

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: P775676

Luminaire Tested: HCDJBS510CSD-HCD4TRH-HCD4TRLWW-1000lm-3000K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775676
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-3000K
Description: 4 INCH ROUND MEDIUM LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3000K CCT
Ballast/Driver: -

Summary

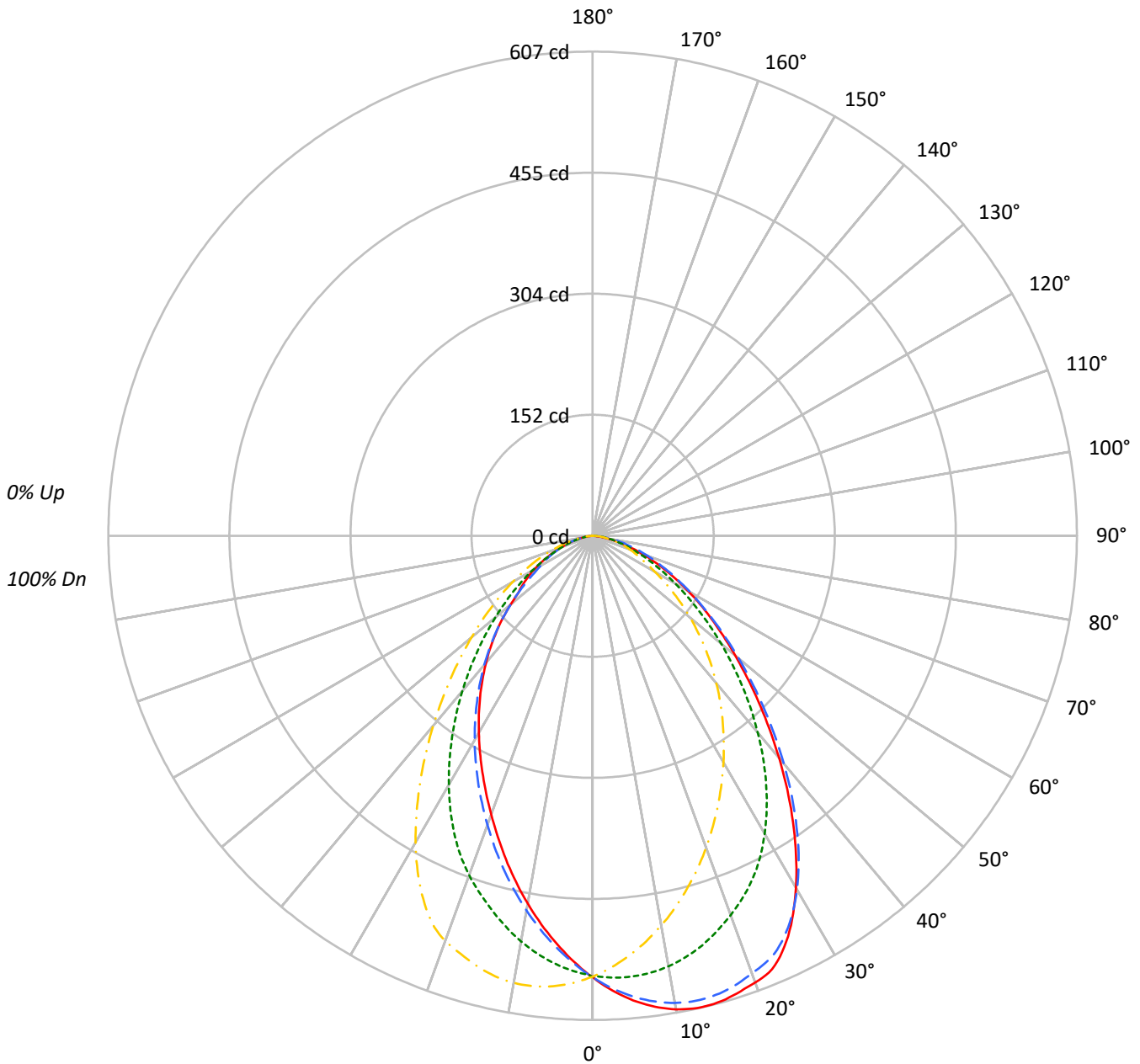
Lumens per Lamp: N/A
Luminaire Lumens: 1038.0 lumens
Efficiency: N/A
Efficacy: 103.8 lumens/watt
Spacing Criteria (0/90/45): 1.1 / 1.09 / 1.15
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

