

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: P775846

Luminaire Tested: HCDJBL510CSD-HCD82TRH-1000lm-3000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775846
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B063-HCD82TRH)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD82TRH-1000lm-3000K
Description: 8 INCH ROUND NARROW HAZE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3000K CCT
Ballast/Driver: -

Summary

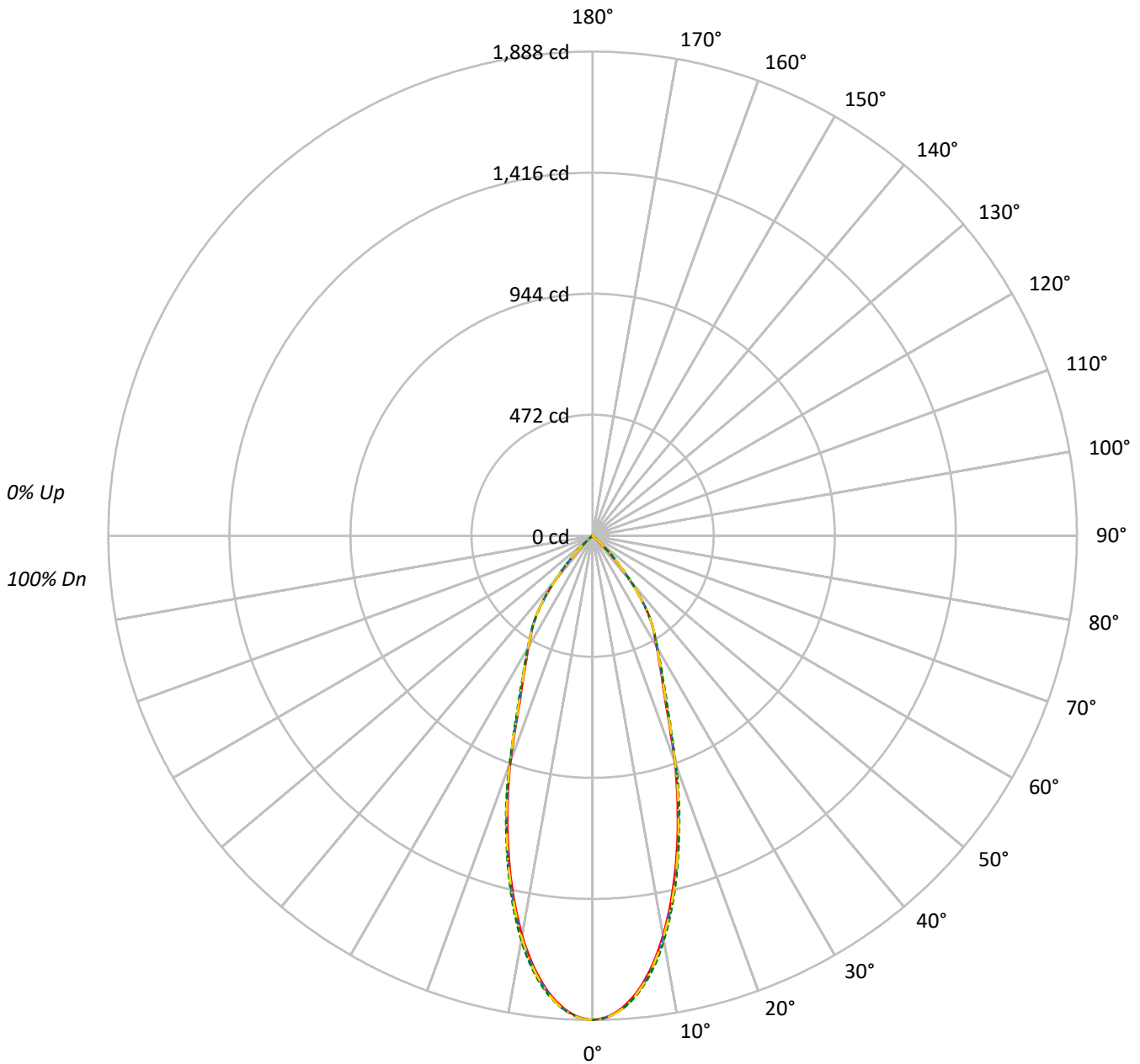
Lumens per Lamp: N/A
Luminaire Lumens: 1136.9 lumens
Efficiency: N/A
Efficacy: 113.7 lumens/watt
Spacing Criteria (0/90/45): 0.64 / 0.65 / 0.67
Luminous Opening: Circular (Dia: 0.67' x H: 0')
CIE Type: Direct

