

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: P775738

Luminaire Tested: HCDJBL510CSD-HCD61TRMW-1000lm-4000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775738
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B037)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD61TRMW-1000lm-4000K
Description: 6 INCH ROUND SHALLOW-WIDE MATTE WHITE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 4000K CCT
Ballast/Driver: -

Summary

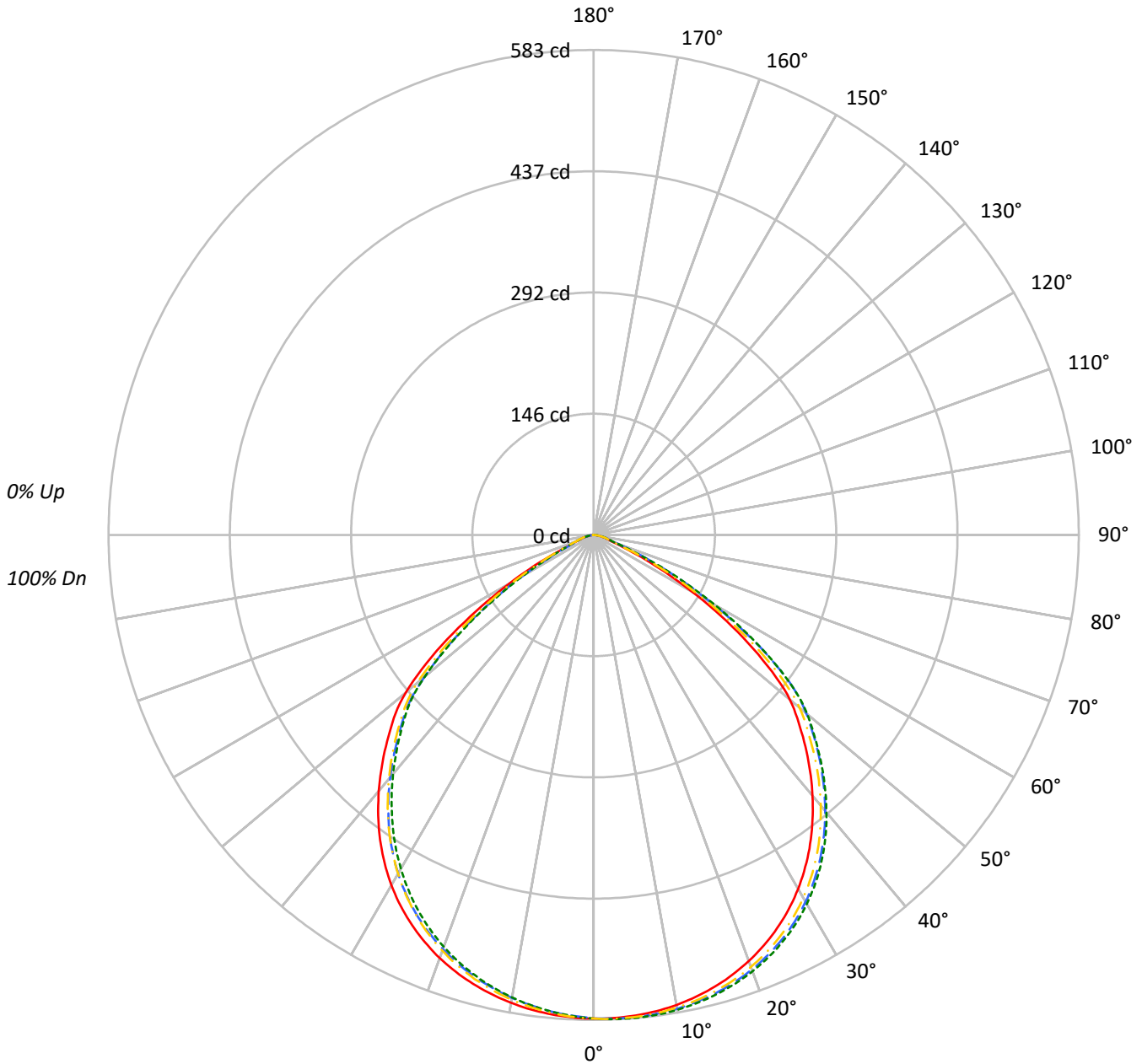
Lumens per Lamp: N/A
Luminaire Lumens: 1282.8 lumens
Efficiency: N/A
Efficacy: 128.3 lumens/watt
Spacing Criteria (0/90/45): 1.24 / 1.24 / 1.32
Luminous Opening: Circular (Dia: 0.5' x H: 0')
CIE Type: Direct

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	0					
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100								
1	111	107	104	101	109	105	102	99	101	99	96	97	95	93	94	92	91	89								
2	103	96	91	86	100	94	89	85	91	87	83	88	84	81	85	82	79	77								
3	95	86	79	74	93	85	78	73	82	76	72	79	74	71	77	73	69	67								
4	88	77	70	64	86	76	69	63	74	67	63	71	66	62	69	65	61	59								
5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54	52								
6	75	63	55	49	74	62	55	49	61	54	49	59	53	48	58	52	48	46								
7	70	58	50	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41								
8	65	53	45	40	64	52	45	39	51	44	39	50	44	39	49	43	39	37								
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35	34								
10	57	45	38	33	56	44	37	33	44	37	32	43	37	32	42	36	32	30								

