

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: P775727

Luminaire Tested: HCDJBL510CSD-HCD61TRH-HCD61TRLWW-1000lm-3500K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P775727  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2312156B041)  
Test Lab:  
Issue Date: 2/13/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBL510CSD-HCD61TRH-HCD61TRLWW-1000lm-3500K  
Description: 6 INCH ROUND SHALLOW-WIDE LENSED WALLWASH KIT  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

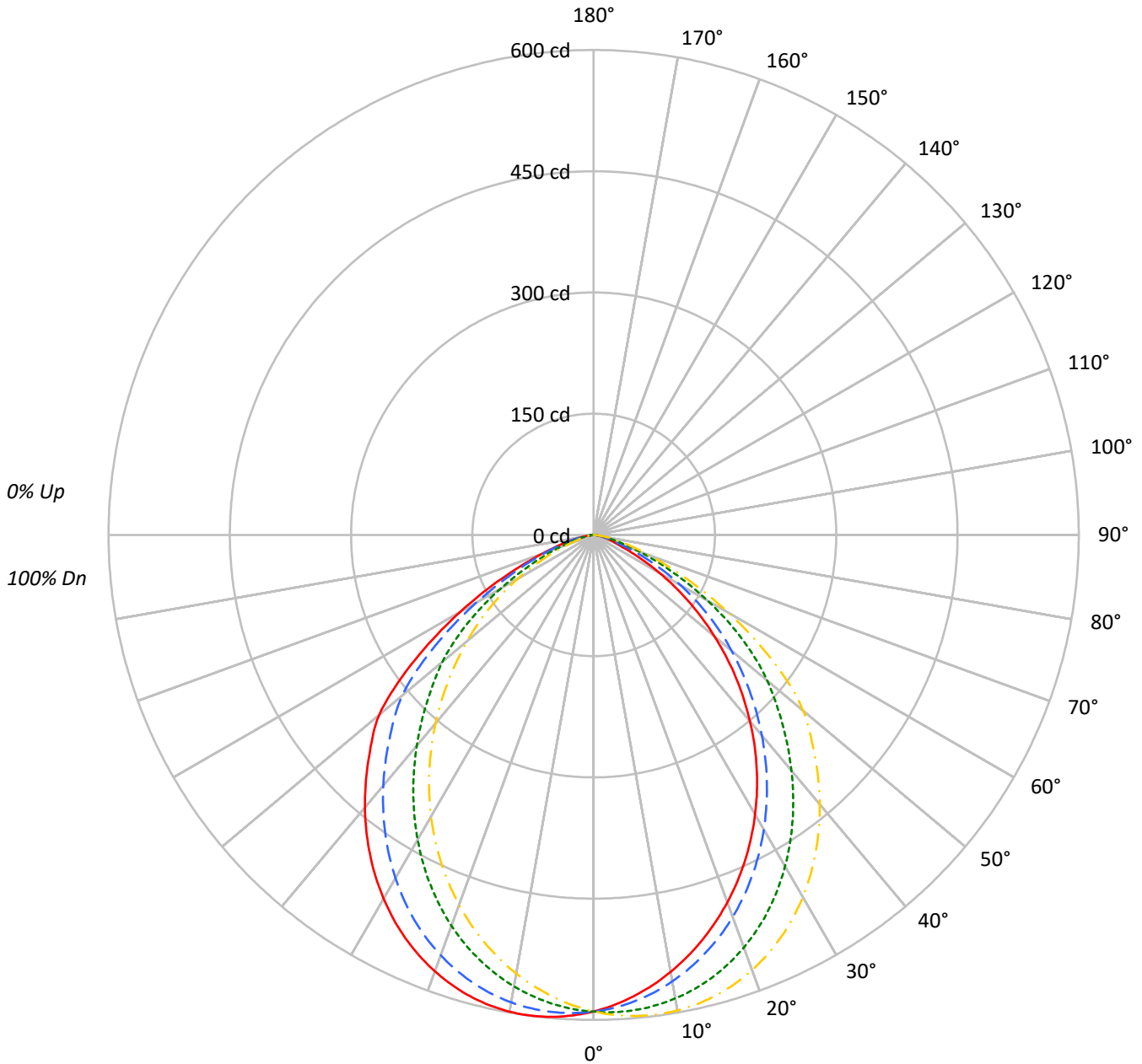
Lumens per Lamp: N/A  
Luminaire Lumens: 1254.7 lumens  
Efficiency: N/A  
Efficacy: 125.5 lumens/watt  
Spacing Criteria (0/90/45): 1.17 / 1.16 / 1.25  
Luminous Opening: Circular (Dia: 0.5' x H: 0')  
CIE Type: Direct

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					20					
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	111	107	103	100	108	105	101	99	100	98	95	97	94	93	93	91	90	88					88			
2	102	95	89	84	100	93	88	83	90	85	82	87	83	80	84	81	78	76					76			
3	94	85	78	72	92	83	77	71	81	75	70	78	73	69	75	71	68	66					66			
4	87	76	68	62	85	75	68	62	72	66	61	70	65	60	68	63	60	58					58			
5	80	69	61	55	78	68	60	54	66	59	54	64	58	53	62	57	53	51					51			
6	75	62	54	48	73	61	54	48	60	53	48	58	52	47	57	51	47	45					45			
7	69	57	49	43	68	56	48	43	55	48	43	53	47	42	52	46	42	40					40			
8	65	52	44	39	63	51	44	39	50	43	38	49	43	38	48	42	38	36					36			
9	61	48	40	35	59	47	40	35	46	40	35	45	39	35	44	39	35	33					33			
10	57	44	37	32	56	44	37	32	43	36	32	42	36	32	41	36	32	30					30			

