

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: P775687

Luminaire Tested: HCDJBL510CSD-HCD4TRMW-1000lm-3500K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775687
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-HCD4TRMW-1000lm-3500K
Description: 4 INCH ROUND MEDIUM MATTE WHITE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT
Ballast/Driver: -

Summary

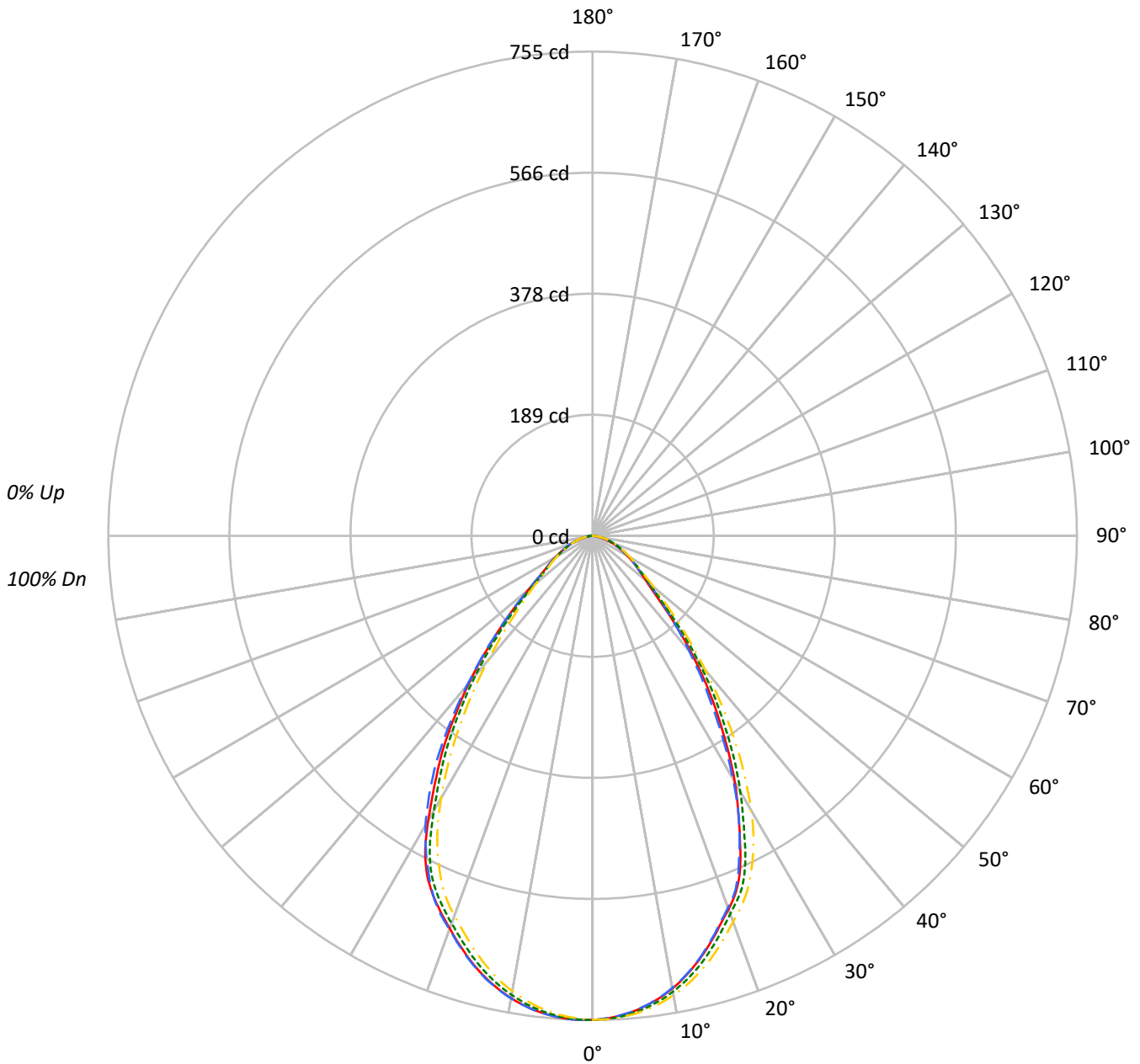
Lumens per Lamp: N/A
Luminaire Lumens: 1052.8 lumens
Efficiency: N/A
Efficacy: 105.3 lumens/watt
Spacing Criteria (0/90/45): 1.03 / 1.03 / 1.02
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					20					
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	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	95	93	92	90					90			
2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	84	82	80					80			
3	97	89	83	78	95	88	82	77	85	80	76	82	78	75	80	76	73	72					72			
4	91	82	75	69	89	80	74	69	78	72	68	76	71	67	74	70	66	65					65			
5	85	75	68	62	83	74	67	62	72	66	61	70	65	61	68	64	60	58					58			
6	80	69	62	56	78	68	61	56	66	60	56	65	60	55	64	59	55	53					53			
7	75	64	57	51	74	63	56	51	62	56	51	60	55	51	59	54	50	49					49			
8	71	59	52	47	69	59	52	47	57	51	47	56	51	47	55	50	46	45					45			
9	67	55	48	44	65	55	48	43	54	48	43	53	47	43	52	47	43	41					41			
10	63	52	45	40	62	51	45	40	50	44	40	49	44	40	49	44	40	38					38			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	94991	94991	94991	94991
5°	93965	94318	94836	94558
10°	91588	92240	93543	92917
15°	87646	88688	90955	90004
20°	82981	84052	87267	86115
25°	75665	78136	83483	81969
30°	64405	66876	74519	71918
35°	52005	54786	62483	59856
40°	39560	42418	49187	46723
45°	27943	30381	36219	33940
50°	21321	22574	25472	23729
55°	18167	18935	19572	18650
60°	15882	16738	16990	16260
65°	13579	14770	14532	14175
70°	11517	13136	12400	12584
75°	9287	11719	10357	11086
80°	6450	10219	7972	9494
85°	2310	8086	3610	6931

