

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 FEU4C209050 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 FEU4C209050 F4LC-CSSQ-MMS
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

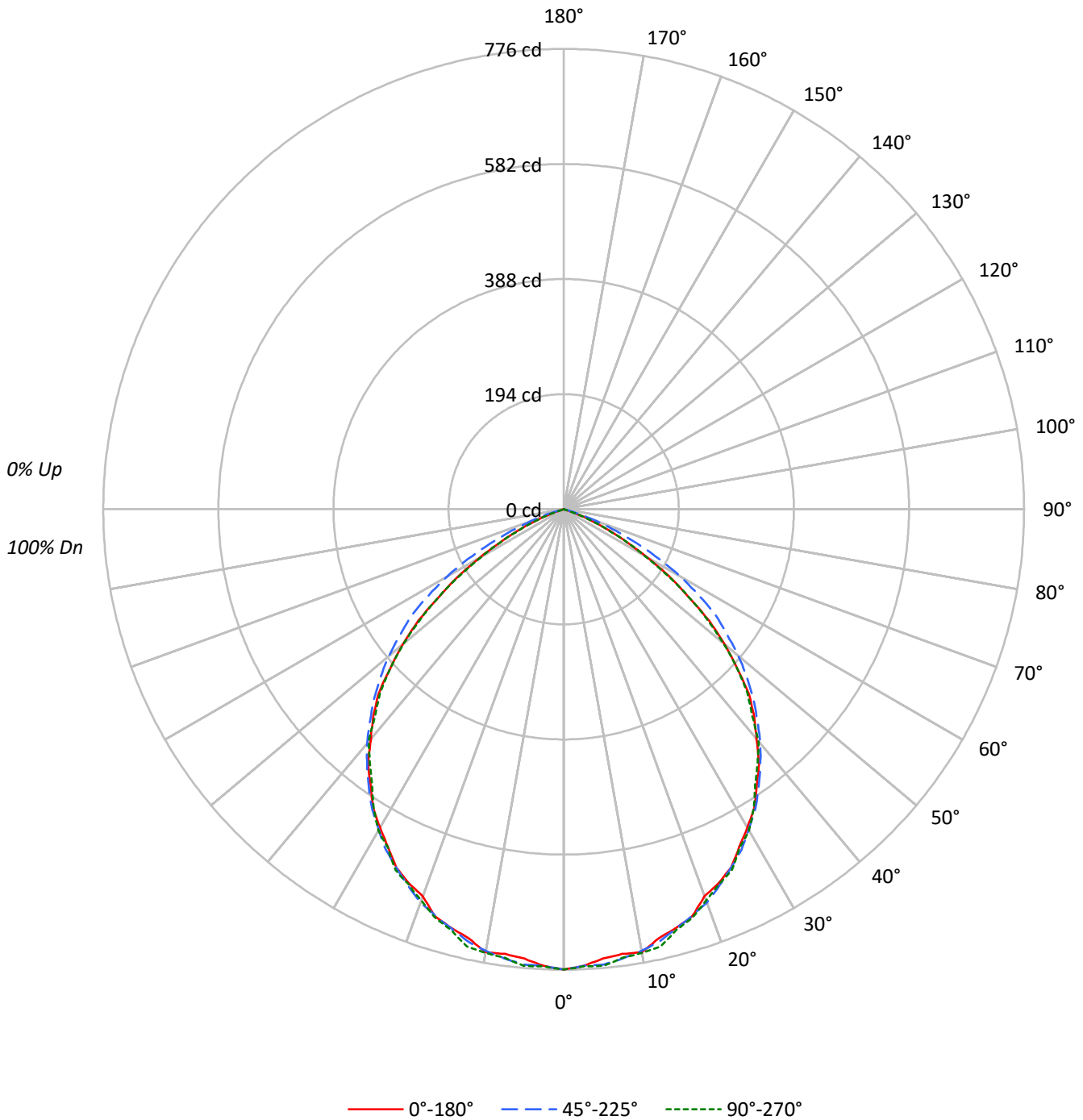
Lumens per Lamp: N/A
 Luminaire Lumens: 1657.0 lumens
 Efficiency: N/A
 Efficacy: 76.0 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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	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°	74846	74846	74846
5°	73641	74600	74813
10°	74277	74061	74384
15°	72972	73081	73301
20°	71271	72411	72072
25°	70969	70969	71437
30°	68989	69479	69601
35°	66835	67483	66316
40°	63697	64944	64389
45°	60286	61637	59686
50°	53094	57717	52764
55°	42998	52822	43183
60°	31475	43806	30838
65°	19133	31187	18607
70°	7448	16786	7166
75°	820	4511	820
80°	611	611	611
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	73.2	4.4
10°-20°	207.2	12.5
20°-30°	307.4	18.6
30°-40°	356.2	21.5
40°-50°	341.5	20.6
50°-60°	251.1	15.2
60°-70°	108.5	6.5
70°-80°	11.7	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°	587.8	35.5
0°-40°	944.0	57.0
0°-60°	1536.7	92.7
0°-90°	1657.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1657.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	776	776	776	776	776	
5°	760	768	770	771	772	73
15°	730	735	732	733	734	206
25°	667	666	667	668	671	305
35°	567	571	573	572	563	355
45°	442	443	452	445	437	336
55°	256	282	314	281	257	230
65°	84	105	137	104	82	86
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°	775.7	775.7	775.7	775.7	775.7	775.7	775.7	775.7	775.7	775.7	775.7
2.5°	770.2	779.0	780.1	774.6	772.4	769.1	776.8	771.3	773.5	771.3	770.2
5°	760.3	770.2	771.3	771.3	769.1	768.0	771.3	770.2	769.1	766.9	770.2
7.5°	755.9	761.4	766.9	760.3	763.6	762.5	770.2	766.9	765.8	765.8	763.6
10°	758.1	756.9	761.4	754.7	756.9	754.7	761.4	761.4	759.2	756.9	755.9
