

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: P775827

Luminaire Tested: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3500K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775827
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-3500K
Description: 8 INCH ROUND SHALLOW-WIDE LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT
Ballast/Driver: -

Summary

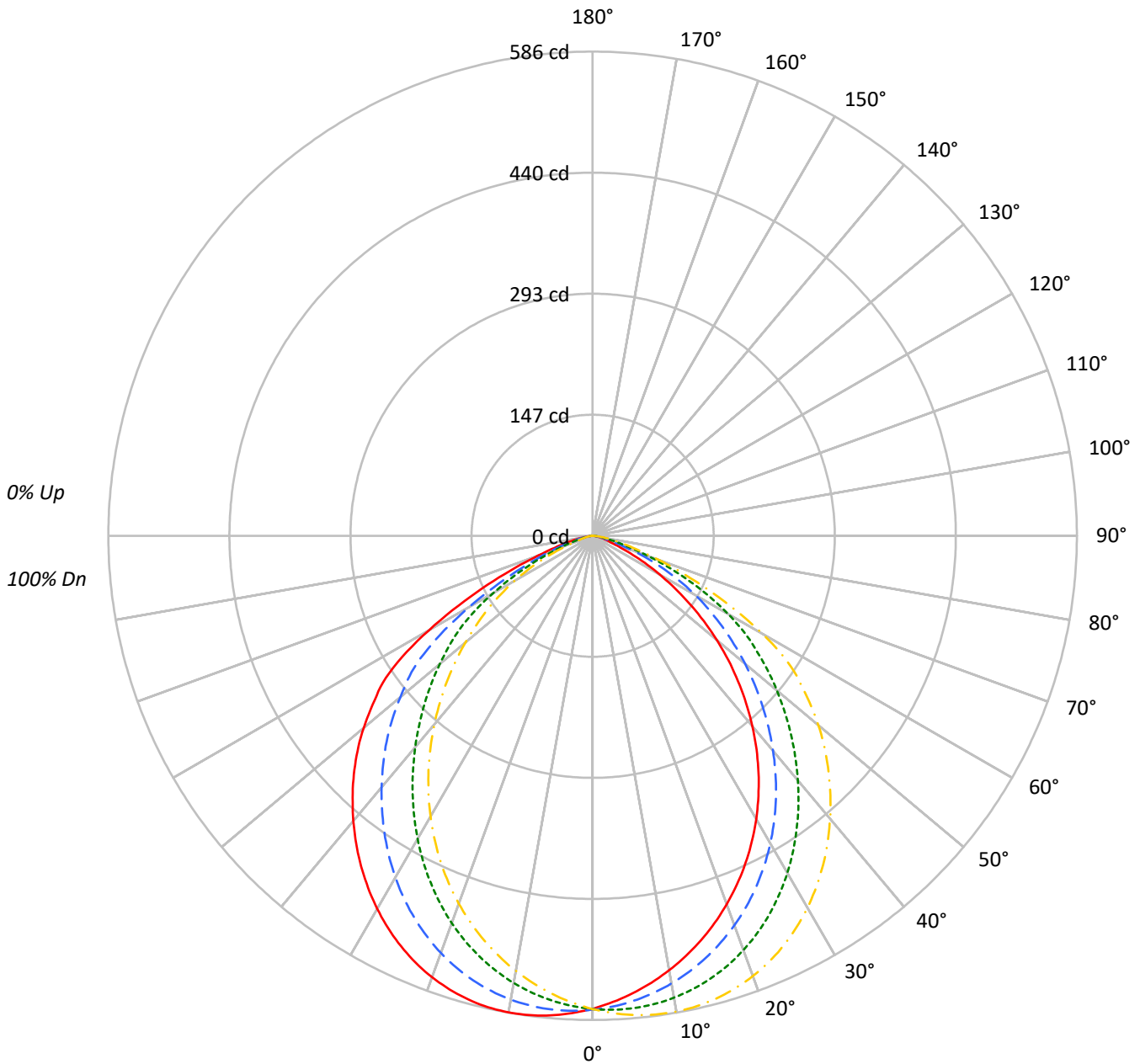
Lumens per Lamp: N/A
Luminaire Lumens: 1271.3 lumens
Efficiency: N/A
Efficacy: 127.1 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.17 / 1.27
Luminous Opening: Circular (Dia: 0.67' x H: 0')
CIE Type: Direct

