

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: P776447

Luminaire Tested: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-3500K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P776447
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-3500K
Description: 8 INCH ROUND SHALLOW-WIDE LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4876.9 lumens
Efficiency: N/A
Efficacy: 126.7 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

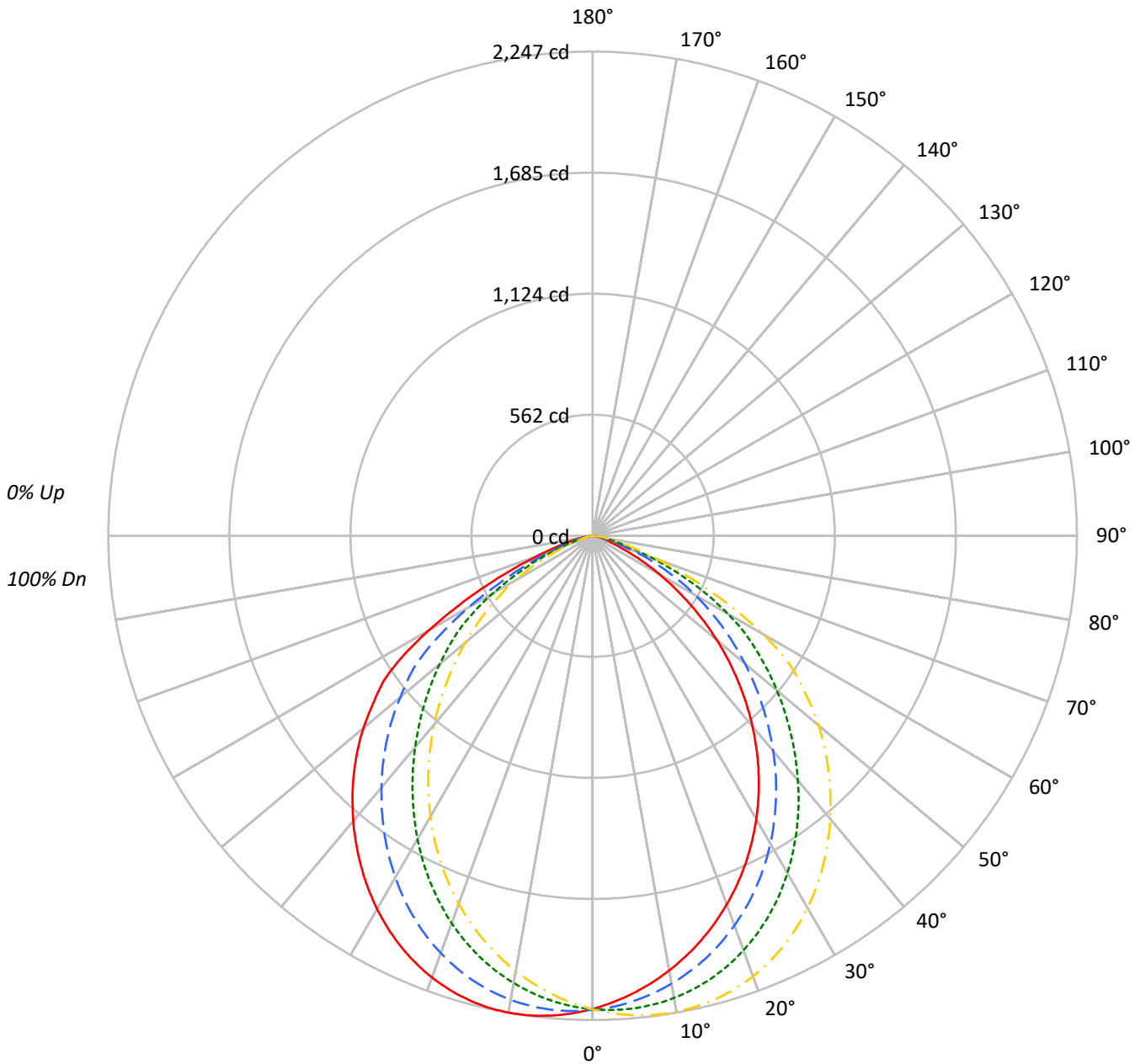
Input Watts (W): 38.5
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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	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°	67112	67112	67112	67112
5°	65345	67466	68499	66393
10°	63491	67505	69672	65351
15°	61441	67216	70459	63964
20°	59154	66513	70863	62149
25°	56539	65362	70876	59901
30°	53539	63724	70517	57294
35°	50043	61608	69812	54292
40°	45956	59052	68857	51058
45°	41225	56168	67666	47628
50°	35689	53016	65906	43972
55°	29227	49406	63304	39932
60°	21909	44306	53599	32655
65°	14036	35680	38837	23363
70°	7945	24512	24012	14086
75°	6051	14344	15181	7644
80°	4255	7894	8668	3639
85°	2522	4309	2242	1541

