

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: P776454

Luminaire Tested: HCDJBL3040CSD-HCD81TRMB-4000lm-5000K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P776454  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2312156B045-HCD81TRMB)  
Test Lab:  
Issue Date: 2/13/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBL3040CSD-HCD81TRMB-4000lm-5000K  
Description: 8 INCH ROUND SHALLOW-WIDE MATTE BLACK TRIM  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 5000K CCT  
Ballast/Driver: -

**Summary**

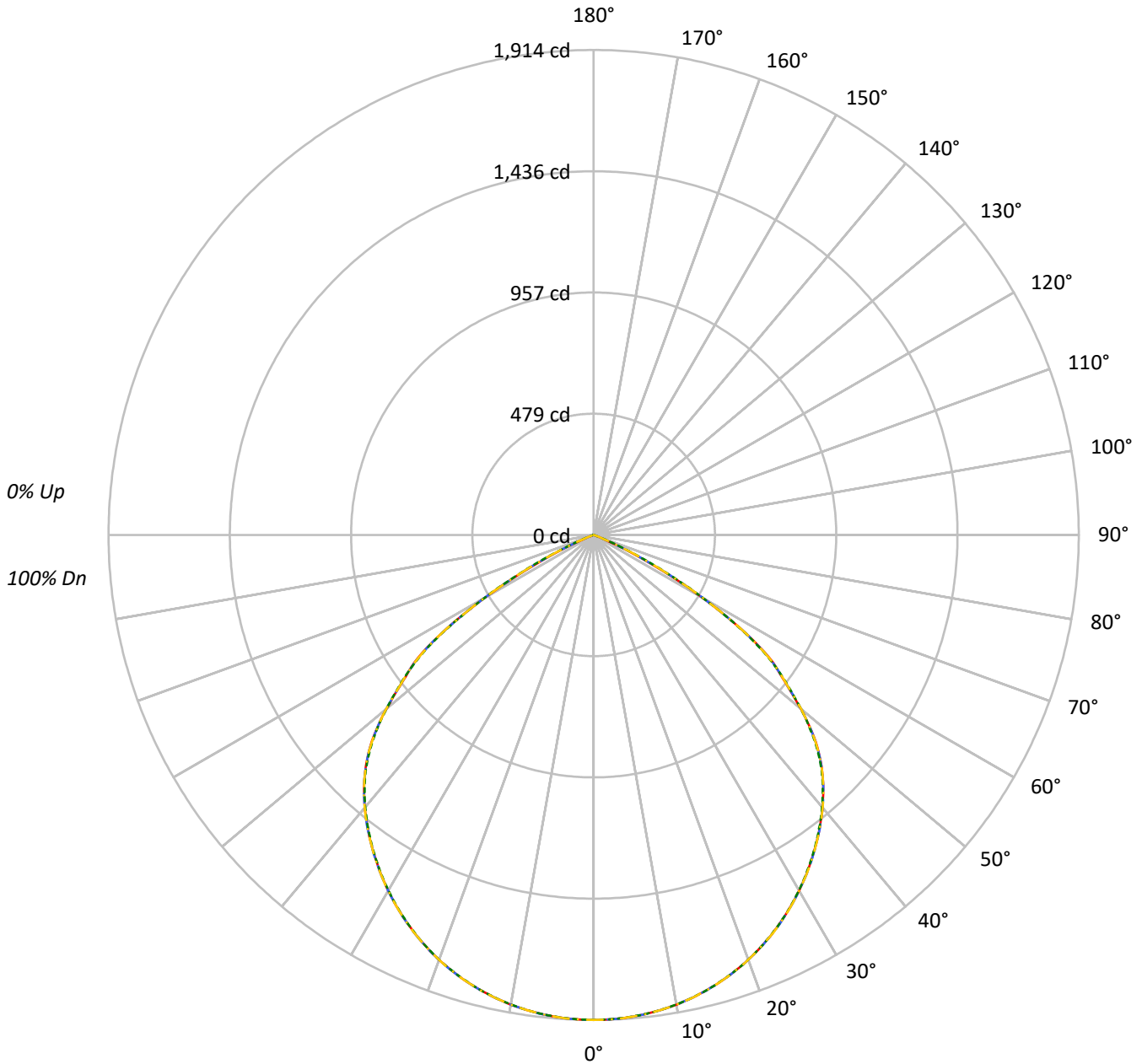
Lumens per Lamp: N/A  
Luminaire Lumens: 4323.7 lumens  
Efficiency: N/A  
Efficacy: 112.3 lumens/watt  
Spacing Criteria (0/90/45): 1.26 / 1.26 / 1.37  
Luminous Opening: Circular (Dia: 0.67' x H: 0')  
CIE Type: Direct

