

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: **FLDSQ4C65D010 FEU4C659030 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: FLDSQ4C65D010 FEU4C659030 F4LC-SQ-LI  
 Description: 4 INCH 6500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

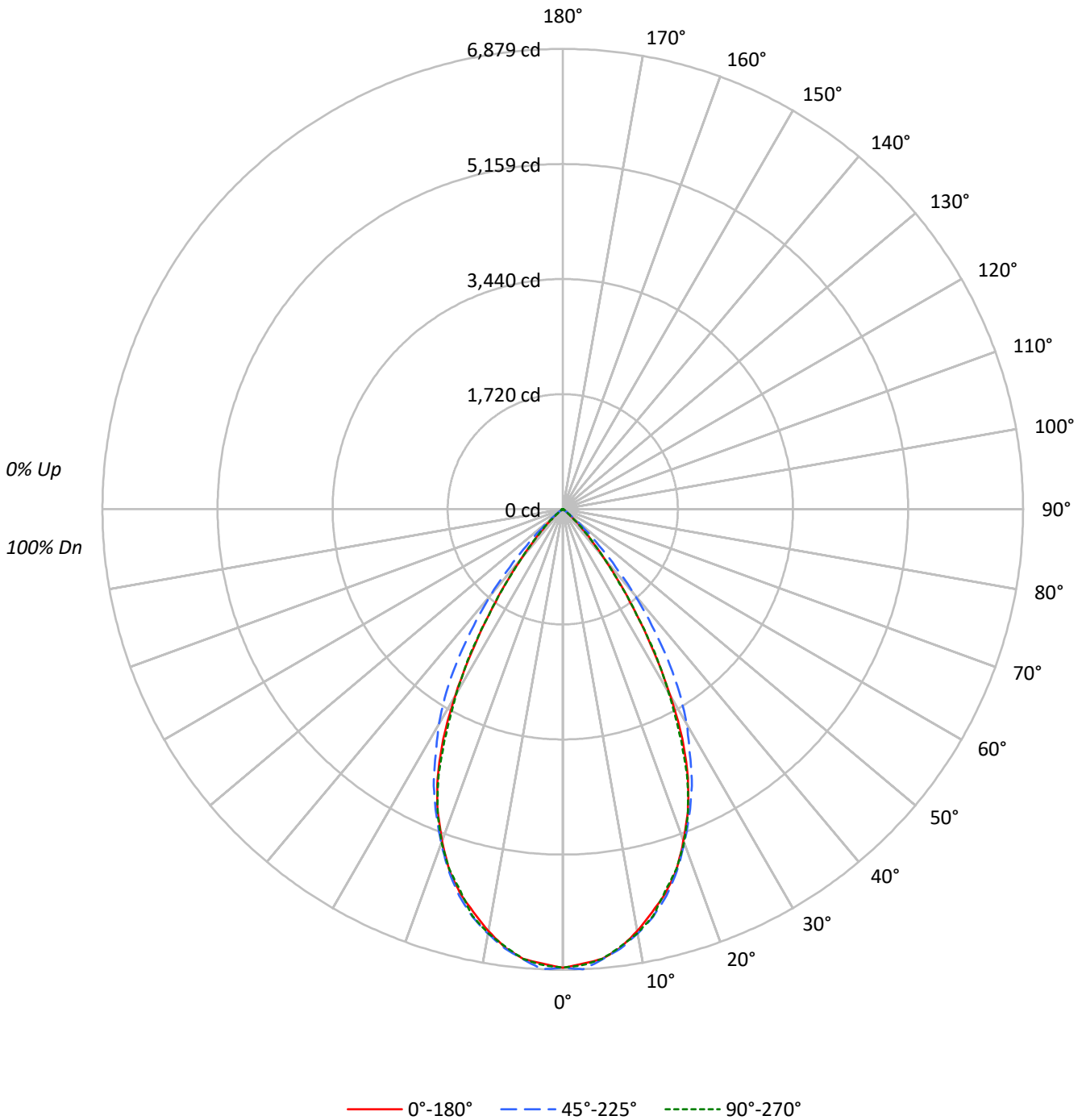
Lumens per Lamp: N/A  
 Luminaire Lumens: 6322.9 lumens  
 Efficiency: N/A  
 Efficacy: 87.3 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 72.4  
 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	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°	660833	660833	660833
5°	653245	654088	653245
10°	627114	630965	630112
15°	592873	597218	589816
20°	541069	545074	543749
25°	471123	485943	467876
30°	358257	412071	352932
35°	225511	320345	227561
40°	121662	211558	119471
45°	57598	104498	56984
50°	21556	39179	21556
55°	10245	12449	9521
60°	6716	5886	6716
65°	3973	3973	3973
70°	2454	3696	2454
75°	1640	1640	1640
80°	2445	2445	2445
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	635.0	10.0
10°-20°	1664.2	26.3
20°-30°	2033.0	32.2
30°-40°	1421.9	22.5
40°-50°	466.0	7.4
50°-60°	74.1	1.2
60°-70°	20.2	0.3
70°-80°	6.7	0.1
80°-90°	1.9	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°	4332.1	68.5
0°-40°	5754.0	91.0
0°-60°	6294.1	99.5
0°-90°	6322.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6322.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	6849	6849	6849	6849	6849	
5°	6744	6747	6753	6712	6744	633
15°	5935	5959	5979	5939	5904	1656
25°	4425	4493	4564	4482	4395	1988
35°	1914	2260	2720	2226	1932	1222
45°	422	520	766	514	418	354
55°	61	65	74	65	57	60
65°	17	22	17	22	17	19
75°	4	4	4	4	4	6
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°	6848.8	6848.8	6848.8	6848.8	6848.8	6848.8	6848.8	6848.8	6848.8	6848.8	6848.8
2.5°	6796.6	6844.5	6831.4	6861.9	6861.9	6827.1	6835.8	6848.8	6866.2	6879.3	6774.8
5°	6744.4	6787.9	6748.7	6792.2	6766.1	6727.0	6792.2	6757.4	6779.2	6753.1	6770.5
7.5°	6605.2	6674.8	6596.5	6648.7	6631.3	6609.4	6635.5	6626.8	6640.0	6618.1	6570.4
10°	6400.6	6457.3	6405.1	6478.9	6444.1	6422.5	6444.1	6466.0	6461.5	6439.9	6466.0
