

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: P775704

Luminaire Tested: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-5000K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775704
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-5000K
Description: 4 INCH SQUARE MEDIUM LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 5000K CCT
Ballast/Driver: -

Summary

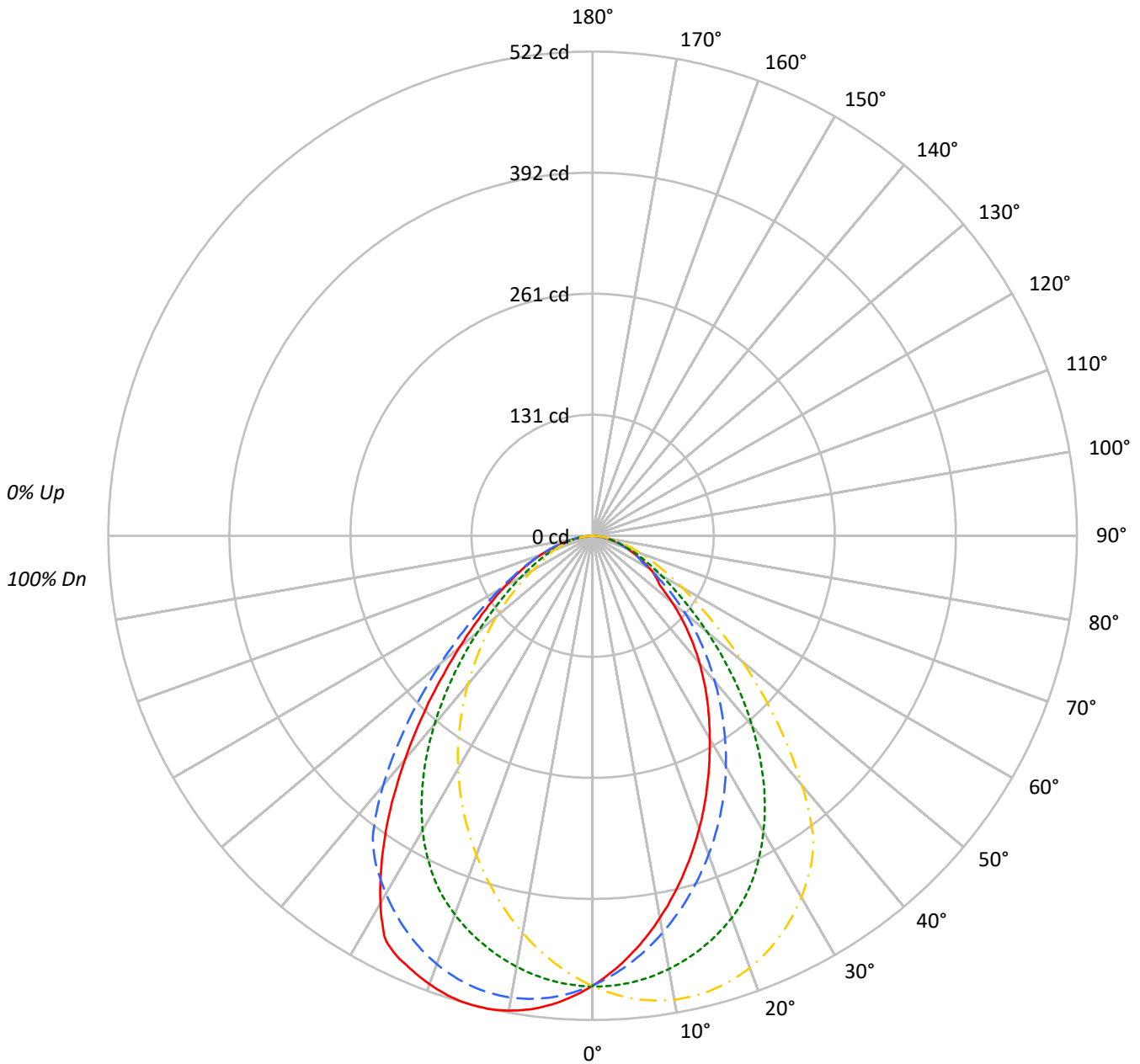
Lumens per Lamp: N/A
Luminaire Lumens: 939.6 lumens
Efficiency: N/A
Efficacy: 94.0 lumens/watt
Spacing Criteria (0/90/45): 1.11 / 1.14 / 1.19
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20									20									20									20									
RC	80									50									30									10									0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0																
RCR																																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100																			
1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	89	88																			
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76																			
3	94	85	78	72	92	84	77	72	81	75	71	78	73	69	76	72	68	66																			
4	87	77	69	63	85	75	68	63	73	67	62	71	65	61	69	64	60	58																			
5	81	70	62	56	79	68	61	55	66	60	55	65	59	54	63	58	54	52																			
6	75	63	55	50	74	62	55	49	61	54	49	59	53	49	58	52	48	46																			
7	70	58	50	44	69	57	50	44	56	49	44	54	48	44	53	48	43	42																			
8	66	53	46	40	64	53	45	40	51	45	40	50	44	40	49	44	39	38																			
9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34																			
10	58	46	38	34	57	45	38	34	44	38	33	43	37	33	43	37	33	32																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	61062	61062	61062	61062
5°	57442	61056	64087	60891
10°	53455	60611	66439	60292
15°	49249	59829	68024	59373
20°	44999	58700	68892	58178
25°	40741	56710	69402	56322
30°	36722	53521	66454	53259
35°	33031	49286	59672	48917
40°	29456	43946	51602	43536
45°	25789	37856	43640	37625
50°	21889	31502	36769	31698
55°	18913	25825	31464	26505
60°	17997	21445	27410	22426
65°	16140	18105	24240	19356
70°	14424	15565	21378	17000
75°	12740	13420	18331	15025
80°	10074	11233	14205	13118
85°	4909	8086	6787	10830

