

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: P776308

Luminaire Tested: HCDJBL3040CSD-HCD4TRMW-4000lm-4000K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P776308
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-HCD4TRMW-4000lm-4000K
Description: 4 INCH ROUND MEDIUM MATTE WHITE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 4000K CCT
Ballast/Driver: -

Summary

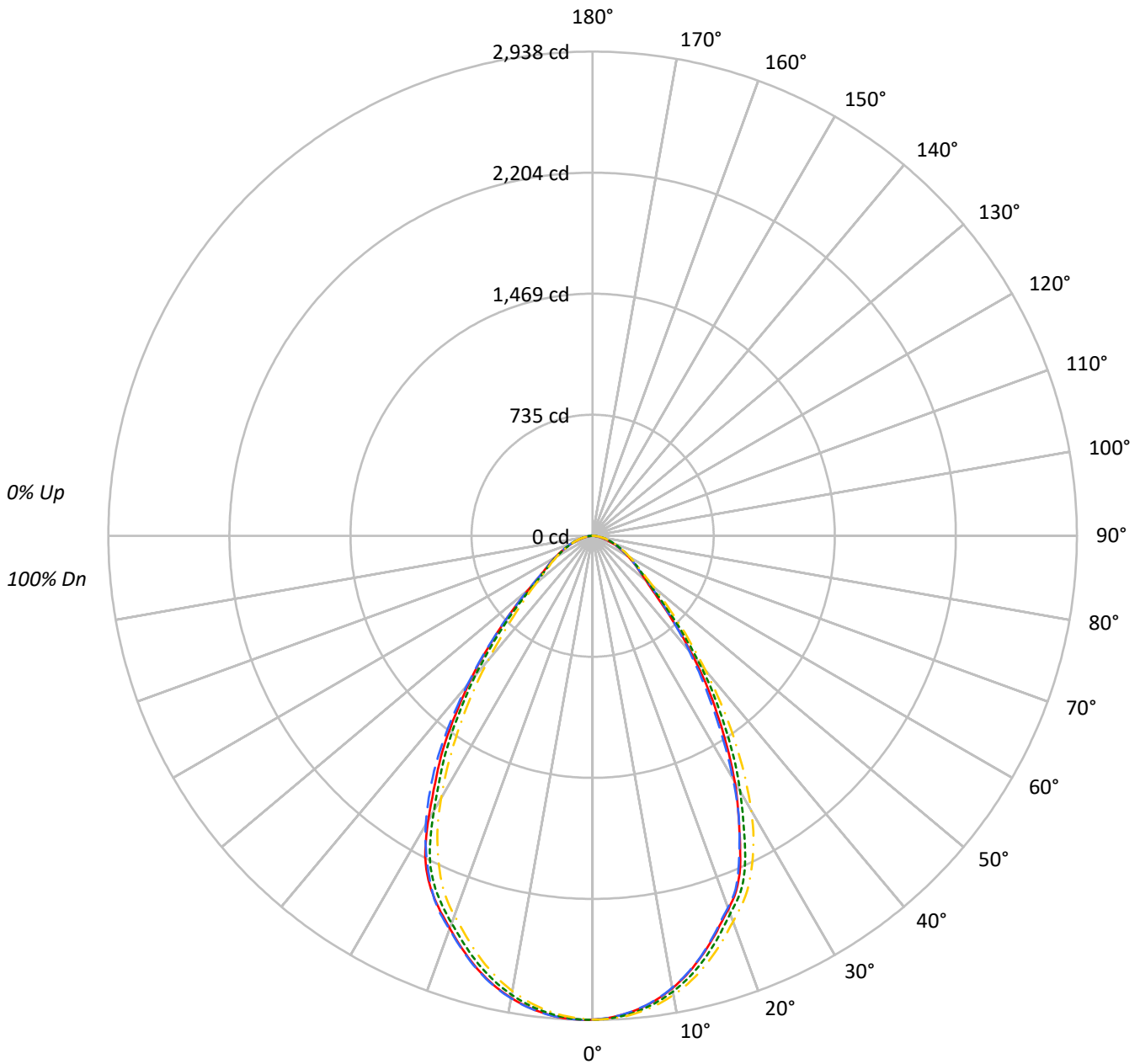
Lumens per Lamp: N/A
Luminaire Lumens: 4095.5 lumens
Efficiency: N/A
Efficacy: 106.4 lumens/watt
Spacing Criteria (0/90/45): 1.03 / 1.03 / 1.02
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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



TEST NUMBER: P776308
CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMW-4000lm-4000K

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	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	112	108	105	102	109	106	103	100	102	99	97	98	96	94	95	93	92	90					90			
2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	84	82	80					80			
3	97	89	83	78	95	88	82	77	85	80	76	82	78	75	80	76	73	72					72			
4	91	82	75	69	89	80	74	69	78	72	68	76	71	67	74	70	66	65					65			
5	85	75	68	62	83	74	67	62	72	66	61	70	65	61	68	64	60	58					58			
6	80	69	62	56	78	68	61	56	66	60	56	65	60	55	64	59	55	53					53			
7	75	64	57	51	74	63	56	51	62	56	51	60	55	51	59	54	50	49					49			
8	71	59	52	47	69	59	52	47	57	51	47	56	51	47	55	50	46	45					45			
9	67	55	48	44	65	55	48	43	54	48	43	53	47	43	52	47	43	41					41			
10	63	52	45	40	62	51	45	40	50	44	40	49	44	40	49	44	40	38					38			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	369508	369508	369508	369508
5°	365525	366902	368936	367824
10°	356269	358838	363886	361457
15°	340967	345006	353827	350100
20°	322803	326955	339477	335004
25°	294355	303978	324738	318864
30°	250544	260150	289897	279768
35°	202306	213137	243034	232817
40°	153902	165025	191376	181765
45°	108709	118178	140923	132024
50°	82916	87811	99088	92294
55°	70629	73635	76114	72582
60°	61767	65115	66121	63277
65°	52797	57473	56520	55180
70°	44781	51146	48203	48939
75°	36031	45659	40358	43081
80°	25148	39716	30946	36817
85°	8664	31478	14006	26713

