

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: P775665

Luminaire Tested: HCDJBL510CSD-HCD4TRC-1000lm-2700K

Issue Date: 2/7/2024

Test Information

Test Method: LM-79-2019
Report Number: P775665
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (A2310613A001)
Test Lab:
Issue Date: 2/7/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCDJBL510CSD-HCD4TRC-1000lm-2700K
Description: 4 INCH ROUND MEDIUM SPECULAR CLEAR TRIM
Light Source: SELECTABLE LUMENS AND CCT ARRAY 90CRI / 2700K CCT
Ballast/Driver: -

Summary

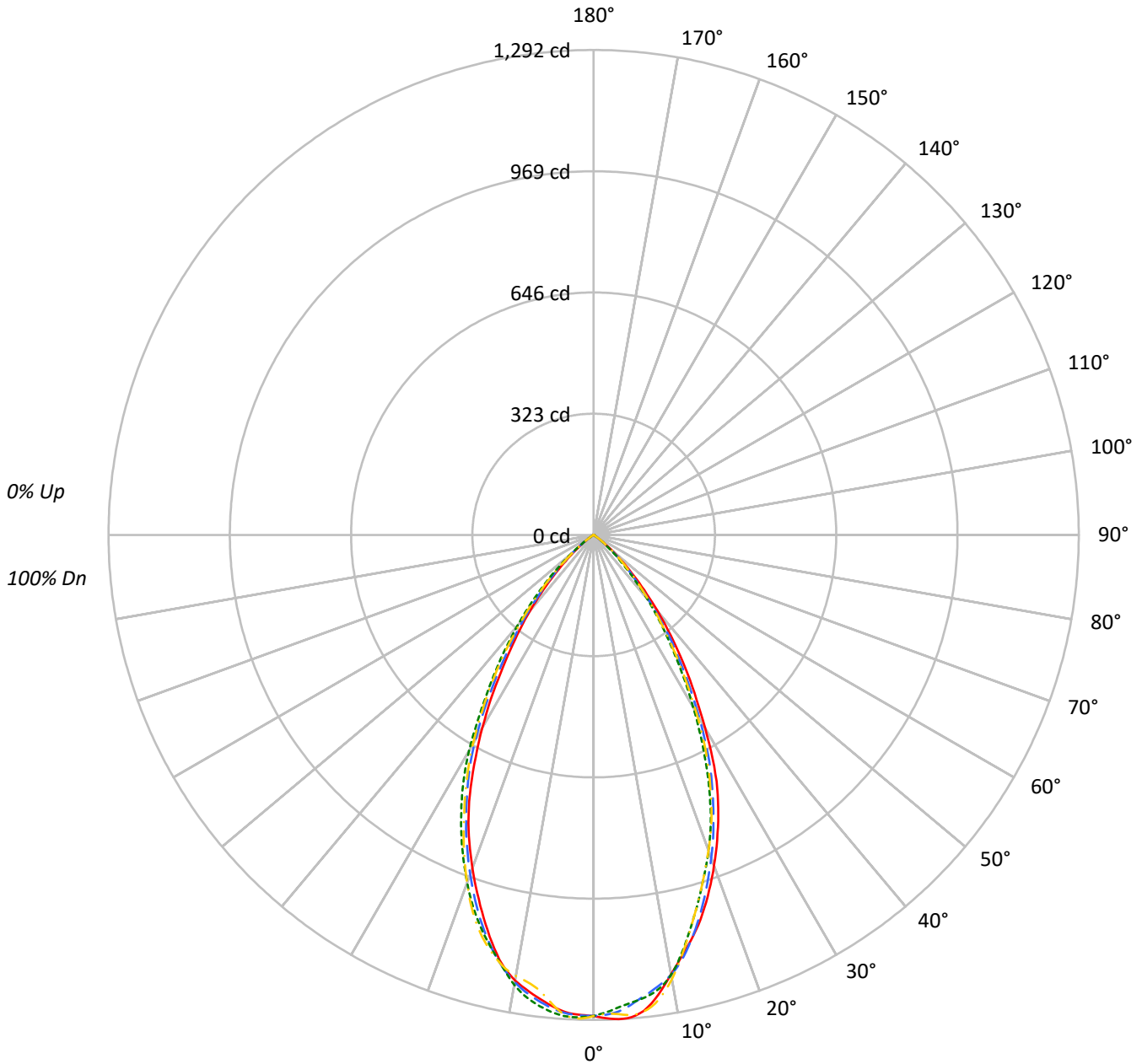
Lumens per Lamp: N/A
Luminaire Lumens: 1166.0 lumens
Efficiency: N/A
Efficacy: 116.6 lumens/watt
Spacing Criteria (0/90/45): 0.87 / 0.87 / 0.88
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

