

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: **FLDSQ4C40D010 FEU4C409040 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: FLDSQ4C40D010 FEU4C409040 F4LC-SQ-LI  
 Description: 4 INCH 4000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

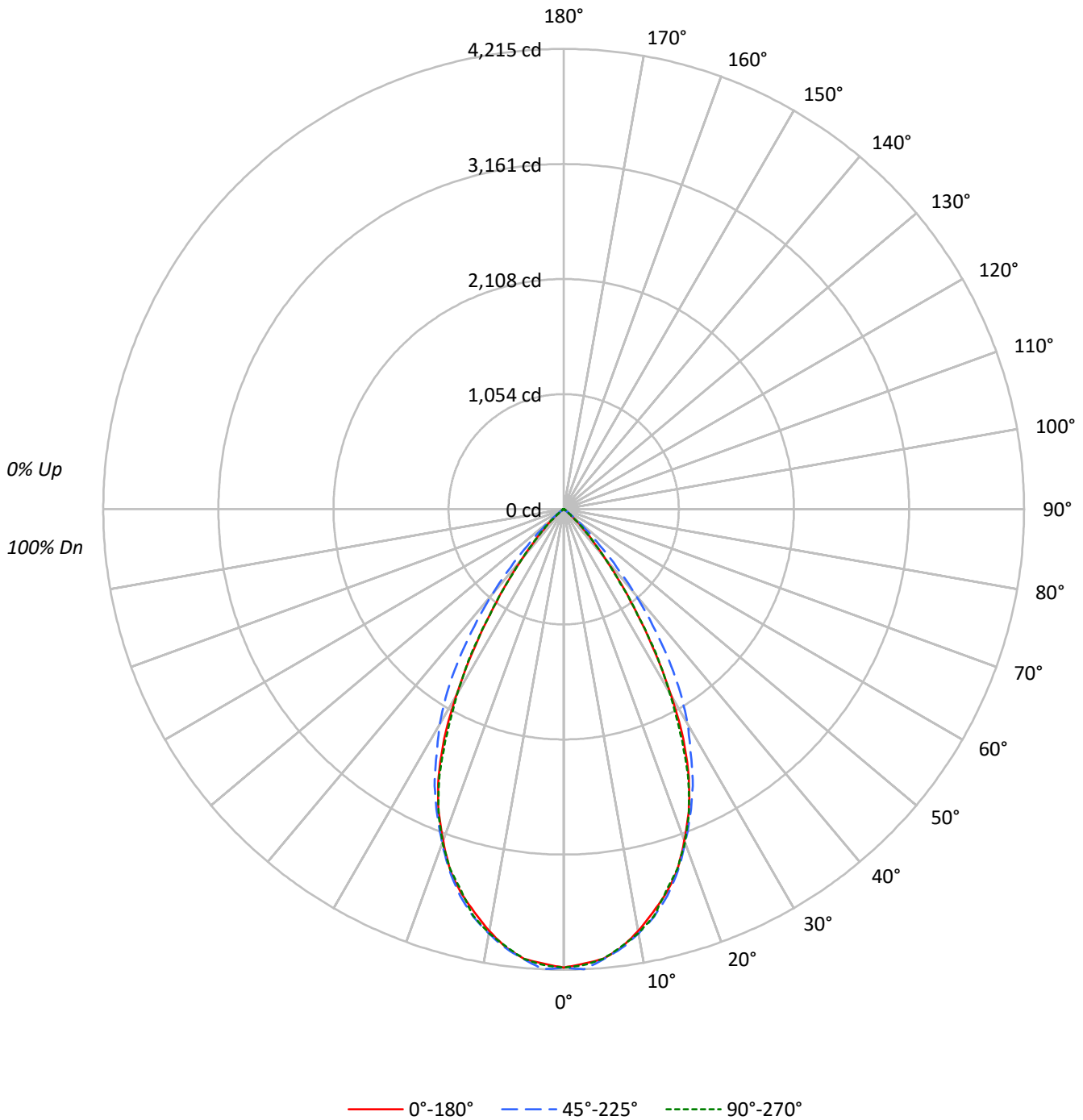
Lumens per Lamp: N/A  
 Luminaire Lumens: 3874.0 lumens  
 Efficiency: N/A  
 Efficacy: 82.4 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 47  
 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				100
1	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93				93
2	108	103	99	95	105	101	97	94	98	95	92	95	92	90	92	90	88	87				87
3	102	96	91	87	100	94	90	86	92	88	84	89	86	83	87	84	82	80				80
4	97	89	84	79	95	88	83	79	86	81	78	84	80	77	82	79	76	75				75
5	92	83	77	73	90	82	77	73	81	76	72	79	75	71	77	74	71	69				69
6	87	78	72	68	86	77	71	67	76	71	67	74	70	66	73	69	66	64				64
7	83	73	67	63	81	73	67	63	71	66	62	70	65	62	69	65	62	60				60
8	79	69	63	59	77	68	62	58	67	62	58	66	61	58	65	61	58	56				56
9	75	65	59	55	74	64	59	55	63	58	55	63	58	54	62	57	54	53				53
10	71	61	55	51	70	61	55	51	60	55	51	59	54	51	58	54	51	50				50

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

	0°	45°	90°
0°	404877	404877	404877
5°	400234	400748	400234
10°	384228	386580	386060
15°	363240	365907	361372
20°	331507	333961	333139
25°	288655	297736	286664
30°	219500	252468	216236
35°	138169	196264	139418
40°	74542	129610	73206
45°	35287	64025	34919
50°	13210	24003	13210
55°	6275	7637	5837
60°	4110	3609	4110
65°	2443	2443	2443
70°	1495	2257	1495
75°	1007	1007	1007
80°	1500	1500	1500
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	389.1	10.0
10°-20°	1019.6	26.3
20°-30°	1245.6	32.2
30°-40°	871.2	22.5
40°-50°	285.5	7.4
50°-60°	45.4	1.2
60°-70°	12.4	0.3
70°-80°	4.1	0.1
80°-90°	1.1	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°	2654.2	68.5
0°-40°	3525.4	91.0
0°-60°	3856.3	99.5
0°-90°	3874.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3874.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4196	4196	4196	4196	4196	
5°	4132	4134	4138	4112	4132	388
15°	3636	3651	3663	3639	3618	1014
25°	2711	2753	2797	2746	2693	1218
35°	1173	1385	1666	1364	1184	749
45°	259	319	469	315	256	217
55°	37	40	45	40	35	37
65°	11	13	11	13	11	12
75°	3	3	3	3	3	4
