

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 FEU4C909035 F4LC-CSSQ-MW**

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 FEU4C909035 F4LC-CSSQ-MW  
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

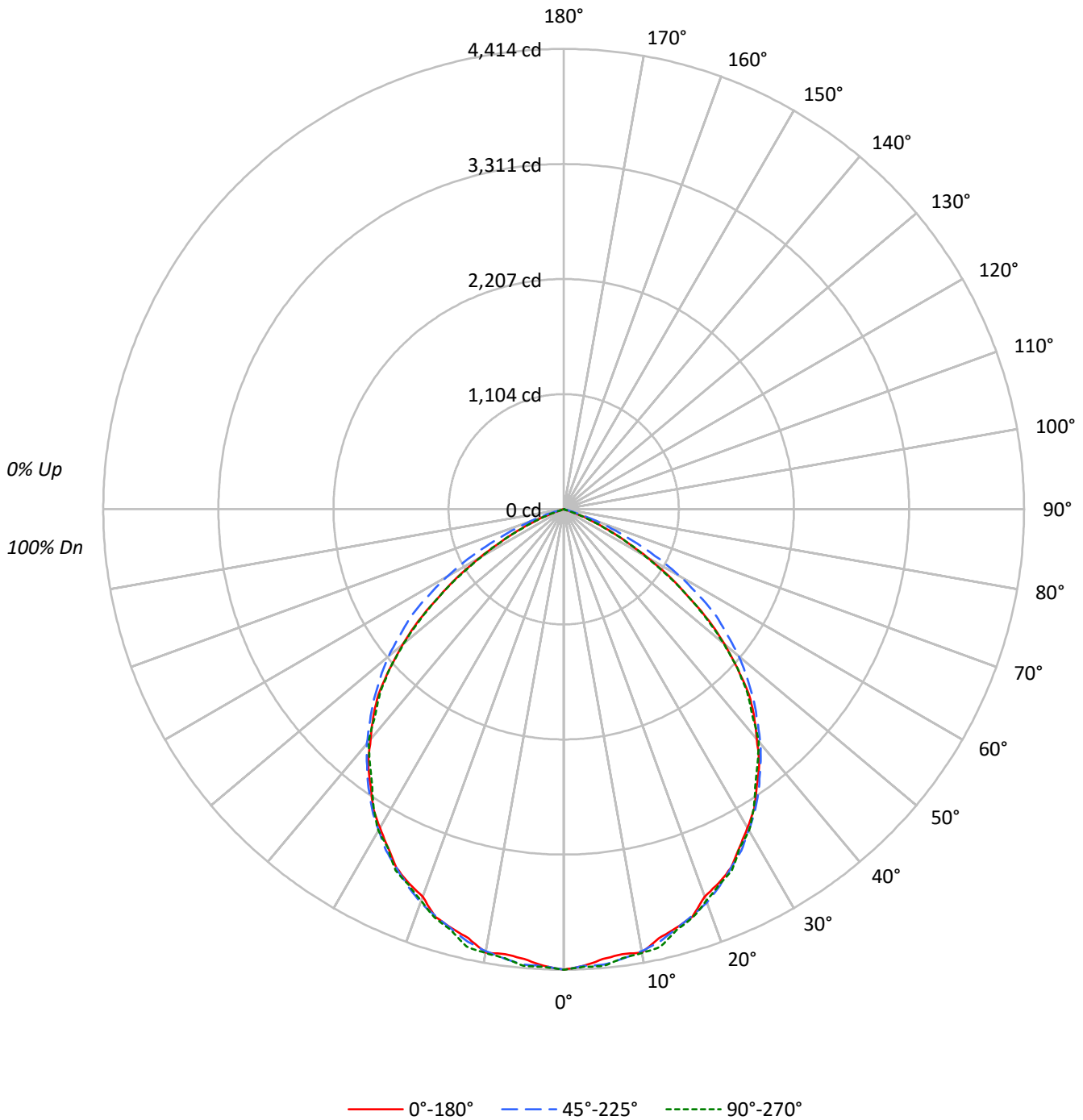
Lumens per Lamp: N/A  
 Luminaire Lumens: 9430.0 lumens  
 Efficiency: N/A  
 Efficacy: 97.1 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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



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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	111	108	104	101	109	105	102	100	101	99	96	97	95	94	94	92	91	89
2	103	96	91	86	100	94	89	85	91	87	83	88	84	81	85	82	79	77
3	95	86	79	74	93	85	78	73	82	76	72	79	74	71	77	73	69	67
4	88	77	70	64	86	76	69	63	74	67	63	71	66	62	69	65	61	59
5	81	70	62	56	79	69	61	56	67	60	55	65	59	54	63	58	54	52
6	75	63	55	49	73	62	55	49	61	54	49	59	53	48	57	52	48	46
7	70	58	50	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41
8	65	53	45	40	64	52	45	39	51	44	39	50	44	39	49	43	39	37
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35	33
10	57	45	38	33	56	44	37	33	44	37	32	43	37	32	42	36	32	31

