

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: **FLDSQ4C60D010 FEU4C609035 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: FLDSQ4C60D010 FEU4C609035 F4LC-CSSQ-MMS
 Description: 4 INCH 6000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

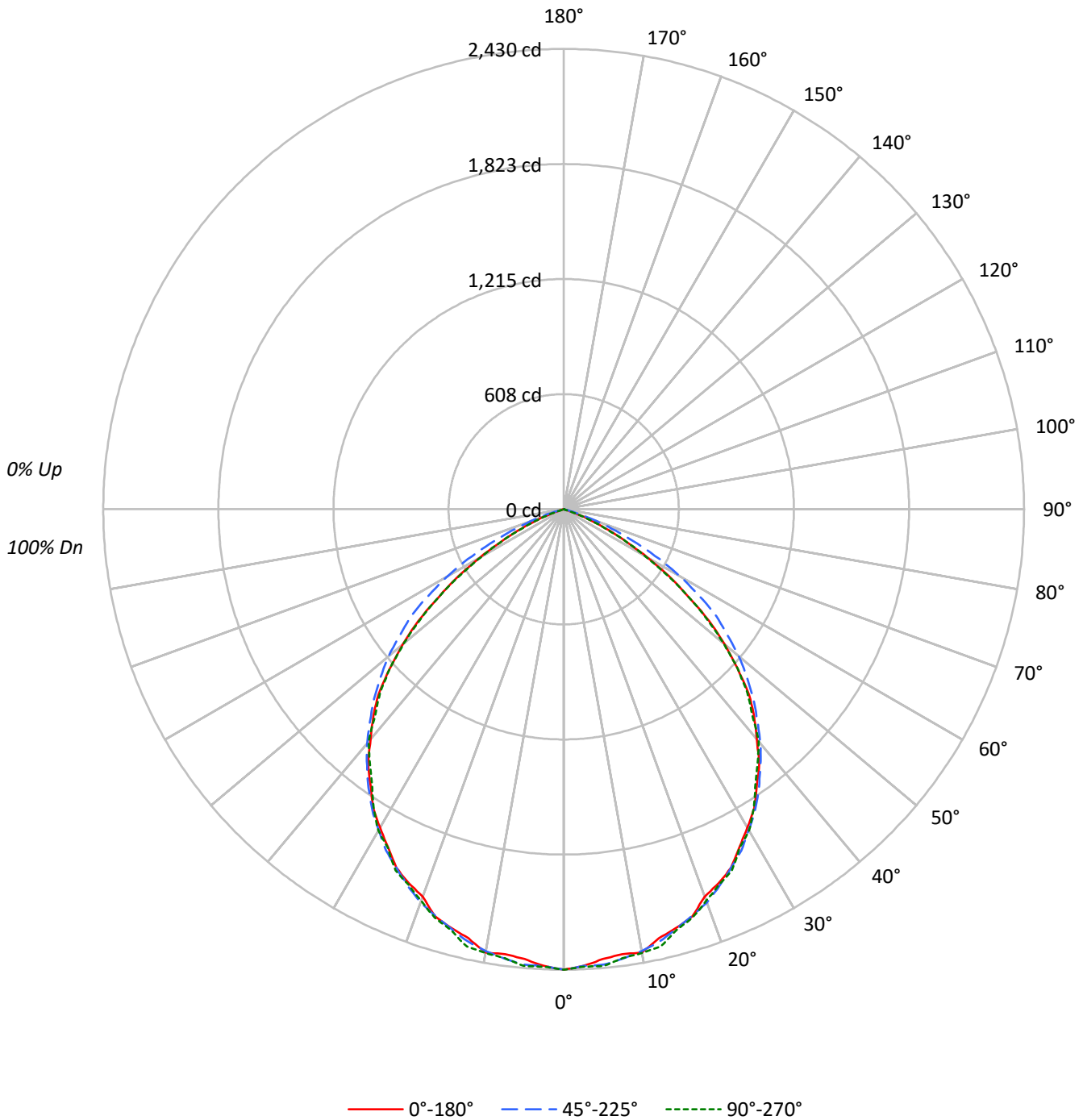
Lumens per Lamp: N/A
 Luminaire Lumens: 5191.0 lumens
 Efficiency: N/A
 Efficacy: 72.1 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 72
 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°	234478	234478	234478
5°	230695	233688	234356
10°	232687	232010	233010
15°	228604	228944	229633
20°	223291	226833	225776
25°	222328	222328	223797
30°	216124	217662	218063
35°	209386	211423	207760
40°	199567	203471	201733
45°	188869	193112	186986
50°	166337	180838	165301
55°	134713	165481	135302
60°	98573	137227	96585
65°	59909	97718	58334
70°	23359	52614	22400
75°	2572	14167	2572
80°	1945	1945	1945
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	229.4	4.4
10°-20°	649.1	12.5
20°-30°	963.1	18.6
30°-40°	1115.9	21.5
40°-50°	1069.9	20.6
50°-60°	786.7	15.2
60°-70°	339.8	6.5
70°-80°	36.7	0.7
80°-90°	0.5	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°	1841.5	35.5
0°-40°	2957.5	57.0
0°-60°	4814.1	92.7
0°-90°	5191.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5191.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2430	2430	2430	2430	2430	
5°	2382	2406	2413	2416	2420	227
15°	2288	2302	2292	2295	2299	645
25°	2088	2085	2088	2092	2102	956
35°	1778	1788	1795	1791	1764	1112
45°	1384	1388	1415	1394	1370	1052
55°	801	884	984	880	804	721
65°	262	328	428	324	256	270
75°	7	10	38	7	7	21
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°	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1
2.5°	2412.7	2440.4	2443.9	2426.5	2419.6	2409.4	2433.5	2416.3	2423.2	2416.3	2412.7
5°	2381.8	2412.7	2416.3	2416.3	2409.4	2405.8	2416.3	2412.7	2409.4	2402.5	2412.7
7.5°	2368.0	2385.1	2402.5	2381.8	2392.0	2388.7	2412.7	2402.5	2398.9	2398.9	2392.0
10°	2374.9	2371.3	2385.1	2364.4	2371.3	2364.4	2385.1	2385.1	2378.2	2371.3	2368.0
12.5°	2319.5	2347.1	2347.1	2343.7	2336.8	2326.4	2347.1	2361.1	2340.2	2340.2	2336.8
15°	2288.5	2295.4	2298.8	2298.8	2295.4	2302.3	2312.6	2298.8	2302.3	2285.0	2291.9