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			
1	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93			
2	108	103	98	95	105	101	97	94	98	95	92	95	92	90	92	90	88	86			
3	102	95	90	86	100	94	89	86	91	87	84	89	86	83	87	84	82	80			
4	97	89	83	79	95	88	82	78	85	81	77	83	80	76	82	78	76	74			
5	91	83	77	72	90	82	76	72	80	75	71	78	74	71	77	73	70	69			
6	87	78	71	67	85	77	71	67	75	70	66	74	69	66	72	68	65	64			
7	82	73	66	62	81	72	66	62	71	65	62	69	65	61	68	64	61	60			
8	78	68	62	58	77	68	62	58	67	61	57	66	61	57	65	60	57	56			
9	74	64	58	54	73	64	58	54	63	58	54	62	57	54	61	57	53	52			
10	71	61	55	51	70	60	54	51	59	54	50	59	54	50	58	53	50	49			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	161302	161302	161302	161302
5°	162398	157635	159265	161248
10°	151867	151944	154001	155509
15°	140204	135892	142120	144725
20°	125570	119784	126453	131944
25°	108783	100423	108880	116004
30°	86116	77106	86101	96332
35°	63574	55063	62806	72669
40°	43404	36307	43026	51881
45°	25522	19827	25131	32445
50°	10866	8810	11708	15741
55°	2194	2150	3708	4630
60°	352	428	403	554
65°	208	238	208	328
70°	110	147	147	184
75°	49	97	97	146
80°	0	72	72	72
85°	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 270°

