

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 FEU4C909035 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 FEU4C909035 F4LC-SQ-LI
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

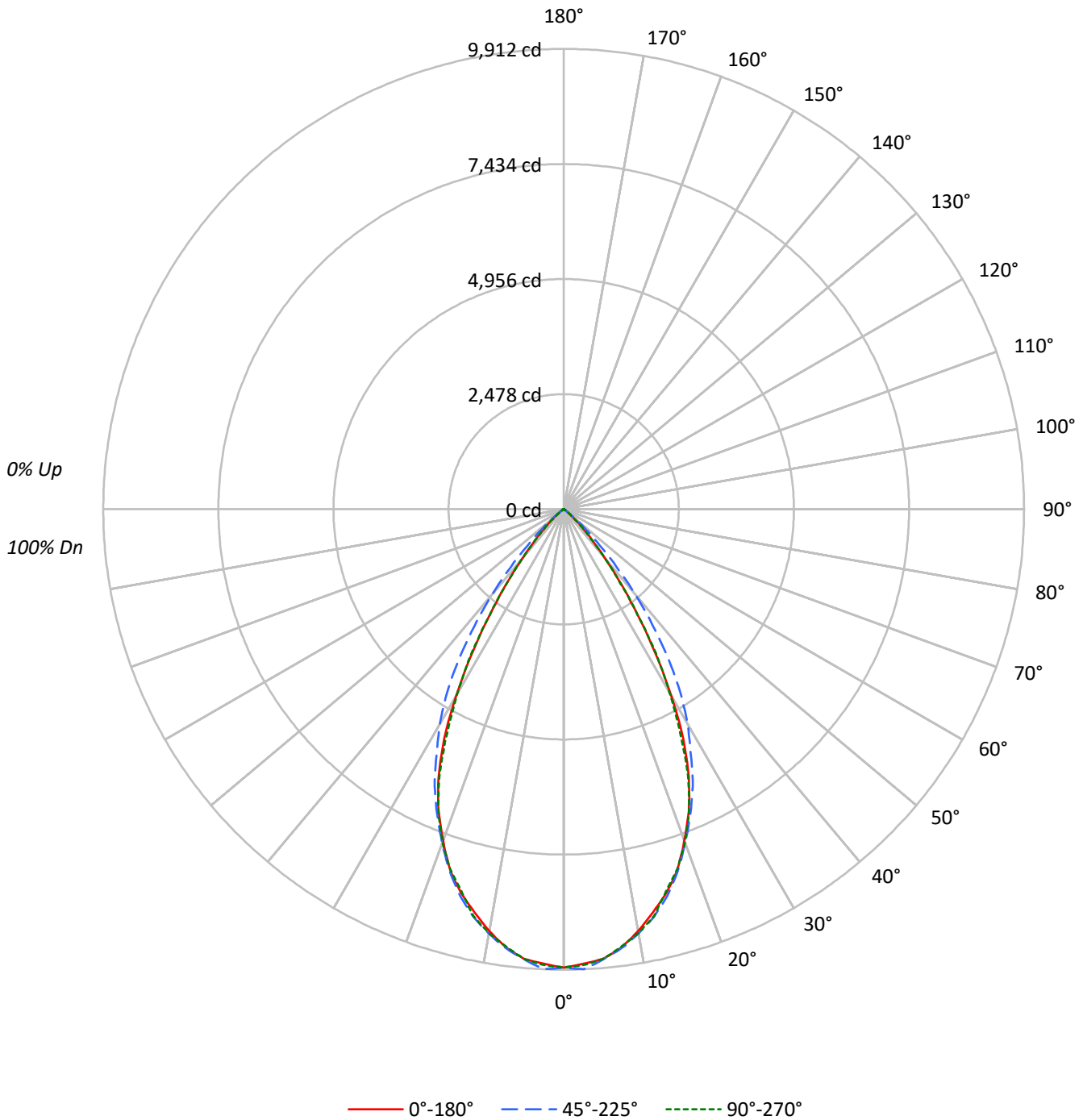
Lumens per Lamp: N/A
 Luminaire Lumens: 9110.0 lumens
 Efficiency: N/A
 Efficacy: 93.8 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	952104	952104	952104
5°	941174	942394	941174
10°	903528	909073	907839
15°	854192	860445	849797
20°	779557	785327	783418
25°	678781	700137	674096
30°	516167	593690	508502
35°	324903	461541	327860
40°	175295	304804	172133
45°	82979	150565	82106
50°	31073	56456	31073
55°	14753	17949	13727
60°	9668	8491	9668
65°	5731	5731	5731
70°	3526	5332	3526
75°	2386	2386	2386
80°	3556	3556	3556
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	914.9	10.0
10°-20°	2397.7	26.3
20°-30°	2929.0	32.2
30°-40°	2048.6	22.5
40°-50°	671.4	7.4
50°-60°	106.7	1.2
60°-70°	29.1	0.3
70°-80°	9.8	0.1
80°-90°	2.7	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°	6241.6	68.5
0°-40°	8290.3	91.0
0°-60°	9068.4	99.5
0°-90°	9110.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	9110.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	9868	9868	9868	9868	9868	
5°	9717	9720	9730	9670	9717	911
15°	8551	8586	8614	8557	8507	2385
25°	6376	6473	6576	6457	6332	2864
35°	2758	3257	3918	3207	2783	1760
45°	608	749	1103	740	602	510
55°	88	94	107	94	82	87
65°	25	32	25	32	25	28
75°	6	6	6	6	6	9
85°	0	0	0	0	0	3
90°	0	0	0	0	0	

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	9867.5	9867.5	9867.5	9867.5	9867.5	9867.5	9867.5	9867.5	9867.5	9867.5	9867.5
2.5°	9792.3	9861.4	9842.5	9886.5	9886.5	9836.3	9848.9	9867.5	9892.6	9911.5	9760.9
5°	9717.1	9779.8	9723.3	9785.9	9748.3	9692.0	9785.9	9735.8	9767.3	9729.7	9754.7
7.5°	9516.5	9616.8	9504.0	9579.2	9554.2	9522.7	9560.3	9547.8	9566.7	9535.2	9466.4
10°	9221.8	9303.4	9228.2	9334.7	9284.5	9253.3	9284.5	9316.0	9309.6	9278.4	9316.0
12.5°	8883.4	8977.3	8939.7	9002.3	8946.1	8946.1	9021.3	9002.3	9008.7	8983.7	9027.4
