

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: P775701

Luminaire Tested: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3000K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775701
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-3000K
Description: 4 INCH SQUARE MEDIUM LENSED WALLWASH KIT
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3000K CCT
Ballast/Driver: -

Summary

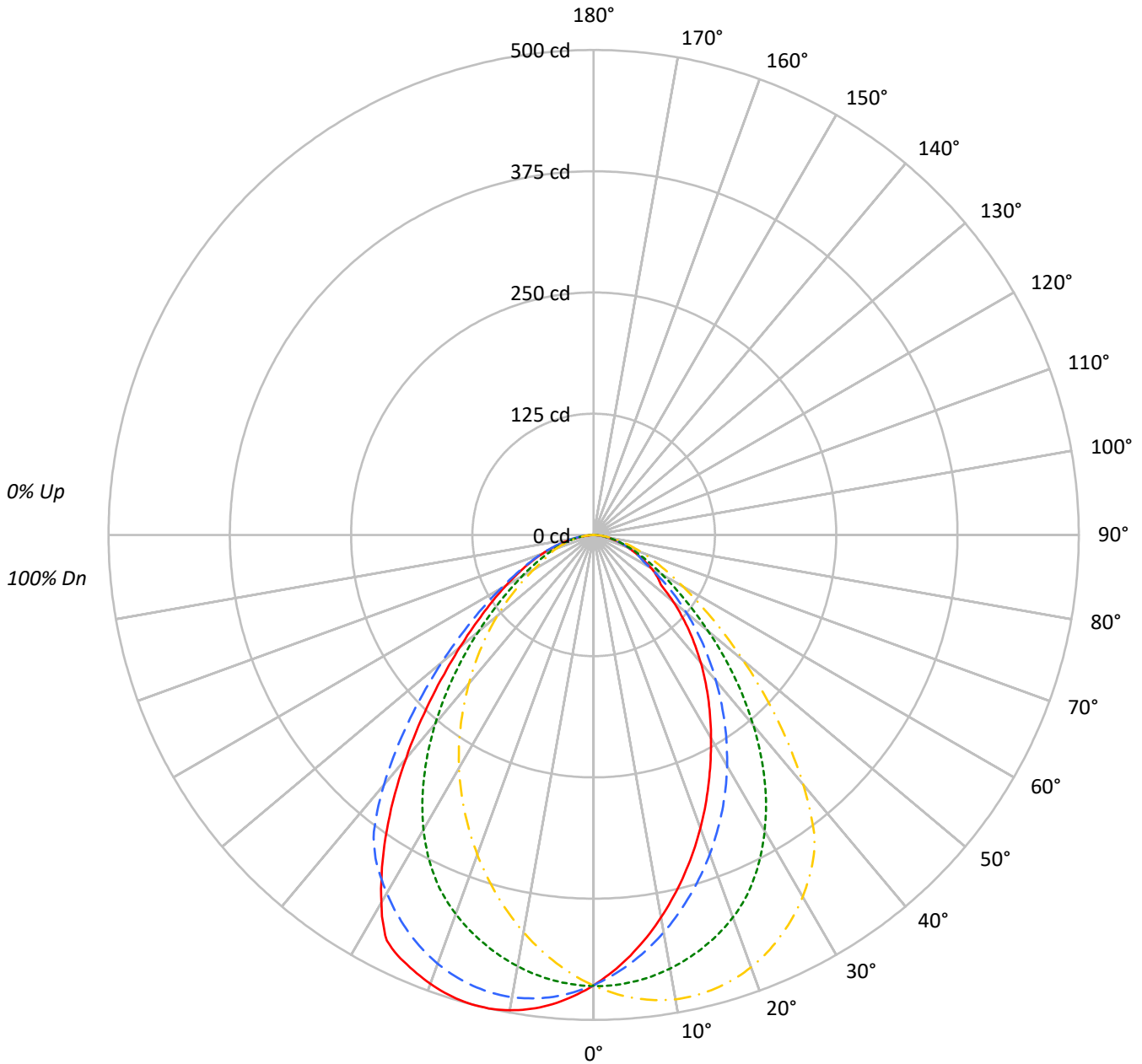
Lumens per Lamp: N/A
Luminaire Lumens: 899.4 lumens
Efficiency: N/A
Efficacy: 89.9 lumens/watt
Spacing Criteria (0/90/45): 1.11 / 1.14 / 1.19
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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				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°	58457	58457	58457	58457
5°	54992	58440	61346	58289
10°	51168	58017	63589	57711
15°	47139	57275	65119	56832
20°	43071	56196	65945	55687
25°	38992	54280	66431	53905
30°	35153	51225	63606	50978
35°	31618	47166	57121	46828
40°	28191	42057	49401	41679
45°	24686	36236	41772	36005
50°	20949	30151	35203	30347
55°	18102	24706	30103	25364
60°	17241	20514	26252	21470
65°	15425	17331	23227	18522
70°	13799	14902	20459	16264
75°	12205	12837	17553	14393
80°	9639	10726	13625	12538
85°	4765	7797	6498	10252

