

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: P776445

Luminaire Tested: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-2700K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P776445
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B048)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBS3040CSD-HCD81TRH-HCD81TRLWW-4000lm-2700K
Description: 8 INCH ROUND SHALLOW-WIDE LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 2700K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4710.9 lumens
Efficiency: N/A
Efficacy: 122.4 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.17 / 1.27
Luminous Opening: Circular (Dia: 0.67' x H: 0')
CIE Type: Direct

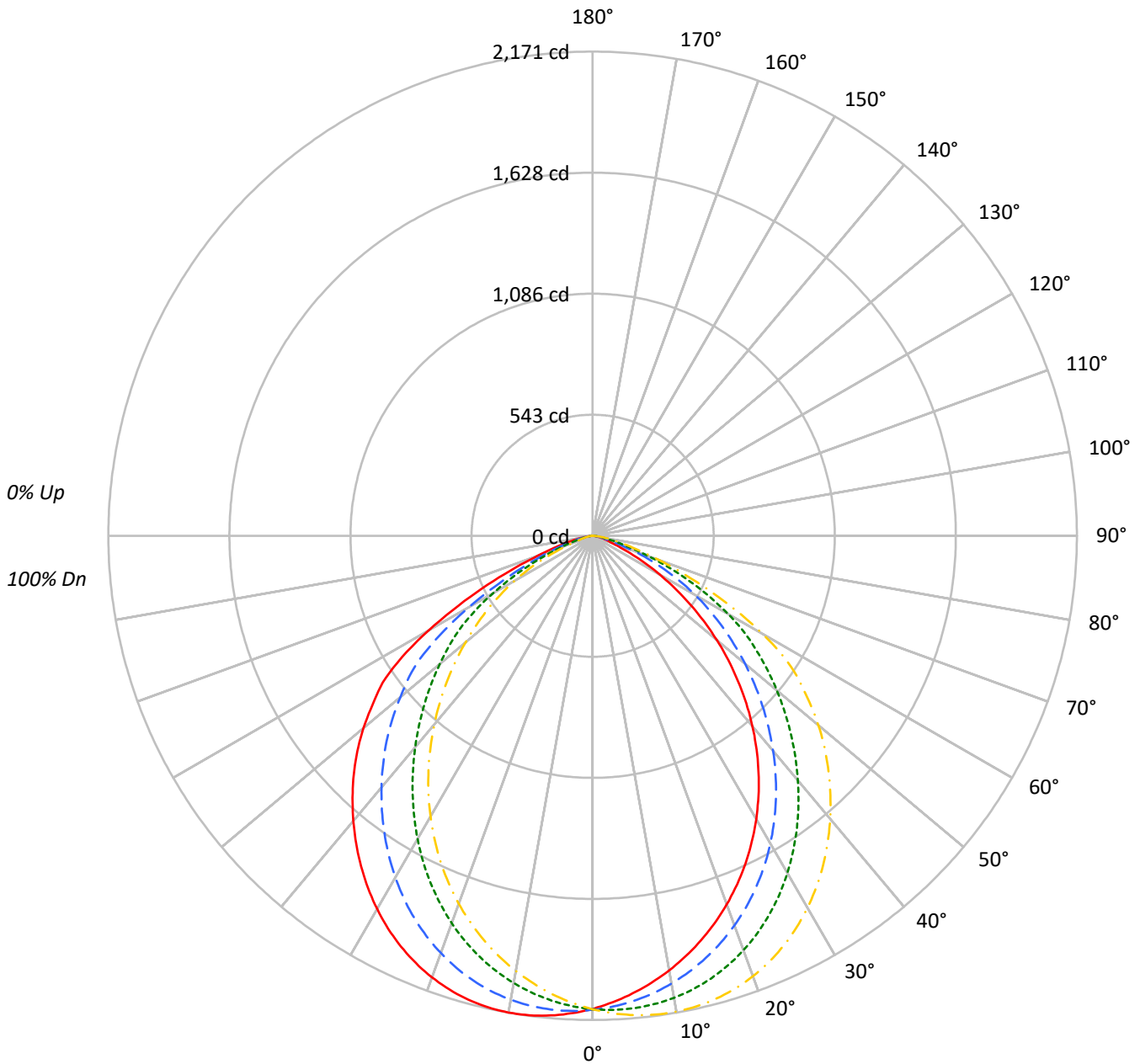
Input Watts (W): 38.5
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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	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	105	101	98	100	98	95	97	94	92	93	91	90	88								
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	83	80	78	76								
3	94	85	77	72	92	83	76	71	80	74	70	77	73	69	75	71	67	65								
4	87	76	68	62	84	74	67	61	72	66	61	70	64	60	68	63	59	57								
5	80	68	60	54	78	67	59	54	65	58	53	63	57	52	61	56	52	50								
6	74	62	53	48	72	61	53	47	59	52	47	57	51	47	56	50	46	44								
7	69	56	48	42	67	55	48	42	54	47	42	53	46	42	51	46	41	39								
8	64	52	44	38	63	51	43	38	50	43	38	48	42	37	47	42	37	35								
9	60	47	40	34	59	47	39	34	46	39	34	45	38	34	44	38	34	32								
10	56	44	36	31	55	43	36	31	42	36	31	41	35	31	41	35	31	29								

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	64828	64828	64828	64828
5°	63120	65168	66170	64135
10°	61330	65208	67304	63125
15°	59349	64931	68060	61789
20°	57140	64248	68452	60034
25°	54616	63138	68464	57863
30°	51717	61556	68116	55344
35°	48340	59510	67437	52443
40°	44394	57044	66513	49320
45°	39822	54260	65360	46004
50°	34473	51211	63660	42476
55°	28237	47724	61148	38574
60°	21164	42797	51773	31544
65°	13560	34466	37515	22568
70°	7677	23673	23200	13604
75°	5839	13860	14674	7384
80°	4114	7630	8369	3516
85°	2417	4169	2137	1471

