

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: P175488

Luminaire Tested: **LDA6A15830D010TE LARL20NF 6LAL1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P175488
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26268)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDA6A15830D010TE LARL20NF 6LAL1 30° Tilt
Description: PORTFOLIO 6" Lensed Adjustable, Self-flange Trim Ring, 20° Narrow Flood Optic, at 30° tilt
Light Source: (1) HIGH LUMEN LED 80CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1258.3 lumens
Efficiency: N/A
Efficacy: 56.5 lumens/watt
Spacing Criteria (0/90/45): 2.7 / 0.43 / 1.35
Luminous Opening: Circular (Dia: 0.5' x H: 0')
CIE Type: Direct

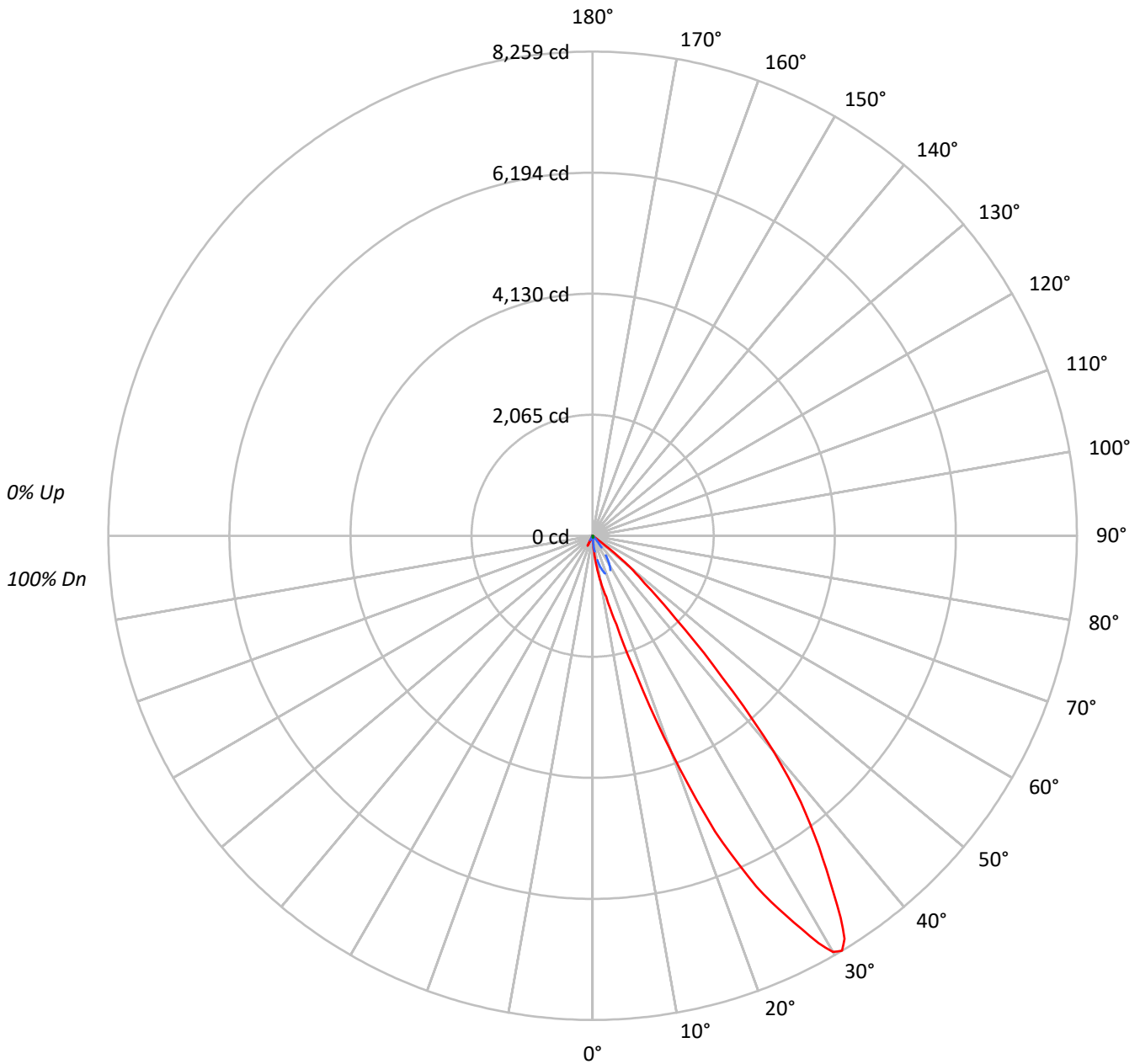
Input Watts (W): 22.27
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	94	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	78	76	74																			
4	92	83	76	71	90	82	75	70	79	74	70	77	72	69	75	71	68	66																			
5	86	75	68	63	84	74	68	63	72	67	62	71	66	62	69	65	61	59																			
6	80	69	62	56	78	68	61	56	66	60	56	65	59	55	63	59	55	53																			
7	74	63	56	50	73	62	55	50	61	55	50	59	54	50	58	53	49	48																			
8	69	58	50	45	68	57	50	45	56	49	45	55	49	45	54	48	44	43																			
9	65	53	46	41	63	52	45	41	51	45	40	50	44	40	49	44	40	39																			
10	60	49	41	37	59	48	41	37	47	41	37	46	40	36	45	40	36	35																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	1557	1557	1557
5°	15133	1376	567
10°	44761	985	356
15°	88848	670	306
20°	229194	543	432
25°	399434	653	3085
30°	518852	684	1741
35°	464901	294	167
40°	343701	107	0
45°	154776	116	0
50°	69831	128	0
55°	6232	143	0
60°	757	164	0
65°	324	259	0
70°	240	321	0
75°	0	424	0
80°	0	631	158
85°	0	1258	314



