

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 FEU4C659030 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 FEU4C659030 F4LC-CSSQ-MMS
 Description: 4 INCH 6500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

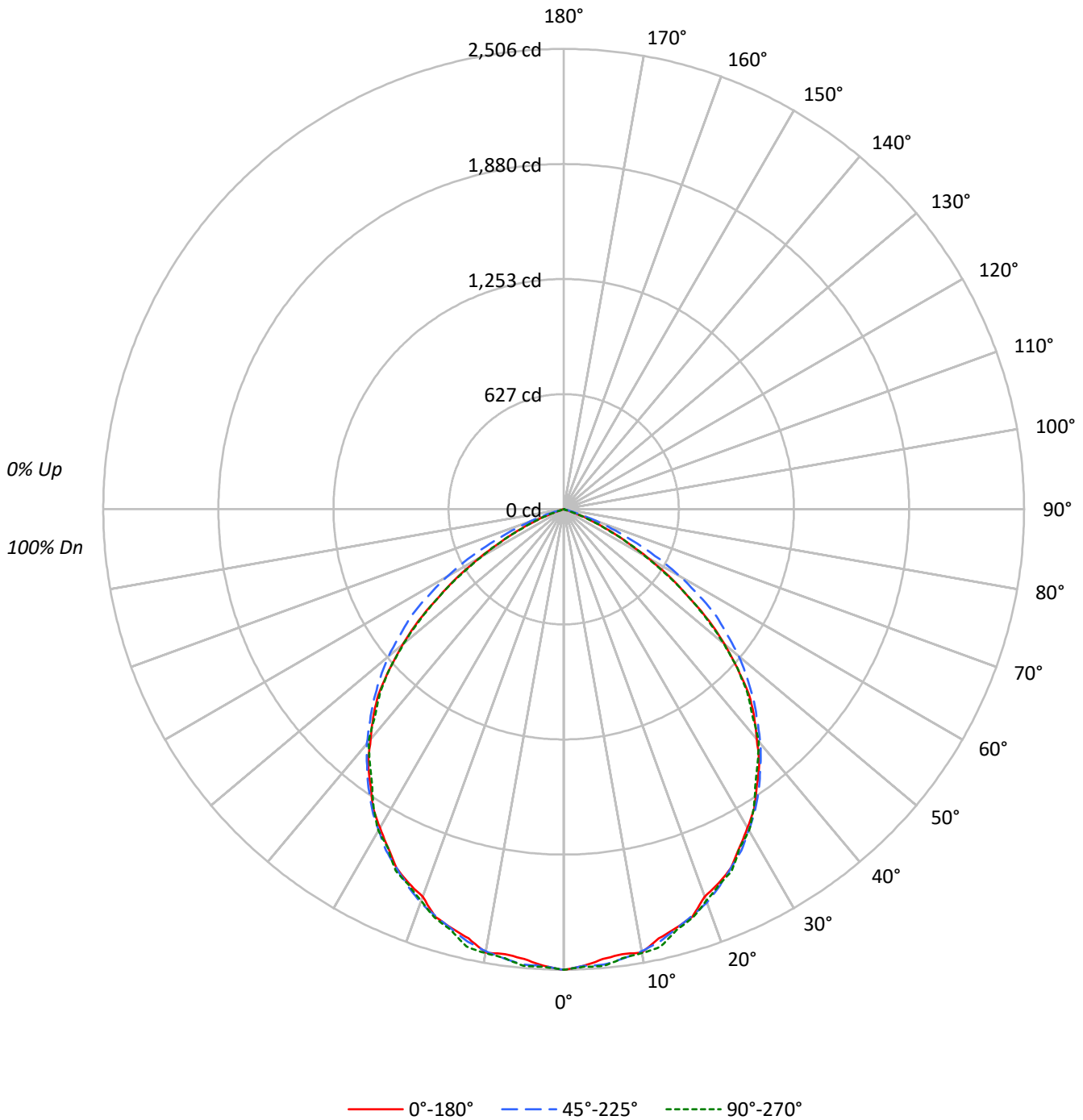
Lumens per Lamp: N/A
 Luminaire Lumens: 5354.0 lumens
 Efficiency: N/A
 Efficacy: 74.0 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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°	241840	241840	241840
5°	237930	241030	241717
10°	239986	239290	240329
15°	235787	236136	236845
20°	230304	233959	232871
25°	229302	229302	230824
30°	222910	224503	224904
35°	215958	218067	214286
40°	205827	209857	208056
45°	194804	199185	192853
50°	171561	186512	170480
55°	138936	170679	139541
60°	101661	141530	99615
65°	61781	100777	60160
70°	24093	54251	23105
75°	2647	14614	2647
80°	2000	2000	2000
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	236.6	4.4
10°-20°	669.5	12.5
20°-30°	993.3	18.6
30°-40°	1151.0	21.5
40°-50°	1103.5	20.6
50°-60°	811.4	15.2
60°-70°	350.4	6.5
70°-80°	37.8	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°	1899.4	35.5
0°-40°	3050.3	57.0
0°-60°	4965.2	92.7
0°-90°	5354.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5354.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2506	2506	2506	2506	2506	
5°	2456	2481	2488	2492	2496	234
15°	2360	2375	2364	2368	2371	665
25°	2154	2150	2154	2158	2168	986
35°	1833	1844	1851	1848	1819	1146
45°	1428	1431	1460	1438	1413	1085
55°	826	911	1015	908	830	743
65°	271	338	441	335	264	278
75°	7	11	39	7	7	22
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4
2.5°	2488.5	2517.0	2520.6	2502.7	2495.6	2485.0	2509.9	2492.1	2499.3	2492.1	2488.5
5°	2456.5	2488.5	2492.1	2492.1	2485.0	2481.4	2492.1	2488.5	2485.0	2477.9	2488.5
7.5°	2442.3	2460.0	2477.9	2456.5	2467.2	2463.7	2488.5	2477.9	2474.3	2474.3	2467.2
10°	2449.4	2445.8	2460.0	2438.7	2445.8	2438.7	2460.0	2460.0	2452.9	2445.8	2442.3
12.5°	2392.4	2420.8	2420.8	2417.3	2410.2	2399.5	2420.8	2435.2	2413.7	2413.7	2410.2
15°	2360.4	2367.5	2371.0	2371.0	2367.5	2374.6	2385.2	2371.0	2374.6	2356.8	2363.9
17.5°	2324.8	2310.6	2321.2	2314.1	2317.7	2324.8	2339.0	2339.0	2317.7	2314.1	2321.2
