

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: P175493

Luminaire Tested: **LDA6A15935D010TE LARL20NF 6LAL1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P175493  
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: LDA6A15935D010TE 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 / 3500K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1084.3 lumens  
Efficiency: N/A  
Efficacy: 48.7 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

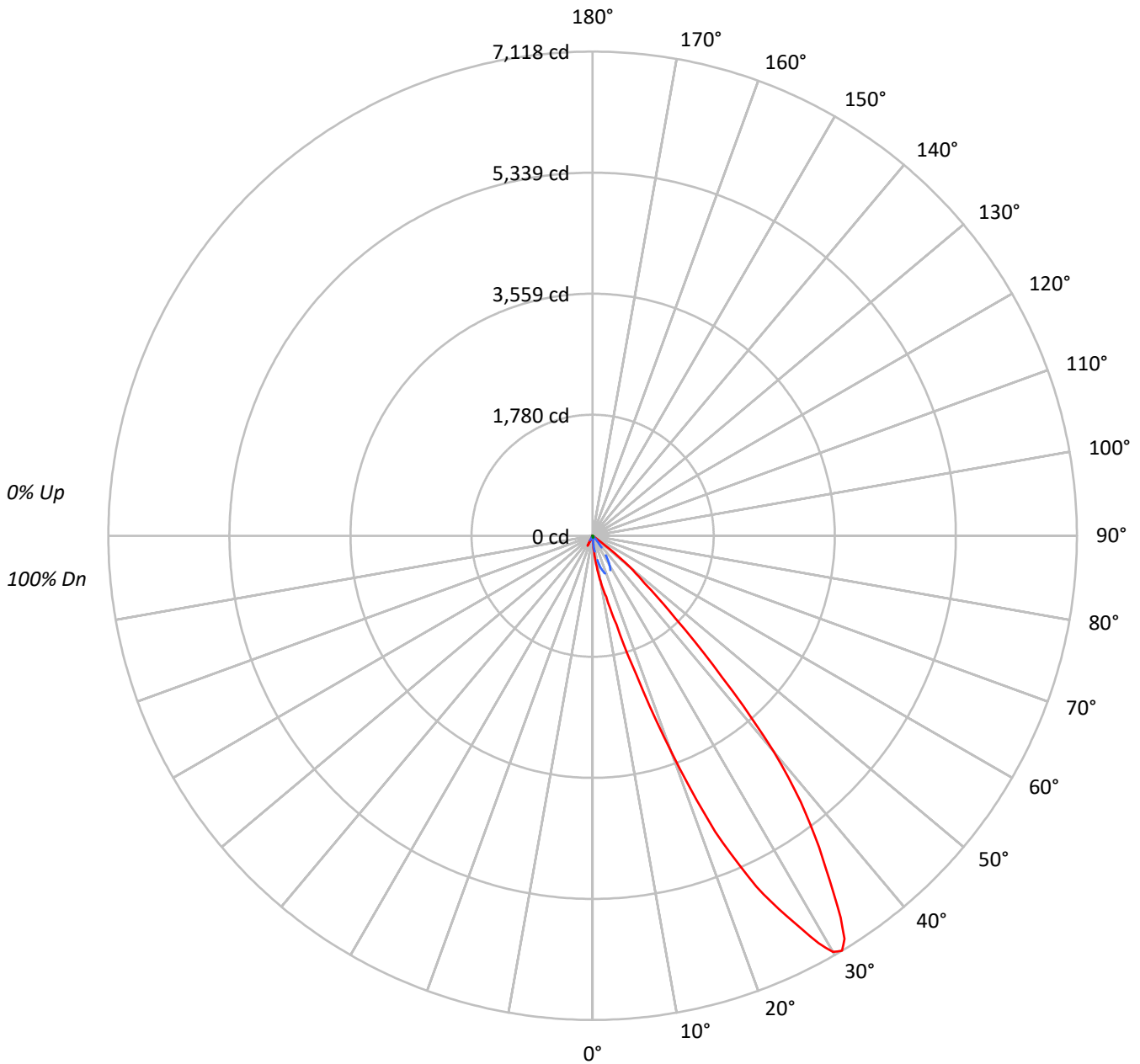
Input Watts (W): 22.27  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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°	1343	1343	1343
5°	13042	1183	490
10°	38571	846	306
15°	76567	573	261
20°	197516	467	368
25°	344228	563	2655
30°	447138	589	1500
35°	400648	254	141
40°	296198	93	0
45°	133386	101	0
50°	60177	111	0
55°	5371	124	0
60°	647	143	0
65°	272	221	0
70°	208	272	0
75°	0	360	0
80°	0	537	126
85°	0	1069	252