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	100	100	100	100		
	1	111	108	105	102	109	106	103	100	101	99	97	98	96	94	94	93	91	89	89	89	89	89	89		
	2	103	97	91	86	101	95	90	85	91	87	84	88	85	82	85	82	80	78	78	78	78	78	78		
	3	95	86	80	74	93	85	79	74	82	77	72	80	75	71	77	73	70	68	68	68	68	68	68		
	4	88	78	70	64	86	76	69	64	74	68	63	72	66	62	70	65	61	59	59	59	59	59	59		
	5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54	52	52	52	52	52	52		
	6	75	63	55	50	74	62	55	49	61	54	49	59	53	49	58	52	48	46	46	46	46	46	46		
	7	70	58	50	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41	41	41	41	41	41		
	8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39	37	37	37	37	37	37		
	9	61	48	41	36	60	48	41	36	47	40	35	46	40	35	45	39	35	33	33	33	33	33	33		
	10	57	45	37	32	56	44	37	32	43	37	32	42	36	32	42	36	32	30	30	30	30	30	30		

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

	0°	90°	180°	270°
0°	58441	58441	58441	58441
5°	58425	58401	58425	58401
10°	58354	58341	58354	58341
15°	58202	58189	58202	58189
20°	57968	57955	57968	57955
25°	57611	57584	57611	57584
30°	57149	57103	57149	57103
35°	56607	56532	56607	56532
40°	55972	55856	55972	55856
45°	54704	54510	54704	54510
50°	50665	50665	50665	50665
55°	45089	44589	45089	44589
60°	30109	30530	30109	30530
65°	10663	12758	10663	12758
70°	107	1205	107	1205
75°	0	0	0	0
80°	0	0	0	0
85°	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 54704 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	181.2	4.2
10°-20°	519.7	12.0
20°-30°	788.0	18.2
30°-40°	950.0	22.0
40°-50°	968.5	22.4
50°-60°	727.8	16.8
60°-70°	188.0	4.3
70°-80°	0.5	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°	1489.0	34.4
0°-40°	2439.0	56.4
0°-60°	4135.2	95.6
0°-90°	4323.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4323.7	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1914	1914	1914	1914	1914	
5°	1906	1906	1906	1906	1906	181
15°	1841	1841	1841	1841	1841	520
25°	1710	1709	1710	1709	1710	788
35°	1519	1517	1519	1517	1519	950
45°	1267	1262	1267	1262	1267	969
55°	847	838	847	838	847	728
65°	148	177	148	177	148	176
75°	0	0	0	0	0	0
85°	0	0	0	0	0	0
90°	0	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°	1914.2	1914.2	1914.2	1914.2	1914.2	1914.2	1914.2	1914.2	1914.2	1914.2	1914.2
0.5°	1914.2	1914.2	1914.2	1914.2	1913.8	1914.2	1914.2	1914.2	1914.2	1914.2	1914.2
1°	1914.2	1914.2	1914.2	1913.8	1913.4	1913.8	1914.2	1914.2	1914.2	1914.2	1914.2
1.5°	1913.8	1913.8	1913.8	1913.8	1913.4	1913.8	1913.8	1913.8	1913.8	1913.8	1913.8
2°	1913.4	1913.4	1913.4	1913.0	1912.6	1913.0	1913.4	1913.4	1913.4	1913.4	1913.4
2.5°	1912.1	1912.6	1912.6	1912.6	1911.7	1912.6	1912.6	1912.6	1912.1	1912.6	1912.6
3°	1911.3	1911.7	1911.7	1911.7	1910.9	1911.7	1911.7	1911.7	1911.3	1911.7	1911.7
3.5°	1910.5	1910.5	1910.5	1910.5	1910.1	1910.5	1910.5	1910.5	1910.5	1910.5	1910.5
