

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 FEU4C709040 F4LC-DFSSQ-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 FEU4C709040 F4LC-DFSSQ-MW  
 Description: 4 INCH 7000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

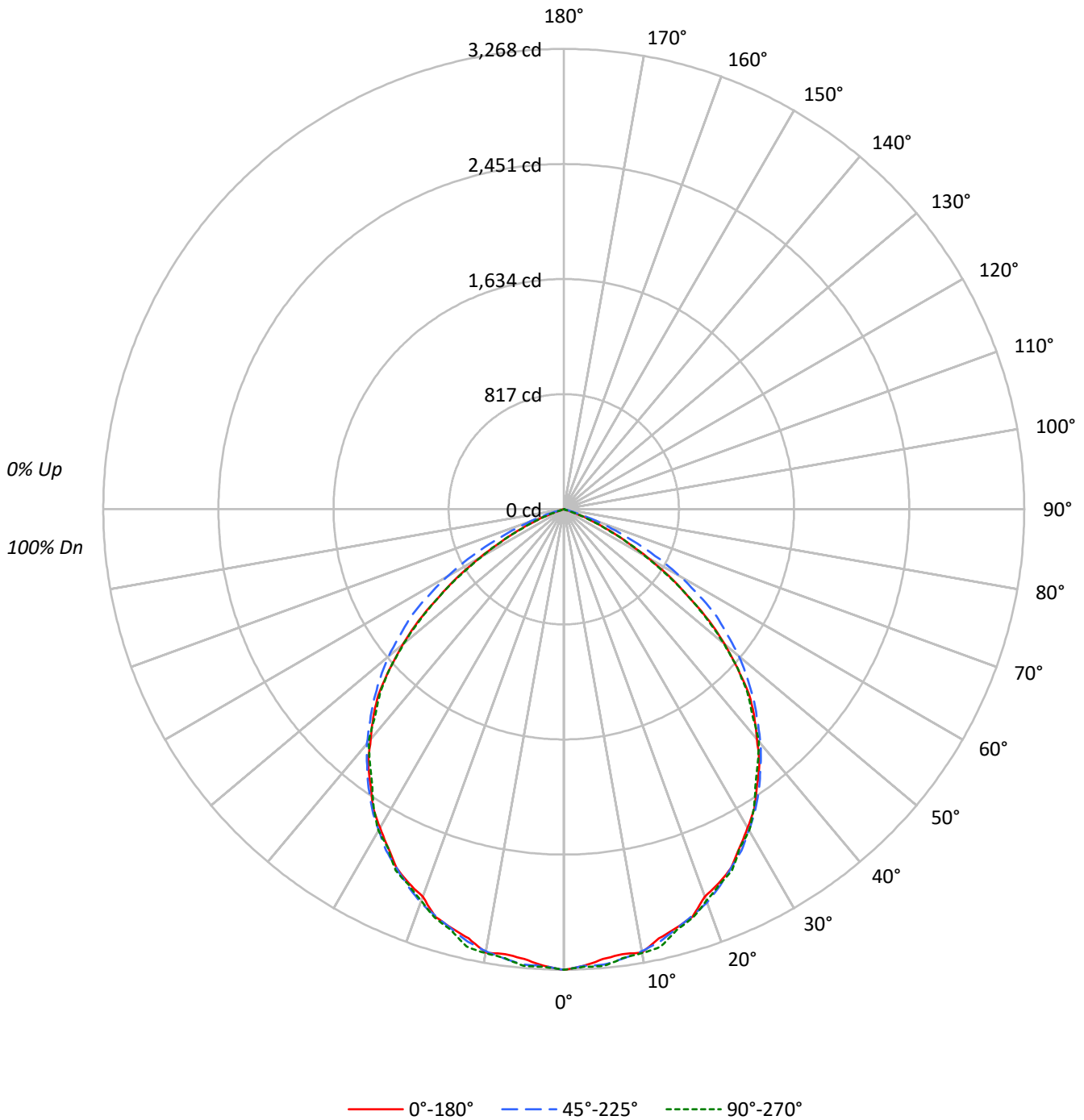
Lumens per Lamp: N/A  
 Luminaire Lumens: 6982.0 lumens  
 Efficiency: N/A  
 Efficacy: 89.5 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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#

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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°	315374	315374	315374
5°	310283	314322	315223
10°	312959	312058	313410
15°	307480	307939	308868
20°	300333	305097	303680
25°	299035	299035	301005
30°	290695	292767	293291
35°	281627	284371	279436
40°	268415	273667	271325
45°	254040	259744	251502
50°	223724	243223	222328
55°	181193	222576	181984
60°	132576	184564	129913
65°	80571	131439	78448
70°	31428	70754	30130
75°	3467	19050	3467
80°	2612	2612	2612
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	308.5	4.4
10°-20°	873.0	12.5
20°-30°	1295.4	18.6
30°-40°	1500.9	21.5
40°-50°	1439.1	20.6
50°-60°	1058.1	15.2
60°-70°	457.0	6.5
70°-80°	49.3	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°	2476.9	35.5
0°-40°	3977.8	57.0
0°-60°	6475.0	92.7
0°-90°	6982.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6982.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3268	3268	3268	3268	3268	
5°	3204	3236	3245	3250	3254	306
15°	3078	3097	3083	3087	3092	868
25°	2809	2804	2809	2814	2827	1286
35°	2391	2405	2414	2410	2372	1495
45°	1862	1866	1904	1876	1843	1415
55°	1077	1188	1323	1184	1082	969
65°	353	441	576	436	344	363
75°	9	14	51	9	9	29
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C70D010 FEU4C709040 F4LC-DFSSQ-MW

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5
2.5°	3245.2	3282.3	3287.1	3263.8	3254.5	3240.6	3273.0	3249.9	3259.2	3249.9	3245.2
5°	3203.5	3245.2	3249.9	3249.9	3240.6	3235.9	3249.9	3245.2	3240.6	3231.4	3245.2
7.5°	3185.0	3208.1	3231.4	3203.5	3217.3	3212.8	3245.2	3231.4	3226.6	3226.6	3217.3
10°	3194.2	3189.5	3208.1	3180.2	3189.5	3180.2	3208.1	3208.1	3198.8	3189.5	3185.0
