

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: P775826

Luminaire Tested: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775826
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B048)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3000K
Description: 8 INCH ROUND SHALLOW-WIDE LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3000K CCT
Ballast/Driver: -

Summary

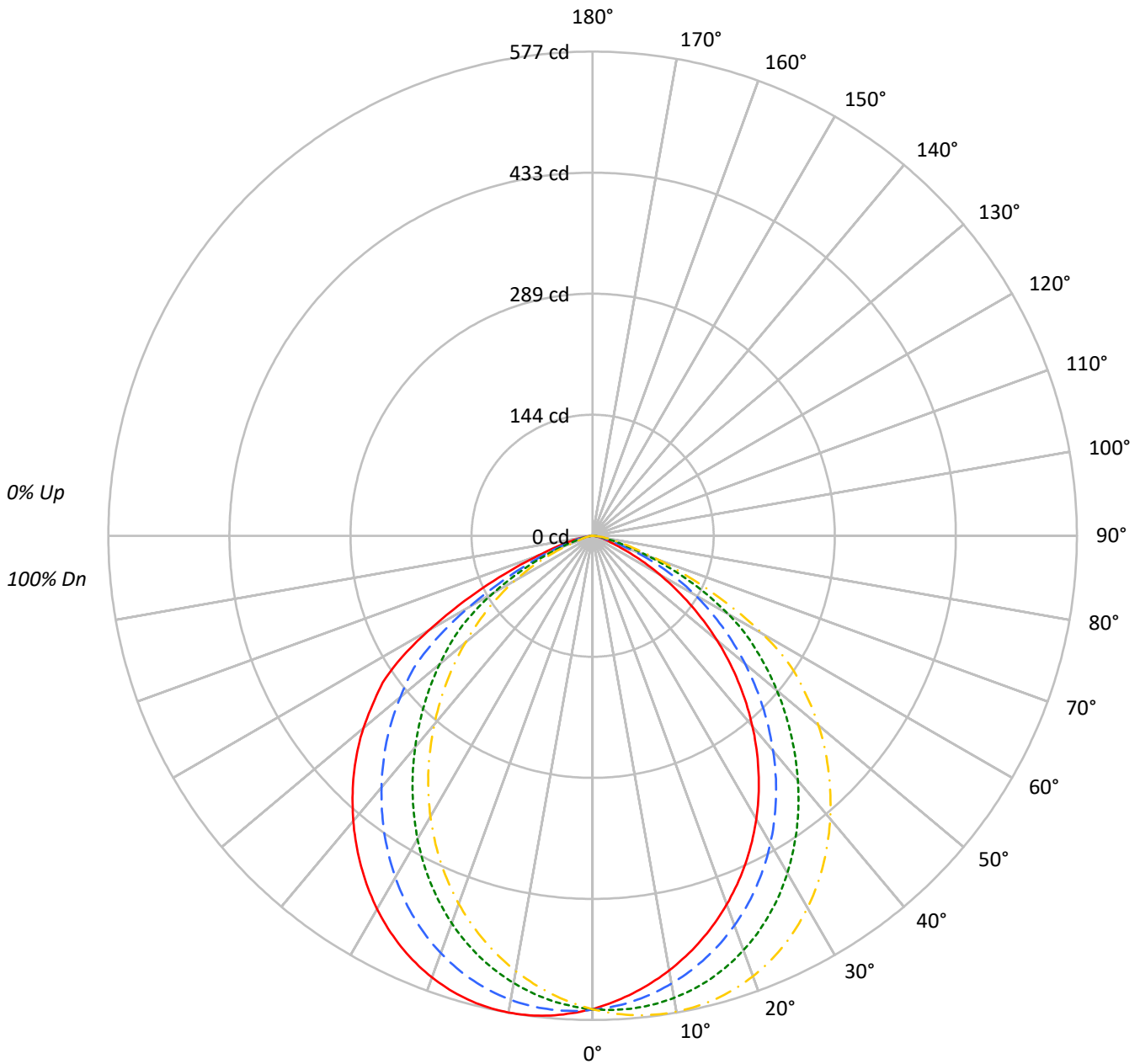
Lumens per Lamp: N/A
Luminaire Lumens: 1252.2 lumens
Efficiency: N/A
Efficacy: 125.2 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.17 / 1.27
Luminous Opening: Circular (Dia: 0.67' x H: 0')
CIE Type: Direct

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				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
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	105	101	98	100	98	95	97	94	92	93	91	90	88		
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	83	80	78	76		
3	94	85	77	72	92	83	76	71	80	74	70	77	73	69	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	59	54	65	58	53	63	57	52	61	56	52	50		
6	74	62	53	48	72	61	53	47	59	52	47	57	51	47	56	50	46	44		
7	69	56	48	42	67	55	48	42	54	47	42	53	46	42	51	46	41	39		
8	64	52	44	38	63	51	43	38	50	43	38	48	42	37	47	42	37	35		
9	60	47	40	34	59	47	39	34	46	39	34	45	38	34	44	38	34	32		
10	56	44	36	31	55	43	36	31	42	36	31	41	35	31	41	35	31	29		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	17231	17231	17231	17231
5°	16779	17322	17588	17046
10°	16300	17333	17888	16778
15°	15775	17258	18092	16423
20°	15189	17077	18194	15956
25°	14515	16783	18197	15381
30°	13745	16361	18106	14711
35°	12847	15818	17923	13939
40°	11801	15161	17679	13108
45°	10587	14421	17374	12228
50°	9162	13613	16923	11290
55°	7505	12684	16256	10252
60°	5624	11376	13763	8384
65°	3605	9160	9969	5996
70°	2044	6293	6168	3615
75°	1557	3680	3904	1958
80°	1090	2022	2233	932
85°	631	1121	560	385

