

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

**Summary**

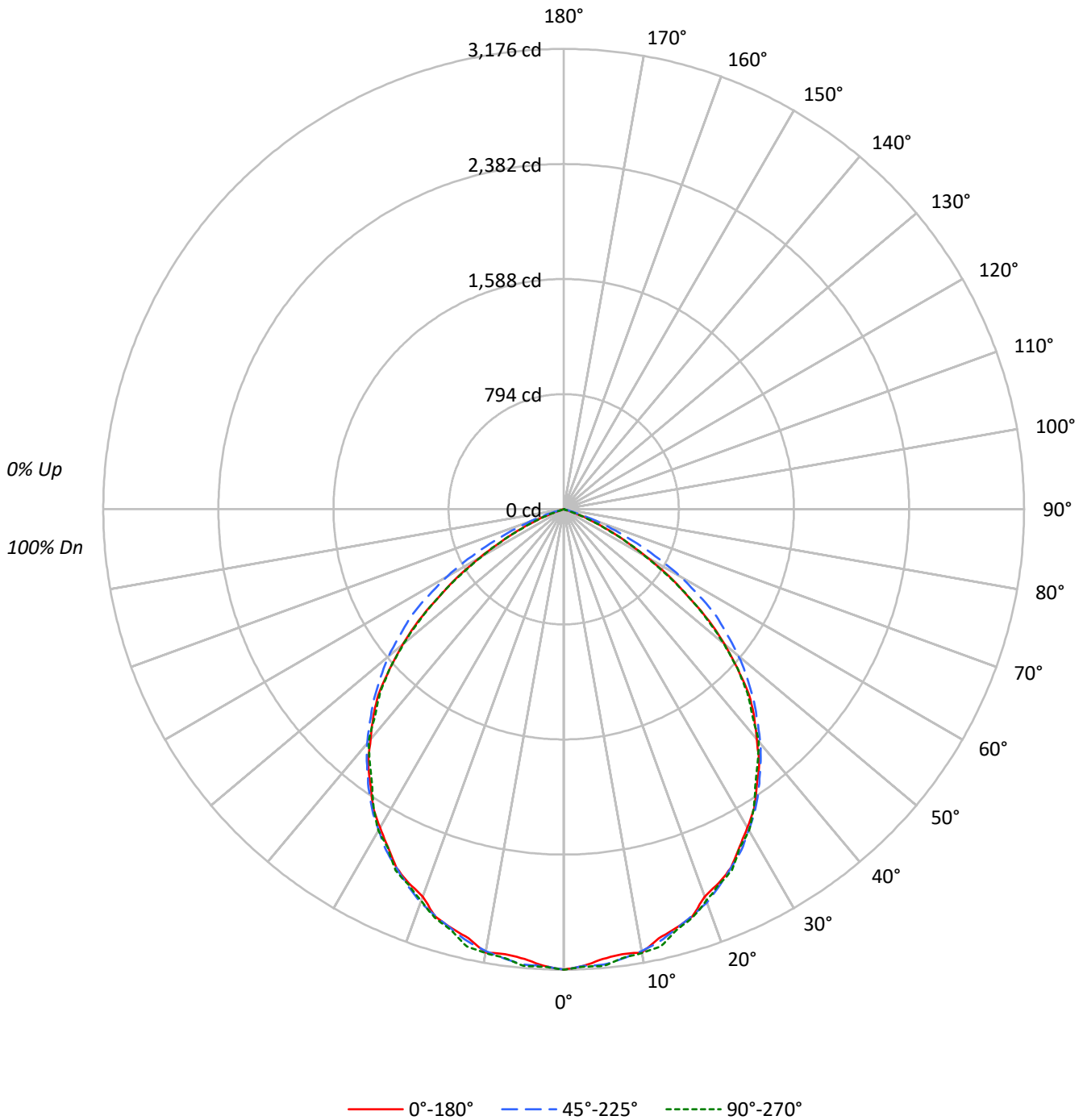
Lumens per Lamp: N/A  
 Luminaire Lumens: 6784.0 lumens  
 Efficiency: N/A  
 Efficacy: 93.7 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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

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### Luminous Intensity Polar Plot