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 157.5°
 Vertical Angle: 45°
 Luminance: 68607 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	207.4	4.3
10°-20°	586.8	12.0
20°-30°	864.0	17.7
30°-40°	990.6	20.3
40°-50°	953.3	19.5
50°-60°	760.2	15.6
60°-70°	394.6	8.1
70°-80°	106.4	2.2
80°-90°	13.6	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°	1658.2	34.0
0°-40°	2648.8	54.3
0°-60°	4362.3	89.4
0°-90°	4876.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4876.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2198	2198	2198	2198	2198	
5°	2132	2201	2235	2166	2132	201
15°	1944	2127	2229	2024	1944	547
25°	1678	1940	2104	1778	1678	771
35°	1343	1653	1873	1457	1343	837
45°	955	1301	1567	1103	955	734
55°	549	928	1189	750	549	491
65°	194	494	538	323	194	201
75°	51	122	129	65	51	56
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°	2198.2	2198.2	2198.2	2198.2	2198.2	2198.2	2198.2	2198.2	2198.2	2198.2	2198.2
0.5°	2190.2	2199.8	2199.0	2197.8	2199.0	2201.0	2202.1	2202.1	2200.6	2207.3	2202.5
1°	2184.7	2195.8	2196.6	2197.4	2200.6	2204.5	2206.9	2206.9	2205.3	2210.5	2204.5
1.5°	2178.7	2191.4	2193.8	2197.0	2201.4	2206.9	2210.9	2211.7	2210.1	2213.3	2205.7
2°	2172.7	2187.0	2191.0	2195.8	2202.1	2209.7	2214.9	2216.5	2214.5	2216.1	2206.9
2.5°	2166.4	2182.3	2187.4	2195.0	2202.5	2212.1	2218.8	2220.8	2218.4	2218.8	2207.7
3°	2160.0	2177.1	2184.3	2193.4	2202.9	2214.5	2222.4	2224.8	2222.0	2221.2	2208.1
3.5°	2153.7	2171.9	2180.7	2191.8	2202.9	2216.5	2225.6	2228.8	2226.0	2223.2	2208.5
4°	2146.5	2166.4	2176.7	2189.8	2202.5	2218.0	2228.4	2232.3	2229.2	2224.8	2208.5
4.5°	2139.8	2160.8	2172.3	2187.4	2202.1	2219.2	2231.2	2235.5	2232.3	2226.4	2208.1
5°	2132.2	2154.9	2168.0	2185.1	2201.4	2220.0	2233.5	2238.7	2235.1	2227.6	2207.7
5.5°	2125.1	2148.9	2163.6	2182.3	2200.2	2220.8	2235.5	2241.5	2237.5	2228.4	2206.5
6°	2117.1	2142.5	2158.4	2179.1	2199.0	2221.2	2237.5	2243.9	2239.9	2228.8	2205.7
6.5°	2109.2	2135.8	2153.3	2175.9	2197.0	2221.6	2239.1	2245.9	2241.9	2229.2	2204.5
7°	2101.2	2129.0	2148.1	2172.3	2195.0	2221.6	2240.7	2248.2	2243.5	2229.2	2202.9
7.5°	2092.9	2121.9	2142.5	2168.8	2192.6	2221.2	2241.5	2249.8	2244.7	2228.8	2201.0
8°	2084.1	2114.7	2136.6	2164.4	2190.6	2220.8	2242.3	2251.0	2245.9	2228.4	2198.6
8.5°	2075.4	2107.2	2130.2	2160.0	2187.8	2219.6	2243.1	2252.2	2246.7	2227.2	2196.2
9°	2066.3	2099.6	2123.9	2155.3	2184.7	2218.8	2243.1	2253.0	2247.4	2226.4	2193.4
9.5°	2057.5	2091.7	2117.5	2150.5	2181.5	2217.2	2243.1	2253.4	2247.4	2224.8	2190.2
10°	2048.0	2083.7	2110.4	2145.3	2177.5	2215.3	2242.7	2253.8	2247.4	2222.8	2187.0
10.5°	2038.8	2075.4	2103.2	2139.8	2173.9	2213.7	2242.3	2253.4	2246.7	2220.8	2183.5
11°	2028.9	2066.6	2096.1	2133.8	2169.6	2211.3	2241.1	2253.0	2245.9	2218.4	2179.5
11.5°	2019.0	2058.3	2088.5	2128.2	2165.2	2208.9	2239.9	2252.2	2245.1	2216.1	2175.1
12°	2008.6	2049.2	2081.0	2121.9	2160.4	2206.1	2238.7	2251.4	2243.5	2212.9	2170.8
12.5°	1998.7	2040.0	2072.6	2115.1	2155.7	2202.9	2236.7	2249.8	2241.9	2209.7	2166.0
13°	1988.0	2030.5	2064.7	2108.4	2150.5	2199.8	2234.7	2248.2	2239.9	2206.1	2160.8
13.5°	1977.2	2021.0	2055.9	2101.6	2144.9	2196.2	2232.3	2246.3	2237.9	2202.5	2155.7
14°	1966.5	2011.4	2047.2	2094.1	2139.0	2192.2	2229.6	2244.3	2235.5	2198.2	2149.7
14.5°	1955.0	2001.5	2038.4	2086.9	2133.0	2187.8	2226.8	2241.9	2232.3	2193.8	2144.1
15°	1943.9	1991.5	2029.3	2079.0	2126.6	2183.1	2223.6	2238.7	2229.2	2189.0	2137.8
15.5°	1932.3	1980.8	2019.8	2071.0	2119.9	2178.7	2220.0	2235.5	2225.6	2184.3	2131.4
16°	1920.8	1970.1	2009.8	2062.7	2112.7	2173.5	2216.1	2232.3	2222.0	2178.7	2125.1
16.5°	1908.9	1959.4	1999.9	2053.9	2105.6	2168.0	2212.1	2228.4	2218.0	2173.1	2117.9
17°	1896.6	1948.2	1990.0	2044.8	2098.0	2162.4	2207.7	2224.4	2213.7	2167.2	2110.4
17.5°	1884.3	1937.1	1979.6	2036.1	2090.5	2156.5	2202.9	2220.0	2208.9	2160.8	2102.8
18°	1872.3	1925.6	1969.3	2026.5	2082.1	2150.1	2198.2	2215.3	2203.7	2154.5	2094.9
18.5°	1859.6	1914.1	1958.2	2017.0	2073.8	2143.3	2193.0	2210.5	2198.2	2147.7	2086.9
19°	1846.1	1902.1	1947.0	2007.0	2065.1	2137.0	2187.4	2205.3	2193.0	2141.0	2078.6
19.5°	1833.4	1889.8	1935.9	1996.7	2056.3	2129.8	2181.5	2199.8	2187.0	2133.4	2069.8
20°	1820.7	1877.9	1924.4	1986.8	2047.2	2122.3	2175.5	2193.8	2181.1	2125.9	2060.7
20.5°	1807.2	1865.2	1912.9	1976.1	2037.2	2114.7	2169.2	2187.8	2174.7	2117.9	2051.9
21°	1792.9	1852.9	1901.0	1965.3	2027.7	2106.8	2162.4	2181.5	2168.0	2110.0	2042.4



