

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: P175494

Luminaire Tested: **LDA6A15940D010TE LARL20NF 6LAL1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P175494  
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: LDA6A15940D010TE 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 90CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1164.2 lumens  
Efficiency: N/A  
Efficacy: 52.3 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

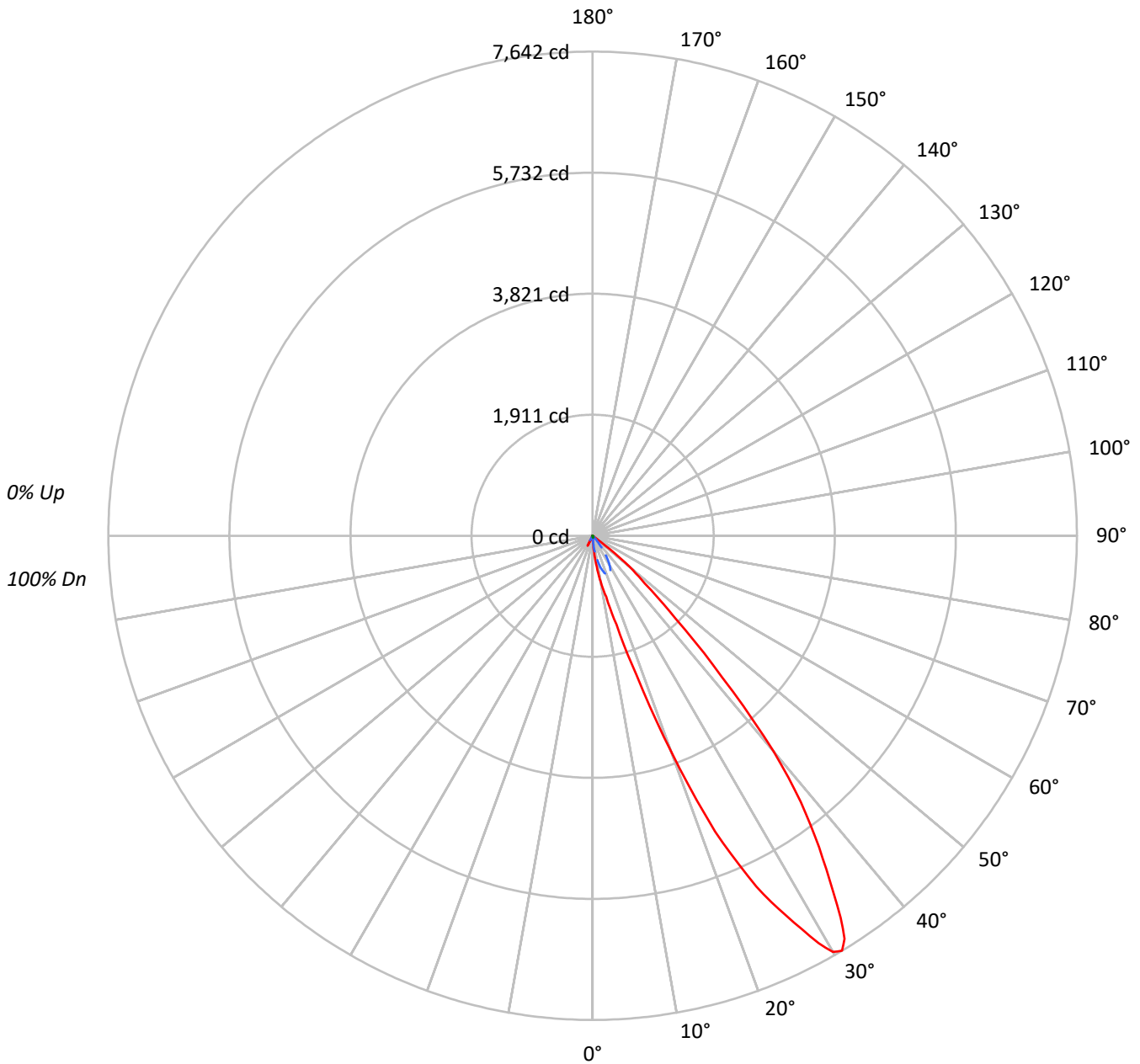
Input Watts (W): 22.27  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	73	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	41	36	45	40	36	35																			