12.5°	740.4	749.2	749.2	748.1	745.9	742.6	749.2	753.7	747.0	747.0	745.9
15°	730.5	732.7	733.8	733.8	732.7	734.9	738.2	733.8	734.9	729.4	731.6
17.5°	719.5	715.1	718.4	716.2	717.3	719.5	723.9	723.9	717.3	716.2	718.4
20°	694.1	707.4	708.5	701.9	703.0	703.0	710.7	704.1	708.5	703.0	705.2
22.5°	682.0	690.8	691.9	683.1	688.6	682.0	689.7	679.8	690.8	683.1	686.4
25°	666.6	665.5	668.8	664.4	665.5	665.5	671.0	666.6	669.9	665.5	666.6
27.5°	641.3	650.1	649.0	644.6	646.8	645.7	656.7	644.6	651.2	645.7	647.9
30°	619.2	626.9	624.7	620.3	620.3	617.0	629.1	625.8	624.7	624.7	623.6
32.5°	597.2	598.3	596.1	597.2	598.3	593.9	603.8	599.4	598.3	599.4	600.5
35°	567.4	567.4	569.6	566.3	570.7	570.7	579.6	574.0	572.9	569.6	572.9
37.5°	541.0	537.7	538.8	538.8	541.0	543.2	547.6	545.4	545.4	542.1	544.3
40°	505.7	503.5	506.8	506.8	510.1	510.1	514.6	512.3	515.6	515.6	515.6
42.5°	474.9	474.9	472.7	476.0	477.1	476.0	483.7	482.6	483.7	481.5	482.6
45°	441.8	441.8	439.6	438.5	444.0	442.9	451.7	448.4	452.8	450.6	451.7
47.5°	396.6	402.2	398.8	402.2	408.8	409.9	415.4	413.2	417.6	414.3	418.7
50°	353.7	353.7	357.0	361.4	368.0	369.1	375.7	380.1	382.3	383.4	384.5
52.5°	308.5	307.4	310.7	316.2	321.7	326.1	332.8	339.4	343.8	350.4	347.1
55°	255.6	257.8	261.1	267.7	276.6	282.0	287.6	296.4	304.1	307.4	314.0
57.5°	210.4	208.2	210.4	219.2	229.2	233.6	241.3	250.1	261.1	267.7	270.0
60°	163.1	164.2	166.4	174.1	181.8	188.4	191.7	206.0	216.0	222.6	227.0
62.5°	120.1	122.3	124.5	131.1	138.8	144.3	149.8	162.0	170.8	177.4	181.8
65°	83.8	84.8	88.2	91.4	99.2	104.7	109.1	119.0	127.8	133.3	136.6
67.5°	51.8	52.9	55.1	59.5	65.0	69.4	73.8	80.4	88.2	93.6	94.8
70°	26.4	27.6	28.6	32.0	36.4	38.6	41.9	47.4	52.9	57.3	59.5
72.5°	8.8	8.8	9.9	12.1	14.3	16.5	17.6	23.2	27.6	29.8	30.8
75°	2.2	2.2	2.2	2.2	2.2	3.3	3.3	6.6	8.8	11.0	12.1
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°	775.7	775.7	775.7	775.7	775.7	775.7	775.7	775.7	775.7	775.7
