

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 FEU4C709027 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 FEU4C709027 F4LC-CSSQ-MW
 Description: 4 INCH 7000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

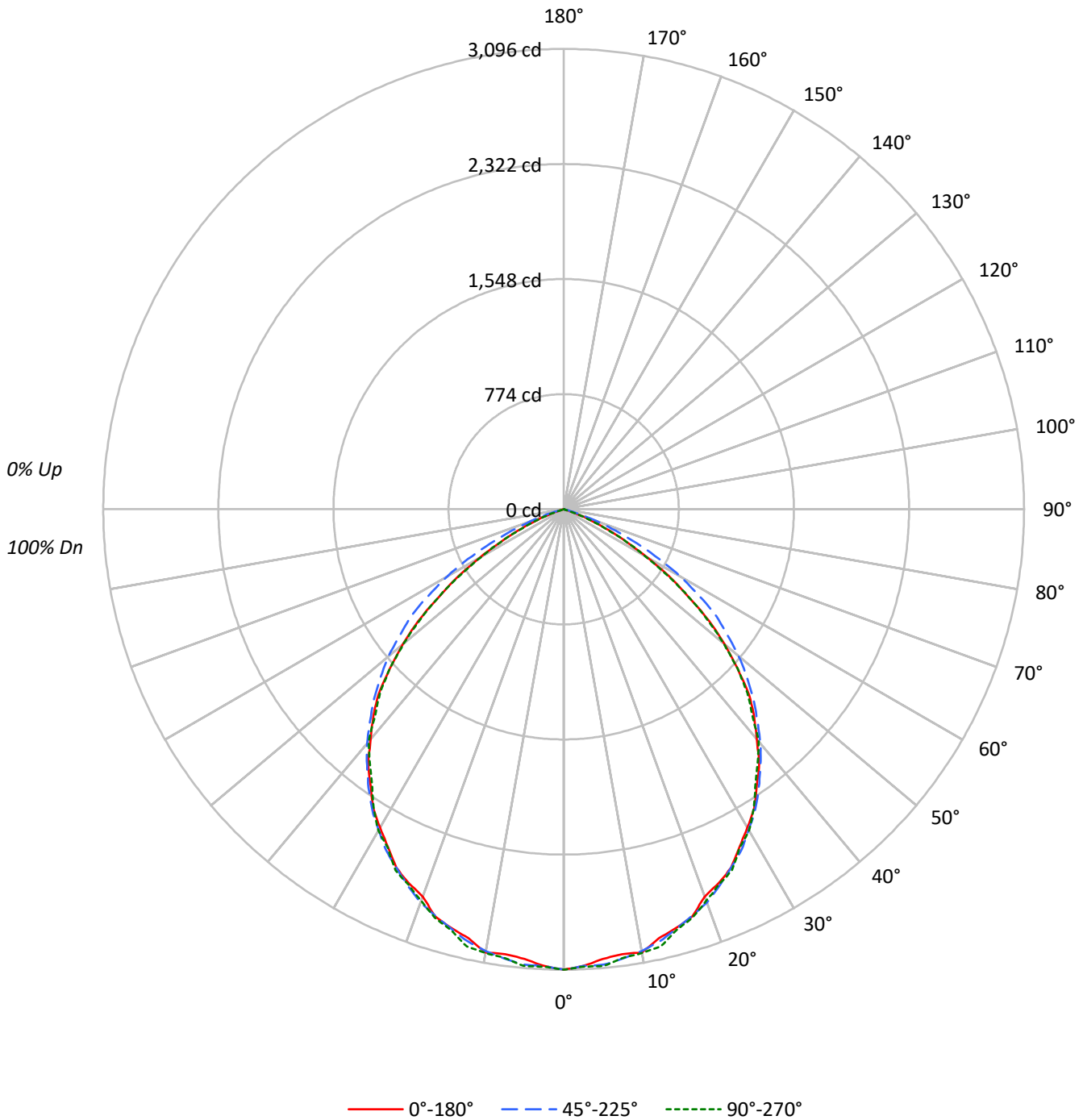
Lumens per Lamp: N/A
 Luminaire Lumens: 6613.0 lumens
 Efficiency: N/A
 Efficacy: 84.8 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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



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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°	298701	298701	298701
5°	293885	297711	298563
10°	296421	295559	296842
15°	291227	291667	292536
20°	284458	288976	287631
25°	283225	283225	285099
30°	275331	277292	277793
35°	266738	269341	264677
40°	254232	259208	256991
45°	240613	246016	238211
50°	211895	230374	210574
55°	171605	210817	172362
60°	125571	174819	123043
65°	76302	124476	74316
70°	29763	67002	28550
75°	3281	18044	3281
80°	2500	2500	2500
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	292.2	4.4
10°-20°	826.9	12.5
20°-30°	1226.9	18.6
30°-40°	1421.6	21.5
40°-50°	1363.0	20.6
50°-60°	1002.2	15.2
60°-70°	432.8	6.5
70°-80°	46.7	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°	2346.0	35.5
0°-40°	3767.6	57.0
0°-60°	6132.8	92.7
0°-90°	6613.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6613.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3096	3096	3096	3096	3096	
5°	3034	3065	3074	3078	3082	289
15°	2915	2933	2920	2924	2928	822
25°	2660	2656	2660	2665	2678	1218
35°	2264	2278	2287	2282	2247	1416
45°	1763	1768	1803	1776	1746	1340
55°	1020	1126	1253	1121	1025	918
65°	334	418	545	413	326	344
75°	9	13	48	9	9	27
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°	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7
2.5°	3073.7	3108.9	3113.3	3091.3	3082.5	3069.4	3100.1	3078.2	3087.0	3078.2	3073.7
5°	3034.2	3073.7	3078.2	3078.2	3069.4	3064.9	3078.2	3073.7	3069.4	3060.6	3073.7
7.5°	3016.6	3038.5	3060.6	3034.2	3047.3	3043.0	3073.7	3060.6	3056.1	3056.1	3047.3
10°	3025.4	3020.9	3038.5	3012.1	3020.9	3012.1	3038.5	3038.5	3029.7	3020.9	3016.6
12.5°	2954.9	2990.1	2990.1	2985.8	2977.0	2963.7	2990.1	3007.8	2981.3	2981.3	2977.0
