

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: P776241

Luminaire Tested: HCDJBL3040CSD-HCD41TRH-4000lm-3000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P776241
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: HCDJBS3040CSD-HCD41TRH-4000lm-3000K
Description: 4 INCH ROUND SHALLOW-WIDE HAZE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3000K CCT
Ballast/Driver: -

Summary

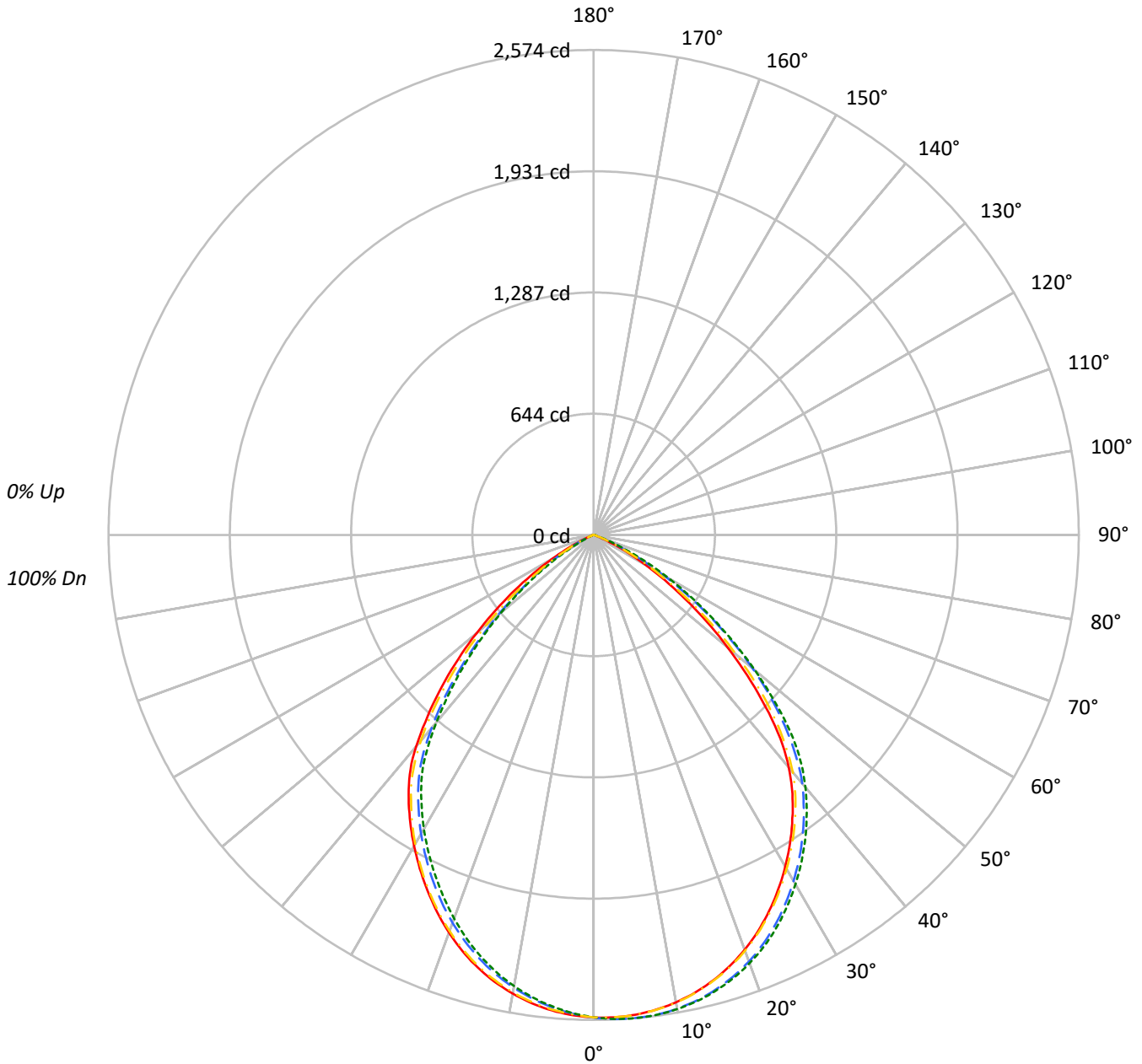
Lumens per Lamp: N/A
Luminaire Lumens: 4580.7 lumens
Efficiency: N/A
Efficacy: 119.0 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.15 / 1.22
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

Input Watts (W): 38.5
Input Voltage (V): NR
Input Current (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	100	100	100
1	112	109	105	103	109	106	104	101	102	100	98	98	97	95	95	94	92	90	90	90	90
2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	84	82	80	80	80	80
3	97	89	83	77	95	87	82	77	85	80	76	82	78	74	80	76	73	71	71	71	71
4	90	81	74	68	88	79	73	68	77	71	67	75	70	66	73	69	65	63	63	63	63
5	84	73	66	60	82	72	65	60	70	64	60	69	63	59	67	62	58	57	57	57	57
6	78	67	60	54	77	66	59	54	65	58	53	63	57	53	62	57	53	51	51	51	51
7	73	62	54	49	72	61	54	49	59	53	48	58	52	48	57	52	48	46	46	46	46
8	69	57	49	44	67	56	49	44	55	48	44	54	48	44	53	47	43	42	42	42	42
9	64	52	45	40	63	52	45	40	51	44	40	50	44	40	49	44	40	38	38	38	38
10	60	49	42	37	59	48	41	37	47	41	37	46	41	36	46	40	36	35	35	35	35