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 202.5°
 Vertical Angle: 45°
 Luminance: 142846 cd/sqm



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CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMW-4000lm-4000K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	274.6	6.7
10°-20°	748.1	18.3
20°-30°	1014.2	24.8
30°-40°	900.7	22.0
40°-50°	551.5	13.5
50°-60°	305.8	7.5
60°-70°	187.7	4.6
70°-80°	92.8	2.3
80°-90°	20.1	0.5
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°	2036.9	49.7
0°-40°	2937.6	71.7
0°-60°	3794.9	92.7
0°-90°	4095.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4095.5	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2936	2936	2936	2936	2936	
5°	2893	2904	2920	2912	2893	273
15°	2617	2648	2716	2687	2617	734
25°	2120	2189	2339	2296	2120	963
35°	1317	1387	1582	1515	1317	820
45°	611	664	792	742	611	487
55°	322	336	347	331	322	291
65°	177	193	190	185	177	177
75°	74	94	83	89	74	79
85°	6	22	10	18	6	11
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°	2936.1	2936.1	2936.1	2936.1	2936.1	2936.1	2936.1	2936.1	2936.1	2936.1	2936.1
0.5°	2934.9	2935.3	2934.5	2932.9	2936.9	2935.7	2935.7	2936.5	2937.3	2938.1	2937.3
1°	2932.9	2933.3	2932.5	2930.9	2935.7	2935.3	2935.3	2936.9	2937.7	2938.5	2937.7
1.5°	2930.1	2930.1	2929.3	2928.1	2933.7	2934.1	2934.1	2936.5	2937.7	2938.5	2937.7
2°	2926.9	2926.5	2925.7	2924.8	2931.3	2932.1	2932.9	2934.9	2936.9	2938.1	2936.9
2.5°	2922.8	2922.4	2921.6	2920.8	2928.1	2929.7	2930.9	2933.7	2935.7	2936.9	2935.7
3°	2918.0	2918.0	2917.2	2916.4	2924.4	2926.5	2928.5	2931.7	2933.7	2934.9	2933.7
3.5°	2912.8	2912.8	2911.6	2911.6	2920.4	2922.8	2925.3	2928.9	2931.3	2932.5	2931.3
4°	2907.1	2906.7	2905.5	2905.9	2915.6	2918.8	2921.2	2925.7	2928.5	2929.7	2928.5
4.5°	2901.1	2900.3	2899.1	2899.9	2910.3	2913.6	2916.8	2921.6	2924.8	2926.5	2924.8
5°	2893.4	2893.0	2892.2	2893.0	2904.3	2908.3	2912.0	2917.2	2920.4	2922.4	2920.8
5.5°	2885.8	2885.0	2884.2	2885.4	2897.0	2901.9	2905.9	2912.4	2915.6	2917.6	2916.4
6°	2877.7	2876.5	2875.7	2876.9	2889.8	2895.4	2900.3	2906.7	2910.3	2912.4	2911.6
6.5°	2868.4	2867.2	2867.2	2868.4	2881.7	2887.8	2893.4	2900.3	2904.7	2906.7	2905.9
7°	2859.2	2858.0	2857.6	2859.2	2873.3	2879.7	2886.2	2893.4	2898.7	2900.7	2899.5
7.5°	2848.7	2847.1	2846.7	2849.1	2864.0	2871.3	2878.1	2886.2	2891.4	2893.8	2892.6
8°	2838.2	2836.6	2835.8	2838.2	2853.5	2862.0	2869.6	2878.1	2883.3	2886.2	2885.0
8.5°	2826.5	2824.9	2824.1	2826.5	2843.5	2852.3	2860.4	2869.6	2875.3	2877.7	2877.3
9°	2814.4	2812.4	2811.6	2814.8	2832.2	2841.8	2850.7	2860.0	2866.8	2869.6	2868.8
9.5°	2801.1	2798.7	2798.3	2802.0	2820.1	2831.0	2840.2	2850.7	2857.6	2860.4	2859.6
10°	2787.9	2785.0	2784.6	2788.3	2808.0	2819.3	2829.4	2840.2	2847.5	2851.1	2849.9
10.5°	2773.8	2770.9	2770.5	2774.2	2795.1	2807.2	2817.7	2829.4	2836.6	2840.6	2839.8
11°	2758.8	2756.0	2755.2	2759.6	2780.6	2793.9	2805.2	2818.1	2825.7	2829.8	2829.0
11.5°	2743.1	2739.5	2739.5	2744.3	2766.9	2780.2	2792.7	2805.2	2814.4	2818.1	2817.7
12°	2727.0	2723.8	2723.4	2728.2	2752.0	2766.1	2779.0	2792.7	2802.4	2806.4	2805.2
12.5°	2710.1	2706.5	2706.5	2710.9	2735.5	2750.8	2764.5	2779.4	2789.1	2793.5	2792.3
13°	2692.8	2689.1	2688.3	2694.0	2719.4	2735.5	2750.0	2765.7	2775.8	2780.6	2779.4
13.5°	2673.8	2669.8	2670.6	2675.8	2702.8	2719.0	2734.7	2751.2	2761.7	2766.5	2765.7
14°	2656.1	2651.7	2651.3	2656.9	2685.1	2702.0	2718.1	2735.5	2747.2	2752.0	2750.4
14.5°	2636.8	2632.3	2631.9	2638.4	2666.6	2684.7	2702.0	2719.8	2732.2	2736.7	2735.1
15°	2617.0	2611.8	2611.4	2618.2	2648.0	2666.6	2685.1	2703.2	2715.7	2721.0	2719.4
15.5°	2596.5	2591.6	2591.6	2598.1	2628.3	2648.0	2667.0	2686.7	2699.2	2704.8	2703.6
16°	2575.5	2570.7	2570.3	2577.1	2608.6	2629.1	2648.8	2669.8	2682.7	2688.3	2686.7
16.5°	2554.6	2548.9	2548.9	2556.6	2588.4	2609.4	2630.3	2651.7	2665.4	2671.0	2669.4
17°	2533.6	2527.2	2527.6	2535.2	2567.5	2589.2	2611.4	2633.5	2647.2	2653.3	2652.1
17.5°	2512.3	2505.4	2505.4	2513.5	2546.1	2569.1	2591.6	2614.6	2629.1	2635.5	2633.5
18°	2489.7	2483.2	2482.8	2491.3	2525.1	2548.1	2571.9	2595.3	2610.6	2617.0	2615.4
18.5°	2468.7	2461.5	2460.7	2469.5	2503.4	2526.8	2551.3	2575.9	2591.6	2598.1	2596.5
19°	2448.6	2440.9	2439.7	2448.2	2481.6	2506.2	2530.8	2556.2	2572.7	2579.5	2577.5
19.5°	2429.2	2421.2	2420.0	2428.4	2461.1	2485.7	2510.2	2536.8	2552.9	2560.6	2559.0
20°	2410.3	2401.8	2401.0	2409.1	2441.3	2466.3	2491.7	2517.5	2534.8	2542.1	2541.3
20.5°	2390.2	2381.7	2380.9	2389.4	2422.0	2447.0	2472.4	2498.6	2515.9	2524.3	2523.5
21°	2370.0	2361.6	2361.2	2370.0	2402.7	2428.8	2453.8	2479.6	2497.7	2507.0	2506.2



