

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: **FLDSQ4C45D010 FEU4C459040 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: FLDSQ4C45D010 FEU4C459040 F4LC-SQ-LI
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

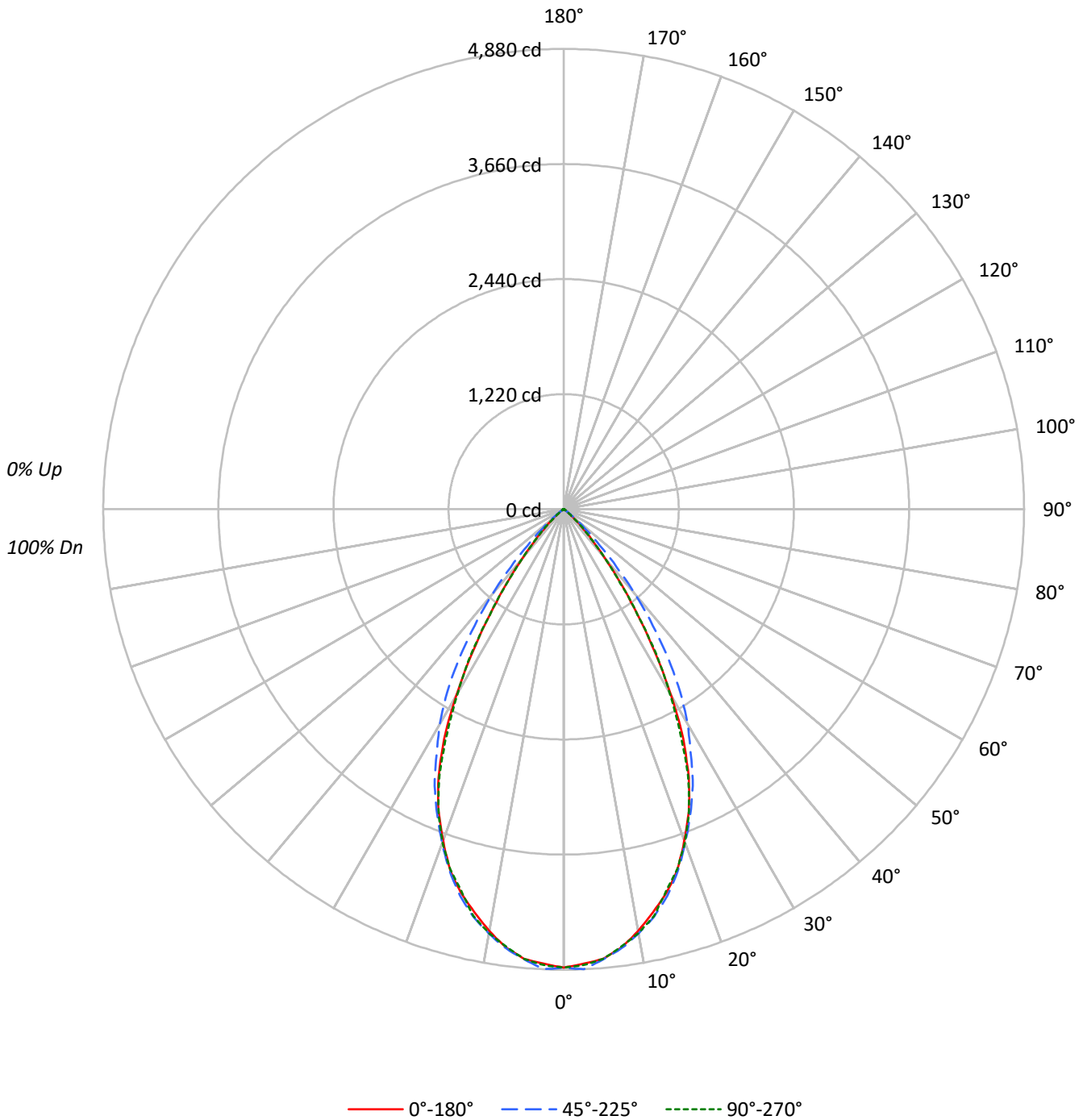
Lumens per Lamp: N/A
 Luminaire Lumens: 4484.9 lumens
 Efficiency: N/A
 Efficacy: 90.4 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 49.6
 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°	468743	468743	468743
5°	463356	463957	463356
10°	444827	447551	446943
15°	420528	423615	418370
20°	383782	386636	385692
25°	334179	344687	331869
30°	254117	292288	250340
35°	159960	227219	161409
40°	86306	150053	84744
45°	40855	74123	40418
50°	15296	27785	15296
55°	7267	8832	6763
60°	4767	4188	4767
65°	2808	2808	2808
70°	1749	2624	1749
75°	1156	1156	1156
80°	1723	1723	1723
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	450.4	10.0
10°-20°	1180.4	26.3
20°-30°	1442.0	32.2
30°-40°	1008.6	22.5
40°-50°	330.5	7.4
50°-60°	52.6	1.2
60°-70°	14.3	0.3
70°-80°	4.8	0.1
80°-90°	1.3	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°	3072.9	68.5
0°-40°	4081.4	91.0
0°-60°	4464.5	99.5
0°-90°	4484.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4484.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4858	4858	4858	4858	4858	
5°	4784	4785	4790	4761	4784	449
15°	4210	4227	4241	4213	4188	1174
25°	3139	3187	3238	3179	3117	1410
35°	1358	1603	1929	1579	1370	867
45°	299	369	543	364	296	251
55°	43	46	52	46	40	43
65°	12	16	12	16	12	14
75°	3	3	3	3	3	4
85°	0	0	0	0	0	1
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°	4858.0	4858.0	4858.0	4858.0	4858.0	4858.0	4858.0	4858.0	4858.0	4858.0	4858.0
2.5°	4820.9	4854.9	4845.6	4867.3	4867.3	4842.6	4848.8	4858.0	4870.3	4879.6	4805.4
5°	4783.9	4814.8	4786.9	4817.8	4799.3	4771.6	4817.8	4793.1	4808.6	4790.1	4802.4
7.5°	4685.2	4734.5	4679.0	4716.0	4703.7	4688.2	4706.7	4700.5	4709.8	4694.3	4660.5
10°	4540.1	4580.2	4543.2	4595.6	4570.9	4555.5	4570.9	4586.4	4583.3	4567.9	4586.4