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 225°
 Vertical Angle: 45°
 Luminance: 49745 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	45.6	4.9
10°-20°	127.6	13.6
20°-30°	184.3	19.6
30°-40°	198.3	21.1
40°-50°	164.6	17.5
50°-60°	110.7	11.8
60°-70°	67.0	7.1
70°-80°	33.9	3.6
80°-90°	7.6	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°	357.6	38.1
0°-40°	555.8	59.2
0°-60°	831.1	88.5
0°-90°	939.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	939.6	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	485	485	485	485	485	
5°	455	483	507	482	455	42
15°	378	459	522	456	378	106
25°	293	408	500	406	293	135
35°	215	321	388	318	215	134
45°	145	213	245	211	145	112
55°	86	118	143	121	86	79
65°	54	61	81	65	54	54
75°	26	28	38	31	26	28
85°	3	6	5	8	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°	485.2	485.2	485.2	485.2	485.2	485.2	485.2	485.2	485.2	485.2	485.2
0.5°	482.4	482.4	482.9	484.0	486.0	486.7	487.4	487.7	487.7	487.3	486.6
1°	479.6	479.8	481.0	482.9	486.0	487.7	489.2	490.0	490.2	489.6	488.3
1.5°	476.7	477.1	478.9	481.7	485.9	488.5	490.9	492.3	492.7	491.7	489.9
2°	473.8	474.5	476.8	480.4	485.7	489.4	492.5	494.5	495.0	493.9	491.6
2.5°	470.7	471.6	474.6	479.2	485.4	490.1	494.1	496.5	497.3	496.0	493.1
3°	467.8	468.8	472.4	477.8	485.1	490.9	495.6	498.6	499.5	497.9	494.5
3.5°	464.6	465.8	470.1	476.4	484.8	491.4	497.0	500.6	501.5	499.8	495.9
4°	461.4	463.0	467.6	474.9	484.3	492.1	498.3	502.4	503.6	501.7	497.2
4.5°	458.1	459.8	465.2	473.3	483.9	492.5	499.6	504.1	505.5	503.4	498.2
5°	454.7	456.8	462.7	471.7	483.3	492.9	500.8	505.8	507.3	505.0	499.4
5.5°	451.2	453.6	460.1	470.0	482.7	493.2	501.9	507.4	509.0	506.4	500.4
6°	447.8	450.3	457.5	468.3	482.0	493.6	502.8	508.9	510.6	507.9	501.3
6.5°	444.4	446.9	454.9	466.5	481.3	493.7	503.8	510.2	512.1	509.2	502.2
7°	440.8	443.7	452.1	464.8	480.4	493.8	504.6	511.5	513.6	510.4	502.9
7.5°	437.1	440.1	449.2	462.7	479.6	493.8	505.4	512.6	514.9	511.6	503.6
8°	433.5	436.7	446.4	460.8	478.6	493.8	506.0	513.8	516.0	512.6	504.1
8.5°	429.8	433.2	443.6	458.8	477.6	493.7	506.6	514.8	517.2	513.5	504.5
9°	426.0	429.7	440.6	456.8	476.5	493.4	507.1	515.6	518.2	514.3	505.0
9.5°	422.1	426.0	437.5	454.5	475.4	493.1	507.5	516.4	519.0	515.1	505.3
10°	418.3	422.3	434.5	452.4	474.3	492.8	507.8	517.1	519.9	515.7	505.5
10.5°	414.3	418.7	431.4	450.2	473.0	492.4	508.0	517.7	520.5	516.3	505.7
11°	410.5	415.0	428.3	447.9	471.7	492.0	508.2	518.2	521.2	516.7	505.7
11.5°	406.6	411.3	425.1	445.5	470.3	491.4	508.2	518.6	521.6	517.0	505.6
12°	402.4	407.5	421.8	443.1	468.9	490.8	508.2	518.9	522.0	517.2	505.5
12.5°	398.5	403.6	418.6	440.7	467.4	490.1	508.0	519.0	522.3	517.4	505.3
13°	394.5	399.7	415.3	438.2	465.9	489.4	507.7	519.1	522.4	517.4	505.0
13.5°	390.4	395.9	412.0	435.8	464.3	488.5	507.4	519.1	522.5	517.3	504.5
14°	386.3	392.1	408.5	433.2	462.7	487.6	507.0	519.0	522.5	517.1	504.0
14.5°	382.2	388.1	405.1	430.6	461.0	486.7	506.6	518.8	522.3	516.8	503.4
15°	378.0	384.0	401.7	427.9	459.2	485.7	505.9	518.5	522.1	516.5	502.7
15.5°	373.8	380.0	398.3	425.2	457.4	484.6	505.3	518.1	521.8	516.0	502.0
16°	369.7	376.1	394.7	422.6	455.6	483.3	504.5	517.5	521.4	515.5	501.1
16.5°	365.6	372.0	391.1	419.8	453.7	482.1	503.7	517.0	520.8	514.9	500.2
17°	361.4	368.1	387.6	416.9	451.7	480.8	502.8	516.4	520.2	514.0	499.2
17.5°	357.2	363.8	384.0	414.0	449.5	479.4	501.8	515.5	519.5	513.2	498.0
18°	352.9	359.8	380.4	411.2	447.4	477.8	500.7	514.6	518.6	512.2	496.9
18.5°	348.8	355.7	376.8	408.2	445.3	476.3	499.5	513.6	517.6	511.1	495.6
19°	344.5	351.6	373.1	405.1	443.0	474.7	498.2	512.5	516.7	510.1	494.3
19.5°	340.2	347.4	369.5	402.1	440.7	472.9	496.9	511.4	515.6	508.8	492.9
20°	336.0	343.4	365.6	399.0	438.3	471.2	495.5	510.1	514.4	507.5	491.4
20.5°	331.7	339.2	362.0	395.8	435.9	469.2	494.0	508.7	513.2	506.1	489.7
21°	327.5	335.0	358.3	392.6	433.3	467.3	492.4	507.3	511.9	504.6	488.1



