

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: **FLDSQ4C90D010 FEU4C909027 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: FLDSQ4C90D010 FEU4C909027 F4LC-SQ-LI
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

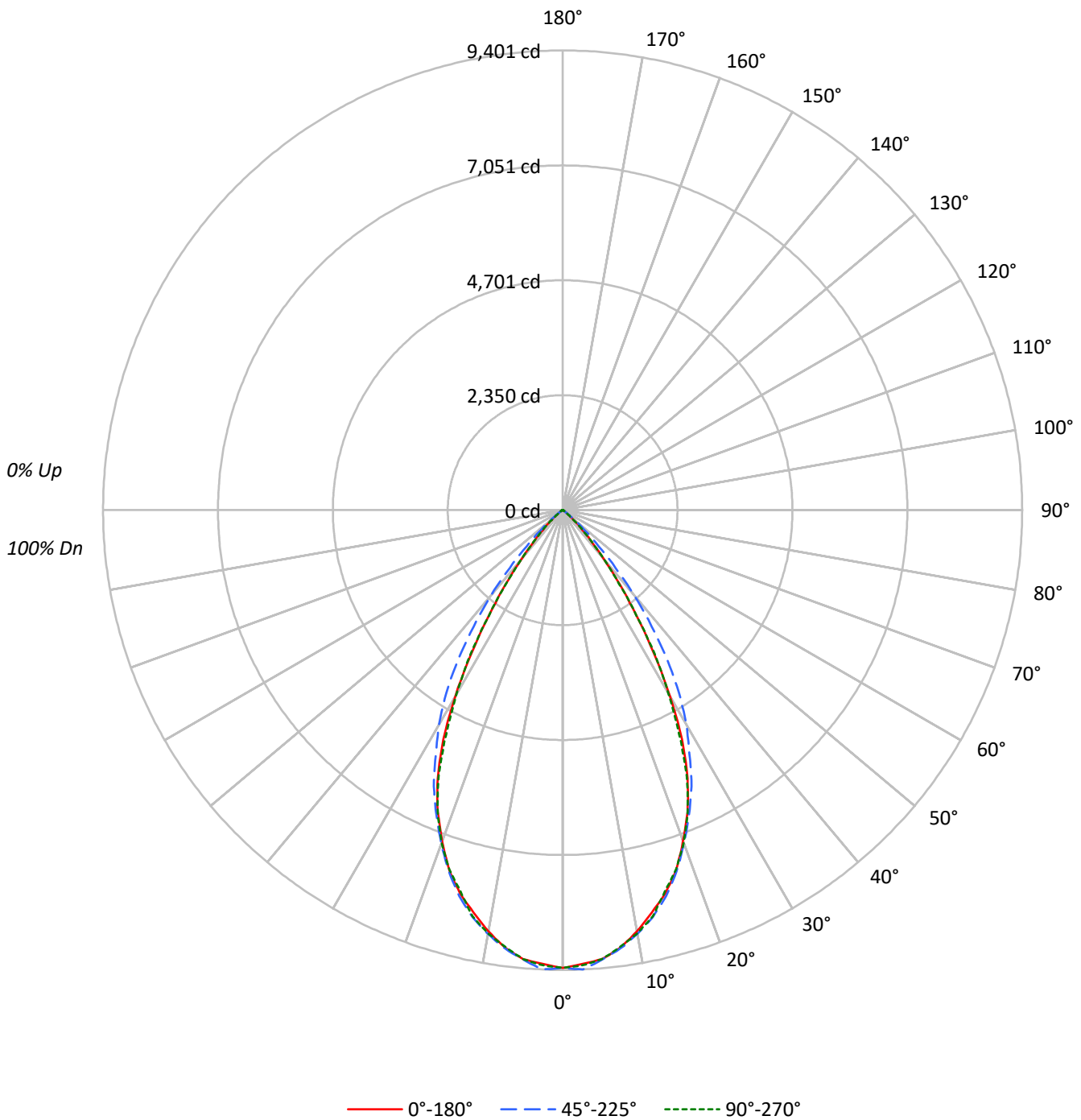
Lumens per Lamp: N/A
 Luminaire Lumens: 8641.1 lumens
 Efficiency: N/A
 Efficacy: 89.0 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 97.1
 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			
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	100	100
1	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93	93	93
2	108	103	99	95	105	101	97	94	98	95	92	95	92	90	92	90	88	87	87	87
3	102	96	91	87	100	94	90	86	92	88	84	89	86	83	87	84	82	80	80	80
4	97	89	84	79	95	88	83	79	86	81	78	84	80	77	82	79	76	75	75	75
5	92	83	77	73	90	82	77	73	81	76	72	79	75	71	77	74	71	69	69	69
6	87	78	72	68	86	77	71	67	76	71	67	74	70	66	73	69	66	64	64	64
7	83	73	67	63	81	73	67	63	71	66	62	70	65	62	69	65	62	60	60	60
8	79	69	63	59	77	68	62	58	67	62	58	66	61	58	65	61	58	56	56	56
9	75	65	59	55	74	64	59	55	63	58	55	63	58	54	62	57	54	53	53	53
10	71	61	55	51	70	61	55	51	60	55	51	59	54	51	58	54	51	50	50	50

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	903088	903088	903088
5°	892726	893878	892726
10°	857018	862270	861104
15°	810209	816153	806044
20°	739419	744902	743084
25°	643839	664099	639400
30°	489594	563129	482319
35°	308177	437771	310981
40°	166276	289110	163278
45°	78708	142815	77875
50°	29467	53544	29467
55°	13996	17024	13020
60°	9186	8047	9186
65°	5434	5434	5434
70°	3357	5078	3357
75°	2274	2274	2274
80°	3390	3390	3390
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	867.8	10.0
10°-20°	2274.3	26.3
20°-30°	2778.2	32.2
30°-40°	1943.2	22.5
40°-50°	636.8	7.4
50°-60°	101.3	1.2
60°-70°	27.7	0.3
70°-80°	9.3	0.1
80°-90°	2.6	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°	5920.3	68.5
0°-40°	7863.5	91.0
0°-60°	8601.5	99.5
0°-90°	8641.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	8641.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	9360	9360	9360	9360	9360	
5°	9217	9220	9229	9172	9217	864
15°	8111	8144	8170	8117	8069	2262
25°	6048	6140	6238	6125	6006	2717
35°	2616	3089	3716	3042	2640	1670
45°	577	711	1047	702	571	484
55°	83	89	101	89	77	82
65°	24	30	24	30	24	26
75°	6	6	6	6	6	9
85°	0	0	0	0	0	2
90°	0	0	0	0	0	

TEST NUMBER: P#
