

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: P170683

Luminaire Tested: **LDA4A18935D010TE LAR25NF 4LA1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170683  
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: LDA4A18935D010TE 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: 1434.5 lumens  
Efficiency: N/A  
Efficacy: 49.3 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

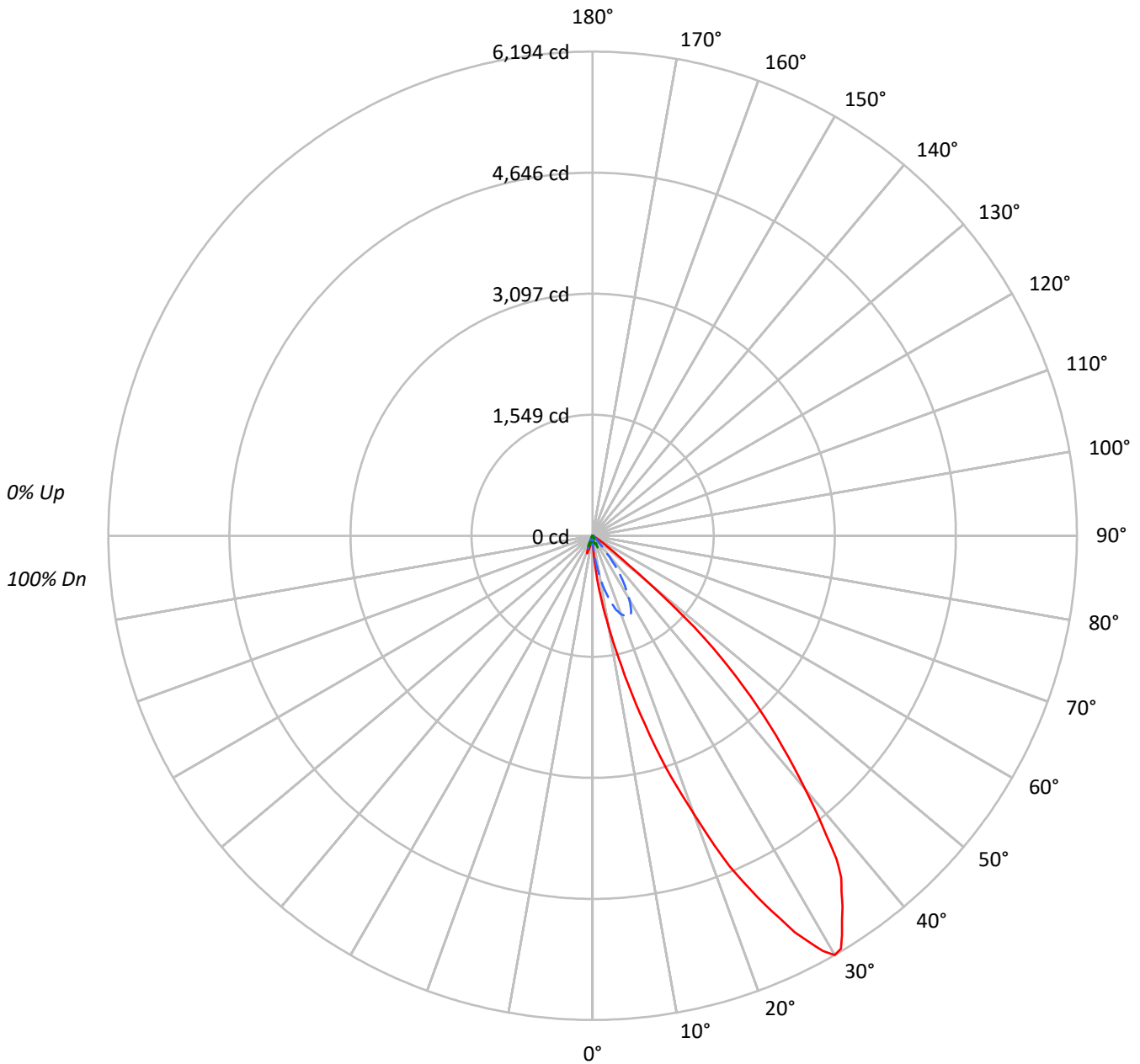
Input Watts (W): 29.12  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20									20									20									20									
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°	11730	11730	11730
5°	50951	11057	6698
10°	146916	9957	7289
15°	301032	10995	21044
20°	496655	20437	21304
25°	707499	13052	7145
30°	882137	5726	2806
35°	835839	2590	1235
40°	680777	1320	403
45°	476859	715	0
50°	178690	480	0
55°	38085	538	0
60°	7277	395	0
65°	2160	730	0
70°	577	902	0
75°	0	1191	0
80°	0	1776	0
85°	0	3538	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	19.9	1.4
10°-20°	171.8	12.0
20°-30°	438.8	30.6
30°-40°	508.2	35.4
40°-50°	262.2	18.3
50°-60°	27.1	1.9
60°-70°	2.9	0.2
70°-80°	1.9	0.1
80°-90°	1.7	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°	630.6	44.0
0°-40°	1138.8	79.4
0°-60°	1428.1	99.5
0°-90°	1434.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1434.5	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	95	95	95	95	95	
5°	412	214	89	59	54	64
15°	2357	863	86	115	165	722
25°	5198	1127	96	60	52	2415
35°	5551	616	17	10	8	3399
45°	2734	72	4	2	0	2047
55°	177	11	2	2	0	222
65°	7	2	2	2	0	10
