

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: P990913

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDMB-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: P990913
 Test Lab: Cooper Lighting Solutions
 Issue Date: 5/13/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMB-1000LM-3000K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE BLACK TRIM
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT
 Ballast/Driver: -

Summary

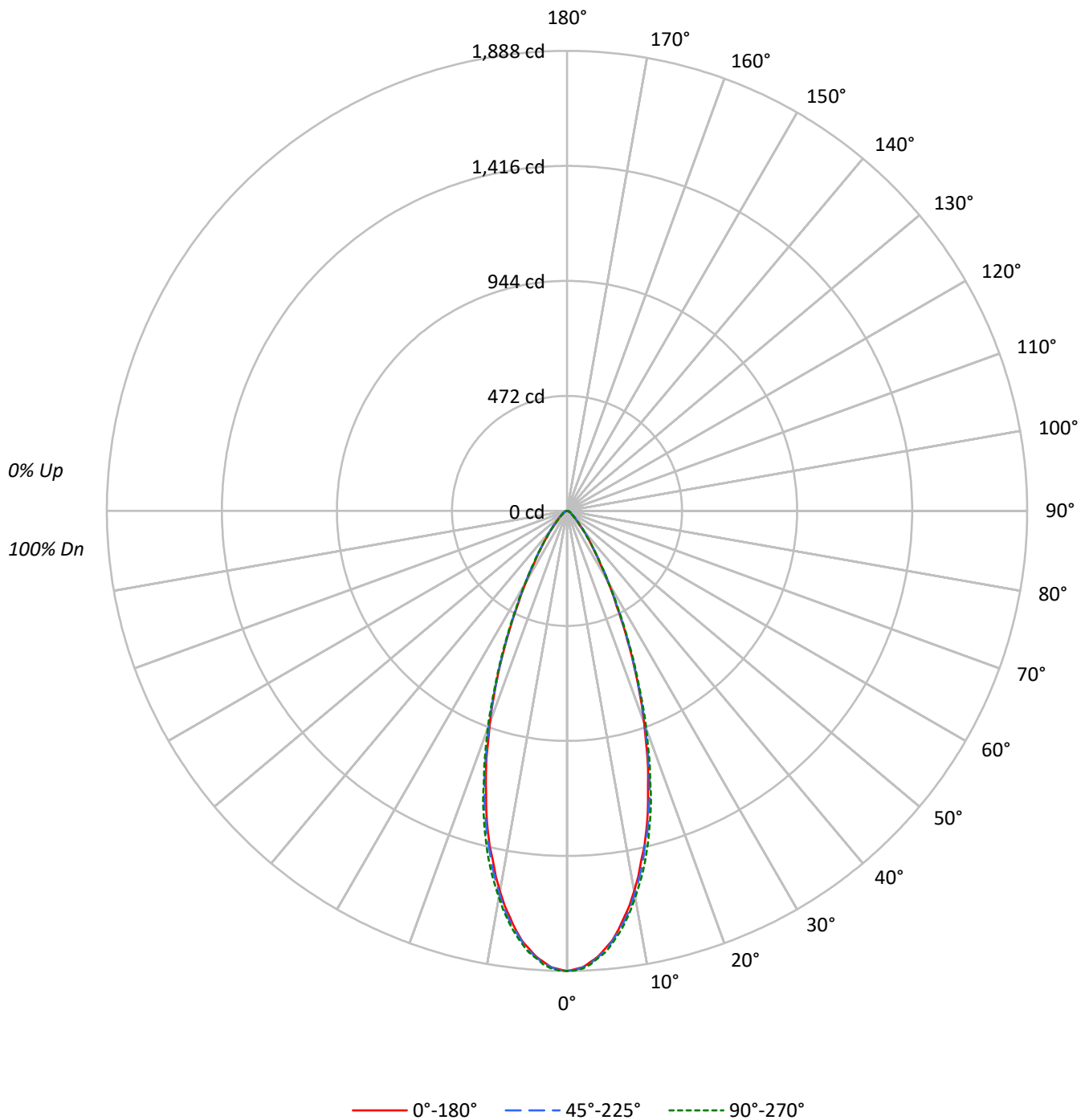
Lumens per Lamp: N/A
 Luminaire Lumens: 1009.9 lumens
 Efficiency: N/A
 Efficacy: 77.7 lumens/watt
 Spacing Criteria (0/90/45): 0.64 / 0.65 / 0.64
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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

