

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: P775822

Luminaire Tested: HCDJBL510CSD-HCD81TRH-1000lm-3500K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P775822  
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-3500K  
Description: 8 INCH ROUND SHALLOW-WIDE HAZE TRIM  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

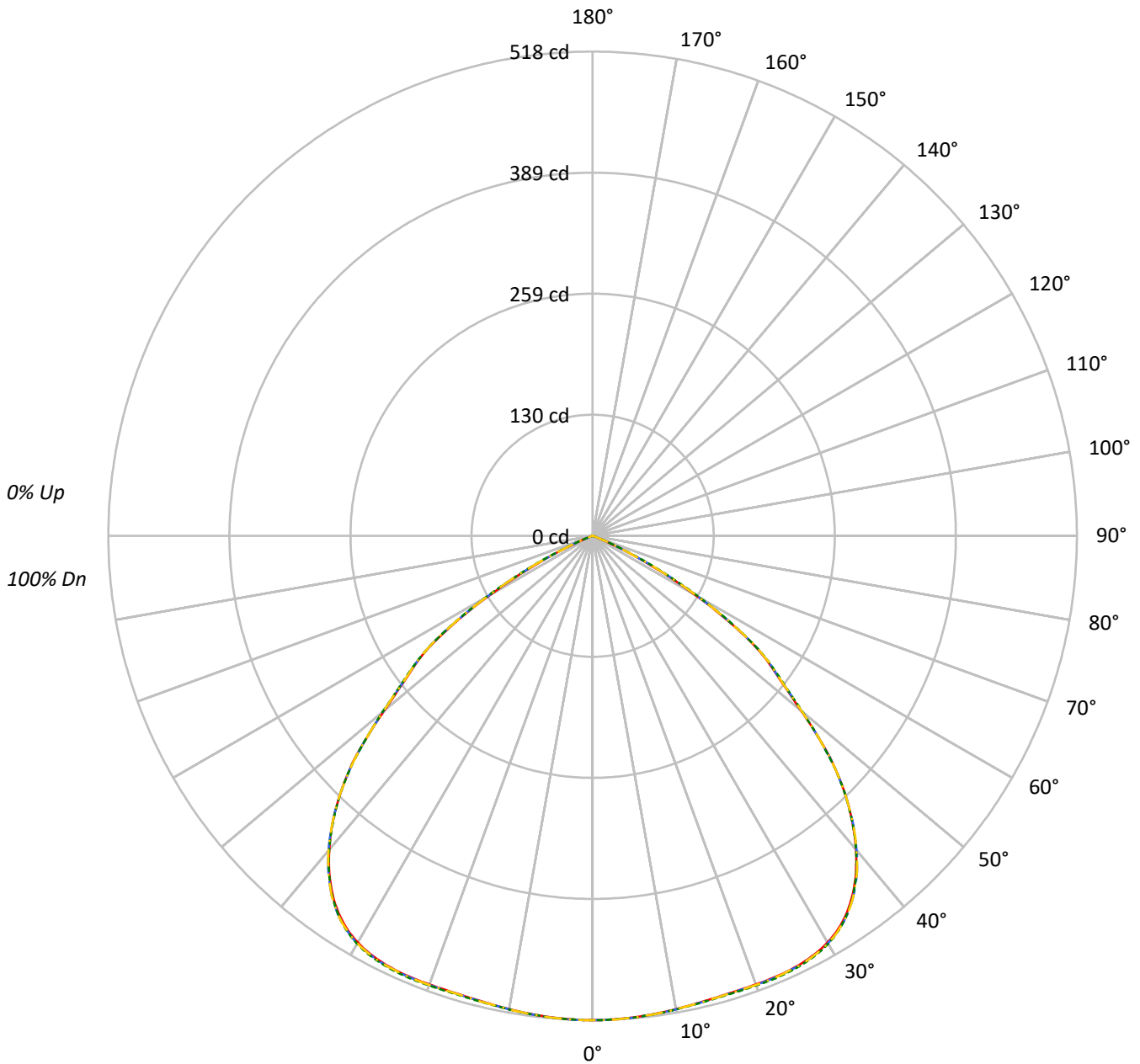
Lumens per Lamp: N/A  
Luminaire Lumens: 1258.8 lumens  
Efficiency: N/A  
Efficacy: 125.9 lumens/watt  
Spacing Criteria (0/90/45): 1.42 / 1.42 / 1.43  
Luminous Opening: Circular (Dia: 0.67' x H: 0')  
CIE Type: Direct

