

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: P776301

Luminaire Tested: HCDJBS3040CSD-HCD4TRMB-4000lm-3000K

Issue Date: 2/7/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P776301  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2310613A001)  
Test Lab:  
Issue Date: 2/7/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBL3040CSD-HCD4TRMB-4000lm-3000K  
Description: 4 INCH ROUND MEDIUM MATTE BLACK TRIM  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2480.1 lumens  
Efficiency: N/A  
Efficacy: 64.4 lumens/watt  
Spacing Criteria (0/90/45): 0.95 / 0.95 / 0.94  
Luminous Opening: Circular (Dia: 0.33' x H: 0')  
CIE Type: Direct

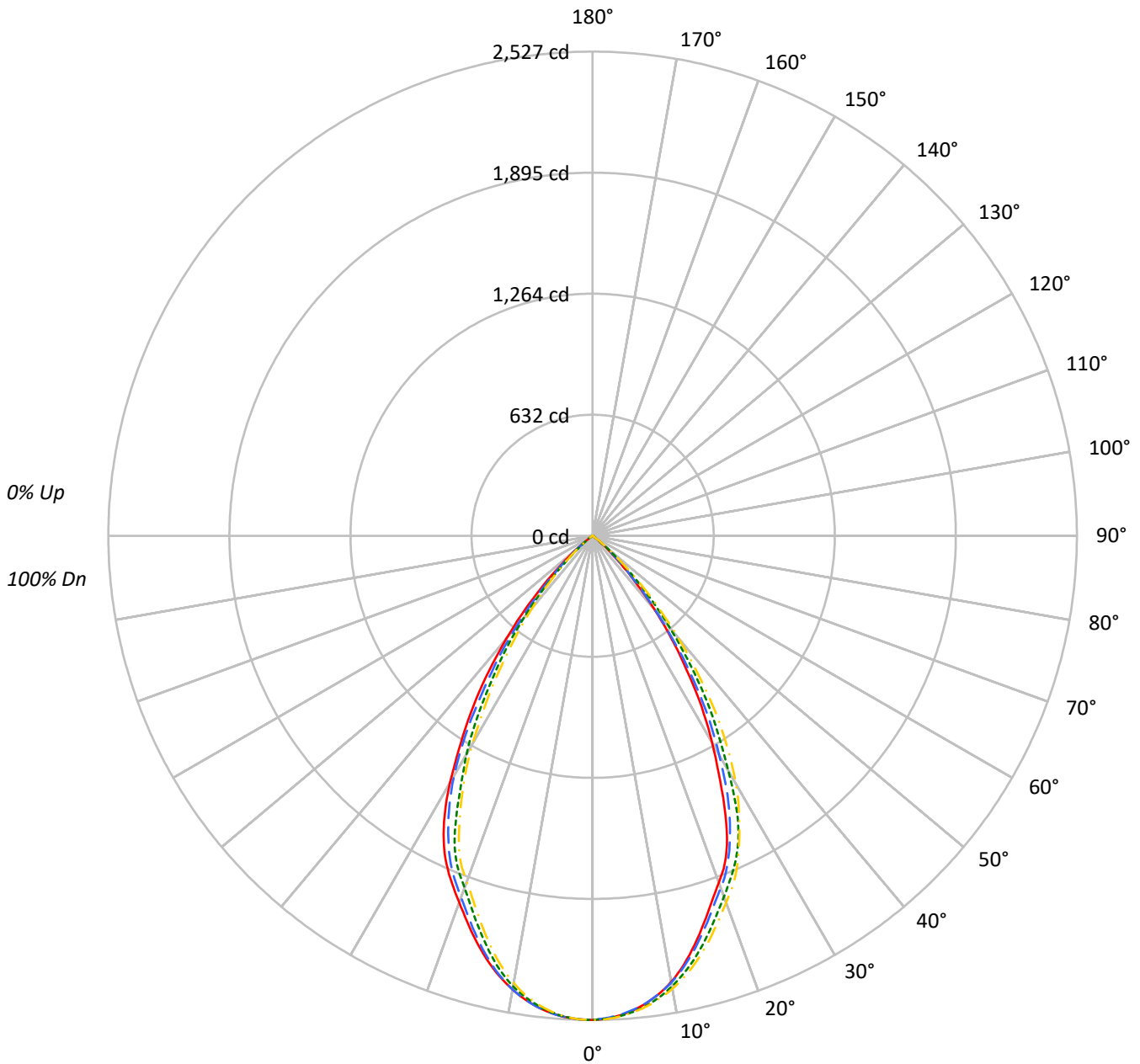
Input Watts (W): 38.5  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20										
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								
1	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93								
2	108	103	98	95	105	101	97	94	98	95	92	95	92	90	92	90	88	86								
3	102	95	90	86	100	94	89	85	91	87	84	89	86	83	87	84	82	80								
4	97	89	83	79	95	88	82	78	85	81	77	83	80	76	82	78	76	74								
5	91	83	77	72	90	82	76	72	80	75	71	78	74	71	77	73	70	69								
6	87	77	71	67	85	77	71	67	75	70	66	74	69	66	72	68	65	64								
7	82	72	66	62	81	72	66	62	70	65	61	69	65	61	68	64	61	59								
8	78	68	62	58	77	67	62	57	66	61	57	65	60	57	64	60	57	55								
9	74	64	58	54	73	63	58	54	62	57	53	62	57	53	61	56	53	52								
10	70	60	54	50	69	60	54	50	59	54	50	58	53	50	57	53	50	48								

