

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: P170707

Luminaire Tested: **LDA4A28935D010TE LAR25NF 4LA1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P170707
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P25649)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDA4A28935D010TE LAR25NF 4LA1 30° Tilt
Description: PORTFOLIO 4" Adjustable Reflector, Self-flanged Trim Ring, 25°
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: 2246.3 lumens
Efficiency: N/A
Efficacy: 50.5 lumens/watt
Spacing Criteria (0/90/45): 2.56 / 1.01 / 1.3
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

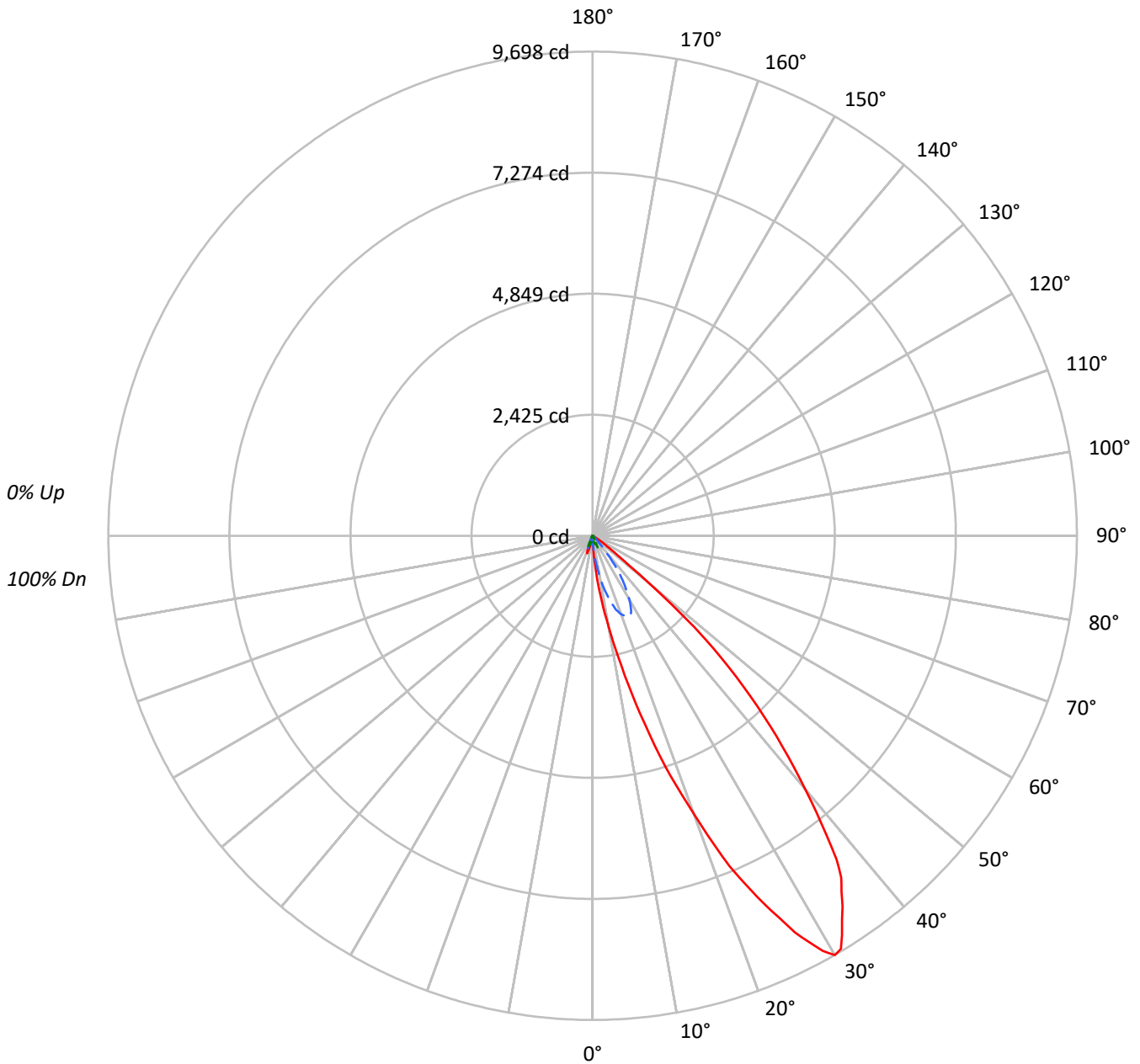
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P170707