4°	1909.3	1909.3	1909.3	1909.3	1908.5	1909.3	1909.3	1909.3	1909.3	1909.3	1909.3
4.5°	1908.1	1908.1	1908.1	1908.1	1907.2	1908.1	1908.1	1908.1	1908.1	1908.1	1908.1
5°	1906.4	1906.4	1906.4	1906.4	1905.6	1906.4	1906.4	1906.4	1906.4	1906.4	1906.4
5.5°	1904.8	1904.8	1904.8	1904.8	1904.0	1904.8	1904.8	1904.8	1904.8	1904.8	1904.8
6°	1902.7	1903.1	1902.7	1902.7	1902.3	1902.7	1902.7	1903.1	1902.7	1903.1	1902.7
6.5°	1900.7	1901.1	1901.1	1900.7	1900.3	1900.7	1901.1	1901.1	1900.7	1901.1	1901.1
7°	1898.7	1898.7	1898.7	1898.7	1898.2	1898.7	1898.7	1898.7	1898.7	1898.7	1898.7
7.5°	1896.2	1896.2	1896.2	1896.6	1895.8	1896.6	1896.2	1896.2	1896.2	1896.2	1896.2
8°	1893.7	1893.7	1893.7	1893.7	1893.3	1893.7	1893.7	1893.7	1893.7	1893.7	1893.7
8.5°	1891.3	1891.3	1891.3	1891.3	1890.5	1891.3	1891.3	1891.3	1891.3	1891.3	1891.3
9°	1888.4	1888.4	1888.4	1888.4	1888.0	1888.4	1888.4	1888.4	1888.4	1888.4	1888.4
9.5°	1885.2	1885.6	1885.6	1885.6	1884.8	1885.6	1885.6	1885.6	1885.2	1885.6	1885.6
10°	1882.3	1882.3	1882.3	1882.3	1881.9	1882.3	1882.3	1882.3	1882.3	1882.3	1882.3
10.5°	1879.0	1879.0	1879.0	1879.0	1878.6	1879.0	1879.0	1879.0	1879.0	1879.0	1879.0
11°	1875.3	1875.3	1875.3	1875.8	1874.9	1875.8	1875.3	1875.3	1875.3	1875.3	1875.3
11.5°	1871.7	1871.7	1871.7	1872.1	1871.3	1872.1	1871.7	1871.7	1871.7	1871.7	1871.7
12°	1868.0	1868.0	1868.0	1868.0	1867.6	1868.0	1868.0	1868.0	1868.0	1868.0	1868.0
12.5°	1863.9	1863.9	1863.9	1864.3	1863.5	1864.3	1863.9	1863.9	1863.9	1863.9	1863.9
13°	1859.8	1859.8	1859.8	1859.8	1859.4	1859.8	1859.8	1859.8	1859.8	1859.8	1859.8
13.5°	1855.3	1855.7	1855.7	1855.7	1854.9	1855.7	1855.7	1855.7	1855.3	1855.7	1855.7
14°	1850.8	1851.2	1851.2	1851.2	1850.4	1851.2	1851.2	1851.2	1850.8	1851.2	1851.2
14.5°	1846.3	1846.3	1846.3	1846.3	1845.9	1846.3	1846.3	1846.3	1846.3	1846.3	1846.3
15°	1841.4	1841.4	1841.4	1841.8	1841.0	1841.8	1841.4	1841.4	1841.4	1841.4	1841.4
15.5°	1836.5	1836.5	1836.5	1836.5	1836.1	1836.5	1836.5	1836.5	1836.5	1836.5	1836.5
16°	1831.2	1831.6	1831.6	1831.6	1830.8	1831.6	1831.6	1831.6	1831.2	1831.6	1831.6
16.5°	1825.9	1825.9	1826.3	1826.3	1825.9	1826.3	1826.3	1825.9	1825.9	1825.9	1826.3
17°	1820.6	1820.6	1821.0	1820.6	1820.2	1820.6	1821.0	1820.6	1820.6	1820.6	1821.0
17.5°	1814.8	1814.8	1815.2	1815.2	1814.8	1815.2	1815.2	1814.8	1814.8	1814.8	1815.2
18°	1809.1	1809.1	1809.1	1809.1	1808.7	1809.1	1809.1	1809.1	1809.1	1809.1	1809.1
18.5°	1803.0	1803.0	1803.4	1803.4	1802.6	1803.4	1803.4	1803.0	1803.0	1803.0	1803.4
19°	1796.9	1796.9	1797.3	1797.3	1796.4	1797.3	1797.3	1796.9	1796.9	1796.9	1797.3
19.5°	1790.7	1790.7	1790.7	1790.7	1790.3	1790.7	1790.7	1790.7	1790.7	1790.7	1790.7
20°	1784.2	1784.2	1784.2	1784.2	1783.8	1784.2	1784.2	1784.2	1784.2	1784.2	1784.2
20.5°	1777.2	1777.6	1777.6	1777.6	1776.8	1777.6	1777.6	1777.6	1777.2	1777.6	1777.6
21°	1770.7	1770.7	1770.7	1770.7	1770.3	1770.7	1770.7	1770.7	1770.7	1770.7	1770.7



