

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 FEU4C459050 F4LC-CSSQ-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 FEU4C459050 F4LC-CSSQ-MW  
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

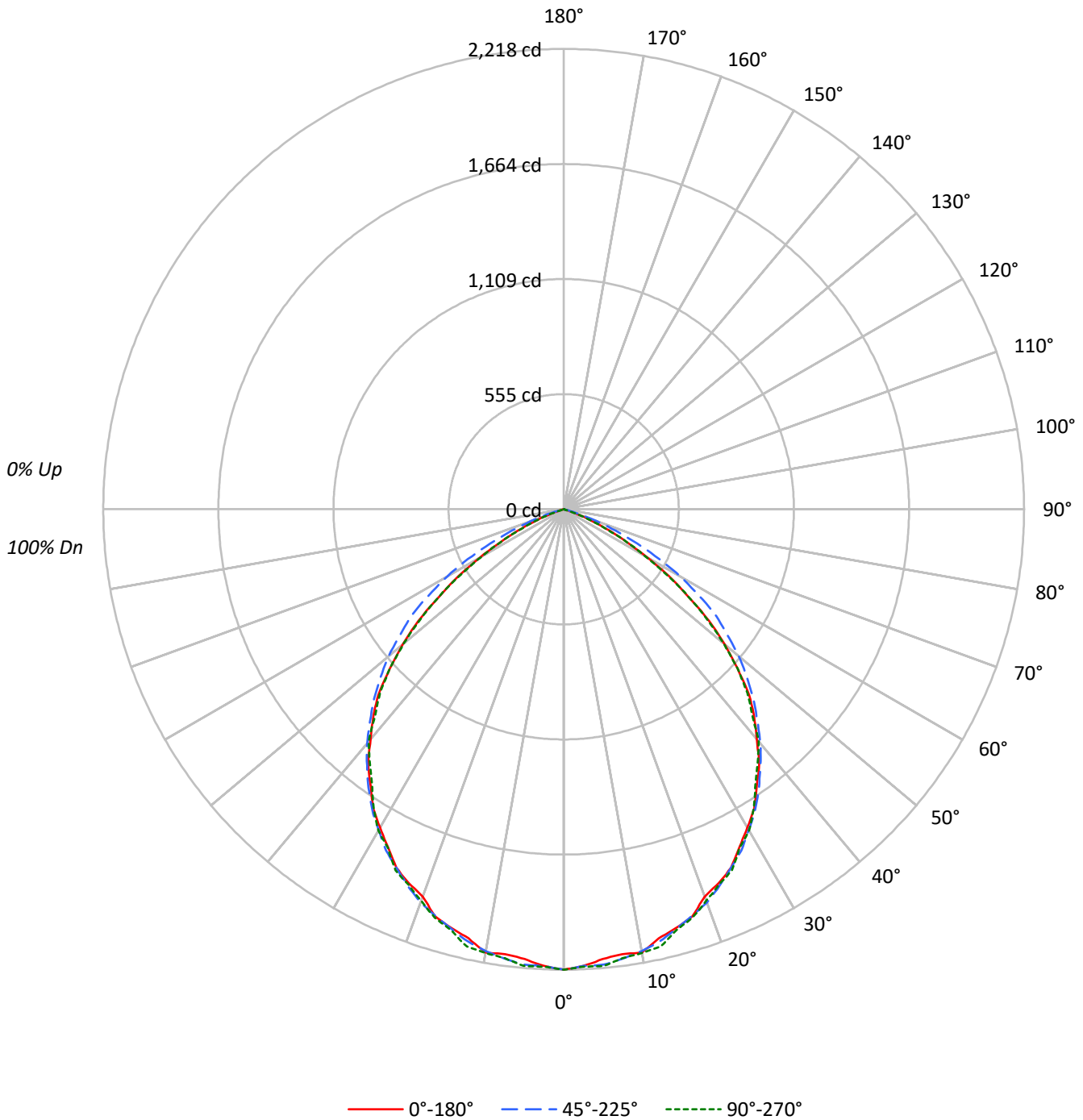
Lumens per Lamp: N/A  
 Luminaire Lumens: 4738.0 lumens  
 Efficiency: N/A  
 Efficacy: 95.5 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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#

CATALOG NUMBER: FLDSQ4C45D010 FEU4C459050 F4LC-CSSQ-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°	214012	214012	214012
5°	210558	213300	213910
10°	212376	211759	212680
15°	208656	208965	209595
20°	203802	207036	206071
25°	202920	202920	204261
30°	197273	198665	199033
35°	191116	192977	189632
40°	182147	185711	184124
45°	172385	176260	170665
50°	151821	165061	150876
55°	122954	151048	123493
60°	89966	125243	88152
65°	54681	89179	53242
70°	21328	48016	20453
75°	2349	12936	2349
80°	1778	1778	1778
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	209.4	4.4
10°-20°	592.4	12.5
20°-30°	879.0	18.6
30°-40°	1018.6	21.5
40°-50°	976.6	20.6
50°-60°	718.0	15.2
60°-70°	310.1	6.5
70°-80°	33.5	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°	1680.8	35.5
0°-40°	2699.4	57.0
0°-60°	4394.0	92.7
0°-90°	4738.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4738.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2218	2218	2218	2218	2218	
5°	2174	2196	2202	2205	2208	207
15°	2089	2101	2092	2095	2098	589
25°	1906	1903	1906	1909	1919	873
35°	1622	1632	1638	1635	1610	1015
45°	1263	1266	1292	1273	1251	960
55°	731	806	898	803	734	658
65°	240	299	391	296	233	246
75°	6	10	35	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°	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0
2.5°	2202.2	2227.4	2230.6	2214.8	2208.5	2199.1	2221.1	2205.4	2211.7	2205.4	2202.2
5°	2173.9	2202.2	2205.4	2205.4	2199.1	2195.9	2205.4	2202.2	2199.1	2192.8	2202.2
7.5°	2161.3	2177.0	2192.8	2173.9	2183.3	2180.2	2202.2	2192.8	2189.6	2189.6	2183.3
10°	2167.6	2164.4	2177.0	2158.1	2164.4	2158.1	2177.0	2177.0	2170.7	2164.4	2161.3
12.5°	2117.1	2142.3	2142.3	2139.2	2132.9	2123.4	2142.3	2155.0	2136.0	2136.0	2132.9
