

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: **FLDSQ4C80D010 FEU4C809040 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: FLDSQ4C80D010 FEU4C809040 F4LC-SQ-LI  
 Description: 4 INCH 8000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

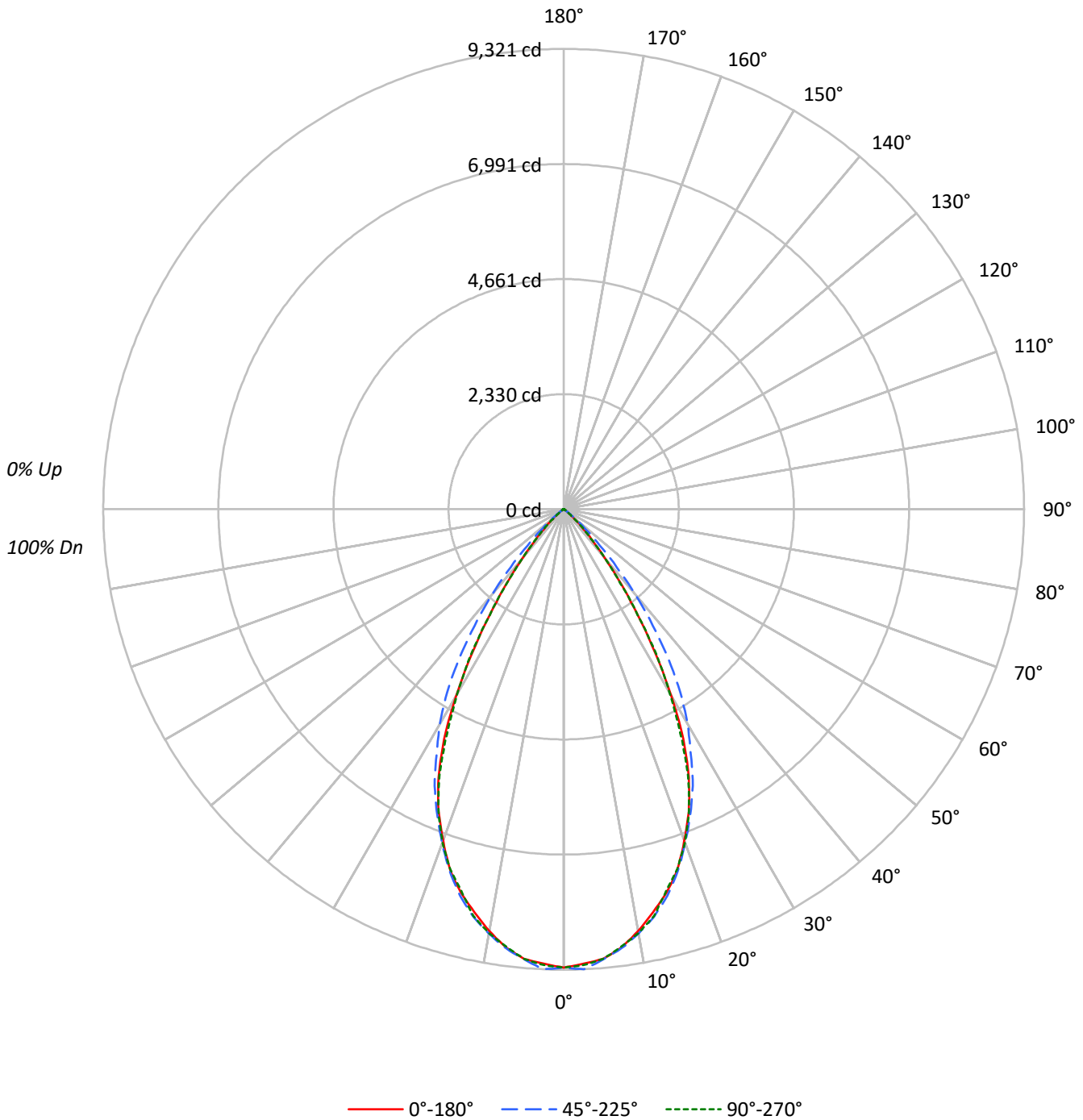
Lumens per Lamp: N/A  
 Luminaire Lumens: 8567.0 lumens  
 Efficiency: N/A  
 Efficacy: 95.7 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 89.5  
 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°	895359	895359	895359
5°	885074	886217	885074
10°	849680	854882	853726
15°	803277	809160	799141
20°	733083	738525	736718
25°	638324	658404	633917
30°	485405	558304	478185
35°	305539	434025	308318
40°	164853	286628	161880
45°	78039	141587	77207
50°	29211	53094	29211
55°	13878	16873	12903
60°	9109	7989	9109
65°	5388	5388	5388
70°	3329	5022	3329
75°	2237	2237	2237
80°	3334	3334	3334
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	860.4	10.0
10°-20°	2254.8	26.3
20°-30°	2754.5	32.2
30°-40°	1926.5	22.5
40°-50°	631.4	7.4
50°-60°	100.4	1.2
60°-70°	27.4	0.3
70°-80°	9.2	0.1
80°-90°	2.5	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°	5869.6	68.5
0°-40°	7796.1	91.0
0°-60°	8527.9	99.5
0°-90°	8567.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	8567.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	9279	9279	9279	9279	9279	
5°	9138	9141	9150	9094	9138	857
15°	8041	8074	8100	8047	8000	2243
25°	5996	6087	6184	6072	5954	2693
35°	2594	3063	3685	3016	2618	1655
45°	572	705	1038	696	566	480
55°	82	88	100	88	77	82
65°	24	30	24	30	24	26
75°	6	6	6	6	6	9
85°	0	0	0	0	0	2
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C80D010 FEU4C809040 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	9279.4	9279.4	9279.4	9279.4	9279.4	9279.4	9279.4	9279.4	9279.4	9279.4	9279.4
2.5°	9208.7	9273.6	9255.8	9297.2	9297.2	9250.0	9261.8	9279.4	9303.0	9320.8	9179.1
5°	9137.9	9196.9	9143.7	9202.7	9167.3	9114.4	9202.7	9155.5	9185.1	9149.7	9173.3
7.5°	8949.3	9043.6	8937.5	9008.3	8984.7	8955.1	8990.5	8978.7	8996.5	8966.9	8902.2