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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°	1749.0	1749.4	1749.4	1749.4	1748.6	1749.4	1749.4	1749.4	1749.0	1749.4	1749.4
23°	1741.7	1741.7	1741.7	1741.7	1741.2	1741.7	1741.7	1741.7	1741.7	1741.7	1741.7
23.5°	1733.9	1734.3	1734.3	1734.3	1733.5	1734.3	1734.3	1734.3	1733.9	1734.3	1734.3
24°	1726.1	1726.1	1726.5	1726.1	1725.7	1726.1	1726.5	1726.1	1726.1	1726.1	1726.5
24.5°	1717.9	1718.4	1718.8	1718.4	1717.5	1718.4	1718.8	1718.4	1717.9	1718.4	1718.8
25°	1710.2	1710.2	1710.6	1710.2	1709.4	1710.2	1710.6	1710.2	1710.2	1710.2	1710.6
25.5°	1701.6	1702.0	1702.4	1702.0	1701.2	1702.0	1702.4	1702.0	1701.6	1702.0	1702.4
26°	1693.4	1693.4	1693.8	1693.4	1692.6	1693.4	1693.8	1693.4	1693.4	1693.4	1693.8
26.5°	1684.8	1685.2	1685.2	1684.8	1684.0	1684.8	1685.2	1685.2	1684.8	1685.2	1685.2
27°	1676.2	1676.2	1676.7	1676.2	1675.4	1676.2	1676.7	1676.2	1676.2	1676.2	1676.7
27.5°	1667.2	1667.7	1667.7	1667.2	1666.4	1667.2	1667.7	1667.7	1667.2	1667.7	1667.7
28°	1658.3	1658.7	1658.7	1658.3	1657.4	1658.3	1658.7	1658.7	1658.3	1658.7	1658.7
28.5°	1649.3	1649.3	1649.7	1649.3	1648.4	1649.3	1649.7	1649.3	1649.3	1649.3	1649.7
29°	1639.9	1640.3	1640.3	1639.9	1638.6	1639.9	1640.3	1640.3	1639.9	1640.3	1640.3
29.5°	1630.5	1630.9	1630.9	1630.5	1629.2	1630.5	1630.9	1630.9	1630.5	1630.9	1630.9
30°	1621.1	1621.5	1621.5	1620.6	1619.8	1620.6	1621.5	1621.5	1621.1	1621.5	1621.5
30.5°	1611.6	1611.6	1611.6	1611.2	1610.0	1611.2	1611.6	1611.6	1611.6	1611.6	1611.6
31°	1601.4	1601.8	1602.2	1601.0	1600.2	1601.0	1602.2	1601.8	1601.4	1601.8	1602.2
31.5°	1591.6	1592.0	1592.0	1591.2	1590.0	1591.2	1592.0	1592.0	1591.6	1592.0	1592.0
32°	1581.8	1582.2	1582.2	1581.4	1579.8	1581.4	1582.2	1582.2	1581.8	1582.2	1582.2
32.5°	1571.6	1572.0	1572.0	1570.8	1569.5	1570.8	1572.0	1572.0	1571.6	1572.0	1572.0
33°	1561.0	1561.8	1561.8	1561.0	1559.3	1561.0	1561.8	1561.8	1561.0	1561.8	1561.8
33.5°	1550.7	1551.1	1551.5	1550.3	1548.7	1550.3	1551.5	1551.1	1550.7	1551.1	1551.5
34°	1540.1	1540.5	1540.9	1539.7	1538.5	1539.7	1540.9	1540.5	1540.1	1540.5	1540.9
34.5°	1529.5	1529.9	1530.3	1529.1	1527.8	1529.1	1530.3	1529.9	1529.5	1529.9	1530.3
35°	1518.8	1519.2	1519.7	1518.4	1516.8	1518.4	1519.7	1519.2	1518.8	1519.2	1519.7
35.5°	1507.8	1508.6	1508.6	1507.4	1505.8	1507.4	1508.6	1508.6	1507.8	1508.6	1508.6
36°	1497.2	1497.6	1498.0	1496.4	1494.7	1496.4	1498.0	1497.6	1497.2	1497.6	1498.0
36.5°	1486.1	1486.5	1487.0	1485.3	1483.7	1485.3	1487.0	1486.5	1486.1	1486.5	1487.0
37°	1474.7	1475.1	1475.5	1473.9	1472.6	1473.9	1475.5	1475.1	1474.7	1475.1	1475.5
37.5°	1463.2	1464.1	1464.5	1462.4	1460.8	1462.4	1464.5	1464.1	1463.2	1464.1	1464.5
38°	1451.8	1452.2	1453.0	1451.0	1449.7	1451.0	1453.0	1452.2	1451.8	1452.2	1453.0
38.5°	1439.9	1440.8	1441.2	1439.5	1437.9	1439.5	1441.2	1440.8	1439.9	1440.8	1441.2
39°	1428.5	1429.3	1429.7	1427.7	1426.0	1427.7	1429.7	1429.3	1428.5	1429.3	1429.7
39.5°	1416.6	1417.0	1417.4	1415.8	1413.8	1415.8	1417.4	1417.0	1416.6	1417.0	1417.4
40°	1404.4	1405.2	1405.2	1403.5	1401.5	1403.5	1405.2	1405.2	1404.4	1405.2	1405.2
40.5°	1392.1	1392.5	1392.9	1390.9	1389.2	1390.9	1392.9	1392.5	1392.1	1392.5	1392.9
41°	1379.4	1380.2	1380.7	1378.6	1376.6	1378.6	1380.7	1380.2	1379.4	1380.2	1380.7
41.5°	1366.8	1367.2	1367.6	1365.5	1363.9	1365.5	1367.6	1367.2	1366.8	1367.2	1367.6
42°	1353.7	1354.1	1354.5	1352.4	1350.4	1352.4	1354.5	1354.1	1353.7	1354.1	1354.5
42.5°	1340.2	1341.0	1341.0	1339.0	1336.9	1339.0	1341.0	1341.0	1340.2	1341.0	1341.0
43°	1326.7	1327.1	1327.1	1325.1	1323.0	1325.1	1327.1	1327.1	1326.7	1327.1	1327.1
43.5°	1312.4	1312.8	1312.8	1310.7	1308.7	1310.7	1312.8	1312.8	1312.4	1312.8	1312.8



