

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO

Report Number: P990928

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDSL-1000LM-3000K**

Issue Date: 5/13/2025

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: P990928
 Test Lab: Cooper Lighting Solutions
 Issue Date: 5/13/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML4ALSFL9FS1E-TIR4D40FL-TL4SDSL-1000LM-3000K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR,
 METALLIC SILVER TRIM
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT
 Ballast/Driver: -

Summary

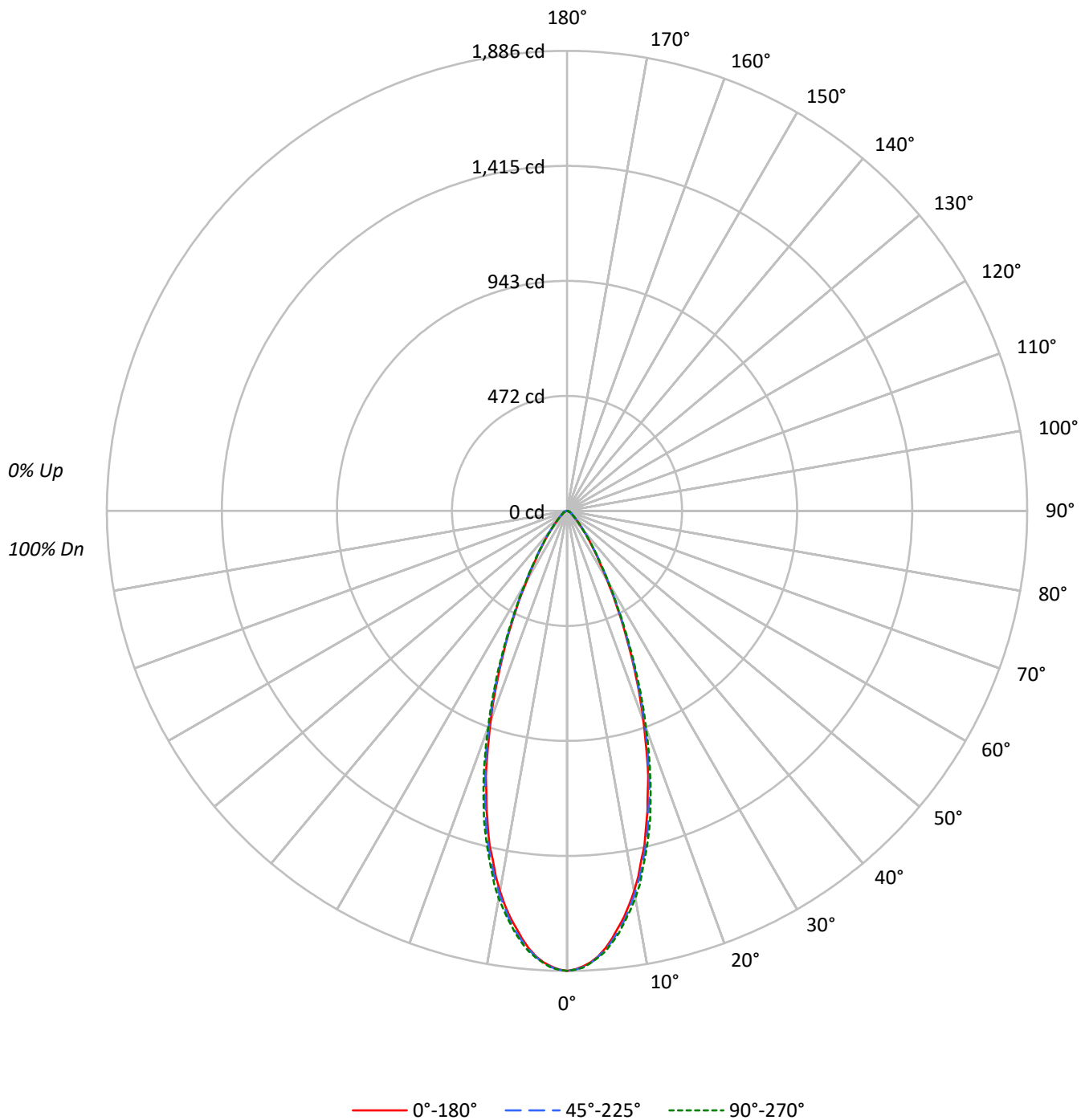
Lumens per Lamp: N/A
 Luminaire Lumens: 1011.6 lumens
 Efficiency: N/A
 Efficacy: 77.8 lumens/watt
 Spacing Criteria (0/90/45): 0.64 / 0.65 / 0.64
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 13
 Input Voltage (V): NR
 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: P990928
CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDSL-1000LM-3000K

