

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: FAIL-SAFE

Report Number: P#

Luminaire Tested: **FLDSQ4C70D010 FEU4C709027 F4LC-SQ-LI**

Issue Date: 12/13/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P#  
 Test Lab: INNOVATION CENTER  
 Issue Date: 12/13/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: FAIL-SAFE  
 Catalog Number: FLDSQ4C70D010 FEU4C709027 F4LC-SQ-LI  
 Description: 4 INCH 7000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

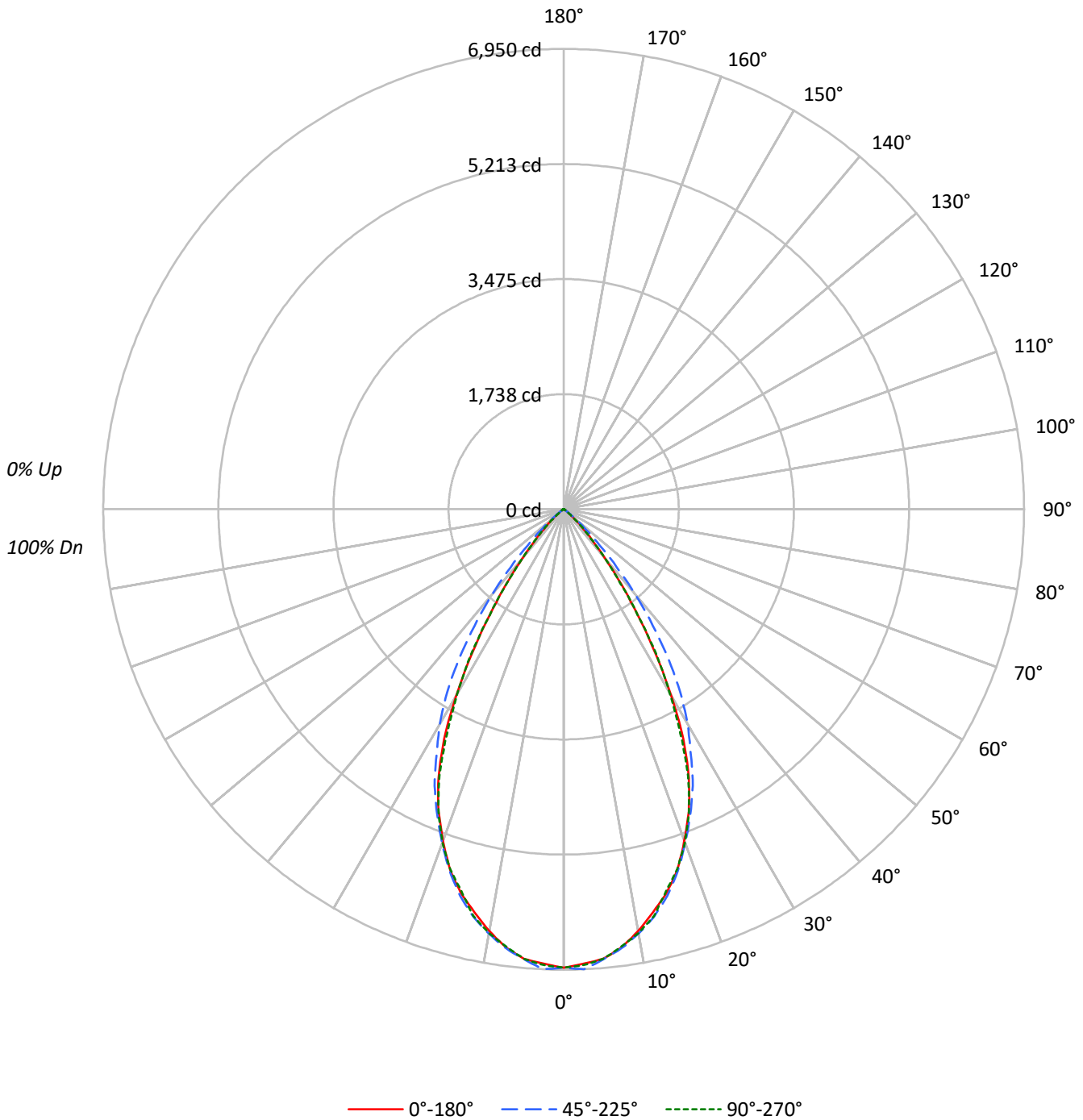
Lumens per Lamp: N/A  
 Luminaire Lumens: 6388.1 lumens  
 Efficiency: N/A  
 Efficacy: 81.9 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 78  
 Input Voltage (V):  
 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