20°	2242.9	2285.6	2289.2	2267.9	2271.4	2271.4	2296.3	2275.0	2289.2	2271.4	2278.5
22.5°	2203.7	2232.1	2235.8	2207.3	2225.0	2203.7	2228.6	2196.5	2232.1	2207.3	2217.9
25°	2153.8	2150.4	2161.0	2146.7	2150.4	2150.4	2168.1	2153.8	2164.6	2150.4	2153.8
27.5°	2072.1	2100.5	2096.9	2082.7	2089.8	2086.3	2121.9	2082.7	2104.0	2086.3	2093.4
30°	2000.7	2025.7	2018.6	2004.4	2004.4	1993.6	2032.8	2022.1	2018.6	2018.6	2015.0
32.5°	1929.6	1933.2	1926.1	1929.6	1933.2	1919.0	1950.9	1936.7	1933.2	1936.7	1940.3
35°	1833.4	1833.4	1840.5	1829.9	1844.2	1844.2	1872.6	1854.8	1851.3	1840.5	1851.3
37.5°	1748.0	1737.4	1740.9	1740.9	1748.0	1755.1	1769.4	1762.2	1762.2	1751.6	1758.7
40°	1634.1	1627.0	1637.6	1637.6	1648.4	1648.4	1662.6	1655.5	1666.1	1666.1	1666.1
42.5°	1534.5	1534.5	1527.4	1538.0	1541.6	1538.0	1562.9	1559.3	1562.9	1555.8	1559.3
45°	1427.6	1427.6	1420.5	1417.0	1434.7	1431.2	1459.7	1448.9	1463.2	1456.0	1459.7
47.5°	1281.6	1299.5	1288.7	1299.5	1320.8	1324.4	1342.2	1335.0	1349.3	1338.7	1352.9
50°	1142.9	1142.9	1153.5	1167.7	1189.1	1192.7	1214.0	1228.3	1235.4	1238.9	1242.5
52.5°	996.9	993.3	1004.0	1021.7	1039.6	1053.8	1075.2	1096.5	1110.8	1132.1	1121.4
55°	825.9	833.0	843.8	865.1	893.6	911.3	929.2	957.7	982.6	993.3	1014.6
57.5°	679.9	672.8	679.9	708.4	740.5	754.7	779.7	808.2	843.8	865.1	872.3
60°	526.8	530.5	537.6	562.6	587.4	608.8	619.5	665.7	697.8	719.2	733.4
62.5°	388.1	395.2	402.4	423.7	448.5	466.4	484.1	523.4	551.8	573.2	587.4
65°	270.6	274.1	284.8	295.5	320.4	338.2	352.4	384.5	413.0	430.8	441.4
67.5°	167.3	170.8	177.9	192.3	210.0	224.3	238.5	259.9	284.8	302.6	306.2
70°	85.4	89.0	92.5	103.3	117.5	124.6	135.2	153.1	170.8	185.1	192.3
72.5°	28.5	28.5	32.1	39.2	46.3	53.5	56.9	74.8	89.0	96.2	99.6
75°	7.1	7.1	7.1	7.1	7.1	10.7	10.7	21.4	28.5	35.6	39.2
77.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	7.1	7.1
80°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
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°	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4	2506.4
2.5°	2506.4	2499.3	2495.6	2499.3	2499.3	2495.6	2506.4	2520.6	2538.3	2492.1
5°	2502.7	2495.6	2502.7	2481.4	2492.1	2485.0	2499.3	2495.6	2509.9	2495.6
