

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: P775703

Luminaire Tested: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-4000K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775703
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-4000K
Description: 4 INCH SQUARE MEDIUM LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 4000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 925.9 lumens
Efficiency: N/A
Efficacy: 92.6 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

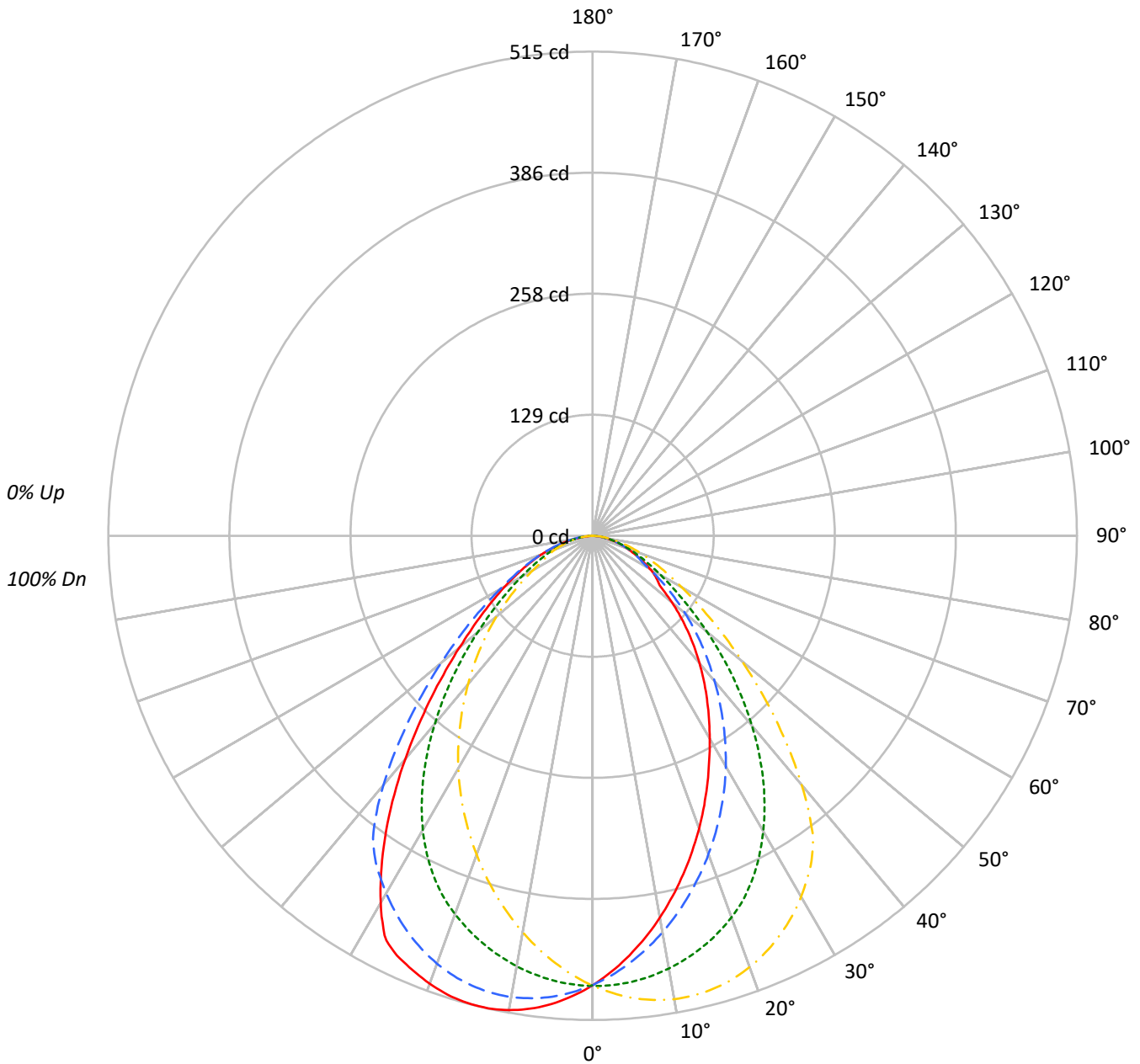
Input Watts (W): 10
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20									20									20									20									
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			100																
1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	89	88			88																
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76			76																
3	94	85	78	72	92	84	77	72	81	75	71	78	73	69	76	72	68	66			66																
4	87	77	69	63	85	75	68	63	73	67	62	71	65	61	69	64	60	58			58																
5	81	70	62	56	79	68	61	55	66	60	55	65	59	54	63	58	54	52			52																
6	75	63	55	50	74	62	55	49	61	54	49	59	53	49	58	52	48	46			46																
7	70	58	50	44	69	57	50	44	56	49	44	54	48	44	53	48	43	42			42																
8	66	53	46	40	64	53	45	40	51	45	40	50	44	40	49	44	39	38			38																
9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34			34																
10	58	46	38	34	57	45	38	34	44	38	33	43	37	33	43	37	33	32			32																