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CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
22.5°	2297.5	2285.4	2284.6	2298.3	2341.8	2369.2	2395.8	2423.2	2441.7	2451.4	2450.2
23°	2267.7	2255.2	2252.4	2268.9	2317.6	2345.8	2373.2	2403.5	2422.8	2431.7	2428.4
23.5°	2235.8	2222.9	2217.7	2237.9	2289.8	2320.1	2349.9	2382.9	2403.1	2409.9	2405.9
24°	2200.0	2187.5	2180.6	2204.0	2258.8	2292.7	2324.5	2360.8	2382.5	2387.3	2381.3
24.5°	2161.3	2151.2	2143.6	2168.2	2225.8	2263.2	2297.5	2337.8	2360.8	2363.2	2355.9
25°	2119.8	2112.9	2105.7	2130.7	2189.1	2231.8	2269.3	2312.8	2338.6	2337.8	2328.9
25.5°	2079.1	2072.7	2069.0	2091.6	2150.8	2196.8	2239.5	2287.0	2314.8	2310.8	2300.3
26°	2038.0	2031.6	2032.8	2051.3	2110.9	2160.5	2209.2	2259.2	2288.6	2283.0	2271.7
26.5°	1996.9	1988.0	1996.1	2010.2	2068.2	2122.6	2177.0	2229.0	2260.4	2252.8	2242.3
27°	1956.2	1945.7	1958.2	1969.1	2026.3	2083.5	2145.6	2198.0	2230.6	2222.5	2213.7
27.5°	1917.5	1903.0	1919.5	1926.4	1986.0	2044.0	2112.9	2165.7	2198.0	2191.1	2184.7
28°	1879.3	1859.5	1878.0	1884.5	1945.7	2003.4	2078.7	2131.5	2162.5	2160.5	2154.0
28.5°	1841.4	1818.4	1835.3	1843.4	1906.7	1965.1	2042.8	2096.8	2123.4	2127.9	2123.8
29°	1801.9	1777.3	1791.4	1801.9	1868.0	1927.6	2004.2	2059.8	2082.3	2094.4	2092.8
29.5°	1763.6	1736.6	1747.5	1760.4	1829.3	1890.5	1964.7	2021.1	2039.6	2059.8	2059.8
30°	1724.1	1695.5	1702.8	1718.9	1790.2	1853.5	1923.6	1980.8	1994.9	2024.3	2025.9
30.5°	1684.2	1655.6	1657.2	1677.0	1751.9	1816.8	1882.1	1936.9	1949.4	1985.6	1989.3
31°	1642.7	1614.1	1612.9	1635.1	1713.2	1778.9	1839.0	1892.1	1904.2	1947.3	1952.6
31.5°	1601.6	1573.0	1569.0	1594.0	1673.0	1740.6	1795.4	1845.4	1860.7	1907.5	1913.5
32°	1558.1	1532.7	1524.7	1552.9	1633.5	1702.0	1753.5	1798.3	1819.6	1866.4	1875.2
32.5°	1516.2	1491.2	1480.4	1511.4	1593.6	1662.5	1711.6	1751.5	1779.3	1822.8	1836.9
33°	1475.1	1450.1	1437.6	1471.1	1551.3	1621.0	1667.3	1704.4	1739.4	1778.5	1798.7
33.5°	1434.4	1411.1	1394.9	1431.2	1509.4	1579.5	1623.0	1659.3	1699.9	1734.6	1758.0
34°	1394.9	1370.0	1352.6	1390.9	1467.9	1536.8	1578.7	1617.3	1661.7	1691.5	1718.9
34.5°	1355.4	1329.7	1311.1	1350.6	1427.6	1492.8	1535.2	1573.4	1621.8	1648.0	1675.8
35°	1316.8	1288.6	1269.2	1310.7	1387.3	1448.9	1491.2	1529.1	1581.9	1606.5	1633.1
35.5°	1278.9	1250.3	1229.7	1270.8	1349.0	1407.0	1448.1	1486.8	1540.0	1565.8	1588.3
36°	1241.4	1209.6	1191.9	1230.5	1309.1	1363.9	1403.4	1444.1	1496.5	1525.1	1544.4
36.5°	1203.1	1170.1	1154.8	1189.4	1271.6	1322.4	1361.1	1401.4	1453.4	1484.0	1498.9
37°	1164.5	1132.2	1118.5	1150.0	1233.4	1280.5	1316.4	1357.9	1409.4	1442.5	1453.4
37.5°	1125.8	1094.4	1082.3	1110.5	1195.5	1240.2	1273.2	1314.8	1365.9	1402.6	1408.6
38°	1087.1	1057.3	1046.4	1071.8	1158.0	1199.9	1229.3	1272.4	1324.4	1360.3	1363.5
38.5°	1048.4	1019.8	1010.5	1035.9	1120.1	1160.4	1187.4	1230.9	1285.3	1318.8	1317.6
39°	1011.3	985.2	976.3	1000.5	1079.0	1120.9	1145.5	1189.4	1243.8	1276.5	1273.2
39.5°	973.5	950.5	942.4	965.8	1041.6	1081.5	1106.4	1150.4	1204.8	1234.6	1228.9
40°	936.8	916.3	908.2	931.2	1004.5	1042.0	1064.9	1111.3	1164.9	1192.3	1185.4
40.5°	901.3	882.8	876.4	898.1	965.8	1000.9	1025.4	1073.8	1129.0	1150.8	1141.9
41°	867.1	850.2	845.7	865.5	929.1	961.8	986.4	1036.3	1089.5	1110.1	1100.8
41.5°	832.4	817.9	815.5	834.1	893.7	923.5	949.7	1000.5	1049.2	1069.8	1060.5
42°	798.2	787.3	787.7	803.0	859.8	886.0	913.0	965.8	1009.7	1029.9	1021.0
42.5°	765.6	757.9	759.9	772.8	825.2	849.0	878.4	931.2	973.1	991.2	982.7
43°	732.9	729.3	732.9	743.8	791.8	813.9	844.5	896.5	934.0	951.7	944.1
43.5°	700.7	701.1	705.9	715.6	758.3	780.1	812.7	863.5	896.5	913.4	906.6



