

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 FEU4C459027 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 FEU4C459027 F4LC-SQ-LI
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

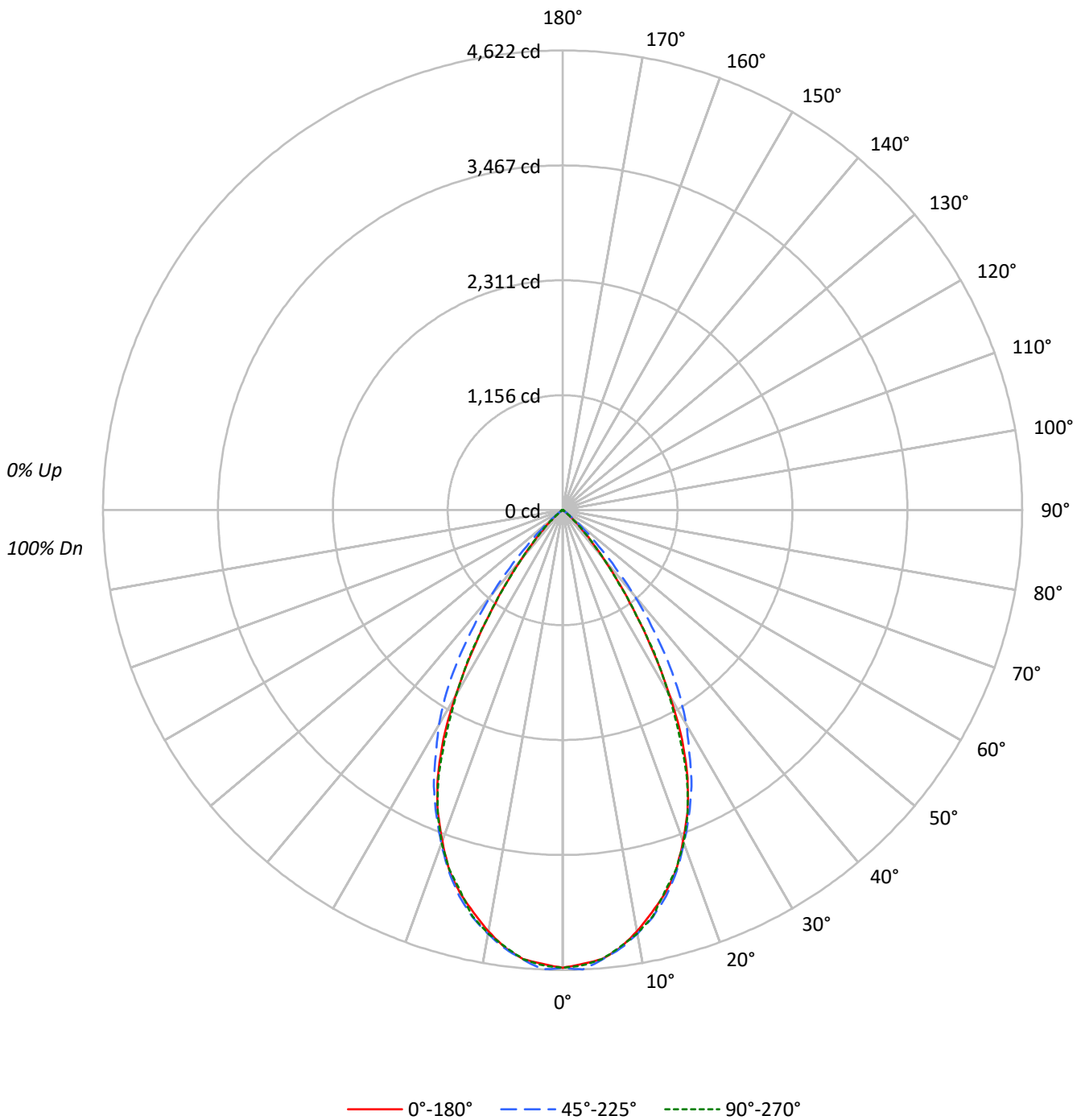
Lumens per Lamp: N/A
 Luminaire Lumens: 4248.0 lumens
 Efficiency: N/A
 Efficacy: 85.6 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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°	443965	443965	443965
5°	438871	439433	438871
10°	421322	423899	423331
15°	398312	401229	396254
20°	363502	366203	365309
25°	316517	326471	314334
30°	240692	276846	237115
35°	151503	215216	152881
40°	81746	142130	80273
45°	38699	70207	38290
50°	14486	26329	14486
55°	6880	8361	6409
60°	4516	3956	4516
65°	2671	2671	2671
70°	1636	2483	1636
75°	1118	1118	1118
80°	1667	1667	1667
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	426.6	10.0
10°-20°	1118.1	26.3
20°-30°	1365.8	32.2
30°-40°	955.3	22.5
40°-50°	313.1	7.4
50°-60°	49.8	1.2
60°-70°	13.6	0.3
70°-80°	4.6	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°	2910.5	68.5
0°-40°	3865.8	91.0
0°-60°	4228.6	99.5
0°-90°	4248.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4248.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4601	4601	4601	4601	4601	
5°	4531	4533	4537	4509	4531	425
15°	3987	4004	4017	3990	3967	1112
25°	2973	3018	3066	3011	2952	1335
35°	1286	1519	1827	1495	1298	821
45°	284	349	514	345	281	238
55°	41	44	50	44	38	40
65°	12	15	12	15	12	13
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°	4601.2	4601.2	4601.2	4601.2	4601.2	4601.2	4601.2	4601.2	4601.2	4601.2	4601.2
2.5°	4566.2	4598.4	4589.6	4610.1	4610.1	4586.7	4592.5	4601.2	4612.9	4621.8	4551.5
5°	4531.1	4560.3	4534.0	4563.2	4545.7	4519.4	4563.2	4539.8	4554.5	4536.9	4548.6
7.5°	4437.6	4484.3	4431.7	4466.8	4455.1	4440.4	4458.0	4452.1	4461.0	4446.3	4414.2
10°	4300.2	4338.2	4303.1	4352.8	4329.4	4314.8	4329.4	4344.0	4341.1	4326.5	4344.0
12.5°	4142.3	4186.1	4168.6	4197.8	4171.6	4171.6	4206.6	4197.8	4200.8	4189.1	4209.5
