

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: P175495

Luminaire Tested: **LDA6A30827D010TE LARL20NF 6LAL1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P175495
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: LDA6A30827D010TE 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 / 2700K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2254.7 lumens
Efficiency: N/A
Efficacy: 50.7 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

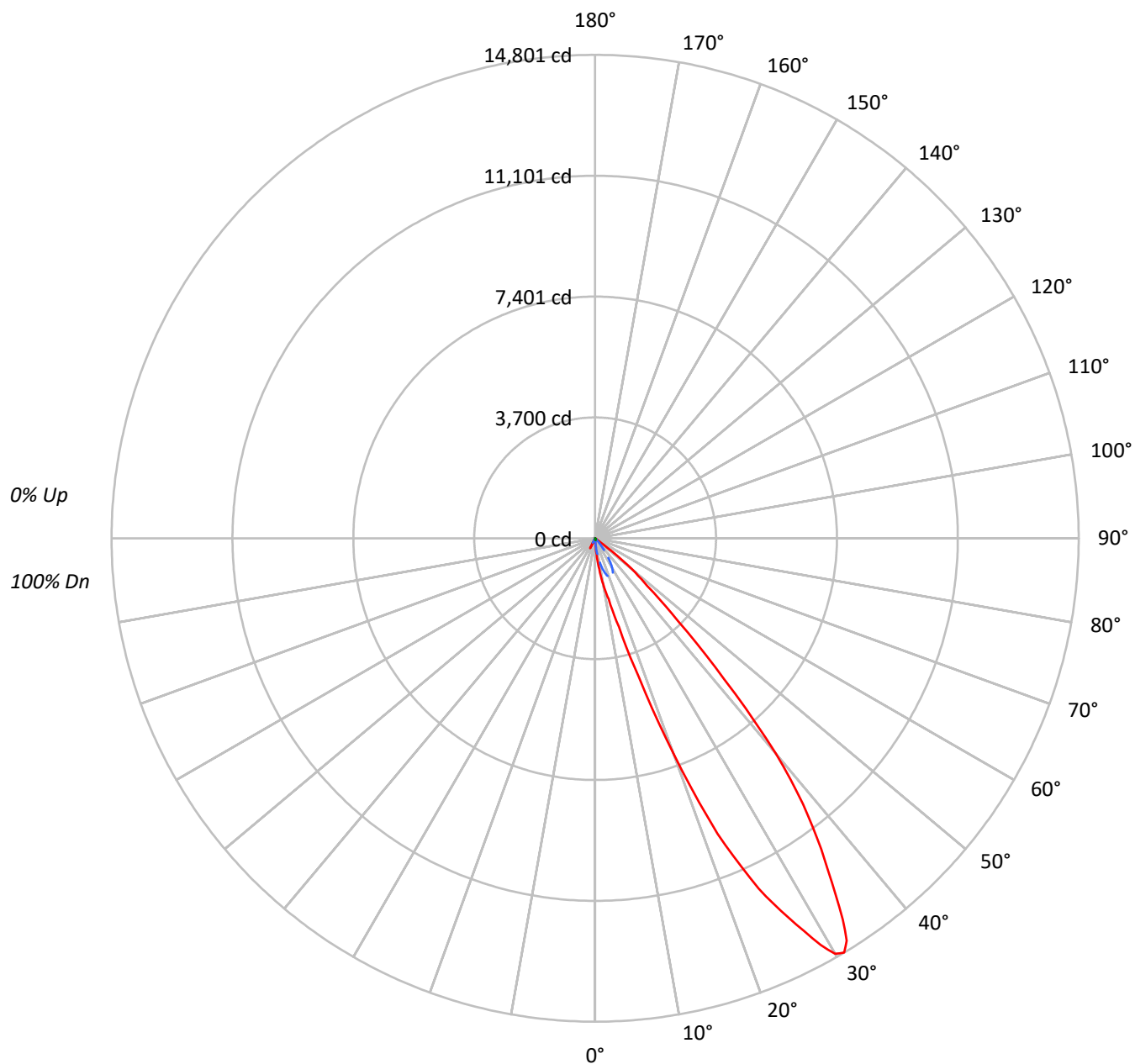
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20					20					20					20
RC	80				70					50					30					0
RW	70	50	30	10	70	50	30	10		50	30	10		50	30	10		50	30	10
RCR																				
0	119	119	119	119	116	116	116	116		111	111	111		106	106	106		102	102	102
1	112	109	106	104	110	107	104	102		103	101	99		99	97	96		96	94	93
2	105	100	95	91	103	98	93	90		94	91	88		91	88	86		89	86	84
3	99	91	85	80	96	89	84	79		87	82	78		84	80	77		82	78	76
4	92	83	76	71	90	82	75	70		79	74	70		77	72	69		75	71	68
5	86	75	68	63	84	74	68	63		73	67	62		71	66	62		69	65	61
6	80	69	62	56	78	68	61	56		66	60	56		65	59	55		63	59	55
7	74	63	56	50	73	62	55	50		61	55	50		59	54	50		58	53	49
8	69	58	50	45	68	57	50	45		56	49	45		55	49	45		54	48	44
9	65	53	46	41	63	52	45	41		51	45	40		50	44	40		49	44	40
10	60	49	41	37	59	48	41	37		47	41	37		46	41	36		45	40	36