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 157.5°
 Vertical Angle: 45°
 Luminance: 66271 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	200.3	4.3
10°-20°	566.8	12.0
20°-30°	834.6	17.7
30°-40°	956.9	20.3
40°-50°	920.9	19.5
50°-60°	734.3	15.6
60°-70°	381.1	8.1
70°-80°	102.8	2.2
80°-90°	13.2	0.3
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°	1601.8	34.0
0°-40°	2558.7	54.3
0°-60°	4213.8	89.4
0°-90°	4710.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4710.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2123	2123	2123	2123	2123	
5°	2060	2126	2159	2093	2060	194
15°	1878	2054	2153	1955	1878	528
25°	1621	1874	2032	1718	1621	745
35°	1297	1597	1809	1407	1297	809
45°	922	1257	1514	1066	922	709
55°	530	897	1149	725	530	474
65°	188	477	519	312	188	194
75°	50	118	124	63	50	54
85°	7	12	6	4	7	9
90°	0	1	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°	2123.4	2123.4	2123.4	2123.4	2123.4	2123.4	2123.4	2123.4	2123.4	2123.4	2123.4
0.5°	2115.7	2124.9	2124.1	2123.0	2124.1	2126.0	2127.2	2127.2	2125.7	2132.2	2127.6
1°	2110.3	2121.1	2121.8	2122.6	2125.7	2129.5	2131.8	2131.8	2130.3	2135.3	2129.5
1.5°	2104.6	2116.8	2119.1	2122.2	2126.4	2131.8	2135.6	2136.4	2134.9	2137.9	2130.7
2°	2098.8	2112.6	2116.5	2121.1	2127.2	2134.5	2139.5	2141.0	2139.1	2140.6	2131.8
2.5°	2092.7	2108.0	2113.0	2120.3	2127.6	2136.8	2143.3	2145.2	2142.9	2143.3	2132.6
3°	2086.5	2103.0	2109.9	2118.8	2128.0	2139.1	2146.8	2149.1	2146.4	2145.6	2133.0
3.5°	2080.4	2098.0	2106.5	2117.2	2128.0	2141.0	2149.8	2152.9	2150.2	2147.5	2133.3
4°	2073.5	2092.7	2102.6	2115.3	2127.6	2142.6	2152.5	2156.4	2153.3	2149.1	2133.3
4.5°	2066.9	2087.3	2098.4	2113.0	2127.2	2143.7	2155.2	2159.4	2156.4	2150.6	2133.0
5°	2059.6	2081.5	2094.2	2110.7	2126.4	2144.5	2157.5	2162.5	2159.1	2151.8	2132.6
5.5°	2052.7	2075.8	2090.0	2108.0	2125.3	2145.2	2159.4	2165.2	2161.4	2152.5	2131.4
6°	2045.1	2069.6	2085.0	2104.9	2124.1	2145.6	2161.4	2167.5	2163.7	2152.9	2130.7
6.5°	2037.4	2063.1	2080.0	2101.9	2122.2	2146.0	2162.9	2169.4	2165.6	2153.3	2129.5
7°	2029.7	2056.6	2075.0	2098.4	2120.3	2146.0	2164.4	2171.7	2167.1	2153.3	2128.0
7.5°	2021.6	2049.7	2069.6	2095.0	2118.0	2145.6	2165.2	2173.3	2168.3	2152.9	2126.0
8°	2013.2	2042.8	2063.9	2090.7	2116.1	2145.2	2166.0	2174.4	2169.4	2152.5	2123.7
8.5°	2004.8	2035.5	2057.7	2086.5	2113.4	2144.1	2166.7	2175.6	2170.2	2151.4	2121.4
9°	1995.9	2028.2	2051.6	2081.9	2110.3	2143.3	2166.7	2176.3	2171.0	2150.6	2118.8
9.5°	1987.5	2020.5	2045.4	2077.3	2107.2	2141.8	2166.7	2176.7	2171.0	2149.1	2115.7
10°	1978.3	2012.8	2038.5	2072.3	2103.4	2139.9	2166.4	2177.1	2171.0	2147.2	2112.6
10.5°	1969.4	2004.8	2031.6	2066.9	2099.9	2138.3	2166.0	2176.7	2170.2	2145.2	2109.2
11°	1959.8	1996.3	2024.7	2061.2	2095.7	2136.0	2164.8	2176.3	2169.4	2142.9	2105.3
11.5°	1950.3	1988.3	2017.4	2055.8	2091.5	2133.7	2163.7	2175.6	2168.7	2140.6	2101.1
12°	1940.3	1979.4	2010.1	2049.7	2086.9	2131.0	2162.5	2174.8	2167.1	2137.6	2096.9
12.5°	1930.7	1970.6	2002.1	2043.1	2082.3	2128.0	2160.6	2173.3	2165.6	2134.5	2092.3
13°	1920.3	1961.4	1994.4	2036.6	2077.3	2124.9	2158.7	2171.7	2163.7	2131.0	2087.3
13.5°	1910.0	1952.2	1985.9	2030.1	2071.9	2121.4	2156.4	2169.8	2161.7	2127.6	2082.3
14°	1899.6	1943.0	1977.5	2022.8	2066.2	2117.6	2153.7	2167.9	2159.4	2123.4	2076.5
14.5°	1888.5	1933.4	1969.1	2015.9	2060.4	2113.4	2151.0	2165.6	2156.4	2119.1	2071.2
15°	1877.7	1923.8	1960.2	2008.2	2054.3	2108.8	2147.9	2162.5	2153.3	2114.5	2065.0
15.5°	1866.6	1913.4	1951.0	2000.5	2047.7	2104.6	2144.5	2159.4	2149.8	2109.9	2058.9
16°	1855.4	1903.0	1941.4	1992.5	2040.8	2099.6	2140.6	2156.4	2146.4	2104.6	2052.7
16.5°	1843.9	1892.7	1931.8	1984.0	2033.9	2094.2	2136.8	2152.5	2142.6	2099.2	2045.8
17°	1832.0	1881.9	1922.2	1975.2	2026.6	2088.8	2132.6	2148.7	2138.3	2093.4	2038.5
17.5°	1820.1	1871.2	1912.3	1966.8	2019.3	2083.1	2128.0	2144.5	2133.7	2087.3	2031.2
18°	1808.6	1860.1	1902.3	1957.5	2011.3	2076.9	2123.4	2139.9	2128.7	2081.1	2023.6
18.5°	1796.3	1848.9	1891.5	1948.3	2003.2	2070.4	2118.4	2135.3	2123.4	2074.6	2015.9
19°	1783.3	1837.4	1880.8	1938.7	1994.8	2064.3	2113.0	2130.3	2118.4	2068.1	2007.8
19.5°	1771.0	1825.5	1870.0	1928.8	1986.3	2057.3	2107.2	2124.9	2112.6	2060.8	1999.4
20°	1758.7	1814.0	1858.9	1919.2	1977.5	2050.0	2101.5	2119.1	2106.9	2053.5	1990.6
20.5°	1745.7	1801.7	1847.8	1908.8	1967.9	2042.8	2095.3	2113.4	2100.7	2045.8	1982.1
21°	1731.9	1789.8	1836.3	1898.4	1958.7	2035.1	2088.8	2107.2	2094.2	2038.2	1972.9

