

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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: P775832

Luminaire Tested: HCDJBL510CSD-HCD81TRMB-1000lm-3500K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P775832  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2312156B045-HCD81TRMB)  
Test Lab:  
Issue Date: 2/13/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBL510CSD-HCD81TRMB-1000lm-3500K  
Description: 8 INCH ROUND SHALLOW-WIDE MATTE BLACK TRIM  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1095.3 lumens  
Efficiency: N/A  
Efficacy: 109.5 lumens/watt  
Spacing Criteria (0/90/45): 1.26 / 1.26 / 1.37  
Luminous Opening: Circular (Dia: 0.67' x H: 0')  
CIE Type: Direct

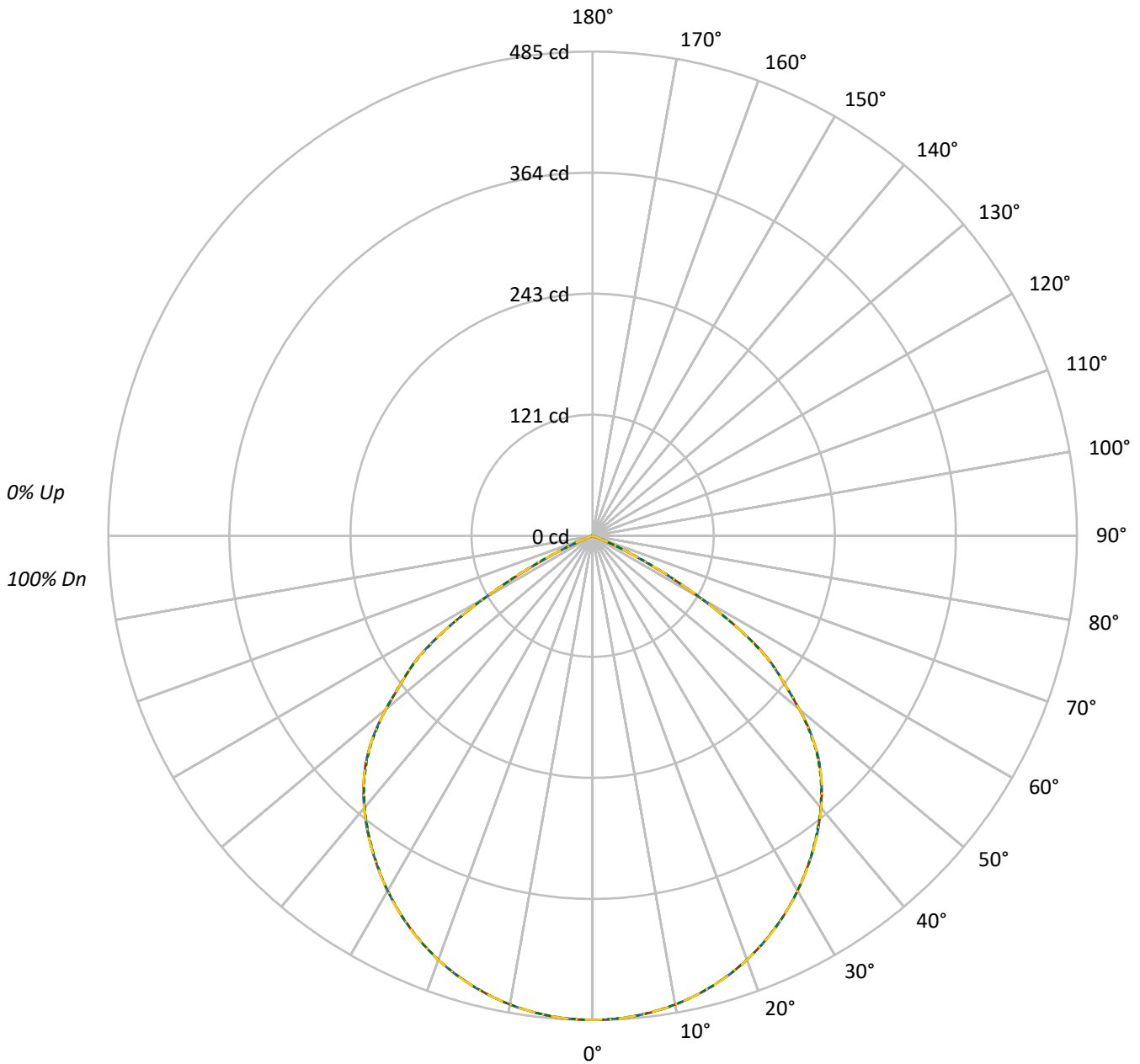
Input Watts (W): 10  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