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	2796	2796	2796
5°	27124	2465	1018
10°	80209	1759	635
15°	159218	1198	551
20°	410726	974	770
25°	715814	1167	5529
30°	929808	1222	3114
35°	833132	529	294
40°	615933	186	0
45°	277370	202	0
50°	125139	222	0
55°	11173	248	0
60°	1349	285	0
65°	571	454	0
70°	417	561	0
75°	0	741	0
80°	0	1105	284
85°	0	2201	566



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	20.3	0.9
10°-20°	189.8	8.4
20°-30°	749.7	33.2
30°-40°	904.6	40.1
40°-50°	351.1	15.6
50°-60°	30.9	1.4
60°-70°	2.9	0.1
70°-80°	2.8	0.1
80°-90°	2.6	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°	959.8	42.6
0°-40°	1864.5	82.7
0°-60°	2246.4	99.6
0°-90°	2254.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2254.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	51	51	51	51	51	
5°	493	241	45	22	18	78
15°	2805	1061	21	13	10	1028
25°	11834	1256	19	62	91	5412
35°	12449	639	8	8	4	7652
45°	3578	45	3	2	0	3143
55°	117	5	3	2	0	282
65°	4	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	



TEST NUMBER: P175495

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CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0
2.5°	159.9	152.0	143.2	146.7	148.5	152.9	149.4	136.2	144.1	137.9	132.7
5°	492.9	484.1	467.4	470.1	464.8	470.9	456.9	428.8	434.0	425.3	402.4
7.5°	961.2	924.3	897.1	898.8	883.0	890.0	863.7	815.4	810.1	765.3	758.2
10°	1440.9	1422.5	1390.0	1385.6	1357.5	1361.0	1319.7	1255.5	1238.0	1186.1	1156.3
12.5°	1911.9	1881.1	1835.4	1825.8	1780.1	1781.0	1724.7	1652.7	1626.3	1572.7	1531.4
15°	2805.4	2761.5	2656.9	2617.4	2490.9	2471.5	2332.7	2169.3	2090.2	1998.0	1876.7
17.5°	4454.6	4426.5	4221.8	4108.4	3851.9	3597.1	3446.8	3093.6	2887.1	2628.8	2404.8
20°	7040.4	7092.2	6734.6	6481.6	6005.3	5467.6	5088.1	4444.9	4015.3	3569.8	3148.1
22.5°	9790.4	9812.4	9446.0	9130.6	8576.2	7837.3	6963.0	6182.8	5395.6	4630.3	3934.4
25°	11834.1	11770.8	11367.5	10988.9	10405.5	9650.7	8801.1	7759.1	6682.8	5631.9	4612.7
26°	12457.9	12423.6	12019.5	11566.1	10923.8	10157.7	9273.8	8222.1	7085.2	5953.5	4820.1
27°	13036.0	13014.1	12575.6	12071.3	11351.7	10549.6	9624.4	8573.5	7389.2	6202.2	4970.3