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 157.5°

Vertical Angle: 45°

Luminance: 17616 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	53.3	4.3
10°-20°	150.7	12.0
20°-30°	221.8	17.7
30°-40°	254.3	20.3
40°-50°	244.8	19.5
50°-60°	195.2	15.6
60°-70°	101.3	8.1
70°-80°	27.3	2.2
80°-90°	3.5	0.3
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°	425.8	34.0
0°-40°	680.1	54.3
0°-60°	1120.0	89.4
0°-90°	1252.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1252.2	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	564	564	564	564	564	
5°	548	565	574	556	548	52
15°	499	546	572	520	499	140
25°	431	498	540	457	431	198
35°	345	424	481	374	345	215
45°	245	334	402	283	245	189
55°	141	238	305	193	141	126
65°	50	127	138	83	50	52
75°	13	31	33	17	13	14
85°	2	3	2	1	2	2
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°	564.4	564.4	564.4	564.4	564.4	564.4	564.4	564.4	564.4	564.4	564.4
0.5°	562.4	564.8	564.6	564.3	564.6	565.1	565.4	565.4	565.0	566.7	565.5
1°	560.9	563.8	564.0	564.2	565.0	566.0	566.6	566.6	566.2	567.6	566.0
1.5°	559.4	562.7	563.3	564.1	565.2	566.6	567.7	567.7	567.5	568.3	566.3
2°	557.9	561.5	562.6	563.8	565.4	567.4	568.7	569.1	568.6	569.0	566.6
2.5°	556.2	560.3	561.6	563.6	565.5	568.0	569.7	570.2	569.6	569.7	566.8
3°	554.6	559.0	560.8	563.2	565.6	568.6	570.6	571.2	570.5	570.3	566.9
3.5°	553.0	557.7	559.9	562.8	565.6	569.1	571.4	572.3	571.5	570.8	567.0
4°	551.1	556.2	558.9	562.3	565.5	569.5	572.1	573.2	572.4	571.2	567.0
4.5°	549.4	554.8	557.8	561.6	565.4	569.8	572.9	574.0	573.2	571.6	566.9
5°	547.5	553.3	556.6	561.0	565.2	570.0	573.5	574.8	573.9	571.9	566.8
5.5°	545.6	551.7	555.5	560.3	564.9	570.2	574.0	575.5	574.5	572.1	566.5
6°	543.6	550.1	554.2	559.5	564.6	570.3	574.5	576.1	575.1	572.3	566.3
6.5°	541.5	548.4	552.9	558.7	564.1	570.4	574.9	576.6	575.6	572.4	566.0
7°	539.5	546.6	551.5	557.8	563.6	570.4	575.3	577.2	576.0	572.4	565.6
7.5°	537.4	544.8	550.1	556.8	563.0	570.3	575.5	577.7	576.3	572.3	565.1
8°	535.1	543.0	548.6	555.7	562.5	570.2	575.7	578.0	576.6	572.1	564.5
8.5°	532.9	541.0	546.9	554.6	561.7	569.9	575.9	578.3	576.8	571.8	563.9
9°	530.5	539.1	545.3	553.4	560.9	569.7	575.9	578.5	577.0	571.6	563.2
9.5°	528.3	537.1	543.7	552.2	560.1	569.3	575.9	578.6	577.0	571.2	562.4
10°	525.8	535.0	541.8	550.8	559.1	568.8	575.8	578.7	577.0	570.7	561.5
10.5°	523.5	532.9	540.0	549.4	558.2	568.4	575.7	578.6	576.8	570.2	560.6
11°	520.9	530.6	538.2	547.9	557.0	567.8	575.4	578.5	576.6	569.6	559.6
11.5°	518.4	528.5	536.2	546.4	555.9	567.1	575.1	578.3	576.4	569.0	558.5
12°	515.7	526.1	534.3	544.8	554.7	566.4	574.8	578.1	576.0	568.2	557.4
12.5°	513.2	523.8	532.2	543.1	553.5	565.6	574.3	577.7	575.6	567.4	556.1
13°	510.4	521.3	530.1	541.3	552.2	564.8	573.8	577.2	575.1	566.4	554.8
13.5°	507.7	518.9	527.9	539.6	550.7	563.9	573.2	576.7	574.6	565.5	553.5
14°	504.9	516.4	525.6	537.7	549.2	562.9	572.5	576.2	574.0	564.4	551.9
14.5°	502.0	513.9	523.4	535.8	547.7	561.7	571.7	575.6	573.2	563.3	550.5
15°	499.1	511.3	521.0	533.8	546.0	560.5	570.9	574.8	572.4	562.0	548.9
15.5°	496.1	508.6	518.6	531.7	544.3	559.4	570.0	574.0	571.4	560.8	547.3
16°	493.2	505.8	516.0	529.6	542.5	558.1	569.0	573.2	570.5	559.4	545.6
16.5°	490.1	503.1	513.5	527.4	540.6	556.6	568.0	572.1	569.5	558.0	543.8
17°	487.0	500.2	510.9	525.0	538.7	555.2	566.8	571.1	568.4	556.4	541.8
17.5°	483.8	497.4	508.3	522.8	536.7	553.7	565.6	570.0	567.1	554.8	539.9
18°	480.7	494.4	505.6	520.3	534.6	552.0	564.4	568.8	565.8	553.2	537.9
18.5°	477.5	491.4	502.8	517.9	532.5	550.3	563.1	567.6	564.4	551.4	535.8
19°	474.0	488.4	499.9	515.3	530.2	548.7	561.6	566.2	563.1	549.7	533.7
19.5°	470.7	485.2	497.1	512.7	528.0	546.8	560.1	564.8	561.5	547.8	531.4
20°	467.5	482.2	494.1	510.1	525.6	544.9	558.6	563.3	560.0	545.8	529.1
20.5°	464.0	478.9	491.1	507.4	523.1	543.0	556.9	561.7	558.4	543.8	526.8
21°	460.3	475.7	488.1	504.6	520.6	540.9	555.2	560.1	556.6	541.7	524.4



