

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: **FLDSQ4C90D010 FEU4C909030 F4LC-CSSQ-MW**

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: FLDSQ4C90D010 FEU4C909030 F4LC-CSSQ-MW
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

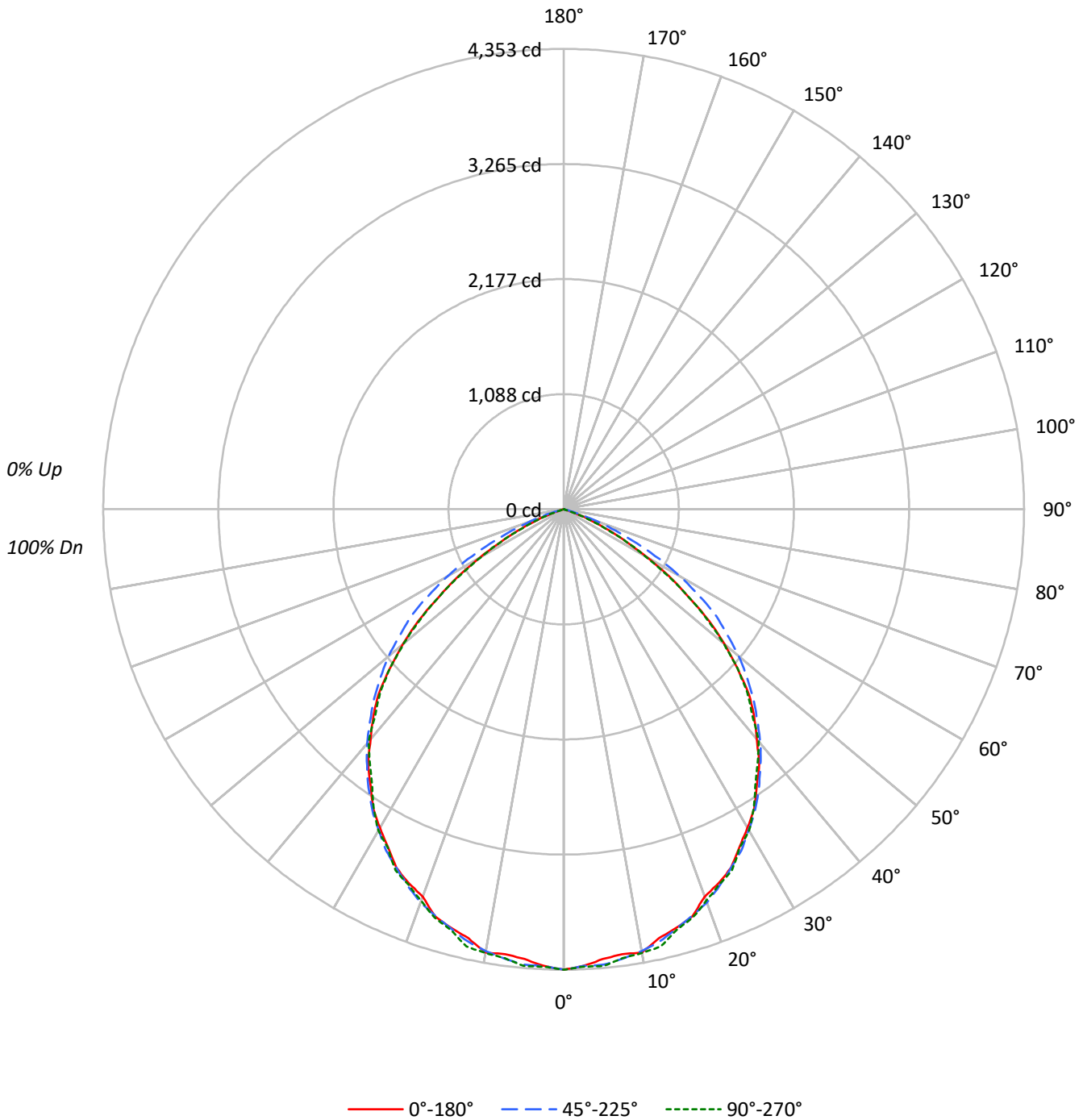
Lumens per Lamp: N/A
 Luminaire Lumens: 9299.0 lumens
 Efficiency: N/A
 Efficacy: 95.8 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 97.1
 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: FLDSQ4C90D010 FEU4C909030 F4LC-CSSQ-MW