28°	13622.1	13597.5	13066.8	12481.6	11699.7	10828.1	9866.9	8808.1	7585.1	6348.0	5032.7
29°	14241.5	14194.1	13515.8	12783.0	11931.6	10990.6	9993.4	8915.3	7651.9	6384.0	5016.9
30°	14688.7	14614.9	13840.0	12973.7	12026.5	11041.6	10007.4	8912.7	7610.6	6309.3	4915.9
31°	14801.2	14726.5	13930.5	12971.0	11957.1	10964.3	9906.4	8787.9	7438.4	6128.4	4745.4
32°	14528.8	14460.3	13701.2	12674.9	11737.4	10778.0	9705.2	8556.9	7171.3	5857.7	4514.3
33°	13920.8	13869.0	13214.4	12285.7	11422.9	10513.5	9417.0	8228.2	6791.7	5513.3	4242.8
34°	13153.8	13116.0	12612.5	11827.9	11024.0	10150.7	9043.6	7795.1	6291.8	5123.2	3946.7
35°	12449.1	12421.0	12013.3	11317.5	10568.0	9701.7	8570.9	7261.8	5776.9	4703.2	3630.4
36°	11770.8	11747.1	11393.0	10746.4	10023.3	9175.4	7976.1	6623.9	5224.3	4267.4	3302.7
37°	11062.7	11041.6	10737.6	10122.5	9410.9	8546.3	7269.7	5944.7	4662.8	3832.5	2966.2
38°	10328.1	10310.6	10032.1	9418.8	8696.6	7777.5	6464.0	5242.7	4115.4	3408.2	2664.0
39°	9508.4	9493.5	9236.9	8593.8	7822.3	6871.7	5634.6	4558.3	3596.2	2996.1	2371.4
40°	8606.9	8586.7	8330.2	7611.5	6832.1	5939.5	4837.7	3930.1	3105.9	2611.3	2114.0
42.5°	5851.6	5829.6	5639.0	5220.7	4470.4	3896.7	3206.1	2630.6	2200.9	1903.1	1646.5
45°	3577.7	3580.4	3480.2	3221.9	2770.3	2451.3	2076.2	1801.2	1607.9	1493.6	1315.3
47.5°	2164.0	2164.0	2119.2	1987.4	1784.5	1657.1	1501.6	1373.3	1225.7	1113.2	919.9
50°	1467.3	1468.2	1399.6	1406.7	1271.4	1192.3	1043.8	887.4	742.4	579.0	413.0
51°	1086.0	1091.2	1028.0	1057.0	908.5	841.7	701.1	568.5	440.2	313.7	181.0
52°	664.2	673.9	630.8	657.2	571.1	473.6	359.4	265.3	178.4	124.8	87.0
53°	308.4	316.3	294.3	306.6	255.7	199.4	151.1	123.0	98.4	80.0	58.9
54°	163.4	165.2	158.2	154.6	140.6	123.9	102.8	85.2	66.8	53.6	39.5
55°	116.9	116.9	113.3	109.8	98.4	84.3	68.5	58.0	43.9	35.1	25.5
57.5°	36.0	36.0	36.0	34.3	29.9	25.5	20.2	17.6	14.1	13.2	10.5
60°	12.3	12.3	12.3	11.4	10.5	9.7	8.8	7.9	7.0	7.0	6.2
61°	8.8	8.8	8.8	8.8	7.9	7.9	7.0	6.2	5.3	6.2	5.3
62°	7.0	7.9	7.0	7.0	7.0	6.2	5.3	5.3	4.4	5.3	4.4
63°	6.2	6.2	6.2	6.2	5.3	5.3	4.4	4.4	3.5	4.4	4.4
64°	5.3	5.3	5.3	5.3	4.4	4.4	3.5	3.5	2.6	3.5	3.5
65°	4.4	4.4	4.4	4.4	3.5	3.5	3.5	2.6	2.6	3.5	3.5
66°	3.5	3.5	3.5	3.5	3.5	2.6	2.6	2.6	1.8	2.6	2.6



