

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: P170705

Luminaire Tested: **LDA4A28927D010TE LAR25NF 4LA1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170705  
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: LDA4A28927D010TE 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 / 2700K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1933.6 lumens  
Efficiency: N/A  
Efficacy: 43.5 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

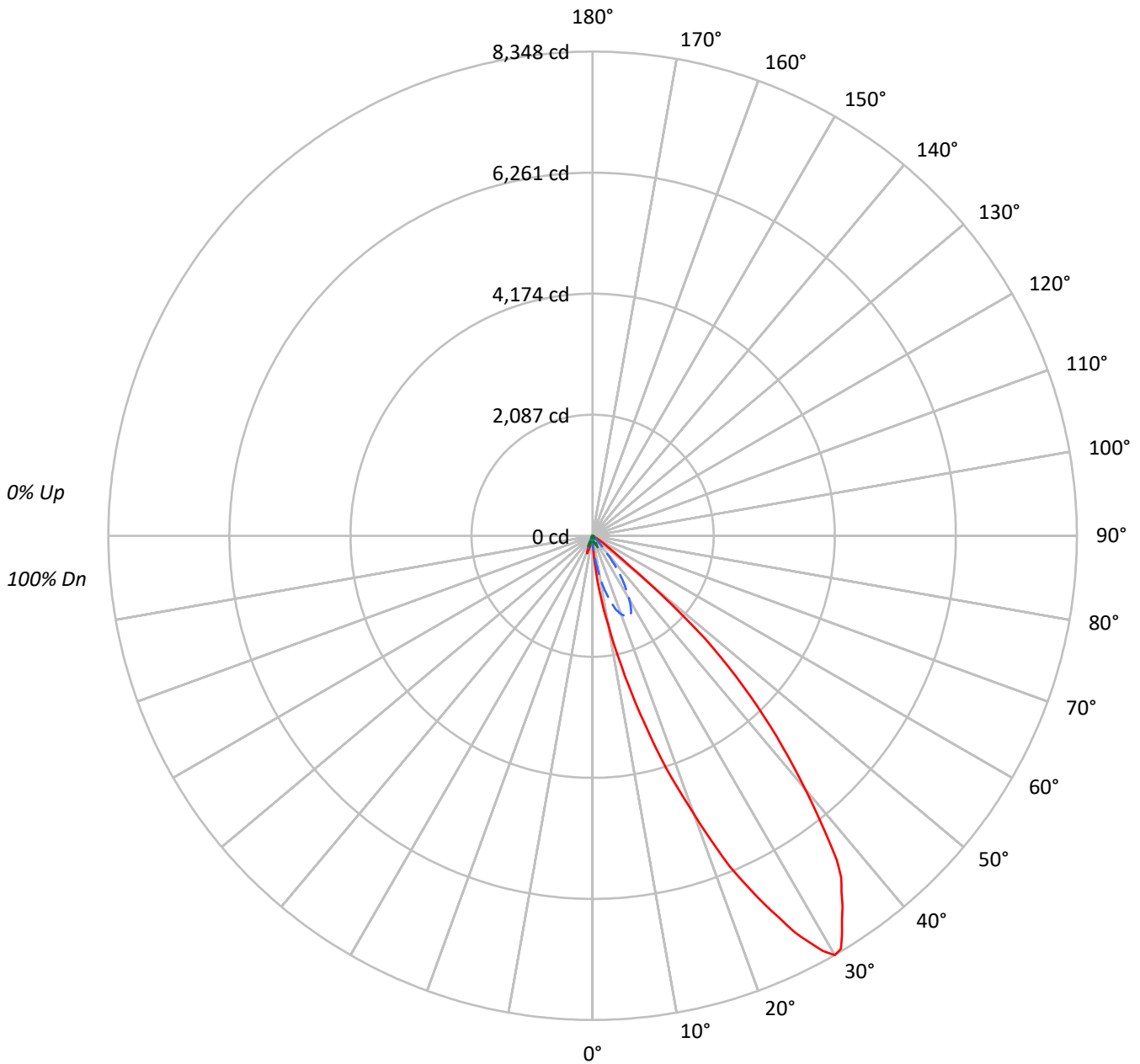
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P170705

