.2	1522.3	1614.7	1746.4	1844.1	1877.2	1854.7	1758.6	1652.7
38°	1265.9	1352.6	1416.4	1503.9	1597.1	1729.6	1828.6	1862.1	1839.6	1742.7	1636.0
38.5°	1246.3	1333.4	1397.6	1484.7	1579.1	1712.8	1813.0	1847.0	1824.5	1727.2	1619.2
39°	1227.1	1313.8	1378.8	1467.1	1562.0	1696.1	1797.1	1832.2	1808.9	1710.8	1602.4
39.5°	1207.5	1295.0	1360.0	1448.3	1543.2	1678.9	1780.7	1816.3	1793.8	1694.4	1585.7
40°	1186.6	1275.7	1340.8	1429.9	1524.8	1661.3	1764.8	1800.3	1777.9	1678.1	1568.1
40.5°	1167.0	1256.1	1321.5	1410.7	1506.4	1644.2	1748.4	1784.4	1761.9	1661.7	1551.3
41°	1146.5	1236.5	1302.3	1392.3	1488.0	1626.6	1731.2	1768.9	1746.0	1645.0	1533.7
41.5°	1126.5	1216.9	1283.1	1373.5	1469.6	1608.6	1714.9	1752.5	1729.6	1629.0	1516.6
42°	1105.6	1197.2	1263.1	1354.7	1451.2	1590.6	1697.7	1735.7	1713.3	1611.8	1499.4
42.5°	1086.0	1177.2	1244.3	1335.8	1432.8	1573.0	1681.4	1719.4	1696.9	1594.7	1481.4
43°	1065.2	1157.2	1224.6	1317.0	1413.9	1555.0	1663.8	1703.0	1680.5	1577.1	1463.8
43.5°	1044.3	1137.1	1205.4	1297.4	1395.1	1537.0	1646.6	1686.3	1663.8	1560.3	1446.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	982.6	1076.2	1146.1	1240.2	1338.7	1481.8	1593.9	1635.2	1612.7	1507.2	1391.9
45.5°	961.7	1056.2	1126.9	1221.4	1319.9	1463.4	1575.9	1618.0	1595.5	1488.8	1373.5
46°	940.9	1035.7	1106.9	1201.7	1301.1	1445.0	1557.9	1600.0	1577.9	1470.8	1355.1
46.5°	920.0	1015.3	1087.6	1182.5	1282.3	1426.2	1539.9	1582.4	1560.3	1452.4	1336.3
47°	899.6	995.2	1067.6	1163.3	1263.5	1407.4	1521.1	1564.4	1541.9	1433.6	1317.4
47.5°	878.3	974.8	1048.0	1144.1	1243.8	1388.6	1503.1	1546.0	1523.5	1414.8	1297.8
48°	856.6	954.4	1028.0	1125.3	1225.0	1369.8	1484.3	1527.6	1505.5	1394.7	1278.6
48.5°	836.2	933.5	1008.3	1105.6	1206.2	1351.0	1465.5	1508.8	1486.7	1375.1	1259.0
49°	815.3	913.5	988.3	1086.4	1187.0	1331.3	1446.2	1490.0	1467.5	1355.1	1238.9
49.5°	794.5	893.0	969.1	1067.2	1167.4	1312.1	1427.4	1470.8	1447.5	1334.6	1218.9
50°	773.2	872.6	949.9	1047.6	1148.6	1292.9	1407.4	1451.2	1427.8	1314.2	1198.9
50.5°	752.0	852.1	929.8	1028.8	1129.4	1273.3	1387.4	1431.1	1407.4	1292.9	1179.2
51°	731.1	831.3	910.2	1009.6	1110.1	1253.7	1367.3	1410.7	1387.0	1272.5	1159.6
51.5°	710.7	810.8	890.6	990.3	1090.9	1234.0	1346.9	1389.8	1366.1	1252.4	1140.4