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	322264	322264	322264	322264
5°	322901	325175	320084	317355
10°	321829	326634	315977	310673
15°	318987	326336	309711	301698
20°	313790	324009	300786	290085
25°	305825	318989	289523	276470
30°	295419	311186	277036	261792
35°	282364	300954	262930	244709
40°	264631	287088	240448	213242
45°	229539	262305	202717	171073
50°	181534	218323	158764	125187
55°	130419	168728	111505	79471
60°	79738	115002	63856	38132
65°	33471	61433	23912	11316
70°	7506	17993	6918	4894
75°	5154	6662	4765	3258
80°	3696	5073	3406	2247
85°	1155	4476	578	578

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 45°
 Luminance: 262305 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	241.3	5.3
10°-20°	679.0	14.8
20°-30°	986.5	21.5
30°-40°	1105.1	24.1
40°-50°	930.5	20.3
50°-60°	501.0	10.9
60°-70°	123.5	2.7
70°-80°	11.8	0.3
80°-90°	2.0	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°	1906.8	41.6
0°-40°	3011.9	65.8
0°-60°	4443.4	97.0
0°-90°	4580.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4580.7	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2561	2561	2561	2561	2561	
5°	2556	2574	2534	2512	2556	243
15°	2448	2505	2377	2316	2448	690
25°	2202	2297	2085	1991	2202	1013
35°	1838	1959	1711	1593	1838	1146
45°	1290	1474	1139	961	1290	986
55°	594	769	508	362	594	536
65°	112	206	80	38	112	126
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°	2560.7	2560.7	2560.7	2560.7	2560.7	2560.7	2560.7	2560.7	2560.7	2560.7	2560.7
0.5°	2562.3	2563.8	2564.6	2563.8	2563.0	2561.5	2560.7	2559.9	2559.9	2559.9	2559.1
1°	2562.7	2565.8	2567.0	2566.6	2565.4	2563.8	2561.5	2559.5	2558.3	2557.2	2555.6
1.5°	2563.0	2567.0	2569.3	2568.9	2567.7	2565.4	2562.3	2559.1	2556.4	2554.0	2552.1
2°	2563.0	2568.1	2570.9	2570.9	2569.7	2566.6	2562.3	2558.0	2554.4	2550.9	2548.2
2.5°	2562.7	2568.9	2572.4	2572.4	2571.3	2567.4	2562.3	2556.4	2551.7	2547.4	2543.5
3°	2561.9	2569.3	2573.2	2573.6	2572.4	2568.1	2561.5	2554.8	2548.9	2543.5	2539.2
3.5°	2560.7	2569.3	2574.0	2574.8	2573.2	2568.1	2560.7	2552.9	2545.4	2538.8	2534.1
4°	2559.5	2568.9	2574.4	2575.2	2574.0	2568.1	2559.9	2550.5	2541.9	2534.5	2529.0
4.5°	2558.0	2568.1	2574.4	2575.6	2574.4	2567.7	2558.3	2547.8	2538.0	2529.8	2523.1
5°	2556.0	2567.4	2574.0	2576.0	2574.0	2567.0	2556.4	2544.6	2533.7	2524.3	2517.2
5.5°	2553.6	2566.2	2573.2	2575.6	2574.0	2565.8	2554.4	2541.5	2529.0	2518.8	2511.4
6°	2550.9	2564.6	2572.8	2574.8	2573.2	2564.6	2551.7	2537.6	2524.3	2512.9	2504.7
6.5°	2547.8	2562.7	2571.3	2573.6	2572.1	2562.7	2548.9	2533.7	2518.8	2506.7	2497.7
7°	2545.0	2560.3	2569.7	2572.4	2570.9	2560.7	2545.8	2529.4	2513.3	2500.4	2490.2
7.5°	2541.1	2558.0	2567.7	2570.9	2568.9	2558.3	2542.7	2524.7	2507.4	2493.4	2482.8
8°	2537.2	2555.2	2565.4	2568.9	2567.0	2555.6	2538.8	2519.6	2501.2	2485.9	2474.9
8.5°	2532.9	2551.7	2563.0	2566.6	2564.6	2552.9	2534.5	2514.1	2494.1	2478.1	2466.7
9°	2528.6	2548.2	2560.3	2563.8	2561.9	2549.3	2530.2	2508.2	2487.5	2470.2	2458.1
9.5°	2523.5	2544.3	2556.8	2561.1	2559.1	2545.8	2525.5	2502.4	2480.0	2462.4	2449.5
10°	2518.4	2540.3	2553.3	2557.6	2556.0	2541.9	2520.4	2496.1	2472.6	2453.8	2440.5
10.5°	2512.9	2535.6	2549.3	2554.0	2552.1	2537.6	2514.9	2489.0	2464.4	2444.8	2430.7
11°	2507.1	2530.9	2545.0	2550.1	2548.2	2532.9	2509.0	2482.0	2456.2	2435.8	2420.9
11.5°	2500.8	2525.5	2540.7	2545.8	2543.9	2527.8	2503.1	2474.6	2447.5	2426.0	2411.1
12°	2494.5	2520.0	2535.6	2541.1	2539.6	2522.3	2496.9	2467.1	2438.5	2416.2	2400.6
12.5°	2487.5	2514.1	2530.2	2536.0	2534.5	2516.8	2489.8	2458.5	2429.1	2406.4	2389.6
13°	2480.4	2507.8	2524.7	2530.9	2529.4	2511.0	2482.8	2450.3	2419.3	2395.9	2379.0
13.5°	2472.6	2501.2	2518.4	2525.1	2523.5	2504.7	2475.3	2441.7	2409.6	2384.5	2367.3
14°	2464.8	2494.1	2512.5	2519.2	2517.6	2498.4	2467.9	2432.7	2398.6	2373.5	2355.5
14.5°	2456.5	2487.1	2505.9	2512.5	2511.4	2491.4	2459.7	2422.9	2388.0	2361.8	2343.8
15°	2448.3	2479.6	2498.8	2505.9	2504.7	2484.0	2451.5	2412.7	2377.1	2350.4	2331.6
15.5°	2439.3	2471.4	2491.4	2498.8	2497.7	2476.5	2442.4	2402.5	2365.3	2337.5	2318.3
16°	2429.9	2463.2	2484.0	2491.8	2490.2	2468.3	2433.8	2392.3	2353.6	2325.0	2305.4
16.5°	2420.1	2454.6	2475.7	2484.0	2482.8	2460.1	2424.0	2381.0	2341.0	2312.5	2292.1
17°	2410.3	2445.2	2467.5	2475.7	2474.9	2451.5	2414.3	2369.6	2328.9	2299.1	2278.8
17.5°	2399.8	2436.2	2458.5	2467.1	2466.3	2442.4	2404.1	2358.3	2315.6	2285.4	2264.3
18°	2389.2	2426.4	2449.5	2458.1	2457.7	2433.1	2393.5	2346.5	2302.3	2271.3	2250.2
18.5°	2378.2	2416.2	2440.1	2448.7	2448.7	2423.7	2382.9	2334.0	2288.6	2256.9	2235.3
19°	2366.9	2405.6	2429.9	2439.3	2439.3	2413.5	2371.6	2321.5	2274.5	2242.0	2220.8
19.5°	2355.1	2394.7	2419.7	2429.1	2429.5	2403.3	2360.2	2308.1	2260.4	2227.5	2205.2
20°	2343.0	2383.3	2409.2	2418.6	2419.3	2392.3	2348.1	2294.8	2245.9	2212.6	2189.9
20.5°	2330.5	2372.0	2397.8	2408.0	2408.8	2381.4	2336.3	2281.1	2231.0	2196.6	2174.2
21°	2317.5	2359.8	2386.5	2397.0	2397.8	2369.6	2323.8	2267.4	2215.4	2180.9	2158.2



