

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 FEU4C909027 F4LC-DFSSQ-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 FEU4C909027 F4LC-DFSSQ-MW
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

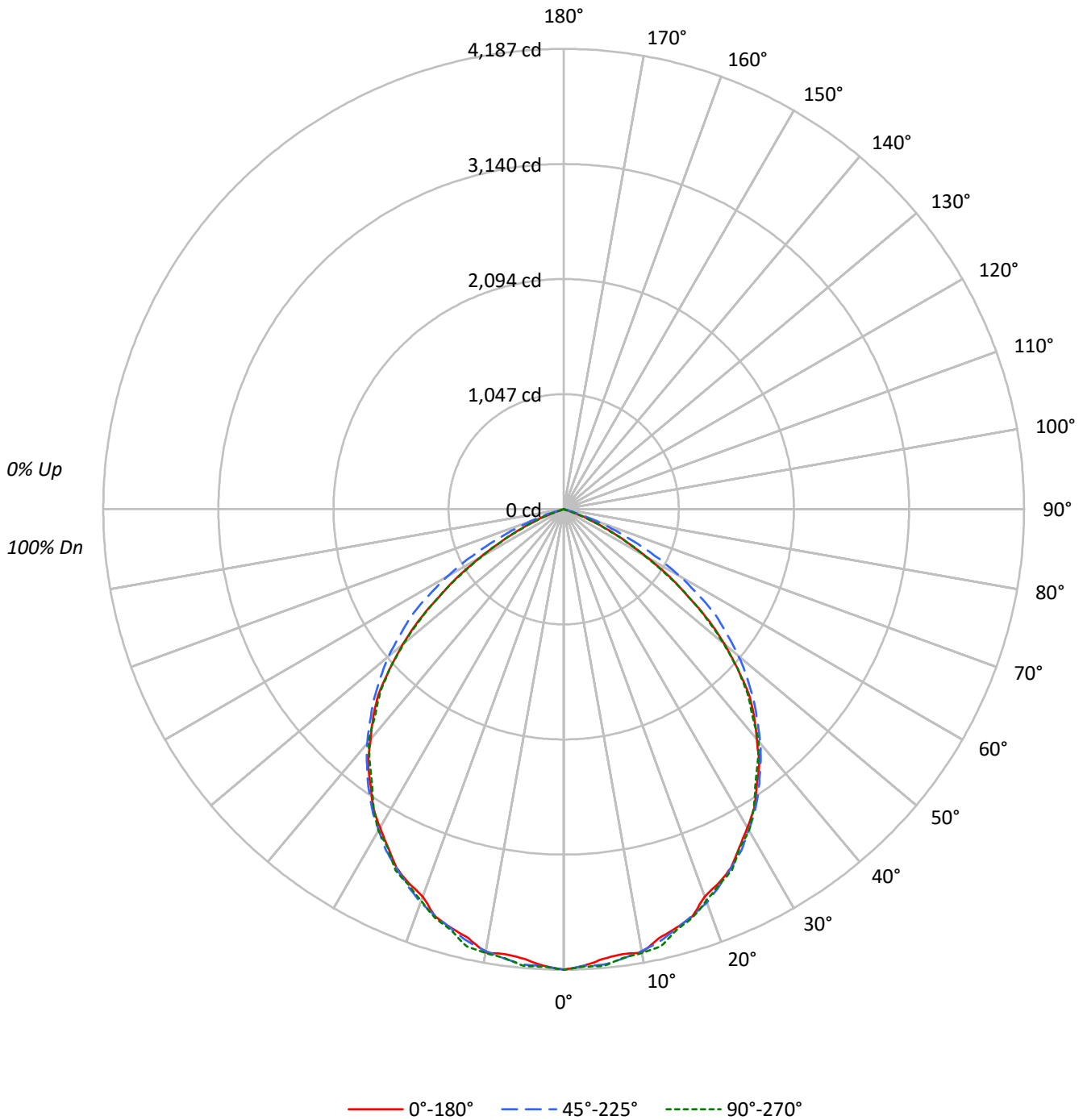
Lumens per Lamp: N/A
 Luminaire Lumens: 8944.0 lumens
 Efficiency: N/A
 Efficacy: 92.1 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 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	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°	403999	403999	403999
5°	397474	402646	403799
10°	400904	399748	401482
15°	393887	394466	395655
20°	384726	390826	389008
25°	383067	383067	385590
30°	372385	375037	375705
35°	360771	364281	357967
40°	343838	350564	347567
45°	325420	332734	322172
50°	286590	311568	284804
55°	232098	285122	233124
60°	169840	236436	166424
65°	103220	168357	100503
70°	40258	90643	38621
75°	4436	24419	4436
80°	3390	3390	3390
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	395.2	4.4
10°-20°	1118.3	12.5
20°-30°	1659.4	18.6
30°-40°	1922.7	21.5
40°-50°	1843.5	20.6
50°-60°	1355.4	15.2
60°-70°	585.4	6.5
70°-80°	63.2	0.7
80°-90°	0.8	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°	3172.9	35.5
0°-40°	5095.7	57.0
0°-60°	8294.6	92.7
0°-90°	8944.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	8944.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4187	4187	4187	4187	4187	
5°	4104	4145	4157	4163	4169	392
15°	3943	3967	3949	3955	3961	1111
25°	3598	3592	3598	3604	3622	1647
35°	3063	3081	3093	3086	3039	1915
45°	2385	2391	2438	2403	2361	1813
55°	1380	1522	1695	1517	1386	1242
65°	452	565	737	559	440	465
75°	12	18	66	12	12	37
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°	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0
2.5°	4157.1	4204.7	4210.7	4180.9	4169.0	4151.3	4192.8	4163.2	4175.1	4163.2	4157.1
5°	4103.7	4157.1	4163.2	4163.2	4151.3	4145.2	4163.2	4157.1	4151.3	4139.4	4157.1
7.5°	4080.0	4109.6	4139.4	4103.7	4121.5	4115.6	4157.1	4139.4	4133.3	4133.3	4121.5
10°	4091.8	4085.8	4109.6	4073.9	4085.8	4073.9	4109.6	4109.6	4097.7	4085.8	4080.0
12.5°	3996.5	4044.0	4044.0	4038.2	4026.3	4008.4	4044.0	4068.1	4032.2	4032.2	4026.3
15°	3943.1	3955.0	3960.8	3960.8	3955.0	3966.9	3984.6	3960.8	3966.9	3937.0	3948.9
