

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

Summary

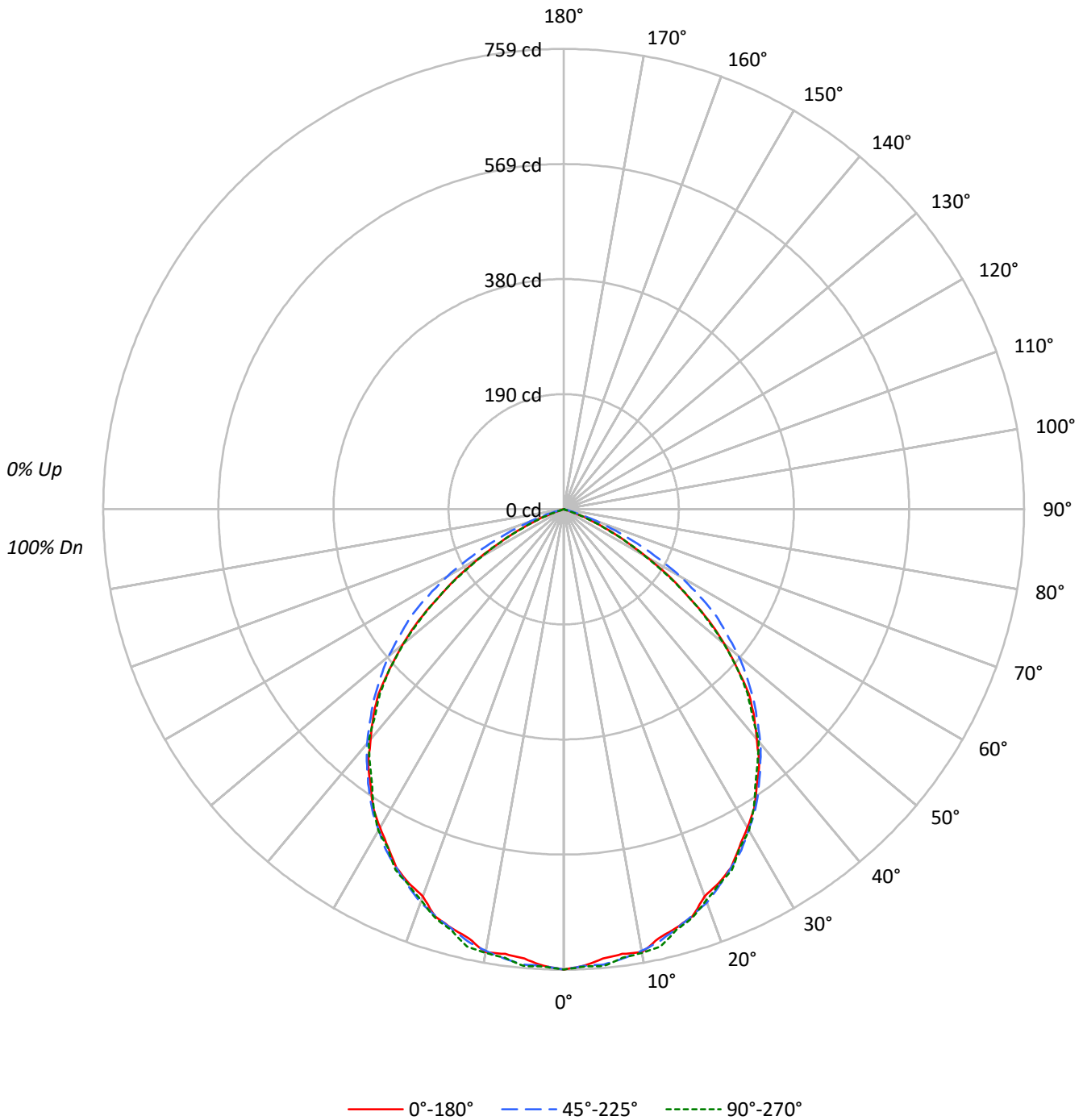
Lumens per Lamp: N/A
 Luminaire Lumens: 1621.0 lumens
 Efficiency: N/A
 Efficacy: 74.4 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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



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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	33
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°	73216	73216	73216
5°	72043	72972	73186
10°	72660	72444	72768
15°	71383	71493	71713
20°	69731	70830	70501
25°	69425	69425	69883
30°	67496	67975	68097
35°	65386	66022	64879
40°	62324	63533	62991
45°	58976	60300	58389
50°	51938	56471	51623
55°	42073	51678	42258
60°	30780	42841	30162
65°	18699	30503	18219
70°	7307	16419	6996
75°	820	4436	820
80°	611	611	611
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	71.6	4.4
10°-20°	202.7	12.5
20°-30°	300.7	18.6
30°-40°	348.5	21.5
40°-50°	334.1	20.6
50°-60°	245.7	15.2
60°-70°	106.1	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°	575.1	35.5
0°-40°	923.5	57.0
0°-60°	1503.3	92.7
0°-90°	1621.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1621.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	759	759	759	759	759	
5°	744	751	753	754	756	71
15°	715	719	716	717	718	201
25°	652	651	652	653	656	299
35°	555	558	560	559	551	347
45°	432	433	442	436	428	329
55°	250	276	307	275	251	225
65°	82	102	134	101	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°	758.8	758.8	758.8	758.8	758.8	758.8	758.8	758.8	758.8	758.8	758.8
2.5°	753.4	762.1	763.2	757.7	755.6	752.4	759.9	754.5	756.7	754.5	753.4
5°	743.8	753.4	754.5	754.5	752.4	751.3	754.5	753.4	752.4	750.2	753.4
7.5°	739.4	744.8	750.2	743.8	747.0	745.9	753.4	750.2	749.1	749.1	747.0
10°	741.6	740.5	744.8	738.3	740.5	738.3	744.8	744.8	742.7	740.5	739.4
