

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: P776757

Luminaire Tested: HCDJBL54050CSD-HCD81TRH-HCD81TRLWW-5000lm-3500K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P776757
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: HCDJBS4050CSD-HCD81TRH-HCD81TRLWW-5000lm-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: 5788.5 lumens
Efficiency: N/A
Efficacy: 120.6 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

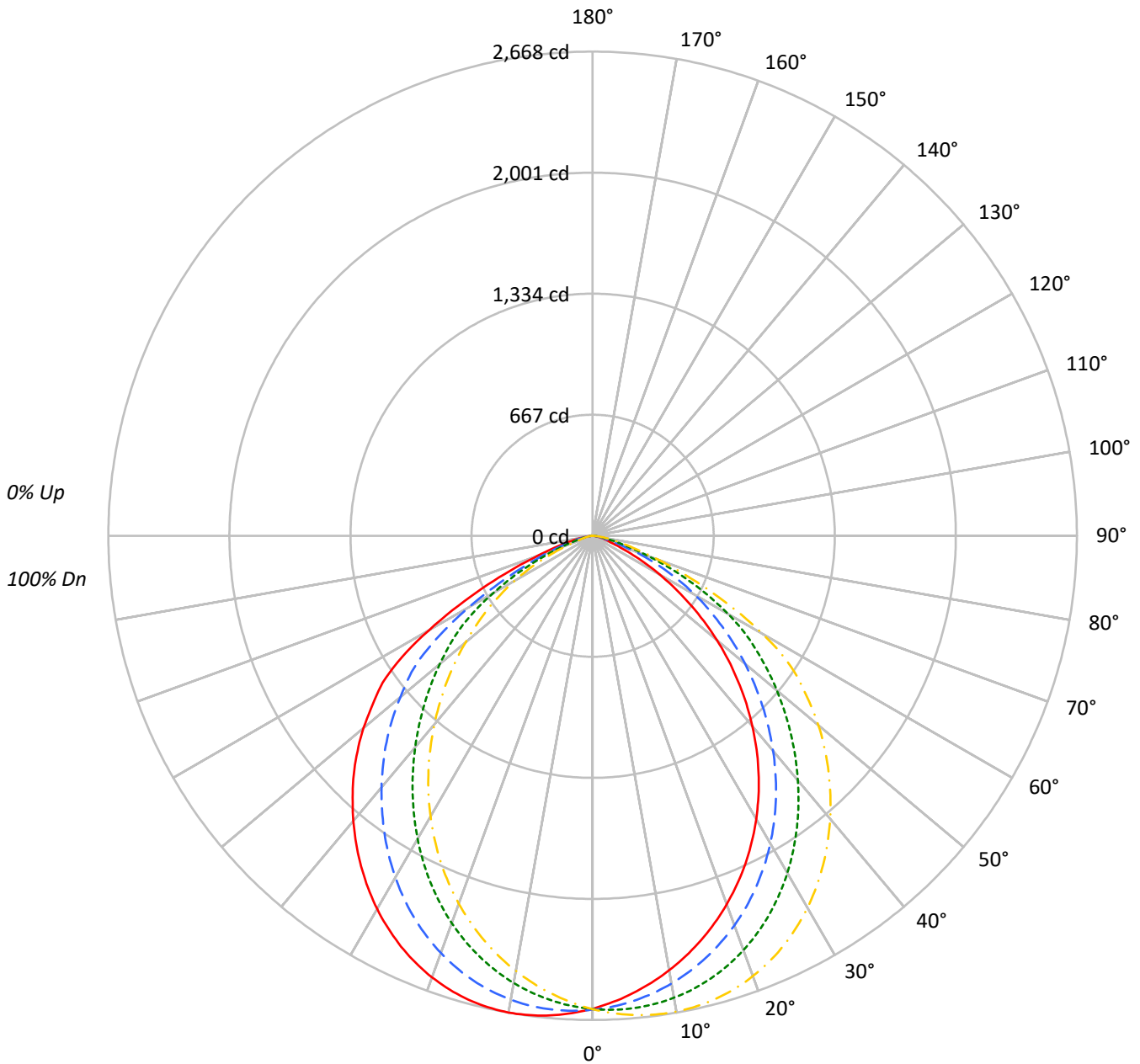
Input Watts (W): 48
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					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°	79657	79657	79657	79657
5°	77561	80074	81303	78802
10°	75358	80123	82699	77565
15°	72924	79783	83630	75921
20°	70210	78943	84109	73764
25°	67110	77580	84125	71099
30°	63548	75636	83698	68004
35°	59394	73125	82864	64441
40°	54549	70092	81730	60599
45°	48932	66669	80312	56531
50°	42362	62924	78222	52194
55°	34694	58641	75137	47394
60°	26006	52585	63613	38761
65°	16659	42348	46097	27733
70°	9426	29091	28502	16710
75°	7172	17022	18024	9071
80°	5064	9371	10285	4308
85°	2978	5114	2627	1822

