

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: P775819

Luminaire Tested: HCDJBL510CSD-HCD81TRC-1000lm-5000K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P775819  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2312156B042-HCD81TRC)  
Test Lab:  
Issue Date: 2/13/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBL510CSD-HCD81TRC-1000lm-5000K  
Description: 8 INCH ROUND SHALLOW-WIDE SPECULAR CLEAR TRIM  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 5000K CCT  
Ballast/Driver: -

**Summary**

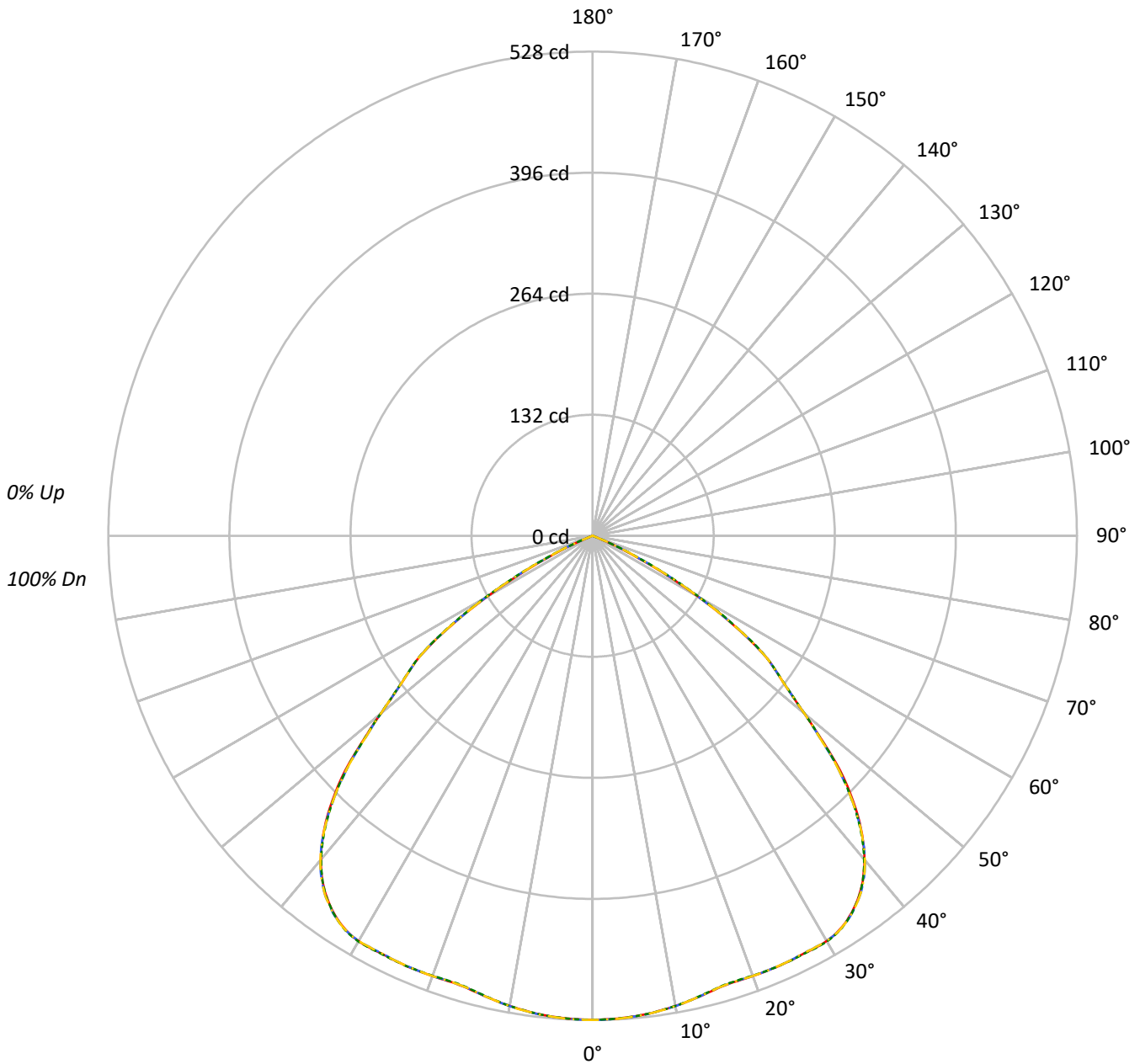
Lumens per Lamp: N/A  
Luminaire Lumens: 1292.2 lumens  
Efficiency: N/A  
Efficacy: 129.2 lumens/watt  
Spacing Criteria (0/90/45): 1.44 / 1.44 / 1.44  
Luminous Opening: Circular (Dia: 0.67' x H: 0')  
CIE Type: Direct