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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
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	102		101	100	98		98
2	108	104	100	97	106	102	98	95	99	96	93		96	93	91		93
3	103	97	92	89	101	96	91	88	93	90	87		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	93	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	78	72	68	85	77	72	68	76	71	67		74	70	67		73
8	83	74	68	64	81	73	68	64	72	67	64		71	67	64		70
9	79	70	65	61	78	70	65	61	69	64	61		68	64	61		67
10	76	67	62	58	75	67	62	58	66	61	58		65	61	58		65

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	182930	182930	182930
5°	175266	175956	176744
10°	155916	157008	158503
15°	128345	129769	131995
20°	95247	96185	98062
25°	62777	63429	64401
30°	37541	38223	38335
35°	21760	22588	22588
40°	13038	13810	13165
45°	8165	8590	7891
50°	5335	5938	5184
55°	3750	4442	3918
60°	3333	3720	3333
65°	3003	3484	3255
70°	2578	3427	2861
75°	1909	3032	1909
80°	558	1116	558
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	165.9	16.4
10°-20°	353.8	35.0
20°-30°	273.7	27.1
30°-40°	123.6	12.2
40°-50°	49.2	4.9
50°-60°	22.7	2.2
60°-70°	14.1	1.4
70°-80°	6.5	0.6
80°-90°	0.3	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°	793.4	78.6
0°-40°	917.1	90.8
0°-60°	989.0	97.9
0°-90°	1009.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1009.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1888	1888	1888	1888	1888	
5°	1802	1807	1809	1809	1818	165
15°	1280	1283	1294	1310	1316	350
25°	587	587	593	593	602	271
35°	184	186	191	191	191	121
45°	60	61	63	61	58	48
55°	22	24	26	24	23	21
65°	13	14	15	14	14	13
75°	5	6	8	6	5	5
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1888.3	1888.3	1888.3	1888.3	1888.3
1°	1881.2	1885.2	1884.2	1882.2	1886.2
2°	1874.1	1874.1	1874.1	1873.1	1879.2
3°	1852.9	1860.0	1857.9	1856.9	1863.0
4°	1832.7	1833.7	1835.7	1835.7	1838.7
5°	1802.3	1807.4	1809.4	1809.4	1817.5
6°	1773.0	1772.0	1776.1	1778.1	1783.1
7°	1731.6	1733.6	1735.6	1743.7	1747.8
8°	1684.1	1688.1	1697.2	1701.3	1707.3
9°	1639.6	1640.6	1650.7	1653.7	1661.8
10°	1585.0	1589.0	1596.1	1608.3	1611.3
11°	1529.4	1532.4	1540.5	1550.6	1558.7
12°	1464.7	1474.8	1484.9	1495.0	1505.1
13°	1412.2	1413.2	1418.2	1436.4	1446.5
14°	1346.4	1350.5	1360.6	1368.7	1382.8
15°	1279.7	1282.8	1293.9	1310.1	1316.1
16°	1204.9	1214.0	1227.2	1235.3	1249.4
17°	1138.2	1141.2	1156.4	1163.5	1168.5
18°	1069.5	1069.5	1079.6	1089.7	1097.8
19°	990.6	998.7	1005.8	1016.9	1022.0
20°	923.9	928.0	933.0	943.1	951.2
22.5°	752.1	749.0	755.1	762.2	766.2
25°	587.3	587.3	593.4	593.4	602.5
27.5°	441.7	445.8	451.8	451.8	455.9
30°	335.6	336.6	341.7	342.7	342.7
32.5°	244.6	250.7	255.7	255.7	253.7
35°	184.0	186.0	191.0	191.0	191.0
37.5°	137.5	139.5	143.5	141.5	138.5
40°	103.1	104.1	109.2	106.1	104.1
42.5°	77.8	78.8	81.9	79.9	76.8
45°	59.6	60.7	62.7	60.7	57.6
47.5°	45.5	46.5	48.5	46.5	44.5
50°	35.4	36.4	39.4	36.4	34.4
52.5°	27.3	29.3	31.3	29.3	27.3
55°	22.2	24.3	26.3	24.3	23.2
57.5°	19.2	20.2	22.2	21.2	20.2
60°	17.2	17.2	19.2	18.2	17.2
62.5°	15.2	15.2	17.2	16.2	15.2
65°	13.1	14.2	15.2	14.2	14.2
67.5°	11.1	12.1	13.1	13.1	12.1
70°	9.1	10.1	12.1	11.1	10.1
72.5°	8.1	8.1	10.1	9.1	8.1
75°	5.1	6.1	8.1	6.1	5.1
77.5°	2.0	4.0	5.1	3.0	3.0
80°	1.0	1.0	2.0	1.0	1.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
82.5°	0.0	1.0	1.0	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)