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 202.5°
 Vertical Angle: 45°
 Luminance: 36717 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	70.6	6.7
10°-20°	192.3	18.3
20°-30°	260.7	24.8
30°-40°	231.5	22.0
40°-50°	141.8	13.5
50°-60°	78.6	7.5
60°-70°	48.2	4.6
70°-80°	23.9	2.3
80°-90°	5.2	0.5
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°	523.6	49.7
0°-40°	755.2	71.7
0°-60°	975.6	92.7
0°-90°	1052.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1052.8	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	755	755	755	755	755	
5°	744	747	751	748	744	70
15°	673	681	698	691	673	189
25°	545	563	601	590	545	248
35°	338	357	407	390	338	211
45°	157	171	204	191	157	125
55°	83	86	89	85	83	75
65°	46	50	49	48	46	46
75°	19	24	21	23	19	20
85°	2	6	2	5	2	3
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°	754.8	754.8	754.8	754.8	754.8	754.8	754.8	754.8	754.8	754.8	754.8
0.5°	754.5	754.6	754.4	754.0	755.0	754.7	754.7	754.9	755.1	755.3	755.1
1°	754.0	754.1	753.9	753.4	754.7	754.6	754.6	755.0	755.2	755.4	755.2
1.5°	753.2	753.2	753.0	752.7	754.2	754.3	754.3	754.9	755.2	755.4	755.2
2°	752.4	752.3	752.1	751.9	753.5	753.7	754.0	754.5	755.0	755.3	755.0
2.5°	751.4	751.3	751.1	750.8	752.7	753.1	753.4	754.2	754.7	755.0	754.7
3°	750.1	750.1	749.9	749.7	751.8	752.3	752.8	753.6	754.2	754.5	754.2
3.5°	748.8	748.8	748.5	748.5	750.7	751.4	752.0	752.9	753.5	753.9	753.5
4°	747.3	747.2	746.9	747.0	749.5	750.3	751.0	752.1	752.8	753.1	752.8
4.5°	745.8	745.6	745.3	745.5	748.2	749.0	749.8	751.1	751.9	752.3	751.9
5°	743.8	743.7	743.5	743.7	746.6	747.6	748.6	749.9	750.7	751.3	750.8
5.5°	741.8	741.6	741.4	741.7	744.7	746.0	747.0	748.7	749.5	750.0	749.7
6°	739.8	739.5	739.2	739.6	742.9	744.3	745.6	747.2	748.2	748.7	748.5
6.5°	737.4	737.1	737.1	737.4	740.8	742.4	743.8	745.6	746.7	747.2	747.0
7°	735.0	734.7	734.6	735.0	738.6	740.3	741.9	743.8	745.2	745.7	745.4
7.5°	732.3	731.9	731.8	732.4	736.2	738.1	739.9	741.9	743.3	743.9	743.6
8°	729.6	729.2	729.0	729.6	733.5	735.7	737.7	739.9	741.2	741.9	741.6
8.5°	726.6	726.2	726.0	726.6	731.0	733.2	735.3	737.7	739.1	739.8	739.7
9°	723.5	723.0	722.8	723.6	728.1	730.5	732.8	735.2	737.0	737.7	737.5
9.5°	720.1	719.5	719.4	720.3	725.0	727.7	730.1	732.8	734.6	735.3	735.1
10°	716.7	715.9	715.8	716.8	721.8	724.7	727.3	730.1	732.0	732.9	732.6
10.5°	713.0	712.3	712.2	713.1	718.5	721.6	724.3	727.3	729.2	730.2	730.0
11°	709.2	708.5	708.3	709.4	714.8	718.2	721.1	724.4	726.4	727.4	727.2
11.5°	705.2	704.2	704.2	705.5	711.3	714.7	717.9	721.1	723.5	724.4	724.3
12°	701.0	700.2	700.1	701.3	707.4	711.1	714.4	717.9	720.4	721.4	721.1
12.5°	696.7	695.7	695.7	696.9	703.2	707.1	710.7	714.5	717.0	718.1	717.8
13°	692.2	691.3	691.1	692.5	699.1	703.2	706.9	711.0	713.6	714.8	714.5
13.5°	687.4	686.3	686.5	687.9	694.8	699.0	703.0	707.2	709.9	711.2	711.0
14°	682.8	681.7	681.6	683.0	690.3	694.6	698.7	703.2	706.2	707.4	707.0
14.5°	677.8	676.7	676.6	678.2	685.5	690.1	694.6	699.2	702.4	703.5	703.1
15°	672.7	671.4	671.3	673.1	680.7	685.5	690.3	694.9	698.1	699.5	699.1
15.5°	667.5	666.2	666.2	667.9	675.6	680.7	685.6	690.7	693.9	695.3	695.0
16°	662.1	660.8	660.7	662.5	670.6	675.9	680.9	686.3	689.6	691.1	690.7
16.5°	656.7	655.2	655.2	657.2	665.4	670.8	676.2	681.7	685.2	686.6	686.2
17°	651.3	649.7	649.8	651.7	660.0	665.6	671.3	677.0	680.5	682.1	681.8
17.5°	645.8	644.1	644.1	646.1	654.5	660.4	666.2	672.1	675.9	677.5	677.0
18°	640.0	638.4	638.3	640.4	649.1	655.0	661.1	667.2	671.1	672.7	672.3
18.5°	634.6	632.8	632.6	634.8	643.5	649.5	655.9	662.2	666.2	667.9	667.5
19°	629.5	627.5	627.2	629.3	637.9	644.3	650.6	657.1	661.4	663.1	662.6
19.5°	624.5	622.4	622.1	624.3	632.7	639.0	645.3	652.1	656.3	658.2	657.8
20°	619.6	617.4	617.2	619.3	627.6	634.0	640.5	647.2	651.6	653.5	653.3
20.5°	614.4	612.3	612.1	614.2	622.6	629.0	635.6	642.3	646.7	648.9	648.7
21°	609.3	607.1	607.0	609.3	617.6	624.4	630.8	637.4	642.1	644.5	644.3