TEST NUMBER: P775832

CATALOG NUMBER: HCDJBL510CSD-HCD81TRMB-1000lm-3500K

### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20										
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR	0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	100	100	100	100	100		
	1	111	108	105	102	109	106	103	100	101	99	97	98	96	94	94	93	91	89	89	89	89	89	89		
	2	103	97	91	86	101	95	90	85	91	87	84	88	85	82	85	82	80	78	78	78	78	78	78		
	3	95	86	80	74	93	85	79	74	82	77	72	80	75	71	77	73	70	68	68	68	68	68	68		
	4	88	78	70	64	86	76	69	64	74	68	63	72	66	62	70	65	61	59	59	59	59	59	59		
	5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54	52	52	52	52	52	52		
	6	75	63	55	50	74	62	55	49	61	54	49	59	53	49	58	52	48	46	46	46	46	46	46		
	7	70	58	50	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41	41	41	41	41	41		
	8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39	37	37	37	37	37	37		
	9	61	48	41	36	60	48	41	36	47	40	35	46	40	35	45	39	35	33	33	33	33	33	33		
	10	57	45	37	32	56	44	37	32	43	37	32	42	36	32	42	36	32	30	30	30	30	30	30		

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

	0°	90°	180°	270°
0°	14804	14804	14804	14804
5°	14799	14793	14799	14793
10°	14781	14778	14781	14778
15°	14745	14742	14745	14742
20°	14685	14682	14685	14682
25°	14593	14586	14593	14586
30°	14475	14464	14475	14464
35°	14338	14319	14338	14319
40°	14176	14148	14176	14148
45°	13860	13808	13860	13808
50°	12834	12834	12834	12834
55°	11423	11295	11423	11295
60°	7626	7736	7626	7736
65°	2702	3229	2702	3229
70°	27	303	27	303
75°	0	0	0	0
80°	0	0	0	0
85°	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 13860 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	45.9	4.2
10°-20°	131.7	12.0
20°-30°	199.6	18.2
30°-40°	240.7	22.0
40°-50°	245.3	22.4
50°-60°	184.4	16.8
60°-70°	47.6	4.3
70°-80°	0.1	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°	377.2	34.4
0°-40°	617.8	56.4
0°-60°	1047.5	95.6
0°-90°	1095.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1095.3	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	485	485	485	485	485	
5°	483	483	483	483	483	46
15°	466	466	466	466	466	132
25°	433	433	433	433	433	200
35°	385	384	385	384	385	241
45°	321	320	321	320	321	246
55°	215	212	215	212	215	184
65°	37	45	37	45	37	45
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°	484.9	484.9	484.9	484.9	484.9	484.9	484.9	484.9	484.9	484.9	484.9
0.5°	484.9	484.9	484.9	484.9	484.8	484.9	484.9	484.9	484.9	484.9	484.9
1°	484.9	484.9	484.9	484.8	484.7	484.8	484.9	484.9	484.9	484.9	484.9
1.5°	484.8	484.8	484.8	484.8	484.7	484.8	484.8	484.8	484.8	484.8	484.8
2°	484.7	484.7	484.7	484.6	484.5	484.6	484.7	484.7	484.7	484.7	484.7
