

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: P776765

Luminaire Tested: HCDJBS4050CSD-HCD81TRMW-5000lm-2700K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P776765
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-2700K
Description: 8 INCH ROUND SHALLOW-WIDE MATTE WHITE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 2700K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5623.4 lumens
Efficiency: N/A
Efficacy: 117.2 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

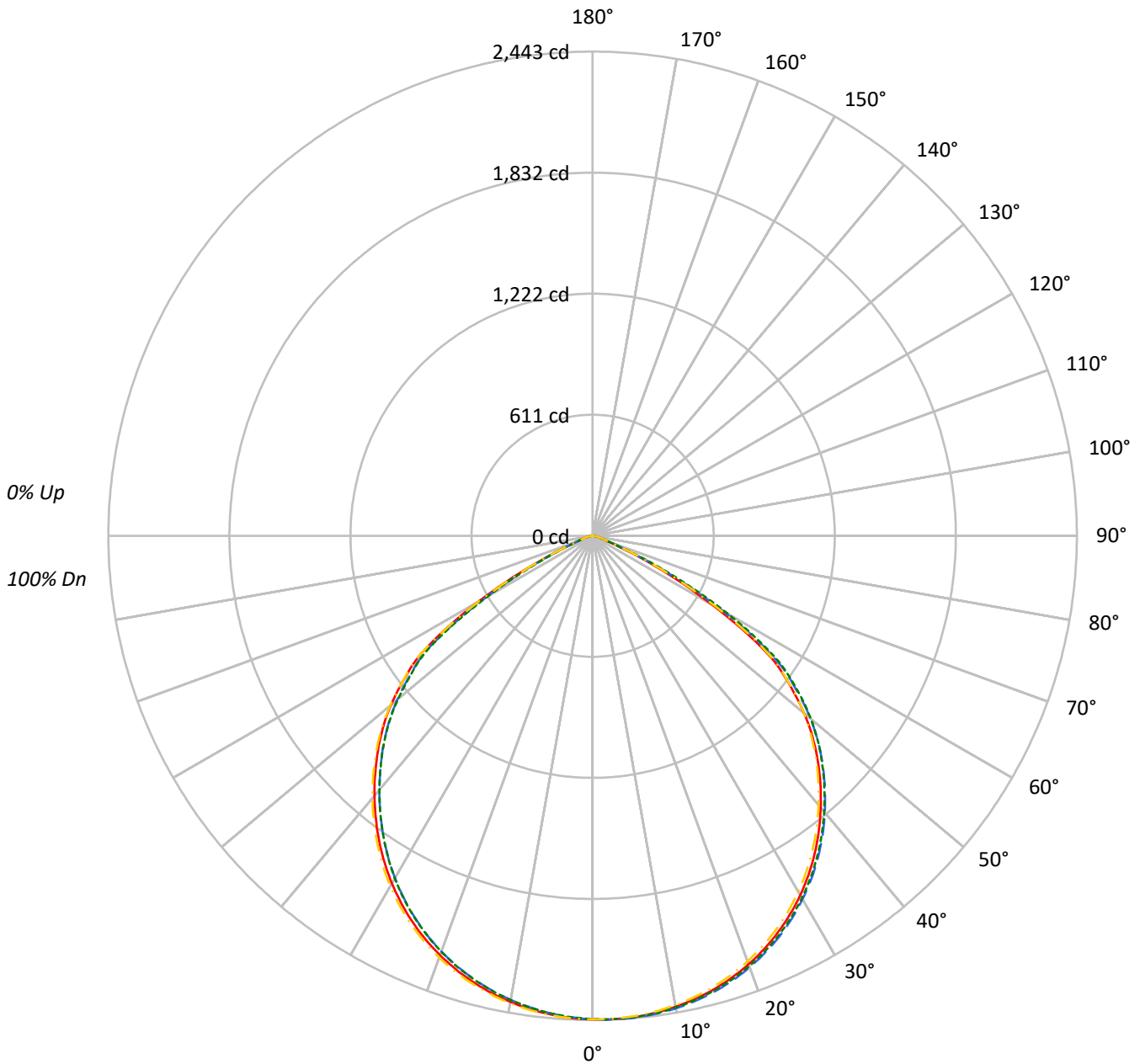
Input Watts (W): 48
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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									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	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°	74500	74500	74500	74500
5°	74702	74729	74325	74129
10°	74815	74942	74053	73743
15°	74852	75067	73673	73240
20°	74752	75077	73167	72562
25°	74420	74882	72409	71611
30°	73817	74413	71392	70334
35°	72830	73609	70009	68652
40°	71359	72412	68235	66676
45°	69358	70779	66133	64363
50°	66130	68295	63080	60805
55°	60382	63320	57545	55123
60°	42700	48073	40672	37223
65°	20964	25082	18927	17085
70°	6668	7364	6713	6588
75°	4836	5426	4895	5002
80°	3358	4009	3358	3604
85°	1927	2697	1927	2242

