

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: P775677

Luminaire Tested: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3500K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775677
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B004)
Test Lab:
Issue Date: 2/7/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3500K
Description: 4 INCH ROUND MEDIUM LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1053.9 lumens
Efficiency: N/A
Efficacy: 105.4 lumens/watt
Spacing Criteria (0/90/45): 1.1 / 1.09 / 1.15
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

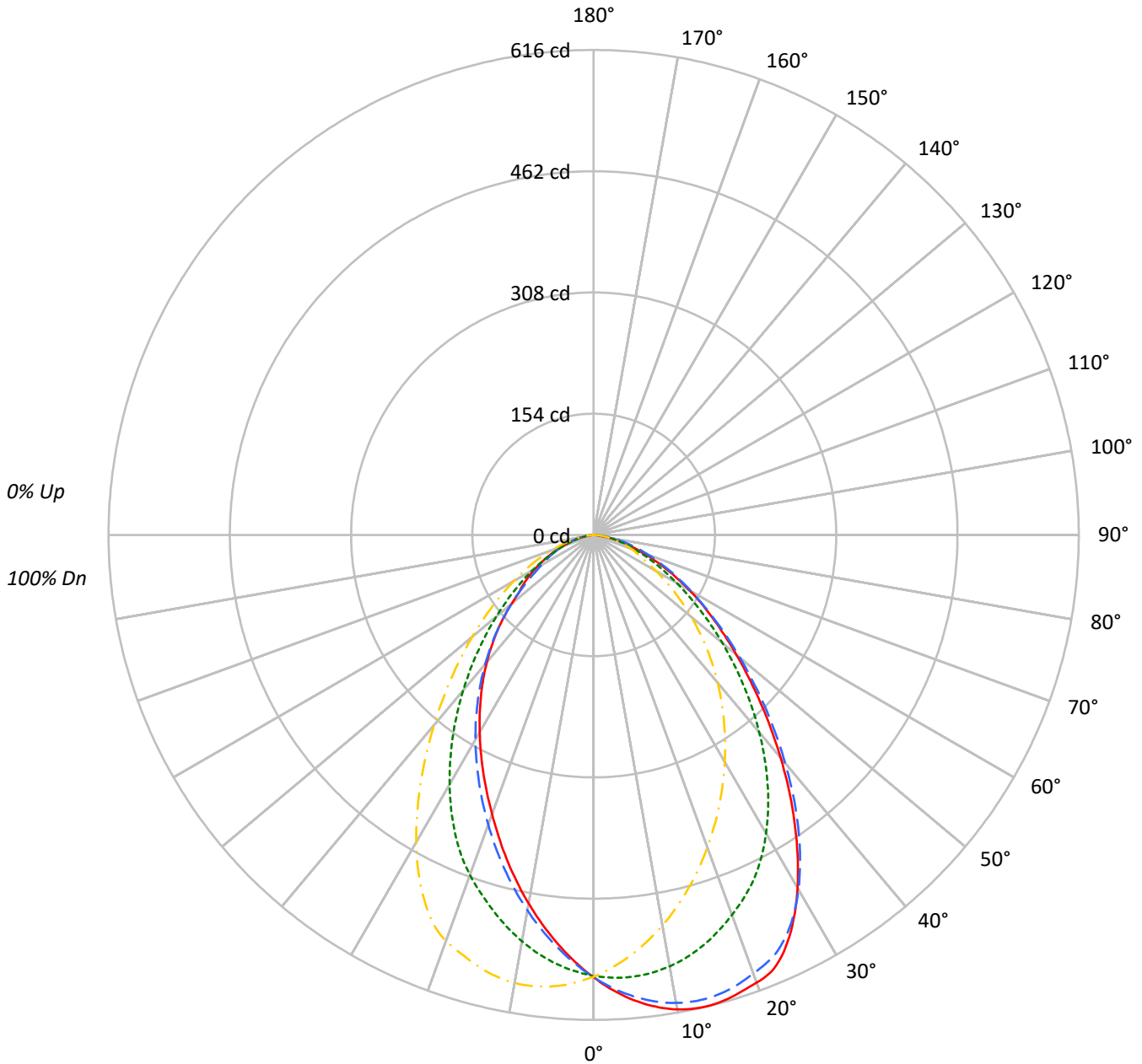
Input Watts (W): 10
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	90	88																			
2	102	95	89	84	100	93	88	83	90	85	82	87	83	80	84	81	78	76																			
3	94	85	78	73	92	84	77	72	81	75	71	78	73	69	76	72	68	66																			
4	87	77	69	63	85	76	68	63	73	67	62	71	66	61	69	64	60	58																			
5	81	70	62	56	79	69	61	55	67	60	55	65	59	54	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	45	69	57	50	44	56	49	44	54	48	44	53	48	44	42																			
8	66	54	46	40	64	53	45	40	52	45	40	50	44	40	49	44	40	38																			
9	62	49	42	37	61	49	42	37	48	41	37	47	41	36	46	40	36	35																			
10	58	46	39	34	57	45	38	34	45	38	34	44	38	33	43	37	33	32																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	70639	70639	70639	70639
5°	74990	71149	65881	69065
10°	78208	71103	60752	66988
15°	80128	70291	55542	64324
20°	81052	68798	50530	61553
25°	80150	66917	46088	57905
30°	75232	63650	42055	53172
35°	68275	59118	38316	47857
40°	60654	53705	34664	42353
45°	53127	47787	30844	36824
50°	46323	41722	26705	31600
55°	40525	35896	23850	26856
60°	35339	30556	21596	22452
65°	29957	25878	18582	18463
70°	24617	21710	15307	14866
75°	18964	18137	12399	11670
80°	12103	15075	8769	8624
85°	3610	13140	3466	4043