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

	0°	90°	180°	270°
0°	317934	317934	317934	317934
5°	313754	314841	315776	315182
10°	302009	305012	307325	305114
15°	280461	288226	292096	284956
20°	257969	268362	272607	261746
25°	229077	248767	253669	236145
30°	181285	205699	216234	191007
35°	131787	156569	166739	140391
40°	82488	103401	114737	90669
45°	37286	55422	63859	42590
50°	10807	16955	22085	12726
55°	1711	1711	2326	2150
60°	680	680	780	680
65°	476	476	476	476
70°	294	442	442	442
75°	194	389	194	389
80°	0	290	290	290
85°	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 180°

Vertical Angle: 45°

Luminance: 63859 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	234.5	9.5
10°-20°	615.2	24.8
20°-30°	785.1	31.7
30°-40°	600.3	24.2
40°-50°	224.3	9.0
50°-60°	18.3	0.7
60°-70°	1.7	0.1
70°-80°	0.7	0.0
80°-90°	0.1	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°	1634.8	65.9
0°-40°	2235.1	90.1
0°-60°	2477.7	99.9
0°-90°	2480.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2480.1	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2526	2526	2526	2526	2526	
5°	2484	2492	2500	2495	2484	233
15°	2153	2212	2242	2187	2153	602
25°	1650	1792	1827	1701	1650	742
35°	858	1019	1085	914	858	534
45°	210	311	359	239	210	176
55°	8	8	11	10	8	13
65°	2	2	2	2	2	2
75°	0	1	0	1	0	1
85°	0	0	0	0	0	0
90°	0	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°	2526.3	2526.3	2526.3	2526.3	2526.3	2526.3	2526.3	2526.3	2526.3	2526.3	2526.3
0.5°	2525.5	2523.5	2523.5	2523.5	2525.5	2525.9	2527.1	2527.8	2526.7	2525.5	2525.5
1°	2523.9	2522.0	2521.6	2522.0	2523.9	2524.7	2525.9	2526.7	2526.3	2525.5	2525.1
1.5°	2521.6	2519.2	2518.8	2519.2	2522.0	2523.1	2524.3	2525.5	2524.7	2524.3	2524.7
2°	2518.4	2516.1	2515.3	2516.1	2519.6	2520.8	2522.0	2523.1	2523.1	2522.8	2523.1
2.5°	2514.5	2511.8	2511.4	2512.6	2516.5	2517.7	2518.8	2520.4	2520.8	2520.4	2520.8
3°	2509.8	2507.1	2506.7	2508.3	2512.6	2514.1	2515.3	2516.9	2517.7	2517.7	2518.1
3.5°	2504.3	2501.2	2501.6	2503.6	2508.3	2509.8	2511.4	2513.0	2514.1	2514.5	2514.5
4°	2498.1	2495.3	2495.3	2497.7	2503.6	2505.1	2506.3	2508.3	2509.8	2510.6	2510.6
4.5°	2491.0	2488.3	2488.7	2491.8	2498.5	2500.0	2501.2	2503.2	2505.1	2505.9	2505.9
5°	2483.6	2480.5	2480.8	2484.8	2492.2	2493.8	2494.9	2497.3	2499.6	2500.8	2500.4
5.5°	2475.0	2471.4	2473.0	2476.9	2485.2	2486.7	2488.3	2490.6	2493.4	2494.6	2493.8
6°	2466.0	2462.4	2464.0	2468.7	2477.7	2479.3	2480.8	2483.6	2486.7	2487.9	2486.7
