

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 FEU4C209040 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 FEU4C209040 F4LC-SQ-LI
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

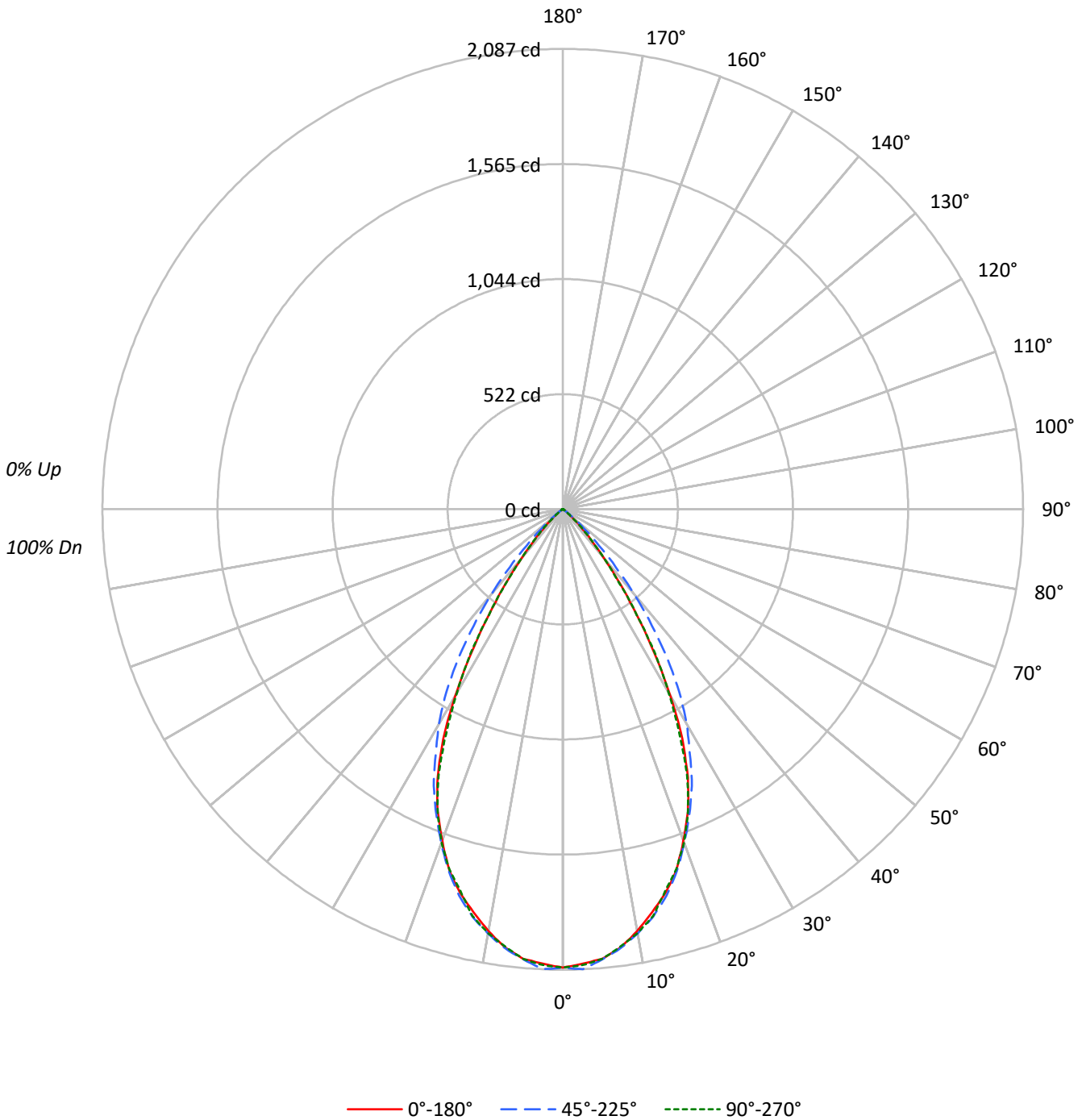
Lumens per Lamp: N/A
 Luminaire Lumens: 1917.9 lumens
 Efficiency: N/A
 Efficacy: 88.0 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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°	200456	200456	200456
5°	198151	198413	198151
10°	190223	191389	191134
15°	179837	181155	178918
20°	164126	165337	164937
25°	142906	147410	141927
30°	108675	124997	107059
35°	68401	97166	69026
40°	36905	64175	36238
45°	17466	31699	17289
50°	6545	11889	6545
55°	3112	3785	2893
60°	2046	1795	2046
65°	1210	1210	1210
70°	733	1128	733
75°	485	485	485
80°	722	722	722
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	192.6	10.0
10°-20°	504.8	26.3
20°-30°	616.7	32.2
30°-40°	431.3	22.5
40°-50°	141.3	7.4
50°-60°	22.5	1.2
60°-70°	6.1	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°	1314.1	68.5
0°-40°	1745.4	91.0
0°-60°	1909.2	99.5
0°-90°	1917.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1917.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2078	2078	2078	2078	2078	
5°	2046	2046	2048	2036	2046	192
15°	1800	1808	1814	1802	1791	502
25°	1342	1363	1385	1359	1333	603
35°	581	686	825	675	586	371
45°	128	158	232	156	127	107
55°	18	20	22	20	17	18
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#
 CATALOG NUMBER: FLDSQ4C20D010 FEU4C209040 F4LC-SQ-LI

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	2077.5	2077.5	2077.5	2077.5	2077.5	2077.5	2077.5	2077.5	2077.5	2077.5	2077.5
2.5°	2061.7	2076.2	2072.2	2081.5	2081.5	2070.9	2073.6	2077.5	2082.8	2086.8	2055.0
5°	2045.8	2059.0	2047.1	2060.3	2052.4	2040.5	2060.3	2049.8	2056.4	2048.5	2053.7