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 22.5°

Vertical Angle: 45°

Luminance: 54942 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	52.7	5.0
10°-20°	145.9	13.8
20°-30°	206.8	19.6
30°-40°	216.0	20.5
40°-50°	181.8	17.3
50°-60°	129.1	12.3
60°-70°	78.3	7.4
70°-80°	35.9	3.4
80°-90°	7.2	0.7
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°	405.4	38.5
0°-40°	621.4	59.0
0°-60°	932.4	88.5
0°-90°	1053.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1053.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	561	561	561	561	561	
5°	594	563	522	547	594	57
15°	615	540	426	494	615	174
25°	577	482	332	417	577	263
35°	444	385	249	312	444	277
45°	298	268	173	207	298	231
55°	185	164	109	122	185	166
65°	101	87	62	62	101	100
75°	39	37	26	24	39	42
85°	2	9	2	3	2	5
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°	561.3	561.3	561.3	561.3	561.3	561.3	561.3	561.3	561.3	561.3	561.3
0.5°	565.7	565.7	565.1	563.8	560.8	559.7	559.0	558.4	558.4	558.3	558.7
1°	569.3	569.2	568.0	565.8	561.4	559.0	556.9	555.2	554.6	554.4	555.4
1.5°	572.7	572.7	571.0	567.8	562.1	558.0	554.5	551.9	550.8	550.6	552.0
2°	576.1	576.1	573.9	569.5	562.6	557.1	552.1	548.5	546.7	546.5	548.5
2.5°	579.3	579.4	576.6	571.3	563.0	555.9	549.7	545.0	542.7	542.5	544.9
3°	582.3	582.5	579.3	572.8	563.2	554.8	547.2	541.4	538.6	538.3	541.3
3.5°	585.3	585.5	581.8	574.3	563.4	553.5	544.5	537.8	534.5	534.1	537.7
4°	588.2	588.5	584.1	575.7	563.4	552.1	541.9	534.1	530.1	529.8	533.9
4.5°	590.9	591.3	586.4	577.1	563.4	550.6	539.1	530.2	525.8	525.7	530.0
5°	593.6	594.0	588.6	578.2	563.2	549.0	536.2	526.4	521.5	521.2	526.2
5.5°	595.9	596.6	590.7	579.3	563.1	547.3	533.3	522.5	517.1	516.7	522.3
6°	598.3	599.1	592.6	580.3	562.7	545.6	530.1	518.5	512.6	512.2	518.2
6.5°	600.5	601.3	594.4	581.1	562.3	543.8	527.1	514.6	508.2	507.8	514.2
7°	602.6	603.5	596.2	581.9	561.8	541.9	524.0	510.5	503.5	503.3	510.1
7.5°	604.5	605.6	597.7	582.5	561.0	539.8	520.7	506.3	499.0	498.6	505.9
8°	606.3	607.4	599.2	582.9	560.3	537.7	517.4	502.2	494.3	494.0	501.6
8.5°	607.9	609.2	600.5	583.3	559.5	535.4	514.0	497.9	489.6	489.3	497.4
9°	609.4	610.9	601.8	583.6	558.5	533.3	510.7	493.7	484.9	484.6	493.2
9.5°	610.8	612.3	602.8	583.8	557.5	530.9	507.0	489.3	480.1	479.9	488.8
10°	612.0	613.7	603.7	583.8	556.4	528.4	503.5	485.0	475.4	475.0	484.3
10.5°	613.0	614.8	604.4	583.7	555.1	525.8	499.8	480.6	470.6	470.1	479.9
11°	613.9	615.8	605.2	583.6	553.8	523.2	496.4	476.1	465.7	465.4	475.4
11.5°	614.6	616.7	605.6	583.2	552.3	520.6	492.4	471.6	460.9	460.6	471.0
12°	615.1	617.4	606.0	582.8	550.8	517.8	488.6	467.0	455.9	455.6	466.4
12.5°	615.5	617.9	606.2	582.3	549.1	515.0	484.7	462.6	451.1	450.8	461.8
13°	615.7	618.3	606.3	581.5	547.3	512.1	480.9	457.9	446.2	445.8	457.3
13.5°	615.8	618.5	606.2	580.7	545.5	509.1	477.0	453.5	441.2	440.9	452.6
14°	615.6	618.6	606.0	579.8	543.6	506.0	472.9	448.7	436.3	435.8	448.0
14.5°	615.4	618.5	605.6	578.7	541.4	502.9	468.9	444.0	431.4	430.9	443.3
15°	615.0	618.2	605.1	577.5	539.5	499.8	464.8	439.3	426.3	426.0	438.5
15.5°	614.4	617.8	604.4	576.3	537.2	496.5	460.7	434.6	421.3	421.0	433.9
16°	613.8	617.2	603.6	574.8	534.8	493.2	456.6	429.9	416.4	416.0	429.2
16.5°	612.8	616.5	602.7	573.3	532.4	489.7	452.3	425.3	411.5	411.0	424.6
17°	611.9	615.6	601.5	571.6	529.9	486.4	448.2	420.5	406.4	406.0	419.8
17.5°	610.8	614.7	600.4	569.8	527.2	482.8	443.8	415.7	401.4	401.1	415.1
18°	609.6	613.6	599.1	568.0	524.7	479.3	439.6	411.0	396.6	396.1	410.4
18.5°	608.3	612.3	597.6	566.0	522.0	475.6	435.2	406.1	391.7	391.2	405.6
19°	607.1	611.0	596.1	564.0	519.3	472.1	431.1	401.3	386.8	386.2	400.9
19.5°	606.2	609.7	594.5	561.9	516.5	468.5	426.5	396.7	382.2	381.4	396.2
20°	605.2	608.7	592.8	559.7	513.7	464.9	422.2	391.9	377.3	376.6	391.5
20.5°	604.0	607.6	591.3	557.6	510.8	461.1	417.8	387.1	372.7	371.9	386.7
21°	602.7	606.3	589.8	555.5	507.9	457.4	413.5	382.6	368.0	367.1	382.1