Vertical Angle: 45°

Luminance: 32445 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	118.7	10.2
10°-20°	301.6	25.9
20°-30°	353.8	30.3
30°-40°	259.0	22.2
40°-50°	114.3	9.8
50°-60°	17.4	1.5
60°-70°	0.9	0.1
70°-80°	0.2	0.0
80°-90°	0.0	0.0
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	774.1	66.4
0°-40°	1033.2	88.6
0°-60°	1164.9	99.9
0°-90°	1166.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1166.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1282	1282	1282	1282	1282	
5°	1286	1248	1261	1276	1286	119
15°	1076	1043	1091	1111	1076	300
25°	783	723	784	835	783	355
35°	414	358	409	473	414	259
45°	143	111	141	182	143	113
55°	10	10	17	21	10	14
65°	1	1	1	1	1	1
75°	0	0	0	0	0	0
85°	0	0	0	0	0	0
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1281.7	1281.7	1281.7	1281.7	1281.7	1281.7	1281.7	1281.7	1281.7	1281.7	1281.7
0.5°	1284.1	1282.4	1280.7	1280.4	1278.5	1278.5	1279.5	1280.2	1280.9	1281.2	1281.4
1°	1286.2	1283.0	1279.9	1278.3	1275.8	1276.0	1277.7	1278.9	1279.9	1280.6	1281.3
1.5°	1288.1	1283.7	1278.8	1275.6	1272.4	1274.0	1276.5	1278.3	1279.2	1279.8	1280.9
2°	1289.8	1284.1	1277.2	1272.2	1268.6	1272.0	1276.5	1278.7	1278.5	1278.8	1280.1
2.5°	1291.1	1283.9	1274.7	1267.6	1264.7	1270.3	1277.4	1279.6	1277.2	1277.0	1279.1
3°	1291.8	1282.8	1271.5	1262.6	1260.7	1269.3	1278.9	1280.5	1275.4	1274.3	1277.6
3.5°	1291.7	1280.8	1267.2	1257.2	1257.1	1268.6	1280.8	1281.3	1272.5	1270.7	1275.9
4°	1290.7	1277.7	1262.1	1251.4	1253.7	1268.1	1282.2	1281.4	1269.1	1266.3	1273.5
4.5°	1288.7	1273.4	1256.2	1246.0	1250.7	1267.5	1282.8	1280.8	1265.2	1261.0	1270.3
5°	1285.5	1268.2	1250.2	1240.9	1247.8	1266.4	1282.2	1278.9	1260.7	1255.1	1266.5
5.5°	1280.8	1262.2	1244.3	1236.1	1244.9	1264.5	1280.3	1276.2	1255.8	1248.6	1262.1
6°	1274.9	1255.3	1238.5	1232.0	1241.9	1261.5	1276.9	1272.2	1250.8	1242.4	1257.4
6.5°	1267.3	1248.0	1232.9	1228.1	1238.5	1257.8	1272.2	1267.4	1245.5	1236.1	1252.5
7°	1258.3	1240.0	1227.7	1224.3	1234.4	1252.6	1266.1	1261.3	1240.3	1230.7	1247.4
7.5°	1248.3	1231.4	1222.0	1220.5	1229.7	1245.8	1258.8	1254.5	1234.8	1225.2	1242.1
8°	1237.4	1222.3	1216.3	1216.3	1224.1	1237.8	1249.4	1246.5	1229.1	1220.3	1236.5
8.5°	1225.9	1212.0	1210.4	1211.6	1217.3	1228.7	1239.0	1237.8	1223.5	1216.0	1230.8
9°	1213.2	1201.9	1204.1	1206.1	1209.1	1217.6	1227.4	1228.2	1217.5	1212.2	1224.3
9.5°	1200.6	1191.6	1197.2	1199.7	1199.8	1205.6	1215.0	1217.4	1211.7	1208.3	1217.4
10°	1188.4	1181.2	1189.6	1192.3	1189.0	1192.6	1201.1	1206.0	1205.1	1204.1	1209.8
10.5°	1176.6	1170.6	1181.1	1183.4	1177.2	1178.2	1186.9	1193.6	1197.8	1199.6	1202.1
11°	1165.2	1160.0	1171.7	1172.4	1164.6	1163.2	1171.5	1180.6	1189.4	1194.6	1193.5
11.5°	1154.1	1148.9	1160.9	1161.5	1150.0	1148.3	1156.0	1166.6	1180.3	1188.3	1184.5
12°	1143.0	1137.6	1149.2	1148.6	1135.1	1130.7	1138.9	1151.9	1170.1	1181.1	1174.9
12.5°	1132.1	1126.0	1137.2	1134.2	1120.0	1114.5	1123.1	1136.7	1158.9	1172.3	1164.3
13°	1121.5	1114.5	1124.2	1119.6	1104.7	1099.8	1106.6	1121.5	1146.0	1162.1	1153.4
13.5°	1110.8	1101.9	1111.1	1105.7	1089.2	1082.4	1090.5	1106.0	1133.0	1151.3	1142.1
14°	1099.6	1089.1	1097.6	1090.3	1073.5	1067.1	1074.4	1090.4	1119.7	1138.9	1130.4
14.5°	1087.9	1076.0	1083.9	1075.1	1058.0	1052.2	1059.2	1075.4	1105.5	1126.0	1118.2
15°	1076.1	1062.7	1069.5	1059.8	1043.0	1036.5	1043.0	1060.4	1090.8	1112.6	1105.2
