

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: io LED

Report Number: P179666

Luminaire Tested: **LDA6A45935D010TE LARH20SP 6LAL1LI 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P179666
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26673)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDA6A45935D010TE LARH20SP 6LAL1LI 30°
Description: PORTFOLIO 6" Lensed Adjustable, Self-flanged, 20° Spot, 30° Tilt
Light Source: (1) HIGH LUMEN LED 90CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3486.9 lumens
Efficiency: N/A
Efficacy: 65.8 lumens/watt
Spacing Criteria (0/90/45): 2.36 / 0.56 / 1.31
Luminous Opening: Circular (Dia: 0.5' x H: 0')
CIE Type: Direct

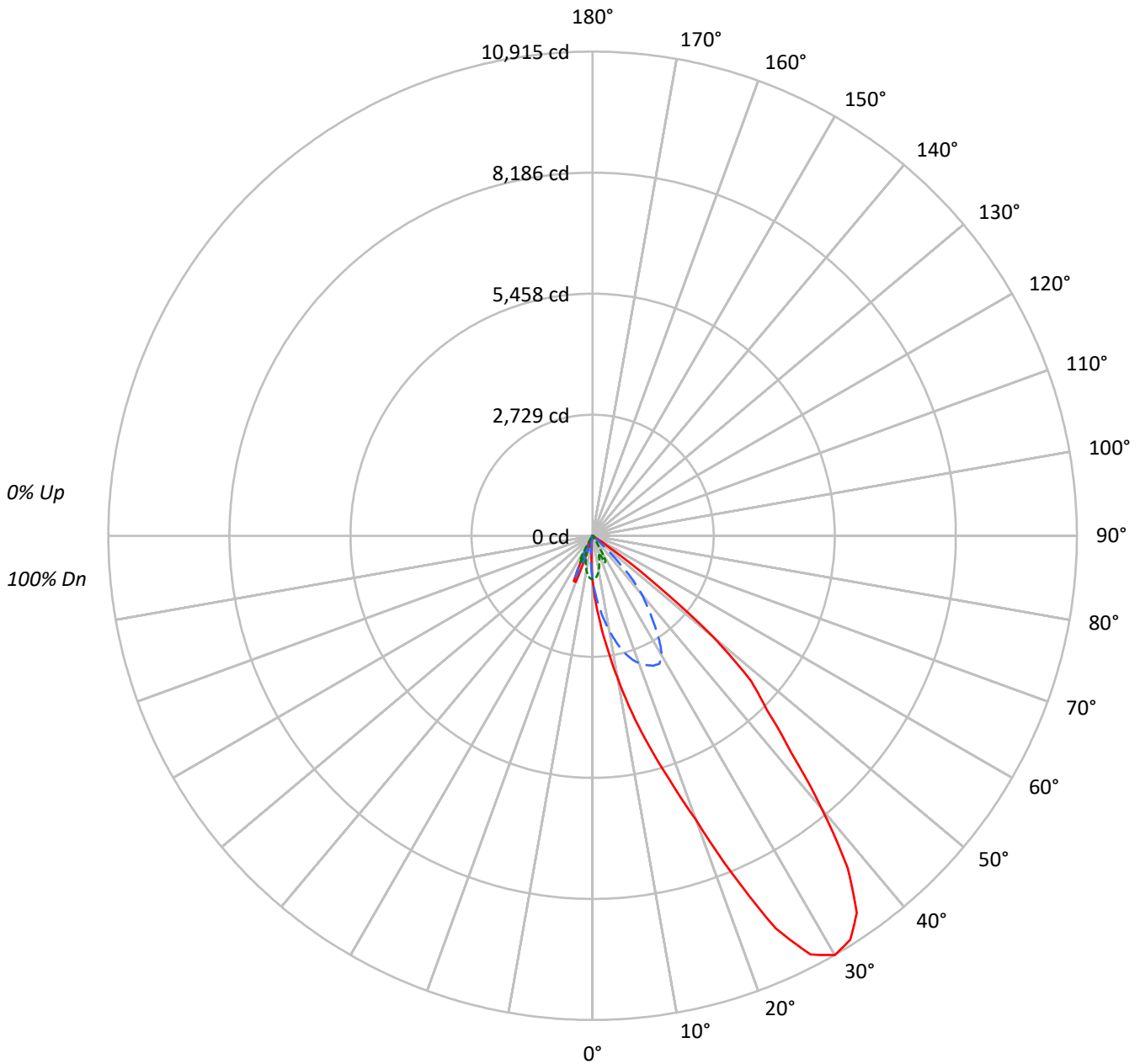
Input Watts (W): 53
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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									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	112	109	106	104	110	107	104	102	103	101	99	99	97	96	96	94	93	91																			
2	105	100	95	91	103	98	93	90	95	91	88	91	88	86	89	86	84	82																			
3	99	91	85	80	96	89	84	79	87	82	78	84	80	77	82	79	76	74																			
4	92	83	76	71	90	82	76	71	79	74	70	77	73	69	75	71	68	66																			
5	86	76	69	64	84	75	68	63	73	67	63	71	66	62	69	65	61	60																			
6	80	69	62	57	79	69	62	57	67	61	56	65	60	56	64	59	55	54																			
7	75	64	56	51	73	63	56	51	62	55	51	60	55	51	59	54	50	49																			
8	70	59	51	46	69	58	51	46	57	50	46	56	50	46	55	49	46	44																			
9	66	54	47	42	64	53	47	42	52	46	42	51	46	42	50	45	41	40																			
10	62	50	43	38	60	49	43	38	48	42	38	48	42	38	47	42	38	36																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	54113	54113	54113
5°	108364	51475	13801
10°	181732	44009	3774
15°	277521	32991	5482
20°	397623	24123	64557
25°	591143	40031	33111
30°	690942	17699	5146
35°	694755	3687	2724
40°	575256	2061	1574
45°	430603	1310	1248
50°	301773	938	725
55°	48505	726	564