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	31867	31867	31867	31867
5°	31912	32077	31846	31664
10°	31936	32269	31796	31429
15°	31913	32441	31720	31135
20°	31800	32570	31573	30733
25°	31556	32591	31284	30153
30°	31100	32429	30771	29334
35°	30356	31976	29948	28221
40°	29283	31151	28747	26836
45°	27902	29949	27220	25212
50°	26251	28596	25099	22592
55°	21648	24907	19717	16879
60°	15021	18321	12872	10624
65°	8133	10818	6149	5435
70°	3879	4600	3382	3366
75°	3114	3516	2584	2711
80°	2368	2873	1768	2052
85°	1447	2327	755	1195

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 67.5°
 Vertical Angle: 45°
 Luminance: 30786 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	55.0	4.3
10°-20°	158.1	12.3
20°-30°	238.9	18.6
30°-40°	280.9	21.9
40°-50°	273.6	21.3
50°-60°	193.0	15.0
60°-70°	64.7	5.0
70°-80°	15.6	1.2
80°-90°	3.1	0.2
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°	452.0	35.2
0°-40°	732.9	57.1
0°-60°	1199.4	93.5
0°-90°	1282.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1282.8	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	581	581	581	581	581	
5°	580	583	579	575	580	55
15°	562	572	559	549	562	159
25°	522	539	517	498	522	240
35°	454	478	448	422	454	283
45°	360	386	351	325	360	277
55°	226	261	206	177	226	201
65°	63	83	47	42	63	67
75°	15	17	12	13	15	16
85°	2	4	1	2	2	3
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°	581.3	581.3	581.3	581.3	581.3	581.3	581.3	581.3	581.3	581.3	581.3
0.5°	581.6	581.5	581.2	580.6	581.8	581.9	581.8	581.8	581.5	581.1	580.5
1°	581.6	581.6	581.5	581.1	582.1	582.1	582.0	581.8	581.4	580.9	580.1
1.5°	581.6	581.7	581.6	581.4	582.3	582.3	582.1	581.7	581.1	580.4	579.7
2°	581.5	581.7	581.8	581.7	582.5	582.4	582.1	581.6	580.9	580.1	579.2
2.5°	581.3	581.7	581.9	581.9	582.7	582.4	582.1	581.5	580.6	579.7	578.8
3°	581.2	581.7	582.0	582.1	582.7	582.5	582.1	581.3	580.2	579.3	578.1
3.5°	580.9	581.7	582.1	582.3	582.9	582.5	582.0	581.1	579.9	578.8	577.5
4°	580.6	581.5	582.0	582.4	582.9	582.5	581.9	580.9	579.6	578.2	576.9
4.5°	580.2	581.3	582.0	582.5	583.0	582.4	581.8	580.4	579.1	577.6	576.0
5°	579.9	581.1	581.9	582.5	582.9	582.3	581.5	580.1	578.7	577.0	575.4
5.5°	579.5	580.9	581.7	582.4	582.7	582.1	581.3	579.7	578.1	576.3	574.6
6°	579.1	580.4	581.6	582.4	582.5	581.9	581.1	579.3	577.5	575.6	573.7
6.5°	578.5	580.1	581.3	582.3	582.3	581.7	580.6	578.8	576.9	574.8	572.8
7°	578.0	579.7	581.0	582.1	582.1	581.3	580.3	578.2	576.2	574.0	571.8
7.5°	577.4	579.3	580.6	581.9	581.8	581.0	579.9	577.6	575.5	573.2	570.8
8°	576.8	578.8	580.2	581.7	581.5	580.5	579.4	577.0	574.8	572.2	569.8
8.5°	576.0	578.2	579.9	581.5	581.1	580.1	578.8	576.3	573.9	571.3	568.7
9°	575.3	577.6	579.4	581.1	580.6	579.6	578.2	575.6	573.1	570.2	567.6
9.5°	574.5	577.0	578.9	580.6	580.2	579.1	577.7	574.9	572.1	569.2	566.4
10°	573.7	576.2	578.3	580.2	579.7	578.4	577.0	573.9	571.2	568.1	565.2
10.5°	572.8	575.5	577.7	579.8	579.1	577.7	576.2	573.1	570.1	567.0	563.8
11°	571.8	574.7	577.0	579.2	578.4	577.1	575.5	572.1	569.1	565.8	562.6
11.5°	570.8	573.8	576.3	578.7	577.7	576.2	574.7	571.2	568.0	564.6	561.2
12°	569.7	572.9	575.5	578.0	577.0	575.5	573.8	570.1	566.9	563.3	559.9
12.5°	568.6	571.9	574.7	577.3	576.2	574.7	572.9	569.1	565.6	562.0	558.4
13°	567.4	570.9	573.8	576.6	575.4	573.8	571.9	567.9	564.4	560.6	556.8
13.5°	566.2	569.9	572.9	575.8	574.6	572.8	570.9	566.8	563.1	559.1	555.2
14°	564.9	568.8	571.9	575.0	573.6	571.8	569.8	565.5	561.7	557.6	553.7
14.5°	563.6	567.6	570.9	574.1	572.6	570.8	568.7	564.3	560.3	556.1	551.9
15°	562.3	566.4	569.8	573.1	571.6	569.7	567.5	562.9	558.9	554.6	550.2
15.5°	560.8	565.1	568.7	572.1	570.6	568.5	566.3	561.5	557.3	552.9	548.4
16°	559.3	563.7	567.5	571.1	569.4	567.3	564.9	560.1	555.9	551.2	546.6
16.5°	557.8	562.4	566.2	570.1	568.1	566.0	563.6	558.6	554.2	549.5	544.7
17°	556.1	560.9	565.0	568.9	567.0	564.7	562.3	557.0	552.5	547.7	542.7
17.5°	554.4	559.4	563.6	567.7	565.6	563.3	560.8	555.3	550.7	545.8	540.7
18°	552.7	557.9	562.3	566.5	564.3	562.0	559.2	553.7	548.9	543.9	538.7
18.5°	550.9	556.3	560.8	565.1	562.8	560.4	557.6	552.0	547.1	541.9	536.5
19°	549.0	554.6	559.2	563.7	561.4	558.9	556.1	550.2	545.1	539.9	534.4
19.5°	547.1	552.8	557.6	562.4	559.9	557.2	554.4	548.3	543.2	537.8	532.2
20°	545.1	551.0	556.0	560.9	558.3	555.5	552.7	546.4	541.2	535.6	529.9
20.5°	543.2	549.2	554.4	559.3	556.6	553.8	550.8	544.4	539.1	533.4	527.5
21°	541.0	547.2	552.6	557.8	554.9	552.0	548.9	542.3	537.0	531.2	525.2



