

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: P776442

Luminaire Tested: HCDJBL3040CSD-HCD81TRH-4000lm-3500K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P776442  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2312156B043-HCD81TRH)  
Test Lab:  
Issue Date: 2/13/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBL3040CSD-HCD81TRH-4000lm-3500K  
Description: 8 INCH ROUND SHALLOW-WIDE HAZE TRIM  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4829.3 lumens  
Efficiency: N/A  
Efficacy: 125.4 lumens/watt  
Spacing Criteria (0/90/45): 1.42 / 1.42 / 1.43  
Luminous Opening: Circular (Dia: 0.67' x H: 0')  
CIE Type: Direct

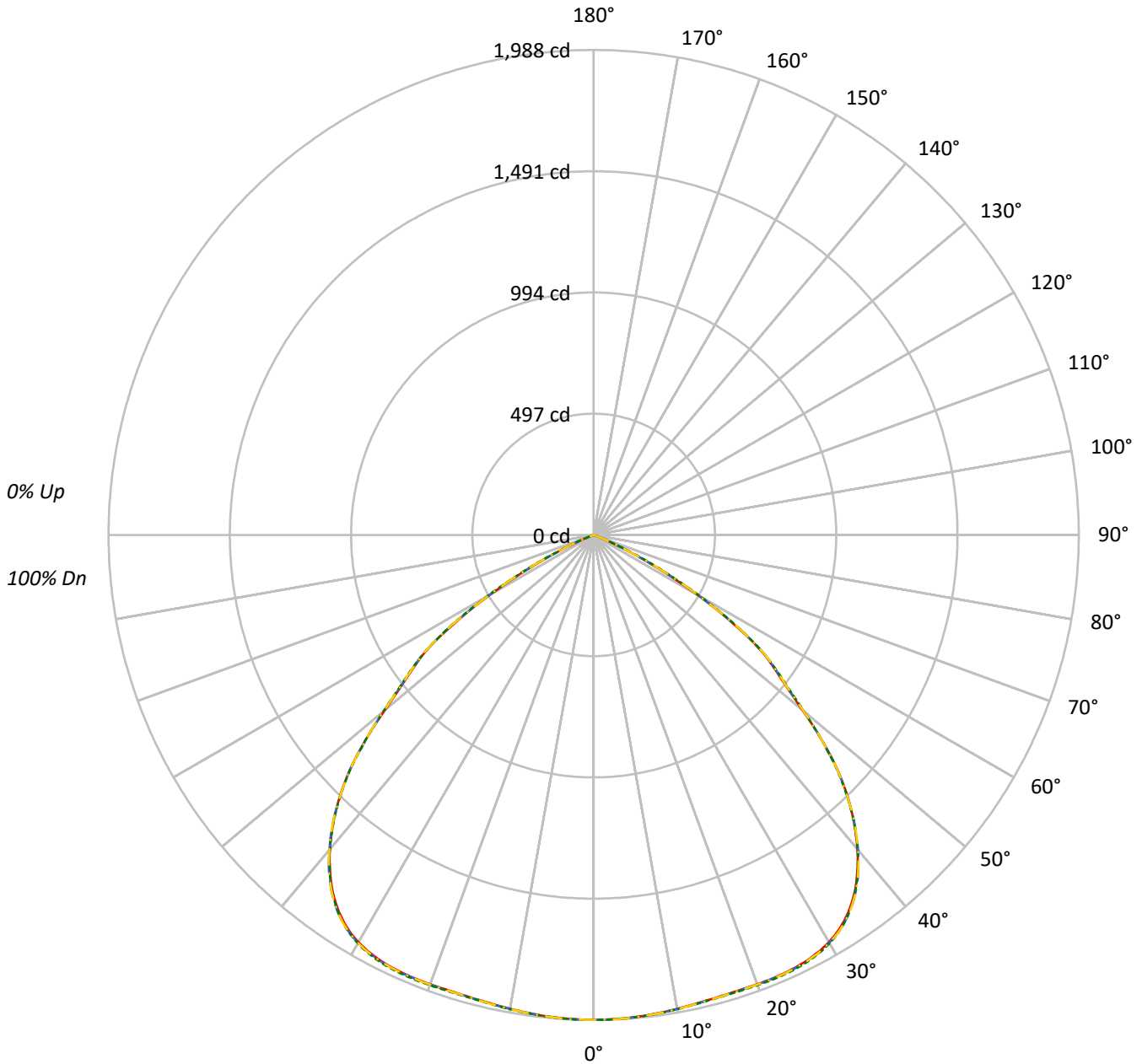
Input Watts (W): 38.5  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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	50	30	10	0
RCR																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100			100
1	112	108	105	102	109	106	103	100	102	99	97	98	96	94	94	93	91	89			89
2	103	97	91	87	101	95	90	86	92	87	84	88	85	82	86	83	80	78			78
3	96	87	80	75	93	85	79	74	82	77	73	80	75	71	77	74	70	68			68
4	88	78	70	65	86	77	70	64	74	68	63	72	67	63	70	66	62	60			60
5	82	70	62	57	80	69	62	56	67	61	56	65	60	55	64	59	55	53			53
6	76	64	56	50	74	63	55	50	61	54	49	59	53	49	58	53	48	47			47
7	70	58	50	44	69	57	50	44	56	49	44	54	48	44	53	48	43	41			41
8	65	53	45	40	64	52	45	40	51	44	39	50	44	39	49	43	39	37			37
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35	33			33
10	57	45	37	32	56	44	37	32	43	37	32	42	36	32	42	36	32	30			30