6.5°	2456.2	2453.0	2455.0	2459.7	2469.1	2471.4	2473.0	2475.8	2479.3	2480.5	2479.3
7°	2445.6	2442.5	2444.8	2449.5	2459.7	2462.4	2464.4	2467.5	2470.7	2472.2	2471.1
7.5°	2434.2	2431.5	2433.5	2438.5	2449.5	2452.6	2455.4	2458.1	2461.3	2463.2	2462.0
8°	2422.1	2419.7	2421.7	2427.2	2438.5	2442.1	2445.6	2448.7	2451.9	2453.0	2451.9
8.5°	2408.8	2407.2	2409.6	2414.7	2426.8	2430.7	2435.4	2438.2	2440.9	2442.9	2441.3
9°	2394.7	2393.5	2396.2	2401.3	2414.3	2419.4	2424.4	2427.2	2429.9	2431.1	2429.9
9.5°	2379.0	2379.0	2382.1	2387.6	2400.9	2406.8	2412.7	2416.2	2417.8	2419.0	2417.8
10°	2363.3	2363.3	2366.9	2372.7	2386.8	2393.9	2400.2	2403.7	2404.9	2405.6	2404.5
10.5°	2346.9	2346.9	2350.8	2357.5	2373.1	2379.8	2386.8	2390.8	2391.5	2391.9	2390.4
11°	2328.1	2328.9	2334.0	2340.6	2357.5	2365.3	2373.1	2377.1	2377.8	2377.4	2375.5
11.5°	2308.9	2310.5	2316.3	2323.4	2341.4	2350.4	2359.0	2362.6	2362.6	2362.2	2359.4
12°	2288.5	2290.9	2297.5	2305.4	2325.4	2334.8	2343.8	2347.7	2347.7	2346.1	2343.4
12.5°	2267.4	2270.1	2277.6	2287.0	2307.7	2317.9	2327.7	2332.0	2331.6	2329.3	2326.1
13°	2245.5	2249.0	2257.6	2267.8	2289.7	2300.7	2311.6	2316.0	2314.8	2311.6	2306.9
13.5°	2222.7	2227.4	2236.4	2247.4	2271.7	2283.1	2294.0	2298.3	2297.5	2294.0	2288.5
14°	2199.6	2205.1	2215.7	2227.4	2251.7	2265.0	2276.0	2281.1	2279.5	2274.8	2268.6
14.5°	2176.1	2182.4	2193.8	2206.7	2232.1	2246.2	2257.2	2262.3	2260.7	2255.6	2247.8
15°	2152.6	2159.3	2171.4	2185.1	2212.2	2226.7	2238.4	2243.5	2241.9	2235.7	2227.0
15.5°	2128.3	2136.2	2148.7	2164.0	2192.2	2206.7	2219.2	2223.9	2222.3	2215.7	2205.5
16°	2104.1	2112.7	2126.8	2142.1	2171.0	2187.1	2199.6	2204.3	2202.4	2194.9	2184.0
16.5°	2080.6	2090.0	2104.5	2120.5	2150.3	2166.7	2178.9	2185.1	2182.4	2174.2	2162.0
17°	2057.1	2066.5	2081.7	2099.0	2129.1	2146.0	2158.9	2164.4	2161.6	2152.6	2140.1
17.5°	2033.6	2043.4	2059.4	2077.4	2107.6	2124.8	2137.7	2142.8	2140.5	2131.1	2117.4
18°	2010.1	2020.6	2037.1	2055.5	2086.4	2104.1	2117.0	2122.9	2119.3	2109.5	2095.4
18.5°	1987.3	1999.1	2015.1	2034.0	2064.9	2083.3	2096.6	2101.7	2097.8	2087.6	2072.7
19°	1966.2	1978.3	1995.2	2013.2	2044.1	2062.9	2075.9	2081.0	2076.6	2066.1	2050.4
19.5°	1946.2	1958.7	1974.8	1993.2	2024.2	2042.6	2056.3	2061.0	2056.7	2044.5	2028.5
20°	1926.2	1939.2	1955.2	1973.6	2003.8	2022.6	2037.5	2041.4	2035.5	2024.2	2007.7
20.5°	1906.7	1919.2	1935.6	1953.7	1984.2	2003.4	2017.9	2022.2	2016.3	2003.8	1987.3
21°	1886.7	1899.6	1915.3	1933.7	1964.6	1984.2	1997.9	2003.0	1996.7	1984.2	1967.4



