

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 FEU4C909050 F4LC-CSSQ-MMS**

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 FEU4C909050 F4LC-CSSQ-MMS  
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

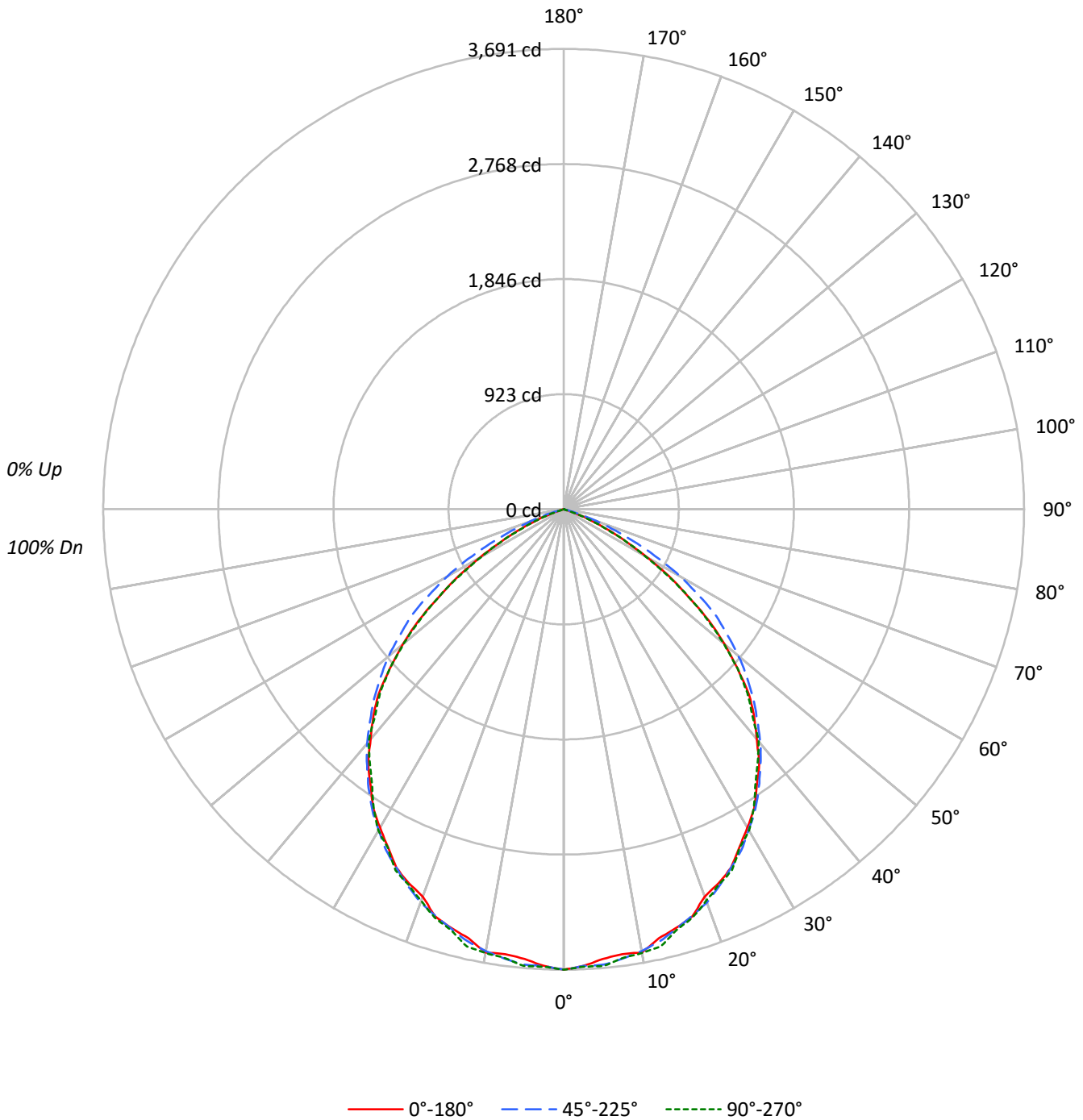
Lumens per Lamp: N/A  
 Luminaire Lumens: 7884.0 lumens  
 Efficiency: N/A  
 Efficacy: 81.2 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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



