

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: P776568

Luminaire Tested: HCDJBS4050CSD-HCD41TRMW-5000lm-4000K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P776568  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2312156B030)  
Test Lab:  
Issue Date: 2/13/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBS4050CSD-HCD41TRMW-5000lm-4000K  
Description: 4 INCH ROUND SHALLOW-WIDE MATTE WHITE TRIM  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

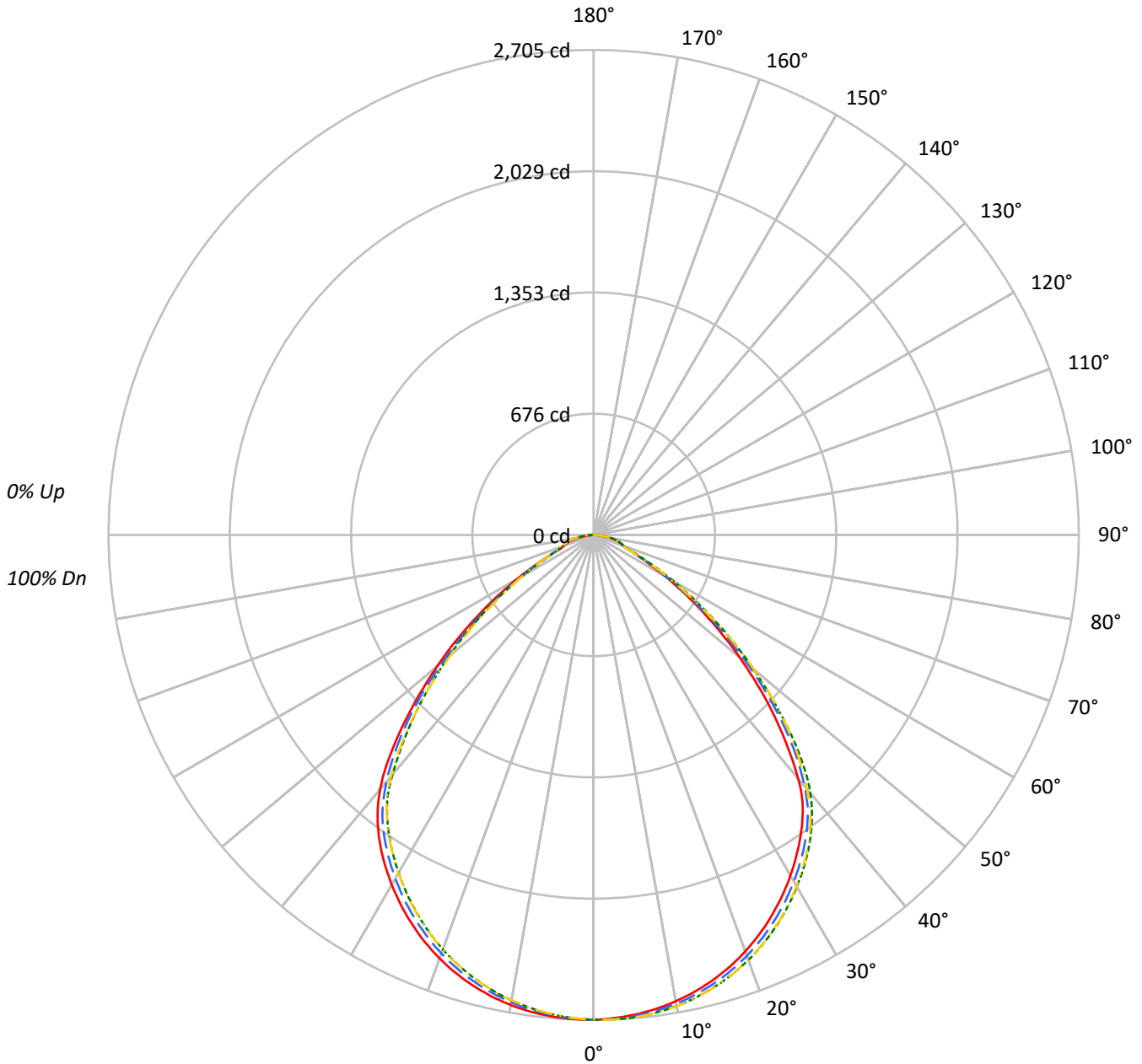
Lumens per Lamp: N/A  
Luminaire Lumens: 5645.0 lumens  
Efficiency: N/A  
Efficacy: 117.6 lumens/watt  
Spacing Criteria (0/90/45): 1.22 / 1.22 / 1.28  
Luminous Opening: Circular (Dia: 0.33' x H: 0')  
CIE Type: Direct

Input Watts (W): 48  
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					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	102	99	101	98	96	97	95	93	93	92	90	88					88			
2	103	96	90	85	100	94	89	84	90	86	82	87	84	81	84	81	79	77					77			
3	95	86	79	73	93	84	78	73	82	76	72	79	74	70	76	73	69	67					67			
4	88	77	70	64	86	76	69	64	74	68	63	72	66	62	69	65	61	59					59			
5	81	70	62	56	79	69	62	56	67	60	55	65	59	55	63	58	54	52					52			
6	76	64	56	50	74	63	55	50	61	54	49	60	54	49	58	53	49	47					47			
7	71	58	50	45	69	57	50	45	56	49	44	55	49	44	53	48	44	42					42			
8	66	54	46	40	64	53	45	40	52	45	40	50	44	40	49	44	40	38					38			
9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34					34			
10	58	46	38	33	57	45	38	33	44	38	33	43	37	33	43	37	33	31					31			