17.5°	2254.0	2240.2	2250.5	2243.6	2247.1	2254.0	2267.8	2267.8	2247.1	2243.6	2250.5
20°	2174.6	2216.0	2219.5	2198.8	2202.2	2202.2	2226.4	2205.7	2219.5	2202.2	2209.1
22.5°	2136.6	2164.2	2167.7	2140.1	2157.3	2136.6	2160.8	2129.7	2164.2	2140.1	2150.4
25°	2088.3	2084.9	2095.2	2081.4	2084.9	2084.9	2102.1	2088.3	2098.7	2084.9	2088.3
27.5°	2009.0	2036.6	2033.1	2019.3	2026.2	2022.8	2057.3	2019.3	2040.0	2022.8	2029.7
30°	1939.8	1964.1	1957.2	1943.4	1943.4	1932.9	1971.0	1960.5	1957.2	1957.2	1953.6
32.5°	1870.8	1874.3	1867.4	1870.8	1874.3	1860.5	1891.5	1877.7	1874.3	1877.7	1881.2
35°	1777.6	1777.6	1784.5	1774.2	1788.0	1788.0	1815.6	1798.3	1794.9	1784.5	1794.9
37.5°	1694.8	1684.5	1687.9	1687.9	1694.8	1701.7	1715.5	1708.6	1708.6	1698.3	1705.2
40°	1584.4	1577.5	1587.8	1587.8	1598.2	1598.2	1612.0	1605.1	1615.4	1615.4	1615.4
42.5°	1487.8	1487.8	1480.9	1491.1	1494.7	1491.1	1515.4	1511.8	1515.4	1508.5	1511.8
45°	1384.1	1384.1	1377.2	1373.8	1391.0	1387.6	1415.2	1404.8	1418.6	1411.7	1415.2
47.5°	1242.6	1259.9	1249.5	1259.9	1280.6	1284.1	1301.3	1294.4	1308.2	1297.9	1311.7
50°	1108.1	1108.1	1118.4	1132.2	1152.9	1156.4	1177.1	1190.9	1197.8	1201.2	1204.7
52.5°	966.5	963.0	973.4	990.6	1007.9	1021.7	1042.4	1063.1	1076.9	1097.7	1087.2
55°	800.8	807.7	818.1	838.8	866.4	883.6	900.9	928.5	952.7	963.0	983.7
57.5°	659.2	652.3	659.2	686.8	718.0	731.8	756.0	783.6	818.1	838.8	845.7
60°	510.8	514.3	521.2	545.4	569.5	590.2	600.6	645.4	676.6	697.3	711.1
62.5°	376.3	383.2	390.1	410.8	434.9	452.2	469.4	507.4	535.0	555.7	569.5
65°	262.4	265.8	276.2	286.5	310.7	327.9	341.7	372.8	400.4	417.7	428.0
67.5°	162.2	165.6	172.5	186.5	203.6	217.4	231.2	252.0	276.2	293.4	296.9
70°	82.8	86.3	89.7	100.1	113.9	120.8	131.1	148.4	165.6	179.4	186.5
72.5°	27.6	27.6	31.1	38.0	44.9	51.8	55.2	72.5	86.3	93.2	96.6
75°	6.9	6.9	6.9	6.9	6.9	10.4	10.4	20.7	27.6	34.5	38.0
77.5°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	6.9	6.9
80°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
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°	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1	2430.1
2.5°	2430.1	2423.2	2419.6	2423.2	2423.2	2419.6	2430.1	2443.9	2461.1	2416.3