2.5°	484.4	484.5	484.5	484.5	484.3	484.5	484.5	484.5	484.4	484.5	484.5
3°	484.2	484.3	484.3	484.3	484.1	484.3	484.3	484.3	484.2	484.3	484.3
3.5°	484.0	484.0	484.0	484.0	483.9	484.0	484.0	484.0	484.0	484.0	484.0
4°	483.7	483.7	483.7	483.7	483.4	483.7	483.7	483.7	483.7	483.7	483.7
4.5°	483.3	483.3	483.3	483.3	483.1	483.3	483.3	483.3	483.3	483.3	483.3
5°	482.9	482.9	482.9	482.9	482.7	482.9	482.9	482.9	482.9	482.9	482.9
5.5°	482.5	482.5	482.5	482.5	482.3	482.5	482.5	482.5	482.5	482.5	482.5
6°	482.0	482.1	482.0	482.0	481.9	482.0	482.0	482.1	482.0	482.1	482.0
6.5°	481.5	481.6	481.6	481.5	481.4	481.5	481.6	481.6	481.5	481.6	481.6
7°	481.0	481.0	481.0	481.0	480.9	481.0	481.0	481.0	481.0	481.0	481.0
7.5°	480.3	480.3	480.3	480.4	480.2	480.4	480.3	480.3	480.3	480.3	480.3
8°	479.7	479.7	479.7	479.7	479.6	479.7	479.7	479.7	479.7	479.7	479.7
8.5°	479.1	479.1	479.1	479.1	478.9	479.1	479.1	479.1	479.1	479.1	479.1
9°	478.4	478.4	478.4	478.4	478.3	478.4	478.4	478.4	478.4	478.4	478.4
9.5°	477.5	477.6	477.6	477.6	477.4	477.6	477.6	477.6	477.5	477.6	477.6
10°	476.8	476.8	476.8	476.8	476.7	476.8	476.8	476.8	476.8	476.8	476.8
10.5°	476.0	476.0	476.0	476.0	475.9	476.0	476.0	476.0	476.0	476.0	476.0
11°	475.1	475.1	475.1	475.2	475.0	475.2	475.1	475.1	475.1	475.1	475.1
11.5°	474.1	474.1	474.1	474.2	474.0	474.2	474.1	474.1	474.1	474.1	474.1
12°	473.2	473.2	473.2	473.2	473.1	473.2	473.2	473.2	473.2	473.2	473.2
12.5°	472.2	472.2	472.2	472.3	472.1	472.3	472.2	472.2	472.2	472.2	472.2
13°	471.1	471.1	471.1	471.1	471.0	471.1	471.1	471.1	471.1	471.1	471.1
13.5°	470.0	470.1	470.1	470.1	469.9	470.1	470.1	470.1	470.0	470.1	470.1
14°	468.8	468.9	468.9	468.9	468.7	468.9	468.9	468.9	468.8	468.9	468.9
14.5°	467.7	467.7	467.7	467.7	467.6	467.7	467.7	467.7	467.7	467.7	467.7
15°	466.5	466.5	466.5	466.6	466.4	466.6	466.5	466.5	466.5	466.5	466.5
15.5°	465.2	465.2	465.2	465.2	465.1	465.2	465.2	465.2	465.2	465.2	465.2
16°	463.9	464.0	464.0	464.0	463.8	464.0	464.0	464.0	463.9	464.0	464.0
16.5°	462.5	462.5	462.6	462.6	462.5	462.6	462.6	462.5	462.5	462.5	462.6
17°	461.2	461.2	461.3	461.2	461.1	461.2	461.3	461.2	461.2	461.2	461.3
17.5°	459.7	459.7	459.8	459.8	459.7	459.8	459.8	459.7	459.7	459.7	459.8
18°	458.3	458.3	458.3	458.3	458.2	458.3	458.3	458.3	458.3	458.3	458.3
18.5°	456.7	456.7	456.8	456.8	456.6	456.8	456.8	456.7	456.7	456.7	456.8
19°	455.2	455.2	455.3	455.3	455.1	455.3	455.3	455.2	455.2	455.2	455.3
19.5°	453.6	453.6	453.6	453.6	453.5	453.6	453.6	453.6	453.6	453.6	453.6
20°	452.0	452.0	452.0	452.0	451.9	452.0	452.0	452.0	452.0	452.0	452.0
20.5°	450.2	450.3	450.3	450.3	450.1	450.3	450.3	450.3	450.2	450.3	450.3
21°	448.5	448.5	448.5	448.5	448.4	448.5	448.5	448.5	448.5	448.5	448.5



