

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 FEU4C809035 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: FLDSQ4C80D010 FEU4C809035 F4LC-DFSSQ-MW  
 Description: 4 INCH 8000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

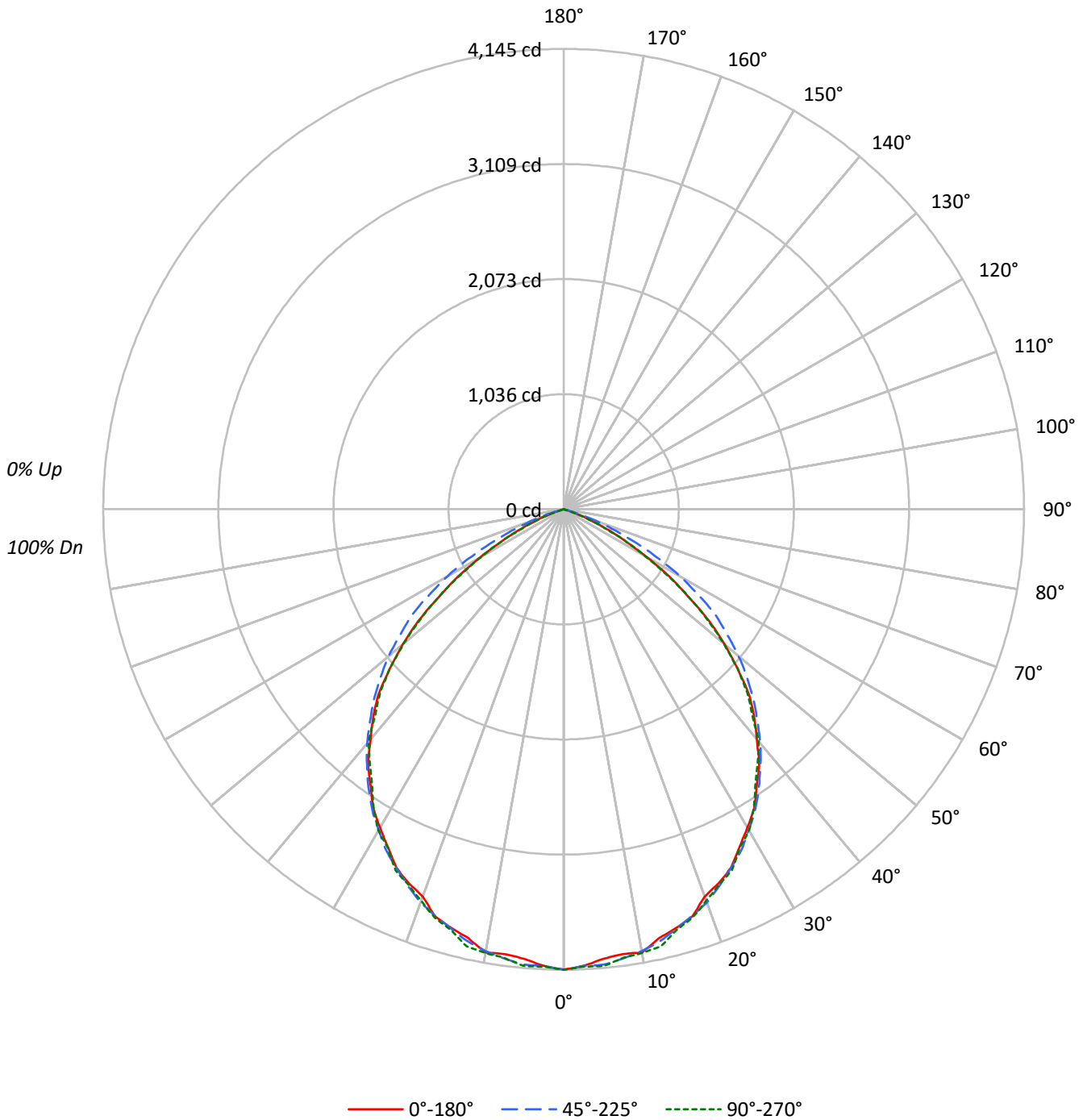
Lumens per Lamp: N/A  
 Luminaire Lumens: 8854.0 lumens  
 Efficiency: N/A  
 Efficacy: 98.9 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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	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°	399927	399927	399927
5°	393474	398598	399740
10°	396877	395721	397435
15°	389921	390500	391679
20°	380855	386893	385096
25°	379202	379202	381715
30°	368641	371260	371928
35°	357131	360618	354363
40°	340387	347038	344078
45°	322145	329391	318938
50°	283708	308446	281937
55°	229759	282262	230769
60°	168122	234043	164745
65°	102170	166668	99476
70°	39835	89712	38227
75°	4399	24195	4399
80°	3334	3334	3334
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	391.2	4.4
10°-20°	1107.1	12.5
20°-30°	1642.7	18.6
30°-40°	1903.4	21.5
40°-50°	1824.9	20.6
50°-60°	1341.8	15.2
60°-70°	579.5	6.5
70°-80°	62.6	0.7
80°-90°	0.8	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°	3141.0	35.5
0°-40°	5044.4	57.0
0°-60°	8211.1	92.7
0°-90°	8854.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	8854.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4145	4145	4145	4145	4145	
5°	4062	4104	4115	4121	4127	388
15°	3903	3927	3909	3915	3921	1100
25°	3562	3556	3562	3568	3585	1631
35°	3032	3050	3062	3056	3008	1896
45°	2361	2367	2414	2379	2337	1795
55°	1366	1507	1678	1501	1372	1229
65°	448	559	730	553	436	460
75°	12	18	65	12	12	36
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C80D010 FEU4C809035 F4LC-DFSSQ-MW

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8
2.5°	4115.3	4162.4	4168.4	4138.8	4127.1	4109.5	4150.6	4121.3	4133.1	4121.3	4115.3
5°	4062.4	4115.3	4121.3	4121.3	4109.5	4103.5	4121.3	4115.3	4109.5	4097.7	4115.3
7.5°	4038.9	4068.2	4097.7	4062.4	4080.0	4074.2	4115.3	4097.7	4091.7	4091.7	4080.0
10°	4050.7	4044.7	4068.2	4032.9	4044.7	4032.9	4068.2	4068.2	4056.4	4044.7	4038.9
12.5°	3956.3	4003.4	4003.4	3997.6	3985.8	3968.0	4003.4	4027.1	3991.6	3991.6	3985.8