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°	270°
0°	60703	60703	60703	60703
5°	60788	60813	60788	60813
10°	61147	61196	61147	61196
15°	62004	62092	62004	62092
20°	63670	63813	63670	63813
25°	65894	66083	65894	66083
30°	67951	68148	67951	68148
35°	68667	68816	68667	68816
40°	66995	67027	66995	67027
45°	62485	62398	62485	62398
50°	53025	53405	53025	53405
55°	45329	45584	45329	45584
60°	29810	30976	29810	30976
65°	10511	12664	10511	12664
70°	179	955	179	955
75°	47	47	47	47
80°	0	70	0	70
85°	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 62485 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	189.1	3.9
10°-20°	556.7	11.5
20°-30°	904.4	18.7
30°-40°	1148.3	23.8
40°-50°	1101.3	22.8
50°-60°	741.2	15.3
60°-70°	187.5	3.9
70°-80°	0.8	0.0
80°-90°	0.0	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°	1650.2	34.2
0°-40°	2798.5	57.9
0°-60°	4641.0	96.1
0°-90°	4829.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4829.3	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1988	1988	1988	1988	1988	
5°	1984	1984	1984	1984	1984	189
15°	1962	1964	1962	1964	1962	556
25°	1956	1962	1956	1962	1956	903
35°	1842	1846	1842	1846	1842	1146
45°	1447	1445	1447	1445	1447	1101
55°	852	856	852	856	852	736
65°	146	175	146	175	146	174
75°	0	0	0	0	0	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°	1988.3	1988.3	1988.3	1988.3	1988.3	1988.3	1988.3	1988.3	1988.3	1988.3	1988.3
0.5°	1987.9	1987.9	1988.3	1988.7	1988.3	1988.7	1988.3	1987.9	1987.9	1987.9	1988.3
1°	1987.9	1987.9	1988.3	1988.7	1987.9	1988.7	1988.3	1987.9	1987.9	1987.9	1988.3
1.5°	1987.5	1987.5	1987.9	1988.3	1987.9	1988.3	1987.9	1987.5	1987.5	1987.5	1987.9
2°	1987.1	1987.1	1987.9	1987.9	1987.5	1987.9	1987.9	1987.1	1987.1	1987.1	1987.9
2.5°	1986.7	1987.1	1987.5	1987.9	1987.1	1987.9	1987.5	1987.1	1986.7	1987.1	1987.5
3°	1986.3	1986.3	1987.1	1987.1	1986.7	1987.1	1987.1	1986.3	1986.3	1986.3	1987.1
3.5°	1985.5	1985.9	1986.3	1986.7	1986.3	1986.7	1986.3	1985.9	1985.5	1985.9	1986.3
4°	1985.1	1985.1	1985.5	1986.3	1985.5	1986.3	1985.5	1985.1	1985.1	1985.1	1985.5
4.5°	1984.3	1984.7	1985.1	1985.5	1985.1	1985.5	1985.1	1984.7	1984.3	1984.7	1985.1
5°	1983.5	1983.9	1984.3	1984.7	1984.3	1984.7	1984.3	1983.9	1983.5	1983.9	1984.3
5.5°	1982.7	1982.7	1983.5	1983.9	1983.5	1983.9	1983.5	1982.7	1982.7	1982.7	1983.5
6°	1981.6	1982.0	1982.4	1983.1	1982.7	1983.1	1982.4	1982.0	1981.6	1982.0	1982.4
6.5°	1980.8	1981.2	1981.6	1982.4	1981.6	1982.4	1981.6	1981.2	1980.8	1981.2	1981.6
