

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: P776244

Luminaire Tested: HCDJBL3040CSD-HCD41TRH-4000lm-5000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P776244
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B029)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL3040CSD-HCD41TRH-4000lm-5000K
Description: 4 INCH ROUND SHALLOW-WIDE HAZE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 5000K CCT
Ballast/Driver: -

Summary

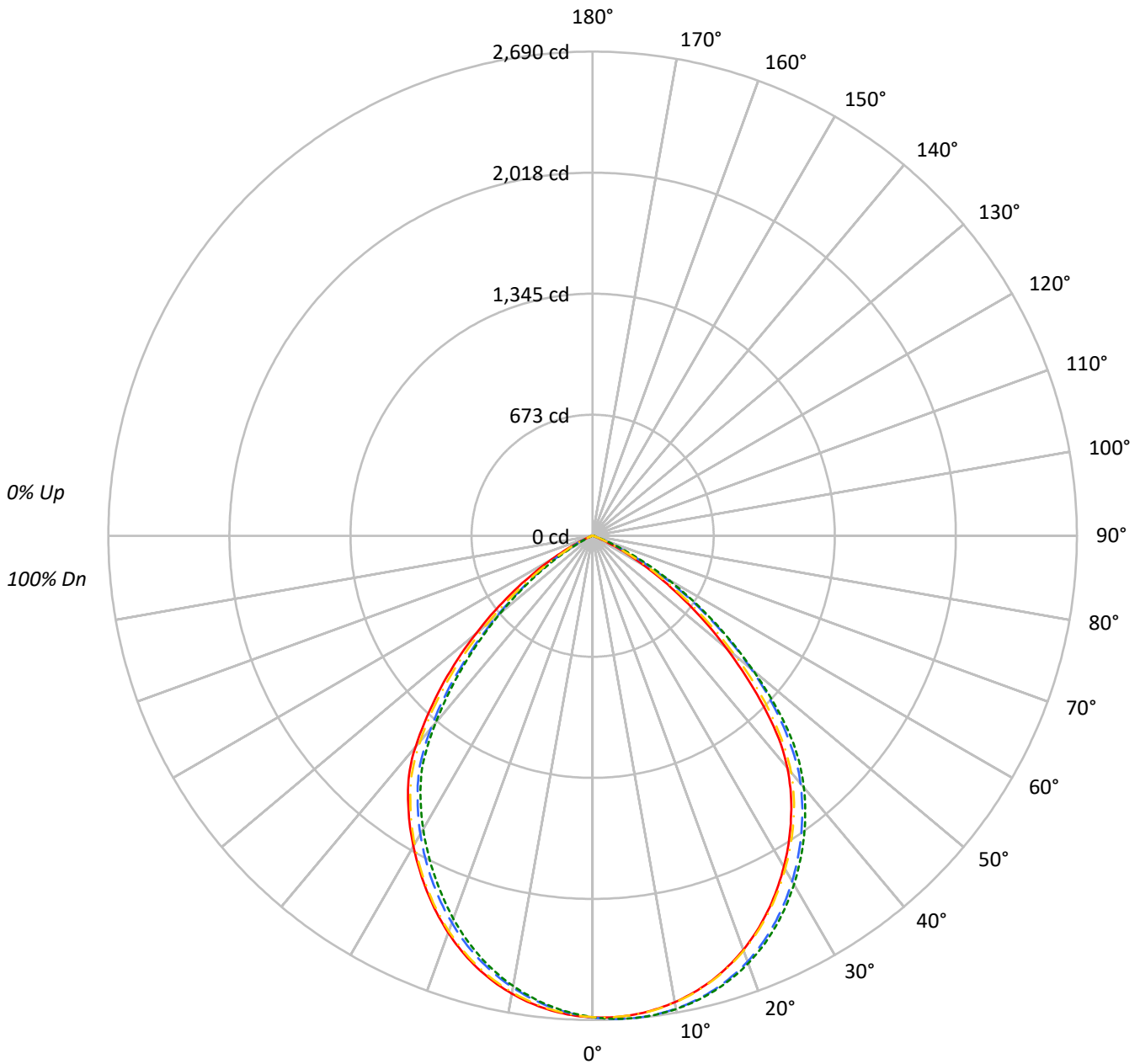
Lumens per Lamp: N/A
Luminaire Lumens: 4785.5 lumens
Efficiency: N/A
Efficacy: 124.3 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.15 / 1.22
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20									20									20									20									
RC	80									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	112	109	105	103	109	106	104	101	102	100	98	98	97	95	95	94	92	90																			
2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	84	82	80																			
3	97	89	83	77	95	87	82	77	85	80	76	82	78	74	80	76	73	71																			
4	90	81	74	68	88	79	73	68	77	71	67	75	70	66	73	69	65	63																			
5	84	73	66	60	82	72	65	60	70	64	60	69	63	59	67	62	58	57																			
6	78	67	60	54	77	66	59	54	65	58	53	63	57	53	62	57	53	51																			
7	73	62	54	49	72	61	54	49	59	53	48	58	52	48	57	52	48	46																			
8	69	57	49	44	67	56	49	44	55	48	44	54	48	44	53	47	43	42																			
9	64	52	45	40	63	52	45	40	51	44	40	50	44	40	49	44	40	38																			
10	60	49	42	37	59	48	41	37	47	41	37	46	41	36	46	40	36	35																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	336673	336673	336673	336673
5°	337340	339715	334397	331554
10°	336219	341241	330110	324564
15°	333254	340928	323560	315183
20°	327825	338499	314232	303062
25°	319503	333250	302465	288829
30°	308628	325093	289431	273490
35°	294993	314412	274698	255647
40°	276459	299919	251192	222771
45°	239808	274033	211777	178726
50°	189640	228092	165852	130786
55°	136233	176276	116486	83026
60°	83287	120161	66726	39844
65°	34960	64203	24984	11822
70°	7838	18803	7212	5115
75°	5349	6953	4960	3404
80°	3841	5363	3551	2392
85°	1155	4765	578	578

