

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: **FLDSQ4C60D010 FEU4C609040 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: FLDSQ4C60D010 FEU4C609040 F4LC-CSSQ-MMS  
 Description: 4 INCH 6000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

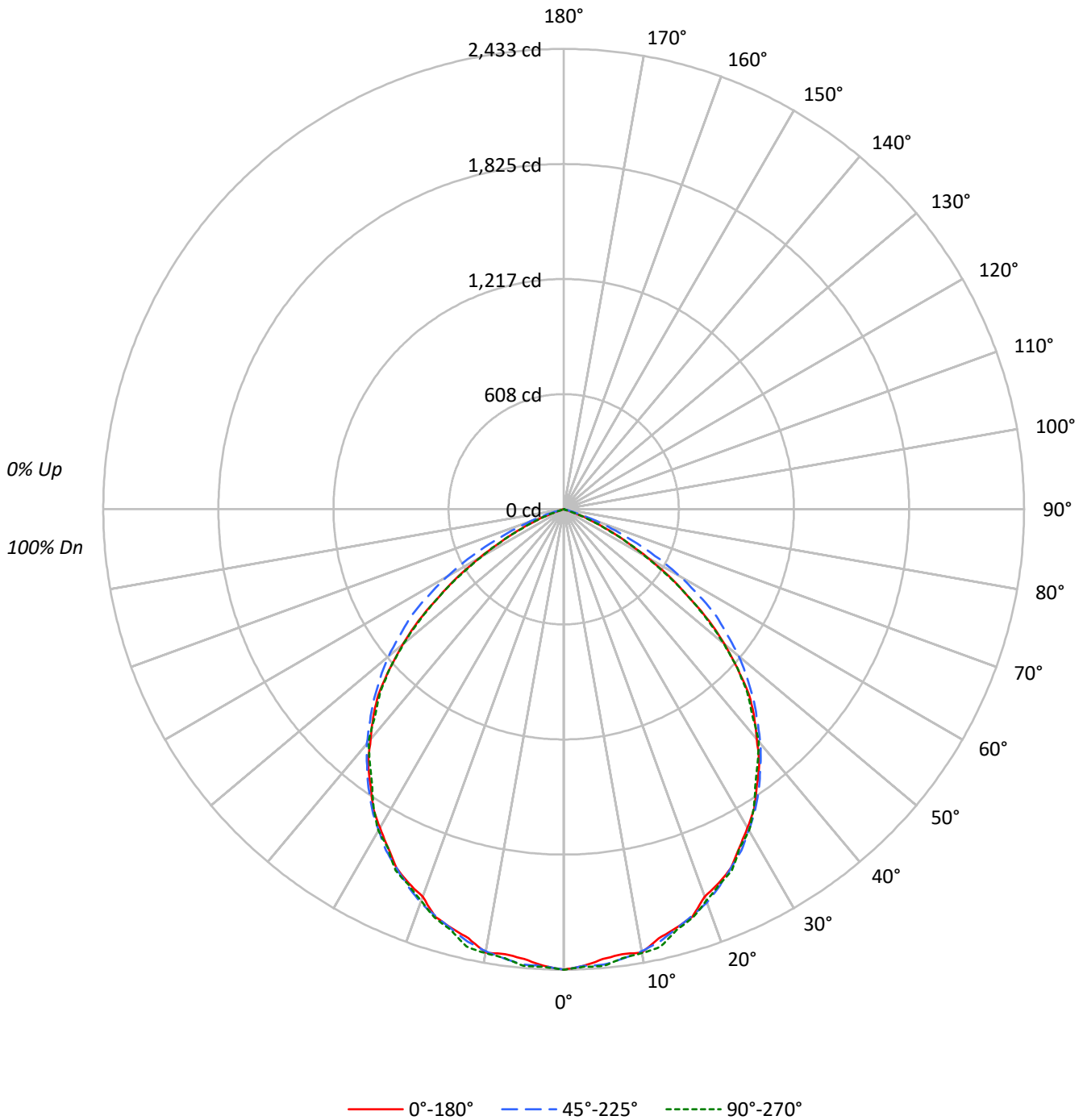
Lumens per Lamp: N/A  
 Luminaire Lumens: 5198.0 lumens  
 Efficiency: N/A  
 Efficacy: 72.2 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 72  
 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	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°	234786	234786	234786
5°	231005	234008	234676
10°	233000	232324	233333
15°	228914	229254	229943
20°	223589	227141	226084
25°	222626	222626	224095
30°	216414	217963	218353
35°	209668	211706	208043
40°	199831	203736	201998
45°	189128	193372	187245
50°	166562	181078	165526
55°	134898	165700	135487
60°	98708	137400	96720
65°	59978	97855	58402
70°	23387	52671	22428
75°	2572	14204	2572
80°	1945	1945	1945
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	229.7	4.4
10°-20°	649.9	12.5
20°-30°	964.4	18.6
30°-40°	1117.4	21.5
40°-50°	1071.4	20.6
50°-60°	787.7	15.2
60°-70°	340.2	6.5
70°-80°	36.7	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°	1844.0	35.5
0°-40°	2961.5	57.0
0°-60°	4820.6	92.7
0°-90°	5198.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5198.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2433	2433	2433	2433	2433	
5°	2385	2409	2416	2420	2423	228
15°	2292	2305	2295	2298	2302	646
25°	2091	2088	2091	2095	2105	957
35°	1780	1790	1797	1794	1766	1113
45°	1386	1390	1417	1396	1372	1054
55°	802	885	985	881	805	722
65°	263	328	429	325	256	270
75°	7	10	38	7	7	21
85°	0	0	0	0	0	0
90°	0	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°	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3
2.5°	2416.0	2443.6	2447.2	2429.8	2422.9	2412.6	2436.7	2419.5	2426.4	2419.5	2416.0
5°	2385.0	2416.0	2419.5	2419.5	2412.6	2409.1	2419.5	2416.0	2412.6	2405.7	2416.0
7.5°	2371.2	2388.4	2405.7	2385.0	2395.3	2391.9	2416.0	2405.7	2402.2	2402.2	2395.3
10°	2378.1	2374.5	2388.4	2367.6	2374.5	2367.6	2388.4	2388.4	2381.5	2374.5	2371.2
12.5°	2322.6	2350.3	2350.3	2346.9	2340.0	2329.6	2350.3	2364.2	2343.4	2343.4	2340.0