15.5°	1063.7	1048.7	1055.0	1044.3	1027.9	1021.1	1028.1	1045.4	1076.5	1099.1	1092.2
16°	1051.0	1034.9	1040.0	1028.8	1012.9	1006.3	1012.3	1030.8	1061.8	1084.7	1079.0
16.5°	1037.2	1020.3	1025.0	1013.6	997.6	991.7	997.2	1016.8	1047.5	1070.3	1065.5
17°	1024.0	1005.8	1009.5	998.0	983.2	976.7	982.2	1001.7	1033.1	1055.8	1051.6
17.5°	1009.9	990.8	994.1	982.6	968.3	962.3	967.9	987.4	1017.8	1040.9	1037.1
18°	995.7	976.0	978.4	967.3	953.3	947.4	952.2	973.3	1003.2	1025.9	1022.6
18.5°	981.3	960.7	962.8	951.9	938.4	932.9	937.4	959.0	989.0	1010.2	1007.5
19°	967.0	945.8	946.6	936.2	923.9	918.4	922.8	944.3	974.1	995.1	992.5
19.5°	952.3	930.5	931.4	920.8	909.2	904.5	908.9	930.4	959.3	979.3	977.2
20°	937.6	915.8	915.4	905.6	894.4	890.0	893.9	916.2	944.2	963.7	961.9
20.5°	922.7	900.5	899.7	890.1	879.8	875.8	879.4	901.5	929.3	947.9	946.4
21°	907.8	884.9	883.9	874.5	864.2	861.0	865.0	887.3	914.1	932.4	930.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
22.5°	862.3	837.4	833.9	824.4	815.1	814.3	819.9	843.2	868.4	885.4	884.0
23°	847.0	820.8	816.8	807.1	797.5	797.2	803.2	827.3	853.2	869.9	868.7
23.5°	831.3	804.5	799.6	789.1	778.9	780.8	786.6	811.2	836.5	853.5	852.4
24°	815.4	787.7	782.5	770.9	760.3	763.2	769.2	793.7	819.4	837.0	835.5
24.5°	799.8	771.2	765.2	752.0	741.7	745.6	751.7	776.0	801.5	820.0	819.0
25°	783.4	754.0	748.0	733.5	723.2	728.0	734.3	758.3	784.1	802.8	803.2
25.5°	767.3	737.3	730.8	714.5	704.6	710.3	716.8	740.7	765.3	785.3	785.7
26°	750.7	720.4	713.5	695.3	685.0	690.8	699.3	723.0	746.4	767.8	769.3
26.5°	733.2	702.9	695.9	676.0	665.3	672.4	681.5	705.3	727.6	750.4	752.9
27°	714.2	684.5	678.0	657.0	645.9	652.5	662.8	686.1	708.7	732.9	736.5
27.5°	694.9	666.5	658.9	638.3	626.5	633.0	645.3	666.3	688.6	715.5	720.1
28°	675.0	647.4	639.7	619.6	606.8	613.6	625.7	646.1	668.6	698.1	703.6
28.5°	654.5	627.7	620.7	600.7	587.5	594.0	606.5	626.3	649.5	679.1	685.6
29°	633.6	608.1	601.3	582.2	568.3	574.3	587.2	606.2	630.5	660.2	667.2
29.5°	612.6	587.9	581.6	563.8	549.4	554.7	567.2	587.3	611.6	641.1	648.2
30°	592.6	567.7	562.6	545.5	530.6	535.0	546.9	567.2	592.5	621.7	628.9
30.5°	572.9	547.4	543.7	527.3	511.7	515.9	527.7	547.6	573.4	602.2	609.4
31°	553.7	526.6	524.8	508.4	493.5	496.6	508.1	529.0	554.2	583.3	589.7
31.5°	535.1	507.0	506.5	490.2	475.2	478.0	489.0	510.7	535.1	564.7	570.3
32°	516.5	488.2	488.4	472.0	457.3	460.8	470.0	492.1	516.7	546.1	550.9
32.5°	499.2	469.5	470.5	453.6	439.9	443.0	452.4	474.4	497.8	527.9	531.6
33°	482.4	451.4	453.1	435.4	422.6	425.9	434.3	456.7	479.2	509.6	512.7
33.5°	465.2	433.5	435.9	418.7	405.7	410.0	417.1	439.4	460.8	492.1	493.0
34°	447.9	416.4	418.8	402.0	389.6	392.5	400.2	422.6	443.0	474.6	474.0
34.5°	430.5	399.9	402.3	385.4	373.8	376.6	383.5	405.9	425.5	457.3	455.8
35°	413.8	383.6	385.5	369.6	358.4	362.1	367.3	389.6	408.8	440.2	438.2
35.5°	397.5	367.8	368.7	357.0	343.3	346.3	351.7	374.0	392.7	422.9	420.3
36°	380.8	358.6	357.7	341.7	328.9	330.1	336.7	358.0	377.6	405.9	403.2
36.5°	365.1	342.3	341.0	326.5	314.7	316.2	322.1	343.2	362.3	389.0	386.5
37°	350.4	325.9	324.2	311.2	300.6	301.5	307.6	328.0	347.4	372.4	370.7
37.5°	335.8	309.5	307.3	296.0	286.9	287.2	294.0	312.9	333.2	356.3	354.7
38°	321.2	293.2	290.5	281.9	273.2	273.6	280.6	299.3	318.4	340.2	339.6
38.5°	306.5	279.3	275.2	268.0	259.5	260.1	267.4	285.7	304.5	325.2	324.6