10°	8672.2	8748.9	8678.2	8778.3	8731.1	8701.8	8731.1	8760.7	8754.7	8725.3	8760.7
12.5°	8353.9	8442.2	8406.8	8465.8	8412.8	8412.8	8483.6	8465.8	8471.8	8448.2	8489.3
15°	8041.4	8106.3	8053.2	8129.9	8106.3	8041.4	8070.7	8070.7	8118.1	8100.3	8053.2
17.5°	7652.4	7705.3	7646.3	7664.1	7640.6	7628.8	7752.4	7669.9	7717.1	7681.7	7687.7
20°	7139.4	7163.0	7145.2	7192.4	7163.0	7198.4	7186.6	7174.8	7174.8	7192.4	7151.2
22.5°	6620.5	6620.5	6638.3	6650.1	6673.7	6638.3	6709.0	6650.1	6655.9	6697.3	6685.5
25°	5995.7	5977.9	6019.3	6078.2	6101.8	6072.2	6166.5	6119.4	6154.8	6184.3	6119.4
27.5°	5235.2	5235.2	5276.4	5376.7	5394.3	5429.6	5559.3	5559.3	5606.5	5565.3	5612.5
30°	4356.7	4421.6	4474.5	4604.2	4645.6	4722.3	4857.8	4922.7	5028.8	5011.0	4987.5
32.5°	3454.7	3543.3	3549.0	3684.7	3796.6	3926.3	4109.1	4262.4	4339.1	4392.0	4333.1
35°	2593.9	2647.1	2694.2	2788.6	2977.2	3148.2	3313.3	3513.7	3649.3	3684.7	3631.6
37.5°	1898.4	1910.2	1957.4	2045.7	2187.1	2352.4	2552.8	2770.8	2912.5	2965.4	2906.4
40°	1308.8	1320.5	1344.1	1420.9	1538.7	1656.6	1815.9	2039.9	2169.5	2275.6	2198.9
42.5°	878.4	890.1	913.7	972.7	1037.6	1149.5	1273.4	1414.9	1538.7	1585.9	1544.5
45°	571.9	571.9	583.6	625.0	660.4	748.7	837.2	925.5	1008.0	1037.6	1008.0
47.5°	336.1	341.9	353.7	383.2	424.4	459.8	524.7	583.6	607.2	630.8	619.0
50°	194.6	194.6	212.2	230.0	259.3	282.9	306.5	330.1	341.9	353.7	341.9
52.5°	106.1	112.1	117.9	123.9	135.7	159.3	176.8	176.8	182.8	188.6	182.8
55°	82.5	82.5	82.5	82.5	88.5	88.5	88.5	94.3	94.3	100.3	94.3
57.5°	58.9	58.9	58.9	65.0	65.0	65.0	58.9	58.9	58.9	58.9	58.9
60°	47.2	47.2	47.2	47.2	47.2	47.2	47.2	41.4	41.4	41.4	41.4
62.5°	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4
65°	23.6	23.6	29.6	29.6	29.6	29.6	29.6	23.6	23.6	23.6	23.6
67.5°	17.8	17.8	17.8	17.8	23.6	23.6	17.8	17.8	17.8	17.8	17.8
70°	11.8	11.8	11.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8
72.5°	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
75°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
77.5°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