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



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### Luminous Intensity Polar Plot





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

RF	20					20					20					20										
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100								
1	112	108	105	102	109	106	103	100	102	99	97	98	96	94	94	93	91	89								
2	103	97	91	87	101	95	90	86	92	87	84	88	85	82	86	83	80	78								
3	96	87	80	75	93	85	79	74	82	77	73	80	75	71	77	74	70	68								
4	88	78	70	65	86	77	70	64	74	68	63	72	67	63	70	66	62	60								
5	82	70	62	57	80	69	62	56	67	61	56	65	60	55	64	59	55	53								
6	76	64	56	50	74	63	55	50	61	54	49	59	53	49	58	53	48	47								
7	70	58	50	44	69	57	50	44	56	49	44	54	48	44	53	48	43	41								
8	65	53	45	40	64	52	45	40	51	44	39	50	44	39	49	43	39	37								
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35	33								
10	57	45	37	32	56	44	37	32	43	37	32	42	36	32	42	36	32	30								

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

	0°	90°	180°	270°
0°	15824	15824	15824	15824
5°	15848	15854	15848	15854
10°	15938	15953	15938	15953
15°	16164	16186	16164	16186
20°	16596	16635	16596	16635
25°	17177	17227	17177	17227
30°	17711	17764	17711	17764
35°	17901	17938	17901	17938
40°	17464	17472	17464	17472
45°	16286	16265	16286	16265
50°	13822	13921	13822	13921
55°	11817	11880	11817	11880
60°	7773	8072	7773	8072
65°	2738	3301	2738	3301
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: 16286 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	49.3	3.9
10°-20°	145.1	11.5
20°-30°	235.7	18.7
30°-40°	299.3	23.8
40°-50°	287.1	22.8
50°-60°	193.2	15.3
60°-70°	48.9	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°	430.1	34.2
0°-40°	729.5	57.9
0°-60°	1209.8	96.1
0°-90°	1258.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1258.8	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	518	518	518	518	518	
5°	517	517	517	517	517	49
15°	511	512	511	512	511	145
25°	510	511	510	511	510	235
35°	480	481	480	481	480	299
45°	377	377	377	377	377	287
55°	222	223	222	223	222	192
65°	38	46	38	46	38	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°	518.3	518.3	518.3	518.3	518.3	518.3	518.3	518.3	518.3	518.3	518.3
0.5°	518.2	518.2	518.3	518.4	518.3	518.4	518.3	518.2	518.2	518.2	518.3
1°	518.2	518.2	518.3	518.4	518.2	518.4	518.3	518.2	518.2	518.2	518.3
1.5°	518.1	518.1	518.2	518.3	518.2	518.3	518.2	518.1	518.1	518.1	518.2
2°	518.0	518.0	518.2	518.2	518.1	518.2	518.2	518.0	518.0	518.0	518.2
2.5°	517.9	518.0	518.1	518.2	518.0	518.2	518.1	518.0	517.9	518.0	518.1