52°	689.4	790.8	870.9	971.1	1071.3	1213.6	1326.0	1368.6	1344.8	1233.2	1122.0
52.5°	668.9	770.4	851.3	951.9	1051.7	1193.6	1305.2	1347.3	1323.6	1214.4	1102.8
53°	647.7	749.9	832.1	932.7	1032.0	1172.7	1283.9	1326.9	1303.5	1194.4	1083.6
53.5°	626.8	729.9	812.5	913.9	1012.8	1152.3	1262.7	1305.2	1283.9	1173.5	1061.1
54°	606.4	709.8	793.2	893.8	993.2	1131.8	1242.2	1285.6	1264.7	1149.8	1038.2
54.5°	585.9	689.8	773.6	875.0	974.0	1112.2	1222.2	1266.7	1244.7	1123.6	1012.0
55°	565.1	669.8	754.4	855.8	955.2	1092.6	1203.0	1247.5	1223.8	1094.2	985.0
55.5°	545.1	649.3	735.6	837.4	936.8	1073.7	1182.9	1225.9	1198.9	1065.6	956.8
56°	524.6	630.1	716.0	818.6	918.0	1054.1	1162.1	1201.7	1171.5	1033.7	927.8
56.5°	504.6	610.5	697.2	799.8	899.2	1033.3	1138.8	1174.7	1142.9	1001.8	898.7
57°	484.5	590.4	678.8	781.8	878.7	1010.8	1113.8	1147.3	1112.2	969.1	869.3
57.5°	464.5	571.2	660.4	763.4	858.3	988.3	1087.2	1116.7	1079.1	936.8	837.8
58°	445.7	552.0	641.1	745.0	836.6	963.8	1059.8	1085.2	1045.5	901.6	806.7
58.5°	426.1	533.2	622.3	725.4	815.3	938.8	1031.2	1051.7	1011.6	866.4	775.7
59°	406.8	514.4	603.9	705.7	792.4	913.1	1000.1	1017.7	976.0	832.1	744.6
59.5°	387.6	495.6	585.1	685.7	769.9	886.1	969.1	981.3	939.6	798.2	713.1
60°	369.2	476.4	566.3	665.7	746.6	859.5	937.2	946.2	903.2	762.6	682.4
60.5°	350.8	458.0	546.7	645.6	724.1	832.1	904.9	909.8	866.8	728.2	651.8
61°	332.8	440.0	527.9	624.8	700.0	804.3	871.3	874.6	830.9	694.3	621.5
61.5°	314.4	421.2	508.7	604.7	676.3	776.1	837.4	838.2	794.1	659.5	591.3
62°	297.3	402.8	489.4	583.9	653.0	747.5	804.7	803.1	758.5	626.0	561.0
62.5°	280.1	384.4	470.6	563.5	628.5	718.8	770.4	767.5	722.1	593.3	532.0
63°	263.3	366.4	451.0	543.0	604.3	689.4	736.8	731.9	687.3	562.6	503.8
63.5°	246.2	348.4	432.2	521.3	580.2	660.4	703.7	696.8	652.6	531.6	475.9
64°	230.6	331.2	413.4	500.9	556.5	631.7	671.8	662.8	619.1	502.1	449.0
64.5°	215.1	313.6	394.6	480.0	532.4	602.7	639.1	629.3	586.3	473.5	422.8
65°	199.9	296.0	376.2	459.6	508.3	574.1	608.0	596.6	553.2	445.7	397.9
65.5°	185.2	279.3	357.4	438.7	484.1	545.9	576.9	564.3	520.9	419.5	375.8
66°	171.3	262.9	339.0	418.3	460.0	518.1	546.3	532.8	489.0	394.2	354.1