Input Watts (W): 10
Input Voltage (V): NR
Input Current (Ain): 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	114	111	109	107	111	109	107	105	105	103	102	101	100	99	98	97	96	94	94	94	94	94	94		
	2	108	104	100	97	106	102	99	96	99	96	94	96	94	92	93	91	90	88	88	88	88	88	88		
	3	103	97	93	89	101	96	92	88	93	90	87	91	88	85	89	86	84	82	82	82	82	82	82		
	4	98	91	86	82	97	90	85	82	88	84	81	86	82	80	84	81	79	77	77	77	77	77	77		
	5	94	86	80	76	92	85	80	76	83	79	75	82	78	75	80	77	74	72	72	72	72	72	72		
	6	89	81	75	71	88	80	75	71	79	74	70	77	73	70	76	72	70	68	68	68	68	68	68		
	7	85	76	71	67	84	76	70	67	75	70	66	73	69	66	72	68	65	64	64	64	64	64	64		
	8	81	72	67	63	80	72	66	63	71	66	62	70	65	62	69	65	62	61	61	61	61	61	61		
	9	78	69	63	59	77	68	63	59	67	62	59	66	62	59	66	62	59	57	57	57	57	57	57		
	10	74	65	60	56	74	65	60	56	64	59	56	63	59	56	63	58	56	54	54	54	54	54	54		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	57629	57629	57629	57629
5°	55321	55572	55321	55572
10°	49053	49667	49053	49667
15°	40091	40739	40091	40739
20°	30414	30794	30414	30794
25°	21930	22523	21930	22523
30°	17591	17863	17591	17863
35°	14401	14278	14401	14278
40°	9035	9222	9035	9222
45°	3441	3994	3441	3994
50°	513	722	513	722
55°	106	112	106	112
60°	67	67	67	67
65°	43	43	43	43
70°	27	36	27	36
75°	24	24	24	24
80°	18	18	18	18
85°	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 45°
 Luminance: 3994 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	165.8	14.6
10°-20°	351.7	30.9
20°-30°	308.9	27.2
30°-40°	233.3	20.5
40°-50°	73.5	6.5
50°-60°	2.8	0.2
60°-70°	0.7	0.1
70°-80°	0.2	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°	826.4	72.7
0°-40°	1059.7	93.2
0°-60°	1136.0	99.9
0°-90°	1136.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1136.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1888	1888	1888	1888	1888	
5°	1805	1813	1805	1813	1805	165
15°	1268	1289	1268	1289	1268	349
25°	651	669	651	669	651	306
35°	386	383	386	383	386	233
45°	80	92	80	92	80	70
55°	2	2	2	2	2	2
65°	1	1	1	1	1	1
75°	0	0	0	0	0	0
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°	1887.6	1887.6	1887.6	1887.6	1887.6	1887.6	1887.6	1887.6	1887.6	1887.6	1887.6
0.5°	1885.9	1886.3	1887.3	1887.7	1885.9	1887.7	1887.3	1886.3	1885.9	1886.3	1887.3
1°	1883.3	1883.8	1884.9	1885.6	1883.7	1885.6	1884.9	1883.8	1883.3	1883.8	1884.9
1.5°	1879.0	1879.7	1881.0	1881.8	1880.0	1881.8	1881.0	1879.7	1879.0	1879.7	1881.0
2°	1873.3	1873.8	1875.6	1876.6	1874.9	1876.6	1875.6	1873.8	1873.3	1873.8	1875.6
2.5°	1865.5	1866.5	1868.5	1869.8	1868.1	1869.8	1868.5	1866.5	1865.5	1866.5	1868.5
3°	1856.6	1857.6	1860.1	1861.6	1860.1	1861.6	1860.1	1857.6	1856.6	1857.6	1860.1
3.5°	1846.0	1847.2	1850.0	1851.9	1850.8	1851.9	1850.0	1847.2	1846.0	1847.2	1850.0
4°	1833.6	1835.2	1838.4	1840.8	1839.8	1840.8	1838.4	1835.2	1833.6	1835.2	1838.4