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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°	443.1	443.2	443.2	443.2	443.0	443.2	443.2	443.2	443.1	443.2	443.2
23°	441.2	441.2	441.2	441.2	441.1	441.2	441.2	441.2	441.2	441.2	441.2
23.5°	439.2	439.3	439.3	439.3	439.1	439.3	439.3	439.3	439.2	439.3	439.3
24°	437.3	437.3	437.4	437.3	437.2	437.3	437.4	437.3	437.3	437.3	437.4
24.5°	435.2	435.3	435.4	435.3	435.1	435.3	435.4	435.3	435.2	435.3	435.4
25°	433.2	433.2	433.3	433.2	433.0	433.2	433.3	433.2	433.2	433.2	433.3
25.5°	431.0	431.1	431.2	431.1	430.9	431.1	431.2	431.1	431.0	431.1	431.2
26°	429.0	429.0	429.1	429.0	428.8	429.0	429.1	429.0	429.0	429.0	429.1
26.5°	426.8	426.9	426.9	426.8	426.6	426.8	426.9	426.9	426.8	426.9	426.9
27°	424.6	424.6	424.7	424.6	424.4	424.6	424.7	424.6	424.6	424.6	424.7
27.5°	422.3	422.4	422.4	422.3	422.1	422.3	422.4	422.4	422.3	422.4	422.4
28°	420.1	420.2	420.2	420.1	419.9	420.1	420.2	420.2	420.1	420.2	420.2
28.5°	417.8	417.8	417.9	417.8	417.6	417.8	417.9	417.8	417.8	417.8	417.9
29°	415.4	415.5	415.5	415.4	415.1	415.4	415.5	415.5	415.4	415.5	415.5
29.5°	413.0	413.1	413.1	413.0	412.7	413.0	413.1	413.1	413.0	413.1	413.1
30°	410.6	410.7	410.7	410.5	410.3	410.5	410.7	410.7	410.6	410.7	410.7
30.5°	408.3	408.3	408.3	408.2	407.8	408.2	408.3	408.3	408.3	408.3	408.3
31°	405.7	405.8	405.9	405.6	405.4	405.6	405.9	405.8	405.7	405.8	405.9
31.5°	403.2	403.3	403.3	403.1	402.8	403.1	403.3	403.3	403.2	403.3	403.3
32°	400.7	400.8	400.8	400.6	400.2	400.6	400.8	400.8	400.7	400.8	400.8
32.5°	398.1	398.2	398.2	397.9	397.6	397.9	398.2	398.2	398.1	398.2	398.2
33°	395.4	395.6	395.6	395.4	395.0	395.4	395.6	395.6	395.4	395.6	395.6
33.5°	392.8	392.9	393.0	392.7	392.3	392.7	393.0	392.9	392.8	392.9	393.0
34°	390.1	390.2	390.3	390.0	389.7	390.0	390.3	390.2	390.1	390.2	390.3
34.5°	387.4	387.5	387.6	387.3	387.0	387.3	387.6	387.5	387.4	387.5	387.6
35°	384.7	384.9	385.0	384.6	384.2	384.6	385.0	384.9	384.7	384.9	385.0
35.5°	382.0	382.2	382.2	381.8	381.4	381.8	382.2	382.2	382.0	382.2	382.2
36°	379.3	379.4	379.5	379.1	378.6	379.1	379.5	379.4	379.3	379.4	379.5
36.5°	376.5	376.6	376.7	376.3	375.8	376.3	376.7	376.6	376.5	376.6	376.7
37°	373.6	373.7	373.8	373.4	373.0	373.4	373.8	373.7	373.6	373.7	373.8
37.5°	370.7	370.9	371.0	370.5	370.0	370.5	371.0	370.9	370.7	370.9	371.0
38°	367.8	367.9	368.1	367.6	367.2	367.6	368.1	367.9	367.8	367.9	368.1
38.5°	364.8	365.0	365.1	364.7	364.2	364.7	365.1	365.0	364.8	365.0	365.1
39°	361.9	362.1	362.2	361.7	361.2	361.7	362.2	362.1	361.9	362.1	362.2
39.5°	358.9	359.0	359.1	358.6	358.1	358.6	359.1	359.0	358.9	359.0	359.1
40°	355.7	356.0	356.0	355.5	355.0	355.5	356.0	356.0	355.7	356.0	356.0
40.5°	352.6	352.7	352.8	352.3	351.9	352.3	352.8	352.7	352.6	352.7	352.8
41°	349.4	349.6	349.7	349.2	348.7	349.2	349.7	349.6	349.4	349.6	349.7
41.5°	346.2	346.3	346.4	345.9	345.5	345.9	346.4	346.3	346.2	346.3	346.4
42°	342.9	343.0	343.1	342.6	342.1	342.6	343.1	343.0	342.9	343.0	343.1
42.5°	339.5	339.7	339.7	339.2	338.7	339.2	339.7	339.7	339.5	339.7	339.7
43°	336.1	336.2	336.2	335.7	335.1	335.7	336.2	336.2	336.1	336.2	336.2
43.5°	332.4	332.5	332.5	332.0	331.5	332.0	332.5	332.5	332.4	332.5	332.5