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C65D010 FEU4C659050 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	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°	306429	306429	306429
5°	301488	305411	306283
10°	304092	303201	304524
15°	298759	299208	300107
20°	291810	296441	295065
25°	290550	290550	292466
30°	282450	284467	284979
35°	273641	276303	271520
40°	260807	265908	263629
45°	246835	252375	244365
50°	217374	236333	216023
55°	176046	216268	176819
60°	128832	179334	126227
65°	78288	127695	76233
70°	30525	68751	29284
75°	3355	18528	3355
80°	2556	2556	2556
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	299.8	4.4
10°-20°	848.3	12.5
20°-30°	1258.6	18.6
30°-40°	1458.4	21.5
40°-50°	1398.3	20.6
50°-60°	1028.1	15.2
60°-70°	444.0	6.5
70°-80°	47.9	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°	2406.7	35.5
0°-40°	3865.0	57.0
0°-60°	6291.4	92.7
0°-90°	6784.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6784.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3176	3176	3176	3176	3176	
5°	3113	3144	3153	3158	3162	297
15°	2991	3009	2995	3000	3004	843
25°	2729	2725	2729	2734	2747	1250
35°	2323	2337	2346	2341	2305	1453
45°	1809	1814	1850	1822	1791	1375
55°	1046	1155	1286	1150	1051	942
65°	343	428	559	424	334	352
75°	9	14	50	9	9	28
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°	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8
2.5°	3153.2	3189.2	3193.8	3171.2	3162.2	3148.7	3180.2	3157.8	3166.8	3157.8	3153.2
5°	3112.7	3153.2	3157.8	3157.8	3148.7	3144.1	3157.8	3153.2	3148.7	3139.7	3153.2
7.5°	3094.6	3117.1	3139.7	3112.7	3126.1	3121.7	3153.2	3139.7	3135.1	3135.1	3126.1
10°	3103.7	3099.1	3117.1	3090.0	3099.1	3090.0	3117.1	3117.1	3108.1	3099.1	3094.6
12.5°	3031.3	3067.4	3067.4	3063.0	3054.0	3040.3	3067.4	3085.6	3058.4	3058.4	3054.0
15°	2990.8	2999.8	3004.3	3004.3	2999.8	3008.9	3022.3	3004.3	3008.9	2986.2	2995.3
17.5°	2945.7	2927.7	2941.1	2932.1	2936.7	2945.7	2963.8	2963.8	2936.7	2932.1	2941.1
20°	2841.9	2896.0	2900.6	2873.6	2878.0	2878.0	2909.7	2882.6	2900.6	2878.0	2887.0
22.5°	2792.2	2828.3	2832.9	2796.8	2819.3	2792.2	2823.9	2783.2	2828.3	2796.8	2810.3
25°	2729.1	2724.7	2738.1	2720.1	2724.7	2724.7	2747.1	2729.1	2742.7	2724.7	2729.1
27.5°	2625.5	2661.6	2657.0	2638.9	2647.9	2643.5	2688.6	2638.9	2666.0	2643.5	2652.5
30°	2535.1	2566.8	2557.8	2539.7	2539.7	2526.1	2575.8	2562.2	2557.8	2557.8	2553.2
32.5°	2444.9	2449.5	2440.5	2444.9	2449.5	2431.5	2472.0	2454.0	2449.5	2454.0	2458.6
35°	2323.1	2323.1	2332.1	2318.7	2336.7	2336.7	2372.8	2350.2	2345.7	2332.1	2345.7
37.5°	2214.9	2201.4	2205.9	2205.9	2214.9	2223.9	2241.9	2232.9	2232.9	2219.5	2228.5
40°	2070.6	2061.6	2075.0	2075.0	2088.6	2088.6	2106.6	2097.6	2111.1	2111.1	2111.1
42.5°	1944.3	1944.3	1935.3	1948.7	1953.3	1948.7	1980.4	1975.8	1980.4	1971.4	1975.8
45°	1808.9	1808.9	1799.8	1795.4	1817.9	1813.5	1849.5	1835.9	1854.0	1844.9	1849.5
47.5°	1623.9	1646.5	1632.9	1646.5	1673.6	1678.2	1700.6	1691.6	1709.7	1696.2	1714.2
50°	1448.1	1448.1	1461.6	1479.6	1506.6	1511.2	1538.3	1556.3	1565.4	1569.8	1574.4
52.5°	1263.1	1258.5	1272.2	1294.6	1317.3	1335.3	1362.3	1389.4	1407.4	1434.5	1420.9
