

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 FEU4C209040 F4LC-CSSQ-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 FEU4C209040 F4LC-CSSQ-MW  
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

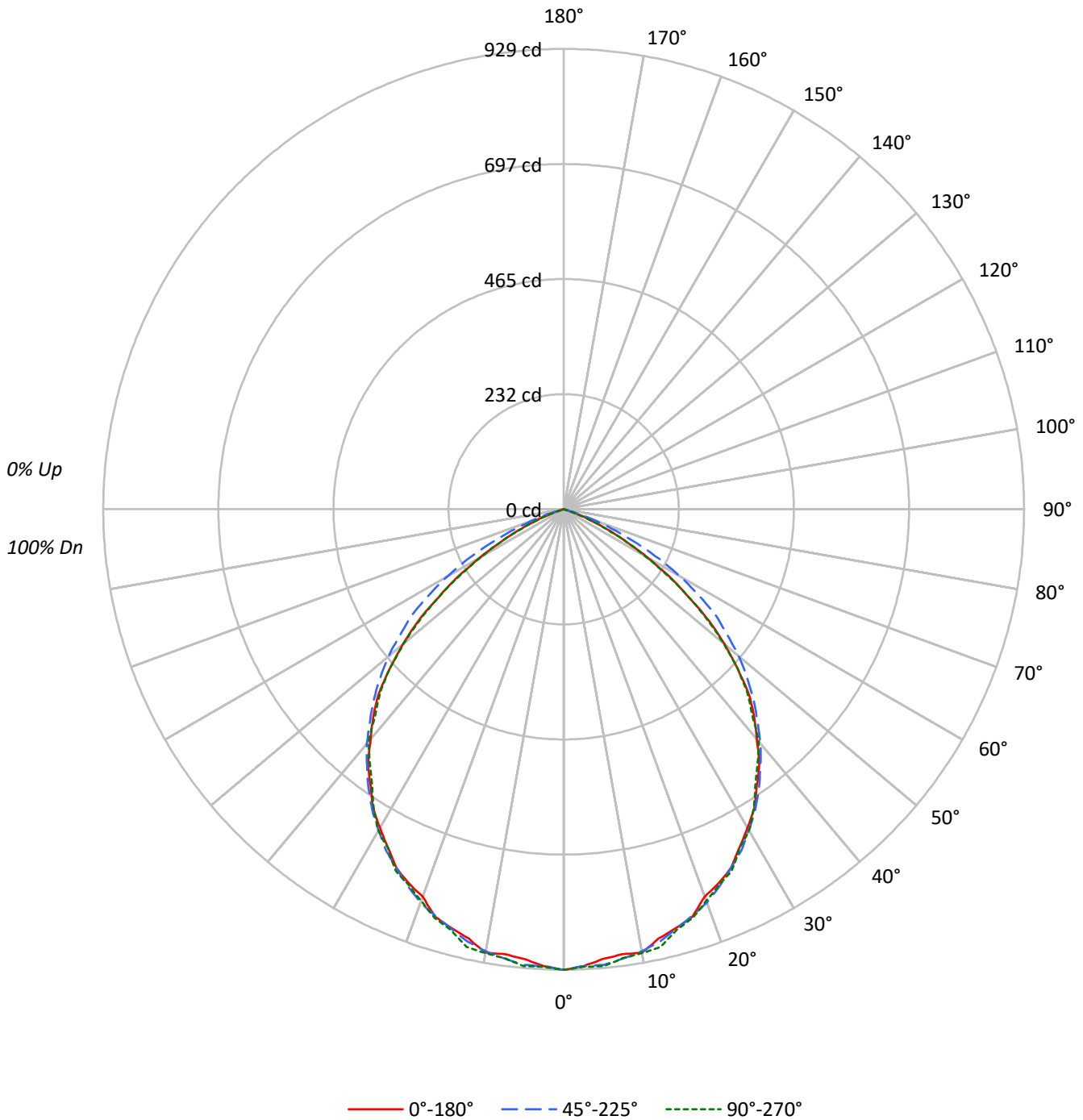
Lumens per Lamp: N/A  
 Luminaire Lumens: 1985.0 lumens  
 Efficiency: N/A  
 Efficacy: 91.1 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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	0
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111		106	106	106		102	102	102	100
1	111	108	104	101	109	105	102	100	101	99	96		97	95	94		94	92	91	89
2	103	96	91	86	100	94	89	85	91	87	83		88	84	81		85	82	79	77
3	95	86	79	74	93	85	78	73	82	76	72		79	74	71		77	73	69	67
4	88	77	70	64	86	76	69	63	74	67	63		71	66	62		69	65	61	59
5	81	70	62	56	79	69	61	56	67	60	55		65	59	54		63	58	54	52
6	75	63	55	49	73	62	55	49	61	54	49		59	53	48		57	52	48	46
7	70	58	50	44	68	57	49	44	55	49	44		54	48	43		53	47	43	41
8	65	53	45	40	64	52	45	39	51	44	39		50	44	39		49	43	39	37
9	61	49	41	36	60	48	41	36	47	40	36		46	40	35		45	39	35	34
10	57	45	38	33	56	44	37	33	44	37	32		43	37	32		42	36	32	31

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

	0°	45°	90°
0°	89657	89657	89657
5°	88218	89361	89622
10°	88973	88719	89101
15°	87416	87546	87806
20°	85390	86735	86334
25°	85011	85011	85576
30°	82648	83239	83384
35°	80063	80852	79450
40°	76318	77804	77136
45°	72226	73850	71503
50°	63602	69156	63211
55°	51510	63286	51745
60°	37689	52471	36936
65°	22900	37375	22306
70°	8943	20115	8576
75°	969	5406	969
80°	722	722	722
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	87.7	4.4
10°-20°	248.2	12.5
20°-30°	368.3	18.6
30°-40°	426.7	21.5
40°-50°	409.1	20.6
50°-60°	300.8	15.2
60°-70°	129.9	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°	704.2	35.5
0°-40°	1130.9	57.0
0°-60°	1840.9	92.7
0°-90°	1985.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1985.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	929	929	929	929	929	
5°	911	920	923	924	925	87
15°	875	880	876	878	879	247
25°	798	797	798	800	804	366
35°	680	684	686	685	674	425
45°	529	531	541	533	524	402
