

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: **FLDSQ4C15D010 FEU4C159030 F4LC-SQ-LI**

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: FLDSQ4C15D010 FEU4C159030 F4LC-SQ-LI  
 Description: 4 INCH 1500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

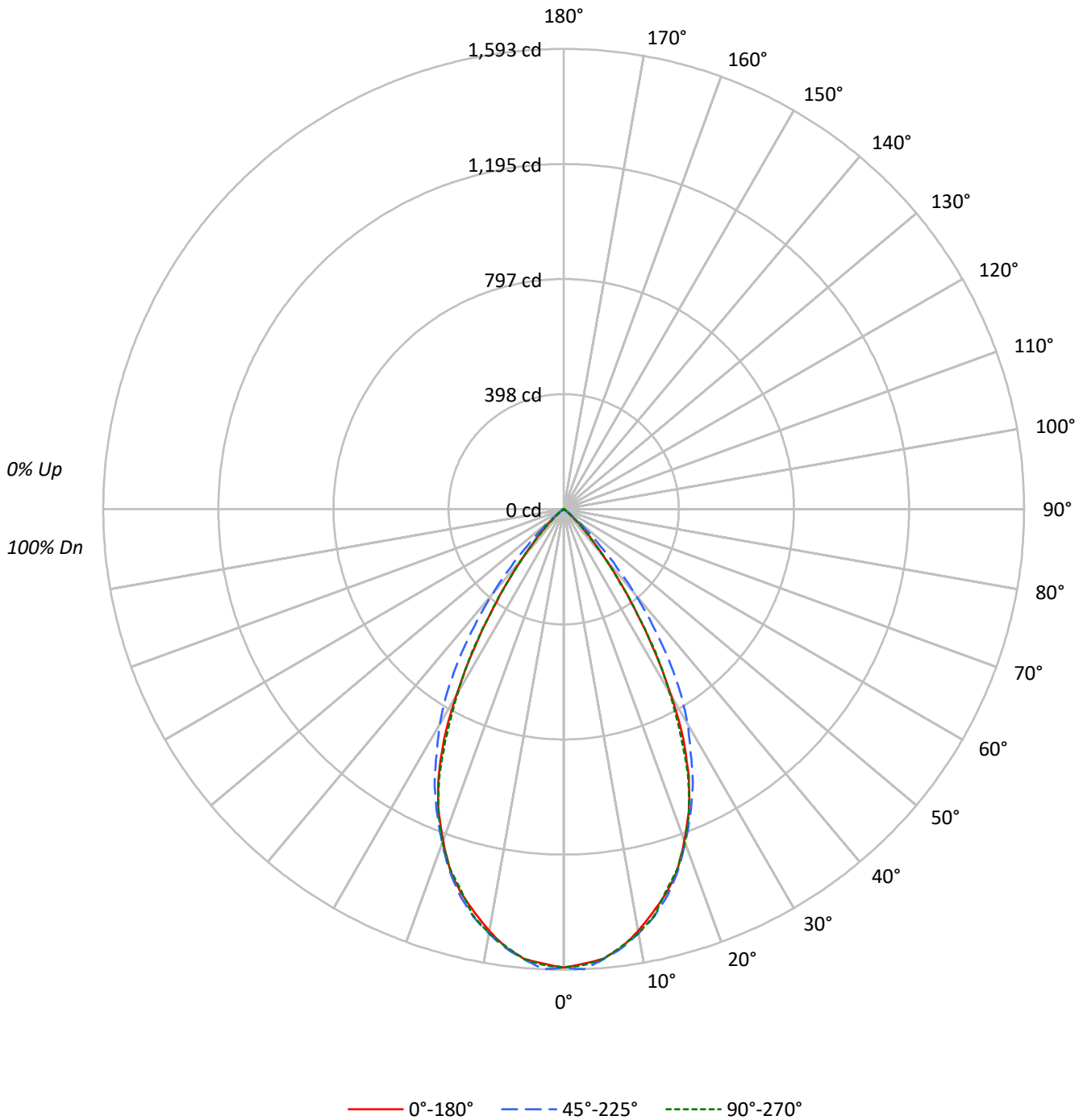
Lumens per Lamp: N/A  
 Luminaire Lumens: 1463.9 lumens  
 Efficiency: N/A  
 Efficacy: 92.7 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 15.8  
 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	113	111	108	106	111	108	106	104	104	103	101		101	99	98		97	96	95	93
2	108	103	99	95	105	101	97	94	98	95	92		95	92	90		92	90	88	87
3	102	96	91	87	100	94	90	86	92	88	84		89	86	83		87	84	82	80
4	97	89	84	79	95	88	83	79	86	81	78		84	80	77		82	79	76	75
5	92	83	77	73	90	82	77	73	81	76	72		79	75	71		77	74	71	69
6	87	78	72	68	86	77	71	67	76	71	67		74	70	66		73	69	66	64
7	83	73	67	63	81	73	67	63	71	66	62		70	65	62		69	65	62	60
8	79	69	63	59	77	68	62	58	67	62	58		66	61	58		65	61	58	56
9	75	65	59	55	74	64	59	55	63	58	55		63	58	54		62	57	54	53
10	71	61	55	51	70	61	55	51	60	55	51		59	54	51		58	54	51	50

