

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 FEU4C209027 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 FEU4C209027 F4LC-SQ-LI  
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

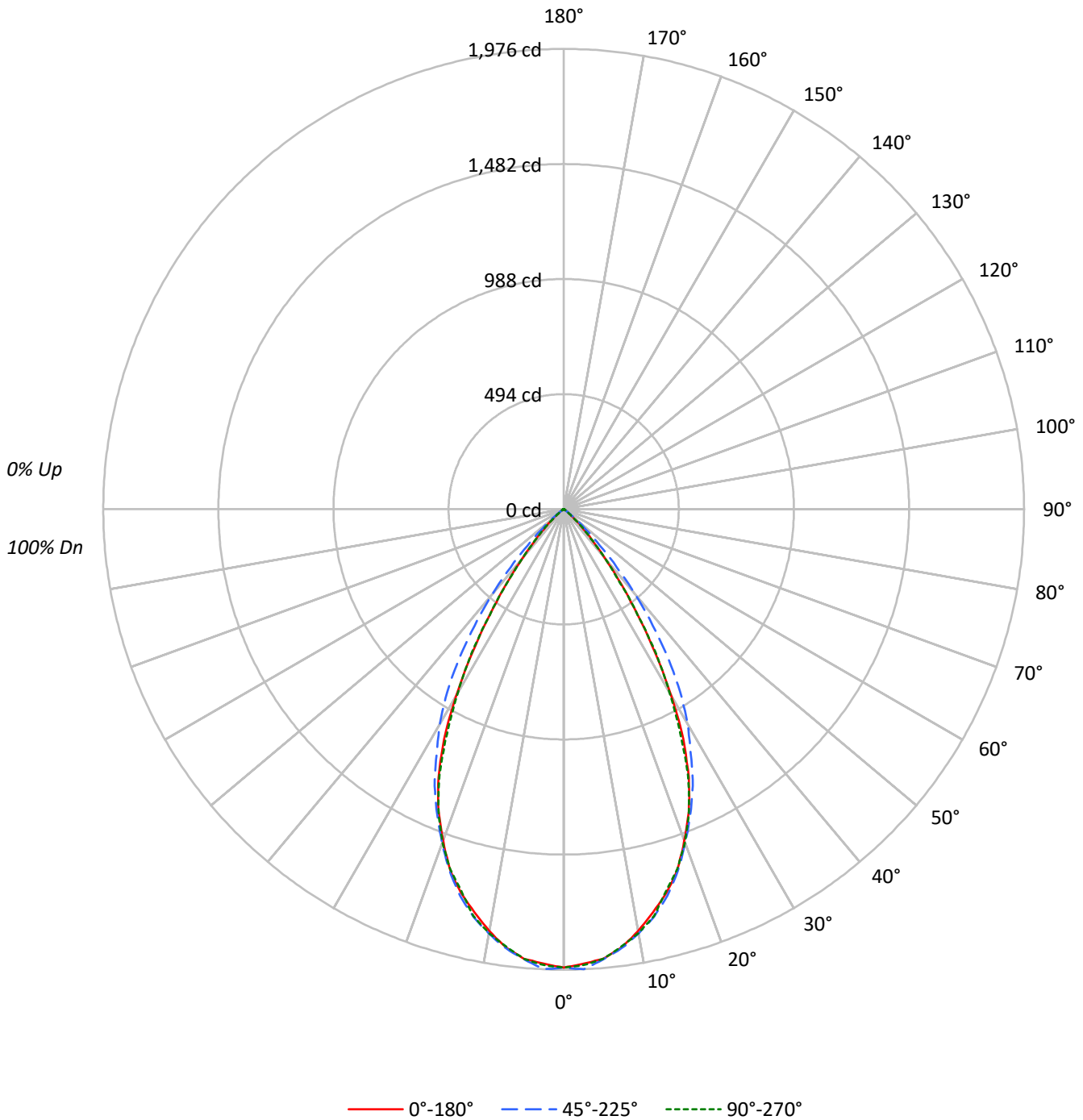
Lumens per Lamp: N/A  
 Luminaire Lumens: 1816.1 lumens  
 Efficiency: N/A  
 Efficacy: 83.3 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

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				
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°	189794	189794	189794
5°	187613	187855	187613
10°	180112	181219	180974
15°	170277	171526	169398
20°	155398	156548	156168
25°	135315	139563	134379
30°	102892	118346	101366
35°	64773	92007	65351
40°	34941	60762	34311
45°	16538	30020	16361
50°	6200	11258	6200
55°	2944	3583	2742
60°	1930	1698	1930
65°	1142	1142	1142
70°	705	1072	705
75°	485	485	485
80°	722	722	722
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	182.4	10.0
10°-20°	478.0	26.3
20°-30°	583.9	32.2
30°-40°	408.4	22.5
40°-50°	133.8	7.4
50°-60°	21.3	1.2
60°-70°	5.8	0.3
70°-80°	2.0	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°	1244.2	68.5
0°-40°	1652.6	91.0
0°-60°	1807.7	99.5
0°-90°	1816.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1816.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1967	1967	1967	1967	1967	
5°	1937	1938	1940	1928	1937	182
15°	1705	1711	1717	1706	1696	475
25°	1271	1290	1311	1287	1262	571
35°	550	649	781	639	555	351
45°	121	149	220	148	120	102
55°	18	19	21	19	16	17
65°	5	6	5	6	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#  
 CATALOG NUMBER: FLDSQ4C20D010 FEU4C209027 F4LC-SQ-LI

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1967.0	1967.0	1967.0	1967.0	1967.0	1967.0	1967.0	1967.0	1967.0	1967.0	1967.0
2.5°	1952.0	1965.8	1962.0	1970.8	1970.8	1960.8	1963.3	1967.0	1972.0	1975.8	1945.7
5°	1937.0	1949.5	1938.2	1950.7	1943.2	1932.0	1950.7	1940.7	1947.0	1939.5	1944.5
7.5°	1897.0	1917.0	1894.5	1909.5	1904.5	1898.3	1905.8	1903.3	1907.0	1900.8	1887.0
