

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 FEU4C659027 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: FLDSQ4C65D010 FEU4C659027 F4LC-CSSQ-MW  
 Description: 4 INCH 6500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

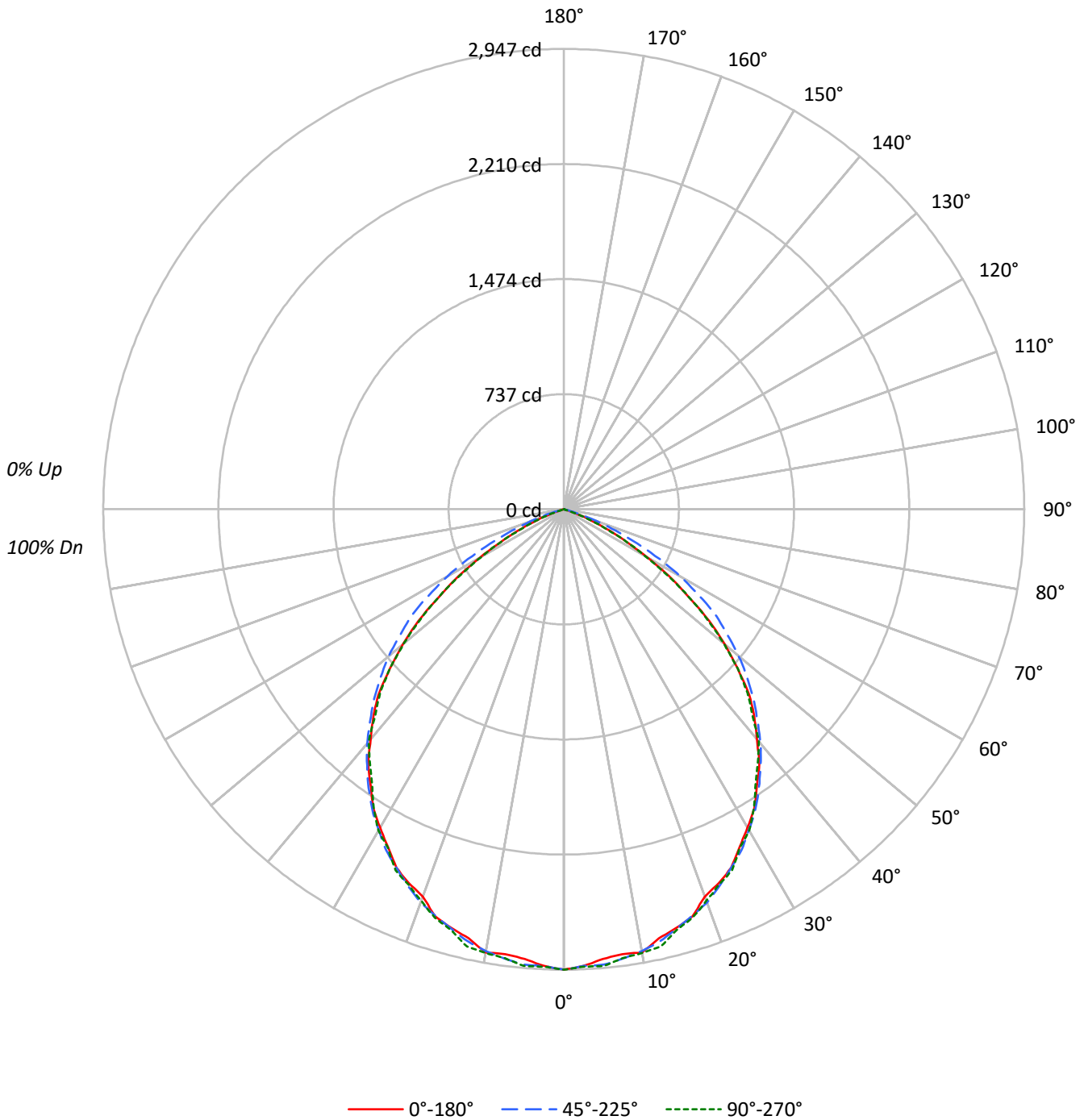
Lumens per Lamp: N/A  
 Luminaire Lumens: 6295.0 lumens  
 Efficiency: N/A  
 Efficacy: 86.9 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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#

CATALOG NUMBER: FLDSQ4C65D010 FEU4C659027 F4LC-CSSQ-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°	284343	284343	284343
5°	279753	283395	284199
10°	282165	281352	282567
15°	277222	277632	278471
20°	270781	275073	273800
25°	269609	269609	271387
30°	262094	263955	264434
35°	253911	256384	251944
40°	242002	246738	244634
45°	229041	234186	226749
50°	201703	219296	200457
55°	163362	200674	164068
60°	119530	166405	117138
65°	72649	118494	70731
70°	28324	63786	27168
75°	3132	17186	3132
80°	2389	2389	2389
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	278.2	4.4
10°-20°	787.1	12.5
20°-30°	1167.9	18.6
30°-40°	1353.3	21.5
40°-50°	1297.5	20.6
50°-60°	954.0	15.2
60°-70°	412.0	6.5
70°-80°	44.5	0.7
80°-90°	0.6	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°	2233.2	35.5
0°-40°	3586.4	57.0
0°-60°	5837.9	92.7
0°-90°	6295.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6295.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2947	2947	2947	2947	2947	
5°	2888	2918	2926	2930	2934	276
15°	2775	2792	2779	2784	2788	782
25°	2532	2528	2532	2537	2549	1159
35°	2156	2168	2177	2172	2139	1348
45°	1678	1683	1716	1691	1662	1276
55°	971	1072	1193	1067	975	874
65°	318	398	519	394	310	327
75°	8	13	46	8	8	26
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°	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9
2.5°	2925.9	2959.4	2963.6	2942.6	2934.2	2921.8	2951.0	2930.1	2938.5	2930.1	2925.9
5°	2888.3	2925.9	2930.1	2930.1	2921.8	2917.5	2930.1	2925.9	2921.8	2913.4	2925.9
7.5°	2871.6	2892.4	2913.4	2888.3	2900.8	2896.7	2925.9	2913.4	2909.1	2909.1	2900.8
10°	2879.9	2875.7	2892.4	2867.3	2875.7	2867.3	2892.4	2892.4	2884.0	2875.7	2871.6
12.5°	2812.8	2846.3	2846.3	2842.2	2833.8	2821.2	2846.3	2863.2	2837.9	2837.9	2833.8