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	610.8	624.1	632.2	637.8	664.0	687.0	718.8	764.8	791.8	802.6	799.4
45.5°	585.1	600.4	609.2	614.1	635.0	658.4	691.0	733.3	759.5	767.6	765.2
46°	560.9	577.8	587.9	591.5	607.2	630.2	663.2	702.7	727.3	733.3	732.1
46.5°	537.9	556.0	566.1	569.3	581.0	604.8	636.2	673.3	696.7	699.9	700.3
47°	517.0	535.1	546.4	548.0	557.2	579.4	610.8	645.1	666.4	666.8	669.3
47.5°	498.0	514.9	526.6	527.8	535.1	555.6	586.7	617.3	637.0	636.6	640.3
48°	481.1	496.8	507.7	508.9	514.1	533.9	564.1	591.5	609.2	607.6	611.2
48.5°	465.0	479.1	489.6	490.8	495.2	513.3	542.3	566.9	581.8	580.2	583.8
49°	450.5	462.6	473.4	473.4	478.3	494.8	521.0	543.1	555.2	553.6	557.2
49.5°	436.4	446.8	456.9	456.9	462.6	476.7	501.6	521.0	530.3	529.0	532.7
50°	423.5	431.9	441.2	441.2	448.5	460.1	482.7	499.6	506.1	505.7	508.5
50.5°	411.4	417.8	425.5	426.7	434.4	444.8	465.0	479.5	484.3	484.3	485.9
51°	399.7	404.9	411.8	412.6	421.1	430.7	448.1	460.5	463.8	464.2	465.0
51.5°	388.0	392.0	398.1	399.7	409.0	417.4	431.9	442.8	444.8	445.6	444.8
52°	377.1	380.0	385.2	386.8	397.7	404.5	417.0	426.3	427.1	427.9	426.3
52.5°	366.3	368.3	372.7	375.1	386.0	392.5	402.5	410.2	411.0	411.4	409.0
53°	355.8	357.8	361.0	363.4	374.7	380.8	389.2	395.3	396.5	396.1	392.9
53.5°	346.1	347.7	350.1	352.6	363.8	369.5	376.3	382.0	382.4	382.0	378.8
54°	337.3	338.5	340.1	342.5	353.8	359.4	364.2	369.1	369.5	368.7	365.9
54.5°	329.6	330.4	331.6	334.0	343.7	348.5	353.0	357.0	357.8	356.2	353.8
55°	321.9	322.7	324.0	326.0	335.6	340.5	344.1	346.1	346.9	345.7	344.9
55.5°	314.3	315.1	316.3	318.3	327.6	332.0	335.6	337.7	338.5	337.3	336.0
56°	306.6	307.4	308.6	310.3	319.5	324.0	327.2	329.2	329.6	328.4	327.2
56.5°	298.6	299.8	301.0	303.0	311.5	315.5	318.3	320.7	320.7	319.9	318.7
57°	290.9	292.1	293.3	294.9	304.2	307.4	309.9	311.9	311.9	311.1	309.9
57.5°	283.3	284.5	285.3	287.3	296.2	299.4	301.8	303.8	304.6	303.0	301.4
58°	275.6	276.8	277.6	279.6	288.5	291.7	293.7	295.7	296.2	294.9	292.9
58.5°	267.9	269.2	270.4	272.4	280.8	283.7	285.7	288.1	287.7	286.9	284.9
59°	260.7	261.9	263.1	265.1	273.2	276.0	278.0	280.0	279.2	278.4	276.8
59.5°	253.0	254.6	255.9	257.5	265.9	268.3	270.0	272.0	271.2	270.4	268.8
60°	245.4	247.8	248.6	250.6	258.7	261.5	262.7	264.3	262.7	262.7	261.1
60.5°	238.1	240.5	241.8	243.4	251.8	253.8	255.5	256.7	254.6	254.6	253.4
61°	230.9	233.3	234.9	236.5	244.6	247.0	248.2	249.4	247.0	247.0	246.2
61.5°	224.0	226.4	228.5	230.1	237.7	240.1	241.0	242.2	239.3	239.3	238.9
62°	216.8	219.6	222.0	223.2	230.9	233.3	234.1	235.3	231.7	232.1	232.1
62.5°	209.9	213.1	215.2	216.8	224.0	226.4	227.7	228.1	224.4	224.8	225.2
63°	203.1	206.3	209.1	210.7	217.6	220.0	220.8	221.2	217.2	217.6	218.4
63.5°	196.6	199.9	202.7	204.3	211.1	213.6	214.4	214.0	209.9	210.7	211.9
64°	190.2	193.4	197.0	198.2	205.1	207.1	207.9	207.1	203.1	203.9	205.5
64.5°	183.7	187.4	191.0	192.6	199.0	201.1	201.9	200.7	196.2	197.4	199.4
65°	177.3	180.9	185.3	186.6	193.0	195.0	195.8	194.2	189.8	191.0	193.0
65.5°	171.2	174.9	179.3	180.9	187.4	189.0	190.2	187.8	182.9	184.5	187.0
66°	165.2	169.2	173.7	175.3	181.3	183.3	184.1	181.7	176.9	178.5	181.3