4.5°	1820.1	1821.5	1825.4	1828.2	1827.2	1828.2	1825.4	1821.5	1820.1	1821.5	1825.4
5°	1805.1	1806.6	1810.9	1814.2	1813.3	1814.2	1810.9	1806.6	1805.1	1806.6	1810.9
5.5°	1788.5	1790.2	1794.7	1798.5	1798.1	1798.5	1794.7	1790.2	1788.5	1790.2	1794.7
6°	1770.5	1772.2	1777.1	1781.6	1781.7	1781.6	1777.1	1772.2	1770.5	1772.2	1777.1
6.5°	1751.6	1753.0	1758.4	1763.4	1763.7	1763.4	1758.4	1753.0	1751.6	1753.0	1758.4
7°	1731.0	1732.6	1738.2	1743.8	1745.0	1743.8	1738.2	1732.6	1731.0	1732.6	1738.2
7.5°	1709.3	1710.7	1716.5	1722.4	1724.0	1722.4	1716.5	1710.7	1709.3	1710.7	1716.5
8°	1686.1	1687.6	1693.7	1700.2	1702.2	1700.2	1693.7	1687.6	1686.1	1687.6	1693.7
8.5°	1662.0	1663.3	1669.4	1676.7	1679.0	1676.7	1669.4	1663.3	1662.0	1663.3	1669.4
9°	1636.2	1637.9	1644.3	1652.1	1654.7	1652.1	1644.3	1637.9	1636.2	1637.9	1644.3
9.5°	1609.8	1611.7	1617.8	1626.0	1629.0	1626.0	1617.8	1611.7	1609.8	1611.7	1617.8
10°	1582.3	1584.3	1590.7	1599.5	1602.1	1599.5	1590.7	1584.3	1582.3	1584.3	1590.7
10.5°	1553.8	1555.9	1562.4	1571.8	1574.2	1571.8	1562.4	1555.9	1553.8	1555.9	1562.4
11°	1523.4	1526.7	1533.3	1543.1	1545.2	1543.1	1533.3	1526.7	1523.4	1526.7	1533.3
11.5°	1494.1	1496.8	1503.4	1512.9	1515.4	1512.9	1503.4	1496.8	1494.1	1496.8	1503.4
12°	1463.0	1466.2	1473.0	1482.6	1484.9	1482.6	1473.0	1466.2	1463.0	1466.2	1473.0
12.5°	1431.8	1435.0	1442.0	1451.1	1453.1	1451.1	1442.0	1435.0	1431.8	1435.0	1442.0
13°	1399.7	1403.4	1410.8	1419.9	1421.6	1419.9	1410.8	1403.4	1399.7	1403.4	1410.8
13.5°	1367.7	1371.3	1379.1	1387.1	1389.4	1387.1	1379.1	1371.3	1367.7	1371.3	1379.1
14°	1334.8	1338.8	1346.7	1353.9	1356.5	1353.9	1346.7	1338.8	1334.8	1338.8	1346.7
14.5°	1301.6	1305.7	1313.7	1320.5	1322.7	1320.5	1313.7	1305.7	1301.6	1305.7	1313.7
15°	1268.4	1272.6	1280.4	1287.4	1288.9	1287.4	1280.4	1272.6	1268.4	1272.6	1280.4
15.5°	1235.0	1239.1	1247.0	1253.6	1255.9	1253.6	1247.0	1239.1	1235.0	1239.1	1247.0
16°	1201.8	1205.4	1213.3	1219.9	1222.7	1219.9	1213.3	1205.4	1201.8	1205.4	1213.3
16.5°	1169.1	1172.1	1180.0	1186.4	1189.4	1186.4	1180.0	1172.1	1169.1	1172.1	1180.0
17°	1135.4	1138.8	1145.9	1153.5	1155.7	1153.5	1145.9	1138.8	1135.4	1138.8	1145.9
17.5°	1101.8	1105.2	1112.3	1120.0	1122.7	1120.0	1112.3	1105.2	1101.8	1105.2	1112.3
18°	1068.9	1071.4	1079.1	1086.5	1089.2	1086.5	1079.1	1071.4	1068.9	1071.4	1079.1
18.5°	1035.9	1038.5	1045.3	1052.5	1055.4	1052.5	1045.3	1038.5	1035.9	1038.5	1045.3
19°	1002.8	1005.3	1012.0	1018.2	1021.4	1018.2	1012.0	1005.3	1002.8	1005.3	1012.0
19.5°	969.8	972.4	977.9	983.2	985.7	983.2	977.9	972.4	969.8	972.4	977.9
20°	936.1	938.4	942.7	947.7	947.8	947.7	942.7	938.4	936.1	938.4	942.7
20.5°	902.0	903.4	908.1	912.8	912.2	912.8	908.1	903.4	902.0	903.4	908.1
21°	867.2	869.6	874.1	878.7	878.5	878.7	874.1	869.6	867.2	869.6	874.1