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 67.5°
 Vertical Angle: 45°
 Luminance: 70934 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	231.0	4.1
10°-20°	662.6	11.8
20°-30°	1002.9	17.8
30°-40°	1195.4	21.3
40°-50°	1206.5	21.5
50°-60°	958.3	17.0
60°-70°	310.7	5.5
70°-80°	47.7	0.8
80°-90°	8.3	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°	1896.5	33.7
0°-40°	3092.0	55.0
0°-60°	5256.7	93.5
0°-90°	5623.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5623.4	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2440	2440	2440	2440	2440	
5°	2438	2438	2425	2419	2438	232
15°	2368	2375	2331	2317	2368	668
25°	2209	2223	2150	2126	2209	1018
35°	1954	1975	1878	1842	1954	1221
45°	1606	1639	1532	1491	1606	1236
55°	1134	1190	1081	1036	1134	979
65°	290	347	262	236	290	314
75°	41	46	42	42	41	45
85°	6	8	6	6	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°	2440.2	2440.2	2440.2	2440.2	2440.2	2440.2	2440.2	2440.2	2440.2	2440.2	2440.2
0.5°	2441.6	2441.1	2441.1	2441.6	2439.3	2439.7	2440.7	2440.7	2440.2	2439.3	2438.8
1°	2441.6	2441.6	2442.0	2442.5	2440.2	2440.2	2440.2	2440.2	2439.3	2437.9	2437.5
1.5°	2442.0	2442.0	2442.5	2442.9	2440.7	2440.2	2440.2	2439.7	2437.9	2436.6	2435.6
2°	2441.6	2442.0	2442.9	2443.4	2441.1	2440.2	2439.7	2438.8	2437.0	2434.7	2433.8
2.5°	2441.1	2442.0	2442.9	2443.4	2441.1	2440.2	2438.8	2437.5	2435.2	2433.4	2432.0
3°	2441.1	2442.0	2442.9	2443.4	2440.7	2439.7	2438.4	2436.1	2433.8	2431.1	2430.2
3.5°	2440.2	2441.6	2442.5	2443.4	2440.7	2438.8	2437.0	2434.7	2432.0	2428.8	2427.4
4°	2439.7	2441.1	2442.0	2442.5	2440.2	2438.4	2435.6	2432.9	2429.7	2426.5	2425.2
4.5°	2438.4	2440.2	2441.6	2442.0	2439.3	2437.0	2434.3	2431.1	2427.4	2423.8	2422.0
5°	2437.5	2439.3	2441.1	2441.1	2438.4	2436.1	2432.5	2428.8	2425.2	2421.1	2419.2
5.5°	2436.1	2437.9	2439.7	2440.2	2437.0	2434.7	2430.6	2426.5	2422.0	2417.9	2416.1
6°	2434.3	2436.6	2438.4	2438.8	2435.6	2432.9	2428.4	2424.3	2419.2	2414.7	2412.9
6.5°	2432.5	2435.2	2437.0	2437.5	2434.3	2431.1	2426.1	2421.5	2416.1	2411.0	2409.2
7°	2430.2	2433.4	2435.6	2435.6	2432.5	2428.8	2423.8	2418.8	2412.9	2407.4	2405.1
7.5°	2427.9	2431.1	2433.8	2433.8	2430.6	2426.5	2421.5	2415.1	2409.2	2403.8	2401.5
8°	2425.6	2428.8	2431.5	2432.0	2428.4	2424.3	2418.3	2412.0	2405.6	2399.7	2396.9
8.5°	2422.4	2426.5	2429.3	2429.3	2426.1	2421.1	2415.1	2408.3	2401.5	2395.6	2392.8
9°	2419.7	2424.3	2427.0	2427.0	2423.3	2418.3	2411.5	2404.7	2397.4	2391.0	2388.3
9.5°	2416.5	2421.1	2424.3	2424.3	2420.6	2415.6	2408.3	2400.6	2393.3	2386.4	2383.2
10°	2413.3	2418.3	2421.1	2421.1	2417.4	2412.0	2404.7	2396.5	2388.7	2381.4	2378.2
10.5°	2409.7	2415.1	2417.9	2417.9	2414.2	2408.3	2401.0	2391.9	2383.7	2376.4	2372.8
11°	2406.0	2411.5	2414.7	2414.7	2410.6	2404.7	2396.5	2387.3	2378.7	2370.9	2367.3
11.5°	2401.9	2407.9	2411.0	2411.0	2406.9	2400.6	2391.9	2382.8	2373.7	2365.5	2361.8
12°	2397.8	2404.2	2407.4	2407.4	2402.8	2396.5	2387.3	2377.3	2368.2	2360.0	2355.9
12.5°	2393.7	2400.1	2403.3	2403.3	2399.2	2391.9	2382.8	2372.3	2362.3	2353.6	2349.5
13°	2388.7	2395.6	2399.2	2398.7	2394.6	2387.3	2377.8	2366.8	2356.4	2347.7	2343.6
13.5°	2383.7	2390.5	2394.6	2394.2	2390.1	2382.3	2372.8	2360.9	2350.4	2341.3	2336.8
14°	2378.7	2386.0	2390.1	2389.6	2385.1	2377.3	2367.3	2355.5	2344.1	2335.0	2329.9
14.5°	2373.7	2381.0	2385.5	2384.6	2380.5	2371.9	2361.4	2349.1	2337.7	2328.1	2323.1
15°	2368.2	2376.4	2380.5	2379.6	2375.0	2366.8	2355.5	2342.7	2330.9	2320.8	2316.3
15.5°	2362.3	2370.5	2375.0	2374.1	2369.6	2360.9	2349.5	2336.8	2324.0	2314.0	2308.5
16°	2356.4	2365.0	2369.6	2368.2	2363.7	2355.0	2343.2	2329.5	2316.7	2306.3	2300.8
16.5°	2350.4	2359.1	2363.7	2362.3	2358.2	2349.1	2336.8	2322.7	2309.4	2299.0	2293.0
17°	2343.6	2353.2	2357.7	2356.4	2352.3	2342.7	2329.9	2315.4	2302.2	2291.2	2284.8
17.5°	2337.2	2346.8	2351.8	2350.0	2345.9	2336.3	2322.7	2308.1	2294.0	2282.6	2276.6
18°	2330.4	2340.0	2345.0	2343.6	2339.5	2329.5	2315.8	2300.3	2286.2	2274.4	2268.0
18.5°	2323.6	2333.6	2338.6	2336.3	2332.7	2322.2	2308.5	2292.6	2278.0	2265.7	2259.3
19°	2315.8	2326.8	2331.3	2329.9	2325.4	2314.9	2300.8	2284.4	2269.3	2256.6	2250.2
19.5°	2308.5	2319.5	2324.5	2322.7	2318.1	2307.6	2293.0	2276.2	2260.7	2247.9	2241.1
20°	2300.8	2311.7	2317.2	2315.4	2310.8	2299.9	2284.8	2268.0	2252.0	2238.8	2231.5
20.5°	2293.0	2304.0	2309.4	2307.6	2303.1	2292.1	2276.6	2258.9	2242.5	2229.3	2222.0
21°	2284.4	2296.2	2301.2	2299.9	2294.9	2283.9	2267.5	2249.8	2233.4	2219.2	2211.9