15°	8551.1	8620.1	8563.6	8645.2	8620.1	8551.1	8582.3	8582.3	8632.7	8613.7	8563.6
17.5°	8137.4	8193.7	8131.0	8149.9	8124.8	8112.3	8243.8	8156.1	8206.2	8168.6	8175.0
20°	7592.0	7617.0	7598.1	7648.2	7617.0	7654.6	7642.1	7629.6	7629.6	7648.2	7604.5
22.5°	7040.1	7040.1	7059.1	7071.6	7096.7	7059.1	7134.3	7071.6	7077.7	7121.7	7109.2
25°	6375.7	6356.8	6400.8	6463.5	6488.6	6457.1	6557.4	6507.2	6544.9	6576.3	6507.2
27.5°	5567.1	5567.1	5610.8	5717.5	5736.2	5773.8	5911.7	5911.7	5961.8	5918.1	5968.2
30°	4632.8	4701.9	4758.2	4896.0	4940.0	5021.6	5165.7	5234.8	5347.6	5328.6	5303.6
32.5°	3673.7	3767.8	3774.0	3918.3	4037.2	4175.1	4369.5	4532.5	4614.1	4670.4	4607.7
35°	2758.3	2814.9	2865.0	2965.3	3165.9	3347.8	3523.3	3736.4	3880.7	3918.3	3861.7
37.5°	2018.7	2031.3	2081.4	2175.3	2325.7	2501.5	2714.6	2946.4	3097.1	3153.3	3090.7
40°	1391.7	1404.2	1429.3	1510.9	1636.3	1761.6	1931.0	2169.2	2307.1	2419.9	2338.3
42.5°	934.0	946.6	971.6	1034.3	1103.4	1222.4	1354.1	1504.5	1636.3	1686.4	1642.4
45°	608.1	608.1	620.6	664.6	702.2	796.1	890.3	984.2	1071.9	1103.4	1071.9
47.5°	357.4	363.5	376.1	407.5	451.3	488.9	558.0	620.6	645.7	670.8	658.2
50°	207.0	207.0	225.6	244.6	275.8	300.9	325.9	351.0	363.5	376.1	363.5
52.5°	112.8	119.2	125.4	131.7	144.3	169.4	188.0	188.0	194.4	200.6	194.4
55°	87.7	87.7	87.7	87.7	94.1	94.1	94.1	100.3	100.3	106.7	100.3
57.5°	62.7	62.7	62.7	69.1	69.1	69.1	62.7	62.7	62.7	62.7	62.7
60°	50.1	50.1	50.1	50.1	50.1	50.1	50.1	44.0	44.0	44.0	44.0
62.5°	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6
65°	25.1	25.1	31.5	31.5	31.5	31.5	31.5	25.1	25.1	25.1	25.1
67.5°	18.9	18.9	18.9	18.9	25.1	25.1	18.9	18.9	18.9	18.9	18.9
70°	12.5	12.5	12.5	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9
72.5°	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
75°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
77.5°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
80°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	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°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
