

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: P775707

Luminaire Tested: HCDJBL510CSD-HCD4TSQMB-1000lm-3500K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775707
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-3500K
Description: 4 INCH SQUARE MEDIUM MATTE BLACK TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 690.5 lumens
Efficiency: N/A
Efficacy: 69.0 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

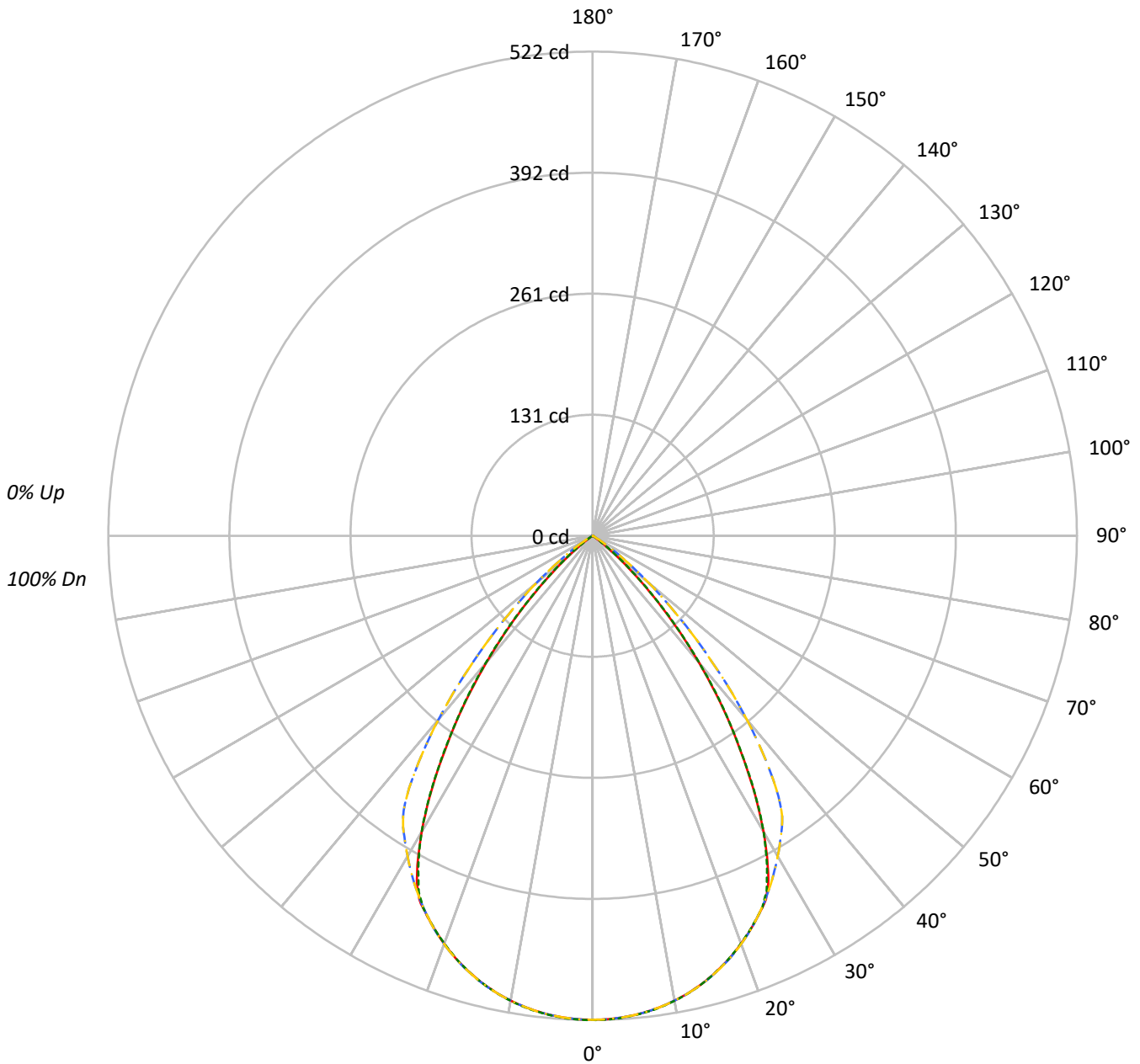
Input Watts (W): 10
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



