

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: P775702

Luminaire Tested: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3500K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775702
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B009)
Test Lab:
Issue Date: 2/7/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3500K
Description: 4 INCH SQUARE MEDIUM LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT
Ballast/Driver: -

Summary

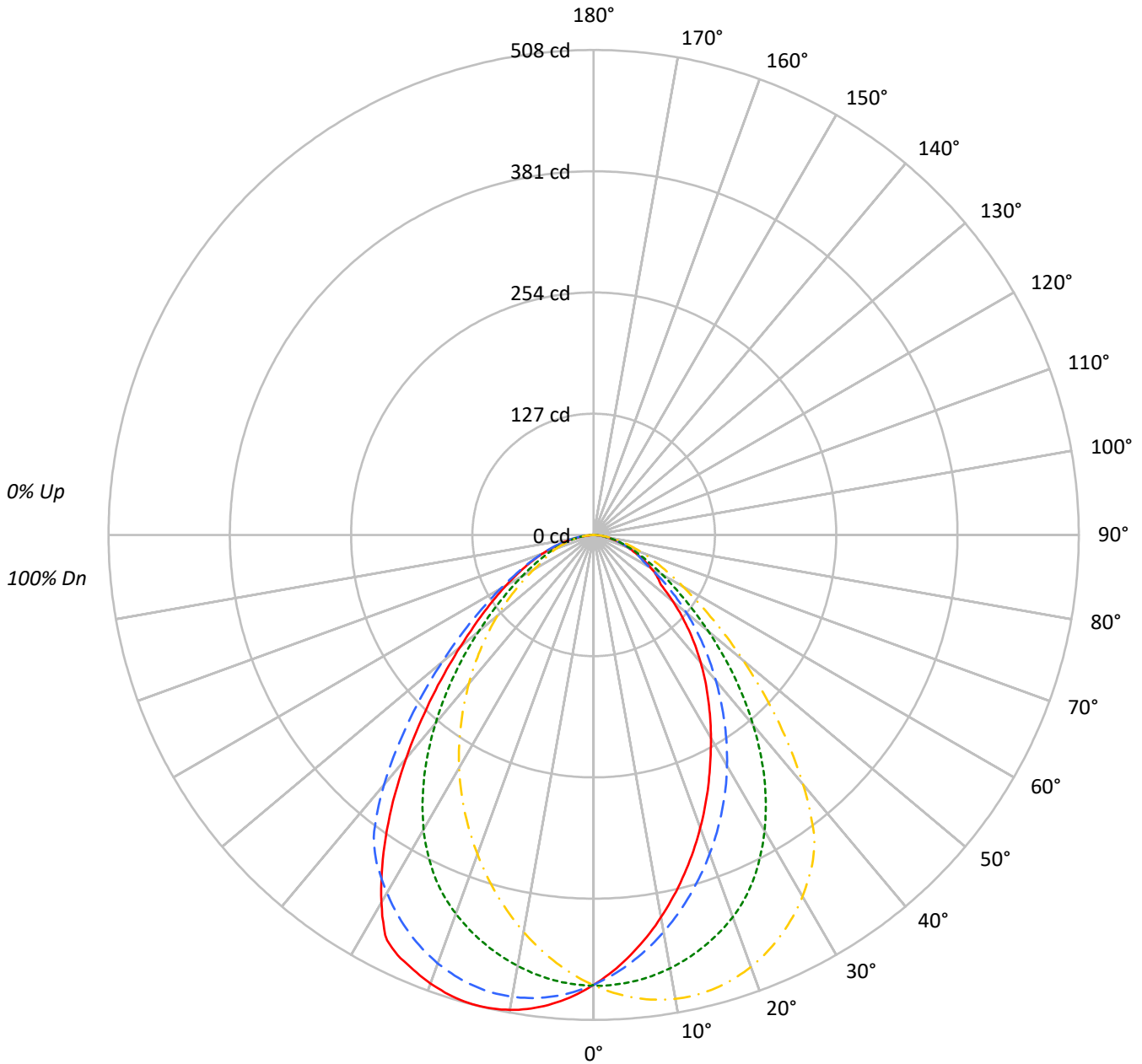
Lumens per Lamp: N/A
Luminaire Lumens: 913.1 lumens
Efficiency: N/A
Efficacy: 91.3 lumens/watt
Spacing Criteria (0/90/45): 1.11 / 1.14 / 1.19
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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									50									30									10									0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0																
RCR																																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100																			
1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	89	88																			
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76																			
3	94	85	78	72	92	84	77	72	81	75	71	78	73	69	76	72	68	66																			
4	87	77	69	63	85	75	68	63	73	67	62	71	65	61	69	64	60	58																			
5	81	70	62	56	79	68	61	55	66	60	55	65	59	54	63	58	54	52																			
6	75	63	55	50	74	62	55	49	61	54	49	59	53	49	58	52	48	46																			
7	70	58	50	44	69	57	50	44	56	49	44	54	48	44	53	48	43	42																			
8	66	53	46	40	64	53	45	40	51	45	40	50	44	40	49	44	39	38																			
9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34																			
10	58	46	38	34	57	45	38	34	44	38	33	43	37	33	43	37	33	32																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	59338	59338	59338	59338
5°	55825	59337	62281	59173
10°	51947	58899	64560	58592
15°	47855	58148	66109	57705
20°	43727	57053	66950	56530
25°	39589	55113	67444	54739
30°	35690	52010	64580	51748
35°	32094	47888	57997	47534
40°	28618	42698	50156	42303
45°	25059	36788	42412	36557
50°	21282	30602	35731	30817
55°	18387	25101	30564	25759
60°	17493	20841	26655	21797
65°	15664	17569	23555	18820
70°	14019	15123	20790	16521
75°	12399	13031	17845	14587
80°	9784	10871	13843	12755
85°	4765	7942	6642	10541