39°	291.9	266.0	261.6	253.8	246.4	247.6	254.5	271.1	290.1	310.1	309.9
39.5°	277.9	252.7	247.9	240.2	233.4	235.1	241.6	257.9	276.1	295.5	295.1
40°	264.2	239.4	234.8	226.8	221.0	222.9	229.3	245.1	261.9	280.8	281.1
40.5°	250.7	226.7	221.2	213.4	208.1	211.2	217.5	232.1	249.0	266.8	267.3
41°	237.2	214.6	209.2	200.7	196.4	199.6	206.0	219.7	235.4	252.8	253.7
41.5°	224.4	202.5	197.1	188.5	184.4	188.5	195.0	207.6	222.4	239.3	240.2
42°	211.6	190.8	185.4	176.6	173.0	177.8	184.2	196.0	210.0	225.9	227.5
42.5°	199.4	179.4	173.6	165.1	161.8	167.3	173.9	184.7	198.0	213.2	214.8
43°	187.5	167.9	163.1	154.2	150.9	157.1	164.2	173.5	186.4	200.5	202.6
43.5°	176.1	156.9	152.5	143.6	140.6	147.2	154.3	163.0	174.7	188.3	190.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
45°	143.4	126.5	123.2	114.1	111.4	120.1	127.1	133.4	141.2	154.4	157.8
45.5°	133.2	116.9	114.2	105.3	102.8	111.9	118.6	124.1	130.8	144.1	147.5
46°	123.2	108.0	105.7	96.8	95.5	103.8	110.4	115.3	120.9	134.1	137.3
46.5°	113.3	99.4	97.6	88.9	88.2	96.6	102.5	107.0	111.0	124.6	127.7
47°	103.7	91.1	89.8	81.5	80.8	89.4	95.5	98.9	102.0	115.3	118.8
47.5°	94.5	83.2	82.3	74.5	73.5	82.2	88.6	91.7	94.7	106.5	109.9
48°	86.1	75.6	75.2	68.1	66.3	75.0	81.6	84.5	87.4	99.0	101.2
48.5°	77.7	68.4	68.5	62.1	60.5	67.9	74.6	77.3	80.1	91.5	93.5
49°	69.8	61.7	62.1	56.3	55.1	61.8	67.6	70.1	72.7	83.9	85.8
49.5°	62.5	55.3	56.1	51.0	49.9	55.9	61.2	63.8	65.5	76.4	78.1
50°	55.5	49.1	50.1	46.1	45.0	50.2	55.4	57.7	59.8	68.9	70.5
50.5°	49.1	43.3	44.7	41.4	40.4	44.9	49.6	52.1	54.5	62.5	63.9
51°	43.1	37.9	39.6	36.8	36.1	39.8	44.3	47.0	49.3	56.5	57.7
51.5°	37.4	33.6	34.6	33.0	32.0	35.1	39.1	42.0	44.5	50.9	51.4
52°	33.0	29.3	30.5	29.2	28.0	30.7	34.5	37.3	40.0	45.7	45.7
52.5°	28.7	25.0	26.5	25.4	24.1	26.5	29.8	32.8	35.7	40.7	40.2
53°	24.4	20.7	22.5	21.5	20.5	22.5	25.6	28.6	31.7	36.0	35.2
53.5°	20.1	16.4	18.5	17.8	17.1	18.9	21.7	24.5	27.5	31.6	30.4
54°	15.8	13.3	15.2	14.6	14.2	15.6	18.0	20.8	23.6	27.4	26.0
54.5°	12.7	10.6	12.3	11.8	12.0	13.2	14.8	17.3	20.0	23.3	22.0
55°	10.0	7.9	9.6	9.1	9.8	10.8	12.4	14.3	16.9	19.7	18.2
55.5°	7.3	5.5	7.0	6.6	7.6	8.4	10.1	12.0	14.5	16.4	14.9
56°	5.0	3.7	4.8	4.6	5.4	6.0	7.8	9.7	12.2	13.8	12.6
56.5°	3.3	3.2	3.3	3.3	3.3	3.7	5.5	7.4	9.8	11.3	10.2
57°	2.9	2.8	3.0	3.0	2.8	2.8	3.2	5.2	7.4	8.8	7.9
57.5°	2.5	2.3	2.6	2.7	2.5	2.5	2.5	2.9	5.1	6.3	5.6
58°	2.1	1.9	2.3	2.4	2.3	2.2	2.2	2.3	2.7	3.8	3.3
58.5°	1.8	1.7	2.0	2.1	2.1	2.1	2.0	2.0	2.2	2.7	2.5
59°	1.6	1.6	1.8	1.9	1.9	1.9	1.8	1.8	1.9	2.2	2.2
59.5°	1.5	1.5	1.7	1.8	1.8	1.8	1.7	1.7	1.7	1.9	2.0
60°	1.4	1.3	1.5	1.6	1.7	1.6	1.6	1.5	1.6	1.7	1.8
60.5°	1.3	1.2	1.4	1.5	1.6	1.5	1.4	1.4	1.5	1.6	1.7
61°	1.2	1.2	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.5	1.5
61.5°	1.1	1.1	1.2	1.3	1.4	1.3	1.2	1.2	1.2	1.3	1.4
62°	1.0	1.0	1.1	1.2	1.3	1.2	1.2	1.1	1.1	1.2	1.3
62.5°	0.9	0.9	1.1	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.2
63°	0.9	0.9	1.0	1.1	1.1	1.1	1.0	1.0	1.0	1.1	1.1
63.5°	0.8	0.8	0.9	1.0	1.0	1.0	0.9	0.9	0.9	1.0	1.1
64°	0.8	0.8	0.9	0.9	1.0	0.9	0.9	0.9	0.9	0.9	1.0
64.5°	0.7	0.7	0.8	0.9	0.9	0.9	0.8	0.8	0.8	0.9	0.9
65°	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.9
65.5°	0.6	0.6	0.7	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.8
66°	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.7	0.7