Input Watts (W): 10
Input Voltage (V): NR
Input Current (A_{in}): 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					100			
1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	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	73	92	84	77	72	81	75	71	78	73	69	76	72	68	66					66			
4	87	77	69	63	85	76	68	63	73	67	62	71	66	61	69	64	60	58					58			
5	81	70	62	56	79	69	61	55	67	60	55	65	59	54	63	58	54	52					52			
6	75	63	55	50	74	63	55	49	61	54	49	59	53	49	58	52	48	46					46			
7	70	58	50	45	69	57	50	44	56	49	44	54	48	44	53	48	44	42					42			
8	66	54	46	40	64	53	45	40	52	45	40	50	44	40	49	44	40	38					38			
9	62	49	42	37	61	49	42	37	48	41	37	47	41	36	46	40	36	35					35			
10	58	46	39	34	57	45	38	34	45	38	34	44	38	33	43	37	33	32					32			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	69582	69582	69582	69582
5°	73865	70076	64896	68029
10°	77033	70030	59845	65991
15°	78929	69236	54708	63360
20°	79834	67767	49767	60629
25°	78942	65903	45393	57030
30°	74098	62691	41430	52373
35°	67261	58227	37748	47135
40°	59751	52900	34138	41712
45°	52343	47075	30381	36272
50°	45618	41096	26294	31130
55°	39911	35369	23499	26439
60°	34810	30103	21269	22124
65°	29511	25490	18284	18165
70°	24249	21378	15050	14645
75°	18672	17845	12205	11524
80°	11886	14857	8624	8479
85°	3466	12996	3321	4043

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 22.5°
 Vertical Angle: 45°
 Luminance: 54123 cd/sqm



TEST NUMBER: P775676

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	51.9	5.0
10°-20°	143.7	13.8
20°-30°	203.7	19.6
30°-40°	212.8	20.5
40°-50°	179.1	17.3
50°-60°	127.2	12.3
60°-70°	77.1	7.4
70°-80°	35.4	3.4
80°-90°	7.1	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°	399.3	38.5
0°-40°	612.1	59.0
0°-60°	918.4	88.5
0°-90°	1038.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1038.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	553	553	553	553	553	
5°	585	555	514	538	585	56
15°	606	531	420	486	606	171
25°	568	475	327	411	568	259
35°	438	379	246	307	438	273
45°	294	264	171	204	294	227
55°	182	161	107	120	182	164
65°	99	86	61	61	99	99
75°	38	37	25	24	38	41
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°	552.9	552.9	552.9	552.9	552.9	552.9	552.9	552.9	552.9	552.9	552.9
0.5°	557.2	557.2	556.6	555.4	552.4	551.3	550.6	550.1	550.1	549.9	550.4
1°	560.8	560.7	559.4	557.3	553.0	550.6	548.5	546.9	546.3	546.1	547.1
1.5°	564.1	564.1	562.4	559.2	553.6	549.6	546.2	543.6	542.5	542.3	543.7
2°	567.4	567.4	565.3	561.0	554.1	548.7	543.8	540.3	538.5	538.3	540.3
2.5°	570.6	570.7	567.9	562.7	554.5	547.6	541.5	536.8	534.5	534.3	536.7
3°	573.5	573.7	570.6	564.2	554.7	546.5	539.0	533.3	530.6	530.2	533.2
3.5°	576.5	576.7	573.0	565.7	554.9	545.2	536.4	529.7	526.5	526.1	529.6
4°	579.3	579.7	575.4	567.1	554.9	543.8	533.7	526.1	522.2	521.9	525.9
4.5°	582.0	582.4	577.6	568.4	554.9	542.3	531.0	522.3	517.9	517.8	522.1
5°	584.7	585.1	579.8	569.5	554.7	540.8	528.1	518.5	513.7	513.4	518.3
5.5°	587.0	587.6	581.8	570.6	554.6	539.1	525.2	514.6	509.3	508.9	514.4
6°	589.3	590.1	583.7	571.6	554.2	537.4	522.2	510.8	504.9	504.5	510.4
6.5°	591.5	592.3	585.5	572.4	553.8	535.7	519.2	506.9	500.5	500.1	506.5
7°	593.5	594.5	587.2	573.1	553.3	533.7	516.2	502.8	496.0	495.7	502.5
7.5°	595.5	596.5	588.7	573.7	552.6	531.7	512.9	498.7	491.5	491.2	498.3
8°	597.2	598.3	590.2	574.1	551.9	529.6	509.6	494.6	486.9	486.6	494.1
8.5°	598.7	600.1	591.5	574.5	551.1	527.4	506.3	490.4	482.3	482.0	489.9
9°	600.3	601.7	592.7	574.9	550.2	525.2	503.0	486.3	477.6	477.3	485.7
9.5°	601.6	603.1	593.7	575.1	549.1	522.9	499.4	482.0	472.9	472.7	481.5
10°	602.8	604.5	594.7	575.1	548.0	520.5	496.0	477.7	468.3	467.9	477.1
10.5°	603.8	605.6	595.4	575.0	546.8	517.9	492.3	473.4	463.5	463.1	472.7
11°	604.7	606.6	596.1	574.9	545.5	515.3	488.9	468.9	458.7	458.4	468.3
11.5°	605.4	607.4	596.5	574.4	544.0	512.8	485.0	464.5	454.0	453.7	463.9
12°	605.9	608.1	596.9	574.0	542.5	510.0	481.3	460.0	449.1	448.8	459.4
12.5°	606.3	608.6	597.1	573.5	540.9	507.3	477.4	455.6	444.3	444.0	454.8
13°	606.5	609.0	597.2	572.8	539.1	504.4	473.7	451.0	439.5	439.1	450.4
13.5°	606.6	609.3	597.1	572.0	537.3	501.5	469.8	446.7	434.6	434.3	445.8
14°	606.4	609.4	596.9	571.1	535.5	498.4	465.8	442.0	429.7	429.3	441.2
14.5°	606.2	609.3	596.5	570.1	533.3	495.3	461.9	437.4	424.9	424.4	436.7
15°	605.8	608.9	596.0	568.8	531.4	492.3	457.8	432.7	419.9	419.6	432.0
15.5°	605.2	608.5	595.4	567.6	529.1	489.0	453.8	428.1	415.0	414.7	427.4
16°	604.6	607.9	594.6	566.2	526.8	485.7	449.7	423.5	410.1	409.7	422.8
16.5°	603.6	607.2	593.6	564.6	524.4	482.4	445.5	418.9	405.3	404.8	418.2
17°	602.7	606.4	592.5	563.0	522.0	479.1	441.4	414.2	400.3	399.9	413.5
17.5°	601.6	605.5	591.4	561.3	519.3	475.5	437.2	409.5	395.4	395.1	408.9
18°	600.5	604.4	590.1	559.4	516.8	472.1	433.0	404.8	390.6	390.1	404.2
18.5°	599.1	603.1	588.6	557.5	514.1	468.5	428.7	400.0	385.8	385.3	399.5
19°	598.0	601.8	587.1	555.6	511.5	465.0	424.6	395.3	381.0	380.4	394.9
19.5°	597.1	600.6	585.6	553.4	508.7	461.5	420.1	390.7	376.4	375.7	390.2
20°	596.1	599.6	583.9	551.3	506.0	457.9	415.8	386.0	371.6	370.9	385.6
20.5°	595.0	598.4	582.4	549.2	503.1	454.2	411.5	381.3	367.1	366.3	380.9
21°	593.6	597.2	581.0	547.2	500.2	450.5	407.3	376.8	362.4	361.6	376.3