TEST NUMBER: P#

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

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

	0°	45°	90°
0°	356112	356112	356112
5°	350372	354924	355942
10°	353395	352366	353894
15°	347207	347716	348765
20°	339126	344506	342904
25°	337660	337660	339896
30°	328253	330582	331183
35°	318013	321111	315539
40°	303091	309024	306379
45°	286858	293298	283992
50°	252620	274656	251044
55°	204593	251342	205485
60°	149712	208416	146702
65°	90982	148403	88585
70°	35490	79895	34023
75°	3914	21511	3914
80°	2945	2945	2945
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	348.4	4.4
10°-20°	985.8	12.5
20°-30°	1462.7	18.6
30°-40°	1694.9	21.5
40°-50°	1625.0	20.6
50°-60°	1194.8	15.2
60°-70°	516.0	6.5
70°-80°	55.7	0.7
80°-90°	0.7	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°	2796.9	35.5
0°-40°	4491.7	57.0
0°-60°	7311.5	92.7
0°-90°	7884.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	7884.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3691	3691	3691	3691	3691	
5°	3617	3654	3664	3670	3675	345
15°	3476	3497	3481	3486	3491	980
25°	3172	3166	3172	3177	3193	1452
35°	2700	2716	2726	2721	2679	1688
45°	2102	2108	2149	2118	2081	1598
55°	1216	1342	1494	1337	1222	1094
65°	398	498	650	493	388	410
75°	10	16	58	10	10	32
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#  
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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7
2.5°	3664.4	3706.4	3711.7	3685.4	3674.9	3659.3	3695.9	3669.8	3680.3	3669.8	3664.4
5°	3617.4	3664.4	3669.8	3669.8	3659.3	3654.0	3669.8	3664.4	3659.3	3648.8	3664.4
7.5°	3596.4	3622.5	3648.8	3617.4	3633.0	3627.9	3664.4	3648.8	3643.5	3643.5	3633.0
10°	3606.9	3601.6	3622.5	3591.1	3601.6	3591.1	3622.5	3622.5	3612.0	3601.6	3596.4
12.5°	3522.8	3564.8	3564.8	3559.6	3549.1	3533.3	3564.8	3585.9	3554.3	3554.3	3549.1
15°	3475.8	3486.3	3491.4	3491.4	3486.3	3496.7	3512.4	3491.4	3496.7	3470.4	3480.9
17.5°	3423.4	3402.4	3418.0	3407.6	3412.9	3423.4	3444.3	3444.3	3412.9	3407.6	3418.0
20°	3302.7	3365.6	3371.0	3339.5	3344.7	3344.7	3381.5	3350.0	3371.0	3344.7	3355.1
22.5°	3245.0	3286.9	3292.3	3250.3	3276.4	3245.0	3281.8	3234.5	3286.9	3250.3	3266.0
25°	3171.6	3166.5	3182.1	3161.1	3166.5	3166.5	3192.6	3171.6	3187.5	3166.5	3171.6
27.5°	3051.2	3093.1	3087.8	3066.8	3077.3	3072.2	3124.6	3066.8	3098.3	3072.2	3082.6
30°	2946.2	2983.0	2972.5	2951.5	2951.5	2935.7	2993.5	2977.6	2972.5	2972.5	2967.1
32.5°	2841.4	2846.7	2836.2	2841.4	2846.7	2825.8	2872.8	2851.9	2846.7	2851.9	2857.2
35°	2699.8	2699.8	2710.3	2694.6	2715.6	2715.6	2757.5	2731.2	2726.1	2710.3	2726.1
37.5°	2574.0	2558.4	2563.5	2563.5	2574.0	2584.5	2605.4	2595.0	2595.0	2579.3	2589.8
40°	2406.3	2395.8	2411.4	2411.4	2427.3	2427.3	2448.2	2437.8	2453.4	2453.4	2453.4
42.5°	2259.6	2259.6	2249.1	2264.7	2270.1	2264.7	2301.5	2296.2	2301.5	2291.0	2296.2
45°	2102.2	2102.2	2091.7	2086.5	2112.6	2107.5	2149.4	2133.6	2154.6	2144.1	2149.4
47.5°	1887.2	1913.5	1897.7	1913.5	1944.9	1950.3	1976.4	1965.9	1986.9	1971.2	1992.2
50°	1682.9	1682.9	1698.5	1719.5	1750.9	1756.3	1787.7	1808.7	1819.2	1824.3	1829.7
52.5°	1468.0	1462.6	1478.4	1504.5	1530.8	1551.8	1583.2	1614.7	1635.6	1667.1	1651.3