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

	0°	90°	180°	270°
0°	340222	340222	340222	340222
5°	339223	341029	340612	338983
10°	337458	340947	340206	336845
15°	334896	339938	339000	333762
20°	331040	337830	336544	329433
25°	325696	334402	332667	323502
30°	318800	329307	327287	316083
35°	309988	322417	319774	306900
40°	291393	308840	304371	286596
45°	252925	273873	268000	249597
50°	208240	227642	223041	206478
55°	160829	177943	174477	160829
60°	114775	127788	125120	115253
65°	77931	83499	81355	78079
70°	64982	64614	65129	66380
75°	68415	68852	66081	72110
80°	63777	71097	57907	76315
85°	35233	64978	24836	73931

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 112.5°  
 Vertical Angle: 45°  
 Luminance: 278216 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	255.6	4.5
10°-20°	729.1	12.9
20°-30°	1090.7	19.3
30°-40°	1275.3	22.6
40°-50°	1127.9	20.0
50°-60°	686.5	12.2
60°-70°	286.0	5.1
70°-80°	148.4	2.6
80°-90°	45.4	0.8
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°	2075.4	36.8
0°-40°	3350.8	59.4
0°-60°	5165.2	91.5
0°-90°	5645.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5645.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2703	2703	2703	2703	2703	
5°	2685	2700	2696	2683	2685	255
15°	2570	2609	2602	2562	2570	725
25°	2346	2408	2396	2330	2346	1080
35°	2018	2099	2081	1998	2018	1256
45°	1421	1539	1506	1402	1421	1092
55°	733	811	795	733	733	660
65°	262	280	273	262	262	276
75°	141	142	136	148	141	145
85°	24	45	17	51	24	36
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°	2703.4	2703.4	2703.4	2703.4	2703.4	2703.4	2703.4	2703.4	2703.4	2703.4	2703.4
0.5°	2702.9	2703.4	2703.9	2702.9	2704.8	2705.3	2704.3	2703.9	2703.9	2703.9	2703.4
1°	2701.9	2702.9	2703.4	2703.4	2705.3	2705.8	2705.3	2704.3	2703.9	2703.9	2702.9
1.5°	2700.5	2701.9	2702.9	2703.4	2705.3	2706.2	2705.3	2704.3	2703.9	2703.4	2701.9
2°	2699.1	2700.5	2702.4	2702.9	2705.3	2706.2	2705.3	2704.3	2703.4	2702.4	2701.0
2.5°	2697.2	2699.1	2701.5	2702.4	2704.8	2706.2	2705.3	2703.9	2702.9	2701.5	2699.5
3°	2695.2	2697.6	2700.0	2701.5	2704.3	2705.8	2704.3	2703.4	2701.9	2700.5	2698.1
3.5°	2693.3	2695.7	2698.6	2700.5	2703.4	2705.3	2703.9	2702.4	2701.0	2698.6	2696.2
4°	2690.9	2693.3	2696.7	2699.1	2702.4	2704.3	2702.4	2701.0	2699.5	2697.2	2693.8
4.5°	2688.1	2690.9	2694.3	2697.2	2701.0	2702.9	2701.5	2699.5	2697.6	2695.2	2691.4
5°	2685.2	2688.5	2691.9	2695.2	2699.5	2701.5	2699.5	2698.1	2696.2	2692.9	2688.5
5.5°	2681.8	2685.2	2689.5	2693.3	2697.2	2700.0	2697.6	2695.7	2693.8	2690.0	2685.7
6°	2678.0	2682.3	2686.6	2690.9	2695.2	2697.6	2695.7	2693.8	2691.4	2687.6	2682.3
6.5°	2674.2	2678.5	2683.8	2688.1	2692.9	2695.7	2693.3	2691.4	2689.0	2684.7	2679.0
7°	2670.4	2674.7	2680.4	2685.2	2690.0	2692.9	2690.5	2688.5	2685.7	2681.4	2675.6
7.5°	2666.1	2670.8	2676.6	2681.8	2687.1	2690.5	2687.6	2685.7	2682.3	2677.5	2671.3
8°	2661.8	2666.5	2673.2	2678.5	2683.3	2687.1	2684.2	2682.3	2679.0	2673.7	2667.0
8.5°	2657.0	2662.2	2668.4	2674.7	2679.9	2684.2	2680.9	2678.5	2675.1	2669.9	2662.7
9°	2651.7	2657.4	2664.1	2670.8	2676.1	2680.4	2677.1	2674.7	2671.3	2665.1	2657.9
9.5°	2646.4	2652.2	2659.8	2666.1	2672.3	2676.6	2673.2	2670.8	2667.0	2660.8	2652.7
10°	2640.7	2646.9	2654.6	2661.8	2668.0	2672.3	2668.9	2666.5	2662.2	2656.0	2647.4
10.5°	2635.0	2641.7	2649.3	2656.5	2663.2	2668.0	2664.1	2661.8	2657.4	2650.7	2642.1
11°	2628.7	2635.4	2644.0	2651.7	2658.4	2663.2	2659.4	2656.5	2652.7	2645.0	2635.9
11.5°	2622.5	2629.7	2638.3	2646.4	2653.1	2658.4	2654.1	2651.7	2646.9	2639.3	2629.7
12°	2615.8	2623.0	2632.1	2640.2	2647.9	2653.1	2648.8	2646.4	2641.7	2633.5	2623.5
12.5°	2608.6	2616.3	2625.9	2634.5	2642.1	2647.9	2643.1	2640.2	2635.9	2627.3	2616.8
13°	2601.9	2609.6	2619.2	2628.3	2635.9	2642.1	2636.9	2634.5	2629.7	2620.6	2610.1
13.5°	2593.8	2602.4	2612.0	2622.0	2629.7	2635.9	2630.6	2628.3	2623.0	2613.9	2602.9
14°	2586.6	2595.2	2605.3	2615.3	2623.0	2629.7	2624.4	2621.6	2616.3	2606.7	2595.2
14.5°	2578.5	2587.6	2597.6	2608.2	2616.3	2623.0	2617.3	2614.4	2609.1	2599.5	2587.6
15°	2570.4	2579.5	2590.5	2601.0	2609.1	2616.3	2610.6	2607.7	2601.9	2591.9	2579.5
15.5°	2561.7	2570.8	2582.3	2592.9	2601.9	2608.6	2602.9	2600.0	2594.3	2584.2	2571.3
16°	2552.7	2562.2	2573.7	2585.2	2594.3	2601.5	2594.8	2592.4	2586.2	2575.6	2562.7
16.5°	2543.6	2553.6	2565.6	2577.1	2586.2	2593.3	2587.1	2584.2	2578.5	2567.5	2553.6
17°	2534.5	2544.5	2557.0	2568.4	2578.0	2585.2	2579.0	2575.6	2569.4	2558.9	2544.5
17.5°	2524.9	2535.0	2547.9	2560.3	2569.4	2577.1	2569.9	2567.0	2560.8	2549.3	2535.0
18°	2514.9	2525.4	2538.3	2551.2	2560.8	2568.0	2561.3	2558.4	2552.2	2540.2	2525.4
18.5°	2504.3	2515.3	2528.7	2541.7	2551.7	2558.9	2552.2	2549.3	2542.6	2530.6	2515.3
19°	2493.8	2505.3	2518.7	2532.1	2542.1	2549.8	2542.6	2539.7	2533.5	2521.1	2505.3
19.5°	2482.8	2494.8	2508.6	2522.5	2532.6	2540.2	2532.6	2530.2	2523.5	2510.6	2494.8
20°	2471.8	2483.8	2498.1	2512.5	2522.5	2530.6	2522.5	2519.6	2512.9	2500.5	2483.8
20.5°	2460.8	2472.8	2487.6	2501.9	2512.5	2520.1	2512.0	2509.1	2502.4	2489.5	2472.3
21°	2448.4	2461.3	2476.1	2491.4	2501.9	2510.1	2501.5	2498.6	2491.9	2478.5	2461.3



