

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: **FLDSQ4C45D010 FEU4C459040 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: FLDSQ4C45D010 FEU4C459040 F4LC-CSSQ-MMS
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

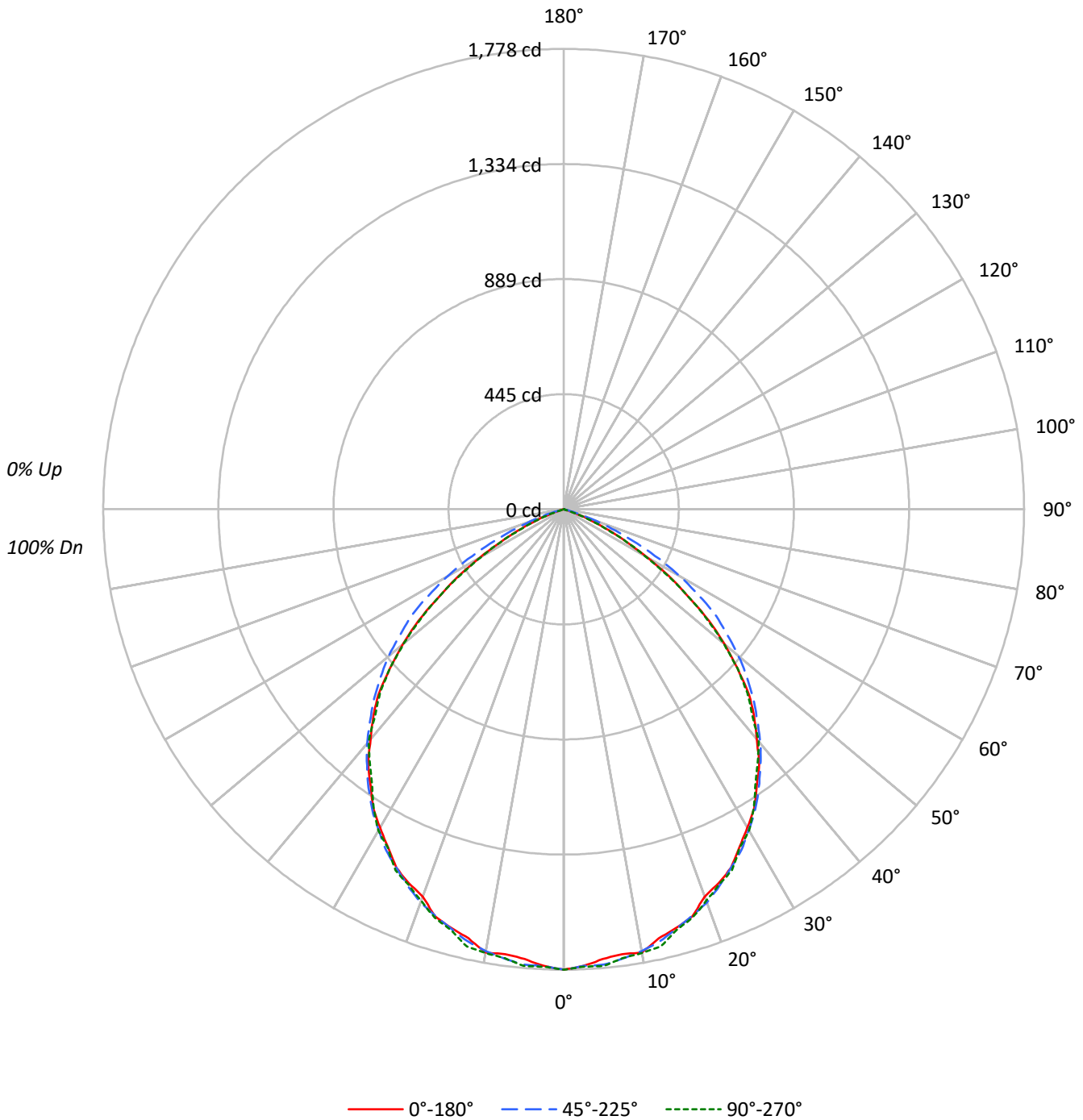
Lumens per Lamp: N/A
 Luminaire Lumens: 3798.0 lumens
 Efficiency: N/A
 Efficacy: 76.6 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 49.6
 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°	171557	171557	171557
5°	168784	170982	171467
10°	170246	169746	170481
15°	167260	167510	168009
20°	163366	165964	165194
25°	162666	162666	163741
30°	158132	159258	159547
35°	153199	154683	152010
40°	146010	148869	147597
45°	138189	141300	136811
50°	121694	132307	120944
55°	98562	121070	98999
60°	72116	100406	70668
65°	43836	71485	42672
70°	17096	38480	16391
75°	1864	10364	1864
80°	1445	1445	1445
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	167.8	4.4
10°-20°	474.9	12.5
20°-30°	704.6	18.6
30°-40°	816.5	21.5
40°-50°	782.8	20.6
50°-60°	575.6	15.2
60°-70°	248.6	6.5
70°-80°	26.8	0.7
80°-90°	0.4	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°	1347.4	35.5
0°-40°	2163.8	57.0
0°-60°	3522.2	92.7
0°-90°	3798.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3798.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1778	1778	1778	1778	1778	
5°	1743	1760	1765	1768	1770	166
15°	1674	1684	1677	1680	1682	472
25°	1528	1525	1528	1530	1538	700
35°	1301	1308	1313	1311	1290	813
45°	1013	1015	1036	1020	1003	770
55°	586	646	720	644	588	527
65°	192	240	313	237	187	197
75°	5	8	28	5	5	16
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°	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0
2.5°	1765.3	1785.5	1788.1	1775.4	1770.3	1762.8	1780.4	1767.9	1772.9	1767.9	1765.3
5°	1742.6	1765.3	1767.9	1767.9	1762.8	1760.2	1767.9	1765.3	1762.8	1757.8	1765.3
7.5°	1732.5	1745.1	1757.8	1742.6	1750.1	1747.7	1765.3	1757.8	1755.2	1755.2	1750.1
10°	1737.6	1735.0	1745.1	1729.9	1735.0	1729.9	1745.1	1745.1	1740.0	1735.0	1732.5
12.5°	1697.1	1717.3	1717.3	1714.8	1709.7	1702.1	1717.3	1727.5	1712.2	1712.2	1709.7
15°	1674.4	1679.5	1681.9	1681.9	1679.5	1684.5	1692.0	1681.9	1684.5	1671.8	1676.9