7.5°	2003.6	2024.7	2001.0	2016.8	2011.5	2004.9	2012.8	2010.2	2014.2	2007.5	1993.0
10°	1941.5	1958.7	1942.9	1965.3	1954.7	1948.2	1954.7	1961.4	1960.0	1953.4	1961.4
12.5°	1870.3	1890.1	1882.1	1895.3	1883.5	1883.5	1899.3	1895.3	1896.7	1891.4	1900.6
15°	1800.3	1814.9	1803.0	1820.1	1814.9	1800.3	1806.9	1806.9	1817.5	1813.5	1803.0
17.5°	1713.2	1725.1	1711.9	1715.9	1710.6	1707.9	1735.6	1717.2	1727.7	1719.8	1721.1
20°	1598.4	1603.7	1599.7	1610.2	1603.7	1611.6	1609.0	1606.3	1606.3	1610.2	1601.0
22.5°	1482.2	1482.2	1486.2	1488.8	1494.1	1486.2	1502.0	1488.8	1490.1	1499.4	1496.8
25°	1342.3	1338.4	1347.6	1360.8	1366.1	1359.5	1380.6	1370.0	1377.9	1384.6	1370.0
27.5°	1172.1	1172.1	1181.3	1203.8	1207.7	1215.6	1244.6	1244.6	1255.2	1246.0	1256.5
30°	975.4	989.9	1001.8	1030.8	1040.1	1057.2	1087.6	1102.1	1125.9	1121.9	1116.6
32.5°	773.5	793.3	794.6	824.9	850.0	879.0	920.0	954.3	971.4	983.3	970.1
35°	580.7	592.6	603.2	624.3	666.5	704.8	741.8	786.6	817.0	824.9	813.0
37.5°	425.0	427.7	438.2	458.0	489.7	526.7	571.5	620.3	652.0	663.9	650.7
40°	293.0	295.6	300.9	318.1	344.5	370.9	406.5	456.7	485.7	509.5	492.3
42.5°	196.6	199.3	204.6	217.8	232.3	257.4	285.1	316.8	344.5	355.1	345.8
45°	128.0	128.0	130.7	139.9	147.8	167.6	187.4	207.2	225.7	232.3	225.7
47.5°	75.2	76.5	79.2	85.8	95.0	102.9	117.5	130.7	135.9	141.2	138.6
50°	43.6	43.6	47.5	51.5	58.1	63.3	68.6	73.9	76.5	79.2	76.5
52.5°	23.8	25.1	26.4	27.7	30.4	35.7	39.6	39.6	40.9	42.2	40.9
55°	18.5	18.5	18.5	18.5	19.8	19.8	19.8	21.1	21.1	22.5	21.1
57.5°	13.2	13.2	13.2	14.5	14.5	14.5	13.2	13.2	13.2	13.2	13.2
60°	10.6	10.6	10.6	10.6	10.6	10.6	10.6	9.3	9.3	9.3	9.3
62.5°	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
65°	5.3	5.3	6.6	6.6	6.6	6.6	6.6	5.3	5.3	5.3	5.3
67.5°	4.0	4.0	4.0	4.0	5.3	5.3	4.0	4.0	4.0	4.0	4.0
70°	2.6	2.6	2.6	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