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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°	1816.6	1828.7	1844.0	1868.3	1905.1	1924.3	1936.8	1942.7	1938.0	1925.1	1906.3
23°	1788.4	1800.9	1817.0	1845.6	1884.3	1902.7	1913.7	1920.8	1918.0	1904.3	1883.9
23.5°	1757.8	1771.1	1788.8	1819.7	1862.8	1879.6	1888.2	1896.1	1896.5	1883.2	1860.0
24°	1723.7	1737.8	1759.0	1792.7	1840.9	1855.0	1861.2	1871.0	1874.1	1861.2	1835.0
24.5°	1687.7	1701.8	1727.3	1764.1	1817.0	1829.9	1834.2	1844.0	1851.0	1837.7	1807.6
25°	1649.7	1663.4	1696.3	1735.1	1791.5	1802.9	1805.6	1816.2	1826.8	1813.8	1779.4
25.5°	1609.8	1624.3	1663.8	1703.4	1764.9	1774.3	1775.1	1786.8	1800.9	1788.0	1750.0
26°	1568.3	1584.3	1631.3	1672.8	1735.9	1744.1	1745.3	1757.0	1773.1	1761.0	1720.2
26.5°	1526.0	1544.4	1596.1	1640.7	1704.2	1712.8	1715.9	1726.9	1743.3	1731.6	1688.5
27°	1483.3	1505.2	1560.4	1607.4	1670.1	1681.1	1686.5	1696.7	1711.6	1699.5	1656.8
27.5°	1442.5	1466.4	1523.2	1573.3	1632.5	1648.5	1656.8	1666.2	1679.1	1666.2	1625.4
28°	1401.4	1429.6	1484.0	1536.9	1592.9	1615.3	1626.2	1635.6	1643.1	1630.5	1591.8
28.5°	1361.5	1394.0	1444.1	1498.5	1549.8	1580.0	1595.7	1604.3	1606.6	1594.1	1557.7
29°	1323.1	1358.7	1403.8	1459.4	1506.0	1544.4	1564.3	1572.6	1569.4	1554.2	1522.0
29.5°	1285.1	1323.1	1362.2	1417.9	1460.9	1507.2	1530.3	1538.5	1528.7	1513.4	1484.4
30°	1247.5	1286.6	1321.1	1374.4	1415.5	1468.0	1495.0	1504.4	1488.0	1471.1	1444.5
30.5°	1210.3	1249.0	1281.5	1328.9	1372.4	1427.6	1457.8	1467.6	1444.5	1426.9	1404.5
31°	1172.3	1210.3	1241.2	1284.7	1330.5	1386.1	1421.4	1431.6	1402.2	1382.6	1363.0
31.5°	1134.3	1170.3	1202.4	1238.1	1290.2	1344.2	1383.4	1392.4	1359.9	1337.9	1321.5
32°	1095.9	1130.0	1162.5	1192.6	1252.2	1301.5	1346.2	1353.2	1319.5	1294.9	1277.6
32.5°	1057.5	1087.3	1122.9	1148.4	1213.4	1259.6	1308.6	1312.1	1278.8	1253.0	1235.7
33°	1017.6	1045.4	1082.6	1102.9	1176.6	1218.1	1270.2	1271.8	1240.0	1211.4	1191.1
33.5°	976.8	1003.5	1041.8	1058.3	1137.4	1177.0	1230.2	1231.0	1200.1	1170.7	1146.0
34°	936.5	963.5	999.9	1014.8	1098.2	1137.8	1190.7	1190.3	1162.9	1130.4	1100.2
34.5°	897.3	922.0	958.4	972.5	1057.9	1099.4	1149.6	1148.0	1123.7	1091.2	1056.7
35°	857.8	883.2	916.9	930.6	1019.1	1062.6	1108.4	1107.3	1085.3	1052.4	1011.7
35.5°	820.6	846.0	874.2	889.9	976.0	1024.2	1065.0	1066.1	1046.2	1013.3	969.4
36°	783.7	808.4	831.5	850.3	934.5	985.4	1022.3	1025.0	1008.6	973.7	928.3
36.5°	747.7	771.6	790.0	811.5	893.8	947.5	978.8	983.5	968.2	933.4	888.3
37°	712.1	734.0	746.5	773.2	853.8	909.5	936.1	941.2	928.3	892.2	848.0
37.5°	676.8	697.6	704.6	735.6	813.9	869.9	893.0	901.2	887.9	851.5	810.4
38°	641.6	660.0	663.5	697.6	776.3	830.0	853.1	861.7	848.4	810.8	772.0
38.5°	606.3	622.8	625.1	660.7	738.7	789.6	811.9	822.9	810.0	770.8	734.0
39°	571.8	586.3	588.3	624.7	703.1	750.4	771.6	784.1	772.4	734.4	696.4
39.5°	536.2	548.3	551.5	591.0	665.4	711.3	731.6	745.7	734.8	694.8	659.6
40°	502.1	511.9	515.4	555.8	629.4	673.7	691.7	706.6	698.4	658.4	622.8
40.5°	468.0	476.3	482.5	522.9	594.2	636.5	652.1	668.6	661.5	623.5	586.3
41°	434.8	441.8	449.6	490.4	559.7	600.8	614.1	630.2	627.5	590.6	549.5
41.5°	401.9	408.5	417.9	458.3	524.1	564.8	577.3	591.4	592.2	555.8	514.7
42°	371.7	375.6	387.0	425.7	489.2	530.3	540.9	554.2	555.8	523.7	479.8
42.5°	341.5	345.1	358.0	396.4	456.3	495.9	505.3	518.6	520.9	491.2	446.9
43°	313.3	315.3	329.0	367.0	424.6	461.4	470.4	483.7	487.2	461.0	415.2
43.5°	285.1	286.7	302.4	338.0	394.0	426.5	437.9	449.6	453.2	428.1	384.6



