

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: P775637

Luminaire Tested: HCDJBL510CSD-HCD41TRMW-1000lm-3500K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775637
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2312156B030)
Test Lab:
Issue Date: 2/13/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD41TRMW-1000lm-3500K
Description: 4 INCH ROUND SHALLOW-WIDE MATTE WHITE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 3500K CCT
Ballast/Driver: -

Summary

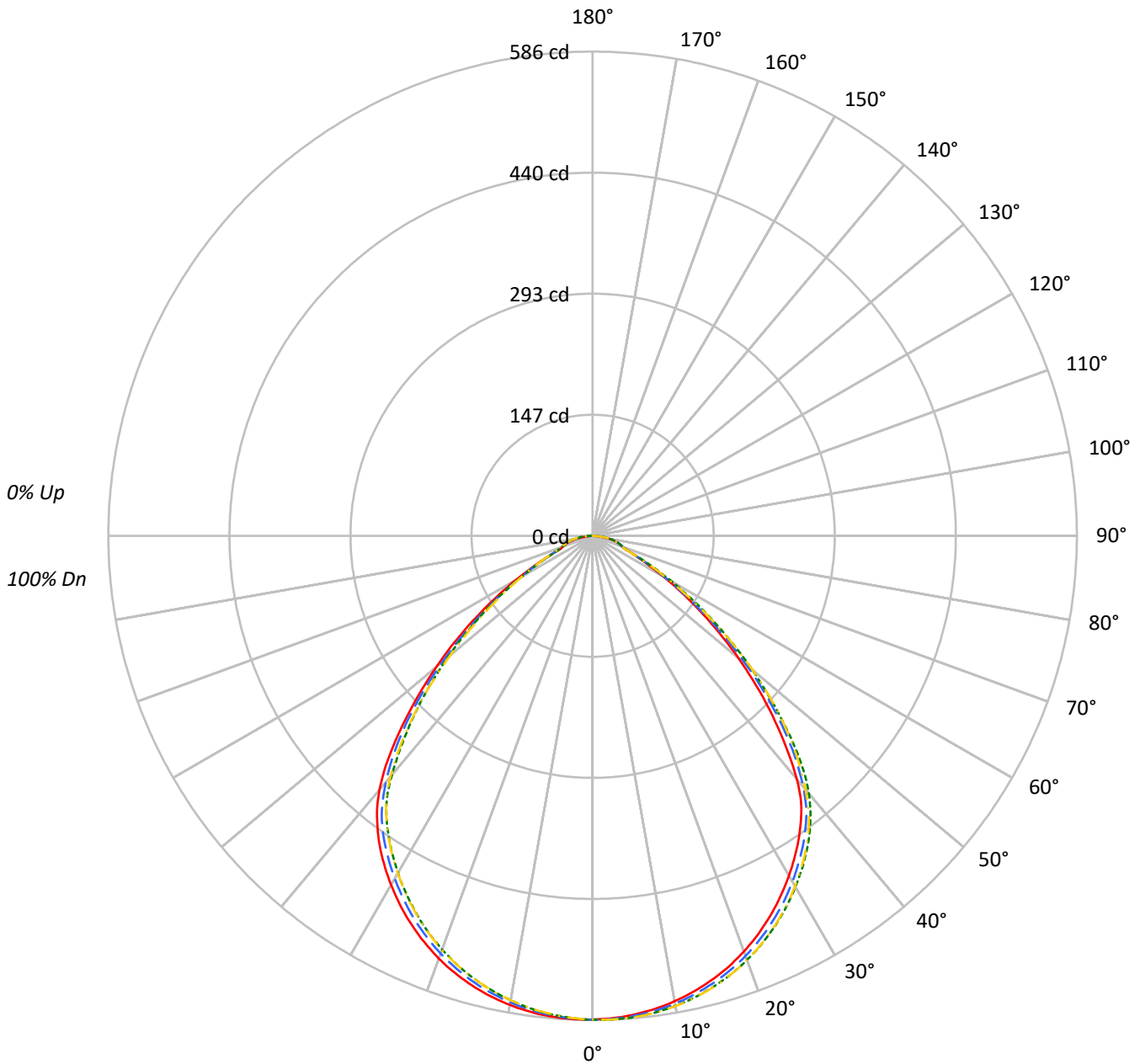
Lumens per Lamp: N/A
Luminaire Lumens: 1222.6 lumens
Efficiency: N/A
Efficacy: 122.3 lumens/watt
Spacing Criteria (0/90/45): 1.22 / 1.22 / 1.28
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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	111	107	103	100	108	105	102	99	101	98	96	97	95	93	93	92	90	88	88	88	88	88	88		
	2	103	96	90	85	100	94	89	84	90	86	82	87	84	81	84	81	79	77	77	77	77	77	77		
	3	95	86	79	73	93	84	78	73	82	76	72	79	74	70	76	73	69	67	67	67	67	67	67		
	4	88	77	70	64	86	76	69	64	74	68	63	72	66	62	69	65	61	59	59	59	59	59	59		
	5	81	70	62	56	79	69	62	56	67	60	55	65	59	55	63	58	54	52	52	52	52	52	52		
	6	76	64	56	50	74	63	55	50	61	54	49	60	54	49	58	53	49	47	47	47	47	47	47		
	7	71	58	50	45	69	57	50	45	56	49	44	55	49	44	53	48	44	42	42	42	42	42	42		
	8	66	54	46	40	64	53	45	40	52	45	40	50	44	40	49	44	40	38	38	38	38	38	38		
	9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34	34	34	34	34	34		
	10	58	46	38	33	57	45	38	33	44	38	33	43	37	33	43	37	33	31	31	31	31	31	31		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	73685	73685	73685	73685
5°	73474	73865	73764	73423
10°	73084	73838	73684	72956
15°	72532	73626	73418	72284
20°	71691	73164	72896	71356
25°	70541	72429	72054	70069
30°	69041	71322	70887	68460
35°	67138	69827	69258	66478
40°	63118	66897	65928	62067
45°	54782	59320	58039	54052
50°	45109	49299	48301	44718
55°	34843	38551	37783	34843
60°	24868	27687	27108	24969
65°	16884	18076	17629	16914
70°	14056	13982	14093	14387
75°	14831	14928	14296	15609
80°	13843	15364	12538	16524
85°	7653	14006	5343	16028

