

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: P776299

Luminaire Tested: HCDJBL3040CSD-HCD4TRH-HCD4TRLWW-4000lm-5000K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P776299
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B004)
Test Lab:
Issue Date: 2/7/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL3040CSD-HCD4TRH-HCD4TRLWW-4000lm-5000K
Description: 4 INCH ROUND MEDIUM LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 5000K CCT
Ballast/Driver: -

Summary

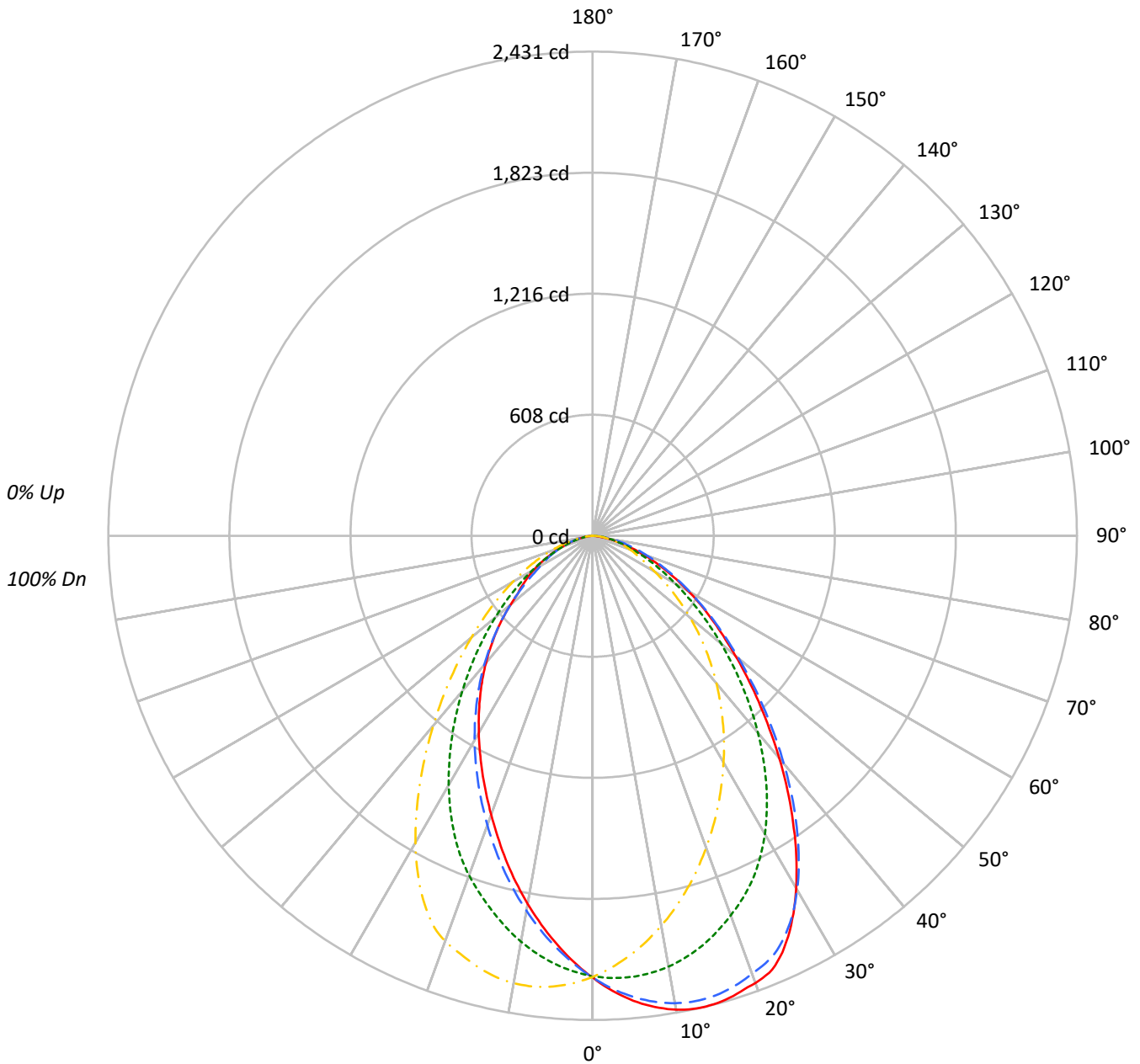
Lumens per Lamp: N/A
Luminaire Lumens: 4160.3 lumens
Efficiency: N/A
Efficacy: 108.1 lumens/watt
Spacing Criteria (0/90/45): 1.1 / 1.09 / 1.15
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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									50									30									10									0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0																
RCR																																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100																			
1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	90	88																			
2	102	95	89	84	100	93	88	83	90	85	82	87	83	80	84	81	78	76																			
3	94	85	78	73	92	84	77	72	81	75	71	78	73	69	76	72	68	66																			
4	87	77	69	63	85	76	68	63	73	67	62	71	66	61	69	64	60	58																			
5	81	70	62	56	79	69	61	55	67	60	55	65	59	54	63	58	54	52																			
6	75	63	55	50	74	63	55	49	61	54	49	59	53	49	58	52	48	46																			
7	70	58	50	45	69	57	50	44	56	49	44	54	48	44	53	48	44	42																			
8	66	54	46	40	64	53	45	40	52	45	40	50	44	40	49	44	40	38																			
9	62	49	42	37	61	49	42	37	48	41	37	47	41	36	46	40	36	35																			
10	58	46	39	34	57	45	38	34	45	38	34	44	38	33	43	37	33	32																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	278883	278883	278883	278883
5°	296018	280871	260102	272659
10°	308744	280668	239839	264464
15°	316329	277464	219264	253908
20°	319951	271576	199470	242970
25°	316392	264139	181948	228577
30°	296988	251285	166027	209899
35°	269551	233355	151268	188924
40°	239446	212027	136833	167210
45°	209748	188639	121737	145391
50°	182846	164677	105392	124775
55°	159952	141718	94150	105998
60°	139517	120665	85251	88649
65°	118281	102200	73345	72838
70°	97252	85661	60345	58690
75°	74785	71624	48916	46145
80°	47760	59574	34715	34063
85°	14151	51983	13573	15884

