

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 FEU4C159040 F4LC-DFSSQ-MW**

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 FEU4C159040 F4LC-DFSSQ-MW  
 Description: 4 INCH 1500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

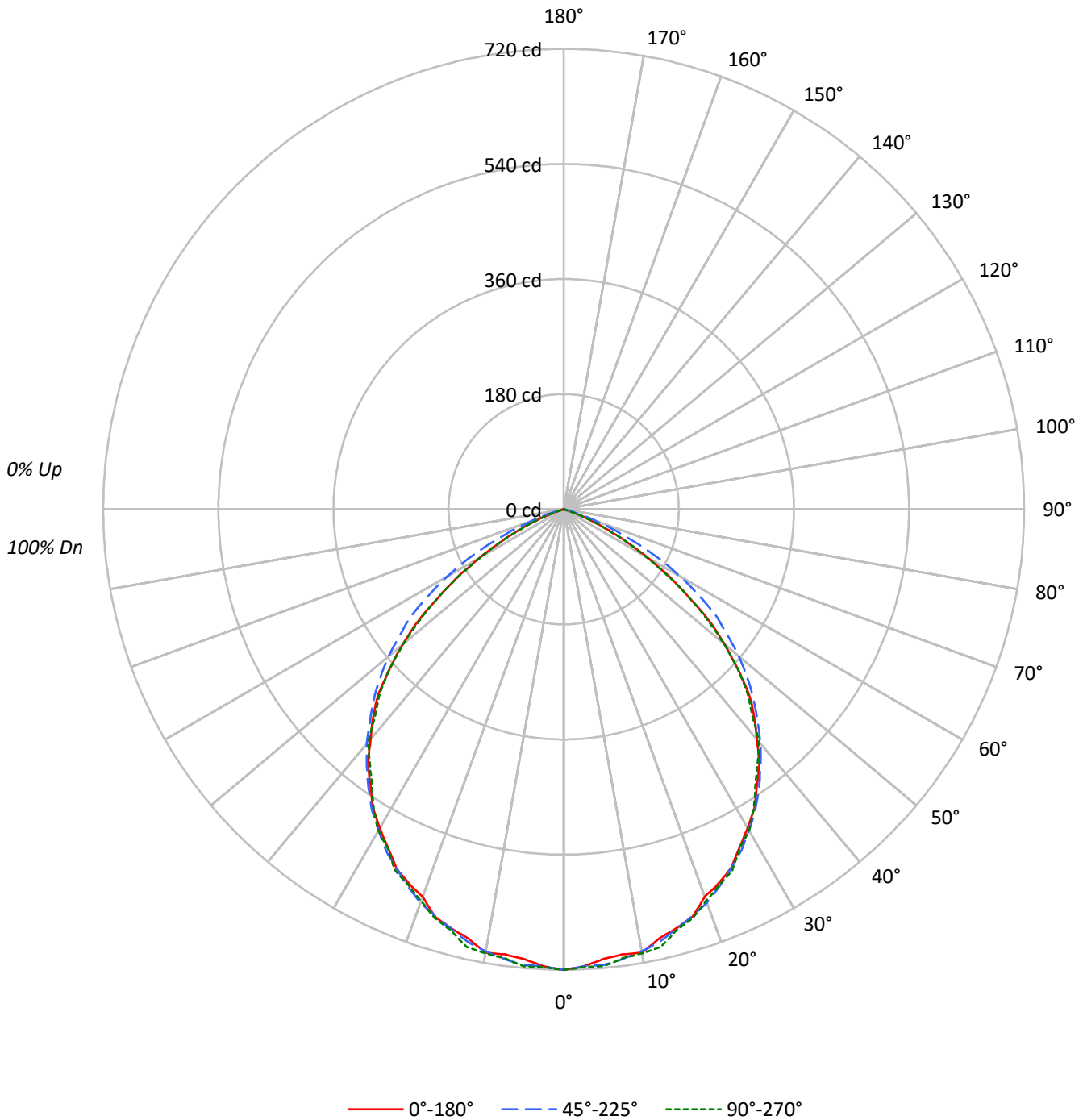
Lumens per Lamp: N/A  
 Luminaire Lumens: 1539.0 lumens  
 Efficiency: N/A  
 Efficacy: 97.4 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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°	69520	69520	69520
5°	68391	69282	69486
10°	68986	68780	69084
15°	67777	67877	68077
20°	66199	67246	66938
25°	65912	65912	66348
30°	64075	64532	64643
35°	62076	62677	61593
40°	59162	60321	59805
45°	56002	57257	55442
50°	49311	53619	49011
55°	39936	49054	40121
60°	29217	40680	28638
65°	17763	28973	17283
70°	6940	15601	6630
75°	746	4213	746
80°	556	556	556
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	68.0	4.4
10°-20°	192.4	12.5
20°-30°	285.5	18.6
30°-40°	330.8	21.5
40°-50°	317.2	20.6
50°-60°	233.2	15.2
60°-70°	100.7	6.5
70°-80°	10.9	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°	546.0	35.5
0°-40°	876.8	57.0
0°-60°	1427.3	92.7
0°-90°	1539.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1539.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	720	720	720	720	720	
5°	706	713	715	716	717	67
15°	678	683	680	680	682	191
25°	619	618	619	620	623	283
35°	527	530	532	531	523	330
45°	410	411	420	413	406	312
55°	237	262	292	261	238	214
65°	78	97	127	96	76	80
75°	2	3	11	2	2	6
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C15D010 FEU4C159040 F4LC-DFSSQ-MW

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	720.5	720.5	720.5	720.5	720.5	720.5	720.5	720.5	720.5	720.5	720.5
2.5°	715.3	723.5	724.5	719.4	717.4	714.3	721.5	716.4	718.4	716.4	715.3
5°	706.1	715.3	716.4	716.4	714.3	713.3	716.4	715.3	714.3	712.3	715.3
7.5°	702.0	707.1	712.3	706.1	709.2	708.2	715.3	712.3	711.2	711.2	709.2
10°	704.1	703.0	707.1	701.0	703.0	701.0	707.1	707.1	705.1	703.0	702.0