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 112.5°
 Vertical Angle: 45°
 Luminance: 60264 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	55.4	4.5
10°-20°	157.9	12.9
20°-30°	236.2	19.3
30°-40°	276.2	22.6
40°-50°	244.3	20.0
50°-60°	148.7	12.2
60°-70°	61.9	5.1
70°-80°	32.1	2.6
80°-90°	9.8	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°	449.5	36.8
0°-40°	725.7	59.4
0°-60°	1118.7	91.5
0°-90°	1222.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1222.6	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	586	586	586	586	586	
5°	582	585	584	581	582	55
15°	557	565	564	555	557	157
25°	508	522	519	505	508	234
35°	437	454	451	433	437	272
45°	308	333	326	304	308	236
55°	159	176	172	159	159	143
65°	57	61	59	57	57	60
75°	30	31	29	32	30	31
85°	5	10	4	11	5	8
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°	585.5	585.5	585.5	585.5	585.5	585.5	585.5	585.5	585.5	585.5	585.5
0.5°	585.4	585.5	585.6	585.4	585.8	585.9	585.7	585.6	585.6	585.6	585.5
1°	585.2	585.4	585.5	585.5	585.9	586.0	585.9	585.7	585.6	585.6	585.4
1.5°	584.9	585.2	585.4	585.5	585.9	586.1	585.9	585.7	585.6	585.5	585.2
2°	584.6	584.9	585.3	585.4	585.9	586.1	585.9	585.7	585.5	585.3	585.0
2.5°	584.2	584.6	585.1	585.3	585.8	586.1	585.9	585.6	585.4	585.1	584.7
3°	583.7	584.3	584.8	585.1	585.7	586.0	585.7	585.5	585.2	584.9	584.4
3.5°	583.3	583.8	584.5	584.9	585.5	585.9	585.6	585.3	585.0	584.5	583.9
4°	582.8	583.3	584.1	584.6	585.3	585.7	585.3	585.0	584.7	584.2	583.4
4.5°	582.2	582.8	583.5	584.2	585.0	585.4	585.1	584.7	584.3	583.7	582.9
5°	581.6	582.3	583.0	583.7	584.7	585.1	584.7	584.4	583.9	583.2	582.3
5.5°	580.8	581.6	582.5	583.3	584.2	584.8	584.3	583.8	583.4	582.6	581.7
6°	580.0	580.9	581.9	582.8	583.7	584.3	583.8	583.4	582.9	582.1	580.9
6.5°	579.2	580.1	581.3	582.2	583.2	583.8	583.3	582.9	582.4	581.5	580.2
7°	578.4	579.3	580.5	581.6	582.6	583.2	582.7	582.3	581.7	580.7	579.5
7.5°	577.4	578.5	579.7	580.8	582.0	582.7	582.1	581.7	580.9	579.9	578.6
8°	576.5	577.5	579.0	580.1	581.2	582.0	581.4	580.9	580.2	579.1	577.6
8.5°	575.5	576.6	577.9	579.3	580.4	581.4	580.6	580.1	579.4	578.3	576.7
9°	574.3	575.6	577.0	578.5	579.6	580.5	579.8	579.3	578.6	577.2	575.7
9.5°	573.2	574.4	576.1	577.4	578.8	579.7	579.0	578.5	577.6	576.3	574.5
10°	571.9	573.3	574.9	576.5	577.8	578.8	578.0	577.5	576.6	575.2	573.4
10.5°	570.7	572.1	573.8	575.3	576.8	577.8	577.0	576.5	575.6	574.1	572.2
11°	569.3	570.8	572.7	574.3	575.8	576.8	576.0	575.3	574.5	572.9	570.9
11.5°	568.0	569.5	571.4	573.2	574.6	575.8	574.8	574.3	573.3	571.6	569.5
12°	566.5	568.1	570.1	571.8	573.5	574.6	573.7	573.2	572.1	570.4	568.2
12.5°	565.0	566.6	568.7	570.6	572.2	573.5	572.4	571.8	570.9	569.0	566.7
13°	563.5	565.2	567.3	569.2	570.9	572.2	571.1	570.6	569.5	567.6	565.3
13.5°	561.8	563.6	565.7	567.9	569.5	570.9	569.8	569.2	568.1	566.1	563.7
14°	560.2	562.1	564.3	566.4	568.1	569.5	568.4	567.8	566.6	564.6	562.1
14.5°	558.5	560.4	562.6	564.9	566.6	568.1	566.9	566.2	565.1	563.0	560.4
15°	556.7	558.7	561.0	563.3	565.1	566.6	565.4	564.8	563.5	561.4	558.7
15.5°	554.8	556.8	559.3	561.6	563.5	565.0	563.7	563.1	561.9	559.7	556.9
16°	552.9	554.9	557.4	559.9	561.9	563.4	562.0	561.5	560.1	557.8	555.0
16.5°	550.9	553.1	555.7	558.1	560.1	561.7	560.3	559.7	558.5	556.1	553.1
17°	548.9	551.1	553.8	556.3	558.4	559.9	558.6	557.8	556.5	554.2	551.1
17.5°	546.9	549.0	551.8	554.5	556.5	558.1	556.6	556.0	554.6	552.1	549.0
18°	544.7	547.0	549.8	552.6	554.6	556.2	554.7	554.1	552.8	550.2	547.0
18.5°	542.4	544.8	547.7	550.5	552.7	554.2	552.8	552.1	550.7	548.1	544.8
