

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: **FLDSQ4C80D010 FEU4C809030 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: FLDSQ4C80D010 FEU4C809030 F4LC-CSSQ-MMS  
 Description: 4 INCH 8000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

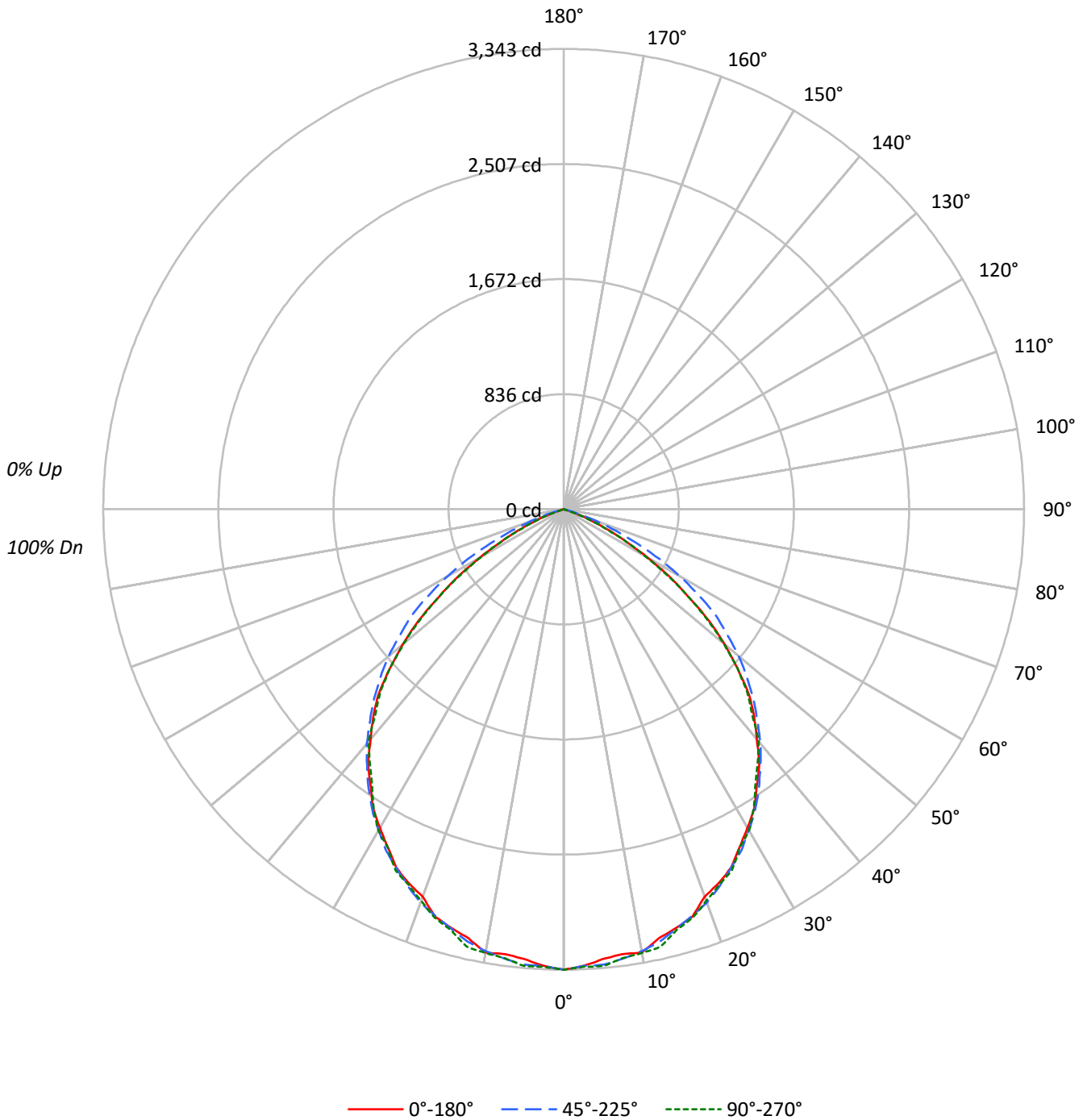
Lumens per Lamp: N/A  
 Luminaire Lumens: 7142.0 lumens  
 Efficiency: N/A  
 Efficacy: 79.8 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 89.5  
 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°	322601	322601	322601
5°	317392	321528	322448
10°	320131	319201	320592
15°	314532	314992	315940
20°	307212	312090	310632
25°	305881	305881	307904
30°	297358	299474	300009
35°	288082	290885	285844
40°	274562	279940	277547
45°	259853	265693	257260
50°	228843	248807	227417
55°	185332	227673	186156
60°	135625	188790	132885
65°	82421	134430	80252
70°	32133	72362	30835
75°	3542	19498	3542
80°	2667	2667	2667
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	315.6	4.4
10°-20°	893.0	12.5
20°-30°	1325.1	18.6
30°-40°	1535.3	21.5
40°-50°	1472.1	20.6
50°-60°	1082.3	15.2
60°-70°	467.5	6.5
70°-80°	50.5	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°	2533.7	35.5
0°-40°	4069.0	57.0
0°-60°	6623.4	92.7
0°-90°	7142.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	7142.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3343	3343	3343	3343	3343	
5°	3277	3310	3320	3324	3329	313
15°	3149	3168	3153	3158	3163	887
25°	2873	2868	2873	2878	2892	1315
35°	2446	2460	2470	2465	2427	1529
45°	1904	1909	1947	1919	1885	1448
55°	1102	1216	1353	1211	1107	991
65°	361	451	589	446	352	371
75°	10	14	52	10	10	29
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C80D010 FEU4C809030 F4LC-CSSQ-MMS

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4
2.5°	3319.6	3357.5	3362.4	3338.6	3329.1	3314.9	3348.0	3324.4	3333.9	3324.4	3319.6
5°	3276.9	3319.6	3324.4	3324.4	3314.9	3310.1	3324.4	3319.6	3314.9	3305.4	3319.6
7.5°	3257.9	3281.6	3305.4	3276.9	3291.1	3286.4	3319.6	3305.4	3300.6	3300.6	3291.1
10°	3267.4	3262.6	3281.6	3253.1	3262.6	3253.1	3281.6	3281.6	3272.1	3262.6	3257.9
12.5°	3191.3	3229.3	3229.3	3224.6	3215.1	3200.8	3229.3	3248.4	3219.8	3219.8	3215.1
15°	3148.7	3158.2	3162.8	3162.8	3158.2	3167.6	3181.8	3162.8	3167.6	3143.8	3153.3
