

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 FEU4C909040 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 FEU4C909040 F4LC-DFSSQ-MW
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

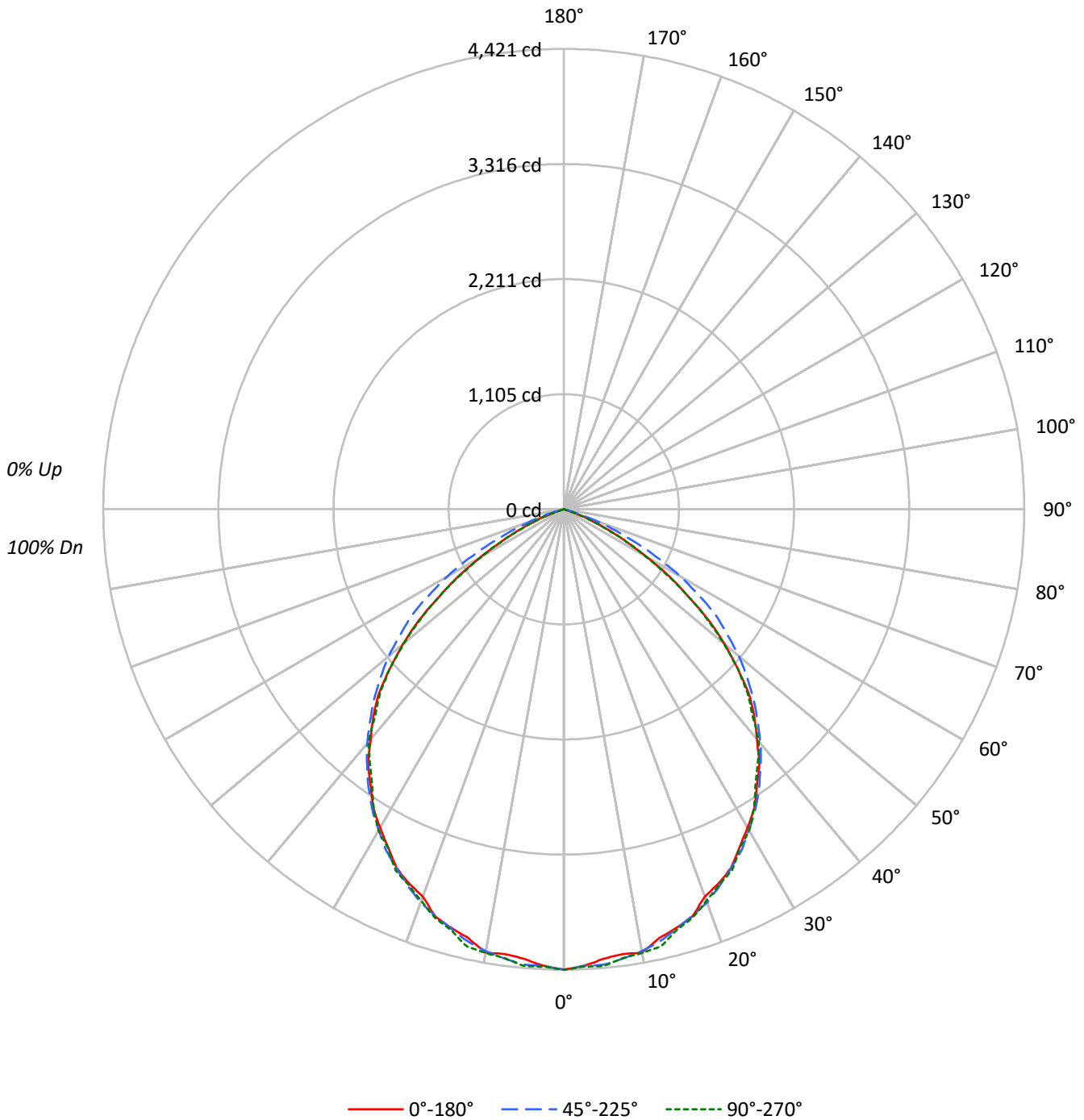
Lumens per Lamp: N/A
 Luminaire Lumens: 9444.0 lumens
 Efficiency: N/A
 Efficacy: 97.3 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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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CATALOG NUMBER: FLDSQ4C90D010 FEU4C909040 F4LC-DFSSQ-MW

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°	426577	426577	426577
5°	419693	425156	426376
10°	423321	422087	423919
15°	415903	416522	417771
20°	406238	412676	410756
25°	404477	404477	407149
30°	393197	396005	396718
35°	380937	384647	377980
40°	363059	370163	367002
45°	343610	351333	340185
50°	302607	328996	300731
55°	245084	301069	246161
60°	179334	249636	175726
65°	108973	177764	106119
70°	42515	95693	40766
75°	4697	25798	4697
80°	3556	3556	3556
85°	0	0	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	417.3	4.4
10°-20°	1180.9	12.5
20°-30°	1752.1	18.6
30°-40°	2030.2	21.5
40°-50°	1946.5	20.6
50°-60°	1431.2	15.2
60°-70°	618.1	6.5
70°-80°	66.7	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°	3350.3	35.5
0°-40°	5380.5	57.0
0°-60°	8758.2	92.7
0°-90°	9444.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	9444.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4421	4421	4421	4421	4421	
5°	4333	4377	4390	4396	4402	413
15°	4164	4189	4170	4176	4182	1173
25°	3799	3793	3799	3806	3824	1739
35°	3234	3253	3266	3259	3209	2022
45°	2518	2524	2575	2537	2493	1914
55°	1457	1608	1790	1601	1463	1311
65°	477	596	779	590	465	491
75°	13	19	69	13	13	39
85°	0	0	0	0	0	1
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°	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0
2.5°	4389.5	4439.7	4446.1	4414.6	4402.1	4383.4	4427.2	4395.9	4408.5	4395.9	4389.5
5°	4333.1	4389.5	4395.9	4395.9	4383.4	4377.0	4395.9	4389.5	4383.4	4370.8	4389.5
7.5°	4308.0	4339.3	4370.8	4333.1	4351.9	4345.7	4389.5	4370.8	4364.4	4364.4	4351.9
10°	4320.6	4314.2	4339.3	4301.6	4314.2	4301.6	4339.3	4339.3	4326.7	4314.2	4308.0
12.5°	4219.9	4270.1	4270.1	4264.0	4251.4	4232.5	4270.1	4295.5	4257.6	4257.6	4251.4