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	1267.0	1267.0	1266.6	1264.5	1262.5	1264.5	1266.6	1267.0	1267.0	1267.0	1266.6
45.5°	1250.6	1250.6	1250.2	1247.8	1245.7	1247.8	1250.2	1250.6	1250.6	1250.6	1250.2
46°	1233.9	1233.9	1233.1	1230.6	1228.2	1230.6	1233.1	1233.9	1233.9	1233.9	1233.1
46.5°	1215.9	1215.9	1215.1	1212.2	1210.6	1212.2	1215.1	1215.9	1215.9	1215.9	1215.1
47°	1197.1	1197.1	1195.9	1193.4	1191.4	1193.4	1195.9	1197.1	1197.1	1197.1	1195.9
47.5°	1177.5	1177.5	1176.2	1173.8	1171.7	1173.8	1176.2	1177.5	1177.5	1177.5	1176.2
48°	1157.0	1157.0	1156.2	1153.7	1152.1	1153.7	1156.2	1157.0	1157.0	1157.0	1156.2
48.5°	1135.8	1135.8	1134.9	1133.3	1131.7	1133.3	1134.9	1135.8	1135.8	1135.8	1134.9
49°	1113.3	1113.3	1112.9	1111.6	1110.8	1111.6	1112.9	1113.3	1113.3	1113.3	1112.9
49.5°	1090.8	1090.4	1090.8	1089.6	1089.1	1089.6	1090.8	1090.4	1090.8	1090.4	1090.8
50°	1066.7	1067.1	1067.9	1067.1	1066.7	1067.1	1067.9	1067.1	1066.7	1067.1	1067.9
50.5°	1041.7	1043.4	1044.6	1044.2	1044.2	1044.2	1044.6	1043.4	1041.7	1043.4	1044.6
51°	1018.0	1018.8	1020.1	1021.3	1022.1	1021.3	1020.1	1018.8	1018.0	1018.8	1020.1
51.5°	994.7	995.1	996.8	998.0	999.2	998.0	996.8	995.1	994.7	995.1	996.8
52°	971.4	972.2	973.9	975.5	977.5	975.5	973.9	972.2	971.4	972.2	973.9
52.5°	949.3	950.1	952.2	954.2	955.9	954.2	952.2	950.1	949.3	950.1	952.2
53°	928.5	929.3	931.3	933.0	934.6	933.0	931.3	929.3	928.5	929.3	931.3
53.5°	908.9	909.7	910.5	911.3	912.5	911.3	910.5	909.7	908.9	909.7	910.5
54°	890.5	889.6	889.6	889.2	889.2	889.2	889.6	889.6	890.5	889.6	889.6
54.5°	870.0	869.2	867.6	865.5	863.9	865.5	867.6	869.2	870.0	869.2	867.6
55°	847.1	845.5	843.0	840.2	837.7	840.2	843.0	845.5	847.1	845.5	843.0
55.5°	820.1	818.1	815.6	813.2	810.7	813.2	815.6	818.1	820.1	818.1	815.6
56°	789.9	788.7	786.2	783.7	780.9	783.7	786.2	788.7	789.9	788.7	786.2
56.5°	756.8	755.5	754.7	752.3	750.2	752.3	754.7	755.5	756.8	755.5	754.7
57°	722.0	721.2	720.8	718.7	716.3	718.7	720.8	721.2	722.0	721.2	720.8
57.5°	685.2	685.2	685.2	683.2	681.5	683.2	685.2	685.2	685.2	685.2	685.2
58°	648.0	648.4	648.8	647.6	646.0	647.6	648.8	648.4	648.0	648.4	648.8
58.5°	610.0	610.0	611.2	610.8	609.2	610.8	611.2	610.0	610.0	610.0	611.2
59°	571.1	572.0	573.2	573.6	573.2	573.6	573.2	572.0	571.1	572.0	573.2
59.5°	532.3	533.1	535.2	536.8	536.8	536.8	535.2	533.1	532.3	533.1	535.2
60°	493.1	494.7	497.1	500.4	500.0	500.4	497.1	494.7	493.1	494.7	497.1
60.5°	454.2	456.3	459.5	463.2	463.6	463.2	459.5	456.3	454.2	456.3	459.5
61°	416.6	419.1	422.3	426.4	427.6	426.4	422.3	419.1	416.6	419.1	422.3
61.5°	379.8	381.9	386.4	390.0	392.5	390.0	386.4	381.9	379.8	381.9	386.4
62°	343.0	345.9	350.8	355.3	358.6	355.3	350.8	345.9	343.0	345.9	350.8
62.5°	306.6	309.9	316.4	321.3	324.6	321.3	316.4	309.9	306.6	309.9	316.4
63°	271.9	275.6	282.9	288.2	291.9	288.2	282.9	275.6	271.9	275.6	282.9
63.5°	238.8	242.4	250.2	256.8	262.9	256.8	250.2	242.4	238.8	242.4	250.2
64°	206.9	211.0	218.7	227.3	234.3	227.3	218.7	211.0	206.9	211.0	218.7
64.5°	176.2	181.5	189.7	198.7	205.2	198.7	189.7	181.5	176.2	181.5	189.7
65°	147.6	154.5	162.3	170.9	176.6	170.9	162.3	154.5	147.6	154.5	162.3
65.5°	121.4	129.2	136.1	144.3	149.6	144.3	136.1	129.2	121.4	129.2	136.1
66°	97.3	106.7	112.0	120.2	125.1	120.2	112.0	106.7	97.3	106.7	112.0





