

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: P776333

Luminaire Tested: HCDJBL3040CSD-HCD4TSQMW-4000lm-4000K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P776333
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-HCD4TSQMW-4000lm-4000K
Description: 4 INCH SQUARE MEDIUM MATTE WHITE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 4000K CCT
Ballast/Driver: -

Summary

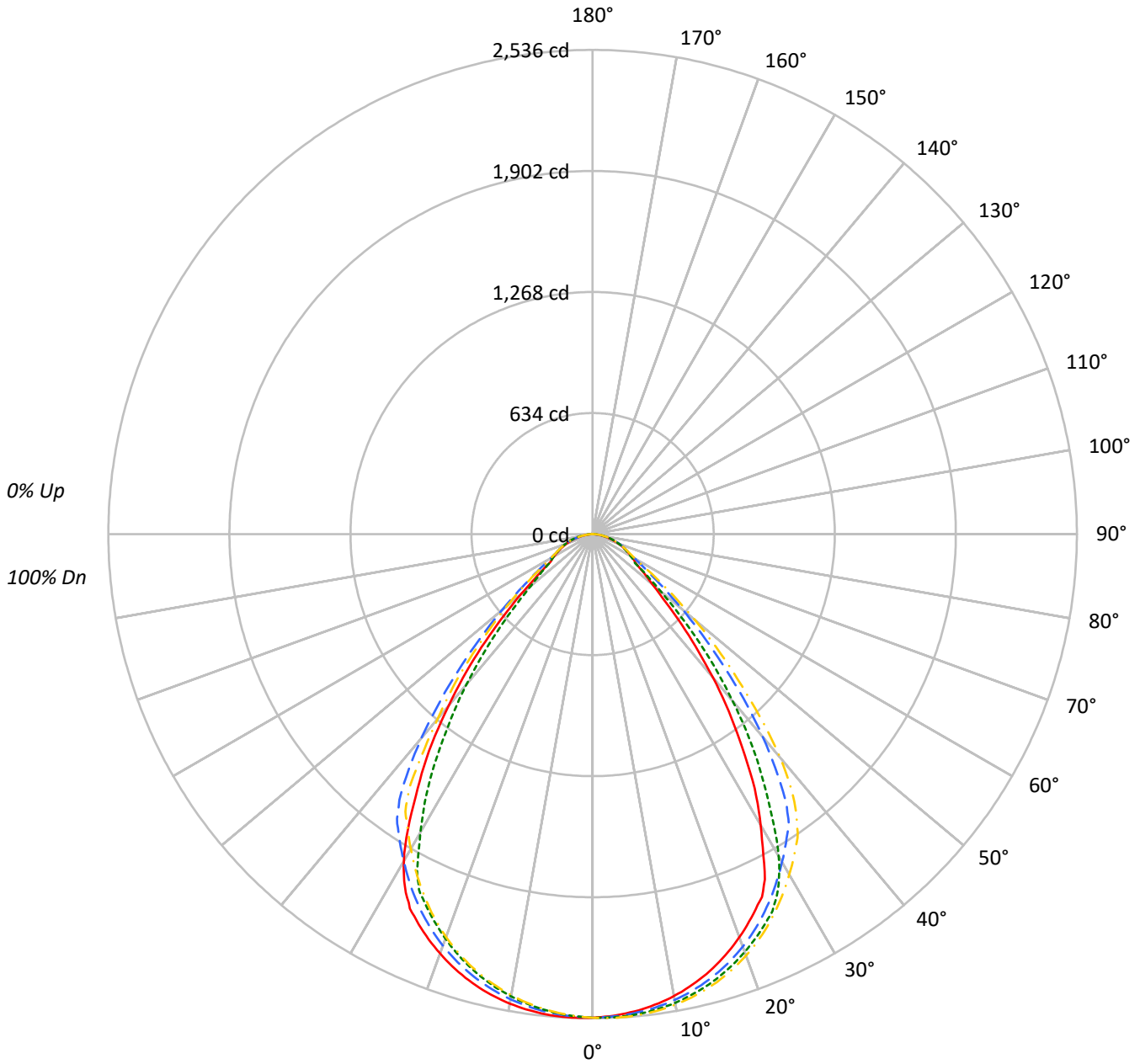
Lumens per Lamp: N/A
Luminaire Lumens: 4188.2 lumens
Efficiency: N/A
Efficacy: 108.8 lumens/watt
Spacing Criteria (0/90/45): 1.12 / 1.13 / 1.17
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

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					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	111	108	104	101	109	106	103	100	101	99	97	98	96	94	94	93	91	89					89			
2	104	97	92	88	101	96	91	86	92	88	85	89	86	83	86	83	81	79					79			
3	97	88	82	77	94	87	81	76	84	79	75	81	77	73	79	75	72	70					70			
4	90	80	73	68	88	79	72	67	77	71	66	75	70	66	73	68	65	63					63			
5	84	73	66	61	82	72	65	60	70	64	60	69	63	59	67	62	58	57					57			
6	79	67	60	55	77	67	59	54	65	59	54	63	58	53	62	57	53	51					51			
7	74	62	55	49	72	61	54	49	60	54	49	59	53	49	57	52	48	47					47			
8	69	58	50	45	68	57	50	45	56	49	45	55	49	45	53	48	44	43					43			
9	65	53	46	41	64	53	46	41	52	46	41	51	45	41	50	45	41	39					39			
10	61	50	43	38	60	49	43	38	48	42	38	48	42	38	47	41	38	36					36			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	250318	250318	250318	250318
5°	249002	250718	250957	249121
10°	246541	250175	250626	246782
15°	242489	248383	249089	242939
20°	236289	244977	245861	237173
25°	228721	240282	240991	229648
30°	200851	222388	225698	205828
35°	164779	186378	190408	171053
40°	126384	146977	151403	132616
45°	88861	106655	110947	94606
50°	62846	71396	75056	65076
55°	49733	49113	52025	50767
60°	46614	45171	45981	46535
65°	43923	43361	43642	44975
70°	40546	41586	41124	43580
75°	36471	39412	37884	42009
80°	28916	36486	32786	39446
85°	14176	29713	19620	34703

