

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: P775639

Luminaire Tested: HCDJBL510CSD-HCD41TRMW-1000lm-5000K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775639
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-5000K
Description: 4 INCH ROUND SHALLOW-WIDE MATTE WHITE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 5000K CCT
Ballast/Driver: -

Summary

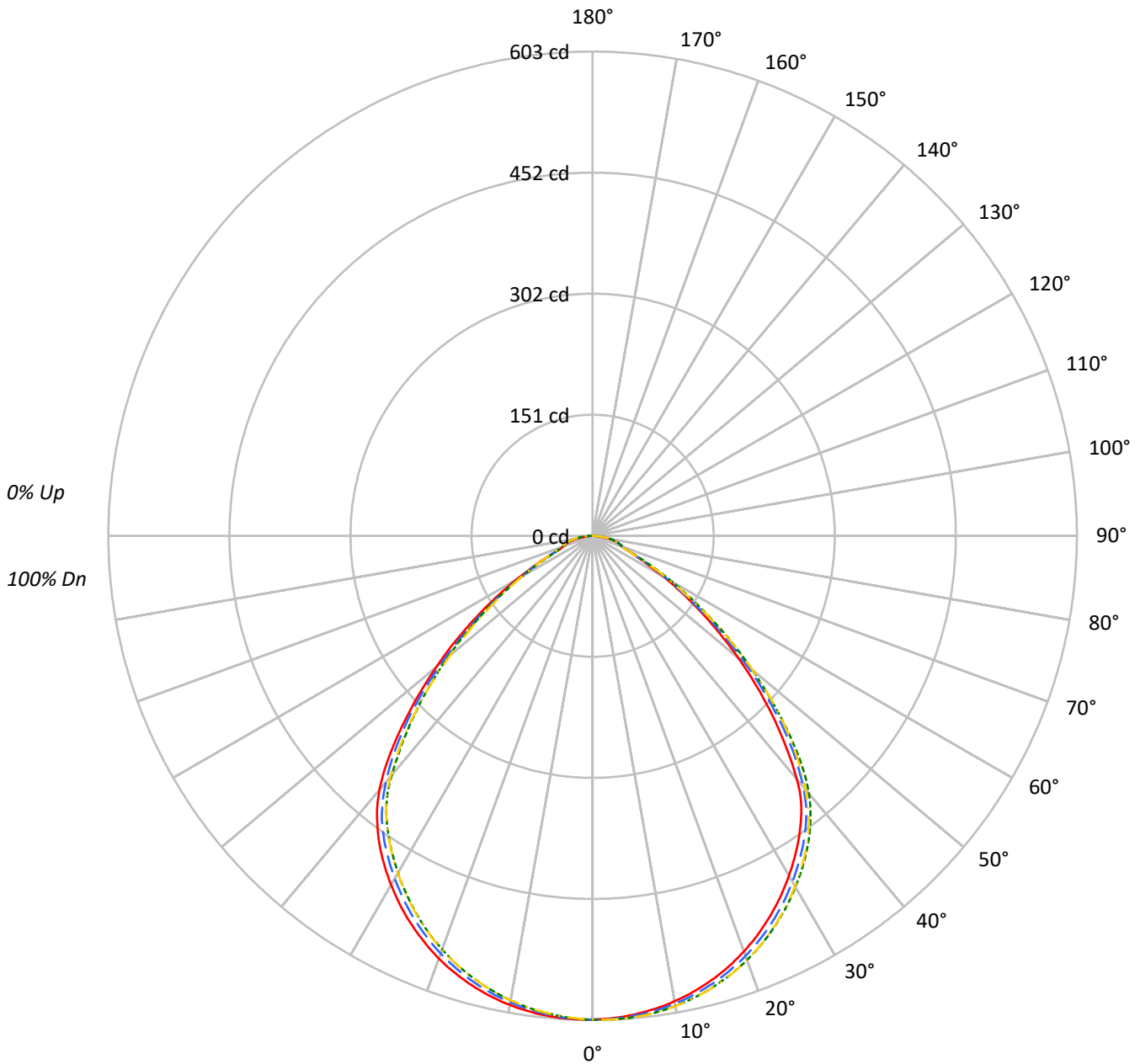
Lumens per Lamp: N/A
Luminaire Lumens: 1258.1 lumens
Efficiency: N/A
Efficacy: 125.8 lumens/watt
Spacing Criteria (0/90/45): 1.22 / 1.22 / 1.28
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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					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			
1	111	107	103	100	108	105	102	99	101	98	96	97	95	93	93	92	90	88					88			
2	103	96	90	85	100	94	89	84	90	86	82	87	84	81	84	81	79	77					77			
3	95	86	79	73	93	84	78	73	82	76	72	79	74	70	76	73	69	67					67			
4	88	77	70	64	86	76	69	64	74	68	63	72	66	62	69	65	61	59					59			
5	81	70	62	56	79	69	62	56	67	60	55	65	59	55	63	58	54	52					52			
6	76	64	56	50	74	63	55	50	61	54	49	60	54	49	58	53	49	47					47			
7	71	58	50	45	69	57	50	45	56	49	44	55	49	44	53	48	44	42					42			
8	66	54	46	40	64	53	45	40	52	45	40	50	44	40	49	44	40	38					38			
9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34					34			
10	58	46	38	33	57	45	38	33	44	38	33	43	37	33	43	37	33	31					31			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	75824	75824	75824	75824
5°	75596	76000	75912	75546
10°	75205	75985	75819	75077
15°	74643	75763	75555	74382
20°	73780	75294	75012	73419
25°	72582	74526	74137	72096
30°	71046	73386	72936	70451
35°	69089	71855	71271	68398
40°	64942	68836	67833	63874
45°	56366	61029	59730	55636
50°	46421	50729	49710	46010
55°	35852	39670	38880	35852
60°	25573	28467	27888	25699
65°	17361	18612	18135	17391
70°	14461	14387	14534	14792
75°	15268	15365	14733	16095
80°	14205	15872	12900	17031
85°	7797	14440	5487	16461

