

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 FEU4C109040 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 FEU4C109040 F4LC-SQ-LI  
 Description: 4 INCH 1000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

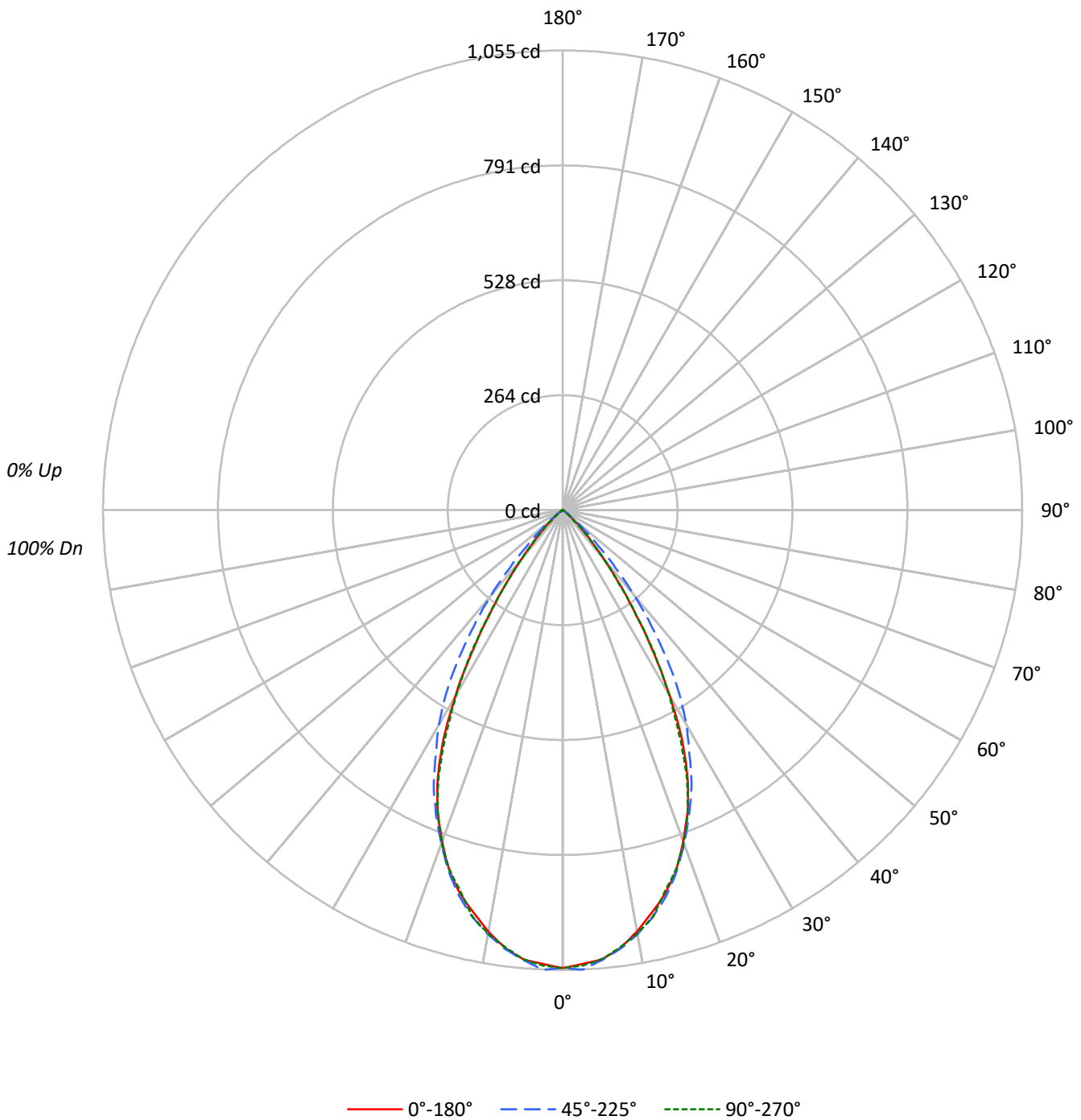
Lumens per Lamp: N/A  
 Luminaire Lumens: 970.0 lumens  
 Efficiency: N/A  
 Efficacy: 99.0 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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°	101381	101381	101381
5°	100209	100344	100209
10°	96204	96792	96664
15°	90952	91622	90483
20°	83008	83624	83418
25°	72278	74546	71778
30°	54961	63217	54148
35°	34595	49142	34913
40°	18667	32459	18327
45°	8829	16034	8747
50°	3302	6004	3302
55°	1564	1918	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°	97.4	10.0
10°-20°	255.3	26.3
20°-30°	311.9	32.2
30°-40°	218.1	22.5
40°-50°	71.5	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°	664.6	68.5
0°-40°	882.7	91.0
0°-60°	965.6	99.5
0°-90°	970.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	970.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1051	1051	1051	1051	1051	
5°	1035	1035	1036	1030	1035	97
15°	910	914	917	911	906	254
25°	679	689	700	688	674	305
35°	294	347	417	341	296	187
45°	65	80	118	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 FEU4C109040 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1050.7	1050.7	1050.7	1050.7	1050.7	1050.7	1050.7	1050.7	1050.7	1050.7	1050.7
2.5°	1042.7	1050.0	1048.0	1052.7	1052.7	1047.3	1048.7	1050.7	1053.3	1055.3	1039.3
5°	1034.6	1041.3	1035.3	1042.0	1038.0	1032.0	1042.0	1036.6	1040.0	1036.0	1038.6
7.5°	1013.3	1024.0	1012.0	1020.0	1017.3	1013.9	1017.9	1016.6	1018.6	1015.3	1007.9
10°	981.9	990.6	982.6	993.9	988.6	985.3	988.6	991.9	991.3	987.9	991.9
12.5°	945.9	955.9	951.9	958.5	952.5	952.5	960.6	958.5	959.2	956.5	961.2
15°	910.5	917.8	911.8	920.5	917.8	910.5	913.8	913.8	919.2	917.2	911.8
17.5°	866.4	872.4	865.8	867.8	865.1	863.8	877.8	868.4	873.8	869.8	870.4
20°	808.4	811.0	809.0	814.4	811.0	815.0	813.7	812.4	812.4	814.4	809.7
22.5°	749.6	749.6	751.6	753.0	755.6	751.6	759.6	753.0	753.6	758.3	757.0