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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°	2276.8	2321.9	2349.7	2361.0	2363.0	2333.2	2283.9	2223.6	2168.4	2131.6	2108.5
23°	2263.1	2308.1	2336.7	2348.1	2350.8	2320.3	2270.2	2208.7	2152.3	2115.1	2091.6
23.5°	2248.2	2294.4	2323.4	2335.6	2337.9	2307.4	2255.7	2193.0	2135.5	2097.9	2074.0
24°	2233.4	2280.4	2309.7	2321.9	2324.6	2293.7	2241.2	2177.8	2119.0	2080.7	2056.4
24.5°	2218.1	2265.5	2295.6	2308.1	2310.9	2279.6	2226.3	2161.3	2102.2	2063.4	2038.8
25°	2202.4	2251.0	2281.1	2294.1	2297.2	2265.5	2211.4	2145.7	2085.0	2046.2	2021.1
25.5°	2186.8	2236.1	2266.6	2280.0	2283.5	2251.4	2196.2	2129.2	2067.7	2027.8	2003.1
26°	2170.7	2220.4	2251.4	2265.1	2268.6	2236.1	2180.9	2112.8	2050.9	2009.8	1984.7
26.5°	2154.3	2204.8	2236.5	2250.2	2253.3	2220.8	2164.8	2095.5	2032.9	1991.4	1966.3
27°	2138.2	2188.7	2220.8	2234.9	2238.5	2205.2	2148.8	2079.1	2014.9	1973.4	1947.5
27.5°	2121.0	2172.3	2204.8	2219.7	2222.8	2189.5	2132.0	2061.9	1997.3	1955.0	1928.7
28°	2103.8	2155.8	2188.3	2203.6	2207.1	2173.1	2115.9	2044.6	1979.3	1936.2	1909.9
28.5°	2086.5	2139.4	2171.9	2187.2	2191.1	2157.4	2099.1	2026.6	1960.9	1917.8	1890.4
29°	2068.9	2122.2	2155.1	2170.7	2174.6	2141.0	2081.8	2009.0	1942.8	1899.0	1871.2
29.5°	2050.9	2104.9	2138.2	2154.3	2158.2	2124.1	2064.2	1991.4	1924.4	1879.4	1852.0
30°	2032.9	2086.9	2120.6	2136.7	2141.4	2106.5	2047.4	1973.8	1906.4	1860.6	1832.0
30.5°	2014.9	2069.3	2103.4	2120.2	2124.1	2089.3	2029.4	1955.4	1887.2	1841.4	1812.1
31°	1996.1	2051.7	2085.4	2102.6	2106.9	2072.0	2011.4	1937.0	1868.4	1821.9	1791.7
31.5°	1977.7	2032.9	2067.7	2084.6	2088.9	2054.0	1993.0	1918.6	1849.7	1802.3	1771.3
32°	1958.5	2014.5	2048.9	2066.2	2070.9	2035.6	1975.3	1900.6	1830.9	1782.3	1750.6
32.5°	1939.7	1995.7	2030.9	2048.6	2052.9	2017.6	1956.5	1881.8	1811.7	1761.9	1729.4
33°	1919.3	1976.5	2012.1	2030.2	2034.5	1999.6	1938.1	1863.4	1791.7	1741.6	1708.7
33.5°	1900.2	1957.7	1993.0	2011.4	2015.7	1980.4	1919.3	1843.4	1771.7	1720.8	1686.8
34°	1879.4	1938.1	1973.4	1992.6	1997.3	1962.0	1900.2	1824.2	1751.8	1700.5	1665.2
34.5°	1859.4	1917.8	1954.6	1973.4	1977.7	1942.8	1881.0	1804.2	1731.8	1678.9	1643.7
35°	1837.9	1897.0	1934.6	1954.2	1958.9	1923.3	1861.0	1784.3	1711.4	1657.8	1621.0
35.5°	1818.3	1877.1	1914.3	1933.8	1939.3	1903.3	1840.6	1764.3	1690.7	1636.3	1597.9
36°	1796.8	1856.3	1893.5	1914.3	1919.3	1883.3	1820.7	1743.9	1669.5	1614.3	1575.6
36.5°	1775.7	1835.2	1873.5	1893.5	1898.6	1863.0	1799.9	1723.6	1648.4	1591.6	1550.9
37°	1752.9	1813.6	1852.4	1872.4	1877.5	1841.8	1778.8	1702.0	1626.5	1567.3	1523.9
37.5°	1732.2	1792.1	1831.2	1851.6	1856.7	1821.1	1758.0	1680.5	1603.8	1540.7	1495.3
38°	1708.3	1770.6	1809.3	1830.5	1835.9	1799.9	1736.1	1658.6	1579.1	1512.9	1465.2
38.5°	1684.8	1748.6	1788.2	1808.5	1814.4	1778.0	1713.8	1635.5	1552.9	1484.3	1433.8
39°	1660.1	1725.1	1766.6	1787.0	1792.9	1756.1	1691.5	1610.4	1525.1	1454.6	1402.1
39.5°	1636.7	1701.3	1743.9	1765.1	1771.0	1733.0	1668.0	1583.4	1495.7	1423.3	1370.4
40°	1610.8	1677.4	1720.4	1741.6	1747.5	1710.3	1642.5	1556.0	1463.6	1391.5	1338.3
40.5°	1583.8	1652.3	1696.2	1718.1	1724.4	1685.6	1615.5	1526.6	1431.9	1359.0	1304.6
41°	1556.0	1626.1	1671.1	1694.2	1700.5	1661.3	1587.7	1496.9	1400.2	1325.8	1271.3
41.5°	1527.0	1597.9	1643.7	1668.0	1675.8	1635.5	1559.5	1467.1	1368.1	1293.7	1238.8
42°	1497.3	1569.3	1615.5	1641.0	1650.4	1608.5	1529.8	1436.6	1335.2	1258.0	1204.0