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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°	590.6	587.5	587.3	590.8	602.0	609.0	615.9	622.9	627.7	630.2	629.9
23°	582.9	579.7	579.0	583.3	595.8	603.0	610.1	617.9	622.8	625.1	624.3
23.5°	574.8	571.4	570.1	575.3	588.6	596.4	604.1	612.6	617.7	619.5	618.5
24°	565.5	562.3	560.6	566.6	580.7	589.4	597.5	606.9	612.5	613.7	612.2
24.5°	555.6	553.0	551.0	557.4	572.2	581.8	590.6	601.0	606.9	607.5	605.6
25°	544.9	543.2	541.3	547.7	562.7	573.7	583.4	594.5	601.2	601.0	598.7
25.5°	534.5	532.8	531.9	537.7	552.9	564.7	575.7	587.9	595.1	594.0	591.3
26°	523.9	522.2	522.6	527.3	542.7	555.4	567.9	580.8	588.3	586.9	584.0
26.5°	513.3	511.1	513.1	516.8	531.7	545.7	559.6	573.0	581.1	579.1	576.4
27°	502.9	500.2	503.4	506.2	520.9	535.6	551.6	565.0	573.4	571.3	569.1
27.5°	492.9	489.2	493.5	495.2	510.5	525.5	543.2	556.7	565.0	563.3	561.6
28°	483.1	478.0	482.8	484.4	500.2	515.0	534.4	547.9	555.9	555.4	553.7
28.5°	473.4	467.5	471.8	473.9	490.1	505.2	525.1	539.0	545.9	547.0	546.0
29°	463.2	456.9	460.5	463.2	480.2	495.5	515.2	529.5	535.3	538.4	538.0
29.5°	453.4	446.4	449.2	452.5	470.3	486.0	505.1	519.6	524.3	529.5	529.5
30°	443.2	435.9	437.7	441.9	460.2	476.5	494.5	509.2	512.8	520.4	520.8
30.5°	433.0	425.6	426.0	431.1	450.4	467.0	483.8	497.9	501.1	510.4	511.4
31°	422.3	414.9	414.6	420.3	440.4	457.3	472.7	486.4	489.5	500.6	501.9
31.5°	411.7	404.4	403.3	409.8	430.1	447.5	461.5	474.4	478.3	490.3	491.9
32°	400.5	394.0	391.9	399.2	419.9	437.5	450.8	462.3	467.8	479.8	482.1
32.5°	389.8	383.3	380.6	388.5	409.7	427.4	440.0	450.3	457.4	468.6	472.2
33°	379.2	372.8	369.6	378.2	398.8	416.7	428.6	438.1	447.2	457.2	462.4
33.5°	368.7	362.7	358.6	367.9	388.0	406.0	417.2	426.5	437.0	445.9	451.9
34°	358.6	352.2	347.7	357.6	377.3	395.1	405.8	415.8	427.2	434.8	441.9
34.5°	348.4	341.8	337.0	347.2	367.0	383.8	394.6	404.5	416.9	423.6	430.8
35°	338.5	331.2	326.3	336.9	356.6	372.5	383.3	393.1	406.7	413.0	419.8
35.5°	328.8	321.4	316.1	326.7	346.8	361.7	372.3	382.2	395.9	402.5	408.3
36°	319.1	310.9	306.4	316.3	336.5	350.6	360.8	371.2	384.7	392.0	397.0
36.5°	309.3	300.8	296.9	305.8	326.9	339.9	349.9	360.2	373.6	381.5	385.3
37°	299.3	291.1	287.5	295.6	317.1	329.2	338.4	349.1	362.3	370.8	373.6
37.5°	289.4	281.3	278.2	285.5	307.3	318.8	327.3	338.0	351.1	360.6	362.1
38°	279.5	271.8	269.0	275.5	297.7	308.5	316.0	327.1	340.5	349.7	350.5
38.5°	269.5	262.2	259.8	266.3	288.0	298.3	305.2	316.4	330.4	339.0	338.7
39°	260.0	253.3	251.0	257.2	277.4	288.2	294.5	305.8	319.7	328.1	327.3
39.5°	250.2	244.3	242.3	248.3	267.8	278.0	284.4	295.7	309.7	317.4	315.9
40°	240.8	235.5	233.5	239.4	258.2	267.9	273.8	285.7	299.4	306.5	304.7
40.5°	231.7	226.9	225.3	230.9	248.3	257.3	263.6	276.0	290.2	295.8	293.5
41°	222.9	218.6	217.4	222.5	238.9	247.2	253.6	266.4	280.1	285.4	283.0
41.5°	214.0	210.3	209.6	214.4	229.7	237.4	244.1	257.2	269.7	275.0	272.6
42°	205.2	202.4	202.5	206.4	221.0	227.8	234.7	248.3	259.6	264.7	262.5
42.5°	196.8	194.8	195.4	198.7	212.1	218.2	225.8	239.4	250.1	254.8	252.6