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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°	534.2	541.2	546.9	552.7	549.3	546.2	542.9	535.9	530.0	523.9	517.6
23°	531.9	539.1	544.9	550.8	547.4	544.2	540.8	533.6	527.5	521.4	514.8
23.5°	529.5	536.7	542.8	548.9	545.4	542.1	538.6	531.2	525.1	518.8	512.2
24°	527.0	534.4	540.6	547.0	543.3	539.9	536.3	528.8	522.5	516.2	509.3
24.5°	524.5	532.0	538.4	544.9	541.0	537.6	534.0	526.2	519.8	513.3	506.5
25°	521.7	529.5	536.1	542.8	538.8	535.3	531.7	523.7	517.2	510.6	503.6
25.5°	519.0	527.0	533.8	540.6	536.5	532.9	529.2	521.0	514.4	507.8	500.4
26°	516.2	524.3	531.3	538.4	534.1	530.4	526.7	518.3	511.5	504.8	497.4
26.5°	513.4	521.7	528.9	536.1	531.7	527.8	524.1	515.5	508.6	501.7	494.2
27°	510.4	518.9	526.2	533.7	529.2	525.3	521.4	512.6	505.7	498.7	490.9
27.5°	507.4	516.2	523.6	531.3	526.6	522.6	518.6	509.6	502.6	495.6	487.7
28°	504.3	513.3	521.0	528.8	523.8	519.7	515.8	506.7	499.5	492.2	484.2
28.5°	501.2	510.3	518.2	526.2	521.1	516.9	512.9	503.7	496.2	489.0	480.9
29°	498.0	507.2	515.3	523.5	518.3	513.9	509.9	500.5	492.9	485.5	477.3
29.5°	494.6	504.2	512.3	520.8	515.3	510.9	506.8	497.2	489.5	482.0	473.7
30°	491.3	500.9	509.3	517.9	512.3	508.0	503.8	493.9	486.1	478.4	469.9
30.5°	487.9	497.7	506.3	515.0	509.2	504.7	500.4	490.5	482.5	474.8	466.2
31°	484.3	494.4	503.0	512.2	506.1	501.5	497.1	487.1	479.0	471.1	462.4
31.5°	480.8	490.9	499.8	509.0	502.8	498.1	493.9	483.5	475.3	467.3	458.4
32°	477.1	487.4	496.4	505.9	499.6	494.7	490.3	479.8	471.5	463.4	454.4
32.5°	473.3	483.9	493.0	502.6	496.1	491.3	486.7	476.1	467.7	459.4	450.2
33°	469.5	480.2	489.5	499.3	492.6	487.6	483.2	472.5	463.8	455.4	446.1
33.5°	465.6	476.5	485.9	495.9	489.1	483.9	479.5	468.6	459.8	451.2	442.0
34°	461.6	472.8	482.3	492.5	485.5	480.2	475.7	464.6	455.7	447.0	437.6
34.5°	457.8	468.9	478.6	489.0	481.7	476.5	471.8	460.6	451.6	442.8	433.3
35°	453.6	465.0	474.8	485.3	477.8	472.6	467.9	456.6	447.5	438.5	428.8
35.5°	449.5	460.9	470.9	481.6	473.9	468.7	463.8	452.4	443.2	434.0	424.2
36°	445.0	456.8	466.9	477.8	470.0	464.5	459.9	448.2	438.7	429.6	419.5
36.5°	440.8	452.7	462.9	473.9	465.9	460.3	455.7	443.9	434.2	425.0	414.9
37°	436.6	448.5	458.7	470.0	461.7	456.1	451.3	439.6	429.8	420.4	410.2
37.5°	432.1	444.3	454.7	465.9	457.4	451.8	447.0	435.1	425.3	415.7	405.4
38°	427.6	439.9	450.4	461.9	453.2	447.5	442.7	430.5	420.8	411.0	400.5
38.5°	423.1	435.5	446.1	457.6	448.7	443.0	438.2	426.0	415.9	406.2	395.5
39°	418.5	431.0	441.7	453.4	444.4	438.4	433.7	421.3	411.2	401.2	390.5
39.5°	414.0	426.5	437.3	449.0	439.8	433.9	429.1	416.6	406.5	396.2	385.5
40°	409.2	421.9	432.8	444.6	435.3	429.3	424.5	412.0	401.7	391.3	380.3
40.5°	404.4	417.2	428.2	440.1	430.5	424.6	419.7	407.1	396.8	386.2	375.4
41°	399.7	412.5	423.5	435.6	425.9	419.7	415.0	402.3	391.8	381.1	370.0
41.5°	394.8	407.8	418.8	430.9	421.2	415.0	410.1	397.3	386.9	376.0	364.9
42°	389.9	403.0	414.1	426.2	416.4	410.2	405.2	392.3	381.8	370.9	359.6
42.5°	385.0	398.2	409.3	421.5	411.4	405.2	400.5	387.4	376.8	365.7	354.4
43°	380.0	393.3	404.4	416.8	406.5	400.3	395.5	382.3	371.7	360.4	348.9