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	321.0	321.0	320.8	320.3	319.8	320.3	320.8	321.0	321.0	321.0	320.8
45.5°	316.8	316.8	316.7	316.1	315.6	316.1	316.7	316.8	316.8	316.8	316.7
46°	312.6	312.6	312.4	311.7	311.1	311.7	312.4	312.6	312.6	312.6	312.4
46.5°	308.0	308.0	307.8	307.1	306.7	307.1	307.8	308.0	308.0	308.0	307.8
47°	303.2	303.2	302.9	302.3	301.8	302.3	302.9	303.2	303.2	303.2	302.9
47.5°	298.3	298.3	298.0	297.3	296.8	297.3	298.0	298.3	298.3	298.3	298.0
48°	293.1	293.1	292.9	292.3	291.8	292.3	292.9	293.1	293.1	293.1	292.9
48.5°	287.7	287.7	287.5	287.1	286.7	287.1	287.5	287.7	287.7	287.7	287.5
49°	282.0	282.0	281.9	281.6	281.4	281.6	281.9	282.0	282.0	282.0	281.9
49.5°	276.3	276.2	276.3	276.0	275.9	276.0	276.3	276.2	276.3	276.2	276.3
50°	270.2	270.3	270.5	270.3	270.2	270.3	270.5	270.3	270.2	270.3	270.5
50.5°	263.9	264.3	264.6	264.5	264.5	264.5	264.6	264.3	263.9	264.3	264.6
51°	257.9	258.1	258.4	258.7	258.9	258.7	258.4	258.1	257.9	258.1	258.4
51.5°	252.0	252.1	252.5	252.8	253.1	252.8	252.5	252.1	252.0	252.1	252.5
52°	246.1	246.3	246.7	247.1	247.6	247.1	246.7	246.3	246.1	246.3	246.7
52.5°	240.5	240.7	241.2	241.7	242.1	241.7	241.2	240.7	240.5	240.7	241.2
53°	235.2	235.4	235.9	236.3	236.8	236.3	235.9	235.4	235.2	235.4	235.9
53.5°	230.2	230.4	230.6	230.8	231.2	230.8	230.6	230.4	230.2	230.4	230.6
54°	225.6	225.4	225.4	225.3	225.3	225.3	225.4	225.4	225.6	225.4	225.4
54.5°	220.4	220.2	219.8	219.2	218.8	219.2	219.8	220.2	220.4	220.2	219.8
55°	214.6	214.2	213.6	212.8	212.2	212.8	213.6	214.2	214.6	214.2	213.6
55.5°	207.8	207.2	206.6	206.0	205.4	206.0	206.6	207.2	207.8	207.2	206.6
56°	200.1	199.8	199.2	198.5	197.8	198.5	199.2	199.8	200.1	199.8	199.2
56.5°	191.7	191.4	191.2	190.6	190.0	190.6	191.2	191.4	191.7	191.4	191.2
57°	182.9	182.7	182.6	182.1	181.4	182.1	182.6	182.7	182.9	182.7	182.6
57.5°	173.6	173.6	173.6	173.1	172.6	173.1	173.6	173.6	173.6	173.6	173.6
58°	164.2	164.3	164.4	164.0	163.6	164.0	164.4	164.3	164.2	164.3	164.4
58.5°	154.5	154.5	154.8	154.7	154.3	154.7	154.8	154.5	154.5	154.5	154.8
59°	144.7	144.9	145.2	145.3	145.2	145.3	145.2	144.9	144.7	144.9	145.2
59.5°	134.8	135.0	135.6	136.0	136.0	136.0	135.6	135.0	134.8	135.0	135.6
60°	124.9	125.3	125.9	126.8	126.7	126.8	125.9	125.3	124.9	125.3	125.9
60.5°	115.1	115.6	116.4	117.3	117.4	117.3	116.4	115.6	115.1	115.6	116.4
61°	105.5	106.2	107.0	108.0	108.3	108.0	107.0	106.2	105.5	106.2	107.0
61.5°	96.2	96.7	97.9	98.8	99.4	98.8	97.9	96.7	96.2	96.7	97.9
62°	86.9	87.6	88.9	90.0	90.8	90.0	88.9	87.6	86.9	87.6	88.9
62.5°	77.7	78.5	80.2	81.4	82.2	81.4	80.2	78.5	77.7	78.5	80.2
63°	68.9	69.8	71.7	73.0	73.9	73.0	71.7	69.8	68.9	69.8	71.7
63.5°	60.5	61.4	63.4	65.0	66.6	65.0	63.4	61.4	60.5	61.4	63.4
64°	52.4	53.4	55.4	57.6	59.3	57.6	55.4	53.4	52.4	53.4	55.4
64.5°	44.6	46.0	48.1	50.3	52.0	50.3	48.1	46.0	44.6	46.0	48.1
65°	37.4	39.1	41.1	43.3	44.7	43.3	41.1	39.1	37.4	39.1	41.1
65.5°	30.8	32.7	34.5	36.6	37.9	36.6	34.5	32.7	30.8	32.7	34.5
66°	24.6	27.0	28.4	30.4	31.7	30.4	28.4	27.0	24.6	27.0	28.4