CATALOG NUMBER: LDA4A28935D010TE LAR25NF 4LA1 30° Tilt

Luminous Intensity Polar Plot





TEST NUMBER: P170707

CATALOG NUMBER: LDA4A28935D010TE LAR25NF 4LA1 30° Tilt

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	95	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	71	79	74	70	77	73	69	75	71	68	66																			
5	86	76	69	63	84	75	68	63	73	67	62	71	66	62	69	65	61	60																			
6	80	69	62	57	78	68	61	56	67	61	56	65	60	56	64	59	55	53																			
7	75	63	56	51	73	63	56	51	61	55	50	60	54	50	59	54	50	48																			
8	70	58	51	46	68	58	51	46	56	50	46	55	49	45	54	49	45	43																			
9	65	53	46	41	64	53	46	41	52	46	41	51	45	41	50	45	41	39																			
10	61	49	42	38	60	49	42	37	48	42	37	47	41	37	46	41	37	36																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	18366	18366	18366
5°	79775	17322	10487
10°	230044	15593	11410
15°	471367	17214	32946
20°	777673	32015	33354
25°	1107815	20442	11174
30°	1381260	8959	4387
35°	1308787	4066	1927
40°	1065960	2061	628
45°	746660	1116	0
50°	279778	748	0
55°	59611	839	0
60°	11397	641	0
65°	3386	1138	0
70°	938	1406	0
75°	0	1859	0
80°	0	2770	0
85°	0	5519	0



TEST NUMBER: P170707

CATALOG NUMBER: LDA4A28935D010TE LAR25NF 4LA1 30° Tilt

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	31.2	1.4
10°-20°	269.0	12.0
20°-30°	687.1	30.6
30°-40°	795.8	35.4
40°-50°	410.6	18.3
50°-60°	42.4	1.9
60°-70°	4.6	0.2
70°-80°	2.9	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°	987.3	44.0
0°-40°	1783.1	79.4
0°-60°	2236.1	99.5
0°-90°	2246.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2246.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	149	149	149	149	149	
5°	644	335	140	92	85	100
15°	3691	1352	135	180	258	1130
25°	8140	1765	150	94	82	3782
35°	8692	965	27	15	13	5322
45°	4280	113	6	4	0	3205
55°	277	17	4	3	0	347
65°	12	4	4	3	0	15
75°	0	3	4	4	0	0
85°	0	3	4	4	0	0
90°	0	0	0	0	0	



