

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: **FLDSQ4C90D010 FEU4C909030 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: FLDSQ4C90D010 FEU4C909030 F4LC-SQ-LI  
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

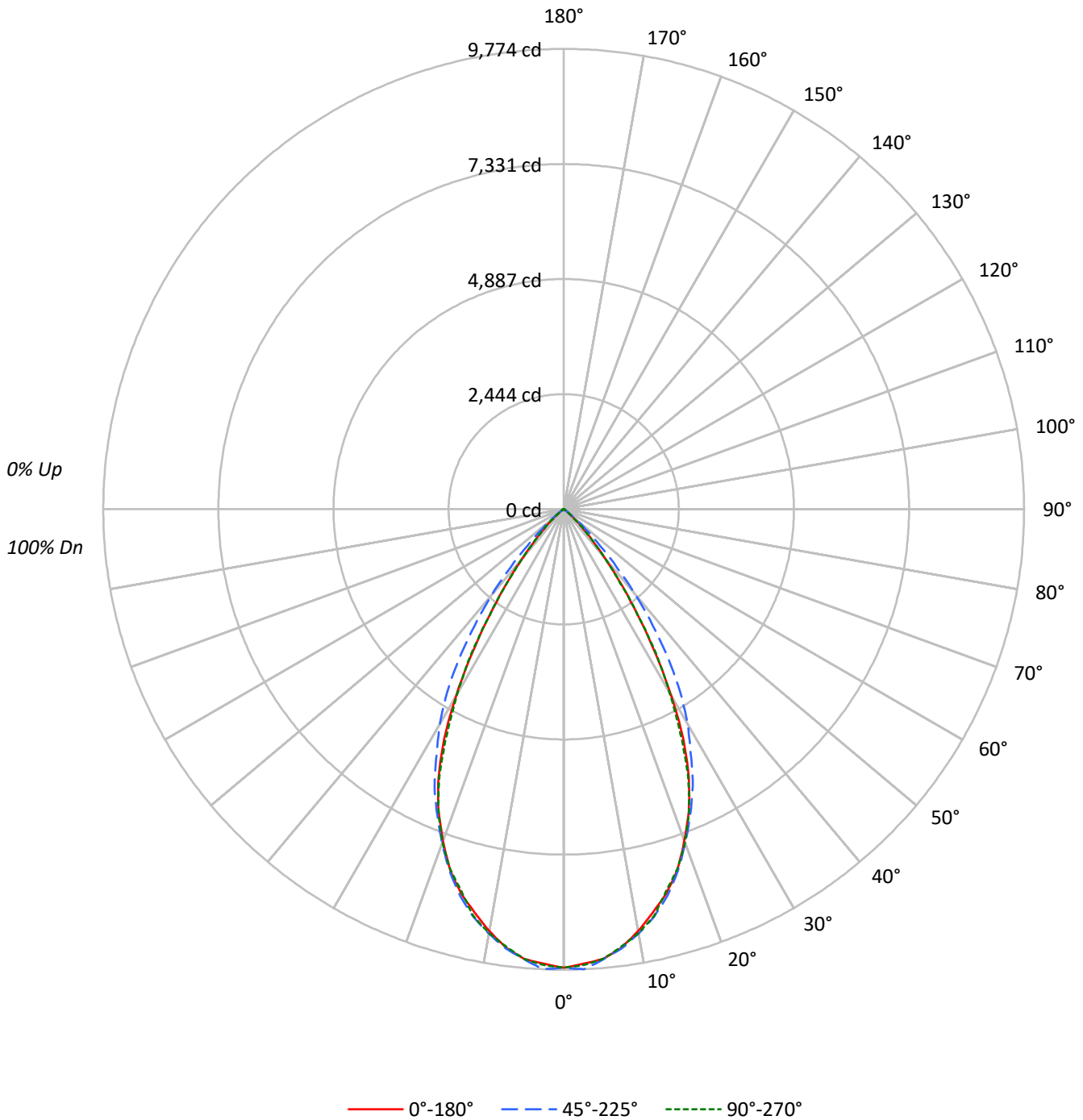
Lumens per Lamp: N/A  
 Luminaire Lumens: 8984.0 lumens  
 Efficiency: N/A  
 Efficacy: 92.5 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 97.1  
 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: FLDSQ4C90D010 FEU4C909030 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°	938943	938943	938943
5°	928156	929357	928156
10°	891036	896493	895288
15°	842375	848548	838039
20°	768765	774474	772574
25°	669401	690460	664781
30°	509025	585479	501460
35°	320416	455157	323325
40°	172876	300585	169753
45°	81833	148478	80973
50°	30637	55676	30637
55°	14551	17697	13542
60°	9533	8375	9533
65°	5639	5639	5639
70°	3498	5276	3498
75°	2349	2349	2349
80°	3501	3501	3501
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	902.2	10.0
10°-20°	2364.5	26.3
20°-30°	2888.5	32.2
30°-40°	2020.3	22.5
40°-50°	662.1	7.4
50°-60°	105.3	1.2
60°-70°	28.7	0.3
70°-80°	9.6	0.1
80°-90°	2.7	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°	6155.3	68.5
0°-40°	8175.6	91.0
0°-60°	8942.9	99.5
0°-90°	8984.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	8984.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	9731	9731	9731	9731	9731	
5°	9583	9586	9595	9536	9583	899
15°	8433	8467	8495	8439	8389	2352
25°	6288	6383	6485	6368	6244	2824
35°	2720	3212	3864	3162	2745	1736
45°	600	739	1088	730	593	503
55°	86	93	105	93	80	86
65°	25	31	25	31	25	27
75°	6	6	6	6	6	9
85°	0	0	0	0	0	3
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C90D010 FEU4C909030 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	9731.1	9731.1	9731.1	9731.1	9731.1	9731.1	9731.1	9731.1	9731.1	9731.1	9731.1
2.5°	9656.9	9725.0	9706.3	9749.7	9749.7	9700.3	9712.6	9731.1	9755.8	9774.5	9625.9
5°	9582.7	9644.5	9588.8	9650.6	9613.5	9558.0	9650.6	9601.1	9632.2	9595.1	9619.8
7.5°	9384.9	9483.8	9372.6	9446.7	9422.0	9391.0	9428.1	9415.7	9434.4	9403.3	9335.5