3°	517.8	517.8	518.0	518.0	517.9	518.0	518.0	517.8	517.8	517.8	518.0
3.5°	517.6	517.7	517.8	517.9	517.8	517.9	517.8	517.7	517.6	517.7	517.8
4°	517.5	517.5	517.6	517.8	517.6	517.8	517.6	517.5	517.5	517.5	517.6
4.5°	517.3	517.4	517.5	517.6	517.5	517.6	517.5	517.4	517.3	517.4	517.5
5°	517.1	517.2	517.3	517.4	517.3	517.4	517.3	517.2	517.1	517.2	517.3
5.5°	516.8	516.8	517.1	517.2	517.1	517.2	517.1	516.8	516.8	516.8	517.1
6°	516.5	516.6	516.7	516.9	516.8	516.9	516.7	516.6	516.5	516.6	516.7
6.5°	516.3	516.4	516.5	516.7	516.5	516.7	516.5	516.4	516.3	516.4	516.5
7°	516.0	516.1	516.3	516.4	516.3	516.4	516.3	516.1	516.0	516.1	516.3
7.5°	515.7	515.8	516.0	516.1	516.0	516.1	516.0	515.8	515.7	515.8	516.0
8°	515.5	515.5	515.7	515.9	515.8	515.9	515.7	515.5	515.5	515.5	515.7
8.5°	515.2	515.2	515.4	515.5	515.5	515.5	515.4	515.2	515.2	515.2	515.4
9°	514.8	514.9	515.1	515.3	515.2	515.3	515.1	514.9	514.8	514.9	515.1
9.5°	514.5	514.6	514.8	515.0	514.9	515.0	514.8	514.6	514.5	514.6	514.8
10°	514.1	514.3	514.5	514.7	514.6	514.7	514.5	514.3	514.1	514.3	514.5
10.5°	513.8	513.9	514.0	514.4	514.3	514.4	514.0	513.9	513.8	513.9	514.0
11°	513.5	513.5	513.7	514.0	513.9	514.0	513.7	513.5	513.5	513.5	513.7
11.5°	513.2	513.2	513.4	513.7	513.6	513.7	513.4	513.2	513.2	513.2	513.4
12°	512.9	512.9	513.1	513.4	513.4	513.4	513.1	512.9	512.9	512.9	513.1
12.5°	512.6	512.6	512.9	513.1	513.1	513.1	512.9	512.6	512.6	512.6	512.9
13°	512.3	512.4	512.6	512.8	512.9	512.8	512.6	512.4	512.3	512.4	512.6
13.5°	512.0	512.1	512.4	512.6	512.6	512.6	512.4	512.1	512.0	512.1	512.4
14°	511.8	511.9	512.1	512.4	512.4	512.4	512.1	511.9	511.8	511.9	512.1
14.5°	511.6	511.7	511.9	512.2	512.3	512.2	511.9	511.7	511.6	511.7	511.9
15°	511.4	511.5	511.7	512.1	512.1	512.1	511.7	511.5	511.4	511.5	511.7
15.5°	511.1	511.2	511.6	511.9	512.0	511.9	511.6	511.2	511.1	511.2	511.6
16°	511.0	511.1	511.4	511.8	511.9	511.8	511.4	511.1	511.0	511.1	511.4
16.5°	510.9	511.0	511.2	511.7	511.8	511.7	511.2	511.0	510.9	511.0	511.2
17°	510.8	510.9	511.2	511.7	511.8	511.7	511.2	510.9	510.8	510.9	511.2
17.5°	510.8	510.9	511.1	511.7	511.8	511.7	511.1	510.9	510.8	510.9	511.1
18°	510.7	510.8	511.1	511.7	511.8	511.7	511.1	510.8	510.7	510.8	511.1
18.5°	510.7	510.8	511.1	511.7	511.8	511.7	511.1	510.8	510.7	510.8	511.1
19°	510.8	510.8	511.1	511.8	511.9	511.8	511.1	510.8	510.8	510.8	511.1
19.5°	510.8	510.9	511.2	511.8	512.0	511.8	511.2	510.9	510.8	510.9	511.2
20°	510.8	510.9	511.2	511.9	512.0	511.9	511.2	510.9	510.8	510.9	511.2
20.5°	510.9	510.9	511.4	511.9	512.1	511.9	511.4	510.9	510.9	510.9	511.4
21°	510.9	511.0	511.4	512.0	512.1	512.0	511.4	511.0	510.9	511.0	511.4