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	209.5	207.6	227.6	257.7	311.4	331.0	346.6	356.4	358.8	343.1	302.4
45.5°	186.8	184.5	206.0	233.4	284.0	299.6	317.3	327.0	329.4	315.3	275.0
46°	165.7	163.3	185.3	210.3	256.5	268.3	287.9	297.7	300.0	287.5	250.3
46.5°	145.3	143.4	166.1	189.2	231.1	240.9	258.9	268.7	270.6	260.1	227.2
47°	130.8	129.3	147.3	168.8	206.4	215.0	232.7	241.3	243.2	234.6	204.8
47.5°	116.7	114.8	132.8	149.2	182.9	190.7	207.6	215.8	218.6	211.1	184.1
48°	102.6	100.3	118.3	130.8	160.6	168.4	184.9	191.5	194.7	188.8	164.9
48.5°	88.5	86.2	103.8	114.8	139.8	147.3	162.9	169.2	172.3	166.1	146.9
49°	74.4	71.7	89.3	101.1	120.2	128.5	142.2	147.7	150.8	145.7	129.6
49.5°	64.6	62.3	74.8	88.5	102.2	110.8	123.0	128.1	131.2	126.9	114.0
50°	55.2	53.3	63.5	76.0	86.6	94.8	105.0	110.5	112.8	109.3	99.5
50.5°	47.0	45.4	53.3	63.5	72.5	80.3	88.9	94.4	96.4	93.6	85.8
51°	39.6	38.0	43.9	50.9	59.9	67.0	74.0	79.5	81.1	78.7	73.6
51.5°	32.5	31.3	35.6	41.5	52.1	55.2	61.1	65.8	67.4	66.2	62.3
52°	26.6	25.5	28.2	32.9	44.3	47.0	52.1	54.1	55.2	54.8	52.1
52.5°	21.2	20.0	21.9	25.1	36.4	39.2	43.1	46.2	47.0	47.0	44.7
53°	16.1	15.3	16.5	18.8	28.6	30.9	34.5	38.0	39.2	38.8	37.2
53.5°	14.1	13.3	14.5	13.7	20.8	22.7	25.5	30.2	30.9	30.9	29.8
54°	12.1	11.0	12.1	11.4	12.9	14.9	16.8	21.9	22.7	23.1	21.9
54.5°	10.2	8.6	10.2	9.8	9.4	10.6	11.8	14.1	14.9	14.9	14.9
55°	7.8	6.7	7.8	7.8	7.8	8.2	9.0	10.2	10.6	11.0	11.0
55.5°	5.9	5.9	5.9	6.3	6.7	7.1	7.4	7.8	8.2	8.6	8.2
56°	5.5	5.1	5.1	5.5	5.9	6.3	6.3	6.7	7.1	7.1	7.1
56.5°	4.7	4.7	4.7	4.7	5.1	5.5	5.9	5.9	6.3	6.3	6.3
57°	4.3	4.3	4.3	4.3	4.7	4.7	5.1	5.5	5.5	5.5	5.5
57.5°	3.9	3.9	3.9	3.9	4.3	4.3	4.7	4.7	5.1	5.1	5.1
58°	3.5	3.5	3.5	3.5	3.9	3.9	3.9	4.3	4.3	4.3	4.3
58.5°	3.1	3.1	3.1	3.1	3.5	3.5	3.5	3.9	3.9	3.9	3.9
59°	3.1	3.1	3.1	3.1	3.1	3.1	3.5	3.5	3.5	3.5	3.5
59.5°	2.7	2.7	2.7	2.7	2.7	3.1	3.1	3.1	3.1	3.1	3.1
60°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3.1	3.1	3.1	3.1
60.5°	2.4	2.4	2.4	2.4	2.7	2.7	2.7	2.7	2.7	2.7	2.7
61°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.7	2.7	2.7	2.7
61.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
62°	2.0	2.0	2.0	2.0	2.0	2.4	2.4	2.4	2.4	2.4	2.4
62.5°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4	2.4
63°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
63.5°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
64°	1.6	1.6	1.6	1.6	1.6	2.0	2.0	2.0	2.0	2.0	2.0
64.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.0
65°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
65.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
66°	1.2	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6