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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°	588.0	592.4	575.7	540.5	491.4	439.4	394.1	363.3	349.0	348.0	362.5
23°	584.9	590.1	573.5	538.0	488.2	435.6	389.8	358.9	344.4	343.5	358.0
23.5°	581.3	587.3	571.2	535.4	484.9	431.8	385.3	354.4	340.1	339.2	353.5
24°	577.5	583.9	568.1	532.4	481.6	427.9	380.9	350.0	335.7	334.6	348.9
24.5°	573.3	580.1	564.7	529.3	478.1	423.8	376.4	345.7	331.3	330.1	344.4
25°	568.5	576.2	561.2	525.9	474.6	419.7	372.1	341.2	326.9	325.8	339.9
25.5°	563.6	572.1	557.3	522.2	470.7	415.6	367.8	337.0	322.7	321.5	335.4
26°	558.7	567.5	553.2	518.3	467.0	411.4	363.4	332.6	318.5	317.2	330.9
26.5°	553.3	562.4	548.9	514.1	462.8	407.2	358.8	328.5	314.2	312.8	326.4
27°	547.6	557.5	544.4	509.7	458.7	403.0	354.4	324.1	309.9	308.7	321.9
27.5°	541.6	552.2	539.5	505.2	454.3	398.6	350.0	319.9	305.8	304.5	317.6
28°	535.9	546.5	534.4	500.4	450.0	394.2	345.6	315.6	301.5	300.3	313.1
28.5°	529.4	540.7	529.2	495.6	445.4	389.8	341.1	311.5	297.5	296.1	308.8
29°	523.0	534.7	523.8	490.5	440.8	385.2	336.7	307.3	293.3	291.9	304.4
29.5°	516.5	528.5	518.1	485.4	436.0	380.8	332.4	303.1	289.2	287.8	300.0
30°	509.9	522.2	512.3	480.1	431.4	376.1	327.9	299.1	285.1	283.8	295.7
30.5°	502.9	515.7	506.3	474.6	426.4	371.4	323.6	295.0	281.1	279.7	291.3
31°	496.0	508.9	500.0	469.1	421.4	366.8	319.2	290.8	277.0	275.6	286.9
31.5°	488.9	502.0	493.7	463.3	416.3	362.0	314.8	286.6	273.1	271.4	282.5
32°	481.8	495.1	487.3	457.5	411.3	357.3	310.4	282.5	269.1	267.4	278.3
32.5°	474.5	488.1	480.5	451.7	406.0	352.6	306.1	278.5	265.2	263.4	274.0
33°	467.4	480.9	473.9	445.7	400.7	347.7	301.6	274.5	261.2	259.5	269.7
33.5°	460.1	473.6	467.1	439.5	395.4	343.0	297.3	270.5	257.3	255.5	265.3
34°	452.8	466.5	460.1	433.3	390.0	338.1	292.8	266.5	253.4	251.5	261.1
34.5°	445.1	458.8	452.8	427.1	384.5	333.2	288.5	262.4	249.6	247.5	256.8
35°	437.8	451.5	445.7	420.6	379.0	328.3	284.2	258.4	245.7	243.6	252.5
35.5°	430.4	443.9	438.6	414.2	373.5	323.5	279.9	254.5	242.0	239.8	248.3
36°	423.1	436.7	431.3	407.7	367.9	318.6	275.5	250.6	238.0	235.8	244.3
36.5°	415.5	429.1	424.0	401.1	362.2	313.5	271.2	246.6	234.4	231.9	240.0
37°	407.9	421.3	416.9	394.5	356.5	308.6	266.8	242.6	230.4	228.0	235.8
37.5°	400.6	413.8	409.5	387.9	350.8	303.8	262.5	238.7	226.7	224.1	231.7
38°	393.2	406.2	402.2	381.1	345.1	298.7	258.1	234.9	222.8	220.4	227.5
38.5°	385.7	398.6	394.6	374.4	339.4	293.8	254.0	231.0	219.0	216.5	223.3
39°	378.2	391.2	387.5	367.7	333.7	288.8	249.7	227.0	215.4	212.7	219.3
39.5°	371.0	383.7	380.0	360.9	327.8	283.9	245.5	223.1	211.7	208.8	215.2
40°	363.7	376.0	372.8	354.2	322.0	278.8	241.2	219.2	207.8	205.1	211.2
40.5°	356.2	368.5	365.3	347.4	316.2	273.9	236.9	215.3	204.0	201.2	207.0
41°	349.0	361.2	358.3	340.6	310.4	268.8	232.7	211.5	200.4	197.3	203.1
41.5°	341.9	353.9	350.9	334.0	304.8	264.0	228.5	207.6	196.7	193.5	199.0
42°	334.9	346.4	343.9	327.3	298.9	258.9	224.2	203.7	192.9	189.8	195.1
42.5°	327.7	339.1	336.7	320.6	293.1	254.2	220.1	200.0	189.1	186.1	191.2
43°	320.9	332.1	329.6	314.2	287.4	249.3	216.0	196.2	185.5	182.3	187.2
