

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: P776257

Luminaire Tested: HCDJBL3040CSD-HCD41TRMW-4000lm-3500K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P776257
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B030)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL3040CSD-HCD41TRMW-4000lm-3500K
Description: 4 INCH ROUND SHALLOW-WIDE MATTE WHITE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT
Ballast/Driver: -

Summary

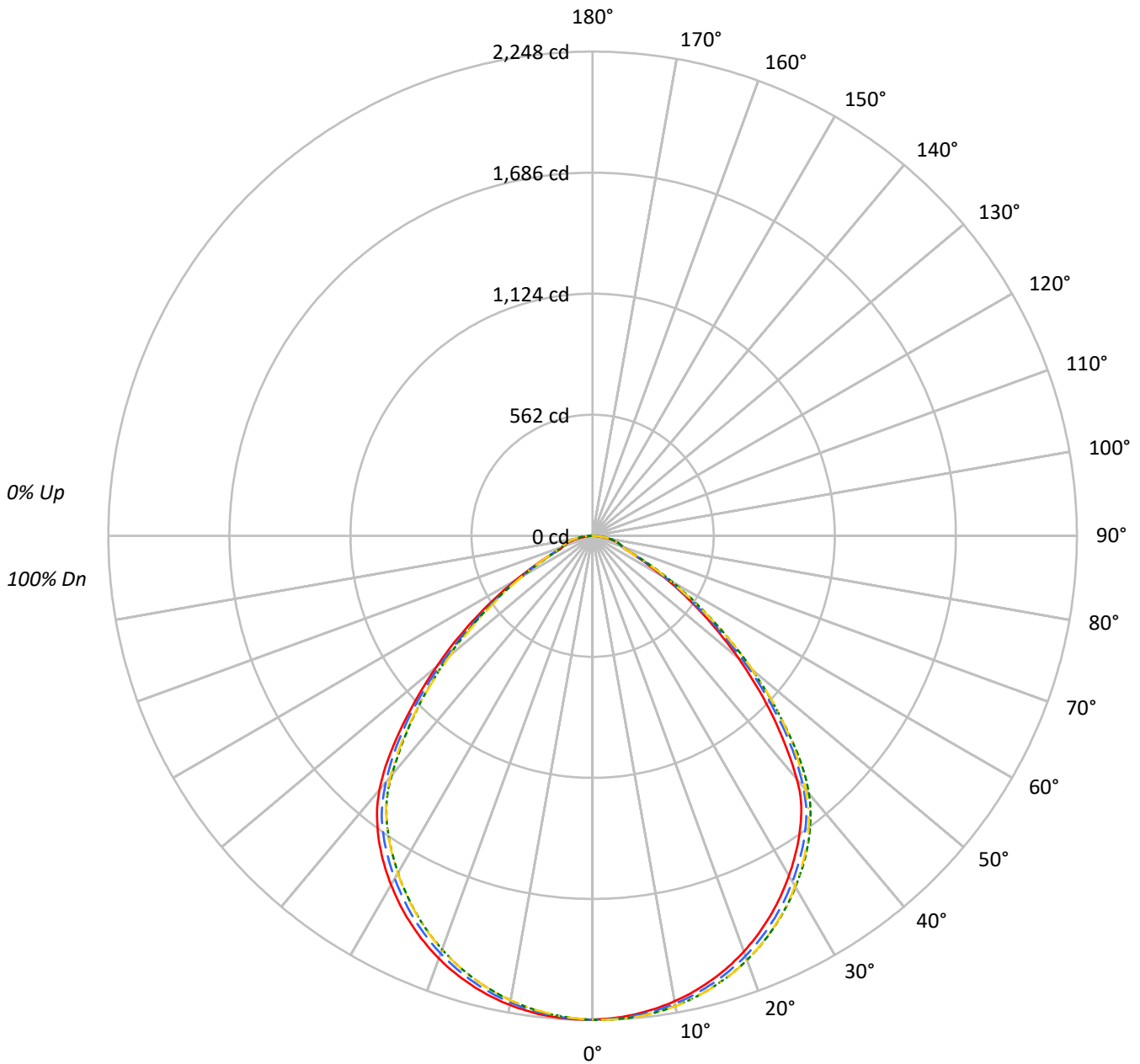
Lumens per Lamp: N/A
Luminaire Lumens: 4690.3 lumens
Efficiency: N/A
Efficacy: 121.8 lumens/watt
Spacing Criteria (0/90/45): 1.22 / 1.22 / 1.28
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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



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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	102	99	101	98	96	97	95	93	93	92	90	88								
2	103	96	90	85	100	94	89	84	90	86	82	87	84	81	84	81	79	77								
3	95	86	79	73	93	84	78	73	82	76	72	79	74	70	76	73	69	67								
4	88	77	70	64	86	76	69	64	74	68	63	72	66	62	69	65	61	59								
5	81	70	62	56	79	69	62	56	67	60	55	65	59	55	63	58	54	52								
6	76	64	56	50	74	63	55	50	61	54	49	60	54	49	58	53	49	47								
7	71	58	50	45	69	57	50	45	56	49	44	55	49	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	60	49	42	37	48	41	36	47	41	36	46	40	36	34								
10	58	46	38	33	57	45	38	33	44	38	33	43	37	33	43	37	33	31								

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	282684	282684	282684	282684
5°	281843	283359	283006	281654
10°	280387	283275	282674	279876
15°	278246	282441	281672	277321
20°	275045	280697	279625	273719
25°	270610	277845	276401	268791
30°	264887	273606	271935	262635
35°	257568	267892	265680	255002
40°	242107	256614	252884	238131
45°	210139	227545	222669	207381
50°	173037	189131	185332	171549
55°	133622	147840	144966	133622
60°	95369	106167	103977	95772
65°	64768	69384	67597	64888
70°	53980	53685	54127	55157
75°	56842	57231	54897	59906
80°	52978	59066	48123	63415
85°	29312	54004	20649	61368