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 45°
 Luminance: 274033 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	252.1	5.3
10°-20°	709.3	14.8
20°-30°	1030.7	21.5
30°-40°	1154.6	24.1
40°-50°	972.1	20.3
50°-60°	523.4	10.9
60°-70°	129.0	2.7
70°-80°	12.3	0.3
80°-90°	2.1	0.0
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°	1992.1	41.6
0°-40°	3146.6	65.8
0°-60°	4642.1	97.0
0°-90°	4785.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4785.5	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2675	2675	2675	2675	2675	
5°	2670	2689	2647	2624	2670	254
15°	2558	2617	2483	2419	2558	720
25°	2301	2400	2178	2080	2301	1058
35°	1920	2046	1788	1664	1920	1198
45°	1347	1540	1190	1004	1347	1030
55°	621	803	531	378	621	560
65°	117	216	84	40	117	132
75°	11	14	10	7	11	12
85°	1	3	0	0	1	2
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°	2675.2	2675.2	2675.2	2675.2	2675.2	2675.2	2675.2	2675.2	2675.2	2675.2	2675.2
0.5°	2676.8	2678.5	2679.3	2678.5	2677.7	2676.0	2675.2	2674.4	2674.4	2674.4	2673.6
1°	2677.2	2680.5	2681.7	2681.3	2680.1	2678.5	2676.0	2674.0	2672.7	2671.5	2669.9
1.5°	2677.7	2681.7	2684.2	2683.8	2682.6	2680.1	2676.8	2673.6	2670.7	2668.2	2666.2
2°	2677.7	2683.0	2685.8	2685.8	2684.6	2681.3	2676.8	2672.3	2668.7	2665.0	2662.1
2.5°	2677.2	2683.8	2687.5	2687.5	2686.2	2682.2	2676.8	2670.7	2665.8	2661.3	2657.2
3°	2676.4	2684.2	2688.3	2688.7	2687.5	2683.0	2676.0	2669.1	2662.9	2657.2	2652.7
3.5°	2675.2	2684.2	2689.1	2689.9	2688.3	2683.0	2675.2	2667.0	2659.2	2652.3	2647.4
4°	2674.0	2683.8	2689.5	2690.3	2689.1	2683.0	2674.4	2664.6	2655.6	2647.8	2642.1
4.5°	2672.3	2683.0	2689.5	2690.7	2689.5	2682.6	2672.7	2661.7	2651.5	2642.9	2635.9
5°	2670.3	2682.2	2689.1	2691.2	2689.1	2681.7	2670.7	2658.4	2647.0	2637.2	2629.8
5.5°	2667.8	2680.9	2688.3	2690.7	2689.1	2680.5	2668.7	2655.2	2642.1	2631.4	2623.7
6°	2665.0	2679.3	2687.9	2689.9	2688.3	2679.3	2665.8	2651.1	2637.2	2625.3	2616.7
6.5°	2661.7	2677.2	2686.2	2688.7	2687.1	2677.2	2662.9	2647.0	2631.4	2618.7	2609.3
7°	2658.8	2674.8	2684.6	2687.5	2685.8	2675.2	2659.7	2642.5	2625.7	2612.2	2601.6
7.5°	2654.7	2672.3	2682.6	2685.8	2683.8	2672.7	2656.4	2637.6	2619.6	2604.8	2593.8
8°	2650.7	2669.5	2680.1	2683.8	2681.7	2669.9	2652.3	2632.2	2613.0	2597.1	2585.6
8.5°	2646.2	2665.8	2677.7	2681.3	2679.3	2667.0	2647.8	2626.5	2605.7	2588.9	2577.0
9°	2641.7	2662.1	2674.8	2678.5	2676.4	2663.3	2643.3	2620.4	2598.7	2580.7	2568.0
9.5°	2636.3	2658.0	2671.1	2675.6	2673.6	2659.7	2638.4	2614.2	2590.9	2572.5	2559.0
10°	2631.0	2653.9	2667.4	2671.9	2670.3	2655.6	2633.1	2607.7	2583.2	2563.5	2549.6
10.5°	2625.3	2649.0	2663.3	2668.2	2666.2	2651.1	2627.3	2600.3	2574.6	2554.1	2539.4
11°	2619.2	2644.1	2658.8	2664.2	2662.1	2646.2	2621.2	2593.0	2566.0	2544.7	2529.2
11.5°	2612.6	2638.4	2654.3	2659.7	2657.6	2640.8	2615.1	2585.2	2557.0	2534.5	2518.9
12°	2606.1	2632.7	2649.0	2654.7	2653.1	2635.1	2608.5	2577.4	2547.6	2524.3	2507.9
12.5°	2598.7	2626.5	2643.3	2649.4	2647.8	2629.4	2601.2	2568.4	2537.8	2514.0	2496.4
13°	2591.3	2620.0	2637.6	2644.1	2642.5	2623.2	2593.8	2559.8	2527.5	2503.0	2485.4
13.5°	2583.2	2613.0	2631.0	2638.0	2636.3	2616.7	2586.0	2550.8	2517.3	2491.1	2473.1
14°	2575.0	2605.7	2624.9	2631.8	2630.2	2610.2	2578.3	2541.4	2505.9	2479.7	2460.9
14.5°	2566.4	2598.3	2617.9	2624.9	2623.7	2602.8	2569.7	2531.2	2494.8	2467.4	2448.6
15°	2557.8	2590.5	2610.6	2617.9	2616.7	2595.0	2561.1	2520.6	2483.4	2455.5	2435.9
15.5°	2548.4	2581.9	2602.8	2610.6	2609.3	2587.3	2551.7	2509.9	2471.1	2442.0	2422.0
16°	2538.6	2573.3	2595.0	2603.2	2601.6	2578.7	2542.7	2499.3	2458.8	2428.9	2408.5
16.5°	2528.3	2564.3	2586.4	2595.0	2593.8	2570.1	2532.4	2487.4	2445.7	2415.9	2394.6
17°	2518.1	2554.5	2577.8	2586.4	2585.6	2561.1	2522.2	2475.6	2433.0	2402.0	2380.7
17.5°	2507.1	2545.1	2568.4	2577.4	2576.6	2551.7	2511.6	2463.7	2419.1	2387.6	2365.5
18°	2496.0	2534.9	2559.0	2568.0	2567.6	2541.8	2500.5	2451.4	2405.2	2372.9	2350.8
18.5°	2484.6	2524.3	2549.2	2558.2	2558.2	2532.0	2489.5	2438.4	2390.9	2357.8	2335.3
19°	2472.7	2513.2	2538.6	2548.4	2548.4	2521.4	2477.6	2425.3	2376.2	2342.2	2320.1
19.5°	2460.4	2501.8	2527.9	2537.8	2538.2	2510.8	2465.8	2411.4	2361.5	2327.1	2303.8
20°	2447.8	2489.9	2516.9	2526.7	2527.5	2499.3	2453.1	2397.5	2346.3	2311.6	2287.8
20.5°	2434.7	2478.0	2505.0	2515.7	2516.5	2487.9	2440.8	2383.1	2330.8	2294.8	2271.5
21°	2421.2	2465.4	2493.2	2504.2	2505.0	2475.6	2427.7	2368.8	2314.4	2278.4	2254.7



