

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: **FLDSQ4C05D010 FEU4C059035 F4LC-CSSQ-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: FLDSQ4C05D010 FEU4C059035 F4LC-CSSQ-MW  
 Description: 4 INCH 500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

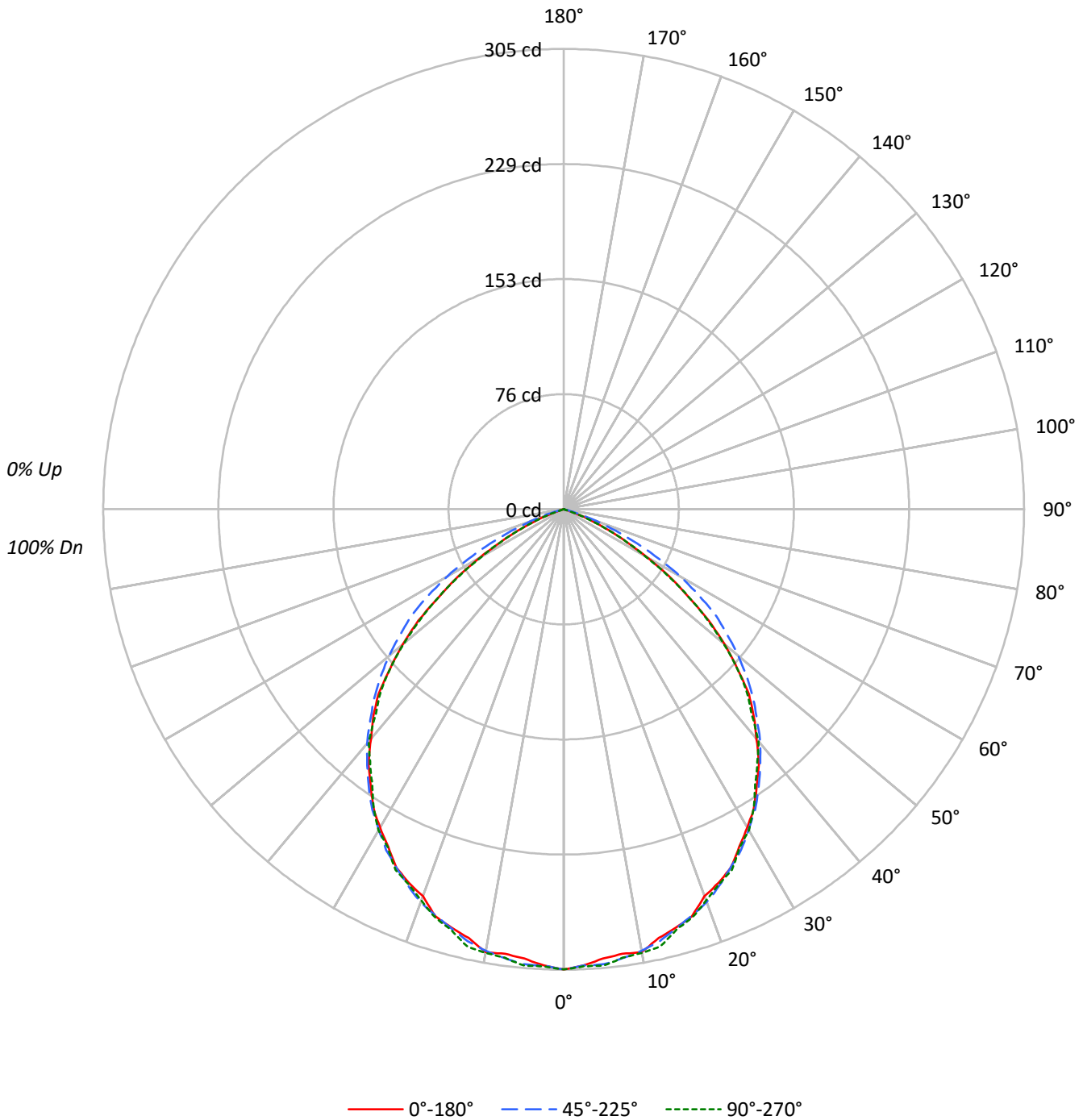
Lumens per Lamp: N/A  
 Luminaire Lumens: 651.0 lumens  
 Efficiency: N/A  
 Efficacy: 90.4 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 7.2  
 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: FLDSQ4C05D010 FEU4C059035 F4LC-CSSQ-MW

**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°	29410	29410	29410
5°	28931	29309	29387
10°	29178	29099	29227
15°	28669	28709	28799
20°	28001	28443	28320
25°	27883	27883	28064
30°	27107	27297	27341
35°	26256	26515	26055
40°	25028	25519	25292
45°	23689	24221	23443
50°	20865	22682	20730
55°	16890	20759	16974
60°	12370	17214	12119
65°	7511	12260	7306
70°	2934	6601	2821
75°	336	1789	336
80°	222	222	222
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	28.8	4.4
10°-20°	81.4	12.5
20°-30°	120.8	18.6
30°-40°	139.9	21.5
40°-50°	134.2	20.6
50°-60°	98.7	15.2
60°-70°	42.6	6.5
70°-80°	4.6	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°	230.9	35.5
0°-40°	370.9	57.0
0°-60°	603.7	92.7
0°-90°	651.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	651.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	305	305	305	305	305	
5°	299	302	303	303	303	28
15°	287	289	287	288	288	81
25°	262	262	262	262	264	120
35°	223	224	225	225	221	139
45°	174	174	178	175	172	132
55°	100	111	123	110	101	90
65°	33	41	54	41	32	34
75°	1	1	5	1	1	3
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C05D010 FEU4C059035 F4LC-CSSQ-MW

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8
2.5°	302.6	306.0	306.5	304.3	303.4	302.2	305.2	303.0	303.9	303.0	302.6
5°	298.7	302.6	303.0	303.0	302.2	301.7	303.0	302.6	302.2	301.3	302.6
7.5°	297.0	299.1	301.3	298.7	300.0	299.6	302.6	301.3	300.9	300.9	300.0
10°	297.8	297.4	299.1	296.5	297.4	296.5	299.1	299.1	298.3	297.4	297.0