7°	1979.6	1980.0	1980.8	1981.2	1980.8	1981.2	1980.8	1980.0	1979.6	1980.0	1980.8
7.5°	1978.4	1978.8	1979.6	1980.0	1979.6	1980.0	1979.6	1978.8	1978.4	1978.8	1979.6
8°	1977.6	1977.6	1978.4	1979.2	1978.8	1979.2	1978.4	1977.6	1977.6	1977.6	1978.4
8.5°	1976.4	1976.4	1977.2	1977.6	1977.6	1977.6	1977.2	1976.4	1976.4	1976.4	1977.2
9°	1974.8	1975.2	1976.0	1976.8	1976.4	1976.8	1976.0	1975.2	1974.8	1975.2	1976.0
9.5°	1973.6	1974.0	1974.8	1975.6	1975.2	1975.6	1974.8	1974.0	1973.6	1974.0	1974.8
10°	1972.4	1972.8	1973.6	1974.4	1974.0	1974.4	1973.6	1972.8	1972.4	1972.8	1973.6
10.5°	1971.2	1971.6	1972.0	1973.2	1972.8	1973.2	1972.0	1971.6	1971.2	1971.6	1972.0
11°	1970.0	1970.0	1970.8	1972.0	1971.6	1972.0	1970.8	1970.0	1970.0	1970.0	1970.8
11.5°	1968.8	1968.8	1969.6	1970.8	1970.4	1970.8	1969.6	1968.8	1968.8	1968.8	1969.6
12°	1967.6	1967.6	1968.4	1969.6	1969.6	1969.6	1968.4	1967.6	1967.6	1967.6	1968.4
12.5°	1966.4	1966.4	1967.6	1968.4	1968.4	1968.4	1967.6	1966.4	1966.4	1966.4	1967.6
13°	1965.3	1965.7	1966.4	1967.2	1967.6	1967.2	1966.4	1965.7	1965.3	1965.7	1966.4
13.5°	1964.1	1964.5	1965.7	1966.4	1966.4	1966.4	1965.7	1964.5	1964.1	1964.5	1965.7
14°	1963.3	1963.7	1964.5	1965.7	1965.7	1965.7	1964.5	1963.7	1963.3	1963.7	1964.5
14.5°	1962.5	1962.9	1963.7	1964.9	1965.3	1964.9	1963.7	1962.9	1962.5	1962.9	1963.7
15°	1961.7	1962.1	1962.9	1964.5	1964.5	1964.5	1962.9	1962.1	1961.7	1962.1	1962.9
15.5°	1960.9	1961.3	1962.5	1963.7	1964.1	1963.7	1962.5	1961.3	1960.9	1961.3	1962.5
16°	1960.5	1960.9	1961.7	1963.3	1963.7	1963.3	1961.7	1960.9	1960.5	1960.9	1961.7
16.5°	1960.1	1960.5	1961.3	1962.9	1963.3	1962.9	1961.3	1960.5	1960.1	1960.5	1961.3
17°	1959.7	1960.1	1961.3	1962.9	1963.3	1962.9	1961.3	1960.1	1959.7	1960.1	1961.3
17.5°	1959.7	1960.1	1960.9	1962.9	1963.3	1962.9	1960.9	1960.1	1959.7	1960.1	1960.9
18°	1959.3	1959.7	1960.9	1962.9	1963.3	1962.9	1960.9	1959.7	1959.3	1959.7	1960.9
18.5°	1959.3	1959.7	1960.9	1962.9	1963.3	1962.9	1960.9	1959.7	1959.3	1959.7	1960.9
19°	1959.7	1959.7	1960.9	1963.3	1963.7	1963.3	1960.9	1959.7	1959.7	1959.7	1960.9
19.5°	1959.7	1960.1	1961.3	1963.3	1964.1	1963.3	1961.3	1960.1	1959.7	1960.1	1961.3
20°	1959.7	1960.1	1961.3	1963.7	1964.1	1963.7	1961.3	1960.1	1959.7	1960.1	1961.3
20.5°	1960.1	1960.1	1961.7	1963.7	1964.5	1963.7	1961.7	1960.1	1960.1	1960.1	1961.7
21°	1960.1	1960.5	1961.7	1964.1	1964.5	1964.1	1961.7	1960.5	1960.1	1960.5	1961.7