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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°	2378.6	2425.7	2454.7	2466.6	2468.6	2437.5	2386.0	2323.0	2265.3	2226.9	2202.7
23°	2364.3	2411.4	2441.2	2453.1	2455.9	2424.0	2371.7	2307.5	2248.6	2209.7	2185.2
23.5°	2348.8	2397.0	2427.3	2440.0	2442.4	2410.5	2356.5	2291.1	2231.0	2191.7	2166.7
24°	2333.2	2382.3	2413.0	2425.7	2428.5	2396.2	2341.4	2275.1	2213.8	2173.7	2148.3
24.5°	2317.3	2366.8	2398.3	2411.4	2414.2	2381.5	2325.9	2258.0	2196.2	2155.7	2129.9
25°	2300.9	2351.6	2383.1	2396.6	2399.9	2366.8	2310.3	2241.6	2178.2	2137.7	2111.5
25.5°	2284.6	2336.1	2368.0	2381.9	2385.6	2352.0	2294.4	2224.4	2160.2	2118.5	2092.7
26°	2267.8	2319.7	2352.0	2366.4	2370.0	2336.1	2278.4	2207.2	2142.6	2099.7	2073.5
26.5°	2250.6	2303.4	2336.5	2350.8	2354.1	2320.1	2261.6	2189.2	2123.8	2080.4	2054.3
27°	2233.8	2286.6	2320.1	2334.9	2338.5	2303.8	2244.9	2172.1	2105.0	2061.6	2034.6
27.5°	2215.8	2269.4	2303.4	2318.9	2322.2	2287.4	2227.3	2154.1	2086.6	2042.4	2015.0
28°	2197.8	2252.2	2286.2	2302.1	2305.8	2270.2	2210.5	2136.1	2067.8	2022.8	1995.4
28.5°	2179.8	2235.1	2269.0	2285.0	2289.1	2253.9	2192.9	2117.3	2048.5	2003.5	1974.9
29°	2161.4	2217.1	2251.4	2267.8	2271.9	2236.7	2174.9	2098.8	2029.7	1983.9	1954.9
29.5°	2142.6	2199.1	2233.8	2250.6	2254.7	2219.1	2156.5	2080.4	2010.5	1963.4	1934.8
30°	2123.8	2180.2	2215.4	2232.2	2237.1	2200.7	2138.9	2062.0	1991.7	1943.8	1914.0
30.5°	2105.0	2161.8	2197.4	2215.0	2219.1	2182.7	2120.1	2042.8	1971.6	1923.8	1893.1
31°	2085.3	2143.4	2178.6	2196.6	2201.1	2164.7	2101.3	2023.6	1952.0	1903.3	1871.8
31.5°	2066.1	2123.8	2160.2	2177.8	2182.3	2145.9	2082.1	2004.4	1932.4	1882.9	1850.5
32°	2046.1	2104.6	2140.6	2158.6	2163.5	2126.7	2063.7	1985.5	1912.7	1862.0	1828.9
32.5°	2026.4	2084.9	2121.8	2140.2	2144.7	2107.8	2044.0	1965.9	1892.7	1840.7	1806.8
33°	2005.2	2064.9	2102.1	2120.9	2125.4	2089.0	2024.8	1946.7	1871.8	1819.5	1785.1
33.5°	1985.1	2045.3	2082.1	2101.3	2105.8	2069.0	2005.2	1925.8	1851.0	1797.8	1762.2
34°	1963.4	2024.8	2061.6	2081.7	2086.6	2049.8	1985.1	1905.8	1830.1	1776.5	1739.7
34.5°	1942.6	2003.5	2042.0	2061.6	2066.1	2029.7	1965.1	1884.9	1809.2	1754.0	1717.2
35°	1920.1	1981.9	2021.1	2041.6	2046.5	2009.3	1944.2	1864.0	1788.0	1731.9	1693.5
35.5°	1899.6	1961.0	1999.9	2020.3	2026.0	1988.4	1923.0	1843.2	1766.3	1709.4	1669.3
36°	1877.1	1939.3	1978.2	1999.9	2005.2	1967.5	1902.1	1821.9	1744.2	1686.5	1646.0
36.5°	1855.0	1917.2	1957.3	1978.2	1983.5	1946.3	1880.4	1800.6	1722.1	1662.8	1620.3
37°	1831.3	1894.7	1935.2	1956.1	1961.4	1924.2	1858.3	1778.1	1699.2	1637.4	1592.0
37.5°	1809.6	1872.2	1913.1	1934.4	1939.7	1902.5	1836.6	1755.6	1675.5	1609.6	1562.2
38°	1784.7	1849.7	1890.2	1912.3	1918.0	1880.4	1813.7	1732.7	1649.7	1580.6	1530.7
38.5°	1760.1	1826.8	1868.1	1889.4	1895.5	1857.5	1790.4	1708.6	1622.3	1550.7	1497.9
39°	1734.4	1802.3	1845.6	1866.9	1873.0	1834.6	1767.1	1682.4	1593.3	1519.6	1464.8
39.5°	1709.8	1777.3	1821.9	1844.0	1850.1	1810.5	1742.6	1654.2	1562.6	1486.9	1431.7
40°	1682.8	1752.4	1797.4	1819.5	1825.6	1786.7	1716.0	1625.6	1529.0	1453.8	1398.1
40.5°	1654.6	1726.2	1772.0	1794.9	1801.5	1761.0	1687.7	1594.9	1495.9	1419.8	1363.0
41°	1625.6	1698.8	1745.8	1770.0	1776.5	1735.6	1658.7	1563.8	1462.8	1385.0	1328.2
41.5°	1595.3	1669.3	1717.2	1742.6	1750.7	1708.6	1629.3	1532.7	1429.2	1351.5	1294.2
42°	1564.2	1639.5	1687.7	1714.3	1724.2	1680.4	1598.2	1500.8	1394.9	1314.3	1257.8
42.5°	1531.1	1608.4	1657.5	1685.3	1696.3	1650.5	1567.1	1467.7	1360.5	1278.7	1222.2
43°	1495.9	1576.1	1626.8	1654.6	1667.7	1619.4	1535.2	1432.9	1327.0	1243.5	1185.4
43.5°	1459.5	1542.9	1595.7	1623.5	1637.0	1587.9	1502.4	1399.0	1293.4	1208.3	1150.3