42.5°	1465.5	1539.5	1586.5	1613.2	1623.7	1579.9	1500.0	1404.9	1302.3	1224.0	1169.9
43°	1431.9	1508.6	1557.2	1583.8	1596.3	1550.1	1469.5	1371.6	1270.2	1190.3	1134.7
43.5°	1397.0	1476.9	1527.4	1554.0	1567.0	1520.0	1438.1	1339.1	1238.1	1156.6	1101.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1289.7	1379.0	1434.6	1462.0	1473.8	1422.9	1340.6	1240.4	1139.0	1054.4	996.5
45.5°	1252.5	1345.7	1403.7	1430.7	1439.3	1389.2	1307.0	1207.5	1106.9	1021.1	961.6
46°	1215.4	1311.3	1371.2	1398.6	1405.3	1354.3	1272.9	1174.2	1073.2	987.5	926.4
46.5°	1178.9	1275.3	1338.7	1365.7	1370.0	1319.5	1238.5	1141.0	1040.3	954.2	892.3
47°	1142.1	1240.4	1306.2	1332.8	1333.6	1283.5	1202.8	1106.9	1007.4	920.9	857.9
47.5°	1105.7	1204.8	1271.7	1299.1	1297.6	1247.1	1167.6	1073.6	974.6	889.6	823.8
48°	1068.9	1169.1	1238.1	1265.1	1260.4	1210.7	1132.0	1040.3	940.9	855.9	790.5
48.5°	1032.9	1133.1	1204.0	1230.6	1224.0	1173.8	1096.3	1007.1	908.4	823.4	758.4
49°	997.7	1097.5	1170.7	1196.2	1187.2	1137.0	1060.3	972.6	875.9	790.9	725.1
49.5°	961.6	1060.7	1135.5	1161.3	1151.1	1100.2	1024.7	939.7	843.8	759.6	693.4
50°	927.2	1024.7	1100.6	1125.3	1115.1	1063.0	988.3	905.2	810.9	728.3	661.7
50.5°	891.2	989.0	1065.4	1089.3	1080.7	1026.2	952.2	872.0	778.8	696.9	631.2
51°	857.1	953.8	1030.5	1054.0	1043.5	990.2	916.2	837.5	747.5	666.4	601.0
51.5°	822.6	917.8	994.5	1017.6	1008.2	955.4	881.4	805.4	716.5	636.3	572.4
52°	789.4	883.7	960.5	983.2	973.8	920.1	846.1	772.1	685.6	606.1	543.5
52.5°	755.3	849.3	924.4	946.8	940.1	883.7	811.7	738.8	654.7	576.4	515.7
53°	722.4	814.8	888.8	911.5	904.1	848.9	776.8	706.0	624.5	547.4	487.5
53.5°	689.5	780.3	852.8	874.7	869.2	814.8	743.5	674.6	594.8	519.2	460.8
54°	657.4	746.7	817.9	840.3	835.2	780.7	709.1	642.5	565.8	491.0	435.0
54.5°	625.3	714.2	783.1	805.0	803.1	747.1	677.0	610.4	536.4	463.6	409.6
55°	594.4	681.3	748.6	771.3	769.0	713.4	644.5	579.9	508.2	437.4	385.7
55.5°	563.0	648.8	714.2	736.1	735.3	681.3	613.2	549.7	480.0	411.1	363.4
56°	533.7	617.1	679.7	704.0	702.4	648.4	581.8	519.6	452.6	386.1	340.6
56.5°	503.5	586.1	646.4	670.3	671.1	616.7	550.9	489.8	425.6	362.6	317.9
57°	475.3	555.2	612.0	637.4	638.2	585.4	521.1	461.6	399.4	339.5	295.6
57.5°	446.8	524.7	579.9	604.2	606.5	555.2	492.2	433.8	373.5	316.0	272.9
58°	419.3	495.3	548.2	574.0	576.0	525.5	464.0	406.0	349.3	292.9	252.9
58.5°	392.7	466.7	516.8	542.3	544.6	496.5	436.6	379.8	325.0	269.4	233.8
59°	366.9	437.4	485.9	511.4	514.9	468.3	409.2	355.1	300.7	248.2	215.0
59.5°	341.8	409.6	455.8	480.4	485.9	440.5	382.9	330.1	276.4	228.3	196.9
60°	316.8	382.5	426.4	452.2	456.9	413.1	359.0	305.4	253.7	208.7	180.1
60.5°	292.9	355.5	397.8	423.3	428.7	387.2	335.2	280.7	232.2	190.3	163.3
61°	269.8	329.3	370.0	394.3	400.9	363.0	311.3	258.4	211.4	172.3	147.6
61.5°	247.8	304.6	343.8	367.3	375.1	339.1	287.4	237.3	191.5	155.8	133.1
62°	226.7	280.3	317.9	340.6	349.6	314.8	263.5	216.5	172.7	139.8	119.4
62.5°	205.6	256.9	292.5	314.4	324.2	290.9	242.0	196.9	153.9	124.9	106.1
63°	185.2	233.8	268.2	289.4	298.7	266.6	221.2	177.4	137.0	110.4	93.2
63.5°	165.2	211.8	245.1	264.3	273.3	245.1	201.6	159.7	121.0	97.5	81.8
64°	145.7	190.3	222.8	241.2	249.8	224.0	182.5	143.3	106.1	85.0	71.3
64.5°	128.8	169.5	201.6	218.5	227.5	203.2	165.2	127.6	92.8	73.6	61.1
65°	112.4	150.0	181.3	197.3	206.3	184.0	148.0	112.8	80.3	63.4	52.5
65.5°	95.9	133.1	161.7	177.0	185.6	165.2	132.3	99.1	68.1	54.0	46.2
66°	79.5	117.5	143.3	157.0	165.6	147.2	116.7	86.5	57.9	45.8	39.9