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	111	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	91	87	84	88	85	82	85	83	80	78								
3	95	87	80	74	93	85	79	74	82	77	73	80	75	71	77	73	70	68								
4	88	78	70	64	86	77	69	64	74	68	63	72	67	62	70	65	62	60								
5	81	70	62	56	80	69	62	56	67	60	55	65	59	55	63	58	54	52								
6	75	63	55	50	74	63	55	49	61	54	49	59	53	49	58	52	48	46								
7	70	58	50	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41								
8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39	37								
9	61	48	41	35	60	48	40	35	47	40	35	46	39	35	45	39	35	33								
10	57	45	37	32	56	44	37	32	43	37	32	42	36	32	41	36	32	30								

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

	0°	90°	180°	270°
0°	16117	16117	16117	16117
5°	16120	16123	16120	16123
10°	16142	16139	16142	16139
15°	16205	16189	16205	16189
20°	16599	16589	16599	16589
25°	17214	17217	17214	17217
30°	17990	18007	17990	18007
35°	18497	18509	18497	18509
40°	18373	18349	18373	18349
45°	17163	17072	17163	17072
50°	14306	14330	14306	14330
55°	12285	12312	12285	12312
60°	8084	8304	8084	8304
65°	2875	3287	2875	3287
70°	89	161	89	161
75°	35	47	35	47
80°	18	35	18	35
85°	0	35	0	35

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 17163 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	50.1	3.9
10°-20°	145.5	11.3
20°-30°	236.4	18.3
30°-40°	309.3	23.9
40°-50°	300.5	23.3
50°-60°	199.6	15.4
60°-70°	50.3	3.9
70°-80°	0.4	0.0
80°-90°	0.1	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°	432.0	33.4
0°-40°	741.3	57.4
0°-60°	1241.4	96.1
0°-90°	1292.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1292.2	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	528	528	528	528	528	
5°	526	526	526	526	526	50
15°	513	512	513	512	513	145
25°	511	511	511	511	511	236
35°	496	497	496	497	496	309
45°	398	395	398	395	398	301
55°	231	231	231	231	231	199
65°	40	46	40	46	40	47
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°	527.9	527.9	527.9	527.9	527.9	527.9	527.9	527.9	527.9	527.9	527.9
0.5°	527.8	527.8	528.0	528.1	527.8	528.1	528.0	527.8	527.8	527.8	528.0
1°	527.7	527.8	527.9	528.0	527.8	528.0	527.9	527.8	527.7	527.8	527.9
1.5°	527.6	527.7	527.8	527.9	527.7	527.9	527.8	527.7	527.6	527.7	527.8
2°	527.5	527.5	527.7	527.8	527.6	527.8	527.7	527.5	527.5	527.5	527.7
2.5°	527.3	527.4	527.5	527.6	527.4	527.6	527.5	527.4	527.3	527.4	527.5
3°	527.2	527.2	527.4	527.5	527.2	527.5	527.4	527.2	527.2	527.2	527.4
3.5°	527.0	527.0	527.2	527.2	527.0	527.2	527.2	527.0	527.0	527.0	527.2
4°	526.7	526.8	526.9	527.0	526.7	527.0	526.9	526.8	526.7	526.8	526.9
4.5°	526.3	526.4	526.5	526.7	526.4	526.7	526.5	526.4	526.3	526.4	526.5
5°	526.0	526.1	526.2	526.3	526.1	526.3	526.2	526.1	526.0	526.1	526.2
5.5°	525.7	525.8	525.9	526.0	525.8	526.0	525.9	525.8	525.7	525.8	525.9
6°	525.3	525.4	525.5	525.6	525.4	525.6	525.5	525.4	525.3	525.4	525.5
6.5°	524.8	524.9	525.1	525.2	524.8	525.2	525.1	524.9	524.8	524.9	525.1
7°	524.4	524.4	524.5	524.6	524.3	524.6	524.5	524.4	524.4	524.4	524.5
7.5°	523.9	523.9	524.0	524.0	523.8	524.0	524.0	523.9	523.9	523.9	524.0
8°	523.2	523.3	523.3	523.5	523.2	523.5	523.3	523.3	523.2	523.3	523.3
8.5°	522.6	522.7	522.8	522.8	522.6	522.8	522.8	522.7	522.6	522.7	522.8
9°	522.1	522.1	522.2	522.2	522.0	522.2	522.2	522.1	522.1	522.1	522.2
9.5°	521.3	521.4	521.4	521.5	521.3	521.5	521.4	521.4	521.3	521.4	521.4
10°	520.7	520.7	520.8	520.8	520.6	520.8	520.8	520.7	520.7	520.7	520.8
10.5°	519.9	519.9	520.0	520.0	519.8	520.0	520.0	519.9	519.9	519.9	520.0
11°	519.2	519.2	519.3	519.3	519.0	519.3	519.3	519.2	519.2	519.2	519.3
11.5°	518.3	518.3	518.4	518.4	518.2	518.4	518.4	518.3	518.3	518.3	518.4
12°	517.6	517.6	517.6	517.6	517.4	517.6	517.6	517.6	517.6	517.6	517.6
12.5°	516.7	516.7	516.7	516.7	516.5	516.7	516.7	516.7	516.7	516.7	516.7
13°	516.0	515.9	516.0	515.9	515.7	515.9	516.0	515.9	516.0	515.9	516.0
13.5°	515.1	515.0	515.0	515.0	514.7	515.0	515.0	515.0	515.1	515.0	515.0
14°	514.3	514.3	514.2	514.2	513.9	514.2	514.2	514.3	514.3	514.3	514.2
14.5°	513.4	513.4	513.3	513.3	513.0	513.3	513.3	513.4	513.4	513.4	513.3
15°	512.7	512.6	512.5	512.5	512.2	512.5	512.5	512.6	512.7	512.6	512.5
15.5°	511.9	511.8	511.7	511.6	511.4	511.6	511.7	511.8	511.9	511.8	511.7
16°	511.4	511.3	511.2	511.0	510.8	511.0	511.2	511.3	511.4	511.3	511.2
16.5°	511.0	510.9	510.8	510.4	510.3	510.4	510.8	510.9	511.0	510.9	510.8
17°	510.7	510.7	510.6	510.2	510.0	510.2	510.6	510.7	510.7	510.7	510.6
17.5°	510.6	510.6	510.3	510.1	510.0	510.1	510.3	510.6	510.6	510.6	510.3
18°	510.6	510.6	510.3	510.2	510.0	510.2	510.3	510.6	510.6	510.6	510.3
18.5°	510.6	510.6	510.4	510.2	510.0	510.2	510.4	510.6	510.6	510.6	510.4
19°	510.7	510.7	510.6	510.4	510.2	510.4	510.6	510.7	510.7	510.7	510.6
19.5°	510.8	510.8	510.7	510.6	510.3	510.6	510.7	510.8	510.8	510.8	510.7
20°	510.9	510.9	510.8	510.7	510.6	510.7	510.8	510.9	510.9	510.9	510.8
20.5°	511.0	510.9	510.9	510.9	510.7	510.9	510.9	510.9	511.0	510.9	510.9
21°	511.0	511.0	511.0	511.0	510.9	511.0	511.0	511.0	511.0	511.0	511.0