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	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	105	101	98	100	98	95	97	94	92	93	91	90	88				88				
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	83	80	78	76				76				
3	94	85	77	72	92	83	76	71	80	74	70	77	73	69	75	71	67	65				65				
4	87	76	68	62	84	74	67	61	72	66	61	70	64	60	68	63	59	57				57				
5	80	68	60	54	78	67	59	54	65	58	53	63	57	52	61	56	52	50				50				
6	74	62	53	48	72	61	53	47	59	52	47	57	51	47	56	50	46	44				44				
7	69	56	48	42	67	55	48	42	54	47	42	53	46	42	51	46	41	39				39				
8	64	52	44	38	63	51	43	38	50	43	38	48	42	37	47	42	37	35				35				
9	60	47	40	34	59	47	39	34	46	39	34	45	38	34	44	38	34	32				32				
10	56	44	36	31	55	43	36	31	42	36	31	41	35	31	41	35	31	29				29				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	17494	17494	17494	17494
5°	17034	17585	17855	17306
10°	16548	17596	18161	17035
15°	16015	17523	18367	16673
20°	15420	17336	18470	16199
25°	14738	17039	18474	15614
30°	13957	16611	18381	14933
35°	13045	16060	18199	14152
40°	11980	15392	17950	13307
45°	10747	14641	17638	12413
50°	9305	13822	17180	11461
55°	7617	12881	16501	10411
60°	5709	11547	13971	8512
65°	3663	9297	10121	6090
70°	2071	6391	6257	3669
75°	1581	3739	3963	1994
80°	1108	2057	2250	949
85°	666	1121	596	385

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 157.5°
 Vertical Angle: 45°
 Luminance: 17884 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	54.1	4.3
10°-20°	153.0	12.0
20°-30°	225.2	17.7
30°-40°	258.2	20.3
40°-50°	248.5	19.5
50°-60°	198.1	15.6
60°-70°	102.8	8.1
70°-80°	27.7	2.2
80°-90°	3.6	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°	432.2	34.0
0°-40°	690.5	54.3
0°-60°	1137.1	89.4
0°-90°	1271.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1271.3	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	573	573	573	573	573	
5°	556	574	583	565	556	52
15°	507	554	581	528	507	142
25°	438	506	548	464	438	201
35°	350	431	488	380	350	218
45°	249	339	408	288	249	191
55°	143	242	310	196	143	128
65°	51	129	140	84	51	52
75°	13	32	34	17	13	15
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°	573.0	573.0	573.0	573.0	573.0	573.0	573.0	573.0	573.0	573.0	573.0
0.5°	570.9	573.4	573.2	572.9	573.2	573.7	574.0	574.0	573.6	575.4	574.1
1°	569.5	572.4	572.6	572.8	573.6	574.7	575.3	575.3	574.9	576.2	574.7
1.5°	567.9	571.2	571.9	572.7	573.8	575.3	576.3	576.3	576.1	576.9	575.0
2°	566.4	570.1	571.1	572.4	574.0	576.0	577.3	577.3	577.2	577.7	575.3
2.5°	564.7	568.9	570.2	572.2	574.1	576.6	578.4	578.4	578.3	578.4	575.5
3°	563.1	567.5	569.4	571.8	574.2	577.2	579.3	579.3	579.2	579.0	575.6
3.5°	561.4	566.2	568.4	571.3	574.2	577.8	580.1	581.0	580.2	579.5	575.7
4°	559.5	564.7	567.4	570.8	574.1	578.2	580.9	581.9	581.1	579.9	575.7
4.5°	557.8	563.3	566.3	570.2	574.0	578.5	581.6	582.7	581.9	580.4	575.6
5°	555.8	561.7	565.1	569.6	573.8	578.7	582.2	583.6	582.6	580.7	575.5
5.5°	553.9	560.2	564.0	568.9	573.5	578.9	582.7	584.3	583.3	580.9	575.2
6°	551.9	558.5	562.6	568.0	573.2	579.0	583.3	584.9	583.9	581.0	575.0
6.5°	549.8	556.7	561.3	567.2	572.7	579.1	583.7	585.4	584.4	581.1	574.7
7°	547.7	555.0	559.9	566.3	572.2	579.1	584.1	586.0	584.8	581.1	574.2
7.5°	545.5	553.1	558.5	565.3	571.5	579.0	584.3	586.5	585.1	581.0	573.7
8°	543.3	551.2	556.9	564.2	571.0	578.9	584.5	586.8	585.4	580.9	573.1
8.5°	541.0	549.3	555.3	563.1	570.3	578.6	584.7	587.1	585.6	580.6	572.5
9°	538.6	547.3	553.6	561.8	569.5	578.4	584.7	587.3	585.8	580.4	571.8
9.5°	536.3	545.2	552.0	560.6	568.6	578.0	584.7	587.4	585.8	579.9	570.9
10°	533.8	543.2	550.1	559.2	567.6	577.5	584.6	587.5	585.8	579.4	570.1
10.5°	531.5	541.0	548.2	557.8	566.7	577.0	584.5	587.4	585.6	578.9	569.2
11°	528.9	538.7	546.4	556.2	565.5	576.4	584.2	587.3	585.4	578.3	568.1
11.5°	526.3	536.5	544.4	554.8	564.4	575.8	583.9	587.1	585.2	577.7	567.0
12°	523.6	534.2	542.4	553.1	563.2	575.1	583.6	586.9	584.8	576.8	565.9
12.5°	521.0	531.8	540.3	551.3	561.9	574.2	583.0	586.5	584.4	576.0	564.6
13°	518.2	529.3	538.2	549.6	560.6	573.4	582.5	586.0	583.9	575.1	563.3
13.5°	515.4	526.8	535.9	547.8	559.1	572.5	581.9	585.5	583.4	574.1	561.9
14°	512.6	524.3	533.6	545.9	557.6	571.4	581.2	585.0	582.7	573.0	560.4
14.5°	509.6	521.7	531.4	544.0	556.0	570.3	580.5	584.4	581.9	571.9	558.9
15°	506.7	519.1	529.0	541.9	554.4	569.1	579.6	583.6	581.1	570.6	557.3
15.5°	503.7	516.3	526.5	539.9	552.6	567.9	578.7	582.7	580.1	569.4	555.6
16°	500.7	513.5	523.9	537.7	550.7	566.6	577.7	581.9	579.2	567.9	553.9
16.5°	497.6	510.7	521.3	535.4	548.9	565.1	576.6	580.9	578.2	566.5	552.1
17°	494.4	507.8	518.7	533.0	546.9	563.7	575.5	579.8	577.0	564.9	550.1
17.5°	491.2	504.9	516.0	530.7	544.9	562.1	574.2	578.7	575.8	563.3	548.1
18°	488.1	501.9	513.3	528.3	542.8	560.5	573.0	577.5	574.4	561.6	546.1
18.5°	484.7	498.9	510.4	525.8	540.6	558.7	571.7	576.2	573.0	559.8	544.0
19°	481.2	495.8	507.5	523.2	538.3	557.0	570.2	574.9	571.7	558.1	541.8
19.5°	477.9	492.6	504.6	520.5	536.0	555.2	568.6	573.4	570.1	556.1	539.5
20°	474.6	489.5	501.6	517.9	533.6	553.2	567.1	571.9	568.5	554.1	537.2
20.5°	471.1	486.2	498.6	515.1	531.0	551.2	565.4	570.3	566.9	552.1	534.9
21°	467.3	483.0	495.5	512.3	528.6	549.2	563.7	568.6	565.1	550.0	532.4