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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°	2412.0	2425.4	2441.7	2457.4	2468.9	2477.1	2467.5	2465.1	2457.9	2444.0	2425.4
23°	2399.1	2412.9	2429.2	2446.0	2457.4	2465.6	2455.5	2453.1	2446.0	2432.1	2412.5
23.5°	2386.1	2400.0	2416.8	2433.5	2445.5	2453.6	2443.6	2440.7	2434.0	2419.2	2400.0
24°	2372.8	2387.1	2404.3	2421.6	2433.0	2441.7	2431.1	2428.3	2421.6	2406.7	2387.1
24.5°	2359.4	2373.7	2391.4	2408.6	2420.6	2429.2	2418.7	2415.8	2408.6	2393.8	2373.7
25°	2345.5	2359.8	2378.0	2395.7	2408.2	2416.3	2405.3	2402.9	2395.7	2380.9	2360.3
25.5°	2331.6	2346.4	2364.6	2382.8	2395.2	2403.4	2392.4	2389.5	2382.8	2367.5	2346.4
26°	2316.8	2332.6	2350.7	2369.4	2381.8	2390.5	2379.0	2376.1	2369.4	2353.6	2332.1
26.5°	2302.9	2318.2	2336.9	2356.0	2368.0	2377.1	2365.1	2362.2	2355.0	2340.2	2318.2
27°	2288.1	2303.4	2322.5	2341.7	2354.6	2363.7	2350.7	2348.4	2341.2	2325.9	2303.9
27.5°	2272.8	2289.0	2308.6	2327.8	2340.2	2349.3	2336.9	2334.0	2327.3	2311.0	2289.0
28°	2257.4	2273.7	2293.3	2313.4	2325.9	2335.0	2322.0	2319.6	2312.5	2297.2	2273.7
28.5°	2241.7	2258.4	2278.5	2298.6	2312.0	2320.6	2307.2	2304.8	2297.6	2281.4	2258.4
29°	2226.3	2242.6	2263.2	2283.8	2296.7	2305.8	2291.9	2290.0	2282.8	2267.0	2243.1
29.5°	2210.1	2227.3	2247.9	2268.4	2281.8	2290.9	2276.6	2274.7	2267.5	2251.2	2227.8
30°	2193.8	2211.5	2232.1	2253.1	2266.1	2275.6	2261.3	2258.9	2252.2	2235.9	2211.5
30.5°	2177.1	2195.2	2216.3	2237.8	2250.7	2259.8	2245.5	2243.1	2236.4	2219.6	2195.2
31°	2160.3	2178.5	2200.5	2221.6	2235.0	2244.5	2229.2	2226.8	2220.1	2203.9	2179.0
31.5°	2143.6	2162.2	2183.8	2205.8	2218.7	2228.3	2212.9	2210.5	2203.9	2187.6	2163.2
32°	2126.8	2145.5	2167.0	2189.5	2202.4	2212.0	2196.2	2194.3	2187.6	2171.8	2146.0
32.5°	2109.1	2128.3	2150.7	2172.8	2186.6	2195.7	2179.4	2177.5	2170.8	2155.0	2128.7
33°	2091.9	2111.0	2133.5	2156.0	2169.4	2179.0	2162.2	2160.3	2154.1	2137.8	2111.5
33.5°	2074.2	2093.3	2116.3	2139.3	2152.2	2161.7	2145.0	2142.6	2136.4	2120.1	2093.8
34°	2055.5	2075.6	2098.1	2121.6	2135.0	2144.5	2126.3	2124.4	2118.2	2101.9	2075.6
34.5°	2037.3	2057.0	2080.4	2103.4	2117.2	2125.9	2108.6	2106.2	2100.0	2084.2	2057.4
35°	2017.7	2038.3	2061.7	2085.2	2098.6	2107.7	2089.5	2087.6	2081.4	2065.6	2038.8
35.5°	1998.6	2019.2	2042.6	2066.5	2079.9	2089.0	2070.8	2068.4	2062.7	2046.4	2019.6
36°	1979.0	1999.5	2023.5	2047.4	2061.3	2070.4	2050.7	2047.9	2042.6	2026.3	1999.5
36.5°	1958.4	1979.4	2003.4	2028.3	2041.2	2050.3	2029.7	2027.3	2021.6	2005.8	1979.0
37°	1937.3	1958.4	1982.3	2006.7	2020.1	2029.2	2008.6	2006.2	2000.5	1984.7	1957.9
37.5°	1914.9	1936.9	1961.3	1986.1	1999.1	2008.2	1985.7	1984.2	1979.0	1962.7	1933.5
38°	1891.4	1913.9	1939.7	1964.1	1977.1	1986.6	1960.8	1960.3	1956.5	1939.3	1908.2
38.5°	1865.1	1887.6	1913.9	1941.6	1954.6	1963.2	1934.0	1933.5	1932.1	1915.3	1882.3
39°	1837.3	1858.9	1886.1	1916.8	1930.6	1938.3	1906.2	1906.7	1906.7	1889.5	1854.1
39.5°	1806.7	1829.7	1858.9	1891.4	1905.8	1912.0	1878.5	1878.5	1880.4	1862.2	1826.3
40°	1773.7	1798.6	1830.2	1863.2	1879.9	1883.8	1849.3	1848.3	1852.7	1833.5	1796.2
40.5°	1739.7	1765.6	1799.5	1834.9	1852.2	1854.6	1820.1	1818.7	1823.0	1803.4	1768.0
41°	1705.3	1732.6	1768.9	1804.3	1823.0	1824.9	1790.9	1789.0	1791.4	1772.7	1735.9
41.5°	1670.8	1699.1	1736.9	1773.2	1791.4	1794.8	1760.3	1757.4	1758.9	1741.2	1704.8
42°	1634.5	1664.1	1704.8	1741.2	1758.9	1763.7	1729.7	1726.8	1725.4	1708.6	1672.3
42.5°	1599.5	1629.2	1671.8	1708.6	1724.4	1731.6	1697.6	1694.3	1690.4	1674.7	1639.3
43°	1564.1	1594.8	1638.3	1674.7	1689.0	1698.6	1665.6	1661.3	1654.6	1640.2	1604.8
43.5°	1528.7	1559.8	1602.4	1640.2	1651.7	1666.0	1633.0	1627.8	1617.2	1604.8	1571.3