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 112.5°

Vertical Angle: 45°

Luminance: 62008 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	57.0	4.5
10°-20°	162.5	12.9
20°-30°	243.1	19.3
30°-40°	284.2	22.6
40°-50°	251.4	20.0
50°-60°	153.0	12.2
60°-70°	63.7	5.1
70°-80°	33.1	2.6
80°-90°	10.1	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°	462.6	36.8
0°-40°	746.8	59.4
0°-60°	1151.2	91.5
0°-90°	1258.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1258.1	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	602	602	602	602	602	
5°	598	602	601	598	598	57
15°	573	582	580	571	573	162
25°	523	537	534	519	523	241
35°	450	468	464	445	450	280
45°	317	343	336	313	317	243
55°	163	181	177	163	163	147
65°	58	62	61	58	58	61
75°	31	32	30	33	31	32
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°	602.5	602.5	602.5	602.5	602.5	602.5	602.5	602.5	602.5	602.5	602.5
0.5°	602.4	602.5	602.6	602.4	602.8	602.9	602.7	602.6	602.6	602.6	602.5
1°	602.2	602.4	602.5	602.5	602.9	603.0	602.9	602.7	602.6	602.6	602.4
1.5°	601.9	602.2	602.4	602.5	602.9	603.1	602.9	602.7	602.6	602.5	602.2
2°	601.5	601.9	602.3	602.4	602.9	603.1	602.9	602.7	602.5	602.3	602.0
2.5°	601.1	601.5	602.1	602.3	602.8	603.1	602.9	602.6	602.4	602.1	601.6
3°	600.7	601.2	601.8	602.1	602.7	603.0	602.7	602.5	602.2	601.9	601.3
3.5°	600.3	600.8	601.4	601.9	602.5	602.9	602.6	602.3	602.0	601.4	600.9
4°	599.7	600.3	601.0	601.5	602.3	602.7	602.3	602.0	601.6	601.1	600.4
4.5°	599.1	599.7	600.5	601.1	602.0	602.4	602.1	601.6	601.2	600.7	599.8
5°	598.4	599.2	599.9	600.7	601.6	602.1	601.6	601.3	600.9	600.2	599.2
5.5°	597.7	598.4	599.4	600.3	601.1	601.8	601.2	600.8	600.4	599.5	598.6
6°	596.8	597.8	598.8	599.7	600.7	601.2	600.8	600.4	599.8	599.0	597.8
6.5°	596.0	597.0	598.1	599.1	600.2	600.8	600.3	599.8	599.3	598.3	597.1
7°	595.1	596.1	597.4	598.4	599.5	600.2	599.6	599.2	598.6	597.6	596.3
7.5°	594.2	595.2	596.5	597.7	598.9	599.6	599.0	598.6	597.8	596.7	595.4
8°	593.2	594.3	595.8	597.0	598.0	598.9	598.2	597.8	597.1	595.9	594.4
8.5°	592.2	593.3	594.7	596.1	597.3	598.2	597.5	597.0	596.2	595.0	593.4
9°	591.0	592.3	593.8	595.2	596.4	597.4	596.6	596.1	595.4	594.0	592.4
9.5°	589.8	591.1	592.8	594.2	595.6	596.5	595.8	595.2	594.4	593.0	591.2
10°	588.5	589.9	591.6	593.2	594.6	595.6	594.8	594.3	593.3	591.9	590.0
10.5°	587.3	588.7	590.5	592.1	593.5	594.6	593.8	593.2	592.3	590.8	588.9
11°	585.9	587.4	589.3	591.0	592.5	593.5	592.7	592.1	591.2	589.5	587.5
11.5°	584.5	586.1	588.0	589.8	591.3	592.5	591.5	591.0	589.9	588.2	586.1
12°	583.0	584.6	586.6	588.4	590.1	591.3	590.3	589.8	588.7	586.9	584.7
12.5°	581.4	583.1	585.2	587.1	588.9	590.1	589.1	588.4	587.5	585.5	583.2
13°	579.9	581.6	583.7	585.8	587.5	588.9	587.7	587.1	586.1	584.1	581.7
13.5°	578.1	580.0	582.1	584.4	586.1	587.5	586.3	585.8	584.6	582.6	580.1
14°	576.5	578.4	580.6	582.9	584.6	586.1	584.9	584.3	583.1	581.0	578.4
14.5°	574.7	576.7	578.9	581.3	583.1	584.6	583.3	582.7	581.5	579.4	576.7
15°	572.9	574.9	577.3	579.7	581.5	583.1	581.8	581.2	579.9	577.7	574.9
15.5°	570.9	573.0	575.5	577.9	579.9	581.4	580.1	579.5	578.2	575.9	573.1
16°	568.9	571.0	573.6	576.2	578.2	579.8	578.3	577.8	576.4	574.0	571.1
16.5°	566.9	569.1	571.8	574.3	576.4	578.0	576.6	575.9	574.7	572.2	569.1
17°	564.9	567.1	569.9	572.4	574.6	576.2	574.8	574.0	572.6	570.3	567.1
17.5°	562.7	565.0	567.8	570.6	572.6	574.3	572.7	572.1	570.7	568.2	565.0
18°	560.5	562.8	565.7	568.6	570.7	572.3	570.8	570.2	568.8	566.1	562.8
18.5°	558.1	560.6	563.6	566.5	568.7	570.3	568.8	568.2	566.7	564.0	560.6
19°	555.8	558.4	561.3	564.3	566.6	568.3	566.7	566.0	564.6	561.9	558.4
19.5°	553.3	556.0	559.1	562.2	564.4	566.1	564.4	563.9	562.4	559.5	556.0
20°	550.9	553.6	556.8	560.0	562.2	564.0	562.2	561.6	560.1	557.3	553.6
20.5°	548.4	551.1	554.4	557.6	560.0	561.7	559.8	559.2	557.7	554.8	551.0
21°	545.7	548.5	551.8	555.3	557.6	559.4	557.5	556.9	555.4	552.4	548.5



