

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



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: P776439

Luminaire Tested: HCDJBL3040CSD-HCD81TRC-4000lm-5000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P776439
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B042-HCD81TRC)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL3040CSD-HCD81TRC-4000lm-5000K
Description: 8 INCH ROUND SHALLOW-WIDE SPECULAR CLEAR TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 5000K CCT
Ballast/Driver: -

Summary

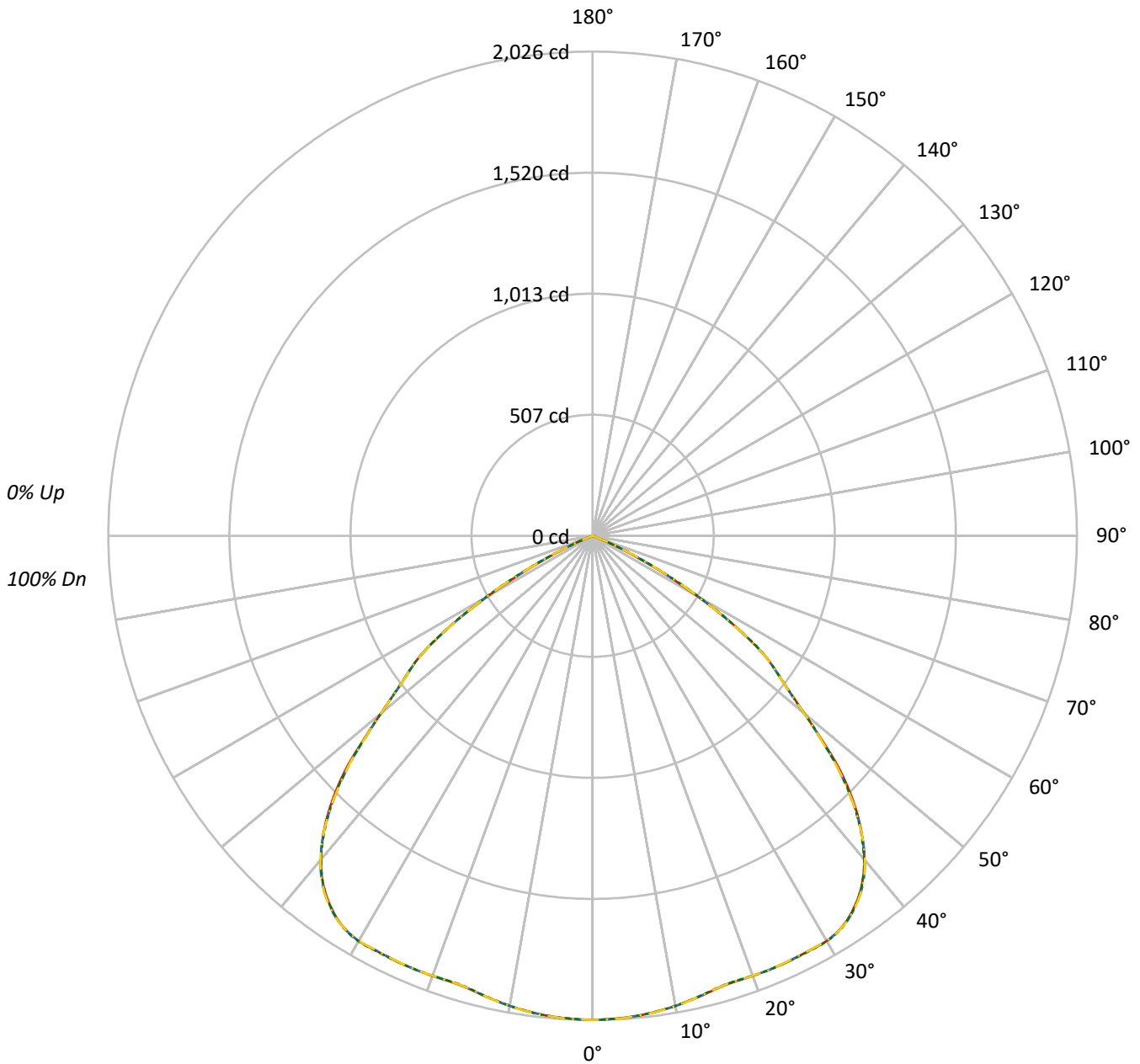
Lumens per Lamp: N/A
Luminaire Lumens: 4957.2 lumens
Efficiency: N/A
Efficacy: 128.8 lumens/watt
Spacing Criteria (0/90/45): 1.44 / 1.44 / 1.44
Luminous Opening: Circular (Dia: 0.67' x H: 0')
CIE Type: Direct

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				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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	111	108	105	102	109	106	103	100	102	99	97	98	96	94	94	93	91	89
2	103	97	91	87	101	95	90	86	91	87	84	88	85	82	85	83	80	78
3	95	87	80	74	93	85	79	74	82	77	73	80	75	71	77	73	70	68
4	88	78	70	64	86	77	69	64	74	68	63	72	67	62	70	65	62	60
5	81	70	62	56	80	69	62	56	67	60	55	65	59	55	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	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41
8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39	37
9	61	48	41	35	60	48	40	35	47	40	35	46	39	35	45	39	35	33
10	57	45	37	32	56	44	37	32	43	37	32	42	36	32	41	36	32	30