TEST NUMBER: P776449

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	135.3	215.1	284.2	357.4	390.5	438.3	459.2	444.9	398.7	327.9	288.7
68°	125.1	199.9	266.6	337.3	368.8	413.0	431.8	417.5	373.3	305.4	269.5
68.5°	115.3	185.2	249.4	317.3	347.1	388.0	404.8	390.9	348.0	283.4	251.9
69°	105.1	170.5	231.8	297.7	325.5	365.1	381.5	367.2	322.6	264.6	235.1
69.5°	97.3	156.2	214.7	277.6	304.2	342.7	358.2	343.9	297.7	247.0	219.2
70°	91.6	143.5	197.9	259.2	282.5	319.8	335.3	320.2	276.8	230.2	204.4
70.5°	87.9	131.3	181.5	240.4	263.3	296.9	312.0	296.9	257.2	214.7	190.5
71°	83.8	119.4	166.0	222.0	244.9	277.2	288.7	276.8	238.8	199.9	177.0
71.5°	79.7	107.5	150.9	204.4	226.9	257.2	268.6	257.6	221.6	186.0	164.8
72°	75.6	95.7	138.6	187.7	209.8	238.8	249.4	239.6	206.1	173.4	153.3
72.5°	71.6	87.1	126.8	171.7	193.0	221.2	231.8	222.8	191.4	161.1	141.9
73°	67.5	81.0	114.9	157.0	177.5	204.9	215.5	206.9	177.9	149.7	131.7
73.5°	63.8	76.9	103.0	142.7	163.1	189.3	199.9	192.2	165.6	139.0	121.8
74°	60.1	72.8	90.8	131.3	149.7	175.0	185.2	178.7	153.7	128.8	112.4
74.5°	56.4	69.1	82.2	119.4	136.6	161.5	171.7	166.0	142.7	119.4	103.9
75°	52.7	65.4	74.4	107.9	125.1	148.8	159.1	154.2	132.5	110.4	95.3
75.5°	49.5	61.7	68.3	96.5	114.1	137.0	147.2	143.1	122.3	101.4	87.5
76°	46.2	58.1	62.6	87.1	103.9	125.9	136.2	132.5	112.9	93.2	79.7
76.5°	43.3	54.8	57.7	78.5	94.0	115.3	125.9	123.1	103.9	85.5	72.8
77°	40.5	51.1	53.6	71.1	85.9	106.3	116.1	113.7	94.9	78.1	65.8
77.5°	37.6	47.8	49.9	64.2	77.7	96.9	107.1	105.1	86.7	70.7	59.3
78°	34.8	45.0	47.0	58.1	70.3	88.3	98.1	96.5	78.9	64.2	53.2
78.5°	32.3	42.1	43.8	52.7	63.4	80.6	90.0	88.3	71.1	58.1	47.4
79°	29.8	39.3	41.3	47.8	57.2	73.2	82.2	81.0	63.8	51.9	42.1
79.5°	27.4	36.4	38.4	43.3	51.5	66.2	74.8	73.6	57.2	46.6	38.0
80°	24.9	33.5	36.0	39.3	46.2	59.7	67.9	66.6	50.7	42.1	33.5
80.5°	22.9	31.1	33.1	35.6	41.3	54.0	61.3	60.5	44.6	37.2	29.0
81°	20.9	28.6	31.1	32.3	37.6	47.8	55.2	54.4	39.7	32.7	24.9
81.5°	18.8	26.6	28.6	29.4	33.5	42.9	49.1	48.7	34.8	28.2	20.4
82°	16.8	24.1	26.6	26.6	29.8	38.4	43.8	42.9	29.8	23.7	17.2
82.5°	15.1	22.1	24.1	24.1	25.8	34.3	39.3	38.4	24.5	19.2	14.3
83°	13.1	19.6	22.1	21.7	22.1	30.3	34.8	33.9	19.6	15.9	11.4
83.5°	11.4	18.0	20.4	20.0	19.2	25.8	30.3	29.4	15.9	12.7	9.0
84°	10.2	15.9	18.4	18.0	16.8	21.7	25.8	24.9	12.3	9.8	7.0
84.5°	8.6	14.3	16.4	16.4	14.7	18.8	21.3	20.4	9.4	7.4	5.3
85°	7.4	12.7	14.7	14.7	12.7	15.9	18.0	16.8	6.5	4.9	3.7
85.5°	6.1	11.0	13.5	13.1	10.6	13.1	14.7	13.5	4.1	3.3	2.5
86°	4.9	9.4	11.9	11.9	9.4	11.0	11.9	10.6	2.5	2.0	1.2
86.5°	3.7	7.8	10.2	10.2	7.8	9.0	9.4	7.8	1.6	0.8	0.4
87°	2.9	6.5	8.6	9.0	6.5	7.0	7.4	5.7	1.2	0.4	0.0
87.5°	2.0	5.3	7.4	7.8	5.3	5.7	5.3	4.1	0.8	0.0	0.0
88°	1.6	4.1	6.1	6.5	4.5	4.1	3.7	2.5	0.4	0.0	0.0
88.5°	0.8	3.3	4.9	5.3	3.3	2.9	2.5	1.2	0.4	0.0	0.0