15°	2915.4	2924.2	2928.5	2928.5	2924.2	2933.0	2946.1	2928.5	2933.0	2911.0	2919.8
17.5°	2871.5	2853.9	2867.0	2858.2	2862.7	2871.5	2889.1	2889.1	2862.7	2858.2	2867.0
20°	2770.3	2823.0	2827.5	2801.2	2805.5	2805.5	2836.3	2809.9	2827.5	2805.5	2814.3
22.5°	2721.9	2757.0	2761.5	2726.3	2748.2	2721.9	2752.7	2713.1	2757.0	2726.3	2739.4
25°	2660.3	2656.0	2669.1	2651.5	2656.0	2656.0	2677.9	2660.3	2673.6	2656.0	2660.3
27.5°	2559.3	2594.5	2590.0	2572.4	2581.2	2576.9	2620.8	2572.4	2598.8	2576.9	2585.7
30°	2471.2	2502.1	2493.3	2475.7	2475.7	2462.4	2510.9	2497.6	2493.3	2493.3	2488.8
32.5°	2383.3	2387.8	2379.0	2383.3	2387.8	2370.2	2409.7	2392.1	2387.8	2392.1	2396.6
35°	2264.5	2264.5	2273.3	2260.2	2277.8	2277.8	2313.0	2290.9	2286.6	2273.3	2286.6
37.5°	2159.0	2145.9	2150.3	2150.3	2159.0	2167.8	2185.4	2176.6	2176.6	2163.5	2172.3
40°	2018.4	2009.6	2022.7	2022.7	2036.0	2036.0	2053.5	2044.8	2057.9	2057.9	2057.9
42.5°	1895.3	1895.3	1886.5	1899.6	1904.1	1899.6	1930.5	1926.0	1930.5	1921.7	1926.0
45°	1763.3	1763.3	1754.5	1750.2	1772.1	1767.7	1802.9	1789.6	1807.2	1798.4	1802.9
47.5°	1583.0	1605.0	1591.7	1605.0	1631.4	1635.9	1657.8	1649.0	1666.6	1653.5	1671.0
50°	1411.6	1411.6	1424.7	1442.3	1468.7	1473.1	1499.5	1517.1	1525.9	1530.2	1534.7
52.5°	1231.3	1226.8	1240.1	1262.0	1284.0	1301.6	1328.0	1354.4	1372.0	1398.3	1385.1
55°	1020.1	1028.9	1042.2	1068.6	1103.7	1125.6	1147.7	1182.9	1213.7	1226.8	1253.2
57.5°	839.8	831.0	839.8	875.0	914.6	932.2	963.1	998.2	1042.2	1068.6	1077.4
60°	650.7	655.2	664.0	694.9	725.5	751.9	765.2	822.2	861.9	888.3	905.9
62.5°	479.4	488.2	497.0	523.3	554.0	576.1	598.0	646.4	681.6	708.0	725.5
65°	334.2	338.6	351.8	364.9	395.8	417.7	435.3	474.9	510.1	532.1	545.2
67.5°	206.7	211.0	219.8	237.5	259.4	277.0	294.6	321.0	351.8	373.7	378.2
70°	105.5	110.0	114.3	127.6	145.1	153.9	167.0	189.1	211.0	228.6	237.5
72.5°	35.2	35.2	39.6	48.4	57.2	66.0	70.3	92.4	110.0	118.8	123.1
75°	8.8	8.8	8.8	8.8	8.8	13.3	13.3	26.4	35.2	44.0	48.4
77.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	8.8	8.8
80°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
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°	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7	3095.7
2.5°	3095.7	3087.0	3082.5	3087.0	3087.0	3082.5	3095.7	3113.3	3135.2	3078.2
