

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: P775620

Luminaire Tested: HCDJBL510CSD-HCD41TRH-1000lm-2700K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775620
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-2700K
Description: 4 INCH ROUND SHALLOW-WIDE HAZE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 2700K CCT
Ballast/Driver: -

Summary

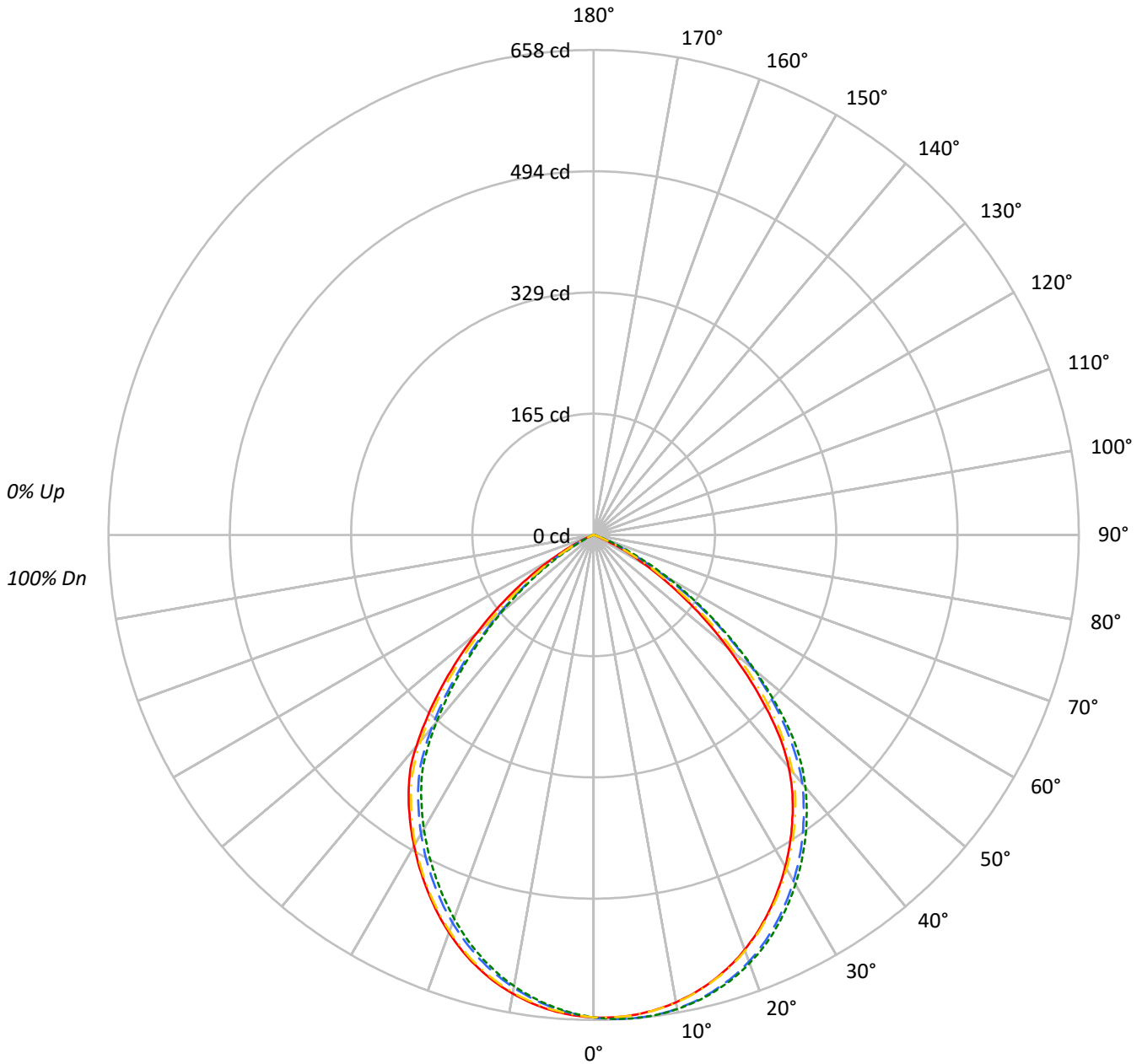
Lumens per Lamp: N/A
Luminaire Lumens: 1171.0 lumens
Efficiency: N/A
Efficacy: 117.1 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.15 / 1.22
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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								
1	112	109	105	103	109	106	104	101	102	100	98	98	97	95	95	94	92	90								
2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	84	82	80								
3	97	89	83	77	95	87	82	77	85	80	76	82	78	74	80	76	73	71								
4	90	81	74	68	88	79	73	68	77	71	67	75	70	66	73	69	65	63								
5	84	73	66	60	82	72	65	60	70	64	60	69	63	59	67	62	58	57								
6	78	67	60	54	77	66	59	54	65	58	53	63	57	53	62	57	53	51								
7	73	62	54	49	72	61	54	49	59	53	48	58	52	48	57	52	48	46								
8	69	57	49	44	67	56	49	44	55	48	44	54	48	44	53	47	43	42								
9	64	52	45	40	63	52	45	40	51	44	40	50	44	40	49	44	40	38								
10	60	49	42	37	59	48	41	37	47	41	37	46	41	36	46	40	36	35								