Luminous Intensity Polar Plot



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C90D010 FEU4C909030 F4LC-CSSQ-MW

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	0
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111		106	106	106		102	102	102	100
1	111	108	104	101	109	105	102	100	101	99	96		97	95	94		94	92	91	89
2	103	96	91	86	100	94	89	85	91	87	83		88	84	81		85	82	79	77
3	95	86	79	74	93	85	78	73	82	76	72		79	74	71		77	73	69	67
4	88	77	70	64	86	76	69	63	74	67	63		71	66	62		69	65	61	59
5	81	70	62	56	79	69	61	56	67	60	55		65	59	54		63	58	54	52
6	75	63	55	49	73	62	55	49	61	54	49		59	53	48		57	52	48	46
7	70	58	50	44	68	57	49	44	55	49	44		54	48	43		53	47	43	41
8	65	53	45	40	64	52	45	39	51	44	39		50	44	39		49	43	39	37
9	61	49	41	36	60	48	41	36	47	40	36		46	40	35		45	39	35	33
10	57	45	38	33	56	44	37	33	44	37	32		43	37	32		42	36	32	31

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	420026	420026	420026
5°	413252	418628	419829
10°	416825	415610	417413
15°	409520	410129	411358
20°	399995	406341	404452
25°	398270	398270	400900
30°	387170	389922	390624
35°	375082	378746	372173
40°	357492	364483	361372
45°	338329	345943	334958
50°	297968	323938	296107
55°	241316	296443	242376
60°	176575	245815	173024
65°	107307	175047	104476
70°	41838	94226	40145
75°	4623	25388	4623
80°	3501	3501	3501
85°	0	0	0

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C90D010 FEU4C909030 F4LC-CSSQ-MW

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	410.9	4.4
10°-20°	1162.7	12.5
20°-30°	1725.2	18.6
30°-40°	1999.0	21.5
40°-50°	1916.6	20.6
50°-60°	1409.2	15.2
60°-70°	608.7	6.5
70°-80°	65.7	0.7
80°-90°	0.9	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°	3298.9	35.5
0°-40°	5297.9	57.0
0°-60°	8623.8	92.7
0°-90°	9299.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	9299.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4353	4353	4353	4353	4353	
5°	4267	4310	4322	4328	4334	407
15°	4100	4124	4106	4112	4118	1155
25°	3741	3735	3741	3747	3766	1713
35°	3184	3203	3215	3209	3160	1991
45°	2479	2486	2535	2498	2455	1885
55°	1434	1583	1762	1577	1441	1291
65°	470	587	767	581	458	483
75°	12	19	68	12	12	38
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C90D010 FEU4C909030 F4LC-CSSQ-MW

