

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: P775628

Luminaire Tested: HCDJBL510CSD-HCD41TRH-HCD41TRLWW-1000lm-4000K

Issue Date: 2/13/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P775628  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA ( A2312156B034)  
Test Lab:  
Issue Date: 2/13/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCDJBS510CSD-HCD41TRH-HCD41TRLWW-1000lm-4000K  
Description: 4 INCH ROUND SHALLOW-WIDE LENSED WALLWASH KIT  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

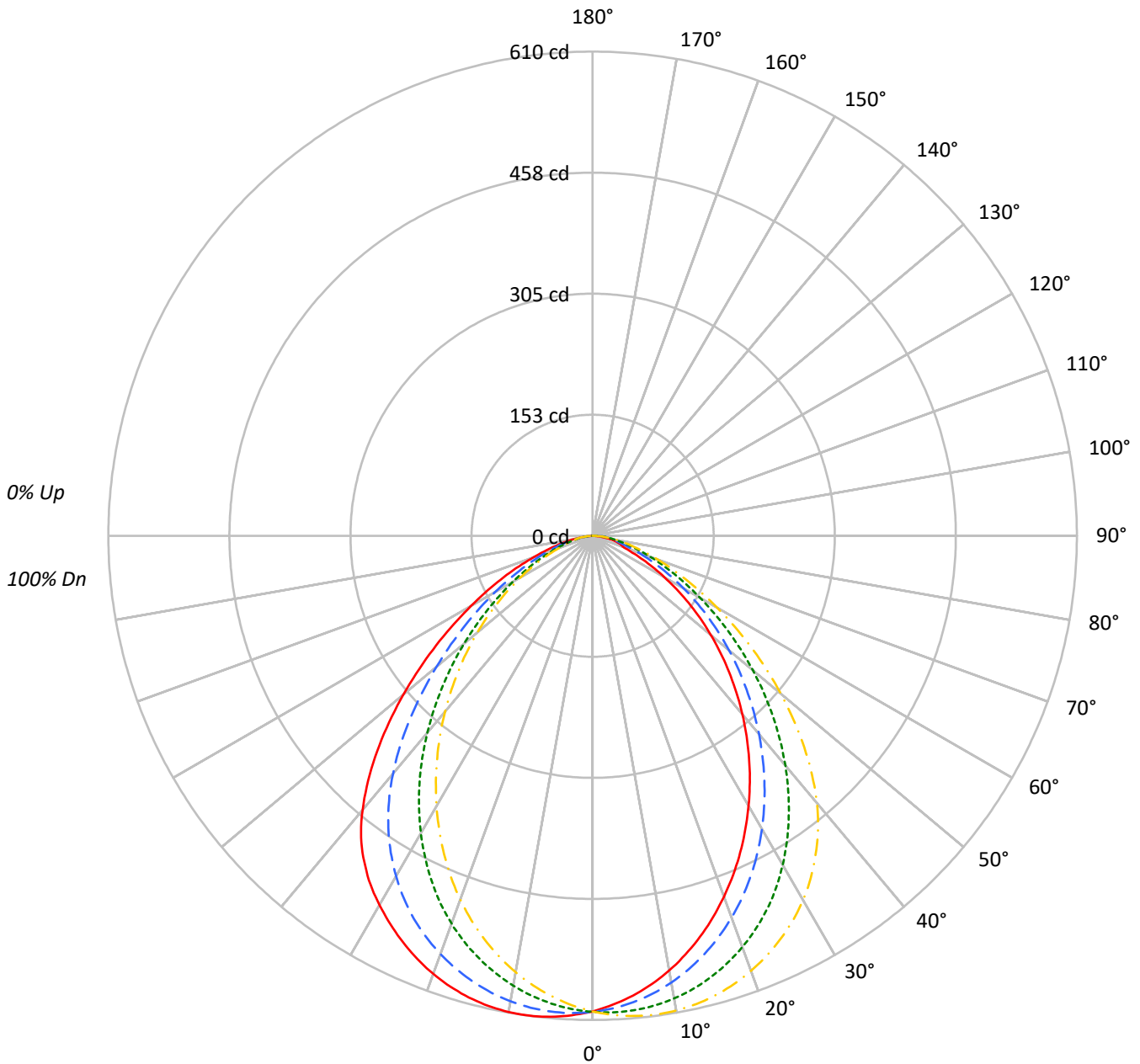
Lumens per Lamp: N/A  
Luminaire Lumens: 1257.6 lumens  
Efficiency: N/A  
Efficacy: 125.8 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.14 / 1.22  
Luminous Opening: Circular (Dia: 0.33' x H: 0')  
CIE Type: Direct

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									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	0																
RCR																																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100																			
1	110	106	103	99	108	104	101	98	100	97	95	96	94	92	93	91	89	87																			
2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77	75																			
3	94	84	77	71	91	83	76	71	80	74	70	77	72	68	75	71	67	65																			
4	87	76	68	62	84	74	67	61	72	66	61	70	64	60	68	63	59	57																			
5	80	68	60	54	78	67	60	54	65	59	53	63	57	53	62	56	52	50																			
6	74	62	54	48	73	61	53	48	59	53	47	58	52	47	56	51	47	45																			
7	69	57	49	43	68	56	48	43	54	48	42	53	47	42	52	46	42	40																			
8	65	52	44	39	63	51	44	39	50	43	38	49	43	38	48	42	38	36																			
9	61	48	40	35	59	47	40	35	46	40	35	45	39	35	44	39	35	33																			
10	57	45	37	32	56	44	37	32	43	36	32	42	36	32	41	36	32	30																			