19°	540.1	542.6	545.5	548.4	550.6	552.2	550.7	550.1	548.7	546.0	542.6
19.5°	537.7	540.3	543.3	546.3	548.5	550.2	548.5	548.0	546.5	543.7	540.3
20°	535.3	537.9	541.0	544.2	546.3	548.1	546.3	545.7	544.3	541.6	537.9
20.5°	533.0	535.6	538.8	541.9	544.2	545.8	544.1	543.4	542.0	539.2	535.5
21°	530.3	533.1	536.3	539.6	541.9	543.6	541.8	541.2	539.7	536.8	533.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
22.5°	522.4	525.3	528.8	532.2	534.7	536.5	534.4	533.9	532.3	529.3	525.3
23°	519.6	522.6	526.1	529.8	532.2	534.0	531.8	531.3	529.8	526.7	522.5
23.5°	516.8	519.8	523.4	527.1	529.6	531.4	529.2	528.6	527.2	523.9	519.8
24°	513.9	517.0	520.7	524.5	527.0	528.8	526.5	525.9	524.5	521.3	517.0
24.5°	511.0	514.1	517.9	521.7	524.3	526.1	523.8	523.2	521.7	518.5	514.1
25°	508.0	511.1	515.0	518.9	521.6	523.3	520.9	520.4	518.9	515.7	511.2
25.5°	505.0	508.2	512.1	516.1	518.8	520.5	518.1	517.5	516.1	512.8	508.2
26°	501.8	505.2	509.1	513.2	515.9	517.7	515.2	514.6	513.2	509.8	505.1
26.5°	498.8	502.1	506.1	510.3	512.9	514.8	512.2	511.6	510.1	506.8	502.1
27°	495.6	498.9	503.0	507.2	510.0	511.9	509.1	508.6	507.1	503.7	499.0
27.5°	492.2	495.8	500.0	504.2	506.8	508.8	506.1	505.5	504.1	500.5	495.8
28°	488.9	492.4	496.7	501.0	503.7	505.7	502.9	502.4	500.8	497.5	492.4
28.5°	485.5	489.1	493.5	497.8	500.7	502.6	499.7	499.2	497.6	494.1	489.1
29°	482.2	485.7	490.2	494.6	497.4	499.4	496.4	496.0	494.4	491.0	485.8
29.5°	478.7	482.4	486.8	491.3	494.2	496.2	493.1	492.7	491.1	487.6	482.5
30°	475.1	479.0	483.4	488.0	490.8	492.9	489.8	489.2	487.8	484.3	479.0
30.5°	471.5	475.5	480.0	484.7	487.5	489.4	486.3	485.8	484.4	480.7	475.5
31°	467.9	471.8	476.6	481.1	484.1	486.1	482.8	482.3	480.8	477.3	471.9
31.5°	464.3	468.3	473.0	477.7	480.5	482.6	479.3	478.8	477.3	473.8	468.5
32°	460.6	464.7	469.3	474.2	477.0	479.1	475.7	475.2	473.8	470.4	464.8
32.5°	456.8	460.9	465.8	470.6	473.6	475.6	472.0	471.6	470.2	466.7	461.0
33°	453.1	457.2	462.1	467.0	469.9	471.9	468.3	467.9	466.5	463.0	457.3
33.5°	449.2	453.4	458.4	463.3	466.1	468.2	464.6	464.1	462.7	459.2	453.5
34°	445.2	449.5	454.4	459.5	462.4	464.5	460.5	460.1	458.8	455.2	449.5
34.5°	441.3	445.5	450.6	455.6	458.6	460.4	456.7	456.2	454.8	451.4	445.6
35°	437.0	441.5	446.5	451.6	454.5	456.5	452.5	452.1	450.8	447.4	441.6
35.5°	432.9	437.3	442.4	447.6	450.5	452.4	448.5	448.0	446.7	443.2	437.4
36°	428.6	433.1	438.2	443.4	446.4	448.4	444.2	443.5	442.4	438.9	433.1
36.5°	424.2	428.7	433.9	439.3	442.1	444.1	439.6	439.1	437.8	434.4	428.6
37°	419.6	424.2	429.3	434.6	437.5	439.5	435.0	434.5	433.3	429.9	424.1
37.5°	414.7	419.5	424.8	430.2	433.0	434.9	430.1	429.7	428.6	425.1	418.8
38°	409.6	414.5	420.1	425.4	428.2	430.3	424.7	424.6	423.7	420.0	413.3
38.5°	403.9	408.8	414.5	420.5	423.3	425.2	418.9	418.8	418.5	414.8	407.7
39°	397.9	402.6	408.5	415.1	418.1	419.8	412.9	413.0	413.0	409.2	401.6
39.5°	391.3	396.3	402.6	409.6	412.8	414.1	406.8	406.8	407.3	403.3	395.6
40°	384.2	389.5	396.4	403.5	407.2	408.0	400.5	400.3	401.3	397.1	389.0
40.5°	376.8	382.4	389.7	397.4	401.1	401.7	394.2	393.9	394.8	390.6	382.9
41°	369.3	375.2	383.1	390.8	394.8	395.2	387.9	387.5	388.0	383.9	376.0
41.5°	361.9	368.0	376.2	384.0	388.0	388.7	381.3	380.6	380.9	377.1	369.2
42°	354.0	360.4	369.2	377.1	380.9	382.0	374.6	374.0	373.7	370.1	362.2
42.5°	346.4	352.9	362.1	370.1	373.5	375.0	367.7	367.0	366.1	362.7	355.0
43°	338.8	345.4	354.8	362.7	365.8	367.9	360.7	359.8	358.3	355.2	347.6
43.5°	331.1	337.8	347.1	355.2	357.7	360.8	353.7	352.5	350.3	347.6	340.3



