

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: P776444

Luminaire Tested: HCDJBL3040CSD-HCD81TRH-4000lm-5000K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P776444  
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-5000K  
Description: 8 INCH ROUND SHALLOW-WIDE HAZE TRIM  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 5000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4969.4 lumens  
Efficiency: N/A  
Efficacy: 129.1 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

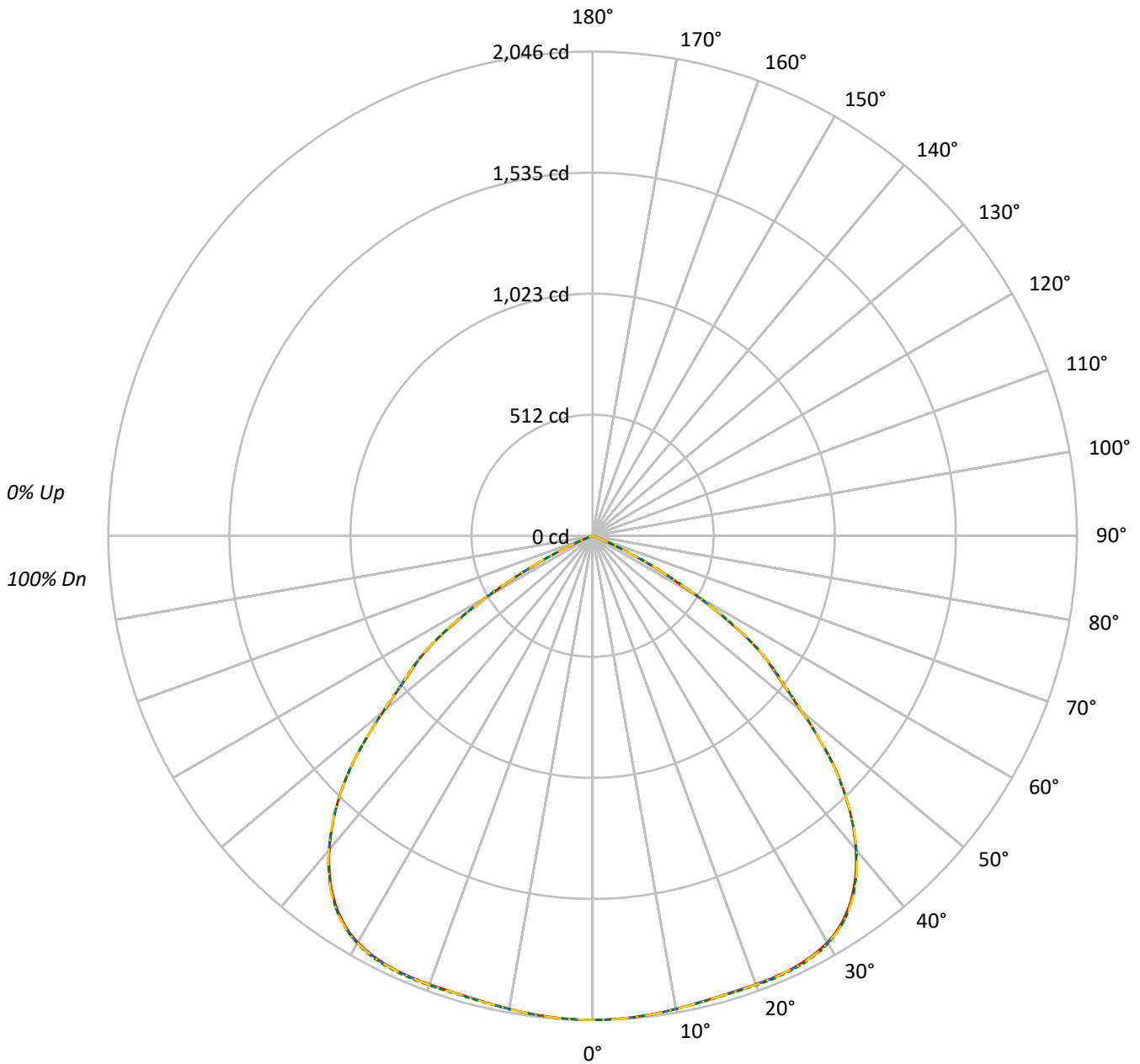
Input Watts (W): 38.5  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20										
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	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°	62465	62465	62465	62465
5°	62553	62578	62553	62578
10°	62923	62973	62923	62973
15°	63802	63894	63802	63894
20°	65519	65665	65519	65665
25°	67807	67999	67807	67999
30°	69921	70126	69921	70126
35°	70661	70814	70661	70814
40°	68940	68972	68940	68972
45°	64298	64212	64298	64212
50°	54564	54954	54564	54954
55°	46644	46910	46644	46910
60°	30677	31874	30677	31874
65°	10814	13032	10814	13032
70°	179	982	179	982
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: 64298 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	194.5	3.9
10°-20°	572.9	11.5
20°-30°	930.6	18.7
30°-40°	1181.7	23.8
40°-50°	1133.3	22.8
50°-60°	762.7	15.3
60°-70°	192.9	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°	1698.1	34.2
0°-40°	2879.7	57.9
0°-60°	4775.7	96.1
0°-90°	4969.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4969.4	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2046	2046	2046	2046	2046	
5°	2041	2042	2041	2042	2041	194
15°	2019	2022	2019	2022	2019	572
25°	2013	2019	2013	2019	2013	929
35°	1896	1900	1896	1900	1896	1179
45°	1489	1487	1489	1487	1489	1133
