

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 FEU4C709040 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 FEU4C709040 F4LC-SQ-LI  
 Description: 4 INCH 7000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

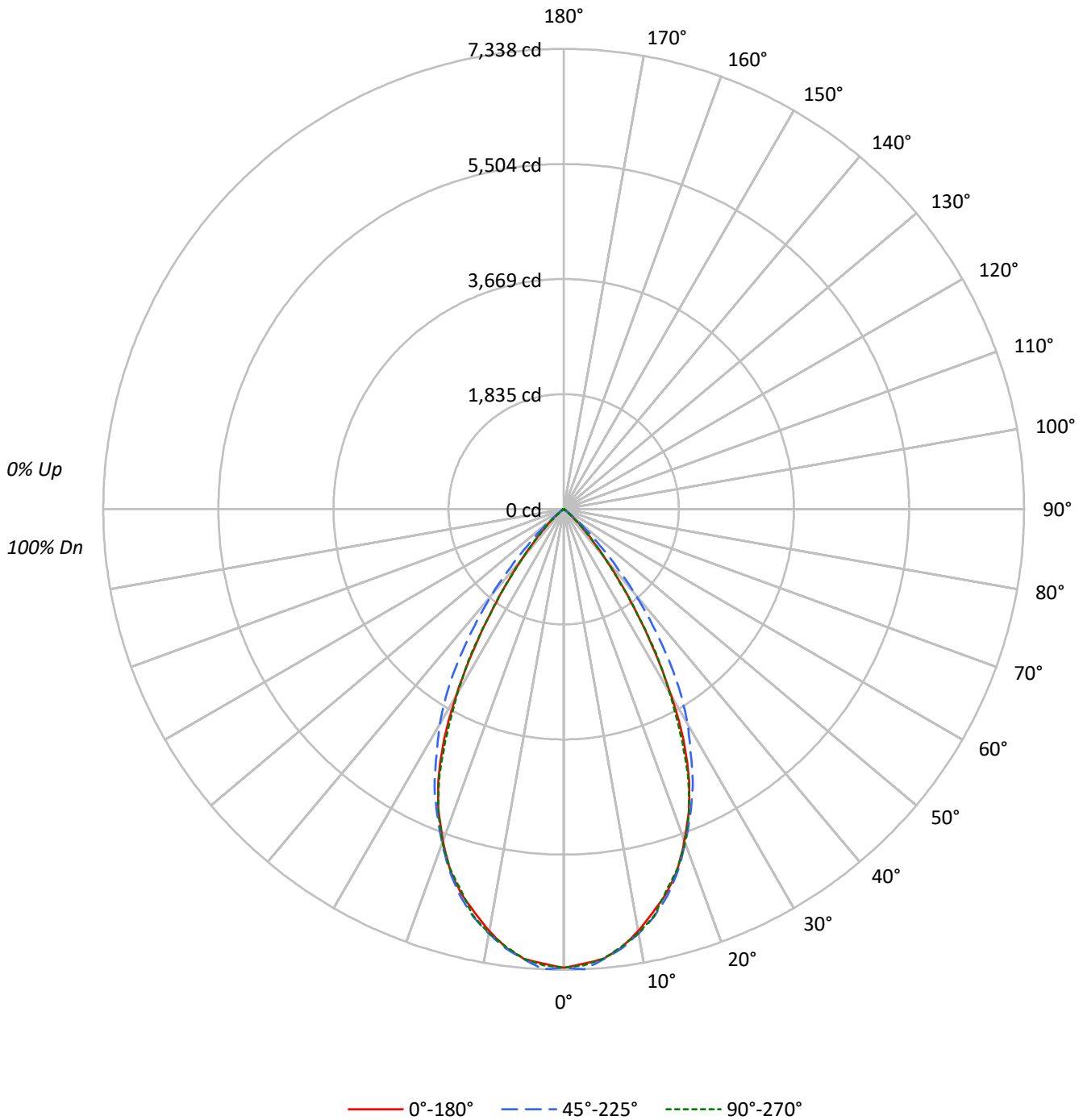
Lumens per Lamp: N/A  
 Luminaire Lumens: 6745.0 lumens  
 Efficiency: N/A  
 Efficacy: 86.5 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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



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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	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°	704938	704938	704938
5°	696841	697742	696841
10°	668970	673075	672164
15°	632440	637075	629184
20°	577172	581454	580037
25°	502573	518382	499102
30°	382167	439569	376485
35°	240565	341724	242744
40°	129786	225678	127456
45°	61432	111471	60791
50°	22997	41791	22997
55°	10935	13290	10161
60°	7159	6291	7159
65°	4247	4247	4247
70°	2624	3950	2624
75°	1752	1752	1752
80°	2612	2612	2612
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	677.4	10.0
10°-20°	1775.2	26.3
20°-30°	2168.6	32.2
30°-40°	1516.8	22.5
40°-50°	497.1	7.4
50°-60°	79.0	1.2
60°-70°	21.6	0.3
70°-80°	7.2	0.1
80°-90°	2.0	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°	4621.3	68.5
0°-40°	6138.1	91.0
0°-60°	6714.2	99.5
0°-90°	6745.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6745.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	7306	7306	7306	7306	7306	
5°	7194	7197	7204	7160	7194	675
15°	6331	6357	6378	6336	6299	1766
25°	4721	4792	4869	4781	4688	2120
35°	2042	2411	2901	2374	2061	1303
45°	450	555	817	548	446	378
55°	65	70	79	70	60	64
65°	19	23	19	23	19	21
75°	5	5	5	5	5	7
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°	7305.9	7305.9	7305.9	7305.9	7305.9	7305.9	7305.9	7305.9	7305.9	7305.9	7305.9
2.5°	7250.2	7301.3	7287.3	7319.9	7319.9	7282.8	7292.1	7305.9	7324.4	7338.5	7226.9
5°	7194.5	7240.9	7199.1	7245.5	7217.6	7175.9	7245.5	7208.3	7231.6	7203.8	7222.4
7.5°	7046.0	7120.3	7036.7	7092.4	7073.9	7050.6	7078.4	7069.1	7083.1	7059.8	7008.9
