

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: P775823

Luminaire Tested: HCDJBL510CSD-HCD81TRH-1000lm-4000K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P775823  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2312156B043-HCD81TRH)  
Test Lab:  
Issue Date: 2/13/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBL510CSD-HCD81TRH-1000lm-4000K  
Description: 8 INCH ROUND SHALLOW-WIDE HAZE TRIM  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

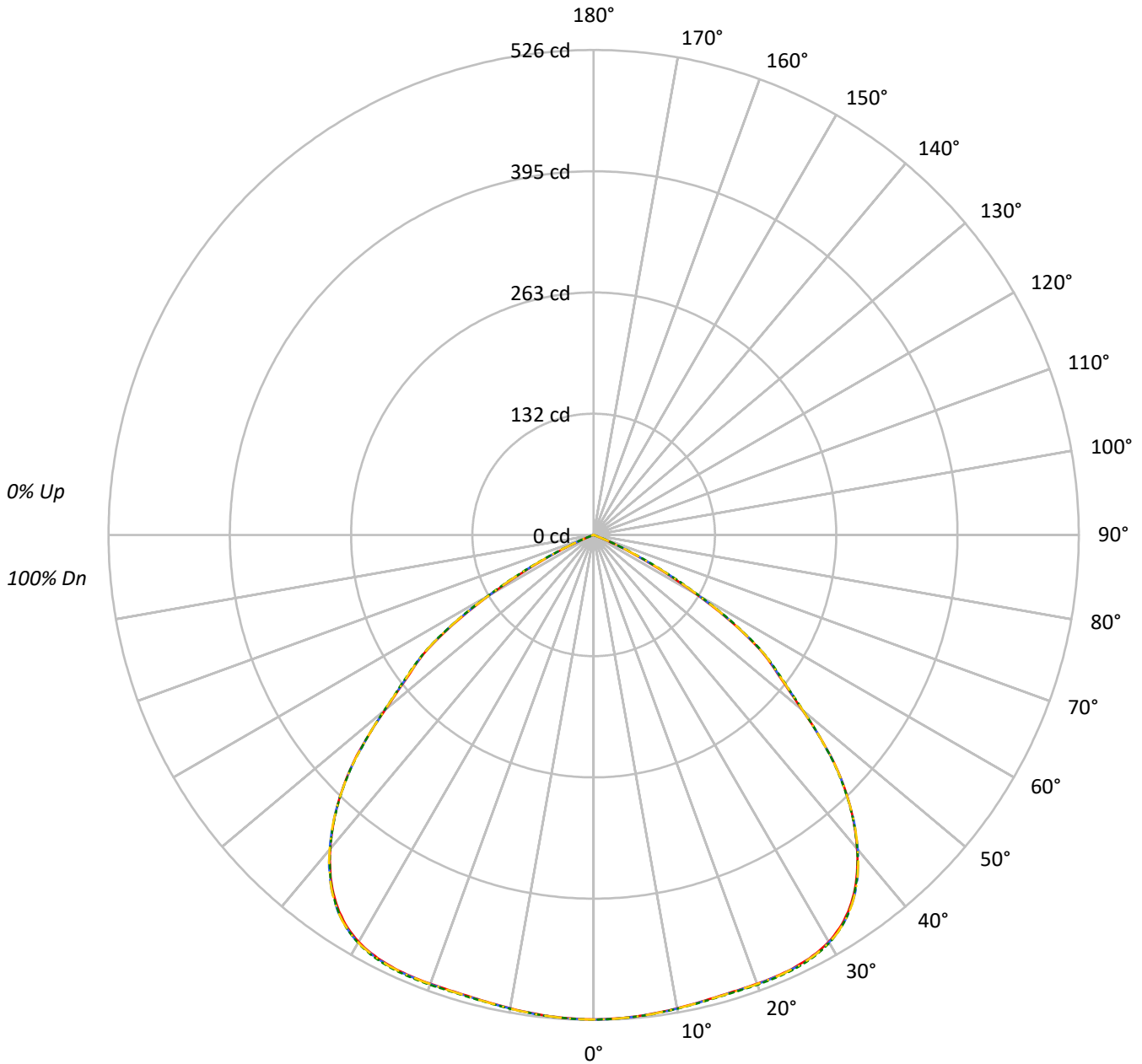
Lumens per Lamp: N/A  
Luminaire Lumens: 1276.5 lumens  
Efficiency: N/A  
Efficacy: 127.6 lumens/watt  
Spacing Criteria (0/90/45): 1.42 / 1.42 / 1.43  
Luminous Opening: Circular (Dia: 0.67' x H: 0')  
CIE Type: Direct