15°	2775.2	2783.6	2787.7	2787.7	2783.6	2792.0	2804.5	2787.7	2792.0	2771.0	2779.3
17.5°	2733.4	2716.7	2729.1	2720.8	2725.0	2733.4	2750.1	2750.1	2725.0	2720.8	2729.1
20°	2637.1	2687.3	2691.6	2666.5	2670.6	2670.6	2699.9	2674.8	2691.6	2670.6	2678.9
22.5°	2591.0	2624.4	2628.7	2595.2	2616.1	2591.0	2620.3	2582.6	2624.4	2595.2	2607.7
25°	2532.4	2528.3	2540.8	2524.0	2528.3	2528.3	2549.1	2532.4	2545.0	2528.3	2532.4
27.5°	2436.2	2469.7	2465.4	2448.7	2457.1	2453.0	2494.8	2448.7	2473.8	2453.0	2461.3
30°	2352.4	2381.8	2373.4	2356.7	2356.7	2344.0	2390.1	2377.5	2373.4	2373.4	2369.1
32.5°	2268.7	2273.0	2264.6	2268.7	2273.0	2256.2	2293.8	2277.1	2273.0	2277.1	2281.3
35°	2155.6	2155.6	2164.0	2151.5	2168.3	2168.3	2201.8	2180.8	2176.6	2164.0	2176.6
37.5°	2055.2	2042.8	2046.9	2046.9	2055.2	2063.6	2080.3	2072.0	2072.0	2059.5	2067.9
40°	1921.3	1913.0	1925.4	1925.4	1938.1	1938.1	1954.8	1946.4	1958.9	1958.9	1958.9
42.5°	1804.2	1804.2	1795.8	1808.3	1812.5	1808.3	1837.6	1833.4	1837.6	1829.3	1833.4
45°	1678.5	1678.5	1670.1	1666.0	1686.8	1682.7	1716.2	1703.6	1720.3	1711.9	1716.2
47.5°	1506.8	1527.8	1515.2	1527.8	1552.9	1557.2	1578.0	1569.7	1586.4	1573.9	1590.7
50°	1343.7	1343.7	1356.2	1372.9	1398.0	1402.3	1427.4	1444.2	1452.5	1456.6	1460.9
52.5°	1172.1	1167.8	1180.5	1201.3	1222.3	1239.0	1264.1	1289.3	1306.0	1331.1	1318.5
55°	971.1	979.5	992.1	1017.2	1050.7	1071.5	1092.5	1126.0	1155.4	1167.8	1192.9
57.5°	799.4	791.1	799.4	832.9	870.7	887.4	916.8	950.2	992.1	1017.2	1025.6
60°	619.4	623.7	632.1	661.4	690.7	715.8	728.4	782.7	820.4	845.6	862.3
62.5°	456.3	464.7	473.1	498.2	527.4	548.4	569.2	615.3	648.8	673.9	690.7
65°	318.2	322.3	334.9	347.4	376.7	397.6	414.3	452.1	485.5	506.5	519.0
67.5°	196.7	200.8	209.2	226.1	247.0	263.7	280.4	305.5	334.9	355.7	360.0
70°	100.4	104.7	108.8	121.4	138.2	146.5	159.0	180.0	200.8	217.6	226.1
72.5°	33.5	33.5	37.7	46.1	54.5	62.8	66.9	88.0	104.7	113.1	117.2
75°	8.4	8.4	8.4	8.4	8.4	12.6	12.6	25.1	33.5	41.8	46.1
77.5°	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	8.4	8.4
80°	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
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°	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9	2946.9
2.5°	2946.9	2938.5	2934.2	2938.5	2938.5	2934.2	2946.9	2963.6	2984.5	2930.1