TEST NUMBER: P776454

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRMB-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	37.2	50.3	56.0	63.0	66.6	63.0	56.0	50.3	37.2	50.3	56.0
68°	21.7	34.8	42.5	47.4	51.9	47.4	42.5	34.8	21.7	34.8	42.5
68.5°	8.2	23.3	30.7	36.0	41.3	36.0	30.7	23.3	8.2	23.3	30.7
69°	4.1	13.9	19.6	24.9	30.7	24.9	19.6	13.9	4.1	13.9	19.6
69.5°	2.5	6.1	11.0	16.4	22.1	16.4	11.0	6.1	2.5	6.1	11.0
70°	1.2	2.9	6.1	9.4	13.5	9.4	6.1	2.9	1.2	2.9	6.1
70.5°	0.4	1.6	3.7	4.5	5.3	4.5	3.7	1.6	0.4	1.6	3.7
71°	0.4	0.8	2.0	2.5	2.0	2.5	2.0	0.8	0.4	0.8	2.0
71.5°	0.4	0.4	1.2	1.2	0.4	1.2	1.2	0.4	0.4	0.4	1.2
72°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
72.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
73°	0.0	0.0	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0
73.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81°	0.0	0.0	0.0	0.0	0.0	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: P776454  
CATALOG NUMBER: HCDJBL3040CSD-HCD81TRMB-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: P776454

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRMB-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1914.2	1914.2	1914.2	1914.2	1914.2	1914.2
0.5°	1914.2	1913.8	1914.2	1914.2	1914.2	1914.2
1°	1913.8	1913.4	1913.8	1914.2	1914.2	1914.2
1.5°	1913.8	1913.4	1913.8	1913.8	1913.8	1913.8
2°	1913.0	1912.6	1913.0	1913.4	1913.4	1913.4
2.5°	1912.6	1911.7	1912.6	1912.6	1912.6	1912.1
3°	1911.7	1910.9	1911.7	1911.7	1911.7	1911.3
3.5°	1910.5	1910.1	1910.5	1910.5	1910.5	1910.5
4°	1909.3	1908.5	1909.3	1909.3	1909.3	1909.3
4.5°	1908.1	1907.2	1908.1	1908.1	1908.1	1908.1
5°	1906.4	1905.6	1906.4	1906.4	1906.4	1906.4
5.5°	1904.8	1904.0	1904.8	1904.8	1904.8	1904.8
6°	1902.7	1902.3	1902.7	1902.7	1903.1	1902.7
6.5°	1900.7	1900.3	1900.7	1901.1	1901.1	1900.7
7°	1898.7	1898.2	1898.7	1898.7	1898.7	1898.7
7.5°	1896.6	1895.8	1896.6	1896.2	1896.2	1896.2
8°	1893.7	1893.3	1893.7	1893.7	1893.7	1893.7
8.5°	1891.3	1890.5	1891.3	1891.3	1891.3	1891.3
9°	1888.4	1888.0	1888.4	1888.4	1888.4	1888.4
9.5°	1885.6	1884.8	1885.6	1885.6	1885.6	1885.2
10°	1882.3	1881.9	1882.3	1882.3	1882.3	1882.3
10.5°	1879.0	1878.6	1879.0	1879.0	1879.0	1879.0
11°	1875.8	1874.9	1875.8	1875.3	1875.3	1875.3
11.5°	1872.1	1871.3	1872.1	1871.7	1871.7	1871.7
12°	1868.0	1867.6	1868.0	1868.0	1868.0	1868.0
12.5°	1864.3	1863.5	1864.3	1863.9	1863.9	1863.9
13°	1859.8	1859.4	1859.8	1859.8	1859.8	1859.8
13.5°	1855.7	1854.9	1855.7	1855.7	1855.7	1855.3
14°	1851.2	1850.4	1851.2	1851.2	1851.2	1850.8
14.5°	1846.3	1845.9	1846.3	1846.3	1846.3	1846.3
15°	1841.8	1841.0	1841.8	1841.4	1841.4	1841.4
15.5°	1836.5	1836.1	1836.5	1836.5	1836.5	1836.5
16°	1831.6	1830.8	1831.6	1831.6	1831.6	1831.2
16.5°	1826.3	1825.9	1826.3	1826.3	1825.9	1825.9
17°	1820.6	1820.2	1820.6	1821.0	1820.6	1820.6
17.5°	1815.2	1814.8	1815.2	1815.2	1814.8	1814.8
18°	1809.1	1808.7	1809.1	1809.1	1809.1	1809.1
18.5°	1803.4	1802.6	1803.4	1803.4	1803.0	1803.0
19°	1797.3	1796.4	1797.3	1797.3	1796.9	1796.9
19.5°	1790.7	1790.3	1790.7	1790.7	1790.7	1790.7
20°	1784.2	1783.8	1784.2	1784.2	1784.2	1784.2
20.5°	1777.6	1776.8	1777.6	1777.6	1777.6	1777.2
21°	1770.7	1770.3	1770.7	1770.7	1770.7	1770.7