TEST NUMBER: P775707

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3500K

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°	51586	51586	51586	51586
5°	51465	51495	51465	51495
10°	51077	51107	51077	51107
15°	50356	50366	50356	50366
20°	49216	49195	49216	49195
25°	47747	47561	47747	47561
30°	42058	42047	42058	42047
35°	32845	32953	32845	32953
40°	22929	23148	22929	23148
45°	13014	13363	13014	13363
50°	5167	5551	5167	5551
55°	775	982	775	982
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: 22002 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	49.2	7.1
10°-20°	138.5	20.1
20°-30°	199.6	28.9
30°-40°	188.4	27.3
40°-50°	97.1	14.1
50°-60°	16.9	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°	387.3	56.1
0°-40°	575.7	83.4
0°-60°	689.7	99.9
0°-90°	690.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	690.5	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	522	522	522	522	522	
5°	519	519	519	519	519	49
15°	492	492	492	492	492	139
25°	438	436	438	436	438	198
35°	272	273	272	273	272	169
45°	93	96	93	96	93	74
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°	521.9	521.9	521.9	521.9	521.9	521.9	521.9	521.9	521.9	521.9	521.9
0.5°	521.8	521.8	521.8	521.9	522.2	521.9	521.8	521.8	521.8	521.8	521.8
1°	521.7	521.7	521.7	521.8	522.1	521.8	521.7	521.7	521.7	521.7	521.7
1.5°	521.5	521.6	521.6	521.6	521.9	521.6	521.6	521.6	521.5	521.6	521.6
2°	521.3	521.3	521.4	521.4	521.7	521.4	521.4	521.3	521.3	521.3	521.4
2.5°	521.0	521.0	521.1	521.2	521.4	521.2	521.1	521.0	521.0	521.0	521.1
3°	520.6	520.6	520.7	520.7	521.1	520.7	520.7	520.6	520.6	520.6	520.7
3.5°	520.2	520.2	520.3	520.3	520.6	520.3	520.3	520.2	520.2	520.2	520.3
4°	519.8	519.8	519.8	519.9	520.1	519.9	519.8	519.8	519.8	519.8	519.8
4.5°	519.3	519.3	519.3	519.3	519.6	519.3	519.3	519.3	519.3	519.3	519.3
5°	518.7	518.7	518.7	518.7	519.0	518.7	518.7	518.7	518.7	518.7	518.7
5.5°	518.0	518.0	518.1	518.1	518.3	518.1	518.1	518.0	518.0	518.0	518.1
6°	517.2	517.2	517.2	517.3	517.5	517.3	517.2	517.2	517.2	517.2	517.2
6.5°	516.4	516.4	516.5	516.5	516.7	516.5	516.5	516.4	516.4	516.4	516.5