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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°	511.2	511.1	511.1	511.2	511.2	511.2	511.1	511.1	511.2	511.1	511.1
23°	511.2	511.1	511.1	511.3	511.2	511.3	511.1	511.1	511.2	511.1	511.1
23.5°	511.2	511.1	511.0	511.2	511.2	511.2	511.0	511.1	511.2	511.1	511.0
24°	511.1	511.0	510.9	511.2	511.2	511.2	510.9	511.0	511.1	511.0	510.9
24.5°	511.1	510.9	510.9	511.2	511.2	511.2	510.9	510.9	511.1	510.9	510.9
25°	511.0	510.8	510.8	511.1	511.1	511.1	510.8	510.8	511.0	510.8	510.8
25.5°	510.9	510.7	510.7	511.1	511.1	511.1	510.7	510.7	510.9	510.7	510.7
26°	510.7	510.6	510.4	511.0	511.0	511.0	510.4	510.6	510.7	510.6	510.4
26.5°	510.6	510.4	510.3	510.9	510.9	510.9	510.3	510.4	510.6	510.4	510.3
27°	510.6	510.3	510.2	510.8	510.9	510.8	510.2	510.3	510.6	510.3	510.2
27.5°	510.6	510.4	510.2	510.8	510.9	510.8	510.2	510.4	510.6	510.4	510.2
28°	510.7	510.4	510.3	510.9	511.0	510.9	510.3	510.4	510.7	510.4	510.3
28.5°	510.8	510.6	510.3	511.0	511.1	511.0	510.3	510.6	510.8	510.6	510.3
29°	510.8	510.6	510.3	511.1	511.1	511.1	510.3	510.6	510.8	510.6	510.3
29.5°	510.7	510.4	510.3	511.0	511.0	511.0	510.3	510.4	510.7	510.4	510.3
30°	510.3	510.2	510.1	510.8	510.8	510.8	510.1	510.2	510.3	510.2	510.1
30.5°	509.9	509.8	509.8	510.4	510.3	510.4	509.8	509.8	509.9	509.8	509.8
31°	509.3	509.2	509.2	509.8	509.7	509.8	509.2	509.2	509.3	509.2	509.2
31.5°	508.4	508.4	508.5	509.1	508.8	509.1	508.5	508.4	508.4	508.4	508.5
32°	507.2	507.4	507.5	508.0	507.8	508.0	507.5	507.4	507.2	507.4	507.5
32.5°	506.0	506.1	506.3	506.7	506.5	506.7	506.3	506.1	506.0	506.1	506.3
33°	504.5	504.6	504.9	505.2	504.9	505.2	504.9	504.6	504.5	504.6	504.9
33.5°	502.8	502.9	503.3	503.5	503.2	503.5	503.3	502.9	502.8	502.9	503.3
34°	500.7	501.1	501.5	501.6	501.2	501.6	501.5	501.1	500.7	501.1	501.5
34.5°	498.6	498.9	499.5	499.5	499.0	499.5	499.5	498.9	498.6	498.9	499.5
35°	496.3	496.6	497.2	497.1	496.6	497.1	497.2	496.6	496.3	496.6	497.2
35.5°	493.8	494.2	494.8	494.7	494.1	494.7	494.8	494.2	493.8	494.2	494.8
36°	491.2	491.6	492.2	492.0	491.4	492.0	492.2	491.6	491.2	491.6	492.2
36.5°	488.3	488.8	489.4	489.1	488.5	489.1	489.4	488.8	488.3	488.8	489.4
37°	485.2	485.7	486.4	486.0	485.3	486.0	486.4	485.7	485.2	485.7	486.4
37.5°	481.9	482.5	482.9	482.6	481.9	482.6	482.9	482.5	481.9	482.5	482.9
38°	478.3	478.9	479.4	479.0	478.3	479.0	479.4	478.9	478.3	478.9	479.4
38.5°	474.3	475.1	475.6	475.1	474.2	475.1	475.6	475.1	474.3	475.1	475.6
39°	470.1	471.0	471.3	470.8	469.9	470.8	471.3	471.0	470.1	471.0	471.3
39.5°	465.8	466.5	466.7	466.1	465.2	466.1	466.7	466.5	465.8	466.5	466.7
40°	461.0	461.6	461.8	461.2	460.4	461.2	461.8	461.6	461.0	461.6	461.8
40.5°	456.0	456.5	456.6	456.0	455.1	456.0	456.6	456.5	456.0	456.5	456.6
41°	450.6	451.1	451.0	450.3	449.7	450.3	451.0	451.1	450.6	451.1	451.0
41.5°	445.0	445.3	445.1	444.5	443.9	444.5	445.1	445.3	445.0	445.3	445.1
42°	439.1	439.2	438.8	438.3	438.0	438.3	438.8	439.2	439.1	439.2	438.8
42.5°	433.0	432.9	432.3	431.9	431.6	431.9	432.3	432.9	433.0	432.9	432.3
43°	426.5	426.2	425.5	425.2	424.9	425.2	425.5	426.2	426.5	426.2	425.5
