

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: P775634

Luminaire Tested: HCDJBS510CSD-HCD41TRMB-1000lm-5000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775634
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B031)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD41TRMB-1000lm-5000K
Description: 4 INCH ROUND SHALLOW-WIDE MATTE BLACK TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 5000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 973.7 lumens
Efficiency: N/A
Efficacy: 97.4 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.21 / 1.26
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

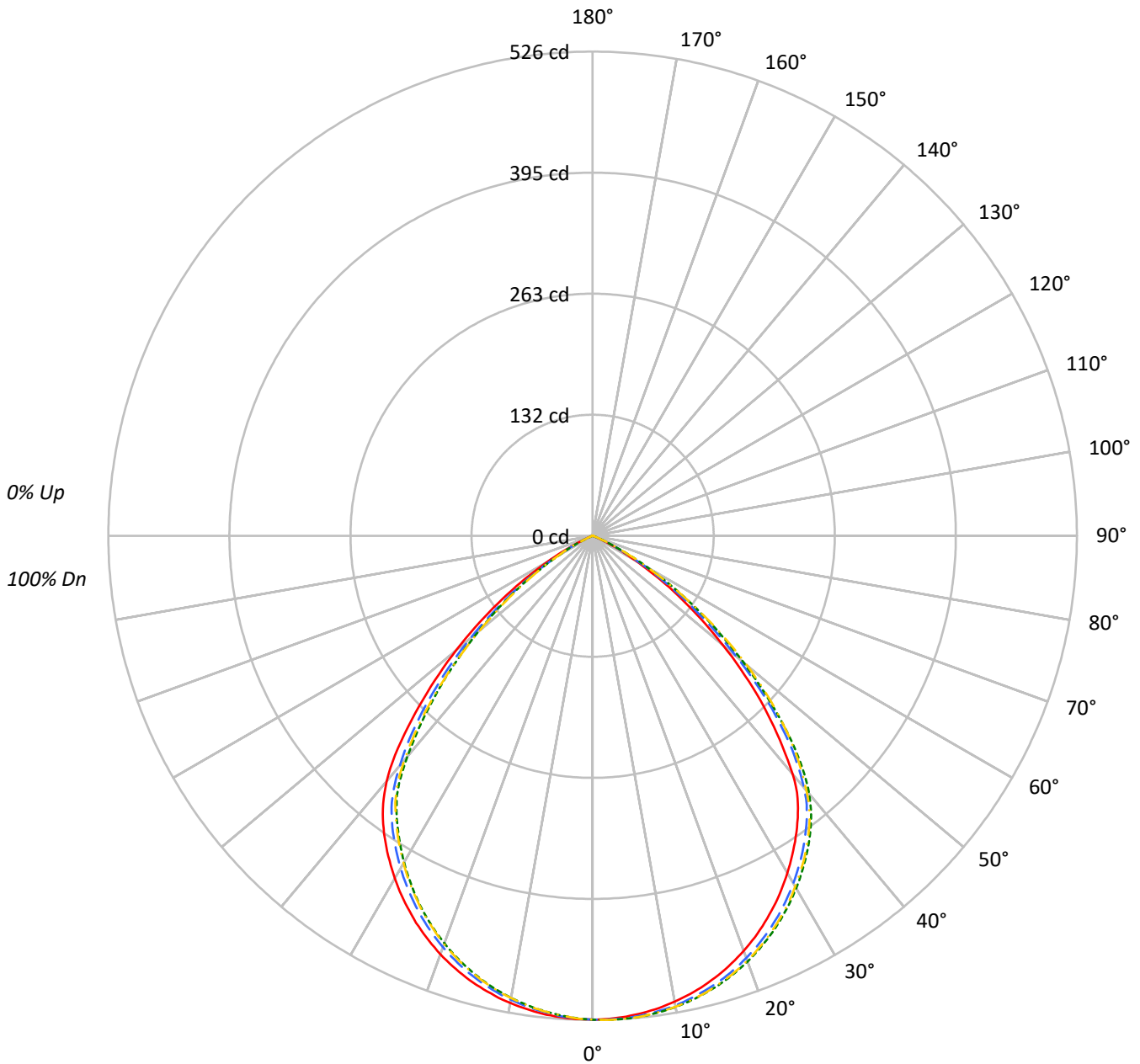
Input Watts (W): 10
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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					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	100	100	100	100		
	1	112	109	106	103	109	106	104	101	102	100	98	99	97	95	95	94	92	90	90	90	90	90	90		
	2	105	98	93	89	102	97	92	88	93	89	86	90	87	84	87	85	82	81	81	81	81	81	81		