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°	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1
2.5°	163.9	158.2	154.1	155.7	164.8	154.9	155.7	152.5	150.8	149.2	145.1
5°	411.5	395.1	384.4	385.3	361.5	379.5	377.9	363.9	354.9	337.7	327.9
7.5°	772.1	736.9	724.6	720.5	723.0	705.8	698.4	680.3	656.6	625.4	607.4
10°	1173.0	1151.7	1144.3	1131.2	1130.4	1100.0	1082.0	1059.0	1011.5	968.1	936.1
12.5°	1709.1	1643.5	1632.0	1607.4	1600.9	1549.2	1511.5	1477.9	1398.4	1341.0	1290.2
15°	2357.4	2304.1	2316.4	2241.0	2220.5	2136.1	2065.6	1993.5	1864.8	1777.1	1686.9
17.5°	3093.5	3025.5	3033.7	2939.4	2769.7	2785.3	2682.8	2583.7	2402.5	2285.3	2145.9
20°	3783.7	3735.3	3738.6	3613.2	3555.8	3400.1	3263.2	3145.1	2904.2	2755.0	2570.5
22.5°	4578.0	4452.6	4428.8	4258.3	4157.5	3948.4	3757.5	3600.9	3309.1	3141.0	2914.8
25°	5198.5	5112.4	5046.8	4845.2	4705.0	4432.9	4211.6	3979.6	3628.8	3442.7	3173.8
26°	5431.3	5350.1	5265.7	5048.5	4891.1	4603.4	4362.4	4113.2	3737.8	3538.6	3246.0
27°	5694.4	5561.6	5459.9	5216.5	5046.0	4743.5	4457.5	4222.2	3820.6	3600.1	3291.9
28°	5880.4	5747.7	5613.2	5348.5	5164.0	4847.6	4550.1	4293.5	3868.9	3629.6	3310.7
29°	6071.4	5930.4	5734.5	5446.0	5245.2	4912.4	4603.4	4328.8	3882.9	3627.9	3300.9
30°	6193.6	6051.8	5798.5	5500.9	5288.6	4938.6	4618.1	4322.2	3860.7	3595.2	3264.8
31°	6164.9	6034.5	5782.9	5506.7	5284.5	4923.1	4591.1	4275.5	3805.0	3537.0	3199.2
32°	6021.4	5910.8	5719.8	5468.1	5239.5	4869.8	4528.0	4201.7	3724.7	3468.9	3119.7
33°	5855.0	5763.2	5631.3	5390.3	5160.8	4789.4	4441.1	4110.7	3632.0	3376.3	3023.8
34°	5715.7	5632.9	5510.8	5285.4	5053.4	4682.1	4331.2	3996.0	3526.3	3267.3	2910.7