TEST NUMBER: P776308

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	147.9	151.9	157.1	159.2	164.8	166.4	167.2	163.6	158.8	160.4	164.0
68°	142.6	146.3	151.9	153.9	159.6	161.2	162.0	157.9	153.1	154.7	158.4
68.5°	137.4	141.4	147.1	148.7	154.3	155.9	156.3	152.3	147.1	149.1	153.1
69°	132.2	136.2	141.8	143.8	149.1	150.7	151.1	146.7	141.8	143.8	147.9
69.5°	126.9	131.0	137.0	139.0	144.2	145.9	145.9	141.4	136.2	138.6	142.6
70°	121.7	125.7	132.2	134.6	139.0	140.6	141.0	136.2	131.0	133.4	137.4
70.5°	116.4	120.5	127.3	129.7	134.6	135.8	136.2	131.0	125.7	128.1	132.6
71°	111.6	115.6	122.5	124.9	129.7	131.0	131.0	125.7	120.9	122.9	127.7
71.5°	106.8	110.8	117.7	120.5	124.9	126.5	126.1	120.5	115.6	118.1	122.9
72°	101.5	106.0	112.8	115.6	120.1	121.7	121.3	115.6	110.8	113.2	118.1
72.5°	96.7	101.1	108.4	111.2	115.6	117.3	116.8	110.8	106.0	108.4	113.6
73°	91.9	96.3	103.6	106.8	111.2	112.4	112.0	106.0	101.1	103.6	108.8
73.5°	87.4	91.5	99.1	102.3	106.8	108.0	107.2	101.1	96.3	98.7	104.4
74°	83.0	87.0	94.7	98.3	102.3	104.0	103.1	96.7	91.9	94.3	99.9
74.5°	78.6	82.6	90.3	93.9	97.9	99.5	98.3	92.3	87.4	89.9	95.5
75°	74.1	78.2	85.8	89.9	93.9	95.1	94.3	87.4	83.0	85.4	91.1
75.5°	69.7	73.7	81.8	85.4	89.9	91.1	89.9	83.4	78.6	81.0	87.0
76°	65.7	69.7	77.4	81.8	85.4	87.0	85.4	78.6	74.1	76.6	83.0
76.5°	61.6	65.3	73.3	77.4	81.4	83.0	81.4	74.5	70.1	72.5	78.6
77°	57.6	61.2	69.3	73.7	77.4	79.0	77.4	70.1	65.7	68.1	74.5
77.5°	53.6	57.2	65.3	69.7	73.7	75.3	73.3	66.1	61.6	64.1	70.5
78°	49.6	53.2	61.6	66.1	69.7	71.3	69.3	62.1	57.6	60.4	66.5
78.5°	45.5	49.2	57.6	62.1	66.1	67.3	65.3	58.0	54.0	56.4	62.9
79°	41.9	45.1	54.0	58.4	62.1	63.7	61.6	54.0	50.0	52.4	59.2
79.5°	38.3	41.5	50.0	54.8	58.4	60.0	58.0	50.4	46.3	48.4	55.2
80°	34.7	37.9	46.3	51.2	54.8	56.4	54.0	46.3	42.7	44.7	51.6
80.5°	31.0	34.2	43.1	47.9	51.6	52.8	50.8	42.7	39.1	41.1	47.9
81°	27.4	30.6	39.5	44.3	47.9	49.2	47.1	39.1	35.5	37.9	44.7
81.5°	24.2	27.0	36.3	40.7	44.3	45.9	43.5	35.9	32.2	34.2	41.1
82°	20.5	23.8	33.0	37.5	41.1	42.3	40.3	32.6	28.6	30.6	37.9
82.5°	17.3	20.5	29.8	34.2	37.5	39.1	37.1	29.4	25.4	27.4	35.1
83°	14.1	17.7	27.0	31.0	34.7	35.9	34.2	26.2	21.8	23.8	32.2
83.5°	12.1	14.9	23.8	27.8	31.4	32.6	31.0	22.6	18.5	21.0	29.0
84°	10.1	13.3	21.4	25.0	28.2	29.4	27.8	19.7	15.3	18.1	26.2
84.5°	8.1	11.7	18.5	21.8	25.0	26.2	25.0	17.3	12.5	15.3	23.4
85°	6.0	9.7	15.7	18.5	21.8	23.0	21.8	14.9	9.7	13.3	20.5
85.5°	4.8	8.1	13.3	15.7	18.5	20.1	19.3	12.9	8.1	11.7	17.7
86°	3.6	6.4	10.9	12.9	15.7	17.3	16.5	11.3	6.8	10.1	15.3
86.5°	2.8	4.8	8.5	10.1	12.9	14.1	14.1	9.3	5.6	8.5	12.9
87°	1.6	3.2	5.6	7.3	10.1	11.3	11.3	7.7	4.4	6.8	10.5
87.5°	0.8	2.0	3.2	4.4	7.3	8.9	8.9	6.0	3.6	5.2	8.1
88°	0.4	0.8	1.2	2.0	4.8	6.0	6.4	4.4	2.4	4.0	5.6
88.5°	0.0	0.4	0.4	0.8	2.4	3.2	4.0	2.8	1.6	2.4	3.2