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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°	456.7	472.7	485.8	503.3	520.6	542.5	558.0	563.2	559.3	543.3	524.6
23°	452.9	469.2	482.5	500.2	517.8	540.2	555.9	561.3	557.3	540.8	521.8
23.5°	449.1	465.7	479.1	497.1	514.8	537.8	553.8	559.2	555.2	538.4	519.1
24°	445.3	462.1	475.5	493.9	511.9	535.2	551.7	557.2	553.0	535.8	516.2
24.5°	441.5	458.4	472.0	490.4	508.9	532.6	549.4	555.0	550.7	533.2	513.3
25°	437.5	454.7	468.5	487.1	505.8	530.0	547.0	552.7	548.4	530.5	510.3
25.5°	433.6	450.9	464.9	483.7	502.6	527.2	544.6	550.4	546.0	527.8	507.3
26°	429.5	447.1	461.1	480.2	499.4	524.4	542.1	548.0	543.5	525.0	504.2
26.5°	425.5	443.3	457.4	476.6	496.0	521.6	539.6	545.5	541.0	522.1	501.1
27°	421.4	439.5	453.7	473.0	492.7	518.7	537.0	543.0	538.4	519.2	497.8
27.5°	417.2	435.5	449.8	469.4	489.3	515.7	534.3	540.5	535.7	516.3	494.6
28°	413.1	431.5	446.0	465.7	485.7	512.5	531.6	537.8	533.0	513.2	491.2
28.5°	408.7	427.4	442.1	461.9	482.2	509.5	528.8	535.0	530.1	510.1	487.9
29°	404.5	423.3	438.0	457.9	478.5	506.2	525.8	532.2	527.3	506.9	484.3
29.5°	400.2	419.2	434.1	454.1	474.9	503.0	522.9	529.4	524.3	503.7	480.8
30°	395.9	415.1	430.0	450.2	471.2	499.7	519.9	526.5	521.4	500.5	477.2
30.5°	391.4	410.8	425.8	446.2	467.3	496.1	516.8	523.5	518.3	497.1	473.7
31°	387.0	406.5	421.7	442.3	463.6	492.7	513.6	520.4	515.2	493.8	470.0
31.5°	382.4	402.3	417.4	438.0	459.7	489.2	510.3	517.3	512.0	490.3	466.3
32°	378.0	397.9	413.2	433.9	455.6	485.6	507.1	514.1	508.8	486.9	462.6
32.5°	373.4	393.4	408.8	429.6	451.6	482.0	503.8	511.0	505.5	483.3	458.9
33°	368.8	389.0	404.4	425.5	447.6	478.1	500.4	507.7	502.1	479.8	454.9
33.5°	364.2	384.6	400.0	421.2	443.4	474.4	497.0	504.2	498.7	476.0	451.1
34°	359.4	380.1	395.7	416.9	439.4	470.7	493.3	500.8	495.3	472.4	447.1
34.5°	354.8	375.6	391.2	412.5	435.1	466.7	489.8	497.4	491.8	468.8	443.2
35°	350.0	370.9	386.8	408.2	430.9	462.8	486.2	494.0	488.3	465.0	439.2
35.5°	345.2	366.3	382.1	403.6	426.5	458.9	482.5	490.3	484.7	461.1	435.2
36°	340.4	361.6	377.5	399.2	422.3	454.8	478.8	486.6	481.0	457.2	431.0
36.5°	335.5	356.9	372.9	394.5	417.9	450.8	474.9	483.0	477.4	453.5	426.8
37°	330.6	352.2	368.3	390.2	413.6	446.5	471.1	479.4	473.6	449.4	422.8
37.5°	325.8	347.4	363.6	385.6	409.0	442.4	467.1	475.5	469.8	445.5	418.7
38°	320.7	342.6	358.8	381.0	404.6	438.1	463.2	471.7	466.0	441.5	414.4
38.5°	315.7	337.8	354.0	376.1	400.0	433.9	459.3	467.9	462.2	437.5	410.2
39°	310.8	332.8	349.3	371.6	395.7	429.6	455.2	464.1	458.2	433.4	405.9
39.5°	305.9	328.0	344.5	366.9	390.9	425.3	451.1	460.1	454.4	429.2	401.7
40°	300.6	323.2	339.6	362.2	386.2	420.8	447.0	456.1	450.4	425.1	397.2
40.5°	295.6	318.2	334.8	357.3	381.6	416.5	442.9	452.0	446.3	420.9	393.0
41°	290.4	313.2	329.9	352.7	376.9	412.0	438.6	448.1	442.3	416.7	388.5
41.5°	285.4	308.3	325.0	347.9	372.3	407.5	434.4	443.9	438.1	412.7	384.2
42°	280.1	303.3	320.0	343.2	367.6	402.9	430.1	439.7	434.0	408.3	379.8
42.5°	275.1	298.2	315.2	338.4	362.9	398.5	425.9	435.5	429.9	404.0	375.3
43°	269.8	293.1	310.2	333.6	358.2	393.9	421.5	431.4	425.7	399.5	370.8
43.5°	264.5	288.1	305.4	328.7	353.4	389.4	417.1	427.2	421.5	395.3	366.4