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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°	314.7	322.6	346.9	382.8	424.9	461.0	487.2	502.5	507.5	499.7	482.6
23°	310.3	318.3	342.9	379.3	421.9	458.6	485.2	500.8	506.0	498.0	480.7
23.5°	306.2	314.3	339.2	375.9	418.6	456.1	483.2	499.0	504.4	496.2	478.6
24°	301.9	310.0	335.3	372.0	415.3	453.5	481.0	497.3	502.9	494.4	476.5
24.5°	297.5	305.8	331.4	368.4	411.9	450.6	478.8	495.4	501.4	492.4	474.3
25°	293.4	301.7	327.4	364.6	408.4	447.6	476.6	493.4	499.8	490.5	472.0
25.5°	289.2	297.4	323.5	360.7	404.9	444.5	474.4	491.6	497.7	488.5	469.6
26°	285.0	293.3	319.6	356.7	401.1	441.4	471.9	489.8	495.4	486.7	467.2
26.5°	280.9	289.2	315.6	352.8	397.3	438.0	469.5	487.9	492.9	484.7	464.7
27°	276.7	284.9	311.7	348.8	393.3	434.5	466.9	485.9	490.4	482.7	462.1
27.5°	272.7	280.9	307.7	344.7	389.3	431.0	464.3	483.2	486.3	480.0	459.5
28°	268.5	276.7	303.7	340.6	385.2	427.2	461.7	480.5	480.8	477.2	456.9
28.5°	264.6	272.7	299.8	336.4	381.1	423.4	458.9	477.9	475.1	474.5	454.1
29°	260.6	268.5	295.6	332.2	376.9	419.5	456.0	474.9	469.9	471.5	451.2
29.5°	256.6	264.7	291.5	328.0	372.6	415.3	453.0	470.3	463.6	466.9	448.4
30°	252.7	260.7	287.4	323.6	368.3	411.0	450.1	464.6	457.3	461.4	445.5
30.5°	248.8	256.7	283.2	319.4	363.7	406.9	446.9	459.0	451.0	455.7	442.5
31°	245.0	252.4	279.1	315.0	359.3	402.6	443.6	453.7	444.6	450.3	439.5
31.5°	241.1	248.8	274.8	310.6	354.7	398.0	440.1	447.4	437.6	444.2	436.4
32°	237.3	244.9	270.7	306.3	350.1	393.6	436.8	441.1	430.9	438.0	433.3
32.5°	233.6	241.1	266.5	301.9	345.4	388.9	433.5	434.7	424.2	431.9	430.2
33°	229.8	237.3	262.3	297.4	340.6	384.2	430.0	428.5	417.1	425.5	427.0
33.5°	226.1	233.6	258.2	293.0	335.6	379.4	426.4	421.8	410.0	419.1	423.7
34°	222.5	229.8	253.9	288.5	330.9	374.5	422.6	415.2	402.7	412.3	420.0
34.5°	218.6	226.0	249.7	284.0	325.8	369.3	418.3	408.3	395.6	405.8	415.9
35°	215.0	222.0	245.5	279.4	320.8	364.4	414.0	401.7	388.4	399.1	411.7
35.5°	211.4	218.6	241.3	274.9	315.6	359.0	409.4	394.6	381.1	392.5	407.5
36°	207.9	214.9	237.3	270.3	310.3	353.8	404.8	387.7	373.6	385.6	403.2
36.5°	204.2	211.3	233.0	265.9	305.1	348.5	399.0	380.6	366.5	378.6	397.8
37°	200.6	207.7	229.0	261.3	300.0	342.9	392.3	373.6	359.0	371.9	391.3
37.5°	197.0	203.9	224.8	256.6	294.5	337.3	385.6	366.5	351.5	365.0	385.0
38°	193.4	200.3	220.8	252.0	289.1	331.6	379.1	359.3	343.8	358.0	378.6
38.5°	189.9	196.7	216.8	247.3	283.7	326.0	372.3	351.9	336.7	350.8	372.2
39°	186.4	193.2	212.8	242.7	278.3	320.2	365.2	345.2	329.4	344.1	365.2
39.5°	182.8	189.6	208.7	238.0	272.9	314.4	358.1	337.8	321.8	337.2	358.3
40°	179.3	185.9	204.8	233.3	267.5	308.4	350.9	330.5	314.1	330.0	351.1
40.5°	175.8	182.4	200.8	228.8	261.8	302.5	343.8	323.2	307.5	322.8	344.1
41°	172.3	178.9	197.0	224.1	256.4	296.6	336.4	316.5	300.4	316.3	337.1
41.5°	168.9	175.4	193.0	219.5	250.8	290.6	329.2	309.3	292.8	309.3	329.6
42°	165.3	171.8	189.2	214.8	245.4	284.6	321.8	301.9	285.9	302.1	322.5
42.5°	161.9	168.3	185.4	210.3	240.0	278.4	314.7	295.2	279.3	295.5	315.1
