

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: P776767

Luminaire Tested: HCDJBS4050CSD-HCD81TRMW-5000lm-3500K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P776767  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2312156B044)  
Test Lab:  
Issue Date: 2/13/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBS4050CSD-HCD81TRMW-5000lm-3500K  
Description: 8 INCH ROUND SHALLOW-WIDE MATTE WHITE TRIM  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5821.5 lumens  
Efficiency: N/A  
Efficacy: 121.3 lumens/watt  
Spacing Criteria (0/90/45): 1.25 / 1.25 / 1.35  
Luminous Opening: Circular (Dia: 0.67' x H: 0')  
CIE Type: Direct

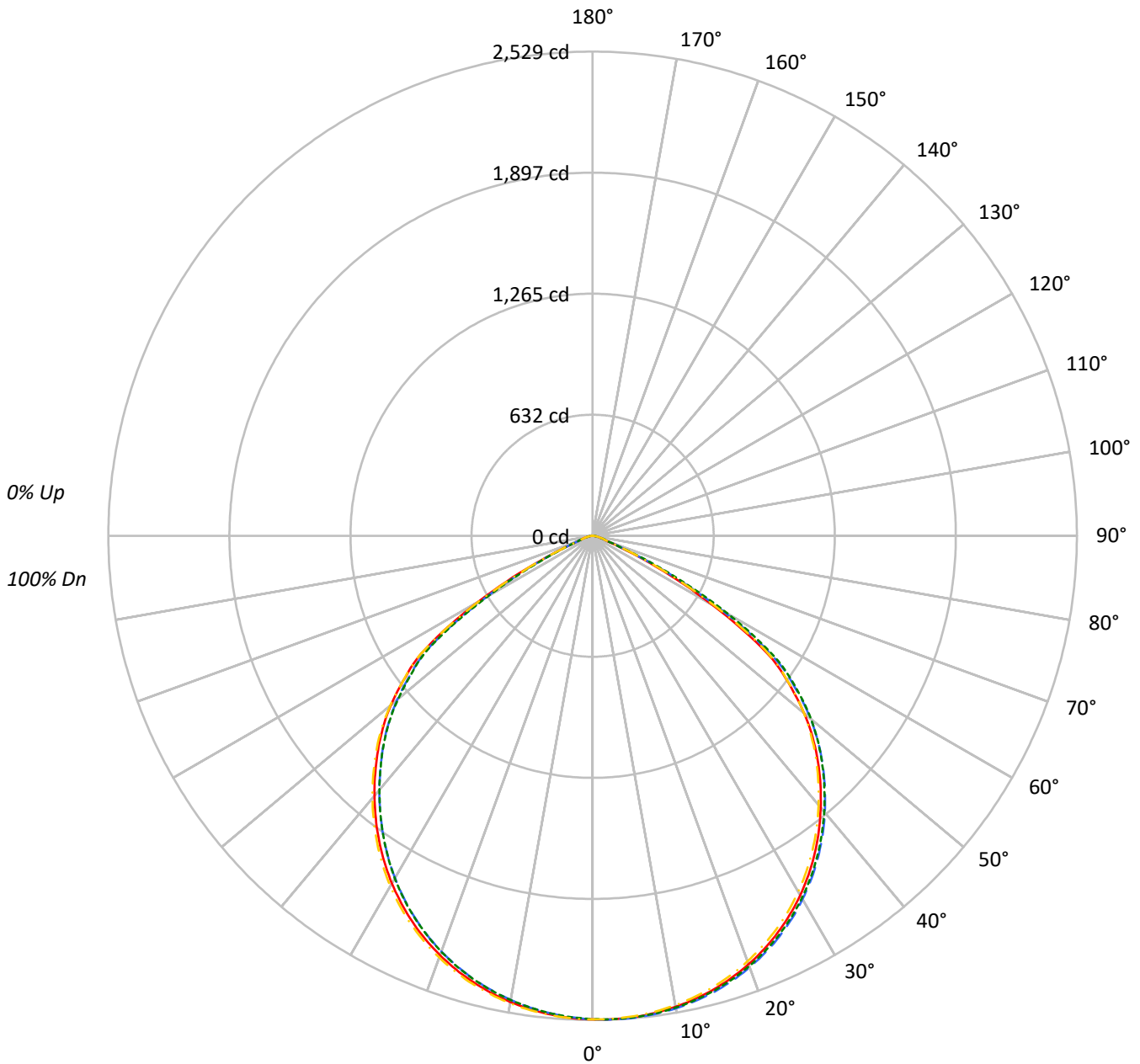
Input Watts (W): 48  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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	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	104	101	109	105	102	99	101	98	96	97	95	93	94	92	91	89								
2	103	96	90	85	100	94	89	84	91	86	83	87	84	81	85	82	79	77								
3	95	86	79	73	92	84	78	72	81	76	71	79	74	70	76	72	69	67								
4	87	77	69	63	85	75	68	63	73	67	62	71	65	61	69	64	60	58								
5	81	69	61	55	79	68	60	55	66	59	54	64	58	54	62	57	53	51								
6	75	62	54	48	73	62	54	48	60	53	48	58	52	47	57	51	47	45								
7	69	57	49	43	68	56	48	43	55	48	43	53	47	42	52	46	42	40								
8	65	52	44	39	63	51	44	38	50	43	38	49	43	38	48	42	38	36								
9	60	48	40	35	59	47	40	35	46	39	35	45	39	34	44	38	34	32								
10	57	44	37	32	55	44	36	32	43	36	31	42	36	31	41	35	31	29								