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	61833	61833	61833	61833
5°	61842	61855	61842	61855
10°	61925	61913	61925	61913
15°	62165	62102	62165	62102
20°	63676	63634	63676	63634
25°	66036	66049	66036	66049
30°	69019	69075	69019	69075
35°	70956	71000	70956	71000
40°	70479	70399	70479	70399
45°	65848	65494	65848	65494
50°	54878	54973	54878	54973
55°	47133	47240	47133	47240
60°	31019	31868	31019	31868
65°	11024	12613	11024	12613
70°	330	625	330	625
75°	142	189	142	189
80°	70	141	70	141
85°	0	140	0	140

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 65848 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	192.0	3.9
10°-20°	558.0	11.3
20°-30°	907.1	18.3
30°-40°	1186.6	23.9
40°-50°	1152.8	23.3
50°-60°	765.9	15.4
60°-70°	192.9	3.9
70°-80°	1.7	0.0
80°-90°	0.2	0.0
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°	1657.1	33.4
0°-40°	2843.7	57.4
0°-60°	4762.4	96.1
0°-90°	4957.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4957.2	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2025	2025	2025	2025	2025	
5°	2018	2018	2018	2018	2018	192
15°	1967	1965	1967	1965	1967	558
25°	1960	1961	1960	1961	1960	907
35°	1904	1905	1904	1905	1904	1185
45°	1525	1517	1525	1517	1525	1156
55°	886	888	886	888	886	764
65°	153	175	153	175	153	182
75°	1	2	1	2	1	1
85°	0	0	0	0	0	0
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°	2025.3	2025.3	2025.3	2025.3	2025.3	2025.3	2025.3	2025.3	2025.3	2025.3	2025.3
0.5°	2024.9	2024.9	2025.7	2026.1	2024.9	2026.1	2025.7	2024.9	2024.9	2024.9	2025.7
1°	2024.5	2024.9	2025.3	2025.7	2024.9	2025.7	2025.3	2024.9	2024.5	2024.9	2025.3
1.5°	2024.1	2024.5	2024.9	2025.3	2024.5	2025.3	2024.9	2024.5	2024.1	2024.5	2024.9
2°	2023.7	2023.7	2024.5	2024.9	2024.1	2024.9	2024.5	2023.7	2023.7	2023.7	2024.5
2.5°	2022.8	2023.2	2023.7	2024.1	2023.2	2024.1	2023.7	2023.2	2022.8	2023.2	2023.7
3°	2022.4	2022.4	2023.2	2023.7	2022.4	2023.7	2023.2	2022.4	2022.4	2022.4	2023.2
3.5°	2021.6	2021.6	2022.4	2022.4	2021.6	2022.4	2022.4	2021.6	2021.6	2021.6	2022.4
4°	2020.4	2020.8	2021.2	2021.6	2020.4	2021.6	2021.2	2020.8	2020.4	2020.8	2021.2
4.5°	2019.2	2019.6	2020.0	2020.4	2019.6	2020.4	2020.0	2019.6	2019.2	2019.6	2020.0
5°	2017.9	2018.3	2018.7	2019.2	2018.3	2019.2	2018.7	2018.3	2017.9	2018.3	2018.7
5.5°	2016.7	2017.1	2017.5	2017.9	2017.1	2017.9	2017.5	2017.1	2016.7	2017.1	2017.5
6°	2015.1	2015.5	2015.9	2016.3	2015.5	2016.3	2015.9	2015.5	2015.1	2015.5	2015.9
6.5°	2013.4	2013.8	2014.2	2014.7	2013.4	2014.7	2014.2	2013.8	2013.4	2013.8	2014.2
7°	2011.8	2011.8	2012.2	2012.6	2011.4	2012.6	2012.2	2011.8	2011.8	2011.8	2012.2
7.5°	2009.7	2009.7	2010.2	2010.2	2009.3	2010.2	2010.2	2009.7	2009.7	2009.7	2010.2
8°	2007.3	2007.7	2007.7	2008.1	2007.3	2008.1	2007.7	2007.7	2007.3	2007.7	2007.7
8.5°	2004.8	2005.2	2005.7	2005.7	2004.8	2005.7	2005.7	2005.2	2004.8	2005.2	2005.7
9°	2002.8	2002.8	2003.2	2003.2	2002.4	2003.2	2003.2	2002.8	2002.8	2002.8	2003.2
9.5°	1999.9	2000.3	2000.3	2000.7	1999.9	2000.7	2000.3	2000.3	1999.9	2000.3	2000.3
10°	1997.5	1997.5	1997.9	1997.9	1997.1	1997.9	1997.9	1997.5	1997.5	1997.5	1997.9
10.5°	1994.6	1994.6	1995.0	1995.0	1994.2	1995.0	1995.0	1994.6	1994.6	1994.6	1995.0
11°	1991.8	1991.8	1992.2	1992.2	1990.9	1992.2	1992.2	1991.8	1991.8	1991.8	1992.2
11.5°	1988.5	1988.5	1988.9	1988.9	1988.1	1988.9	1988.9	1988.5	1988.5	1988.5	1988.9
12°	1985.6	1985.6	1985.6	1985.6	1984.8	1985.6	1985.6	1985.6	1985.6	1985.6	1985.6
12.5°	1982.3	1982.3	1982.3	1982.3	1981.5	1982.3	1982.3	1982.3	1982.3	1982.3	1982.3
13°	1979.5	1979.1	1979.5	1979.1	1978.3	1979.1	1979.5	1979.1	1979.5	1979.1	1979.5
13.5°	1976.2	1975.8	1975.8	1975.8	1974.6	1975.8	1975.8	1975.8	1976.2	1975.8	1975.8
14°	1972.9	1972.9	1972.5	1972.5	1971.3	1972.5	1972.5	1972.9	1972.9	1972.9	1972.5
14.5°	1969.7	1969.7	1969.3	1969.3	1968.0	1969.3	1969.3	1969.7	1969.7	1969.7	1969.3
15°	1966.8	1966.4	1966.0	1966.0	1964.8	1966.0	1966.0	1966.4	1966.8	1966.4	1966.0
15.5°	1963.9	1963.5	1963.1	1962.7	1961.9	1962.7	1963.1	1963.5	1963.9	1963.5	1963.1
16°	1961.9	1961.5	1961.1	1960.3	1959.4	1960.3	1961.1	1961.5	1961.9	1961.5	1961.1
16.5°	1960.3	1959.9	1959.4	1958.2	1957.8	1958.2	1959.4	1959.9	1960.3	1959.9	1959.4
17°	1959.0	1959.0	1958.6	1957.4	1956.6	1957.4	1958.6	1959.0	1959.0	1959.0	1958.6
17.5°	1958.6	1958.6	1957.8	1957.0	1956.6	1957.0	1957.8	1958.6	1958.6	1958.6	1957.8
18°	1958.6	1958.6	1957.8	1957.4	1956.6	1957.4	1957.8	1958.6	1958.6	1958.6	1957.8
18.5°	1958.6	1958.6	1958.2	1957.4	1956.6	1957.4	1958.2	1958.6	1958.6	1958.6	1958.2
19°	1959.0	1959.0	1958.6	1958.2	1957.4	1958.2	1958.6	1959.0	1959.0	1959.0	1958.6
19.5°	1959.4	1959.4	1959.0	1958.6	1957.8	1958.6	1959.0	1959.4	1959.4	1959.4	1959.0
20°	1959.9	1959.9	1959.4	1959.0	1958.6	1959.0	1959.4	1959.9	1959.9	1959.9	1959.4
20.5°	1960.3	1959.9	1959.9	1959.9	1959.0	1959.9	1959.9	1959.9	1960.3	1959.9	1959.9
21°	1960.3	1960.3	1960.3	1960.3	1959.9	1960.3	1960.3	1960.3	1960.3	1960.3	1960.3