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

	0°	90°	180°	270°
0°	32327	32327	32327	32327
5°	31515	32467	32935	32049
10°	30549	32409	33338	31568
15°	29450	32163	33530	30891
20°	28212	31684	33515	30009
25°	26826	30957	33310	28889
30°	25276	29967	32891	27568
35°	23517	28710	32277	26033
40°	21519	27237	31488	24346
45°	19250	25569	30538	22568
50°	16648	23888	29534	20835
55°	13677	21380	25853	18169
60°	10339	17860	20919	14571
65°	6784	13711	15657	10753
70°	4504	9601	10803	7245
75°	3601	6185	7498	4575
80°	2652	3788	4514	2715
85°	1447	2201	1006	1572

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 157.5°  
 Vertical Angle: 45°  
 Luminance: 30747 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	55.5	4.4
10°-20°	156.3	12.5
20°-30°	228.1	18.2
30°-40°	258.2	20.6
40°-50°	244.3	19.5
50°-60°	185.5	14.8
60°-70°	92.9	7.4
70°-80°	29.4	2.3
80°-90°	4.5	0.4
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°	440.0	35.1
0°-40°	698.2	55.6
0°-60°	1127.9	89.9
0°-90°	1254.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1254.7	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	590	590	590	590	590	
5°	573	590	598	582	573	54
15°	519	567	591	544	519	146
25°	444	512	551	478	444	204
35°	351	429	482	389	351	219
45°	248	330	394	291	248	191
55°	143	224	270	190	143	128
65°	52	106	121	83	52	54
75°	17	29	35	22	17	18
85°	2	4	2	2	2	3
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	589.7	589.7	589.7	589.7	589.7	589.7	589.7	589.7	589.7	589.7	589.7
0.5°	588.3	588.7	589.1	589.4	590.3	590.4	590.6	590.7	590.8	590.8	590.4
1°	586.8	587.5	588.3	589.2	590.6	591.2	591.7	592.0	592.0	591.8	591.0
1.5°	585.4	586.3	587.4	588.8	590.8	591.9	592.7	593.1	593.1	592.6	591.5
2°	583.8	584.9	586.5	588.4	591.0	592.4	593.5	594.2	594.1	593.4	591.8
2.5°	582.0	583.5	585.5	587.8	591.0	592.9	594.4	595.1	595.1	594.2	592.2
3°	580.4	582.0	584.3	587.2	591.0	593.3	595.2	596.0	595.8	594.7	592.4
3.5°	578.6	580.5	583.2	586.5	590.8	593.7	595.8	596.9	596.6	595.2	592.5
4°	576.7	578.8	581.9	585.8	590.6	594.0	596.4	597.6	597.4	595.7	592.6
4.5°	574.8	577.1	580.6	584.9	590.4	594.2	597.0	598.3	598.0	596.0	592.6
5°	572.7	575.3	579.1	584.0	590.0	594.3	597.4	598.8	598.5	596.3	592.5
5.5°	570.6	573.3	577.7	583.0	589.6	594.4	597.7	599.3	598.9	596.5	592.4
6°	568.5	571.4	576.0	581.9	589.1	594.3	598.0	599.8	599.2	596.6	592.1
6.5°	566.3	569.4	574.5	580.8	588.6	594.2	598.2	600.1	599.5	596.6	591.8
7°	564.0	567.3	572.7	579.6	587.8	594.0	598.3	600.3	599.7	596.6	591.4
7.5°	561.6	565.2	571.0	578.2	587.1	593.6	598.3	600.4	599.8	596.4	590.8
8°	559.2	562.9	569.1	576.8	586.3	593.3	598.3	600.5	599.8	596.2	590.3
8.5°	556.7	560.6	567.1	575.3	585.5	592.9	598.2	600.5	599.7	595.9	589.6
9°	554.2	558.3	565.1	573.8	584.4	592.5	597.9	600.4	599.5	595.6	588.9
9.5°	551.5	555.8	563.0	572.2	583.4	591.9	597.7	600.2	599.2	595.1	588.2
10°	548.8	553.3	560.9	570.4	582.2	591.3	597.3	599.9	598.9	594.6	587.2
10.5°	546.1	550.8	558.6	568.7	581.1	590.4	596.9	599.5	598.5	593.9	586.3
11°	543.3	548.2	556.2	566.8	579.8	589.6	596.3	599.1	597.9	593.2	585.3
11.5°	540.4	545.5	553.9	564.8	578.4	588.8	595.7	598.5	597.4	592.4	584.1
12°	537.5	542.7	551.5	562.8	577.0	587.7	595.0	598.0	596.6	591.6	583.0
12.5°	534.5	539.9	548.9	560.8	575.5	586.7	594.2	597.3	595.9	590.6	581.6
13°	531.5	537.0	546.3	558.5	573.9	585.6	593.3	596.4	595.1	589.6	580.3
13.5°	528.4	534.1	543.6	556.4	572.2	584.4	592.4	595.6	594.1	588.5	578.9
14°	525.3	531.1	540.9	554.1	570.4	583.1	591.4	594.7	593.1	587.2	577.4
14.5°	522.1	528.1	538.1	551.7	568.6	581.7	590.2	593.6	592.0	586.0	575.8
15°	518.9	524.9	535.2	549.1	566.7	580.2	589.1	592.5	590.8	584.6	574.2
15.5°	515.5	521.7	532.2	546.6	564.6	578.7	587.8	591.4	589.6	583.2	572.4
16°	512.2	518.4	529.3	543.9	562.6	577.1	586.5	590.0	588.2	581.6	570.5
16.5°	508.8	515.1	526.2	541.3	560.5	575.4	585.0	588.7	586.8	580.1	568.7
17°	505.3	511.8	523.0	538.4	558.3	573.7	583.6	587.3	585.3	578.4	566.7
17.5°	501.9	508.4	519.8	535.6	555.9	571.8	581.9	585.8	583.7	576.7	564.7
18°	498.2	504.9	516.6	532.7	553.5	569.9	580.3	584.1	581.9	574.8	562.6
18.5°	494.7	501.5	513.2	529.7	551.1	567.9	578.5	582.5	580.3	572.8	560.4
19°	491.0	497.8	509.8	526.6	548.5	565.8	576.7	580.7	578.4	570.9	558.1
19.5°	487.3	494.3	506.3	523.4	545.9	563.6	574.8	578.8	576.4	568.9	555.7
20°	483.6	490.6	502.9	520.3	543.1	561.3	572.9	576.9	574.5	566.7	553.3
20.5°	479.7	486.8	499.3	517.0	540.3	558.9	570.9	574.9	572.4	564.4	550.8
21°	475.9	483.0	495.7	513.7	537.5	556.7	568.7	572.8	570.3	562.2	548.3



