

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: P175496

Luminaire Tested: **LDA6A30830D010TE LARL20NF 6LAL1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P175496
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: LDA6A30830D010TE 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: 2440.8 lumens
Efficiency: N/A
Efficacy: 54.9 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

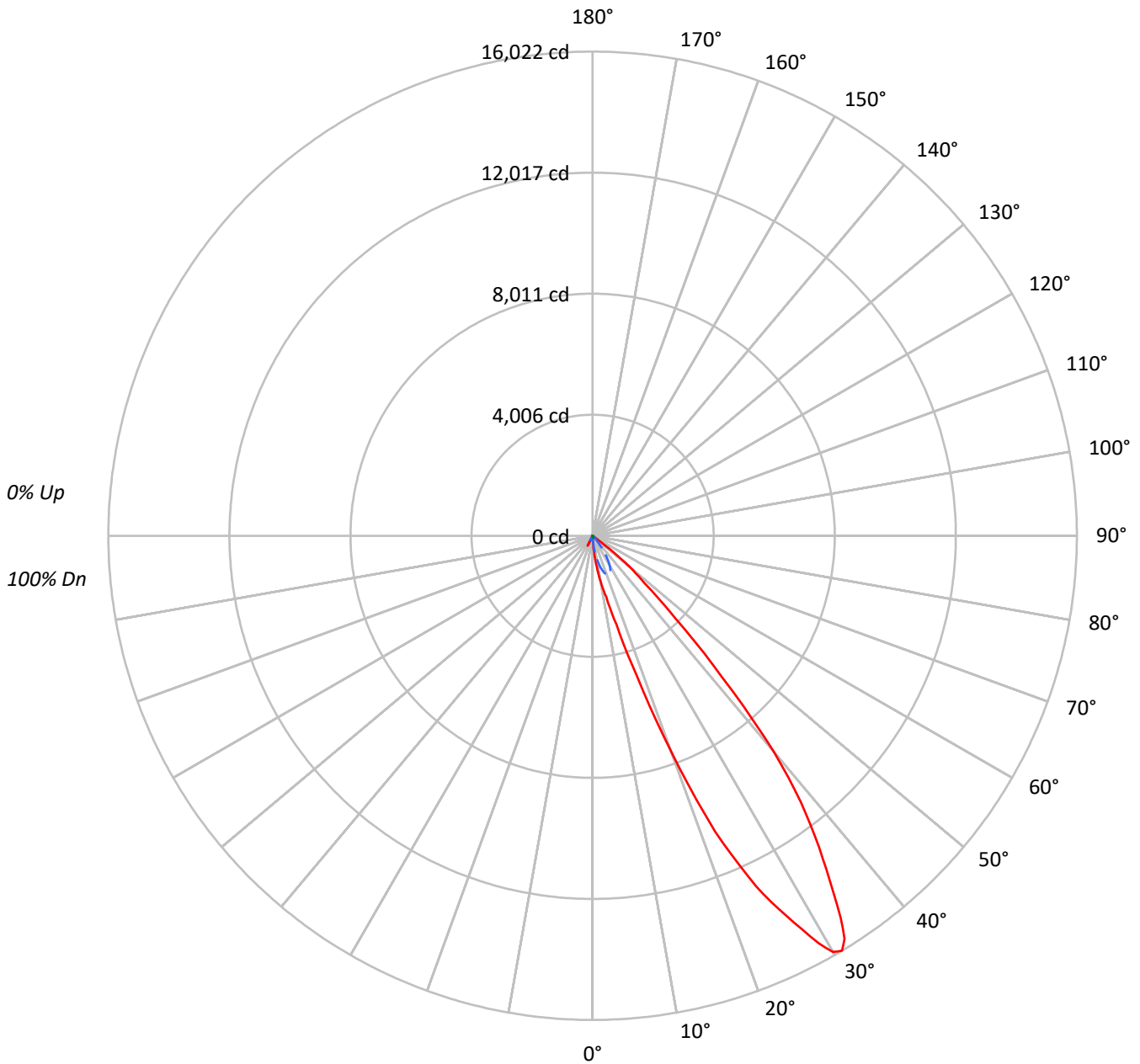
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	3026	3026	3026
5°	29364	2669	1101
10°	86828	1904	690
15°	172356	1294	596
20°	444609	1056	834
25°	774873	1264	5982
30°	1006528	1323	3374
35°	901875	576	321
40°	666756	208	0
45°	300256	225	0
50°	135467	247	0
55°	12090	277	0
60°	1458	318	0
65°	623	493	0
70°	465	609	0
75°	0	805	0
80°	0	1200	316
85°	0	2390	629