	3	97	89	83	78	95	88	82	77	85	80	76	82	78	75	80	76	73	72	72	72	72	72	72		
	4	90	81	74	68	88	80	73	68	77	72	67	75	70	66	73	69	65	64	64	64	64	64	64		
	5	84	74	66	61	82	73	66	60	71	64	60	69	63	59	67	62	59	57	57	57	57	57	57		
	6	78	67	60	54	77	66	59	54	65	58	54	63	57	53	62	57	53	51	51	51	51	51	51		
	7	73	62	54	49	72	61	54	49	59	53	48	58	52	48	57	52	48	46	46	46	46	46	46		
	8	69	57	49	44	67	56	49	44	55	48	44	54	48	44	53	47	43	42	42	42	42	42	42		
	9	64	52	45	40	63	52	45	40	51	44	40	50	44	40	49	43	40	38	38	38	38	38	38		
	10	60	49	42	37	59	48	41	37	47	41	37	46	41	36	45	40	36	35	35	35	35	35	35		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	66159	66159	66159	66159
5°	66008	66387	66083	65742
10°	65672	66413	65876	65135
15°	65119	66278	65457	64272
20°	64285	65919	64767	63093
25°	63070	65236	63792	61543
30°	61484	64245	62443	59508
35°	59441	62836	60670	57014
40°	55545	60128	57188	51421
45°	46862	52646	48464	42234
50°	36260	41840	37767	31835
55°	24903	29972	26132	21042
60°	13466	17669	14573	10622
65°	4139	6373	4526	2859
70°	405	442	405	405
75°	438	438	438	438
80°	362	362	290	362
85°	144	289	144	289