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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°	770.5	773.3	777.4	784.9	788.1	784.9	777.4	773.3	770.5	773.3	777.4
23°	742.6	744.8	749.7	756.0	759.7	756.0	749.7	744.8	742.6	744.8	749.7
23.5°	715.1	720.4	724.2	729.5	733.0	729.5	724.2	720.4	715.1	720.4	724.2
24°	693.4	695.5	700.9	706.5	711.2	706.5	700.9	695.5	693.4	695.5	700.9
24.5°	671.1	673.5	678.8	684.5	690.1	684.5	678.8	673.5	671.1	673.5	678.8
25°	651.0	653.5	658.5	663.3	668.6	663.3	658.5	653.5	651.0	653.5	658.5
25.5°	633.7	634.9	638.9	643.0	647.6	643.0	638.9	634.9	633.7	634.9	638.9
26°	616.7	617.7	620.4	624.2	627.0	624.2	620.4	617.7	616.7	617.7	620.4
26.5°	599.0	600.6	603.7	607.1	608.8	607.1	603.7	600.6	599.0	600.6	603.7
27°	582.0	583.8	587.9	591.6	593.3	591.6	587.9	583.8	582.0	583.8	587.9
27.5°	566.4	568.1	572.1	576.0	578.4	576.0	572.1	568.1	566.4	568.1	572.1
28°	552.0	553.4	556.7	560.3	562.3	560.3	556.7	553.4	552.0	553.4	556.7
28.5°	538.3	539.5	542.3	545.3	547.5	545.3	542.3	539.5	538.3	539.5	542.3
29°	525.0	526.1	528.7	531.6	533.0	531.6	528.7	526.1	525.0	526.1	528.7
29.5°	511.8	512.9	515.6	518.2	519.5	518.2	515.6	512.9	511.8	512.9	515.6
30°	499.0	500.0	502.6	505.1	506.7	505.1	502.6	500.0	499.0	500.0	502.6
30.5°	486.7	487.5	490.1	492.7	494.2	492.7	490.1	487.5	486.7	487.5	490.1
31°	474.5	475.9	478.2	480.9	482.2	480.9	478.2	475.9	474.5	475.9	478.2
31.5°	463.4	464.2	466.8	469.2	470.9	469.2	466.8	464.2	463.4	464.2	466.8
32°	452.4	453.4	455.8	458.1	459.5	458.1	455.8	453.4	452.4	453.4	455.8
32.5°	442.2	443.2	445.3	447.0	447.8	447.0	445.3	443.2	442.2	443.2	445.3
33°	432.7	433.2	434.5	435.3	435.2	435.3	434.5	433.2	432.7	433.2	434.5
33.5°	422.9	422.8	422.9	422.9	422.7	422.9	422.9	422.8	422.9	422.8	422.9
34°	412.0	411.3	410.4	411.6	409.3	411.6	410.4	411.3	412.0	411.3	410.4
34.5°	399.4	399.2	399.0	398.2	396.2	398.2	399.0	399.2	399.4	399.2	399.0
35°	386.4	385.4	385.4	384.6	383.1	384.6	385.4	385.4	386.4	385.4	385.4
35.5°	372.9	371.8	371.8	370.3	369.4	370.3	371.8	371.8	372.9	371.8	371.8
36°	358.1	357.5	357.8	355.4	355.2	355.4	357.8	357.5	358.1	357.5	357.8
36.5°	342.8	342.7	342.7	340.4	340.0	340.4	342.7	342.7	342.8	342.7	342.7
37°	327.0	327.0	327.1	325.3	324.6	325.3	327.1	327.0	327.0	327.0	327.1
37.5°	311.2	310.8	312.2	310.0	309.5	310.0	312.2	310.8	311.2	310.8	312.2
38°	295.0	294.3	294.7	294.1	294.2	294.1	294.7	294.3	295.0	294.3	294.7
38.5°	278.2	277.6	277.4	278.3	278.6	278.3	277.4	277.6	278.2	277.6	277.4
39°	261.1	260.8	260.3	262.4	262.5	262.4	260.3	260.8	261.1	260.8	260.3
39.5°	243.8	243.8	243.8	246.3	247.0	246.3	243.8	243.8	243.8	243.8	243.8
40°	226.7	227.2	228.2	230.4	231.4	230.4	228.2	227.2	226.7	227.2	228.2
40.5°	209.8	210.4	212.7	214.4	216.2	214.4	212.7	210.4	209.8	210.4	212.7
41°	193.2	194.1	197.1	198.9	200.8	198.9	197.1	194.1	193.2	194.1	197.1
41.5°	176.5	178.1	181.5	183.6	185.8	183.6	181.5	178.1	176.5	178.1	181.5