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

	0°	45°	90°
0°	425950	425950	425950
5°	419073	424526	425737
10°	422694	421460	423292
15°	415294	415903	417152
20°	405632	412070	410150
25°	403881	403881	406542
30°	392618	395415	396128
35°	380371	384070	377415
40°	362530	369622	366460
45°	343105	350814	339680
50°	302157	328501	300280
55°	244714	300615	245791
60°	179064	249269	175455
65°	108814	177513	105960
70°	42430	95552	40709
75°	4660	25761	4660
80°	3556	3556	3556
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	416.7	4.4
10°-20°	1179.1	12.5
20°-30°	1749.5	18.6
30°-40°	2027.2	21.5
40°-50°	1943.6	20.6
50°-60°	1429.1	15.2
60°-70°	617.2	6.5
70°-80°	66.6	0.7
80°-90°	0.9	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°	3345.3	35.5
0°-40°	5372.5	57.0
0°-60°	8745.3	92.7
0°-90°	9430.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	9430.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4414	4414	4414	4414	4414	
5°	4327	4370	4383	4389	4396	413
15°	4157	4182	4164	4170	4176	1172
25°	3794	3787	3794	3800	3819	1737
35°	3229	3248	3261	3254	3204	2019
45°	2514	2521	2571	2533	2489	1911
55°	1455	1605	1787	1599	1461	1309
65°	477	596	778	589	464	490
75°	12	19	69	12	12	38
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5
2.5°	4383.0	4433.2	4439.5	4408.1	4395.5	4376.9	4420.6	4389.4	4401.9	4389.4	4383.0
5°	4326.7	4383.0	4389.4	4389.4	4376.9	4370.5	4389.4	4383.0	4376.9	4364.3	4383.0
7.5°	4301.6	4332.9	4364.3	4326.7	4345.4	4339.3	4383.0	4364.3	4357.9	4357.9	4345.4
10°	4314.2	4307.8	4332.9	4295.3	4307.8	4295.3	4332.9	4332.9	4320.3	4307.8	4301.6
12.5°	4213.6	4263.8	4263.8	4257.6	4245.1	4226.2	4263.8	4289.1	4251.3	4251.3	4245.1
15°	4157.4	4169.9	4176.0	4176.0	4169.9	4182.4	4201.1	4176.0	4182.4	4151.0	4163.5
17.5°	4094.7	4069.6	4088.3	4075.8	4082.1	4094.7	4119.8	4119.8	4082.1	4075.8	4088.3
20°	3950.4	4025.6	4032.0	3994.4	4000.5	4000.5	4044.5	4006.9	4032.0	4000.5	4013.1
22.5°	3881.3	3931.5	3937.9	3887.7	3918.9	3881.3	3925.3	3868.8	3931.5	3887.7	3906.4
25°	3793.6	3787.4	3806.1	3781.0	3787.4	3787.4	3818.6	3793.6	3812.5	3787.4	3793.6
27.5°	3649.5	3699.7	3693.3	3668.2	3680.7	3674.6	3737.3	3668.2	3705.8	3674.6	3687.1
30°	3523.9	3567.9	3555.4	3530.3	3530.3	3511.4	3580.4	3561.5	3555.4	3555.4	3549.0
32.5°	3398.5	3404.9	3392.4	3398.5	3404.9	3379.9	3436.2	3411.1	3404.9	3411.1	3417.5
35°	3229.2	3229.2	3241.7	3223.0	3248.1	3248.1	3298.3	3266.8	3260.6	3241.7	3260.6
37.5°	3078.8	3060.1	3066.2	3066.2	3078.8	3091.3	3116.4	3103.8	3103.8	3085.1	3097.7
40°	2878.2	2865.6	2884.3	2884.3	2903.2	2903.2	2928.3	2915.8	2934.5	2934.5	2934.5
42.5°	2702.7	2702.7	2690.1	2708.8	2715.2	2708.8	2752.8	2746.4	2752.8	2740.3	2746.4
45°	2514.4	2514.4	2501.8	2495.7	2526.9	2520.8	2570.9	2552.0	2577.1	2564.5	2570.9
47.5°	2257.3	2288.7	2269.8	2288.7	2326.3	2332.7	2363.9	2351.4	2376.5	2357.8	2382.9
50°	2012.9	2012.9	2031.6	2056.7	2094.3	2100.7	2138.3	2163.4	2175.9	2182.0	2188.4
52.5°	1755.8	1749.4	1768.3	1799.6	1831.0	1856.1	1893.7	1931.3	1956.4	1994.0	1975.1
55°	1454.7	1467.2	1486.2	1523.8	1573.9	1605.1	1636.6	1686.7	1730.7	1749.4	1787.0
57.5°	1197.6	1185.0	1197.6	1247.7	1304.3	1329.3	1373.3	1423.5	1486.2	1523.8	1536.3
