

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 FEU4C459027 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 FEU4C459027 F4LC-CSSQ-MMS
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

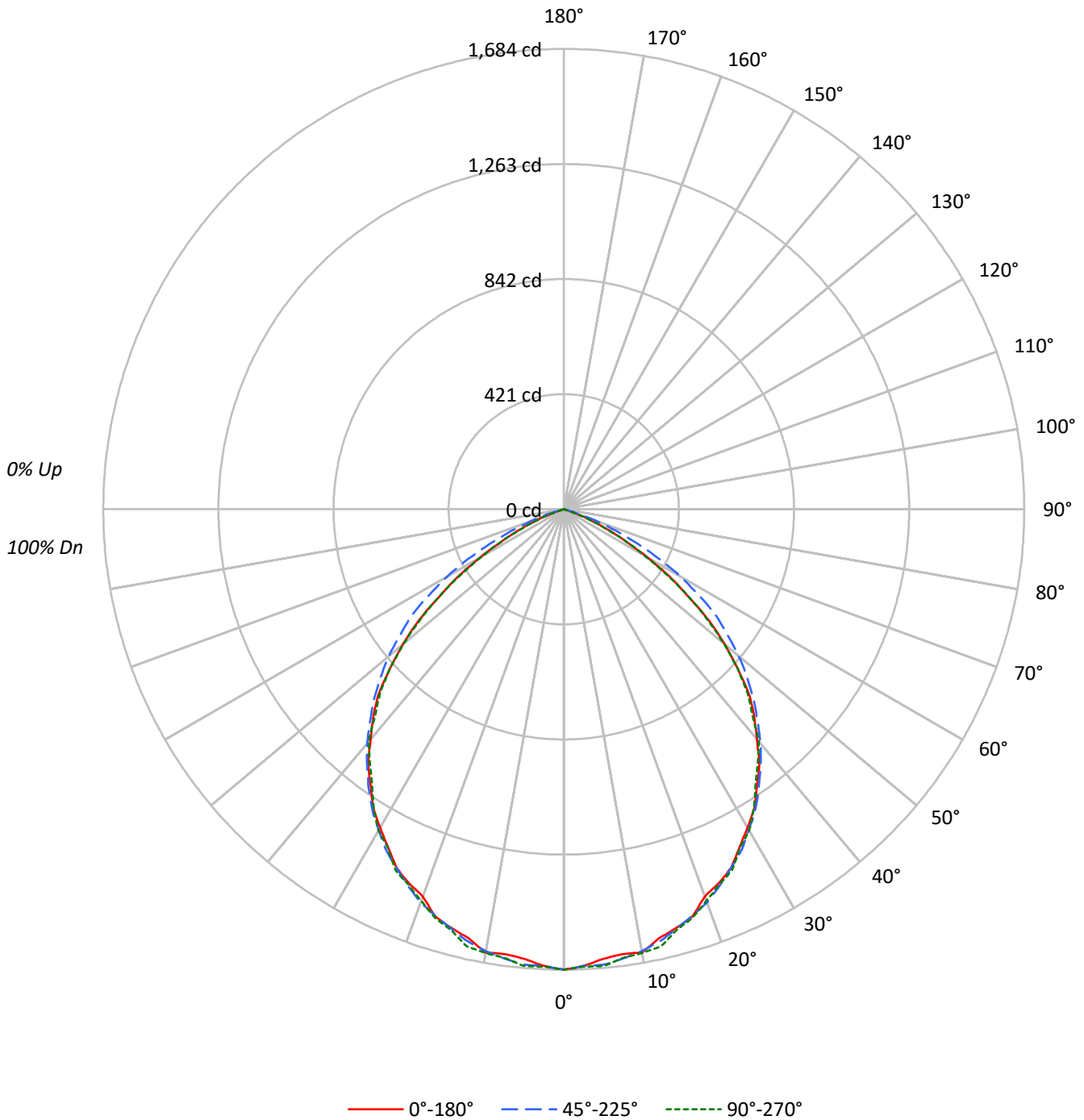
Lumens per Lamp: N/A
 Luminaire Lumens: 3597.0 lumens
 Efficiency: N/A
 Efficacy: 72.5 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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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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°	162478	162478	162478
5°	159854	161936	162391
10°	161232	160761	161467
15°	158410	158640	159119
20°	154720	157185	156445
25°	154053	154053	155075
30°	149765	150824	151102
35°	145083	146497	143964
40°	138289	140984	139787
45°	130875	133822	129565
50°	115255	125312	114534
55°	93347	114661	93751
60°	68314	95080	66925
65°	41507	67717	40411
70°	16193	36449	15516
75°	1789	9805	1789
80°	1334	1334	1334
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	158.9	4.4
10°-20°	449.8	12.5
20°-30°	667.3	18.6
30°-40°	773.3	21.5
40°-50°	741.4	20.6
50°-60°	545.1	15.2
60°-70°	235.4	6.5
70°-80°	25.4	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°	1276.1	35.5
0°-40°	2049.3	57.0
0°-60°	3335.8	92.7
0°-90°	3597.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3597.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1684	1684	1684	1684	1684	
5°	1650	1667	1672	1674	1677	157
15°	1586	1595	1588	1591	1593	447
25°	1447	1445	1447	1450	1457	663
35°	1232	1239	1244	1241	1222	770
45°	959	962	981	966	950	729
55°	555	612	682	610	557	499
65°	182	227	297	225	177	187
75°	5	7	26	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°	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9
2.5°	1671.9	1691.0	1693.4	1681.4	1676.6	1669.5	1686.2	1674.3	1679.1	1674.3	1671.9
5°	1650.4	1671.9	1674.3	1674.3	1669.5	1667.1	1674.3	1671.9	1669.5	1664.7	1671.9
7.5°	1640.8	1652.7	1664.7	1650.4	1657.5	1655.2	1671.9	1664.7	1662.3	1662.3	1657.5
10°	1645.6	1643.2	1652.7	1638.4	1643.2	1638.4	1652.7	1652.7	1648.0	1643.2	1640.8
12.5°	1607.3	1626.4	1626.4	1624.0	1619.3	1612.0	1626.4	1636.0	1621.6	1621.6	1619.3
