

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 FEU4C209050 F4LC-CSSQ-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: FLDSQ4C20D010 FEU4C209050 F4LC-CSSQ-MW
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

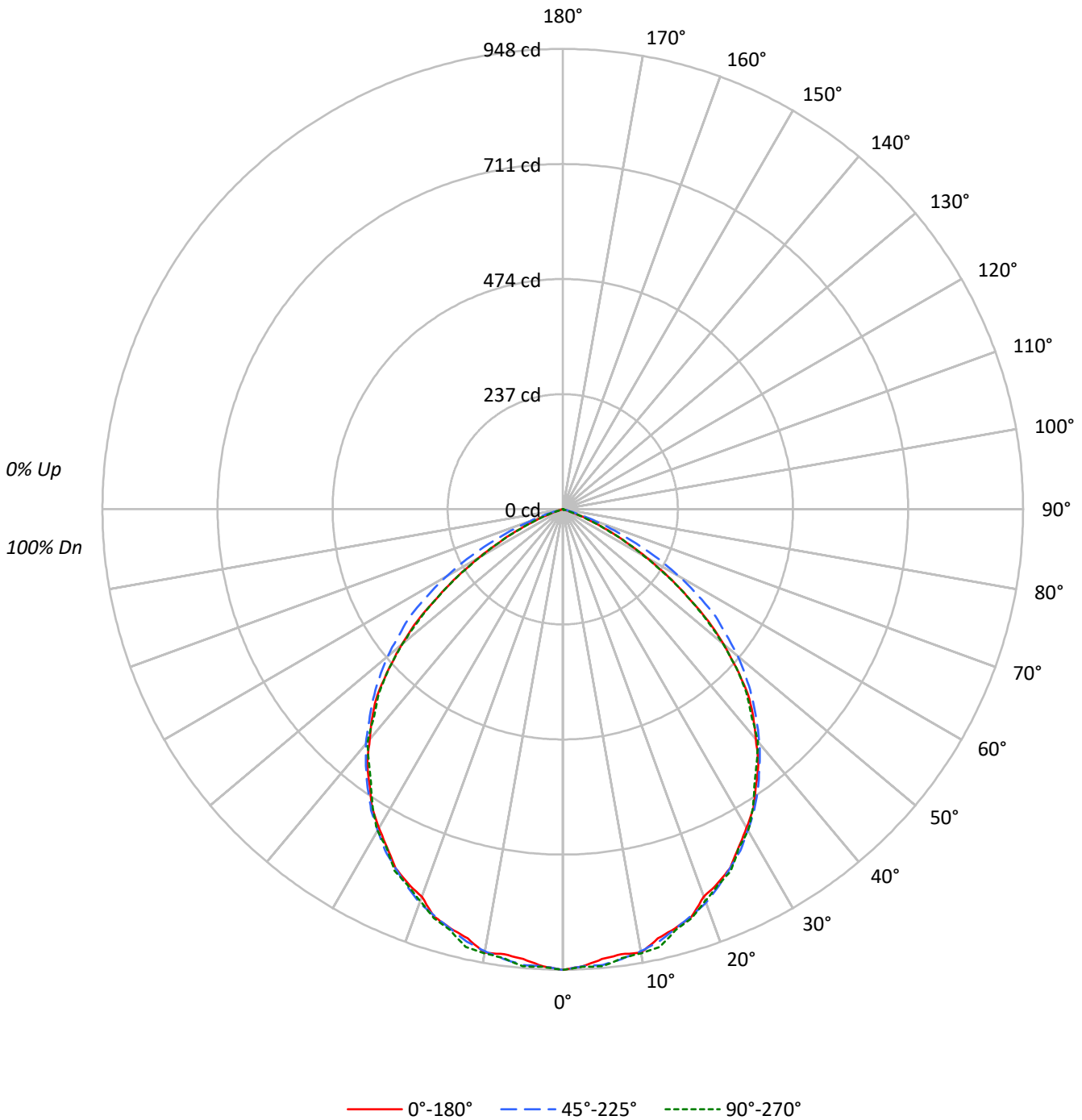
Lumens per Lamp: N/A
 Luminaire Lumens: 2026.0 lumens
 Efficiency: N/A
 Efficacy: 92.9 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 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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CATALOG NUMBER: FLDSQ4C20D010 FEU4C209050 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	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°	91510	91510	91510
5°	90039	91211	91472
10°	90815	90551	90943
15°	89224	89354	89624
20°	87146	88532	88121
25°	86768	86768	87343
30°	84353	84955	85111
35°	81724	82513	81087
40°	77892	79416	78736
45°	73713	75378	72977
50°	64923	70582	64517
55°	52570	64581	52805
60°	38480	53551	37689
65°	23379	38128	22763
70°	9112	20538	8746
75°	1007	5518	1007
80°	778	778	778
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	89.5	4.4
10°-20°	253.3	12.5
20°-30°	375.9	18.6
30°-40°	435.5	21.5
40°-50°	417.6	20.6
50°-60°	307.0	15.2
60°-70°	132.6	6.5
70°-80°	14.3	0.7
80°-90°	0.2	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°	718.7	35.5
0°-40°	1154.3	57.0
0°-60°	1878.9	92.7
0°-90°	2026.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2026.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	948	948	948	948	948	
5°	930	939	942	943	944	89
15°	893	899	894	896	897	252
25°	815	814	815	816	820	373
35°	694	698	700	699	688	434
45°	540	542	552	544	535	411
55°	312	345	384	344	314	281
65°	102	128	167	127	100	105
75°	3	4	15	3	3	8
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°	948.4	948.4	948.4	948.4	948.4	948.4	948.4	948.4	948.4	948.4	948.4
2.5°	941.7	952.4	953.8	947.1	944.4	940.4	949.8	943.0	945.7	943.0	941.7
5°	929.6	941.7	943.0	943.0	940.4	939.0	943.0	941.7	940.4	937.7	941.7
7.5°	924.2	930.9	937.7	929.6	933.6	932.3	941.7	937.7	936.3	936.3	933.6
10°	926.9	925.5	930.9	922.8	925.5	922.8	930.9	930.9	928.2	925.5	924.2