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	GONIO 1 IN0055	4/22/2021	10/22/2021
Power Meter	XITRON 2801 IN0197	12/1/2020	12/1/2021
AC Power Source	CHROMA 61505 IN0196	12/1/2020	12/1/2021
DC Power Supply	AGILENT E3634A IN0198	11/30/2020	11/30/2021
Room Thermometer	ONSET IN0143	12/1/2020	12/1/2021

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### Luminous Intensity Polar Plot



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C70D010 FEU4C709027 F4LC-SQ-LI

**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	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93				
2	108	103	99	95	105	101	97	94	98	95	92	95	92	90	92	90	88	87				
3	102	96	91	87	100	94	90	86	92	88	84	89	86	83	87	84	82	80				
4	97	89	84	79	95	88	83	79	86	81	78	84	80	77	82	79	76	75				
5	92	83	77	73	90	82	77	73	81	76	72	79	75	71	77	74	71	69				
6	87	78	72	68	86	77	71	67	76	71	67	74	70	66	73	69	66	64				
7	83	73	67	63	81	73	67	63	71	66	62	70	65	62	69	65	62	60				
8	79	69	63	59	77	68	62	58	67	62	58	66	61	58	65	61	58	56				
9	75	65	59	55	74	64	59	55	63	58	55	63	58	54	62	57	54	53				
10	71	61	55	51	70	61	55	51	60	55	51	59	54	51	58	54	51	50				

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

	0°	45°	90°
0°	667626	667626	667626
5°	659958	660810	659958
10°	633561	637451	636589
15°	598966	603352	595880
20°	546624	550680	549335
25°	475967	490947	472688
30°	361945	416305	356564
35°	227832	323631	229905
40°	122922	213724	120705
45°	58185	105576	57571
50°	21781	39584	21781
55°	10346	12583	9622
60°	6793	5963	6793
65°	4018	4018	4018
70°	2483	3752	2483
75°	1678	1678	1678
80°	2500	2500	2500
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	641.5	10.0
10°-20°	1681.3	26.3
20°-30°	2053.9	32.2
30°-40°	1436.5	22.5
40°-50°	470.8	7.4
50°-60°	74.9	1.2
60°-70°	20.5	0.3
70°-80°	6.9	0.1
80°-90°	1.9	0.0
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°	4376.7	68.5
0°-40°	5813.2	91.0
0°-60°	6358.8	99.5
0°-90°	6388.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6388.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	6919	6919	6919	6919	6919	
5°	6814	6816	6822	6781	6814	639
15°	5996	6020	6040	6000	5965	1673
25°	4471	4539	4611	4528	4440	2008
35°	1934	2284	2748	2249	1952	1234
45°	426	525	774	519	422	358
55°	62	66	75	66	57	61
65°	18	22	18	22	18	20
75°	4	4	4	4	4	6
85°	0	0	0	0	0	2
90°	0	0	0	0	0	

