

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: P775623

Luminaire Tested: HCDJBL510CSD-HCD41TRH-1000lm-4000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775623
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B029)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD41TRH-1000lm-4000K
Description: 4 INCH ROUND SHALLOW-WIDE HAZE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 4000K CCT
Ballast/Driver: -

Summary

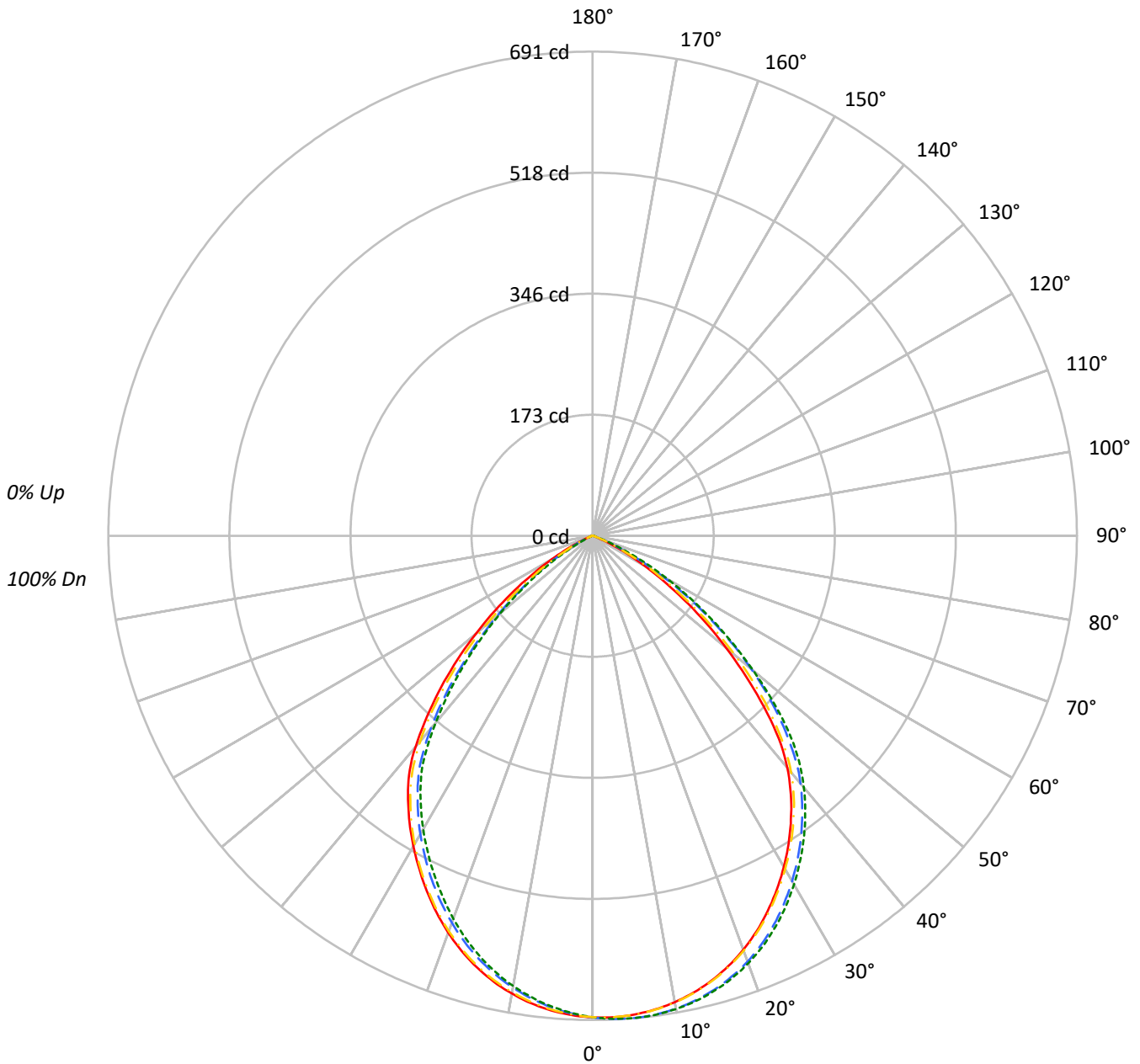
Lumens per Lamp: N/A
Luminaire Lumens: 1229.2 lumens
Efficiency: N/A
Efficacy: 122.9 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.15 / 1.22
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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	105	103	109	106	104	101	102	100	98	98	97	95	95	94	92	90	90	90	90	90	90		
	2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	84	82	80	80	80	80	80	80		
	3	97	89	83	77	95	87	82	77	85	80	76	82	78	74	80	76	73	71	71	71	71	71	71		
	4	90	81	74	68	88	79	73	68	77	71	67	75	70	66	73	69	65	63	63	63	63	63	63		
	5	84	73	66	60	82	72	65	60	70	64	60	69	63	59	67	62	58	57	57	57	57	57	57		
	6	78	67	60	54	77	66	59	54	65	58	53	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	44	40	38	38	38	38	38	38		
	10	60	49	42	37	59	48	41	37	47	41	37	46	41	36	46	40	36	35	35	35	35	35	35		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	86484	86484	86484	86484
5°	86650	87256	85892	85159
10°	86361	87652	84789	83371
15°	85600	87567	83112	80962
20°	84200	86945	80718	77852
25°	82066	85607	77692	74193
30°	79271	83500	74345	70247
35°	75772	80766	70564	65663
40°	71021	77033	64531	57221
45°	61598	70390	54408	45918
50°	48712	58580	42603	33597
55°	34996	45287	29928	21327
60°	21394	30858	17141	10244
65°	8993	16497	6402	3037
70°	2024	4820	1840	1325
75°	1361	1799	1264	875
80°	1015	1377	942	580
85°	289	1155	144	144