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 112.5°
 Vertical Angle: 45°
 Luminance: 53055 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	49.7	5.1
10°-20°	141.3	14.5
20°-30°	210.1	21.6
30°-40°	242.9	24.9
40°-50°	204.9	21.0
50°-60°	104.3	10.7
60°-70°	19.5	2.0
70°-80°	0.9	0.1
80°-90°	0.2	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°	401.0	41.2
0°-40°	643.9	66.1
0°-60°	953.1	97.9
0°-90°	973.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	973.7	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	526	526	526	526	526	
5°	522	526	523	520	522	50
15°	500	509	502	493	500	141
25°	454	470	459	443	454	209
35°	387	409	395	371	387	241
45°	263	296	272	237	263	202
55°	114	137	119	96	114	102
65°	14	21	15	10	14	18
75°	1	1	1	1	1	1
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°	525.7	525.7	525.7	525.7	525.7	525.7	525.7	525.7	525.7	525.7	525.7
0.5°	525.6	525.6	525.8	525.9	526.0	526.0	526.0	525.6	525.5	525.6	525.5
1°	525.5	525.7	525.9	526.0	526.1	526.2	526.1	525.7	525.5	525.5	525.3
1.5°	525.3	525.6	525.9	526.1	526.1	526.3	526.2	525.8	525.4	525.2	525.0
2°	525.1	525.5	525.8	526.2	526.2	526.5	526.3	525.8	525.3	525.0	524.5
2.5°	524.6	525.2	525.7	526.2	526.2	526.3	526.1	525.7	525.1	524.6	524.2
3°	524.3	525.0	525.5	526.0	526.2	526.3	526.1	525.4	524.9	524.3	523.7
3.5°	523.9	524.6	525.4	525.9	526.0	526.2	526.1	525.3	524.4	523.8	523.3
4°	523.6	524.3	525.1	525.7	525.9	526.1	525.9	525.2	524.1	523.4	522.7
4.5°	523.0	523.9	524.9	525.4	525.7	525.9	525.6	525.0	523.7	522.7	522.0
5°	522.5	523.5	524.4	525.2	525.5	525.6	525.3	524.5	523.1	522.2	521.3
5.5°	521.9	522.9	524.0	524.9	525.1	525.4	525.1	524.1	522.7	521.7	520.6
6°	521.1	522.4	523.7	524.4	524.7	525.0	524.6	523.7	522.1	520.9	519.8
6.5°	520.4	521.8	523.0	524.0	524.3	524.5	524.1	523.3	521.4	520.3	519.1
7°	519.7	521.1	522.5	523.6	523.8	524.0	523.6	522.7	520.7	519.3	518.2
7.5°	518.9	520.4	521.9	522.9	523.1	523.6	523.0	522.1	519.9	518.6	517.3
8°	518.0	519.6	521.2	522.4	522.6	522.9	522.4	521.3	519.1	517.6	516.3
8.5°	517.1	518.8	520.5	521.7	522.0	522.3	521.8	520.6	518.2	516.6	515.3
9°	516.0	517.9	519.7	520.9	521.2	521.7	521.1	519.8	517.4	515.7	514.1
9.5°	514.9	517.0	518.9	520.2	520.5	520.9	520.3	519.1	516.5	514.6	512.9
10°	513.9	516.0	517.9	519.4	519.7	520.2	519.5	518.2	515.5	513.5	511.7
10.5°	512.7	514.9	517.0	518.5	518.9	519.3	518.6	517.3	514.4	512.4	510.5
11°	511.5	513.8	516.0	517.5	517.9	518.3	517.7	516.3	513.3	511.1	509.2
11.5°	510.3	512.6	514.9	516.5	517.0	517.4	516.6	515.3	512.2	509.8	507.8
12°	508.9	511.4	513.8	515.5	516.0	516.3	515.7	514.1	510.9	508.5	506.3
12.5°	507.6	510.1	512.6	514.4	514.9	515.3	514.5	512.9	509.5	507.2	504.8
13°	506.1	508.9	511.3	513.3	513.8	514.2	513.4	511.8	508.2	505.7	503.2
13.5°	504.7	507.5	510.0	512.1	512.6	512.9	512.2	510.6	506.8	504.2	501.6
14°	503.1	506.0	508.7	510.8	511.3	511.8	511.0	509.2	505.3	502.7	500.0
14.5°	501.5	504.5	507.3	509.5	510.0	510.5	509.6	507.8	504.0	501.1	498.2
15°	499.8	502.9	505.8	508.1	508.7	509.2	508.2	506.4	502.4	499.4	496.4
15.5°	498.1	501.1	504.4	506.6	507.4	507.7	506.7	504.8	500.8	497.7	494.7
16°	496.3	499.6	502.8	505.1	505.9	506.3	505.2	503.3	499.0	495.8	492.9
16.5°	494.5	497.9	501.1	503.6	504.3	504.7	503.7	501.7	497.3	494.0	490.8
17°	492.6	496.1	499.5	502.0	502.8	503.1	502.1	500.1	495.5	492.2	488.8
17.5°	490.6	494.1	497.8	500.3	501.1	501.4	500.4	498.4	493.6	490.2	486.7
18°	488.5	492.2	495.8	498.6	499.4	499.7	498.7	496.5	491.7	488.2	484.5
18.5°	486.5	490.3	493.9	496.9	497.6	498.1	496.9	494.7	489.9	486.1	482.4
19°	484.3	488.2	492.1	495.0	495.8	496.3	495.0	492.9	487.8	484.0	480.3
19.5°	482.2	486.1	490.1	493.2	494.0	494.4	493.1	490.9	485.8	481.9	477.9
20°	480.0	484.0	488.1	491.3	492.2	492.4	491.2	488.9	483.6	479.6	475.6
20.5°	477.6	481.9	486.0	489.2	490.2	490.5	489.1	486.9	481.6	477.4	473.1
21°	475.3	479.5	483.9	487.2	488.3	488.6	487.1	484.8	479.2	474.9	470.7



