

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: P775696

Luminaire Tested: HCDJBL5510CSD-HCD4TSQH-1000lm-3000K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775696
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2310613A001)
Test Lab:
Issue Date: 2/7/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD4TSQH-1000lm-3000K
Description: 4 INCH SQUARE MEDIUM HAZE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3000K CCT
Ballast/Driver: -

Summary

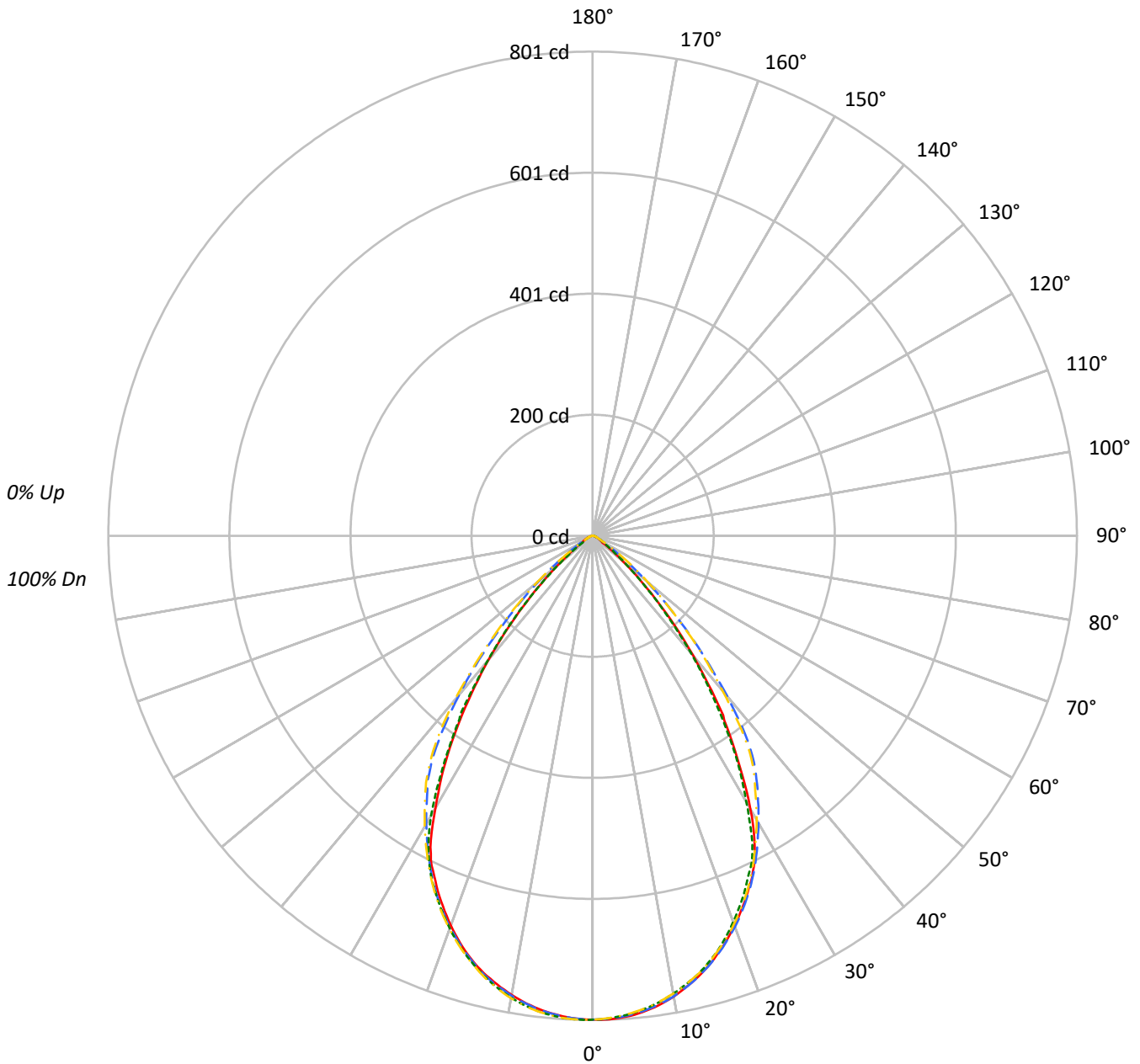
Lumens per Lamp: N/A
Luminaire Lumens: 1024.8 lumens
Efficiency: N/A
Efficacy: 102.5 lumens/watt
Spacing Criteria (0/90/45): 1.05 / 1.05 / 1.09
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

