

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: P775706

Luminaire Tested: HCDJBL510CSD-HCD4TSQMB-1000lm-3000K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775706
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B006-HCD4TSQMB)
Test Lab:
Issue Date: 2/7/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD4TSQMB-1000lm-3000K
Description: 4 INCH SQUARE MEDIUM MATTE BLACK TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 680.1 lumens
Efficiency: N/A
Efficacy: 68.0 lumens/watt
Spacing Criteria (0/90/45): 1.1 / 1.1 / 1.14
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

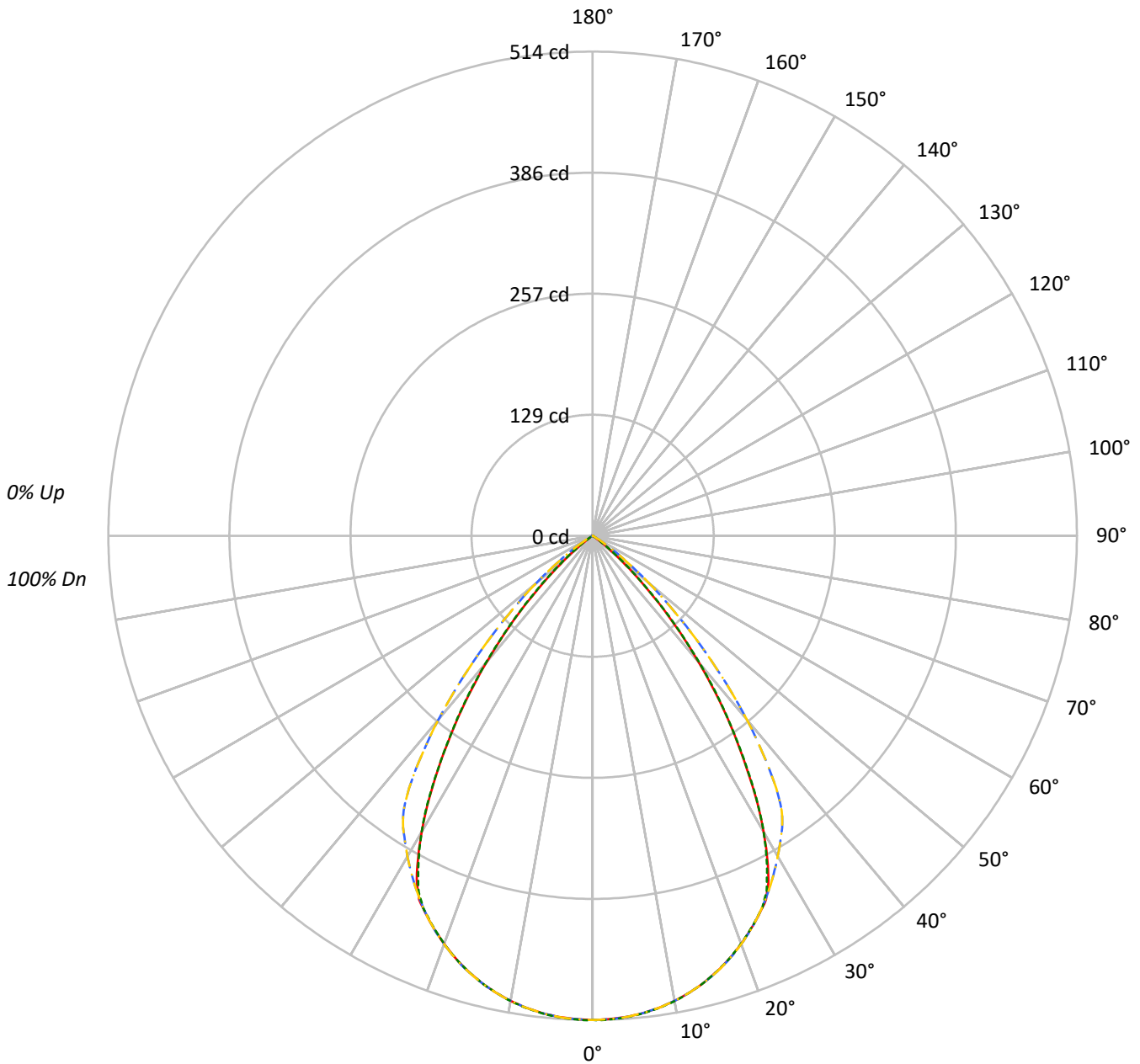
Input Watts (W): 10
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



