

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-MMS**

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

**Summary**

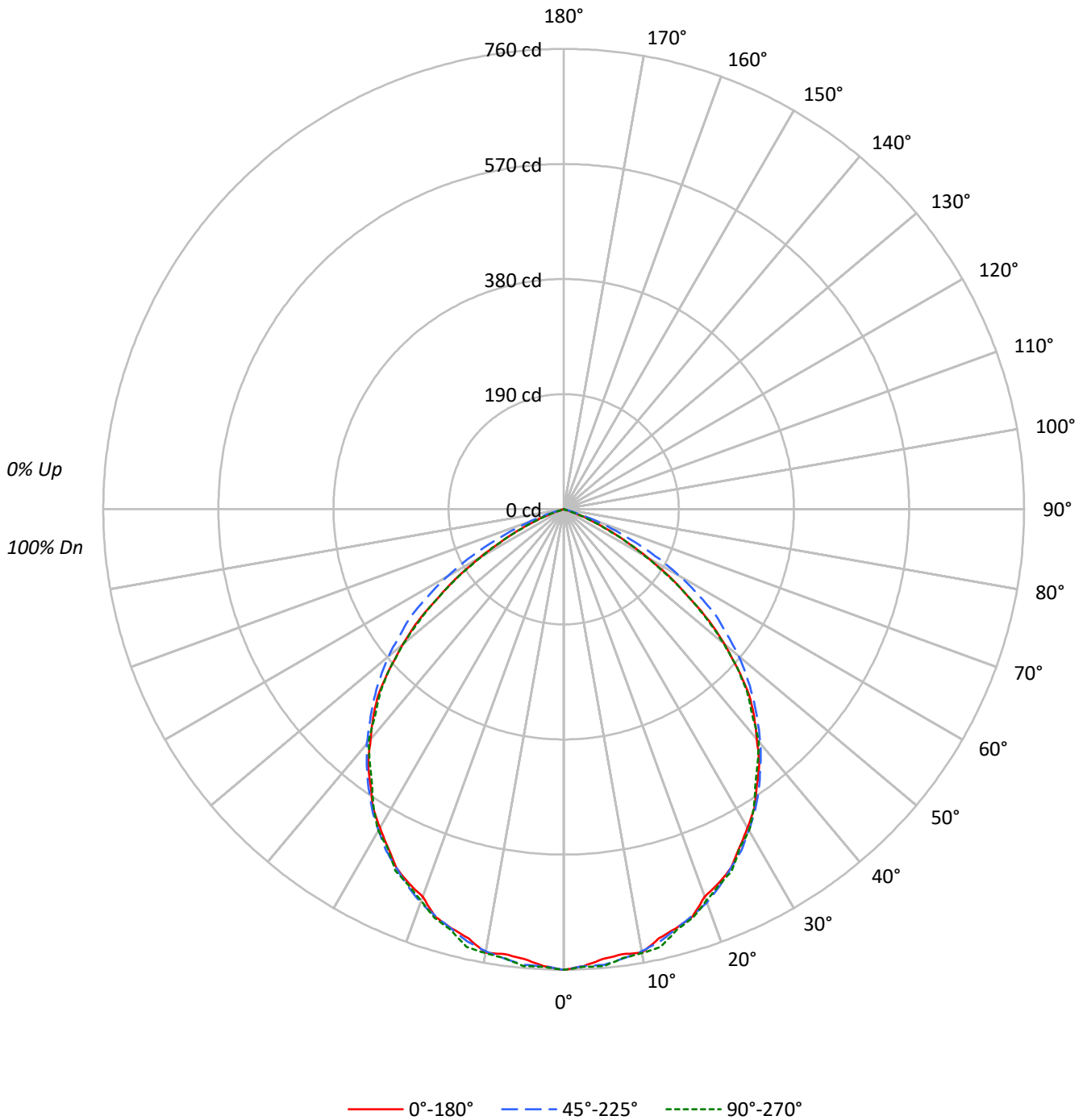
Lumens per Lamp: N/A  
 Luminaire Lumens: 1624.0 lumens  
 Efficiency: N/A  
 Efficacy: 74.5 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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	33				33
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°	73351	73351	73351
5°	72168	73108	73321
10°	72797	72582	72895
15°	71523	71623	71843
20°	69854	70963	70634
25°	69553	69553	70011
30°	67618	68097	68220
35°	65504	66140	64997
40°	62437	63659	63105
45°	59085	60423	58499
50°	52043	56576	51713
55°	42140	51779	42325
60°	30838	42938	30220
65°	18744	30571	18242
70°	7307	16447	6996
75°	820	4436	820
80°	611	611	611
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	71.8	4.4
10°-20°	203.1	12.5
20°-30°	301.3	18.6
30°-40°	349.1	21.5
40°-50°	334.7	20.6
50°-60°	246.1	15.2
60°-70°	106.3	6.5
70°-80°	11.5	0.7
80°-90°	0.1	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°	576.1	35.5
0°-40°	925.2	57.0
0°-60°	1506.1	92.7
0°-90°	1624.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1624.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	760	760	760	760	760	
5°	745	753	755	756	757	71
15°	716	720	717	718	719	202
25°	653	652	653	654	658	299
35°	556	559	562	560	552	348
45°	433	434	443	436	429	329
55°	250	276	308	275	252	225
65°	82	103	134	102	80	84
75°	2	3	12	2	2	7
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°	760.2	760.2	760.2	760.2	760.2	760.2	760.2	760.2	760.2	760.2	760.2
2.5°	754.8	763.5	764.6	759.1	757.0	753.8	761.3	755.9	758.1	755.9	754.8
5°	745.1	754.8	755.9	755.9	753.8	752.7	755.9	754.8	753.8	751.6	754.8
7.5°	740.8	746.2	751.6	745.1	748.3	747.3	754.8	751.6	750.5	750.5	748.3
10°	743.0	741.9	746.2	739.7	741.9	739.7	746.2	746.2	744.0	741.9	740.8
12.5°	725.7	734.3	734.3	733.2	731.1	727.8	734.3	738.7	732.1	732.1	731.1
15°	716.0	718.1	719.2	719.2	718.1	720.3	723.5	719.2	720.3	714.9	717.0