TEST NUMBER: P776454

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRMB-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	1749.4	1748.6	1749.4	1749.4	1749.4	1749.0
23°	1741.7	1741.2	1741.7	1741.7	1741.7	1741.7
23.5°	1734.3	1733.5	1734.3	1734.3	1734.3	1733.9
24°	1726.1	1725.7	1726.1	1726.5	1726.1	1726.1
24.5°	1718.4	1717.5	1718.4	1718.8	1718.4	1717.9
25°	1710.2	1709.4	1710.2	1710.6	1710.2	1710.2
25.5°	1702.0	1701.2	1702.0	1702.4	1702.0	1701.6
26°	1693.4	1692.6	1693.4	1693.8	1693.4	1693.4
26.5°	1684.8	1684.0	1684.8	1685.2	1685.2	1684.8
27°	1676.2	1675.4	1676.2	1676.7	1676.2	1676.2
27.5°	1667.2	1666.4	1667.2	1667.7	1667.7	1667.2
28°	1658.3	1657.4	1658.3	1658.7	1658.7	1658.3
28.5°	1649.3	1648.4	1649.3	1649.7	1649.3	1649.3
29°	1639.9	1638.6	1639.9	1640.3	1640.3	1639.9
29.5°	1630.5	1629.2	1630.5	1630.9	1630.9	1630.5
30°	1620.6	1619.8	1620.6	1621.5	1621.5	1621.1
30.5°	1611.2	1610.0	1611.2	1611.6	1611.6	1611.6
31°	1601.0	1600.2	1601.0	1602.2	1601.8	1601.4
31.5°	1591.2	1590.0	1591.2	1592.0	1592.0	1591.6
32°	1581.4	1579.8	1581.4	1582.2	1582.2	1581.8
32.5°	1570.8	1569.5	1570.8	1572.0	1572.0	1571.6
33°	1561.0	1559.3	1561.0	1561.8	1561.8	1561.0
33.5°	1550.3	1548.7	1550.3	1551.5	1551.1	1550.7
34°	1539.7	1538.5	1539.7	1540.9	1540.5	1540.1
34.5°	1529.1	1527.8	1529.1	1530.3	1529.9	1529.5
35°	1518.4	1516.8	1518.4	1519.7	1519.2	1518.8
35.5°	1507.4	1505.8	1507.4	1508.6	1508.6	1507.8
36°	1496.4	1494.7	1496.4	1498.0	1497.6	1497.2
36.5°	1485.3	1483.7	1485.3	1487.0	1486.5	1486.1
37°	1473.9	1472.6	1473.9	1475.5	1475.1	1474.7
37.5°	1462.4	1460.8	1462.4	1464.5	1464.1	1463.2
38°	1451.0	1449.7	1451.0	1453.0	1452.2	1451.8
38.5°	1439.5	1437.9	1439.5	1441.2	1440.8	1439.9
39°	1427.7	1426.0	1427.7	1429.7	1429.3	1428.5
39.5°	1415.8	1413.8	1415.8	1417.4	1417.0	1416.6
40°	1403.5	1401.5	1403.5	1405.2	1405.2	1404.4
40.5°	1390.9	1389.2	1390.9	1392.9	1392.5	1392.1
41°	1378.6	1376.6	1378.6	1380.7	1380.2	1379.4
41.5°	1365.5	1363.9	1365.5	1367.6	1367.2	1366.8
42°	1352.4	1350.4	1352.4	1354.5	1354.1	1353.7
42.5°	1339.0	1336.9	1339.0	1341.0	1341.0	1340.2
43°	1325.1	1323.0	1325.1	1327.1	1327.1	1326.7
43.5°	1310.7	1308.7	1310.7	1312.8	1312.8	1312.4