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 157.5°
 Vertical Angle: 45°
 Luminance: 81435 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	246.2	4.3
10°-20°	696.5	12.0
20°-30°	1025.5	17.7
30°-40°	1175.8	20.3
40°-50°	1131.5	19.5
50°-60°	902.2	15.6
60°-70°	468.3	8.1
70°-80°	126.3	2.2
80°-90°	16.2	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°	1968.2	34.0
0°-40°	3143.9	54.3
0°-60°	5177.7	89.4
0°-90°	5788.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5788.5	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2609	2609	2609	2609	2609	
5°	2531	2613	2653	2571	2531	238
15°	2307	2524	2646	2402	2307	649
25°	1992	2303	2497	2111	1992	915
35°	1594	1962	2223	1729	1594	994
45°	1133	1544	1860	1309	1133	872
55°	652	1102	1412	890	652	583
65°	231	586	638	384	231	238
75°	61	144	153	77	61	67
85°	8	15	8	5	8	11
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°	2609.1	2609.1	2609.1	2609.1	2609.1	2609.1	2609.1	2609.1	2609.1	2609.1	2609.1
0.5°	2599.6	2611.0	2610.0	2608.6	2610.0	2612.4	2613.8	2613.8	2611.9	2619.9	2614.3
1°	2593.0	2606.2	2607.2	2608.1	2611.9	2616.6	2619.4	2619.4	2617.6	2623.7	2616.6
1.5°	2586.0	2601.1	2603.9	2607.7	2612.8	2619.4	2624.2	2624.2	2623.2	2627.0	2618.0
2°	2578.9	2595.9	2600.6	2606.2	2613.8	2622.7	2628.9	2628.9	2628.4	2630.3	2619.4
2.5°	2571.3	2590.2	2596.3	2605.3	2614.3	2625.6	2633.6	2633.6	2633.1	2633.6	2620.4
3°	2563.8	2584.1	2592.6	2603.4	2614.7	2628.4	2637.8	2637.8	2637.4	2636.4	2620.9
3.5°	2556.2	2577.9	2588.3	2601.5	2614.7	2630.8	2641.6	2641.6	2642.1	2638.8	2621.3
4°	2547.8	2571.3	2583.6	2599.2	2614.3	2632.7	2644.9	2644.9	2645.9	2640.7	2621.3
4.5°	2539.7	2564.7	2578.4	2596.3	2613.8	2634.1	2648.2	2648.2	2649.6	2642.6	2620.9
5°	2530.8	2557.7	2573.2	2593.5	2612.8	2635.0	2651.0	2651.0	2652.9	2644.0	2620.4
5.5°	2522.3	2550.6	2568.0	2590.2	2611.4	2636.0	2653.4	2653.4	2655.8	2644.9	2619.0
6°	2512.9	2543.0	2561.9	2586.4	2610.0	2636.4	2655.8	2655.8	2658.6	2645.4	2618.0
6.5°	2503.4	2535.0	2555.8	2582.7	2607.7	2636.9	2657.6	2657.6	2660.9	2645.9	2616.6
7°	2494.0	2527.0	2549.6	2578.4	2605.3	2636.9	2659.5	2659.5	2662.8	2645.9	2614.7
7.5°	2484.1	2518.5	2543.0	2574.2	2602.5	2636.4	2660.5	2660.5	2664.3	2645.4	2612.4
8°	2473.7	2510.0	2536.0	2569.0	2600.1	2636.0	2661.4	2661.4	2665.7	2644.9	2609.5
8.5°	2463.3	2501.1	2528.4	2563.8	2596.8	2634.5	2662.4	2662.4	2666.6	2643.5	2606.7
9°	2452.5	2492.1	2520.9	2558.1	2593.0	2633.6	2662.4	2662.4	2667.6	2642.6	2603.4
9.5°	2442.1	2482.7	2513.3	2552.5	2589.3	2631.7	2662.4	2662.4	2667.6	2640.7	2599.6
10°	2430.8	2473.2	2504.8	2546.3	2584.5	2629.3	2661.9	2661.9	2667.6	2638.3	2595.9
10.5°	2419.9	2463.3	2496.3	2539.7	2580.3	2627.5	2661.4	2661.4	2666.6	2636.0	2591.6
11°	2408.2	2453.0	2487.9	2532.7	2575.1	2624.6	2660.0	2660.0	2665.7	2633.1	2586.9
11.5°	2396.4	2443.1	2478.9	2526.1	2569.9	2621.8	2658.6	2658.6	2664.7	2630.3	2581.7
12°	2384.1	2432.2	2469.9	2518.5	2564.3	2618.5	2657.2	2657.2	2662.8	2626.5	2576.5
12.5°	2372.3	2421.4	2460.0	2510.5	2558.6	2614.7	2654.8	2654.8	2660.9	2622.7	2570.9
13°	2359.6	2410.0	2450.6	2502.5	2552.5	2611.0	2652.5	2652.5	2658.6	2618.5	2564.7
13.5°	2346.8	2398.7	2440.2	2494.5	2545.9	2606.7	2649.6	2649.6	2656.2	2614.3	2558.6
14°	2334.1	2387.4	2429.8	2485.5	2538.8	2602.0	2646.3	2646.3	2653.4	2609.1	2551.5
14.5°	2320.4	2375.6	2419.5	2477.0	2531.7	2596.8	2643.0	2643.0	2649.6	2603.9	2544.9
15°	2307.2	2363.8	2408.6	2467.6	2524.2	2591.1	2639.3	2639.3	2645.9	2598.2	2537.4
15.5°	2293.5	2351.1	2397.3	2458.1	2516.2	2586.0	2635.0	2635.0	2641.6	2592.6	2529.8
16°	2279.9	2338.4	2385.5	2448.2	2507.7	2579.8	2630.3	2630.3	2637.4	2586.0	2522.3
16.5°	2265.7	2325.6	2373.7	2437.9	2499.2	2573.2	2625.6	2625.6	2632.7	2579.4	2513.8
17°	2251.1	2312.4	2361.9	2427.0	2490.2	2566.6	2620.4	2620.4	2627.5	2572.3	2504.8
17.5°	2236.5	2299.2	2349.7	2416.6	2481.3	2559.5	2614.7	2614.7	2621.8	2564.7	2495.9
18°	2222.3	2285.5	2337.4	2405.3	2471.4	2552.0	2609.1	2609.1	2615.7	2557.2	2486.4
18.5°	2207.2	2271.9	2324.2	2394.0	2461.4	2544.0	2602.9	2602.9	2609.1	2549.2	2477.0
19°	2191.2	2257.7	2311.0	2382.2	2451.1	2536.4	2596.3	2596.3	2602.9	2541.2	2467.1
19.5°	2176.1	2243.1	2297.8	2370.0	2440.7	2527.9	2589.3	2589.3	2595.9	2532.2	2456.7
20°	2161.0	2228.9	2284.1	2358.2	2429.8	2519.0	2582.2	2582.2	2588.8	2523.2	2445.9
20.5°	2145.0	2213.8	2270.4	2345.4	2418.1	2510.0	2574.6	2574.6	2581.2	2513.8	2435.5
21°	2128.0	2199.2	2256.3	2332.7	2406.7	2500.6	2566.6	2566.6	2573.2	2504.4	2424.2