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	248.9	272.6	290.3	314.2	339.1	375.4	403.8	414.2	408.5	381.8	352.6
45.5°	243.6	267.5	285.5	309.4	334.4	370.7	399.2	409.9	404.2	377.1	347.9
46°	238.3	262.4	280.4	304.4	329.6	366.0	394.6	405.3	399.7	372.6	343.3
46.5°	233.1	257.2	275.5	299.5	324.8	361.3	390.1	400.8	395.3	367.9	338.5
47°	227.9	252.1	270.4	294.7	320.1	356.5	385.3	396.3	390.6	363.1	333.7
47.5°	222.5	246.9	265.5	289.8	315.1	351.8	380.8	391.6	385.9	358.4	328.8
48°	217.0	241.8	260.4	285.0	310.3	347.0	376.0	387.0	381.4	353.3	323.9
48.5°	211.8	236.5	255.4	280.1	305.6	342.2	371.2	382.2	376.6	348.3	318.9
49°	206.5	231.4	250.3	275.2	300.7	337.3	366.4	377.4	371.7	343.3	313.8
49.5°	201.3	226.2	245.5	270.3	295.7	332.4	361.6	372.6	366.7	338.1	308.8
50°	195.9	221.0	240.6	265.4	291.0	327.5	356.5	367.6	361.7	332.9	303.7
50.5°	190.5	215.9	235.5	260.6	286.1	322.5	351.4	362.5	356.5	327.5	298.7
51°	185.2	210.6	230.6	255.7	281.2	317.6	346.4	357.3	351.3	322.3	293.7
51.5°	180.0	205.4	225.6	250.9	276.3	312.6	341.2	352.1	346.1	317.3	288.9
52°	174.6	200.3	220.6	246.0	271.4	307.4	335.9	346.7	340.7	312.4	284.2
52.5°	169.5	195.1	215.7	241.1	266.4	302.3	330.6	341.3	335.3	307.6	279.4
53°	164.1	190.0	210.8	236.3	261.4	297.1	325.2	336.1	330.2	302.6	274.5
53.5°	158.8	184.9	205.8	231.5	256.6	291.9	319.9	330.6	325.2	297.3	268.8
54°	153.6	179.8	200.9	226.4	251.6	286.7	314.7	325.7	320.4	291.3	263.0
54.5°	148.4	174.7	196.0	221.7	246.7	281.7	309.6	320.9	315.3	284.6	256.4
55°	143.1	169.7	191.1	216.8	242.0	276.8	304.7	316.0	310.0	277.2	249.5
55.5°	138.1	164.5	186.3	212.1	237.3	272.0	299.7	310.5	303.7	269.9	242.4
56°	132.9	159.6	181.4	207.4	232.5	267.0	294.4	304.4	296.8	261.8	235.0
56.5°	127.8	154.6	176.6	202.6	227.8	261.7	288.5	297.6	289.5	253.8	227.7
57°	122.7	149.6	171.9	198.0	222.6	256.0	282.1	290.6	281.7	245.5	220.2
57.5°	117.7	144.7	167.3	193.4	217.4	250.3	275.4	282.9	273.3	237.3	212.2
58°	112.9	139.8	162.4	188.7	211.9	244.1	268.5	274.9	264.9	228.4	204.4
58.5°	107.9	135.1	157.6	183.7	206.5	237.8	261.2	266.4	256.3	219.5	196.5
59°	103.1	130.3	153.0	178.8	200.7	231.3	253.4	257.8	247.2	210.8	188.6
59.5°	98.2	125.5	148.2	173.7	195.0	224.5	245.5	248.6	238.0	202.2	180.6
60°	93.5	120.7	143.5	168.6	189.1	217.7	237.4	239.7	228.8	193.2	172.9
60.5°	88.9	116.0	138.5	163.6	183.4	210.8	229.2	230.5	219.6	184.5	165.1
61°	84.3	111.5	133.7	158.3	177.3	203.7	220.7	221.6	210.5	175.9	157.4
61.5°	79.7	106.7	128.9	153.2	171.3	196.6	212.1	212.3	201.1	167.1	149.8
62°	75.3	102.0	124.0	147.9	165.4	189.3	203.8	203.4	192.1	158.6	142.1
62.5°	71.0	97.4	119.2	142.7	159.2	182.1	195.1	194.4	182.9	150.3	134.8
63°	66.7	92.8	114.2	137.6	153.1	174.6	186.6	185.4	174.1	142.5	127.6
63.5°	62.4	88.2	109.5	132.1	147.0	167.3	178.3	176.5	165.3	134.7	120.6
64°	58.4	83.9	104.7	126.9	141.0	160.0	170.2	167.9	156.8	127.2	113.7
64.5°	54.5	79.4	100.0	121.6	134.9	152.7	161.9	159.4	148.5	119.9	107.1
65°	50.7	75.0	95.3	116.4	128.7	145.4	154.0	151.1	140.1	112.9	100.8
65.5°	46.9	70.7	90.5	111.1	122.6	138.3	146.1	142.9	132.0	106.3	95.2
66°	43.4	66.6	85.9	106.0	116.5	131.2	138.4	135.0	123.9	99.8	89.7



