

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 FEU4C909030 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 FEU4C909030 F4LC-CSSQ-MMS  
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

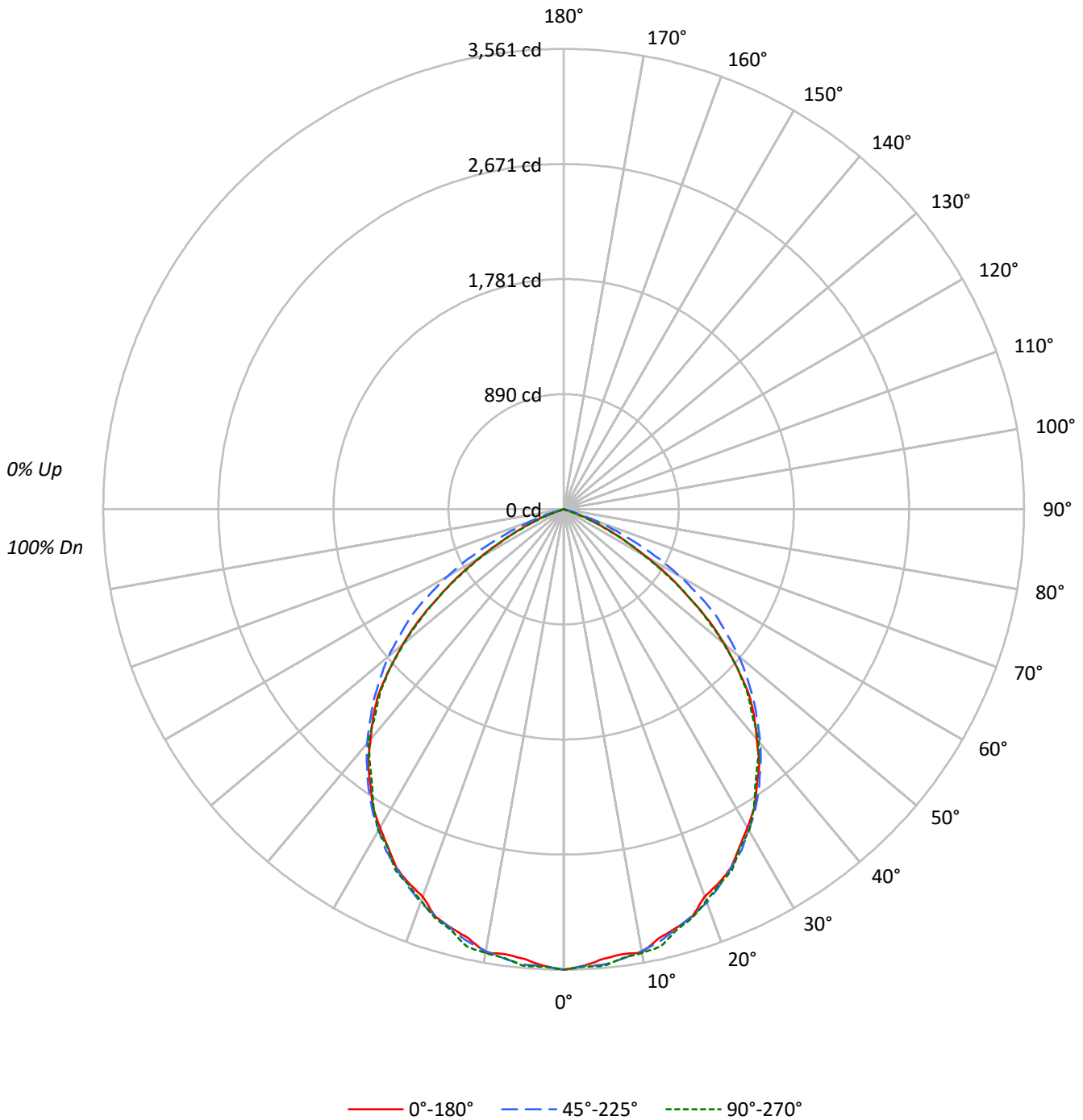
Lumens per Lamp: N/A  
 Luminaire Lumens: 7607.0 lumens  
 Efficiency: N/A  
 Efficacy: 78.3 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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	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°	343607	343607	343607
5°	338062	342459	343437
10°	340981	339991	341461
15°	335010	335499	336508
20°	327215	332410	330860
25°	325800	325800	327951
30°	316722	318972	319552
35°	306834	309826	304455
40°	292448	298166	295609
45°	276774	282996	274017
50°	243749	265004	242233
55°	197410	242511	198268
60°	144444	201083	141549
65°	87786	143197	85480
70°	34249	77074	32838
75°	3765	20765	3765
80°	2889	2889	2889
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	336.1	4.4
10°-20°	951.2	12.5
20°-30°	1411.3	18.6
30°-40°	1635.3	21.5
40°-50°	1567.9	20.6
50°-60°	1152.8	15.2
60°-70°	497.9	6.5
70°-80°	53.8	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°	2698.6	35.5
0°-40°	4333.9	57.0
0°-60°	7054.6	92.7
0°-90°	7607.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	7607.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3561	3561	3561	3561	3561	
5°	3490	3526	3536	3541	3546	333
15°	3354	3374	3359	3364	3369	945
25°	3060	3055	3060	3065	3080	1401
35°	2605	2620	2630	2625	2585	1629
45°	2028	2034	2074	2044	2008	1542
55°	1174	1295	1442	1290	1179	1056
65°	384	480	627	476	374	395
75°	10	15	56	10	10	31
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°	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1
2.5°	3535.7	3576.1	3581.3	3555.9	3545.8	3530.7	3566.0	3540.8	3551.0	3540.8	3535.7
5°	3490.3	3535.7	3540.8	3540.8	3530.7	3525.6	3540.8	3535.7	3530.7	3520.6	3535.7
7.5°	3470.1	3495.2	3520.6	3490.3	3505.4	3500.4	3535.7	3520.6	3515.5	3515.5	3505.4
10°	3480.2	3475.0	3495.2	3464.9	3475.0	3464.9	3495.2	3495.2	3485.1	3475.0	3470.1
12.5°	3399.1	3439.5	3439.5	3434.6	3424.5	3409.2	3439.5	3459.9	3429.4	3429.4	3424.5
15°	3353.7	3363.8	3368.7	3368.7	3363.8	3373.9	3389.0	3368.7	3373.9	3348.5	3358.6