60°	2971	746	460
65°	882	986	441
70°	545	1090	673
75°	360	1250	890
80°	253	1863	1326
85°	503	3711	1572



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	102.3	2.9
10°-20°	431.9	12.4
20°-30°	1039.1	29.8
30°-40°	1107.1	31.8
40°-50°	690.4	19.8
50°-60°	100.9	2.9
60°-70°	6.4	0.2
70°-80°	5.0	0.1
80°-90°	3.8	0.1
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°	1573.3	45.1
0°-40°	2680.4	76.9
0°-60°	3471.7	99.6
0°-90°	3486.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3486.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	987	987	987	987	987	
5°	1969	1579	935	466	251	228
15°	4890	2717	581	90	97	1451
25°	9773	3232	662	686	547	4404
35°	10381	2398	55	51	41	6263
45°	5554	702	17	20	16	4372
55°	508	12	8	8	6	898
65°	7	5	8	7	3	10
75°	2	3	6	6	4	2
85°	1	3	6	5	2	1
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1
2.5°	1468.4	1418.4	1435.4	1398.1	1384.5	1387.9	1360.8	1338.8	1326.9	1298.1	1268.4
5°	1969.2	1911.6	1928.5	1872.6	1837.8	1830.2	1787.8	1740.4	1698.0	1633.6	1579.4
7.5°	2576.7	2505.5	2517.4	2433.5	2363.2	2339.5	2275.1	2182.7	2097.1	1987.8	1883.6
10°	3264.7	3197.8	3194.4	3066.5	2946.1	2899.5	2805.5	2653.0	2507.2	2342.8	2171.7
12.5°	4075.6	3974.8	3957.8	3793.5	3613.8	3537.6	3406.2	3173.2	2942.7	2703.0	2456.4
15°	4889.9	4781.4	4754.3	4547.6	4296.8	4194.2	4018.8	3708.7	3391.0	3052.0	2717.4
17.5°	5757.5	5583.8	5437.3	5198.3	4908.5	4803.5	4576.4	4179.0	3779.0	3360.5	2913.1
20°	6815.8	6621.8	6415.9	6007.5	5476.2	5269.5	5020.4	4572.1	4073.1	3589.2	3058.0
22.5°	8266.5	7947.9	7510.6	6854.0	6123.6	5828.7	5444.0	4863.6	4299.3	3756.2	3154.6
25°	9773.0	9333.2	8852.8	7843.6	6715.9	6355.8	5849.9	5086.5	4478.9	3879.0	3231.7
27.5°	10640.7	10287.3	9742.5	8685.0	7196.3	6723.5	6140.5	5254.2	4593.3	3938.3	3253.7
30°	10915.2	10628.8	10134.0	9049.4	7357.3	6793.8	6167.6	5255.9	4538.2	3835.0	3126.6
32.5°	10800.8	10528.8	9981.4	8821.5	7062.4	6543.9	5936.3	5042.4	4267.1	3517.2	2800.4
35°	10381.4	10022.1	9357.0	8064.8	6560.8	6045.6	5477.9	4660.3	3850.2	3085.9	2397.9