Input Watts (W): 10  
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	112	108	105	102	109	106	103	100	102	99	97	98	96	94	94	93	91	89	89	89	89	89	89		
	2	103	97	91	87	101	95	90	86	92	87	84	88	85	82	86	83	80	78	78	78	78	78	78		
	3	96	87	80	75	93	85	79	74	82	77	73	80	75	71	77	74	70	68	68	68	68	68	68		
	4	88	78	70	65	86	77	70	64	74	68	63	72	67	63	70	66	62	60	60	60	60	60	60		
	5	82	70	62	57	80	69	62	56	67	61	56	65	60	55	64	59	55	53	53	53	53	53	53		
	6	76	64	56	50	74	63	55	50	61	54	49	59	53	49	58	53	48	47	47	47	47	47	47		
	7	70	58	50	44	69	57	50	44	56	49	44	54	48	44	53	48	43	41	41	41	41	41	41		
	8	65	53	45	40	64	52	45	40	51	44	39	50	44	39	49	43	39	37	37	37	37	37	37		
	9	61	49	41	36	60	48	41	36	47	40	36	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°	16047	16047	16047	16047
5°	16068	16074	16068	16074
10°	16164	16176	16164	16176
15°	16388	16414	16388	16414
20°	16830	16865	16830	16865
25°	17416	17466	17416	17466
30°	17962	18011	17962	18011
35°	18151	18188	18151	18188
40°	17707	17715	17707	17715
45°	16515	16493	16515	16493
50°	14016	14116	14016	14116
55°	11982	12051	11982	12051
60°	7883	8188	7883	8188
65°	2781	3345	2781	3345
70°	45	250	45	250
75°	12	12	12	12
80°	0	18	0	18
85°	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 16515 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	50.0	3.9
10°-20°	147.2	11.5
20°-30°	239.0	18.7
30°-40°	303.5	23.8
40°-50°	291.1	22.8
50°-60°	195.9	15.3
60°-70°	49.6	3.9
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°	436.2	34.2
0°-40°	739.7	57.9
0°-60°	1226.7	96.1
0°-90°	1276.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1276.5	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	526	526	526	526	526	
5°	524	524	524	524	524	50
15°	518	519	518	519	518	147
25°	517	518	517	518	517	239
35°	487	488	487	488	487	303
45°	382	382	382	382	382	291
55°	225	226	225	226	225	195
65°	38	46	38	46	38	46
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°	525.6	525.6	525.6	525.6	525.6	525.6	525.6	525.6	525.6	525.6	525.6
0.5°	525.5	525.5	525.6	525.7	525.6	525.7	525.6	525.5	525.5	525.5	525.6
1°	525.5	525.5	525.6	525.7	525.5	525.7	525.6	525.5	525.5	525.5	525.6
1.5°	525.3	525.3	525.5	525.6	525.5	525.6	525.5	525.3	525.3	525.3	525.5
2°	525.2	525.2	525.5	525.5	525.3	525.5	525.5	525.2	525.2	525.2	525.5
2.5°	525.1	525.2	525.3	525.5	525.2	525.5	525.3	525.2	525.1	525.2	525.3
3°	525.0	525.0	525.2	525.2	525.1	525.2	525.2	525.0	525.0	525.0	525.2
3.5°	524.8	524.9	525.0	525.1	525.0	525.1	525.0	524.9	524.8	524.9	525.0