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	22.0	0.9
10°-20°	205.5	8.4
20°-30°	811.5	33.2
30°-40°	979.3	40.1
40°-50°	380.0	15.6
50°-60°	33.4	1.4
60°-70°	3.2	0.1
70°-80°	3.0	0.1
80°-90°	2.8	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°	1039.0	42.6
0°-40°	2018.3	82.7
0°-60°	2431.8	99.6
0°-90°	2440.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2440.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	55	55	55	55	55	
5°	534	261	48	24	20	85
15°	3037	1149	23	14	10	1113
25°	12810	1359	21	67	99	5859
35°	13476	692	9	9	5	8284
45°	3873	48	3	2	0	3402
55°	126	6	3	2	0	305
65°	5	4	4	3	0	5
75°	0	4	4	4	0	1
85°	0	4	4	4	1	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°	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
2.5°	173.1	164.5	155.0	158.8	160.7	165.5	161.7	147.4	156.0	149.3	143.6
5°	533.6	524.1	506.0	508.8	503.1	509.8	494.6	464.1	469.8	460.3	435.6
7.5°	1040.5	1000.6	971.1	973.0	955.9	963.5	934.9	882.6	876.9	828.4	820.8
10°	1559.8	1539.8	1504.7	1499.9	1469.5	1473.3	1428.6	1359.1	1340.1	1284.0	1251.7
12.5°	2069.6	2036.3	1986.9	1976.4	1926.9	1927.9	1867.0	1789.0	1760.5	1702.5	1657.8
15°	3036.9	2989.3	2876.2	2833.4	2696.4	2675.5	2525.2	2348.3	2262.7	2162.8	2031.6
17.5°	4822.1	4791.7	4570.1	4447.4	4169.7	3893.8	3731.2	3348.9	3125.3	2845.7	2603.2
20°	7621.2	7677.4	7290.3	7016.3	6500.8	5918.8	5507.9	4811.7	4346.6	3864.4	3407.8
22.5°	10598.2	10622.0	10225.4	9883.9	9283.8	8483.9	7537.6	6693.0	5840.8	5012.4	4259.1
25°	12810.5	12742.0	12305.5	11895.5	11264.0	10447.0	9527.3	8399.3	7234.1	6096.6	4993.3
26°	13485.8	13448.7	13011.2	12520.4	11825.2	10995.8	10039.0	8900.5	7669.8	6444.7	5217.8
27°	14111.6	14087.8	13613.2	13067.3	12288.3	11420.0	10418.5	9280.9	7998.8	6713.9	5380.4
28°	14746.0	14719.4	14144.9	13511.5	12665.0	11721.5	10681.0	9534.9	8210.9	6871.8	5448.0
29°	15416.5	15365.2	14630.9	13837.7	12916.1	11897.4	10817.9	9650.9	8283.2	6910.8	5430.8
30°	15900.7	15820.8	14981.9	14044.1	13018.8	11952.6	10833.1	9648.1	8238.5	6829.9	5321.5