12.5°	687.7	695.9	695.9	694.9	692.8	689.7	695.9	700.0	693.8	693.8	692.8
15°	678.5	680.5	681.5	681.5	680.5	682.6	685.6	681.5	682.6	677.4	679.5
17.5°	668.3	664.2	667.2	665.2	666.2	668.3	672.4	672.4	666.2	665.2	667.2
20°	644.7	657.0	658.0	651.9	652.9	652.9	660.1	653.9	658.0	652.9	654.9
22.5°	633.4	641.6	642.7	634.5	639.6	633.4	640.6	631.4	641.6	634.5	637.5
25°	619.1	618.1	621.2	617.1	618.1	618.1	623.2	619.1	622.2	618.1	619.1
27.5°	595.6	603.8	602.8	598.7	600.7	599.7	609.9	598.7	604.8	599.7	601.7
30°	575.1	582.3	580.2	576.2	576.2	573.1	584.3	581.2	580.2	580.2	579.2
32.5°	554.7	555.7	553.6	554.7	555.7	551.6	560.8	556.7	555.7	556.7	557.7
35°	527.0	527.0	529.1	526.0	530.1	530.1	538.3	533.1	532.1	529.1	532.1
37.5°	502.5	499.4	500.4	500.4	502.5	504.5	508.6	506.6	506.6	503.5	505.5
40°	469.7	467.7	470.7	470.7	473.8	473.8	477.9	475.9	478.9	478.9	478.9
42.5°	441.1	441.1	439.0	442.1	443.1	442.1	449.3	448.2	449.3	447.2	448.2
45°	410.4	410.4	408.3	407.3	412.4	411.4	419.6	416.5	420.6	418.5	419.6
47.5°	368.4	373.5	370.4	373.5	379.7	380.7	385.8	383.8	387.8	384.8	388.9
50°	328.5	328.5	331.6	335.7	341.8	342.8	349.0	353.1	355.1	356.1	357.2
52.5°	286.6	285.5	288.6	293.7	298.8	302.9	309.1	315.2	319.3	325.4	322.3
55°	237.4	239.5	242.5	248.7	256.9	262.0	267.1	275.3	282.5	285.5	291.6
57.5°	195.4	193.4	195.4	203.6	212.9	217.0	224.1	232.3	242.5	248.7	250.7
60°	151.4	152.5	154.5	161.7	168.9	175.0	178.1	191.4	200.6	206.7	210.8
62.5°	111.6	113.6	115.7	121.8	128.9	134.1	139.2	150.4	158.6	164.8	168.9
65°	77.8	78.8	81.9	84.9	92.1	97.2	101.3	110.5	118.7	123.8	126.9
67.5°	48.1	49.1	51.1	55.3	60.4	64.5	68.6	74.7	81.9	87.0	88.0
70°	24.6	25.6	26.6	29.7	33.8	35.8	38.9	44.0	49.1	53.2	55.3
72.5°	8.2	8.2	9.2	11.3	13.3	15.4	16.4	21.5	25.6	27.6	28.6
75°	2.0	2.0	2.0	2.0	2.0	3.1	3.1	6.1	8.2	10.2	11.3
77.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0
80°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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°	720.5	720.5	720.5	720.5	720.5	720.5	720.5	720.5	720.5	720.5