TEST NUMBER: P170707

CATALOG NUMBER: LDA4A28935D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	148.9	148.9	148.9	148.9	148.9	148.9	148.9	148.9	148.9	148.9	148.9
2.5°	256.7	247.7	241.3	243.9	258.0	242.6	243.9	238.7	236.2	233.6	227.2
5°	644.3	618.6	602.0	603.2	566.0	594.3	591.7	569.9	555.7	528.8	513.4
7.5°	1209.0	1153.9	1134.6	1128.2	1132.0	1105.1	1093.5	1065.3	1028.1	979.3	951.1
10°	1836.7	1803.3	1791.7	1771.2	1769.9	1722.4	1694.2	1658.3	1583.8	1515.8	1465.7
12.5°	2676.1	2573.4	2555.4	2516.9	2506.6	2425.8	2366.7	2314.1	2189.6	2099.8	2020.2
15°	3691.3	3607.9	3627.1	3509.0	3477.0	3344.8	3234.4	3121.4	2919.9	2782.6	2641.4
17.5°	4843.9	4737.3	4750.2	4602.6	4336.9	4361.3	4200.8	4045.5	3761.9	3578.4	3360.2
20°	5924.6	5848.8	5854.0	5657.6	5567.8	5323.9	5109.6	4924.7	4547.4	4313.8	4025.0
22.5°	7168.3	6971.9	6934.7	6667.7	6509.8	6182.5	5883.5	5638.4	5181.4	4918.3	4564.1
25°	8139.9	8005.1	7902.4	7586.7	7367.2	6941.1	6594.5	6231.3	5682.0	5390.6	4969.7
26°	8504.4	8377.3	8245.1	7905.0	7658.6	7208.1	6830.7	6440.5	5852.7	5540.8	5082.6
27°	8916.4	8708.4	8549.3	8168.1	7901.1	7427.5	6979.6	6611.2	5982.3	5637.1	5154.5
28°	9207.7	8999.8	8789.3	8374.7	8086.0	7590.5	7124.6	6722.9	6058.1	5683.3	5184.0
29°	9506.8	9286.0	8979.3	8527.5	8213.0	7691.9	7208.1	6778.1	6079.9	5680.7	5168.6
30°	9698.0	9476.0	9079.4	8613.5	8281.0	7733.0	7231.2	6767.8	6045.2	5629.4	5112.1
31°	9653.1	9449.0	9055.0	8622.5	8274.6	7708.6	7188.8	6694.7	5957.9	5538.2	5009.4
32°	9428.5	9255.2	8956.2	8562.1	8204.0	7625.2	7090.0	6579.1	5832.2	5431.7	4884.9
33°	9167.9	9024.2	8817.5	8440.2	8080.8	7499.4	6953.9	6436.7	5687.1	5286.7	4734.8
34°	8949.7	8820.1	8628.9	8275.9	7912.7	7331.3	6781.9	6257.0	5521.6	5116.0	4557.7
35°	8691.8	8573.7	8396.6	8053.9	7679.1	7105.4	6566.3	6049.1	5326.5	4913.2	4352.3
36°	8467.2	8281.0	8101.4	7767.7	7394.2	6832.0	6312.2	5805.2	5105.7	4680.9	4121.3
37°	8119.3	7933.2	7740.7	7425.0	7056.6	6518.8	6029.8	5544.7	4854.1	4506.3	3874.8
38°	7599.5	7513.5	7321.0	7020.7	6678.0	6173.6	5720.5	5248.2	4570.5	4168.8	3613.0
39°	7114.4	7043.8	6856.4	6581.7	6264.7	5802.6	5377.8	4914.5	4250.9	3871.0	3337.1
40°	6620.2	6549.6	6373.8	6126.1	5841.1	5416.3	5013.3	4558.9	3915.9	3564.2	3059.8
42.5°	5449.7	5376.5	5339.3	5086.5	4784.8	4420.3	4046.8	3636.1	3089.3	2800.6	2405.3
45°	4280.4	4213.7	4073.8	3969.8	3700.3	3397.4	3093.2	2758.2	2355.2	2070.3	1700.6
47.5°	3059.8	3027.7	3032.9	2840.4	2583.7	2344.9	2093.4	1790.5	1433.7	1075.6	789.3
50°	1458.0	1467.0	1503.0	1368.2	1175.7	1035.8	886.9	695.6	508.3	399.2	309.3
51°	944.6	954.9	985.7	889.5	749.6	654.6	559.6	451.8	360.7	306.8	245.1
52°	639.2	639.2	645.6	589.1	519.8	465.9	410.7	347.8	281.1	241.3	193.8
53°	480.0	478.7	481.3	444.1	396.6	356.8	318.3	272.1	222.0	188.7	150.2
54°	367.1	365.8	368.4	340.1	306.8	277.2	247.7	213.1	172.0	141.2	112.9
55°	277.2	277.2	281.1	259.3	233.6	210.5	188.7	159.2	127.1	102.7	82.1
57.5°	111.7	111.7	115.5	107.8	96.3	87.3	79.6	68.0	56.5	47.5	38.5
60°	46.2	47.5	48.8	44.9	42.4	39.8	37.2	33.4	29.5	24.4	20.5
61°	34.7	34.7	35.9	33.4	32.1	29.5	28.2	25.7	23.1	19.3	16.7
62°	25.7	25.7	27.0	25.7	24.4	23.1	21.8	20.5	18.0	15.4	12.8
63°	19.3	19.3	20.5	19.3	19.3	18.0	16.7	15.4	14.1	11.6	10.3
64°	15.4	15.4	15.4	14.1	14.1	14.1	12.8	12.8	10.3	9.0	7.7
65°	11.6	11.6	11.6	11.6	10.3	10.3	10.3	9.0	9.0	6.4	6.4
66°	9.0	9.0	9.0	7.7	7.7	7.7	7.7	7.7	6.4	5.1	3.9



TEST NUMBER: P170707

CATALOG NUMBER: LDA4A28935D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
72.5°	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
75°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3
77.5°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3
80°	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3
85°	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	1.3
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3
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: P170707