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

	0°	90°	180°	270°
0°	75434	75434	75434	75434
5°	73474	75798	76847	74750
10°	71052	75640	77850	73544
15°	68141	74995	78460	71855
20°	64807	73847	78642	69615
25°	61098	72138	78470	66597
30°	57096	69579	78036	62865
35°	52773	66186	77048	58381
40°	48168	62034	74043	53179
45°	43267	57113	68308	47413
50°	38042	51551	60909	41370
55°	32407	45506	52747	35084
60°	26277	39366	44526	29147
65°	20041	33590	36896	23823
70°	15160	28407	29032	19024
75°	15900	23777	22805	15171
80°	14567	20800	16234	11668
85°	7220	21082	4621	6209

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°

Vertical Angle: 89.5°

Luminance: 77876 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	56.4	4.5
10°-20°	158.5	12.6
20°-30°	230.5	18.3
30°-40°	258.2	20.5
40°-50°	233.6	18.6
50°-60°	169.7	13.5
60°-70°	97.1	7.7
70°-80°	43.1	3.4
80°-90°	10.4	0.8
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°	445.5	35.4
0°-40°	703.7	56.0
0°-60°	1107.0	88.0
0°-90°	1257.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1257.6	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	599	599	599	599	599	
5°	582	600	608	592	582	55
15°	523	576	602	552	523	147
25°	440	520	565	480	440	202
35°	344	431	502	380	344	214
45°	243	321	384	266	243	187
55°	148	207	240	160	148	132
65°	67	113	124	80	67	68
75°	33	49	47	31	33	34
85°	5	15	3	4	5	8
90°	0	3	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°	599.4	599.4	599.4	599.4	599.4	599.4	599.4	599.4	599.4	599.4	599.4
0.5°	597.8	599.2	599.2	599.1	600.3	600.3	600.4	600.4	600.4	601.2	600.4
1°	596.2	598.1	598.5	598.9	600.6	601.0	601.4	601.6	601.5	602.1	600.9
1.5°	594.7	596.9	597.7	598.6	600.7	601.8	602.5	602.8	602.7	602.9	601.3
2°	593.0	595.6	596.8	598.2	600.9	602.3	603.4	604.0	603.7	603.6	601.6
2.5°	591.3	594.2	595.9	597.8	600.9	602.8	604.3	604.9	604.7	604.3	601.9
3°	589.5	592.7	594.8	597.2	600.9	603.2	605.0	605.9	605.6	604.8	602.0
3.5°	587.7	591.1	593.7	596.6	600.8	603.6	605.7	606.7	606.4	605.3	602.1
4°	585.7	589.6	592.5	595.9	600.6	604.0	606.4	607.4	607.1	605.6	602.0
4.5°	583.7	587.9	591.1	595.1	600.3	604.2	606.9	608.2	607.7	606.0	601.9
5°	581.6	586.0	589.8	594.3	600.0	604.3	607.3	608.8	608.3	606.2	601.8
5.5°	579.4	584.2	588.3	593.3	599.5	604.3	607.6	609.2	608.7	606.4	601.4
6°	577.1	582.2	586.7	592.3	599.0	604.2	608.0	609.7	609.1	606.4	601.1
6.5°	574.7	580.2	585.1	591.1	598.4	604.1	608.2	610.1	609.4	606.4	600.7
7°	572.3	578.1	583.5	590.0	597.7	603.9	608.3	610.3	609.6	606.3	600.2
7.5°	569.8	575.9	581.7	588.7	596.9	603.6	608.3	610.5	609.7	606.1	599.7
8°	567.2	573.6	579.8	587.4	596.1	603.2	608.3	610.6	609.8	605.9	598.9
8.5°	564.5	571.2	577.8	585.9	595.1	602.7	608.2	610.6	609.7	605.5	598.2
9°	561.8	568.8	575.8	584.4	594.2	602.2	607.8	610.6	609.6	605.0	597.4
9.5°	558.9	566.2	573.7	582.7	593.0	601.5	607.6	610.4	609.5	604.6	596.5
10°	556.0	563.6	571.5	581.0	591.9	600.9	607.2	610.2	609.2	604.0	595.6
10.5°	553.0	560.9	569.2	579.3	590.5	600.1	606.8	609.8	608.9	603.3	594.5
11°	550.0	558.2	566.9	577.5	589.1	599.2	606.3	609.4	608.4	602.6	593.3
11.5°	546.8	555.3	564.4	575.6	587.8	598.3	605.6	609.0	608.0	601.8	592.2
12°	543.6	552.6	561.9	573.5	586.3	597.2	605.0	608.5	607.3	600.9	590.9
12.5°	540.4	549.5	559.3	571.5	584.7	596.2	604.2	607.8	606.7	600.0	589.6
13°	537.0	546.5	556.7	569.3	583.0	595.0	603.3	607.1	606.0	598.9	588.2
13.5°	533.7	543.3	553.9	567.0	581.4	593.8	602.5	606.3	605.1	597.8	586.6
14°	530.2	540.2	551.1	564.7	579.5	592.4	601.4	605.4	604.2	596.6	585.0
14.5°	526.6	536.9	548.2	562.2	577.6	590.9	600.4	604.5	603.1	595.3	583.4
15°	523.0	533.7	545.3	559.8	575.6	589.5	599.2	603.5	602.2	594.0	581.8
15.5°	519.4	530.1	542.2	557.2	573.5	587.9	598.0	602.4	601.0	592.5	579.9
16°	515.7	526.7	539.1	554.6	571.3	586.2	596.6	601.2	599.8	591.0	578.0
16.5°	511.8	523.2	535.9	551.9	569.2	584.5	595.2	600.0	598.4	589.5	576.1
17°	508.0	519.7	532.7	549.2	566.9	582.7	593.8	598.7	597.1	587.8	574.1
17.5°	504.1	516.0	529.3	546.3	564.4	580.8	592.2	597.2	595.7	586.0	572.0
18°	500.2	512.3	526.0	543.3	562.0	578.8	590.6	595.8	594.1	584.3	569.9
18.5°	496.1	508.5	522.5	540.3	559.5	576.8	588.9	594.2	592.5	582.4	567.6
19°	492.0	504.6	519.0	537.1	556.9	574.7	587.1	592.6	590.8	580.4	565.4
19.5°	488.0	500.8	515.4	534.0	554.3	572.5	585.3	590.8	589.0	578.4	563.1
20°	483.9	496.9	511.8	530.8	551.4	570.3	583.4	589.0	587.2	576.4	560.7
20.5°	479.6	492.9	508.1	527.5	548.6	568.0	581.4	587.2	585.4	574.2	558.1
21°	475.4	488.8	504.3	524.1	545.6	565.6	579.3	585.3	583.4	572.0	555.6