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 225°
 Vertical Angle: 45°
 Luminance: 47609 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	43.7	4.9
10°-20°	122.2	13.6
20°-30°	176.4	19.6
30°-40°	189.8	21.1
40°-50°	157.5	17.5
50°-60°	106.0	11.8
60°-70°	64.1	7.1
70°-80°	32.4	3.6
80°-90°	7.3	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°	342.2	38.1
0°-40°	532.0	59.2
0°-60°	795.5	88.5
0°-90°	899.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	899.4	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	464	464	464	464	464	
5°	435	463	486	461	435	40
15°	362	440	500	436	362	101
25°	281	391	478	388	281	129
35°	206	307	372	305	206	129
45°	139	204	235	202	139	107
55°	82	113	137	116	82	75
65°	52	58	78	62	52	52
75°	25	26	36	30	25	27
85°	3	5	4	7	3	5
90°	0	0	0	0	0	



TEST NUMBER: P775701

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	464.5	464.5	464.5	464.5	464.5	464.5	464.5	464.5	464.5	464.5	464.5
0.5°	461.7	461.7	462.2	463.2	465.2	465.9	466.5	466.8	466.8	466.4	465.8
1°	459.1	459.3	460.4	462.2	465.2	466.8	468.2	469.1	469.3	468.7	467.4
1.5°	456.3	456.7	458.4	461.1	465.1	467.6	469.9	471.2	471.6	470.7	469.0
2°	453.5	454.2	456.4	459.9	464.9	468.4	471.4	473.3	473.9	472.7	470.6
2.5°	450.6	451.4	454.3	458.7	464.7	469.2	472.9	475.3	476.0	474.8	472.0
3°	447.7	448.8	452.2	457.3	464.4	469.9	474.4	477.2	478.1	476.6	473.3
3.5°	444.7	445.9	450.0	456.0	464.1	470.4	475.7	479.2	480.1	478.4	474.7
4°	441.6	443.1	447.6	454.6	463.5	471.0	477.0	480.9	482.0	480.2	475.9
4.5°	438.4	440.1	445.3	453.0	463.1	471.4	478.2	482.5	483.9	481.8	476.9
5°	435.3	437.2	442.9	451.5	462.6	471.8	479.4	484.2	485.6	483.3	478.0
5.5°	431.9	434.2	440.4	449.9	462.0	472.1	480.4	485.7	487.2	484.8	479.0
6°	428.7	431.0	437.9	448.2	461.4	472.4	481.3	487.1	488.8	486.2	479.9
6.5°	425.4	427.7	435.4	446.5	460.7	472.5	482.2	488.3	490.2	487.4	480.7
7°	421.9	424.7	432.7	444.9	459.9	472.6	483.0	489.6	491.6	488.5	481.4
7.5°	418.3	421.3	430.0	442.9	459.1	472.6	483.8	490.7	492.8	489.7	482.0
8°	415.0	418.0	427.3	441.1	458.1	472.6	484.4	491.8	494.0	490.7	482.5
8.5°	411.4	414.7	424.6	439.2	457.1	472.5	484.9	492.7	495.1	491.5	482.9
9°	407.7	411.3	421.7	437.2	456.1	472.3	485.4	493.5	496.0	492.3	483.3
9.5°	404.1	407.7	418.8	435.1	455.1	472.0	485.8	494.3	496.8	493.0	483.7
10°	400.4	404.3	415.9	433.0	454.0	471.7	486.1	495.0	497.6	493.6	483.9
10.5°	396.6	400.8	412.9	430.9	452.7	471.3	486.3	495.6	498.2	494.2	484.1
11°	392.9	397.2	410.0	428.8	451.5	470.9	486.4	496.0	498.9	494.6	484.1
11.5°	389.2	393.7	406.9	426.4	450.2	470.4	486.4	496.4	499.3	494.9	484.0
12°	385.2	390.1	403.8	424.2	448.9	469.8	486.4	496.7	499.7	495.1	483.9
12.5°	381.4	386.3	400.7	421.8	447.4	469.2	486.3	496.8	500.0	495.3	483.7
13°	377.6	382.6	397.5	419.5	446.0	468.4	486.0	496.9	500.1	495.3	483.3
13.5°	373.7	379.0	394.4	417.1	444.5	467.6	485.7	496.9	500.2	495.2	482.9
14°	369.8	375.3	391.0	414.7	442.9	466.7	485.3	496.8	500.2	495.0	482.4
14.5°	365.8	371.5	387.7	412.1	441.3	465.9	484.9	496.6	500.0	494.7	481.8
15°	361.8	367.5	384.5	409.6	439.6	464.9	484.3	496.3	499.8	494.4	481.2
15.5°	357.8	363.8	381.2	407.0	437.8	463.9	483.7	495.9	499.5	494.0	480.5
16°	353.9	360.0	377.8	404.5	436.1	462.6	482.9	495.4	499.1	493.4	479.7
16.5°	350.0	356.1	374.4	401.8	434.3	461.5	482.1	494.9	498.5	492.8	478.8
17°	345.9	352.3	371.0	399.1	432.3	460.2	481.3	494.3	497.9	492.0	477.8
17.5°	341.9	348.2	367.5	396.3	430.3	458.9	480.3	493.4	497.2	491.2	476.7
18°	337.8	344.4	364.2	393.6	428.2	457.3	479.3	492.5	496.4	490.3	475.6
18.5°	333.9	340.5	360.7	390.7	426.2	455.9	478.1	491.6	495.5	489.3	474.4
19°	329.8	336.5	357.1	387.7	424.1	454.4	476.9	490.6	494.6	488.2	473.1
19.5°	325.6	332.5	353.7	384.9	421.8	452.6	475.6	489.5	493.5	487.0	471.8
20°	321.6	328.7	350.0	381.9	419.6	451.0	474.3	488.2	492.4	485.8	470.4
20.5°	317.5	324.7	346.5	378.9	417.2	449.2	472.8	486.9	491.2	484.5	468.8
21°	313.5	320.7	342.9	375.8	414.8	447.3	471.3	485.6	490.0	483.0	467.2