43.5°	419.7	419.3	418.2	418.1	418.0	418.1	418.2	419.3	419.7	419.3	418.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	397.5	396.6	395.1	395.1	395.4	395.1	395.1	396.6	397.5	396.6	395.1
45.5°	389.4	388.4	386.7	386.9	387.2	386.9	386.7	388.4	389.4	388.4	386.7
46°	380.9	379.9	378.1	378.4	378.9	378.4	378.1	379.9	380.9	379.9	378.1
46.5°	372.0	371.0	369.3	369.5	370.0	369.5	369.3	371.0	372.0	371.0	369.3
47°	362.6	361.6	360.0	360.2	360.7	360.2	360.0	361.6	362.6	361.6	360.0
47.5°	352.1	351.2	349.6	349.9	350.3	349.9	349.6	351.2	352.1	351.2	349.6
48°	340.9	340.1	338.8	339.3	339.8	339.3	338.8	340.1	340.9	340.1	338.8
48.5°	330.5	330.1	328.9	329.3	329.9	329.3	328.9	330.1	330.5	330.1	328.9
49°	320.7	320.5	319.8	320.1	320.5	320.1	319.8	320.5	320.7	320.5	319.8
49.5°	311.0	310.9	310.6	310.8	311.0	310.8	310.6	310.9	311.0	310.9	310.6
50°	301.2	301.1	301.1	301.4	301.7	301.4	301.1	301.1	301.2	301.1	301.1
50.5°	292.0	292.1	292.0	292.2	292.4	292.2	292.0	292.1	292.0	292.1	292.0
51°	283.7	283.7	283.6	283.8	283.6	283.8	283.6	283.7	283.7	283.7	283.6
51.5°	275.8	275.7	275.6	275.8	275.9	275.8	275.6	275.7	275.8	275.7	275.6
52°	268.2	268.2	268.2	268.6	268.9	268.6	268.2	268.2	268.2	268.2	268.2
52.5°	261.3	261.4	261.3	261.7	262.0	261.7	261.3	261.4	261.3	261.4	261.3
53°	255.1	255.0	255.0	255.5	255.8	255.5	255.0	255.0	255.1	255.0	255.0
53.5°	249.3	249.3	249.3	249.7	249.9	249.7	249.3	249.3	249.3	249.3	249.3
54°	243.6	243.5	243.5	243.9	243.9	243.9	243.5	243.5	243.6	243.5	243.5
54.5°	237.5	237.5	237.5	237.8	238.0	237.8	237.5	237.5	237.5	237.5	237.5
55°	230.8	230.8	230.8	231.3	231.3	231.3	230.8	230.8	230.8	230.8	230.8
55.5°	223.0	223.0	223.1	223.9	223.7	223.9	223.1	223.0	223.0	223.0	223.1
56°	214.2	214.4	214.7	215.4	215.2	215.4	214.7	214.4	214.2	214.4	214.7
56.5°	205.0	205.1	205.5	206.2	206.2	206.2	205.5	205.1	205.0	205.1	205.5
57°	195.3	195.4	195.9	196.6	196.4	196.6	195.9	195.4	195.3	195.4	195.9
57.5°	185.2	185.4	185.8	186.7	186.7	186.7	185.8	185.4	185.2	185.4	185.8
58°	175.1	175.1	175.7	176.7	176.9	176.7	175.7	175.1	175.1	175.1	175.7
58.5°	164.4	164.7	165.2	166.4	166.8	166.4	165.2	164.7	164.4	164.7	165.2
59°	153.7	154.2	154.8	156.0	156.5	156.0	154.8	154.2	153.7	154.2	154.8
59.5°	143.0	143.5	144.2	145.7	146.4	145.7	144.2	143.5	143.0	143.5	144.2
60°	132.4	133.0	134.0	135.4	136.0	135.4	134.0	133.0	132.4	133.0	134.0
60.5°	121.9	122.6	123.9	125.4	126.0	125.4	123.9	122.6	121.9	122.6	123.9
61°	111.5	112.5	114.0	115.4	115.9	115.4	114.0	112.5	111.5	112.5	114.0
61.5°	101.7	102.6	104.4	105.7	106.1	105.7	104.4	102.6	101.7	102.6	104.4
62°	91.9	93.0	94.8	95.9	96.5	95.9	94.8	93.0	91.9	93.0	94.8
62.5°	82.3	83.5	85.5	86.6	87.4	86.6	85.5	83.5	82.3	83.5	85.5
63°	72.8	74.2	76.4	77.5	78.4	77.5	76.4	74.2	72.8	74.2	76.4
63.5°	64.0	65.1	67.6	68.8	69.6	68.8	67.6	65.1	64.0	65.1	67.6
64°	55.5	56.8	59.1	60.3	61.0	60.3	59.1	56.8	55.5	56.8	59.1
64.5°	47.4	48.8	51.0	52.1	52.7	52.1	51.0	48.8	47.4	48.8	51.0
65°	39.8	41.3	43.6	44.9	45.5	44.9	43.6	41.3	39.8	41.3	43.6
65.5°	32.9	34.5	36.5	37.8	38.7	37.8	36.5	34.5	32.9	34.5	36.5
66°	26.3	28.5	29.9	31.2	32.1	31.2	29.9	28.5	26.3	28.5	29.9





