

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: **FLDSQ4C30D010 FEU4C309035 F4LC-DFSSQ-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: FLDSQ4C30D010 FEU4C309035 F4LC-DFSSQ-MW  
 Description: 4 INCH 3000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

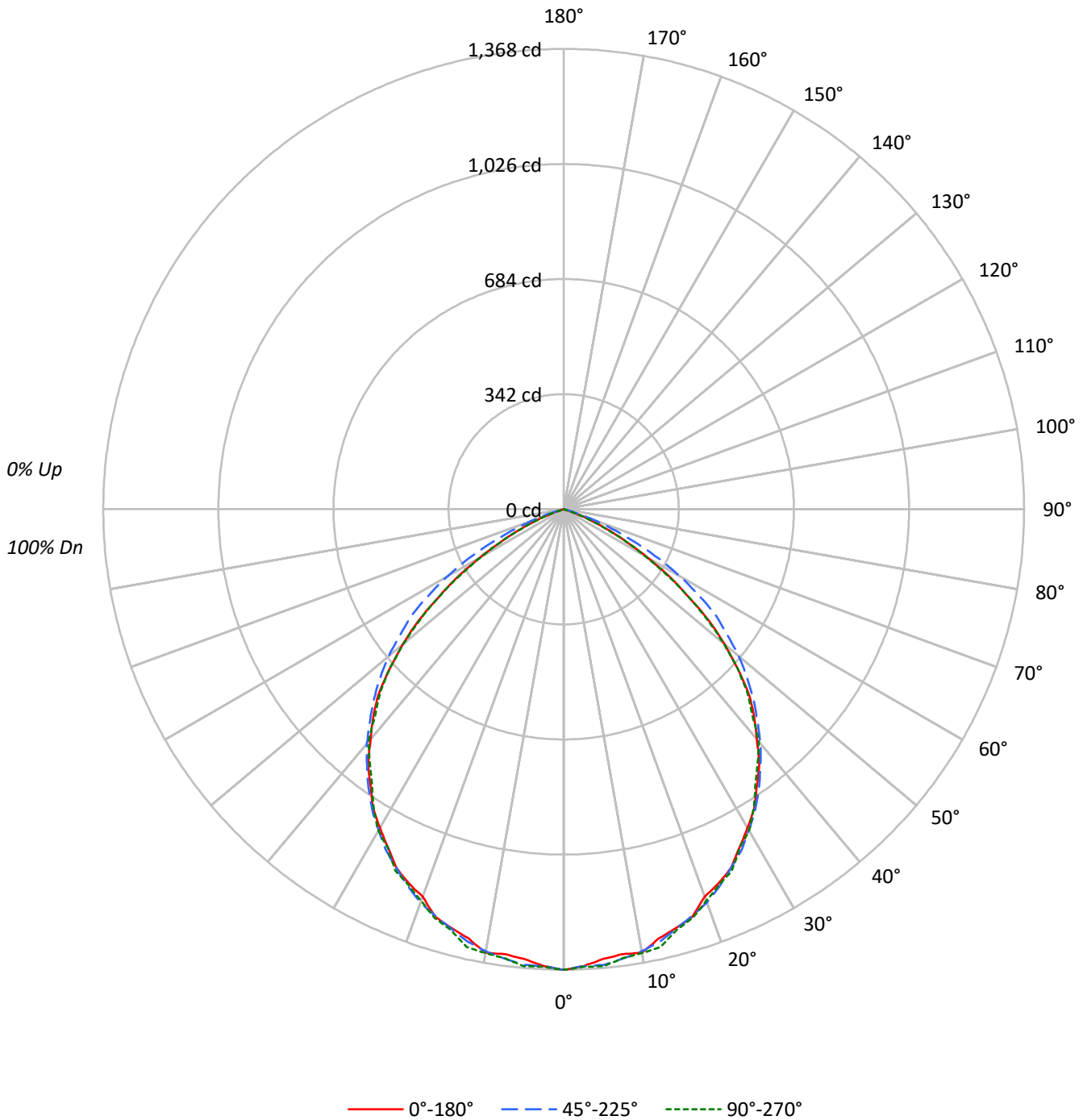
Lumens per Lamp: N/A  
 Luminaire Lumens: 2923.0 lumens  
 Efficiency: N/A  
 Efficacy: 92.5 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 31.6  
 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



TEST NUMBER: P#

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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	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°	132026	132026	132026
5°	129896	131591	131968
10°	131025	130643	131211
15°	128722	128921	129301
20°	125733	127725	127130
25°	125191	125191	126021
30°	121699	122568	122791
35°	117897	119052	116990
40°	112367	114571	113588
45°	106354	108742	105289
50°	93654	101820	93083
55°	75852	93179	76188
60°	55500	77268	54381
65°	33722	55023	32854
70°	13147	29622	12611
75°	1454	7978	1454
80°	1111	1111	1111
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	129.2	4.4
10°-20°	365.5	12.5
20°-30°	542.3	18.6
30°-40°	628.4	21.5
40°-50°	602.5	20.6
50°-60°	443.0	15.2
60°-70°	191.3	6.5
70°-80°	20.7	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°	1037.0	35.5
0°-40°	1665.3	57.0
0°-60°	2710.7	92.7
0°-90°	2923.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2923.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1368	1368	1368	1368	1368	
5°	1341	1355	1359	1361	1362	128
15°	1289	1296	1291	1292	1294	363
25°	1176	1174	1176	1178	1184	538
35°	1001	1007	1011	1009	993	626
45°	779	781	797	785	772	592
55°	451	498	554	496	453	406
65°	148	185	241	183	144	152
75°	4	6	21	4	4	12
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°	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3
2.5°	1358.6	1374.1	1376.1	1366.4	1362.5	1356.7	1370.3	1360.6	1364.5	1360.6	1358.6
5°	1341.1	1358.6	1360.6	1360.6	1356.7	1354.7	1360.6	1358.6	1356.7	1352.8	1358.6
7.5°	1333.4	1343.1	1352.8	1341.1	1346.9	1345.0	1358.6	1352.8	1350.8	1350.8	1346.9
10°	1337.3	1335.3	1343.1	1331.4	1335.3	1331.4	1343.1	1343.1	1339.2	1335.3	1333.4