43°	158.5	164.8	181.5	205.7	234.4	272.5	307.4	288.5	272.4	288.9	308.1
43.5°	155.0	161.4	177.7	201.2	228.9	266.4	300.2	281.2	264.7	282.0	300.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	144.9	151.0	166.5	187.6	212.7	248.2	278.5	261.3	245.2	262.6	279.5
45.5°	141.5	147.6	162.8	183.1	207.2	242.2	271.2	253.9	238.9	255.5	272.5
46°	138.3	144.3	159.2	178.8	201.9	236.2	264.0	247.6	233.2	248.9	265.4
46.5°	134.7	140.9	155.4	174.3	196.6	230.1	257.2	241.7	226.8	243.5	258.8
47°	131.4	137.5	151.8	170.0	191.2	224.2	250.3	234.9	219.9	237.1	251.9
47.5°	128.1	134.1	148.1	165.7	186.0	218.2	243.3	227.9	215.0	230.1	245.2
48°	124.9	130.8	144.7	161.4	180.8	212.3	236.2	222.7	209.7	224.7	238.5
48.5°	121.5	127.4	141.0	157.1	175.8	206.6	229.9	216.7	203.4	219.3	232.4
49°	118.3	124.2	137.5	153.1	170.8	200.8	223.4	210.0	197.8	213.0	225.9
49.5°	115.1	120.9	134.0	148.9	165.9	195.2	216.7	204.1	193.2	206.8	219.5
50°	111.8	117.6	130.5	144.8	160.9	189.3	210.2	198.9	187.8	201.9	213.1
50.5°	108.5	114.3	127.1	140.7	156.2	183.9	204.3	193.0	181.9	196.5	207.5
51°	105.4	111.1	123.7	136.9	151.5	178.2	198.1	186.8	177.8	190.0	201.5
51.5°	102.2	107.9	120.2	132.9	147.0	173.0	191.9	182.4	173.4	185.6	195.5
52°	99.1	104.7	116.9	129.1	142.4	167.5	186.4	177.3	167.8	180.7	189.7
52.5°	96.0	101.5	113.6	125.4	137.9	162.3	180.8	171.2	163.7	175.1	184.8
53°	93.2	98.3	110.4	121.6	133.7	157.0	174.8	166.8	159.8	169.9	178.9
53.5°	90.4	95.2	107.1	118.0	129.6	152.0	169.4	162.5	155.2	165.9	173.3
54°	88.7	92.2	103.9	114.4	125.5	146.9	164.3	157.3	150.7	161.0	168.4
54.5°	87.5	89.2	100.8	110.9	121.5	142.0	159.0	152.6	147.3	155.7	163.6
55°	86.2	86.5	97.8	107.6	117.7	137.3	153.7	148.8	143.4	152.1	158.3
55.5°	85.1	83.8	94.8	104.3	114.0	132.5	149.2	144.4	139.0	148.0	153.5
56°	83.7	82.4	91.7	101.1	110.3	128.0	144.3	139.9	135.9	142.9	149.0
56.5°	82.3	81.2	88.7	97.9	106.8	123.8	139.4	136.3	132.4	139.4	144.3
57°	81.0	79.9	85.8	94.8	103.3	119.5	135.2	132.4	128.3	135.8	139.6
57.5°	79.5	78.7	82.9	91.7	100.1	115.3	130.9	128.1	125.5	131.4	135.8
58°	78.1	77.3	80.3	88.8	96.8	111.5	126.3	125.0	122.3	127.9	131.4
58.5°	76.5	76.0	77.5	86.0	93.8	107.7	122.5	121.5	118.5	124.7	127.2
59°	74.8	74.5	74.8	83.3	90.9	104.0	118.5	117.5	115.4	120.9	123.4
59.5°	73.2	73.1	72.2	80.5	88.1	100.4	114.5	114.6	112.1	117.5	119.6
60°	71.5	71.6	69.7	77.9	85.2	97.0	110.9	111.4	108.9	114.5	115.6
60.5°	69.7	70.0	67.2	75.3	82.3	93.7	107.3	107.8	106.0	110.9	112.1
61°	68.0	68.4	64.8	72.9	79.4	90.6	103.6	105.0	102.9	107.7	108.7
61.5°	66.3	66.8	62.8	70.5	76.9	87.6	100.4	101.8	100.0	104.7	105.1
62°	64.5	65.1	60.8	68.1	74.4	84.5	97.2	98.5	97.1	101.4	101.9
62.5°	62.8	63.4	59.6	65.9	72.0	81.4	93.8	95.7	94.4	98.5	98.8
63°	61.1	61.8	58.3	63.6	69.5	78.8	90.9	92.8	91.9	95.7	95.4
63.5°	59.4	60.1	57.1	61.5	67.3	76.1	88.1	90.0	89.2	92.5	92.6
64°	57.6	58.5	56.0	59.5	65.0	73.6	85.3	87.2	86.7	89.9	89.9
64.5°	55.9	56.8	54.7	57.3	62.8	71.0	82.4	84.4	84.0	87.2	87.0
65°	54.2	55.2	53.4	55.4	60.8	68.6	79.5	81.7	81.4	84.5	84.2
65.5°	52.4	53.5	52.1	53.6	58.6	66.3	76.9	79.4	78.9	81.9	81.3
66°	50.7	51.9	50.8	51.7	56.6	64.0	74.3	76.6	76.4	79.3	78.7