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 22.5°
 Vertical Angle: 45°
 Luminance: 216885 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	207.9	5.0
10°-20°	576.1	13.8
20°-30°	816.3	19.6
30°-40°	852.9	20.5
40°-50°	717.9	17.3
50°-60°	509.7	12.3
60°-70°	309.2	7.4
70°-80°	141.8	3.4
80°-90°	28.5	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°	1600.3	38.5
0°-40°	2453.1	59.0
0°-60°	3680.7	88.5
0°-90°	4160.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4160.3	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2216	2216	2216	2216	2216	
5°	2343	2223	2059	2158	2343	226
15°	2428	2130	1683	1949	2428	685
25°	2278	1902	1310	1646	2278	1040
35°	1754	1519	985	1230	1754	1094
45°	1178	1060	684	817	1178	911
55°	729	646	429	483	729	656
65°	397	343	246	245	397	396
75°	154	147	101	95	154	166
85°	10	36	9	11	10	19
90°	0	2	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°	2216.0	2216.0	2216.0	2216.0	2216.0	2216.0	2216.0	2216.0	2216.0	2216.0	2216.0
0.5°	2233.1	2233.1	2230.7	2225.8	2213.9	2209.4	2206.5	2204.5	2204.5	2204.1	2205.7
1°	2247.4	2247.0	2242.1	2233.5	2216.4	2206.5	2198.4	2191.8	2189.4	2188.5	2192.6
1.5°	2260.9	2260.9	2254.0	2241.3	2218.8	2202.9	2189.0	2178.7	2174.2	2173.4	2179.1
2°	2274.0	2274.0	2265.4	2248.3	2220.9	2199.2	2179.5	2165.2	2158.3	2157.5	2165.2
2.5°	2286.7	2287.1	2276.1	2255.2	2222.5	2194.7	2170.1	2151.3	2142.3	2141.5	2150.9
3°	2298.6	2299.4	2286.7	2261.4	2223.3	2190.2	2160.3	2137.4	2126.4	2125.1	2137.0
3.5°	2310.4	2311.3	2296.5	2267.1	2224.1	2184.9	2149.7	2123.1	2110.0	2108.4	2122.7
4°	2321.9	2323.1	2305.9	2272.8	2224.1	2179.5	2139.0	2108.4	2092.8	2091.6	2107.5
4.5°	2332.5	2334.2	2314.9	2278.1	2224.1	2173.4	2128.0	2093.2	2075.6	2075.2	2092.4
5°	2343.2	2344.8	2323.5	2282.6	2223.3	2167.3	2116.5	2078.1	2058.9	2057.6	2077.3
5.5°	2352.6	2355.0	2331.7	2286.7	2222.9	2160.7	2105.1	2062.5	2041.3	2039.6	2061.7
6°	2362.0	2364.9	2339.5	2290.8	2221.3	2153.8	2092.8	2047.0	2023.7	2022.0	2045.8
6.5°	2370.6	2373.9	2346.4	2294.1	2219.6	2146.8	2081.0	2031.5	2006.1	2004.5	2029.8
7°	2378.8	2382.4	2353.4	2296.9	2217.6	2139.0	2068.7	2015.1	1987.7	1986.9	2013.9
7.5°	2386.5	2390.6	2359.5	2299.4	2214.7	2130.9	2055.6	1998.7	1969.7	1968.5	1997.1
8°	2393.5	2398.0	2365.3	2301.0	2211.9	2122.7	2042.5	1982.4	1951.3	1950.1	1980.3
8.5°	2399.6	2404.9	2370.6	2302.7	2208.6	2113.7	2029.0	1965.6	1932.9	1931.6	1963.6
9°	2405.8	2411.5	2375.5	2303.9	2204.9	2105.1	2015.9	1948.8	1914.1	1912.8	1946.8
9.5°	2411.1	2417.2	2379.6	2304.7	2200.8	2095.7	2001.6	1931.6	1895.2	1894.4	1929.6
10°	2416.0	2422.5	2383.3	2304.7	2196.3	2085.9	1987.7	1914.5	1876.8	1875.2	1912.0
10.5°	2420.1	2427.0	2386.1	2304.3	2191.4	2075.6	1973.0	1897.3	1857.6	1856.0	1894.4
11°	2423.4	2431.1	2389.0	2303.9	2186.1	2065.4	1959.5	1879.3	1838.4	1837.1	1876.8
11.5°	2426.2	2434.4	2390.6	2302.3	2180.4	2055.2	1943.9	1861.7	1819.6	1818.3	1859.2
12°	2428.3	2437.3	2392.3	2300.6	2174.2	2044.1	1928.8	1843.7	1799.9	1798.7	1841.2
12.5°	2429.9	2439.3	2393.1	2298.6	2167.7	2033.1	1913.2	1826.1	1780.7	1779.5	1822.8
13°	2430.7	2440.9	2393.5	2295.7	2160.7	2021.6	1898.5	1807.7	1761.5	1759.8	1805.2
13.5°	2431.1	2441.8	2393.1	2292.4	2153.4	2009.8	1883.0	1790.1	1741.8	1740.6	1786.8
14°	2430.3	2442.2	2392.3	2288.8	2146.0	1997.5	1867.0	1771.3	1722.2	1720.6	1768.4
14.5°	2429.5	2441.8	2390.6	2284.7	2137.4	1985.2	1851.1	1752.9	1703.0	1700.9	1750.0
15°	2427.9	2440.5	2388.6	2279.8	2129.6	1973.0	1834.7	1734.1	1682.9	1681.7	1731.2
15.5°	2425.4	2438.9	2386.1	2274.9	2120.6	1959.9	1818.7	1715.7	1663.3	1662.1	1712.8
16°	2422.9	2436.4	2382.9	2269.1	2111.2	1946.8	1802.4	1697.2	1643.7	1642.0	1694.4
16.5°	2419.3	2433.6	2379.2	2263.0	2101.8	1933.3	1785.6	1678.8	1624.4	1622.4	1676.0
17°	2415.6	2430.3	2374.7	2256.4	2092.0	1920.2	1769.2	1660.0	1604.4	1602.7	1657.2
17.5°	2411.1	2426.6	2370.2	2249.5	2081.4	1905.9	1752.1	1641.2	1584.8	1583.5	1638.7
18°	2406.6	2422.1	2364.9	2242.1	2071.1	1892.0	1735.3	1622.4	1565.5	1563.5	1619.9
18.5°	2401.3	2417.2	2359.1	2234.4	2060.5	1877.6	1718.1	1603.2	1546.3	1544.3	1601.1
19°	2396.8	2411.9	2353.0	2226.6	2049.9	1863.7	1701.7	1584.3	1527.1	1524.6	1582.7
19.5°	2393.1	2407.0	2346.9	2218.0	2038.8	1849.4	1683.7	1565.9	1508.7	1505.8	1563.9
20°	2389.0	2402.9	2340.3	2209.4	2027.8	1835.1	1666.6	1547.1	1489.4	1486.6	1545.5
20.5°	2384.5	2398.4	2334.2	2201.2	2016.3	1820.4	1649.4	1528.3	1471.4	1468.2	1526.7
21°	2379.2	2393.5	2328.4	2193.0	2004.9	1805.6	1632.2	1510.3	1452.6	1449.3	1508.3