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	307.8	315.1	323.8	331.6	333.3	338.6	331.5	330.1	326.1	323.5	317.2
45.5°	300.0	307.5	315.9	323.4	324.9	330.6	324.2	322.3	317.9	315.2	309.4
46°	292.3	299.8	307.8	315.0	316.4	322.8	316.3	314.2	309.9	306.9	301.2
46.5°	284.6	292.0	299.7	306.6	308.2	314.8	308.5	306.3	301.8	298.7	293.2
47°	276.6	284.4	291.6	298.1	300.1	306.6	300.7	298.5	293.9	290.4	285.2
47.5°	268.8	276.5	283.2	289.7	291.9	298.5	293.1	290.3	286.0	282.3	277.2
48°	261.0	268.5	275.2	281.2	283.8	290.3	285.0	282.2	278.0	273.9	268.9
48.5°	253.3	260.7	266.9	272.8	275.9	282.1	277.2	274.0	270.2	265.8	261.0
49°	245.6	252.9	258.9	264.5	267.8	274.0	268.9	266.0	262.4	257.6	252.9
49.5°	237.9	244.8	250.8	256.1	259.7	265.7	260.7	257.9	254.5	249.6	244.9
50°	230.4	237.0	242.6	247.8	251.8	257.6	252.8	249.8	246.7	241.6	236.9
50.5°	222.8	229.0	234.5	239.5	243.9	249.5	244.4	242.0	238.9	233.8	228.9
51°	215.2	221.2	226.5	231.4	236.0	241.4	236.5	234.2	231.3	226.1	221.1
51.5°	208.0	213.7	218.7	223.3	228.2	233.7	228.2	226.3	223.7	218.3	213.5
52°	200.6	206.0	210.8	215.5	220.5	225.7	219.9	218.5	216.4	210.6	205.8
52.5°	193.5	198.4	203.0	207.8	212.8	217.7	212.0	210.8	208.7	203.1	198.0
53°	186.3	191.0	195.1	200.1	205.2	209.8	204.0	203.2	201.1	195.5	190.6
53.5°	179.3	183.6	187.6	192.5	197.5	202.3	196.3	195.5	193.7	188.4	183.2
54°	172.3	176.4	179.9	185.2	190.3	194.6	188.2	188.1	186.7	181.0	176.2
54.5°	165.5	169.0	172.6	177.8	183.0	187.2	180.6	180.8	179.5	174.0	169.1
55°	158.8	162.1	165.5	170.8	175.7	179.9	173.1	173.6	172.2	166.9	162.0
55.5°	152.2	155.2	158.2	163.7	168.5	172.5	165.6	166.4	165.2	160.2	155.1
56°	145.8	148.5	151.2	157.0	161.5	165.1	158.3	159.2	158.6	153.4	148.6
56.5°	139.4	141.8	144.6	150.3	154.6	158.0	151.2	152.3	151.6	146.8	142.1
57°	133.2	135.3	137.9	143.7	147.8	151.2	144.3	145.5	144.9	140.5	135.8
57.5°	127.0	128.9	131.4	137.2	141.1	144.3	137.5	138.9	138.3	134.3	129.4
58°	121.0	122.7	125.0	131.1	134.5	137.4	131.0	132.3	132.1	128.2	123.5
58.5°	115.2	116.7	119.0	124.9	128.4	130.9	124.6	125.7	125.7	122.3	117.7
59°	109.6	110.9	113.3	119.2	122.0	124.5	118.3	119.4	119.5	116.5	111.9
59.5°	104.1	105.2	107.6	113.2	115.9	118.1	112.2	113.4	113.5	110.8	106.5
60°	98.8	99.7	102.2	107.6	110.0	111.9	106.3	107.4	107.7	105.3	101.2
60.5°	93.7	94.4	96.9	102.1	104.3	106.0	100.8	101.5	102.0	100.0	96.1
61°	88.6	89.3	91.8	96.8	98.7	100.4	95.8	96.0	96.5	95.1	91.5
61.5°	83.8	84.6	87.0	91.5	93.6	95.2	90.6	90.9	91.4	90.3	87.0
62°	79.3	80.0	82.4	86.6	88.5	90.0	85.5	85.7	86.3	85.4	82.5
62.5°	74.9	75.5	77.9	81.8	83.5	84.8	80.4	80.5	81.2	80.5	77.9
63°	70.8	71.3	73.7	77.1	78.4	79.5	75.3	75.4	76.3	75.6	73.4
63.5°	66.9	67.4	69.6	72.6	73.4	74.3	70.7	70.9	71.8	71.3	69.3
64°	63.2	63.7	65.8	68.3	69.0	69.7	66.4	66.4	67.5	67.3	65.5
64.5°	59.7	60.2	62.2	64.4	64.8	65.5	62.5	62.5	63.3	63.3	62.0
65°	56.7	57.0	58.8	60.6	60.7	61.5	58.7	58.8	59.2	59.7	58.7
65.5°	53.8	54.1	55.6	57.1	57.0	57.6	55.1	55.2	55.2	56.4	55.5
66°	51.0	51.4	52.7	53.8	53.5	54.2	51.9	52.0	51.5	53.1	52.6