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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°	467.8	472.5	477.1	480.7	481.7	482.0	480.5	478.1	472.2	467.6	463.0
23°	465.2	470.0	474.7	478.5	479.4	479.7	478.3	475.8	469.7	465.1	460.3
23.5°	462.6	467.4	472.4	476.2	477.2	477.3	475.9	473.3	467.3	462.5	457.5
24°	459.8	464.8	469.9	473.8	474.7	475.1	473.5	471.0	464.7	459.8	454.8
24.5°	457.0	462.3	467.4	471.3	472.4	472.5	471.0	468.4	462.2	457.1	451.9
25°	454.2	459.6	464.7	468.8	469.8	470.0	468.4	465.9	459.4	454.3	449.0
25.5°	451.3	456.8	462.2	466.3	467.4	467.5	465.9	463.3	456.6	451.5	445.9
26°	448.4	453.9	459.4	463.6	464.8	464.9	463.3	460.7	453.8	448.5	443.0
26.5°	445.5	451.1	456.7	461.0	462.2	462.2	460.6	457.9	451.0	445.5	439.9
27°	442.4	448.2	453.8	458.3	459.4	459.5	457.8	455.1	448.1	442.6	436.8
27.5°	439.3	445.2	451.1	455.6	456.6	456.7	455.0	452.2	445.2	439.5	433.6
28°	436.1	442.2	448.2	452.8	453.9	454.0	452.2	449.4	442.3	436.5	430.3
28.5°	432.9	439.0	445.1	449.9	451.1	451.1	449.4	446.4	439.2	433.4	427.1
29°	429.7	435.9	442.0	446.9	448.2	448.1	446.3	443.5	436.0	430.1	423.9
29.5°	426.4	432.7	439.0	444.0	445.2	445.1	443.3	440.5	432.9	426.9	420.4
30°	423.1	429.6	435.9	441.0	442.1	442.1	440.2	437.3	429.7	423.5	416.8
30.5°	419.7	426.3	432.7	437.9	439.1	438.8	437.1	434.2	426.5	420.2	413.5
31°	416.3	423.0	429.5	434.6	435.9	435.7	433.8	431.0	423.1	416.8	410.0
31.5°	412.7	419.6	426.2	431.5	432.7	432.5	430.6	427.8	419.7	413.3	406.4
32°	409.2	416.2	422.9	428.3	429.5	429.3	427.4	424.5	416.3	409.9	402.9
32.5°	405.5	412.6	419.5	425.0	426.1	425.9	424.1	421.2	412.9	406.3	399.0
33°	401.9	409.0	416.1	421.6	422.9	422.5	420.8	417.8	409.5	402.8	395.4
33.5°	398.3	405.4	412.6	418.3	419.5	419.1	417.4	414.3	405.8	399.1	391.6
34°	394.5	401.9	409.2	414.8	416.1	415.8	413.7	410.9	402.2	395.3	387.9
34.5°	390.7	398.2	405.5	411.4	412.6	412.1	410.1	407.2	398.6	391.6	383.9
35°	386.9	394.4	401.8	407.7	409.0	408.6	406.5	403.5	394.9	387.7	379.9
35.5°	382.8	390.6	398.1	404.1	405.3	405.0	402.9	399.9	391.0	383.8	375.7
36°	379.0	386.8	394.3	400.3	401.7	401.3	399.0	396.1	387.0	379.6	371.5
36.5°	374.8	382.8	390.5	396.6	398.0	397.4	395.2	392.2	382.8	375.4	367.1
37°	370.7	378.8	386.5	392.6	393.9	393.4	391.1	388.1	378.7	371.1	362.6
37.5°	366.2	374.4	382.3	388.5	389.7	389.2	387.1	384.0	374.2	366.4	357.0
38°	361.7	370.0	377.9	384.3	385.5	384.9	382.8	379.6	369.4	361.3	351.3
38.5°	356.6	365.1	373.4	379.8	381.0	380.4	377.9	375.0	364.5	355.7	345.2
39°	351.0	359.7	368.5	375.4	376.2	375.4	372.6	370.0	359.2	349.9	339.0
39.5°	345.0	353.7	363.0	370.4	371.3	369.8	366.9	364.6	353.7	343.9	332.5
40°	338.1	347.4	357.0	365.2	366.0	363.9	361.2	358.7	348.1	337.5	325.9
40.5°	330.6	341.0	350.9	359.7	360.2	358.1	355.1	352.7	341.8	331.0	318.9
41°	323.2	334.4	344.6	353.7	354.2	351.9	349.0	346.6	335.1	324.4	312.0
41.5°	315.7	327.6	338.0	347.4	347.8	345.7	342.9	340.1	327.9	317.4	304.9
42°	308.2	320.3	331.5	340.6	341.0	339.3	336.7	333.4	320.8	310.4	297.5
42.5°	300.7	313.1	324.6	333.6	334.2	332.9	330.4	326.8	313.0	303.2	289.8
43°	293.3	305.7	317.6	326.4	327.0	326.3	323.7	319.6	305.0	295.6	282.2
43.5°	285.8	298.1	310.3	318.8	319.6	319.5	316.9	312.5	296.9	287.8	274.4