43.5°	314.2	325.0	322.5	307.4	281.6	244.4	211.7	192.3	181.8	178.5	183.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	294.1	304.1	302.0	288.1	264.5	229.8	199.4	180.9	170.7	167.4	171.6
45.5°	287.6	297.3	295.3	281.6	258.8	225.0	195.3	177.0	167.1	163.7	167.7
46°	281.1	290.6	288.7	275.4	253.2	220.2	191.2	173.3	163.4	160.0	163.8
46.5°	274.6	284.1	282.2	269.2	247.7	215.5	187.1	169.5	159.7	156.3	160.0
47°	268.5	277.6	275.6	263.0	242.0	210.7	183.0	165.8	156.1	152.7	156.5
47.5°	262.4	271.1	269.2	256.8	236.5	206.0	179.0	162.1	152.3	149.0	152.5
48°	256.2	264.7	262.9	250.8	231.1	201.4	174.9	158.4	148.8	145.4	148.8
48.5°	250.3	258.7	256.8	245.0	225.8	196.8	171.1	154.6	145.1	141.8	145.1
49°	244.7	252.6	250.8	239.1	220.4	192.1	167.1	151.1	141.5	138.3	141.7
49.5°	238.8	246.5	244.8	233.3	215.1	187.7	163.1	147.4	137.9	134.7	137.9
50°	233.0	240.6	238.7	227.7	209.9	183.1	159.2	143.7	134.3	131.3	134.4
50.5°	227.7	235.0	232.9	221.9	204.6	178.6	155.3	140.0	130.6	127.8	130.9
51°	222.2	229.3	227.1	216.5	199.6	174.2	151.5	136.5	127.2	124.2	127.4
51.5°	216.7	223.5	221.6	211.0	194.6	169.8	147.7	132.9	123.8	121.0	123.9
52°	211.6	218.2	216.2	205.7	189.5	165.6	143.9	129.4	120.2	117.7	120.5
52.5°	206.6	213.0	210.7	200.5	184.6	161.2	140.1	125.9	117.1	114.3	117.1
53°	201.3	207.5	205.4	195.2	179.8	157.0	136.5	122.4	115.3	111.1	113.8
53.5°	196.2	202.4	200.2	190.1	175.0	152.8	132.7	119.0	113.5	108.0	110.5
54°	191.6	197.4	195.0	185.1	170.3	148.6	129.1	115.6	111.5	106.2	107.4
54.5°	186.8	192.5	190.0	180.2	165.7	144.5	125.5	112.4	109.2	104.2	104.2
55°	181.9	187.6	185.1	175.3	161.2	140.5	122.1	109.2	107.1	102.2	101.2
55.5°	177.6	182.8	180.3	170.6	156.7	136.6	118.6	105.9	104.7	100.0	98.2
56°	173.0	178.1	175.5	165.8	152.2	132.7	115.1	103.6	102.5	97.9	95.2
56.5°	168.4	173.5	170.9	161.3	147.8	128.8	111.7	101.8	100.2	95.6	92.4
57°	164.0	168.9	166.3	156.8	143.6	125.0	108.4	99.7	97.9	93.5	89.6
57.5°	159.7	164.6	161.8	152.4	139.4	121.3	105.1	97.7	95.6	91.4	87.2
58°	155.1	160.2	157.4	148.0	135.3	117.7	102.0	95.5	93.5	89.2	84.7
58.5°	151.0	155.9	153.1	143.8	131.3	114.1	98.9	93.4	91.2	87.1	82.3
59°	146.6	151.7	148.8	139.6	127.3	110.5	95.8	91.1	89.0	85.0	79.8
59.5°	142.3	147.4	144.7	135.5	123.4	107.1	92.8	89.0	86.8	83.0	77.4
60°	138.3	143.2	140.7	131.5	119.6	103.7	89.8	87.0	84.5	80.8	75.5
60.5°	133.8	139.1	136.7	127.6	115.8	100.4	87.2	84.8	82.3	78.8	73.7
61°	129.9	134.7	132.6	123.7	112.3	97.2	84.5	82.7	80.0	76.7	71.9
61.5°	125.9	131.0	128.9	120.0	108.6	93.9	81.9	80.6	77.8	74.6	70.0
62°	122.0	127.0	125.1	116.3	105.1	90.9	79.2	78.5	75.4	72.6	68.2
62.5°	118.0	123.0	121.4	112.7	101.7	88.0	76.6	76.2	73.1	70.4	66.3
63°	114.0	119.2	117.7	109.0	98.3	85.1	74.0	74.1	70.7	68.3	64.5
63.5°	110.2	115.3	114.1	105.5	94.9	82.2	71.8	71.9	68.4	66.2	62.7
64°	106.4	111.7	110.6	102.1	91.7	79.3	69.6	69.7	66.0	64.1	61.0
64.5°	102.8	107.9	107.2	98.8	88.7	76.3	67.8	67.6	63.7	62.0	59.3
65°	99.1	104.4	103.8	95.5	85.6	73.8	66.0	65.5	61.4	59.9	57.6
65.5°	95.6	100.7	100.4	92.4	82.6	71.1	64.3	63.3	59.2	57.8	55.8
66°	92.0	97.4	97.2	89.2	79.6	68.4	62.5	61.2	57.0	55.7	54.2