42°	160.6	162.4	166.4	168.8	170.9	168.8	166.4	162.4	160.6	162.4	166.4
42.5°	145.2	147.2	151.7	154.8	156.7	154.8	151.7	147.2	145.2	147.2	151.7
43°	130.2	133.0	137.7	141.1	142.8	141.1	137.7	133.0	130.2	133.0	137.7
43.5°	116.1	119.4	124.0	127.8	129.2	127.8	124.0	119.4	116.1	119.4	124.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	79.7	81.4	85.6	90.6	92.5	90.6	85.6	81.4	79.7	81.4	85.6
45.5°	68.7	70.4	74.6	79.6	81.6	79.6	74.6	70.4	68.7	70.4	74.6
46°	58.1	60.2	64.5	69.6	72.9	69.6	64.5	60.2	58.1	60.2	64.5
46.5°	49.1	50.7	55.6	60.4	64.1	60.4	55.6	50.7	49.1	50.7	55.6
47°	41.1	43.0	47.2	51.6	55.3	51.6	47.2	43.0	41.1	43.0	47.2
47.5°	34.1	35.6	39.3	43.1	46.5	43.1	39.3	35.6	34.1	35.6	39.3
48°	28.3	29.2	32.2	35.3	37.8	35.3	32.2	29.2	28.3	29.2	32.2
48.5°	22.9	24.0	26.0	28.8	30.9	28.8	26.0	24.0	22.9	24.0	26.0
49°	17.9	19.1	21.2	23.0	24.8	23.0	21.2	19.1	17.9	19.1	21.2
49.5°	14.0	14.9	16.7	18.4	19.7	18.4	16.7	14.9	14.0	14.9	16.7
50°	10.8	11.4	12.8	14.2	15.2	14.2	12.8	11.4	10.8	11.4	12.8
50.5°	8.1	8.2	9.7	11.1	11.8	11.1	9.7	8.2	8.1	8.2	9.7
51°	5.6	6.0	7.2	8.8	10.0	8.8	7.2	6.0	5.6	6.0	7.2
51.5°	3.7	4.5	5.6	6.6	8.3	6.6	5.6	4.5	3.7	4.5	5.6
52°	3.2	3.4	4.2	5.1	6.4	5.1	4.2	3.4	3.2	3.4	4.2
52.5°	2.9	3.0	3.1	3.9	4.7	3.9	3.1	3.0	2.9	3.0	3.1
53°	2.7	2.8	2.8	3.0	3.0	3.0	2.8	2.8	2.7	2.8	2.8
53.5°	2.4	2.6	2.7	2.7	2.6	2.7	2.7	2.6	2.4	2.6	2.7
54°	2.3	2.3	2.4	2.4	2.3	2.4	2.4	2.3	2.3	2.3	2.4
54.5°	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2
55°	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1
55.5°	1.9	1.9	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0
56°	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.9
56.5°	1.7	1.7	1.8	1.8	1.7	1.8	1.8	1.7	1.7	1.7	1.8
57°	1.6	1.6	1.7	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.7
57.5°	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.6
58°	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.5
58.5°	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.4
59°	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.3	1.3
59.5°	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.2	1.2
60°	1.1	1.1	1.2	1.2	1.1	1.2	1.2	1.1	1.1	1.1	1.2
60.5°	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.1
61°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
61.5°	0.9	0.9	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	1.0
62°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
62.5°	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.9
63°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
63.5°	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.8
64°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
64.5°	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.7
65°	0.6	0.6	0.7	0.7	0.6	0.7	0.7	0.6	0.6	0.6	0.7
65.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
66°	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.6