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	60181	60181	60181	60181
5°	56609	60171	63153	60007
10°	52676	59717	65467	59410
15°	48533	58956	67034	58513
20°	44343	57843	67887	57334
25°	40144	55877	68388	55502
30°	36199	52736	65481	52475
35°	32555	48564	58811	48210
40°	29029	43306	50863	42895
45°	25415	37304	43000	37073
50°	21576	31032	36240	31248
55°	18650	25452	31003	26110
60°	17745	21118	27033	22099
65°	15902	17837	23912	19088
70°	14240	15344	21047	16742
75°	12545	13226	18088	14831
80°	9929	11016	13987	12973
85°	4909	8086	6642	10685

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 225°
 Vertical Angle: 45°
 Luminance: 49015 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	45.0	4.9
10°-20°	125.8	13.6
20°-30°	181.6	19.6
30°-40°	195.4	21.1
40°-50°	162.2	17.5
50°-60°	109.1	11.8
60°-70°	66.0	7.1
70°-80°	33.4	3.6
80°-90°	7.5	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°	352.3	38.1
0°-40°	547.7	59.2
0°-60°	819.0	88.5
0°-90°	925.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	925.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	478	478	478	478	478	
5°	448	476	500	475	448	42
15°	372	452	514	449	372	104
25°	289	402	492	400	289	133
35°	212	316	383	314	212	132
45°	143	210	242	208	143	110
55°	85	116	141	119	85	78
65°	53	60	80	64	53	53
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°	478.2	478.2	478.2	478.2	478.2	478.2	478.2	478.2	478.2	478.2	478.2
0.5°	475.3	475.3	475.8	476.9	478.9	479.6	480.3	480.6	480.6	480.2	479.5
1°	472.6	472.8	474.0	475.8	478.9	480.6	482.0	482.9	483.1	482.5	481.2
1.5°	469.8	470.2	472.0	474.7	478.8	481.4	483.7	485.1	485.5	484.6	482.8
2°	466.9	467.5	469.9	473.4	478.6	482.3	485.3	487.3	487.8	486.7	484.5
2.5°	463.9	464.7	467.7	472.2	478.4	483.0	486.9	489.3	490.0	488.8	485.9
3°	460.9	462.0	465.6	470.8	478.1	483.7	488.3	491.3	492.2	490.7	487.3
3.5°	457.8	459.0	463.2	469.4	477.7	484.2	489.7	493.3	494.2	492.5	488.7
4°	454.6	456.2	460.8	468.0	477.2	484.9	491.1	495.1	496.2	494.3	489.9
4.5°	451.4	453.1	458.4	466.4	476.8	485.3	492.3	496.7	498.1	496.0	491.0
5°	448.1	450.1	456.0	464.8	476.3	485.7	493.5	498.4	499.9	497.6	492.1
5.5°	444.6	447.0	453.4	463.1	475.6	486.0	494.5	500.0	501.6	499.1	493.1
6°	441.3	443.7	450.8	461.5	475.0	486.3	495.5	501.5	503.2	500.5	494.0
6.5°	437.9	440.3	448.2	459.7	474.3	486.5	496.4	502.7	504.6	501.8	494.9
7°	434.4	437.2	445.5	458.0	473.4	486.6	497.3	504.0	506.1	502.9	495.6
7.5°	430.7	433.7	442.7	456.0	472.6	486.6	498.0	505.2	507.4	504.1	496.2
8°	427.2	430.4	439.9	454.1	471.6	486.6	498.6	506.3	508.5	505.2	496.7
8.5°	423.5	426.9	437.1	452.1	470.6	486.5	499.2	507.3	509.7	506.0	497.2
9°	419.8	423.4	434.1	450.1	469.5	486.2	499.7	508.1	510.6	506.8	497.6
9.5°	416.0	419.8	431.1	447.9	468.5	485.9	500.1	508.8	511.5	507.6	497.9
10°	412.2	416.2	428.2	445.8	467.3	485.6	500.4	509.6	512.3	508.2	498.1
10.5°	408.3	412.6	425.1	443.6	466.1	485.2	500.6	510.2	512.9	508.7	498.3
11°	404.5	408.9	422.1	441.4	464.8	484.8	500.7	510.6	513.6	509.1	498.3
11.5°	400.6	405.3	418.9	439.0	463.4	484.2	500.7	511.0	514.0	509.5	498.2
12°	396.5	401.6	415.7	436.7	462.1	483.6	500.7	511.3	514.4	509.7	498.1
12.5°	392.7	397.7	412.5	434.2	460.6	483.0	500.6	511.5	514.7	509.9	497.9
13°	388.8	393.9	409.2	431.8	459.1	482.3	500.3	511.6	514.8	509.9	497.6
13.5°	384.7	390.1	406.0	429.4	457.6	481.4	500.0	511.6	514.9	509.8	497.2
14°	380.7	386.3	402.5	426.9	456.0	480.5	499.6	511.5	514.9	509.6	496.6
14.5°	376.6	382.5	399.2	424.3	454.3	479.6	499.2	511.2	514.7	509.2	496.0
15°	372.5	378.4	395.8	421.6	452.5	478.6	498.5	510.9	514.5	508.9	495.4
15.5°	368.4	374.5	392.4	419.0	450.7	477.5	497.9	510.5	514.2	508.5	494.6
16°	364.3	370.6	389.0	416.4	449.0	476.3	497.2	510.0	513.8	508.0	493.8
16.5°	360.3	366.6	385.4	413.7	447.1	475.1	496.3	509.5	513.2	507.4	492.9
17°	356.1	362.7	381.9	410.8	445.1	473.7	495.5	508.8	512.6	506.5	491.9
17.5°	352.0	358.5	378.4	408.0	443.0	472.4	494.4	508.0	511.9	505.7	490.8
18°	347.8	354.5	374.9	405.2	440.9	470.8	493.4	507.0	511.0	504.7	489.6
18.5°	343.7	350.5	371.3	402.2	438.8	469.3	492.2	506.1	510.1	503.7	488.3
19°	339.5	346.4	367.7	399.2	436.6	467.8	491.0	505.0	509.1	502.6	487.1
19.5°	335.2	342.3	364.1	396.2	434.2	466.0	489.6	503.9	508.1	501.4	485.7
20°	331.1	338.3	360.3	393.2	431.9	464.3	488.2	502.6	506.9	500.1	484.2
20.5°	326.9	334.2	356.7	390.0	429.5	462.4	486.8	501.3	505.7	498.7	482.6
21°	322.7	330.2	353.0	386.9	427.0	460.5	485.2	499.9	504.4	497.3	481.0