5°	2942.6	2934.2	2942.6	2917.5	2930.1	2921.8	2938.5	2934.2	2951.0	2934.2
7.5°	2930.1	2913.4	2917.5	2905.0	2921.8	2900.8	2913.4	2938.5	2921.8	2896.7
10°	2888.3	2879.9	2909.1	2867.3	2858.9	2875.7	2909.1	2884.0	2875.7	2884.0
12.5°	2846.3	2846.3	2858.9	2825.5	2829.6	2837.9	2854.7	2837.9	2846.3	2867.3
15°	2800.4	2792.0	2812.8	2787.7	2783.6	2775.2	2792.0	2792.0	2800.4	2787.7
17.5°	2745.9	2733.4	2733.4	2725.0	2720.8	2741.8	2750.1	2754.2	2758.5	2741.8
20°	2678.9	2674.8	2687.3	2674.8	2678.9	2683.2	2683.2	2674.8	2712.4	2666.5
22.5°	2607.7	2620.3	2603.6	2595.2	2603.6	2612.0	2612.0	2616.1	2607.7	2599.3
25°	2536.7	2545.0	2549.1	2524.0	2536.7	2524.0	2553.4	2557.5	2540.8	2549.1
27.5°	2473.8	2461.3	2457.1	2440.3	2448.7	2444.6	2448.7	2448.7	2473.8	2440.3
30°	2377.5	2365.0	2369.1	2356.7	2360.8	2356.7	2360.8	2360.8	2377.5	2373.4
32.5°	2285.4	2273.0	2277.1	2264.6	2264.6	2268.7	2260.3	2260.3	2273.0	2264.6
35°	2197.5	2168.3	2172.4	2168.3	2172.4	2155.6	2155.6	2151.5	2159.9	2138.9
37.5°	2072.0	2059.5	2055.2	2051.1	2055.2	2046.9	2055.2	2042.8	2055.2	2038.5
40°	1958.9	1950.5	1954.8	1929.7	1929.7	1933.8	1925.4	1921.3	1925.4	1942.2
42.5°	1846.0	1829.3	1820.9	1812.5	1816.6	1804.2	1799.9	1791.5	1799.9	1783.2
45°	1711.9	1711.9	1707.8	1686.8	1691.1	1691.1	1674.4	1657.6	1661.7	1661.7
47.5°	1590.7	1582.3	1578.0	1557.2	1552.9	1548.8	1531.9	1519.5	1519.5	1506.8
50°	1456.6	1448.3	1435.8	1414.8	1406.4	1381.3	1368.8	1352.1	1335.4	1335.4
52.5°	1331.1	1301.7	1285.0	1251.5	1239.0	1226.4	1192.9	1180.5	1167.8	1155.4
55°	1180.5	1155.4	1121.9	1084.1	1067.4	1046.4	1012.9	987.8	971.1	975.3
57.5°	1033.9	992.1	958.6	908.4	887.4	874.8	841.3	807.8	791.1	791.1
60°	853.9	820.4	778.6	732.5	715.8	694.9	652.9	632.1	619.4	607.0
62.5°	682.3	657.2	619.4	560.9	548.4	527.4	498.2	473.1	460.4	460.4
65°	510.6	485.5	452.1	410.2	393.5	376.7	351.6	326.5	313.9	309.8
67.5°	360.0	330.6	301.4	268.0	255.3	247.0	221.8	205.1	196.7	192.5
70°	217.6	200.8	180.0	154.9	142.3	133.9	117.2	104.7	100.4	96.3
72.5°	113.1	100.4	83.7	66.9	58.6	50.2	41.8	33.5	29.4	29.4
75°	41.8	33.5	21.0	12.6	8.4	8.4	8.4	8.4	8.4	8.4
77.5°	8.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
80°	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
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)