55°	876	881	876	881	876	758
65°	150	180	150	180	150	179
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°	2046.0	2046.0	2046.0	2046.0	2046.0	2046.0	2046.0	2046.0	2046.0	2046.0	2046.0
0.5°	2045.6	2045.6	2046.0	2046.4	2046.0	2046.4	2046.0	2045.6	2045.6	2045.6	2046.0
1°	2045.6	2045.6	2046.0	2046.4	2045.6	2046.4	2046.0	2045.6	2045.6	2045.6	2046.0
1.5°	2045.2	2045.2	2045.6	2046.0	2045.6	2046.0	2045.6	2045.2	2045.2	2045.2	2045.6
2°	2044.8	2044.8	2045.6	2045.6	2045.2	2045.6	2045.6	2044.8	2044.8	2044.8	2045.6
2.5°	2044.4	2044.8	2045.2	2045.6	2044.8	2045.6	2045.2	2044.8	2044.4	2044.8	2045.2
3°	2044.0	2044.0	2044.8	2044.8	2044.4	2044.8	2044.8	2044.0	2044.0	2044.0	2044.8
3.5°	2043.2	2043.6	2044.0	2044.4	2044.0	2044.4	2044.0	2043.6	2043.2	2043.6	2044.0
4°	2042.8	2042.8	2043.2	2044.0	2043.2	2044.0	2043.2	2042.8	2042.8	2042.8	2043.2
4.5°	2041.9	2042.4	2042.8	2043.2	2042.8	2043.2	2042.8	2042.4	2041.9	2042.4	2042.8
5°	2041.1	2041.5	2041.9	2042.4	2041.9	2042.4	2041.9	2041.5	2041.1	2041.5	2041.9
5.5°	2040.3	2040.3	2041.1	2041.5	2041.1	2041.5	2041.1	2040.3	2040.3	2040.3	2041.1
6°	2039.1	2039.5	2039.9	2040.7	2040.3	2040.7	2039.9	2039.5	2039.1	2039.5	2039.9
6.5°	2038.3	2038.7	2039.1	2039.9	2039.1	2039.9	2039.1	2038.7	2038.3	2038.7	2039.1
7°	2037.0	2037.4	2038.3	2038.7	2038.3	2038.7	2038.3	2037.4	2037.0	2037.4	2038.3
7.5°	2035.8	2036.2	2037.0	2037.4	2037.0	2037.4	2037.0	2036.2	2035.8	2036.2	2037.0
8°	2035.0	2035.0	2035.8	2036.6	2036.2	2036.6	2035.8	2035.0	2035.0	2035.0	2035.8
8.5°	2033.8	2033.8	2034.6	2035.0	2035.0	2035.0	2034.6	2033.8	2033.8	2033.8	2034.6
9°	2032.1	2032.5	2033.4	2034.2	2033.8	2034.2	2033.4	2032.5	2032.1	2032.5	2033.4
9.5°	2030.9	2031.3	2032.1	2032.9	2032.5	2032.9	2032.1	2031.3	2030.9	2031.3	2032.1
10°	2029.7	2030.1	2030.9	2031.7	2031.3	2031.7	2030.9	2030.1	2029.7	2030.1	2030.9