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	263.3	275.0	287.2	294.5	295.8	298.1	295.9	289.9	272.3	263.9	251.0
45.5°	255.7	267.1	279.0	285.8	287.5	290.8	288.4	282.4	264.2	255.7	243.2
46°	248.0	259.4	271.0	277.4	279.2	283.1	281.1	274.3	256.1	247.2	235.4
46.5°	240.2	251.5	262.6	268.9	270.8	275.5	273.7	266.6	247.9	238.8	227.6
47°	232.2	243.8	254.4	260.3	262.3	267.5	265.9	258.3	240.1	230.3	219.9
47.5°	224.3	236.0	246.1	251.5	254.1	259.7	258.4	250.2	232.2	222.0	212.0
48°	216.4	228.1	237.4	243.1	246.0	251.7	250.4	242.1	224.4	213.7	204.3
48.5°	208.4	220.1	228.8	234.7	237.9	243.7	242.7	234.6	216.5	205.2	196.6
49°	200.6	212.4	220.2	226.4	229.7	235.6	234.6	226.2	208.6	197.0	188.8
49.5°	192.8	204.5	211.8	218.1	221.6	227.3	226.8	218.2	200.7	188.7	181.1
50°	185.2	196.5	203.2	210.1	213.7	219.0	218.6	210.2	192.9	180.9	173.3
50.5°	177.5	188.5	194.8	201.6	205.7	210.8	210.5	202.4	185.1	172.7	165.4
51°	170.2	180.4	186.3	193.6	197.7	202.6	202.1	194.7	177.7	165.1	157.8
51.5°	162.6	172.6	178.2	185.5	189.8	194.5	194.3	187.0	169.9	157.4	150.2
52°	155.4	164.6	170.2	177.8	182.0	186.3	186.1	179.4	162.3	149.9	142.7
52.5°	148.2	157.0	162.4	169.5	174.1	178.3	178.0	171.6	154.9	142.6	135.2
53°	141.1	149.3	154.4	162.2	166.5	170.3	170.0	164.1	147.6	135.4	127.9
53.5°	133.9	141.7	146.7	154.5	158.9	162.4	162.1	156.6	140.2	128.3	120.7
54°	126.9	134.0	139.3	146.9	151.3	154.6	154.1	149.3	133.1	121.6	113.8
54.5°	120.1	126.6	131.9	139.2	143.7	146.8	146.3	141.9	126.1	115.2	107.1
55°	113.5	119.4	124.8	132.2	136.6	139.3	138.7	134.8	119.1	108.3	100.3
55.5°	106.8	112.2	117.6	125.2	129.5	131.8	130.9	127.5	112.3	101.7	94.3
56°	100.3	105.4	110.8	118.0	122.2	124.4	123.5	120.7	105.6	95.8	88.1
56.5°	93.9	98.6	104.1	110.9	115.2	117.1	116.2	113.6	99.3	89.8	82.0
57°	87.8	91.9	97.6	104.6	108.3	110.2	109.2	106.8	93.1	83.9	75.8
57.5°	81.7	85.5	91.2	98.0	101.7	103.2	102.3	100.3	86.9	77.9	70.2
58°	75.6	79.3	84.8	91.6	95.3	96.6	95.8	93.9	80.6	72.0	64.6
58.5°	70.0	73.4	78.7	85.4	88.9	90.0	89.1	87.4	74.4	66.6	59.4
59°	64.2	67.7	72.9	79.4	82.5	83.4	82.6	80.9	68.7	61.1	54.4
59.5°	58.9	62.2	67.3	73.7	76.2	76.8	76.1	74.5	63.3	56.1	49.6
60°	53.5	56.7	61.7	68.0	70.2	70.8	70.1	68.7	57.9	51.1	45.0
60.5°	48.6	51.7	56.4	62.7	64.5	64.9	64.3	62.9	52.7	46.4	40.4
61°	43.7	46.7	51.5	57.3	58.9	59.3	58.5	57.2	47.7	41.7	36.3
61.5°	39.1	42.1	46.6	52.1	53.4	53.7	53.1	51.8	43.1	37.4	32.4
62°	35.2	37.6	42.0	47.3	48.2	48.5	48.0	46.6	38.3	33.2	28.5
62.5°	31.4	34.0	37.6	42.5	43.1	43.5	43.0	41.4	33.9	29.2	25.0
63°	27.4	30.4	34.0	38.1	38.3	38.7	38.2	36.5	29.6	25.5	21.6
63.5°	23.6	26.8	30.4	34.1	33.7	34.1	33.6	32.0	25.7	22.1	18.7
64°	19.7	23.1	26.8	30.2	29.3	29.8	29.4	27.7	22.0	18.8	15.8
64.5°	16.6	19.6	23.1	26.3	25.2	25.7	25.4	23.7	18.6	15.8	13.2
65°	13.9	16.6	19.5	22.4	21.4	22.0	21.6	19.9	15.2	13.6	11.3
65.5°	11.5	14.0	16.5	18.6	17.9	18.3	18.1	16.6	12.8	11.4	9.5
66°	9.4	11.4	13.8	15.4	14.7	15.1	14.9	14.2	10.5	9.2	7.7



