

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: P175485

Luminaire Tested: **LDA6A10935D010TE LARL20NF 6LAL1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P175485
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: LDA6A10935D010TE 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: 730.6 lumens
Efficiency: N/A
Efficacy: 52.8 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

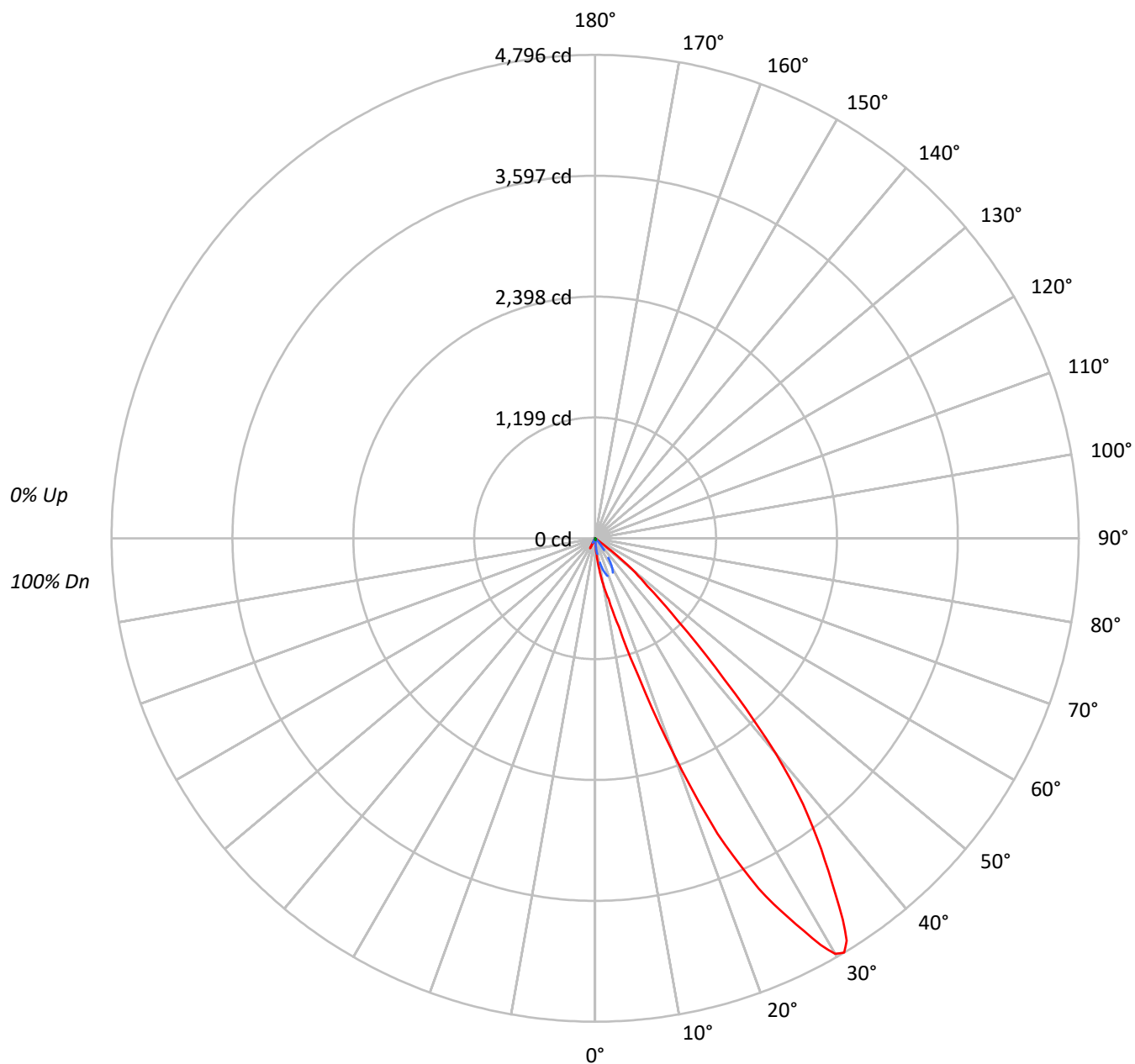
Input Watts (W): 13.84
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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				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	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°	905	905	905
5°	8788	798	330
10°	25990	568	206
15°	51595	386	176
20°	133087	315	251
25°	231951	381	1790
30°	301293	399	1006
35°	269968	174	94
40°	199588	64	0
45°	89878	70	0
50°	40553	77	0
55°	3622	86	0
60°	439	99	0
65°	182	143	0
70°	144	176	0
75°	0	233	0
80°	0	347	95
85°	0	692	189