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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°	1959.7	1960.1	1961.7	1964.1	1964.9	1964.1	1961.7	1960.1	1959.7	1960.1	1961.7
23°	1959.3	1959.7	1961.3	1963.7	1964.5	1963.7	1961.3	1959.7	1959.3	1959.7	1961.3
23.5°	1958.9	1959.3	1960.9	1963.3	1964.1	1963.3	1960.9	1959.3	1958.9	1959.3	1960.9
24°	1958.5	1958.5	1960.1	1962.9	1963.7	1962.9	1960.1	1958.5	1958.5	1958.5	1960.1
24.5°	1957.3	1957.7	1959.3	1962.1	1962.9	1962.1	1959.3	1957.7	1957.3	1957.7	1959.3
25°	1956.1	1956.5	1958.5	1961.3	1961.7	1961.3	1958.5	1956.5	1956.1	1956.5	1958.5
25.5°	1954.9	1955.3	1957.3	1960.1	1960.5	1960.1	1957.3	1955.3	1954.9	1955.3	1957.3
26°	1953.3	1953.7	1955.7	1958.5	1959.3	1958.5	1955.7	1953.7	1953.3	1953.7	1955.7
26.5°	1951.3	1951.7	1954.1	1956.9	1957.3	1956.9	1954.1	1951.7	1951.3	1951.7	1954.1
27°	1949.4	1949.8	1951.7	1954.5	1954.9	1954.5	1951.7	1949.8	1949.4	1949.8	1951.7
27.5°	1946.6	1947.4	1949.4	1952.1	1952.5	1952.1	1949.4	1947.4	1946.6	1947.4	1949.4
28°	1943.8	1944.2	1946.6	1949.4	1949.8	1949.4	1946.6	1944.2	1943.8	1944.2	1946.6
28.5°	1940.6	1941.0	1943.4	1946.2	1946.2	1946.2	1943.4	1941.0	1940.6	1941.0	1943.4
29°	1936.6	1937.4	1939.8	1942.2	1942.6	1942.2	1939.8	1937.4	1936.6	1937.4	1939.8
29.5°	1932.3	1933.1	1935.8	1938.2	1938.2	1938.2	1935.8	1933.1	1932.3	1933.1	1935.8
30°	1927.5	1928.3	1931.1	1933.4	1933.1	1933.4	1931.1	1928.3	1927.5	1928.3	1931.1
30.5°	1922.3	1923.1	1925.9	1928.3	1927.9	1928.3	1925.9	1923.1	1922.3	1923.1	1925.9
31°	1916.4	1917.1	1920.3	1922.3	1921.5	1922.3	1920.3	1917.1	1916.4	1917.1	1920.3
31.5°	1909.6	1910.8	1914.0	1915.6	1914.8	1915.6	1914.0	1910.8	1909.6	1910.8	1914.0
32°	1902.0	1903.6	1906.8	1908.4	1907.6	1908.4	1906.8	1903.6	1902.0	1903.6	1906.8
32.5°	1894.1	1895.7	1898.9	1900.1	1899.3	1900.1	1898.9	1895.7	1894.1	1895.7	1898.9
33°	1885.3	1886.9	1890.5	1891.3	1890.1	1891.3	1890.5	1886.9	1885.3	1886.9	1890.5
33.5°	1875.4	1877.4	1881.0	1881.8	1880.6	1881.8	1881.0	1877.4	1875.4	1877.4	1881.0
34°	1865.5	1867.5	1871.0	1871.4	1869.8	1871.4	1871.0	1867.5	1865.5	1867.5	1871.0
34.5°	1853.9	1856.3	1859.9	1859.9	1858.3	1859.9	1859.9	1856.3	1853.9	1856.3	1859.9
35°	1842.4	1844.4	1848.4	1848.0	1846.4	1848.0	1848.4	1844.4	1842.4	1844.4	1848.4
35.5°	1829.7	1831.7	1835.6	1835.2	1833.7	1835.2	1835.6	1831.7	1829.7	1831.7	1835.6
36°	1816.2	1818.5	1822.5	1821.7	1819.7	1821.7	1822.5	1818.5	1816.2	1818.5	1822.5
36.5°	1802.2	1804.2	1808.2	1807.4	1805.0	1807.4	1808.2	1804.2	1802.2	1804.2	1808.2
37°	1786.7	1789.1	1792.7	1792.3	1789.9	1792.3	1792.7	1789.1	1786.7	1789.1	1792.7
37.5°	1771.2	1773.2	1777.2	1776.0	1773.6	1776.0	1777.2	1773.2	1771.2	1773.2	1777.2
38°	1754.5	1756.9	1760.5	1759.3	1756.5	1759.3	1760.5	1756.9	1754.5	1756.9	1760.5
38.5°	1737.0	1739.4	1743.0	1741.4	1739.0	1741.4	1743.0	1739.4	1737.0	1739.4	1743.0
39°	1719.5	1721.5	1724.7	1723.5	1720.7	1723.5	1724.7	1721.5	1719.5	1721.5	1724.7
39.5°	1700.9	1702.5	1705.6	1704.4	1701.7	1704.4	1705.6	1702.5	1700.9	1702.5	1705.6
40°	1681.0	1682.6	1685.8	1684.6	1681.8	1684.6	1685.8	1682.6	1681.0	1682.6	1685.8
40.5°	1661.1	1662.3	1665.1	1663.9	1661.1	1663.9	1665.1	1662.3	1661.1	1662.3	1665.1
41°	1640.0	1641.2	1643.6	1642.8	1640.0	1642.8	1643.6	1641.2	1640.0	1641.2	1643.6
41.5°	1618.6	1619.4	1621.7	1620.2	1618.2	1620.2	1621.7	1619.4	1618.6	1619.4	1621.7
42°	1596.3	1597.1	1598.7	1597.9	1595.9	1597.9	1598.7	1597.1	1596.3	1597.1	1598.7
42.5°	1573.6	1573.6	1575.2	1574.4	1572.4	1574.4	1575.2	1573.6	1573.6	1573.6	1575.2
43°	1549.8	1549.8	1551.0	1550.2	1548.2	1550.2	1551.0	1549.8	1549.8	1549.8	1551.0
43.5°	1525.1	1525.1	1525.5	1524.7	1523.5	1524.7	1525.5	1525.1	1525.1	1525.1	1525.5