TEST NUMBER: P776449

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-5000K

**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	2.5	1.2	0.8	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776449

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2262.0	2262.0	2262.0	2262.0	2262.0	2262.0
0.5°	2261.6	2259.5	2257.5	2256.3	2254.6	2253.8
1°	2261.2	2257.1	2253.4	2250.9	2248.5	2248.1
1.5°	2260.3	2254.6	2248.9	2244.8	2242.4	2241.9
2°	2259.5	2251.8	2244.4	2239.1	2235.8	2235.8
2.5°	2257.9	2248.5	2239.5	2233.0	2229.3	2229.3
3°	2256.3	2245.2	2234.2	2226.4	2222.3	2222.7
3.5°	2254.6	2241.9	2228.9	2219.9	2215.4	2216.2
4°	2252.2	2237.9	2223.1	2212.9	2207.6	2208.8
4.5°	2250.1	2233.8	2217.0	2205.6	2200.2	2201.9
5°	2247.3	2229.3	2210.9	2198.2	2192.1	2194.1
5.5°	2244.4	2224.4	2204.3	2190.4	2184.3	2186.7
6°	2241.1	2219.5	2197.4	2182.7	2176.1	2178.6
6.5°	2237.5	2214.1	2190.4	2174.5	2167.5	2170.4
7°	2233.8	2208.8	2183.1	2166.3	2158.9	2162.2
7.5°	2229.7	2202.7	2175.7	2157.7	2149.9	2153.6
8°	2225.2	2196.6	2167.9	2148.7	2141.0	2144.6
8.5°	2220.7	2190.0	2159.8	2139.7	2131.5	2135.6
9°	2215.4	2183.5	2151.6	2130.3	2121.7	2126.2
9.5°	2210.5	2176.5	2143.0	2120.9	2111.9	2117.2
10°	2204.7	2169.2	2134.0	2111.1	2102.1	2107.4
10.5°	2199.0	2162.2	2125.0	2100.9	2091.9	2098.0
11°	2192.9	2154.0	2115.6	2091.1	2081.7	2087.8
11.5°	2186.7	2145.9	2105.8	2080.4	2071.0	2077.6
12°	2179.8	2137.7	2096.0	2069.8	2060.0	2066.9
12.5°	2172.8	2129.1	2085.8	2058.8	2049.0	2056.7
13°	2165.5	2120.5	2075.5	2047.7	2037.9	2045.7
13.5°	2158.1	2111.1	2064.9	2036.3	2026.9	2034.6
14°	2150.4	2101.7	2053.9	2025.2	2015.0	2023.6
14.5°	2142.6	2092.3	2043.2	2013.4	2003.2	2011.7
15°	2134.0	2082.5	2031.8	2001.1	1991.3	2000.3
15.5°	2125.4	2072.3	2019.9	1988.8	1978.6	1988.4
16°	2116.4	2061.6	2008.5	1976.6	1966.8	1976.6
16.5°	2107.4	2051.0	1996.2	1963.9	1954.1	1964.3
17°	2098.0	2040.0	1983.9	1951.2	1941.4	1951.6
17.5°	2088.2	2028.5	1971.3	1937.7	1928.3	1939.0
18°	2078.0	2017.1	1958.6	1925.1	1915.2	1926.7
18.5°	2067.8	2005.2	1945.5	1911.2	1901.3	1913.6
19°	2057.5	1993.3	1932.0	1898.1	1888.3	1899.7
19.5°	2046.5	1981.1	1918.5	1883.8	1874.4	1886.6
20°	2035.5	1968.4	1904.6	1869.9	1860.5	1873.5
20.5°	2024.0	1955.7	1890.7	1855.1	1846.6	1859.6
21°	2012.6	1942.6	1876.4	1840.8	1831.8	1844.9

