

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-DFSSQ-MW**

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

Summary

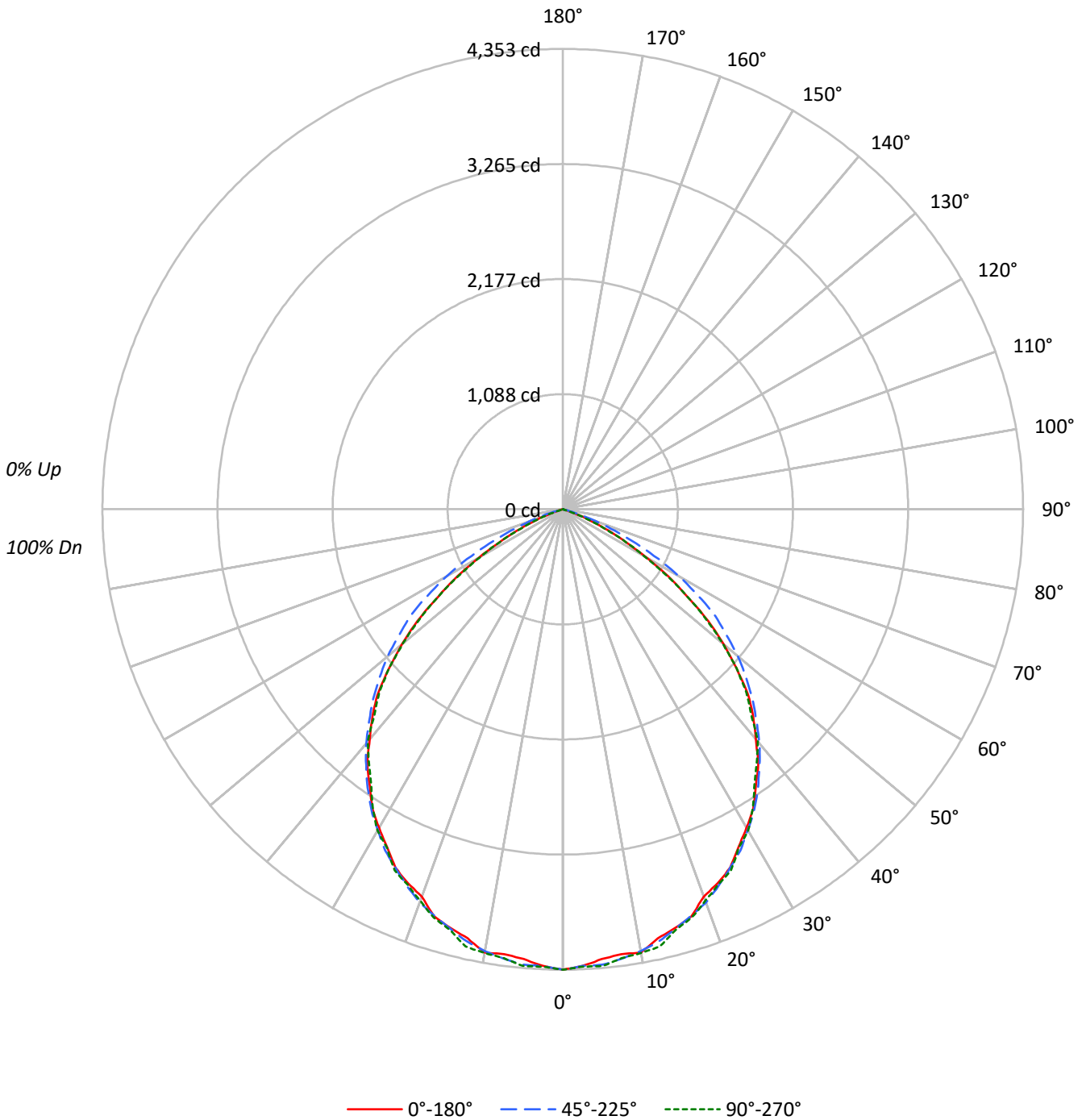
Lumens per Lamp: N/A
 Luminaire Lumens: 9299.0 lumens
 Efficiency: N/A
 Efficacy: 95.8 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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

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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	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

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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	

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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

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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)