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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°	449.8	465.6	478.5	495.7	512.8	534.4	549.6	554.7	550.9	535.1	516.7
23°	446.1	462.2	475.2	492.7	510.0	532.1	547.6	552.9	548.9	532.7	514.0
23.5°	442.4	458.7	471.9	489.6	507.1	529.7	545.5	550.8	546.8	530.3	511.3
24°	438.6	455.1	468.4	486.4	504.2	527.2	543.4	548.8	544.7	527.8	508.5
24.5°	434.8	451.6	464.9	483.1	501.2	524.6	541.1	546.6	542.5	525.2	505.6
25°	430.9	447.9	461.5	479.8	498.2	522.1	538.8	544.4	540.2	522.6	502.7
25.5°	427.1	444.1	457.9	476.4	495.0	519.3	536.4	542.2	537.8	519.9	499.7
26°	423.1	440.4	454.2	473.0	491.9	516.5	534.0	539.8	535.3	517.2	496.7
26.5°	419.1	436.7	450.5	469.4	488.6	513.8	531.5	537.4	532.9	514.3	493.6
27°	415.0	432.9	446.9	465.9	485.3	510.9	528.9	534.8	530.3	511.4	490.3
27.5°	411.0	429.0	443.1	462.4	482.0	508.0	526.2	532.4	527.7	508.6	487.2
28°	406.9	425.0	439.3	458.7	478.4	504.8	523.6	529.7	525.0	505.5	483.8
28.5°	402.6	420.9	435.4	454.9	474.9	501.9	520.8	527.0	522.2	502.5	480.5
29°	398.4	417.0	431.5	451.0	471.3	498.6	517.9	524.2	519.4	499.3	477.1
29.5°	394.2	412.9	427.6	447.3	467.8	495.4	515.0	521.4	516.4	496.1	473.6
30°	389.9	408.9	423.5	443.4	464.1	492.2	512.1	518.6	513.6	493.0	470.0
30.5°	385.5	404.6	419.4	439.5	460.3	488.7	509.0	515.6	510.5	489.6	466.6
31°	381.2	400.4	415.3	435.6	456.7	485.3	505.9	512.6	507.5	486.3	463.0
31.5°	376.7	396.3	411.2	431.5	452.8	481.9	502.7	509.5	504.3	483.0	459.3
32°	372.3	392.0	407.0	427.4	448.8	478.3	499.5	506.3	501.1	479.6	455.6
32.5°	367.8	387.5	402.7	423.2	444.8	474.7	496.2	503.3	497.9	476.0	452.0
33°	363.3	383.2	398.3	419.1	440.8	470.9	492.9	500.1	494.6	472.6	448.1
33.5°	358.7	378.8	394.0	414.8	436.8	467.3	489.5	496.7	491.2	468.9	444.3
34°	354.0	374.4	389.7	410.6	432.8	463.6	485.9	493.3	487.9	465.3	440.4
34.5°	349.4	369.9	385.3	406.3	428.6	459.7	482.5	489.9	484.4	461.8	436.6
35°	344.7	365.3	381.0	402.1	424.4	455.8	478.9	486.6	480.9	458.0	432.6
35.5°	340.0	360.8	376.4	397.6	420.1	452.0	475.2	483.0	477.5	454.2	428.7
36°	335.2	356.2	371.9	393.2	415.9	448.0	471.7	479.3	473.8	450.3	424.5
36.5°	330.5	351.6	367.3	388.6	411.7	444.0	467.8	475.7	470.2	446.7	420.4
37°	325.7	346.9	362.8	384.3	407.4	439.8	464.0	472.2	466.5	442.7	416.5
37.5°	320.9	342.2	358.1	379.8	402.9	435.7	460.1	468.4	462.8	438.8	412.4
38°	315.9	337.5	353.4	375.2	398.5	431.6	456.2	464.6	459.0	434.8	408.2
38.5°	311.0	332.7	348.7	370.4	394.0	427.4	452.4	460.8	455.2	430.9	404.0
39°	306.2	327.8	344.0	366.1	389.7	423.2	448.4	457.2	451.4	426.9	399.8
39.5°	301.3	323.1	339.3	361.4	385.0	418.9	444.3	453.2	447.6	422.8	395.6
40°	296.1	318.3	334.5	356.8	380.4	414.5	440.3	449.2	443.6	418.7	391.3
40.5°	291.2	313.4	329.7	352.0	375.9	410.2	436.3	445.2	439.6	414.6	387.1
41°	286.1	308.5	324.9	347.4	371.3	405.8	432.0	441.4	435.6	410.4	382.7
41.5°	281.1	303.6	320.1	342.7	366.7	401.4	427.9	437.3	431.6	406.5	378.4
42°	275.9	298.7	315.2	338.0	362.1	396.9	423.6	433.1	427.5	402.2	374.1
42.5°	271.0	293.7	310.5	333.3	357.5	392.5	419.5	429.0	423.4	397.9	369.6
43°	265.8	288.7	305.6	328.6	352.8	388.0	415.1	424.9	419.3	393.5	365.2
43.5°	260.6	283.7	300.8	323.7	348.1	383.5	410.8	420.7	415.1	389.3	360.9



