

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: P775675

Luminaire Tested: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-2700K

Issue Date: 2/7/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P775675  
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-2700K  
Description: 4 INCH ROUND MEDIUM LENSED WALLWASH KIT  
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 2700K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1018.0 lumens  
Efficiency: N/A  
Efficacy: 101.8 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

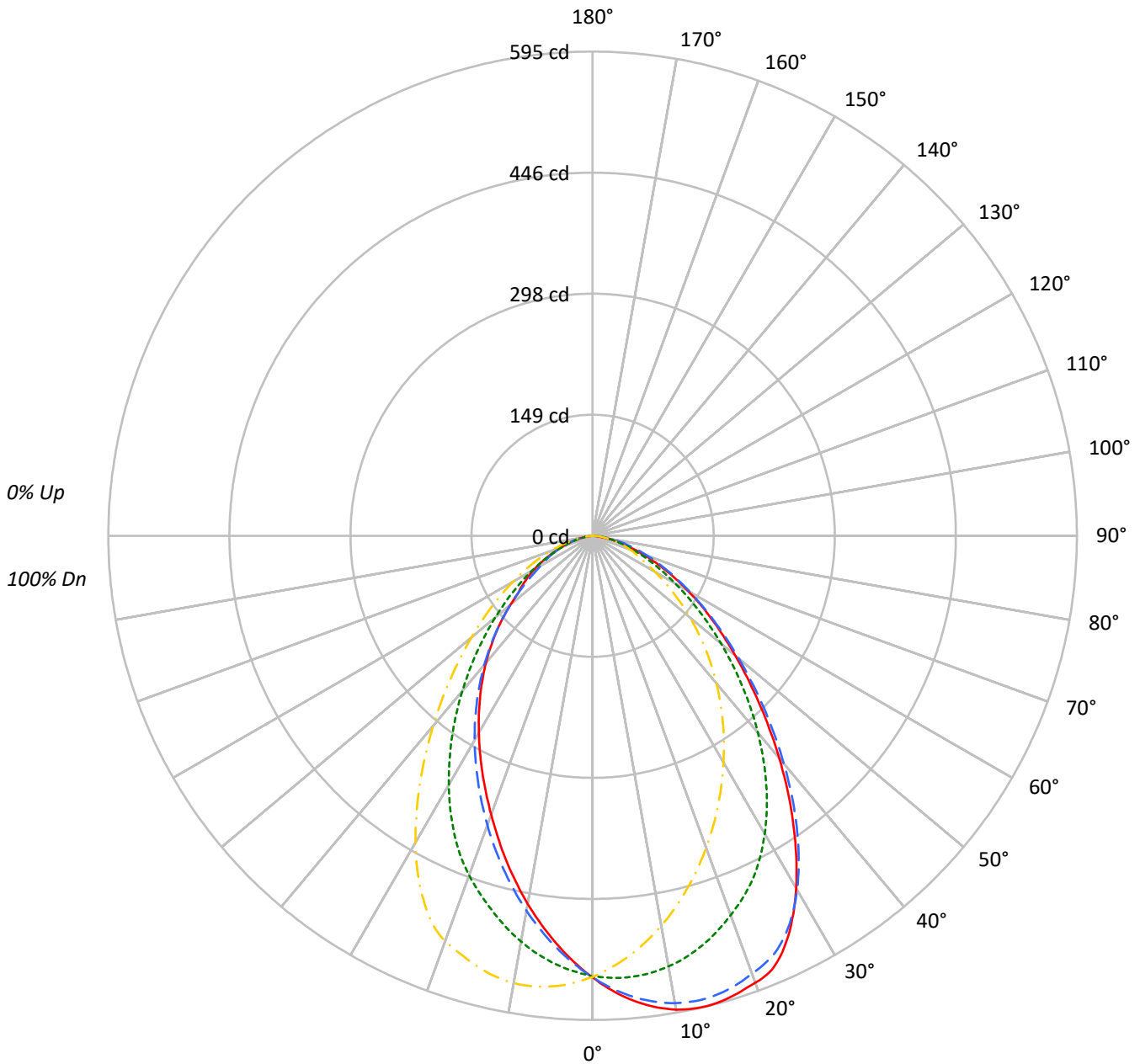
Input Watts (W): 10  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



TEST NUMBER: P775675

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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20										
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100								
1	111	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	55	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°	68236	68236	68236	68236
5°	72438	68724	63645	66715
10°	75550	68675	58695	64713
15°	77405	67894	53653	62135
20°	78293	66454	48816	59450
25°	77414	64639	44518	55933
30°	72674	61484	40631	51356
35°	65955	57106	37010	46229
40°	58584	51881	33481	40907
45°	51329	46168	29794	35578
50°	44737	40293	25785	30543
55°	39143	34689	23038	25935
60°	34130	29524	20866	21697
65°	28945	25014	17956	17837
70°	23807	20974	14755	14350
75°	18283	17505	11962	11281
80°	11668	14567	8479	8335
85°	3466	12707	3321	3899