43°	188.4	187.5	188.4	191.2	203.5	209.2	217.1	230.5	240.1	244.7	242.7
43.5°	180.1	180.2	181.5	184.0	194.9	200.5	208.9	222.0	230.5	234.8	233.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	157.0	160.4	162.5	164.0	170.7	176.6	184.8	196.6	203.5	206.3	205.5
45.5°	150.4	154.3	156.6	157.9	163.2	169.2	177.6	188.5	195.2	197.3	196.7
46°	144.2	148.5	151.1	152.1	156.1	162.0	170.5	180.6	187.0	188.5	188.2
46.5°	138.3	142.9	145.5	146.4	149.4	155.5	163.6	173.1	179.1	179.9	180.0
47°	132.9	137.6	140.5	140.9	143.3	148.9	157.0	165.8	171.3	171.4	172.0
47.5°	128.0	132.4	135.4	135.7	137.6	142.8	150.8	158.7	163.8	163.7	164.6
48°	123.7	127.7	130.5	130.8	132.2	137.2	145.0	152.1	156.6	156.2	157.1
48.5°	119.5	123.2	125.8	126.2	127.3	132.0	139.4	145.7	149.6	149.2	150.1
49°	115.8	118.9	121.7	121.7	122.9	127.2	133.9	139.6	142.7	142.3	143.3
49.5°	112.2	114.9	117.5	117.5	118.9	122.5	129.0	133.9	136.3	136.0	136.9
50°	108.9	111.0	113.4	113.4	115.3	118.3	124.1	128.4	130.1	130.0	130.7
50.5°	105.8	107.4	109.4	109.7	111.7	114.4	119.5	123.3	124.5	124.5	124.9
51°	102.8	104.1	105.9	106.1	108.2	110.7	115.2	118.4	119.2	119.3	119.5
51.5°	99.7	100.8	102.3	102.8	105.1	107.3	111.0	113.8	114.4	114.6	114.4
52°	97.0	97.7	99.0	99.4	102.2	104.0	107.2	109.6	109.8	110.0	109.6
52.5°	94.2	94.7	95.8	96.4	99.2	100.9	103.5	105.4	105.7	105.8	105.1
53°	91.5	92.0	92.8	93.4	96.3	97.9	100.1	101.6	101.9	101.8	101.0
53.5°	89.0	89.4	90.0	90.6	93.5	95.0	96.7	98.2	98.3	98.2	97.4
54°	86.7	87.0	87.4	88.0	90.9	92.4	93.6	94.9	95.0	94.8	94.1
54.5°	84.7	84.9	85.2	85.9	88.4	89.6	90.7	91.8	92.0	91.6	90.9
55°	82.8	83.0	83.3	83.8	86.3	87.5	88.5	89.0	89.2	88.9	88.7
55.5°	80.8	81.0	81.3	81.8	84.2	85.3	86.3	86.8	87.0	86.7	86.4
56°	78.8	79.0	79.3	79.8	82.1	83.3	84.1	84.6	84.7	84.4	84.1
56.5°	76.8	77.1	77.4	77.9	80.1	81.1	81.8	82.4	82.4	82.2	81.9
57°	74.8	75.1	75.4	75.8	78.2	79.0	79.7	80.2	80.2	80.0	79.7
57.5°	72.8	73.1	73.3	73.9	76.1	77.0	77.6	78.1	78.3	77.9	77.5
58°	70.8	71.2	71.4	71.9	74.2	75.0	75.5	76.0	76.1	75.8	75.3
58.5°	68.9	69.2	69.5	70.0	72.2	72.9	73.4	74.1	74.0	73.7	73.2
59°	67.0	67.3	67.6	68.2	70.2	71.0	71.5	72.0	71.8	71.6	71.2
59.5°	65.0	65.5	65.8	66.2	68.4	69.0	69.4	69.9	69.7	69.5	69.1
60°	63.1	63.7	63.9	64.4	66.5	67.2	67.5	67.9	67.5	67.5	67.1
60.5°	61.2	61.8	62.1	62.6	64.7	65.3	65.7	66.0	65.5	65.5	65.2
61°	59.4	60.0	60.4	60.8	62.9	63.5	63.8	64.1	63.5	63.5	63.3
61.5°	57.6	58.2	58.7	59.1	61.1	61.7	61.9	62.3	61.5	61.5	61.4
62°	55.7	56.5	57.1	57.4	59.4	60.0	60.2	60.5	59.6	59.7	59.7
62.5°	54.0	54.8	55.3	55.7	57.6	58.2	58.5	58.6	57.7	57.8	57.9
63°	52.2	53.0	53.8	54.2	55.9	56.6	56.8	56.9	55.8	55.9	56.1
63.5°	50.5	51.4	52.1	52.5	54.3	54.9	55.1	55.0	54.0	54.2	54.5
64°	48.9	49.7	50.7	51.0	52.7	53.2	53.4	53.2	52.2	52.4	52.8
64.5°	47.2	48.2	49.1	49.5	51.2	51.7	51.9	51.6	50.4	50.8	51.3
65°	45.6	46.5	47.6	48.0	49.6	50.1	50.3	49.9	48.8	49.1	49.6
65.5°	44.0	45.0	46.1	46.5	48.2	48.6	48.9	48.3	47.0	47.4	48.1
66°	42.5	43.5	44.6	45.1	46.6	47.1	47.3	46.7	45.5	45.9	46.6