TEST NUMBER: P775634

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMB-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	4.6	5.7	7.1	7.6	8.0	8.3	8.1	7.0	3.2	3.5	2.9
68°	3.8	4.3	5.4	5.7	5.8	6.0	5.8	4.7	1.9	2.5	2.0
68.5°	3.2	3.4	3.9	4.2	3.6	3.7	3.5	3.2	1.3	1.6	1.5
69°	2.5	2.7	3.2	3.4	2.5	2.6	2.3	2.1	1.2	1.3	1.2
69.5°	1.8	1.9	2.6	2.7	1.7	1.7	1.6	1.5	1.2	1.2	1.2
70°	1.1	1.2	1.8	1.8	1.2	1.2	1.2	1.2	1.1	1.1	1.1
70.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
71°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
71.5°	1.0	1.0	1.0	1.1	1.0	1.0	1.1	1.1	1.1	1.1	1.1
72°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
72.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
73°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
73.5°	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	0.9	0.9	1.0
74°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
74.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
75°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
75.5°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.9	0.7	0.7	0.7
76°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
76.5°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
77°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.7
77.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
78°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
78.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.6
79°	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
79.5°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
80°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5
80.5°	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5
81°	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
81.5°	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4
82°	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4
82.5°	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.3	0.3
83°	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.3
83.5°	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3
84°	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.2
84.5°	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.2
85°	0.1	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.2
85.5°	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.2
86°	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.1
86.5°	0.0	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.0	0.1	0.1
87°	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1
87.5°	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
88°	0.0	0.0	0.1	0.1	0.0	0.1	0.1	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: P775634

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMB-1000lm-5000K

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: P775634

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMB-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	525.7	525.7	525.7	525.7	525.7	525.7
0.5°	525.4	525.4	525.6	525.5	525.3	525.6
1°	525.1	525.1	525.3	525.2	525.1	525.5
1.5°	524.6	524.6	524.9	524.9	524.7	525.3
2°	524.3	524.2	524.3	524.4	524.2	525.1
2.5°	523.9	523.7	523.9	523.8	523.8	524.6
3°	523.4	523.1	523.3	523.3	523.4	524.3
3.5°	522.7	522.6	522.6	522.7	522.8	523.9
4°	522.1	522.0	522.0	522.1	522.3	523.6
4.5°	521.3	521.2	521.2	521.3	521.7	523.0
5°	520.6	520.4	520.4	520.6	520.9	522.5
5.5°	519.8	519.6	519.5	519.7	520.3	521.9
6°	519.0	518.7	518.6	519.0	519.4	521.1
6.5°	518.1	517.8	517.6	518.0	518.6	520.4
7°	517.2	516.9	516.7	517.1	517.7	519.7
7.5°	516.1	515.8	515.7	516.0	516.9	518.9
8°	515.0	514.6	514.6	514.8	515.8	518.0
8.5°	513.9	513.5	513.4	513.8	514.6	517.1
9°	512.7	512.3	512.2	512.6	513.4	516.0
9.5°	511.5	511.0	510.9	511.3	512.3	514.9
10°	510.2	509.7	509.5	510.0	511.0	513.9
10.5°	508.9	508.4	508.2	508.7	509.8	512.7
11°	507.5	507.0	506.8	507.4	508.3	511.5
11.5°	506.0	505.4	505.3	505.8	506.9	510.3
12°	504.5	504.0	503.7	504.3	505.6	508.9
12.5°	503.0	502.4	502.1	502.7	504.0	507.6
13°	501.3	500.6	500.3	501.1	502.4	506.1
13.5°	499.6	498.9	498.6	499.4	500.8	504.7
14°	497.9	497.1	496.9	497.7	499.0	503.1
14.5°	496.1	495.3	495.0	495.8	497.3	501.5
15°	494.1	493.3	493.1	493.8	495.4	499.8
15.5°	492.2	491.4	491.2	491.9	493.5	498.1
16°	490.2	489.3	489.2	490.0	491.6	496.3
16.5°	488.3	487.3	487.1	488.0	489.6	494.5
17°	486.1	485.1	484.9	485.8	487.5	492.6
17.5°	484.0	482.9	482.7	483.7	485.4	490.6
18°	481.8	480.7	480.5	481.3	483.4	488.5
18.5°	479.4	478.4	478.1	479.1	481.1	486.5
19°	477.2	476.0	475.7	476.8	478.7	484.3
19.5°	474.7	473.6	473.3	474.3	476.4	482.2
20°	472.3	471.1	470.9	471.9	474.2	480.0
20.5°	469.8	468.5	468.2	469.3	471.6	477.6
21°	467.3	465.9	465.7	466.7	469.1	475.3