55°	306	338	376	337	308	276
65°	100	125	164	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°	929.2	929.2	929.2	929.2	929.2	929.2	929.2	929.2	929.2	929.2	929.2
2.5°	922.6	933.2	934.5	927.9	925.3	921.3	930.5	924.0	926.6	924.0	922.6
5°	910.8	922.6	924.0	924.0	921.3	920.0	924.0	922.6	921.3	918.7	922.6
7.5°	905.5	912.1	918.7	910.8	914.7	913.4	922.6	918.7	917.3	917.3	914.7
10°	908.1	906.8	912.1	904.1	906.8	904.1	912.1	912.1	909.4	906.8	905.5
12.5°	887.0	897.5	897.5	896.2	893.6	889.6	897.5	902.9	894.9	894.9	893.6
15°	875.1	877.8	879.0	879.0	877.8	880.4	884.3	879.0	880.4	873.8	876.4
17.5°	861.9	856.6	860.6	857.9	859.3	861.9	867.2	867.2	859.3	857.9	860.6
20°	831.6	847.4	848.7	840.8	842.1	842.1	851.4	843.5	848.7	842.1	844.7
22.5°	817.0	827.6	828.9	818.4	824.9	817.0	826.3	814.4	827.6	818.4	822.3
25°	798.5	797.2	801.2	795.9	797.2	797.2	803.8	798.5	802.5	797.2	798.5
27.5°	768.2	778.8	777.4	772.2	774.8	773.5	786.7	772.2	780.1	773.5	776.1
30°	741.8	751.0	748.4	743.1	743.1	739.1	753.7	749.7	748.4	748.4	747.1
32.5°	715.4	716.7	714.1	715.4	716.7	711.5	723.3	718.0	716.7	718.0	719.4
35°	679.7	679.7	682.4	678.4	683.7	683.7	694.3	687.7	686.4	682.4	686.4
37.5°	648.1	644.1	645.4	645.4	648.1	650.7	656.0	653.3	653.3	649.4	652.1
40°	605.9	603.2	607.1	607.1	611.1	611.1	616.4	613.8	617.7	617.7	617.7
42.5°	568.9	568.9	566.3	570.2	571.5	570.2	579.5	578.1	579.5	576.8	578.1
45°	529.3	529.3	526.6	525.3	531.9	530.6	541.2	537.2	542.5	539.8	541.2
47.5°	475.1	481.8	477.8	481.8	489.7	491.0	497.6	495.0	500.2	496.3	501.6
50°	423.7	423.7	427.7	432.9	440.8	442.2	450.1	455.4	458.0	459.3	460.7
52.5°	369.6	368.2	372.2	378.8	385.4	390.7	398.6	406.5	411.8	419.7	415.7
55°	306.2	308.8	312.8	320.8	331.3	337.9	344.5	355.1	364.3	368.2	376.2
57.5°	252.1	249.4	252.1	262.6	274.5	279.8	289.1	299.6	312.8	320.8	323.4
60°	195.3	196.7	199.3	208.6	217.8	225.7	229.7	246.8	258.7	266.6	271.9
62.5°	143.9	146.5	149.2	157.1	166.3	172.9	179.5	194.0	204.6	212.5	217.8
65°	100.3	101.6	105.6	109.5	118.8	125.4	130.6	142.6	153.1	159.7	163.7
67.5°	62.0	63.3	66.0	71.3	77.9	83.1	88.4	96.3	105.6	112.2	113.5
70°	31.7	33.0	34.3	38.3	43.6	46.2	50.1	56.8	63.3	68.6	71.3
