

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: P175489

Luminaire Tested: **LDA6A15835D010TE LARL20NF 6LAL1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P175489
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: LDA6A15835D010TE 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 / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1322.7 lumens
Efficiency: N/A
Efficacy: 59.4 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

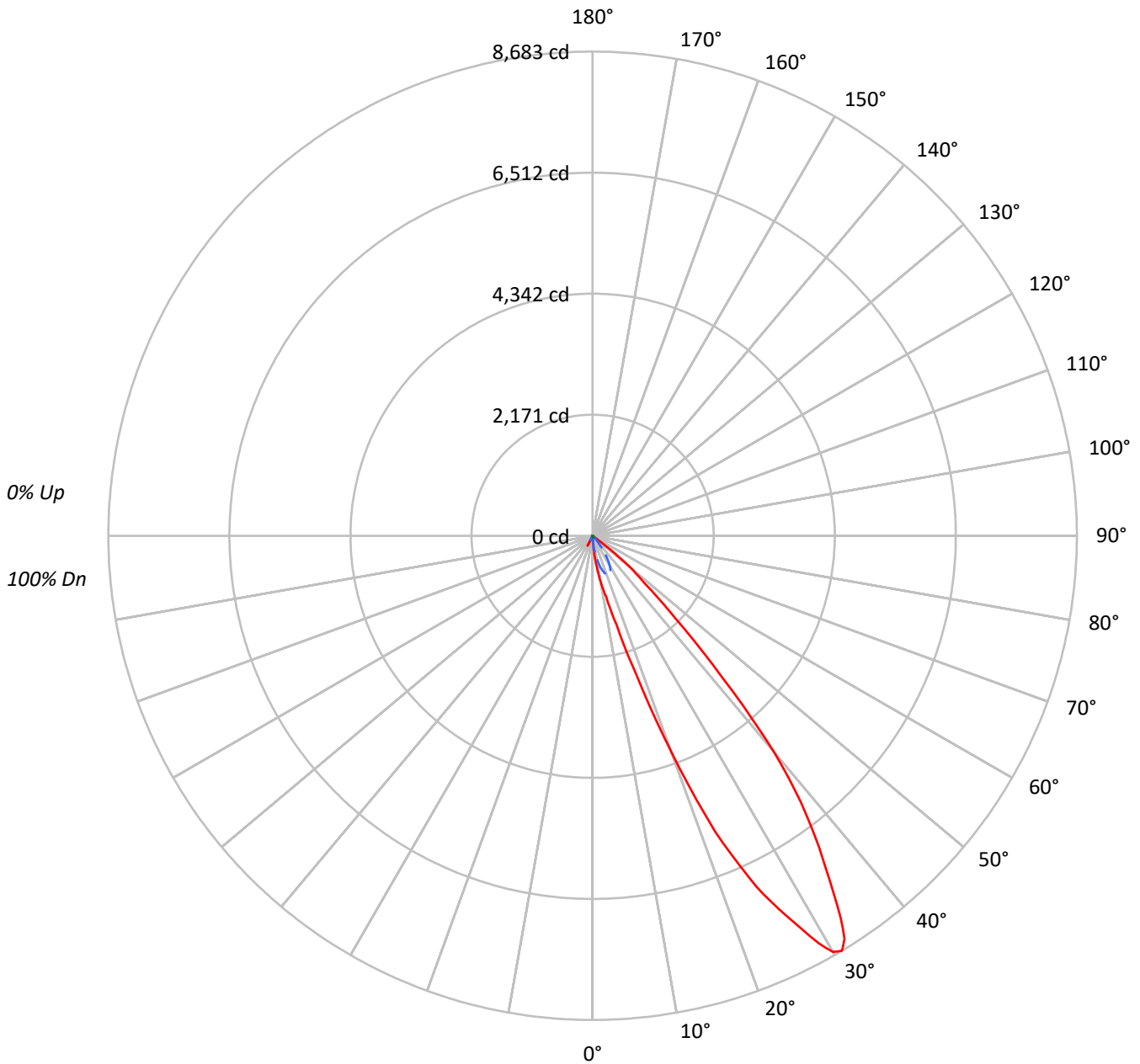
Input Watts (W): 22.27
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	1639	1639	1639
5°	15915	1447	594
10°	47054	1035	373
15°	93406	704	323
20°	240949	572	449
25°	419921	684	3242
30°	545464	715	1829
35°	488746	308	174
40°	361334	107	0
45°	162715	116	0
50°	73413	128	0
55°	6557	143	0
60°	789	164	0
65°	337	272	0
70°	240	337	0
75°	0	445	0
80°	0	663	158
85°	0	1321	314



