

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: **FLDSQ4C40D010 FEU4C409035 F4LC-DFSSQ-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: FLDSQ4C40D010 FEU4C409035 F4LC-DFSSQ-MW  
 Description: 4 INCH 4000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

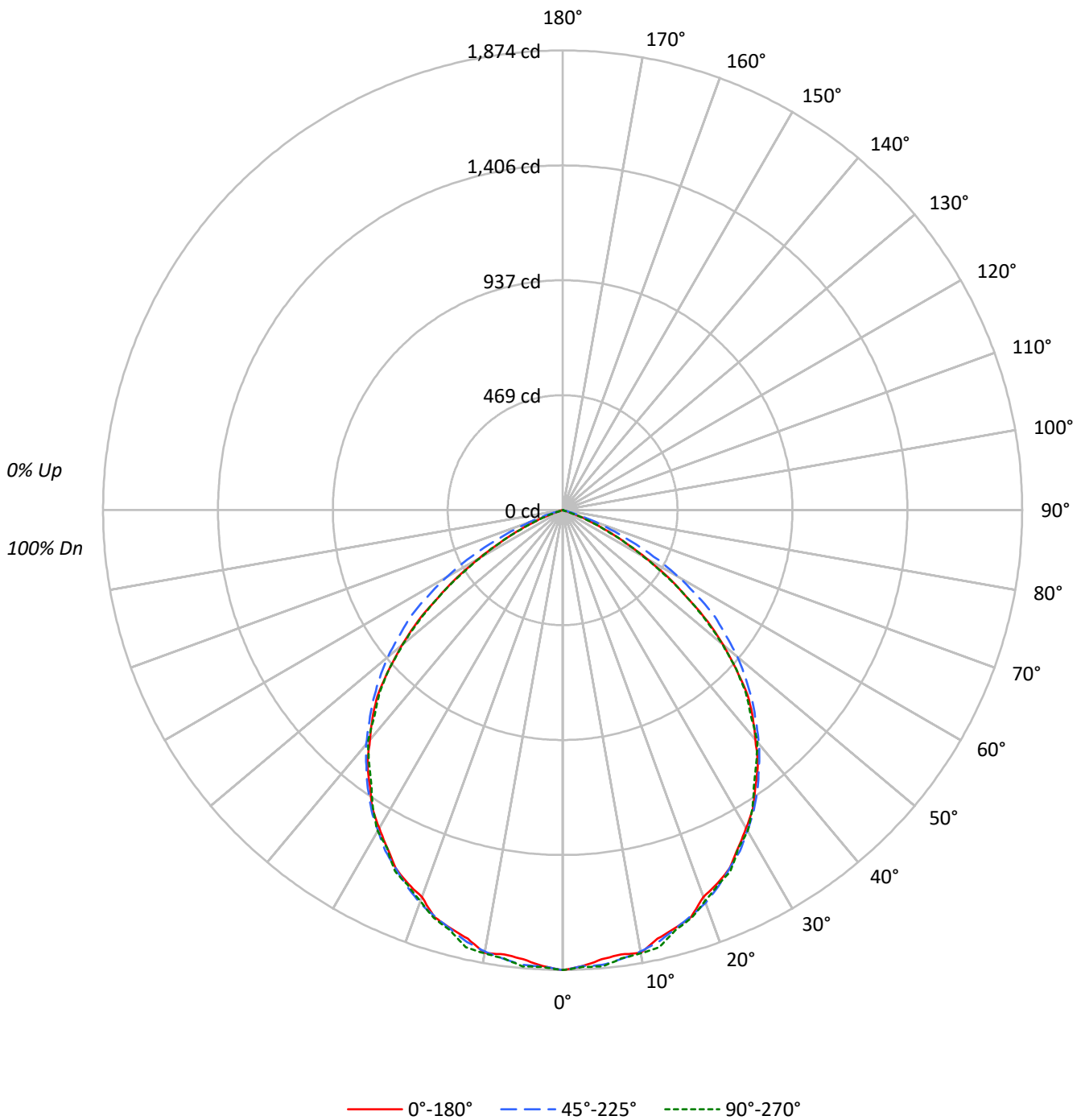
Lumens per Lamp: N/A  
 Luminaire Lumens: 4004.0 lumens  
 Efficiency: N/A  
 Efficacy: 85.2 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 47  
 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: FLDSQ4C40D010 FEU4C409035 F4LC-DFSSQ-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°	180859	180859	180859
5°	177937	180252	180775
10°	179475	178956	179730
15°	176331	176590	177130
20°	172227	174969	174148
25°	171492	171492	172620
30°	166711	167892	168193
35°	161504	163082	160255
40°	153932	156943	155595
45°	145680	148955	144234
50°	128299	139482	127503
55°	103912	127648	104366
60°	76033	105848	74509
65°	46210	75366	45000
70°	18027	40568	17294
75°	1976	10923	1976
80°	1500	1500	1500
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	176.9	4.4
10°-20°	500.7	12.5
20°-30°	742.9	18.6
30°-40°	860.8	21.5
40°-50°	825.3	20.6
50°-60°	606.8	15.2
60°-70°	262.1	6.5
70°-80°	28.3	0.7
80°-90°	0.4	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°	1420.4	35.5
0°-40°	2281.2	57.0
0°-60°	3713.3	92.7
0°-90°	4004.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4004.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1874	1874	1874	1874	1874	
5°	1837	1856	1861	1864	1866	175
15°	1765	1776	1768	1770	1773	498
25°	1611	1608	1611	1614	1621	737
35°	1371	1379	1384	1382	1360	857
45°	1068	1070	1092	1076	1057	812
55°	618	682	759	679	620	556
65°	202	253	330	250	197	208
75°	5	8	29	5	5	16
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C40D010 FEU4C409035 F4LC-DFSSQ-MW

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4
2.5°	1861.0	1882.3	1885.0	1871.7	1866.4	1858.4	1877.0	1863.8	1869.1	1863.8	1861.0
5°	1837.1	1861.0	1863.8	1863.8	1858.4	1855.7	1863.8	1861.0	1858.4	1853.1	1861.0
7.5°	1826.5	1839.7	1853.1	1837.1	1845.1	1842.5	1861.0	1853.1	1850.4	1850.4	1845.1
10°	1831.8	1829.1	1839.7	1823.8	1829.1	1823.8	1839.7	1839.7	1834.4	1829.1	1826.5