35°	5550.9	5475.5	5362.4	5143.5	4904.2	4537.8	4193.5	3863.2	3401.7	3137.8	2779.6
36°	5407.5	5288.6	5173.9	4960.8	4722.2	4363.2	4031.2	3707.5	3260.7	2989.4	2632.0
37°	5185.4	5066.5	4943.5	4741.9	4506.6	4163.2	3850.9	3541.1	3100.1	2877.9	2474.6
38°	4853.4	4798.5	4675.5	4483.7	4264.8	3942.7	3653.4	3351.7	2918.9	2662.3	2307.4
39°	4543.5	4498.5	4378.8	4203.4	4000.9	3705.8	3434.5	3138.6	2714.8	2472.2	2131.2
40°	4228.0	4182.9	4070.6	3912.4	3730.4	3459.1	3201.7	2911.5	2500.9	2276.3	1954.1
42.5°	3480.4	3433.7	3409.9	3248.4	3055.8	2823.0	2584.5	2322.2	1973.0	1788.6	1536.1
45°	2733.7	2691.0	2601.7	2535.3	2363.2	2169.7	1975.5	1761.5	1504.1	1322.2	1086.1
47.5°	1954.1	1933.6	1936.9	1814.0	1650.0	1497.6	1336.9	1143.5	915.6	686.9	504.1
50°	931.2	936.9	959.9	873.8	750.8	661.5	566.4	444.3	324.6	254.9	197.5
51°	603.3	609.8	629.5	568.0	478.7	418.0	357.4	288.5	230.3	195.9	156.6
52°	408.2	408.2	412.3	376.2	332.0	297.5	262.3	222.1	179.5	154.1	123.8
53°	306.6	305.7	307.4	283.6	253.3	227.9	203.3	173.8	141.8	120.5	95.9
54°	234.4	233.6	235.3	217.2	195.9	177.1	158.2	136.1	109.8	90.2	72.1
55°	177.1	177.1	179.5	165.6	149.2	134.4	120.5	101.6	81.1	65.6	52.5
57.5°	71.3	71.3	73.8	68.9	61.5	55.7	50.8	43.4	36.1	30.3	24.6
60°	29.5	30.3	31.1	28.7	27.0	25.4	23.8	21.3	18.9	15.6	13.1
61°	22.1	22.1	23.0	21.3	20.5	18.9	18.0	16.4	14.8	12.3	10.7
62°	16.4	16.4	17.2	16.4	15.6	14.8	13.9	13.1	11.5	9.8	8.2
63°	12.3	12.3	13.1	12.3	12.3	11.5	10.7	9.8	9.0	7.4	6.6
64°	9.8	9.8	9.8	9.0	9.0	9.0	8.2	8.2	6.6	5.7	4.9
65°	7.4	7.4	7.4	7.4	6.6	6.6	6.6	5.7	5.7	4.1	4.1
66°	5.7	5.7	5.7	4.9	4.9	4.9	4.9	4.9	4.1	3.3	2.5