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	245.2	268.5	286.0	309.4	334.0	369.7	397.7	408.0	402.4	376.1	347.3
45.5°	240.0	263.5	281.2	304.7	329.3	365.1	393.2	403.7	398.1	371.5	342.7
46°	234.8	258.4	276.2	299.8	324.6	360.6	388.7	399.2	393.7	367.0	338.1
46.5°	229.6	253.3	271.4	295.1	319.9	355.9	384.2	394.8	389.3	362.4	333.4
47°	224.5	248.3	266.4	290.3	315.3	351.2	379.5	390.3	384.7	357.7	328.7
47.5°	219.1	243.2	261.5	285.5	310.4	346.5	375.0	385.8	380.1	353.0	323.8
48°	213.7	238.1	256.5	280.8	305.7	341.8	370.3	381.2	375.7	348.0	319.0
48.5°	208.6	232.9	251.6	275.9	301.0	337.1	365.7	376.5	371.0	343.1	314.1
49°	203.4	227.9	246.6	271.1	296.2	332.2	360.9	371.8	366.2	338.1	309.1
49.5°	198.2	222.8	241.8	266.3	291.3	327.4	356.2	367.0	361.2	333.0	304.1
50°	192.9	217.7	237.0	261.4	286.6	322.6	351.2	362.1	356.3	327.9	299.1
50.5°	187.6	212.6	232.0	256.7	281.8	317.7	346.2	357.1	351.2	322.6	294.2
51°	182.4	207.4	227.1	251.9	277.0	312.8	341.2	352.0	346.1	317.5	289.3
51.5°	177.3	202.3	222.2	247.1	272.2	307.9	336.1	346.8	340.9	312.5	284.5
52°	172.0	197.3	217.3	242.3	267.3	302.8	330.9	341.5	335.6	307.7	280.0
52.5°	166.9	192.2	212.4	237.5	262.4	297.8	325.7	336.2	330.3	303.0	275.2
53°	161.6	187.1	207.6	232.7	257.5	292.6	320.4	331.1	325.3	298.0	270.4
53.5°	156.4	182.1	202.7	228.0	252.7	287.5	315.0	325.7	320.4	292.8	264.8
54°	151.3	177.1	197.9	223.0	247.8	282.4	309.9	320.8	315.6	286.9	259.0
54.5°	146.2	172.1	193.0	218.3	243.0	277.5	304.9	316.1	310.6	280.4	252.5
55°	141.0	167.1	188.2	213.5	238.3	272.6	300.2	311.3	305.4	273.0	245.8
55.5°	136.0	162.0	183.5	208.9	233.7	267.9	295.2	305.9	299.1	265.9	238.7
56°	130.9	157.2	178.6	204.3	229.0	263.0	290.0	299.8	292.3	257.9	231.5
56.5°	125.9	152.3	174.0	199.6	224.3	257.8	284.1	293.1	285.2	250.0	224.2
57°	120.9	147.3	169.4	195.1	219.2	252.2	277.9	286.3	277.5	241.8	216.9
57.5°	115.9	142.5	164.8	190.5	214.1	246.6	271.3	278.6	269.2	233.7	209.0
58°	111.2	137.7	160.0	185.9	208.7	240.5	264.4	270.8	260.9	225.0	201.3
58.5°	106.3	133.0	155.3	181.0	203.4	234.2	257.3	262.4	252.4	216.2	193.5
59°	101.5	128.3	150.7	176.1	197.7	227.8	249.5	253.9	243.5	207.6	185.8
59.5°	96.7	123.7	146.0	171.1	192.1	221.1	241.8	244.9	234.5	199.1	177.9
60°	92.1	118.9	141.3	166.1	186.3	214.5	233.8	236.1	225.4	190.3	170.3
60.5°	87.5	114.3	136.4	161.1	180.7	207.6	225.8	227.0	216.3	181.7	162.6
61°	83.0	109.8	131.7	155.9	174.7	200.7	217.4	218.2	207.3	173.2	155.1
61.5°	78.5	105.1	126.9	150.9	168.7	193.6	208.9	209.1	198.1	164.6	147.5
62°	74.2	100.5	122.1	145.7	162.9	186.5	200.8	200.4	189.3	156.2	140.0
62.5°	69.9	95.9	117.4	140.6	156.8	179.4	192.2	191.5	180.2	148.0	132.7
63°	65.7	91.4	112.5	135.5	150.8	172.0	183.8	182.6	171.5	140.4	125.7
63.5°	61.4	86.9	107.8	130.1	144.8	164.8	175.6	173.8	162.8	132.6	118.8
64°	57.5	82.6	103.1	125.0	138.9	157.6	167.6	165.4	154.5	125.3	112.0
64.5°	53.7	78.3	98.5	119.8	132.8	150.4	159.5	157.0	146.3	118.1	105.5
65°	49.9	73.9	93.9	114.7	126.8	143.2	151.7	148.9	138.0	111.2	99.3
65.5°	46.2	69.7	89.2	109.5	120.8	136.2	144.0	140.8	130.0	104.7	93.8
66°	42.7	65.6	84.6	104.4	114.8	129.3	136.3	132.9	122.0	98.4	88.4