7°	515.6	515.6	515.6	515.7	515.9	515.7	515.6	515.6	515.6	515.6	515.6
7.5°	514.6	514.6	514.6	514.6	514.9	514.6	514.6	514.6	514.6	514.6	514.6
8°	513.6	513.6	513.7	513.7	513.9	513.7	513.7	513.6	513.6	513.6	513.7
8.5°	512.6	512.6	512.6	512.6	512.8	512.6	512.6	512.6	512.6	512.6	512.6
9°	511.4	511.4	511.4	511.4	511.6	511.4	511.4	511.4	511.4	511.4	511.4
9.5°	510.2	510.2	510.2	510.2	510.4	510.2	510.2	510.2	510.2	510.2	510.2
10°	508.9	508.9	508.9	508.9	509.2	508.9	508.9	508.9	508.9	508.9	508.9
10.5°	507.6	507.6	507.6	507.5	507.8	507.5	507.6	507.6	507.6	507.6	507.6
11°	506.1	506.1	506.3	506.1	506.4	506.1	506.3	506.1	506.1	506.1	506.3
11.5°	504.7	504.7	504.7	504.6	504.8	504.6	504.7	504.7	504.7	504.7	504.7
12°	503.1	503.1	503.1	503.0	503.2	503.0	503.1	503.1	503.1	503.1	503.1
12.5°	501.4	501.5	501.5	501.4	501.5	501.4	501.5	501.5	501.4	501.5	501.5
13°	499.7	499.8	499.8	499.6	499.8	499.6	499.8	499.8	499.7	499.8	499.8
13.5°	498.0	498.0	498.1	497.9	498.1	497.9	498.1	498.0	498.0	498.0	498.1
14°	496.1	496.2	496.2	496.0	496.1	496.0	496.2	496.2	496.1	496.2	496.2
14.5°	494.1	494.2	494.3	494.1	494.1	494.1	494.3	494.2	494.1	494.2	494.3
15°	492.1	492.3	492.3	492.1	492.2	492.1	492.3	492.3	492.1	492.3	492.3
15.5°	490.0	490.2	490.2	490.0	490.0	490.0	490.2	490.2	490.0	490.2	490.2
16°	487.8	488.0	488.1	487.8	487.8	487.8	488.1	488.0	487.8	488.0	488.1
16.5°	485.7	485.8	486.0	485.7	485.5	485.7	486.0	485.8	485.7	485.8	486.0
17°	483.4	483.5	483.7	483.3	483.3	483.3	483.7	483.5	483.4	483.5	483.7
17.5°	480.9	481.1	481.3	480.9	480.9	480.9	481.3	481.1	480.9	481.1	481.3
18°	478.5	478.6	478.8	478.5	478.4	478.5	478.8	478.6	478.5	478.6	478.8
18.5°	476.0	476.1	476.3	475.9	475.8	475.9	476.3	476.1	476.0	476.1	476.3
19°	473.3	473.5	473.7	473.3	473.1	473.3	473.7	473.5	473.3	473.5	473.7
19.5°	470.7	470.8	471.1	470.6	470.5	470.6	471.1	470.8	470.7	470.8	471.1
20°	467.9	468.2	468.4	467.8	467.7	467.8	468.4	468.2	467.9	468.2	468.4
20.5°	465.3	465.4	465.6	465.0	464.9	465.0	465.6	465.4	465.3	465.4	465.6
21°	462.4	462.5	462.7	462.1	462.0	462.1	462.7	462.5	462.4	462.5	462.7