TEST NUMBER: P775706

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3000K

Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20										
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	113	110	107	105	110	108	105	103	104	102	100	100	98	97	97	95	94	92					92			
2	107	101	97	93	104	100	96	92	96	93	90	93	91	88	90	88	86	85					85			
3	100	93	88	84	98	92	87	83	89	85	81	87	83	80	84	82	79	77					77			
4	95	86	80	75	93	85	79	75	83	78	74	81	77	73	79	75	72	71					71			
5	89	80	73	68	87	79	73	68	77	72	67	75	71	67	74	70	66	65					65			
6	84	74	67	62	82	73	67	62	71	66	62	70	65	61	69	64	61	59					59			
7	79	69	62	57	77	68	62	57	67	61	57	65	60	56	64	60	56	55					55			
8	74	64	57	53	73	63	57	53	62	56	52	61	56	52	60	55	52	50					50			
9	70	60	53	49	69	59	53	49	58	52	48	57	52	48	56	52	48	47					47			
10	67	56	49	45	65	55	49	45	54	49	45	54	48	45	53	48	45	43					43			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	50805	50805	50805	50805
5°	50691	50721	50691	50721
10°	50314	50334	50314	50334
15°	49599	49609	49599	49609
20°	48480	48459	48480	48459
25°	47027	46841	47027	46841
30°	41419	41408	41419	41408
35°	32350	32459	32350	32459
40°	22580	22799	22580	22799
45°	12818	13154	12818	13154
50°	5090	5474	5090	5474
55°	758	965	758	965
60°	158	158	158	158
65°	117	117	117	117
70°	87	87	87	87
75°	76	76	76	76
80°	57	57	57	57
85°	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 45°
 Vertical Angle: 45°
 Luminance: 21667 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	48.5	7.1
10°-20°	136.5	20.1
20°-30°	196.6	28.9
30°-40°	185.5	27.3
40°-50°	95.6	14.1
50°-60°	16.7	2.5
60°-70°	0.6	0.1
70°-80°	0.2	0.0
80°-90°	0.0	0.0
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°	381.5	56.1
0°-40°	567.0	83.4
0°-60°	679.3	99.9
0°-90°	680.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	680.1	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	514	514	514	514	514	
5°	511	511	511	511	511	48
15°	485	485	485	485	485	136
25°	431	430	431	430	431	195
35°	268	269	268	269	268	166
45°	92	94	92	94	92	73
55°	4	6	4	6	4	8
65°	0	0	0	0	0	1
75°	0	0	0	0	0	0
85°	0	0	0	0	0	0
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°	514.0	514.0	514.0	514.0	514.0	514.0	514.0	514.0	514.0	514.0	514.0
0.5°	513.9	513.9	513.9	514.0	514.4	514.0	513.9	513.9	513.9	513.9	513.9
1°	513.8	513.8	513.8	513.9	514.3	513.9	513.8	513.8	513.8	513.8	513.8
1.5°	513.6	513.7	513.7	513.7	514.0	513.7	513.7	513.7	513.6	513.7	513.7
2°	513.4	513.4	513.5	513.5	513.8	513.5	513.5	513.4	513.4	513.4	513.5
2.5°	513.1	513.1	513.2	513.3	513.5	513.3	513.2	513.1	513.1	513.1	513.2
