

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: P775635

Luminaire Tested: HCDJBL510CSD-HCD41TRMW-1000lm-2700K

Issue Date: 2/13/2024

Test Information

Test Method: LM-79-2019
Report Number: P775635
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-2700K
Description: 4 INCH ROUND SHALLOW-WIDE MATTE WHITE TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 2700K CCT
Ballast/Driver: -

Summary

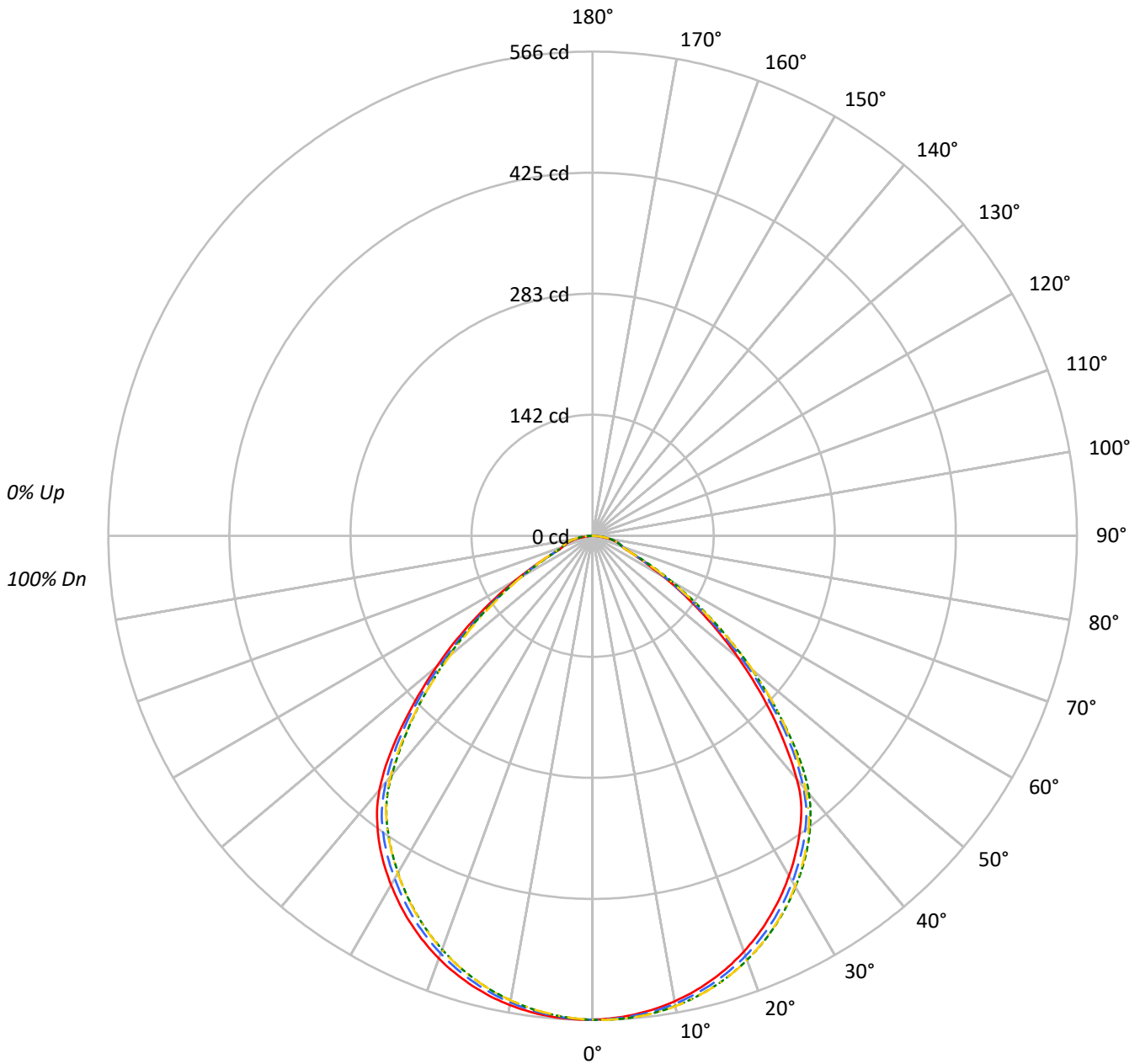
Lumens per Lamp: N/A
Luminaire Lumens: 1181.0 lumens
Efficiency: N/A
Efficacy: 118.1 lumens/watt
Spacing Criteria (0/90/45): 1.22 / 1.22 / 1.28
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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	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°	71181	71181	71181	71181
5°	70972	71351	71263	70922
10°	70605	71333	71180	70477
15°	70057	71125	70929	69822
20°	69253	70673	70405	68919
25°	68139	69958	69597	67680
30°	66701	68896	68474	66135
35°	64849	67445	66892	64204
40°	60966	64613	63677	59964
45°	52913	57291	56063	52219
50°	43563	47616	46656	43191
55°	33658	37234	36510	33658
60°	24012	26730	26177	24113
65°	16319	17480	17033	16348
70°	13578	13504	13615	13872
75°	14296	14393	13809	15074
80°	13335	14857	12103	15944
85°	7364	13573	5198	15450