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 112.5°
 Vertical Angle: 45°
 Luminance: 231158 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	212.4	4.5
10°-20°	605.8	12.9
20°-30°	906.2	19.3
30°-40°	1059.6	22.6
40°-50°	937.2	20.0
50°-60°	570.3	12.2
60°-70°	237.6	5.1
70°-80°	123.3	2.6
80°-90°	37.8	0.8
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°	1724.4	36.8
0°-40°	2784.0	59.4
0°-60°	4291.6	91.5
0°-90°	4690.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4690.3	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2246	2246	2246	2246	2246	
5°	2231	2243	2240	2230	2231	212
15°	2136	2168	2162	2128	2136	602
25°	1949	2001	1990	1936	1949	897
35°	1676	1744	1729	1660	1676	1044
45°	1181	1278	1251	1165	1181	907
55°	609	674	661	609	609	549
65°	218	233	227	218	218	229
75°	117	118	113	123	117	121
85°	20	37	14	42	20	30
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°	2246.2	2246.2	2246.2	2246.2	2246.2	2246.2	2246.2	2246.2	2246.2	2246.2	2246.2
0.5°	2245.8	2246.2	2246.5	2245.8	2247.3	2247.7	2246.9	2246.5	2246.5	2246.5	2246.2
1°	2245.0	2245.8	2246.2	2246.2	2247.7	2248.1	2247.7	2246.9	2246.5	2246.5	2245.8
1.5°	2243.8	2245.0	2245.8	2246.2	2247.7	2248.5	2247.7	2246.9	2246.5	2246.2	2245.0
2°	2242.6	2243.8	2245.4	2245.8	2247.7	2248.5	2247.7	2246.9	2246.2	2245.4	2244.2
2.5°	2241.0	2242.6	2244.6	2245.4	2247.3	2248.5	2247.7	2246.5	2245.8	2244.6	2243.0
3°	2239.4	2241.4	2243.4	2244.6	2246.9	2248.1	2246.9	2246.2	2245.0	2243.8	2241.8
3.5°	2237.8	2239.8	2242.2	2243.8	2246.2	2247.7	2246.5	2245.4	2244.2	2242.2	2240.2
4°	2235.8	2237.8	2240.6	2242.6	2245.4	2246.9	2245.4	2244.2	2243.0	2241.0	2238.2
4.5°	2233.4	2235.8	2238.6	2241.0	2244.2	2245.8	2244.6	2243.0	2241.4	2239.4	2236.2
5°	2231.0	2233.8	2236.6	2239.4	2243.0	2244.6	2243.0	2241.8	2240.2	2237.4	2233.8
5.5°	2228.3	2231.0	2234.6	2237.8	2241.0	2243.4	2241.4	2239.8	2238.2	2235.0	2231.4
6°	2225.1	2228.7	2232.2	2235.8	2239.4	2241.4	2239.8	2238.2	2236.2	2233.0	2228.7
6.5°	2221.9	2225.5	2229.9	2233.4	2237.4	2239.8	2237.8	2236.2	2234.2	2230.6	2225.9
7°	2218.7	2222.3	2227.1	2231.0	2235.0	2237.4	2235.4	2233.8	2231.4	2227.9	2223.1
7.5°	2215.1	2219.1	2223.9	2228.3	2232.6	2235.4	2233.0	2231.4	2228.7	2224.7	2219.5
8°	2211.6	2215.5	2221.1	2225.5	2229.5	2232.6	2230.3	2228.7	2225.9	2221.5	2215.9
8.5°	2207.6	2212.0	2217.1	2222.3	2226.7	2230.3	2227.5	2225.5	2222.7	2218.3	2212.4
9°	2203.2	2208.0	2213.6	2219.1	2223.5	2227.1	2224.3	2222.3	2219.5	2214.3	2208.4
9.5°	2198.8	2203.6	2210.0	2215.1	2220.3	2223.9	2221.1	2219.1	2215.9	2210.8	2204.0
10°	2194.1	2199.2	2205.6	2211.6	2216.7	2220.3	2217.5	2215.5	2212.0	2206.8	2199.6
10.5°	2189.3	2194.9	2201.2	2207.2	2212.8	2216.7	2213.6	2211.6	2208.0	2202.4	2195.3
11°	2184.1	2189.7	2196.9	2203.2	2208.8	2212.8	2209.6	2207.2	2204.0	2197.7	2190.1
11.5°	2179.0	2184.9	2192.1	2198.8	2204.4	2208.8	2205.2	2203.2	2199.2	2192.9	2184.9
12°	2173.4	2179.4	2186.9	2193.7	2200.0	2204.4	2200.8	2198.8	2194.9	2188.1	2179.8
12.5°	2167.4	2173.8	2181.7	2188.9	2195.3	2200.0	2196.1	2193.7	2190.1	2182.9	2174.2
13°	2161.9	2168.2	2176.2	2183.7	2190.1	2195.3	2190.9	2188.9	2184.9	2177.4	2168.6
13.5°	2155.1	2162.3	2170.2	2178.6	2184.9	2190.1	2185.7	2183.7	2179.4	2171.8	2162.7
14°	2149.2	2156.3	2164.7	2173.0	2179.4	2184.9	2180.6	2178.2	2173.8	2165.8	2156.3
14.5°	2142.4	2149.9	2158.3	2167.0	2173.8	2179.4	2174.6	2172.2	2167.8	2159.9	2149.9
15°	2135.6	2143.2	2152.3	2161.1	2167.8	2173.8	2169.0	2166.6	2161.9	2153.5	2143.2
15.5°	2128.5	2136.0	2145.6	2154.3	2161.9	2167.4	2162.7	2160.3	2155.5	2147.2	2136.4
16°	2120.9	2128.9	2138.4	2148.0	2155.5	2161.5	2155.9	2153.9	2148.8	2140.0	2129.3
16.5°	2113.4	2121.7	2131.7	2141.2	2148.8	2154.7	2149.5	2147.2	2142.4	2133.2	2121.7
17°	2105.8	2114.2	2124.5	2134.0	2142.0	2148.0	2142.8	2140.0	2134.8	2126.1	2114.2
17.5°	2097.9	2106.2	2116.9	2127.3	2134.8	2141.2	2135.2	2132.9	2127.7	2118.1	2106.2
18°	2089.5	2098.3	2109.0	2119.7	2127.7	2133.6	2128.1	2125.7	2120.5	2110.6	2098.3
18.5°	2080.8	2089.9	2101.0	2111.8	2120.1	2126.1	2120.5	2118.1	2112.6	2102.6	2089.9
19°	2072.0	2081.6	2092.7	2103.8	2112.2	2118.5	2112.6	2110.2	2105.0	2094.7	2081.6
19.5°	2062.9	2072.8	2084.3	2095.9	2104.2	2110.6	2104.2	2102.2	2096.7	2085.9	2072.8
20°	2053.7	2063.7	2075.6	2087.5	2095.9	2102.6	2095.9	2093.5	2087.9	2077.6	2063.7
20.5°	2044.6	2054.5	2066.9	2078.8	2087.5	2093.9	2087.1	2084.7	2079.2	2068.4	2054.1
21°	2034.3	2045.0	2057.3	2070.0	2078.8	2085.5	2078.4	2076.0	2070.4	2059.3	2045.0



