

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: **FLDSQ4C100D010 FEU4C1009027 F4LC-CSSQ-MMS**

Issue Date: 12/13/2022

Tested By:

Approved By:



Cooper Lighting Solutions laboratories have been accredited by National Voluntary Laboratory Accreditation Program (NVLAP) that it adheres to the requirements of ISO/IEC 17025:2005 and appropriate IESNA test methods. This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government. Results contained in this report are valid for luminaire sample tested, as supplied by requestor. Information related to the luminaire tested has been supplied by requestor and can affect the validity of the test results. Report shall not be reproduced except in full without approval of Cooper Lighting Solutions Lighting Laboratory. Test performed at address noted above.

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: FLDSQ4C100D010 FEU4C1009027 F4LC-CSSQ-MMS
 Description: 4 INCH 10000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

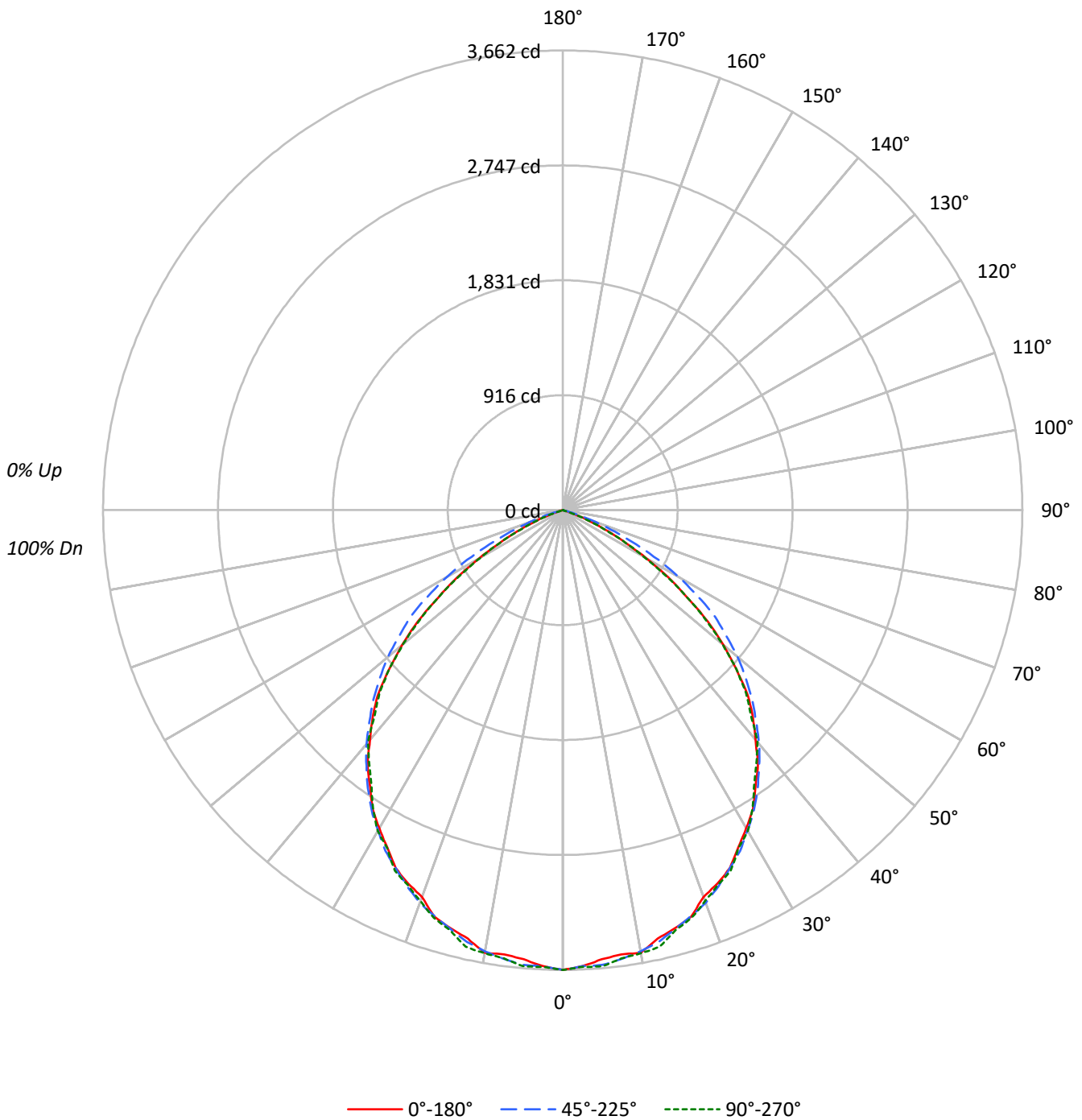
Lumens per Lamp: N/A
 Luminaire Lumens: 7823.0 lumens
 Efficiency: N/A
 Efficacy: 68.4 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 114.4
 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