12.5°	3119.8	3156.9	3156.9	3152.4	3143.1	3129.1	3156.9	3175.7	3147.6	3147.6	3143.1
15°	3078.1	3087.4	3092.0	3092.0	3087.4	3096.7	3110.5	3092.0	3096.7	3073.4	3082.7
17.5°	3031.7	3013.1	3027.0	3017.7	3022.4	3031.7	3050.3	3050.3	3022.4	3017.7	3027.0
20°	2924.9	2980.6	2985.3	2957.5	2962.0	2962.0	2994.6	2966.7	2985.3	2962.0	2971.3
22.5°	2873.7	2910.9	2915.6	2878.5	2901.6	2873.7	2906.3	2864.5	2910.9	2878.5	2892.3
25°	2808.8	2804.2	2818.0	2799.5	2804.2	2804.2	2827.3	2808.8	2822.8	2804.2	2808.8
27.5°	2702.1	2739.2	2734.5	2715.9	2725.2	2720.7	2767.1	2715.9	2743.8	2720.7	2730.0
30°	2609.1	2641.7	2632.4	2613.8	2613.8	2599.8	2651.0	2637.0	2632.4	2632.4	2627.7
32.5°	2516.3	2521.0	2511.7	2516.3	2521.0	2502.5	2544.1	2525.6	2521.0	2525.6	2530.3
35°	2390.9	2390.9	2400.2	2386.3	2404.9	2404.9	2442.0	2418.7	2414.2	2400.2	2414.2
37.5°	2279.5	2265.7	2270.2	2270.2	2279.5	2288.8	2307.4	2298.1	2298.1	2284.2	2293.5
40°	2131.0	2121.7	2135.6	2135.6	2149.6	2149.6	2168.1	2158.9	2172.7	2172.7	2172.7
42.5°	2001.1	2001.1	1991.8	2005.6	2010.3	2005.6	2038.2	2033.5	2038.2	2028.9	2033.5
45°	1861.7	1861.7	1852.4	1847.8	1870.9	1866.4	1903.5	1889.5	1908.1	1898.8	1903.5
47.5°	1671.3	1694.6	1680.6	1694.6	1722.4	1727.2	1750.3	1741.0	1759.6	1745.7	1764.3
50°	1490.4	1490.4	1504.2	1522.8	1550.6	1555.3	1583.2	1601.8	1611.0	1615.6	1620.3
52.5°	1300.0	1295.3	1309.3	1332.4	1355.7	1374.3	1402.1	1430.0	1448.5	1476.4	1462.3
55°	1077.1	1086.3	1100.4	1128.2	1165.3	1188.4	1211.7	1248.9	1281.4	1295.3	1323.1
57.5°	886.7	877.4	886.7	923.8	965.7	984.2	1016.8	1053.9	1100.4	1128.2	1137.5
60°	687.0	691.8	701.1	733.6	766.0	793.9	807.9	868.1	910.0	937.8	956.4
62.5°	506.1	515.4	524.7	552.5	584.9	608.2	631.3	682.5	719.6	747.5	766.0
65°	352.9	357.4	371.5	385.3	417.9	441.0	459.5	501.4	538.5	561.8	575.7
67.5°	218.2	222.8	232.0	250.8	273.9	292.5	311.0	338.9	371.5	394.6	399.3
70°	111.4	116.1	120.7	134.7	153.2	162.5	176.4	199.7	222.8	241.3	250.8
72.5°	37.1	37.1	41.9	51.1	60.4	69.7	74.3	97.6	116.1	125.4	129.9
75°	9.3	9.3	9.3	9.3	9.3	14.0	14.0	27.8	37.1	46.4	51.1
77.5°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	9.3	9.3
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°	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5	3268.5
