

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 FEU4C659035 F4LC-DFSSQ-MW**

Issue Date: 12/13/2022

Tested By:

Approved By:



Cooper Lighting Solutions laboratories have been accredited by National Voluntary Laboratory Accreditation Program (NVLAP) that it adheres to the requirements of ISO/IEC 17025:2005 and appropriate IESNA test methods. This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government. Results contained in this report are valid for luminaire sample tested, as supplied by requestor. Information related to the luminaire tested has been supplied by requestor and can affect the validity of the test results. Report shall not be reproduced except in full without approval of Cooper Lighting Solutions Lighting Laboratory. Test performed at address noted above.

**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 FEU4C659035 F4LC-DFSSQ-MW  
 Description: 4 INCH 6500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

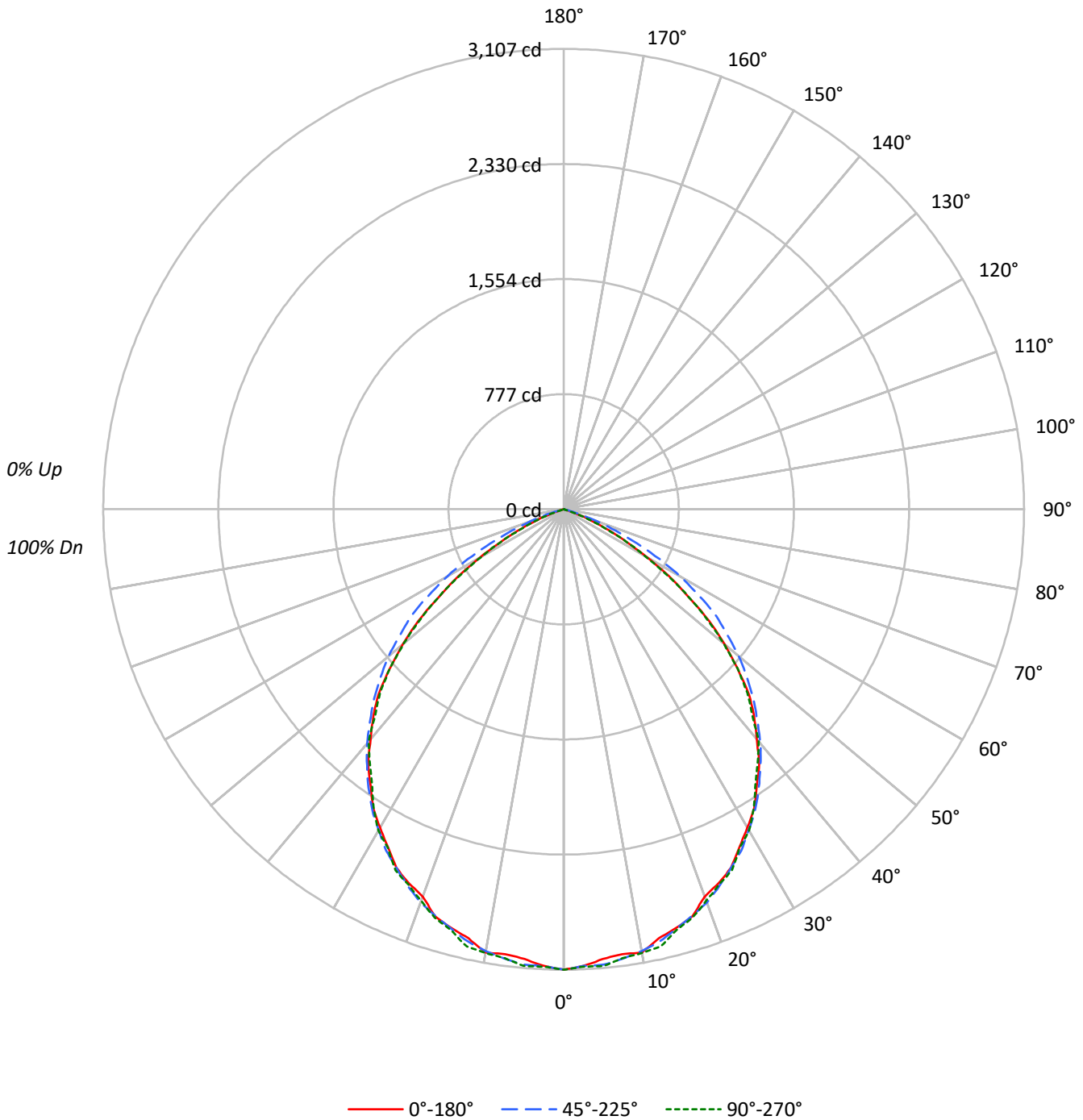
Lumens per Lamp: N/A  
 Luminaire Lumens: 6637.0 lumens  
 Efficiency: N/A  
 Efficacy: 91.7 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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