15°	1585.8	1590.6	1592.9	1592.9	1590.6	1595.4	1602.5	1592.9	1595.4	1583.4	1588.1
17.5°	1561.9	1552.3	1559.4	1554.7	1557.1	1561.9	1571.4	1571.4	1557.1	1554.7	1559.4
20°	1506.8	1535.5	1538.0	1523.6	1526.0	1526.0	1542.8	1528.4	1538.0	1526.0	1530.8
22.5°	1480.5	1499.6	1502.1	1482.9	1494.8	1480.5	1497.3	1475.7	1499.6	1482.9	1490.1
25°	1447.0	1444.7	1451.8	1442.2	1444.7	1444.7	1456.6	1447.0	1454.2	1444.7	1447.0
27.5°	1392.1	1411.2	1408.8	1399.2	1404.0	1401.6	1425.6	1399.2	1413.6	1401.6	1406.4
30°	1344.2	1361.0	1356.2	1346.6	1346.6	1339.4	1365.7	1358.5	1356.2	1356.2	1353.7
32.5°	1296.3	1298.8	1294.0	1296.3	1298.8	1289.2	1310.7	1301.1	1298.8	1301.1	1303.6
35°	1231.7	1231.7	1236.5	1229.4	1239.0	1239.0	1258.1	1246.1	1243.7	1236.5	1243.7
37.5°	1174.4	1167.2	1169.6	1169.6	1174.4	1179.1	1188.7	1183.9	1183.9	1176.8	1181.6
40°	1097.9	1093.1	1100.2	1100.2	1107.4	1107.4	1117.0	1112.2	1119.3	1119.3	1119.3
42.5°	1030.9	1030.9	1026.1	1033.3	1035.7	1033.3	1050.0	1047.6	1050.0	1045.3	1047.6
45°	959.1	959.1	954.3	952.0	963.9	961.5	980.7	973.4	983.0	978.2	980.7
47.5°	861.0	873.0	865.8	873.0	887.4	889.8	901.7	896.9	906.5	899.4	908.9
50°	767.8	767.8	774.9	784.5	798.8	801.3	815.6	825.2	830.0	832.3	834.8
52.5°	669.7	667.3	674.5	686.4	698.4	708.0	722.3	736.7	746.2	760.6	753.4
55°	554.9	559.7	566.9	581.2	600.4	612.3	624.3	643.4	660.2	667.3	681.6
57.5°	456.8	452.0	456.8	475.9	497.5	507.1	523.8	543.0	566.9	581.2	586.0
60°	354.0	356.4	361.2	378.0	394.6	409.0	416.2	447.2	468.8	483.2	492.7
62.5°	260.8	265.5	270.3	284.7	301.4	313.4	325.3	351.6	370.7	385.1	394.6
65°	181.8	184.1	191.4	198.5	215.3	227.2	236.7	258.3	277.4	289.4	296.6
67.5°	112.4	114.8	119.5	129.2	141.1	150.7	160.2	174.6	191.4	203.3	205.7
70°	57.4	59.8	62.2	69.4	78.9	83.7	90.9	102.9	114.8	124.3	129.2
72.5°	19.1	19.1	21.6	26.3	31.1	35.9	38.3	50.3	59.8	64.6	66.9
75°	4.8	4.8	4.8	4.8	4.8	7.2	7.2	14.3	19.1	23.9	26.3
77.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	4.8	4.8
80°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
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°	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9	1683.9
2.5°	1683.9	1679.1	1676.6	1679.1	1679.1	1676.6	1683.9	1693.4	1705.3	1674.3