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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°	1961.1	1960.7	1960.7	1961.1	1961.1	1961.1	1960.7	1960.7	1961.1	1960.7	1960.7
23°	1961.1	1960.7	1960.7	1961.5	1961.1	1961.5	1960.7	1960.7	1961.1	1960.7	1960.7
23.5°	1961.1	1960.7	1960.3	1961.1	1961.1	1961.1	1960.3	1960.7	1961.1	1960.7	1960.3
24°	1960.7	1960.3	1959.9	1961.1	1961.1	1961.1	1959.9	1960.3	1960.7	1960.3	1959.9
24.5°	1960.7	1959.9	1959.9	1961.1	1961.1	1961.1	1959.9	1959.9	1960.7	1959.9	1959.9
25°	1960.3	1959.4	1959.4	1960.7	1960.7	1960.7	1959.4	1959.4	1960.3	1959.4	1959.4
25.5°	1959.9	1959.0	1959.0	1960.7	1960.7	1960.7	1959.0	1959.0	1959.9	1959.0	1959.0
26°	1959.0	1958.6	1958.2	1960.3	1960.3	1960.3	1958.2	1958.6	1959.0	1958.6	1958.2
26.5°	1958.6	1958.2	1957.8	1959.9	1959.9	1959.9	1957.8	1958.2	1958.6	1958.2	1957.8
27°	1958.6	1957.8	1957.4	1959.9	1959.9	1959.4	1957.4	1957.8	1958.6	1957.8	1957.4
27.5°	1958.6	1958.2	1957.4	1959.9	1959.9	1959.4	1957.4	1958.2	1958.6	1958.2	1957.4
28°	1959.0	1958.2	1957.8	1960.3	1960.3	1959.9	1957.8	1958.2	1959.0	1958.2	1957.8
28.5°	1959.4	1958.6	1957.8	1960.3	1960.7	1960.3	1957.8	1958.6	1959.4	1958.6	1957.8
29°	1959.4	1958.6	1957.8	1960.7	1960.7	1960.7	1957.8	1958.6	1959.4	1958.6	1957.8
29.5°	1959.0	1958.2	1957.8	1960.3	1960.3	1960.3	1957.8	1958.2	1959.0	1958.2	1957.8
30°	1957.8	1957.4	1957.0	1959.4	1959.4	1959.4	1957.0	1957.4	1957.8	1957.4	1957.0
30.5°	1956.2	1955.8	1955.8	1957.8	1957.8	1958.2	1955.8	1955.8	1956.2	1955.8	1955.8
31°	1953.7	1953.3	1953.3	1955.8	1955.4	1955.8	1953.3	1953.3	1953.7	1953.3	1953.3
31.5°	1950.4	1950.4	1950.9	1952.9	1952.1	1952.9	1950.9	1950.4	1950.4	1950.4	1950.9
32°	1945.9	1946.4	1946.8	1948.8	1948.0	1948.8	1946.8	1946.4	1945.9	1946.4	1946.8
32.5°	1941.0	1941.4	1942.3	1943.9	1943.1	1943.9	1942.3	1941.4	1941.0	1941.4	1942.3
33°	1935.3	1935.7	1936.9	1938.2	1936.9	1938.2	1936.9	1935.7	1935.3	1935.7	1936.9
33.5°	1928.8	1929.2	1930.8	1931.6	1930.4	1931.6	1930.8	1929.2	1928.8	1929.2	1930.8
34°	1921.0	1922.2	1923.9	1924.3	1922.6	1924.3	1923.9	1922.2	1921.0	1922.2	1923.9
34.5°	1912.8	1914.0	1916.1	1916.1	1914.5	1916.1	1916.1	1914.0	1912.8	1914.0	1916.1
35°	1903.8	1905.0	1907.5	1907.1	1905.0	1907.1	1907.5	1905.0	1903.8	1905.0	1907.5
35.5°	1894.4	1896.0	1898.1	1897.7	1895.6	1897.7	1898.1	1896.0	1894.4	1896.0	1898.1
36°	1884.2	1885.8	1888.3	1887.5	1885.0	1887.5	1888.3	1885.8	1884.2	1885.8	1888.3
36.5°	1873.1	1875.2	1877.6	1876.4	1874.0	1876.4	1877.6	1875.2	1873.1	1875.2	1877.6
37°	1861.3	1863.3	1865.8	1864.6	1861.7	1864.6	1865.8	1863.3	1861.3	1863.3	1865.8
37.5°	1848.6	1851.1	1852.7	1851.5	1848.6	1851.5	1852.7	1851.1	1848.6	1851.1	1852.7
38°	1834.7	1837.2	1839.2	1837.6	1834.7	1837.6	1839.2	1837.2	1834.7	1837.2	1839.2
38.5°	1819.6	1822.4	1824.5	1822.4	1819.2	1822.4	1824.5	1822.4	1819.6	1822.4	1824.5
39°	1803.6	1806.9	1808.1	1806.1	1802.8	1806.1	1808.1	1806.9	1803.6	1806.9	1808.1
39.5°	1786.9	1789.7	1790.5	1788.1	1784.8	1788.1	1790.5	1789.7	1786.9	1789.7	1790.5
40°	1768.4	1770.9	1771.7	1769.3	1766.4	1769.3	1771.7	1770.9	1768.4	1770.9	1771.7
40.5°	1749.2	1751.3	1751.7	1749.2	1746.0	1749.2	1751.7	1751.3	1749.2	1751.3	1751.7
41°	1728.8	1730.4	1730.0	1727.5	1725.1	1727.5	1730.0	1730.4	1728.8	1730.4	1730.0
41.5°	1707.1	1708.3	1707.5	1705.1	1703.0	1705.1	1707.5	1708.3	1707.1	1708.3	1707.5
42°	1684.6	1685.0	1683.4	1681.3	1680.1	1681.3	1683.4	1685.0	1684.6	1685.0	1683.4
42.5°	1661.3	1660.9	1658.4	1656.8	1655.6	1656.8	1658.4	1660.9	1661.3	1660.9	1658.4
43°	1636.3	1635.1	1632.3	1631.0	1630.2	1631.0	1632.3	1635.1	1636.3	1635.1	1632.3
43.5°	1610.2	1608.5	1604.4	1604.0	1603.6	1604.0	1604.4	1608.5	1610.2	1608.5	1604.4