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 45°
 Luminance: 70390 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	64.7	5.3
10°-20°	182.2	14.8
20°-30°	264.7	21.5
30°-40°	296.6	24.1
40°-50°	249.7	20.3
50°-60°	134.4	10.9
60°-70°	33.1	2.7
70°-80°	3.2	0.3
80°-90°	0.5	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°	511.7	41.6
0°-40°	808.3	65.8
0°-60°	1192.4	97.0
0°-90°	1229.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1229.2	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	687	687	687	687	687	
5°	686	691	680	674	686	65
15°	657	672	638	621	657	185
25°	591	616	560	534	591	272
35°	493	526	459	427	493	308
45°	346	396	306	258	346	265
55°	160	206	136	97	160	144
65°	30	55	22	10	30	34
75°	3	4	3	2	3	3
85°	0	1	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°	687.2	687.2	687.2	687.2	687.2	687.2	687.2	687.2	687.2	687.2	687.2
0.5°	687.6	688.0	688.2	688.0	687.8	687.4	687.2	687.0	687.0	687.0	686.7
1°	687.7	688.5	688.8	688.7	688.4	688.0	687.4	686.9	686.5	686.2	685.8
1.5°	687.8	688.8	689.5	689.4	689.1	688.4	687.6	686.7	686.0	685.4	684.9
2°	687.8	689.2	689.9	689.9	689.6	688.7	687.6	686.4	685.5	684.5	683.8
2.5°	687.7	689.4	690.3	690.3	690.0	689.0	687.6	686.0	684.8	683.6	682.5
3°	687.5	689.5	690.5	690.6	690.3	689.2	687.4	685.6	684.0	682.5	681.4
3.5°	687.2	689.5	690.7	691.0	690.5	689.2	687.2	685.1	683.1	681.3	680.0
4°	686.9	689.4	690.8	691.1	690.7	689.2	687.0	684.4	682.1	680.1	678.7
4.5°	686.4	689.2	690.8	691.2	690.8	689.1	686.5	683.7	681.1	678.9	677.1
5°	685.9	689.0	690.7	691.3	690.7	688.8	686.0	682.9	679.9	677.4	675.5
5.5°	685.3	688.6	690.5	691.2	690.7	688.5	685.5	682.0	678.7	675.9	673.9
6°	684.5	688.2	690.4	691.0	690.5	688.2	684.8	681.0	677.4	674.3	672.1
6.5°	683.7	687.7	690.0	690.6	690.2	687.7	684.0	679.9	675.9	672.7	670.3
7°	683.0	687.1	689.6	690.3	689.9	687.2	683.2	678.8	674.5	671.0	668.3
7.5°	681.9	686.4	689.1	689.9	689.4	686.5	682.3	677.5	672.9	669.1	666.3
8°	680.9	685.7	688.4	689.4	688.8	685.8	681.3	676.1	671.2	667.1	664.2
8.5°	679.7	684.8	687.8	688.7	688.2	685.1	680.1	674.7	669.3	665.0	662.0
9°	678.6	683.8	687.1	688.0	687.5	684.1	679.0	673.1	667.5	662.9	659.6
9.5°	677.2	682.8	686.1	687.3	686.7	683.2	677.7	671.5	665.5	660.8	657.3
10°	675.8	681.7	685.2	686.3	685.9	682.1	676.3	669.8	663.5	658.5	654.9
10.5°	674.3	680.4	684.1	685.4	684.9	681.0	674.9	667.9	661.3	656.1	652.3
11°	672.8	679.2	683.0	684.3	683.8	679.7	673.3	666.0	659.1	653.7	649.7
11.5°	671.1	677.7	681.8	683.2	682.7	678.3	671.7	664.1	656.8	651.0	647.0
12°	669.4	676.2	680.4	681.9	681.5	676.9	670.0	662.1	654.4	648.4	644.2
12.5°	667.5	674.7	679.0	680.5	680.1	675.4	668.2	659.7	651.9	645.8	641.3
13°	665.6	673.0	677.5	679.2	678.8	673.8	666.3	657.5	649.2	642.9	638.4
13.5°	663.5	671.2	675.8	677.6	677.2	672.1	664.3	655.2	646.6	639.9	635.3
14°	661.4	669.3	674.2	676.0	675.6	670.5	662.3	652.8	643.7	636.9	632.1
14.5°	659.2	667.4	672.5	674.2	673.9	668.6	660.1	650.2	640.8	633.8	629.0
15°	657.0	665.4	670.6	672.5	672.1	666.6	657.9	647.5	637.9	630.7	625.7
15.5°	654.6	663.2	668.6	670.6	670.3	664.6	655.4	644.7	634.7	627.3	622.1
16°	652.1	661.0	666.6	668.7	668.3	662.4	653.1	642.0	631.6	623.9	618.7
16.5°	649.4	658.7	664.4	666.6	666.3	660.2	650.5	638.9	628.2	620.6	615.1
17°	646.8	656.2	662.2	664.4	664.2	657.9	647.9	635.9	625.0	617.0	611.5
17.5°	644.0	653.8	659.7	662.1	661.8	655.4	645.1	632.8	621.4	613.3	607.6
18°	641.1	651.1	657.3	659.6	659.5	652.9	642.3	629.7	617.8	609.5	603.8
18.5°	638.2	648.4	654.8	657.1	657.1	650.4	639.5	626.3	614.1	605.6	599.9
19°	635.2	645.6	652.1	654.6	654.6	647.7	636.4	623.0	610.4	601.6	596.0
19.5°	632.0	642.6	649.3	651.9	652.0	644.9	633.4	619.4	606.6	597.8	591.8
20°	628.7	639.6	646.5	649.0	649.2	642.0	630.1	615.8	602.7	593.8	587.7
20.5°	625.4	636.5	643.5	646.2	646.4	639.0	627.0	612.1	598.7	589.5	583.5
21°	621.9	633.3	640.4	643.2	643.5	635.9	623.6	608.5	594.5	585.2	579.2