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1447.2	1446.0	1446.0	1445.6	1445.2	1445.6	1446.0	1446.0	1447.2	1446.0	1446.0
45.5°	1419.4	1418.2	1417.8	1417.4	1417.0	1417.4	1417.8	1418.2	1419.4	1418.2	1417.8
46°	1390.7	1389.2	1388.8	1388.8	1388.4	1388.8	1388.8	1389.2	1390.7	1389.2	1388.8
46.5°	1360.9	1359.3	1358.9	1358.5	1358.1	1358.5	1358.9	1359.3	1360.9	1359.3	1358.9
47°	1329.1	1327.5	1326.3	1325.5	1324.7	1325.5	1326.3	1327.5	1329.1	1327.5	1326.3
47.5°	1294.5	1292.9	1291.4	1291.7	1291.4	1291.7	1291.4	1292.9	1294.5	1292.9	1291.4
48°	1258.0	1257.6	1258.4	1258.7	1259.1	1258.7	1258.4	1257.6	1258.0	1257.6	1258.4
48.5°	1223.0	1223.0	1224.6	1225.0	1225.0	1225.0	1224.6	1223.0	1223.0	1223.0	1224.6
49°	1189.2	1188.8	1190.0	1190.4	1190.8	1190.4	1190.0	1188.8	1189.2	1188.8	1190.0
49.5°	1152.6	1153.0	1155.4	1157.0	1157.4	1157.0	1155.4	1153.0	1152.6	1153.0	1155.4
50°	1116.4	1118.0	1121.2	1123.2	1124.4	1123.2	1121.2	1118.0	1116.4	1118.0	1121.2
50.5°	1083.0	1085.0	1088.2	1090.2	1091.0	1090.2	1088.2	1085.0	1083.0	1085.0	1088.2
51°	1052.4	1053.6	1056.8	1058.4	1059.2	1058.4	1056.8	1053.6	1052.4	1053.6	1056.8
51.5°	1023.0	1023.8	1027.4	1030.1	1031.3	1030.1	1027.4	1023.8	1023.0	1023.8	1027.4
52°	994.0	995.5	999.1	1002.7	1004.3	1002.7	999.1	995.5	994.0	995.5	999.1
52.5°	967.7	969.3	973.3	976.9	979.2	976.9	973.3	969.3	967.7	969.3	973.3
53°	943.5	945.1	949.4	953.0	954.6	953.0	949.4	945.1	943.5	945.1	949.4
53.5°	920.8	922.4	926.4	929.6	931.1	929.6	926.4	922.4	920.8	922.4	926.4
54°	899.3	900.5	904.1	906.1	906.9	906.1	904.1	900.5	899.3	900.5	904.1
54.5°	876.7	877.9	880.6	883.0	883.4	883.0	880.6	877.9	876.7	877.9	880.6
55°	851.6	852.8	855.6	857.2	856.4	857.2	855.6	852.8	851.6	852.8	855.6
55.5°	822.6	823.8	827.0	828.6	828.2	828.6	827.0	823.8	822.6	823.8	827.0
56°	790.4	792.0	796.0	798.0	797.6	798.0	796.0	792.0	790.4	792.0	796.0
56.5°	756.2	758.6	762.2	765.3	765.0	765.3	762.2	758.6	756.2	758.6	762.2
57°	720.4	722.4	727.6	729.6	730.0	729.6	727.6	722.4	720.4	722.4	727.6
57.5°	683.0	685.4	691.0	693.4	693.8	693.4	691.0	685.4	683.0	685.4	691.0
58°	645.3	647.7	653.2	656.8	657.6	656.8	653.2	647.7	645.3	647.7	653.2
58.5°	606.7	608.7	614.7	619.0	620.2	619.0	614.7	608.7	606.7	608.7	614.7
59°	567.7	569.7	575.3	581.3	582.9	581.3	575.3	569.7	567.7	569.7	575.3
59.5°	528.0	530.4	536.7	543.5	545.1	543.5	536.7	530.4	528.0	530.4	536.7
60°	488.2	491.8	498.2	506.5	507.3	506.5	498.2	491.8	488.2	491.8	498.2
60.5°	449.3	452.5	461.2	468.8	470.3	468.8	461.2	452.5	449.3	452.5	461.2
61°	411.1	415.1	424.6	431.8	433.8	431.8	424.6	415.1	411.1	415.1	424.6
61.5°	374.5	378.1	388.4	394.8	398.4	394.8	388.4	378.1	374.5	378.1	388.4
62°	338.3	341.9	352.7	359.0	363.0	359.0	352.7	341.9	338.3	341.9	352.7
62.5°	302.2	306.9	318.1	324.4	328.8	324.4	318.1	306.9	302.2	306.9	318.1
63°	266.8	272.7	284.3	291.0	296.2	291.0	284.3	272.7	266.8	272.7	284.3
63.5°	234.2	239.3	251.7	258.8	264.0	258.8	251.7	239.3	234.2	239.3	251.7
64°	203.2	208.7	219.9	228.2	233.0	228.2	219.9	208.7	203.2	208.7	219.9
64.5°	173.7	178.9	189.6	199.2	204.0	199.2	189.6	178.9	173.7	178.9	189.6
65°	145.5	152.7	161.8	171.0	175.3	171.0	161.8	152.7	145.5	152.7	161.8
65.5°	120.9	127.6	135.6	144.7	148.7	144.7	135.6	127.6	120.9	127.6	135.6
66°	97.4	104.2	112.1	120.9	122.9	120.9	112.1	104.2	97.4	104.2	112.1