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	9.8	0.9
10°-20°	91.3	8.4
20°-30°	360.5	33.3
30°-40°	435.0	40.1
40°-50°	168.8	15.6
50°-60°	14.8	1.4
60°-70°	1.4	0.1
70°-80°	1.3	0.1
80°-90°	1.2	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°	461.6	42.6
0°-40°	896.6	82.7
0°-60°	1080.3	99.6
0°-90°	1084.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1084.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	24	24	24	24	24	
5°	237	116	22	11	9	38
15°	1349	510	10	6	5	494
25°	5691	604	9	30	44	2603
35°	5987	307	4	4	2	3680
45°	1720	22	1	1	0	1512
55°	56	2	1	1	0	136
65°	2	2	2	1	0	2
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°	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5
2.5°	76.9	73.1	68.9	70.6	71.4	73.5	71.8	65.5	69.3	66.3	63.8
5°	237.0	232.8	224.8	226.0	223.5	226.5	219.7	206.2	208.7	204.5	193.5
7.5°	462.2	444.5	431.4	432.2	424.6	428.0	415.3	392.1	389.6	368.0	364.6
10°	692.9	684.1	668.4	666.3	652.8	654.5	634.6	603.8	595.3	570.4	556.0
12.5°	919.4	904.6	882.6	878.0	856.0	856.5	829.4	794.8	782.1	756.3	736.5
15°	1349.1	1328.0	1277.7	1258.7	1197.8	1188.6	1121.8	1043.2	1005.2	960.8	902.5
17.5°	2142.2	2128.7	2030.2	1975.7	1852.3	1729.8	1657.6	1487.7	1388.4	1264.2	1156.4
20°	3385.7	3410.6	3238.6	3116.9	2887.9	2629.4	2446.8	2137.5	1930.9	1716.7	1513.9
22.5°	4708.2	4718.7	4542.5	4390.8	4124.2	3768.9	3348.5	2973.3	2594.7	2226.7	1892.1
25°	5690.9	5660.5	5466.6	5284.5	5003.9	4641.0	4232.4	3731.3	3213.7	2708.4	2218.2
26°	5990.9	5974.5	5780.1	5562.1	5253.2	4884.8	4459.7	3954.0	3407.2	2863.0	2318.0
27°	6269.0	6258.4	6047.6	5805.0	5459.0	5073.2	4628.3	4123.0	3553.4	2982.6	2390.2
28°	6550.8	6538.9	6283.7	6002.3	5626.3	5207.2	4744.9	4235.8	3647.6	3052.7	2420.2
29°	6848.7	6825.8	6499.7	6147.3	5737.8	5285.3	4805.8	4287.3	3679.7	3070.0	2412.6
30°	7063.7	7028.2	6655.6	6239.0	5783.5	5309.8	4812.5	4286.1	3659.9	3034.1	2364.0