12.5°	724.3	732.9	732.9	731.9	729.7	726.5	732.9	737.3	730.8	730.8	729.7
15°	714.6	716.8	717.9	717.9	716.8	719.0	722.2	717.9	719.0	713.5	715.7
17.5°	703.9	699.6	702.8	700.6	701.7	703.9	708.2	708.2	701.7	700.6	702.8
20°	679.1	692.0	693.1	686.6	687.7	687.7	695.2	688.8	693.1	687.7	689.8
22.5°	667.2	675.8	676.9	668.3	673.7	667.2	674.8	665.0	675.8	668.3	671.5
25°	652.1	651.1	654.3	650.0	651.1	651.1	656.4	652.1	655.4	651.1	652.1
27.5°	627.3	636.0	634.9	630.6	632.7	631.7	642.4	630.6	637.0	631.7	633.8
30°	605.8	613.3	611.2	606.9	606.9	603.6	615.5	612.2	611.2	611.2	610.1
32.5°	584.2	585.3	583.1	584.2	585.3	581.0	590.7	586.4	585.3	586.4	587.5
35°	555.1	555.1	557.2	554.0	558.3	558.3	567.0	561.6	560.5	557.2	560.5
37.5°	529.2	526.0	527.1	527.1	529.2	531.4	535.7	533.5	533.5	530.3	532.5
40°	494.8	492.6	495.8	495.8	499.1	499.1	503.4	501.2	504.4	504.4	504.4
42.5°	464.6	464.6	462.4	465.6	466.7	465.6	473.2	472.1	473.2	471.0	472.1
45°	432.2	432.2	430.1	429.0	434.4	433.3	441.9	438.7	443.0	440.8	441.9
47.5°	388.0	393.4	390.2	393.4	399.9	401.0	406.4	404.2	408.5	405.3	409.6
50°	346.0	346.0	349.2	353.5	360.0	361.1	367.6	371.9	374.0	375.1	376.2
52.5°	301.8	300.7	304.0	309.3	314.8	319.1	325.5	332.0	336.3	342.8	339.5
55°	250.1	252.2	255.5	261.9	270.6	275.9	281.3	289.9	297.5	300.7	307.2
57.5°	205.9	203.7	205.9	214.5	224.2	228.5	236.1	244.7	255.5	261.9	264.1
60°	159.5	160.6	162.8	170.3	177.8	184.3	187.6	201.6	211.3	217.7	222.0
62.5°	117.5	119.7	121.8	128.3	135.8	141.2	146.6	158.5	167.1	173.5	177.8
65°	81.9	83.0	86.2	89.5	97.0	102.4	106.7	116.4	125.0	130.4	133.6
67.5°	50.7	51.7	53.9	58.2	63.6	67.9	72.2	78.7	86.2	91.6	92.7
70°	25.9	27.0	28.0	31.3	35.6	37.7	40.9	46.4	51.7	56.0	58.2
72.5°	8.6	8.6	9.7	11.9	14.0	16.2	17.2	22.6	27.0	29.1	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°	758.8	758.8	758.8	758.8	758.8	758.8	758.8	758.8	758.8	758.8
