

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-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: FLDSQ4C90D010 FEU4C909027 F4LC-CSSQ-MMS
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

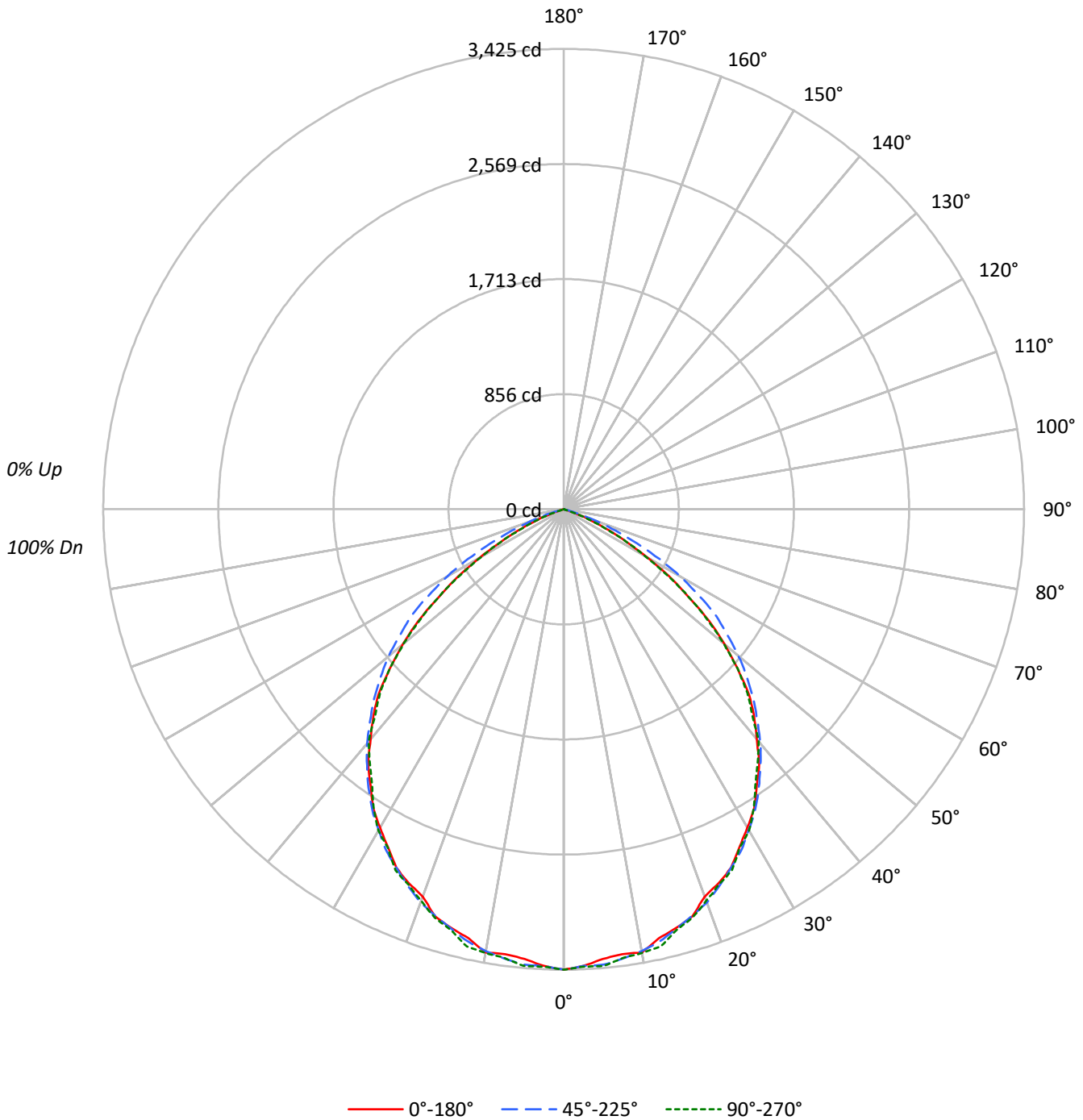
Lumens per Lamp: N/A
 Luminaire Lumens: 7316.0 lumens
 Efficiency: N/A
 Efficacy: 75.3 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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°	330455	330455	330455
5°	325131	329354	330303
10°	327930	326980	328401
15°	322194	322663	323642
20°	314698	319688	318199
25°	313333	313333	315409
30°	304600	306772	307318
35°	295102	297976	292805
40°	281250	286754	284311
45°	266185	272175	263537
50°	234427	254857	232956
55°	189857	233225	190681
60°	138925	193383	136127
65°	84430	137718	82192
70°	32923	74140	31569
75°	3616	19982	3616
80°	2778	2778	2778
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	323.3	4.4
10°-20°	914.8	12.5
20°-30°	1357.3	18.6
30°-40°	1572.8	21.5
40°-50°	1507.9	20.6
50°-60°	1108.7	15.2
60°-70°	478.9	6.5
70°-80°	51.7	0.7
80°-90°	0.7	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°	2595.4	35.5
0°-40°	4168.1	57.0
0°-60°	6784.8	92.7
0°-90°	7316.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	7316.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3425	3425	3425	3425	3425	
5°	3357	3391	3400	3405	3410	320
15°	3225	3245	3230	3235	3240	909
25°	2943	2938	2943	2948	2963	1348
35°	2505	2520	2530	2525	2486	1567
45°	1951	1956	1995	1965	1931	1483
55°	1129	1245	1386	1240	1134	1016
65°	370	462	603	457	360	380
75°	10	15	54	10	10	30
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°	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8
2.5°	3400.4	3439.3	3444.3	3419.9	3410.2	3395.7	3429.6	3405.4	3415.1	3405.4	3400.4
5°	3356.8	3400.4	3405.4	3405.4	3395.7	3390.7	3405.4	3400.4	3395.7	3385.9	3400.4
7.5°	3337.3	3361.5	3385.9	3356.8	3371.3	3366.5	3400.4	3385.9	3381.0	3381.0	3371.3
10°	3347.0	3342.1	3361.5	3332.4	3342.1	3332.4	3361.5	3361.5	3351.8	3342.1	3337.3
12.5°	3269.0	3307.9	3307.9	3303.2	3293.5	3278.8	3307.9	3327.6	3298.2	3298.2	3293.5
15°	3225.4	3235.1	3239.9	3239.9	3235.1	3244.8	3259.3	3239.9	3244.8	3220.4	3230.1