TEST NUMBER: P775704

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	46.3	47.0	46.7	46.5	51.0	57.5	66.7	69.5	69.3	72.0	71.1
68°	44.8	45.5	45.2	44.9	49.1	55.4	64.4	67.2	67.1	69.5	68.6
68.5°	43.4	44.0	43.8	43.3	47.3	53.5	62.0	64.8	64.7	67.2	66.2
69°	42.0	42.5	42.5	41.7	45.6	51.6	59.7	62.6	62.6	64.8	63.9
69.5°	40.6	41.1	41.1	40.2	43.9	49.6	57.6	60.3	60.3	62.6	61.5
70°	39.2	39.8	39.7	38.8	42.3	47.8	55.3	58.1	58.1	60.3	59.4
70.5°	37.9	38.2	38.4	37.4	40.6	45.9	53.2	56.1	56.1	58.1	57.1
71°	36.7	37.0	37.1	36.1	39.1	44.2	51.2	53.8	53.9	56.1	55.0
71.5°	35.4	35.7	35.7	34.8	37.5	42.4	49.0	51.8	51.8	53.8	52.9
72°	34.0	34.4	34.3	33.5	36.0	40.7	47.0	49.7	49.7	51.7	50.8
72.5°	32.7	33.2	33.0	32.1	34.5	39.1	45.1	47.6	47.6	49.6	48.7
73°	31.4	31.9	31.7	30.9	33.2	37.4	43.2	45.7	45.6	47.6	46.8
73.5°	30.1	30.6	30.4	29.7	31.7	35.8	41.3	43.7	43.6	45.5	44.8
74°	28.8	29.2	29.0	28.7	30.3	34.3	39.3	41.7	41.6	43.5	42.9
74.5°	27.5	27.9	27.8	27.7	28.9	32.7	37.5	39.8	39.7	41.6	40.9
75°	26.2	26.6	26.6	26.6	27.6	31.2	35.7	37.9	37.7	39.7	39.1
75.5°	24.9	25.4	25.4	25.6	26.2	29.8	33.9	36.0	35.8	37.6	37.2
76°	23.7	24.1	24.1	24.4	24.9	28.4	32.3	34.1	33.9	35.8	35.4
76.5°	22.4	22.8	22.9	23.3	23.7	26.9	30.5	32.2	32.0	33.9	33.6
77°	21.2	21.5	21.7	22.3	22.5	25.5	28.9	30.5	30.3	32.1	31.9
77.5°	19.9	20.3	20.6	21.1	21.2	24.1	27.2	28.7	28.4	30.2	30.2
78°	18.8	19.0	19.4	20.0	20.0	22.7	25.6	27.0	26.5	28.5	28.5
78.5°	17.5	17.8	18.2	19.0	18.9	21.3	24.0	25.2	24.8	26.6	26.9
79°	16.3	16.5	17.2	17.8	17.7	20.0	22.5	23.5	23.0	24.8	25.2
79.5°	15.0	15.2	16.0	16.7	16.6	18.8	21.0	21.6	21.3	23.1	23.6
80°	13.9	14.0	14.8	15.7	15.5	17.5	19.5	19.9	19.6	21.4	22.1
80.5°	12.7	12.8	13.8	14.6	14.4	16.2	18.0	18.3	17.9	19.7	20.5
81°	11.5	11.5	12.7	13.5	13.3	15.0	16.6	16.6	16.2	18.0	19.0
81.5°	10.3	10.3	11.6	12.5	12.4	13.9	15.2	15.0	14.6	16.4	17.6
82°	9.2	9.2	10.7	11.5	11.3	12.7	13.9	13.6	13.0	14.8	16.1
82.5°	8.0	8.2	9.6	10.4	10.3	11.6	12.6	12.2	11.5	13.3	14.8
83°	6.9	7.1	8.6	9.5	9.4	10.4	11.4	10.9	10.0	11.8	13.4
83.5°	5.8	6.2	7.8	8.5	8.4	9.5	10.2	9.7	8.5	10.7	12.2
84°	4.7	5.3	6.8	7.5	7.5	8.4	9.2	8.4	7.0	9.4	11.0
84.5°	3.8	4.5	6.0	6.5	6.5	7.4	8.0	7.1	5.5	8.2	9.9
85°	3.4	3.8	5.1	5.5	5.6	6.3	6.9	5.9	4.7	7.0	8.7
85.5°	2.9	3.3	4.3	4.6	4.7	5.2	5.8	5.0	4.1	5.8	7.7
86°	2.3	2.7	3.5	3.6	3.8	4.3	4.8	4.2	3.4	4.9	6.5
86.5°	1.9	2.1	2.7	2.8	3.0	3.3	3.7	3.4	2.9	4.2	5.4
87°	1.4	1.5	1.9	1.9	2.1	2.3	2.8	2.6	2.2	3.4	4.4
87.5°	1.0	1.0	1.1	1.2	1.3	1.5	1.8	1.8	1.7	2.6	3.4
88°	0.5	0.4	0.4	0.3	0.5	0.7	1.0	1.2	1.2	1.8	2.5
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: P775704

