

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 FEU4C409030 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 FEU4C409030 F4LC-SQ-LI  
 Description: 4 INCH 4000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

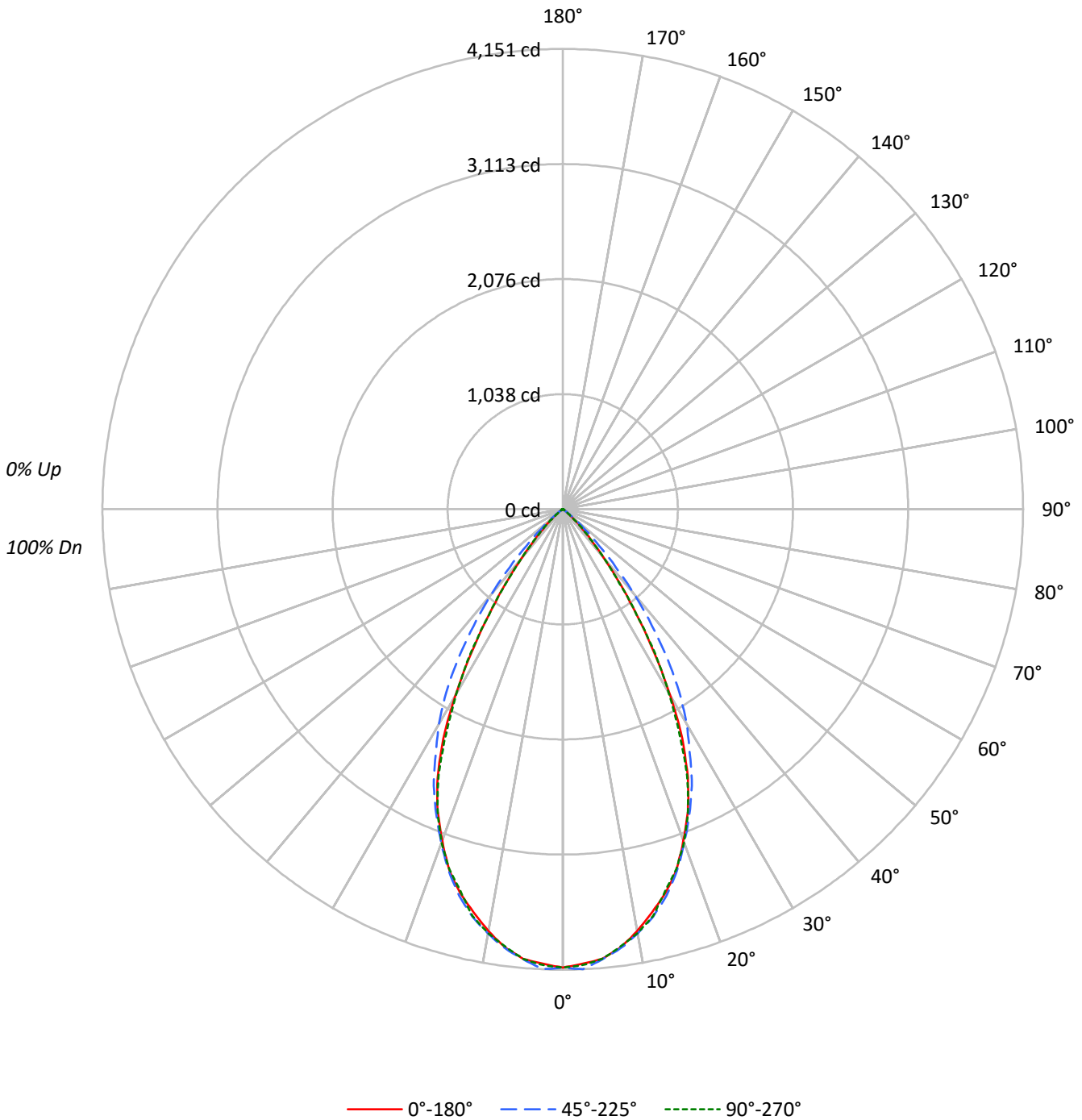
Lumens per Lamp: N/A  
 Luminaire Lumens: 3815.0 lumens  
 Efficiency: N/A  
 Efficacy: 81.2 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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				
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°	398711	398711	398711
5°	394132	394646	394132
10°	378369	380691	380182
15°	357706	360333	355868
20°	326455	328878	328067
25°	284258	293201	282299
30°	216158	248624	212949
35°	136061	193284	137297
40°	73408	127645	72085
45°	34755	63056	34387
50°	13015	23642	13015
55°	6174	7520	5753
60°	4053	3551	4053
65°	2397	2397	2397
70°	1467	2229	1467
75°	1007	1007	1007
80°	1500	1500	1500
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	383.1	10.0
10°-20°	1004.1	26.3
20°-30°	1226.6	32.2
30°-40°	857.9	22.5
40°-50°	281.2	7.4
50°-60°	44.7	1.2
60°-70°	12.2	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°	2613.8	68.5
0°-40°	3471.7	91.0
0°-60°	3797.6	99.5
0°-90°	3815.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3815.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4132	4132	4132	4132	4132	
5°	4069	4070	4074	4050	4069	382
15°	3581	3595	3607	3584	3562	999
25°	2670	2711	2754	2704	2652	1199
35°	1155	1364	1641	1343	1166	737
45°	255	314	462	310	252	214
55°	37	39	45	39	34	36
65°	10	13	10	13	10	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 FEU4C409030 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	4132.2	4132.2	4132.2	4132.2	4132.2	4132.2	4132.2	4132.2	4132.2	4132.2	4132.2
2.5°	4100.7	4129.7	4121.7	4140.2	4140.2	4119.2	4124.4	4132.2	4142.7	4150.7	4087.6
5°	4069.2	4095.5	4071.8	4098.1	4082.3	4058.7	4098.1	4077.1	4090.2	4074.5	4085.0