TEST NUMBER: P#  
CATALOG NUMBER: FLDSQ4C65D010 FEU4C659035 F4LC-DFSSQ-MW

### Luminous Intensity Polar Plot



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C65D010 FEU4C659035 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	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°	299791	299791	299791
5°	294950	298786	299648
10°	297499	296636	297920
15°	292286	292715	293604
20°	285495	290023	288668
25°	284258	284258	286132
30°	276333	278294	278796
35°	267716	270319	265631
40°	255152	260140	257923
45°	241486	246917	239071
50°	212661	231215	211340
55°	172227	211574	172984
60°	126034	175436	123486
65°	76599	124932	74567
70°	29876	67256	28663
75°	3281	18118	3281
80°	2500	2500	2500
85°	0	0	0

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C65D010 FEU4C659035 F4LC-DFSSQ-MW

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	293.3	4.4
10°-20°	829.9	12.5
20°-30°	1231.4	18.6
30°-40°	1426.8	21.5
40°-50°	1368.0	20.6
50°-60°	1005.8	15.2
60°-70°	434.4	6.5
70°-80°	46.9	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°	2354.5	35.5
0°-40°	3781.3	57.0
0°-60°	6155.1	92.7
0°-90°	6637.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6637.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3107	3107	3107	3107	3107	
5°	3045	3076	3085	3089	3094	291
15°	2926	2944	2930	2935	2939	825
25°	2670	2666	2670	2674	2688	1222
35°	2273	2286	2295	2290	2255	1421
45°	1770	1774	1810	1783	1752	1345
55°	1024	1130	1258	1125	1028	921
65°	336	419	547	415	327	345
75°	9	13	49	9	9	27
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C65D010 FEU4C659035 F4LC-DFSSQ-MW

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0
2.5°	3084.8	3120.1	3124.6	3102.5	3093.7	3080.5	3111.3	3089.3	3098.2	3089.3	3084.8
5°	3045.2	3084.8	3089.3	3089.3	3080.5	3076.0	3089.3	3084.8	3080.5	3071.7	3084.8
7.5°	3027.6	3049.5	3071.7	3045.2	3058.4	3054.0	3084.8	3071.7	3067.2	3067.2	3058.4
10°	3036.4	3031.9	3049.5	3023.1	3031.9	3023.1	3049.5	3049.5	3040.7	3031.9	3027.6
12.5°	2965.6	3000.9	3000.9	2996.6	2987.8	2974.5	3000.9	3018.8	2992.1	2992.1	2987.8
15°	2926.0	2934.8	2939.2	2939.2	2934.8	2943.7	2956.8	2939.2	2943.7	2921.5	2930.3
17.5°	2881.9	2864.3	2877.4	2868.6	2873.1	2881.9	2899.6	2899.6	2873.1	2868.6	2877.4
20°	2780.4	2833.3	2837.8	2811.3	2815.6	2815.6	2846.6	2820.1	2837.8	2815.6	2824.5
22.5°	2731.7	2767.0	2771.5	2736.2	2758.2	2731.7	2762.7	2722.9	2767.0	2736.2	2749.4
25°	2670.0	2665.7	2678.8	2661.2	2665.7	2665.7	2687.6	2670.0	2683.3	2665.7	2670.0
27.5°	2568.6	2603.9	2599.4	2581.7	2590.6	2586.2	2630.4	2581.7	2608.2	2586.2	2595.1
30°	2480.2	2511.2	2502.3	2484.7	2484.7	2471.4	2520.0	2506.7	2502.3	2502.3	2497.8
32.5°	2392.0	2396.5	2387.6	2392.0	2396.5	2378.8	2418.4	2400.8	2396.5	2400.8	2405.3
35°	2272.8	2272.8	2281.6	2268.4	2286.1	2286.1	2321.4	2299.2	2294.9	2281.6	2294.9
37.5°	2166.9	2153.7	2158.1	2158.1	2166.9	2175.7	2193.3	2184.5	2184.5	2171.4	2180.2
40°	2025.7	2016.9	2030.0	2030.0	2043.4	2043.4	2061.0	2052.2	2065.3	2065.3	2065.3
42.5°	1902.2	1902.2	1893.4	1906.5	1911.0	1906.5	1937.5	1933.0	1937.5	1928.7	1933.0
45°	1769.7	1769.7	1760.8	1756.5	1778.5	1774.2	1809.5	1796.1	1813.8	1805.0	1809.5
47.5°	1588.7	1610.8	1597.5	1610.8	1637.3	1641.8	1663.8	1655.0	1672.6	1659.5	1677.1
50°	1416.7	1416.7	1429.9	1447.5	1474.0	1478.5	1505.0	1522.6	1531.4	1535.8	1540.3
52.5°	1235.8	1231.3	1244.6	1266.6	1288.7	1306.4	1332.8	1359.3	1376.9	1403.4	1390.1
55°	1023.8	1032.7	1046.0	1072.5	1107.7	1129.7	1151.9	1187.2	1218.1	1231.3	1257.7
57.5°	842.9	834.1	842.9	878.2	918.0	935.6	966.6	1001.9	1046.0	1072.5	1081.3
60°	653.1	657.6	666.4	697.4	728.2	754.6	768.0	825.2	865.0	891.5	909.1
62.5°	481.1	489.9	498.8	525.2	556.0	578.2	600.2	648.8	684.1	710.5	728.2
65°	335.5	339.8	353.1	366.3	397.2	419.2	436.8	476.6	511.9	534.1	547.2
67.5°	207.4	211.8	220.6	238.4	260.4	278.0	295.7	322.1	353.1	375.1	379.6
70°	105.9	110.4	114.7	128.0	145.7	154.5	167.6	189.8	211.8	229.4	238.4
72.5°	35.3	35.3	39.8	48.6	57.4	66.3	70.6	92.7	110.4	119.2	123.5
75°	8.8	8.8	8.8	8.8	8.8	13.3	13.3	26.5	35.3	44.1	48.6
77.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	8.8	8.8
80°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
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