TEST NUMBER: P775687

CATALOG NUMBER: HCDJBL510CSD-HCD4TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	38.0	39.0	40.4	40.9	42.4	42.8	43.0	42.1	40.8	41.2	42.2
68°	36.7	37.6	39.0	39.6	41.0	41.4	41.6	40.6	39.4	39.8	40.7
68.5°	35.3	36.4	37.8	38.2	39.7	40.1	40.2	39.2	37.8	38.3	39.4
69°	34.0	35.0	36.5	37.0	38.3	38.7	38.8	37.7	36.5	37.0	38.0
69.5°	32.6	33.7	35.2	35.7	37.1	37.5	37.5	36.4	35.0	35.6	36.7
70°	31.3	32.3	34.0	34.6	35.7	36.1	36.3	35.0	33.7	34.3	35.3
70.5°	29.9	31.0	32.7	33.4	34.6	34.9	35.0	33.7	32.3	32.9	34.1
71°	28.7	29.7	31.5	32.1	33.4	33.7	33.7	32.3	31.1	31.6	32.8
71.5°	27.4	28.5	30.2	31.0	32.1	32.5	32.4	31.0	29.7	30.3	31.6
72°	26.1	27.2	29.0	29.7	30.9	31.3	31.2	29.7	28.5	29.1	30.3
72.5°	24.9	26.0	27.9	28.6	29.7	30.1	30.0	28.5	27.2	27.9	29.2
73°	23.6	24.8	26.6	27.4	28.6	28.9	28.8	27.2	26.0	26.6	28.0
73.5°	22.5	23.5	25.5	26.3	27.4	27.8	27.6	26.0	24.8	25.4	26.8
74°	21.3	22.4	24.3	25.3	26.3	26.7	26.5	24.9	23.6	24.2	25.7
74.5°	20.2	21.2	23.2	24.1	25.2	25.6	25.3	23.7	22.5	23.1	24.5
75°	19.1	20.1	22.1	23.1	24.1	24.4	24.2	22.5	21.3	22.0	23.4
75.5°	17.9	19.0	21.0	22.0	23.1	23.4	23.1	21.4	20.2	20.8	22.4
76°	16.9	17.9	19.9	21.0	22.0	22.4	22.0	20.2	19.1	19.7	21.3
76.5°	15.8	16.8	18.9	19.9	20.9	21.3	20.9	19.2	18.0	18.6	20.2
77°	14.8	15.7	17.8	19.0	19.9	20.3	19.9	18.0	16.9	17.5	19.2
77.5°	13.8	14.7	16.8	17.9	19.0	19.4	18.9	17.0	15.8	16.5	18.1
78°	12.7	13.7	15.8	17.0	17.9	18.3	17.8	16.0	14.8	15.5	17.1
78.5°	11.7	12.6	14.8	16.0	17.0	17.3	16.8	14.9	13.9	14.5	16.2
79°	10.8	11.6	13.9	15.0	16.0	16.4	15.8	13.9	12.8	13.5	15.2
79.5°	9.8	10.7	12.8	14.1	15.0	15.4	14.9	12.9	11.9	12.4	14.2
80°	8.9	9.7	11.9	13.2	14.1	14.5	13.9	11.9	11.0	11.5	13.3
80.5°	8.0	8.8	11.1	12.3	13.3	13.6	13.1	11.0	10.0	10.6	12.3
81°	7.0	7.9	10.2	11.4	12.3	12.6	12.1	10.0	9.1	9.7	11.5
81.5°	6.2	6.9	9.3	10.5	11.4	11.8	11.2	9.2	8.3	8.8	10.6
82°	5.3	6.1	8.5	9.6	10.6	10.9	10.4	8.4	7.4	7.9	9.7
82.5°	4.5	5.3	7.7	8.8	9.6	10.0	9.5	7.6	6.5	7.0	9.0
83°	3.6	4.6	6.9	8.0	8.9	9.2	8.8	6.7	5.6	6.1	8.3
83.5°	3.1	3.8	6.1	7.1	8.1	8.4	8.0	5.8	4.8	5.4	7.5
84°	2.6	3.4	5.5	6.4	7.3	7.6	7.1	5.1	3.9	4.7	6.7
84.5°	2.1	3.0	4.8	5.6	6.4	6.7	6.4	4.5	3.2	3.9	6.0
85°	1.6	2.5	4.0	4.8	5.6	5.9	5.6	3.8	2.5	3.4	5.3
85.5°	1.2	2.1	3.4	4.0	4.8	5.2	5.0	3.3	2.1	3.0	4.6
86°	0.9	1.7	2.8	3.3	4.0	4.5	4.2	2.9	1.8	2.6	3.9
86.5°	0.7	1.2	2.2	2.6	3.3	3.6	3.6	2.4	1.5	2.2	3.3
87°	0.4	0.8	1.5	1.9	2.6	2.9	2.9	2.0	1.1	1.8	2.7
87.5°	0.2	0.5	0.8	1.1	1.9	2.3	2.3	1.6	0.9	1.3	2.1
88°	0.1	0.2	0.3	0.5	1.2	1.6	1.7	1.1	0.6	1.0	1.5
88.5°	0.0	0.1	0.1	0.2	0.6	0.8	1.0	0.7	0.4	0.6	0.8