55°	1216.2	1226.7	1242.5	1274.0	1315.9	1342.0	1368.3	1410.2	1447.0	1462.6	1494.1
57.5°	1001.2	990.8	1001.2	1043.2	1090.4	1111.4	1148.2	1190.1	1242.5	1274.0	1284.4
60°	775.8	781.1	791.6	828.4	865.0	896.4	912.3	980.3	1027.5	1059.0	1080.0
62.5°	571.5	582.0	592.5	623.9	660.5	686.8	712.9	770.7	812.6	844.0	865.0
65°	398.5	403.6	419.4	435.1	471.8	497.9	518.9	566.2	608.1	634.4	650.0
67.5°	246.4	251.5	262.0	283.2	309.3	330.3	351.2	382.7	419.4	445.5	450.9
70°	125.8	131.1	136.3	152.1	173.0	183.5	199.1	225.4	251.5	272.5	283.2
72.5°	41.9	41.9	47.3	57.7	68.2	78.7	83.8	110.2	131.1	141.6	146.7
75°	10.5	10.5	10.5	10.5	10.5	15.8	15.8	31.4	41.9	52.4	57.7
77.5°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	10.5	10.5
80°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
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°	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7	3690.7
2.5°	3690.7	3680.3	3674.9	3680.3	3680.3	3674.9	3690.7	3711.7	3737.8	3669.8
5°	3685.4	3674.9	3685.4	3654.0	3669.8	3659.3	3680.3	3674.9	3695.9	3674.9
7.5°	3669.8	3648.8	3654.0	3638.3	3659.3	3633.0	3648.8	3680.3	3659.3	3627.9
10°	3617.4	3606.9	3643.5	3591.1	3580.6	3601.6	3643.5	3612.0	3601.6	3612.0
12.5°	3564.8	3564.8	3580.6	3538.7	3543.8	3554.3	3575.2	3554.3	3564.8	3591.1
15°	3507.2	3496.7	3522.8	3491.4	3486.3	3475.8	3496.7	3496.7	3507.2	3491.4
17.5°	3439.0	3423.4	3423.4	3412.9	3407.6	3433.9	3444.3	3449.5	3454.8	3433.9
20°	3355.1	3350.0	3365.6	3350.0	3355.1	3360.5	3360.5	3350.0	3397.1	3339.5
22.5°	3266.0	3281.8	3260.8	3250.3	3260.8	3271.3	3271.3	3276.4	3266.0	3255.5
25°	3177.0	3187.5	3192.6	3161.1	3177.0	3161.1	3197.9	3203.1	3182.1	3192.6
27.5°	3098.3	3082.6	3077.3	3056.3	3066.8	3061.7	3066.8	3066.8	3098.3	3056.3
30°	2977.6	2962.0	2967.1	2951.5	2956.7	2951.5	2956.7	2956.7	2977.6	2972.5
32.5°	2862.3	2846.7	2851.9	2836.2	2836.2	2841.4	2830.9	2830.9	2846.7	2836.2
35°	2752.2	2715.6	2720.7	2715.6	2720.7	2699.8	2699.8	2694.6	2705.1	2678.8
37.5°	2595.0	2579.3	2574.0	2568.9	2574.0	2563.5	2574.0	2558.4	2574.0	2553.0
40°	2453.4	2442.9	2448.2	2416.8	2416.8	2421.9	2411.4	2406.3	2411.4	2432.4
42.5°	2312.0	2291.0	2280.5	2270.1	2275.2	2259.6	2254.2	2243.8	2254.2	2233.3
45°	2144.1	2144.1	2138.9	2112.6	2118.0	2118.0	2097.0	2076.1	2081.2	2081.2
47.5°	1992.2	1981.7	1976.4	1950.3	1944.9	1939.8	1918.6	1903.0	1903.0	1887.2
50°	1824.3	1813.8	1798.2	1771.9	1761.4	1730.0	1714.4	1693.4	1672.4	1672.4
52.5°	1667.1	1630.3	1609.3	1567.4	1551.8	1536.0	1494.1	1478.4	1462.6	1447.0
55°	1478.4	1447.0	1405.1	1357.8	1336.8	1310.5	1268.6	1237.2	1216.2	1221.5
57.5°	1294.9	1242.5	1200.6	1137.7	1111.4	1095.6	1053.6	1011.7	990.8	990.8
60°	1069.5	1027.5	975.1	917.4	896.4	870.3	817.7	791.6	775.8	760.2
62.5°	854.5	823.1	775.8	702.4	686.8	660.5	623.9	592.5	576.7	576.7
65°	639.5	608.1	566.2	513.8	492.8	471.8	440.4	409.0	393.1	388.0
67.5°	450.9	414.1	377.5	335.6	319.8	309.3	277.8	256.9	246.4	241.1
70°	272.5	251.5	225.4	194.0	178.2	167.7	146.7	131.1	125.8	120.6
72.5°	141.6	125.8	104.8	83.8	73.4	62.9	52.4	41.9	36.8	36.8
75°	52.4	41.9	26.3	15.8	10.5	10.5	10.5	10.5	10.5	10.5
77.5°	10.5	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
80°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
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)