

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 FEU4C659040 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 FEU4C659040 F4LC-CSSQ-MW
 Description: 4 INCH 6500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

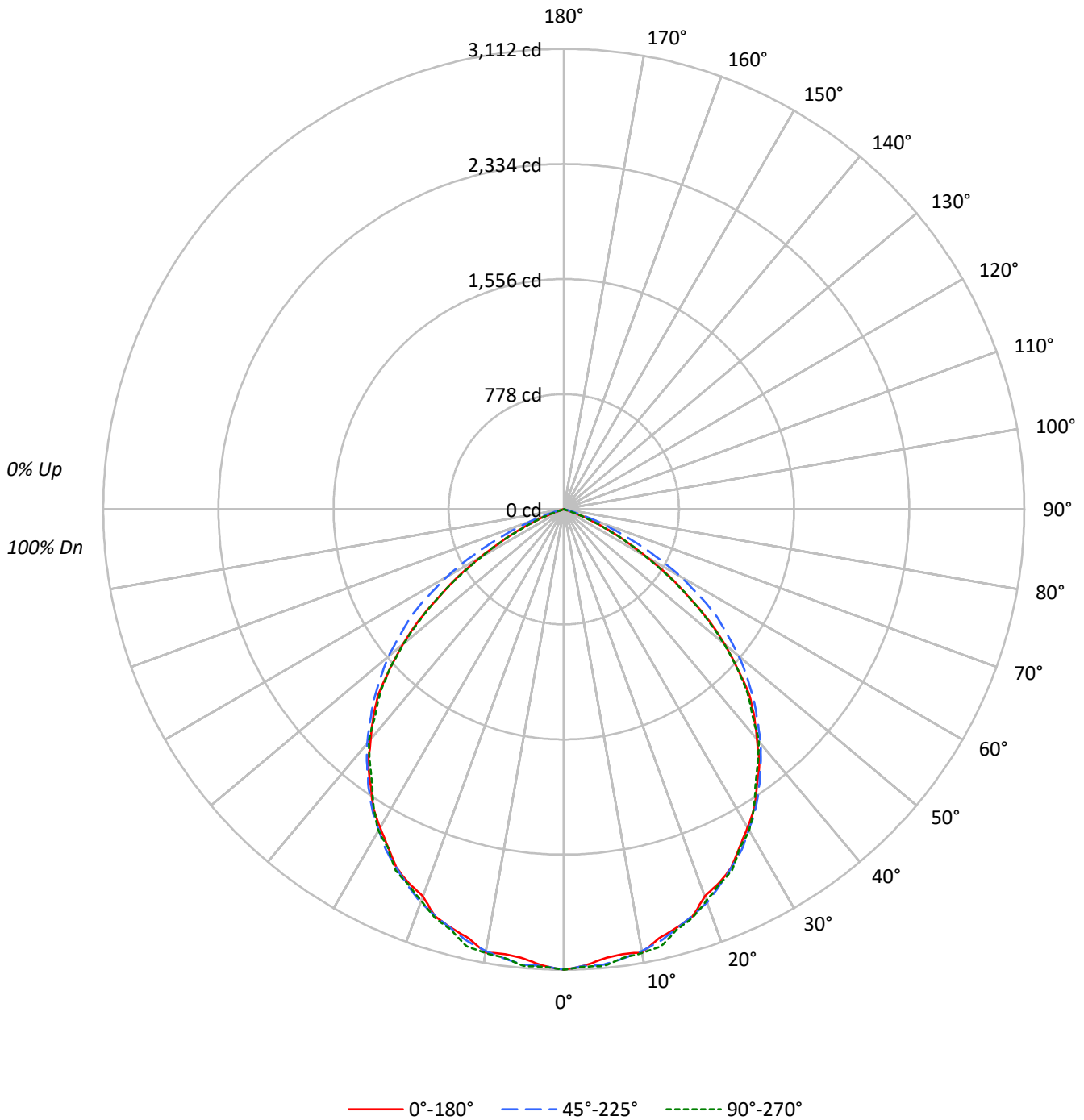
Lumens per Lamp: N/A
 Luminaire Lumens: 6647.0 lumens
 Efficiency: N/A
 Efficacy: 91.8 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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