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1
2.5°	4322.1	4371.6	4377.9	4346.8	4334.5	4316.1	4359.2	4328.4	4340.8	4328.4	4322.1
5°	4266.6	4322.1	4328.4	4328.4	4316.1	4309.8	4328.4	4322.1	4316.1	4303.7	4322.1
7.5°	4241.9	4272.7	4303.7	4266.6	4285.0	4279.0	4322.1	4303.7	4297.4	4297.4	4285.0
10°	4254.3	4248.0	4272.7	4235.6	4248.0	4235.6	4272.7	4272.7	4260.3	4248.0	4241.9
12.5°	4155.1	4204.6	4204.6	4198.5	4186.1	4167.5	4204.6	4229.5	4192.2	4192.2	4186.1
15°	4099.6	4112.0	4118.0	4118.0	4112.0	4124.3	4142.8	4118.0	4124.3	4093.3	4105.7
17.5°	4037.8	4013.1	4031.5	4019.1	4025.4	4037.8	4062.5	4062.5	4025.4	4019.1	4031.5
20°	3895.5	3969.7	3976.0	3938.9	3945.0	3945.0	3988.3	3951.3	3976.0	3945.0	3957.3
22.5°	3827.4	3876.8	3883.1	3833.7	3864.5	3827.4	3870.8	3815.0	3876.8	3833.7	3852.1
25°	3740.9	3734.8	3753.2	3728.5	3734.8	3734.8	3765.6	3740.9	3759.5	3734.8	3740.9
27.5°	3598.8	3648.3	3642.0	3617.2	3629.6	3623.5	3685.4	3617.2	3654.3	3623.5	3635.9
30°	3475.0	3518.3	3506.0	3481.3	3481.3	3462.6	3530.7	3512.0	3506.0	3506.0	3499.7
32.5°	3351.3	3357.6	3345.3	3351.3	3357.6	3332.9	3388.4	3363.7	3357.6	3363.7	3370.0
35°	3184.3	3184.3	3196.7	3178.3	3203.0	3203.0	3252.4	3221.4	3215.4	3196.7	3215.4
37.5°	3036.0	3017.6	3023.6	3023.6	3036.0	3048.3	3073.1	3060.7	3060.7	3042.3	3054.6
40°	2838.2	2825.8	2844.2	2844.2	2862.9	2862.9	2887.6	2875.3	2893.7	2893.7	2893.7
42.5°	2665.1	2665.1	2652.8	2671.2	2677.5	2671.2	2714.6	2708.3	2714.6	2702.2	2708.3
45°	2479.4	2479.4	2467.1	2461.0	2491.8	2485.7	2535.2	2516.5	2541.3	2528.9	2535.2
47.5°	2225.9	2256.9	2238.3	2256.9	2294.0	2300.3	2331.1	2318.7	2343.5	2325.0	2349.8
50°	1985.0	1985.0	2003.4	2028.1	2065.2	2071.5	2108.6	2133.3	2145.7	2151.7	2158.0
52.5°	1731.4	1725.1	1743.8	1774.6	1805.6	1830.3	1867.4	1904.5	1929.2	1966.3	1947.6
55°	1434.5	1446.8	1465.5	1502.6	1552.0	1582.8	1613.9	1663.3	1706.7	1725.1	1762.2
57.5°	1180.9	1168.6	1180.9	1230.4	1286.1	1310.9	1354.3	1403.7	1465.5	1502.6	1515.0
60°	915.0	921.3	933.7	977.1	1020.2	1057.3	1076.0	1156.2	1212.0	1249.1	1273.8
62.5°	674.1	686.5	698.8	735.9	779.1	810.1	840.9	909.0	958.4	995.5	1020.2
65°	470.0	476.1	494.7	513.1	556.5	587.3	612.0	667.8	717.2	748.3	766.7
67.5°	290.6	296.7	309.1	334.0	364.8	389.5	414.3	451.3	494.7	525.5	531.8
70°	148.3	154.6	160.7	179.4	204.1	216.5	234.9	265.9	296.7	321.4	334.0
72.5°	49.4	49.4	55.8	68.1	80.5	92.8	98.9	129.9	154.6	167.0	173.1
75°	12.4	12.4	12.4	12.4	12.4	18.7	18.7	37.1	49.4	61.8	68.1
77.5°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	12.4	12.4
80°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
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: FLDSQ4C90D010 FEU4C909030 F4LC-CSSQ-MW