TEST NUMBER: P775637

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	44.2	44.8	45.4	45.7	45.1	45.8	44.0	44.5	43.3	45.3	45.6
68°	42.5	43.0	43.4	43.6	43.0	43.6	42.2	42.6	41.6	43.4	43.7
68.5°	40.8	41.6	41.8	41.8	41.2	41.8	40.7	41.0	40.5	41.8	42.1
69°	39.7	40.3	40.2	40.2	39.9	40.3	39.6	39.8	39.8	40.5	40.7
69.5°	39.0	39.2	39.1	39.0	38.8	39.1	38.8	39.0	39.1	39.5	39.8
70°	38.2	38.2	38.2	38.1	38.0	38.3	38.1	38.2	38.3	38.8	39.1
70.5°	37.5	37.6	37.8	37.5	37.4	37.7	37.5	37.5	37.6	38.0	38.4
71°	36.8	36.9	37.1	36.8	36.7	37.0	36.8	36.7	36.8	37.3	37.8
71.5°	36.2	36.2	36.5	36.2	36.1	36.4	36.1	36.0	36.1	36.5	37.1
72°	35.4	35.4	35.8	35.5	35.3	35.6	35.3	35.1	35.1	35.6	36.4
72.5°	34.8	34.8	35.0	34.9	34.6	34.9	34.6	34.3	34.3	34.8	35.6
73°	34.0	34.0	34.3	34.2	33.9	34.2	33.8	33.4	33.4	34.0	34.8
73.5°	33.2	33.2	33.6	33.4	33.2	33.4	33.0	32.4	32.4	33.1	34.0
74°	32.2	32.3	32.7	32.6	32.3	32.6	32.1	31.5	31.5	32.1	33.2
74.5°	31.3	31.4	31.9	31.9	31.5	31.8	31.3	30.6	30.5	31.2	32.3
75°	30.5	30.5	31.1	31.1	30.7	31.0	30.4	29.5	29.4	30.2	31.4
75.5°	29.4	29.5	30.3	30.3	29.8	30.2	29.4	28.5	28.4	29.1	30.5
76°	28.4	28.5	29.3	29.4	29.0	29.3	28.5	27.5	27.3	28.1	29.5
76.5°	27.5	27.6	28.4	28.5	28.1	28.4	27.5	26.4	26.2	26.9	28.6
77°	26.3	26.5	27.5	27.7	27.2	27.5	26.5	25.3	25.0	25.8	27.7
77.5°	25.2	25.4	26.5	26.7	26.2	26.5	25.5	24.1	23.7	24.6	26.5
78°	24.0	24.4	25.5	25.8	25.3	25.6	24.4	22.9	22.5	23.4	25.5
78.5°	22.9	23.2	24.5	24.9	24.2	24.6	23.3	21.7	21.2	22.2	24.4
79°	21.7	22.0	23.4	23.8	23.3	23.5	22.2	20.4	20.0	20.9	23.3
79.5°	20.4	20.8	22.4	22.8	22.3	22.6	21.0	19.2	18.7	19.6	22.2
80°	19.1	19.5	21.2	21.8	21.2	21.5	19.9	17.9	17.3	18.2	20.9
80.5°	17.8	18.2	20.1	20.7	20.1	20.4	18.8	16.6	16.0	17.0	19.8
81°	16.6	17.0	19.0	19.7	19.1	19.3	17.6	15.2	14.5	15.5	18.5
81.5°	15.1	15.6	17.8	18.5	17.9	18.1	16.4	13.9	13.2	14.2	17.3
82°	13.8	14.3	16.6	17.4	16.8	17.1	15.2	12.5	11.7	12.9	16.2
82.5°	12.4	13.0	15.4	16.3	15.6	15.9	14.1	11.3	10.4	11.4	14.9
83°	11.0	11.6	14.3	15.1	14.5	14.7	13.0	10.2	8.9	10.3	13.8
83.5°	9.5	10.3	13.2	14.0	13.4	13.6	11.8	9.0	7.6	9.1	12.5
84°	8.1	8.9	12.0	12.9	12.2	12.4	10.7	7.9	6.1	8.0	11.5
84.5°	6.6	7.7	10.9	11.6	11.0	11.2	9.5	6.8	4.7	6.7	10.4
85°	5.3	6.6	9.8	10.5	9.7	9.9	8.4	5.7	3.7	5.6	9.2
85.5°	4.0	5.8	8.7	9.2	8.5	8.7	7.2	4.9	3.2	5.0	8.2
86°	3.5	5.1	7.6	8.0	7.3	7.5	6.0	4.1	2.8	4.2	7.0
86.5°	3.0	4.2	6.3	6.7	6.0	6.2	4.9	3.4	2.3	3.6	5.9
87°	2.5	3.5	5.2	5.4	4.8	4.9	3.7	2.6	1.9	2.9	4.8
87.5°	1.9	2.8	3.9	4.1	3.5	3.6	2.5	1.9	1.3	2.3	3.6
88°	1.3	2.1	3.0	3.1	2.3	2.5	1.5	1.1	0.8	1.6	2.5
88.5°	0.9	1.3	2.1	2.1	1.2	1.3	0.5	0.5	0.5	0.9	1.5