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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1421.1	1455.0	1495.2	1531.1	1538.8	1563.2	1530.6	1523.9	1505.8	1493.8	1464.6
45.5°	1385.2	1419.6	1458.4	1493.3	1500.0	1526.3	1496.7	1488.1	1468.0	1455.5	1428.7
46°	1349.8	1384.2	1421.1	1454.6	1460.8	1490.4	1460.3	1450.7	1430.6	1417.2	1390.9
46.5°	1313.9	1348.3	1383.7	1415.8	1423.0	1453.6	1424.4	1414.4	1393.3	1379.0	1353.6
47°	1277.0	1312.9	1346.4	1376.6	1385.7	1415.8	1388.5	1378.0	1357.0	1340.7	1316.8
47.5°	1241.2	1276.6	1307.7	1337.8	1347.9	1378.0	1353.1	1340.2	1320.6	1303.4	1279.9
48°	1205.3	1239.7	1270.8	1298.6	1310.5	1340.2	1315.8	1302.9	1283.7	1264.6	1241.6
48.5°	1169.4	1203.8	1232.5	1259.3	1273.7	1302.4	1279.9	1265.1	1247.4	1227.3	1205.3
49°	1134.0	1167.5	1195.2	1221.1	1236.4	1265.1	1241.6	1228.2	1211.5	1189.5	1167.5
49.5°	1098.6	1130.2	1157.9	1182.3	1199.1	1226.8	1203.8	1190.9	1175.1	1152.6	1130.6
50°	1063.6	1094.3	1120.1	1144.0	1162.7	1189.5	1167.0	1153.6	1139.2	1115.3	1093.8
50.5°	1028.7	1057.4	1082.8	1105.8	1126.3	1152.2	1128.2	1117.2	1102.9	1079.4	1056.9
51°	993.8	1021.5	1045.9	1068.4	1089.5	1114.4	1091.9	1081.4	1068.0	1044.0	1021.1
51.5°	960.3	986.6	1009.6	1031.1	1053.6	1079.0	1053.6	1045.0	1033.0	1008.1	985.7
52°	926.3	951.2	973.2	995.2	1018.2	1042.1	1015.3	1008.6	999.1	972.3	950.2
52.5°	893.3	916.3	937.3	959.3	982.3	1005.3	979.0	973.2	963.6	937.8	914.4
53°	860.3	881.8	901.0	923.9	947.4	968.9	942.1	938.3	928.7	902.9	879.9
53.5°	827.8	847.9	866.0	889.0	912.0	934.0	906.2	902.9	894.3	869.9	845.9
54°	795.7	814.4	830.6	855.0	878.5	898.6	868.9	868.4	862.2	835.9	813.4
54.5°	764.1	780.4	797.1	821.1	845.0	864.1	834.0	834.9	828.7	803.4	780.9
55°	733.0	748.3	764.1	788.5	811.0	830.6	799.1	801.4	795.2	770.8	747.9
55.5°	702.9	716.8	730.6	756.0	778.0	796.7	764.6	768.4	762.7	739.7	716.3
56°	673.2	685.7	698.1	724.9	745.5	762.2	731.1	734.9	732.1	708.1	686.1
56.5°	643.5	654.6	667.5	693.8	713.9	729.7	698.1	703.4	700.0	678.0	656.0
57°	614.8	624.9	636.8	663.6	682.3	698.1	666.0	671.8	668.9	648.8	626.8
57.5°	586.6	595.2	606.7	633.5	651.7	666.0	634.9	641.2	638.8	620.1	597.6
58°	558.9	566.5	577.0	605.3	621.1	634.5	604.8	611.0	610.1	591.9	570.3
58.5°	532.1	538.8	549.3	576.6	592.8	604.3	575.1	580.4	580.4	564.6	543.5
59°	506.2	512.0	523.0	550.2	563.2	574.6	546.4	551.2	551.7	537.8	516.8
59.5°	480.9	485.7	496.7	522.5	534.9	545.5	518.2	523.5	523.9	511.5	491.9
60°	456.0	460.3	471.8	496.7	507.7	516.8	490.9	495.7	497.1	486.1	467.5
60.5°	432.5	435.9	447.4	471.3	481.3	489.5	465.6	468.4	470.8	461.7	443.5
61°	409.1	412.4	423.9	446.9	455.5	463.6	442.1	443.1	445.5	439.2	422.5
61.5°	387.1	390.4	401.9	422.5	432.1	439.7	418.2	419.6	422.0	416.8	401.9
62°	366.0	369.4	380.4	400.0	408.6	415.3	394.7	395.7	398.6	394.3	380.9
62.5°	345.9	348.8	359.8	377.5	385.6	391.4	371.3	371.8	375.1	371.8	359.8
63°	326.8	329.2	340.2	356.0	362.2	367.0	347.9	348.3	352.2	349.3	338.8
63.5°	309.1	311.0	321.5	335.4	338.8	343.1	326.3	327.3	331.6	329.2	320.1
64°	291.9	294.3	303.8	315.3	318.7	322.0	306.7	306.7	311.5	310.5	302.4
64.5°	275.6	278.0	287.1	297.1	299.0	302.4	288.5	288.5	292.3	292.3	286.1
65°	261.7	263.2	271.3	279.9	280.4	283.7	270.8	271.3	273.2	275.6	270.8
65.5°	248.3	249.8	256.9	263.6	263.2	266.0	254.5	255.0	255.0	260.3	256.5
66°	235.4	237.3	243.5	248.3	246.9	250.2	239.7	240.2	237.8	245.0	243.1