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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°	301.2	308.8	332.0	366.4	406.7	441.3	466.3	481.0	485.8	478.3	461.9
23°	297.0	304.7	328.2	363.0	403.9	439.0	464.5	479.4	484.4	476.7	460.1
23.5°	293.0	300.8	324.7	359.8	400.7	436.6	462.5	477.6	482.8	475.0	458.1
24°	289.0	296.7	320.9	356.1	397.5	434.1	460.4	476.0	481.4	473.2	456.1
24.5°	284.8	292.7	317.2	352.6	394.3	431.3	458.3	474.2	480.0	471.3	454.0
25°	280.8	288.8	313.4	349.0	390.9	428.4	456.2	472.3	478.4	469.5	451.8
25.5°	276.8	284.7	309.7	345.3	387.5	425.5	454.1	470.6	476.4	467.6	449.5
26°	272.8	280.7	305.9	341.4	384.0	422.5	451.7	468.9	474.2	465.9	447.2
26.5°	268.9	276.8	302.1	337.7	380.3	419.3	449.4	467.0	471.8	464.0	444.8
27°	264.9	272.7	298.4	333.9	376.5	415.9	446.9	465.1	469.4	462.0	442.3
27.5°	261.0	268.9	294.6	330.0	372.6	412.5	444.5	462.5	465.5	459.5	439.9
28°	257.0	264.9	290.7	326.0	368.8	409.0	441.9	460.0	460.2	456.8	437.3
28.5°	253.3	261.0	286.9	322.0	364.8	405.3	439.3	457.4	454.8	454.2	434.7
29°	249.5	257.0	282.9	317.9	360.8	401.5	436.5	454.6	449.8	451.3	431.9
29.5°	245.6	253.4	279.1	314.0	356.6	397.5	433.7	450.2	443.8	446.9	429.2
30°	241.9	249.6	275.1	309.8	352.5	393.5	430.8	444.7	437.7	441.6	426.4
30.5°	238.2	245.7	271.1	305.7	348.1	389.5	427.7	439.4	431.7	436.2	423.6
31°	234.5	241.6	267.1	301.5	344.0	385.4	424.6	434.3	425.6	431.0	420.7
31.5°	230.8	238.2	263.0	297.3	339.5	381.0	421.3	428.2	418.9	425.2	417.7
32°	227.1	234.4	259.1	293.1	335.1	376.7	418.1	422.2	412.4	419.3	414.8
32.5°	223.6	230.8	255.1	289.0	330.6	372.2	415.0	416.1	406.0	413.4	411.8
33°	220.0	227.1	251.1	284.7	326.0	367.7	411.6	410.2	399.3	407.3	408.8
33.5°	216.4	223.6	247.1	280.5	321.2	363.1	408.1	403.8	392.4	401.2	405.6
34°	212.9	220.0	243.0	276.1	316.7	358.5	404.5	397.4	385.5	394.7	402.0
34.5°	209.3	216.3	239.0	271.8	311.8	353.5	400.4	390.8	378.7	388.5	398.1
35°	205.8	212.5	235.0	267.4	307.0	348.8	396.3	384.5	371.8	382.0	394.1
35.5°	202.3	209.3	231.0	263.2	302.1	343.7	391.9	377.7	364.8	375.7	390.1
36°	199.0	205.7	227.1	258.8	297.0	338.7	387.4	371.1	357.6	369.1	385.9
36.5°	195.5	202.2	223.1	254.5	292.0	333.6	381.9	364.3	350.8	362.4	380.8
37°	192.0	198.8	219.2	250.1	287.1	328.2	375.5	357.6	343.7	356.0	374.6
37.5°	188.6	195.2	215.2	245.6	281.9	322.8	369.1	350.8	336.4	349.4	368.6
38°	185.1	191.7	211.3	241.2	276.7	317.4	362.8	344.0	329.1	342.6	362.4
38.5°	181.7	188.3	207.5	236.7	271.5	312.0	356.4	336.8	322.3	335.8	356.3
39°	178.5	184.9	203.7	232.3	266.4	306.5	349.6	330.4	315.3	329.4	349.6
39.5°	175.0	181.5	199.8	227.8	261.2	300.9	342.7	323.4	308.0	322.7	342.9
40°	171.6	178.0	196.0	223.4	256.0	295.2	335.9	316.3	300.7	315.9	336.1
40.5°	168.3	174.6	192.2	219.0	250.6	289.6	329.1	309.4	294.4	309.0	329.4
41°	164.9	171.2	188.6	214.5	245.4	283.9	322.0	302.9	287.5	302.7	322.6
41.5°	161.6	167.8	184.8	210.1	240.1	278.1	315.1	296.1	280.3	296.1	315.5
42°	158.3	164.5	181.1	205.6	234.9	272.4	308.0	289.0	273.7	289.2	308.7
42.5°	155.0	161.1	177.4	201.3	229.7	266.5	301.2	282.5	267.3	282.8	301.6
43°	151.7	157.7	173.8	196.9	224.4	260.8	294.3	276.1	260.7	276.5	294.9
43.5°	148.4	154.5	170.1	192.5	219.1	255.0	287.3	269.2	253.4	269.9	287.8