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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°	611.0	623.1	630.5	633.6	634.1	626.1	612.9	596.7	581.9	572.0	565.8
23°	607.3	619.4	627.1	630.1	630.9	622.7	609.2	592.7	577.6	567.6	561.3
23.5°	603.3	615.7	623.5	626.8	627.4	619.2	605.3	588.5	573.1	563.0	556.6
24°	599.3	611.9	619.8	623.1	623.8	615.5	601.4	584.4	568.6	558.4	551.8
24.5°	595.2	607.9	616.0	619.4	620.1	611.7	597.4	580.0	564.1	553.7	547.1
25°	591.0	604.1	612.1	615.6	616.5	607.9	593.4	575.8	559.5	549.1	542.4
25.5°	586.8	600.1	608.3	611.8	612.8	604.2	589.3	571.4	554.9	544.2	537.5
26°	582.5	595.9	604.2	607.8	608.8	600.1	585.2	567.0	550.4	539.3	532.6
26.5°	578.1	591.7	600.2	603.8	604.7	596.0	580.9	562.3	545.5	534.4	527.7
27°	573.8	587.4	596.0	599.7	600.7	591.8	576.6	557.9	540.7	529.6	522.6
27.5°	569.2	582.9	591.7	595.7	596.5	587.6	572.1	553.3	536.0	524.6	517.6
28°	564.5	578.5	587.2	591.3	592.3	583.1	567.8	548.7	531.1	519.6	512.5
28.5°	559.9	574.1	582.8	586.9	588.0	578.9	563.3	543.9	526.2	514.6	507.3
29°	555.2	569.5	578.3	582.5	583.6	574.5	558.7	539.1	521.4	509.6	502.1
29.5°	550.4	564.9	573.8	578.1	579.2	570.0	553.9	534.4	516.4	504.3	497.0
30°	545.5	560.0	569.1	573.4	574.6	565.3	549.4	529.7	511.6	499.3	491.6
30.5°	540.7	555.3	564.4	569.0	570.0	560.7	544.6	524.7	506.4	494.2	486.3
31°	535.7	550.6	559.6	564.2	565.4	556.0	539.8	519.8	501.4	488.9	480.8
31.5°	530.7	545.5	554.9	559.4	560.6	551.2	534.8	514.9	496.4	483.6	475.3
32°	525.6	540.6	549.8	554.5	555.7	546.3	530.1	510.0	491.3	478.3	469.8
32.5°	520.5	535.6	545.0	549.7	550.9	541.4	525.0	505.0	486.2	472.8	464.1
33°	515.1	530.4	540.0	544.8	546.0	536.6	520.1	500.0	480.8	467.4	458.5
33.5°	509.9	525.4	534.8	539.8	540.9	531.5	515.1	494.7	475.4	461.8	452.6
34°	504.3	520.1	529.6	534.7	536.0	526.5	509.9	489.5	470.1	456.3	446.9
34.5°	499.0	514.6	524.5	529.6	530.7	521.4	504.8	484.2	464.7	450.5	441.1
35°	493.2	509.1	519.2	524.4	525.7	516.1	499.4	478.8	459.3	444.9	435.0
35.5°	488.0	503.7	513.7	518.9	520.4	510.8	493.9	473.5	453.7	439.1	428.8
36°	482.2	498.1	508.1	513.7	515.1	505.4	488.6	468.0	448.0	433.2	422.8
36.5°	476.5	492.5	502.8	508.1	509.5	499.9	483.0	462.5	442.4	427.1	416.2
37°	470.4	486.7	497.1	502.5	503.8	494.3	477.3	456.7	436.5	420.6	408.9
37.5°	464.8	480.9	491.4	496.9	498.2	488.7	471.8	451.0	430.4	413.5	401.3
38°	458.4	475.1	485.5	491.2	492.7	483.0	465.9	445.1	423.8	406.0	393.2
38.5°	452.1	469.2	479.9	485.3	486.9	477.1	459.9	438.9	416.7	398.3	384.8
39°	445.5	462.9	474.1	479.5	481.1	471.2	453.9	432.2	409.3	390.3	376.3
39.5°	439.2	456.5	468.0	473.7	475.2	465.0	447.6	424.9	401.4	381.9	367.8
40°	432.3	450.1	461.7	467.4	468.9	459.0	440.8	417.6	392.8	373.4	359.1
40.5°	425.0	443.4	455.2	461.1	462.7	452.3	433.5	409.7	384.2	364.7	350.1
41°	417.6	436.4	448.4	454.6	456.3	445.8	426.1	401.7	375.7	355.8	341.2
41.5°	409.8	428.8	441.1	447.6	449.7	438.9	418.5	393.7	367.1	347.2	332.4
42°	401.8	421.1	433.5	440.4	442.9	431.6	410.5	385.5	358.3	337.6	323.1
42.5°	393.3	413.1	425.8	432.9	435.7	424.0	402.5	377.0	349.5	328.5	314.0
43°	384.2	404.8	417.9	425.0	428.4	416.0	394.3	368.1	340.9	319.4	304.5
43.5°	374.9	396.3	409.9	417.0	420.5	407.9	385.9	359.3	332.2	310.4	295.5