5°	2426.5	2419.6	2426.5	2405.8	2416.3	2409.4	2423.2	2419.6	2433.5	2419.6
7.5°	2416.3	2402.5	2405.8	2395.6	2409.4	2392.0	2402.5	2423.2	2409.4	2388.7
10°	2381.8	2374.9	2398.9	2364.4	2357.5	2371.3	2398.9	2378.2	2371.3	2378.2
12.5°	2347.1	2347.1	2357.5	2329.9	2333.3	2340.2	2354.0	2340.2	2347.1	2364.4
15°	2309.2	2302.3	2319.5	2298.8	2295.4	2288.5	2302.3	2302.3	2309.2	2298.8
17.5°	2264.3	2254.0	2254.0	2247.1	2243.6	2260.9	2267.8	2271.2	2274.7	2260.9
20°	2209.1	2205.7	2216.0	2205.7	2209.1	2212.6	2212.6	2205.7	2236.7	2198.8
22.5°	2150.4	2160.8	2147.0	2140.1	2147.0	2153.9	2153.9	2157.3	2150.4	2143.5
25°	2091.8	2098.7	2102.1	2081.4	2091.8	2081.4	2105.6	2109.0	2095.2	2102.1
27.5°	2040.0	2029.7	2026.2	2012.4	2019.3	2015.9	2019.3	2019.3	2040.0	2012.4
30°	1960.5	1950.3	1953.6	1943.4	1946.7	1943.4	1946.7	1946.7	1960.5	1957.2
32.5°	1884.6	1874.3	1877.7	1867.4	1867.4	1870.8	1863.9	1863.9	1874.3	1867.4
35°	1812.1	1788.0	1791.4	1788.0	1791.4	1777.6	1777.6	1774.2	1781.1	1763.8
37.5°	1708.6	1698.3	1694.8	1691.4	1694.8	1687.9	1694.8	1684.5	1694.8	1681.0
40°	1615.4	1608.5	1612.0	1591.3	1591.3	1594.7	1587.8	1584.4	1587.8	1601.6
42.5°	1522.3	1508.5	1501.6	1494.7	1498.0	1487.8	1484.2	1477.3	1484.2	1470.4
45°	1411.7	1411.7	1408.3	1391.0	1394.5	1394.5	1380.7	1366.9	1370.3	1370.3
47.5°	1311.7	1304.8	1301.3	1284.1	1280.6	1277.2	1263.3	1253.0	1253.0	1242.6
50°	1201.2	1194.3	1184.0	1166.7	1159.8	1139.1	1128.8	1115.0	1101.2	1101.2
52.5°	1097.7	1073.4	1059.6	1032.0	1021.7	1011.3	983.7	973.4	963.0	952.7
55°	973.4	952.7	925.1	894.0	880.2	862.9	835.3	814.6	800.8	804.3
57.5°	852.6	818.1	790.5	749.1	731.8	721.3	693.7	666.1	652.3	652.3
60°	704.2	676.6	642.1	604.0	590.2	573.0	538.4	521.2	510.8	500.5
62.5°	562.6	541.9	510.8	462.5	452.2	434.9	410.8	390.1	379.7	379.7
65°	421.1	400.4	372.8	338.3	324.5	310.7	290.0	269.3	258.9	255.5
67.5°	296.9	272.7	248.6	221.0	210.5	203.6	182.9	169.1	162.2	158.7
70°	179.4	165.6	148.4	127.7	117.3	110.4	96.6	86.3	82.8	79.4
72.5°	93.2	82.8	69.0	55.2	48.3	41.4	34.5	27.6	24.2	24.2
75°	34.5	27.6	17.3	10.4	6.9	6.9	6.9	6.9	6.9	6.9
77.5°	6.9	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
80°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
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)