

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 FEU4C659035 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 FEU4C659035 F4LC-SQ-LI
 Description: 4 INCH 6500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

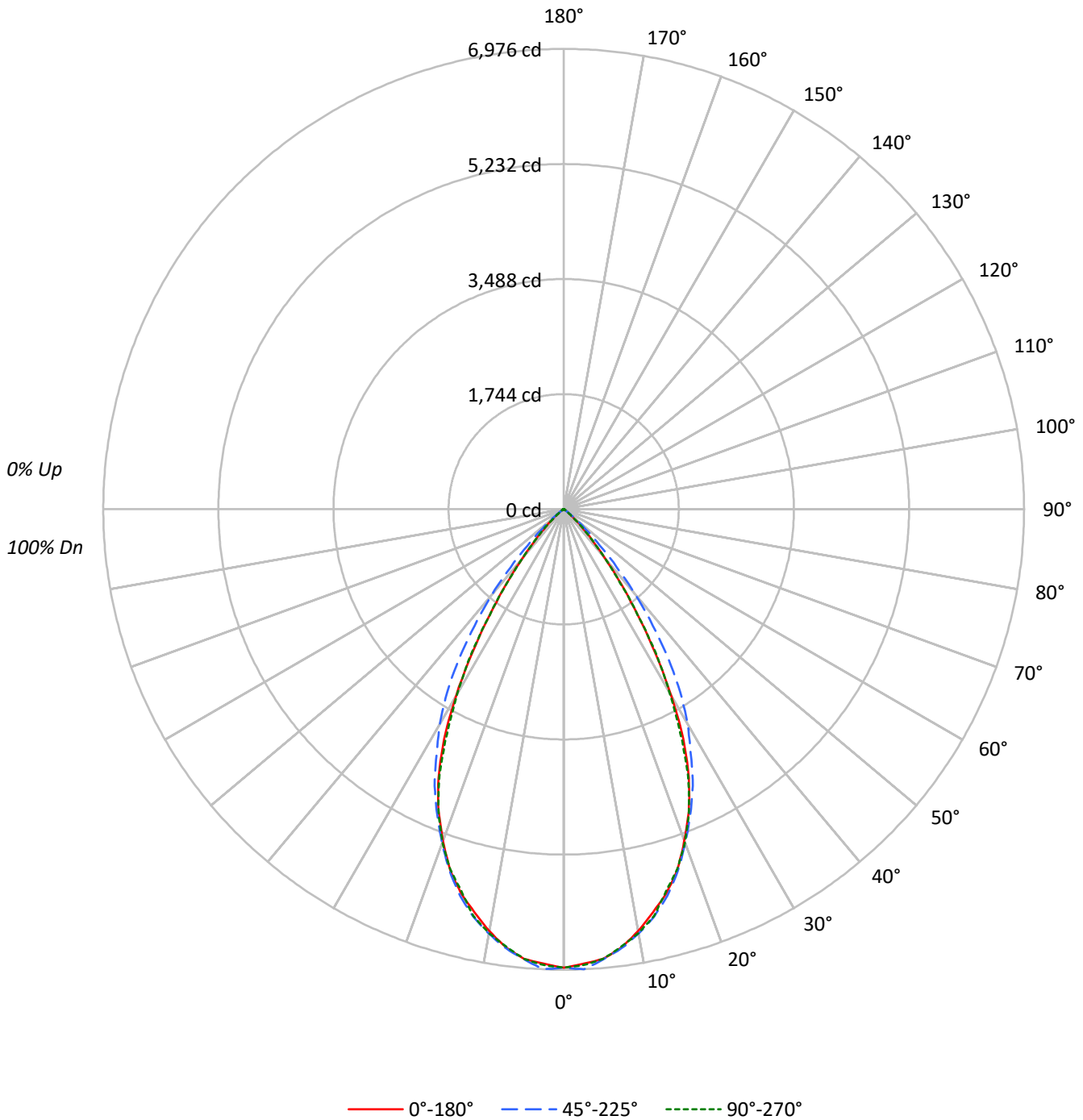
Lumens per Lamp: N/A
 Luminaire Lumens: 6412.0 lumens
 Efficiency: N/A
 Efficacy: 88.6 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 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	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°	670135	670135	670135
5°	662437	663290	662437
10°	635942	639841	638979
15°	601214	605619	598117
20°	548678	552754	551399
25°	477756	492789	474466
30°	363305	417865	357901
35°	228680	324845	230765
40°	123375	214530	121158
45°	58403	105972	57789
50°	21871	39734	21871
55°	10396	12634	9656
60°	6812	5982	6812
65°	4018	4018	4018
70°	2483	3752	2483
75°	1678	1678	1678
80°	2500	2500	2500
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	643.9	10.0
10°-20°	1687.6	26.3
20°-30°	2061.6	32.2
30°-40°	1441.9	22.5
40°-50°	472.5	7.4
50°-60°	75.1	1.2
60°-70°	20.5	0.3
70°-80°	6.9	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°	4393.1	68.5
0°-40°	5835.0	91.0
0°-60°	6382.7	99.5
0°-90°	6412.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6412.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	6945	6945	6945	6945	6945	
5°	6839	6842	6848	6806	6839	641
15°	6019	6043	6063	6023	5988	1679
25°	4488	4556	4629	4545	4457	2016
35°	1941	2292	2758	2257	1959	1239
45°	428	527	777	521	424	359
55°	62	66	75	66	57	61
65°	18	22	18	22	18	20
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°	6945.2	6945.2	6945.2	6945.2	6945.2	6945.2	6945.2	6945.2	6945.2	6945.2	6945.2
2.5°	6892.3	6940.9	6927.5	6958.5	6958.5	6923.2	6932.0	6945.2	6962.8	6976.2	6870.1
5°	6839.3	6883.4	6843.6	6887.8	6861.3	6821.7	6887.8	6852.5	6874.6	6848.1	6865.8
7.5°	6698.1	6768.7	6689.3	6742.3	6724.6	6702.5	6728.9	6720.1	6733.4	6711.3	6662.9
10°	6490.7	6548.2	6495.2	6570.1	6534.8	6512.9	6534.8	6557.0	6552.5	6530.5	6557.0