17.5°	3176.7	3157.3	3171.8	3162.1	3167.0	3176.7	3196.2	3196.2	3167.0	3162.1	3171.8
20°	3064.8	3123.2	3128.1	3098.9	3103.7	3103.7	3137.8	3108.7	3128.1	3103.7	3113.4
22.5°	3011.2	3050.1	3055.1	3016.2	3040.4	3011.2	3045.3	3001.5	3050.1	3016.2	3030.7
25°	2943.1	2938.4	2952.9	2933.4	2938.4	2938.4	2962.6	2943.1	2957.8	2938.4	2943.1
27.5°	2831.4	2870.3	2865.3	2845.9	2855.6	2850.8	2899.5	2845.9	2875.0	2850.8	2860.6
30°	2733.9	2768.1	2758.3	2738.9	2738.9	2724.2	2777.8	2763.1	2758.3	2758.3	2753.4
32.5°	2636.7	2641.6	2631.9	2636.7	2641.6	2622.2	2665.8	2646.4	2641.6	2646.4	2651.4
35°	2505.3	2505.3	2515.0	2500.5	2520.0	2520.0	2558.9	2534.5	2529.7	2515.0	2529.7
37.5°	2388.6	2374.1	2378.8	2378.8	2388.6	2398.3	2417.7	2408.0	2408.0	2393.5	2403.2
40°	2232.9	2223.2	2237.7	2237.7	2252.4	2252.4	2271.9	2262.1	2276.6	2276.6	2276.6
42.5°	2096.8	2096.8	2087.1	2101.6	2106.5	2101.6	2135.7	2130.7	2135.7	2126.0	2130.7
45°	1950.7	1950.7	1941.0	1936.2	1960.4	1955.7	1994.6	1979.9	1999.3	1989.6	1994.6
47.5°	1751.2	1775.6	1761.0	1775.6	1804.8	1809.8	1834.0	1824.3	1843.7	1829.2	1848.7
50°	1561.7	1561.7	1576.2	1595.6	1624.8	1629.8	1658.9	1678.4	1688.1	1692.9	1697.8
52.5°	1362.2	1357.2	1371.9	1396.1	1420.6	1440.0	1469.2	1498.4	1517.8	1547.0	1532.3
55°	1128.6	1138.3	1153.0	1182.2	1221.1	1245.3	1269.7	1308.6	1342.7	1357.2	1386.4
57.5°	929.1	919.4	929.1	968.0	1011.9	1031.3	1065.5	1104.4	1153.0	1182.2	1191.9
60°	719.9	724.9	734.6	768.7	802.7	831.8	846.5	909.7	953.5	982.7	1002.1
62.5°	530.3	540.1	549.8	579.0	612.9	637.3	661.6	715.1	754.0	783.2	802.7
65°	369.8	374.5	389.2	403.7	437.9	462.1	481.5	525.4	564.3	588.7	603.2
67.5°	228.7	233.4	243.1	262.8	287.0	306.5	325.9	355.1	389.2	413.4	418.4
70°	116.7	121.7	126.4	141.1	160.6	170.3	184.8	209.2	233.4	252.9	262.8
72.5°	38.9	38.9	43.9	53.6	63.3	73.0	77.8	102.2	121.7	131.4	136.2
75°	9.7	9.7	9.7	9.7	9.7	14.7	14.7	29.2	38.9	48.6	53.6
77.5°	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	9.7	9.7
80°	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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°	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8	3424.8
2.5°	3424.8	3415.1	3410.2	3415.1	3415.1	3410.2	3424.8	3444.3	3468.5	3405.4
5°	3419.9	3410.2	3419.9	3390.7	3405.4	3395.7	3415.1	3410.2	3429.6	3410.2
