

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 FEU4C459035 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 FEU4C459035 F4LC-CSSQ-MW
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

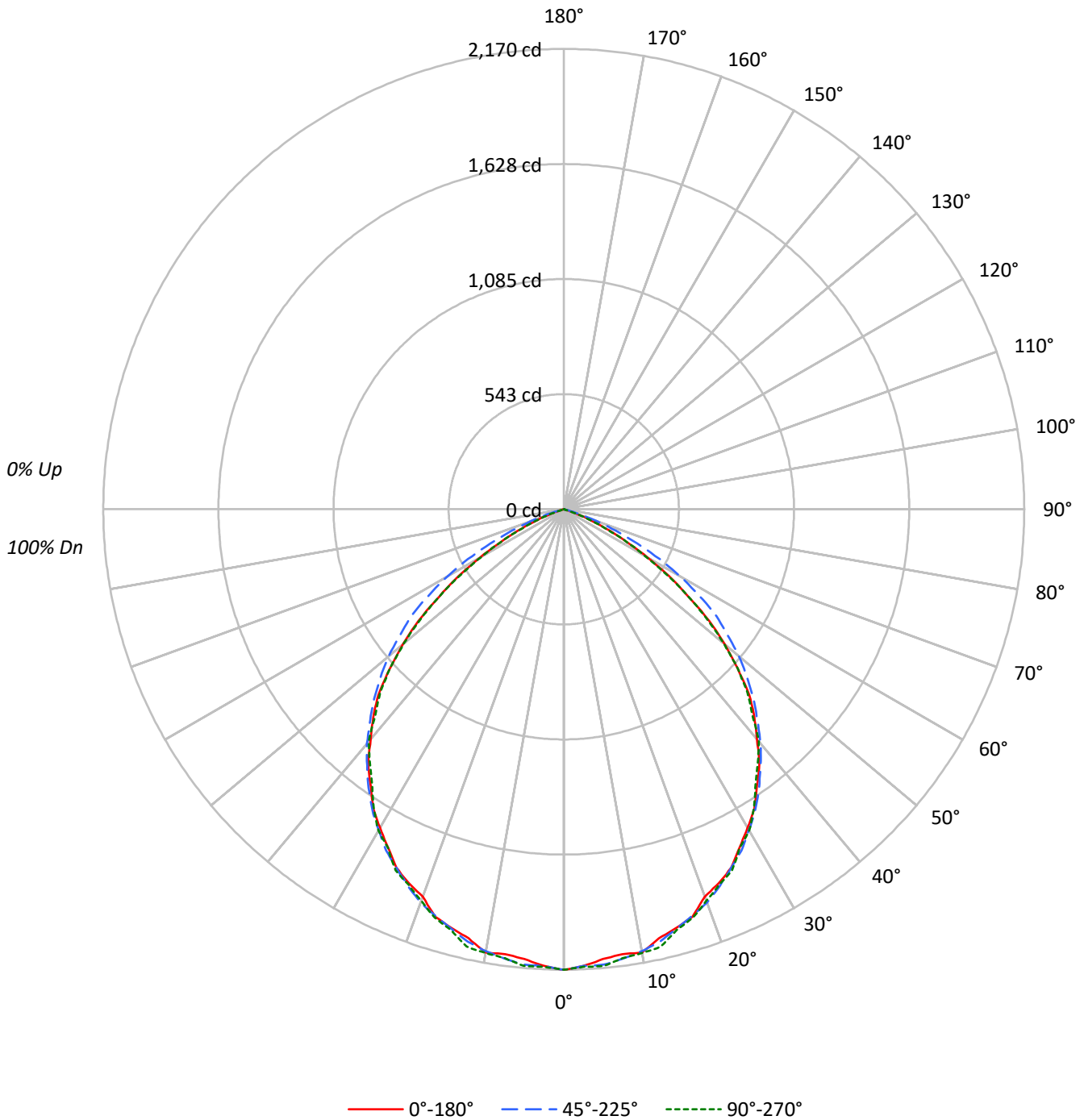
Lumens per Lamp: N/A
 Luminaire Lumens: 4636.0 lumens
 Efficiency: N/A
 Efficacy: 93.5 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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



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CATALOG NUMBER: FLDSQ4C45D010 FEU4C459035 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	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°	209410	209410	209410
5°	206026	208708	209299
10°	207810	207203	208104
15°	204171	204470	205080
20°	199417	202580	201635
25°	198555	198555	199864
30°	193017	194398	194744
35°	186994	188819	185545
40°	178230	181706	180157
45°	168673	172467	166995
50°	148549	161503	147618
55°	120313	147784	120835
60°	88036	122541	86261
65°	53494	87261	52101
70°	20876	46972	20002
75°	2311	12675	2311
80°	1723	1723	1723
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	204.9	4.4
10°-20°	579.7	12.5
20°-30°	860.1	18.6
30°-40°	996.6	21.5
40°-50°	955.5	20.6
50°-60°	702.6	15.2
60°-70°	303.4	6.5
70°-80°	32.8	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°	1644.6	35.5
0°-40°	2641.3	57.0
0°-60°	4299.4	92.7
0°-90°	4636.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4636.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2170	2170	2170	2170	2170	
5°	2127	2149	2155	2158	2161	203
15°	2044	2056	2047	2050	2053	576
25°	1865	1862	1865	1868	1877	854
35°	1588	1597	1603	1600	1575	993
45°	1236	1239	1264	1245	1224	940
55°	715	789	878	786	718	644
65°	234	293	382	290	228	241
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°	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3
2.5°	2154.8	2179.4	2182.6	2167.1	2160.9	2151.8	2173.3	2157.9	2164.1	2157.9	2154.8
5°	2127.1	2154.8	2157.9	2157.9	2151.8	2148.6	2157.9	2154.8	2151.8	2145.6	2154.8
7.5°	2114.8	2130.1	2145.6	2127.1	2136.3	2133.3	2154.8	2145.6	2142.5	2142.5	2136.3
10°	2121.0	2117.8	2130.1	2111.6	2117.8	2111.6	2130.1	2130.1	2124.0	2117.8	2114.8