TEST NUMBER: P776449

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1976.6	1902.2	1832.6	1795.8	1787.7	1802.8
23°	1963.9	1888.3	1817.9	1780.7	1772.5	1788.1
23.5°	1951.2	1873.9	1802.8	1765.6	1757.4	1773.0
24°	1937.7	1859.2	1787.3	1750.1	1741.9	1757.8
24.5°	1924.6	1844.9	1771.7	1733.7	1726.3	1742.7
25°	1911.2	1829.8	1755.4	1717.8	1710.4	1727.2
25.5°	1897.3	1815.5	1739.8	1701.8	1694.4	1711.6
26°	1883.4	1799.9	1723.9	1685.4	1678.5	1695.7
26.5°	1869.0	1784.8	1707.5	1668.7	1662.1	1679.7
27°	1854.7	1768.9	1691.2	1651.9	1645.8	1663.4
27.5°	1840.0	1753.3	1674.4	1635.2	1629.0	1647.0
28°	1825.3	1737.4	1657.6	1618.4	1611.8	1630.7
28.5°	1810.2	1721.0	1640.9	1601.2	1595.1	1613.5
29°	1795.0	1705.1	1623.7	1583.6	1578.3	1596.7
29.5°	1779.5	1688.7	1606.5	1566.1	1560.7	1580.0
30°	1764.0	1672.4	1589.4	1548.9	1543.2	1562.8
30.5°	1748.4	1655.2	1571.8	1530.9	1526.0	1545.2
31°	1732.9	1638.4	1554.2	1513.3	1508.0	1527.6
31.5°	1716.5	1621.3	1536.2	1495.3	1490.4	1509.6
32°	1700.6	1604.1	1518.2	1476.9	1472.0	1492.0
32.5°	1683.8	1586.9	1500.6	1458.9	1454.0	1474.1
33°	1667.5	1569.7	1482.6	1440.5	1435.6	1456.1
33.5°	1650.7	1551.7	1464.6	1422.1	1417.2	1437.7
34°	1633.9	1534.6	1445.8	1403.7	1398.4	1418.9
34.5°	1617.6	1516.6	1427.8	1385.3	1380.0	1400.5
35°	1600.4	1499.0	1409.0	1366.5	1360.8	1381.6
35.5°	1583.2	1481.4	1390.6	1347.3	1342.4	1362.8
36°	1566.1	1463.0	1372.6	1328.9	1322.8	1343.6
36.5°	1548.9	1445.4	1353.8	1310.1	1304.4	1324.4
37°	1531.3	1427.4	1335.4	1290.9	1284.7	1305.2
37.5°	1513.7	1409.4	1317.0	1271.7	1265.5	1286.0
38°	1496.1	1391.0	1298.2	1252.4	1245.9	1265.9
38.5°	1478.5	1372.6	1279.8	1233.6	1226.7	1246.3
39°	1461.4	1354.7	1260.6	1214.4	1207.0	1227.1
39.5°	1443.4	1336.7	1242.2	1195.2	1187.4	1207.5
40°	1425.4	1318.3	1223.4	1176.0	1167.8	1186.6
40.5°	1407.8	1299.9	1205.0	1156.8	1148.2	1167.0
41°	1389.8	1281.1	1186.2	1137.5	1127.7	1146.5
41.5°	1372.2	1263.5	1167.0	1118.3	1108.1	1126.5
42°	1354.2	1245.5	1148.6	1098.7	1088.5	1105.6
42.5°	1335.8	1226.7	1130.2	1079.5	1068.4	1086.0
43°	1317.9	1208.3	1111.8	1059.8	1048.0	1065.2
43.5°	1299.9	1190.3	1092.6	1041.0	1028.4	1044.3