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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°	2258.4	2270.7	2276.6	2274.4	2269.8	2258.0	2240.6	2222.0	2203.7	2188.7	2181.0
23°	2248.8	2262.1	2267.5	2265.7	2261.1	2248.8	2231.5	2211.5	2193.3	2178.7	2170.0
23.5°	2239.7	2252.9	2258.9	2256.6	2251.6	2239.7	2221.5	2201.9	2182.8	2167.3	2159.1
24°	2229.7	2243.4	2249.3	2247.5	2242.5	2230.2	2211.5	2191.4	2172.3	2156.8	2147.7
24.5°	2219.7	2233.8	2239.7	2237.5	2232.9	2220.1	2201.5	2181.0	2160.9	2145.0	2135.9
25°	2209.2	2223.8	2229.7	2227.4	2222.9	2209.7	2191.4	2170.0	2149.5	2133.6	2124.0
25.5°	2199.2	2213.8	2219.7	2217.4	2212.9	2199.6	2181.0	2158.6	2138.6	2122.2	2112.2
26°	2188.7	2203.3	2209.2	2207.4	2202.4	2189.2	2170.0	2147.7	2126.7	2109.9	2100.3
26.5°	2177.8	2192.8	2199.2	2196.9	2191.4	2178.7	2158.6	2136.3	2114.9	2097.6	2087.6
27°	2166.4	2181.9	2187.8	2186.0	2180.5	2167.8	2147.7	2124.5	2102.6	2085.3	2074.8
27.5°	2155.0	2170.5	2177.3	2174.6	2170.0	2156.4	2135.9	2112.6	2090.3	2072.5	2062.1
28°	2143.1	2159.1	2165.9	2163.2	2158.6	2145.0	2124.0	2099.9	2077.5	2059.8	2049.3
28.5°	2131.3	2147.2	2154.1	2151.8	2146.8	2133.1	2112.2	2087.6	2064.8	2046.1	2035.6
29°	2119.5	2135.9	2142.2	2140.0	2134.9	2120.8	2099.4	2074.8	2052.0	2033.3	2022.0
29.5°	2106.7	2124.0	2130.4	2128.1	2123.1	2109.0	2087.1	2062.1	2038.4	2019.2	2008.3
30°	2093.9	2111.3	2117.6	2115.8	2110.8	2096.2	2074.4	2048.8	2025.1	2005.6	1994.2
30.5°	2081.6	2098.5	2105.3	2103.1	2098.5	2083.9	2061.6	2035.6	2011.0	1991.4	1979.6
31°	2068.0	2085.7	2092.6	2090.3	2085.3	2070.7	2047.9	2022.0	1997.4	1977.3	1965.5
31.5°	2054.8	2072.5	2079.4	2077.1	2072.5	2057.5	2034.7	2007.8	1983.2	1962.7	1950.9
32°	2041.1	2058.9	2066.2	2063.9	2059.3	2044.3	2021.0	1994.2	1968.7	1948.2	1936.3
32.5°	2027.0	2045.2	2052.9	2050.2	2045.6	2030.6	2006.9	1979.6	1954.1	1933.1	1920.4
33°	2013.3	2031.5	2039.3	2036.5	2032.4	2016.9	1992.8	1965.5	1939.0	1918.1	1905.8
33.5°	1998.7	2017.4	2025.1	2022.9	2018.3	2002.8	1978.2	1950.4	1924.5	1902.1	1889.8
34°	1983.7	2002.8	2011.0	2008.3	2003.7	1988.7	1964.1	1935.4	1909.0	1886.6	1874.3
34.5°	1969.1	1988.2	1996.4	1993.7	1989.2	1973.7	1949.1	1920.4	1893.5	1871.2	1857.9
35°	1954.1	1973.2	1981.9	1979.1	1975.0	1959.1	1934.0	1905.3	1878.4	1855.2	1842.5
35.5°	1938.6	1958.2	1966.8	1964.1	1960.0	1944.0	1918.5	1889.4	1862.5	1838.8	1826.0
36°	1923.1	1943.1	1951.3	1949.5	1945.4	1929.0	1903.5	1873.4	1846.1	1822.9	1809.6
36.5°	1907.1	1927.2	1935.8	1934.0	1929.5	1913.5	1888.0	1857.9	1830.1	1806.5	1793.2
37°	1891.2	1911.2	1920.4	1918.5	1914.4	1898.0	1872.1	1842.5	1813.3	1789.6	1776.8
37.5°	1875.3	1895.3	1904.9	1902.6	1898.5	1881.6	1856.1	1825.6	1796.9	1773.2	1759.5
38°	1858.4	1878.9	1888.5	1886.6	1882.5	1866.1	1839.7	1809.2	1780.5	1755.9	1742.7
38.5°	1842.0	1862.5	1872.1	1870.7	1866.1	1849.7	1823.3	1792.8	1763.6	1739.0	1725.4
39°	1825.1	1845.6	1855.7	1853.8	1850.2	1833.3	1806.9	1775.9	1746.8	1721.7	1708.5
39.5°	1807.8	1828.8	1838.8	1837.4	1833.8	1816.5	1789.6	1759.1	1729.5	1704.4	1691.2
40°	1790.5	1811.5	1822.4	1820.6	1816.9	1800.1	1772.7	1741.3	1712.1	1687.1	1673.4
40.5°	1773.2	1794.2	1804.6	1803.7	1800.1	1782.8	1755.4	1724.0	1694.8	1668.9	1656.1
41°	1755.0	1776.4	1787.3	1786.4	1782.3	1765.5	1738.1	1706.7	1677.1	1651.6	1637.9
41.5°	1736.8	1758.6	1769.6	1769.1	1765.5	1748.1	1720.8	1689.4	1659.8	1633.8	1620.1
42°	1719.0	1740.9	1752.2	1751.8	1748.1	1730.4	1703.0	1672.1	1641.5	1615.6	1601.9
42.5°	1700.8	1722.6	1734.5	1734.0	1730.4	1712.6	1685.3	1653.8	1623.3	1597.8	1584.1