CATALOG NUMBER: LDA4A28935D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	148.9	148.9	148.9	148.9	148.9	148.9	148.9	148.9	148.9	148.9	148.9
2.5°	229.7	228.5	215.6	215.6	220.8	213.1	209.2	200.2	172.0	146.3	123.2
5°	508.3	494.1	450.5	437.7	436.4	400.4	379.9	335.0	196.4	139.9	106.5
7.5°	938.2	895.9	821.4	781.6	732.9	704.6	654.6	577.6	223.3	130.9	96.3
10°	1387.4	1340.0	1229.6	1159.0	1121.8	1030.6	947.2	842.0	250.3	124.5	95.0
12.5°	1902.1	1795.6	1690.3	1564.6	1452.9	1372.0	1233.4	1110.2	268.2	123.2	104.0
15°	2459.2	2325.7	2146.0	1976.6	1818.7	1703.2	1517.1	1351.5	274.7	134.8	136.0
17.5°	3082.9	2832.7	2573.4	2342.4	2125.5	1970.1	1739.1	1544.0	270.8	165.6	216.9
20°	3666.9	3334.5	2982.8	2661.9	2355.2	2153.7	1886.7	1674.9	272.1	243.9	292.6
22.5°	4130.3	3726.0	3297.3	2905.8	2516.9	2275.6	1984.3	1744.3	305.5	260.5	198.9
25°	4471.7	3995.5	3503.9	3053.4	2644.0	2373.2	2053.6	1764.8	284.9	150.2	112.9
26°	4562.8	4060.9	3542.4	3075.2	2659.4	2373.2	2043.3	1743.0	246.4	119.4	93.7
27°	4614.1	4090.5	3548.8	3065.0	2640.1	2346.2	2006.1	1699.3	201.5	100.1	79.6
28°	4620.5	4077.6	3516.7	3022.6	2586.2	2288.5	1939.3	1632.6	166.9	84.7	65.5
29°	4585.9	4030.1	3455.1	2952.0	2504.1	2203.7	1848.2	1550.5	142.5	73.2	55.2
30°	4512.7	3946.7	3361.4	2857.0	2397.6	2101.1	1741.7	1459.3	124.5	62.9	46.2
31°	4407.5	3832.5	3260.1	2744.1	2285.9	1998.4	1641.6	1366.9	110.4	52.6	38.5
32°	4271.4	3697.7	3129.1	2622.2	2185.8	1900.8	1545.3	1273.2	98.8	44.9	32.1
33°	4120.0	3545.0	2986.7	2495.1	2089.5	1800.7	1443.9	1174.4	88.6	37.2	27.0
34°	3945.4	3376.8	2835.2	2368.0	1986.8	1690.3	1334.8	1073.0	77.0	30.8	23.1
35°	3746.5	3189.5	2672.2	2252.5	1872.6	1571.0	1220.6	965.2	68.0	27.0	19.3
36°	3530.9	2994.4	2507.9	2120.3	1749.4	1446.5	1099.9	856.1	59.0	23.1	16.7
37°	3305.0	2791.6	2343.6	1970.1	1613.3	1314.3	975.4	738.0	51.3	19.3	14.1
38°	3066.2	2587.5	2184.5	1827.7	1469.6	1171.8	848.4	608.4	44.9	16.7	12.8
39°	2822.4	2386.0	2026.6	1671.1	1322.0	1031.9	726.5	472.3	39.8	14.1	11.6
40°	2583.7	2196.0	1859.8	1500.4	1174.4	894.6	608.4	347.8	34.7	12.8	9.0
42.5°	2045.9	1686.5	1334.8	1001.1	818.9	567.3	337.6	182.3	24.4	9.0	6.4
45°	1338.7	997.3	720.0	487.7	423.6	240.0	156.6	112.9	18.0	6.4	5.1
47.5°	554.5	404.3	281.1	202.8	164.3	128.3	100.1	73.2	12.8	5.1	5.1
50°	243.9	192.5	152.7	119.4	104.0	83.4	64.2	44.9	7.7	3.9	3.9
51°	195.1	155.3	119.4	95.0	84.7	68.0	52.6	35.9	7.7	3.9	3.9
52°	154.0	120.6	93.7	73.2	68.0	55.2	43.6	29.5	6.4	3.9	3.9
53°	118.1	91.1	70.6	57.8	53.9	44.9	35.9	24.4	5.1	3.9	3.9
54°	87.3	69.3	55.2	44.9	43.6	35.9	29.5	20.5	5.1	3.9	3.9
55°	64.2	53.9	42.4	35.9	34.7	29.5	24.4	16.7	5.1	3.9	3.9
57.5°	33.4	28.2	23.1	20.5	20.5	19.3	16.7	10.3	3.9	2.6	3.9
60°	18.0	15.4	12.8	11.6	14.1	12.8	11.6	6.4	3.9	2.6	3.9
61°	14.1	12.8	10.3	9.0	11.6	10.3	10.3	5.1	3.9	3.9	3.9
62°	11.6	10.3	9.0	7.7	10.3	9.0	9.0	5.1	3.9	3.9	3.9
63°	9.0	7.7	6.4	6.4	9.0	9.0	7.7	3.9	3.9	3.9	3.9
64°	6.4	6.4	5.1	5.1	7.7	7.7	6.4	3.9	3.9	3.9	3.9
65°	5.1	5.1	3.9	3.9	6.4	6.4	6.4	3.9	3.9	3.9	3.9
66°	3.9	3.9	3.9	2.6	5.1	6.4	6.4	2.6	3.9	3.9	3.9