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 112.5°
 Vertical Angle: 45°
 Luminance: 58199 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	53.5	4.5
10°-20°	152.5	12.9
20°-30°	228.2	19.3
30°-40°	266.8	22.6
40°-50°	236.0	20.0
50°-60°	143.6	12.2
60°-70°	59.8	5.1
70°-80°	31.0	2.6
80°-90°	9.5	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°	434.2	36.8
0°-40°	701.0	59.4
0°-60°	1080.6	91.5
0°-90°	1181.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1181.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	566	566	566	566	566	
5°	562	565	564	561	562	53
15°	538	546	544	536	538	152
25°	491	504	501	487	491	226
35°	422	439	435	418	422	263
45°	297	322	315	293	297	228
55°	153	170	166	153	153	138
65°	55	59	57	55	55	58
75°	29	30	28	31	29	30
85°	5	9	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°	565.6	565.6	565.6	565.6	565.6	565.6	565.6	565.6	565.6	565.6	565.6
0.5°	565.5	565.6	565.7	565.5	565.9	566.0	565.8	565.7	565.7	565.7	565.6
1°	565.3	565.5	565.6	565.6	566.0	566.1	566.0	565.8	565.7	565.7	565.5
1.5°	565.0	565.3	565.5	565.6	566.0	566.2	566.0	565.8	565.7	565.6	565.3
2°	564.7	565.0	565.4	565.5	566.0	566.2	566.0	565.8	565.6	565.4	565.1
2.5°	564.3	564.7	565.2	565.4	565.9	566.2	566.0	565.7	565.5	565.2	564.8
3°	563.9	564.4	564.9	565.2	565.8	566.1	565.8	565.6	565.3	565.0	564.5
3.5°	563.5	564.0	564.6	565.0	565.6	566.0	565.7	565.4	565.1	564.6	564.1
4°	563.0	563.5	564.2	564.7	565.4	565.8	565.4	565.1	564.8	564.3	563.6
4.5°	562.4	563.0	563.7	564.3	565.1	565.5	565.2	564.8	564.4	563.9	563.1
5°	561.8	562.5	563.2	563.9	564.8	565.2	564.8	564.5	564.1	563.4	562.5
5.5°	561.1	561.8	562.7	563.5	564.3	564.9	564.4	564.0	563.6	562.8	561.9
6°	560.3	561.2	562.1	563.0	563.9	564.4	564.0	563.6	563.1	562.3	561.2
6.5°	559.5	560.4	561.5	562.4	563.4	564.0	563.5	563.1	562.6	561.7	560.5
7°	558.7	559.6	560.8	561.8	562.8	563.4	562.9	562.5	561.9	561.0	559.8
7.5°	557.8	558.8	560.0	561.1	562.2	562.9	562.3	561.9	561.2	560.2	558.9
8°	556.9	557.9	559.3	560.4	561.4	562.2	561.6	561.2	560.5	559.4	558.0
8.5°	555.9	557.0	558.3	559.6	560.7	561.6	560.9	560.4	559.7	558.6	557.1
9°	554.8	556.0	557.4	558.8	559.9	560.8	560.1	559.6	558.9	557.6	556.1
9.5°	553.7	554.9	556.5	557.8	559.1	560.0	559.3	558.8	558.0	556.7	555.0
10°	552.5	553.8	555.4	556.9	558.2	559.1	558.4	557.9	557.0	555.7	553.9
10.5°	551.3	552.7	554.3	555.8	557.2	558.2	557.4	556.9	556.0	554.6	552.8
11°	550.0	551.4	553.2	554.8	556.2	557.2	556.4	555.8	555.0	553.4	551.5
11.5°	548.7	550.2	552.0	553.7	555.1	556.2	555.3	554.8	553.8	552.2	550.2
12°	547.3	548.8	550.7	552.4	554.0	555.1	554.2	553.7	552.7	551.0	548.9
12.5°	545.8	547.4	549.4	551.2	552.8	554.0	553.0	552.4	551.5	549.7	547.5
13°	544.4	546.0	548.0	549.9	551.5	552.8	551.7	551.2	550.2	548.3	546.1
13.5°	542.7	544.5	546.5	548.6	550.2	551.5	550.4	549.9	548.8	546.9	544.6
14°	541.2	543.0	545.1	547.2	548.8	550.2	549.1	548.5	547.4	545.4	543.0
14.5°	539.5	541.4	543.5	545.7	547.4	548.8	547.6	547.0	545.9	543.9	541.4
15°	537.7	539.7	542.0	544.2	545.9	547.4	546.2	545.6	544.4	542.3	539.7
15.5°	535.9	537.8	540.3	542.5	544.4	545.8	544.6	544.0	542.8	540.7	537.9
16°	534.0	536.0	538.4	540.9	542.8	544.3	542.9	542.4	541.1	538.8	536.1
16.5°	532.1	534.2	536.7	539.2	541.1	542.6	541.3	540.7	539.5	537.1	534.2
17°	530.2	532.3	534.9	537.3	539.4	540.9	539.6	538.8	537.5	535.3	532.3
17.5°	528.2	530.3	533.0	535.6	537.5	539.2	537.6	537.0	535.7	533.3	530.3
18°	526.1	528.3	531.0	533.7	535.7	537.2	535.8	535.2	533.9	531.4	528.3
18.5°	523.9	526.2	529.0	531.7	533.8	535.3	533.9	533.3	531.9	529.4	526.2
19°	521.7	524.1	526.9	529.7	531.8	533.4	531.9	531.3	530.0	527.4	524.1
19.5°	519.4	521.9	524.8	527.7	529.8	531.4	529.8	529.3	527.9	525.2	521.9
20°	517.1	519.6	522.6	525.6	527.7	529.4	527.7	527.1	525.7	523.1	519.6
20.5°	514.8	517.3	520.4	523.4	525.6	527.2	525.5	524.9	523.5	520.8	517.2
21°	512.2	514.9	518.0	521.2	523.4	525.1	523.3	522.7	521.3	518.5	514.9