17.5°	1649.2	1639.1	1646.6	1641.5	1644.1	1649.2	1659.3	1659.3	1644.1	1641.5	1646.6
20°	1591.0	1621.3	1623.9	1608.8	1611.2	1611.2	1629.0	1613.8	1623.9	1611.2	1616.3
22.5°	1563.2	1583.4	1586.0	1565.8	1578.4	1563.2	1580.9	1558.2	1583.4	1565.8	1573.3
25°	1527.9	1525.4	1532.9	1522.8	1525.4	1525.4	1538.0	1527.9	1535.5	1525.4	1527.9
27.5°	1469.9	1490.1	1487.5	1477.4	1482.4	1480.0	1505.2	1477.4	1492.5	1480.0	1485.0
30°	1419.3	1437.0	1432.0	1421.9	1421.9	1414.2	1442.1	1434.4	1432.0	1432.0	1429.4
32.5°	1368.8	1371.4	1366.3	1368.8	1371.4	1361.3	1383.9	1373.8	1371.4	1373.8	1376.4
35°	1300.6	1300.6	1305.6	1298.1	1308.2	1308.2	1328.4	1315.7	1313.2	1305.6	1313.2
37.5°	1240.0	1232.5	1234.9	1234.9	1240.0	1245.0	1255.1	1250.1	1250.1	1242.6	1247.6
40°	1159.2	1154.2	1161.7	1161.7	1169.3	1169.3	1179.4	1174.4	1181.9	1181.9	1181.9
42.5°	1088.5	1088.5	1083.5	1091.0	1093.6	1091.0	1108.7	1106.1	1108.7	1103.7	1106.1
45°	1012.7	1012.7	1007.6	1005.2	1017.7	1015.3	1035.5	1027.8	1037.9	1032.9	1035.5
47.5°	909.1	921.8	914.2	921.8	936.9	939.5	952.1	947.0	957.1	949.6	959.7
50°	810.7	810.7	818.2	828.3	843.5	846.1	861.2	871.3	876.4	878.8	881.4
52.5°	707.2	704.6	712.2	724.8	737.5	747.6	762.7	777.9	787.9	803.1	795.5
55°	585.9	590.9	598.6	613.7	633.9	646.5	659.1	679.3	697.1	704.6	719.7
57.5°	482.3	477.3	482.3	502.5	525.3	535.4	553.1	573.3	598.6	613.7	618.8
60°	373.7	376.3	381.4	399.1	416.7	431.8	439.5	472.2	495.0	510.2	520.3
62.5°	275.3	280.4	285.4	300.6	318.2	330.9	343.4	371.3	391.5	406.6	416.7
65°	192.0	194.4	202.1	209.6	227.3	239.9	250.0	272.7	292.9	305.6	313.1
67.5°	118.7	121.2	126.2	136.4	149.0	159.1	169.2	184.3	202.1	214.6	217.2
70°	60.6	63.2	65.6	73.3	83.4	88.4	95.9	108.6	121.2	131.3	136.4
72.5°	20.2	20.2	22.8	27.8	32.9	37.9	40.4	53.1	63.2	68.2	70.7
75°	5.0	5.0	5.0	5.0	5.0	7.6	7.6	15.1	20.2	25.2	27.8
77.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	5.0	5.0
80°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
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°	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0	1778.0
2.5°	1778.0	1772.9	1770.3	1772.9	1772.9	1770.3	1778.0	1788.1	1800.6	1767.9