17.5°	3303.1	3282.9	3297.9	3287.8	3293.0	3303.1	3323.3	3323.3	3293.0	3287.8	3297.9
20°	3186.7	3247.4	3252.5	3222.2	3227.2	3227.2	3262.6	3232.3	3252.5	3227.2	3237.3
22.5°	3131.0	3171.4	3176.6	3136.1	3161.3	3131.0	3166.5	3120.9	3171.4	3136.1	3151.2
25°	3060.2	3055.2	3070.3	3050.1	3055.2	3055.2	3080.4	3060.2	3075.5	3055.2	3060.2
27.5°	2944.0	2984.4	2979.3	2959.1	2969.2	2964.2	3014.8	2959.1	2989.4	2964.2	2974.3
30°	2842.7	2878.2	2868.1	2847.8	2847.8	2832.6	2888.3	2873.0	2868.1	2868.1	2862.9
32.5°	2741.5	2746.7	2736.6	2741.5	2746.7	2726.5	2771.9	2751.7	2746.7	2751.7	2756.8
35°	2604.9	2604.9	2615.0	2600.0	2620.2	2620.2	2660.6	2635.3	2630.3	2615.0	2630.3
37.5°	2483.6	2468.5	2473.5	2473.5	2483.6	2493.7	2513.9	2503.8	2503.8	2488.7	2498.8
40°	2321.8	2311.7	2326.7	2326.7	2342.0	2342.0	2362.2	2352.1	2367.2	2367.2	2367.2
42.5°	2180.2	2180.2	2170.1	2185.1	2190.3	2185.1	2220.6	2215.5	2220.6	2210.5	2215.5
45°	2028.3	2028.3	2018.2	2013.2	2038.4	2033.5	2073.9	2058.6	2078.9	2068.7	2073.9
47.5°	1820.9	1846.3	1831.0	1846.3	1876.6	1881.8	1906.9	1896.8	1917.1	1902.0	1922.2
50°	1623.8	1623.8	1638.9	1659.1	1689.4	1694.6	1724.9	1745.1	1755.3	1760.2	1765.4
52.5°	1416.4	1411.2	1426.5	1451.7	1477.1	1497.3	1527.6	1558.0	1578.2	1608.5	1593.3
55°	1173.5	1183.6	1198.9	1229.2	1269.6	1294.8	1320.2	1360.7	1396.2	1411.2	1441.6
57.5°	966.1	956.0	966.1	1006.5	1052.1	1072.3	1107.8	1148.3	1198.9	1229.2	1239.3
60°	748.5	753.7	763.8	799.3	834.6	864.9	880.2	945.8	991.4	1021.8	1042.0
62.5°	551.4	561.6	571.7	602.0	637.3	662.7	687.9	743.6	784.0	814.4	834.6
65°	384.5	389.4	404.7	419.8	455.3	480.5	500.7	546.3	586.7	612.1	627.2
67.5°	237.7	242.7	252.8	273.2	298.4	318.7	338.9	369.2	404.7	429.9	435.0
70°	121.4	126.5	131.5	146.7	167.0	177.1	192.1	217.5	242.7	262.9	273.2
72.5°	40.5	40.5	45.6	55.7	65.8	75.9	80.9	106.3	126.5	136.6	141.6
75°	10.1	10.1	10.1	10.1	10.1	15.3	15.3	30.3	40.5	50.6	55.7
77.5°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	10.1	10.1
80°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
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°	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1	3561.1
2.5°	3561.1	3551.0	3545.8	3551.0	3551.0	3545.8	3561.1	3581.3	3606.5	3540.8
5°	3555.9	3545.8	3555.9	3525.6	3540.8	3530.7	3551.0	3545.8	3566.0	3545.8