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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°	504.6	507.4	510.8	514.1	516.5	518.2	516.2	515.7	514.2	511.3	507.4
23°	501.9	504.8	508.2	511.7	514.1	515.8	513.7	513.2	511.7	508.8	504.7
23.5°	499.2	502.1	505.6	509.1	511.6	513.3	511.2	510.6	509.2	506.1	502.1
24°	496.4	499.4	503.0	506.6	509.0	510.8	508.6	508.0	506.6	503.5	499.4
24.5°	493.6	496.6	500.3	503.9	506.4	508.2	506.0	505.4	503.9	500.8	496.6
25°	490.7	493.7	497.5	501.2	503.8	505.5	503.2	502.7	501.2	498.1	493.8
25.5°	487.8	490.9	494.7	498.5	501.1	502.8	500.5	499.9	498.5	495.3	490.9
26°	484.7	488.0	491.8	495.7	498.3	500.1	497.7	497.1	495.7	492.4	487.9
26.5°	481.8	485.0	488.9	492.9	495.4	497.3	494.8	494.2	492.7	489.6	485.0
27°	478.7	481.9	485.9	489.9	492.6	494.5	491.8	491.3	489.8	486.6	482.0
27.5°	475.5	478.9	483.0	487.0	489.6	491.5	488.9	488.3	486.9	483.5	478.9
28°	472.3	475.7	479.8	484.0	486.6	488.5	485.8	485.3	483.8	480.6	475.7
28.5°	469.0	472.5	476.7	480.9	483.7	485.5	482.7	482.2	480.7	477.3	472.5
29°	465.8	469.2	473.5	477.8	480.5	482.4	479.5	479.1	477.6	474.3	469.3
29.5°	462.4	466.0	470.3	474.6	477.4	479.3	476.3	475.9	474.4	471.0	466.1
30°	459.0	462.7	467.0	471.4	474.1	476.1	473.1	472.6	471.2	467.8	462.7
30.5°	455.5	459.3	463.7	468.2	470.9	472.8	469.8	469.3	467.9	464.4	459.3
31°	452.0	455.8	460.4	464.8	467.6	469.6	466.4	465.9	464.5	461.1	455.9
31.5°	448.5	452.4	456.9	461.5	464.2	466.2	463.0	462.5	461.1	457.7	452.6
32°	445.0	448.9	453.4	458.1	460.8	462.8	459.5	459.1	457.7	454.4	449.0
32.5°	441.3	445.3	450.0	454.6	457.5	459.4	456.0	455.6	454.2	450.9	445.4
33°	437.6	441.7	446.4	451.1	453.9	455.9	452.4	452.0	450.7	447.3	441.8
33.5°	433.9	437.9	442.8	447.6	450.3	452.3	448.8	448.3	447.0	443.6	438.0
34°	430.0	434.2	438.9	443.9	446.7	448.7	444.9	444.5	443.2	439.7	434.2
34.5°	426.2	430.3	435.2	440.0	443.0	444.8	441.2	440.6	439.3	436.0	430.4
35°	422.1	426.4	431.3	436.2	439.0	440.9	437.1	436.7	435.4	432.1	426.5
35.5°	418.1	422.4	427.3	432.3	435.1	437.0	433.2	432.7	431.5	428.1	422.5
36°	414.0	418.3	423.3	428.3	431.2	433.1	429.0	428.4	427.3	423.9	418.3
36.5°	409.7	414.1	419.1	424.3	427.0	428.9	424.6	424.1	422.9	419.6	414.0
37°	405.3	409.7	414.7	419.8	422.6	424.5	420.2	419.7	418.5	415.2	409.6
37.5°	400.6	405.2	410.3	415.5	418.2	420.1	415.4	415.1	414.0	410.6	404.5
38°	395.7	400.4	405.8	410.9	413.6	415.6	410.2	410.1	409.3	405.7	399.2
38.5°	390.2	394.9	400.4	406.2	408.9	410.7	404.6	404.5	404.2	400.7	393.8
39°	384.4	388.9	394.6	401.0	403.9	405.5	398.8	398.9	398.9	395.3	387.9
39.5°	378.0	382.8	388.9	395.7	398.7	400.0	393.0	393.0	393.4	389.6	382.1
40°	371.1	376.3	382.9	389.8	393.3	394.1	386.9	386.7	387.6	383.6	375.8
40.5°	364.0	369.4	376.5	383.9	387.5	388.0	380.8	380.5	381.4	377.3	369.9
41°	356.8	362.5	370.1	377.5	381.4	381.8	374.7	374.3	374.8	370.9	363.2
41.5°	349.6	355.5	363.4	371.0	374.8	375.5	368.3	367.7	368.0	364.3	356.7
42°	341.9	348.2	356.7	364.3	368.0	369.0	361.9	361.3	361.0	357.5	349.9
42.5°	334.6	340.8	349.8	357.5	360.8	362.3	355.2	354.5	353.7	350.4	342.9
43°	327.2	333.6	342.7	350.4	353.4	355.4	348.5	347.6	346.2	343.2	335.7
