

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: **FLDSQ4C30D010 FEU4C309027 F4LC-SQ-LI**

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: FLDSQ4C30D010 FEU4C309027 F4LC-SQ-LI  
 Description: 4 INCH 3000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

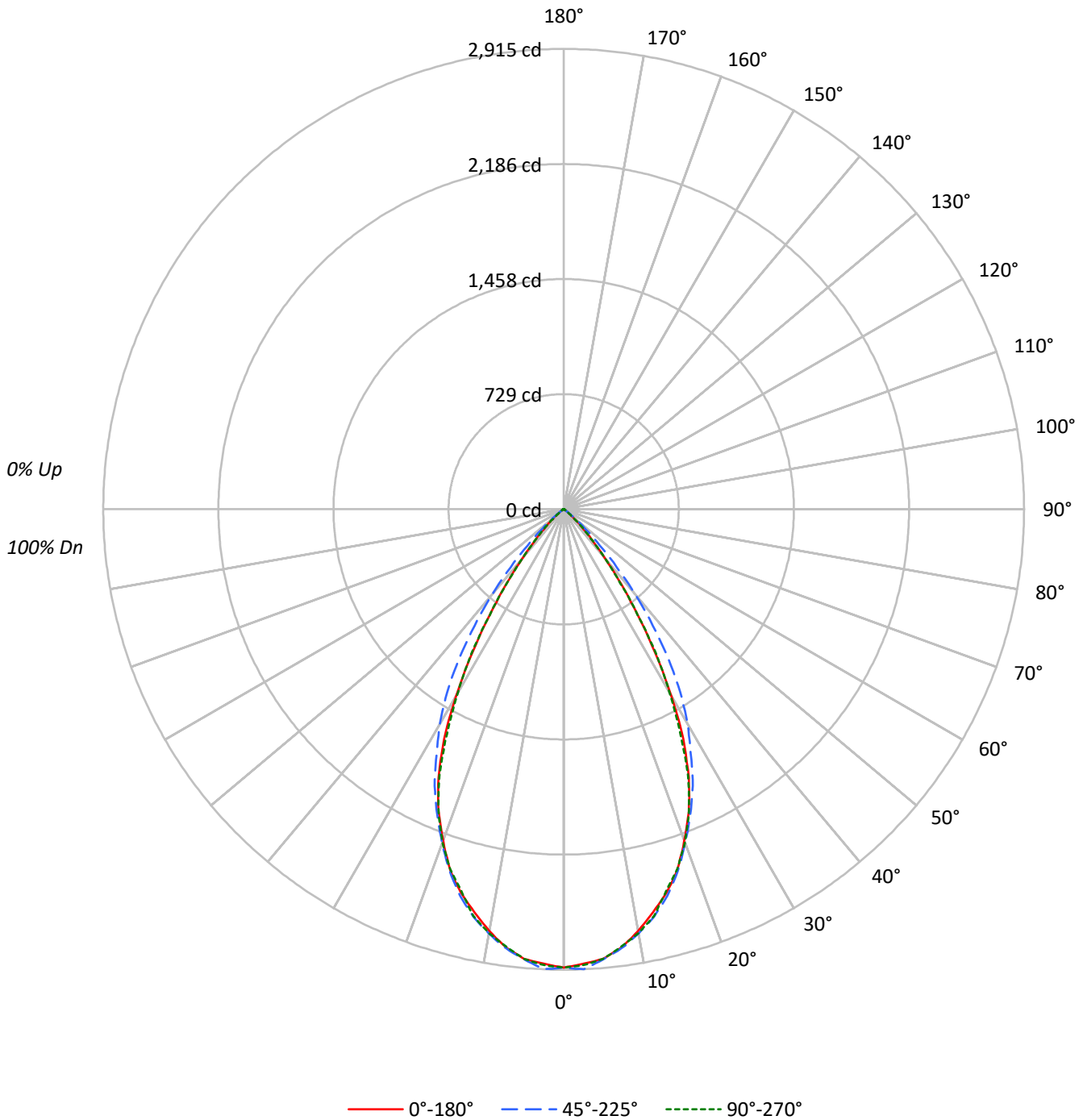
Lumens per Lamp: N/A  
 Luminaire Lumens: 2679.0 lumens  
 Efficiency: N/A  
 Efficacy: 84.8 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 31.6  
 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	113	111	108	106	111	108	106	104	104	103	101		101	99	98		97	96	95	93
2	108	103	99	95	105	101	97	94	98	95	92		95	92	90		92	90	88	87
3	102	96	91	87	100	94	90	86	92	88	84		89	86	83		87	84	82	80
4	97	89	84	79	95	88	83	79	86	81	78		84	80	77		82	79	76	75
5	92	83	77	73	90	82	77	73	81	76	72		79	75	71		77	74	71	69
6	87	78	72	68	86	77	71	67	76	71	67		74	70	66		73	69	66	64
7	83	73	67	63	81	73	67	63	71	66	62		70	65	62		69	65	62	60
8	79	69	63	59	77	68	62	58	67	62	58		66	61	58		65	61	58	56
9	75	65	59	55	74	64	59	55	63	58	55		63	58	54		62	57	54	53
10	71	61	55	51	70	61	55	51	60	55	51		59	54	51		58	54	51	50

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	279991	279991	279991
5°	276770	277129	276770
10°	265705	267331	266969
15°	251190	253038	249901
20°	229246	230941	230376
25°	199609	205890	198235
30°	151793	174589	149531
35°	95552	135731	96412
40°	51554	89631	50622
45°	24398	44280	24139
50°	9142	16602	9142
55°	4340	5282	4037
60°	2837	2489	2837
65°	1690	1690	1690
70°	1044	1580	1044
75°	708	708	708
80°	1056	1056	1056
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	269.0	10.0
10°-20°	705.1	26.3
20°-30°	861.4	32.2
30°-40°	602.4	22.5
40°-50°	197.4	7.4
50°-60°	31.4	1.2
60°-70°	8.6	0.3
70°-80°	2.9	0.1
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°	1835.5	68.5
0°-40°	2437.9	91.0
0°-60°	2666.8	99.5
0°-90°	2679.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2679.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2902	2902	2902	2902	2902	
5°	2858	2858	2861	2844	2858	268
15°	2515	2525	2533	2516	2502	701
25°	1875	1904	1934	1899	1862	842
35°	811	958	1152	943	818	518
45°	179	220	324	218	177	150
55°	26	28	31	28	24	25
65°	7	9	7	9	7	8
75°	2	2	2	2	2	3