3°	512.8	512.8	512.9	512.9	513.2	512.9	512.9	512.8	512.8	512.8	512.9
3.5°	512.4	512.4	512.5	512.5	512.8	512.5	512.5	512.4	512.4	512.4	512.5
4°	512.0	512.0	512.0	512.1	512.3	512.1	512.0	512.0	512.0	512.0	512.0
4.5°	511.5	511.5	511.5	511.5	511.8	511.5	511.5	511.5	511.5	511.5	511.5
5°	510.9	510.9	510.9	510.9	511.2	510.9	510.9	510.9	510.9	510.9	510.9
5.5°	510.2	510.2	510.3	510.3	510.5	510.3	510.3	510.2	510.2	510.2	510.3
6°	509.5	509.5	509.5	509.6	509.8	509.6	509.5	509.5	509.5	509.5	509.5
6.5°	508.6	508.6	508.7	508.7	509.0	508.7	508.7	508.6	508.6	508.6	508.7
7°	507.8	507.8	507.8	507.9	508.1	507.9	507.8	507.8	507.8	507.8	507.8
7.5°	506.9	506.9	506.9	506.9	507.2	506.9	506.9	506.9	506.9	506.9	506.9
8°	505.9	505.9	506.0	506.0	506.2	506.0	506.0	505.9	505.9	505.9	506.0
8.5°	504.9	504.9	504.9	504.9	505.1	504.9	504.9	504.9	504.9	504.9	504.9
9°	503.7	503.7	503.7	503.7	504.0	503.7	503.7	503.7	503.7	503.7	503.7
9.5°	502.5	502.5	502.5	502.5	502.7	502.5	502.5	502.5	502.5	502.5	502.5
10°	501.3	501.3	501.3	501.3	501.5	501.3	501.3	501.3	501.3	501.3	501.3
10.5°	500.0	500.0	500.0	499.9	500.2	499.9	500.0	500.0	500.0	500.0	500.0
11°	498.5	498.5	498.7	498.5	498.8	498.5	498.7	498.5	498.5	498.5	498.7
11.5°	497.1	497.1	497.1	497.0	497.2	497.0	497.1	497.1	497.1	497.1	497.1
12°	495.6	495.6	495.6	495.5	495.7	495.5	495.6	495.6	495.6	495.6	495.6
12.5°	493.9	494.0	494.0	493.9	494.0	493.9	494.0	494.0	493.9	494.0	494.0
13°	492.2	492.3	492.3	492.1	492.3	492.1	492.3	492.3	492.2	492.3	492.3
13.5°	490.5	490.5	490.6	490.4	490.6	490.4	490.6	490.5	490.5	490.5	490.6
14°	488.7	488.8	488.8	488.6	488.7	488.6	488.8	488.8	488.7	488.8	488.8
14.5°	486.7	486.8	486.9	486.7	486.7	486.7	486.9	486.8	486.7	486.8	486.9
15°	484.7	484.9	484.9	484.7	484.8	484.7	484.9	484.9	484.7	484.9	484.9
15.5°	482.6	482.8	482.8	482.6	482.6	482.6	482.8	482.8	482.6	482.8	482.8
16°	480.5	480.7	480.8	480.5	480.5	480.5	480.8	480.7	480.5	480.7	480.8
16.5°	478.4	478.5	478.7	478.4	478.3	478.4	478.7	478.5	478.4	478.5	478.7
17°	476.1	476.2	476.4	476.0	476.0	476.0	476.4	476.2	476.1	476.2	476.4
17.5°	473.7	473.9	474.1	473.7	473.7	473.7	474.1	473.9	473.7	473.9	474.1
18°	471.3	471.4	471.6	471.3	471.2	471.3	471.6	471.4	471.3	471.4	471.6
18.5°	468.9	469.0	469.2	468.8	468.7	468.8	469.2	469.0	468.9	469.0	469.2
19°	466.2	466.4	466.6	466.2	466.0	466.2	466.6	466.4	466.2	466.4	466.6
19.5°	463.7	463.8	464.0	463.6	463.5	463.6	464.0	463.8	463.7	463.8	464.0
20°	460.9	461.1	461.3	460.8	460.7	460.8	461.3	461.1	460.9	461.1	461.3
20.5°	458.3	458.4	458.6	458.1	458.0	458.1	458.6	458.4	458.3	458.4	458.6
21°	455.4	455.5	455.7	455.2	455.1	455.2	455.7	455.5	455.4	455.5	455.7