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	11.9	0.9
10°-20°	111.4	8.4
20°-30°	439.8	33.2
30°-40°	530.7	40.1
40°-50°	205.9	15.6
50°-60°	18.1	1.4
60°-70°	1.7	0.1
70°-80°	1.6	0.1
80°-90°	1.5	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°	563.1	42.6
0°-40°	1093.8	82.7
0°-60°	1317.8	99.6
0°-90°	1322.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1322.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	30	30	30	30	30	
5°	289	141	26	13	11	46
15°	1646	623	12	8	6	603
25°	6942	737	11	36	54	3175
35°	7303	375	5	5	3	4489
45°	2099	26	2	1	0	1844
55°	69	3	2	1	0	165
65°	3	2	2	2	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°	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9
2.5°	93.8	89.2	84.0	86.1	87.1	89.7	87.6	79.9	84.5	80.9	77.8
5°	289.2	284.0	274.2	275.8	272.7	276.3	268.0	251.5	254.6	249.5	236.1
7.5°	563.9	542.2	526.3	527.3	518.0	522.1	506.7	478.3	475.2	448.9	444.8
10°	845.3	834.5	815.4	812.8	796.3	798.4	774.2	736.6	726.2	695.8	678.3
12.5°	1121.6	1103.5	1076.7	1071.1	1044.3	1044.8	1011.8	969.5	954.1	922.6	898.4
15°	1645.8	1620.0	1558.7	1535.5	1461.2	1449.9	1368.5	1272.6	1226.2	1172.1	1101.0
17.5°	2613.2	2596.7	2476.6	2410.2	2259.7	2110.2	2022.0	1814.8	1693.7	1542.2	1410.7
20°	4130.2	4160.6	3950.8	3802.3	3523.0	3207.5	2984.9	2607.6	2355.5	2094.2	1846.8
22.5°	5743.5	5756.3	5541.4	5356.4	5031.1	4597.6	4084.8	3627.1	3165.3	2716.3	2308.1
25°	6942.3	6905.2	6668.7	6446.5	6104.3	5661.5	5163.1	4551.8	3920.4	3303.9	2706.0
26°	7308.3	7288.2	7051.1	6785.1	6408.4	5958.9	5440.4	4823.4	4156.4	3492.6	2827.7
27°	7647.5	7634.6	7377.4	7081.5	6659.4	6188.8	5646.0	5029.6	4334.8	3638.4	2915.8
28°	7991.3	7976.8	7665.5	7322.2	6863.5	6352.2	5788.3	5167.2	4449.7	3724.0	2952.4
29°	8354.6	8326.8	7928.9	7499.0	6999.6	6447.5	5862.5	5230.1	4488.9	3745.1	2943.1
30°	8617.0	8573.7	8119.1	7610.9	7055.2	6477.4	5870.8	5228.5	4464.7	3701.3	2883.8
31°	8683.0	8639.1	8172.2	7609.3	7014.5	6432.1	5811.5	5155.3	4363.6	3595.1	2783.8
32°	8523.2	8483.0	8037.6	7435.6	6885.6	6322.8	5693.5	5019.8	4207.0	3436.4	2648.3
33°	8166.5	8136.1	7752.1	7207.3	6701.1	6167.7	5524.4	4827.0	3984.3	3234.3	2489.0
34°	7716.5	7694.4	7399.0	6938.7	6467.1	5954.8	5305.3	4572.9	3691.0	3005.5	2315.3
35°	7303.1	7286.7	7047.5	6639.3	6199.6	5691.4	5028.0	4260.0	3389.0	2759.1	2129.8
36°	6905.2	6891.3	6683.6	6304.2	5880.0	5382.7	4679.1	3885.8	3064.8	2503.5	1937.5
37°	6489.8	6477.4	6299.1	5938.3	5520.8	5013.6	4264.7	3487.4	2735.4	2248.3	1740.1
38°	6058.9	6048.6	5885.2	5525.4	5101.7	4562.6	3792.0	3075.6	2414.3	1999.4	1562.8
39°	5578.0	5569.2	5418.7	5041.4	4588.9	4031.2	3305.5	2674.1	2109.7	1757.6	1391.1
40°	5049.2	5037.3	4886.8	4465.2	4008.0	3484.3	2838.0	2305.5	1822.1	1531.9	1240.1
42.5°	3432.8	3419.9	3308.0	3062.7	2622.5	2285.9	1880.8	1543.2	1291.2	1116.4	965.9
45°	2098.8	2100.4	2041.6	1890.1	1625.2	1438.1	1218.0	1056.6	943.2	876.2	771.6
47.5°	1269.5	1269.5	1243.2	1165.9	1046.8	972.1	880.9	805.6	719.0	653.1	539.7
50°	860.8	861.3	821.1	825.2	745.8	699.4	612.3	520.6	435.5	339.7	242.3
51°	637.1	640.2	603.1	620.1	533.0	493.8	411.3	333.5	258.2	184.0	106.2
52°	389.7	395.3	370.1	385.5	335.0	277.8	210.8	155.7	104.6	73.2	51.0
53°	180.9	185.6	172.7	179.9	150.0	117.0	88.7	72.2	57.7	46.9	34.5
54°	95.9	96.9	92.8	90.7	82.5	72.7	60.3	50.0	39.2	31.4	23.2
55°	68.6	68.6	66.5	64.4	57.7	49.5	40.2	34.0	25.8	20.6	14.9
57.5°	21.1	21.1	21.1	20.1	17.5	14.9	11.9	10.3	8.2	7.7	6.2
60°	7.2	7.2	7.2	6.7	6.2	5.7	5.2	4.6	4.1	4.1	3.6
61°	5.2	5.2	5.2	5.2	4.6	4.6	4.1	3.6	3.1	3.6	3.1
62°	4.1	4.6	4.1	4.1	4.1	3.6	3.1	3.1	2.6	3.1	2.6
63°	3.6	3.6	3.6	3.6	3.1	3.1	2.6	2.6	2.1	2.6	2.6
64°	3.1	3.1	3.1	3.1	2.6	2.6	2.1	2.1	1.5	2.1	2.1
65°	2.6	2.6	2.6	2.6	2.1	2.1	2.1	1.5	1.5	2.1	2.1
66°	2.1	2.1	2.1	2.1	2.1	1.5	1.5	1.5	1.0	1.5	1.5