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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°	310.1	317.9	341.8	377.2	418.7	454.3	480.0	495.2	500.1	492.4	475.5
23°	305.8	313.7	337.9	373.7	415.8	451.9	478.2	493.5	498.6	490.8	473.6
23.5°	301.7	309.7	334.2	370.4	412.5	449.5	476.2	491.7	497.1	489.0	471.6
24°	297.5	305.5	330.4	366.6	409.2	446.9	474.0	490.0	495.6	487.2	469.5
24.5°	293.2	301.4	326.6	363.0	405.9	444.0	471.9	488.1	494.1	485.2	467.3
25°	289.1	297.3	322.6	359.2	402.4	441.1	469.6	486.2	492.5	483.3	465.1
25.5°	285.0	293.1	318.8	355.5	399.0	438.0	467.4	484.5	490.4	481.4	462.7
26°	280.9	289.0	314.9	351.5	395.3	435.0	465.0	482.7	488.1	479.6	460.4
26.5°	276.8	285.0	311.0	347.7	391.5	431.6	462.6	480.8	485.7	477.6	457.9
27°	272.7	280.8	307.1	343.7	387.6	428.2	460.1	478.8	483.2	475.6	455.4
27.5°	268.7	276.8	303.3	339.7	383.6	424.7	457.6	476.2	479.2	473.0	452.8
28°	264.6	272.7	299.3	335.6	379.6	421.0	454.9	473.5	473.7	470.3	450.2
28.5°	260.7	268.7	295.4	331.5	375.5	417.2	452.2	470.9	468.2	467.5	447.5
29°	256.8	264.6	291.3	327.3	371.4	413.3	449.4	468.0	463.0	464.6	444.6
29.5°	252.8	260.8	287.3	323.2	367.1	409.2	446.4	463.4	456.8	460.1	441.8
30°	249.1	256.9	283.2	318.9	362.9	405.0	443.5	457.8	450.6	454.6	439.0
30.5°	245.2	252.9	279.1	314.7	358.4	400.9	440.3	452.3	444.4	449.1	436.0
31°	241.4	248.7	275.0	310.4	354.1	396.7	437.1	447.1	438.1	443.7	433.1
31.5°	237.6	245.2	270.8	306.1	349.5	392.2	433.7	440.9	431.2	437.7	430.0
32°	233.8	241.3	266.7	301.8	345.0	387.8	430.5	434.7	424.6	431.6	427.0
32.5°	230.1	237.6	262.6	297.5	340.3	383.2	427.2	428.4	418.0	425.6	424.0
33°	226.5	233.8	258.5	293.1	335.6	378.6	423.7	422.3	411.0	419.3	420.8
33.5°	222.8	230.1	254.4	288.8	330.7	373.8	420.2	415.7	404.0	413.0	417.5
34°	219.2	226.5	250.2	284.2	326.1	369.0	416.4	409.1	396.9	406.3	413.9
34.5°	215.4	222.7	246.0	279.8	321.0	363.9	412.2	402.3	389.8	399.9	409.9
35°	211.9	218.8	241.9	275.3	316.1	359.0	408.0	395.8	382.8	393.3	405.7
35.5°	208.3	215.4	237.8	270.9	311.0	353.8	403.5	388.9	375.5	386.8	401.6
36°	204.8	211.8	233.8	266.4	305.8	348.6	398.8	382.0	368.2	379.9	397.3
36.5°	201.3	208.2	229.6	262.0	300.6	343.4	393.2	375.0	361.1	373.1	392.0
37°	197.7	204.6	225.6	257.5	295.6	337.9	386.6	368.2	353.8	366.5	385.6
37.5°	194.1	200.9	221.5	252.8	290.2	332.4	379.9	361.1	346.3	359.7	379.4
38°	190.5	197.4	217.5	248.3	284.9	326.8	373.5	354.1	338.8	352.7	373.1
38.5°	187.1	193.8	213.7	243.7	279.5	321.2	366.9	346.7	331.8	345.7	366.8
39°	183.7	190.3	209.7	239.2	274.3	315.5	359.9	340.1	324.6	339.1	359.9
39.5°	180.1	186.9	205.7	234.6	268.9	309.8	352.8	332.9	317.1	332.3	353.0
40°	176.7	183.2	201.8	229.9	263.6	303.9	345.8	325.6	309.6	325.2	346.0
40.5°	173.2	179.7	197.9	225.4	258.0	298.1	338.8	318.5	303.0	318.1	339.1
41°	169.7	176.3	194.1	220.8	252.6	292.2	331.5	311.9	296.0	311.7	332.1
41.5°	166.4	172.8	190.2	216.3	247.2	286.3	324.4	304.8	288.6	304.8	324.8
42°	162.9	169.3	186.5	211.7	241.8	280.5	317.1	297.5	281.7	297.7	317.8
42.5°	159.6	165.9	182.7	207.2	236.5	274.4	310.1	290.9	275.2	291.2	310.5
43°	156.2	162.4	178.9	202.7	231.0	268.5	302.9	284.2	268.4	284.7	303.6
43.5°	152.7	159.0	175.1	198.2	225.5	262.5	295.8	277.1	260.8	277.8	296.3