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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°	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
75°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8
77.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8
80°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
82.5°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
85°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8
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°	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1
2.5°	146.7	145.9	137.7	137.7	141.0	136.1	133.6	127.9	109.8	93.4	78.7
5°	324.6	315.6	287.7	279.5	278.7	255.7	242.6	213.9	125.4	89.3	68.0
7.5°	599.2	572.1	524.6	499.2	468.0	450.0	418.0	368.9	142.6	83.6	61.5
10°	886.1	855.8	785.3	740.2	716.4	658.2	604.9	537.7	159.8	79.5	60.7
12.5°	1214.8	1146.7	1079.5	999.2	927.9	876.2	787.7	709.0	171.3	78.7	66.4
15°	1570.5	1485.3	1370.5	1262.3	1161.5	1087.7	968.9	863.1	175.4	86.1	86.9
17.5°	1968.9	1809.1	1643.5	1495.9	1357.4	1258.2	1110.7	986.1	173.0	105.7	138.5
20°	2341.9	2129.6	1905.0	1700.0	1504.1	1375.4	1204.9	1069.7	173.8	155.7	186.9
22.5°	2637.8	2379.6	2105.8	1855.8	1607.4	1453.3	1267.2	1114.0	195.1	166.4	127.1
25°	2855.8	2551.7	2237.8	1950.0	1688.6	1515.6	1311.5	1127.1	182.0	95.9	72.1
26°	2914.0	2593.5	2262.3	1964.0	1698.4	1515.6	1304.9	1113.1	157.4	76.2	59.8
27°	2946.8	2612.3	2266.4	1957.4	1686.1	1498.4	1281.2	1085.3	128.7	63.9	50.8
28°	2950.9	2604.2	2245.9	1930.4	1651.7	1461.5	1238.5	1042.6	106.6	54.1	41.8
29°	2928.7	2573.8	2206.6	1885.3	1599.2	1407.4	1180.4	990.2	91.0	46.7	35.2
30°	2882.0	2520.5	2146.8	1824.6	1531.2	1341.8	1112.3	932.0	79.5	40.2	29.5
31°	2814.8	2447.6	2082.0	1752.5	1459.9	1276.3	1048.4	873.0	70.5	33.6	24.6
32°	2727.9	2361.5	1998.4	1674.6	1395.9	1214.0	986.9	813.1	63.1	28.7	20.5
33°	2631.2	2264.0	1907.4	1593.5	1334.5	1150.0	922.2	750.0	56.6	23.8	17.2
34°	2519.7	2156.6	1810.7	1512.3	1268.9	1079.5	852.5	685.3	49.2	19.7	14.8
35°	2392.7	2036.9	1706.6	1438.6	1195.9	1003.3	779.5	616.4	43.4	17.2	12.3
36°	2255.0	1912.3	1601.7	1354.1	1117.2	923.8	702.5	546.7	37.7	14.8	10.7
37°	2110.7	1782.8	1496.8	1258.2	1030.3	839.4	623.0	471.3	32.8	12.3	9.0
38°	1958.2	1652.5	1395.1	1167.2	938.5	748.4	541.8	388.5	28.7	10.7	8.2
39°	1802.5	1523.8	1294.3	1067.2	844.3	659.0	463.9	301.6	25.4	9.0	7.4
40°	1650.0	1402.5	1187.7	958.2	750.0	571.3	388.5	222.1	22.1	8.2	5.7
42.5°	1306.6	1077.1	852.5	639.4	523.0	362.3	215.6	116.4	15.6	5.7	4.1
45°	854.9	636.9	459.8	311.5	270.5	153.3	100.0	72.1	11.5	4.1	3.3
47.5°	354.1	258.2	179.5	129.5	104.9	82.0	63.9	46.7	8.2	3.3	3.3
50°	155.7	123.0	97.5	76.2	66.4	53.3	41.0	28.7	4.9	2.5	2.5
51°	124.6	99.2	76.2	60.7	54.1	43.4	33.6	23.0	4.9	2.5	2.5
52°	98.4	77.1	59.8	46.7	43.4	35.2	27.9	18.9	4.1	2.5	2.5
53°	75.4	58.2	45.1	36.9	34.4	28.7	23.0	15.6	3.3	2.5	2.5
54°	55.7	44.3	35.2	28.7	27.9	23.0	18.9	13.1	3.3	2.5	2.5
55°	41.0	34.4	27.0	23.0	22.1	18.9	15.6	10.7	3.3	2.5	2.5
57.5°	21.3	18.0	14.8	13.1	13.1	12.3	10.7	6.6	2.5	1.6	2.5
60°	11.5	9.8	8.2	7.4	9.0	8.2	7.4	4.1	2.5	1.6	2.5
61°	9.0	8.2	6.6	5.7	7.4	6.6	6.6	3.3	2.5	2.5	2.5
62°	7.4	6.6	5.7	4.9	6.6	5.7	5.7	3.3	2.5	2.5	2.5
63°	5.7	4.9	4.1	4.1	5.7	5.7	4.9	2.5	2.5	2.5	2.5
64°	4.1	4.1	3.3	3.3	4.9	4.9	4.1	2.5	2.5	2.5	2.5
65°	3.3	3.3	2.5	2.5	4.1	4.1	4.1	2.5	2.5	2.5	2.5
66°	2.5	2.5	2.5	1.6	3.3	4.1	4.1	1.6	2.5	2.5	2.5