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
22.5°	464.2	471.4	484.4	503.1	528.5	548.9	561.7	566.2	563.5	554.9	540.2
23°	460.1	467.4	480.5	499.5	525.3	546.2	559.4	563.8	561.0	552.3	537.3
23.5°	456.1	463.4	476.7	495.8	522.1	543.4	556.9	561.3	558.5	549.6	534.4
24°	451.9	459.4	472.7	492.0	518.8	540.5	554.2	558.8	556.0	546.8	531.4
24.5°	447.7	455.3	468.5	488.1	515.3	537.5	551.5	556.2	553.2	544.0	528.3
25°	443.5	451.0	464.5	484.3	511.8	534.6	548.8	553.6	550.7	541.2	525.2
25.5°	439.3	446.9	460.4	480.3	508.3	531.4	546.0	550.9	547.8	538.3	522.0
26°	435.1	442.6	456.3	476.3	504.8	528.2	543.1	548.1	545.0	535.2	518.8
26.5°	430.7	438.4	451.8	472.1	501.0	525.0	540.1	545.1	542.0	532.2	515.4
27°	426.4	434.0	447.7	468.1	497.2	521.7	537.0	542.2	539.1	529.0	512.0
27.5°	421.9	429.6	443.3	463.9	493.5	518.2	534.0	539.2	535.9	525.9	508.6
28°	417.4	425.1	439.0	459.6	489.5	514.7	530.8	536.1	532.7	522.7	505.0
28.5°	413.0	420.7	434.4	455.3	485.6	511.2	527.5	532.8	529.5	519.3	501.5
29°	408.5	416.3	430.0	451.0	481.7	507.7	524.1	529.7	526.2	515.9	497.8
29.5°	404.0	411.7	425.5	446.7	477.5	503.8	520.8	526.3	522.9	512.4	494.1
30°	399.3	407.1	421.1	442.2	473.4	500.2	517.3	523.0	519.6	508.9	490.3
30.5°	394.7	402.5	416.3	437.6	469.2	496.3	513.7	519.6	516.2	505.3	486.4
31°	390.0	397.9	411.7	433.2	465.0	492.3	510.1	516.2	512.6	501.7	482.6
31.5°	385.3	393.2	407.0	428.5	460.6	488.3	506.4	512.5	508.9	497.9	478.6
32°	380.6	388.5	402.3	423.9	456.2	484.5	502.7	508.9	505.4	494.2	474.6
32.5°	375.8	383.8	397.6	419.3	451.8	480.3	499.0	505.2	501.8	490.4	470.6
33°	370.9	378.9	392.9	414.6	447.5	476.1	495.0	501.5	497.9	486.5	466.5
33.5°	366.2	374.1	388.0	409.8	442.9	471.9	491.1	497.7	494.1	482.6	462.5
34°	361.3	369.4	383.3	405.1	438.4	467.7	487.1	493.9	490.2	478.6	458.2
34.5°	356.3	364.5	378.3	400.3	433.6	463.2	483.0	489.9	486.2	474.5	453.9
35°	351.4	359.5	373.5	395.4	429.0	458.9	479.0	485.9	482.3	470.5	449.7
35.5°	346.5	354.7	368.5	390.6	424.4	454.5	474.7	481.9	478.4	466.4	445.4
36°	341.5	349.7	363.7	385.7	419.6	450.0	470.6	477.8	474.3	462.2	441.0
36.5°	336.5	344.7	358.7	380.8	414.9	445.4	466.3	473.7	470.1	458.2	436.6
37°	331.5	339.7	353.5	375.8	410.0	440.9	462.0	469.4	465.9	453.8	432.2
37.5°	326.4	334.7	348.7	370.8	405.1	436.2	457.5	465.2	461.7	449.6	427.6
38°	321.2	329.6	343.7	365.9	400.4	431.5	453.2	461.0	457.4	445.1	423.0
38.5°	316.2	324.6	338.6	360.9	395.4	426.8	448.6	456.6	453.2	440.9	418.7
39°	311.3	319.5	333.6	355.8	390.5	422.0	444.2	452.3	448.7	436.4	414.0
39.5°	306.0	314.5	328.6	350.8	385.6	417.2	439.6	447.8	444.5	431.9	409.5
40°	300.7	309.3	323.6	345.8	380.6	412.4	435.0	443.3	440.0	427.5	404.7
40.5°	295.6	304.1	318.3	340.7	375.4	407.6	430.3	438.8	435.5	423.0	400.1
41°	290.5	298.9	313.3	335.6	370.4	402.5	425.5	434.2	431.0	418.4	395.4
41.5°	285.2	293.9	308.2	330.4	365.6	397.7	420.9	429.7	426.6	413.9	390.7
42°	279.9	288.6	303.1	325.5	360.3	392.7	416.1	425.0	421.9	409.3	386.0
42.5°	274.7	283.5	298.1	320.4	355.4	387.8	411.3	420.3	417.3	404.7	381.2
43°	269.5	278.3	292.9	315.3	350.2	382.8	406.5	415.7	412.7	399.9	376.4
43.5°	264.2	273.2	287.9	310.2	345.2	377.9	401.7	411.0	408.1	395.3	371.7



