

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: P170791

Luminaire Tested: **LDA4A13835D010TE LAR25NF 4LAL1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170791  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26105)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: LDA4A13835D010TE LAR25NF 4LAL1 30° Tilt  
Description: PORTFOLIO 4" Lensed Adjustable, Self-flanged, 25° Narrow Flood  
Optic, at 30° tilt. --- 27.9W  
Light Source: (1) HIGH LUMEN LED 80CRI / 3500K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1604.6 lumens  
Efficiency: N/A  
Efficacy: 72.1 lumens/watt  
Spacing Criteria (0/90/45): 2.53 / 1.09 / 1.29  
Luminous Opening: Circular (Dia: 0.33' x H: 0')  
CIE Type: Direct

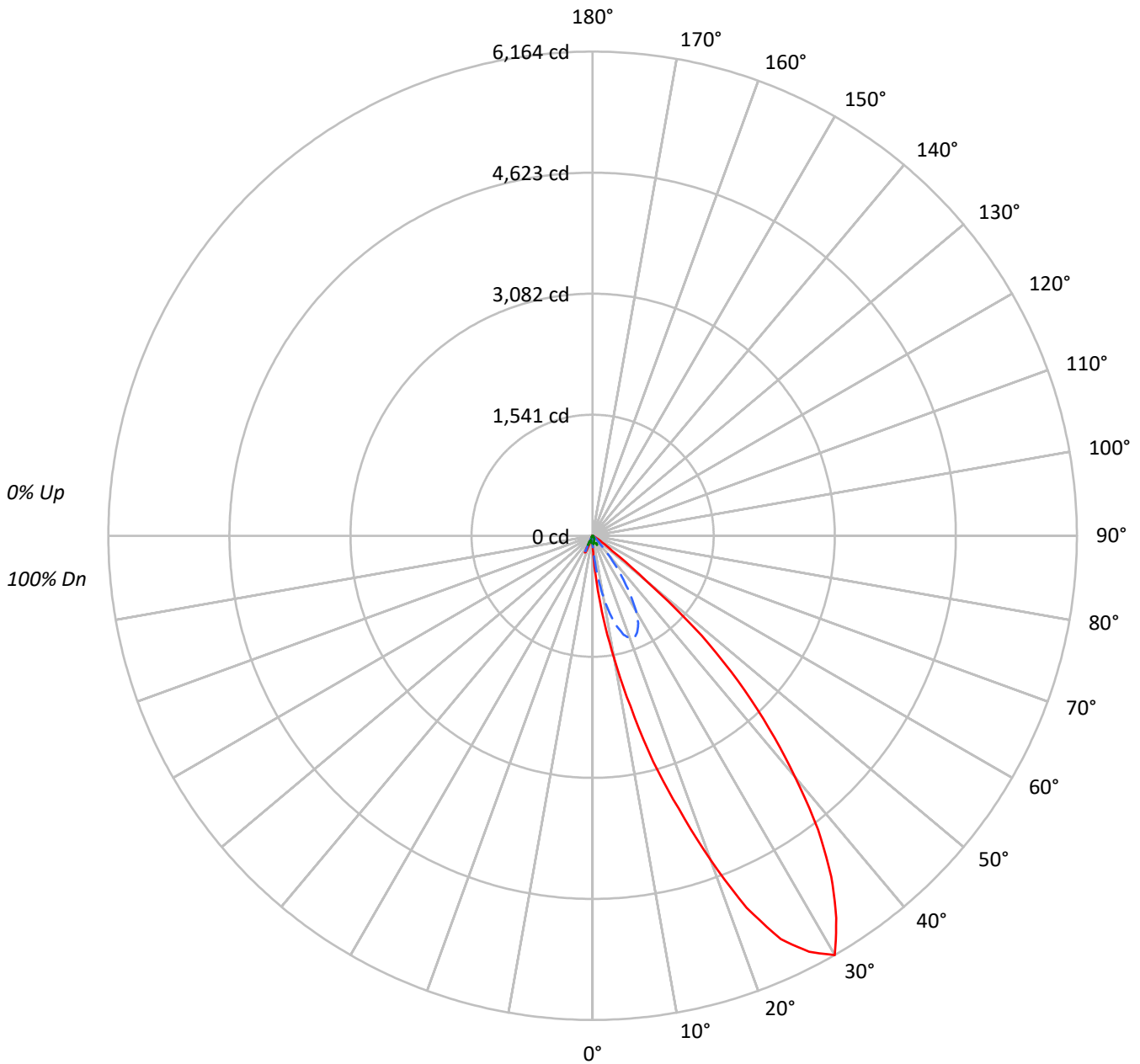
Input Watts (W): 22.27  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	98	96	96	94	93	91																			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	86	84	83																			
3	99	91	85	81	97	90	84	80	87	82	79	84	81	77	82	79	76	74																			
4	92	83	77	72	90	82	76	71	80	74	70	78	73	69	76	72	69	67																			
5	86	76	69	64	84	75	69	64	73	67	63	71	66	62	70	65	62	60																			
6	80	70	63	57	79	69	62	57	67	61	57	66	60	56	64	60	56	54																			
7	75	64	57	52	74	63	56	51	62	56	51	61	55	51	59	54	51	49																			
8	70	59	52	47	69	58	51	47	57	51	46	56	50	46	55	50	46	44																			
9	66	54	47	42	64	54	47	42	53	46	42	52	46	42	51	45	42	40																			
10	62	50	43	38	60	50	43	38	49	42	38	48	42	38	47	42	38	36																			