TEST NUMBER: P#  
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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	6919.2	6919.2	6919.2	6919.2	6919.2	6919.2	6919.2	6919.2	6919.2	6919.2	6919.2
2.5°	6866.5	6914.9	6901.6	6932.5	6932.5	6897.3	6906.1	6919.2	6936.8	6950.1	6844.4
5°	6813.7	6857.7	6818.0	6862.0	6835.6	6796.1	6862.0	6826.8	6848.9	6822.5	6840.1
7.5°	6673.1	6743.4	6664.3	6717.0	6699.4	6677.4	6703.8	6695.0	6708.2	6686.2	6637.9
10°	6466.4	6523.6	6470.9	6545.5	6510.4	6488.5	6510.4	6532.4	6528.0	6506.1	6532.4
12.5°	6229.1	6294.9	6268.6	6312.5	6273.0	6273.0	6325.8	6312.5	6317.0	6299.4	6330.1
15°	5996.1	6044.5	6004.9	6062.1	6044.5	5996.1	6018.0	6018.0	6053.3	6040.0	6004.9
17.5°	5706.0	5745.5	5701.5	5714.8	5697.2	5688.4	5780.6	5719.1	5754.3	5727.9	5732.4
20°	5323.5	5341.1	5327.8	5363.0	5341.1	5367.5	5358.7	5349.9	5349.9	5363.0	5332.3
22.5°	4936.6	4936.6	4949.9	4958.7	4976.2	4949.9	5002.6	4958.7	4963.0	4993.8	4985.0
25°	4470.7	4457.4	4488.3	4532.3	4549.8	4527.8	4598.1	4562.9	4589.3	4611.4	4562.9
27.5°	3903.7	3903.7	3934.4	4009.2	4022.3	4048.6	4145.3	4145.3	4180.5	4149.8	4185.0
30°	3248.6	3297.0	3336.5	3433.1	3464.0	3521.2	3622.2	3670.6	3749.8	3736.5	3718.9
32.5°	2576.0	2642.0	2646.3	2747.5	2830.9	2927.6	3064.0	3178.2	3235.5	3274.9	3231.0
35°	1934.2	1973.8	2009.0	2079.3	2219.9	2347.5	2470.5	2620.0	2721.1	2747.5	2707.9
37.5°	1415.6	1424.3	1459.5	1525.3	1630.8	1754.1	1903.5	2066.0	2171.7	2211.1	2167.2
40°	975.9	984.7	1002.2	1059.5	1147.4	1235.3	1354.0	1521.0	1617.7	1696.8	1639.6
42.5°	654.9	663.7	681.3	725.3	773.7	857.1	949.5	1055.0	1147.4	1182.5	1151.7
45°	426.4	426.4	435.2	466.0	492.4	558.3	624.3	690.1	751.6	773.7	751.6
47.5°	250.6	254.9	263.7	285.8	316.4	342.8	391.2	435.2	452.8	470.4	461.6
50°	145.1	145.1	158.2	171.5	193.4	211.0	228.5	246.1	254.9	263.7	254.9
52.5°	79.1	83.6	87.9	92.4	101.2	118.8	131.9	131.9	136.3	140.6	136.3
55°	61.5	61.5	61.5	61.5	66.0	66.0	66.0	70.3	70.3	74.8	70.3
57.5°	44.0	44.0	44.0	48.4	48.4	48.4	44.0	44.0	44.0	44.0	44.0
60°	35.2	35.2	35.2	35.2	35.2	35.2	35.2	30.9	30.9	30.9	30.9
62.5°	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4
65°	17.6	17.6	22.1	22.1	22.1	22.1	22.1	17.6	17.6	17.6	17.6
67.5°	13.3	13.3	13.3	13.3	17.6	17.6	13.3	13.3	13.3	13.3	13.3
70°	8.8	8.8	8.8	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
72.5°	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
75°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
77.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
80°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	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°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	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):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	6919.2	6919.2	6919.2	6919.2	6919.2	6919.2	6919.2	6919.2
2.5°	6919.2	6844.4	6853.2	6892.8	6870.8	6892.8	6888.5	6888.5
5°	6844.4	6822.5	6787.3	6774.1	6800.4	6857.7	6848.9	6813.7
7.5°	6703.8	6646.7	6686.2	6703.8	6681.9	6717.0	6734.6	6659.8
10°	6536.7	6514.9	6506.1	6514.9	6506.1	6541.2	6497.3	6497.3
12.5°	6299.4	6264.2	6264.2	6317.0	6286.1	6259.8	6294.9	6290.6
15°	6062.1	5991.6	5991.6	6009.2	6022.4	6004.9	6009.2	5965.2
17.5°	5710.3	5688.4	5657.6	5706.0	5719.1	5701.5	5714.8	5692.7
20°	5380.6	5380.6	5323.5	5345.4	5363.0	5376.3	5385.1	5349.9
22.5°	4958.7	4967.4	4927.8	4971.8	4985.0	4941.1	4949.9	4941.1
25°	4571.7	4567.4	4536.6	4519.0	4527.8	4510.2	4505.9	4439.9
27.5°	4145.3	4101.4	4035.5	4053.1	3978.3	3916.8	3916.8	3815.6
30°	3683.7	3609.1	3521.2	3433.1	3367.3	3297.0	3257.3	3200.3
32.5°	3143.1	3042.1	2932.1	2813.4	2738.7	2633.2	2576.0	2606.9
35°	2606.9	2457.3	2307.8	2189.3	2074.8	2013.3	1943.0	1951.8
37.5°	2088.1	1877.1	1745.3	1617.7	1521.0	1441.9	1411.1	1402.3
40°	1525.3	1358.3	1226.5	1134.1	1068.3	1006.7	971.6	958.3
42.5°	1055.0	936.4	830.8	756.1	712.2	672.5	654.9	650.6
45°	685.8	615.5	545.2	492.4	457.3	430.9	426.4	421.9
47.5°	430.9	395.6	351.6	312.1	281.3	263.7	250.6	250.6
50°	246.1	233.0	211.0	189.1	171.5	162.7	149.4	145.1
52.5°	131.9	131.9	123.1	105.5	92.4	83.6	83.6	79.1
55°	70.3	70.3	66.0	66.0	61.5	61.5	61.5	57.2
57.5°	44.0	44.0	48.4	48.4	44.0	44.0	44.0	44.0
60°	30.9	35.2	35.2	35.2	35.2	35.2	35.2	35.2
62.5°	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4
65°	17.6	22.1	22.1	22.1	22.1	17.6	17.6	17.6
67.5°	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
70°	13.3	13.3	13.3	13.3	13.3	8.8	8.8	8.8
72.5°	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
75°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
77.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
80°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
82.5°	0.0	0.0	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
87.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)