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	82381	82381	82381	82381
5°	82544	83125	81824	81129
10°	82272	83499	80777	79422
15°	81548	83424	79177	77118
20°	80222	82834	76887	74155
25°	78178	81539	74012	70680
30°	75522	79548	70828	66919
35°	72177	76940	67215	62560
40°	67653	73386	61459	54510
45°	58680	67044	51827	43729
50°	46402	55819	40587	32011
55°	33329	43136	28502	20318
60°	20388	29399	16335	9741
65°	8546	15693	6105	2889
70°	1913	4600	1766	1251
75°	1313	1702	1216	827
80°	942	1305	870	580
85°	289	1155	144	144

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 45°
 Luminance: 67044 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	61.7	5.3
10°-20°	173.6	14.8
20°-30°	252.2	21.5
30°-40°	282.5	24.1
40°-50°	237.9	20.3
50°-60°	128.1	10.9
60°-70°	31.6	2.7
70°-80°	3.0	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°	487.5	41.6
0°-40°	770.0	65.8
0°-60°	1135.9	97.0
0°-90°	1171.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1171.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	655	655	655	655	655	
5°	653	658	648	642	653	62
15°	626	640	608	592	626	176
25°	563	587	533	509	563	259
35°	470	501	438	407	470	293
45°	330	377	291	246	330	252
55°	152	197	130	93	152	137
65°	29	53	20	10	29	32
75°	3	4	2	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°	654.6	654.6	654.6	654.6	654.6	654.6	654.6	654.6	654.6	654.6	654.6
0.5°	655.0	655.4	655.6	655.4	655.2	654.8	654.6	654.4	654.4	654.4	654.2
1°	655.1	655.9	656.2	656.1	655.8	655.4	654.8	654.3	654.0	653.7	653.3
1.5°	655.2	656.2	656.8	656.7	656.4	655.8	655.0	654.2	653.5	652.9	652.4
2°	655.2	656.5	657.2	657.2	656.9	656.1	655.0	653.9	653.0	652.1	651.4
2.5°	655.1	656.7	657.6	657.6	657.3	656.3	655.0	653.5	652.3	651.2	650.2
3°	654.9	656.8	657.8	657.9	657.6	656.5	654.8	653.1	651.6	650.2	649.1
3.5°	654.6	656.8	658.0	658.2	657.8	656.5	654.6	652.6	650.7	649.0	647.8
4°	654.3	656.7	658.1	658.3	658.0	656.5	654.4	652.0	649.8	647.9	646.5
4.5°	653.9	656.5	658.1	658.4	658.1	656.4	654.0	651.3	648.8	646.7	645.0
5°	653.4	656.3	658.0	658.5	658.0	656.2	653.5	650.5	647.7	645.3	643.5
5.5°	652.8	656.0	657.8	658.4	658.0	655.9	653.0	649.7	646.5	643.9	642.0
6°	652.1	655.6	657.7	658.2	657.8	655.6	652.3	648.7	645.3	642.4	640.3
6.5°	651.3	655.1	657.3	657.9	657.5	655.1	651.6	647.7	643.9	640.8	638.5
7°	650.6	654.5	656.9	657.6	657.2	654.6	650.8	646.6	642.5	639.2	636.6
7.5°	649.6	653.9	656.4	657.2	656.7	654.0	650.0	645.4	641.0	637.4	634.7
8°	648.6	653.2	655.8	656.7	656.2	653.3	649.0	644.1	639.4	635.5	632.7
8.5°	647.5	652.3	655.2	656.1	655.6	652.6	647.9	642.7	637.6	633.5	630.6
9°	646.4	651.4	654.5	655.4	654.9	651.7	646.8	641.2	635.9	631.5	628.4
9.5°	645.1	650.4	653.6	654.7	654.2	650.8	645.6	639.7	634.0	629.5	626.2
10°	643.8	649.4	652.7	653.8	653.4	649.8	644.3	638.1	632.1	627.3	623.9
10.5°	642.4	648.2	651.7	652.9	652.4	648.7	642.9	636.3	630.0	625.0	621.4
11°	640.9	647.0	650.6	651.9	651.4	647.5	641.4	634.5	627.9	622.7	618.9
11.5°	639.3	645.6	649.5	650.8	650.3	646.2	639.9	632.6	625.7	620.2	616.4
12°	637.7	644.2	648.2	649.6	649.2	644.8	638.3	630.7	623.4	617.7	613.7
12.5°	635.9	642.7	646.8	648.3	647.9	643.4	636.5	628.5	621.0	615.2	610.9
13°	634.1	641.1	645.4	647.0	646.6	641.9	634.7	626.4	618.5	612.5	608.2
13.5°	632.1	639.4	643.8	645.5	645.1	640.3	632.8	624.2	616.0	609.6	605.2
14°	630.1	637.6	642.3	644.0	643.6	638.7	630.9	621.9	613.2	606.8	602.2
14.5°	628.0	635.8	640.6	642.3	642.0	636.9	628.8	619.4	610.5	603.8	599.2
15°	625.9	633.9	638.8	640.6	640.3	635.0	626.7	616.8	607.7	600.9	596.1
15.5°	623.6	631.8	636.9	638.8	638.5	633.1	624.4	614.2	604.7	597.6	592.7
16°	621.2	629.7	635.0	637.0	636.6	631.0	622.2	611.6	601.7	594.4	589.3
16.5°	618.7	627.5	632.9	635.0	634.7	628.9	619.7	608.7	598.5	591.1	585.9