TEST NUMBER: P776308
CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMW-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	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.4	0.0



TEST NUMBER: P776308

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2936.1	2936.1	2936.1	2936.1	2936.1	2936.1
0.5°	2935.3	2937.3	2935.7	2934.1	2934.5	2934.9
1°	2935.7	2936.9	2934.5	2932.5	2932.5	2932.9
1.5°	2934.9	2935.7	2932.9	2930.5	2930.1	2930.1
2°	2934.1	2934.1	2930.9	2927.7	2926.9	2926.9
2.5°	2932.5	2931.7	2928.5	2924.8	2923.2	2922.8
3°	2930.5	2928.9	2924.8	2921.2	2918.8	2918.0
3.5°	2928.1	2925.7	2921.2	2916.8	2914.0	2912.8
4°	2924.8	2922.0	2916.4	2912.4	2908.7	2907.1
4.5°	2921.2	2916.8	2911.6	2906.3	2902.7	2901.1
5°	2917.2	2911.6	2905.5	2900.3	2895.8	2893.4
5.5°	2912.0	2905.9	2899.5	2893.4	2888.6	2885.8
6°	2906.3	2899.9	2892.2	2886.2	2880.9	2877.7
6.5°	2900.7	2893.4	2885.0	2878.5	2872.1	2868.4
7°	2894.2	2885.8	2876.9	2869.6	2862.8	2859.2
7.5°	2887.4	2877.3	2868.4	2860.4	2853.1	2848.7
8°	2879.3	2869.2	2859.2	2850.3	2842.7	2838.2
8.5°	2871.3	2860.0	2849.5	2840.2	2831.8	2826.5
9°	2862.4	2849.9	2839.0	2828.5	2819.3	2814.4
9.5°	2853.1	2839.8	2828.1	2817.3	2807.2	2801.1
10°	2843.1	2828.5	2816.5	2805.2	2794.3	2787.9
10.5°	2832.6	2817.3	2804.0	2792.3	2781.0	2773.8
11°	2820.9	2805.2	2791.1	2778.6	2766.5	2758.8
11.5°	2809.2	2792.7	2777.8	2764.5	2750.8	2743.1
12°	2796.7	2779.0	2763.7	2748.8	2735.5	2727.0
12.5°	2783.8	2764.9	2748.8	2733.1	2719.0	2710.1
13°	2770.1	2750.4	2733.9	2717.3	2702.4	2692.8
13.5°	2756.0	2735.9	2717.7	2700.8	2684.3	2673.8
14°	2741.1	2720.2	2701.6	2683.5	2665.8	2656.1
14.5°	2725.8	2704.0	2684.7	2665.8	2647.2	2636.8
15°	2709.7	2687.1	2667.0	2646.8	2627.9	2617.0
15.5°	2693.2	2669.4	2648.8	2628.3	2608.6	2596.5
16°	2676.2	2652.1	2630.3	2609.0	2588.8	2575.5
16.5°	2658.9	2633.9	2611.4	2589.6	2567.9	2554.6
17°	2640.8	2614.6	2592.0	2569.9	2547.3	2533.6
17.5°	2622.7	2596.5	2572.3	2548.9	2526.0	2512.3
18°	2604.1	2577.1	2552.9	2528.8	2505.0	2489.7
18.5°	2585.2	2557.4	2533.2	2508.6	2484.4	2468.7
19°	2565.4	2539.2	2513.9	2489.3	2465.1	2448.6
19.5°	2547.3	2519.9	2494.9	2470.7	2446.2	2429.2
20°	2529.6	2501.4	2477.2	2451.8	2427.2	2410.3
20.5°	2511.8	2483.6	2457.9	2432.9	2407.5	2390.2
21°	2493.7	2464.7	2439.3	2413.5	2387.7	2370.0