TEST NUMBER: P775826

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	33.8	53.7	70.9	89.2	97.4	109.4	114.6	111.0	99.5	81.8	72.0
68°	31.2	49.9	66.5	84.2	92.0	103.0	107.7	104.2	93.1	76.2	67.2
68.5°	28.8	46.2	62.2	79.2	86.6	96.8	101.0	97.5	86.8	70.7	62.8
69°	26.2	42.5	57.8	74.3	81.2	91.1	95.2	91.6	80.5	66.0	58.7
69.5°	24.3	39.0	53.6	69.3	75.9	85.5	89.4	85.8	74.3	61.6	54.7
70°	22.9	35.8	49.4	64.7	70.5	79.8	83.7	79.9	69.1	57.4	51.0
70.5°	21.9	32.7	45.3	60.0	65.7	74.1	77.8	74.1	64.2	53.6	47.5
71°	20.9	29.8	41.4	55.4	61.1	69.2	72.0	69.1	59.6	49.9	44.2
71.5°	19.9	26.8	37.6	51.0	56.6	64.2	67.0	64.3	55.3	46.4	41.1
72°	18.9	23.9	34.6	46.8	52.3	59.6	62.2	59.8	51.4	43.3	38.3
72.5°	17.9	21.7	31.6	42.8	48.2	55.2	57.8	55.6	47.7	40.2	35.4
73°	16.8	20.2	28.7	39.2	44.3	51.1	53.8	51.6	44.4	37.3	32.9
73.5°	15.9	19.2	25.7	35.6	40.7	47.2	49.9	48.0	41.3	34.7	30.4
74°	15.0	18.2	22.6	32.7	37.3	43.7	46.2	44.6	38.4	32.1	28.1
74.5°	14.1	17.2	20.5	29.8	34.1	40.3	42.8	41.4	35.6	29.8	25.9
75°	13.2	16.3	18.6	26.9	31.2	37.1	39.7	38.5	33.1	27.5	23.8
75.5°	12.3	15.4	17.0	24.1	28.5	34.2	36.7	35.7	30.5	25.3	21.8
76°	11.5	14.5	15.6	21.7	25.9	31.4	34.0	33.1	28.2	23.3	19.9
76.5°	10.8	13.7	14.4	19.6	23.5	28.8	31.4	30.7	25.9	21.3	18.2
77°	10.1	12.8	13.4	17.8	21.4	26.5	29.0	28.4	23.7	19.5	16.4
77.5°	9.4	11.9	12.4	16.0	19.4	24.2	26.7	26.2	21.6	17.7	14.8
78°	8.7	11.2	11.7	14.5	17.5	22.0	24.5	24.1	19.7	16.0	13.3
78.5°	8.1	10.5	10.9	13.2	15.8	20.1	22.4	22.0	17.8	14.5	11.8
79°	7.4	9.8	10.3	11.9	14.3	18.3	20.5	20.2	15.9	13.0	10.5
79.5°	6.8	9.1	9.6	10.8	12.9	16.5	18.7	18.4	14.3	11.6	9.5
80°	6.2	8.4	9.0	9.8	11.5	14.9	16.9	16.6	12.7	10.5	8.4
80.5°	5.7	7.8	8.3	8.9	10.3	13.5	15.3	15.1	11.1	9.3	7.2
81°	5.2	7.1	7.8	8.1	9.4	11.9	13.8	13.6	9.9	8.2	6.2
81.5°	4.7	6.6	7.1	7.3	8.4	10.7	12.2	12.1	8.7	7.0	5.1
82°	4.2	6.0	6.6	6.6	7.4	9.6	10.9	10.7	7.4	5.9	4.3
82.5°	3.8	5.5	6.0	6.0	6.4	8.6	9.8	9.6	6.1	4.8	3.6
83°	3.3	4.9	5.5	5.4	5.5	7.5	8.7	8.5	4.9	4.0	2.9
83.5°	2.9	4.5	5.1	5.0	4.8	6.4	7.5	7.3	4.0	3.2	2.2
84°	2.6	4.0	4.6	4.5	4.2	5.4	6.4	6.2	3.1	2.4	1.7
84.5°	2.1	3.6	4.1	4.1	3.7	4.7	5.3	5.1	2.3	1.8	1.3
85°	1.8	3.2	3.7	3.7	3.2	4.0	4.5	4.2	1.6	1.2	0.9
85.5°	1.5	2.8	3.4	3.3	2.7	3.3	3.7	3.4	1.0	0.8	0.6
86°	1.2	2.3	3.0	3.0	2.3	2.8	3.0	2.7	0.6	0.5	0.3
86.5°	0.9	1.9	2.6	2.6	1.9	2.2	2.3	1.9	0.4	0.2	0.1
87°	0.7	1.6	2.1	2.2	1.6	1.7	1.8	1.4	0.3	0.1	0.0
87.5°	0.5	1.3	1.8	1.9	1.3	1.4	1.3	1.0	0.2	0.0	0.0
88°	0.4	1.0	1.5	1.6	1.1	1.0	0.9	0.6	0.1	0.0	0.0
88.5°	0.2	0.8	1.2	1.3	0.8	0.7	0.6	0.3	0.1	0.0	0.0



