

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: **FLDSQ4C45D010 FEU4C459030 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: FLDSQ4C45D010 FEU4C459030 F4LC-DFSSQ-MW  
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

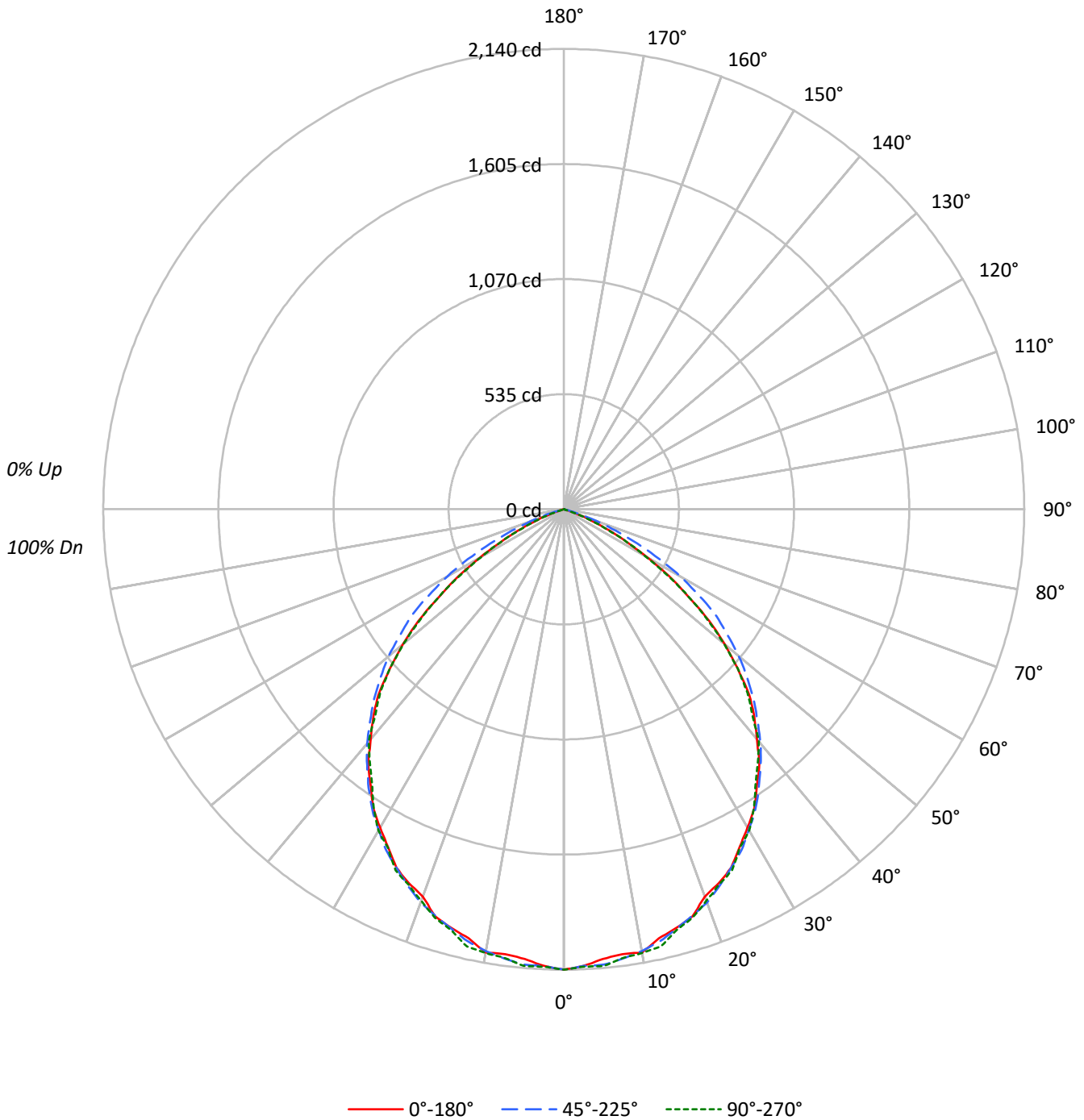
Lumens per Lamp: N/A  
 Luminaire Lumens: 4571.0 lumens  
 Efficiency: N/A  
 Efficacy: 92.2 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 49.6  
 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#

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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°	206467	206467	206467
5°	203139	205783	206374
10°	204890	204293	205184
15°	201304	201603	202213
20°	196624	199746	198812
25°	195776	195776	197064
30°	190309	191669	192014
35°	184379	186169	182941
40°	175723	179162	177638
45°	166312	170051	164648
50°	146462	159237	145547
55°	118614	145715	119136
60°	86801	120823	85045
65°	52740	86051	51370
70°	20566	46323	19720
75°	2274	12489	2274
80°	1723	1723	1723
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	202.0	4.4
10°-20°	571.6	12.5
20°-30°	848.1	18.6
30°-40°	982.7	21.5
40°-50°	942.1	20.6
50°-60°	692.7	15.2
60°-70°	299.2	6.5
70°-80°	32.3	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°	1621.6	35.5
0°-40°	2604.2	57.0
0°-60°	4239.1	92.7
0°-90°	4571.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4571.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2140	2140	2140	2140	2140	
5°	2097	2118	2125	2128	2131	200
15°	2015	2027	2018	2021	2024	568
25°	1839	1836	1839	1842	1851	842
35°	1565	1574	1580	1577	1553	979
45°	1219	1222	1246	1228	1207	927
55°	705	778	866	775	708	635
65°	231	289	377	286	225	237
75°	6	9	34	6	6	19
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°	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8
2.5°	2124.6	2148.9	2152.0	2136.7	2130.7	2121.6	2142.8	2127.7	2133.7	2127.7	2124.6
5°	2097.3	2124.6	2127.7	2127.7	2121.6	2118.5	2127.7	2124.6	2121.6	2115.5	2124.6
7.5°	2085.1	2100.3	2115.5	2097.3	2106.3	2103.4	2124.6	2115.5	2112.4	2112.4	2106.3
10°	2091.2	2088.1	2100.3	2082.0	2088.1	2082.0	2100.3	2100.3	2094.2	2088.1	2085.1
12.5°	2042.5	2066.8	2066.8	2063.8	2057.7	2048.6	2066.8	2079.1	2060.7	2060.7	2057.7