17°	616.2	625.1	630.8	632.9	632.7	626.7	617.2	605.8	595.4	587.7	582.5
17.5°	613.5	622.8	628.5	630.7	630.5	624.4	614.6	602.9	591.9	584.2	578.8
18°	610.8	620.3	626.2	628.4	628.3	622.0	611.9	599.9	588.5	580.6	575.2
18.5°	608.0	617.7	623.8	626.0	626.0	619.6	609.2	596.7	585.0	576.9	571.4
19°	605.1	615.0	621.2	623.6	623.6	617.0	606.3	593.5	581.4	573.1	567.7
19.5°	602.1	612.2	618.6	621.0	621.1	614.4	603.4	590.0	577.8	569.4	563.7
20°	599.0	609.3	615.9	618.3	618.5	611.6	600.3	586.6	574.1	565.6	559.8
20.5°	595.8	606.4	613.0	615.6	615.8	608.8	597.3	583.1	570.3	561.5	555.8
21°	592.4	603.3	610.1	612.8	613.0	605.8	594.1	579.6	566.3	557.5	551.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
22.5°	582.0	593.6	600.7	603.6	604.1	596.5	583.8	568.4	554.3	544.9	539.0
23°	578.5	590.0	597.4	600.3	601.0	593.2	580.3	564.6	550.2	540.7	534.7
23.5°	574.7	586.5	594.0	597.1	597.7	589.8	576.6	560.6	545.9	536.3	530.2
24°	570.9	582.9	590.4	593.6	594.3	586.3	572.9	556.7	541.7	531.9	525.7
24.5°	567.0	579.1	586.8	590.0	590.7	582.7	569.1	552.5	537.4	527.5	521.2
25°	563.0	575.4	583.1	586.4	587.2	579.1	565.3	548.5	533.0	523.1	516.7
25.5°	559.0	571.6	579.4	582.8	583.7	575.5	561.4	544.3	528.6	518.4	512.1
26°	554.9	567.6	575.5	579.0	579.9	571.6	557.5	540.1	524.3	513.8	507.4
26.5°	550.7	563.6	571.7	575.2	576.0	567.7	553.4	535.7	519.7	509.1	502.7
27°	546.6	559.5	567.7	571.3	572.2	563.7	549.3	531.5	515.1	504.5	497.9
27.5°	542.2	555.3	563.6	567.4	568.2	559.7	545.0	527.1	510.6	499.8	493.1
28°	537.8	551.1	559.4	563.3	564.2	555.5	540.9	522.7	506.0	495.0	488.3
28.5°	533.4	546.9	555.2	559.1	560.1	551.5	536.6	518.1	501.3	490.3	483.2
29°	528.9	542.5	550.9	554.9	555.9	547.3	532.2	513.6	496.7	485.5	478.3
29.5°	524.3	538.1	546.6	550.7	551.7	543.0	527.7	509.1	492.0	480.4	473.4
30°	519.7	533.5	542.1	546.2	547.4	538.5	523.4	504.6	487.4	475.6	468.3
30.5°	515.1	529.0	537.7	542.0	543.0	534.1	518.8	499.9	482.4	470.7	463.2
31°	510.3	524.5	533.1	537.5	538.6	529.7	514.2	495.2	477.6	465.7	458.0
31.5°	505.6	519.7	528.6	532.9	534.0	525.1	509.5	490.5	472.8	460.7	452.8
32°	500.7	515.0	523.8	528.2	529.4	520.4	505.0	485.9	468.0	455.6	447.5
32.5°	495.9	510.2	519.2	523.7	524.8	515.8	500.2	481.0	463.1	450.4	442.1
33°	490.7	505.3	514.4	519.0	520.1	511.2	495.5	476.3	458.0	445.2	436.8
33.5°	485.8	500.5	509.5	514.2	515.3	506.3	490.7	471.2	452.9	439.9	431.2
34°	480.4	495.5	504.5	509.4	510.6	501.6	485.8	466.3	447.8	434.7	425.7
34.5°	475.3	490.3	499.7	504.5	505.6	496.7	480.8	461.2	442.7	429.2	420.2
35°	469.8	485.0	494.6	499.6	500.8	491.7	475.7	456.1	437.5	423.8	414.4
35.5°	464.8	479.8	489.4	494.4	495.8	486.6	470.5	451.0	432.2	418.3	408.5
36°	459.3	474.5	484.0	489.4	490.7	481.4	465.4	445.8	426.8	412.7	402.8
36.5°	453.9	469.1	478.9	484.0	485.4	476.2	460.1	440.6	421.4	406.9	396.5
37°	448.1	463.6	473.5	478.6	479.9	470.8	454.7	435.1	415.8	400.7	389.6
37.5°	442.8	458.1	468.1	473.3	474.6	465.5	449.4	429.6	410.0	393.9	382.3
38°	436.7	452.6	462.5	467.9	469.3	460.1	443.8	424.0	403.7	386.8	374.5
38.5°	430.7	447.0	457.1	462.3	463.8	454.5	438.1	418.1	397.0	379.5	366.5
39°	424.4	441.0	451.6	456.8	458.3	448.9	432.4	411.7	389.9	371.8	358.4
39.5°	418.4	434.9	445.8	451.2	452.7	443.0	426.4	404.8	382.4	363.8	350.3
40°	411.8	428.8	439.8	445.2	446.7	437.2	419.9	397.8	374.1	355.7	342.1
40.5°	404.9	422.4	433.6	439.2	440.8	430.9	413.0	390.3	366.0	347.4	333.5
41°	397.8	415.7	427.2	433.1	434.7	424.7	405.9	382.7	357.9	338.9	325.0
41.5°	390.4	408.5	420.2	426.4	428.4	418.1	398.7	375.0	349.7	330.7	316.7
42°	382.8	401.2	413.0	419.5	421.9	411.2	391.1	367.2	341.3	321.6	307.8
42.5°	374.6	393.6	405.6	412.4	415.1	403.9	383.5	359.1	332.9	312.9	299.1
43°	366.0	385.7	398.1	404.9	408.1	396.3	375.6	350.6	324.7	304.3	290.1
43.5°	357.1	377.6	390.5	397.3	400.6	388.6	367.6	342.3	316.5	295.7	281.5