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 22.5°

Vertical Angle: 45°

Luminance: 53073 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	50.9	5.0
10°-20°	141.0	13.8
20°-30°	199.7	19.6
30°-40°	208.7	20.5
40°-50°	175.7	17.3
50°-60°	124.7	12.3
60°-70°	75.7	7.4
70°-80°	34.7	3.4
80°-90°	7.0	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°	391.6	38.5
0°-40°	600.3	59.0
0°-60°	900.7	88.5
0°-90°	1018.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1018.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	542	542	542	542	542	
5°	573	544	504	528	573	55
15°	594	521	412	477	594	168
25°	558	466	321	403	558	254
35°	429	372	241	301	429	268
45°	288	259	167	200	288	223
55°	178	158	105	118	178	160
65°	97	84	60	60	97	97
75°	38	36	25	23	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°	542.2	542.2	542.2	542.2	542.2	542.2	542.2	542.2	542.2	542.2	542.2
0.5°	546.4	546.4	545.8	544.6	541.7	540.6	539.9	539.4	539.4	539.3	539.7
1°	549.9	549.8	548.6	546.5	542.3	539.9	537.9	536.3	535.7	535.5	536.5
1.5°	553.2	553.2	551.5	548.4	542.9	539.0	535.6	533.1	532.0	531.8	533.2
2°	556.4	556.4	554.3	550.1	543.4	538.1	533.3	529.8	528.1	527.9	529.8
2.5°	559.5	559.6	556.9	551.8	543.8	537.0	531.0	526.4	524.2	524.0	526.3
3°	562.5	562.7	559.5	553.3	544.0	535.9	528.6	523.0	520.3	520.0	522.9
3.5°	565.4	565.6	562.0	554.7	544.2	534.6	526.0	519.5	516.3	515.9	519.4
4°	568.2	568.5	564.3	556.1	544.2	533.3	523.4	515.9	512.1	511.8	515.7
4.5°	570.8	571.2	566.5	557.4	544.2	531.8	520.7	512.2	507.9	507.8	512.0
5°	573.4	573.8	568.6	558.5	544.0	530.3	517.9	508.5	503.8	503.5	508.3
5.5°	575.7	576.3	570.6	559.5	543.9	528.7	515.1	504.7	499.5	499.1	504.5
6°	578.0	578.7	572.5	560.6	543.5	527.0	512.1	500.9	495.2	494.8	500.6
6.5°	580.1	580.9	574.2	561.4	543.1	525.3	509.2	497.1	490.9	490.5	496.7
7°	582.1	583.0	575.9	562.1	542.6	523.4	506.2	493.1	486.4	486.2	492.8
7.5°	584.0	585.0	577.4	562.7	541.9	521.4	503.0	489.1	482.0	481.7	488.7
8°	585.7	586.8	578.8	563.1	541.2	519.4	499.8	485.1	477.5	477.2	484.6
8.5°	587.2	588.5	580.1	563.5	540.4	517.2	496.5	481.0	473.0	472.7	480.5
9°	588.7	590.1	581.3	563.8	539.5	515.1	493.3	476.9	468.4	468.1	476.4
9.5°	590.0	591.5	582.3	564.0	538.5	512.8	489.8	472.7	463.8	463.6	472.2
10°	591.2	592.8	583.2	564.0	537.4	510.4	486.4	468.5	459.3	458.9	467.9
10.5°	592.2	593.9	583.9	563.9	536.2	507.9	482.8	464.3	454.5	454.1	463.6
11°	593.0	594.9	584.6	563.8	534.9	505.4	479.5	459.9	449.8	449.5	459.3
11.5°	593.7	595.7	585.0	563.4	533.5	502.9	475.7	455.5	445.2	444.9	454.9
12°	594.2	596.4	585.4	563.0	532.0	500.2	472.0	451.1	440.4	440.1	450.5
12.5°	594.6	596.9	585.6	562.5	530.4	497.5	468.2	446.8	435.7	435.4	446.0
13°	594.8	597.3	585.7	561.8	528.7	494.7	464.6	442.3	431.0	430.6	441.7
13.5°	594.9	597.5	585.6	561.0	526.9	491.8	460.8	438.0	426.2	425.9	437.2
14°	594.7	597.6	585.4	560.0	525.1	488.8	456.8	433.4	421.4	421.0	432.7
14.5°	594.5	597.5	585.0	559.0	523.0	485.8	452.9	428.9	416.7	416.2	428.2
15°	594.1	597.2	584.5	557.8	521.1	482.8	448.9	424.3	411.8	411.5	423.6
15.5°	593.5	596.8	583.9	556.6	518.9	479.6	445.0	419.8	407.0	406.7	419.1
16°	592.9	596.2	583.1	555.2	516.6	476.4	441.0	415.3	402.2	401.8	414.6
16.5°	592.0	595.5	582.2	553.7	514.3	473.1	436.9	410.8	397.5	397.0	410.1
17°	591.1	594.7	581.1	552.1	511.9	469.9	432.9	406.2	392.6	392.2	405.5
17.5°	590.0	593.8	580.0	550.4	509.3	466.4	428.7	401.6	387.8	387.5	401.0
18°	588.9	592.7	578.7	548.6	506.8	463.0	424.6	397.0	383.1	382.6	396.4
18.5°	587.6	591.5	577.3	546.7	504.2	459.5	420.4	392.3	378.4	377.9	391.8
19°	586.5	590.2	575.8	544.8	501.6	456.0	416.4	387.7	373.7	373.1	387.3
19.5°	585.6	589.0	574.3	542.7	498.9	452.5	412.0	383.2	369.2	368.5	382.7
20°	584.6	588.0	572.7	540.6	496.2	449.0	407.8	378.6	364.5	363.8	378.2
20.5°	583.5	586.9	571.2	538.6	493.4	445.4	403.6	374.0	360.1	359.3	373.6
21°	582.2	585.7	569.8	536.6	490.6	441.8	399.4	369.6	355.4	354.6	369.1