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



TEST NUMBER: P775696
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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	113	110	107	104	110	107	105	103	103	101	100	100	98	97	96	95	94	92					92			
2	106	101	96	92	104	99	95	91	96	92	89	93	90	87	90	88	85	84					84			
3	100	93	87	82	98	91	86	82	88	84	80	86	82	79	84	81	78	76					76			
4	94	85	79	74	92	84	78	74	82	77	73	80	76	72	78	74	71	70					70			
5	88	79	72	67	87	78	72	67	76	71	66	74	70	66	73	69	65	64					64			
6	83	73	66	61	82	72	66	61	71	65	61	69	64	60	68	63	60	58					58			
7	78	68	61	56	77	67	61	56	66	60	56	65	59	56	63	59	55	54					54			
8	74	63	56	52	73	63	56	52	61	56	51	60	55	51	59	55	51	49					49			
9	70	59	52	48	69	58	52	48	57	52	48	57	51	47	56	51	47	46					46			
10	66	55	49	44	65	55	49	44	54	48	44	53	48	44	52	47	44	43					43			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	79123	79123	79123	79123
5°	78909	78562	78661	78979
10°	77654	77182	77393	77875
15°	75457	75048	75447	75785
20°	72189	71516	72147	72704
25°	68065	66930	67639	68643
30°	59623	58071	59383	60936
35°	46794	45792	47698	48338
40°	33290	32580	34567	34902
45°	20353	19835	21569	21708
50°	9995	10303	11118	10764
55°	3739	5170	5446	4188
60°	2728	3440	3479	2768
65°	2152	2713	2760	2222
70°	1705	2167	2225	1792
75°	1337	1719	1719	1489
80°	854	1309	1252	1138
85°	340	1021	567	794

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 315°

Vertical Angle: 45°

Luminance: 31214 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	75.1	7.3
10°-20°	207.0	20.2
20°-30°	284.9	27.8
30°-40°	261.7	25.5
40°-50°	141.6	13.8
50°-60°	38.1	3.7
60°-70°	10.9	1.1
70°-80°	4.6	0.4
80°-90°	0.9	0.1
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°	567.0	55.3
0°-40°	828.8	80.9
0°-60°	1008.5	98.4
0°-90°	1024.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1024.8	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	800	800	800	800	800	
5°	795	792	793	796	795	75
15°	737	733	737	741	737	207
25°	624	614	620	629	624	283
35°	388	380	395	401	388	241
45°	146	142	154	155	146	115
55°	22	30	32	24	22	25
65°	9	12	12	10	9	9
75°	4	4	4	4	4	4
85°	0	1	0	1	0	1
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°	800.5	800.5	800.5	800.5	800.5	800.5	800.5	800.5	800.5	800.5	800.5
0.5°	800.9	800.6	800.3	800.0	800.5	800.0	800.2	800.3	800.6	800.6	800.2
1°	800.9	800.4	800.0	799.8	800.1	799.6	799.7	799.8	800.2	800.4	800.0
1.5°	800.6	800.0	799.9	799.3	799.4	798.8	799.1	799.2	799.8	799.9	799.5
2°	800.4	799.7	799.3	798.8	798.6	798.2	798.3	798.5	799.0	799.4	799.0
2.5°	799.9	799.2	798.8	798.1	797.7	797.2	797.4	797.5	798.4	798.7	798.4
3°	799.3	798.3	798.1	797.3	796.9	796.2	796.4	796.6	797.5	798.1	797.5
3.5°	798.5	797.4	797.1	796.4	795.9	795.1	795.2	795.5	796.5	797.1	796.7
4°	797.5	796.4	796.4	795.4	794.7	794.0	794.0	794.4	795.3	796.2	795.7
4.5°	796.5	795.2	795.1	794.3	793.3	792.4	792.6	793.1	794.2	795.2	794.5
5°	795.3	793.9	793.9	792.8	791.8	791.0	791.1	791.6	792.8	793.8	793.2
5.5°	793.8	792.4	792.5	791.4	790.2	789.3	789.5	790.0	791.3	792.5	791.7
6°	792.3	790.7	790.9	789.8	788.5	787.4	787.7	788.4	789.6	790.9	790.1
6.5°	790.6	789.0	789.3	788.2	786.5	785.5	785.8	786.4	787.9	789.4	788.5
7°	788.7	786.9	787.3	786.1	784.5	783.4	783.9	784.6	785.9	787.5	786.6
7.5°	786.6	784.9	785.4	784.3	782.2	781.2	781.6	782.4	783.8	785.6	784.6
8°	784.5	782.6	783.5	781.8	779.9	778.7	779.3	780.0	781.6	783.5	782.4
8.5°	782.0	780.3	781.1	779.4	777.2	776.3	776.9	777.6	779.2	781.1	780.2
9°	779.5	777.9	778.7	776.9	774.7	773.6	774.3	775.1	776.6	778.7	777.9
9.5°	776.7	774.9	776.2	774.4	771.8	770.8	771.5	772.3	773.9	776.2	775.2
10°	773.7	772.0	773.4	771.4	769.0	768.0	768.8	769.6	771.1	773.6	772.5
10.5°	770.7	768.9	770.5	768.5	766.0	765.0	765.9	766.6	768.2	770.8	769.6
11°	767.5	765.7	767.8	765.4	763.0	761.9	762.9	763.6	765.2	767.9	766.6
11.5°	764.3	762.4	764.3	762.2	759.6	758.6	759.5	760.7	762.2	764.8	763.5
12°	760.7	758.9	761.0	758.8	756.2	755.3	756.2	757.3	758.9	761.8	761.3
12.5°	757.2	755.2	757.3	755.3	752.9	751.9	752.9	754.1	755.5	758.4	757.9
13°	753.6	751.5	753.9	751.6	749.6	748.6	749.5	750.7	752.1	755.0	754.4
13.5°	749.8	747.6	750.1	747.9	746.1	745.2	746.1	747.5	748.8	751.6	750.9
14°	745.8	743.7	746.0	744.0	742.0	741.0	742.3	743.4	745.4	748.3	747.6
14.5°	741.5	739.3	741.8	740.0	737.8	736.8	738.1	739.2	741.4	744.9	742.8
15°	737.4	735.0	737.8	735.9	733.4	732.7	733.7	735.1	737.3	740.8	738.6
15.5°	732.9	730.6	733.5	731.4	728.9	728.1	729.2	730.6	732.9	736.6	734.2
16°	728.4	726.0	728.8	726.8	724.3	723.6	724.6	726.2	728.4	732.3	729.8
16.5°	723.5	721.5	724.1	722.3	719.4	718.7	720.0	721.5	723.9	727.7	725.2
17°	718.7	716.4	719.5	717.6	714.4	713.9	715.2	716.8	719.2	723.1	720.4
17.5°	713.7	711.5	714.5	712.6	709.2	708.9	710.2	711.7	714.0	718.4	715.5
18°	708.5	706.3	709.6	707.4	703.5	703.6	705.2	706.7	708.6	713.5	710.6
18.5°	702.9	700.9	704.3	702.3	697.8	698.1	699.9	701.4	703.2	708.3	705.5
19°	697.6	695.4	699.2	696.9	691.9	692.4	694.6	695.9	697.6	702.9	700.2
19.5°	692.0	689.9	693.8	691.0	686.0	686.6	689.2	690.3	691.9	697.3	694.8
20°	686.3	684.2	688.4	685.1	679.9	680.4	683.7	684.5	685.9	691.5	689.4
20.5°	680.4	678.4	682.8	679.1	673.8	674.3	677.9	678.5	679.9	685.7	683.6
21°	674.4	672.3	676.8	672.9	667.5	668.1	672.1	672.4	673.8	679.6	677.9