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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°	462.4	476.4	492.7	513.5	536.4	557.9	572.6	579.1	577.1	565.0	547.5
23°	458.1	472.2	488.7	509.9	533.2	555.2	570.3	576.8	574.7	562.6	544.7
23.5°	453.6	467.8	484.6	506.1	529.9	552.4	567.9	574.6	572.5	560.0	541.8
24°	449.1	463.7	480.5	502.2	526.5	549.6	565.4	572.2	570.1	557.4	538.8
24.5°	444.5	459.2	476.3	498.3	523.0	546.6	562.9	569.8	567.7	554.8	535.6
25°	440.0	454.7	472.0	494.5	519.5	543.6	560.2	567.4	565.1	552.1	532.5
25.5°	435.4	450.3	467.7	490.4	515.8	540.5	557.6	564.8	562.6	549.4	529.2
26°	430.9	445.9	463.1	486.3	512.1	537.2	554.9	562.2	560.0	546.6	525.9
26.5°	426.1	441.4	458.8	481.9	508.2	534.0	552.0	559.6	557.3	543.6	522.4
27°	421.5	436.8	454.4	477.8	504.2	530.7	549.2	557.0	554.6	540.7	518.7
27.5°	416.8	432.1	449.9	473.5	500.2	527.1	546.3	554.3	551.8	537.8	515.1
28°	412.1	427.5	445.2	469.0	496.1	523.6	543.2	551.3	548.9	534.7	511.3
28.5°	407.3	422.9	440.8	464.5	491.9	519.9	540.0	548.6	546.1	531.3	507.3
29°	402.5	418.2	436.1	459.9	487.6	516.2	536.8	545.6	543.1	528.1	503.3
29.5°	397.7	413.4	431.5	455.4	483.2	512.2	533.4	542.7	540.2	524.6	499.3
30°	392.9	408.7	426.5	450.7	478.8	508.2	530.1	539.6	537.0	521.1	495.2
30.5°	388.0	404.0	421.8	445.9	474.4	504.0	526.5	536.5	534.0	517.5	490.9
31°	383.1	399.0	417.0	441.2	469.8	499.8	522.8	533.2	530.8	513.7	486.6
31.5°	378.2	394.3	412.2	436.3	465.0	495.5	519.2	530.0	527.7	509.9	482.3
32°	373.4	389.4	407.1	431.4	460.3	491.3	515.3	526.6	524.3	506.0	477.7
32.5°	368.4	384.4	402.3	426.7	455.6	486.8	511.2	523.0	521.0	501.9	473.2
33°	363.5	379.6	397.2	421.5	450.7	482.4	507.1	519.4	517.5	497.7	468.5
33.5°	358.6	374.6	392.4	416.6	445.8	477.7	502.9	515.7	513.6	493.4	463.8
34°	353.6	369.7	387.3	411.6	440.9	473.1	498.7	511.8	509.5	489.3	458.8
34.5°	348.6	364.8	382.3	406.6	435.7	468.4	494.3	507.8	505.5	484.7	453.9
35°	343.5	359.7	377.2	401.4	430.8	463.6	489.9	503.6	501.5	480.2	448.8
35.5°	338.6	354.8	372.1	396.2	425.6	458.7	485.4	499.5	497.5	475.4	443.5
36°	333.6	349.7	367.0	391.0	420.5	453.8	480.8	495.1	493.2	470.6	438.2
36.5°	328.6	344.8	362.0	385.9	415.3	448.6	476.1	490.8	488.7	465.2	432.7
37°	323.5	339.8	357.0	380.7	410.1	443.5	471.2	486.2	483.9	460.0	427.1
37.5°	318.5	334.6	351.6	375.5	404.6	438.3	466.2	481.5	479.1	454.5	421.4
38°	313.4	329.6	346.6	370.1	399.2	433.0	461.0	476.6	473.8	448.8	415.6
38.5°	308.5	324.6	341.3	364.9	393.9	427.5	455.9	471.4	468.4	443.0	409.8
39°	303.5	319.5	336.2	359.4	388.4	422.3	450.5	465.9	462.8	437.0	403.5
39.5°	298.4	314.5	331.0	354.4	383.0	416.7	445.2	460.2	456.7	430.8	397.5
40°	293.2	309.5	325.9	349.0	377.6	411.1	439.4	454.2	450.7	424.5	391.1
40.5°	288.4	304.4	320.7	343.5	371.9	405.3	433.6	448.3	444.5	417.9	384.7
41°	283.1	299.4	315.5	338.2	366.3	399.7	427.5	442.0	438.2	411.3	378.3
41.5°	278.2	294.4	310.4	332.9	360.8	393.9	421.7	435.9	431.7	404.6	371.9
42°	273.1	289.2	305.3	327.5	355.1	387.9	415.4	429.4	425.1	397.8	365.3
42.5°	268.2	284.3	300.0	322.1	349.4	382.0	409.2	423.2	418.5	391.0	358.7
43°	263.1	279.2	294.9	316.8	343.9	376.1	402.8	416.6	411.7	383.8	352.0