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1525.1	1521.4	1515.7	1515.7	1516.9	1515.7	1515.7	1521.4	1525.1	1521.4	1515.7
45.5°	1494.0	1489.9	1483.4	1484.2	1485.4	1484.2	1483.4	1489.9	1494.0	1489.9	1483.4
46°	1461.3	1457.2	1450.7	1451.5	1453.5	1451.5	1450.7	1457.2	1461.3	1457.2	1450.7
46.5°	1426.9	1423.3	1416.7	1417.5	1419.6	1417.5	1416.7	1423.3	1426.9	1423.3	1416.7
47°	1391.0	1387.3	1381.1	1382.0	1383.6	1382.0	1381.1	1387.3	1391.0	1387.3	1381.1
47.5°	1350.9	1347.2	1341.1	1342.3	1343.9	1342.3	1341.1	1347.2	1350.9	1347.2	1341.1
48°	1307.9	1304.7	1299.8	1301.8	1303.4	1301.8	1299.8	1304.7	1307.9	1304.7	1299.8
48.5°	1267.9	1266.2	1261.7	1263.4	1265.4	1263.4	1261.7	1266.2	1267.9	1266.2	1261.7
49°	1230.2	1229.4	1227.0	1228.2	1229.4	1228.2	1227.0	1229.4	1230.2	1229.4	1227.0
49.5°	1193.0	1192.6	1191.4	1192.2	1193.0	1192.2	1191.4	1192.6	1193.0	1192.6	1191.4
50°	1155.4	1155.0	1155.0	1156.2	1157.4	1156.2	1155.0	1155.0	1155.4	1155.0	1155.0
50.5°	1120.2	1120.6	1120.2	1121.0	1121.8	1121.0	1120.2	1120.6	1120.2	1120.6	1120.2
51°	1088.3	1088.3	1087.9	1088.7	1087.9	1088.7	1087.9	1088.3	1088.3	1088.3	1087.9
51.5°	1058.0	1057.6	1057.2	1058.0	1058.5	1058.0	1057.2	1057.6	1058.0	1057.6	1057.2
52°	1029.0	1029.0	1029.0	1030.2	1031.5	1030.2	1029.0	1029.0	1029.0	1029.0	1029.0
52.5°	1002.4	1002.8	1002.4	1004.1	1005.3	1004.1	1002.4	1002.8	1002.4	1002.8	1002.4
53°	978.7	978.3	978.3	980.3	981.2	980.3	978.3	978.3	978.7	978.3	978.3
53.5°	956.2	956.2	956.2	957.8	958.7	957.8	956.2	956.2	956.2	956.2	956.2
54°	934.5	934.1	934.1	935.8	935.8	935.8	934.1	934.1	934.5	934.1	934.1
54.5°	911.2	911.2	911.2	912.4	912.9	912.4	911.2	911.2	911.2	911.2	911.2
55°	885.5	885.5	885.5	887.5	887.5	887.5	885.5	885.5	885.5	885.5	885.5
55.5°	855.6	855.6	856.0	858.9	858.0	858.9	856.0	855.6	855.6	855.6	856.0
56°	821.6	822.5	823.7	826.1	825.7	826.1	823.7	822.5	821.6	822.5	823.7
56.5°	786.5	786.9	788.5	791.0	791.0	791.0	788.5	786.9	786.5	786.9	788.5
57°	749.3	749.7	751.7	754.2	753.3	754.2	751.7	749.7	749.3	749.7	751.7
57.5°	710.4	711.2	712.9	716.1	716.1	716.1	712.9	711.2	710.4	711.2	712.9
58°	671.6	671.6	674.0	677.7	678.5	677.7	674.0	671.6	671.6	671.6	674.0
58.5°	630.7	631.9	633.9	638.4	640.1	638.4	633.9	631.9	630.7	631.9	633.9
59°	589.8	591.4	593.8	598.3	600.4	598.3	593.8	591.4	589.8	591.4	593.8
59.5°	548.4	550.5	553.4	559.1	561.5	559.1	553.4	550.5	548.4	550.5	553.4
60°	508.0	510.4	514.1	519.4	521.9	519.4	514.1	510.4	508.0	510.4	514.1
60.5°	467.5	470.3	475.2	481.0	483.4	481.0	475.2	470.3	467.5	470.3	475.2
61°	427.8	431.5	437.2	442.5	444.6	442.5	437.2	431.5	427.8	431.5	437.2
61.5°	390.2	393.4	400.4	405.3	406.9	405.3	400.4	393.4	390.2	393.4	400.4
62°	352.5	356.6	363.6	368.1	370.1	368.1	363.6	356.6	352.5	356.6	363.6
62.5°	315.7	320.2	328.0	332.1	335.4	332.1	328.0	320.2	315.7	320.2	328.0
63°	279.3	284.7	293.2	297.3	300.6	297.3	293.2	284.7	279.3	284.7	293.2
63.5°	245.4	249.9	259.3	263.8	267.1	263.8	259.3	249.9	245.4	249.9	259.3
64°	213.1	218.0	226.6	231.5	233.9	231.5	226.6	218.0	213.1	218.0	226.6
64.5°	182.0	187.3	195.5	200.0	202.0	200.0	195.5	187.3	182.0	187.3	195.5
65°	152.6	158.3	167.3	172.2	174.6	172.2	167.3	158.3	152.6	158.3	167.3
65.5°	126.4	132.5	139.9	145.2	148.5	145.2	139.9	132.5	126.4	132.5	139.9
66°	101.0	109.2	114.5	119.8	123.1	119.8	114.5	109.2	101.0	109.2	114.5