12.5°	1306.1	1321.6	1321.6	1319.7	1315.8	1310.0	1321.6	1329.5	1317.8	1317.8	1315.8
15°	1288.6	1292.5	1294.4	1294.4	1292.5	1296.4	1302.2	1294.4	1296.4	1286.7	1290.6
17.5°	1269.2	1261.4	1267.2	1263.4	1265.3	1269.2	1277.0	1277.0	1265.3	1263.4	1267.2
20°	1224.5	1247.8	1249.8	1238.1	1240.0	1240.0	1253.7	1242.0	1249.8	1240.0	1243.9
22.5°	1203.1	1218.6	1220.6	1205.1	1214.7	1203.1	1216.7	1199.2	1218.6	1205.1	1210.9
25°	1175.9	1174.0	1179.8	1172.0	1174.0	1174.0	1183.7	1175.9	1181.8	1174.0	1175.9
27.5°	1131.2	1146.8	1144.8	1137.0	1140.9	1139.0	1158.4	1137.0	1148.7	1139.0	1142.9
30°	1092.3	1105.9	1102.1	1094.3	1094.3	1088.4	1109.8	1104.0	1102.1	1102.1	1100.1
32.5°	1053.4	1055.4	1051.5	1053.4	1055.4	1047.7	1065.1	1057.3	1055.4	1057.3	1059.3
35°	1000.9	1000.9	1004.8	999.0	1006.8	1006.8	1022.4	1012.6	1010.7	1004.8	1010.7
37.5°	954.3	948.5	950.4	950.4	954.3	958.2	966.0	962.1	962.1	956.3	960.2
40°	892.1	888.3	894.0	894.0	899.9	899.9	907.7	903.8	909.6	909.6	909.6
42.5°	837.7	837.7	833.9	839.6	841.6	839.6	853.3	851.3	853.3	849.4	851.3
45°	779.4	779.4	775.5	773.6	783.3	781.4	796.9	791.0	798.8	794.9	796.9
47.5°	699.7	709.4	703.6	709.4	721.1	723.1	732.7	728.9	736.6	730.8	738.6
50°	623.9	623.9	629.7	637.5	649.2	651.1	662.8	670.6	674.5	676.4	678.3
52.5°	544.2	542.3	548.1	557.8	567.6	575.3	587.0	598.6	606.4	618.1	612.2
55°	450.9	454.8	460.7	472.3	487.9	497.5	507.3	522.8	536.5	542.3	553.9
57.5°	371.2	367.3	371.2	386.8	404.3	412.1	425.7	441.2	460.7	472.3	476.2
60°	287.6	289.6	293.5	307.1	320.7	332.4	338.2	363.4	381.0	392.6	400.4
62.5°	211.9	215.8	219.7	231.3	244.9	254.6	264.3	285.7	301.3	312.9	320.7
65°	147.7	149.6	155.5	161.3	174.9	184.6	192.4	209.9	225.5	235.2	241.0
67.5°	91.4	93.3	97.1	105.0	114.7	122.4	130.2	141.9	155.5	165.2	167.2
70°	46.6	48.6	50.5	56.4	64.2	68.0	73.8	83.6	93.3	101.0	105.0
72.5°	15.5	15.5	17.5	21.4	25.3	29.2	31.1	40.8	48.6	52.5	54.4
75°	3.9	3.9	3.9	3.9	3.9	5.9	5.9	11.7	15.5	19.4	21.4
77.5°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.9	3.9
80°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
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°	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3	1368.3