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	329.7	352.5	366.7	373.7	376.7	363.7	342.7	317.1	291.2	269.6	254.7
45.5°	320.2	344.0	358.8	365.7	367.9	355.1	334.1	308.7	283.0	261.0	245.8
46°	310.7	335.2	350.5	357.5	359.2	346.2	325.4	300.2	274.4	252.4	236.8
46.5°	301.4	326.0	342.2	349.1	350.2	337.3	316.6	291.7	265.9	243.9	228.1
47°	292.0	317.1	333.9	340.7	340.9	328.1	307.5	283.0	257.5	235.4	219.3
47.5°	282.7	308.0	325.1	332.1	331.7	318.8	298.5	274.5	249.1	227.4	210.6
48°	273.3	298.9	316.5	323.4	322.2	309.5	289.4	265.9	240.5	218.8	202.1
48.5°	264.0	289.7	307.8	314.6	312.9	300.1	280.3	257.4	232.2	210.5	193.9
49°	255.0	280.6	299.3	305.8	303.5	290.7	271.1	248.6	223.9	202.2	185.4
49.5°	245.8	271.2	290.3	296.9	294.3	281.3	261.9	240.2	215.7	194.2	177.3
50°	237.0	261.9	281.4	287.7	285.1	271.8	252.6	231.4	207.3	186.2	169.2
50.5°	227.8	252.8	272.4	278.5	276.3	262.3	243.4	222.9	199.1	178.2	161.3
51°	219.1	243.8	263.4	269.5	266.7	253.1	234.2	214.1	191.1	170.4	153.6
51.5°	210.3	234.6	254.2	260.1	257.7	244.2	225.3	205.9	183.2	162.7	146.3
52°	201.8	225.9	245.5	251.3	248.9	235.2	216.3	197.4	175.3	154.9	138.9
52.5°	193.1	217.1	236.3	242.0	240.3	225.9	207.5	188.9	167.4	147.3	131.8
53°	184.7	208.3	227.2	233.0	231.1	217.0	198.6	180.5	159.6	139.9	124.6
53.5°	176.3	199.5	218.0	223.6	222.2	208.3	190.1	172.5	152.0	132.7	117.8
54°	168.1	190.9	209.1	214.8	213.5	199.6	181.3	164.3	144.6	125.5	111.2
54.5°	159.8	182.6	200.2	205.8	205.3	191.0	173.1	156.0	137.1	118.5	104.7
55°	151.9	174.2	191.4	197.2	196.6	182.4	164.8	148.2	129.9	111.8	98.6
55.5°	143.9	165.9	182.6	188.2	188.0	174.2	156.7	140.5	122.7	105.1	92.9
56°	136.4	157.7	173.8	180.0	179.6	165.8	148.7	132.8	115.7	98.7	87.1
56.5°	128.7	149.8	165.3	171.4	171.6	157.6	140.8	125.2	108.8	92.7	81.3
57°	121.5	141.9	156.4	163.0	163.2	149.6	133.2	118.0	102.1	86.8	75.6
57.5°	114.2	134.1	148.2	154.4	155.0	141.9	125.8	110.9	95.5	80.8	69.8
58°	107.2	126.6	140.1	146.7	147.2	134.3	118.6	103.8	89.3	74.9	64.7
58.5°	100.4	119.3	132.1	138.6	139.2	126.9	111.6	97.1	83.1	68.9	59.8
59°	93.8	111.8	124.2	130.7	131.6	119.7	104.6	90.8	76.9	63.5	55.0
59.5°	87.4	104.7	116.5	122.8	124.2	112.6	97.9	84.4	70.7	58.4	50.3
60°	81.0	97.8	109.0	115.6	116.8	105.6	91.8	78.1	64.9	53.3	46.0
60.5°	74.9	90.9	101.7	108.2	109.6	99.0	85.7	71.8	59.4	48.6	41.7
61°	69.0	84.2	94.6	100.8	102.5	92.8	79.6	66.1	54.1	44.0	37.7
61.5°	63.4	77.9	87.9	93.9	95.9	86.7	73.5	60.7	48.9	39.8	34.0
62°	58.0	71.7	81.3	87.1	89.4	80.5	67.4	55.4	44.1	35.7	30.5
62.5°	52.5	65.7	74.8	80.4	82.9	74.4	61.9	50.3	39.3	31.9	27.1
63°	47.3	59.8	68.6	74.0	76.4	68.2	56.6	45.3	35.0	28.2	23.8
63.5°	42.2	54.2	62.7	67.6	69.9	62.7	51.5	40.8	30.9	24.9	20.9
64°	37.2	48.6	57.0	61.7	63.9	57.3	46.6	36.6	27.1	21.7	18.2
64.5°	32.9	43.3	51.5	55.9	58.2	51.9	42.2	32.6	23.7	18.8	15.6
65°	28.7	38.3	46.3	50.4	52.7	47.0	37.8	28.8	20.5	16.2	13.4
65.5°	24.5	34.0	41.3	45.2	47.4	42.2	33.8	25.3	17.4	13.8	11.8
66°	20.3	30.0	36.6	40.1	42.3	37.6	29.8	22.1	14.8	11.7	10.2