TEST NUMBER: P775826
CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.3	0.5	0.6	0.3	0.2	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P775826

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	564.4	564.4	564.4	564.4	564.4	564.4
0.5°	564.3	563.8	563.3	563.0	562.6	562.4
1°	564.2	563.2	562.3	561.6	561.0	560.9
1.5°	564.0	562.6	561.1	560.1	559.5	559.4
2°	563.8	561.8	560.0	558.7	557.9	557.9
2.5°	563.4	561.0	558.8	557.2	556.2	556.2
3°	563.0	560.2	557.5	555.5	554.5	554.6
3.5°	562.6	559.4	556.1	553.9	552.8	553.0
4°	561.9	558.4	554.7	552.2	550.8	551.1
4.5°	561.4	557.4	553.2	550.3	549.0	549.4
5°	560.7	556.2	551.6	548.5	546.9	547.5
5.5°	560.0	555.0	550.0	546.5	545.0	545.6
6°	559.2	553.8	548.3	544.6	543.0	543.6
6.5°	558.3	552.5	546.5	542.6	540.8	541.5
7°	557.4	551.1	544.7	540.5	538.7	539.5
7.5°	556.3	549.6	542.9	538.4	536.4	537.4
8°	555.2	548.1	540.9	536.1	534.2	535.1
8.5°	554.1	546.4	538.9	533.9	531.8	532.9
9°	552.8	544.8	536.8	531.5	529.4	530.5
9.5°	551.5	543.1	534.7	529.2	527.0	528.3
10°	550.1	541.2	532.5	526.7	524.5	525.8
10.5°	548.7	539.5	530.2	524.2	522.0	523.5
11°	547.2	537.5	527.9	521.7	519.4	520.9
11.5°	545.6	535.4	525.4	519.1	516.7	518.4
12°	543.9	533.4	523.0	516.4	514.0	515.7
12.5°	542.2	531.2	520.4	513.7	511.2	513.2
13°	540.3	529.1	517.9	510.9	508.5	510.4
13.5°	538.5	526.7	515.2	508.1	505.7	507.7
14°	536.5	524.4	512.5	505.3	502.8	504.9
14.5°	534.6	522.1	509.8	502.4	499.8	502.0
15°	532.5	519.6	507.0	499.3	496.9	499.1
15.5°	530.3	517.1	504.0	496.2	493.7	496.1
16°	528.1	514.4	501.1	493.2	490.7	493.2
16.5°	525.8	511.8	498.1	490.0	487.6	490.1
17°	523.5	509.0	495.0	486.9	484.4	487.0
17.5°	521.0	506.1	491.9	483.5	481.1	483.8
18°	518.5	503.3	488.7	480.3	477.9	480.7
18.5°	515.9	500.3	485.4	476.9	474.4	477.5
19°	513.4	497.4	482.1	473.6	471.1	474.0
19.5°	510.6	494.3	478.7	470.0	467.7	470.7
20°	507.9	491.1	475.2	466.6	464.2	467.5
20.5°	505.0	488.0	471.8	462.9	460.7	464.0
21°	502.2	484.7	468.2	459.3	457.1	460.3