12.5°	4373.4	4419.7	4401.1	4432.0	4404.3	4404.3	4441.3	4432.0	4435.1	4422.8	4444.3
15°	4209.8	4243.8	4216.0	4256.2	4243.8	4209.8	4225.2	4225.2	4250.0	4240.7	4216.0
17.5°	4006.2	4033.9	4003.0	4012.3	4000.0	3993.8	4058.6	4015.4	4040.0	4021.5	4024.7
20°	3737.6	3750.0	3740.7	3765.4	3750.0	3768.5	3762.3	3756.2	3756.2	3765.4	3743.8
22.5°	3466.0	3466.0	3475.3	3481.5	3493.8	3475.3	3512.3	3481.5	3484.5	3506.1	3500.0
25°	3138.9	3129.6	3151.2	3182.1	3194.4	3178.9	3228.3	3203.6	3222.1	3237.6	3203.6
27.5°	2740.8	2740.8	2762.3	2814.8	2824.0	2842.5	2910.4	2910.4	2935.1	2913.6	2938.2
30°	2280.8	2314.8	2342.5	2410.4	2432.1	2472.2	2543.1	2577.2	2632.7	2623.4	2611.0
32.5°	1808.6	1855.0	1858.0	1929.0	1987.6	2055.5	2151.2	2231.4	2271.6	2299.3	2268.5
35°	1358.0	1385.8	1410.5	1459.9	1558.6	1648.2	1734.6	1839.5	1910.5	1929.0	1901.2
37.5°	993.9	1000.0	1024.7	1070.9	1145.0	1231.5	1336.4	1450.5	1524.7	1552.4	1521.6
40°	685.2	691.3	703.7	743.8	805.6	867.3	950.7	1067.9	1135.8	1191.3	1151.2
42.5°	459.8	466.0	478.4	509.2	543.2	601.8	666.6	740.7	805.6	830.3	808.6
45°	299.4	299.4	305.6	327.2	345.7	392.0	438.3	484.5	527.7	543.2	527.7
47.5°	175.9	179.0	185.1	200.6	222.2	240.7	274.7	305.6	317.9	330.2	324.1
50°	101.9	101.9	111.1	120.4	135.8	148.1	160.5	172.8	179.0	185.1	179.0
52.5°	55.5	58.7	61.7	64.9	71.0	83.4	92.6	92.6	95.7	98.7	95.7
55°	43.2	43.2	43.2	43.2	46.3	46.3	46.3	49.4	49.4	52.5	49.4
57.5°	30.9	30.9	30.9	34.0	34.0	34.0	30.9	30.9	30.9	30.9	30.9
60°	24.7	24.7	24.7	24.7	24.7	24.7	24.7	21.7	21.7	21.7	21.7
62.5°	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
65°	12.3	12.3	15.5	15.5	15.5	15.5	15.5	12.3	12.3	12.3	12.3
67.5°	9.3	9.3	9.3	9.3	12.3	12.3	9.3	9.3	9.3	9.3	9.3
70°	6.2	6.2	6.2	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
72.5°	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
75°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
77.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
80°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	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°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
