

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: **FLDSQ4C70D010 FEU4C709030 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: FLDSQ4C70D010 FEU4C709030 F4LC-CSSQ-MW  
 Description: 4 INCH 7000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

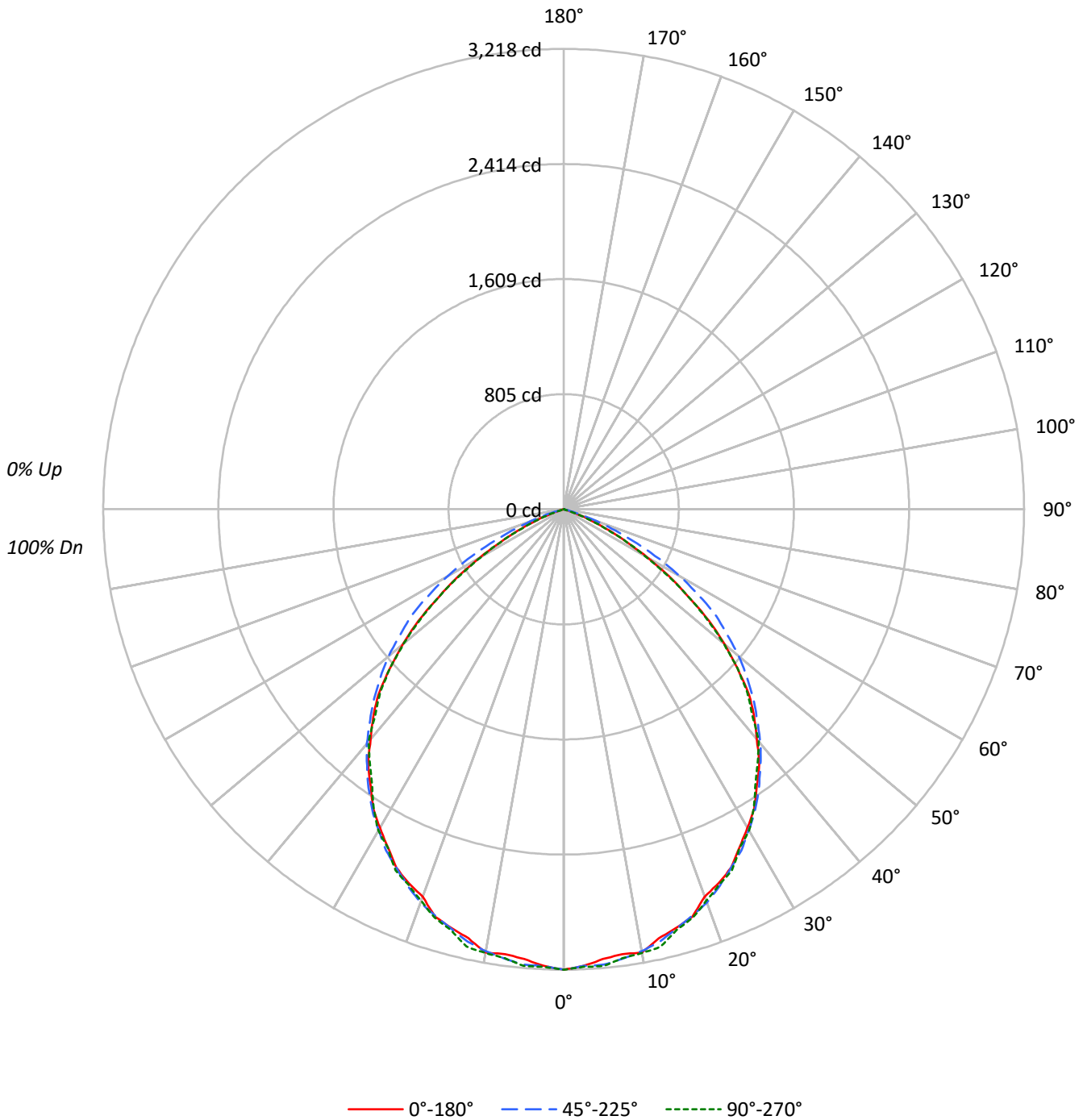
Lumens per Lamp: N/A  
 Luminaire Lumens: 6875.0 lumens  
 Efficiency: N/A  
 Efficacy: 88.1 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 78  
 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#

CATALOG NUMBER: FLDSQ4C70D010 FEU4C709030 F4LC-CSSQ-MW

**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°	310540	310540	310540
5°	305527	309508	310389
10°	308168	307267	308609
15°	302765	303214	304133
20°	295733	300425	299018
25°	294447	294447	296395
30°	286238	288277	288801
35°	277316	280013	275160
40°	264296	269473	267168
45°	250137	255759	247640
50°	220287	239501	218921
55°	178418	219161	179191
60°	130549	181727	127925
65°	79338	129407	77238
70°	30948	69654	29678
75°	3393	18789	3393
80°	2612	2612	2612
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	303.8	4.4
10°-20°	859.6	12.5
20°-30°	1275.5	18.6
30°-40°	1478.0	21.5
40°-50°	1417.0	20.6
50°-60°	1041.9	15.2
60°-70°	450.0	6.5
70°-80°	48.6	0.7
80°-90°	0.6	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°	2438.9	35.5
0°-40°	3916.9	57.0
0°-60°	6375.8	92.7
0°-90°	6875.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6875.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3218	3218	3218	3218	3218	
5°	3154	3186	3196	3200	3205	301
15°	3031	3049	3035	3040	3045	854
25°	2766	2761	2766	2770	2784	1266
35°	2354	2368	2377	2372	2336	1472
45°	1833	1838	1874	1847	1815	1393
55°	1061	1170	1303	1166	1065	954
65°	348	434	567	430	338	357
75°	9	14	50	9	9	28
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°	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4
2.5°	3195.5	3232.0	3236.7	3213.7	3204.6	3191.0	3222.9	3200.1	3209.3	3200.1	3195.5
5°	3154.4	3195.5	3200.1	3200.1	3191.0	3186.3	3200.1	3195.5	3191.0	3181.8	3195.5
7.5°	3136.1	3158.9	3181.8	3154.4	3168.0	3163.6	3195.5	3181.8	3177.2	3177.2	3168.0
10°	3145.3	3140.6	3158.9	3131.5	3140.6	3131.5	3158.9	3158.9	3149.8	3140.6	3136.1
12.5°	3072.0	3108.5	3108.5	3104.1	3094.9	3081.1	3108.5	3127.0	3099.4	3099.4	3094.9