5°	1681.4	1676.6	1681.4	1667.1	1674.3	1669.5	1679.1	1676.6	1686.2	1676.6
7.5°	1674.3	1664.7	1667.1	1660.0	1669.5	1657.5	1664.7	1679.1	1669.5	1655.2
10°	1650.4	1645.6	1662.3	1638.4	1633.6	1643.2	1662.3	1648.0	1643.2	1648.0
12.5°	1626.4	1626.4	1633.6	1614.5	1616.8	1621.6	1631.2	1621.6	1626.4	1638.4
15°	1600.1	1595.4	1607.3	1592.9	1590.6	1585.8	1595.4	1595.4	1600.1	1592.9
17.5°	1569.0	1561.9	1561.9	1557.1	1554.7	1566.7	1571.4	1573.8	1576.2	1566.7
20°	1530.8	1528.4	1535.5	1528.4	1530.8	1533.2	1533.2	1528.4	1549.9	1523.6
22.5°	1490.1	1497.3	1487.7	1482.9	1487.7	1492.5	1492.5	1494.8	1490.1	1485.3
25°	1449.5	1454.2	1456.6	1442.2	1449.5	1442.2	1459.0	1461.4	1451.8	1456.6
27.5°	1413.6	1406.4	1404.0	1394.4	1399.2	1396.9	1399.2	1399.2	1413.6	1394.4
30°	1358.5	1351.4	1353.7	1346.6	1348.9	1346.6	1348.9	1348.9	1358.5	1356.2
32.5°	1305.9	1298.8	1301.1	1294.0	1294.0	1296.3	1291.6	1291.6	1298.8	1294.0
35°	1255.7	1239.0	1241.3	1239.0	1241.3	1231.7	1231.7	1229.4	1234.2	1222.2
37.5°	1183.9	1176.8	1174.4	1172.0	1174.4	1169.6	1174.4	1167.2	1174.4	1164.8
40°	1119.3	1114.5	1117.0	1102.6	1102.6	1105.0	1100.2	1097.9	1100.2	1109.8
42.5°	1054.8	1045.3	1040.5	1035.7	1038.0	1030.9	1028.5	1023.7	1028.5	1018.9
45°	978.2	978.2	975.9	963.9	966.3	966.3	956.7	947.2	949.5	949.5
47.5°	908.9	904.1	901.7	889.8	887.4	885.0	875.4	868.2	868.2	861.0
50°	832.3	827.5	820.4	808.4	803.6	789.3	782.2	772.6	763.0	763.0
52.5°	760.6	743.8	734.2	715.1	708.0	700.8	681.6	674.5	667.3	660.2
55°	674.5	660.2	641.0	619.5	609.9	597.9	578.8	564.4	554.9	557.3
57.5°	590.8	566.9	547.8	519.1	507.1	499.8	480.7	461.6	452.0	452.0
60°	487.9	468.8	444.9	418.6	409.0	397.1	373.1	361.2	354.0	346.8
62.5°	389.9	375.5	354.0	320.5	313.4	301.4	284.7	270.3	263.1	263.1
65°	291.8	277.4	258.3	234.4	224.8	215.3	200.9	186.6	179.4	177.0
67.5°	205.7	188.9	172.2	153.1	145.9	141.1	126.8	117.2	112.4	110.0
70°	124.3	114.8	102.9	88.5	81.3	76.5	66.9	59.8	57.4	55.0
72.5°	64.6	57.4	47.8	38.3	33.5	28.7	23.9	19.1	16.8	16.8
75°	23.9	19.1	12.0	7.2	4.8	4.8	4.8	4.8	4.8	4.8
77.5°	4.8	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
80°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
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)