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	153002	153002	153002
5°	151253	151446	151253
10°	145202	146094	145888
15°	137272	138271	136563
20°	125271	126206	125898
25°	109083	112511	108327
30°	82949	95405	81712
35°	52217	74173	52688
40°	28177	48985	27660
45°	13332	24194	13195
50°	4999	9067	4999
55°	2372	2877	2204
60°	1563	1370	1563
65°	913	913	913
70°	564	846	564
75°	373	373	373
80°	556	556	556
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	147.0	10.0
10°-20°	385.3	26.3
20°-30°	470.7	32.2
30°-40°	329.2	22.5
40°-50°	107.9	7.4
50°-60°	17.2	1.2
60°-70°	4.7	0.3
70°-80°	1.5	0.1
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°	1003.0	68.5
0°-40°	1332.3	91.0
0°-60°	1457.3	99.5
0°-90°	1463.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1463.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1586	1586	1586	1586	1586	
5°	1562	1562	1564	1554	1562	146
15°	1374	1380	1384	1375	1367	383
25°	1025	1040	1057	1038	1018	460
35°	443	523	630	515	447	283
45°	98	120	177	119	97	82
55°	14	15	17	15	13	14
65°	4	5	4	5	4	4
75°	1	1	1	1	1	1
85°	0	0	0	0	0	0
90°	0	0	0	0	0	0