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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°	537.6	540.5	544.2	547.7	550.2	552.1	549.9	549.4	547.8	544.7	540.5
23°	534.7	537.8	541.4	545.1	547.7	549.5	547.3	546.7	545.1	542.0	537.7
23.5°	531.8	534.9	538.6	542.4	545.0	546.8	544.6	544.0	542.5	539.2	534.9
24°	528.8	532.0	535.9	539.7	542.3	544.2	541.8	541.2	539.7	536.4	532.0
24.5°	525.8	529.0	533.0	536.8	539.5	541.4	539.1	538.4	536.8	533.5	529.0
25°	522.7	525.9	530.0	533.9	536.7	538.5	536.1	535.5	533.9	530.6	526.0
25.5°	519.6	522.9	527.0	531.1	533.8	535.6	533.2	532.5	531.1	527.6	522.9
26°	516.3	519.9	523.9	528.1	530.8	532.8	530.2	529.6	528.1	524.5	519.8
26.5°	513.2	516.7	520.8	525.1	527.7	529.8	527.1	526.5	524.9	521.6	516.7
27°	509.9	513.4	517.6	521.9	524.8	526.8	523.9	523.4	521.8	518.4	513.5
27.5°	506.5	510.2	514.5	518.8	521.6	523.6	520.8	520.2	518.7	515.1	510.2
28°	503.1	506.7	511.1	515.6	518.4	520.4	517.5	517.0	515.4	512.0	506.7
28.5°	499.6	503.3	507.8	512.3	515.3	517.2	514.2	513.7	512.1	508.4	503.3
29°	496.2	499.8	504.4	509.0	511.9	513.9	510.8	510.4	508.8	505.2	499.9
29.5°	492.6	496.4	501.0	505.6	508.6	510.6	507.4	507.0	505.4	501.7	496.5
30°	488.9	492.9	497.5	502.2	505.0	507.2	504.0	503.4	501.9	498.3	492.9
30.5°	485.2	489.3	493.9	498.7	501.6	503.6	500.4	499.9	498.4	494.7	489.3
31°	481.5	485.5	490.4	495.1	498.1	500.2	496.8	496.3	494.8	491.2	485.6
31.5°	477.7	481.9	486.7	491.6	494.5	496.6	493.2	492.7	491.2	487.5	482.1
32°	474.0	478.2	483.0	488.0	490.9	493.0	489.5	489.0	487.5	484.0	478.3
32.5°	470.1	474.3	479.3	484.2	487.3	489.4	485.7	485.3	483.8	480.3	474.4
33°	466.2	470.5	475.5	480.5	483.5	485.6	481.9	481.5	480.1	476.5	470.6
33.5°	462.3	466.5	471.7	476.8	479.7	481.8	478.1	477.5	476.1	472.5	466.6
34°	458.1	462.6	467.6	472.8	475.8	477.9	473.9	473.5	472.1	468.5	462.6
34.5°	454.1	458.4	463.7	468.8	471.9	473.8	470.0	469.4	468.0	464.5	458.5
35°	449.7	454.3	459.5	464.7	467.7	469.7	465.7	465.3	463.9	460.4	454.4
35.5°	445.4	450.0	455.2	460.6	463.6	465.6	461.5	461.0	459.7	456.1	450.1
36°	441.1	445.6	451.0	456.3	459.4	461.4	457.0	456.4	455.2	451.6	445.6
36.5°	436.5	441.2	446.5	452.0	454.9	456.9	452.4	451.8	450.5	447.0	441.1
37°	431.8	436.5	441.8	447.2	450.2	452.2	447.7	447.1	445.9	442.3	436.4
37.5°	426.8	431.7	437.1	442.7	445.5	447.6	442.5	442.2	441.1	437.4	430.9
38°	421.5	426.5	432.3	437.7	440.6	442.8	437.0	436.9	436.0	432.2	425.3
38.5°	415.7	420.7	426.5	432.7	435.6	437.5	431.0	430.9	430.6	426.9	419.5
39°	409.5	414.3	420.4	427.2	430.3	432.0	424.8	424.9	424.9	421.1	413.2
39.5°	402.7	407.8	414.3	421.5	424.7	426.1	418.7	418.7	419.1	415.0	407.0
40°	395.3	400.8	407.9	415.2	419.0	419.8	412.2	411.9	412.9	408.6	400.3
40.5°	387.7	393.5	401.1	409.0	412.8	413.3	405.6	405.3	406.3	401.9	394.0
41°	380.1	386.1	394.2	402.1	406.3	406.7	399.1	398.7	399.3	395.1	386.9
41.5°	372.4	378.7	387.1	395.2	399.3	400.0	392.3	391.7	392.0	388.1	379.9
42°	364.3	370.9	379.9	388.1	392.0	393.1	385.5	384.9	384.5	380.8	372.7
42.5°	356.5	363.1	372.6	380.8	384.3	385.9	378.3	377.6	376.7	373.2	365.3
43°	348.6	355.4	365.1	373.2	376.4	378.6	371.2	370.2	368.8	365.6	357.7
