

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 FEU4C459040 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 FEU4C459040 F4LC-CSSQ-MW
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

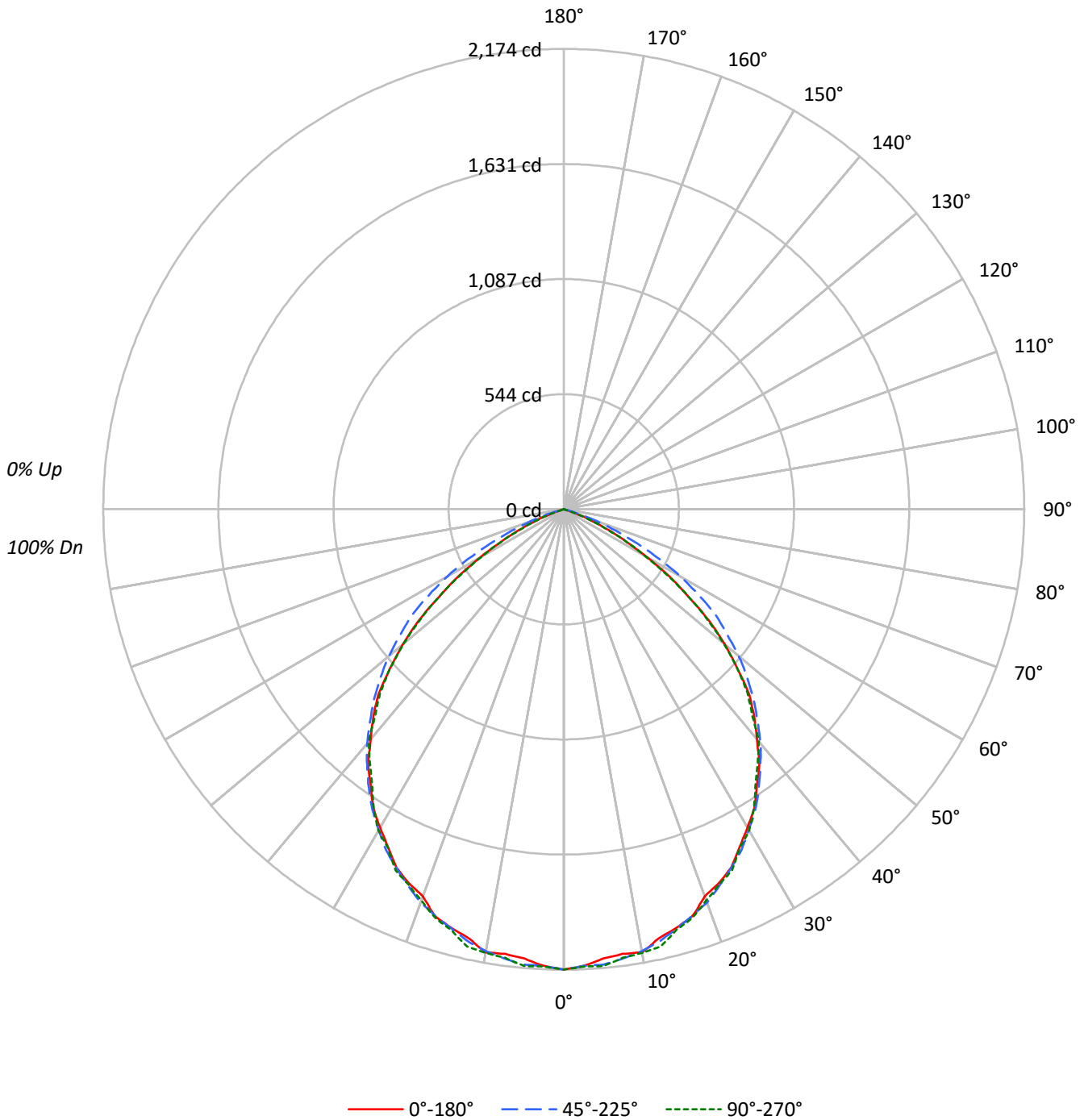
Lumens per Lamp: N/A
 Luminaire Lumens: 4643.0 lumens
 Efficiency: N/A
 Efficacy: 93.6 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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 FEU4C459040 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°	209719	209719	209719
5°	206335	209018	209619
10°	208124	207516	208418
15°	204470	204780	205389
20°	199715	202888	201943
25°	198853	198853	200173
30°	193306	194688	195033
35°	187276	189102	185827
40°	178494	181983	180434
45°	168932	172726	167240
50°	148774	161744	147843
55°	120481	148020	121020
60°	88172	122734	86396
65°	53585	87398	52169
70°	20905	47057	20030
75°	2311	12675	2311
80°	1723	1723	1723
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	205.2	4.4
10°-20°	580.6	12.5
20°-30°	861.4	18.6
30°-40°	998.1	21.5
40°-50°	957.0	20.6
50°-60°	703.6	15.2
60°-70°	303.9	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°	1647.1	35.5
0°-40°	2645.3	57.0
0°-60°	4305.9	92.7
0°-90°	4643.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4643.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2174	2174	2174	2174	2174	
5°	2130	2152	2158	2161	2164	203
15°	2047	2059	2050	2053	2056	577
25°	1868	1865	1868	1871	1880	855
35°	1590	1599	1605	1602	1578	994
45°	1238	1241	1266	1247	1226	941
55°	716	790	880	787	719	645
65°	235	293	383	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°	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5
2.5°	2158.0	2182.7	2185.9	2170.4	2164.2	2155.0	2176.6	2161.2	2167.4	2161.2	2158.0
5°	2130.3	2158.0	2161.2	2161.2	2155.0	2151.9	2161.2	2158.0	2155.0	2148.8	2158.0
7.5°	2118.0	2133.4	2148.8	2130.3	2139.5	2136.5	2158.0	2148.8	2145.7	2145.7	2139.5
10°	2124.2	2121.0	2133.4	2114.8	2121.0	2114.8	2133.4	2133.4	2127.2	2121.0	2118.0
12.5°	2074.7	2099.3	2099.3	2096.3	2090.1	2080.8	2099.3	2111.8	2093.2	2093.2	2090.1