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CATALOG NUMBER: LDA4A18935D010TE 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°	0.8	0.8	0.8	0.8	2.5	3.3	3.3	1.6	2.5	2.5	2.5
75°	0.8	0.8	0.8	0.8	2.5	3.3	3.3	1.6	2.5	2.5	2.5
77.5°	0.8	0.8	0.8	0.8	2.5	3.3	3.3	1.6	2.5	2.5	3.3
80°	0.8	0.8	0.8	0.8	2.5	3.3	3.3	1.6	2.5	2.5	3.3
82.5°	0.8	0.8	0.8	0.8	2.5	3.3	3.3	1.6	2.5	2.5	3.3
85°	0.8	0.8	0.8	0.8	2.5	3.3	3.3	1.6	2.5	2.5	3.3
87.5°	0.8	0.8	0.8	0.8	2.5	3.3	3.3	1.6	2.5	2.5	3.3
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):**

	135°	157.5°	180°
0°	95.1	95.1	95.1
2.5°	71.3	67.2	66.4
5°	59.0	54.9	54.1
7.5°	54.1	50.8	50.0
10°	55.7	56.6	58.2
12.5°	71.3	78.7	85.2
15°	114.8	144.3	164.8
17.5°	200.0	221.3	235.3
20°	175.4	161.5	162.3
22.5°	98.4	88.5	87.7
25°	59.8	54.1	52.5
26°	50.0	45.1	43.4
27°	41.0	36.9	35.2
28°	33.6	30.3	29.5
29°	28.7	24.6	23.8
30°	23.8	20.5	19.7
31°	19.7	17.2	16.4
32°	17.2	14.8	13.1
33°	13.9	12.3	11.5
34°	12.3	9.8	9.0
35°	9.8	8.2	8.2
36°	9.0	7.4	6.6
37°	7.4	5.7	5.7
38°	6.6	4.9	4.1
39°	5.7	4.1	3.3
40°	4.9	3.3	2.5
42.5°	3.3	1.6	0.8
45°	2.5	0.8	0.0
47.5°	1.6	0.8	0.0
50°	1.6	0.0	0.0
51°	1.6	0.0	0.0
52°	1.6	0.0	0.0
53°	1.6	0.0	0.0
54°	1.6	0.0	0.0
55°	1.6	0.0	0.0
57.5°	1.6	0.0	0.0
60°	1.6	0.0	0.0
61°	1.6	0.0	0.0
62°	1.6	0.0	0.0
63°	1.6	0.8	0.0
64°	1.6	0.8	0.0
65°	1.6	0.8	0.0
66°	1.6	0.8	0.0



TEST NUMBER: P170683

CATALOG NUMBER: LDA4A18935D010TE LAR25NF 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
72.5°	2.5	0.8	0.0
75°	2.5	0.8	0.0
77.5°	2.5	0.8	0.0
80°	2.5	0.8	0.0
82.5°	2.5	0.8	0.0
85°	2.5	0.8	0.0
87.5°	1.6	0.8	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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









67.5°	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.5	1.6
70°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8





67.5°	1.6	1.6	1.6	1.6	3.3	3.3	3.3	1.6	2.5	2.5	2.5
70°	0.8	0.8	0.8	1.6	2.5	3.3	3.3	1.6	2.5	2.5	2.5





67.5°	1.6	0.8	0.0
70°	1.6	0.8	0.0



(END OF REPORT)