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CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
22.5°	446.6	446.6	446.7	446.3	446.3	446.3	446.7	446.6	446.6	446.6	446.7
23°	443.6	443.6	443.6	443.3	443.2	443.3	443.6	443.6	443.6	443.6	443.6
23.5°	440.5	440.5	440.3	440.1	440.1	440.1	440.3	440.5	440.5	440.5	440.3
24°	437.4	437.4	437.1	437.0	437.2	437.0	437.1	437.4	437.4	437.4	437.1
24.5°	434.2	434.1	433.7	433.7	434.0	433.7	433.7	434.1	434.2	434.1	433.7
25°	431.2	430.7	430.2	430.3	429.5	430.3	430.2	430.7	431.2	430.7	430.2
25.5°	427.8	427.5	426.8	427.1	425.2	427.1	426.8	427.5	427.8	427.5	426.8
26°	422.0	424.1	423.2	423.8	420.9	423.8	423.2	424.1	422.0	424.1	423.2
26.5°	417.1	420.7	419.6	420.3	414.7	420.3	419.6	420.7	417.1	420.7	419.6
27°	411.2	417.6	416.0	415.5	407.5	415.5	416.0	417.6	411.2	417.6	416.0
27.5°	403.8	413.2	412.2	411.2	401.0	411.2	412.2	413.2	403.8	413.2	412.2
28°	396.1	407.4	408.4	406.5	393.7	406.5	408.4	407.4	396.1	407.4	408.4
28.5°	388.2	402.4	404.6	399.8	386.2	399.8	404.6	402.4	388.2	402.4	404.6
29°	380.0	396.2	400.8	392.9	378.8	392.9	400.8	396.2	380.0	396.2	400.8
29.5°	371.6	388.8	396.9	386.2	370.9	386.2	396.9	388.8	371.6	388.8	396.9
30°	362.9	381.3	392.9	379.0	362.8	379.0	392.9	381.3	362.9	381.3	392.9
30.5°	354.1	373.3	389.0	371.6	354.5	371.6	389.0	373.3	354.1	373.3	389.0
31°	344.9	365.4	385.1	363.9	345.9	363.9	385.1	365.4	344.9	365.4	385.1
31.5°	335.6	357.1	381.1	356.3	336.6	356.3	381.1	357.1	335.6	357.1	381.1
32°	326.1	348.7	377.1	348.4	327.1	348.4	377.1	348.7	326.1	348.7	377.1
32.5°	316.4	340.1	373.2	340.4	317.5	340.4	373.2	340.1	316.4	340.1	373.2
33°	306.7	331.4	369.2	331.9	308.1	331.9	369.2	331.4	306.7	331.4	369.2
33.5°	296.9	322.3	364.7	323.3	297.8	323.3	364.7	322.3	296.9	322.3	364.7
34°	287.4	313.2	359.8	314.2	288.0	314.2	359.8	313.2	287.4	313.2	359.8
34.5°	277.7	303.9	354.1	304.8	278.3	304.8	354.1	303.9	277.7	303.9	354.1
35°	268.1	294.6	347.1	295.3	269.0	295.3	347.1	294.6	268.1	294.6	347.1
35.5°	258.7	285.4	339.7	286.0	259.4	286.0	339.7	285.4	258.7	285.4	339.7
36°	249.4	276.0	331.4	276.6	250.4	276.6	331.4	276.0	249.4	276.0	331.4
36.5°	240.0	266.9	322.5	267.3	241.3	267.3	322.5	266.9	240.0	266.9	322.5
37°	230.8	257.7	313.2	258.1	232.2	258.1	313.2	257.7	230.8	257.7	313.2
37.5°	221.4	248.6	303.7	249.2	223.0	249.2	303.7	248.6	221.4	248.6	303.7
38°	212.0	239.5	293.9	240.2	213.8	240.2	293.9	239.5	212.0	239.5	293.9
38.5°	202.5	230.8	284.2	231.6	204.5	231.6	284.2	230.8	202.5	230.8	284.2
39°	193.3	221.9	274.4	222.9	195.3	222.9	274.4	221.9	193.3	221.9	274.4
39.5°	184.3	213.0	264.5	214.3	185.8	214.3	264.5	213.0	184.3	213.0	264.5
40°	175.0	204.0	254.4	205.6	176.7	205.6	254.4	204.0	175.0	204.0	254.4
40.5°	165.9	195.2	244.2	196.7	167.5	196.7	244.2	195.2	165.9	195.2	244.2
41°	157.1	186.4	234.0	187.9	158.7	187.9	234.0	186.4	157.1	186.4	234.0
41.5°	148.4	177.6	223.7	179.2	150.0	179.2	223.7	177.6	148.4	177.6	223.7
42°	139.9	169.1	213.4	170.4	141.6	170.4	213.4	169.1	139.9	169.1	213.4
42.5°	131.5	160.5	203.3	161.9	133.4	161.9	203.3	160.5	131.5	160.5	203.3
43°	123.3	152.1	193.2	153.4	125.2	153.4	193.2	152.1	123.3	152.1	193.2
43.5°	115.0	143.9	183.3	145.3	117.3	145.3	183.3	143.9	115.0	143.9	183.3