43°	1682.5	1703.9	1716.2	1716.2	1713.1	1694.8	1667.5	1636.1	1605.5	1579.1	1565.9
43.5°	1663.9	1685.7	1698.0	1698.5	1694.8	1676.6	1649.3	1617.8	1587.3	1560.9	1547.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1606.4	1628.3	1642.0	1642.9	1639.3	1621.0	1594.1	1563.2	1531.7	1504.9	1492.1
45.5°	1586.4	1608.7	1622.4	1624.2	1620.6	1601.9	1575.0	1543.6	1513.1	1486.2	1473.4
46°	1566.8	1589.6	1603.3	1605.1	1601.4	1582.8	1556.3	1524.9	1493.9	1467.0	1454.3
46.5°	1546.8	1568.6	1583.7	1585.5	1582.3	1563.6	1536.7	1505.8	1474.3	1447.9	1435.1
47°	1525.8	1548.6	1563.6	1565.9	1563.2	1543.6	1516.7	1485.7	1454.7	1428.3	1415.1
47.5°	1504.9	1527.6	1543.1	1545.9	1543.6	1523.5	1496.6	1465.7	1435.1	1407.8	1395.1
48°	1483.9	1506.2	1522.6	1525.4	1522.6	1503.5	1478.0	1446.1	1415.1	1387.8	1375.0
48.5°	1461.6	1484.3	1500.8	1504.4	1502.6	1483.4	1456.1	1425.6	1394.1	1367.3	1354.0
49°	1439.7	1462.9	1479.3	1483.9	1481.6	1461.6	1435.1	1404.2	1372.3	1345.4	1332.2
49.5°	1416.5	1440.2	1457.0	1461.6	1460.2	1440.2	1413.3	1382.3	1350.9	1323.5	1309.9
50°	1392.3	1416.5	1434.2	1439.2	1437.9	1418.3	1391.9	1360.4	1328.1	1300.7	1286.6
50.5°	1367.7	1391.4	1410.5	1415.1	1414.6	1396.0	1368.6	1336.7	1304.8	1276.6	1262.9
51°	1343.6	1367.3	1385.9	1391.9	1391.4	1371.4	1344.0	1312.6	1280.2	1252.4	1238.8
51.5°	1317.1	1341.3	1360.4	1366.8	1367.7	1347.2	1319.9	1288.0	1256.5	1229.2	1214.6
52°	1291.2	1316.2	1335.4	1341.7	1342.2	1322.2	1294.8	1262.5	1230.6	1203.7	1189.1
52.5°	1265.2	1289.4	1309.4	1315.3	1316.7	1296.2	1268.8	1237.0	1206.0	1178.6	1164.5
53°	1239.2	1262.9	1283.0	1290.3	1290.7	1270.7	1242.9	1211.4	1180.9	1154.0	1140.4
53.5°	1213.7	1236.5	1257.0	1263.8	1265.2	1245.6	1217.4	1187.3	1157.2	1131.3	1118.0
54°	1189.1	1212.4	1231.9	1239.7	1240.1	1220.1	1193.2	1163.1	1134.4	1108.0	1094.4
54.5°	1163.6	1187.3	1206.9	1214.6	1215.1	1196.4	1169.1	1138.1	1109.4	1083.0	1069.8
55°	1134.4	1157.7	1178.6	1186.8	1189.6	1169.5	1142.2	1110.8	1081.1	1055.2	1042.0
55.5°	1102.1	1125.3	1147.7	1155.9	1160.0	1140.4	1111.7	1079.8	1047.4	1020.5	1008.7
56°	1064.3	1090.7	1111.2	1119.9	1126.7	1107.6	1077.0	1042.4	1009.6	983.6	970.9
56.5°	1024.2	1051.5	1072.5	1082.1	1089.8	1071.1	1040.1	1003.7	970.9	943.1	930.3
57°	981.4	1008.2	1031.5	1041.5	1050.6	1030.1	999.1	963.1	929.0	901.2	887.5
57.5°	936.3	961.8	988.7	1000.5	1009.6	987.7	956.8	921.2	886.6	859.3	843.8
58°	889.3	915.3	944.5	958.6	967.7	943.1	911.2	876.6	843.3	815.1	799.6
58.5°	843.3	868.4	898.4	915.3	924.9	898.9	866.6	832.8	800.0	772.7	755.4
59°	794.6	821.9	852.9	871.1	879.3	850.6	819.2	786.4	754.9	728.1	709.8
59.5°	747.6	774.1	806.0	824.6	833.3	804.1	771.8	739.9	710.3	683.9	665.6
60°	699.3	728.1	759.0	779.1	787.3	757.2	724.4	692.5	666.1	640.6	622.8
60.5°	653.8	682.0	711.6	731.7	741.3	712.1	677.0	647.4	621.9	596.8	579.5
61°	607.8	636.9	664.3	684.3	693.4	666.1	631.0	600.5	577.2	554.9	537.6
61.5°	563.1	593.2	618.7	636.0	647.9	622.8	585.9	555.8	534.0	513.9	496.1
62°	519.8	548.5	574.1	589.1	602.8	577.2	542.2	511.6	491.6	473.8	457.0
62.5°	477.9	506.2	529.9	541.7	556.3	533.5	498.4	468.4	452.4	436.5	420.5
63°	437.4	464.3	486.6	496.6	512.1	490.7	460.2	429.6	413.2	399.1	383.6
63.5°	397.7	423.7	442.8	450.6	469.3	451.5	421.4	390.5	374.0	361.3	346.7
64°	359.5	383.6	401.8	407.8	428.7	411.9	382.7	351.3	334.9	323.9	310.3
64.5°	323.5	346.3	361.7	366.3	388.2	372.7	344.0	312.5	296.1	286.1	277.5
65°	290.2	309.8	323.0	327.1	347.2	333.0	305.7	278.4	262.0	253.3	247.4
65.5°	256.5	274.7	286.6	290.7	306.6	293.9	271.1	246.9	231.0	222.3	219.6
66°	222.3	241.0	251.0	255.1	269.3	257.9	239.6	218.2	201.4	194.1	193.6