12.5°	290.9	294.4	294.4	293.9	293.1	291.8	294.4	296.1	293.5	293.5	293.1
15°	287.0	287.9	288.3	288.3	287.9	288.7	290.0	288.3	288.7	286.6	287.4
17.5°	282.7	280.9	282.2	281.4	281.8	282.7	284.4	284.4	281.8	281.4	282.2
20°	272.7	277.9	278.3	275.8	276.2	276.2	279.2	276.6	278.3	276.2	277.0
22.5°	267.9	271.4	271.8	268.4	270.5	267.9	271.0	267.1	271.4	268.4	269.7
25°	261.9	261.5	262.8	261.0	261.5	261.5	263.6	261.9	263.2	261.5	261.9
27.5°	251.9	255.4	255.0	253.2	254.1	253.7	258.0	253.2	255.8	253.7	254.5
30°	243.3	246.3	245.4	243.7	243.7	242.4	247.2	245.9	245.4	245.4	245.0
32.5°	234.6	235.1	234.2	234.6	235.1	233.3	237.2	235.5	235.1	235.5	235.9
35°	222.9	222.9	223.8	222.5	224.2	224.2	227.7	225.5	225.1	223.8	225.1
37.5°	212.5	211.3	211.7	211.7	212.5	213.4	215.1	214.3	214.3	213.0	213.8
40°	198.7	197.8	199.1	199.1	200.4	200.4	202.2	201.3	202.6	202.6	202.6
42.5°	186.6	186.6	185.7	187.0	187.4	187.0	190.0	189.6	190.0	189.2	189.6
45°	173.6	173.6	172.7	172.3	174.4	174.0	177.5	176.2	177.9	177.0	177.5
47.5°	155.8	158.0	156.7	158.0	160.6	161.0	163.2	162.3	164.1	162.8	164.5
50°	139.0	139.0	140.3	142.0	144.6	145.0	147.6	149.3	150.2	150.6	151.1
52.5°	121.2	120.8	122.1	124.2	126.4	128.1	130.7	133.3	135.1	137.7	136.3
55°	100.4	101.3	102.6	105.2	108.7	110.8	113.0	116.4	119.5	120.8	123.4
57.5°	82.7	81.8	82.7	86.1	90.0	91.8	94.8	98.3	102.6	105.2	106.1
60°	64.1	64.5	65.4	68.4	71.4	74.0	75.3	80.9	84.8	87.4	89.2
62.5°	47.2	48.1	48.9	51.5	54.5	56.7	58.9	63.6	67.1	69.7	71.4
65°	32.9	33.3	34.6	35.9	39.0	41.1	42.8	46.8	50.2	52.4	53.7
67.5°	20.3	20.8	21.6	23.4	25.5	27.3	29.0	31.6	34.6	36.8	37.2
70°	10.4	10.8	11.3	12.6	14.3	15.2	16.4	18.6	20.8	22.5	23.4
72.5°	3.5	3.5	3.9	4.8	5.6	6.5	6.9	9.1	10.8	11.7	12.1
75°	0.9	0.9	0.9	0.9	0.9	1.3	1.3	2.6	3.5	4.3	4.8
77.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.9
80°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
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°	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8
