

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 FEU4C709035 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 FEU4C709035 F4LC-SQ-LI  
 Description: 4 INCH 7000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

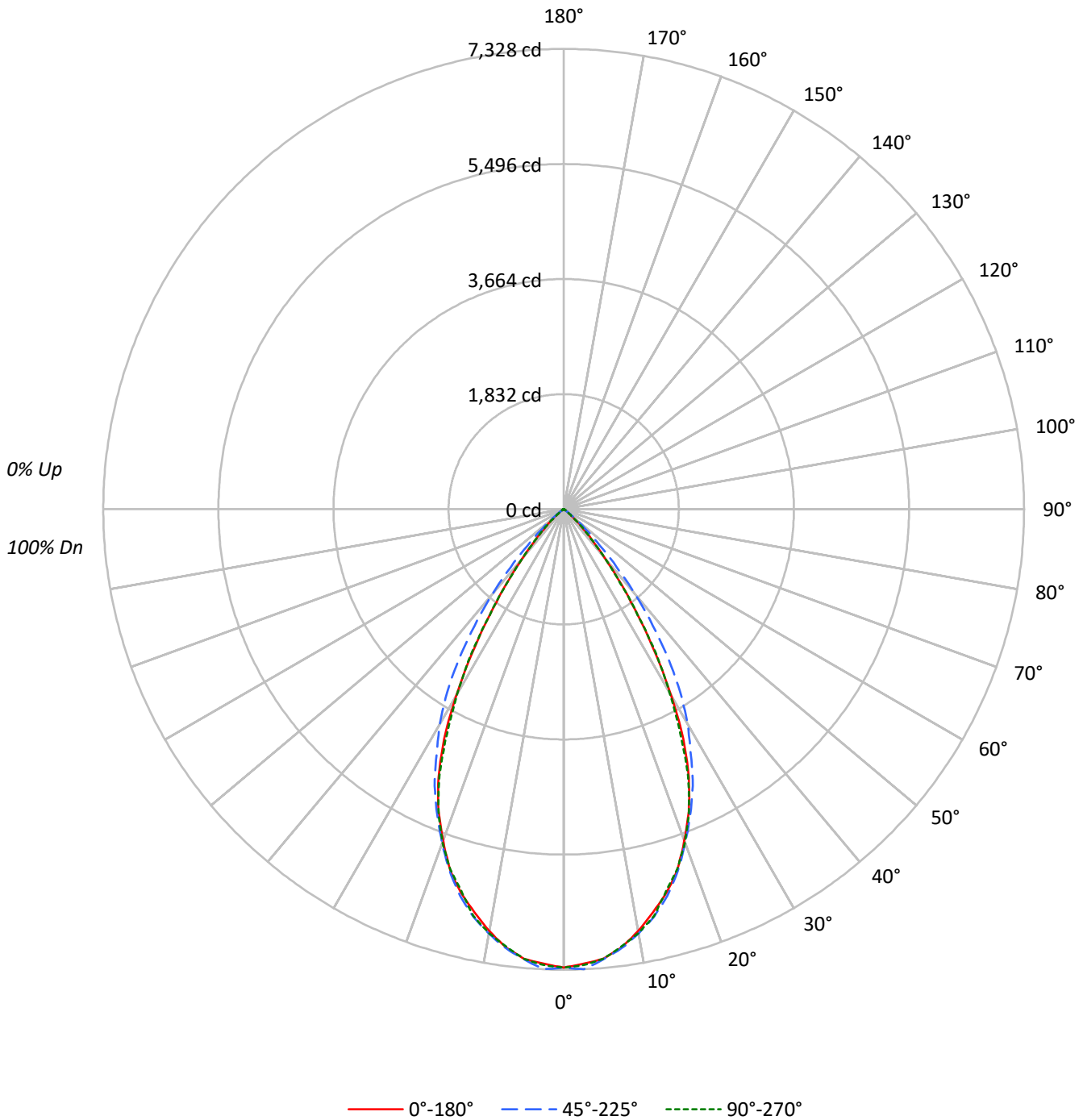
Lumens per Lamp: N/A  
 Luminaire Lumens: 6735.0 lumens  
 Efficiency: N/A  
 Efficacy: 86.3 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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	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°	703896	703896	703896
5°	695805	696705	695805
10°	667980	672076	671165
15°	631501	636126	628245
20°	576320	580591	579174
25°	501827	517616	498357
30°	381599	438922	375928
35°	240200	341218	242391
40°	129597	225338	127255
45°	61351	111307	60696
50°	22967	41731	22967
55°	10918	13273	10144
60°	7159	6272	7159
65°	4224	4224	4224
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°	676.4	10.0
10°-20°	1772.6	26.3
20°-30°	2165.4	32.2
30°-40°	1514.6	22.5
40°-50°	496.3	7.4
50°-60°	78.9	1.2
60°-70°	21.5	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°	4614.4	68.5
0°-40°	6129.0	91.0
0°-60°	6704.2	99.5
0°-90°	6735.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6735.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	7295	7295	7295	7295	7295	
5°	7184	7186	7193	7149	7184	674
15°	6322	6347	6368	6326	6289	1763
25°	4714	4785	4862	4774	4681	2117
35°	2039	2408	2897	2371	2058	1301
45°	450	554	816	547	445	377
55°	65	70	79	70	60	64
65°	18	23	18	23	18	21
75°	5	5	5	5	5	7
85°	0	0	0	0	0	2
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C70D010 FEU4C709035 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	7295.1	7295.1	7295.1	7295.1	7295.1	7295.1	7295.1	7295.1	7295.1	7295.1	7295.1
2.5°	7239.4	7290.5	7276.5	7309.0	7309.0	7272.0	7281.2	7295.1	7313.6	7327.6	7216.2