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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°	597.0	601.4	584.4	548.7	498.9	446.1	400.1	368.8	354.3	353.3	368.1
23°	593.8	599.1	582.3	546.2	495.6	442.3	395.7	364.3	349.6	348.7	363.4
23.5°	590.1	596.3	579.9	543.5	492.3	438.3	391.2	359.8	345.3	344.3	358.9
24°	586.3	592.8	576.8	540.5	488.9	434.4	386.7	355.3	340.8	339.7	354.2
24.5°	582.1	588.9	573.4	537.4	485.4	430.3	382.2	351.0	336.4	335.1	349.6
25°	577.2	585.0	569.7	533.9	481.9	426.1	377.8	346.4	331.9	330.8	345.1
25.5°	572.2	580.8	565.8	530.1	477.9	422.0	373.4	342.2	327.7	326.4	340.5
26°	567.2	576.2	561.6	526.2	474.1	417.7	368.9	337.7	323.3	322.1	336.0
26.5°	561.8	571.0	557.3	522.0	469.8	413.4	364.2	333.5	319.0	317.6	331.4
27°	555.9	566.0	552.7	517.5	465.7	409.1	359.8	329.0	314.6	313.4	326.8
27.5°	549.8	560.6	547.8	512.9	461.2	404.7	355.3	324.8	310.5	309.1	322.5
28°	544.0	554.8	542.6	508.1	456.9	400.2	350.9	320.4	306.1	304.9	317.9
28.5°	537.5	548.9	537.3	503.2	452.2	395.7	346.3	316.3	302.1	300.6	313.5
29°	531.0	542.9	531.8	498.0	447.6	391.1	341.9	312.0	297.8	296.4	309.0
29.5°	524.3	536.6	526.0	492.8	442.7	386.6	337.5	307.8	293.6	292.2	304.6
30°	517.7	530.1	520.1	487.5	438.0	381.9	332.9	303.6	289.4	288.1	300.2
30.5°	510.6	523.5	514.0	481.9	432.9	377.1	328.5	299.5	285.4	283.9	295.7
31°	503.5	516.7	507.7	476.3	427.9	372.4	324.0	295.2	281.2	279.8	291.3
31.5°	496.4	509.6	501.2	470.4	422.7	367.6	319.6	291.0	277.3	275.5	286.8
32°	489.1	502.7	494.7	464.4	417.6	362.8	315.1	286.8	273.2	271.5	282.6
32.5°	481.8	495.5	487.9	458.5	412.2	358.0	310.8	282.8	269.2	267.5	278.1
33°	474.5	488.3	481.1	452.5	406.8	353.1	306.2	278.6	265.2	263.4	273.8
33.5°	467.1	480.8	474.2	446.2	401.4	348.2	301.9	274.6	261.2	259.4	269.3
34°	459.7	473.6	467.1	439.9	396.0	343.2	297.3	270.6	257.3	255.3	265.1
34.5°	451.9	465.8	459.7	433.6	390.4	338.2	292.9	266.4	253.4	251.3	260.7
35°	444.4	458.3	452.5	427.0	384.8	333.3	288.5	262.4	249.4	247.4	256.4
35.5°	437.0	450.7	445.3	420.5	379.2	328.4	284.1	258.3	245.7	243.4	252.1
36°	429.5	443.3	437.9	413.9	373.5	323.4	279.7	254.4	241.7	239.4	248.0
36.5°	421.9	435.6	430.5	407.2	367.8	318.2	275.3	250.4	237.9	235.4	243.6
37°	414.1	427.8	423.2	400.5	362.0	313.3	270.9	246.3	233.9	231.5	239.4
37.5°	406.7	420.1	415.7	393.8	356.2	308.4	266.5	242.4	230.2	227.6	235.2
38°	399.2	412.4	408.3	386.9	350.4	303.2	262.1	238.4	226.2	223.7	231.0
38.5°	391.6	404.7	400.6	380.1	344.6	298.2	257.9	234.5	222.4	219.8	226.7
39°	383.9	397.2	393.4	373.3	338.8	293.2	253.5	230.5	218.6	216.0	222.7
39.5°	376.7	389.5	385.8	366.4	332.8	288.2	249.2	226.5	214.9	212.0	218.4
40°	369.2	381.8	378.4	359.6	326.9	283.0	244.9	222.6	211.0	208.2	214.4
40.5°	361.7	374.1	370.9	352.7	321.0	278.0	240.5	218.5	207.1	204.2	210.2
41°	354.3	366.7	363.7	345.8	315.1	272.9	236.3	214.7	203.4	200.3	206.2
41.5°	347.1	359.3	356.3	339.1	309.4	268.0	232.0	210.8	199.7	196.5	202.1
42°	340.0	351.7	349.1	332.3	303.4	262.9	227.7	206.8	195.9	192.7	198.0
42.5°	332.7	344.2	341.9	325.5	297.6	258.0	223.4	203.0	192.0	188.9	194.1
43°	325.8	337.2	334.6	319.0	291.8	253.1	219.3	199.2	188.3	185.1	190.0
43.5°	319.0	329.9	327.5	312.1	285.9	248.1	214.9	195.2	184.6	181.2	185.9