17.5°	705.2	700.9	704.1	701.9	703.0	705.2	709.5	709.5	703.0	701.9	704.1
20°	680.3	693.3	694.4	687.9	689.0	689.0	696.5	690.1	694.4	689.0	691.1
22.5°	668.4	677.1	678.2	669.5	674.9	668.4	676.0	666.3	677.1	669.5	672.7
25°	653.3	652.3	655.5	651.2	652.3	652.3	657.6	653.3	656.6	652.3	653.3
27.5°	628.5	637.1	636.0	631.7	633.9	632.8	643.6	631.7	638.2	632.8	635.0
30°	606.9	614.5	612.3	608.0	608.0	604.7	616.6	613.4	612.3	612.3	611.2
32.5°	585.3	586.4	584.2	585.3	586.4	582.1	591.8	587.4	586.4	587.4	588.5
35°	556.1	556.1	558.3	555.1	559.4	559.4	568.0	562.6	561.5	558.3	561.5
37.5°	530.2	527.0	528.1	528.1	530.2	532.4	536.7	534.5	534.5	531.3	533.5
40°	495.7	493.5	496.7	496.7	500.0	500.0	504.3	502.1	505.4	505.4	505.4
42.5°	465.4	465.4	463.3	466.5	467.6	466.5	474.1	473.0	474.1	471.9	473.0
45°	433.0	433.0	430.9	429.8	435.2	434.1	442.8	439.5	443.8	441.7	442.8
47.5°	388.7	394.2	390.9	394.2	400.6	401.7	407.1	405.0	409.3	406.1	410.4
50°	346.7	346.7	349.9	354.2	360.7	361.8	368.2	372.6	374.7	375.8	376.9
52.5°	302.4	301.3	304.5	309.9	315.3	319.7	326.1	332.6	336.9	343.4	340.1
55°	250.5	252.7	255.9	262.4	271.1	276.4	281.8	290.5	298.1	301.3	307.8
57.5°	206.2	204.1	206.2	214.9	224.6	228.9	236.5	245.1	255.9	262.4	264.6
60°	159.8	160.9	163.1	170.6	178.2	184.7	187.9	201.9	211.7	218.1	222.5
62.5°	117.7	119.9	122.0	128.5	136.1	141.5	146.9	158.7	167.4	173.9	178.2
65°	82.1	83.1	86.4	89.6	97.2	102.6	106.9	116.6	125.3	130.7	133.9
67.5°	50.8	51.8	54.0	58.3	63.7	68.0	72.3	78.8	86.4	91.8	92.9
70°	25.9	27.0	28.1	31.3	35.6	37.8	41.0	46.4	51.8	56.1	58.3
72.5°	8.6	8.6	9.7	11.9	14.1	16.2	17.3	22.7	27.0	29.2	30.2
75°	2.2	2.2	2.2	2.2	2.2	3.3	3.3	6.5	8.6	10.8	11.9
77.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	2.2	2.2
80°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
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°	760.2	760.2	760.2	760.2	760.2	760.2	760.2	760.2	760.2	760.2
2.5°	760.2	758.1	757.0	758.1	758.1	757.0	760.2	764.6	769.9	755.9
