

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: **FLDSQ4C65D010 FEU4C659050 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: FLDSQ4C65D010 FEU4C659050 F4LC-CSSQ-MMS  
 Description: 4 INCH 6500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

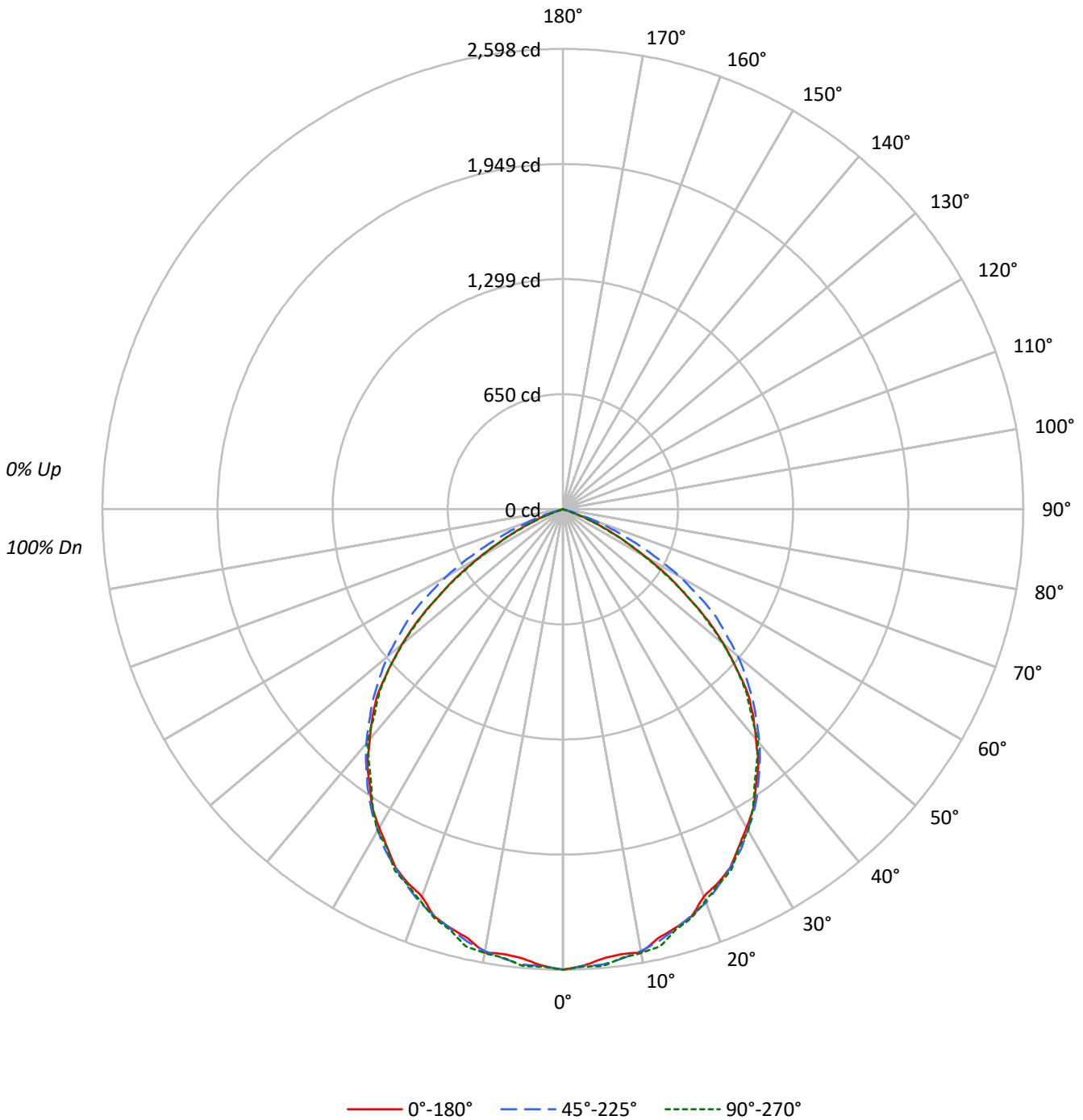
Lumens per Lamp: N/A  
 Luminaire Lumens: 5549.0 lumens  
 Efficiency: N/A  
 Efficacy: 76.6 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 72.4  
 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



TEST NUMBER: P#

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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°	250649	250649	250649
5°	246599	249805	250522
10°	248725	248010	249088
15°	244377	244737	245476
20°	238693	242482	241352
25°	237659	237659	239224
30°	231032	232681	233093
35°	223827	226006	222084
40°	213321	217503	215639
45°	201900	206430	199881
50°	177805	193312	176695
55°	143999	176904	144638
60°	105366	146682	103243
65°	64042	104453	62352
70°	24967	56225	23952
75°	2759	15136	2759
80°	2111	2111	2111
85°	0	0	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	245.2	4.4
10°-20°	693.8	12.5
20°-30°	1029.5	18.6
30°-40°	1192.9	21.5
40°-50°	1143.7	20.6
50°-60°	840.9	15.2
60°-70°	363.2	6.5
70°-80°	39.2	0.7
80°-90°	0.5	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°	1968.5	35.5
0°-40°	3161.4	57.0
0°-60°	5146.1	92.7
0°-90°	5549.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5549.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2598	2598	2598	2598	2598	
5°	2546	2572	2579	2583	2586	243
15°	2446	2461	2450	2454	2457	689
25°	2232	2229	2232	2236	2247	1022
35°	1900	1911	1919	1915	1885	1188
45°	1480	1483	1513	1491	1465	1125
55°	856	944	1052	941	860	770
65°	280	350	458	347	273	288
75°	7	11	41	7	7	23
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°	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7
2.5°	2579.1	2608.7	2612.4	2593.9	2586.5	2575.5	2601.3	2582.9	2590.3	2582.9	2579.1
5°	2546.0	2579.1	2582.9	2582.9	2575.5	2571.8	2582.9	2579.1	2575.5	2568.2	2579.1
7.5°	2531.3	2549.6	2568.2	2546.0	2557.0	2553.4	2579.1	2568.2	2564.4	2564.4	2557.0
10°	2538.6	2534.9	2549.6	2527.5	2534.9	2527.5	2549.6	2549.6	2542.3	2534.9	2531.3
12.5°	2479.5	2509.0	2509.0	2505.4	2498.0	2486.9	2509.0	2523.9	2501.6	2501.6	2498.0