15°	3987.4	4019.6	3993.2	4031.3	4019.6	3987.4	4001.9	4001.9	4025.4	4016.6	3993.2
17.5°	3794.5	3820.7	3791.5	3800.3	3788.6	3782.8	3844.1	3803.2	3826.6	3809.0	3812.0
20°	3540.1	3551.8	3543.0	3566.4	3551.8	3569.4	3563.5	3557.7	3557.7	3566.4	3546.0
22.5°	3282.8	3282.8	3291.6	3297.5	3309.2	3291.6	3326.7	3297.5	3300.4	3320.9	3315.0
25°	2973.0	2964.2	2984.7	3013.9	3025.6	3011.0	3057.7	3034.3	3051.9	3066.5	3034.3
27.5°	2595.9	2595.9	2616.3	2666.1	2674.8	2692.3	2756.6	2756.6	2780.0	2759.6	2783.0
30°	2160.3	2192.5	2218.7	2283.0	2303.5	2341.6	2408.8	2441.0	2493.6	2484.8	2473.1
32.5°	1713.0	1756.9	1759.8	1827.1	1882.6	1946.9	2037.5	2113.5	2151.6	2177.8	2148.6
35°	1286.2	1312.6	1336.0	1382.7	1476.2	1561.1	1642.9	1742.3	1809.6	1827.1	1800.7
37.5°	941.3	947.2	970.6	1014.3	1084.5	1166.4	1265.8	1373.9	1444.2	1470.4	1441.2
40°	649.0	654.8	666.5	704.5	763.0	821.5	900.4	1011.5	1075.8	1128.4	1090.3
42.5°	435.5	441.4	453.1	482.3	514.5	570.0	631.4	701.6	763.0	786.4	765.9
45°	283.6	283.6	289.4	309.9	327.5	371.2	415.1	458.9	499.8	514.5	499.8
47.5°	166.7	169.5	175.4	190.0	210.4	228.0	260.2	289.4	301.1	312.8	306.9
50°	96.5	96.5	105.2	114.0	128.6	140.3	152.0	163.7	169.5	175.4	169.5
52.5°	52.6	55.6	58.5	61.4	67.3	79.0	87.7	87.7	90.7	93.5	90.7
55°	40.9	40.9	40.9	40.9	43.9	43.9	43.9	46.8	46.8	49.7	46.8
57.5°	29.2	29.2	29.2	32.2	32.2	32.2	29.2	29.2	29.2	29.2	29.2
60°	23.4	23.4	23.4	23.4	23.4	23.4	23.4	20.5	20.5	20.5	20.5
62.5°	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
65°	11.7	11.7	14.7	14.7	14.7	14.7	14.7	11.7	11.7	11.7	11.7
67.5°	8.8	8.8	8.8	8.8	11.7	11.7	8.8	8.8	8.8	8.8	8.8
70°	5.8	5.8	5.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
72.5°	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
75°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
77.5°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
80°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	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°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