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

	0°	90°	180°
0°	14727	14727	14727
5°	75739	13694	6389
10°	199621	11423	3332
15°	379936	8964	2579
20°	577079	7416	6891
25°	771097	17679	31847
30°	877993	6666	6438
35°	797487	3764	2921
40°	645917	1691	1175
45°	457077	977	279
50°	166773	614	0
55°	34709	516	0
60°	8363	592	0
65°	2598	700	0
70°	866	866	0
75°	381	1144	0
80°	0	1705	0
85°	0	3397	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	27.1	1.7
10°-20°	201.8	12.6
20°-30°	511.9	31.9
30°-40°	547.8	34.1
40°-50°	280.0	17.5
50°-60°	29.2	1.8
60°-70°	3.3	0.2
70°-80°	1.8	0.1
80°-90°	1.6	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°	740.7	46.2
0°-40°	1288.6	80.3
0°-60°	1597.8	99.6
0°-90°	1604.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1604.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	119	119	119	119	119	
5°	612	332	111	64	52	89
15°	2975	1196	70	25	20	879
25°	5666	1347	130	218	234	2574
35°	5296	683	25	19	19	3252
45°	2620	91	6	3	2	1955
55°	161	14	2	2	0	219
65°	9	3	2	2	0	12
75°	1	2	2	2	0	1
85°	0	2	2	2	0	0
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°
0°	119.4	119.4	119.4	119.4	119.4	119.4	119.4	119.4	119.4	119.4	119.4
2.5°	241.3	243.7	226.0	231.6	235.6	227.6	226.0	226.0	234.8	230.0	238.1
5°	611.7	609.3	578.6	587.5	593.9	578.6	585.9	574.6	588.3	579.4	588.3
7.5°	1068.4	1096.7	1058.0	1066.8	1072.5	1056.3	1060.4	1044.2	1059.6	1049.1	1056.3
10°	1593.8	1622.8	1577.7	1584.9	1588.9	1573.6	1574.4	1553.4	1567.2	1555.9	1560.7
12.5°	2221.6	2232.9	2211.1	2216.8	2219.2	2199.0	2161.1	2165.1	2178.9	2159.5	2164.3
15°	2975.3	2967.3	2941.5	2960.0	2941.5	2931.8	2874.5	2871.2	2879.3	2857.5	2822.8
17.5°	3639.5	3700.8	3671.8	3682.3	3659.7	3659.7	3586.2	3574.1	3574.9	3516.8	3510.4
20°	4396.4	4474.7	4403.7	4406.9	4377.1	4376.3	4286.7	4261.7	4251.2	4185.0	4166.5
22.5°	5126.0	5148.6	5147.7	5134.0	5063.8	5104.2	4992.0	4952.5	4920.2	4845.1	4808.0
25°	5665.8	5736.8	5688.4	5653.7	5592.4	5643.2	5517.3	5465.7	5417.3	5354.3	5305.9
27.5°	5970.9	6037.0	6025.7	5974.1	5911.1	5960.4	5822.4	5755.4	5686.8	5640.8	5580.3
30°	6164.5	6265.4	6232.3	6120.2	6028.2	6044.3	5889.4	5799.8	5723.9	5676.3	5599.7
32.5°	5771.5	5875.6	5866.0	5784.5	5736.8	5776.4	5641.6	5552.8	5480.2	5442.3	5356.8
35°	5296.2	5418.1	5391.5	5323.7	5289.0	5335.0	5203.4	5129.2	5055.7	5022.7	4929.1
37.5°	4714.4	4829.0	4802.4	4737.8	4703.9	4737.8	4611.9	4543.3	4473.9	4439.2	4375.5
40°	4011.5	4112.4	4084.1	4024.4	3996.2	4020.4	3911.4	3851.7	3792.8	3767.0	3682.3
42.5°	3324.8	3405.5	3379.6	3328.0	3306.2	3322.3	3232.8	3179.5	3127.9	3106.1	3056.0
45°	2620.3	2700.2	2675.1	2630.8	2610.6	2619.5	2544.4	2496.8	2452.4	2432.2	2387.1
47.5°	1880.3	1969.8	1939.2	1901.3	1880.3	1876.2	1810.1	1767.3	1771.3	1702.7	1660.8
50°	869.1	945.0	914.3	894.1	874.0	862.7	839.3	790.8	804.6	742.4	718.2
52.5°	315.5	334.1	326.8	320.4	313.9	311.5	303.4	291.3	292.9	277.6	270.3
55°	161.4	170.3	167.9	163.8	163.8	161.4	157.4	152.5	149.3	146.9	144.4
57.5°	74.2	79.1	77.5	75.9	75.9	74.2	72.6	70.2	71.8	67.8	67.0
60°	33.9	36.3	35.5	34.7	34.7	34.7	33.9	33.1	33.1	32.3	31.5
62.5°	16.1	17.8	16.9	16.9	16.9	16.9	16.1	16.1	16.1	16.1	15.3
65°	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.1	8.9	8.1	8.1
67.5°	4.8	4.8	4.8	4.8	4.0	4.8	4.8	4.0	4.0	4.0	4.0
70°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
72.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
75°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
77.5°	0.0	0.8	0.8	0.8	0.0	0.8	0.8	0.8	0.8	0.8	0.8
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.8	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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):**