17.5°	3883.6	3859.9	3877.6	3865.7	3871.8	3883.6	3907.4	3907.4	3871.8	3865.7	3877.6
20°	3746.8	3818.1	3824.2	3788.5	3794.4	3794.4	3836.1	3800.4	3824.2	3794.4	3806.2
22.5°	3681.3	3728.8	3734.9	3687.3	3717.0	3681.3	3723.0	3669.4	3728.8	3687.3	3705.1
25°	3598.1	3592.2	3609.9	3586.2	3592.2	3592.2	3621.8	3598.1	3616.0	3592.2	3598.1
27.5°	3461.4	3509.0	3502.9	3479.1	3491.0	3485.2	3544.7	3479.1	3514.8	3485.2	3497.1
30°	3342.3	3384.0	3372.1	3348.4	3348.4	3330.4	3395.9	3378.0	3372.1	3372.1	3366.1
32.5°	3223.4	3229.5	3217.6	3223.4	3229.5	3205.7	3259.1	3235.3	3229.5	3235.3	3241.3
35°	3062.8	3062.8	3074.7	3056.9	3080.7	3080.7	3128.3	3098.4	3092.6	3074.7	3092.6
37.5°	2920.1	2902.4	2908.2	2908.2	2920.1	2932.0	2955.8	2943.9	2943.9	2926.1	2938.0
40°	2729.8	2717.9	2735.7	2735.7	2753.6	2753.6	2777.4	2765.5	2783.2	2783.2	2783.2
42.5°	2563.4	2563.4	2551.5	2569.2	2575.3	2569.2	2610.9	2604.9	2610.9	2599.0	2604.9
45°	2384.8	2384.8	2372.9	2367.1	2396.7	2390.9	2438.4	2420.5	2444.2	2432.4	2438.4
47.5°	2140.9	2170.8	2152.8	2170.8	2206.4	2212.5	2242.1	2230.2	2254.0	2236.3	2260.1
50°	1909.2	1909.2	1926.9	1950.7	1986.4	1992.4	2028.1	2051.9	2063.8	2069.6	2075.6
52.5°	1665.3	1659.3	1677.2	1706.8	1736.7	1760.4	1796.1	1831.8	1855.6	1891.2	1873.3
55°	1379.7	1391.6	1409.6	1445.2	1492.8	1522.4	1552.2	1599.8	1641.5	1659.3	1694.9
57.5°	1135.9	1124.0	1135.9	1183.4	1237.0	1260.8	1302.6	1350.1	1409.6	1445.2	1457.1
60°	880.1	886.2	898.1	939.8	981.3	1017.0	1034.9	1112.1	1165.7	1201.4	1225.2
62.5°	648.4	660.3	672.1	707.8	749.3	779.2	808.8	874.3	921.8	957.5	981.3
65°	452.1	457.9	475.8	493.6	535.3	564.9	588.7	642.3	689.9	719.7	737.4
67.5°	279.5	285.4	297.3	321.3	350.9	374.7	398.4	434.1	475.8	505.4	511.5
70°	142.7	148.7	154.6	172.5	196.3	208.2	225.9	255.8	285.4	309.1	321.3
72.5°	47.6	47.6	53.6	65.5	77.4	89.3	95.1	125.0	148.7	160.6	166.5
75°	11.9	11.9	11.9	11.9	11.9	18.0	18.0	35.7	47.6	59.5	65.5
77.5°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	11.9	11.9
80°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
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°	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0	4187.0
2.5°	4187.0	4175.1	4169.0	4175.1	4175.1	4169.0	4187.0	4210.7	4240.4	4163.2