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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°	2079.4	2152.5	2212.0	2291.7	2370.4	2470.4	2540.7	2564.3	2546.8	2473.7	2388.8
23°	2062.4	2136.5	2196.9	2277.5	2357.7	2459.6	2531.3	2555.8	2537.4	2462.4	2376.1
23.5°	2045.0	2120.5	2181.3	2263.4	2344.0	2448.7	2521.8	2546.3	2527.9	2451.5	2363.8
24°	2027.5	2104.0	2165.3	2248.7	2330.8	2436.9	2511.9	2536.9	2518.0	2439.8	2350.6
24.5°	2010.1	2087.4	2149.2	2233.2	2317.1	2425.1	2501.5	2527.0	2507.7	2428.0	2337.4
25°	1992.2	2070.5	2133.2	2218.1	2303.0	2413.3	2490.7	2516.6	2497.3	2415.7	2323.7
25.5°	1974.3	2053.0	2116.7	2202.5	2288.4	2400.6	2479.8	2506.3	2486.0	2403.4	2310.1
26°	1955.9	2036.0	2099.7	2186.5	2273.7	2387.9	2468.5	2495.4	2474.7	2390.7	2295.9
26.5°	1937.5	2018.6	2082.7	2170.0	2258.6	2375.1	2457.2	2484.1	2463.3	2377.5	2281.8
27°	1918.6	2001.1	2065.7	2153.9	2243.6	2361.9	2444.9	2472.3	2451.5	2364.3	2266.7
27.5°	1899.7	1983.2	2048.3	2137.4	2228.0	2348.3	2432.7	2461.0	2439.3	2351.1	2252.0
28°	1880.9	1964.8	2030.8	2120.5	2211.5	2333.6	2420.4	2448.7	2427.0	2336.9	2236.5
28.5°	1861.1	1946.0	2012.9	2103.0	2195.4	2320.0	2407.7	2436.0	2413.8	2322.8	2221.4
29°	1841.7	1927.6	1994.5	2085.1	2178.9	2304.9	2394.0	2423.2	2401.1	2308.2	2205.4
29.5°	1822.4	1908.7	1976.6	2067.6	2162.4	2290.2	2380.8	2410.5	2387.4	2293.5	2189.3
30°	1802.6	1890.3	1957.7	2049.7	2145.5	2275.2	2367.1	2397.3	2374.2	2278.9	2172.8
30.5°	1782.3	1870.5	1938.9	2031.8	2128.0	2259.1	2353.0	2383.6	2360.0	2263.4	2156.8
31°	1762.0	1851.2	1920.0	2013.9	2111.0	2243.6	2338.8	2369.5	2345.9	2248.3	2140.3
31.5°	1741.3	1831.8	1900.7	1994.5	2093.1	2227.5	2323.7	2355.3	2331.3	2232.7	2123.3
32°	1721.0	1812.0	1881.3	1975.7	2074.7	2211.0	2309.1	2340.7	2316.7	2217.1	2106.3
32.5°	1700.2	1791.3	1861.5	1956.3	2056.3	2194.5	2294.0	2326.6	2301.6	2200.6	2089.3
33°	1679.5	1771.5	1841.3	1937.5	2037.9	2177.1	2278.5	2311.9	2286.5	2184.6	2071.4
33.5°	1658.3	1751.2	1821.4	1917.7	2019.1	2160.1	2262.9	2295.9	2270.9	2167.6	2054.0
34°	1636.6	1730.9	1801.6	1898.3	2000.7	2143.1	2246.4	2280.3	2255.3	2151.1	2036.0
34.5°	1615.3	1710.1	1781.4	1878.0	1981.3	2125.2	2230.3	2264.8	2239.3	2134.6	2018.1
35°	1593.6	1688.9	1761.1	1858.7	1962.0	2107.3	2213.8	2249.2	2223.3	2117.2	1999.7
35.5°	1572.0	1667.7	1739.9	1838.0	1942.2	2089.3	2196.9	2232.7	2207.2	2099.7	1981.8
36°	1549.8	1646.5	1719.1	1817.7	1922.8	2070.9	2180.4	2215.7	2190.3	2081.8	1962.5
36.5°	1527.6	1625.2	1697.9	1796.4	1903.0	2052.5	2162.4	2199.2	2173.8	2064.8	1943.6
37°	1505.5	1603.5	1677.1	1776.6	1883.2	2033.2	2145.0	2182.7	2156.3	2046.4	1925.2
37.5°	1483.3	1581.9	1655.4	1755.9	1862.5	2014.3	2127.1	2165.3	2139.3	2028.5	1906.3
38°	1460.2	1560.2	1633.7	1734.7	1842.2	1995.0	2109.1	2147.8	2121.9	2010.1	1887.0
38.5°	1437.5	1538.0	1612.0	1712.5	1821.4	1975.7	2091.2	2130.4	2104.4	1992.2	1867.7
39°	1415.4	1515.4	1590.3	1692.2	1801.6	1956.3	2072.8	2113.4	2086.5	1973.3	1848.3
39.5°	1392.7	1493.7	1568.6	1670.5	1779.9	1936.5	2054.0	2095.0	2069.1	1954.4	1829.0
40°	1368.7	1471.5	1546.5	1649.3	1758.7	1916.2	2035.6	2076.6	2050.7	1935.6	1808.7
40.5°	1346.0	1448.9	1524.3	1627.1	1737.5	1896.4	2016.7	2058.2	2032.3	1916.7	1789.4
41°	1322.5	1426.2	1502.1	1605.9	1716.3	1876.2	1996.9	2040.3	2013.9	1897.4	1769.1
41.5°	1299.3	1403.6	1480.0	1584.2	1695.0	1855.4	1978.0	2021.4	1995.0	1879.0	1749.3
42°	1275.3	1380.9	1456.9	1562.5	1673.8	1834.6	1958.2	2002.1	1976.1	1859.2	1729.5
42.5°	1252.7	1357.8	1435.2	1540.8	1652.6	1814.4	1939.4	1983.2	1957.3	1839.4	1708.7
