

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: P170704

Luminaire Tested: **LDA4A28840D010TE LAR25NF 4LA1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170704  
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: LDA4A28840D010TE 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 80CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2810.3 lumens  
Efficiency: N/A  
Efficacy: 63.2 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

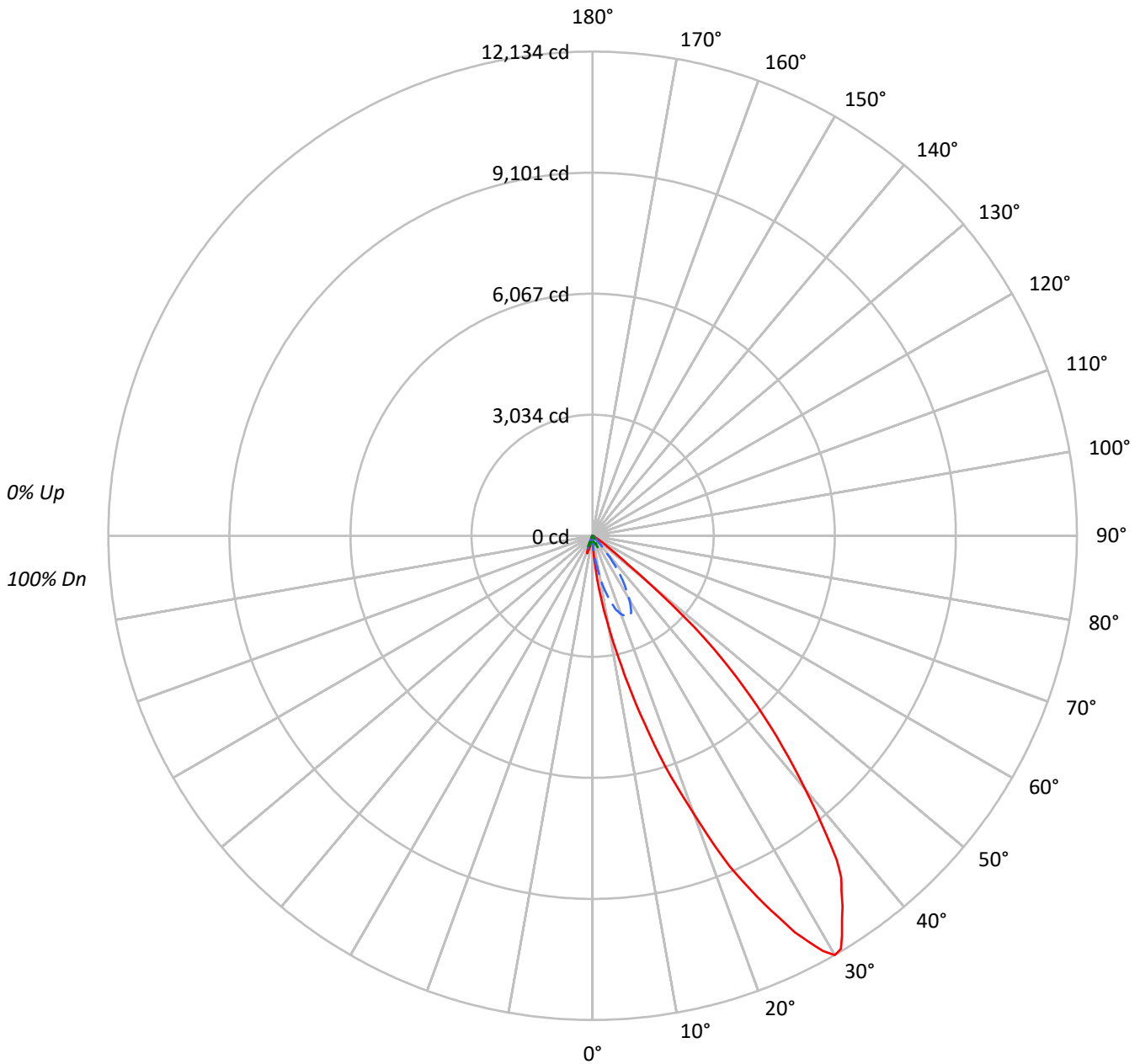
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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°	22979	22979	22979
5°	99809	21668	13125
10°	287821	19514	14278
15°	589768	21530	41221
20°	973003	40048	41741
25°	1386065	25573	13991
30°	1728212	11209	5483
35°	1637527	5074	2424
40°	1333714	2592	773
45°	934215	1395	0
50°	350068	921	0
55°	74600	1032	0
60°	14259	789	0
65°	4232	1401	0
70°	1154	1731	0
75°	0	2288	0
80°	0	3410	0
85°	0	6793	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	39.1	1.4
10°-20°	336.6	12.0
20°-30°	859.7	30.6
30°-40°	995.7	35.4
40°-50°	513.7	18.3
50°-60°	53.0	1.9
60°-70°	5.7	0.2
70°-80°	3.6	0.1
80°-90°	3.3	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°	1235.3	44.0
0°-40°	2231.0	79.4
0°-60°	2797.8	99.6
0°-90°	2810.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2810.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	186	186	186	186	186	
5°	806	419	175	116	106	126
15°	4618	1691	169	225	323	1414
25°	10184	2208	188	117	103	4731
35°	10875	1208	34	19	16	6659
45°	5356	141	8	5	0	4011
55°	347	21	5	3	0	434
65°	14	5	5	3	0	19
75°	0	3	5	5	0	0
