

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: **FLDSQ4C40D010 FEU4C409027 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: FLDSQ4C40D010 FEU4C409027 F4LC-CSSQ-MMS
 Description: 4 INCH 4000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

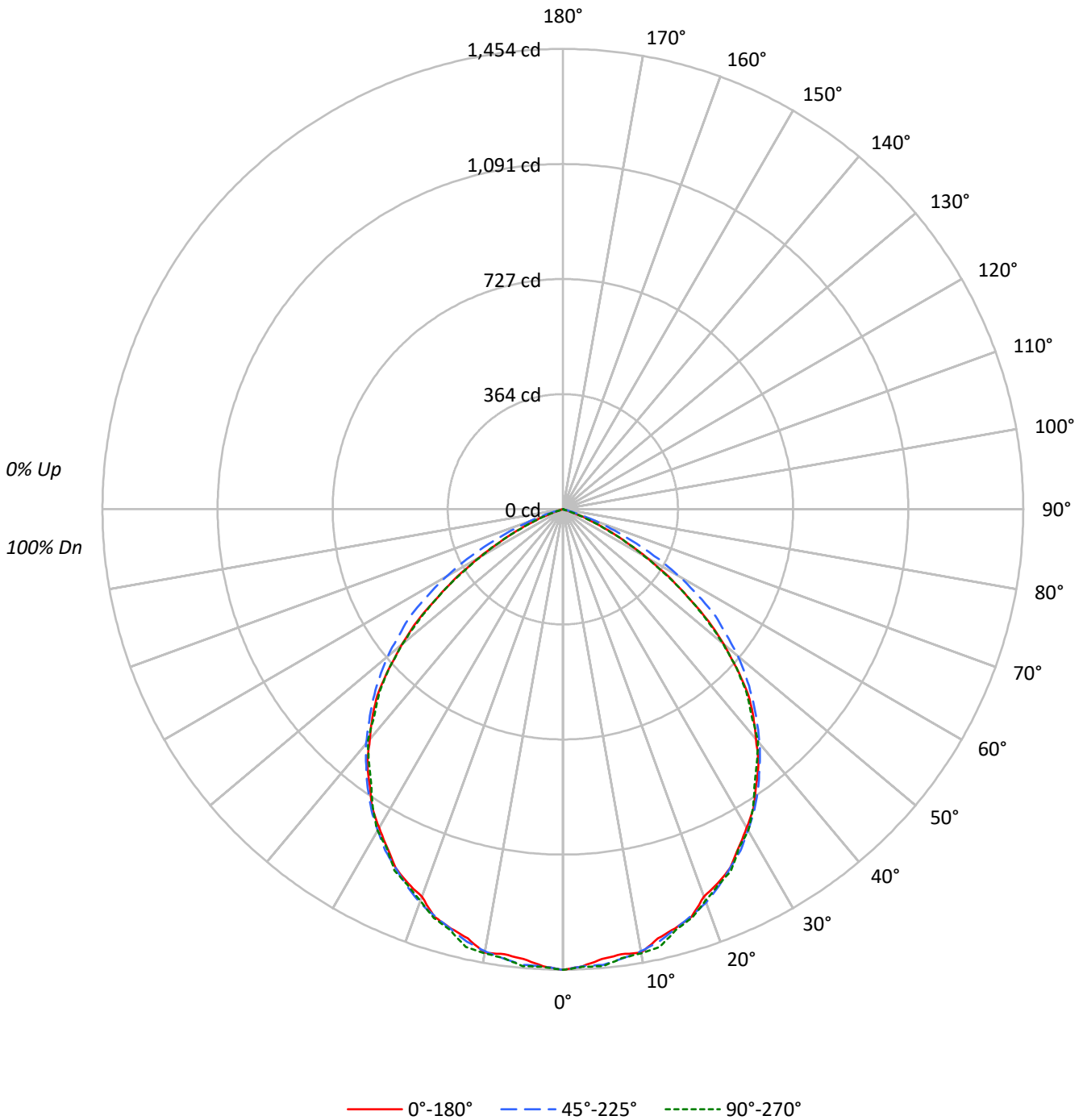
Lumens per Lamp: N/A
 Luminaire Lumens: 3107.0 lumens
 Efficiency: N/A
 Efficacy: 66.1 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 47
 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	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°	140343	140343	140343
5°	138080	139872	140269
10°	139265	138863	139471
15°	136833	137033	137442
20°	133650	135765	135139
25°	133069	133069	133953
30°	129365	130278	130512
35°	125330	126543	124352
40°	119445	121776	120743
45°	113040	115592	111921
50°	99553	108229	98938
55°	80629	99050	80983
60°	58993	82131	57816
65°	35845	58494	34909
70°	13993	31484	13400
75°	1528	8500	1528
80°	1167	1167	1167
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	137.3	4.4
10°-20°	388.5	12.5
20°-30°	576.4	18.6
30°-40°	667.9	21.5
40°-50°	640.4	20.6
50°-60°	470.8	15.2
60°-70°	203.4	6.5
70°-80°	21.9	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°	1102.2	35.5
0°-40°	1770.2	57.0
0°-60°	2881.4	92.7
0°-90°	3107.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3107.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1454	1454	1454	1454	1454	
5°	1426	1440	1444	1446	1448	136
15°	1370	1378	1372	1374	1376	386
25°	1250	1248	1250	1252	1258	572
35°	1064	1070	1074	1072	1056	665
45°	828	830	847	835	820	630
55°	479	529	589	527	481	431
65°	157	196	256	194	153	161
75°	4	6	23	4	4	13
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°	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5
2.5°	1444.1	1460.6	1462.7	1452.4	1448.2	1442.1	1456.5	1446.2	1450.4	1446.2	1444.1
5°	1425.6	1444.1	1446.2	1446.2	1442.1	1440.0	1446.2	1444.1	1442.1	1438.0	1444.1
7.5°	1417.3	1427.6	1438.0	1425.6	1431.7	1429.7	1444.1	1438.0	1435.9	1435.9	1431.7
10°	1421.4	1419.3	1427.6	1415.2	1419.3	1415.2	1427.6	1427.6	1423.5	1419.3	1417.3
12.5°	1388.3	1404.8	1404.8	1402.8	1398.7	1392.4	1404.8	1413.2	1400.7	1400.7	1398.7
