

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: P175475

Luminaire Tested: **LDA6A20927D010TE LARL20NF 6LAL1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P175475
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: LDA6A20927D010TE 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 / 2700K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1156.5 lumens
Efficiency: N/A
Efficacy: 39.7 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

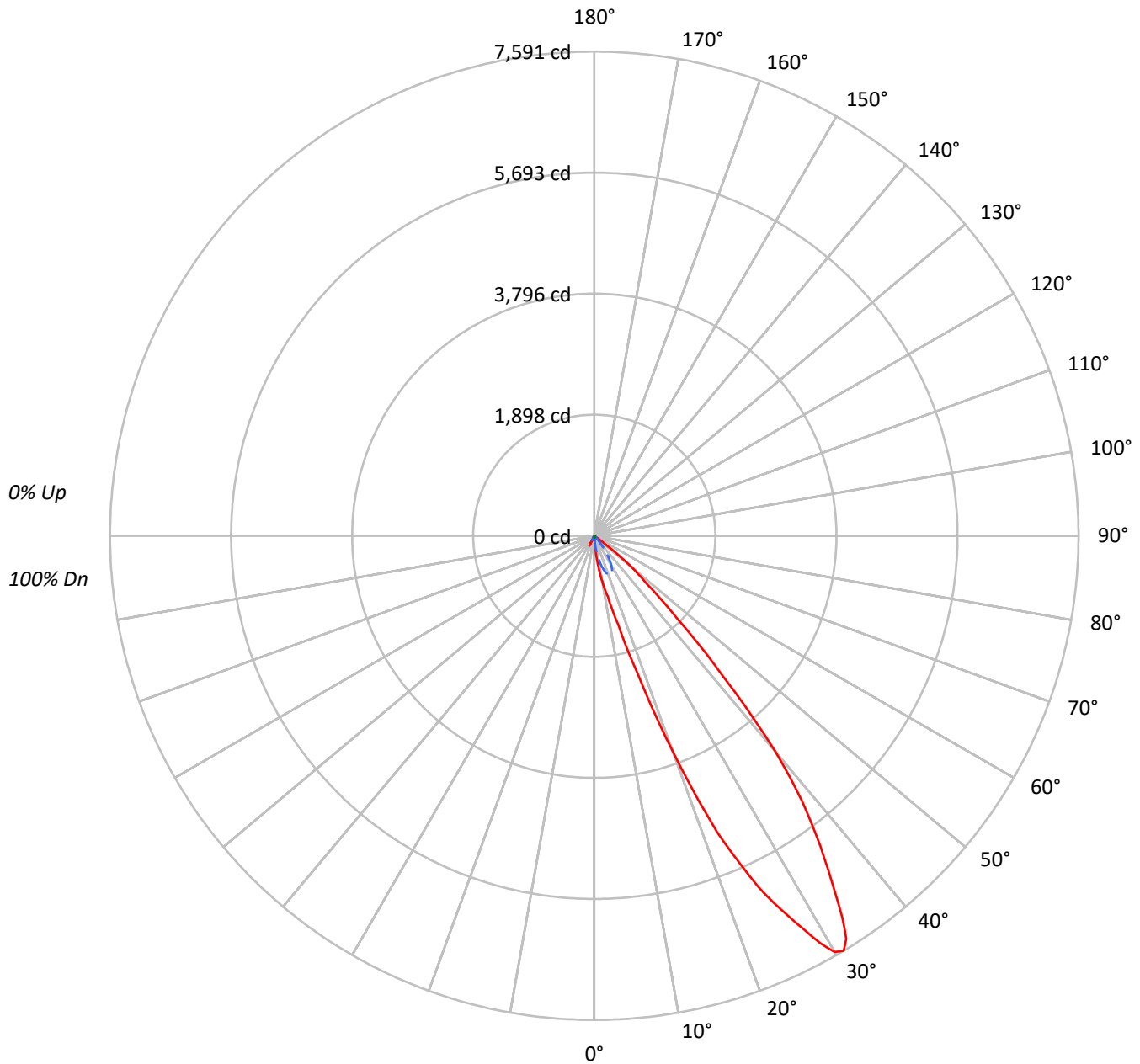
Input Watts (W): 29.12
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P175475