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 135°

Vertical Angle: 45°

Luminance: 150044 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	239.1	5.7
10°-20°	676.5	16.2
20°-30°	986.0	23.5
30°-40°	991.8	23.7
40°-50°	650.2	15.5
50°-60°	315.1	7.5
60°-70°	191.5	4.6
70°-80°	110.3	2.6
80°-90°	27.7	0.7
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°	1901.6	45.4
0°-40°	2893.4	69.1
0°-60°	3858.7	92.1
0°-90°	4188.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4188.2	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2532	2532	2532	2532	2532	
5°	2510	2527	2529	2511	2510	238
15°	2370	2427	2434	2374	2370	667
25°	2097	2203	2210	2106	2097	945
35°	1366	1545	1578	1418	1366	851
45°	636	763	794	677	636	500
55°	289	285	302	295	289	270
65°	188	185	187	192	188	186
75°	96	103	99	110	96	101
85°	12	26	17	31	12	18
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°	2532.5	2532.5	2532.5	2532.5	2532.5	2532.5	2532.5	2532.5	2532.5	2532.5	2532.5
0.5°	2532.1	2531.3	2531.7	2531.7	2533.3	2533.7	2534.6	2535.0	2534.1	2532.5	2531.3
1°	2530.9	2530.1	2531.3	2532.1	2533.7	2534.6	2535.4	2535.8	2534.6	2532.5	2530.9
1.5°	2528.9	2528.9	2530.9	2532.1	2533.7	2535.0	2536.2	2536.2	2535.0	2532.5	2530.1
2°	2526.9	2527.3	2530.1	2532.1	2533.7	2535.0	2536.2	2536.2	2535.0	2532.1	2528.9
2.5°	2524.9	2525.7	2528.9	2531.3	2533.3	2535.0	2536.2	2536.2	2535.0	2531.7	2527.7
3°	2522.1	2523.3	2527.3	2530.5	2532.1	2534.6	2535.8	2536.2	2534.1	2530.9	2526.1
3.5°	2519.6	2520.8	2525.7	2529.7	2531.3	2533.7	2535.4	2535.4	2533.3	2529.7	2524.1
4°	2516.8	2518.4	2523.7	2528.5	2530.1	2532.9	2534.6	2535.0	2532.5	2528.1	2522.5
4.5°	2513.2	2515.2	2521.2	2526.9	2528.9	2531.3	2533.7	2533.7	2531.3	2526.5	2520.0
5°	2509.6	2512.0	2518.4	2524.9	2526.9	2530.1	2532.1	2532.1	2529.3	2524.5	2516.8
5.5°	2505.9	2508.4	2515.6	2522.9	2524.9	2528.1	2530.5	2530.5	2527.7	2522.5	2514.0
6°	2501.9	2504.7	2512.8	2520.4	2522.5	2525.7	2528.5	2528.5	2525.3	2519.6	2510.8
6.5°	2497.5	2500.7	2509.6	2518.0	2519.6	2523.7	2526.1	2526.1	2522.5	2516.8	2507.1
7°	2492.2	2495.9	2505.9	2515.2	2516.4	2520.8	2523.7	2523.7	2520.0	2514.0	2503.1
7.5°	2487.0	2491.0	2501.9	2512.0	2513.2	2518.0	2520.8	2520.4	2516.8	2510.4	2499.1
8°	2481.7	2486.2	2497.1	2508.4	2509.6	2514.8	2517.6	2517.2	2513.6	2506.7	2494.6
8.5°	2475.7	2480.1	2493.0	2504.7	2505.9	2511.2	2514.0	2514.0	2510.0	2502.7	2489.8
9°	2469.7	2474.5	2488.2	2500.7	2501.9	2507.5	2510.4	2510.4	2505.9	2498.7	2485.0
9.5°	2463.2	2468.4	2483.0	2495.9	2497.5	2503.5	2506.3	2505.9	2501.5	2493.8	2479.7
10°	2456.4	2462.4	2477.3	2491.4	2492.6	2498.7	2502.3	2501.9	2497.1	2489.0	2474.1
10.5°	2449.1	2455.5	2471.7	2486.2	2487.4	2493.8	2497.5	2497.1	2492.2	2484.2	2468.0
11°	2441.8	2448.3	2465.6	2480.9	2482.2	2488.6	2492.6	2492.2	2487.4	2478.5	2461.6
11.5°	2434.2	2441.0	2459.2	2475.3	2476.1	2483.4	2487.4	2486.6	2481.7	2472.9	2455.1
12°	2425.7	2433.4	2452.3	2469.3	2470.1	2478.1	2482.2	2480.9	2475.7	2466.8	2448.3
12.5°	2417.3	2425.3	2445.1	2462.8	2463.6	2472.1	2476.1	2474.9	2469.7	2460.4	2441.0
13°	2408.4	2417.3	2437.8	2456.8	2457.2	2465.2	2470.1	2468.8	2463.2	2453.9	2433.8
13.5°	2399.5	2408.4	2430.6	2449.5	2450.3	2459.2	2463.6	2462.0	2456.4	2446.7	2425.7
14°	2390.2	2399.1	2422.1	2442.6	2443.1	2451.9	2456.8	2455.1	2449.1	2439.0	2417.7
14.5°	2380.2	2389.4	2414.0	2435.0	2435.4	2444.3	2449.5	2448.3	2441.8	2431.4	2409.2
15°	2369.7	2379.8	2405.2	2427.3	2427.3	2437.0	2442.2	2440.2	2434.2	2423.7	2400.3
15.5°	2358.8	2369.7	2396.3	2419.3	2419.3	2429.3	2434.6	2432.6	2425.7	2415.2	2391.1
16°	2347.9	2359.2	2386.6	2410.8	2410.4	2420.5	2426.5	2424.1	2417.3	2406.8	2381.8
16.5°	2336.2	2348.3	2376.9	2401.5	2401.1	2412.0	2418.1	2415.6	2408.4	2397.5	2371.7
17°	2324.5	2337.0	2367.3	2392.7	2391.9	2402.7	2409.2	2407.2	2399.5	2388.2	2361.6
17.5°	2312.1	2325.4	2356.8	2383.4	2382.2	2393.9	2399.9	2397.9	2389.4	2378.6	2351.2
18°	2300.0	2313.7	2345.9	2373.3	2372.1	2384.2	2390.2	2387.8	2379.4	2368.5	2340.3
18.5°	2286.7	2300.8	2335.0	2363.2	2362.0	2373.7	2380.6	2377.8	2369.7	2358.4	2329.0
19°	2273.8	2288.3	2323.3	2353.2	2351.2	2362.8	2370.5	2367.3	2359.2	2347.5	2317.7
19.5°	2260.1	2275.0	2311.6	2341.9	2340.3	2353.2	2360.0	2356.4	2348.7	2336.2	2306.0
20°	2246.4	2262.1	2299.6	2330.6	2329.0	2341.5	2348.7	2345.9	2337.4	2325.0	2293.5
20.5°	2232.6	2248.4	2286.7	2318.9	2317.3	2330.2	2337.8	2334.2	2325.8	2313.3	2280.6
21°	2218.5	2234.3	2273.8	2307.2	2305.2	2318.5	2326.2	2322.5	2314.1	2301.6	2268.1