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	6.6	0.9
10°-20°	61.5	8.4
20°-30°	242.9	33.3
30°-40°	293.1	40.1
40°-50°	113.8	15.6
50°-60°	10.0	1.4
60°-70°	0.9	0.1
70°-80°	0.9	0.1
80°-90°	0.8	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°	311.0	42.6
0°-40°	604.2	82.7
0°-60°	727.9	99.6
0°-90°	730.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	730.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	16	16	16	16	16	
5°	160	78	14	7	6	25
15°	909	344	7	4	3	333
25°	3835	407	6	20	30	1754
35°	4034	207	3	3	1	2480
45°	1159	14	1	1	0	1018
55°	38	2	1	1	0	91
65°	1	1	1	1	0	2
75°	0	1	1	1	0	0
85°	0	1	1	1	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°	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
2.5°	51.8	49.3	46.4	47.5	48.1	49.5	48.4	44.1	46.7	44.7	43.0
5°	159.7	156.9	151.5	152.3	150.6	152.6	148.0	138.9	140.6	137.8	130.4
7.5°	311.5	299.5	290.7	291.3	286.1	288.4	279.9	264.2	262.5	248.0	245.7
10°	466.9	460.9	450.4	449.0	439.9	441.0	427.6	406.8	401.1	384.3	374.7
12.5°	619.5	609.6	594.7	591.6	576.8	577.1	558.9	535.5	527.0	509.6	496.2
15°	909.1	894.8	860.9	848.1	807.1	800.9	755.9	702.9	677.3	647.4	608.1
17.5°	1443.4	1434.3	1368.0	1331.3	1248.1	1165.6	1116.9	1002.4	935.5	851.8	779.2
20°	2281.3	2298.1	2182.3	2100.3	1945.9	1771.7	1648.7	1440.3	1301.1	1156.8	1020.1
22.5°	3172.5	3179.6	3060.8	2958.6	2779.0	2539.6	2256.3	2003.5	1748.4	1500.4	1274.9
25°	3834.7	3814.2	3683.5	3560.8	3371.7	3127.2	2851.9	2514.2	2165.5	1824.9	1494.7
26°	4036.8	4025.7	3894.7	3747.8	3539.7	3291.5	3005.0	2664.3	2295.8	1929.2	1561.9
27°	4224.1	4217.0	4075.0	3911.5	3678.4	3418.4	3118.6	2778.1	2394.4	2009.7	1610.6
28°	4414.0	4406.1	4234.1	4044.5	3791.1	3508.7	3197.2	2854.2	2457.8	2057.0	1630.8
29°	4614.8	4599.4	4379.6	4142.2	3866.3	3561.4	3238.2	2888.9	2479.5	2068.7	1625.7
30°	4759.7	4735.8	4484.7	4203.9	3897.0	3577.9	3242.8	2888.0	2466.1	2044.5	1592.9