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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°	1751.9	1813.5	1863.6	1930.8	1997.1	2081.4	2140.6	2160.4	2145.7	2084.1	2012.6
23°	1737.6	1800.0	1850.9	1918.8	1986.4	2072.2	2132.6	2153.3	2137.8	2074.6	2001.9
23.5°	1722.9	1786.5	1837.8	1906.9	1974.9	2063.1	2124.7	2145.3	2129.8	2065.5	1991.5
24°	1708.2	1772.6	1824.3	1894.6	1963.7	2053.1	2116.3	2137.4	2121.5	2055.5	1980.4
24.5°	1693.5	1758.7	1810.8	1881.5	1952.2	2043.2	2107.6	2129.0	2112.7	2045.6	1969.3
25°	1678.4	1744.4	1797.2	1868.8	1940.3	2033.3	2098.4	2120.3	2104.0	2035.3	1957.8
25.5°	1663.3	1729.7	1783.3	1855.7	1928.0	2022.5	2089.3	2111.6	2094.5	2024.9	1946.3
26°	1647.8	1715.4	1769.0	1842.1	1915.7	2011.8	2079.8	2102.4	2084.9	2014.2	1934.3
26.5°	1632.3	1700.7	1754.7	1828.2	1902.9	2001.1	2070.2	2092.9	2075.4	2003.1	1922.4
27°	1616.4	1686.0	1740.4	1814.7	1890.2	1990.0	2059.9	2082.9	2065.5	1991.9	1909.7
27.5°	1600.6	1670.9	1725.7	1800.8	1877.1	1978.4	2049.6	2073.4	2055.1	1980.8	1897.4
28°	1584.7	1655.4	1711.0	1786.5	1863.2	1966.1	2039.2	2063.1	2044.8	1968.9	1884.3
28.5°	1568.0	1639.5	1695.9	1771.8	1849.7	1954.6	2028.5	2052.3	2033.7	1957.0	1871.5
29°	1551.7	1624.0	1680.4	1756.7	1835.8	1941.9	2017.0	2041.6	2022.9	1944.7	1858.0
29.5°	1535.4	1608.1	1665.3	1742.0	1821.9	1929.6	2005.9	2030.9	2011.4	1932.3	1844.5
30°	1518.7	1592.6	1649.4	1726.9	1807.6	1916.8	1994.3	2019.8	2000.3	1920.0	1830.6
30.5°	1501.6	1575.9	1633.5	1711.8	1792.9	1903.3	1982.4	2008.2	1988.4	1906.9	1817.1
31°	1484.5	1559.6	1617.6	1696.7	1778.6	1890.2	1970.5	1996.3	1976.4	1894.2	1803.2
31.5°	1467.0	1543.3	1601.3	1680.4	1763.5	1876.7	1957.8	1984.4	1964.1	1881.1	1788.9
32°	1450.0	1526.6	1585.1	1664.5	1748.0	1862.8	1945.5	1972.1	1951.8	1868.0	1774.6
32.5°	1432.5	1509.2	1568.4	1648.2	1732.5	1848.9	1932.7	1960.2	1939.1	1854.1	1760.3
33°	1415.0	1492.5	1551.3	1632.3	1717.0	1834.2	1919.6	1947.8	1926.4	1840.6	1745.2
33.5°	1397.1	1475.4	1534.6	1615.6	1701.1	1819.9	1906.5	1934.3	1913.3	1826.2	1730.5
34°	1378.8	1458.3	1517.9	1599.4	1685.6	1805.6	1892.6	1921.2	1900.2	1812.3	1715.4
34.5°	1360.9	1440.8	1500.8	1582.3	1669.3	1790.5	1879.1	1908.1	1886.6	1798.4	1700.3
35°	1342.7	1422.9	1483.7	1566.0	1653.0	1775.4	1865.2	1895.0	1873.1	1783.7	1684.8
35.5°	1324.4	1405.1	1465.8	1548.5	1636.3	1760.3	1850.9	1881.1	1859.6	1769.0	1669.7
36°	1305.7	1387.2	1448.4	1531.4	1620.0	1744.8	1837.0	1866.8	1845.3	1753.9	1653.4
36.5°	1287.0	1369.3	1430.5	1513.5	1603.3	1729.3	1821.9	1852.9	1831.4	1739.6	1637.5
37°	1268.4	1351.0	1413.0	1496.8	1586.6	1713.0	1807.2	1839.0	1816.7	1724.1	1622.0
37.5°	1249.7	1332.7	1394.7	1479.4	1569.2	1697.1	1792.1	1824.3	1802.4	1709.0	1606.1
38°	1230.2	1314.5	1376.4	1461.5	1552.1	1680.8	1777.0	1809.6	1787.7	1693.5	1589.8
38.5°	1211.1	1295.8	1358.2	1442.8	1534.6	1664.5	1761.9	1794.9	1773.0	1678.4	1573.5
39°	1192.5	1276.7	1339.9	1425.7	1517.9	1648.2	1746.4	1780.6	1757.9	1662.5	1557.2
39.5°	1173.4	1258.4	1321.6	1407.4	1499.6	1631.5	1730.5	1765.1	1743.2	1646.6	1540.9
40°	1153.1	1239.8	1302.9	1389.6	1481.7	1614.5	1715.0	1749.6	1727.7	1630.7	1523.9
40.5°	1134.1	1220.7	1284.3	1370.9	1463.9	1597.8	1699.1	1734.1	1712.2	1614.9	1507.6
41°	1114.2	1201.6	1265.6	1353.0	1446.0	1580.7	1682.4	1719.0	1696.7	1598.6	1490.5
41.5°	1094.7	1182.5	1246.9	1334.7	1428.1	1563.2	1666.5	1703.1	1680.8	1583.1	1473.8
42°	1074.5	1163.5	1227.4	1316.4	1410.2	1545.7	1649.8	1686.8	1664.9	1566.4	1457.1
42.5°	1055.4	1144.0	1209.2	1298.2	1392.3	1528.6	1633.9	1670.9	1649.0	1549.7	1439.6
43°	1035.1	1124.5	1190.1	1279.9	1374.1	1511.1	1616.8	1655.0	1633.1	1532.6	1422.5
43.5°	1014.8	1105.0	1171.4	1260.8	1355.8	1493.7	1600.2	1638.7	1616.8	1516.3	1405.4