CATALOG NUMBER: LDA4A28927D010TE LAR25NF 4LA1 30° Tilt

### Luminous Intensity Polar Plot





TEST NUMBER: P170705

CATALOG NUMBER: LDA4A28927D010TE 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	38	48	42	37	47	41	37	46	41	37	36																			

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	15813	15813	15813
5°	68681	14908	9026
10°	198030	13427	9819
15°	405782	14813	28361
20°	669461	27552	28720
25°	953658	17597	9622
30°	1189054	7705	3774
35°	1126664	3493	1656
40°	917632	1771	531
45°	642766	959	0
50°	240863	633	0
55°	51332	710	0
60°	9818	543	0
65°	2889	963	0
70°	793	1190	0
75°	0	1573	0
80°	0	2344	0
85°	0	4670	0



TEST NUMBER: P170705

CATALOG NUMBER: LDA4A28927D010TE LAR25NF 4LA1 30° Tilt

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	26.9	1.4
10°-20°	231.6	12.0
20°-30°	591.5	30.6
30°-40°	685.1	35.4
40°-50°	353.4	18.3
50°-60°	36.5	1.9
60°-70°	3.9	0.2
70°-80°	2.5	0.1
80°-90°	2.2	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°	849.9	44.0
0°-40°	1535.0	79.4
0°-60°	1924.9	99.6
0°-90°	1933.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1933.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	128	128	128	128	128	
5°	555	288	120	80	73	86
15°	3178	1163	116	155	222	973
25°	7007	1519	129	81	71	3255
35°	7482	831	23	13	11	4582
45°	3685	97	6	3	0	2759
55°	239	14	3	2	0	299
65°	10	3	3	2	0	13
75°	0	2	3	3	0	0
85°	0	2	3	3	0	0
90°	0	0	0	0	0	