TEST NUMBER: P776439

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRC-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	40.5	52.3	56.8	58.9	59.7	58.9	56.8	52.3	40.5	52.3	56.8
68°	24.5	37.6	41.7	44.2	46.2	44.2	41.7	37.6	24.5	37.6	41.7
68.5°	10.6	24.9	27.4	29.9	33.9	29.9	27.4	24.9	10.6	24.9	27.4
69°	6.5	15.1	18.4	19.6	24.5	19.6	18.4	15.1	6.5	15.1	18.4
69.5°	4.5	9.0	12.3	11.5	15.5	11.5	12.3	9.0	4.5	9.0	12.3
70°	3.7	5.3	6.5	6.1	7.0	6.1	6.5	5.3	3.7	5.3	6.5
70.5°	2.5	3.3	4.1	4.1	3.3	4.1	4.1	3.3	2.5	3.3	4.1
71°	2.0	2.5	3.3	3.3	2.9	3.3	3.3	2.5	2.0	2.5	3.3
71.5°	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.5
72°	2.0	2.0	2.0	2.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0
72.5°	1.6	2.0	2.0	2.0	2.5	2.0	2.0	2.0	1.6	2.0	2.0
73°	1.6	1.6	2.0	2.0	2.0	2.0	2.0	1.6	1.6	1.6	2.0
73.5°	1.6	1.6	1.6	2.0	2.0	2.0	1.6	1.6	1.6	1.6	1.6
74°	1.2	1.6	1.6	1.6	2.0	1.6	1.6	1.6	1.2	1.6	1.6
74.5°	1.2	1.2	1.6	1.6	1.6	1.6	1.6	1.2	1.2	1.2	1.6
75°	1.2	1.2	1.2	1.6	1.6	1.6	1.2	1.2	1.2	1.2	1.2
75.5°	1.2	1.2	1.2	1.6	1.6	1.6	1.2	1.2	1.2	1.2	1.2
76°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
76.5°	0.8	0.8	1.2	1.2	1.2	1.2	1.2	0.8	0.8	0.8	1.2
77°	0.8	0.8	1.2	1.2	1.2	1.2	1.2	0.8	0.8	0.8	1.2
77.5°	0.8	0.8	0.8	1.2	1.2	1.2	0.8	0.8	0.8	0.8	0.8
78°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
78.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
79°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
79.5°	0.4	0.4	0.8	0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.8
80°	0.4	0.4	0.4	0.8	0.8	0.8	0.4	0.4	0.4	0.4	0.4
80.5°	0.4	0.4	0.4	0.8	0.8	0.8	0.4	0.4	0.4	0.4	0.4
81°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
81.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
82°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
82.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
83°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
83.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
84°	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.4
84.5°	0.0	0.0	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776439
CATALOG NUMBER: HCDJBL3040CSD-HCD81TRC-4000lm-5000K