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	298.5	308.7	306.6	292.5	268.5	233.3	202.5	183.6	173.3	169.9	174.2
45.5°	292.0	301.9	299.8	285.9	262.8	228.4	198.2	179.7	169.6	166.2	170.3
46°	285.4	295.0	293.1	279.6	257.1	223.5	194.1	176.0	165.9	162.5	166.3
46.5°	278.8	288.4	286.5	273.3	251.5	218.8	189.9	172.1	162.2	158.6	162.5
47°	272.6	281.9	279.8	267.0	245.7	213.9	185.8	168.3	158.4	155.0	158.9
47.5°	266.4	275.2	273.3	260.7	240.1	209.1	181.8	164.6	154.6	151.3	154.8
48°	260.1	268.7	266.9	254.6	234.6	204.5	177.6	160.8	151.1	147.7	151.1
48.5°	254.1	262.7	260.7	248.7	229.2	199.8	173.7	157.0	147.4	143.9	147.4
49°	248.4	256.5	254.6	242.8	223.7	195.0	169.6	153.4	143.6	140.4	143.8
49.5°	242.5	250.3	248.5	236.9	218.3	190.6	165.6	149.6	140.0	136.8	140.0
50°	236.6	244.2	242.4	231.2	213.1	185.9	161.7	145.9	136.4	133.3	136.5
50.5°	231.2	238.5	236.5	225.3	207.8	181.3	157.7	142.2	132.6	129.7	132.8
51°	225.6	232.8	230.6	219.8	202.7	176.9	153.8	138.5	129.1	126.1	129.3
51.5°	220.0	226.9	225.0	214.2	197.6	172.4	149.9	134.9	125.7	122.8	125.8
52°	214.8	221.6	219.5	208.8	192.4	168.1	146.1	131.4	122.1	119.5	122.4
52.5°	209.7	216.3	213.9	203.5	187.5	163.6	142.3	127.8	118.9	116.1	118.9
53°	204.3	210.7	208.5	198.1	182.6	159.4	138.5	124.2	117.1	112.7	115.5
53.5°	199.2	205.5	203.2	192.9	177.7	155.1	134.7	120.8	115.2	109.6	112.2
54°	194.5	200.4	197.9	187.9	172.8	150.9	131.1	117.4	113.2	107.8	109.0
54.5°	189.6	195.4	192.8	182.9	168.2	146.7	127.5	114.1	110.9	105.8	105.8
55°	184.7	190.5	187.9	177.9	163.6	142.7	123.9	110.9	108.7	103.7	102.7
55.5°	180.3	185.6	183.0	173.2	159.1	138.7	120.4	107.6	106.3	101.6	99.7
56°	175.6	180.8	178.1	168.3	154.5	134.7	116.9	105.2	104.0	99.4	96.7
56.5°	171.0	176.2	173.5	163.7	150.0	130.8	113.4	103.3	101.8	97.1	93.8
57°	166.5	171.5	168.8	159.2	145.8	126.9	110.0	101.2	99.4	94.9	91.0
57.5°	162.2	167.1	164.2	154.7	141.6	123.1	106.7	99.2	97.1	92.7	88.5
58°	157.5	162.7	159.8	150.3	137.4	119.5	103.5	97.0	94.9	90.6	86.0
58.5°	153.3	158.2	155.4	146.0	133.3	115.9	100.4	94.8	92.6	88.4	83.5
59°	148.8	154.0	151.1	141.8	129.2	112.2	97.3	92.5	90.4	86.3	81.0
59.5°	144.5	149.6	146.9	137.6	125.3	108.7	94.2	90.4	88.1	84.2	78.5
60°	140.4	145.4	142.8	133.5	121.4	105.3	91.2	88.3	85.8	82.1	76.7
60.5°	135.9	141.2	138.8	129.5	117.6	102.0	88.5	86.1	83.5	80.0	74.8
61°	131.9	136.8	134.6	125.6	114.0	98.7	85.8	83.9	81.2	77.8	73.0
61.5°	127.8	133.0	130.9	121.9	110.3	95.3	83.1	81.9	79.0	75.7	71.1
62°	123.8	128.9	127.0	118.0	106.7	92.3	80.4	79.7	76.6	73.7	69.2
62.5°	119.8	124.9	123.2	114.4	103.2	89.3	77.7	77.4	74.2	71.5	67.4
63°	115.7	121.0	119.5	110.7	99.8	86.4	75.1	75.2	71.8	69.3	65.5
63.5°	111.9	117.1	115.9	107.1	96.4	83.4	72.8	73.0	69.4	67.3	63.6
64°	108.0	113.4	112.3	103.6	93.1	80.5	70.7	70.8	67.0	65.1	62.0
64.5°	104.4	109.5	108.8	100.3	90.1	77.5	68.8	68.6	64.7	62.9	60.2
65°	100.6	106.0	105.4	97.0	86.9	74.9	67.0	66.5	62.4	60.8	58.4
65.5°	97.1	102.3	102.0	93.8	83.8	72.2	65.3	64.2	60.1	58.7	56.7
66°	93.4	98.9	98.7	90.6	80.8	69.4	63.4	62.2	57.8	56.6	55.0