43.5°	319.8	326.3	335.2	343.2	345.6	348.6	341.6	340.5	338.3	335.7	328.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	297.3	304.4	312.8	320.3	321.9	327.0	320.2	318.8	315.0	312.5	306.4
45.5°	289.8	297.0	305.1	312.4	313.8	319.3	313.1	311.3	307.1	304.5	298.9
46°	282.4	289.6	297.3	304.3	305.6	311.8	305.5	303.5	299.3	296.5	291.0
46.5°	274.9	282.1	289.5	296.2	297.7	304.1	298.0	295.9	291.5	288.5	283.2
47°	267.2	274.7	281.7	288.0	289.9	296.2	290.5	288.3	283.9	280.5	275.5
47.5°	259.7	267.1	273.6	279.9	282.0	288.3	283.1	280.4	276.3	272.7	267.8
48°	252.2	259.4	265.9	271.7	274.2	280.4	275.3	272.6	268.6	264.6	259.8
48.5°	244.6	251.9	257.9	263.5	266.5	272.5	267.8	264.7	261.0	256.8	252.2
49°	237.2	244.2	250.1	255.5	258.7	264.7	259.8	257.0	253.5	248.9	244.2
49.5°	229.8	236.4	242.2	247.4	250.9	256.7	251.9	249.2	245.9	241.1	236.5
50°	222.5	228.9	234.3	239.3	243.2	248.9	244.1	241.3	238.3	233.3	228.8
50.5°	215.2	221.2	226.5	231.3	235.6	241.0	236.0	233.7	230.7	225.8	221.1
51°	207.9	213.7	218.8	223.5	227.9	233.1	228.4	226.2	223.4	218.4	213.6
51.5°	200.9	206.4	211.2	215.7	220.4	225.7	220.4	218.6	216.1	210.9	206.2
52°	193.8	199.0	203.6	208.2	213.0	218.0	212.4	211.0	209.0	203.4	198.8
52.5°	186.9	191.7	196.1	200.7	205.5	210.3	204.8	203.6	201.6	196.2	191.3
53°	180.0	184.5	188.5	193.3	198.2	202.7	197.1	196.3	194.3	188.9	184.1
53.5°	173.2	177.4	181.2	186.0	190.8	195.4	189.6	188.9	187.1	182.0	177.0
54°	166.5	170.4	173.8	178.9	183.8	188.0	181.8	181.7	180.4	174.9	170.2
54.5°	159.9	163.3	166.8	171.8	176.8	180.8	174.5	174.7	173.4	168.1	163.4
55°	153.4	156.6	159.9	165.0	169.7	173.8	167.2	167.7	166.4	161.3	156.5
55.5°	147.1	150.0	152.9	158.2	162.8	166.7	160.0	160.8	159.6	154.8	149.9
56°	140.8	143.4	146.0	151.7	156.0	159.5	153.0	153.8	153.2	148.2	143.5
56.5°	134.6	136.9	139.6	145.1	149.4	152.7	146.0	147.2	146.4	141.8	137.2
57°	128.6	130.7	133.2	138.8	142.7	146.0	139.3	140.5	139.9	135.7	131.1
57.5°	122.7	124.5	126.9	132.5	136.3	139.3	132.8	134.1	133.6	129.7	125.0
58°	116.9	118.5	120.7	126.6	129.9	132.7	126.5	127.8	127.6	123.8	119.3
58.5°	111.3	112.7	114.9	120.6	124.0	126.4	120.3	121.4	121.4	118.1	113.7
59°	105.9	107.1	109.4	115.1	117.8	120.2	114.3	115.3	115.4	112.5	108.1
59.5°	100.6	101.6	103.9	109.3	111.9	114.1	108.4	109.5	109.6	107.0	102.9
60°	95.4	96.3	98.7	103.9	106.2	108.1	102.7	103.7	104.0	101.7	97.8
60.5°	90.5	91.2	93.6	98.6	100.7	102.4	97.4	98.0	98.5	96.6	92.8
61°	85.6	86.3	88.7	93.5	95.3	97.0	92.5	92.7	93.2	91.9	88.4
61.5°	81.0	81.7	84.1	88.4	90.4	92.0	87.5	87.8	88.3	87.2	84.1
62°	76.6	77.3	79.6	83.7	85.5	86.9	82.6	82.8	83.4	82.5	79.7
62.5°	72.4	73.0	75.3	79.0	80.7	81.9	77.7	77.8	78.5	77.8	75.3
63°	68.4	68.9	71.2	74.5	75.8	76.8	72.8	72.9	73.7	73.1	70.9
63.5°	64.7	65.1	67.3	70.2	70.9	71.8	68.3	68.5	69.4	68.9	67.0
64°	61.1	61.6	63.6	66.0	66.7	67.4	64.2	64.2	65.2	65.0	63.3
64.5°	57.7	58.2	60.1	62.2	62.6	63.3	60.4	60.4	61.2	61.2	59.9
65°	54.8	55.1	56.8	58.6	58.7	59.4	56.7	56.8	57.2	57.7	56.7
65.5°	52.0	52.3	53.8	55.2	55.1	55.7	53.3	53.4	53.4	54.5	53.7
66°	49.3	49.7	51.0	52.0	51.7	52.4	50.2	50.3	49.8	51.3	50.9