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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°	2173.4	2190.7	2233.0	2269.3	2268.5	2281.8	2289.1	2286.3	2277.4	2263.7	2227.4
23°	2158.1	2175.8	2218.1	2256.8	2255.2	2268.9	2276.2	2273.4	2264.5	2250.4	2212.9
23.5°	2142.8	2160.1	2203.2	2243.5	2241.9	2256.0	2262.9	2260.1	2252.0	2236.7	2198.0
24°	2126.2	2144.4	2188.3	2229.8	2228.6	2242.7	2249.2	2246.8	2238.7	2223.0	2183.1
24.5°	2112.1	2129.1	2173.0	2216.1	2214.9	2229.0	2234.7	2233.0	2224.6	2209.3	2167.8
25°	2097.2	2112.9	2156.9	2201.6	2203.2	2215.3	2220.2	2218.9	2209.7	2195.2	2151.6
25.5°	2073.0	2096.8	2140.7	2187.1	2187.1	2201.2	2205.6	2205.2	2196.0	2180.6	2135.9
26°	2046.4	2081.1	2124.2	2172.6	2165.3	2186.3	2190.3	2190.7	2182.3	2165.7	2119.0
26.5°	2021.4	2066.2	2107.7	2157.7	2146.8	2172.2	2175.0	2175.4	2157.7	2150.4	2102.5
27°	1983.9	2047.2	2090.8	2142.0	2125.4	2158.9	2159.3	2160.1	2138.7	2134.3	2085.5
27.5°	1944.4	2018.2	2073.4	2128.2	2101.2	2140.3	2143.6	2146.0	2117.8	2119.8	2068.2
28°	1905.3	1994.8	2055.7	2112.9	2074.2	2118.2	2126.6	2125.8	2093.6	2101.6	2050.5
28.5°	1867.5	1963.0	2038.0	2090.0	2046.4	2099.6	2110.5	2102.5	2067.8	2077.9	2033.1
29°	1830.8	1925.1	2020.2	2069.4	2016.2	2076.7	2094.0	2083.9	2039.6	2058.1	2014.6
29.5°	1795.3	1886.8	2002.5	2048.8	1983.9	2051.7	2077.1	2061.3	2009.7	2036.3	1996.8
30°	1759.8	1848.5	1983.9	2025.1	1948.5	2025.5	2059.7	2035.9	1977.5	2011.8	1978.3
30.5°	1725.2	1811.0	1965.8	1999.3	1910.6	1997.7	2042.8	2009.7	1943.2	1985.2	1959.8
31°	1690.5	1774.3	1947.3	1971.0	1871.5	1967.0	2025.5	1981.9	1906.2	1957.7	1941.2
31.5°	1655.0	1739.7	1928.3	1942.4	1830.4	1936.4	2007.7	1951.7	1865.8	1927.9	1922.7
32°	1616.3	1704.6	1910.2	1911.4	1788.9	1902.5	1989.6	1919.5	1824.3	1896.9	1903.7
32.5°	1578.9	1670.8	1890.8	1878.7	1746.5	1865.4	1971.9	1886.0	1782.8	1862.6	1884.4
33°	1538.1	1635.7	1873.1	1842.5	1704.6	1827.1	1953.3	1849.3	1741.3	1827.1	1865.4
33.5°	1495.4	1600.6	1855.8	1807.0	1663.5	1787.2	1936.0	1811.0	1698.6	1788.9	1846.5
34°	1450.7	1563.1	1838.0	1768.3	1623.2	1746.5	1918.6	1771.1	1656.6	1749.8	1830.0
34.5°	1408.8	1525.2	1809.8	1727.6	1583.7	1705.8	1896.1	1730.0	1616.7	1709.5	1808.6
35°	1365.6	1485.7	1778.0	1686.9	1544.6	1665.1	1867.1	1688.1	1578.0	1667.5	1776.8
35.5°	1324.9	1444.2	1750.6	1646.6	1505.9	1624.8	1841.7	1648.6	1540.2	1627.2	1747.7
36°	1284.6	1401.5	1715.9	1606.7	1467.2	1585.7	1816.3	1608.3	1501.1	1587.7	1721.1
36.5°	1246.7	1359.2	1676.4	1567.2	1427.7	1546.6	1785.6	1568.8	1461.2	1548.2	1685.7
37°	1208.4	1317.7	1636.1	1527.3	1387.4	1507.9	1754.2	1529.7	1423.3	1509.5	1645.8
37.5°	1171.3	1279.4	1594.2	1489.4	1346.3	1470.8	1720.7	1492.2	1382.6	1472.4	1605.5
38°	1134.3	1239.1	1553.1	1451.5	1304.4	1431.7	1685.3	1453.9	1341.0	1434.6	1564.3
38.5°	1096.8	1202.0	1511.5	1414.0	1262.8	1393.8	1649.4	1417.2	1298.3	1397.9	1521.6
39°	1058.1	1165.3	1470.8	1376.5	1222.1	1355.5	1609.9	1378.1	1256.4	1360.4	1480.1
39.5°	1019.0	1129.4	1429.7	1338.2	1180.6	1315.6	1569.2	1339.4	1215.3	1322.9	1437.0
40°	979.5	1091.5	1387.0	1300.7	1139.1	1276.1	1526.5	1299.1	1173.4	1284.2	1393.8
40.5°	940.8	1056.1	1344.3	1262.0	1099.2	1235.8	1482.5	1259.2	1133.1	1244.3	1349.5
41°	902.9	1019.0	1300.7	1222.5	1061.3	1195.1	1436.2	1218.1	1093.1	1204.4	1306.0
41.5°	866.6	982.3	1258.0	1183.4	1022.2	1156.0	1389.0	1177.8	1055.7	1164.9	1262.4
42°	830.3	944.8	1214.1	1143.9	984.3	1117.3	1341.4	1137.9	1017.0	1125.8	1218.5