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	91.7	120.0	155.0	121.6	94.1	121.6	155.0	120.0	91.7	120.0	155.0
45.5°	84.5	112.4	146.1	114.1	86.9	114.1	146.1	112.4	84.5	112.4	146.1
46°	77.7	104.9	137.7	106.8	79.9	106.8	137.7	104.9	77.7	104.9	137.7
46.5°	70.8	97.4	129.3	99.4	73.3	99.4	129.3	97.4	70.8	97.4	129.3
47°	64.2	90.2	121.1	92.2	67.1	92.2	121.1	90.2	64.2	90.2	121.1
47.5°	57.7	83.3	113.3	85.0	61.0	85.0	113.3	83.3	57.7	83.3	113.3
48°	52.0	76.7	105.7	78.4	55.1	78.4	105.7	76.7	52.0	76.7	105.7
48.5°	46.5	70.2	98.5	72.1	49.8	72.1	98.5	70.2	46.5	70.2	98.5
49°	41.9	63.7	91.3	65.9	44.9	65.9	91.3	63.7	41.9	63.7	91.3
49.5°	37.5	57.7	84.3	60.0	40.2	60.0	84.3	57.7	37.5	57.7	84.3
50°	33.1	52.0	77.5	54.2	35.6	54.2	77.5	52.0	33.1	52.0	77.5
50.5°	29.0	46.6	71.2	48.9	31.1	48.9	71.2	46.6	29.0	46.6	71.2
51°	25.0	41.9	65.1	44.2	27.3	44.2	65.1	41.9	25.0	41.9	65.1
51.5°	21.7	37.4	59.2	39.5	23.8	39.5	59.2	37.4	21.7	37.4	59.2
52°	18.6	33.0	53.6	35.0	20.4	35.0	53.6	33.0	18.6	33.0	53.6
52.5°	15.6	28.8	48.3	30.7	17.2	30.7	48.3	28.8	15.6	28.8	48.3
53°	12.8	24.9	43.6	26.9	14.3	26.9	43.6	24.9	12.8	24.9	43.6
53.5°	10.6	21.4	39.1	23.5	11.4	23.5	39.1	21.4	10.6	21.4	39.1
54°	8.3	18.3	34.8	20.1	9.1	20.1	34.8	18.3	8.3	18.3	34.8
54.5°	6.0	15.3	30.8	16.9	7.3	16.9	30.8	15.3	6.0	15.3	30.8
55°	4.4	12.7	26.9	14.0	5.6	14.0	26.9	12.7	4.4	12.7	26.9
55.5°	2.8	10.4	23.5	11.2	3.9	11.2	23.5	10.4	2.8	10.4	23.5
56°	1.8	8.2	20.1	8.8	2.1	8.8	20.1	8.2	1.8	8.2	20.1
56.5°	1.4	5.9	17.2	6.7	1.3	6.7	17.2	5.9	1.4	5.9	17.2
57°	1.0	3.9	14.7	4.9	1.1	4.9	14.7	3.9	1.0	3.9	14.7
57.5°	1.0	2.4	12.3	3.3	1.0	3.3	12.3	2.4	1.0	2.4	12.3
58°	0.9	1.5	10.3	2.1	1.0	2.1	10.3	1.5	0.9	1.5	10.3
58.5°	0.9	1.0	8.6	1.5	0.9	1.5	8.6	1.0	0.9	1.0	8.6
59°	0.8	0.8	6.9	1.1	0.9	1.1	6.9	0.8	0.8	0.8	6.9
59.5°	0.8	0.8	5.6	0.8	0.9	0.8	5.6	0.8	0.8	0.8	5.6
60°	0.8	0.8	4.5	0.8	0.8	0.8	4.5	0.8	0.8	0.8	4.5
60.5°	0.7	0.7	3.5	0.8	0.8	0.8	3.5	0.7	0.7	0.7	3.5
61°	0.7	0.7	2.8	0.7	0.8	0.7	2.8	0.7	0.7	0.7	2.8
61.5°	0.7	0.7	2.0	0.7	0.7	0.7	2.0	0.7	0.7	0.7	2.0
62°	0.6	0.6	1.5	0.7	0.7	0.7	1.5	0.6	0.6	0.6	1.5
62.5°	0.6	0.6	1.1	0.6	0.7	0.6	1.1	0.6	0.6	0.6	1.1
63°	0.6	0.6	0.8	0.6	0.6	0.6	0.8	0.6	0.6	0.6	0.8
63.5°	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.5	0.6
64°	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5
64.5°	0.5	0.5	0.4	0.5	0.6	0.5	0.4	0.5	0.5	0.5	0.4
65°	0.5	0.5	0.4	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.4
65.5°	0.5	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.4
66°	0.5	0.4	0.3	0.4	0.5	0.4	0.3	0.4	0.5	0.4	0.3