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	11.3	0.9
10°-20°	105.9	8.4
20°-30°	418.3	33.2
30°-40°	504.8	40.1
40°-50°	195.9	15.6
50°-60°	17.2	1.4
60°-70°	1.7	0.1
70°-80°	1.6	0.1
80°-90°	1.5	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°	535.6	42.6
0°-40°	1040.4	82.7
0°-60°	1253.6	99.6
0°-90°	1258.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1258.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	28	28	28	28	28	
5°	275	134	25	12	10	44
15°	1566	592	12	7	5	574
25°	6604	701	11	34	51	3020
35°	6947	356	4	4	2	4270
45°	1996	25	2	1	0	1754
55°	65	3	2	1	0	157
65°	2	2	2	2	0	3
75°	0	2	2	2	0	0
85°	0	2	2	2	0	0
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4
2.5°	89.2	84.8	79.9	81.9	82.9	85.3	83.3	76.0	80.4	77.0	74.0
5°	275.0	270.1	260.8	262.3	259.4	262.8	254.9	239.3	242.2	237.3	224.6
7.5°	536.4	515.8	500.6	501.6	492.7	496.7	481.9	455.0	452.0	427.0	423.1
10°	804.1	793.8	775.6	773.2	757.5	759.5	736.4	700.6	690.8	661.9	645.2
12.5°	1066.9	1049.7	1024.2	1018.8	993.3	993.8	962.4	922.2	907.5	877.6	854.6
15°	1565.5	1541.0	1482.6	1460.6	1390.0	1379.2	1301.7	1210.5	1166.4	1114.9	1047.2
17.5°	2485.7	2470.1	2355.8	2292.6	2149.4	2007.2	1923.4	1726.3	1611.1	1466.9	1341.9
20°	3928.7	3957.6	3758.0	3616.8	3351.1	3051.0	2839.2	2480.3	2240.6	1992.0	1756.7
22.5°	5463.2	5475.5	5271.0	5095.0	4785.7	4373.3	3885.5	3450.1	3010.8	2583.8	2195.5
25°	6603.6	6568.3	6343.3	6132.0	5806.4	5385.3	4911.2	4329.7	3729.1	3142.7	2574.0
26°	6951.7	6932.6	6707.1	6454.1	6095.7	5668.2	5175.0	4588.1	3953.7	3322.2	2689.7
27°	7274.4	7262.1	7017.4	6736.0	6334.5	5886.8	5370.6	4784.2	4123.3	3460.9	2773.5
28°	7601.4	7587.6	7291.5	6965.0	6528.6	6042.3	5505.9	4915.1	4232.6	3542.3	2808.4
29°	7947.0	7920.5	7542.0	7133.2	6658.1	6133.0	5576.5	4974.9	4269.9	3562.4	2799.5
30°	8196.6	8155.4	7723.0	7239.5	6711.0	6161.4	5584.3	4973.4	4246.8	3520.7	2743.1