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	248.3	257.5	272.5	295.0	329.8	362.8	386.9	396.6	393.9	381.2	357.3
45.5°	243.0	252.4	267.7	290.0	325.0	357.7	382.0	391.9	389.3	376.4	352.5
46°	237.7	247.2	262.5	285.0	319.8	352.5	377.0	387.1	384.5	371.9	347.8
46.5°	232.2	242.1	257.5	280.0	314.7	347.6	372.3	382.4	380.1	367.3	343.3
47°	226.9	236.8	252.4	275.0	309.6	342.7	367.5	377.8	375.6	362.9	338.7
47.5°	221.7	231.6	247.5	270.0	304.8	337.8	362.9	373.3	371.0	358.3	334.1
48°	216.4	226.5	242.4	265.1	299.8	333.0	358.1	368.8	366.6	353.8	329.6
48.5°	211.1	221.4	237.4	260.3	295.0	328.3	353.5	364.2	362.0	349.2	324.8
49°	205.7	216.3	232.4	255.4	290.0	323.3	348.7	359.4	357.3	344.2	320.0
49.5°	200.5	211.2	227.6	250.6	285.1	318.4	343.8	354.7	352.2	338.9	314.6
50°	195.2	206.0	222.7	245.5	280.1	313.3	338.5	349.1	346.3	333.1	309.2
50.5°	189.9	201.0	217.6	240.7	275.1	307.9	332.7	343.1	340.1	326.6	303.1
51°	184.4	196.0	212.8	235.7	269.8	302.1	326.7	336.4	332.7	319.8	297.0
51.5°	179.3	190.9	207.9	230.6	264.3	296.4	320.4	329.5	325.7	312.7	290.2
52°	174.0	185.8	202.9	225.5	259.0	290.1	313.6	322.0	318.3	305.4	283.3
52.5°	168.8	180.9	198.1	220.2	253.2	283.8	306.5	314.4	310.4	297.7	276.2
53°	163.7	175.9	193.1	215.0	247.3	277.4	299.2	306.6	302.9	290.0	269.1
53.5°	158.5	170.9	188.0	209.8	241.6	270.8	291.7	298.8	294.7	282.2	261.8
54°	153.2	165.9	183.0	204.3	235.6	263.9	284.3	291.1	286.5	274.3	254.5
54.5°	148.1	161.0	178.1	199.1	229.9	257.3	276.7	283.0	278.4	266.4	247.2
55°	143.1	156.1	173.1	193.9	223.7	250.5	269.1	275.1	270.5	258.5	239.9
55.5°	137.9	151.2	167.9	188.5	217.8	243.6	261.2	267.1	262.2	250.5	232.3
56°	133.0	146.3	162.9	183.1	211.7	236.5	253.6	259.1	253.9	242.3	225.0
56.5°	127.9	141.3	158.0	177.8	205.7	229.4	245.7	251.0	245.9	234.4	217.5
57°	123.0	136.4	152.9	172.4	199.5	222.4	238.1	242.8	237.7	226.6	210.3
57.5°	118.0	131.6	147.8	167.0	193.6	215.5	230.3	234.8	229.8	218.6	202.8
58°	113.2	126.8	142.9	161.6	187.4	208.3	222.9	226.9	222.0	210.7	195.6
58.5°	108.5	121.9	137.9	156.3	181.3	201.4	215.1	219.0	214.0	203.0	188.4
59°	103.6	117.3	133.0	150.8	175.1	194.3	207.5	211.1	206.1	195.6	181.2
59.5°	98.9	112.5	128.0	145.5	169.2	187.4	200.0	203.2	198.4	187.9	174.0
60°	94.3	107.8	123.3	140.4	162.9	180.5	192.6	195.6	190.8	180.5	167.3
60.5°	89.6	103.1	118.4	135.1	156.9	173.6	185.0	188.0	183.3	173.3	160.3
61°	85.0	98.6	113.5	129.8	150.8	167.0	177.8	180.5	175.9	166.4	153.7
61.5°	80.7	94.1	108.9	124.6	145.0	160.5	170.6	173.1	168.6	159.4	147.3
62°	76.2	89.6	104.3	119.5	139.0	154.0	163.8	165.9	161.5	152.7	141.0
62.5°	71.9	85.1	99.5	114.5	133.3	147.5	156.4	158.7	154.4	146.1	134.7
63°	67.7	80.9	95.0	109.4	127.5	141.0	149.6	151.6	147.7	139.4	128.5
63.5°	63.7	76.5	90.4	104.4	121.9	135.0	142.8	144.8	140.7	133.2	122.7
64°	59.7	72.4	85.9	99.4	116.3	128.7	136.5	138.2	133.7	127.4	117.2
64.5°	55.9	68.4	81.4	94.6	110.9	122.6	130.0	131.6	127.1	121.4	111.7
65°	52.3	64.4	77.1	89.8	105.7	116.8	123.7	125.3	120.7	115.7	106.3
65.5°	48.7	60.4	72.7	85.3	100.6	111.1	117.7	119.1	114.0	110.0	101.2
66°	45.4	56.7	68.4	80.5	95.5	105.4	111.9	113.0	107.8	104.6	96.2