15°	4163.5	4176.1	4182.2	4182.2	4176.1	4188.6	4207.3	4182.2	4188.6	4157.1	4169.7
17.5°	4100.8	4075.6	4094.4	4081.8	4088.2	4100.8	4125.9	4125.9	4088.2	4081.8	4094.4
20°	3956.3	4031.6	4038.0	4000.3	4006.5	4006.5	4050.5	4012.9	4038.0	4006.5	4019.0
22.5°	3887.1	3937.3	3943.7	3893.5	3924.7	3887.1	3931.1	3874.5	3937.3	3893.5	3912.2
25°	3799.2	3793.0	3811.7	3786.6	3793.0	3793.0	3824.3	3799.2	3818.1	3793.0	3799.2
27.5°	3654.9	3705.2	3698.8	3673.6	3686.2	3680.0	3742.8	3673.6	3711.3	3680.0	3692.6
30°	3529.1	3573.2	3560.7	3535.5	3535.5	3516.6	3585.8	3566.8	3560.7	3560.7	3554.3
32.5°	3403.6	3410.0	3397.4	3403.6	3410.0	3384.9	3441.3	3416.1	3410.0	3416.1	3422.5
35°	3234.0	3234.0	3246.5	3227.8	3252.9	3252.9	3303.2	3271.6	3265.5	3246.5	3265.5
37.5°	3083.3	3064.6	3070.8	3070.8	3083.3	3095.9	3121.0	3108.4	3108.4	3089.7	3102.3
40°	2882.4	2869.9	2888.6	2888.6	2907.6	2907.6	2932.7	2920.1	2938.8	2938.8	2938.8
42.5°	2706.7	2706.7	2694.1	2712.8	2719.2	2712.8	2756.9	2750.5	2756.9	2744.3	2750.5
45°	2518.1	2518.1	2505.6	2499.4	2530.7	2524.5	2574.7	2555.8	2580.9	2568.3	2574.7
47.5°	2260.6	2292.1	2273.2	2292.1	2329.8	2336.2	2367.4	2354.9	2380.0	2361.3	2386.4
50°	2015.9	2015.9	2034.6	2059.7	2097.4	2103.8	2141.5	2166.6	2179.1	2185.3	2191.7
52.5°	1758.4	1752.0	1771.0	1802.2	1833.7	1858.9	1896.5	1934.2	1959.3	1997.0	1978.0
55°	1456.9	1469.4	1488.4	1526.0	1576.2	1607.5	1639.0	1689.2	1733.3	1752.0	1789.7
57.5°	1199.4	1186.8	1199.4	1249.6	1306.2	1331.3	1375.4	1425.6	1488.4	1526.0	1538.6
60°	929.3	935.7	948.3	992.3	1036.1	1073.8	1092.8	1174.2	1230.9	1268.5	1293.6
62.5°	684.6	697.2	709.7	747.4	791.2	822.7	854.0	923.2	973.4	1011.0	1036.1
65°	477.3	483.5	502.4	521.1	565.2	596.5	621.6	678.2	728.4	759.9	778.6
67.5°	295.2	301.3	313.9	339.2	370.5	395.6	420.7	458.4	502.4	533.7	540.1
70°	150.7	157.1	163.2	182.2	207.3	219.8	238.5	270.1	301.3	326.4	339.2
72.5°	50.2	50.2	56.6	69.2	81.7	94.3	100.4	131.9	157.1	169.6	175.8
75°	12.6	12.6	12.6	12.6	12.6	19.0	19.0	37.7	50.2	62.8	69.2
77.5°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	12.6	12.6
80°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
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°	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0	4421.0
2.5°	4421.0	4408.5	4402.1	4408.5	4408.5	4402.1	4421.0	4446.1	4477.4	4395.9