TEST NUMBER: P775819

CATALOG NUMBER: HCDJBL510CSD-HCD81TRC-1000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	10.6	13.6	14.8	15.4	15.6	15.4	14.8	13.6	10.6	13.6	14.8
68°	6.4	9.8	10.9	11.5	12.0	11.5	10.9	9.8	6.4	9.8	10.9
68.5°	2.8	6.5	7.1	7.8	8.8	7.8	7.1	6.5	2.8	6.5	7.1
69°	1.7	3.9	4.8	5.1	6.4	5.1	4.8	3.9	1.7	3.9	4.8
69.5°	1.2	2.3	3.2	3.0	4.1	3.0	3.2	2.3	1.2	2.3	3.2
70°	1.0	1.4	1.7	1.6	1.8	1.6	1.7	1.4	1.0	1.4	1.7
70.5°	0.6	0.9	1.1	1.1	0.9	1.1	1.1	0.9	0.6	0.9	1.1
71°	0.5	0.6	0.9	0.9	0.7	0.9	0.9	0.6	0.5	0.6	0.9
71.5°	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.6
72°	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5
72.5°	0.4	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.4	0.5	0.5
73°	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5
73.5°	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4
74°	0.3	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.3	0.4	0.4
74.5°	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4
75°	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
75.5°	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
76°	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
76.5°	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3
77°	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3
77.5°	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
78°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
78.5°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
79°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
79.5°	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2
80°	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
80.5°	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
81°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
81.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
83°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
83.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
84°	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
84.5°	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.1	0.1	0.1	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: P775819  
CATALOG NUMBER: HCDJBL510CSD-HCD81TRC-1000lm-5000K