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	142.8	148.8	164.1	184.9	209.6	244.5	274.5	257.5	241.6	258.7	275.4
45.5°	139.4	145.5	160.4	180.5	204.2	238.7	267.2	250.2	235.4	251.8	268.5
46°	136.2	142.2	156.8	176.2	199.0	232.8	260.2	244.0	229.8	245.3	261.6
46.5°	132.8	138.9	153.2	171.7	193.7	226.8	253.5	238.1	223.5	239.9	255.0
47°	129.5	135.5	149.6	167.5	188.4	220.9	246.6	231.5	216.7	233.6	248.2
47.5°	126.3	132.1	145.9	163.2	183.3	215.0	239.7	224.6	211.9	226.8	241.6
48°	123.1	128.9	142.5	159.0	178.2	209.2	232.8	219.4	206.6	221.4	235.0
48.5°	119.7	125.5	139.0	154.8	173.2	203.6	226.6	213.6	200.4	216.1	229.0
49°	116.6	122.4	135.5	150.8	168.3	197.9	220.2	206.9	195.0	209.9	222.6
49.5°	113.4	119.1	132.0	146.7	163.4	192.3	213.6	201.2	190.3	203.8	216.3
50°	110.2	115.9	128.6	142.6	158.5	186.6	207.1	196.0	185.1	199.0	210.0
50.5°	106.9	112.6	125.2	138.7	153.9	181.2	201.4	190.2	179.2	193.6	204.5
51°	103.9	109.5	121.8	134.9	149.3	175.6	195.2	184.0	175.2	187.2	198.5
51.5°	100.7	106.3	118.5	131.0	144.9	170.5	189.1	179.7	170.9	182.9	192.6
52°	97.7	103.2	115.2	127.2	140.3	165.0	183.7	174.7	165.3	178.0	187.0
52.5°	94.6	100.0	112.0	123.5	135.9	160.0	178.2	168.7	161.3	172.6	182.1
53°	91.8	96.8	108.8	119.9	131.7	154.7	172.3	164.4	157.5	167.4	176.3
53.5°	89.1	93.8	105.6	116.3	127.7	149.8	166.9	160.1	152.9	163.4	170.8
54°	87.4	90.9	102.4	112.7	123.6	144.7	161.9	155.0	148.5	158.6	166.0
54.5°	86.2	87.9	99.4	109.2	119.7	139.9	156.7	150.4	145.2	153.5	161.2
55°	85.0	85.2	96.3	106.0	116.0	135.3	151.5	146.6	141.3	149.9	156.0
55.5°	83.8	82.6	93.4	102.7	112.3	130.6	147.1	142.3	137.0	145.8	151.3
56°	82.5	81.2	90.3	99.6	108.7	126.2	142.2	137.8	133.9	140.9	146.9
56.5°	81.1	80.0	87.4	96.4	105.3	122.0	137.4	134.4	130.5	137.4	142.2
57°	79.8	78.8	84.6	93.4	101.8	117.8	133.2	130.5	126.5	133.8	137.6
57.5°	78.4	77.5	81.7	90.3	98.6	113.7	129.0	126.3	123.6	129.5	133.8
58°	77.0	76.2	79.1	87.5	95.4	109.9	124.5	123.2	120.5	126.1	129.5
58.5°	75.4	74.9	76.4	84.8	92.4	106.1	120.7	119.7	116.8	122.9	125.3
59°	73.7	73.4	73.7	82.0	89.6	102.5	116.8	115.8	113.8	119.1	121.6
59.5°	72.2	72.1	71.1	79.3	86.8	99.0	112.8	112.9	110.5	115.8	117.9
60°	70.5	70.6	68.7	76.8	83.9	95.6	109.2	109.8	107.4	112.8	113.9
60.5°	68.7	69.0	66.2	74.2	81.1	92.3	105.8	106.2	104.4	109.2	110.5
61°	67.0	67.4	63.9	71.8	78.3	89.3	102.1	103.5	101.4	106.1	107.1
61.5°	65.3	65.9	61.9	69.4	75.7	86.3	99.0	100.3	98.5	103.2	103.6
62°	63.6	64.2	59.9	67.1	73.3	83.3	95.8	97.1	95.7	99.9	100.4
62.5°	61.9	62.5	58.7	64.9	70.9	80.3	92.4	94.3	93.1	97.1	97.4
63°	60.2	60.9	57.5	62.7	68.5	77.6	89.6	91.5	90.5	94.3	94.0
63.5°	58.5	59.2	56.3	60.6	66.3	75.0	86.8	88.7	87.9	91.2	91.3
64°	56.7	57.7	55.1	58.6	64.1	72.5	84.0	85.9	85.4	88.6	88.6
64.5°	55.0	56.0	53.9	56.5	61.9	70.0	81.2	83.2	82.8	85.9	85.7
65°	53.4	54.4	52.6	54.6	59.9	67.6	78.4	80.5	80.3	83.3	83.0
65.5°	51.7	52.7	51.4	52.8	57.8	65.3	75.7	78.3	77.7	80.7	80.1
66°	50.0	51.2	50.1	50.9	55.8	63.0	73.2	75.5	75.3	78.2	77.5