12.5°	6252.5	6318.6	6292.1	6336.2	6296.6	6296.6	6349.5	6336.2	6340.7	6323.1	6353.9
15°	6018.6	6067.2	6027.4	6084.9	6067.2	6018.6	6040.6	6040.6	6076.0	6062.7	6027.4
17.5°	5727.4	5767.0	5722.9	5736.3	5718.6	5709.8	5802.3	5740.6	5775.9	5749.4	5753.9
20°	5343.5	5361.2	5347.9	5383.2	5361.2	5387.7	5378.8	5370.0	5370.0	5383.2	5352.4
22.5°	4955.1	4955.1	4968.5	4977.3	4994.9	4968.5	5021.4	4977.3	4981.6	5012.6	5003.8
25°	4487.5	4474.2	4505.2	4549.3	4566.9	4544.8	4615.4	4580.1	4606.5	4628.7	4580.1
27.5°	3918.3	3918.3	3949.1	4024.2	4037.4	4063.8	4160.9	4160.9	4196.2	4165.4	4200.7
30°	3260.8	3309.4	3349.0	3446.0	3477.0	3534.4	3635.8	3684.4	3763.8	3750.5	3732.9
32.5°	2585.7	2652.0	2656.3	2757.8	2841.6	2938.6	3075.5	3190.2	3247.6	3287.2	3243.1
35°	1941.4	1981.2	2016.5	2087.1	2228.3	2356.3	2479.8	2629.8	2731.4	2757.8	2718.0
37.5°	1420.9	1429.7	1465.0	1531.1	1637.0	1760.6	1910.6	2073.8	2179.8	2219.5	2175.3
40°	979.5	988.4	1006.0	1063.4	1151.7	1239.9	1359.1	1526.7	1623.8	1703.2	1645.8
42.5°	657.4	666.2	683.9	728.0	776.6	860.3	953.1	1058.9	1151.7	1187.0	1156.0
45°	428.0	428.0	436.8	467.8	494.3	560.4	626.6	692.7	754.5	776.6	754.5
47.5°	251.5	255.9	264.7	286.8	317.6	344.1	392.7	436.8	454.5	472.1	463.3
50°	145.7	145.7	158.8	172.1	194.1	211.8	229.4	247.0	255.9	264.7	255.9
52.5°	79.4	83.9	88.2	92.7	101.6	119.2	132.3	132.3	136.8	141.2	136.8
55°	61.8	61.8	61.8	61.8	66.3	66.3	66.3	70.6	70.6	75.1	70.6
57.5°	44.1	44.1	44.1	48.6	48.6	48.6	44.1	44.1	44.1	44.1	44.1
60°	35.3	35.3	35.3	35.3	35.3	35.3	35.3	31.0	31.0	31.0	31.0
62.5°	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5
65°	17.6	17.6	22.1	22.1	22.1	22.1	22.1	17.6	17.6	17.6	17.6
67.5°	13.3	13.3	13.3	13.3	17.6	17.6	13.3	13.3	13.3	13.3	13.3
70°	8.8	8.8	8.8	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
72.5°	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
75°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
77.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
80°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	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°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
