

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: **FLDSQ4C10D010 FEU4C109035 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: FLDSQ4C10D010 FEU4C109035 F4LC-SQ-LI  
 Description: 4 INCH 1000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

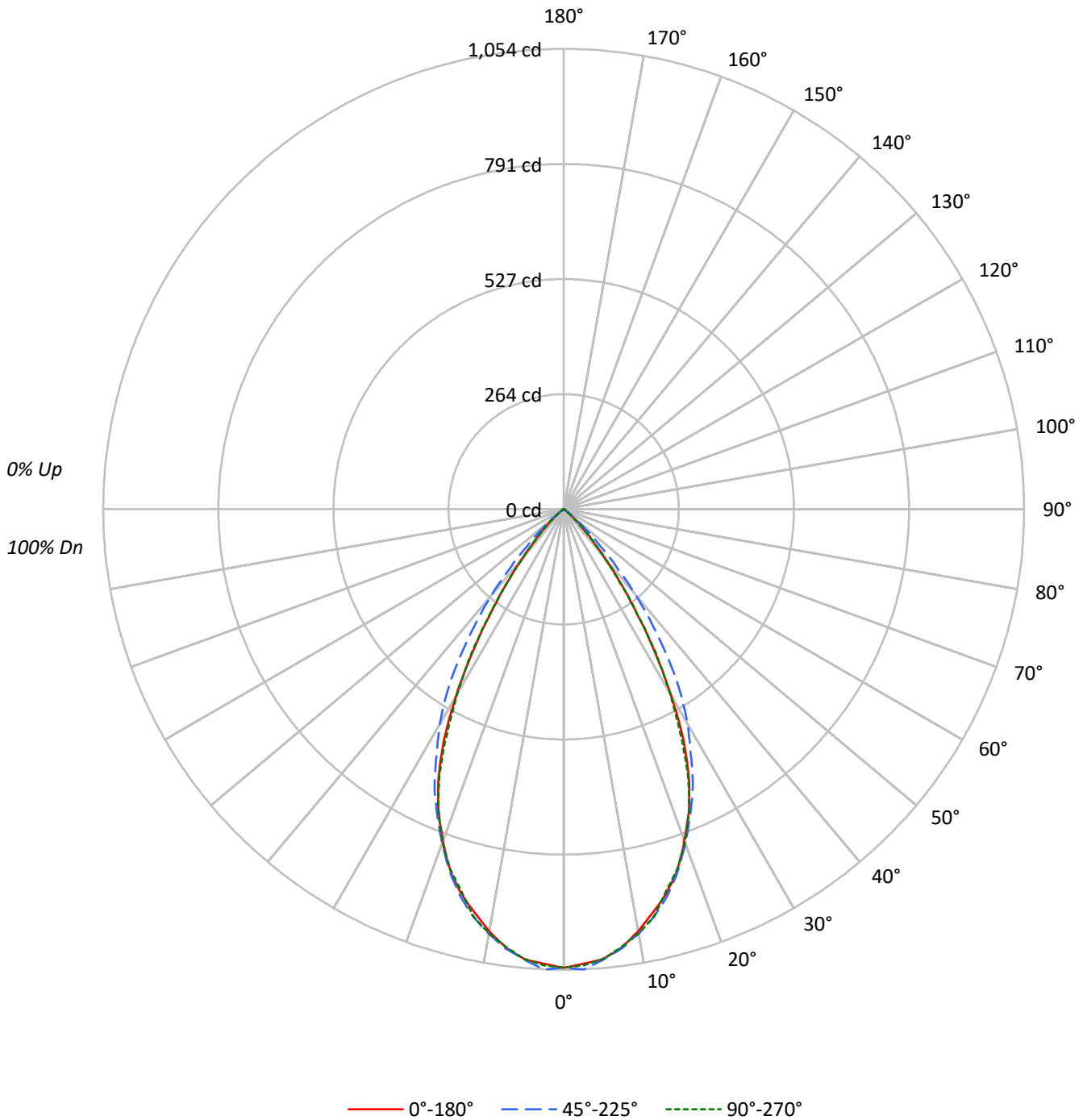
Lumens per Lamp: N/A  
 Luminaire Lumens: 969.0 lumens  
 Efficiency: N/A  
 Efficacy: 98.9 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 9.8  
 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°	101275	101275	101275
5°	100112	100238	100112
10°	96106	96694	96567
15°	90852	91522	90393
20°	82915	83531	83326
25°	72204	74471	71703
30°	54906	63150	54092
35°	34560	49095	34878
40°	18642	32421	18314
45°	8829	16020	8733
50°	3302	6004	3302
55°	1564	1901	1464
60°	1023	907	1023
65°	616	616	616
70°	367	564	367
75°	261	261	261
80°	389	389	389
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	97.3	10.0
10°-20°	255.0	26.3
20°-30°	311.6	32.2
30°-40°	217.9	22.5
40°-50°	71.4	7.4
50°-60°	11.4	1.2
60°-70°	3.1	0.3
70°-80°	1.0	0.1
80°-90°	0.3	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°	663.9	68.5
0°-40°	881.8	91.0
0°-60°	964.6	99.5
0°-90°	969.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	969.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1050	1050	1050	1050	1050	
5°	1034	1034	1035	1029	1034	97
15°	910	913	916	910	905	254
25°	678	688	700	687	674	305
35°	293	346	417	341	296	187
45°	65	80	117	79	64	54
55°	9	10	11	10	9	9
65°	3	3	3	3	3	3
75°	1	1	1	1	1	1
85°	0	0	0	0	0	0
90°	0	0	0	0	0	0

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C10D010 FEU4C109035 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1049.6	1049.6	1049.6	1049.6	1049.6	1049.6	1049.6	1049.6	1049.6	1049.6	1049.6
2.5°	1041.6	1048.9	1046.9	1051.6	1051.6	1046.3	1047.6	1049.6	1052.2	1054.3	1038.2
5°	1033.6	1040.2	1034.2	1040.9	1036.9	1030.9	1040.9	1035.6	1038.9	1034.9	1037.6
7.5°	1012.2	1022.9	1010.9	1018.9	1016.2	1012.9	1016.9	1015.6	1017.6	1014.2	1006.9