12.5°	2071.5	2096.2	2096.2	2093.2	2087.0	2077.7	2096.2	2108.6	2090.0	2090.0	2087.0
15°	2043.9	2050.0	2053.0	2053.0	2050.0	2056.2	2065.4	2053.0	2056.2	2040.7	2046.9
17.5°	2013.0	2000.7	2009.9	2003.7	2006.9	2013.0	2025.4	2025.4	2006.9	2003.7	2009.9
20°	1942.1	1979.1	1982.2	1963.7	1966.8	1966.8	1988.4	1969.9	1982.2	1966.8	1972.9
22.5°	1908.1	1932.8	1935.9	1911.3	1926.6	1908.1	1929.8	1902.0	1932.8	1911.3	1920.5
25°	1865.0	1862.0	1871.2	1858.8	1862.0	1862.0	1877.3	1865.0	1874.3	1862.0	1865.0
27.5°	1794.2	1818.8	1815.7	1803.4	1809.5	1806.5	1837.3	1803.4	1821.9	1806.5	1812.7
30°	1732.4	1754.1	1747.9	1735.6	1735.6	1726.3	1760.2	1750.9	1747.9	1747.9	1744.8
32.5°	1670.8	1673.9	1667.8	1670.8	1673.9	1661.6	1689.3	1677.0	1673.9	1677.0	1680.1
35°	1587.5	1587.5	1593.7	1584.5	1596.8	1596.8	1621.5	1606.0	1603.0	1593.7	1603.0
37.5°	1513.6	1504.4	1507.4	1507.4	1513.6	1519.7	1532.1	1525.9	1525.9	1516.7	1522.9
40°	1415.0	1408.8	1418.0	1418.0	1427.3	1427.3	1439.6	1433.5	1442.6	1442.6	1442.6
42.5°	1328.7	1328.7	1322.5	1331.7	1334.9	1331.7	1353.3	1350.2	1353.3	1347.2	1350.2
45°	1236.1	1236.1	1230.0	1226.9	1242.3	1239.3	1263.9	1254.6	1266.9	1260.8	1263.9
47.5°	1109.7	1125.2	1115.9	1125.2	1143.7	1146.8	1162.2	1156.0	1168.3	1159.1	1171.5
50°	989.6	989.6	998.8	1011.1	1029.6	1032.7	1051.2	1063.6	1069.7	1072.7	1075.9
52.5°	863.2	860.1	869.4	884.7	900.2	912.5	931.0	949.5	961.8	980.3	971.0
55°	715.2	721.3	730.6	749.1	773.8	789.1	804.6	829.2	850.9	860.1	878.5
57.5°	588.8	582.6	588.8	613.4	641.2	653.5	675.2	699.8	730.6	749.1	755.3
60°	456.2	459.3	465.5	487.1	508.6	527.1	536.4	576.4	604.2	622.7	635.0
62.5°	336.1	342.2	348.4	366.9	388.4	403.9	419.2	453.2	477.8	496.3	508.6
65°	234.3	237.3	246.6	255.8	277.5	292.8	305.1	332.9	357.6	373.0	382.2
67.5°	144.9	147.9	154.1	166.5	181.9	194.2	206.5	225.0	246.6	262.0	265.1
70°	74.0	77.1	80.1	89.4	101.8	107.9	117.1	132.6	147.9	160.2	166.5
72.5°	24.7	24.7	27.8	34.0	40.1	46.3	49.3	64.8	77.1	83.3	86.3
75°	6.2	6.2	6.2	6.2	6.2	9.3	9.3	18.5	24.7	30.8	34.0
77.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	6.2	6.2
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°	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3	2170.3