31°	7117.8	7081.9	6699.1	6237.7	5750.1	5272.6	4763.9	4226.1	3577.1	2947.1	2282.0
32°	6986.8	6953.9	6588.8	6095.3	5644.5	5183.1	4667.2	4114.9	3448.6	2817.0	2170.9
33°	6694.4	6669.5	6354.7	5908.1	5493.2	5055.9	4528.6	3956.9	3266.1	2651.3	2040.4
34°	6325.6	6307.4	6065.3	5688.0	5301.4	4881.4	4349.0	3748.6	3025.7	2463.7	1898.0
35°	5986.7	5973.2	5777.1	5442.5	5082.1	4665.5	4121.7	3492.1	2778.1	2261.8	1745.9
36°	5660.5	5649.1	5478.8	5167.9	4820.1	4412.4	3835.7	3185.4	2512.3	2052.2	1588.3
37°	5320.0	5309.8	5163.6	4867.9	4525.6	4109.9	3495.9	2858.8	2242.3	1843.0	1426.4
38°	4966.7	4958.3	4824.4	4529.4	4182.1	3740.2	3108.5	2521.2	1979.1	1639.0	1281.1
39°	4572.5	4565.3	4442.0	4132.7	3761.7	3304.5	2709.6	2192.0	1729.4	1440.8	1140.4
40°	4139.0	4129.3	4005.9	3660.3	3285.5	2856.2	2326.4	1889.9	1493.6	1255.7	1016.6
42.5°	2814.0	2803.4	2711.7	2510.6	2149.8	1873.9	1541.8	1265.0	1058.4	915.2	791.8
45°	1720.5	1721.8	1673.6	1549.4	1332.2	1178.8	998.4	866.2	773.2	718.3	632.5
47.5°	1040.7	1040.7	1019.1	955.7	858.1	796.9	722.1	660.4	589.4	535.3	442.4
50°	705.6	706.0	673.1	676.5	611.4	573.4	502.0	426.7	357.0	278.4	198.6
51°	522.2	524.8	494.4	508.3	436.9	404.8	337.2	273.4	211.7	150.8	87.0
52°	319.4	324.1	303.4	316.0	274.6	227.7	172.8	127.6	85.8	60.0	41.8
53°	148.3	152.1	141.5	147.5	123.0	95.9	72.7	59.2	47.3	38.4	28.3
54°	78.6	79.4	76.1	74.4	67.6	59.6	49.4	41.0	32.1	25.8	19.0
55°	56.2	56.2	54.5	52.8	47.3	40.6	33.0	27.9	21.1	16.9	12.3
57.5°	17.3	17.3	17.3	16.5	14.4	12.3	9.7	8.5	6.8	6.3	5.1
60°	5.9	5.9	5.9	5.5	5.1	4.6	4.2	3.8	3.4	3.4	3.0
61°	4.2	4.2	4.2	4.2	3.8	3.8	3.4	3.0	2.5	3.0	2.5
62°	3.4	3.8	3.4	3.4	3.4	3.0	2.5	2.5	2.1	2.5	2.1
63°	3.0	3.0	3.0	3.0	2.5	2.5	2.1	2.1	1.7	2.1	2.1
64°	2.5	2.5	2.5	2.5	2.1	2.1	1.7	1.7	1.3	1.7	1.7
65°	2.1	2.1	2.1	2.1	1.7	1.7	1.7	1.3	1.3	1.7	1.7
66°	1.7	1.7	1.7	1.7	1.7	1.3	1.3	1.3	0.8	1.3	1.3