TEST NUMBER: P#
CATALOG NUMBER: FLDSQ4C100D010 FEU4C1009027 F4LC-CSSQ-MMS

Luminous Intensity Polar Plot



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C100D010 FEU4C1009027 F4LC-CSSQ-MMS

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°	353362	353362	353362
5°	347660	352183	353191
10°	350661	349642	351161
15°	344520	345029	346068
20°	336507	341847	340255
25°	335052	335052	337266
30°	325713	328030	328621
35°	315551	318625	313101
40°	300748	306630	304011
45°	284633	291033	281795
50°	250669	272525	249108
55°	203012	249391	203903
60°	148554	206795	145563
65°	90275	147261	87900
70°	35208	79274	33769
75°	3877	21362	3877
80°	2945	2945	2945
85°	0	0	0

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C100D010 FEU4C1009027 F4LC-CSSQ-MMS

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	345.7	4.4
10°-20°	978.2	12.5
20°-30°	1451.4	18.6
30°-40°	1681.7	21.5
40°-50°	1612.4	20.6
50°-60°	1185.5	15.2
60°-70°	512.0	6.5
70°-80°	55.3	0.7
80°-90°	0.7	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°	2775.3	35.5
0°-40°	4457.0	57.0
0°-60°	7255.0	92.7
0°-90°	7823.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	7823.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3662	3662	3662	3662	3662	
5°	3589	3626	3636	3641	3646	342
15°	3449	3470	3454	3459	3464	972
25°	3147	3142	3147	3152	3168	1441
35°	2679	2695	2705	2700	2658	1675
45°	2086	2091	2133	2102	2065	1586
55°	1207	1332	1482	1326	1212	1086
65°	395	494	645	489	385	406
75°	10	16	57	10	10	32
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C100D010 FEU4C1009027 F4LC-CSSQ-MMS

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2
2.5°	3636.1	3677.7	3683.0	3656.9	3646.5	3631.0	3667.3	3641.4	3651.8	3641.4	3636.1
5°	3589.4	3636.1	3641.4	3641.4	3631.0	3625.7	3641.4	3636.1	3631.0	3620.6	3636.1
7.5°	3568.6	3594.5	3620.6	3589.4	3604.9	3599.8	3636.1	3620.6	3615.3	3615.3	3604.9
10°	3579.0	3573.7	3594.5	3563.3	3573.7	3563.3	3594.5	3594.5	3584.1	3573.7	3568.6
12.5°	3495.6	3537.2	3537.2	3532.1	3521.7	3506.0	3537.2	3558.2	3526.8	3526.8	3521.7
15°	3448.9	3459.3	3464.4	3464.4	3459.3	3469.7	3485.2	3464.4	3469.7	3443.6	3454.0
17.5°	3396.9	3376.1	3391.6	3381.2	3386.5	3396.9	3417.7	3417.7	3386.5	3381.2	3391.6
20°	3277.2	3339.6	3344.9	3313.7	3318.8	3318.8	3355.3	3324.1	3344.9	3318.8	3329.2
22.5°	3219.9	3261.5	3266.8	3225.2	3251.1	3219.9	3256.4	3209.5	3261.5	3225.2	3240.7
25°	3147.1	3142.0	3157.5	3136.7	3142.0	3142.0	3167.9	3147.1	3162.8	3142.0	3147.1
27.5°	3027.6	3069.2	3063.9	3043.1	3053.5	3048.4	3100.4	3043.1	3074.3	3048.4	3058.8
30°	2923.4	2959.9	2949.5	2928.7	2928.7	2913.0	2970.3	2954.6	2949.5	2949.5	2944.2
32.5°	2819.4	2824.7	2814.3	2819.4	2824.7	2803.9	2850.6	2829.8	2824.7	2829.8	2835.1
35°	2678.9	2678.9	2689.3	2673.8	2694.6	2694.6	2736.2	2710.1	2705.0	2689.3	2705.0
37.5°	2554.1	2538.6	2543.7	2543.7	2554.1	2564.5	2585.3	2574.9	2574.9	2559.4	2569.8
40°	2387.7	2377.3	2392.8	2392.8	2408.5	2408.5	2429.3	2418.9	2434.4	2434.4	2434.4
42.5°	2242.1	2242.1	2231.7	2247.2	2252.5	2247.2	2283.7	2278.4	2283.7	2273.3	2278.4
45°	2085.9	2085.9	2075.5	2070.4	2096.3	2091.2	2132.8	2117.1	2137.9	2127.5	2132.8
47.5°	1872.6	1898.7	1883.0	1898.7	1929.9	1935.2	1961.1	1950.7	1971.5	1956.0	1976.8
50°	1669.9	1669.9	1685.4	1706.2	1737.4	1742.7	1773.9	1794.7	1805.1	1810.2	1815.5
52.5°	1456.6	1451.3	1467.0	1492.9	1519.0	1539.8	1571.0	1602.2	1623.0	1654.2	1638.5
55°	1206.8	1217.2	1232.9	1264.1	1305.7	1331.6	1357.7	1399.3	1435.8	1451.3	1482.5
57.5°	993.5	983.1	993.5	1035.1	1082.0	1102.8	1139.3	1180.9	1232.9	1264.1	1274.5
60°	769.8	775.1	785.5	822.0	858.3	889.5	905.2	972.7	1019.6	1050.8	1071.6
62.5°	567.1	577.5	587.9	619.1	655.4	681.5	707.4	764.7	806.3	837.5	858.3
65°	395.4	400.5	416.2	431.7	468.2	494.1	514.9	561.8	603.4	629.5	645.0
67.5°	244.5	249.6	260.0	281.0	306.9	327.7	348.5	379.7	416.2	442.1	447.4
70°	124.8	130.1	135.2	150.9	171.7	182.1	197.6	223.7	249.6	270.4	281.0
72.5°	41.6	41.6	46.9	57.3	67.7	78.1	83.2	109.3	130.1	140.5	145.6
75°	10.4	10.4	10.4	10.4	10.4	15.7	15.7	31.2	41.6	52.0	57.3
77.5°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	10.4	10.4
80°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
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