TEST NUMBER: P170705

CATALOG NUMBER: LDA4A28927D010TE LAR25NF 4LA1 30° Tilt

**CANDELA DISTRIBUTION (FULL):**

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	128.2	128.2	128.2	128.2	128.2	128.2	128.2	128.2	128.2	128.2	128.2
2.5°	221.0	213.2	207.7	209.9	222.1	208.8	209.9	205.5	203.3	201.1	195.6
5°	554.7	532.6	518.2	519.3	487.3	511.6	509.4	490.6	478.4	455.2	442.0
7.5°	1040.8	993.3	976.7	971.2	974.5	951.3	941.4	917.1	885.0	843.0	818.7
10°	1581.1	1552.4	1542.4	1524.7	1523.6	1482.8	1458.5	1427.5	1363.4	1304.9	1261.8
12.5°	2303.7	2215.3	2199.8	2166.7	2157.8	2088.2	2037.4	1992.1	1884.9	1807.6	1739.1
15°	3177.7	3105.8	3122.4	3020.8	2993.1	2879.3	2784.3	2687.1	2513.6	2395.4	2273.9
17.5°	4169.8	4078.1	4089.2	3962.1	3733.4	3754.4	3616.3	3482.6	3238.4	3080.4	2892.6
20°	5100.2	5035.0	5039.4	4870.3	4793.0	4583.1	4398.6	4239.5	3914.6	3713.5	3464.9
22.5°	6170.8	6001.7	5969.7	5739.9	5604.0	5322.2	5064.8	4853.8	4460.4	4233.9	3929.0
25°	7007.2	6891.2	6802.8	6531.0	6342.1	5975.2	5676.9	5364.2	4891.3	4640.5	4278.1
26°	7321.0	7211.6	7097.8	6805.0	6592.9	6205.0	5880.2	5544.3	5038.3	4769.8	4375.4
27°	7675.6	7496.7	7359.7	7031.5	6801.7	6394.0	6008.4	5691.3	5149.9	4852.7	4437.2
28°	7926.5	7747.5	7566.3	7209.4	6960.8	6534.3	6133.2	5787.4	5215.1	4892.4	4462.6
29°	8183.9	7993.9	7729.8	7340.9	7070.2	6621.6	6205.0	5834.9	5233.8	4890.2	4449.4
30°	8348.5	8157.4	7816.0	7414.9	7128.7	6656.9	6224.9	5826.1	5204.0	4846.0	4400.8
31°	8309.9	8134.2	7795.0	7422.6	7123.2	6636.0	6188.5	5763.1	5128.9	4767.6	4312.4
32°	8116.5	7967.3	7709.9	7370.7	7062.4	6564.1	6103.4	5663.7	5020.6	4675.9	4205.2
33°	7892.2	7768.5	7590.6	7265.7	6956.4	6455.9	5986.3	5541.0	4895.8	4551.0	4075.9
34°	7704.4	7592.8	7428.2	7124.3	6811.6	6311.1	5838.2	5386.3	4753.2	4404.1	3923.5
35°	7482.3	7380.6	7228.2	6933.2	6610.5	6116.7	5652.6	5207.3	4585.3	4229.5	3746.7
36°	7288.9	7128.7	6974.0	6686.8	6365.3	5881.3	5433.8	4997.4	4395.2	4029.5	3547.8
37°	6989.5	6829.3	6663.6	6391.8	6074.7	5611.7	5190.8	4773.1	4178.7	3879.3	3335.7
38°	6542.0	6468.0	6302.3	6043.7	5748.7	5314.5	4924.5	4517.9	3934.5	3588.7	3110.3
39°	6124.4	6063.6	5902.3	5665.9	5393.0	4995.2	4629.5	4230.6	3659.4	3332.3	2872.7
40°	5699.0	5638.2	5486.9	5273.6	5028.3	4662.6	4315.7	3924.6	3371.0	3068.3	2634.1
42.5°	4691.4	4628.4	4596.3	4378.7	4119.0	3805.2	3483.7	3130.1	2659.5	2410.9	2070.6
45°	3684.8	3627.3	3506.9	3417.4	3185.4	2924.6	2662.8	2374.4	2027.5	1782.2	1464.0
47.5°	2634.1	2606.4	2610.8	2445.1	2224.1	2018.6	1802.1	1541.3	1234.2	925.9	679.5
50°	1255.2	1262.9	1293.8	1177.8	1012.1	891.6	763.5	598.8	437.5	343.6	266.3
51°	813.2	822.0	848.6	765.7	645.3	563.5	481.7	388.9	310.5	264.1	211.0
52°	550.2	550.2	555.8	507.1	447.5	401.1	353.6	299.4	242.0	207.7	166.8
53°	413.2	412.1	414.3	382.3	341.4	307.2	274.0	234.2	191.1	162.4	129.3
54°	316.0	314.9	317.1	292.8	264.1	238.7	213.2	183.4	148.1	121.5	97.2
55°	238.7	238.7	242.0	223.2	201.1	181.2	162.4	137.0	109.4	88.4	70.7
57.5°	96.1	96.1	99.4	92.8	82.9	75.1	68.5	58.6	48.6	40.9	33.1
60°	39.8	40.9	42.0	38.7	36.5	34.3	32.0	28.7	25.4	21.0	17.7
61°	29.8	29.8	30.9	28.7	27.6	25.4	24.3	22.1	19.9	16.6	14.4
62°	22.1	22.1	23.2	22.1	21.0	19.9	18.8	17.7	15.5	13.3	11.0
63°	16.6	16.6	17.7	16.6	16.6	15.5	14.4	13.3	12.2	9.9	8.8
64°	13.3	13.3	13.3	12.2	12.2	12.2	11.0	11.0	8.8	7.7	6.6
65°	9.9	9.9	9.9	9.9	8.8	8.8	8.8	7.7	7.7	5.5	5.5
66°	7.7	7.7	7.7	6.6	6.6	6.6	6.6	6.6	5.5	4.4	3.3



TEST NUMBER: P170705

CATALOG NUMBER: LDA4A28927D010TE 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	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
75°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1
77.5°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1
80°	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1
82.5°	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1
85°	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1
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: P170705