TEST NUMBER: P776301

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMB-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
68°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
68.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
69°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
69.5°	0.8	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
70°	0.8	0.8	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
70.5°	0.8	0.8	0.8	0.8	1.2	1.2	1.2	0.8	0.8	0.8	1.2
71°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.2
71.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
72°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
72.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
73°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
73.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
74°	0.4	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
74.5°	0.4	0.4	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
75°	0.4	0.4	0.4	0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.8
75.5°	0.4	0.4	0.4	0.4	0.8	0.8	0.8	0.4	0.4	0.4	0.8
76°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
76.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
77°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
77.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
78°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
78.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
79°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
79.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
80°	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
80.5°	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
81°	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.4
81.5°	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.4
82°	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.4
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776301

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMB-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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776301

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMB-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2526.3	2526.3	2526.3	2526.3	2526.3	2526.3
0.5°	2525.5	2526.3	2526.7	2527.1	2527.1	2525.5
1°	2525.5	2525.9	2525.9	2526.3	2525.9	2523.9
1.5°	2524.7	2524.7	2524.7	2524.7	2523.9	2521.6
2°	2523.1	2522.8	2522.8	2522.4	2520.8	2518.4
2.5°	2520.8	2520.0	2519.6	2519.2	2517.3	2514.5
3°	2518.1	2516.5	2516.1	2515.3	2513.4	2509.8
3.5°	2514.1	2512.2	2511.8	2510.6	2507.9	2504.3
4°	2509.4	2507.1	2506.7	2505.1	2502.0	2498.1
4.5°	2504.3	2501.2	2500.4	2498.9	2495.7	2491.0
5°	2498.9	2494.9	2493.4	2491.4	2488.3	2483.6
5.5°	2492.2	2487.5	2485.5	2483.6	2479.3	2475.0
6°	2484.8	2479.3	2477.3	2474.6	2470.7	2466.0
6.5°	2476.9	2470.7	2468.3	2465.2	2460.9	2456.2
7°	2468.3	2461.3	2458.1	2454.6	2449.5	2445.6
7.5°	2458.9	2451.1	2447.2	2442.9	2437.8	2434.2
8°	2449.1	2440.1	2435.4	2430.3	2426.0	2422.1
8.5°	2438.2	2428.4	2422.9	2417.0	2412.3	2408.8
9°	2426.4	2415.8	2409.2	2402.5	2397.8	2394.7
9.5°	2413.9	2402.1	2394.7	2386.8	2381.4	2379.0
10°	2400.6	2387.6	2379.0	2370.8	2365.7	2363.3
10.5°	2386.1	2372.4	2362.2	2353.2	2348.5	2346.9
11°	2371.2	2355.9	2344.5	2334.8	2329.7	2328.1
11.5°	2355.1	2337.9	2325.7	2315.2	2309.7	2308.9
12°	2337.5	2319.5	2305.8	2294.4	2288.9	2288.5
12.5°	2319.5	2299.1	2284.6	2272.9	2267.4	2267.4
13°	2300.7	2278.0	2263.1	2250.9	2245.1	2245.5
13.5°	2280.3	2256.4	2240.4	2227.4	2222.7	2222.7
14°	2259.2	2234.1	2217.3	2203.9	2198.1	2199.6
14.5°	2237.6	2210.6	2193.4	2180.4	2174.2	2176.1
15°	2215.7	2187.1	2169.1	2156.2	2150.3	2152.6
15.5°	2193.0	2163.6	2144.8	2131.9	2126.0	2128.3
16°	2170.3	2139.3	2120.5	2106.4	2101.7	2104.1
16.5°	2147.1	2115.8	2096.2	2082.1	2077.4	2080.6
17°	2123.6	2091.9	2071.2	2057.5	2052.8	2057.1
17.5°	2100.1	2067.6	2046.9	2033.6	2028.9	2033.6
18°	2077.0	2043.4	2023.0	2008.9	2005.4	2010.1
18.5°	2053.9	2020.2	1998.7	1985.0	1981.9	1987.3
19°	2030.8	1996.7	1975.6	1962.3	1959.9	1966.2
19.5°	2008.9	1975.2	1954.8	1941.5	1938.8	1946.2
20°	1987.7	1954.4	1933.3	1921.1	1918.4	1926.2
20.5°	1967.4	1934.5	1913.3	1900.8	1898.8	1906.7
21°	1947.0	1914.5	1892.6	1880.0	1879.2	1886.7