TEST NUMBER: P775846

CATALOG NUMBER: HCDJBL510CSD-HCD82TRH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
68°	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5
68.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
69°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
69.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
70°	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4
70.5°	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3
71°	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
71.5°	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
72°	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
72.5°	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3
73°	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3
73.5°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
74°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
74.5°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
75°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
75.5°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
76°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
76.5°	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2
77°	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
77.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
78°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
78.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
79°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
79.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
80°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
80.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
81°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
81.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82°	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
82.5°	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
83°	0.0	0.0	0.0	0.1	0.1	0.1	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: P775846
CATALOG NUMBER: HCDJBL510CSD-HCD82TRH-1000lm-3000K

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: P775846

CATALOG NUMBER: HCDJBL510CSD-HCD82TRH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1887.6	1887.6	1887.6	1887.6	1887.6	1887.6
0.5°	1887.7	1885.9	1887.7	1887.3	1886.3	1885.9
1°	1885.6	1883.7	1885.6	1884.9	1883.8	1883.3
1.5°	1881.8	1880.0	1881.8	1881.0	1879.7	1879.0
2°	1876.6	1874.9	1876.6	1875.6	1873.8	1873.3
2.5°	1869.8	1868.1	1869.8	1868.5	1866.5	1865.5
3°	1861.6	1860.1	1861.6	1860.1	1857.6	1856.6
3.5°	1851.9	1850.8	1851.9	1850.0	1847.2	1846.0
4°	1840.8	1839.8	1840.8	1838.4	1835.2	1833.6
4.5°	1828.2	1827.2	1828.2	1825.4	1821.5	1820.1
5°	1814.2	1813.3	1814.2	1810.9	1806.6	1805.1
5.5°	1798.5	1798.1	1798.5	1794.7	1790.2	1788.5
6°	1781.6	1781.7	1781.6	1777.1	1772.2	1770.5
6.5°	1763.4	1763.7	1763.4	1758.4	1753.0	1751.6
7°	1743.8	1745.0	1743.8	1738.2	1732.6	1731.0
7.5°	1722.4	1724.0	1722.4	1716.5	1710.7	1709.3
8°	1700.2	1702.2	1700.2	1693.7	1687.6	1686.1
8.5°	1676.7	1679.0	1676.7	1669.4	1663.3	1662.0
9°	1652.1	1654.7	1652.1	1644.3	1637.9	1636.2
9.5°	1626.0	1629.0	1626.0	1617.8	1611.7	1609.8
10°	1599.5	1602.1	1599.5	1590.7	1584.3	1582.3
10.5°	1571.8	1574.2	1571.8	1562.4	1555.9	1553.8
11°	1543.1	1545.2	1543.1	1533.3	1526.7	1523.4
11.5°	1512.9	1515.4	1512.9	1503.4	1496.8	1494.1
12°	1482.6	1484.9	1482.6	1473.0	1466.2	1463.0
12.5°	1451.1	1453.1	1451.1	1442.0	1435.0	1431.8
13°	1419.9	1421.6	1419.9	1410.8	1403.4	1399.7
13.5°	1387.1	1389.4	1387.1	1379.1	1371.3	1367.7
14°	1353.9	1356.5	1353.9	1346.7	1338.8	1334.8
14.5°	1320.5	1322.7	1320.5	1313.7	1305.7	1301.6
15°	1287.4	1288.9	1287.4	1280.4	1272.6	1268.4
15.5°	1253.6	1255.9	1253.6	1247.0	1239.1	1235.0
16°	1219.9	1222.7	1219.9	1213.3	1205.4	1201.8
16.5°	1186.4	1189.4	1186.4	1180.0	1172.1	1169.1
17°	1153.5	1155.7	1153.5	1145.9	1138.8	1135.4
17.5°	1120.0	1122.7	1120.0	1112.3	1105.2	1101.8
18°	1086.5	1089.2	1086.5	1079.1	1071.4	1068.9
18.5°	1052.5	1055.4	1052.5	1045.3	1038.5	1035.9
19°	1018.2	1021.4	1018.2	1012.0	1005.3	1002.8
19.5°	983.2	985.7	983.2	977.9	972.4	969.8
20°	947.7	947.8	947.7	942.7	938.4	936.1
20.5°	912.8	912.2	912.8	908.1	903.4	902.0
21°	878.7	878.5	878.7	874.1	869.6	867.2