7.5°	2492.1	2477.9	2481.4	2470.8	2485.0	2467.2	2477.9	2499.3	2485.0	2463.7
10°	2456.5	2449.4	2474.3	2438.7	2431.6	2445.8	2474.3	2452.9	2445.8	2452.9
12.5°	2420.8	2420.8	2431.6	2403.1	2406.6	2413.7	2427.9	2413.7	2420.8	2438.7
15°	2381.7	2374.6	2392.4	2371.0	2367.5	2360.4	2374.6	2374.6	2381.7	2371.0
17.5°	2335.4	2324.8	2324.8	2317.7	2314.1	2331.9	2339.0	2342.5	2346.2	2331.9
20°	2278.5	2275.0	2285.6	2275.0	2278.5	2282.1	2282.1	2275.0	2306.9	2267.9
22.5°	2217.9	2228.6	2214.4	2207.3	2214.4	2221.5	2221.5	2225.0	2217.9	2210.8
25°	2157.5	2164.6	2168.1	2146.7	2157.5	2146.7	2171.7	2175.2	2161.0	2168.1
27.5°	2104.0	2093.4	2089.8	2075.5	2082.7	2079.2	2082.7	2082.7	2104.0	2075.5
30°	2022.1	2011.5	2015.0	2004.4	2007.9	2004.4	2007.9	2007.9	2022.1	2018.6
32.5°	1943.8	1933.2	1936.7	1926.1	1926.1	1929.6	1922.5	1922.5	1933.2	1926.1
35°	1869.0	1844.2	1847.6	1844.2	1847.6	1833.4	1833.4	1829.9	1837.0	1819.2
37.5°	1762.2	1751.6	1748.0	1744.5	1748.0	1740.9	1748.0	1737.4	1748.0	1733.8
40°	1666.1	1659.0	1662.6	1641.2	1641.2	1644.7	1637.6	1634.1	1637.6	1651.8
42.5°	1570.1	1555.8	1548.7	1541.6	1545.1	1534.5	1530.8	1523.7	1530.8	1516.6
45°	1456.0	1456.0	1452.5	1434.7	1438.3	1438.3	1424.1	1409.8	1413.3	1413.3
47.5°	1352.9	1345.8	1342.2	1324.4	1320.8	1317.3	1302.9	1292.3	1292.3	1281.6
50°	1238.9	1231.8	1221.2	1203.3	1196.2	1174.8	1164.2	1150.0	1135.7	1135.7
52.5°	1132.1	1107.1	1092.9	1064.4	1053.8	1043.1	1014.6	1004.0	993.3	982.6
55°	1004.0	982.6	954.2	922.1	907.8	890.0	861.5	840.2	825.9	829.5
57.5°	879.4	843.8	815.3	772.6	754.7	744.0	715.5	687.1	672.8	672.8
60°	726.3	697.8	662.2	623.0	608.8	591.0	555.3	537.6	526.8	516.2
62.5°	580.3	558.9	526.8	477.0	466.4	448.5	423.7	402.4	391.6	391.6
65°	434.3	413.0	384.5	348.9	334.7	320.4	299.1	277.7	267.0	263.5
67.5°	306.2	281.2	256.4	227.9	217.2	210.0	188.7	174.5	167.3	163.7
70°	185.1	170.8	153.1	131.7	121.0	113.9	99.6	89.0	85.4	81.9
72.5°	96.2	85.4	71.2	56.9	49.8	42.7	35.6	28.5	25.0	25.0
75°	35.6	28.5	17.9	10.7	7.1	7.1	7.1	7.1	7.1	7.1
77.5°	7.1	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
80°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
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)