31°	8259.3	8217.7	7773.5	7238.1	6672.3	6118.3	5528.0	4903.8	4150.7	3419.7	2648.0
32°	8107.3	8069.1	7645.5	7072.8	6549.7	6014.3	5415.7	4774.9	4001.7	3268.7	2519.1
33°	7768.1	7739.1	7373.9	6855.6	6374.2	5866.7	5254.9	4591.5	3789.9	3076.5	2367.6
34°	7340.1	7319.0	7038.0	6600.2	6151.6	5664.3	5046.5	4349.8	3510.9	2858.8	2202.4
35°	6946.8	6931.2	6703.7	6315.4	5897.1	5413.7	4782.7	4052.2	3223.6	2624.5	2025.9
36°	6568.3	6555.1	6357.5	5996.7	5593.2	5120.0	4450.8	3696.3	2915.2	2381.3	1843.0
37°	6173.2	6161.4	5991.8	5648.6	5251.4	4769.0	4056.6	3317.3	2601.9	2138.6	1655.2
38°	5763.3	5753.5	5598.1	5255.9	4852.8	4340.0	3607.0	2925.5	2296.5	1901.8	1486.5
39°	5305.9	5297.5	5154.4	4795.5	4365.0	3834.5	3144.2	2543.6	2006.7	1671.9	1323.3
40°	4802.8	4791.6	4648.4	4247.3	3812.5	3314.3	2699.5	2193.0	1733.2	1457.1	1179.6
42.5°	3265.3	3253.0	3146.6	2913.3	2494.6	2174.4	1789.0	1467.9	1228.2	1062.0	918.8
45°	1996.4	1997.9	1942.0	1797.9	1545.9	1367.9	1158.5	1005.1	897.2	833.5	734.0
47.5°	1207.6	1207.6	1182.6	1109.0	995.8	924.7	837.9	766.3	683.9	621.2	513.3
50°	818.8	819.3	781.0	784.9	709.4	665.3	582.5	495.2	414.3	323.1	230.4
51°	606.0	608.9	573.6	589.8	507.0	469.7	391.2	317.2	245.6	175.0	101.0
52°	370.7	376.0	352.0	366.7	318.7	264.3	200.5	148.1	99.5	69.6	48.5
53°	172.1	176.5	164.2	171.1	142.7	111.3	84.3	68.6	54.9	44.6	32.8
54°	91.2	92.2	88.3	86.3	78.4	69.1	57.4	47.6	37.3	29.9	22.1
55°	65.2	65.2	63.2	61.3	54.9	47.1	38.2	32.4	24.5	19.6	14.2
57.5°	20.1	20.1	20.1	19.1	16.7	14.2	11.3	9.8	7.8	7.4	5.9
60°	6.9	6.9	6.9	6.4	5.9	5.4	4.9	4.4	3.9	3.9	3.4
61°	4.9	4.9	4.9	4.9	4.4	4.4	3.9	3.4	2.9	3.4	2.9
62°	3.9	4.4	3.9	3.9	3.9	3.4	2.9	2.9	2.5	2.9	2.5
63°	3.4	3.4	3.4	3.4	2.9	2.9	2.5	2.5	2.0	2.5	2.5
64°	2.9	2.9	2.9	2.9	2.5	2.5	2.0	2.0	1.5	2.0	2.0
65°	2.5	2.5	2.5	2.5	2.0	2.0	2.0	1.5	1.5	2.0	2.0
66°	2.0	2.0	2.0	2.0	2.0	1.5	1.5	1.5	1.0	1.5	1.5