TEST NUMBER: P775727

CATALOG NUMBER: HCDJBL510CSD-HCD61TRH-HCD61TRLWW-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	36.7	45.7	56.1	67.3	81.2	90.2	95.4	96.2	91.2	89.8	82.9
68°	34.8	42.3	52.3	63.3	76.4	85.5	90.6	91.3	86.2	85.0	78.4
68.5°	32.8	39.1	48.6	59.1	72.2	80.7	85.9	86.4	81.1	80.3	74.0
69°	31.0	36.5	45.1	55.3	68.0	75.9	81.1	81.5	76.0	75.6	70.0
69.5°	29.0	34.0	41.6	51.4	63.8	71.4	76.2	76.7	71.6	71.4	66.1
70°	28.1	31.5	38.5	48.0	59.9	67.2	72.0	72.5	67.4	67.3	62.4
70.5°	27.0	28.9	36.0	44.5	56.1	63.3	68.1	68.5	63.5	63.6	58.9
71°	25.9	26.4	33.6	41.2	52.6	59.5	64.1	64.5	59.8	59.9	55.5
71.5°	24.8	25.3	31.0	38.2	49.1	55.7	60.3	60.7	56.1	56.4	52.2
72°	23.5	24.2	28.5	35.7	45.8	52.4	56.8	57.3	52.7	52.9	49.1
72.5°	22.4	23.2	26.0	33.3	42.6	49.0	53.4	53.9	49.5	49.8	46.1
73°	21.2	22.1	24.0	30.8	39.7	45.9	50.2	50.8	46.4	46.6	43.2
73.5°	20.1	21.0	22.3	28.2	36.9	42.9	47.0	47.6	43.6	43.8	40.5
74°	19.1	20.0	20.7	25.7	34.2	40.1	44.2	44.7	40.7	41.0	37.9
74.5°	17.9	19.0	19.4	23.7	31.6	37.3	41.4	42.0	38.0	38.3	35.4
75°	17.0	17.9	18.1	21.9	29.2	34.7	38.8	39.3	35.4	35.8	32.9
75.5°	16.0	17.0	17.1	20.1	27.0	32.3	36.3	36.8	32.9	33.4	30.7
76°	15.0	16.0	16.1	18.5	24.9	29.9	33.8	34.3	30.5	31.0	28.5
76.5°	14.1	15.0	15.2	17.0	22.9	27.8	31.5	31.9	28.2	28.8	26.4
77°	13.2	14.1	14.3	15.6	21.0	25.7	29.2	29.7	25.9	26.6	24.4
77.5°	12.3	13.3	13.5	14.4	19.3	23.7	27.1	27.6	23.8	24.5	22.6
78°	11.4	12.3	12.6	13.3	17.6	21.9	25.1	25.5	21.8	22.6	20.7
78.5°	10.7	11.5	11.8	12.1	16.1	20.0	23.1	23.5	19.7	20.8	19.0
79°	9.8	10.7	11.1	11.1	14.6	18.3	21.2	21.5	17.8	19.0	17.3
79.5°	9.1	9.8	10.4	10.2	13.3	16.7	19.5	19.8	16.1	17.3	15.7
80°	8.4	9.1	9.6	9.3	12.0	15.1	17.7	18.0	14.3	15.6	14.2
80.5°	7.7	8.4	8.9	8.5	10.9	13.7	16.1	16.4	12.5	14.1	12.7
81°	6.9	7.7	8.2	7.8	9.8	12.3	14.5	14.8	11.1	12.6	11.4
81.5°	6.3	7.0	7.6	7.1	8.9	11.1	12.9	13.3	9.7	11.3	10.3
82°	5.7	6.3	6.9	6.5	8.0	9.9	11.5	11.9	8.3	10.2	9.1
82.5°	5.1	5.7	6.3	5.9	7.0	8.9	10.4	10.7	6.8	9.0	8.0
83°	4.5	5.1	5.7	5.4	6.1	7.9	9.2	9.5	5.5	7.9	6.8
83.5°	3.8	4.5	5.1	4.9	5.4	6.8	8.1	8.4	4.4	6.6	5.7
84°	3.3	3.8	4.6	4.4	4.7	5.8	6.8	7.1	3.2	5.5	4.9
84.5°	2.8	3.3	4.0	3.8	4.0	5.0	5.7	6.0	2.3	4.6	4.0
85°	2.3	2.8	3.5	3.4	3.5	4.1	4.8	4.9	1.6	3.7	3.3
85.5°	1.8	2.3	3.1	3.0	3.0	3.5	3.9	3.9	1.0	2.9	2.6
86°	1.3	1.9	2.6	2.6	2.5	2.8	3.2	3.0	0.7	2.2	2.0
86.5°	1.1	1.5	2.1	2.1	2.1	2.3	2.5	2.3	0.6	1.6	1.5
87°	0.8	1.1	1.7	1.7	1.7	1.8	1.9	1.7	0.4	1.0	1.0
87.5°	0.6	0.8	1.2	1.2	1.3	1.3	1.3	1.1	0.3	0.6	0.6
88°	0.4	0.6	0.8	0.9	1.0	0.9	0.8	0.6	0.2	0.3	0.3
88.5°	0.2	0.3	0.5	0.5	0.6	0.5	0.4	0.3	0.1	0.1	0.1



