

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 FEU4C609030 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 FEU4C609030 F4LC-CSSQ-MMS
 Description: 4 INCH 6000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

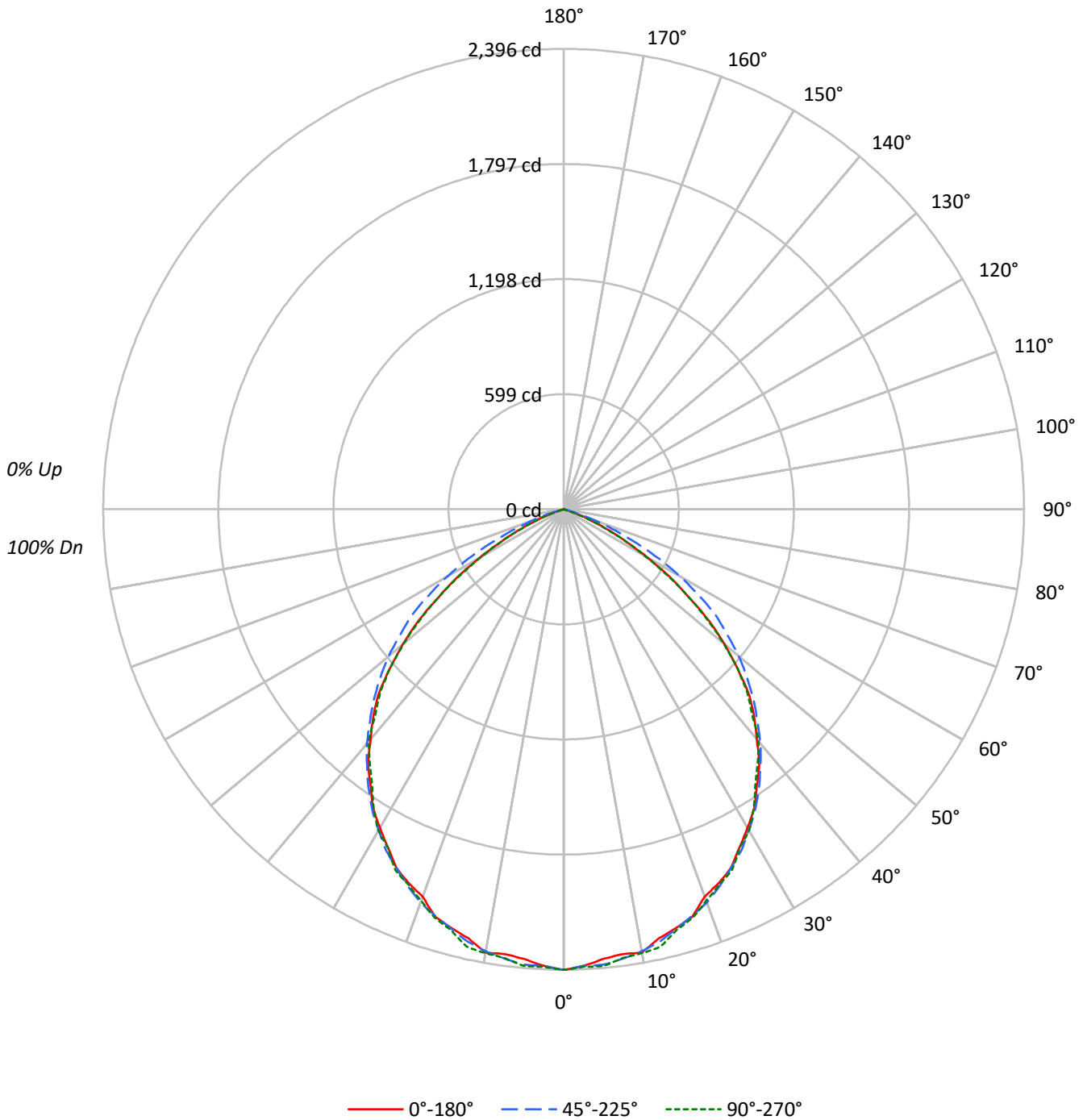
Lumens per Lamp: N/A
 Luminaire Lumens: 5119.0 lumens
 Efficiency: N/A
 Efficacy: 71.1 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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			
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	100	100
1	111	108	104	101	109	105	102	100	101	99	96	97	95	94	94	92	91	89	89	89
2	103	96	91	86	100	94	89	85	91	87	83	88	84	81	85	82	79	77	77	77
3	95	86	79	74	93	85	78	73	82	76	72	79	74	71	77	73	69	67	67	67
4	88	77	70	64	86	76	69	63	74	67	63	71	66	62	69	65	61	59	59	59
5	81	70	62	56	79	69	61	56	67	60	55	65	59	54	63	58	54	52	52	52
6	75	63	55	49	73	62	55	49	61	54	49	59	53	48	57	52	48	46	46	46
7	70	58	50	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41	41	41
8	65	53	45	40	64	52	45	39	51	44	39	50	44	39	49	43	39	37	37	37
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35	33	33	33
10	57	45	38	33	56	44	37	33	44	37	32	43	37	32	42	36	32	31	31	31

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	231226	231226	231226
5°	227489	230453	231112
10°	229453	228787	229786
15°	225438	225767	226447
20°	220190	223691	222644
25°	219241	219241	220689
30°	213127	214642	215032
35°	206476	208490	204874
40°	196796	200637	198924
45°	186249	190438	184393
50°	164025	178331	163005
55°	132846	163193	133418
60°	97203	135316	95254
65°	59064	96371	57512
70°	23049	51881	22090
75°	2535	13980	2535
80°	1945	1945	1945
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	226.2	4.4
10°-20°	640.1	12.5
20°-30°	949.7	18.6
30°-40°	1100.4	21.5
40°-50°	1055.1	20.6
50°-60°	775.8	15.2
60°-70°	335.1	6.5
70°-80°	36.2	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°	1816.0	35.5
0°-40°	2916.4	57.0
0°-60°	4747.3	92.7
0°-90°	5119.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5119.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2396	2396	2396	2396	2396	
5°	2349	2372	2379	2383	2386	224
15°	2257	2270	2260	2264	2267	636
25°	2059	2056	2059	2063	2073	943
35°	1753	1763	1770	1766	1739	1096
45°	1365	1368	1396	1375	1351	1038
55°	790	871	970	868	793	711
65°	259	323	422	320	252	266
75°	7	10	38	7	7	21
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°	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4