TEST NUMBER: P776568

CATALOG NUMBER: HCDJBL54050CSD-HCD41TRMW-5000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	204.3	206.7	209.6	211.0	208.1	211.5	203.4	205.3	200.0	209.1	210.5
68°	196.2	198.6	200.5	201.4	198.6	201.4	194.7	196.7	191.9	200.5	201.9
68.5°	188.5	191.9	192.8	192.8	190.4	192.8	188.0	189.5	187.1	192.8	194.3
69°	183.3	186.1	185.6	185.6	184.2	186.1	182.8	183.7	183.7	187.1	188.0
69.5°	179.9	180.9	180.4	179.9	178.9	180.4	178.9	179.9	180.4	182.3	183.7
70°	176.6	176.6	176.6	176.1	175.6	177.0	176.1	176.6	177.0	178.9	180.4
70.5°	173.2	173.7	174.6	173.2	172.7	174.2	173.2	173.2	173.7	175.6	177.5
71°	169.9	170.3	171.3	169.9	169.4	170.8	169.9	169.4	169.9	172.3	174.6
71.5°	167.0	167.0	168.4	167.0	166.5	167.9	166.5	166.0	166.5	168.4	171.3
72°	163.6	163.6	165.1	164.1	163.2	164.6	163.2	162.2	162.2	164.6	167.9
72.5°	160.8	160.8	161.7	161.2	159.8	161.2	159.8	158.4	158.4	160.8	164.6
73°	156.9	156.9	158.4	157.9	156.5	157.9	156.0	154.1	154.1	156.9	160.8
73.5°	153.1	153.1	155.0	154.1	153.1	154.1	152.2	149.8	149.8	152.6	156.9
74°	148.8	149.3	151.2	150.7	149.3	150.7	148.3	145.5	145.5	148.3	153.1
74.5°	144.5	145.0	147.4	147.4	145.5	146.9	144.5	141.1	140.7	144.0	149.3
75°	140.7	140.7	143.5	143.5	141.6	143.1	140.2	136.4	135.9	139.2	145.0
75.5°	135.9	136.4	139.7	139.7	137.8	139.2	135.9	131.6	131.1	134.5	140.7
76°	131.1	131.6	135.4	135.9	134.0	135.4	131.6	126.8	125.8	129.7	136.4
76.5°	126.8	127.3	131.1	131.6	129.7	131.1	126.8	122.0	121.1	124.4	132.1
77°	121.5	122.5	126.8	127.8	125.4	126.8	122.5	116.7	115.3	119.1	127.8
77.5°	116.3	117.2	122.5	123.4	121.1	122.5	117.7	111.5	109.6	113.4	122.5
78°	111.0	112.4	117.7	119.1	116.7	118.2	112.4	105.7	103.8	108.1	117.7
78.5°	105.7	107.2	112.9	114.8	112.0	113.4	107.7	100.0	98.1	102.4	112.4
79°	100.0	101.4	108.1	110.0	107.7	108.6	102.4	94.3	92.3	96.7	107.7
79.5°	94.3	96.2	103.4	105.3	102.9	104.3	97.1	88.5	86.1	90.4	102.4
80°	88.0	90.0	98.1	100.5	98.1	99.0	91.9	82.8	79.9	84.2	96.7
80.5°	82.3	84.2	92.8	95.7	92.8	94.3	86.6	76.6	73.7	78.5	91.4
81°	76.6	78.5	87.6	90.9	88.0	89.0	81.3	70.3	67.0	71.8	85.6
81.5°	69.9	72.2	82.3	85.6	82.8	83.7	75.6	64.1	60.8	65.6	79.9
82°	63.6	66.0	76.6	80.4	77.5	78.9	70.3	57.9	54.1	59.3	74.6
82.5°	57.4	59.8	71.3	75.1	72.2	73.2	65.1	52.2	47.8	52.6	68.9
83°	50.7	53.6	66.0	69.9	67.0	67.9	59.8	46.9	41.1	47.4	63.6
83.5°	44.0	47.4	60.8	64.6	61.7	62.7	54.5	41.6	34.9	42.1	57.9
84°	37.3	41.1	55.5	59.3	56.5	57.4	49.3	36.4	28.2	36.8	53.1
84.5°	30.6	35.4	50.2	53.6	50.7	51.7	44.0	31.6	21.5	31.1	47.8
85°	24.4	30.6	45.5	48.3	45.0	45.9	38.8	26.3	17.2	25.8	42.6
85.5°	18.7	26.8	40.2	42.6	39.2	40.2	33.0	22.5	14.8	23.0	37.8
86°	16.3	23.4	34.9	36.8	33.5	34.5	27.8	19.1	12.9	19.6	32.5
86.5°	13.9	19.6	29.2	31.1	27.8	28.7	22.5	15.8	10.5	16.7	27.3
87°	11.5	16.3	23.9	24.9	22.0	22.5	17.2	12.0	8.6	13.4	22.0
87.5°	8.6	12.9	18.2	19.1	16.3	16.7	11.5	8.6	6.2	10.5	16.7
88°	6.2	9.6	13.9	14.4	10.5	11.5	6.7	5.3	3.8	7.2	11.5
88.5°	4.3	6.2	9.6	9.6	5.7	6.2	2.4	2.4	2.4	4.3	6.7