15°	2046.9	2053.1	2056.1	2056.1	2053.1	2059.3	2068.5	2056.1	2059.3	2043.8	2050.0
17.5°	2016.1	2003.7	2012.9	2006.8	2009.9	2016.1	2028.4	2028.4	2009.9	2006.8	2012.9
20°	1945.0	1982.1	1985.2	1966.7	1969.7	1969.7	1991.4	1972.9	1985.2	1969.7	1975.9
22.5°	1911.0	1935.7	1938.9	1914.2	1929.5	1911.0	1932.7	1904.9	1935.7	1914.2	1923.4
25°	1867.8	1864.8	1874.0	1861.6	1864.8	1864.8	1880.2	1867.8	1877.1	1864.8	1867.8
27.5°	1796.9	1821.6	1818.4	1806.1	1812.3	1809.2	1840.1	1806.1	1824.6	1809.2	1815.4
30°	1735.0	1756.7	1750.5	1738.2	1738.2	1728.9	1762.9	1753.6	1750.5	1750.5	1747.4
32.5°	1673.3	1676.5	1670.3	1673.3	1676.5	1664.1	1691.8	1679.5	1676.5	1679.5	1682.6
35°	1589.9	1589.9	1596.1	1586.9	1599.3	1599.3	1623.9	1608.5	1605.4	1596.1	1605.4
37.5°	1515.9	1506.7	1509.7	1509.7	1515.9	1522.0	1534.4	1528.2	1528.2	1519.0	1525.2
40°	1417.1	1410.9	1420.1	1420.1	1429.5	1429.5	1441.8	1435.6	1444.8	1444.8	1444.8
42.5°	1330.7	1330.7	1324.5	1333.7	1336.9	1333.7	1355.4	1352.2	1355.4	1349.2	1352.2
45°	1238.0	1238.0	1231.8	1228.8	1244.2	1241.1	1265.8	1256.5	1268.9	1262.7	1265.8
47.5°	1111.4	1126.9	1117.6	1126.9	1145.4	1148.6	1163.9	1157.7	1170.1	1160.9	1173.2
50°	991.1	991.1	1000.3	1012.6	1031.2	1034.3	1052.8	1065.2	1071.3	1074.4	1077.5
52.5°	864.5	861.4	870.7	886.0	901.5	913.9	932.4	950.9	963.3	981.8	972.5
55°	716.2	722.4	731.7	750.2	774.9	790.3	805.8	830.5	852.2	861.4	879.9
57.5°	589.6	583.5	589.6	614.3	642.2	654.5	676.2	700.9	731.7	750.2	756.4
60°	456.9	460.0	466.2	487.9	509.4	527.9	537.2	577.3	605.1	623.7	636.0
62.5°	336.6	342.7	348.9	367.4	389.0	404.5	419.8	453.9	478.5	497.1	509.4
65°	234.7	237.7	247.0	256.2	277.9	293.2	305.6	333.4	358.1	373.6	382.8
67.5°	145.1	148.1	154.3	166.8	182.1	194.5	206.8	225.4	247.0	262.4	265.5
70°	74.1	77.2	80.2	89.6	101.9	108.1	117.3	132.8	148.1	160.5	166.8
72.5°	24.7	24.7	27.8	34.0	40.2	46.4	49.4	64.9	77.2	83.4	86.4
75°	6.2	6.2	6.2	6.2	6.2	9.3	9.3	18.5	24.7	30.9	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°	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5	2173.5
2.5°	2173.5	2167.4	2164.2	2167.4	2167.4	2164.2	2173.5	2185.9	2201.2	2161.2