TEST NUMBER: P775826

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	493.2	474.6	457.3	448.1	446.0	449.8
23°	490.0	471.1	453.6	444.3	442.3	446.1
23.5°	486.9	467.6	449.8	440.5	438.5	442.4
24°	483.5	463.9	445.9	436.7	434.6	438.6
24.5°	480.2	460.3	442.1	432.6	430.7	434.8
25°	476.9	456.6	438.0	428.6	426.8	430.9
25.5°	473.4	453.0	434.1	424.6	422.8	427.1
26°	469.9	449.1	430.1	420.5	418.8	423.1
26.5°	466.3	445.3	426.1	416.4	414.7	419.1
27°	462.8	441.4	422.0	412.2	410.6	415.0
27.5°	459.1	437.5	417.8	408.0	406.5	411.0
28°	455.4	433.5	413.6	403.8	402.2	406.9
28.5°	451.7	429.4	409.4	399.5	398.0	402.6
29°	447.9	425.4	405.1	395.1	393.8	398.4
29.5°	444.0	421.4	400.9	390.8	389.4	394.2
30°	440.1	417.3	396.6	386.5	385.0	389.9
30.5°	436.3	413.0	392.2	382.0	380.8	385.5
31°	432.4	408.8	387.8	377.6	376.3	381.2
31.5°	428.3	404.5	383.3	373.1	371.9	376.7
32°	424.3	400.2	378.8	368.5	367.3	372.3
32.5°	420.1	396.0	374.4	364.0	362.8	367.8
33°	416.1	391.7	369.9	359.4	358.2	363.3
33.5°	411.9	387.2	365.4	354.8	353.6	358.7
34°	407.7	382.9	360.8	350.2	348.9	354.0
34.5°	403.6	378.4	356.3	345.7	344.3	349.4
35°	399.3	374.0	351.6	341.0	339.5	344.7
35.5°	395.0	369.6	347.0	336.2	334.9	340.0
36°	390.8	365.0	342.5	331.6	330.0	335.2
36.5°	386.5	360.7	337.8	326.9	325.5	330.5
37°	382.1	356.2	333.2	322.1	320.6	325.7
37.5°	377.7	351.7	328.6	317.3	315.8	320.9
38°	373.3	347.1	323.9	312.5	310.9	315.9
38.5°	368.9	342.5	319.3	307.8	306.1	311.0
39°	364.6	338.0	314.5	303.0	301.2	306.2
39.5°	360.1	333.5	309.9	298.2	296.3	301.3
40°	355.7	328.9	305.3	293.4	291.4	296.1
40.5°	351.3	324.3	300.7	288.6	286.5	291.2
41°	346.8	319.6	296.0	283.8	281.4	286.1
41.5°	342.4	315.3	291.2	279.0	276.5	281.1
42°	337.9	310.8	286.6	274.1	271.6	275.9
42.5°	333.3	306.1	282.0	269.3	266.6	271.0
43°	328.8	301.5	277.4	264.4	261.5	265.8
43.5°	324.3	297.0	272.6	259.8	256.6	260.6

TEST NUMBER: P775826

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	310.7	283.2	258.7	245.3	241.4	245.2
45.5°	306.1	278.8	254.0	240.6	236.5	240.0
46°	301.6	274.3	249.5	235.8	231.5	234.8
46.5°	296.9	269.6	244.9	231.0	226.4	229.6
47°	292.2	265.1	240.4	226.2	221.4	224.5
47.5°	287.5	260.6	235.6	221.4	216.3	219.1
48°	282.7	256.0	231.2	216.7	211.3	213.7
48.5°	278.0	251.4	226.5	211.9	206.3	208.6
49°	273.2	246.9	222.0	207.2	201.3	203.4
49.5°	268.3	242.3	217.4	202.4	196.4	198.2
50°	263.6	237.7	212.8	197.7	191.3	192.9
50.5°	258.9	233.0	208.2	193.1	186.3	187.6
51°	254.3	228.4	203.7	188.4	181.4	182.4
51.5°	249.8	224.0	199.3	183.6	176.5	177.3
52°	245.5	219.8	194.9	179.2	171.6	172.0
52.5°	240.9	215.5	190.5	174.6	166.6	166.9
53°	236.1	211.2	186.3	170.1	161.7	161.6
53.5°	231.0	206.8	181.9	165.5	156.9	156.4
54°	225.5	202.2	177.6	161.0	152.0	151.3
54.5°	220.0	197.5	173.2	156.7	147.2	146.2
55°	213.8	192.6	168.7	152.3	142.5	141.0
55.5°	207.7	187.4	164.1	147.7	137.8	136.0
56°	201.3	182.2	159.5	143.3	133.2	130.9
56.5°	195.0	176.9	154.8	138.8	128.5	125.9
57°	188.2	171.4	150.1	134.3	124.0	120.9
57.5°	181.7	165.8	145.3	129.7	119.4	115.9
58°	175.0	160.2	140.6	125.3	114.9	111.2
58.5°	168.2	154.6	135.6	120.8	110.4	106.3
59°	161.6	148.8	130.8	116.3	105.9	101.5
59.5°	155.0	143.0	125.9	111.8	101.4	96.7
60°	148.2	137.3	120.9	107.4	96.9	92.1
60.5°	141.7	131.6	115.9	102.8	92.5	87.5
61°	135.3	125.9	110.9	98.5	88.1	83.0
61.5°	128.8	120.3	105.9	94.1	83.9	78.5
62°	122.3	114.7	101.0	89.7	79.7	74.2
62.5°	116.2	109.2	96.0	85.2	75.4	69.9
63°	110.1	103.8	91.0	80.8	71.3	65.7
63.5°	104.2	98.4	86.2	76.2	67.2	61.4
64°	98.6	93.0	81.4	71.8	63.4	57.5
64.5°	93.1	88.0	76.7	67.4	59.5	53.7
65°	87.7	83.0	72.0	63.3	55.7	49.9
65.5°	82.4	77.9	67.6	58.9	51.8	46.2
66°	77.0	73.0	63.1	54.6	48.3	42.7