TEST NUMBER: P776765

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-2700K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	145.8	155.4	161.7	165.4	173.6	168.6	158.1	145.3	127.1	127.6	130.3
68°	128.9	137.6	144.9	148.1	148.1	143.5	135.3	126.7	109.8	112.1	114.4
68.5°	112.1	120.3	128.5	130.8	126.2	121.6	116.6	110.3	96.1	100.2	101.1
69°	95.7	103.0	112.1	113.9	108.0	103.9	101.6	96.6	86.1	90.2	90.2
69.5°	78.8	85.7	95.7	96.6	93.4	90.7	88.8	85.7	79.3	82.0	81.6
70°	74.7	77.5	79.3	79.3	82.5	81.1	79.7	77.9	75.2	75.6	76.1
70.5°	71.1	72.4	73.8	73.8	75.6	75.2	74.7	73.4	71.5	72.0	72.0
71°	67.0	68.8	70.2	70.2	71.5	71.5	71.1	69.7	67.9	68.3	68.8
71.5°	63.3	65.6	67.0	67.0	68.3	67.9	67.4	66.1	63.8	64.7	65.2
72°	59.7	62.0	63.3	63.3	64.7	64.7	64.2	62.9	60.6	61.5	62.0
72.5°	56.5	58.3	60.1	60.1	61.5	61.1	60.6	59.2	57.0	57.9	58.8
73°	52.8	55.1	56.5	57.0	58.3	57.9	57.4	56.0	53.8	54.7	55.6
73.5°	49.7	51.9	53.3	53.8	55.1	54.7	54.2	52.8	50.6	51.5	52.4
74°	46.9	48.7	50.6	50.6	51.9	51.5	51.5	49.7	47.4	48.3	49.2
74.5°	43.7	45.6	47.4	47.4	48.7	48.7	48.3	46.5	44.2	45.6	46.5
75°	41.0	42.8	44.6	44.6	46.0	45.6	45.6	43.7	41.5	42.4	43.7
75.5°	38.3	40.1	41.9	41.9	43.3	42.8	42.8	41.0	39.2	39.6	41.0
76°	35.5	37.4	39.2	39.2	40.5	40.5	40.1	38.3	36.4	37.4	38.7
76.5°	33.3	34.6	36.4	36.9	38.3	37.8	37.8	36.0	34.2	35.1	36.0
77°	31.0	32.3	34.2	34.6	35.5	35.5	35.1	33.7	31.4	32.3	33.7
77.5°	28.7	30.1	31.9	32.3	33.3	33.3	32.8	31.0	29.2	30.1	31.4
78°	26.4	27.8	29.6	30.1	31.0	31.0	30.5	28.7	26.9	27.8	28.7
78.5°	24.6	26.0	27.3	27.8	28.7	28.7	28.2	26.4	24.6	25.5	26.9
79°	22.8	23.7	25.5	26.0	26.4	26.4	26.0	24.1	22.8	23.2	24.6
79.5°	20.5	21.9	23.7	23.7	24.6	24.6	24.1	22.3	21.0	21.4	22.8
80°	19.1	20.0	21.4	21.9	22.8	22.8	22.3	20.5	19.1	19.6	21.0
80.5°	17.3	18.2	19.6	20.0	21.0	21.0	20.5	18.7	17.3	17.8	19.1
81°	15.5	16.4	18.2	18.7	19.1	19.1	18.7	16.9	15.5	15.9	17.3
81.5°	14.1	15.0	16.4	16.9	17.3	17.3	16.9	15.5	14.1	14.6	15.5
82°	12.8	13.7	15.0	15.0	15.9	15.9	15.5	13.7	12.8	12.8	14.1
82.5°	10.9	11.8	13.2	13.7	14.1	14.1	13.7	12.3	10.9	11.4	12.8
83°	9.6	10.5	11.8	12.3	12.8	12.8	12.3	10.9	9.6	10.0	11.4
83.5°	8.7	9.1	10.5	10.9	11.4	11.4	10.9	9.6	8.7	8.7	10.0
84°	7.3	7.7	9.1	9.6	10.0	10.0	9.6	8.2	7.3	7.7	8.7
84.5°	6.4	6.8	7.7	8.2	8.7	8.7	8.2	6.8	6.4	6.4	7.3
85°	5.5	5.9	6.8	7.3	7.7	7.7	7.3	5.9	5.5	5.5	6.4
85.5°	4.1	4.6	5.9	6.4	6.4	6.4	5.9	4.6	4.6	4.1	5.5
86°	3.6	3.6	5.0	5.0	5.5	5.5	5.0	3.6	3.6	3.2	4.6
86.5°	2.7	2.7	4.1	4.1	4.6	4.6	4.1	3.2	2.7	2.7	3.6
87°	1.8	2.3	3.2	3.6	3.6	3.6	3.2	2.3	1.8	1.8	2.7
87.5°	1.4	1.8	2.3	2.7	2.7	2.7	2.7	1.8	1.4	1.4	2.3
88°	0.9	1.4	1.8	1.8	2.3	2.3	1.8	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: P776765
CATALOG NUMBER: HCDJBL4050CSD-HCD81TRMW-5000lm-2700K

