

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 FEU4C109027 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 FEU4C109027 F4LC-SQ-LI  
 Description: 4 INCH 1000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

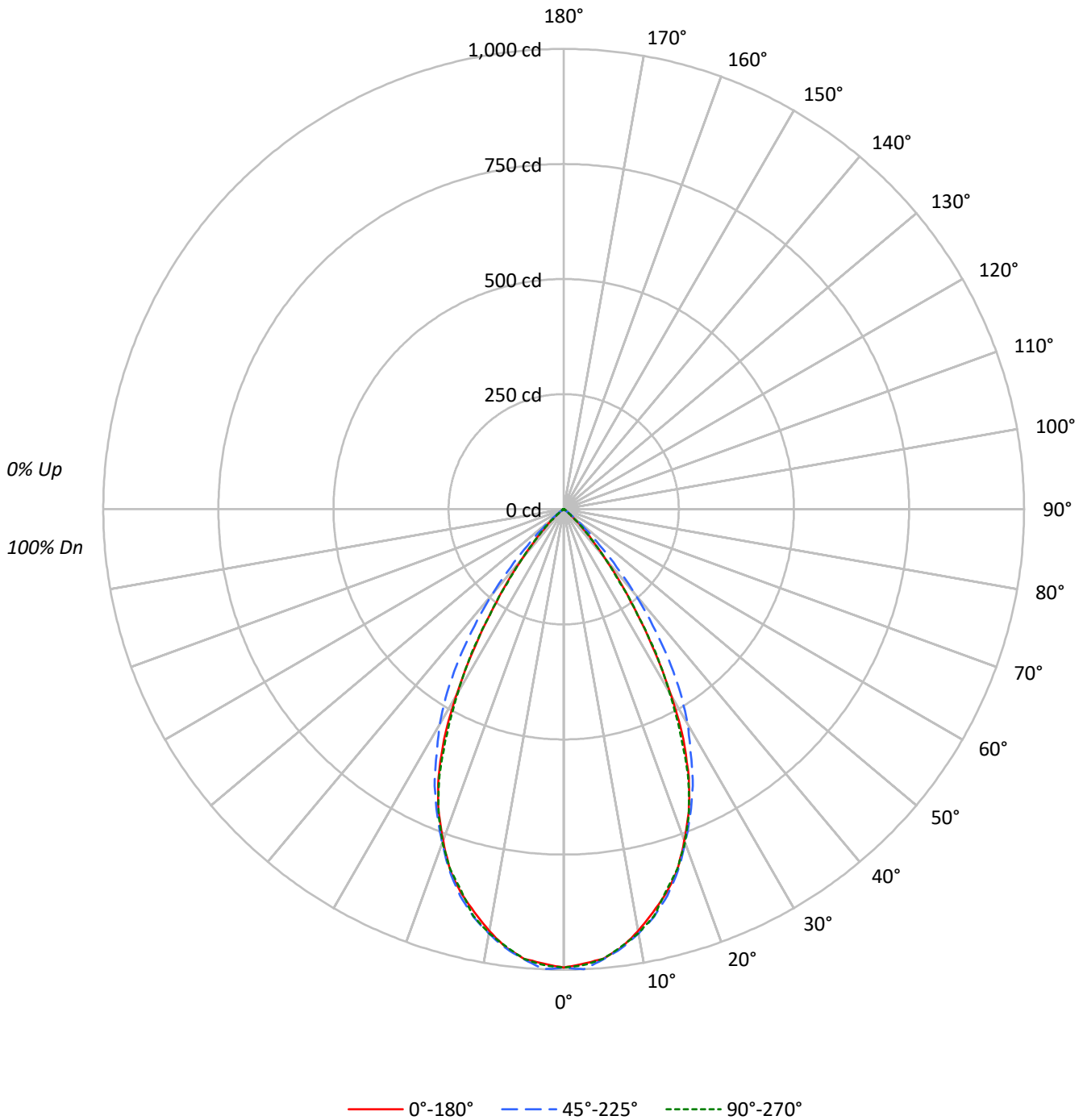
Lumens per Lamp: N/A  
 Luminaire Lumens: 919.0 lumens  
 Efficiency: N/A  
 Efficacy: 93.8 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 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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CATALOG NUMBER: FLDSQ4C10D010 FEU4C109027 F4LC-SQ-LI