2.5°	2379.3	2406.5	2410.0	2392.9	2386.1	2375.9	2399.7	2382.8	2389.6	2382.8	2379.3
5°	2348.7	2379.3	2382.8	2382.8	2375.9	2372.5	2382.8	2379.3	2375.9	2369.1	2379.3
7.5°	2335.1	2352.1	2369.1	2348.7	2358.9	2355.5	2379.3	2369.1	2365.7	2365.7	2358.9
10°	2341.9	2338.5	2352.1	2331.6	2338.5	2331.6	2352.1	2352.1	2345.3	2338.5	2335.1
12.5°	2287.3	2314.6	2314.6	2311.2	2304.4	2294.2	2314.6	2328.3	2307.8	2307.8	2304.4
15°	2256.8	2263.6	2266.9	2266.9	2263.6	2270.4	2280.5	2266.9	2270.4	2253.3	2260.1
17.5°	2222.8	2209.2	2219.3	2212.5	2216.0	2222.8	2236.4	2236.4	2216.0	2212.5	2219.3
20°	2144.4	2185.3	2188.7	2168.3	2171.7	2171.7	2195.5	2175.1	2188.7	2171.7	2178.5
22.5°	2106.9	2134.2	2137.6	2110.4	2127.4	2106.9	2130.8	2100.1	2134.2	2110.4	2120.6
25°	2059.3	2056.0	2066.1	2052.5	2056.0	2056.0	2072.9	2059.3	2069.6	2056.0	2059.3
27.5°	1981.1	2008.3	2004.9	1991.3	1998.1	1994.7	2028.7	1991.3	2011.7	1994.7	2001.5
30°	1912.9	1936.8	1930.0	1916.4	1916.4	1906.1	1943.6	1933.3	1930.0	1930.0	1926.5
32.5°	1844.9	1848.3	1841.5	1844.9	1848.3	1834.7	1865.3	1851.7	1848.3	1851.7	1855.1
35°	1752.9	1752.9	1759.7	1749.6	1763.2	1763.2	1790.4	1773.4	1770.0	1759.7	1770.0
37.5°	1671.3	1661.1	1664.5	1664.5	1671.3	1678.1	1691.7	1684.9	1684.9	1674.7	1681.5
40°	1562.4	1555.6	1565.7	1565.7	1576.0	1576.0	1589.6	1582.8	1592.9	1592.9	1592.9
42.5°	1467.1	1467.1	1460.3	1470.5	1473.9	1470.5	1494.3	1490.9	1494.3	1487.5	1490.9
45°	1364.9	1364.9	1358.1	1354.8	1371.7	1368.4	1395.6	1385.3	1398.9	1392.1	1395.6
47.5°	1225.3	1242.4	1232.1	1242.4	1262.8	1266.3	1283.2	1276.4	1290.1	1279.9	1293.5
50°	1092.7	1092.7	1102.8	1116.5	1136.9	1140.3	1160.8	1174.4	1181.2	1184.5	1188.0
52.5°	953.1	949.7	959.9	976.9	994.0	1007.6	1028.0	1048.4	1062.0	1082.4	1072.2
55°	789.7	796.5	806.7	827.2	854.4	871.3	888.4	915.6	939.5	949.7	970.1
57.5°	650.1	643.3	650.1	677.3	708.0	721.6	745.5	772.7	806.7	827.2	834.0
60°	503.7	507.2	514.0	537.9	561.6	582.0	592.3	636.5	667.2	687.6	701.2
62.5°	371.1	377.9	384.7	405.1	428.9	445.9	462.9	500.4	527.6	548.0	561.6
65°	258.7	262.1	272.3	282.5	306.4	323.3	336.9	367.6	394.8	411.9	422.1
67.5°	160.0	163.3	170.1	183.9	200.8	214.4	228.0	248.5	272.3	289.3	292.8
70°	81.7	85.1	88.5	98.7	112.4	119.2	129.3	146.4	163.3	176.9	183.9
72.5°	27.2	27.2	30.7	37.5	44.3	51.1	54.4	71.5	85.1	91.9	95.3
75°	6.8	6.8	6.8	6.8	6.8	10.3	10.3	20.4	27.2	34.0	37.5