7.5°	3985.3	4027.2	3980.0	4011.5	4001.0	3987.8	4003.6	3998.3	4006.2	3993.1	3964.3
10°	3861.8	3896.0	3864.5	3909.1	3888.1	3875.0	3888.1	3901.3	3898.6	3885.5	3901.3
12.5°	3720.1	3759.4	3743.7	3769.9	3746.3	3746.3	3777.8	3769.9	3772.6	3762.1	3780.4
15°	3580.9	3609.9	3586.2	3620.4	3609.9	3580.9	3594.0	3594.0	3615.1	3607.2	3586.2
17.5°	3407.7	3431.3	3405.0	3412.9	3402.4	3397.2	3452.3	3415.5	3436.5	3420.8	3423.4
20°	3179.3	3189.8	3181.9	3202.9	3189.8	3205.5	3200.3	3195.0	3195.0	3202.9	3184.5
22.5°	2948.2	2948.2	2956.1	2961.4	2971.9	2956.1	2987.6	2961.4	2964.0	2982.4	2977.1
25°	2670.0	2662.0	2680.5	2706.7	2717.2	2704.0	2746.0	2725.0	2740.8	2754.0	2725.0
27.5°	2331.3	2331.3	2349.6	2394.3	2402.1	2417.9	2475.6	2475.6	2496.6	2478.3	2499.3
30°	1940.1	1969.0	1992.6	2050.3	2068.7	2102.9	2163.2	2192.2	2239.4	2231.5	2221.0
32.5°	1538.4	1577.9	1580.4	1640.9	1690.7	1748.4	1829.8	1898.1	1932.3	1955.8	1929.6
35°	1155.1	1178.8	1199.8	1241.8	1325.8	1401.9	1475.4	1564.7	1625.1	1640.9	1617.2
37.5°	845.4	850.6	871.6	911.0	974.0	1047.5	1136.8	1233.9	1297.0	1320.5	1294.3
40°	582.8	588.1	598.6	632.7	685.2	737.7	808.6	908.4	966.1	1013.4	979.2
42.5°	391.1	396.4	406.9	433.1	462.1	511.9	567.1	630.1	685.2	706.2	687.8
45°	254.7	254.7	259.9	278.3	294.1	333.4	372.8	412.1	448.9	462.1	448.9
47.5°	149.7	152.2	157.5	170.7	189.0	204.7	233.7	259.9	270.4	280.9	275.7
50°	86.7	86.7	94.5	102.4	115.5	126.0	136.5	147.0	152.2	157.5	152.2
52.5°	47.2	49.9	52.5	55.2	60.4	70.9	78.7	78.7	81.4	84.0	81.4
55°	36.7	36.7	36.7	36.7	39.4	39.4	39.4	42.0	42.0	44.7	42.0
57.5°	26.2	26.2	26.2	28.9	28.9	28.9	26.2	26.2	26.2	26.2	26.2
60°	21.0	21.0	21.0	21.0	21.0	21.0	21.0	18.4	18.4	18.4	18.4
62.5°	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
65°	10.5	10.5	13.2	13.2	13.2	13.2	13.2	10.5	10.5	10.5	10.5
67.5°	7.9	7.9	7.9	7.9	10.5	10.5	7.9	7.9	7.9	7.9	7.9
