

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: **FLDSQ4C25D010 FEU4C259030 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: FLDSQ4C25D010 FEU4C259030 F4LC-DFSSQ-MW  
 Description: 4 INCH 2500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

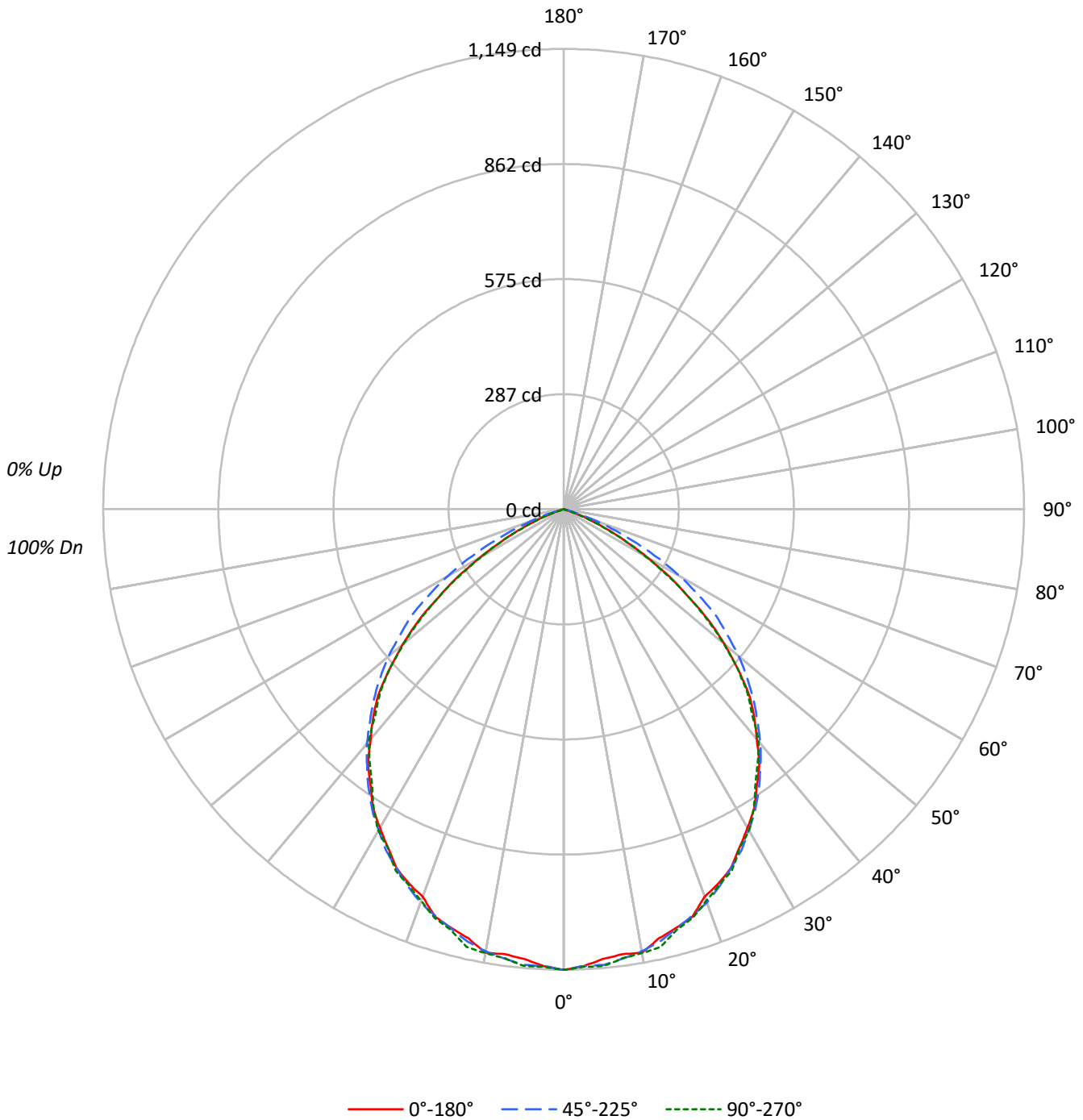
Lumens per Lamp: N/A  
 Luminaire Lumens: 2455.0 lumens  
 Efficiency: N/A  
 Efficacy: 77.9 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 31.5  
 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°	110895	110895	110895
5°	109100	110524	110834
10°	110048	109725	110205
15°	108114	108274	108603
20°	105597	107281	106778
25°	105144	105144	105836
30°	102213	102937	103126
35°	99027	99993	98261
40°	94380	96231	95400
45°	89324	91330	88437
50°	78658	85518	78177
55°	63706	78257	63992
60°	46623	64898	45678
65°	28334	46210	27580
70°	11059	24883	10608
75°	1230	6710	1230
80°	945	945	945
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	108.5	4.4
10°-20°	307.0	12.5
20°-30°	455.5	18.6
30°-40°	527.8	21.5
40°-50°	506.0	20.6
50°-60°	372.0	15.2
60°-70°	160.7	6.5
70°-80°	17.4	0.7
80°-90°	0.2	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°	870.9	35.5
0°-40°	1398.7	57.0
0°-60°	2276.7	92.7
0°-90°	2455.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2455.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1149	1149	1149	1149	1149	
5°	1126	1138	1141	1143	1144	107
15°	1082	1089	1084	1086	1087	305
25°	988	986	988	989	994	452
35°	841	846	849	847	834	526
45°	655	656	669	660	648	498
55°	379	418	465	416	380	341
65°	124	155	202	154	121	128
75°	3	5	18	3	3	10
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P#  
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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3
2.5°	1141.1	1154.1	1155.8	1147.6	1144.3	1139.5	1150.9	1142.7	1146.0	1142.7	1141.1
5°	1126.4	1141.1	1142.7	1142.7	1139.5	1137.8	1142.7	1141.1	1139.5	1136.2	1141.1
7.5°	1119.9	1128.0	1136.2	1126.4	1131.3	1129.7	1141.1	1136.2	1134.5	1134.5	1131.3
10°	1123.2	1121.5	1128.0	1118.2	1121.5	1118.2	1128.0	1128.0	1124.8	1121.5	1119.9
12.5°	1097.0	1110.0	1110.0	1108.4	1105.2	1100.2	1110.0	1116.6	1106.8	1106.8	1105.2