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CATALOG NUMBER: LDA6A30827D010TE 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°	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9	1.8	1.8
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
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°	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0
2.5°	127.4	118.6	116.9	116.9	98.4	101.9	95.8	91.4	64.1	49.2	36.9
5°	389.2	357.6	344.4	333.0	282.9	278.5	247.8	240.7	86.1	44.8	28.1
7.5°	725.7	677.4	646.7	616.8	536.0	514.0	461.3	448.1	116.9	37.8	22.0
10°	1108.8	1039.4	985.8	914.6	810.1	764.4	687.1	659.0	142.3	31.6	21.1
12.5°	1469.0	1390.0	1317.0	1223.0	1081.6	1008.7	906.7	870.7	152.0	26.4	19.3
15°	1780.1	1674.6	1584.1	1483.1	1325.0	1232.7	1107.9	1061.4	144.1	21.1	16.7
17.5°	2174.6	1996.2	1838.9	1697.5	1525.3	1412.8	1267.8	1192.3	116.9	18.5	14.9
20°	2758.0	2398.6	2121.9	1893.4	1654.4	1514.7	1353.9	1262.6	84.3	16.7	14.9
22.5°	3307.1	2794.0	2369.6	2042.8	1721.2	1554.3	1387.3	1286.3	59.7	16.7	17.6
25°	3755.2	3091.9	2541.0	2141.2	1758.1	1562.2	1375.0	1255.5	46.6	19.3	34.3
26°	3880.9	3165.7	2574.3	2149.1	1752.8	1550.8	1353.9	1227.4	41.3	26.4	64.1
27°	3959.0	3199.0	2575.2	2136.8	1733.5	1527.9	1322.3	1189.6	36.0	40.4	108.1
28°	3974.9	3183.2	2545.4	2102.5	1700.1	1497.2	1287.2	1144.0	33.4	51.0	123.0
29°	3931.8	3127.0	2490.9	2052.4	1659.7	1460.3	1245.0	1093.9	29.0	38.7	80.0
30°	3835.2	3033.9	2410.9	1988.3	1616.7	1419.0	1193.2	1034.1	23.7	19.3	36.0
31°	3690.2	2905.6	2312.5	1912.7	1568.3	1366.2	1130.8	967.4	20.2	13.2	21.1
32°	3506.6	2751.8	2202.7	1835.4	1513.9	1302.1	1057.9	892.7	18.5	10.5	17.6
33°	3295.7	2590.2	2089.4	1757.2	1448.8	1225.7	979.7	812.7	16.7	11.4	17.6
34°	3065.5	2425.0	1961.1	1675.5	1373.3	1142.2	896.2	718.7	14.9	10.5	13.2
35°	2816.0	2253.7	1846.0	1603.5	1288.1	1051.7	811.0	638.8	13.2	7.9	8.8
36°	2600.7	2086.7	1734.4	1512.1	1194.9	958.6	723.1	552.7	11.4	5.3	6.2
37°	2366.1	1930.3	1630.7	1417.2	1094.8	862.8	635.2	467.4	10.5	3.5	5.3
38°	2147.3	1786.2	1527.0	1308.3	992.0	766.2	545.6	384.0	9.7	3.5	4.4
39°	1948.8	1655.3	1430.4	1192.3	883.9	665.1	455.1	301.4	8.8	2.6	4.4
40°	1778.3	1538.5	1314.4	1070.2	772.3	565.0	364.6	223.2	7.9	2.6	4.4
42.5°	1446.2	1234.5	992.0	756.5	499.9	319.8	163.4	81.7	6.2	2.6	3.5
45°	1105.3	878.6	654.6	455.1	257.4	123.9	60.6	44.8	5.3	2.6	3.5
47.5°	717.8	527.2	351.4	198.6	86.1	50.1	31.6	22.8	4.4	2.6	3.5
50°	265.3	146.7	77.3	48.3	33.4	21.1	14.1	13.2	4.4	2.6	3.5
51°	108.9	71.2	48.3	32.5	21.1	14.9	11.4	11.4	4.4	2.6	3.5
52°	65.0	44.8	32.5	23.7	15.8	11.4	8.8	9.7	4.4	2.6	3.5
53°	43.1	30.8	23.7	18.5	12.3	8.8	6.2	7.0	4.4	2.6	3.5
54°	29.0	22.0	17.6	14.1	8.8	7.0	3.5	6.2	3.5	2.6	3.5
55°	20.2	15.8	13.2	10.5	6.2	4.4	2.6	5.3	3.5	2.6	3.5
57.5°	8.8	7.9	7.0	6.2	2.6	1.8	0.9	4.4	3.5	2.6	3.5
60°	6.2	5.3	4.4	4.4	0.9	0.9	0.0	3.5	3.5	2.6	3.5
61°	5.3	4.4	4.4	3.5	0.9	0.9	0.0	3.5	4.4	2.6	3.5
62°	4.4	4.4	3.5	3.5	0.9	0.0	0.0	3.5	4.4	2.6	4.4
63°	3.5	3.5	3.5	3.5	0.9	0.0	0.0	3.5	4.4	2.6	4.4
64°	3.5	3.5	3.5	3.5	0.0	0.0	0.0	3.5	4.4	2.6	4.4
65°	3.5	2.6	2.6	2.6	0.0	0.0	0.0	3.5	4.4	3.5	4.4
66°	2.6	2.6	2.6	2.6	0.0	0.0	0.0	3.5	4.4	3.5	4.4



