

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: **FLDSQ4C15D010 FEU4C159030 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: FLDSQ4C15D010 FEU4C159030 F4LC-CSSQ-MMS  
 Description: 4 INCH 1500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

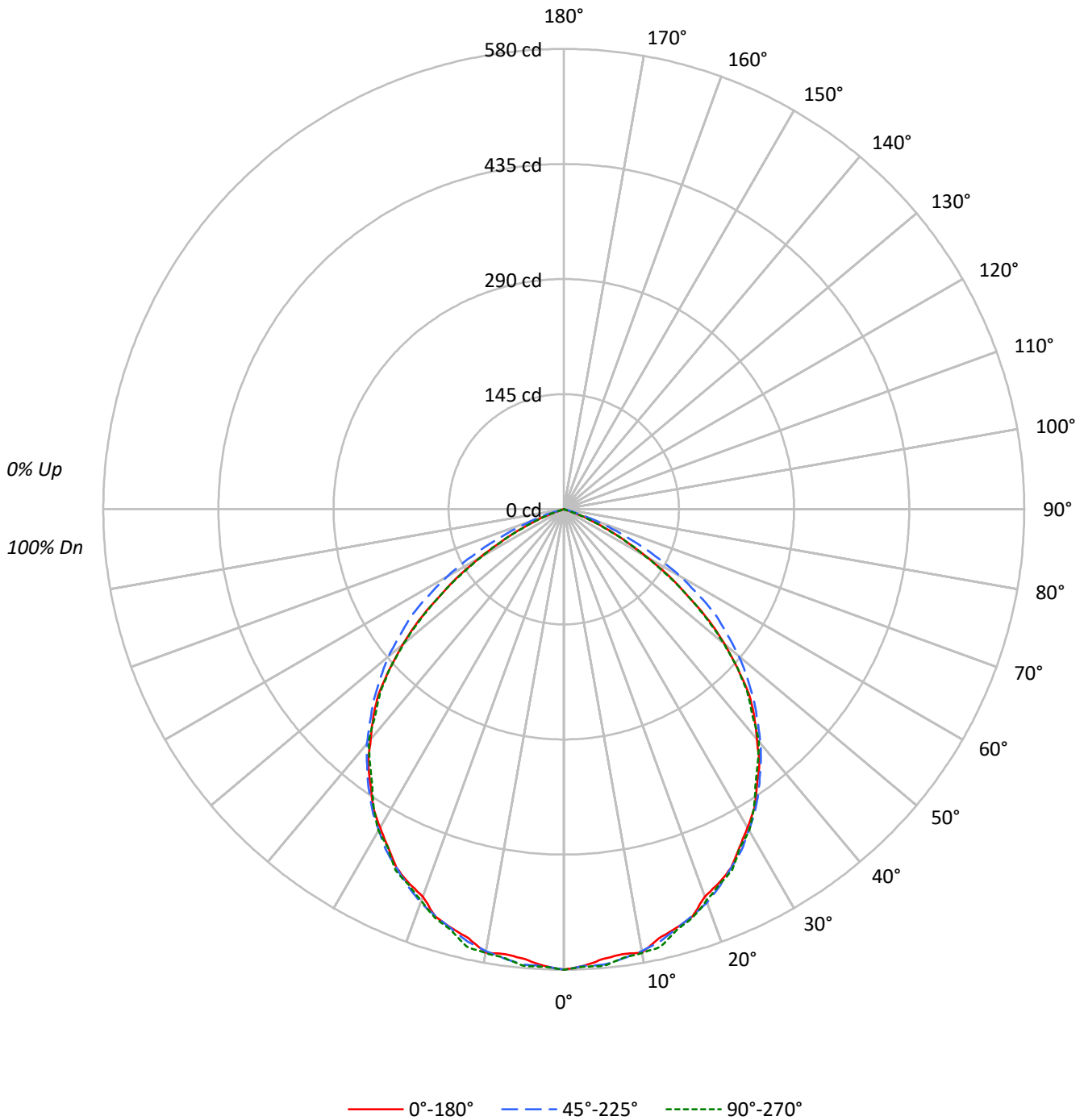
Lumens per Lamp: N/A  
 Luminaire Lumens: 1239.0 lumens  
 Efficiency: N/A  
 Efficacy: 78.4 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 15.8  
 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	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°	55964	55964	55964
5°	55063	55780	55935
10°	55534	55377	55612
15°	54561	54641	54811
20°	53292	54144	53887
25°	53062	53062	53413
30°	51586	51953	52042
35°	49979	50462	49590
40°	47637	48569	48153
45°	45085	46095	44635
50°	39704	43157	39449
55°	32147	39499	32299
60°	23524	32748	23061
65°	14292	23334	13927
70°	5586	12554	5360
75°	596	3393	596
80°	445	445	445
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	54.7	4.4
10°-20°	154.9	12.5
20°-30°	229.9	18.6
30°-40°	266.4	21.5
40°-50°	255.4	20.6
50°-60°	187.8	15.2
60°-70°	81.1	6.5
70°-80°	8.7	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°	439.5	35.5
0°-40°	705.9	57.0
0°-60°	1149.0	92.7
0°-90°	1239.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1239.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	580	580	580	580	580	
5°	568	574	576	577	578	54
15°	546	550	547	548	549	154
25°	498	498	498	499	502	228
35°	424	427	428	428	421	265
45°	330	331	338	333	327	251
55°	191	211	235	210	192	172
65°	63	78	102	77	61	64
75°	2	2	9	2	2	5
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P#  
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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	580.0	580.0	580.0	580.0	580.0	580.0	580.0	580.0	580.0	580.0	580.0
2.5°	575.9	582.5	583.3	579.2	577.5	575.1	580.8	576.7	578.4	576.7	575.9
5°	568.5	575.9	576.7	576.7	575.1	574.2	576.7	575.9	575.1	573.4	575.9
7.5°	565.2	569.3	573.4	568.5	570.9	570.1	575.9	573.4	572.6	572.6	570.9
10°	566.8	566.0	569.3	564.4	566.0	564.4	569.3	569.3	567.6	566.0	565.2