85°	0	3	5	5	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°	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
2.5°	321.2	309.9	301.9	305.1	322.8	303.5	305.1	298.7	295.5	292.3	284.2
5°	806.1	774.0	753.2	754.8	708.2	743.5	740.3	713.0	695.3	661.6	642.3
7.5°	1512.7	1443.7	1419.6	1411.6	1416.4	1382.7	1368.2	1332.9	1286.3	1225.3	1189.9
10°	2298.0	2256.2	2241.8	2216.1	2214.5	2155.1	2119.7	2074.8	1981.6	1896.5	1833.9
12.5°	3348.2	3219.8	3197.3	3149.1	3136.3	3035.1	2961.2	2895.4	2739.6	2627.2	2527.6
15°	4618.5	4514.1	4538.2	4390.4	4350.3	4184.9	4046.8	3905.5	3653.4	3481.5	3304.9
17.5°	6060.6	5927.3	5943.3	5758.6	5426.2	5456.7	5256.0	5061.7	4706.8	4477.2	4204.2
20°	7412.7	7317.9	7324.4	7078.7	6966.3	6661.1	6393.0	6161.7	5689.6	5397.3	5036.0
22.5°	8968.8	8723.1	8676.5	8342.5	8145.0	7735.5	7361.3	7054.6	6482.9	6153.7	5710.5
25°	10184.4	10015.8	9887.3	9492.3	9217.7	8684.5	8251.0	7796.5	7109.2	6744.7	6217.9
26°	10640.5	10481.5	10316.1	9890.6	9582.2	9018.6	8546.4	8058.3	7322.8	6932.5	6359.2
27°	11156.0	10895.8	10696.7	10219.8	9885.7	9293.2	8732.7	8271.8	7485.0	7053.0	6449.2
28°	11520.5	11260.4	10997.0	10478.3	10117.0	9497.1	8914.2	8411.5	7579.7	7110.8	6486.1
29°	11894.7	11618.5	11234.7	10669.4	10276.0	9624.0	9018.6	8480.6	7607.0	7107.6	6466.8
30°	12134.0	11856.1	11359.9	10777.0	10361.1	9675.4	9047.5	8467.8	7563.6	7043.3	6396.2
31°	12077.7	11822.4	11329.4	10788.2	10353.0	9644.9	8994.5	8376.2	7454.4	6929.3	6267.7
32°	11796.7	11579.9	11205.8	10712.8	10264.7	9540.5	8870.8	8231.7	7297.1	6796.0	6111.9
33°	11470.7	11290.9	11032.3	10560.2	10110.6	9383.1	8700.6	8053.4	7115.6	6614.6	5924.1
34°	11197.7	11035.5	10796.3	10354.6	9900.2	9172.7	8485.4	7828.6	6908.5	6401.0	5702.4