15°	2291.6	2298.5	2301.9	2301.9	2298.5	2305.4	2315.7	2301.9	2305.4	2288.1	2295.0
17.5°	2257.1	2243.2	2253.5	2246.6	2250.2	2257.1	2270.9	2270.9	2250.2	2246.6	2253.5
20°	2177.5	2219.0	2222.5	2201.8	2205.2	2205.2	2229.4	2208.7	2222.5	2205.2	2212.1
22.5°	2139.5	2167.1	2170.6	2143.0	2160.2	2139.5	2163.7	2132.5	2167.1	2143.0	2153.3
25°	2091.1	2087.7	2098.0	2084.2	2087.7	2087.7	2104.9	2091.1	2101.5	2087.7	2091.1
27.5°	2011.7	2039.3	2035.8	2022.0	2028.9	2025.5	2060.1	2022.0	2042.7	2025.5	2032.4
30°	1942.4	1966.7	1959.8	1946.0	1946.0	1935.5	1973.6	1963.2	1959.8	1959.8	1956.3
32.5°	1873.3	1876.9	1870.0	1873.3	1876.9	1863.0	1894.1	1880.3	1876.9	1880.3	1883.8
35°	1780.0	1780.0	1786.9	1776.6	1790.4	1790.4	1818.1	1800.7	1797.3	1786.9	1797.3
37.5°	1697.1	1686.8	1690.2	1690.2	1697.1	1704.0	1717.8	1710.9	1710.9	1700.6	1707.5
40°	1586.5	1579.6	1589.9	1589.9	1600.3	1600.3	1614.1	1607.2	1617.5	1617.5	1617.5
42.5°	1489.8	1489.8	1482.9	1493.1	1496.7	1493.1	1517.4	1513.9	1517.4	1510.5	1513.9
45°	1386.0	1386.0	1379.1	1375.7	1392.9	1389.5	1417.1	1406.7	1420.5	1413.6	1417.1
47.5°	1244.2	1261.6	1251.2	1261.6	1282.3	1285.8	1303.0	1296.1	1310.0	1299.7	1313.5
50°	1109.6	1109.6	1119.9	1133.7	1154.4	1157.9	1178.7	1192.5	1199.4	1202.8	1206.3
52.5°	967.8	964.3	974.7	992.0	1009.3	1023.1	1043.8	1064.6	1078.4	1099.1	1088.7
55°	801.9	808.8	819.2	839.9	867.6	884.8	902.1	929.8	954.0	964.3	985.0
57.5°	660.1	653.2	660.1	687.8	718.9	732.8	757.0	784.6	819.2	839.9	846.8
60°	511.5	515.0	521.9	546.2	570.3	591.0	601.5	646.3	677.5	698.2	712.0
62.5°	376.8	383.7	390.6	411.4	435.5	452.8	470.0	508.1	535.7	556.5	570.3
65°	262.7	266.1	276.5	286.8	311.1	328.3	342.1	373.3	400.9	418.3	428.6
67.5°	162.5	165.8	172.8	186.7	203.9	217.7	231.6	252.3	276.5	293.8	297.3
70°	82.9	86.4	89.8	100.3	114.1	121.0	131.3	148.6	165.8	179.7	186.7
72.5°	27.6	27.6	31.2	38.1	45.0	51.9	55.3	72.6	86.4	93.4	96.7
75°	6.9	6.9	6.9	6.9	6.9	10.4	10.4	20.7	27.6	34.6	38.1
77.5°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	6.9	6.9
80°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
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°	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3	2433.3
2.5°	2433.3	2426.4	2422.9	2426.4	2426.4	2422.9	2433.3	2447.2	2464.4	2419.5