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C65D010 FEU4C659035 F4LC-DFSSQ-MW

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0	3107.0
2.5°	3107.0	3098.2	3093.7	3098.2	3098.2	3093.7	3107.0	3124.6	3146.6	3089.3
5°	3102.5	3093.7	3102.5	3076.0	3089.3	3080.5	3098.2	3093.7	3111.3	3093.7
7.5°	3089.3	3071.7	3076.0	3062.9	3080.5	3058.4	3071.7	3098.2	3080.5	3054.0
10°	3045.2	3036.4	3067.2	3023.1	3014.3	3031.9	3067.2	3040.7	3031.9	3040.7
12.5°	3000.9	3000.9	3014.3	2979.0	2983.3	2992.1	3009.8	2992.1	3000.9	3023.1
15°	2952.5	2943.7	2965.6	2939.2	2934.8	2926.0	2943.7	2943.7	2952.5	2939.2
17.5°	2895.1	2881.9	2881.9	2873.1	2868.6	2890.7	2899.6	2903.9	2908.4	2890.7
20°	2824.5	2820.1	2833.3	2820.1	2824.5	2829.0	2829.0	2820.1	2859.8	2811.3
22.5°	2749.4	2762.7	2745.1	2736.2	2745.1	2753.9	2753.9	2758.2	2749.4	2740.6
25°	2674.5	2683.3	2687.6	2661.2	2674.5	2661.2	2692.1	2696.4	2678.8	2687.6
27.5°	2608.2	2595.1	2590.6	2572.9	2581.7	2577.4	2581.7	2581.7	2608.2	2572.9
30°	2506.7	2493.5	2497.8	2484.7	2489.0	2484.7	2489.0	2489.0	2506.7	2502.3
32.5°	2409.6	2396.5	2400.8	2387.6	2387.6	2392.0	2383.1	2383.1	2396.5	2387.6
35°	2316.9	2286.1	2290.4	2286.1	2290.4	2272.8	2272.8	2268.4	2277.3	2255.1
37.5°	2184.5	2171.4	2166.9	2162.6	2166.9	2158.1	2166.9	2153.7	2166.9	2149.2
40°	2065.3	2056.5	2061.0	2034.5	2034.5	2038.9	2030.0	2025.7	2030.0	2047.7
42.5°	1946.3	1928.7	1919.8	1911.0	1915.3	1902.2	1897.7	1888.9	1897.7	1880.0
45°	1805.0	1805.0	1800.6	1778.5	1783.0	1783.0	1765.3	1747.7	1752.0	1752.0
47.5°	1677.1	1668.3	1663.8	1641.8	1637.3	1633.0	1615.2	1602.0	1602.0	1588.7
50°	1535.8	1526.9	1513.8	1491.6	1482.8	1456.4	1443.2	1425.6	1407.9	1407.9
52.5°	1403.4	1372.4	1354.8	1319.5	1306.4	1293.0	1257.7	1244.6	1231.3	1218.1
55°	1244.6	1218.1	1182.8	1143.0	1125.4	1103.2	1068.0	1041.5	1023.8	1028.3
57.5°	1090.1	1046.0	1010.7	957.8	935.6	922.3	887.0	851.7	834.1	834.1
60°	900.3	865.0	820.9	772.3	754.6	732.7	688.4	666.4	653.1	639.9
62.5°	719.4	692.9	653.1	591.3	578.2	556.0	525.2	498.8	485.5	485.5
65°	538.4	511.9	476.6	432.5	414.9	397.2	370.7	344.3	331.0	326.6
67.5°	379.6	348.6	317.8	282.5	269.2	260.4	233.9	216.3	207.4	202.9
70°	229.4	211.8	189.8	163.3	150.0	141.2	123.5	110.4	105.9	101.6
72.5°	119.2	105.9	88.2	70.6	61.8	52.9	44.1	35.3	31.0	31.0
75°	44.1	35.3	22.1	13.3	8.8	8.8	8.8	8.8	8.8	8.8
77.5°	8.8	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
80°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
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)