43°	1228.6	1334.7	1412.5	1519.1	1630.9	1793.6	1919.1	1964.3	1938.4	1819.1	1688.4
43.5°	1204.5	1311.6	1390.4	1496.5	1609.2	1772.9	1899.3	1945.0	1919.1	1799.7	1668.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1133.3	1241.3	1322.0	1430.5	1544.1	1709.2	1838.4	1886.1	1860.1	1738.4	1605.4
45.5°	1109.3	1218.2	1299.8	1408.8	1522.4	1688.0	1817.7	1866.2	1840.3	1717.2	1584.2
46°	1085.2	1194.6	1276.7	1386.1	1500.7	1666.7	1796.9	1845.5	1820.0	1696.5	1563.0
46.5°	1061.2	1171.1	1254.5	1364.0	1479.0	1645.1	1776.2	1825.2	1799.7	1675.2	1541.3
47°	1037.6	1148.0	1231.4	1341.8	1457.3	1623.4	1754.5	1804.5	1778.5	1653.5	1519.6
47.5°	1013.1	1124.4	1208.8	1319.6	1434.7	1601.7	1733.7	1783.2	1757.3	1631.8	1497.0
48°	988.1	1100.8	1185.7	1297.9	1413.0	1580.0	1712.0	1762.0	1736.5	1608.7	1474.8
48.5°	964.5	1076.7	1163.0	1275.3	1391.3	1558.3	1690.3	1740.3	1714.9	1586.1	1452.2
49°	940.4	1053.6	1139.9	1253.1	1369.1	1535.6	1668.2	1718.6	1692.7	1563.0	1429.0
49.5°	916.4	1030.0	1117.8	1231.0	1346.5	1513.5	1646.5	1696.5	1669.6	1539.4	1405.9
50°	891.9	1006.5	1095.6	1208.3	1324.8	1491.3	1623.4	1673.8	1646.9	1515.8	1382.8
50.5°	867.3	982.9	1072.5	1186.6	1302.6	1468.7	1600.2	1650.7	1623.4	1491.3	1360.2
51°	843.3	958.8	1049.9	1164.5	1280.5	1446.0	1577.1	1627.1	1599.8	1467.7	1337.5
51.5°	819.7	935.2	1027.2	1142.3	1258.3	1423.4	1553.6	1603.1	1575.7	1444.6	1315.4
52°	795.2	912.1	1004.6	1120.1	1235.7	1399.8	1529.5	1578.6	1551.2	1422.4	1294.2
52.5°	771.6	888.6	981.9	1098.0	1213.0	1376.7	1505.5	1554.0	1526.7	1400.7	1272.0
53°	747.1	865.0	959.8	1075.8	1190.4	1352.6	1480.9	1530.4	1503.6	1377.6	1249.8
53.5°	723.0	841.9	937.1	1054.1	1168.2	1329.1	1456.4	1505.5	1480.9	1353.6	1223.9
54°	699.4	818.8	915.0	1031.0	1145.6	1305.5	1432.8	1482.8	1458.8	1326.2	1197.5
54.5°	675.8	795.6	892.3	1009.3	1123.4	1282.8	1409.7	1461.1	1435.6	1296.0	1167.3
55°	651.8	772.5	870.2	987.1	1101.7	1260.2	1387.5	1439.0	1411.6	1262.1	1136.2
55.5°	628.7	749.0	848.5	965.9	1080.5	1238.5	1364.4	1414.0	1382.8	1229.1	1103.6
56°	605.1	726.8	825.8	944.2	1058.8	1215.9	1340.4	1386.1	1351.2	1192.3	1070.1
56.5°	582.0	704.1	804.1	922.5	1037.1	1191.8	1313.5	1355.0	1318.2	1155.5	1036.6
57°	558.9	681.0	782.9	901.8	1013.5	1165.9	1284.7	1323.4	1282.8	1117.8	1002.7
57.5°	535.8	658.9	761.7	880.5	990.0	1139.9	1254.1	1288.0	1244.6	1080.5	966.4
58°	514.1	636.7	739.5	859.3	965.0	1111.6	1222.5	1251.7	1206.0	1039.9	930.5
58.5°	491.4	615.0	717.8	836.7	940.4	1082.9	1189.5	1213.0	1166.8	999.4	894.7
59°	469.3	593.3	696.6	814.0	914.0	1053.2	1153.6	1173.9	1125.8	959.8	858.8
59.5°	447.1	571.6	674.9	790.9	888.1	1022.0	1117.8	1131.9	1083.8	920.6	822.5
60°	425.9	549.5	653.2	767.8	861.2	991.4	1081.0	1091.4	1041.8	879.6	787.2
60.5°	404.7	528.2	630.6	744.7	835.3	959.8	1043.7	1049.4	999.9	840.0	751.8
61°	383.9	507.5	608.9	720.7	807.4	927.7	1005.0	1008.8	958.4	800.8	716.9
61.5°	362.7	485.8	586.7	697.5	780.1	895.2	965.9	966.8	915.9	760.7	682.0
62°	342.9	464.6	564.5	673.5	753.2	862.1	928.2	926.3	874.9	722.1	647.1
62.5°	323.1	443.3	542.8	649.9	724.9	829.1	888.6	885.3	832.9	684.3	613.6
63°	303.7	422.6	520.2	626.3	697.1	795.2	849.9	844.2	792.8	649.0	581.1
63.5°	283.9	401.8	498.5	601.3	669.2	761.7	811.7	803.7	752.7	613.1	549.0
64°	266.0	382.0	476.8	577.7	641.9	728.7	774.9	764.5	714.1	579.2	517.9
64.5°	248.1	361.7	455.1	553.7	614.1	695.2	737.2	725.8	676.3	546.2	487.7
65°	230.6	341.5	433.9	530.1	586.2	662.2	701.3	688.1	638.1	514.1	458.9
65.5°	213.6	322.1	412.2	506.1	558.4	629.6	665.5	650.9	600.9	483.9	433.4
66°	197.6	303.3	391.0	482.5	530.6	597.6	630.1	614.5	564.1	454.7	408.4