5°	4414.6	4402.1	4414.6	4377.0	4395.9	4383.4	4408.5	4402.1	4427.2	4402.1
7.5°	4395.9	4370.8	4377.0	4358.3	4383.4	4351.9	4370.8	4408.5	4383.4	4345.7
10°	4333.1	4320.6	4364.4	4301.6	4289.1	4314.2	4364.4	4326.7	4314.2	4326.7
12.5°	4270.1	4270.1	4289.1	4238.9	4245.0	4257.6	4282.7	4257.6	4270.1	4301.6
15°	4201.2	4188.6	4219.9	4182.2	4176.1	4163.5	4188.6	4188.6	4201.2	4182.2
17.5°	4119.5	4100.8	4100.8	4088.2	4081.8	4113.3	4125.9	4132.0	4138.4	4113.3
20°	4019.0	4012.9	4031.6	4012.9	4019.0	4025.4	4025.4	4012.9	4069.2	4000.3
22.5°	3912.2	3931.1	3906.0	3893.5	3906.0	3918.6	3918.6	3924.7	3912.2	3899.6
25°	3805.6	3818.1	3824.3	3786.6	3805.6	3786.6	3830.7	3836.9	3811.7	3824.3
27.5°	3711.3	3692.6	3686.2	3661.1	3673.6	3667.5	3673.6	3673.6	3711.3	3661.1
30°	3566.8	3548.1	3554.3	3535.5	3541.7	3535.5	3541.7	3541.7	3566.8	3560.7
32.5°	3428.7	3410.0	3416.1	3397.4	3397.4	3403.6	3391.0	3391.0	3410.0	3397.4
35°	3296.8	3252.9	3259.1	3252.9	3259.1	3234.0	3234.0	3227.8	3240.4	3208.9
37.5°	3108.4	3089.7	3083.3	3077.2	3083.3	3070.8	3083.3	3064.6	3083.3	3058.2
40°	2938.8	2926.3	2932.7	2895.0	2895.0	2901.2	2888.6	2882.4	2888.6	2913.7
42.5°	2769.5	2744.3	2731.8	2719.2	2725.4	2706.7	2700.3	2687.7	2700.3	2675.2
45°	2568.3	2568.3	2562.2	2530.7	2537.1	2537.1	2512.0	2486.8	2493.0	2493.0
47.5°	2386.4	2373.9	2367.4	2336.2	2329.8	2323.6	2298.3	2279.6	2279.6	2260.6
50°	2185.3	2172.7	2154.0	2122.5	2110.0	2072.3	2053.6	2028.5	2003.4	2003.4
52.5°	1997.0	1952.9	1927.8	1877.6	1858.9	1839.9	1789.7	1771.0	1752.0	1733.3
55°	1771.0	1733.3	1683.1	1626.5	1601.4	1569.8	1519.6	1482.0	1456.9	1463.3
57.5°	1551.1	1488.4	1438.1	1362.8	1331.3	1312.4	1262.1	1211.9	1186.8	1186.8
60°	1281.1	1230.9	1168.1	1098.9	1073.8	1042.5	979.5	948.3	929.3	910.6
62.5°	1023.6	985.9	929.3	841.4	822.7	791.2	747.4	709.7	690.8	690.8
65°	766.1	728.4	678.2	615.4	590.3	565.2	527.5	489.9	470.9	464.8
67.5°	540.1	496.0	452.2	402.0	383.0	370.5	332.8	307.7	295.2	288.8
70°	326.4	301.3	270.1	232.4	213.4	200.9	175.8	157.1	150.7	144.5
72.5°	169.6	150.7	125.5	100.4	87.9	75.3	62.8	50.2	44.1	44.1
75°	62.8	50.2	31.5	19.0	12.6	12.6	12.6	12.6	12.6	12.6
77.5°	12.6	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
80°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
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)