

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 FEU4C909035 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 FEU4C909035 F4LC-CSSQ-MMS  
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

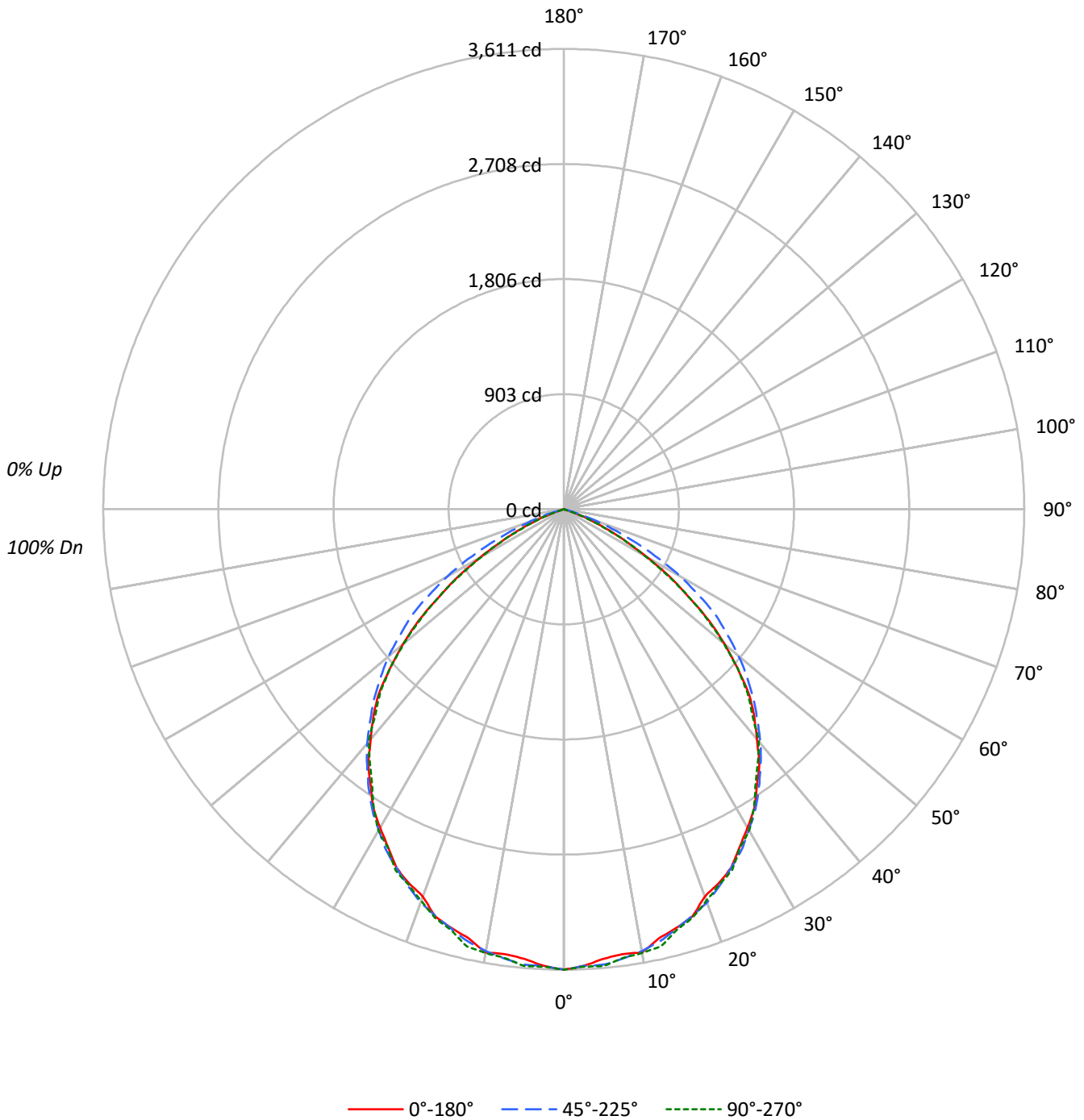
Lumens per Lamp: N/A  
 Luminaire Lumens: 7713.0 lumens  
 Efficiency: N/A  
 Efficacy: 79.4 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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



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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°	348392	348392	348392
5°	342769	347234	348222
10°	345733	344724	346223
15°	339675	340174	341203
20°	331774	337041	335470
25°	330336	330336	332518
30°	321134	323418	323997
35°	311110	314149	308695
40°	296516	302323	299741
45°	280635	286939	277838
50°	247141	268697	245610
55°	200152	245875	201044
60°	146470	203881	143518
65°	88996	145184	86667
70°	34700	78146	33290
75°	3840	21063	3840
80°	2889	2889	2889
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	340.8	4.4
10°-20°	964.4	12.5
20°-30°	1431.0	18.6
30°-40°	1658.1	21.5
40°-50°	1589.7	20.6
50°-60°	1168.9	15.2
60°-70°	504.8	6.5
70°-80°	54.5	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°	2736.2	35.5
0°-40°	4394.3	57.0
0°-60°	7152.9	92.7
0°-90°	7713.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	7713.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3611	3611	3611	3611	3611	
5°	3539	3575	3585	3590	3595	338
15°	3400	3421	3405	3411	3416	958
25°	3103	3098	3103	3108	3123	1421
35°	2641	2657	2667	2662	2621	1652
45°	2057	2062	2103	2072	2036	1563
55°	1190	1313	1462	1308	1195	1071
65°	390	487	636	482	380	401
75°	10	16	56	10	10	31
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°	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7
2.5°	3585.0	3626.0	3631.2	3605.5	3595.2	3579.9	3615.7	3590.2	3600.4	3590.2	3585.0
5°	3538.9	3585.0	3590.2	3590.2	3579.9	3574.7	3590.2	3585.0	3579.9	3569.7	3585.0
7.5°	3518.4	3543.9	3569.7	3538.9	3554.2	3549.2	3585.0	3569.7	3564.5	3564.5	3554.2
10°	3528.7	3523.4	3543.9	3513.2	3523.4	3513.2	3543.9	3543.9	3533.7	3523.4	3518.4
12.5°	3446.4	3487.4	3487.4	3482.4	3472.2	3456.7	3487.4	3508.2	3477.2	3477.2	3472.2