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1347.4	1440.7	1498.8	1527.4	1539.7	1486.5	1400.6	1295.9	1189.9	1101.6	1041.0
45.5°	1308.6	1405.9	1466.5	1494.7	1503.7	1451.3	1365.4	1261.5	1156.4	1066.8	1004.6
46°	1269.7	1369.9	1432.5	1461.1	1468.1	1414.9	1329.8	1226.7	1121.2	1031.6	967.8
46.5°	1231.7	1332.3	1398.5	1426.8	1431.3	1378.5	1293.8	1192.0	1086.9	996.9	932.2
47°	1193.2	1295.9	1364.6	1392.4	1393.2	1340.9	1256.6	1156.4	1052.5	962.1	896.2
47.5°	1155.2	1258.7	1328.6	1357.2	1355.6	1302.8	1219.8	1121.6	1018.1	929.4	860.6
48°	1116.7	1221.4	1293.4	1321.6	1316.7	1264.8	1182.6	1086.9	983.0	894.2	825.9
48.5°	1079.1	1183.8	1257.8	1285.6	1278.7	1226.3	1145.3	1052.1	949.0	860.2	792.3
49°	1042.3	1146.6	1223.1	1249.7	1240.2	1187.9	1107.7	1016.1	915.0	826.3	757.6
49.5°	1004.6	1108.1	1186.2	1213.2	1202.6	1149.4	1070.5	981.7	881.5	793.6	724.4
50°	968.6	1070.5	1149.8	1175.6	1165.0	1110.6	1032.4	945.7	847.1	760.8	691.3
50.5°	931.0	1033.3	1113.0	1138.0	1129.0	1072.1	994.8	911.0	813.6	728.1	659.4
51°	895.4	996.4	1076.6	1101.2	1090.1	1034.5	957.2	875.0	780.9	696.2	627.9
51.5°	859.4	958.8	1039.0	1063.1	1053.3	998.1	920.8	841.4	748.6	664.7	598.0
52°	824.6	923.2	1003.4	1027.1	1017.3	961.3	884.0	806.6	716.2	633.2	567.8
52.5°	789.1	887.2	965.8	989.1	982.1	923.2	848.0	771.9	683.9	602.1	538.7
53°	754.7	851.2	928.5	952.3	944.5	886.8	811.6	737.5	652.4	571.9	509.3
53.5°	720.3	815.2	890.9	913.8	908.1	851.2	776.8	704.8	621.3	542.4	481.5
54°	686.8	780.1	854.5	877.8	872.5	815.6	740.8	671.3	591.1	513.0	454.5
54.5°	653.3	746.1	818.1	841.0	839.0	780.5	707.3	637.7	560.4	484.3	427.9
55°	620.9	711.7	782.1	805.8	803.4	745.3	673.3	605.8	530.9	456.9	402.9
55.5°	588.2	677.8	746.1	769.0	768.2	711.7	640.6	574.3	501.5	429.5	379.6
56°	557.5	644.7	710.1	735.5	733.8	677.4	607.9	542.8	472.9	403.3	355.9
56.5°	526.0	612.4	675.3	700.3	701.1	644.3	575.5	511.7	444.6	378.8	332.1
57°	496.6	580.0	639.3	665.9	666.8	611.5	544.4	482.3	417.2	354.6	308.8
57.5°	466.7	548.1	605.8	631.2	633.6	580.0	514.2	453.2	390.2	330.1	285.1
58°	438.1	517.5	572.7	599.7	601.7	548.9	484.7	424.2	364.9	306.0	264.2
58.5°	410.3	487.6	539.9	566.5	569.0	518.7	456.1	396.8	339.5	281.4	244.2
59°	383.3	456.9	507.6	534.2	537.9	489.2	427.5	371.0	314.2	259.3	224.6
59.5°	357.1	427.9	476.1	501.9	507.6	460.2	400.1	344.8	288.8	238.5	205.8
60°	330.9	399.6	445.5	472.5	477.4	431.5	375.1	319.1	265.1	218.0	188.2
60.5°	306.0	371.4	415.6	442.2	447.9	404.6	350.1	293.3	242.6	198.8	170.6
61°	281.8	344.0	386.6	411.9	418.9	379.2	325.2	270.0	220.9	180.0	154.2
61.5°	258.9	318.2	359.1	383.7	391.9	354.2	300.2	247.9	200.0	162.8	139.1
62°	236.8	292.9	332.1	355.9	365.3	328.9	275.3	226.2	180.4	146.0	124.8
62.5°	214.8	268.3	305.6	328.5	338.7	303.9	252.8	205.8	160.8	130.5	110.9
63°	193.5	244.2	280.2	302.3	312.1	278.6	231.1	185.3	143.2	115.4	97.4
63.5°	172.6	221.3	256.1	276.1	285.5	256.1	210.7	166.9	126.4	101.9	85.5
64°	152.2	198.8	232.8	252.0	261.0	234.0	190.6	149.7	110.9	88.8	74.4
64.5°	134.6	177.1	210.7	228.3	237.7	212.3	172.6	133.4	96.9	76.9	63.8
65°	117.4	156.7	189.4	206.2	215.6	192.3	154.6	117.8	83.9	66.3	54.8
65.5°	100.2	139.1	168.9	184.9	193.9	172.6	138.3	103.5	71.2	56.4	48.3
66°	83.0	122.7	149.7	164.0	173.0	153.8	121.9	90.4	60.5	47.9	41.7