31°	16022.4	15941.6	15079.9	14041.2	12943.7	11868.9	10723.8	9513.0	8052.1	6634.0	5136.9
32°	15727.6	15653.4	14831.6	13720.7	12705.9	11667.3	10506.0	9262.9	7763.0	6341.1	4886.8
33°	15069.4	15013.3	14304.7	13299.4	12365.4	11381.0	10194.0	8907.1	7352.1	5968.2	4592.9
34°	14239.1	14198.2	13653.2	12803.8	11933.6	10988.2	9789.8	8438.3	6810.9	5545.9	4272.4
35°	13476.3	13445.8	13004.5	12251.3	11440.0	10502.2	9278.1	7860.9	6253.6	5091.3	3930.0
36°	12742.0	12716.3	12333.0	11633.0	10850.3	9932.4	8634.2	7170.4	5655.3	4619.5	3575.2
37°	11975.4	11952.6	11623.5	10957.7	10187.3	9251.5	7869.5	6435.2	5047.5	4148.7	3210.9
38°	11180.3	11161.3	10859.8	10195.9	9414.1	8419.2	6997.3	5675.3	4455.0	3689.4	2883.8
39°	10292.9	10276.7	9999.0	9302.8	8467.7	7438.6	6099.5	4934.4	3892.9	3243.3	2567.0
40°	9317.1	9295.2	9017.5	8239.5	7395.8	6429.5	5236.8	4254.3	3362.2	2826.7	2288.4
42.5°	6334.4	6310.6	6104.2	5651.5	4839.3	4218.2	3470.6	2847.6	2382.5	2060.1	1782.4
45°	3872.9	3875.8	3767.3	3487.7	2998.9	2653.6	2247.5	1949.8	1740.5	1616.9	1423.8
47.5°	2342.6	2342.6	2294.1	2151.4	1931.7	1793.8	1625.4	1486.6	1326.8	1205.1	995.8
50°	1588.4	1589.3	1515.1	1522.7	1376.3	1290.7	1129.9	960.6	803.7	626.8	447.0
51°	1175.6	1181.3	1112.8	1144.2	983.4	911.2	759.0	615.4	476.5	339.5	195.9
52°	719.0	729.5	682.9	711.4	618.2	512.6	389.0	287.2	193.1	135.1	94.2
53°	333.8	342.4	318.6	331.9	276.8	215.9	163.6	133.2	106.5	86.6	63.7
54°	176.9	178.8	171.2	167.4	152.2	134.1	111.3	92.3	72.3	58.0	42.8
55°	126.5	126.5	122.7	118.9	106.5	91.3	74.2	62.8	47.6	38.0	27.6
57.5°	39.0	39.0	39.0	37.1	32.3	27.6	21.9	19.0	15.2	14.3	11.4
60°	13.3	13.3	13.3	12.4	11.4	10.5	9.5	8.6	7.6	7.6	6.7
61°	9.5	9.5	9.5	9.5	8.6	8.6	7.6	6.7	5.7	6.7	5.7
62°	7.6	8.6	7.6	7.6	7.6	6.7	5.7	5.7	4.8	5.7	4.8
63°	6.7	6.7	6.7	6.7	5.7	5.7	4.8	4.8	3.8	4.8	4.8
64°	5.7	5.7	5.7	5.7	4.8	4.8	3.8	3.8	2.9	3.8	3.8
65°	4.8	4.8	4.8	4.8	3.8	3.8	3.8	2.9	2.9	3.8	3.8
66°	3.8	3.8	3.8	3.8	3.8	2.9	2.9	2.9	1.9	2.9	2.9