12.5°	553.6	560.2	560.2	559.4	557.8	555.3	560.2	563.5	558.6	558.6	557.8
15°	546.2	547.9	548.7	548.7	547.9	549.5	552.0	548.7	549.5	545.4	547.0
17.5°	538.0	534.7	537.2	535.5	536.3	538.0	541.3	541.3	536.3	535.5	537.2
20°	519.0	528.9	529.8	524.8	525.6	525.6	531.4	526.5	529.8	525.6	527.3
22.5°	510.0	516.6	517.4	510.8	514.9	510.0	515.7	508.3	516.6	510.8	513.3
25°	498.4	497.6	500.1	496.8	497.6	497.6	501.7	498.4	500.9	497.6	498.4
27.5°	479.5	486.1	485.3	482.0	483.6	482.8	491.0	482.0	486.9	482.8	484.4
30°	463.0	468.8	467.1	463.8	463.8	461.4	470.4	467.9	467.1	467.1	466.3
32.5°	446.5	447.4	445.7	446.5	447.4	444.1	451.5	448.2	447.4	448.2	449.0
35°	424.3	424.3	425.9	423.5	426.8	426.8	433.4	429.2	428.4	425.9	428.4
37.5°	404.5	402.1	402.9	402.9	404.5	406.2	409.5	407.8	407.8	405.4	407.0
40°	378.2	376.5	379.0	379.0	381.5	381.5	384.7	383.1	385.6	385.6	385.6
42.5°	355.1	355.1	353.5	355.9	356.7	355.9	361.7	360.8	361.7	360.0	360.8
45°	330.4	330.4	328.7	327.9	332.0	331.2	337.8	335.3	338.6	337.0	337.8
47.5°	296.6	300.7	298.2	300.7	305.7	306.5	310.6	308.9	312.2	309.8	313.1
50°	264.5	264.5	266.9	270.2	275.2	276.0	280.9	284.2	285.9	286.7	287.5
52.5°	230.7	229.9	232.3	236.4	240.6	243.9	248.8	253.8	257.0	262.0	259.5
55°	191.1	192.8	195.3	200.2	206.8	210.9	215.0	221.6	227.4	229.9	234.8
57.5°	157.3	155.7	157.3	163.9	171.4	174.7	180.4	187.0	195.3	200.2	201.9
60°	121.9	122.8	124.4	130.2	135.9	140.9	143.4	154.1	161.5	166.4	169.7
62.5°	89.8	91.5	93.1	98.1	103.8	107.9	112.0	121.1	127.7	132.6	135.9
65°	62.6	63.4	65.9	68.4	74.2	78.3	81.5	89.0	95.6	99.7	102.2
67.5°	38.7	39.5	41.2	44.5	48.6	51.9	55.2	60.1	65.9	70.0	70.9
70°	19.8	20.6	21.4	23.9	27.2	28.8	31.3	35.4	39.5	42.8	44.5
72.5°	6.6	6.6	7.4	9.1	10.7	12.4	13.2	17.3	20.6	22.3	23.1
75°	1.6	1.6	1.6	1.6	1.6	2.5	2.5	4.9	6.6	8.2	9.1
77.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6
80°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
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°	580.0	580.0	580.0	580.0	580.0	580.0	580.0	580.0	580.0	580.0