TEST NUMBER: P775635

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	42.7	43.2	43.8	44.1	43.5	44.2	42.5	42.9	41.8	43.7	44.0
68°	41.0	41.5	41.9	42.1	41.5	42.1	40.7	41.1	40.1	41.9	42.2
68.5°	39.4	40.1	40.3	40.3	39.8	40.3	39.3	39.6	39.1	40.3	40.6
69°	38.3	38.9	38.8	38.8	38.5	38.9	38.2	38.4	38.4	39.1	39.3
69.5°	37.6	37.8	37.7	37.6	37.4	37.7	37.4	37.6	37.7	38.1	38.4
70°	36.9	36.9	36.9	36.8	36.7	37.0	36.8	36.9	37.0	37.4	37.7
70.5°	36.2	36.3	36.5	36.2	36.1	36.4	36.2	36.2	36.3	36.7	37.1
71°	35.5	35.6	35.8	35.5	35.4	35.7	35.5	35.4	35.5	36.0	36.5
71.5°	34.9	34.9	35.2	34.9	34.8	35.1	34.8	34.7	34.8	35.2	35.8
72°	34.2	34.2	34.5	34.3	34.1	34.4	34.1	33.9	33.9	34.4	35.1
72.5°	33.6	33.6	33.8	33.7	33.4	33.7	33.4	33.1	33.1	33.6	34.4
73°	32.8	32.8	33.1	33.0	32.7	33.0	32.6	32.2	32.2	32.8	33.6
73.5°	32.0	32.0	32.4	32.2	32.0	32.2	31.8	31.3	31.3	31.9	32.8
74°	31.1	31.2	31.6	31.5	31.2	31.5	31.0	30.4	30.4	31.0	32.0
74.5°	30.2	30.3	30.8	30.8	30.4	30.7	30.2	29.5	29.4	30.1	31.2
75°	29.4	29.4	30.0	30.0	29.6	29.9	29.3	28.5	28.4	29.1	30.3
75.5°	28.4	28.5	29.2	29.2	28.8	29.1	28.4	27.5	27.4	28.1	29.4
76°	27.4	27.5	28.3	28.4	28.0	28.3	27.5	26.5	26.3	27.1	28.5
76.5°	26.5	26.6	27.4	27.5	27.1	27.4	26.5	25.5	25.3	26.0	27.6
77°	25.4	25.6	26.5	26.7	26.2	26.5	25.6	24.4	24.1	24.9	26.7
77.5°	24.3	24.5	25.6	25.8	25.3	25.6	24.6	23.3	22.9	23.7	25.6
78°	23.2	23.5	24.6	24.9	24.4	24.7	23.5	22.1	21.7	22.6	24.6
78.5°	22.1	22.4	23.6	24.0	23.4	23.7	22.5	20.9	20.5	21.4	23.5
79°	20.9	21.2	22.6	23.0	22.5	22.7	21.4	19.7	19.3	20.2	22.5
79.5°	19.7	20.1	21.6	22.0	21.5	21.8	20.3	18.5	18.0	18.9	21.4
80°	18.4	18.8	20.5	21.0	20.5	20.7	19.2	17.3	16.7	17.6	20.2
80.5°	17.2	17.6	19.4	20.0	19.4	19.7	18.1	16.0	15.4	16.4	19.1
81°	16.0	16.4	18.3	19.0	18.4	18.6	17.0	14.7	14.0	15.0	17.9
81.5°	14.6	15.1	17.2	17.9	17.3	17.5	15.8	13.4	12.7	13.7	16.7
82°	13.3	13.8	16.0	16.8	16.2	16.5	14.7	12.1	11.3	12.4	15.6
82.5°	12.0	12.5	14.9	15.7	15.1	15.3	13.6	10.9	10.0	11.0	14.4
83°	10.6	11.2	13.8	14.6	14.0	14.2	12.5	9.8	8.6	9.9	13.3
83.5°	9.2	9.9	12.7	13.5	12.9	13.1	11.4	8.7	7.3	8.8	12.1
84°	7.8	8.6	11.6	12.4	11.8	12.0	10.3	7.6	5.9	7.7	11.1
84.5°	6.4	7.4	10.5	11.2	10.6	10.8	9.2	6.6	4.5	6.5	10.0
85°	5.1	6.4	9.5	10.1	9.4	9.6	8.1	5.5	3.6	5.4	8.9
85.5°	3.9	5.6	8.4	8.9	8.2	8.4	6.9	4.7	3.1	4.8	7.9
86°	3.4	4.9	7.3	7.7	7.0	7.2	5.8	4.0	2.7	4.1	6.8
86.5°	2.9	4.1	6.1	6.5	5.8	6.0	4.7	3.3	2.2	3.5	5.7
87°	2.4	3.4	5.0	5.2	4.6	4.7	3.6	2.5	1.8	2.8	4.6
87.5°	1.8	2.7	3.8	4.0	3.4	3.5	2.4	1.8	1.3	2.2	3.5
88°	1.3	2.0	2.9	3.0	2.2	2.4	1.4	1.1	0.8	1.5	2.4
88.5°	0.9	1.3	2.0	2.0	1.2	1.3	0.5	0.5	0.5	0.9	1.4