TEST NUMBER: P776442

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	39.0	49.7	53.7	61.2	61.6	61.2	53.7	49.7	39.0	49.7	53.7
68°	23.9	35.0	39.0	46.5	45.7	46.5	39.0	35.0	23.9	35.0	39.0
68.5°	10.3	22.7	27.4	33.0	36.6	33.0	27.4	22.7	10.3	22.7	27.4
69°	5.6	13.9	17.9	21.5	28.2	21.5	17.9	13.9	5.6	13.9	17.9
69.5°	3.6	6.8	9.9	12.7	19.5	12.7	9.9	6.8	3.6	6.8	9.9
70°	2.0	4.0	4.8	5.6	10.7	5.6	4.8	4.0	2.0	4.0	4.8
70.5°	0.8	2.0	2.8	2.4	3.2	2.4	2.8	2.0	0.8	2.0	2.8
71°	0.8	1.2	1.6	1.2	1.2	1.2	1.6	1.2	0.8	1.2	1.6
71.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
72°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
72.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
73°	0.4	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.4	0.8	0.8
73.5°	0.4	0.4	0.8	0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.8
74°	0.4	0.4	0.4	0.8	0.8	0.8	0.4	0.4	0.4	0.4	0.4
74.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
75°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
75.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
76°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
76.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
77°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
77.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
78°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
78.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
79°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
79.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
80°	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.4
80.5°	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.4
81°	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
81.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	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: P776442

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-3500K

**CANDELA DISTRIBUTION (continued):**

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



TEST NUMBER: P776442

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1988.3	1988.3	1988.3	1988.3	1988.3	1988.3
0.5°	1988.7	1988.3	1988.7	1988.3	1987.9	1987.9
1°	1988.7	1987.9	1988.7	1988.3	1987.9	1987.9
1.5°	1988.3	1987.9	1988.3	1987.9	1987.5	1987.5
2°	1987.9	1987.5	1987.9	1987.9	1987.1	1987.1
2.5°	1987.9	1987.1	1987.9	1987.5	1987.1	1986.7
3°	1987.1	1986.7	1987.1	1987.1	1986.3	1986.3
3.5°	1986.7	1986.3	1986.7	1986.3	1985.9	1985.5
4°	1986.3	1985.5	1986.3	1985.5	1985.1	1985.1
4.5°	1985.5	1985.1	1985.5	1985.1	1984.7	1984.3
5°	1984.7	1984.3	1984.7	1984.3	1983.9	1983.5
5.5°	1983.9	1983.5	1983.9	1983.5	1982.7	1982.7
6°	1983.1	1982.7	1983.1	1982.4	1982.0	1981.6
6.5°	1982.4	1981.6	1982.4	1981.6	1981.2	1980.8
7°	1981.2	1980.8	1981.2	1980.8	1980.0	1979.6
7.5°	1980.0	1979.6	1980.0	1979.6	1978.8	1978.4
8°	1979.2	1978.8	1979.2	1978.4	1977.6	1977.6
8.5°	1977.6	1977.6	1977.6	1977.2	1976.4	1976.4
9°	1976.8	1976.4	1976.8	1976.0	1975.2	1974.8
9.5°	1975.6	1975.2	1975.6	1974.8	1974.0	1973.6
10°	1974.4	1974.0	1974.4	1973.6	1972.8	1972.4
10.5°	1973.2	1972.8	1973.2	1972.0	1971.6	1971.2
11°	1972.0	1971.6	1972.0	1970.8	1970.0	1970.0
11.5°	1970.8	1970.4	1970.8	1969.6	1968.8	1968.8
12°	1969.6	1969.6	1969.6	1968.4	1967.6	1967.6
12.5°	1968.4	1968.4	1968.4	1967.6	1966.4	1966.4
13°	1967.2	1967.6	1967.2	1966.4	1965.7	1965.3
13.5°	1966.4	1966.4	1966.4	1965.7	1964.5	1964.1
14°	1965.7	1965.7	1965.7	1964.5	1963.7	1963.3
14.5°	1964.9	1965.3	1964.9	1963.7	1962.9	1962.5
15°	1964.5	1964.5	1964.5	1962.9	1962.1	1961.7
15.5°	1963.7	1964.1	1963.7	1962.5	1961.3	1960.9
16°	1963.3	1963.7	1963.3	1961.7	1960.9	1960.5
16.5°	1962.9	1963.3	1962.9	1961.3	1960.5	1960.1
17°	1962.9	1963.3	1962.9	1961.3	1960.1	1959.7
17.5°	1962.9	1963.3	1962.9	1960.9	1960.1	1959.7
18°	1962.9	1963.3	1962.9	1960.9	1959.7	1959.3
18.5°	1962.9	1963.3	1962.9	1960.9	1959.7	1959.3
19°	1963.3	1963.7	1963.3	1960.9	1959.7	1959.7
19.5°	1963.3	1964.1	1963.3	1961.3	1960.1	1959.7
20°	1963.7	1964.1	1963.7	1961.3	1960.1	1959.7
20.5°	1963.7	1964.5	1963.7	1961.7	1960.1	1960.1
21°	1964.1	1964.5	1964.1	1961.7	1960.5	1960.1

