

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: P170804

Luminaire Tested: **LDA4A28940D010TE LAR25NF 4LAL1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170804  
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: LDA4A28940D010TE 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 90CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2739.7 lumens  
Efficiency: N/A  
Efficacy: 61.6 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

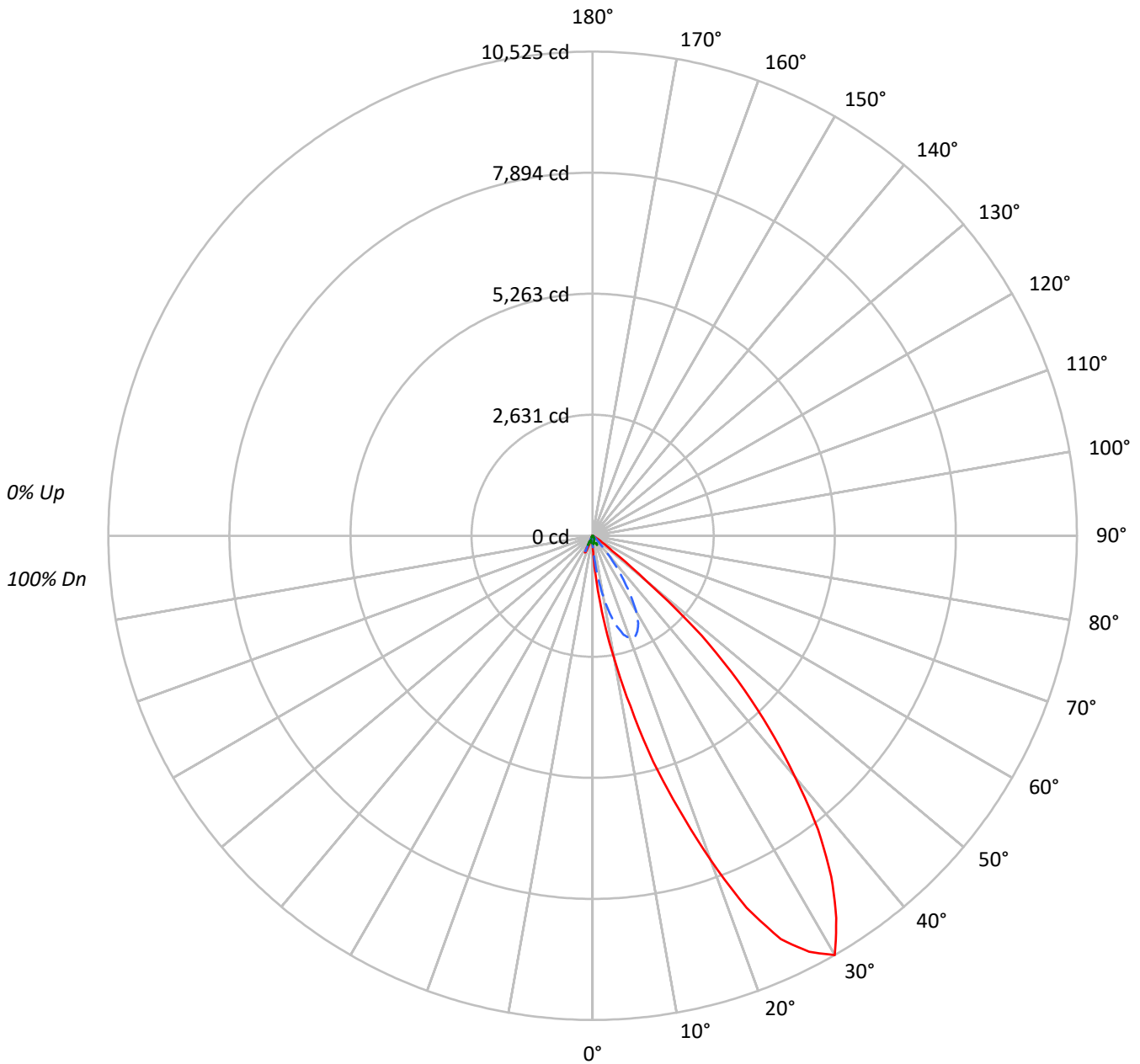
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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°	25150	25150	25150
5°	129314	23377	10921
10°	340826	19501	5699
15°	648712	15311	4393
20°	985303	12654	11761
25°	1316574	30186	54384
30°	1499090	11380	10995
35°	1361625	6430	4984
40°	1102833	2882	1997
45°	780397	1675	488
50°	284748	1055	0
55°	59267	882	0
60°	14283	1011	0
65°	4436	1197	0
70°	1479	1479	0
75°	667	1954	0
80°	0	2912	0
85°	0	5802	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	46.2	1.7
10°-20°	344.6	12.6
20°-30°	873.9	31.9
30°-40°	935.3	34.1
40°-50°	478.1	17.5
50°-60°	49.9	1.8
60°-70°	5.7	0.2
70°-80°	3.1	0.1
80°-90°	2.8	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°	1264.7	46.2
0°-40°	2200.1	80.3
0°-60°	2728.1	99.6
0°-90°	2739.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2739.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	204	204	204	204	204	
5°	1044	568	189	109	88	152
15°	5080	2042	120	43	34	1501
25°	9674	2300	222	372	400	4395
35°	9043	1166	43	33	33	5552
45°	4474	156	10	6	3	3339
55°	276	25	4	3	0	374
65°	15	6	4	3	0	20
75°	1	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°	203.9	203.9	203.9	203.9	203.9	203.9	203.9	203.9	203.9	203.9	203.9
2.5°	412.0	416.1	385.8	395.4	402.3	388.5	385.8	385.8	400.9	392.7	406.5
5°	1044.4	1040.3	987.9	1003.1	1014.1	987.9	1000.3	981.0	1004.4	989.3	1004.4
7.5°	1824.2	1872.5	1806.3	1821.5	1831.1	1803.6	1810.5	1782.9	1809.1	1791.2	1803.6