TEST NUMBER: P775635

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-2700K

CANDELA DISTRIBUTION (continued):

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



TEST NUMBER: P775635

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	565.6	565.6	565.6	565.6	565.6	565.6
0.5°	565.3	565.6	565.6	565.5	565.4	565.5
1°	565.1	565.4	565.2	565.3	565.2	565.3
1.5°	564.9	565.1	564.9	564.9	564.9	565.0
2°	564.5	564.7	564.5	564.6	564.5	564.7
2.5°	564.2	564.3	564.1	564.2	564.1	564.3
3°	563.8	563.8	563.5	563.7	563.6	563.9
3.5°	563.3	563.3	563.0	563.2	563.2	563.5
4°	562.8	562.8	562.3	562.6	562.6	563.0
4.5°	562.2	562.1	561.7	562.0	562.0	562.4
5°	561.5	561.4	561.0	561.3	561.3	561.8
5.5°	560.8	560.7	560.2	560.5	560.6	561.1
6°	560.1	559.9	559.3	559.8	559.8	560.3
6.5°	559.3	559.1	558.4	558.9	559.0	559.5
7°	558.5	558.2	557.5	558.0	558.1	558.7
7.5°	557.5	557.2	556.5	557.0	557.1	557.8
8°	556.6	556.2	555.4	556.0	556.2	556.9
8.5°	555.5	555.0	554.4	555.0	555.1	555.9
9°	554.5	553.9	553.2	553.9	554.1	554.8
9.5°	553.3	552.7	552.0	552.7	552.9	553.7
10°	552.1	551.5	550.7	551.4	551.7	552.5
10.5°	550.9	550.2	549.3	550.2	550.5	551.3
11°	549.5	548.9	547.9	548.8	549.2	550.0
11.5°	548.2	547.5	546.5	547.4	547.8	548.7
12°	546.8	546.0	545.0	546.0	546.3	547.3
12.5°	545.3	544.4	543.4	544.5	544.9	545.8
13°	543.8	542.9	541.8	542.9	543.3	544.4
13.5°	542.1	541.2	540.2	541.3	541.7	542.7
14°	540.5	539.6	538.4	539.7	540.0	541.2
14.5°	538.7	537.7	536.6	537.8	538.2	539.5
15°	536.9	535.9	534.7	536.1	536.5	537.7
15.5°	535.1	534.1	532.9	534.2	534.6	535.9
16°	533.2	532.1	530.9	532.3	532.7	534.0
16.5°	531.3	530.2	528.9	530.3	530.8	532.1
17°	529.3	528.1	526.8	528.3	528.8	530.2
17.5°	527.2	526.0	524.7	526.2	526.7	528.2
18°	525.1	523.8	522.4	524.1	524.6	526.1
18.5°	522.9	521.6	520.2	521.9	522.4	523.9
19°	520.7	519.3	517.9	519.6	520.1	521.7
19.5°	518.4	517.0	515.5	517.3	517.8	519.4
20°	516.1	514.6	513.1	514.9	515.5	517.1
20.5°	513.6	512.1	510.5	512.4	513.2	514.8
21°	511.1	509.5	507.9	510.0	510.7	512.2