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

	0°	90°	180°	270°
0°	77126	77126	77126	77126
5°	77331	77362	76942	76740
10°	77450	77584	76663	76341
15°	77492	77713	76268	75820
20°	77384	77722	75746	75116
25°	77041	77519	74962	74134
30°	76419	77036	73909	72812
35°	75395	76203	72476	71071
40°	73874	74966	70642	69024
45°	71802	73270	68465	66630
50°	68462	70699	65303	62947
55°	62511	65550	59573	57066
60°	44208	49764	42107	38535
65°	21701	25963	19592	17685
70°	6909	7623	6945	6820
75°	5002	5615	5060	5178
80°	3481	4149	3481	3727
85°	1997	2802	1997	2312

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°  
 Vertical Angle: 45°  
 Luminance: 73434 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	239.1	4.1
10°-20°	686.0	11.8
20°-30°	1038.2	17.8
30°-40°	1237.6	21.3
40°-50°	1249.0	21.5
50°-60°	992.1	17.0
60°-70°	321.6	5.5
70°-80°	49.3	0.8
80°-90°	8.6	0.1
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°	1963.3	33.7
0°-40°	3200.9	55.0
0°-60°	5441.9	93.5
0°-90°	5821.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5821.5	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2526	2526	2526	2526	2526	
5°	2523	2524	2511	2504	2523	240
15°	2452	2459	2413	2399	2452	692
25°	2287	2301	2225	2201	2287	1054
35°	2023	2045	1945	1907	2023	1264
45°	1663	1697	1586	1543	1663	1279
55°	1174	1232	1119	1072	1174	1013
65°	300	359	271	245	300	325
75°	42	48	43	44	42	47
85°	6	8	6	7	6	7
90°	0	0	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°	2526.2	2526.2	2526.2	2526.2	2526.2	2526.2	2526.2	2526.2	2526.2	2526.2	2526.2
0.5°	2527.6	2527.1	2527.1	2527.6	2525.2	2525.7	2526.6	2526.6	2526.2	2525.2	2524.8
1°	2527.6	2527.6	2528.1	2528.5	2526.2	2526.2	2526.2	2526.2	2525.2	2523.8	2523.3
1.5°	2528.1	2528.1	2528.5	2529.0	2526.6	2526.2	2526.2	2525.7	2523.8	2522.4	2521.5
2°	2527.6	2528.1	2529.0	2529.5	2527.1	2526.2	2525.7	2524.8	2522.9	2520.5	2519.6
2.5°	2527.1	2528.1	2529.0	2529.5	2527.1	2526.2	2524.8	2523.3	2521.0	2519.1	2517.7
3°	2527.1	2528.1	2529.0	2529.5	2526.6	2525.7	2524.3	2521.9	2519.6	2516.7	2515.8
3.5°	2526.2	2527.6	2528.5	2529.5	2526.6	2524.8	2522.9	2520.5	2517.7	2514.4	2513.0
4°	2525.7	2527.1	2528.1	2528.5	2526.2	2524.3	2521.5	2518.6	2515.3	2512.0	2510.6
4.5°	2524.3	2526.2	2527.6	2528.1	2525.2	2522.9	2520.0	2516.7	2513.0	2509.2	2507.3
5°	2523.3	2525.2	2527.1	2527.1	2524.3	2521.9	2518.2	2514.4	2510.6	2506.4	2504.5
5.5°	2521.9	2523.8	2525.7	2526.2	2522.9	2520.5	2516.3	2512.0	2507.3	2503.1	2501.2
6°	2520.0	2522.4	2524.3	2524.8	2521.5	2518.6	2513.9	2509.7	2504.5	2499.8	2497.9
6.5°	2518.2	2521.0	2522.9	2523.3	2520.0	2516.7	2511.6	2506.8	2501.2	2496.0	2494.1
7°	2515.8	2519.1	2521.5	2521.5	2518.2	2514.4	2509.2	2504.0	2497.9	2492.2	2489.9
7.5°	2513.4	2516.7	2519.6	2519.6	2516.3	2512.0	2506.8	2500.2	2494.1	2488.4	2486.1
8°	2511.1	2514.4	2517.2	2517.7	2513.9	2509.7	2503.5	2496.9	2490.3	2484.2	2481.4
8.5°	2507.8	2512.0	2514.9	2514.9	2511.6	2506.4	2500.2	2493.2	2486.1	2480.0	2477.1
9°	2505.0	2509.7	2512.5	2512.5	2508.7	2503.5	2496.5	2489.4	2481.8	2475.2	2472.4
9.5°	2501.6	2506.4	2509.7	2509.7	2505.9	2500.7	2493.2	2485.1	2477.6	2470.5	2467.2
10°	2498.3	2503.5	2506.4	2506.4	2502.6	2496.9	2489.4	2480.9	2472.9	2465.3	2462.0
10.5°	2494.6	2500.2	2503.1	2503.1	2499.3	2493.2	2485.6	2476.2	2467.7	2460.1	2456.4
11°	2490.8	2496.5	2499.8	2499.8	2495.5	2489.4	2480.9	2471.5	2462.5	2454.5	2450.7
11.5°	2486.6	2492.7	2496.0	2496.0	2491.7	2485.1	2476.2	2466.7	2457.3	2448.8	2445.1
12°	2482.3	2488.9	2492.2	2492.2	2487.5	2480.9	2471.5	2461.1	2451.7	2443.2	2438.9
12.5°	2478.1	2484.7	2488.0	2488.0	2483.7	2476.2	2466.7	2455.9	2445.5	2436.6	2432.3
13°	2472.9	2480.0	2483.7	2483.3	2479.0	2471.5	2461.6	2450.2	2439.4	2430.4	2426.2
13.5°	2467.7	2474.8	2479.0	2478.5	2474.3	2466.3	2456.4	2444.1	2433.3	2423.8	2419.1
14°	2462.5	2470.0	2474.3	2473.8	2469.1	2461.1	2450.7	2438.4	2426.7	2417.2	2412.0
14.5°	2457.3	2464.9	2469.6	2468.6	2464.4	2455.4	2444.6	2431.8	2420.1	2410.1	2405.0
15°	2451.7	2460.1	2464.4	2463.4	2458.7	2450.2	2438.4	2425.2	2413.0	2402.6	2397.9
15.5°	2445.5	2454.0	2458.7	2457.8	2453.1	2444.1	2432.3	2419.1	2405.9	2395.5	2389.9
16°	2439.4	2448.4	2453.1	2451.7	2446.9	2438.0	2425.7	2411.6	2398.4	2387.5	2381.8
16.5°	2433.3	2442.2	2446.9	2445.5	2441.3	2431.8	2419.1	2404.5	2390.8	2380.0	2373.8
17°	2426.2	2436.1	2440.8	2439.4	2435.1	2425.2	2412.0	2396.9	2383.3	2371.9	2365.3
17.5°	2419.6	2429.5	2434.7	2432.8	2428.5	2418.6	2404.5	2389.4	2374.8	2363.0	2356.9
18°	2412.5	2422.4	2427.6	2426.2	2421.9	2411.6	2397.4	2381.4	2366.8	2354.5	2347.9
18.5°	2405.4	2415.8	2421.0	2418.6	2414.9	2404.0	2389.9	2373.4	2358.3	2345.5	2338.9
19°	2397.4	2408.7	2413.5	2412.0	2407.3	2396.5	2381.8	2364.9	2349.3	2336.1	2329.5
19.5°	2389.9	2401.2	2406.4	2404.5	2399.8	2388.9	2373.8	2356.4	2340.3	2327.1	2320.1
20°	2381.8	2393.2	2398.8	2396.9	2392.2	2380.9	2365.3	2347.9	2331.4	2317.7	2310.2
20.5°	2373.8	2385.2	2390.8	2388.9	2384.2	2372.9	2356.9	2338.5	2321.5	2307.8	2300.3
21°	2364.9	2377.1	2382.3	2380.9	2375.7	2364.4	2347.4	2329.0	2312.0	2297.4	2289.9