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	1442	1442	1442
5°	14005	1271	523
10°	41415	907	328
15°	82208	619	284
20°	212072	502	397
25°	369602	605	2855
30°	480093	633	1608
35°	430175	274	154
40°	318032	100	0
45°	143216	109	0
50°	64612	119	0
55°	5763	134	0
60°	702	153	0
65°	298	233	0
70°	224	289	0
75°	0	381	0
80°	0	568	158
85°	0	1132	314



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	10.5	0.9
10°-20°	98.0	8.4
20°-30°	387.1	33.2
30°-40°	467.1	40.1
40°-50°	181.3	15.6
50°-60°	15.9	1.4
60°-70°	1.5	0.1
70°-80°	1.4	0.1
80°-90°	1.3	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°	495.6	42.6
0°-40°	962.7	82.7
0°-60°	1159.9	99.6
0°-90°	1164.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1164.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	26	26	26	26	26	
5°	254	124	23	11	10	40
15°	1448	548	11	7	5	531
25°	6110	648	10	32	47	2794
35°	6428	330	4	4	2	3951
45°	1847	23	1	1	0	1623
55°	60	3	1	1	0	146
65°	2	2	2	1	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°	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3
2.5°	82.6	78.5	73.9	75.8	76.7	78.9	77.1	70.3	74.4	71.2	68.5
5°	254.5	250.0	241.3	242.7	240.0	243.2	235.9	221.4	224.1	219.6	207.8
7.5°	496.3	477.3	463.2	464.1	455.9	459.6	446.0	421.0	418.3	395.1	391.5
10°	744.0	734.5	717.7	715.4	700.9	702.7	681.4	648.3	639.2	612.4	597.0
12.5°	987.2	971.3	947.7	942.7	919.1	919.6	890.5	853.3	839.7	812.1	790.7
15°	1448.5	1425.9	1371.9	1351.5	1286.1	1276.2	1204.5	1120.1	1079.3	1031.6	969.0
17.5°	2300.1	2285.6	2179.8	2121.3	1988.9	1857.3	1779.7	1597.3	1490.7	1357.4	1241.7
20°	3635.2	3662.0	3477.3	3346.7	3100.8	2823.1	2627.2	2295.1	2073.2	1843.2	1625.5
22.5°	5055.2	5066.5	4877.3	4714.5	4428.2	4046.7	3595.3	3192.4	2785.9	2390.8	2031.5
25°	6110.4	6077.7	5869.5	5674.0	5372.7	4983.0	4544.3	4006.3	3450.6	2908.0	2381.7
26°	6432.5	6414.8	6206.1	5972.0	5640.4	5244.8	4788.4	4245.4	3658.3	3074.0	2488.8
27°	6731.0	6719.7	6493.3	6232.9	5861.3	5447.1	4969.4	4426.8	3815.3	3202.4	2566.4
28°	7033.6	7020.9	6746.9	6444.7	6041.0	5590.9	5094.6	4548.0	3916.5	3277.7	2598.6