TEST NUMBER: P775687

CATALOG NUMBER: HCDJBL510CSD-HCD4TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0



TEST NUMBER: P775687

CATALOG NUMBER: HCDJBL510CSD-HCD4TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	754.8	754.8	754.8	754.8	754.8	754.8
0.5°	754.6	755.1	754.7	754.3	754.4	754.5
1°	754.7	755.0	754.4	753.9	753.9	754.0
1.5°	754.5	754.7	754.0	753.3	753.2	753.2
2°	754.3	754.3	753.4	752.6	752.4	752.4
2.5°	753.9	753.6	752.8	751.9	751.5	751.4
3°	753.3	752.9	751.9	751.0	750.3	750.1
3.5°	752.7	752.1	751.0	749.8	749.1	748.8
4°	751.9	751.2	749.7	748.7	747.7	747.3
4.5°	751.0	749.8	748.5	747.1	746.2	745.8
5°	749.9	748.5	746.9	745.6	744.4	743.8
5.5°	748.6	747.0	745.4	743.8	742.6	741.8
6°	747.1	745.5	743.5	741.9	740.6	739.8
6.5°	745.7	743.8	741.6	740.0	738.3	737.4
7°	744.0	741.8	739.6	737.7	735.9	735.0
7.5°	742.3	739.7	737.4	735.3	733.4	732.3
8°	740.2	737.6	735.0	732.7	730.8	729.6
8.5°	738.1	735.2	732.5	730.1	728.0	726.6
9°	735.8	732.6	729.8	727.1	724.7	723.5
9.5°	733.4	730.0	727.0	724.2	721.6	720.1
10°	730.9	727.1	724.0	721.1	718.3	716.7
10.5°	728.2	724.2	720.8	717.8	714.9	713.0
11°	725.2	721.1	717.5	714.3	711.2	709.2
11.5°	722.2	717.9	714.1	710.7	707.1	705.2
12°	718.9	714.4	710.5	706.6	703.2	701.0
12.5°	715.6	710.8	706.6	702.6	699.0	696.7
13°	712.1	707.0	702.8	698.5	694.7	692.2
13.5°	708.5	703.3	698.6	694.3	690.0	687.4
14°	704.7	699.3	694.5	689.8	685.3	682.8
14.5°	700.7	695.1	690.1	685.3	680.5	677.8
15°	696.6	690.8	685.6	680.4	675.5	672.7
15.5°	692.3	686.2	680.9	675.6	670.6	667.5
16°	688.0	681.8	676.2	670.7	665.5	662.1
16.5°	683.5	677.1	671.3	665.7	660.1	656.7
17°	678.9	672.1	666.3	660.6	654.8	651.3
17.5°	674.2	667.5	661.3	655.2	649.3	645.8
18°	669.4	662.5	656.3	650.1	644.0	640.0
18.5°	664.6	657.4	651.2	644.9	638.7	634.6
19°	659.5	652.8	646.2	639.9	633.7	629.5
19.5°	654.8	647.8	641.4	635.1	628.8	624.5
20°	650.3	643.0	636.8	630.3	624.0	619.6
20.5°	645.7	638.5	631.8	625.4	618.9	614.4
21°	641.1	633.6	627.1	620.4	613.8	609.3