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 225°
 Vertical Angle: 45°
 Luminance: 48339 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	44.3	4.9
10°-20°	124.0	13.6
20°-30°	179.1	19.6
30°-40°	192.7	21.1
40°-50°	159.9	17.5
50°-60°	107.6	11.8
60°-70°	65.1	7.1
70°-80°	32.9	3.6
80°-90°	7.4	0.8
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°	347.5	38.1
0°-40°	540.2	59.2
0°-60°	807.7	88.5
0°-90°	913.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	913.1	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	472	472	472	472	472	
5°	442	470	493	468	442	41
15°	367	446	507	443	367	103
25°	285	397	486	394	285	131
35°	209	312	378	309	209	131
45°	141	207	238	205	141	108
55°	84	114	139	117	84	77
65°	53	59	79	63	53	52
75°	26	27	37	30	26	27
85°	3	6	5	7	3	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°	471.5	471.5	471.5	471.5	471.5	471.5	471.5	471.5	471.5	471.5	471.5
0.5°	468.8	468.8	469.3	470.3	472.3	473.0	473.6	473.9	473.9	473.5	472.9
1°	466.1	466.3	467.4	469.3	472.3	473.9	475.4	476.2	476.4	475.8	474.6
1.5°	463.3	463.7	465.4	468.1	472.2	474.8	477.0	478.4	478.8	477.9	476.1
2°	460.5	461.1	463.4	466.9	472.0	475.6	478.6	480.6	481.1	479.9	477.8
2.5°	457.5	458.3	461.2	465.6	471.8	476.3	480.1	482.5	483.3	482.0	479.2
3°	454.6	455.6	459.1	464.3	471.4	477.0	481.6	484.5	485.4	483.9	480.6
3.5°	451.5	452.7	456.8	462.9	471.1	477.6	482.9	486.5	487.4	485.7	481.9
4°	448.3	449.9	454.5	461.5	470.6	478.2	484.3	488.2	489.4	487.5	483.1
4.5°	445.1	446.8	452.1	459.9	470.2	478.6	485.5	489.9	491.2	489.2	484.2
5°	441.9	443.9	449.7	458.4	469.7	479.0	486.7	491.5	493.0	490.7	485.3
5.5°	438.5	440.8	447.1	456.7	469.1	479.3	487.7	493.1	494.6	492.2	486.3
6°	435.2	437.6	444.6	455.1	468.4	479.6	488.6	494.5	496.2	493.6	487.2
6.5°	431.9	434.3	442.0	453.3	467.7	479.7	489.6	495.8	497.7	494.9	488.0
7°	428.3	431.1	439.3	451.7	466.9	479.8	490.4	497.0	499.1	496.0	488.7
7.5°	424.7	427.7	436.5	449.7	466.1	479.8	491.1	498.2	500.3	497.1	489.4
8°	421.3	424.4	433.8	447.8	465.1	479.8	491.7	499.3	501.5	498.2	489.9
8.5°	417.7	421.0	431.0	445.9	464.1	479.7	492.3	500.2	502.6	499.0	490.3
9°	414.0	417.6	428.1	443.9	463.1	479.5	492.8	501.1	503.6	499.8	490.7
9.5°	410.2	414.0	425.1	441.7	462.0	479.2	493.2	501.8	504.4	500.6	491.0
10°	406.5	410.4	422.2	439.6	460.9	478.9	493.5	502.5	505.2	501.2	491.2
10.5°	402.7	406.9	419.2	437.5	459.6	478.5	493.7	503.1	505.8	501.7	491.4
11°	398.9	403.3	416.2	435.3	458.4	478.1	493.8	503.6	506.5	502.1	491.4
11.5°	395.1	399.7	413.1	432.9	457.0	477.6	493.8	504.0	506.9	502.4	491.3
12°	391.1	396.0	409.9	430.6	455.7	476.9	493.8	504.3	507.3	502.6	491.2
12.5°	387.2	392.2	406.8	428.2	454.2	476.3	493.7	504.4	507.6	502.8	491.0
13°	383.4	388.5	403.6	425.9	452.8	475.6	493.4	504.5	507.7	502.8	490.7
13.5°	379.4	384.7	400.4	423.5	451.2	474.8	493.1	504.5	507.8	502.7	490.3
14°	375.4	381.0	397.0	421.0	449.7	473.8	492.7	504.4	507.8	502.5	489.8
14.5°	371.4	377.2	393.6	418.4	448.0	473.0	492.3	504.2	507.6	502.2	489.2
15°	367.3	373.1	390.3	415.8	446.3	472.0	491.6	503.9	507.4	501.9	488.5
15.5°	363.3	369.3	387.0	413.2	444.5	470.9	491.0	503.5	507.1	501.5	487.8
16°	359.3	365.5	383.6	410.6	442.7	469.7	490.3	502.9	506.7	501.0	487.0
16.5°	355.3	361.5	380.1	407.9	440.9	468.5	489.5	502.4	506.1	500.3	486.1
17°	351.2	357.7	376.7	405.1	438.9	467.2	488.6	501.8	505.5	499.5	485.1
17.5°	347.1	353.6	373.1	402.3	436.8	465.9	487.6	501.0	504.8	498.7	484.0
18°	343.0	349.6	369.7	399.6	434.8	464.3	486.6	500.0	504.0	497.8	482.8
18.5°	339.0	345.7	366.2	396.7	432.7	462.8	485.4	499.1	503.0	496.7	481.6
19°	334.8	341.6	362.6	393.6	430.5	461.3	484.2	498.1	502.1	495.7	480.4
19.5°	330.6	337.6	359.0	390.7	428.2	459.5	482.8	496.9	501.1	494.4	479.0
20°	326.5	333.7	355.3	387.7	426.0	457.9	481.5	495.7	499.9	493.2	477.6
20.5°	322.4	329.6	351.8	384.6	423.6	456.0	480.0	494.3	498.7	491.9	475.9
21°	318.2	325.6	348.2	381.5	421.1	454.1	478.5	493.0	497.4	490.4	474.3