29°	7353.4	7328.9	6978.7	6600.3	6160.7	5674.9	5160.0	4603.3	3950.9	3296.3	2590.4
30°	7584.3	7546.2	7146.1	6698.8	6209.7	5701.2	5167.2	4602.0	3929.6	3257.8	2538.2
31°	7642.4	7603.8	7192.8	6697.4	6173.9	5661.3	5115.0	4537.5	3840.7	3164.3	2450.2
32°	7501.8	7466.4	7074.4	6544.5	6060.5	5565.1	5011.2	4418.2	3702.8	3024.6	2330.9
33°	7187.8	7161.1	6823.1	6343.6	5898.1	5428.5	4862.4	4248.6	3506.8	2846.7	2190.7
34°	6791.8	6772.3	6512.3	6107.2	5692.1	5241.2	4669.6	4024.9	3248.7	2645.3	2037.9
35°	6427.9	6413.4	6202.9	5843.6	5456.7	5009.3	4425.5	3749.5	2982.8	2428.5	1874.5
36°	6077.7	6065.5	5882.6	5548.7	5175.4	4737.6	4118.4	3420.2	2697.5	2203.4	1705.3
37°	5712.1	5701.2	5544.2	5226.6	4859.2	4412.8	3753.6	3069.5	2407.6	1978.9	1531.6
38°	5332.8	5323.7	5179.9	4863.3	4490.4	4015.8	3337.6	2707.0	2125.0	1759.8	1375.5
39°	4909.5	4901.8	4769.4	4437.3	4039.0	3548.1	2909.3	2353.6	1856.8	1547.0	1224.4
40°	4444.1	4433.6	4301.2	3930.1	3527.7	3066.8	2497.9	2029.2	1603.7	1348.3	1091.5
42.5°	3021.4	3010.1	2911.6	2695.7	2308.2	2012.0	1655.4	1358.3	1136.4	982.6	850.2
45°	1847.3	1848.7	1797.0	1663.6	1430.4	1265.7	1072.0	930.0	830.2	771.2	679.1
47.5°	1117.4	1117.4	1094.2	1026.2	921.4	855.6	775.3	709.1	632.9	574.8	475.0
50°	757.6	758.1	722.7	726.3	656.4	615.6	539.0	458.2	383.3	299.0	213.2
51°	560.7	563.4	530.8	545.8	469.1	434.6	362.0	293.5	227.3	162.0	93.5
52°	343.0	348.0	325.7	339.3	294.9	244.5	185.5	137.0	92.1	64.4	44.9
53°	159.2	163.3	152.0	158.3	132.0	103.0	78.0	63.5	50.8	41.3	30.4
54°	84.4	85.3	81.7	79.8	72.6	64.0	53.1	44.0	34.5	27.7	20.4
55°	60.3	60.3	58.5	56.7	50.8	43.6	35.4	29.9	22.7	18.1	13.2
57.5°	18.6	18.6	18.6	17.7	15.4	13.2	10.4	9.1	7.3	6.8	5.4
60°	6.4	6.4	6.4	5.9	5.4	5.0	4.5	4.1	3.6	3.6	3.2
61°	4.5	4.5	4.5	4.5	4.1	4.1	3.6	3.2	2.7	3.2	2.7
62°	3.6	4.1	3.6	3.6	3.6	3.2	2.7	2.7	2.3	2.7	2.3
63°	3.2	3.2	3.2	3.2	2.7	2.7	2.3	2.3	1.8	2.3	2.3
64°	2.7	2.7	2.7	2.7	2.3	2.3	1.8	1.8	1.4	1.8	1.8
65°	2.3	2.3	2.3	2.3	1.8	1.8	1.8	1.4	1.4	1.8	1.8
66°	1.8	1.8	1.8	1.8	1.8	1.4	1.4	1.4	0.9	1.4	1.4



