

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 FEU4C459030 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: FLDSQ4C45D010 FEU4C459030 F4LC-CSSQ-MW
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

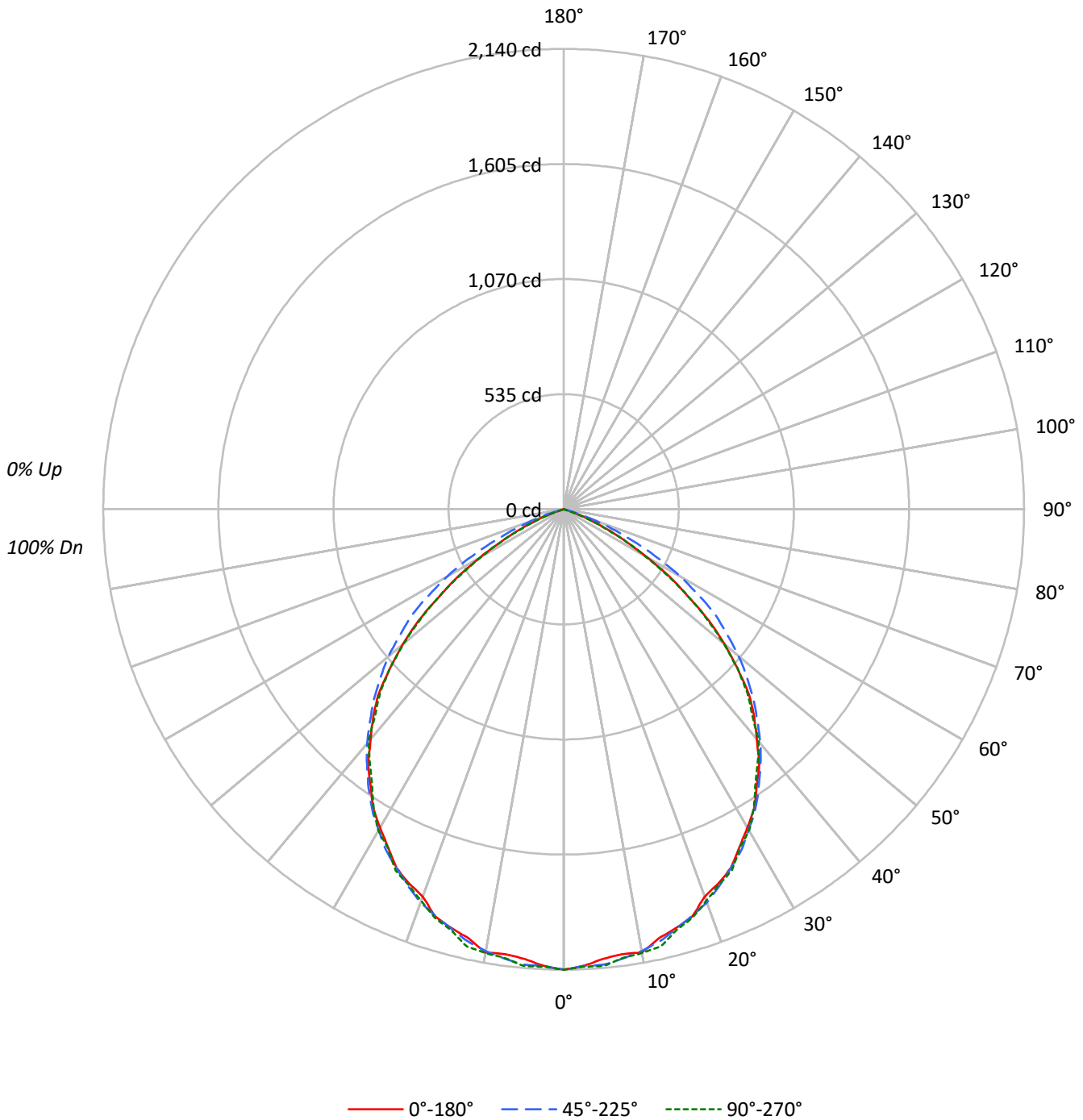
Lumens per Lamp: N/A
 Luminaire Lumens: 4571.0 lumens
 Efficiency: N/A
 Efficacy: 92.2 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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

TEST NUMBER: P#
CATALOG NUMBER: FLDSQ4C45D010 FEU4C459030 F4LC-CSSQ-MW

Luminous Intensity Polar Plot



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C45D010 FEU4C459030 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°	206467	206467	206467
5°	203139	205783	206374
10°	204890	204293	205184
15°	201304	201603	202213
20°	196624	199746	198812
25°	195776	195776	197064
30°	190309	191669	192014
35°	184379	186169	182941
40°	175723	179162	177638
45°	166312	170051	164648
50°	146462	159237	145547
55°	118614	145715	119136
60°	86801	120823	85045
65°	52740	86051	51370
70°	20566	46323	19720
75°	2274	12489	2274
80°	1723	1723	1723
85°	0	0	0

