

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: **FLDSQ4C90D010 FEU4C909050 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: FLDSQ4C90D010 FEU4C909050 F4LC-CSSQ-MW
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

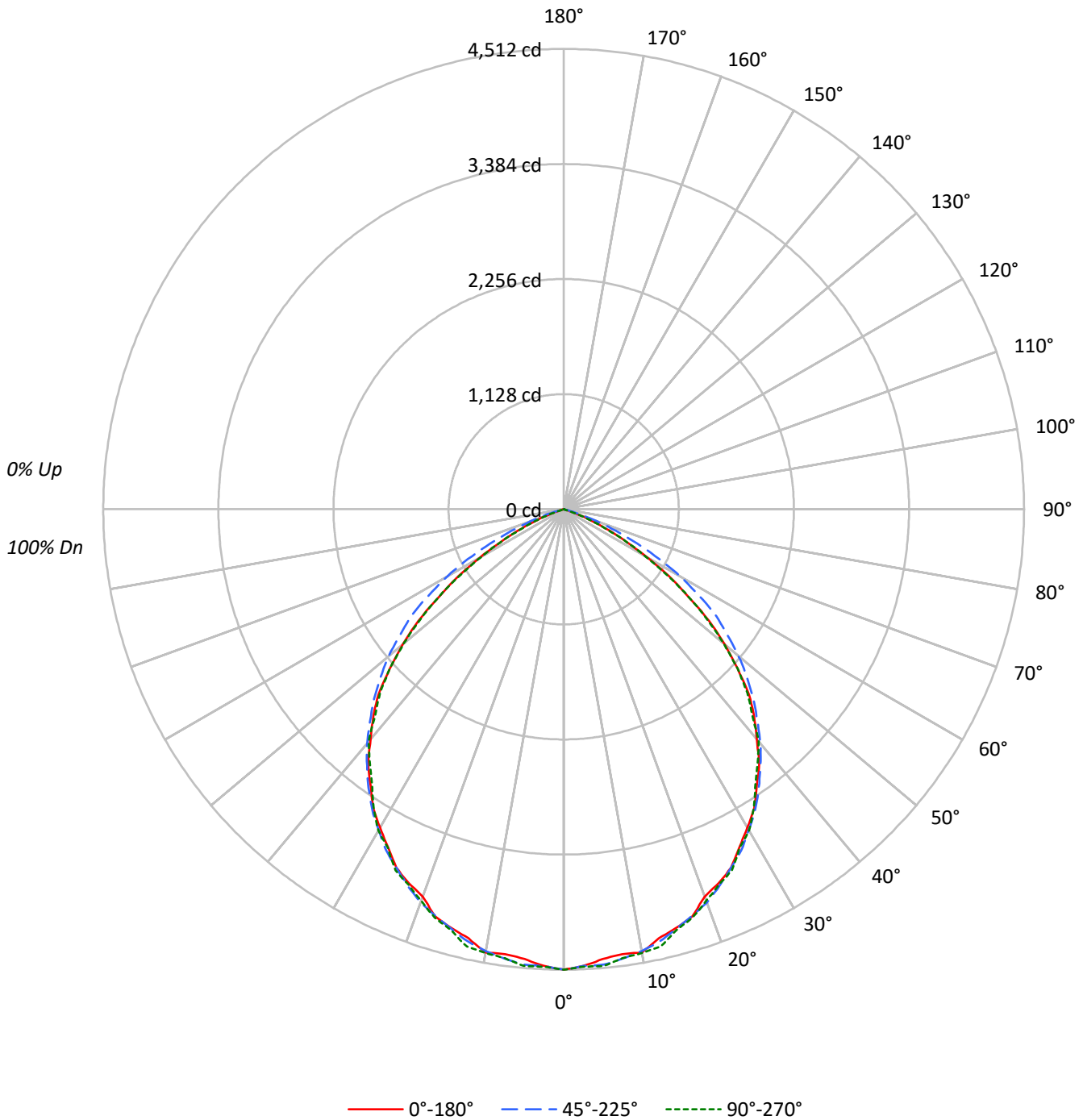
Lumens per Lamp: N/A
 Luminaire Lumens: 9638.0 lumens
 Efficiency: N/A
 Efficacy: 99.3 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 97.1
 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	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°	435339	435339	435339
5°	428323	433892	435132
10°	432012	430758	432629
15°	424454	425073	426362
20°	414576	421158	419197
25°	412781	412781	415517
30°	401275	404138	404863
35°	388758	392551	385743
40°	370529	377771	374547
45°	350664	358552	347171
50°	308821	335751	306900
55°	250114	307243	251208
60°	183020	254769	179334
65°	111211	181417	108288
70°	43389	97668	41612
75°	4772	26320	4772
80°	3612	3612	3612
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	425.9	4.4
10°-20°	1205.1	12.5
20°-30°	1788.1	18.6
30°-40°	2071.9	21.5
40°-50°	1986.5	20.6
50°-60°	1460.6	15.2
60°-70°	630.8	6.5
70°-80°	68.1	0.7
80°-90°	0.9	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°	3419.1	35.5
0°-40°	5491.1	57.0
0°-60°	8938.2	92.7
0°-90°	9638.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	9638.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4512	4512	4512	4512	4512	
5°	4422	4467	4480	4486	4492	422
15°	4249	4275	4255	4262	4268	1198
25°	3877	3871	3877	3884	3903	1775
35°	3300	3320	3333	3326	3275	2064
45°	2570	2576	2628	2589	2544	1954
55°	1487	1640	1826	1634	1493	1338
65°	487	609	795	602	474	501
75°	13	19	71	13	13	39
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8
2.5°	4479.7	4530.9	4537.5	4505.3	4492.5	4473.4	4518.1	4486.2	4499.0	4486.2	4479.7
5°	4422.2	4479.7	4486.2	4486.2	4473.4	4466.9	4486.2	4479.7	4473.4	4460.6	4479.7
7.5°	4396.5	4428.4	4460.6	4422.2	4441.2	4435.0	4479.7	4460.6	4454.1	4454.1	4441.2
10°	4409.3	4402.8	4428.4	4390.0	4402.8	4390.0	4428.4	4428.4	4415.6	4402.8	4396.5
12.5°	4306.6	4357.8	4357.8	4351.6	4338.7	4319.4	4357.8	4383.7	4345.0	4345.0	4338.7
15°	4249.1	4261.9	4268.2	4268.2	4261.9	4274.7	4293.8	4268.2	4274.7	4242.5	4255.3