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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°	305.8	313.5	337.1	372.0	412.9	448.0	473.4	488.3	493.2	485.6	469.0
23°	301.6	309.3	333.3	368.6	410.0	445.6	471.5	486.7	491.7	484.0	467.1
23.5°	297.5	305.4	329.6	365.3	406.8	443.3	469.6	484.9	490.2	482.2	465.1
24°	293.4	301.2	325.8	361.5	403.6	440.7	467.4	483.3	488.7	480.5	463.1
24.5°	289.1	297.2	322.1	358.0	400.3	437.9	465.3	481.4	487.3	478.5	460.9
25°	285.1	293.2	318.1	354.3	396.9	435.0	463.2	479.5	485.7	476.6	458.7
25.5°	281.0	289.0	314.4	350.6	393.4	432.0	461.0	477.8	483.7	474.8	456.3
26°	277.0	285.0	310.6	346.6	389.8	429.0	458.6	476.0	481.4	473.0	454.0
26.5°	273.0	281.0	306.7	342.9	386.1	425.7	456.2	474.1	479.0	471.0	451.6
27°	268.9	276.9	302.9	339.0	382.3	422.2	453.7	472.2	476.5	469.1	449.1
27.5°	265.0	273.0	299.1	335.0	378.3	418.8	451.2	469.6	472.6	466.5	446.6
28°	260.9	268.9	295.1	331.0	374.4	415.2	448.7	467.0	467.2	463.8	444.0
28.5°	257.1	265.0	291.3	326.9	370.3	411.5	446.0	464.4	461.7	461.1	441.3
29°	253.3	260.9	287.3	322.8	366.3	407.6	443.2	461.5	456.6	458.2	438.5
29.5°	249.3	257.2	283.3	318.8	362.1	403.6	440.3	457.0	450.5	453.7	435.7
30°	245.6	253.4	279.3	314.5	357.9	399.4	437.4	451.5	444.4	448.3	432.9
30.5°	241.8	249.4	275.2	310.4	353.5	395.4	434.3	446.1	438.3	442.9	430.0
31°	238.1	245.3	271.2	306.1	349.2	391.3	431.0	440.9	432.1	437.6	427.1
31.5°	234.3	241.8	267.1	301.9	344.6	386.8	427.7	434.8	425.2	431.7	424.1
32°	230.6	237.9	263.0	297.6	340.2	382.5	424.5	428.7	418.7	425.7	421.1
32.5°	227.0	234.3	259.0	293.4	335.6	377.9	421.3	422.4	412.2	419.8	418.1
33°	223.3	230.6	254.9	289.0	331.0	373.3	417.9	416.4	405.4	413.5	415.0
33.5°	219.7	227.0	250.9	284.8	326.1	368.7	414.4	409.9	398.4	407.3	411.8
34°	216.2	223.3	246.8	280.3	321.5	363.9	410.6	403.5	391.4	400.7	408.1
34.5°	212.5	219.6	242.6	276.0	316.6	358.8	406.5	396.8	384.4	394.4	404.2
35°	208.9	215.8	238.6	271.5	311.7	354.1	402.3	390.3	377.5	387.8	400.1
35.5°	205.4	212.5	234.5	267.2	306.7	348.9	397.9	383.5	370.3	381.4	396.0
36°	202.0	208.8	230.6	262.7	301.6	343.8	393.3	376.8	363.1	374.7	391.8
36.5°	198.5	205.3	226.5	258.4	296.5	338.6	387.7	369.8	356.1	368.0	386.6
37°	195.0	201.8	222.5	253.9	291.5	333.3	381.2	363.1	348.9	361.4	380.3
37.5°	191.4	198.2	218.5	249.3	286.2	327.8	374.7	356.1	341.5	354.7	374.2
38°	187.9	194.6	214.5	244.9	280.9	322.3	368.4	349.2	334.1	347.9	368.0
38.5°	184.5	191.1	210.7	240.3	275.7	316.8	361.8	342.0	327.2	340.9	361.7
39°	181.2	187.7	206.8	235.9	270.5	311.2	354.9	335.4	320.1	334.4	354.9
39.5°	177.7	184.3	202.8	231.3	265.2	305.5	348.0	328.3	312.7	327.7	348.2
40°	174.2	180.7	199.0	226.8	259.9	299.7	341.0	321.1	305.3	320.7	341.2
40.5°	170.8	177.2	195.2	222.3	254.4	294.0	334.1	314.1	298.9	313.7	334.4
41°	167.4	173.8	191.4	217.7	249.1	288.2	326.9	307.6	291.9	307.4	327.6
41.5°	164.1	170.4	187.6	213.3	243.8	282.4	319.9	300.6	284.6	300.6	320.3
42°	160.7	167.0	183.9	208.7	238.5	276.6	312.7	293.4	277.8	293.6	313.4
42.5°	157.4	163.6	180.1	204.4	233.2	270.6	305.8	286.8	271.4	287.2	306.2