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C45D010 FEU4C459030 F4LC-CSSQ-MW

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	202.0	4.4
10°-20°	571.6	12.5
20°-30°	848.1	18.6
30°-40°	982.7	21.5
40°-50°	942.1	20.6
50°-60°	692.7	15.2
60°-70°	299.2	6.5
70°-80°	32.3	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°	1621.6	35.5
0°-40°	2604.2	57.0
0°-60°	4239.1	92.7
0°-90°	4571.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4571.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2140	2140	2140	2140	2140	
5°	2097	2118	2125	2128	2131	200
15°	2015	2027	2018	2021	2024	568
25°	1839	1836	1839	1842	1851	842
35°	1565	1574	1580	1577	1553	979
45°	1219	1222	1246	1228	1207	927
55°	705	778	866	775	708	635
65°	231	289	377	286	225	237
75°	6	9	34	6	6	19
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C45D010 FEU4C459030 F4LC-CSSQ-MW

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8
2.5°	2124.6	2148.9	2152.0	2136.7	2130.7	2121.6	2142.8	2127.7	2133.7	2127.7	2124.6
5°	2097.3	2124.6	2127.7	2127.7	2121.6	2118.5	2127.7	2124.6	2121.6	2115.5	2124.6
7.5°	2085.1	2100.3	2115.5	2097.3	2106.3	2103.4	2124.6	2115.5	2112.4	2112.4	2106.3
10°	2091.2	2088.1	2100.3	2082.0	2088.1	2082.0	2100.3	2100.3	2094.2	2088.1	2085.1
12.5°	2042.5	2066.8	2066.8	2063.8	2057.7	2048.6	2066.8	2079.1	2060.7	2060.7	2057.7
15°	2015.2	2021.3	2024.3	2024.3	2021.3	2027.3	2036.4	2024.3	2027.3	2012.1	2018.2
17.5°	1984.8	1972.7	1981.7	1975.6	1978.7	1984.8	1997.0	1997.0	1978.7	1975.6	1981.7
20°	1914.9	1951.3	1954.4	1936.2	1939.2	1939.2	1960.5	1942.3	1954.4	1939.2	1945.3
22.5°	1881.4	1905.7	1908.8	1884.5	1899.6	1881.4	1902.7	1875.3	1905.7	1884.5	1893.5
25°	1838.9	1835.9	1844.9	1832.8	1835.9	1835.9	1851.0	1838.9	1848.0	1835.9	1838.9
27.5°	1769.0	1793.3	1790.2	1778.1	1784.2	1781.2	1811.6	1778.1	1796.3	1781.2	1787.3
30°	1708.1	1729.5	1723.4	1711.2	1711.2	1702.1	1735.5	1726.4	1723.4	1723.4	1720.3
32.5°	1647.4	1650.5	1644.4	1647.4	1650.5	1638.3	1665.6	1653.5	1650.5	1653.5	1656.6
35°	1565.3	1565.3	1571.4	1562.3	1574.5	1574.5	1598.8	1583.5	1580.5	1571.4	1580.5
37.5°	1492.4	1483.3	1486.3	1486.3	1492.4	1498.4	1510.6	1504.5	1504.5	1495.5	1501.5
40°	1395.1	1389.1	1398.1	1398.1	1407.3	1407.3	1419.4	1413.4	1422.4	1422.4	1422.4
42.5°	1310.1	1310.1	1304.0	1313.0	1316.1	1313.0	1334.4	1331.3	1334.4	1328.3	1331.3
45°	1218.8	1218.8	1212.7	1209.7	1224.9	1221.9	1246.2	1237.0	1249.2	1243.1	1246.2
47.5°	1094.2	1109.4	1100.2	1109.4	1127.6	1130.7	1145.9	1139.8	1151.9	1142.9	1155.0
50°	975.7	975.7	984.8	996.9	1015.2	1018.3	1036.5	1048.6	1054.7	1057.7	1060.8
52.5°	851.1	848.0	857.2	872.3	887.6	899.7	917.9	936.2	948.3	966.6	957.4
55°	705.1	711.2	720.4	738.6	762.9	778.1	793.3	817.6	838.9	848.0	866.2
57.5°	580.5	574.4	580.5	604.8	632.2	644.4	665.7	690.0	720.4	738.6	744.7
60°	449.8	452.9	459.0	480.3	501.5	519.7	528.9	568.3	595.8	614.0	626.1
62.5°	331.4	337.4	343.5	361.7	383.0	398.2	413.3	446.8	471.1	489.4	501.5
65°	231.0	234.0	243.2	252.2	273.6	288.7	300.9	328.3	352.6	367.8	376.9
67.5°	142.9	145.8	151.9	164.2	179.3	191.5	203.6	221.9	243.2	258.3	261.4
70°	72.9	76.0	79.0	88.2	100.3	106.4	115.5	130.7	145.8	158.0	164.2
72.5°	24.3	24.3	27.4	33.5	39.6	45.6	48.6	63.9	76.0	82.1	85.1
75°	6.1	6.1	6.1	6.1	6.1	9.2	9.2	18.2	24.3	30.4	33.5
77.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	6.1	6.1
80°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
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: FLDSQ4C45D010 FEU4C459030 F4LC-CSSQ-MW