TEST NUMBER: P775706

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.3
68°	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.3
68.5°	0.4	0.3	0.2	0.3	0.4	0.3	0.2	0.3	0.4	0.3	0.2
69°	0.3	0.3	0.2	0.3	0.4	0.3	0.2	0.3	0.3	0.3	0.2
69.5°	0.3	0.3	0.2	0.3	0.4	0.3	0.2	0.3	0.3	0.3	0.2
70°	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.2
70.5°	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.2
71°	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.2
71.5°	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2
72°	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2
72.5°	0.2	0.2	0.1	0.2	0.3	0.2	0.1	0.2	0.2	0.2	0.1
73°	0.2	0.2	0.1	0.2	0.3	0.2	0.1	0.2	0.2	0.2	0.1
73.5°	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1
74°	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1
74.5°	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1
75°	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1
75.5°	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1
76°	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1
76.5°	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
77°	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
77.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
78°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
78.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
79°	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0
79.5°	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0
80°	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0
80.5°	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0
81°	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0
81.5°	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0
82°	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
83°	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P775706

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3000K

CANDELA DISTRIBUTION (continued):

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



TEST NUMBER: P775706

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	514.0	514.0	514.0	514.0	514.0	514.0
0.5°	514.0	514.4	514.0	513.9	513.9	513.9
1°	513.9	514.3	513.9	513.8	513.8	513.8
1.5°	513.7	514.0	513.7	513.7	513.7	513.6
2°	513.5	513.8	513.5	513.5	513.4	513.4
2.5°	513.3	513.5	513.3	513.2	513.1	513.1
3°	512.9	513.2	512.9	512.9	512.8	512.8
3.5°	512.5	512.8	512.5	512.5	512.4	512.4
4°	512.1	512.3	512.1	512.0	512.0	512.0
4.5°	511.5	511.8	511.5	511.5	511.5	511.5
5°	510.9	511.2	510.9	510.9	510.9	510.9
5.5°	510.3	510.5	510.3	510.3	510.2	510.2
6°	509.6	509.8	509.6	509.5	509.5	509.5
6.5°	508.7	509.0	508.7	508.7	508.6	508.6
7°	507.9	508.1	507.9	507.8	507.8	507.8
7.5°	506.9	507.2	506.9	506.9	506.9	506.9
8°	506.0	506.2	506.0	506.0	505.9	505.9
8.5°	504.9	505.1	504.9	504.9	504.9	504.9
9°	503.7	504.0	503.7	503.7	503.7	503.7
9.5°	502.5	502.7	502.5	502.5	502.5	502.5
10°	501.3	501.5	501.3	501.3	501.3	501.3
10.5°	499.9	500.2	499.9	500.0	500.0	500.0
11°	498.5	498.8	498.5	498.7	498.5	498.5
11.5°	497.0	497.2	497.0	497.1	497.1	497.1
12°	495.5	495.7	495.5	495.6	495.6	495.6
12.5°	493.9	494.0	493.9	494.0	494.0	493.9
13°	492.1	492.3	492.1	492.3	492.3	492.2
13.5°	490.4	490.6	490.4	490.6	490.5	490.5
14°	488.6	488.7	488.6	488.8	488.8	488.7
14.5°	486.7	486.7	486.7	486.9	486.8	486.7
15°	484.7	484.8	484.7	484.9	484.9	484.7
15.5°	482.6	482.6	482.6	482.8	482.8	482.6
16°	480.5	480.5	480.5	480.8	480.7	480.5
16.5°	478.4	478.3	478.4	478.7	478.5	478.4
17°	476.0	476.0	476.0	476.4	476.2	476.1
17.5°	473.7	473.7	473.7	474.1	473.9	473.7
18°	471.3	471.2	471.3	471.6	471.4	471.3
18.5°	468.8	468.7	468.8	469.2	469.0	468.9
19°	466.2	466.0	466.2	466.6	466.4	466.2
19.5°	463.6	463.5	463.6	464.0	463.8	463.7
20°	460.8	460.7	460.8	461.3	461.1	460.9
20.5°	458.1	458.0	458.1	458.6	458.4	458.3
21°	455.2	455.1	455.2	455.7	455.5	455.4