TEST NUMBER: P775676

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	81.9	87.2	87.6	80.1	71.0	61.2	57.3	55.0	50.4	49.7	49.2
68°	78.5	83.9	84.5	77.3	68.2	58.9	55.5	53.0	48.4	47.7	47.6
68.5°	75.2	80.7	81.6	74.3	65.6	56.6	53.9	51.0	46.4	45.8	45.9
69°	72.2	77.6	78.6	71.6	63.1	54.5	52.2	49.0	44.5	43.9	44.3
69.5°	69.0	74.4	75.5	68.8	60.5	52.4	50.4	47.1	42.8	42.2	42.7
70°	65.9	71.4	72.8	66.2	58.1	50.3	48.8	45.1	40.9	40.4	41.0
70.5°	62.9	68.5	70.0	63.5	55.6	48.4	47.2	43.4	39.2	38.7	39.4
71°	59.9	65.5	67.3	61.0	53.4	46.4	45.5	41.5	37.6	37.1	37.9
71.5°	57.1	62.7	64.4	58.5	51.0	44.6	43.9	39.8	35.9	35.4	36.2
72°	54.3	59.8	61.9	56.0	48.9	42.8	42.3	38.2	34.3	33.8	34.7
72.5°	51.4	57.2	59.2	53.7	46.6	41.0	40.6	36.5	32.7	32.3	33.2
73°	48.7	54.5	56.6	51.2	44.6	39.4	39.1	34.9	31.1	30.7	31.6
73.5°	46.0	51.7	54.1	49.0	42.5	37.7	37.5	33.4	29.6	29.2	30.1
74°	43.4	49.3	51.6	46.8	40.5	36.0	35.9	31.8	28.1	27.7	28.7
74.5°	40.8	46.7	49.3	44.6	38.6	34.5	34.5	30.3	26.6	26.2	27.4
75°	38.4	44.3	46.8	42.5	36.7	33.0	32.9	28.9	25.1	24.7	25.9
75.5°	36.0	41.8	44.5	40.4	34.9	31.4	31.4	27.5	23.7	23.3	24.6
76°	33.7	39.6	42.3	38.4	33.2	30.0	29.9	25.9	22.4	21.8	23.3
76.5°	31.4	37.3	40.0	36.4	31.4	28.6	28.6	24.5	20.9	20.5	21.9
77°	29.1	35.1	37.9	34.6	29.8	27.3	27.2	23.2	19.6	19.1	20.6
77.5°	26.8	33.1	35.8	32.7	28.1	25.9	25.8	21.8	18.3	17.8	19.4
78°	24.7	30.9	33.9	30.8	26.5	24.6	24.4	20.4	16.9	16.4	18.1
78.5°	22.5	28.8	31.8	29.0	24.9	23.4	23.2	19.1	15.6	15.1	16.8
79°	20.4	26.7	29.8	27.3	23.5	22.3	21.8	17.8	14.4	13.9	15.6
79.5°	18.4	24.8	27.9	25.5	21.9	21.0	20.5	16.5	13.2	12.7	14.4
80°	16.4	22.9	25.9	23.9	20.5	19.9	19.3	15.2	11.9	11.4	13.3
80.5°	14.5	20.9	24.2	22.3	19.2	18.8	18.1	14.0	10.7	10.3	12.1
81°	12.7	19.2	22.5	20.7	17.9	17.7	16.8	12.8	9.6	9.3	11.1
81.5°	10.8	17.5	20.6	19.2	16.6	16.5	15.7	11.6	8.5	8.3	10.0
82°	9.0	15.8	19.0	17.8	15.4	15.4	14.5	10.4	7.3	7.2	9.1
82.5°	7.3	14.2	17.5	16.3	14.2	14.3	13.4	9.5	6.2	6.2	8.2
83°	5.7	12.7	15.9	15.0	13.1	13.3	12.2	8.5	5.1	5.2	7.2
83.5°	4.2	11.2	14.5	13.7	11.9	12.2	11.2	7.5	4.1	4.5	6.3
84°	3.7	9.9	13.1	12.4	10.9	11.1	10.2	6.5	3.3	3.9	5.4
84.5°	3.1	8.8	11.7	11.1	9.9	10.2	9.3	5.5	2.7	3.4	4.6
85°	2.4	7.8	10.4	9.9	9.0	9.2	8.3	4.9	2.3	2.9	3.8
85.5°	1.8	6.7	9.2	8.8	8.0	8.3	7.3	4.3	1.9	2.3	3.0
86°	1.3	5.8	8.0	7.7	7.0	7.2	6.4	3.7	1.6	1.8	2.2
86.5°	1.0	4.9	6.7	6.5	6.0	6.2	5.4	3.1	1.3	1.4	1.4
87°	0.7	4.0	5.6	5.5	5.1	5.3	4.6	2.6	1.0	0.9	0.7
87.5°	0.5	3.1	4.5	4.5	4.3	4.4	3.7	1.9	0.6	0.5	0.2
88°	0.2	2.2	3.5	3.6	3.5	3.6	2.9	1.4	0.3	0.2	0.1
88.5°	0.1	1.4	2.7	2.8	2.7	2.7	2.0	0.8	0.1	0.1	0.0