15°	2088.8	2095.1	2098.2	2098.2	2095.1	2101.4	2110.8	2098.2	2101.4	2085.6	2091.9
17.5°	2057.3	2044.7	2054.1	2047.8	2051.0	2057.3	2069.9	2069.9	2051.0	2047.8	2054.1
20°	1984.8	2022.6	2025.8	2006.9	2010.0	2010.0	2032.1	2013.2	2025.8	2010.0	2016.3
22.5°	1950.1	1975.3	1978.5	1953.3	1969.0	1950.1	1972.2	1943.8	1975.3	1953.3	1962.7
25°	1906.0	1902.9	1912.3	1899.7	1902.9	1902.9	1918.6	1906.0	1915.5	1902.9	1906.0
27.5°	1833.7	1858.9	1855.6	1843.0	1849.3	1846.3	1877.8	1843.0	1861.9	1846.3	1852.6
30°	1770.6	1792.7	1786.4	1773.8	1773.8	1764.3	1799.0	1789.4	1786.4	1786.4	1783.1
32.5°	1707.6	1710.8	1704.5	1707.6	1710.8	1698.2	1726.5	1713.9	1710.8	1713.9	1717.1
35°	1622.5	1622.5	1628.8	1619.4	1632.0	1632.0	1657.2	1641.4	1638.3	1628.8	1638.3
37.5°	1546.9	1537.5	1540.6	1540.6	1546.9	1553.2	1565.8	1559.5	1559.5	1550.1	1556.4
40°	1446.1	1439.8	1449.2	1449.2	1458.7	1458.7	1471.3	1465.0	1474.4	1474.4	1474.4
42.5°	1357.9	1357.9	1351.6	1361.0	1364.2	1361.0	1383.1	1379.9	1383.1	1376.8	1379.9
45°	1263.3	1263.3	1257.0	1253.9	1269.6	1266.5	1291.7	1282.2	1294.8	1288.5	1291.7
47.5°	1134.1	1149.9	1140.4	1149.9	1168.8	1172.1	1187.7	1181.4	1194.0	1184.6	1197.2
50°	1011.4	1011.4	1020.8	1033.4	1052.3	1055.5	1074.4	1087.0	1093.3	1096.3	1099.6
52.5°	882.2	879.0	888.5	904.2	920.0	932.6	951.5	970.4	983.0	1001.9	992.4
55°	730.9	737.2	746.7	765.6	790.8	806.5	822.3	847.5	869.6	879.0	897.9
57.5°	601.7	595.4	601.7	626.9	655.3	667.9	690.0	715.2	746.7	765.6	771.9
60°	466.2	469.4	475.7	497.8	519.8	538.7	548.2	589.1	617.5	636.4	649.0
62.5°	343.5	349.8	356.1	375.0	396.9	412.7	428.4	463.1	488.3	507.2	519.8
65°	239.5	242.6	252.1	261.5	283.6	299.2	311.8	340.3	365.4	381.3	390.6
67.5°	148.1	151.2	157.5	170.2	185.9	198.5	211.1	230.0	252.1	267.8	271.0
70°	75.6	78.8	81.9	91.4	104.0	110.3	119.7	135.5	151.2	163.8	170.2
72.5°	25.2	25.2	28.4	34.7	41.0	47.3	50.4	66.2	78.8	85.1	88.2
75°	6.3	6.3	6.3	6.3	6.3	9.5	9.5	18.9	25.2	31.5	34.7
77.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	6.3	6.3
80°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
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°	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0	2218.0
2.5°	2218.0	2211.7	2208.5	2211.7	2211.7	2208.5	2218.0	2230.6	2246.3	2205.4