10.5°	2028.4	2028.9	2029.3	2030.5	2030.1	2030.5	2029.3	2028.9	2028.4	2028.9	2029.3
11°	2027.2	2027.2	2028.0	2029.3	2028.9	2029.3	2028.0	2027.2	2027.2	2027.2	2028.0
11.5°	2026.0	2026.0	2026.8	2028.0	2027.6	2028.0	2026.8	2026.0	2026.0	2026.0	2026.8
12°	2024.8	2024.8	2025.6	2026.8	2026.8	2026.8	2025.6	2024.8	2024.8	2024.8	2025.6
12.5°	2023.5	2023.5	2024.8	2025.6	2025.6	2025.6	2024.8	2023.5	2023.5	2023.5	2024.8
13°	2022.3	2022.7	2023.5	2024.4	2024.8	2024.4	2023.5	2022.7	2022.3	2022.7	2023.5
13.5°	2021.1	2021.5	2022.7	2023.5	2023.5	2023.5	2022.7	2021.5	2021.1	2021.5	2022.7
14°	2020.3	2020.7	2021.5	2022.7	2022.7	2022.7	2021.5	2020.7	2020.3	2020.7	2021.5
14.5°	2019.4	2019.9	2020.7	2021.9	2022.3	2021.9	2020.7	2019.9	2019.4	2019.9	2020.7
15°	2018.6	2019.0	2019.9	2021.5	2021.5	2021.5	2019.9	2019.0	2018.6	2019.0	2019.9
15.5°	2017.8	2018.2	2019.4	2020.7	2021.1	2020.7	2019.4	2018.2	2017.8	2018.2	2019.4
16°	2017.4	2017.8	2018.6	2020.3	2020.7	2020.3	2018.6	2017.8	2017.4	2017.8	2018.6
16.5°	2017.0	2017.4	2018.2	2019.9	2020.3	2019.9	2018.2	2017.4	2017.0	2017.4	2018.2
17°	2016.6	2017.0	2018.2	2019.9	2020.3	2019.9	2018.2	2017.0	2016.6	2017.0	2018.2
17.5°	2016.6	2017.0	2017.8	2019.9	2020.3	2019.9	2017.8	2017.0	2016.6	2017.0	2017.8
18°	2016.2	2016.6	2017.8	2019.9	2020.3	2019.9	2017.8	2016.6	2016.2	2016.6	2017.8
18.5°	2016.2	2016.6	2017.8	2019.9	2020.3	2019.9	2017.8	2016.6	2016.2	2016.6	2017.8
19°	2016.6	2016.6	2017.8	2020.3	2020.7	2020.3	2017.8	2016.6	2016.6	2016.6	2017.8
19.5°	2016.6	2017.0	2018.2	2020.3	2021.1	2020.3	2018.2	2017.0	2016.6	2017.0	2018.2
20°	2016.6	2017.0	2018.2	2020.7	2021.1	2020.7	2018.2	2017.0	2016.6	2017.0	2018.2
20.5°	2017.0	2017.0	2018.6	2020.7	2021.5	2020.7	2018.6	2017.0	2017.0	2017.0	2018.6
21°	2017.0	2017.4	2018.6	2021.1	2021.5	2021.1	2018.6	2017.4	2017.0	2017.4	2018.6