TEST NUMBER: P775635

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	503.4	501.7	499.9	502.1	502.9	504.6
23°	500.7	499.0	497.1	499.4	500.2	501.9
23.5°	498.0	496.3	494.3	496.6	497.4	499.2
24°	495.2	493.3	491.4	493.7	494.5	496.4
24.5°	492.3	490.4	488.5	490.9	491.7	493.6
25°	489.4	487.4	485.5	487.9	488.8	490.7
25.5°	486.4	484.4	482.3	484.9	485.8	487.8
26°	483.4	481.3	479.3	481.9	482.8	484.7
26.5°	480.3	478.3	476.2	478.7	479.7	481.8
27°	477.2	475.1	472.9	475.6	476.6	478.7
27.5°	474.1	471.9	469.7	472.4	473.4	475.5
28°	470.9	468.5	466.4	469.1	470.1	472.3
28.5°	467.6	465.3	463.0	465.7	466.9	469.0
29°	464.3	462.0	459.7	462.3	463.5	465.8
29.5°	460.9	458.6	456.1	459.0	460.1	462.4
30°	457.6	455.1	452.8	455.5	456.7	459.0
30.5°	454.1	451.6	449.2	452.0	453.2	455.5
31°	450.7	448.1	445.7	448.6	449.7	452.0
31.5°	447.2	444.6	441.9	444.9	446.1	448.5
32°	443.6	440.8	438.3	441.3	442.5	445.0
32.5°	439.9	437.2	434.6	437.5	438.8	441.3
33°	436.2	433.5	430.9	433.8	435.1	437.6
33.5°	432.5	429.7	427.0	430.1	431.4	433.9
34°	428.6	425.9	423.1	426.2	427.5	430.0
34.5°	424.7	421.9	419.2	422.3	423.6	426.2
35°	420.8	417.9	415.1	418.2	419.6	422.1
35.5°	416.7	413.8	410.9	414.1	415.5	418.1
36°	412.5	409.6	406.7	410.1	411.4	414.0
36.5°	408.2	405.3	402.4	405.7	407.0	409.7
37°	403.7	400.8	397.9	401.3	402.6	405.3
37.5°	398.6	396.0	393.1	396.8	398.1	400.6
38°	392.9	390.7	387.6	392.1	393.2	395.7
38.5°	387.1	385.0	381.6	386.6	387.4	390.2
39°	381.0	378.8	375.7	380.5	381.6	384.4
39.5°	374.7	372.0	369.3	374.2	375.4	378.0
40°	368.2	365.0	362.4	367.6	368.9	371.1
40.5°	361.6	358.0	355.5	360.8	361.9	364.0
41°	354.8	350.9	348.3	353.9	354.9	356.8
41.5°	347.8	343.6	340.9	347.0	347.6	349.6
42°	340.6	336.5	333.6	339.7	340.1	341.9
42.5°	333.5	329.5	326.0	332.5	332.6	334.6
43°	326.3	322.4	318.5	325.2	325.2	327.2
43.5°	319.2	315.1	310.8	317.7	317.5	319.8



TEST NUMBER: P775635

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	297.6	293.4	288.3	294.7	294.4	297.3
45.5°	290.4	286.1	280.8	286.9	286.6	289.8
46°	283.2	279.0	273.4	279.1	278.9	282.4
46.5°	276.0	271.5	265.9	271.5	271.2	274.9
47°	268.5	264.1	258.6	263.5	263.5	267.2
47.5°	261.3	256.8	251.1	255.7	255.9	259.7
48°	254.0	249.5	243.7	247.7	248.4	252.2
48.5°	246.6	242.0	236.2	240.1	240.8	244.6
49°	239.0	234.9	229.2	232.2	233.4	237.2
49.5°	231.6	227.8	222.1	224.7	226.0	229.8
50°	224.2	220.6	214.8	217.0	218.7	222.5
50.5°	216.9	213.5	207.7	209.7	211.4	215.2
51°	209.7	206.7	200.7	202.3	204.1	207.9
51.5°	202.4	199.7	193.8	195.2	196.9	200.9
52°	195.2	192.9	186.9	188.1	189.9	193.8
52.5°	188.1	186.1	180.0	181.4	183.0	186.9
53°	181.1	179.4	173.3	174.5	176.2	180.0
53.5°	174.2	172.8	166.8	167.8	169.4	173.2
54°	167.3	166.1	160.2	161.4	162.7	166.5
54.5°	160.6	159.7	153.9	155.1	156.2	159.9
55°	154.0	153.4	147.7	148.8	150.0	153.4
55.5°	147.5	147.1	141.5	142.8	143.7	147.1
56°	141.0	140.7	135.4	136.9	137.5	140.8
56.5°	134.8	134.7	129.6	131.2	131.6	134.6
57°	128.6	128.7	123.9	125.6	125.9	128.6
57.5°	122.6	122.9	118.3	120.1	120.3	122.7
58°	116.9	117.2	113.0	115.0	114.8	116.9
58.5°	111.2	111.7	107.8	109.9	109.7	111.3
59°	105.7	106.2	102.7	104.9	104.5	105.9
59.5°	100.3	100.9	97.9	100.1	99.7	100.6
60°	95.2	95.8	93.1	95.6	94.9	95.4
60.5°	90.7	90.8	88.5	91.1	90.4	90.5
61°	86.1	86.0	84.1	86.8	85.9	85.6
61.5°	81.5	81.4	80.0	82.6	81.7	81.0
62°	77.0	76.9	76.0	78.7	77.6	76.6
62.5°	72.4	72.7	72.1	74.9	73.7	72.4
63°	68.5	68.7	68.4	71.2	69.9	68.4
63.5°	64.9	64.8	64.9	67.7	66.4	64.7
64°	61.3	61.2	61.6	64.3	63.0	61.1
64.5°	58.0	57.9	58.5	61.1	59.8	57.7
65°	55.0	54.9	55.5	58.0	56.6	54.8
65.5°	52.2	52.2	52.7	55.2	54.0	52.0
66°	49.6	49.7	50.2	52.5	51.3	49.3