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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°	510.8	510.9	511.4	512.0	512.2	512.0	511.4	510.9	510.8	510.9	511.4
23°	510.7	510.8	511.2	511.9	512.1	511.9	511.2	510.8	510.7	510.8	511.2
23.5°	510.6	510.7	511.1	511.8	512.0	511.8	511.1	510.7	510.6	510.7	511.1
24°	510.5	510.5	510.9	511.7	511.9	511.7	510.9	510.5	510.5	510.5	510.9
24.5°	510.2	510.3	510.7	511.5	511.7	511.5	510.7	510.3	510.2	510.3	510.7
25°	509.9	510.0	510.5	511.2	511.4	511.2	510.5	510.0	509.9	510.0	510.5
25.5°	509.6	509.7	510.2	510.9	511.0	510.9	510.2	509.7	509.6	509.7	510.2
26°	509.2	509.3	509.8	510.5	510.7	510.5	509.8	509.3	509.2	509.3	509.8
26.5°	508.7	508.8	509.4	510.1	510.2	510.1	509.4	508.8	508.7	508.8	509.4
27°	508.1	508.2	508.8	509.5	509.6	509.5	508.8	508.2	508.1	508.2	508.8
27.5°	507.4	507.6	508.1	508.9	509.0	508.9	508.1	507.6	507.4	507.6	508.1
28°	506.7	506.8	507.4	508.1	508.2	508.1	507.4	506.8	506.7	506.8	507.4
28.5°	505.9	506.0	506.6	507.3	507.3	507.3	506.6	506.0	505.9	506.0	506.6
29°	504.8	505.0	505.7	506.3	506.4	506.3	505.7	505.0	504.8	505.0	505.7
29.5°	503.7	503.9	504.6	505.2	505.2	505.2	504.6	503.9	503.7	503.9	504.6
30°	502.4	502.6	503.4	504.0	503.9	504.0	503.4	502.6	502.4	502.6	503.4
30.5°	501.1	501.3	502.0	502.6	502.5	502.6	502.0	501.3	501.1	501.3	502.0
31°	499.5	499.7	500.6	501.1	500.9	501.1	500.6	499.7	499.5	499.7	500.6
31.5°	497.8	498.1	498.9	499.3	499.1	499.3	498.9	498.1	497.8	498.1	498.9
32°	495.8	496.2	497.0	497.5	497.3	497.5	497.0	496.2	495.8	496.2	497.0
32.5°	493.7	494.1	495.0	495.3	495.1	495.3	495.0	494.1	493.7	494.1	495.0
33°	491.5	491.9	492.8	493.0	492.7	493.0	492.8	491.9	491.5	491.9	492.8
33.5°	488.9	489.4	490.3	490.5	490.2	490.5	490.3	489.4	488.9	489.4	490.3
34°	486.3	486.8	487.7	487.8	487.4	487.8	487.7	486.8	486.3	486.8	487.7
34.5°	483.3	483.9	484.8	484.8	484.4	484.8	484.8	483.9	483.3	483.9	484.8
35°	480.3	480.8	481.8	481.7	481.3	481.7	481.8	480.8	480.3	480.8	481.8
35.5°	476.9	477.5	478.5	478.4	478.0	478.4	478.5	477.5	476.9	477.5	478.5
36°	473.4	474.0	475.1	474.9	474.4	474.9	475.1	474.0	473.4	474.0	475.1
36.5°	469.8	470.3	471.3	471.1	470.5	471.1	471.3	470.3	469.8	470.3	471.3
37°	465.7	466.4	467.3	467.2	466.6	467.2	467.3	466.4	465.7	466.4	467.3
37.5°	461.7	462.2	463.3	463.0	462.3	463.0	463.3	462.2	461.7	462.2	463.3
38°	457.4	458.0	458.9	458.6	457.9	458.6	458.9	458.0	457.4	458.0	458.9
38.5°	452.8	453.4	454.3	453.9	453.3	453.9	454.3	453.4	452.8	453.4	454.3
39°	448.2	448.8	449.6	449.3	448.5	449.3	449.6	448.8	448.2	448.8	449.6
39.5°	443.4	443.8	444.6	444.3	443.6	444.3	444.6	443.8	443.4	443.8	444.6
40°	438.2	438.6	439.4	439.1	438.4	439.1	439.4	438.6	438.2	438.6	439.4
40.5°	433.0	433.3	434.0	433.7	433.0	433.7	434.0	433.3	433.0	433.3	434.0
41°	427.5	427.8	428.4	428.2	427.5	428.2	428.4	427.8	427.5	427.8	428.4
41.5°	421.9	422.1	422.7	422.3	421.8	422.3	422.7	422.1	421.9	422.1	422.7
42°	416.1	416.3	416.7	416.5	416.0	416.5	416.7	416.3	416.1	416.3	416.7
42.5°	410.2	410.2	410.6	410.4	409.9	410.4	410.6	410.2	410.2	410.2	410.6
43°	404.0	404.0	404.3	404.1	403.6	404.1	404.3	404.0	404.0	404.0	404.3
43.5°	397.6	397.6	397.7	397.5	397.1	397.5	397.7	397.6	397.6	397.6	397.7