10°	9094.3	9174.8	9100.6	9205.6	9156.1	9125.3	9156.1	9187.1	9180.8	9150.0	9187.1
12.5°	8760.5	8853.1	8816.0	8877.8	8822.3	8822.3	8896.5	8877.8	8884.1	8859.4	8902.6
15°	8432.8	8500.9	8445.1	8525.6	8500.9	8432.8	8463.6	8463.6	8513.3	8494.6	8445.1
17.5°	8024.8	8080.3	8018.5	8037.2	8012.5	8000.1	8129.8	8043.3	8092.7	8055.6	8061.9
20°	7486.9	7511.7	7493.0	7542.5	7511.7	7548.8	7536.4	7524.0	7524.0	7542.5	7499.3
22.5°	6942.8	6942.8	6961.4	6973.8	6998.5	6961.4	7035.6	6973.8	6979.9	7023.2	7010.9
25°	6287.6	6268.9	6312.3	6374.1	6398.8	6367.8	6466.7	6417.2	6454.3	6485.4	6417.2
27.5°	5490.1	5490.1	5533.2	5638.4	5656.8	5693.9	5829.9	5829.9	5879.4	5836.2	5885.7
30°	4568.7	4636.8	4692.3	4828.3	4871.7	4952.2	5094.2	5162.4	5273.6	5254.9	5230.2
32.5°	3622.9	3715.7	3721.8	3864.1	3981.4	4117.4	4309.1	4469.8	4550.3	4605.8	4544.0
35°	2720.2	2775.9	2825.4	2924.3	3122.1	3301.5	3474.5	3684.7	3827.0	3864.1	3808.3
37.5°	1990.8	2003.2	2052.6	2145.2	2293.6	2466.9	2677.0	2905.6	3054.2	3109.7	3047.9
40°	1372.5	1384.8	1409.5	1490.0	1613.6	1737.3	1904.3	2139.2	2275.1	2386.4	2305.9
42.5°	921.1	933.5	958.2	1020.0	1088.1	1205.4	1335.4	1483.7	1613.6	1663.1	1619.7
45°	599.7	599.7	612.1	655.4	692.5	785.1	878.0	970.6	1057.1	1088.1	1057.1
47.5°	352.4	358.5	370.9	401.9	445.0	482.1	550.2	612.1	636.8	661.5	649.1
50°	204.1	204.1	222.5	241.2	272.0	296.7	321.4	346.1	358.5	370.9	358.5
52.5°	111.3	117.6	123.6	129.9	142.3	167.0	185.4	185.4	191.7	197.8	191.7
55°	86.5	86.5	86.5	86.5	92.8	92.8	92.8	98.9	98.9	105.2	98.9
57.5°	61.8	61.8	61.8	68.1	68.1	68.1	61.8	61.8	61.8	61.8	61.8
60°	49.4	49.4	49.4	49.4	49.4	49.4	49.4	43.4	43.4	43.4	43.4
62.5°	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1
65°	24.7	24.7	31.0	31.0	31.0	31.0	31.0	24.7	24.7	24.7	24.7
67.5°	18.7	18.7	18.7	18.7	24.7	24.7	18.7	18.7	18.7	18.7	18.7
70°	12.4	12.4	12.4	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7
72.5°	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
75°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
77.5°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
80°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	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°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