72.5°	10.6	10.6	11.9	14.5	17.2	19.8	21.1	27.7	33.0	35.7	36.9
75°	2.6	2.6	2.6	2.6	2.6	4.0	4.0	7.9	10.6	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°	929.2	929.2	929.2	929.2	929.2	929.2	929.2	929.2	929.2	929.2
2.5°	929.2	926.6	925.3	926.6	926.6	925.3	929.2	934.5	941.1	924.0
5°	927.9	925.3	927.9	920.0	924.0	921.3	926.6	925.3	930.5	925.3
7.5°	924.0	918.7	920.0	916.0	921.3	914.7	918.7	926.6	921.3	913.4
10°	910.8	908.1	917.3	904.1	901.5	906.8	917.3	909.4	906.8	909.4
12.5°	897.5	897.5	901.5	891.0	892.2	894.9	900.2	894.9	897.5	904.1
15°	883.0	880.4	887.0	879.0	877.8	875.1	880.4	880.4	883.0	879.0
17.5°	865.9	861.9	861.9	859.3	857.9	864.6	867.2	868.5	869.8	864.6
20°	844.7	843.5	847.4	843.5	844.7	846.1	846.1	843.5	855.3	840.8
22.5°	822.3	826.3	821.0	818.4	821.0	823.6	823.6	824.9	822.3	819.6
25°	799.9	802.5	803.8	795.9	799.9	795.9	805.2	806.5	801.2	803.8
27.5°	780.1	776.1	774.8	769.5	772.2	770.9	772.2	772.2	780.1	769.5
30°	749.7	745.8	747.1	743.1	744.4	743.1	744.4	744.4	749.7	748.4
32.5°	720.7	716.7	718.0	714.1	714.1	715.4	712.8	712.8	716.7	714.1
35°	692.9	683.7	685.0	683.7	685.0	679.7	679.7	678.4	681.1	674.5
37.5°	653.3	649.4	648.1	646.8	648.1	645.4	648.1	644.1	648.1	642.8
40°	617.7	615.1	616.4	608.5	608.5	609.8	607.1	605.9	607.1	612.4
42.5°	582.1	576.8	574.2	571.5	572.8	568.9	567.6	564.9	567.6	562.3
45°	539.8	539.8	538.5	531.9	533.3	533.3	528.0	522.7	524.0	524.0
47.5°	501.6	499.0	497.6	491.0	489.7	488.4	483.1	479.1	479.1	475.1
50°	459.3	456.7	452.7	446.1	443.5	435.6	431.6	426.4	421.1	421.1
52.5°	419.7	410.5	405.2	394.6	390.7	386.7	376.2	372.2	368.2	364.3
55°	372.2	364.3	353.8	341.9	336.6	330.0	319.4	311.5	306.2	307.6
57.5°	326.0	312.8	302.3	286.4	279.8	275.8	265.3	254.7	249.4	249.4
60°	269.3	258.7	245.5	231.0	225.7	219.1	205.9	199.3	195.3	191.4
62.5°	215.1	207.2	195.3	176.9	172.9	166.3	157.1	149.2	145.2	145.2
65°	161.0	153.1	142.6	129.4	124.1	118.8	110.9	103.0	99.0	97.7
67.5°	113.5	104.3	95.1	84.5	80.5	77.9	70.0	64.7	62.0	60.7
70°	68.6	63.3	56.8	48.8	44.9	42.2	36.9	33.0	31.7	30.4
72.5°	35.7	31.7	26.4	21.1	18.5	15.8	13.2	10.6	9.3	9.3
75°	13.2	10.6	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)