

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-CSSQ-MMS**

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-CSSQ-MMS
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

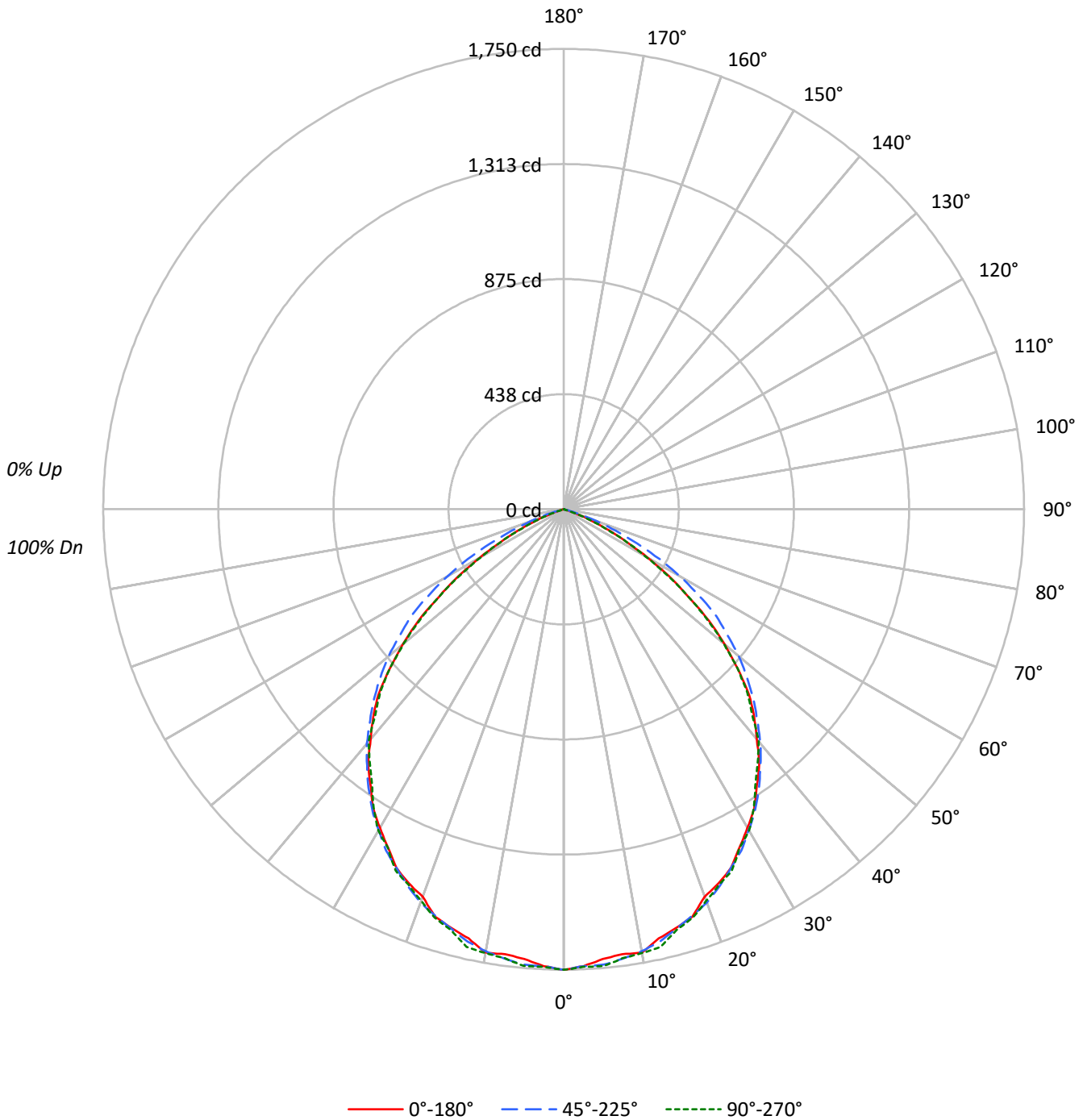
Lumens per Lamp: N/A
 Luminaire Lumens: 3739.0 lumens
 Efficiency: N/A
 Efficacy: 75.4 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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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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°	168885	168885	168885
5°	166159	168329	168803
10°	167600	167110	167835
15°	164663	164903	165402
20°	160830	163387	162627
25°	160132	160132	161197
30°	155670	156784	157063
35°	150820	152280	149642
40°	143742	146551	145304
45°	136047	139103	134682
50°	119803	130251	119067
55°	97031	119203	97452
60°	70997	98843	69568
65°	43151	70389	42009
70°	16814	37888	16137
75°	1864	10215	1864
80°	1389	1389	1389
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	165.2	4.4
10°-20°	467.5	12.5
20°-30°	693.7	18.6
30°-40°	803.8	21.5
40°-50°	770.7	20.6
50°-60°	566.6	15.2
60°-70°	244.7	6.5
70°-80°	26.4	0.7
80°-90°	0.3	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°	1326.4	35.5
0°-40°	2130.2	57.0
0°-60°	3467.5	92.7
0°-90°	3739.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3739.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1750	1750	1750	1750	1750	
5°	1716	1733	1738	1740	1743	164
15°	1648	1658	1651	1653	1656	465
25°	1504	1502	1504	1507	1514	689
35°	1280	1288	1293	1290	1270	801
45°	997	1000	1019	1004	987	758
55°	577	636	709	634	579	519
65°	189	236	308	234	184	194
75°	5	8	27	5	5	15
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°	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3
2.5°	1737.9	1757.7	1760.3	1747.8	1742.8	1735.4	1752.8	1740.4	1745.4	1740.4	1737.9
5°	1715.5	1737.9	1740.4	1740.4	1735.4	1732.9	1740.4	1737.9	1735.4	1730.5	1737.9
7.5°	1705.6	1718.0	1730.5	1715.5	1723.0	1720.5	1737.9	1730.5	1727.9	1727.9	1723.0
10°	1710.6	1708.0	1718.0	1703.1	1708.0	1703.1	1718.0	1718.0	1713.0	1708.0	1705.6
12.5°	1670.7	1690.6	1690.6	1688.2	1683.2	1675.7	1690.6	1700.6	1685.6	1685.6	1683.2