2.5°	1368.3	1364.5	1362.5	1364.5	1364.5	1362.5	1368.3	1376.1	1385.8	1360.6
5°	1366.4	1362.5	1366.4	1354.7	1360.6	1356.7	1364.5	1362.5	1370.3	1362.5
7.5°	1360.6	1352.8	1354.7	1348.9	1356.7	1346.9	1352.8	1364.5	1356.7	1345.0
10°	1341.1	1337.3	1350.8	1331.4	1327.5	1335.3	1350.8	1339.2	1335.3	1339.2
12.5°	1321.6	1321.6	1327.5	1312.0	1313.9	1317.8	1325.5	1317.8	1321.6	1331.4
15°	1300.3	1296.4	1306.1	1294.4	1292.5	1288.6	1296.4	1296.4	1300.3	1294.4
17.5°	1275.0	1269.2	1269.2	1265.3	1263.4	1273.1	1277.0	1278.9	1280.9	1273.1
20°	1243.9	1242.0	1247.8	1242.0	1243.9	1245.9	1245.9	1242.0	1259.5	1238.1
22.5°	1210.9	1216.7	1209.0	1205.1	1209.0	1212.8	1212.8	1214.7	1210.9	1207.0
25°	1177.9	1181.8	1183.7	1172.0	1177.9	1172.0	1185.6	1187.5	1179.8	1183.7
27.5°	1148.7	1142.9	1140.9	1133.1	1137.0	1135.1	1137.0	1137.0	1148.7	1133.1
30°	1104.0	1098.2	1100.1	1094.3	1096.2	1094.3	1096.2	1096.2	1104.0	1102.1
32.5°	1061.2	1055.4	1057.3	1051.5	1051.5	1053.4	1049.6	1049.6	1055.4	1051.5
35°	1020.4	1006.8	1008.7	1006.8	1008.7	1000.9	1000.9	999.0	1002.9	993.2
37.5°	962.1	956.3	954.3	952.4	954.3	950.4	954.3	948.5	954.3	946.5
40°	909.6	905.7	907.7	896.0	896.0	897.9	894.0	892.1	894.0	901.8
42.5°	857.2	849.4	845.5	841.6	843.5	837.7	835.8	831.9	835.8	828.0
45°	794.9	794.9	793.0	783.3	785.2	785.2	777.5	769.7	771.6	771.6
47.5°	738.6	734.7	732.7	723.1	721.1	719.2	711.3	705.5	705.5	699.7
50°	676.4	672.5	666.7	656.9	653.0	641.4	635.6	627.8	620.1	620.1
52.5°	618.1	604.4	596.7	581.1	575.3	569.5	553.9	548.1	542.3	536.5
55°	548.1	536.5	520.9	503.4	495.6	485.9	470.3	458.7	450.9	452.9
57.5°	480.1	460.7	445.1	421.8	412.1	406.2	390.6	375.1	367.3	367.3
60°	396.5	381.0	361.5	340.1	332.4	322.7	303.2	293.5	287.6	281.8
62.5°	316.8	305.2	287.6	260.4	254.6	244.9	231.3	219.7	213.8	213.8
65°	237.1	225.5	209.9	190.5	182.7	174.9	163.3	151.6	145.8	143.9
67.5°	167.2	153.5	140.0	124.4	118.6	114.7	103.0	95.2	91.4	89.4
70°	101.0	93.3	83.6	71.9	66.1	62.2	54.4	48.6	46.6	44.7
72.5°	52.5	46.6	38.9	31.1	27.2	23.3	19.4	15.5	13.6	13.6
75°	19.4	15.5	9.8	5.9	3.9	3.9	3.9	3.9	3.9	3.9
77.5°	3.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
80°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
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)