TEST NUMBER: P776308

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	2438.1	2407.5	2379.3	2346.6	2316.8	2297.5
23°	2417.6	2387.7	2358.3	2322.1	2289.8	2267.7
23.5°	2395.8	2366.4	2335.4	2295.1	2259.6	2235.8
24°	2372.0	2345.4	2310.8	2266.9	2227.4	2200.0
24.5°	2347.5	2320.9	2285.0	2236.6	2193.1	2161.3
25°	2321.3	2296.3	2257.2	2206.0	2157.7	2119.8
25.5°	2293.9	2269.3	2228.2	2174.6	2120.2	2079.1
26°	2265.3	2241.5	2197.6	2143.2	2081.5	2038.0
26.5°	2234.2	2208.8	2164.5	2109.7	2041.6	1996.9
27°	2204.0	2175.8	2130.3	2075.1	2002.5	1956.2
27.5°	2173.4	2138.3	2094.8	2039.6	1963.1	1917.5
28°	2141.6	2098.8	2057.7	2002.1	1924.8	1879.3
28.5°	2108.9	2056.9	2018.7	1963.1	1886.9	1841.4
29°	2075.1	2014.6	1978.0	1922.4	1849.4	1801.9
29.5°	2041.2	1969.9	1935.7	1880.9	1812.4	1763.6
30°	2004.6	1925.2	1891.7	1838.6	1775.3	1724.1
30.5°	1966.7	1881.7	1845.8	1796.2	1737.0	1684.2
31°	1927.2	1839.0	1797.9	1753.5	1697.1	1642.7
31.5°	1886.5	1797.9	1751.9	1709.2	1657.6	1601.6
32°	1845.0	1757.6	1706.4	1665.7	1617.8	1558.1
32.5°	1801.9	1718.1	1661.7	1621.8	1576.7	1516.2
33°	1758.0	1679.0	1619.0	1578.3	1532.3	1475.1
33.5°	1713.6	1639.9	1575.4	1533.9	1489.6	1434.4
34°	1670.5	1600.4	1533.9	1490.4	1444.9	1394.9
34.5°	1627.8	1557.7	1491.6	1445.7	1401.0	1355.4
35°	1585.9	1515.4	1449.3	1401.8	1356.3	1316.8
35.5°	1544.8	1472.7	1406.6	1358.7	1314.8	1278.9
36°	1503.7	1429.6	1363.5	1316.4	1272.4	1241.4
36.5°	1462.6	1387.3	1320.8	1274.1	1231.7	1203.1
37°	1421.9	1343.8	1278.1	1230.5	1191.5	1164.5
37.5°	1379.6	1302.3	1236.2	1188.6	1153.2	1125.8
38°	1337.7	1262.0	1194.7	1146.7	1112.9	1087.1
38.5°	1296.2	1222.9	1154.0	1106.0	1073.8	1048.4
39°	1255.1	1184.2	1115.7	1064.9	1033.9	1011.3
39.5°	1212.4	1145.1	1077.4	1025.0	993.6	973.5
40°	1170.9	1106.4	1040.4	985.6	954.1	936.8
40.5°	1129.0	1067.8	1004.1	947.3	915.5	901.3
41°	1090.3	1028.3	967.8	909.8	877.2	867.1
41.5°	1049.2	990.4	932.8	874.8	840.5	832.4
42°	1010.1	951.7	897.3	839.7	805.9	798.2
42.5°	970.7	914.2	865.1	807.5	772.8	765.6
43°	933.6	877.2	830.4	775.2	740.6	732.9
43.5°	894.5	842.1	797.4	743.8	709.6	700.7



TEST NUMBER: P776308

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	786.9	741.8	701.9	657.6	624.5	610.8
45.5°	751.5	710.4	672.5	631.4	599.2	585.1
46°	718.4	680.1	644.3	606.8	574.6	560.9
46.5°	685.4	649.9	616.5	582.6	551.6	537.9
47°	654.0	621.3	589.9	558.9	529.8	517.0
47.5°	624.1	593.1	565.3	537.1	509.7	498.0
48°	595.1	566.5	540.7	517.0	491.2	481.1
48.5°	568.9	540.3	518.2	497.6	473.4	465.0
49°	542.3	516.1	497.2	479.1	457.3	450.5
49.5°	518.6	493.2	477.1	461.4	442.4	436.4
50°	496.0	471.4	457.7	444.4	428.3	423.5
50.5°	474.6	450.9	439.6	428.7	415.0	411.4
51°	454.5	432.7	423.1	413.8	402.1	399.7
51.5°	436.4	415.8	407.4	400.1	390.0	388.0
52°	419.0	400.1	393.3	386.4	378.8	377.1
52.5°	402.9	386.0	379.6	373.9	367.5	366.3
53°	388.0	372.7	366.7	361.8	357.0	355.8
53.5°	373.9	360.6	354.6	350.9	346.9	346.1
54°	361.0	349.3	344.1	340.9	338.1	337.3
54.5°	349.7	339.7	335.2	332.4	330.0	329.6
55°	341.3	330.8	327.2	324.8	322.3	321.9
55.5°	332.4	323.1	319.1	316.7	314.3	314.3
56°	324.0	315.1	311.1	309.0	306.6	306.6
56.5°	315.5	307.0	303.4	301.0	298.6	298.6
57°	306.6	298.6	295.3	292.9	290.9	290.9
57.5°	298.6	290.1	286.9	284.9	283.3	283.3
58°	290.5	282.5	279.2	277.2	275.6	275.6
58.5°	282.5	274.4	271.2	269.6	267.9	267.9
59°	274.0	266.7	263.5	261.9	260.7	260.7
59.5°	266.3	258.7	255.9	254.6	253.4	253.0
60°	258.7	251.4	248.6	247.4	246.2	245.4
60.5°	251.0	243.8	241.4	240.5	239.3	238.1
61°	243.8	236.9	234.5	233.3	232.5	230.9
61.5°	236.5	230.1	227.7	226.4	225.2	224.0
62°	229.7	223.2	221.2	220.0	218.8	216.8
62.5°	222.8	216.4	214.0	213.6	211.9	209.9
63°	216.0	209.9	207.9	207.1	205.5	203.1
63.5°	209.9	203.5	201.5	201.1	199.0	196.6
64°	203.5	197.4	195.4	195.0	192.6	190.2
64.5°	197.0	191.4	189.4	189.0	186.6	183.7
65°	191.0	185.3	183.7	183.3	180.5	177.3
65.5°	184.9	179.7	178.1	177.3	174.5	171.2
66°	179.3	174.1	172.5	172.0	168.4	165.2