TEST NUMBER: P775727

CATALOG NUMBER: HCDJBL510CSD-HCD61TRH-HCD61TRLWW-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: P775727

CATALOG NUMBER: HCDJBL510CSD-HCD61TRH-HCD61TRLWW-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	589.7	589.7	589.7	589.7	589.7	589.7
0.5°	589.8	589.6	588.8	588.3	588.1	588.3
1°	589.9	589.1	587.7	587.0	586.6	586.8
1.5°	589.8	588.5	586.8	585.6	585.0	585.4
2°	589.8	587.8	585.7	584.1	583.4	583.8
2.5°	589.6	587.1	584.4	582.7	581.7	582.0
3°	589.4	586.3	583.2	581.0	580.0	580.4
3.5°	589.1	585.4	581.8	579.3	578.2	578.6
4°	588.7	584.4	580.5	577.6	576.3	576.7
4.5°	588.2	583.4	579.0	575.7	574.3	574.8
5°	587.6	582.4	577.5	573.9	572.2	572.7
5.5°	587.0	581.1	575.8	571.9	570.1	570.6
6°	586.3	579.9	574.1	569.8	568.0	568.5
6.5°	585.5	578.5	572.3	567.7	565.7	566.3
7°	584.6	577.2	570.5	565.6	563.3	564.0
7.5°	583.6	575.6	568.6	563.3	560.9	561.6
8°	582.7	574.1	566.6	561.0	558.5	559.2
8.5°	581.5	572.5	564.4	558.6	555.9	556.7
9°	580.4	570.8	562.4	556.2	553.3	554.2
9.5°	579.1	568.9	560.1	553.7	550.7	551.5
10°	577.8	567.1	557.8	551.1	548.0	548.8
10.5°	576.3	565.2	555.4	548.5	545.3	546.1
11°	574.9	563.2	553.0	545.8	542.5	543.3
11.5°	573.3	561.0	550.6	543.0	539.6	540.4
12°	571.8	558.8	548.0	540.2	536.6	537.5
12.5°	570.0	556.7	545.3	537.2	533.6	534.5
13°	568.3	554.4	542.6	534.3	530.6	531.5
13.5°	566.4	551.9	539.9	531.3	527.3	528.4
14°	564.4	549.5	537.0	528.3	524.2	525.3
14.5°	562.5	546.9	534.1	525.2	521.0	522.1
15°	560.3	544.3	531.2	522.0	517.7	518.9
15.5°	558.1	541.7	528.1	518.6	514.4	515.5
16°	555.9	539.0	525.0	515.3	511.1	512.2
16.5°	553.7	536.2	521.8	512.0	507.6	508.8
17°	551.3	533.3	518.5	508.6	504.1	505.3
17.5°	548.8	530.4	515.2	505.1	500.5	501.9
18°	546.2	527.2	511.9	501.6	497.0	498.2
18.5°	543.6	524.1	508.4	497.9	493.4	494.7
19°	540.9	520.9	505.0	494.3	489.6	491.0
19.5°	538.1	517.7	501.5	490.6	485.9	487.3
20°	535.3	514.4	497.8	487.0	482.2	483.6
20.5°	532.4	511.1	494.1	483.1	478.4	479.7
21°	529.4	507.6	490.4	479.2	474.4	475.9