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CATALOG NUMBER: LDA6A30827D010TE 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°	1.8	1.8	1.8	1.8	0.0	0.0	0.0	2.6	4.4	3.5	5.3
75°	0.9	1.8	1.8	1.8	0.0	0.0	0.0	3.5	4.4	3.5	5.3
77.5°	0.9	1.8	1.8	1.8	0.0	0.0	0.0	3.5	4.4	3.5	5.3
80°	0.9	1.8	1.8	1.8	0.0	0.0	0.0	3.5	4.4	3.5	5.3
82.5°	0.9	1.8	1.8	1.8	0.0	0.0	0.0	3.5	4.4	3.5	5.3
85°	0.9	1.8	1.8	1.8	0.0	0.0	0.0	3.5	4.4	3.5	5.3
87.5°	0.9	1.8	1.8	1.8	0.0	0.0	0.0	3.5	4.4	3.5	5.3
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: P175495

CATALOG NUMBER: LDA6A30827D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	51.0	51.0	51.0
2.5°	30.8	28.1	26.4
5°	22.0	20.2	18.5
7.5°	18.5	15.8	14.9
10°	16.7	12.3	11.4
12.5°	14.1	10.5	9.7
15°	13.2	10.5	9.7
17.5°	13.2	10.5	9.7
20°	14.1	13.2	13.2
22.5°	20.2	22.0	22.8
25°	61.5	79.1	91.4
26°	144.1	216.1	289.9
27°	218.8	318.9	340.0
28°	196.8	228.4	222.3
29°	94.9	107.2	97.5
30°	42.2	50.1	49.2
31°	27.2	30.8	29.9
32°	22.8	21.1	20.2
33°	18.5	14.9	12.3
34°	12.3	9.7	7.9
35°	7.9	5.3	4.4
36°	5.3	2.6	1.8
37°	3.5	1.8	0.9
38°	3.5	0.9	0.0
39°	2.6	0.9	0.0
40°	2.6	0.9	0.0
42.5°	2.6	0.0	0.0
45°	1.8	0.0	0.0
47.5°	1.8	0.0	0.0
50°	2.6	0.9	0.0
51°	2.6	0.0	0.0
52°	2.6	0.0	0.0
53°	1.8	0.0	0.0
54°	1.8	0.0	0.0
55°	1.8	0.0	0.0
57.5°	1.8	0.0	0.0
60°	1.8	0.0	0.0
61°	2.6	0.0	0.0
62°	2.6	0.0	0.0
63°	2.6	0.0	0.0
64°	2.6	0.9	0.0
65°	2.6	0.9	0.0
66°	2.6	0.9	0.0



TEST NUMBER: P175495

CATALOG NUMBER: LDA6A30827D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	3.5	0.9	0.0
75°	3.5	0.9	0.0
77.5°	3.5	0.9	0.0
80°	3.5	1.8	0.9
82.5°	3.5	1.8	0.9
85°	3.5	1.8	0.9
87.5°	3.5	1.8	0.9
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





— 0°-180° - - 45°-225° - - - 90°-270°







67.5°	2.6	2.6	2.6	2.6	2.6	2.6	1.8	1.8	1.8	2.6	2.6
70°	2.6	2.6	1.8	1.8	1.8	1.8	1.8	0.9	0.9	2.6	2.6





67.5°	2.6	2.6	2.6	2.6	0.0	0.0	0.0	3.5	4.4	3.5	4.4
70°	2.6	2.6	2.6	2.6	0.0	0.0	0.0	3.5	4.4	3.5	5.3





67.5°	3.5	0.9	0.0
70°	3.5	0.9	0.0



(END OF REPORT)