CANDELA DISTRIBUTION (continued):

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



TEST NUMBER: P776439

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRC-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2025.3	2025.3	2025.3	2025.3	2025.3	2025.3
0.5°	2026.1	2024.9	2026.1	2025.7	2024.9	2024.9
1°	2025.7	2024.9	2025.7	2025.3	2024.9	2024.5
1.5°	2025.3	2024.5	2025.3	2024.9	2024.5	2024.1
2°	2024.9	2024.1	2024.9	2024.5	2023.7	2023.7
2.5°	2024.1	2023.2	2024.1	2023.7	2023.2	2022.8
3°	2023.7	2022.4	2023.7	2023.2	2022.4	2022.4
3.5°	2022.4	2021.6	2022.4	2022.4	2021.6	2021.6
4°	2021.6	2020.4	2021.6	2021.2	2020.8	2020.4
4.5°	2020.4	2019.6	2020.4	2020.0	2019.6	2019.2
5°	2019.2	2018.3	2019.2	2018.7	2018.3	2017.9
5.5°	2017.9	2017.1	2017.9	2017.5	2017.1	2016.7
6°	2016.3	2015.5	2016.3	2015.9	2015.5	2015.1
6.5°	2014.7	2013.4	2014.7	2014.2	2013.8	2013.4
7°	2012.6	2011.4	2012.6	2012.2	2011.8	2011.8
7.5°	2010.2	2009.3	2010.2	2010.2	2009.7	2009.7
8°	2008.1	2007.3	2008.1	2007.7	2007.7	2007.3
8.5°	2005.7	2004.8	2005.7	2005.7	2005.2	2004.8
9°	2003.2	2002.4	2003.2	2003.2	2002.8	2002.8
9.5°	2000.7	1999.9	2000.7	2000.3	2000.3	1999.9
10°	1997.9	1997.1	1997.9	1997.9	1997.5	1997.5
10.5°	1995.0	1994.2	1995.0	1995.0	1994.6	1994.6
11°	1992.2	1990.9	1992.2	1992.2	1991.8	1991.8
11.5°	1988.9	1988.1	1988.9	1988.9	1988.5	1988.5
12°	1985.6	1984.8	1985.6	1985.6	1985.6	1985.6
12.5°	1982.3	1981.5	1982.3	1982.3	1982.3	1982.3
13°	1979.1	1978.3	1979.1	1979.5	1979.1	1979.5
13.5°	1975.8	1974.6	1975.8	1975.8	1975.8	1976.2
14°	1972.5	1971.3	1972.5	1972.5	1972.9	1972.9
14.5°	1969.3	1968.0	1969.3	1969.3	1969.7	1969.7
15°	1966.0	1964.8	1966.0	1966.0	1966.4	1966.8
15.5°	1962.7	1961.9	1962.7	1963.1	1963.5	1963.9
16°	1960.3	1959.4	1960.3	1961.1	1961.5	1961.9
16.5°	1958.2	1957.8	1958.2	1959.4	1959.9	1960.3
17°	1957.4	1956.6	1957.4	1958.6	1959.0	1959.0
17.5°	1957.0	1956.6	1957.0	1957.8	1958.6	1958.6
18°	1957.4	1956.6	1957.4	1957.8	1958.6	1958.6
18.5°	1957.4	1956.6	1957.4	1958.2	1958.6	1958.6
19°	1958.2	1957.4	1958.2	1958.6	1959.0	1959.0
19.5°	1958.6	1957.8	1958.6	1959.0	1959.4	1959.4
20°	1959.0	1958.6	1959.0	1959.4	1959.9	1959.9
20.5°	1959.9	1959.0	1959.9	1959.9	1959.9	1960.3
21°	1960.3	1959.9	1960.3	1960.3	1960.3	1960.3