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

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



TEST NUMBER: P775704

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	485.2	485.2	485.2	485.2	485.2	485.2
0.5°	486.0	485.8	484.6	483.5	482.8	482.4
1°	486.8	485.7	483.4	481.5	480.2	479.6
1.5°	487.7	485.4	482.3	479.4	477.6	476.7
2°	488.4	485.1	480.9	477.3	474.8	473.8
2.5°	489.1	484.8	479.5	475.0	471.9	470.7
3°	489.7	484.4	478.1	472.8	469.1	467.8
3.5°	490.2	483.9	476.6	470.4	466.3	464.6
4°	490.7	483.3	475.0	468.1	463.2	461.4
4.5°	491.0	482.7	473.4	465.4	460.1	458.1
5°	491.3	482.0	471.8	463.0	456.9	454.7
5.5°	491.5	481.2	470.1	460.3	453.8	451.2
6°	491.7	480.4	468.3	457.6	450.5	447.8
6.5°	491.8	479.6	466.4	454.9	447.2	444.4
7°	491.8	478.6	464.4	452.3	443.9	440.8
7.5°	491.7	477.7	462.5	449.4	440.5	437.1
8°	491.6	476.6	460.5	446.5	436.9	433.5
8.5°	491.4	475.4	458.5	443.7	433.4	429.8
9°	491.1	474.3	456.3	440.7	429.8	426.0
9.5°	490.8	473.1	454.1	437.6	426.3	422.1
10°	490.4	471.8	451.9	434.5	422.7	418.3
10.5°	489.8	470.4	449.6	431.5	419.0	414.3
11°	489.3	469.0	447.3	428.3	415.3	410.5
11.5°	488.6	467.5	444.9	425.1	411.5	406.6
12°	487.9	465.9	442.5	421.9	407.7	402.4
12.5°	487.2	464.4	440.0	418.6	403.9	398.5
13°	486.3	462.9	437.6	415.3	400.1	394.5
13.5°	485.2	461.1	435.0	412.0	396.2	390.4
14°	484.4	459.4	432.6	408.7	392.3	386.3
14.5°	483.3	457.6	429.9	405.3	388.3	382.2
15°	482.1	455.7	427.2	401.8	384.4	378.0
15.5°	481.0	453.9	424.6	398.4	380.3	373.8
16°	479.7	452.0	421.9	394.8	376.4	369.7
16.5°	478.4	450.0	419.1	391.4	372.5	365.6
17°	476.9	447.9	416.4	387.9	368.4	361.4
17.5°	475.4	445.8	413.5	384.3	364.4	357.2
18°	473.9	443.7	410.7	380.7	360.3	352.9
18.5°	472.3	441.4	407.7	377.1	356.1	348.8
19°	470.6	439.1	404.8	373.4	352.1	344.5
19.5°	468.9	436.8	401.8	369.9	348.2	340.2
20°	467.1	434.4	398.8	366.3	344.0	336.0
20.5°	465.1	431.9	395.7	362.5	339.9	331.7
21°	463.2	429.4	392.5	358.8	335.8	327.5