TEST NUMBER: P775676

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3000K

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: P775676

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	552.9	552.9	552.9	552.9	552.9	552.9
0.5°	551.1	550.7	552.5	554.4	556.1	557.2
1°	548.8	549.7	553.0	556.3	558.9	560.8
1.5°	546.5	548.7	553.3	557.9	561.7	564.1
2°	544.0	547.4	553.5	559.5	564.4	567.4
2.5°	541.5	546.3	553.7	561.1	566.9	570.6
3°	538.9	544.9	553.7	562.4	569.3	573.5
3.5°	536.2	543.5	553.7	563.7	571.7	576.5
4°	533.4	542.0	553.5	564.9	573.8	579.3
4.5°	530.7	540.3	553.2	565.9	576.0	582.0
5°	527.6	538.5	552.9	566.8	577.9	584.7
5.5°	524.6	536.8	552.4	567.6	579.9	587.0
6°	521.6	534.8	551.9	568.2	581.5	589.3
6.5°	518.5	532.8	551.1	568.8	583.1	591.5
7°	515.2	530.8	550.4	569.2	584.4	593.5
7.5°	512.0	528.5	549.4	569.5	585.8	595.5
8°	508.6	526.3	548.3	569.7	586.9	597.2
8.5°	505.1	523.8	547.2	569.7	587.9	598.7
9°	501.7	521.5	546.0	569.7	588.8	600.3
9.5°	498.2	518.9	544.6	569.5	589.6	601.6
10°	494.6	516.4	543.2	569.1	590.2	602.8
10.5°	491.0	513.6	541.7	568.7	590.7	603.8
11°	487.2	511.0	539.9	568.1	591.0	604.7
11.5°	483.4	508.0	538.1	567.4	591.1	605.4
12°	479.6	505.1	536.3	566.5	591.1	605.9
12.5°	475.7	502.1	534.2	565.5	590.9	606.3
13°	472.0	499.0	532.2	564.3	590.6	606.5
13.5°	468.1	495.9	530.0	563.1	590.1	606.6
14°	464.0	492.8	527.8	561.8	589.4	606.4
14.5°	459.9	489.5	525.5	560.4	588.7	606.2
15°	455.9	486.3	523.1	558.7	587.8	605.8
15.5°	452.0	483.0	520.7	557.0	586.8	605.2
16°	447.9	479.8	518.2	555.3	585.7	604.6
16.5°	443.8	476.5	515.7	553.5	584.4	603.6
17°	439.9	473.2	513.2	551.6	583.1	602.7
17.5°	435.7	469.9	510.8	549.6	581.7	601.6
18°	431.5	466.6	508.3	548.0	580.2	600.5
18.5°	427.4	463.2	505.7	546.3	578.9	599.1
19°	423.3	459.7	503.2	544.4	577.8	598.0
19.5°	419.2	456.4	500.3	542.4	576.6	597.1
20°	415.1	452.7	497.4	540.3	575.1	596.1
20.5°	410.9	449.0	494.4	538.0	573.4	595.0
21°	406.6	445.1	491.2	535.5	571.6	593.6