31°	4796.1	4771.9	4514.0	4203.1	3874.5	3552.8	3210.0	2847.6	2410.3	1985.8	1537.7
32°	4707.9	4685.7	4439.7	4107.1	3803.4	3492.5	3144.8	2772.7	2323.8	1898.1	1462.8
33°	4510.8	4494.0	4281.9	3981.0	3701.4	3406.8	3051.5	2666.2	2200.8	1786.5	1374.8
34°	4262.3	4250.1	4086.9	3832.7	3572.2	3289.2	2930.5	2525.9	2038.8	1660.1	1278.9
35°	4034.0	4024.9	3892.8	3667.3	3424.4	3143.7	2777.3	2353.1	1871.9	1524.0	1176.4
36°	3814.2	3806.5	3691.8	3482.2	3247.9	2973.2	2584.5	2146.4	1692.8	1382.8	1070.2
37°	3584.7	3577.9	3479.4	3280.1	3049.5	2769.3	2355.6	1926.3	1510.9	1241.9	961.2
38°	3346.7	3341.0	3250.7	3052.0	2818.0	2520.2	2094.6	1698.8	1333.6	1104.4	863.2
39°	3081.1	3076.2	2993.1	2784.7	2534.7	2226.7	1825.8	1477.0	1165.3	970.8	768.4
40°	2789.0	2782.4	2699.3	2466.4	2213.9	1924.6	1567.6	1273.5	1006.4	846.1	685.0
42.5°	1896.1	1889.0	1827.2	1691.7	1448.6	1262.7	1038.9	852.4	713.2	616.7	533.5
45°	1159.3	1160.2	1127.7	1044.0	897.7	794.3	672.8	583.6	521.0	484.0	426.2
47.5°	701.2	701.2	686.7	644.0	578.2	537.0	486.6	445.0	397.2	360.7	298.1
50°	475.5	475.7	453.5	455.8	412.0	386.3	338.2	287.6	240.6	187.6	133.8
51°	351.9	353.6	333.1	342.5	294.4	272.7	227.2	184.2	142.6	101.6	58.6
52°	215.2	218.4	204.4	213.0	185.1	153.5	116.4	86.0	57.8	40.4	28.2
53°	99.9	102.5	95.4	99.4	82.8	64.6	49.0	39.9	31.9	25.9	19.1
54°	53.0	53.5	51.2	50.1	45.6	40.1	33.3	27.6	21.6	17.4	12.8
55°	37.9	37.9	36.7	35.6	31.9	27.3	22.2	18.8	14.2	11.4	8.3
57.5°	11.7	11.7	11.7	11.1	9.7	8.3	6.5	5.7	4.6	4.3	3.4
60°	4.0	4.0	4.0	3.7	3.4	3.1	2.8	2.6	2.3	2.3	2.0
61°	2.8	2.8	2.8	2.8	2.6	2.6	2.3	2.0	1.7	2.0	1.7
62°	2.3	2.6	2.3	2.3	2.3	2.0	1.7	1.7	1.4	1.7	1.4
63°	2.0	2.0	2.0	2.0	1.7	1.7	1.4	1.4	1.1	1.4	1.4
64°	1.7	1.7	1.7	1.7	1.4	1.4	1.1	1.1	0.9	1.1	1.1
65°	1.4	1.4	1.4	1.4	1.1	1.1	1.1	0.9	0.9	1.1	1.1
66°	1.1	1.1	1.1	1.1	1.1	0.9	0.9	0.9	0.6	0.9	0.9