5°	2170.4	2164.2	2170.4	2151.9	2161.2	2155.0	2167.4	2164.2	2176.6	2164.2
7.5°	2161.2	2148.8	2151.9	2142.7	2155.0	2139.5	2148.8	2167.4	2155.0	2136.5
10°	2130.3	2124.2	2145.7	2114.8	2108.7	2121.0	2145.7	2127.2	2121.0	2127.2
12.5°	2099.3	2099.3	2108.7	2084.0	2087.0	2093.2	2105.5	2093.2	2099.3	2114.8
15°	2065.5	2059.3	2074.7	2056.1	2053.1	2046.9	2059.3	2059.3	2065.5	2056.1
17.5°	2025.3	2016.1	2016.1	2009.9	2006.8	2022.2	2028.4	2031.4	2034.6	2022.2
20°	1975.9	1972.9	1982.1	1972.9	1975.9	1979.0	1979.0	1972.9	2000.6	1966.7
22.5°	1923.4	1932.7	1920.3	1914.2	1920.3	1926.5	1926.5	1929.5	1923.4	1917.2
25°	1871.0	1877.1	1880.2	1861.6	1871.0	1861.6	1883.3	1886.3	1874.0	1880.2
27.5°	1824.6	1815.4	1812.3	1799.9	1806.1	1803.1	1806.1	1806.1	1824.6	1799.9
30°	1753.6	1744.4	1747.4	1738.2	1741.2	1738.2	1741.2	1741.2	1753.6	1750.5
32.5°	1685.7	1676.5	1679.5	1670.3	1670.3	1673.3	1667.2	1667.2	1676.5	1670.3
35°	1620.8	1599.3	1602.3	1599.3	1602.3	1589.9	1589.9	1586.9	1593.1	1577.6
37.5°	1528.2	1519.0	1515.9	1512.8	1515.9	1509.7	1515.9	1506.7	1515.9	1503.5
40°	1444.8	1438.7	1441.8	1423.3	1423.3	1426.3	1420.1	1417.1	1420.1	1432.5
42.5°	1361.6	1349.2	1343.0	1336.9	1339.9	1330.7	1327.6	1321.4	1327.6	1315.2
45°	1262.7	1262.7	1259.7	1244.2	1247.3	1247.3	1235.0	1222.6	1225.6	1225.6
47.5°	1173.2	1167.1	1163.9	1148.6	1145.4	1142.4	1129.9	1120.7	1120.7	1111.4
50°	1074.4	1068.2	1059.0	1043.5	1037.3	1018.8	1009.6	997.3	984.9	984.9
52.5°	981.8	960.1	947.8	923.1	913.9	904.6	879.9	870.7	861.4	852.2
55°	870.7	852.2	827.5	799.6	787.3	771.8	747.1	728.6	716.2	719.4
57.5°	762.6	731.7	707.0	670.0	654.5	645.2	620.5	595.8	583.5	583.5
60°	629.8	605.1	574.3	540.3	527.9	512.6	481.6	466.2	456.9	447.7
62.5°	503.2	484.7	456.9	413.7	404.5	389.0	367.4	348.9	339.6	339.6
65°	376.6	358.1	333.4	302.6	290.2	277.9	259.4	240.8	231.5	228.5
67.5°	265.5	243.9	222.3	197.6	188.3	182.1	163.6	151.3	145.1	142.0
70°	160.5	148.1	132.8	114.2	104.9	98.8	86.4	77.2	74.1	71.0
72.5°	83.4	74.1	61.7	49.4	43.2	37.0	30.9	24.7	21.7	21.7
75°	30.9	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)