70°	5.2	5.2	5.2	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
72.5°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
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°	4132.2	4132.2	4132.2	4132.2	4132.2	4132.2	4132.2	4132.2
2.5°	4132.2	4087.6	4092.8	4116.5	4103.3	4116.5	4113.9	4113.9
5°	4087.6	4074.5	4053.5	4045.6	4061.3	4095.5	4090.2	4069.2
7.5°	4003.6	3969.5	3993.1	4003.6	3990.5	4011.5	4022.0	3977.3
10°	3903.8	3890.8	3885.5	3890.8	3885.5	3906.5	3880.3	3880.3
12.5°	3762.1	3741.1	3741.1	3772.6	3754.2	3738.4	3759.4	3756.8
15°	3620.4	3578.3	3578.3	3588.8	3596.7	3586.2	3588.8	3562.5
17.5°	3410.3	3397.2	3378.8	3407.7	3415.5	3405.0	3412.9	3399.8
20°	3213.4	3213.4	3179.3	3192.4	3202.9	3210.8	3216.0	3195.0
22.5°	2961.4	2966.6	2943.0	2969.2	2977.1	2950.9	2956.1	2950.9
25°	2730.3	2727.7	2709.3	2698.8	2704.0	2693.5	2691.0	2651.6
27.5°	2475.6	2449.4	2410.1	2420.6	2375.9	2339.1	2339.1	2278.7
30°	2200.0	2155.4	2102.9	2050.3	2011.0	1969.0	1945.3	1911.3
32.5°	1877.1	1816.8	1751.1	1680.2	1635.6	1572.6	1538.4	1556.9
35°	1556.9	1467.5	1378.3	1307.5	1239.1	1202.4	1160.4	1165.6
37.5°	1247.0	1121.0	1042.3	966.1	908.4	861.1	842.7	837.5
40°	911.0	811.2	732.5	677.3	638.0	601.2	580.2	572.3
42.5°	630.1	559.2	496.1	451.6	425.3	401.6	391.1	388.6
45°	409.6	367.6	325.6	294.1	273.1	257.3	254.7	252.0
47.5°	257.3	236.2	210.0	186.4	168.0	157.5	149.7	149.7
50°	147.0	139.2	126.0	112.9	102.4	97.2	89.2	86.7
52.5°	78.7	78.7	73.5	63.0	55.2	49.9	49.9	47.2
55°	42.0	42.0	39.4	39.4	36.7	36.7	36.7	34.2
57.5°	26.2	26.2	28.9	28.9	26.2	26.2	26.2	26.2
60°	18.4	21.0	21.0	21.0	21.0	21.0	21.0	21.0
62.5°	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
65°	10.5	13.2	13.2	13.2	13.2	10.5	10.5	10.5
67.5°	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
70°	7.9	7.9	7.9	7.9	7.9	5.2	5.2	5.2
72.5°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
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)