TEST NUMBER: P775620

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	10.5	18.2	25.1	27.8	28.9	25.4	19.9	13.8	9.7	7.7	5.4
68°	8.4	15.3	21.2	24.1	25.0	21.9	17.0	11.7	8.3	6.3	4.7
68.5°	6.9	12.7	17.4	20.3	21.4	18.7	14.4	10.4	6.9	5.0	4.3
69°	6.0	10.5	14.4	16.5	18.0	15.8	12.2	9.2	5.5	4.5	4.0
69.5°	5.5	8.7	11.8	13.7	15.0	13.2	10.7	7.9	5.1	4.2	3.7
70°	5.2	7.2	9.6	11.3	12.5	11.6	9.3	6.6	4.8	3.9	3.5
70.5°	4.9	6.0	7.7	9.2	11.0	10.0	7.9	5.4	4.5	3.7	3.3
71°	4.6	5.1	6.3	7.5	9.5	8.4	6.5	4.9	4.2	3.5	3.0
71.5°	4.3	4.7	5.3	6.2	8.0	6.8	5.1	4.6	3.9	3.2	2.8
72°	4.0	4.4	4.7	5.2	6.5	5.2	4.7	4.3	3.7	3.0	2.7
72.5°	3.8	4.1	4.3	4.7	5.0	4.7	4.4	4.0	3.4	2.8	2.5
73°	3.6	3.8	4.0	4.4	4.6	4.4	4.1	3.8	3.2	2.6	2.3
73.5°	3.3	3.6	3.8	4.1	4.3	4.1	3.8	3.5	3.0	2.5	2.2
74°	3.1	3.4	3.6	3.8	4.0	3.8	3.6	3.3	2.8	2.3	2.0
74.5°	2.9	3.1	3.3	3.6	3.8	3.6	3.3	3.1	2.6	2.1	1.9
75°	2.7	2.9	3.1	3.3	3.5	3.3	3.1	2.9	2.5	2.0	1.7
75.5°	2.5	2.7	2.9	3.1	3.3	3.1	2.9	2.7	2.3	1.9	1.6
76°	2.4	2.6	2.7	2.9	3.1	2.9	2.7	2.5	2.1	1.7	1.5
76.5°	2.2	2.4	2.5	2.7	2.9	2.7	2.5	2.3	2.0	1.6	1.4
77°	2.1	2.2	2.4	2.5	2.7	2.5	2.4	2.2	1.9	1.5	1.3
77.5°	1.9	2.1	2.2	2.4	2.5	2.4	2.2	2.0	1.7	1.4	1.2
78°	1.8	2.0	2.1	2.2	2.3	2.2	2.0	1.9	1.6	1.3	1.1
78.5°	1.7	1.8	1.9	2.1	2.2	2.1	1.9	1.7	1.5	1.2	1.0
79°	1.5	1.7	1.8	1.9	2.0	1.9	1.8	1.6	1.4	1.1	0.9
79.5°	1.4	1.6	1.7	1.8	1.9	1.8	1.6	1.5	1.3	1.0	0.9
80°	1.3	1.4	1.5	1.7	1.8	1.7	1.5	1.4	1.2	0.9	0.8
80.5°	1.2	1.3	1.4	1.6	1.6	1.6	1.4	1.3	1.1	0.8	0.7
81°	1.1	1.2	1.3	1.5	1.5	1.4	1.3	1.2	1.0	0.7	0.6
81.5°	1.0	1.1	1.2	1.4	1.4	1.3	1.2	1.1	0.9	0.6	0.6
82°	0.8	1.0	1.1	1.3	1.3	1.2	1.1	1.0	0.8	0.5	0.5
82.5°	0.7	0.9	1.1	1.2	1.2	1.2	1.0	0.9	0.6	0.4	0.5
83°	0.6	0.8	1.0	1.1	1.1	1.1	1.0	0.8	0.5	0.4	0.4
83.5°	0.4	0.7	0.9	1.0	1.0	1.0	0.9	0.7	0.4	0.3	0.4
84°	0.3	0.6	0.8	0.9	1.0	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: P775620
CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-2700K