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CATALOG NUMBER: HCDJBL510CSD-HCD4TSQH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
22.5°	656.0	653.6	658.7	653.5	648.3	648.8	653.8	653.2	654.7	660.7	659.9
23°	649.2	647.2	652.4	646.7	641.5	642.1	647.6	646.4	648.3	654.2	653.6
23.5°	642.9	640.7	645.7	640.2	634.3	635.5	641.0	639.7	641.5	647.6	647.0
24°	636.4	633.9	639.3	633.3	627.0	628.6	634.2	633.0	634.5	641.0	640.2
24.5°	630.4	627.2	632.5	626.6	620.1	621.5	627.1	626.2	627.3	634.1	633.3
25°	624.1	620.0	625.4	619.1	613.7	614.1	620.0	619.1	620.2	627.1	626.4
25.5°	615.9	613.4	618.2	611.8	607.3	606.7	612.7	611.9	613.6	619.7	619.2
26°	608.4	607.0	610.7	604.1	600.9	599.4	605.3	604.5	607.4	612.4	612.1
26.5°	600.3	600.7	603.4	596.9	591.5	592.6	597.7	597.0	599.7	604.9	604.5
27°	590.8	592.3	595.9	589.8	581.6	586.1	590.0	589.7	589.7	598.1	597.0
27.5°	580.8	584.2	588.2	583.3	572.3	579.3	582.3	582.7	581.0	591.7	589.3
28°	570.3	575.7	580.3	576.7	559.5	571.6	574.4	576.1	570.2	584.6	581.6
28.5°	559.2	566.7	572.6	569.3	546.6	561.1	566.6	568.4	557.8	574.6	573.9
29°	547.8	556.9	564.5	559.2	534.1	552.4	558.7	558.6	545.4	565.6	566.0
29.5°	535.3	546.7	556.9	549.9	521.4	541.7	550.5	549.6	532.6	556.4	558.2
30°	522.4	535.6	549.0	539.9	508.8	529.0	542.5	539.5	520.3	544.5	550.3
30.5°	508.8	524.9	541.0	527.6	496.6	516.4	534.2	527.4	507.6	531.9	542.3
31°	495.2	512.5	532.8	514.9	484.5	504.2	525.9	515.5	495.7	519.7	534.1
31.5°	481.3	500.5	524.7	502.4	472.2	491.6	517.4	502.9	483.7	507.1	525.8
32°	467.1	487.1	516.4	490.1	460.3	479.5	509.3	490.7	471.7	495.0	517.7
32.5°	453.4	474.4	508.7	477.6	447.6	467.6	500.9	478.4	459.5	482.8	509.5
33°	440.1	460.8	501.3	465.6	434.9	456.0	493.0	466.8	447.3	470.9	501.7
33.5°	426.8	447.0	493.3	453.7	421.1	444.1	485.4	454.8	435.0	458.9	494.9
34°	413.9	433.8	484.3	441.8	407.6	432.2	477.9	443.4	422.1	447.0	487.8
34.5°	400.8	420.4	476.4	429.8	393.4	419.9	470.1	431.5	408.7	435.1	477.5
35°	387.8	407.0	468.3	417.6	379.5	408.2	461.4	420.2	395.3	423.0	467.1
35.5°	375.0	394.4	459.7	405.2	365.5	395.1	451.8	408.2	381.9	410.6	458.1
36°	367.1	381.8	449.5	392.6	352.4	382.1	442.1	396.4	368.5	398.2	447.0
36.5°	352.9	369.6	437.7	379.7	339.0	369.0	429.8	384.0	355.1	385.4	434.7
37°	338.3	357.3	426.7	366.5	326.2	355.8	417.4	371.5	341.5	372.3	422.0
37.5°	323.7	344.8	414.9	353.8	313.7	342.4	404.2	359.0	328.8	359.1	409.3
38°	309.1	332.5	401.1	341.0	301.4	329.5	389.8	346.3	316.3	346.3	396.3
38.5°	296.0	320.1	386.8	328.4	289.1	317.1	375.5	333.5	304.0	333.2	383.4
39°	283.1	307.7	373.0	315.6	277.3	304.9	361.2	320.9	291.7	320.7	370.1
39.5°	270.4	295.0	359.2	302.9	264.8	293.5	347.6	308.6	279.6	308.4	356.9
40°	258.0	282.6	345.4	290.7	252.5	281.5	334.1	296.8	267.9	296.2	343.7
40.5°	246.1	269.9	331.6	279.0	240.0	269.9	321.1	284.6	255.6	284.2	330.6
41°	234.1	257.9	317.8	267.5	228.1	258.7	308.5	273.2	243.5	272.6	317.2
41.5°	222.3	246.1	304.0	256.1	215.9	247.6	296.0	262.0	231.2	261.3	304.1
42°	210.9	234.6	290.8	244.4	204.3	235.9	283.9	250.7	219.3	249.7	290.7
42.5°	199.4	223.2	278.0	233.2	193.1	224.3	272.2	239.7	207.8	238.4	277.7
43°	188.3	212.2	265.2	221.9	182.2	213.1	260.5	228.5	196.6	226.9	264.4
43.5°	176.9	201.5	252.8	210.7	171.5	202.2	248.9	217.5	185.6	215.6	251.8