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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°	2004.0	2015.2	2028.7	2041.8	2051.4	2058.1	2050.2	2048.2	2042.2	2030.7	2015.2
23°	1993.3	2004.8	2018.4	2032.3	2041.8	2048.6	2040.2	2038.2	2032.3	2020.7	2004.4
23.5°	1982.6	1994.1	2008.0	2021.9	2031.9	2038.6	2030.3	2027.9	2022.3	2010.0	1994.1
24°	1971.4	1983.4	1997.7	2012.0	2021.5	2028.7	2019.9	2017.6	2012.0	1999.7	1983.4
24.5°	1960.3	1972.2	1987.0	2001.3	2011.2	2018.4	2009.6	2007.2	2001.3	1988.9	1972.2
25°	1948.8	1960.7	1975.8	1990.5	2000.9	2007.6	1998.5	1996.5	1990.5	1978.2	1961.1
25.5°	1937.3	1949.6	1964.7	1979.8	1990.1	1996.9	1987.7	1985.4	1979.8	1967.1	1949.6
26°	1924.9	1938.1	1953.2	1968.7	1979.0	1986.2	1976.6	1974.2	1968.7	1955.5	1937.7
26.5°	1913.4	1926.1	1941.6	1957.5	1967.5	1975.0	1965.1	1962.7	1956.7	1944.4	1926.1
27°	1901.1	1913.8	1929.7	1945.6	1956.3	1963.9	1953.2	1951.2	1945.2	1932.5	1914.2
27.5°	1888.4	1901.9	1918.2	1934.1	1944.4	1952.0	1941.6	1939.2	1933.7	1920.2	1901.9
28°	1875.6	1889.2	1905.5	1922.1	1932.5	1940.0	1929.3	1927.3	1921.4	1908.6	1889.2
28.5°	1862.5	1876.4	1893.1	1909.8	1921.0	1928.1	1917.0	1915.0	1909.0	1895.5	1876.4
29°	1849.8	1863.3	1880.4	1897.5	1908.2	1915.8	1904.3	1902.7	1896.7	1883.6	1863.7
29.5°	1836.3	1850.6	1867.7	1884.8	1895.9	1903.5	1891.5	1889.9	1884.0	1870.5	1851.0
30°	1822.8	1837.5	1854.6	1872.1	1882.8	1890.7	1878.8	1876.8	1871.3	1857.7	1837.5
30.5°	1808.8	1824.0	1841.4	1859.3	1870.1	1877.6	1865.7	1863.7	1858.1	1844.2	1824.0
31°	1794.9	1810.0	1828.3	1845.8	1857.0	1864.9	1852.2	1850.2	1844.6	1831.1	1810.4
31.5°	1781.0	1796.5	1814.4	1832.7	1843.4	1851.4	1838.7	1836.7	1831.1	1817.6	1797.3
32°	1767.1	1782.6	1800.5	1819.2	1829.9	1837.9	1824.8	1823.2	1817.6	1804.5	1783.0
32.5°	1752.4	1768.3	1787.0	1805.3	1816.8	1824.4	1810.8	1809.2	1803.7	1790.6	1768.7
33°	1738.1	1754.0	1772.7	1791.4	1802.5	1810.4	1796.5	1794.9	1789.8	1776.2	1754.4
33.5°	1723.4	1739.3	1758.4	1777.4	1788.2	1796.1	1782.2	1780.2	1775.1	1761.5	1739.7
34°	1707.9	1724.6	1743.3	1762.7	1773.9	1781.8	1766.7	1765.1	1759.9	1746.4	1724.6
34.5°	1692.8	1709.1	1728.5	1747.6	1759.2	1766.3	1752.0	1750.0	1744.8	1731.7	1709.5
35°	1676.5	1693.6	1713.0	1732.5	1743.7	1751.2	1736.1	1734.5	1729.3	1716.2	1694.0
35.5°	1660.6	1677.7	1697.1	1717.0	1728.1	1735.7	1720.6	1718.6	1713.8	1700.3	1678.1
36°	1644.3	1661.4	1681.2	1701.1	1712.6	1720.2	1703.9	1701.5	1697.1	1683.6	1661.4
36.5°	1627.2	1644.7	1664.5	1685.2	1695.9	1703.5	1686.4	1684.4	1679.6	1666.5	1644.3
37°	1609.7	1627.2	1647.0	1667.3	1678.5	1686.0	1668.9	1666.9	1662.2	1649.0	1626.8
37.5°	1591.0	1609.3	1629.6	1650.2	1661.0	1668.5	1649.8	1648.6	1644.3	1630.7	1606.5
38°	1571.5	1590.2	1611.7	1631.9	1642.7	1650.6	1629.2	1628.8	1625.6	1611.3	1585.4
38.5°	1549.6	1568.3	1590.2	1613.3	1624.0	1631.1	1606.9	1606.5	1605.3	1591.4	1564.0
39°	1526.6	1544.5	1567.1	1592.6	1604.1	1610.5	1583.8	1584.2	1584.2	1569.9	1540.5
39.5°	1501.1	1520.2	1544.5	1571.5	1583.4	1588.6	1560.8	1560.8	1562.4	1547.3	1517.4
40°	1473.7	1494.4	1520.6	1548.1	1562.0	1565.2	1536.5	1535.7	1539.3	1523.4	1492.4
40.5°	1445.5	1467.0	1495.2	1524.6	1538.9	1540.9	1512.3	1511.1	1514.7	1498.4	1468.9
41°	1416.9	1439.5	1469.7	1499.2	1514.7	1516.3	1488.0	1486.4	1488.4	1472.9	1442.3
41.5°	1388.2	1411.7	1443.1	1473.3	1488.4	1491.2	1462.6	1460.2	1461.4	1446.7	1416.5
42°	1358.0	1382.7	1416.5	1446.7	1461.4	1465.4	1437.1	1434.8	1433.6	1419.6	1389.4
42.5°	1329.0	1353.7	1389.0	1419.6	1432.8	1438.7	1410.5	1407.7	1404.5	1391.4	1362.0
43°	1299.6	1325.0	1361.2	1391.4	1403.3	1411.3	1383.9	1380.3	1374.7	1362.8	1333.4
43.5°	1270.2	1296.0	1331.4	1362.8	1372.3	1384.3	1356.8	1352.5	1343.7	1333.4	1305.6