17.5°	3101.2	3082.2	3096.3	3086.9	3091.7	3101.2	3120.2	3120.2	3091.7	3086.9	3096.3
20°	2991.9	3048.9	3053.7	3025.2	3029.9	3029.9	3063.2	3034.7	3053.7	3029.9	3039.4
22.5°	2939.6	2977.6	2982.4	2944.4	2968.1	2939.6	2972.9	2930.1	2977.6	2944.4	2958.6
25°	2873.1	2868.5	2882.6	2863.6	2868.5	2868.5	2892.1	2873.1	2887.5	2868.5	2873.1
27.5°	2764.0	2802.0	2797.2	2778.2	2787.7	2783.0	2830.5	2778.2	2806.7	2783.0	2792.5
30°	2668.9	2702.2	2692.7	2673.7	2673.7	2659.4	2711.7	2697.4	2692.7	2692.7	2687.9
32.5°	2574.0	2578.8	2569.3	2574.0	2578.8	2559.8	2602.4	2583.5	2578.8	2583.5	2588.3
35°	2445.7	2445.7	2455.2	2441.0	2460.0	2460.0	2498.0	2474.2	2469.5	2455.2	2469.5
37.5°	2331.8	2317.6	2322.3	2322.3	2331.8	2341.2	2360.2	2350.7	2350.7	2336.6	2346.1
40°	2179.8	2170.3	2184.5	2184.5	2198.8	2198.8	2217.8	2208.3	2222.5	2222.5	2222.5
42.5°	2046.9	2046.9	2037.4	2051.6	2056.4	2051.6	2084.9	2080.1	2084.9	2075.4	2080.1
45°	1904.3	1904.3	1894.8	1890.2	1913.8	1909.2	1947.1	1932.8	1951.8	1942.3	1947.1
47.5°	1709.6	1733.4	1719.1	1733.4	1761.9	1766.7	1790.4	1780.9	1799.9	1785.7	1804.7
50°	1524.5	1524.5	1538.7	1557.7	1586.2	1591.0	1619.5	1638.5	1648.0	1652.6	1657.5
52.5°	1329.8	1325.0	1339.3	1362.9	1386.8	1405.8	1434.2	1462.7	1481.7	1510.2	1495.9
55°	1101.7	1111.2	1125.6	1154.1	1192.0	1215.7	1239.5	1277.5	1310.8	1325.0	1353.4
57.5°	907.0	897.5	907.0	945.0	987.8	1006.8	1040.1	1078.1	1125.6	1154.1	1163.5
60°	702.8	707.6	717.1	750.4	783.6	812.1	826.4	888.0	930.8	959.3	978.3
62.5°	517.7	527.2	536.7	565.2	598.3	622.2	645.8	698.1	736.1	764.6	783.6
65°	361.0	365.6	380.0	394.1	427.4	451.1	470.1	512.9	550.9	574.7	588.8
67.5°	223.2	227.9	237.4	256.5	280.2	299.2	318.2	346.6	380.0	403.6	408.5
70°	113.9	118.8	123.4	137.8	156.8	166.2	180.4	204.2	227.9	246.9	256.5
72.5°	38.0	38.0	42.8	52.3	61.8	71.3	76.0	99.8	118.8	128.3	132.9
75°	9.5	9.5	9.5	9.5	9.5	14.3	14.3	28.5	38.0	47.5	52.3
77.5°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	9.5	9.5
80°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
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°	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4	3343.4
2.5°	3343.4	3333.9	3329.1	3333.9	3333.9	3329.1	3343.4	3362.4	3386.0	3324.4