2.5°	304.8	303.9	303.4	303.9	303.9	303.4	304.8	306.5	308.6	303.0
5°	304.3	303.4	304.3	301.7	303.0	302.2	303.9	303.4	305.2	303.4
7.5°	303.0	301.3	301.7	300.4	302.2	300.0	301.3	303.9	302.2	299.6
10°	298.7	297.8	300.9	296.5	295.7	297.4	300.9	298.3	297.4	298.3
12.5°	294.4	294.4	295.7	292.2	292.6	293.5	295.2	293.5	294.4	296.5
15°	289.6	288.7	290.9	288.3	287.9	287.0	288.7	288.7	289.6	288.3
17.5°	284.0	282.7	282.7	281.8	281.4	283.5	284.4	284.8	285.3	283.5
20°	277.0	276.6	277.9	276.6	277.0	277.5	277.5	276.6	280.5	275.8
22.5°	269.7	271.0	269.3	268.4	269.3	270.1	270.1	270.5	269.7	268.8
25°	262.3	263.2	263.6	261.0	262.3	261.0	264.1	264.5	262.8	263.6
27.5°	255.8	254.5	254.1	252.4	253.2	252.8	253.2	253.2	255.8	252.4
30°	245.9	244.6	245.0	243.7	244.1	243.7	244.1	244.1	245.9	245.4
32.5°	236.3	235.1	235.5	234.2	234.2	234.6	233.8	233.8	235.1	234.2
35°	227.3	224.2	224.7	224.2	224.7	222.9	222.9	222.5	223.4	221.2
37.5°	214.3	213.0	212.5	212.1	212.5	211.7	212.5	211.3	212.5	210.8
40°	202.6	201.7	202.2	199.6	199.6	200.0	199.1	198.7	199.1	200.8
42.5°	190.9	189.2	188.3	187.4	187.9	186.6	186.1	185.3	186.1	184.4
45°	177.0	177.0	176.6	174.4	174.9	174.9	173.2	171.4	171.8	171.8
47.5°	164.5	163.6	163.2	161.0	160.6	160.2	158.4	157.1	157.1	155.8
50°	150.6	149.8	148.5	146.3	145.4	142.8	141.6	139.8	138.1	138.1
52.5°	137.7	134.6	132.9	129.4	128.1	126.8	123.4	122.1	120.8	119.5
55°	122.1	119.5	116.0	112.1	110.4	108.2	104.8	102.2	100.4	100.9
57.5°	106.9	102.6	99.1	93.9	91.8	90.5	87.0	83.5	81.8	81.8
60°	88.3	84.8	80.5	75.8	74.0	71.9	67.5	65.4	64.1	62.8
62.5°	70.6	68.0	64.1	58.0	56.7	54.5	51.5	48.9	47.6	47.6
65°	52.8	50.2	46.8	42.4	40.7	39.0	36.4	33.8	32.5	32.0
67.5°	37.2	34.2	31.2	27.7	26.4	25.5	22.9	21.2	20.3	19.9
70°	22.5	20.8	18.6	16.0	14.7	13.8	12.1	10.8	10.4	10.0
72.5°	11.7	10.4	8.7	6.9	6.1	5.2	4.3	3.5	3.0	3.0
75°	4.3	3.5	2.2	1.3	0.9	0.9	0.9	0.9	0.9	0.9
77.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
80°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
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)