TEST NUMBER: P775846

CATALOG NUMBER: HCDJBL510CSD-HCD82TRH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	784.9	788.1	784.9	777.4	773.3	770.5
23°	756.0	759.7	756.0	749.7	744.8	742.6
23.5°	729.5	733.0	729.5	724.2	720.4	715.1
24°	706.5	711.2	706.5	700.9	695.5	693.4
24.5°	684.5	690.1	684.5	678.8	673.5	671.1
25°	663.3	668.6	663.3	658.5	653.5	651.0
25.5°	643.0	647.6	643.0	638.9	634.9	633.7
26°	624.2	627.0	624.2	620.4	617.7	616.7
26.5°	607.1	608.8	607.1	603.7	600.6	599.0
27°	591.6	593.3	591.6	587.9	583.8	582.0
27.5°	576.0	578.4	576.0	572.1	568.1	566.4
28°	560.3	562.3	560.3	556.7	553.4	552.0
28.5°	545.3	547.5	545.3	542.3	539.5	538.3
29°	531.6	533.0	531.6	528.7	526.1	525.0
29.5°	518.2	519.5	518.2	515.6	512.9	511.8
30°	505.1	506.7	505.1	502.6	500.0	499.0
30.5°	492.7	494.2	492.7	490.1	487.5	486.7
31°	480.9	482.2	480.9	478.2	475.9	474.5
31.5°	469.2	470.9	469.2	466.8	464.2	463.4
32°	458.1	459.5	458.1	455.8	453.4	452.4
32.5°	447.0	447.8	447.0	445.3	443.2	442.2
33°	435.3	435.2	435.3	434.5	433.2	432.7
33.5°	422.9	422.7	422.9	422.9	422.8	422.9
34°	411.6	409.3	411.6	410.4	411.3	412.0
34.5°	398.2	396.2	398.2	399.0	399.2	399.4
35°	384.6	383.1	384.6	385.4	385.4	386.4
35.5°	370.3	369.4	370.3	371.8	371.8	372.9
36°	355.4	355.2	355.4	357.8	357.5	358.1
36.5°	340.4	340.0	340.4	342.7	342.7	342.8
37°	325.3	324.6	325.3	327.1	327.0	327.0
37.5°	310.0	309.5	310.0	312.2	310.8	311.2
38°	294.1	294.2	294.1	294.7	294.3	295.0
38.5°	278.3	278.6	278.3	277.4	277.6	278.2
39°	262.4	262.5	262.4	260.3	260.8	261.1
39.5°	246.3	247.0	246.3	243.8	243.8	243.8
40°	230.4	231.4	230.4	228.2	227.2	226.7
40.5°	214.4	216.2	214.4	212.7	210.4	209.8
41°	198.9	200.8	198.9	197.1	194.1	193.2
41.5°	183.6	185.8	183.6	181.5	178.1	176.5
42°	168.8	170.9	168.8	166.4	162.4	160.6
42.5°	154.8	156.7	154.8	151.7	147.2	145.2
43°	141.1	142.8	141.1	137.7	133.0	130.2
43.5°	127.8	129.2	127.8	124.0	119.4	116.1



TEST NUMBER: P775846

CATALOG NUMBER: HCDJBL510CSD-HCD82TRH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	90.6	92.5	90.6	85.6	81.4	79.7
45.5°	79.6	81.6	79.6	74.6	70.4	68.7
46°	69.6	72.9	69.6	64.5	60.2	58.1
46.5°	60.4	64.1	60.4	55.6	50.7	49.1
47°	51.6	55.3	51.6	47.2	43.0	41.1
47.5°	43.1	46.5	43.1	39.3	35.6	34.1
48°	35.3	37.8	35.3	32.2	29.2	28.3
48.5°	28.8	30.9	28.8	26.0	24.0	22.9
49°	23.0	24.8	23.0	21.2	19.1	17.9
49.5°	18.4	19.7	18.4	16.7	14.9	14.0
50°	14.2	15.2	14.2	12.8	11.4	10.8
50.5°	11.1	11.8	11.1	9.7	8.2	8.1
51°	8.8	10.0	8.8	7.2	6.0	5.6
51.5°	6.6	8.3	6.6	5.6	4.5	3.7
52°	5.1	6.4	5.1	4.2	3.4	3.2
52.5°	3.9	4.7	3.9	3.1	3.0	2.9
53°	3.0	3.0	3.0	2.8	2.8	2.7
53.5°	2.7	2.6	2.7	2.7	2.6	2.4
54°	2.4	2.3	2.4	2.4	2.3	2.3
54.5°	2.2	2.2	2.2	2.2	2.2	2.1
55°	2.1	2.1	2.1	2.1	2.1	2.0
55.5°	2.0	2.0	2.0	2.0	1.9	1.9
56°	1.9	1.9	1.9	1.9	1.8	1.8
56.5°	1.8	1.7	1.8	1.8	1.7	1.7
57°	1.7	1.6	1.7	1.7	1.6	1.6
57.5°	1.6	1.6	1.6	1.6	1.5	1.5
58°	1.5	1.5	1.5	1.5	1.4	1.4
58.5°	1.4	1.4	1.4	1.4	1.3	1.3
59°	1.3	1.3	1.3	1.3	1.3	1.2
59.5°	1.2	1.2	1.2	1.2	1.2	1.1
60°	1.2	1.1	1.2	1.2	1.1	1.1
60.5°	1.1	1.1	1.1	1.1	1.0	1.0
61°	1.0	1.0	1.0	1.0	1.0	1.0
61.5°	1.0	1.0	1.0	1.0	0.9	0.9
62°	0.9	0.9	0.9	0.9	0.9	0.9
62.5°	0.9	0.9	0.9	0.9	0.8	0.8
63°	0.8	0.8	0.8	0.8	0.8	0.8
63.5°	0.8	0.8	0.8	0.8	0.7	0.7
64°	0.7	0.7	0.7	0.7	0.7	0.7
64.5°	0.7	0.7	0.7	0.7	0.7	0.6
65°	0.7	0.6	0.7	0.7	0.6	0.6
65.5°	0.6	0.6	0.6	0.6	0.6	0.6
66°	0.6	0.6	0.6	0.6	0.6	0.5