TEST NUMBER: P776244

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	43.0	74.4	102.7	113.7	118.2	103.9	81.4	56.4	39.7	31.5	22.1
68°	34.4	62.6	86.7	98.6	102.3	89.6	69.5	47.9	34.0	25.8	19.2
68.5°	28.2	51.9	71.2	83.0	87.5	76.5	58.9	42.5	28.2	20.5	17.6
69°	24.5	43.0	58.9	67.5	73.6	64.6	49.9	37.6	22.5	18.4	16.4
69.5°	22.5	35.6	48.3	56.0	61.4	54.0	43.8	32.3	20.9	17.2	15.1
70°	21.3	29.5	39.3	46.2	51.1	47.4	38.0	27.0	19.6	16.0	14.3
70.5°	20.0	24.5	31.5	37.6	45.0	40.9	32.3	22.1	18.4	15.1	13.5
71°	18.8	20.9	25.8	30.7	38.9	34.4	26.6	20.0	17.2	14.3	12.3
71.5°	17.6	19.2	21.7	25.4	32.7	27.8	20.9	18.8	16.0	13.1	11.5
72°	16.4	18.0	19.2	21.3	26.6	21.3	19.2	17.6	15.1	12.3	11.0
72.5°	15.5	16.8	17.6	19.2	20.5	19.2	18.0	16.4	13.9	11.5	10.2
73°	14.7	15.5	16.4	18.0	18.8	18.0	16.8	15.5	13.1	10.6	9.4
73.5°	13.5	14.7	15.5	16.8	17.6	16.8	15.5	14.3	12.3	10.2	9.0
74°	12.7	13.9	14.7	15.5	16.4	15.5	14.7	13.5	11.5	9.4	8.2
74.5°	11.9	12.7	13.5	14.7	15.5	14.7	13.5	12.7	10.6	8.6	7.8
75°	11.0	11.9	12.7	13.5	14.3	13.5	12.7	11.9	10.2	8.2	7.0
75.5°	10.2	11.0	11.9	12.7	13.5	12.7	11.9	11.0	9.4	7.8	6.5
76°	9.8	10.6	11.0	11.9	12.7	11.9	11.0	10.2	8.6	7.0	6.1
76.5°	9.0	9.8	10.2	11.0	11.9	11.0	10.2	9.4	8.2	6.5	5.7
77°	8.6	9.0	9.8	10.2	11.0	10.2	9.8	9.0	7.8	6.1	5.3
77.5°	7.8	8.6	9.0	9.8	10.2	9.8	9.0	8.2	7.0	5.7	4.9
78°	7.4	8.2	8.6	9.0	9.4	9.0	8.2	7.8	6.5	5.3	4.5
78.5°	7.0	7.4	7.8	8.6	9.0	8.6	7.8	7.0	6.1	4.9	4.1
79°	6.1	7.0	7.4	7.8	8.2	7.8	7.4	6.5	5.7	4.5	3.7
79.5°	5.7	6.5	7.0	7.4	7.8	7.4	6.5	6.1	5.3	4.1	3.7
80°	5.3	5.7	6.1	7.0	7.4	7.0	6.1	5.7	4.9	3.7	3.3
80.5°	4.9	5.3	5.7	6.5	6.5	6.5	5.7	5.3	4.5	3.3	2.9
81°	4.5	4.9	5.3	6.1	6.1	5.7	5.3	4.9	4.1	2.9	2.5
81.5°	4.1	4.5	4.9	5.7	5.7	5.3	4.9	4.5	3.7	2.5	2.5
82°	3.3	4.1	4.5	5.3	5.3	4.9	4.5	4.1	3.3	2.0	2.0
82.5°	2.9	3.7	4.5	4.9	4.9	4.9	4.1	3.7	2.5	1.6	2.0
83°	2.5	3.3	4.1	4.5	4.5	4.5	4.1	3.3	2.0	1.6	1.6
83.5°	1.6	2.9	3.7	4.1	4.1	4.1	3.7	2.9	1.6	1.2	1.6
84°	1.2	2.5	3.3	3.7	4.1	3.7	3.3	2.5	1.2	0.8	1.2
84.5°	0.8	2.0	2.9	3.3	3.7	3.3	2.9	2.0	0.8	0.8	0.8
85°	0.8	1.6	2.9	3.3	3.3	3.3	2.9	1.6	0.4	0.8	0.8
85.5°	0.4	1.6	2.5	2.9	2.9	2.9	2.5	1.6	0.4	0.4	0.4
86°	0.4	1.2	2.5	2.5	2.9	2.5	2.0	1.2	0.4	0.4	0.4
86.5°	0.4	1.2	2.0	2.5	2.5	2.5	2.0	1.2	0.4	0.4	0.0
87°	0.4	1.2	1.6	2.0	2.0	2.0	1.6	0.8	0.0	0.0	0.0
87.5°	0.0	0.8	1.6	1.6	2.0	1.6	1.2	0.8	0.0	0.0	0.0
88°	0.0	0.4	1.2	1.6	1.6	1.6	1.2	0.4	0.0	0.0	0.0
88.5°	0.0	0.4	0.8	1.2	1.2	1.2	0.8	0.4	0.0	0.0	0.0