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	145.6	170.1	216.3	178.1	141.9	170.3	214.2	185.3	154.3	182.9	214.8
45.5°	135.8	159.8	204.3	168.0	132.4	160.7	203.1	174.7	144.6	172.6	203.4
46°	126.4	150.0	192.9	158.0	123.1	151.0	192.0	164.9	135.1	162.6	192.0
46.5°	117.2	140.4	181.8	148.6	114.5	141.7	181.4	155.1	125.9	153.0	181.1
47°	108.5	131.2	170.9	139.5	106.2	132.6	171.2	145.7	116.8	143.5	170.7
47.5°	100.5	122.2	160.4	130.4	98.4	123.8	161.3	136.3	108.3	134.1	160.5
48°	92.6	113.6	150.4	121.5	91.9	115.3	152.1	127.4	100.3	125.5	150.6
48.5°	85.3	105.6	140.8	113.0	85.4	107.1	142.9	118.9	93.2	116.8	141.0
49°	78.2	97.8	131.6	105.2	78.9	99.4	134.2	110.5	86.3	108.5	132.2
49.5°	71.4	90.4	122.9	97.4	72.4	92.6	126.0	102.5	79.3	100.6	122.9
50°	65.0	83.2	114.5	89.9	67.0	85.9	118.0	95.7	72.3	93.5	114.4
50.5°	59.1	76.3	106.1	82.6	62.0	79.2	110.5	88.9	66.7	86.4	106.4
51°	53.6	69.9	98.3	76.1	57.7	72.4	102.8	81.9	61.5	79.3	99.0
51.5°	48.5	63.9	90.9	70.0	53.7	66.9	96.2	75.1	56.8	72.2	92.0
52°	43.7	58.1	84.0	64.3	49.8	61.8	89.8	68.2	52.4	66.2	85.2
52.5°	39.3	52.6	77.1	59.2	46.1	57.1	83.2	62.5	48.6	60.8	78.3
53°	35.2	47.5	70.9	54.5	42.6	52.8	76.7	57.3	44.8	55.9	71.5
53.5°	31.8	42.9	65.0	50.3	39.5	49.0	70.2	52.6	41.3	51.4	65.3
54°	28.5	38.7	59.5	46.3	36.2	45.4	64.7	48.4	37.9	47.3	59.8
54.5°	25.1	34.6	54.2	42.6	33.1	41.9	59.5	44.4	34.7	43.5	54.7
55°	21.7	30.8	49.6	39.4	30.0	38.7	54.6	40.8	31.6	40.0	49.8
55.5°	19.5	28.1	45.1	36.1	27.2	35.6	50.0	37.4	28.6	36.7	45.3
56°	18.7	25.4	41.0	33.5	24.8	32.5	45.7	34.2	25.9	33.6	41.1
56.5°	18.0	22.6	37.2	30.7	23.1	29.6	41.7	31.2	23.8	30.6	37.3
57°	17.3	20.0	34.5	28.0	22.0	26.7	38.1	28.4	22.2	27.6	33.8
57.5°	16.6	17.2	31.6	25.2	21.2	24.2	34.7	25.6	21.4	24.9	30.6
58°	16.0	16.6	28.9	22.9	20.4	21.8	31.5	23.0	20.6	22.5	27.7
58.5°	15.4	16.0	26.1	20.8	19.7	20.1	28.8	20.8	19.8	20.7	25.1
59°	14.8	15.4	23.4	19.3	18.9	19.2	26.1	19.2	19.1	19.5	22.9
59.5°	14.3	14.8	21.3	18.5	18.2	18.4	23.9	18.3	18.4	18.8	20.9
60°	13.8	14.3	19.6	17.6	17.4	17.6	21.8	17.5	17.6	18.1	19.2
60.5°	13.2	13.8	18.0	17.0	16.7	17.0	20.0	16.8	16.9	17.3	17.5
61°	12.6	13.2	16.6	16.3	16.1	16.3	18.4	16.1	16.3	16.6	16.3
61.5°	12.2	12.8	15.4	15.7	15.5	15.7	16.9	15.5	15.7	16.0	15.1
62°	11.7	12.2	14.4	15.0	14.9	15.1	15.7	14.9	15.0	15.4	14.1
62.5°	11.2	11.7	13.4	14.5	14.3	14.5	14.7	14.3	14.5	14.8	13.2
63°	10.8	11.3	12.5	13.9	13.7	13.9	13.7	13.8	13.9	14.2	12.4
63.5°	10.4	10.8	11.8	13.3	13.2	13.4	12.9	13.2	13.4	13.7	11.7
64°	10.0	10.4	11.3	12.8	12.6	12.9	12.0	12.6	12.8	13.1	11.2
64.5°	9.6	10.0	10.9	12.2	12.1	12.3	11.4	12.1	12.2	12.5	10.7
65°	9.2	9.7	10.4	11.7	11.6	11.8	10.9	11.6	11.8	12.0	10.3
65.5°	8.9	9.3	10.0	11.3	11.1	11.3	10.5	11.1	11.3	11.5	9.9
66°	8.5	8.9	9.7	10.8	10.6	10.9	10.1	10.7	10.8	11.1	9.5