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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°	453.5	453.5	453.6	453.1	453.1	453.1	453.6	453.5	453.5	453.5	453.6
23°	450.3	450.3	450.3	450.0	449.9	450.0	450.3	450.3	450.3	450.3	450.3
23.5°	447.2	447.2	447.0	446.8	446.8	446.8	447.0	447.2	447.2	447.2	447.0
24°	444.0	444.0	443.7	443.6	443.8	443.6	443.7	444.0	444.0	444.0	443.7
24.5°	440.8	440.7	440.3	440.3	440.6	440.3	440.3	440.7	440.8	440.7	440.3
25°	437.8	437.3	436.8	436.9	436.1	436.9	436.8	437.3	437.8	437.3	436.8
25.5°	434.3	434.0	433.3	433.6	431.7	433.6	433.3	434.0	434.3	434.0	433.3
26°	428.4	430.6	429.6	430.3	427.4	430.3	429.6	430.6	428.4	430.6	429.6
26.5°	423.4	427.2	426.0	426.7	421.0	426.7	426.0	427.2	423.4	427.2	426.0
27°	417.4	423.9	422.3	421.9	413.7	421.9	422.3	423.9	417.4	423.9	422.3
27.5°	410.0	419.5	418.5	417.4	407.1	417.4	418.5	419.5	410.0	419.5	418.5
28°	402.1	413.6	414.6	412.7	399.7	412.7	414.6	413.6	402.1	413.6	414.6
28.5°	394.1	408.5	410.8	405.9	392.1	405.9	410.8	408.5	394.1	408.5	410.8
29°	385.7	402.2	406.9	398.9	384.6	398.9	406.9	402.2	385.7	402.2	406.9
29.5°	377.3	394.8	402.9	392.1	376.5	392.1	402.9	394.8	377.3	394.8	402.9
30°	368.5	387.1	398.9	384.8	368.4	384.8	398.9	387.1	368.5	387.1	398.9
30.5°	359.4	379.0	395.0	377.3	359.9	377.3	395.0	379.0	359.4	379.0	395.0
31°	350.1	370.9	390.9	369.5	351.2	369.5	390.9	370.9	350.1	370.9	390.9
31.5°	340.7	362.6	386.9	361.7	341.7	361.7	386.9	362.6	340.7	362.6	386.9
32°	331.1	354.1	382.8	353.8	332.1	353.8	382.8	354.1	331.1	354.1	382.8
32.5°	321.2	345.3	378.9	345.6	322.4	345.6	378.9	345.3	321.2	345.3	378.9
33°	311.4	336.5	374.9	337.0	312.8	337.0	374.9	336.5	311.4	336.5	374.9
33.5°	301.5	327.3	370.2	328.2	302.3	328.2	370.2	327.3	301.5	327.3	370.2
34°	291.7	317.9	365.2	319.0	292.4	319.0	365.2	317.9	291.7	317.9	365.2
34.5°	281.9	308.5	359.4	309.4	282.5	309.4	359.4	308.5	281.9	308.5	359.4
35°	272.2	299.1	352.4	299.8	273.1	299.8	352.4	299.1	272.2	299.1	352.4
35.5°	262.7	289.8	344.9	290.4	263.4	290.4	344.9	289.8	262.7	289.8	344.9
36°	253.2	280.3	336.5	280.8	254.3	280.8	336.5	280.3	253.2	280.3	336.5
36.5°	243.7	270.9	327.5	271.3	244.9	271.3	327.5	270.9	243.7	270.9	327.5
37°	234.3	261.6	317.9	262.0	235.7	262.0	317.9	261.6	234.3	261.6	317.9
37.5°	224.8	252.4	308.3	253.0	226.4	253.0	308.3	252.4	224.8	252.4	308.3
38°	215.2	243.2	298.4	243.9	217.1	243.9	298.4	243.2	215.2	243.2	298.4
38.5°	205.6	234.3	288.5	235.1	207.6	235.1	288.5	234.3	205.6	234.3	288.5
39°	196.3	225.3	278.6	226.3	198.3	226.3	278.6	225.3	196.3	225.3	278.6
39.5°	187.1	216.3	268.6	217.6	188.6	217.6	268.6	216.3	187.1	216.3	268.6
