

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: P170798

Luminaire Tested: **LDA4A28830D010TE LAR25NF 4LAL1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170798  
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: LDA4A28830D010TE 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 / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2961.0 lumens  
Efficiency: N/A  
Efficacy: 66.6 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

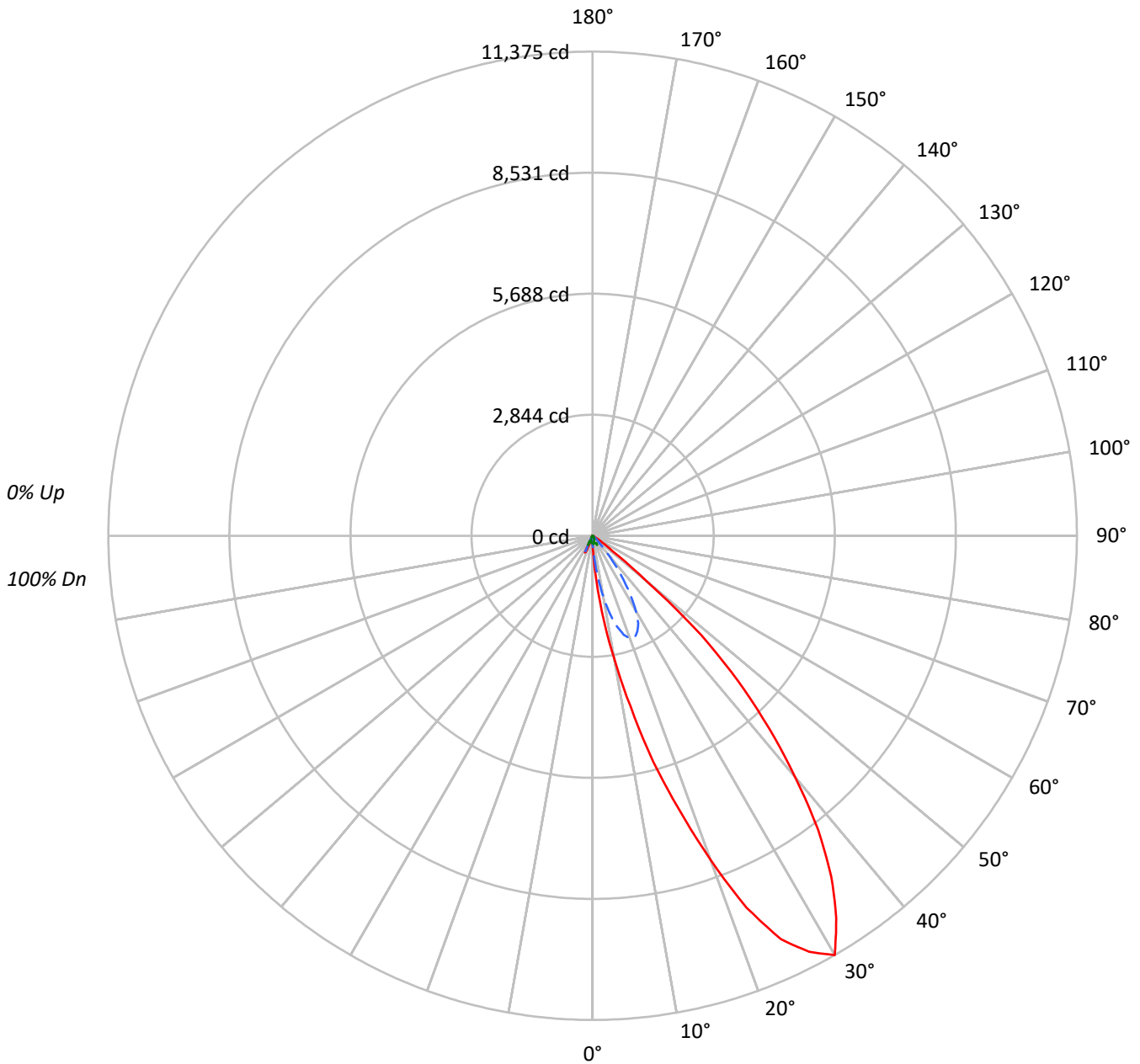
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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

RF	20									20									20									20									
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°	27185	27185	27185
5°	139752	25259	11800
10°	368343	21079	6150
15°	701081	16537	4750
20°	1064847	13677	12706
25°	1422852	32622	58767
30°	1620096	12306	11878
35°	1471546	6957	5376
40°	1191859	3124	2158
45°	843403	1814	523
50°	307737	1151	0
55°	64041	968	0
60°	15418	1110	0
65°	4787	1313	0
70°	1623	1623	0
75°	715	2145	0
80°	0	3196	0
85°	0	6369	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	49.9	1.7
10°-20°	372.4	12.6
20°-30°	944.5	31.9
30°-40°	1010.8	34.1
40°-50°	516.7	17.4
50°-60°	54.0	1.8
60°-70°	6.2	0.2
70°-80°	3.4	0.1
80°-90°	3.0	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°	1366.8	46.2
0°-40°	2377.7	80.3
0°-60°	2948.3	99.6
0°-90°	2961.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2961.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	220	220	220	220	220	
5°	1129	614	204	118	95	165
15°	5490	2207	130	46	37	1622
25°	10455	2485	240	402	432	4750
35°	9773	1260	46	36	36	6000
45°	4835	168	10	6	3	3608
55°	298	27	4	3	0	404
65°	16	6	4	3	0	22
75°	2	3	4	4	0	1
85°	0	3	4	4	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°	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
2.5°	445.2	449.7	416.9	427.4	434.8	419.9	416.9	416.9	433.3	424.4	439.3
5°	1128.7	1124.2	1067.7	1084.0	1095.9	1067.7	1081.1	1060.2	1085.5	1069.1	1085.5
7.5°	1971.5	2023.6	1952.2	1968.5	1979.0	1949.2	1956.6	1926.8	1955.1	1935.8	1949.2
10°	2940.9	2994.5	2911.1	2924.5	2932.0	2903.7	2905.2	2866.4	2891.7	2870.9	2879.8
12.5°	4099.4	4120.2	4080.0	4090.4	4094.9	4057.7	3987.7	3995.1	4020.5	3984.7	3993.7
15°	5490.2	5475.3	5427.6	5461.9	5427.6	5409.7	5304.0	5298.1	5313.0	5272.8	5208.7
17.5°	6715.6	6828.8	6775.2	6794.6	6752.9	6752.9	6617.4	6595.0	6596.5	6489.3	6477.4
20°	8112.4	8256.8	8125.8	8131.7	8076.6	8075.2	7909.9	7863.7	7844.4	7722.3	7688.0
22.5°	9458.5	9500.2	9498.7	9473.4	9343.8	9418.3	9211.3	9138.3	9078.8	8940.3	8871.8
25°	10454.7	10585.7	10496.4	10432.3	10319.2	10413.0	10180.7	10085.4	9996.0	9879.9	9790.6