42.5°	796.5	908.1	1170.1	1105.2	946.4	1078.6	1294.3	1098.0	979.5	1087.9	1175.4
43°	763.0	871.5	1125.8	1066.9	908.5	1040.3	1248.7	1060.1	942.8	1050.0	1133.5
43.5°	730.4	836.0	1081.9	1030.3	871.5	1003.3	1203.2	1022.6	904.9	1013.7	1088.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	635.7	736.0	956.5	921.8	763.0	894.8	1073.4	913.0	793.7	907.3	966.2
45.5°	606.2	704.6	916.6	887.2	727.6	857.7	1033.5	877.9	758.6	873.9	926.3
46°	578.0	673.5	879.1	852.5	693.7	823.1	994.4	841.6	723.5	838.4	888.4
46.5°	551.0	643.3	842.8	818.2	660.2	789.2	954.5	806.2	690.1	803.7	850.9
47°	524.8	613.9	807.8	784.4	628.8	754.6	916.6	770.7	657.8	769.9	815.4
47.5°	501.4	585.3	773.5	750.9	598.2	721.5	878.7	736.0	626.8	736.8	780.4
48°	479.7	557.9	739.2	717.9	568.7	688.9	840.4	703.4	596.6	704.2	745.7
48.5°	459.9	531.3	706.2	684.8	541.3	656.2	804.5	671.1	568.3	672.7	712.2
49°	441.8	506.3	674.8	653.8	514.3	625.6	767.1	640.1	540.1	642.1	680.0
49.5°	424.4	483.3	644.1	624.0	488.9	594.5	731.2	608.6	513.9	613.1	649.0
50°	408.7	461.1	613.9	594.9	464.3	565.9	696.9	580.0	488.1	584.1	619.1
50.5°	394.6	441.0	584.5	566.7	440.6	537.3	663.1	551.0	463.5	556.6	589.3
51°	381.3	422.8	556.6	540.5	418.4	510.7	631.2	524.0	440.6	530.0	561.9
51.5°	368.4	405.9	530.0	513.9	398.2	485.3	600.2	498.2	419.2	505.1	535.3
52°	356.3	391.0	504.7	489.3	378.9	461.1	570.8	474.0	399.0	480.9	509.9
52.5°	344.2	376.5	481.3	464.7	362.8	437.3	541.3	449.0	379.7	456.7	485.7
53°	332.9	363.2	458.3	441.4	346.6	415.2	514.7	426.1	362.4	434.9	462.3
53.5°	320.8	350.7	436.9	418.4	330.5	393.8	488.1	405.1	347.0	413.2	440.6
54°	309.6	339.0	416.0	397.4	314.4	374.1	463.5	384.9	332.1	392.6	419.6
54.5°	298.7	327.3	397.0	377.3	298.7	357.9	439.4	365.6	316.8	373.2	400.7
55°	288.6	316.0	378.9	358.3	285.0	341.4	417.6	349.5	301.9	357.5	382.5
55.5°	279.7	304.7	362.0	341.4	274.1	325.3	395.4	333.7	288.2	341.8	364.8
56°	273.3	293.8	345.8	324.9	265.6	308.8	374.9	318.0	276.5	326.1	350.3
56.5°	268.4	283.0	330.9	310.0	260.4	292.6	358.3	302.3	266.8	310.8	335.4
57°	264.0	273.7	317.2	295.9	255.6	278.9	341.4	288.2	260.4	295.1	320.4
57.5°	259.2	265.2	303.9	282.6	251.1	266.8	324.9	275.3	255.6	281.8	305.9
58°	254.7	259.6	292.2	270.1	246.7	257.2	308.4	264.4	251.1	269.7	294.2
58.5°	250.3	254.7	281.8	260.0	242.2	251.1	291.4	255.1	246.7	260.0	283.0
59°	245.5	249.9	271.7	253.5	237.4	245.9	278.9	249.1	241.8	252.3	272.5
59.5°	240.6	245.5	262.8	248.3	233.0	241.4	267.6	243.9	237.4	247.1	263.2
60°	235.8	241.0	254.3	243.5	228.5	237.0	257.6	239.4	232.6	242.2	254.3
60.5°	230.6	236.2	246.7	239.0	224.1	232.2	248.7	234.6	228.1	237.8	246.3
61°	226.1	231.4	239.4	234.2	219.7	227.7	241.0	230.2	223.3	233.4	239.0
61.5°	221.3	226.5	232.6	229.4	215.2	223.3	233.4	225.7	218.5	228.5	232.2
62°	216.5	221.7	226.5	224.9	211.2	218.9	226.5	220.9	214.0	224.1	225.7
62.5°	211.2	216.5	220.1	220.5	206.8	214.4	220.1	216.0	209.6	219.3	219.3
63°	206.8	211.6	214.4	216.0	202.3	209.6	214.0	211.6	204.8	214.4	213.6
63.5°	201.9	206.8	208.8	211.2	197.9	205.2	208.4	206.8	200.3	210.0	208.4
64°	197.1	201.9	204.0	206.8	193.9	200.7	202.7	201.9	195.9	205.2	203.2
64.5°	192.3	197.5	199.1	202.3	189.4	196.3	197.9	197.5	191.1	200.3	198.3
65°	187.8	192.3	194.7	197.9	185.4	192.3	193.5	192.7	186.6	195.9	193.5
65.5°	183.0	187.4	190.3	193.5	181.0	187.8	188.6	188.2	182.2	191.1	189.0
66°	178.2	183.0	185.4	189.0	177.0	183.4	184.2	183.4	177.8	186.6	184.6