TEST NUMBER: P776308

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMW-4000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	162.8	157.5	156.3	155.5	151.1	147.9
68°	157.1	152.3	151.1	150.7	145.1	142.6
68.5°	152.3	147.5	145.5	145.1	140.2	137.4
69°	147.1	142.6	141.0	140.2	135.4	132.2
69.5°	141.8	137.8	136.2	135.4	130.1	126.9
70°	137.0	133.0	131.8	131.0	125.3	121.7
70.5°	132.2	128.5	126.9	126.1	120.1	116.4
71°	127.7	123.7	122.1	121.3	115.2	111.6
71.5°	122.9	118.9	117.7	116.4	110.4	106.8
72°	118.5	114.4	113.2	112.0	105.6	101.5
72.5°	113.6	110.0	108.8	107.2	100.7	96.7
73°	109.2	105.6	104.4	102.7	96.3	91.9
73.5°	104.8	101.1	99.9	98.3	91.5	87.4
74°	100.7	97.1	95.9	93.9	87.0	83.0
74.5°	96.3	92.7	91.5	89.9	82.6	78.6
75°	92.3	88.6	87.4	85.4	78.2	74.1
75.5°	88.2	84.6	83.4	81.4	74.1	69.7
76°	84.2	80.6	79.4	77.0	69.7	65.7
76.5°	80.2	76.6	75.3	72.9	65.3	61.6
77°	76.2	72.9	71.7	68.9	61.2	57.6
77.5°	72.5	68.9	67.7	65.3	57.2	53.6
78°	68.5	65.3	64.1	61.2	53.2	49.6
78.5°	64.9	61.6	60.4	57.6	49.6	45.5
79°	61.2	58.0	56.8	53.6	45.5	41.9
79.5°	57.6	54.4	53.2	50.0	41.9	38.3
80°	54.0	50.8	49.6	46.7	38.3	34.7
80.5°	50.4	47.5	46.3	43.1	34.7	31.0
81°	47.1	43.9	42.7	39.5	31.0	27.4
81.5°	43.5	40.7	39.5	36.3	27.8	24.2
82°	40.3	37.5	36.3	33.0	24.6	20.5
82.5°	37.1	34.2	33.0	30.2	21.4	17.3
83°	34.2	31.0	29.8	27.0	18.5	14.1
83.5°	31.0	27.8	26.6	24.2	16.1	12.1
84°	27.8	24.6	23.4	21.4	14.1	10.1
84.5°	24.6	21.8	20.5	18.5	12.5	8.1
85°	21.8	18.5	17.7	15.7	10.5	6.0
85.5°	18.5	15.7	14.5	13.3	8.5	4.8
86°	15.7	13.3	12.1	10.5	6.8	3.6
86.5°	12.9	10.5	9.3	8.1	5.2	2.8
87°	10.5	7.7	6.4	5.2	3.6	1.6
87.5°	7.7	4.8	3.6	2.8	2.0	0.8
88°	4.8	2.4	1.6	1.2	0.8	0.4
88.5°	2.4	0.8	0.4	0.4	0.4	0.0



TEST NUMBER: P776308

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRMW-4000lm-4000K

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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21.5°	2349.1	2338.2	2339.0	2348.7	2383.7	2409.5	2435.3	2461.1	2478.8	2488.5	2488.1
22°	2324.9	2312.8	2313.6	2324.5	2364.0	2390.6	2417.2	2442.1	2460.7	2470.7	2469.9



44°	669.3	674.5	680.9	689.0	725.7	748.2	780.1	829.6	860.2	876.0	869.9
44.5°	639.8	648.7	655.2	663.2	694.6	717.2	748.2	797.4	826.4	838.5	834.1



66.5°	159.6	163.2	168.4	169.6	175.7	177.7	178.1	175.3	170.4	172.0	175.3
67°	153.5	157.5	162.8	164.4	170.4	172.0	172.9	169.6	164.8	166.4	169.6



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

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21.5°	2475.2	2445.4	2420.0	2393.0	2366.0	2349.1
22°	2457.5	2427.2	2400.2	2370.4	2342.6	2324.9



44°	858.2	807.1	765.2	714.0	679.7	669.3
44.5°	821.6	774.0	733.7	685.0	651.5	639.8

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66.5°	173.7	168.4	166.8	166.4	162.4	159.6
67°	168.0	162.8	161.6	161.2	156.7	153.5

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

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(END OF REPORT)