TEST NUMBER: P775634

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMB-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	459.2	457.9	457.5	458.5	461.3	467.8
23°	456.4	455.1	454.7	455.9	458.4	465.2
23.5°	453.5	452.1	451.8	453.0	455.5	462.6
24°	450.6	449.1	448.7	450.1	452.8	459.8
24.5°	447.6	446.2	445.7	447.0	449.9	457.0
25°	444.7	443.2	442.7	444.0	447.0	454.2
25.5°	441.6	440.0	439.5	440.8	443.9	451.3
26°	438.5	436.8	436.3	437.7	440.8	448.4
26.5°	435.2	433.6	433.1	434.6	437.6	445.5
27°	432.1	430.3	429.9	431.3	434.4	442.4
27.5°	428.7	427.0	426.5	428.0	431.2	439.3
28°	425.4	423.4	423.1	424.6	427.9	436.1
28.5°	421.9	420.1	419.7	421.3	424.5	432.9
29°	418.5	416.7	416.2	417.8	421.2	429.7
29.5°	414.9	413.2	412.7	414.4	417.8	426.4
30°	411.5	409.5	409.2	410.8	414.4	423.1
30.5°	407.8	406.0	405.4	407.2	410.8	419.7
31°	404.1	402.2	401.7	403.4	407.1	416.3
31.5°	400.5	398.6	398.0	399.9	403.6	412.7
32°	396.8	394.8	394.1	396.3	400.0	409.2
32.5°	392.9	391.0	390.5	392.4	396.4	405.5
33°	389.0	387.2	386.7	388.5	392.5	401.9
33.5°	385.2	383.2	382.7	384.7	388.6	398.3
34°	381.2	379.2	378.8	380.9	384.7	394.5
34.5°	377.3	375.2	374.7	376.8	380.9	390.7
35°	373.1	371.1	370.7	372.7	376.7	386.9
35.5°	368.7	366.9	366.5	368.6	372.9	382.8
36°	364.5	362.4	362.1	364.5	368.7	379.0
36.5°	359.9	357.9	357.6	360.1	364.3	374.8
37°	354.9	353.1	353.0	355.3	359.8	370.7
37.5°	349.0	347.5	347.7	350.6	355.3	366.2
38°	342.7	341.3	341.7	344.9	349.7	361.7
38.5°	336.2	334.5	335.3	338.6	343.7	356.6
39°	329.2	327.7	328.5	332.1	337.5	351.0
39.5°	321.9	320.4	321.5	325.1	330.9	345.0
40°	314.6	313.0	314.1	318.0	324.0	338.1
40.5°	307.1	305.3	306.6	310.7	316.5	330.6
41°	299.9	297.7	299.1	303.5	308.9	323.2
41.5°	292.5	289.8	291.3	295.8	300.9	315.7
42°	285.1	282.6	283.6	288.2	293.1	308.2
42.5°	278.0	274.9	275.9	280.6	285.2	300.7
43°	270.7	267.5	267.9	272.7	277.0	293.3
43.5°	263.6	259.7	259.9	264.7	269.0	285.8



TEST NUMBER: P775634

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMB-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	241.4	237.3	235.8	240.0	245.5	263.3
45.5°	233.8	229.6	227.8	231.8	237.5	255.7
46°	226.2	222.2	220.2	223.6	229.8	248.0
46.5°	218.3	214.3	212.3	215.4	222.0	240.2
47°	210.6	207.1	204.5	207.2	214.3	232.2
47.5°	202.9	199.2	196.6	199.1	206.4	224.3
48°	195.1	192.0	189.3	191.1	198.8	216.4
48.5°	187.6	184.4	181.5	183.0	191.1	208.4
49°	180.1	177.1	174.1	175.3	183.5	200.6
49.5°	172.5	169.9	166.6	167.6	175.9	192.8
50°	165.1	162.6	159.2	160.0	168.4	185.2
50.5°	158.0	155.5	151.8	152.5	161.0	177.5
51°	150.9	148.3	144.8	145.3	153.8	170.2
51.5°	143.7	141.5	137.7	138.2	146.4	162.6
52°	136.6	134.7	130.8	131.3	139.5	155.4
52.5°	129.9	128.0	123.9	124.3	132.4	148.2
53°	122.9	121.1	117.4	117.8	125.6	141.1
53.5°	116.1	114.6	110.7	111.4	118.8	133.9
54°	109.4	108.1	104.4	105.0	112.2	126.9
54.5°	103.1	101.9	98.3	99.0	105.7	120.1
55°	96.9	95.9	92.3	93.1	99.5	113.5
55.5°	90.9	89.7	86.6	87.3	93.2	106.8
56°	84.8	83.7	80.8	81.8	87.1	100.3
56.5°	78.7	77.9	75.3	76.3	81.1	93.9
57°	72.6	72.3	70.1	71.0	75.6	87.8
57.5°	67.1	66.9	64.9	65.9	70.0	81.7
58°	61.5	61.4	60.0	61.1	64.7	75.6
58.5°	56.2	56.3	55.3	56.4	59.4	70.0
59°	51.1	51.4	50.8	51.8	54.6	64.2
59.5°	46.2	46.7	46.5	47.5	49.9	58.9
60°	41.6	42.2	42.3	43.4	45.4	53.5
60.5°	37.2	37.6	38.3	39.2	40.9	48.6
61°	33.1	34.0	34.9	35.9	36.8	43.7
61.5°	29.0	30.5	31.5	32.5	33.3	39.1
62°	25.3	26.9	28.0	29.1	29.6	35.2
62.5°	22.0	23.2	24.6	25.7	26.0	31.4
63°	18.8	19.7	21.2	22.3	22.5	27.4
63.5°	15.9	16.7	18.3	19.4	19.4	23.6
64°	13.2	14.1	15.7	16.7	16.6	19.7
64.5°	11.4	11.7	13.2	14.2	13.9	16.6
65°	9.7	9.6	11.1	11.8	11.6	13.9
65.5°	7.9	7.8	9.1	9.7	9.5	11.5
66°	6.2	6.2	7.1	7.9	7.6	9.4