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: P775620

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	654.6	654.6	654.6	654.6	654.6	654.6
0.5°	653.8	653.5	653.5	653.9	654.3	655.0
1°	652.9	652.6	652.8	653.4	654.2	655.1
1.5°	651.9	651.6	651.9	652.8	654.0	655.2
2°	650.8	650.5	651.0	652.2	653.6	655.2
2.5°	649.7	649.4	650.0	651.4	653.2	655.1
3°	648.4	648.1	649.0	650.6	652.7	654.9
3.5°	647.0	646.8	647.8	649.7	652.1	654.6
4°	645.6	645.3	646.6	648.7	651.4	654.3
4.5°	644.1	643.8	645.2	647.6	650.7	653.9
5°	642.5	642.2	643.8	646.5	649.9	653.4
5.5°	640.8	640.5	642.3	645.3	648.9	652.8
6°	639.0	638.8	640.7	644.0	647.9	652.1
6.5°	637.2	637.0	639.0	642.6	646.8	651.3
7°	635.3	635.0	637.2	641.0	645.7	650.6
7.5°	633.3	633.0	635.4	639.4	644.4	649.6
8°	631.2	630.8	633.4	637.7	643.2	648.6
8.5°	629.0	628.7	631.4	636.0	641.8	647.5
9°	626.8	626.4	629.2	634.2	640.3	646.4
9.5°	624.5	624.0	627.0	632.2	638.6	645.1
10°	622.1	621.5	624.7	630.2	637.0	643.8
10.5°	619.6	619.0	622.3	628.2	635.3	642.4
11°	617.0	616.4	619.9	626.1	633.5	640.9
11.5°	614.3	613.7	617.3	623.8	631.6	639.3
12°	611.6	610.9	614.7	621.4	629.6	637.7
12.5°	608.7	607.9	611.9	618.9	627.4	635.9
13°	605.8	605.0	609.0	616.5	625.3	634.1
13.5°	602.8	601.9	606.1	613.8	623.1	632.1
14°	599.7	598.7	603.1	611.1	620.8	630.1
14.5°	596.5	595.5	599.9	608.3	618.3	628.0
15°	593.2	591.9	596.7	605.5	615.8	625.9
15.5°	589.8	588.4	593.3	602.5	613.1	623.6
16°	586.3	584.9	589.9	599.4	610.4	621.2
16.5°	582.7	581.3	586.3	596.3	607.7	618.7
17°	579.1	577.6	582.8	593.1	604.9	616.2
17.5°	575.4	573.8	579.1	589.7	601.8	613.5
18°	571.7	569.9	575.4	586.2	598.8	610.8
18.5°	567.8	565.9	571.5	582.7	595.6	608.0
19°	563.9	561.9	567.6	579.1	592.3	605.1
19.5°	559.8	557.9	563.7	575.5	589.0	602.1
20°	555.7	553.7	559.7	571.7	585.6	599.0
20.5°	551.6	549.4	555.6	567.9	582.1	595.8
21°	547.4	545.1	551.3	564.0	578.5	592.4