TEST NUMBER: P776301

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMB-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1885.5	1852.2	1827.5	1811.9	1808.0	1816.6
23°	1861.2	1827.5	1800.9	1782.5	1778.6	1788.4
23.5°	1836.2	1800.5	1772.3	1750.8	1748.4	1757.8
24°	1808.7	1770.0	1739.4	1715.9	1714.3	1723.7
24.5°	1779.8	1736.7	1706.9	1679.9	1678.3	1687.7
25°	1748.8	1700.6	1670.9	1641.9	1641.1	1649.7
25.5°	1717.1	1661.9	1633.7	1604.7	1603.5	1609.8
26°	1683.4	1621.1	1593.7	1568.3	1563.6	1568.3
26.5°	1648.5	1578.4	1553.8	1531.4	1524.8	1526.0
27°	1612.9	1537.3	1511.1	1495.4	1485.2	1483.3
27.5°	1575.3	1496.6	1466.0	1457.0	1444.9	1442.5
28°	1536.9	1458.6	1422.6	1418.6	1404.9	1401.4
28.5°	1498.5	1421.4	1380.3	1378.7	1365.0	1361.5
29°	1459.0	1385.3	1339.5	1337.2	1323.5	1323.1
29.5°	1419.4	1350.5	1300.0	1294.1	1282.3	1285.1
30°	1381.0	1314.4	1260.8	1251.0	1240.0	1247.5
30.5°	1341.9	1277.2	1222.8	1206.3	1196.9	1210.3
31°	1303.9	1239.2	1184.8	1161.3	1154.6	1172.3
31.5°	1267.1	1198.9	1146.8	1118.6	1111.6	1134.3
32°	1229.5	1157.8	1108.0	1075.9	1070.8	1095.9
32.5°	1192.2	1116.3	1070.0	1034.0	1031.7	1057.5
33°	1155.0	1074.0	1030.9	993.7	992.9	1017.6
33.5°	1117.8	1031.7	991.3	952.5	954.5	976.8
34°	1078.3	990.9	951.8	912.6	916.1	936.5
34.5°	1038.3	952.2	911.0	872.6	877.3	897.3
35°	996.4	913.8	871.5	832.7	838.6	857.8
35.5°	956.1	877.7	833.5	793.1	799.8	820.6
36°	911.4	842.9	795.5	755.5	760.6	783.7
36.5°	869.5	806.8	759.8	719.5	721.1	747.7
37°	826.4	771.6	723.4	683.9	683.1	712.1
37.5°	785.7	736.0	687.8	649.0	646.3	676.8
38°	744.6	698.7	652.5	614.5	610.6	641.6
38.5°	706.2	661.5	617.7	580.8	576.5	606.3
39°	667.0	625.1	584.4	548.7	544.4	571.8
39.5°	629.0	588.3	549.5	515.8	512.7	536.2
40°	591.0	551.9	516.2	485.3	481.8	502.1
40.5°	555.4	516.6	483.7	454.3	451.2	468.0
41°	519.0	483.3	451.6	425.4	422.6	434.8
41.5°	484.1	450.0	420.7	397.5	393.6	401.9
42°	450.0	418.7	390.5	371.7	366.2	371.7
42.5°	416.7	387.4	361.5	345.5	339.6	341.5
43°	384.6	357.2	333.7	321.2	314.5	313.3
43.5°	356.0	325.9	307.5	296.9	289.4	285.1



TEST NUMBER: P776301

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMB-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	271.0	239.3	234.2	230.7	222.9	209.5
45.5°	246.0	213.1	211.9	210.3	202.5	186.8
46°	222.5	188.8	191.1	191.5	184.1	165.7
46.5°	200.1	166.1	171.2	173.5	165.7	145.3
47°	179.4	146.1	152.0	155.9	148.4	130.8
47.5°	160.2	131.6	134.3	139.8	134.3	116.7
48°	141.8	117.1	120.6	126.5	120.6	102.6
48.5°	125.3	103.0	106.5	113.2	106.5	88.5
49°	110.1	88.9	92.8	99.9	92.4	74.4
49.5°	96.0	74.8	79.1	86.6	78.3	64.6
50°	83.0	65.0	67.8	73.2	67.4	55.2
50.5°	71.7	56.4	58.0	62.3	56.4	47.0
51°	61.1	48.2	49.4	52.5	47.4	39.6
51.5°	52.1	41.1	41.1	43.5	39.2	32.5
52°	45.0	34.5	33.7	35.3	31.3	26.6
52.5°	38.4	28.2	27.4	27.8	24.7	21.2
53°	31.3	22.7	21.5	21.2	18.8	16.1
53.5°	24.7	17.6	16.5	15.7	13.7	14.1
54°	17.6	13.3	14.1	13.3	11.8	12.1
54.5°	13.3	11.4	12.1	11.0	9.8	10.2
55°	10.2	9.8	10.2	8.6	7.8	7.8
55.5°	7.8	7.8	7.8	6.3	6.3	5.9
56°	7.1	6.3	5.9	5.9	5.5	5.5
56.5°	5.9	5.5	5.1	5.1	5.1	4.7
57°	5.5	4.7	4.7	4.7	4.3	4.3
57.5°	4.7	4.3	4.3	4.3	3.9	3.9
58°	4.3	3.9	3.9	3.9	3.5	3.5
58.5°	3.9	3.5	3.5	3.5	3.5	3.1
59°	3.5	3.1	3.1	3.1	3.1	3.1
59.5°	3.1	3.1	3.1	3.1	2.7	2.7
60°	3.1	2.7	2.7	2.7	2.7	2.7
60.5°	2.7	2.7	2.7	2.7	2.7	2.4
61°	2.7	2.4	2.4	2.4	2.4	2.4
61.5°	2.4	2.4	2.4	2.4	2.4	2.4
62°	2.4	2.4	2.4	2.4	2.0	2.0
62.5°	2.4	2.0	2.0	2.0	2.0	2.0
63°	2.0	2.0	2.0	2.0	2.0	2.0
63.5°	2.0	2.0	2.0	2.0	2.0	2.0
64°	2.0	2.0	2.0	2.0	1.6	1.6
64.5°	2.0	1.6	1.6	1.6	1.6	1.6
65°	1.6	1.6	1.6	1.6	1.6	1.6
65.5°	1.6	1.6	1.6	1.6	1.6	1.6
66°	1.6	1.6	1.6	1.6	1.6	1.2