2.5°	2170.3	2164.1	2160.9	2164.1	2164.1	2160.9	2170.3	2182.6	2197.9	2157.9
5°	2167.1	2160.9	2167.1	2148.6	2157.9	2151.8	2164.1	2160.9	2173.3	2160.9
7.5°	2157.9	2145.6	2148.6	2139.4	2151.8	2136.3	2145.6	2164.1	2151.8	2133.3
10°	2127.1	2121.0	2142.5	2111.6	2105.5	2117.8	2142.5	2124.0	2117.8	2124.0
12.5°	2096.2	2096.2	2105.5	2080.8	2083.9	2090.0	2102.3	2090.0	2096.2	2111.6
15°	2062.3	2056.2	2071.5	2053.0	2050.0	2043.9	2056.2	2056.2	2062.3	2053.0
17.5°	2022.2	2013.0	2013.0	2006.9	2003.7	2019.2	2025.4	2028.4	2031.5	2019.2
20°	1972.9	1969.9	1979.1	1969.9	1972.9	1976.1	1976.1	1969.9	1997.6	1963.7
22.5°	1920.5	1929.8	1917.4	1911.3	1917.4	1923.6	1923.6	1926.6	1920.5	1914.3
25°	1868.1	1874.3	1877.3	1858.8	1868.1	1858.8	1880.5	1883.5	1871.2	1877.3
27.5°	1821.9	1812.7	1809.5	1797.2	1803.4	1800.3	1803.4	1803.4	1821.9	1797.2
30°	1750.9	1741.7	1744.8	1735.6	1738.6	1735.6	1738.6	1738.6	1750.9	1747.9
32.5°	1683.1	1673.9	1677.0	1667.8	1667.8	1670.8	1664.6	1664.6	1673.9	1667.8
35°	1618.4	1596.8	1599.9	1596.8	1599.9	1587.5	1587.5	1584.5	1590.7	1575.2
37.5°	1525.9	1516.7	1513.6	1510.6	1513.6	1507.4	1513.6	1504.4	1513.6	1501.3
40°	1442.6	1436.5	1439.6	1421.1	1421.1	1424.2	1418.0	1415.0	1418.0	1430.3
42.5°	1359.5	1347.2	1341.0	1334.9	1337.9	1328.7	1325.5	1319.4	1325.5	1313.2
45°	1260.8	1260.8	1257.8	1242.3	1245.4	1245.4	1233.1	1220.8	1223.8	1223.8
47.5°	1171.5	1165.3	1162.2	1146.8	1143.7	1140.7	1128.2	1119.0	1119.0	1109.7
50°	1072.7	1066.6	1057.4	1041.9	1035.8	1017.3	1008.1	995.8	983.4	983.4
52.5°	980.3	958.7	946.3	921.7	912.5	903.2	878.5	869.4	860.1	850.9
55°	869.4	850.9	826.2	798.4	786.1	770.6	746.0	727.5	715.2	718.3
57.5°	761.4	730.6	706.0	669.0	653.5	644.2	619.6	594.9	582.6	582.6
60°	628.9	604.2	573.4	539.5	527.1	511.8	480.8	465.5	456.2	447.0
62.5°	502.5	484.0	456.2	413.0	403.9	388.4	366.9	348.4	339.1	339.1
65°	376.1	357.6	332.9	302.1	289.8	277.5	259.0	240.5	231.2	228.2
67.5°	265.1	243.5	222.0	197.3	188.0	181.9	163.4	151.1	144.9	141.8
70°	160.2	147.9	132.6	114.1	104.8	98.6	86.3	77.1	74.0	70.9
72.5°	83.3	74.0	61.6	49.3	43.1	37.0	30.8	24.7	21.6	21.6
75°	30.8	24.7	15.5	9.3	6.2	6.2	6.2	6.2	6.2	6.2
77.5°	6.2	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)