43.5°	375.1	388.3	399.6	411.9	401.6	395.4	390.3	377.3	366.6	355.1	343.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	359.9	373.3	384.6	397.1	386.3	380.0	375.1	361.8	351.1	339.5	328.1
45.5°	354.7	368.2	379.7	392.1	381.2	374.9	369.9	356.6	346.0	334.4	323.1
46°	349.6	363.0	374.6	387.1	376.1	369.6	364.7	351.5	340.7	329.3	318.2
46.5°	344.3	357.9	369.4	381.9	370.9	364.5	359.4	346.2	335.6	324.1	313.1
47°	339.3	352.8	364.3	376.8	365.6	359.4	354.4	341.2	330.7	319.2	307.8
47.5°	334.2	347.7	359.2	371.6	360.6	354.4	349.4	336.1	325.6	313.9	302.1
48°	329.2	342.5	354.0	366.4	355.7	349.3	344.3	331.1	320.2	308.1	295.9
48.5°	323.9	337.5	348.9	361.3	350.5	344.4	339.2	325.7	314.4	301.8	288.9
49°	319.0	332.4	343.8	356.2	345.5	339.2	334.1	319.7	308.3	294.8	281.4
49.5°	313.4	327.2	338.9	350.9	340.4	334.1	328.8	313.6	301.6	287.4	273.3
50°	307.8	321.9	333.7	345.9	335.3	328.5	322.9	307.1	294.3	279.5	265.2
50.5°	301.6	316.2	328.3	340.8	329.6	322.6	316.8	300.2	286.8	271.7	257.1
51°	294.5	310.0	322.6	335.7	323.6	316.1	310.2	292.7	279.0	263.4	248.6
51.5°	286.6	303.0	316.4	330.2	317.3	308.6	302.8	284.7	270.5	255.0	240.1
52°	278.7	295.7	309.9	324.4	310.2	301.0	294.9	276.0	261.8	246.4	231.4
52.5°	270.4	287.8	302.6	318.2	302.4	293.4	287.2	267.2	252.9	237.7	222.8
53°	261.9	279.5	295.1	311.5	294.6	285.2	278.7	258.2	243.9	228.6	214.1
53.5°	253.0	270.9	286.9	304.4	286.3	276.9	270.2	248.8	234.8	219.5	205.3
54°	244.3	262.4	278.2	296.6	277.9	268.5	261.3	239.6	225.3	210.6	196.7
54.5°	235.4	253.5	269.1	288.3	269.2	260.1	252.4	230.5	216.0	201.6	187.9
55°	226.5	244.4	260.0	279.5	260.6	251.4	243.2	220.8	206.3	192.2	179.0
55.5°	217.4	235.0	250.6	270.5	251.7	242.4	234.0	211.5	196.8	183.2	170.4
56°	208.6	225.6	241.1	261.1	242.6	233.3	224.8	202.1	187.3	174.2	161.7
56.5°	199.4	216.2	231.3	251.7	233.4	224.0	215.4	193.1	177.9	165.1	153.0
57°	190.4	206.5	221.4	242.1	224.0	214.8	206.0	183.9	168.8	156.3	144.6
57.5°	181.4	197.1	211.9	232.4	214.5	205.6	196.7	175.0	159.8	147.5	136.4
58°	172.3	187.4	202.3	223.0	205.1	196.1	187.5	166.0	150.8	138.8	128.3
58.5°	163.3	177.7	192.5	213.4	195.6	186.4	178.4	157.0	142.0	130.4	120.2
59°	154.5	168.5	183.0	204.0	186.0	176.9	169.1	148.1	133.6	121.8	112.4
59.5°	145.8	159.2	173.7	194.7	176.6	167.3	160.1	139.7	125.4	113.8	104.9
60°	137.0	150.1	164.7	185.4	167.1	158.0	151.1	131.1	117.4	105.8	97.8
60.5°	128.4	141.3	155.7	176.3	157.9	148.6	142.3	122.9	109.7	98.7	90.6
61°	120.3	132.6	146.4	167.0	148.8	139.5	133.7	114.6	102.0	91.7	83.5
61.5°	112.0	124.0	137.8	158.4	140.0	130.6	125.2	106.8	94.8	84.8	76.4
62°	104.2	115.8	129.4	149.3	131.2	121.7	116.7	99.6	87.7	77.7	69.2
62.5°	96.6	107.8	121.2	140.6	122.5	113.0	108.4	92.2	80.5	70.7	63.1
63°	89.4	100.1	113.1	132.1	114.1	104.8	100.9	85.0	73.3	64.7	57.4
63.5°	82.2	92.5	105.1	123.7	105.9	97.2	93.4	77.7	66.1	59.1	52.0
64°	75.5	85.4	97.6	115.4	98.3	89.6	85.8	70.5	59.5	53.8	47.1
64.5°	69.0	78.5	90.2	107.2	90.9	81.9	78.4	64.0	53.1	48.7	42.5
65°	62.7	72.0	83.2	99.5	83.4	74.4	70.8	57.9	47.4	44.1	38.5
65.5°	56.7	65.6	76.5	91.9	75.8	67.6	64.0	52.1	41.9	39.8	35.0
66°	51.0	60.0	70.0	84.5	68.4	61.1	57.7	46.7	37.3	36.1	32.0