5°	4180.9	4169.0	4180.9	4145.2	4163.2	4151.3	4175.1	4169.0	4192.8	4169.0
7.5°	4163.2	4139.4	4145.2	4127.5	4151.3	4121.5	4139.4	4175.1	4151.3	4115.6
10°	4103.7	4091.8	4133.3	4073.9	4062.0	4085.8	4133.3	4097.7	4085.8	4097.7
12.5°	4044.0	4044.0	4062.0	4014.4	4020.3	4032.2	4055.9	4032.2	4044.0	4073.9
15°	3978.8	3966.9	3996.5	3960.8	3955.0	3943.1	3966.9	3966.9	3978.8	3960.8
17.5°	3901.4	3883.6	3883.6	3871.8	3865.7	3895.5	3907.4	3913.3	3919.3	3895.5
20°	3806.2	3800.4	3818.1	3800.4	3806.2	3812.3	3812.3	3800.4	3853.8	3788.5
22.5°	3705.1	3723.0	3699.2	3687.3	3699.2	3711.1	3711.1	3717.0	3705.1	3693.2
25°	3604.1	3616.0	3621.8	3586.2	3604.1	3586.2	3627.9	3633.7	3609.9	3621.8
27.5°	3514.8	3497.1	3491.0	3467.3	3479.1	3473.3	3479.1	3479.1	3514.8	3467.3
30°	3378.0	3360.2	3366.1	3348.4	3354.2	3348.4	3354.2	3354.2	3378.0	3372.1
32.5°	3247.2	3229.5	3235.3	3217.6	3217.6	3223.4	3211.5	3211.5	3229.5	3217.6
35°	3122.2	3080.7	3086.5	3080.7	3086.5	3062.8	3062.8	3056.9	3068.8	3039.0
37.5°	2943.9	2926.1	2920.1	2914.3	2920.1	2908.2	2920.1	2902.4	2920.1	2896.3
40°	2783.2	2771.3	2777.4	2741.7	2741.7	2747.6	2735.7	2729.8	2735.7	2759.4
42.5°	2622.8	2599.0	2587.2	2575.3	2581.1	2563.4	2557.3	2545.4	2557.3	2533.5
45°	2432.4	2432.4	2426.5	2396.7	2402.7	2402.7	2379.0	2355.2	2361.0	2361.0
47.5°	2260.1	2248.2	2242.1	2212.5	2206.4	2200.6	2176.6	2158.9	2158.9	2140.9
50°	2069.6	2057.7	2040.0	2010.1	1998.2	1962.6	1944.9	1921.1	1897.3	1897.3
52.5°	1891.2	1849.5	1825.7	1778.2	1760.4	1742.5	1694.9	1677.2	1659.3	1641.5
55°	1677.2	1641.5	1594.0	1540.4	1516.6	1486.7	1439.2	1403.5	1379.7	1385.8
57.5°	1469.0	1409.6	1362.0	1290.7	1260.8	1242.9	1195.3	1147.7	1124.0	1124.0
60°	1213.3	1165.7	1106.2	1040.7	1017.0	987.3	927.7	898.1	880.1	862.4
62.5°	969.4	933.7	880.1	796.9	779.2	749.3	707.8	672.1	654.2	654.2
65°	725.5	689.9	642.3	582.9	559.1	535.3	499.6	463.9	446.0	440.2
67.5°	511.5	469.8	428.3	380.7	362.8	350.9	315.2	291.4	279.5	273.5
70°	309.1	285.4	255.8	220.1	202.1	190.2	166.5	148.7	142.7	136.9
72.5°	160.6	142.7	118.9	95.1	83.2	71.3	59.5	47.6	41.7	41.7
75°	59.5	47.6	29.8	18.0	11.9	11.9	11.9	11.9	11.9	11.9
77.5°	11.9	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
80°	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
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)