TEST NUMBER: P775706

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	446.3	446.3	446.3	446.7	446.6	446.6
23°	443.3	443.2	443.3	443.6	443.6	443.6
23.5°	440.1	440.1	440.1	440.3	440.5	440.5
24°	437.0	437.2	437.0	437.1	437.4	437.4
24.5°	433.7	434.0	433.7	433.7	434.1	434.2
25°	430.3	429.5	430.3	430.2	430.7	431.2
25.5°	427.1	425.2	427.1	426.8	427.5	427.8
26°	423.8	420.9	423.8	423.2	424.1	422.0
26.5°	420.3	414.7	420.3	419.6	420.7	417.1
27°	415.5	407.5	415.5	416.0	417.6	411.2
27.5°	411.2	401.0	411.2	412.2	413.2	403.8
28°	406.5	393.7	406.5	408.4	407.4	396.1
28.5°	399.8	386.2	399.8	404.6	402.4	388.2
29°	392.9	378.8	392.9	400.8	396.2	380.0
29.5°	386.2	370.9	386.2	396.9	388.8	371.6
30°	379.0	362.8	379.0	392.9	381.3	362.9
30.5°	371.6	354.5	371.6	389.0	373.3	354.1
31°	363.9	345.9	363.9	385.1	365.4	344.9
31.5°	356.3	336.6	356.3	381.1	357.1	335.6
32°	348.4	327.1	348.4	377.1	348.7	326.1
32.5°	340.4	317.5	340.4	373.2	340.1	316.4
33°	331.9	308.1	331.9	369.2	331.4	306.7
33.5°	323.3	297.8	323.3	364.7	322.3	296.9
34°	314.2	288.0	314.2	359.8	313.2	287.4
34.5°	304.8	278.3	304.8	354.1	303.9	277.7
35°	295.3	269.0	295.3	347.1	294.6	268.1
35.5°	286.0	259.4	286.0	339.7	285.4	258.7
36°	276.6	250.4	276.6	331.4	276.0	249.4
36.5°	267.3	241.3	267.3	322.5	266.9	240.0
37°	258.1	232.2	258.1	313.2	257.7	230.8
37.5°	249.2	223.0	249.2	303.7	248.6	221.4
38°	240.2	213.8	240.2	293.9	239.5	212.0
38.5°	231.6	204.5	231.6	284.2	230.8	202.5
39°	222.9	195.3	222.9	274.4	221.9	193.3
39.5°	214.3	185.8	214.3	264.5	213.0	184.3
40°	205.6	176.7	205.6	254.4	204.0	175.0
40.5°	196.7	167.5	196.7	244.2	195.2	165.9
41°	187.9	158.7	187.9	234.0	186.4	157.1
41.5°	179.2	150.0	179.2	223.7	177.6	148.4
42°	170.4	141.6	170.4	213.4	169.1	139.9
42.5°	161.9	133.4	161.9	203.3	160.5	131.5
43°	153.4	125.2	153.4	193.2	152.1	123.3
43.5°	145.3	117.3	145.3	183.3	143.9	115.0



TEST NUMBER: P775706

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	121.6	94.1	121.6	155.0	120.0	91.7
45.5°	114.1	86.9	114.1	146.1	112.4	84.5
46°	106.8	79.9	106.8	137.7	104.9	77.7
46.5°	99.4	73.3	99.4	129.3	97.4	70.8
47°	92.2	67.1	92.2	121.1	90.2	64.2
47.5°	85.0	61.0	85.0	113.3	83.3	57.7
48°	78.4	55.1	78.4	105.7	76.7	52.0
48.5°	72.1	49.8	72.1	98.5	70.2	46.5
49°	65.9	44.9	65.9	91.3	63.7	41.9
49.5°	60.0	40.2	60.0	84.3	57.7	37.5
50°	54.2	35.6	54.2	77.5	52.0	33.1
50.5°	48.9	31.1	48.9	71.2	46.6	29.0
51°	44.2	27.3	44.2	65.1	41.9	25.0
51.5°	39.5	23.8	39.5	59.2	37.4	21.7
52°	35.0	20.4	35.0	53.6	33.0	18.6
52.5°	30.7	17.2	30.7	48.3	28.8	15.6
53°	26.9	14.3	26.9	43.6	24.9	12.8
53.5°	23.5	11.4	23.5	39.1	21.4	10.6
54°	20.1	9.1	20.1	34.8	18.3	8.3
54.5°	16.9	7.3	16.9	30.8	15.3	6.0
55°	14.0	5.6	14.0	26.9	12.7	4.4
55.5°	11.2	3.9	11.2	23.5	10.4	2.8
56°	8.8	2.1	8.8	20.1	8.2	1.8
56.5°	6.7	1.3	6.7	17.2	5.9	1.4
57°	4.9	1.1	4.9	14.7	3.9	1.0
57.5°	3.3	1.0	3.3	12.3	2.4	1.0
58°	2.1	1.0	2.1	10.3	1.5	0.9
58.5°	1.5	0.9	1.5	8.6	1.0	0.9
59°	1.1	0.9	1.1	6.9	0.8	0.8
59.5°	0.8	0.9	0.8	5.6	0.8	0.8
60°	0.8	0.8	0.8	4.5	0.8	0.8
60.5°	0.8	0.8	0.8	3.5	0.7	0.7
61°	0.7	0.8	0.7	2.8	0.7	0.7
61.5°	0.7	0.7	0.7	2.0	0.7	0.7
62°	0.7	0.7	0.7	1.5	0.6	0.6
62.5°	0.6	0.7	0.6	1.1	0.6	0.6
63°	0.6	0.6	0.6	0.8	0.6	0.6
63.5°	0.6	0.6	0.6	0.6	0.5	0.6
64°	0.5	0.6	0.5	0.5	0.5	0.5
64.5°	0.5	0.6	0.5	0.4	0.5	0.5
65°	0.5	0.5	0.5	0.4	0.5	0.5
65.5°	0.5	0.5	0.5	0.4	0.4	0.5
66°	0.4	0.5	0.4	0.3	0.4	0.5