37.5°	9440.0	9067.2	8310.5	7094.6	5914.3	5466.1	5009.4	4232.4	3430.8	2693.6	2047.1
40°	8038.5	7644.5	7022.6	6169.3	5217.0	4911.1	4525.5	3758.7	2986.8	2308.9	1722.6
42.5°	6624.4	6371.9	6003.3	5327.1	4663.7	4362.0	3987.5	3242.7	2559.8	1912.4	1308.3
45°	5554.2	5354.2	5109.3	4682.3	4056.1	3772.3	3424.0	2723.3	1995.4	1277.8	701.6
47.5°	4839.9	4595.9	4382.3	3906.1	3234.2	2889.4	2519.9	1794.6	1150.7	554.1	194.0
50°	3538.4	3244.4	3045.3	2511.5	1901.4	1614.1	1343.9	832.9	372.8	123.7	32.2
52.5°	1793.8	1571.8	1454.8	1099.0	726.2	543.1	399.1	172.0	73.7	24.6	18.6
55°	507.5	408.4	366.0	241.5	131.3	92.4	60.2	30.5	22.0	16.9	11.9
57.5°	52.5	44.9	42.4	34.7	28.0	26.3	23.7	18.6	14.4	11.9	7.6
60°	27.1	24.6	23.7	21.2	17.8	16.1	15.3	12.7	9.3	6.8	5.9
62.5°	14.4	13.6	11.9	11.0	9.3	9.3	8.5	6.8	5.9	5.9	5.1
65°	6.8	6.8	6.8	6.8	5.9	5.9	5.1	5.1	5.1	5.1	5.1
67.5°	5.1	5.1	5.1	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
70°	3.4	3.4	3.4	3.4	2.5	2.5	2.5	2.5	2.5	3.4	3.4
72.5°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	2.5	2.5	3.4	3.4
75°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	2.5	2.5	3.4	3.4
77.5°	0.8	0.8	1.7	1.7	1.7	1.7	1.7	2.5	2.5	3.4	3.4
80°	0.8	0.8	0.8	0.8	1.7	1.7	1.7	2.5	2.5	3.4	3.4
82.5°	0.8	0.8	0.8	0.8	1.7	1.7	1.7	2.5	2.5	3.4	3.4
85°	0.8	0.8	0.8	0.8	1.7	1.7	1.7	1.7	2.5	3.4	3.4
87.5°	0.0	0.0	0.8	0.8	0.8	1.7	1.7	1.7	2.5	3.4	3.4
90°	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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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1
2.5°	1232.9	1211.7	1177.8	1143.9	1133.7	1105.8	1072.7	1033.7	997.3	968.5	940.5
5°	1492.1	1435.4	1371.8	1286.2	1255.7	1208.3	1137.1	1060.8	994.8	935.4	880.4
7.5°	1750.6	1643.8	1527.7	1404.0	1351.5	1281.1	1169.3	1061.7	963.4	876.1	793.9
10°	1979.3	1815.0	1651.4	1481.1	1407.4	1316.7	1167.6	1030.3	904.9	790.6	687.2
12.5°	2190.3	1963.2	1746.3	1527.7	1435.4	1326.1	1142.2	976.1	827.0	693.1	571.9
15°	2375.0	2082.7	1814.1	1549.7	1432.8	1307.4	1092.2	901.5	735.5	581.3	449.9