TEST NUMBER: P775665

CATALOG NUMBER: HCDJBL510CSD-HCD4TRC-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.6	0.6
68°	0.4	0.4	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6
68.5°	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
69°	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5
69.5°	0.3	0.3	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5
70°	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
70.5°	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4
71°	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4
71.5°	0.2	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4
72°	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
72.5°	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
73°	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3
73.5°	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3
74°	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
74.5°	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
75°	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
75.5°	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
76°	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2
76.5°	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2
77°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
77.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
78°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
78.5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
79°	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
79.5°	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
80°	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
80.5°	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1
81°	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1
81.5°	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
82°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P775665
CATALOG NUMBER: HCDJBL510CSD-HCD4TRC-1000lm-2700K

CANDELA DISTRIBUTION (continued):

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



TEST NUMBER: P775665

CATALOG NUMBER: HCDJBL510CSD-HCD4TRC-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1281.7	1281.7	1281.7	1281.7	1281.7	1281.7
0.5°	1282.9	1282.8	1283.7	1284.7	1284.8	1284.1
1°	1283.6	1284.3	1285.8	1287.2	1287.4	1286.2
1.5°	1284.0	1285.4	1287.1	1288.7	1289.5	1288.1
2°	1284.3	1286.0	1287.2	1289.2	1291.0	1289.8
2.5°	1284.5	1285.9	1286.1	1288.2	1291.5	1291.1
3°	1284.4	1285.2	1283.2	1285.1	1290.9	1291.8
3.5°	1284.3	1284.0	1278.7	1280.4	1288.9	1291.7
4°	1284.2	1282.1	1272.9	1273.3	1285.6	1290.7
4.5°	1283.7	1279.6	1265.6	1264.9	1280.9	1288.7
5°	1282.9	1276.4	1256.9	1255.5	1274.7	1285.5
5.5°	1282.0	1272.6	1248.1	1245.4	1267.5	1280.8
6°	1280.6	1268.3	1239.2	1235.9	1260.5	1274.9
6.5°	1278.2	1263.8	1230.6	1227.1	1253.2	1267.3
7°	1274.7	1258.9	1223.2	1219.4	1244.5	1258.3
7.5°	1270.1	1253.7	1217.1	1213.0	1236.4	1248.3
8°	1263.6	1247.8	1212.0	1207.7	1227.8	1237.4
8.5°	1255.8	1241.5	1207.7	1203.7	1218.8	1225.9
9°	1247.0	1234.2	1203.8	1199.8	1209.6	1213.2
9.5°	1236.8	1226.0	1200.8	1196.2	1200.7	1200.6
10°	1225.1	1216.9	1196.9	1192.5	1191.4	1188.4
10.5°	1213.6	1206.9	1192.7	1188.6	1182.2	1176.6
11°	1201.4	1196.5	1188.0	1184.0	1172.7	1165.2
11.5°	1188.7	1185.6	1182.5	1178.7	1163.5	1154.1
12°	1176.8	1174.8	1175.7	1172.3	1154.2	1143.0
12.5°	1165.3	1163.9	1168.5	1164.9	1144.9	1132.1
13°	1153.5	1153.0	1160.8	1157.4	1136.0	1121.5
13.5°	1141.8	1142.5	1152.3	1149.0	1126.3	1110.8
14°	1130.5	1131.9	1143.4	1140.2	1116.3	1099.6
14.5°	1119.1	1121.7	1134.3	1131.1	1105.8	1087.9
15°	1107.4	1110.8	1124.1	1121.3	1095.0	1076.1
15.5°	1095.9	1100.3	1113.5	1111.2	1083.3	1063.7
16°	1083.5	1089.1	1102.4	1100.1	1071.4	1051.0
16.5°	1071.3	1077.7	1091.1	1088.1	1059.2	1037.2
17°	1057.8	1065.6	1079.1	1075.7	1046.3	1024.0
17.5°	1044.7	1053.4	1066.1	1062.3	1033.0	1009.9
18°	1030.7	1040.5	1052.2	1048.2	1019.3	995.7
18.5°	1016.8	1027.2	1038.3	1033.3	1004.5	981.3
19°	1002.0	1013.2	1023.5	1017.7	990.3	967.0
19.5°	987.5	999.7	1008.6	1001.7	975.7	952.3
20°	972.4	985.2	993.6	986.1	960.8	937.6
20.5°	957.8	971.3	977.4	969.9	945.7	922.7
21°	942.7	956.4	962.1	953.5	930.6	907.8