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	954.8	1045.8	1113.8	1205.2	1300.9	1440.0	1548.9	1589.0	1567.2	1464.7	1352.6
45.5°	934.6	1026.4	1095.1	1186.9	1282.7	1422.1	1531.4	1572.3	1550.5	1446.8	1334.7
46°	914.3	1006.5	1075.6	1167.8	1264.4	1404.3	1513.9	1554.9	1533.4	1429.3	1316.8
46.5°	894.1	986.6	1057.0	1149.2	1246.1	1386.0	1496.4	1537.8	1516.3	1411.4	1298.6
47°	874.2	967.2	1037.5	1130.5	1227.8	1367.7	1478.2	1520.3	1498.4	1393.1	1280.3
47.5°	853.5	947.3	1018.4	1111.8	1208.8	1349.4	1460.7	1502.4	1480.5	1374.9	1261.2
48°	832.5	927.4	999.0	1093.5	1190.5	1331.1	1442.4	1484.5	1463.1	1355.4	1242.5
48.5°	812.6	907.2	979.9	1074.5	1172.2	1312.9	1424.1	1466.2	1444.8	1336.3	1223.5
49°	792.3	887.7	960.4	1055.8	1153.5	1293.8	1405.4	1448.0	1426.1	1316.8	1204.0
49.5°	772.1	867.8	941.7	1037.1	1134.5	1275.1	1387.2	1429.3	1406.6	1297.0	1184.5
50°	751.4	848.0	923.1	1018.0	1116.2	1256.4	1367.7	1410.2	1387.6	1277.1	1165.0
50.5°	730.7	828.1	903.6	999.7	1097.5	1237.4	1348.2	1390.7	1367.7	1256.4	1146.0
51°	710.5	807.8	884.5	981.1	1078.8	1218.3	1328.8	1370.9	1347.8	1236.6	1126.9
51.5°	690.6	788.0	865.4	962.4	1060.1	1199.2	1308.9	1350.6	1327.6	1217.1	1108.2
52°	669.9	768.5	846.4	943.7	1041.1	1179.4	1288.6	1330.0	1306.9	1198.4	1090.3
52.5°	650.1	748.6	827.3	925.0	1022.0	1159.9	1268.4	1309.3	1286.2	1180.1	1071.7
53°	629.4	728.8	808.6	906.4	1002.9	1139.6	1247.7	1289.4	1266.8	1160.7	1053.0
53.5°	609.1	709.3	789.5	888.1	984.3	1119.7	1227.0	1268.4	1247.7	1140.4	1031.1
54°	589.3	689.8	770.9	868.6	965.2	1099.9	1207.2	1249.3	1229.0	1117.4	1008.9
54.5°	569.4	670.3	751.8	850.3	946.5	1080.8	1187.7	1231.0	1209.6	1091.9	983.5
55°	549.1	650.9	733.1	831.7	928.2	1061.7	1169.0	1212.3	1189.3	1063.3	957.2
55.5°	529.7	631.0	714.8	813.8	910.3	1043.5	1149.6	1191.3	1165.0	1035.5	929.8
56°	509.8	612.3	695.8	795.5	892.1	1024.4	1129.3	1167.8	1138.4	1004.5	901.6
56.5°	490.3	593.3	677.5	777.2	873.8	1004.1	1106.6	1141.6	1110.6	973.5	873.4
57°	470.9	573.8	659.6	759.7	853.9	982.3	1082.4	1115.0	1080.8	941.7	844.8
57.5°	451.4	555.1	641.7	741.9	834.1	960.4	1056.6	1085.2	1048.6	910.3	814.2
58°	433.1	536.4	623.1	724.0	813.0	936.6	1029.9	1054.6	1016.0	876.2	784.0
58.5°	414.0	518.2	604.8	704.9	792.3	912.3	1002.1	1022.0	983.1	842.0	753.8
59°	395.4	499.9	586.9	685.8	770.1	887.3	971.9	989.0	948.5	808.6	723.6
59.5°	376.7	481.6	568.6	666.4	748.2	861.1	941.7	953.7	913.1	775.6	693.0
60°	358.8	462.9	550.3	646.9	725.6	835.2	910.7	919.5	877.8	741.1	663.2
60.5°	340.9	445.0	531.3	627.4	703.7	808.6	879.3	884.1	842.4	707.7	633.4
61°	323.4	427.6	513.0	607.2	680.3	781.6	846.8	849.9	807.4	674.7	604.0
61.5°	305.6	409.3	494.3	587.7	657.2	754.2	813.8	814.6	771.7	640.9	574.6
62°	288.9	391.4	475.6	567.4	634.6	726.4	782.0	780.4	737.1	608.4	545.2
62.5°	272.2	373.5	457.4	547.6	610.7	698.6	748.6	745.8	701.7	576.6	517.0
63°	255.9	356.0	438.3	527.7	587.3	669.9	716.0	711.3	668.0	546.8	489.5
63.5°	239.2	338.5	420.0	506.6	563.8	641.7	683.8	677.1	634.2	516.6	462.5
64°	224.1	321.9	401.7	486.8	540.8	613.9	652.9	644.1	601.6	488.0	436.3
64.5°	209.0	304.8	383.4	466.5	517.4	585.7	621.1	611.5	569.8	460.1	410.9
65°	194.3	287.7	365.6	446.6	493.9	557.9	590.9	579.7	537.6	433.1	386.6
65.5°	180.0	271.4	347.3	426.4	470.5	530.5	560.7	548.4	506.2	407.7	365.2
66°	166.5	255.5	329.4	406.5	447.0	503.5	530.9	517.8	475.2	383.1	344.1