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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°	1692.3	1751.8	1800.2	1865.0	1929.1	2010.5	2067.7	2086.9	2072.7	2013.2	1944.1
23°	1678.5	1738.8	1787.9	1853.5	1918.8	2001.7	2060.0	2080.0	2065.0	2004.0	1933.7
23.5°	1664.3	1725.7	1775.2	1842.0	1907.6	1992.9	2052.4	2072.3	2057.3	1995.2	1923.8
24°	1650.1	1712.3	1762.2	1830.1	1896.9	1983.3	2044.3	2064.6	2049.3	1985.6	1913.0
24.5°	1635.9	1698.8	1749.1	1817.4	1885.8	1973.7	2035.8	2056.6	2040.8	1976.0	1902.3
25°	1621.3	1685.0	1736.1	1805.2	1874.3	1964.1	2027.0	2048.1	2032.4	1966.0	1891.1
25.5°	1606.7	1670.8	1722.6	1792.5	1862.4	1953.7	2018.2	2039.7	2023.2	1956.0	1880.0
26°	1591.8	1657.0	1708.8	1779.4	1850.5	1943.3	2009.0	2030.9	2014.0	1945.6	1868.5
26.5°	1576.8	1642.8	1695.0	1766.0	1838.2	1933.0	1999.8	2021.6	2004.8	1934.9	1857.0
27°	1561.4	1628.6	1681.2	1753.0	1825.9	1922.2	1989.8	2012.0	1995.2	1924.2	1844.7
27.5°	1546.1	1614.0	1667.0	1739.5	1813.2	1911.1	1979.8	2002.8	1985.2	1913.4	1832.8
28°	1530.7	1599.0	1652.8	1725.7	1799.8	1899.2	1969.8	1992.9	1975.2	1901.9	1820.1
28.5°	1514.6	1583.7	1638.2	1711.5	1786.7	1888.1	1959.5	1982.5	1964.5	1890.4	1807.9
29°	1498.9	1568.7	1623.2	1696.9	1773.3	1875.8	1948.3	1972.1	1954.1	1878.5	1794.8
29.5°	1483.1	1553.4	1608.6	1682.7	1759.9	1863.9	1937.6	1961.8	1943.0	1866.6	1781.8
30°	1467.0	1538.4	1593.3	1668.1	1746.1	1851.6	1926.5	1951.0	1932.2	1854.7	1768.3
30.5°	1450.5	1522.3	1577.9	1653.6	1731.9	1838.6	1914.9	1939.9	1920.7	1842.0	1755.3
31°	1434.0	1506.5	1562.6	1639.0	1718.0	1825.9	1903.4	1928.4	1909.2	1829.7	1741.8
31.5°	1417.1	1490.8	1546.8	1623.2	1703.4	1812.8	1891.1	1916.9	1897.3	1817.1	1728.0
32°	1400.6	1474.7	1531.1	1607.9	1688.5	1799.4	1879.2	1905.0	1885.4	1804.4	1714.2
32.5°	1383.7	1457.8	1515.0	1592.1	1673.5	1786.0	1867.0	1893.4	1873.1	1791.0	1700.4
33°	1366.8	1441.7	1498.5	1576.8	1658.5	1771.8	1854.3	1881.5	1860.8	1777.9	1685.8
33.5°	1349.6	1425.2	1482.4	1560.7	1643.2	1758.0	1841.6	1868.5	1848.2	1764.1	1671.6
34°	1331.9	1408.7	1466.2	1544.9	1628.2	1744.1	1828.2	1855.8	1835.5	1750.7	1657.0
34.5°	1314.6	1391.8	1449.7	1528.4	1612.5	1729.5	1815.1	1843.2	1822.4	1737.2	1642.4
35°	1297.0	1374.5	1433.2	1512.7	1596.7	1715.0	1801.7	1830.5	1809.4	1723.0	1627.4
35.5°	1279.3	1357.2	1416.0	1495.8	1580.6	1700.4	1787.9	1817.1	1796.3	1708.8	1612.9
36°	1261.3	1340.0	1399.1	1479.3	1564.9	1685.4	1774.5	1803.2	1782.5	1694.2	1597.1
36.5°	1243.2	1322.7	1381.8	1462.0	1548.8	1670.4	1759.9	1789.8	1769.1	1680.4	1581.8
37°	1225.2	1305.0	1364.9	1445.9	1532.6	1654.7	1745.7	1776.4	1754.9	1665.4	1566.8
37.5°	1207.2	1287.4	1347.3	1429.0	1515.8	1639.3	1731.1	1762.2	1741.1	1650.9	1551.5
38°	1188.3	1269.7	1329.6	1411.7	1499.2	1623.6	1716.5	1748.0	1726.9	1635.9	1535.7
38.5°	1169.9	1251.7	1311.9	1393.7	1482.4	1607.9	1701.9	1733.8	1712.7	1621.3	1520.0
39°	1151.9	1233.3	1294.3	1377.2	1466.2	1592.1	1686.9	1720.0	1698.1	1606.0	1504.2
39.5°	1133.5	1215.6	1276.6	1359.5	1448.6	1576.0	1671.6	1705.0	1683.9	1590.6	1488.5
40°	1113.9	1197.6	1258.6	1342.3	1431.3	1559.5	1656.6	1690.0	1668.9	1575.2	1472.0
40.5°	1095.5	1179.1	1240.5	1324.2	1414.0	1543.4	1641.3	1675.0	1653.9	1559.9	1456.3
41°	1076.3	1160.7	1222.5	1306.9	1396.8	1526.9	1625.1	1660.5	1639.0	1544.2	1439.8
41.5°	1057.5	1142.3	1204.5	1289.3	1379.5	1510.0	1609.8	1645.1	1623.6	1529.2	1423.6
42°	1037.9	1123.9	1185.7	1271.6	1362.2	1493.1	1593.7	1629.4	1608.3	1513.1	1407.5
42.5°	1019.5	1105.1	1168.0	1254.0	1344.9	1476.6	1578.3	1614.0	1592.9	1496.9	1390.6
43°	999.9	1086.2	1149.6	1236.3	1327.3	1459.7	1561.8	1598.7	1577.6	1480.4	1374.1
43.5°	980.3	1067.4	1131.5	1217.9	1309.6	1442.8	1545.7	1582.9	1561.8	1464.7	1357.6