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: P776765

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2440.2	2440.2	2440.2	2440.2	2440.2	2440.2
0.5°	2439.3	2437.5	2438.4	2439.7	2441.1	2441.6
1°	2437.9	2436.1	2437.5	2439.3	2441.1	2441.6
1.5°	2436.6	2434.7	2436.1	2438.8	2441.1	2442.0
2°	2434.7	2433.4	2434.7	2437.9	2440.7	2441.6
2.5°	2432.9	2431.5	2433.4	2436.6	2439.7	2441.1
3°	2430.6	2429.3	2431.5	2435.2	2438.8	2441.1
3.5°	2428.4	2427.0	2429.7	2433.8	2437.9	2440.2
4°	2425.6	2424.7	2427.4	2432.0	2436.6	2439.7
4.5°	2422.9	2422.0	2425.2	2430.2	2435.2	2438.4
5°	2420.2	2418.8	2422.9	2427.9	2433.4	2437.5
5.5°	2416.5	2416.1	2420.2	2425.6	2431.5	2436.1
6°	2413.3	2412.9	2417.0	2423.3	2429.3	2434.3
6.5°	2410.1	2409.2	2413.8	2420.2	2427.0	2432.5
7°	2406.0	2405.6	2411.0	2417.4	2424.7	2430.2
7.5°	2402.4	2401.5	2407.4	2414.2	2422.0	2427.9
8°	2397.8	2397.4	2403.3	2410.6	2419.2	2425.6
8.5°	2393.7	2392.8	2399.2	2407.4	2415.6	2422.4
9°	2389.2	2388.3	2394.6	2403.3	2412.4	2419.7
9.5°	2384.2	2383.7	2390.5	2399.2	2408.8	2416.5
10°	2379.1	2378.7	2386.0	2395.1	2405.1	2413.3
10.5°	2373.7	2373.7	2381.0	2390.5	2401.0	2409.7
11°	2368.7	2368.2	2376.0	2386.0	2396.9	2406.0
11.5°	2362.7	2362.7	2370.5	2381.0	2392.8	2401.9
12°	2356.8	2356.8	2365.0	2376.0	2387.8	2397.8
12.5°	2350.9	2350.9	2359.6	2370.5	2383.2	2393.7
13°	2344.5	2344.5	2353.6	2365.0	2378.2	2388.7
13.5°	2337.7	2338.1	2347.3	2359.1	2372.8	2383.7
14°	2330.9	2330.9	2340.9	2353.2	2367.3	2378.7
14.5°	2324.0	2324.0	2334.5	2347.3	2361.4	2373.7
15°	2317.2	2317.2	2327.7	2340.9	2355.5	2368.2
15.5°	2309.4	2309.9	2319.9	2334.0	2349.5	2362.3
16°	2301.7	2302.2	2312.6	2327.2	2343.2	2356.4
16.5°	2294.0	2294.4	2305.3	2319.9	2336.3	2350.4
17°	2286.2	2286.7	2297.6	2312.6	2329.5	2343.6
17.5°	2277.1	2278.0	2289.9	2305.3	2322.7	2337.2
18°	2268.9	2269.8	2281.2	2297.6	2314.9	2330.4
18.5°	2260.2	2260.7	2273.0	2289.4	2307.6	2323.6
19°	2251.1	2252.0	2264.3	2281.2	2299.9	2315.8
19.5°	2242.0	2242.5	2255.2	2273.0	2292.1	2308.5
20°	2232.4	2233.4	2246.1	2264.3	2283.5	2300.8
20.5°	2222.4	2223.3	2237.0	2255.2	2275.3	2293.0
21°	2212.4	2213.3	2227.0	2246.1	2266.6	2284.4