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C30D010 FEU4C309027 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	2901.8	2901.8	2901.8	2901.8	2901.8	2901.8	2901.8	2901.8	2901.8	2901.8	2901.8
2.5°	2879.7	2900.0	2894.4	2907.3	2907.3	2892.6	2896.3	2901.8	2909.1	2914.7	2870.4
5°	2857.5	2876.0	2859.3	2877.8	2866.7	2850.2	2877.8	2863.0	2872.3	2861.2	2868.6
7.5°	2798.6	2828.0	2794.9	2817.0	2809.6	2800.4	2811.4	2807.7	2813.3	2804.0	2783.8
10°	2711.9	2735.9	2713.8	2745.1	2730.3	2721.1	2730.3	2739.6	2737.7	2728.5	2739.6
12.5°	2612.4	2640.0	2628.9	2647.3	2630.8	2630.8	2652.9	2647.3	2649.2	2641.8	2654.7
15°	2514.6	2534.9	2518.3	2542.3	2534.9	2514.6	2523.8	2523.8	2538.6	2533.1	2518.3
17.5°	2393.0	2409.5	2391.1	2396.7	2389.3	2385.6	2424.3	2398.5	2413.2	2402.2	2404.0
20°	2232.6	2240.0	2234.4	2249.1	2240.0	2251.0	2247.3	2243.6	2243.6	2249.1	2236.3
22.5°	2070.3	2070.3	2075.9	2079.6	2086.9	2075.9	2098.0	2079.6	2081.4	2094.3	2090.6
25°	1874.9	1869.4	1882.3	1900.7	1908.1	1898.9	1928.3	1913.6	1924.7	1933.9	1913.6
27.5°	1637.1	1637.1	1650.0	1681.4	1686.9	1697.9	1738.5	1738.5	1753.2	1740.3	1755.1
30°	1362.4	1382.7	1399.2	1439.8	1452.7	1476.7	1519.1	1539.4	1572.6	1567.0	1559.6
32.5°	1080.3	1108.0	1109.8	1152.3	1187.2	1227.8	1285.0	1332.9	1356.9	1373.4	1355.0
35°	811.2	827.8	842.5	872.0	931.0	984.5	1036.1	1098.8	1141.2	1152.3	1135.6
37.5°	593.7	597.3	612.1	639.7	683.9	735.6	798.3	866.4	910.8	927.3	908.9
40°	409.3	412.9	420.3	444.3	481.2	518.0	567.8	637.9	678.4	711.6	687.6
42.5°	274.7	278.4	285.7	304.2	324.5	359.5	398.2	442.4	481.2	495.9	483.0
45°	178.8	178.8	182.5	195.5	206.5	234.1	261.8	289.4	315.2	324.5	315.2
47.5°	105.1	106.9	110.6	119.8	132.7	143.8	164.1	182.5	189.9	197.3	193.6
50°	60.9	60.9	66.4	71.9	81.1	88.5	95.8	103.2	106.9	110.6	106.9
52.5°	33.2	35.1	36.9	38.7	42.4	49.8	55.3	55.3	57.2	59.0	57.2
55°	25.8	25.8	25.8	25.8	27.7	27.7	27.7	29.5	29.5	31.4	29.5
57.5°	18.4	18.4	18.4	20.3	20.3	20.3	18.4	18.4	18.4	18.4	18.4
60°	14.7	14.7	14.7	14.7	14.7	14.7	14.7	12.9	12.9	12.9	12.9
62.5°	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
65°	7.4	7.4	9.3	9.3	9.3	9.3	9.3	7.4	7.4	7.4	7.4
67.5°	5.6	5.6	5.6	5.6	7.4	7.4	5.6	5.6	5.6	5.6	5.6
70°	3.7	3.7	3.7	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
72.5°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
75°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