12.5°	905.3	916.1	916.1	914.7	912.0	908.0	916.1	921.5	913.4	913.4	912.0
15°	893.2	895.9	897.2	897.2	895.9	898.6	902.6	897.2	898.6	891.8	894.5
17.5°	879.7	874.3	878.4	875.7	877.0	879.7	885.1	885.1	877.0	875.7	878.4
20°	848.7	864.9	866.3	858.2	859.5	859.5	869.0	860.9	866.3	859.5	862.2
22.5°	833.9	844.7	846.0	835.3	842.0	833.9	843.3	831.2	844.7	835.3	839.3
25°	815.0	813.7	817.7	812.3	813.7	813.7	820.4	815.0	819.1	813.7	815.0
27.5°	784.1	794.9	793.5	788.1	790.8	789.5	802.9	788.1	796.2	789.5	792.2
30°	757.1	766.6	763.9	758.5	758.5	754.4	769.2	765.2	763.9	763.9	762.5
32.5°	730.2	731.5	728.8	730.2	731.5	726.2	738.2	732.9	731.5	732.9	734.2
35°	693.8	693.8	696.5	692.5	697.8	697.8	708.6	701.9	700.5	696.5	700.5
37.5°	661.5	657.4	658.8	658.8	661.5	664.2	669.5	666.8	666.8	662.8	665.5
40°	618.4	615.7	619.7	619.7	623.8	623.8	629.1	626.4	630.5	630.5	630.5
42.5°	580.7	580.7	578.0	582.0	583.4	582.0	591.4	590.1	591.4	588.7	590.1
45°	540.2	540.2	537.5	536.2	542.9	541.6	552.4	548.3	553.7	551.0	552.4
47.5°	485.0	491.7	487.7	491.7	499.8	501.2	507.9	505.2	510.6	506.6	512.0
50°	432.5	432.5	436.5	441.9	449.9	451.3	459.4	464.8	467.5	468.8	470.2
52.5°	377.2	375.9	379.9	386.6	393.4	398.8	406.9	414.9	420.3	428.4	424.3
55°	312.5	315.2	319.3	327.4	338.1	344.9	351.6	362.4	371.8	375.9	383.9
57.5°	257.3	254.6	257.3	268.1	280.2	285.6	295.1	305.8	319.3	327.4	330.1
60°	199.4	200.7	203.4	212.9	222.3	230.4	234.4	251.9	264.1	272.1	277.5
62.5°	146.9	149.6	152.3	160.3	169.7	176.5	183.2	198.0	208.8	216.9	222.3
65°	102.4	103.7	107.8	111.8	121.3	128.0	133.3	145.5	156.3	163.0	167.0
67.5°	63.3	64.6	67.3	72.8	79.5	84.9	90.3	98.3	107.8	114.5	115.9
70°	32.3	33.7	35.0	39.1	44.5	47.2	51.2	57.9	64.6	70.0	72.8
72.5°	10.8	10.8	12.1	14.8	17.5	20.2	21.5	28.3	33.7	36.4	37.7
75°	2.7	2.7	2.7	2.7	2.7	4.1	4.1	8.1	10.8	13.5	14.8
77.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	2.7	2.7
80°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
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°	948.4	948.4	948.4	948.4	948.4	948.4	948.4	948.4	948.4	948.4