	11°	12°	13°	14°	15°	17.5°	20°	22.5°	45°	67.5°	90°
0°	119.4	119.4	119.4	119.4	119.4	119.4	119.4	119.4	119.4	119.4	119.4
2.5°	219.5	225.1	230.8	229.2	221.1	220.3	217.1	218.7	170.3	138.0	115.4
5°	556.8	564.1	571.3	567.3	547.1	542.3	526.2	522.9	332.5	163.0	110.6
7.5°	1017.6	1021.6	1027.3	1022.4	992.6	978.9	945.0	911.9	559.2	196.9	102.5
10°	1517.1	1515.5	1517.9	1511.5	1474.4	1447.7	1395.3	1371.9	792.5	226.0	91.2
12.5°	2099.8	2093.3	2057.8	2074.8	2022.3	1968.2	1881.9	1809.3	1012.8	242.1	80.7
15°	2780.1	2760.7	2747.8	2728.4	2663.9	2576.7	2445.2	2364.5	1195.9	240.5	70.2
17.5°	3456.3	3424.8	3368.3	3375.6	3300.6	3178.7	3005.2	2867.2	1322.6	220.3	62.1
20°	4096.2	4049.4	3978.4	3972.8	3882.4	3721.8	3503.1	3332.0	1392.0	187.2	56.5
22.5°	4712.8	4640.2	4544.9	4515.1	4398.9	4171.3	3885.6	3677.4	1398.5	156.6	67.8
25°	5198.6	5107.4	5001.7	4950.0	4821.7	4531.2	4175.3	3919.5	1346.9	154.9	129.9
27.5°	5469.7	5366.4	5260.7	5190.5	5060.6	4731.3	4328.7	4033.3	1258.1	166.2	123.5
30°	5484.3	5368.0	5258.3	5169.5	5040.4	4688.6	4260.9	3953.4	1098.3	104.9	46.8
32.5°	5243.0	5118.7	5008.9	4908.9	4781.4	4427.1	4007.5	3713.7	893.3	73.4	33.1
35°	4820.9	4692.6	4587.7	4482.0	4362.5	4029.3	3644.3	3370.8	682.7	58.1	25.0
37.5°	4246.3	4127.7	4034.9	3963.1	3834.0	3568.5	3216.6	2926.9	482.6	41.2	15.3
40°	3603.2	3503.1	3427.3	3365.1	3245.7	3010.0	2655.0	2410.5	292.9	29.1	10.5
42.5°	2956.0	2862.4	2795.4	2736.5	2625.9	2417.7	2125.6	1880.3	140.4	20.2	7.3
45°	2299.1	2215.2	2158.7	2105.4	2006.2	1801.2	1569.6	1392.0	91.2	14.5	5.6
47.5°	1570.4	1526.8	1434.0	1375.9	1274.2	1117.7	900.6	705.3	60.5	10.5	4.0
50°	652.8	630.3	568.9	529.4	471.3	391.4	284.1	238.1	37.1	7.3	3.2
52.5°	253.4	247.7	232.4	223.5	209.0	188.0	156.6	139.6	22.6	5.6	3.2
55°	136.4	134.8	126.7	121.9	113.8	103.3	84.7	74.2	14.5	4.0	2.4
57.5°	62.9	62.1	58.1	58.1	52.5	48.4	40.3	36.3	8.9	3.2	2.4
60°	29.9	29.9	28.2	28.2	25.8	24.2	20.2	18.6	5.6	2.4	2.4
62.5°	14.5	14.5	14.5	14.5	13.7	12.9	11.3	10.5	4.0	2.4	2.4
65°	8.1	8.1	8.1	8.1	7.3	7.3	6.5	5.6	3.2	2.4	2.4
67.5°	4.0	4.0	4.0	4.0	4.0	4.0	3.2	3.2	2.4	2.4	2.4
70°	2.4	2.4	2.4	2.4	2.4	1.6	1.6	1.6	1.6	2.4	2.4
72.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	2.4	2.4
75°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	2.4	2.4
77.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	2.4	2.4
80°	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	1.6	2.4	2.4
82.5°	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	2.4	2.4
85°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	1.6	2.4	2.4
87.5°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	2.4	2.4
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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**CANDELA DISTRIBUTION (continued):**