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1180.7	1208.9	1242.3	1272.2	1278.5	1298.8	1271.8	1266.2	1251.1	1241.1	1216.9
45.5°	1150.9	1179.5	1211.7	1240.8	1246.3	1268.2	1243.5	1236.4	1219.7	1209.3	1187.1
46°	1121.5	1150.1	1180.7	1208.5	1213.7	1238.4	1213.3	1205.4	1188.7	1177.5	1155.7
46.5°	1091.7	1120.3	1149.7	1176.3	1182.3	1207.8	1183.5	1175.2	1157.7	1145.7	1124.7
47°	1061.1	1090.9	1118.7	1143.7	1151.3	1176.3	1153.7	1144.9	1127.4	1113.9	1094.1
47.5°	1031.2	1060.7	1086.5	1111.5	1119.9	1144.9	1124.3	1113.5	1097.2	1082.9	1063.4
48°	1001.4	1030.0	1055.9	1078.9	1088.9	1113.5	1093.3	1082.5	1066.6	1050.7	1031.6
48.5°	971.6	1000.2	1024.1	1046.3	1058.3	1082.1	1063.4	1051.1	1036.4	1019.7	1001.4
49°	942.2	970.0	993.1	1014.5	1027.3	1051.1	1031.6	1020.5	1006.6	988.3	970.0
49.5°	912.8	939.0	962.1	982.3	996.3	1019.3	1000.2	989.5	976.4	957.7	939.4
50°	883.8	909.2	930.7	950.5	966.0	988.3	969.6	958.5	946.6	926.7	908.8
50.5°	854.7	878.6	899.7	918.7	935.8	957.3	937.4	928.3	916.4	896.9	878.2
51°	825.7	848.8	869.0	887.7	905.2	925.9	907.2	898.5	887.3	867.5	848.4
51.5°	797.9	819.7	838.8	856.7	875.4	896.5	875.4	868.2	858.3	837.6	819.0
52°	769.7	790.3	808.6	826.9	846.0	865.9	843.6	838.0	830.1	807.8	789.5
52.5°	742.2	761.3	778.8	797.1	816.2	835.3	813.4	808.6	800.7	779.2	759.7
53°	714.8	732.7	748.6	767.7	787.1	805.0	782.8	779.6	771.6	750.2	731.1
53.5°	687.8	704.5	719.6	738.6	757.7	776.0	753.0	750.2	743.0	722.7	702.9
54°	661.1	676.6	690.1	710.4	729.9	746.6	721.9	721.6	716.4	694.5	675.8
54.5°	634.9	648.4	662.3	682.2	702.1	718.0	692.9	693.7	688.6	667.5	648.8
55°	609.0	621.8	634.9	655.2	673.8	690.1	663.9	665.9	660.7	640.5	621.4
55.5°	584.0	595.5	607.1	628.1	646.4	661.9	635.3	638.5	633.7	614.6	595.1
56°	559.4	569.7	580.0	602.3	619.4	633.3	607.5	610.6	608.3	588.4	570.1
56.5°	534.7	543.8	554.6	576.4	593.1	606.3	580.0	584.4	581.6	563.3	545.0
57°	510.9	519.2	529.1	551.4	566.9	580.0	553.4	558.2	555.8	539.1	520.8
57.5°	487.4	494.6	504.1	526.4	541.5	553.4	527.5	532.7	530.7	515.2	496.5
58°	464.3	470.7	479.4	502.9	516.0	527.2	502.5	507.7	506.9	491.8	473.9
58.5°	442.1	447.6	456.4	479.0	492.6	502.1	477.9	482.2	482.2	469.1	451.6
59°	420.6	425.4	434.5	457.2	467.9	477.5	454.0	458.0	458.4	446.8	429.4
59.5°	399.5	403.5	412.7	434.1	444.5	453.2	430.5	434.9	435.3	425.0	408.7
60°	378.9	382.4	392.0	412.7	421.8	429.4	407.9	411.9	413.1	403.9	388.4
60.5°	359.4	362.2	371.7	391.6	399.9	406.7	386.8	389.2	391.2	383.6	368.5
61°	339.9	342.7	352.2	371.3	378.5	385.2	367.3	368.1	370.1	365.0	351.0
61.5°	321.6	324.4	333.9	351.0	359.0	365.3	347.5	348.7	350.6	346.3	333.9
62°	304.1	306.9	316.1	332.4	339.5	345.1	328.0	328.8	331.2	327.6	316.4
62.5°	287.4	289.8	299.0	313.7	320.4	325.2	308.5	308.9	311.7	308.9	299.0
63°	271.5	273.5	282.7	295.8	300.9	304.9	289.0	289.4	292.6	290.2	281.5
63.5°	256.8	258.4	267.2	278.7	281.5	285.0	271.1	271.9	275.5	273.5	266.0
64°	242.5	244.5	252.4	262.0	264.8	267.6	254.8	254.8	258.8	258.0	251.3
64.5°	229.0	231.0	238.5	246.9	248.5	251.3	239.7	239.7	242.9	242.9	237.7
65°	217.5	218.7	225.4	232.6	233.0	235.7	225.0	225.4	227.0	229.0	225.0
65.5°	206.3	207.5	213.5	219.0	218.7	221.0	211.5	211.9	211.9	216.3	213.1
66°	195.6	197.2	202.4	206.3	205.1	207.9	199.2	199.6	197.6	203.5	202.0