TEST NUMBER: P775665

CATALOG NUMBER: HCDJBL510CSD-HCD4TRC-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
22.5°	898.1	912.6	914.9	903.3	883.8	862.3
23°	882.6	897.6	898.3	886.4	868.0	847.0
23.5°	867.1	882.1	881.5	869.1	851.2	831.3
24°	852.1	866.8	865.0	851.1	835.0	815.4
24.5°	836.8	851.2	847.9	833.5	818.0	799.8
25°	820.9	835.4	830.2	816.1	801.9	783.4
25.5°	805.5	819.6	813.4	798.9	784.2	767.3
26°	790.0	803.6	796.8	782.1	767.9	750.7
26.5°	773.7	787.6	779.8	765.0	750.9	733.2
27°	757.3	771.4	763.2	748.4	733.7	714.2
27.5°	741.0	754.8	746.1	731.5	715.0	694.9
28°	724.6	737.4	728.8	714.3	698.1	675.0
28.5°	708.3	719.3	711.6	696.7	679.5	654.5
29°	690.0	701.2	694.1	679.3	660.4	633.6
29.5°	671.0	682.3	676.7	661.2	641.5	612.6
30°	651.1	662.9	658.5	642.8	622.0	592.6
30.5°	630.8	643.1	639.5	623.9	601.6	572.9
31°	612.0	622.7	620.8	605.0	581.9	553.7
31.5°	591.1	602.1	601.7	586.2	561.7	535.1
32°	569.3	582.2	582.8	567.9	542.5	516.5
32.5°	550.3	562.7	563.5	549.5	523.5	499.2
33°	530.6	543.9	545.4	531.9	504.7	482.4
33.5°	510.9	524.7	525.8	514.2	487.0	465.2
34°	492.3	507.5	507.8	496.3	469.8	447.9
34.5°	474.5	490.2	490.5	478.8	453.1	430.5
35°	457.4	473.0	472.4	461.6	436.5	413.8
35.5°	440.6	456.2	455.1	444.3	420.6	397.5
36°	424.0	439.7	438.5	427.4	404.6	380.8
36.5°	407.4	423.5	421.8	410.1	389.2	365.1
37°	391.1	407.2	404.9	393.1	373.8	350.4
37.5°	375.0	391.1	389.4	377.1	357.3	335.8
38°	359.0	374.8	373.0	361.4	342.5	321.2
38.5°	343.3	359.1	355.7	346.2	327.9	306.5
39°	327.8	344.7	341.3	330.9	313.2	291.9
39.5°	313.0	330.2	326.9	315.7	298.5	277.9
40°	298.6	315.8	312.6	300.4	283.9	264.2
40.5°	284.5	301.4	298.2	285.2	270.1	250.7
41°	271.7	287.0	283.8	270.9	256.4	237.2
41.5°	257.8	273.3	269.5	256.8	243.1	224.4
42°	244.9	259.8	255.3	243.2	230.0	211.6
42.5°	232.2	246.2	241.7	230.2	217.3	199.4
43°	220.5	232.9	228.1	217.3	204.6	187.5
43.5°	207.9	219.8	214.9	204.3	192.0	176.1



TEST NUMBER: P775665

CATALOG NUMBER: HCDJBL510CSD-HCD4TRC-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
45°	173.8	182.3	177.8	168.4	155.9	143.4
45.5°	162.3	170.5	165.9	157.0	144.7	133.2
46°	151.7	159.0	154.4	145.9	134.0	123.2
46.5°	141.1	147.9	143.6	135.3	123.5	113.3
47°	131.1	137.1	132.8	125.0	113.5	103.7
47.5°	121.0	126.6	122.5	115.0	103.7	94.5
48°	111.6	116.6	112.3	105.3	94.7	86.1
48.5°	102.4	106.9	102.9	96.4	86.2	77.7
49°	94.1	97.8	93.9	87.4	77.9	69.8
49.5°	85.9	89.0	85.3	79.0	70.1	62.5
50°	77.6	80.4	76.5	70.8	63.0	55.5
50.5°	69.4	72.4	68.9	63.2	55.9	49.1
51°	62.3	64.9	61.5	56.2	49.3	43.1
51.5°	55.6	57.8	54.8	49.4	43.4	37.4
52°	49.0	51.1	48.0	43.0	37.6	33.0
52.5°	43.1	45.0	42.1	37.4	33.2	28.7
53°	37.7	39.1	36.4	33.0	28.7	24.4
53.5°	32.5	34.0	32.1	28.5	24.3	20.1
54°	27.6	29.7	27.8	24.1	19.8	15.8
54.5°	23.4	25.4	23.5	19.7	15.4	12.7
55°	19.4	21.1	19.2	15.3	12.5	10.0
55.5°	15.8	16.7	14.9	12.3	9.7	7.3
56°	13.4	13.6	12.0	9.7	7.1	5.0
56.5°	11.0	10.9	9.5	7.0	4.7	3.3
57°	8.6	8.2	6.8	4.8	3.2	2.9
57.5°	6.2	5.9	4.7	3.3	2.9	2.5
58°	3.8	4.1	3.4	2.9	2.5	2.1
58.5°	2.9	3.6	3.1	2.6	2.1	1.8
59°	2.5	3.2	2.7	2.2	1.8	1.6
59.5°	2.3	2.7	2.4	1.9	1.6	1.5
60°	2.1	2.2	2.0	1.7	1.5	1.4
60.5°	1.9	2.0	1.9	1.6	1.4	1.3
61°	1.8	1.9	1.7	1.5	1.3	1.2
61.5°	1.6	1.7	1.6	1.4	1.2	1.1
62°	1.5	1.6	1.5	1.3	1.1	1.0
62.5°	1.4	1.5	1.4	1.2	1.0	0.9
63°	1.3	1.4	1.3	1.1	1.0	0.9
63.5°	1.2	1.3	1.2	1.0	0.9	0.8
64°	1.1	1.2	1.1	0.9	0.8	0.8
64.5°	1.1	1.1	1.0	0.9	0.8	0.7
65°	1.0	1.1	1.0	0.8	0.7	0.7
65.5°	0.9	1.0	0.9	0.8	0.7	0.6
66°	0.9	0.9	0.8	0.7	0.6	0.6