CATALOG NUMBER: LDA6A20927D010TE LARL20NF 6LAL1 30° Tilt

Luminous Intensity Polar Plot





TEST NUMBER: P175475

CATALOG NUMBER: LDA6A20927D010TE LARL20NF 6LAL1 30° Tilt

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	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°	1431	1431	1431
5°	13911	1266	523
10°	41137	902	328
15°	81663	613	284
20°	210654	502	397
25°	367128	599	2837
30°	476884	627	1595
35°	427297	274	154
40°	315899	100	0
45°	142263	109	0
50°	64177	119	0
55°	5725	134	0
60°	691	153	0
65°	298	233	0
70°	224	289	0
75°	0	381	0
80°	0	568	158
85°	0	1132	314



TEST NUMBER: P175475

CATALOG NUMBER: LDA6A20927D010TE LARL20NF 6LAL1 30° Tilt

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	10.4	0.9
10°-20°	97.4	8.4
20°-30°	384.5	33.2
30°-40°	464.0	40.1
40°-50°	180.1	15.6
50°-60°	15.8	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°	492.3	42.6
0°-40°	956.3	82.7
0°-60°	1152.2	99.6
0°-90°	1156.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1156.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	26	26	26	26	26	
5°	253	124	23	11	10	40
15°	1439	544	11	7	5	527
25°	6070	644	10	32	47	2776
35°	6385	328	4	4	2	3925
45°	1835	23	1	1	0	1612
55°	60	3	1	1	0	145
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	