5°	2214.8	2208.5	2214.8	2195.9	2205.4	2199.1	2211.7	2208.5	2221.1	2208.5
7.5°	2205.4	2192.8	2195.9	2186.5	2199.1	2183.3	2192.8	2211.7	2199.1	2180.2
10°	2173.9	2167.6	2189.6	2158.1	2151.8	2164.4	2189.6	2170.7	2164.4	2170.7
12.5°	2142.3	2142.3	2151.8	2126.6	2129.7	2136.0	2148.6	2136.0	2142.3	2158.1
15°	2107.7	2101.4	2117.1	2098.2	2095.1	2088.8	2101.4	2101.4	2107.7	2098.2
17.5°	2066.7	2057.3	2057.3	2051.0	2047.8	2063.6	2069.9	2073.0	2076.2	2063.6
20°	2016.3	2013.2	2022.6	2013.2	2016.3	2019.5	2019.5	2013.2	2041.5	2006.9
22.5°	1962.7	1972.2	1959.6	1953.3	1959.6	1965.9	1965.9	1969.0	1962.7	1956.4
25°	1909.2	1915.5	1918.6	1899.7	1909.2	1899.7	1921.8	1924.9	1912.3	1918.6
27.5°	1861.9	1852.6	1849.3	1836.7	1843.0	1840.0	1843.0	1843.0	1861.9	1836.7
30°	1789.4	1780.1	1783.1	1773.8	1776.8	1773.8	1776.8	1776.8	1789.4	1786.4
32.5°	1720.2	1710.8	1713.9	1704.5	1704.5	1707.6	1701.3	1701.3	1710.8	1704.5
35°	1654.0	1632.0	1635.1	1632.0	1635.1	1622.5	1622.5	1619.4	1625.7	1609.9
37.5°	1559.5	1550.1	1546.9	1543.8	1546.9	1540.6	1546.9	1537.5	1546.9	1534.3
40°	1474.4	1468.1	1471.3	1452.4	1452.4	1455.5	1449.2	1446.1	1449.2	1461.8
42.5°	1389.4	1376.8	1370.5	1364.2	1367.3	1357.9	1354.7	1348.4	1354.7	1342.1
45°	1288.5	1288.5	1285.4	1269.6	1272.8	1272.8	1260.2	1247.6	1250.7	1250.7
47.5°	1197.2	1190.9	1187.7	1172.1	1168.8	1165.8	1153.0	1143.6	1143.6	1134.1
50°	1096.3	1090.0	1080.7	1064.8	1058.6	1039.7	1030.3	1017.7	1005.1	1005.1
52.5°	1001.9	979.8	967.2	942.0	932.6	923.1	897.9	888.5	879.0	869.6
55°	888.5	869.6	844.4	816.0	803.4	787.6	762.4	743.5	730.9	734.1
57.5°	778.2	746.7	721.5	683.7	667.9	658.4	633.2	608.0	595.4	595.4
60°	642.7	617.5	586.0	551.3	538.7	523.0	491.4	475.7	466.2	456.8
62.5°	513.5	494.6	466.2	422.1	412.7	396.9	375.0	356.1	346.6	346.6
65°	384.3	365.4	340.3	308.8	296.2	283.6	264.7	245.8	236.3	233.2
67.5°	271.0	248.9	226.9	201.7	192.2	185.9	167.0	154.4	148.1	144.9
70°	163.8	151.2	135.5	116.6	107.1	100.8	88.2	78.8	75.6	72.5
72.5°	85.1	75.6	63.0	50.4	44.1	37.8	31.5	25.2	22.1	22.1
75°	31.5	25.2	15.8	9.5	6.3	6.3	6.3	6.3	6.3	6.3
77.5°	6.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
80°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
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)