5°	759.1	757.0	759.1	752.7	755.9	753.8	758.1	757.0	761.3	757.0
7.5°	755.9	751.6	752.7	749.4	753.8	748.3	751.6	758.1	753.8	747.3
10°	745.1	743.0	750.5	739.7	737.6	741.9	750.5	744.0	741.9	744.0
12.5°	734.3	734.3	737.6	728.9	730.0	732.1	736.5	732.1	734.3	739.7
15°	722.4	720.3	725.7	719.2	718.1	716.0	720.3	720.3	722.4	719.2
17.5°	708.4	705.2	705.2	703.0	701.9	707.3	709.5	710.5	711.6	707.3
20°	691.1	690.1	693.3	690.1	691.1	692.2	692.2	690.1	699.8	687.9
22.5°	672.7	676.0	671.7	669.5	671.7	673.8	673.8	674.9	672.7	670.6
25°	654.4	656.6	657.6	651.2	654.4	651.2	658.7	659.8	655.5	657.6
27.5°	638.2	635.0	633.9	629.6	631.7	630.7	631.7	631.7	638.2	629.6
30°	613.4	610.1	611.2	608.0	609.0	608.0	609.0	609.0	613.4	612.3
32.5°	589.6	586.4	587.4	584.2	584.2	585.3	583.1	583.1	586.4	584.2
35°	566.9	559.4	560.4	559.4	560.4	556.1	556.1	555.1	557.2	551.8
37.5°	534.5	531.3	530.2	529.2	530.2	528.1	530.2	527.0	530.2	525.9
40°	505.4	503.2	504.3	497.8	497.8	498.9	496.7	495.7	496.7	501.0
42.5°	476.2	471.9	469.8	467.6	468.7	465.4	464.3	462.2	464.3	460.0
45°	441.7	441.7	440.6	435.2	436.3	436.3	432.0	427.6	428.7	428.7
47.5°	410.4	408.2	407.1	401.7	400.6	399.6	395.2	392.0	392.0	388.7
50°	375.8	373.6	370.4	365.0	362.8	356.4	353.1	348.8	344.5	344.5
52.5°	343.4	335.8	331.5	322.9	319.7	316.4	307.8	304.5	301.3	298.1
55°	304.5	298.1	289.4	279.7	275.4	270.0	261.3	254.8	250.5	251.6
57.5°	266.7	255.9	247.3	234.4	228.9	225.7	217.0	208.4	204.1	204.1
60°	220.3	211.7	200.9	189.0	184.7	179.3	168.4	163.1	159.8	156.6
62.5°	176.0	169.5	159.8	144.7	141.5	136.1	128.5	122.0	118.8	118.8
65°	131.7	125.3	116.6	105.8	101.5	97.2	90.7	84.2	81.0	79.9
67.5°	92.9	85.3	77.8	69.1	65.9	63.7	57.2	52.9	50.8	49.7
70°	56.1	51.8	46.4	40.0	36.7	34.5	30.2	27.0	25.9	24.8
72.5°	29.2	25.9	21.6	17.3	15.1	13.0	10.8	8.6	7.6	7.6
75°	10.8	8.6	5.4	3.3	2.2	2.2	2.2	2.2	2.2	2.2
77.5°	2.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
80°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
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)