TEST NUMBER: P776765

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	2181.0	2182.3	2197.4	2217.0	2239.3	2258.4
23°	2170.5	2171.4	2186.4	2206.9	2229.7	2248.8
23.5°	2159.1	2160.5	2176.0	2196.9	2219.7	2239.7
24°	2147.7	2149.1	2165.0	2186.0	2209.7	2229.7
24.5°	2136.3	2137.7	2153.2	2175.5	2199.2	2219.7
25°	2124.5	2125.8	2141.8	2164.1	2188.7	2209.2
25.5°	2112.2	2114.0	2130.4	2153.2	2177.8	2199.2
26°	2100.3	2101.7	2118.5	2141.3	2166.8	2188.7
26.5°	2087.6	2089.4	2106.7	2129.9	2155.0	2177.8
27°	2074.8	2076.6	2093.9	2117.6	2143.6	2166.4
27.5°	2062.1	2063.4	2081.2	2105.3	2131.8	2155.0
28°	2048.8	2050.2	2068.4	2093.0	2119.9	2143.1
28.5°	2035.2	2037.0	2055.7	2080.3	2107.6	2131.3
29°	2021.5	2023.3	2041.5	2067.5	2094.9	2119.5
29.5°	2007.4	2009.7	2028.3	2054.3	2082.1	2106.7
30°	1992.8	1995.1	2014.7	2040.6	2069.3	2093.9
30.5°	1978.7	1981.0	2000.1	2027.0	2055.7	2081.6
31°	1964.6	1966.4	1986.4	2013.3	2042.0	2068.0
31.5°	1949.5	1951.8	1971.8	1999.2	2028.3	2054.8
32°	1934.5	1936.3	1956.8	1985.1	2014.7	2041.1
32.5°	1919.0	1921.3	1941.8	1970.0	2000.5	2027.0
33°	1904.0	1906.2	1927.2	1955.4	1986.4	2013.3
33.5°	1888.5	1890.3	1911.2	1940.9	1971.4	1998.7
34°	1872.5	1874.3	1895.8	1925.4	1956.4	1983.7
34.5°	1856.1	1858.9	1880.3	1909.9	1941.3	1969.1
35°	1840.2	1842.0	1864.3	1894.4	1925.8	1954.1
35.5°	1824.2	1826.5	1847.9	1878.4	1910.3	1938.6
36°	1807.8	1809.6	1832.0	1862.5	1894.4	1923.1
36.5°	1791.0	1793.7	1815.6	1846.6	1878.9	1907.1
37°	1774.6	1776.8	1798.7	1830.1	1862.5	1891.2
37.5°	1757.3	1759.5	1781.9	1813.3	1846.1	1875.3
38°	1740.4	1742.2	1764.5	1796.4	1829.2	1858.4
38.5°	1723.5	1725.4	1747.7	1779.6	1812.4	1842.0
39°	1705.8	1708.0	1730.4	1762.7	1795.5	1825.1
39.5°	1688.5	1690.3	1713.1	1745.0	1778.7	1807.8
40°	1671.1	1673.0	1695.3	1727.6	1761.4	1790.5
40.5°	1653.4	1655.2	1677.1	1709.9	1744.0	1773.2
41°	1636.1	1637.4	1659.8	1692.1	1725.8	1755.0
41.5°	1617.8	1618.8	1641.1	1673.9	1708.0	1736.8
42°	1600.1	1601.4	1623.3	1656.6	1690.3	1719.0
42.5°	1582.3	1582.8	1605.1	1638.3	1671.6	1700.8
43°	1563.6	1565.0	1587.3	1619.7	1653.4	1682.5
43.5°	1545.4	1546.3	1568.2	1601.0	1634.7	1663.9

TEST NUMBER: P776765

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1490.3	1490.7	1511.7	1544.5	1578.2	1606.4
45.5°	1471.6	1471.6	1492.5	1525.4	1558.2	1586.4
46°	1452.5	1452.0	1473.0	1505.8	1538.6	1566.8
46.5°	1433.3	1432.0	1453.4	1485.7	1518.5	1546.8
47°	1413.7	1412.8	1432.9	1465.2	1498.0	1525.8
47.5°	1393.2	1391.9	1411.5	1444.3	1477.1	1504.9
48°	1372.7	1370.9	1390.5	1422.8	1455.2	1483.9
48.5°	1351.8	1349.0	1369.1	1401.0	1433.3	1461.6
49°	1329.9	1327.2	1346.8	1378.2	1411.5	1439.7
49.5°	1307.6	1304.4	1323.5	1355.9	1388.2	1416.5
50°	1284.3	1280.2	1299.8	1331.3	1364.5	1392.3
50.5°	1260.6	1257.0	1275.7	1307.1	1339.5	1367.7
51°	1236.5	1232.4	1251.5	1283.0	1314.9	1343.6
51.5°	1211.9	1207.8	1226.0	1258.4	1289.8	1317.1
52°	1186.4	1183.2	1201.9	1232.9	1263.8	1291.2
52.5°	1161.8	1158.6	1177.3	1207.3	1236.5	1265.2
53°	1138.1	1135.4	1153.6	1183.2	1212.4	1239.2
53.5°	1114.9	1113.0	1131.3	1160.0	1188.2	1213.7
54°	1092.5	1090.3	1108.0	1137.2	1164.5	1189.1
54.5°	1067.5	1064.7	1083.0	1111.2	1138.5	1163.6
55°	1040.6	1035.6	1055.2	1083.4	1110.8	1134.4
55.5°	1008.7	1001.0	1020.5	1048.8	1076.6	1102.1
56°	970.0	962.7	982.7	1010.5	1038.8	1064.3
56.5°	929.4	921.7	941.3	970.4	997.8	1024.2
57°	887.5	878.4	898.4	927.6	956.3	981.4
57.5°	843.8	833.3	855.2	884.3	912.1	936.3
58°	799.6	787.7	811.0	840.6	867.5	889.3
58.5°	753.6	743.1	766.3	796.4	818.7	843.3
59°	707.5	697.1	721.2	749.9	773.6	794.6
59.5°	662.4	653.8	677.0	705.3	727.1	747.6
60°	617.3	609.6	633.3	659.7	679.3	699.3
60.5°	573.6	566.3	589.5	614.2	631.5	653.8
61°	529.9	523.0	545.8	568.6	586.4	607.8
61.5°	489.3	483.4	503.9	525.3	542.2	563.1
62°	452.4	442.4	463.8	481.1	497.1	519.8
62.5°	416.0	404.1	423.7	438.7	455.1	477.9
63°	379.5	367.2	384.5	397.7	413.2	437.4
63.5°	343.1	331.7	347.6	358.6	374.0	397.7
64°	306.6	297.5	310.7	320.7	335.3	359.5
64.5°	276.1	266.5	276.5	285.7	300.7	323.5
65°	247.4	236.5	244.2	251.9	267.0	290.2
65.5°	220.5	209.6	213.7	221.0	235.5	256.5
66°	195.0	184.1	185.0	192.7	206.8	222.3