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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°	576.7	581.0	564.6	530.0	481.9	430.9	386.5	356.2	342.2	341.2	355.5
23°	573.6	578.7	562.5	527.6	478.8	427.2	382.3	351.9	337.7	336.8	351.0
23.5°	570.1	576.0	560.1	525.0	475.6	423.4	377.9	347.5	333.5	332.6	346.6
24°	566.4	572.7	557.1	522.1	472.3	419.6	373.6	343.2	329.2	328.1	342.1
24.5°	562.3	568.9	553.8	519.1	468.9	415.6	369.2	339.0	324.9	323.7	337.7
25°	557.5	565.1	550.3	515.7	465.5	411.6	365.0	334.6	320.6	319.5	333.3
25.5°	552.7	561.1	546.5	512.1	461.7	407.6	360.7	330.5	316.5	315.3	328.9
26°	547.9	556.5	542.5	508.3	457.9	403.5	356.3	326.2	312.3	311.1	324.5
26.5°	542.6	551.5	538.3	504.2	453.8	399.3	351.8	322.1	308.1	306.8	320.1
27°	537.0	546.7	533.9	499.9	449.8	395.2	347.5	317.8	303.9	302.7	315.7
27.5°	531.1	541.5	529.1	495.5	445.5	390.9	343.2	313.7	299.9	298.6	311.5
28°	525.5	535.9	524.1	490.8	441.3	386.6	338.9	309.5	295.7	294.5	307.1
28.5°	519.2	530.2	519.0	486.1	436.8	382.3	334.5	305.5	291.8	290.4	302.8
29°	512.9	524.4	513.7	481.1	432.3	377.8	330.2	301.4	287.7	286.3	298.5
29.5°	506.5	518.3	508.1	476.1	427.6	373.5	326.0	297.3	283.6	282.3	294.2
30°	500.1	512.1	502.4	470.9	423.1	368.9	321.6	293.3	279.6	278.3	290.0
30.5°	493.2	505.7	496.5	465.5	418.2	364.3	317.3	289.3	275.7	274.3	285.7
31°	486.4	499.1	490.4	460.1	413.3	359.8	313.0	285.2	271.7	270.3	281.4
31.5°	479.5	492.3	484.2	454.3	408.3	355.0	308.7	281.1	267.9	266.2	277.1
32°	472.5	485.6	477.9	448.6	403.4	350.4	304.4	277.1	263.9	262.3	273.0
32.5°	465.4	478.7	471.3	442.9	398.2	345.8	300.2	273.2	260.1	258.4	268.7
33°	458.3	471.7	464.8	437.1	393.0	341.0	295.8	269.2	256.2	254.4	264.5
33.5°	451.2	464.5	458.0	431.0	387.8	336.3	291.6	265.3	252.3	250.5	260.2
34°	444.0	457.4	451.2	424.9	382.5	331.5	287.2	261.4	248.5	246.6	256.1
34.5°	436.5	449.9	444.0	418.8	377.1	326.7	283.0	257.4	244.7	242.7	251.8
35°	429.3	442.7	437.1	412.5	371.7	321.9	278.7	253.4	240.9	238.9	247.6
35.5°	422.1	435.3	430.1	406.2	366.3	317.2	274.5	249.5	237.3	235.1	243.5
36°	414.9	428.2	423.0	399.8	360.8	312.4	270.2	245.7	233.4	231.2	239.5
36.5°	407.5	420.8	415.8	393.4	355.2	307.4	266.0	241.8	229.8	227.4	235.3
37°	400.0	413.2	408.8	386.9	349.6	302.6	261.7	237.9	225.9	223.6	231.2
37.5°	392.9	405.8	401.6	380.4	344.0	297.9	257.5	234.1	222.3	219.8	227.2
38°	385.6	398.4	394.4	373.8	338.4	292.9	253.1	230.3	218.5	216.1	223.1
38.5°	378.3	390.9	387.0	367.2	332.8	288.1	249.1	226.5	214.8	212.3	219.0
39°	370.9	383.7	380.0	360.6	327.2	283.2	244.8	222.6	211.2	208.6	215.1
39.5°	363.9	376.3	372.7	353.9	321.5	278.4	240.7	218.8	207.6	204.8	211.0
40°	356.6	368.8	365.6	347.3	315.8	273.4	236.5	215.0	203.8	201.1	207.1
40.5°	349.3	361.4	358.3	340.7	310.1	268.6	232.3	211.1	200.1	197.3	203.0
41°	342.2	354.2	351.3	334.0	304.4	263.7	228.2	207.4	196.5	193.5	199.2
41.5°	335.3	347.0	344.1	327.5	298.9	258.9	224.1	203.6	192.9	189.8	195.2
42°	328.4	339.7	337.2	321.0	293.1	253.9	219.9	199.8	189.2	186.2	191.3
42.5°	321.4	332.5	330.2	314.4	287.5	249.2	215.8	196.1	185.5	182.5	187.5
43°	314.7	325.7	323.2	308.1	281.9	244.4	211.8	192.4	181.9	178.8	183.6
43.5°	308.1	318.7	316.3	301.5	276.2	239.6	207.6	188.6	178.3	175.1	179.6