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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	9359.5	9359.5	9359.5	9359.5	9359.5	9359.5	9359.5	9359.5	9359.5	9359.5	9359.5
2.5°	9288.2	9353.7	9335.8	9377.5	9377.5	9329.9	9341.8	9359.5	9383.3	9401.3	9258.4
5°	9216.9	9276.3	9222.7	9282.1	9246.5	9193.1	9282.1	9234.6	9264.4	9228.8	9252.5
7.5°	9026.6	9121.7	9014.7	9086.1	9062.3	9032.4	9068.1	9056.2	9074.2	9044.3	8979.1
10°	8747.1	8824.5	8753.1	8854.1	8806.5	8776.9	8806.5	8836.4	8830.3	8800.7	8836.4
12.5°	8426.0	8515.1	8479.4	8538.9	8485.5	8485.5	8556.8	8538.9	8544.9	8521.2	8562.7
15°	8110.8	8176.3	8122.7	8200.1	8176.3	8110.8	8140.4	8140.4	8188.2	8170.3	8122.7
17.5°	7718.5	7771.8	7712.4	7730.3	7706.6	7694.7	7819.4	7736.2	7783.7	7748.1	7754.1
20°	7201.1	7224.9	7206.9	7254.5	7224.9	7260.6	7248.7	7236.8	7236.8	7254.5	7213.0
22.5°	6677.7	6677.7	6695.7	6707.5	6731.3	6695.7	6767.0	6707.5	6713.4	6755.1	6743.2
25°	6047.5	6029.6	6071.3	6130.7	6154.5	6124.7	6219.8	6172.2	6207.9	6237.8	6172.2
27.5°	5280.5	5280.5	5322.0	5423.2	5440.9	5476.5	5607.3	5607.3	5654.9	5613.4	5661.0
30°	4394.3	4459.8	4513.2	4644.0	4685.7	4763.1	4899.7	4965.3	5072.3	5054.3	5030.5
32.5°	3484.6	3573.9	3579.7	3716.5	3829.4	3960.2	4144.6	4299.2	4376.6	4430.0	4370.5
35°	2616.3	2670.0	2717.5	2812.6	3002.9	3175.4	3341.9	3544.0	3680.9	3716.5	3662.9
37.5°	1914.8	1926.7	1974.3	2063.3	2206.0	2372.7	2574.8	2794.7	2937.6	2991.0	2931.5
40°	1320.1	1331.9	1355.7	1433.1	1552.0	1670.9	1831.6	2057.5	2188.3	2295.3	2217.9
42.5°	885.9	897.8	921.6	981.1	1046.6	1159.4	1284.4	1427.1	1552.0	1599.6	1557.9
45°	576.8	576.8	588.7	630.4	666.1	755.2	844.4	933.5	1016.7	1046.6	1016.7
47.5°	339.0	344.8	356.7	386.6	428.1	463.7	529.2	588.7	612.5	636.2	624.4
50°	196.3	196.3	214.0	232.0	261.6	285.4	309.1	332.9	344.8	356.7	344.8
52.5°	107.0	113.1	118.9	125.0	136.9	160.6	178.4	178.4	184.4	190.2	184.4
55°	83.2	83.2	83.2	83.2	89.3	89.3	89.3	95.1	95.1	101.2	95.1
57.5°	59.5	59.5	59.5	65.5	65.5	65.5	59.5	59.5	59.5	59.5	59.5
60°	47.6	47.6	47.6	47.6	47.6	47.6	47.6	41.7	41.7	41.7	41.7
62.5°	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7
65°	23.8	23.8	29.8	29.8	29.8	29.8	29.8	23.8	23.8	23.8	23.8
67.5°	18.0	18.0	18.0	18.0	23.8	23.8	18.0	18.0	18.0	18.0	18.0
70°	11.9	11.9	11.9	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
72.5°	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9