12.5°	1789.1	1810.4	1810.4	1807.8	1802.5	1794.4	1810.4	1821.2	1805.1	1805.1	1802.5
15°	1765.2	1770.5	1773.2	1773.2	1770.5	1775.9	1783.8	1773.2	1775.9	1762.5	1767.8
17.5°	1738.6	1728.0	1735.9	1730.6	1733.3	1738.6	1749.3	1749.3	1733.3	1730.6	1735.9
20°	1677.3	1709.3	1712.0	1696.0	1698.6	1698.6	1717.3	1701.3	1712.0	1698.6	1704.0
22.5°	1648.0	1669.3	1672.0	1650.7	1664.0	1648.0	1666.7	1642.7	1669.3	1650.7	1658.7
25°	1610.8	1608.1	1616.1	1605.4	1608.1	1608.1	1621.4	1610.8	1618.8	1608.1	1610.8
27.5°	1549.6	1570.9	1568.2	1557.5	1562.8	1560.2	1586.9	1557.5	1573.5	1560.2	1565.6
30°	1496.3	1514.9	1509.6	1499.0	1499.0	1490.9	1520.3	1512.2	1509.6	1509.6	1506.9
32.5°	1443.0	1445.7	1440.4	1443.0	1445.7	1435.1	1459.0	1448.4	1445.7	1448.4	1451.1
35°	1371.1	1371.1	1376.4	1368.5	1379.2	1379.2	1400.4	1387.1	1384.5	1376.4	1384.5
37.5°	1307.2	1299.3	1301.9	1301.9	1307.2	1312.6	1323.2	1317.9	1317.9	1310.0	1315.3
40°	1222.1	1216.8	1224.7	1224.7	1232.7	1232.7	1243.4	1238.0	1246.0	1246.0	1246.0
42.5°	1147.6	1147.6	1142.2	1150.2	1152.9	1150.2	1168.8	1166.1	1168.8	1163.5	1166.1
45°	1067.6	1067.6	1062.3	1059.7	1072.9	1070.3	1091.6	1083.6	1094.2	1088.9	1091.6
47.5°	958.4	971.8	963.8	971.8	987.8	990.5	1003.7	998.4	1009.1	1001.1	1011.8
50°	854.7	854.7	862.6	873.3	889.2	892.0	907.9	918.6	923.9	926.5	929.2
52.5°	745.5	742.8	750.8	764.1	777.5	788.1	804.1	820.0	830.7	846.7	838.6
55°	617.7	623.0	631.0	647.0	668.3	681.5	694.9	716.2	734.9	742.8	758.8
57.5°	508.5	503.2	508.5	529.8	553.8	564.4	583.1	604.4	631.0	647.0	652.3
60°	394.0	396.7	402.0	420.7	439.3	455.3	463.3	497.8	521.9	537.8	548.5
62.5°	290.3	295.6	300.9	316.9	335.4	348.8	362.1	391.4	412.7	428.7	439.3
65°	202.4	205.0	213.0	221.0	239.6	252.9	263.5	287.5	308.8	322.2	330.1
67.5°	125.1	127.7	133.1	143.8	157.1	167.7	178.4	194.3	213.0	226.3	229.0
70°	63.9	66.6	69.2	77.2	87.9	93.2	101.1	114.5	127.7	138.4	143.8
72.5°	21.3	21.3	24.0	29.3	34.7	40.0	42.6	55.9	66.6	71.9	74.5
75°	5.3	5.3	5.3	5.3	5.3	8.0	8.0	16.0	21.3	26.6	29.3
77.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	5.3	5.3
80°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
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°	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4	1874.4
2.5°	1874.4	1869.1	1866.4	1869.1	1869.1	1866.4	1874.4	1885.0	1898.3	1863.8