TEST NUMBER: P775703

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	45.6	46.3	46.0	45.8	50.2	56.6	65.8	68.5	68.3	70.9	70.1
68°	44.1	44.9	44.5	44.2	48.4	54.6	63.4	66.2	66.1	68.5	67.6
68.5°	42.8	43.4	43.2	42.6	46.6	52.7	61.1	63.9	63.8	66.2	65.2
69°	41.4	41.9	41.9	41.1	45.0	50.8	58.8	61.7	61.7	63.9	62.9
69.5°	40.0	40.5	40.5	39.6	43.3	48.8	56.7	59.5	59.5	61.7	60.6
70°	38.7	39.2	39.1	38.2	41.7	47.1	54.5	57.2	57.2	59.5	58.5
70.5°	37.4	37.6	37.8	36.9	40.0	45.3	52.4	55.3	55.3	57.2	56.3
71°	36.1	36.4	36.6	35.6	38.6	43.6	50.4	53.0	53.2	55.3	54.2
71.5°	34.9	35.2	35.2	34.2	37.0	41.8	48.3	51.1	51.1	53.0	52.1
72°	33.5	33.9	33.8	33.0	35.5	40.1	46.3	49.0	49.0	50.9	50.1
72.5°	32.2	32.7	32.6	31.6	34.0	38.6	44.4	47.0	47.0	48.8	48.0
73°	31.0	31.4	31.2	30.5	32.7	36.9	42.5	45.1	45.0	47.0	46.1
73.5°	29.6	30.1	29.9	29.3	31.2	35.3	40.7	43.1	43.0	44.9	44.1
74°	28.4	28.8	28.6	28.3	29.8	33.8	38.8	41.1	41.0	42.9	42.2
74.5°	27.1	27.5	27.4	27.3	28.5	32.2	37.0	39.2	39.1	41.0	40.3
75°	25.8	26.3	26.3	26.3	27.2	30.8	35.2	37.4	37.2	39.1	38.6
75.5°	24.6	25.0	25.0	25.2	25.8	29.4	33.4	35.5	35.3	37.1	36.7
76°	23.3	23.7	23.7	24.1	24.6	27.9	31.8	33.6	33.4	35.3	34.9
76.5°	22.1	22.5	22.6	23.0	23.3	26.5	30.0	31.7	31.5	33.4	33.1
77°	20.9	21.2	21.4	22.0	22.2	25.1	28.5	30.0	29.8	31.6	31.4
77.5°	19.6	20.0	20.3	20.8	20.9	23.7	26.8	28.3	27.9	29.7	29.7
78°	18.5	18.7	19.1	19.7	19.7	22.4	25.2	26.6	26.2	28.0	28.0
78.5°	17.2	17.5	18.0	18.7	18.6	21.0	23.6	24.8	24.5	26.3	26.5
79°	16.1	16.3	16.9	17.5	17.4	19.7	22.2	23.1	22.7	24.5	24.8
79.5°	14.8	15.0	15.8	16.5	16.4	18.5	20.7	21.3	21.0	22.8	23.2
80°	13.7	13.8	14.6	15.4	15.2	17.2	19.2	19.6	19.3	21.1	21.7
80.5°	12.5	12.6	13.6	14.4	14.2	16.0	17.8	18.1	17.6	19.4	20.2
81°	11.3	11.3	12.5	13.3	13.1	14.8	16.4	16.4	16.0	17.8	18.7
81.5°	10.2	10.2	11.4	12.3	12.2	13.7	15.0	14.8	14.4	16.2	17.3
82°	9.0	9.0	10.5	11.3	11.1	12.5	13.7	13.4	12.8	14.6	15.9
82.5°	7.9	8.1	9.5	10.3	10.2	11.4	12.4	12.0	11.3	13.1	14.6
83°	6.8	7.0	8.5	9.3	9.2	10.3	11.2	10.7	9.9	11.7	13.2
83.5°	5.7	6.1	7.7	8.4	8.3	9.3	10.1	9.6	8.4	10.5	12.0
84°	4.6	5.3	6.7	7.4	7.4	8.3	9.0	8.3	6.9	9.2	10.8
84.5°	3.8	4.4	5.9	6.4	6.4	7.2	7.9	7.0	5.5	8.1	9.8
85°	3.4	3.8	5.0	5.5	5.6	6.2	6.8	5.8	4.6	6.9	8.6
85.5°	2.8	3.3	4.2	4.5	4.6	5.1	5.7	4.9	4.0	5.7	7.6
86°	2.3	2.6	3.5	3.6	3.8	4.2	4.7	4.1	3.4	4.8	6.4
86.5°	1.9	2.1	2.6	2.7	2.9	3.3	3.7	3.4	2.8	4.1	5.4
87°	1.4	1.5	1.9	1.9	2.1	2.3	2.7	2.5	2.2	3.4	4.3
87.5°	0.9	0.9	1.1	1.2	1.3	1.5	1.8	1.8	1.7	2.5	3.4
88°	0.5	0.4	0.4	0.3	0.5	0.7	0.9	1.2	1.2	1.8	2.4
88.5°	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.5	1.1	1.5