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	138.7	144.6	159.4	179.6	203.6	237.5	266.6	250.1	234.7	251.3	267.5
45.5°	135.4	141.3	155.8	175.3	198.4	231.8	259.6	243.0	228.7	244.6	260.8
46°	132.3	138.2	152.3	171.1	193.3	226.1	252.7	237.0	223.3	238.3	254.1
46.5°	129.0	134.9	148.8	166.8	188.2	220.3	246.2	231.3	217.1	233.0	247.7
47°	125.8	131.6	145.3	162.7	183.1	214.6	239.6	224.9	210.5	226.9	241.1
47.5°	122.6	128.4	141.7	158.6	178.1	208.9	232.8	218.2	205.8	220.3	234.7
48°	119.6	125.2	138.5	154.5	173.1	203.3	226.1	213.2	200.7	215.1	228.3
48.5°	116.3	121.9	135.0	150.4	168.3	197.7	220.1	207.4	194.7	209.9	222.4
49°	113.3	118.9	131.6	146.5	163.5	192.2	213.9	201.0	189.4	203.9	216.2
49.5°	110.2	115.7	128.3	142.5	158.8	186.8	207.4	195.4	184.9	197.9	210.1
50°	107.0	112.5	124.9	138.6	154.0	181.2	201.2	190.4	179.8	193.3	204.0
50.5°	103.9	109.4	121.6	134.7	149.5	176.0	195.6	184.8	174.1	188.1	198.7
51°	100.9	106.3	118.4	131.0	145.0	170.6	189.6	178.8	170.2	181.8	192.8
51.5°	97.9	103.3	115.1	127.2	140.7	165.6	183.7	174.6	166.0	177.6	187.1
52°	94.9	100.2	111.9	123.6	136.3	160.3	178.5	169.7	160.6	173.0	181.6
52.5°	91.9	97.1	108.8	120.0	132.0	155.4	173.1	163.9	156.7	167.6	176.9
53°	89.2	94.1	105.7	116.4	128.0	150.3	167.3	159.7	153.0	162.6	171.2
53.5°	86.5	91.1	102.5	113.0	124.1	145.5	162.1	155.5	148.6	158.8	165.9
54°	84.9	88.3	99.5	109.5	120.1	140.6	157.2	150.6	144.3	154.1	161.2
54.5°	83.8	85.4	96.5	106.1	116.3	135.9	152.2	146.1	141.0	149.1	156.6
55°	82.5	82.8	93.6	103.0	112.6	131.4	147.1	142.4	137.2	145.6	151.5
55.5°	81.4	80.2	90.7	99.8	109.1	126.8	142.9	138.3	133.1	141.6	146.9
56°	80.1	78.9	87.8	96.7	105.6	122.5	138.2	133.9	130.1	136.8	142.6
56.5°	78.8	77.8	84.9	93.7	102.2	118.5	133.5	130.5	126.7	133.5	138.2
57°	77.5	76.5	82.1	90.7	98.9	114.4	129.4	126.7	122.9	130.0	133.7
57.5°	76.1	75.3	79.4	87.8	95.8	110.4	125.3	122.6	120.1	125.8	130.0
58°	74.8	74.0	76.8	85.0	92.6	106.7	120.9	119.7	117.0	122.4	125.8
58.5°	73.3	72.8	74.2	82.3	89.8	103.1	117.2	116.3	113.5	119.4	121.7
59°	71.6	71.3	71.6	79.7	87.0	99.6	113.5	112.4	110.5	115.7	118.2
59.5°	70.1	70.0	69.1	77.0	84.3	96.1	109.6	109.7	107.3	112.4	114.5
60°	68.5	68.6	66.7	74.6	81.5	92.9	106.1	106.6	104.3	109.6	110.6
60.5°	66.7	67.0	64.3	72.0	78.8	89.7	102.8	103.2	101.4	106.1	107.3
61°	65.1	65.5	62.0	69.8	76.0	86.7	99.2	100.5	98.5	103.1	104.1
61.5°	63.5	64.0	60.1	67.4	73.6	83.9	96.1	97.4	95.7	100.2	100.6
62°	61.7	62.3	58.2	65.2	71.2	80.9	93.1	94.3	93.0	97.0	97.5
62.5°	60.1	60.7	57.0	63.1	68.9	78.0	89.8	91.6	90.4	94.3	94.6
63°	58.5	59.2	55.8	60.9	66.5	75.4	87.0	88.9	88.0	91.6	91.3
63.5°	56.8	57.5	54.7	58.9	64.4	72.9	84.3	86.1	85.4	88.6	88.7
64°	55.1	56.0	53.6	56.9	62.2	70.4	81.6	83.5	83.0	86.0	86.0
64.5°	53.5	54.4	52.3	54.9	60.1	68.0	78.9	80.8	80.4	83.5	83.3
65°	51.8	52.9	51.1	53.1	58.2	65.7	76.1	78.2	78.0	80.9	80.6
65.5°	50.2	51.2	49.9	51.3	56.1	63.5	73.6	76.0	75.5	78.4	77.9
66°	48.6	49.7	48.7	49.5	54.2	61.2	71.1	73.4	73.2	75.9	75.3