43.5°	340.7	347.6	357.1	365.6	368.1	371.3	364.0	362.8	360.4	357.7	350.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	316.7	324.3	333.2	341.2	342.9	348.4	341.1	339.6	335.6	332.9	326.4
45.5°	308.7	316.4	325.0	332.8	334.3	340.2	333.6	331.6	327.2	324.4	318.4
46°	300.8	308.5	316.7	324.2	325.6	332.2	325.5	323.3	318.8	315.9	310.0
46.5°	292.8	300.5	308.4	315.5	317.1	324.0	317.5	315.2	310.5	307.3	301.7
47°	284.6	292.6	300.1	306.8	308.8	315.5	309.5	307.1	302.4	298.8	293.5
47.5°	276.6	284.5	291.4	298.2	300.4	307.1	301.6	298.7	294.3	290.5	285.3
48°	268.6	276.3	283.2	289.4	292.1	298.7	293.3	290.4	286.1	281.8	276.7
48.5°	260.6	268.3	274.7	280.7	283.9	290.3	285.3	281.9	278.0	273.5	268.6
49°	252.7	260.2	266.4	272.1	275.6	281.9	276.7	273.7	270.0	265.1	260.2
49.5°	244.8	251.9	258.1	263.5	267.2	273.4	268.3	265.4	261.9	256.9	252.0
50°	237.1	243.9	249.6	255.0	259.1	265.1	260.1	257.1	253.9	248.6	243.8
50.5°	229.3	235.7	241.3	246.4	251.0	256.8	251.5	249.0	245.8	240.6	235.6
51°	221.5	227.7	233.1	238.1	242.8	248.4	243.3	241.0	238.0	232.7	227.6
51.5°	214.0	219.9	225.0	229.8	234.8	240.5	234.8	232.9	230.2	224.7	219.7
52°	206.4	212.0	216.9	221.8	226.9	232.3	226.3	224.8	222.7	216.7	211.8
52.5°	199.1	204.2	208.9	213.8	218.9	224.0	218.2	216.9	214.8	209.0	203.8
53°	191.7	196.5	200.8	205.9	211.1	215.9	210.0	209.1	207.0	201.2	196.1
53.5°	184.5	189.0	193.0	198.1	203.3	208.2	202.0	201.2	199.3	193.9	188.5
54°	177.3	181.5	185.1	190.6	195.8	200.3	193.7	193.5	192.2	186.3	181.3
54.5°	170.3	173.9	177.7	183.0	188.3	192.6	185.9	186.1	184.7	179.0	174.0
55°	163.4	166.8	170.3	175.7	180.8	185.1	178.1	178.6	177.2	171.8	166.7
55.5°	156.7	159.7	162.8	168.5	173.4	177.6	170.4	171.3	170.0	164.9	159.6
56°	150.0	152.8	155.6	161.6	166.1	169.9	162.9	163.8	163.2	157.8	152.9
56.5°	143.4	145.9	148.8	154.6	159.1	162.6	155.6	156.8	156.0	151.1	146.2
57°	137.0	139.3	141.9	147.9	152.1	155.6	148.4	149.7	149.1	144.6	139.7
57.5°	130.7	132.7	135.2	141.2	145.2	148.4	141.5	142.9	142.4	138.2	133.2
58°	124.6	126.3	128.6	134.9	138.4	141.4	134.8	136.2	136.0	131.9	127.1
58.5°	118.6	120.1	122.4	128.5	132.1	134.7	128.2	129.4	129.4	125.8	121.1
59°	112.8	114.1	116.6	122.6	125.5	128.1	121.8	122.8	123.0	119.9	115.2
59.5°	107.2	108.2	110.7	116.4	119.2	121.6	115.5	116.7	116.8	114.0	109.6
60°	101.6	102.6	105.1	110.7	113.1	115.2	109.4	110.5	110.8	108.3	104.2
60.5°	96.4	97.1	99.7	105.0	107.3	109.1	103.8	104.4	104.9	102.9	98.9
61°	91.2	91.9	94.5	99.6	101.5	103.3	98.5	98.7	99.3	97.9	94.2
61.5°	86.3	87.0	89.6	94.2	96.3	98.0	93.2	93.5	94.1	92.9	89.6
62°	81.6	82.3	84.8	89.1	91.1	92.6	88.0	88.2	88.8	87.9	84.9
62.5°	77.1	77.7	80.2	84.1	85.9	87.2	82.8	82.9	83.6	82.9	80.2
63°	72.8	73.4	75.8	79.3	80.7	81.8	77.5	77.6	78.5	77.8	75.5
63.5°	68.9	69.3	71.7	74.8	75.5	76.5	72.7	72.9	73.9	73.4	71.3
64°	65.0	65.6	67.7	70.3	71.0	71.8	68.4	68.4	69.4	69.2	67.4
64.5°	61.4	62.0	64.0	66.2	66.6	67.4	64.3	64.3	65.2	65.2	63.8
65°	58.3	58.7	60.5	62.4	62.5	63.2	60.4	60.5	60.9	61.4	60.4
65.5°	55.3	55.7	57.3	58.8	58.7	59.3	56.7	56.8	56.8	58.0	57.2
66°	52.5	52.9	54.3	55.3	55.0	55.8	53.4	53.5	53.0	54.6	54.2