TEST NUMBER: P776757

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRH-HCD81TRLWW-5000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	156.1	248.1	327.8	412.2	450.4	505.6	529.6	513.1	459.8	378.2	333.0
68°	144.3	230.6	307.5	389.1	425.4	476.3	498.0	481.5	430.6	352.3	310.8
68.5°	133.0	213.6	287.7	366.0	400.4	447.6	466.9	450.9	401.4	326.8	290.5
69°	121.2	196.7	267.4	343.3	375.4	421.2	440.0	423.5	372.1	305.1	271.2
69.5°	112.2	180.2	247.6	320.2	350.9	395.2	413.1	396.6	343.3	284.9	252.8
70°	105.6	165.5	228.3	299.0	325.9	368.8	386.7	369.3	319.3	265.5	235.8
70.5°	101.4	151.4	209.4	277.3	303.7	342.4	359.9	342.4	296.7	247.6	219.8
71°	96.7	137.7	191.5	256.1	282.5	319.8	333.0	319.3	275.4	230.6	204.2
71.5°	92.0	124.0	174.0	235.8	261.8	296.7	309.9	297.1	255.6	214.6	190.1
72°	87.3	110.4	159.9	216.5	241.9	275.4	287.7	276.4	237.7	200.0	176.9
72.5°	82.5	100.5	146.2	198.1	222.6	255.2	267.4	257.0	220.7	185.8	163.7
73°	77.8	93.4	132.5	181.1	204.7	236.3	248.6	238.6	205.2	172.6	151.9
73.5°	73.6	88.7	118.9	164.6	188.2	218.4	230.6	221.7	191.0	160.4	140.5
74°	69.3	84.0	104.7	151.4	172.6	201.9	213.6	206.1	177.3	148.6	129.7
74.5°	65.1	79.7	94.8	137.7	157.5	186.3	198.1	191.5	164.6	137.7	119.8
75°	60.8	75.5	85.8	124.5	144.3	171.7	183.5	177.8	152.8	127.3	109.9
75.5°	57.1	71.2	78.8	111.3	131.6	158.0	169.8	165.1	141.0	117.0	100.9
76°	53.3	67.0	72.2	100.5	119.8	145.3	157.1	152.8	130.2	107.5	92.0
76.5°	50.0	63.2	66.5	90.6	108.5	133.0	145.3	142.0	119.8	98.6	84.0
77°	46.7	59.0	61.8	82.1	99.0	122.6	133.9	131.1	109.4	90.1	75.9
77.5°	43.4	55.2	57.5	74.0	89.6	111.8	123.6	121.2	100.0	81.6	68.4
78°	40.1	51.9	54.2	67.0	81.1	101.9	113.2	111.3	91.0	74.0	61.3
78.5°	37.3	48.6	50.5	60.8	73.1	92.9	103.8	101.9	82.1	67.0	54.7
79°	34.4	45.3	47.6	55.2	66.0	84.4	94.8	93.4	73.6	59.9	48.6
79.5°	31.6	42.0	44.3	50.0	59.4	76.4	86.3	84.9	66.0	53.8	43.9
80°	28.8	38.7	41.5	45.3	53.3	68.9	78.3	76.9	58.5	48.6	38.7
80.5°	26.4	35.8	38.2	41.0	47.6	62.3	70.7	69.8	51.4	42.9	33.5
81°	24.1	33.0	35.8	37.3	43.4	55.2	63.7	62.7	45.7	37.7	28.8
81.5°	21.7	30.7	33.0	34.0	38.7	49.5	56.6	56.1	40.1	32.5	23.6
82°	19.3	27.8	30.7	30.7	34.4	44.3	50.5	49.5	34.4	27.4	19.8
82.5°	17.5	25.5	27.8	27.8	29.7	39.6	45.3	44.3	28.3	22.2	16.5
83°	15.1	22.6	25.5	25.0	25.5	34.9	40.1	39.1	22.6	18.4	13.2
83.5°	13.2	20.8	23.6	23.1	22.2	29.7	34.9	34.0	18.4	14.6	10.4
84°	11.8	18.4	21.2	20.8	19.3	25.0	29.7	28.8	14.1	11.3	8.0
84.5°	9.9	16.5	18.9	18.9	17.0	21.7	24.5	23.6	10.8	8.5	6.1
85°	8.5	14.6	17.0	17.0	14.6	18.4	20.8	19.3	7.5	5.7	4.2
85.5°	7.1	12.7	15.6	15.1	12.3	15.1	17.0	15.6	4.7	3.8	2.8
86°	5.7	10.8	13.7	13.7	10.8	12.7	13.7	12.3	2.8	2.4	1.4
86.5°	4.2	9.0	11.8	11.8	9.0	10.4	10.8	9.0	1.9	0.9	0.5
87°	3.3	7.5	9.9	10.4	7.5	8.0	8.5	6.6	1.4	0.5	0.0
87.5°	2.4	6.1	8.5	9.0	6.1	6.6	6.1	4.7	0.9	0.0	0.0
88°	1.9	4.7	7.1	7.5	5.2	4.7	4.2	2.8	0.5	0.0	0.0
88.5°	0.9	3.8	5.7	6.1	3.8	3.3	2.8	1.4	0.5	0.0	0.0