12.5°	6165.7	6230.9	6204.8	6248.3	6209.2	6209.2	6261.4	6248.3	6252.7	6235.3	6265.7
15°	5935.1	5983.0	5943.8	6000.4	5983.0	5935.1	5956.7	5956.7	5991.7	5978.6	5943.8
17.5°	5647.9	5687.0	5643.5	5656.6	5639.2	5630.5	5721.8	5660.9	5695.7	5669.6	5674.0
20°	5269.4	5286.8	5273.6	5308.4	5286.8	5312.9	5304.2	5295.5	5295.5	5308.4	5278.1
22.5°	4886.4	4886.4	4899.5	4908.2	4925.6	4899.5	4951.7	4908.2	4912.5	4943.0	4934.3
25°	4425.2	4412.1	4442.6	4486.1	4503.5	4481.7	4551.3	4516.5	4542.6	4564.4	4516.5
27.5°	3864.0	3864.0	3894.3	3968.4	3981.3	4007.4	4103.1	4103.1	4137.9	4107.6	4142.4
30°	3215.5	3263.4	3302.5	3398.2	3428.7	3485.4	3585.4	3633.3	3711.6	3698.5	3681.1
32.5°	2549.8	2615.1	2619.4	2719.6	2802.1	2897.8	3032.8	3145.9	3202.5	3241.6	3198.1
35°	1914.5	1953.7	1988.5	2058.1	2197.3	2323.6	2445.4	2593.3	2693.5	2719.6	2680.3
37.5°	1401.1	1409.9	1444.7	1509.8	1614.2	1736.2	1884.1	2045.0	2149.6	2188.6	2145.1
40°	965.9	974.6	992.0	1048.7	1135.7	1222.7	1340.2	1505.6	1601.3	1679.6	1622.9
42.5°	648.3	657.0	674.4	717.9	765.8	848.4	939.8	1044.3	1135.7	1170.5	1140.0
45°	422.1	422.1	430.8	461.3	487.4	552.6	617.9	683.1	744.0	765.8	744.0
47.5°	248.1	252.3	261.0	282.9	313.2	339.3	387.3	430.8	448.2	465.6	456.9
50°	143.6	143.6	156.6	169.7	191.4	208.8	226.2	243.6	252.3	261.0	252.3
52.5°	78.3	82.7	87.0	91.4	100.1	117.5	130.5	130.5	134.9	139.2	134.9
55°	60.9	60.9	60.9	60.9	65.3	65.3	65.3	69.6	69.6	74.0	69.6
57.5°	43.5	43.5	43.5	47.9	47.9	47.9	43.5	43.5	43.5	43.5	43.5
60°	34.8	34.8	34.8	34.8	34.8	34.8	34.8	30.5	30.5	30.5	30.5
62.5°	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1
65°	17.4	17.4	21.8	21.8	21.8	21.8	21.8	17.4	17.4	17.4	17.4
67.5°	13.1	13.1	13.1	13.1	17.4	17.4	13.1	13.1	13.1	13.1	13.1
70°	8.7	8.7	8.7	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1
72.5°	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
75°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
77.5°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
80°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	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°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