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	288.4	298.2	296.2	282.6	259.4	225.3	195.6	177.4	167.4	164.2	168.3
45.5°	282.1	291.6	289.6	276.2	253.8	220.6	191.5	173.6	163.9	160.6	164.5
46°	275.7	285.0	283.1	270.1	248.3	215.9	187.5	170.0	160.3	157.0	160.7
46.5°	269.3	278.6	276.8	264.0	242.9	211.3	183.5	166.3	156.7	153.3	157.0
47°	263.4	272.3	270.3	258.0	237.3	206.6	179.5	162.6	153.1	149.7	153.5
47.5°	257.4	265.9	264.0	251.8	231.9	202.0	175.6	159.0	149.3	146.1	149.5
48°	251.2	259.6	257.9	245.9	226.6	197.5	171.6	155.4	145.9	142.6	145.9
48.5°	245.4	253.7	251.8	240.2	221.4	193.0	167.8	151.6	142.3	139.0	142.3
49°	239.9	247.7	245.9	234.5	216.1	188.4	163.9	148.1	138.7	135.6	138.9
49.5°	234.2	241.7	240.0	228.8	210.9	184.1	160.0	144.5	135.2	132.1	135.2
50°	228.5	235.9	234.1	223.3	205.8	179.6	156.2	140.9	131.7	128.7	131.8
50.5°	223.3	230.4	228.4	217.6	200.7	175.2	152.3	137.3	128.1	125.3	128.3
51°	217.9	224.9	222.7	212.3	195.8	170.9	148.5	133.8	124.7	121.8	124.9
51.5°	212.5	219.2	217.3	206.9	190.9	166.6	144.8	130.3	121.4	118.6	121.5
52°	207.5	214.0	212.0	201.7	185.9	162.4	141.1	126.9	117.9	115.4	118.2
52.5°	202.6	208.9	206.6	196.6	181.1	158.1	137.4	123.4	114.8	112.1	114.8
53°	197.4	203.5	201.4	191.4	176.4	154.0	133.8	120.0	113.1	108.9	111.6
53.5°	192.4	198.5	196.3	186.4	171.7	149.8	130.1	116.7	111.3	105.9	108.4
54°	187.9	193.6	191.2	181.5	167.0	145.7	126.6	113.4	109.3	104.1	105.3
54.5°	183.2	188.8	186.3	176.7	162.5	141.7	123.1	110.2	107.1	102.2	102.2
55°	178.4	184.0	181.5	171.9	158.1	137.8	119.7	107.1	105.0	100.2	99.2
55.5°	174.2	179.3	176.8	167.3	153.7	133.9	116.3	103.9	102.7	98.1	96.3
56°	169.7	174.7	172.1	162.6	149.2	130.1	112.9	101.6	100.5	96.0	93.4
56.5°	165.2	170.2	167.6	158.2	144.9	126.3	109.5	99.8	98.3	93.8	90.6
57°	160.9	165.7	163.1	153.8	140.8	122.6	106.3	97.8	96.0	91.7	87.9
57.5°	156.7	161.5	158.7	149.4	136.7	118.9	103.1	95.8	93.8	89.6	85.5
58°	152.1	157.2	154.4	145.1	132.7	115.4	100.0	93.7	91.7	87.5	83.1
58.5°	148.0	152.8	150.1	141.0	128.7	111.9	97.0	91.6	89.5	85.4	80.7
59°	143.7	148.7	145.9	136.9	124.8	108.4	94.0	89.4	87.3	83.4	78.3
59.5°	139.5	144.5	141.9	132.9	121.0	105.0	91.0	87.3	85.1	81.4	75.9
60°	135.6	140.4	137.9	128.9	117.3	101.7	88.1	85.3	82.9	79.3	74.1
60.5°	131.2	136.4	134.0	125.1	113.6	98.5	85.5	83.2	80.7	77.3	72.3
61°	127.4	132.1	130.0	121.3	110.1	95.3	82.9	81.1	78.5	75.2	70.5
61.5°	123.4	128.4	126.4	117.7	106.5	92.1	80.3	79.1	76.3	73.2	68.7
62°	119.6	124.5	122.7	114.0	103.1	89.2	77.7	77.0	74.0	71.2	66.9
62.5°	115.7	120.6	119.0	110.5	99.7	86.3	75.1	74.8	71.7	69.1	65.1
63°	111.8	116.9	115.4	106.9	96.4	83.5	72.6	72.7	69.4	67.0	63.3
63.5°	108.1	113.1	111.9	103.5	93.1	80.6	70.4	70.5	67.1	65.0	61.5
64°	104.3	109.5	108.5	100.1	89.9	77.8	68.3	68.4	64.8	62.9	59.9
64.5°	100.8	105.8	105.1	96.9	87.0	74.9	66.5	66.3	62.5	60.8	58.2
65°	97.2	102.4	101.8	93.7	84.0	72.4	64.8	64.3	60.3	58.8	56.5
65.5°	93.8	98.8	98.5	90.6	81.0	69.8	63.1	62.1	58.1	56.7	54.8
66°	90.2	95.5	95.3	87.5	78.1	67.1	61.3	60.1	55.9	54.7	53.2