15°	3030.9	3040.1	3044.6	3044.6	3040.1	3049.2	3062.8	3044.6	3049.2	3026.3	3035.4
17.5°	2985.3	2967.0	2980.6	2971.5	2976.1	2985.3	3003.5	3003.5	2976.1	2971.5	2980.6
20°	2880.1	2934.9	2939.6	2912.1	2916.6	2916.6	2948.7	2921.3	2939.6	2916.6	2925.8
22.5°	2829.7	2866.3	2870.9	2834.4	2857.1	2829.7	2861.8	2820.6	2866.3	2834.4	2848.0
25°	2765.7	2761.2	2774.9	2756.6	2761.2	2761.2	2784.0	2765.7	2779.5	2761.2	2765.7
27.5°	2660.7	2697.3	2692.6	2674.3	2683.5	2679.0	2724.7	2674.3	2701.7	2679.0	2688.1
30°	2569.1	2601.2	2592.1	2573.8	2573.8	2560.0	2610.3	2596.5	2592.1	2592.1	2587.4
32.5°	2477.7	2482.4	2473.3	2477.7	2482.4	2464.1	2505.2	2486.9	2482.4	2486.9	2491.5
35°	2354.3	2354.3	2363.4	2349.8	2368.1	2368.1	2404.6	2381.7	2377.2	2363.4	2377.2
37.5°	2244.6	2231.0	2235.4	2235.4	2244.6	2253.7	2272.0	2262.9	2262.9	2249.2	2258.4
40°	2098.3	2089.2	2102.8	2102.8	2116.6	2116.6	2134.9	2125.8	2139.4	2139.4	2139.4
42.5°	1970.4	1970.4	1961.3	1974.9	1979.5	1974.9	2007.0	2002.3	2007.0	1997.8	2002.3
45°	1833.1	1833.1	1824.0	1819.5	1842.3	1837.8	1874.3	1860.5	1878.8	1869.7	1874.3
47.5°	1645.7	1668.6	1654.8	1668.6	1696.0	1700.7	1723.4	1714.3	1732.6	1719.0	1737.2
50°	1467.5	1467.5	1481.2	1499.4	1526.9	1531.5	1558.9	1577.2	1586.4	1590.8	1595.5
52.5°	1280.1	1275.4	1289.2	1312.0	1334.9	1353.2	1380.6	1408.0	1426.3	1453.7	1439.9
55°	1060.6	1069.7	1083.5	1110.9	1147.5	1170.2	1193.2	1229.7	1261.8	1275.4	1302.8
57.5°	873.1	864.0	873.1	909.7	950.9	969.2	1001.2	1037.8	1083.5	1110.9	1120.1
60°	676.5	681.2	690.3	722.4	754.3	781.7	795.5	854.8	896.0	923.5	941.7
62.5°	498.4	507.5	516.7	544.1	576.0	598.9	621.7	672.0	708.6	736.0	754.3
65°	347.5	352.0	365.8	379.4	411.5	434.2	452.5	493.7	530.3	553.2	566.8
67.5°	214.9	219.4	228.5	246.9	269.7	288.0	306.3	333.7	365.8	388.5	393.2
70°	109.7	114.3	118.8	132.6	150.9	160.0	173.7	196.6	219.4	237.6	246.9
72.5°	36.6	36.6	41.2	50.4	59.5	68.6	73.1	96.1	114.3	123.5	128.0
75°	9.1	9.1	9.1	9.1	9.1	13.8	13.8	27.4	36.6	45.7	50.4
77.5°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	9.1	9.1
80°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
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°	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4	3218.4
2.5°	3218.4	3209.3	3204.6	3209.3	3209.3	3204.6	3218.4	3236.7	3259.4	3200.1