TEST NUMBER: P775639

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	45.5	46.1	46.7	47.0	46.4	47.1	45.3	45.7	44.6	46.6	46.9
68°	43.7	44.3	44.7	44.9	44.3	44.9	43.4	43.8	42.8	44.7	45.0
68.5°	42.0	42.8	43.0	43.0	42.4	43.0	41.9	42.2	41.7	43.0	43.3
69°	40.8	41.5	41.4	41.4	41.1	41.5	40.7	40.9	40.9	41.7	41.9
69.5°	40.1	40.3	40.2	40.1	39.9	40.2	39.9	40.1	40.2	40.6	40.9
70°	39.3	39.3	39.3	39.2	39.1	39.5	39.2	39.3	39.5	39.9	40.2
70.5°	38.6	38.7	38.9	38.6	38.5	38.8	38.6	38.6	38.7	39.1	39.6
71°	37.9	38.0	38.2	37.9	37.7	38.1	37.9	37.7	37.9	38.4	38.9
71.5°	37.2	37.2	37.5	37.2	37.1	37.4	37.1	37.0	37.1	37.5	38.2
72°	36.5	36.5	36.8	36.6	36.4	36.7	36.4	36.2	36.2	36.7	37.4
72.5°	35.8	35.8	36.0	35.9	35.6	35.9	35.6	35.3	35.3	35.8	36.7
73°	35.0	35.0	35.3	35.2	34.9	35.2	34.8	34.3	34.3	35.0	35.8
73.5°	34.1	34.1	34.6	34.3	34.1	34.3	33.9	33.4	33.4	34.0	35.0
74°	33.2	33.3	33.7	33.6	33.3	33.6	33.1	32.4	32.4	33.1	34.1
74.5°	32.2	32.3	32.8	32.8	32.4	32.7	32.2	31.5	31.4	32.1	33.3
75°	31.4	31.4	32.0	32.0	31.6	31.9	31.2	30.4	30.3	31.0	32.3
75.5°	30.3	30.4	31.1	31.1	30.7	31.0	30.3	29.3	29.2	30.0	31.4
76°	29.2	29.3	30.2	30.3	29.9	30.2	29.3	28.3	28.0	28.9	30.4
76.5°	28.3	28.4	29.2	29.3	28.9	29.2	28.3	27.2	27.0	27.7	29.4
77°	27.1	27.3	28.3	28.5	27.9	28.3	27.3	26.0	25.7	26.6	28.5
77.5°	25.9	26.1	27.3	27.5	27.0	27.3	26.2	24.8	24.4	25.3	27.3
78°	24.7	25.1	26.2	26.6	26.0	26.3	25.1	23.6	23.1	24.1	26.2
78.5°	23.6	23.9	25.2	25.6	25.0	25.3	24.0	22.3	21.9	22.8	25.1
79°	22.3	22.6	24.1	24.5	24.0	24.2	22.8	21.0	20.6	21.5	24.0
79.5°	21.0	21.4	23.0	23.5	22.9	23.2	21.6	19.7	19.2	20.2	22.8
80°	19.6	20.0	21.9	22.4	21.9	22.1	20.5	18.4	17.8	18.8	21.5
80.5°	18.3	18.8	20.7	21.3	20.7	21.0	19.3	17.1	16.4	17.5	20.4
81°	17.1	17.5	19.5	20.3	19.6	19.8	18.1	15.7	14.9	16.0	19.1
81.5°	15.6	16.1	18.3	19.1	18.4	18.7	16.8	14.3	13.5	14.6	17.8
82°	14.2	14.7	17.1	17.9	17.3	17.6	15.7	12.9	12.1	13.2	16.6
82.5°	12.8	13.3	15.9	16.7	16.1	16.3	14.5	11.6	10.7	11.7	15.4
83°	11.3	11.9	14.7	15.6	14.9	15.1	13.3	10.5	9.2	10.6	14.2
83.5°	9.8	10.6	13.5	14.4	13.8	14.0	12.2	9.3	7.8	9.4	12.9
84°	8.3	9.2	12.4	13.2	12.6	12.8	11.0	8.1	6.3	8.2	11.8
84.5°	6.8	7.9	11.2	11.9	11.3	11.5	9.8	7.0	4.8	6.9	10.7
85°	5.4	6.8	10.1	10.8	10.0	10.2	8.6	5.9	3.8	5.8	9.5
85.5°	4.2	6.0	9.0	9.5	8.7	9.0	7.4	5.0	3.3	5.1	8.4
86°	3.6	5.2	7.8	8.2	7.5	7.7	6.2	4.3	2.9	4.4	7.3
86.5°	3.1	4.4	6.5	6.9	6.2	6.4	5.0	3.5	2.3	3.7	6.1
87°	2.6	3.6	5.3	5.5	4.9	5.0	3.8	2.7	1.9	3.0	4.9
87.5°	1.9	2.9	4.1	4.3	3.6	3.7	2.6	1.9	1.4	2.3	3.7
88°	1.4	2.1	3.1	3.2	2.3	2.6	1.5	1.2	0.9	1.6	2.6
88.5°	1.0	1.4	2.1	2.1	1.3	1.4	0.5	0.5	0.5	1.0	1.5