TEST NUMBER: P775703

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-4000K

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: P775703

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	478.2	478.2	478.2	478.2	478.2	478.2
0.5°	478.9	478.7	477.5	476.5	475.7	475.3
1°	479.7	478.6	476.4	474.5	473.2	472.6
1.5°	480.6	478.4	475.2	472.4	470.6	469.8
2°	481.3	478.1	473.8	470.4	467.9	466.9
2.5°	481.9	477.7	472.5	468.1	465.0	463.9
3°	482.6	477.3	471.1	465.9	462.3	460.9
3.5°	483.1	476.8	469.6	463.6	459.5	457.8
4°	483.5	476.3	468.1	461.2	456.4	454.6
4.5°	483.8	475.6	466.5	458.6	453.4	451.4
5°	484.1	475.0	464.9	456.2	450.2	448.1
5.5°	484.4	474.2	463.2	453.6	447.2	444.6
6°	484.6	473.4	461.5	450.9	443.9	441.3
6.5°	484.7	472.6	459.6	448.2	440.7	437.9
7°	484.7	471.6	457.7	445.7	437.4	434.4
7.5°	484.6	470.7	455.8	442.9	434.0	430.7
8°	484.5	469.6	453.8	440.0	430.6	427.2
8.5°	484.2	468.5	451.8	437.2	427.1	423.5
9°	483.9	467.3	449.7	434.2	423.5	419.8
9.5°	483.6	466.2	447.5	431.2	420.1	416.0
10°	483.2	464.9	445.3	428.2	416.5	412.2
10.5°	482.7	463.6	443.1	425.2	412.9	408.3
11°	482.1	462.2	440.8	422.1	409.2	404.5
11.5°	481.5	460.7	438.4	418.9	405.5	400.6
12°	480.8	459.1	436.0	415.8	401.8	396.5
12.5°	480.0	457.7	433.6	412.5	398.0	392.7
13°	479.2	456.1	431.2	409.2	394.2	388.8
13.5°	478.2	454.4	428.7	406.0	390.4	384.7
14°	477.3	452.7	426.3	402.7	386.6	380.7
14.5°	476.3	450.9	423.6	399.4	382.7	376.6
15°	475.1	449.1	421.0	395.9	378.8	372.5
15.5°	474.0	447.3	418.4	392.5	374.8	368.4
16°	472.7	445.4	415.8	389.1	370.9	364.3
16.5°	471.4	443.4	413.0	385.7	367.0	360.3
17°	470.0	441.4	410.3	382.3	363.0	356.1
17.5°	468.5	439.3	407.5	378.7	359.0	352.0
18°	467.0	437.2	404.7	375.1	355.0	347.8
18.5°	465.4	435.0	401.8	371.6	350.9	343.7
19°	463.8	432.7	398.8	368.0	347.0	339.5
19.5°	462.1	430.5	395.9	364.5	343.1	335.2
20°	460.3	428.1	393.0	360.9	339.0	331.1
20.5°	458.3	425.6	389.9	357.3	335.0	326.9
21°	456.4	423.1	386.8	353.6	330.9	322.7