TEST NUMBER: P775701

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	44.3	45.0	44.7	44.5	48.8	55.0	63.9	66.5	66.3	68.9	68.1
68°	42.9	43.6	43.3	43.0	47.0	53.1	61.6	64.3	64.2	66.5	65.7
68.5°	41.5	42.1	41.9	41.4	45.3	51.2	59.4	62.0	61.9	64.3	63.4
69°	40.2	40.7	40.7	39.9	43.7	49.4	57.1	59.9	59.9	62.0	61.1
69.5°	38.9	39.4	39.4	38.5	42.0	47.4	55.1	57.8	57.8	59.9	58.9
70°	37.5	38.1	38.0	37.1	40.5	45.7	53.0	55.6	55.6	57.8	56.8
70.5°	36.3	36.5	36.7	35.8	38.9	44.0	50.9	53.7	53.7	55.6	54.7
71°	35.1	35.4	35.5	34.6	37.4	42.3	49.0	51.5	51.6	53.7	52.7
71.5°	33.9	34.2	34.2	33.3	35.9	40.6	46.9	49.6	49.6	51.5	50.6
72°	32.5	33.0	32.9	32.0	34.5	39.0	45.0	47.5	47.5	49.5	48.7
72.5°	31.3	31.7	31.6	30.7	33.1	37.4	43.2	45.6	45.6	47.4	46.6
73°	30.1	30.5	30.3	29.6	31.7	35.8	41.3	43.8	43.7	45.6	44.8
73.5°	28.8	29.3	29.1	28.5	30.3	34.3	39.5	41.8	41.7	43.6	42.9
74°	27.5	28.0	27.8	27.4	29.0	32.9	37.7	39.9	39.8	41.6	41.0
74.5°	26.3	26.7	26.6	26.5	27.7	31.3	35.9	38.1	38.0	39.8	39.2
75°	25.1	25.5	25.5	25.5	26.4	29.9	34.2	36.3	36.1	38.0	37.4
75.5°	23.9	24.3	24.3	24.5	25.1	28.6	32.4	34.5	34.3	36.0	35.6
76°	22.7	23.1	23.1	23.4	23.9	27.1	30.9	32.7	32.4	34.3	33.9
76.5°	21.4	21.8	21.9	22.3	22.7	25.7	29.2	30.8	30.6	32.4	32.1
77°	20.3	20.6	20.8	21.3	21.5	24.4	27.7	29.2	29.0	30.7	30.5
77.5°	19.1	19.4	19.7	20.2	20.3	23.1	26.0	27.4	27.1	28.9	28.9
78°	18.0	18.2	18.6	19.2	19.2	21.7	24.5	25.8	25.4	27.2	27.2
78.5°	16.7	17.0	17.4	18.2	18.1	20.4	23.0	24.1	23.8	25.5	25.7
79°	15.6	15.8	16.4	17.0	16.9	19.2	21.5	22.4	22.0	23.8	24.1
79.5°	14.4	14.6	15.3	16.0	15.9	18.0	20.1	20.7	20.4	22.1	22.5
80°	13.3	13.4	14.2	15.0	14.8	16.7	18.7	19.1	18.8	20.5	21.1
80.5°	12.1	12.2	13.2	14.0	13.8	15.5	17.2	17.6	17.1	18.9	19.6
81°	11.0	11.0	12.1	13.0	12.8	14.4	15.9	15.9	15.5	17.2	18.2
81.5°	9.9	9.9	11.1	11.9	11.8	13.3	14.6	14.4	14.0	15.7	16.8
82°	8.8	8.8	10.2	11.0	10.8	12.1	13.3	13.1	12.4	14.2	15.4
82.5°	7.7	7.9	9.2	10.0	9.9	11.1	12.0	11.6	11.0	12.8	14.2
83°	6.6	6.8	8.3	9.1	9.0	10.0	10.9	10.4	9.6	11.3	12.9
83.5°	5.5	5.9	7.4	8.2	8.1	9.1	9.8	9.3	8.2	10.2	11.6
84°	4.5	5.1	6.5	7.1	7.1	8.1	8.8	8.1	6.7	9.0	10.5
84.5°	3.7	4.3	5.7	6.2	6.2	7.0	7.7	6.8	5.3	7.9	9.5
85°	3.3	3.7	4.9	5.3	5.4	6.0	6.6	5.6	4.5	6.7	8.4
85.5°	2.8	3.2	4.1	4.4	4.5	5.0	5.5	4.8	3.9	5.5	7.3
86°	2.2	2.6	3.4	3.5	3.7	4.1	4.6	4.0	3.3	4.7	6.2
86.5°	1.8	2.0	2.6	2.7	2.9	3.2	3.6	3.3	2.8	4.0	5.2
87°	1.3	1.4	1.8	1.8	2.0	2.2	2.7	2.4	2.1	3.3	4.2
87.5°	0.9	0.9	1.0	1.1	1.2	1.4	1.7	1.7	1.6	2.4	3.3
88°	0.5	0.4	0.4	0.3	0.5	0.7	0.9	1.1	1.1	1.7	2.3
88.5°	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.5	1.0	1.4