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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°	2338.0	2350.7	2356.9	2354.5	2349.8	2337.5	2319.6	2300.3	2281.4	2265.8	2257.8
23°	2328.1	2341.8	2347.4	2345.5	2340.8	2328.1	2310.2	2289.4	2270.5	2255.4	2246.5
23.5°	2318.6	2332.3	2338.5	2336.1	2330.9	2318.6	2299.8	2279.5	2259.7	2243.7	2235.2
24°	2308.3	2322.4	2328.6	2326.7	2321.5	2308.7	2289.4	2268.7	2248.8	2232.8	2223.4
24.5°	2297.9	2312.5	2318.6	2316.3	2311.6	2298.4	2279.0	2257.8	2237.1	2220.5	2211.1
25°	2287.0	2302.1	2308.3	2305.9	2301.2	2287.5	2268.7	2246.5	2225.3	2208.8	2198.8
25.5°	2276.7	2291.8	2297.9	2295.5	2290.8	2277.1	2257.8	2234.7	2213.9	2197.0	2186.6
26°	2265.8	2280.9	2287.0	2285.2	2280.0	2266.3	2246.5	2223.4	2201.7	2184.2	2174.3
26.5°	2254.5	2270.1	2276.7	2274.3	2268.7	2255.4	2234.7	2211.6	2189.4	2171.5	2161.1
27°	2242.7	2258.7	2264.9	2263.0	2257.3	2244.1	2223.4	2199.3	2176.7	2158.8	2147.9
27.5°	2230.9	2247.0	2254.0	2251.2	2246.5	2232.3	2211.1	2187.1	2163.9	2145.6	2134.7
28°	2218.7	2235.2	2242.2	2239.4	2234.7	2220.5	2198.8	2173.9	2150.7	2132.3	2121.5
28.5°	2206.4	2222.9	2230.0	2227.6	2222.4	2208.3	2186.6	2161.1	2137.5	2118.2	2107.3
29°	2194.1	2211.1	2217.7	2215.4	2210.2	2195.5	2173.4	2147.9	2124.3	2105.0	2093.2
29.5°	2180.9	2198.8	2205.5	2203.1	2197.9	2183.3	2160.6	2134.7	2110.2	2090.4	2079.0
30°	2167.7	2185.6	2192.2	2190.4	2185.2	2170.1	2147.4	2121.0	2096.5	2076.2	2064.4
30.5°	2155.0	2172.4	2179.5	2177.2	2172.4	2157.3	2134.2	2107.3	2081.9	2061.6	2049.3
31°	2140.8	2159.2	2166.3	2163.9	2158.8	2143.7	2120.1	2093.2	2067.7	2047.0	2034.7
31.5°	2127.2	2145.6	2152.6	2150.3	2145.6	2130.0	2106.4	2078.6	2053.1	2031.9	2019.6
32°	2113.0	2131.4	2138.9	2136.6	2131.9	2116.3	2092.3	2064.4	2038.0	2016.8	2004.5
32.5°	2098.4	2117.3	2125.3	2122.4	2117.7	2102.2	2077.6	2049.3	2022.9	2001.2	1988.0
33°	2084.2	2103.1	2111.1	2108.3	2104.0	2088.0	2063.0	2034.7	2007.4	1985.7	1972.9
33.5°	2069.1	2088.5	2096.5	2094.1	2089.4	2073.4	2047.9	2019.1	1992.3	1969.2	1956.4
34°	2053.6	2073.4	2081.9	2079.0	2074.3	2058.8	2033.3	2003.6	1976.2	1953.1	1940.4
34.5°	2038.5	2058.3	2066.8	2064.0	2059.2	2043.2	2017.7	1988.0	1960.2	1937.1	1923.4
35°	2022.9	2042.7	2051.7	2048.9	2044.6	2028.1	2002.2	1972.5	1944.6	1920.6	1907.4
35.5°	2006.9	2027.2	2036.1	2033.3	2029.1	2012.5	1986.1	1955.9	1928.1	1903.6	1890.4
36°	1990.8	2011.6	2020.1	2018.2	2014.0	1997.0	1970.6	1939.4	1911.1	1887.1	1873.4
36.5°	1974.3	1995.1	2004.1	2002.2	1997.5	1980.9	1954.5	1923.4	1894.6	1870.1	1856.4
37°	1957.8	1978.6	1988.0	1986.1	1981.9	1964.9	1938.0	1907.4	1877.2	1852.7	1839.4
37.5°	1941.3	1962.1	1972.0	1969.6	1965.4	1947.9	1921.5	1889.9	1860.2	1835.7	1821.5
38°	1923.9	1945.1	1955.0	1953.1	1948.9	1931.9	1904.5	1872.9	1843.2	1817.8	1804.1
38.5°	1906.9	1928.1	1938.0	1936.6	1931.9	1914.9	1887.6	1856.0	1825.8	1800.3	1786.2
39°	1889.4	1910.7	1921.0	1919.2	1915.4	1897.9	1870.6	1838.5	1808.3	1782.4	1768.7
39.5°	1871.5	1893.2	1903.6	1902.2	1898.4	1880.5	1852.7	1821.1	1790.4	1764.5	1750.8
40°	1853.6	1875.3	1886.6	1884.7	1881.0	1863.5	1835.2	1802.7	1772.5	1746.5	1732.4
40.5°	1835.7	1857.4	1868.2	1867.3	1863.5	1845.6	1817.3	1784.7	1754.6	1727.7	1714.5
41°	1816.8	1839.0	1850.3	1849.4	1845.1	1827.7	1799.4	1766.8	1736.2	1709.7	1695.6
41.5°	1797.9	1820.6	1831.9	1831.4	1827.7	1809.7	1781.4	1748.9	1718.2	1691.3	1677.2
42°	1779.5	1802.2	1814.0	1813.5	1809.7	1791.3	1763.0	1731.0	1699.4	1672.5	1658.3
42.5°	1760.7	1783.3	1795.6	1795.1	1791.3	1772.9	1744.6	1712.1	1680.5	1654.1	1639.9