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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°	2356.7	2374.3	2307.2	2166.0	1969.3	1761.1	1579.4	1455.9	1398.6	1394.5	1453.0
23°	2344.0	2364.9	2298.6	2156.2	1956.6	1745.9	1562.3	1438.3	1380.2	1376.5	1434.6
23.5°	2329.7	2353.8	2289.2	2145.6	1943.5	1730.4	1544.3	1420.3	1363.0	1359.4	1416.6
24°	2314.5	2340.3	2276.9	2133.7	1930.0	1714.8	1526.7	1402.7	1345.4	1340.9	1398.2
24.5°	2297.8	2324.8	2263.4	2121.5	1916.1	1698.5	1508.7	1385.5	1327.9	1322.9	1380.2
25°	2278.5	2309.2	2249.1	2107.5	1902.2	1682.1	1491.5	1367.5	1310.3	1305.8	1362.2
25.5°	2258.9	2292.9	2233.5	2092.8	1886.6	1665.7	1473.9	1350.8	1293.5	1288.6	1344.2
26°	2239.3	2274.4	2217.2	2077.3	1871.5	1649.0	1456.3	1333.2	1276.3	1271.4	1326.2
26.5°	2217.6	2254.0	2200.0	2060.5	1854.7	1631.8	1437.9	1316.4	1259.1	1253.8	1308.2
27°	2194.7	2234.4	2182.0	2042.9	1838.4	1615.0	1420.3	1298.8	1241.9	1237.0	1290.2
27.5°	2170.5	2213.1	2162.4	2024.9	1820.8	1597.4	1402.7	1282.0	1225.6	1220.3	1273.0
28°	2147.6	2190.2	2141.9	2005.7	1803.6	1579.8	1385.1	1264.9	1208.4	1203.5	1255.0
28.5°	2121.9	2166.9	2121.0	1986.5	1785.2	1562.3	1367.1	1248.5	1192.4	1186.7	1237.4
29°	2096.1	2143.1	2099.4	1966.0	1766.8	1543.8	1349.5	1231.7	1175.7	1169.9	1219.9
29.5°	2069.9	2118.2	2076.5	1945.6	1747.6	1526.3	1332.4	1214.9	1158.9	1153.6	1202.3
30°	2043.7	2092.8	2053.1	1924.3	1729.2	1507.4	1314.4	1198.6	1142.5	1137.2	1185.1
30.5°	2015.5	2066.6	2029.0	1902.2	1709.1	1488.6	1296.8	1182.2	1126.6	1120.9	1167.5
31°	1987.7	2039.6	2004.1	1880.1	1689.1	1470.2	1279.2	1165.5	1110.2	1104.5	1149.9
31.5°	1959.5	2011.8	1978.7	1856.8	1668.6	1451.0	1261.6	1148.7	1094.7	1087.7	1132.3
32°	1930.8	1984.4	1952.9	1833.5	1648.6	1432.2	1244.0	1132.3	1078.3	1071.8	1115.5
32.5°	1901.8	1956.2	1925.9	1810.1	1627.3	1413.3	1226.8	1116.4	1062.8	1055.8	1098.0
33°	1873.1	1927.6	1899.3	1786.4	1606.0	1393.7	1208.8	1100.0	1046.8	1039.9	1080.8
33.5°	1844.1	1898.1	1871.9	1761.5	1584.8	1374.5	1191.6	1084.0	1031.3	1023.9	1063.2
34°	1814.6	1869.5	1844.1	1736.5	1563.1	1354.9	1173.6	1068.1	1015.7	1008.0	1046.4
34.5°	1784.0	1838.8	1814.6	1711.6	1541.0	1335.2	1156.5	1051.7	1000.2	992.0	1029.2
35°	1754.5	1809.3	1786.4	1685.8	1518.9	1315.6	1138.9	1035.8	984.6	976.5	1012.0
35.5°	1725.1	1779.1	1757.8	1660.0	1496.8	1296.4	1121.7	1019.8	969.9	960.9	995.3
36°	1695.6	1750.0	1728.7	1633.8	1474.3	1276.7	1104.1	1004.3	954.0	945.0	978.9
36.5°	1665.3	1719.7	1699.3	1607.7	1451.8	1256.3	1086.9	988.3	939.2	929.4	961.7
37°	1634.7	1688.7	1670.7	1581.1	1428.9	1236.6	1069.3	972.4	923.3	913.9	945.0
37.5°	1605.6	1658.4	1641.2	1554.5	1406.0	1217.4	1052.1	956.8	908.6	898.3	928.6
38°	1575.8	1628.1	1611.7	1527.5	1383.1	1196.9	1034.5	941.3	893.0	883.2	911.8
38.5°	1545.9	1597.4	1581.5	1500.5	1360.2	1177.3	1018.2	925.7	877.9	867.6	895.1
39°	1515.6	1568.0	1552.8	1473.5	1337.3	1157.3	1000.6	909.8	863.1	852.5	879.1
39.5°	1487.0	1537.7	1523.0	1446.5	1313.9	1137.6	983.8	894.2	848.4	837.0	862.3
40°	1457.5	1507.0	1493.9	1419.5	1290.6	1117.2	966.6	878.7	832.9	821.8	846.4
40.5°	1427.7	1476.8	1464.1	1392.5	1267.3	1097.5	949.5	862.7	817.7	806.3	829.6
41°	1398.6	1447.7	1435.8	1365.1	1244.0	1077.5	932.7	847.6	803.0	790.7	814.1
41.5°	1370.4	1418.3	1406.4	1338.5	1221.5	1057.9	915.9	832.1	788.3	775.6	797.7
42°	1342.2	1388.4	1378.2	1311.9	1197.8	1037.8	898.7	816.5	773.1	760.9	781.7
42.5°	1313.5	1358.9	1349.5	1284.9	1174.9	1018.6	882.0	801.4	758.0	745.7	766.2
43°	1286.1	1331.1	1320.9	1259.1	1152.0	999.0	865.6	786.2	743.3	730.6	750.2
43.5°	1259.1	1302.5	1292.7	1232.1	1128.6	979.3	848.4	770.7	728.6	715.5	733.9