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	346.1	370.1	385.0	392.3	395.5	381.8	359.8	332.9	305.7	283.0	267.4
45.5°	336.1	361.1	376.7	383.9	386.2	372.8	350.7	324.0	297.0	274.0	258.1
46°	326.1	351.9	368.0	375.3	377.1	363.4	341.6	315.1	288.0	265.0	248.6
46.5°	316.4	342.2	359.2	366.5	367.6	354.1	332.3	306.2	279.2	256.1	239.5
47°	306.5	332.9	350.5	357.7	357.9	344.4	322.8	297.0	270.3	247.1	230.2
47.5°	296.7	323.3	341.3	348.6	348.2	334.7	313.3	288.1	261.5	238.7	221.1
48°	286.8	313.7	332.2	339.5	338.2	324.9	303.8	279.2	252.5	229.7	212.1
48.5°	277.2	304.1	323.1	330.2	328.5	315.0	294.2	270.2	243.8	221.0	203.5
49°	267.7	294.5	314.2	321.0	318.6	305.1	284.5	261.0	235.0	212.2	194.6
49.5°	258.1	284.6	304.7	311.6	308.9	295.3	275.0	252.2	226.4	203.8	186.1
50°	248.8	275.0	295.4	302.0	299.2	285.3	265.2	242.9	217.6	195.4	177.6
50.5°	239.1	265.4	285.9	292.3	290.0	275.4	255.5	234.0	209.0	187.0	169.4
51°	230.0	256.0	276.5	282.9	280.0	265.7	245.9	224.7	200.6	178.8	161.3
51.5°	220.8	246.3	266.9	273.1	270.6	256.4	236.5	216.1	192.3	170.7	153.6
52°	211.8	237.1	257.7	263.8	261.3	246.9	227.1	207.2	184.0	162.7	145.8
52.5°	202.7	227.9	248.1	254.1	252.3	237.1	217.8	198.3	175.7	154.7	138.4
53°	193.9	218.7	238.5	244.6	242.6	227.8	208.5	189.4	167.6	146.9	130.8
53.5°	185.0	209.4	228.8	234.7	233.3	218.7	199.5	181.0	159.6	139.3	123.7
54°	176.4	200.4	219.5	225.5	224.1	209.5	190.3	172.4	151.8	131.8	116.7
54.5°	167.8	191.7	210.1	216.0	215.5	200.5	181.7	163.8	143.9	124.4	109.9
55°	159.5	182.8	200.9	207.0	206.4	191.4	172.9	155.6	136.4	117.4	103.5
55.5°	151.1	174.1	191.7	197.5	197.3	182.8	164.5	147.5	128.8	110.3	97.5
56°	143.2	165.6	182.4	188.9	188.5	174.0	156.1	139.4	121.5	103.6	91.4
56.5°	135.1	157.3	173.5	179.9	180.1	165.5	147.8	131.4	114.2	97.3	85.3
57°	127.6	149.0	164.2	171.1	171.3	157.1	139.9	123.9	107.2	91.1	79.3
57.5°	119.9	140.8	155.6	162.1	162.8	149.0	132.1	116.4	100.2	84.8	73.2
58°	112.5	132.9	147.1	154.0	154.6	141.0	124.5	109.0	93.7	78.6	67.9
58.5°	105.4	125.2	138.7	145.5	146.2	133.2	117.2	101.9	87.2	72.3	62.7
59°	98.5	117.4	130.4	137.2	138.2	125.7	109.8	95.3	80.7	66.6	57.7
59.5°	91.7	109.9	122.3	128.9	130.4	118.2	102.8	88.6	74.2	61.3	52.9
60°	85.0	102.7	114.4	121.4	122.6	110.9	96.4	82.0	68.1	56.0	48.3
60.5°	78.6	95.4	106.8	113.6	115.1	103.9	89.9	75.3	62.3	51.1	43.8
61°	72.4	88.4	99.3	105.8	107.6	97.4	83.5	69.3	56.7	46.2	39.6
61.5°	66.5	81.7	92.3	98.6	100.7	91.0	77.1	63.7	51.4	41.8	35.7
62°	60.8	75.2	85.3	91.4	93.8	84.5	70.7	58.1	46.3	37.5	32.0
62.5°	55.2	68.9	78.5	84.4	87.0	78.1	64.9	52.9	41.3	33.5	28.5
63°	49.7	62.7	72.0	77.6	80.2	71.6	59.4	47.6	36.8	29.6	25.0
63.5°	44.3	56.8	65.8	70.9	73.3	65.8	54.1	42.9	32.5	26.2	22.0
64°	39.1	51.1	59.8	64.7	67.0	60.1	49.0	38.5	28.5	22.8	19.1
64.5°	34.6	45.5	54.1	58.6	61.0	54.5	44.3	34.3	24.9	19.8	16.4
65°	30.2	40.2	48.6	53.0	55.4	49.4	39.7	30.3	21.5	17.0	14.1
65.5°	25.7	35.7	43.4	47.5	49.8	44.3	35.5	26.6	18.3	14.5	12.4
66°	21.3	31.5	38.5	42.1	44.4	39.5	31.3	23.2	15.6	12.3	10.7