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	922.3	1010.2	1075.9	1164.2	1256.7	1391.0	1496.2	1534.9	1513.8	1414.8	1306.6
45.5°	902.8	991.4	1057.8	1146.5	1239.0	1373.7	1479.3	1518.8	1497.7	1397.5	1289.3
46°	883.2	972.2	1039.0	1128.1	1221.4	1356.5	1462.4	1501.9	1481.2	1380.6	1272.0
46.5°	863.6	953.1	1021.0	1110.0	1203.7	1338.8	1445.5	1485.4	1464.7	1363.4	1254.4
47°	844.4	934.2	1002.2	1092.0	1186.0	1321.2	1427.9	1468.5	1447.4	1345.7	1236.7
47.5°	824.5	915.1	983.8	1074.0	1167.6	1303.5	1411.0	1451.3	1430.2	1328.1	1218.3
48°	804.1	895.9	965.0	1056.3	1150.0	1285.8	1393.3	1434.0	1413.3	1309.3	1200.2
48.5°	784.9	876.3	946.5	1037.9	1132.3	1268.2	1375.7	1416.3	1395.6	1290.8	1181.8
49°	765.4	857.5	927.7	1019.8	1114.3	1249.8	1357.6	1398.7	1377.6	1272.0	1163.0
49.5°	745.8	838.3	909.7	1001.8	1095.8	1231.7	1340.0	1380.6	1358.8	1252.8	1144.2
50°	725.8	819.1	891.6	983.4	1078.2	1213.7	1321.2	1362.2	1340.3	1233.6	1125.4
50.5°	705.9	799.9	872.8	965.7	1060.1	1195.3	1302.3	1343.4	1321.2	1213.7	1107.0
51°	686.3	780.3	854.4	947.7	1042.1	1176.8	1283.5	1324.2	1302.0	1194.5	1088.5
51.5°	667.1	761.1	836.0	929.6	1024.1	1158.4	1264.3	1304.6	1282.4	1175.7	1070.5
52°	647.1	742.3	817.6	911.6	1005.6	1139.2	1244.8	1284.7	1262.4	1157.6	1053.2
52.5°	627.9	723.1	799.1	893.6	987.2	1120.4	1225.2	1264.7	1242.5	1140.0	1035.2
53°	608.0	703.9	781.1	875.5	968.8	1100.8	1205.2	1245.5	1223.7	1121.2	1017.2
53.5°	588.4	685.1	762.7	857.9	950.8	1081.6	1185.3	1225.2	1205.2	1101.6	996.0
54°	569.2	666.3	744.6	839.1	932.3	1062.4	1166.1	1206.8	1187.2	1079.3	974.6
54.5°	550.0	647.5	726.2	821.4	914.3	1044.0	1147.3	1189.1	1168.4	1054.8	950.0
55°	530.5	628.7	708.2	803.4	896.6	1025.6	1129.2	1171.1	1148.8	1027.1	924.7
55.5°	511.6	609.5	690.5	786.1	879.4	1007.9	1110.4	1150.7	1125.4	1000.3	898.2
56°	492.5	591.5	672.1	768.4	861.7	989.5	1090.9	1128.1	1099.7	970.3	870.9
56.5°	473.6	573.1	654.4	750.8	844.0	969.9	1069.0	1102.8	1072.8	940.4	843.7
57°	454.8	554.3	637.2	733.9	824.9	948.8	1045.6	1077.0	1044.0	909.7	816.0
57.5°	436.0	536.2	619.9	716.6	805.7	927.7	1020.6	1048.2	1012.9	879.4	786.5
58°	418.4	518.2	601.8	699.3	785.3	904.7	994.9	1018.7	981.5	846.4	757.3
58.5°	400.0	500.5	584.2	680.9	765.4	881.3	968.0	987.2	949.6	813.3	728.1
59°	381.9	482.9	566.9	662.5	743.9	857.1	938.9	955.4	916.2	781.1	699.0
59.5°	363.9	465.2	549.3	643.7	722.8	831.8	909.7	921.2	882.0	749.2	669.4
60°	346.6	447.2	531.6	624.9	700.9	806.8	879.7	888.2	847.9	715.8	640.6
60.5°	329.3	429.9	513.2	606.1	679.8	781.1	849.4	854.0	813.7	683.6	611.8
61°	312.4	413.0	495.5	586.5	657.1	755.0	817.9	821.0	779.9	651.7	583.4
61.5°	295.2	395.3	477.5	567.7	634.9	728.5	786.1	786.9	745.4	619.1	555.0
62°	279.0	378.1	459.4	548.1	613.0	701.6	755.4	753.8	712.0	587.6	526.6
62.5°	262.9	360.8	441.8	528.9	590.0	674.8	723.1	720.5	677.8	556.9	499.4
63°	247.2	343.9	423.4	509.7	567.3	647.1	691.7	687.1	645.2	528.2	472.9
63.5°	231.1	327.0	405.7	489.4	544.7	619.9	660.6	654.1	612.6	499.0	446.8
64°	216.5	310.9	388.1	470.2	522.4	593.0	630.6	622.2	581.1	471.3	421.4
64.5°	201.9	294.4	370.4	450.6	499.7	565.8	599.9	590.7	550.4	444.5	396.9
65°	187.7	277.9	353.1	431.4	477.1	538.9	570.8	560.0	519.3	418.4	373.5
65.5°	173.9	262.2	335.5	411.9	454.5	512.4	541.6	529.7	489.0	393.8	352.7
66°	160.8	246.8	318.2	392.7	431.8	486.3	512.8	500.1	459.1	370.0	332.4