TEST NUMBER: P775832

CATALOG NUMBER: HCDJBL510CSD-HCD81TRMB-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	9.4	12.7	14.2	15.9	16.9	15.9	14.2	12.7	9.4	12.7	14.2
68°	5.5	8.8	10.8	12.0	13.2	12.0	10.8	8.8	5.5	8.8	10.8
68.5°	2.1	5.9	7.8	9.1	10.5	9.1	7.8	5.9	2.1	5.9	7.8
69°	1.0	3.5	5.0	6.3	7.8	6.3	5.0	3.5	1.0	3.5	5.0
69.5°	0.6	1.6	2.8	4.1	5.6	4.1	2.8	1.6	0.6	1.6	2.8
70°	0.3	0.7	1.6	2.4	3.4	2.4	1.6	0.7	0.3	0.7	1.6
70.5°	0.1	0.4	0.9	1.1	1.3	1.1	0.9	0.4	0.1	0.4	0.9
71°	0.1	0.2	0.5	0.6	0.5	0.6	0.5	0.2	0.1	0.2	0.5
71.5°	0.1	0.1	0.3	0.3	0.1	0.3	0.3	0.1	0.1	0.1	0.3
72°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
72.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
73°	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
73.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P775832

CATALOG NUMBER: HCDJBL510CSD-HCD81TRMB-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

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



TEST NUMBER: P775832

CATALOG NUMBER: HCDJBL510CSD-HCD81TRMB-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	484.9	484.9	484.9	484.9	484.9	484.9
0.5°	484.9	484.8	484.9	484.9	484.9	484.9
1°	484.8	484.7	484.8	484.9	484.9	484.9
1.5°	484.8	484.7	484.8	484.8	484.8	484.8
2°	484.6	484.5	484.6	484.7	484.7	484.7
2.5°	484.5	484.3	484.5	484.5	484.5	484.4
3°	484.3	484.1	484.3	484.3	484.3	484.2
3.5°	484.0	483.9	484.0	484.0	484.0	484.0
4°	483.7	483.4	483.7	483.7	483.7	483.7
4.5°	483.3	483.1	483.3	483.3	483.3	483.3
5°	482.9	482.7	482.9	482.9	482.9	482.9
5.5°	482.5	482.3	482.5	482.5	482.5	482.5
6°	482.0	481.9	482.0	482.0	482.1	482.0
6.5°	481.5	481.4	481.5	481.6	481.6	481.5
7°	481.0	480.9	481.0	481.0	481.0	481.0
7.5°	480.4	480.2	480.4	480.3	480.3	480.3
8°	479.7	479.6	479.7	479.7	479.7	479.7
8.5°	479.1	478.9	479.1	479.1	479.1	479.1
9°	478.4	478.3	478.4	478.4	478.4	478.4
9.5°	477.6	477.4	477.6	477.6	477.6	477.5
10°	476.8	476.7	476.8	476.8	476.8	476.8
10.5°	476.0	475.9	476.0	476.0	476.0	476.0
11°	475.2	475.0	475.2	475.1	475.1	475.1
11.5°	474.2	474.0	474.2	474.1	474.1	474.1
12°	473.2	473.1	473.2	473.2	473.2	473.2
12.5°	472.3	472.1	472.3	472.2	472.2	472.2
13°	471.1	471.0	471.1	471.1	471.1	471.1
13.5°	470.1	469.9	470.1	470.1	470.1	470.0
14°	468.9	468.7	468.9	468.9	468.9	468.8
14.5°	467.7	467.6	467.7	467.7	467.7	467.7
15°	466.6	466.4	466.6	466.5	466.5	466.5
15.5°	465.2	465.1	465.2	465.2	465.2	465.2
16°	464.0	463.8	464.0	464.0	464.0	463.9
16.5°	462.6	462.5	462.6	462.6	462.5	462.5
17°	461.2	461.1	461.2	461.3	461.2	461.2
17.5°	459.8	459.7	459.8	459.8	459.7	459.7
18°	458.3	458.2	458.3	458.3	458.3	458.3
18.5°	456.8	456.6	456.8	456.8	456.7	456.7
19°	455.3	455.1	455.3	455.3	455.2	455.2
19.5°	453.6	453.5	453.6	453.6	453.6	453.6
20°	452.0	451.9	452.0	452.0	452.0	452.0
20.5°	450.3	450.1	450.3	450.3	450.3	450.2
21°	448.5	448.4	448.5	448.5	448.5	448.5