TEST NUMBER: P775623

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	11.0	19.1	26.4	29.2	30.4	26.7	20.9	14.5	10.2	8.1	5.7
68°	8.8	16.1	22.3	25.3	26.3	23.0	17.9	12.3	8.7	6.6	4.9
68.5°	7.2	13.3	18.3	21.3	22.5	19.6	15.1	10.9	7.2	5.3	4.5
69°	6.3	11.0	15.1	17.3	18.9	16.6	12.8	9.7	5.8	4.7	4.2
69.5°	5.8	9.1	12.4	14.4	15.8	13.9	11.2	8.3	5.4	4.4	3.9
70°	5.5	7.6	10.1	11.9	13.1	12.2	9.8	6.9	5.0	4.1	3.7
70.5°	5.1	6.3	8.1	9.7	11.6	10.5	8.3	5.7	4.7	3.9	3.5
71°	4.8	5.4	6.6	7.9	10.0	8.8	6.8	5.1	4.4	3.7	3.2
71.5°	4.5	4.9	5.6	6.5	8.4	7.1	5.4	4.8	4.1	3.4	2.9
72°	4.2	4.6	4.9	5.5	6.8	5.5	4.9	4.5	3.9	3.2	2.8
72.5°	4.0	4.3	4.5	4.9	5.3	4.9	4.6	4.2	3.6	2.9	2.6
73°	3.8	4.0	4.2	4.6	4.8	4.6	4.3	4.0	3.4	2.7	2.4
73.5°	3.5	3.8	4.0	4.3	4.5	4.3	4.0	3.7	3.2	2.6	2.3
74°	3.3	3.6	3.8	4.0	4.2	4.0	3.8	3.5	2.9	2.4	2.1
74.5°	3.0	3.3	3.5	3.8	4.0	3.8	3.5	3.3	2.7	2.2	2.0
75°	2.8	3.0	3.3	3.5	3.7	3.5	3.3	3.0	2.6	2.1	1.8
75.5°	2.6	2.8	3.0	3.3	3.5	3.3	3.0	2.8	2.4	2.0	1.7
76°	2.5	2.7	2.8	3.0	3.3	3.0	2.8	2.6	2.2	1.8	1.6
76.5°	2.3	2.5	2.6	2.8	3.0	2.8	2.6	2.4	2.1	1.7	1.5
77°	2.2	2.3	2.5	2.6	2.8	2.6	2.5	2.3	2.0	1.6	1.4
77.5°	2.0	2.2	2.3	2.5	2.6	2.5	2.3	2.1	1.8	1.5	1.3
78°	1.9	2.1	2.2	2.3	2.4	2.3	2.1	2.0	1.7	1.4	1.2
78.5°	1.8	1.9	2.0	2.2	2.3	2.2	2.0	1.8	1.6	1.3	1.1
79°	1.6	1.8	1.9	2.0	2.1	2.0	1.9	1.7	1.5	1.2	0.9
79.5°	1.5	1.7	1.8	1.9	2.0	1.9	1.7	1.6	1.4	1.1	0.9
80°	1.4	1.5	1.6	1.8	1.9	1.8	1.6	1.5	1.3	0.9	0.8
80.5°	1.3	1.4	1.5	1.7	1.7	1.7	1.5	1.4	1.2	0.8	0.7
81°	1.2	1.3	1.4	1.6	1.6	1.5	1.4	1.3	1.1	0.7	0.6
81.5°	1.1	1.2	1.3	1.5	1.5	1.4	1.3	1.2	0.9	0.6	0.6
82°	0.8	1.1	1.2	1.4	1.4	1.3	1.2	1.1	0.8	0.5	0.5
82.5°	0.7	0.9	1.2	1.3	1.3	1.3	1.1	0.9	0.6	0.4	0.5
83°	0.6	0.8	1.1	1.2	1.2	1.2	1.1	0.8	0.5	0.4	0.4
83.5°	0.4	0.7	0.9	1.1	1.1	1.1	0.9	0.7	0.4	0.3	0.4
84°	0.3	0.6	0.8	0.9	1.1	0.9	0.8	0.6	0.3	0.2	0.3
84.5°	0.2	0.5	0.7	0.8	0.9	0.8	0.7	0.5	0.2	0.2	0.2
85°	0.2	0.4	0.7	0.8	0.8	0.8	0.7	0.4	0.1	0.2	0.2
85.5°	0.1	0.4	0.6	0.7	0.7	0.7	0.6	0.4	0.1	0.1	0.1
86°	0.1	0.3	0.6	0.6	0.7	0.6	0.5	0.3	0.1	0.1	0.1
86.5°	0.1	0.3	0.5	0.6	0.6	0.6	0.5	0.3	0.1	0.1	0.0
87°	0.1	0.3	0.4	0.5	0.5	0.5	0.4	0.2	0.0	0.0	0.0
87.5°	0.0	0.2	0.4	0.4	0.5	0.4	0.3	0.2	0.0	0.0	0.0
88°	0.0	0.1	0.3	0.4	0.4	0.4	0.3	0.1	0.0	0.0	0.0
88.5°	0.0	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.0	0.0	0.0