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CATALOG NUMBER: LDA6A30830D010TE 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°	1.9	1.9	1.9	1.9	1.0	1.0	1.0	1.0	1.0	1.9	1.9
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
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: LDA6A30830D010TE 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°	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
2.5°	137.9	128.4	126.5	126.5	106.5	110.3	103.7	98.9	69.4	53.3	39.9
5°	421.3	387.1	372.8	360.5	306.3	301.5	268.2	260.6	93.2	48.5	30.4
7.5°	785.6	733.3	700.0	667.7	580.2	556.4	499.3	485.1	126.5	40.9	23.8
10°	1200.3	1125.2	1067.1	990.1	876.9	827.5	743.8	713.3	154.1	34.2	22.8
12.5°	1590.3	1504.7	1425.7	1323.9	1170.8	1091.9	981.5	942.6	164.5	28.5	20.9
15°	1926.9	1812.8	1714.9	1605.5	1434.3	1334.4	1199.4	1148.9	156.0	22.8	18.1
17.5°	2354.0	2160.9	1990.7	1837.5	1651.1	1529.4	1372.5	1290.7	126.5	20.0	16.2
20°	2985.5	2596.5	2296.9	2049.6	1790.9	1639.7	1465.7	1366.7	91.3	18.1	16.2
22.5°	3580.0	3024.5	2565.1	2211.3	1863.2	1682.5	1501.8	1392.4	64.7	18.1	19.0
25°	4065.0	3347.0	2750.6	2317.9	1903.2	1691.1	1488.5	1359.1	50.4	20.9	37.1
26°	4201.1	3426.9	2786.8	2326.4	1897.5	1678.7	1465.7	1328.7	44.7	28.5	69.4
27°	4285.7	3463.0	2787.7	2313.1	1876.5	1654.0	1431.4	1287.8	39.0	43.8	117.0
28°	4302.8	3445.9	2755.4	2276.0	1840.4	1620.7	1393.4	1238.3	36.1	55.2	133.2
29°	4256.2	3385.0	2696.4	2221.8	1796.6	1580.7	1347.7	1184.1	31.4	41.8	86.6
30°	4151.6	3284.2	2609.8	2152.4	1750.0	1536.0	1291.6	1119.5	25.7	20.9	39.0
31°	3994.7	3145.3	2503.3	2070.6	1697.7	1479.0	1224.1	1047.2	21.9	14.3	22.8
32°	3795.9	2978.9	2384.4	1986.9	1638.8	1409.5	1145.1	966.3	20.0	11.4	19.0
33°	3567.6	2803.9	2261.7	1902.2	1568.4	1326.8	1060.5	879.8	18.1	12.4	19.0
34°	3318.4	2625.1	2122.9	1813.8	1486.6	1236.4	970.1	778.0	16.2	11.4	14.3
35°	3048.3	2439.6	1998.3	1735.8	1394.3	1138.5	877.9	691.5	14.3	8.6	9.5
36°	2815.3	2258.9	1877.5	1636.9	1293.5	1037.7	782.8	598.2	12.4	5.7	6.7
37°	2561.3	2089.6	1765.3	1534.1	1185.1	934.0	687.7	506.0	11.4	3.8	5.7
38°	2324.5	1933.6	1653.0	1416.2	1073.8	829.4	590.6	415.6	10.5	3.8	4.8
39°	2109.6	1791.9	1548.4	1290.7	956.8	720.0	492.7	326.2	9.5	2.9	4.8
40°	1925.0	1665.4	1422.9	1158.5	836.0	611.6	394.7	241.6	8.6	2.9	4.8
42.5°	1565.5	1336.3	1073.8	818.9	541.2	346.2	176.9	88.5	6.7	2.9	3.8
45°	1196.5	951.1	708.6	492.7	278.7	134.1	65.6	48.5	5.7	2.9	3.8
47.5°	777.1	570.7	380.4	215.0	93.2	54.2	34.2	24.7	4.8	2.9	3.8
50°	287.2	158.8	83.7	52.3	36.1	22.8	15.2	14.3	4.8	2.9	3.8
51°	117.9	77.0	52.3	35.2	22.8	16.2	12.4	12.4	4.8	2.9	3.8
52°	70.4	48.5	35.2	25.7	17.1	12.4	9.5	10.5	4.8	2.9	3.8
53°	46.6	33.3	25.7	20.0	13.3	9.5	6.7	7.6	4.8	2.9	3.8
54°	31.4	23.8	19.0	15.2	9.5	7.6	3.8	6.7	3.8	2.9	3.8
55°	21.9	17.1	14.3	11.4	6.7	4.8	2.9	5.7	3.8	2.9	3.8
57.5°	9.5	8.6	7.6	6.7	2.9	1.9	1.0	4.8	3.8	2.9	3.8
60°	6.7	5.7	4.8	4.8	1.0	1.0	0.0	3.8	3.8	2.9	3.8
61°	5.7	4.8	4.8	3.8	1.0	1.0	0.0	3.8	4.8	2.9	3.8
62°	4.8	4.8	3.8	3.8	1.0	0.0	0.0	3.8	4.8	2.9	4.8
63°	3.8	3.8	3.8	3.8	1.0	0.0	0.0	3.8	4.8	2.9	4.8
64°	3.8	3.8	3.8	3.8	0.0	0.0	0.0	3.8	4.8	2.9	4.8
65°	3.8	2.9	2.9	2.9	0.0	0.0	0.0	3.8	4.8	3.8	4.8
66°	2.9	2.9	2.9	2.9	0.0	0.0	0.0	3.8	4.8	3.8	4.8