TEST NUMBER: P775634

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMB-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	2.5	3.1	3.4	3.4	3.4	4.6
68°	1.8	2.5	2.7	2.9	2.5	3.8
68.5°	1.4	1.8	1.9	2.2	2.2	3.2
69°	1.2	1.2	1.2	1.7	1.9	2.5
69.5°	1.2	1.2	1.1	1.2	1.6	1.8
70°	1.1	1.1	1.1	1.1	1.3	1.1
70.5°	1.1	1.1	1.1	1.1	1.1	1.1
71°	1.1	1.1	1.1	1.1	1.0	1.1
71.5°	1.0	1.0	1.0	1.0	1.0	1.0
72°	1.0	1.0	1.0	1.0	1.0	1.0
72.5°	1.0	1.0	1.0	1.0	1.0	1.0
73°	1.0	1.0	1.0	1.0	0.9	1.0
73.5°	0.9	0.9	0.9	0.9	0.9	0.9
74°	0.9	0.9	0.9	0.9	0.9	0.9
74.5°	0.9	0.9	0.9	0.9	0.9	0.9
75°	0.9	0.9	0.9	0.9	0.7	0.9
75.5°	0.7	0.7	0.7	0.7	0.7	0.7
76°	0.7	0.7	0.7	0.7	0.7	0.7
76.5°	0.7	0.7	0.7	0.7	0.7	0.7
77°	0.7	0.7	0.7	0.7	0.6	0.7
77.5°	0.6	0.6	0.6	0.6	0.6	0.6
78°	0.6	0.6	0.6	0.6	0.6	0.6
78.5°	0.6	0.6	0.6	0.6	0.5	0.6
79°	0.6	0.6	0.6	0.5	0.5	0.5
79.5°	0.5	0.5	0.5	0.5	0.5	0.5
80°	0.5	0.5	0.5	0.5	0.4	0.5
80.5°	0.5	0.5	0.5	0.5	0.4	0.4
81°	0.4	0.5	0.5	0.4	0.4	0.4
81.5°	0.4	0.4	0.4	0.4	0.3	0.4
82°	0.4	0.4	0.4	0.4	0.3	0.3
82.5°	0.4	0.4	0.4	0.3	0.3	0.3
83°	0.3	0.3	0.3	0.3	0.2	0.3
83.5°	0.3	0.3	0.3	0.3	0.2	0.2
84°	0.3	0.3	0.3	0.3	0.2	0.2
84.5°	0.2	0.2	0.2	0.2	0.1	0.1
85°	0.2	0.2	0.2	0.2	0.1	0.1
85.5°	0.2	0.2	0.2	0.2	0.1	0.1
86°	0.1	0.1	0.1	0.1	0.1	0.1
86.5°	0.1	0.1	0.1	0.1	0.1	0.0
87°	0.1	0.1	0.1	0.1	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: P775634

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMB-1000lm-5000K

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°	472.8	477.3	481.8	485.1	486.0	486.4	484.9	482.6	477.0	472.6	468.2
22°	470.4	474.9	479.4	482.9	483.9	484.1	482.8	480.5	474.5	470.3	465.7



44°	278.4	290.6	302.7	310.8	312.0	312.5	310.1	305.2	288.8	279.9	266.7
44.5°	270.8	282.7	294.8	302.7	303.8	305.5	303.3	298.0	280.4	272.0	258.9



66.5°	7.5	9.3	11.3	12.5	12.5	12.9	12.6	11.8	8.0	7.0	5.8
67°	6.0	7.4	9.1	9.8	10.2	10.6	10.3	9.4	5.7	4.8	3.9



89°	0.0	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	0.0

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21.5°	464.6	463.3	462.9	464.1	466.4	472.8
22°	461.9	460.7	460.2	461.3	463.9	470.4



44°	256.1	252.3	251.8	256.5	261.1	278.4
44.5°	248.9	244.6	243.8	248.2	253.4	270.8



66.5°	4.5	4.9	5.5	6.2	5.9	7.5
67°	3.4	3.7	4.2	4.7	4.6	6.0

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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)