

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-CSSQ-MMS**

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

**Summary**

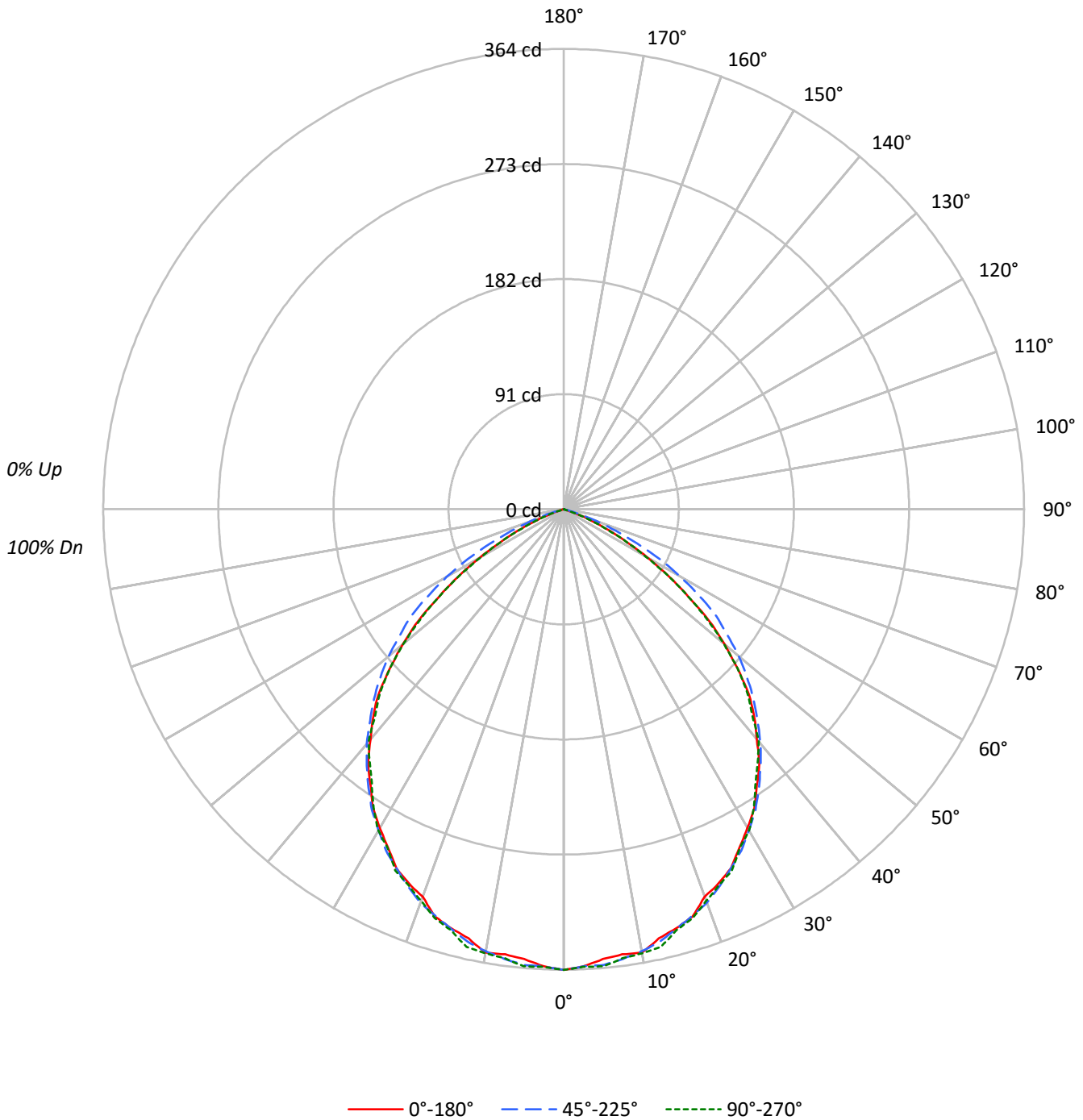
Lumens per Lamp: N/A  
 Luminaire Lumens: 778.0 lumens  
 Efficiency: N/A  
 Efficacy: 79.8 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 9.75  
 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



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C10D010 FEU4C109027 F4LC-CSSQ-MMS