43°	154.0	160.2	176.4	199.9	227.8	264.8	298.8	280.3	264.7	280.7	299.4
43.5°	150.6	156.8	172.7	195.5	222.4	258.9	291.7	273.3	257.2	274.0	292.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	140.8	146.8	161.8	182.3	206.7	241.2	270.7	253.9	238.3	255.1	271.6
45.5°	137.5	143.5	158.2	178.0	201.4	235.4	263.5	246.8	232.1	248.3	264.8
46°	134.4	140.3	154.7	173.7	196.2	229.6	256.6	240.6	226.7	241.9	257.9
46.5°	130.9	136.9	151.0	169.4	191.0	223.7	250.0	234.8	220.4	236.6	251.5
47°	127.7	133.6	147.5	165.2	185.8	217.9	243.2	228.3	213.7	230.4	244.8
47.5°	124.5	130.3	143.9	161.0	180.8	212.1	236.4	221.5	208.9	223.7	238.3
48°	121.4	127.1	140.6	156.8	175.7	206.4	229.6	216.4	203.8	218.4	231.7
48.5°	118.1	123.8	137.1	152.7	170.8	200.8	223.4	210.6	197.7	213.1	225.8
49°	115.0	120.7	133.6	148.8	166.0	195.2	217.1	204.1	192.3	207.0	219.5
49.5°	111.9	117.5	130.2	144.7	161.2	189.7	210.6	198.4	187.7	201.0	213.3
50°	108.7	114.3	126.8	140.7	156.3	184.0	204.3	193.3	182.5	196.2	207.1
50.5°	105.5	111.0	123.5	136.7	151.8	178.7	198.6	187.6	176.7	190.9	201.7
51°	102.5	107.9	120.2	133.0	147.2	173.2	192.5	181.5	172.8	184.6	195.8
51.5°	99.3	104.8	116.9	129.2	142.9	168.1	186.5	177.2	168.5	180.4	190.0
52°	96.3	101.7	113.6	125.4	138.4	162.7	181.2	172.3	163.1	175.6	184.4
52.5°	93.3	98.6	110.4	121.8	134.0	157.8	175.7	166.4	159.1	170.2	179.6
53°	90.5	95.5	107.3	118.2	129.9	152.6	169.9	162.1	155.3	165.1	173.8
53.5°	87.8	92.5	104.1	114.7	126.0	147.7	164.6	157.9	150.8	161.2	168.4
54°	86.2	89.6	101.0	111.2	121.9	142.7	159.6	152.9	146.5	156.4	163.7
54.5°	85.0	86.7	98.0	107.7	118.1	138.0	154.6	148.3	143.2	151.3	159.0
55°	83.8	84.0	95.0	104.5	114.4	133.4	149.4	144.6	139.3	147.8	153.8
55.5°	82.7	81.4	92.1	101.3	110.7	128.8	145.0	140.4	135.1	143.8	149.2
56°	81.3	80.1	89.1	98.2	107.2	124.4	140.3	135.9	132.1	138.9	144.8
56.5°	80.0	78.9	86.2	95.1	103.8	120.3	135.5	132.5	128.7	135.5	140.3
57°	78.7	77.7	83.4	92.1	100.4	116.1	131.4	128.7	124.7	132.0	135.7
57.5°	77.3	76.5	80.6	89.1	97.3	112.1	127.2	124.5	121.9	127.7	132.0
58°	75.9	75.1	78.0	86.3	94.1	108.4	122.8	121.5	118.8	124.3	127.7
58.5°	74.4	73.9	75.3	83.6	91.2	104.6	119.0	118.1	115.2	121.2	123.6
59°	72.7	72.4	72.7	80.9	88.4	101.1	115.2	114.2	112.2	117.5	120.0
59.5°	71.2	71.1	70.1	78.2	85.6	97.6	111.3	111.4	109.0	114.2	116.2
60°	69.5	69.6	67.7	75.7	82.8	94.3	107.7	108.3	105.9	111.3	112.3
60.5°	67.7	68.1	65.3	73.1	80.0	91.1	104.3	104.7	103.0	107.7	109.0
61°	66.1	66.5	63.0	70.9	77.2	88.1	100.7	102.0	100.0	104.6	105.7
61.5°	64.4	65.0	61.0	68.5	74.7	85.2	97.6	98.9	97.2	101.7	102.1
62°	62.7	63.3	59.0	66.2	72.3	82.1	94.5	95.7	94.4	98.5	99.0
62.5°	61.0	61.6	57.9	64.0	69.9	79.1	91.2	93.0	91.8	95.7	96.0
63°	59.4	60.1	56.7	61.8	67.5	76.6	88.4	90.2	89.3	93.0	92.7
63.5°	57.7	58.4	55.5	59.8	65.4	74.0	85.6	87.4	86.7	89.9	90.0
64°	55.9	56.9	54.4	57.8	63.2	71.5	82.9	84.7	84.2	87.3	87.3
64.5°	54.3	55.2	53.1	55.7	61.0	69.0	80.1	82.0	81.6	84.7	84.5
65°	52.6	53.7	51.9	53.9	59.0	66.7	77.3	79.4	79.1	82.1	81.8
65.5°	51.0	52.0	50.7	52.1	57.0	64.4	74.7	77.2	76.7	79.6	79.0
66°	49.3	50.4	49.4	50.2	55.0	62.2	72.2	74.5	74.3	77.1	76.5