15°	1082.3	1085.6	1087.2	1087.2	1085.6	1088.9	1093.7	1087.2	1088.9	1080.7	1083.9
17.5°	1066.0	1059.5	1064.3	1061.1	1062.7	1066.0	1072.5	1072.5	1062.7	1061.1	1064.3
20°	1028.4	1048.0	1049.7	1039.9	1041.5	1041.5	1053.0	1043.2	1049.7	1041.5	1044.8
22.5°	1010.5	1023.5	1025.2	1012.1	1020.3	1010.5	1021.9	1007.2	1023.5	1012.1	1017.0
25°	987.6	986.0	990.9	984.3	986.0	986.0	994.1	987.6	992.5	986.0	987.6
27.5°	950.1	963.2	961.5	955.0	958.2	956.6	973.0	955.0	964.8	956.6	959.9
30°	917.4	928.9	925.6	919.1	919.1	914.1	932.1	927.2	925.6	925.6	923.9
32.5°	884.8	886.4	883.2	884.8	886.4	879.9	894.6	888.0	886.4	888.0	889.7
35°	840.7	840.7	843.9	839.1	845.6	845.6	858.7	850.5	848.9	843.9	848.9
37.5°	801.5	796.7	798.3	798.3	801.5	804.8	811.3	808.0	808.0	803.2	806.4
40°	749.3	746.0	750.9	750.9	755.8	755.8	762.4	759.1	764.0	764.0	764.0
42.5°	703.6	703.6	700.3	705.2	706.9	705.2	716.7	715.0	716.7	713.4	715.0
45°	654.6	654.6	651.3	649.7	657.9	656.3	669.3	664.4	670.9	667.6	669.3
47.5°	587.7	595.8	590.9	595.8	605.6	607.3	615.4	612.2	618.7	613.8	620.4
50°	524.0	524.0	528.9	535.4	545.2	546.9	556.7	563.2	566.5	568.1	569.7
52.5°	457.1	455.4	460.4	468.5	476.7	483.2	493.0	502.8	509.3	519.1	514.2
55°	378.7	382.0	386.9	396.7	409.8	417.9	426.1	439.1	450.6	455.4	465.2
57.5°	311.8	308.5	311.8	324.8	339.6	346.1	357.5	370.6	386.9	396.7	400.0
60°	241.6	243.2	246.5	258.0	269.3	279.1	284.1	305.2	320.0	329.8	336.3
62.5°	178.0	181.2	184.5	194.3	205.7	213.9	222.0	240.0	253.0	262.8	269.3
65°	124.1	125.7	130.6	135.5	146.9	155.1	161.6	176.3	189.4	197.5	202.4
67.5°	76.7	78.3	81.6	88.2	96.3	102.8	109.4	119.2	130.6	138.7	140.4
70°	39.2	40.8	42.4	47.4	53.9	57.1	62.0	70.2	78.3	84.9	88.2
72.5°	13.1	13.1	14.7	18.0	21.2	24.5	26.1	34.3	40.8	44.1	45.7
75°	3.3	3.3	3.3	3.3	3.3	4.9	4.9	9.8	13.1	16.3	18.0
77.5°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	3.3	3.3
80°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
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°	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3	1149.3
2.5°	1149.3	1146.0	1144.3	1146.0	1146.0	1144.3	1149.3	1155.8	1163.9	1142.7
