

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 FEU4C209035 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 FEU4C209035 F4LC-SQ-LI
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

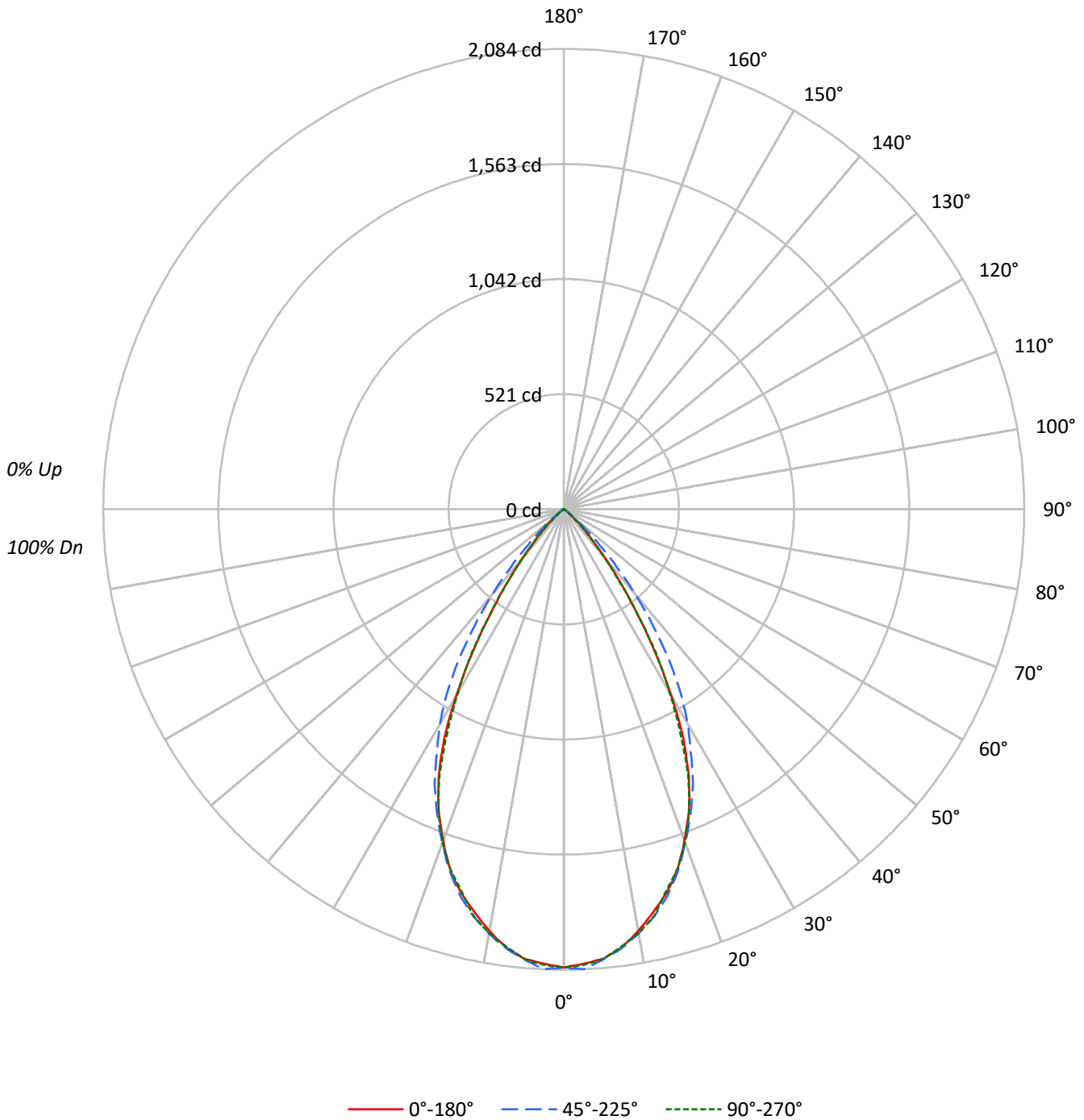
Lumens per Lamp: N/A
 Luminaire Lumens: 1914.9 lumens
 Efficiency: N/A
 Efficacy: 87.8 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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	
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°	200137	200137	200137
5°	197841	198103	197841
10°	189929	191095	190840
15°	179557	180876	178638
20°	163869	165081	164680
25°	142683	147175	141703
30°	108508	124797	106892
35°	68295	97025	68920
40°	36843	64074	36188
45°	17439	31644	17262
50°	6530	11874	6530
55°	3095	3768	2893
60°	2026	1775	2026
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°	192.3	10.0
10°-20°	504.0	26.3
20°-30°	615.7	32.2
30°-40°	430.6	22.5
40°-50°	141.1	7.4
50°-60°	22.4	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°	1312.0	68.5
0°-40°	1742.7	91.0
0°-60°	1906.3	99.5
0°-90°	1914.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1914.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2074	2074	2074	2074	2074	
5°	2043	2043	2045	2033	2043	192
15°	1798	1805	1811	1799	1788	501
25°	1340	1361	1382	1357	1331	602
35°	580	685	824	674	585	370
45°	128	158	232	156	126	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#
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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	2074.2	2074.2	2074.2	2074.2	2074.2	2074.2	2074.2	2074.2	2074.2	2074.2	2074.2
2.5°	2058.4	2073.0	2069.0	2078.2	2078.2	2067.7	2070.3	2074.2	2079.5	2083.5	2051.8
5°	2042.6	2055.8	2043.9	2057.1	2049.2	2037.4	2057.1	2046.5	2053.2	2045.3	2050.5
7.5°	2000.5	2021.5	1997.8	2013.6	2008.4	2001.8	2009.7	2007.0	2011.0	2004.4	1989.9
10°	1938.5	1955.7	1939.9	1962.2	1951.7	1945.1	1951.7	1958.3	1957.0	1950.4	1958.3
12.5°	1867.4	1887.1	1879.2	1892.4	1880.5	1880.5	1896.3	1892.4	1893.7	1888.4	1897.6
15°	1797.5	1812.0	1800.1	1817.3	1812.0	1797.5	1804.1	1804.1	1814.7	1810.7	1800.1
17.5°	1710.5	1722.4	1709.2	1713.2	1707.9	1705.3	1732.9	1714.5	1725.0	1717.1	1718.5
20°	1595.9	1601.2	1597.2	1607.7	1601.2	1609.1	1606.4	1603.8	1603.8	1607.7	1598.5
22.5°	1479.9	1479.9	1483.9	1486.5	1491.8	1483.9	1499.7	1486.5	1487.8	1497.1	1494.4
25°	1340.2	1336.3	1345.5	1358.7	1364.0	1357.3	1378.4	1367.9	1375.8	1382.4	1367.9