TEST NUMBER: P776257

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRMW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	169.8	171.7	174.1	175.3	172.9	175.7	169.0	170.5	166.2	173.7	174.9
68°	163.0	165.0	166.6	167.4	165.0	167.4	161.8	163.4	159.4	166.6	167.8
68.5°	156.6	159.4	160.2	160.2	158.2	160.2	156.2	157.4	155.4	160.2	161.4
69°	152.3	154.6	154.2	154.2	153.1	154.6	151.9	152.7	152.7	155.4	156.2
69.5°	149.5	150.3	149.9	149.5	148.7	149.9	148.7	149.5	149.9	151.5	152.7
70°	146.7	146.7	146.7	146.3	145.9	147.1	146.3	146.7	147.1	148.7	149.9
70.5°	143.9	144.3	145.1	143.9	143.5	144.7	143.9	143.9	144.3	145.9	147.5
71°	141.1	141.5	142.3	141.1	140.7	141.9	141.1	140.7	141.1	143.1	145.1
71.5°	138.7	138.7	139.9	138.7	138.3	139.5	138.3	137.9	138.3	139.9	142.3
72°	136.0	136.0	137.2	136.4	135.6	136.8	135.6	134.8	134.8	136.8	139.5
72.5°	133.6	133.6	134.4	134.0	132.8	134.0	132.8	131.6	131.6	133.6	136.8
73°	130.4	130.4	131.6	131.2	130.0	131.2	129.6	128.0	128.0	130.4	133.6
73.5°	127.2	127.2	128.8	128.0	127.2	128.0	126.4	124.4	124.4	126.8	130.4
74°	123.6	124.0	125.6	125.2	124.0	125.2	123.2	120.9	120.9	123.2	127.2
74.5°	120.1	120.5	122.4	122.4	120.9	122.0	120.1	117.3	116.9	119.7	124.0
75°	116.9	116.9	119.3	119.3	117.7	118.9	116.5	113.3	112.9	115.7	120.5
75.5°	112.9	113.3	116.1	116.1	114.5	115.7	112.9	109.3	108.9	111.7	116.9
76°	108.9	109.3	112.5	112.9	111.3	112.5	109.3	105.4	104.6	107.7	113.3
76.5°	105.4	105.7	108.9	109.3	107.7	108.9	105.4	101.4	100.6	103.4	109.7
77°	101.0	101.8	105.4	106.1	104.2	105.4	101.8	97.0	95.8	99.0	106.1
77.5°	96.6	97.4	101.8	102.6	100.6	101.8	97.8	92.6	91.0	94.2	101.8
78°	92.2	93.4	97.8	99.0	97.0	98.2	93.4	87.9	86.3	89.8	97.8
78.5°	87.9	89.1	93.8	95.4	93.0	94.2	89.4	83.1	81.5	85.1	93.4
79°	83.1	84.3	89.8	91.4	89.4	90.2	85.1	78.3	76.7	80.3	89.4
79.5°	78.3	79.9	85.9	87.5	85.5	86.7	80.7	73.5	71.6	75.1	85.1
80°	73.1	74.7	81.5	83.5	81.5	82.3	76.3	68.8	66.4	70.0	80.3
80.5°	68.4	70.0	77.1	79.5	77.1	78.3	72.0	63.6	61.2	65.2	75.9
81°	63.6	65.2	72.8	75.5	73.1	73.9	67.6	58.4	55.7	59.6	71.2
81.5°	58.0	60.0	68.4	71.2	68.8	69.6	62.8	53.3	50.5	54.5	66.4
82°	52.9	54.9	63.6	66.8	64.4	65.6	58.4	48.1	44.9	49.3	62.0
82.5°	47.7	49.7	59.2	62.4	60.0	60.8	54.1	43.3	39.8	43.7	57.2
83°	42.1	44.5	54.9	58.0	55.7	56.5	49.7	39.0	34.2	39.4	52.9
83.5°	36.6	39.4	50.5	53.7	51.3	52.1	45.3	34.6	29.0	35.0	48.1
84°	31.0	34.2	46.1	49.3	46.9	47.7	40.9	30.2	23.5	30.6	44.1
84.5°	25.4	29.4	41.7	44.5	42.1	42.9	36.6	26.2	17.9	25.8	39.8
85°	20.3	25.4	37.8	40.2	37.4	38.2	32.2	21.9	14.3	21.5	35.4
85.5°	15.5	22.3	33.4	35.4	32.6	33.4	27.4	18.7	12.3	19.1	31.4
86°	13.5	19.5	29.0	30.6	27.8	28.6	23.1	15.9	10.7	16.3	27.0
86.5°	11.5	16.3	24.3	25.8	23.1	23.9	18.7	13.1	8.7	13.9	22.7
87°	9.5	13.5	19.9	20.7	18.3	18.7	14.3	9.9	7.2	11.1	18.3
87.5°	7.2	10.7	15.1	15.9	13.5	13.9	9.5	7.2	5.2	8.7	13.9
88°	5.2	8.0	11.5	11.9	8.7	9.5	5.6	4.4	3.2	6.0	9.5
88.5°	3.6	5.2	8.0	8.0	4.8	5.2	2.0	2.0	2.0	3.6	5.6