4°	524.7	524.7	524.8	525.0	524.8	525.0	524.8	524.7	524.7	524.7	524.8
4.5°	524.5	524.6	524.7	524.8	524.7	524.8	524.7	524.6	524.5	524.6	524.7
5°	524.3	524.4	524.5	524.6	524.5	524.6	524.5	524.4	524.3	524.4	524.5
5.5°	524.1	524.1	524.3	524.4	524.3	524.4	524.3	524.1	524.1	524.1	524.3
6°	523.8	523.9	524.0	524.2	524.1	524.2	524.0	523.9	523.8	523.9	524.0
6.5°	523.6	523.7	523.8	524.0	523.8	524.0	523.8	523.7	523.6	523.7	523.8
7°	523.2	523.4	523.6	523.7	523.6	523.7	523.6	523.4	523.2	523.4	523.6
7.5°	522.9	523.0	523.2	523.4	523.2	523.4	523.2	523.0	522.9	523.0	523.2
8°	522.7	522.7	522.9	523.1	523.0	523.1	522.9	522.7	522.7	522.7	522.9
8.5°	522.4	522.4	522.6	522.7	522.7	522.7	522.6	522.4	522.4	522.4	522.6
9°	522.0	522.1	522.3	522.5	522.4	522.5	522.3	522.1	522.0	522.1	522.3
9.5°	521.7	521.8	522.0	522.2	522.1	522.2	522.0	521.8	521.7	521.8	522.0
10°	521.4	521.5	521.7	521.9	521.8	521.9	521.7	521.5	521.4	521.5	521.7
10.5°	521.0	521.1	521.2	521.6	521.5	521.6	521.2	521.1	521.0	521.1	521.2
11°	520.7	520.7	520.9	521.2	521.1	521.2	520.9	520.7	520.7	520.7	520.9
11.5°	520.4	520.4	520.6	520.9	520.8	520.9	520.6	520.4	520.4	520.4	520.6
12°	520.1	520.1	520.3	520.6	520.6	520.6	520.3	520.1	520.1	520.1	520.3
12.5°	519.8	519.8	520.1	520.3	520.3	520.3	520.1	519.8	519.8	519.8	520.1
13°	519.5	519.6	519.8	520.0	520.1	520.0	519.8	519.6	519.5	519.6	519.8
13.5°	519.1	519.3	519.6	519.8	519.8	519.8	519.6	519.3	519.1	519.3	519.6
14°	518.9	519.0	519.3	519.6	519.6	519.6	519.3	519.0	518.9	519.0	519.3
14.5°	518.7	518.8	519.0	519.4	519.5	519.4	519.0	518.8	518.7	518.8	519.0
15°	518.5	518.6	518.8	519.3	519.3	519.3	518.8	518.6	518.5	518.6	518.8
15.5°	518.3	518.4	518.7	519.0	519.1	519.0	518.7	518.4	518.3	518.4	518.7
16°	518.2	518.3	518.5	518.9	519.0	518.9	518.5	518.3	518.2	518.3	518.5
16.5°	518.1	518.2	518.4	518.8	518.9	518.8	518.4	518.2	518.1	518.2	518.4
17°	518.0	518.1	518.4	518.8	518.9	518.8	518.4	518.1	518.0	518.1	518.4
17.5°	518.0	518.1	518.3	518.8	518.9	518.8	518.3	518.1	518.0	518.1	518.3
18°	517.9	518.0	518.3	518.8	518.9	518.8	518.3	518.0	517.9	518.0	518.3
18.5°	517.9	518.0	518.3	518.8	518.9	518.8	518.3	518.0	517.9	518.0	518.3
19°	518.0	518.0	518.3	518.9	519.0	518.9	518.3	518.0	518.0	518.0	518.3
19.5°	518.0	518.1	518.4	518.9	519.1	518.9	518.4	518.1	518.0	518.1	518.4
20°	518.0	518.1	518.4	519.0	519.1	519.0	518.4	518.1	518.0	518.1	518.4
20.5°	518.1	518.1	518.5	519.0	519.3	519.0	518.5	518.1	518.1	518.1	518.5
21°	518.1	518.2	518.5	519.1	519.3	519.1	518.5	518.2	518.1	518.2	518.5