75°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
77.5°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
80°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	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°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
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°	9359.5	9359.5	9359.5	9359.5	9359.5	9359.5	9359.5	9359.5
2.5°	9359.5	9258.4	9270.3	9323.9	9294.0	9323.9	9318.0	9318.0
5°	9258.4	9228.8	9181.2	9163.2	9198.9	9276.3	9264.4	9216.9
7.5°	9068.1	8990.9	9044.3	9068.1	9038.5	9086.1	9109.9	9008.7
10°	8842.2	8812.6	8800.7	8812.6	8800.7	8848.3	8788.8	8788.8
12.5°	8521.2	8473.6	8473.6	8544.9	8503.2	8467.5	8515.1	8509.3
15°	8200.1	8104.8	8104.8	8128.6	8146.5	8122.7	8128.6	8069.1
17.5°	7724.3	7694.7	7652.9	7718.5	7736.2	7712.4	7730.3	7700.5
20°	7278.3	7278.3	7201.1	7230.7	7254.5	7272.4	7284.3	7236.8
22.5°	6707.5	6719.4	6665.8	6725.3	6743.2	6683.8	6695.7	6683.8
25°	6184.1	6178.3	6136.6	6112.8	6124.7	6100.9	6095.1	6005.8
27.5°	5607.3	5547.9	5458.8	5482.6	5381.4	5298.2	5298.2	5161.3
30°	4983.0	4882.0	4763.1	4644.0	4554.9	4459.8	4406.2	4329.0
32.5°	4251.6	4115.0	3966.2	3805.6	3704.7	3562.0	3484.6	3526.3
35°	3526.3	3323.9	3121.8	2961.4	2806.6	2723.4	2628.2	2640.1
37.5°	2824.5	2539.2	2360.8	2188.3	2057.5	1950.5	1908.7	1896.9
40°	2063.3	1837.4	1659.0	1534.1	1445.0	1361.8	1314.2	1296.3
42.5°	1427.1	1266.7	1123.8	1022.8	963.3	909.7	885.9	880.1
45°	927.7	832.6	737.4	666.1	618.5	582.9	576.8	570.7
47.5°	582.9	535.1	475.6	422.2	380.5	356.7	339.0	339.0
50°	332.9	315.2	285.4	255.8	232.0	220.1	202.1	196.3
52.5°	178.4	178.4	166.5	142.7	125.0	113.1	113.1	107.0
55°	95.1	95.1	89.3	89.3	83.2	83.2	83.2	77.4
57.5°	59.5	59.5	65.5	65.5	59.5	59.5	59.5	59.5
60°	41.7	47.6	47.6	47.6	47.6	47.6	47.6	47.6
62.5°	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7
65°	23.8	29.8	29.8	29.8	29.8	23.8	23.8	23.8
67.5°	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
70°	18.0	18.0	18.0	18.0	18.0	11.9	11.9	11.9
72.5°	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9
75°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
77.5°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
80°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
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°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)