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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°	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.6	0.6
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
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°	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
2.5°	41.3	38.4	37.9	37.9	31.9	33.0	31.0	29.6	20.8	15.9	12.0
5°	126.1	115.9	111.6	107.9	91.7	90.3	80.3	78.0	27.9	14.5	9.1
7.5°	235.2	219.5	209.5	199.9	173.7	166.6	149.5	145.2	37.9	12.2	7.1
10°	359.3	336.8	319.4	296.4	262.5	247.7	222.6	213.5	46.1	10.2	6.8
12.5°	476.0	450.4	426.8	396.3	350.5	326.8	293.8	282.1	49.3	8.5	6.3
15°	576.8	542.6	513.3	480.6	429.3	399.4	359.0	343.9	46.7	6.8	5.4
17.5°	704.6	646.8	595.9	550.0	494.2	457.8	410.8	386.3	37.9	6.0	4.8
20°	893.7	777.2	687.6	613.5	536.1	490.8	438.7	409.1	27.3	5.4	4.8
22.5°	1071.6	905.4	767.8	661.9	557.7	503.6	449.5	416.8	19.4	5.4	5.7
25°	1216.8	1001.9	823.4	693.8	569.7	506.2	445.6	406.8	15.1	6.3	11.1
26°	1257.5	1025.8	834.2	696.4	568.0	502.5	438.7	397.7	13.4	8.5	20.8
27°	1282.9	1036.6	834.5	692.4	561.7	495.1	428.5	385.5	11.7	13.1	35.0
28°	1288.0	1031.5	824.8	681.3	550.9	485.1	417.1	370.7	10.8	16.5	39.9
29°	1274.0	1013.3	807.1	665.1	537.8	473.2	403.4	354.5	9.4	12.5	25.9
30°	1242.7	983.1	781.2	644.3	523.9	459.8	386.6	335.1	7.7	6.3	11.7
31°	1195.8	941.5	749.3	619.8	508.2	442.7	366.4	313.5	6.5	4.3	6.8
32°	1136.3	891.7	713.8	594.7	490.5	421.9	342.8	289.3	6.0	3.4	5.7
33°	1067.9	839.3	677.0	569.4	469.5	397.2	317.4	263.4	5.4	3.7	5.7
34°	993.3	785.8	635.5	542.9	445.0	370.1	290.4	232.9	4.8	3.4	4.3
35°	912.5	730.3	598.2	519.6	417.4	340.8	262.8	207.0	4.3	2.6	2.8
36°	842.7	676.2	562.0	490.0	387.2	310.6	234.3	179.1	3.7	1.7	2.0
37°	766.7	625.5	528.4	459.2	354.7	279.6	205.8	151.5	3.4	1.1	1.7
38°	695.8	578.8	494.8	423.9	321.4	248.3	176.8	124.4	3.1	1.1	1.4
39°	631.5	536.4	463.5	386.3	286.4	215.5	147.5	97.7	2.8	0.9	1.4
40°	576.2	498.5	425.9	346.8	250.3	183.1	118.2	72.3	2.6	0.9	1.4
42.5°	468.6	400.0	321.4	245.1	162.0	103.6	53.0	26.5	2.0	0.9	1.1
45°	358.2	284.7	212.1	147.5	83.4	40.1	19.6	14.5	1.7	0.9	1.1
47.5°	232.6	170.8	113.9	64.3	27.9	16.2	10.2	7.4	1.4	0.9	1.1
50°	86.0	47.5	25.1	15.7	10.8	6.8	4.6	4.3	1.4	0.9	1.1
51°	35.3	23.1	15.7	10.5	6.8	4.8	3.7	3.7	1.4	0.9	1.1
52°	21.1	14.5	10.5	7.7	5.1	3.7	2.8	3.1	1.4	0.9	1.1
53°	14.0	10.0	7.7	6.0	4.0	2.8	2.0	2.3	1.4	0.9	1.1
54°	9.4	7.1	5.7	4.6	2.8	2.3	1.1	2.0	1.1	0.9	1.1
55°	6.5	5.1	4.3	3.4	2.0	1.4	0.9	1.7	1.1	0.9	1.1
57.5°	2.8	2.6	2.3	2.0	0.9	0.6	0.3	1.4	1.1	0.9	1.1
60°	2.0	1.7	1.4	1.4	0.3	0.3	0.0	1.1	1.1	0.9	1.1
61°	1.7	1.4	1.4	1.1	0.3	0.3	0.0	1.1	1.4	0.9	1.1
62°	1.4	1.4	1.1	1.1	0.3	0.0	0.0	1.1	1.4	0.9	1.4
63°	1.1	1.1	1.1	1.1	0.3	0.0	0.0	1.1	1.4	0.9	1.4
64°	1.1	1.1	1.1	1.1	0.0	0.0	0.0	1.1	1.4	0.9	1.4
65°	1.1	0.9	0.9	0.9	0.0	0.0	0.0	1.1	1.4	1.1	1.4
66°	0.9	0.9	0.9	0.9	0.0	0.0	0.0	1.1	1.4	1.1	1.4



