

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 FEU4C459050 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 FEU4C459050 F4LC-SQ-LI
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

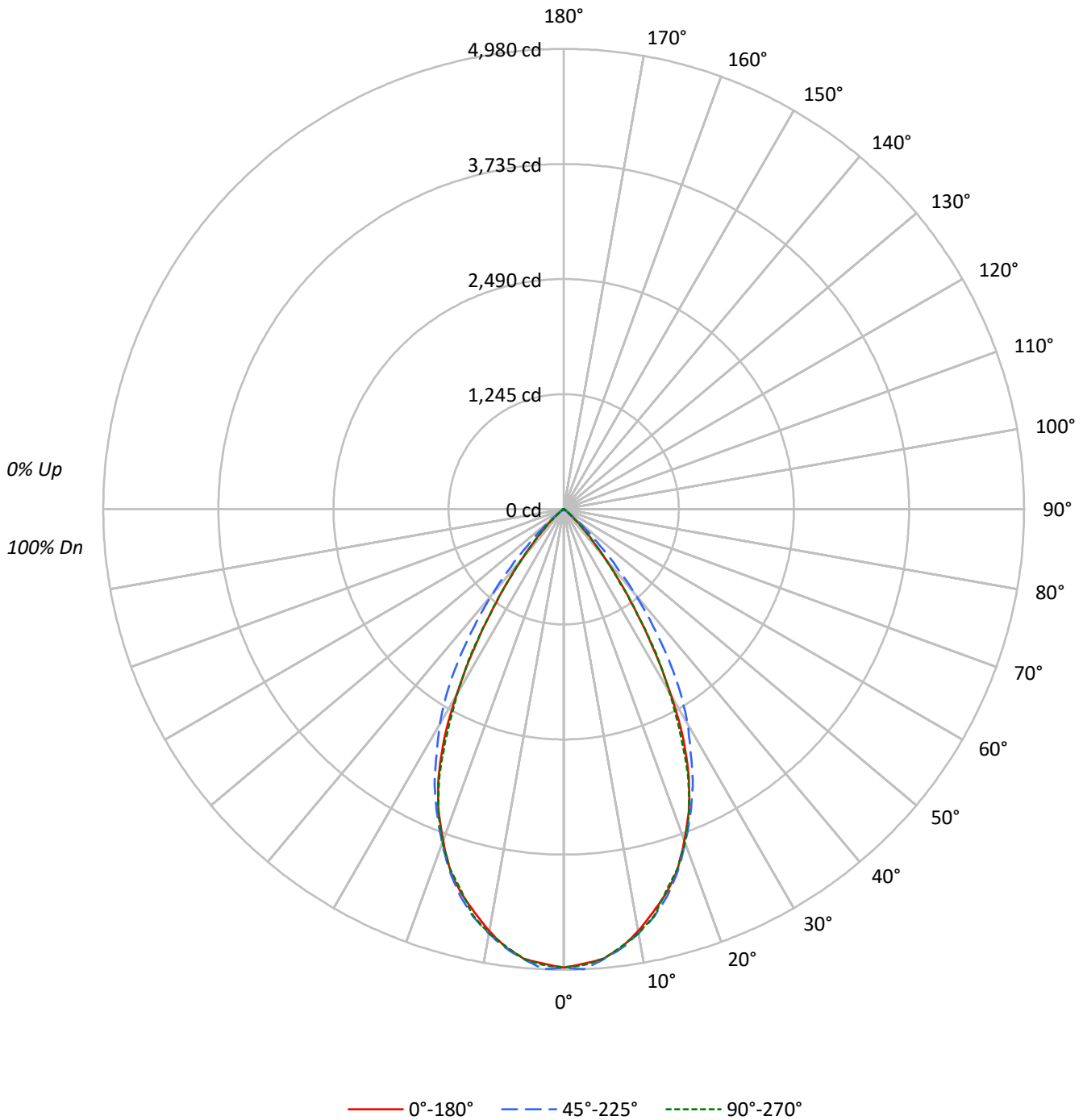
Lumens per Lamp: N/A
 Luminaire Lumens: 4577.0 lumens
 Efficiency: N/A
 Efficacy: 92.3 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 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				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°	478353	478353	478353
5°	472858	473468	472858
10°	453949	456731	456114
15°	429159	432305	426951
20°	391657	394563	393598
25°	341035	351756	338682
30°	259331	298282	255476
35°	163235	231884	164719
40°	88069	153139	86482
45°	41687	75651	41251
50°	15611	28356	15611
55°	7419	9017	6897
60°	4863	4265	4863
65°	2877	2877	2877
70°	1777	2680	1777
75°	1193	1193	1193
80°	1778	1778	1778
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	459.7	10.0
10°-20°	1204.6	26.3
20°-30°	1471.6	32.2
30°-40°	1029.3	22.5
40°-50°	337.3	7.4
50°-60°	53.6	1.2
60°-70°	14.6	0.3
70°-80°	4.9	0.1
80°-90°	1.4	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°	3135.9	68.5
0°-40°	4165.1	91.0
0°-60°	4556.1	99.5
0°-90°	4577.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4577.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4958	4958	4958	4958	4958	
5°	4882	4884	4888	4858	4882	458
15°	4296	4314	4328	4299	4274	1198
25°	3203	3252	3304	3244	3181	1439
35°	1386	1636	1969	1611	1398	884
45°	306	376	554	372	302	256
55°	44	47	54	47	41	44
65°	13	16	13	16	13	14
75°	3	3	3	3	3	5
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°	4957.6	4957.6	4957.6	4957.6	4957.6	4957.6	4957.6	4957.6	4957.6	4957.6	4957.6
2.5°	4919.8	4954.5	4945.0	4967.1	4967.1	4941.9	4948.2	4957.6	4970.2	4979.7	4904.0
5°	4882.0	4913.5	4885.1	4916.6	4897.7	4869.4	4916.6	4891.4	4907.2	4888.3	4900.9
7.5°	4781.3	4831.6	4775.0	4812.7	4800.2	4784.3	4803.2	4796.9	4806.4	4790.6	4756.1
10°	4633.2	4674.2	4636.4	4689.9	4664.7	4649.0	4664.7	4680.5	4677.3	4661.6	4680.5