TEST NUMBER: P775623

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-4000K

CANDELA DISTRIBUTION (continued):

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



TEST NUMBER: P775623

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	687.2	687.2	687.2	687.2	687.2	687.2
0.5°	686.3	686.0	686.0	686.4	686.9	687.6
1°	685.4	685.1	685.3	685.9	686.7	687.7
1.5°	684.3	684.0	684.3	685.3	686.5	687.8
2°	683.2	682.9	683.4	684.6	686.1	687.8
2.5°	682.0	681.7	682.3	683.8	685.7	687.7
3°	680.7	680.3	681.3	683.0	685.2	687.5
3.5°	679.2	679.0	680.0	682.0	684.5	687.2
4°	677.7	677.4	678.8	681.0	683.8	686.9
4.5°	676.1	675.8	677.3	679.8	683.1	686.4
5°	674.5	674.1	675.8	678.7	682.2	685.9
5.5°	672.7	672.4	674.2	677.4	681.2	685.3
6°	670.8	670.6	672.6	676.0	680.1	684.5
6.5°	668.9	668.7	670.8	674.6	679.0	683.7
7°	666.9	666.6	668.9	672.9	677.8	683.0
7.5°	664.8	664.5	667.0	671.2	676.5	681.9
8°	662.6	662.2	664.9	669.4	675.2	680.9
8.5°	660.3	660.0	662.8	667.6	673.7	679.7
9°	658.0	657.5	660.5	665.7	672.1	678.6
9.5°	655.5	655.0	658.2	663.6	670.4	677.2
10°	653.0	652.4	655.8	661.5	668.7	675.8
10.5°	650.4	649.8	653.2	659.4	666.9	674.3
11°	647.7	647.0	650.7	657.2	665.0	672.8
11.5°	644.8	644.2	648.0	654.8	663.0	671.1
12°	642.0	641.3	645.2	652.3	660.9	669.4
12.5°	638.9	638.1	642.3	649.7	658.6	667.5
13°	635.9	635.1	639.3	647.1	656.4	665.6
13.5°	632.7	631.8	636.2	644.3	654.1	663.5
14°	629.5	628.4	633.1	641.5	651.7	661.4
14.5°	626.1	625.1	629.7	638.5	649.0	659.2
15°	622.7	621.4	626.3	635.6	646.4	657.0
15.5°	619.2	617.7	622.8	632.4	643.6	654.6
16°	615.5	614.0	619.3	629.2	640.7	652.1
16.5°	611.7	610.3	615.5	625.9	637.9	649.4
17°	607.9	606.4	611.8	622.5	634.9	646.8
17.5°	604.1	602.4	607.9	619.1	631.7	644.0
18°	600.2	598.3	604.1	615.4	628.5	641.1
18.5°	596.1	594.1	600.0	611.7	625.2	638.2
19°	592.0	589.9	595.9	607.9	621.8	635.2
19.5°	587.7	585.7	591.8	604.2	618.3	632.0
20°	583.4	581.3	587.6	600.2	614.8	628.7
20.5°	579.0	576.7	583.3	596.2	611.1	625.4
21°	574.6	572.2	578.7	592.1	607.3	621.9