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	377.2	376.9	376.9	376.8	376.7	376.8	376.9	376.9	377.2	376.9	376.9
45.5°	370.0	369.7	369.6	369.5	369.4	369.5	369.6	369.7	370.0	369.7	369.6
46°	362.5	362.1	362.0	362.0	361.9	362.0	362.0	362.1	362.5	362.1	362.0
46.5°	354.8	354.3	354.2	354.1	354.0	354.1	354.2	354.3	354.8	354.3	354.2
47°	346.5	346.0	345.7	345.5	345.3	345.5	345.7	346.0	346.5	346.0	345.7
47.5°	337.4	337.0	336.6	336.7	336.6	336.7	336.6	337.0	337.4	337.0	336.6
48°	327.9	327.8	328.0	328.1	328.2	328.1	328.0	327.8	327.9	327.8	328.0
48.5°	318.8	318.8	319.2	319.3	319.3	319.3	319.2	318.8	318.8	318.8	319.2
49°	310.0	309.9	310.2	310.3	310.4	310.3	310.2	309.9	310.0	309.9	310.2
49.5°	300.4	300.6	301.2	301.6	301.7	301.6	301.2	300.6	300.4	300.6	301.2
50°	291.0	291.4	292.3	292.8	293.1	292.8	292.3	291.4	291.0	291.4	292.3
50.5°	282.3	282.8	283.7	284.2	284.4	284.2	283.7	282.8	282.3	282.8	283.7
51°	274.3	274.6	275.5	275.9	276.1	275.9	275.5	274.6	274.3	274.6	275.5
51.5°	266.7	266.9	267.8	268.5	268.8	268.5	267.8	266.9	266.7	266.9	267.8
52°	259.1	259.5	260.4	261.4	261.8	261.4	260.4	259.5	259.1	259.5	260.4
52.5°	252.3	252.7	253.7	254.6	255.3	254.6	253.7	252.7	252.3	252.7	253.7
53°	245.9	246.3	247.5	248.4	248.8	248.4	247.5	246.3	245.9	246.3	247.5
53.5°	240.0	240.4	241.5	242.3	242.7	242.3	241.5	240.4	240.0	240.4	241.5
54°	234.4	234.7	235.7	236.2	236.4	236.2	235.7	234.7	234.4	234.7	235.7
54.5°	228.5	228.8	229.6	230.2	230.3	230.2	229.6	228.8	228.5	228.8	229.6
55°	222.0	222.3	223.0	223.4	223.2	223.4	223.0	222.3	222.0	222.3	223.0
55.5°	214.4	214.7	215.6	216.0	215.9	216.0	215.6	214.7	214.4	214.7	215.6
56°	206.0	206.4	207.5	208.0	207.9	208.0	207.5	206.4	206.0	206.4	207.5
56.5°	197.1	197.7	198.7	199.5	199.4	199.5	198.7	197.7	197.1	197.7	198.7
57°	187.8	188.3	189.7	190.2	190.3	190.2	189.7	188.3	187.8	188.3	189.7
57.5°	178.1	178.7	180.1	180.7	180.8	180.7	180.1	178.7	178.1	178.7	180.1
58°	168.2	168.8	170.3	171.2	171.4	171.2	170.3	168.8	168.2	168.8	170.3
58.5°	158.2	158.7	160.2	161.4	161.7	161.4	160.2	158.7	158.2	158.7	160.2
59°	148.0	148.5	150.0	151.5	151.9	151.5	150.0	148.5	148.0	148.5	150.0
59.5°	137.6	138.3	139.9	141.7	142.1	141.7	139.9	138.3	137.6	138.3	139.9
60°	127.3	128.2	129.9	132.0	132.2	132.0	129.9	128.2	127.3	128.2	129.9
60.5°	117.1	117.9	120.2	122.2	122.6	122.2	120.2	117.9	117.1	117.9	120.2
61°	107.2	108.2	110.7	112.6	113.1	112.6	110.7	108.2	107.2	108.2	110.7
61.5°	97.6	98.6	101.3	102.9	103.8	102.9	101.3	98.6	97.6	98.6	101.3
62°	88.2	89.1	91.9	93.6	94.6	93.6	91.9	89.1	88.2	89.1	91.9
62.5°	78.8	80.0	82.9	84.6	85.7	84.6	82.9	80.0	78.8	80.0	82.9
63°	69.5	71.1	74.1	75.9	77.2	75.9	74.1	71.1	69.5	71.1	74.1
63.5°	61.0	62.4	65.6	67.5	68.8	67.5	65.6	62.4	61.0	62.4	65.6
64°	53.0	54.4	57.3	59.5	60.7	59.5	57.3	54.4	53.0	54.4	57.3
64.5°	45.3	46.6	49.4	51.9	53.2	51.9	49.4	46.6	45.3	46.6	49.4
65°	37.9	39.8	42.2	44.6	45.7	44.6	42.2	39.8	37.9	39.8	42.2
65.5°	31.5	33.3	35.3	37.7	38.8	37.7	35.3	33.3	31.5	33.3	35.3
66°	25.4	27.2	29.2	31.5	32.0	31.5	29.2	27.2	25.4	27.2	29.2