TEST NUMBER: P776333

CATALOG NUMBER: HCDJBL3040CSD-HCD4TSQMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	164.1	168.5	171.7	175.7	164.5	170.5	170.9	169.7	164.5	172.9	171.3
68°	159.6	163.6	167.3	171.3	160.4	166.1	166.1	165.3	160.0	168.5	166.9
68.5°	154.8	158.8	162.4	166.9	156.0	162.0	161.6	160.8	155.6	163.6	162.4
69°	150.3	154.4	158.0	162.4	152.0	157.6	157.2	156.4	151.2	159.2	157.6
69.5°	144.7	149.5	153.2	158.4	147.9	153.2	152.8	151.6	146.7	154.8	153.2
70°	140.3	146.3	148.7	154.0	143.9	149.1	147.9	147.1	142.3	150.3	148.7
70.5°	136.2	141.5	143.9	149.5	139.9	145.1	143.5	142.7	138.3	145.9	144.3
71°	131.8	136.6	139.5	145.9	135.8	140.7	139.1	138.3	133.8	141.5	139.9
71.5°	127.8	131.4	135.0	141.5	131.8	136.2	134.6	133.8	129.4	136.6	135.4
72°	122.9	126.6	130.6	137.4	127.8	132.2	130.2	129.4	125.0	132.2	131.0
72.5°	118.5	121.7	126.2	133.0	123.7	128.2	125.8	125.0	120.9	127.8	126.6
73°	113.7	117.3	121.7	129.0	119.3	124.1	121.3	120.5	116.5	123.3	122.1
73.5°	109.2	112.5	117.3	124.6	115.3	119.7	117.3	116.1	112.1	118.9	117.7
74°	104.4	108.0	112.9	120.5	111.7	115.7	112.9	111.7	108.0	114.5	113.3
74.5°	100.0	103.2	108.0	116.1	107.6	111.7	108.4	107.2	103.6	110.0	109.2
75°	95.5	98.4	103.6	112.1	103.2	107.2	104.4	102.8	99.2	105.6	104.8
75.5°	91.1	93.9	99.2	107.6	99.2	103.2	100.0	98.4	95.1	101.2	100.4
76°	86.3	89.1	94.7	103.6	95.1	99.2	95.5	93.9	90.7	96.7	95.9
76.5°	81.8	84.6	90.3	99.6	91.5	95.1	91.5	89.5	86.7	92.7	91.5
77°	77.4	79.8	85.9	95.1	87.5	91.1	87.5	85.0	82.2	88.3	87.1
77.5°	73.0	75.4	81.4	91.1	83.4	87.1	83.4	80.6	78.2	83.8	83.0
78°	68.5	70.5	77.4	86.7	79.4	82.6	79.0	76.2	74.2	79.4	78.6
78.5°	64.1	66.1	73.0	82.6	75.4	78.6	75.0	71.7	69.7	75.0	74.2
79°	59.7	61.3	68.9	78.2	71.7	74.6	70.9	67.3	65.7	70.5	70.1
79.5°	55.2	56.8	64.5	74.2	67.7	70.5	66.9	62.9	61.7	66.5	66.1
80°	50.8	52.4	60.5	70.1	64.1	66.5	62.9	58.8	57.6	62.1	62.1
80.5°	46.8	48.0	56.4	65.7	60.1	62.5	59.3	54.4	53.6	57.6	57.6
81°	42.3	43.1	52.4	61.7	56.4	58.4	55.2	50.4	49.6	53.2	54.0
81.5°	37.9	38.7	48.4	57.6	52.4	54.8	51.6	46.8	45.5	49.2	50.0
82°	33.5	34.7	44.3	53.6	48.8	50.8	47.6	42.7	41.1	44.7	46.0
82.5°	29.4	30.6	40.7	50.0	45.1	47.2	43.9	39.1	37.1	40.3	42.3
83°	25.0	27.0	37.1	46.0	41.5	43.1	40.3	35.5	33.5	36.7	38.7
83.5°	20.6	23.0	33.5	42.3	37.5	39.5	37.1	31.8	29.4	32.6	35.5
84°	16.5	19.8	29.8	38.3	33.9	35.5	33.5	28.2	25.4	28.6	32.2
84.5°	14.5	16.5	26.6	34.7	30.2	31.8	30.2	25.0	21.4	25.0	29.0
85°	12.5	14.1	23.4	30.6	26.2	28.2	26.6	21.4	17.3	21.0	25.8
85.5°	10.1	11.7	19.8	27.0	22.6	24.2	23.4	18.1	14.5	17.7	22.2
86°	8.1	9.7	16.5	23.0	18.9	20.6	20.2	15.7	12.1	15.3	19.3
86.5°	6.0	7.7	13.7	19.3	15.3	16.9	16.9	13.3	10.5	13.3	16.1
87°	4.4	5.2	10.5	15.7	11.7	13.3	13.7	10.9	8.9	11.3	12.9
87.5°	2.4	3.2	7.7	12.1	8.1	9.7	10.5	8.5	6.9	8.9	9.7
88°	0.8	1.2	4.4	8.9	4.8	6.0	7.3	6.4	5.2	6.9	6.9
88.5°	0.0	0.4	1.6	5.2	1.6	2.8	4.0	4.0	3.6	4.8	3.6