CATALOG NUMBER: LDA4A28927D010TE 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°	128.2	128.2	128.2	128.2	128.2	128.2	128.2	128.2	128.2	128.2	128.2
2.5°	197.8	196.7	185.6	185.6	190.0	183.4	180.1	172.4	148.1	126.0	106.1
5°	437.5	425.4	387.8	376.8	375.7	344.7	327.0	288.4	169.0	120.4	91.7
7.5°	807.7	771.2	707.1	672.9	630.9	606.6	563.5	497.2	192.3	112.7	82.9
10°	1194.4	1153.5	1058.5	997.7	965.7	887.2	815.4	724.8	215.5	107.2	81.8
12.5°	1637.4	1545.7	1455.1	1346.9	1250.7	1181.1	1061.8	955.7	230.9	106.1	89.5
15°	2117.0	2002.1	1847.4	1701.5	1565.6	1466.2	1306.0	1163.4	236.4	116.0	117.1
17.5°	2653.9	2438.5	2215.3	2016.4	1829.7	1696.0	1497.1	1329.2	233.1	142.5	186.7
20°	3156.7	2870.5	2567.8	2291.5	2027.5	1854.0	1624.2	1441.9	234.2	209.9	251.9
22.5°	3555.5	3207.5	2838.5	2501.5	2166.7	1959.0	1708.2	1501.5	263.0	224.3	171.3
25°	3849.4	3439.5	3016.3	2628.5	2276.1	2042.9	1767.8	1519.2	245.3	129.3	97.2
26°	3927.9	3495.9	3049.5	2647.3	2289.3	2042.9	1759.0	1500.4	212.1	102.8	80.7
27°	3972.1	3521.3	3055.0	2638.5	2272.8	2019.7	1726.9	1462.9	173.5	86.2	68.5
28°	3977.6	3510.2	3027.4	2602.0	2226.3	1970.0	1669.5	1405.4	143.6	72.9	56.3
29°	3947.8	3469.3	2974.4	2541.2	2155.6	1897.1	1591.0	1334.7	122.6	63.0	47.5
30°	3884.8	3397.5	2893.7	2459.5	2063.9	1808.7	1499.3	1256.3	107.2	54.1	39.8
31°	3794.2	3299.2	2806.4	2362.2	1967.8	1720.3	1413.2	1176.7	95.0	45.3	33.1
32°	3677.1	3183.2	2693.7	2257.3	1881.6	1636.3	1330.3	1096.0	85.1	38.7	27.6
33°	3546.7	3051.7	2571.1	2147.9	1798.8	1550.2	1243.0	1011.0	76.2	32.0	23.2
34°	3396.4	2907.0	2440.7	2038.5	1710.4	1455.1	1149.1	923.7	66.3	26.5	19.9
35°	3225.2	2745.6	2300.4	1939.1	1612.0	1352.4	1050.7	830.9	58.6	23.2	16.6
36°	3039.5	2577.7	2158.9	1825.3	1506.0	1245.2	946.9	737.0	50.8	19.9	14.4
37°	2845.1	2403.1	2017.5	1696.0	1388.8	1131.4	839.7	635.3	44.2	16.6	12.2
38°	2639.6	2227.5	1880.5	1573.4	1265.1	1008.8	730.3	523.7	38.7	14.4	11.0
39°	2429.6	2054.0	1744.6	1438.6	1138.0	888.3	625.4	406.6	34.3	12.2	9.9
40°	2224.1	1890.5	1601.0	1291.6	1011.0	770.1	523.7	299.4	29.8	11.0	7.7
42.5°	1761.2	1451.8	1149.1	861.8	704.9	488.4	290.6	156.9	21.0	7.7	5.5
45°	1152.4	858.5	619.8	419.9	364.6	206.6	134.8	97.2	15.5	5.5	4.4
47.5°	477.3	348.0	242.0	174.6	141.4	110.5	86.2	63.0	11.0	4.4	4.4
50°	209.9	165.7	131.5	102.8	89.5	71.8	55.2	38.7	6.6	3.3	3.3
51°	167.9	133.7	102.8	81.8	72.9	58.6	45.3	30.9	6.6	3.3	3.3
52°	132.6	103.9	80.7	63.0	58.6	47.5	37.6	25.4	5.5	3.3	3.3
53°	101.6	78.4	60.8	49.7	46.4	38.7	30.9	21.0	4.4	3.3	3.3
54°	75.1	59.7	47.5	38.7	37.6	30.9	25.4	17.7	4.4	3.3	3.3
55°	55.2	46.4	36.5	30.9	29.8	25.4	21.0	14.4	4.4	3.3	3.3
57.5°	28.7	24.3	19.9	17.7	17.7	16.6	14.4	8.8	3.3	2.2	3.3
60°	15.5	13.3	11.0	9.9	12.2	11.0	9.9	5.5	3.3	2.2	3.3
61°	12.2	11.0	8.8	7.7	9.9	8.8	8.8	4.4	3.3	3.3	3.3
62°	9.9	8.8	7.7	6.6	8.8	7.7	7.7	4.4	3.3	3.3	3.3
63°	7.7	6.6	5.5	5.5	7.7	7.7	6.6	3.3	3.3	3.3	3.3
64°	5.5	5.5	4.4	4.4	6.6	6.6	5.5	3.3	3.3	3.3	3.3
65°	4.4	4.4	3.3	3.3	5.5	5.5	5.5	3.3	3.3	3.3	3.3
66°	3.3	3.3	3.3	2.2	4.4	5.5	5.5	2.2	3.3	3.3	3.3