5°	3213.7	3204.6	3213.7	3186.3	3200.1	3191.0	3209.3	3204.6	3222.9	3204.6
7.5°	3200.1	3181.8	3186.3	3172.7	3191.0	3168.0	3181.8	3209.3	3191.0	3163.6
10°	3154.4	3145.3	3177.2	3131.5	3122.3	3140.6	3177.2	3149.8	3140.6	3149.8
12.5°	3108.5	3108.5	3122.3	3085.8	3090.3	3099.4	3117.7	3099.4	3108.5	3131.5
15°	3058.4	3049.2	3072.0	3044.6	3040.1	3030.9	3049.2	3049.2	3058.4	3044.6
17.5°	2998.9	2985.3	2985.3	2976.1	2971.5	2994.4	3003.5	3008.0	3012.7	2994.4
20°	2925.8	2921.3	2934.9	2921.3	2925.8	2930.4	2930.4	2921.3	2962.3	2912.1
22.5°	2848.0	2861.8	2843.5	2834.4	2843.5	2852.6	2852.6	2857.1	2848.0	2838.8
25°	2770.4	2779.5	2784.0	2756.6	2770.4	2756.6	2788.7	2793.1	2774.9	2784.0
27.5°	2701.7	2688.1	2683.5	2665.2	2674.3	2669.8	2674.3	2674.3	2701.7	2665.2
30°	2596.5	2582.9	2587.4	2573.8	2578.3	2573.8	2578.3	2578.3	2596.5	2592.1
32.5°	2496.0	2482.4	2486.9	2473.3	2473.3	2477.7	2468.6	2468.6	2482.4	2473.3
35°	2400.0	2368.1	2372.5	2368.1	2372.5	2354.3	2354.3	2349.8	2358.9	2336.0
37.5°	2262.9	2249.2	2244.6	2240.1	2244.6	2235.4	2244.6	2231.0	2244.6	2226.3
40°	2139.4	2130.2	2134.9	2107.5	2107.5	2112.0	2102.8	2098.3	2102.8	2121.1
42.5°	2016.1	1997.8	1988.7	1979.5	1984.0	1970.4	1965.7	1956.6	1965.7	1947.5
45°	1869.7	1869.7	1865.2	1842.3	1846.9	1846.9	1828.6	1810.4	1814.8	1814.8
47.5°	1737.2	1728.1	1723.4	1700.7	1696.0	1691.5	1673.1	1659.5	1659.5	1645.7
50°	1590.8	1581.7	1568.1	1545.1	1536.0	1508.6	1495.0	1476.7	1458.4	1458.4
52.5°	1453.7	1421.7	1403.4	1366.8	1353.2	1339.4	1302.8	1289.2	1275.4	1261.8
55°	1289.2	1261.8	1225.2	1184.0	1165.7	1142.8	1106.3	1078.8	1060.6	1065.2
57.5°	1129.2	1083.5	1046.9	992.1	969.2	955.4	918.8	882.2	864.0	864.0
60°	932.6	896.0	850.3	800.0	781.7	758.9	713.1	690.3	676.5	662.9
62.5°	745.1	717.7	676.5	612.5	598.9	576.0	544.1	516.7	502.9	502.9
65°	557.7	530.3	493.7	448.0	429.7	411.5	384.0	356.6	342.8	338.3
67.5°	393.2	361.1	329.2	292.6	278.8	269.7	242.3	224.0	214.9	210.2
70°	237.6	219.4	196.6	169.2	155.4	146.2	128.0	114.3	109.7	105.2
72.5°	123.5	109.7	91.4	73.1	64.0	54.8	45.7	36.6	32.1	32.1
75°	45.7	36.6	22.9	13.8	9.1	9.1	9.1	9.1	9.1	9.1
77.5°	9.1	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
80°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
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)