40°	177.7	207.2	258.3	208.7	179.4	208.7	258.3	207.2	177.7	207.2	258.3
40.5°	168.4	198.2	247.9	199.7	170.1	199.7	247.9	198.2	168.4	198.2	247.9
41°	159.5	189.2	237.6	190.8	161.1	190.8	237.6	189.2	159.5	189.2	237.6
41.5°	150.6	180.3	227.1	181.9	152.3	181.9	227.1	180.3	150.6	180.3	227.1
42°	142.0	171.6	216.7	173.0	143.8	173.0	216.7	171.6	142.0	171.6	216.7
42.5°	133.6	163.0	206.4	164.4	135.4	164.4	206.4	163.0	133.6	163.0	206.4
43°	125.2	154.5	196.2	155.7	127.1	155.7	196.2	154.5	125.2	154.5	196.2
43.5°	116.8	146.1	186.1	147.5	119.1	147.5	186.1	146.1	116.8	146.1	186.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	93.1	121.9	157.4	123.4	95.6	123.4	157.4	121.9	93.1	121.9	157.4
45.5°	85.8	114.1	148.4	115.8	88.2	115.8	148.4	114.1	85.8	114.1	148.4
46°	78.9	106.5	139.8	108.4	81.2	108.4	139.8	106.5	78.9	106.5	139.8
46.5°	71.8	98.9	131.3	100.9	74.4	100.9	131.3	98.9	71.8	98.9	131.3
47°	65.2	91.6	123.0	93.6	68.1	93.6	123.0	91.6	65.2	91.6	123.0
47.5°	58.6	84.6	115.0	86.3	61.9	86.3	115.0	84.6	58.6	84.6	115.0
48°	52.8	77.9	107.4	79.6	55.9	79.6	107.4	77.9	52.8	77.9	107.4
48.5°	47.2	71.2	100.0	73.2	50.5	73.2	100.0	71.2	47.2	71.2	100.0
49°	42.6	64.7	92.7	66.9	45.6	66.9	92.7	64.7	42.6	64.7	92.7
49.5°	38.1	58.6	85.6	60.9	40.8	60.9	85.6	58.6	38.1	58.6	85.6
50°	33.6	52.8	78.7	55.1	36.1	55.1	78.7	52.8	33.6	52.8	78.7
50.5°	29.4	47.3	72.3	49.7	31.6	49.7	72.3	47.3	29.4	47.3	72.3
51°	25.4	42.6	66.1	44.8	27.7	44.8	66.1	42.6	25.4	42.6	66.1
51.5°	22.1	38.0	60.1	40.1	24.1	40.1	60.1	38.0	22.1	38.0	60.1
52°	18.8	33.5	54.5	35.5	20.7	35.5	54.5	33.5	18.8	33.5	54.5
52.5°	15.8	29.2	49.1	31.2	17.5	31.2	49.1	29.2	15.8	29.2	49.1
53°	13.0	25.3	44.3	27.3	14.5	27.3	44.3	25.3	13.0	25.3	44.3
53.5°	10.8	21.7	39.7	23.8	11.6	23.8	39.7	21.7	10.8	21.7	39.7
54°	8.4	18.5	35.3	20.4	9.2	20.4	35.3	18.5	8.4	18.5	35.3
54.5°	6.1	15.5	31.3	17.2	7.5	17.2	31.3	15.5	6.1	15.5	31.3
55°	4.5	12.9	27.3	14.2	5.7	14.2	27.3	12.9	4.5	12.9	27.3
55.5°	2.8	10.6	23.8	11.4	3.9	11.4	23.8	10.6	2.8	10.6	23.8
56°	1.9	8.3	20.4	8.9	2.2	8.9	20.4	8.3	1.9	8.3	20.4
56.5°	1.4	6.0	17.5	6.8	1.3	6.8	17.5	6.0	1.4	6.0	17.5
57°	1.0	3.9	14.9	5.0	1.1	5.0	14.9	3.9	1.0	3.9	14.9
57.5°	1.0	2.5	12.5	3.3	1.0	3.3	12.5	2.5	1.0	2.5	12.5
58°	0.9	1.6	10.5	2.2	1.0	2.2	10.5	1.6	0.9	1.6	10.5
58.5°	0.9	1.0	8.7	1.6	0.9	1.6	8.7	1.0	0.9	1.0	8.7
59°	0.8	0.8	7.0	1.1	0.9	1.1	7.0	0.8	0.8	0.8	7.0
59.5°	0.8	0.8	5.7	0.8	0.9	0.8	5.7	0.8	0.8	0.8	5.7
60°	0.8	0.8	4.6	0.8	0.8	0.8	4.6	0.8	0.8	0.8	4.6
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	2.1	0.7	0.7	0.7	2.1	0.7	0.7	0.7	2.1
62°	0.6	0.6	1.6	0.7	0.7	0.7	1.6	0.6	0.6	0.6	1.6
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: P775707

