

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: **FLDSQ4C20D010 FEU4C209050 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: FLDSQ4C20D010 FEU4C209050 F4LC-SQ-LI
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

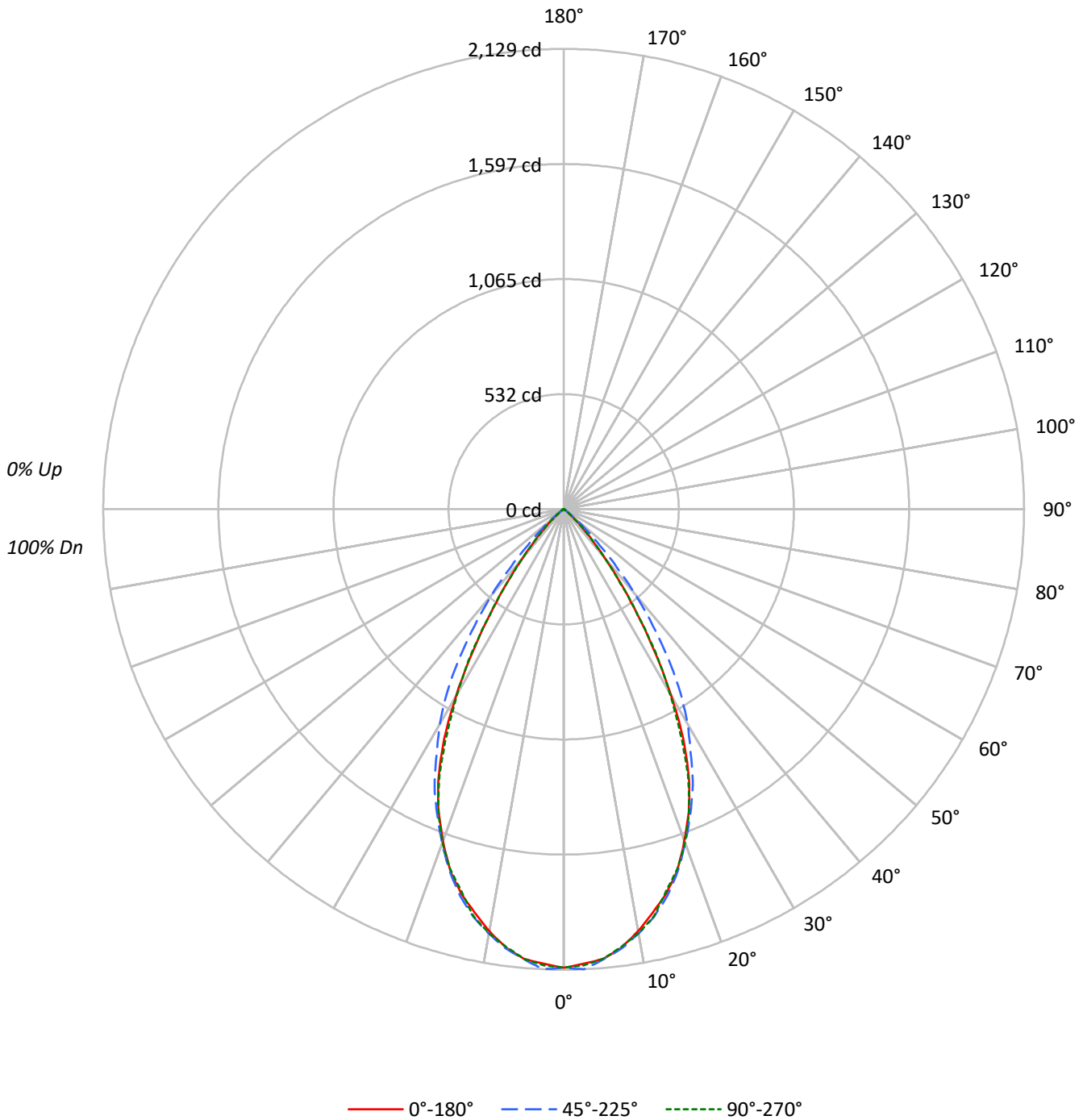
Lumens per Lamp: N/A
 Luminaire Lumens: 1957.1 lumens
 Efficiency: N/A
 Efficacy: 89.8 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 21.8
 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	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	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93				93
2	108	103	99	95	105	101	97	94	98	95	92	95	92	90	92	90	88	87				87
3	102	96	91	87	100	94	90	86	92	88	84	89	86	83	87	84	82	80				80
4	97	89	84	79	95	88	83	79	86	81	78	84	80	77	82	79	76	75				75
5	92	83	77	73	90	82	77	73	81	76	72	79	75	71	77	74	71	69				69
6	87	78	72	68	86	77	71	67	76	71	67	74	70	66	73	69	66	64				64
7	83	73	67	63	81	73	67	63	71	66	62	70	65	62	69	65	62	60				60
8	79	69	63	59	77	68	62	58	67	62	58	66	61	58	65	61	58	56				56
9	75	65	59	55	74	64	59	55	63	58	55	63	58	54	62	57	54	53				53
10	71	61	55	51	70	61	55	51	60	55	51	59	54	51	58	54	51	50				50

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	204528	204528	204528
5°	202180	202442	202180
10°	194093	195289	195024
15°	183493	184841	182554
20°	167463	168705	168295
25°	145813	150401	144812
30°	110881	127538	109232
35°	69791	99145	70427
40°	37661	65473	36981
45°	17821	32340	17644
50°	6680	12129	6680
55°	3179	3852	2944
60°	2084	1833	2084
65°	1233	1233	1233
70°	762	1157	762
75°	522	522	522
80°	778	778	778
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	196.5	10.0
10°-20°	515.1	26.3
20°-30°	629.2	32.2
30°-40°	440.1	22.5
40°-50°	144.2	7.4
50°-60°	22.9	1.2
60°-70°	6.3	0.3
70°-80°	2.1	0.1
80°-90°	0.6	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°	1340.8	68.5
0°-40°	1780.9	91.0
0°-60°	1948.1	99.5
0°-90°	1957.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1957.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2120	2120	2120	2120	2120	
5°	2087	2088	2090	2077	2087	196
15°	1837	1844	1850	1838	1828	512
25°	1370	1390	1413	1387	1360	615
35°	592	700	842	689	598	378
45°	131	161	237	159	129	110
55°	19	20	23	20	18	19
65°	5	7	5	7	5	6
75°	1	1	1	1	1	2