**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: P775819

CATALOG NUMBER: HCDJBL510CSD-HCD81TRC-1000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	527.9	527.9	527.9	527.9	527.9	527.9
0.5°	528.1	527.8	528.1	528.0	527.8	527.8
1°	528.0	527.8	528.0	527.9	527.8	527.7
1.5°	527.9	527.7	527.9	527.8	527.7	527.6
2°	527.8	527.6	527.8	527.7	527.5	527.5
2.5°	527.6	527.4	527.6	527.5	527.4	527.3
3°	527.5	527.2	527.5	527.4	527.2	527.2
3.5°	527.2	527.0	527.2	527.2	527.0	527.0
4°	527.0	526.7	527.0	526.9	526.8	526.7
4.5°	526.7	526.4	526.7	526.5	526.4	526.3
5°	526.3	526.1	526.3	526.2	526.1	526.0
5.5°	526.0	525.8	526.0	525.9	525.8	525.7
6°	525.6	525.4	525.6	525.5	525.4	525.3
6.5°	525.2	524.8	525.2	525.1	524.9	524.8
7°	524.6	524.3	524.6	524.5	524.4	524.4
7.5°	524.0	523.8	524.0	524.0	523.9	523.9
8°	523.5	523.2	523.5	523.3	523.3	523.2
8.5°	522.8	522.6	522.8	522.8	522.7	522.6
9°	522.2	522.0	522.2	522.2	522.1	522.1
9.5°	521.5	521.3	521.5	521.4	521.4	521.3
10°	520.8	520.6	520.8	520.8	520.7	520.7
10.5°	520.0	519.8	520.0	520.0	519.9	519.9
11°	519.3	519.0	519.3	519.3	519.2	519.2
11.5°	518.4	518.2	518.4	518.4	518.3	518.3
12°	517.6	517.4	517.6	517.6	517.6	517.6
12.5°	516.7	516.5	516.7	516.7	516.7	516.7
13°	515.9	515.7	515.9	516.0	515.9	516.0
13.5°	515.0	514.7	515.0	515.0	515.0	515.1
14°	514.2	513.9	514.2	514.2	514.3	514.3
14.5°	513.3	513.0	513.3	513.3	513.4	513.4
15°	512.5	512.2	512.5	512.5	512.6	512.7
15.5°	511.6	511.4	511.6	511.7	511.8	511.9
16°	511.0	510.8	511.0	511.2	511.3	511.4
16.5°	510.4	510.3	510.4	510.8	510.9	511.0
17°	510.2	510.0	510.2	510.6	510.7	510.7
17.5°	510.1	510.0	510.1	510.3	510.6	510.6
18°	510.2	510.0	510.2	510.3	510.6	510.6
18.5°	510.2	510.0	510.2	510.4	510.6	510.6
19°	510.4	510.2	510.4	510.6	510.7	510.7
19.5°	510.6	510.3	510.6	510.7	510.8	510.8
20°	510.7	510.6	510.7	510.8	510.9	510.9
20.5°	510.9	510.7	510.9	510.9	510.9	511.0
21°	511.0	510.9	511.0	511.0	511.0	511.0