TEST NUMBER: P776447

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	131.5	209.0	276.2	347.3	379.5	426.0	446.2	432.3	387.4	318.7	280.5
68°	121.6	194.3	259.1	327.8	358.4	401.3	419.6	405.7	362.8	296.8	261.9
68.5°	112.1	180.0	242.4	308.3	337.4	377.1	393.4	379.9	338.2	275.4	244.8
69°	102.1	165.7	225.3	289.3	316.3	354.8	370.7	356.8	313.5	257.1	228.5
69.5°	94.6	151.8	208.6	269.8	295.6	333.0	348.1	334.2	289.3	240.0	213.0
70°	89.0	139.5	192.3	251.9	274.6	310.7	325.8	311.1	269.0	223.7	198.7
70.5°	85.4	127.6	176.4	233.6	255.9	288.5	303.2	288.5	249.9	208.6	185.2
71°	81.5	116.0	161.3	215.8	238.0	269.4	280.5	269.0	232.1	194.3	172.1
71.5°	77.5	104.5	146.6	198.7	220.5	249.9	261.1	250.3	215.4	180.8	160.1
72°	73.5	93.0	134.7	182.4	203.8	232.1	242.4	232.9	200.3	168.5	149.0
72.5°	69.5	84.6	123.2	166.9	187.6	215.0	225.3	216.6	186.0	156.6	137.9
73°	65.6	78.7	111.7	152.6	172.5	199.1	209.4	201.1	172.8	145.4	127.9
73.5°	62.0	74.7	100.1	138.7	158.5	184.0	194.3	186.8	160.9	135.1	118.4
74°	58.4	70.7	88.2	127.6	145.4	170.1	180.0	173.6	149.4	125.2	109.3
74.5°	54.8	67.2	79.9	116.0	132.7	157.0	166.9	161.3	138.7	116.0	100.9
75°	51.3	63.6	72.3	104.9	121.6	144.6	154.6	149.8	128.7	107.3	92.6
75.5°	48.1	60.0	66.4	93.8	110.9	133.1	143.0	139.1	118.8	98.5	85.0
76°	44.9	56.4	60.8	84.6	100.9	122.4	132.3	128.7	109.7	90.6	77.5
76.5°	42.1	53.2	56.0	76.3	91.4	112.1	122.4	119.6	100.9	83.0	70.7
77°	39.3	49.7	52.1	69.1	83.4	103.3	112.8	110.5	92.2	75.9	64.0
77.5°	36.6	46.5	48.5	62.4	75.5	94.2	104.1	102.1	84.2	68.7	57.6
78°	33.8	43.7	45.7	56.4	68.3	85.8	95.4	93.8	76.7	62.4	51.7
78.5°	31.4	40.9	42.5	51.3	61.6	78.3	87.4	85.8	69.1	56.4	46.1
79°	29.0	38.1	40.1	46.5	55.6	71.1	79.9	78.7	62.0	50.5	40.9
79.5°	26.6	35.4	37.4	42.1	50.1	64.4	72.7	71.5	55.6	45.3	37.0
80°	24.2	32.6	35.0	38.1	44.9	58.0	66.0	64.8	49.3	40.9	32.6
80.5°	22.3	30.2	32.2	34.6	40.1	52.5	59.6	58.8	43.3	36.2	28.2
81°	20.3	27.8	30.2	31.4	36.6	46.5	53.6	52.8	38.5	31.8	24.2
81.5°	18.3	25.8	27.8	28.6	32.6	41.7	47.7	47.3	33.8	27.4	19.9
82°	16.3	23.4	25.8	25.8	29.0	37.4	42.5	41.7	29.0	23.0	16.7
82.5°	14.7	21.5	23.4	23.4	25.0	33.4	38.1	37.4	23.8	18.7	13.9
83°	12.7	19.1	21.5	21.1	21.5	29.4	33.8	33.0	19.1	15.5	11.1
83.5°	11.1	17.5	19.9	19.5	18.7	25.0	29.4	28.6	15.5	12.3	8.7
84°	9.9	15.5	17.9	17.5	16.3	21.1	25.0	24.2	11.9	9.5	6.8
84.5°	8.3	13.9	15.9	15.9	14.3	18.3	20.7	19.9	9.1	7.2	5.2
85°	7.2	12.3	14.3	14.3	12.3	15.5	17.5	16.3	6.4	4.8	3.6
85.5°	6.0	10.7	13.1	12.7	10.3	12.7	14.3	13.1	4.0	3.2	2.4
86°	4.8	9.1	11.5	11.5	9.1	10.7	11.5	10.3	2.4	2.0	1.2
86.5°	3.6	7.5	9.9	9.9	7.5	8.7	9.1	7.5	1.6	0.8	0.4
87°	2.8	6.4	8.3	8.7	6.4	6.8	7.2	5.6	1.2	0.4	0.0
87.5°	2.0	5.2	7.2	7.5	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: P776447