2.5°	720.5	718.4	717.4	718.4	718.4	717.4	720.5	724.5	729.6	716.4
5°	719.4	717.4	719.4	713.3	716.4	714.3	718.4	717.4	721.5	717.4
7.5°	716.4	712.3	713.3	710.2	714.3	709.2	712.3	718.4	714.3	708.2
10°	706.1	704.1	711.2	701.0	699.0	703.0	711.2	705.1	703.0	705.1
12.5°	695.9	695.9	699.0	690.8	691.8	693.8	697.9	693.8	695.9	701.0
15°	684.6	682.6	687.7	681.5	680.5	678.5	682.6	682.6	684.6	681.5
17.5°	671.3	668.3	668.3	666.2	665.2	670.3	672.4	673.4	674.4	670.3
20°	654.9	653.9	657.0	653.9	654.9	656.0	656.0	653.9	663.1	651.9
22.5°	637.5	640.6	636.5	634.5	636.5	638.6	638.6	639.6	637.5	635.5
25°	620.2	622.2	623.2	617.1	620.2	617.1	624.3	625.3	621.2	623.2
27.5°	604.8	601.7	600.7	596.6	598.7	597.7	598.7	598.7	604.8	596.6
30°	581.2	578.2	579.2	576.2	577.2	576.2	577.2	577.2	581.2	580.2
32.5°	558.7	555.7	556.7	553.6	553.6	554.7	552.6	552.6	555.7	553.6
35°	537.2	530.1	531.1	530.1	531.1	527.0	527.0	526.0	528.1	522.9
37.5°	506.6	503.5	502.5	501.5	502.5	500.4	502.5	499.4	502.5	498.4
40°	478.9	476.9	477.9	471.8	471.8	472.8	470.7	469.7	470.7	474.8
42.5°	451.3	447.2	445.2	443.1	444.1	441.1	440.0	438.0	440.0	435.9
45°	418.5	418.5	417.5	412.4	413.4	413.4	409.3	405.3	406.3	406.3
47.5°	388.9	386.8	385.8	380.7	379.7	378.7	374.5	371.5	371.5	368.4
50°	356.1	354.1	351.0	345.9	343.8	337.7	334.7	330.6	326.5	326.5
52.5°	325.4	318.2	314.2	306.0	302.9	299.8	291.6	288.6	285.5	282.5
55°	288.6	282.5	274.3	265.1	261.0	255.8	247.6	241.5	237.4	238.5
57.5°	252.8	242.5	234.4	222.1	217.0	213.9	205.7	197.5	193.4	193.4
60°	208.8	200.6	190.4	179.1	175.0	169.9	159.6	154.5	151.4	148.4
62.5°	166.8	160.7	151.4	137.1	134.1	128.9	121.8	115.7	112.6	112.6
65°	124.8	118.7	110.5	100.3	96.2	92.1	86.0	79.8	76.7	75.7
67.5°	88.0	80.8	73.7	65.5	62.4	60.4	54.2	50.1	48.1	47.1
70°	53.2	49.1	44.0	37.9	34.8	32.7	28.6	25.6	24.6	23.5
72.5°	27.6	24.6	20.5	16.4	14.3	12.3	10.2	8.2	7.2	7.2
75°	10.2	8.2	5.1	3.1	2.0	2.0	2.0	2.0	2.0	2.0
77.5°	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
80°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)