**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	111	108	104	101	109	105	102	100	101	99	96		97	95	94		94	92	91	89
2	103	96	91	86	100	94	89	85	91	87	83		88	84	81		85	82	79	77
3	95	86	79	74	93	85	78	73	82	76	72		79	74	71		77	73	69	67
4	88	77	70	64	86	76	69	63	74	67	63		71	66	62		69	65	61	59
5	81	70	62	56	79	69	61	56	67	60	55		65	59	54		63	58	54	52
6	75	63	55	49	73	62	55	49	61	54	49		59	53	48		57	52	48	46
7	70	58	50	44	68	57	49	44	55	49	44		54	48	43		53	47	43	41
8	65	53	45	40	64	52	45	39	51	44	39		50	44	39		49	43	39	37
9	61	49	41	36	60	48	41	36	47	40	36		46	40	35		45	39	35	34
10	57	45	38	33	56	44	37	33	44	37	32		43	37	32		42	36	32	31

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

	0°	45°	90°
0°	35141	35141	35141
5°	34578	35024	35121
10°	34870	34772	34919
15°	34263	34313	34413
20°	33464	33998	33834
25°	33323	33323	33536
30°	32389	32623	32678
35°	31380	31686	31132
40°	29915	30494	30230
45°	28301	28942	28028
50°	24933	27110	24768
55°	20187	24796	20271
60°	14782	20571	14473
65°	8973	14635	8744
70°	3498	7871	3357
75°	373	2125	373
80°	278	278	278
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	34.4	4.4
10°-20°	97.3	12.5
20°-30°	144.3	18.6
30°-40°	167.3	21.5
40°-50°	160.4	20.6
50°-60°	117.9	15.2
60°-70°	50.9	6.5
70°-80°	5.5	0.7
80°-90°	0.1	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°	276.0	35.5
0°-40°	443.3	57.0
0°-60°	721.5	92.7
0°-90°	778.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	778.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	364	364	364	364	364	
5°	357	361	362	362	363	34
15°	343	345	344	344	344	97
25°	313	312	313	314	315	143
35°	266	268	269	268	264	167
45°	207	208	212	209	205	158
55°	120	132	147	132	120	108
65°	39	49	64	49	38	40
75°	1	2	6	1	1	3
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C10D010 FEU4C109027 F4LC-CSSQ-MMS