TEST NUMBER: P776439

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRC-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1961.1	1961.1	1961.1	1960.7	1960.7	1961.1
23°	1961.5	1961.1	1961.5	1960.7	1960.7	1961.1
23.5°	1961.1	1961.1	1961.1	1960.3	1960.7	1961.1
24°	1961.1	1961.1	1961.1	1959.9	1960.3	1960.7
24.5°	1961.1	1961.1	1961.1	1959.9	1959.9	1960.7
25°	1960.7	1960.7	1960.7	1959.4	1959.4	1960.3
25.5°	1960.7	1960.7	1960.7	1959.0	1959.0	1959.9
26°	1960.3	1960.3	1960.3	1958.2	1958.6	1959.0
26.5°	1959.9	1959.9	1959.9	1957.8	1958.2	1958.6
27°	1959.4	1959.9	1959.4	1957.4	1957.8	1958.6
27.5°	1959.4	1959.9	1959.4	1957.4	1958.2	1958.6
28°	1959.9	1960.3	1959.9	1957.8	1958.2	1959.0
28.5°	1960.3	1960.7	1960.3	1957.8	1958.6	1959.4
29°	1960.7	1960.7	1960.7	1957.8	1958.6	1959.4
29.5°	1960.3	1960.3	1960.3	1957.8	1958.2	1959.0
30°	1959.4	1959.4	1959.4	1957.0	1957.4	1957.8
30.5°	1958.2	1957.8	1958.2	1955.8	1955.8	1956.2
31°	1955.8	1955.4	1955.8	1953.3	1953.3	1953.7
31.5°	1952.9	1952.1	1952.9	1950.9	1950.4	1950.4
32°	1948.8	1948.0	1948.8	1946.8	1946.4	1945.9
32.5°	1943.9	1943.1	1943.9	1942.3	1941.4	1941.0
33°	1938.2	1936.9	1938.2	1936.9	1935.7	1935.3
33.5°	1931.6	1930.4	1931.6	1930.8	1929.2	1928.8
34°	1924.3	1922.6	1924.3	1923.9	1922.2	1921.0
34.5°	1916.1	1914.5	1916.1	1916.1	1914.0	1912.8
35°	1907.1	1905.0	1907.1	1907.5	1905.0	1903.8
35.5°	1897.7	1895.6	1897.7	1898.1	1896.0	1894.4
36°	1887.5	1885.0	1887.5	1888.3	1885.8	1884.2
36.5°	1876.4	1874.0	1876.4	1877.6	1875.2	1873.1
37°	1864.6	1861.7	1864.6	1865.8	1863.3	1861.3
37.5°	1851.5	1848.6	1851.5	1852.7	1851.1	1848.6
38°	1837.6	1834.7	1837.6	1839.2	1837.2	1834.7
38.5°	1822.4	1819.2	1822.4	1824.5	1822.4	1819.6
39°	1806.1	1802.8	1806.1	1808.1	1806.9	1803.6
39.5°	1788.1	1784.8	1788.1	1790.5	1789.7	1786.9
40°	1769.3	1766.4	1769.3	1771.7	1770.9	1768.4
40.5°	1749.2	1746.0	1749.2	1751.7	1751.3	1749.2
41°	1727.5	1725.1	1727.5	1730.0	1730.4	1728.8
41.5°	1705.1	1703.0	1705.1	1707.5	1708.3	1707.1
42°	1681.3	1680.1	1681.3	1683.4	1685.0	1684.6
42.5°	1656.8	1655.6	1656.8	1658.4	1660.9	1661.3
43°	1631.0	1630.2	1631.0	1632.3	1635.1	1636.3
43.5°	1604.0	1603.6	1604.0	1604.4	1608.5	1610.2



TEST NUMBER: P776439

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRC-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1515.7	1516.9	1515.7	1515.7	1521.4	1525.1
45.5°	1484.2	1485.4	1484.2	1483.4	1489.9	1494.0
46°	1451.5	1453.5	1451.5	1450.7	1457.2	1461.3
46.5°	1417.5	1419.6	1417.5	1416.7	1423.3	1426.9
47°	1382.0	1383.6	1382.0	1381.1	1387.3	1391.0
47.5°	1342.3	1343.9	1342.3	1341.1	1347.2	1350.9
48°	1301.8	1303.4	1301.8	1299.8	1304.7	1307.9
48.5°	1263.4	1265.4	1263.4	1261.7	1266.2	1267.9
49°	1228.2	1229.4	1228.2	1227.0	1229.4	1230.2
49.5°	1192.2	1193.0	1192.2	1191.4	1192.6	1193.0
50°	1156.2	1157.4	1156.2	1155.0	1155.0	1155.4
50.5°	1121.0	1121.8	1121.0	1120.2	1120.6	1120.2
51°	1088.7	1087.9	1088.7	1087.9	1088.3	1088.3
51.5°	1058.0	1058.5	1058.0	1057.2	1057.6	1058.0
52°	1030.2	1031.5	1030.2	1029.0	1029.0	1029.0
52.5°	1004.1	1005.3	1004.1	1002.4	1002.8	1002.4
53°	980.3	981.2	980.3	978.3	978.3	978.7
53.5°	957.8	958.7	957.8	956.2	956.2	956.2
54°	935.8	935.8	935.8	934.1	934.1	934.5
54.5°	912.4	912.9	912.4	911.2	911.2	911.2
55°	887.5	887.5	887.5	885.5	885.5	885.5
55.5°	858.9	858.0	858.9	856.0	855.6	855.6
56°	826.1	825.7	826.1	823.7	822.5	821.6
56.5°	791.0	791.0	791.0	788.5	786.9	786.5
57°	754.2	753.3	754.2	751.7	749.7	749.3
57.5°	716.1	716.1	716.1	712.9	711.2	710.4
58°	677.7	678.5	677.7	674.0	671.6	671.6
58.5°	638.4	640.1	638.4	633.9	631.9	630.7
59°	598.3	600.4	598.3	593.8	591.4	589.8
59.5°	559.1	561.5	559.1	553.4	550.5	548.4
60°	519.4	521.9	519.4	514.1	510.4	508.0
60.5°	481.0	483.4	481.0	475.2	470.3	467.5
61°	442.5	444.6	442.5	437.2	431.5	427.8
61.5°	405.3	406.9	405.3	400.4	393.4	390.2
62°	368.1	370.1	368.1	363.6	356.6	352.5
62.5°	332.1	335.4	332.1	328.0	320.2	315.7
63°	297.3	300.6	297.3	293.2	284.7	279.3
63.5°	263.8	267.1	263.8	259.3	249.9	245.4
64°	231.5	233.9	231.5	226.6	218.0	213.1
64.5°	200.0	202.0	200.0	195.5	187.3	182.0
65°	172.2	174.6	172.2	167.3	158.3	152.6
65.5°	145.2	148.5	145.2	139.9	132.5	126.4
66°	119.8	123.1	119.8	114.5	109.2	101.0