55°	1046.5	1055.5	1069.2	1096.2	1132.3	1154.7	1177.4	1213.4	1245.1	1258.5	1285.6
57.5°	861.5	852.5	861.5	897.6	938.3	956.3	988.0	1024.1	1069.2	1096.2	1105.2
60°	667.6	672.2	681.2	712.8	744.3	771.4	785.0	843.5	884.2	911.2	929.3
62.5°	491.8	500.8	509.8	536.9	568.4	591.0	613.4	663.1	699.2	726.3	744.3
65°	342.9	347.3	360.9	374.4	406.0	428.5	446.5	487.2	523.3	545.9	559.3
67.5°	212.0	216.4	225.5	243.7	266.1	284.2	302.2	329.3	360.9	383.4	388.0
70°	108.2	112.8	117.2	130.9	148.9	157.9	171.4	194.0	216.4	234.5	243.7
72.5°	36.1	36.1	40.7	49.7	58.7	67.7	72.1	94.8	112.8	121.8	126.3
75°	9.0	9.0	9.0	9.0	9.0	13.6	13.6	27.1	36.1	45.1	49.7
77.5°	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	9.0	9.0
80°	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
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°	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8	3175.8
2.5°	3175.8	3166.8	3162.2	3166.8	3166.8	3162.2	3175.8	3193.8	3216.3	3157.8
5°	3171.2	3162.2	3171.2	3144.1	3157.8	3148.7	3166.8	3162.2	3180.2	3162.2
7.5°	3157.8	3139.7	3144.1	3130.7	3148.7	3126.1	3139.7	3166.8	3148.7	3121.7
10°	3112.7	3103.7	3135.1	3090.0	3081.0	3099.1	3135.1	3108.1	3099.1	3108.1
12.5°	3067.4	3067.4	3081.0	3044.9	3049.4	3058.4	3076.4	3058.4	3067.4	3090.0
15°	3017.9	3008.9	3031.3	3004.3	2999.8	2990.8	3008.9	3008.9	3017.9	3004.3
17.5°	2959.2	2945.7	2945.7	2936.7	2932.1	2954.8	2963.8	2968.2	2972.8	2954.8
20°	2887.0	2882.6	2896.0	2882.6	2887.0	2891.6	2891.6	2882.6	2923.1	2873.6
22.5°	2810.3	2823.9	2805.9	2796.8	2805.9	2814.9	2814.9	2819.3	2810.3	2801.3
25°	2733.7	2742.7	2747.1	2720.1	2733.7	2720.1	2751.7	2756.2	2738.1	2747.1
27.5°	2666.0	2652.5	2647.9	2629.9	2638.9	2634.5	2638.9	2638.9	2666.0	2629.9
30°	2562.2	2548.7	2553.2	2539.7	2544.1	2539.7	2544.1	2544.1	2562.2	2557.8
32.5°	2463.0	2449.5	2454.0	2440.5	2440.5	2444.9	2435.9	2435.9	2449.5	2440.5
35°	2368.2	2336.7	2341.1	2336.7	2341.1	2323.1	2323.1	2318.7	2327.7	2305.1
37.5°	2232.9	2219.5	2214.9	2210.5	2214.9	2205.9	2214.9	2201.4	2214.9	2196.8
40°	2111.1	2102.1	2106.6	2079.6	2079.6	2084.0	2075.0	2070.6	2075.0	2093.0
42.5°	1989.4	1971.4	1962.4	1953.3	1957.8	1944.3	1939.7	1930.7	1939.7	1921.7
45°	1844.9	1844.9	1840.5	1817.9	1822.5	1822.5	1804.4	1786.4	1790.8	1790.8
47.5°	1714.2	1705.2	1700.6	1678.2	1673.6	1669.2	1650.9	1637.5	1637.5	1623.9
50°	1569.8	1560.8	1547.3	1524.7	1515.7	1488.6	1475.2	1457.1	1439.1	1439.1
52.5°	1434.5	1402.8	1384.8	1348.7	1335.3	1321.7	1285.6	1272.2	1258.5	1245.1
55°	1272.2	1245.1	1209.0	1168.4	1150.3	1127.7	1091.6	1064.6	1046.5	1051.1
57.5°	1114.2	1069.2	1033.1	979.0	956.3	942.7	906.6	870.6	852.5	852.5
60°	920.3	884.2	839.1	789.4	771.4	748.9	703.6	681.2	667.6	654.1
62.5°	735.3	708.2	667.6	604.4	591.0	568.4	536.9	509.8	496.2	496.2
65°	550.3	523.3	487.2	442.1	424.1	406.0	379.0	351.9	338.3	333.9
67.5°	388.0	356.3	324.8	288.8	275.2	266.1	239.1	221.0	212.0	207.4
70°	234.5	216.4	194.0	166.9	153.3	144.3	126.3	112.8	108.2	103.8
72.5°	121.8	108.2	90.2	72.1	63.1	54.1	45.1	36.1	31.7	31.7
75°	45.1	36.1	22.6	13.6	9.0	9.0	9.0	9.0	9.0	9.0
77.5°	9.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
80°	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
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)