TEST NUMBER: P175475

CATALOG NUMBER: LDA6A20927D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1
2.5°	82.0	78.0	73.5	75.3	76.2	78.4	76.6	69.8	73.9	70.7	68.0
5°	252.8	248.3	239.7	241.1	238.4	241.5	234.3	219.9	222.6	218.1	206.4
7.5°	493.0	474.1	460.1	461.0	452.9	456.5	443.0	418.2	415.5	392.5	388.9
10°	739.0	729.6	712.9	710.6	696.2	698.0	676.8	643.9	634.9	608.3	593.0
12.5°	980.6	964.8	941.4	936.4	913.0	913.4	884.6	847.6	834.1	806.6	785.4
15°	1438.9	1416.3	1362.7	1342.4	1277.5	1267.6	1196.4	1112.6	1072.0	1024.7	962.5
17.5°	2284.7	2270.3	2165.3	2107.1	1975.5	1844.9	1767.8	1586.7	1480.8	1348.3	1233.4
20°	3610.9	3637.5	3454.1	3324.3	3080.0	2804.2	2609.6	2279.7	2059.4	1830.9	1614.6
22.5°	5021.3	5032.6	4844.7	4682.9	4398.6	4019.6	3571.2	3171.1	2767.3	2374.8	2017.9
25°	6069.5	6037.0	5830.2	5636.0	5336.8	4949.7	4513.9	3979.5	3427.5	2888.5	2365.8
26°	6389.4	6371.9	6164.6	5932.0	5602.6	5209.7	4756.4	4217.0	3633.9	3053.4	2472.1
27°	6685.9	6674.7	6449.8	6191.2	5822.1	5410.7	4936.2	4397.2	3789.8	3181.0	2549.2
28°	6986.5	6973.9	6701.7	6401.6	6000.5	5553.5	5060.5	4517.5	3890.3	3255.8	2581.2
29°	7304.2	7279.9	6932.0	6556.2	6119.5	5636.9	5125.4	4572.5	3924.5	3274.3	2573.1
30°	7533.6	7495.7	7098.3	6654.0	6168.2	5663.0	5132.6	4571.2	3903.3	3235.9	2521.3
31°	7591.3	7553.0	7144.7	6652.6	6132.6	5623.4	5080.8	4507.2	3815.0	3143.1	2433.8
32°	7451.6	7416.4	7027.1	6500.7	6019.9	5527.8	4977.6	4388.7	3678.0	3004.3	2315.3
33°	7139.7	7113.1	6777.4	6301.1	5858.6	5392.2	4829.8	4220.1	3483.3	2827.7	2176.1
34°	6746.3	6727.0	6468.7	6066.3	5654.0	5206.1	4638.3	3998.0	3226.9	2627.6	2024.2
35°	6384.9	6370.5	6161.4	5804.5	5420.1	4975.8	4395.9	3724.4	2962.9	2412.2	1862.0
36°	6037.0	6024.9	5843.3	5511.6	5140.7	4705.9	4090.8	3397.3	2679.4	2188.7	1693.9
37°	5673.8	5663.0	5507.1	5191.7	4826.7	4383.2	3728.5	3048.9	2391.5	1965.6	1521.3
38°	5297.1	5288.1	5145.3	4830.7	4460.3	3988.9	3315.3	2688.9	2110.7	1748.0	1366.3
39°	4876.7	4869.0	4737.4	4407.6	4011.9	3524.4	2889.9	2337.9	1844.4	1536.6	1216.2
40°	4414.3	4404.0	4272.4	3903.8	3504.1	3046.2	2481.2	2015.7	1593.0	1339.3	1084.2
42.5°	3001.2	2989.9	2892.1	2677.6	2292.8	1998.5	1644.3	1349.2	1128.8	976.1	844.5
45°	1835.0	1836.3	1784.9	1652.4	1420.8	1257.2	1064.8	923.8	824.6	766.1	674.6
47.5°	1109.9	1109.9	1086.9	1019.3	915.2	849.9	770.1	704.3	628.6	570.9	471.8
50°	752.5	753.0	717.8	721.5	652.1	611.5	535.3	455.1	380.8	297.0	211.8
51°	557.0	559.7	527.2	542.1	465.9	431.7	359.6	291.6	225.8	160.9	92.8
52°	340.7	345.6	323.5	337.1	292.9	242.9	184.3	136.1	91.5	64.0	44.6
53°	158.2	162.2	151.0	157.3	131.1	102.3	77.5	63.1	50.5	41.0	30.2
54°	83.8	84.7	81.1	79.3	72.1	63.5	52.7	43.7	34.2	27.5	20.3
55°	59.9	59.9	58.1	56.3	50.5	43.3	35.1	29.7	22.5	18.0	13.1
57.5°	18.5	18.5	18.5	17.6	15.3	13.1	10.4	9.0	7.2	6.8	5.4
60°	6.3	6.3	6.3	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



TEST NUMBER: P175475

CATALOG NUMBER: LDA6A20927D010TE 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