TEST NUMBER: P775702

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	45.0	45.7	45.4	45.2	49.5	55.8	64.8	67.5	67.3	69.9	69.1
68°	43.5	44.2	43.9	43.6	47.8	53.9	62.6	65.3	65.2	67.5	66.7
68.5°	42.2	42.8	42.6	42.1	46.0	52.0	60.3	63.0	62.9	65.3	64.3
69°	40.8	41.3	41.3	40.5	44.3	50.1	58.0	60.8	60.8	63.0	62.1
69.5°	39.5	40.0	40.0	39.1	42.7	48.2	55.9	58.6	58.6	60.8	59.8
70°	38.1	38.6	38.5	37.7	41.1	46.4	53.8	56.5	56.5	58.6	57.7
70.5°	36.9	37.1	37.3	36.4	39.5	44.6	51.7	54.5	54.5	56.5	55.5
71°	35.6	35.9	36.0	35.1	38.0	43.0	49.7	52.3	52.4	54.5	53.5
71.5°	34.4	34.7	34.7	33.8	36.5	41.2	47.7	50.3	50.3	52.3	51.4
72°	33.0	33.5	33.4	32.5	35.0	39.6	45.7	48.3	48.3	50.2	49.4
72.5°	31.8	32.2	32.1	31.2	33.6	38.0	43.8	46.3	46.3	48.2	47.3
73°	30.6	31.0	30.8	30.0	32.2	36.4	42.0	44.4	44.3	46.3	45.5
73.5°	29.2	29.7	29.5	28.9	30.8	34.8	40.1	42.5	42.4	44.2	43.5
74°	28.0	28.4	28.2	27.9	29.4	33.4	38.2	40.5	40.4	42.3	41.6
74.5°	26.7	27.1	27.0	26.9	28.1	31.8	36.5	38.6	38.5	40.4	39.8
75°	25.5	25.9	25.9	25.9	26.8	30.4	34.7	36.9	36.7	38.5	38.0
75.5°	24.2	24.7	24.7	24.9	25.5	29.0	32.9	35.0	34.8	36.6	36.2
76°	23.0	23.4	23.4	23.7	24.2	27.6	31.4	33.1	32.9	34.8	34.4
76.5°	21.8	22.2	22.3	22.7	23.0	26.1	29.6	31.3	31.1	32.9	32.6
77°	20.6	20.9	21.1	21.7	21.9	24.8	28.1	29.6	29.4	31.2	31.0
77.5°	19.4	19.7	20.0	20.5	20.6	23.4	26.4	27.9	27.6	29.3	29.3
78°	18.2	18.4	18.9	19.5	19.5	22.1	24.9	26.2	25.8	27.7	27.7
78.5°	17.0	17.3	17.7	18.4	18.3	20.7	23.3	24.4	24.1	25.9	26.1
79°	15.8	16.1	16.7	17.3	17.2	19.5	21.9	22.8	22.4	24.1	24.4
79.5°	14.6	14.8	15.5	16.3	16.2	18.2	20.4	21.0	20.7	22.5	22.9
80°	13.5	13.6	14.4	15.2	15.0	17.0	19.0	19.4	19.1	20.8	21.4
80.5°	12.3	12.4	13.4	14.2	14.0	15.7	17.5	17.8	17.4	19.2	19.9
81°	11.2	11.2	12.3	13.2	12.9	14.6	16.2	16.2	15.7	17.5	18.4
81.5°	10.0	10.0	11.3	12.1	12.0	13.5	14.8	14.6	14.2	16.0	17.1
82°	8.9	8.9	10.4	11.2	11.0	12.3	13.5	13.3	12.6	14.4	15.6
82.5°	7.8	8.0	9.3	10.2	10.0	11.3	12.2	11.8	11.2	12.9	14.4
83°	6.7	6.9	8.4	9.2	9.1	10.2	11.1	10.6	9.7	11.5	13.1
83.5°	5.6	6.0	7.6	8.3	8.2	9.2	9.9	9.4	8.3	10.4	11.8
84°	4.6	5.2	6.6	7.3	7.3	8.2	8.9	8.2	6.8	9.1	10.7
84.5°	3.7	4.4	5.8	6.3	6.3	7.1	7.8	6.9	5.4	8.0	9.6
85°	3.3	3.7	5.0	5.4	5.5	6.1	6.7	5.7	4.6	6.8	8.5
85.5°	2.8	3.2	4.1	4.5	4.6	5.1	5.6	4.9	3.9	5.6	7.5
86°	2.3	2.6	3.4	3.5	3.7	4.1	4.7	4.0	3.3	4.8	6.3
86.5°	1.9	2.1	2.6	2.7	2.9	3.2	3.6	3.3	2.8	4.0	5.3
87°	1.3	1.5	1.9	1.9	2.1	2.3	2.7	2.5	2.2	3.3	4.2
87.5°	0.9	0.9	1.0	1.1	1.2	1.5	1.8	1.8	1.7	2.5	3.3
88°	0.5	0.4	0.4	0.3	0.5	0.7	0.9	1.1	1.1	1.8	2.4
88.5°	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.5	1.0	1.5