TEST NUMBER: P775623

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	561.0	558.4	565.4	579.4	595.7	611.0
23°	556.2	553.6	560.7	575.1	591.6	607.3
23.5°	551.6	548.9	556.1	570.6	587.5	603.3
24°	546.8	544.1	551.4	566.0	583.1	599.3
24.5°	542.0	539.2	546.7	561.5	578.9	595.2
25°	537.1	534.3	541.7	556.9	574.5	591.0
25.5°	532.1	529.4	537.0	552.3	570.1	586.8
26°	527.1	524.5	532.1	547.5	565.7	582.5
26.5°	522.1	519.5	527.2	542.8	561.2	578.1
27°	517.1	514.5	522.3	538.0	556.6	573.8
27.5°	512.0	509.4	517.4	533.1	551.9	569.2
28°	506.9	504.2	512.3	528.2	547.1	564.5
28.5°	501.6	499.1	507.2	523.3	542.4	559.9
29°	496.6	494.0	502.2	518.2	537.4	555.2
29.5°	491.3	488.8	497.1	513.2	532.6	550.4
30°	486.0	483.4	491.9	508.1	527.7	545.5
30.5°	480.5	478.1	486.7	502.9	522.5	540.7
31°	475.0	472.7	481.2	497.7	517.4	535.7
31.5°	469.6	467.3	475.9	492.4	512.3	530.7
32°	463.9	461.8	470.5	487.0	507.1	525.6
32.5°	458.4	456.2	465.0	481.5	501.8	520.5
33°	452.8	450.5	459.5	476.2	496.3	515.1
33.5°	447.1	445.1	454.0	470.6	490.8	509.9
34°	441.3	439.3	448.4	465.0	485.3	504.3
34.5°	435.4	433.4	442.6	459.3	479.5	499.0
35°	429.3	427.4	436.7	453.7	474.0	493.2
35.5°	423.3	421.3	430.8	447.8	468.2	488.0
36°	417.1	414.7	424.7	441.9	462.4	482.2
36.5°	410.1	407.8	418.1	435.5	456.5	476.5
37°	402.5	400.1	410.7	429.2	450.2	470.4
37.5°	394.8	391.9	403.1	422.2	443.8	464.8
38°	386.5	383.5	394.9	414.7	437.3	458.4
38.5°	378.0	374.9	386.5	406.9	430.6	452.1
39°	369.4	366.3	377.9	399.1	423.4	445.5
39.5°	360.6	357.5	369.2	391.1	415.9	439.2
40°	351.5	348.3	360.6	382.7	407.8	432.3
40.5°	342.6	339.2	351.7	374.2	399.8	425.0
41°	333.3	330.1	343.1	365.5	391.5	417.6
41.5°	324.1	321.1	334.1	356.6	383.1	409.8
42°	314.8	312.2	325.3	347.7	374.6	401.8
42.5°	305.7	303.0	316.5	338.8	365.5	393.3
43°	296.1	293.9	307.8	329.5	356.5	384.2
43.5°	287.0	285.0	298.8	320.2	347.2	374.9

TEST NUMBER: P775623

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	259.3	258.0	271.7	292.3	318.7	346.1
45.5°	250.2	249.0	262.7	282.6	309.0	336.1
46°	241.1	240.1	253.3	273.7	299.2	326.1
46.5°	232.3	231.2	244.0	264.3	289.2	316.4
47°	223.2	222.3	235.2	254.9	279.3	306.5
47.5°	214.5	213.6	225.9	245.3	269.4	296.7
48°	205.9	205.0	217.2	236.3	259.6	286.8
48.5°	197.3	196.5	208.3	226.7	249.7	277.2
49°	188.8	188.2	199.4	217.8	240.1	267.7
49.5°	180.3	179.8	190.9	208.6	230.5	258.1
50°	172.1	171.6	182.3	199.5	220.9	248.8
50.5°	163.9	163.4	173.8	190.0	211.4	239.1
51°	156.0	155.5	165.3	181.7	202.3	230.0
51.5°	148.4	147.7	157.2	172.7	193.2	220.8
52°	140.5	140.1	149.1	164.1	184.4	211.8
52.5°	133.0	132.6	141.2	155.1	175.6	202.7
53°	125.7	125.1	133.3	147.2	167.0	193.9
53.5°	118.5	117.9	125.6	139.0	158.7	185.0
54°	111.6	110.9	118.0	130.7	150.4	176.4
54.5°	104.8	104.0	110.9	122.9	142.5	167.8
55°	98.7	97.2	103.7	115.4	134.6	159.5
55.5°	92.5	90.7	96.6	108.0	126.9	151.1
56°	86.4	84.2	89.8	100.9	119.5	143.2
56.5°	80.2	78.0	83.2	93.8	112.3	135.1
57°	74.0	72.0	76.9	87.1	105.2	127.6
57.5°	68.5	66.1	70.7	80.8	98.2	119.9
58°	63.3	60.5	64.7	74.6	91.5	112.5
58.5°	58.1	55.2	59.2	68.7	85.1	105.4
59°	53.4	50.1	53.7	62.9	78.8	98.5
59.5°	48.5	45.3	48.6	57.6	72.7	91.7
60°	44.0	40.7	43.8	52.5	66.8	85.0
60.5°	39.7	36.4	39.2	47.5	61.2	78.6
61°	35.8	32.7	35.4	42.8	55.7	72.4
61.5°	31.8	29.0	31.7	38.5	50.5	66.5
62°	28.3	25.4	28.1	34.9	45.7	60.8
62.5°	25.0	21.7	24.4	31.2	40.9	55.2
63°	22.0	18.8	20.7	27.6	36.4	49.7
63.5°	18.9	16.3	17.9	24.1	32.6	44.3
64°	16.3	13.9	15.3	20.5	28.9	39.1
64.5°	13.9	12.0	13.2	17.7	25.2	34.6
65°	12.4	10.2	11.3	15.1	21.5	30.2
65.5°	10.9	8.7	9.8	12.8	18.5	25.7
66°	9.5	7.4	8.3	10.8	15.7	21.3