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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°	2016.6	2017.0	2018.6	2021.1	2021.9	2021.1	2018.6	2017.0	2016.6	2017.0	2018.6
23°	2016.2	2016.6	2018.2	2020.7	2021.5	2020.7	2018.2	2016.6	2016.2	2016.6	2018.2
23.5°	2015.8	2016.2	2017.8	2020.3	2021.1	2020.3	2017.8	2016.2	2015.8	2016.2	2017.8
24°	2015.4	2015.4	2017.0	2019.9	2020.7	2019.9	2017.0	2015.4	2015.4	2015.4	2017.0
24.5°	2014.1	2014.5	2016.2	2019.0	2019.9	2019.0	2016.2	2014.5	2014.1	2014.5	2016.2
25°	2012.9	2013.3	2015.4	2018.2	2018.6	2018.2	2015.4	2013.3	2012.9	2013.3	2015.4
25.5°	2011.7	2012.1	2014.1	2017.0	2017.4	2017.0	2014.1	2012.1	2011.7	2012.1	2014.1
26°	2010.0	2010.4	2012.5	2015.4	2016.2	2015.4	2012.5	2010.4	2010.0	2010.4	2012.5
26.5°	2008.0	2008.4	2010.9	2013.7	2014.1	2013.7	2010.9	2008.4	2008.0	2008.4	2010.9
27°	2005.9	2006.3	2008.4	2011.3	2011.7	2011.3	2008.4	2006.3	2005.9	2006.3	2008.4
27.5°	2003.1	2003.9	2005.9	2008.8	2009.2	2008.8	2005.9	2003.9	2003.1	2003.9	2005.9
28°	2000.2	2000.6	2003.1	2005.9	2006.3	2005.9	2003.1	2000.6	2000.2	2000.6	2003.1
28.5°	1996.9	1997.3	1999.8	2002.7	2002.7	2002.7	1999.8	1997.3	1996.9	1997.3	1999.8
29°	1992.8	1993.7	1996.1	1998.6	1999.0	1998.6	1996.1	1993.7	1992.8	1993.7	1996.1
29.5°	1988.3	1989.2	1992.0	1994.5	1994.5	1994.5	1992.0	1989.2	1988.3	1989.2	1992.0
30°	1983.4	1984.3	1987.1	1989.6	1989.2	1989.6	1987.1	1984.3	1983.4	1984.3	1987.1
30.5°	1978.1	1978.9	1981.8	1984.3	1983.8	1984.3	1981.8	1978.9	1978.1	1978.9	1981.8
31°	1972.0	1972.8	1976.1	1978.1	1977.3	1978.1	1976.1	1972.8	1972.0	1972.8	1976.1
31.5°	1965.0	1966.3	1969.5	1971.2	1970.3	1971.2	1969.5	1966.3	1965.0	1966.3	1969.5
32°	1957.3	1958.9	1962.2	1963.8	1963.0	1963.8	1962.2	1958.9	1957.3	1958.9	1962.2
32.5°	1949.1	1950.7	1954.0	1955.2	1954.4	1955.2	1954.0	1950.7	1949.1	1950.7	1954.0
33°	1940.1	1941.7	1945.4	1946.2	1945.0	1946.2	1945.4	1941.7	1940.1	1941.7	1945.4
33.5°	1929.8	1931.9	1935.6	1936.4	1935.2	1936.4	1935.6	1931.9	1929.8	1931.9	1935.6
34°	1919.6	1921.7	1925.3	1925.8	1924.1	1925.8	1925.3	1921.7	1919.6	1921.7	1925.3
34.5°	1907.8	1910.2	1913.9	1913.9	1912.3	1913.9	1913.9	1910.2	1907.8	1910.2	1913.9
35°	1895.9	1897.9	1902.0	1901.6	1900.0	1901.6	1902.0	1897.9	1895.9	1897.9	1902.0
35.5°	1882.8	1884.8	1888.9	1888.5	1886.9	1888.5	1888.9	1884.8	1882.8	1884.8	1888.9
36°	1868.9	1871.3	1875.4	1874.6	1872.6	1874.6	1875.4	1871.3	1868.9	1871.3	1875.4
36.5°	1854.6	1856.6	1860.7	1859.9	1857.4	1859.9	1860.7	1856.6	1854.6	1856.6	1860.7
37°	1838.6	1841.1	1844.7	1844.3	1841.9	1844.3	1844.7	1841.1	1838.6	1841.1	1844.7
37.5°	1822.7	1824.7	1828.8	1827.6	1825.1	1827.6	1828.8	1824.7	1822.7	1824.7	1828.8
38°	1805.5	1807.9	1811.6	1810.4	1807.5	1810.4	1811.6	1807.9	1805.5	1807.9	1811.6
38.5°	1787.5	1789.9	1793.6	1792.0	1789.5	1792.0	1793.6	1789.9	1787.5	1789.9	1793.6
39°	1769.5	1771.5	1774.8	1773.6	1770.7	1773.6	1774.8	1771.5	1769.5	1771.5	1774.8
39.5°	1750.2	1751.9	1755.1	1753.9	1751.1	1753.9	1755.1	1751.9	1750.2	1751.9	1755.1
40°	1729.8	1731.4	1734.7	1733.5	1730.6	1733.5	1734.7	1731.4	1729.8	1731.4	1734.7
40.5°	1709.3	1710.6	1713.4	1712.2	1709.3	1712.2	1713.4	1710.6	1709.3	1710.6	1713.4
41°	1687.6	1688.9	1691.3	1690.5	1687.6	1690.5	1691.3	1688.9	1687.6	1688.9	1691.3
41.5°	1665.5	1666.4	1668.8	1667.2	1665.1	1667.2	1668.8	1666.4	1665.5	1666.4	1668.8
42°	1642.6	1643.5	1645.1	1644.3	1642.2	1644.3	1645.1	1643.5	1642.6	1643.5	1645.1
42.5°	1619.3	1619.3	1621.0	1620.1	1618.1	1620.1	1621.0	1619.3	1619.3	1619.3	1621.0
43°	1594.8	1594.8	1596.0	1595.2	1593.1	1595.2	1596.0	1594.8	1594.8	1594.8	1596.0
43.5°	1569.4	1569.4	1569.8	1569.0	1567.8	1569.0	1569.8	1569.4	1569.4	1569.4	1569.8