TEST NUMBER: P775832

CATALOG NUMBER: HCDJBL510CSD-HCD81TRMB-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	443.2	443.0	443.2	443.2	443.2	443.1
23°	441.2	441.1	441.2	441.2	441.2	441.2
23.5°	439.3	439.1	439.3	439.3	439.3	439.2
24°	437.3	437.2	437.3	437.4	437.3	437.3
24.5°	435.3	435.1	435.3	435.4	435.3	435.2
25°	433.2	433.0	433.2	433.3	433.2	433.2
25.5°	431.1	430.9	431.1	431.2	431.1	431.0
26°	429.0	428.8	429.0	429.1	429.0	429.0
26.5°	426.8	426.6	426.8	426.9	426.9	426.8
27°	424.6	424.4	424.6	424.7	424.6	424.6
27.5°	422.3	422.1	422.3	422.4	422.4	422.3
28°	420.1	419.9	420.1	420.2	420.2	420.1
28.5°	417.8	417.6	417.8	417.9	417.8	417.8
29°	415.4	415.1	415.4	415.5	415.5	415.4
29.5°	413.0	412.7	413.0	413.1	413.1	413.0
30°	410.5	410.3	410.5	410.7	410.7	410.6
30.5°	408.2	407.8	408.2	408.3	408.3	408.3
31°	405.6	405.4	405.6	405.9	405.8	405.7
31.5°	403.1	402.8	403.1	403.3	403.3	403.2
32°	400.6	400.2	400.6	400.8	400.8	400.7
32.5°	397.9	397.6	397.9	398.2	398.2	398.1
33°	395.4	395.0	395.4	395.6	395.6	395.4
33.5°	392.7	392.3	392.7	393.0	392.9	392.8
34°	390.0	389.7	390.0	390.3	390.2	390.1
34.5°	387.3	387.0	387.3	387.6	387.5	387.4
35°	384.6	384.2	384.6	385.0	384.9	384.7
35.5°	381.8	381.4	381.8	382.2	382.2	382.0
36°	379.1	378.6	379.1	379.5	379.4	379.3
36.5°	376.3	375.8	376.3	376.7	376.6	376.5
37°	373.4	373.0	373.4	373.8	373.7	373.6
37.5°	370.5	370.0	370.5	371.0	370.9	370.7
38°	367.6	367.2	367.6	368.1	367.9	367.8
38.5°	364.7	364.2	364.7	365.1	365.0	364.8
39°	361.7	361.2	361.7	362.2	362.1	361.9
39.5°	358.6	358.1	358.6	359.1	359.0	358.9
40°	355.5	355.0	355.5	356.0	356.0	355.7
40.5°	352.3	351.9	352.3	352.8	352.7	352.6
41°	349.2	348.7	349.2	349.7	349.6	349.4
41.5°	345.9	345.5	345.9	346.4	346.3	346.2
42°	342.6	342.1	342.6	343.1	343.0	342.9
42.5°	339.2	338.7	339.2	339.7	339.7	339.5
43°	335.7	335.1	335.7	336.2	336.2	336.1
43.5°	332.0	331.5	332.0	332.5	332.5	332.4



TEST NUMBER: P775832

CATALOG NUMBER: HCDJBL510CSD-HCD81TRMB-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	320.3	319.8	320.3	320.8	321.0	321.0
45.5°	316.1	315.6	316.1	316.7	316.8	316.8
46°	311.7	311.1	311.7	312.4	312.6	312.6
46.5°	307.1	306.7	307.1	307.8	308.0	308.0
47°	302.3	301.8	302.3	302.9	303.2	303.2
47.5°	297.3	296.8	297.3	298.0	298.3	298.3
48°	292.3	291.8	292.3	292.9	293.1	293.1
48.5°	287.1	286.7	287.1	287.5	287.7	287.7
49°	281.6	281.4	281.6	281.9	282.0	282.0
49.5°	276.0	275.9	276.0	276.3	276.2	276.3
50°	270.3	270.2	270.3	270.5	270.3	270.2
50.5°	264.5	264.5	264.5	264.6	264.3	263.9
51°	258.7	258.9	258.7	258.4	258.1	257.9
51.5°	252.8	253.1	252.8	252.5	252.1	252.0
52°	247.1	247.6	247.1	246.7	246.3	246.1
52.5°	241.7	242.1	241.7	241.2	240.7	240.5
53°	236.3	236.8	236.3	235.9	235.4	235.2
53.5°	230.8	231.2	230.8	230.6	230.4	230.2
54°	225.3	225.3	225.3	225.4	225.4	225.6
54.5°	219.2	218.8	219.2	219.8	220.2	220.4
55°	212.8	212.2	212.8	213.6	214.2	214.6
55.5°	206.0	205.4	206.0	206.6	207.2	207.8
56°	198.5	197.8	198.5	199.2	199.8	200.1
56.5°	190.6	190.0	190.6	191.2	191.4	191.7
57°	182.1	181.4	182.1	182.6	182.7	182.9
57.5°	173.1	172.6	173.1	173.6	173.6	173.6
58°	164.0	163.6	164.0	164.4	164.3	164.2
58.5°	154.7	154.3	154.7	154.8	154.5	154.5
59°	145.3	145.2	145.3	145.2	144.9	144.7
59.5°	136.0	136.0	136.0	135.6	135.0	134.8
60°	126.8	126.7	126.8	125.9	125.3	124.9
60.5°	117.3	117.4	117.3	116.4	115.6	115.1
61°	108.0	108.3	108.0	107.0	106.2	105.5
61.5°	98.8	99.4	98.8	97.9	96.7	96.2
62°	90.0	90.8	90.0	88.9	87.6	86.9
62.5°	81.4	82.2	81.4	80.2	78.5	77.7
63°	73.0	73.9	73.0	71.7	69.8	68.9
63.5°	65.0	66.6	65.0	63.4	61.4	60.5
64°	57.6	59.3	57.6	55.4	53.4	52.4
64.5°	50.3	52.0	50.3	48.1	46.0	44.6
65°	43.3	44.7	43.3	41.1	39.1	37.4
65.5°	36.6	37.9	36.6	34.5	32.7	30.8
66°	30.4	31.7	30.4	28.4	27.0	24.6