TEST NUMBER: P775827

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	34.3	54.5	72.0	90.5	98.9	111.0	116.3	112.7	101.0	83.1	73.1
68°	31.7	50.7	67.5	85.5	93.4	104.6	109.4	105.8	94.6	77.4	68.3
68.5°	29.2	46.9	63.2	80.4	87.9	98.3	102.5	99.0	88.1	71.8	63.8
69°	26.6	43.2	58.7	75.4	82.4	92.5	96.6	93.0	81.7	67.0	59.6
69.5°	24.7	39.6	54.4	70.3	77.1	86.8	90.7	87.1	75.4	62.6	55.5
70°	23.2	36.4	50.1	65.7	71.6	81.0	84.9	81.1	70.1	58.3	51.8
70.5°	22.3	33.2	46.0	60.9	66.7	75.2	79.0	75.2	65.2	54.4	48.3
71°	21.2	30.2	42.1	56.2	62.0	70.2	73.1	70.1	60.5	50.7	44.8
71.5°	20.2	27.2	38.2	51.8	57.5	65.2	68.1	65.3	56.1	47.1	41.7
72°	19.2	24.2	35.1	47.5	53.1	60.5	63.2	60.7	52.2	43.9	38.8
72.5°	18.1	22.1	32.1	43.5	48.9	56.0	58.7	56.5	48.5	40.8	35.9
73°	17.1	20.5	29.1	39.8	45.0	51.9	54.6	52.4	45.1	37.9	33.4
73.5°	16.2	19.5	26.1	36.1	41.3	48.0	50.7	48.7	41.9	35.2	30.9
74°	15.2	18.4	23.0	33.2	37.9	44.3	46.9	45.3	38.9	32.6	28.5
74.5°	14.3	17.5	20.8	30.2	34.6	40.9	43.5	42.1	36.1	30.2	26.3
75°	13.4	16.6	18.9	27.3	31.7	37.7	40.3	39.0	33.6	28.0	24.1
75.5°	12.5	15.6	17.3	24.4	28.9	34.7	37.3	36.3	31.0	25.7	22.2
76°	11.7	14.7	15.8	22.1	26.3	31.9	34.5	33.6	28.6	23.6	20.2
76.5°	11.0	13.9	14.6	19.9	23.8	29.2	31.9	31.2	26.3	21.6	18.4
77°	10.3	12.9	13.6	18.0	21.8	26.9	29.4	28.8	24.0	19.8	16.7
77.5°	9.5	12.1	12.6	16.3	19.7	24.5	27.1	26.6	22.0	17.9	15.0
78°	8.8	11.4	11.9	14.7	17.8	22.4	24.9	24.4	20.0	16.3	13.5
78.5°	8.2	10.7	11.1	13.4	16.1	20.4	22.8	22.4	18.0	14.7	12.0
79°	7.6	9.9	10.5	12.1	14.5	18.5	20.8	20.5	16.2	13.2	10.7
79.5°	6.9	9.2	9.7	11.0	13.1	16.8	19.0	18.6	14.5	11.8	9.6
80°	6.3	8.5	9.1	9.9	11.7	15.1	17.2	16.9	12.8	10.7	8.5
80.5°	5.8	7.9	8.4	9.0	10.5	13.7	15.5	15.3	11.3	9.4	7.4
81°	5.3	7.3	7.9	8.2	9.5	12.1	14.0	13.8	10.0	8.3	6.3
81.5°	4.8	6.7	7.3	7.5	8.5	10.9	12.4	12.3	8.8	7.1	5.2
82°	4.2	6.1	6.7	6.7	7.6	9.7	11.1	10.9	7.6	6.0	4.4
82.5°	3.8	5.6	6.1	6.1	6.5	8.7	9.9	9.7	6.2	4.9	3.6
83°	3.3	5.0	5.6	5.5	5.6	7.7	8.8	8.6	5.0	4.0	2.9
83.5°	2.9	4.6	5.2	5.1	4.9	6.5	7.7	7.5	4.0	3.2	2.3
84°	2.6	4.0	4.7	4.6	4.2	5.5	6.5	6.3	3.1	2.5	1.8
84.5°	2.2	3.6	4.1	4.1	3.7	4.8	5.4	5.2	2.4	1.9	1.3
85°	1.9	3.2	3.7	3.7	3.2	4.0	4.6	4.2	1.7	1.2	0.9
85.5°	1.6	2.8	3.4	3.3	2.7	3.3	3.7	3.4	1.0	0.8	0.6
86°	1.2	2.4	3.0	3.0	2.4	2.8	3.0	2.7	0.6	0.5	0.3
86.5°	0.9	2.0	2.6	2.6	2.0	2.3	2.4	2.0	0.4	0.2	0.1
87°	0.7	1.7	2.2	2.3	1.7	1.8	1.9	1.5	0.3	0.1	0.0
87.5°	0.5	1.3	1.9	2.0	1.3	1.5	1.3	1.0	0.2	0.0	0.0
88°	0.4	1.0	1.6	1.7	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: P775827