2.5°	758.8	756.7	755.6	756.7	756.7	755.6	758.8	763.2	768.5	754.5
5°	757.7	755.6	757.7	751.3	754.5	752.4	756.7	755.6	759.9	755.6
7.5°	754.5	750.2	751.3	748.1	752.4	747.0	750.2	756.7	752.4	745.9
10°	743.8	741.6	749.1	738.3	736.2	740.5	749.1	742.7	740.5	742.7
12.5°	732.9	732.9	736.2	727.6	728.6	730.8	735.1	730.8	732.9	738.3
15°	721.1	719.0	724.3	717.9	716.8	714.6	719.0	719.0	721.1	717.9
17.5°	707.1	703.9	703.9	701.7	700.6	706.0	708.2	709.2	710.3	706.0
20°	689.8	688.8	692.0	688.8	689.8	690.9	690.9	688.8	698.5	686.6
22.5°	671.5	674.8	670.4	668.3	670.4	672.6	672.6	673.7	671.5	669.3
25°	653.2	655.4	656.4	650.0	653.2	650.0	657.5	658.6	654.3	656.4
27.5°	637.0	633.8	632.7	628.4	630.6	629.5	630.6	630.6	637.0	628.4
30°	612.2	609.0	610.1	606.9	607.9	606.9	607.9	607.9	612.2	611.2
32.5°	588.5	585.3	586.4	583.1	583.1	584.2	582.0	582.0	585.3	583.1
35°	565.9	558.3	559.4	558.3	559.4	555.1	555.1	554.0	556.2	550.8
37.5°	533.5	530.3	529.2	528.2	529.2	527.1	529.2	526.0	529.2	524.9
40°	504.4	502.3	503.4	496.9	496.9	498.0	495.8	494.8	495.8	500.1
42.5°	475.4	471.0	468.9	466.7	467.8	464.6	463.5	461.3	463.5	459.2
45°	440.8	440.8	439.8	434.4	435.5	435.5	431.2	426.9	427.9	427.9
47.5°	409.6	407.5	406.4	401.0	399.9	398.8	394.5	391.3	391.3	388.0
50°	375.1	372.9	369.7	364.3	362.2	355.7	352.5	348.2	343.9	343.9
52.5°	342.8	335.2	330.9	322.3	319.1	315.8	307.2	304.0	300.7	297.5
55°	304.0	297.5	288.9	279.2	274.9	269.5	260.8	254.4	250.1	251.2
57.5°	266.2	255.5	246.8	233.9	228.5	225.3	216.6	208.0	203.7	203.7
60°	219.9	211.3	200.5	188.6	184.3	178.9	168.1	162.8	159.5	156.3
62.5°	175.7	169.2	159.5	144.4	141.2	135.8	128.3	121.8	118.6	118.6
65°	131.5	125.0	116.4	105.6	101.3	97.0	90.6	84.1	80.8	79.8
67.5°	92.7	85.1	77.6	69.0	65.7	63.6	57.1	52.8	50.7	49.6
70°	56.0	51.7	46.4	39.9	36.6	34.5	30.2	27.0	25.9	24.8
72.5°	29.1	25.9	21.5	17.2	15.1	12.9	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)