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1178.5	1218.6	1210.4	1154.8	1059.9	920.8	799.3	724.9	684.0	670.9	687.7
45.5°	1152.8	1191.6	1183.4	1128.6	1037.4	901.6	782.6	709.3	669.7	656.2	672.1
46°	1126.6	1164.6	1156.9	1103.7	1014.9	882.4	766.2	694.6	654.9	641.4	656.6
46.5°	1100.4	1138.5	1131.1	1078.7	992.8	863.6	749.8	679.5	640.2	626.3	641.4
47°	1076.3	1112.7	1104.5	1054.2	969.9	844.3	733.5	664.3	625.5	612.0	627.1
47.5°	1051.7	1086.5	1078.7	1029.2	947.8	825.5	717.5	649.6	610.3	597.2	611.2
48°	1026.8	1060.7	1053.8	1005.1	926.1	807.1	701.2	634.9	596.4	582.9	596.4
48.5°	1003.0	1037.0	1029.2	981.8	904.9	788.7	685.6	619.7	581.7	568.2	581.7
49°	980.5	1012.5	1005.1	958.5	883.2	769.9	669.7	605.4	567.0	554.3	567.8
49.5°	957.2	987.9	981.0	935.1	861.9	752.3	653.7	590.7	552.7	540.0	552.7
50°	933.9	964.2	956.8	912.6	841.1	733.9	638.2	576.0	538.3	526.1	538.7
50.5°	912.6	941.7	933.5	889.3	820.2	715.9	622.6	561.2	523.6	512.2	524.4
51°	890.6	919.2	910.2	867.6	800.1	698.3	607.1	546.9	509.7	497.8	510.5
51.5°	868.5	895.9	888.1	845.6	780.1	680.7	591.9	532.6	496.2	484.8	496.6
52°	848.0	874.6	866.4	824.3	759.6	663.5	576.8	518.7	481.9	471.7	483.1
52.5°	828.0	853.7	844.3	803.4	740.0	645.9	561.7	504.4	469.2	458.2	469.2
53°	806.7	831.6	823.1	782.1	720.8	629.2	546.9	490.5	462.3	445.1	456.1
53.5°	786.2	811.2	802.2	761.7	701.6	612.4	531.8	477.0	454.9	432.8	443.0
54°	767.8	791.1	781.3	741.7	682.3	595.6	517.5	463.5	446.7	425.4	430.3
54.5°	748.6	771.5	761.3	722.0	663.9	579.2	503.2	450.4	437.7	417.7	417.7
55°	729.0	751.9	741.7	702.4	645.9	563.3	489.3	437.7	429.1	409.5	405.4
55.5°	711.8	732.7	722.4	683.6	627.9	547.3	475.3	424.6	419.7	400.9	393.5
56°	693.4	713.8	703.2	664.3	609.9	531.8	461.4	415.2	410.7	392.3	381.7
56.5°	675.0	695.4	684.8	646.3	592.3	516.3	447.5	407.8	401.7	383.3	370.2
57°	657.4	677.0	666.4	628.3	575.6	501.1	434.4	399.7	392.3	374.7	359.2
57.5°	640.2	659.8	648.4	610.7	558.8	486.0	421.3	391.5	383.3	366.1	349.3
58°	621.8	642.2	630.8	593.2	542.4	471.7	408.7	382.9	374.7	357.5	339.5
58.5°	605.0	624.7	613.6	576.4	526.1	457.3	396.4	374.3	365.7	348.9	329.7
59°	587.4	607.9	596.4	559.6	510.1	443.0	384.1	365.3	356.7	340.8	319.9
59.5°	570.2	590.7	580.1	543.2	494.6	429.1	371.8	356.7	347.7	332.6	310.1
60°	554.3	573.9	563.7	526.9	479.4	415.6	360.0	348.5	338.7	324.0	302.7
60.5°	536.3	557.6	547.7	511.3	464.3	402.5	349.3	339.9	329.7	315.8	295.4
61°	520.8	540.0	531.4	495.8	450.0	389.4	338.7	331.3	320.7	307.2	288.0
61.5°	504.4	524.8	516.7	481.1	435.3	376.3	328.1	323.2	311.7	299.0	280.6
62°	488.8	508.9	501.5	465.9	421.3	364.5	317.4	314.6	302.3	290.9	273.3
62.5°	472.9	492.9	486.4	451.6	407.4	352.6	306.8	305.6	292.9	282.3	265.9
63°	456.9	477.8	471.7	436.9	393.9	341.2	296.6	297.0	283.5	273.7	258.5
63.5°	441.8	462.3	457.3	423.0	380.4	329.3	287.6	288.0	274.1	265.5	251.2
64°	426.3	447.5	443.4	409.1	367.3	317.9	279.0	279.4	264.7	256.9	244.6
64.5°	411.9	432.4	429.5	396.0	355.5	306.0	271.6	270.8	255.3	248.3	237.7
65°	397.2	418.5	416.0	382.9	343.2	295.8	264.7	262.6	246.3	240.1	230.7
65.5°	383.3	403.8	402.5	370.2	330.9	285.1	257.7	253.6	237.3	231.5	223.8
66°	368.6	390.3	389.4	357.5	319.1	274.1	250.4	245.4	228.3	223.4	217.2