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

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



TEST NUMBER: P775827

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	573.0	573.0	573.0	573.0	573.0	573.0
0.5°	572.9	572.4	571.9	571.5	571.1	570.9
1°	572.8	571.8	570.8	570.2	569.6	569.5
1.5°	572.6	571.1	569.7	568.6	568.0	567.9
2°	572.4	570.4	568.5	567.2	566.4	566.4
2.5°	572.0	569.6	567.3	565.6	564.7	564.7
3°	571.5	568.8	566.0	564.0	563.0	563.1
3.5°	571.1	567.9	564.6	562.3	561.2	561.4
4°	570.5	566.9	563.2	560.6	559.2	559.5
4.5°	570.0	565.9	561.6	558.7	557.4	557.8
5°	569.3	564.7	560.1	556.8	555.3	555.8
5.5°	568.5	563.5	558.4	554.9	553.3	553.9
6°	567.7	562.2	556.6	552.9	551.2	551.9
6.5°	566.8	560.9	554.9	550.8	549.1	549.8
7°	565.9	559.5	553.0	548.8	546.9	547.7
7.5°	564.8	558.0	551.1	546.6	544.6	545.5
8°	563.7	556.4	549.2	544.3	542.3	543.3
8.5°	562.5	554.8	547.1	542.0	540.0	541.0
9°	561.2	553.1	545.0	539.6	537.5	538.6
9.5°	559.9	551.3	542.9	537.3	535.0	536.3
10°	558.5	549.5	540.6	534.8	532.5	533.8
10.5°	557.0	547.7	538.3	532.2	529.9	531.5
11°	555.5	545.7	535.9	529.7	527.3	528.9
11.5°	553.9	543.6	533.4	527.0	524.6	526.3
12°	552.2	541.5	530.9	524.3	521.8	523.6
12.5°	550.4	539.3	528.4	521.5	519.0	521.0
13°	548.6	537.2	525.8	518.7	516.2	518.2
13.5°	546.7	534.8	523.1	515.8	513.4	515.4
14°	544.7	532.4	520.3	513.0	510.4	512.6
14.5°	542.8	530.0	517.6	510.0	507.4	509.6
15°	540.6	527.5	514.7	506.9	504.4	506.7
15.5°	538.4	524.9	511.7	503.8	501.2	503.7
16°	536.1	522.2	508.8	500.7	498.2	500.7
16.5°	533.8	519.6	505.7	497.5	495.0	497.6
17°	531.5	516.8	502.6	494.3	491.8	494.4
17.5°	529.0	513.9	499.4	490.9	488.5	491.2
18°	526.4	511.0	496.1	487.6	485.2	488.1
18.5°	523.8	508.0	492.8	484.1	481.6	484.7
19°	521.2	504.9	489.4	480.8	478.3	481.2
19.5°	518.4	501.8	486.0	477.2	474.8	477.9
20°	515.6	498.6	482.5	473.7	471.3	474.6
20.5°	512.7	495.4	478.9	469.9	467.8	471.1
21°	509.8	492.1	475.3	466.3	464.0	467.3