10°	6827.8	6888.2	6832.5	6911.3	6874.2	6851.1	6874.2	6897.5	6892.8	6869.7	6897.5
12.5°	6577.2	6646.7	6618.9	6665.3	6623.6	6623.6	6679.3	6665.3	6670.0	6651.5	6683.9
15°	6331.2	6382.3	6340.4	6400.9	6382.3	6331.2	6354.3	6354.3	6391.6	6377.6	6340.4
17.5°	6024.9	6066.6	6020.1	6034.2	6015.6	6006.3	6103.7	6038.7	6075.8	6048.0	6052.7
20°	5621.0	5639.6	5625.6	5662.7	5639.6	5667.5	5658.2	5648.9	5648.9	5662.7	5630.3
22.5°	5212.5	5212.5	5226.5	5235.8	5254.3	5226.5	5282.2	5235.8	5240.3	5272.9	5263.6
25°	4720.6	4706.6	4739.1	4785.5	4804.1	4780.8	4855.1	4817.9	4845.8	4869.1	4817.9
27.5°	4121.8	4121.8	4154.2	4233.2	4247.0	4274.9	4377.0	4377.0	4414.1	4381.7	4418.8
30°	3430.1	3481.2	3522.9	3625.0	3657.6	3718.0	3824.6	3875.8	3959.3	3945.3	3926.7
32.5°	2720.0	2789.7	2794.2	2901.1	2989.1	3091.2	3235.2	3355.8	3416.3	3457.9	3411.5
35°	2042.3	2084.1	2121.2	2195.5	2344.0	2478.7	2608.6	2766.4	2873.2	2901.1	2859.2
37.5°	1494.7	1503.9	1541.1	1610.6	1722.0	1852.1	2009.9	2181.5	2293.0	2334.7	2288.3
40°	1030.4	1039.7	1058.3	1118.7	1211.5	1304.3	1429.7	1606.0	1708.1	1791.7	1731.2
42.5°	691.6	700.8	719.4	765.8	816.9	905.0	1002.6	1113.9	1211.5	1248.6	1216.0
45°	450.2	450.2	459.5	492.1	519.9	589.5	659.2	728.7	793.6	816.9	793.6
47.5°	264.6	269.2	278.4	301.7	334.1	362.0	413.1	459.5	478.1	496.6	487.4
50°	153.2	153.2	167.1	181.1	204.2	222.8	241.3	259.9	269.2	278.4	269.2
52.5°	83.5	88.3	92.8	97.5	106.8	125.4	139.2	139.2	144.0	148.5	144.0
55°	65.0	65.0	65.0	65.0	69.7	69.7	69.7	74.3	74.3	79.0	74.3
57.5°	46.4	46.4	46.4	51.1	51.1	51.1	46.4	46.4	46.4	46.4	46.4
60°	37.1	37.1	37.1	37.1	37.1	37.1	37.1	32.6	32.6	32.6	32.6
62.5°	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8
65°	18.6	18.6	23.3	23.3	23.3	23.3	23.3	18.6	18.6	18.6	18.6
67.5°	14.0	14.0	14.0	14.0	18.6	18.6	14.0	14.0	14.0	14.0	14.0
70°	9.3	9.3	9.3	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
72.5°	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
75°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
77.5°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
80°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	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°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