10°	2721.2	2770.8	2693.7	2706.1	2713.0	2686.8	2688.2	2652.3	2675.7	2656.5	2664.7
12.5°	3793.2	3812.5	3775.3	3784.9	3789.0	3754.6	3689.8	3696.7	3720.1	3687.1	3695.3
15°	5080.1	5066.3	5022.2	5053.9	5022.2	5005.7	4907.8	4902.3	4916.1	4878.9	4819.7
17.5°	6214.0	6318.7	6269.1	6287.0	6248.5	6248.5	6123.1	6102.4	6103.8	6004.6	5993.6
20°	7506.4	7640.1	7518.8	7524.3	7473.4	7472.0	7319.0	7276.3	7258.4	7145.4	7113.7
22.5°	8752.0	8790.6	8789.2	8765.8	8645.9	8714.8	8523.3	8455.8	8400.6	8272.5	8209.1
25°	9673.8	9795.0	9712.3	9653.1	9548.4	9635.2	9420.2	9332.1	9249.4	9141.9	9059.2
27.5°	10194.6	10307.6	10288.3	10200.1	10092.6	10176.7	9941.1	9826.7	9709.6	9631.0	9527.7
30°	10525.3	10697.5	10641.0	10449.5	10292.4	10320.0	10055.4	9902.5	9773.0	9691.7	9560.8
32.5°	9854.3	10032.0	10015.5	9876.3	9795.0	9862.5	9632.4	9480.9	9356.9	9292.1	9146.0
35°	9042.7	9250.8	9205.3	9089.6	9030.3	9108.8	8884.3	8757.5	8632.1	8575.6	8415.8
37.5°	8049.3	8244.9	8199.5	8089.3	8031.4	8089.3	7874.3	7757.2	7638.7	7579.5	7470.6
40°	6849.2	7021.4	6973.2	6871.2	6823.0	6864.4	6678.4	6576.4	6475.8	6431.7	6287.0
42.5°	5676.7	5814.5	5770.4	5682.2	5645.0	5672.5	5519.6	5428.7	5340.5	5303.3	5217.8
45°	4473.8	4610.2	4567.5	4491.7	4457.3	4472.4	4344.3	4263.0	4187.2	4152.8	4075.6
47.5°	3210.3	3363.3	3310.9	3246.2	3210.3	3203.5	3090.5	3017.5	3024.3	2907.2	2835.6
50°	1483.9	1613.4	1561.1	1526.6	1492.2	1472.9	1432.9	1350.3	1373.7	1267.6	1226.3
52.5°	538.7	570.4	558.0	547.0	536.0	531.8	518.1	497.4	500.2	474.0	461.6
55°	275.6	290.7	286.6	279.7	279.7	275.6	268.7	260.4	254.9	250.8	246.6
57.5°	126.8	135.0	132.3	129.5	129.5	126.8	124.0	119.9	122.6	115.7	114.4
60°	57.9	62.0	60.6	59.2	59.2	59.2	57.9	56.5	56.5	55.1	53.7
62.5°	27.6	30.3	28.9	28.9	28.9	28.9	27.6	27.6	27.6	27.6	26.2
65°	15.2	15.2	15.2	15.2	15.2	15.2	15.2	13.8	15.2	13.8	13.8
67.5°	8.3	8.3	8.3	8.3	6.9	8.3	8.3	6.9	6.9	6.9	6.9