17.5°	4185.0	4159.4	4178.5	4165.7	4172.2	4185.0	4210.6	4210.6	4172.2	4165.7	4178.5
20°	4037.5	4114.4	4120.9	4082.5	4088.8	4088.8	4133.7	4095.3	4120.9	4088.8	4101.6
22.5°	3966.9	4018.2	4024.7	3973.5	4005.4	3966.9	4011.9	3954.1	4018.2	3973.5	3992.6
25°	3877.2	3871.0	3890.1	3864.4	3871.0	3871.0	3902.9	3877.2	3896.6	3871.0	3877.2
27.5°	3730.0	3781.3	3774.7	3749.1	3761.9	3755.6	3819.7	3749.1	3787.5	3755.6	3768.5
30°	3601.6	3646.6	3633.8	3608.2	3608.2	3588.8	3659.4	3640.1	3633.8	3633.8	3627.3
32.5°	3473.5	3480.0	3467.2	3473.5	3480.0	3454.4	3511.9	3486.3	3480.0	3486.3	3492.9
35°	3300.4	3300.4	3313.2	3294.1	3319.8	3319.8	3371.0	3338.9	3332.6	3313.2	3332.6
37.5°	3146.7	3127.6	3133.8	3133.8	3146.7	3159.5	3185.1	3172.3	3172.3	3153.2	3166.0
40°	2941.7	2928.8	2947.9	2947.9	2967.3	2967.3	2992.9	2980.1	2999.2	2999.2	2999.2
42.5°	2762.3	2762.3	2749.5	2768.6	2775.1	2768.6	2813.5	2807.0	2813.5	2800.7	2807.0
45°	2569.8	2569.8	2557.0	2550.7	2582.6	2576.4	2627.6	2608.3	2633.9	2621.1	2627.6
47.5°	2307.0	2339.2	2319.9	2339.2	2377.6	2384.2	2416.1	2403.3	2428.9	2409.8	2435.4
50°	2057.3	2057.3	2076.4	2102.0	2140.5	2147.0	2185.5	2211.1	2223.9	2230.2	2236.7
52.5°	1794.5	1788.0	1807.4	1839.3	1871.4	1897.0	1935.5	1973.9	1999.5	2038.0	2018.6
55°	1486.8	1499.6	1518.9	1557.4	1608.6	1640.5	1672.7	1723.9	1768.9	1788.0	1826.4
57.5°	1224.0	1211.2	1224.0	1275.2	1333.0	1358.7	1403.6	1454.9	1518.9	1557.4	1570.2
60°	948.4	954.9	967.7	1012.7	1057.4	1095.9	1115.2	1198.4	1256.2	1294.6	1320.2
62.5°	698.7	711.5	724.3	762.7	807.5	839.6	871.5	942.1	993.4	1031.8	1057.4
65°	487.1	493.4	512.8	531.9	576.8	608.7	634.4	692.1	743.4	775.5	794.6
67.5°	301.2	307.5	320.3	346.2	378.1	403.7	429.4	467.8	512.8	544.7	551.2
70°	153.8	160.3	166.6	185.9	211.5	224.3	243.4	275.6	307.5	333.1	346.2
72.5°	51.3	51.3	57.8	70.6	83.4	96.2	102.5	134.7	160.3	173.1	179.4
75°	12.8	12.8	12.8	12.8	12.8	19.3	19.3	38.4	51.3	64.1	70.6
77.5°	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	12.8	12.8
80°	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
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°	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8	4511.8
2.5°	4511.8	4499.0	4492.5	4499.0	4499.0	4492.5	4511.8	4537.5	4569.4	4486.2
5°	4505.3	4492.5	4505.3	4466.9	4486.2	4473.4	4499.0	4492.5	4518.1	4492.5