TEST NUMBER: P776442

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1964.1	1964.9	1964.1	1961.7	1960.1	1959.7
23°	1963.7	1964.5	1963.7	1961.3	1959.7	1959.3
23.5°	1963.3	1964.1	1963.3	1960.9	1959.3	1958.9
24°	1962.9	1963.7	1962.9	1960.1	1958.5	1958.5
24.5°	1962.1	1962.9	1962.1	1959.3	1957.7	1957.3
25°	1961.3	1961.7	1961.3	1958.5	1956.5	1956.1
25.5°	1960.1	1960.5	1960.1	1957.3	1955.3	1954.9
26°	1958.5	1959.3	1958.5	1955.7	1953.7	1953.3
26.5°	1956.9	1957.3	1956.9	1954.1	1951.7	1951.3
27°	1954.5	1954.9	1954.5	1951.7	1949.8	1949.4
27.5°	1952.1	1952.5	1952.1	1949.4	1947.4	1946.6
28°	1949.4	1949.8	1949.4	1946.6	1944.2	1943.8
28.5°	1946.2	1946.2	1946.2	1943.4	1941.0	1940.6
29°	1942.2	1942.6	1942.2	1939.8	1937.4	1936.6
29.5°	1938.2	1938.2	1938.2	1935.8	1933.1	1932.3
30°	1933.4	1933.1	1933.4	1931.1	1928.3	1927.5
30.5°	1928.3	1927.9	1928.3	1925.9	1923.1	1922.3
31°	1922.3	1921.5	1922.3	1920.3	1917.1	1916.4
31.5°	1915.6	1914.8	1915.6	1914.0	1910.8	1909.6
32°	1908.4	1907.6	1908.4	1906.8	1903.6	1902.0
32.5°	1900.1	1899.3	1900.1	1898.9	1895.7	1894.1
33°	1891.3	1890.1	1891.3	1890.5	1886.9	1885.3
33.5°	1881.8	1880.6	1881.8	1881.0	1877.4	1875.4
34°	1871.4	1869.8	1871.4	1871.0	1867.5	1865.5
34.5°	1859.9	1858.3	1859.9	1859.9	1856.3	1853.9
35°	1848.0	1846.4	1848.0	1848.4	1844.4	1842.4
35.5°	1835.2	1833.7	1835.2	1835.6	1831.7	1829.7
36°	1821.7	1819.7	1821.7	1822.5	1818.5	1816.2
36.5°	1807.4	1805.0	1807.4	1808.2	1804.2	1802.2
37°	1792.3	1789.9	1792.3	1792.7	1789.1	1786.7
37.5°	1776.0	1773.6	1776.0	1777.2	1773.2	1771.2
38°	1759.3	1756.5	1759.3	1760.5	1756.9	1754.5
38.5°	1741.4	1739.0	1741.4	1743.0	1739.4	1737.0
39°	1723.5	1720.7	1723.5	1724.7	1721.5	1719.5
39.5°	1704.4	1701.7	1704.4	1705.6	1702.5	1700.9
40°	1684.6	1681.8	1684.6	1685.8	1682.6	1681.0
40.5°	1663.9	1661.1	1663.9	1665.1	1662.3	1661.1
41°	1642.8	1640.0	1642.8	1643.6	1641.2	1640.0
41.5°	1620.2	1618.2	1620.2	1621.7	1619.4	1618.6
42°	1597.9	1595.9	1597.9	1598.7	1597.1	1596.3
42.5°	1574.4	1572.4	1574.4	1575.2	1573.6	1573.6
43°	1550.2	1548.2	1550.2	1551.0	1549.8	1549.8
43.5°	1524.7	1523.5	1524.7	1525.5	1525.1	1525.1