TEST NUMBER: P775701

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

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



TEST NUMBER: P775701

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	464.5	464.5	464.5	464.5	464.5	464.5
0.5°	465.2	465.0	463.9	462.8	462.1	461.7
1°	466.0	464.9	462.7	460.9	459.7	459.1
1.5°	466.8	464.7	461.6	458.9	457.1	456.3
2°	467.5	464.4	460.3	456.9	454.5	453.5
2.5°	468.1	464.1	459.0	454.7	451.7	450.6
3°	468.8	463.7	457.6	452.5	449.1	447.7
3.5°	469.3	463.1	456.2	450.3	446.3	444.7
4°	469.7	462.6	454.7	448.0	443.3	441.6
4.5°	470.0	462.0	453.1	445.5	440.4	438.4
5°	470.3	461.4	451.6	443.1	437.3	435.3
5.5°	470.5	460.6	450.0	440.6	434.4	431.9
6°	470.7	459.9	448.2	438.0	431.2	428.7
6.5°	470.8	459.1	446.4	435.4	428.0	425.4
7°	470.8	458.1	444.6	432.9	424.9	421.9
7.5°	470.7	457.2	442.7	430.2	421.6	418.3
8°	470.6	456.2	440.8	427.4	418.2	415.0
8.5°	470.4	455.1	438.9	424.7	414.9	411.4
9°	470.1	454.0	436.8	421.8	411.4	407.7
9.5°	469.8	452.8	434.7	418.9	408.0	404.1
10°	469.4	451.6	432.5	415.9	404.6	400.4
10.5°	468.9	450.3	430.4	413.0	401.1	396.6
11°	468.3	449.0	428.1	410.0	397.5	392.9
11.5°	467.7	447.5	425.9	406.9	393.9	389.2
12°	467.0	446.0	423.6	403.9	390.3	385.2
12.5°	466.3	444.6	421.2	400.7	386.6	381.4
13°	465.5	443.0	418.9	397.5	382.9	377.6
13.5°	464.5	441.4	416.4	394.4	379.3	373.7
14°	463.7	439.8	414.1	391.2	375.5	369.8
14.5°	462.6	438.0	411.5	387.9	371.7	365.8
15°	461.5	436.2	409.0	384.6	367.9	361.8
15.5°	460.4	434.5	406.4	381.3	364.1	357.8
16°	459.2	432.6	403.9	377.9	360.3	353.9
16.5°	457.9	430.7	401.2	374.7	356.5	350.0
17°	456.5	428.8	398.6	371.3	352.6	345.9
17.5°	455.1	426.7	395.8	367.8	348.8	341.9
18°	453.7	424.7	393.1	364.4	344.9	337.8
18.5°	452.1	422.5	390.3	361.0	340.9	333.9
19°	450.5	420.3	387.4	357.4	337.0	329.8
19.5°	448.9	418.1	384.6	354.1	333.2	325.6
20°	447.1	415.8	381.7	350.6	329.3	321.6
20.5°	445.2	413.4	378.8	347.0	325.4	317.5
21°	443.3	411.0	375.7	343.5	321.4	313.5