TEST NUMBER: P776445

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-2700K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	127.0	201.9	266.8	335.5	366.6	411.5	431.0	417.6	374.2	307.8	271.0
68°	117.5	187.7	250.3	316.7	346.2	387.7	405.3	391.9	350.4	286.7	252.9
68.5°	108.2	173.9	234.1	297.9	325.9	364.3	380.0	366.9	326.6	266.0	236.4
69°	98.6	160.1	217.6	279.4	305.5	342.8	358.1	344.7	302.8	248.3	220.7
69.5°	91.4	146.6	201.5	260.6	285.6	321.7	336.2	322.8	279.4	231.8	205.7
70°	86.0	134.7	185.8	243.3	265.2	300.2	314.7	300.5	259.9	216.1	191.9
70.5°	82.5	123.2	170.4	225.7	247.2	278.7	292.9	278.7	241.4	201.5	178.9
71°	78.7	112.1	155.8	208.4	229.9	260.2	271.0	259.9	224.2	187.7	166.2
71.5°	74.8	100.9	141.6	191.9	213.0	241.4	252.2	241.8	208.0	174.6	154.7
72°	71.0	89.8	130.1	176.2	196.9	224.2	234.1	224.9	193.5	162.7	143.9
72.5°	67.2	81.8	119.0	161.2	181.2	207.7	217.6	209.2	179.6	151.2	133.2
73°	63.3	76.0	107.9	147.4	166.6	192.3	202.3	194.2	167.0	140.5	123.6
73.5°	59.9	72.2	96.7	134.0	153.1	177.7	187.7	180.4	155.5	130.5	114.4
74°	56.4	68.3	85.2	123.2	140.5	164.3	173.9	167.7	144.3	120.9	105.6
74.5°	53.0	64.9	77.2	112.1	128.2	151.6	161.2	155.8	134.0	112.1	97.5
75°	49.5	61.4	69.9	101.3	117.5	139.7	149.3	144.7	124.4	103.6	89.4
75.5°	46.4	58.0	64.1	90.6	107.1	128.6	138.2	134.3	114.8	95.2	82.1
76°	43.4	54.5	58.7	81.8	97.5	118.2	127.8	124.4	105.9	87.5	74.8
76.5°	40.7	51.4	54.1	73.7	88.3	108.2	118.2	115.5	97.5	80.2	68.3
77°	38.0	48.0	50.3	66.8	80.6	99.8	109.0	106.7	89.0	73.3	61.8
77.5°	35.3	44.9	46.8	60.3	72.9	91.0	100.6	98.6	81.4	66.4	55.7
78°	32.6	42.2	44.1	54.5	66.0	82.9	92.1	90.6	74.1	60.3	49.9
78.5°	30.3	39.5	41.1	49.5	59.5	75.6	84.4	82.9	66.8	54.5	44.5
79°	28.0	36.8	38.8	44.9	53.7	68.7	77.2	76.0	59.9	48.7	39.5
79.5°	25.7	34.2	36.1	40.7	48.4	62.2	70.2	69.1	53.7	43.8	35.7
80°	23.4	31.5	33.8	36.8	43.4	56.0	63.7	62.6	47.6	39.5	31.5
80.5°	21.5	29.2	31.1	33.4	38.8	50.7	57.6	56.8	41.8	34.9	27.3
81°	19.6	26.9	29.2	30.3	35.3	44.9	51.8	51.0	37.2	30.7	23.4
81.5°	17.7	24.9	26.9	27.6	31.5	40.3	46.1	45.7	32.6	26.5	19.2
82°	15.7	22.6	24.9	24.9	28.0	36.1	41.1	40.3	28.0	22.3	16.1
82.5°	14.2	20.7	22.6	22.6	24.2	32.2	36.8	36.1	23.0	18.0	13.4
83°	12.3	18.4	20.7	20.3	20.7	28.4	32.6	31.9	18.4	15.0	10.7
83.5°	10.7	16.9	19.2	18.8	18.0	24.2	28.4	27.6	15.0	11.9	8.4
84°	9.6	15.0	17.3	16.9	15.7	20.3	24.2	23.4	11.5	9.2	6.5
84.5°	8.1	13.4	15.4	15.4	13.8	17.7	20.0	19.2	8.8	6.9	5.0
85°	6.9	11.9	13.8	13.8	11.9	15.0	16.9	15.7	6.1	4.6	3.5
85.5°	5.8	10.4	12.7	12.3	10.0	12.3	13.8	12.7	3.8	3.1	2.3
86°	4.6	8.8	11.1	11.1	8.8	10.4	11.1	10.0	2.3	1.9	1.2
86.5°	3.5	7.3	9.6	9.6	7.3	8.4	8.8	7.3	1.5	0.8	0.4
87°	2.7	6.1	8.1	8.4	6.1	6.5	6.9	5.4	1.2	0.4	0.0
87.5°	1.9	5.0	6.9	7.3	5.0	5.4	5.0	3.8	0.8	0.0	0.0
88°	1.5	3.8	5.8	6.1	4.2	3.8	3.5	2.3	0.4	0.0	0.0
88.5°	0.8	3.1	4.6	5.0	3.1	2.7	2.3	1.2	0.4	0.0	0.0