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CATALOG NUMBER: LDA6A15940D010TE 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°	0.9	0.9	0.9	0.9	0.5	0.5	0.5	0.5	0.5	0.9	0.9
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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**CANDELA DISTRIBUTION (continued):**

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3
2.5°	65.8	61.2	60.3	60.3	50.8	52.6	49.4	47.2	33.1	25.4	19.1
5°	201.0	184.6	177.8	171.9	146.1	143.8	127.9	124.3	44.5	23.1	14.5
7.5°	374.7	349.8	333.9	318.5	276.7	265.4	238.2	231.4	60.3	19.5	11.3
10°	572.5	536.7	509.0	472.3	418.3	394.7	354.8	340.2	73.5	16.3	10.9
12.5°	758.5	717.7	680.0	631.5	558.5	520.8	468.2	449.6	78.5	13.6	10.0
15°	919.1	864.7	818.0	765.8	684.1	636.5	572.1	548.0	74.4	10.9	8.6
17.5°	1122.8	1030.7	949.5	876.5	787.6	729.5	654.6	615.6	60.3	9.5	7.7
20°	1424.0	1238.5	1095.6	977.6	854.2	782.1	699.1	651.9	43.6	8.6	7.7
22.5°	1707.6	1442.6	1223.5	1054.8	888.7	802.5	716.3	664.2	30.8	8.6	9.1
25°	1939.0	1596.4	1312.0	1105.6	907.8	806.6	710.0	648.3	24.0	10.0	17.7
26°	2003.8	1634.5	1329.2	1109.7	905.1	800.7	699.1	633.8	21.3	13.6	33.1
27°	2044.2	1651.8	1329.7	1103.3	895.1	788.9	682.8	614.3	18.6	20.9	55.8
28°	2052.4	1643.6	1314.3	1085.6	877.8	773.0	664.6	590.7	17.2	26.3	63.5
29°	2030.1	1614.6	1286.1	1059.8	857.0	754.0	642.8	564.8	15.0	20.0	41.3
30°	1980.2	1566.5	1244.9	1026.6	834.7	732.7	616.1	534.0	12.2	10.0	18.6
31°	1905.4	1500.3	1194.0	987.6	809.8	705.4	583.9	499.5	10.4	6.8	10.9
32°	1810.6	1420.9	1137.3	947.7	781.7	672.3	546.2	460.9	9.5	5.4	9.1
33°	1701.7	1337.4	1078.8	907.3	748.1	632.9	505.8	419.6	8.6	5.9	9.1
34°	1582.8	1252.1	1012.6	865.1	709.1	589.8	462.7	371.1	7.7	5.4	6.8
35°	1454.0	1163.6	953.1	827.9	665.1	543.0	418.7	329.8	6.8	4.1	4.5
36°	1342.8	1077.4	895.5	780.8	617.0	494.9	373.4	285.4	5.9	2.7	3.2
37°	1221.7	996.7	842.0	731.8	565.3	445.5	328.0	241.3	5.4	1.8	2.7
38°	1108.8	922.3	788.5	675.5	512.2	395.6	281.7	198.3	5.0	1.8	2.3
39°	1006.2	854.7	738.6	615.6	456.4	343.4	235.0	155.6	4.5	1.4	2.3
40°	918.2	794.4	678.7	552.6	398.8	291.7	188.3	115.2	4.1	1.4	2.3
42.5°	746.7	637.4	512.2	390.6	258.1	165.1	84.4	42.2	3.2	1.4	1.8
45°	570.7	453.7	338.0	235.0	132.9	64.0	31.3	23.1	2.7	1.4	1.8
47.5°	370.6	272.2	181.5	102.5	44.5	25.9	16.3	11.8	2.3	1.4	1.8
50°	137.0	75.8	39.9	25.0	17.2	10.9	7.3	6.8	2.3	1.4	1.8
51°	56.3	36.7	25.0	16.8	10.9	7.7	5.9	5.9	2.3	1.4	1.8
52°	33.6	23.1	16.8	12.2	8.2	5.9	4.5	5.0	2.3	1.4	1.8
53°	22.2	15.9	12.2	9.5	6.4	4.5	3.2	3.6	2.3	1.4	1.8
54°	15.0	11.3	9.1	7.3	4.5	3.6	1.8	3.2	1.8	1.4	1.8
55°	10.4	8.2	6.8	5.4	3.2	2.3	1.4	2.7	1.8	1.4	1.8
57.5°	4.5	4.1	3.6	3.2	1.4	0.9	0.5	2.3	1.8	1.4	1.8
60°	3.2	2.7	2.3	2.3	0.5	0.5	0.0	1.8	1.8	1.4	1.8
61°	2.7	2.3	2.3	1.8	0.5	0.5	0.0	1.8	2.3	1.4	1.8
62°	2.3	2.3	1.8	1.8	0.5	0.0	0.0	1.8	2.3	1.4	2.3
63°	1.8	1.8	1.8	1.8	0.5	0.0	0.0	1.8	2.3	1.4	2.3
64°	1.8	1.8	1.8	1.8	0.0	0.0	0.0	1.8	2.3	1.4	2.3
65°	1.8	1.4	1.4	1.4	0.0	0.0	0.0	1.8	2.3	1.8	2.3
66°	1.4	1.4	1.4	1.4	0.0	0.0	0.0	1.8	2.3	1.8	2.3