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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°	300244	300244	300244
5°	295396	299241	300093
10°	297949	297077	298371
15°	292725	293165	294044
20°	285916	290455	289110
25°	284684	284684	286568
30°	276746	278718	279219
35°	268116	270731	266031
40°	255542	260530	258313
45°	241841	247285	239439
50°	212991	231560	211655
55°	172496	211894	173253
60°	126227	175706	123679
65°	76713	125115	74681
70°	29904	67369	28691
75°	3281	18156	3281
80°	2500	2500	2500
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	293.7	4.4
10°-20°	831.1	12.5
20°-30°	1233.2	18.6
30°-40°	1428.9	21.5
40°-50°	1370.0	20.6
50°-60°	1007.3	15.2
60°-70°	435.1	6.5
70°-80°	47.0	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°	2358.1	35.5
0°-40°	3787.0	57.0
0°-60°	6164.3	92.7
0°-90°	6647.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6647.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3112	3112	3112	3112	3112	
5°	3050	3081	3090	3094	3098	291
15°	2930	2948	2935	2939	2944	826
25°	2674	2670	2674	2678	2692	1224
35°	2276	2290	2298	2294	2258	1423
45°	1772	1777	1812	1786	1755	1347
55°	1025	1131	1260	1127	1030	923
65°	336	420	548	416	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 FEU4C659040 F4LC-CSSQ-MW

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7
2.5°	3089.5	3124.8	3129.3	3107.2	3098.3	3085.2	3116.0	3094.0	3102.8	3094.0	3089.5
5°	3049.8	3089.5	3094.0	3094.0	3085.2	3080.7	3094.0	3089.5	3085.2	3076.3	3089.5
7.5°	3032.1	3054.1	3076.3	3049.8	3063.0	3058.6	3089.5	3076.3	3071.8	3071.8	3063.0
10°	3041.0	3036.5	3054.1	3027.6	3036.5	3027.6	3054.1	3054.1	3045.3	3036.5	3032.1
12.5°	2970.1	3005.5	3005.5	3001.1	2992.3	2978.9	3005.5	3023.3	2996.6	2996.6	2992.3
15°	2930.4	2939.3	2943.6	2943.6	2939.3	2948.1	2961.3	2943.6	2948.1	2925.9	2934.8
17.5°	2886.2	2868.6	2881.7	2872.9	2877.4	2886.2	2903.9	2903.9	2877.4	2872.9	2881.7
20°	2784.5	2837.6	2842.1	2815.6	2819.9	2819.9	2850.9	2824.4	2842.1	2819.9	2828.7
22.5°	2735.9	2771.2	2775.7	2740.4	2762.4	2735.9	2766.9	2727.0	2771.2	2740.4	2753.5
25°	2674.0	2669.7	2682.8	2665.2	2669.7	2669.7	2691.7	2674.0	2687.3	2669.7	2674.0
27.5°	2572.5	2607.8	2603.3	2585.6	2594.5	2590.1	2634.3	2585.6	2612.1	2590.1	2599.0
30°	2483.9	2514.9	2506.1	2488.4	2488.4	2475.1	2523.8	2510.4	2506.1	2506.1	2501.6
32.5°	2395.6	2400.1	2391.2	2395.6	2400.1	2382.4	2422.1	2404.4	2400.1	2404.4	2408.9
35°	2276.2	2276.2	2285.0	2271.9	2289.5	2289.5	2324.9	2302.7	2298.4	2285.0	2298.4
37.5°	2170.1	2157.0	2161.3	2161.3	2170.1	2179.0	2196.7	2187.8	2187.8	2174.6	2183.5
40°	2028.8	2019.9	2033.1	2033.1	2046.4	2046.4	2064.1	2055.3	2068.4	2068.4	2068.4
42.5°	1905.0	1905.0	1896.2	1909.4	1913.9	1909.4	1940.4	1935.9	1940.4	1931.6	1935.9
45°	1772.3	1772.3	1763.5	1759.2	1781.2	1776.8	1812.2	1798.8	1816.5	1807.7	1812.2
47.5°	1591.1	1613.3	1599.9	1613.3	1639.8	1644.3	1666.3	1657.5	1675.1	1662.0	1679.6
50°	1418.9	1418.9	1432.0	1449.7	1476.2	1480.7	1507.2	1524.9	1533.7	1538.1	1542.6
52.5°	1237.6	1233.1	1246.5	1268.5	1290.7	1308.3	1334.8	1361.3	1379.0	1405.5	1392.2
55°	1025.4	1034.2	1047.6	1074.1	1109.4	1131.4	1153.6	1188.9	1220.0	1233.1	1259.6
57.5°	844.1	835.3	844.1	879.5	919.3	937.0	968.0	1003.4	1047.6	1074.1	1082.9
60°	654.1	658.6	667.4	698.4	729.3	755.8	769.1	826.5	866.3	892.8	910.5
62.5°	481.8	490.7	499.5	526.0	556.9	579.1	601.1	649.7	685.1	711.6	729.3
65°	336.0	340.3	353.6	366.8	397.8	419.8	437.5	477.3	512.7	534.9	548.0
67.5°	207.7	212.1	220.9	238.8	260.8	278.4	296.1	322.6	353.6	375.6	380.1
70°	106.0	110.5	114.9	128.2	145.9	154.7	167.9	190.1	212.1	229.7	238.8
72.5°	35.3	35.3	39.9	48.7	57.5	66.4	70.7	92.9	110.5	119.4	123.7
75°	8.8	8.8	8.8	8.8	8.8	13.3	13.3	26.5	35.3	44.2	48.7
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