TEST NUMBER: P170707

CATALOG NUMBER: LDA4A28935D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
72.5°	1.3	1.3	1.3	1.3	3.9	5.1	5.1	2.6	3.9	3.9	3.9
75°	1.3	1.3	1.3	1.3	3.9	5.1	5.1	2.6	3.9	3.9	3.9
77.5°	1.3	1.3	1.3	1.3	3.9	5.1	5.1	2.6	3.9	3.9	5.1
80°	1.3	1.3	1.3	1.3	3.9	5.1	5.1	2.6	3.9	3.9	5.1
82.5°	1.3	1.3	1.3	1.3	3.9	5.1	5.1	2.6	3.9	3.9	5.1
85°	1.3	1.3	1.3	1.3	3.9	5.1	5.1	2.6	3.9	3.9	5.1
87.5°	1.3	1.3	1.3	1.3	3.9	5.1	5.1	2.6	3.9	3.9	5.1
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: P170707

CATALOG NUMBER: LDA4A28935D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	148.9	148.9	148.9
2.5°	111.7	105.2	104.0
5°	92.4	86.0	84.7
7.5°	84.7	79.6	78.3
10°	87.3	88.6	91.1
12.5°	111.7	123.2	133.5
15°	179.7	225.9	258.0
17.5°	313.2	346.5	368.4
20°	274.7	252.8	254.1
22.5°	154.0	138.6	137.3
25°	93.7	84.7	82.1
26°	78.3	70.6	68.0
27°	64.2	57.8	55.2
28°	52.6	47.5	46.2
29°	44.9	38.5	37.2
30°	37.2	32.1	30.8
31°	30.8	27.0	25.7
32°	27.0	23.1	20.5
33°	21.8	19.3	18.0
34°	19.3	15.4	14.1
35°	15.4	12.8	12.8
36°	14.1	11.6	10.3
37°	11.6	9.0	9.0
38°	10.3	7.7	6.4
39°	9.0	6.4	5.1
40°	7.7	5.1	3.9
42.5°	5.1	2.6	1.3
45°	3.9	1.3	0.0
47.5°	2.6	1.3	0.0
50°	2.6	0.0	0.0
51°	2.6	0.0	0.0
52°	2.6	0.0	0.0
53°	2.6	0.0	0.0
54°	2.6	0.0	0.0
55°	2.6	0.0	0.0
57.5°	2.6	0.0	0.0
60°	2.6	0.0	0.0
61°	2.6	0.0	0.0
62°	2.6	0.0	0.0
63°	2.6	1.3	0.0
64°	2.6	1.3	0.0
65°	2.6	1.3	0.0
66°	2.6	1.3	0.0



TEST NUMBER: P170707

CATALOG NUMBER: LDA4A28935D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	3.9	1.3	0.0
75°	3.9	1.3	0.0
77.5°	3.9	1.3	0.0
80°	3.9	1.3	0.0
82.5°	3.9	1.3	0.0
85°	3.9	1.3	0.0
87.5°	2.6	1.3	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	3.9	2.6
70°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.3	1.3





67.5°	2.6	2.6	2.6	2.6	5.1	5.1	5.1	2.6	3.9	3.9	3.9
70°	1.3	1.3	1.3	2.6	3.9	5.1	5.1	2.6	3.9	3.9	3.9





67.5°	2.6	1.3	0.0
70°	2.6	1.3	0.0



(END OF REPORT)