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**CANDELA DISTRIBUTION (continued):**

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
72.5°	0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.4	0.4	0.8	0.8
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
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):**

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5
2.5°	61.3	57.0	56.2	56.2	47.3	49.0	46.1	43.9	30.8	23.7	17.7
5°	187.2	172.0	165.6	160.1	136.1	133.9	119.2	115.8	41.4	21.5	13.5
7.5°	349.0	325.8	311.0	296.6	257.7	247.2	221.8	215.5	56.2	18.2	10.6
10°	533.2	499.8	474.1	439.8	389.6	367.6	330.4	316.9	68.4	15.2	10.1
12.5°	706.5	668.4	633.4	588.2	520.1	485.1	436.0	418.7	73.1	12.7	9.3
15°	856.0	805.3	761.8	713.2	637.2	592.8	532.8	510.4	69.3	10.1	8.0
17.5°	1045.7	960.0	884.3	816.3	733.5	679.4	609.7	573.4	56.2	8.9	7.2
20°	1326.3	1153.5	1020.4	910.5	795.6	728.4	651.1	607.2	40.6	8.0	7.2
22.5°	1590.4	1343.6	1139.5	982.4	827.7	747.4	667.2	618.6	28.7	8.0	8.5
25°	1805.9	1486.9	1221.9	1029.7	845.5	751.2	661.2	603.8	22.4	9.3	16.5
26°	1866.3	1522.3	1238.0	1033.5	842.9	745.8	651.1	590.3	19.9	12.7	30.8
27°	1903.9	1538.4	1238.4	1027.6	833.6	734.8	635.9	572.1	17.3	19.4	52.0
28°	1911.5	1530.8	1224.0	1011.1	817.6	720.0	619.0	550.1	16.1	24.5	59.2
29°	1890.8	1503.8	1197.8	987.0	798.1	702.2	598.7	526.0	13.9	18.6	38.4
30°	1844.3	1459.0	1159.4	956.2	777.4	682.4	573.8	497.3	11.4	9.3	17.3
31°	1774.6	1397.3	1112.1	919.8	754.2	657.0	543.8	465.2	9.7	6.3	10.1
32°	1686.3	1323.3	1059.3	882.6	728.0	626.2	508.7	429.3	8.9	5.1	8.5
33°	1584.9	1245.6	1004.8	845.0	696.7	589.4	471.1	390.8	8.0	5.5	8.5
34°	1474.2	1166.2	943.1	805.7	660.4	549.3	431.0	345.6	7.2	5.1	6.3
35°	1354.2	1083.8	887.7	771.1	619.4	505.8	390.0	307.2	6.3	3.8	4.2
36°	1250.7	1003.5	834.1	727.2	574.6	461.0	347.7	265.8	5.5	2.5	3.0
37°	1137.9	928.3	784.2	681.5	526.5	414.9	305.5	224.8	5.1	1.7	2.5
38°	1032.6	859.0	734.3	629.1	477.0	368.4	262.4	184.6	4.6	1.7	2.1
39°	937.2	796.0	687.9	573.4	425.1	319.8	218.9	144.9	4.2	1.3	2.1
40°	855.2	739.8	632.1	514.6	371.4	271.7	175.3	107.3	3.8	1.3	2.1
42.5°	695.5	593.6	477.0	363.8	240.4	153.8	78.6	39.3	3.0	1.3	1.7
45°	531.5	422.5	314.8	218.9	123.8	59.6	29.2	21.5	2.5	1.3	1.7
47.5°	345.2	253.5	169.0	95.5	41.4	24.1	15.2	11.0	2.1	1.3	1.7
50°	127.6	70.6	37.2	23.2	16.1	10.1	6.8	6.3	2.1	1.3	1.7
51°	52.4	34.2	23.2	15.6	10.1	7.2	5.5	5.5	2.1	1.3	1.7
52°	31.3	21.5	15.6	11.4	7.6	5.5	4.2	4.6	2.1	1.3	1.7
53°	20.7	14.8	11.4	8.9	5.9	4.2	3.0	3.4	2.1	1.3	1.7
54°	13.9	10.6	8.5	6.8	4.2	3.4	1.7	3.0	1.7	1.3	1.7
55°	9.7	7.6	6.3	5.1	3.0	2.1	1.3	2.5	1.7	1.3	1.7
57.5°	4.2	3.8	3.4	3.0	1.3	0.8	0.4	2.1	1.7	1.3	1.7
60°	3.0	2.5	2.1	2.1	0.4	0.4	0.0	1.7	1.7	1.3	1.7
61°	2.5	2.1	2.1	1.7	0.4	0.4	0.0	1.7	2.1	1.3	1.7
62°	2.1	2.1	1.7	1.7	0.4	0.0	0.0	1.7	2.1	1.3	2.1
63°	1.7	1.7	1.7	1.7	0.4	0.0	0.0	1.7	2.1	1.3	2.1
64°	1.7	1.7	1.7	1.7	0.0	0.0	0.0	1.7	2.1	1.3	2.1
65°	1.7	1.3	1.3	1.3	0.0	0.0	0.0	1.7	2.1	1.7	2.1
66°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	1.7	2.1	1.7	2.1