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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°	518.0	518.1	518.5	519.1	519.4	519.1	518.5	518.1	518.0	518.1	518.5
23°	517.9	518.0	518.4	519.0	519.3	519.0	518.4	518.0	517.9	518.0	518.4
23.5°	517.8	517.9	518.3	518.9	519.1	518.9	518.3	517.9	517.8	517.9	518.3
24°	517.7	517.7	518.1	518.8	519.0	518.8	518.1	517.7	517.7	517.7	518.1
24.5°	517.4	517.5	517.9	518.6	518.8	518.6	517.9	517.5	517.4	517.5	517.9
25°	517.0	517.2	517.7	518.4	518.5	518.4	517.7	517.2	517.0	517.2	517.7
25.5°	516.7	516.8	517.4	518.1	518.2	518.1	517.4	516.8	516.7	516.8	517.4
26°	516.3	516.4	516.9	517.7	517.9	517.7	516.9	516.4	516.3	516.4	516.9
26.5°	515.8	515.9	516.5	517.3	517.4	517.3	516.5	515.9	515.8	515.9	516.5
27°	515.3	515.4	515.9	516.6	516.7	516.6	515.9	515.4	515.3	515.4	515.9
27.5°	514.5	514.7	515.3	516.0	516.1	516.0	515.3	514.7	514.5	514.7	515.3
28°	513.8	513.9	514.5	515.3	515.4	515.3	514.5	513.9	513.8	513.9	514.5
28.5°	512.9	513.1	513.7	514.4	514.4	514.4	513.7	513.1	512.9	513.1	513.7
29°	511.9	512.1	512.7	513.4	513.5	513.4	512.7	512.1	511.9	512.1	512.7
29.5°	510.7	510.9	511.7	512.3	512.3	512.3	511.7	510.9	510.7	510.9	511.7
30°	509.5	509.7	510.4	511.1	510.9	511.1	510.4	509.7	509.5	509.7	510.4
30.5°	508.1	508.3	509.1	509.7	509.6	509.7	509.1	508.3	508.1	508.3	509.1
31°	506.5	506.7	507.6	508.1	507.9	508.1	507.6	506.7	506.5	506.7	507.6
31.5°	504.7	505.1	505.9	506.3	506.1	506.3	505.9	505.1	504.7	505.1	505.9
32°	502.8	503.2	504.0	504.4	504.2	504.4	504.0	503.2	502.8	503.2	504.0
32.5°	500.7	501.1	501.9	502.2	502.0	502.2	501.9	501.1	500.7	501.1	501.9
33°	498.3	498.8	499.7	499.9	499.6	499.9	499.7	498.8	498.3	498.8	499.7
33.5°	495.7	496.2	497.2	497.4	497.1	497.4	497.2	496.2	495.7	496.2	497.2
34°	493.1	493.6	494.6	494.7	494.2	494.7	494.6	493.6	493.1	493.6	494.6
34.5°	490.0	490.7	491.6	491.6	491.2	491.6	491.6	490.7	490.0	490.7	491.6
35°	487.0	487.5	488.6	488.5	488.0	488.5	488.6	487.5	487.0	487.5	488.6
35.5°	483.6	484.2	485.2	485.1	484.7	485.1	485.2	484.2	483.6	484.2	485.2
36°	480.1	480.7	481.7	481.5	481.0	481.5	481.7	480.7	480.1	480.7	481.7
36.5°	476.4	476.9	478.0	477.7	477.1	477.7	478.0	476.9	476.4	476.9	478.0
37°	472.3	472.9	473.9	473.7	473.1	473.7	473.9	472.9	472.3	472.9	473.9
37.5°	468.2	468.7	469.8	469.4	468.8	469.4	469.8	468.7	468.2	468.7	469.8
38°	463.8	464.4	465.3	465.0	464.3	465.0	465.3	464.4	463.8	464.4	465.3
38.5°	459.1	459.8	460.7	460.3	459.7	460.3	460.7	459.8	459.1	459.8	460.7
39°	454.5	455.0	455.9	455.6	454.8	455.6	455.9	455.0	454.5	455.0	455.9
39.5°	449.6	450.0	450.8	450.5	449.8	450.5	450.8	450.0	449.6	450.0	450.8
40°	444.3	444.7	445.6	445.3	444.5	445.3	445.6	444.7	444.3	444.7	445.6
40.5°	439.1	439.4	440.1	439.8	439.1	439.8	440.1	439.4	439.1	439.4	440.1
41°	433.5	433.8	434.4	434.2	433.5	434.2	434.4	433.8	433.5	433.8	434.4
41.5°	427.8	428.0	428.7	428.2	427.7	428.2	428.7	428.0	427.8	428.0	428.7
42°	421.9	422.1	422.6	422.4	421.8	422.4	422.6	422.1	421.9	422.1	422.6
42.5°	415.9	415.9	416.4	416.2	415.6	416.2	416.4	415.9	415.9	415.9	416.4
43°	409.6	409.6	410.0	409.7	409.2	409.7	410.0	409.6	409.6	409.6	410.0