TEST NUMBER: P775738

CATALOG NUMBER: HCDJBL510CSD-HCD61TRMW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	36.9	44.5	52.1	63.8	50.1	44.4	41.4	33.5	27.1	27.3	25.5
68°	34.0	40.1	46.8	57.7	44.6	39.7	37.1	30.3	25.2	25.3	24.1
68.5°	31.3	36.6	42.0	51.8	40.0	35.4	33.3	27.5	24.1	23.6	23.0
69°	28.5	33.7	37.8	46.4	35.6	31.7	30.1	25.3	23.1	22.5	22.1
69.5°	25.6	31.0	35.0	41.4	31.9	28.6	27.4	23.7	22.2	21.5	21.2
70°	24.2	28.2	32.1	36.8	28.7	26.2	25.3	22.6	21.1	20.6	20.3
70.5°	23.1	25.4	29.4	33.8	26.3	24.2	23.7	21.6	20.2	19.6	19.4
71°	22.2	23.6	26.7	30.8	24.3	23.0	22.7	20.7	19.1	18.8	18.6
71.5°	21.2	22.4	23.8	27.8	22.9	22.1	21.7	19.7	18.2	17.9	17.6
72°	20.3	21.4	22.7	24.9	22.0	21.1	20.9	18.8	17.2	16.9	16.8
72.5°	19.2	20.5	21.8	23.3	21.0	20.2	20.0	17.9	16.3	16.1	16.0
73°	18.3	19.5	20.9	22.4	20.2	19.3	19.0	16.9	15.4	15.2	15.1
73.5°	17.3	18.6	20.0	21.4	19.2	18.4	18.2	16.1	14.6	14.4	14.4
74°	16.5	17.6	19.0	20.6	18.3	17.5	17.2	15.1	13.8	13.5	13.5
74.5°	15.5	16.8	18.2	19.6	17.4	16.6	16.4	14.3	12.9	12.7	12.8
75°	14.7	15.9	17.2	18.7	16.6	15.8	15.5	13.4	12.2	12.0	12.1
75.5°	13.9	15.0	16.4	17.9	15.8	14.9	14.7	12.7	11.4	11.2	11.3
76°	13.0	14.2	15.4	16.9	14.9	14.2	13.9	11.9	10.7	10.5	10.7
76.5°	12.3	13.3	14.7	16.1	14.1	13.3	13.1	11.1	10.0	9.8	10.0
77°	11.4	12.6	13.9	15.2	13.3	12.6	12.4	10.4	9.2	9.1	9.3
77.5°	10.7	11.8	13.0	14.4	12.6	11.9	11.7	9.7	8.6	8.5	8.7
78°	10.1	11.0	12.3	13.7	11.9	11.1	10.9	9.0	8.0	7.9	8.1
78.5°	9.3	10.3	11.6	12.8	11.1	10.5	10.2	8.4	7.4	7.1	7.5
79°	8.7	9.7	10.8	12.1	10.4	9.8	9.6	7.8	6.7	6.5	6.9
79.5°	8.1	8.9	10.1	11.4	9.8	9.2	8.9	7.1	6.1	6.0	6.3
80°	7.5	8.3	9.5	10.7	9.1	8.6	8.3	6.5	5.6	5.4	5.7
80.5°	6.8	7.7	8.8	10.0	8.5	8.0	7.7	5.9	5.0	4.8	5.1
81°	6.3	7.0	8.2	9.3	7.9	7.4	7.0	5.4	4.5	4.3	4.7
81.5°	5.8	6.5	7.6	8.7	7.2	6.8	6.4	4.7	4.0	3.8	4.2
82°	5.1	5.9	6.9	8.1	6.6	6.2	5.9	4.3	3.6	3.3	3.7
82.5°	4.6	5.4	6.4	7.6	6.1	5.7	5.4	3.8	3.0	2.8	3.3
83°	4.2	4.8	5.9	6.9	5.6	5.1	4.8	3.3	2.6	2.4	2.8
83.5°	3.7	4.4	5.4	6.4	5.1	4.6	4.3	2.8	2.2	2.0	2.4
84°	3.3	3.9	4.8	5.9	4.6	4.2	3.9	2.4	1.8	1.6	2.0
84.5°	2.8	3.5	4.3	5.4	4.1	3.7	3.4	2.0	1.5	1.3	1.7
85°	2.3	2.9	3.9	4.8	3.7	3.3	2.9	1.7	1.2	1.1	1.4
85.5°	1.9	2.5	3.4	4.3	3.3	2.8	2.5	1.4	0.8	0.8	1.1
86°	1.6	2.1	2.9	3.9	2.8	2.4	2.2	1.2	0.7	0.6	0.7
86.5°	1.2	1.7	2.6	3.5	2.4	2.0	1.8	0.8	0.5	0.4	0.4
87°	0.9	1.4	2.2	3.0	2.0	1.7	1.5	0.6	0.3	0.2	0.2
87.5°	0.7	1.2	1.9	2.6	1.6	1.3	1.2	0.4	0.2	0.1	0.0
88°	0.5	0.9	1.5	2.2	1.3	0.9	0.8	0.2	0.1	0.0	0.0
88.5°	0.3	0.6	1.2	1.8	0.9	0.6	0.5	0.1	0.0	0.0	0.0