80°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	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°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	9279.4	9279.4	9279.4	9279.4	9279.4	9279.4	9279.4	9279.4
2.5°	9279.4	9179.1	9190.9	9244.0	9214.4	9244.0	9238.3	9238.3
5°	9179.1	9149.7	9102.6	9084.8	9120.1	9196.9	9185.1	9137.9
7.5°	8990.5	8914.0	8966.9	8990.5	8961.1	9008.3	9031.8	8931.5
10°	8766.5	8737.1	8725.3	8737.1	8725.3	8772.5	8713.5	8713.5
12.5°	8448.2	8401.0	8401.0	8471.8	8430.4	8395.0	8442.2	8436.4
15°	8129.9	8035.4	8035.4	8058.9	8076.7	8053.2	8058.9	8000.0
17.5°	7658.1	7628.8	7587.4	7652.4	7669.9	7646.3	7664.1	7634.6
20°	7215.9	7215.9	7139.4	7168.8	7192.4	7210.2	7222.0	7174.8
22.5°	6650.1	6661.9	6608.7	6667.7	6685.5	6626.5	6638.3	6626.5
25°	6131.2	6125.4	6084.0	6060.4	6072.2	6048.7	6042.9	5954.3
27.5°	5559.3	5500.4	5412.1	5435.7	5335.3	5252.8	5252.8	5117.1
30°	4940.3	4840.2	4722.3	4604.2	4515.9	4421.6	4368.4	4291.9
32.5°	4215.2	4079.7	3932.3	3773.0	3672.9	3531.5	3454.7	3496.1
35°	3496.1	3295.5	3095.1	2936.0	2782.5	2700.0	2605.7	2617.5
37.5°	2800.3	2517.4	2340.6	2169.5	2039.9	1933.8	1892.4	1880.6
40°	2045.7	1821.7	1644.8	1520.9	1432.6	1350.1	1303.0	1285.2
42.5°	1414.9	1255.8	1114.1	1014.0	955.1	901.9	878.4	872.6
45°	919.7	825.4	731.1	660.4	613.2	577.9	571.9	565.8
47.5°	577.9	530.5	471.5	418.6	377.2	353.7	336.1	336.1
50°	330.1	312.5	282.9	253.6	230.0	218.2	200.4	194.6
52.5°	176.8	176.8	165.0	141.5	123.9	112.1	112.1	106.1
55°	94.3	94.3	88.5	88.5	82.5	82.5	82.5	76.7
57.5°	58.9	58.9	65.0	65.0	58.9	58.9	58.9	58.9
60°	41.4	47.2	47.2	47.2	47.2	47.2	47.2	47.2
62.5°	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4
65°	23.6	29.6	29.6	29.6	29.6	23.6	23.6	23.6
67.5°	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8
70°	17.8	17.8	17.8	17.8	17.8	11.8	11.8	11.8
72.5°	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
75°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
77.5°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
80°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)