5°	1871.7	1866.4	1871.7	1855.7	1863.8	1858.4	1869.1	1866.4	1877.0	1866.4
7.5°	1863.8	1853.1	1855.7	1847.8	1858.4	1845.1	1853.1	1869.1	1858.4	1842.5
10°	1837.1	1831.8	1850.4	1823.8	1818.5	1829.1	1850.4	1834.4	1829.1	1834.4
12.5°	1810.4	1810.4	1818.5	1797.2	1799.8	1805.1	1815.7	1805.1	1810.4	1823.8
15°	1781.2	1775.9	1789.1	1773.2	1770.5	1765.2	1775.9	1775.9	1781.2	1773.2
17.5°	1746.5	1738.6	1738.6	1733.3	1730.6	1743.9	1749.3	1751.9	1754.6	1743.9
20°	1704.0	1701.3	1709.3	1701.3	1704.0	1706.7	1706.7	1701.3	1725.3	1696.0
22.5°	1658.7	1666.7	1656.1	1650.7	1656.1	1661.4	1661.4	1664.0	1658.7	1653.3
25°	1613.5	1618.8	1621.4	1605.4	1613.5	1605.4	1624.1	1626.7	1616.1	1621.4
27.5°	1573.5	1565.6	1562.8	1552.2	1557.5	1554.9	1557.5	1557.5	1573.5	1552.2
30°	1512.2	1504.3	1506.9	1499.0	1501.6	1499.0	1501.6	1501.6	1512.2	1509.6
32.5°	1453.7	1445.7	1448.4	1440.4	1440.4	1443.0	1437.7	1437.7	1445.7	1440.4
35°	1397.7	1379.2	1381.8	1379.2	1381.8	1371.1	1371.1	1368.5	1373.8	1360.5
37.5°	1317.9	1310.0	1307.2	1304.6	1307.2	1301.9	1307.2	1299.3	1307.2	1296.6
40°	1246.0	1240.7	1243.4	1227.4	1227.4	1230.0	1224.7	1222.1	1224.7	1235.3
42.5°	1174.2	1163.5	1158.2	1152.9	1155.5	1147.6	1144.8	1139.5	1144.8	1134.2
45°	1088.9	1088.9	1086.3	1072.9	1075.6	1075.6	1065.0	1054.4	1057.0	1057.0
47.5°	1011.8	1006.4	1003.7	990.5	987.8	985.2	974.4	966.5	966.5	958.4
50°	926.5	921.2	913.2	899.9	894.6	878.6	870.7	860.0	849.4	849.4
52.5°	846.7	828.0	817.3	796.0	788.1	780.1	758.8	750.8	742.8	734.9
55°	750.8	734.9	713.6	689.6	678.9	665.6	644.3	628.3	617.7	620.4
57.5°	657.6	631.0	609.7	577.8	564.4	556.4	535.1	513.8	503.2	503.2
60°	543.1	521.9	495.2	465.9	455.3	442.0	415.3	402.0	394.0	386.1
62.5°	434.0	418.0	394.0	356.7	348.8	335.4	316.9	300.9	292.9	292.9
65°	324.8	308.8	287.5	260.9	250.3	239.6	223.7	207.7	199.7	197.1
67.5°	229.0	210.3	191.7	170.4	162.4	157.1	141.1	130.5	125.1	122.4
70°	138.4	127.7	114.5	98.5	90.5	85.2	74.5	66.6	63.9	61.3
72.5°	71.9	63.9	53.2	42.6	37.3	31.9	26.6	21.3	18.7	18.7
75°	26.6	21.3	13.4	8.0	5.3	5.3	5.3	5.3	5.3	5.3
77.5°	5.3	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
80°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
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)