72.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
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°	2077.5	2077.5	2077.5	2077.5	2077.5	2077.5	2077.5	2077.5
2.5°	2077.5	2055.0	2057.7	2069.6	2063.0	2069.6	2068.3	2068.3
5°	2055.0	2048.5	2037.9	2033.9	2041.8	2059.0	2056.4	2045.8
7.5°	2012.8	1995.7	2007.5	2012.8	2006.2	2016.8	2022.1	1999.6
10°	1962.7	1956.1	1953.4	1956.1	1953.4	1964.0	1950.8	1950.8
12.5°	1891.4	1880.8	1880.8	1896.7	1887.4	1879.5	1890.1	1888.8
15°	1820.1	1799.0	1799.0	1804.3	1808.2	1803.0	1804.3	1791.1
17.5°	1714.5	1707.9	1698.7	1713.2	1717.2	1711.9	1715.9	1709.2
20°	1615.5	1615.5	1598.4	1605.0	1610.2	1614.2	1616.9	1606.3
22.5°	1488.8	1491.5	1479.6	1492.8	1496.8	1483.6	1486.2	1483.6
25°	1372.7	1371.4	1362.1	1356.8	1359.5	1354.2	1352.9	1333.1
27.5°	1244.6	1231.4	1211.7	1216.9	1194.5	1176.0	1176.0	1145.6
30°	1106.0	1083.6	1057.2	1030.8	1011.0	989.9	978.0	960.9
32.5°	943.7	913.4	880.4	844.7	822.3	790.6	773.5	782.7
35°	782.7	737.8	692.9	657.3	623.0	604.5	583.4	586.0
37.5°	626.9	563.6	524.0	485.7	456.7	432.9	423.7	421.0
40°	458.0	407.8	368.3	340.5	320.7	302.3	291.7	287.7
42.5°	316.8	281.2	249.4	227.0	213.8	201.9	196.6	195.4
45°	205.9	184.8	163.7	147.8	137.3	129.4	128.0	126.7
47.5°	129.4	118.8	105.6	93.7	84.5	79.2	75.2	75.2
50°	73.9	70.0	63.3	56.8	51.5	48.9	44.9	43.6
52.5°	39.6	39.6	36.9	31.7	27.7	25.1	25.1	23.8
55°	21.1	21.1	19.8	19.8	18.5	18.5	18.5	17.2
57.5°	13.2	13.2	14.5	14.5	13.2	13.2	13.2	13.2
60°	9.3	10.6	10.6	10.6	10.6	10.6	10.6	10.6
62.5°	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
65°	5.3	6.6	6.6	6.6	6.6	5.3	5.3	5.3
67.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
70°	4.0	4.0	4.0	4.0	4.0	2.6	2.6	2.6
72.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
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)