7.5°	3405.4	3385.9	3390.7	3376.2	3395.7	3371.3	3385.9	3415.1	3395.7	3366.5
10°	3356.8	3347.0	3381.0	3332.4	3322.6	3342.1	3381.0	3351.8	3342.1	3351.8
12.5°	3307.9	3307.9	3322.6	3283.7	3288.5	3298.2	3317.7	3298.2	3307.9	3332.4
15°	3254.5	3244.8	3269.0	3239.9	3235.1	3225.4	3244.8	3244.8	3254.5	3239.9
17.5°	3191.2	3176.7	3176.7	3167.0	3162.1	3186.5	3196.2	3201.0	3205.9	3186.5
20°	3113.4	3108.7	3123.2	3108.7	3113.4	3118.4	3118.4	3108.7	3152.3	3098.9
22.5°	3030.7	3045.3	3025.9	3016.2	3025.9	3035.6	3035.6	3040.4	3030.7	3020.9
25°	2948.1	2957.8	2962.6	2933.4	2948.1	2933.4	2967.5	2972.3	2952.9	2962.6
27.5°	2875.0	2860.6	2855.6	2836.1	2845.9	2841.1	2845.9	2845.9	2875.0	2836.1
30°	2763.1	2748.6	2753.4	2738.9	2743.7	2738.9	2743.7	2743.7	2763.1	2758.3
32.5°	2656.1	2641.6	2646.4	2631.9	2631.9	2636.7	2626.9	2626.9	2641.6	2631.9
35°	2553.9	2520.0	2524.7	2520.0	2524.7	2505.3	2505.3	2500.5	2510.2	2485.8
37.5°	2408.0	2393.5	2388.6	2383.8	2388.6	2378.8	2388.6	2374.1	2388.6	2369.1
40°	2276.6	2266.9	2271.9	2242.7	2242.7	2247.4	2237.7	2232.9	2237.7	2257.2
42.5°	2145.4	2126.0	2116.2	2106.5	2111.3	2096.8	2091.8	2082.1	2091.8	2072.4
45°	1989.6	1989.6	1984.8	1960.4	1965.4	1965.4	1945.9	1926.5	1931.3	1931.3
47.5°	1848.7	1839.0	1834.0	1809.8	1804.8	1800.1	1780.4	1765.9	1765.9	1751.2
50°	1692.9	1683.1	1668.7	1644.2	1634.5	1605.3	1590.8	1571.4	1551.9	1551.9
52.5°	1547.0	1512.9	1493.4	1454.5	1440.0	1425.3	1386.4	1371.9	1357.2	1342.7
55°	1371.9	1342.7	1303.8	1260.0	1240.5	1216.1	1177.2	1148.0	1128.6	1133.5
57.5°	1201.6	1153.0	1114.1	1055.7	1031.3	1016.6	977.7	938.8	919.4	919.4
60°	992.4	953.5	904.9	851.3	831.8	807.6	758.8	734.6	719.9	705.4
62.5°	792.9	763.8	719.9	651.8	637.3	612.9	579.0	549.8	535.1	535.1
65°	593.5	564.3	525.4	476.8	457.3	437.9	408.7	379.5	364.8	360.0
67.5°	418.4	384.3	350.3	311.4	296.7	287.0	257.8	238.4	228.7	223.7
70°	252.9	233.4	209.2	180.0	165.3	155.6	136.2	121.7	116.7	111.9
72.5°	131.4	116.7	97.3	77.8	68.1	58.4	48.6	38.9	34.1	34.1
75°	48.6	38.9	24.4	14.7	9.7	9.7	9.7	9.7	9.7	9.7
77.5°	9.7	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
80°	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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)