43.5°	258.2	274.3	289.7	311.5	338.2	370.0	396.5	410.0	404.8	376.8	345.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	243.1	259.3	274.4	295.4	320.9	351.4	376.9	389.6	383.8	355.3	324.6
45.5°	238.3	254.2	269.2	289.9	315.3	345.2	370.3	382.7	376.6	348.2	317.8
46°	233.3	249.3	264.2	284.6	309.5	338.8	363.5	375.8	369.5	341.0	310.8
46.5°	228.4	244.4	259.2	279.3	303.6	332.6	356.9	368.8	362.1	333.8	303.9
47°	223.4	239.4	254.1	274.0	297.8	326.2	350.2	361.6	354.9	326.5	297.0
47.5°	218.6	234.5	249.1	268.7	292.0	319.9	343.3	354.5	347.5	319.4	290.3
48°	213.7	229.5	244.0	263.4	286.4	313.6	336.5	347.4	340.3	312.2	283.4
48.5°	208.8	224.7	239.0	258.1	280.6	307.2	329.8	340.4	333.0	305.2	276.7
49°	204.0	219.9	234.0	252.8	274.8	300.9	322.9	333.1	325.6	297.9	270.1
49.5°	199.3	214.9	229.2	247.7	269.0	294.6	316.1	326.0	318.3	291.0	263.5
50°	194.3	210.2	224.2	242.6	263.3	288.3	309.3	318.7	311.1	283.9	256.8
50.5°	189.6	205.3	219.2	237.2	257.6	282.0	302.6	311.5	303.7	277.0	250.2
51°	184.9	200.5	214.4	231.9	251.8	275.5	295.7	304.4	296.6	270.1	243.9
51.5°	180.1	195.7	209.6	226.9	246.1	269.5	289.0	297.3	289.2	263.1	237.5
52°	175.5	191.0	204.8	221.8	240.6	263.1	282.4	290.2	282.1	256.4	231.2
52.5°	170.9	186.2	200.0	216.8	235.0	256.9	275.5	282.9	274.9	249.7	225.0
53°	166.1	181.6	195.2	211.5	229.4	250.7	268.8	275.9	268.0	243.1	218.8
53.5°	161.3	176.8	190.4	206.6	223.7	244.8	262.2	268.8	260.9	236.3	212.7
54°	156.8	172.2	185.8	201.6	218.3	238.6	255.6	261.9	253.8	229.9	206.7
54.5°	152.2	167.5	181.1	196.5	212.9	232.7	249.2	254.7	247.1	223.5	200.8
55°	147.7	163.1	176.4	191.7	207.4	226.8	242.8	248.2	240.4	217.2	195.0
55.5°	143.1	158.5	171.8	186.7	202.1	220.9	236.2	241.2	233.5	210.9	189.1
56°	138.6	154.1	167.3	181.8	196.6	214.9	229.7	234.5	226.9	204.6	183.5
56.5°	134.1	149.5	162.8	177.0	191.5	209.1	223.4	227.7	220.3	198.5	178.0
57°	129.7	145.1	158.3	172.2	186.3	203.5	217.2	221.1	213.8	192.5	172.5
57.5°	125.4	140.7	153.7	167.4	181.2	197.9	211.1	214.6	207.3	186.6	167.1
58°	121.0	136.4	149.3	162.7	176.0	192.2	204.9	208.2	201.1	180.9	161.8
58.5°	116.8	132.1	145.0	158.1	171.1	186.7	198.9	201.9	194.8	175.0	156.6
59°	112.6	128.0	140.7	153.5	166.0	181.3	192.9	195.7	188.6	169.4	151.5
59.5°	108.3	123.7	136.2	149.0	161.2	175.9	187.1	189.6	182.6	163.8	146.5
60°	104.4	119.6	132.0	144.6	156.4	170.6	181.3	183.6	176.9	158.5	141.6
60.5°	100.3	115.4	127.7	140.1	151.6	165.4	175.5	177.6	170.9	153.1	136.6
61°	96.3	111.4	123.6	135.8	147.0	160.3	169.9	171.8	165.3	147.9	132.0
61.5°	92.4	107.4	119.4	131.5	142.6	155.2	164.5	166.1	159.6	142.7	127.4
62°	88.6	103.5	115.5	127.4	138.0	150.3	159.0	160.6	154.4	137.9	122.9
62.5°	84.7	99.6	111.5	123.2	133.7	145.3	153.6	155.0	148.9	132.8	118.3
63°	81.1	95.8	107.6	119.2	129.3	140.5	148.4	149.6	143.6	128.0	114.0
63.5°	77.6	92.1	103.7	115.3	125.1	135.8	143.2	144.4	138.5	123.3	109.7
64°	74.1	88.3	100.2	111.4	120.9	131.2	138.2	139.4	133.5	119.0	105.6
64.5°	70.5	84.6	96.4	107.5	116.9	126.6	133.3	134.3	128.5	114.3	101.6
65°	67.3	81.1	92.8	103.8	112.8	122.2	128.5	129.4	123.9	110.0	97.7
65.5°	63.9	77.7	89.2	100.3	108.9	117.8	123.8	124.6	119.1	105.6	93.8
66°	60.6	74.2	85.9	96.7	105.1	113.5	119.2	119.9	114.1	101.5	90.2