TEST NUMBER: P775704

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	456.8	421.4	382.9	347.7	323.4	314.7
23°	454.5	418.5	379.5	344.0	319.2	310.3
23.5°	452.1	415.5	376.3	340.3	315.2	306.2
24°	449.6	412.2	372.9	336.4	311.1	301.9
24.5°	447.1	409.1	369.4	332.7	306.9	297.5
25°	444.4	405.6	365.7	328.9	302.6	293.4
25.5°	441.6	402.2	362.2	325.0	298.7	289.2
26°	438.7	398.5	358.5	321.2	294.5	285.0
26.5°	435.6	394.8	354.7	317.3	290.4	280.9
27°	432.4	391.2	350.8	313.5	286.3	276.7
27.5°	429.0	387.3	346.9	309.6	282.3	272.7
28°	425.3	383.1	342.8	305.6	278.1	268.5
28.5°	421.7	379.3	338.9	301.8	274.1	264.6
29°	418.0	375.1	334.8	297.9	270.1	260.6
29.5°	414.0	370.9	330.8	294.0	266.2	256.6
30°	410.2	366.5	326.5	289.9	262.2	252.7
30.5°	406.1	362.0	322.5	286.0	258.3	248.8
31°	401.9	357.4	318.1	282.0	254.3	245.0
31.5°	397.4	352.7	313.8	277.9	250.4	241.1
32°	392.9	348.2	309.5	274.0	246.7	237.3
32.5°	388.3	343.4	305.2	269.8	242.8	233.6
33°	383.5	338.3	300.7	265.7	239.0	229.8
33.5°	378.7	333.4	296.2	261.7	235.3	226.1
34°	373.6	328.5	291.8	257.5	231.5	222.5
34.5°	368.6	323.4	287.3	253.4	227.9	218.6
35°	363.5	318.4	282.7	249.2	224.2	215.0
35.5°	358.3	313.1	278.2	245.2	220.6	211.4
36°	352.9	308.1	273.6	241.2	216.8	207.9
36.5°	347.4	302.8	269.1	237.2	213.3	204.2
37°	342.0	297.4	264.5	233.1	209.7	200.6
37.5°	336.4	292.2	259.9	229.0	206.2	197.0
38°	330.8	286.6	255.3	224.9	202.4	193.4
38.5°	325.0	281.3	250.6	221.0	198.9	189.9
39°	319.4	275.9	246.0	217.0	195.5	186.4
39.5°	313.6	270.5	241.4	213.2	192.0	182.8
40°	307.7	265.0	236.9	209.1	188.3	179.3
40.5°	301.8	259.6	232.2	205.2	184.8	175.8
41°	295.8	254.1	227.6	201.4	181.4	172.3
41.5°	289.9	248.7	222.9	197.4	177.8	168.9
42°	283.9	243.4	218.3	193.6	174.4	165.3
42.5°	278.1	237.9	213.7	189.7	170.9	161.9
43°	272.0	232.5	209.3	185.9	167.6	158.5
43.5°	266.0	227.2	204.7	182.1	163.9	155.0



TEST NUMBER: P775704

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	248.3	211.4	191.3	170.9	153.9	144.9
45.5°	242.4	206.2	186.9	167.3	150.4	141.5
46°	236.4	201.0	182.7	163.6	147.2	138.3
46.5°	230.7	195.9	178.2	159.9	143.8	134.7
47°	224.8	190.9	174.0	156.3	140.5	131.4
47.5°	219.2	185.9	169.7	152.6	137.1	128.1
48°	213.4	181.0	165.7	149.1	133.9	124.9
48.5°	207.9	176.1	161.5	145.6	130.6	121.5
49°	202.2	171.4	157.3	142.1	127.3	118.3
49.5°	196.8	166.7	153.3	138.6	124.0	115.1
50°	191.2	161.9	149.5	135.1	120.8	111.8
50.5°	185.9	157.4	145.4	131.6	117.6	108.5
51°	180.7	153.0	141.6	128.2	114.3	105.4
51.5°	175.6	148.6	137.7	124.9	111.1	102.2
52°	170.3	144.3	134.0	121.5	108.0	99.1
52.5°	165.1	140.1	130.3	118.3	104.9	96.0
53°	160.1	136.0	126.7	115.0	101.7	93.2
53.5°	155.3	132.1	123.0	111.8	98.5	90.4
54°	150.4	128.1	119.5	108.6	95.5	88.7
54.5°	145.8	124.4	116.2	105.5	92.5	87.5
55°	141.3	120.8	112.8	102.4	89.6	86.2
55.5°	136.9	117.2	109.6	99.5	86.8	85.1
56°	132.6	113.7	106.3	96.5	84.1	83.7
56.5°	128.5	110.3	103.2	93.5	82.6	82.3
57°	124.5	107.0	100.1	90.6	81.4	81.0
57.5°	120.6	103.8	97.2	87.7	80.2	79.5
58°	116.8	100.7	94.3	85.0	78.9	78.1
58.5°	113.2	97.8	91.5	82.3	77.5	76.5
59°	109.6	94.9	88.7	79.6	76.1	74.8
59.5°	106.2	92.0	86.0	77.0	74.8	73.2
60°	102.9	89.1	83.4	74.4	73.3	71.5
60.5°	99.7	86.5	80.8	72.0	71.8	69.7
61°	96.6	83.8	78.2	69.5	70.4	68.0
61.5°	93.5	81.3	75.9	67.3	68.8	66.3
62°	90.7	78.8	73.6	65.0	67.1	64.5
62.5°	87.9	76.3	71.3	62.9	65.5	62.8
63°	85.2	74.0	69.0	61.0	63.9	61.1
63.5°	82.4	71.6	66.8	59.5	62.3	59.4
64°	79.6	69.3	64.6	58.3	60.5	57.6
64.5°	77.0	67.2	62.6	57.1	58.9	55.9
65°	74.5	65.0	60.5	56.0	57.3	54.2
65.5°	72.1	63.0	58.6	54.7	55.8	52.4
66°	69.7	60.9	56.7	53.4	54.0	50.7