TEST NUMBER: P775639

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-5000K

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: P775639

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	602.5	602.5	602.5	602.5	602.5	602.5
0.5°	602.2	602.5	602.5	602.4	602.3	602.4
1°	602.0	602.3	602.1	602.2	602.1	602.2
1.5°	601.8	602.0	601.8	601.8	601.8	601.9
2°	601.3	601.5	601.3	601.4	601.3	601.5
2.5°	601.0	601.1	600.9	601.0	600.9	601.1
3°	600.6	600.6	600.3	600.5	600.4	600.7
3.5°	600.0	600.0	599.7	599.9	599.9	600.3
4°	599.5	599.5	599.0	599.3	599.3	599.7
4.5°	598.9	598.8	598.3	598.7	598.7	599.1
5°	598.1	598.0	597.6	597.9	597.9	598.4
5.5°	597.4	597.3	596.7	597.1	597.2	597.7
6°	596.6	596.4	595.8	596.3	596.3	596.8
6.5°	595.8	595.6	594.8	595.4	595.5	596.0
7°	594.9	594.6	593.9	594.4	594.5	595.1
7.5°	593.9	593.5	592.8	593.3	593.4	594.2
8°	592.9	592.5	591.6	592.3	592.5	593.2
8.5°	591.7	591.2	590.6	591.2	591.3	592.2
9°	590.7	590.0	589.3	590.0	590.2	591.0
9.5°	589.4	588.7	588.0	588.7	589.0	589.8
10°	588.1	587.5	586.6	587.4	587.7	588.5
10.5°	586.8	586.1	585.1	586.1	586.4	587.3
11°	585.3	584.7	583.6	584.6	585.0	585.9
11.5°	583.9	583.2	582.1	583.1	583.5	584.5
12°	582.5	581.6	580.5	581.6	581.9	583.0
12.5°	580.9	579.9	578.8	580.0	580.4	581.4
13°	579.3	578.3	577.1	578.3	578.7	579.9
13.5°	577.4	576.5	575.4	576.6	577.0	578.1
14°	575.7	574.8	573.6	574.9	575.2	576.5
14.5°	573.9	572.9	571.7	573.0	573.4	574.7
15°	572.0	570.9	569.7	571.1	571.6	572.9
15.5°	570.1	569.0	567.7	569.1	569.5	570.9
16°	568.1	566.9	565.6	567.1	567.5	568.9
16.5°	566.0	564.9	563.5	565.0	565.5	566.9
17°	563.9	562.6	561.2	562.8	563.4	564.9
17.5°	561.7	560.4	559.0	560.6	561.1	562.7
18°	559.4	558.0	556.5	558.4	558.9	560.5
18.5°	557.1	555.7	554.2	556.0	556.5	558.1
19°	554.7	553.2	551.7	553.6	554.1	555.8
19.5°	552.3	550.8	549.2	551.1	551.6	553.3
20°	549.8	548.2	546.6	548.5	549.2	550.9
20.5°	547.2	545.6	543.9	545.9	546.7	548.4
21°	544.5	542.8	541.1	543.3	544.1	545.7