7.5°	4486.2	4460.6	4466.9	4447.8	4473.4	4441.2	4460.6	4499.0	4473.4	4435.0
10°	4422.2	4409.3	4454.1	4390.0	4377.2	4402.8	4454.1	4415.6	4402.8	4415.6
12.5°	4357.8	4357.8	4377.2	4325.9	4332.2	4345.0	4370.7	4345.0	4357.8	4390.0
15°	4287.5	4274.7	4306.6	4268.2	4261.9	4249.1	4274.7	4274.7	4287.5	4268.2
17.5°	4204.1	4185.0	4185.0	4172.2	4165.7	4197.8	4210.6	4216.9	4223.4	4197.8
20°	4101.6	4095.3	4114.4	4095.3	4101.6	4108.1	4108.1	4095.3	4152.8	4082.5
22.5°	3992.6	4011.9	3986.3	3973.5	3986.3	3999.1	3999.1	4005.4	3992.6	3979.7
25°	3883.8	3896.6	3902.9	3864.4	3883.8	3864.4	3909.4	3915.7	3890.1	3902.9
27.5°	3787.5	3768.5	3761.9	3736.3	3749.1	3742.8	3749.1	3749.1	3787.5	3736.3
30°	3640.1	3621.0	3627.3	3608.2	3614.5	3608.2	3614.5	3614.5	3640.1	3633.8
32.5°	3499.1	3480.0	3486.3	3467.2	3467.2	3473.5	3460.7	3460.7	3480.0	3467.2
35°	3364.5	3319.8	3326.0	3319.8	3326.0	3300.4	3300.4	3294.1	3306.9	3274.8
37.5°	3172.3	3153.2	3146.7	3140.4	3146.7	3133.8	3146.7	3127.6	3146.7	3121.0
40°	2999.2	2986.4	2992.9	2954.5	2954.5	2960.7	2947.9	2941.7	2947.9	2973.6
42.5°	2826.3	2800.7	2787.9	2775.1	2781.4	2762.3	2755.7	2742.9	2755.7	2730.1
45°	2621.1	2621.1	2614.8	2582.6	2589.2	2589.2	2563.6	2537.9	2544.2	2544.2
47.5°	2435.4	2422.6	2416.1	2384.2	2377.6	2371.4	2345.5	2326.4	2326.4	2307.0
50°	2230.2	2217.4	2198.3	2166.1	2153.3	2114.9	2095.8	2070.1	2044.5	2044.5
52.5°	2038.0	1993.0	1967.4	1916.1	1897.0	1877.7	1826.4	1807.4	1788.0	1768.9
55°	1807.4	1768.9	1717.7	1659.9	1634.3	1602.1	1550.8	1512.4	1486.8	1493.3
57.5°	1583.0	1518.9	1467.7	1390.8	1358.7	1339.3	1288.1	1236.8	1211.2	1211.2
60°	1307.4	1256.2	1192.1	1121.5	1095.9	1064.0	999.6	967.7	948.4	929.3
62.5°	1044.6	1006.2	948.4	858.7	839.6	807.5	762.7	724.3	705.0	705.0
65°	781.8	743.4	692.1	628.1	602.5	576.8	538.4	499.9	480.6	474.3
67.5°	551.2	506.2	461.5	410.3	390.9	378.1	339.7	314.0	301.2	294.7
70°	333.1	307.5	275.6	237.2	217.8	205.0	179.4	160.3	153.8	147.5
72.5°	173.1	153.8	128.1	102.5	89.7	76.9	64.1	51.3	45.0	45.0
75°	64.1	51.3	32.2	19.3	12.8	12.8	12.8	12.8	12.8	12.8
77.5°	12.8	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
80°	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
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)