10°	1838.3	1854.6	1839.6	1860.8	1850.8	1844.6	1850.8	1857.1	1855.8	1849.6	1857.1
12.5°	1770.8	1789.5	1782.0	1794.5	1783.3	1783.3	1798.3	1794.5	1795.8	1790.8	1799.5
15°	1704.6	1718.3	1707.1	1723.3	1718.3	1704.6	1710.8	1710.8	1720.8	1717.1	1707.1
17.5°	1622.1	1633.3	1620.8	1624.6	1619.6	1617.1	1643.3	1625.8	1635.8	1628.3	1629.6
20°	1513.4	1518.4	1514.6	1524.6	1518.4	1525.9	1523.4	1520.9	1520.9	1524.6	1515.9
22.5°	1403.4	1403.4	1407.2	1409.7	1414.7	1407.2	1422.2	1409.7	1410.9	1419.7	1417.2
25°	1271.0	1267.2	1275.9	1288.4	1293.4	1287.2	1307.2	1297.2	1304.7	1310.9	1297.2
27.5°	1109.7	1109.7	1118.5	1139.7	1143.5	1151.0	1178.4	1178.4	1188.4	1179.7	1189.7
30°	923.5	937.3	948.5	976.0	984.8	1001.0	1029.7	1043.5	1066.0	1062.2	1057.2
32.5°	732.3	751.1	752.3	781.1	804.8	832.3	871.0	903.5	919.8	931.0	918.5
35°	549.9	561.1	571.1	591.1	631.1	667.3	702.3	744.8	773.6	781.1	769.8
37.5°	402.4	404.9	414.9	433.6	463.6	498.6	541.1	587.3	617.4	628.6	616.1
40°	277.4	279.9	284.9	301.2	326.2	351.2	384.9	432.4	459.9	482.4	466.1
42.5°	186.2	188.7	193.7	206.2	220.0	243.7	269.9	299.9	326.2	336.2	327.4
45°	121.2	121.2	123.7	132.5	140.0	158.7	177.5	196.2	213.7	220.0	213.7
47.5°	71.2	72.5	75.0	81.2	90.0	97.5	111.2	123.7	128.7	133.7	131.2
50°	41.3	41.3	45.0	48.8	55.0	60.0	65.0	70.0	72.5	75.0	72.5
52.5°	22.5	23.8	25.0	26.3	28.8	33.8	37.5	37.5	38.8	40.0	38.8
55°	17.5	17.5	17.5	17.5	18.8	18.8	18.8	20.0	20.0	21.3	20.0
57.5°	12.5	12.5	12.5	13.8	13.8	13.8	12.5	12.5	12.5	12.5	12.5
60°	10.0	10.0	10.0	10.0	10.0	10.0	10.0	8.8	8.8	8.8	8.8
62.5°	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
65°	5.0	5.0	6.3	6.3	6.3	6.3	6.3	5.0	5.0	5.0	5.0
67.5°	3.8	3.8	3.8	3.8	5.0	5.0	3.8	3.8	3.8	3.8	3.8
70°	2.5	2.5	2.5	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
72.5°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
75°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
77.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	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°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