	112.5°	135°	157.5°	180°
0°	119.4	119.4	119.4	119.4
2.5°	99.3	86.3	79.9	78.3
5°	81.5	63.8	54.9	51.6
7.5°	66.2	46.0	38.7	35.5
10°	52.5	36.3	29.1	26.6
12.5°	43.6	29.1	23.4	21.8
15°	37.1	25.0	21.0	20.2
17.5°	33.9	26.6	25.0	25.8
20°	41.2	43.6	50.8	52.5
22.5°	87.2	150.9	205.0	217.1
25°	181.6	217.9	226.0	234.0
27.5°	100.9	78.3	76.7	79.9
30°	41.2	42.0	43.6	45.2
32.5°	30.7	30.7	29.9	30.7
35°	21.0	19.4	18.6	19.4
37.5°	12.9	12.1	11.3	11.3
40°	8.9	8.1	7.3	7.3
42.5°	6.5	4.8	4.0	4.0
45°	4.8	3.2	2.4	1.6
47.5°	4.0	2.4	0.8	0.8
50°	3.2	1.6	0.8	0.0
52.5°	2.4	1.6	0.8	0.0
55°	2.4	1.6	0.0	0.0
57.5°	2.4	1.6	0.0	0.0
60°	2.4	1.6	0.8	0.0
62.5°	2.4	1.6	0.8	0.8
65°	2.4	1.6	0.8	0.0
67.5°	2.4	1.6	0.8	0.0
70°	2.4	1.6	0.8	0.0
72.5°	3.2	1.6	0.8	0.0
75°	3.2	2.4	0.8	0.0
77.5°	3.2	2.4	0.8	0.0
80°	3.2	2.4	0.8	0.0
82.5°	3.2	2.4	0.8	0.0
85°	3.2	2.4	0.8	0.0
87.5°	3.2	2.4	0.8	0.0
90°	0.0	0.0	0.0	0.0





Report Generated By E9808895 / USPTCWHP6082093





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











(END OF REPORT)