15°	3903.4	3915.2	3921.0	3921.0	3915.2	3927.0	3944.5	3921.0	3927.0	3897.4	3909.2
17.5°	3844.6	3821.0	3838.6	3826.8	3832.8	3844.6	3868.1	3868.1	3832.8	3826.8	3838.6
20°	3709.1	3779.7	3785.7	3750.4	3756.2	3756.2	3797.5	3762.2	3785.7	3756.2	3767.9
22.5°	3644.2	3691.3	3697.3	3650.2	3679.6	3644.2	3685.6	3632.5	3691.3	3650.2	3667.8
25°	3561.8	3556.1	3573.6	3550.1	3556.1	3556.1	3585.4	3561.8	3579.6	3556.1	3561.8
27.5°	3426.6	3473.7	3467.7	3444.1	3455.9	3450.1	3509.0	3444.1	3479.5	3450.1	3461.9
30°	3308.7	3350.0	3338.2	3314.7	3314.7	3296.9	3361.7	3344.0	3338.2	3338.2	3332.2
32.5°	3191.0	3197.0	3185.2	3191.0	3197.0	3173.4	3226.3	3202.7	3197.0	3202.7	3208.7
35°	3031.9	3031.9	3043.7	3026.2	3049.7	3049.7	3096.8	3067.3	3061.5	3043.7	3061.5
37.5°	2890.7	2873.2	2878.9	2878.9	2890.7	2902.5	2926.0	2914.2	2914.2	2896.7	2908.5
40°	2702.4	2690.6	2708.1	2708.1	2725.9	2725.9	2749.5	2737.7	2755.2	2755.2	2755.2
42.5°	2537.6	2537.6	2525.8	2543.4	2549.4	2543.4	2584.7	2578.7	2584.7	2572.9	2578.7
45°	2360.8	2360.8	2349.0	2343.3	2372.6	2366.8	2413.9	2396.1	2419.6	2407.9	2413.9
47.5°	2119.4	2148.9	2131.2	2148.9	2184.2	2190.2	2219.5	2207.8	2231.3	2213.8	2237.3
50°	1890.0	1890.0	1907.5	1931.1	1966.4	1972.4	2007.7	2031.2	2043.0	2048.8	2054.8
52.5°	1648.6	1642.6	1660.3	1689.6	1719.2	1742.7	1778.0	1813.3	1836.9	1872.2	1854.4
55°	1365.8	1377.6	1395.4	1430.7	1477.8	1507.1	1536.6	1583.7	1625.0	1642.6	1677.9
57.5°	1124.4	1112.7	1124.4	1171.5	1224.6	1248.1	1289.4	1336.5	1395.4	1430.7	1442.5
60°	871.2	877.2	889.0	930.3	971.4	1006.7	1024.5	1100.9	1154.0	1189.3	1212.8
62.5°	641.8	653.6	665.4	700.7	741.8	771.3	800.6	865.5	912.6	947.9	971.4
65°	447.5	453.3	471.1	488.6	529.9	559.2	582.8	635.8	682.9	712.5	730.0
67.5°	276.7	282.5	294.3	318.0	347.3	370.9	394.4	429.7	471.1	500.4	506.4
70°	141.2	147.2	153.0	170.8	194.3	206.1	223.6	253.2	282.5	306.0	318.0
72.5°	47.1	47.1	53.1	64.9	76.6	88.4	94.2	123.7	147.2	159.0	164.8
75°	11.8	11.8	11.8	11.8	11.8	17.8	17.8	35.3	47.1	58.9	64.9
77.5°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	11.8	11.8
80°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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°	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8	4144.8
2.5°	4144.8	4133.1	4127.1	4133.1	4133.1	4127.1	4144.8	4168.4	4197.7	4121.3