15°	1648.4	1653.4	1655.8	1655.8	1653.4	1658.3	1665.7	1655.8	1658.3	1645.9	1650.8
17.5°	1623.5	1613.6	1621.0	1616.0	1618.6	1623.5	1633.5	1633.5	1618.6	1616.0	1621.0
20°	1566.3	1596.2	1598.7	1583.8	1586.2	1586.2	1603.7	1588.7	1598.7	1586.2	1591.2
22.5°	1538.9	1558.8	1561.4	1541.5	1553.9	1538.9	1556.4	1534.0	1558.8	1541.5	1548.9
25°	1504.1	1501.7	1509.1	1499.2	1501.7	1501.7	1514.1	1504.1	1511.7	1501.7	1504.1
27.5°	1447.0	1466.9	1464.4	1454.4	1459.4	1457.0	1481.8	1454.4	1469.4	1457.0	1461.9
30°	1397.2	1414.7	1409.7	1399.8	1399.8	1392.3	1419.6	1412.1	1409.7	1409.7	1407.2
32.5°	1347.5	1350.1	1345.1	1347.5	1350.1	1340.1	1362.4	1352.5	1350.1	1352.5	1355.0
35°	1280.4	1280.4	1285.3	1277.9	1287.9	1287.9	1307.8	1295.3	1292.8	1285.3	1292.8
37.5°	1220.7	1213.3	1215.8	1215.8	1220.7	1225.7	1235.6	1230.7	1230.7	1223.3	1228.2
40°	1141.2	1136.2	1143.6	1143.6	1151.1	1151.1	1161.1	1156.1	1163.5	1163.5	1163.5
42.5°	1071.6	1071.6	1066.6	1074.0	1076.6	1074.0	1091.5	1089.0	1091.5	1086.5	1089.0
45°	997.0	997.0	992.0	989.5	1001.9	999.5	1019.4	1011.9	1021.8	1016.8	1019.4
47.5°	895.0	907.5	900.0	907.5	922.4	924.9	937.3	932.3	942.3	934.9	944.8
50°	798.1	798.1	805.5	815.5	830.4	832.9	847.8	857.8	862.7	865.2	867.7
52.5°	696.2	693.6	701.2	713.5	726.0	735.9	750.9	765.8	775.7	790.6	783.1
55°	576.8	581.8	589.3	604.2	624.1	636.4	648.9	668.8	686.2	693.6	708.6
57.5°	474.8	469.9	474.8	494.7	517.1	527.1	544.5	564.4	589.3	604.2	609.1
60°	367.9	370.5	375.4	392.9	410.2	425.1	432.6	464.9	487.3	502.2	512.2
62.5°	271.0	276.0	281.0	295.9	313.2	325.7	338.1	365.5	385.4	400.3	410.2
65°	189.0	191.4	198.9	206.3	223.8	236.2	246.1	268.5	288.4	300.9	308.3
67.5°	116.9	119.3	124.3	134.3	146.7	156.6	166.6	181.5	198.9	211.3	213.8
70°	59.6	62.2	64.6	72.1	82.1	87.0	94.4	106.9	119.3	129.2	134.3
72.5°	19.9	19.9	22.4	27.4	32.4	37.3	39.8	52.2	62.2	67.2	69.6
75°	5.0	5.0	5.0	5.0	5.0	7.5	7.5	14.9	19.9	24.9	27.4
77.5°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0	5.0
80°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
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°	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3	1750.3
2.5°	1750.3	1745.4	1742.8	1745.4	1745.4	1742.8	1750.3	1760.3	1772.7	1740.4