TEST NUMBER: P776241

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	41.1	71.3	98.3	108.8	113.2	99.5	77.9	54.0	38.0	30.1	21.1
68°	32.9	59.9	83.0	94.4	97.9	85.7	66.6	45.8	32.5	24.7	18.4
68.5°	27.0	49.7	68.1	79.5	83.8	73.2	56.4	40.7	27.0	19.6	16.8
69°	23.5	41.1	56.4	64.6	70.5	61.9	47.8	36.0	21.5	17.6	15.7
69.5°	21.5	34.1	46.2	53.6	58.7	51.7	41.9	30.9	20.0	16.4	14.5
70°	20.4	28.2	37.6	44.2	48.9	45.4	36.4	25.8	18.8	15.3	13.7
70.5°	19.2	23.5	30.1	36.0	43.1	39.2	30.9	21.1	17.6	14.5	12.9
71°	18.0	20.0	24.7	29.4	37.2	32.9	25.5	19.2	16.4	13.7	11.7
71.5°	16.8	18.4	20.8	24.3	31.3	26.6	20.0	18.0	15.3	12.5	11.0
72°	15.7	17.2	18.4	20.4	25.5	20.4	18.4	16.8	14.5	11.7	10.6
72.5°	14.9	16.1	16.8	18.4	19.6	18.4	17.2	15.7	13.3	11.0	9.8
73°	14.1	14.9	15.7	17.2	18.0	17.2	16.1	14.9	12.5	10.2	9.0
73.5°	12.9	14.1	14.9	16.1	16.8	16.1	14.9	13.7	11.7	9.8	8.6
74°	12.1	13.3	14.1	14.9	15.7	14.9	14.1	12.9	11.0	9.0	7.8
74.5°	11.4	12.1	12.9	14.1	14.9	14.1	12.9	12.1	10.2	8.2	7.4
75°	10.6	11.4	12.1	12.9	13.7	12.9	12.1	11.4	9.8	7.8	6.7
75.5°	9.8	10.6	11.4	12.1	12.9	12.1	11.4	10.6	9.0	7.4	6.3
76°	9.4	10.2	10.6	11.4	12.1	11.4	10.6	9.8	8.2	6.7	5.9
76.5°	8.6	9.4	9.8	10.6	11.4	10.6	9.8	9.0	7.8	6.3	5.5
77°	8.2	8.6	9.4	9.8	10.6	9.8	9.4	8.6	7.4	5.9	5.1
77.5°	7.4	8.2	8.6	9.4	9.8	9.4	8.6	7.8	6.7	5.5	4.7
78°	7.0	7.8	8.2	8.6	9.0	8.6	7.8	7.4	6.3	5.1	4.3
78.5°	6.7	7.0	7.4	8.2	8.6	8.2	7.4	6.7	5.9	4.7	3.9
79°	5.9	6.7	7.0	7.4	7.8	7.4	7.0	6.3	5.5	4.3	3.5
79.5°	5.5	6.3	6.7	7.0	7.4	7.0	6.3	5.9	5.1	3.9	3.5
80°	5.1	5.5	5.9	6.7	7.0	6.7	5.9	5.5	4.7	3.5	3.1
80.5°	4.7	5.1	5.5	6.3	6.3	6.3	5.5	5.1	4.3	3.1	2.7
81°	4.3	4.7	5.1	5.9	5.9	5.5	5.1	4.7	3.9	2.7	2.3
81.5°	3.9	4.3	4.7	5.5	5.5	5.1	4.7	4.3	3.5	2.3	2.3
82°	3.1	3.9	4.3	5.1	5.1	4.7	4.3	3.9	3.1	2.0	2.0
82.5°	2.7	3.5	4.3	4.7	4.7	4.7	3.9	3.5	2.3	1.6	2.0
83°	2.3	3.1	3.9	4.3	4.3	4.3	3.9	3.1	2.0	1.6	1.6
83.5°	1.6	2.7	3.5	3.9	3.9	3.9	3.5	2.7	1.6	1.2	1.6
84°	1.2	2.3	3.1	3.5	3.9	3.5	3.1	2.3	1.2	0.8	1.2
84.5°	0.8	2.0	2.7	3.1	3.5	3.1	2.7	2.0	0.8	0.8	0.8
85°	0.8	1.6	2.7	3.1	3.1	3.1	2.7	1.6	0.4	0.8	0.8
85.5°	0.4	1.6	2.3	2.7	2.7	2.7	2.3	1.6	0.4	0.4	0.4
86°	0.4	1.2	2.3	2.3	2.7	2.3	2.0	1.2	0.4	0.4	0.4
86.5°	0.4	1.2	2.0	2.3	2.3	2.3	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: P776241