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C40D010 FEU4C409040 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	4196.1	4196.1	4196.1	4196.1	4196.1	4196.1	4196.1	4196.1	4196.1	4196.1	4196.1
2.5°	4164.2	4193.5	4185.5	4204.2	4204.2	4182.9	4188.2	4196.1	4206.8	4214.9	4150.8
5°	4132.2	4158.8	4134.8	4161.4	4145.5	4121.5	4161.4	4140.1	4153.5	4137.5	4148.2
7.5°	4046.9	4089.5	4041.6	4073.5	4062.9	4049.5	4065.5	4060.2	4068.2	4054.8	4025.6
10°	3921.6	3956.3	3924.3	3969.5	3948.2	3934.9	3948.2	3961.6	3958.9	3945.6	3961.6
12.5°	3777.6	3817.6	3801.6	3828.2	3804.3	3804.3	3836.3	3828.2	3830.9	3820.3	3838.9
15°	3636.3	3665.7	3641.6	3676.3	3665.7	3636.3	3649.6	3649.6	3671.0	3663.0	3641.6
17.5°	3460.4	3484.3	3457.7	3465.7	3455.1	3449.7	3505.7	3468.3	3489.7	3473.7	3476.4
20°	3228.5	3239.1	3231.1	3252.4	3239.1	3255.1	3249.8	3244.4	3244.4	3252.4	3233.8
22.5°	2993.8	2993.8	3001.8	3007.2	3017.8	3001.8	3033.8	3007.2	3009.8	3028.5	3023.2
25°	2711.3	2703.2	2721.9	2748.6	2759.2	2745.9	2788.5	2767.2	2783.2	2796.6	2767.2
27.5°	2367.4	2367.4	2386.0	2431.3	2439.3	2455.3	2513.9	2513.9	2535.2	2516.6	2538.0
30°	1970.1	1999.5	2023.4	2082.0	2100.7	2135.4	2196.7	2226.1	2274.0	2266.0	2255.3
32.5°	1562.2	1602.3	1604.9	1666.2	1716.8	1775.5	1858.1	1927.4	1962.1	1986.1	1959.4
35°	1173.0	1197.0	1218.3	1261.0	1346.3	1423.6	1498.3	1588.9	1650.2	1666.2	1642.2
37.5°	858.5	863.8	885.1	925.0	989.0	1063.7	1154.4	1252.9	1317.0	1340.9	1314.3
40°	591.8	597.1	607.8	642.5	695.8	749.1	821.1	922.4	981.1	1029.0	994.3
42.5°	397.2	402.5	413.2	439.8	469.2	519.8	575.8	639.8	695.8	717.1	698.4
45°	258.6	258.6	263.9	282.6	298.6	338.6	378.6	418.5	455.8	469.2	455.8
47.5°	152.0	154.6	159.9	173.3	191.9	207.9	237.3	263.9	274.6	285.2	279.9
50°	88.0	88.0	96.0	104.0	117.3	127.9	138.6	149.3	154.6	159.9	154.6
52.5°	48.0	50.7	53.3	56.0	61.4	72.0	80.0	80.0	82.7	85.3	82.7
55°	37.3	37.3	37.3	37.3	40.0	40.0	40.0	42.6	42.6	45.4	42.6
57.5°	26.7	26.7	26.7	29.4	29.4	29.4	26.7	26.7	26.7	26.7	26.7
60°	21.3	21.3	21.3	21.3	21.3	21.3	21.3	18.7	18.7	18.7	18.7
62.5°	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
65°	10.7	10.7	13.4	13.4	13.4	13.4	13.4	10.7	10.7	10.7	10.7
67.5°	8.0	8.0	8.0	8.0	10.7	10.7	8.0	8.0	8.0	8.0	8.0
70°	5.3	5.3	5.3	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
72.5°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