TEST NUMBER: P775701

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	437.2	403.3	366.5	332.8	309.6	301.2
23°	435.1	400.6	363.2	329.3	305.5	297.0
23.5°	432.7	397.7	360.2	325.7	301.7	293.0
24°	430.4	394.6	356.9	322.0	297.7	289.0
24.5°	427.9	391.6	353.6	318.5	293.8	284.8
25°	425.4	388.2	350.1	314.8	289.7	280.8
25.5°	422.7	385.0	346.7	311.1	285.9	276.8
26°	419.9	381.4	343.1	307.4	281.9	272.8
26.5°	416.9	377.9	339.5	303.8	277.9	268.9
27°	413.9	374.5	335.8	300.1	274.1	264.9
27.5°	410.6	370.7	332.0	296.3	270.2	261.0
28°	407.1	366.7	328.1	292.5	266.2	257.0
28.5°	403.7	363.0	324.4	288.9	262.3	253.3
29°	400.1	359.1	320.5	285.2	258.6	249.5
29.5°	396.3	355.0	316.6	281.4	254.8	245.6
30°	392.6	350.8	312.5	277.5	251.0	241.9
30.5°	388.8	346.5	308.7	273.8	247.2	238.2
31°	384.7	342.1	304.5	269.9	243.5	234.5
31.5°	380.4	337.6	300.4	266.0	239.7	230.8
32°	376.1	333.2	296.2	262.2	236.1	227.1
32.5°	371.7	328.7	292.1	258.3	232.4	223.6
33°	367.1	323.9	287.8	254.4	228.8	220.0
33.5°	362.5	319.2	283.6	250.5	225.2	216.4
34°	357.6	314.5	279.3	246.5	221.6	212.9
34.5°	352.8	309.6	275.0	242.5	218.2	209.3
35°	347.9	304.8	270.6	238.6	214.6	205.8
35.5°	342.9	299.7	266.3	234.7	211.1	202.3
36°	337.8	294.9	261.9	230.9	207.5	199.0
36.5°	332.5	289.9	257.5	227.0	204.2	195.5
37°	327.3	284.7	253.2	223.2	200.7	192.0
37.5°	322.0	279.7	248.8	219.2	197.3	188.6
38°	316.6	274.4	244.4	215.3	193.8	185.1
38.5°	311.1	269.3	239.9	211.5	190.4	181.7
39°	305.7	264.1	235.5	207.7	187.1	178.5
39.5°	300.2	259.0	231.1	204.1	183.8	175.0
40°	294.6	253.7	226.7	200.2	180.2	171.6
40.5°	288.9	248.5	222.2	196.4	176.9	168.3
41°	283.1	243.3	217.8	192.7	173.7	164.9
41.5°	277.5	238.0	213.4	189.0	170.2	161.6
42°	271.7	232.9	209.0	185.3	166.9	158.3
42.5°	266.2	227.7	204.6	181.6	163.6	155.0
43°	260.4	222.5	200.3	178.0	160.4	151.7
43.5°	254.6	217.4	195.9	174.3	156.9	148.4

TEST NUMBER: P775701

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	237.6	202.3	183.2	163.6	147.3	138.7
45.5°	232.0	197.3	178.9	160.1	144.0	135.4
46°	226.3	192.4	174.9	156.6	140.9	132.3
46.5°	220.8	187.5	170.6	153.1	137.6	129.0
47°	215.2	182.7	166.5	149.6	134.5	125.8
47.5°	209.8	178.0	162.4	146.1	131.2	122.6
48°	204.3	173.3	158.6	142.7	128.2	119.6
48.5°	199.0	168.6	154.6	139.4	125.0	116.3
49°	193.6	164.1	150.6	136.0	121.8	113.3
49.5°	188.4	159.6	146.7	132.6	118.7	110.2
50°	183.1	155.0	143.1	129.3	115.6	107.0
50.5°	178.0	150.7	139.2	126.0	112.5	103.9
51°	173.0	146.4	135.5	122.7	109.4	100.9
51.5°	168.1	142.2	131.8	119.6	106.3	97.9
52°	163.1	138.2	128.3	116.3	103.4	94.9
52.5°	158.1	134.1	124.7	113.3	100.4	91.9
53°	153.3	130.2	121.3	110.1	97.3	89.2
53.5°	148.7	126.4	117.7	107.0	94.3	86.5
54°	144.0	122.6	114.4	104.0	91.4	84.9
54.5°	139.6	119.1	111.2	101.0	88.6	83.8
55°	135.3	115.6	108.0	98.1	85.8	82.5
55.5°	131.0	112.1	104.9	95.2	83.1	81.4
56°	126.9	108.9	101.7	92.3	80.5	80.1
56.5°	123.0	105.6	98.8	89.5	79.1	78.8
57°	119.2	102.4	95.8	86.7	78.0	77.5
57.5°	115.4	99.4	93.1	84.0	76.7	76.1
58°	111.8	96.4	90.3	81.3	75.5	74.8
58.5°	108.4	93.6	87.5	78.8	74.2	73.3
59°	104.9	90.8	84.9	76.2	72.9	71.6
59.5°	101.6	88.1	82.3	73.7	71.6	70.1
60°	98.5	85.3	79.8	71.2	70.2	68.5
60.5°	95.4	82.8	77.3	68.9	68.8	66.7
61°	92.4	80.2	74.9	66.5	67.3	65.1
61.5°	89.5	77.9	72.6	64.4	65.8	63.5
62°	86.8	75.4	70.4	62.2	64.2	61.7
62.5°	84.2	73.1	68.3	60.2	62.7	60.1
63°	81.5	70.8	66.0	58.4	61.1	58.5
63.5°	78.9	68.6	64.0	56.9	59.6	56.8
64°	76.2	66.3	61.8	55.8	58.0	55.1
64.5°	73.7	64.3	59.9	54.7	56.4	53.5
65°	71.3	62.2	58.0	53.6	54.9	51.8
65.5°	69.0	60.3	56.1	52.3	53.4	50.2
66°	66.7	58.3	54.3	51.1	51.7	48.6