Luminous Intensity Polar Plot



TEST NUMBER: P990928

CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDSL-1000LM-3000K

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50
RCR																	
0	119	119	119	119	116	116	116	116	111	111	111		106	106	106		102
1	114	111	109	106	111	109	107	105	105	103	101		101	100	98		98
2	108	104	100	96	106	102	98	95	99	96	93		96	93	91		93
3	103	97	92	89	101	96	91	88	93	89	86		91	88	85		89
4	99	91	86	82	97	90	85	82	88	84	81		86	83	80		84
5	94	86	81	77	92	85	80	76	84	79	76		82	78	75		80
6	90	82	76	72	89	81	76	72	79	75	71		78	74	71		77
7	86	77	72	68	85	77	71	68	76	71	67		74	70	67		73
8	82	74	68	64	81	73	68	64	72	67	64		71	67	64		70
9	79	70	65	61	78	70	64	61	69	64	61		68	64	61		67
10	76	67	62	58	75	67	61	58	66	61	58		65	61	58		64

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	182707	182707	182707
5°	175052	175450	176238
10°	155720	156910	158592
15°	127653	129077	131705
20°	94350	96124	97577
25°	62199	63172	64359
30°	36724	38190	38425
35°	21985	22576	22695
40°	13152	13797	13152
45°	8302	8713	8165
50°	5335	5938	5486
55°	3918	4611	4087
60°	3333	3914	3526
65°	3232	3713	3484
70°	2861	3427	2861
75°	1909	3032	1909
80°	558	1116	558
85°	0	0	0

TEST NUMBER: P990928
 CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDSL-1000LM-3000K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	165.6	16.4
10°-20°	353.2	34.9
20°-30°	273.3	27.0
30°-40°	124.0	12.3
40°-50°	50.1	5.0
50°-60°	23.6	2.3
60°-70°	14.9	1.5
70°-80°	6.7	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°	792.1	78.3
0°-40°	916.1	90.6
0°-60°	989.8	97.8
0°-90°	1011.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1011.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1886	1886	1886	1886	1886	
5°	1800	1804	1804	1809	1812	165
15°	1273	1278	1287	1306	1313	348
25°	582	586	591	593	602	268
35°	186	187	191	192	192	121
45°	61	62	64	62	60	49
55°	23	25	27	25	24	22
65°	14	14	16	15	15	14
75°	5	6	8	6	5	5
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P990928

CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDSL-1000LM-3000K

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1886.0	1886.0	1886.0	1886.0	1886.0
1°	1879.9	1881.0	1881.0	1882.0	1881.0
2°	1868.8	1871.9	1871.9	1872.9	1873.9
3°	1852.7	1854.7	1855.7	1858.7	1855.7
4°	1830.4	1831.5	1832.5	1836.5	1835.5
5°	1800.1	1804.2	1804.2	1809.2	1812.3
6°	1762.8	1771.9	1771.9	1778.9	1778.9
7°	1721.3	1729.4	1734.5	1739.5	1743.6
8°	1679.9	1688.0	1693.1	1696.1	1700.1
9°	1633.5	1637.5	1643.6	1652.7	1657.7
10°	1583.0	1588.0	1595.1	1604.2	1612.2
11°	1527.4	1534.5	1541.5	1550.6	1560.7
12°	1462.7	1473.9	1482.9	1497.1	1497.1
13°	1409.2	1409.2	1423.3	1436.5	1437.5
14°	1338.5	1345.6	1360.7	1369.8	1376.9
15°	1272.8	1277.9	1287.0	1306.2	1313.2
16°	1199.1	1209.2	1222.3	1239.5	1241.5
17°	1137.5	1141.5	1149.6	1163.7	1169.8
18°	1060.7	1065.7	1076.9	1091.0	1097.1
19°	983.9	993.0	1005.1	1017.3	1022.3
20°	915.2	926.3	932.4	941.5	946.5
22.5°	740.5	746.5	752.6	763.7	767.7
25°	581.9	585.9	591.0	593.0	602.1
27.5°	443.5	444.5	452.6	457.6	457.6
30°	328.3	335.4	341.4	342.5	343.5
32.5°	244.5	250.5	253.6	257.6	254.6
35°	185.9	186.9	190.9	191.9	191.9
37.5°	139.4	139.4	145.5	144.5	141.4
40°	104.0	105.1	109.1	108.1	104.0
42.5°	78.8	79.8	82.8	80.8	78.8
45°	60.6	61.6	63.6	61.6	59.6
47.5°	46.5	47.5	49.5	48.5	45.5
50°	35.4	37.4	39.4	38.4	36.4
52.5°	28.3	30.3	32.3	30.3	29.3
55°	23.2	25.3	27.3	25.3	24.2
57.5°	20.2	21.2	23.2	22.2	21.2
60°	17.2	18.2	20.2	19.2	18.2
62.5°	15.2	16.2	18.2	17.2	16.2
65°	14.1	14.1	16.2	15.2	15.2
67.5°	12.1	13.1	14.1	14.1	13.1
70°	10.1	11.1	12.1	12.1	10.1
72.5°	8.1	9.1	10.1	9.1	8.1
75°	5.1	6.1	8.1	6.1	5.1
77.5°	2.0	3.0	5.1	4.0	3.0
80°	1.0	1.0	2.0	1.0	1.0

TEST NUMBER: P990928

CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDSL-1000LM-3000K

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
82.5°	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)