

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: **FLDSQ4C20D010 FEU4C209035 F4LC-DFSSQ-MW**

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: FLDSQ4C20D010 FEU4C209035 F4LC-DFSSQ-MW  
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

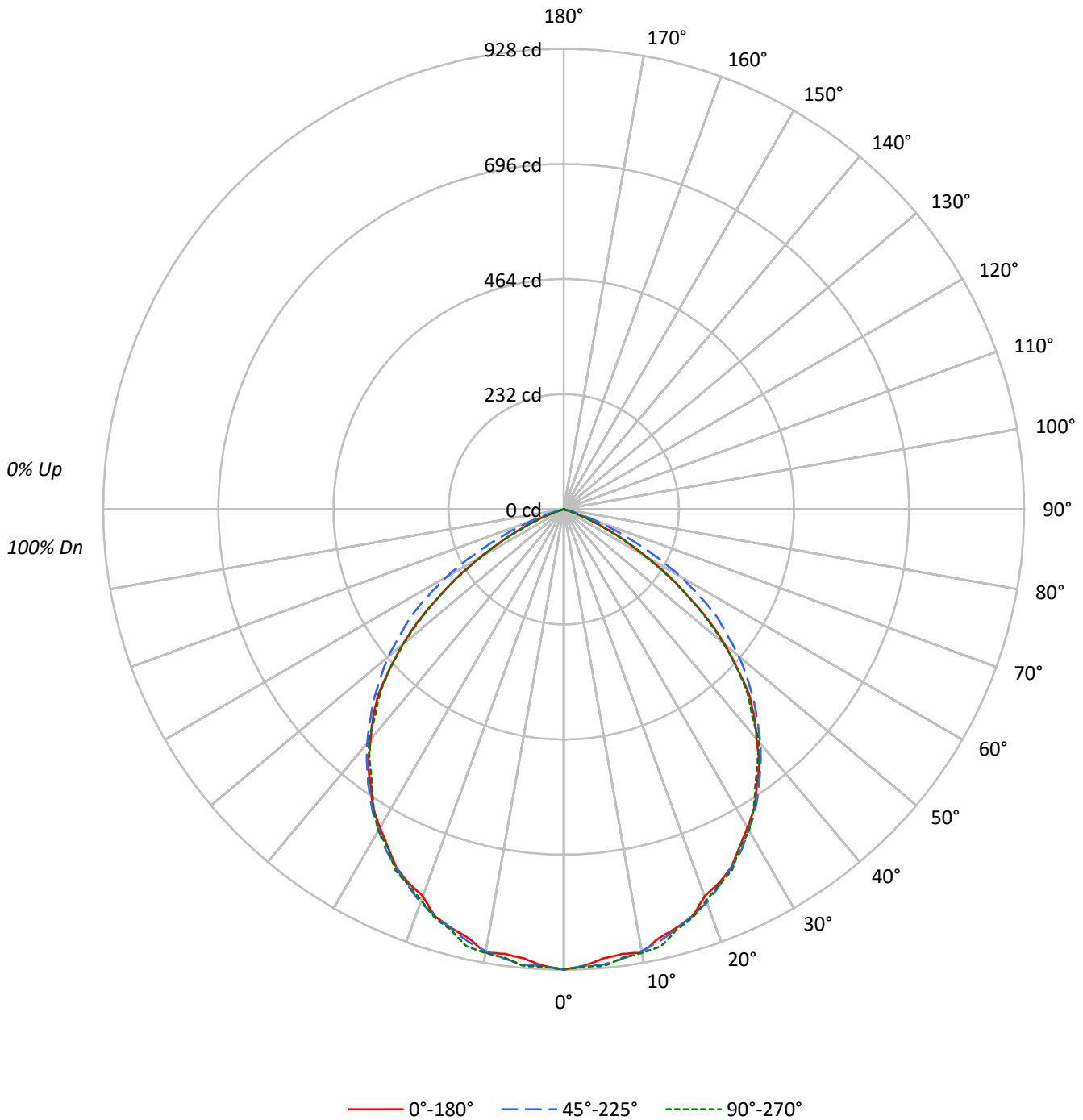
Lumens per Lamp: N/A  
 Luminaire Lumens: 1982.0 lumens  
 Efficiency: N/A  
 Efficacy: 90.9 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 21.8  
 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