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3500K

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: P775707

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3500K

CANDELA DISTRIBUTION (continued):

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



TEST NUMBER: P775707

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	521.9	521.9	521.9	521.9	521.9	521.9
0.5°	521.9	522.2	521.9	521.8	521.8	521.8
1°	521.8	522.1	521.8	521.7	521.7	521.7
1.5°	521.6	521.9	521.6	521.6	521.6	521.5
2°	521.4	521.7	521.4	521.4	521.3	521.3
2.5°	521.2	521.4	521.2	521.1	521.0	521.0
3°	520.7	521.1	520.7	520.7	520.6	520.6
3.5°	520.3	520.6	520.3	520.3	520.2	520.2
4°	519.9	520.1	519.9	519.8	519.8	519.8
4.5°	519.3	519.6	519.3	519.3	519.3	519.3
5°	518.7	519.0	518.7	518.7	518.7	518.7
5.5°	518.1	518.3	518.1	518.1	518.0	518.0
6°	517.3	517.5	517.3	517.2	517.2	517.2
6.5°	516.5	516.7	516.5	516.5	516.4	516.4
7°	515.7	515.9	515.7	515.6	515.6	515.6
7.5°	514.6	514.9	514.6	514.6	514.6	514.6
8°	513.7	513.9	513.7	513.7	513.6	513.6
8.5°	512.6	512.8	512.6	512.6	512.6	512.6
9°	511.4	511.6	511.4	511.4	511.4	511.4
9.5°	510.2	510.4	510.2	510.2	510.2	510.2
10°	508.9	509.2	508.9	508.9	508.9	508.9
10.5°	507.5	507.8	507.5	507.6	507.6	507.6
11°	506.1	506.4	506.1	506.3	506.1	506.1
11.5°	504.6	504.8	504.6	504.7	504.7	504.7
12°	503.0	503.2	503.0	503.1	503.1	503.1
12.5°	501.4	501.5	501.4	501.5	501.5	501.4
13°	499.6	499.8	499.6	499.8	499.8	499.7
13.5°	497.9	498.1	497.9	498.1	498.0	498.0
14°	496.0	496.1	496.0	496.2	496.2	496.1
14.5°	494.1	494.1	494.1	494.3	494.2	494.1
15°	492.1	492.2	492.1	492.3	492.3	492.1
15.5°	490.0	490.0	490.0	490.2	490.2	490.0
16°	487.8	487.8	487.8	488.1	488.0	487.8
16.5°	485.7	485.5	485.7	486.0	485.8	485.7
17°	483.3	483.3	483.3	483.7	483.5	483.4
17.5°	480.9	480.9	480.9	481.3	481.1	480.9
18°	478.5	478.4	478.5	478.8	478.6	478.5
18.5°	475.9	475.8	475.9	476.3	476.1	476.0
19°	473.3	473.1	473.3	473.7	473.5	473.3
19.5°	470.6	470.5	470.6	471.1	470.8	470.7
20°	467.8	467.7	467.8	468.4	468.2	467.9
20.5°	465.0	464.9	465.0	465.6	465.4	465.3
21°	462.1	462.0	462.1	462.7	462.5	462.4



TEST NUMBER: P775707

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	453.1	453.1	453.1	453.6	453.5	453.5
23°	450.0	449.9	450.0	450.3	450.3	450.3
23.5°	446.8	446.8	446.8	447.0	447.2	447.2
24°	443.6	443.8	443.6	443.7	444.0	444.0
24.5°	440.3	440.6	440.3	440.3	440.7	440.8
25°	436.9	436.1	436.9	436.8	437.3	437.8
25.5°	433.6	431.7	433.6	433.3	434.0	434.3
26°	430.3	427.4	430.3	429.6	430.6	428.4
26.5°	426.7	421.0	426.7	426.0	427.2	423.4
27°	421.9	413.7	421.9	422.3	423.9	417.4
27.5°	417.4	407.1	417.4	418.5	419.5	410.0
28°	412.7	399.7	412.7	414.6	413.6	402.1
28.5°	405.9	392.1	405.9	410.8	408.5	394.1
29°	398.9	384.6	398.9	406.9	402.2	385.7
29.5°	392.1	376.5	392.1	402.9	394.8	377.3
30°	384.8	368.4	384.8	398.9	387.1	368.5
30.5°	377.3	359.9	377.3	395.0	379.0	359.4
31°	369.5	351.2	369.5	390.9	370.9	350.1
31.5°	361.7	341.7	361.7	386.9	362.6	340.7
32°	353.8	332.1	353.8	382.8	354.1	331.1
32.5°	345.6	322.4	345.6	378.9	345.3	321.2
33°	337.0	312.8	337.0	374.9	336.5	311.4
33.5°	328.2	302.3	328.2	370.2	327.3	301.5
34°	319.0	292.4	319.0	365.2	317.9	291.7
34.5°	309.4	282.5	309.4	359.4	308.5	281.9
35°	299.8	273.1	299.8	352.4	299.1	272.2
35.5°	290.4	263.4	290.4	344.9	289.8	262.7
36°	280.8	254.3	280.8	336.5	280.3	253.2
36.5°	271.3	244.9	271.3	327.5	270.9	243.7
37°	262.0	235.7	262.0	317.9	261.6	234.3
37.5°	253.0	226.4	253.0	308.3	252.4	224.8
38°	243.9	217.1	243.9	298.4	243.2	215.2
38.5°	235.1	207.6	235.1	288.5	234.3	205.6
39°	226.3	198.3	226.3	278.6	225.3	196.3
39.5°	217.6	188.6	217.6	268.6	216.3	187.1
40°	208.7	179.4	208.7	258.3	207.2	177.7
40.5°	199.7	170.1	199.7	247.9	198.2	168.4
41°	190.8	161.1	190.8	237.6	189.2	159.5
41.5°	181.9	152.3	181.9	227.1	180.3	150.6
42°	173.0	143.8	173.0	216.7	171.6	142.0
42.5°	164.4	135.4	164.4	206.4	163.0	133.6
43°	155.7	127.1	155.7	196.2	154.5	125.2
43.5°	147.5	119.1	147.5	186.1	146.1	116.8