TEST NUMBER: P775702

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0



TEST NUMBER: P775702

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	471.5	471.5	471.5	471.5	471.5	471.5
0.5°	472.3	472.1	470.9	469.9	469.2	468.8
1°	473.1	472.0	469.8	467.9	466.7	466.1
1.5°	473.9	471.8	468.6	465.9	464.1	463.3
2°	474.7	471.4	467.3	463.9	461.4	460.5
2.5°	475.3	471.1	466.0	461.6	458.6	457.5
3°	475.9	470.7	464.6	459.4	455.9	454.6
3.5°	476.4	470.2	463.2	457.1	453.1	451.5
4°	476.8	469.7	461.6	454.9	450.1	448.3
4.5°	477.1	469.1	460.0	452.3	447.1	445.1
5°	477.5	468.4	458.5	449.9	444.0	441.9
5.5°	477.7	467.6	456.8	447.3	441.0	438.5
6°	477.9	466.9	455.1	444.7	437.8	435.2
6.5°	478.0	466.1	453.2	442.0	434.6	431.9
7°	478.0	465.1	451.3	439.5	431.4	428.3
7.5°	477.9	464.2	449.5	436.7	428.0	424.7
8°	477.8	463.2	447.5	433.9	424.6	421.3
8.5°	477.6	462.0	445.5	431.1	421.2	417.7
9°	477.2	460.9	443.5	428.2	417.7	414.0
9.5°	476.9	459.7	441.3	425.2	414.3	410.2
10°	476.5	458.5	439.1	422.2	410.7	406.5
10.5°	476.0	457.1	436.9	419.3	407.2	402.7
11°	475.5	455.8	434.7	416.2	403.6	398.9
11.5°	474.9	454.4	432.4	413.1	399.9	395.1
12°	474.1	452.8	430.0	410.0	396.2	391.1
12.5°	473.4	451.3	427.6	406.8	392.5	387.2
13°	472.6	449.8	425.2	403.6	388.8	383.4
13.5°	471.5	448.1	422.8	400.4	385.0	379.4
14°	470.7	446.5	420.4	397.2	381.2	375.4
14.5°	469.7	444.7	417.8	393.9	377.4	371.4
15°	468.5	442.9	415.2	390.4	373.6	367.3
15.5°	467.4	441.1	412.6	387.1	369.6	363.3
16°	466.2	439.2	410.0	383.7	365.8	359.3
16.5°	464.9	437.3	407.3	380.4	361.9	355.3
17°	463.5	435.3	404.6	377.0	358.0	351.2
17.5°	462.0	433.2	401.8	373.4	354.1	347.1
18°	460.6	431.1	399.1	369.9	350.1	343.0
18.5°	459.0	429.0	396.2	366.5	346.1	339.0
19°	457.4	426.7	393.3	362.9	342.2	334.8
19.5°	455.7	424.5	390.4	359.5	338.3	330.6
20°	453.9	422.1	387.5	355.9	334.3	326.5
20.5°	452.0	419.8	384.5	352.3	330.4	322.4
21°	450.1	417.3	381.4	348.7	326.3	318.2