2.5°	948.4	945.7	944.4	945.7	945.7	944.4	948.4	953.8	960.5	943.0
5°	947.1	944.4	947.1	939.0	943.0	940.4	945.7	944.4	949.8	944.4
7.5°	943.0	937.7	939.0	935.0	940.4	933.6	937.7	945.7	940.4	932.3
10°	929.6	926.9	936.3	922.8	920.1	925.5	936.3	928.2	925.5	928.2
12.5°	916.1	916.1	920.1	909.4	910.7	913.4	918.8	913.4	916.1	922.8
15°	901.3	898.6	905.3	897.2	895.9	893.2	898.6	898.6	901.3	897.2
17.5°	883.7	879.7	879.7	877.0	875.7	882.4	885.1	886.4	887.8	882.4
20°	862.2	860.9	864.9	860.9	862.2	863.6	863.6	860.9	873.0	858.2
22.5°	839.3	843.3	838.0	835.3	838.0	840.6	840.6	842.0	839.3	836.6
25°	816.4	819.1	820.4	812.3	816.4	812.3	821.8	823.1	817.7	820.4
27.5°	796.2	792.2	790.8	785.4	788.1	786.8	788.1	788.1	796.2	785.4
30°	765.2	761.2	762.5	758.5	759.8	758.5	759.8	759.8	765.2	763.9
32.5°	735.6	731.5	732.9	728.8	728.8	730.2	727.5	727.5	731.5	728.8
35°	707.2	697.8	699.2	697.8	699.2	693.8	693.8	692.5	695.2	688.4
37.5°	666.8	662.8	661.5	660.1	661.5	658.8	661.5	657.4	661.5	656.1
40°	630.5	627.8	629.1	621.1	621.1	622.4	619.7	618.4	619.7	625.1
42.5°	594.1	588.7	586.0	583.4	584.7	580.7	579.3	576.6	579.3	573.9
45°	551.0	551.0	549.7	542.9	544.3	544.3	538.9	533.5	534.8	534.8
47.5°	512.0	509.3	507.9	501.2	499.8	498.5	493.0	489.0	489.0	485.0
50°	468.8	466.1	462.1	455.3	452.6	444.6	440.5	435.2	429.8	429.8
52.5°	428.4	418.9	413.6	402.8	398.8	394.7	383.9	379.9	375.9	371.8
55°	379.9	371.8	361.1	348.9	343.5	336.8	326.0	317.9	312.5	313.9
57.5°	332.8	319.3	308.5	292.4	285.6	281.5	270.8	260.0	254.6	254.6
60°	274.8	264.1	250.6	235.7	230.4	223.7	210.1	203.4	199.4	195.3
62.5°	219.6	211.5	199.4	180.5	176.5	169.7	160.3	152.3	148.2	148.2
65°	164.3	156.3	145.5	132.0	126.6	121.3	113.2	105.1	101.0	99.7
67.5°	115.9	106.4	97.0	86.2	82.2	79.5	71.4	66.0	63.3	61.9
70°	70.0	64.6	57.9	49.9	45.8	43.1	37.7	33.7	32.3	31.0
72.5°	36.4	32.3	26.9	21.5	18.9	16.2	13.5	10.8	9.5	9.5
75°	13.5	10.8	6.8	4.1	2.7	2.7	2.7	2.7	2.7	2.7
77.5°	2.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
80°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
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)