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-3500K

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: P776447

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2198.2	2198.2	2198.2	2198.2	2198.2	2198.2
0.5°	2197.8	2195.8	2193.8	2192.6	2191.0	2190.2
1°	2197.4	2193.4	2189.8	2187.4	2185.1	2184.7
1.5°	2196.6	2191.0	2185.5	2181.5	2179.1	2178.7
2°	2195.8	2188.2	2181.1	2175.9	2172.7	2172.7
2.5°	2194.2	2185.1	2176.3	2170.0	2166.4	2166.4
3°	2192.6	2181.9	2171.2	2163.6	2159.6	2160.0
3.5°	2191.0	2178.7	2166.0	2157.2	2152.9	2153.7
4°	2188.6	2174.7	2160.4	2150.5	2145.3	2146.5
4.5°	2186.7	2170.8	2154.5	2143.3	2138.2	2139.8
5°	2183.9	2166.4	2148.5	2136.2	2130.2	2132.2
5.5°	2181.1	2161.6	2142.1	2128.6	2122.7	2125.1
6°	2177.9	2156.8	2135.4	2121.1	2114.7	2117.1
6.5°	2174.3	2151.7	2128.6	2113.1	2106.4	2109.2
7°	2170.8	2146.5	2121.5	2105.2	2098.0	2101.2
7.5°	2166.8	2140.6	2114.3	2096.8	2089.3	2092.9
8°	2162.4	2134.6	2106.8	2088.1	2080.6	2084.1
8.5°	2158.0	2128.2	2098.8	2079.4	2071.4	2075.4
9°	2152.9	2121.9	2090.9	2070.2	2061.9	2066.3
9.5°	2148.1	2115.1	2082.5	2061.1	2052.3	2057.5
10°	2142.5	2108.0	2073.8	2051.5	2042.8	2048.0
10.5°	2137.0	2101.2	2065.1	2041.6	2032.9	2038.8
11°	2131.0	2093.3	2055.9	2032.1	2022.9	2028.9
11.5°	2125.1	2085.3	2046.4	2021.7	2012.6	2019.0
12°	2118.3	2077.4	2036.8	2011.4	2001.9	2008.6
12.5°	2111.6	2069.0	2026.9	2000.7	1991.2	1998.7
13°	2104.4	2060.7	2017.0	1990.0	1980.4	1988.0
13.5°	2097.2	2051.5	2006.6	1978.8	1969.7	1977.2
14°	2089.7	2042.4	1995.9	1968.1	1958.2	1966.5
14.5°	2082.1	2033.3	1985.6	1956.6	1946.6	1955.0
15°	2073.8	2023.7	1974.5	1944.7	1935.1	1943.9
15.5°	2065.5	2013.8	1962.9	1932.7	1922.8	1932.3
16°	2056.7	2003.5	1951.8	1920.8	1911.3	1920.8
16.5°	2048.0	1993.1	1939.9	1908.5	1899.0	1908.9
17°	2038.8	1982.4	1928.0	1896.2	1886.6	1896.6
17.5°	2029.3	1971.3	1915.7	1883.1	1873.9	1884.3
18°	2019.4	1960.2	1903.3	1870.8	1861.2	1872.3
18.5°	2009.4	1948.6	1890.6	1857.2	1847.7	1859.6
19°	1999.5	1937.1	1877.5	1844.5	1835.0	1846.1
19.5°	1988.8	1925.2	1864.4	1830.6	1821.5	1833.4
20°	1978.0	1912.9	1850.9	1817.1	1808.0	1820.7
20.5°	1966.9	1900.6	1837.4	1802.8	1794.5	1807.2
21°	1955.8	1887.8	1823.5	1788.9	1780.2	1792.9