TEST NUMBER: P775675

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-2700K

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	80.3	85.5	85.9	78.6	69.7	60.1	56.2	54.0	49.4	48.7	48.2
68°	77.0	82.3	82.9	75.8	66.9	57.8	54.5	52.0	47.4	46.7	46.6
68.5°	73.8	79.2	80.0	72.9	64.4	55.6	52.9	50.0	45.5	44.9	45.0
69°	70.8	76.1	77.1	70.2	61.9	53.5	51.2	48.0	43.6	43.0	43.4
69.5°	67.7	73.0	74.1	67.5	59.4	51.4	49.4	46.1	41.9	41.3	41.8
70°	64.7	70.1	71.4	65.0	57.0	49.3	47.8	44.2	40.1	39.6	40.2
70.5°	61.7	67.2	68.7	62.3	54.6	47.4	46.2	42.5	38.4	37.9	38.6
71°	58.8	64.3	66.0	59.9	52.4	45.5	44.6	40.7	36.8	36.3	37.1
71.5°	56.0	61.5	63.2	57.4	50.0	43.7	43.0	39.0	35.2	34.7	35.5
72°	53.3	58.7	60.7	55.0	47.9	41.9	41.4	37.4	33.6	33.1	34.0
72.5°	50.4	56.1	58.1	52.7	45.7	40.2	39.8	35.8	32.0	31.6	32.5
73°	47.7	53.5	55.6	50.2	43.7	38.6	38.3	34.2	30.5	30.1	31.0
73.5°	45.1	50.7	53.1	48.0	41.6	36.9	36.7	32.7	29.0	28.6	29.5
74°	42.5	48.3	50.6	45.9	39.7	35.3	35.2	31.2	27.5	27.1	28.1
74.5°	40.0	45.8	48.3	43.7	37.8	33.8	33.8	29.7	26.1	25.7	26.8
75°	37.6	43.4	45.9	41.6	36.0	32.3	32.2	28.3	24.6	24.2	25.4
75.5°	35.3	41.0	43.6	39.6	34.2	30.8	30.8	26.9	23.2	22.8	24.1
76°	33.0	38.8	41.4	37.6	32.5	29.4	29.3	25.4	21.9	21.4	22.8
76.5°	30.8	36.5	39.2	35.7	30.8	28.0	28.0	24.0	20.5	20.1	21.5
77°	28.5	34.4	37.1	33.9	29.2	26.7	26.6	22.7	19.2	18.7	20.2
77.5°	26.3	32.4	35.1	32.0	27.5	25.4	25.3	21.4	17.9	17.4	19.0
78°	24.2	30.3	33.2	30.2	26.0	24.1	23.9	20.0	16.6	16.1	17.7
78.5°	22.0	28.2	31.2	28.4	24.4	22.9	22.7	18.7	15.3	14.8	16.5
79°	20.0	26.2	29.2	26.7	23.0	21.8	21.4	17.4	14.1	13.6	15.3
79.5°	18.0	24.3	27.3	25.0	21.5	20.6	20.1	16.2	12.9	12.4	14.1
80°	16.1	22.4	25.4	23.4	20.1	19.5	18.9	14.9	11.7	11.2	13.0
80.5°	14.2	20.5	23.7	21.8	18.8	18.4	17.7	13.7	10.5	10.1	11.9
81°	12.4	18.8	22.0	20.3	17.5	17.3	16.5	12.5	9.4	9.1	10.9
81.5°	10.6	17.1	20.2	18.8	16.3	16.2	15.4	11.4	8.3	8.1	9.8
82°	8.8	15.5	18.6	17.4	15.1	15.1	14.2	10.2	7.2	7.1	8.9
82.5°	7.2	13.9	17.1	16.0	13.9	14.0	13.1	9.3	6.1	6.1	8.0
83°	5.6	12.4	15.6	14.7	12.8	13.0	12.0	8.3	5.0	5.1	7.1
83.5°	4.1	11.0	14.2	13.4	11.7	12.0	11.0	7.3	4.0	4.4	6.2
84°	3.6	9.7	12.8	12.1	10.7	10.9	10.0	6.4	3.2	3.8	5.3
84.5°	3.0	8.6	11.5	10.9	9.7	10.0	9.1	5.4	2.6	3.3	4.5
85°	2.4	7.6	10.2	9.7	8.8	9.0	8.1	4.8	2.3	2.8	3.7
85.5°	1.8	6.6	9.0	8.6	7.8	8.1	7.2	4.2	1.9	2.3	2.9
86°	1.3	5.7	7.8	7.5	6.9	7.1	6.3	3.6	1.6	1.8	2.2
86.5°	1.0	4.8	6.6	6.4	5.9	6.1	5.3	3.0	1.3	1.4	1.4
87°	0.7	3.9	5.5	5.4	5.0	5.2	4.5	2.5	1.0	0.9	0.7
87.5°	0.5	3.0	4.4	4.4	4.2	4.3	3.6	1.9	0.6	0.5	0.2
88°	0.2	2.2	3.4	3.5	3.4	3.5	2.8	1.4	0.3	0.2	0.1
88.5°	0.1	1.4	2.6	2.7	2.6	2.6	2.0	0.8	0.1	0.1	0.0