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°	6945.2	6945.2	6945.2	6945.2	6945.2	6945.2	6945.2	6945.2
2.5°	6945.2	6870.1	6878.9	6918.7	6896.6	6918.7	6914.4	6914.4
5°	6870.1	6848.1	6812.8	6799.5	6826.0	6883.4	6874.6	6839.3
7.5°	6728.9	6671.7	6711.3	6728.9	6707.0	6742.3	6759.9	6684.8
10°	6561.3	6539.3	6530.5	6539.3	6530.5	6565.8	6521.7	6521.7
12.5°	6323.1	6287.8	6287.8	6340.7	6309.8	6283.3	6318.6	6314.3
15°	6084.9	6014.1	6014.1	6031.7	6045.1	6027.4	6031.7	5987.6
17.5°	5731.8	5709.8	5678.8	5727.4	5740.6	5722.9	5736.3	5714.1
20°	5400.8	5400.8	5343.5	5365.5	5383.2	5396.5	5405.3	5370.0
22.5°	4977.3	4986.1	4946.3	4990.4	5003.8	4959.6	4968.5	4959.6
25°	4588.9	4584.6	4553.6	4536.0	4544.8	4527.1	4522.8	4456.6
27.5°	4160.9	4116.8	4050.7	4068.3	3993.2	3931.5	3931.5	3829.9
30°	3697.6	3622.7	3534.4	3446.0	3380.0	3309.4	3269.6	3212.3
32.5°	3154.9	3053.5	2943.1	2823.9	2749.0	2643.1	2585.7	2616.7
35°	2616.7	2466.5	2316.5	2197.5	2082.6	2020.8	1950.3	1959.1
37.5°	2095.9	1884.2	1751.8	1623.8	1526.7	1447.3	1416.4	1407.6
40°	1531.1	1363.4	1231.1	1138.4	1072.3	1010.5	975.2	961.9
42.5°	1058.9	939.9	833.9	759.0	714.8	675.1	657.4	653.1
45°	688.4	617.8	547.2	494.3	459.0	432.5	428.0	423.5
47.5°	432.5	397.0	352.9	313.3	282.3	264.7	251.5	251.5
50°	247.0	233.9	211.8	189.8	172.1	163.3	150.0	145.7
52.5°	132.3	132.3	123.5	105.9	92.7	83.9	83.9	79.4
55°	70.6	70.6	66.3	66.3	61.8	61.8	61.8	57.4
57.5°	44.1	44.1	48.6	48.6	44.1	44.1	44.1	44.1
60°	31.0	35.3	35.3	35.3	35.3	35.3	35.3	35.3
62.5°	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5
65°	17.6	22.1	22.1	22.1	22.1	17.6	17.6	17.6
67.5°	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
70°	13.3	13.3	13.3	13.3	13.3	8.8	8.8	8.8
72.5°	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
75°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
77.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
80°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
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°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)