TEST NUMBER: P775687

CATALOG NUMBER: HCDJBL510CSD-HCD4TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	626.8	618.9	611.6	603.2	595.6	590.6
23°	621.5	613.8	606.3	596.9	588.6	582.9
23.5°	615.9	608.3	600.3	590.0	580.9	574.8
24°	609.8	602.9	594.0	582.7	572.6	565.5
24.5°	603.5	596.6	587.4	575.0	563.8	555.6
25°	596.7	590.3	580.3	567.1	554.7	544.9
25.5°	589.7	583.4	572.8	559.0	545.0	534.5
26°	582.3	576.2	564.9	550.9	535.1	523.9
26.5°	574.3	567.8	556.4	542.3	524.8	513.3
27°	566.6	559.3	547.6	533.4	514.8	502.9
27.5°	558.7	549.7	538.5	524.3	504.6	492.9
28°	550.5	539.5	529.0	514.7	494.8	483.1
28.5°	542.1	528.8	518.9	504.6	485.1	473.4
29°	533.4	517.9	508.5	494.2	475.4	463.2
29.5°	524.7	506.4	497.6	483.5	465.9	453.4
30°	515.3	494.9	486.3	472.6	456.4	443.2
30.5°	505.6	483.7	474.5	461.8	446.5	433.0
31°	495.4	472.7	462.2	450.8	436.3	422.3
31.5°	485.0	462.2	450.4	439.4	426.1	411.7
32°	474.3	451.8	438.7	428.2	415.9	400.5
32.5°	463.2	441.7	427.2	416.9	405.3	389.8
33°	451.9	431.6	416.2	405.7	393.9	379.2
33.5°	440.5	421.6	405.0	394.3	382.9	368.7
34°	429.4	411.4	394.3	383.1	371.4	358.6
34.5°	418.5	400.4	383.5	371.6	360.1	348.4
35°	407.7	389.6	372.6	360.4	348.6	338.5
35.5°	397.1	378.6	361.6	349.3	338.0	328.8
36°	386.6	367.5	350.5	338.4	327.1	319.1
36.5°	376.0	356.6	339.5	327.5	316.6	309.3
37°	365.5	345.4	328.6	316.3	306.3	299.3
37.5°	354.7	334.8	317.8	305.6	296.4	289.4
38°	343.9	324.4	307.1	294.8	286.1	279.5
38.5°	333.2	314.4	296.7	284.3	276.0	269.5
39°	322.6	304.4	286.8	273.8	265.8	260.0
39.5°	311.7	294.4	277.0	263.5	255.4	250.2
40°	301.0	284.4	267.4	253.4	245.3	240.8
40.5°	290.2	274.5	258.1	243.5	235.3	231.7
41°	280.3	264.3	248.8	233.9	225.5	222.9
41.5°	269.7	254.6	239.8	224.9	216.1	214.0
42°	259.7	244.7	230.7	215.9	207.2	205.2
42.5°	249.5	235.0	222.4	207.6	198.7	196.8
43°	240.0	225.5	213.5	199.3	190.4	188.4
43.5°	229.9	216.5	205.0	191.2	182.4	180.1

TEST NUMBER: P775687

CATALOG NUMBER: HCDJBL510CSD-HCD4TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	202.3	190.7	180.4	169.0	160.5	157.0
45.5°	193.2	182.6	172.9	162.3	154.0	150.4
46°	184.7	174.8	165.6	156.0	147.7	144.2
46.5°	176.2	167.1	158.5	149.8	141.8	138.3
47°	168.1	159.7	151.6	143.7	136.2	132.9
47.5°	160.4	152.5	145.3	138.1	131.0	128.0
48°	153.0	145.6	139.0	132.9	126.3	123.7
48.5°	146.3	138.9	133.2	127.9	121.7	119.5
49°	139.4	132.7	127.8	123.2	117.6	115.8
49.5°	133.3	126.8	122.6	118.6	113.7	112.2
50°	127.5	121.2	117.7	114.2	110.1	108.9
50.5°	122.0	115.9	113.0	110.2	106.7	105.8
51°	116.8	111.2	108.8	106.4	103.4	102.8
51.5°	112.2	106.9	104.7	102.9	100.3	99.7
52°	107.7	102.9	101.1	99.3	97.4	97.0
52.5°	103.6	99.2	97.6	96.1	94.5	94.2
53°	99.7	95.8	94.3	93.0	91.8	91.5
53.5°	96.1	92.7	91.1	90.2	89.2	89.0
54°	92.8	89.8	88.5	87.6	86.9	86.7
54.5°	89.9	87.3	86.2	85.5	84.8	84.7
55°	87.7	85.0	84.1	83.5	82.9	82.8
55.5°	85.5	83.1	82.0	81.4	80.8	80.8
56°	83.3	81.0	80.0	79.4	78.8	78.8
56.5°	81.1	78.9	78.0	77.4	76.8	76.8
57°	78.8	76.8	75.9	75.3	74.8	74.8
57.5°	76.8	74.6	73.7	73.2	72.8	72.8
58°	74.7	72.6	71.8	71.3	70.8	70.8
58.5°	72.6	70.5	69.7	69.3	68.9	68.9
59°	70.4	68.6	67.7	67.3	67.0	67.0
59.5°	68.5	66.5	65.8	65.5	65.2	65.0
60°	66.5	64.6	63.9	63.6	63.3	63.1
60.5°	64.5	62.7	62.0	61.8	61.5	61.2
61°	62.7	60.9	60.3	60.0	59.8	59.4
61.5°	60.8	59.1	58.5	58.2	57.9	57.6
62°	59.0	57.4	56.9	56.6	56.2	55.7
62.5°	57.3	55.6	55.0	54.9	54.5	54.0
63°	55.5	54.0	53.4	53.2	52.8	52.2
63.5°	54.0	52.3	51.8	51.7	51.2	50.5
64°	52.3	50.8	50.2	50.1	49.5	48.9
64.5°	50.7	49.2	48.7	48.6	48.0	47.2
65°	49.1	47.6	47.2	47.1	46.4	45.6
65.5°	47.5	46.2	45.8	45.6	44.8	44.0
66°	46.1	44.7	44.3	44.2	43.3	42.5