TEST NUMBER: P776757

CATALOG NUMBER: HCDJBS4050CSD-HCD81TRH-HCD81TRLWW-5000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	1.4	2.4	2.8	1.4	0.9	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776757

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRH-HCD81TRLWW-5000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2609.1	2609.1	2609.1	2609.1	2609.1	2609.1
0.5°	2608.6	2606.2	2603.9	2602.5	2600.6	2599.6
1°	2608.1	2603.4	2599.2	2596.3	2593.5	2593.0
1.5°	2607.2	2600.6	2594.0	2589.3	2586.4	2586.0
2°	2606.2	2597.3	2588.8	2582.7	2578.9	2578.9
2.5°	2604.4	2593.5	2583.1	2575.6	2571.3	2571.3
3°	2602.5	2589.7	2577.0	2568.0	2563.3	2563.8
3.5°	2600.6	2586.0	2570.9	2560.5	2555.3	2556.2
4°	2597.8	2581.2	2564.3	2552.5	2546.3	2547.8
4.5°	2595.4	2576.5	2557.2	2544.0	2537.9	2539.7
5°	2592.1	2571.3	2550.1	2535.5	2528.4	2530.8
5.5°	2588.8	2565.7	2542.6	2526.5	2519.5	2522.3
6°	2585.0	2560.0	2534.6	2517.6	2510.0	2512.9
6.5°	2580.8	2553.9	2526.5	2508.1	2500.1	2503.4
7°	2576.5	2547.8	2518.0	2498.7	2490.2	2494.0
7.5°	2571.8	2540.7	2509.6	2488.8	2479.8	2484.1
8°	2566.6	2533.6	2500.6	2478.4	2469.5	2473.7
8.5°	2561.4	2526.1	2491.2	2468.1	2458.6	2463.3
9°	2555.3	2518.5	2481.7	2457.2	2447.3	2452.5
9.5°	2549.6	2510.5	2471.8	2446.4	2436.0	2442.1
10°	2543.0	2502.0	2461.4	2435.0	2424.7	2430.8
10.5°	2536.4	2494.0	2451.1	2423.2	2412.9	2419.9
11°	2529.4	2484.6	2440.2	2411.9	2401.1	2408.2
11.5°	2522.3	2475.1	2428.9	2399.7	2388.8	2396.4
12°	2514.3	2465.7	2417.6	2387.4	2376.1	2384.1
12.5°	2506.3	2455.8	2405.8	2374.7	2363.3	2372.3
13°	2497.8	2445.9	2394.0	2361.9	2350.6	2359.6
13.5°	2489.3	2435.0	2381.7	2348.7	2337.9	2346.8
14°	2480.3	2424.2	2369.0	2336.0	2324.2	2334.1
14.5°	2471.4	2413.3	2356.7	2322.3	2310.5	2320.4
15°	2461.4	2402.0	2343.5	2308.2	2296.8	2307.2
15.5°	2451.5	2390.2	2329.9	2294.0	2282.2	2293.5
16°	2441.2	2378.0	2316.7	2279.9	2268.6	2279.9
16.5°	2430.8	2365.7	2302.5	2265.2	2253.9	2265.7
17°	2419.9	2353.0	2288.4	2250.6	2239.3	2251.1
17.5°	2408.6	2339.8	2273.7	2235.1	2224.2	2236.5
18°	2396.8	2326.6	2259.1	2220.4	2209.1	2222.3
18.5°	2385.0	2312.9	2244.0	2204.4	2193.1	2207.2
19°	2373.3	2299.2	2228.5	2189.3	2178.0	2191.2
19.5°	2360.5	2285.1	2212.9	2172.8	2162.0	2176.1
20°	2347.8	2270.4	2196.9	2156.8	2145.9	2161.0
20.5°	2334.6	2255.8	2180.8	2139.8	2129.9	2145.0
21°	2321.4	2240.7	2164.3	2123.3	2112.9	2128.0