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°	1967.0	1967.0	1967.0	1967.0	1967.0	1967.0	1967.0	1967.0
2.5°	1967.0	1945.7	1948.2	1959.5	1953.2	1959.5	1958.3	1958.3
5°	1945.7	1939.5	1929.5	1925.8	1933.3	1949.5	1947.0	1937.0
7.5°	1905.8	1889.5	1900.8	1905.8	1899.5	1909.5	1914.5	1893.3
10°	1858.3	1852.1	1849.6	1852.1	1849.6	1859.6	1847.1	1847.1
12.5°	1790.8	1780.8	1780.8	1795.8	1787.0	1779.5	1789.5	1788.3
15°	1723.3	1703.3	1703.3	1708.3	1712.1	1707.1	1708.3	1695.8
17.5°	1623.3	1617.1	1608.3	1622.1	1625.8	1620.8	1624.6	1618.3
20°	1529.6	1529.6	1513.4	1519.6	1524.6	1528.4	1530.9	1520.9
22.5°	1409.7	1412.2	1400.9	1413.4	1417.2	1404.7	1407.2	1404.7
25°	1299.7	1298.4	1289.7	1284.7	1287.2	1282.2	1280.9	1262.2
27.5°	1178.4	1165.9	1147.2	1152.2	1131.0	1113.5	1113.5	1084.7
30°	1047.2	1026.0	1001.0	976.0	957.3	937.3	926.0	909.8
32.5°	893.5	864.8	833.5	799.8	778.6	748.6	732.3	741.1
35°	741.1	698.6	656.1	622.4	589.8	572.3	552.4	554.8
37.5°	593.6	533.6	496.2	459.9	432.4	409.9	401.1	398.6
40°	433.6	386.2	348.7	322.4	303.7	286.2	276.2	272.4
42.5°	299.9	266.2	236.2	215.0	202.5	191.2	186.2	185.0
45°	195.0	175.0	155.0	140.0	130.0	122.5	121.2	119.9
47.5°	122.5	112.4	100.0	88.7	80.0	75.0	71.2	71.2
50°	70.0	66.2	60.0	53.8	48.8	46.3	42.5	41.3
52.5°	37.5	37.5	35.0	30.0	26.3	23.8	23.8	22.5
55°	20.0	20.0	18.8	18.8	17.5	17.5	17.5	16.3
57.5°	12.5	12.5	13.8	13.8	12.5	12.5	12.5	12.5
60°	8.8	10.0	10.0	10.0	10.0	10.0	10.0	10.0
62.5°	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
65°	5.0	6.3	6.3	6.3	6.3	5.0	5.0	5.0
67.5°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
70°	3.8	3.8	3.8	3.8	3.8	2.5	2.5	2.5
72.5°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
75°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
77.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
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°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)