TEST NUMBER: P775637

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

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

TEST NUMBER: P775637

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	585.5	585.5	585.5	585.5	585.5	585.5
0.5°	585.2	585.5	585.5	585.4	585.3	585.4
1°	585.0	585.3	585.1	585.2	585.1	585.2
1.5°	584.8	585.0	584.8	584.8	584.8	584.9
2°	584.4	584.6	584.4	584.5	584.4	584.6
2.5°	584.1	584.2	583.9	584.1	583.9	584.2
3°	583.6	583.6	583.3	583.5	583.4	583.7
3.5°	583.1	583.1	582.8	583.0	583.0	583.3
4°	582.6	582.6	582.1	582.4	582.4	582.8
4.5°	582.0	581.9	581.5	581.8	581.8	582.2
5°	581.3	581.2	580.7	581.0	581.0	581.6
5.5°	580.5	580.4	579.9	580.2	580.3	580.8
6°	579.8	579.6	579.0	579.5	579.5	580.0
6.5°	579.0	578.8	578.0	578.6	578.7	579.2
7°	578.1	577.8	577.1	577.6	577.7	578.4
7.5°	577.1	576.8	576.1	576.6	576.7	577.4
8°	576.2	575.8	574.9	575.6	575.8	576.5
8.5°	575.0	574.5	573.9	574.5	574.6	575.5
9°	574.0	573.4	572.7	573.4	573.6	574.3
9.5°	572.8	572.1	571.4	572.1	572.3	573.2
10°	571.5	570.9	570.1	570.8	571.1	571.9
10.5°	570.3	569.5	568.6	569.5	569.9	570.7
11°	568.8	568.2	567.2	568.1	568.5	569.3
11.5°	567.5	566.7	565.7	566.6	567.1	568.0
12°	566.0	565.2	564.2	565.2	565.5	566.5
12.5°	564.5	563.5	562.5	563.6	564.1	565.0
13°	562.9	562.0	560.8	562.0	562.4	563.5
13.5°	561.2	560.2	559.2	560.3	560.7	561.8
14°	559.5	558.6	557.4	558.7	559.0	560.2
14.5°	557.7	556.7	555.6	556.8	557.2	558.5
15°	555.9	554.8	553.6	555.0	555.5	556.7
15.5°	554.0	553.0	551.7	553.1	553.5	554.8
16°	552.0	550.9	549.6	551.1	551.5	552.9
16.5°	550.1	548.9	547.6	549.0	549.5	550.9
17°	548.0	546.7	545.4	547.0	547.5	548.9
17.5°	545.8	544.6	543.2	544.8	545.3	546.9
18°	543.6	542.3	540.8	542.6	543.1	544.7
18.5°	541.4	540.0	538.6	540.3	540.8	542.4
19°	539.1	537.6	536.2	537.9	538.5	540.1
19.5°	536.7	535.2	533.7	535.6	536.1	537.7
20°	534.3	532.8	531.2	533.1	533.7	535.3
20.5°	531.7	530.2	528.5	530.5	531.3	533.0
21°	529.1	527.5	525.8	528.0	528.7	530.3