TEST NUMBER: P775832

CATALOG NUMBER: HCDJBL510CSD-HCD81TRMB-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	15.9	16.9	15.9	14.2	12.7	9.4
68°	12.0	13.2	12.0	10.8	8.8	5.5
68.5°	9.1	10.5	9.1	7.8	5.9	2.1
69°	6.3	7.8	6.3	5.0	3.5	1.0
69.5°	4.1	5.6	4.1	2.8	1.6	0.6
70°	2.4	3.4	2.4	1.6	0.7	0.3
70.5°	1.1	1.3	1.1	0.9	0.4	0.1
71°	0.6	0.5	0.6	0.5	0.2	0.1
71.5°	0.3	0.1	0.3	0.3	0.1	0.1
72°	0.1	0.1	0.1	0.1	0.1	0.1
72.5°	0.1	0.1	0.1	0.1	0.1	0.1
73°	0.1	0.1	0.1	0.0	0.0	0.0
73.5°	0.0	0.0	0.0	0.0	0.0	0.0
74°	0.0	0.0	0.0	0.0	0.0	0.0
74.5°	0.0	0.0	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0	0.0	0.0
75.5°	0.0	0.0	0.0	0.0	0.0	0.0
76°	0.0	0.0	0.0	0.0	0.0	0.0
76.5°	0.0	0.0	0.0	0.0	0.0	0.0
77°	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0
78°	0.0	0.0	0.0	0.0	0.0	0.0
78.5°	0.0	0.0	0.0	0.0	0.0	0.0
79°	0.0	0.0	0.0	0.0	0.0	0.0
79.5°	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0
80.5°	0.0	0.0	0.0	0.0	0.0	0.0
81°	0.0	0.0	0.0	0.0	0.0	0.0
81.5°	0.0	0.0	0.0	0.0	0.0	0.0
82°	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0
83°	0.0	0.0	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P775832

CATALOG NUMBER: HCDJBL510CSD-HCD81TRMB-1000lm-3500K

**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°	446.8	446.8	446.8	446.8	446.6	446.8	446.8	446.8	446.8	446.8	446.8	446.8
22°	444.9	444.9	445.0	445.0	444.8	445.0	445.0	444.9	444.9	444.9	444.9	445.0



44°	328.7	328.8	328.7	328.2	327.8	328.2	328.7	328.8	328.7	328.8	328.7
44.5°	324.9	325.0	325.0	324.4	323.7	324.4	325.0	325.0	324.9	325.0	325.0



66.5°	19.5	21.9	23.0	25.0	26.1	25.0	23.0	21.9	19.5	21.9	23.0
67°	14.4	16.8	18.4	20.1	21.0	20.1	18.4	16.8	14.4	16.8	18.4



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°	446.8	446.6	446.8	446.8	446.8	446.8
22°	445.0	444.8	445.0	445.0	444.9	444.9



44°	328.2	327.8	328.2	328.7	328.8	328.7
44.5°	324.4	323.7	324.4	325.0	325.0	324.9

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66.5°	25.0	26.1	25.0	23.0	21.9	19.5
67°	20.1	21.0	20.1	18.4	16.8	14.4

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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)