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C100D010 FEU4C1009027 F4LC-CSSQ-MMS

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2	3662.2
2.5°	3662.2	3651.8	3646.5	3651.8	3651.8	3646.5	3662.2	3683.0	3708.9	3641.4
5°	3656.9	3646.5	3656.9	3625.7	3641.4	3631.0	3651.8	3646.5	3667.3	3646.5
7.5°	3641.4	3620.6	3625.7	3610.2	3631.0	3604.9	3620.6	3651.8	3631.0	3599.8
10°	3589.4	3579.0	3615.3	3563.3	3552.9	3573.7	3615.3	3584.1	3573.7	3584.1
12.5°	3537.2	3537.2	3552.9	3511.3	3516.4	3526.8	3547.6	3526.8	3537.2	3563.3
15°	3480.1	3469.7	3495.6	3464.4	3459.3	3448.9	3469.7	3469.7	3480.1	3464.4
17.5°	3412.4	3396.9	3396.9	3386.5	3381.2	3407.3	3417.7	3422.8	3428.1	3407.3
20°	3329.2	3324.1	3339.6	3324.1	3329.2	3334.5	3334.5	3324.1	3370.8	3313.7
22.5°	3240.7	3256.4	3235.6	3225.2	3235.6	3246.0	3246.0	3251.1	3240.7	3230.3
25°	3152.4	3162.8	3167.9	3136.7	3152.4	3136.7	3173.2	3178.3	3157.5	3167.9
27.5°	3074.3	3058.8	3053.5	3032.7	3043.1	3038.0	3043.1	3043.1	3074.3	3032.7
30°	2954.6	2939.1	2944.2	2928.7	2933.8	2928.7	2933.8	2933.8	2954.6	2949.5
32.5°	2840.2	2824.7	2829.8	2814.3	2814.3	2819.4	2809.0	2809.0	2824.7	2814.3
35°	2730.9	2694.6	2699.7	2694.6	2699.7	2678.9	2678.9	2673.8	2684.2	2658.1
37.5°	2574.9	2559.4	2554.1	2549.0	2554.1	2543.7	2554.1	2538.6	2554.1	2533.3
40°	2434.4	2424.0	2429.3	2398.1	2398.1	2403.2	2392.8	2387.7	2392.8	2413.6
42.5°	2294.1	2273.3	2262.9	2252.5	2257.6	2242.1	2236.8	2226.4	2236.8	2216.0
45°	2127.5	2127.5	2122.4	2096.3	2101.6	2101.6	2080.8	2060.0	2065.1	2065.1
47.5°	1976.8	1966.4	1961.1	1935.2	1929.9	1924.8	1903.8	1888.3	1888.3	1872.6
50°	1810.2	1799.8	1784.3	1758.2	1747.8	1716.6	1701.1	1680.3	1659.5	1659.5
52.5°	1654.2	1617.7	1596.9	1555.3	1539.8	1524.1	1482.5	1467.0	1451.3	1435.8
55°	1467.0	1435.8	1394.2	1347.3	1326.5	1300.4	1258.8	1227.6	1206.8	1212.1
57.5°	1284.9	1232.9	1191.3	1128.9	1102.8	1087.1	1045.5	1003.9	983.1	983.1
60°	1061.2	1019.6	967.6	910.3	889.5	863.6	811.4	785.5	769.8	754.3
62.5°	847.9	816.7	769.8	697.0	681.5	655.4	619.1	587.9	572.2	572.2
65°	634.6	603.4	561.8	509.8	489.0	468.2	437.0	405.8	390.1	385.0
67.5°	447.4	410.9	374.6	333.0	317.3	306.9	275.7	254.9	244.5	239.2
70°	270.4	249.6	223.7	192.5	176.8	166.4	145.6	130.1	124.8	119.7
72.5°	140.5	124.8	104.0	83.2	72.8	62.4	52.0	41.6	36.5	36.5
75°	52.0	41.6	26.1	15.7	10.4	10.4	10.4	10.4	10.4	10.4
77.5°	10.4	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
80°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
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)