TEST NUMBER: P776244

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-5000K

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	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.4



TEST NUMBER: P776244

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2675.2	2675.2	2675.2	2675.2	2675.2	2675.2
0.5°	2671.9	2670.7	2670.7	2672.3	2674.0	2676.8
1°	2668.2	2667.0	2667.8	2670.3	2673.6	2677.2
1.5°	2664.2	2662.9	2664.2	2667.8	2672.7	2677.7
2°	2659.7	2658.4	2660.5	2665.4	2671.1	2677.7
2.5°	2655.2	2653.9	2656.4	2662.1	2669.5	2677.2
3°	2649.8	2648.6	2652.3	2658.8	2667.4	2676.4
3.5°	2644.1	2643.3	2647.4	2655.2	2665.0	2675.2
4°	2638.4	2637.2	2642.5	2651.1	2662.1	2674.0
4.5°	2632.2	2631.0	2636.7	2646.6	2659.2	2672.3
5°	2625.7	2624.5	2631.0	2642.1	2656.0	2670.3
5.5°	2618.7	2617.5	2624.9	2637.2	2651.9	2667.8
6°	2611.4	2610.6	2618.3	2631.8	2647.8	2665.0
6.5°	2604.0	2603.2	2611.4	2626.1	2643.3	2661.7
7°	2596.3	2595.0	2604.0	2619.6	2638.8	2658.8
7.5°	2588.1	2586.8	2596.7	2613.0	2633.5	2654.7
8°	2579.5	2577.8	2588.5	2606.1	2628.6	2650.7
8.5°	2570.5	2569.3	2580.3	2599.1	2622.8	2646.2
9°	2561.5	2559.8	2571.3	2591.8	2616.7	2641.7
9.5°	2552.1	2550.0	2562.3	2583.6	2609.7	2636.3
10°	2542.3	2539.8	2552.9	2575.4	2603.2	2631.0
10.5°	2532.0	2529.6	2543.1	2567.2	2596.3	2625.3
11°	2521.4	2518.9	2533.3	2558.6	2588.9	2619.2
11.5°	2510.4	2507.9	2522.6	2549.2	2581.1	2612.6
12°	2499.3	2496.4	2512.0	2539.4	2572.9	2606.1
12.5°	2487.4	2484.2	2500.5	2529.2	2563.9	2598.7
13°	2475.6	2472.3	2488.7	2519.3	2555.3	2591.3
13.5°	2463.3	2459.6	2476.8	2508.3	2546.3	2583.2
14°	2450.6	2446.5	2464.5	2497.3	2536.9	2575.0
14.5°	2437.5	2433.4	2451.4	2485.8	2526.7	2566.4
15°	2424.0	2419.1	2438.4	2474.4	2516.5	2557.8
15.5°	2410.5	2404.8	2424.4	2462.1	2505.4	2548.4
16°	2396.2	2390.5	2411.0	2449.4	2494.4	2538.6
16.5°	2381.5	2375.8	2396.2	2436.7	2483.4	2528.3
17°	2366.8	2360.6	2381.9	2423.6	2471.9	2518.1
17.5°	2351.6	2345.1	2366.8	2410.1	2459.2	2507.1
18°	2336.5	2329.1	2351.6	2395.8	2446.9	2496.0
18.5°	2320.6	2312.8	2335.7	2381.5	2433.9	2484.6
19°	2304.6	2296.4	2319.7	2366.8	2420.8	2472.7
19.5°	2287.8	2280.1	2303.8	2352.0	2407.3	2460.4
20°	2271.1	2262.9	2287.4	2336.5	2393.4	2447.8
20.5°	2254.3	2245.3	2270.6	2321.0	2379.0	2434.7
21°	2237.1	2227.7	2253.1	2305.0	2364.3	2421.2