TEST NUMBER: P776445

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-2700K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	1.2	1.9	2.3	1.2	0.8	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776445

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2123.4	2123.4	2123.4	2123.4	2123.4	2123.4
0.5°	2123.0	2121.1	2119.1	2118.0	2116.5	2115.7
1°	2122.6	2118.8	2115.3	2113.0	2110.7	2110.3
1.5°	2121.8	2116.5	2111.1	2107.2	2104.9	2104.6
2°	2121.1	2113.8	2106.9	2101.9	2098.8	2098.8
2.5°	2119.5	2110.7	2102.3	2096.1	2092.7	2092.7
3°	2118.0	2107.6	2097.3	2090.0	2086.1	2086.5
3.5°	2116.5	2104.6	2092.3	2083.8	2079.6	2080.4
4°	2114.1	2100.7	2086.9	2077.3	2072.3	2073.5
4.5°	2112.2	2096.9	2081.1	2070.4	2065.4	2066.9
5°	2109.5	2092.7	2075.4	2063.5	2057.7	2059.6
5.5°	2106.9	2088.0	2069.2	2056.2	2050.4	2052.7
6°	2103.8	2083.4	2062.7	2048.9	2042.8	2045.1
6.5°	2100.3	2078.5	2056.2	2041.2	2034.7	2037.4
7°	2096.9	2073.5	2049.3	2033.5	2026.6	2029.7
7.5°	2093.0	2067.7	2042.4	2025.5	2018.2	2021.6
8°	2088.8	2061.9	2035.1	2017.0	2009.7	2013.2
8.5°	2084.6	2055.8	2027.4	2008.6	2000.9	2004.8
9°	2079.6	2049.7	2019.7	1999.8	1991.7	1995.9
9.5°	2075.0	2043.1	2011.7	1990.9	1982.5	1987.5
10°	2069.6	2036.2	2003.2	1981.7	1973.3	1978.3
10.5°	2064.3	2029.7	1994.8	1972.1	1963.7	1969.4
11°	2058.5	2022.0	1985.9	1962.9	1954.1	1959.8
11.5°	2052.7	2014.4	1976.7	1952.9	1944.1	1950.3
12°	2046.2	2006.7	1967.5	1943.0	1933.7	1940.3
12.5°	2039.7	1998.6	1957.9	1932.6	1923.4	1930.7
13°	2032.8	1990.6	1948.3	1922.2	1913.0	1920.3
13.5°	2025.9	1981.7	1938.4	1911.5	1902.7	1910.0
14°	2018.6	1972.9	1928.0	1901.1	1891.5	1899.6
14.5°	2011.3	1964.1	1918.0	1890.0	1880.4	1888.5
15°	2003.2	1954.9	1907.3	1878.5	1869.3	1877.7
15.5°	1995.2	1945.3	1896.1	1867.0	1857.4	1866.6
16°	1986.7	1935.3	1885.4	1855.4	1846.2	1855.4
16.5°	1978.3	1925.3	1873.9	1843.5	1834.3	1843.9
17°	1969.4	1914.9	1862.4	1831.6	1822.4	1832.0
17.5°	1960.2	1904.2	1850.5	1819.0	1810.2	1820.1
18°	1950.6	1893.4	1838.6	1807.1	1797.9	1808.6
18.5°	1941.0	1882.3	1826.3	1794.0	1784.8	1796.3
19°	1931.4	1871.2	1813.6	1781.8	1772.5	1783.3
19.5°	1921.1	1859.7	1800.9	1768.3	1759.5	1771.0
20°	1910.7	1847.8	1787.9	1755.3	1746.4	1758.7
20.5°	1900.0	1835.9	1774.8	1741.4	1733.4	1745.7
21°	1889.2	1823.6	1761.4	1728.0	1719.6	1731.9