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-3000K

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: P776241

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2560.7	2560.7	2560.7	2560.7	2560.7	2560.7
0.5°	2557.6	2556.4	2556.4	2558.0	2559.5	2562.3
1°	2554.0	2552.9	2553.6	2556.0	2559.1	2562.7
1.5°	2550.1	2548.9	2550.1	2553.6	2558.3	2563.0
2°	2545.8	2544.6	2546.6	2551.3	2556.8	2563.0
2.5°	2541.5	2540.3	2542.7	2548.2	2555.2	2562.7
3°	2536.4	2535.2	2538.8	2545.0	2553.3	2561.9
3.5°	2530.9	2530.2	2534.1	2541.5	2550.9	2560.7
4°	2525.5	2524.3	2529.4	2537.6	2548.2	2559.5
4.5°	2519.6	2518.4	2523.9	2533.3	2545.4	2558.0
5°	2513.3	2512.1	2518.4	2529.0	2542.3	2556.0
5.5°	2506.7	2505.5	2512.5	2524.3	2538.4	2553.6
6°	2499.6	2498.8	2506.3	2519.2	2534.5	2550.9
6.5°	2492.6	2491.8	2499.6	2513.7	2530.2	2547.8
7°	2485.1	2484.0	2492.6	2507.4	2525.8	2545.0
7.5°	2477.3	2476.1	2485.5	2501.2	2520.8	2541.1
8°	2469.1	2467.5	2477.7	2494.5	2516.1	2537.2
8.5°	2460.5	2459.3	2469.9	2487.9	2510.6	2532.9
9°	2451.8	2450.3	2461.2	2480.8	2504.7	2528.6
9.5°	2442.8	2440.9	2452.6	2473.0	2498.0	2523.5
10°	2433.4	2431.1	2443.6	2465.2	2491.8	2518.4
10.5°	2423.7	2421.3	2434.2	2457.3	2485.1	2512.9
11°	2413.5	2411.1	2424.8	2449.1	2478.1	2507.1
11.5°	2402.9	2400.6	2414.6	2440.1	2470.6	2500.8
12°	2392.3	2389.6	2404.5	2430.7	2462.8	2494.5
12.5°	2381.0	2377.8	2393.5	2420.9	2454.2	2487.5
13°	2369.6	2366.5	2382.2	2411.5	2446.0	2480.4
13.5°	2357.9	2354.4	2370.8	2400.9	2437.4	2472.6
14°	2345.7	2341.8	2359.1	2390.4	2428.4	2464.8
14.5°	2333.2	2329.3	2346.5	2379.4	2418.6	2456.5
15°	2320.3	2315.6	2334.0	2368.4	2408.8	2448.3
15.5°	2307.4	2301.9	2320.7	2356.7	2398.2	2439.3
16°	2293.7	2288.2	2307.8	2344.6	2387.6	2429.9
16.5°	2279.6	2274.1	2293.7	2332.4	2377.1	2420.1
17°	2265.5	2259.6	2280.0	2319.9	2366.1	2410.3
17.5°	2251.0	2244.7	2265.5	2307.0	2354.0	2399.8
18°	2236.5	2229.4	2251.0	2293.3	2342.2	2389.2
18.5°	2221.2	2213.8	2235.7	2279.6	2329.7	2378.2
19°	2206.0	2198.1	2220.4	2265.5	2317.2	2366.9
19.5°	2189.9	2182.5	2205.2	2251.4	2304.2	2355.1
20°	2173.9	2166.0	2189.5	2236.5	2290.9	2343.0
20.5°	2157.8	2149.2	2173.5	2221.6	2277.2	2330.5
21°	2141.4	2132.3	2156.6	2206.3	2263.1	2317.5