TEST NUMBER: P#  
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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	111	108	104	101	109	105	102	100	101	99	96	97	95	94	94	92	91	89				89
2	103	96	91	86	100	94	89	85	91	87	83	88	84	81	85	82	79	77				77
3	95	86	79	74	93	85	78	73	82	76	72	79	74	71	77	73	69	67				67
4	88	77	70	64	86	76	69	63	74	67	63	71	66	62	69	65	61	59				59
5	81	70	62	56	79	69	61	56	67	60	55	65	59	54	63	58	54	52				52
6	75	63	55	49	73	62	55	49	61	54	49	59	53	48	57	52	48	46				46
7	70	58	50	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41				41
8	65	53	45	40	64	52	45	39	51	44	39	50	44	39	49	43	39	37				37
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35	34				34
10	57	45	38	33	56	44	37	33	44	37	32	43	37	32	42	36	32	31				31

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	89522	89522	89522
5°	88082	89225	89487
10°	88846	88581	88963
15°	87286	87416	87676
20°	85256	86612	86201
25°	84884	84884	85448
30°	82526	83105	83261
35°	79945	80722	79321
40°	76192	77690	77023
45°	72117	73741	71394
50°	63512	69051	63106
55°	51426	63185	51661
60°	37631	52393	36878
65°	22877	37306	22260
70°	8915	20087	8548
75°	969	5406	969
80°	722	722	722
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	87.6	4.4
10°-20°	247.8	12.5
20°-30°	367.7	18.6
30°-40°	426.1	21.5
40°-50°	408.5	20.6
50°-60°	300.4	15.2
60°-70°	129.7	6.5
70°-80°	14.0	0.7
80°-90°	0.2	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°	703.1	35.5
0°-40°	1129.2	57.0
0°-60°	1838.1	92.7
0°-90°	1982.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1982.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	928	928	928	928	928	
5°	909	919	921	923	924	87
15°	874	879	875	876	878	246
25°	797	796	797	799	803	365
35°	679	683	685	684	673	424
45°	528	530	540	532	523	402
55°	306	337	376	336	307	275
65°	100	125	163	124	98	103
75°	3	4	14	3	3	8
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P#  
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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	927.8	927.8	927.8	927.8	927.8	927.8	927.8	927.8	927.8	927.8	927.8
2.5°	921.2	931.8	933.1	926.5	923.9	919.9	929.1	922.6	925.2	922.6	921.2
5°	909.4	921.2	922.6	922.6	919.9	918.6	922.6	921.2	919.9	917.3	921.2
7.5°	904.1	910.7	917.3	909.4	913.3	912.0	921.2	917.3	916.0	916.0	913.3
10°	906.8	905.4	910.7	902.8	905.4	902.8	910.7	910.7	908.0	905.4	904.1
12.5°	885.6	896.2	896.2	894.9	892.2	888.3	896.2	901.5	893.5	893.5	892.2
15°	873.8	876.4	877.7	877.7	876.4	879.1	883.0	877.7	879.1	872.5	875.1
17.5°	860.6	855.4	859.3	856.6	858.0	860.6	865.9	865.9	858.0	856.6	859.3
20°	830.3	846.1	847.4	839.5	840.8	840.8	850.1	842.2	847.4	840.8	843.5
22.5°	815.8	826.3	827.7	817.1	823.7	815.8	825.0	813.1	826.3	817.1	821.0
25°	797.3	796.0	800.0	794.7	796.0	796.0	802.6	797.3	801.3	796.0	797.3
27.5°	767.1	777.6	776.3	771.0	773.6	772.3	785.5	771.0	778.9	772.3	775.0
30°	740.7	749.9	747.3	742.0	742.0	738.0	752.5	748.6	747.3	747.3	745.9
32.5°	714.3	715.7	713.0	714.3	715.7	710.4	722.2	716.9	715.7	716.9	718.3
35°	678.7	678.7	681.3	677.4	682.7	682.7	693.2	686.6	685.3	681.3	685.3
37.5°	647.1	643.2	644.5	644.5	647.1	649.7	655.0	652.4	652.4	648.4	651.1
40°	604.9	602.3	606.2	606.2	610.2	610.2	615.5	612.8	616.8	616.8	616.8
42.5°	568.0	568.0	565.4	569.3	570.7	569.3	578.6	577.2	578.6	576.0	577.2