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°	9731.1	9731.1	9731.1	9731.1	9731.1	9731.1	9731.1	9731.1
2.5°	9731.1	9625.9	9638.2	9694.0	9663.0	9694.0	9687.9	9687.9
5°	9625.9	9595.1	9545.6	9527.0	9564.1	9644.5	9632.2	9582.7
7.5°	9428.1	9347.8	9403.3	9428.1	9397.3	9446.7	9471.5	9366.3
10°	9193.2	9162.4	9150.0	9162.4	9150.0	9199.5	9137.7	9137.7
12.5°	8859.4	8810.0	8810.0	8884.1	8840.7	8803.7	8853.1	8847.0
15°	8525.6	8426.5	8426.5	8451.2	8469.9	8445.1	8451.2	8389.4
17.5°	8030.9	8000.1	7956.7	8024.8	8043.3	8018.5	8037.2	8006.2
20°	7567.2	7567.2	7486.9	7517.7	7542.5	7561.1	7573.5	7524.0
22.5°	6973.8	6986.2	6930.4	6992.2	7010.9	6949.1	6961.4	6949.1
25°	6429.6	6423.5	6380.2	6355.4	6367.8	6343.1	6337.0	6244.2
27.5°	5829.9	5768.1	5675.5	5700.2	5595.0	5508.5	5508.5	5366.2
30°	5180.8	5075.8	4952.2	4828.3	4735.7	4636.8	4581.1	4500.8
32.5°	4420.4	4278.3	4123.7	3956.7	3851.7	3703.4	3622.9	3666.3
35°	3666.3	3455.9	3245.7	3078.9	2918.0	2831.5	2732.6	2744.9
37.5°	2936.7	2640.0	2454.5	2275.1	2139.2	2027.9	1984.5	1972.2
40°	2145.2	1910.3	1724.9	1595.0	1502.4	1415.8	1366.4	1347.7
42.5°	1483.7	1316.9	1168.4	1063.4	1001.6	945.8	921.1	915.1
45°	964.5	865.6	766.7	692.5	643.1	606.0	599.7	593.4
47.5°	606.0	556.3	494.5	439.0	395.6	370.9	352.4	352.4
50°	346.1	327.7	296.7	265.9	241.2	228.8	210.2	204.1
52.5°	185.4	185.4	173.1	148.3	129.9	117.6	117.6	111.3
55°	98.9	98.9	92.8	92.8	86.5	86.5	86.5	80.5
57.5°	61.8	61.8	68.1	68.1	61.8	61.8	61.8	61.8
60°	43.4	49.4	49.4	49.4	49.4	49.4	49.4	49.4
62.5°	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1
65°	24.7	31.0	31.0	31.0	31.0	24.7	24.7	24.7
67.5°	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7
70°	18.7	18.7	18.7	18.7	18.7	12.4	12.4	12.4
72.5°	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
75°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
77.5°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
80°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
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°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)