TEST NUMBER: P776568

CATALOG NUMBER: HCDJBL4050CSD-HCD41TRMW-5000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.5	0.5	0.5	0.0	0.0	0.0	0.5	0.0	0.5	0.0



TEST NUMBER: P776568

CATALOG NUMBER: HCDJBL54050CSD-HCD41TRMW-5000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2703.4	2703.4	2703.4	2703.4	2703.4	2703.4
0.5°	2701.9	2703.4	2703.4	2702.9	2702.4	2702.9
1°	2701.0	2702.4	2701.5	2701.9	2701.5	2701.9
1.5°	2700.0	2701.0	2700.0	2700.0	2700.0	2700.5
2°	2698.1	2699.1	2698.1	2698.6	2698.1	2699.1
2.5°	2696.7	2697.2	2696.2	2696.7	2696.2	2697.2
3°	2694.8	2694.8	2693.3	2694.3	2693.8	2695.2
3.5°	2692.4	2692.4	2690.9	2691.9	2691.9	2693.3
4°	2690.0	2690.0	2687.6	2689.0	2689.0	2690.9
4.5°	2687.1	2686.6	2684.7	2686.2	2686.2	2688.1
5°	2683.8	2683.3	2681.4	2682.8	2682.8	2685.2
5.5°	2680.4	2679.9	2677.5	2679.0	2679.5	2681.8
6°	2677.1	2676.1	2673.2	2675.6	2675.6	2678.0
6.5°	2673.2	2672.3	2668.9	2671.3	2671.8	2674.2
7°	2669.4	2668.0	2664.6	2667.0	2667.5	2670.4
7.5°	2664.6	2663.2	2659.8	2662.2	2662.7	2666.1
8°	2660.3	2658.4	2654.6	2657.4	2658.4	2661.8
8.5°	2655.1	2652.7	2649.8	2652.7	2653.1	2657.0
9°	2650.3	2647.4	2644.0	2647.4	2648.4	2651.7
9.5°	2644.5	2641.7	2638.3	2641.7	2642.6	2646.4
10°	2638.8	2635.9	2632.1	2635.4	2636.9	2640.7
10.5°	2633.0	2629.7	2625.4	2629.7	2631.1	2635.0
11°	2626.3	2623.5	2618.7	2623.0	2624.9	2628.7
11.5°	2620.1	2616.8	2612.0	2616.3	2618.2	2622.5
12°	2613.4	2609.6	2604.8	2609.6	2611.0	2615.8
12.5°	2606.2	2601.9	2597.2	2602.4	2604.3	2608.6
13°	2599.1	2594.8	2589.5	2594.8	2596.7	2601.9
13.5°	2590.9	2586.6	2581.8	2587.1	2589.0	2593.8
14°	2583.3	2579.0	2573.7	2579.5	2580.9	2586.6
14.5°	2575.1	2570.4	2565.1	2570.8	2572.8	2578.5
15°	2566.5	2561.7	2556.0	2562.7	2564.6	2570.4
15.5°	2557.9	2553.1	2547.4	2553.6	2555.5	2561.7
16°	2548.8	2543.6	2537.8	2544.5	2546.4	2552.7
16.5°	2539.7	2534.5	2528.3	2535.0	2537.3	2543.6
17°	2530.2	2524.4	2518.2	2525.4	2527.8	2534.5
17.5°	2520.1	2514.4	2508.2	2515.3	2517.7	2524.9
18°	2510.1	2503.9	2497.2	2505.3	2507.7	2514.9
18.5°	2499.5	2493.3	2486.6	2494.8	2497.2	2504.3
19°	2489.0	2482.3	2475.6	2483.8	2486.2	2493.8
19.5°	2478.0	2471.3	2464.1	2472.8	2475.1	2482.8
20°	2467.0	2459.8	2452.7	2461.3	2464.1	2471.8
20.5°	2455.0	2447.9	2440.2	2449.3	2453.1	2460.8
21°	2443.1	2435.4	2427.8	2437.8	2441.2	2448.4