TEST NUMBER: P775827

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	500.7	481.8	464.2	454.9	452.8	456.7
23°	497.5	478.3	460.5	451.1	449.0	452.9
23.5°	494.3	474.7	456.7	447.3	445.2	449.1
24°	490.9	471.0	452.7	443.3	441.2	445.3
24.5°	487.5	467.3	448.8	439.2	437.3	441.5
25°	484.1	463.5	444.7	435.1	433.3	437.5
25.5°	480.6	459.9	440.7	431.1	429.2	433.6
26°	477.1	456.0	436.7	427.0	425.2	429.5
26.5°	473.5	452.1	432.5	422.7	421.0	425.5
27°	469.8	448.1	428.4	418.5	416.9	421.4
27.5°	466.1	444.1	424.2	414.2	412.7	417.2
28°	462.4	440.1	419.9	410.0	408.3	413.1
28.5°	458.5	436.0	415.7	405.6	404.1	408.7
29°	454.7	431.9	411.3	401.2	399.8	404.5
29.5°	450.8	427.8	407.0	396.7	395.4	400.2
30°	446.8	423.6	402.6	392.4	390.9	395.9
30.5°	442.9	419.3	398.2	387.8	386.6	391.4
31°	439.0	415.0	393.7	383.3	382.0	387.0
31.5°	434.8	410.7	389.1	378.8	377.5	382.4
32°	430.8	406.3	384.6	374.1	372.9	378.0
32.5°	426.5	402.0	380.1	369.6	368.3	373.4
33°	422.4	397.6	375.6	364.9	363.7	368.8
33.5°	418.1	393.1	371.0	360.2	359.0	364.2
34°	413.9	388.7	366.3	355.6	354.2	359.4
34.5°	409.8	384.2	361.7	350.9	349.6	354.8
35°	405.4	379.7	356.9	346.2	344.7	350.0
35.5°	401.1	375.3	352.3	341.3	340.0	345.2
36°	396.7	370.6	347.7	336.6	335.1	340.4
36.5°	392.4	366.2	342.9	331.9	330.4	335.5
37°	387.9	361.6	338.3	327.0	325.4	330.6
37.5°	383.4	357.0	333.6	322.1	320.6	325.8
38°	379.0	352.4	328.9	317.3	315.6	320.7
38.5°	374.5	347.7	324.2	312.5	310.7	315.7
39°	370.2	343.2	319.3	307.6	305.8	310.8
39.5°	365.6	338.6	314.7	302.8	300.8	305.9
40°	361.1	333.9	309.9	297.9	295.8	300.6
40.5°	356.6	329.3	305.2	293.0	290.8	295.6
41°	352.1	324.5	300.5	288.2	285.7	290.4
41.5°	347.6	320.1	295.6	283.3	280.7	285.4
42°	343.1	315.5	291.0	278.3	275.7	280.1
42.5°	338.4	310.7	286.3	273.4	270.7	275.1
43°	333.8	306.1	281.6	268.5	265.5	269.8
43.5°	329.3	301.5	276.8	263.7	260.5	264.5



TEST NUMBER: P775827

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	315.4	287.5	262.7	249.0	245.1	248.9
45.5°	310.7	283.1	257.9	244.2	240.1	243.6
46°	306.2	278.5	253.4	239.4	235.0	238.3
46.5°	301.4	273.8	248.6	234.5	229.8	233.1
47°	296.6	269.1	244.0	229.6	224.8	227.9
47.5°	291.9	264.5	239.2	224.8	219.6	222.5
48°	287.0	259.9	234.7	220.0	214.5	217.0
48.5°	282.3	255.2	229.9	215.1	209.4	211.8
49°	277.4	250.7	225.4	210.4	204.4	206.5
49.5°	272.4	246.0	220.7	205.5	199.4	201.3
50°	267.6	241.3	216.1	200.7	194.2	195.9
50.5°	262.9	236.6	211.4	196.1	189.1	190.5
51°	258.2	231.9	206.8	191.3	184.2	185.2
51.5°	253.6	227.5	202.3	186.4	179.2	180.0
52°	249.2	223.1	197.8	181.9	174.2	174.6
52.5°	244.5	218.8	193.4	177.2	169.1	169.5
53°	239.7	214.4	189.1	172.7	164.2	164.1
53.5°	234.5	210.0	184.7	168.0	159.3	158.8
54°	228.9	205.3	180.3	163.4	154.3	153.6
54.5°	223.3	200.5	175.9	159.1	149.5	148.4
55°	217.1	195.6	171.3	154.6	144.7	143.1
55.5°	210.9	190.3	166.6	150.0	139.9	138.1
56°	204.4	185.0	161.9	145.5	135.3	132.9
56.5°	197.9	179.6	157.1	140.9	130.5	127.8
57°	191.1	174.0	152.4	136.3	125.8	122.7
57.5°	184.5	168.3	147.5	131.6	121.2	117.7
58°	177.6	162.6	142.7	127.2	116.6	112.9
58.5°	170.8	156.9	137.7	122.6	112.1	107.9
59°	164.1	151.0	132.8	118.1	107.5	103.1
59.5°	157.3	145.2	127.8	113.5	103.0	98.2
60°	150.5	139.4	122.7	109.1	98.4	93.5
60.5°	143.9	133.6	117.7	104.4	93.9	88.9
61°	137.3	127.8	112.6	100.0	89.5	84.3
61.5°	130.7	122.1	107.5	95.5	85.1	79.7
62°	124.2	116.4	102.5	91.0	80.9	75.3
62.5°	118.0	110.8	97.5	86.5	76.5	71.0
63°	111.8	105.3	92.4	82.0	72.4	66.7
63.5°	105.8	99.8	87.5	77.4	68.3	62.4
64°	100.1	94.5	82.7	72.9	64.3	58.4
64.5°	94.6	89.4	77.9	68.5	60.4	54.5
65°	89.1	84.3	73.1	64.2	56.6	50.7
65.5°	83.7	79.1	68.7	59.8	52.6	46.9
66°	78.2	74.2	64.0	55.4	49.0	43.4