17.5°	2503.8	2150.5	1833.6	1526.9	1398.1	1254.0	1015.9	812.6	630.4	468.6	318.6
20°	2580.9	2168.3	1815.0	1476.9	1334.5	1185.4	944.8	738.9	561.8	413.5	288.1
22.5°	2623.3	2176.8	1801.4	1459.1	1314.2	1171.8	948.2	751.6	599.9	499.9	489.8
25°	2665.7	2203.9	1825.1	1479.4	1343.9	1211.7	998.1	797.3	694.0	661.8	672.8
27.5°	2663.1	2186.9	1803.1	1460.8	1330.3	1193.0	954.9	743.9	672.8	622.8	581.3
30°	2512.3	2025.9	1633.6	1270.1	1121.0	938.0	636.3	437.2	334.7	279.6	251.7
32.5°	2163.2	1652.3	1248.1	882.9	737.2	533.0	273.7	144.0	123.7	110.2	98.3
35°	1798.0	1315.9	939.7	556.7	370.3	202.5	94.1	61.0	56.8	55.1	54.2
37.5°	1482.8	1040.5	617.7	222.8	133.0	75.4	43.2	39.0	38.1	39.0	38.1
40°	1170.1	686.3	244.9	74.6	40.7	33.0	30.5	28.0	28.0	28.8	28.0
42.5°	700.7	255.9	74.6	28.0	26.3	23.7	22.9	22.0	21.2	22.0	22.0
45°	231.3	65.2	24.6	19.5	18.6	17.8	16.9	16.9	16.9	16.9	17.8
47.5°	52.5	22.9	16.9	14.4	14.4	13.6	13.6	12.7	13.6	13.6	14.4
50°	20.3	14.4	11.9	11.0	11.0	10.2	10.2	10.2	10.2	11.0	11.0
52.5°	12.7	10.2	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	9.3
55°	8.5	7.6	6.8	6.8	6.8	6.8	6.8	7.6	7.6	7.6	7.6
57.5°	5.9	5.9	5.9	5.9	6.8	5.9	6.8	5.9	5.9	6.8	7.6
60°	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	6.8	6.8	7.6
62.5°	5.1	5.9	5.9	5.9	5.9	5.9	5.9	6.8	6.8	6.8	7.6
65°	5.1	5.1	5.9	5.9	5.9	5.9	6.8	6.8	6.8	7.6	7.6
67.5°	4.2	5.1	5.1	5.9	5.9	5.9	5.9	6.8	6.8	6.8	7.6
70°	4.2	4.2	5.1	5.1	5.1	5.1	5.9	5.9	5.9	6.8	6.8
72.5°	4.2	4.2	5.1	5.1	5.1	5.1	5.1	5.9	5.9	5.9	6.8
75°	4.2	4.2	5.1	5.1	5.1	5.1	5.1	5.9	5.9	5.9	6.8
77.5°	4.2	4.2	5.1	5.1	5.1	5.1	5.1	5.9	5.9	5.9	6.8
80°	4.2	4.2	5.1	5.1	5.1	5.1	5.9	5.9	5.9	5.9	6.8
82.5°	4.2	4.2	5.1	5.1	5.1	5.1	5.1	5.9	5.9	5.9	5.9
85°	4.2	4.2	5.1	5.1	5.1	5.1	5.1	5.1	5.9	5.9	5.9
87.5°	4.2	4.2	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.9
90°	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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CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1