TEST NUMBER: P775703

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	450.1	415.2	377.3	342.7	318.7	310.1
23°	447.9	412.4	374.0	339.0	314.5	305.8
23.5°	445.5	409.5	370.8	335.3	310.6	301.7
24°	443.1	406.2	367.4	331.5	306.5	297.5
24.5°	440.6	403.2	364.0	327.8	302.4	293.2
25°	437.9	399.7	360.4	324.1	298.2	289.1
25.5°	435.2	396.3	356.9	320.3	294.3	285.0
26°	432.3	392.7	353.3	316.5	290.2	280.9
26.5°	429.2	389.1	349.5	312.7	286.1	276.8
27°	426.1	385.5	345.7	308.9	282.1	272.7
27.5°	422.7	381.6	341.8	305.0	278.2	268.7
28°	419.1	377.5	337.8	301.2	274.1	264.6
28.5°	415.6	373.7	333.9	297.4	270.1	260.7
29°	411.9	369.6	329.9	293.6	266.2	256.8
29.5°	408.0	365.4	325.9	289.7	262.3	252.8
30°	404.2	361.1	321.7	285.7	258.4	249.1
30.5°	400.2	356.7	317.8	281.8	254.5	245.2
31°	396.0	352.2	313.4	277.8	250.6	241.4
31.5°	391.6	347.6	309.2	273.8	246.7	237.6
32°	387.2	343.1	304.9	270.0	243.1	233.8
32.5°	382.7	338.3	300.7	265.9	239.3	230.1
33°	377.9	333.4	296.3	261.9	235.5	226.5
33.5°	373.2	328.6	291.9	257.9	231.8	222.8
34°	368.2	323.7	287.5	253.8	228.2	219.2
34.5°	363.2	318.7	283.1	249.7	224.6	215.4
35°	358.2	313.8	278.6	245.6	220.9	211.9
35.5°	353.0	308.5	274.2	241.6	217.3	208.3
36°	347.8	303.6	269.6	237.7	213.7	204.8
36.5°	342.3	298.4	265.1	233.7	210.2	201.3
37°	337.0	293.1	260.6	229.7	206.6	197.7
37.5°	331.5	287.9	256.1	225.6	203.2	194.1
38°	325.9	282.5	251.6	221.6	199.5	190.5
38.5°	320.3	277.2	247.0	217.8	196.0	187.1
39°	314.7	271.9	242.4	213.9	192.6	183.7
39.5°	309.0	266.6	237.9	210.1	189.2	180.1
40°	303.3	261.1	233.4	206.1	185.5	176.7
40.5°	297.4	255.8	228.8	202.2	182.1	173.2
41°	291.5	250.4	224.3	198.4	178.8	169.7
41.5°	285.7	245.1	219.6	194.5	175.2	166.4
42°	279.7	239.8	215.1	190.8	171.9	162.9
42.5°	274.1	234.5	210.6	187.0	168.4	159.6
43°	268.1	229.1	206.2	183.2	165.1	156.2
43.5°	262.1	223.8	201.7	179.4	161.6	152.7



TEST NUMBER: P775703

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	244.6	208.3	188.6	168.4	151.7	142.8
45.5°	238.9	203.2	184.1	164.8	148.2	139.4
46°	233.0	198.1	180.0	161.2	145.1	136.2
46.5°	227.3	193.1	175.6	157.6	141.7	132.8
47°	221.5	188.1	171.4	154.0	138.4	129.5
47.5°	216.0	183.2	167.2	150.4	135.1	126.3
48°	210.3	178.4	163.2	147.0	131.9	123.1
48.5°	204.8	173.5	159.1	143.5	128.7	119.7
49°	199.3	168.9	155.0	140.0	125.4	116.6
49.5°	193.9	164.3	151.1	136.6	122.2	113.4
50°	188.4	159.6	147.3	133.1	119.0	110.2
50.5°	183.2	155.1	143.3	129.7	115.9	106.9
51°	178.0	150.7	139.5	126.4	112.6	103.9
51.5°	173.0	146.4	135.7	123.1	109.5	100.7
52°	167.9	142.2	132.0	119.7	106.4	97.7
52.5°	162.7	138.0	128.4	116.6	103.4	94.6
53°	157.8	134.0	124.9	113.3	100.2	91.8
53.5°	153.0	130.1	121.2	110.2	97.1	89.1
54°	148.2	126.3	117.8	107.0	94.1	87.4
54.5°	143.7	122.6	114.5	104.0	91.2	86.2
55°	139.3	119.0	111.1	100.9	88.3	85.0
55.5°	134.9	115.4	108.0	98.0	85.5	83.8
56°	130.7	112.1	104.7	95.1	82.9	82.5
56.5°	126.6	108.7	101.7	92.1	81.4	81.1
57°	122.7	105.5	98.6	89.3	80.3	79.8
57.5°	118.8	102.3	95.8	86.5	79.0	78.4
58°	115.1	99.3	93.0	83.7	77.7	77.0
58.5°	111.6	96.3	90.1	81.1	76.4	75.4
59°	108.0	93.5	87.4	78.5	75.0	73.7
59.5°	104.6	90.7	84.8	75.8	73.7	72.2
60°	101.4	87.8	82.1	73.3	72.3	70.5
60.5°	98.2	85.2	79.6	70.9	70.8	68.7
61°	95.2	82.6	77.1	68.5	69.3	67.0
61.5°	92.1	80.1	74.8	66.3	67.8	65.3
62°	89.4	77.6	72.5	64.1	66.1	63.6
62.5°	86.7	75.2	70.3	62.0	64.5	61.9
63°	83.9	72.9	68.0	60.1	62.9	60.2
63.5°	81.2	70.6	65.9	58.6	61.3	58.5
64°	78.5	68.3	63.7	57.5	59.7	56.7
64.5°	75.8	66.2	61.7	56.3	58.1	55.0
65°	73.4	64.1	59.7	55.1	56.5	53.4
65.5°	71.0	62.1	57.8	53.9	54.9	51.7
66°	68.7	60.0	55.9	52.6	53.3	50.0