15°	3400.4	3410.6	3415.7	3415.7	3410.6	3420.9	3436.2	3415.7	3420.9	3395.2	3405.4
17.5°	3349.1	3328.6	3343.9	3333.6	3338.9	3349.1	3369.6	3369.6	3338.9	3333.6	3343.9
20°	3231.1	3292.6	3297.9	3267.1	3272.1	3272.1	3308.1	3277.3	3297.9	3272.1	3282.4
22.5°	3174.6	3215.6	3220.9	3179.8	3205.4	3174.6	3210.6	3164.4	3215.6	3179.8	3195.1
25°	3102.8	3097.8	3113.1	3092.6	3097.8	3097.8	3123.3	3102.8	3118.3	3097.8	3102.8
27.5°	2985.0	3026.0	3020.8	3000.3	3010.6	3005.5	3056.8	3000.3	3031.1	3005.5	3015.8
30°	2882.3	2918.3	2908.0	2887.5	2887.5	2872.0	2928.5	2913.0	2908.0	2908.0	2902.8
32.5°	2779.7	2785.0	2774.7	2779.7	2785.0	2764.5	2810.5	2790.0	2785.0	2790.0	2795.2
35°	2641.2	2641.2	2651.5	2636.2	2656.7	2656.7	2697.7	2672.0	2667.0	2651.5	2667.0
37.5°	2518.2	2502.9	2507.9	2507.9	2518.2	2528.4	2548.9	2538.7	2538.7	2523.4	2533.7
40°	2354.1	2343.9	2359.1	2359.1	2374.6	2374.6	2395.1	2384.9	2400.2	2400.2	2400.2
42.5°	2210.6	2210.6	2200.3	2215.6	2220.8	2215.6	2251.6	2246.4	2251.6	2241.3	2246.4
45°	2056.6	2056.6	2046.3	2041.3	2066.8	2061.8	2102.8	2087.3	2107.8	2097.6	2102.8
47.5°	1846.3	1872.0	1856.5	1872.0	1902.8	1908.0	1933.5	1923.3	1943.8	1928.5	1949.0
50°	1646.4	1646.4	1661.7	1682.2	1713.0	1718.2	1749.0	1769.5	1779.7	1784.7	1790.0
52.5°	1436.1	1430.9	1446.4	1471.9	1497.6	1518.1	1548.9	1579.7	1600.2	1630.9	1615.5
55°	1189.8	1200.1	1215.6	1246.3	1287.3	1312.9	1338.6	1379.6	1415.6	1430.9	1461.6
57.5°	979.5	969.3	979.5	1020.5	1066.8	1087.3	1123.3	1164.3	1215.6	1246.3	1256.6
60°	759.0	764.2	774.5	810.4	846.2	877.0	892.5	959.0	1005.3	1036.0	1056.5
62.5°	559.1	569.4	579.6	610.4	646.2	671.9	697.4	753.9	795.0	825.7	846.2
65°	389.8	394.9	410.3	425.6	461.6	487.1	507.7	553.9	594.9	620.6	635.9
67.5°	241.1	246.1	256.3	277.0	302.6	323.1	343.6	374.4	410.3	435.9	441.1
70°	123.0	128.3	133.3	148.8	169.3	179.5	194.8	220.6	246.1	266.6	277.0
72.5°	41.0	41.0	46.2	56.5	66.7	77.0	82.0	107.8	128.3	138.5	143.6
75°	10.3	10.3	10.3	10.3	10.3	15.5	15.5	30.8	41.0	51.3	56.5
77.5°	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	10.3	10.3
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°	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7	3610.7
2.5°	3610.7	3600.4	3595.2	3600.4	3600.4	3595.2	3610.7	3631.2	3656.7	3590.2