TEST NUMBER: P775675

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-2700K

**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: P775675

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-2700K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	542.2	542.2	542.2	542.2	542.2	542.2
0.5°	540.4	540.0	541.8	543.7	545.3	546.4
1°	538.2	539.1	542.3	545.5	548.1	549.9
1.5°	535.9	538.1	542.6	547.1	550.8	553.2
2°	533.5	536.8	542.8	548.7	553.5	556.4
2.5°	531.0	535.7	543.0	550.2	555.9	559.5
3°	528.5	534.4	543.0	551.5	558.3	562.5
3.5°	525.8	533.0	543.0	552.8	560.7	565.4
4°	523.1	531.5	542.8	553.9	562.8	568.2
4.5°	520.4	529.8	542.5	554.9	564.9	570.8
5°	517.4	528.1	542.2	555.8	566.8	573.4
5.5°	514.5	526.4	541.7	556.6	568.7	575.7
6°	511.5	524.5	541.2	557.2	570.3	578.0
6.5°	508.5	522.5	540.4	557.8	571.9	580.1
7°	505.3	520.5	539.7	558.2	573.2	582.1
7.5°	502.1	518.3	538.8	558.5	574.5	584.0
8°	498.8	516.1	537.7	558.7	575.6	585.7
8.5°	495.4	513.7	536.6	558.7	576.6	587.2
9°	492.0	511.4	535.4	558.7	577.5	588.7
9.5°	488.6	508.9	534.1	558.5	578.2	590.0
10°	485.1	506.4	532.7	558.1	578.8	591.2
10.5°	481.5	503.7	531.2	557.7	579.3	592.2
11°	477.8	501.1	529.5	557.1	579.6	593.0
11.5°	474.1	498.2	527.7	556.4	579.7	593.7
12°	470.4	495.4	525.9	555.5	579.7	594.2
12.5°	466.6	492.4	523.9	554.5	579.5	594.6
13°	462.9	489.4	521.9	553.4	579.2	594.8
13.5°	459.1	486.3	519.8	552.2	578.7	594.9
14°	455.0	483.3	517.6	550.9	578.1	594.7
14.5°	451.0	480.1	515.3	549.5	577.4	594.5
15°	447.1	476.9	513.0	547.9	576.5	594.1
15.5°	443.2	473.7	510.6	546.2	575.5	593.5
16°	439.2	470.6	508.2	544.5	574.4	592.9
16.5°	435.2	467.3	505.7	542.8	573.2	592.0
17°	431.4	464.1	503.3	540.9	571.9	591.1
17.5°	427.3	460.9	500.9	539.0	570.5	590.0
18°	423.2	457.5	498.5	537.4	569.0	588.9
18.5°	419.1	454.2	495.9	535.7	567.8	587.6
19°	415.1	450.8	493.5	533.9	566.7	586.5
19.5°	411.1	447.5	490.7	531.9	565.5	585.6
20°	407.1	443.9	487.8	529.8	564.0	584.6
20.5°	403.0	440.3	484.9	527.6	562.4	583.5
21°	398.8	436.5	481.7	525.1	560.6	582.2