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CATALOG NUMBER: LDA6A15830D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
72.5°	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	1.0	1.0
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
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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CATALOG NUMBER: LDA6A15830D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4
2.5°	71.1	66.2	65.2	65.2	54.9	56.9	53.4	51.0	35.8	27.5	20.6
5°	217.2	199.5	192.2	185.8	157.9	155.4	138.3	134.3	48.0	25.0	15.7
7.5°	405.0	378.0	360.8	344.2	299.1	286.8	257.4	250.0	65.2	21.1	12.3
10°	618.7	580.0	550.1	510.4	452.0	426.5	383.4	367.7	79.4	17.7	11.8
12.5°	819.8	775.6	734.9	682.5	603.5	562.8	506.0	485.9	84.8	14.7	10.8
15°	993.3	934.5	884.0	827.6	739.3	687.9	618.2	592.3	80.4	11.8	9.3
17.5°	1213.5	1113.9	1026.2	947.2	851.1	788.4	707.5	665.3	65.2	10.3	8.3
20°	1539.0	1338.5	1184.0	1056.6	923.2	845.3	755.5	704.5	47.1	9.3	8.3
22.5°	1845.4	1559.1	1322.3	1139.9	960.5	867.3	774.2	717.8	33.3	9.3	9.8
25°	2095.5	1725.3	1417.9	1194.8	981.1	871.7	767.3	700.6	26.0	10.8	19.1
26°	2165.6	1766.5	1436.5	1199.2	978.1	865.4	755.5	684.9	23.0	14.7	35.8
27°	2209.2	1785.1	1437.0	1192.4	967.3	852.6	737.9	663.8	20.1	22.6	60.3
28°	2218.0	1776.3	1420.4	1173.3	948.7	835.4	718.3	638.4	18.6	28.4	68.6
29°	2194.0	1744.9	1390.0	1145.3	926.1	814.9	694.7	610.4	16.2	21.6	44.6
30°	2140.1	1693.0	1345.3	1109.5	902.1	791.8	665.8	577.1	13.2	10.8	20.1
31°	2059.2	1621.4	1290.4	1067.3	875.2	762.4	631.0	539.8	11.3	7.4	11.8
32°	1956.7	1535.6	1229.1	1024.2	844.8	726.6	590.3	498.1	10.3	5.9	9.8
33°	1839.1	1445.4	1165.9	980.6	808.5	683.9	546.7	453.5	9.3	6.4	9.8
34°	1710.6	1353.2	1094.3	935.0	766.3	637.4	500.1	401.1	8.3	5.9	7.4
35°	1571.4	1257.6	1030.1	894.8	718.8	586.9	452.5	356.4	7.4	4.4	4.9
36°	1451.2	1164.4	967.8	843.8	666.8	534.9	403.5	308.4	6.4	2.9	3.4
37°	1320.3	1077.2	910.0	790.8	610.9	481.5	354.5	260.8	5.9	2.0	2.9
38°	1198.3	996.7	852.1	730.0	553.5	427.5	304.5	214.3	5.4	2.0	2.5
39°	1087.5	923.7	798.2	665.3	493.2	371.1	254.0	168.2	4.9	1.5	2.5
40°	992.3	858.5	733.5	597.2	431.0	315.3	203.5	124.5	4.4	1.5	2.5
42.5°	807.0	688.8	553.5	422.1	279.0	178.5	91.2	45.6	3.4	1.5	2.0
45°	616.8	490.3	365.3	254.0	143.7	69.1	33.8	25.0	2.9	1.5	2.0
47.5°	400.6	294.2	196.1	110.8	48.0	27.9	17.7	12.7	2.5	1.5	2.0
50°	148.1	81.9	43.1	27.0	18.6	11.8	7.8	7.4	2.5	1.5	2.0
51°	60.8	39.7	27.0	18.1	11.8	8.3	6.4	6.4	2.5	1.5	2.0
52°	36.3	25.0	18.1	13.2	8.8	6.4	4.9	5.4	2.5	1.5	2.0
53°	24.0	17.2	13.2	10.3	6.9	4.9	3.4	3.9	2.5	1.5	2.0
54°	16.2	12.3	9.8	7.8	4.9	3.9	2.0	3.4	2.0	1.5	2.0
55°	11.3	8.8	7.4	5.9	3.4	2.5	1.5	2.9	2.0	1.5	2.0
57.5°	4.9	4.4	3.9	3.4	1.5	1.0	0.5	2.5	2.0	1.5	2.0
60°	3.4	2.9	2.5	2.5	0.5	0.5	0.0	2.0	2.0	1.5	2.0
61°	2.9	2.5	2.5	2.0	0.5	0.5	0.0	2.0	2.5	1.5	2.0
62°	2.5	2.5	2.0	2.0	0.5	0.0	0.0	2.0	2.5	1.5	2.5
63°	2.0	2.0	2.0	2.0	0.5	0.0	0.0	2.0	2.5	1.5	2.5
64°	2.0	2.0	2.0	2.0	0.0	0.0	0.0	2.0	2.5	1.5	2.5
65°	2.0	1.5	1.5	1.5	0.0	0.0	0.0	2.0	2.5	2.0	2.5
66°	1.5	1.5	1.5	1.5	0.0	0.0	0.0	2.0	2.5	2.0	2.5