TEST NUMBER: P776333

CATALOG NUMBER: HCDJBL3040CSD-HCD4TSQMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.4	0.4	0.0	0.0	0.0	0.4	0.4	0.0	0.4	0.4



TEST NUMBER: P776333

CATALOG NUMBER: HCDJBL3040CSD-HCD4TSQMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2532.5	2532.5	2532.5	2532.5	2532.5	2532.5
0.5°	2529.7	2531.7	2531.7	2532.1	2532.5	2532.1
1°	2528.9	2530.5	2530.1	2530.5	2531.3	2530.9
1.5°	2527.3	2528.9	2528.1	2528.5	2529.3	2528.9
2°	2525.7	2527.3	2526.1	2526.1	2526.9	2526.9
2.5°	2523.7	2525.3	2523.7	2523.7	2524.5	2524.9
3°	2521.2	2522.9	2520.8	2520.8	2521.7	2522.1
3.5°	2518.4	2520.4	2518.4	2518.0	2518.8	2519.6
4°	2515.6	2517.2	2515.2	2514.8	2515.6	2516.8
4.5°	2512.4	2514.4	2511.6	2511.2	2512.0	2513.2
5°	2508.8	2510.8	2507.5	2507.5	2508.4	2509.6
5.5°	2505.1	2507.1	2503.5	2503.1	2504.3	2505.9
6°	2501.1	2502.7	2499.1	2498.7	2499.9	2501.9
6.5°	2496.7	2498.3	2494.6	2494.2	2495.0	2497.5
7°	2491.8	2493.4	2489.4	2489.0	2490.2	2492.2
7.5°	2486.6	2488.6	2484.2	2483.8	2484.6	2487.0
8°	2481.3	2483.0	2478.5	2478.1	2479.3	2481.7
8.5°	2475.7	2477.3	2472.5	2472.1	2473.3	2475.7
9°	2470.1	2471.3	2466.4	2465.6	2466.8	2469.7
9.5°	2463.6	2464.8	2460.0	2459.2	2460.4	2463.2
10°	2456.8	2458.8	2453.1	2451.9	2453.5	2456.4
10.5°	2449.9	2451.9	2445.9	2445.1	2445.9	2449.1
11°	2442.6	2444.3	2438.6	2437.4	2438.6	2441.8
11.5°	2435.4	2436.6	2430.6	2429.3	2431.0	2434.2
12°	2427.3	2428.9	2422.5	2421.3	2422.5	2425.7
12.5°	2419.3	2420.5	2414.0	2412.8	2413.6	2417.3
13°	2410.8	2412.0	2405.2	2404.0	2405.2	2408.4
13.5°	2401.5	2403.1	2396.3	2395.1	2395.9	2399.5
14°	2392.7	2393.9	2386.6	2385.4	2386.6	2390.2
14.5°	2383.0	2384.2	2376.9	2375.3	2376.1	2380.2
15°	2373.3	2374.1	2366.9	2365.3	2365.7	2369.7
15.5°	2362.8	2363.6	2356.0	2354.8	2354.8	2358.8
16°	2352.4	2353.2	2345.1	2343.9	2344.3	2347.9
16.5°	2341.1	2342.3	2334.2	2332.6	2333.0	2336.2
17°	2329.8	2330.6	2322.9	2321.3	2321.3	2324.5
17.5°	2318.1	2318.9	2310.8	2309.2	2308.8	2312.1
18°	2306.4	2306.4	2298.8	2297.1	2296.7	2300.0
18.5°	2293.5	2293.9	2285.9	2285.0	2283.8	2286.7
19°	2281.0	2281.4	2273.0	2271.7	2270.5	2273.8
19.5°	2268.1	2268.1	2259.7	2258.8	2257.2	2260.1
20°	2254.4	2254.8	2245.9	2245.1	2243.1	2246.4
20.5°	2240.7	2241.1	2232.2	2230.6	2229.0	2232.6
21°	2226.6	2227.0	2217.7	2216.9	2214.5	2218.5