TEST NUMBER: P776299

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRH-HCD4TRLWW-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	328.1	349.3	351.0	321.1	284.7	245.4	229.5	220.5	202.1	199.2	197.2
68°	314.6	336.3	338.7	309.7	273.3	236.0	222.5	212.3	193.9	191.0	190.6
68.5°	301.5	323.6	326.8	297.8	263.0	227.0	216.0	204.5	186.1	183.7	184.1
69°	289.2	310.9	315.0	286.8	252.8	218.4	209.0	196.4	178.4	175.9	177.5
69.5°	276.5	298.2	302.7	275.7	242.6	209.9	202.1	188.6	171.4	168.9	171.0
70°	264.3	286.4	291.7	265.5	232.8	201.7	195.5	180.8	164.0	162.0	164.4
70.5°	252.0	274.5	280.6	254.4	222.9	193.9	189.0	173.9	157.1	155.0	157.9
71°	240.1	262.6	269.6	244.6	213.9	186.1	182.4	166.5	150.5	148.5	151.8
71.5°	228.7	251.2	258.1	234.4	204.5	178.8	175.9	159.5	144.0	141.9	145.2
72°	217.6	239.7	247.9	224.6	195.9	171.4	169.4	153.0	137.4	135.4	139.1
72.5°	206.2	229.1	237.3	215.2	186.9	164.4	162.8	146.4	130.9	129.3	132.9
73°	195.1	218.4	227.0	205.4	178.8	157.9	156.7	139.9	124.8	123.1	126.8
73.5°	184.5	207.4	216.8	196.4	170.2	150.9	150.1	133.8	118.6	117.0	120.7
74°	173.9	197.6	207.0	187.8	162.4	144.4	144.0	127.6	112.5	110.9	114.9
74.5°	163.6	187.4	197.6	178.8	154.6	138.3	138.3	121.5	106.8	105.1	109.6
75°	153.8	177.5	187.8	170.2	147.3	132.1	131.7	115.8	100.6	99.0	103.9
75.5°	144.4	167.7	178.4	162.0	139.9	126.0	126.0	110.0	94.9	93.3	98.6
76°	135.0	158.7	169.4	153.8	132.9	120.3	119.9	103.9	89.6	87.5	93.3
76.5°	126.0	149.3	160.4	146.0	126.0	114.5	114.5	98.2	83.9	82.2	88.0
77°	116.6	140.7	151.8	138.7	119.4	109.2	108.8	92.9	78.5	76.5	82.6
77.5°	107.6	132.5	143.6	130.9	112.5	103.9	103.5	87.5	73.2	71.2	77.7
78°	99.0	123.9	135.8	123.5	106.4	98.6	97.8	81.8	67.9	65.9	72.4
78.5°	90.0	115.4	127.6	116.2	99.8	93.7	92.9	76.5	62.6	60.5	67.5
79°	81.8	107.2	119.4	109.2	94.1	89.2	87.5	71.2	57.7	55.6	62.6
79.5°	73.6	99.4	111.7	102.3	88.0	84.3	82.2	66.3	52.8	50.7	57.7
80°	65.9	91.6	103.9	95.7	82.2	79.8	77.3	61.0	47.9	45.8	53.2
80.5°	58.1	83.9	97.0	89.2	76.9	75.3	72.4	56.0	43.0	41.3	48.7
81°	50.7	76.9	90.0	83.0	71.6	70.8	67.5	51.1	38.5	37.2	44.6
81.5°	43.4	70.0	82.6	76.9	66.7	66.3	63.0	46.6	34.0	33.1	40.1
82°	36.0	63.4	76.1	71.2	61.8	61.8	58.1	41.7	29.5	29.0	36.4
82.5°	29.5	56.9	70.0	65.5	56.9	57.3	53.6	38.0	25.0	25.0	32.7
83°	22.9	50.7	63.8	60.1	52.4	53.2	49.1	34.0	20.5	20.9	29.0
83.5°	16.8	45.0	58.1	54.8	47.9	49.1	45.0	29.9	16.4	18.0	25.4
84°	14.7	39.7	52.4	49.5	43.8	44.6	40.9	26.2	13.1	15.5	21.7
84.5°	12.3	35.2	47.0	44.6	39.7	40.9	37.2	22.1	10.6	13.5	18.4
85°	9.8	31.1	41.7	39.7	36.0	36.8	33.1	19.6	9.4	11.5	15.1
85.5°	7.4	27.0	36.8	35.2	31.9	33.1	29.5	17.2	7.8	9.4	11.9
86°	5.3	23.3	31.9	30.7	28.2	29.0	25.8	14.7	6.5	7.4	9.0
86.5°	4.1	19.6	27.0	26.2	24.1	25.0	21.7	12.3	5.3	5.7	5.7
87°	2.9	16.0	22.5	22.1	20.5	21.3	18.4	10.2	4.1	3.7	2.9
87.5°	2.0	12.3	18.0	18.0	17.2	17.6	14.7	7.8	2.5	2.0	0.8
88°	0.8	9.0	13.9	14.3	13.9	14.3	11.5	5.7	1.2	0.8	0.4
88.5°	0.4	5.7	10.6	11.0	10.6	10.6	8.2	3.3	0.4	0.4	0.0