TEST NUMBER: P776241

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	2090.5	2080.7	2106.9	2159.0	2219.7	2276.8
23°	2072.8	2063.0	2089.3	2142.9	2204.4	2263.1
23.5°	2055.6	2045.4	2072.4	2126.5	2189.1	2248.2
24°	2037.6	2027.4	2054.8	2109.2	2173.1	2233.4
24.5°	2019.6	2009.4	2037.2	2092.4	2157.4	2218.1
25°	2001.6	1991.0	2018.8	2075.2	2141.0	2202.4
25.5°	1982.8	1972.6	2001.2	2058.0	2124.5	2186.8
26°	1964.4	1954.6	1982.8	2040.3	2108.1	2170.7
26.5°	1945.6	1935.8	1964.8	2022.7	2091.2	2154.3
27°	1926.8	1917.4	1946.4	2004.7	2074.0	2138.2
27.5°	1908.0	1898.2	1928.0	1986.7	2056.8	2121.0
28°	1888.8	1879.0	1909.2	1968.3	2038.8	2103.8
28.5°	1869.2	1859.8	1890.0	1949.9	2021.1	2086.5
29°	1850.4	1841.0	1871.6	1931.1	2002.7	2068.9
29.5°	1830.9	1821.5	1852.4	1912.3	1984.7	2050.9
30°	1810.9	1801.5	1833.2	1893.5	1966.3	2032.9
30.5°	1790.5	1781.5	1813.6	1873.9	1947.1	2014.9
31°	1770.2	1761.6	1793.3	1854.7	1928.0	1996.1
31.5°	1749.8	1741.2	1773.3	1834.8	1909.2	1977.7
32°	1728.7	1720.8	1753.3	1814.8	1889.6	1958.5
32.5°	1708.3	1700.1	1733.0	1794.4	1870.0	1939.7
33°	1687.2	1678.9	1712.2	1774.5	1849.3	1919.3
33.5°	1666.0	1658.6	1691.9	1753.7	1828.9	1900.2
34°	1644.5	1637.0	1671.1	1733.0	1808.5	1879.4
34.5°	1622.6	1615.1	1649.2	1711.4	1787.0	1859.4
35°	1599.8	1592.8	1627.3	1690.7	1766.3	1837.9
35.5°	1577.5	1570.1	1605.3	1668.8	1744.7	1818.3
36°	1554.4	1545.4	1582.6	1646.8	1723.2	1796.8
36.5°	1528.2	1519.6	1558.0	1622.9	1701.3	1775.7
37°	1500.0	1491.0	1530.5	1599.5	1677.8	1752.9
37.5°	1471.0	1460.5	1502.0	1573.2	1653.9	1732.2
38°	1440.1	1429.1	1471.4	1545.4	1629.6	1708.3
38.5°	1408.8	1397.0	1440.1	1516.4	1604.5	1684.8
39°	1376.7	1364.9	1408.4	1487.1	1577.9	1660.1
39.5°	1343.8	1332.0	1375.9	1457.3	1549.7	1636.7
40°	1309.7	1298.0	1343.8	1426.0	1519.6	1610.8
40.5°	1276.8	1263.9	1310.5	1394.3	1489.8	1583.8
41°	1242.0	1230.2	1278.4	1362.2	1458.9	1556.0
41.5°	1207.9	1196.6	1245.1	1328.9	1427.6	1527.0
42°	1173.1	1163.3	1212.2	1295.6	1395.9	1497.3
42.5°	1139.0	1129.2	1179.3	1262.3	1362.2	1465.5
43°	1103.4	1095.1	1146.8	1227.9	1328.5	1431.9
43.5°	1069.3	1061.9	1113.6	1193.0	1293.7	1397.0