2.5°	775.7	773.5	772.4	773.5	773.5	772.4	775.7	780.1	785.6	771.3
5°	774.6	772.4	774.6	768.0	771.3	769.1	773.5	772.4	776.8	772.4
7.5°	771.3	766.9	768.0	764.7	769.1	763.6	766.9	773.5	769.1	762.5
10°	760.3	758.1	765.8	754.7	752.5	756.9	765.8	759.2	756.9	759.2
12.5°	749.2	749.2	752.5	743.7	744.8	747.0	751.4	747.0	749.2	754.7
15°	737.1	734.9	740.4	733.8	732.7	730.5	734.9	734.9	737.1	733.8
17.5°	722.8	719.5	719.5	717.3	716.2	721.7	723.9	725.0	726.1	721.7
20°	705.2	704.1	707.4	704.1	705.2	706.3	706.3	704.1	714.0	701.9
22.5°	686.4	689.7	685.3	683.1	685.3	687.5	687.5	688.6	686.4	684.2
25°	667.7	669.9	671.0	664.4	667.7	664.4	672.1	673.2	668.8	671.0
27.5°	651.2	647.9	646.8	642.4	644.6	643.5	644.6	644.6	651.2	642.4
30°	625.8	622.5	623.6	620.3	621.4	620.3	621.4	621.4	625.8	624.7
32.5°	601.6	598.3	599.4	596.1	596.1	597.2	595.0	595.0	598.3	596.1
35°	578.4	570.7	571.8	570.7	571.8	567.4	567.4	566.3	568.5	563.0
37.5°	545.4	542.1	541.0	539.9	541.0	538.8	541.0	537.7	541.0	536.6
40°	515.6	513.4	514.6	507.9	507.9	509.0	506.8	505.7	506.8	511.2
42.5°	485.9	481.5	479.3	477.1	478.2	474.9	473.8	471.6	473.8	469.4
45°	450.6	450.6	449.5	444.0	445.1	445.1	440.7	436.3	437.4	437.4
47.5°	418.7	416.5	415.4	409.9	408.8	407.7	403.2	400.0	400.0	396.6
50°	383.4	381.2	377.9	372.4	370.2	363.6	360.3	355.9	351.5	351.5
52.5°	350.4	342.6	338.2	329.4	326.1	322.8	314.0	310.7	307.4	304.1
55°	310.7	304.1	295.3	285.4	281.0	275.4	266.6	260.0	255.6	256.7
57.5°	272.2	261.1	252.3	239.1	233.6	230.3	221.4	212.6	208.2	208.2
60°	224.8	216.0	204.9	192.8	188.4	182.9	171.9	166.4	163.1	159.8
62.5°	179.6	173.0	163.1	147.6	144.3	138.8	131.1	124.5	121.2	121.2
65°	134.4	127.8	119.0	108.0	103.6	99.2	92.6	86.0	82.6	81.5
67.5°	94.8	87.0	79.3	70.5	67.2	65.0	58.4	54.0	51.8	50.7
70°	57.3	52.9	47.4	40.8	37.4	35.2	30.8	27.6	26.4	25.4
72.5°	29.8	26.4	22.0	17.6	15.4	13.2	11.0	8.8	7.7	7.7
75°	11.0	8.8	5.5	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)