TEST NUMBER: P775628

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-HCD41TRLWW-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	51.8	64.3	75.8	86.2	94.2	101.3	106.1	106.6	100.2	89.7	79.3
68°	49.2	61.3	72.7	82.9	90.8	97.3	101.8	102.1	95.7	85.9	76.1
68.5°	46.8	58.2	69.6	79.7	87.4	93.5	97.8	97.9	91.5	82.0	72.8
69°	44.5	55.3	66.5	76.5	84.0	90.0	94.0	94.0	87.3	78.1	69.7
69.5°	42.5	52.4	63.6	73.4	80.6	86.4	90.3	90.1	83.1	74.4	66.6
70°	41.2	49.7	60.6	70.3	77.2	82.9	86.6	86.2	78.9	70.9	63.6
70.5°	40.5	47.1	57.9	67.3	74.0	79.3	82.9	82.4	75.4	67.5	60.7
71°	39.7	44.8	55.2	64.4	70.9	76.0	79.2	78.5	71.8	64.2	57.9
71.5°	39.0	42.6	52.7	61.5	67.9	72.7	75.9	74.8	68.1	61.1	55.2
72°	38.3	40.8	50.1	58.7	64.9	69.7	72.5	71.4	64.7	58.0	52.5
72.5°	37.3	39.5	47.7	56.1	62.1	66.5	69.3	68.0	61.5	55.1	49.9
73°	36.4	38.6	45.5	53.5	59.3	63.6	66.3	64.7	58.3	52.1	47.4
73.5°	35.5	37.7	43.3	51.0	56.5	60.6	63.2	61.6	55.3	49.3	45.0
74°	34.6	36.9	41.3	48.6	53.9	58.0	60.2	58.5	52.4	46.6	42.6
74.5°	33.7	36.2	39.3	46.2	51.4	55.3	57.4	55.6	49.6	43.9	40.2
75°	32.7	35.3	37.5	44.0	48.9	52.7	54.8	52.8	46.9	41.4	38.0
75.5°	31.6	34.5	36.3	41.8	46.5	50.0	51.9	50.0	44.2	38.9	35.8
76°	30.5	33.5	35.0	39.8	44.2	47.6	49.4	47.3	41.6	36.5	33.6
76.5°	29.2	32.5	33.7	37.8	41.9	45.3	46.9	44.7	39.2	34.0	31.5
77°	28.1	31.4	32.4	36.2	39.8	43.0	44.5	42.0	36.7	31.7	29.5
77.5°	26.8	30.4	31.4	34.6	37.8	40.8	42.0	39.6	34.3	29.4	27.5
78°	25.5	29.2	30.6	33.0	35.8	38.6	39.7	37.2	31.8	27.2	25.4
78.5°	24.2	28.2	29.7	31.4	33.9	36.6	37.5	34.9	29.4	25.0	23.5
79°	22.8	26.9	28.8	29.8	32.2	34.6	35.3	32.6	27.0	22.8	21.6
79.5°	21.4	25.7	27.8	28.5	30.4	32.7	33.2	30.3	24.7	20.7	19.8
80°	20.1	24.5	26.8	27.1	28.7	30.8	31.2	28.1	22.4	18.7	18.0
80.5°	18.6	23.2	25.7	26.0	27.1	29.0	29.2	26.1	20.1	16.6	16.3
81°	17.1	21.9	24.7	24.8	25.5	27.2	27.2	23.9	17.8	14.7	14.6
81.5°	15.7	20.6	23.5	23.6	24.1	25.5	25.3	21.9	15.4	12.8	12.9
82°	14.2	19.1	22.4	22.5	22.6	23.9	23.3	19.9	13.1	11.2	11.3
82.5°	12.7	17.8	21.2	21.4	21.2	22.3	21.4	18.0	11.3	9.8	10.0
83°	11.0	16.3	20.1	20.3	19.9	20.6	19.7	16.1	9.5	8.3	8.6
83.5°	9.5	14.8	18.8	19.3	18.5	19.0	17.9	14.4	7.6	6.8	7.3
84°	7.9	13.3	17.7	18.3	17.1	17.4	16.2	12.6	5.8	5.4	5.9
84.5°	6.4	11.9	16.4	17.2	15.9	16.0	14.6	11.1	3.9	4.3	4.6
85°	5.0	10.4	15.2	16.2	14.6	14.5	13.0	9.7	3.2	3.4	3.4
85.5°	4.1	9.0	14.1	15.1	13.5	13.1	11.6	8.3	2.5	2.4	2.4
86°	3.6	7.9	12.9	14.0	12.3	11.8	10.3	6.8	2.1	1.6	1.5
86.5°	2.9	6.9	11.8	12.8	11.1	10.5	8.9	5.4	1.7	0.8	0.8
87°	2.4	6.1	10.6	11.6	10.1	9.2	7.6	4.2	1.3	0.4	0.3
87.5°	1.9	5.3	9.4	10.4	8.9	8.0	6.2	3.0	1.1	0.2	0.0
88°	1.4	4.4	8.2	9.1	7.8	6.7	4.8	2.1	0.6	0.1	0.0
88.5°	0.8	3.6	6.9	8.0	6.7	5.5	3.7	1.3	0.3	0.0	0.0