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1489.2	1488.0	1488.0	1487.6	1487.2	1487.6	1488.0	1488.0	1489.2	1488.0	1488.0
45.5°	1460.6	1459.3	1458.9	1458.5	1458.1	1458.5	1458.9	1459.3	1460.6	1459.3	1458.9
46°	1431.1	1429.5	1429.1	1429.1	1428.7	1429.1	1429.1	1429.5	1431.1	1429.5	1429.1
46.5°	1400.4	1398.8	1398.4	1398.0	1397.6	1398.0	1398.4	1398.8	1400.4	1398.8	1398.4
47°	1367.7	1366.1	1364.8	1364.0	1363.2	1364.0	1364.8	1366.1	1367.7	1366.1	1364.8
47.5°	1332.1	1330.5	1328.8	1329.2	1328.8	1329.2	1328.8	1330.5	1332.1	1330.5	1328.8
48°	1294.5	1294.1	1294.9	1295.3	1295.7	1295.3	1294.9	1294.1	1294.5	1294.1	1294.9
48.5°	1258.5	1258.5	1260.1	1260.5	1260.5	1260.5	1260.1	1258.5	1258.5	1258.5	1260.1
49°	1223.7	1223.3	1224.5	1224.9	1225.3	1224.9	1224.5	1223.3	1223.7	1223.3	1224.5
49.5°	1186.1	1186.5	1188.9	1190.6	1191.0	1190.6	1188.9	1186.5	1186.1	1186.5	1188.9
50°	1148.8	1150.5	1153.7	1155.8	1157.0	1155.8	1153.7	1150.5	1148.8	1150.5	1153.7
50.5°	1114.5	1116.5	1119.8	1121.8	1122.6	1121.8	1119.8	1116.5	1114.5	1116.5	1119.8
51°	1083.0	1084.2	1087.5	1089.1	1089.9	1089.1	1087.5	1084.2	1083.0	1084.2	1087.5
51.5°	1052.7	1053.5	1057.2	1060.0	1061.3	1060.0	1057.2	1053.5	1052.7	1053.5	1057.2
52°	1022.8	1024.4	1028.1	1031.8	1033.5	1031.8	1028.1	1024.4	1022.8	1024.4	1028.1
52.5°	995.8	997.4	1001.5	1005.2	1007.7	1005.2	1001.5	997.4	995.8	997.4	1001.5
53°	970.9	972.5	977.0	980.7	982.3	980.7	977.0	972.5	970.9	972.5	977.0
53.5°	947.5	949.2	953.3	956.5	958.2	956.5	953.3	949.2	947.5	949.2	953.3
54°	925.4	926.7	930.4	932.4	933.2	932.4	930.4	926.7	925.4	926.7	930.4
54.5°	902.1	903.3	906.2	908.7	909.1	908.7	906.2	903.3	902.1	903.3	906.2
55°	876.3	877.6	880.4	882.1	881.3	882.1	880.4	877.6	876.3	877.6	880.4
55.5°	846.5	847.7	851.0	852.6	852.2	852.6	851.0	847.7	846.5	847.7	851.0
56°	813.3	815.0	819.1	821.1	820.7	821.1	819.1	815.0	813.3	815.0	819.1
56.5°	778.2	780.6	784.3	787.6	787.2	787.6	784.3	780.6	778.2	780.6	784.3
57°	741.3	743.4	748.7	750.7	751.2	750.7	748.7	743.4	741.3	743.4	748.7
57.5°	702.9	705.3	711.1	713.5	713.9	713.5	711.1	705.3	702.9	705.3	711.1
58°	664.0	666.5	672.2	675.9	676.7	675.9	672.2	666.5	664.0	666.5	672.2
58.5°	624.3	626.4	632.5	637.0	638.2	637.0	632.5	626.4	624.3	626.4	632.5
59°	584.2	586.3	592.0	598.1	599.8	598.1	592.0	586.3	584.2	586.3	592.0
59.5°	543.3	545.8	552.3	559.3	560.9	559.3	552.3	545.8	543.3	545.8	552.3
60°	502.4	506.1	512.6	521.2	522.0	521.2	512.6	506.1	502.4	506.1	512.6
60.5°	462.3	465.6	474.6	482.4	484.0	482.4	474.6	465.6	462.3	465.6	474.6
61°	423.0	427.1	436.9	444.3	446.4	444.3	436.9	427.1	423.0	427.1	436.9
61.5°	385.4	389.1	399.7	406.3	409.9	406.3	399.7	389.1	385.4	389.1	399.7
62°	348.2	351.8	362.9	369.4	373.5	369.4	362.9	351.8	348.2	351.8	362.9
62.5°	310.9	315.8	327.3	333.8	338.3	333.8	327.3	315.8	310.9	315.8	327.3
63°	274.5	280.7	292.5	299.5	304.8	299.5	292.5	280.7	274.5	280.7	292.5
63.5°	241.0	246.3	259.0	266.3	271.7	266.3	259.0	246.3	241.0	246.3	259.0
64°	209.1	214.8	226.2	234.8	239.7	234.8	226.2	214.8	209.1	214.8	226.2
64.5°	178.8	184.1	195.2	205.0	209.9	205.0	195.2	184.1	178.8	184.1	195.2
65°	149.7	157.1	166.5	175.9	180.4	175.9	166.5	157.1	149.7	157.1	166.5
65.5°	124.4	131.3	139.5	148.9	153.0	148.9	139.5	131.3	124.4	131.3	139.5
66°	100.2	107.2	115.4	124.4	126.4	124.4	115.4	107.2	100.2	107.2	115.4