TEST NUMBER: P775819

CATALOG NUMBER: HCDJBL510CSD-HCD81TRC-1000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	511.2	511.2	511.2	511.1	511.1	511.2
23°	511.3	511.2	511.3	511.1	511.1	511.2
23.5°	511.2	511.2	511.2	511.0	511.1	511.2
24°	511.2	511.2	511.2	510.9	511.0	511.1
24.5°	511.2	511.2	511.2	510.9	510.9	511.1
25°	511.1	511.1	511.1	510.8	510.8	511.0
25.5°	511.1	511.1	511.1	510.7	510.7	510.9
26°	511.0	511.0	511.0	510.4	510.6	510.7
26.5°	510.9	510.9	510.9	510.3	510.4	510.6
27°	510.8	510.9	510.8	510.2	510.3	510.6
27.5°	510.8	510.9	510.8	510.2	510.4	510.6
28°	510.9	511.0	510.9	510.3	510.4	510.7
28.5°	511.0	511.1	511.0	510.3	510.6	510.8
29°	511.1	511.1	511.1	510.3	510.6	510.8
29.5°	511.0	511.0	511.0	510.3	510.4	510.7
30°	510.8	510.8	510.8	510.1	510.2	510.3
30.5°	510.4	510.3	510.4	509.8	509.8	509.9
31°	509.8	509.7	509.8	509.2	509.2	509.3
31.5°	509.1	508.8	509.1	508.5	508.4	508.4
32°	508.0	507.8	508.0	507.5	507.4	507.2
32.5°	506.7	506.5	506.7	506.3	506.1	506.0
33°	505.2	504.9	505.2	504.9	504.6	504.5
33.5°	503.5	503.2	503.5	503.3	502.9	502.8
34°	501.6	501.2	501.6	501.5	501.1	500.7
34.5°	499.5	499.0	499.5	499.5	498.9	498.6
35°	497.1	496.6	497.1	497.2	496.6	496.3
35.5°	494.7	494.1	494.7	494.8	494.2	493.8
36°	492.0	491.4	492.0	492.2	491.6	491.2
36.5°	489.1	488.5	489.1	489.4	488.8	488.3
37°	486.0	485.3	486.0	486.4	485.7	485.2
37.5°	482.6	481.9	482.6	482.9	482.5	481.9
38°	479.0	478.3	479.0	479.4	478.9	478.3
38.5°	475.1	474.2	475.1	475.6	475.1	474.3
39°	470.8	469.9	470.8	471.3	471.0	470.1
39.5°	466.1	465.2	466.1	466.7	466.5	465.8
40°	461.2	460.4	461.2	461.8	461.6	461.0
40.5°	456.0	455.1	456.0	456.6	456.5	456.0
41°	450.3	449.7	450.3	451.0	451.1	450.6
41.5°	444.5	443.9	444.5	445.1	445.3	445.0
42°	438.3	438.0	438.3	438.8	439.2	439.1
42.5°	431.9	431.6	431.9	432.3	432.9	433.0
43°	425.2	424.9	425.2	425.5	426.2	426.5
43.5°	418.1	418.0	418.1	418.2	419.3	419.7



TEST NUMBER: P775819

CATALOG NUMBER: HCDJBL510CSD-HCD81TRC-1000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	395.1	395.4	395.1	395.1	396.6	397.5
45.5°	386.9	387.2	386.9	386.7	388.4	389.4
46°	378.4	378.9	378.4	378.1	379.9	380.9
46.5°	369.5	370.0	369.5	369.3	371.0	372.0
47°	360.2	360.7	360.2	360.0	361.6	362.6
47.5°	349.9	350.3	349.9	349.6	351.2	352.1
48°	339.3	339.8	339.3	338.8	340.1	340.9
48.5°	329.3	329.9	329.3	328.9	330.1	330.5
49°	320.1	320.5	320.1	319.8	320.5	320.7
49.5°	310.8	311.0	310.8	310.6	310.9	311.0
50°	301.4	301.7	301.4	301.1	301.1	301.2
50.5°	292.2	292.4	292.2	292.0	292.1	292.0
51°	283.8	283.6	283.8	283.6	283.7	283.7
51.5°	275.8	275.9	275.8	275.6	275.7	275.8
52°	268.6	268.9	268.6	268.2	268.2	268.2
52.5°	261.7	262.0	261.7	261.3	261.4	261.3
53°	255.5	255.8	255.5	255.0	255.0	255.1
53.5°	249.7	249.9	249.7	249.3	249.3	249.3
54°	243.9	243.9	243.9	243.5	243.5	243.6
54.5°	237.8	238.0	237.8	237.5	237.5	237.5
55°	231.3	231.3	231.3	230.8	230.8	230.8
55.5°	223.9	223.7	223.9	223.1	223.0	223.0
56°	215.4	215.2	215.4	214.7	214.4	214.2
56.5°	206.2	206.2	206.2	205.5	205.1	205.0
57°	196.6	196.4	196.6	195.9	195.4	195.3
57.5°	186.7	186.7	186.7	185.8	185.4	185.2
58°	176.7	176.9	176.7	175.7	175.1	175.1
58.5°	166.4	166.8	166.4	165.2	164.7	164.4
59°	156.0	156.5	156.0	154.8	154.2	153.7
59.5°	145.7	146.4	145.7	144.2	143.5	143.0
60°	135.4	136.0	135.4	134.0	133.0	132.4
60.5°	125.4	126.0	125.4	123.9	122.6	121.9
61°	115.4	115.9	115.4	114.0	112.5	111.5
61.5°	105.7	106.1	105.7	104.4	102.6	101.7
62°	95.9	96.5	95.9	94.8	93.0	91.9
62.5°	86.6	87.4	86.6	85.5	83.5	82.3
63°	77.5	78.4	77.5	76.4	74.2	72.8
63.5°	68.8	69.6	68.8	67.6	65.1	64.0
64°	60.3	61.0	60.3	59.1	56.8	55.5
64.5°	52.1	52.7	52.1	51.0	48.8	47.4
65°	44.9	45.5	44.9	43.6	41.3	39.8
65.5°	37.8	38.7	37.8	36.5	34.5	32.9
66°	31.2	32.1	31.2	29.9	28.5	26.3