TEST NUMBER: P776445

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1855.4	1785.6	1720.3	1685.8	1678.1	1692.3
23°	1843.5	1772.5	1706.5	1671.6	1663.9	1678.5
23.5°	1831.6	1759.1	1692.3	1657.4	1649.7	1664.3
24°	1819.0	1745.3	1677.7	1642.8	1635.1	1650.1
24.5°	1806.7	1731.9	1663.1	1627.4	1620.5	1635.9
25°	1794.0	1717.7	1647.8	1612.5	1605.6	1621.3
25.5°	1781.0	1704.2	1633.2	1597.5	1590.6	1606.7
26°	1767.9	1689.6	1618.2	1582.2	1575.6	1591.8
26.5°	1754.5	1675.4	1602.9	1566.4	1560.3	1576.8
27°	1741.1	1660.5	1587.5	1550.7	1544.9	1561.4
27.5°	1727.2	1645.9	1571.8	1534.9	1529.2	1546.1
28°	1713.4	1630.9	1556.1	1519.2	1513.1	1530.7
28.5°	1699.2	1615.6	1540.3	1503.1	1497.3	1514.6
29°	1685.0	1600.6	1524.2	1486.6	1481.6	1498.9
29.5°	1670.4	1585.2	1508.1	1470.1	1465.1	1483.1
30°	1655.9	1569.9	1492.0	1454.0	1448.6	1467.0
30.5°	1641.3	1553.8	1475.5	1437.1	1432.5	1450.5
31°	1626.7	1538.0	1458.9	1420.6	1415.6	1434.0
31.5°	1611.3	1521.9	1442.1	1403.7	1399.1	1417.1
32°	1596.4	1505.8	1425.2	1386.4	1381.8	1400.6
32.5°	1580.6	1489.7	1408.7	1369.5	1364.9	1383.7
33°	1565.3	1473.5	1391.8	1352.2	1347.6	1366.8
33.5°	1549.5	1456.6	1374.9	1335.0	1330.4	1349.6
34°	1533.8	1440.5	1357.2	1317.7	1312.7	1331.9
34.5°	1518.4	1423.6	1340.3	1300.4	1295.4	1314.6
35°	1502.3	1407.1	1322.7	1282.8	1277.4	1297.0
35.5°	1486.2	1390.6	1305.4	1264.7	1260.1	1279.3
36°	1470.1	1373.4	1288.5	1247.5	1241.7	1261.3
36.5°	1454.0	1356.8	1270.9	1229.8	1224.4	1243.2
37°	1437.5	1340.0	1253.6	1211.8	1206.0	1225.2
37.5°	1420.9	1323.1	1236.3	1193.7	1188.0	1207.2
38°	1404.4	1305.8	1218.7	1175.7	1169.5	1188.3
38.5°	1387.9	1288.5	1201.4	1158.0	1151.5	1169.9
39°	1371.8	1271.6	1183.4	1140.0	1133.1	1151.9
39.5°	1354.9	1254.7	1166.1	1121.9	1114.6	1133.5
40°	1338.0	1237.5	1148.4	1103.9	1096.2	1113.9
40.5°	1321.5	1220.2	1131.2	1085.9	1077.8	1095.5
41°	1304.6	1202.5	1113.5	1067.8	1058.6	1076.3
41.5°	1288.1	1186.0	1095.5	1049.8	1040.2	1057.5
42°	1271.3	1169.2	1078.2	1031.4	1021.8	1037.9
42.5°	1254.0	1151.5	1060.9	1013.3	1003.0	1019.5
43°	1237.1	1134.2	1043.6	994.9	983.8	999.9
43.5°	1220.2	1117.3	1025.6	977.2	965.3	980.3



TEST NUMBER: P776445

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1168.8	1065.5	973.4	922.7	908.1	922.3
45.5°	1151.5	1049.0	955.7	905.1	889.7	902.8
46°	1134.6	1032.1	938.9	887.0	870.9	883.2
46.5°	1117.0	1014.5	921.2	869.0	851.7	863.6
47°	1099.3	997.2	904.3	851.0	832.9	844.4
47.5°	1081.6	980.3	886.3	832.9	813.7	824.5
48°	1063.6	963.0	869.8	815.3	794.9	804.1
48.5°	1045.9	945.8	852.1	797.2	776.1	784.9
49°	1027.9	928.9	835.2	779.6	757.3	765.4
49.5°	1009.5	911.6	817.9	761.5	738.9	745.8
50°	991.8	894.3	800.7	743.9	719.7	725.8
50.5°	974.2	876.7	783.4	726.6	700.9	705.9
51°	956.9	859.4	766.5	708.9	682.5	686.3
51.5°	939.6	842.9	749.6	690.9	664.0	667.1
52°	923.5	826.8	733.1	674.0	645.6	647.1
52.5°	906.2	810.7	716.6	656.7	626.8	627.9
53°	888.2	794.5	700.9	639.8	608.4	608.0
53.5°	869.0	778.0	684.4	622.6	590.3	588.4
54°	848.3	760.8	668.3	605.7	571.9	569.2
54.5°	827.5	743.1	651.7	589.6	553.9	550.0
55°	804.5	724.7	634.9	573.1	536.2	530.5
55.5°	781.5	705.1	617.2	555.8	518.6	511.6
56°	757.3	685.5	599.9	539.3	501.3	492.5
56.5°	733.5	665.6	582.3	522.0	483.6	473.6
57°	708.2	644.8	564.6	505.1	466.4	454.8
57.5°	683.6	623.7	546.6	487.9	449.1	436.0
58°	658.3	602.6	528.9	471.3	432.2	418.4
58.5°	632.9	581.5	510.1	454.5	415.3	400.0
59°	608.0	559.6	492.1	437.6	398.4	381.9
59.5°	583.0	538.1	473.6	420.7	381.5	363.9
60°	557.7	516.6	454.8	404.2	364.6	346.6
60.5°	533.1	495.1	436.0	386.9	348.1	329.3
61°	509.0	473.6	417.2	370.4	331.6	312.4
61.5°	484.4	452.5	398.4	353.9	315.5	295.2
62°	460.2	431.4	380.0	337.4	299.8	279.0
62.5°	437.2	410.7	361.2	320.5	283.7	262.9
63°	414.2	390.4	342.4	304.0	268.3	247.2
63.5°	391.9	370.0	324.3	286.7	252.9	231.1
64°	370.8	350.1	306.3	270.2	238.4	216.5
64.5°	350.4	331.2	288.6	253.7	223.8	201.9
65°	330.1	312.4	271.0	238.0	209.6	187.7
65.5°	310.1	293.2	254.5	221.5	195.0	173.9
66°	289.8	274.8	237.2	205.4	181.6	160.8