15°	2015.2	2021.3	2024.3	2024.3	2021.3	2027.3	2036.4	2024.3	2027.3	2012.1	2018.2
17.5°	1984.8	1972.7	1981.7	1975.6	1978.7	1984.8	1997.0	1997.0	1978.7	1975.6	1981.7
20°	1914.9	1951.3	1954.4	1936.2	1939.2	1939.2	1960.5	1942.3	1954.4	1939.2	1945.3
22.5°	1881.4	1905.7	1908.8	1884.5	1899.6	1881.4	1902.7	1875.3	1905.7	1884.5	1893.5
25°	1838.9	1835.9	1844.9	1832.8	1835.9	1835.9	1851.0	1838.9	1848.0	1835.9	1838.9
27.5°	1769.0	1793.3	1790.2	1778.1	1784.2	1781.2	1811.6	1778.1	1796.3	1781.2	1787.3
30°	1708.1	1729.5	1723.4	1711.2	1711.2	1702.1	1735.5	1726.4	1723.4	1723.4	1720.3
32.5°	1647.4	1650.5	1644.4	1647.4	1650.5	1638.3	1665.6	1653.5	1650.5	1653.5	1656.6
35°	1565.3	1565.3	1571.4	1562.3	1574.5	1574.5	1598.8	1583.5	1580.5	1571.4	1580.5
37.5°	1492.4	1483.3	1486.3	1486.3	1492.4	1498.4	1510.6	1504.5	1504.5	1495.5	1501.5
40°	1395.1	1389.1	1398.1	1398.1	1407.3	1407.3	1419.4	1413.4	1422.4	1422.4	1422.4
42.5°	1310.1	1310.1	1304.0	1313.0	1316.1	1313.0	1334.4	1331.3	1334.4	1328.3	1331.3
45°	1218.8	1218.8	1212.7	1209.7	1224.9	1221.9	1246.2	1237.0	1249.2	1243.1	1246.2
47.5°	1094.2	1109.4	1100.2	1109.4	1127.6	1130.7	1145.9	1139.8	1151.9	1142.9	1155.0
50°	975.7	975.7	984.8	996.9	1015.2	1018.3	1036.5	1048.6	1054.7	1057.7	1060.8
52.5°	851.1	848.0	857.2	872.3	887.6	899.7	917.9	936.2	948.3	966.6	957.4
55°	705.1	711.2	720.4	738.6	762.9	778.1	793.3	817.6	838.9	848.0	866.2
57.5°	580.5	574.4	580.5	604.8	632.2	644.4	665.7	690.0	720.4	738.6	744.7
60°	449.8	452.9	459.0	480.3	501.5	519.7	528.9	568.3	595.8	614.0	626.1
62.5°	331.4	337.4	343.5	361.7	383.0	398.2	413.3	446.8	471.1	489.4	501.5
65°	231.0	234.0	243.2	252.2	273.6	288.7	300.9	328.3	352.6	367.8	376.9
67.5°	142.9	145.8	151.9	164.2	179.3	191.5	203.6	221.9	243.2	258.3	261.4
70°	72.9	76.0	79.0	88.2	100.3	106.4	115.5	130.7	145.8	158.0	164.2
72.5°	24.3	24.3	27.4	33.5	39.6	45.6	48.6	63.9	76.0	82.1	85.1
75°	6.1	6.1	6.1	6.1	6.1	9.2	9.2	18.2	24.3	30.4	33.5
77.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	6.1	6.1
80°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
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°	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8
2.5°	2139.8	2133.7	2130.7	2133.7	2133.7	2130.7	2139.8	2152.0	2167.1	2127.7