2.5°	580.0	578.4	577.5	578.4	578.4	577.5	580.0	583.3	587.4	576.7
5°	579.2	577.5	579.2	574.2	576.7	575.1	578.4	577.5	580.8	577.5
7.5°	576.7	573.4	574.2	571.8	575.1	570.9	573.4	578.4	575.1	570.1
10°	568.5	566.8	572.6	564.4	562.7	566.0	572.6	567.6	566.0	567.6
12.5°	560.2	560.2	562.7	556.1	556.9	558.6	561.9	558.6	560.2	564.4
15°	551.2	549.5	553.6	548.7	547.9	546.2	549.5	549.5	551.2	548.7
17.5°	540.5	538.0	538.0	536.3	535.5	539.6	541.3	542.1	542.9	539.6
20°	527.3	526.5	528.9	526.5	527.3	528.1	528.1	526.5	533.9	524.8
22.5°	513.3	515.7	512.4	510.8	512.4	514.1	514.1	514.9	513.3	511.6
25°	499.3	500.9	501.7	496.8	499.3	496.8	502.6	503.4	500.1	501.7
27.5°	486.9	484.4	483.6	480.3	482.0	481.2	482.0	482.0	486.9	480.3
30°	467.9	465.5	466.3	463.8	464.7	463.8	464.7	464.7	467.9	467.1
32.5°	449.8	447.4	448.2	445.7	445.7	446.5	444.9	444.9	447.4	445.7
35°	432.5	426.8	427.6	426.8	427.6	424.3	424.3	423.5	425.1	421.0
37.5°	407.8	405.4	404.5	403.7	404.5	402.9	404.5	402.1	404.5	401.2
40°	385.6	383.9	384.7	379.8	379.8	380.6	379.0	378.2	379.0	382.3
42.5°	363.3	360.0	358.4	356.7	357.6	355.1	354.3	352.6	354.3	351.0
45°	337.0	337.0	336.1	332.0	332.8	332.8	329.6	326.3	327.1	327.1
47.5°	313.1	311.4	310.6	306.5	305.7	304.8	301.5	299.1	299.1	296.6
50°	286.7	285.0	282.6	278.5	276.8	271.9	269.4	266.1	262.8	262.8
52.5°	262.0	256.2	252.9	246.3	243.9	241.4	234.8	232.3	229.9	227.4
55°	232.3	227.4	220.8	213.4	210.1	206.0	199.4	194.4	191.1	192.0
57.5°	203.5	195.3	188.7	178.8	174.7	172.2	165.6	159.0	155.7	155.7
60°	168.1	161.5	153.2	144.2	140.9	136.8	128.5	124.4	121.9	119.5
62.5°	134.3	129.3	121.9	110.4	107.9	103.8	98.1	93.1	90.6	90.6
65°	100.5	95.6	89.0	80.7	77.4	74.2	69.2	64.3	61.8	61.0
67.5°	70.9	65.1	59.3	52.7	50.3	48.6	43.7	40.4	38.7	37.9
70°	42.8	39.5	35.4	30.5	28.0	26.4	23.1	20.6	19.8	19.0
72.5°	22.3	19.8	16.5	13.2	11.5	9.9	8.2	6.6	5.8	5.8
75°	8.2	6.6	4.1	2.5	1.6	1.6	1.6	1.6	1.6	1.6
77.5°	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
80°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
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)