TEST NUMBER: P776568

CATALOG NUMBER: HCDJBL54050CSD-HCD41TRMW-5000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	2406.2	2398.1	2389.5	2400.0	2403.9	2412.0
23°	2393.3	2385.2	2376.1	2387.1	2390.9	2399.1
23.5°	2380.4	2372.3	2362.7	2373.7	2377.5	2386.1
24°	2367.0	2357.9	2348.8	2359.8	2363.7	2372.8
24.5°	2353.1	2344.0	2335.0	2346.4	2350.3	2359.4
25°	2339.3	2329.7	2320.6	2332.1	2336.4	2345.5
25.5°	2324.9	2315.3	2305.3	2317.7	2322.0	2331.6
26°	2310.6	2300.5	2290.9	2303.4	2307.7	2316.8
26.5°	2295.7	2286.1	2276.1	2288.1	2292.8	2302.9
27°	2280.9	2270.8	2260.3	2273.2	2278.0	2288.1
27.5°	2266.1	2255.5	2245.0	2257.9	2262.7	2272.8
28°	2250.7	2239.3	2229.2	2242.1	2246.9	2257.4
28.5°	2235.0	2223.9	2212.9	2225.9	2231.6	2241.7
29°	2219.2	2208.2	2197.2	2209.6	2215.3	2226.3
29.5°	2202.9	2191.9	2179.9	2193.8	2199.1	2210.1
30°	2187.1	2175.1	2164.1	2177.1	2182.8	2193.8
30.5°	2170.4	2158.4	2146.9	2160.3	2166.1	2177.1
31°	2154.1	2141.6	2130.2	2144.0	2149.3	2160.3
31.5°	2137.3	2124.9	2112.0	2126.3	2132.1	2143.6
32°	2120.1	2107.2	2095.2	2109.1	2114.9	2126.8
32.5°	2102.9	2090.0	2077.5	2091.4	2097.6	2109.1
33°	2085.2	2072.3	2059.8	2073.7	2079.9	2091.9
33.5°	2067.5	2054.1	2041.2	2056.0	2062.2	2074.2
34°	2048.8	2035.9	2022.5	2037.3	2043.6	2055.5
34.5°	2030.2	2016.8	2003.8	2018.7	2024.9	2037.3
35°	2011.5	1997.6	1984.2	1999.1	2005.8	2017.7
35.5°	1991.9	1978.0	1964.1	1979.4	1986.1	1998.6
36°	1971.8	1957.9	1944.0	1960.3	1966.5	1979.0
36.5°	1951.2	1937.3	1923.5	1939.3	1945.5	1958.4
37°	1929.7	1915.8	1901.9	1918.2	1924.4	1937.3
37.5°	1905.3	1892.8	1879.0	1896.7	1902.9	1914.9
38°	1878.0	1867.5	1852.7	1874.2	1879.4	1891.4
38.5°	1850.3	1840.2	1823.9	1847.9	1851.7	1865.1
39°	1821.1	1810.5	1795.7	1818.7	1823.9	1837.3
39.5°	1790.9	1778.0	1765.1	1788.5	1794.3	1806.7
40°	1759.8	1744.5	1732.1	1757.0	1763.2	1773.7
40.5°	1728.2	1711.0	1699.1	1724.4	1729.7	1739.7
41°	1695.7	1677.1	1664.6	1691.4	1696.2	1705.3
41.5°	1662.2	1642.1	1629.7	1658.4	1661.3	1670.8
42°	1628.2	1608.6	1594.8	1623.9	1625.9	1634.5
42.5°	1594.3	1575.1	1558.4	1589.5	1590.0	1599.5
43°	1559.8	1541.2	1522.5	1554.6	1554.6	1564.1
43.5°	1525.9	1506.2	1485.7	1518.7	1517.7	1528.7



TEST NUMBER: P776568

CATALOG NUMBER: HCDJBL54050CSD-HCD41TRMW-5000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1422.5	1402.4	1378.0	1408.6	1407.2	1421.1
45.5°	1388.1	1367.5	1342.1	1371.3	1369.9	1385.2
46°	1353.6	1333.5	1306.7	1334.0	1333.0	1349.8
46.5°	1319.2	1297.6	1270.8	1297.6	1296.2	1313.9
47°	1283.3	1262.2	1235.9	1259.3	1259.3	1277.0
47.5°	1248.8	1227.3	1200.0	1222.0	1223.0	1241.2
48°	1213.9	1192.4	1165.1	1183.7	1187.1	1205.3
48.5°	1178.5	1156.9	1129.2	1147.9	1151.2	1169.4
49°	1142.6	1123.0	1095.7	1110.1	1115.8	1134.0
49.5°	1107.2	1089.0	1061.7	1074.2	1080.4	1098.6
50°	1071.8	1054.6	1026.8	1037.3	1045.5	1063.6
50.5°	1036.9	1020.6	992.8	1002.4	1010.5	1028.7
51°	1002.4	988.0	959.3	967.0	975.6	993.8
51.5°	967.5	954.6	926.3	933.0	941.2	960.3
52°	933.0	922.0	893.3	899.1	907.7	926.3
52.5°	899.1	889.5	860.3	867.0	874.7	893.3
53°	865.6	857.4	828.2	834.0	842.1	860.3
53.5°	832.5	825.8	797.1	801.9	809.6	827.8
54°	799.5	793.8	765.6	771.3	777.5	795.7
54.5°	767.5	763.2	735.4	741.2	746.4	764.1
55°	735.9	733.0	705.7	711.0	716.8	733.0
55.5°	704.8	702.9	676.6	682.8	687.1	702.9
56°	674.2	672.7	647.4	654.6	657.4	673.2
56.5°	644.5	644.0	619.6	627.3	629.2	643.5
57°	614.8	615.3	592.4	600.5	601.9	614.8
57.5°	586.1	587.6	565.6	574.2	575.1	586.6
58°	558.9	560.3	540.2	549.8	548.8	558.9
58.5°	531.6	534.0	515.3	525.4	524.4	532.1
59°	505.3	507.7	490.9	501.4	499.5	506.2
59.5°	479.4	482.3	467.9	478.5	476.6	480.9
60°	455.0	457.9	445.0	456.9	453.6	456.0
60.5°	433.5	434.0	423.0	435.4	432.1	432.5
61°	411.5	411.0	401.9	414.8	410.5	409.1
61.5°	389.5	389.0	382.3	394.7	390.4	387.1
62°	367.9	367.5	363.2	376.1	370.8	366.0
62.5°	345.9	347.4	344.5	357.9	352.2	345.9
63°	327.3	328.2	326.8	340.2	334.0	326.8
63.5°	310.1	309.6	310.1	323.4	317.2	309.1
64°	292.8	292.3	294.3	307.2	301.0	291.9
64.5°	277.0	276.6	279.4	291.9	285.6	275.6
65°	262.7	262.2	265.1	277.0	270.3	261.7
65.5°	249.3	249.3	251.7	263.6	257.9	248.3
66°	236.8	237.3	239.7	250.7	245.0	235.4