25°	678.9	676.9	681.5	688.2	690.9	687.5	698.2	692.9	696.9	700.2	692.9
27.5°	592.8	592.8	597.4	608.8	610.8	614.8	629.5	629.5	634.8	630.1	635.5
30°	493.3	500.6	506.6	521.3	526.0	534.7	550.0	557.4	569.4	567.4	564.7
32.5°	391.2	401.2	401.8	417.2	429.9	444.6	465.3	482.6	491.3	497.3	490.6
35°	293.7	299.7	305.1	315.7	337.1	356.5	375.1	397.8	413.2	417.2	411.2
37.5°	214.9	216.3	221.6	231.6	247.6	266.3	289.0	313.7	329.8	335.8	329.1
40°	148.2	149.5	152.2	160.9	174.2	187.6	205.6	231.0	245.6	257.7	249.0
42.5°	99.5	100.8	103.5	110.1	117.5	130.2	144.2	160.2	174.2	179.6	174.9
45°	64.7	64.7	66.1	70.8	74.8	84.8	94.8	104.8	114.1	117.5	114.1
47.5°	38.1	38.7	40.0	43.4	48.1	52.1	59.4	66.1	68.8	71.4	70.1
50°	22.0	22.0	24.0	26.0	29.4	32.0	34.7	37.4	38.7	40.0	38.7
52.5°	12.0	12.7	13.3	14.0	15.4	18.0	20.0	20.0	20.7	21.4	20.7
55°	9.3	9.3	9.3	9.3	10.0	10.0	10.0	10.7	10.7	11.4	10.7
57.5°	6.7	6.7	6.7	7.4	7.4	7.4	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°	1050.7	1050.7	1050.7	1050.7	1050.7	1050.7	1050.7	1050.7
2.5°	1050.7	1039.3	1040.6	1046.7	1043.3	1046.7	1046.0	1046.0
5°	1039.3	1036.0	1030.6	1028.6	1032.6	1041.3	1040.0	1034.6
7.5°	1017.9	1009.3	1015.3	1017.9	1014.6	1020.0	1022.6	1011.3
10°	992.6	989.3	987.9	989.3	987.9	993.3	986.6	986.6
12.5°	956.5	951.2	951.2	959.2	954.5	950.5	955.9	955.2
15°	920.5	909.8	909.8	912.5	914.5	911.8	912.5	905.8
17.5°	867.1	863.8	859.1	866.4	868.4	865.8	867.8	864.4
20°	817.0	817.0	808.4	811.7	814.4	816.4	817.7	812.4
22.5°	753.0	754.3	748.3	754.9	757.0	750.3	751.6	750.3
25°	694.2	693.5	688.9	686.2	687.5	684.9	684.2	674.2
27.5°	629.5	622.8	612.8	615.5	604.1	594.8	594.8	579.4
30°	559.4	548.0	534.7	521.3	511.3	500.6	494.6	486.0
32.5°	477.3	461.9	445.2	427.2	415.9	399.9	391.2	395.8
35°	395.8	373.1	350.4	332.4	315.1	305.7	295.0	296.4
37.5°	317.1	285.0	265.0	245.6	231.0	219.0	214.3	212.9
40°	231.6	206.3	186.2	172.2	162.2	152.9	147.5	145.5
42.5°	160.2	142.2	126.1	114.8	108.1	102.1	99.5	98.8
45°	104.1	93.5	82.8	74.8	69.4	65.4	64.7	64.1
47.5°	65.4	60.1	53.4	47.4	42.7	40.0	38.1	38.1
50°	37.4	35.4	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	7.4	7.4	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)