TEST NUMBER: P776447

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1920.8	1848.5	1780.9	1745.2	1737.2	1751.9
23°	1908.5	1835.0	1766.6	1730.5	1722.5	1737.6
23.5°	1896.2	1821.1	1751.9	1715.8	1707.8	1722.9
24°	1883.1	1806.8	1736.8	1700.7	1692.7	1708.2
24.5°	1870.4	1792.9	1721.7	1684.8	1677.6	1693.5
25°	1857.2	1778.2	1705.8	1669.3	1662.1	1678.4
25.5°	1843.7	1764.3	1690.8	1653.8	1646.6	1663.3
26°	1830.2	1749.2	1675.3	1637.9	1631.1	1647.8
26.5°	1816.3	1734.5	1659.4	1621.6	1615.3	1632.3
27°	1802.4	1719.0	1643.5	1605.3	1599.4	1616.4
27.5°	1788.1	1703.9	1627.2	1589.0	1583.1	1600.6
28°	1773.8	1688.4	1610.9	1572.7	1566.4	1584.7
28.5°	1759.1	1672.5	1594.6	1556.0	1550.1	1568.0
29°	1744.4	1657.0	1577.9	1539.0	1533.8	1551.7
29.5°	1729.3	1641.1	1561.2	1521.9	1516.7	1535.4
30°	1714.2	1625.2	1544.5	1505.2	1499.6	1518.7
30.5°	1699.1	1608.5	1527.4	1487.7	1482.9	1501.6
31°	1684.0	1592.2	1510.4	1470.6	1465.4	1484.5
31.5°	1668.1	1575.5	1492.9	1453.1	1448.4	1467.0
32°	1652.6	1558.8	1475.4	1435.3	1430.5	1450.0
32.5°	1636.3	1542.1	1458.3	1417.8	1413.0	1432.5
33°	1620.4	1525.4	1440.8	1399.9	1395.1	1415.0
33.5°	1604.1	1508.0	1423.3	1382.0	1377.2	1397.1
34°	1587.8	1491.3	1405.1	1364.1	1359.0	1378.8
34.5°	1571.9	1473.8	1387.6	1346.2	1341.1	1360.9
35°	1555.3	1456.7	1369.3	1328.0	1322.4	1342.7
35.5°	1538.6	1439.6	1351.4	1309.3	1304.5	1324.4
36°	1521.9	1421.7	1333.9	1291.4	1285.4	1305.7
36.5°	1505.2	1404.7	1315.6	1273.1	1267.6	1287.0
37°	1488.1	1387.2	1297.8	1254.5	1248.5	1268.4
37.5°	1471.0	1369.7	1279.9	1235.8	1229.8	1249.7
38°	1453.9	1351.8	1261.6	1217.1	1210.7	1230.2
38.5°	1436.8	1333.9	1243.7	1198.8	1192.1	1211.1
39°	1420.2	1316.4	1225.0	1180.1	1173.0	1192.5
39.5°	1402.7	1299.0	1207.2	1161.5	1153.9	1173.4
40°	1385.2	1281.1	1188.9	1142.8	1134.8	1153.1
40.5°	1368.1	1263.2	1171.0	1124.1	1115.8	1134.1
41°	1350.6	1244.9	1152.7	1105.4	1095.9	1114.2
41.5°	1333.5	1227.8	1134.1	1086.8	1076.8	1094.7
42°	1316.0	1210.3	1116.2	1067.7	1057.8	1074.5
42.5°	1298.2	1192.1	1098.3	1049.0	1038.3	1055.4
43°	1280.7	1174.2	1080.4	1029.9	1018.4	1035.1
43.5°	1263.2	1156.7	1061.7	1011.7	999.4	1014.8