15°	1369.8	1373.9	1375.9	1375.9	1373.9	1378.0	1384.2	1375.9	1378.0	1367.7	1371.8
17.5°	1349.1	1340.9	1347.0	1342.9	1345.0	1349.1	1357.4	1357.4	1345.0	1342.9	1347.0
20°	1301.6	1326.4	1328.5	1316.1	1318.1	1318.1	1332.6	1320.2	1328.5	1318.1	1322.2
22.5°	1278.8	1295.3	1297.4	1280.9	1291.2	1278.8	1293.3	1274.7	1295.3	1280.9	1287.1
25°	1249.9	1247.9	1254.0	1245.8	1247.9	1247.9	1258.2	1249.9	1256.1	1247.9	1249.9
27.5°	1202.4	1219.0	1216.9	1208.6	1212.7	1210.7	1231.4	1208.6	1221.0	1210.7	1214.8
30°	1161.1	1175.6	1171.4	1163.2	1163.2	1156.9	1179.7	1173.5	1171.4	1171.4	1169.3
32.5°	1119.8	1121.9	1117.7	1119.8	1121.9	1113.6	1132.1	1123.9	1121.9	1123.9	1126.0
35°	1064.0	1064.0	1068.1	1061.9	1070.2	1070.2	1086.7	1076.3	1074.3	1068.1	1074.3
37.5°	1014.4	1008.2	1010.3	1010.3	1014.4	1018.5	1026.8	1022.6	1022.6	1016.5	1020.6
40°	948.3	944.2	950.3	950.3	956.6	956.6	964.8	960.7	966.8	966.8	966.8
42.5°	890.5	890.5	886.3	892.5	894.6	892.5	907.0	904.9	907.0	902.9	904.9
45°	828.4	828.4	824.3	822.3	832.6	830.5	847.1	840.8	849.1	845.0	847.1
47.5°	743.7	754.1	747.9	754.1	766.5	768.6	778.9	774.7	783.0	776.8	785.1
50°	663.2	663.2	669.4	677.6	690.0	692.1	704.5	712.8	716.9	718.9	721.0
52.5°	578.5	576.4	582.6	592.9	603.3	611.5	623.9	636.3	644.6	657.0	650.7
55°	479.3	483.4	489.7	502.1	518.6	528.9	539.2	555.7	570.2	576.4	588.8
57.5°	394.6	390.4	394.6	411.1	429.7	438.0	452.5	469.0	489.7	502.1	506.2
60°	305.7	307.8	312.0	326.5	340.9	353.3	359.5	386.3	404.9	417.3	425.6
62.5°	225.2	229.4	233.5	245.9	260.3	270.7	281.0	303.7	320.2	332.6	340.9
65°	157.0	159.1	165.3	171.5	186.0	196.2	204.5	223.1	239.6	250.0	256.2
67.5°	97.1	99.1	103.3	111.6	121.9	130.1	138.4	150.8	165.3	175.6	177.7
70°	49.6	51.7	53.7	59.9	68.2	72.3	78.5	88.8	99.1	107.4	111.6
72.5°	16.5	16.5	18.6	22.8	26.9	31.0	33.0	43.4	51.7	55.8	57.8
75°	4.1	4.1	4.1	4.1	4.1	6.2	6.2	12.4	16.5	20.7	22.8
77.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	4.1	4.1
80°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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°	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5	1454.5
2.5°	1454.5	1450.4	1448.2	1450.4	1450.4	1448.2	1454.5	1462.7	1473.0	1446.2