TEST NUMBER: P776301

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMB-4000lm-3000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	1.2	1.2	1.2	1.2	1.2	1.2
68°	1.2	1.2	1.2	1.2	1.2	1.2
68.5°	1.2	1.2	1.2	1.2	1.2	1.2
69°	1.2	1.2	1.2	1.2	1.2	1.2
69.5°	1.2	1.2	1.2	1.2	1.2	0.8
70°	1.2	1.2	1.2	1.2	0.8	0.8
70.5°	1.2	1.2	1.2	0.8	0.8	0.8
71°	1.2	0.8	0.8	0.8	0.8	0.8
71.5°	0.8	0.8	0.8	0.8	0.8	0.8
72°	0.8	0.8	0.8	0.8	0.8	0.8
72.5°	0.8	0.8	0.8	0.8	0.8	0.8
73°	0.8	0.8	0.8	0.8	0.8	0.8
73.5°	0.8	0.8	0.8	0.8	0.8	0.8
74°	0.8	0.8	0.8	0.8	0.8	0.4
74.5°	0.8	0.8	0.8	0.8	0.4	0.4
75°	0.8	0.8	0.8	0.8	0.4	0.4
75.5°	0.8	0.8	0.8	0.4	0.4	0.4
76°	0.8	0.4	0.4	0.4	0.4	0.4
76.5°	0.4	0.4	0.4	0.4	0.4	0.4
77°	0.4	0.4	0.4	0.4	0.4	0.4
77.5°	0.4	0.4	0.4	0.4	0.4	0.4
78°	0.4	0.4	0.4	0.4	0.4	0.4
78.5°	0.4	0.4	0.4	0.4	0.4	0.4
79°	0.4	0.4	0.4	0.4	0.4	0.4
79.5°	0.4	0.4	0.4	0.4	0.4	0.4
80°	0.4	0.4	0.4	0.4	0.4	0.0
80.5°	0.4	0.4	0.4	0.4	0.0	0.0
81°	0.4	0.4	0.4	0.4	0.0	0.0
81.5°	0.4	0.4	0.4	0.4	0.0	0.0
82°	0.4	0.4	0.4	0.0	0.0	0.0
82.5°	0.4	0.0	0.0	0.0	0.0	0.0
83°	0.0	0.0	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776301

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMB-4000lm-3000K

**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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21.5°	1865.9	1878.5	1893.3	1913.3	1945.0	1965.4	1979.9	1983.8	1977.2	1963.8	1947.4
22°	1842.4	1854.6	1869.4	1892.2	1925.5	1945.0	1959.1	1964.2	1958.0	1944.3	1927.8



44°	259.3	258.9	275.7	309.4	366.6	393.2	405.4	416.3	419.9	398.7	357.2
44.5°	232.7	232.7	251.1	283.6	339.2	361.9	376.0	385.8	388.1	370.9	329.8



66.5°	1.2	1.2	1.2	1.2	1.6	1.6	1.6	1.6	1.6	1.6	1.6
67°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.6



89°	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0



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21.5°	1927.0	1894.9	1873.4	1860.8	1857.7	1865.9
22°	1907.4	1874.1	1851.0	1837.7	1834.2	1842.4



44°	327.8	296.1	282.0	273.8	265.9	259.3
44.5°	299.2	267.1	257.7	251.5	244.0	232.7

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66.5°	1.6	1.6	1.6	1.6	1.2	1.2
67°	1.6	1.6	1.2	1.2	1.2	1.2

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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)