TEST NUMBER: P775707

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	123.4	95.6	123.4	157.4	121.9	93.1
45.5°	115.8	88.2	115.8	148.4	114.1	85.8
46°	108.4	81.2	108.4	139.8	106.5	78.9
46.5°	100.9	74.4	100.9	131.3	98.9	71.8
47°	93.6	68.1	93.6	123.0	91.6	65.2
47.5°	86.3	61.9	86.3	115.0	84.6	58.6
48°	79.6	55.9	79.6	107.4	77.9	52.8
48.5°	73.2	50.5	73.2	100.0	71.2	47.2
49°	66.9	45.6	66.9	92.7	64.7	42.6
49.5°	60.9	40.8	60.9	85.6	58.6	38.1
50°	55.1	36.1	55.1	78.7	52.8	33.6
50.5°	49.7	31.6	49.7	72.3	47.3	29.4
51°	44.8	27.7	44.8	66.1	42.6	25.4
51.5°	40.1	24.1	40.1	60.1	38.0	22.1
52°	35.5	20.7	35.5	54.5	33.5	18.8
52.5°	31.2	17.5	31.2	49.1	29.2	15.8
53°	27.3	14.5	27.3	44.3	25.3	13.0
53.5°	23.8	11.6	23.8	39.7	21.7	10.8
54°	20.4	9.2	20.4	35.3	18.5	8.4
54.5°	17.2	7.5	17.2	31.3	15.5	6.1
55°	14.2	5.7	14.2	27.3	12.9	4.5
55.5°	11.4	3.9	11.4	23.8	10.6	2.8
56°	8.9	2.2	8.9	20.4	8.3	1.9
56.5°	6.8	1.3	6.8	17.5	6.0	1.4
57°	5.0	1.1	5.0	14.9	3.9	1.0
57.5°	3.3	1.0	3.3	12.5	2.5	1.0
58°	2.2	1.0	2.2	10.5	1.6	0.9
58.5°	1.6	0.9	1.6	8.7	1.0	0.9
59°	1.1	0.9	1.1	7.0	0.8	0.8
59.5°	0.8	0.9	0.8	5.7	0.8	0.8
60°	0.8	0.8	0.8	4.6	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	2.1	0.7	0.7
62°	0.7	0.7	0.7	1.6	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: P775707

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-1000lm-3500K

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: P775707

CATALOG NUMBER: HCDJBL510CSD-HCD4TSQMB-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°	459.5	459.6	459.7	459.3	459.1	459.3	459.7	459.6	459.5	459.6	459.7
22°	456.5	456.6	456.7	456.1	456.1	456.1	456.7	456.6	456.5	456.6	456.7



44°	108.7	137.8	176.2	139.2	111.0	139.2	176.2	137.8	108.7	137.8	176.2
44.5°	100.8	129.8	166.7	131.3	103.1	131.3	166.7	129.8	100.8	129.8	166.7



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°	459.3	459.1	459.3	459.7	459.6	459.5
22°	456.1	456.1	456.1	456.7	456.6	456.5



44°	139.2	111.0	139.2	176.2	137.8	108.7
44.5°	131.3	103.1	131.3	166.7	129.8	100.8

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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)