TEST NUMBER: P776299

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRH-HCD4TRLWW-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.4	0.4	1.2	2.0	1.6	0.8	0.4	0.0	0.4	0.0



TEST NUMBER: P776299

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRH-HCD4TRLWW-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2216.0	2216.0	2216.0	2216.0	2216.0	2216.0
0.5°	2208.6	2207.0	2214.3	2222.1	2228.6	2233.1
1°	2199.6	2203.3	2216.4	2229.5	2240.1	2247.4
1.5°	2190.2	2199.2	2217.6	2236.0	2251.1	2260.9
2°	2180.4	2193.9	2218.4	2242.5	2262.2	2274.0
2.5°	2170.1	2189.4	2219.2	2248.7	2272.0	2286.7
3°	2159.9	2184.0	2219.2	2254.0	2281.8	2298.6
3.5°	2148.9	2178.3	2219.2	2259.3	2291.2	2310.4
4°	2137.8	2172.2	2218.4	2263.8	2299.8	2321.9
4.5°	2126.8	2165.2	2217.2	2267.9	2308.4	2332.5
5°	2114.5	2158.3	2216.0	2271.6	2316.2	2343.2
5.5°	2102.6	2151.3	2213.9	2274.9	2323.9	2352.6
6°	2090.4	2143.5	2211.9	2277.3	2330.5	2362.0
6.5°	2078.1	2135.4	2208.6	2279.8	2337.0	2370.6
7°	2065.0	2127.2	2205.7	2281.4	2342.4	2378.8
7.5°	2051.9	2118.2	2202.0	2282.6	2347.7	2386.5
8°	2038.4	2109.2	2197.5	2283.4	2352.2	2393.5
8.5°	2024.5	2099.4	2193.0	2283.4	2356.3	2399.6
9°	2010.6	2090.0	2188.1	2283.4	2359.9	2405.8
9.5°	1996.7	2079.7	2182.8	2282.6	2362.8	2411.1
10°	1982.4	2069.5	2177.1	2281.0	2365.3	2416.0
10.5°	1967.6	2058.5	2171.0	2279.4	2367.3	2420.1
11°	1952.5	2047.8	2164.0	2276.9	2368.5	2423.4
11.5°	1937.4	2036.0	2156.6	2274.0	2368.9	2426.2
12°	1922.2	2024.5	2149.3	2270.4	2368.9	2428.3
12.5°	1906.7	2012.2	2141.1	2266.3	2368.1	2429.9
13°	1891.6	2000.0	2132.9	2261.8	2366.9	2430.7
13.5°	1876.0	1987.3	2124.3	2256.9	2364.9	2431.1
14°	1859.6	1975.0	2115.3	2251.5	2362.4	2430.3
14.5°	1843.3	1961.9	2105.9	2245.8	2359.5	2429.5
15°	1827.3	1948.8	2096.5	2239.3	2355.9	2427.9
15.5°	1811.4	1935.7	2086.7	2232.3	2351.8	2425.4
16°	1795.0	1923.1	2076.9	2225.4	2347.3	2422.9
16.5°	1778.7	1909.6	2066.6	2218.4	2342.4	2419.3
17°	1763.1	1896.5	2056.8	2210.6	2337.0	2415.6
17.5°	1746.3	1883.4	2047.0	2202.9	2331.3	2411.1
18°	1729.6	1869.9	2037.2	2196.3	2325.2	2406.6
18.5°	1712.8	1856.4	2026.5	2189.4	2320.3	2401.3
19°	1696.4	1842.5	2016.7	2182.0	2315.8	2396.8
19.5°	1680.1	1829.0	2005.3	2173.8	2310.9	2393.1
20°	1663.7	1814.2	1993.4	2165.2	2304.7	2389.0
20.5°	1646.9	1799.5	1981.6	2156.2	2298.2	2384.5
21°	1629.7	1784.0	1968.5	2146.0	2290.8	2379.2