2.5°	903.2	868.5	851.6	826.1	827.8	785.5	769.4	738.9	721.9	704.1	683.8
5°	813.4	752.4	709.2	675.3	656.7	601.6	564.3	516.0	466.0	417.7	377.9
7.5°	700.7	620.2	554.1	510.9	484.7	373.7	302.5	245.7	223.7	206.7	189.8
10°	575.3	475.3	358.4	299.1	262.7	210.1	189.0	156.8	133.9	112.7	100.0
12.5°	449.1	296.6	214.4	196.6	183.9	136.4	107.6	100.0	81.3	77.1	75.4
15°	282.2	194.9	151.7	130.5	113.5	94.9	87.3	86.4	89.8	90.7	89.8
17.5°	200.0	155.9	114.4	111.8	111.8	122.0	123.7	131.3	138.1	144.0	144.9
20°	256.7	230.5	268.6	285.5	315.2	351.6	405.0	479.6	544.8	610.9	661.8
22.5°	491.4	549.1	633.8	663.5	713.4	791.4	865.1	933.7	1003.2	1054.9	1065.9
25°	722.8	762.6	812.6	801.6	816.8	812.6	771.1	715.1	685.5	631.3	612.6
27.5°	553.3	511.8	477.0	437.2	417.7	380.4	327.1	293.2	262.7	232.2	219.5
30°	225.4	197.4	177.1	162.7	154.2	133.9	123.7	112.7	107.6	100.0	95.7
32.5°	88.1	83.0	80.5	78.0	77.1	74.6	72.0	68.6	67.8	67.8	64.4
35°	52.5	52.5	52.5	51.7	52.5	51.7	50.8	50.0	50.8	50.8	48.3
37.5°	37.3	38.1	38.1	38.1	38.1	38.1	38.1	38.1	37.3	37.3	34.7
40°	28.0	28.8	29.7	28.8	29.7	29.7	28.8	28.0	28.0	28.0	26.3
42.5°	22.9	22.9	22.9	22.9	23.7	22.9	22.9	22.9	22.9	22.9	22.0
45°	18.6	18.6	18.6	18.6	19.5	19.5	18.6	18.6	19.5	19.5	18.6
47.5°	14.4	14.4	14.4	14.4	14.4	14.4	14.4	13.6	13.6	13.6	12.7
50°	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.9	11.0	11.0
52.5°	9.3	9.3	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	9.3
55°	8.5	8.5	9.3	9.3	9.3	9.3	9.3	8.5	8.5	8.5	7.6
57.5°	7.6	8.5	8.5	8.5	8.5	8.5	8.5	8.5	7.6	7.6	6.8
60°	7.6	7.6	8.5	8.5	8.5	8.5	7.6	7.6	6.8	6.8	5.9
62.5°	7.6	7.6	8.5	8.5	8.5	7.6	7.6	6.8	6.8	5.9	5.9
65°	7.6	8.5	8.5	8.5	8.5	7.6	7.6	6.8	6.8	5.9	5.9
67.5°	7.6	8.5	8.5	8.5	8.5	7.6	7.6	6.8	6.8	5.9	5.9
70°	7.6	7.6	7.6	7.6	7.6	7.6	7.6	6.8	6.8	5.9	5.9
72.5°	6.8	7.6	7.6	7.6	7.6	7.6	6.8	6.8	6.8	5.9	5.9
75°	6.8	6.8	6.8	6.8	7.6	6.8	6.8	6.8	5.9	5.9	5.1
77.5°	6.8	6.8	6.8	6.8	6.8	6.8	6.8	5.9	5.9	5.9	5.1
80°	6.8	6.8	6.8	6.8	6.8	6.8	6.8	5.9	5.9	5.1	5.1
82.5°	6.8	6.8	6.8	6.8	6.8	6.8	5.9	5.9	5.1	5.1	5.1