TEST NUMBER: P775702

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	443.9	409.5	372.1	337.9	314.3	305.8
23°	441.7	406.7	368.8	334.3	310.2	301.6
23.5°	439.3	403.8	365.7	330.7	306.3	297.5
24°	436.9	400.6	362.4	326.9	302.3	293.4
24.5°	434.5	397.6	358.9	323.3	298.2	289.1
25°	431.9	394.2	355.4	319.6	294.1	285.1
25.5°	429.2	390.8	352.0	315.8	290.3	281.0
26°	426.3	387.2	348.4	312.1	286.2	277.0
26.5°	423.3	383.7	344.6	308.4	282.2	273.0
27°	420.2	380.2	340.9	304.7	278.2	268.9
27.5°	416.9	376.3	337.1	300.8	274.3	265.0
28°	413.3	372.3	333.1	297.0	270.3	260.9
28.5°	409.8	368.6	329.3	293.3	266.3	257.1
29°	406.2	364.5	325.4	289.5	262.5	253.3
29.5°	402.3	360.4	321.4	285.7	258.7	249.3
30°	398.6	356.1	317.3	281.8	254.8	245.6
30.5°	394.7	351.8	313.4	277.9	251.0	241.8
31°	390.5	347.3	309.1	274.0	247.2	238.1
31.5°	386.2	342.8	305.0	270.1	243.3	234.3
32°	381.8	338.3	300.7	266.2	239.7	230.6
32.5°	377.4	333.7	296.6	262.2	236.0	227.0
33°	372.7	328.8	292.2	258.3	232.3	223.3
33.5°	368.1	324.0	287.9	254.3	228.6	219.7
34°	363.1	319.3	283.5	250.3	225.0	216.2
34.5°	358.2	314.3	279.2	246.2	221.5	212.5
35°	353.2	309.4	274.7	242.2	217.9	208.9
35.5°	348.2	304.2	270.4	238.3	214.3	205.4
36°	343.0	299.4	265.9	234.4	210.7	202.0
36.5°	337.6	294.3	261.5	230.5	207.3	198.5
37°	332.3	289.0	257.0	226.6	203.8	195.0
37.5°	326.9	283.9	252.6	222.5	200.3	191.4
38°	321.4	278.6	248.1	218.6	196.7	187.9
38.5°	315.8	273.4	243.5	214.7	193.3	184.5
39°	310.4	268.1	239.1	210.9	190.0	181.2
39.5°	304.8	262.9	234.6	207.2	186.6	177.7
40°	299.1	257.5	230.2	203.2	182.9	174.2
40.5°	293.3	252.2	225.6	199.4	179.6	170.8
41°	287.5	247.0	221.2	195.7	176.3	167.4
41.5°	281.8	241.7	216.6	191.9	172.8	164.1
42°	275.9	236.5	212.2	188.1	169.5	160.7
42.5°	270.3	231.2	207.7	184.4	166.1	157.4
43°	264.4	225.9	203.3	180.7	162.8	154.0
43.5°	258.5	220.8	198.9	176.9	159.3	150.6

TEST NUMBER: P775702

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	241.3	205.4	185.9	166.1	149.6	140.8
45.5°	235.6	200.3	181.6	162.5	146.2	137.5
46°	229.8	195.4	177.6	159.0	143.1	134.4
46.5°	224.2	190.4	173.2	155.4	139.7	130.9
47°	218.5	185.5	169.1	151.9	136.5	127.7
47.5°	213.0	180.7	164.9	148.3	133.2	124.5
48°	207.4	175.9	161.0	144.9	130.1	121.4
48.5°	202.0	171.1	156.9	141.5	126.9	118.1
49°	196.5	166.6	152.9	138.1	123.7	115.0
49.5°	191.2	162.0	149.0	134.7	120.5	111.9
50°	185.8	157.4	145.2	131.3	117.4	108.7
50.5°	180.7	153.0	141.3	127.9	114.3	105.5
51°	175.6	148.7	137.6	124.6	111.0	102.5
51.5°	170.6	144.4	133.8	121.4	107.9	99.3
52°	165.5	140.3	130.2	118.1	104.9	96.3
52.5°	160.5	136.1	126.6	115.0	101.9	93.3
53°	155.6	132.2	123.2	111.8	98.8	90.5
53.5°	150.9	128.3	119.5	108.7	95.7	87.8
54°	146.2	124.5	116.1	105.6	92.8	86.2
54.5°	141.7	120.9	112.9	102.6	89.9	85.0
55°	137.4	117.4	109.6	99.6	87.1	83.8
55.5°	133.0	113.8	106.5	96.7	84.3	82.7
56°	128.9	110.5	103.3	93.8	81.7	81.3
56.5°	124.8	107.2	100.3	90.8	80.3	80.0
57°	121.0	104.0	97.3	88.1	79.1	78.7
57.5°	117.2	100.9	94.5	85.3	77.9	77.3
58°	113.5	97.9	91.7	82.6	76.7	75.9
58.5°	110.0	95.0	88.9	80.0	75.3	74.4
59°	106.5	92.2	86.2	77.4	74.0	72.7
59.5°	103.2	89.4	83.6	74.8	72.7	71.2
60°	100.0	86.6	81.0	72.3	71.3	69.5
60.5°	96.9	84.0	78.5	69.9	69.8	67.7
61°	93.9	81.4	76.0	67.5	68.4	66.1
61.5°	90.8	79.0	73.8	65.4	66.8	64.4
62°	88.2	76.6	71.5	63.2	65.2	62.7
62.5°	85.5	74.2	69.3	61.1	63.6	61.0
63°	82.8	71.9	67.0	59.3	62.1	59.4
63.5°	80.1	69.6	65.0	57.8	60.5	57.7
64°	77.4	67.3	62.8	56.7	58.8	55.9
64.5°	74.8	65.3	60.8	55.5	57.3	54.3
65°	72.4	63.2	58.8	54.4	55.7	52.6
65.5°	70.0	61.2	57.0	53.1	54.2	51.0
66°	67.7	59.2	55.1	51.9	52.5	49.3