TEST NUMBER: P776299

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRH-HCD4TRLWW-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1577.8	1736.1	1923.5	2105.5	2258.5	2356.7
23°	1559.8	1719.3	1906.7	2088.7	2243.8	2344.0
23.5°	1542.2	1701.7	1888.7	2071.5	2227.8	2329.7
24°	1524.2	1683.3	1870.3	2053.1	2210.6	2314.5
24.5°	1506.6	1664.9	1850.2	2033.1	2192.6	2297.8
25°	1488.2	1646.1	1831.0	2013.1	2173.0	2278.5
25.5°	1469.8	1626.9	1811.0	1993.0	2151.7	2258.9
26°	1451.0	1607.2	1790.1	1971.7	2130.5	2239.3
26.5°	1432.2	1588.0	1768.8	1949.2	2108.4	2217.6
27°	1413.8	1568.4	1747.6	1927.1	2084.6	2194.7
27.5°	1394.5	1547.9	1725.9	1903.4	2059.7	2170.5
28°	1375.3	1527.1	1703.8	1878.9	2034.7	2147.6
28.5°	1356.1	1507.4	1681.3	1854.7	2009.8	2121.9
29°	1336.9	1486.2	1658.4	1830.2	1984.0	2096.1
29.5°	1317.6	1465.7	1635.9	1804.0	1957.0	2069.9
30°	1298.0	1444.4	1613.0	1778.7	1930.8	2043.7
30.5°	1278.4	1423.6	1588.8	1752.1	1902.6	2015.5
31°	1258.7	1402.3	1565.5	1725.9	1875.2	1987.7
31.5°	1239.5	1381.0	1541.4	1699.7	1847.0	1959.5
32°	1220.3	1358.9	1516.8	1671.9	1818.7	1930.8
32.5°	1200.2	1338.1	1493.1	1645.3	1789.7	1901.8
33°	1181.0	1316.0	1468.6	1618.3	1761.9	1873.1
33.5°	1161.8	1295.1	1444.4	1591.3	1733.2	1844.1
34°	1143.0	1273.0	1419.1	1564.3	1704.6	1814.6
34.5°	1123.3	1251.8	1394.5	1536.5	1675.6	1784.0
35°	1103.7	1229.7	1369.6	1509.5	1646.9	1754.5
35.5°	1084.5	1208.8	1345.4	1482.5	1617.9	1725.1
36°	1065.6	1187.9	1320.5	1455.5	1590.1	1695.6
36.5°	1046.4	1165.9	1295.9	1428.9	1561.0	1665.3
37°	1027.6	1144.2	1271.8	1401.9	1532.8	1634.7
37.5°	1008.4	1123.3	1246.9	1375.3	1503.3	1605.6
38°	990.0	1102.0	1222.7	1348.7	1475.1	1575.8
38.5°	971.1	1080.8	1198.6	1322.9	1447.3	1545.9
39°	953.1	1059.5	1174.4	1296.8	1418.7	1515.6
39.5°	934.3	1038.6	1151.1	1271.0	1391.7	1487.0
40°	915.5	1017.8	1126.6	1244.8	1363.4	1457.5
40.5°	897.5	996.9	1104.1	1219.9	1336.4	1427.7
41°	879.5	976.0	1080.8	1194.1	1307.8	1398.6
41.5°	861.5	955.2	1057.9	1169.9	1282.0	1370.4
42°	843.5	935.1	1035.0	1145.4	1255.9	1342.2
42.5°	825.9	915.1	1012.9	1121.3	1229.3	1313.5
43°	807.9	895.1	990.8	1096.7	1202.3	1286.1
43.5°	790.7	875.4	968.7	1073.4	1177.3	1259.1



TEST NUMBER: P776299

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRH-HCD4TRLWW-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	738.8	816.9	904.9	1004.3	1101.2	1178.5
45.5°	721.6	798.1	884.4	981.8	1077.9	1152.8
46°	705.2	779.3	864.0	959.3	1054.2	1126.6
46.5°	688.5	760.5	843.5	938.0	1030.5	1100.4
47°	671.3	742.5	823.9	916.3	1005.9	1076.3
47.5°	655.3	724.1	804.2	895.1	983.4	1051.7
48°	639.4	706.1	785.0	873.8	961.3	1026.8
48.5°	623.4	688.5	765.8	853.7	939.2	1003.0
49°	607.9	671.3	747.0	833.7	916.7	980.5
49.5°	591.9	654.5	728.6	814.1	895.9	957.2
50°	576.4	637.3	710.6	793.6	874.2	933.9
50.5°	561.2	621.0	692.2	774.8	853.3	912.6
51°	546.1	604.6	675.0	755.6	832.5	890.6
51.5°	531.8	588.7	657.4	737.2	813.2	868.5
52°	517.1	573.1	640.6	719.2	793.2	848.0
52.5°	502.8	557.6	623.4	700.3	773.6	828.0
53°	488.4	542.0	607.5	682.7	754.7	806.7
53.5°	474.9	526.9	590.7	665.2	735.9	786.2
54°	461.4	512.2	574.7	648.0	717.1	767.8
54.5°	447.5	497.0	558.4	631.2	699.5	748.6
55°	434.4	483.1	543.7	614.4	681.5	729.0
55.5°	421.8	468.8	528.5	598.1	663.9	711.8
56°	409.1	454.9	513.4	582.1	646.3	693.4
56.5°	396.4	441.4	498.7	566.2	630.0	675.0
57°	384.1	427.9	484.3	550.6	613.2	657.4
57.5°	372.7	414.4	469.6	535.1	596.8	640.2
58°	360.8	402.1	455.7	520.3	581.3	621.8
58.5°	349.8	389.0	441.8	505.6	565.3	605.0
59°	339.1	376.8	428.3	491.3	549.8	587.4
59.5°	328.1	364.5	415.2	476.6	534.2	570.2
60°	317.0	352.2	402.1	462.3	518.7	554.3
60.5°	306.0	340.3	389.0	448.8	503.6	536.3
61°	295.8	328.9	376.8	435.3	488.4	520.8
61.5°	285.5	317.4	364.1	421.8	473.3	504.4
62°	276.1	306.4	352.2	408.7	458.6	488.8
62.5°	266.7	295.8	339.9	395.6	443.4	472.9
63°	256.9	285.1	328.5	382.9	429.1	456.9
63.5°	247.9	274.5	316.6	370.6	414.8	441.8
64°	239.3	264.3	305.6	358.3	400.9	426.3
64.5°	230.7	254.4	294.5	346.1	387.4	411.9
65°	222.5	244.6	283.9	334.6	373.5	397.2
65.5°	214.4	234.8	272.9	322.3	360.4	383.3
66°	206.2	225.8	262.6	310.9	346.9	368.6