5°	4138.8	4127.1	4138.8	4103.5	4121.3	4109.5	4133.1	4127.1	4150.6	4127.1
7.5°	4121.3	4097.7	4103.5	4086.0	4109.5	4080.0	4097.7	4133.1	4109.5	4074.2
10°	4062.4	4050.7	4091.7	4032.9	4021.1	4044.7	4091.7	4056.4	4044.7	4056.4
12.5°	4003.4	4003.4	4021.1	3974.0	3979.8	3991.6	4015.1	3991.6	4003.4	4032.9
15°	3938.7	3927.0	3956.3	3921.0	3915.2	3903.4	3927.0	3927.0	3938.7	3921.0
17.5°	3862.1	3844.6	3844.6	3832.8	3826.8	3856.3	3868.1	3873.9	3879.9	3856.3
20°	3767.9	3762.2	3779.7	3762.2	3767.9	3773.9	3773.9	3762.2	3815.0	3750.4
22.5°	3667.8	3685.6	3662.0	3650.2	3662.0	3673.8	3673.8	3679.6	3667.8	3656.0
25°	3567.8	3579.6	3585.4	3550.1	3567.8	3550.1	3591.4	3597.2	3573.6	3585.4
27.5°	3479.5	3461.9	3455.9	3432.4	3444.1	3438.4	3444.1	3444.1	3479.5	3432.4
30°	3344.0	3326.4	3332.2	3314.7	3320.4	3314.7	3320.4	3320.4	3344.0	3338.2
32.5°	3214.5	3197.0	3202.7	3185.2	3185.2	3191.0	3179.2	3179.2	3197.0	3185.2
35°	3090.8	3049.7	3055.5	3049.7	3055.5	3031.9	3031.9	3026.2	3037.9	3008.4
37.5°	2914.2	2896.7	2890.7	2884.9	2890.7	2878.9	2890.7	2873.2	2890.7	2867.2
40°	2755.2	2743.4	2749.5	2714.1	2714.1	2719.9	2708.1	2702.4	2708.1	2731.7
42.5°	2596.4	2572.9	2561.1	2549.4	2555.1	2537.6	2531.6	2519.8	2531.6	2508.0
45°	2407.9	2407.9	2402.1	2372.6	2378.6	2378.6	2355.0	2331.5	2337.3	2337.3
47.5°	2237.3	2225.5	2219.5	2190.2	2184.2	2178.5	2154.7	2137.2	2137.2	2119.4
50°	2048.8	2037.0	2019.4	1989.9	1978.1	1942.8	1925.3	1901.7	1878.2	1878.2
52.5°	1872.2	1830.9	1807.3	1760.3	1742.7	1725.0	1677.9	1660.3	1642.6	1625.0
55°	1660.3	1625.0	1577.9	1524.9	1501.3	1471.8	1424.7	1389.4	1365.8	1371.8
57.5°	1454.2	1395.4	1348.3	1277.7	1248.1	1230.4	1183.3	1136.2	1112.7	1112.7
60°	1201.1	1154.0	1095.1	1030.3	1006.7	977.4	918.3	889.0	871.2	853.7
62.5°	959.6	924.3	871.2	788.9	771.3	741.8	700.7	665.4	647.6	647.6
65°	718.2	682.9	635.8	577.0	553.4	529.9	494.6	459.3	441.5	435.7
67.5°	506.4	465.1	424.0	376.9	359.1	347.3	312.0	288.5	276.7	270.7
70°	306.0	282.5	253.2	217.9	200.1	188.3	164.8	147.2	141.2	135.5
72.5°	159.0	141.2	117.7	94.2	82.4	70.6	58.9	47.1	41.3	41.3
75°	58.9	47.1	29.5	17.8	11.8	11.8	11.8	11.8	11.8	11.8
77.5°	11.8	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
80°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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)