12.5°	4463.1	4510.3	4491.4	4522.9	4494.6	4494.6	4532.4	4522.9	4526.1	4513.5	4535.5
15°	4296.2	4330.9	4302.5	4343.5	4330.9	4296.2	4311.9	4311.9	4337.2	4327.7	4302.5
17.5°	4088.3	4116.6	4085.1	4094.6	4082.0	4075.7	4141.8	4097.7	4122.9	4104.0	4107.2
20°	3814.3	3826.9	3817.4	3842.6	3826.9	3845.8	3839.5	3833.2	3833.2	3842.6	3820.6
22.5°	3537.1	3537.1	3546.6	3552.9	3565.5	3546.6	3584.4	3552.9	3556.0	3578.1	3571.8
25°	3203.3	3193.8	3215.9	3247.4	3260.0	3244.1	3294.5	3269.3	3288.2	3304.0	3269.3
27.5°	2797.0	2797.0	2819.0	2872.6	2881.9	2900.8	2970.1	2970.1	2995.3	2973.3	2998.5
30°	2327.6	2362.3	2390.6	2459.8	2482.0	2523.0	2595.3	2630.0	2686.7	2677.2	2664.6
32.5°	1845.7	1893.0	1896.1	1968.6	2028.4	2097.6	2195.3	2277.2	2318.2	2346.5	2315.0
35°	1385.8	1414.2	1439.4	1489.8	1590.6	1682.0	1770.1	1877.2	1949.7	1968.6	1940.2
37.5°	1014.2	1020.5	1045.7	1092.9	1168.5	1256.8	1363.9	1480.3	1556.0	1584.3	1552.8
40°	699.2	705.5	718.1	759.1	822.1	885.1	970.2	1089.8	1159.1	1215.8	1174.8
42.5°	469.3	475.6	488.2	519.7	554.4	614.1	680.3	755.9	822.1	847.3	825.2
45°	305.5	305.5	311.8	333.9	352.8	400.0	447.3	494.5	538.6	554.4	538.6
47.5°	179.6	182.6	188.9	204.8	226.7	245.6	280.3	311.8	324.4	337.0	330.7
50°	104.0	104.0	113.4	122.9	138.6	151.2	163.8	176.3	182.6	188.9	182.6
52.5°	56.7	59.9	63.0	66.2	72.5	85.1	94.5	94.5	97.7	100.8	97.7
55°	44.1	44.1	44.1	44.1	47.3	47.3	47.3	50.4	50.4	53.6	50.4
57.5°	31.5	31.5	31.5	34.7	34.7	34.7	31.5	31.5	31.5	31.5	31.5
60°	25.2	25.2	25.2	25.2	25.2	25.2	25.2	22.1	22.1	22.1	22.1
62.5°	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9
65°	12.6	12.6	15.8	15.8	15.8	15.8	15.8	12.6	12.6	12.6	12.6
67.5°	9.5	9.5	9.5	9.5	12.6	12.6	9.5	9.5	9.5	9.5	9.5
70°	6.3	6.3	6.3	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
72.5°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
75°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
77.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
80°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	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°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