43°	1741.8	1764.0	1776.7	1776.7	1773.4	1754.6	1726.3	1693.7	1662.1	1634.8	1621.1
43.5°	1722.5	1745.1	1757.9	1758.3	1754.6	1735.7	1707.4	1674.8	1643.2	1615.9	1602.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1663.0	1685.7	1699.8	1700.8	1697.0	1678.1	1650.3	1618.2	1585.7	1557.9	1544.7
45.5°	1642.3	1665.4	1679.6	1681.4	1677.7	1658.3	1630.5	1598.0	1566.4	1538.5	1525.3
46°	1622.0	1645.6	1659.7	1661.6	1657.9	1638.5	1611.2	1578.6	1546.6	1518.7	1505.5
46.5°	1601.3	1623.9	1639.5	1641.4	1638.1	1618.7	1590.9	1558.8	1526.3	1498.9	1485.7
47°	1579.6	1603.1	1618.7	1621.1	1618.2	1598.0	1570.1	1538.1	1506.0	1478.6	1465.0
47.5°	1557.9	1581.5	1597.5	1600.3	1598.0	1577.2	1549.4	1517.3	1485.7	1457.4	1444.2
48°	1536.2	1559.3	1576.3	1579.1	1576.3	1556.5	1530.0	1497.0	1465.0	1436.7	1423.4
48.5°	1513.1	1536.6	1553.6	1557.4	1555.5	1535.7	1507.4	1475.8	1443.3	1415.4	1401.8
49°	1490.4	1514.5	1531.5	1536.2	1533.8	1513.1	1485.7	1453.6	1420.6	1392.8	1379.1
49.5°	1466.4	1490.9	1508.3	1513.1	1511.6	1490.9	1463.1	1431.0	1398.5	1370.2	1356.0
50°	1441.4	1466.4	1484.8	1490.0	1488.5	1468.3	1440.9	1408.4	1374.9	1346.6	1331.9
50.5°	1415.9	1440.4	1460.2	1465.0	1464.5	1445.1	1416.8	1383.8	1350.8	1321.6	1307.4
51°	1390.9	1415.4	1434.8	1440.9	1440.4	1419.7	1391.4	1358.8	1325.3	1296.6	1282.4
51.5°	1363.5	1388.5	1408.4	1415.0	1415.9	1394.7	1366.4	1333.4	1300.8	1272.5	1257.4
52°	1336.7	1362.6	1382.4	1389.0	1389.5	1368.7	1340.4	1307.0	1273.9	1246.1	1231.0
52.5°	1309.8	1334.8	1355.5	1361.7	1363.1	1341.9	1313.6	1280.5	1248.5	1220.2	1205.5
53°	1282.9	1307.4	1328.2	1335.7	1336.2	1315.4	1286.7	1254.1	1222.5	1194.7	1180.5
53.5°	1256.5	1280.1	1301.3	1308.4	1309.8	1289.5	1260.3	1229.1	1198.0	1171.1	1157.4
54°	1231.0	1255.1	1275.4	1283.4	1283.8	1263.1	1235.3	1204.1	1174.4	1147.1	1132.9
54.5°	1204.6	1229.1	1249.4	1257.4	1257.9	1238.6	1210.3	1178.2	1148.5	1121.1	1107.4
55°	1174.4	1198.5	1220.2	1228.7	1231.5	1210.7	1182.4	1149.9	1119.2	1092.3	1078.7
55.5°	1140.9	1165.0	1188.1	1196.6	1200.8	1180.5	1150.8	1117.8	1084.3	1056.5	1044.2
56°	1101.8	1129.1	1150.4	1159.3	1166.4	1146.6	1115.0	1079.1	1045.2	1018.3	1005.1
56.5°	1060.3	1088.6	1110.3	1120.2	1128.2	1108.9	1076.8	1039.1	1005.1	976.3	963.1
57°	1015.9	1043.8	1067.8	1078.2	1087.6	1066.4	1034.3	997.1	961.7	932.9	918.8
57.5°	969.2	995.7	1023.5	1035.8	1045.2	1022.5	990.5	953.7	917.8	889.5	873.5
58°	920.7	947.6	977.7	992.4	1001.8	976.3	943.3	907.5	873.0	843.8	827.8
58.5°	873.0	899.0	930.1	947.6	957.5	930.6	897.1	862.2	828.2	799.9	782.0
59°	822.6	850.9	882.9	901.8	910.3	880.6	848.0	814.1	781.5	753.7	734.8
59.5°	774.0	801.3	834.4	853.7	862.7	832.5	799.0	766.0	735.3	708.0	689.1
60°	724.0	753.7	785.8	806.5	815.0	783.9	749.9	716.9	689.6	663.1	644.8
60.5°	676.8	706.1	736.7	757.5	767.4	737.2	700.9	670.2	643.8	617.9	599.9
61°	629.2	659.4	687.7	708.4	717.9	689.6	653.2	621.6	597.6	574.5	556.6
61.5°	583.0	614.1	640.5	658.4	670.7	644.8	606.5	575.4	552.8	532.0	513.6
62°	538.2	567.9	594.3	609.8	624.0	597.6	561.3	529.7	508.9	490.5	473.1
62.5°	494.8	524.0	548.5	560.8	575.9	552.3	516.0	484.9	468.4	451.8	435.3
63°	452.8	480.6	503.7	514.1	530.1	508.0	476.4	444.8	427.8	413.2	397.1
63.5°	411.8	438.6	458.4	466.5	485.8	467.4	436.3	404.2	387.2	374.0	358.9
64°	372.1	397.1	416.0	422.1	443.8	426.4	396.2	363.6	346.7	335.3	321.2
64.5°	334.9	358.5	374.5	379.2	401.8	385.8	356.1	323.6	306.6	296.2	287.2
65°	300.4	320.7	334.4	338.6	359.4	344.8	316.5	288.2	271.2	262.2	256.1
65.5°	265.5	284.4	296.7	300.9	317.4	304.2	280.6	255.6	239.1	230.2	227.3
66°	230.2	249.5	259.9	264.1	278.7	267.0	248.1	225.9	208.5	200.9	200.5