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°	4858.0	4858.0	4858.0	4858.0	4858.0	4858.0	4858.0	4858.0
2.5°	4858.0	4805.4	4811.6	4839.4	4823.9	4839.4	4836.4	4836.4
5°	4805.4	4790.1	4765.4	4756.1	4774.6	4814.8	4808.6	4783.9
7.5°	4706.7	4666.6	4694.3	4706.7	4691.3	4716.0	4728.4	4675.8
10°	4589.4	4574.1	4567.9	4574.1	4567.9	4592.6	4561.7	4561.7
12.5°	4422.8	4398.1	4398.1	4435.1	4413.5	4395.0	4419.7	4416.6
15°	4256.2	4206.7	4206.7	4219.0	4228.3	4216.0	4219.0	4188.2
17.5°	4009.2	3993.8	3972.2	4006.2	4015.4	4003.0	4012.3	3996.8
20°	3777.7	3777.7	3737.6	3753.0	3765.4	3774.7	3780.8	3756.2
22.5°	3481.5	3487.6	3459.8	3490.7	3500.0	3469.1	3475.3	3469.1
25°	3209.8	3206.8	3185.1	3172.8	3178.9	3166.6	3163.6	3117.2
27.5°	2910.4	2879.6	2833.3	2845.7	2793.2	2750.0	2750.0	2678.9
30°	2586.4	2534.0	2472.2	2410.4	2364.2	2314.8	2287.0	2246.9
32.5°	2206.7	2135.8	2058.6	1975.2	1922.9	1848.8	1808.6	1830.3
35°	1830.3	1725.2	1620.3	1537.1	1456.7	1413.5	1364.1	1370.3
37.5°	1466.0	1317.9	1225.3	1135.8	1067.9	1012.4	990.7	984.5
40°	1070.9	953.7	861.1	796.2	750.0	706.8	682.1	672.8
42.5°	740.7	657.4	583.3	530.9	500.0	472.2	459.8	456.8
45°	481.5	432.1	382.8	345.7	321.0	302.5	299.4	296.2
47.5°	302.5	277.7	246.9	219.1	197.5	185.1	175.9	175.9
50°	172.8	163.6	148.1	132.7	120.4	114.2	104.9	101.9
52.5°	92.6	92.6	86.4	74.1	64.9	58.7	58.7	55.5
55°	49.4	49.4	46.3	46.3	43.2	43.2	43.2	40.2
57.5°	30.9	30.9	34.0	34.0	30.9	30.9	30.9	30.9
60°	21.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7
62.5°	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
65°	12.3	15.5	15.5	15.5	15.5	12.3	12.3	12.3
67.5°	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
70°	9.3	9.3	9.3	9.3	9.3	6.2	6.2	6.2
72.5°	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
75°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
77.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
80°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
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°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)