5°	1147.6	1144.3	1147.6	1137.8	1142.7	1139.5	1146.0	1144.3	1150.9	1144.3
7.5°	1142.7	1136.2	1137.8	1132.9	1139.5	1131.3	1136.2	1146.0	1139.5	1129.7
10°	1126.4	1123.2	1134.5	1118.2	1115.0	1121.5	1134.5	1124.8	1121.5	1124.8
12.5°	1110.0	1110.0	1115.0	1101.9	1103.5	1106.8	1113.3	1106.8	1110.0	1118.2
15°	1092.1	1088.9	1097.0	1087.2	1085.6	1082.3	1088.9	1088.9	1092.1	1087.2
17.5°	1070.9	1066.0	1066.0	1062.7	1061.1	1069.3	1072.5	1074.1	1075.8	1069.3
20°	1044.8	1043.2	1048.0	1043.2	1044.8	1046.4	1046.4	1043.2	1057.8	1039.9
22.5°	1017.0	1021.9	1015.4	1012.1	1015.4	1018.7	1018.7	1020.3	1017.0	1013.7
25°	989.3	992.5	994.1	984.3	989.3	984.3	995.8	997.4	990.9	994.1
27.5°	964.8	959.9	958.2	951.7	955.0	953.4	955.0	955.0	964.8	951.7
30°	927.2	922.3	923.9	919.1	920.7	919.1	920.7	920.7	927.2	925.6
32.5°	891.3	886.4	888.0	883.2	883.2	884.8	881.5	881.5	886.4	883.2
35°	857.0	845.6	847.2	845.6	847.2	840.7	840.7	839.1	842.3	834.2
37.5°	808.0	803.2	801.5	799.9	801.5	798.3	801.5	796.7	801.5	795.0
40°	764.0	760.7	762.4	752.6	752.6	754.2	750.9	749.3	750.9	757.4
42.5°	719.9	713.4	710.1	706.9	708.5	703.6	701.9	698.7	701.9	695.4
45°	667.6	667.6	666.0	657.9	659.5	659.5	653.0	646.5	648.1	648.1
47.5°	620.4	617.1	615.4	607.3	605.6	604.0	597.4	592.6	592.6	587.7
50°	568.1	564.8	559.9	551.8	548.5	538.7	533.8	527.3	520.8	520.8
52.5°	519.1	507.7	501.1	488.1	483.2	478.3	465.2	460.4	455.4	450.6
55°	460.4	450.6	437.5	422.8	416.3	408.1	395.0	385.2	378.7	380.4
57.5°	403.2	386.9	373.9	354.3	346.1	341.1	328.1	315.0	308.5	308.5
60°	333.0	320.0	303.6	285.7	279.1	271.0	254.6	246.5	241.6	236.7
62.5°	266.1	256.3	241.6	218.7	213.9	205.7	194.3	184.5	179.6	179.6
65°	199.1	189.4	176.3	160.0	153.5	146.9	137.1	127.3	122.4	120.8
67.5°	140.4	128.9	117.6	104.5	99.6	96.3	86.5	80.0	76.7	75.1
70°	84.9	78.3	70.2	60.4	55.5	52.2	45.7	40.8	39.2	37.6
72.5°	44.1	39.2	32.6	26.1	22.8	19.6	16.3	13.1	11.5	11.5
75°	16.3	13.1	8.2	4.9	3.3	3.3	3.3	3.3	3.3	3.3
77.5°	3.3	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
80°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
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)