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1	4353.1
2.5°	4353.1	4340.8	4334.5	4340.8	4340.8	4334.5	4353.1	4377.9	4408.7	4328.4
5°	4346.8	4334.5	4346.8	4309.8	4328.4	4316.1	4340.8	4334.5	4359.2	4334.5
7.5°	4328.4	4303.7	4309.8	4291.3	4316.1	4285.0	4303.7	4340.8	4316.1	4279.0
10°	4266.6	4254.3	4297.4	4235.6	4223.2	4248.0	4297.4	4260.3	4248.0	4260.3
12.5°	4204.6	4204.6	4223.2	4173.8	4179.8	4192.2	4216.9	4192.2	4204.6	4235.6
15°	4136.7	4124.3	4155.1	4118.0	4112.0	4099.6	4124.3	4124.3	4136.7	4118.0
17.5°	4056.2	4037.8	4037.8	4025.4	4019.1	4050.2	4062.5	4068.6	4074.9	4050.2
20°	3957.3	3951.3	3969.7	3951.3	3957.3	3963.6	3963.6	3951.3	4006.8	3938.9
22.5°	3852.1	3870.8	3846.1	3833.7	3846.1	3858.4	3858.4	3864.5	3852.1	3839.8
25°	3747.2	3759.5	3765.6	3728.5	3747.2	3728.5	3771.9	3777.9	3753.2	3765.6
27.5°	3654.3	3635.9	3629.6	3604.9	3617.2	3611.2	3617.2	3617.2	3654.3	3604.9
30°	3512.0	3493.6	3499.7	3481.3	3487.3	3481.3	3487.3	3487.3	3512.0	3506.0
32.5°	3376.1	3357.6	3363.7	3345.3	3345.3	3351.3	3339.0	3339.0	3357.6	3345.3
35°	3246.1	3203.0	3209.1	3203.0	3209.1	3184.3	3184.3	3178.3	3190.6	3159.6
37.5°	3060.7	3042.3	3036.0	3029.9	3036.0	3023.6	3036.0	3017.6	3036.0	3011.3
40°	2893.7	2881.3	2887.6	2850.6	2850.6	2856.6	2844.2	2838.2	2844.2	2869.0
42.5°	2726.9	2702.2	2689.8	2677.5	2683.5	2665.1	2658.8	2646.5	2658.8	2634.1
45°	2528.9	2528.9	2522.8	2491.8	2498.1	2498.1	2473.4	2448.7	2454.7	2454.7
47.5°	2349.8	2337.4	2331.1	2300.3	2294.0	2288.0	2263.0	2244.6	2244.6	2225.9
50°	2151.7	2139.4	2120.9	2089.9	2077.6	2040.5	2022.0	1997.3	1972.6	1972.6
52.5°	1966.3	1922.9	1898.2	1848.7	1830.3	1811.7	1762.2	1743.8	1725.1	1706.7
55°	1743.8	1706.7	1657.2	1601.5	1576.8	1545.7	1496.3	1459.2	1434.5	1440.8
57.5°	1527.3	1465.5	1416.1	1341.9	1310.9	1292.2	1242.8	1193.3	1168.6	1168.6
60°	1261.4	1212.0	1150.2	1082.0	1057.3	1026.5	964.5	933.7	915.0	896.6
62.5°	1007.9	970.8	915.0	828.5	810.1	779.1	735.9	698.8	680.2	680.2
65°	754.3	717.2	667.8	606.0	581.3	556.5	519.4	482.4	463.7	457.6
67.5°	531.8	488.4	445.3	395.8	377.2	364.8	327.7	303.0	290.6	284.3
70°	321.4	296.7	265.9	228.8	210.2	197.8	173.1	154.6	148.3	142.3
72.5°	167.0	148.3	123.6	98.9	86.5	74.2	61.8	49.4	43.4	43.4
75°	61.8	49.4	31.0	18.7	12.4	12.4	12.4	12.4	12.4	12.4
77.5°	12.4	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
80°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
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)