TEST NUMBER: P775696

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	7.4	7.9	8.6	9.5	9.4	9.6	9.0	9.4	9.5	9.8	8.4
68°	7.1	7.5	8.2	9.1	9.0	9.2	8.6	9.0	9.1	9.4	8.1
68.5°	6.8	7.1	7.9	8.8	8.6	8.8	8.3	8.6	8.7	9.0	7.8
69°	6.5	6.8	7.5	8.4	8.3	8.5	7.9	8.3	8.4	8.6	7.4
69.5°	6.2	6.5	7.2	8.1	7.9	8.1	7.5	7.9	8.0	8.2	7.1
70°	5.9	6.2	6.9	7.7	7.5	7.8	7.2	7.5	7.7	7.9	6.7
70.5°	5.6	6.0	6.6	7.3	7.1	7.4	6.8	7.1	7.2	7.4	6.5
71°	5.4	5.7	6.3	7.0	6.8	7.0	6.5	6.8	6.9	7.1	6.2
71.5°	5.1	5.4	6.0	6.6	6.5	6.7	6.2	6.5	6.5	6.7	5.9
72°	4.9	5.2	5.7	6.4	6.2	6.4	6.0	6.2	6.2	6.4	5.6
72.5°	4.6	4.9	5.5	6.1	5.9	6.1	5.7	5.9	5.9	6.1	5.4
73°	4.4	4.7	5.2	5.8	5.6	5.8	5.4	5.6	5.6	5.8	5.1
73.5°	4.1	4.4	4.9	5.5	5.3	5.5	5.2	5.3	5.3	5.5	4.9
74°	3.9	4.2	4.7	5.2	5.1	5.3	4.9	5.0	5.1	5.3	4.7
74.5°	3.7	4.0	4.5	5.0	4.8	5.0	4.7	4.8	4.8	5.0	4.4
75°	3.5	3.7	4.2	4.7	4.5	4.8	4.4	4.5	4.5	4.7	4.2
75.5°	3.3	3.5	4.0	4.5	4.3	4.5	4.2	4.3	4.3	4.5	4.0
76°	3.0	3.3	3.8	4.3	4.1	4.3	4.0	4.0	4.0	4.2	3.8
76.5°	2.8	3.1	3.6	4.0	3.8	4.1	3.8	3.8	3.8	4.0	3.5
77°	2.7	2.9	3.4	3.8	3.6	3.8	3.6	3.5	3.5	3.7	3.3
77.5°	2.4	2.7	3.2	3.6	3.4	3.6	3.4	3.3	3.3	3.5	3.1
78°	2.2	2.4	3.0	3.4	3.2	3.4	3.2	3.1	3.1	3.3	2.9
78.5°	2.0	2.2	2.8	3.2	3.0	3.2	3.0	2.9	2.9	3.0	2.8
79°	1.9	2.0	2.6	3.0	2.8	3.0	2.8	2.7	2.7	2.8	2.6
79.5°	1.7	1.8	2.4	2.8	2.6	2.8	2.6	2.4	2.4	2.6	2.3
80°	1.5	1.7	2.2	2.6	2.3	2.6	2.4	2.2	2.2	2.3	2.1
80.5°	1.4	1.5	2.0	2.3	2.2	2.3	2.2	2.0	2.0	2.1	2.0
81°	1.2	1.3	1.9	2.1	2.0	2.1	2.0	1.8	1.8	1.9	1.8
81.5°	1.1	1.2	1.7	1.9	1.8	2.0	1.9	1.6	1.6	1.7	1.7
82°	1.0	1.0	1.6	1.8	1.7	1.8	1.7	1.5	1.5	1.5	1.5
82.5°	0.8	0.9	1.4	1.6	1.5	1.7	1.6	1.3	1.3	1.3	1.4
83°	0.7	0.8	1.3	1.5	1.4	1.5	1.4	1.2	1.1	1.2	1.2
83.5°	0.5	0.6	1.1	1.3	1.3	1.4	1.3	1.0	1.0	1.0	1.1
84°	0.4	0.5	1.0	1.2	1.1	1.2	1.2	0.9	0.8	0.9	1.0
84.5°	0.4	0.4	0.9	1.0	1.0	1.1	1.0	0.8	0.7	0.7	0.9
85°	0.3	0.4	0.8	0.9	0.9	1.0	0.9	0.6	0.5	0.6	0.8
85.5°	0.2	0.3	0.7	0.8	0.7	0.8	0.8	0.5	0.4	0.5	0.6
86°	0.2	0.2	0.5	0.6	0.6	0.7	0.7	0.4	0.4	0.4	0.5
86.5°	0.2	0.2	0.4	0.5	0.5	0.6	0.6	0.4	0.3	0.3	0.4
87°	0.1	0.1	0.3	0.4	0.4	0.4	0.5	0.3	0.3	0.3	0.3
87.5°	0.0	0.1	0.2	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.2
88°	0.0	0.0	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1
88.5°	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1