77.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
80°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	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°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
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):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	2901.8	2901.8	2901.8	2901.8	2901.8	2901.8	2901.8	2901.8
2.5°	2901.8	2870.4	2874.1	2890.7	2881.5	2890.7	2888.9	2888.9
5°	2870.4	2861.2	2846.5	2840.9	2852.0	2876.0	2872.3	2857.5
7.5°	2811.4	2787.5	2804.0	2811.4	2802.2	2817.0	2824.4	2793.0
10°	2741.4	2732.2	2728.5	2732.2	2728.5	2743.3	2724.8	2724.8
12.5°	2641.8	2627.1	2627.1	2649.2	2636.3	2625.2	2640.0	2638.2
15°	2542.3	2512.8	2512.8	2520.1	2525.7	2518.3	2520.1	2501.7
17.5°	2394.8	2385.6	2372.7	2393.0	2398.5	2391.1	2396.7	2387.4
20°	2256.5	2256.5	2232.6	2241.8	2249.1	2254.7	2258.4	2243.6
22.5°	2079.6	2083.2	2066.6	2085.1	2090.6	2072.2	2075.9	2072.2
25°	1917.3	1915.5	1902.5	1895.2	1898.9	1891.5	1889.7	1862.0
27.5°	1738.5	1720.0	1692.4	1699.8	1668.4	1642.6	1642.6	1600.2
30°	1544.9	1513.6	1476.7	1439.8	1412.2	1382.7	1366.1	1342.1
32.5°	1318.1	1275.8	1229.7	1179.9	1148.6	1104.3	1080.3	1093.3
35°	1093.3	1030.5	967.9	918.1	870.1	844.3	814.8	818.5
37.5°	875.7	787.2	731.9	678.4	637.9	604.7	591.8	588.1
40°	639.7	569.7	514.4	475.6	448.0	422.2	407.5	401.9
42.5°	442.4	392.7	348.4	317.1	298.7	282.0	274.7	272.9
45°	287.6	258.1	228.6	206.5	191.8	180.7	178.8	176.9
47.5°	180.7	165.9	147.5	130.9	118.0	110.6	105.1	105.1
50°	103.2	97.7	88.5	79.3	71.9	68.2	62.7	60.9
52.5°	55.3	55.3	51.6	44.2	38.7	35.1	35.1	33.2
55°	29.5	29.5	27.7	27.7	25.8	25.8	25.8	24.0
57.5°	18.4	18.4	20.3	20.3	18.4	18.4	18.4	18.4
60°	12.9	14.7	14.7	14.7	14.7	14.7	14.7	14.7
62.5°	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
65°	7.4	9.3	9.3	9.3	9.3	7.4	7.4	7.4
67.5°	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
70°	5.6	5.6	5.6	5.6	5.6	3.7	3.7	3.7
72.5°	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
75°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
77.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
80°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
82.5°	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
87.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)