TEST NUMBER: P775822

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	10.2	13.0	14.0	16.0	16.1	16.0	14.0	13.0	10.2	13.0	14.0
68°	6.2	9.1	10.2	12.1	11.9	12.1	10.2	9.1	6.2	9.1	10.2
68.5°	2.7	5.9	7.2	8.6	9.5	8.6	7.2	5.9	2.7	5.9	7.2
69°	1.5	3.6	4.7	5.6	7.4	5.6	4.7	3.6	1.5	3.6	4.7
69.5°	0.9	1.8	2.6	3.3	5.1	3.3	2.6	1.8	0.9	1.8	2.6
70°	0.5	1.0	1.2	1.5	2.8	1.5	1.2	1.0	0.5	1.0	1.2
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: P775822  
CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-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: P775822

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	518.3	518.3	518.3	518.3	518.3	518.3
0.5°	518.4	518.3	518.4	518.3	518.2	518.2
1°	518.4	518.2	518.4	518.3	518.2	518.2
1.5°	518.3	518.2	518.3	518.2	518.1	518.1
2°	518.2	518.1	518.2	518.2	518.0	518.0
2.5°	518.2	518.0	518.2	518.1	518.0	517.9
3°	518.0	517.9	518.0	518.0	517.8	517.8
3.5°	517.9	517.8	517.9	517.8	517.7	517.6
4°	517.8	517.6	517.8	517.6	517.5	517.5
4.5°	517.6	517.5	517.6	517.5	517.4	517.3
5°	517.4	517.3	517.4	517.3	517.2	517.1
5.5°	517.2	517.1	517.2	517.1	516.8	516.8
6°	516.9	516.8	516.9	516.7	516.6	516.5
6.5°	516.7	516.5	516.7	516.5	516.4	516.3
7°	516.4	516.3	516.4	516.3	516.1	516.0
7.5°	516.1	516.0	516.1	516.0	515.8	515.7
8°	515.9	515.8	515.9	515.7	515.5	515.5
8.5°	515.5	515.5	515.5	515.4	515.2	515.2
9°	515.3	515.2	515.3	515.1	514.9	514.8
9.5°	515.0	514.9	515.0	514.8	514.6	514.5
10°	514.7	514.6	514.7	514.5	514.3	514.1
10.5°	514.4	514.3	514.4	514.0	513.9	513.8
11°	514.0	513.9	514.0	513.7	513.5	513.5
11.5°	513.7	513.6	513.7	513.4	513.2	513.2
12°	513.4	513.4	513.4	513.1	512.9	512.9
12.5°	513.1	513.1	513.1	512.9	512.6	512.6
13°	512.8	512.9	512.8	512.6	512.4	512.3
13.5°	512.6	512.6	512.6	512.4	512.1	512.0
14°	512.4	512.4	512.4	512.1	511.9	511.8
14.5°	512.2	512.3	512.2	511.9	511.7	511.6
15°	512.1	512.1	512.1	511.7	511.5	511.4
15.5°	511.9	512.0	511.9	511.6	511.2	511.1
16°	511.8	511.9	511.8	511.4	511.1	511.0
16.5°	511.7	511.8	511.7	511.2	511.0	510.9
17°	511.7	511.8	511.7	511.2	510.9	510.8
17.5°	511.7	511.8	511.7	511.1	510.9	510.8
18°	511.7	511.8	511.7	511.1	510.8	510.7
18.5°	511.7	511.8	511.7	511.1	510.8	510.7
19°	511.8	511.9	511.8	511.1	510.8	510.8
19.5°	511.8	512.0	511.8	511.2	510.9	510.8
20°	511.9	512.0	511.9	511.2	510.9	510.8
20.5°	511.9	512.1	511.9	511.4	510.9	510.9
21°	512.0	512.1	512.0	511.4	511.0	510.9