TEST NUMBER: P775620

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	534.4	531.9	538.6	551.9	567.4	582.0
23°	529.9	527.4	534.1	547.8	563.5	578.5
23.5°	525.5	522.9	529.8	543.6	559.6	574.7
24°	520.9	518.3	525.3	539.2	555.5	570.9
24.5°	516.3	513.7	520.8	534.9	551.5	567.0
25°	511.7	509.0	516.1	530.5	547.3	563.0
25.5°	506.9	504.3	511.6	526.1	543.1	559.0
26°	502.2	499.7	506.9	521.6	538.9	554.9
26.5°	497.4	494.9	502.3	517.1	534.6	550.7
27°	492.6	490.2	497.6	512.5	530.2	546.6
27.5°	487.8	485.3	492.9	507.9	525.8	542.2
28°	482.8	480.3	488.1	503.2	521.2	537.8
28.5°	477.8	475.4	483.1	498.5	516.7	533.4
29°	473.0	470.6	478.4	493.7	512.0	528.9
29.5°	468.0	465.6	473.5	488.9	507.4	524.3
30°	462.9	460.5	468.6	484.0	502.7	519.7
30.5°	457.7	455.4	463.6	479.0	497.8	515.1
31°	452.5	450.3	458.4	474.1	492.9	510.3
31.5°	447.3	445.1	453.3	469.0	488.1	505.6
32°	441.9	439.9	448.2	463.9	483.0	500.7
32.5°	436.7	434.6	443.0	458.7	478.0	495.9
33°	431.3	429.2	437.7	453.6	472.7	490.7
33.5°	425.9	424.0	432.5	448.3	467.5	485.8
34°	420.4	418.5	427.2	443.0	462.3	480.4
34.5°	414.8	412.9	421.6	437.5	456.8	475.3
35°	409.0	407.2	416.0	432.2	451.5	469.8
35.5°	403.3	401.4	410.4	426.6	446.0	464.8
36°	397.4	395.1	404.6	421.0	440.5	459.3
36.5°	390.7	388.5	398.3	414.9	434.9	453.9
37°	383.5	381.2	391.3	408.9	428.9	448.1
37.5°	376.0	373.3	384.0	402.2	422.8	442.8
38°	368.1	365.3	376.1	395.1	416.6	436.7
38.5°	360.1	357.1	368.1	387.7	410.2	430.7
39°	351.9	348.9	360.0	380.2	403.4	424.4
39.5°	343.5	340.5	351.7	372.5	396.2	418.4
40°	334.8	331.8	343.5	364.5	388.5	411.8
40.5°	326.4	323.1	335.0	356.4	380.9	404.9
41°	317.5	314.5	326.8	348.2	372.9	397.8
41.5°	308.8	305.9	318.3	339.7	364.9	390.4
42°	299.9	297.4	309.9	331.2	356.8	382.8
42.5°	291.2	288.7	301.5	322.7	348.2	374.6
43°	282.1	280.0	293.2	313.9	339.6	366.0
43.5°	273.4	271.5	284.7	305.0	330.7	357.1