2.5°	3268.5	3259.2	3254.5	3259.2	3259.2	3254.5	3268.5	3287.1	3310.2	3249.9
5°	3263.8	3254.5	3263.8	3235.9	3249.9	3240.6	3259.2	3254.5	3273.0	3254.5
7.5°	3249.9	3231.4	3235.9	3222.1	3240.6	3217.3	3231.4	3259.2	3240.6	3212.8
10°	3203.5	3194.2	3226.6	3180.2	3170.9	3189.5	3226.6	3198.8	3189.5	3198.8
12.5°	3156.9	3156.9	3170.9	3133.8	3138.4	3147.6	3166.2	3147.6	3156.9	3180.2
15°	3106.0	3096.7	3119.8	3092.0	3087.4	3078.1	3096.7	3096.7	3106.0	3092.0
17.5°	3045.5	3031.7	3031.7	3022.4	3017.7	3041.0	3050.3	3054.8	3059.6	3041.0
20°	2971.3	2966.7	2980.6	2966.7	2971.3	2976.0	2976.0	2966.7	3008.4	2957.5
22.5°	2892.3	2906.3	2887.8	2878.5	2887.8	2897.0	2897.0	2901.6	2892.3	2883.0
25°	2813.5	2822.8	2827.3	2799.5	2813.5	2799.5	2832.1	2836.6	2818.0	2827.3
27.5°	2743.8	2730.0	2725.2	2706.7	2715.9	2711.4	2715.9	2715.9	2743.8	2706.7
30°	2637.0	2623.1	2627.7	2613.8	2618.4	2613.8	2618.4	2618.4	2637.0	2632.4
32.5°	2534.9	2521.0	2525.6	2511.7	2511.7	2516.3	2507.0	2507.0	2521.0	2511.7
35°	2437.3	2404.9	2409.5	2404.9	2409.5	2390.9	2390.9	2386.3	2395.6	2372.3
37.5°	2298.1	2284.2	2279.5	2275.0	2279.5	2270.2	2279.5	2265.7	2279.5	2261.0
40°	2172.7	2163.4	2168.1	2140.3	2140.3	2144.8	2135.6	2131.0	2135.6	2154.1
42.5°	2047.5	2028.9	2019.6	2010.3	2014.9	2001.1	1996.3	1987.0	1996.3	1977.8
45°	1898.8	1898.8	1894.2	1870.9	1875.7	1875.7	1857.1	1838.5	1843.1	1843.1
47.5°	1764.3	1755.0	1750.3	1727.2	1722.4	1717.9	1699.1	1685.3	1685.3	1671.3
50°	1615.6	1606.3	1592.5	1569.2	1559.9	1532.1	1518.2	1499.7	1481.1	1481.1
52.5°	1476.4	1443.8	1425.2	1388.1	1374.3	1360.2	1323.1	1309.3	1295.3	1281.4
55°	1309.3	1281.4	1244.3	1202.5	1183.9	1160.6	1123.5	1095.6	1077.1	1081.8
57.5°	1146.8	1100.4	1063.2	1007.5	984.2	970.2	933.1	896.0	877.4	877.4
60°	947.1	910.0	863.6	812.4	793.9	770.8	724.2	701.1	687.0	673.2
62.5°	756.7	728.9	687.0	622.1	608.2	584.9	552.5	524.7	510.7	510.7
65°	566.4	538.5	501.4	455.0	436.4	417.9	390.0	362.2	348.2	343.6
67.5°	399.3	366.7	334.3	297.2	283.2	273.9	246.1	227.5	218.2	213.5
70°	241.3	222.8	199.7	171.8	157.8	148.5	129.9	116.1	111.4	106.8
72.5°	125.4	111.4	92.8	74.3	65.0	55.7	46.4	37.1	32.6	32.6
75°	46.4	37.1	23.3	14.0	9.3	9.3	9.3	9.3	9.3	9.3
77.5°	9.3	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)