TEST NUMBER: P776257

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRMW-4000lm-3500K

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	0.4	0.0	0.0	0.0	0.4	0.0	0.4	0.0



TEST NUMBER: P776257

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRMW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2246.2	2246.2	2246.2	2246.2	2246.2	2246.2
0.5°	2245.0	2246.2	2246.2	2245.8	2245.4	2245.8
1°	2244.2	2245.4	2244.6	2245.0	2244.6	2245.0
1.5°	2243.4	2244.2	2243.4	2243.4	2243.4	2243.8
2°	2241.8	2242.6	2241.8	2242.2	2241.8	2242.6
2.5°	2240.6	2241.0	2240.2	2240.6	2240.2	2241.0
3°	2239.0	2239.0	2237.8	2238.6	2238.2	2239.4
3.5°	2237.0	2237.0	2235.8	2236.6	2236.6	2237.8
4°	2235.0	2235.0	2233.0	2234.2	2234.2	2235.8
4.5°	2232.6	2232.2	2230.6	2231.8	2231.8	2233.4
5°	2229.9	2229.5	2227.9	2229.1	2229.1	2231.0
5.5°	2227.1	2226.7	2224.7	2225.9	2226.3	2228.3
6°	2224.3	2223.5	2221.1	2223.1	2223.1	2225.1
6.5°	2221.1	2220.3	2217.5	2219.5	2219.9	2221.9
7°	2217.9	2216.7	2214.0	2215.9	2216.3	2218.7
7.5°	2214.0	2212.8	2210.0	2212.0	2212.4	2215.1
8°	2210.4	2208.8	2205.6	2208.0	2208.8	2211.6
8.5°	2206.0	2204.0	2201.6	2204.0	2204.4	2207.6
9°	2202.0	2199.6	2196.9	2199.6	2200.4	2203.2
9.5°	2197.3	2194.9	2192.1	2194.9	2195.7	2198.8
10°	2192.5	2190.1	2186.9	2189.7	2190.9	2194.1
10.5°	2187.7	2184.9	2181.4	2184.9	2186.1	2189.3
11°	2182.1	2179.8	2175.8	2179.4	2181.0	2184.1
11.5°	2177.0	2174.2	2170.2	2173.8	2175.4	2179.0
12°	2171.4	2168.2	2164.3	2168.2	2169.4	2173.4
12.5°	2165.4	2161.9	2157.9	2162.3	2163.9	2167.4
13°	2159.5	2155.9	2151.5	2155.9	2157.5	2161.9
13.5°	2152.7	2149.2	2145.2	2149.5	2151.1	2155.1
14°	2146.4	2142.8	2138.4	2143.2	2144.4	2149.2
14.5°	2139.6	2135.6	2131.3	2136.0	2137.6	2142.4
15°	2132.5	2128.5	2123.7	2129.3	2130.9	2135.6
15.5°	2125.3	2121.3	2116.6	2121.7	2123.3	2128.5
16°	2117.7	2113.4	2108.6	2114.2	2115.8	2120.9
16.5°	2110.2	2105.8	2100.6	2106.2	2108.2	2113.4
17°	2102.2	2097.5	2092.3	2098.3	2100.3	2105.8
17.5°	2093.9	2089.1	2084.0	2089.9	2091.9	2097.9
18°	2085.5	2080.4	2074.8	2081.6	2083.6	2089.5
18.5°	2076.8	2071.6	2066.1	2072.8	2074.8	2080.8
19°	2068.1	2062.5	2056.9	2063.7	2065.7	2072.0
19.5°	2058.9	2053.3	2047.4	2054.5	2056.5	2062.9
20°	2049.8	2043.8	2037.8	2045.0	2047.4	2053.7
20.5°	2039.8	2033.9	2027.5	2035.1	2038.2	2044.6
21°	2029.9	2023.5	2017.2	2025.5	2028.3	2034.3