TEST NUMBER: P775639

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	536.3	534.5	532.5	534.9	535.7	537.6
23°	533.4	531.6	529.6	532.0	532.9	534.7
23.5°	530.5	528.7	526.6	529.0	529.9	531.8
24°	527.5	525.5	523.5	525.9	526.8	528.8
24.5°	524.4	522.4	520.4	522.9	523.8	525.8
25°	521.3	519.2	517.2	519.8	520.7	522.7
25.5°	518.2	516.0	513.8	516.6	517.5	519.6
26°	515.0	512.7	510.6	513.4	514.3	516.3
26.5°	511.6	509.5	507.3	509.9	511.0	513.2
27°	508.3	506.1	503.8	506.6	507.7	509.9
27.5°	505.0	502.7	500.3	503.2	504.3	506.5
28°	501.6	499.1	496.8	499.7	500.8	503.1
28.5°	498.1	495.7	493.2	496.1	497.4	499.6
29°	494.6	492.1	489.7	492.5	493.7	496.2
29.5°	491.0	488.5	485.8	488.9	490.1	492.6
30°	487.4	484.8	482.3	485.2	486.5	488.9
30.5°	483.7	481.0	478.5	481.5	482.7	485.2
31°	480.1	477.3	474.7	477.8	479.0	481.5
31.5°	476.3	473.6	470.7	473.9	475.2	477.7
32°	472.5	469.6	467.0	470.1	471.3	474.0
32.5°	468.7	465.8	463.0	466.1	467.5	470.1
33°	464.7	461.8	459.1	462.2	463.6	466.2
33.5°	460.8	457.8	454.9	458.2	459.6	462.3
34°	456.6	453.7	450.8	454.1	455.4	458.1
34.5°	452.5	449.5	446.6	449.9	451.3	454.1
35°	448.3	445.2	442.2	445.5	447.0	449.7
35.5°	443.9	440.8	437.7	441.2	442.7	445.4
36°	439.5	436.4	433.3	436.9	438.3	441.1
36.5°	434.9	431.8	428.7	432.2	433.6	436.5
37°	430.1	427.0	423.9	427.5	428.9	431.8
37.5°	424.6	421.9	418.8	422.7	424.1	426.8
38°	418.6	416.2	412.9	417.7	418.9	421.5
38.5°	412.4	410.1	406.5	411.8	412.7	415.7
39°	405.9	403.5	400.2	405.3	406.5	409.5
39.5°	399.1	396.3	393.4	398.6	399.9	402.7
40°	392.2	388.8	386.0	391.6	393.0	395.3
40.5°	385.2	381.3	378.7	384.3	385.5	387.7
41°	377.9	373.8	371.0	377.0	378.0	380.1
41.5°	370.5	366.0	363.2	369.6	370.2	372.4
42°	362.9	358.5	355.4	361.9	362.4	364.3
42.5°	355.3	351.1	347.3	354.2	354.4	356.5
43°	347.6	343.5	339.3	346.5	346.5	348.6
43.5°	340.1	335.7	331.1	338.5	338.3	340.7



TEST NUMBER: P775639

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	317.0	312.6	307.1	313.9	313.6	316.7
45.5°	309.4	304.8	299.1	305.6	305.3	308.7
46°	301.7	297.2	291.2	297.3	297.1	300.8
46.5°	294.0	289.2	283.2	289.2	288.9	292.8
47°	286.0	281.3	275.4	280.7	280.7	284.6
47.5°	278.3	273.5	267.4	272.4	272.6	276.6
48°	270.5	265.7	259.7	263.8	264.6	268.6
48.5°	262.6	257.8	251.7	255.8	256.6	260.6
49°	254.6	250.3	244.2	247.4	248.7	252.7
49.5°	246.8	242.7	236.6	239.4	240.8	244.8
50°	238.9	235.0	228.8	231.2	233.0	237.1
50.5°	231.1	227.5	221.3	223.4	225.2	229.3
51°	223.4	220.2	213.8	215.5	217.4	221.5
51.5°	215.6	212.7	206.4	207.9	209.8	214.0
52°	207.9	205.5	199.1	200.4	202.3	206.4
52.5°	200.4	198.2	191.7	193.2	194.9	199.1
53°	192.9	191.1	184.6	185.9	187.7	191.7
53.5°	185.5	184.1	177.7	178.7	180.4	184.5
54°	178.2	176.9	170.6	171.9	173.3	177.3
54.5°	171.0	170.1	163.9	165.2	166.4	170.3
55°	164.0	163.4	157.3	158.5	159.7	163.4
55.5°	157.1	156.7	150.8	152.2	153.1	156.7
56°	150.3	149.9	144.3	145.9	146.5	150.0
56.5°	143.6	143.5	138.1	139.8	140.2	143.4
57°	137.0	137.1	132.0	133.8	134.1	137.0
57.5°	130.6	131.0	126.0	128.0	128.2	130.7
58°	124.6	124.9	120.4	122.5	122.3	124.6
58.5°	118.5	119.0	114.8	117.1	116.9	118.6
59°	112.6	113.1	109.4	111.8	111.3	112.8
59.5°	106.9	107.5	104.3	106.6	106.2	107.2
60°	101.4	102.1	99.2	101.8	101.1	101.6
60.5°	96.6	96.7	94.3	97.0	96.3	96.4
61°	91.7	91.6	89.6	92.5	91.5	91.2
61.5°	86.8	86.7	85.2	88.0	87.0	86.3
62°	82.0	81.9	80.9	83.8	82.6	81.6
62.5°	77.1	77.4	76.8	79.8	78.5	77.1
63°	72.9	73.2	72.8	75.8	74.4	72.8
63.5°	69.1	69.0	69.1	72.1	70.7	68.9
64°	65.3	65.2	65.6	68.5	67.1	65.0
64.5°	61.7	61.6	62.3	65.0	63.7	61.4
65°	58.5	58.4	59.1	61.7	60.3	58.3
65.5°	55.6	55.6	56.1	58.8	57.5	55.3
66°	52.8	52.9	53.4	55.9	54.6	52.5