TEST NUMBER: P776299

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRH-HCD4TRLWW-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	184.1	199.2	232.4	277.8	309.3	328.1
68°	177.1	191.0	222.9	267.1	297.0	314.6
68.5°	170.6	182.4	213.5	256.1	285.1	301.5
69°	164.0	174.7	204.5	245.9	273.3	289.2
69.5°	157.5	166.9	195.5	235.6	261.8	276.5
70°	151.8	159.5	186.9	225.8	249.9	264.3
70.5°	146.0	152.2	178.4	215.6	238.9	252.0
71°	140.7	147.3	170.2	206.2	227.9	240.1
71.5°	135.0	140.3	162.0	196.8	217.2	228.7
72°	129.7	133.4	154.2	187.4	207.0	217.6
72.5°	124.4	126.0	145.6	178.4	196.8	206.2
73°	119.4	119.0	138.7	169.4	186.5	195.1
73.5°	114.1	112.9	131.7	160.8	176.7	184.5
74°	109.2	106.8	124.8	152.2	167.3	173.9
74.5°	104.3	101.0	117.8	144.4	157.9	163.6
75°	99.0	94.9	111.3	136.2	149.3	153.8
75.5°	94.5	89.6	104.7	128.4	140.7	144.4
76°	89.6	84.3	98.2	120.3	132.5	135.0
76.5°	84.7	79.0	91.6	112.5	123.9	126.0
77°	79.8	74.0	85.9	105.1	115.8	116.6
77.5°	75.3	69.1	79.8	98.2	107.2	107.6
78°	70.8	64.6	74.5	91.2	99.8	99.0
78.5°	66.3	60.1	68.7	84.3	92.0	90.0
79°	61.8	55.6	63.4	78.1	84.7	81.8
79.5°	57.3	51.1	58.5	71.6	77.7	73.6
80°	52.8	47.0	53.2	65.5	70.8	65.9
80.5°	48.7	43.0	48.7	59.7	64.6	58.1
81°	44.6	38.9	44.2	54.0	58.5	50.7
81.5°	40.5	35.2	39.3	48.7	52.4	43.4
82°	36.4	31.5	35.2	43.4	46.6	36.0
82.5°	32.7	27.8	31.1	38.5	41.7	29.5
83°	28.6	24.1	27.0	34.0	36.4	22.9
83.5°	25.0	20.5	22.9	29.5	31.9	16.8
84°	20.9	17.2	19.2	25.0	27.8	14.7
84.5°	17.2	13.9	15.5	20.9	24.1	12.3
85°	13.5	11.0	12.3	16.8	20.5	9.8
85.5°	10.2	8.2	9.0	13.5	16.8	7.4
86°	7.0	5.3	6.1	10.2	13.5	5.3
86.5°	3.7	2.0	2.9	7.0	10.6	4.1
87°	1.2	0.4	0.8	3.7	7.4	2.9
87.5°	0.4	0.0	0.4	0.8	4.1	2.0
88°	0.0	0.0	0.0	0.0	0.8	0.8
88.5°	0.0	0.0	0.0	0.0	0.4	0.4



TEST NUMBER: P776299

CATALOG NUMBER: HCDJBL3040CSD-HCD4TRH-HCD4TRLWW-4000lm-5000K

CANDELA DISTRIBUTION (continued):

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



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Scaled Data Report





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

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Scaled Data Report





21.5°	2373.0	2387.8	2321.9	2184.5	1993.4	1790.9	1614.6	1491.9	1434.6	1430.9	1489.4
22°	2366.1	2381.6	2314.9	2175.5	1981.1	1775.8	1596.6	1473.9	1416.6	1412.5	1471.0



44°	1231.3	1273.9	1265.7	1205.9	1105.3	959.3	832.1	755.1	713.4	700.7	718.3
44.5°	1204.3	1245.2	1237.9	1180.2	1082.4	940.1	815.7	740.0	698.7	685.6	703.2



66.5°	355.1	376.3	376.3	345.3	306.8	264.3	243.4	237.3	219.3	215.2	210.3
67°	341.2	362.4	363.7	332.6	295.8	254.9	236.4	228.7	210.7	207.0	203.7



89°	0.0	2.5	7.4	7.8	7.4	7.4	4.9	1.6	0.0	0.4	0.0
89.5°	0.0	0.4	4.1	4.5	4.5	4.1	2.5	0.4	0.0	0.4	0.0

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21.5°	1612.6	1768.4	1955.0	2134.1	2282.2	2373.0
22°	1595.4	1752.9	1939.8	2121.0	2271.2	2366.1



44°	773.1	855.0	947.0	1049.7	1152.4	1231.3
44.5°	756.0	835.7	925.7	1027.2	1127.4	1204.3



66.5°	198.8	216.8	252.4	299.9	334.2	355.1
67°	191.4	207.8	242.2	288.4	321.5	341.2

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89°	0.0	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)