TEST NUMBER: P776444

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	40.1	51.1	55.2	63.0	63.4	63.0	55.2	51.1	40.1	51.1	55.2
68°	24.5	36.0	40.1	47.9	47.0	47.9	40.1	36.0	24.5	36.0	40.1
68.5°	10.6	23.3	28.2	34.0	37.6	34.0	28.2	23.3	10.6	23.3	28.2
69°	5.7	14.3	18.4	22.1	29.0	22.1	18.4	14.3	5.7	14.3	18.4
69.5°	3.7	7.0	10.2	13.1	20.0	13.1	10.2	7.0	3.7	7.0	10.2
70°	2.0	4.1	4.9	5.7	11.0	5.7	4.9	4.1	2.0	4.1	4.9
70.5°	0.8	2.0	2.9	2.5	3.3	2.5	2.9	2.0	0.8	2.0	2.9
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: P776444

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-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: P776444

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2046.0	2046.0	2046.0	2046.0	2046.0	2046.0
0.5°	2046.4	2046.0	2046.4	2046.0	2045.6	2045.6
1°	2046.4	2045.6	2046.4	2046.0	2045.6	2045.6
1.5°	2046.0	2045.6	2046.0	2045.6	2045.2	2045.2
2°	2045.6	2045.2	2045.6	2045.6	2044.8	2044.8
2.5°	2045.6	2044.8	2045.6	2045.2	2044.8	2044.4
3°	2044.8	2044.4	2044.8	2044.8	2044.0	2044.0
3.5°	2044.4	2044.0	2044.4	2044.0	2043.6	2043.2
4°	2044.0	2043.2	2044.0	2043.2	2042.8	2042.8
4.5°	2043.2	2042.8	2043.2	2042.8	2042.4	2041.9
5°	2042.4	2041.9	2042.4	2041.9	2041.5	2041.1
5.5°	2041.5	2041.1	2041.5	2041.1	2040.3	2040.3
6°	2040.7	2040.3	2040.7	2039.9	2039.5	2039.1
6.5°	2039.9	2039.1	2039.9	2039.1	2038.7	2038.3
7°	2038.7	2038.3	2038.7	2038.3	2037.4	2037.0
7.5°	2037.4	2037.0	2037.4	2037.0	2036.2	2035.8
8°	2036.6	2036.2	2036.6	2035.8	2035.0	2035.0
8.5°	2035.0	2035.0	2035.0	2034.6	2033.8	2033.8
9°	2034.2	2033.8	2034.2	2033.4	2032.5	2032.1
9.5°	2032.9	2032.5	2032.9	2032.1	2031.3	2030.9
10°	2031.7	2031.3	2031.7	2030.9	2030.1	2029.7
10.5°	2030.5	2030.1	2030.5	2029.3	2028.9	2028.4
11°	2029.3	2028.9	2029.3	2028.0	2027.2	2027.2
11.5°	2028.0	2027.6	2028.0	2026.8	2026.0	2026.0
12°	2026.8	2026.8	2026.8	2025.6	2024.8	2024.8
12.5°	2025.6	2025.6	2025.6	2024.8	2023.5	2023.5
13°	2024.4	2024.8	2024.4	2023.5	2022.7	2022.3
13.5°	2023.5	2023.5	2023.5	2022.7	2021.5	2021.1
14°	2022.7	2022.7	2022.7	2021.5	2020.7	2020.3
14.5°	2021.9	2022.3	2021.9	2020.7	2019.9	2019.4
15°	2021.5	2021.5	2021.5	2019.9	2019.0	2018.6
15.5°	2020.7	2021.1	2020.7	2019.4	2018.2	2017.8
16°	2020.3	2020.7	2020.3	2018.6	2017.8	2017.4
16.5°	2019.9	2020.3	2019.9	2018.2	2017.4	2017.0
17°	2019.9	2020.3	2019.9	2018.2	2017.0	2016.6
17.5°	2019.9	2020.3	2019.9	2017.8	2017.0	2016.6
18°	2019.9	2020.3	2019.9	2017.8	2016.6	2016.2
18.5°	2019.9	2020.3	2019.9	2017.8	2016.6	2016.2
19°	2020.3	2020.7	2020.3	2017.8	2016.6	2016.6
19.5°	2020.3	2021.1	2020.3	2018.2	2017.0	2016.6
20°	2020.7	2021.1	2020.7	2018.2	2017.0	2016.6
20.5°	2020.7	2021.5	2020.7	2018.6	2017.0	2017.0
21°	2021.1	2021.5	2021.1	2018.6	2017.4	2017.0