10°	980.9	989.6	981.6	992.9	987.6	984.2	987.6	990.9	990.2	986.9	990.9
12.5°	944.9	954.9	950.9	957.5	951.6	951.6	959.6	957.5	958.2	955.6	960.2
15°	909.5	916.9	910.9	919.6	916.9	909.5	912.9	912.9	918.2	916.2	910.9
17.5°	865.5	871.5	864.9	866.9	864.2	862.9	876.9	867.5	872.9	868.9	869.5
20°	807.5	810.2	808.2	813.5	810.2	814.2	812.9	811.5	811.5	813.5	808.9
22.5°	748.8	748.8	750.8	752.2	754.8	750.8	758.8	752.2	752.8	757.5	756.2
25°	678.2	676.2	680.8	687.5	690.2	686.8	697.5	692.2	696.2	699.5	692.2
27.5°	592.2	592.2	596.8	608.2	610.1	614.1	628.8	628.8	634.1	629.5	634.8
30°	492.8	500.1	506.1	520.8	525.5	534.1	549.5	556.8	568.8	566.8	564.1
32.5°	390.8	400.8	401.4	416.8	429.4	444.1	464.8	482.1	490.8	496.8	490.1
35°	293.4	299.4	304.7	315.4	336.7	356.1	374.8	397.4	412.8	416.8	410.8
37.5°	214.7	216.1	221.4	231.4	247.4	266.1	288.7	313.4	329.4	335.4	328.7
40°	148.0	149.4	152.0	160.7	174.0	187.4	205.4	230.7	245.4	257.4	248.7
42.5°	99.3	100.7	103.3	110.0	117.4	130.0	144.0	160.0	174.0	179.4	174.7
45°	64.7	64.7	66.0	70.7	74.7	84.7	94.7	104.7	114.0	117.4	114.0
47.5°	38.0	38.7	40.0	43.3	48.0	52.0	59.3	66.0	68.7	71.3	70.0
50°	22.0	22.0	24.0	26.0	29.3	32.0	34.7	37.3	38.7	40.0	38.7
52.5°	12.0	12.7	13.3	14.0	15.3	18.0	20.0	20.0	20.7	21.3	20.7
55°	9.3	9.3	9.3	9.3	10.0	10.0	10.0	10.7	10.7	11.3	10.7
57.5°	6.7	6.7	6.7	7.3	7.3	7.3	6.7	6.7	6.7	6.7	6.7
60°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	4.7	4.7	4.7	4.7
62.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
65°	2.7	2.7	3.3	3.3	3.3	3.3	3.3	2.7	2.7	2.7	2.7
67.5°	2.0	2.0	2.0	2.0	2.7	2.7	2.0	2.0	2.0	2.0	2.0
70°	1.3	1.3	1.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
72.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
75°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
77.5°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
80°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	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°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