5°	1452.4	1448.2	1452.4	1440.0	1446.2	1442.1	1450.4	1448.2	1456.5	1448.2
7.5°	1446.2	1438.0	1440.0	1433.8	1442.1	1431.7	1438.0	1450.4	1442.1	1429.7
10°	1425.6	1421.4	1435.9	1415.2	1411.1	1419.3	1435.9	1423.5	1419.3	1423.5
12.5°	1404.8	1404.8	1411.1	1394.6	1396.6	1400.7	1409.0	1400.7	1404.8	1415.2
15°	1382.2	1378.0	1388.3	1375.9	1373.9	1369.8	1378.0	1378.0	1382.2	1375.9
17.5°	1355.3	1349.1	1349.1	1345.0	1342.9	1353.2	1357.4	1359.4	1361.5	1353.2
20°	1322.2	1320.2	1326.4	1320.2	1322.2	1324.3	1324.3	1320.2	1338.7	1316.1
22.5°	1287.1	1293.3	1285.1	1280.9	1285.1	1289.2	1289.2	1291.2	1287.1	1282.9
25°	1252.0	1256.1	1258.2	1245.8	1252.0	1245.8	1260.3	1262.3	1254.0	1258.2
27.5°	1221.0	1214.8	1212.7	1204.5	1208.6	1206.6	1208.6	1208.6	1221.0	1204.5
30°	1173.5	1167.3	1169.3	1163.2	1165.2	1163.2	1165.2	1165.2	1173.5	1171.4
32.5°	1128.0	1121.9	1123.9	1117.7	1117.7	1119.8	1115.6	1115.6	1121.9	1117.7
35°	1084.6	1070.2	1072.2	1070.2	1072.2	1064.0	1064.0	1061.9	1066.1	1055.7
37.5°	1022.6	1016.5	1014.4	1012.4	1014.4	1010.3	1014.4	1008.2	1014.4	1006.1
40°	966.8	962.7	964.8	952.4	952.4	954.5	950.3	948.3	950.3	958.6
42.5°	911.1	902.9	898.7	894.6	896.6	890.5	888.4	884.2	888.4	880.1
45°	845.0	845.0	842.9	832.6	834.7	834.7	826.4	818.2	820.2	820.2
47.5°	785.1	781.0	778.9	768.6	766.5	764.5	756.1	750.0	750.0	743.7
50°	718.9	714.8	708.7	698.3	694.2	681.8	675.6	667.3	659.1	659.1
52.5°	657.0	642.5	634.2	617.7	611.5	605.3	588.8	582.6	576.4	570.2
55°	582.6	570.2	553.7	535.1	526.8	516.5	499.9	487.6	479.3	481.4
57.5°	510.3	489.7	473.1	448.4	438.0	431.8	415.2	398.7	390.4	390.4
60°	421.5	404.9	384.3	361.5	353.3	343.0	322.3	312.0	305.7	299.6
62.5°	336.8	324.4	305.7	276.8	270.7	260.3	245.9	233.5	227.3	227.3
65°	252.0	239.6	223.1	202.5	194.2	186.0	173.6	161.2	154.9	152.9
67.5°	177.7	163.2	148.8	132.3	126.0	121.9	109.5	101.2	97.1	95.0
70°	107.4	99.1	88.8	76.5	70.2	66.1	57.8	51.7	49.6	47.5
72.5°	55.8	49.6	41.3	33.0	28.9	24.8	20.7	16.5	14.5	14.5
75°	20.7	16.5	10.4	6.2	4.1	4.1	4.1	4.1	4.1	4.1
77.5°	4.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
80°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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)