TEST NUMBER: P775727

CATALOG NUMBER: HCDJBL510CSD-HCD61TRH-HCD61TRLWW-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	520.1	496.9	478.8	467.4	462.6	464.2
23°	516.8	493.1	474.8	463.3	458.6	460.1
23.5°	513.6	489.4	470.9	459.3	454.5	456.1
24°	510.2	485.5	466.8	455.2	450.3	451.9
24.5°	506.6	481.7	462.7	451.0	446.0	447.7
25°	503.1	477.6	458.5	446.8	441.9	443.5
25.5°	499.5	473.7	454.3	442.4	437.6	439.3
26°	495.9	469.8	450.0	438.1	433.3	435.1
26.5°	492.0	465.5	445.8	433.8	428.9	430.7
27°	488.3	461.3	441.4	429.5	424.6	426.4
27.5°	484.6	457.1	437.0	425.0	420.1	421.9
28°	480.6	452.9	432.5	420.5	415.6	417.4
28.5°	476.8	448.6	428.1	416.0	411.2	413.0
29°	472.7	444.2	423.6	411.4	406.6	408.5
29.5°	468.6	439.8	419.0	406.9	402.0	404.0
30°	464.5	435.5	414.4	402.2	397.4	399.3
30.5°	460.4	430.9	409.8	397.6	392.8	394.7
31°	456.2	426.4	405.0	392.9	388.0	390.0
31.5°	451.8	421.8	400.5	388.1	383.4	385.3
32°	447.5	417.1	395.7	383.4	378.5	380.6
32.5°	443.2	412.6	390.9	378.6	373.8	375.8
33°	438.8	408.0	386.2	373.8	369.0	370.9
33.5°	434.3	403.3	381.4	369.0	364.2	366.2
34°	429.9	398.5	376.5	364.1	359.3	361.3
34.5°	425.3	393.7	371.6	359.2	354.5	356.3
35°	420.8	389.0	366.7	354.3	349.4	351.4
35.5°	416.2	384.1	361.9	349.3	344.6	346.5
36°	411.6	379.4	357.0	344.4	339.7	341.5
36.5°	407.0	374.5	352.1	339.4	334.6	336.5
37°	402.2	369.6	347.0	334.4	329.6	331.5
37.5°	397.6	364.8	342.1	329.4	324.6	326.4
38°	392.8	359.9	337.1	324.3	319.6	321.2
38.5°	388.0	354.9	332.2	319.4	314.5	316.2
39°	383.3	350.1	327.2	314.4	309.4	311.3
39.5°	378.5	345.1	322.3	309.3	304.3	306.0
40°	373.6	340.2	317.2	304.1	299.2	300.7
40.5°	368.9	335.3	312.2	299.2	294.1	295.6
41°	364.0	330.2	307.2	294.1	288.8	290.5
41.5°	359.1	325.4	302.2	289.0	283.6	285.2
42°	354.3	320.5	297.2	283.9	278.5	279.9
42.5°	349.4	315.6	292.3	278.9	273.4	274.7
43°	344.6	310.8	287.3	273.8	268.2	269.5
43.5°	339.7	305.7	282.5	268.7	263.0	264.2



TEST NUMBER: P775727

CATALOG NUMBER: HCDJBL510CSD-HCD61TRH-HCD61TRLWW-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	325.2	291.1	267.6	253.6	247.5	248.3
45.5°	320.3	286.2	262.7	248.5	242.2	243.0
46°	315.5	281.5	257.9	243.6	237.0	237.7
46.5°	310.9	276.9	253.2	238.6	231.8	232.2
47°	306.2	272.2	248.3	233.6	226.6	226.9
47.5°	301.5	267.5	243.5	228.6	221.6	221.7
48°	297.1	263.1	238.9	223.6	216.4	216.4
48.5°	292.5	258.4	234.1	218.8	211.1	211.1
49°	287.8	253.8	229.5	214.0	206.0	205.7
49.5°	282.7	249.1	225.0	209.1	201.0	200.5
50°	277.5	244.3	220.3	204.3	195.8	195.2
50.5°	272.0	239.2	215.5	199.5	190.8	189.9
51°	266.4	234.1	210.8	194.7	185.6	184.4
51.5°	260.6	228.8	206.0	190.0	180.7	179.3
52°	254.7	223.5	201.2	185.3	175.7	174.0
52.5°	248.5	218.0	196.2	180.4	170.6	168.8
53°	242.4	212.6	191.2	175.7	165.7	163.7
53.5°	235.9	207.0	186.2	170.8	160.8	158.5
54°	229.3	201.4	181.2	166.1	155.9	153.2
54.5°	222.8	195.8	176.1	161.3	151.0	148.1
55°	216.4	190.1	170.9	156.4	146.3	143.1
55.5°	209.7	184.2	165.8	151.5	141.3	137.9
56°	203.0	178.5	160.7	146.8	136.5	133.0
56.5°	196.5	172.8	155.6	141.9	131.8	127.9
57°	190.0	167.0	150.3	137.1	127.0	123.0
57.5°	183.3	161.2	145.1	132.2	122.2	118.0
58°	176.9	155.5	140.0	127.5	117.7	113.2
58.5°	170.6	149.8	135.0	122.6	112.9	108.5
59°	164.1	144.1	129.9	117.9	108.2	103.6
59.5°	157.9	138.4	124.8	113.2	103.7	98.9
60°	151.6	132.9	119.8	108.6	99.1	94.3
60.5°	145.5	127.4	114.9	103.9	94.6	89.6
61°	139.4	122.0	110.0	99.3	90.1	85.0
61.5°	133.5	116.8	105.1	94.9	85.8	80.7
62°	127.9	111.7	100.4	90.4	81.5	76.2
62.5°	122.1	106.6	95.7	86.0	77.3	71.9
63°	116.5	101.5	91.2	81.6	73.1	67.7
63.5°	111.0	96.7	86.6	77.4	69.0	63.7
64°	105.8	92.0	82.1	73.1	65.1	59.7
64.5°	100.7	87.4	77.8	69.0	61.1	55.9
65°	95.7	82.9	73.5	64.9	57.5	52.3
65.5°	91.1	78.5	69.4	60.9	53.8	48.7
66°	86.5	74.2	65.3	57.1	50.2	45.4