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°	4957.6	4957.6	4957.6	4957.6	4957.6	4957.6	4957.6	4957.6
2.5°	4957.6	4904.0	4910.3	4938.7	4922.9	4938.7	4935.6	4935.6
5°	4904.0	4888.3	4863.1	4853.6	4872.5	4913.5	4907.2	4882.0
7.5°	4803.2	4762.4	4790.6	4803.2	4787.6	4812.7	4825.3	4771.7
10°	4683.6	4667.9	4661.6	4667.9	4661.6	4686.8	4655.3	4655.3
12.5°	4513.5	4488.3	4488.3	4526.1	4504.0	4485.1	4510.3	4507.2
15°	4343.5	4293.0	4293.0	4305.6	4315.1	4302.5	4305.6	4274.1
17.5°	4091.4	4075.7	4053.6	4088.3	4097.7	4085.1	4094.6	4078.8
20°	3855.2	3855.2	3814.3	3830.0	3842.6	3852.1	3858.4	3833.2
22.5°	3552.9	3559.2	3530.8	3562.3	3571.8	3540.3	3546.6	3540.3
25°	3275.6	3272.5	3250.4	3237.8	3244.1	3231.6	3228.5	3181.2
27.5°	2970.1	2938.6	2891.5	2904.0	2850.5	2806.4	2806.4	2733.9
30°	2639.4	2585.9	2523.0	2459.8	2412.7	2362.3	2333.9	2293.0
32.5°	2252.0	2179.6	2100.9	2015.8	1962.3	1886.7	1845.7	1867.8
35°	1867.8	1760.6	1653.6	1568.6	1486.6	1442.5	1392.1	1398.4
37.5°	1496.1	1345.0	1250.5	1159.1	1089.8	1033.1	1011.0	1004.7
40°	1092.9	973.2	878.8	812.6	765.4	721.3	696.1	686.6
42.5°	755.9	670.9	595.2	541.8	510.3	481.9	469.3	466.2
45°	491.4	441.0	390.6	352.8	327.6	308.7	305.5	302.3
47.5°	308.7	283.4	251.9	223.6	201.5	188.9	179.6	179.6
50°	176.3	167.0	151.2	135.5	122.9	116.6	107.1	104.0
52.5°	94.5	94.5	88.2	75.6	66.2	59.9	59.9	56.7
55°	50.4	50.4	47.3	47.3	44.1	44.1	44.1	41.0
57.5°	31.5	31.5	34.7	34.7	31.5	31.5	31.5	31.5
60°	22.1	25.2	25.2	25.2	25.2	25.2	25.2	25.2
62.5°	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9
65°	12.6	15.8	15.8	15.8	15.8	12.6	12.6	12.6
67.5°	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
70°	9.5	9.5	9.5	9.5	9.5	6.3	6.3	6.3
72.5°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
75°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
77.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
80°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
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°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)