TEST NUMBER: P776333

CATALOG NUMBER: HCDJBL3040CSD-HCD4TSQMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	2182.7	2183.5	2173.0	2171.0	2169.4	2173.4
23°	2167.3	2168.2	2157.7	2155.7	2154.0	2158.1
23.5°	2152.4	2152.4	2142.4	2138.7	2138.3	2142.8
24°	2136.7	2137.1	2126.2	2122.6	2122.2	2126.2
24.5°	2120.6	2121.0	2109.7	2105.7	2105.7	2112.1
25°	2104.1	2105.7	2093.6	2088.7	2088.7	2097.2
25.5°	2087.9	2091.6	2076.7	2070.6	2072.6	2073.0
26°	2071.8	2072.6	2059.7	2054.1	2055.3	2046.4
26.5°	2057.3	2044.0	2043.2	2035.1	2040.4	2021.4
27°	2040.8	2021.8	2028.3	2017.8	2024.3	1983.9
27.5°	2014.6	1990.4	2010.5	1998.9	1998.9	1944.4
28°	1988.4	1952.5	1983.9	1980.3	1972.7	1905.3
28.5°	1963.4	1914.2	1958.1	1961.4	1946.5	1867.5
29°	1928.7	1876.7	1933.2	1942.8	1910.6	1830.8
29.5°	1891.2	1839.2	1897.7	1922.7	1872.7	1795.3
30°	1853.8	1803.4	1861.4	1904.1	1833.6	1759.8
30.5°	1817.1	1766.3	1822.7	1884.8	1796.9	1725.2
31°	1781.2	1730.8	1786.8	1865.4	1760.2	1690.5
31.5°	1744.5	1694.9	1749.8	1845.7	1724.4	1655.0
32°	1709.0	1658.7	1714.7	1825.9	1690.1	1616.3
32.5°	1673.6	1620.8	1680.0	1806.6	1657.1	1578.9
33°	1638.5	1582.5	1645.0	1788.1	1622.8	1538.1
33.5°	1602.6	1542.6	1609.9	1771.5	1589.7	1495.4
34°	1565.1	1501.5	1575.2	1753.4	1554.7	1450.7
34.5°	1527.7	1459.9	1538.5	1723.6	1518.8	1408.8
35°	1489.4	1417.6	1501.1	1688.1	1480.1	1365.6
35.5°	1449.5	1375.3	1463.2	1661.5	1442.2	1324.9
36°	1409.2	1335.0	1423.3	1623.2	1401.1	1284.6
36.5°	1368.0	1294.3	1384.2	1575.6	1361.2	1246.7
37°	1327.7	1256.0	1343.9	1528.1	1319.3	1208.4
37.5°	1287.8	1217.3	1304.4	1480.9	1280.2	1171.3
38°	1249.1	1179.4	1264.5	1434.1	1241.5	1134.3
38.5°	1211.7	1141.9	1227.4	1389.4	1204.4	1096.8
39°	1173.4	1105.2	1189.5	1345.9	1168.1	1058.1
39.5°	1136.7	1066.5	1154.4	1304.0	1132.6	1019.0
40°	1100.8	1027.8	1118.1	1263.6	1098.0	979.5
40.5°	1065.7	990.4	1082.3	1225.0	1063.3	940.8
41°	1028.7	952.1	1046.8	1187.1	1028.3	902.9
41.5°	992.4	914.6	1011.7	1149.2	992.0	866.6
42°	955.7	877.9	975.4	1112.1	956.1	830.3
42.5°	920.2	842.4	939.2	1076.2	920.6	796.5
43°	883.9	807.4	903.7	1039.1	884.8	763.0
43.5°	848.1	773.5	867.8	1001.2	849.7	730.4

TEST NUMBER: P776333

CATALOG NUMBER: HCDJBL3040CSD-HCD4TSQMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	748.1	676.8	766.7	888.0	750.5	635.7
45.5°	717.5	646.1	735.6	852.1	719.9	606.2
46°	685.6	615.9	704.6	817.4	689.3	578.0
46.5°	655.4	586.5	673.5	783.2	659.4	551.0
47°	626.0	558.7	644.1	750.9	630.4	524.8
47.5°	597.4	531.3	613.9	720.3	602.2	501.4
48°	568.7	507.1	585.3	691.3	574.4	479.7
48.5°	542.1	482.9	558.3	663.5	547.8	459.9
49°	515.5	461.5	532.1	635.7	522.4	441.8
49.5°	491.4	441.8	507.1	609.5	498.6	424.4
50°	467.2	423.2	483.3	583.7	476.4	408.7
50.5°	445.8	406.3	461.5	558.7	455.5	394.6
51°	425.6	391.4	440.6	534.5	436.5	381.3
51.5°	407.1	377.3	422.4	510.7	418.8	368.4
52°	390.2	364.4	405.9	488.1	402.7	356.3
52.5°	374.9	351.9	389.8	466.4	387.8	344.2
53°	360.8	339.8	375.3	445.8	373.7	332.9
53.5°	348.7	328.1	361.6	426.1	360.4	320.8
54°	337.0	316.4	348.3	407.5	347.9	309.6
54.5°	325.3	305.5	337.0	389.8	335.8	298.7
55°	313.2	294.6	324.9	373.2	324.9	288.6
55.5°	301.5	284.2	313.2	357.5	313.2	279.7
56°	291.0	275.3	302.3	343.0	302.3	273.3
56.5°	280.1	268.0	291.4	329.3	291.4	268.4
57°	270.5	262.4	280.9	316.0	281.3	264.0
57.5°	262.0	258.0	271.3	303.9	272.1	259.2
58°	254.7	253.1	263.2	292.6	264.4	254.7
58.5°	249.5	248.7	256.8	282.2	258.4	250.3
59°	245.1	244.3	251.9	272.5	253.9	245.5
59.5°	240.6	240.2	247.1	262.8	249.1	240.6
60°	236.2	235.4	242.7	254.7	244.7	235.8
60.5°	231.8	231.4	238.2	247.1	239.4	230.6
61°	226.9	226.9	233.4	239.8	235.0	226.1
61.5°	222.5	222.5	228.9	233.0	230.2	221.3
62°	218.1	218.1	224.5	226.5	225.3	216.5
62.5°	213.6	213.6	219.7	220.5	220.1	211.2
63°	209.2	209.6	215.2	214.8	215.2	206.8
63.5°	204.8	205.2	210.8	209.6	210.4	201.9
64°	200.3	201.1	206.4	204.4	205.6	197.1
64.5°	195.9	196.7	201.5	199.9	200.7	192.3
65°	191.9	192.3	197.5	195.5	195.9	187.8
65.5°	187.4	188.2	193.1	190.7	191.1	183.0
66°	183.0	183.8	188.2	186.2	186.2	178.2