TEST NUMBER: P775675

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-2700K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	386.1	424.8	470.7	515.2	552.6	576.7
23°	381.7	420.7	466.6	511.1	549.0	573.6
23.5°	377.4	416.4	462.2	506.9	545.1	570.1
24°	373.0	411.9	457.6	502.4	540.9	566.4
24.5°	368.7	407.4	452.7	497.5	536.5	562.3
25°	364.2	402.8	448.0	492.6	531.7	557.5
25.5°	359.7	398.1	443.1	487.7	526.5	552.7
26°	355.0	393.3	438.0	482.5	521.3	547.9
26.5°	350.4	388.6	432.8	477.0	515.9	542.6
27°	345.9	383.8	427.6	471.6	510.1	537.0
27.5°	341.2	378.8	422.3	465.8	504.0	531.1
28°	336.5	373.7	416.9	459.8	497.9	525.5
28.5°	331.8	368.9	411.4	453.8	491.8	519.2
29°	327.1	363.7	405.8	447.8	485.5	512.9
29.5°	322.4	358.7	400.3	441.4	478.9	506.5
30°	317.6	353.4	394.7	435.2	472.5	500.1
30.5°	312.8	348.3	388.8	428.7	465.6	493.2
31°	308.0	343.1	383.1	422.3	458.9	486.4
31.5°	303.3	337.9	377.2	415.9	451.9	479.5
32°	298.6	332.5	371.2	409.1	445.0	472.5
32.5°	293.7	327.4	365.4	402.6	437.9	465.4
33°	289.0	322.0	359.4	396.0	431.1	458.3
33.5°	284.3	316.9	353.4	389.4	424.1	451.2
34°	279.7	311.5	347.2	382.8	417.1	444.0
34.5°	274.9	306.3	341.2	376.0	410.0	436.5
35°	270.1	300.9	335.1	369.4	403.0	429.3
35.5°	265.4	295.8	329.2	362.8	395.9	422.1
36°	260.8	290.7	323.1	356.1	389.1	414.9
36.5°	256.1	285.3	317.1	349.6	382.0	407.5
37°	251.4	280.0	311.2	343.0	375.1	400.0
37.5°	246.7	274.9	305.1	336.5	367.9	392.9
38°	242.2	269.7	299.2	330.0	361.0	385.6
38.5°	237.6	264.5	293.3	323.7	354.1	378.3
39°	233.2	259.3	287.4	317.3	347.1	370.9
39.5°	228.6	254.1	281.7	311.0	340.5	363.9
40°	224.0	249.0	275.7	304.6	333.6	356.6
40.5°	219.6	243.9	270.2	298.5	327.0	349.3
41°	215.2	238.8	264.5	292.2	320.0	342.2
41.5°	210.8	233.7	258.9	286.3	313.7	335.3
42°	206.4	228.8	253.2	280.3	307.3	328.4
42.5°	202.1	223.9	247.8	274.4	300.8	321.4
43°	197.7	219.0	242.4	268.4	294.2	314.7
43.5°	193.5	214.2	237.0	262.7	288.1	308.1

TEST NUMBER: P775675

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-2700K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
45°	180.8	199.9	221.4	245.7	269.5	288.4
45.5°	176.6	195.3	216.4	240.2	263.8	282.1
46°	172.6	190.7	211.4	234.7	258.0	275.7
46.5°	168.5	186.1	206.4	229.5	252.1	269.3
47°	164.3	181.7	201.6	224.2	246.1	263.4
47.5°	160.4	177.2	196.8	219.0	240.6	257.4
48°	156.5	172.8	192.1	213.8	235.2	251.2
48.5°	152.5	168.5	187.4	208.9	229.8	245.4
49°	148.7	164.3	182.8	204.0	224.3	239.9
49.5°	144.8	160.2	178.3	199.2	219.2	234.2
50°	141.0	156.0	173.9	194.2	213.9	228.5
50.5°	137.3	151.9	169.4	189.6	208.8	223.3
51°	133.6	147.9	165.2	184.9	203.7	217.9
51.5°	130.1	144.0	160.9	180.4	199.0	212.5
52°	126.5	140.2	156.8	176.0	194.1	207.5
52.5°	123.0	136.4	152.5	171.4	189.3	202.6
53°	119.5	132.6	148.6	167.1	184.7	197.4
53.5°	116.2	128.9	144.5	162.8	180.1	192.4
54°	112.9	125.3	140.6	158.6	175.5	187.9
54.5°	109.5	121.6	136.6	154.5	171.2	183.2
55°	106.3	118.2	133.0	150.3	166.8	178.4
55.5°	103.2	114.7	129.3	146.3	162.5	174.2
56°	100.1	111.3	125.6	142.4	158.2	169.7
56.5°	97.0	108.0	122.0	138.5	154.2	165.2
57°	94.0	104.7	118.5	134.7	150.0	160.9
57.5°	91.2	101.4	114.9	130.9	146.0	156.7
58°	88.3	98.4	111.5	127.3	142.2	152.1
58.5°	85.6	95.2	108.1	123.7	138.3	148.0
59°	83.0	92.2	104.8	120.2	134.5	143.7
59.5°	80.3	89.2	101.6	116.6	130.7	139.5
60°	77.6	86.2	98.4	113.1	126.9	135.6
60.5°	74.9	83.3	95.2	109.8	123.2	131.2
61°	72.4	80.5	92.2	106.5	119.5	127.4
61.5°	69.9	77.7	89.1	103.2	115.8	123.4
62°	67.6	75.0	86.2	100.0	112.2	119.6
62.5°	65.3	72.4	83.2	96.8	108.5	115.7
63°	62.9	69.8	80.4	93.7	105.0	111.8
63.5°	60.7	67.2	77.5	90.7	101.5	108.1
64°	58.6	64.7	74.8	87.7	98.1	104.3
64.5°	56.5	62.3	72.1	84.7	94.8	100.8
65°	54.5	59.9	69.5	81.9	91.4	97.2
65.5°	52.5	57.5	66.8	78.9	88.2	93.8
66°	50.4	55.3	64.3	76.1	84.9	90.2