TEST NUMBER: P775677

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	83.1	88.5	88.9	81.3	72.1	62.2	58.1	55.9	51.2	50.5	49.9
68°	79.7	85.2	85.8	78.4	69.2	59.8	56.4	53.8	49.1	48.4	48.3
68.5°	76.4	82.0	82.8	75.4	66.6	57.5	54.7	51.8	47.1	46.5	46.6
69°	73.3	78.8	79.8	72.6	64.0	55.3	53.0	49.7	45.2	44.6	45.0
69.5°	70.1	75.5	76.7	69.8	61.4	53.2	51.2	47.8	43.4	42.8	43.3
70°	66.9	72.5	73.9	67.3	59.0	51.1	49.5	45.8	41.6	41.0	41.7
70.5°	63.8	69.5	71.1	64.5	56.5	49.1	47.9	44.0	39.8	39.3	40.0
71°	60.8	66.5	68.3	62.0	54.2	47.1	46.2	42.2	38.1	37.6	38.4
71.5°	57.9	63.6	65.4	59.4	51.8	45.3	44.6	40.4	36.5	36.0	36.8
72°	55.1	60.7	62.8	56.9	49.6	43.4	42.9	38.8	34.8	34.3	35.2
72.5°	52.2	58.0	60.1	54.5	47.4	41.7	41.2	37.1	33.2	32.7	33.7
73°	49.4	55.3	57.5	52.0	45.3	40.0	39.7	35.4	31.6	31.2	32.1
73.5°	46.7	52.5	54.9	49.7	43.1	38.2	38.0	33.9	30.1	29.6	30.6
74°	44.0	50.1	52.4	47.6	41.1	36.6	36.5	32.3	28.5	28.1	29.1
74.5°	41.4	47.5	50.1	45.3	39.2	35.0	35.0	30.8	27.0	26.6	27.8
75°	39.0	45.0	47.6	43.1	37.3	33.5	33.4	29.3	25.5	25.1	26.3
75.5°	36.6	42.5	45.2	41.0	35.4	31.9	31.9	27.9	24.0	23.6	25.0
76°	34.2	40.2	42.9	39.0	33.7	30.5	30.4	26.3	22.7	22.2	23.6
76.5°	31.9	37.8	40.6	37.0	31.9	29.0	29.0	24.9	21.2	20.8	22.3
77°	29.5	35.6	38.4	35.1	30.3	27.7	27.6	23.5	19.9	19.4	20.9
77.5°	27.3	33.6	36.4	33.2	28.5	26.3	26.2	22.2	18.5	18.0	19.7
78°	25.1	31.4	34.4	31.3	26.9	25.0	24.8	20.7	17.2	16.7	18.3
78.5°	22.8	29.2	32.3	29.4	25.3	23.7	23.5	19.4	15.9	15.3	17.1
79°	20.7	27.1	30.3	27.7	23.8	22.6	22.2	18.0	14.6	14.1	15.9
79.5°	18.7	25.2	28.3	25.9	22.3	21.3	20.8	16.8	13.4	12.8	14.6
80°	16.7	23.2	26.3	24.2	20.8	20.2	19.6	15.4	12.1	11.6	13.5
80.5°	14.7	21.2	24.6	22.6	19.5	19.1	18.3	14.2	10.9	10.5	12.3
81°	12.8	19.5	22.8	21.0	18.1	17.9	17.1	13.0	9.7	9.4	11.3
81.5°	11.0	17.7	20.9	19.5	16.9	16.8	16.0	11.8	8.6	8.4	10.2
82°	9.1	16.1	19.3	18.0	15.6	15.6	14.7	10.6	7.5	7.4	9.2
82.5°	7.5	14.4	17.7	16.6	14.4	14.5	13.6	9.6	6.3	6.3	8.3
83°	5.8	12.8	16.2	15.2	13.3	13.5	12.4	8.6	5.2	5.3	7.4
83.5°	4.2	11.4	14.7	13.9	12.1	12.4	11.4	7.6	4.1	4.6	6.4
84°	3.7	10.1	13.3	12.5	11.1	11.3	10.4	6.6	3.3	3.9	5.5
84.5°	3.1	8.9	11.9	11.3	10.1	10.4	9.4	5.6	2.7	3.4	4.7
85°	2.5	7.9	10.6	10.1	9.1	9.3	8.4	5.0	2.4	2.9	3.8
85.5°	1.9	6.8	9.3	8.9	8.1	8.4	7.5	4.4	2.0	2.4	3.0
86°	1.3	5.9	8.1	7.8	7.2	7.4	6.5	3.7	1.7	1.9	2.3
86.5°	1.0	5.0	6.8	6.6	6.1	6.3	5.5	3.1	1.3	1.5	1.5
87°	0.7	4.0	5.7	5.6	5.2	5.4	4.7	2.6	1.0	0.9	0.7
87.5°	0.5	3.1	4.6	4.6	4.4	4.5	3.7	2.0	0.6	0.5	0.2
88°	0.2	2.3	3.5	3.6	3.5	3.6	2.9	1.5	0.3	0.2	0.1
88.5°	0.1	1.5	2.7	2.8	2.7	2.7	2.1	0.8	0.1	0.1	0.0