TEST NUMBER: P776449

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1245.1	1135.1	1036.9	983.0	967.4	982.6
45.5°	1226.7	1117.5	1018.1	964.2	947.8	961.7
46°	1208.7	1099.5	1000.1	944.9	927.8	940.9
46.5°	1189.9	1080.7	981.3	925.7	907.3	920.0
47°	1171.1	1062.3	963.3	906.5	887.3	899.6
47.5°	1152.3	1044.3	944.1	887.3	866.8	878.3
48°	1133.0	1025.9	926.5	868.5	846.8	856.6
48.5°	1114.2	1007.5	907.7	849.3	826.8	836.2
49°	1095.0	989.5	889.7	830.5	806.7	815.3
49.5°	1075.4	971.1	871.3	811.2	787.1	794.5
50°	1056.6	952.7	852.9	792.4	766.7	773.2
50.5°	1037.8	933.9	834.5	774.0	746.6	752.0
51°	1019.4	915.5	816.6	755.2	727.0	731.1
51.5°	1001.0	897.9	798.6	736.0	707.4	710.7
52°	983.8	880.8	781.0	718.0	687.8	689.4
52.5°	965.4	863.6	763.4	699.6	667.7	668.9
53°	946.2	846.4	746.6	681.6	648.1	647.7
53.5°	925.7	828.8	729.1	663.2	628.9	626.8
54°	903.6	810.4	711.9	645.2	609.2	606.4
54.5°	881.6	791.6	694.3	628.1	590.0	585.9
55°	857.0	772.0	676.3	610.5	571.2	565.1
55.5°	832.5	751.1	657.5	592.1	552.4	545.1
56°	806.7	730.3	639.1	574.5	534.0	524.6
56.5°	781.4	709.0	620.3	556.1	515.2	504.6
57°	754.4	686.9	601.5	538.1	496.8	484.5
57.5°	728.2	664.4	582.3	519.7	478.4	464.5
58°	701.2	642.0	563.5	502.1	460.4	445.7
58.5°	674.3	619.5	543.4	484.1	442.4	426.1
59°	647.7	596.2	524.2	466.1	424.4	406.8
59.5°	621.1	573.3	504.6	448.1	406.4	387.6
60°	594.1	550.4	484.5	430.6	388.4	369.2
60.5°	567.9	527.5	464.5	412.2	370.9	350.8
61°	542.2	504.6	444.5	394.6	353.3	332.8
61.5°	516.0	482.1	424.4	377.0	336.1	314.4
62°	490.3	459.6	404.8	359.4	319.3	297.3
62.5°	465.7	437.5	384.8	341.4	302.2	280.1
63°	441.2	415.8	364.7	323.8	285.8	263.3
63.5°	417.5	394.2	345.5	305.4	269.5	246.2
64°	395.0	372.9	326.3	287.9	253.9	230.6
64.5°	373.3	352.9	307.5	270.3	238.4	215.1
65°	351.6	332.8	288.7	253.5	223.3	199.9
65.5°	330.4	312.4	271.1	235.9	207.7	185.2
66°	308.7	292.8	252.7	218.8	193.4	171.3