TEST NUMBER: P775822

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	512.0	512.2	512.0	511.4	510.9	510.8
23°	511.9	512.1	511.9	511.2	510.8	510.7
23.5°	511.8	512.0	511.8	511.1	510.7	510.6
24°	511.7	511.9	511.7	510.9	510.5	510.5
24.5°	511.5	511.7	511.5	510.7	510.3	510.2
25°	511.2	511.4	511.2	510.5	510.0	509.9
25.5°	510.9	511.0	510.9	510.2	509.7	509.6
26°	510.5	510.7	510.5	509.8	509.3	509.2
26.5°	510.1	510.2	510.1	509.4	508.8	508.7
27°	509.5	509.6	509.5	508.8	508.2	508.1
27.5°	508.9	509.0	508.9	508.1	507.6	507.4
28°	508.1	508.2	508.1	507.4	506.8	506.7
28.5°	507.3	507.3	507.3	506.6	506.0	505.9
29°	506.3	506.4	506.3	505.7	505.0	504.8
29.5°	505.2	505.2	505.2	504.6	503.9	503.7
30°	504.0	503.9	504.0	503.4	502.6	502.4
30.5°	502.6	502.5	502.6	502.0	501.3	501.1
31°	501.1	500.9	501.1	500.6	499.7	499.5
31.5°	499.3	499.1	499.3	498.9	498.1	497.8
32°	497.5	497.3	497.5	497.0	496.2	495.8
32.5°	495.3	495.1	495.3	495.0	494.1	493.7
33°	493.0	492.7	493.0	492.8	491.9	491.5
33.5°	490.5	490.2	490.5	490.3	489.4	488.9
34°	487.8	487.4	487.8	487.7	486.8	486.3
34.5°	484.8	484.4	484.8	484.8	483.9	483.3
35°	481.7	481.3	481.7	481.8	480.8	480.3
35.5°	478.4	478.0	478.4	478.5	477.5	476.9
36°	474.9	474.4	474.9	475.1	474.0	473.4
36.5°	471.1	470.5	471.1	471.3	470.3	469.8
37°	467.2	466.6	467.2	467.3	466.4	465.7
37.5°	463.0	462.3	463.0	463.3	462.2	461.7
38°	458.6	457.9	458.6	458.9	458.0	457.4
38.5°	453.9	453.3	453.9	454.3	453.4	452.8
39°	449.3	448.5	449.3	449.6	448.8	448.2
39.5°	444.3	443.6	444.3	444.6	443.8	443.4
40°	439.1	438.4	439.1	439.4	438.6	438.2
40.5°	433.7	433.0	433.7	434.0	433.3	433.0
41°	428.2	427.5	428.2	428.4	427.8	427.5
41.5°	422.3	421.8	422.3	422.7	422.1	421.9
42°	416.5	416.0	416.5	416.7	416.3	416.1
42.5°	410.4	409.9	410.4	410.6	410.2	410.2
43°	404.1	403.6	404.1	404.3	404.0	404.0
43.5°	397.5	397.1	397.5	397.7	397.6	397.6