5°	1747.8	1742.8	1747.8	1732.9	1740.4	1735.4	1745.4	1742.8	1752.8	1742.8
7.5°	1740.4	1730.5	1732.9	1725.5	1735.4	1723.0	1730.5	1745.4	1735.4	1720.5
10°	1715.5	1710.6	1727.9	1703.1	1698.1	1708.0	1727.9	1713.0	1708.0	1713.0
12.5°	1690.6	1690.6	1698.1	1678.2	1680.7	1685.6	1695.6	1685.6	1690.6	1703.1
15°	1663.3	1658.3	1670.7	1655.8	1653.4	1648.4	1658.3	1658.3	1663.3	1655.8
17.5°	1630.9	1623.5	1623.5	1618.6	1616.0	1628.5	1633.5	1635.9	1638.5	1628.5
20°	1591.2	1588.7	1596.2	1588.7	1591.2	1593.7	1593.7	1588.7	1611.1	1583.8
22.5°	1548.9	1556.4	1546.4	1541.5	1546.4	1551.4	1551.4	1553.9	1548.9	1543.9
25°	1506.7	1511.7	1514.1	1499.2	1506.7	1499.2	1516.6	1519.1	1509.1	1514.1
27.5°	1469.4	1461.9	1459.4	1449.5	1454.4	1452.0	1454.4	1454.4	1469.4	1449.5
30°	1412.1	1404.7	1407.2	1399.8	1402.2	1399.8	1402.2	1402.2	1412.1	1409.7
32.5°	1357.5	1350.1	1352.5	1345.1	1345.1	1347.5	1342.6	1342.6	1350.1	1345.1
35°	1305.2	1287.9	1290.3	1287.9	1290.3	1280.4	1280.4	1277.9	1282.9	1270.4
37.5°	1230.7	1223.3	1220.7	1218.3	1220.7	1215.8	1220.7	1213.3	1220.7	1210.8
40°	1163.5	1158.5	1161.1	1146.2	1146.2	1148.6	1143.6	1141.2	1143.6	1153.6
42.5°	1096.5	1086.5	1081.5	1076.6	1079.0	1071.6	1069.1	1064.1	1069.1	1059.1
45°	1016.8	1016.8	1014.4	1001.9	1004.5	1004.5	994.5	984.6	987.0	987.0
47.5°	944.8	939.8	937.3	924.9	922.4	920.0	909.9	902.5	902.5	895.0
50°	865.2	860.2	852.8	840.3	835.4	820.4	813.0	803.1	793.2	793.2
52.5°	790.6	773.2	763.2	743.4	735.9	728.4	708.6	701.2	693.6	686.2
55°	701.2	686.2	666.4	643.9	634.0	621.5	601.6	586.7	576.8	579.3
57.5°	614.1	589.3	569.4	539.6	527.1	519.6	499.7	479.8	469.9	469.9
60°	507.2	487.3	462.5	435.1	425.1	412.8	387.8	375.4	367.9	360.5
62.5°	405.3	390.3	367.9	333.1	325.7	313.2	295.9	281.0	273.5	273.5
65°	303.3	288.4	268.5	243.7	233.7	223.8	208.9	194.0	186.4	184.0
67.5°	213.8	196.4	179.0	159.2	151.7	146.7	131.8	121.8	116.9	114.3
70°	129.2	119.3	106.9	92.0	84.5	79.5	69.6	62.2	59.6	57.2
72.5°	67.2	59.6	49.7	39.8	34.8	29.8	24.9	19.9	17.4	17.4
75°	24.9	19.9	12.5	7.5	5.0	5.0	5.0	5.0	5.0	5.0
77.5°	5.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
80°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
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)