27.5°	11017.5	11139.6	11118.8	11023.5	10907.3	10998.2	10743.5	10620.0	10493.4	10408.5	10296.8
30°	11374.9	11561.0	11500.0	11293.0	11123.3	11153.0	10867.1	10701.9	10561.9	10474.0	10332.6
32.5°	10649.7	10841.8	10824.0	10673.6	10585.7	10658.7	10410.0	10246.2	10112.2	10042.2	9884.4
35°	9772.7	9997.5	9948.4	9823.3	9759.3	9844.2	9601.4	9464.4	9328.9	9267.9	9095.2
37.5°	8699.1	8910.5	8861.4	8742.3	8679.7	8742.3	8510.0	8383.4	8255.3	8191.3	8073.7
40°	7402.1	7588.2	7536.1	7425.9	7373.8	7418.5	7217.5	7107.3	6998.6	6950.9	6794.6
42.5°	6134.9	6283.8	6236.2	6140.9	6100.7	6130.4	5965.2	5866.9	5771.6	5731.4	5639.1
45°	4835.0	4982.4	4936.2	4854.3	4817.1	4833.5	4695.0	4607.1	4525.2	4488.0	4404.6
47.5°	3469.5	3634.8	3578.2	3508.2	3469.5	3462.1	3340.0	3261.0	3268.5	3141.9	3064.5
50°	1603.7	1743.7	1687.1	1649.9	1612.6	1591.8	1548.6	1459.3	1484.6	1369.9	1325.3
52.5°	582.2	616.5	603.1	591.2	579.2	574.8	559.9	537.5	540.5	512.2	498.8
55°	297.8	314.2	309.7	302.3	302.3	297.8	290.4	281.4	275.5	271.0	266.5
57.5°	137.0	145.9	142.9	140.0	140.0	137.0	134.0	129.5	132.5	125.1	123.6
60°	62.5	67.0	65.5	64.0	64.0	64.0	62.5	61.1	61.1	59.6	58.1
62.5°	29.8	32.8	31.3	31.3	31.3	31.3	29.8	29.8	29.8	29.8	28.3
65°	16.4	16.4	16.4	16.4	16.4	16.4	16.4	14.9	16.4	14.9	14.9
67.5°	8.9	8.9	8.9	8.9	7.4	8.9	8.9	7.4	7.4	7.4	7.4
70°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
72.5°	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
75°	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
77.5°	0.0	1.5	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	1.5
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	1.5	0.0	1.5	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°	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
2.5°	405.0	415.4	425.9	422.9	408.0	406.5	400.6	403.5	314.2	254.6	212.9
5°	1027.4	1040.9	1054.3	1046.8	1009.6	1000.6	970.9	964.9	613.5	300.8	204.0
7.5°	1877.7	1885.1	1895.6	1886.6	1831.5	1806.2	1743.7	1682.6	1031.9	363.3	189.1
10°	2799.4	2796.4	2800.9	2789.0	2720.5	2671.4	2574.6	2531.4	1462.3	416.9	168.3
12.5°	3874.5	3862.6	3797.1	3828.4	3731.6	3631.8	3472.5	3338.5	1868.8	446.7	148.9
15°	5129.8	5094.1	5070.2	5034.5	4915.4	4754.6	4511.8	4362.9	2206.8	443.7	129.5
17.5°	6377.6	6319.6	6215.3	6228.7	6090.2	5865.4	5545.2	5290.6	2440.6	406.5	114.7
20°	7558.5	7472.1	7341.1	7330.6	7163.9	6867.5	6464.0	6148.3	2568.6	345.5	104.2
22.5°	8696.1	8562.1	8386.4	8331.3	8116.9	7696.9	7169.8	6785.6	2580.5	288.9	125.1
25°	9592.5	9424.2	9229.2	9133.9	8897.1	8361.1	7704.4	7232.4	2485.2	285.9	239.7
27.5°	10092.8	9902.2	9707.2	9577.6	9337.9	8730.3	7987.3	7442.3	2321.4	306.7	227.8