5°	7183.8	7230.2	7188.4	7234.7	7206.9	7165.3	7234.7	7197.7	7220.9	7193.1	7211.6
7.5°	7035.6	7109.7	7026.3	7081.9	7063.4	7040.1	7067.9	7058.6	7072.6	7049.4	6998.5
10°	6817.7	6878.0	6822.4	6901.1	6864.0	6840.9	6864.0	6887.3	6882.6	6859.5	6887.3
12.5°	6567.5	6636.9	6609.1	6655.4	6613.8	6613.8	6669.4	6655.4	6660.1	6641.6	6673.9
15°	6321.8	6372.8	6331.0	6391.4	6372.8	6321.8	6344.9	6344.9	6382.1	6368.1	6331.0
17.5°	6015.9	6057.6	6011.2	6025.2	6006.7	5997.4	6094.6	6029.8	6066.8	6039.0	6043.7
20°	5612.7	5631.2	5617.3	5654.3	5631.2	5659.1	5649.8	5640.5	5640.5	5654.3	5622.0
22.5°	5204.8	5204.8	5218.7	5228.0	5246.6	5218.7	5274.4	5228.0	5232.6	5265.1	5255.8
25°	4713.6	4699.6	4732.1	4778.4	4797.0	4773.7	4847.9	4810.8	4838.6	4861.9	4810.8
27.5°	4115.7	4115.7	4148.1	4226.9	4240.7	4268.5	4370.5	4370.5	4407.6	4375.2	4412.3
30°	3425.0	3476.1	3517.7	3619.6	3652.2	3712.5	3819.0	3870.0	3953.4	3939.5	3920.9
32.5°	2716.0	2785.5	2790.1	2896.8	2984.7	3086.7	3230.4	3350.9	3411.2	3452.8	3406.5
35°	2039.2	2081.0	2118.1	2192.2	2340.5	2475.0	2604.7	2762.3	2869.0	2896.8	2855.0
37.5°	1492.4	1501.7	1538.8	1608.2	1719.4	1849.3	2006.9	2178.2	2289.6	2331.3	2284.9
40°	1028.9	1038.2	1056.7	1117.0	1209.7	1302.4	1427.6	1603.7	1705.6	1789.0	1728.7
42.5°	690.5	699.8	718.3	764.7	815.7	903.7	1001.1	1112.3	1209.7	1246.8	1214.2
45°	449.6	449.6	458.8	491.4	519.2	588.6	658.2	727.6	792.5	815.7	792.5
47.5°	264.2	268.8	278.0	301.3	333.6	361.4	412.5	458.8	477.4	495.9	486.6
50°	153.0	153.0	166.8	180.8	203.9	222.4	241.0	259.5	268.8	278.0	268.8
52.5°	83.4	88.1	92.7	97.4	106.7	125.2	139.0	139.0	143.7	148.3	143.7
55°	64.9	64.9	64.9	64.9	69.6	69.6	69.6	74.1	74.1	78.9	74.1
57.5°	46.3	46.3	46.3	51.1	51.1	51.1	46.3	46.3	46.3	46.3	46.3
60°	37.1	37.1	37.1	37.1	37.1	37.1	37.1	32.5	32.5	32.5	32.5