5°	2429.8	2422.9	2429.8	2409.1	2419.5	2412.6	2426.4	2422.9	2436.7	2422.9
7.5°	2419.5	2405.7	2409.1	2398.8	2412.6	2395.3	2405.7	2426.4	2412.6	2391.9
10°	2385.0	2378.1	2402.2	2367.6	2360.7	2374.5	2402.2	2381.5	2374.5	2381.5
12.5°	2350.3	2350.3	2360.7	2333.1	2336.5	2343.4	2357.2	2343.4	2350.3	2367.6
15°	2312.3	2305.4	2322.6	2301.9	2298.5	2291.6	2305.4	2305.4	2312.3	2301.9
17.5°	2267.4	2257.1	2257.1	2250.2	2246.6	2264.0	2270.9	2274.3	2277.8	2264.0
20°	2212.1	2208.7	2219.0	2208.7	2212.1	2215.6	2215.6	2208.7	2239.7	2201.8
22.5°	2153.3	2163.7	2149.9	2143.0	2149.9	2156.8	2156.8	2160.2	2153.3	2146.4
25°	2094.6	2101.5	2104.9	2084.2	2094.6	2084.2	2108.4	2111.8	2098.0	2104.9
27.5°	2042.7	2032.4	2028.9	2015.1	2022.0	2018.6	2022.0	2022.0	2042.7	2015.1
30°	1963.2	1952.9	1956.3	1946.0	1949.4	1946.0	1949.4	1949.4	1963.2	1959.8
32.5°	1887.2	1876.9	1880.3	1870.0	1870.0	1873.3	1866.4	1866.4	1876.9	1870.0
35°	1814.5	1790.4	1793.8	1790.4	1793.8	1780.0	1780.0	1776.6	1783.5	1766.2
37.5°	1710.9	1700.6	1697.1	1693.7	1697.1	1690.2	1697.1	1686.8	1697.1	1683.2
40°	1617.5	1610.6	1614.1	1593.4	1593.4	1596.8	1589.9	1586.5	1589.9	1603.7
42.5°	1524.3	1510.5	1503.6	1496.7	1500.1	1489.8	1486.2	1479.3	1486.2	1472.4
45°	1413.6	1413.6	1410.2	1392.9	1396.4	1396.4	1382.6	1368.8	1372.2	1372.2
47.5°	1313.5	1306.6	1303.0	1285.8	1282.3	1278.9	1265.0	1254.7	1254.7	1244.2
50°	1202.8	1195.9	1185.6	1168.2	1161.3	1140.6	1130.3	1116.5	1102.7	1102.7
52.5°	1099.1	1074.9	1061.1	1033.4	1023.1	1012.7	985.0	974.7	964.3	954.0
55°	974.7	954.0	926.4	895.2	881.4	864.0	836.4	815.7	801.9	805.4
57.5°	853.8	819.2	791.6	750.1	732.8	722.3	694.7	667.0	653.2	653.2
60°	705.1	677.5	642.9	604.8	591.0	573.8	539.1	521.9	511.5	501.2
62.5°	563.4	542.7	511.5	463.1	452.8	435.5	411.4	390.6	380.2	380.2
65°	421.7	400.9	373.3	338.7	324.9	311.1	290.4	269.6	259.2	255.8
67.5°	297.3	273.0	248.9	221.3	210.8	203.9	183.2	169.4	162.5	158.9
70°	179.7	165.8	148.6	127.9	117.5	110.6	96.7	86.4	82.9	79.5
72.5°	93.4	82.9	69.1	55.3	48.4	41.5	34.6	27.6	24.3	24.3
75°	34.6	27.6	17.3	10.4	6.9	6.9	6.9	6.9	6.9	6.9
77.5°	6.9	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
80°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
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)