TEST NUMBER: P776257

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRMW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1999.3	1992.5	1985.4	1994.1	1997.3	2004.0
23°	1988.5	1981.8	1974.2	1983.4	1986.6	1993.3
23.5°	1977.8	1971.0	1963.1	1972.2	1975.4	1982.6
24°	1966.7	1959.1	1951.6	1960.7	1963.9	1971.4
24.5°	1955.1	1947.6	1940.0	1949.6	1952.8	1960.3
25°	1943.6	1935.7	1928.1	1937.7	1941.2	1948.8
25.5°	1931.7	1923.7	1915.4	1925.7	1929.3	1937.3
26°	1919.8	1911.4	1903.5	1913.8	1917.4	1924.9
26.5°	1907.4	1899.5	1891.1	1901.1	1905.1	1913.4
27°	1895.1	1886.8	1878.0	1888.8	1892.7	1901.1
27.5°	1882.8	1874.0	1865.3	1876.0	1880.0	1888.4
28°	1870.1	1860.5	1852.2	1862.9	1866.9	1875.6
28.5°	1857.0	1847.8	1838.7	1849.4	1854.2	1862.5
29°	1843.8	1834.7	1825.5	1835.9	1840.7	1849.8
29.5°	1830.3	1821.2	1811.2	1822.8	1827.1	1836.3
30°	1817.2	1807.3	1798.1	1808.8	1813.6	1822.8
30.5°	1803.3	1793.3	1783.8	1794.9	1799.7	1808.8
31°	1789.8	1779.4	1769.9	1781.4	1785.8	1794.9
31.5°	1775.9	1765.5	1754.8	1766.7	1771.5	1781.0
32°	1761.5	1750.8	1740.9	1752.4	1757.2	1767.1
32.5°	1747.2	1736.5	1726.2	1737.7	1742.9	1752.4
33°	1732.5	1721.8	1711.4	1723.0	1728.1	1738.1
33.5°	1717.8	1706.7	1695.9	1708.3	1713.4	1723.4
34°	1702.3	1691.6	1680.4	1692.8	1697.9	1707.9
34.5°	1686.8	1675.7	1664.9	1677.3	1682.4	1692.8
35°	1671.3	1659.8	1648.6	1661.0	1666.5	1676.5
35.5°	1655.0	1643.5	1631.9	1644.7	1650.2	1660.6
36°	1638.3	1626.8	1615.2	1628.8	1633.9	1644.3
36.5°	1621.2	1609.7	1598.1	1611.3	1616.4	1627.2
37°	1603.3	1591.8	1580.3	1593.8	1598.9	1609.7
37.5°	1583.0	1572.7	1561.2	1575.9	1581.1	1591.0
38°	1560.4	1551.6	1539.3	1557.2	1561.6	1571.5
38.5°	1537.3	1529.0	1515.5	1535.3	1538.5	1549.6
39°	1513.1	1504.3	1492.0	1511.1	1515.5	1526.6
39.5°	1488.0	1477.3	1466.6	1486.0	1490.8	1501.1
40°	1462.2	1449.5	1439.1	1459.8	1465.0	1473.7
40.5°	1435.9	1421.6	1411.7	1432.8	1437.1	1445.5
41°	1408.9	1393.4	1383.1	1405.3	1409.3	1416.9
41.5°	1381.1	1364.4	1354.1	1377.9	1380.3	1388.2
42°	1352.9	1336.6	1325.0	1349.3	1350.9	1358.0
42.5°	1324.6	1308.7	1294.8	1320.7	1321.1	1329.0
43°	1296.0	1280.5	1265.0	1291.6	1291.6	1299.6
43.5°	1267.8	1251.5	1234.4	1261.8	1261.0	1270.2



TEST NUMBER: P776257

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRMW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1181.9	1165.2	1144.9	1170.4	1169.2	1180.7
45.5°	1153.3	1136.2	1115.1	1139.4	1138.2	1150.9
46°	1124.7	1108.0	1085.7	1108.4	1107.6	1121.5
46.5°	1096.0	1078.2	1055.9	1078.2	1077.0	1091.7
47°	1066.2	1048.7	1026.9	1046.3	1046.3	1061.1
47.5°	1037.6	1019.7	997.1	1015.3	1016.1	1031.2
48°	1008.6	990.7	968.0	983.5	986.3	1001.4
48.5°	979.2	961.3	938.2	953.7	956.5	971.6
49°	949.3	933.0	910.4	922.3	927.1	942.2
49.5°	919.9	904.8	882.2	892.5	897.7	912.8
50°	890.5	876.2	853.1	861.9	868.6	883.8
50.5°	861.5	848.0	824.9	832.9	839.6	854.7
51°	832.9	820.9	797.1	803.4	810.6	825.7
51.5°	803.8	793.1	769.7	775.2	782.0	797.9
52°	775.2	766.1	742.2	747.0	754.2	769.7
52.5°	747.0	739.0	714.8	720.4	726.7	742.2
53°	719.2	712.4	688.2	692.9	699.7	714.8
53.5°	691.7	686.2	662.3	666.3	672.7	687.8
54°	664.3	659.5	636.1	640.8	646.0	661.1
54.5°	637.7	634.1	611.0	615.8	620.2	634.9
55°	611.4	609.0	586.4	590.8	595.5	609.0
55.5°	585.6	584.0	562.1	567.3	570.9	584.0
56°	560.1	559.0	537.9	543.8	546.2	559.4
56.5°	535.5	535.1	514.8	521.2	522.8	534.7
57°	510.9	511.2	492.2	498.9	500.1	510.9
57.5°	487.0	488.2	469.9	477.1	477.9	487.4
58°	464.3	465.5	448.8	456.8	456.0	464.3
58.5°	441.7	443.7	428.2	436.5	435.7	442.1
59°	419.8	421.8	407.9	416.6	415.0	420.6
59.5°	398.3	400.7	388.8	397.5	396.0	399.5
60°	378.1	380.5	369.7	379.7	376.9	378.9
60.5°	360.2	360.6	351.4	361.8	359.0	359.4
61°	341.9	341.5	333.9	344.7	341.1	339.9
61.5°	323.6	323.2	317.6	328.0	324.4	321.6
62°	305.7	305.3	301.7	312.5	308.1	304.1
62.5°	287.4	288.6	286.2	297.4	292.6	287.4
63°	271.9	272.7	271.5	282.7	277.5	271.5
63.5°	257.6	257.2	257.6	268.7	263.6	256.8
64°	243.3	242.9	244.5	255.2	250.1	242.5
64.5°	230.2	229.8	232.2	242.5	237.3	229.0
65°	218.3	217.9	220.2	230.2	224.6	217.5
65.5°	207.1	207.1	209.1	219.0	214.3	206.3
66°	196.8	197.2	199.2	208.3	203.5	195.6