15°	2446.4	2453.7	2457.4	2457.4	2453.7	2461.1	2472.1	2457.4	2461.1	2442.6	2450.0
17.5°	2409.5	2394.7	2405.7	2398.3	2402.1	2409.5	2424.2	2424.2	2402.1	2398.3	2405.7
20°	2324.6	2368.8	2372.6	2350.5	2354.1	2354.1	2380.0	2357.8	2372.6	2354.1	2361.5
22.5°	2283.9	2313.4	2317.2	2287.7	2306.1	2283.9	2309.8	2276.5	2313.4	2287.7	2298.7
25°	2232.3	2228.7	2239.7	2224.9	2228.7	2228.7	2247.0	2232.3	2243.4	2228.7	2232.3
27.5°	2147.5	2177.0	2173.3	2158.5	2165.9	2162.3	2199.2	2158.5	2180.7	2162.3	2169.7
30°	2073.6	2099.5	2092.1	2077.4	2077.4	2066.2	2106.9	2095.7	2092.1	2092.1	2088.4
32.5°	1999.8	2003.6	1996.2	1999.8	2003.6	1988.9	2022.0	2007.2	2003.6	2007.2	2011.0
35°	1900.2	1900.2	1907.6	1896.6	1911.3	1911.3	1940.8	1922.3	1918.7	1907.6	1918.7
37.5°	1811.7	1800.7	1804.3	1804.3	1811.7	1819.0	1833.8	1826.4	1826.4	1815.4	1822.8
40°	1693.6	1686.3	1697.3	1697.3	1708.4	1708.4	1723.1	1715.8	1726.8	1726.8	1726.8
42.5°	1590.4	1590.4	1583.0	1594.0	1597.7	1594.0	1619.9	1616.1	1619.9	1612.5	1616.1
45°	1479.6	1479.6	1472.2	1468.6	1486.9	1483.3	1512.8	1501.7	1516.4	1509.1	1512.8
47.5°	1328.3	1346.8	1335.6	1346.8	1368.9	1372.7	1391.0	1383.7	1398.4	1387.4	1402.2
50°	1184.5	1184.5	1195.5	1210.2	1232.4	1236.1	1258.3	1273.0	1280.4	1284.0	1287.8
52.5°	1033.2	1029.4	1040.6	1058.9	1077.5	1092.2	1114.3	1136.5	1151.2	1173.4	1162.2
55°	856.0	863.4	874.5	896.6	926.2	944.5	963.0	992.5	1018.4	1029.4	1051.6
57.5°	704.7	697.3	704.7	734.2	767.5	782.2	808.1	837.6	874.5	896.6	904.0
60°	546.0	549.8	557.2	583.1	608.8	630.9	642.1	690.0	723.2	745.3	760.1
62.5°	402.3	409.6	417.0	439.1	464.9	483.4	501.8	542.4	571.9	594.1	608.8
65°	280.5	284.1	295.2	306.2	332.1	350.5	365.2	398.5	428.0	446.5	457.5
67.5°	173.4	177.0	184.4	199.3	217.7	232.4	247.2	269.3	295.2	313.6	317.3
70°	88.5	92.3	95.9	107.0	121.8	129.2	140.2	158.7	177.0	191.8	199.3
72.5°	29.5	29.5	33.3	40.6	48.0	55.4	59.0	77.5	92.3	99.7	103.3
75°	7.4	7.4	7.4	7.4	7.4	11.1	11.1	22.1	29.5	36.9	40.6
77.5°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	7.4	7.4
80°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
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°	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7	2597.7
2.5°	2597.7	2590.3	2586.5	2590.3	2590.3	2586.5	2597.7	2612.4	2630.8	2582.9