TEST NUMBER: P776447

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1209.9	1103.1	1007.7	955.2	940.1	954.8
45.5°	1192.1	1086.0	989.4	937.0	921.1	934.6
46°	1174.6	1068.5	971.9	918.3	901.6	914.3
46.5°	1156.3	1050.2	953.7	899.6	881.7	894.1
47°	1138.0	1032.3	936.2	880.9	862.3	874.2
47.5°	1119.7	1014.8	917.5	862.3	842.4	853.5
48°	1101.1	997.0	900.4	844.0	822.9	832.5
48.5°	1082.8	979.1	882.1	825.3	803.5	812.6
49°	1064.1	961.6	864.6	807.0	784.0	792.3
49.5°	1045.0	943.7	846.8	788.4	764.9	772.1
50°	1026.8	925.8	828.9	770.1	745.0	751.4
50.5°	1008.5	907.6	811.0	752.2	725.6	730.7
51°	990.6	889.7	793.5	733.9	706.5	710.5
51.5°	972.7	872.6	776.0	715.2	687.4	690.6
52°	956.0	855.9	759.0	697.8	668.4	669.9
52.5°	938.2	839.2	741.9	679.9	648.9	650.1
53°	919.5	822.5	725.6	662.4	629.8	629.4
53.5°	899.6	805.4	708.5	644.5	611.1	609.1
54°	878.2	787.6	691.8	627.0	592.1	589.3
54.5°	856.7	769.3	674.7	610.3	573.4	569.4
55°	832.9	750.2	657.2	593.3	555.1	549.1
55.5°	809.0	729.9	638.9	575.4	536.8	529.7
56°	784.0	709.7	621.1	558.3	518.9	509.8
56.5°	759.3	689.0	602.8	540.4	500.7	490.3
57°	733.1	667.6	584.5	522.9	482.8	470.9
57.5°	707.7	645.7	565.8	505.0	464.9	451.4
58°	681.5	623.8	547.6	488.0	447.4	433.1
58.5°	655.2	602.0	528.1	470.5	429.9	414.0
59°	629.4	579.3	509.4	453.0	412.5	395.4
59.5°	603.6	557.1	490.3	435.5	395.0	376.7
60°	577.4	534.8	470.9	418.4	377.5	358.8
60.5°	551.9	512.6	451.4	400.5	360.4	340.9
61°	526.9	490.3	431.9	383.4	343.3	323.4
61.5°	501.5	468.5	412.5	366.4	326.6	305.6
62°	476.4	446.6	393.4	349.3	310.3	288.9
62.5°	452.6	425.2	373.9	331.8	293.6	272.2
63°	428.7	404.1	354.4	314.7	277.8	255.9
63.5°	405.7	383.1	335.8	296.8	261.9	239.2
64°	383.8	362.4	317.1	279.7	246.8	224.1
64.5°	362.8	342.9	298.8	262.7	231.7	209.0
65°	341.7	323.4	280.5	246.4	217.0	194.3
65.5°	321.1	303.6	263.4	229.3	201.9	180.0
66°	300.0	284.5	245.6	212.6	187.9	166.5



TEST NUMBER: P776447

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	243.2	232.5	197.1	167.3	146.6	131.5
68°	226.9	215.8	181.6	153.0	135.5	121.6
68.5°	211.0	199.9	166.9	138.7	124.4	112.1
69°	195.9	185.2	153.0	127.9	113.6	102.1
69.5°	182.0	171.3	139.1	117.2	102.5	94.6
70°	169.3	157.8	128.3	106.1	91.4	89.0
70.5°	156.6	145.4	118.0	95.4	83.4	85.4
71°	144.6	135.1	107.3	86.2	77.9	81.5
71.5°	133.9	124.8	96.6	78.7	73.9	77.5
72°	123.2	114.8	87.8	71.9	70.3	73.5
72.5°	114.0	104.5	79.9	66.0	66.8	69.5
73°	104.9	94.6	72.3	60.8	63.2	65.6
73.5°	96.2	85.8	65.6	56.0	59.6	62.0
74°	88.2	78.3	59.6	52.1	56.0	58.4
74.5°	80.3	71.1	54.4	48.9	52.8	54.8
75°	73.1	64.8	49.3	45.7	49.7	51.3
75.5°	66.4	58.4	44.9	42.9	46.5	48.1
76°	60.4	52.8	40.5	40.1	43.3	44.9
76.5°	54.0	47.3	37.0	37.7	40.5	42.1
77°	48.9	42.5	33.8	35.0	37.7	39.3
77.5°	43.7	38.1	30.6	33.0	35.0	36.6
78°	39.3	34.2	27.8	30.6	32.6	33.8
78.5°	35.4	30.2	25.4	28.2	30.2	31.4
79°	31.0	27.0	23.0	26.2	27.8	29.0
79.5°	27.0	23.8	21.1	23.8	25.4	26.6
80°	23.0	20.7	19.1	21.9	23.0	24.2
80.5°	19.9	18.3	17.5	19.9	21.1	22.3
81°	17.1	15.9	15.9	18.3	19.1	20.3
81.5°	14.3	14.3	14.3	16.3	17.1	18.3
82°	11.9	12.7	12.7	14.7	15.1	16.3
82.5°	9.9	10.7	11.1	13.1	13.5	14.7
83°	7.9	9.1	9.9	11.5	11.9	12.7
83.5°	6.4	7.5	8.3	9.9	10.3	11.1
84°	5.2	6.4	7.2	8.3	8.7	9.9
84.5°	3.6	5.2	6.4	7.2	7.2	8.3
85°	2.8	4.4	5.2	6.0	6.0	7.2
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: P776447

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-3500K

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°	1779.4	1839.8	1888.6	1953.8	2017.8	2098.4	2155.3	2174.7	2160.8	2101.6	2032.9
22°	1765.9	1827.0	1876.3	1942.3	2007.8	2090.1	2148.1	2167.6	2153.7	2092.9	2022.5



44°	995.0	1085.6	1151.9	1242.5	1337.5	1475.4	1582.7	1622.0	1600.6	1499.2	1388.0
44.5°	975.1	1065.7	1133.3	1224.3	1319.2	1457.9	1566.0	1605.3	1584.3	1482.1	1370.5



66.5°	153.8	239.6	311.9	386.6	424.4	477.2	501.9	488.4	444.6	361.6	322.7
67°	141.1	223.7	294.4	366.8	402.1	451.0	474.0	460.1	416.0	340.1	301.6



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°	1944.3	1874.7	1809.6	1774.6	1765.9	1779.4
22°	1932.3	1861.6	1795.7	1759.9	1751.9	1765.9



44°	1245.7	1139.2	1043.5	992.6	979.9	995.0
44.5°	1227.4	1120.9	1025.6	974.3	960.0	975.1

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66.5°	279.3	267.0	228.9	197.1	173.6	153.8
67°	260.3	249.1	212.2	181.6	159.7	141.1

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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)