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**CANDELA DISTRIBUTION (continued):**

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
72.5°	0.8	0.8	0.8	0.8	0.0	0.0	0.0	1.3	2.1	1.7	2.5
75°	0.4	0.8	0.8	0.8	0.0	0.0	0.0	1.7	2.1	1.7	2.5
77.5°	0.4	0.8	0.8	0.8	0.0	0.0	0.0	1.7	2.1	1.7	2.5
80°	0.4	0.8	0.8	0.8	0.0	0.0	0.0	1.7	2.1	1.7	2.5
82.5°	0.4	0.8	0.8	0.8	0.0	0.0	0.0	1.7	2.1	1.7	2.5
85°	0.4	0.8	0.8	0.8	0.0	0.0	0.0	1.7	2.1	1.7	2.5
87.5°	0.4	0.8	0.8	0.8	0.0	0.0	0.0	1.7	2.1	1.7	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



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**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	24.5	24.5	24.5
2.5°	14.8	13.5	12.7
5°	10.6	9.7	8.9
7.5°	8.9	7.6	7.2
10°	8.0	5.9	5.5
12.5°	6.8	5.1	4.6
15°	6.3	5.1	4.6
17.5°	6.3	5.1	4.6
20°	6.8	6.3	6.3
22.5°	9.7	10.6	11.0
25°	29.6	38.0	43.9
26°	69.3	103.9	139.4
27°	105.2	153.4	163.5
28°	94.6	109.9	106.9
29°	45.6	51.5	46.9
30°	20.3	24.1	23.7
31°	13.1	14.8	14.4
32°	11.0	10.1	9.7
33°	8.9	7.2	5.9
34°	5.9	4.6	3.8
35°	3.8	2.5	2.1
36°	2.5	1.3	0.8
37°	1.7	0.8	0.4
38°	1.7	0.4	0.0
39°	1.3	0.4	0.0
40°	1.3	0.4	0.0
42.5°	1.3	0.0	0.0
45°	0.8	0.0	0.0
47.5°	0.8	0.0	0.0
50°	1.3	0.4	0.0
51°	1.3	0.0	0.0
52°	1.3	0.0	0.0
53°	0.8	0.0	0.0
54°	0.8	0.0	0.0
55°	0.8	0.0	0.0
57.5°	0.8	0.0	0.0
60°	0.8	0.0	0.0
61°	1.3	0.0	0.0
62°	1.3	0.0	0.0
63°	1.3	0.0	0.0
64°	1.3	0.4	0.0
65°	1.3	0.4	0.0
66°	1.3	0.4	0.0



TEST NUMBER: P175493

CATALOG NUMBER: LDA6A15935D010TE LARL20NF 6LAL1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
72.5°	1.7	0.4	0.0
75°	1.7	0.4	0.0
77.5°	1.7	0.4	0.0
80°	1.7	0.8	0.4
82.5°	1.7	0.8	0.4
85°	1.7	0.8	0.4
87.5°	1.7	0.8	0.4
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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









67.5°	1.3	1.3	1.3	1.3	1.3	1.3	0.8	0.8	0.8	1.3	1.3
70°	1.3	1.3	0.8	0.8	0.8	0.8	0.8	0.4	0.4	1.3	1.3





67.5°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	1.7	2.1	1.7	2.1
70°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	1.7	2.1	1.7	2.5





67.5°	1.7	0.4	0.0
70°	1.7	0.4	0.0



(END OF REPORT)