TEST NUMBER: P776241

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	966.3	961.2	1012.5	1089.3	1187.6	1289.7
45.5°	932.3	928.0	978.9	1053.3	1151.5	1252.5
46°	898.6	894.7	944.0	1020.0	1115.1	1215.4
46.5°	865.7	861.4	909.2	984.7	1077.5	1178.9
47°	831.6	828.5	876.3	949.9	1040.7	1142.1
47.5°	799.1	796.0	841.8	914.3	1003.9	1105.7
48°	767.4	763.9	809.3	880.6	967.5	1068.9
48.5°	735.3	732.2	776.0	845.0	930.3	1032.9
49°	703.6	701.3	743.1	811.7	894.7	997.7
49.5°	671.9	669.9	711.4	777.2	859.0	961.6
50°	641.3	639.4	679.3	743.5	823.0	927.2
50.5°	610.8	608.9	647.6	707.9	787.8	891.2
51°	581.4	579.5	615.9	677.0	753.7	857.1
51.5°	552.9	550.5	585.7	643.7	720.0	822.6
52°	523.5	521.9	555.6	611.6	687.2	789.4
52.5°	495.7	494.1	526.2	577.9	654.3	755.3
53°	468.3	466.3	496.9	548.6	622.2	722.4
53.5°	441.7	439.3	467.9	518.0	591.2	689.5
54°	415.8	413.1	439.7	487.1	560.3	657.4
54.5°	390.4	387.6	413.1	458.1	530.9	625.3
55°	367.7	362.2	386.5	429.9	501.6	594.4
55.5°	344.6	337.9	359.8	402.5	473.0	563.0
56°	321.8	313.6	334.8	375.9	445.2	533.7
56.5°	298.7	290.5	310.1	349.6	418.6	503.5
57°	275.6	268.2	286.6	324.6	391.9	475.3
57.5°	255.3	246.3	263.5	301.1	366.1	446.8
58°	235.7	225.5	241.2	278.0	341.0	419.3
58.5°	216.5	205.6	220.4	256.1	317.2	392.7
59°	198.9	186.8	200.1	234.5	293.7	366.9
59.5°	180.9	168.8	181.3	214.6	270.9	341.8
60°	164.1	151.5	163.3	195.8	249.0	316.8
60.5°	148.0	135.5	146.0	177.0	227.9	292.9
61°	133.5	121.8	132.0	159.4	207.5	269.8
61.5°	118.6	108.1	118.2	143.3	188.3	247.8
62°	105.3	94.8	104.5	130.0	170.3	226.7
62.5°	93.2	81.0	90.8	116.3	152.3	205.6
63°	81.8	70.1	77.1	103.0	135.5	185.2
63.5°	70.5	60.7	66.6	89.7	121.4	165.2
64°	60.7	51.7	57.2	76.4	107.7	145.7
64.5°	51.7	44.6	49.3	65.8	94.0	128.8
65°	46.2	38.0	42.3	56.4	80.3	112.4
65.5°	40.7	32.5	36.4	47.8	68.9	95.9
66°	35.2	27.4	30.9	40.3	58.3	79.5



TEST NUMBER: P776241

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	19.2	18.4	20.0	23.9	34.1	41.1
68°	17.2	17.2	18.0	20.8	28.6	32.9
68.5°	16.1	16.1	16.8	18.4	23.9	27.0
69°	15.3	14.9	15.7	17.2	20.8	23.5
69.5°	14.1	14.1	14.9	16.1	18.8	21.5
70°	13.3	13.3	14.1	15.3	17.6	20.4
70.5°	12.5	12.5	12.9	14.1	16.4	19.2
71°	11.4	11.4	12.1	13.3	15.3	18.0
71.5°	10.6	10.6	11.4	12.5	14.5	16.8
72°	10.2	10.2	10.6	11.7	13.7	15.7
72.5°	9.4	9.4	9.8	11.0	12.5	14.9
73°	8.6	8.6	9.0	10.2	11.7	14.1
73.5°	8.2	8.2	8.6	9.4	11.0	12.9
74°	7.4	7.4	7.8	8.6	10.2	12.1
74.5°	7.0	7.0	7.4	8.2	9.4	11.4
75°	6.7	6.7	7.0	7.8	9.0	10.6
75.5°	6.3	6.3	6.7	7.0	8.2	9.8
76°	5.9	5.9	5.9	6.7	7.8	9.4
76.5°	5.5	5.5	5.5	6.3	7.0	8.6
77°	5.1	5.1	5.1	5.9	6.7	8.2
77.5°	4.7	4.7	4.7	5.5	6.3	7.4
78°	4.3	4.3	4.7	5.1	5.9	7.0
78.5°	3.9	3.9	4.3	4.7	5.1	6.7
79°	3.5	3.5	3.9	4.3	4.7	5.9
79.5°	3.5	3.5	3.5	3.9	4.3	5.5
80°	3.1	3.1	3.1	3.5	3.9	5.1
80.5°	2.7	2.7	3.1	3.1	3.5	4.7
81°	2.7	2.7	2.7	2.7	3.1	4.3
81.5°	2.3	2.3	2.3	2.7	2.7	3.9
82°	2.0	2.0	2.3	2.3	2.3	3.1
82.5°	2.0	2.0	2.0	2.0	2.0	2.7
83°	1.6	1.6	1.6	2.0	1.6	2.3
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: P776241

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRH-4000lm-3000K

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°	2304.2	2347.7	2374.7	2384.9	2386.9	2357.9	2310.5	2252.9	2200.1	2164.5	2141.7
22°	2290.9	2334.8	2362.6	2373.1	2374.7	2345.7	2297.2	2238.1	2184.4	2148.4	2125.3



44°	1361.8	1444.8	1497.3	1523.9	1536.8	1488.3	1406.4	1307.0	1204.8	1121.8	1065.4
44.5°	1326.5	1412.3	1466.3	1493.0	1506.3	1455.8	1373.5	1274.1	1171.9	1088.5	1030.5



66.5°	63.0	102.2	128.4	138.6	147.2	130.4	102.6	74.4	48.9	40.3	33.7
67°	50.9	86.5	113.2	123.7	129.6	114.3	89.7	63.4	43.5	35.2	27.4



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°	2124.1	2115.5	2140.2	2191.1	2249.0	2304.2
22°	2107.3	2097.9	2123.7	2175.0	2234.1	2290.9



44°	1034.8	1028.6	1079.9	1158.6	1259.2	1361.8
44.5°	1000.8	994.5	1045.4	1122.9	1224.4	1326.5



66.5°	30.1	23.9	26.2	33.7	49.3	63.0
67°	24.7	20.4	22.7	28.2	41.1	50.9

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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)