**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				
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	65				
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°	96045	96045	96045
5°	94940	95066	94940
10°	91148	91707	91579
15°	86167	86797	85728
20°	78644	79219	79034
25°	68477	70628	67998
30°	52065	59886	51296
35°	32781	46563	33076
40°	17684	30746	17370
45°	8365	15188	8283
50°	3137	5689	3137
55°	1497	1817	1379
60°	984	849	984
65°	571	571	571
70°	367	536	367
75°	224	224	224
80°	333	333	333
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	92.3	10.0
10°-20°	241.9	26.3
20°-30°	295.5	32.2
30°-40°	206.7	22.5
40°-50°	67.7	7.4
50°-60°	10.8	1.2
60°-70°	2.9	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°	629.6	68.5
0°-40°	836.3	91.0
0°-60°	914.8	99.5
0°-90°	919.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	919.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	995	995	995	995	995	
5°	980	981	982	976	980	92
15°	863	866	869	863	858	241
25°	643	653	663	651	639	289
35°	278	329	395	324	281	178
45°	61	76	111	75	61	51
55°	9	10	11	10	8	9
65°	2	3	2	3	2	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 FEU4C109027 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	995.4	995.4	995.4	995.4	995.4	995.4	995.4	995.4	995.4	995.4	995.4
2.5°	987.8	994.8	992.9	997.3	997.3	992.3	993.5	995.4	997.9	999.9	984.7
5°	980.2	986.6	980.9	987.2	983.4	977.7	987.2	982.1	985.3	981.5	984.0
7.5°	960.0	970.1	958.7	966.3	963.8	960.6	964.4	963.2	965.1	961.9	955.0
10°	930.3	938.5	930.9	941.7	936.6	933.5	936.6	939.8	939.1	936.0	939.8
12.5°	896.1	905.6	901.8	908.1	902.5	902.5	910.0	908.1	908.8	906.3	910.7
15°	862.6	869.6	863.9	872.1	869.6	862.6	865.8	865.8	870.8	868.9	863.9
17.5°	820.9	826.6	820.2	822.1	819.6	818.4	831.6	822.8	827.8	824.0	824.7
20°	765.9	768.4	766.5	771.5	768.4	772.2	770.9	769.7	769.7	771.5	767.1
22.5°	710.2	710.2	712.1	713.4	715.9	712.1	719.7	713.4	714.0	718.4	717.2
25°	643.2	641.3	645.7	652.0	654.6	651.4	661.5	656.4	660.2	663.4	656.4
27.5°	561.6	561.6	566.0	576.8	578.7	582.4	596.4	596.4	601.4	597.0	602.1
30°	467.3	474.3	480.0	493.9	498.3	506.6	521.1	528.1	539.5	537.5	535.0
32.5°	370.6	380.1	380.7	395.3	407.3	421.2	440.8	457.2	465.5	471.1	464.8
35°	278.3	284.0	289.0	299.1	319.4	337.7	355.4	376.9	391.5	395.3	389.6
37.5°	203.6	204.9	210.0	219.4	234.6	252.3	273.8	297.2	312.4	318.1	311.8
40°	140.4	141.7	144.2	152.4	165.1	177.7	194.8	218.8	232.7	244.1	235.9
42.5°	94.2	95.5	98.0	104.3	111.3	123.3	136.6	151.8	165.1	170.1	165.7
45°	61.3	61.3	62.6	67.0	70.8	80.3	89.8	99.3	108.1	111.3	108.1
47.5°	36.1	36.7	37.9	41.1	45.5	49.3	56.3	62.6	65.1	67.7	66.4
50°	20.9	20.9	22.8	24.7	27.8	30.3	32.9	35.4	36.7	37.9	36.7
52.5°	11.4	12.0	12.6	13.3	14.6	17.1	19.0	19.0	19.6	20.2	19.6
55°	8.9	8.9	8.9	8.9	9.5	9.5	9.5	10.1	10.1	10.8	10.1
57.5°	6.3	6.3	6.3	7.0	7.0	7.0	6.3	6.3	6.3	6.3	6.3
60°	5.1	5.1	5.1	5.1	5.1	5.1	5.1	4.4	4.4	4.4	4.4
62.5°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
65°	2.5	2.5	3.2	3.2	3.2	3.2	3.2	2.5	2.5	2.5	2.5
67.5°	1.9	1.9	1.9	1.9	2.5	2.5	1.9	1.9	1.9	1.9	1.9
70°	1.3	1.3	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
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°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
77.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
80°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	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°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
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°	995.4	995.4	995.4	995.4	995.4	995.4	995.4	995.4
2.5°	995.4	984.7	985.9	991.6	988.5	991.6	991.0	991.0
5°	984.7	981.5	976.5	974.5	978.3	986.6	985.3	980.2
7.5°	964.4	956.2	961.9	964.4	961.3	966.3	968.9	958.1
10°	940.4	937.2	936.0	937.2	936.0	941.0	934.7	934.7
12.5°	906.3	901.2	901.2	908.8	904.3	900.6	905.6	905.0
15°	872.1	862.0	862.0	864.5	866.4	863.9	864.5	858.2
17.5°	821.5	818.4	813.9	820.9	822.8	820.2	822.1	819.0
20°	774.1	774.1	765.9	769.0	771.5	773.4	774.7	769.7
22.5°	713.4	714.6	708.9	715.3	717.2	710.8	712.1	710.8
25°	657.7	657.1	652.6	650.1	651.4	648.9	648.2	638.7
27.5°	596.4	590.0	580.6	583.1	572.3	563.5	563.5	548.9
30°	530.0	519.2	506.6	493.9	484.4	474.3	468.6	460.4
32.5°	452.2	437.6	421.8	404.7	394.0	378.8	370.6	375.0
35°	375.0	353.5	332.0	315.0	298.5	289.6	279.5	280.8
37.5°	300.4	270.0	251.1	232.7	218.8	207.4	203.0	201.7
40°	219.4	195.4	176.4	163.2	153.7	144.8	139.8	137.9
42.5°	151.8	134.7	119.5	108.8	102.5	96.8	94.2	93.6
45°	98.7	88.5	78.4	70.8	65.8	62.0	61.3	60.7
47.5°	62.0	56.9	50.6	44.9	40.5	37.9	36.1	36.1
50°	35.4	33.5	30.3	27.2	24.7	23.4	21.5	20.9
52.5°	19.0	19.0	17.7	15.2	13.3	12.0	12.0	11.4
55°	10.1	10.1	9.5	9.5	8.9	8.9	8.9	8.2
57.5°	6.3	6.3	7.0	7.0	6.3	6.3	6.3	6.3
60°	4.4	5.1	5.1	5.1	5.1	5.1	5.1	5.1
62.5°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
65°	2.5	3.2	3.2	3.2	3.2	2.5	2.5	2.5
67.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
70°	1.9	1.9	1.9	1.9	1.9	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°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
77.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
80°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
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°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)