75°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
77.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
80°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	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°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
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°	4196.1	4196.1	4196.1	4196.1	4196.1	4196.1	4196.1	4196.1
2.5°	4196.1	4150.8	4156.1	4180.2	4166.8	4180.2	4177.5	4177.5
5°	4150.8	4137.5	4116.2	4108.1	4124.1	4158.8	4153.5	4132.2
7.5°	4065.5	4030.9	4054.8	4065.5	4052.2	4073.5	4084.2	4038.8
10°	3964.2	3950.9	3945.6	3950.9	3945.6	3966.9	3940.3	3940.3
12.5°	3820.3	3799.0	3799.0	3830.9	3812.2	3796.2	3817.6	3814.9
15°	3676.3	3633.6	3633.6	3644.3	3652.3	3641.6	3644.3	3617.6
17.5°	3463.0	3449.7	3431.0	3460.4	3468.3	3457.7	3465.7	3452.3
20°	3263.1	3263.1	3228.5	3241.7	3252.4	3260.4	3265.8	3244.4
22.5°	3007.2	3012.5	2988.5	3015.1	3023.2	2996.5	3001.8	2996.5
25°	2772.5	2769.9	2751.2	2740.5	2745.9	2735.2	2732.6	2692.6
27.5°	2513.9	2487.3	2447.3	2458.0	2412.6	2375.3	2375.3	2314.0
30°	2234.0	2188.7	2135.4	2082.0	2042.1	1999.5	1975.4	1940.8
32.5°	1906.1	1844.9	1778.2	1706.2	1660.9	1596.9	1562.2	1580.9
35°	1580.9	1490.2	1399.6	1327.7	1258.3	1221.0	1178.3	1183.6
37.5°	1266.3	1138.4	1058.4	981.1	922.4	874.5	855.7	850.4
40°	925.0	823.8	743.8	687.8	647.8	610.5	589.2	581.2
42.5°	639.8	567.9	503.8	458.5	431.9	407.9	397.2	394.6
45°	415.9	373.3	330.6	298.6	277.3	261.3	258.6	255.9
47.5°	261.3	239.9	213.2	189.3	170.6	159.9	152.0	152.0
50°	149.3	141.3	127.9	114.7	104.0	98.7	90.6	88.0
52.5°	80.0	80.0	74.6	64.0	56.0	50.7	50.7	48.0
55°	42.6	42.6	40.0	40.0	37.3	37.3	37.3	34.7
57.5°	26.7	26.7	29.4	29.4	26.7	26.7	26.7	26.7
60°	18.7	21.3	21.3	21.3	21.3	21.3	21.3	21.3
62.5°	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
65°	10.7	13.4	13.4	13.4	13.4	10.7	10.7	10.7
67.5°	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
70°	8.0	8.0	8.0	8.0	8.0	5.3	5.3	5.3
72.5°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
75°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
77.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
80°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
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°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)