70°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
72.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
75°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
77.5°	0.0	1.4	1.4	1.4	0.0	1.4	1.4	1.4	1.4	1.4	1.4
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	1.4	0.0	1.4	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°	203.9	203.9	203.9	203.9	203.9	203.9	203.9	203.9	203.9	203.9	203.9
2.5°	374.8	384.4	394.1	391.3	377.5	376.1	370.6	373.4	290.7	235.6	197.0
5°	950.7	963.1	975.5	968.6	934.2	925.9	898.3	892.8	567.7	278.3	188.8
7.5°	1737.4	1744.3	1754.0	1745.7	1694.7	1671.3	1613.4	1557.0	954.8	336.2	175.0
10°	2590.3	2587.6	2591.7	2580.7	2517.3	2471.8	2382.3	2342.3	1353.0	385.8	155.7
12.5°	3585.1	3574.1	3513.5	3542.4	3452.8	3360.5	3213.1	3089.1	1729.2	413.3	137.8
15°	4746.6	4713.6	4691.5	4658.4	4548.2	4399.4	4174.8	4037.0	2041.9	410.6	119.9
17.5°	5901.3	5847.5	5751.1	5763.5	5635.3	5427.3	5131.0	4895.4	2258.3	376.1	106.1
20°	6993.9	6914.0	6792.7	6783.1	6628.7	6354.6	5981.2	5689.1	2376.8	319.7	96.4
22.5°	8046.5	7922.5	7759.9	7709.0	7510.6	7122.0	6634.3	6278.8	2387.8	267.3	115.7
25°	8876.0	8720.3	8539.8	8451.6	8232.5	7736.5	7128.9	6692.1	2299.6	264.5	221.8
27.5°	9338.9	9162.6	8982.1	8862.2	8640.4	8078.2	7390.7	6886.4	2148.0	283.8	210.8
30°	9363.7	9165.3	8978.0	8826.4	8605.9	8005.2	7275.0	6750.0	1875.2	179.1	79.9
32.5°	8951.8	8739.6	8552.2	8381.4	8163.7	7558.8	6842.3	6340.8	1525.3	125.4	56.5
35°	8231.2	8012.1	7833.0	7652.5	7448.6	6879.5	6222.3	5755.2	1165.6	99.2	42.7
37.5°	7250.2	7047.6	6889.2	6766.5	6546.1	6092.8	5492.0	4997.4	823.9	70.3	26.2
40°	6152.0	5981.2	5851.7	5745.6	5541.6	5139.3	4533.1	4115.6	500.2	49.6	17.9
42.5°	5047.0	4887.2	4772.8	4672.2	4483.5	4128.0	3629.2	3210.3	239.7	34.4	12.4
45°	3925.4	3782.1	3685.7	3594.8	3425.3	3075.3	2679.9	2376.8	155.7	24.8	9.6
47.5°	2681.3	2606.9	2448.4	2349.2	2175.6	1908.3	1537.7	1204.2	103.3	17.9	6.9
50°	1114.7	1076.1	971.4	903.9	804.7	668.2	485.0	406.5	63.4	12.4	5.5