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C15D010 FEU4C159030 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1585.7	1585.7	1585.7	1585.7	1585.7	1585.7	1585.7	1585.7	1585.7	1585.7	1585.7
2.5°	1573.7	1584.8	1581.7	1588.8	1588.8	1580.7	1582.7	1585.7	1589.8	1592.8	1568.6
5°	1561.6	1571.6	1562.6	1572.6	1566.6	1557.5	1572.6	1564.6	1569.6	1563.6	1567.6
7.5°	1529.3	1545.4	1527.3	1539.4	1535.4	1530.3	1536.4	1534.4	1537.4	1532.3	1521.3
10°	1482.0	1495.1	1483.0	1500.1	1492.0	1487.0	1492.0	1497.1	1496.1	1491.1	1497.1
12.5°	1427.6	1442.7	1436.6	1446.7	1437.7	1437.7	1449.7	1446.7	1447.7	1443.7	1450.7
15°	1374.2	1385.3	1376.2	1389.3	1385.3	1374.2	1379.2	1379.2	1387.3	1384.2	1376.2
17.5°	1307.7	1316.7	1306.7	1309.7	1305.7	1303.7	1324.8	1310.7	1318.8	1312.7	1313.7
20°	1220.0	1224.1	1221.0	1229.1	1224.1	1230.1	1228.1	1226.1	1226.1	1229.1	1222.1
22.5°	1131.4	1131.4	1134.4	1136.4	1140.5	1134.4	1146.5	1136.4	1137.4	1144.5	1142.5
25°	1024.6	1021.6	1028.6	1038.7	1042.7	1037.7	1053.8	1045.7	1051.8	1056.8	1045.7
27.5°	894.6	894.6	901.7	918.8	921.8	927.9	950.0	950.0	958.1	951.0	959.1
30°	744.5	755.6	764.6	786.8	793.9	807.0	830.1	841.2	859.4	856.3	852.3
32.5°	590.4	605.5	606.5	629.7	648.8	671.0	702.2	728.4	741.5	750.5	740.5
35°	443.3	452.4	460.4	476.5	508.8	538.0	566.2	600.4	623.6	629.7	620.6
37.5°	324.4	326.4	334.5	349.6	373.8	402.0	436.2	473.5	497.7	506.7	496.7
40°	223.7	225.7	229.7	242.8	263.0	283.1	310.3	348.6	370.7	388.9	375.8
42.5°	150.1	152.1	156.1	166.2	177.3	196.4	217.6	241.8	263.0	271.0	263.9
45°	97.7	97.7	99.7	106.8	112.9	127.9	143.1	158.2	172.3	177.3	172.3
47.5°	57.4	58.4	60.4	65.5	72.5	78.6	89.7	99.7	103.8	107.8	105.8
50°	33.3	33.3	36.3	39.3	44.3	48.3	52.4	56.4	58.4	60.4	58.4
52.5°	18.1	19.2	20.1	21.2	23.2	27.2	30.2	30.2	31.2	32.2	31.2
55°	14.1	14.1	14.1	14.1	15.1	15.1	15.1	16.1	16.1	17.1	16.1
57.5°	10.1	10.1	10.1	11.1	11.1	11.1	10.1	10.1	10.1	10.1	10.1
60°	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.1	7.1	7.1	7.1
62.5°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
65°	4.0	4.0	5.1	5.1	5.1	5.1	5.1	4.0	4.0	4.0	4.0
67.5°	3.0	3.0	3.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
70°	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
72.5°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
75°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
77.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
80°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	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°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1585.7	1585.7	1585.7	1585.7	1585.7	1585.7	1585.7	1585.7
2.5°	1585.7	1568.6	1570.6	1579.7	1574.6	1579.7	1578.7	1578.7
5°	1568.6	1563.6	1555.5	1552.5	1558.5	1571.6	1569.6	1561.6
7.5°	1536.4	1523.3	1532.3	1536.4	1531.3	1539.4	1543.4	1526.3
10°	1498.1	1493.1	1491.1	1493.1	1491.1	1499.1	1489.0	1489.0
12.5°	1443.7	1435.6	1435.6	1447.7	1440.7	1434.6	1442.7	1441.7
15°	1389.3	1373.1	1373.1	1377.2	1380.2	1376.2	1377.2	1367.1
17.5°	1308.7	1303.7	1296.6	1307.7	1310.7	1306.7	1309.7	1304.7
20°	1233.1	1233.1	1220.0	1225.1	1229.1	1232.1	1234.1	1226.1
22.5°	1136.4	1138.4	1129.4	1139.4	1142.5	1132.4	1134.4	1132.4
25°	1047.7	1046.8	1039.7	1035.7	1037.7	1033.6	1032.7	1017.5
27.5°	950.0	939.9	924.9	928.9	911.7	897.6	897.6	874.5
30°	844.2	827.1	807.0	786.8	771.7	755.6	746.5	733.4
32.5°	720.3	697.2	672.0	644.8	627.7	603.5	590.4	597.4
35°	597.4	563.2	528.9	501.7	475.5	461.4	445.3	447.3
37.5°	478.5	430.2	400.0	370.7	348.6	330.5	323.4	321.4
40°	349.6	311.3	281.1	259.9	244.8	230.7	222.7	219.6
42.5°	241.8	214.6	190.4	173.3	163.2	154.1	150.1	149.1
45°	157.2	141.1	124.9	112.9	104.8	98.8	97.7	96.7
47.5°	98.8	90.7	80.6	71.5	64.5	60.4	57.4	57.4
50°	56.4	53.4	48.3	43.3	39.3	37.3	34.2	33.3
52.5°	30.2	30.2	28.2	24.2	21.2	19.2	19.2	18.1
55°	16.1	16.1	15.1	15.1	14.1	14.1	14.1	13.1
57.5°	10.1	10.1	11.1	11.1	10.1	10.1	10.1	10.1
60°	7.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
62.5°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
65°	4.0	5.1	5.1	5.1	5.1	4.0	4.0	4.0
67.5°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
70°	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0
72.5°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
75°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
77.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
80°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
82.5°	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
87.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)