TEST NUMBER: P775701

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	60.3	52.8	49.1	47.4	47.1	44.3
68°	58.2	50.9	47.4	46.1	45.6	42.9
68.5°	56.2	49.2	45.9	44.9	44.2	41.5
69°	54.3	47.4	44.3	43.6	42.8	40.2
69.5°	52.3	45.8	42.8	42.2	41.3	38.9
70°	50.5	44.2	41.3	40.9	40.0	37.5
70.5°	48.7	42.7	39.9	39.6	38.7	36.3
71°	46.9	41.0	38.4	38.3	37.3	35.1
71.5°	45.1	39.5	37.1	36.9	36.1	33.9
72°	43.5	38.0	35.8	35.7	34.8	32.5
72.5°	41.7	36.7	34.5	34.4	33.6	31.3
73°	40.1	35.3	33.3	33.2	32.2	30.1
73.5°	38.5	33.9	31.9	31.8	31.0	28.8
74°	36.9	32.3	30.7	30.6	29.7	27.5
74.5°	35.3	30.9	29.5	29.4	28.5	26.3
75°	33.8	29.6	28.4	28.2	27.1	25.1
75.5°	32.3	28.3	27.2	27.0	25.9	23.9
76°	30.8	26.9	26.2	25.8	24.6	22.7
76.5°	29.4	25.7	25.2	24.6	23.4	21.4
77°	28.0	24.4	24.2	23.5	22.1	20.3
77.5°	26.5	23.2	23.2	22.2	20.9	19.1
78°	25.2	21.9	22.0	21.1	19.7	18.0
78.5°	23.8	20.8	21.0	20.0	18.5	16.7
79°	22.4	19.6	19.9	18.9	17.2	15.6
79.5°	21.1	18.5	18.9	17.8	16.0	14.4
80°	19.8	17.3	17.8	16.6	14.8	13.3
80.5°	18.6	16.2	16.7	15.5	13.7	12.1
81°	17.3	15.1	15.6	14.5	12.4	11.0
81.5°	16.1	14.1	14.6	13.4	11.3	9.9
82°	14.9	13.1	13.6	12.3	10.3	8.8
82.5°	13.8	12.0	12.6	11.3	9.2	7.7
83°	12.7	11.0	11.5	10.4	8.2	6.6
83.5°	11.5	10.0	10.5	9.4	7.1	5.5
84°	10.4	9.1	9.6	8.5	6.2	4.5
84.5°	9.4	8.1	8.6	7.6	5.4	3.7
85°	8.4	7.1	7.6	6.6	4.6	3.3
85.5°	7.3	6.2	6.6	5.7	4.0	2.8
86°	6.3	5.4	5.6	4.9	3.4	2.2
86.5°	5.2	4.5	4.7	4.0	2.8	1.8
87°	4.3	3.7	3.8	3.2	2.1	1.3
87.5°	3.4	2.9	2.9	2.4	1.5	0.9
88°	2.4	2.0	2.0	1.6	1.0	0.5
88.5°	1.5	1.2	1.2	0.8	0.5	0.2



TEST NUMBER: P775701

CATALOG NUMBER: HCDJBL510CSD-HCD4TQSH-HCD4TSQLWW-1000lm-3000K

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°	309.3	316.7	339.3	372.7	412.2	445.4	469.7	484.1	488.6	481.5	465.5
22°	305.3	312.7	335.6	369.6	409.6	443.3	468.0	482.6	487.2	480.0	463.9



44°	145.2	151.2	166.5	188.3	213.9	249.2	280.1	262.2	247.6	262.9	280.8
44.5°	141.9	148.0	163.0	183.9	208.7	243.5	273.4	256.4	241.5	257.3	274.1



66.5°	47.1	48.2	47.2	47.8	52.3	59.1	68.6	71.1	70.8	73.5	72.9
67°	45.6	46.5	45.9	46.1	50.5	57.0	66.2	68.8	68.6	71.2	70.3



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°	441.4	408.6	372.6	340.0	317.4	309.3
22°	439.4	405.9	369.6	336.4	313.5	305.3



44°	248.9	212.4	191.6	170.7	153.9	145.2
44.5°	243.4	207.3	187.3	167.1	150.5	141.9

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66.5°	64.5	56.4	52.5	50.0	50.2	47.1
67°	62.3	54.5	50.8	48.8	48.7	45.6

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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)