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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7	3111.7
2.5°	3111.7	3102.8	3098.3	3102.8	3102.8	3098.3	3111.7	3129.3	3151.3	3094.0
5°	3107.2	3098.3	3107.2	3080.7	3094.0	3085.2	3102.8	3098.3	3116.0	3098.3
7.5°	3094.0	3076.3	3080.7	3067.5	3085.2	3063.0	3076.3	3102.8	3085.2	3058.6
10°	3049.8	3041.0	3071.8	3027.6	3018.8	3036.5	3071.8	3045.3	3036.5	3045.3
12.5°	3005.5	3005.5	3018.8	2983.5	2987.8	2996.6	3014.3	2996.6	3005.5	3027.6
15°	2956.9	2948.1	2970.1	2943.6	2939.3	2930.4	2948.1	2948.1	2956.9	2943.6
17.5°	2899.4	2886.2	2886.2	2877.4	2872.9	2895.1	2903.9	2908.3	2912.8	2895.1
20°	2828.7	2824.4	2837.6	2824.4	2828.7	2833.2	2833.2	2824.4	2864.1	2815.6
22.5°	2753.5	2766.9	2749.2	2740.4	2749.2	2758.0	2758.0	2762.4	2753.5	2744.7
25°	2678.5	2687.3	2691.7	2665.2	2678.5	2665.2	2696.2	2700.5	2682.8	2691.7
27.5°	2612.1	2599.0	2594.5	2576.8	2585.6	2581.3	2585.6	2585.6	2612.1	2576.8
30°	2510.4	2497.3	2501.6	2488.4	2492.8	2488.4	2492.8	2492.8	2510.4	2506.1
32.5°	2413.2	2400.1	2404.4	2391.2	2391.2	2395.6	2386.7	2386.7	2400.1	2391.2
35°	2320.4	2289.5	2293.9	2289.5	2293.9	2276.2	2276.2	2271.9	2280.7	2258.5
37.5°	2187.8	2174.6	2170.1	2165.8	2170.1	2161.3	2170.1	2157.0	2170.1	2152.5
40°	2068.4	2059.6	2064.1	2037.6	2037.6	2041.9	2033.1	2028.8	2033.1	2050.8
42.5°	1949.2	1931.6	1922.7	1913.9	1918.2	1905.0	1900.5	1891.7	1900.5	1882.9
45°	1807.7	1807.7	1803.3	1781.2	1785.7	1785.7	1768.0	1750.3	1754.7	1754.7
47.5°	1679.6	1670.8	1666.3	1644.3	1639.8	1635.4	1617.6	1604.4	1604.4	1591.1
50°	1538.1	1529.2	1516.1	1493.9	1485.1	1458.5	1445.4	1427.7	1410.0	1410.0
52.5°	1405.5	1374.5	1356.8	1321.5	1308.3	1295.0	1259.6	1246.5	1233.1	1220.0
55°	1246.5	1220.0	1184.6	1144.8	1127.1	1104.9	1069.6	1043.1	1025.4	1029.9
57.5°	1091.7	1047.6	1012.2	959.2	937.0	923.7	888.3	853.0	835.3	835.3
60°	901.7	866.3	822.1	773.5	755.8	733.8	689.4	667.4	654.1	640.9
62.5°	720.4	693.9	654.1	592.2	579.1	556.9	526.0	499.5	486.2	486.2
65°	539.2	512.7	477.3	433.2	415.5	397.8	371.3	344.8	331.5	327.1
67.5°	380.1	349.1	318.3	282.9	269.6	260.8	234.3	216.6	207.7	203.2
70°	229.7	212.1	190.1	163.6	150.2	141.4	123.7	110.5	106.0	101.7
72.5°	119.4	106.0	88.4	70.7	61.9	53.0	44.2	35.3	31.0	31.0
75°	44.2	35.3	22.2	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)