TEST NUMBER: P775620

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	247.0	245.7	258.8	278.5	303.6	329.7
45.5°	238.3	237.2	250.2	269.2	294.4	320.2
46°	229.7	228.7	241.3	260.7	285.1	310.7
46.5°	221.3	220.2	232.4	251.7	275.5	301.4
47°	212.6	211.8	224.0	242.8	266.0	292.0
47.5°	204.3	203.5	215.2	233.7	256.6	282.7
48°	196.2	195.3	206.9	225.1	247.3	273.3
48.5°	188.0	187.2	198.4	216.0	237.8	264.0
49°	179.9	179.3	190.0	207.5	228.7	255.0
49.5°	171.8	171.3	181.9	198.7	219.6	245.8
50°	164.0	163.5	173.7	190.1	210.4	237.0
50.5°	156.1	155.6	165.6	181.0	201.4	227.8
51°	148.6	148.1	157.4	173.1	192.7	219.1
51.5°	141.3	140.7	149.7	164.6	184.1	210.3
52°	133.8	133.4	142.0	156.3	175.7	201.8
52.5°	126.7	126.3	134.5	147.7	167.3	193.1
53°	119.7	119.2	127.0	140.2	159.0	184.7
53.5°	112.9	112.3	119.6	132.4	151.1	176.3
54°	106.3	105.6	112.4	124.5	143.2	168.1
54.5°	99.8	99.1	105.6	117.1	135.7	159.8
55°	94.0	92.6	98.8	109.9	128.2	151.9
55.5°	88.1	86.4	92.0	102.9	120.9	143.9
56°	82.3	80.2	85.6	96.1	113.8	136.4
56.5°	76.4	74.3	79.3	89.4	107.0	128.7
57°	70.5	68.6	73.3	83.0	100.2	121.5
57.5°	65.3	63.0	67.4	77.0	93.6	114.2
58°	60.3	57.7	61.7	71.1	87.2	107.2
58.5°	55.4	52.5	56.4	65.5	81.1	100.4
59°	50.8	47.7	51.1	60.0	75.1	93.8
59.5°	46.2	43.1	46.3	54.9	69.3	87.4
60°	41.9	38.7	41.7	50.0	63.7	81.0
60.5°	37.8	34.6	37.3	45.2	58.3	74.9
61°	34.1	31.1	33.7	40.7	53.0	69.0
61.5°	30.3	27.6	30.2	36.6	48.1	63.4
62°	26.9	24.2	26.7	33.2	43.5	58.0
62.5°	23.8	20.7	23.2	29.7	38.9	52.5
63°	20.9	17.9	19.7	26.3	34.6	47.3
63.5°	18.0	15.5	17.0	22.9	31.0	42.2
64°	15.5	13.2	14.6	19.5	27.5	37.2
64.5°	13.2	11.4	12.6	16.8	24.0	32.9
65°	11.8	9.7	10.8	14.4	20.5	28.7
65.5°	10.4	8.3	9.3	12.2	17.6	24.5
66°	9.0	7.0	7.9	10.3	14.9	20.3



TEST NUMBER: P775620

CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	4.9	4.7	5.1	6.1	8.7	10.5
68°	4.4	4.4	4.6	5.3	7.3	8.4
68.5°	4.1	4.1	4.3	4.7	6.1	6.9
69°	3.9	3.8	4.0	4.4	5.3	6.0
69.5°	3.6	3.6	3.8	4.1	4.8	5.5
70°	3.4	3.4	3.6	3.9	4.5	5.2
70.5°	3.2	3.2	3.3	3.6	4.2	4.9
71°	2.9	2.9	3.1	3.4	3.9	4.6
71.5°	2.7	2.7	2.9	3.2	3.7	4.3
72°	2.6	2.6	2.7	3.0	3.5	4.0
72.5°	2.4	2.4	2.5	2.8	3.2	3.8
73°	2.2	2.2	2.3	2.6	3.0	3.6
73.5°	2.1	2.1	2.2	2.4	2.8	3.3
74°	1.9	1.9	2.0	2.2	2.6	3.1
74.5°	1.8	1.8	1.9	2.1	2.4	2.9
75°	1.7	1.7	1.8	2.0	2.3	2.7
75.5°	1.6	1.6	1.7	1.8	2.1	2.5
76°	1.5	1.5	1.5	1.7	2.0	2.4
76.5°	1.4	1.4	1.4	1.6	1.8	2.2
77°	1.3	1.3	1.3	1.5	1.7	2.1
77.5°	1.2	1.2	1.2	1.4	1.6	1.9
78°	1.1	1.1	1.2	1.3	1.5	1.8
78.5°	1.0	1.0	1.1	1.2	1.3	1.7
79°	0.9	0.9	1.0	1.1	1.2	1.5
79.5°	0.9	0.9	0.9	1.0	1.1	1.4
80°	0.8	0.8	0.8	0.9	1.0	1.3
80.5°	0.7	0.7	0.8	0.8	0.9	1.2
81°	0.7	0.7	0.7	0.7	0.8	1.1
81.5°	0.6	0.6	0.6	0.7	0.7	1.0
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: P775620
CATALOG NUMBER: HCDJBL510CSD-HCD41TRH-1000lm-2700K

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°	589.0	600.2	607.1	609.7	610.2	602.8	590.6	575.9	562.4	553.3	547.5
22°	585.6	596.9	604.0	606.7	607.1	599.7	587.2	572.1	558.4	549.2	543.3



44°	348.1	369.3	382.8	389.6	392.9	380.5	359.5	334.1	308.0	286.8	272.4
44.5°	339.1	361.0	374.8	381.7	385.1	372.1	351.1	325.7	299.6	278.3	263.4



66.5°	16.1	26.1	32.8	35.4	37.6	33.3	26.2	19.0	12.5	10.3	8.6
67°	13.0	22.1	28.9	31.6	33.1	29.2	22.9	16.2	11.1	9.0	7.0



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°	543.0	540.8	547.1	560.1	574.9	589.0
22°	538.7	536.3	542.9	556.0	571.1	585.6



44°	264.5	262.9	276.1	296.2	321.9	348.1
44.5°	255.8	254.2	267.2	287.1	313.0	339.1



66.5°	7.7	6.1	6.7	8.6	12.6	16.1
67°	6.3	5.2	5.8	7.2	10.5	13.0

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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)