TEST NUMBER: P776757

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRH-HCD81TRLWW-5000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	2279.9	2194.0	2113.9	2071.4	2062.0	2079.4
23°	2265.2	2178.0	2096.9	2054.0	2044.5	2062.4
23.5°	2250.6	2161.5	2079.4	2036.5	2027.1	2045.0
24°	2235.1	2144.5	2061.5	2018.6	2009.2	2027.5
24.5°	2220.0	2128.0	2043.6	1999.7	1991.2	2010.1
25°	2204.4	2110.6	2024.7	1981.3	1972.8	1992.2
25.5°	2188.4	2094.0	2006.8	1962.9	1954.4	1974.3
26°	2172.3	2076.1	1988.4	1944.1	1936.1	1955.9
26.5°	2155.8	2058.7	1969.5	1924.7	1917.2	1937.5
27°	2139.3	2040.3	1950.7	1905.4	1898.3	1918.6
27.5°	2122.3	2022.4	1931.3	1886.1	1879.0	1899.7
28°	2105.4	2004.0	1912.0	1866.7	1859.2	1880.9
28.5°	2087.9	1985.1	1892.7	1846.9	1839.8	1861.1
29°	2070.5	1966.7	1872.9	1826.6	1820.5	1841.7
29.5°	2052.5	1947.8	1853.0	1806.4	1800.2	1822.4
30°	2034.6	1929.0	1833.2	1786.5	1779.9	1802.6
30.5°	2016.7	1909.2	1813.0	1765.8	1760.1	1782.3
31°	1998.8	1889.8	1792.7	1745.5	1739.4	1762.0
31.5°	1979.9	1870.0	1771.9	1724.8	1719.1	1741.3
32°	1961.5	1850.2	1751.2	1703.5	1697.9	1721.0
32.5°	1942.2	1830.4	1730.9	1682.8	1677.1	1700.2
33°	1923.3	1810.6	1710.1	1661.6	1655.9	1679.5
33.5°	1904.0	1789.8	1689.4	1640.3	1634.7	1658.3
34°	1884.6	1770.0	1667.7	1619.1	1613.0	1636.6
34.5°	1865.8	1749.3	1646.9	1597.9	1591.8	1615.3
35°	1846.0	1729.0	1625.2	1576.2	1569.6	1593.6
35.5°	1826.2	1708.7	1604.0	1554.0	1548.4	1572.0
36°	1806.4	1687.5	1583.3	1532.8	1525.7	1549.8
36.5°	1786.5	1667.2	1561.6	1511.1	1504.5	1527.6
37°	1766.3	1646.5	1540.4	1488.9	1481.9	1505.5
37.5°	1746.0	1625.7	1519.1	1466.8	1459.7	1483.3
38°	1725.7	1604.5	1497.4	1444.6	1437.1	1460.2
38.5°	1705.4	1583.3	1476.2	1422.9	1414.9	1437.5
39°	1685.6	1562.5	1454.0	1400.7	1392.3	1415.4
39.5°	1664.9	1541.8	1432.8	1378.6	1369.6	1392.7
40°	1644.1	1520.5	1411.1	1356.4	1347.0	1368.7
40.5°	1623.8	1499.3	1389.9	1334.2	1324.3	1346.0
41°	1603.1	1477.6	1368.2	1312.1	1300.8	1322.5
41.5°	1582.8	1457.3	1346.0	1289.9	1278.1	1299.3
42°	1562.0	1436.6	1324.8	1267.3	1255.5	1275.3
42.5°	1540.8	1414.9	1303.6	1245.1	1232.4	1252.7
43°	1520.1	1393.7	1282.4	1222.5	1208.8	1228.6
43.5°	1499.3	1372.9	1260.2	1200.8	1186.2	1204.5

TEST NUMBER: P776757

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRH-HCD81TRLWW-5000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1436.1	1309.3	1196.1	1133.8	1115.9	1133.3
45.5°	1414.9	1289.0	1174.4	1112.1	1093.2	1109.3
46°	1394.1	1268.2	1153.6	1089.9	1070.1	1085.2
46.5°	1372.4	1246.5	1131.9	1067.8	1046.6	1061.2
47°	1350.8	1225.3	1111.2	1045.6	1023.4	1037.6
47.5°	1329.1	1204.5	1089.0	1023.4	999.9	1013.1
48°	1306.9	1183.3	1068.7	1001.7	976.8	988.1
48.5°	1285.2	1162.1	1047.0	979.6	953.6	964.5
49°	1263.0	1141.4	1026.3	957.9	930.5	940.4
49.5°	1240.4	1120.1	1005.0	935.7	907.9	916.4
50°	1218.7	1098.9	983.8	914.0	884.3	891.9
50.5°	1197.0	1077.2	962.6	892.8	861.2	867.3
51°	1175.8	1056.0	941.8	871.1	838.6	843.3
51.5°	1154.6	1035.7	921.1	848.9	815.9	819.7
52°	1134.7	1015.9	900.8	828.2	793.3	795.2
52.5°	1113.5	996.1	880.5	807.0	770.2	771.6
53°	1091.4	976.3	861.2	786.2	747.5	747.1
53.5°	1067.8	956.0	840.9	765.0	725.4	723.0
54°	1042.3	934.8	821.1	744.2	702.7	699.4
54.5°	1016.8	913.1	800.8	724.4	680.6	675.8
55°	988.5	890.4	780.1	704.1	658.9	651.8
55.5°	960.2	866.4	758.4	682.9	637.2	628.7
56°	930.5	842.3	737.2	662.6	616.0	605.1
56.5°	901.3	817.8	715.5	641.4	594.3	582.0
57°	870.2	792.3	693.8	620.7	573.0	558.9
57.5°	840.0	766.4	671.6	599.4	551.8	535.8
58°	808.8	740.5	649.9	579.2	531.1	514.1
58.5°	777.7	714.5	626.8	558.4	510.3	491.4
59°	747.1	687.6	604.6	537.7	489.6	469.3
59.5°	716.4	661.2	582.0	516.9	468.8	447.1
60°	685.3	634.8	558.9	496.6	448.1	425.9
60.5°	655.1	608.4	535.8	475.4	427.8	404.7
61°	625.4	582.0	512.7	455.1	407.5	383.9
61.5°	595.2	556.1	489.6	434.8	387.7	362.7
62°	565.5	530.1	466.9	414.6	368.3	342.9
62.5°	537.2	504.6	443.8	393.8	348.5	323.1
63°	508.9	479.7	420.7	373.5	329.7	303.7
63.5°	481.5	454.7	398.5	352.3	310.8	283.9
64°	455.6	430.1	376.4	332.0	292.9	266.0
64.5°	430.6	407.0	354.7	311.7	275.0	248.1
65°	405.6	383.9	333.0	292.4	257.5	230.6
65.5°	381.1	360.3	312.7	272.1	239.6	213.6
66°	356.1	337.7	291.5	252.3	223.1	197.6