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°	1049.6	1049.6	1049.6	1049.6	1049.6	1049.6	1049.6	1049.6
2.5°	1049.6	1038.2	1039.6	1045.6	1042.2	1045.6	1044.9	1044.9
5°	1038.2	1034.9	1029.6	1027.6	1031.6	1040.2	1038.9	1033.6
7.5°	1016.9	1008.2	1014.2	1016.9	1013.6	1018.9	1021.6	1010.2
10°	991.6	988.2	986.9	988.2	986.9	992.2	985.6	985.6
12.5°	955.6	950.2	950.2	958.2	953.5	949.5	954.9	954.2
15°	919.6	908.9	908.9	911.5	913.5	910.9	911.5	904.9
17.5°	866.2	862.9	858.2	865.5	867.5	864.9	866.9	863.5
20°	816.2	816.2	807.5	810.9	813.5	815.5	816.9	811.5
22.5°	752.2	753.5	747.5	754.2	756.2	749.5	750.8	749.5
25°	693.5	692.8	688.2	685.5	686.8	684.2	683.5	673.5
27.5°	628.8	622.1	612.2	614.8	603.5	594.1	594.1	578.8
30°	558.8	547.5	534.1	520.8	510.8	500.1	494.1	485.5
32.5°	476.8	461.5	444.8	426.8	415.4	399.4	390.8	395.4
35°	395.4	372.7	350.1	332.1	314.7	305.4	294.7	296.1
37.5°	316.7	284.7	264.7	245.4	230.7	218.7	214.0	212.7
40°	231.4	206.0	186.0	172.0	162.0	152.7	147.4	145.4
42.5°	160.0	142.0	126.0	114.7	108.0	102.0	99.3	98.7
45°	104.0	93.4	82.7	74.7	69.4	65.4	64.7	64.0
47.5°	65.4	60.0	53.3	47.3	42.7	40.0	38.0	38.0
50°	37.3	35.3	32.0	28.7	26.0	24.7	22.7	22.0
52.5°	20.0	20.0	18.7	16.0	14.0	12.7	12.7	12.0
55°	10.7	10.7	10.0	10.0	9.3	9.3	9.3	8.7
57.5°	6.7	6.7	7.3	7.3	6.7	6.7	6.7	6.7
60°	4.7	5.3	5.3	5.3	5.3	5.3	5.3	5.3
62.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
65°	2.7	3.3	3.3	3.3	3.3	2.7	2.7	2.7
67.5°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
70°	2.0	2.0	2.0	2.0	2.0	1.3	1.3	1.3
72.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
75°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
77.5°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
80°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
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°	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)