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CATALOG NUMBER: LDA6A10935D010TE 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°	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.9	1.4	1.1	1.7
75°	0.3	0.6	0.6	0.6	0.0	0.0	0.0	1.1	1.4	1.1	1.7
77.5°	0.3	0.6	0.6	0.6	0.0	0.0	0.0	1.1	1.4	1.1	1.7
80°	0.3	0.6	0.6	0.6	0.0	0.0	0.0	1.1	1.4	1.1	1.7
82.5°	0.3	0.6	0.6	0.6	0.0	0.0	0.0	1.1	1.4	1.1	1.7
85°	0.3	0.6	0.6	0.6	0.0	0.0	0.0	1.1	1.4	1.1	1.7
87.5°	0.3	0.6	0.6	0.6	0.0	0.0	0.0	1.1	1.4	1.1	1.7
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: P175485

CATALOG NUMBER: LDA6A10935D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	16.5	16.5	16.5
2.5°	10.0	9.1	8.5
5°	7.1	6.5	6.0
7.5°	6.0	5.1	4.8
10°	5.4	4.0	3.7
12.5°	4.6	3.4	3.1
15°	4.3	3.4	3.1
17.5°	4.3	3.4	3.1
20°	4.6	4.3	4.3
22.5°	6.5	7.1	7.4
25°	19.9	25.6	29.6
26°	46.7	70.0	94.0
27°	70.9	103.3	110.2
28°	63.8	74.0	72.0
29°	30.7	34.7	31.6
30°	13.7	16.2	15.9
31°	8.8	10.0	9.7
32°	7.4	6.8	6.5
33°	6.0	4.8	4.0
34°	4.0	3.1	2.6
35°	2.6	1.7	1.4
36°	1.7	0.9	0.6
37°	1.1	0.6	0.3
38°	1.1	0.3	0.0
39°	0.9	0.3	0.0
40°	0.9	0.3	0.0
42.5°	0.9	0.0	0.0
45°	0.6	0.0	0.0
47.5°	0.6	0.0	0.0
50°	0.9	0.3	0.0
51°	0.9	0.0	0.0
52°	0.9	0.0	0.0
53°	0.6	0.0	0.0
54°	0.6	0.0	0.0
55°	0.6	0.0	0.0
57.5°	0.6	0.0	0.0
60°	0.6	0.0	0.0
61°	0.9	0.0	0.0
62°	0.9	0.0	0.0
63°	0.9	0.0	0.0
64°	0.9	0.3	0.0
65°	0.9	0.3	0.0
66°	0.9	0.3	0.0



TEST NUMBER: P175485

CATALOG NUMBER: LDA6A10935D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	1.1	0.3	0.0
75°	1.1	0.3	0.0
77.5°	1.1	0.3	0.0
80°	1.1	0.6	0.3
82.5°	1.1	0.6	0.3
85°	1.1	0.6	0.3
87.5°	1.1	0.6	0.3
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





— 0°-180° - - 45°-225° - - - 90°-270°







67.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.6	0.6	0.6	0.9	0.9
70°	0.9	0.9	0.6	0.6	0.6	0.6	0.6	0.3	0.3	0.9	0.9





67.5°	0.9	0.9	0.9	0.9	0.0	0.0	0.0	1.1	1.4	1.1	1.4
70°	0.9	0.9	0.9	0.9	0.0	0.0	0.0	1.1	1.4	1.1	1.7





67.5°	1.1	0.3	0.0
70°	1.1	0.3	0.0



(END OF REPORT)