TEST NUMBER: P775637

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	521.2	519.4	517.5	519.8	520.6	522.4
23°	518.4	516.6	514.6	517.0	517.8	519.6
23.5°	515.6	513.8	511.7	514.1	514.9	516.8
24°	512.7	510.7	508.7	511.1	511.9	513.9
24.5°	509.6	507.7	505.7	508.2	509.0	511.0
25°	506.6	504.6	502.6	505.1	506.0	508.0
25.5°	503.5	501.5	499.3	502.0	502.9	505.0
26°	500.4	498.2	496.2	498.9	499.8	501.8
26.5°	497.2	495.1	493.0	495.6	496.6	498.8
27°	494.0	491.8	489.5	492.3	493.4	495.6
27.5°	490.8	488.5	486.2	489.0	490.1	492.2
28°	487.5	485.0	482.8	485.6	486.6	488.9
28.5°	484.1	481.7	479.3	482.1	483.3	485.5
29°	480.6	478.2	475.9	478.6	479.8	482.2
29.5°	477.1	474.7	472.1	475.1	476.3	478.7
30°	473.7	471.1	468.7	471.5	472.8	475.1
30.5°	470.1	467.5	465.0	467.9	469.1	471.5
31°	466.5	463.8	461.4	464.4	465.5	467.9
31.5°	462.9	460.2	457.4	460.5	461.8	464.3
32°	459.2	456.4	453.8	456.8	458.0	460.6
32.5°	455.4	452.7	450.0	453.0	454.3	456.8
33°	451.6	448.8	446.1	449.1	450.5	453.1
33.5°	447.8	444.9	442.1	445.3	446.6	449.2
34°	443.7	440.9	438.0	441.3	442.6	445.2
34.5°	439.7	436.8	434.0	437.2	438.6	441.3
35°	435.7	432.7	429.7	433.0	434.4	437.0
35.5°	431.4	428.4	425.4	428.7	430.2	432.9
36°	427.1	424.1	421.0	424.6	425.9	428.6
36.5°	422.6	419.6	416.6	420.0	421.4	424.2
37°	417.9	414.9	411.9	415.4	416.8	419.6
37.5°	412.7	410.0	407.0	410.8	412.1	414.7
38°	406.7	404.5	401.3	405.9	407.1	409.6
38.5°	400.7	398.6	395.0	400.2	401.0	403.9
39°	394.4	392.1	388.9	393.9	395.0	397.9
39.5°	387.9	385.1	382.3	387.4	388.6	391.3
40°	381.1	377.8	375.1	380.5	381.9	384.2
40.5°	374.3	370.6	368.0	373.5	374.6	376.8
41°	367.3	363.2	360.5	366.3	367.4	369.3
41.5°	360.0	355.7	353.0	359.2	359.8	361.9
42°	352.6	348.4	345.4	351.7	352.1	354.0
42.5°	345.3	341.1	337.5	344.3	344.4	346.4
43°	337.8	333.8	329.7	336.7	336.7	338.8
43.5°	330.5	326.2	321.8	328.9	328.7	331.1



TEST NUMBER: P775637

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	308.1	303.7	298.5	305.1	304.8	307.8
45.5°	300.6	296.2	290.7	297.0	296.7	300.0
46°	293.2	288.8	283.0	288.9	288.7	292.3
46.5°	285.7	281.0	275.2	281.0	280.7	284.6
47°	277.9	273.4	267.7	272.8	272.8	276.6
47.5°	270.5	265.8	259.9	264.7	264.9	268.8
48°	262.9	258.2	252.3	256.4	257.1	261.0
48.5°	255.2	250.6	244.6	248.6	249.3	253.3
49°	247.5	243.2	237.3	240.4	241.7	245.6
49.5°	239.8	235.9	230.0	232.6	234.0	237.9
50°	232.1	228.4	222.4	224.7	226.4	230.4
50.5°	224.6	221.0	215.0	217.1	218.9	222.8
51°	217.1	214.0	207.8	209.4	211.3	215.2
51.5°	209.5	206.7	200.6	202.1	203.8	208.0
52°	202.1	199.7	193.5	194.7	196.6	200.6
52.5°	194.7	192.6	186.3	187.8	189.4	193.5
53°	187.5	185.7	179.4	180.6	182.4	186.3
53.5°	180.3	178.9	172.6	173.7	175.3	179.3
54°	173.2	171.9	165.8	167.1	168.4	172.3
54.5°	166.2	165.3	159.3	160.5	161.7	165.5
55°	159.4	158.8	152.9	154.0	155.2	158.8
55.5°	152.6	152.2	146.5	147.9	148.8	152.2
56°	146.0	145.7	140.2	141.8	142.4	145.8
56.5°	139.6	139.5	134.2	135.9	136.3	139.4
57°	133.2	133.3	128.3	130.1	130.4	133.2
57.5°	126.9	127.3	122.5	124.4	124.6	127.0
58°	121.0	121.3	117.0	119.1	118.9	121.0
58.5°	115.1	115.7	111.6	113.8	113.6	115.2
59°	109.4	110.0	106.3	108.6	108.2	109.6
59.5°	103.8	104.5	101.3	103.6	103.2	104.1
60°	98.6	99.2	96.4	99.0	98.2	98.8
60.5°	93.9	94.0	91.6	94.3	93.6	93.7
61°	89.1	89.0	87.0	89.8	88.9	88.6
61.5°	84.4	84.3	82.8	85.5	84.6	83.8
62°	79.7	79.6	78.7	81.5	80.3	79.3
62.5°	74.9	75.2	74.6	77.5	76.3	74.9
63°	70.9	71.1	70.8	73.7	72.3	70.8
63.5°	67.2	67.0	67.2	70.1	68.7	66.9
64°	63.4	63.3	63.7	66.5	65.2	63.2
64.5°	60.0	59.9	60.5	63.2	61.9	59.7
65°	56.9	56.8	57.4	60.0	58.6	56.7
65.5°	54.0	54.0	54.5	57.1	55.9	53.8
66°	51.3	51.4	51.9	54.3	53.1	51.0