TEST NUMBER: P775687

CATALOG NUMBER: HCDJBL510CSD-HCD4TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	41.8	40.5	40.2	40.0	38.8	38.0
68°	40.4	39.2	38.8	38.7	37.3	36.7
68.5°	39.2	37.9	37.4	37.3	36.0	35.3
69°	37.8	36.7	36.3	36.0	34.8	34.0
69.5°	36.5	35.4	35.0	34.8	33.5	32.6
70°	35.2	34.2	33.9	33.7	32.2	31.3
70.5°	34.0	33.0	32.6	32.4	30.9	29.9
71°	32.8	31.8	31.4	31.2	29.6	28.7
71.5°	31.6	30.6	30.2	29.9	28.4	27.4
72°	30.5	29.4	29.1	28.8	27.1	26.1
72.5°	29.2	28.3	28.0	27.6	25.9	24.9
73°	28.1	27.1	26.8	26.4	24.8	23.6
73.5°	26.9	26.0	25.7	25.3	23.5	22.5
74°	25.9	25.0	24.7	24.1	22.4	21.3
74.5°	24.8	23.8	23.5	23.1	21.2	20.2
75°	23.7	22.8	22.5	22.0	20.1	19.1
75.5°	22.7	21.8	21.4	20.9	19.1	17.9
76°	21.6	20.7	20.4	19.8	17.9	16.9
76.5°	20.6	19.7	19.4	18.7	16.8	15.8
77°	19.6	18.7	18.4	17.7	15.7	14.8
77.5°	18.6	17.7	17.4	16.8	14.7	13.8
78°	17.6	16.8	16.5	15.7	13.7	12.7
78.5°	16.7	15.8	15.5	14.8	12.7	11.7
79°	15.7	14.9	14.6	13.8	11.7	10.8
79.5°	14.8	14.0	13.7	12.8	10.8	9.8
80°	13.9	13.1	12.7	12.0	9.8	8.9
80.5°	12.9	12.2	11.9	11.1	8.9	8.0
81°	12.1	11.3	11.0	10.2	8.0	7.0
81.5°	11.2	10.5	10.2	9.3	7.1	6.2
82°	10.4	9.6	9.3	8.5	6.3	5.3
82.5°	9.5	8.8	8.5	7.8	5.5	4.5
83°	8.8	8.0	7.7	6.9	4.8	3.6
83.5°	8.0	7.1	6.8	6.2	4.1	3.1
84°	7.1	6.3	6.0	5.5	3.6	2.6
84.5°	6.3	5.6	5.3	4.8	3.2	2.1
85°	5.6	4.8	4.6	4.0	2.7	1.6
85.5°	4.8	4.0	3.7	3.4	2.2	1.2
86°	4.0	3.4	3.1	2.7	1.8	0.9
86.5°	3.3	2.7	2.4	2.1	1.3	0.7
87°	2.7	2.0	1.7	1.3	0.9	0.4
87.5°	2.0	1.2	0.9	0.7	0.5	0.2
88°	1.2	0.6	0.4	0.3	0.2	0.1
88.5°	0.6	0.2	0.1	0.1	0.1	0.0



TEST NUMBER: P775687

CATALOG NUMBER: HCDJBL510CSD-HCD4TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.0	0.0	0.0	0.1	0.0



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

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21.5°	603.9	601.1	601.3	603.8	612.8	619.4	626.0	632.7	637.2	639.7	639.6
22°	597.7	594.5	594.8	597.5	607.7	614.5	621.4	627.8	632.6	635.1	634.9



44°	172.0	173.4	175.0	177.1	186.5	192.3	200.5	213.3	221.1	225.2	223.6
44.5°	164.5	166.8	168.4	170.5	178.6	184.4	192.3	205.0	212.4	215.5	214.4



66.5°	41.0	41.9	43.3	43.6	45.2	45.7	45.8	45.1	43.8	44.2	45.1
67°	39.5	40.5	41.8	42.3	43.8	44.2	44.4	43.6	42.4	42.8	43.6



89°	0.0	0.1	0.0	0.0	0.2	0.3	0.4	0.4	0.2	0.3	0.3
89.5°	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1

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21.5°	636.3	628.6	622.1	615.2	608.2	603.9
22°	631.7	624.0	617.0	609.4	602.2	597.7



44°	220.6	207.5	196.7	183.5	174.7	172.0
44.5°	211.2	199.0	188.6	176.1	167.5	164.5

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66.5°	44.6	43.3	42.9	42.8	41.7	41.0
67°	43.2	41.8	41.5	41.4	40.3	39.5

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89°	0.2	0.0	0.0	0.0	0.1	0.0
89.5°	0.0	0.0	0.0	0.0	0.1	0.0

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(END OF REPORT)