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°	7305.9	7305.9	7305.9	7305.9	7305.9	7305.9	7305.9	7305.9
2.5°	7305.9	7226.9	7236.2	7278.0	7254.7	7278.0	7273.5	7273.5
5°	7226.9	7203.8	7166.7	7152.7	7180.5	7240.9	7231.6	7194.5
7.5°	7078.4	7018.2	7059.8	7078.4	7055.3	7092.4	7111.0	7032.0
10°	6902.1	6878.9	6869.7	6878.9	6869.7	6906.8	6860.4	6860.4
12.5°	6651.5	6614.3	6614.3	6670.0	6637.4	6609.6	6646.7	6642.2
15°	6400.9	6326.4	6326.4	6345.0	6359.0	6340.4	6345.0	6298.6
17.5°	6029.4	6006.3	5973.7	6024.9	6038.7	6020.1	6034.2	6010.9
20°	5681.3	5681.3	5621.0	5644.2	5662.7	5676.7	5686.0	5648.9
22.5°	5235.8	5245.1	5203.2	5249.6	5263.6	5217.2	5226.5	5217.2
25°	4827.2	4822.7	4790.1	4771.5	4780.8	4762.2	4757.7	4688.0
27.5°	4377.0	4330.6	4261.1	4279.6	4200.6	4135.7	4135.7	4028.8
30°	3889.6	3810.8	3718.0	3625.0	3555.5	3481.2	3439.4	3379.1
32.5°	3318.7	3212.1	3096.0	2970.6	2891.8	2780.4	2720.0	2752.6
35°	2752.6	2594.6	2436.8	2311.6	2190.8	2125.8	2051.5	2060.8
37.5°	2204.8	1982.0	1842.8	1708.1	1606.0	1522.5	1489.9	1480.6
40°	1610.6	1434.2	1295.0	1197.5	1128.0	1063.0	1025.9	1011.9
42.5°	1113.9	988.7	877.2	798.4	752.0	710.1	691.6	687.0
45°	724.1	649.9	575.6	519.9	482.8	455.0	450.2	445.5
47.5°	455.0	417.7	371.3	329.6	297.0	278.4	264.6	264.6
50°	259.9	246.0	222.8	199.6	181.1	171.8	157.8	153.2
52.5°	139.2	139.2	129.9	111.4	97.5	88.3	88.3	83.5
55°	74.3	74.3	69.7	69.7	65.0	65.0	65.0	60.4
57.5°	46.4	46.4	51.1	51.1	46.4	46.4	46.4	46.4
60°	32.6	37.1	37.1	37.1	37.1	37.1	37.1	37.1
62.5°	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8
65°	18.6	23.3	23.3	23.3	23.3	18.6	18.6	18.6
67.5°	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
70°	14.0	14.0	14.0	14.0	14.0	9.3	9.3	9.3
72.5°	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
75°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
77.5°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
80°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
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°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)