35°	10875.0	10727.2	10505.6	10076.8	9607.9	8890.1	8215.6	7568.5	6664.4	6147.3	5445.5
36°	10593.9	10361.1	10136.3	9718.7	9251.4	8548.0	7897.7	7263.4	6388.2	5856.6	5156.4
37°	10158.7	9925.9	9685.0	9290.0	8829.1	8156.2	7544.4	6937.4	6073.4	5638.2	4848.1
38°	9508.4	9400.8	9159.9	8784.1	8355.3	7724.2	7157.4	6566.4	5718.5	5215.9	4520.5
39°	8901.3	8813.0	8578.6	8234.9	7838.3	7260.1	6728.6	6148.9	5318.6	4843.3	4175.3
40°	8283.1	8194.8	7974.8	7664.8	7308.3	6776.8	6272.5	5704.1	4899.5	4459.5	3828.4
42.5°	6818.5	6727.0	6680.4	6364.1	5986.7	5530.6	5063.3	4549.4	3865.3	3504.0	3009.4
45°	5355.6	5272.1	5097.0	4967.0	4629.7	4250.7	3870.1	3451.0	2946.8	2590.3	2127.8
47.5°	3828.4	3788.2	3794.7	3553.8	3232.6	2933.9	2619.2	2240.2	1793.8	1345.7	987.6
50°	1824.3	1835.5	1880.5	1711.9	1471.0	1295.9	1109.7	870.4	635.9	499.4	387.0
51°	1181.9	1194.8	1233.3	1112.9	937.8	819.0	700.2	565.3	451.2	383.8	306.7
52°	799.7	799.7	807.8	737.1	650.4	582.9	513.9	435.2	351.7	301.9	242.5
53°	600.6	599.0	602.2	555.6	496.2	446.4	398.3	340.4	277.8	236.1	187.9
54°	459.3	457.7	460.9	425.6	383.8	346.9	309.9	266.6	215.2	176.6	141.3
55°	346.9	346.9	351.7	324.4	292.3	263.4	236.1	199.1	159.0	128.5	102.8
57.5°	139.7	139.7	144.5	134.9	120.4	109.2	99.6	85.1	70.7	59.4	48.2
60°	57.8	59.4	61.0	56.2	53.0	49.8	46.6	41.8	36.9	30.5	25.7
61°	43.4	43.4	45.0	41.8	40.1	36.9	35.3	32.1	28.9	24.1	20.9
62°	32.1	32.1	33.7	32.1	30.5	28.9	27.3	25.7	22.5	19.3	16.1
63°	24.1	24.1	25.7	24.1	24.1	22.5	20.9	19.3	17.7	14.5	12.8
64°	19.3	19.3	19.3	17.7	17.7	17.7	16.1	16.1	12.8	11.2	9.6
65°	14.5	14.5	14.5	14.5	12.8	12.8	12.8	11.2	11.2	8.0	8.0
66°	11.2	11.2	11.2	9.6	9.6	9.6	9.6	9.6	8.0	6.4	4.8