5°	2136.7	2130.7	2136.7	2118.5	2127.7	2121.6	2133.7	2130.7	2142.8	2130.7
7.5°	2127.7	2115.5	2118.5	2109.4	2121.6	2106.3	2115.5	2133.7	2121.6	2103.4
10°	2097.3	2091.2	2112.4	2082.0	2076.0	2088.1	2112.4	2094.2	2088.1	2094.2
12.5°	2066.8	2066.8	2076.0	2051.7	2054.6	2060.7	2072.9	2060.7	2066.8	2082.0
15°	2033.4	2027.3	2042.5	2024.3	2021.3	2015.2	2027.3	2027.3	2033.4	2024.3
17.5°	1993.9	1984.8	1984.8	1978.7	1975.6	1990.9	1997.0	1999.9	2003.0	1990.9
20°	1945.3	1942.3	1951.3	1942.3	1945.3	1948.4	1948.4	1942.3	1969.6	1936.2
22.5°	1893.5	1902.7	1890.6	1884.5	1890.6	1896.6	1896.6	1899.6	1893.5	1887.5
25°	1841.9	1848.0	1851.0	1832.8	1841.9	1832.8	1854.1	1857.1	1844.9	1851.0
27.5°	1796.3	1787.3	1784.2	1772.0	1778.1	1775.1	1778.1	1778.1	1796.3	1772.0
30°	1726.4	1717.3	1720.3	1711.2	1714.2	1711.2	1714.2	1714.2	1726.4	1723.4
32.5°	1659.5	1650.5	1653.5	1644.4	1644.4	1647.4	1641.3	1641.3	1650.5	1644.4
35°	1595.7	1574.5	1577.4	1574.5	1577.4	1565.3	1565.3	1562.3	1568.4	1553.1
37.5°	1504.5	1495.5	1492.4	1489.4	1492.4	1486.3	1492.4	1483.3	1492.4	1480.2
40°	1422.4	1416.3	1419.4	1401.2	1401.2	1404.2	1398.1	1395.1	1398.1	1410.3
42.5°	1340.4	1328.3	1322.2	1316.1	1319.1	1310.1	1307.0	1300.9	1307.0	1294.8
45°	1243.1	1243.1	1240.1	1224.9	1228.0	1228.0	1215.8	1203.7	1206.6	1206.6
47.5°	1155.0	1149.0	1145.9	1130.7	1127.6	1124.7	1112.4	1103.3	1103.3	1094.2
50°	1057.7	1051.6	1042.6	1027.3	1021.2	1003.0	994.0	981.8	969.6	969.6
52.5°	966.6	945.2	933.1	908.8	899.7	890.5	866.2	857.2	848.0	838.9
55°	857.2	838.9	814.6	787.2	775.1	759.8	735.5	717.3	705.1	708.2
57.5°	750.8	720.4	696.1	659.6	644.4	635.2	610.9	586.6	574.4	574.4
60°	620.1	595.8	565.4	531.9	519.7	504.6	474.1	459.0	449.8	440.7
62.5°	495.4	477.2	449.8	407.3	398.2	383.0	361.7	343.5	334.3	334.3
65°	370.8	352.6	328.3	297.9	285.7	273.6	255.3	237.1	227.9	225.0
67.5°	261.4	240.1	218.9	194.6	185.4	179.3	161.1	148.9	142.9	139.8
70°	158.0	145.8	130.7	112.5	103.3	97.2	85.1	76.0	72.9	69.9
72.5°	82.1	72.9	60.8	48.6	42.5	36.5	30.4	24.3	21.3	21.3
75°	30.4	24.3	15.3	9.2	6.1	6.1	6.1	6.1	6.1	6.1
77.5°	6.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
80°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
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)