5°	1775.4	1770.3	1775.4	1760.2	1767.9	1762.8	1772.9	1770.3	1780.4	1770.3
7.5°	1767.9	1757.8	1760.2	1752.7	1762.8	1750.1	1757.8	1772.9	1762.8	1747.7
10°	1742.6	1737.6	1755.2	1729.9	1724.9	1735.0	1755.2	1740.0	1735.0	1740.0
12.5°	1717.3	1717.3	1724.9	1704.7	1707.2	1712.2	1722.3	1712.2	1717.3	1729.9
15°	1689.6	1684.5	1697.1	1681.9	1679.5	1674.4	1684.5	1684.5	1689.6	1681.9
17.5°	1656.7	1649.2	1649.2	1644.1	1641.5	1654.2	1659.3	1661.7	1664.3	1654.2
20°	1616.3	1613.8	1621.3	1613.8	1616.3	1618.9	1618.9	1613.8	1636.5	1608.8
22.5°	1573.3	1580.9	1570.9	1565.8	1570.9	1575.9	1575.9	1578.4	1573.3	1568.3
25°	1530.5	1535.5	1538.0	1522.8	1530.5	1522.8	1540.6	1543.0	1532.9	1538.0
27.5°	1492.5	1485.0	1482.4	1472.3	1477.4	1474.9	1477.4	1477.4	1492.5	1472.3
30°	1434.4	1426.9	1429.4	1421.9	1424.3	1421.9	1424.3	1424.3	1434.4	1432.0
32.5°	1378.9	1371.4	1373.8	1366.3	1366.3	1368.8	1363.7	1363.7	1371.4	1366.3
35°	1325.8	1308.2	1310.7	1308.2	1310.7	1300.6	1300.6	1298.1	1303.2	1290.5
37.5°	1250.1	1242.6	1240.0	1237.5	1240.0	1234.9	1240.0	1232.5	1240.0	1229.9
40°	1181.9	1176.8	1179.4	1164.3	1164.3	1166.7	1161.7	1159.2	1161.7	1171.8
42.5°	1113.8	1103.7	1098.6	1093.6	1096.0	1088.5	1085.9	1080.9	1085.9	1075.8
45°	1032.9	1032.9	1030.4	1017.7	1020.3	1020.3	1010.2	1000.1	1002.6	1002.6
47.5°	959.7	954.7	952.1	939.5	936.9	934.5	924.3	916.8	916.8	909.1
50°	878.8	873.8	866.3	853.6	848.5	833.4	825.9	815.8	805.7	805.7
52.5°	803.1	785.4	775.3	755.1	747.6	739.9	719.7	712.2	704.6	697.1
55°	712.2	697.1	676.9	654.1	644.0	631.3	611.1	596.0	585.9	588.5
57.5°	623.8	598.6	578.4	548.1	535.4	527.8	507.6	487.4	477.3	477.3
60°	515.2	495.0	469.8	441.9	431.8	419.3	393.9	381.4	373.7	366.2
62.5°	411.6	396.5	373.7	338.4	330.9	318.2	300.6	285.4	277.8	277.8
65°	308.1	292.9	272.7	247.5	237.4	227.3	212.2	197.0	189.4	186.9
67.5°	217.2	199.5	181.9	161.7	154.0	149.0	133.8	123.8	118.7	116.1
70°	131.3	121.2	108.6	93.5	85.8	80.8	70.7	63.2	60.6	58.1
72.5°	68.2	60.6	50.5	40.4	35.3	30.3	25.2	20.2	17.7	17.7
75°	25.2	20.2	12.7	7.6	5.0	5.0	5.0	5.0	5.0	5.0
77.5°	5.0	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
80°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
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)