TEST NUMBER: P776449

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	250.2	239.2	202.8	172.1	150.9	135.3
68°	233.5	222.0	186.9	157.4	139.4	125.1
68.5°	217.1	205.7	171.7	142.7	128.0	115.3
69°	201.6	190.5	157.4	131.7	116.9	105.1
69.5°	187.3	176.2	143.1	120.6	105.5	97.3
70°	174.2	162.3	132.1	109.2	94.0	91.6
70.5°	161.1	149.7	121.4	98.1	85.9	87.9
71°	148.8	139.0	110.4	88.7	80.1	83.8
71.5°	137.8	128.4	99.4	81.0	76.1	79.7
72°	126.8	118.2	90.4	74.0	72.4	75.6
72.5°	117.4	107.5	82.2	67.9	68.7	71.6
73°	107.9	97.3	74.4	62.6	65.0	67.5
73.5°	99.0	88.3	67.5	57.7	61.3	63.8
74°	90.8	80.6	61.3	53.6	57.7	60.1
74.5°	82.6	73.2	56.0	50.3	54.4	56.4
75°	75.2	66.6	50.7	47.0	51.1	52.7
75.5°	68.3	60.1	46.2	44.2	47.8	49.5
76°	62.2	54.4	41.7	41.3	44.6	46.2
76.5°	55.6	48.7	38.0	38.8	41.7	43.3
77°	50.3	43.8	34.8	36.0	38.8	40.5
77.5°	45.0	39.3	31.5	33.9	36.0	37.6
78°	40.5	35.2	28.6	31.5	33.5	34.8
78.5°	36.4	31.1	26.2	29.0	31.1	32.3
79°	31.9	27.8	23.7	27.0	28.6	29.8
79.5°	27.8	24.5	21.7	24.5	26.2	27.4
80°	23.7	21.3	19.6	22.5	23.7	24.9
80.5°	20.4	18.8	18.0	20.4	21.7	22.9
81°	17.6	16.4	16.4	18.8	19.6	20.9
81.5°	14.7	14.7	14.7	16.8	17.6	18.8
82°	12.3	13.1	13.1	15.1	15.5	16.8
82.5°	10.2	11.0	11.4	13.5	13.9	15.1
83°	8.2	9.4	10.2	11.9	12.3	13.1
83.5°	6.5	7.8	8.6	10.2	10.6	11.4
84°	5.3	6.5	7.4	8.6	9.0	10.2
84.5°	3.7	5.3	6.5	7.4	7.4	8.6
85°	2.9	4.5	5.3	6.1	6.1	7.4
85.5°	2.0	3.3	4.1	5.3	4.9	6.1
86°	1.2	2.5	3.3	4.1	4.1	4.9
86.5°	0.4	1.6	2.0	2.9	3.3	3.7
87°	0.0	0.8	1.2	2.0	2.5	2.9
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: P776449

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-5000K

**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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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°	1831.0	1893.2	1943.5	2010.5	2076.3	2159.4	2217.8	2237.9	2223.5	2162.6	2091.9
22°	1817.1	1880.1	1930.8	1998.7	2066.1	2150.8	2210.5	2230.5	2216.2	2153.6	2081.3



44°	1023.9	1117.1	1185.4	1278.6	1376.3	1518.2	1628.6	1669.1	1647.0	1542.7	1428.3
44.5°	1003.4	1096.6	1166.2	1259.8	1357.5	1500.2	1611.4	1651.9	1630.2	1525.2	1410.3



66.5°	158.2	246.6	321.0	397.9	436.7	491.1	516.4	502.5	457.5	372.1	332.0
67°	145.2	230.2	303.0	377.4	413.8	464.1	487.8	473.5	428.1	350.0	310.3



89°	0.4	2.5	4.1	4.5	2.5	2.0	1.2	0.4	0.0	0.0	0.0
89.5°	0.0	1.6	2.9	3.3	1.6	1.2	0.4	0.0	0.0	0.0	0.0



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21.5°	2000.7	1929.1	1862.1	1826.1	1817.1	1831.0
22°	1988.4	1915.7	1847.8	1811.0	1802.8	1817.1

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44°	1281.9	1172.3	1073.7	1021.4	1008.3	1023.9
44.5°	1263.1	1153.5	1055.3	1002.6	987.9	1003.4



66.5°	287.5	274.8	235.5	202.8	178.7	158.2
67°	267.8	256.4	218.3	186.9	164.4	145.2

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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)