TEST NUMBER: P175494

CATALOG NUMBER: LDA6A15940D010TE 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°	0.9	0.9	0.9	0.9	0.0	0.0	0.0	1.4	2.3	1.8	2.7
75°	0.5	0.9	0.9	0.9	0.0	0.0	0.0	1.8	2.3	1.8	2.7
77.5°	0.5	0.9	0.9	0.9	0.0	0.0	0.0	1.8	2.3	1.8	2.7
80°	0.5	0.9	0.9	0.9	0.0	0.0	0.0	1.8	2.3	1.8	2.7
82.5°	0.5	0.9	0.9	0.9	0.0	0.0	0.0	1.8	2.3	1.8	2.7
85°	0.5	0.9	0.9	0.9	0.0	0.0	0.0	1.8	2.3	1.8	2.7
87.5°	0.5	0.9	0.9	0.9	0.0	0.0	0.0	1.8	2.3	1.8	2.7
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: P175494

CATALOG NUMBER: LDA6A15940D010TE LARL20NF 6LAL1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	26.3	26.3	26.3
2.5°	15.9	14.5	13.6
5°	11.3	10.4	9.5
7.5°	9.5	8.2	7.7
10°	8.6	6.4	5.9
12.5°	7.3	5.4	5.0
15°	6.8	5.4	5.0
17.5°	6.8	5.4	5.0
20°	7.3	6.8	6.8
22.5°	10.4	11.3	11.8
25°	31.8	40.8	47.2
26°	74.4	111.6	149.7
27°	113.0	164.7	175.6
28°	101.6	118.0	114.8
29°	49.0	55.3	50.4
30°	21.8	25.9	25.4
31°	14.1	15.9	15.4
32°	11.8	10.9	10.4
33°	9.5	7.7	6.4
34°	6.4	5.0	4.1
35°	4.1	2.7	2.3
36°	2.7	1.4	0.9
37°	1.8	0.9	0.5
38°	1.8	0.5	0.0
39°	1.4	0.5	0.0
40°	1.4	0.5	0.0
42.5°	1.4	0.0	0.0
45°	0.9	0.0	0.0
47.5°	0.9	0.0	0.0
50°	1.4	0.5	0.0
51°	1.4	0.0	0.0
52°	1.4	0.0	0.0
53°	0.9	0.0	0.0
54°	0.9	0.0	0.0
55°	0.9	0.0	0.0
57.5°	0.9	0.0	0.0
60°	0.9	0.0	0.0
61°	1.4	0.0	0.0
62°	1.4	0.0	0.0
63°	1.4	0.0	0.0
64°	1.4	0.5	0.0
65°	1.4	0.5	0.0
66°	1.4	0.5	0.0



TEST NUMBER: P175494

CATALOG NUMBER: LDA6A15940D010TE LARL20NF 6LAL1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
72.5°	1.8	0.5	0.0
75°	1.8	0.5	0.0
77.5°	1.8	0.5	0.0
80°	1.8	0.9	0.5
82.5°	1.8	0.9	0.5
85°	1.8	0.9	0.5
87.5°	1.8	0.9	0.5
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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









67.5°	1.4	1.4	1.4	1.4	1.4	1.4	0.9	0.9	0.9	1.4	1.4
70°	1.4	1.4	0.9	0.9	0.9	0.9	0.9	0.5	0.5	1.4	1.4





67.5°	1.4	1.4	1.4	1.4	0.0	0.0	0.0	1.8	2.3	1.8	2.3
70°	1.4	1.4	1.4	1.4	0.0	0.0	0.0	1.8	2.3	1.8	2.7





67.5°	1.8	0.5	0.0
70°	1.8	0.5	0.0



(END OF REPORT)