TEST NUMBER: P775738

CATALOG NUMBER: HCDJBL510CSD-HCD61TRMW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
90°	0.0	0.1	0.3	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P775738

CATALOG NUMBER: HCDJBL510CSD-HCD61TRMW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	581.3	581.3	581.3	581.3	581.3	581.3
0.5°	579.8	581.1	581.3	581.3	581.6	581.6
1°	579.3	580.6	580.9	581.0	581.5	581.6
1.5°	578.7	580.1	580.4	580.6	581.3	581.6
2°	578.0	579.6	580.0	580.2	581.1	581.5
2.5°	577.4	579.0	579.5	579.8	580.8	581.3
3°	576.7	578.3	579.0	579.4	580.4	581.2
3.5°	575.9	577.7	578.3	578.8	580.1	580.9
4°	575.2	577.0	577.7	578.2	579.6	580.6
4.5°	574.3	576.2	577.0	577.6	579.2	580.2
5°	573.4	575.4	576.1	576.9	578.7	579.9
5.5°	572.5	574.6	575.4	576.1	578.1	579.5
6°	571.4	573.6	574.6	575.4	577.5	579.1
6.5°	570.4	572.7	573.7	574.6	576.9	578.5
7°	569.3	571.6	572.8	573.7	576.1	578.0
7.5°	568.1	570.6	571.7	572.8	575.4	577.4
8°	567.0	569.5	570.7	571.8	574.7	576.8
8.5°	565.7	568.4	569.6	570.8	573.8	576.0
9°	564.5	567.2	568.5	569.7	572.9	575.3
9.5°	563.2	565.9	567.3	568.6	571.9	574.5
10°	561.7	564.6	566.0	567.4	570.9	573.7
10.5°	560.4	563.3	564.8	566.2	569.8	572.8
11°	558.8	561.8	563.4	564.9	568.7	571.8
11.5°	557.3	560.4	562.0	563.5	567.6	570.8
12°	555.8	558.9	560.5	562.2	566.5	569.7
12.5°	554.1	557.3	559.0	560.7	565.1	568.6
13°	552.3	555.6	557.4	559.2	563.8	567.4
13.5°	550.6	554.0	555.8	557.6	562.4	566.2
14°	548.8	552.3	554.1	556.1	560.9	564.9
14.5°	546.9	550.5	552.3	554.3	559.4	563.6
15°	545.0	548.6	550.6	552.7	558.0	562.3
15.5°	543.0	546.7	548.7	550.8	556.3	560.8
16°	541.0	544.7	546.8	548.9	554.6	559.3
16.5°	538.9	542.7	544.7	547.0	552.8	557.8
17°	536.7	540.6	542.7	545.0	551.0	556.1
17.5°	534.6	538.4	540.6	543.0	549.2	554.4
18°	532.3	536.3	538.4	540.9	547.4	552.7
18.5°	530.0	533.9	536.2	538.7	545.4	550.9
19°	527.6	531.7	533.9	536.5	543.3	549.0
19.5°	525.1	529.3	531.6	534.2	541.2	547.1
20°	522.6	526.8	529.2	531.9	539.1	545.1
20.5°	520.0	524.3	526.6	529.5	536.8	543.2
21°	517.4	521.6	524.0	527.0	534.5	541.0