TEST NUMBER: P776767

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	150.9	160.8	167.4	171.2	179.7	174.5	163.7	150.5	131.6	132.1	134.9
68°	133.5	142.4	150.0	153.3	153.3	148.6	140.1	131.1	113.7	116.0	118.4
68.5°	116.0	124.5	133.0	135.4	130.6	125.9	120.7	114.1	99.5	103.8	104.7
69°	99.0	106.6	116.0	117.9	111.8	107.5	105.2	100.0	89.1	93.4	93.4
69.5°	81.6	88.7	99.0	100.0	96.7	93.9	92.0	88.7	82.1	84.9	84.4
70°	77.4	80.2	82.1	82.1	85.4	84.0	82.5	80.7	77.8	78.3	78.8
70.5°	73.6	75.0	76.4	76.4	78.3	77.8	77.4	75.9	74.0	74.5	74.5
71°	69.3	71.2	72.6	72.6	74.0	74.0	73.6	72.2	70.3	70.7	71.2
71.5°	65.6	67.9	69.3	69.3	70.7	70.3	69.8	68.4	66.0	67.0	67.4
72°	61.8	64.1	65.6	65.6	67.0	67.0	66.5	65.1	62.7	63.7	64.1
72.5°	58.5	60.4	62.3	62.3	63.7	63.2	62.7	61.3	59.0	59.9	60.8
73°	54.7	57.1	58.5	59.0	60.4	59.9	59.4	58.0	55.7	56.6	57.5
73.5°	51.4	53.8	55.2	55.7	57.1	56.6	56.1	54.7	52.4	53.3	54.2
74°	48.6	50.5	52.4	52.4	53.8	53.3	53.3	51.4	49.1	50.0	50.9
74.5°	45.3	47.2	49.1	49.1	50.5	50.5	50.0	48.1	45.8	47.2	48.1
75°	42.4	44.3	46.2	46.2	47.6	47.2	47.2	45.3	42.9	43.9	45.3
75.5°	39.6	41.5	43.4	43.4	44.8	44.3	44.3	42.4	40.6	41.0	42.4
76°	36.8	38.7	40.6	40.6	42.0	42.0	41.5	39.6	37.7	38.7	40.1
76.5°	34.4	35.8	37.7	38.2	39.6	39.1	39.1	37.3	35.4	36.3	37.3
77°	32.1	33.5	35.4	35.8	36.8	36.8	36.3	34.9	32.5	33.5	34.9
77.5°	29.7	31.1	33.0	33.5	34.4	34.4	34.0	32.1	30.2	31.1	32.5
78°	27.4	28.8	30.7	31.1	32.1	32.1	31.6	29.7	27.8	28.8	29.7
78.5°	25.5	26.9	28.3	28.8	29.7	29.7	29.2	27.4	25.5	26.4	27.8
79°	23.6	24.5	26.4	26.9	27.4	27.4	26.9	25.0	23.6	24.1	25.5
79.5°	21.2	22.6	24.5	24.5	25.5	25.5	25.0	23.1	21.7	22.2	23.6
80°	19.8	20.8	22.2	22.6	23.6	23.6	23.1	21.2	19.8	20.3	21.7
80.5°	17.9	18.9	20.3	20.8	21.7	21.7	21.2	19.3	17.9	18.4	19.8
81°	16.0	17.0	18.9	19.3	19.8	19.8	19.3	17.5	16.0	16.5	17.9
81.5°	14.6	15.6	17.0	17.5	17.9	17.9	17.5	16.0	14.6	15.1	16.0
82°	13.2	14.1	15.6	15.6	16.5	16.5	16.0	14.1	13.2	13.2	14.6
82.5°	11.3	12.3	13.7	14.1	14.6	14.6	14.1	12.7	11.3	11.8	13.2
83°	9.9	10.8	12.3	12.7	13.2	13.2	12.7	11.3	9.9	10.4	11.8
83.5°	9.0	9.4	10.8	11.3	11.8	11.8	11.3	9.9	9.0	9.0	10.4
84°	7.5	8.0	9.4	9.9	10.4	10.4	9.9	8.5	7.5	8.0	9.0
84.5°	6.6	7.1	8.0	8.5	9.0	9.0	8.5	7.1	6.6	6.6	7.5
85°	5.7	6.1	7.1	7.5	8.0	8.0	7.5	6.1	5.7	5.7	6.6
85.5°	4.2	4.7	6.1	6.6	6.6	6.6	6.1	4.7	4.7	4.2	5.7
86°	3.8	3.8	5.2	5.2	5.7	5.7	5.2	3.8	3.8	3.3	4.7
86.5°	2.8	2.8	4.2	4.2	4.7	4.7	4.2	3.3	2.8	2.8	3.8
87°	1.9	2.4	3.3	3.8	3.8	3.8	3.3	2.4	1.9	1.9	2.8
87.5°	1.4	1.9	2.4	2.8	2.8	2.8	2.8	1.9	1.4	1.4	2.4
88°	0.9	1.4	1.9	1.9	2.4	2.4	1.9	1.4	0.9	0.9	1.4
88.5°	0.5	0.9	0.9	1.4	1.4	1.4	1.4	0.9	0.5	0.5	0.9