43.5°	403.1	403.1	403.2	403.0	402.7	403.0	403.2	403.1	403.1	403.1	403.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	382.5	382.2	382.2	382.1	382.0	382.1	382.2	382.2	382.5	382.2	382.2
45.5°	375.2	374.9	374.8	374.6	374.5	374.6	374.8	374.9	375.2	374.9	374.8
46°	367.6	367.2	367.1	367.1	367.0	367.1	367.1	367.2	367.6	367.2	367.1
46.5°	359.7	359.3	359.2	359.1	359.0	359.1	359.2	359.3	359.7	359.3	359.2
47°	351.3	350.9	350.6	350.4	350.2	350.4	350.6	350.9	351.3	350.9	350.6
47.5°	342.2	341.8	341.3	341.4	341.3	341.4	341.3	341.8	342.2	341.8	341.3
48°	332.5	332.4	332.6	332.7	332.8	332.7	332.6	332.4	332.5	332.4	332.6
48.5°	323.3	323.3	323.7	323.8	323.8	323.8	323.7	323.3	323.3	323.3	323.7
49°	314.3	314.2	314.5	314.6	314.7	314.6	314.5	314.2	314.3	314.2	314.5
49.5°	304.7	304.8	305.4	305.8	305.9	305.8	305.4	304.8	304.7	304.8	305.4
50°	295.1	295.5	296.4	296.9	297.2	296.9	296.4	295.5	295.1	295.5	296.4
50.5°	286.3	286.8	287.6	288.2	288.4	288.2	287.6	286.8	286.3	286.8	287.6
51°	278.2	278.5	279.3	279.8	280.0	279.8	279.3	278.5	278.2	278.5	279.3
51.5°	270.4	270.6	271.6	272.3	272.6	272.3	271.6	270.6	270.4	270.6	271.6
52°	262.7	263.1	264.1	265.0	265.5	265.0	264.1	263.1	262.7	263.1	264.1
52.5°	255.8	256.2	257.3	258.2	258.8	258.2	257.3	256.2	255.8	256.2	257.3
53°	249.4	249.8	251.0	251.9	252.3	251.9	251.0	249.8	249.4	249.8	251.0
53.5°	243.4	243.8	244.9	245.7	246.1	245.7	244.9	243.8	243.4	243.8	244.9
54°	237.7	238.0	239.0	239.5	239.7	239.5	239.0	238.0	237.7	238.0	239.0
54.5°	231.7	232.0	232.8	233.4	233.5	233.4	232.8	232.0	231.7	232.0	232.8
55°	225.1	225.4	226.2	226.6	226.4	226.6	226.2	225.4	225.1	225.4	226.2
55.5°	217.4	217.7	218.6	219.0	218.9	219.0	218.6	217.7	217.4	217.7	218.6
56°	208.9	209.3	210.4	210.9	210.8	210.9	210.4	209.3	208.9	209.3	210.4
56.5°	199.9	200.5	201.5	202.3	202.2	202.3	201.5	200.5	199.9	200.5	201.5
57°	190.4	190.9	192.3	192.8	192.9	192.8	192.3	190.9	190.4	190.9	192.3
57.5°	180.5	181.2	182.6	183.3	183.4	183.3	182.6	181.2	180.5	181.2	182.6
58°	170.6	171.2	172.7	173.6	173.8	173.6	172.7	171.2	170.6	171.2	172.7
58.5°	160.4	160.9	162.5	163.6	163.9	163.6	162.5	160.9	160.4	160.9	162.5
59°	150.1	150.6	152.1	153.6	154.1	153.6	152.1	150.6	150.1	150.6	152.1
59.5°	139.6	140.2	141.9	143.7	144.1	143.7	141.9	140.2	139.6	140.2	141.9
60°	129.1	130.0	131.7	133.9	134.1	133.9	131.7	130.0	129.1	130.0	131.7
60.5°	118.8	119.6	121.9	123.9	124.3	123.9	121.9	119.6	118.8	119.6	121.9
61°	108.7	109.7	112.2	114.1	114.7	114.1	112.2	109.7	108.7	109.7	112.2
61.5°	99.0	99.9	102.7	104.4	105.3	104.4	102.7	99.9	99.0	99.9	102.7
62°	89.4	90.4	93.2	94.9	95.9	94.9	93.2	90.4	89.4	90.4	93.2
62.5°	79.9	81.1	84.1	85.8	86.9	85.8	84.1	81.1	79.9	81.1	84.1
63°	70.5	72.1	75.1	76.9	78.3	76.9	75.1	72.1	70.5	72.1	75.1
63.5°	61.9	63.3	66.5	68.4	69.8	68.4	66.5	63.3	61.9	63.3	66.5
64°	53.7	55.2	58.1	60.3	61.6	60.3	58.1	55.2	53.7	55.2	58.1
64.5°	45.9	47.3	50.1	52.7	53.9	52.7	50.1	47.3	45.9	47.3	50.1
65°	38.5	40.4	42.8	45.2	46.3	45.2	42.8	40.4	38.5	40.4	42.8
65.5°	31.9	33.7	35.8	38.3	39.3	38.3	35.8	33.7	31.9	33.7	35.8
66°	25.7	27.5	29.6	31.9	32.5	31.9	29.6	27.5	25.7	27.5	29.6