52.5°	432.6	423.0	396.8	381.7	356.9	321.0	267.3	238.4	38.6	9.6	5.5
55°	232.9	230.1	216.3	208.1	194.3	176.4	144.7	126.8	24.8	6.9	4.1
57.5°	107.5	106.1	99.2	99.2	89.6	82.7	68.9	62.0	15.2	5.5	4.1
60°	51.0	51.0	48.2	48.2	44.1	41.3	34.4	31.7	9.6	4.1	4.1
62.5°	24.8	24.8	24.8	24.8	23.4	22.0	19.3	17.9	6.9	4.1	4.1
65°	13.8	13.8	13.8	13.8	12.4	12.4	11.0	9.6	5.5	4.1	4.1
67.5°	6.9	6.9	6.9	6.9	6.9	6.9	5.5	5.5	4.1	4.1	4.1
70°	4.1	4.1	4.1	4.1	4.1	2.8	2.8	2.8	2.8	4.1	4.1
72.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	2.8	4.1	4.1
75°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	2.8	4.1	4.1
77.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	2.8	4.1	4.1
80°	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4	2.8	4.1	4.1
82.5°	0.0	1.4	1.4	1.4	1.4	1.4	1.4	1.4	2.8	4.1	4.1
85°	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	2.8	4.1	4.1
87.5°	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	2.8	4.1	4.1
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°	203.9	203.9	203.9	203.9
2.5°	169.5	147.4	136.4	133.6
5°	139.2	108.8	93.7	88.2
7.5°	113.0	78.5	66.1	60.6
10°	89.6	62.0	49.6	45.5
12.5°	74.4	49.6	40.0	37.2
15°	63.4	42.7	35.8	34.4
17.5°	57.9	45.5	42.7	44.1
20°	70.3	74.4	86.8	89.6
22.5°	148.8	257.7	350.0	370.6
25°	310.0	372.0	385.8	399.6
27.5°	172.2	133.6	130.9	136.4
30°	70.3	71.6	74.4	77.2
32.5°	52.4	52.4	51.0	52.4
35°	35.8	33.1	31.7	33.1
37.5°	22.0	20.7	19.3	19.3
40°	15.2	13.8	12.4	12.4
42.5°	11.0	8.3	6.9	6.9
45°	8.3	5.5	4.1	2.8
47.5°	6.9	4.1	1.4	1.4
50°	5.5	2.8	1.4	0.0
52.5°	4.1	2.8	1.4	0.0
55°	4.1	2.8	0.0	0.0
57.5°	4.1	2.8	0.0	0.0
60°	4.1	2.8	1.4	0.0
62.5°	4.1	2.8	1.4	1.4
65°	4.1	2.8	1.4	0.0
67.5°	4.1	2.8	1.4	0.0
70°	4.1	2.8	1.4	0.0
72.5°	5.5	2.8	1.4	0.0
75°	5.5	4.1	1.4	0.0
77.5°	5.5	4.1	1.4	0.0
80°	5.5	4.1	1.4	0.0
82.5°	5.5	4.1	1.4	0.0
85°	5.5	4.1	1.4	0.0
87.5°	5.5	4.1	1.4	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)