TEST NUMBER: P776568

CATALOG NUMBER: HCDJBL54050CSD-HCD41TRMW-5000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	207.7	209.6	209.1	217.2	212.9	204.3
68°	200.5	201.9	201.4	208.1	203.8	196.2
68.5°	193.8	195.2	194.3	200.0	196.2	188.5
69°	188.0	189.5	188.0	192.3	189.5	183.3
69.5°	183.3	184.2	182.8	186.1	183.7	179.9
70°	180.4	180.4	178.9	181.3	179.4	176.6
70.5°	177.5	177.5	176.1	178.0	175.6	173.2
71°	174.2	174.2	173.2	175.1	172.3	169.9
71.5°	171.3	171.3	170.3	171.8	169.4	167.0
72°	167.9	167.9	167.0	168.9	166.0	163.6
72.5°	164.6	165.1	163.6	165.6	162.7	160.8
73°	161.2	162.2	160.8	162.7	159.3	156.9
73.5°	157.9	158.9	157.4	159.8	155.5	153.1
74°	154.5	155.5	154.5	156.0	151.7	148.8
74.5°	150.7	152.2	150.7	152.2	147.4	144.5
75°	146.9	148.3	146.9	148.8	143.5	140.7
75.5°	143.1	144.5	143.1	144.5	138.8	135.9
76°	139.2	140.7	139.2	140.7	134.5	131.1
76.5°	134.9	136.4	135.4	136.4	129.7	126.8
77°	130.6	132.5	131.1	132.1	124.9	121.5
77.5°	126.3	128.2	127.3	127.8	120.1	116.3
78°	122.0	123.9	123.0	123.4	114.8	111.0
78.5°	117.2	119.6	118.2	118.7	109.6	105.7
79°	112.4	114.8	113.9	113.9	104.3	100.0
79.5°	107.7	110.0	109.1	108.6	98.6	94.3
80°	102.9	105.3	103.8	103.8	92.8	88.0
80.5°	97.6	100.0	99.0	98.6	87.1	82.3
81°	92.8	95.2	94.3	93.3	81.3	76.6
81.5°	87.6	90.0	89.0	88.0	75.1	69.9
82°	81.8	84.7	83.7	82.3	68.9	63.6
82.5°	76.6	79.4	78.5	77.0	62.7	57.4
83°	71.3	73.7	72.7	71.8	56.9	50.7
83.5°	65.6	68.4	67.5	66.5	50.7	44.0
84°	59.8	62.7	62.2	60.8	44.5	37.3
84.5°	54.1	56.9	56.5	55.5	38.8	30.6
85°	48.3	51.2	50.7	50.7	33.5	24.4
85.5°	42.6	45.5	45.0	45.5	29.2	18.7
86°	36.4	39.7	39.2	40.2	25.4	16.3
86.5°	30.6	33.5	33.0	34.9	22.0	13.9
87°	24.9	27.8	27.3	29.2	18.2	11.5
87.5°	18.7	21.5	21.1	23.9	14.8	8.6
88°	12.9	15.8	15.3	18.2	11.5	6.2
88.5°	7.7	12.0	11.5	13.9	8.1	4.3



TEST NUMBER: P776568

CATALOG NUMBER: HCDJBS4050CSD-HCD41TRMW-5000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.5	0.5	0.5	0.5	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°	2436.9	2449.3	2465.1	2480.4	2491.4	2499.1	2490.5	2487.6	2480.4	2467.0	2449.3
22°	2424.4	2437.8	2453.6	2468.9	2479.9	2488.1	2479.0	2476.6	2469.4	2455.5	2437.3



44°	1492.8	1525.4	1567.5	1604.8	1614.4	1632.1	1600.0	1594.3	1580.4	1568.4	1535.9
44.5°	1456.5	1490.0	1531.6	1568.0	1576.6	1597.6	1565.1	1558.9	1543.1	1532.1	1500.5



66.5°	223.9	225.8	231.1	234.9	232.1	235.9	225.8	227.3	223.4	231.6	231.1
67°	213.9	215.3	219.6	222.0	219.1	223.0	213.9	215.3	210.5	219.6	220.1



89°	2.4	2.9	4.8	5.3	1.0	1.4	0.0	0.5	0.5	1.4	2.9
89.5°	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.5	0.0	0.5	0.0



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21.5°	2431.1	2423.5	2415.3	2425.4	2428.7	2436.9
22°	2419.2	2411.0	2402.9	2412.9	2416.3	2424.4



44°	1490.9	1471.3	1449.8	1482.3	1480.4	1492.8
44.5°	1457.0	1436.9	1413.4	1445.5	1443.6	1456.5

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66.5°	226.3	227.3	228.7	238.8	233.0	223.9
67°	216.3	217.2	218.2	227.8	222.5	213.9

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89°	3.3	8.1	7.7	9.6	4.8	2.4
89.5°	0.0	4.3	4.3	5.3	1.9	0.5

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Scaled Data Report



(END OF REPORT)