TEST NUMBER: P775677

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.1	0.1	0.3	0.5	0.4	0.2	0.1	0.0	0.1	0.0

TEST NUMBER: P775677

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	561.3	561.3	561.3	561.3	561.3	561.3
0.5°	559.5	559.1	560.9	562.9	564.5	565.7
1°	557.2	558.1	561.4	564.8	567.5	569.3
1.5°	554.8	557.1	561.8	566.4	570.2	572.7
2°	552.3	555.7	562.0	568.1	573.0	576.1
2.5°	549.7	554.6	562.2	569.6	575.5	579.3
3°	547.1	553.3	562.2	571.0	578.0	582.3
3.5°	544.3	551.8	562.2	572.3	580.4	585.3
4°	541.5	550.2	562.0	573.5	582.6	588.2
4.5°	538.7	548.5	561.6	574.5	584.8	590.9
5°	535.6	546.7	561.3	575.4	586.7	593.6
5.5°	532.6	545.0	560.8	576.3	588.7	595.9
6°	529.5	543.0	560.3	576.9	590.4	598.3
6.5°	526.4	540.9	559.5	577.5	592.0	600.5
7°	523.1	538.8	558.7	577.9	593.4	602.6
7.5°	519.8	536.6	557.8	578.2	594.7	604.5
8°	516.4	534.3	556.7	578.4	595.8	606.3
8.5°	512.8	531.8	555.5	578.4	596.9	607.9
9°	509.3	529.4	554.3	578.4	597.8	609.4
9.5°	505.8	526.8	552.9	578.2	598.5	610.8
10°	502.2	524.2	551.5	577.8	599.2	612.0
10.5°	498.4	521.4	549.9	577.4	599.7	613.0
11°	494.6	518.7	548.2	576.8	600.0	613.9
11.5°	490.8	515.7	546.3	576.1	600.1	614.6
12°	486.9	512.8	544.4	575.1	600.1	615.1
12.5°	483.0	509.7	542.4	574.1	599.9	615.5
13°	479.2	506.6	540.3	572.9	599.6	615.7
13.5°	475.2	503.4	538.1	571.7	599.1	615.8
14°	471.1	500.3	535.8	570.4	598.4	615.6
14.5°	466.9	497.0	533.5	568.9	597.7	615.4
15°	462.9	493.7	531.1	567.2	596.8	615.0
15.5°	458.9	490.4	528.6	565.5	595.7	614.4
16°	454.7	487.1	526.1	563.7	594.6	613.8
16.5°	450.6	483.7	523.5	562.0	593.4	612.8
17°	446.6	480.4	521.0	560.0	592.0	611.9
17.5°	442.4	477.1	518.5	558.0	590.6	610.8
18°	438.1	473.7	516.1	556.4	589.0	609.6
18.5°	433.9	470.3	513.4	554.6	587.8	608.3
19°	429.7	466.7	510.9	552.7	586.6	607.1
19.5°	425.6	463.3	508.0	550.7	585.4	606.2
20°	421.4	459.6	505.0	548.5	583.8	605.2
20.5°	417.2	455.8	502.0	546.2	582.2	604.0
21°	412.8	451.9	498.6	543.6	580.3	602.7