TEST NUMBER: P776454

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRMB-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	1264.5	1262.5	1264.5	1266.6	1267.0	1267.0
45.5°	1247.8	1245.7	1247.8	1250.2	1250.6	1250.6
46°	1230.6	1228.2	1230.6	1233.1	1233.9	1233.9
46.5°	1212.2	1210.6	1212.2	1215.1	1215.9	1215.9
47°	1193.4	1191.4	1193.4	1195.9	1197.1	1197.1
47.5°	1173.8	1171.7	1173.8	1176.2	1177.5	1177.5
48°	1153.7	1152.1	1153.7	1156.2	1157.0	1157.0
48.5°	1133.3	1131.7	1133.3	1134.9	1135.8	1135.8
49°	1111.6	1110.8	1111.6	1112.9	1113.3	1113.3
49.5°	1089.6	1089.1	1089.6	1090.8	1090.4	1090.8
50°	1067.1	1066.7	1067.1	1067.9	1067.1	1066.7
50.5°	1044.2	1044.2	1044.2	1044.6	1043.4	1041.7
51°	1021.3	1022.1	1021.3	1020.1	1018.8	1018.0
51.5°	998.0	999.2	998.0	996.8	995.1	994.7
52°	975.5	977.5	975.5	973.9	972.2	971.4
52.5°	954.2	955.9	954.2	952.2	950.1	949.3
53°	933.0	934.6	933.0	931.3	929.3	928.5
53.5°	911.3	912.5	911.3	910.5	909.7	908.9
54°	889.2	889.2	889.2	889.6	889.6	890.5
54.5°	865.5	863.9	865.5	867.6	869.2	870.0
55°	840.2	837.7	840.2	843.0	845.5	847.1
55.5°	813.2	810.7	813.2	815.6	818.1	820.1
56°	783.7	780.9	783.7	786.2	788.7	789.9
56.5°	752.3	750.2	752.3	754.7	755.5	756.8
57°	718.7	716.3	718.7	720.8	721.2	722.0
57.5°	683.2	681.5	683.2	685.2	685.2	685.2
58°	647.6	646.0	647.6	648.8	648.4	648.0
58.5°	610.8	609.2	610.8	611.2	610.0	610.0
59°	573.6	573.2	573.6	573.2	572.0	571.1
59.5°	536.8	536.8	536.8	535.2	533.1	532.3
60°	500.4	500.0	500.4	497.1	494.7	493.1
60.5°	463.2	463.6	463.2	459.5	456.3	454.2
61°	426.4	427.6	426.4	422.3	419.1	416.6
61.5°	390.0	392.5	390.0	386.4	381.9	379.8
62°	355.3	358.6	355.3	350.8	345.9	343.0
62.5°	321.3	324.6	321.3	316.4	309.9	306.6
63°	288.2	291.9	288.2	282.9	275.6	271.9
63.5°	256.8	262.9	256.8	250.2	242.4	238.8
64°	227.3	234.3	227.3	218.7	211.0	206.9
64.5°	198.7	205.2	198.7	189.7	181.5	176.2
65°	170.9	176.6	170.9	162.3	154.5	147.6
65.5°	144.3	149.6	144.3	136.1	129.2	121.4
66°	120.2	125.1	120.2	112.0	106.7	97.3



TEST NUMBER: P776454

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRMB-4000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	63.0	66.6	63.0	56.0	50.3	37.2
68°	47.4	51.9	47.4	42.5	34.8	21.7
68.5°	36.0	41.3	36.0	30.7	23.3	8.2
69°	24.9	30.7	24.9	19.6	13.9	4.1
69.5°	16.4	22.1	16.4	11.0	6.1	2.5
70°	9.4	13.5	9.4	6.1	2.9	1.2
70.5°	4.5	5.3	4.5	3.7	1.6	0.4
71°	2.5	2.0	2.5	2.0	0.8	0.4
71.5°	1.2	0.4	1.2	1.2	0.4	0.4
72°	0.4	0.4	0.4	0.4	0.4	0.4
72.5°	0.4	0.4	0.4	0.4	0.4	0.4
73°	0.4	0.4	0.4	0.0	0.0	0.0
73.5°	0.0	0.0	0.0	0.0	0.0	0.0
74°	0.0	0.0	0.0	0.0	0.0	0.0
74.5°	0.0	0.0	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0	0.0	0.0
75.5°	0.0	0.0	0.0	0.0	0.0	0.0
76°	0.0	0.0	0.0	0.0	0.0	0.0
76.5°	0.0	0.0	0.0	0.0	0.0	0.0
77°	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0
78°	0.0	0.0	0.0	0.0	0.0	0.0
78.5°	0.0	0.0	0.0	0.0	0.0	0.0
79°	0.0	0.0	0.0	0.0	0.0	0.0
79.5°	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0
80.5°	0.0	0.0	0.0	0.0	0.0	0.0
81°	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
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: P776454

CATALOG NUMBER: HCDJBL3040CSD-HCD81TRMB-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



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Scaled Data Report





21.5°	1763.7	1763.7	1763.7	1763.7	1762.9	1763.7	1763.7	1763.7	1763.7	1763.7	1763.7	1763.7
22°	1756.4	1756.4	1756.8	1756.8	1756.0	1756.8	1756.8	1756.4	1756.4	1756.4	1756.4	1756.8



44°	1297.7	1298.1	1297.7	1295.6	1294.0	1295.6	1297.7	1298.1	1297.7	1298.1	1297.7
44.5°	1282.5	1282.9	1282.9	1280.5	1278.0	1280.5	1282.9	1282.9	1282.5	1282.9	1282.9



66.5°	76.9	86.3	90.8	98.5	103.0	98.5	90.8	86.3	76.9	86.3	90.8
67°	56.8	66.2	72.8	79.3	83.0	79.3	72.8	66.2	56.8	66.2	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°	1763.7	1762.9	1763.7	1763.7	1763.7	1763.7
22°	1756.8	1756.0	1756.8	1756.8	1756.4	1756.4



44°	1295.6	1294.0	1295.6	1297.7	1298.1	1297.7
44.5°	1280.5	1278.0	1280.5	1282.9	1282.9	1282.5

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66.5°	98.5	103.0	98.5	90.8	86.3	76.9
67°	79.3	83.0	79.3	72.8	66.2	56.8

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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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Scaled Data Report



(END OF REPORT)