TEST NUMBER: P775823

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	10.3	13.1	14.2	16.2	16.3	16.2	14.2	13.1	10.3	13.1	14.2
68°	6.3	9.2	10.3	12.3	12.1	12.3	10.3	9.2	6.3	9.2	10.3
68.5°	2.7	6.0	7.3	8.7	9.7	8.7	7.3	6.0	2.7	6.0	7.3
69°	1.5	3.7	4.7	5.7	7.5	5.7	4.7	3.7	1.5	3.7	4.7
69.5°	0.9	1.8	2.6	3.4	5.1	3.4	2.6	1.8	0.9	1.8	2.6
70°	0.5	1.1	1.3	1.5	2.8	1.5	1.3	1.1	0.5	1.1	1.3
70.5°	0.2	0.5	0.7	0.6	0.8	0.6	0.7	0.5	0.2	0.5	0.7
71°	0.2	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.2	0.3	0.4
71.5°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
72°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
72.5°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
73°	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2
73.5°	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2
74°	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
74.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
75°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
75.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
76°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
76.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
77°	0.1	0.1	0.1	0.1	0.1	0.1	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°	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
80.5°	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
81°	0.0	0.0	0.0	0.0	0.1	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: P775823

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-4000K

**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: P775823

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	525.6	525.6	525.6	525.6	525.6	525.6
0.5°	525.7	525.6	525.7	525.6	525.5	525.5
1°	525.7	525.5	525.7	525.6	525.5	525.5
1.5°	525.6	525.5	525.6	525.5	525.3	525.3
2°	525.5	525.3	525.5	525.5	525.2	525.2
2.5°	525.5	525.2	525.5	525.3	525.2	525.1
3°	525.2	525.1	525.2	525.2	525.0	525.0
3.5°	525.1	525.0	525.1	525.0	524.9	524.8
4°	525.0	524.8	525.0	524.8	524.7	524.7
4.5°	524.8	524.7	524.8	524.7	524.6	524.5
5°	524.6	524.5	524.6	524.5	524.4	524.3
5.5°	524.4	524.3	524.4	524.3	524.1	524.1
6°	524.2	524.1	524.2	524.0	523.9	523.8
6.5°	524.0	523.8	524.0	523.8	523.7	523.6
7°	523.7	523.6	523.7	523.6	523.4	523.2
7.5°	523.4	523.2	523.4	523.2	523.0	522.9
8°	523.1	523.0	523.1	522.9	522.7	522.7
8.5°	522.7	522.7	522.7	522.6	522.4	522.4
9°	522.5	522.4	522.5	522.3	522.1	522.0
9.5°	522.2	522.1	522.2	522.0	521.8	521.7
10°	521.9	521.8	521.9	521.7	521.5	521.4
10.5°	521.6	521.5	521.6	521.2	521.1	521.0
11°	521.2	521.1	521.2	520.9	520.7	520.7
11.5°	520.9	520.8	520.9	520.6	520.4	520.4
12°	520.6	520.6	520.6	520.3	520.1	520.1
12.5°	520.3	520.3	520.3	520.1	519.8	519.8
13°	520.0	520.1	520.0	519.8	519.6	519.5
13.5°	519.8	519.8	519.8	519.6	519.3	519.1
14°	519.6	519.6	519.6	519.3	519.0	518.9
14.5°	519.4	519.5	519.4	519.0	518.8	518.7
15°	519.3	519.3	519.3	518.8	518.6	518.5
15.5°	519.0	519.1	519.0	518.7	518.4	518.3
16°	518.9	519.0	518.9	518.5	518.3	518.2
16.5°	518.8	518.9	518.8	518.4	518.2	518.1
17°	518.8	518.9	518.8	518.4	518.1	518.0
17.5°	518.8	518.9	518.8	518.3	518.1	518.0
18°	518.8	518.9	518.8	518.3	518.0	517.9
18.5°	518.8	518.9	518.8	518.3	518.0	517.9
19°	518.9	519.0	518.9	518.3	518.0	518.0
19.5°	518.9	519.1	518.9	518.4	518.1	518.0
20°	519.0	519.1	519.0	518.4	518.1	518.0
20.5°	519.0	519.3	519.0	518.5	518.1	518.1
21°	519.1	519.3	519.1	518.5	518.2	518.1