7.5°	3540.8	3520.6	3525.6	3510.5	3530.7	3505.4	3520.6	3551.0	3530.7	3500.4
10°	3490.3	3480.2	3515.5	3464.9	3454.8	3475.0	3515.5	3485.1	3475.0	3485.1
12.5°	3439.5	3439.5	3454.8	3414.3	3419.3	3429.4	3449.6	3429.4	3439.5	3464.9
15°	3384.0	3373.9	3399.1	3368.7	3363.8	3353.7	3373.9	3373.9	3384.0	3368.7
17.5°	3318.2	3303.1	3303.1	3293.0	3287.8	3313.2	3323.3	3328.3	3333.4	3313.2
20°	3237.3	3232.3	3247.4	3232.3	3237.3	3242.4	3242.4	3232.3	3277.7	3222.2
22.5°	3151.2	3166.5	3146.3	3136.1	3146.3	3156.4	3156.4	3161.3	3151.2	3141.1
25°	3065.3	3075.5	3080.4	3050.1	3065.3	3050.1	3085.6	3090.5	3070.3	3080.4
27.5°	2989.4	2974.3	2969.2	2949.0	2959.1	2954.1	2959.1	2959.1	2989.4	2949.0
30°	2873.0	2857.9	2862.9	2847.8	2852.8	2847.8	2852.8	2852.8	2873.0	2868.1
32.5°	2761.8	2746.7	2751.7	2736.6	2736.6	2741.5	2731.4	2731.4	2746.7	2736.6
35°	2655.5	2620.2	2625.1	2620.2	2625.1	2604.9	2604.9	2600.0	2610.1	2584.7
37.5°	2503.8	2488.7	2483.6	2478.6	2483.6	2473.5	2483.6	2468.5	2483.6	2463.3
40°	2367.2	2357.1	2362.2	2331.9	2331.9	2336.8	2326.7	2321.8	2326.7	2346.9
42.5°	2230.8	2210.5	2200.4	2190.3	2195.3	2180.2	2175.0	2164.9	2175.0	2154.8
45°	2068.7	2068.7	2063.8	2038.4	2043.6	2043.6	2023.3	2003.1	2008.1	2008.1
47.5°	1922.2	1912.1	1906.9	1881.8	1876.6	1871.6	1851.2	1836.2	1836.2	1820.9
50°	1760.2	1750.1	1735.0	1709.6	1699.5	1669.2	1654.1	1633.9	1613.7	1613.7
52.5°	1608.5	1573.0	1552.8	1512.4	1497.3	1482.0	1441.6	1426.5	1411.2	1396.2
55°	1426.5	1396.2	1355.7	1310.1	1289.9	1264.5	1224.0	1193.7	1173.5	1178.6
57.5°	1249.4	1198.9	1158.4	1097.7	1072.3	1057.1	1016.6	976.2	956.0	956.0
60°	1031.9	991.4	940.9	885.2	864.9	839.8	789.0	763.8	748.5	733.5
62.5°	824.5	794.1	748.5	677.8	662.7	637.3	602.0	571.7	556.4	556.4
65°	617.1	586.7	546.3	495.7	475.5	455.3	424.9	394.6	379.3	374.4
67.5°	435.0	399.6	364.3	323.8	308.5	298.4	268.1	247.9	237.7	232.6
70°	262.9	242.7	217.5	187.2	171.9	161.8	141.6	126.5	121.4	116.4
72.5°	136.6	121.4	101.1	80.9	70.8	60.7	50.6	40.5	35.5	35.5
75°	50.6	40.5	25.4	15.3	10.1	10.1	10.1	10.1	10.1	10.1
77.5°	10.1	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
80°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
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)