TEST NUMBER: P775827

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	63.4	60.6	51.4	43.6	38.2	34.3
68°	59.1	56.2	47.3	39.9	35.3	31.7
68.5°	55.0	52.1	43.5	36.1	32.4	29.2
69°	51.1	48.3	39.9	33.4	29.6	26.6
69.5°	47.4	44.6	36.3	30.6	26.7	24.7
70°	44.1	41.1	33.5	27.7	23.8	23.2
70.5°	40.8	37.9	30.8	24.9	21.8	22.3
71°	37.7	35.2	28.0	22.5	20.3	21.2
71.5°	34.9	32.5	25.2	20.5	19.3	20.2
72°	32.1	29.9	22.9	18.7	18.3	19.2
72.5°	29.7	27.2	20.8	17.2	17.4	18.1
73°	27.3	24.7	18.9	15.8	16.5	17.1
73.5°	25.1	22.4	17.1	14.6	15.5	16.2
74°	23.0	20.4	15.5	13.6	14.6	15.2
74.5°	20.9	18.5	14.2	12.7	13.8	14.3
75°	19.1	16.9	12.8	11.9	12.9	13.4
75.5°	17.3	15.2	11.7	11.2	12.1	12.5
76°	15.7	13.8	10.6	10.5	11.3	11.7
76.5°	14.1	12.3	9.6	9.8	10.6	11.0
77°	12.7	11.1	8.8	9.1	9.8	10.3
77.5°	11.4	9.9	8.0	8.6	9.1	9.5
78°	10.3	8.9	7.3	8.0	8.5	8.8
78.5°	9.2	7.9	6.6	7.4	7.9	8.2
79°	8.1	7.0	6.0	6.8	7.3	7.6
79.5°	7.0	6.2	5.5	6.2	6.6	6.9
80°	6.0	5.4	5.0	5.7	6.0	6.3
80.5°	5.2	4.8	4.6	5.2	5.5	5.8
81°	4.5	4.1	4.1	4.8	5.0	5.3
81.5°	3.7	3.7	3.7	4.2	4.5	4.8
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°	2.1	2.4	2.6	3.0	3.1	3.3
83.5°	1.7	2.0	2.2	2.6	2.7	2.9
84°	1.3	1.7	1.9	2.2	2.3	2.6
84.5°	0.9	1.3	1.7	1.9	1.9	2.2
85°	0.7	1.1	1.3	1.6	1.6	1.9
85.5°	0.5	0.8	1.0	1.3	1.2	1.6
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: P775827

CATALOG NUMBER: HCDJBL510CSD-HCD81TRH-HCD81TRLWW-1000lm-3500K

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°	463.8	479.6	492.3	509.3	526.0	547.0	561.8	566.9	563.3	547.8	529.9
22°	460.3	476.3	489.1	506.3	523.4	544.8	559.9	565.0	561.4	545.5	527.2



44°	259.4	283.0	300.3	323.9	348.6	384.6	412.6	422.8	417.2	390.8	361.8
44.5°	254.2	277.8	295.4	319.1	343.9	380.0	408.2	418.5	413.0	386.3	357.2



66.5°	40.1	62.5	81.3	100.8	110.6	124.4	130.8	127.3	115.9	94.3	84.1
67°	36.8	58.3	76.8	95.6	104.8	117.6	123.6	119.9	108.4	88.7	78.6



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°	506.8	488.7	471.7	462.6	460.3	463.8
22°	503.7	485.3	468.1	458.8	456.7	460.3



44°	324.7	297.0	272.0	258.7	255.4	259.4
44.5°	320.0	292.2	267.3	254.0	250.2	254.2



66.5°	72.8	69.6	59.7	51.4	45.3	40.1
67°	67.8	64.9	55.3	47.3	41.6	36.8

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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)