TEST NUMBER: P775704

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	63.0	55.1	51.3	49.6	49.2	46.3
68°	60.8	53.2	49.6	48.2	47.6	44.8
68.5°	58.7	51.4	48.0	46.9	46.2	43.4
69°	56.7	49.6	46.3	45.5	44.7	42.0
69.5°	54.7	47.9	44.7	44.1	43.2	40.6
70°	52.8	46.2	43.2	42.7	41.8	39.2
70.5°	50.8	44.6	41.7	41.4	40.4	37.9
71°	49.0	42.9	40.1	40.0	39.0	36.7
71.5°	47.1	41.3	38.8	38.6	37.7	35.4
72°	45.4	39.7	37.4	37.3	36.4	34.0
72.5°	43.6	38.4	36.0	35.9	35.1	32.7
73°	41.9	36.9	34.8	34.6	33.7	31.4
73.5°	40.2	35.4	33.4	33.3	32.4	30.1
74°	38.6	33.8	32.1	32.0	31.0	28.8
74.5°	36.9	32.3	30.8	30.7	29.7	27.5
75°	35.3	30.9	29.6	29.4	28.4	26.2
75.5°	33.8	29.5	28.5	28.2	27.1	24.9
76°	32.2	28.1	27.4	27.0	25.7	23.7
76.5°	30.7	26.9	26.3	25.7	24.4	22.4
77°	29.2	25.5	25.3	24.5	23.1	21.2
77.5°	27.7	24.2	24.2	23.2	21.9	19.9
78°	26.3	22.9	23.0	22.1	20.6	18.8
78.5°	24.8	21.7	22.0	20.9	19.3	17.5
79°	23.5	20.5	20.8	19.7	18.0	16.3
79.5°	22.1	19.3	19.7	18.5	16.7	15.0
80°	20.7	18.1	18.5	17.4	15.5	13.9
80.5°	19.4	16.9	17.5	16.2	14.3	12.7
81°	18.1	15.8	16.3	15.1	13.0	11.5
81.5°	16.8	14.7	15.2	14.0	11.8	10.3
82°	15.6	13.6	14.2	12.9	10.8	9.2
82.5°	14.4	12.6	13.1	11.8	9.6	8.0
83°	13.2	11.5	12.0	10.9	8.5	6.9
83.5°	12.0	10.4	11.0	9.8	7.5	5.8
84°	10.9	9.5	10.0	8.8	6.5	4.7
84.5°	9.8	8.4	9.0	7.9	5.6	3.8
85°	8.7	7.5	7.9	6.9	4.8	3.4
85.5°	7.7	6.5	6.9	6.0	4.2	2.9
86°	6.6	5.6	5.9	5.1	3.5	2.3
86.5°	5.4	4.7	4.9	4.2	2.9	1.9
87°	4.5	3.8	3.9	3.3	2.2	1.4
87.5°	3.5	3.0	3.0	2.6	1.6	1.0
88°	2.6	2.1	2.1	1.7	1.1	0.5
88.5°	1.6	1.3	1.3	0.9	0.5	0.2



TEST NUMBER: P775704

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-5000K

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°	323.1	330.9	354.4	389.4	430.7	465.3	490.7	505.7	510.5	503.0	486.3
22°	318.9	326.7	350.6	386.1	427.9	463.2	489.0	504.2	509.0	501.4	484.6



44°	151.7	158.0	174.0	196.7	223.4	260.3	292.6	274.0	258.7	274.7	293.4
44.5°	148.3	154.6	170.2	192.1	218.0	254.3	285.6	267.9	252.3	268.8	286.3



66.5°	49.2	50.3	49.4	49.9	54.7	61.7	71.6	74.3	74.0	76.8	76.1
67°	47.6	48.6	48.0	48.2	52.8	59.6	69.2	71.8	71.6	74.4	73.4



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°	461.1	426.8	389.3	355.2	331.6	323.1
22°	459.0	424.0	386.1	351.5	327.5	318.9



44°	260.0	221.9	200.2	178.3	160.8	151.7
44.5°	254.2	216.6	195.7	174.6	157.2	148.3

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66.5°	67.4	58.9	54.9	52.2	52.4	49.2
67°	65.1	56.9	53.1	51.0	50.8	47.6

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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)