TEST NUMBER: P776333

CATALOG NUMBER: HCDJBL3040CSD-HCD4TSQMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	170.1	171.3	175.3	172.9	171.7	164.1
68°	165.7	167.3	170.9	168.1	166.9	159.6
68.5°	161.6	162.8	166.5	163.2	162.0	154.8
69°	157.2	158.8	162.0	158.8	157.6	150.3
69.5°	152.8	154.8	157.6	154.0	152.8	144.7
70°	148.7	150.8	153.2	149.5	147.9	140.3
70.5°	144.3	145.9	149.1	145.5	143.5	136.2
71°	140.3	141.9	146.3	141.1	138.7	131.8
71.5°	135.8	138.3	141.9	136.2	134.2	127.8
72°	131.8	134.2	137.0	131.8	129.8	122.9
72.5°	127.4	130.2	132.6	127.4	125.0	118.5
73°	123.3	126.6	128.2	122.9	120.1	113.7
73.5°	119.3	122.1	123.7	118.1	115.7	109.2
74°	114.9	118.1	119.7	113.7	110.8	104.4
74.5°	110.8	114.1	115.3	109.2	106.0	100.0
75°	106.4	110.0	110.8	104.8	101.6	95.5
75.5°	102.4	106.0	106.8	100.4	96.7	91.1
76°	97.9	102.0	102.4	95.5	92.3	86.3
76.5°	93.9	97.5	98.4	91.1	87.5	81.8
77°	89.9	93.5	93.9	87.1	82.6	77.4
77.5°	85.5	89.5	89.9	82.6	78.2	73.0
78°	81.4	85.5	85.5	78.2	73.4	68.5
78.5°	77.0	81.4	81.4	73.8	68.9	64.1
79°	73.0	77.4	77.0	69.7	64.1	59.7
79.5°	68.9	73.4	73.0	65.3	59.7	55.2
80°	64.5	69.3	68.5	61.3	54.8	50.8
80.5°	60.5	65.3	64.5	57.2	50.4	46.8
81°	56.4	61.7	60.5	53.2	46.0	42.3
81.5°	52.8	57.6	56.4	49.2	41.9	37.9
82°	48.8	53.6	52.4	45.1	37.5	33.5
82.5°	44.7	50.0	48.4	41.5	33.9	29.4
83°	41.1	46.0	44.3	37.9	29.8	25.0
83.5°	37.1	41.9	40.3	34.3	26.2	20.6
84°	33.5	38.3	36.3	30.6	22.6	16.5
84.5°	29.4	34.7	32.6	27.4	19.3	14.5
85°	25.8	30.6	28.6	23.8	16.5	12.5
85.5°	21.8	27.0	24.6	20.6	14.1	10.1
86°	18.1	23.0	20.6	16.9	11.7	8.1
86.5°	14.1	19.3	16.9	13.7	9.3	6.0
87°	10.5	15.3	13.3	10.5	6.9	4.4
87.5°	6.9	12.1	10.1	7.7	4.4	2.4
88°	3.6	8.5	6.9	4.4	2.0	0.8
88.5°	1.2	4.8	3.6	1.2	0.8	0.0



TEST NUMBER: P776333

CATALOG NUMBER: HCDJBL3040CSD-HCD4TSQMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.0	0.0	0.4	0.4	0.0



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Scaled Data Report





— 0°-180° - - 45°-225° - - - - 90°-270° - · - 135°-315°

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21.5°	2203.6	2219.7	2260.5	2295.1	2293.1	2306.4	2314.5	2310.8	2302.4	2288.7	2255.2
22°	2188.3	2205.2	2246.8	2282.2	2281.0	2293.9	2302.0	2298.8	2290.3	2276.6	2241.1



44°	698.5	800.5	1038.3	992.4	834.4	966.2	1157.6	985.5	866.6	976.7	1046.4
44.5°	666.7	768.3	997.2	956.5	798.5	930.3	1115.7	950.1	830.3	942.8	1005.3



66.5°	173.7	178.2	181.0	184.6	172.5	179.0	179.8	179.0	173.3	182.2	180.2
67°	168.9	173.3	176.5	180.2	168.5	174.5	175.3	174.5	168.9	177.4	175.7



89°	0.0	0.4	0.4	2.0	0.4	0.8	1.6	2.0	2.0	2.8	1.6
89.5°	0.0	0.4	0.4	0.4	0.0	0.0	0.4	0.4	0.4	1.2	0.4

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21.5°	2212.5	2212.9	2203.2	2201.6	2199.6	2203.6
22°	2198.0	2198.0	2188.3	2186.7	2184.7	2188.3



44°	814.2	740.5	833.6	963.0	815.0	698.5
44.5°	781.6	708.2	800.5	925.5	782.8	666.7



66.5°	178.6	179.8	184.2	181.8	181.4	173.7
67°	174.5	175.7	179.8	177.4	176.5	168.9

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89°	0.4	1.6	0.8	0.4	0.4	0.0
89.5°	0.0	0.4	0.4	0.4	0.4	0.0

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(END OF REPORT)