TEST NUMBER: P775703

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	62.1	54.3	50.5	48.8	48.5	45.6
68°	59.9	52.4	48.8	47.5	47.0	44.1
68.5°	57.9	50.6	47.3	46.2	45.5	42.8
69°	55.9	48.8	45.6	44.9	44.0	41.4
69.5°	53.9	47.2	44.0	43.5	42.5	40.0
70°	52.0	45.5	42.5	42.1	41.2	38.7
70.5°	50.1	43.9	41.1	40.8	39.8	37.4
71°	48.3	42.2	39.5	39.4	38.4	36.1
71.5°	46.4	40.7	38.2	38.0	37.2	34.9
72°	44.7	39.1	36.9	36.8	35.8	33.5
72.5°	43.0	37.8	35.5	35.4	34.6	32.2
73°	41.3	36.3	34.2	34.1	33.2	31.0
73.5°	39.6	34.9	32.9	32.8	31.9	29.6
74°	38.0	33.3	31.6	31.5	30.6	28.4
74.5°	36.3	31.8	30.4	30.3	29.3	27.1
75°	34.8	30.5	29.2	29.0	27.9	25.8
75.5°	33.3	29.1	28.0	27.8	26.7	24.6
76°	31.7	27.7	27.0	26.6	25.3	23.3
76.5°	30.3	26.5	25.9	25.3	24.1	22.1
77°	28.8	25.1	24.9	24.2	22.8	20.9
77.5°	27.3	23.8	23.8	22.9	21.5	19.6
78°	25.9	22.6	22.7	21.7	20.3	18.5
78.5°	24.5	21.4	21.6	20.6	19.0	17.2
79°	23.1	20.2	20.5	19.4	17.8	16.1
79.5°	21.7	19.0	19.4	18.3	16.5	14.8
80°	20.4	17.9	18.3	17.1	15.2	13.7
80.5°	19.1	16.7	17.2	16.0	14.1	12.5
81°	17.9	15.5	16.1	14.9	12.8	11.3
81.5°	16.6	14.5	15.0	13.8	11.7	10.2
82°	15.3	13.4	14.0	12.7	10.6	9.0
82.5°	14.2	12.4	12.9	11.7	9.5	7.9
83°	13.0	11.3	11.9	10.7	8.4	6.8
83.5°	11.9	10.3	10.8	9.7	7.4	5.7
84°	10.7	9.3	9.9	8.7	6.4	4.6
84.5°	9.7	8.3	8.8	7.8	5.6	3.8
85°	8.6	7.4	7.8	6.8	4.7	3.4
85.5°	7.6	6.4	6.8	5.9	4.1	2.8
86°	6.5	5.6	5.8	5.0	3.5	2.3
86.5°	5.4	4.6	4.8	4.1	2.8	1.9
87°	4.4	3.8	3.9	3.3	2.2	1.4
87.5°	3.5	2.9	2.9	2.5	1.6	0.9
88°	2.5	2.1	2.1	1.7	1.1	0.5
88.5°	1.6	1.3	1.3	0.8	0.5	0.2



TEST NUMBER: P775703

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-4000K

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°	318.4	326.1	349.3	383.7	424.4	458.5	483.5	498.3	503.1	495.7	479.2
22°	314.3	322.0	345.5	380.5	421.6	456.4	481.8	496.9	501.6	494.1	477.5



44°	149.5	155.7	171.4	193.8	220.2	256.5	288.3	270.0	254.9	270.7	289.1
44.5°	146.1	152.3	167.8	189.3	214.8	250.6	281.4	264.0	248.6	264.9	282.1



66.5°	48.5	49.6	48.6	49.2	53.9	60.8	70.6	73.2	72.9	75.6	75.0
67°	47.0	47.9	47.3	47.5	52.0	58.7	68.2	70.8	70.6	73.3	72.4



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°	454.4	420.6	383.6	350.0	326.8	318.4
22°	452.3	417.9	380.5	346.3	322.7	314.3



44°	256.2	218.7	197.3	175.7	158.4	149.5
44.5°	250.5	213.4	192.9	172.1	154.9	146.1



66.5°	66.4	58.1	54.1	51.5	51.7	48.5
67°	64.2	56.1	52.3	50.2	50.1	47.0

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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)