TEST NUMBER: P776757

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRH-HCD81TRLWW-5000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	288.6	275.9	233.9	198.6	174.0	156.1
68°	269.3	256.1	215.5	181.6	160.8	144.3
68.5°	250.4	237.2	198.1	164.6	147.6	133.0
69°	232.5	219.8	181.6	151.9	134.9	121.2
69.5°	216.0	203.3	165.1	139.1	121.7	112.2
70°	200.9	187.2	152.3	125.9	108.5	105.6
70.5°	185.8	172.6	140.1	113.2	99.0	101.4
71°	171.7	160.4	127.3	102.3	92.4	96.7
71.5°	158.9	148.1	114.6	93.4	87.7	92.0
72°	146.2	136.3	104.2	85.4	83.5	87.3
72.5°	135.4	124.0	94.8	78.3	79.2	82.5
73°	124.5	112.2	85.8	72.2	75.0	77.8
73.5°	114.1	101.9	77.8	66.5	70.7	73.6
74°	104.7	92.9	70.7	61.8	66.5	69.3
74.5°	95.3	84.4	64.6	58.0	62.7	65.1
75°	86.8	76.9	58.5	54.2	59.0	60.8
75.5°	78.8	69.3	53.3	50.9	55.2	57.1
76°	71.7	62.7	48.1	47.6	51.4	53.3
76.5°	64.1	56.1	43.9	44.8	48.1	50.0
77°	58.0	50.5	40.1	41.5	44.8	46.7
77.5°	51.9	45.3	36.3	39.1	41.5	43.4
78°	46.7	40.6	33.0	36.3	38.7	40.1
78.5°	42.0	35.8	30.2	33.5	35.8	37.3
79°	36.8	32.1	27.4	31.1	33.0	34.4
79.5°	32.1	28.3	25.0	28.3	30.2	31.6
80°	27.4	24.5	22.6	25.9	27.4	28.8
80.5°	23.6	21.7	20.8	23.6	25.0	26.4
81°	20.3	18.9	18.9	21.7	22.6	24.1
81.5°	17.0	17.0	17.0	19.3	20.3	21.7
82°	14.1	15.1	15.1	17.5	17.9	19.3
82.5°	11.8	12.7	13.2	15.6	16.0	17.5
83°	9.4	10.8	11.8	13.7	14.1	15.1
83.5°	7.5	9.0	9.9	11.8	12.3	13.2
84°	6.1	7.5	8.5	9.9	10.4	11.8
84.5°	4.2	6.1	7.5	8.5	8.5	9.9
85°	3.3	5.2	6.1	7.1	7.1	8.5
85.5°	2.4	3.8	4.7	6.1	5.7	7.1
86°	1.4	2.8	3.8	4.7	4.7	5.7
86.5°	0.5	1.9	2.4	3.3	3.8	4.2
87°	0.0	0.9	1.4	2.4	2.8	3.3
87.5°	0.0	0.5	0.5	1.4	1.9	2.4
88°	0.0	0.0	0.0	0.5	0.9	1.9
88.5°	0.0	0.0	0.0	0.0	0.5	0.9



TEST NUMBER: P776757

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRH-HCD81TRLWW-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°	2112.0	2183.7	2241.7	2319.0	2394.9	2490.7	2558.1	2581.2	2564.7	2494.5	2412.9
22°	2095.9	2168.6	2227.0	2305.3	2383.2	2480.8	2549.6	2572.8	2556.2	2484.1	2400.6



44°	1181.0	1288.5	1367.3	1474.8	1587.5	1751.2	1878.5	1925.2	1899.7	1779.5	1647.4
44.5°	1157.4	1264.9	1345.1	1453.1	1565.8	1730.4	1858.7	1905.4	1880.4	1759.2	1626.7



66.5°	182.5	284.4	370.2	458.9	503.7	566.4	595.7	579.6	527.8	429.2	383.0
67°	167.4	265.5	349.5	435.3	477.3	535.3	562.7	546.2	493.8	403.7	358.0



89°	0.5	2.8	4.7	5.2	2.8	2.4	1.4	0.5	0.0	0.0	0.0
89.5°	0.0	1.9	3.3	3.8	1.9	1.4	0.5	0.0	0.0	0.0	0.0

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21.5°	2307.7	2225.2	2147.8	2106.3	2095.9	2112.0
22°	2293.5	2209.6	2131.3	2088.9	2079.4	2095.9



44°	1478.6	1352.2	1238.5	1178.1	1163.0	1181.0
44.5°	1456.9	1330.5	1217.3	1156.4	1139.5	1157.4

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66.5°	331.6	316.9	271.7	233.9	206.1	182.5
67°	308.9	295.7	251.9	215.5	189.6	167.4

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

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Scaled Data Report



(END OF REPORT)