TEST NUMBER: P776442

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1445.6	1445.2	1445.6	1446.0	1446.0	1447.2
45.5°	1417.4	1417.0	1417.4	1417.8	1418.2	1419.4
46°	1388.8	1388.4	1388.8	1388.8	1389.2	1390.7
46.5°	1358.5	1358.1	1358.5	1358.9	1359.3	1360.9
47°	1325.5	1324.7	1325.5	1326.3	1327.5	1329.1
47.5°	1291.7	1291.4	1291.7	1291.4	1292.9	1294.5
48°	1258.7	1259.1	1258.7	1258.4	1257.6	1258.0
48.5°	1225.0	1225.0	1225.0	1224.6	1223.0	1223.0
49°	1190.4	1190.8	1190.4	1190.0	1188.8	1189.2
49.5°	1157.0	1157.4	1157.0	1155.4	1153.0	1152.6
50°	1123.2	1124.4	1123.2	1121.2	1118.0	1116.4
50.5°	1090.2	1091.0	1090.2	1088.2	1085.0	1083.0
51°	1058.4	1059.2	1058.4	1056.8	1053.6	1052.4
51.5°	1030.1	1031.3	1030.1	1027.4	1023.8	1023.0
52°	1002.7	1004.3	1002.7	999.1	995.5	994.0
52.5°	976.9	979.2	976.9	973.3	969.3	967.7
53°	953.0	954.6	953.0	949.4	945.1	943.5
53.5°	929.6	931.1	929.6	926.4	922.4	920.8
54°	906.1	906.9	906.1	904.1	900.5	899.3
54.5°	883.0	883.4	883.0	880.6	877.9	876.7
55°	857.2	856.4	857.2	855.6	852.8	851.6
55.5°	828.6	828.2	828.6	827.0	823.8	822.6
56°	798.0	797.6	798.0	796.0	792.0	790.4
56.5°	765.3	765.0	765.3	762.2	758.6	756.2
57°	729.6	730.0	729.6	727.6	722.4	720.4
57.5°	693.4	693.8	693.4	691.0	685.4	683.0
58°	656.8	657.6	656.8	653.2	647.7	645.3
58.5°	619.0	620.2	619.0	614.7	608.7	606.7
59°	581.3	582.9	581.3	575.3	569.7	567.7
59.5°	543.5	545.1	543.5	536.7	530.4	528.0
60°	506.5	507.3	506.5	498.2	491.8	488.2
60.5°	468.8	470.3	468.8	461.2	452.5	449.3
61°	431.8	433.8	431.8	424.6	415.1	411.1
61.5°	394.8	398.4	394.8	388.4	378.1	374.5
62°	359.0	363.0	359.0	352.7	341.9	338.3
62.5°	324.4	328.8	324.4	318.1	306.9	302.2
63°	291.0	296.2	291.0	284.3	272.7	266.8
63.5°	258.8	264.0	258.8	251.7	239.3	234.2
64°	228.2	233.0	228.2	219.9	208.7	203.2
64.5°	199.2	204.0	199.2	189.6	178.9	173.7
65°	171.0	175.3	171.0	161.8	152.7	145.5
65.5°	144.7	148.7	144.7	135.6	127.6	120.9
66°	120.9	122.9	120.9	112.1	104.2	97.4



TEST NUMBER: P776442

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	61.2	61.6	61.2	53.7	49.7	39.0
68°	46.5	45.7	46.5	39.0	35.0	23.9
68.5°	33.0	36.6	33.0	27.4	22.7	10.3
69°	21.5	28.2	21.5	17.9	13.9	5.6
69.5°	12.7	19.5	12.7	9.9	6.8	3.6
70°	5.6	10.7	5.6	4.8	4.0	2.0
70.5°	2.4	3.2	2.4	2.8	2.0	0.8
71°	1.2	1.2	1.2	1.6	1.2	0.8
71.5°	0.8	0.8	0.8	0.8	0.8	0.8
72°	0.8	0.8	0.8	0.8	0.8	0.8
72.5°	0.8	0.8	0.8	0.8	0.8	0.8
73°	0.8	0.8	0.8	0.8	0.8	0.4
73.5°	0.8	0.8	0.8	0.8	0.4	0.4
74°	0.8	0.8	0.8	0.4	0.4	0.4
74.5°	0.4	0.4	0.4	0.4	0.4	0.4
75°	0.4	0.4	0.4	0.4	0.4	0.4
75.5°	0.4	0.4	0.4	0.4	0.4	0.4
76°	0.4	0.4	0.4	0.4	0.4	0.4
76.5°	0.4	0.4	0.4	0.4	0.4	0.4
77°	0.4	0.4	0.4	0.4	0.4	0.4
77.5°	0.4	0.4	0.4	0.4	0.4	0.4
78°	0.4	0.4	0.4	0.4	0.4	0.4
78.5°	0.4	0.4	0.4	0.4	0.4	0.4
79°	0.4	0.4	0.4	0.4	0.4	0.4
79.5°	0.4	0.4	0.4	0.4	0.4	0.4
80°	0.4	0.4	0.4	0.4	0.0	0.0
80.5°	0.4	0.4	0.4	0.4	0.0	0.0
81°	0.0	0.4	0.0	0.0	0.0	0.0
81.5°	0.0	0.0	0.0	0.0	0.0	0.0
82°	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0
83°	0.0	0.0	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	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: P776442

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-3500K

**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°	1960.1	1960.5	1961.7	1964.1	1964.9	1964.1	1961.7	1960.5	1960.1	1960.5	1961.7
22°	1960.1	1960.1	1961.7	1964.1	1964.9	1964.1	1961.7	1960.1	1960.1	1960.1	1961.7



44°	1500.1	1499.3	1499.7	1498.9	1498.1	1498.9	1499.7	1499.3	1500.1	1499.3	1499.7
44.5°	1474.2	1473.0	1473.4	1473.0	1471.9	1473.0	1473.4	1473.0	1474.2	1473.0	1473.4



66.5°	77.9	84.3	89.9	98.2	100.6	98.2	89.9	84.3	77.9	84.3	89.9
67°	58.4	65.2	71.2	79.1	79.9	79.1	71.2	65.2	58.4	65.2	71.2



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°	1964.1	1964.9	1964.1	1961.7	1960.5	1960.1
22°	1964.1	1964.9	1964.1	1961.7	1960.1	1960.1



44°	1498.9	1498.1	1498.9	1499.7	1499.3	1500.1
44.5°	1473.0	1471.9	1473.0	1473.4	1473.0	1474.2



66.5°	98.2	100.6	98.2	89.9	84.3	77.9
67°	79.1	79.9	79.1	71.2	65.2	58.4

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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)