TEST NUMBER: P775738

CATALOG NUMBER: HCDJBL510CSD-HCD61TRMW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	509.0	513.4	516.1	519.1	527.3	534.2
23°	506.2	510.7	513.1	516.3	524.8	531.9
23.5°	503.1	507.8	510.3	513.4	522.1	529.5
24°	500.1	504.7	507.3	510.5	519.5	527.0
24.5°	497.0	501.7	504.3	507.5	516.8	524.5
25°	493.8	498.5	501.1	504.6	513.8	521.7
25.5°	490.5	495.4	497.9	501.5	510.9	519.0
26°	487.3	492.0	494.7	498.3	508.0	516.2
26.5°	483.8	488.7	491.4	494.9	504.9	513.4
27°	480.3	485.3	488.0	491.6	501.8	510.4
27.5°	476.9	481.8	484.4	488.3	498.6	507.4
28°	473.3	478.2	481.0	484.9	495.4	504.3
28.5°	469.5	474.6	477.4	481.3	492.0	501.2
29°	465.7	470.9	473.6	477.6	488.6	498.0
29.5°	462.0	467.1	469.9	474.0	485.1	494.6
30°	458.0	463.4	466.1	470.1	481.5	491.3
30.5°	454.1	459.4	462.2	466.5	477.9	487.9
31°	450.0	455.4	458.3	462.5	474.2	484.3
31.5°	445.8	451.6	454.4	458.6	470.5	480.8
32°	441.6	447.5	450.3	454.5	466.6	477.1
32.5°	437.4	443.3	446.1	450.5	462.7	473.3
33°	433.0	439.2	442.1	446.4	458.7	469.5
33.5°	428.6	435.0	437.9	442.2	454.6	465.6
34°	424.1	430.5	433.6	437.9	450.5	461.6
34.5°	419.5	426.1	429.2	433.7	446.3	457.8
35°	415.0	421.7	424.9	429.2	442.1	453.6
35.5°	410.3	417.2	420.5	424.8	437.8	449.5
36°	405.7	412.7	415.9	420.3	433.4	445.0
36.5°	400.8	408.2	411.5	415.7	429.0	440.8
37°	396.1	403.6	406.9	411.2	424.4	436.6
37.5°	391.2	398.8	402.3	406.6	419.9	432.1
38°	386.3	394.1	397.7	401.9	415.3	427.6
38.5°	381.2	389.5	392.9	397.0	410.7	423.1
39°	376.4	384.5	388.3	392.4	405.9	418.5
39.5°	371.2	379.7	383.6	387.7	401.1	414.0
40°	366.2	375.0	378.8	382.9	396.4	409.2
40.5°	361.1	370.2	373.9	377.9	391.6	404.4
41°	356.0	365.1	369.0	373.1	386.7	399.7
41.5°	350.7	360.2	364.2	368.2	381.7	394.8
42°	345.6	355.2	359.2	363.2	376.9	389.9
42.5°	340.3	350.3	354.3	358.3	371.8	385.0
43°	335.3	345.4	349.4	353.3	366.9	380.0
43.5°	330.0	340.2	344.4	348.2	361.9	375.1



TEST NUMBER: P775738

CATALOG NUMBER: HCDJBL510CSD-HCD61TRMW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	315.2	325.2	329.4	333.1	346.6	359.9
45.5°	310.3	320.3	324.4	328.0	341.4	354.7
46°	305.0	315.2	319.4	323.1	336.3	349.6
46.5°	299.6	310.3	314.4	317.9	331.2	344.3
47°	293.7	305.2	309.5	313.0	326.2	339.3
47.5°	287.0	299.7	304.4	308.0	321.2	334.2
48°	279.6	294.1	298.8	302.5	316.2	329.2
48.5°	271.6	287.8	293.1	296.8	311.0	323.9
49°	263.4	280.8	287.2	291.1	305.6	319.0
49.5°	255.1	273.1	279.9	284.3	300.0	313.4
50°	246.8	264.9	272.4	276.9	293.9	307.8
50.5°	238.1	256.4	263.9	268.7	287.0	301.6
51°	229.4	247.9	255.5	260.3	279.2	294.5
51.5°	220.7	239.1	246.5	251.7	270.9	286.6
52°	211.9	230.3	237.9	242.8	262.5	278.7
52.5°	203.2	221.3	229.1	233.9	254.0	270.4
53°	194.4	212.1	219.9	225.0	245.5	261.9
53.5°	185.9	203.1	210.5	215.7	236.7	253.0
54°	177.3	194.1	201.6	206.7	227.8	244.3
54.5°	168.7	185.5	192.4	197.7	218.9	235.4
55°	160.3	176.6	183.2	189.1	209.9	226.5
55.5°	151.9	167.9	174.4	180.1	200.9	217.4
56°	143.8	159.3	165.5	171.4	192.0	208.6
56.5°	136.0	150.8	156.8	162.9	183.2	199.4
57°	127.9	142.5	148.3	154.6	174.4	190.4
57.5°	120.2	134.4	139.9	146.0	165.7	181.4
58°	112.4	126.4	131.7	137.8	157.1	172.3
58.5°	105.2	118.7	124.0	130.0	148.6	163.3
59°	98.2	111.2	116.5	122.2	140.5	154.5
59.5°	91.3	103.9	109.2	114.6	132.5	145.8
60°	84.2	96.9	102.1	107.2	124.6	137.0
60.5°	77.3	89.9	95.3	100.0	116.9	128.4
61°	70.3	83.3	88.7	93.1	109.1	120.3
61.5°	64.2	77.1	82.5	86.2	101.7	112.0
62°	58.3	71.2	76.4	79.9	94.4	104.2
62.5°	52.9	65.4	70.6	73.7	87.4	96.6
63°	47.9	60.1	65.1	67.7	80.6	89.4
63.5°	43.5	55.0	60.0	62.3	74.2	82.2
64°	39.3	50.3	55.1	57.0	67.9	75.5
64.5°	35.7	45.9	50.4	52.2	61.8	69.0
65°	32.8	41.9	46.2	47.6	56.1	62.7
65.5°	30.1	38.1	42.2	43.4	50.8	56.7
66°	27.9	35.5	38.5	39.5	46.1	51.0