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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°	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
75°	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6	1.6
77.5°	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6	1.6
80°	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6
82.5°	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6
85°	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6
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°	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
2.5°	287.5	285.8	269.8	269.8	276.2	266.6	261.8	250.5	215.2	183.1	154.2
5°	635.9	618.3	563.7	547.6	546.0	501.0	475.3	419.1	245.7	175.0	133.3
7.5°	1173.9	1120.9	1027.8	978.0	917.0	881.6	819.0	722.6	279.4	163.8	120.4
10°	1735.9	1676.5	1538.4	1450.1	1403.5	1289.5	1185.1	1053.5	313.1	155.8	118.8
12.5°	2379.9	2246.6	2114.9	1957.6	1817.8	1716.7	1543.2	1389.1	335.6	154.2	130.1
15°	3076.8	2909.8	2685.0	2473.0	2275.5	2131.0	1898.1	1691.0	343.7	168.6	170.2
17.5°	3857.3	3544.2	3219.8	2930.7	2659.3	2465.0	2176.0	1931.9	338.8	207.2	271.4
20°	4588.0	4172.1	3732.0	3330.6	2946.8	2694.6	2360.6	2095.7	340.4	305.1	366.1
22.5°	5167.7	4661.8	4125.5	3635.7	3149.1	2847.2	2482.7	2182.4	382.2	326.0	248.9
25°	5594.9	4999.1	4384.0	3820.4	3308.1	2969.3	2569.4	2208.1	356.5	187.9	141.3
26°	5708.9	5081.0	4432.2	3847.7	3327.4	2969.3	2556.5	2180.8	308.3	149.3	117.2
27°	5773.1	5117.9	4440.2	3834.8	3303.3	2935.5	2510.0	2126.2	252.1	125.3	99.6
28°	5781.1	5101.8	4400.1	3781.8	3235.8	2863.3	2426.5	2042.7	208.8	106.0	81.9
29°	5737.8	5042.4	4323.0	3693.5	3133.1	2757.3	2312.5	1939.9	178.3	91.5	69.1
30°	5646.2	4938.1	4205.8	3574.7	2999.8	2628.8	2179.2	1825.9	155.8	78.7	57.8
31°	5514.6	4795.1	4078.9	3433.4	2860.1	2500.3	2053.9	1710.3	138.1	65.8	48.2
32°	5344.3	4626.5	3915.1	3280.8	2734.8	2378.3	1933.5	1593.0	123.7	56.2	40.1
33°	5154.8	4435.4	3736.9	3121.8	2614.4	2253.0	1806.6	1469.4	110.8	46.6	33.7
34°	4936.4	4225.0	3547.4	2962.8	2485.9	2114.9	1670.1	1342.5	96.4	38.5	28.9
35°	4687.5	3990.6	3343.4	2818.3	2343.0	1965.6	1527.2	1207.6	85.1	33.7	24.1
36°	4417.7	3746.5	3137.9	2652.9	2188.8	1809.8	1376.2	1071.1	73.9	28.9	20.9
37°	4135.1	3492.8	2932.3	2465.0	2018.6	1644.4	1220.5	923.4	64.2	24.1	17.7
38°	3836.4	3237.4	2733.2	2286.8	1838.7	1466.2	1061.5	761.2	56.2	20.9	16.1
39°	3531.3	2985.3	2535.7	2090.8	1654.0	1291.1	908.9	591.0	49.8	17.7	14.5
40°	3232.6	2747.6	2326.9	1877.3	1469.4	1119.3	761.2	435.2	43.4	16.1	11.2
42.5°	2559.8	2110.1	1670.1	1252.6	1024.5	709.8	422.3	228.0	30.5	11.2	8.0
45°	1674.9	1247.8	900.9	610.2	529.9	300.3	195.9	141.3	22.5	8.0	6.4
47.5°	693.7	505.8	351.7	253.7	205.6	160.6	125.3	91.5	16.1	6.4	6.4
50°	305.1	240.9	191.1	149.3	130.1	104.4	80.3	56.2	9.6	4.8	4.8
51°	244.1	194.3	149.3	118.8	106.0	85.1	65.8	45.0	9.6	4.8	4.8
52°	192.7	151.0	117.2	91.5	85.1	69.1	54.6	36.9	8.0	4.8	4.8
53°	147.7	114.0	88.3	72.3	67.4	56.2	45.0	30.5	6.4	4.8	4.8
54°	109.2	86.7	69.1	56.2	54.6	45.0	36.9	25.7	6.4	4.8	4.8
55°	80.3	67.4	53.0	45.0	43.4	36.9	30.5	20.9	6.4	4.8	4.8
57.5°	41.8	35.3	28.9	25.7	25.7	24.1	20.9	12.8	4.8	3.2	4.8
60°	22.5	19.3	16.1	14.5	17.7	16.1	14.5	8.0	4.8	3.2	4.8
61°	17.7	16.1	12.8	11.2	14.5	12.8	12.8	6.4	4.8	4.8	4.8
62°	14.5	12.8	11.2	9.6	12.8	11.2	11.2	6.4	4.8	4.8	4.8
63°	11.2	9.6	8.0	8.0	11.2	11.2	9.6	4.8	4.8	4.8	4.8
64°	8.0	8.0	6.4	6.4	9.6	9.6	8.0	4.8	4.8	4.8	4.8
65°	6.4	6.4	4.8	4.8	8.0	8.0	8.0	4.8	4.8	4.8	4.8
66°	4.8	4.8	4.8	3.2	6.4	8.0	8.0	3.2	4.8	4.8	4.8