TEST NUMBER: P776767

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776767

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2526.2	2526.2	2526.2	2526.2	2526.2	2526.2
0.5°	2525.2	2523.3	2524.3	2525.7	2527.1	2527.6
1°	2523.8	2521.9	2523.3	2525.2	2527.1	2527.6
1.5°	2522.4	2520.5	2521.9	2524.8	2527.1	2528.1
2°	2520.5	2519.1	2520.5	2523.8	2526.6	2527.6
2.5°	2518.6	2517.2	2519.1	2522.4	2525.7	2527.1
3°	2516.3	2514.9	2517.2	2521.0	2524.8	2527.1
3.5°	2513.9	2512.5	2515.3	2519.6	2523.8	2526.2
4°	2511.1	2510.1	2513.0	2517.7	2522.4	2525.7
4.5°	2508.3	2507.3	2510.6	2515.8	2521.0	2524.3
5°	2505.4	2504.0	2508.3	2513.4	2519.1	2523.3
5.5°	2501.6	2501.2	2505.4	2511.1	2517.2	2521.9
6°	2498.3	2497.9	2502.1	2508.7	2514.9	2520.0
6.5°	2495.0	2494.1	2498.8	2505.4	2512.5	2518.2
7°	2490.8	2490.3	2496.0	2502.6	2510.1	2515.8
7.5°	2487.0	2486.1	2492.2	2499.3	2507.3	2513.4
8°	2482.3	2481.8	2488.0	2495.5	2504.5	2511.1
8.5°	2478.1	2477.1	2483.7	2492.2	2500.7	2507.8
9°	2473.4	2472.4	2479.0	2488.0	2497.4	2505.0
9.5°	2468.2	2467.7	2474.8	2483.7	2493.6	2501.6
10°	2463.0	2462.5	2470.0	2479.5	2489.9	2498.3
10.5°	2457.3	2457.3	2464.9	2474.8	2485.6	2494.6
11°	2452.1	2451.7	2459.7	2470.0	2481.4	2490.8
11.5°	2446.0	2446.0	2454.0	2464.9	2477.1	2486.6
12°	2439.9	2439.9	2448.4	2459.7	2471.9	2482.3
12.5°	2433.7	2433.7	2442.7	2454.0	2467.2	2478.1
13°	2427.1	2427.1	2436.6	2448.4	2462.0	2472.9
13.5°	2420.1	2420.5	2430.0	2442.2	2456.4	2467.7
14°	2413.0	2413.0	2423.4	2436.1	2450.7	2462.5
14.5°	2405.9	2405.9	2416.8	2430.0	2444.6	2457.3
15°	2398.8	2398.8	2409.7	2423.4	2438.4	2451.7
15.5°	2390.8	2391.3	2401.7	2416.3	2432.3	2445.5
16°	2382.8	2383.3	2394.1	2409.2	2425.7	2439.4
16.5°	2374.8	2375.2	2386.6	2401.7	2418.6	2433.3
17°	2366.8	2367.2	2378.5	2394.1	2411.6	2426.2
17.5°	2357.3	2358.3	2370.5	2386.6	2404.5	2419.6
18°	2348.8	2349.8	2361.6	2378.5	2396.5	2412.5
18.5°	2339.9	2340.3	2353.1	2370.1	2388.9	2405.4
19°	2330.4	2331.4	2344.1	2361.6	2380.9	2397.4
19.5°	2321.0	2321.5	2334.7	2353.1	2372.9	2389.9
20°	2311.1	2312.0	2325.3	2344.1	2363.9	2381.8
20.5°	2300.7	2301.7	2315.8	2334.7	2355.4	2373.8
21°	2290.3	2291.3	2305.4	2325.3	2346.5	2364.9