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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°	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	1.0	1.0
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°	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9
2.5°	74.7	69.6	68.6	68.6	57.7	59.8	56.2	53.6	37.6	28.9	21.6
5°	228.3	209.8	202.0	195.3	166.0	163.4	145.4	141.2	50.5	26.3	16.5
7.5°	425.7	397.4	379.4	361.8	314.4	301.5	270.6	262.9	68.6	22.2	12.9
10°	650.5	609.8	578.3	536.6	475.2	448.4	403.1	386.6	83.5	18.6	12.4
12.5°	861.8	815.4	772.6	717.5	634.5	591.7	531.9	510.8	89.2	15.5	11.3
15°	1044.3	982.4	929.3	870.0	777.3	723.2	650.0	622.6	84.5	12.4	9.8
17.5°	1275.7	1171.1	1078.8	995.8	894.8	828.8	743.8	699.4	68.6	10.8	8.8
20°	1617.9	1407.1	1244.8	1110.8	970.6	888.6	794.3	740.7	49.5	9.8	8.8
22.5°	1940.1	1639.1	1390.1	1198.4	1009.7	911.8	813.9	754.6	35.0	9.8	10.3
25°	2203.0	1813.8	1490.6	1256.1	1031.4	916.4	806.7	736.6	27.3	11.3	20.1
26°	2276.7	1857.1	1510.2	1260.7	1028.3	909.7	794.3	720.1	24.2	15.5	37.6
27°	2322.5	1876.7	1510.7	1253.5	1016.9	896.3	775.7	697.9	21.1	23.7	63.4
28°	2331.8	1867.4	1493.2	1233.4	997.4	878.3	755.1	671.1	19.6	29.9	72.2
29°	2306.6	1834.4	1461.2	1204.0	973.7	856.6	730.4	641.7	17.0	22.7	46.9
30°	2249.9	1779.8	1414.3	1166.4	948.4	832.4	700.0	606.7	13.9	11.3	21.1
31°	2164.8	1704.5	1356.6	1122.1	920.0	801.5	663.4	567.5	11.9	7.7	12.4
32°	2057.1	1614.3	1292.2	1076.7	888.1	763.9	620.6	523.7	10.8	6.2	10.3
33°	1933.4	1519.5	1225.7	1030.9	849.9	719.0	574.7	476.8	9.8	6.7	10.3
34°	1798.3	1422.6	1150.4	982.9	805.6	670.1	525.7	421.6	8.8	6.2	7.7
35°	1652.0	1322.1	1082.9	940.7	755.6	617.0	475.7	374.7	7.7	4.6	5.2
36°	1525.7	1224.1	1017.5	887.1	701.0	562.3	424.2	324.2	6.7	3.1	3.6
37°	1388.1	1132.4	956.6	831.4	642.2	506.2	372.7	274.2	6.2	2.1	3.1
38°	1259.7	1047.9	895.8	767.5	581.9	449.5	320.1	225.2	5.7	2.1	2.6
39°	1143.2	971.1	839.1	699.4	518.5	390.2	267.0	176.8	5.2	1.5	2.6
40°	1043.2	902.5	771.1	627.8	453.1	331.4	213.9	130.9	4.6	1.5	2.6
42.5°	848.4	724.2	581.9	443.8	293.3	187.6	95.9	47.9	3.6	1.5	2.1
45°	648.4	515.4	384.0	267.0	151.0	72.7	35.6	26.3	3.1	1.5	2.1
47.5°	421.1	309.3	206.2	116.5	50.5	29.4	18.6	13.4	2.6	1.5	2.1
50°	155.7	86.1	45.4	28.3	19.6	12.4	8.2	7.7	2.6	1.5	2.1
51°	63.9	41.7	28.3	19.1	12.4	8.8	6.7	6.7	2.6	1.5	2.1
52°	38.1	26.3	19.1	13.9	9.3	6.7	5.2	5.7	2.6	1.5	2.1
53°	25.3	18.0	13.9	10.8	7.2	5.2	3.6	4.1	2.6	1.5	2.1
54°	17.0	12.9	10.3	8.2	5.2	4.1	2.1	3.6	2.1	1.5	2.1
55°	11.9	9.3	7.7	6.2	3.6	2.6	1.5	3.1	2.1	1.5	2.1
57.5°	5.2	4.6	4.1	3.6	1.5	1.0	0.5	2.6	2.1	1.5	2.1
60°	3.6	3.1	2.6	2.6	0.5	0.5	0.0	2.1	2.1	1.5	2.1
61°	3.1	2.6	2.6	2.1	0.5	0.5	0.0	2.1	2.6	1.5	2.1
62°	2.6	2.6	2.1	2.1	0.5	0.0	0.0	2.1	2.6	1.5	2.6
63°	2.1	2.1	2.1	2.1	0.5	0.0	0.0	2.1	2.6	1.5	2.6
64°	2.1	2.1	2.1	2.1	0.0	0.0	0.0	2.1	2.6	1.5	2.6
65°	2.1	1.5	1.5	1.5	0.0	0.0	0.0	2.1	2.6	2.1	2.6
66°	1.5	1.5	1.5	1.5	0.0	0.0	0.0	2.1	2.6	2.1	2.6