TEST NUMBER: P775639

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-5000K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	46.3	46.7	46.6	48.4	47.5	45.5
68°	44.7	45.0	44.9	46.4	45.4	43.7
68.5°	43.2	43.5	43.3	44.6	43.7	42.0
69°	41.9	42.2	41.9	42.9	42.2	40.8
69.5°	40.8	41.1	40.7	41.5	40.9	40.1
70°	40.2	40.2	39.9	40.4	40.0	39.3
70.5°	39.6	39.6	39.2	39.7	39.1	38.6
71°	38.8	38.8	38.6	39.0	38.4	37.9
71.5°	38.2	38.2	38.0	38.3	37.7	37.2
72°	37.4	37.4	37.2	37.6	37.0	36.5
72.5°	36.7	36.8	36.5	36.9	36.3	35.8
73°	35.9	36.2	35.8	36.3	35.5	35.0
73.5°	35.2	35.4	35.1	35.6	34.7	34.1
74°	34.4	34.7	34.4	34.8	33.8	33.2
74.5°	33.6	33.9	33.6	33.9	32.8	32.2
75°	32.7	33.1	32.7	33.2	32.0	31.4
75.5°	31.9	32.2	31.9	32.2	30.9	30.3
76°	31.0	31.4	31.0	31.4	30.0	29.2
76.5°	30.1	30.4	30.2	30.4	28.9	28.3
77°	29.1	29.5	29.2	29.4	27.8	27.1
77.5°	28.2	28.6	28.4	28.5	26.8	25.9
78°	27.2	27.6	27.4	27.5	25.6	24.7
78.5°	26.1	26.7	26.3	26.4	24.4	23.6
79°	25.1	25.6	25.4	25.4	23.2	22.3
79.5°	24.0	24.5	24.3	24.2	22.0	21.0
80°	22.9	23.5	23.1	23.1	20.7	19.6
80.5°	21.8	22.3	22.1	22.0	19.4	18.3
81°	20.7	21.2	21.0	20.8	18.1	17.1
81.5°	19.5	20.0	19.8	19.6	16.7	15.6
82°	18.2	18.9	18.7	18.3	15.4	14.2
82.5°	17.1	17.7	17.5	17.2	14.0	12.8
83°	15.9	16.4	16.2	16.0	12.7	11.3
83.5°	14.6	15.2	15.0	14.8	11.3	9.8
84°	13.3	14.0	13.9	13.5	9.9	8.3
84.5°	12.1	12.7	12.6	12.4	8.6	6.8
85°	10.8	11.4	11.3	11.3	7.5	5.4
85.5°	9.5	10.1	10.0	10.1	6.5	4.2
86°	8.1	8.9	8.7	9.0	5.7	3.6
86.5°	6.8	7.5	7.4	7.8	4.9	3.1
87°	5.5	6.2	6.1	6.5	4.1	2.6
87.5°	4.2	4.8	4.7	5.3	3.3	1.9
88°	2.9	3.5	3.4	4.1	2.6	1.4
88.5°	1.7	2.7	2.6	3.1	1.8	1.0



TEST NUMBER: P775639

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-5000K

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°	543.1	545.9	549.4	552.8	555.3	557.0	555.0	554.4	552.8	549.8	545.9
22°	540.3	543.3	546.8	550.2	552.7	554.5	552.5	552.0	550.4	547.3	543.2



44°	332.7	340.0	349.3	357.7	359.8	363.7	356.6	355.3	352.2	349.6	342.3
44.5°	324.6	332.1	341.3	349.5	351.4	356.1	348.8	347.4	343.9	341.5	334.4



66.5°	49.9	50.3	51.5	52.4	51.7	52.6	50.3	50.7	49.8	51.6	51.5
67°	47.7	48.0	48.9	49.5	48.8	49.7	47.7	48.0	46.9	48.9	49.1



89°	0.5	0.6	1.1	1.2	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°	541.8	540.1	538.3	540.5	541.3	543.1
22°	539.2	537.3	535.5	537.8	538.5	540.3



44°	332.3	327.9	323.1	330.4	329.9	332.7
44.5°	324.7	320.2	315.0	322.2	321.7	324.6

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66.5°	50.4	50.7	51.0	53.2	51.9	49.9
67°	48.2	48.4	48.6	50.8	49.6	47.7



89°	0.7	1.8	1.7	2.1	1.1	0.5
89.5°	0.0	1.0	1.0	1.2	0.4	0.1

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(END OF REPORT)