TEST NUMBER: P775623

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	5.1	4.9	5.4	6.4	9.1	11.0
68°	4.6	4.6	4.8	5.6	7.7	8.8
68.5°	4.3	4.3	4.5	4.9	6.4	7.2
69°	4.1	4.0	4.2	4.6	5.6	6.3
69.5°	3.8	3.8	4.0	4.3	5.0	5.8
70°	3.6	3.6	3.8	4.1	4.7	5.5
70.5°	3.4	3.4	3.5	3.8	4.4	5.1
71°	3.0	3.0	3.3	3.6	4.1	4.8
71.5°	2.8	2.8	3.0	3.4	3.9	4.5
72°	2.7	2.7	2.8	3.2	3.7	4.2
72.5°	2.5	2.5	2.6	2.9	3.4	4.0
73°	2.3	2.3	2.4	2.7	3.2	3.8
73.5°	2.2	2.2	2.3	2.5	2.9	3.5
74°	2.0	2.0	2.1	2.3	2.7	3.3
74.5°	1.9	1.9	2.0	2.2	2.5	3.0
75°	1.8	1.8	1.9	2.1	2.4	2.8
75.5°	1.7	1.7	1.8	1.9	2.2	2.6
76°	1.6	1.6	1.6	1.8	2.1	2.5
76.5°	1.5	1.5	1.5	1.7	1.9	2.3
77°	1.4	1.4	1.4	1.6	1.8	2.2
77.5°	1.3	1.3	1.3	1.5	1.7	2.0
78°	1.2	1.2	1.3	1.4	1.6	1.9
78.5°	1.1	1.1	1.2	1.3	1.4	1.8
79°	0.9	0.9	1.1	1.2	1.3	1.6
79.5°	0.9	0.9	0.9	1.1	1.2	1.5
80°	0.8	0.8	0.8	0.9	1.1	1.4
80.5°	0.7	0.7	0.8	0.8	0.9	1.3
81°	0.7	0.7	0.7	0.7	0.8	1.2
81.5°	0.6	0.6	0.6	0.7	0.7	1.1
82°	0.5	0.5	0.6	0.6	0.6	0.8
82.5°	0.5	0.5	0.5	0.5	0.5	0.7
83°	0.4	0.4	0.4	0.5	0.4	0.6
83.5°	0.4	0.3	0.4	0.4	0.4	0.4
84°	0.3	0.3	0.3	0.4	0.3	0.3
84.5°	0.2	0.2	0.2	0.3	0.3	0.2
85°	0.2	0.1	0.2	0.2	0.2	0.2
85.5°	0.1	0.1	0.1	0.2	0.2	0.1
86°	0.0	0.0	0.0	0.1	0.1	0.1
86.5°	0.0	0.0	0.0	0.0	0.1	0.1
87°	0.0	0.0	0.0	0.0	0.0	0.1
87.5°	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.1	0.0	0.0	0.0	0.0
88.5°	0.1	0.1	0.1	0.0	0.0	0.0



TEST NUMBER: P775623
CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-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°	618.3	630.0	637.3	640.0	640.5	632.7	620.0	604.6	590.4	580.8	574.7
22°	614.8	626.5	634.0	636.8	637.3	629.5	616.5	600.6	586.2	576.5	570.3



44°	365.4	387.7	401.8	408.9	412.4	399.4	377.4	350.7	323.3	301.0	285.9
44.5°	356.0	379.0	393.5	400.6	404.2	390.7	368.6	341.9	314.5	292.1	276.5



66.5°	16.9	27.4	34.5	37.2	39.5	35.0	27.5	20.0	13.1	10.8	9.0
67°	13.7	23.2	30.4	33.2	34.8	30.7	24.1	17.0	11.7	9.5	7.4



89°	0.0	0.0	0.2	0.2	0.3	0.2	0.1	0.0	0.0	0.0	0.1
89.5°	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.1

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21.5°	570.0	567.7	574.3	588.0	603.5	618.3
22°	565.5	563.0	569.9	583.7	599.5	614.8



44°	277.7	276.0	289.8	310.9	337.9	365.4
44.5°	268.6	266.9	280.5	301.3	328.6	356.0

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66.5°	8.1	6.4	7.0	9.0	13.2	16.9
67°	6.6	5.5	6.1	7.6	11.0	13.7

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89°	0.1	0.1	0.0	0.1	0.0	0.0
89.5°	0.1	0.0	0.0	0.1	0.0	0.0

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(END OF REPORT)