TEST NUMBER: P775846

CATALOG NUMBER: HCDJBL510CSD-HCD82TRH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	0.5	0.5	0.5	0.5	0.5	0.5
68°	0.5	0.5	0.5	0.5	0.4	0.4
68.5°	0.4	0.4	0.4	0.4	0.4	0.4
69°	0.4	0.4	0.4	0.4	0.4	0.4
69.5°	0.4	0.4	0.4	0.4	0.4	0.4
70°	0.4	0.4	0.4	0.4	0.3	0.3
70.5°	0.4	0.3	0.4	0.3	0.3	0.3
71°	0.3	0.3	0.3	0.3	0.3	0.3
71.5°	0.3	0.3	0.3	0.3	0.3	0.3
72°	0.3	0.3	0.3	0.3	0.3	0.3
72.5°	0.3	0.3	0.3	0.3	0.3	0.2
73°	0.3	0.3	0.3	0.3	0.2	0.2
73.5°	0.2	0.2	0.2	0.2	0.2	0.2
74°	0.2	0.2	0.2	0.2	0.2	0.2
74.5°	0.2	0.2	0.2	0.2	0.2	0.2
75°	0.2	0.2	0.2	0.2	0.2	0.2
75.5°	0.2	0.2	0.2	0.2	0.2	0.2
76°	0.2	0.2	0.2	0.2	0.2	0.2
76.5°	0.2	0.2	0.2	0.2	0.1	0.1
77°	0.2	0.2	0.2	0.1	0.1	0.1
77.5°	0.1	0.1	0.1	0.1	0.1	0.1
78°	0.1	0.1	0.1	0.1	0.1	0.1
78.5°	0.1	0.1	0.1	0.1	0.1	0.1
79°	0.1	0.1	0.1	0.1	0.1	0.1
79.5°	0.1	0.1	0.1	0.1	0.1	0.1
80°	0.1	0.1	0.1	0.1	0.1	0.1
80.5°	0.1	0.1	0.1	0.1	0.1	0.1
81°	0.1	0.1	0.1	0.1	0.1	0.1
81.5°	0.1	0.1	0.1	0.1	0.1	0.1
82°	0.1	0.1	0.1	0.1	0.1	0.0
82.5°	0.1	0.1	0.1	0.1	0.0	0.0
83°	0.1	0.1	0.1	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: P775846

CATALOG NUMBER: HCDJBL510CSD-HCD82TRH-1000lm-3000K

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°	831.2	836.2	841.2	845.9	847.1	845.9	841.2	836.2	831.2	836.2	841.2
22°	799.9	803.1	809.0	813.7	816.2	813.7	809.0	803.1	799.9	803.1	809.0



44°	103.4	106.2	110.8	114.7	116.2	114.7	110.8	106.2	103.4	106.2	110.8
44.5°	91.3	93.6	97.9	102.1	103.9	102.1	97.9	93.6	91.3	93.6	97.9



66.5°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
67°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5



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°	845.9	847.1	845.9	841.2	836.2	831.2
22°	813.7	816.2	813.7	809.0	803.1	799.9



44°	114.7	116.2	114.7	110.8	106.2	103.4
44.5°	102.1	103.9	102.1	97.9	93.6	91.3

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66.5°	0.5	0.5	0.5	0.5	0.5	0.5
67°	0.5	0.5	0.5	0.5	0.5	0.5

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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)