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°	18.5	18.5	23.3	23.3	23.3	23.3	23.3	18.5	18.5	18.5	18.5
67.5°	14.0	14.0	14.0	14.0	18.5	18.5	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°	7295.1	7295.1	7295.1	7295.1	7295.1	7295.1	7295.1	7295.1
2.5°	7295.1	7216.2	7225.5	7267.3	7244.0	7267.3	7262.7	7262.7
5°	7216.2	7193.1	7156.0	7142.0	7169.9	7230.2	7220.9	7183.8
7.5°	7067.9	7007.8	7049.4	7067.9	7044.8	7081.9	7100.4	7021.6
10°	6891.8	6868.7	6859.5	6868.7	6859.5	6896.5	6850.2	6850.2
12.5°	6641.6	6604.5	6604.5	6660.1	6627.6	6599.8	6636.9	6632.3
15°	6391.4	6317.0	6317.0	6335.6	6349.6	6331.0	6335.6	6289.2
17.5°	6020.5	5997.4	5964.9	6015.9	6029.8	6011.2	6025.2	6002.0
20°	5672.9	5672.9	5612.7	5635.8	5654.3	5668.3	5677.6	5640.5
22.5°	5228.0	5237.3	5195.5	5241.8	5255.8	5209.5	5218.7	5209.5
25°	4820.1	4815.5	4783.0	4764.5	4773.7	4755.2	4750.6	4681.0
27.5°	4370.5	4324.2	4254.7	4273.3	4194.4	4129.5	4129.5	4022.9
30°	3883.9	3805.2	3712.5	3619.6	3550.2	3476.1	3434.3	3374.1
32.5°	3313.8	3207.3	3091.4	2966.2	2887.5	2776.3	2716.0	2748.5
35°	2748.5	2590.7	2433.2	2308.2	2187.5	2122.6	2048.5	2057.8
37.5°	2201.5	1979.1	1840.1	1705.6	1603.7	1520.2	1487.7	1478.5
40°	1608.2	1432.1	1293.1	1195.7	1126.3	1061.4	1024.3	1010.3
42.5°	1112.3	987.3	875.9	797.2	750.9	709.1	690.5	686.0
45°	723.1	648.9	574.8	519.2	482.1	454.3	449.6	444.8
47.5°	454.3	417.0	370.7	329.1	296.6	278.0	264.2	264.2
50°	259.5	245.7	222.4	199.3	180.8	171.5	157.5	153.0
52.5°	139.0	139.0	129.7	111.2	97.4	88.1	88.1	83.4
55°	74.1	74.1	69.6	69.6	64.9	64.9	64.9	60.3
57.5°	46.3	46.3	51.1	51.1	46.3	46.3	46.3	46.3
60°	32.5	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°	18.5	23.3	23.3	23.3	23.3	18.5	18.5	18.5
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)