TEST NUMBER: P775635

CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	43.4	43.8	43.7	45.4	44.5	42.7
68°	41.9	42.2	42.1	43.5	42.6	41.0
68.5°	40.5	40.8	40.6	41.8	41.0	39.4
69°	39.3	39.6	39.3	40.2	39.6	38.3
69.5°	38.3	38.5	38.2	38.9	38.4	37.6
70°	37.7	37.7	37.4	37.9	37.5	36.9
70.5°	37.1	37.1	36.8	37.2	36.7	36.2
71°	36.4	36.4	36.2	36.6	36.0	35.5
71.5°	35.8	35.8	35.6	35.9	35.4	34.9
72°	35.1	35.1	34.9	35.3	34.7	34.2
72.5°	34.4	34.5	34.2	34.6	34.0	33.6
73°	33.7	33.9	33.6	34.0	33.3	32.8
73.5°	33.0	33.2	32.9	33.4	32.5	32.0
74°	32.3	32.5	32.3	32.6	31.7	31.1
74.5°	31.5	31.8	31.5	31.8	30.8	30.2
75°	30.7	31.0	30.7	31.1	30.0	29.4
75.5°	29.9	30.2	29.9	30.2	29.0	28.4
76°	29.1	29.4	29.1	29.4	28.1	27.4
76.5°	28.2	28.5	28.3	28.5	27.1	26.5
77°	27.3	27.7	27.4	27.6	26.1	25.4
77.5°	26.4	26.8	26.6	26.7	25.1	24.3
78°	25.5	25.9	25.7	25.8	24.0	23.2
78.5°	24.5	25.0	24.7	24.8	22.9	22.1
79°	23.5	24.0	23.8	23.8	21.8	20.9
79.5°	22.5	23.0	22.8	22.7	20.6	19.7
80°	21.5	22.0	21.7	21.7	19.4	18.4
80.5°	20.4	20.9	20.7	20.6	18.2	17.2
81°	19.4	19.9	19.7	19.5	17.0	16.0
81.5°	18.3	18.8	18.6	18.4	15.7	14.6
82°	17.1	17.7	17.5	17.2	14.4	13.3
82.5°	16.0	16.6	16.4	16.1	13.1	12.0
83°	14.9	15.4	15.2	15.0	11.9	10.6
83.5°	13.7	14.3	14.1	13.9	10.6	9.2
84°	12.5	13.1	13.0	12.7	9.3	7.8
84.5°	11.3	11.9	11.8	11.6	8.1	6.4
85°	10.1	10.7	10.6	10.6	7.0	5.1
85.5°	8.9	9.5	9.4	9.5	6.1	3.9
86°	7.6	8.3	8.2	8.4	5.3	3.4
86.5°	6.4	7.0	6.9	7.3	4.6	2.9
87°	5.2	5.8	5.7	6.1	3.8	2.4
87.5°	3.9	4.5	4.4	5.0	3.1	1.8
88°	2.7	3.3	3.2	3.8	2.4	1.3
88.5°	1.6	2.5	2.4	2.9	1.7	0.9



TEST NUMBER: P775635
CATALOG NUMBER: HCDJBL510CSD-HCD41TRMW-1000lm-2700K

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°	509.8	512.4	515.7	518.9	521.2	522.8	521.0	520.4	518.9	516.1	512.4
22°	507.2	510.0	513.3	516.5	518.8	520.5	518.6	518.1	516.6	513.7	509.9



44°	312.3	319.1	327.9	335.7	337.7	341.4	334.7	333.5	330.6	328.1	321.3
44.5°	304.7	311.7	320.4	328.0	329.8	334.2	327.4	326.1	322.8	320.5	313.9



66.5°	46.8	47.2	48.3	49.2	48.5	49.4	47.2	47.5	46.7	48.4	48.3
67°	44.7	45.0	45.9	46.4	45.8	46.6	44.7	45.0	44.0	45.9	46.0



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°	508.6	507.0	505.3	507.4	508.1	509.8
22°	506.1	504.4	502.7	504.8	505.5	507.2



44°	311.9	307.8	303.3	310.1	309.7	312.3
44.5°	304.8	300.6	295.7	302.4	302.0	304.7



66.5°	47.3	47.5	47.8	50.0	48.7	46.8
67°	45.2	45.4	45.6	47.6	46.5	44.7

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89°	0.7	1.7	1.6	2.0	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)