TEST NUMBER: P775702

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	61.2	53.6	49.8	48.2	47.9	45.0
68°	59.0	51.7	48.2	46.8	46.3	43.5
68.5°	57.1	49.9	46.6	45.6	44.9	42.2
69°	55.1	48.2	45.0	44.2	43.4	40.8
69.5°	53.1	46.5	43.4	42.9	42.0	39.5
70°	51.3	44.9	42.0	41.5	40.6	38.1
70.5°	49.4	43.3	40.5	40.2	39.3	36.9
71°	47.7	41.6	39.0	38.8	37.9	35.6
71.5°	45.8	40.1	37.7	37.5	36.7	34.4
72°	44.1	38.5	36.4	36.3	35.3	33.0
72.5°	42.4	37.3	35.0	34.9	34.1	31.8
73°	40.7	35.8	33.8	33.7	32.7	30.6
73.5°	39.1	34.4	32.4	32.3	31.5	29.2
74°	37.5	32.8	31.2	31.1	30.1	28.0
74.5°	35.8	31.4	29.9	29.8	28.9	26.7
75°	34.3	30.0	28.8	28.6	27.6	25.5
75.5°	32.8	28.7	27.7	27.5	26.3	24.2
76°	31.3	27.3	26.6	26.2	25.0	23.0
76.5°	29.8	26.1	25.6	25.0	23.7	21.8
77°	28.4	24.8	24.6	23.8	22.5	20.6
77.5°	26.9	23.5	23.5	22.6	21.2	19.4
78°	25.6	22.3	22.4	21.4	20.0	18.2
78.5°	24.1	21.1	21.3	20.3	18.8	17.0
79°	22.8	19.9	20.2	19.2	17.5	15.8
79.5°	21.4	18.8	19.2	18.0	16.3	14.6
80°	20.1	17.6	18.0	16.9	15.0	13.5
80.5°	18.9	16.5	17.0	15.7	13.9	12.3
81°	17.6	15.3	15.8	14.7	12.6	11.2
81.5°	16.4	14.3	14.8	13.6	11.5	10.0
82°	15.1	13.3	13.8	12.5	10.5	8.9
82.5°	14.0	12.2	12.7	11.5	9.3	7.8
83°	12.8	11.2	11.7	10.6	8.3	6.7
83.5°	11.7	10.2	10.7	9.5	7.3	5.6
84°	10.6	9.2	9.7	8.6	6.3	4.6
84.5°	9.5	8.2	8.7	7.7	5.5	3.7
85°	8.5	7.3	7.7	6.7	4.7	3.3
85.5°	7.5	6.3	6.7	5.8	4.0	2.8
86°	6.4	5.5	5.7	5.0	3.4	2.3
86.5°	5.3	4.6	4.8	4.0	2.8	1.9
87°	4.4	3.7	3.8	3.2	2.2	1.3
87.5°	3.4	2.9	2.9	2.5	1.6	0.9
88°	2.5	2.1	2.1	1.7	1.0	0.5
88.5°	1.6	1.2	1.2	0.8	0.5	0.2



TEST NUMBER: P775702

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

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



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

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21.5°	314.0	321.5	344.4	378.4	418.5	452.2	476.8	491.4	496.1	488.8	472.6
22°	309.9	317.5	340.7	375.2	415.8	450.1	475.2	490.0	494.6	487.3	470.9



44°	147.4	153.5	169.1	191.1	217.1	253.0	284.4	266.2	251.4	267.0	285.1
44.5°	144.1	150.2	165.4	186.7	211.8	247.2	277.5	260.3	245.2	261.3	278.2



66.5°	47.9	48.9	48.0	48.5	53.1	60.0	69.6	72.2	71.9	74.6	74.0
67°	46.3	47.2	46.6	46.8	51.3	57.9	67.2	69.8	69.6	72.3	71.4



89°	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4	0.6
89.5°	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2

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21.5°	448.1	414.8	378.3	345.2	322.3	314.0
22°	446.1	412.1	375.2	341.5	318.2	309.9



44°	252.7	215.7	194.5	173.3	156.2	147.4
44.5°	247.1	210.5	190.2	169.7	152.8	144.1

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66.5°	65.5	57.3	53.3	50.8	51.0	47.9
67°	63.3	55.3	51.6	49.5	49.4	46.3

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89°	0.7	0.4	0.4	0.3	0.1	0.0
89.5°	0.2	0.1	0.1	0.1	0.1	0.0

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(END OF REPORT)