TEST NUMBER: P775826

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	62.4	59.7	50.6	43.0	37.6	33.8
68°	58.3	55.4	46.6	39.3	34.8	31.2
68.5°	54.2	51.3	42.8	35.6	31.9	28.8
69°	50.3	47.5	39.3	32.9	29.2	26.2
69.5°	46.7	44.0	35.7	30.1	26.3	24.3
70°	43.5	40.5	33.0	27.2	23.5	22.9
70.5°	40.2	37.3	30.3	24.5	21.4	21.9
71°	37.1	34.7	27.5	22.1	20.0	20.9
71.5°	34.4	32.0	24.8	20.2	19.0	19.9
72°	31.6	29.5	22.5	18.5	18.1	18.9
72.5°	29.3	26.8	20.5	16.9	17.1	17.9
73°	26.9	24.3	18.6	15.6	16.2	16.8
73.5°	24.7	22.0	16.8	14.4	15.3	15.9
74°	22.6	20.1	15.3	13.4	14.4	15.0
74.5°	20.6	18.3	14.0	12.5	13.6	14.1
75°	18.8	16.6	12.7	11.7	12.8	13.2
75.5°	17.0	15.0	11.5	11.0	11.9	12.3
76°	15.5	13.6	10.4	10.3	11.1	11.5
76.5°	13.9	12.1	9.5	9.7	10.4	10.8
77°	12.5	10.9	8.7	9.0	9.7	10.1
77.5°	11.2	9.8	7.9	8.5	9.0	9.4
78°	10.1	8.8	7.1	7.9	8.4	8.7
78.5°	9.1	7.8	6.5	7.2	7.8	8.1
79°	8.0	6.9	5.9	6.7	7.1	7.4
79.5°	6.9	6.1	5.4	6.1	6.5	6.8
80°	5.9	5.3	4.9	5.6	5.9	6.2
80.5°	5.1	4.7	4.5	5.1	5.4	5.7
81°	4.4	4.1	4.1	4.7	4.9	5.2
81.5°	3.7	3.7	3.7	4.2	4.4	4.7
82°	3.1	3.3	3.3	3.8	3.9	4.2
82.5°	2.6	2.8	2.9	3.4	3.5	3.8
83°	2.0	2.3	2.6	3.0	3.1	3.3
83.5°	1.6	1.9	2.1	2.6	2.7	2.9
84°	1.3	1.6	1.8	2.1	2.2	2.6
84.5°	0.9	1.3	1.6	1.8	1.8	2.1
85°	0.7	1.1	1.3	1.5	1.5	1.8
85.5°	0.5	0.8	1.0	1.3	1.2	1.5
86°	0.3	0.6	0.8	1.0	1.0	1.2
86.5°	0.1	0.4	0.5	0.7	0.8	0.9
87°	0.0	0.2	0.3	0.5	0.6	0.7
87.5°	0.0	0.1	0.1	0.3	0.4	0.5
88°	0.0	0.0	0.0	0.1	0.2	0.4
88.5°	0.0	0.0	0.0	0.0	0.1	0.2



TEST NUMBER: P775826
CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

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



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

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21.5°	456.9	472.4	484.9	501.6	518.1	538.8	553.4	558.4	554.8	539.6	522.0
22°	453.4	469.1	481.8	498.7	515.5	536.6	551.5	556.5	553.0	537.4	519.3



44°	255.5	278.7	295.8	319.0	343.4	378.8	406.4	416.5	411.0	384.9	356.4
44.5°	250.4	273.6	291.0	314.3	338.7	374.3	402.1	412.2	406.8	380.5	351.9



66.5°	39.5	61.5	80.1	99.3	109.0	122.5	128.9	125.4	114.2	92.8	82.8
67°	36.2	57.4	75.6	94.2	103.2	115.8	121.7	118.1	106.8	87.3	77.4



89°	0.1	0.6	1.0	1.1	0.6	0.5	0.3	0.1	0.0	0.0	0.0
89.5°	0.0	0.4	0.7	0.8	0.4	0.3	0.1	0.0	0.0	0.0	0.0

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21.5°	499.2	481.3	464.6	455.6	453.4	456.9
22°	496.1	478.0	461.0	451.9	449.8	453.4

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44°	319.8	292.5	267.9	254.9	251.6	255.5
44.5°	315.2	287.8	263.3	250.2	246.5	250.4

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66.5°	71.7	68.6	58.8	50.6	44.6	39.5
67°	66.8	64.0	54.5	46.6	41.0	36.2

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

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(END OF REPORT)