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8	2139.8
2.5°	2139.8	2133.7	2130.7	2133.7	2133.7	2130.7	2139.8	2152.0	2167.1	2127.7
5°	2136.7	2130.7	2136.7	2118.5	2127.7	2121.6	2133.7	2130.7	2142.8	2130.7
7.5°	2127.7	2115.5	2118.5	2109.4	2121.6	2106.3	2115.5	2133.7	2121.6	2103.4
10°	2097.3	2091.2	2112.4	2082.0	2076.0	2088.1	2112.4	2094.2	2088.1	2094.2
12.5°	2066.8	2066.8	2076.0	2051.7	2054.6	2060.7	2072.9	2060.7	2066.8	2082.0
15°	2033.4	2027.3	2042.5	2024.3	2021.3	2015.2	2027.3	2027.3	2033.4	2024.3
17.5°	1993.9	1984.8	1984.8	1978.7	1975.6	1990.9	1997.0	1999.9	2003.0	1990.9
20°	1945.3	1942.3	1951.3	1942.3	1945.3	1948.4	1948.4	1942.3	1969.6	1936.2
22.5°	1893.5	1902.7	1890.6	1884.5	1890.6	1896.6	1896.6	1899.6	1893.5	1887.5
25°	1841.9	1848.0	1851.0	1832.8	1841.9	1832.8	1854.1	1857.1	1844.9	1851.0
27.5°	1796.3	1787.3	1784.2	1772.0	1778.1	1775.1	1778.1	1778.1	1796.3	1772.0
30°	1726.4	1717.3	1720.3	1711.2	1714.2	1711.2	1714.2	1714.2	1726.4	1723.4
32.5°	1659.5	1650.5	1653.5	1644.4	1644.4	1647.4	1641.3	1641.3	1650.5	1644.4
35°	1595.7	1574.5	1577.4	1574.5	1577.4	1565.3	1565.3	1562.3	1568.4	1553.1
37.5°	1504.5	1495.5	1492.4	1489.4	1492.4	1486.3	1492.4	1483.3	1492.4	1480.2
40°	1422.4	1416.3	1419.4	1401.2	1401.2	1404.2	1398.1	1395.1	1398.1	1410.3
42.5°	1340.4	1328.3	1322.2	1316.1	1319.1	1310.1	1307.0	1300.9	1307.0	1294.8
45°	1243.1	1243.1	1240.1	1224.9	1228.0	1228.0	1215.8	1203.7	1206.6	1206.6
47.5°	1155.0	1149.0	1145.9	1130.7	1127.6	1124.7	1112.4	1103.3	1103.3	1094.2
50°	1057.7	1051.6	1042.6	1027.3	1021.2	1003.0	994.0	981.8	969.6	969.6
52.5°	966.6	945.2	933.1	908.8	899.7	890.5	866.2	857.2	848.0	838.9
55°	857.2	838.9	814.6	787.2	775.1	759.8	735.5	717.3	705.1	708.2
57.5°	750.8	720.4	696.1	659.6	644.4	635.2	610.9	586.6	574.4	574.4
60°	620.1	595.8	565.4	531.9	519.7	504.6	474.1	459.0	449.8	440.7
62.5°	495.4	477.2	449.8	407.3	398.2	383.0	361.7	343.5	334.3	334.3
65°	370.8	352.6	328.3	297.9	285.7	273.6	255.3	237.1	227.9	225.0
67.5°	261.4	240.1	218.9	194.6	185.4	179.3	161.1	148.9	142.9	139.8
70°	158.0	145.8	130.7	112.5	103.3	97.2	85.1	76.0	72.9	69.9
72.5°	82.1	72.9	60.8	48.6	42.5	36.5	30.4	24.3	21.3	21.3
75°	30.4	24.3	15.3	9.2	6.1	6.1	6.1	6.1	6.1	6.1
77.5°	6.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
80°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
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)