TEST NUMBER: P775628

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-HCD41TRLWW-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	1.2	3.5	4.0	3.2	2.3	0.8	0.1	0.0	0.0	0.0



TEST NUMBER: P775628

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-HCD41TRLWW-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	599.4	599.4	599.4	599.4	599.4	599.4
0.5°	599.2	599.4	598.5	597.9	597.7	597.8
1°	599.2	598.9	597.5	596.5	596.1	596.2
1.5°	599.1	598.3	596.4	595.0	594.5	594.7
2°	598.9	597.5	595.2	593.6	592.8	593.0
2.5°	598.6	596.8	594.0	592.1	591.1	591.3
3°	598.3	596.0	592.6	590.3	589.4	589.5
3.5°	597.8	595.0	591.2	588.6	587.5	587.7
4°	597.3	594.0	589.8	586.7	585.4	585.7
4.5°	596.7	592.9	588.1	584.8	583.3	583.7
5°	596.0	591.7	586.5	582.8	581.2	581.6
5.5°	595.2	590.4	584.7	580.7	578.9	579.4
6°	594.4	589.1	582.8	578.5	576.6	577.1
6.5°	593.4	587.7	581.0	576.3	574.2	574.7
7°	592.4	586.2	579.1	574.0	571.7	572.3
7.5°	591.3	584.6	577.0	571.6	569.2	569.8
8°	590.2	582.9	574.8	569.1	566.4	567.2
8.5°	588.9	581.3	572.5	566.5	563.7	564.5
9°	587.7	579.4	570.3	563.9	561.0	561.8
9.5°	586.2	577.5	567.8	561.2	558.0	558.9
10°	584.7	575.5	565.4	558.3	555.1	556.0
10.5°	583.3	573.5	562.9	555.5	552.1	553.0
11°	581.6	571.3	560.2	552.6	549.0	550.0
11.5°	579.9	569.2	557.6	549.6	545.8	546.8
12°	578.1	566.8	554.8	546.5	542.6	543.6
12.5°	576.3	564.4	551.9	543.2	539.3	540.4
13°	574.3	562.0	549.0	540.1	536.0	537.0
13.5°	572.3	559.5	546.1	536.7	532.4	533.7
14°	570.2	556.9	542.9	533.3	529.0	530.2
14.5°	568.1	554.3	539.9	529.9	525.5	526.6
15°	565.9	551.5	536.6	526.4	521.8	523.0
15.5°	563.6	548.6	533.2	522.7	518.1	519.4
16°	561.2	545.7	529.9	519.2	514.3	515.7
16.5°	558.8	542.9	526.5	515.5	510.5	511.8
17°	556.2	539.7	523.0	511.7	506.5	508.0
17.5°	553.7	536.6	519.4	507.8	502.5	504.1
18°	551.0	533.4	515.8	503.9	498.7	500.2
18.5°	548.4	530.2	512.0	499.9	494.6	496.1
19°	545.5	526.8	508.2	495.9	490.5	492.0
19.5°	542.7	523.5	504.3	491.7	486.3	488.0
20°	539.7	519.8	500.3	487.6	482.2	483.9
20.5°	536.7	516.2	496.3	483.4	478.0	479.6
21°	533.4	512.4	492.2	479.1	473.6	475.4