TEST NUMBER: P776439

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRC-4000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	58.9	59.7	58.9	56.8	52.3	40.5
68°	44.2	46.2	44.2	41.7	37.6	24.5
68.5°	29.9	33.9	29.9	27.4	24.9	10.6
69°	19.6	24.5	19.6	18.4	15.1	6.5
69.5°	11.5	15.5	11.5	12.3	9.0	4.5
70°	6.1	7.0	6.1	6.5	5.3	3.7
70.5°	4.1	3.3	4.1	4.1	3.3	2.5
71°	3.3	2.9	3.3	3.3	2.5	2.0
71.5°	2.5	2.5	2.5	2.5	2.0	2.0
72°	2.5	2.5	2.5	2.0	2.0	2.0
72.5°	2.0	2.5	2.0	2.0	2.0	1.6
73°	2.0	2.0	2.0	2.0	1.6	1.6
73.5°	2.0	2.0	2.0	1.6	1.6	1.6
74°	1.6	2.0	1.6	1.6	1.6	1.2
74.5°	1.6	1.6	1.6	1.6	1.2	1.2
75°	1.6	1.6	1.6	1.2	1.2	1.2
75.5°	1.6	1.6	1.6	1.2	1.2	1.2
76°	1.2	1.2	1.2	1.2	1.2	1.2
76.5°	1.2	1.2	1.2	1.2	0.8	0.8
77°	1.2	1.2	1.2	1.2	0.8	0.8
77.5°	1.2	1.2	1.2	0.8	0.8	0.8
78°	0.8	0.8	0.8	0.8	0.8	0.8
78.5°	0.8	0.8	0.8	0.8	0.8	0.8
79°	0.8	0.8	0.8	0.8	0.8	0.8
79.5°	0.8	0.8	0.8	0.8	0.4	0.4
80°	0.8	0.8	0.8	0.4	0.4	0.4
80.5°	0.8	0.8	0.8	0.4	0.4	0.4
81°	0.4	0.4	0.4	0.4	0.4	0.4
81.5°	0.4	0.4	0.4	0.4	0.4	0.4
82°	0.4	0.4	0.4	0.4	0.4	0.4
82.5°	0.4	0.4	0.4	0.4	0.4	0.4
83°	0.4	0.4	0.4	0.4	0.4	0.4
83.5°	0.4	0.4	0.4	0.4	0.4	0.4
84°	0.4	0.4	0.4	0.4	0.0	0.0
84.5°	0.4	0.4	0.4	0.0	0.0	0.0
85°	0.4	0.4	0.4	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P776439
CATALOG NUMBER: HCDJBL3040CSD-HCD81TRC-4000lm-5000K

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

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21.5°	1960.7	1960.7	1960.3	1960.7	1960.3	1960.7	1960.3	1960.7	1960.7	1960.7	1960.3
22°	1961.1	1960.7	1960.7	1960.7	1960.7	1960.7	1960.7	1960.7	1961.1	1960.7	1960.7



44°	1582.8	1580.7	1575.8	1575.4	1575.8	1575.4	1575.8	1580.7	1582.8	1580.7	1575.8
44.5°	1554.5	1552.1	1546.4	1546.4	1546.8	1546.4	1546.4	1552.1	1554.5	1552.1	1546.4



66.5°	81.0	87.5	93.2	97.3	98.6	97.3	93.2	87.5	81.0	87.5	93.2
67°	60.5	68.3	72.8	76.9	77.7	76.9	72.8	68.3	60.5	68.3	72.8



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

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21.5°	1960.7	1960.3	1960.7	1960.3	1960.7	1960.7
22°	1960.7	1960.7	1960.7	1960.7	1960.7	1961.1



44°	1575.4	1575.8	1575.4	1575.8	1580.7	1582.8
44.5°	1546.4	1546.8	1546.4	1546.4	1552.1	1554.5



66.5°	97.3	98.6	97.3	93.2	87.5	81.0
67°	76.9	77.7	76.9	72.8	68.3	60.5

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

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(END OF REPORT)