27.5°	1170.2	1170.2	1179.4	1201.9	1205.8	1213.7	1242.7	1242.7	1253.2	1244.0	1254.6
30°	973.9	988.4	1000.2	1029.2	1038.4	1055.6	1085.9	1100.4	1124.1	1120.1	1114.9
32.5°	772.2	792.0	793.3	823.7	848.7	877.6	918.5	952.8	969.9	981.8	968.6
35°	579.8	591.7	602.3	623.3	665.5	703.7	740.6	785.4	815.7	823.7	811.8
37.5°	424.4	427.0	437.5	457.3	488.9	525.8	570.6	619.4	651.0	662.9	649.7
40°	292.5	295.2	300.5	317.6	344.0	370.3	405.9	456.0	485.0	508.7	491.5
42.5°	196.3	199.0	204.2	217.4	231.9	256.9	284.6	316.3	344.0	354.5	345.3
45°	127.8	127.8	130.5	139.7	147.6	167.4	187.1	206.9	225.3	231.9	225.3
47.5°	75.1	76.4	79.1	85.7	94.9	102.8	117.3	130.5	135.7	141.0	138.4
50°	43.5	43.5	47.4	51.4	58.0	63.2	68.5	73.8	76.4	79.1	76.4
52.5°	23.7	25.1	26.4	27.7	30.3	35.6	39.5	39.5	40.9	42.2	40.9
55°	18.4	18.4	18.4	18.4	19.8	19.8	19.8	21.1	21.1	22.4	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°	10.5	10.5	10.5	10.5	10.5	10.5	10.5	9.2	9.2	9.2	9.2
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°	2074.2	2074.2	2074.2	2074.2	2074.2	2074.2	2074.2	2074.2
2.5°	2074.2	2051.8	2054.5	2066.3	2059.7	2066.3	2065.0	2065.0
5°	2051.8	2045.3	2034.7	2030.7	2038.6	2055.8	2053.2	2042.6
7.5°	2009.7	1992.6	2004.4	2009.7	2003.1	2013.6	2018.9	1996.5
10°	1959.6	1953.0	1950.4	1953.0	1950.4	1960.9	1947.8	1947.8
12.5°	1888.4	1877.9	1877.9	1893.7	1884.5	1876.6	1887.1	1885.8
15°	1817.3	1796.2	1796.2	1801.4	1805.4	1800.1	1801.4	1788.3
17.5°	1711.8	1705.3	1696.0	1710.5	1714.5	1709.2	1713.2	1706.6
20°	1613.0	1613.0	1595.9	1602.5	1607.7	1611.7	1614.3	1603.8
22.5°	1486.5	1489.1	1477.3	1490.4	1494.4	1481.2	1483.9	1481.2
25°	1370.5	1369.2	1360.0	1354.7	1357.3	1352.1	1350.8	1331.0
27.5°	1242.7	1229.5	1209.8	1215.0	1192.6	1174.2	1174.2	1143.8
30°	1104.3	1081.9	1055.6	1029.2	1009.5	988.4	976.5	959.4
32.5°	942.2	912.0	879.0	843.4	821.0	789.4	772.2	781.5
35°	781.5	736.6	691.8	656.3	622.0	603.5	582.5	585.1
37.5°	626.0	562.7	523.2	485.0	456.0	432.3	423.0	420.4
40°	457.3	407.2	367.7	340.0	320.2	301.8	291.3	287.3
42.5°	316.3	280.7	249.0	226.7	213.5	201.6	196.3	195.0
45°	205.6	184.5	163.4	147.6	137.1	129.2	127.8	126.5
47.5°	129.2	118.6	105.4	93.6	84.3	79.1	75.1	75.1
50°	73.8	69.9	63.2	56.7	51.4	48.8	44.8	43.5
52.5°	39.5	39.5	36.9	31.6	27.7	25.1	25.1	23.7
55°	21.1	21.1	19.8	19.8	18.4	18.4	18.4	17.2
57.5°	13.2	13.2	14.5	14.5	13.2	13.2	13.2	13.2
60°	9.2	10.5	10.5	10.5	10.5	10.5	10.5	10.5
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)