TEST NUMBER: P776244

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	2183.9	2173.7	2201.1	2255.5	2318.9	2378.6
23°	2165.5	2155.3	2182.7	2238.7	2303.0	2364.3
23.5°	2147.5	2136.9	2165.1	2221.6	2287.0	2348.8
24°	2128.7	2118.1	2146.7	2203.6	2270.2	2333.2
24.5°	2109.9	2099.3	2128.3	2186.0	2253.9	2317.3
25°	2091.1	2080.0	2109.1	2168.0	2236.7	2300.9
25.5°	2071.4	2060.8	2090.7	2150.0	2219.5	2284.6
26°	2052.2	2042.0	2071.4	2131.6	2202.3	2267.8
26.5°	2032.6	2022.4	2052.6	2113.2	2184.7	2250.6
27°	2012.9	2003.1	2033.4	2094.3	2166.7	2233.8
27.5°	1993.3	1983.1	2014.2	2075.5	2148.7	2215.8
28°	1973.3	1963.0	1994.5	2056.3	2129.9	2197.8
28.5°	1952.8	1943.0	1974.5	2037.1	2111.5	2179.8
29°	1933.2	1923.4	1955.3	2017.4	2092.3	2161.4
29.5°	1912.7	1902.9	1935.2	1997.8	2073.5	2142.6
30°	1891.9	1882.0	1915.2	1978.2	2054.3	2123.8
30.5°	1870.6	1861.2	1894.7	1957.7	2034.2	2105.0
31°	1849.3	1840.3	1873.5	1937.7	2014.2	2085.3
31.5°	1828.1	1819.1	1852.6	1916.8	1994.5	2066.1
32°	1806.0	1797.8	1831.7	1896.0	1974.1	2046.1
32.5°	1784.7	1776.1	1810.5	1874.7	1953.6	2026.4
33°	1762.6	1754.0	1788.8	1853.8	1932.0	2005.2
33.5°	1740.5	1732.7	1767.5	1832.1	1910.7	1985.1
34°	1718.0	1710.2	1745.8	1810.5	1889.4	1963.4
34.5°	1695.1	1687.3	1722.9	1788.0	1866.9	1942.6
35°	1671.4	1664.0	1700.0	1766.3	1845.2	1920.1
35.5°	1648.1	1640.3	1677.1	1743.4	1822.7	1899.6
36°	1623.9	1614.5	1653.4	1720.5	1800.2	1877.1
36.5°	1596.5	1587.5	1627.6	1695.5	1777.3	1855.0
37°	1567.1	1557.7	1599.0	1671.0	1752.8	1831.3
37.5°	1536.8	1525.8	1569.1	1643.6	1727.8	1809.6
38°	1504.5	1493.0	1537.2	1614.5	1702.5	1784.7
38.5°	1471.8	1459.5	1504.5	1584.3	1676.3	1760.1
39°	1438.2	1426.0	1471.4	1553.6	1648.5	1734.4
39.5°	1403.9	1391.6	1437.4	1522.5	1619.0	1709.8
40°	1368.3	1356.0	1403.9	1489.8	1587.5	1682.8
40.5°	1333.9	1320.4	1369.1	1456.6	1556.4	1654.6
41°	1297.5	1285.2	1335.6	1423.1	1524.1	1625.6
41.5°	1261.9	1250.1	1300.8	1388.3	1491.4	1595.3
42°	1225.5	1215.3	1266.4	1353.6	1458.3	1564.2
42.5°	1189.9	1179.7	1232.1	1318.8	1423.1	1531.1
43°	1152.7	1144.1	1198.1	1282.8	1387.9	1495.9
43.5°	1117.1	1109.3	1163.3	1246.4	1351.5	1459.5

TEST NUMBER: P776244

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1009.5	1004.2	1057.8	1138.0	1240.7	1347.4
45.5°	974.0	969.5	1022.6	1100.3	1203.0	1308.6
46°	938.8	934.7	986.2	1065.6	1165.0	1269.7
46.5°	904.4	899.9	949.8	1028.8	1125.7	1231.7
47°	868.8	865.6	915.5	992.4	1087.3	1193.2
47.5°	834.9	831.6	879.5	955.1	1048.8	1155.2
48°	801.7	798.1	845.5	920.0	1010.8	1116.7
48.5°	768.2	764.9	810.7	882.7	971.9	1079.1
49°	735.1	732.6	776.4	848.0	934.7	1042.3
49.5°	701.9	699.9	743.2	812.0	897.5	1004.6
50°	670.0	668.0	709.7	776.8	859.8	968.6
50.5°	638.1	636.1	676.6	739.6	823.0	931.0
51°	607.4	605.4	643.4	707.3	787.4	895.4
51.5°	577.6	575.1	611.9	672.5	752.2	859.4
52°	546.9	545.3	580.4	638.9	717.9	824.6
52.5°	517.9	516.2	549.8	603.8	683.5	789.1
53°	489.2	487.2	519.1	573.1	650.0	754.7
53.5°	461.4	459.0	488.8	541.2	617.7	720.3
54°	434.4	431.5	459.4	508.9	585.4	686.8
54.5°	407.8	405.0	431.5	478.6	554.7	653.3
55°	384.1	378.4	403.7	449.1	524.0	620.9
55.5°	360.0	353.0	375.9	420.5	494.1	588.2
56°	336.2	327.7	349.7	392.7	465.1	557.5
56.5°	312.1	303.5	324.0	365.3	437.3	526.0
57°	288.0	280.2	299.4	339.1	409.5	496.6
57.5°	266.7	257.3	275.3	314.6	382.5	466.7
58°	246.2	235.6	252.0	290.4	356.3	438.1
58.5°	226.2	214.8	230.3	267.5	331.3	410.3
59°	207.8	195.1	209.0	245.0	306.8	383.3
59.5°	189.0	176.3	189.4	224.2	283.1	357.1
60°	171.4	158.3	170.6	204.5	260.2	330.9
60.5°	154.6	141.5	152.6	184.9	238.1	306.0
61°	139.5	127.2	137.9	166.5	216.8	281.8
61.5°	123.9	112.9	123.5	149.7	196.8	258.9
62°	110.0	99.0	109.2	135.8	177.9	236.8
62.5°	97.4	84.7	94.9	121.5	159.1	214.8
63°	85.5	73.2	80.6	107.6	141.5	193.5
63.5°	73.6	63.4	69.5	93.7	126.8	172.6
64°	63.4	54.0	59.7	79.8	112.5	152.2
64.5°	54.0	46.6	51.5	68.7	98.2	134.6
65°	48.3	39.7	44.2	58.9	83.9	117.4
65.5°	42.5	34.0	38.0	49.9	72.0	100.2
66°	36.8	28.6	32.3	42.1	60.9	83.0