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CATALOG NUMBER: LDA6A30830D010TE 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°	1.9	1.9	1.9	1.9	0.0	0.0	0.0	2.9	4.8	3.8	5.7
75°	1.0	1.9	1.9	1.9	0.0	0.0	0.0	3.8	4.8	3.8	5.7
77.5°	1.0	1.9	1.9	1.9	0.0	0.0	0.0	3.8	4.8	3.8	5.7
80°	1.0	1.9	1.9	1.9	0.0	0.0	0.0	3.8	4.8	3.8	5.7
82.5°	1.0	1.9	1.9	1.9	0.0	0.0	0.0	3.8	4.8	3.8	5.7
85°	1.0	1.9	1.9	1.9	0.0	0.0	0.0	3.8	4.8	3.8	5.7
87.5°	1.0	1.9	1.9	1.9	0.0	0.0	0.0	3.8	4.8	3.8	5.7
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: P175496

CATALOG NUMBER: LDA6A30830D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	55.2	55.2	55.2
2.5°	33.3	30.4	28.5
5°	23.8	21.9	20.0
7.5°	20.0	17.1	16.2
10°	18.1	13.3	12.4
12.5°	15.2	11.4	10.5
15°	14.3	11.4	10.5
17.5°	14.3	11.4	10.5
20°	15.2	14.3	14.3
22.5°	21.9	23.8	24.7
25°	66.6	85.6	98.9
26°	156.0	234.0	313.9
27°	236.8	345.3	368.1
28°	213.0	247.3	240.6
29°	102.7	116.0	105.6
30°	45.7	54.2	53.3
31°	29.5	33.3	32.3
32°	24.7	22.8	21.9
33°	20.0	16.2	13.3
34°	13.3	10.5	8.6
35°	8.6	5.7	4.8
36°	5.7	2.9	1.9
37°	3.8	1.9	1.0
38°	3.8	1.0	0.0
39°	2.9	1.0	0.0
40°	2.9	1.0	0.0
42.5°	2.9	0.0	0.0
45°	1.9	0.0	0.0
47.5°	1.9	0.0	0.0
50°	2.9	1.0	0.0
51°	2.9	0.0	0.0
52°	2.9	0.0	0.0
53°	1.9	0.0	0.0
54°	1.9	0.0	0.0
55°	1.9	0.0	0.0
57.5°	1.9	0.0	0.0
60°	1.9	0.0	0.0
61°	2.9	0.0	0.0
62°	2.9	0.0	0.0
63°	2.9	0.0	0.0
64°	2.9	1.0	0.0
65°	2.9	1.0	0.0
66°	2.9	1.0	0.0



TEST NUMBER: P175496

CATALOG NUMBER: LDA6A30830D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	3.8	1.0	0.0
75°	3.8	1.0	0.0
77.5°	3.8	1.0	0.0
80°	3.8	1.9	1.0
82.5°	3.8	1.9	1.0
85°	3.8	1.9	1.0
87.5°	3.8	1.9	1.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	2.9	2.9	2.9	2.9	2.9	2.9	1.9	1.9	1.9	2.9	2.9
70°	2.9	2.9	1.9	1.9	1.9	1.9	1.9	1.0	1.0	2.9	2.9





67.5°	2.9	2.9	2.9	2.9	0.0	0.0	0.0	3.8	4.8	3.8	4.8
70°	2.9	2.9	2.9	2.9	0.0	0.0	0.0	3.8	4.8	3.8	5.7





67.5°	3.8	1.0	0.0
70°	3.8	1.0	0.0



(END OF REPORT)