TEST NUMBER: P776444

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	2021.1	2021.9	2021.1	2018.6	2017.0	2016.6
23°	2020.7	2021.5	2020.7	2018.2	2016.6	2016.2
23.5°	2020.3	2021.1	2020.3	2017.8	2016.2	2015.8
24°	2019.9	2020.7	2019.9	2017.0	2015.4	2015.4
24.5°	2019.0	2019.9	2019.0	2016.2	2014.5	2014.1
25°	2018.2	2018.6	2018.2	2015.4	2013.3	2012.9
25.5°	2017.0	2017.4	2017.0	2014.1	2012.1	2011.7
26°	2015.4	2016.2	2015.4	2012.5	2010.4	2010.0
26.5°	2013.7	2014.1	2013.7	2010.9	2008.4	2008.0
27°	2011.3	2011.7	2011.3	2008.4	2006.3	2005.9
27.5°	2008.8	2009.2	2008.8	2005.9	2003.9	2003.1
28°	2005.9	2006.3	2005.9	2003.1	2000.6	2000.2
28.5°	2002.7	2002.7	2002.7	1999.8	1997.3	1996.9
29°	1998.6	1999.0	1998.6	1996.1	1993.7	1992.8
29.5°	1994.5	1994.5	1994.5	1992.0	1989.2	1988.3
30°	1989.6	1989.2	1989.6	1987.1	1984.3	1983.4
30.5°	1984.3	1983.8	1984.3	1981.8	1978.9	1978.1
31°	1978.1	1977.3	1978.1	1976.1	1972.8	1972.0
31.5°	1971.2	1970.3	1971.2	1969.5	1966.3	1965.0
32°	1963.8	1963.0	1963.8	1962.2	1958.9	1957.3
32.5°	1955.2	1954.4	1955.2	1954.0	1950.7	1949.1
33°	1946.2	1945.0	1946.2	1945.4	1941.7	1940.1
33.5°	1936.4	1935.2	1936.4	1935.6	1931.9	1929.8
34°	1925.8	1924.1	1925.8	1925.3	1921.7	1919.6
34.5°	1913.9	1912.3	1913.9	1913.9	1910.2	1907.8
35°	1901.6	1900.0	1901.6	1902.0	1897.9	1895.9
35.5°	1888.5	1886.9	1888.5	1888.9	1884.8	1882.8
36°	1874.6	1872.6	1874.6	1875.4	1871.3	1868.9
36.5°	1859.9	1857.4	1859.9	1860.7	1856.6	1854.6
37°	1844.3	1841.9	1844.3	1844.7	1841.1	1838.6
37.5°	1827.6	1825.1	1827.6	1828.8	1824.7	1822.7
38°	1810.4	1807.5	1810.4	1811.6	1807.9	1805.5
38.5°	1792.0	1789.5	1792.0	1793.6	1789.9	1787.5
39°	1773.6	1770.7	1773.6	1774.8	1771.5	1769.5
39.5°	1753.9	1751.1	1753.9	1755.1	1751.9	1750.2
40°	1733.5	1730.6	1733.5	1734.7	1731.4	1729.8
40.5°	1712.2	1709.3	1712.2	1713.4	1710.6	1709.3
41°	1690.5	1687.6	1690.5	1691.3	1688.9	1687.6
41.5°	1667.2	1665.1	1667.2	1668.8	1666.4	1665.5
42°	1644.3	1642.2	1644.3	1645.1	1643.5	1642.6
42.5°	1620.1	1618.1	1620.1	1621.0	1619.3	1619.3
43°	1595.2	1593.1	1595.2	1596.0	1594.8	1594.8
43.5°	1569.0	1567.8	1569.0	1569.8	1569.4	1569.4