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°	6848.8	6848.8	6848.8	6848.8	6848.8	6848.8	6848.8	6848.8
2.5°	6848.8	6774.8	6783.5	6822.7	6800.9	6822.7	6818.4	6818.4
5°	6774.8	6753.1	6718.3	6705.1	6731.2	6787.9	6779.2	6744.4
7.5°	6635.5	6579.1	6618.1	6635.5	6613.9	6648.7	6666.1	6592.0
10°	6470.2	6448.6	6439.9	6448.6	6439.9	6474.7	6431.2	6431.2
12.5°	6235.3	6200.5	6200.5	6252.7	6222.2	6196.1	6230.9	6226.6
15°	6000.4	5930.6	5930.6	5948.0	5961.2	5943.8	5948.0	5904.5
17.5°	5652.2	5630.5	5600.0	5647.9	5660.9	5643.5	5656.6	5634.8
20°	5325.8	5325.8	5269.4	5291.0	5308.4	5321.6	5330.3	5295.5
22.5°	4908.2	4916.9	4877.7	4921.2	4934.3	4890.8	4899.5	4890.8
25°	4525.2	4520.9	4490.4	4473.0	4481.7	4464.3	4460.0	4394.7
27.5°	4103.1	4059.6	3994.5	4011.9	3937.8	3876.9	3876.9	3776.8
30°	3646.3	3572.4	3485.4	3398.2	3333.0	3263.4	3224.2	3167.7
32.5°	3111.1	3011.1	2902.3	2784.7	2710.9	2606.4	2549.8	2580.3
35°	2580.3	2432.3	2284.4	2167.0	2053.7	1992.8	1923.2	1931.9
37.5°	2066.8	1858.0	1727.5	1601.3	1505.6	1427.3	1396.7	1388.0
40°	1509.8	1344.5	1214.0	1122.6	1057.4	996.5	961.7	948.5
42.5°	1044.3	926.9	822.3	748.4	704.9	665.7	648.3	644.0
45°	678.8	609.2	539.6	487.4	452.6	426.5	422.1	417.6
47.5°	426.5	391.5	348.0	309.0	278.4	261.0	248.1	248.1
50°	243.6	230.7	208.8	187.1	169.7	161.0	147.9	143.6
52.5°	130.5	130.5	121.8	104.4	91.4	82.7	82.7	78.3
55°	69.6	69.6	65.3	65.3	60.9	60.9	60.9	56.6
57.5°	43.5	43.5	47.9	47.9	43.5	43.5	43.5	43.5
60°	30.5	34.8	34.8	34.8	34.8	34.8	34.8	34.8
62.5°	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1
65°	17.4	21.8	21.8	21.8	21.8	17.4	17.4	17.4
67.5°	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1
70°	13.1	13.1	13.1	13.1	13.1	8.7	8.7	8.7
72.5°	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
75°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
77.5°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
80°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
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°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)