TEST NUMBER: P775677

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	399.7	439.8	487.2	533.4	572.1	597.0
23°	395.1	435.5	483.0	529.1	568.4	593.8
23.5°	390.7	431.1	478.4	524.8	564.3	590.1
24°	386.1	426.4	473.8	520.1	560.0	586.3
24.5°	381.7	421.8	468.7	515.0	555.4	582.1
25°	377.0	417.0	463.8	509.9	550.5	577.2
25.5°	372.3	412.1	458.7	504.9	545.1	572.2
26°	367.6	407.1	453.5	499.5	539.7	567.2
26.5°	362.8	402.3	448.1	493.8	534.1	561.8
27°	358.1	397.3	442.7	488.2	528.1	555.9
27.5°	353.3	392.1	437.2	482.2	521.8	549.8
28°	348.4	386.8	431.6	475.9	515.4	544.0
28.5°	343.5	381.9	425.9	469.8	509.1	537.5
29°	338.6	376.5	420.1	463.6	502.6	531.0
29.5°	333.8	371.3	414.4	457.0	495.7	524.3
30°	328.8	365.9	408.6	450.6	489.1	517.7
30.5°	323.8	360.6	402.5	443.8	482.0	510.6
31°	318.9	355.2	396.6	437.2	475.0	503.5
31.5°	314.0	349.8	390.5	430.6	467.9	496.4
32°	309.1	344.2	384.2	423.5	460.7	489.1
32.5°	304.0	339.0	378.2	416.8	453.4	481.8
33°	299.2	333.4	372.0	409.9	446.3	474.5
33.5°	294.3	328.1	365.9	403.1	439.1	467.1
34°	289.5	322.5	359.5	396.3	431.8	459.7
34.5°	284.6	317.1	353.3	389.2	424.4	451.9
35°	279.6	311.5	346.9	382.4	417.2	444.4
35.5°	274.7	306.2	340.8	375.5	409.8	437.0
36°	269.9	300.9	334.5	368.7	402.8	429.5
36.5°	265.1	295.3	328.3	362.0	395.4	421.9
37°	260.3	289.8	322.2	355.1	388.3	414.1
37.5°	255.4	284.6	315.8	348.4	380.8	406.7
38°	250.8	279.2	309.7	341.7	373.7	399.2
38.5°	246.0	273.8	303.6	335.1	366.6	391.6
39°	241.4	268.4	297.5	328.5	359.4	383.9
39.5°	236.7	263.1	291.6	322.0	352.5	376.7
40°	231.9	257.8	285.4	315.3	345.4	369.2
40.5°	227.4	252.5	279.7	309.0	338.5	361.7
41°	222.8	247.2	273.8	302.5	331.3	354.3
41.5°	218.2	242.0	268.0	296.4	324.8	347.1
42°	213.7	236.9	262.2	290.1	318.1	340.0
42.5°	209.2	231.8	256.6	284.0	311.4	332.7
43°	204.7	226.7	251.0	277.8	304.6	325.8
43.5°	200.3	221.8	245.4	271.9	298.2	319.0



TEST NUMBER: P775677

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	187.1	206.9	229.2	254.4	279.0	298.5
45.5°	182.8	202.2	224.0	248.7	273.1	292.0
46°	178.6	197.4	218.9	243.0	267.0	285.4
46.5°	174.4	192.6	213.7	237.6	261.0	278.8
47°	170.0	188.1	208.7	232.1	254.8	272.6
47.5°	166.0	183.4	203.7	226.7	249.1	266.4
48°	162.0	178.9	198.9	221.3	243.5	260.1
48.5°	157.9	174.4	194.0	216.3	237.9	254.1
49°	154.0	170.0	189.2	211.2	232.2	248.4
49.5°	149.9	165.8	184.6	206.2	226.9	242.5
50°	146.0	161.4	180.0	201.0	221.4	236.6
50.5°	142.2	157.3	175.3	196.3	216.2	231.2
51°	138.3	153.2	171.0	191.4	210.9	225.6
51.5°	134.7	149.1	166.5	186.7	206.0	220.0
52°	131.0	145.2	162.3	182.2	200.9	214.8
52.5°	127.4	141.2	157.9	177.4	196.0	209.7
53°	123.7	137.3	153.9	173.0	191.2	204.3
53.5°	120.3	133.5	149.6	168.5	186.4	199.2
54°	116.9	129.7	145.6	164.1	181.7	194.5
54.5°	113.4	125.9	141.4	159.9	177.2	189.6
55°	110.0	122.4	137.7	155.6	172.6	184.7
55.5°	106.8	118.8	133.9	151.5	168.2	180.3
56°	103.6	115.2	130.0	147.5	163.7	175.6
56.5°	100.4	111.8	126.3	143.4	159.6	171.0
57°	97.3	108.4	122.7	139.5	155.3	166.5
57.5°	94.4	105.0	119.0	135.5	151.2	162.2
58°	91.4	101.9	115.4	131.8	147.3	157.5
58.5°	88.6	98.5	111.9	128.1	143.2	153.3
59°	85.9	95.4	108.5	124.5	139.3	148.8
59.5°	83.1	92.3	105.2	120.7	135.3	144.5
60°	80.3	89.2	101.9	117.1	131.4	140.4
60.5°	77.5	86.2	98.5	113.7	127.6	135.9
61°	74.9	83.3	95.4	110.3	123.7	131.9
61.5°	72.3	80.4	92.2	106.8	119.9	127.8
62°	69.9	77.6	89.2	103.5	116.2	123.8
62.5°	67.6	74.9	86.1	100.2	112.3	119.8
63°	65.1	72.2	83.2	97.0	108.7	115.7
63.5°	62.8	69.5	80.2	93.9	105.1	111.9
64°	60.6	66.9	77.4	90.8	101.6	108.0
64.5°	58.4	64.5	74.6	87.7	98.1	104.4
65°	56.4	62.0	71.9	84.8	94.6	100.6
65.5°	54.3	59.5	69.1	81.7	91.3	97.1
66°	52.2	57.2	66.5	78.8	87.9	93.4