TEST NUMBER: P776444

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1487.6	1487.2	1487.6	1488.0	1488.0	1489.2
45.5°	1458.5	1458.1	1458.5	1458.9	1459.3	1460.6
46°	1429.1	1428.7	1429.1	1429.1	1429.5	1431.1
46.5°	1398.0	1397.6	1398.0	1398.4	1398.8	1400.4
47°	1364.0	1363.2	1364.0	1364.8	1366.1	1367.7
47.5°	1329.2	1328.8	1329.2	1328.8	1330.5	1332.1
48°	1295.3	1295.7	1295.3	1294.9	1294.1	1294.5
48.5°	1260.5	1260.5	1260.5	1260.1	1258.5	1258.5
49°	1224.9	1225.3	1224.9	1224.5	1223.3	1223.7
49.5°	1190.6	1191.0	1190.6	1188.9	1186.5	1186.1
50°	1155.8	1157.0	1155.8	1153.7	1150.5	1148.8
50.5°	1121.8	1122.6	1121.8	1119.8	1116.5	1114.5
51°	1089.1	1089.9	1089.1	1087.5	1084.2	1083.0
51.5°	1060.0	1061.3	1060.0	1057.2	1053.5	1052.7
52°	1031.8	1033.5	1031.8	1028.1	1024.4	1022.8
52.5°	1005.2	1007.7	1005.2	1001.5	997.4	995.8
53°	980.7	982.3	980.7	977.0	972.5	970.9
53.5°	956.5	958.2	956.5	953.3	949.2	947.5
54°	932.4	933.2	932.4	930.4	926.7	925.4
54.5°	908.7	909.1	908.7	906.2	903.3	902.1
55°	882.1	881.3	882.1	880.4	877.6	876.3
55.5°	852.6	852.2	852.6	851.0	847.7	846.5
56°	821.1	820.7	821.1	819.1	815.0	813.3
56.5°	787.6	787.2	787.6	784.3	780.6	778.2
57°	750.7	751.2	750.7	748.7	743.4	741.3
57.5°	713.5	713.9	713.5	711.1	705.3	702.9
58°	675.9	676.7	675.9	672.2	666.5	664.0
58.5°	637.0	638.2	637.0	632.5	626.4	624.3
59°	598.1	599.8	598.1	592.0	586.3	584.2
59.5°	559.3	560.9	559.3	552.3	545.8	543.3
60°	521.2	522.0	521.2	512.6	506.1	502.4
60.5°	482.4	484.0	482.4	474.6	465.6	462.3
61°	444.3	446.4	444.3	436.9	427.1	423.0
61.5°	406.3	409.9	406.3	399.7	389.1	385.4
62°	369.4	373.5	369.4	362.9	351.8	348.2
62.5°	333.8	338.3	333.8	327.3	315.8	310.9
63°	299.5	304.8	299.5	292.5	280.7	274.5
63.5°	266.3	271.7	266.3	259.0	246.3	241.0
64°	234.8	239.7	234.8	226.2	214.8	209.1
64.5°	205.0	209.9	205.0	195.2	184.1	178.8
65°	175.9	180.4	175.9	166.5	157.1	149.7
65.5°	148.9	153.0	148.9	139.5	131.3	124.4
66°	124.4	126.4	124.4	115.4	107.2	100.2



TEST NUMBER: P776444

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	63.0	63.4	63.0	55.2	51.1	40.1
68°	47.9	47.0	47.9	40.1	36.0	24.5
68.5°	34.0	37.6	34.0	28.2	23.3	10.6
69°	22.1	29.0	22.1	18.4	14.3	5.7
69.5°	13.1	20.0	13.1	10.2	7.0	3.7
70°	5.7	11.0	5.7	4.9	4.1	2.0
70.5°	2.5	3.3	2.5	2.9	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: P776444

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRH-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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Scaled Data Report





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

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Scaled Data Report





21.5°	2017.0	2017.4	2018.6	2021.1	2021.9	2021.1	2018.6	2017.4	2017.0	2017.4	2018.6
22°	2017.0	2017.0	2018.6	2021.1	2021.9	2021.1	2018.6	2017.0	2017.0	2017.0	2018.6



44°	1543.6	1542.8	1543.2	1542.4	1541.6	1542.4	1543.2	1542.8	1543.6	1542.8	1543.2
44.5°	1517.0	1515.8	1516.2	1515.8	1514.6	1515.8	1516.2	1515.8	1517.0	1515.8	1516.2



66.5°	80.2	86.7	92.5	101.1	103.5	101.1	92.5	86.7	80.2	86.7	92.5
67°	60.1	67.1	73.2	81.4	82.2	81.4	73.2	67.1	60.1	67.1	73.2



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°	2021.1	2021.9	2021.1	2018.6	2017.4	2017.0
22°	2021.1	2021.9	2021.1	2018.6	2017.0	2017.0



44°	1542.4	1541.6	1542.4	1543.2	1542.8	1543.6
44.5°	1515.8	1514.6	1515.8	1516.2	1515.8	1517.0



66.5°	101.1	103.5	101.1	92.5	86.7	80.2
67°	81.4	82.2	81.4	73.2	67.1	60.1

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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)