5°	2593.9	2586.5	2593.9	2571.8	2582.9	2575.5	2590.3	2586.5	2601.3	2586.5
7.5°	2582.9	2568.2	2571.8	2560.8	2575.5	2557.0	2568.2	2590.3	2575.5	2553.4
10°	2546.0	2538.6	2564.4	2527.5	2520.1	2534.9	2564.4	2542.3	2534.9	2542.3
12.5°	2509.0	2509.0	2520.1	2490.6	2494.2	2501.6	2516.4	2501.6	2509.0	2527.5
15°	2468.5	2461.1	2479.5	2457.4	2453.7	2446.4	2461.1	2461.1	2468.5	2457.4
17.5°	2420.5	2409.5	2409.5	2402.1	2398.3	2416.9	2424.2	2427.8	2431.6	2416.9
20°	2361.5	2357.8	2368.8	2357.8	2361.5	2365.2	2365.2	2357.8	2391.0	2350.5
22.5°	2298.7	2309.8	2295.1	2287.7	2295.1	2302.4	2302.4	2306.1	2298.7	2291.3
25°	2236.0	2243.4	2247.0	2224.9	2236.0	2224.9	2250.8	2254.4	2239.7	2247.0
27.5°	2180.7	2169.7	2165.9	2151.1	2158.5	2154.9	2158.5	2158.5	2180.7	2151.1
30°	2095.7	2084.8	2088.4	2077.4	2081.0	2077.4	2081.0	2081.0	2095.7	2092.1
32.5°	2014.6	2003.6	2007.2	1996.2	1996.2	1999.8	1992.5	1992.5	2003.6	1996.2
35°	1937.1	1911.3	1914.9	1911.3	1914.9	1900.2	1900.2	1896.6	1903.9	1885.4
37.5°	1826.4	1815.4	1811.7	1808.0	1811.7	1804.3	1811.7	1800.7	1811.7	1796.9
40°	1726.8	1719.4	1723.1	1701.0	1701.0	1704.6	1697.3	1693.6	1697.3	1712.0
42.5°	1627.2	1612.5	1605.1	1597.7	1601.4	1590.4	1586.6	1579.2	1586.6	1571.8
45°	1509.1	1509.1	1505.5	1486.9	1490.7	1490.7	1475.9	1461.2	1464.8	1464.8
47.5°	1402.2	1394.8	1391.0	1372.7	1368.9	1365.3	1350.4	1339.4	1339.4	1328.3
50°	1284.0	1276.6	1265.6	1247.1	1239.7	1217.6	1206.6	1191.9	1177.1	1177.1
52.5°	1173.4	1147.5	1132.7	1103.2	1092.2	1081.1	1051.6	1040.6	1029.4	1018.4
55°	1040.6	1018.4	988.9	955.7	940.9	922.4	892.9	870.8	856.0	859.8
57.5°	911.4	874.5	845.0	800.7	782.2	771.1	741.6	712.1	697.3	697.3
60°	752.7	723.2	686.3	645.7	630.9	612.6	575.5	557.2	546.0	535.0
62.5°	601.4	579.3	546.0	494.4	483.4	464.9	439.1	417.0	405.9	405.9
65°	450.1	428.0	398.5	361.6	346.9	332.1	310.0	287.8	276.7	273.1
67.5°	317.3	291.5	265.7	236.2	225.1	217.7	195.6	180.8	173.4	169.7
70°	191.8	177.0	158.7	136.5	125.4	118.0	103.3	92.3	88.5	84.9
72.5°	99.7	88.5	73.8	59.0	51.6	44.3	36.9	29.5	25.9	25.9
75°	36.9	29.5	18.5	11.1	7.4	7.4	7.4	7.4	7.4	7.4
77.5°	7.4	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
80°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
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)