5°	3605.5	3595.2	3605.5	3574.7	3590.2	3579.9	3600.4	3595.2	3615.7	3595.2
7.5°	3590.2	3569.7	3574.7	3559.4	3579.9	3554.2	3569.7	3600.4	3579.9	3549.2
10°	3538.9	3528.7	3564.5	3513.2	3502.9	3523.4	3564.5	3533.7	3523.4	3533.7
12.5°	3487.4	3487.4	3502.9	3461.9	3466.9	3477.2	3497.7	3477.2	3487.4	3513.2
15°	3431.2	3420.9	3446.4	3415.7	3410.6	3400.4	3420.9	3420.9	3431.2	3415.7
17.5°	3364.4	3349.1	3349.1	3338.9	3333.6	3359.4	3369.6	3374.7	3379.9	3359.4
20°	3282.4	3277.3	3292.6	3277.3	3282.4	3287.6	3287.6	3277.3	3323.4	3267.1
22.5°	3195.1	3210.6	3190.1	3179.8	3190.1	3200.3	3200.3	3205.4	3195.1	3184.9
25°	3108.1	3118.3	3123.3	3092.6	3108.1	3092.6	3128.6	3133.6	3113.1	3123.3
27.5°	3031.1	3015.8	3010.6	2990.0	3000.3	2995.3	3000.3	3000.3	3031.1	2990.0
30°	2913.0	2897.8	2902.8	2887.5	2892.5	2887.5	2892.5	2892.5	2913.0	2908.0
32.5°	2800.3	2785.0	2790.0	2774.7	2774.7	2779.7	2769.5	2769.5	2785.0	2774.7
35°	2692.5	2656.7	2661.7	2656.7	2661.7	2641.2	2641.2	2636.2	2646.4	2620.7
37.5°	2538.7	2523.4	2518.2	2513.2	2518.2	2507.9	2518.2	2502.9	2518.2	2497.7
40°	2400.2	2389.9	2395.1	2364.4	2364.4	2369.4	2359.1	2354.1	2359.1	2379.7
42.5°	2261.8	2241.3	2231.1	2220.8	2225.8	2210.6	2205.3	2195.1	2205.3	2184.8
45°	2097.6	2097.6	2092.5	2066.8	2072.0	2072.0	2051.5	2031.0	2036.1	2036.1
47.5°	1949.0	1938.7	1933.5	1908.0	1902.8	1897.7	1877.0	1861.7	1861.7	1846.3
50°	1784.7	1774.5	1759.2	1733.5	1723.2	1692.5	1677.2	1656.7	1636.2	1636.2
52.5°	1630.9	1594.9	1574.4	1533.4	1518.1	1502.7	1461.6	1446.4	1430.9	1415.6
55°	1446.4	1415.6	1374.6	1328.4	1307.8	1282.1	1241.1	1210.3	1189.8	1195.1
57.5°	1266.8	1215.6	1174.5	1113.0	1087.3	1071.8	1030.8	989.8	969.3	969.3
60°	1046.3	1005.3	954.0	897.5	877.0	851.5	800.0	774.5	759.0	743.7
62.5°	836.0	805.2	759.0	687.2	671.9	646.2	610.4	579.6	564.2	564.2
65°	625.7	594.9	553.9	502.6	482.1	461.6	430.9	400.1	384.6	379.6
67.5°	441.1	405.1	369.3	328.3	312.8	302.6	271.8	251.3	241.1	235.8
70°	266.6	246.1	220.6	189.8	174.3	164.1	143.6	128.3	123.0	118.0
72.5°	138.5	123.0	102.5	82.0	71.8	61.5	51.3	41.0	36.0	36.0
75°	51.3	41.0	25.7	15.5	10.3	10.3	10.3	10.3	10.3	10.3
77.5°	10.3	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)