TEST NUMBER: P775706

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	0.4	0.4	0.4	0.3	0.4	0.4
68°	0.4	0.4	0.4	0.3	0.3	0.4
68.5°	0.3	0.4	0.3	0.2	0.3	0.4
69°	0.3	0.4	0.3	0.2	0.3	0.3
69.5°	0.3	0.4	0.3	0.2	0.3	0.3
70°	0.3	0.3	0.3	0.2	0.3	0.3
70.5°	0.3	0.3	0.3	0.2	0.3	0.3
71°	0.3	0.3	0.3	0.2	0.2	0.3
71.5°	0.2	0.3	0.2	0.2	0.2	0.3
72°	0.2	0.3	0.2	0.2	0.2	0.3
72.5°	0.2	0.3	0.2	0.1	0.2	0.2
73°	0.2	0.3	0.2	0.1	0.2	0.2
73.5°	0.2	0.2	0.2	0.1	0.2	0.2
74°	0.2	0.2	0.2	0.1	0.2	0.2
74.5°	0.2	0.2	0.2	0.1	0.2	0.2
75°	0.2	0.2	0.2	0.1	0.2	0.2
75.5°	0.2	0.2	0.2	0.1	0.1	0.2
76°	0.1	0.2	0.1	0.1	0.1	0.2
76.5°	0.1	0.2	0.1	0.1	0.1	0.1
77°	0.1	0.2	0.1	0.1	0.1	0.1
77.5°	0.1	0.1	0.1	0.1	0.1	0.1
78°	0.1	0.1	0.1	0.1	0.1	0.1
78.5°	0.1	0.1	0.1	0.1	0.1	0.1
79°	0.1	0.1	0.1	0.0	0.1	0.1
79.5°	0.1	0.1	0.1	0.0	0.1	0.1
80°	0.1	0.1	0.1	0.0	0.1	0.1
80.5°	0.1	0.1	0.1	0.0	0.1	0.1
81°	0.1	0.1	0.1	0.0	0.1	0.1
81.5°	0.1	0.1	0.1	0.0	0.0	0.1
82°	0.0	0.1	0.0	0.0	0.0	0.0
82.5°	0.0	0.1	0.0	0.0	0.0	0.0
83°	0.0	0.1	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P775706

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-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



Report Generated By 670245859 / DESKTOP-T8S5UU9

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

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21.5°	452.6	452.7	452.8	452.4	452.3	452.4	452.8	452.7	452.6	452.7	452.8
22°	449.6	449.7	449.8	449.3	449.3	449.3	449.8	449.7	449.6	449.7	449.8



44°	107.1	135.7	173.6	137.2	109.3	137.2	173.6	135.7	107.1	135.7	173.6
44.5°	99.3	127.9	164.2	129.3	101.6	129.3	164.2	127.9	99.3	127.9	164.2



66.5°	0.4	0.4	0.3	0.4	0.5	0.4	0.3	0.4	0.4	0.4	0.3
67°	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.3



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

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21.5°	452.4	452.3	452.4	452.8	452.7	452.6
22°	449.3	449.3	449.3	449.8	449.7	449.6



44°	137.2	109.3	137.2	173.6	135.7	107.1
44.5°	129.3	101.6	129.3	164.2	127.9	99.3

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66.5°	0.4	0.5	0.4	0.3	0.4	0.4
67°	0.4	0.4	0.4	0.3	0.4	0.4

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

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(END OF REPORT)