TEST NUMBER: P775822

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	376.8	376.7	376.8	376.9	376.9	377.2
45.5°	369.5	369.4	369.5	369.6	369.7	370.0
46°	362.0	361.9	362.0	362.0	362.1	362.5
46.5°	354.1	354.0	354.1	354.2	354.3	354.8
47°	345.5	345.3	345.5	345.7	346.0	346.5
47.5°	336.7	336.6	336.7	336.6	337.0	337.4
48°	328.1	328.2	328.1	328.0	327.8	327.9
48.5°	319.3	319.3	319.3	319.2	318.8	318.8
49°	310.3	310.4	310.3	310.2	309.9	310.0
49.5°	301.6	301.7	301.6	301.2	300.6	300.4
50°	292.8	293.1	292.8	292.3	291.4	291.0
50.5°	284.2	284.4	284.2	283.7	282.8	282.3
51°	275.9	276.1	275.9	275.5	274.6	274.3
51.5°	268.5	268.8	268.5	267.8	266.9	266.7
52°	261.4	261.8	261.4	260.4	259.5	259.1
52.5°	254.6	255.3	254.6	253.7	252.7	252.3
53°	248.4	248.8	248.4	247.5	246.3	245.9
53.5°	242.3	242.7	242.3	241.5	240.4	240.0
54°	236.2	236.4	236.2	235.7	234.7	234.4
54.5°	230.2	230.3	230.2	229.6	228.8	228.5
55°	223.4	223.2	223.4	223.0	222.3	222.0
55.5°	216.0	215.9	216.0	215.6	214.7	214.4
56°	208.0	207.9	208.0	207.5	206.4	206.0
56.5°	199.5	199.4	199.5	198.7	197.7	197.1
57°	190.2	190.3	190.2	189.7	188.3	187.8
57.5°	180.7	180.8	180.7	180.1	178.7	178.1
58°	171.2	171.4	171.2	170.3	168.8	168.2
58.5°	161.4	161.7	161.4	160.2	158.7	158.2
59°	151.5	151.9	151.5	150.0	148.5	148.0
59.5°	141.7	142.1	141.7	139.9	138.3	137.6
60°	132.0	132.2	132.0	129.9	128.2	127.3
60.5°	122.2	122.6	122.2	120.2	117.9	117.1
61°	112.6	113.1	112.6	110.7	108.2	107.2
61.5°	102.9	103.8	102.9	101.3	98.6	97.6
62°	93.6	94.6	93.6	91.9	89.1	88.2
62.5°	84.6	85.7	84.6	82.9	80.0	78.8
63°	75.9	77.2	75.9	74.1	71.1	69.5
63.5°	67.5	68.8	67.5	65.6	62.4	61.0
64°	59.5	60.7	59.5	57.3	54.4	53.0
64.5°	51.9	53.2	51.9	49.4	46.6	45.3
65°	44.6	45.7	44.6	42.2	39.8	37.9
65.5°	37.7	38.8	37.7	35.3	33.3	31.5
66°	31.5	32.0	31.5	29.2	27.2	25.4



TEST NUMBER: P775822

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	16.0	16.1	16.0	14.0	13.0	10.2
68°	12.1	11.9	12.1	10.2	9.1	6.2
68.5°	8.6	9.5	8.6	7.2	5.9	2.7
69°	5.6	7.4	5.6	4.7	3.6	1.5
69.5°	3.3	5.1	3.3	2.6	1.8	0.9
70°	1.5	2.8	1.5	1.2	1.0	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: P775822  
CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-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°	510.9	511.0	511.4	512.0	512.2	512.0	511.4	511.0	510.9	511.0	511.4
22°	510.9	510.9	511.4	512.0	512.2	512.0	511.4	510.9	510.9	510.9	511.4



44°	391.0	390.8	390.9	390.7	390.5	390.7	390.9	390.8	391.0	390.8	390.9
44.5°	384.3	384.0	384.1	384.0	383.7	384.0	384.1	384.0	384.3	384.0	384.1



66.5°	20.3	22.0	23.4	25.6	26.2	25.6	23.4	22.0	20.3	22.0	23.4
67°	15.2	17.0	18.6	20.6	20.8	20.6	18.6	17.0	15.2	17.0	18.6



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°	512.0	512.2	512.0	511.4	511.0	510.9
22°	512.0	512.2	512.0	511.4	510.9	510.9



44°	390.7	390.5	390.7	390.9	390.8	391.0
44.5°	384.0	383.7	384.0	384.1	384.0	384.3

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66.5°	25.6	26.2	25.6	23.4	22.0	20.3
67°	20.6	20.8	20.6	18.6	17.0	15.2

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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)