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#
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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	2119.7	2119.7	2119.7	2119.7	2119.7	2119.7	2119.7	2119.7	2119.7	2119.7	2119.7
2.5°	2103.6	2118.4	2114.3	2123.8	2123.8	2113.0	2115.7	2119.7	2125.1	2129.2	2096.8
5°	2087.4	2100.9	2088.7	2102.2	2094.1	2082.0	2102.2	2091.4	2098.2	2090.1	2095.5
7.5°	2044.3	2065.9	2041.6	2057.8	2052.4	2045.7	2053.7	2051.0	2055.1	2048.3	2033.6
10°	1981.0	1998.6	1982.4	2005.3	1994.5	1987.8	1994.5	2001.2	1999.9	1993.2	2001.2
12.5°	1908.3	1928.5	1920.4	1933.9	1921.8	1921.8	1937.9	1933.9	1935.2	1929.9	1939.3
15°	1836.9	1851.8	1839.6	1857.2	1851.8	1836.9	1843.6	1843.6	1854.5	1850.4	1839.6
17.5°	1748.1	1760.2	1746.7	1750.8	1745.4	1742.7	1770.9	1752.1	1762.8	1754.8	1756.1
20°	1630.9	1636.3	1632.2	1643.0	1636.3	1644.4	1641.7	1639.0	1639.0	1643.0	1633.6
22.5°	1512.4	1512.4	1516.4	1519.1	1524.5	1516.4	1532.6	1519.1	1520.4	1529.9	1527.2
25°	1369.6	1365.6	1375.0	1388.5	1393.9	1387.1	1408.7	1397.9	1406.0	1412.7	1397.9
27.5°	1195.9	1195.9	1205.3	1228.2	1232.2	1240.3	1269.9	1269.9	1280.7	1271.3	1282.1
30°	995.2	1010.0	1022.1	1051.8	1061.2	1078.7	1109.7	1124.5	1148.8	1144.7	1139.3
32.5°	789.2	809.4	810.7	841.7	867.3	896.9	938.7	973.7	991.2	1003.3	989.8
35°	592.5	604.7	615.5	637.0	680.1	719.2	756.9	802.6	833.6	841.7	829.6
37.5°	433.7	436.4	447.1	467.3	499.6	537.4	583.1	632.9	665.3	677.4	663.9
40°	299.0	301.7	307.0	324.6	351.5	378.4	414.8	466.0	495.6	519.8	502.3
42.5°	200.6	203.3	208.7	222.2	237.0	262.6	290.9	323.2	351.5	362.3	352.8
45°	130.6	130.6	133.3	142.8	150.9	171.0	191.2	211.4	230.3	237.0	230.3
47.5°	76.8	78.1	80.8	87.5	96.9	105.0	119.9	133.3	138.7	144.1	141.4
50°	44.5	44.5	48.5	52.5	59.2	64.6	70.0	75.4	78.1	80.8	78.1
52.5°	24.2	25.6	26.9	28.3	31.0	36.4	40.4	40.4	41.8	43.1	41.8
55°	18.9	18.9	18.9	18.9	20.2	20.2	20.2	21.5	21.5	22.9	21.5
57.5°	13.5	13.5	13.5	14.8	14.8	14.8	13.5	13.5	13.5	13.5	13.5
60°	10.8	10.8	10.8	10.8	10.8	10.8	10.8	9.5	9.5	9.5	9.5
62.5°	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
65°	5.4	5.4	6.8	6.8	6.8	6.8	6.8	5.4	5.4	5.4	5.4
67.5°	4.1	4.1	4.1	4.1	5.4	5.4	4.1	4.1	4.1	4.1	4.1
70°	2.7	2.7	2.7	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
72.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