TEST NUMBER: P776257

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRMW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	172.5	174.1	173.7	180.5	176.9	169.8
68°	166.6	167.8	167.4	172.9	169.4	163.0
68.5°	161.0	162.2	161.4	166.2	163.0	156.6
69°	156.2	157.4	156.2	159.8	157.4	152.3
69.5°	152.3	153.1	151.9	154.6	152.7	149.5
70°	149.9	149.9	148.7	150.7	149.1	146.7
70.5°	147.5	147.5	146.3	147.9	145.9	143.9
71°	144.7	144.7	143.9	145.5	143.1	141.1
71.5°	142.3	142.3	141.5	142.7	140.7	138.7
72°	139.5	139.5	138.7	140.3	137.9	136.0
72.5°	136.8	137.2	136.0	137.6	135.2	133.6
73°	134.0	134.8	133.6	135.2	132.4	130.4
73.5°	131.2	132.0	130.8	132.8	129.2	127.2
74°	128.4	129.2	128.4	129.6	126.0	123.6
74.5°	125.2	126.4	125.2	126.4	122.4	120.1
75°	122.0	123.2	122.0	123.6	119.3	116.9
75.5°	118.9	120.1	118.9	120.1	115.3	112.9
76°	115.7	116.9	115.7	116.9	111.7	108.9
76.5°	112.1	113.3	112.5	113.3	107.7	105.4
77°	108.5	110.1	108.9	109.7	103.8	101.0
77.5°	105.0	106.5	105.7	106.1	99.8	96.6
78°	101.4	103.0	102.2	102.6	95.4	92.2
78.5°	97.4	99.4	98.2	98.6	91.0	87.9
79°	93.4	95.4	94.6	94.6	86.7	83.1
79.5°	89.4	91.4	90.6	90.2	81.9	78.3
80°	85.5	87.5	86.3	86.3	77.1	73.1
80.5°	81.1	83.1	82.3	81.9	72.4	68.4
81°	77.1	79.1	78.3	77.5	67.6	63.6
81.5°	72.8	74.7	73.9	73.1	62.4	58.0
82°	68.0	70.4	69.6	68.4	57.2	52.9
82.5°	63.6	66.0	65.2	64.0	52.1	47.7
83°	59.2	61.2	60.4	59.6	47.3	42.1
83.5°	54.5	56.8	56.1	55.3	42.1	36.6
84°	49.7	52.1	51.7	50.5	37.0	31.0
84.5°	44.9	47.3	46.9	46.1	32.2	25.4
85°	40.2	42.5	42.1	42.1	27.8	20.3
85.5°	35.4	37.8	37.4	37.8	24.3	15.5
86°	30.2	33.0	32.6	33.4	21.1	13.5
86.5°	25.4	27.8	27.4	29.0	18.3	11.5
87°	20.7	23.1	22.7	24.3	15.1	9.5
87.5°	15.5	17.9	17.5	19.9	12.3	7.2
88°	10.7	13.1	12.7	15.1	9.5	5.2
88.5°	6.4	9.9	9.5	11.5	6.8	3.6



TEST NUMBER: P776257

CATALOG NUMBER: HCDJBL3040CSD-HCD41TRMW-4000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.4	0.4	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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Scaled Data Report



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Scaled Data Report





21.5°	2024.7	2035.1	2048.2	2060.9	2070.0	2076.4	2069.2	2066.9	2060.9	2049.8	2035.1
22°	2014.4	2025.5	2038.6	2051.4	2060.5	2067.3	2059.7	2057.7	2051.8	2040.2	2025.1



44°	1240.4	1267.4	1302.4	1333.4	1341.3	1356.0	1329.4	1324.6	1313.1	1303.2	1276.1
44.5°	1210.1	1238.0	1272.6	1302.8	1309.9	1327.4	1300.4	1295.2	1282.1	1273.0	1246.7



66.5°	186.1	187.6	192.0	195.2	192.8	196.0	187.6	188.8	185.7	192.4	192.0
67°	177.7	178.9	182.5	184.5	182.1	185.3	177.7	178.9	174.9	182.5	182.9



89°	2.0	2.4	4.0	4.4	0.8	1.2	0.0	0.4	0.4	1.2	2.4
89.5°	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.4	0.0	0.4	0.0

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21.5°	2019.9	2013.6	2006.8	2015.2	2018.0	2024.7
22°	2010.0	2003.2	1996.5	2004.8	2007.6	2014.4



44°	1238.8	1222.5	1204.6	1231.6	1230.0	1240.4
44.5°	1210.5	1193.8	1174.4	1201.0	1199.4	1210.1

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66.5°	188.0	188.8	190.0	198.4	193.6	186.1
67°	179.7	180.5	181.3	189.2	184.9	177.7

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89°	2.8	6.8	6.4	8.0	4.0	2.0
89.5°	0.0	3.6	3.6	4.4	1.6	0.4

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(END OF REPORT)