TEST NUMBER: P776767

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	2257.8	2259.2	2274.8	2295.1	2318.2	2338.0
23°	2247.0	2247.9	2263.5	2284.7	2308.3	2328.1
23.5°	2235.2	2236.6	2252.6	2274.3	2297.9	2318.6
24°	2223.4	2224.8	2241.3	2263.0	2287.5	2308.3
24.5°	2211.6	2213.0	2229.0	2252.1	2276.7	2297.9
25°	2199.3	2200.7	2217.2	2240.4	2265.8	2287.0
25.5°	2186.6	2188.5	2205.5	2229.0	2254.5	2276.7
26°	2174.3	2175.7	2193.2	2216.8	2243.2	2265.8
26.5°	2161.1	2163.0	2180.9	2205.0	2230.9	2254.5
27°	2147.9	2149.8	2167.7	2192.2	2219.1	2242.7
27.5°	2134.7	2136.1	2154.5	2179.5	2206.9	2230.9
28°	2121.0	2122.4	2141.3	2166.8	2194.6	2218.7
28.5°	2106.9	2108.8	2128.1	2153.6	2181.9	2206.4
29°	2092.7	2094.6	2113.5	2140.4	2168.7	2194.1
29.5°	2078.1	2080.5	2099.8	2126.7	2155.5	2180.9
30°	2063.0	2065.4	2085.7	2112.5	2142.2	2167.7
30.5°	2048.4	2050.7	2070.6	2098.4	2128.1	2155.0
31°	2033.8	2035.7	2056.4	2084.2	2114.0	2140.8
31.5°	2018.2	2020.6	2041.3	2069.6	2099.8	2127.2
32°	2002.6	2004.5	2025.8	2055.0	2085.7	2113.0
32.5°	1986.6	1989.0	2010.2	2039.4	2071.0	2098.4
33°	1971.0	1973.4	1995.1	2024.3	2056.4	2084.2
33.5°	1955.0	1956.9	1978.6	2009.2	2040.8	2069.1
34°	1938.5	1940.4	1962.5	1993.2	2025.3	2053.6
34.5°	1921.5	1924.3	1946.5	1977.2	2009.7	2038.5
35°	1905.0	1906.9	1930.0	1961.1	1993.7	2022.9
35.5°	1888.5	1890.9	1913.0	1944.6	1977.6	2006.9
36°	1871.5	1873.4	1896.5	1928.1	1961.1	1990.8
36.5°	1854.1	1856.9	1879.5	1911.6	1945.1	1974.3
37°	1837.1	1839.4	1862.1	1894.6	1928.1	1957.8
37.5°	1819.2	1821.5	1844.6	1877.2	1911.1	1941.3
38°	1801.7	1803.6	1826.7	1859.7	1893.7	1923.9
38.5°	1784.3	1786.2	1809.3	1842.3	1876.2	1906.9
39°	1765.9	1768.2	1791.3	1824.8	1858.8	1889.4
39.5°	1747.9	1749.8	1773.4	1806.4	1841.3	1871.5
40°	1730.0	1731.9	1755.0	1788.5	1823.4	1853.6
40.5°	1711.6	1713.5	1736.2	1770.1	1805.5	1835.7
41°	1693.7	1695.1	1718.2	1751.7	1786.6	1816.8
41.5°	1674.8	1675.8	1698.9	1732.9	1768.2	1797.9
42°	1656.4	1657.9	1680.5	1714.9	1749.8	1779.5
42.5°	1638.1	1638.5	1661.6	1696.1	1730.5	1760.7
43°	1618.7	1620.1	1643.2	1676.7	1711.6	1741.8
43.5°	1599.8	1600.8	1623.4	1657.4	1692.3	1722.5

TEST NUMBER: P776767

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1542.8	1543.2	1564.9	1598.9	1633.8	1663.0
45.5°	1523.4	1523.4	1545.1	1579.1	1613.1	1642.3
46°	1503.6	1503.2	1524.9	1558.8	1592.8	1622.0
46.5°	1483.8	1482.4	1504.6	1538.1	1572.0	1601.3
47°	1463.5	1462.6	1483.3	1516.8	1550.8	1579.6
47.5°	1442.3	1440.9	1461.2	1495.1	1529.1	1557.9
48°	1421.1	1419.2	1439.5	1473.0	1506.5	1536.2
48.5°	1399.4	1396.6	1417.3	1450.3	1483.8	1513.1
49°	1376.8	1373.9	1394.2	1426.8	1461.2	1490.4
49.5°	1353.6	1350.3	1370.2	1403.6	1437.1	1466.4
50°	1329.6	1325.3	1345.6	1378.2	1412.6	1441.4
50.5°	1305.1	1301.3	1320.6	1353.2	1386.7	1415.9
51°	1280.1	1275.8	1295.6	1328.2	1361.2	1390.9
51.5°	1254.6	1250.4	1269.2	1302.7	1335.3	1363.5
52°	1228.2	1224.9	1244.2	1276.3	1308.4	1336.7
52.5°	1202.7	1199.4	1218.8	1249.9	1280.1	1309.8
53°	1178.2	1175.4	1194.2	1224.9	1255.1	1282.9
53.5°	1154.1	1152.2	1171.1	1200.8	1230.1	1256.5
54°	1131.0	1128.7	1147.1	1177.2	1205.5	1231.0
54.5°	1105.1	1102.3	1121.1	1150.4	1178.7	1204.6
55°	1077.3	1072.1	1092.3	1121.6	1149.9	1174.4
55.5°	1044.2	1036.2	1056.5	1085.7	1114.5	1140.9
56°	1004.2	996.6	1017.4	1046.1	1075.4	1101.8
56.5°	962.2	954.2	974.4	1004.6	1032.9	1060.3
57°	918.8	909.3	930.1	960.3	990.0	1015.9
57.5°	873.5	862.7	885.3	915.5	944.3	969.2
58°	827.8	815.5	839.5	870.2	898.0	920.7
58.5°	780.1	769.3	793.3	824.5	847.6	873.0
59°	732.5	721.6	746.6	776.3	800.9	822.6
59.5°	685.8	676.8	700.9	730.1	752.8	774.0
60°	639.1	631.1	655.6	683.0	703.2	724.0
60.5°	593.8	586.3	610.3	635.8	653.7	676.8
61°	548.5	541.5	565.0	588.6	607.0	629.2
61.5°	506.6	500.4	521.6	543.8	561.3	583.0
62°	468.4	458.0	480.1	498.1	514.6	538.2
62.5°	430.6	418.4	438.6	454.2	471.2	494.8
63°	392.9	380.2	398.1	411.8	427.8	452.8
63.5°	355.2	343.4	359.9	371.2	387.2	411.8
64°	317.4	308.0	321.7	332.0	347.1	372.1
64.5°	285.8	275.9	286.3	295.7	311.3	334.9
65°	256.1	244.8	252.8	260.8	276.4	300.4
65.5°	228.3	217.0	221.2	228.8	243.8	265.5
66°	201.9	190.5	191.5	199.5	214.1	230.2