TEST NUMBER: P775823

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	519.1	519.4	519.1	518.5	518.1	518.0
23°	519.0	519.3	519.0	518.4	518.0	517.9
23.5°	518.9	519.1	518.9	518.3	517.9	517.8
24°	518.8	519.0	518.8	518.1	517.7	517.7
24.5°	518.6	518.8	518.6	517.9	517.5	517.4
25°	518.4	518.5	518.4	517.7	517.2	517.0
25.5°	518.1	518.2	518.1	517.4	516.8	516.7
26°	517.7	517.9	517.7	516.9	516.4	516.3
26.5°	517.3	517.4	517.3	516.5	515.9	515.8
27°	516.6	516.7	516.6	515.9	515.4	515.3
27.5°	516.0	516.1	516.0	515.3	514.7	514.5
28°	515.3	515.4	515.3	514.5	513.9	513.8
28.5°	514.4	514.4	514.4	513.7	513.1	512.9
29°	513.4	513.5	513.4	512.7	512.1	511.9
29.5°	512.3	512.3	512.3	511.7	510.9	510.7
30°	511.1	510.9	511.1	510.4	509.7	509.5
30.5°	509.7	509.6	509.7	509.1	508.3	508.1
31°	508.1	507.9	508.1	507.6	506.7	506.5
31.5°	506.3	506.1	506.3	505.9	505.1	504.7
32°	504.4	504.2	504.4	504.0	503.2	502.8
32.5°	502.2	502.0	502.2	501.9	501.1	500.7
33°	499.9	499.6	499.9	499.7	498.8	498.3
33.5°	497.4	497.1	497.4	497.2	496.2	495.7
34°	494.7	494.2	494.7	494.6	493.6	493.1
34.5°	491.6	491.2	491.6	491.6	490.7	490.0
35°	488.5	488.0	488.5	488.6	487.5	487.0
35.5°	485.1	484.7	485.1	485.2	484.2	483.6
36°	481.5	481.0	481.5	481.7	480.7	480.1
36.5°	477.7	477.1	477.7	478.0	476.9	476.4
37°	473.7	473.1	473.7	473.9	472.9	472.3
37.5°	469.4	468.8	469.4	469.8	468.7	468.2
38°	465.0	464.3	465.0	465.3	464.4	463.8
38.5°	460.3	459.7	460.3	460.7	459.8	459.1
39°	455.6	454.8	455.6	455.9	455.0	454.5
39.5°	450.5	449.8	450.5	450.8	450.0	449.6
40°	445.3	444.5	445.3	445.6	444.7	444.3
40.5°	439.8	439.1	439.8	440.1	439.4	439.1
41°	434.2	433.5	434.2	434.4	433.8	433.5
41.5°	428.2	427.7	428.2	428.7	428.0	427.8
42°	422.4	421.8	422.4	422.6	422.1	421.9
42.5°	416.2	415.6	416.2	416.4	415.9	415.9
43°	409.7	409.2	409.7	410.0	409.6	409.6
43.5°	403.0	402.7	403.0	403.2	403.1	403.1