TEST NUMBER: P775677

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	46.6	50.5	58.9	70.4	78.3	83.1
68°	44.9	48.4	56.5	67.7	75.2	79.7
68.5°	43.2	46.2	54.1	64.9	72.2	76.4
69°	41.6	44.2	51.8	62.3	69.2	73.3
69.5°	39.9	42.3	49.5	59.7	66.3	70.1
70°	38.4	40.4	47.4	57.2	63.3	66.9
70.5°	37.0	38.5	45.2	54.6	60.5	63.8
71°	35.6	37.3	43.1	52.2	57.7	60.8
71.5°	34.2	35.5	41.0	49.8	55.0	57.9
72°	32.8	33.8	39.1	47.5	52.4	55.1
72.5°	31.5	31.9	36.9	45.2	49.8	52.2
73°	30.3	30.2	35.1	42.9	47.3	49.4
73.5°	28.9	28.6	33.4	40.7	44.8	46.7
74°	27.7	27.0	31.6	38.5	42.4	44.0
74.5°	26.4	25.6	29.8	36.6	40.0	41.4
75°	25.1	24.0	28.2	34.5	37.8	39.0
75.5°	23.9	22.7	26.5	32.5	35.6	36.6
76°	22.7	21.3	24.9	30.5	33.6	34.2
76.5°	21.5	20.0	23.2	28.5	31.4	31.9
77°	20.2	18.8	21.8	26.6	29.3	29.5
77.5°	19.1	17.5	20.2	24.9	27.1	27.3
78°	17.9	16.4	18.9	23.1	25.3	25.1
78.5°	16.8	15.2	17.4	21.3	23.3	22.8
79°	15.6	14.1	16.1	19.8	21.5	20.7
79.5°	14.5	13.0	14.8	18.1	19.7	18.7
80°	13.4	11.9	13.5	16.6	17.9	16.7
80.5°	12.3	10.9	12.3	15.1	16.4	14.7
81°	11.3	9.8	11.2	13.7	14.8	12.8
81.5°	10.3	8.9	9.9	12.3	13.3	11.0
82°	9.2	8.0	8.9	11.0	11.8	9.1
82.5°	8.3	7.0	7.9	9.7	10.6	7.5
83°	7.3	6.1	6.8	8.6	9.2	5.8
83.5°	6.3	5.2	5.8	7.5	8.1	4.2
84°	5.3	4.4	4.9	6.3	7.0	3.7
84.5°	4.4	3.5	3.9	5.3	6.1	3.1
85°	3.4	2.8	3.1	4.2	5.2	2.5
85.5°	2.6	2.1	2.3	3.4	4.2	1.9
86°	1.8	1.3	1.6	2.6	3.4	1.3
86.5°	0.9	0.5	0.7	1.8	2.7	1.0
87°	0.3	0.1	0.2	0.9	1.9	0.7
87.5°	0.1	0.0	0.1	0.2	1.0	0.5
88°	0.0	0.0	0.0	0.0	0.2	0.2
88.5°	0.0	0.0	0.0	0.0	0.1	0.1



TEST NUMBER: P775677

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

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



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

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21.5°	601.1	604.9	588.2	553.4	505.0	453.7	409.0	377.9	363.4	362.5	377.3
22°	599.4	603.3	586.4	551.1	501.9	449.8	404.4	373.4	358.9	357.8	372.6



44°	311.9	322.7	320.6	305.5	280.0	243.0	210.8	191.3	180.7	177.5	182.0
44.5°	305.1	315.4	313.6	299.0	274.2	238.1	206.6	187.5	177.0	173.7	178.1



66.5°	89.9	95.3	95.3	87.5	77.7	66.9	61.7	60.1	55.5	54.5	53.3
67°	86.4	91.8	92.1	84.2	74.9	64.6	59.9	57.9	53.4	52.4	51.6



89°	0.0	0.6	1.9	2.0	1.9	1.9	1.2	0.4	0.0	0.1	0.0
89.5°	0.0	0.1	1.0	1.1	1.1	1.0	0.6	0.1	0.0	0.1	0.0

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21.5°	408.5	448.0	495.2	540.6	578.1	601.1
22°	404.1	444.0	491.4	537.3	575.3	599.4



44°	195.9	216.6	239.9	265.9	291.9	311.9
44.5°	191.5	211.7	234.5	260.2	285.6	305.1

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66.5°	50.4	54.9	63.9	76.0	84.7	89.9
67°	48.5	52.6	61.3	73.1	81.4	86.4

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

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(END OF REPORT)