TEST NUMBER: P775628

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-HCD41TRLWW-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	523.7	501.0	479.4	465.9	460.4	462.4
23°	520.1	496.8	475.0	461.4	456.0	458.1
23.5°	516.5	492.8	470.5	456.7	451.5	453.6
24°	512.7	488.5	466.0	452.1	446.8	449.1
24.5°	509.1	484.2	461.4	447.4	442.2	444.5
25°	505.1	479.6	456.6	442.6	437.5	440.0
25.5°	501.2	475.3	452.0	437.9	432.9	435.4
26°	497.0	470.9	447.1	433.1	428.1	430.9
26.5°	492.9	466.4	442.4	428.1	423.3	426.1
27°	488.7	461.6	437.4	423.3	418.6	421.5
27.5°	484.4	456.9	432.6	418.4	413.7	416.8
28°	480.0	452.1	427.4	413.3	408.8	412.1
28.5°	475.6	447.4	422.6	408.4	403.9	407.3
29°	471.0	442.5	417.4	403.3	399.0	402.5
29.5°	466.4	437.6	412.5	398.3	394.1	397.7
30°	461.9	432.6	407.2	393.3	389.2	392.9
30.5°	457.3	427.5	402.1	388.1	384.1	388.0
31°	452.4	422.5	396.8	383.0	379.2	383.1
31.5°	447.5	417.3	391.7	377.8	374.1	378.2
32°	442.5	412.1	386.4	372.5	369.1	373.4
32.5°	437.5	406.9	381.1	367.6	363.9	368.4
33°	432.5	401.7	375.8	362.2	359.0	363.5
33.5°	427.2	396.4	370.6	357.1	353.8	358.6
34°	421.9	390.9	365.3	351.7	348.8	353.6
34.5°	416.7	385.5	359.9	346.5	343.8	348.6
35°	411.3	380.0	354.4	341.3	338.6	343.5
35.5°	405.8	374.6	349.0	336.1	333.6	338.6
36°	400.2	369.2	343.8	330.8	328.4	333.6
36.5°	394.6	363.5	338.4	325.7	323.4	328.6
37°	388.8	357.8	332.9	320.3	318.3	323.5
37.5°	383.1	352.3	327.5	315.1	313.2	318.5
38°	377.1	346.6	322.0	309.8	308.0	313.4
38.5°	371.5	340.9	316.6	304.7	303.0	308.5
39°	365.4	335.2	311.3	299.4	297.9	303.5
39.5°	359.3	329.5	305.8	294.4	292.9	298.4
40°	353.3	323.7	300.4	289.0	287.6	293.2
40.5°	347.2	317.9	294.9	283.9	282.7	288.4
41°	341.1	312.2	289.5	278.6	277.7	283.1
41.5°	335.0	306.4	284.1	273.6	272.6	278.2
42°	328.9	300.8	278.7	268.5	267.5	273.1
42.5°	322.8	295.1	273.3	263.3	262.6	268.2
43°	316.4	289.3	268.1	258.2	257.7	263.1
43.5°	310.2	283.5	262.6	253.1	252.5	258.2

TEST NUMBER: P775628

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-HCD41TRLWW-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	291.5	266.4	246.9	238.0	237.7	243.1
45.5°	285.4	260.9	241.7	233.0	232.8	238.3
46°	279.0	255.4	236.6	228.2	227.9	233.3
46.5°	272.9	249.7	231.4	223.2	223.0	228.4
47°	266.6	244.1	226.2	218.4	218.3	223.4
47.5°	260.4	238.6	221.0	213.4	213.4	218.6
48°	254.2	233.1	216.0	208.5	208.6	213.7
48.5°	248.1	227.5	210.8	203.8	203.8	208.8
49°	242.1	222.2	206.0	199.0	199.0	204.0
49.5°	236.0	216.8	200.9	194.1	194.4	199.3
50°	229.8	211.3	195.9	189.4	189.8	194.3
50.5°	223.8	206.0	191.0	184.8	185.0	189.6
51°	218.2	200.6	186.2	180.1	180.3	184.9
51.5°	212.2	195.4	181.5	175.3	175.8	180.1
52°	206.4	190.2	176.7	171.0	171.3	175.5
52.5°	200.6	185.1	171.9	166.4	166.8	170.9
53°	195.0	179.8	167.4	161.8	162.3	166.1
53.5°	189.4	174.9	162.8	157.3	157.7	161.3
54°	184.1	169.7	158.3	153.0	153.3	156.8
54.5°	178.7	164.9	153.9	148.7	149.0	152.2
55°	173.3	159.9	149.4	144.4	144.7	147.7
55.5°	167.9	155.3	145.1	140.2	140.4	143.1
56°	162.9	150.5	140.8	136.1	136.1	138.6
56.5°	157.8	146.1	136.7	132.0	131.9	134.1
57°	152.9	141.3	132.5	127.9	127.7	129.7
57.5°	148.1	136.9	128.4	123.9	123.5	125.4
58°	143.2	132.5	124.4	120.0	119.6	121.0
58.5°	138.5	128.3	120.4	116.1	115.4	116.8
59°	133.9	124.0	116.7	112.4	111.5	112.6
59.5°	129.4	120.0	112.8	108.7	107.5	108.3
60°	125.0	115.8	109.0	105.1	103.7	104.4
60.5°	120.5	111.9	105.3	101.3	99.8	100.3
61°	116.4	108.0	101.6	97.8	96.2	96.3
61.5°	112.2	104.3	98.2	94.4	92.5	92.4
62°	108.2	100.6	94.6	91.0	89.0	88.6
62.5°	104.3	96.9	91.0	87.5	85.4	84.7
63°	100.4	93.3	87.6	84.2	82.1	81.1
63.5°	96.7	90.0	84.3	80.9	78.7	77.6
64°	93.0	86.4	81.0	77.7	75.5	74.1
64.5°	89.5	83.2	77.8	74.5	72.3	70.5
65°	86.2	80.0	74.7	71.4	69.3	67.3
65.5°	82.7	76.8	71.6	68.3	66.2	63.9
66°	79.2	73.7	68.5	65.3	63.3	60.6