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°	4601.2	4601.2	4601.2	4601.2	4601.2	4601.2	4601.2	4601.2
2.5°	4601.2	4551.5	4557.3	4583.7	4569.0	4583.7	4580.8	4580.8
5°	4551.5	4536.9	4513.6	4504.7	4522.3	4560.3	4554.5	4531.1
7.5°	4458.0	4420.0	4446.3	4458.0	4443.4	4466.8	4478.5	4428.7
10°	4346.9	4332.4	4326.5	4332.4	4326.5	4349.9	4320.7	4320.7
12.5°	4189.1	4165.7	4165.7	4200.8	4180.3	4162.7	4186.1	4183.2
15°	4031.3	3984.4	3984.4	3996.1	4004.9	3993.2	3996.1	3966.8
17.5°	3797.3	3782.8	3762.3	3794.5	3803.2	3791.5	3800.3	3785.6
20°	3578.1	3578.1	3540.1	3554.7	3566.4	3575.2	3581.1	3557.7
22.5°	3297.5	3303.3	3277.0	3306.2	3315.0	3285.8	3291.6	3285.8
25°	3040.2	3037.3	3016.8	3005.1	3011.0	2999.3	2996.4	2952.5
27.5°	2756.6	2727.4	2683.6	2695.3	2645.6	2604.6	2604.6	2537.4
30°	2449.7	2400.1	2341.6	2283.0	2239.2	2192.5	2166.1	2128.2
32.5°	2090.1	2023.0	1949.8	1870.9	1821.2	1751.1	1713.0	1733.6
35°	1733.6	1634.1	1534.7	1455.8	1379.7	1338.8	1292.1	1297.9
37.5°	1388.6	1248.3	1160.6	1075.8	1011.5	958.9	938.4	932.5
40°	1014.3	903.3	815.6	754.2	710.4	669.5	646.1	637.3
42.5°	701.6	622.7	552.4	502.8	473.6	447.2	435.5	432.7
45°	456.1	409.3	362.5	327.5	304.1	286.5	283.6	280.6
47.5°	286.5	263.0	233.8	207.6	187.1	175.4	166.7	166.7
50°	163.7	155.0	140.3	125.7	114.0	108.2	99.4	96.5
52.5°	87.7	87.7	81.8	70.1	61.4	55.6	55.6	52.6
55°	46.8	46.8	43.9	43.9	40.9	40.9	40.9	38.1
57.5°	29.2	29.2	32.2	32.2	29.2	29.2	29.2	29.2
60°	20.5	23.4	23.4	23.4	23.4	23.4	23.4	23.4
62.5°	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
65°	11.7	14.7	14.7	14.7	14.7	11.7	11.7	11.7
67.5°	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
70°	8.8	8.8	8.8	8.8	8.8	5.8	5.8	5.8
72.5°	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
75°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
77.5°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
80°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
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°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)