TEST NUMBER: P775727

CATALOG NUMBER: HCDJBL510CSD-HCD61TRH-HCD61TRLWW-1000lm-3500K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	73.2	62.3	53.9	46.1	40.3	36.7
68°	69.2	58.5	50.2	42.9	37.4	34.8
68.5°	65.4	55.0	46.9	39.7	35.1	32.8
69°	61.6	51.6	43.5	36.6	32.9	31.0
69.5°	58.1	48.4	40.4	34.2	30.8	29.0
70°	54.7	45.2	37.6	31.8	28.5	28.1
70.5°	51.5	42.2	35.2	29.4	26.3	27.0
71°	48.3	39.4	32.8	27.0	25.3	25.9
71.5°	45.4	36.6	30.5	25.2	24.3	24.8
72°	42.5	34.3	28.1	23.5	23.3	23.5
72.5°	39.8	32.0	25.7	22.0	22.2	22.4
73°	37.1	29.7	23.7	20.5	21.0	21.2
73.5°	34.6	27.3	22.0	19.3	20.0	20.1
74°	32.2	25.4	20.3	18.2	19.0	19.1
74.5°	30.0	23.4	18.7	17.3	17.9	17.9
75°	27.9	21.6	17.4	16.5	17.0	17.0
75.5°	25.8	19.9	16.1	15.5	16.0	16.0
76°	23.8	18.3	14.9	14.7	15.0	15.0
76.5°	22.1	16.8	13.8	13.9	14.1	14.1
77°	20.3	15.3	12.7	13.1	13.3	13.2
77.5°	18.6	14.1	11.8	12.2	12.4	12.3
78°	17.0	12.7	10.9	11.5	11.6	11.4
78.5°	15.5	11.6	10.0	10.8	10.8	10.7
79°	14.1	10.6	9.3	10.0	9.9	9.8
79.5°	12.8	9.5	8.6	9.3	9.2	9.1
80°	11.6	8.6	8.0	8.6	8.5	8.4
80.5°	10.4	7.8	7.5	8.0	7.8	7.7
81°	9.4	6.9	6.8	7.4	7.0	6.9
81.5°	8.5	6.2	6.3	6.7	6.4	6.3
82°	7.5	5.6	5.7	6.1	5.7	5.7
82.5°	6.5	5.0	5.2	5.5	5.1	5.1
83°	5.5	4.4	4.7	5.0	4.5	4.5
83.5°	4.8	3.8	4.1	4.5	3.8	3.8
84°	4.0	3.3	3.7	3.9	3.4	3.3
84.5°	3.4	2.9	3.2	3.4	2.9	2.8
85°	2.8	2.5	2.8	2.9	2.4	2.3
85.5°	2.3	2.0	2.3	2.5	1.9	1.8
86°	1.8	1.7	1.9	2.0	1.6	1.3
86.5°	1.3	1.2	1.5	1.6	1.2	1.1
87°	0.9	0.9	1.0	1.1	0.9	0.8
87.5°	0.6	0.5	0.6	0.7	0.6	0.6
88°	0.4	0.2	0.3	0.4	0.4	0.4
88.5°	0.1	0.1	0.1	0.1	0.2	0.2



TEST NUMBER: P775727

CATALOG NUMBER: HCDJBL510CSD-HCD61TRH-HCD61TRLWW-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°	472.0	479.2	491.9	510.2	534.5	554.1	566.4	570.8	568.2	559.9	545.6
22°	468.1	475.4	488.2	506.6	531.6	551.5	564.2	568.5	565.8	557.3	542.9



44°	258.8	267.9	282.8	305.2	340.1	372.7	396.7	406.2	403.4	390.6	366.9
44.5°	253.6	262.7	277.7	300.2	335.0	367.7	391.9	401.4	398.7	386.0	362.1



66.5°	42.2	52.9	64.2	76.0	90.7	100.1	106.2	107.2	101.8	99.2	91.8
67°	39.2	49.3	60.2	71.6	86.0	95.0	100.8	101.6	96.2	94.5	87.3



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



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21.5°	526.4	504.0	486.6	475.2	470.5	472.0
22°	523.2	500.5	482.7	471.4	466.5	468.1

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44°	334.8	300.8	277.4	263.6	257.7	258.8
44.5°	329.8	295.9	272.5	258.5	252.6	253.6

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66.5°	81.8	70.1	61.3	53.1	46.8	42.2
67°	77.3	66.0	57.5	49.7	43.5	39.2

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

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(END OF REPORT)