TEST NUMBER: P775696
CATALOG NUMBER: HCDJBL510CSD-HCD4TSQH-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: P775696

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	800.5	800.5	800.5	800.5	800.5	800.5
0.5°	800.3	801.0	800.6	800.8	800.6	800.9
1°	800.2	800.9	800.6	800.8	800.6	800.9
1.5°	799.9	800.9	800.6	800.7	800.6	800.6
2°	799.5	800.6	800.5	800.5	800.4	800.4
2.5°	799.0	800.4	800.1	800.4	800.0	799.9
3°	798.3	799.9	799.6	799.8	799.5	799.3
3.5°	797.4	799.1	799.0	799.2	798.8	798.5
4°	796.4	798.2	798.2	798.4	798.1	797.5
4.5°	795.3	797.1	797.2	797.4	797.0	796.5
5°	794.1	796.0	796.1	796.3	795.9	795.3
5.5°	792.6	794.8	794.9	795.0	794.6	793.8
6°	791.1	793.3	793.5	793.7	793.2	792.3
6.5°	789.4	791.6	791.9	792.0	791.5	790.6
7°	787.5	789.9	790.2	790.4	789.8	788.7
7.5°	785.5	788.1	788.5	788.5	787.9	786.6
8°	783.3	785.8	786.3	786.5	785.7	784.5
8.5°	781.0	783.7	784.2	784.3	783.5	782.0
9°	778.7	781.1	781.9	782.0	780.9	779.5
9.5°	776.0	778.5	779.3	779.5	778.6	776.7
10°	773.3	775.9	776.5	776.9	775.7	773.7
10.5°	770.3	773.1	773.8	774.1	772.9	770.7
11°	767.4	769.9	770.7	771.0	769.8	767.5
11.5°	764.3	766.8	767.5	768.0	766.6	764.3
12°	761.0	763.4	764.3	764.7	763.1	760.7
12.5°	757.3	760.0	760.8	761.1	759.7	757.2
13°	753.8	756.4	757.3	757.8	756.1	753.6
13.5°	750.2	752.8	753.7	753.9	752.2	749.8
14°	746.5	749.0	749.9	749.8	748.4	745.8
14.5°	743.7	744.9	745.9	745.6	744.3	741.5
15°	739.5	740.6	741.8	741.4	740.1	737.4
15.5°	735.1	736.4	737.3	737.1	735.7	732.9
16°	730.6	731.9	733.0	732.9	731.2	728.4
16.5°	726.0	727.4	728.5	728.2	726.7	723.5
17°	721.2	722.5	723.8	723.4	722.1	718.7
17.5°	716.3	717.7	718.9	718.6	717.1	713.7
18°	711.2	712.5	713.9	713.6	712.1	708.5
18.5°	706.0	707.4	708.8	708.3	706.6	702.9
19°	700.8	702.1	703.5	703.2	701.2	697.6
19.5°	695.2	696.8	698.0	697.8	695.8	692.0
20°	689.6	691.2	692.6	692.4	690.2	686.3
20.5°	683.9	685.4	686.9	686.7	684.4	680.4
21°	678.0	679.6	680.8	680.9	678.3	674.4