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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°	1.6	1.6	1.6	1.6	4.8	6.4	6.4	3.2	4.8	4.8	4.8
75°	1.6	1.6	1.6	1.6	4.8	6.4	6.4	3.2	4.8	4.8	4.8
77.5°	1.6	1.6	1.6	1.6	4.8	6.4	6.4	3.2	4.8	4.8	6.4
80°	1.6	1.6	1.6	1.6	4.8	6.4	6.4	3.2	4.8	4.8	6.4
82.5°	1.6	1.6	1.6	1.6	4.8	6.4	6.4	3.2	4.8	4.8	6.4
85°	1.6	1.6	1.6	1.6	4.8	6.4	6.4	3.2	4.8	4.8	6.4
87.5°	1.6	1.6	1.6	1.6	4.8	6.4	6.4	3.2	4.8	4.8	6.4
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: LDA4A28840D010TE LAR25NF 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	186.3	186.3	186.3
2.5°	139.7	131.7	130.1
5°	115.6	107.6	106.0
7.5°	106.0	99.6	98.0
10°	109.2	110.8	114.0
12.5°	139.7	154.2	167.0
15°	224.8	282.6	322.8
17.5°	391.8	433.6	460.9
20°	343.7	316.4	318.0
22.5°	192.7	173.4	171.8
25°	117.2	106.0	102.8
26°	98.0	88.3	85.1
27°	80.3	72.3	69.1
28°	65.8	59.4	57.8
29°	56.2	48.2	46.6
30°	46.6	40.1	38.5
31°	38.5	33.7	32.1
32°	33.7	28.9	25.7
33°	27.3	24.1	22.5
34°	24.1	19.3	17.7
35°	19.3	16.1	16.1
36°	17.7	14.5	12.8
37°	14.5	11.2	11.2
38°	12.8	9.6	8.0
39°	11.2	8.0	6.4
40°	9.6	6.4	4.8
42.5°	6.4	3.2	1.6
45°	4.8	1.6	0.0
47.5°	3.2	1.6	0.0
50°	3.2	0.0	0.0
51°	3.2	0.0	0.0
52°	3.2	0.0	0.0
53°	3.2	0.0	0.0
54°	3.2	0.0	0.0
55°	3.2	0.0	0.0
57.5°	3.2	0.0	0.0
60°	3.2	0.0	0.0
61°	3.2	0.0	0.0
62°	3.2	0.0	0.0
63°	3.2	1.6	0.0
64°	3.2	1.6	0.0
65°	3.2	1.6	0.0
66°	3.2	1.6	0.0



TEST NUMBER: P170704

CATALOG NUMBER: LDA4A28840D010TE LAR25NF 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
72.5°	4.8	1.6	0.0
75°	4.8	1.6	0.0
77.5°	4.8	1.6	0.0
80°	4.8	1.6	0.0
82.5°	4.8	1.6	0.0
85°	4.8	1.6	0.0
87.5°	3.2	1.6	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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









67.5°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	4.8	3.2
70°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	1.6	1.6





67.5°	3.2	3.2	3.2	3.2	6.4	6.4	6.4	3.2	4.8	4.8	4.8
70°	1.6	1.6	1.6	3.2	4.8	6.4	6.4	3.2	4.8	4.8	4.8





67.5°	3.2	1.6	0.0
70°	3.2	1.6	0.0



(END OF REPORT)