30°	10119.6	9905.2	9702.7	9538.9	9300.7	8651.4	7862.2	7294.9	2026.6	193.6	86.4
32.5°	9674.4	9445.1	9242.6	9057.9	8822.7	8169.0	7394.7	6852.6	1648.4	135.5	61.1
35°	8895.6	8658.9	8465.3	8270.2	8049.8	7434.9	6724.6	6219.8	1259.7	107.2	46.2
37.5°	7835.4	7616.5	7445.3	7312.8	7074.5	6584.6	5935.4	5400.8	890.5	75.9	28.3
40°	6648.6	6464.0	6324.0	6209.4	5989.0	5554.2	4899.0	4447.8	540.5	53.6	19.4
42.5°	5454.4	5281.7	5158.1	5049.4	4845.4	4461.2	3922.2	3469.5	259.1	37.2	13.4
45°	4242.3	4087.5	3983.2	3885.0	3701.8	3323.6	2896.2	2568.6	168.3	26.8	10.4
47.5°	2897.7	2817.3	2646.1	2538.8	2351.2	2062.3	1661.8	1301.4	111.7	19.4	7.4
50°	1204.6	1163.0	1049.8	976.8	869.6	722.2	524.1	439.3	68.5	13.4	6.0
52.5°	467.6	457.1	428.8	412.5	385.7	347.0	288.9	257.6	41.7	10.4	6.0
55°	251.7	248.7	233.8	224.8	210.0	190.6	156.4	137.0	26.8	7.4	4.5
57.5°	116.1	114.7	107.2	107.2	96.8	89.3	74.5	67.0	16.4	6.0	4.5
60°	55.1	55.1	52.1	52.1	47.6	44.7	37.2	34.2	10.4	4.5	4.5
62.5°	26.8	26.8	26.8	26.8	25.3	23.8	20.8	19.4	7.4	4.5	4.5
65°	14.9	14.9	14.9	14.9	13.4	13.4	11.9	10.4	6.0	4.5	4.5
67.5°	7.4	7.4	7.4	7.4	7.4	7.4	6.0	6.0	4.5	4.5	4.5
70°	4.5	4.5	4.5	4.5	4.5	3.0	3.0	3.0	3.0	4.5	4.5
72.5°	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	4.5	4.5
75°	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	4.5	4.5
77.5°	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	4.5	4.5
80°	0.0	0.0	1.5	1.5	1.5	1.5	1.5	1.5	3.0	4.5	4.5
82.5°	0.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	4.5	4.5
85°	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	3.0	4.5	4.5
87.5°	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5	3.0	4.5	4.5
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°	220.4	220.4	220.4	220.4
2.5°	183.2	159.3	147.4	144.4
5°	150.4	117.6	101.3	95.3
7.5°	122.1	84.9	71.5	65.5
10°	96.8	67.0	53.6	49.1
12.5°	80.4	53.6	43.2	40.2
15°	68.5	46.2	38.7	37.2
17.5°	62.5	49.1	46.2	47.6
20°	75.9	80.4	93.8	96.8
22.5°	160.8	278.5	378.2	400.6
25°	335.0	402.0	416.9	431.8
27.5°	186.1	144.4	141.5	147.4
30°	75.9	77.4	80.4	83.4
32.5°	56.6	56.6	55.1	56.6
35°	38.7	35.7	34.2	35.7
37.5°	23.8	22.3	20.8	20.8
40°	16.4	14.9	13.4	13.4
42.5°	11.9	8.9	7.4	7.4
45°	8.9	6.0	4.5	3.0
47.5°	7.4	4.5	1.5	1.5
50°	6.0	3.0	1.5	0.0
52.5°	4.5	3.0	1.5	0.0
55°	4.5	3.0	0.0	0.0
57.5°	4.5	3.0	0.0	0.0
60°	4.5	3.0	1.5	0.0
62.5°	4.5	3.0	1.5	1.5
65°	4.5	3.0	1.5	0.0
67.5°	4.5	3.0	1.5	0.0
70°	4.5	3.0	1.5	0.0
72.5°	6.0	3.0	1.5	0.0
75°	6.0	4.5	1.5	0.0
77.5°	6.0	4.5	1.5	0.0
80°	6.0	4.5	1.5	0.0
82.5°	6.0	4.5	1.5	0.0
85°	6.0	4.5	1.5	0.0
87.5°	6.0	4.5	1.5	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)