TEST NUMBER: P775823

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	382.1	382.0	382.1	382.2	382.2	382.5
45.5°	374.6	374.5	374.6	374.8	374.9	375.2
46°	367.1	367.0	367.1	367.1	367.2	367.6
46.5°	359.1	359.0	359.1	359.2	359.3	359.7
47°	350.4	350.2	350.4	350.6	350.9	351.3
47.5°	341.4	341.3	341.4	341.3	341.8	342.2
48°	332.7	332.8	332.7	332.6	332.4	332.5
48.5°	323.8	323.8	323.8	323.7	323.3	323.3
49°	314.6	314.7	314.6	314.5	314.2	314.3
49.5°	305.8	305.9	305.8	305.4	304.8	304.7
50°	296.9	297.2	296.9	296.4	295.5	295.1
50.5°	288.2	288.4	288.2	287.6	286.8	286.3
51°	279.8	280.0	279.8	279.3	278.5	278.2
51.5°	272.3	272.6	272.3	271.6	270.6	270.4
52°	265.0	265.5	265.0	264.1	263.1	262.7
52.5°	258.2	258.8	258.2	257.3	256.2	255.8
53°	251.9	252.3	251.9	251.0	249.8	249.4
53.5°	245.7	246.1	245.7	244.9	243.8	243.4
54°	239.5	239.7	239.5	239.0	238.0	237.7
54.5°	233.4	233.5	233.4	232.8	232.0	231.7
55°	226.6	226.4	226.6	226.2	225.4	225.1
55.5°	219.0	218.9	219.0	218.6	217.7	217.4
56°	210.9	210.8	210.9	210.4	209.3	208.9
56.5°	202.3	202.2	202.3	201.5	200.5	199.9
57°	192.8	192.9	192.8	192.3	190.9	190.4
57.5°	183.3	183.4	183.3	182.6	181.2	180.5
58°	173.6	173.8	173.6	172.7	171.2	170.6
58.5°	163.6	163.9	163.6	162.5	160.9	160.4
59°	153.6	154.1	153.6	152.1	150.6	150.1
59.5°	143.7	144.1	143.7	141.9	140.2	139.6
60°	133.9	134.1	133.9	131.7	130.0	129.1
60.5°	123.9	124.3	123.9	121.9	119.6	118.8
61°	114.1	114.7	114.1	112.2	109.7	108.7
61.5°	104.4	105.3	104.4	102.7	99.9	99.0
62°	94.9	95.9	94.9	93.2	90.4	89.4
62.5°	85.8	86.9	85.8	84.1	81.1	79.9
63°	76.9	78.3	76.9	75.1	72.1	70.5
63.5°	68.4	69.8	68.4	66.5	63.3	61.9
64°	60.3	61.6	60.3	58.1	55.2	53.7
64.5°	52.7	53.9	52.7	50.1	47.3	45.9
65°	45.2	46.3	45.2	42.8	40.4	38.5
65.5°	38.3	39.3	38.3	35.8	33.7	31.9
66°	31.9	32.5	31.9	29.6	27.5	25.7



TEST NUMBER: P775823

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	16.2	16.3	16.2	14.2	13.1	10.3
68°	12.3	12.1	12.3	10.3	9.2	6.3
68.5°	8.7	9.7	8.7	7.3	6.0	2.7
69°	5.7	7.5	5.7	4.7	3.7	1.5
69.5°	3.4	5.1	3.4	2.6	1.8	0.9
70°	1.5	2.8	1.5	1.3	1.1	0.5
70.5°	0.6	0.8	0.6	0.7	0.5	0.2
71°	0.3	0.3	0.3	0.4	0.3	0.2
71.5°	0.2	0.2	0.2	0.2	0.2	0.2
72°	0.2	0.2	0.2	0.2	0.2	0.2
72.5°	0.2	0.2	0.2	0.2	0.2	0.2
73°	0.2	0.2	0.2	0.2	0.2	0.1
73.5°	0.2	0.2	0.2	0.2	0.1	0.1
74°	0.2	0.2	0.2	0.1	0.1	0.1
74.5°	0.1	0.1	0.1	0.1	0.1	0.1
75°	0.1	0.1	0.1	0.1	0.1	0.1
75.5°	0.1	0.1	0.1	0.1	0.1	0.1
76°	0.1	0.1	0.1	0.1	0.1	0.1
76.5°	0.1	0.1	0.1	0.1	0.1	0.1
77°	0.1	0.1	0.1	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	0.0	0.0
80.5°	0.1	0.1	0.1	0.1	0.0	0.0
81°	0.0	0.1	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: P775823  
CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-4000K

**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°	518.1	518.2	518.5	519.1	519.4	519.1	518.5	518.2	518.1	518.2	518.5
22°	518.1	518.1	518.5	519.1	519.4	519.1	518.5	518.1	518.1	518.1	518.5



44°	396.5	396.3	396.4	396.2	396.0	396.2	396.4	396.3	396.5	396.3	396.4
44.5°	389.7	389.4	389.5	389.4	389.0	389.4	389.5	389.4	389.7	389.4	389.5



66.5°	20.6	22.3	23.8	26.0	26.6	26.0	23.8	22.3	20.6	22.3	23.8
67°	15.4	17.2	18.8	20.9	21.1	20.9	18.8	17.2	15.4	17.2	18.8



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°	519.1	519.4	519.1	518.5	518.2	518.1
22°	519.1	519.4	519.1	518.5	518.1	518.1

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44°	396.2	396.0	396.2	396.4	396.3	396.5
44.5°	389.4	389.0	389.4	389.5	389.4	389.7

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66.5°	26.0	26.6	26.0	23.8	22.3	20.6
67°	20.9	21.1	20.9	18.8	17.2	15.4

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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)