TEST NUMBER: P775676

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	393.7	433.2	479.9	525.3	563.5	588.0
23°	389.2	429.0	475.7	521.2	559.8	584.9
23.5°	384.8	424.6	471.3	516.9	555.9	581.3
24°	380.3	420.0	466.7	512.3	551.6	577.5
24.5°	375.9	415.4	461.7	507.3	547.1	573.3
25°	371.3	410.7	456.9	502.3	542.2	568.5
25.5°	366.7	405.9	451.9	497.3	536.9	563.6
26°	362.0	401.0	446.7	492.0	531.6	558.7
26.5°	357.3	396.2	441.3	486.4	526.1	553.3
27°	352.8	391.3	436.0	480.8	520.1	547.6
27.5°	348.0	386.2	430.6	474.9	513.9	541.6
28°	343.2	381.0	425.1	468.8	507.7	535.9
28.5°	338.4	376.1	419.5	462.8	501.5	529.4
29°	333.6	370.8	413.8	456.7	495.0	523.0
29.5°	328.8	365.7	408.2	450.1	488.3	516.5
30°	323.9	360.4	402.5	443.8	481.8	509.9
30.5°	319.0	355.2	396.4	437.2	474.7	502.9
31°	314.1	349.9	390.6	430.6	467.9	496.0
31.5°	309.3	344.6	384.6	424.1	460.8	488.9
32°	304.5	339.1	378.5	417.2	453.8	481.8
32.5°	299.5	333.9	372.6	410.5	446.6	474.5
33°	294.7	328.4	366.4	403.8	439.6	467.4
33.5°	289.9	323.2	360.4	397.0	432.5	460.1
34°	285.2	317.6	354.1	390.3	425.3	452.8
34.5°	280.3	312.3	348.0	383.4	418.1	445.1
35°	275.4	306.8	341.7	376.6	410.9	437.8
35.5°	270.6	301.6	335.7	369.9	403.7	430.4
36°	265.9	296.4	329.5	363.2	396.7	423.1
36.5°	261.1	290.9	323.4	356.5	389.5	415.5
37°	256.4	285.5	317.3	349.8	382.5	407.9
37.5°	251.6	280.3	311.1	343.2	375.1	400.6
38°	247.0	275.0	305.1	336.5	368.1	393.2
38.5°	242.3	269.7	299.1	330.1	361.1	385.7
39°	237.8	264.4	293.0	323.6	354.0	378.2
39.5°	233.1	259.2	287.2	317.1	347.2	371.0
40°	228.4	253.9	281.1	310.6	340.2	363.7
40.5°	223.9	248.7	275.5	304.4	333.5	356.2
41°	219.4	243.5	269.7	297.9	326.3	349.0
41.5°	215.0	238.3	264.0	291.9	319.9	341.9
42°	210.5	233.3	258.2	285.8	313.4	334.9
42.5°	206.1	228.3	252.7	279.8	306.7	327.7
43°	201.6	223.3	247.2	273.6	300.0	320.9
43.5°	197.3	218.4	241.7	267.8	293.8	314.2

TEST NUMBER: P775676

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	184.3	203.8	225.8	250.6	274.8	294.1
45.5°	180.0	199.1	220.7	245.0	269.0	287.6
46°	176.0	194.4	215.6	239.4	263.0	281.1
46.5°	171.8	189.7	210.5	234.0	257.1	274.6
47°	167.5	185.3	205.6	228.6	251.0	268.5
47.5°	163.5	180.7	200.7	223.3	245.4	262.4
48°	159.5	176.2	195.9	218.0	239.9	256.2
48.5°	155.6	171.8	191.1	213.0	234.4	250.3
49°	151.7	167.5	186.4	208.0	228.7	244.7
49.5°	147.7	163.3	181.8	203.1	223.5	238.8
50°	143.8	159.0	177.3	198.0	218.1	233.0
50.5°	140.0	154.9	172.7	193.3	212.9	227.7
51°	136.3	150.9	168.4	188.5	207.7	222.2
51.5°	132.7	146.9	164.0	183.9	202.9	216.7
52°	129.0	143.0	159.8	179.4	197.9	211.6
52.5°	125.4	139.1	155.6	174.7	193.0	206.6
53°	121.9	135.2	151.6	170.4	188.3	201.3
53.5°	118.5	131.5	147.4	166.0	183.6	196.2
54°	115.1	127.8	143.4	161.7	178.9	191.6
54.5°	111.7	124.0	139.3	157.5	174.5	186.8
55°	108.4	120.5	135.6	153.3	170.0	181.9
55.5°	105.2	117.0	131.9	149.2	165.7	177.6
56°	102.1	113.5	128.1	145.2	161.3	173.0
56.5°	98.9	110.1	124.4	141.3	157.2	168.4
57°	95.8	106.8	120.8	137.4	153.0	164.0
57.5°	93.0	103.4	117.2	133.5	148.9	159.7
58°	90.0	100.3	113.7	129.8	145.0	155.1
58.5°	87.3	97.1	110.2	126.2	141.1	151.0
59°	84.6	94.0	106.9	122.6	137.2	146.6
59.5°	81.9	90.9	103.6	118.9	133.3	142.3
60°	79.1	87.9	100.3	115.3	129.4	138.3
60.5°	76.3	84.9	97.1	112.0	125.6	133.8
61°	73.8	82.1	94.0	108.6	121.9	129.9
61.5°	71.2	79.2	90.8	105.2	118.1	125.9
62°	68.9	76.4	87.9	102.0	114.4	122.0
62.5°	66.5	73.8	84.8	98.7	110.6	118.0
63°	64.1	71.1	82.0	95.5	107.1	114.0
63.5°	61.9	68.5	79.0	92.5	103.5	110.2
64°	59.7	65.9	76.2	89.4	100.0	106.4
64.5°	57.6	63.5	73.5	86.4	96.7	102.8
65°	55.5	61.0	70.8	83.5	93.2	99.1
65.5°	53.5	58.6	68.1	80.4	89.9	95.6
66°	51.4	56.3	65.5	77.6	86.6	92.0