TEST NUMBER: P776445

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	234.9	224.5	190.4	161.6	141.6	127.0
68°	219.2	208.4	175.4	147.8	130.9	117.5
68.5°	203.8	193.1	161.2	134.0	120.1	108.2
69°	189.2	178.9	147.8	123.6	109.8	98.6
69.5°	175.8	165.4	134.3	113.2	99.0	91.4
70°	163.5	152.4	124.0	102.5	88.3	86.0
70.5°	151.2	140.5	114.0	92.1	80.6	82.5
71°	139.7	130.5	103.6	83.3	75.2	78.7
71.5°	129.4	120.5	93.3	76.0	71.4	74.8
72°	119.0	110.9	84.8	69.5	67.9	71.0
72.5°	110.2	100.9	77.2	63.7	64.5	67.2
73°	101.3	91.4	69.9	58.7	61.0	63.3
73.5°	92.9	82.9	63.3	54.1	57.6	59.9
74°	85.2	75.6	57.6	50.3	54.1	56.4
74.5°	77.5	68.7	52.6	47.2	51.0	53.0
75°	70.6	62.6	47.6	44.1	48.0	49.5
75.5°	64.1	56.4	43.4	41.5	44.9	46.4
76°	58.3	51.0	39.2	38.8	41.8	43.4
76.5°	52.2	45.7	35.7	36.5	39.2	40.7
77°	47.2	41.1	32.6	33.8	36.5	38.0
77.5°	42.2	36.8	29.6	31.9	33.8	35.3
78°	38.0	33.0	26.9	29.6	31.5	32.6
78.5°	34.2	29.2	24.6	27.3	29.2	30.3
79°	29.9	26.1	22.3	25.3	26.9	28.0
79.5°	26.1	23.0	20.3	23.0	24.6	25.7
80°	22.3	20.0	18.4	21.1	22.3	23.4
80.5°	19.2	17.7	16.9	19.2	20.3	21.5
81°	16.5	15.4	15.4	17.7	18.4	19.6
81.5°	13.8	13.8	13.8	15.7	16.5	17.7
82°	11.5	12.3	12.3	14.2	14.6	15.7
82.5°	9.6	10.4	10.7	12.7	13.1	14.2
83°	7.7	8.8	9.6	11.1	11.5	12.3
83.5°	6.1	7.3	8.1	9.6	10.0	10.7
84°	5.0	6.1	6.9	8.1	8.4	9.6
84.5°	3.5	5.0	6.1	6.9	6.9	8.1
85°	2.7	4.2	5.0	5.8	5.8	6.9
85.5°	1.9	3.1	3.8	5.0	4.6	5.8
86°	1.2	2.3	3.1	3.8	3.8	4.6
86.5°	0.4	1.5	1.9	2.7	3.1	3.5
87°	0.0	0.8	1.2	1.9	2.3	2.7
87.5°	0.0	0.4	0.4	1.2	1.5	1.9
88°	0.0	0.0	0.0	0.4	0.8	1.5
88.5°	0.0	0.0	0.0	0.0	0.4	0.8



TEST NUMBER: P776445

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-HCD81TRLWW-4000lm-2700K

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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Scaled Data Report





21.5°	1718.8	1777.1	1824.4	1887.3	1949.1	2027.0	2081.9	2100.7	2087.3	2030.1	1963.7
22°	1705.8	1764.9	1812.5	1876.2	1939.5	2019.0	2075.0	2093.8	2080.4	2021.6	1953.7



44°	961.1	1048.6	1112.7	1200.2	1292.0	1425.2	1528.8	1566.8	1546.1	1448.2	1340.7
44.5°	941.9	1029.4	1094.7	1182.6	1274.3	1408.3	1512.7	1550.7	1530.3	1431.7	1323.8



66.5°	148.5	231.5	301.3	373.5	409.9	461.0	484.8	471.7	429.5	349.3	311.7
67°	136.3	216.1	284.4	354.3	388.4	435.6	457.9	444.5	401.9	328.6	291.3



89°	0.4	2.3	3.8	4.2	2.3	1.9	1.2	0.4	0.0	0.0	0.0
89.5°	0.0	1.5	2.7	3.1	1.5	1.2	0.4	0.0	0.0	0.0	0.0

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21.5°	1878.1	1810.9	1748.0	1714.2	1705.8	1718.8
22°	1866.6	1798.3	1734.5	1700.0	1692.3	1705.8

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44°	1203.3	1100.4	1007.9	958.8	946.5	961.1
44.5°	1185.7	1082.8	990.7	941.2	927.3	941.9



66.5°	269.8	257.9	221.1	190.4	167.7	148.5
67°	251.4	240.7	205.0	175.4	154.3	136.3

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

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(END OF REPORT)