TEST NUMBER: P775696

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	659.6	661.3	662.6	662.9	659.8	656.0
23°	653.4	654.9	656.2	656.6	653.4	649.2
23.5°	646.9	648.4	649.7	650.0	646.9	642.9
24°	640.0	641.7	643.1	643.4	640.3	636.4
24.5°	633.4	635.2	636.4	636.6	633.6	630.4
25°	626.7	629.4	629.3	629.7	626.7	624.1
25.5°	619.5	621.5	622.3	622.7	619.5	615.9
26°	612.3	613.8	615.7	615.3	612.8	608.4
26.5°	606.1	606.1	609.4	608.2	606.5	600.3
27°	599.1	597.0	601.1	601.0	600.0	590.8
27.5°	590.5	588.0	593.3	593.4	591.8	580.8
28°	582.8	578.3	585.3	585.7	583.5	570.3
28.5°	574.3	568.1	576.4	578.2	575.5	559.2
29°	565.6	557.1	567.4	570.7	566.4	547.8
29.5°	556.0	546.0	557.6	562.9	556.9	535.3
30°	546.3	533.9	547.5	555.2	546.8	522.4
30.5°	535.9	521.2	537.1	547.3	535.9	508.8
31°	525.2	507.6	525.7	539.3	524.8	495.2
31.5°	513.8	494.8	513.9	531.3	512.9	481.3
32°	502.3	480.9	501.9	523.3	500.9	467.1
32.5°	489.9	466.8	489.2	516.2	488.2	453.4
33°	477.0	453.4	475.8	508.3	475.0	440.1
33.5°	463.9	440.0	462.4	500.0	461.6	426.8
34°	450.8	426.8	449.1	492.5	448.2	413.9
34.5°	437.2	413.4	435.9	483.7	434.9	400.8
35°	424.2	400.6	422.5	473.9	421.5	387.8
35.5°	411.3	387.9	409.4	464.2	408.8	375.0
36°	398.6	375.2	396.8	454.4	396.2	367.1
36.5°	385.7	367.9	384.4	443.5	383.7	352.9
37°	373.4	353.5	371.9	432.1	371.4	338.3
37.5°	361.1	338.7	359.5	420.4	359.1	323.7
38°	349.0	323.9	347.0	408.1	346.8	309.1
38.5°	336.6	309.1	334.6	395.5	334.5	296.0
39°	324.3	296.3	322.2	382.2	322.2	283.1
39.5°	312.0	283.3	309.7	369.2	309.9	270.4
40°	299.5	270.5	297.0	355.2	297.1	258.0
40.5°	287.1	258.2	284.2	341.1	284.6	246.1
41°	274.6	246.4	271.9	327.2	272.5	234.1
41.5°	262.6	234.1	259.6	313.2	260.4	222.3
42°	250.9	222.6	247.9	299.2	248.8	210.9
42.5°	239.2	211.3	236.2	285.7	237.2	199.4
43°	227.9	199.3	224.9	272.6	226.0	188.3
43.5°	216.8	187.9	213.7	259.7	214.7	176.9



TEST NUMBER: P775696

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	185.2	155.3	181.1	223.3	182.9	145.6
45.5°	175.0	145.1	170.5	212.0	172.6	135.8
46°	164.9	135.2	160.3	200.8	162.6	126.4
46.5°	154.8	125.7	149.9	189.4	152.6	117.2
47°	145.2	116.6	140.3	178.5	143.2	108.5
47.5°	135.8	107.7	130.8	167.8	133.8	100.5
48°	126.7	99.3	121.6	157.7	124.9	92.6
48.5°	118.0	91.4	112.9	147.4	116.0	85.3
49°	109.6	83.9	104.6	137.7	107.9	78.2
49.5°	101.7	76.8	96.3	128.3	99.9	71.4
50°	94.5	70.0	88.8	119.2	91.9	65.0
50.5°	87.2	63.5	81.5	110.6	84.6	59.1
51°	80.0	57.5	74.4	102.3	77.6	53.6
51.5°	72.8	52.1	67.9	94.4	71.0	48.5
52°	66.3	47.1	61.9	86.9	64.8	43.7
52.5°	60.3	42.3	56.0	79.8	58.8	39.3
53°	54.6	37.9	50.7	73.0	53.0	35.2
53.5°	49.2	34.6	45.6	66.8	47.8	31.8
54°	44.1	31.1	41.0	60.5	43.0	28.5
54.5°	39.6	27.6	36.8	55.0	38.7	25.1
55°	35.4	24.3	33.4	49.8	35.1	21.7
55.5°	31.6	20.8	30.0	44.8	31.6	19.5
56°	27.8	19.2	26.5	40.2	28.2	18.7
56.5°	24.5	18.4	23.2	35.9	24.7	18.0
57°	21.5	17.6	19.7	33.0	21.2	17.3
57.5°	19.0	16.9	17.8	30.1	18.7	16.6
58°	17.0	16.3	17.0	27.1	17.0	16.0
58.5°	16.3	15.7	16.4	24.2	16.3	15.4
59°	15.6	15.1	15.8	21.3	15.7	14.8
59.5°	15.1	14.6	15.2	19.4	15.1	14.3
60°	14.5	14.0	14.6	17.8	14.6	13.8
60.5°	14.0	13.5	14.1	16.3	14.0	13.2
61°	13.5	13.0	13.6	15.1	13.5	12.6
61.5°	13.0	12.4	13.1	14.0	13.0	12.2
62°	12.4	12.0	12.5	13.1	12.4	11.7
62.5°	11.9	11.5	12.0	12.2	12.0	11.2
63°	11.5	11.1	11.6	11.5	11.5	10.8
63.5°	11.1	10.7	11.1	11.0	11.0	10.4
64°	10.6	10.3	10.7	10.6	10.6	10.0
64.5°	10.3	9.9	10.3	10.2	10.2	9.6
65°	9.9	9.5	9.9	9.8	9.8	9.2
65.5°	9.5	9.1	9.6	9.4	9.4	8.9
66°	9.1	8.8	9.2	9.1	9.1	8.5