TEST NUMBER: P775628

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-HCD41TRLWW-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	69.9	64.9	60.0	56.7	54.5	51.8
68°	66.8	62.1	57.4	54.1	51.7	49.2
68.5°	64.0	59.4	54.8	51.6	49.0	46.8
69°	61.2	56.7	52.2	49.2	46.3	44.5
69.5°	58.4	54.1	49.8	46.8	43.8	42.5
70°	55.8	51.7	47.5	44.6	41.5	41.2
70.5°	53.3	49.3	45.2	42.6	39.5	40.5
71°	50.7	47.0	43.0	40.6	37.9	39.7
71.5°	48.2	44.7	41.0	38.7	37.2	39.0
72°	45.9	42.5	39.0	37.2	36.4	38.3
72.5°	43.7	40.4	37.7	35.7	35.6	37.3
73°	41.4	38.4	35.9	34.3	34.8	36.4
73.5°	39.3	36.6	34.2	32.9	33.9	35.5
74°	37.3	34.8	32.4	31.4	32.9	34.6
74.5°	35.3	33.0	30.6	30.4	31.9	33.7
75°	33.3	31.2	29.1	29.3	30.9	32.7
75.5°	31.5	29.3	27.7	28.4	29.7	31.6
76°	29.6	27.7	26.4	27.4	28.6	30.5
76.5°	27.8	26.2	25.0	26.5	27.4	29.2
77°	26.2	24.6	23.9	25.4	26.2	28.1
77.5°	24.5	23.1	22.6	24.3	25.0	26.8
78°	22.8	21.6	21.4	23.2	23.8	25.5
78.5°	21.1	20.2	20.2	22.1	22.4	24.2
79°	19.5	18.8	19.0	20.9	21.0	22.8
79.5°	18.0	17.3	18.0	19.8	19.7	21.4
80°	16.5	16.1	16.9	18.5	18.2	20.1
80.5°	15.0	14.8	15.9	17.3	16.8	18.6
81°	13.6	13.6	14.8	16.1	15.4	17.1
81.5°	12.2	12.4	13.8	14.8	14.0	15.7
82°	10.9	11.1	12.6	13.7	12.6	14.2
82.5°	9.7	10.0	11.5	12.4	11.2	12.7
83°	8.3	8.9	10.2	11.2	9.9	11.0
83.5°	7.0	7.8	9.0	10.1	8.6	9.5
84°	5.8	6.6	7.8	8.9	7.5	7.9
84.5°	4.5	5.5	6.5	7.8	6.4	6.4
85°	3.4	4.3	5.3	6.5	5.6	5.0
85.5°	2.3	3.3	3.9	5.3	4.7	4.1
86°	1.4	2.2	2.9	4.0	3.9	3.6
86.5°	0.5	1.2	2.0	3.0	3.2	2.9
87°	0.0	0.2	1.1	2.1	2.4	2.4
87.5°	0.0	0.0	0.1	1.1	1.6	1.9
88°	0.0	0.0	0.0	0.1	0.8	1.4
88.5°	0.0	0.0	0.0	0.1	0.2	0.8



TEST NUMBER: P775628

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-HCD41TRLWW-1000lm-4000K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.0	0.0	0.1	0.1	0.0



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— 0°-180°    - - 45°-225°    - - - - 90°-270°    - · - 135°-315°

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21.5°	471.1	484.7	500.4	520.6	542.7	563.1	577.2	583.3	581.4	569.7	553.0
22°	466.8	480.6	496.7	517.2	539.5	560.6	575.0	581.3	579.3	567.4	550.3



44°	253.1	269.2	284.6	306.0	332.3	363.8	390.0	403.1	397.9	369.6	338.2
44.5°	248.2	264.2	279.4	300.7	326.6	357.6	383.5	396.4	390.9	362.7	331.5



66.5°	57.6	70.7	82.4	93.1	101.3	109.3	114.7	115.4	109.3	97.5	86.6
67°	54.6	67.5	79.0	89.7	97.6	105.3	110.3	111.0	104.8	93.6	83.0



89°	0.3	2.7	5.6	6.6	5.6	4.4	2.5	0.6	0.1	0.0	0.0
89.5°	0.1	2.0	4.3	5.4	4.3	3.3	1.6	0.3	0.0	0.0	0.0



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21.5°	530.2	508.7	488.0	474.8	469.2	471.1
22°	527.0	504.9	483.6	470.4	464.9	466.8



44°	303.9	277.9	257.5	248.1	247.6	253.1
44.5°	297.9	272.2	252.1	243.0	242.7	248.2

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66.5°	76.1	70.6	65.7	62.4	60.2	57.6
67°	72.9	67.7	62.7	59.6	57.4	54.6

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89°	0.0	0.0	0.0	0.1	0.1	0.3
89.5°	0.0	0.0	0.0	0.1	0.1	0.1

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(END OF REPORT)