TEST NUMBER: P776767

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	137.7	135.8	134.9	141.0	145.7	150.9
68°	120.3	120.3	119.8	124.5	128.8	133.5
68.5°	105.7	104.7	104.7	108.0	112.3	116.0
69°	93.9	89.1	89.6	91.5	95.3	99.0
69.5°	84.4	81.1	81.6	83.0	84.9	81.6
70°	78.3	76.4	76.9	77.8	78.3	77.4
70.5°	74.5	73.1	73.6	74.0	74.0	73.6
71°	71.2	69.3	69.8	70.7	70.7	69.3
71.5°	67.4	66.0	66.5	67.0	67.0	65.6
72°	64.1	62.3	62.7	63.7	63.2	61.8
72.5°	60.4	59.0	59.4	60.4	59.9	58.5
73°	57.1	55.7	56.1	56.6	56.1	54.7
73.5°	54.2	52.8	52.8	53.8	52.8	51.4
74°	50.9	49.5	50.0	50.5	50.0	48.6
74.5°	48.1	46.7	47.2	47.6	46.7	45.3
75°	45.3	43.9	44.3	44.3	43.9	42.4
75.5°	42.4	41.0	41.5	42.0	41.0	39.6
76°	40.1	38.7	38.7	39.1	38.2	36.8
76.5°	37.3	35.8	36.3	36.3	35.4	34.4
77°	34.9	33.5	34.0	34.0	33.0	32.1
77.5°	32.5	31.1	31.6	31.6	30.7	29.7
78°	30.2	29.2	29.2	29.7	28.3	27.4
78.5°	27.8	26.9	27.4	27.4	26.4	25.5
79°	25.9	25.0	25.0	25.5	24.1	23.6
79.5°	24.1	23.1	23.1	23.1	22.2	21.2
80°	22.2	21.2	21.2	21.2	20.3	19.8
80.5°	20.3	19.3	19.3	19.3	18.4	17.9
81°	18.4	17.9	17.9	17.9	17.0	16.0
81.5°	16.5	16.0	16.5	16.0	15.1	14.6
82°	15.1	14.6	14.6	14.6	13.7	13.2
82.5°	13.7	13.2	13.2	13.2	11.8	11.3
83°	12.3	11.3	11.8	11.3	10.4	9.9
83.5°	10.8	10.4	10.4	9.9	9.0	9.0
84°	9.4	9.0	9.0	9.0	8.0	7.5
84.5°	8.0	7.5	8.0	7.5	6.6	6.6
85°	7.1	6.6	6.6	6.6	5.7	5.7
85.5°	6.1	5.7	5.7	5.7	4.2	4.2
86°	4.7	4.7	4.7	4.7	3.8	3.8
86.5°	4.2	3.8	3.8	3.8	2.8	2.8
87°	3.3	2.8	2.8	2.8	2.4	1.9
87.5°	2.4	1.9	1.9	1.9	1.9	1.4
88°	1.4	1.4	1.4	1.4	0.9	0.9
88.5°	0.9	0.5	0.5	0.5	0.5	0.5



TEST NUMBER: P776767

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-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°	2355.9	2368.6	2374.3	2372.4	2367.2	2355.4	2338.5	2319.6	2302.1	2287.0	2279.5
22°	2346.9	2360.2	2365.3	2363.9	2358.7	2346.5	2329.0	2310.2	2292.2	2277.1	2268.7



44°	1702.7	1725.8	1738.5	1739.0	1735.2	1716.8	1688.5	1656.4	1623.9	1596.5	1583.3
44.5°	1682.9	1705.5	1718.7	1720.1	1716.8	1697.0	1669.2	1637.1	1605.0	1577.7	1564.0



66.5°	197.6	218.4	226.4	230.6	243.4	233.5	217.0	197.6	179.7	174.5	176.4
67°	168.4	188.2	195.3	199.0	210.8	202.8	188.7	173.1	153.3	151.4	154.2



89°	0.0	0.5	0.5	0.5	0.9	0.5	0.5	0.5	0.0	0.0	0.0
89.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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21.5°	2280.0	2281.4	2295.5	2315.8	2337.0	2355.9
22°	2269.1	2270.5	2285.2	2305.4	2327.6	2346.9



44°	1581.0	1581.9	1604.6	1638.5	1673.0	1702.7
44.5°	1562.1	1562.6	1584.8	1619.2	1653.6	1682.9



66.5°	178.3	167.4	165.6	173.6	188.2	197.6
67°	157.5	151.9	150.0	157.1	162.7	168.4

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

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Scaled Data Report



(END OF REPORT)