75°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
77.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
80°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	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°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
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°	2119.7	2119.7	2119.7	2119.7	2119.7	2119.7	2119.7	2119.7
2.5°	2119.7	2096.8	2099.5	2111.7	2104.9	2111.7	2110.3	2110.3
5°	2096.8	2090.1	2079.3	2075.3	2083.4	2100.9	2098.2	2087.4
7.5°	2053.7	2036.3	2048.3	2053.7	2047.0	2057.8	2063.2	2040.3
10°	2002.6	1995.9	1993.2	1995.9	1993.2	2003.9	1990.5	1990.5
12.5°	1929.9	1919.1	1919.1	1935.2	1925.8	1917.7	1928.5	1927.2
15°	1857.2	1835.6	1835.6	1840.9	1845.0	1839.6	1840.9	1827.5
17.5°	1749.4	1742.7	1733.2	1748.1	1752.1	1746.7	1750.8	1744.0
20°	1648.4	1648.4	1630.9	1637.6	1643.0	1647.1	1649.7	1639.0
22.5°	1519.1	1521.8	1509.7	1523.1	1527.2	1513.7	1516.4	1513.7
25°	1400.6	1399.3	1389.8	1384.4	1387.1	1381.7	1380.4	1360.2
27.5°	1269.9	1256.5	1236.3	1241.7	1218.8	1199.9	1199.9	1168.9
30°	1128.5	1105.7	1078.7	1051.8	1031.6	1010.0	997.9	980.4
32.5°	962.9	932.0	898.3	861.9	839.0	806.7	789.2	798.6
35°	798.6	752.8	707.0	670.7	635.6	616.8	595.2	597.9
37.5°	639.7	575.1	534.7	495.6	466.0	441.7	432.3	429.6
40°	467.3	416.1	375.7	347.4	327.3	308.4	297.6	293.6
42.5°	323.2	286.9	254.5	231.6	218.2	206.0	200.6	199.3
45°	210.1	188.6	167.0	150.9	140.1	132.0	130.6	129.3
47.5°	132.0	121.2	107.7	95.6	86.2	80.8	76.8	76.8
50°	75.4	71.4	64.6	57.9	52.5	49.8	45.8	44.5
52.5°	40.4	40.4	37.7	32.3	28.3	25.6	25.6	24.2
55°	21.5	21.5	20.2	20.2	18.9	18.9	18.9	17.5
57.5°	13.5	13.5	14.8	14.8	13.5	13.5	13.5	13.5
60°	9.5	10.8	10.8	10.8	10.8	10.8	10.8	10.8
62.5°	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
65°	5.4	6.8	6.8	6.8	6.8	5.4	5.4	5.4
67.5°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
70°	4.1	4.1	4.1	4.1	4.1	2.7	2.7	2.7
72.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
75°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
77.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
80°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
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°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)