5°	3091.3	3082.5	3091.3	3064.9	3078.2	3069.4	3087.0	3082.5	3100.1	3082.5
7.5°	3078.2	3060.6	3064.9	3051.8	3069.4	3047.3	3060.6	3087.0	3069.4	3043.0
10°	3034.2	3025.4	3056.1	3012.1	3003.4	3020.9	3056.1	3029.7	3020.9	3029.7
12.5°	2990.1	2990.1	3003.4	2968.2	2972.5	2981.3	2998.9	2981.3	2990.1	3012.1
15°	2941.8	2933.0	2954.9	2928.5	2924.2	2915.4	2933.0	2933.0	2941.8	2928.5
17.5°	2884.6	2871.5	2871.5	2862.7	2858.2	2880.3	2889.1	2893.4	2897.9	2880.3
20°	2814.3	2809.9	2823.0	2809.9	2814.3	2818.7	2818.7	2809.9	2849.4	2801.2
22.5°	2739.4	2752.7	2735.1	2726.3	2735.1	2743.9	2743.9	2748.2	2739.4	2730.7
25°	2664.8	2673.6	2677.9	2651.5	2664.8	2651.5	2682.4	2686.7	2669.1	2677.9
27.5°	2598.8	2585.7	2581.2	2563.6	2572.4	2568.1	2572.4	2572.4	2598.8	2563.6
30°	2497.6	2484.5	2488.8	2475.7	2480.0	2475.7	2480.0	2480.0	2497.6	2493.3
32.5°	2400.9	2387.8	2392.1	2379.0	2379.0	2383.3	2374.5	2374.5	2387.8	2379.0
35°	2308.5	2277.8	2282.1	2277.8	2282.1	2264.5	2264.5	2260.2	2269.0	2247.0
37.5°	2176.6	2163.5	2159.0	2154.7	2159.0	2150.3	2159.0	2145.9	2159.0	2141.5
40°	2057.9	2049.1	2053.5	2027.2	2027.2	2031.5	2022.7	2018.4	2022.7	2040.3
42.5°	1939.3	1921.7	1912.9	1904.1	1908.4	1895.3	1890.8	1882.0	1890.8	1873.2
45°	1798.4	1798.4	1794.1	1772.1	1776.5	1776.5	1759.0	1741.4	1745.7	1745.7
47.5°	1671.0	1662.2	1657.8	1635.9	1631.4	1627.1	1609.3	1596.2	1596.2	1583.0
50°	1530.2	1521.4	1508.3	1486.2	1477.5	1451.1	1438.0	1420.4	1402.8	1402.8
52.5°	1398.3	1367.5	1349.9	1314.7	1301.6	1288.4	1253.2	1240.1	1226.8	1213.7
55°	1240.1	1213.7	1178.6	1138.9	1121.3	1099.3	1064.1	1037.7	1020.1	1024.6
57.5°	1086.2	1042.2	1007.0	954.3	932.2	919.0	883.8	848.6	831.0	831.0
60°	897.1	861.9	817.9	769.5	751.9	730.0	685.9	664.0	650.7	637.6
62.5°	716.8	690.4	650.7	589.2	576.1	554.0	523.3	497.0	483.7	483.7
65°	536.4	510.1	474.9	430.9	413.4	395.8	369.4	343.0	329.8	325.5
67.5°	378.2	347.3	316.7	281.5	268.2	259.4	233.1	215.5	206.7	202.2
70°	228.6	211.0	189.1	162.7	149.5	140.7	123.1	110.0	105.5	101.2
72.5°	118.8	105.5	87.9	70.3	61.5	52.7	44.0	35.2	30.9	30.9
75°	44.0	35.2	22.1	13.3	8.8	8.8	8.8	8.8	8.8	8.8
77.5°	8.8	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
80°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
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)