TEST NUMBER: P775637

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	45.0	45.4	45.3	47.0	46.1	44.2
68°	43.4	43.7	43.6	45.1	44.1	42.5
68.5°	42.0	42.3	42.1	43.3	42.5	40.8
69°	40.7	41.0	40.7	41.7	41.0	39.7
69.5°	39.7	39.9	39.6	40.3	39.8	39.0
70°	39.1	39.1	38.8	39.3	38.9	38.2
70.5°	38.4	38.4	38.1	38.6	38.0	37.5
71°	37.7	37.7	37.5	37.9	37.3	36.8
71.5°	37.1	37.1	36.9	37.2	36.7	36.2
72°	36.4	36.4	36.2	36.6	36.0	35.4
72.5°	35.6	35.8	35.4	35.9	35.2	34.8
73°	34.9	35.1	34.8	35.2	34.5	34.0
73.5°	34.2	34.4	34.1	34.6	33.7	33.2
74°	33.5	33.7	33.5	33.8	32.9	32.2
74.5°	32.6	33.0	32.6	33.0	31.9	31.3
75°	31.8	32.1	31.8	32.2	31.1	30.5
75.5°	31.0	31.3	31.0	31.3	30.1	29.4
76°	30.2	30.5	30.2	30.5	29.1	28.4
76.5°	29.2	29.5	29.3	29.5	28.1	27.5
77°	28.3	28.7	28.4	28.6	27.0	26.3
77.5°	27.4	27.8	27.6	27.7	26.0	25.2
78°	26.4	26.8	26.6	26.7	24.9	24.0
78.5°	25.4	25.9	25.6	25.7	23.7	22.9
79°	24.4	24.9	24.7	24.7	22.6	21.7
79.5°	23.3	23.8	23.6	23.5	21.3	20.4
80°	22.3	22.8	22.5	22.5	20.1	19.1
80.5°	21.1	21.7	21.5	21.3	18.9	17.8
81°	20.1	20.6	20.4	20.2	17.6	16.6
81.5°	19.0	19.5	19.3	19.1	16.3	15.1
82°	17.7	18.3	18.1	17.8	14.9	13.8
82.5°	16.6	17.2	17.0	16.7	13.6	12.4
83°	15.4	16.0	15.8	15.5	12.3	11.0
83.5°	14.2	14.8	14.6	14.4	11.0	9.5
84°	13.0	13.6	13.5	13.2	9.6	8.1
84.5°	11.7	12.3	12.2	12.0	8.4	6.6
85°	10.5	11.1	11.0	11.0	7.3	5.3
85.5°	9.2	9.8	9.7	9.8	6.3	4.0
86°	7.9	8.6	8.5	8.7	5.5	3.5
86.5°	6.6	7.3	7.2	7.6	4.8	3.0
87°	5.4	6.0	5.9	6.3	3.9	2.5
87.5°	4.0	4.7	4.6	5.2	3.2	1.9
88°	2.8	3.4	3.3	3.9	2.5	1.3
88.5°	1.7	2.6	2.5	3.0	1.8	0.9



TEST NUMBER: P775637

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-3500K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
90°	0.0	0.1	0.1	0.1	0.1	0.0



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

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21.5°	527.8	530.5	533.9	537.2	539.6	541.3	539.4	538.8	537.2	534.3	530.5
22°	525.1	528.0	531.4	534.7	537.1	538.9	536.9	536.4	534.8	531.8	527.9



44°	323.3	330.4	339.5	347.6	349.6	353.5	346.5	345.3	342.3	339.7	332.6
44.5°	315.4	322.7	331.7	339.6	341.5	346.0	339.0	337.6	334.2	331.8	325.0



66.5°	48.5	48.9	50.1	50.9	50.3	51.1	48.9	49.2	48.4	50.2	50.1
67°	46.3	46.6	47.6	48.1	47.5	48.3	46.3	46.6	45.6	47.6	47.7



89°	0.5	0.6	1.0	1.1	0.2	0.3	0.0	0.1	0.1	0.3	0.6
89.5°	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0

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21.5°	526.5	524.9	523.1	525.3	526.0	527.8
22°	523.9	522.2	520.4	522.6	523.3	525.1



44°	322.9	318.7	314.0	321.0	320.6	323.3
44.5°	315.6	311.2	306.1	313.1	312.6	315.4



66.5°	49.0	49.2	49.5	51.7	50.5	48.5
67°	46.8	47.0	47.3	49.3	48.2	46.3

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89°	0.7	1.8	1.7	2.1	1.0	0.5
89.5°	0.0	0.9	0.9	1.1	0.4	0.1

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(END OF REPORT)