TEST NUMBER: P775738

CATALOG NUMBER: HCDJBL510CSD-HCD61TRMW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	23.2	27.7	30.6	30.6	35.3	36.9
68°	22.4	25.1	27.9	28.8	32.9	34.0
68.5°	21.4	23.6	25.3	26.9	30.4	31.3
69°	20.6	22.7	23.7	25.0	27.9	28.5
69.5°	19.7	21.8	22.7	23.1	25.4	25.6
70°	18.9	21.0	21.8	22.3	23.8	24.2
70.5°	18.1	20.1	21.0	21.3	22.7	23.1
71°	17.2	19.2	20.2	20.5	21.7	22.2
71.5°	16.4	18.4	19.3	19.6	20.8	21.2
72°	15.5	17.5	18.4	18.8	19.9	20.3
72.5°	14.8	16.7	17.5	18.0	19.0	19.2
73°	14.1	15.9	16.7	17.1	18.1	18.3
73.5°	13.2	15.1	16.0	16.3	17.2	17.3
74°	12.5	14.3	15.1	15.4	16.3	16.5
74.5°	11.9	13.5	14.4	14.6	15.4	15.5
75°	11.1	12.8	13.7	13.9	14.6	14.7
75.5°	10.5	12.1	12.9	13.1	13.8	13.9
76°	9.8	11.4	12.2	12.4	13.0	13.0
76.5°	9.1	10.7	11.4	11.7	12.2	12.3
77°	8.6	10.1	10.8	10.9	11.4	11.4
77.5°	8.0	9.5	10.1	10.2	10.7	10.7
78°	7.5	8.8	9.5	9.6	10.0	10.1
78.5°	6.8	8.2	8.8	8.9	9.3	9.3
79°	6.3	7.7	8.2	8.3	8.7	8.7
79.5°	5.8	7.0	7.7	7.7	8.0	8.1
80°	5.3	6.5	7.0	7.1	7.5	7.5
80.5°	4.7	6.0	6.5	6.5	6.8	6.8
81°	4.3	5.5	6.0	6.0	6.2	6.3
81.5°	3.8	4.9	5.5	5.5	5.7	5.8
82°	3.4	4.5	4.9	4.9	5.1	5.1
82.5°	2.9	4.0	4.5	4.5	4.6	4.6
83°	2.5	3.6	4.0	4.0	4.1	4.2
83.5°	2.1	3.2	3.6	3.6	3.6	3.7
84°	1.7	2.7	3.2	3.2	3.2	3.3
84.5°	1.3	2.3	2.7	2.7	2.7	2.8
85°	0.9	1.9	2.3	2.3	2.2	2.3
85.5°	0.6	1.5	1.9	1.9	1.9	1.9
86°	0.3	1.1	1.5	1.6	1.6	1.6
86.5°	0.1	0.7	1.2	1.2	1.3	1.2
87°	0.0	0.4	0.7	0.8	0.9	0.9
87.5°	0.0	0.2	0.4	0.5	0.7	0.7
88°	0.0	0.0	0.2	0.2	0.5	0.5
88.5°	0.0	0.0	0.0	0.1	0.3	0.3



TEST NUMBER: P775738

CATALOG NUMBER: HCDJBL510CSD-HCD61TRMW-1000lm-4000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.0	0.0	0.0	0.0	0.0



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— 0°-180° - - 45°-225° - - - - 90°-270° - · - 135°-315°

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21.5°	538.8	545.3	550.7	556.2	553.1	550.1	547.0	540.3	534.6	528.8	522.7
22°	536.5	543.3	548.8	554.5	551.3	548.3	545.0	538.1	532.3	526.4	520.1



44°	370.2	383.4	394.7	407.1	396.5	390.2	385.3	372.1	361.4	349.9	338.4
44.5°	364.9	378.2	389.6	402.2	391.4	385.3	380.1	367.0	356.2	344.7	333.3



66.5°	45.9	54.4	63.8	77.5	61.9	55.2	51.7	41.9	33.2	32.8	29.5
67°	41.3	49.3	57.8	70.4	55.7	49.6	46.3	37.4	29.8	29.8	27.3



89°	0.2	0.4	0.8	1.5	0.6	0.3	0.2	0.0	0.0	0.0	0.0
89.5°	0.1	0.2	0.5	1.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0

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21.5°	514.7	519.0	521.4	524.3	532.2	538.8
22°	511.8	516.4	518.8	521.7	529.8	536.5



44°	325.1	335.2	339.4	343.3	356.8	370.2
44.5°	320.2	330.1	334.3	338.1	351.7	364.9

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66.5°	26.0	32.9	35.9	35.9	41.7	45.9
67°	24.5	30.3	33.2	32.9	37.8	41.3

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

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(END OF REPORT)