77.5°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	6.8	6.8
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°	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4	2396.4
2.5°	2396.4	2389.6	2386.1	2389.6	2389.6	2386.1	2396.4	2410.0	2426.9	2382.8
5°	2392.9	2386.1	2392.9	2372.5	2382.8	2375.9	2389.6	2386.1	2399.7	2386.1
7.5°	2382.8	2369.1	2372.5	2362.3	2375.9	2358.9	2369.1	2389.6	2375.9	2355.5
10°	2348.7	2341.9	2365.7	2331.6	2324.8	2338.5	2365.7	2345.3	2338.5	2345.3
12.5°	2314.6	2314.6	2324.8	2297.6	2301.0	2307.8	2321.4	2307.8	2314.6	2331.6
15°	2277.2	2270.4	2287.3	2266.9	2263.6	2256.8	2270.4	2270.4	2277.2	2266.9
17.5°	2232.9	2222.8	2222.8	2216.0	2212.5	2229.6	2236.4	2239.7	2243.2	2229.6
20°	2178.5	2175.1	2185.3	2175.1	2178.5	2181.9	2181.9	2175.1	2205.7	2168.3
22.5°	2120.6	2130.8	2117.2	2110.4	2117.2	2124.0	2124.0	2127.4	2120.6	2113.7
25°	2062.8	2069.6	2072.9	2052.5	2062.8	2052.5	2076.4	2079.7	2066.1	2072.9
27.5°	2011.7	2001.5	1998.1	1984.4	1991.3	1987.9	1991.3	1991.3	2011.7	1984.4
30°	1933.3	1923.2	1926.5	1916.4	1919.7	1916.4	1919.7	1919.7	1933.3	1930.0
32.5°	1858.5	1848.3	1851.7	1841.5	1841.5	1844.9	1838.1	1838.1	1848.3	1841.5
35°	1787.0	1763.2	1766.5	1763.2	1766.5	1752.9	1752.9	1749.6	1756.4	1739.3
37.5°	1684.9	1674.7	1671.3	1667.9	1671.3	1664.5	1671.3	1661.1	1671.3	1657.7
40°	1592.9	1586.1	1589.6	1569.2	1569.2	1572.5	1565.7	1562.4	1565.7	1579.3
42.5°	1501.1	1487.5	1480.7	1473.9	1477.3	1467.1	1463.7	1456.8	1463.7	1450.0
45°	1392.1	1392.1	1388.8	1371.7	1375.2	1375.2	1361.6	1348.0	1351.3	1351.3
47.5°	1293.5	1286.7	1283.2	1266.3	1262.8	1259.5	1245.8	1235.6	1235.6	1225.3
50°	1184.5	1177.7	1167.6	1150.5	1143.7	1123.3	1113.1	1099.5	1085.9	1085.9
52.5°	1082.4	1058.5	1044.9	1017.7	1007.6	997.3	970.1	959.9	949.7	939.5
55°	959.9	939.5	912.3	881.6	868.0	850.9	823.7	803.3	789.7	793.1
57.5°	840.8	806.7	779.5	738.7	721.6	711.3	684.1	656.9	643.3	643.3
60°	694.4	667.2	633.1	595.7	582.0	565.1	530.9	514.0	503.7	493.6
62.5°	554.8	534.4	503.7	456.1	445.9	428.9	405.1	384.7	374.4	374.4
65°	415.3	394.8	367.6	333.6	320.0	306.4	286.0	265.5	255.3	251.9
67.5°	292.8	268.9	245.1	217.9	207.6	200.8	180.4	166.8	160.0	156.5
70°	176.9	163.3	146.4	126.0	115.7	108.9	95.3	85.1	81.7	78.3
72.5°	91.9	81.7	68.1	54.4	47.6	40.8	34.0	27.2	23.9	23.9
75°	34.0	27.2	17.1	10.3	6.8	6.8	6.8	6.8	6.8	6.8
77.5°	6.8	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)