TEST NUMBER: P175488

CATALOG NUMBER: LDA6A15830D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
72.5°	1.0	1.0	1.0	1.0	0.0	0.0	0.0	1.5	2.5	2.0	2.9
75°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.0	2.5	2.0	2.9
77.5°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.0	2.5	2.0	2.9
80°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.0	2.5	2.0	2.9
82.5°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.0	2.5	2.0	2.9
85°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.0	2.5	2.0	2.9
87.5°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.0	2.5	2.0	2.9
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: P175488

CATALOG NUMBER: LDA6A15830D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	28.4	28.4	28.4
2.5°	17.2	15.7	14.7
5°	12.3	11.3	10.3
7.5°	10.3	8.8	8.3
10°	9.3	6.9	6.4
12.5°	7.8	5.9	5.4
15°	7.4	5.9	5.4
17.5°	7.4	5.9	5.4
20°	7.8	7.4	7.4
22.5°	11.3	12.3	12.7
25°	34.3	44.1	51.0
26°	80.4	120.6	161.8
27°	122.1	178.0	189.7
28°	109.8	127.5	124.0
29°	53.0	59.8	54.4
30°	23.5	27.9	27.5
31°	15.2	17.2	16.7
32°	12.7	11.8	11.3
33°	10.3	8.3	6.9
34°	6.9	5.4	4.4
35°	4.4	2.9	2.5
36°	2.9	1.5	1.0
37°	2.0	1.0	0.5
38°	2.0	0.5	0.0
39°	1.5	0.5	0.0
40°	1.5	0.5	0.0
42.5°	1.5	0.0	0.0
45°	1.0	0.0	0.0
47.5°	1.0	0.0	0.0
50°	1.5	0.5	0.0
51°	1.5	0.0	0.0
52°	1.5	0.0	0.0
53°	1.0	0.0	0.0
54°	1.0	0.0	0.0
55°	1.0	0.0	0.0
57.5°	1.0	0.0	0.0
60°	1.0	0.0	0.0
61°	1.5	0.0	0.0
62°	1.5	0.0	0.0
63°	1.5	0.0	0.0
64°	1.5	0.5	0.0
65°	1.5	0.5	0.0
66°	1.5	0.5	0.0



TEST NUMBER: P175488

CATALOG NUMBER: LDA6A15830D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	2.0	0.5	0.0
75°	2.0	0.5	0.0
77.5°	2.0	0.5	0.0
80°	2.0	1.0	0.5
82.5°	2.0	1.0	0.5
85°	2.0	1.0	0.5
87.5°	2.0	1.0	0.5
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.5	1.5
70°	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.5	0.5	1.5	1.5





67.5°	1.5	1.5	1.5	1.5	0.0	0.0	0.0	2.0	2.5	2.0	2.5
70°	1.5	1.5	1.5	1.5	0.0	0.0	0.0	2.0	2.5	2.0	2.9





67.5°	2.0	0.5	0.0
70°	2.0	0.5	0.0



(END OF REPORT)