TEST NUMBER: P775696

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQH-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	8.2	7.8	8.2	8.1	8.0	7.4
68°	7.8	7.4	7.8	7.7	7.7	7.1
68.5°	7.4	7.1	7.4	7.3	7.3	6.8
69°	7.1	6.8	7.1	7.0	7.0	6.5
69.5°	6.8	6.5	6.8	6.7	6.7	6.2
70°	6.5	6.2	6.6	6.4	6.4	5.9
70.5°	6.3	6.0	6.3	6.2	6.1	5.6
71°	6.0	5.7	6.0	5.9	5.8	5.4
71.5°	5.7	5.5	5.7	5.6	5.5	5.1
72°	5.5	5.2	5.5	5.4	5.3	4.9
72.5°	5.3	5.0	5.2	5.1	5.0	4.6
73°	5.0	4.7	5.0	4.9	4.7	4.4
73.5°	4.8	4.5	4.8	4.7	4.5	4.1
74°	4.6	4.3	4.5	4.4	4.3	3.9
74.5°	4.4	4.1	4.3	4.2	4.0	3.7
75°	4.1	3.9	4.1	4.0	3.8	3.5
75.5°	3.9	3.7	3.9	3.8	3.6	3.3
76°	3.7	3.5	3.7	3.6	3.4	3.0
76.5°	3.5	3.3	3.5	3.4	3.2	2.8
77°	3.3	3.1	3.3	3.1	3.0	2.7
77.5°	3.1	2.9	3.1	3.0	2.7	2.4
78°	2.9	2.7	2.9	2.8	2.4	2.2
78.5°	2.8	2.6	2.7	2.6	2.3	2.0
79°	2.6	2.3	2.4	2.3	2.1	1.9
79.5°	2.3	2.1	2.3	2.1	1.9	1.7
80°	2.1	2.0	2.1	2.0	1.7	1.5
80.5°	2.0	1.9	2.0	1.8	1.5	1.4
81°	1.8	1.7	1.8	1.7	1.4	1.2
81.5°	1.7	1.6	1.6	1.5	1.2	1.1
82°	1.5	1.4	1.5	1.4	1.0	1.0
82.5°	1.4	1.3	1.4	1.2	0.9	0.8
83°	1.3	1.2	1.2	1.1	0.8	0.7
83.5°	1.1	1.1	1.1	1.0	0.7	0.5
84°	1.0	1.0	1.0	0.9	0.5	0.4
84.5°	0.9	0.9	0.8	0.8	0.4	0.4
85°	0.8	0.7	0.7	0.6	0.4	0.3
85.5°	0.6	0.6	0.6	0.5	0.3	0.2
86°	0.5	0.5	0.5	0.4	0.2	0.2
86.5°	0.4	0.4	0.4	0.3	0.2	0.2
87°	0.3	0.3	0.3	0.2	0.1	0.1
87.5°	0.2	0.2	0.2	0.1	0.1	0.0
88°	0.1	0.1	0.1	0.1	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P775696
CATALOG NUMBER: HCDJBL510CSD-HCD4TSQH-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°	668.4	666.0	670.8	666.5	661.3	661.7	666.1	666.0	667.5	673.4	672.0
22°	662.3	659.9	664.8	660.0	654.9	655.3	659.9	659.6	661.1	667.1	666.1



44°	166.1	190.9	240.4	199.4	161.4	191.0	237.1	206.6	174.5	204.5	239.1
44.5°	155.7	180.4	228.3	188.4	151.4	180.7	225.6	195.8	164.3	193.6	226.8



66.5°	8.2	8.6	9.3	10.4	10.2	10.4	9.7	10.2	10.4	10.6	9.1
67°	7.8	8.2	8.9	9.9	9.8	10.0	9.3	9.8	9.9	10.2	8.8



89°	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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°	671.9	673.5	674.9	675.0	672.3	668.4
22°	665.8	667.5	668.8	669.0	666.1	662.3



44°	206.1	177.0	202.6	247.3	204.0	166.1
44.5°	195.7	166.0	191.8	235.0	193.3	155.7



66.5°	8.8	8.4	8.8	8.7	8.7	8.2
67°	8.5	8.1	8.5	8.4	8.3	7.8



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)