45°	528.5	528.5	525.8	524.5	531.1	529.8	540.4	536.4	541.6	539.0	540.4
47.5°	474.4	481.0	477.1	481.0	488.9	490.3	496.9	494.2	499.5	495.6	500.8
50°	423.1	423.1	427.0	432.3	440.2	441.5	449.4	454.7	457.3	458.6	460.0
52.5°	369.0	367.7	371.7	378.2	384.8	390.1	398.0	405.9	411.2	419.1	415.1
55°	305.7	308.4	312.4	320.3	330.8	337.4	344.0	354.5	363.8	367.7	375.6
57.5°	251.7	249.1	251.7	262.2	274.1	279.4	288.6	299.2	312.4	320.3	322.9
60°	195.0	196.4	199.0	208.3	217.5	225.4	229.3	246.4	258.3	266.2	271.5
62.5°	143.7	146.3	148.9	156.9	166.0	172.7	179.2	193.7	204.3	212.2	217.5
65°	100.2	101.5	105.4	109.4	118.6	125.2	130.5	142.3	152.9	159.5	163.4
67.5°	61.9	63.2	65.9	71.2	77.8	83.0	88.3	96.2	105.4	112.0	113.4
70°	31.6	33.0	34.3	38.2	43.5	46.1	50.1	56.7	63.2	68.5	71.2
72.5°	10.5	10.5	11.9	14.5	17.2	19.8	21.1	27.7	33.0	35.6	36.9
75°	2.6	2.6	2.6	2.6	2.6	4.0	4.0	7.9	10.5	13.2	14.5
77.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	2.6	2.6
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	0.0	0.0	0.0	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	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	927.8	927.8	927.8	927.8	927.8	927.8	927.8	927.8	927.8	927.8
2.5°	927.8	925.2	923.9	925.2	925.2	923.9	927.8	933.1	939.7	922.6
5°	926.5	923.9	926.5	918.6	922.6	919.9	925.2	923.9	929.1	923.9
7.5°	922.6	917.3	918.6	914.7	919.9	913.3	917.3	925.2	919.9	912.0
10°	909.4	906.8	916.0	902.8	900.1	905.4	916.0	908.0	905.4	908.0
12.5°	896.2	896.2	900.1	889.6	890.9	893.5	898.8	893.5	896.2	902.8
15°	881.7	879.1	885.6	877.7	876.4	873.8	879.1	879.1	881.7	877.7
17.5°	864.5	860.6	860.6	858.0	856.6	863.3	865.9	867.2	868.5	863.3
20°	843.5	842.2	846.1	842.2	843.5	844.8	844.8	842.2	854.0	839.5
22.5°	821.0	825.0	819.8	817.1	819.8	822.4	822.4	823.7	821.0	818.4
25°	798.7	801.3	802.6	794.7	798.7	794.7	803.9	805.2	800.0	802.6
27.5°	778.9	775.0	773.6	768.3	771.0	769.7	771.0	771.0	778.9	768.3
30°	748.6	744.6	745.9	742.0	743.3	742.0	743.3	743.3	748.6	747.3
32.5°	719.6	715.7	716.9	713.0	713.0	714.3	711.7	711.7	715.7	713.0
35°	691.9	682.7	684.0	682.7	684.0	678.7	678.7	677.4	680.1	673.4
37.5°	652.4	648.4	647.1	645.8	647.1	644.5	647.1	643.2	647.1	641.8
40°	616.8	614.1	615.5	607.6	607.6	608.9	606.2	604.9	606.2	611.5
42.5°	581.2	576.0	573.3	570.7	572.0	568.0	566.7	564.1	566.7	561.4
45°	539.0	539.0	537.7	531.1	532.5	532.5	527.2	521.9	523.2	523.2
47.5°	500.8	498.2	496.9	490.3	488.9	487.7	482.3	478.4	478.4	474.4
50°	458.6	456.0	452.1	445.4	442.8	434.9	431.0	425.7	420.4	420.4
52.5°	419.1	409.9	404.6	394.0	390.1	386.1	375.6	371.7	367.7	363.8
55°	371.7	363.8	353.2	341.3	336.1	329.5	318.9	311.0	305.7	307.1
57.5°	325.5	312.4	301.8	286.0	279.4	275.4	264.9	254.3	249.1	249.1
60°	268.9	258.3	245.1	230.6	225.4	218.8	205.6	199.0	195.0	191.1
62.5°	214.8	206.9	195.0	176.6	172.7	166.0	156.9	148.9	145.0	145.0
65°	160.8	152.9	142.3	129.2	123.9	118.6	110.7	102.8	98.8	97.5
67.5°	113.4	104.1	94.9	84.4	80.4	77.8	69.8	64.6	61.9	60.6
70°	68.5	63.2	56.7	48.8	44.8	42.2	36.9	33.0	31.6	30.3
72.5°	35.6	31.6	26.3	21.1	18.4	15.8	13.2	10.5	9.2	9.2
75°	13.2	10.5	6.6	4.0	2.6	2.6	2.6	2.6	2.6	2.6
77.5°	2.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	0.0	0.0	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	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)