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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°	1.0	1.0	1.0	1.0	0.0	0.0	0.0	1.5	2.6	2.1	3.1
75°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.1	2.6	2.1	3.1
77.5°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.1	2.6	2.1	3.1
80°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.1	2.6	2.1	3.1
82.5°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.1	2.6	2.1	3.1
85°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.1	2.6	2.1	3.1
87.5°	0.5	1.0	1.0	1.0	0.0	0.0	0.0	2.1	2.6	2.1	3.1
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: LDA6A15835D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	29.9	29.9	29.9
2.5°	18.0	16.5	15.5
5°	12.9	11.9	10.8
7.5°	10.8	9.3	8.8
10°	9.8	7.2	6.7
12.5°	8.2	6.2	5.7
15°	7.7	6.2	5.7
17.5°	7.7	6.2	5.7
20°	8.2	7.7	7.7
22.5°	11.9	12.9	13.4
25°	36.1	46.4	53.6
26°	84.5	126.8	170.1
27°	128.3	187.1	199.5
28°	115.5	134.0	130.4
29°	55.7	62.9	57.2
30°	24.7	29.4	28.9
31°	16.0	18.0	17.5
32°	13.4	12.4	11.9
33°	10.8	8.8	7.2
34°	7.2	5.7	4.6
35°	4.6	3.1	2.6
36°	3.1	1.5	1.0
37°	2.1	1.0	0.5
38°	2.1	0.5	0.0
39°	1.5	0.5	0.0
40°	1.5	0.5	0.0
42.5°	1.5	0.0	0.0
45°	1.0	0.0	0.0
47.5°	1.0	0.0	0.0
50°	1.5	0.5	0.0
51°	1.5	0.0	0.0
52°	1.5	0.0	0.0
53°	1.0	0.0	0.0
54°	1.0	0.0	0.0
55°	1.0	0.0	0.0
57.5°	1.0	0.0	0.0
60°	1.0	0.0	0.0
61°	1.5	0.0	0.0
62°	1.5	0.0	0.0
63°	1.5	0.0	0.0
64°	1.5	0.5	0.0
65°	1.5	0.5	0.0
66°	1.5	0.5	0.0



TEST NUMBER: P175489

CATALOG NUMBER: LDA6A15835D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	2.1	0.5	0.0
75°	2.1	0.5	0.0
77.5°	2.1	0.5	0.0
80°	2.1	1.0	0.5
82.5°	2.1	1.0	0.5
85°	2.1	1.0	0.5
87.5°	2.1	1.0	0.5
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.5	1.5
70°	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.5	0.5	1.5	1.5





67.5°	1.5	1.5	1.5	1.5	0.0	0.0	0.0	2.1	2.6	2.1	2.6
70°	1.5	1.5	1.5	1.5	0.0	0.0	0.0	2.1	2.6	2.1	3.1





67.5°	2.1	0.5	0.0
70°	2.1	0.5	0.0



(END OF REPORT)