85°	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.1	5.1	4.2	4.2
87.5°	5.9	5.9	5.9	5.9	5.9	5.1	5.1	4.2	3.4	3.4	2.5
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: P179666

CATALOG NUMBER: LDA6A45935D010TE LARH20SP 6LAL1LI 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	987.1	987.1	987.1	987.1	987.1	987.1	987.1	987.1
2.5°	661.8	647.4	644.0	644.0	636.3	621.1	618.5	613.5
5°	334.7	299.1	292.3	284.7	272.0	256.7	252.5	250.8
7.5°	172.9	157.6	155.1	150.0	142.3	134.7	133.0	132.2
10°	101.7	92.4	88.1	80.5	72.9	68.6	68.6	67.8
12.5°	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4
15°	91.5	94.1	94.1	94.9	95.7	96.6	98.3	96.6
17.5°	154.2	166.9	166.1	167.8	173.7	181.3	177.9	182.2
20°	749.0	846.5	874.4	902.4	987.1	1066.8	1050.7	1106.6
22.5°	1076.1	1105.8	1093.9	1086.3	1104.1	1094.7	1134.6	1108.3
25°	577.0	571.1	571.1	545.7	550.8	538.0	555.0	547.4
27.5°	212.7	194.0	192.3	180.5	188.1	170.3	175.4	172.0
30°	91.5	92.4	89.0	86.4	83.9	82.2	82.2	81.3
32.5°	62.7	62.7	61.0	59.3	57.6	55.9	55.1	54.2
35°	46.6	46.6	44.9	44.1	43.2	41.5	40.7	40.7
37.5°	33.9	33.9	33.0	32.2	30.5	29.7	28.8	28.8
40°	26.3	25.4	24.6	24.6	22.9	22.9	22.0	22.0
42.5°	21.2	21.2	21.2	20.3	19.5	18.6	18.6	18.6
45°	18.6	18.6	17.8	16.9	16.9	16.9	16.1	16.1
47.5°	12.7	12.7	11.9	11.9	11.0	11.0	10.2	10.2
50°	10.2	10.2	10.2	10.2	9.3	8.5	8.5	8.5
52.5°	9.3	8.5	8.5	8.5	7.6	7.6	6.8	6.8
55°	7.6	7.6	6.8	6.8	5.9	5.9	5.9	5.9
57.5°	6.8	5.9	5.9	5.9	5.1	5.1	5.1	5.1
60°	5.9	5.1	5.1	5.1	4.2	4.2	4.2	4.2
62.5°	5.1	5.1	5.1	5.1	4.2	4.2	4.2	4.2
65°	5.1	5.1	5.1	4.2	4.2	4.2	4.2	3.4
67.5°	5.1	5.1	5.1	5.1	4.2	4.2	4.2	4.2
70°	5.1	5.1	5.1	5.1	4.2	4.2	4.2	4.2
72.5°	5.1	5.1	5.1	5.1	4.2	4.2	4.2	4.2
75°	5.1	5.1	5.1	5.1	4.2	4.2	4.2	4.2
77.5°	5.1	4.2	4.2	4.2	4.2	4.2	4.2	4.2
80°	5.1	4.2	4.2	4.2	4.2	3.4	3.4	4.2
82.5°	4.2	4.2	4.2	4.2	3.4	3.4	3.4	3.4
85°	3.4	3.4	3.4	3.4	2.5	2.5	2.5	2.5
87.5°	2.5	1.7	1.7	1.7	1.7	1.7	1.7	1.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





— 0°-180° - - 45°-225° - - - - 90°-270°













(END OF REPORT)