TEST NUMBER: P776244

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	20.0	19.2	20.9	25.0	35.6	43.0
68°	18.0	18.0	18.8	21.7	29.9	34.4
68.5°	16.8	16.8	17.6	19.2	25.0	28.2
69°	16.0	15.5	16.4	18.0	21.7	24.5
69.5°	14.7	14.7	15.5	16.8	19.6	22.5
70°	13.9	13.9	14.7	16.0	18.4	21.3
70.5°	13.1	13.1	13.5	14.7	17.2	20.0
71°	11.9	11.9	12.7	13.9	16.0	18.8
71.5°	11.0	11.0	11.9	13.1	15.1	17.6
72°	10.6	10.6	11.0	12.3	14.3	16.4
72.5°	9.8	9.8	10.2	11.5	13.1	15.5
73°	9.0	9.0	9.4	10.6	12.3	14.7
73.5°	8.6	8.6	9.0	9.8	11.5	13.5
74°	7.8	7.8	8.2	9.0	10.6	12.7
74.5°	7.4	7.4	7.8	8.6	9.8	11.9
75°	7.0	7.0	7.4	8.2	9.4	11.0
75.5°	6.5	6.5	7.0	7.4	8.6	10.2
76°	6.1	6.1	6.1	7.0	8.2	9.8
76.5°	5.7	5.7	5.7	6.5	7.4	9.0
77°	5.3	5.3	5.3	6.1	7.0	8.6
77.5°	4.9	4.9	4.9	5.7	6.5	7.8
78°	4.5	4.5	4.9	5.3	6.1	7.4
78.5°	4.1	4.1	4.5	4.9	5.3	7.0
79°	3.7	3.7	4.1	4.5	4.9	6.1
79.5°	3.7	3.7	3.7	4.1	4.5	5.7
80°	3.3	3.3	3.3	3.7	4.1	5.3
80.5°	2.9	2.9	3.3	3.3	3.7	4.9
81°	2.9	2.9	2.9	2.9	3.3	4.5
81.5°	2.5	2.5	2.5	2.9	2.9	4.1
82°	2.0	2.0	2.5	2.5	2.5	3.3
82.5°	2.0	2.0	2.0	2.0	2.0	2.9
83°	1.6	1.6	1.6	2.0	1.6	2.5
83.5°	1.6	1.2	1.6	1.6	1.6	1.6
84°	1.2	1.2	1.2	1.6	1.2	1.2
84.5°	0.8	0.8	0.8	1.2	1.2	0.8
85°	0.8	0.4	0.8	0.8	0.8	0.8
85.5°	0.4	0.4	0.4	0.8	0.8	0.4
86°	0.0	0.0	0.0	0.4	0.4	0.4
86.5°	0.0	0.0	0.0	0.0	0.4	0.4
87°	0.0	0.0	0.0	0.0	0.0	0.4
87.5°	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.4	0.0	0.0	0.0	0.0
88.5°	0.4	0.4	0.4	0.0	0.0	0.0



TEST NUMBER: P776244

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.0	0.0	0.0	0.4	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°	2407.3	2452.7	2480.9	2491.5	2493.6	2463.3	2413.8	2353.7	2298.5	2261.2	2237.5
22°	2393.4	2439.2	2468.2	2479.3	2480.9	2450.6	2399.9	2338.1	2282.1	2244.5	2220.3



44°	1422.7	1509.4	1564.2	1592.0	1605.5	1554.8	1469.3	1365.4	1258.7	1171.9	1113.0
44.5°	1385.9	1475.4	1531.9	1559.7	1573.6	1520.9	1435.0	1331.1	1224.3	1137.2	1076.6



66.5°	65.9	106.8	134.2	144.8	153.8	136.2	107.2	77.7	51.1	42.1	35.2
67°	53.2	90.4	118.2	129.3	135.4	119.4	93.7	66.3	45.4	36.8	28.6



89°	0.0	0.0	0.8	0.8	1.2	0.8	0.4	0.0	0.0	0.0	0.4
89.5°	0.0	0.0	0.4	0.4	0.8	0.4	0.4	0.0	0.0	0.0	0.4

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21.5°	2219.1	2210.1	2235.9	2289.1	2349.6	2407.3
22°	2201.5	2191.7	2218.7	2272.3	2334.0	2393.4



44°	1081.1	1074.6	1128.2	1210.4	1315.5	1422.7
44.5°	1045.5	1039.0	1092.2	1173.2	1279.1	1385.9



66.5°	31.5	25.0	27.4	35.2	51.5	65.9
67°	25.8	21.3	23.7	29.5	43.0	53.2

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89°	0.4	0.4	0.0	0.4	0.0	0.0
89.5°	0.4	0.0	0.0	0.4	0.0	0.0

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(END OF REPORT)