TEST NUMBER: P775676

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	45.9	49.7	58.0	69.3	77.2	81.9
68°	44.2	47.7	55.6	66.7	74.1	78.5
68.5°	42.6	45.5	53.3	63.9	71.1	75.2
69°	40.9	43.6	51.0	61.3	68.2	72.2
69.5°	39.3	41.6	48.8	58.8	65.3	69.0
70°	37.9	39.8	46.6	56.3	62.4	65.9
70.5°	36.4	38.0	44.5	53.8	59.6	62.9
71°	35.1	36.7	42.5	51.4	56.9	59.9
71.5°	33.7	35.0	40.4	49.1	54.2	57.1
72°	32.4	33.3	38.5	46.7	51.6	54.3
72.5°	31.0	31.4	36.3	44.5	49.1	51.4
73°	29.8	29.7	34.6	42.3	46.5	48.7
73.5°	28.5	28.2	32.9	40.1	44.1	46.0
74°	27.3	26.6	31.1	38.0	41.7	43.4
74.5°	26.0	25.2	29.4	36.0	39.4	40.8
75°	24.7	23.7	27.8	34.0	37.3	38.4
75.5°	23.6	22.4	26.1	32.0	35.1	36.0
76°	22.4	21.0	24.5	30.0	33.1	33.7
76.5°	21.1	19.7	22.9	28.1	30.9	31.4
77°	19.9	18.5	21.4	26.2	28.9	29.1
77.5°	18.8	17.2	19.9	24.5	26.7	26.8
78°	17.7	16.1	18.6	22.8	24.9	24.7
78.5°	16.5	15.0	17.1	21.0	23.0	22.5
79°	15.4	13.9	15.8	19.5	21.1	20.4
79.5°	14.3	12.8	14.6	17.9	19.4	18.4
80°	13.2	11.7	13.3	16.3	17.7	16.4
80.5°	12.1	10.7	12.1	14.9	16.1	14.5
81°	11.1	9.7	11.0	13.5	14.6	12.7
81.5°	10.1	8.8	9.8	12.1	13.1	10.8
82°	9.1	7.9	8.8	10.8	11.6	9.0
82.5°	8.2	6.9	7.8	9.6	10.4	7.3
83°	7.1	6.0	6.7	8.5	9.1	5.7
83.5°	6.2	5.1	5.7	7.3	8.0	4.2
84°	5.2	4.3	4.8	6.2	6.9	3.7
84.5°	4.3	3.5	3.9	5.2	6.0	3.1
85°	3.4	2.8	3.1	4.2	5.1	2.4
85.5°	2.6	2.0	2.2	3.4	4.2	1.8
86°	1.7	1.3	1.5	2.6	3.4	1.3
86.5°	0.9	0.5	0.7	1.7	2.7	1.0
87°	0.3	0.1	0.2	0.9	1.8	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: P775676

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-3000K

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°	592.1	595.8	579.3	545.0	497.4	446.9	402.9	372.2	358.0	357.0	371.6
22°	590.4	594.2	577.6	542.8	494.3	443.1	398.4	367.8	353.5	352.4	367.0



44°	307.2	317.8	315.8	300.9	275.8	239.4	207.6	188.4	178.0	174.8	179.2
44.5°	300.5	310.7	308.9	294.5	270.1	234.6	203.5	184.6	174.3	171.1	175.5



66.5°	88.6	93.9	93.9	86.1	76.6	65.9	60.7	59.2	54.7	53.7	52.5
67°	85.1	90.4	90.7	83.0	73.8	63.6	59.0	57.1	52.6	51.6	50.8



89°	0.0	0.6	1.8	1.9	1.8	1.8	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°	402.4	441.2	487.8	532.5	569.4	592.1
22°	398.1	437.4	484.0	529.2	566.7	590.4



44°	192.9	213.3	236.3	261.9	287.5	307.2
44.5°	188.6	208.5	231.0	256.3	281.3	300.5

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66.5°	49.6	54.1	63.0	74.8	83.4	88.6
67°	47.8	51.9	60.4	72.0	80.2	85.1

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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)