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°	9867.5	9867.5	9867.5	9867.5	9867.5	9867.5	9867.5	9867.5
2.5°	9867.5	9760.9	9773.4	9829.9	9798.5	9829.9	9823.8	9823.8
5°	9760.9	9729.7	9679.5	9660.6	9698.2	9779.8	9767.3	9717.1
7.5°	9560.3	9478.9	9535.2	9560.3	9529.1	9579.2	9604.3	9497.6
10°	9322.1	9290.9	9278.4	9290.9	9278.4	9328.5	9265.8	9265.8
12.5°	8983.7	8933.5	8933.5	9008.7	8964.7	8927.1	8977.3	8971.1
15°	8645.2	8544.7	8544.7	8569.7	8588.7	8563.6	8569.7	8507.1
17.5°	8143.5	8112.3	8068.3	8137.4	8156.1	8131.0	8149.9	8118.5
20°	7673.3	7673.3	7592.0	7623.2	7648.2	7667.2	7679.7	7629.6
22.5°	7071.6	7084.1	7027.6	7090.3	7109.2	7046.5	7059.1	7046.5
25°	6519.8	6513.6	6469.6	6444.6	6457.1	6432.0	6425.9	6331.7
27.5°	5911.7	5849.0	5755.1	5780.2	5673.5	5585.8	5585.8	5441.5
30°	5253.4	5147.0	5021.6	4896.0	4802.1	4701.9	4645.3	4564.0
32.5°	4482.4	4338.3	4181.5	4012.2	3905.7	3755.3	3673.7	3717.7
35°	3717.7	3504.3	3291.2	3122.1	2958.9	2871.2	2770.9	2783.4
37.5°	2977.8	2677.0	2488.9	2307.1	2169.2	2056.3	2012.3	1999.8
40°	2175.3	1937.1	1749.1	1617.3	1523.5	1435.7	1385.6	1366.6
42.5°	1504.5	1335.4	1184.7	1078.3	1015.6	959.1	934.0	927.9
45°	978.0	877.7	777.5	702.2	652.1	614.5	608.1	601.7
47.5°	614.5	564.1	501.4	445.1	401.1	376.1	357.4	357.4
50°	351.0	332.3	300.9	269.6	244.6	232.0	213.1	207.0
52.5°	188.0	188.0	175.5	150.4	131.7	119.2	119.2	112.8
55°	100.3	100.3	94.1	94.1	87.7	87.7	87.7	81.6
57.5°	62.7	62.7	69.1	69.1	62.7	62.7	62.7	62.7
60°	44.0	50.1	50.1	50.1	50.1	50.1	50.1	50.1
62.5°	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6
65°	25.1	31.5	31.5	31.5	31.5	25.1	25.1	25.1
67.5°	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9
70°	18.9	18.9	18.9	18.9	18.9	12.5	12.5	12.5
72.5°	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
75°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
77.5°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
80°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
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°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)