TEST NUMBER: P775819  
 CATALOG NUMBER: HCDJBL510CSD-HCD81TRC-1000lm-5000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	15.4	15.6	15.4	14.8	13.6	10.6
68°	11.5	12.0	11.5	10.9	9.8	6.4
68.5°	7.8	8.8	7.8	7.1	6.5	2.8
69°	5.1	6.4	5.1	4.8	3.9	1.7
69.5°	3.0	4.1	3.0	3.2	2.3	1.2
70°	1.6	1.8	1.6	1.7	1.4	1.0
70.5°	1.1	0.9	1.1	1.1	0.9	0.6
71°	0.9	0.7	0.9	0.9	0.6	0.5
71.5°	0.6	0.6	0.6	0.6	0.5	0.5
72°	0.6	0.6	0.6	0.5	0.5	0.5
72.5°	0.5	0.6	0.5	0.5	0.5	0.4
73°	0.5	0.5	0.5	0.5	0.4	0.4
73.5°	0.5	0.5	0.5	0.4	0.4	0.4
74°	0.4	0.5	0.4	0.4	0.4	0.3
74.5°	0.4	0.4	0.4	0.4	0.3	0.3
75°	0.4	0.4	0.4	0.3	0.3	0.3
75.5°	0.4	0.4	0.4	0.3	0.3	0.3
76°	0.3	0.3	0.3	0.3	0.3	0.3
76.5°	0.3	0.3	0.3	0.3	0.2	0.2
77°	0.3	0.3	0.3	0.3	0.2	0.2
77.5°	0.3	0.3	0.3	0.2	0.2	0.2
78°	0.2	0.2	0.2	0.2	0.2	0.2
78.5°	0.2	0.2	0.2	0.2	0.2	0.2
79°	0.2	0.2	0.2	0.2	0.2	0.2
79.5°	0.2	0.2	0.2	0.2	0.1	0.1
80°	0.2	0.2	0.2	0.1	0.1	0.1
80.5°	0.2	0.2	0.2	0.1	0.1	0.1
81°	0.1	0.1	0.1	0.1	0.1	0.1
81.5°	0.1	0.1	0.1	0.1	0.1	0.1
82°	0.1	0.1	0.1	0.1	0.1	0.1
82.5°	0.1	0.1	0.1	0.1	0.1	0.1
83°	0.1	0.1	0.1	0.1	0.1	0.1
83.5°	0.1	0.1	0.1	0.1	0.1	0.1
84°	0.1	0.1	0.1	0.1	0.0	0.0
84.5°	0.1	0.1	0.1	0.0	0.0	0.0
85°	0.1	0.1	0.1	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: P775819  
CATALOG NUMBER: HCDJBL510CSD-HCD81TRC-1000lm-5000K

**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°	511.1	511.1	511.0	511.1	511.0	511.1	511.0	511.1	511.1	511.1	511.0
22°	511.2	511.1	511.1	511.1	511.1	511.1	511.1	511.1	511.2	511.1	511.1



44°	412.6	412.0	410.8	410.7	410.8	410.7	410.8	412.0	412.6	412.0	410.8
44.5°	405.2	404.6	403.1	403.1	403.2	403.1	403.1	404.6	405.2	404.6	403.1



66.5°	21.1	22.8	24.3	25.4	25.7	25.4	24.3	22.8	21.1	22.8	24.3
67°	15.8	17.8	19.0	20.0	20.3	20.0	19.0	17.8	15.8	17.8	19.0



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°	511.1	511.0	511.1	511.0	511.1	511.1
22°	511.1	511.1	511.1	511.1	511.1	511.2



44°	410.7	410.8	410.7	410.8	412.0	412.6
44.5°	403.1	403.2	403.1	403.1	404.6	405.2



66.5°	25.4	25.7	25.4	24.3	22.8	21.1
67°	20.0	20.3	20.0	19.0	17.8	15.8

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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)