TEST NUMBER: P175475

CATALOG NUMBER: LDA6A20927D010TE 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°	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1
2.5°	65.3	60.8	59.9	59.9	50.5	52.3	49.1	46.9	32.9	25.2	18.9
5°	199.6	183.4	176.6	170.8	145.1	142.8	127.1	123.5	44.2	23.0	14.4
7.5°	372.2	347.4	331.7	316.3	274.9	263.6	236.6	229.8	59.9	19.4	11.3
10°	568.7	533.1	505.6	469.1	415.5	392.0	352.4	338.0	73.0	16.2	10.8
12.5°	753.4	712.9	675.5	627.3	554.7	517.3	465.0	446.6	78.0	13.5	9.9
15°	913.0	858.9	812.5	760.7	679.5	632.2	568.2	544.4	73.9	10.8	8.6
17.5°	1115.3	1023.8	943.2	870.6	782.3	724.6	650.3	611.5	59.9	9.5	7.7
20°	1414.5	1230.2	1088.3	971.1	848.5	776.9	694.4	647.6	43.3	8.6	7.7
22.5°	1696.2	1433.0	1215.3	1047.7	882.8	797.2	711.5	659.7	30.6	8.6	9.0
25°	1926.0	1585.8	1303.2	1098.2	901.7	801.2	705.2	643.9	23.9	9.9	17.6
26°	1990.4	1623.6	1320.3	1102.2	899.0	795.4	694.4	629.5	21.2	13.5	32.9
27°	2030.5	1640.7	1320.8	1095.9	889.1	783.6	678.2	610.1	18.5	20.7	55.4
28°	2038.6	1632.6	1305.5	1078.3	872.0	767.9	660.2	586.7	17.1	26.1	63.1
29°	2016.6	1603.8	1277.5	1052.7	851.2	748.9	638.5	561.0	14.9	19.8	41.0
30°	1967.0	1556.0	1236.5	1019.8	829.2	727.8	612.0	530.4	12.2	9.9	18.5
31°	1892.6	1490.2	1186.0	981.0	804.4	700.7	580.0	496.1	10.4	6.8	10.8
32°	1798.5	1411.4	1129.7	941.4	776.4	667.8	542.6	457.8	9.5	5.4	9.0
33°	1690.3	1328.4	1071.6	901.3	743.1	628.6	502.4	416.8	8.6	5.9	9.0
34°	1572.2	1243.7	1005.8	859.3	704.3	585.8	459.6	368.6	7.7	5.4	6.8
35°	1444.3	1155.9	946.8	822.4	660.6	539.4	415.9	327.6	6.8	4.1	4.5
36°	1333.9	1070.2	889.5	775.5	612.9	491.6	370.9	283.4	5.9	2.7	3.2
37°	1213.5	990.0	836.4	726.9	561.5	442.5	325.8	239.7	5.4	1.8	2.7
38°	1101.3	916.1	783.2	671.0	508.8	392.9	279.8	196.9	5.0	1.8	2.3
39°	999.5	849.0	733.6	611.5	453.3	341.1	233.4	154.6	4.5	1.4	2.3
40°	912.1	789.0	674.1	548.9	396.1	289.8	187.0	114.5	4.1	1.4	2.3
42.5°	741.7	633.1	508.8	388.0	256.4	164.0	83.8	41.9	3.2	1.4	1.8
45°	566.9	450.6	335.7	233.4	132.0	63.5	31.1	23.0	2.7	1.4	1.8
47.5°	368.2	270.4	180.3	101.8	44.2	25.7	16.2	11.7	2.3	1.4	1.8
50°	136.1	75.3	39.7	24.8	17.1	10.8	7.2	6.8	2.3	1.4	1.8
51°	55.9	36.5	24.8	16.7	10.8	7.7	5.9	5.9	2.3	1.4	1.8
52°	33.3	23.0	16.7	12.2	8.1	5.9	4.5	5.0	2.3	1.4	1.8
53°	22.1	15.8	12.2	9.5	6.3	4.5	3.2	3.6	2.3	1.4	1.8
54°	14.9	11.3	9.0	7.2	4.5	3.6	1.8	3.2	1.8	1.4	1.8
55°	10.4	8.1	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: P175475

CATALOG NUMBER: LDA6A20927D010TE 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: P175475

CATALOG NUMBER: LDA6A20927D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	26.1	26.1	26.1
2.5°	15.8	14.4	13.5
5°	11.3	10.4	9.5
7.5°	9.5	8.1	7.7
10°	8.6	6.3	5.9
12.5°	7.2	5.4	5.0
15°	6.8	5.4	5.0
17.5°	6.8	5.4	5.0
20°	7.2	6.8	6.8
22.5°	10.4	11.3	11.7
25°	31.5	40.6	46.9
26°	73.9	110.9	148.7
27°	112.2	163.6	174.4
28°	100.9	117.2	114.0
29°	48.7	55.0	50.0
30°	21.6	25.7	25.2
31°	14.0	15.8	15.3
32°	11.7	10.8	10.4
33°	9.5	7.7	6.3
34°	6.3	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: P175475

CATALOG NUMBER: LDA6A20927D010TE 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)