TEST NUMBER: P775675

CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-2700K

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	45.0	48.7	56.9	68.0	75.7	80.3
68°	43.3	46.7	54.6	65.4	72.7	77.0
68.5°	41.7	44.6	52.3	62.7	69.8	73.8
69°	40.1	42.7	50.0	60.2	66.9	70.8
69.5°	38.5	40.8	47.8	57.7	64.1	67.7
70°	37.1	39.0	45.7	55.3	61.2	64.7
70.5°	35.7	37.2	43.6	52.8	58.5	61.7
71°	34.4	36.0	41.6	50.4	55.8	58.8
71.5°	33.0	34.3	39.6	48.1	53.2	56.0
72°	31.7	32.6	37.7	45.8	50.6	53.3
72.5°	30.4	30.8	35.6	43.6	48.1	50.4
73°	29.2	29.1	33.9	41.4	45.6	47.7
73.5°	27.9	27.6	32.2	39.3	43.2	45.1
74°	26.7	26.1	30.5	37.2	40.9	42.5
74.5°	25.5	24.7	28.8	35.3	38.6	40.0
75°	24.2	23.2	27.2	33.3	36.5	37.6
75.5°	23.1	21.9	25.6	31.4	34.4	35.3
76°	21.9	20.6	24.0	29.4	32.4	33.0
76.5°	20.7	19.3	22.4	27.5	30.3	30.8
77°	19.5	18.1	21.0	25.7	28.3	28.5
77.5°	18.4	16.9	19.5	24.0	26.2	26.3
78°	17.3	15.8	18.2	22.3	24.4	24.2
78.5°	16.2	14.7	16.8	20.6	22.5	22.0
79°	15.1	13.6	15.5	19.1	20.7	20.0
79.5°	14.0	12.5	14.3	17.5	19.0	18.0
80°	12.9	11.5	13.0	16.0	17.3	16.1
80.5°	11.9	10.5	11.9	14.6	15.8	14.2
81°	10.9	9.5	10.8	13.2	14.3	12.4
81.5°	9.9	8.6	9.6	11.9	12.8	10.6
82°	8.9	7.7	8.6	10.6	11.4	8.8
82.5°	8.0	6.8	7.6	9.4	10.2	7.2
83°	7.0	5.9	6.6	8.3	8.9	5.6
83.5°	6.1	5.0	5.6	7.2	7.8	4.1
84°	5.1	4.2	4.7	6.1	6.8	3.6
84.5°	4.2	3.4	3.8	5.1	5.9	3.0
85°	3.3	2.7	3.0	4.1	5.0	2.4
85.5°	2.5	2.0	2.2	3.3	4.1	1.8
86°	1.7	1.3	1.5	2.5	3.3	1.3
86.5°	0.9	0.5	0.7	1.7	2.6	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: P775675  
CATALOG NUMBER: HCDJBL510CSD-HCD4TRH-HCD4TRLWW-1000lm-2700K

**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°	580.7	584.3	568.2	534.5	487.8	438.2	395.1	365.1	351.0	350.1	364.5
22°	579.0	582.8	566.5	532.3	484.8	434.5	390.7	360.7	346.6	345.6	360.0



44°	301.3	311.7	309.7	295.1	270.5	234.7	203.6	184.8	174.6	171.5	175.8
44.5°	294.7	304.7	302.9	288.8	264.9	230.0	199.6	181.1	171.0	167.8	172.1



66.5°	86.9	92.1	92.1	84.5	75.1	64.7	59.6	58.1	53.7	52.7	51.5
67°	83.5	88.7	89.0	81.4	72.4	62.4	57.9	56.0	51.6	50.6	49.8



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°	394.6	432.7	478.4	522.2	558.4	580.7
22°	390.4	428.9	474.7	519.0	555.7	579.0



44°	189.2	209.2	231.7	256.9	282.0	301.3
44.5°	185.0	204.5	226.5	251.3	275.9	294.7



66.5°	48.6	53.1	61.8	73.4	81.8	86.9
67°	46.8	50.8	59.3	70.6	78.7	83.5

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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)