60°	927.9	934.3	946.9	990.9	1034.6	1072.2	1091.1	1172.5	1229.0	1266.7	1291.7
62.5°	683.6	696.1	708.7	746.3	790.0	821.5	852.7	921.8	971.9	1009.5	1034.6
65°	476.6	482.8	501.7	520.4	564.4	595.6	620.7	677.2	727.3	758.8	777.5
67.5°	294.7	300.9	313.4	338.7	369.9	395.0	420.1	457.7	501.7	532.9	539.3
70°	150.4	156.8	163.0	181.9	207.0	219.5	238.2	269.7	300.9	325.9	338.7
72.5°	50.1	50.1	56.5	69.1	81.6	94.1	100.3	131.8	156.8	169.4	175.5
75°	12.5	12.5	12.5	12.5	12.5	18.9	18.9	37.6	50.1	62.7	69.1
77.5°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	12.5	12.5
80°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
82.5°	0.0	0.0	0.0	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	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5	4414.5
2.5°	4414.5	4401.9	4395.5	4401.9	4401.9	4395.5	4414.5	4439.5	4470.8	4389.4
5°	4408.1	4395.5	4408.1	4370.5	4389.4	4376.9	4401.9	4395.5	4420.6	4395.5
7.5°	4389.4	4364.3	4370.5	4351.8	4376.9	4345.4	4364.3	4401.9	4376.9	4339.3
10°	4326.7	4314.2	4357.9	4295.3	4282.7	4307.8	4357.9	4320.3	4307.8	4320.3
12.5°	4263.8	4263.8	4282.7	4232.6	4238.7	4251.3	4276.3	4251.3	4263.8	4295.3
15°	4195.0	4182.4	4213.6	4176.0	4169.9	4157.4	4182.4	4182.4	4195.0	4176.0
17.5°	4113.4	4094.7	4094.7	4082.1	4075.8	4107.2	4119.8	4125.9	4132.3	4107.2
20°	4013.1	4006.9	4025.6	4006.9	4013.1	4019.5	4019.5	4006.9	4063.2	3994.4
22.5°	3906.4	3925.3	3900.2	3887.7	3900.2	3912.8	3912.8	3918.9	3906.4	3893.9
25°	3800.0	3812.5	3818.6	3781.0	3800.0	3781.0	3825.0	3831.2	3806.1	3818.6
27.5°	3705.8	3687.1	3680.7	3655.7	3668.2	3662.1	3668.2	3668.2	3705.8	3655.7
30°	3561.5	3542.8	3549.0	3530.3	3536.4	3530.3	3536.4	3536.4	3561.5	3555.4
32.5°	3423.6	3404.9	3411.1	3392.4	3392.4	3398.5	3386.0	3386.0	3404.9	3392.4
35°	3291.9	3248.1	3254.3	3248.1	3254.3	3229.2	3229.2	3223.0	3235.6	3204.1
37.5°	3103.8	3085.1	3078.8	3072.6	3078.8	3066.2	3078.8	3060.1	3078.8	3053.7
40°	2934.5	2921.9	2928.3	2890.7	2890.7	2896.9	2884.3	2878.2	2884.3	2909.4
42.5°	2765.3	2740.3	2727.7	2715.2	2721.3	2702.7	2696.3	2683.7	2696.3	2671.2
45°	2564.5	2564.5	2558.4	2526.9	2533.3	2533.3	2508.2	2483.2	2489.3	2489.3
47.5°	2382.9	2370.3	2363.9	2332.7	2326.3	2320.2	2294.9	2276.2	2276.2	2257.3
50°	2182.0	2169.5	2150.8	2119.4	2106.8	2069.2	2050.5	2025.5	2000.4	2000.4
52.5°	1994.0	1950.0	1924.9	1874.8	1856.1	1837.2	1787.0	1768.3	1749.4	1730.7
55°	1768.3	1730.7	1680.6	1624.1	1599.0	1567.5	1517.4	1479.8	1454.7	1461.1
57.5°	1548.8	1486.2	1436.0	1360.8	1329.3	1310.4	1260.3	1210.1	1185.0	1185.0
60°	1279.2	1229.0	1166.4	1097.3	1072.2	1041.0	978.1	946.9	927.9	909.2
62.5°	1022.1	984.5	927.9	840.2	821.5	790.0	746.3	708.7	689.7	689.7
65°	765.0	727.3	677.2	614.5	589.4	564.4	526.8	489.2	470.2	464.1
67.5°	539.3	495.3	451.6	401.4	382.5	369.9	332.3	307.3	294.7	288.3
70°	325.9	300.9	269.7	232.0	213.1	200.6	175.5	156.8	150.4	144.3
72.5°	169.4	150.4	125.4	100.3	87.8	75.2	62.7	50.1	44.0	44.0
75°	62.7	50.1	31.5	18.9	12.5	12.5	12.5	12.5	12.5	12.5
77.5°	12.5	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
80°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
82.5°	0.0	0.0	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	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)