5°	3338.6	3329.1	3338.6	3310.1	3324.4	3314.9	3333.9	3329.1	3348.0	3329.1
7.5°	3324.4	3305.4	3310.1	3295.9	3314.9	3291.1	3305.4	3333.9	3314.9	3286.4
10°	3276.9	3267.4	3300.6	3253.1	3243.6	3262.6	3300.6	3272.1	3262.6	3272.1
12.5°	3229.3	3229.3	3243.6	3205.6	3210.3	3219.8	3238.8	3219.8	3229.3	3253.1
15°	3177.1	3167.6	3191.3	3162.8	3158.2	3148.7	3167.6	3167.6	3177.1	3162.8
17.5°	3115.3	3101.2	3101.2	3091.7	3086.9	3110.7	3120.2	3124.8	3129.7	3110.7
20°	3039.4	3034.7	3048.9	3034.7	3039.4	3044.2	3044.2	3034.7	3077.4	3025.2
22.5°	2958.6	2972.9	2953.9	2944.4	2953.9	2963.4	2963.4	2968.1	2958.6	2949.1
25°	2878.0	2887.5	2892.1	2863.6	2878.0	2863.6	2897.0	2901.6	2882.6	2892.1
27.5°	2806.7	2792.5	2787.7	2768.7	2778.2	2773.5	2778.2	2778.2	2806.7	2768.7
30°	2697.4	2683.2	2687.9	2673.7	2678.4	2673.7	2678.4	2678.4	2697.4	2692.7
32.5°	2592.9	2578.8	2583.5	2569.3	2569.3	2574.0	2564.5	2564.5	2578.8	2569.3
35°	2493.2	2460.0	2464.7	2460.0	2464.7	2445.7	2445.7	2441.0	2450.5	2426.7
37.5°	2350.7	2336.6	2331.8	2327.1	2331.8	2322.3	2331.8	2317.6	2331.8	2312.8
40°	2222.5	2213.0	2217.8	2189.3	2189.3	2194.0	2184.5	2179.8	2184.5	2203.5
42.5°	2094.4	2075.4	2065.9	2056.4	2061.1	2046.9	2042.1	2032.6	2042.1	2023.1
45°	1942.3	1942.3	1937.6	1913.8	1918.6	1918.6	1899.7	1880.7	1885.3	1885.3
47.5°	1804.7	1795.2	1790.4	1766.7	1761.9	1757.2	1738.1	1723.9	1723.9	1709.6
50°	1652.6	1643.1	1629.0	1605.1	1595.6	1567.2	1553.0	1534.0	1515.0	1515.0
52.5°	1510.2	1476.9	1457.9	1419.9	1405.8	1391.4	1353.4	1339.3	1325.0	1310.8
55°	1339.3	1310.8	1272.8	1230.0	1211.0	1187.2	1149.2	1120.7	1101.7	1106.6
57.5°	1173.0	1125.6	1087.6	1030.6	1006.8	992.5	954.5	916.5	897.5	897.5
60°	968.8	930.8	883.4	831.1	812.1	788.4	740.8	717.1	702.8	688.6
62.5°	774.1	745.6	702.8	636.3	622.2	598.3	565.2	536.7	522.4	522.4
65°	579.4	550.9	512.9	465.4	446.4	427.4	399.0	370.5	356.1	351.5
67.5°	408.5	375.1	342.0	304.0	289.7	280.2	251.7	232.7	223.2	218.4
70°	246.9	227.9	204.2	175.7	161.4	151.9	132.9	118.8	113.9	109.3
72.5°	128.3	113.9	94.9	76.0	66.5	57.0	47.5	38.0	33.3	33.3
75°	47.5	38.0	23.8	14.3	9.5	9.5	9.5	9.5	9.5	9.5
77.5°	9.5	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
80°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
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)