TEST NUMBER: P170705

CATALOG NUMBER: LDA4A28927D010TE 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°	1.1	1.1	1.1	1.1	3.3	4.4	4.4	2.2	3.3	3.3	3.3
75°	1.1	1.1	1.1	1.1	3.3	4.4	4.4	2.2	3.3	3.3	3.3
77.5°	1.1	1.1	1.1	1.1	3.3	4.4	4.4	2.2	3.3	3.3	4.4
80°	1.1	1.1	1.1	1.1	3.3	4.4	4.4	2.2	3.3	3.3	4.4
82.5°	1.1	1.1	1.1	1.1	3.3	4.4	4.4	2.2	3.3	3.3	4.4
85°	1.1	1.1	1.1	1.1	3.3	4.4	4.4	2.2	3.3	3.3	4.4
87.5°	1.1	1.1	1.1	1.1	3.3	4.4	4.4	2.2	3.3	3.3	4.4
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: P170705

CATALOG NUMBER: LDA4A28927D010TE LAR25NF 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	128.2	128.2	128.2
2.5°	96.1	90.6	89.5
5°	79.6	74.0	72.9
7.5°	72.9	68.5	67.4
10°	75.1	76.2	78.4
12.5°	96.1	106.1	114.9
15°	154.7	194.5	222.1
17.5°	269.6	298.3	317.1
20°	236.4	217.7	218.8
22.5°	132.6	119.3	118.2
25°	80.7	72.9	70.7
26°	67.4	60.8	58.6
27°	55.2	49.7	47.5
28°	45.3	40.9	39.8
29°	38.7	33.1	32.0
30°	32.0	27.6	26.5
31°	26.5	23.2	22.1
32°	23.2	19.9	17.7
33°	18.8	16.6	15.5
34°	16.6	13.3	12.2
35°	13.3	11.0	11.0
36°	12.2	9.9	8.8
37°	9.9	7.7	7.7
38°	8.8	6.6	5.5
39°	7.7	5.5	4.4
40°	6.6	4.4	3.3
42.5°	4.4	2.2	1.1
45°	3.3	1.1	0.0
47.5°	2.2	1.1	0.0
50°	2.2	0.0	0.0
51°	2.2	0.0	0.0
52°	2.2	0.0	0.0
53°	2.2	0.0	0.0
54°	2.2	0.0	0.0
55°	2.2	0.0	0.0
57.5°	2.2	0.0	0.0
60°	2.2	0.0	0.0
61°	2.2	0.0	0.0
62°	2.2	0.0	0.0
63°	2.2	1.1	0.0
64°	2.2	1.1	0.0
65°	2.2	1.1	0.0
66°	2.2	1.1	0.0



TEST NUMBER: P170705

CATALOG NUMBER: LDA4A28927D010TE LAR25NF 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
72.5°	3.3	1.1	0.0
75°	3.3	1.1	0.0
77.5°	3.3	1.1	0.0
80°	3.3	1.1	0.0
82.5°	3.3	1.1	0.0
85°	3.3	1.1	0.0
87.5°	2.2	1.1	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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









67.5°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	3.3	2.2
70°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	1.1	1.1





67.5°	2.2	2.2	2.2	2.2	4.4	4.4	4.4	2.2	3.3	3.3	3.3
70°	1.1	1.1	1.1	2.2	3.3	4.4	4.4	2.2	3.3	3.3	3.3





67.5°	2.2	1.1	0.0
70°	2.2	1.1	0.0



(END OF REPORT)