TEST NUMBER: P775665

CATALOG NUMBER: HCDJBL510CSD-HCD4TRC-1000lm-2700K

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	0.7	0.8	0.7	0.6	0.5	0.5
68°	0.7	0.7	0.6	0.5	0.5	0.4
68.5°	0.6	0.7	0.6	0.5	0.4	0.4
69°	0.6	0.6	0.6	0.5	0.4	0.4
69.5°	0.5	0.6	0.5	0.4	0.4	0.3
70°	0.5	0.5	0.5	0.4	0.3	0.3
70.5°	0.5	0.5	0.5	0.4	0.3	0.3
71°	0.4	0.5	0.4	0.4	0.3	0.3
71.5°	0.4	0.4	0.4	0.3	0.3	0.2
72°	0.4	0.4	0.4	0.3	0.3	0.2
72.5°	0.4	0.4	0.3	0.3	0.2	0.2
73°	0.3	0.3	0.3	0.3	0.2	0.2
73.5°	0.3	0.3	0.3	0.2	0.2	0.2
74°	0.3	0.3	0.3	0.2	0.2	0.2
74.5°	0.3	0.3	0.3	0.2	0.2	0.1
75°	0.2	0.3	0.2	0.2	0.2	0.1
75.5°	0.2	0.2	0.2	0.2	0.1	0.1
76°	0.2	0.2	0.2	0.2	0.1	0.1
76.5°	0.2	0.2	0.2	0.1	0.1	0.1
77°	0.2	0.2	0.2	0.1	0.1	0.1
77.5°	0.2	0.2	0.2	0.1	0.1	0.1
78°	0.2	0.2	0.1	0.1	0.1	0.1
78.5°	0.1	0.1	0.1	0.1	0.1	0.1
79°	0.1	0.1	0.1	0.1	0.1	0.1
79.5°	0.1	0.1	0.1	0.1	0.1	0.0
80°	0.1	0.1	0.1	0.1	0.0	0.0
80.5°	0.1	0.1	0.1	0.1	0.0	0.0
81°	0.1	0.1	0.1	0.1	0.0	0.0
81.5°	0.1	0.1	0.1	0.0	0.0	0.0
82°	0.1	0.1	0.1	0.0	0.0	0.0
82.5°	0.1	0.1	0.1	0.0	0.0	0.0
83°	0.1	0.1	0.0	0.0	0.0	0.0
83.5°	0.0	0.0	0.0	0.0	0.0	0.0
84°	0.0	0.0	0.0	0.0	0.0	0.0
84.5°	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0
85.5°	0.0	0.0	0.0	0.0	0.0	0.0
86°	0.0	0.0	0.0	0.0	0.0	0.0
86.5°	0.0	0.0	0.0	0.0	0.0	0.0
87°	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0
88°	0.0	0.0	0.0	0.0	0.0	0.0
88.5°	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P775665
CATALOG NUMBER: HCDJBL510CSD-HCD4TRC-1000lm-2700K

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°	892.8	869.4	867.6	858.0	848.4	846.2	851.2	873.0	898.7	916.4	915.3
22°	877.8	853.4	851.2	841.2	832.0	830.5	835.9	858.5	883.6	901.0	899.6



44°	164.9	146.4	142.3	133.2	130.7	137.9	144.9	152.7	163.1	176.6	179.5
44.5°	153.8	136.3	132.6	123.4	120.8	128.8	135.8	142.8	152.0	165.4	168.4



66.5°	0.5	0.5	0.6	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.7
67°	0.5	0.5	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.7



89°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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21.5°	927.8	942.0	946.5	937.0	915.2	892.8
22°	912.7	927.1	930.5	920.5	899.9	877.8



44°	196.2	207.1	202.1	192.0	179.5	164.9
44.5°	184.7	194.6	190.0	180.1	167.9	153.8

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66.5°	0.8	0.9	0.8	0.7	0.6	0.5
67°	0.8	0.8	0.7	0.6	0.5	0.5

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89°	0.0	0.0	0.0	0.0	0.0	0.0
89.5°	0.0	0.0	0.0	0.0	0.0	0.0

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(END OF REPORT)