TEST NUMBER: P776765

CATALOG NUMBER: HCDJBL54050CSD-HCD81TRMW-5000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	133.0	131.2	130.3	136.2	140.8	145.8
68°	116.2	116.2	115.7	120.3	124.4	128.9
68.5°	102.1	101.1	101.1	104.3	108.4	112.1
69°	90.7	86.1	86.6	88.4	92.0	95.7
69.5°	81.6	78.4	78.8	80.2	82.0	78.8
70°	75.6	73.8	74.3	75.2	75.6	74.7
70.5°	72.0	70.6	71.1	71.5	71.5	71.1
71°	68.8	67.0	67.4	68.3	68.3	67.0
71.5°	65.2	63.8	64.2	64.7	64.7	63.3
72°	62.0	60.1	60.6	61.5	61.1	59.7
72.5°	58.3	57.0	57.4	58.3	57.9	56.5
73°	55.1	53.8	54.2	54.7	54.2	52.8
73.5°	52.4	51.0	51.0	51.9	51.0	49.7
74°	49.2	47.8	48.3	48.7	48.3	46.9
74.5°	46.5	45.1	45.6	46.0	45.1	43.7
75°	43.7	42.4	42.8	42.8	42.4	41.0
75.5°	41.0	39.6	40.1	40.5	39.6	38.3
76°	38.7	37.4	37.4	37.8	36.9	35.5
76.5°	36.0	34.6	35.1	35.1	34.2	33.3
77°	33.7	32.3	32.8	32.8	31.9	31.0
77.5°	31.4	30.1	30.5	30.5	29.6	28.7
78°	29.2	28.2	28.2	28.7	27.3	26.4
78.5°	26.9	26.0	26.4	26.4	25.5	24.6
79°	25.1	24.1	24.1	24.6	23.2	22.8
79.5°	23.2	22.3	22.3	22.3	21.4	20.5
80°	21.4	20.5	20.5	20.5	19.6	19.1
80.5°	19.6	18.7	18.7	18.7	17.8	17.3
81°	17.8	17.3	17.3	17.3	16.4	15.5
81.5°	15.9	15.5	15.9	15.5	14.6	14.1
82°	14.6	14.1	14.1	14.1	13.2	12.8
82.5°	13.2	12.8	12.8	12.8	11.4	10.9
83°	11.8	10.9	11.4	10.9	10.0	9.6
83.5°	10.5	10.0	10.0	9.6	8.7	8.7
84°	9.1	8.7	8.7	8.7	7.7	7.3
84.5°	7.7	7.3	7.7	7.3	6.4	6.4
85°	6.8	6.4	6.4	6.4	5.5	5.5
85.5°	5.9	5.5	5.5	5.5	4.1	4.1
86°	4.6	4.6	4.6	4.6	3.6	3.6
86.5°	4.1	3.6	3.6	3.6	2.7	2.7
87°	3.2	2.7	2.7	2.7	2.3	1.8
87.5°	2.3	1.8	1.8	1.8	1.8	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: P776765
CATALOG NUMBER: HCDJBS4050CSD-HCD81TRMW-5000lm-2700K

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°	2275.7	2288.0	2293.5	2291.7	2286.7	2275.3	2258.9	2240.6	2223.8	2209.2	2201.9
22°	2267.1	2279.8	2284.8	2283.5	2278.5	2266.6	2249.8	2231.5	2214.2	2199.6	2191.4



44°	1644.7	1667.0	1679.3	1679.8	1676.2	1658.4	1631.1	1600.1	1568.6	1542.2	1529.5
44.5°	1625.6	1647.5	1660.2	1661.6	1658.4	1639.3	1612.4	1581.4	1550.4	1524.0	1510.8



66.5°	190.9	210.9	218.7	222.8	235.1	225.5	209.6	190.9	173.6	168.6	170.4
67°	162.6	181.8	188.6	192.3	203.7	195.9	182.2	167.2	148.1	146.2	149.0



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°	2202.4	2203.7	2217.4	2237.0	2257.5	2275.7
22°	2191.9	2193.3	2207.4	2227.0	2248.4	2267.1



44°	1527.2	1528.1	1550.0	1582.8	1616.0	1644.7
44.5°	1509.0	1509.4	1530.8	1564.1	1597.3	1625.6



66.5°	172.2	161.7	159.9	167.7	181.8	190.9
67°	152.2	146.7	144.9	151.7	157.2	162.6

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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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(END OF REPORT)