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	364.2	364.2	364.2	364.2	364.2	364.2	364.2	364.2	364.2	364.2	364.2
2.5°	361.6	365.7	366.3	363.7	362.6	361.1	364.7	362.1	363.2	362.1	361.6
5°	357.0	361.6	362.1	362.1	361.1	360.6	362.1	361.6	361.1	360.1	361.6
7.5°	354.9	357.5	360.1	357.0	358.5	358.0	361.6	360.1	359.5	359.5	358.5
10°	355.9	355.4	357.5	354.4	355.4	354.4	357.5	357.5	356.4	355.4	354.9
12.5°	347.6	351.8	351.8	351.3	350.2	348.7	351.8	353.9	350.7	350.7	350.2
15°	343.0	344.0	344.5	344.5	344.0	345.1	346.6	344.5	345.1	342.5	343.5
17.5°	337.8	335.8	337.3	336.3	336.8	337.8	339.9	339.9	336.8	336.3	337.3
20°	325.9	332.1	332.7	329.5	330.1	330.1	333.7	330.6	332.7	330.1	331.1
22.5°	320.2	324.4	324.9	320.7	323.3	320.2	323.8	319.2	324.4	320.7	322.3
25°	313.0	312.5	314.0	311.9	312.5	312.5	315.0	313.0	314.5	312.5	313.0
27.5°	301.1	305.2	304.7	302.6	303.7	303.2	308.3	302.6	305.7	303.2	304.2
30°	290.7	294.4	293.3	291.3	291.3	289.7	295.4	293.8	293.3	293.3	292.8
32.5°	280.4	280.9	279.9	280.4	280.9	278.8	283.5	281.4	280.9	281.4	282.0
35°	266.4	266.4	267.5	265.9	268.0	268.0	272.1	269.5	269.0	267.5	269.0
37.5°	254.0	252.5	253.0	253.0	254.0	255.0	257.1	256.1	256.1	254.5	255.6
40°	237.5	236.4	238.0	238.0	239.5	239.5	241.6	240.6	242.1	242.1	242.1
42.5°	223.0	223.0	221.9	223.5	224.0	223.5	227.1	226.6	227.1	226.1	226.6
45°	207.4	207.4	206.4	205.9	208.5	208.0	212.1	210.5	212.6	211.6	212.1
47.5°	186.2	188.8	187.3	188.8	191.9	192.5	195.0	194.0	196.1	194.5	196.6
50°	166.1	166.1	167.6	169.7	172.8	173.3	176.4	178.5	179.5	180.0	180.6
52.5°	144.9	144.3	145.9	148.5	151.1	153.1	156.2	159.3	161.4	164.5	162.9
55°	120.0	121.1	122.6	125.7	129.9	132.4	135.0	139.2	142.8	144.3	147.4
57.5°	98.8	97.8	98.8	102.9	107.6	109.7	113.3	117.4	122.6	125.7	126.7
60°	76.6	77.1	78.1	81.7	85.4	88.5	90.0	96.7	101.4	104.5	106.6
62.5°	56.4	57.4	58.5	61.6	65.2	67.8	70.4	76.0	80.2	83.3	85.4
65°	39.3	39.8	41.4	42.9	46.6	49.1	51.2	55.9	60.0	62.6	64.1
67.5°	24.3	24.8	25.9	27.9	30.5	32.6	34.7	37.8	41.4	44.0	44.5
70°	12.4	12.9	13.4	15.0	17.1	18.1	19.7	22.2	24.8	26.9	27.9
72.5°	4.1	4.1	4.7	5.7	6.7	7.8	8.3	10.9	12.9	14.0	14.5
75°	1.0	1.0	1.0	1.0	1.0	1.6	1.6	3.1	4.1	5.2	5.7
77.5°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0
80°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
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°	364.2	364.2	364.2	364.2	364.2	364.2	364.2	364.2	364.2	364.2
2.5°	364.2	363.2	362.6	363.2	363.2	362.6	364.2	366.3	368.8	362.1
5°	363.7	362.6	363.7	360.6	362.1	361.1	363.2	362.6	364.7	362.6
7.5°	362.1	360.1	360.6	359.0	361.1	358.5	360.1	363.2	361.1	358.0
10°	357.0	355.9	359.5	354.4	353.3	355.4	359.5	356.4	355.4	356.4
12.5°	351.8	351.8	353.3	349.2	349.7	350.7	352.8	350.7	351.8	354.4
15°	346.1	345.1	347.6	344.5	344.0	343.0	345.1	345.1	346.1	344.5
17.5°	339.4	337.8	337.8	336.8	336.3	338.9	339.9	340.4	340.9	338.9
20°	331.1	330.6	332.1	330.6	331.1	331.6	331.6	330.6	335.2	329.5
22.5°	322.3	323.8	321.8	320.7	321.8	322.8	322.8	323.3	322.3	321.3
25°	313.5	314.5	315.0	311.9	313.5	311.9	315.6	316.1	314.0	315.0
27.5°	305.7	304.2	303.7	301.6	302.6	302.1	302.6	302.6	305.7	301.6
30°	293.8	292.3	292.8	291.3	291.8	291.3	291.8	291.8	293.8	293.3
32.5°	282.5	280.9	281.4	279.9	279.9	280.4	279.4	279.4	280.9	279.9
35°	271.6	268.0	268.5	268.0	268.5	266.4	266.4	265.9	266.9	264.3
37.5°	256.1	254.5	254.0	253.5	254.0	253.0	254.0	252.5	254.0	251.9
40°	242.1	241.1	241.6	238.5	238.5	239.0	238.0	237.5	238.0	240.0
42.5°	228.1	226.1	225.0	224.0	224.5	223.0	222.4	221.4	222.4	220.4
45°	211.6	211.6	211.1	208.5	209.0	209.0	206.9	204.9	205.4	205.4
47.5°	196.6	195.6	195.0	192.5	191.9	191.4	189.3	187.8	187.8	186.2
50°	180.0	179.0	177.4	174.9	173.8	170.7	169.2	167.1	165.0	165.0
52.5°	164.5	160.9	158.8	154.7	153.1	151.6	147.4	145.9	144.3	142.8
55°	145.9	142.8	138.7	134.0	131.9	129.3	125.2	122.1	120.0	120.5
57.5°	127.8	122.6	118.5	112.3	109.7	108.1	104.0	99.8	97.8	97.8
60°	105.5	101.4	96.2	90.5	88.5	85.9	80.7	78.1	76.6	75.0
62.5°	84.3	81.2	76.6	69.3	67.8	65.2	61.6	58.5	56.9	56.9
65°	63.1	60.0	55.9	50.7	48.6	46.6	43.5	40.4	38.8	38.3
67.5°	44.5	40.9	37.3	33.1	31.6	30.5	27.4	25.3	24.3	23.8
70°	26.9	24.8	22.2	19.1	17.6	16.5	14.5	12.9	12.4	11.9
72.5°	14.0	12.4	10.3	8.3	7.2	6.2	5.2	4.1	3.6	3.6
75°	5.2	4.1	2.6	1.6	1.0	1.0	1.0	1.0	1.0	1.0
77.5°	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
80°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
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)