

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: P990915

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDMB-1000LM-4000K**

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: P990915
 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-4000K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE BLACK TRIM
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
 Ballast/Driver: -

Summary

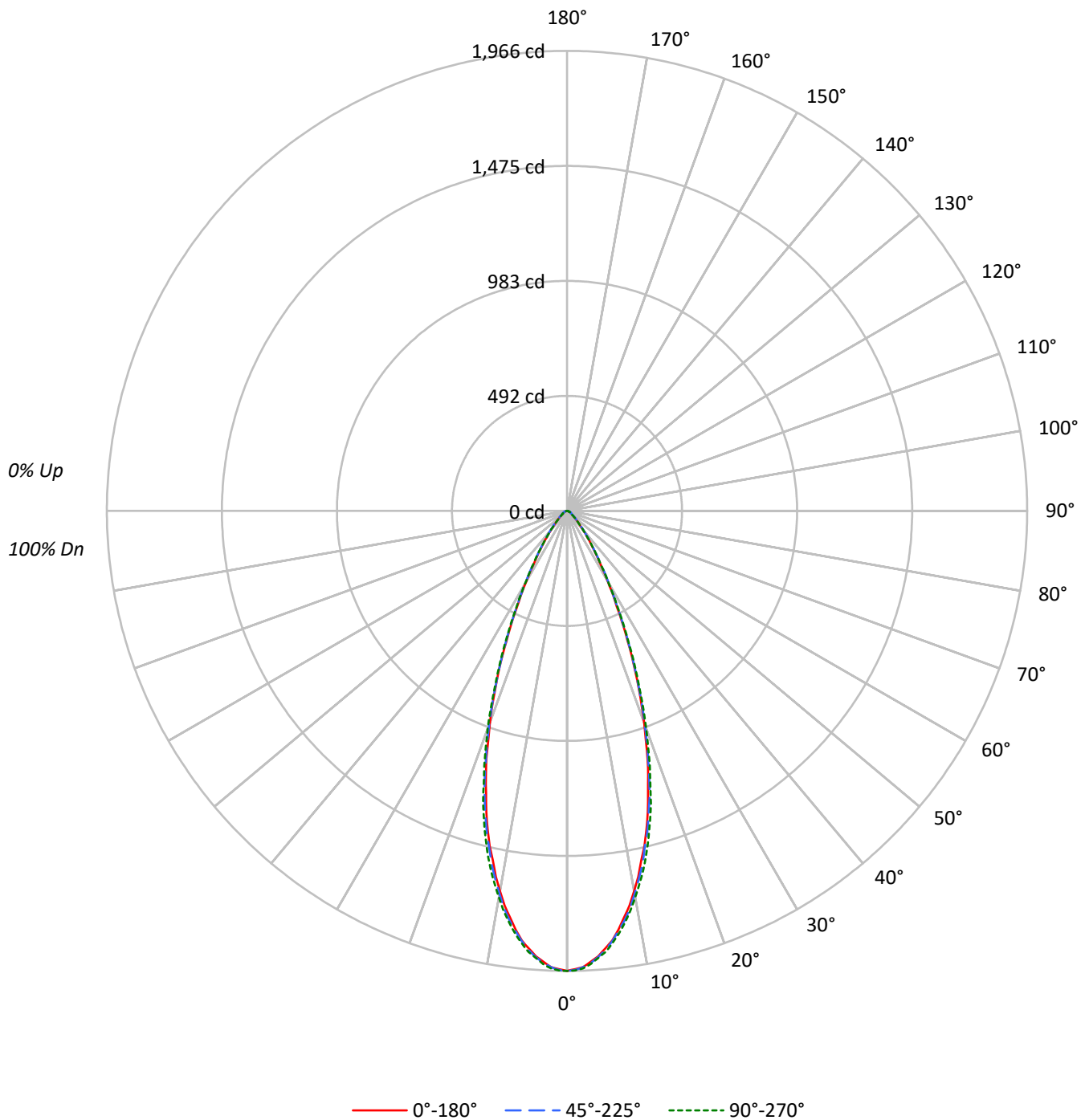
Lumens per Lamp: N/A
 Luminaire Lumens: 1051.6 lumens
 Efficiency: N/A
 Efficacy: 80.9 lumens/watt
 Spacing Criteria (0/90/45): 0.64 / 0.65 / 0.64
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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°	190467	190467	190467
5°	182491	183210	184027
10°	162340	163481	165035
15°	133640	135114	137441
20°	99175	100155	102103
25°	65363	66037	67052
30°	39085	39789	39912
35°	22659	23523	23523
40°	13582	14379	13708
45°	8508	8946	8220
50°	5546	6179	5395
55°	3918	4628	4087
60°	3468	3875	3468
65°	3140	3622	3370
70°	2691	3569	2974
75°	1984	3144	1984
80°	614	1172	614
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	172.7	16.4
10°-20°	368.4	35.0
20°-30°	285.0	27.1
30°-40°	128.7	12.2
40°-50°	51.3	4.9
50°-60°	23.6	2.2
60°-70°	14.7	1.4
70°-80°	6.8	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°	826.1	78.6
0°-40°	954.9	90.8
0°-60°	1029.8	97.9
0°-90°	1051.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1051.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1966	1966	1966	1966	1966	
5°	1877	1882	1884	1884	1892	172
15°	1332	1336	1347	1364	1370	364
25°	612	612	618	618	627	282
35°	192	194	199	199	199	126
45°	62	63	65	63	60	50
55°	23	25	27	25	24	22
65°	14	15	16	15	15	14
75°	5	6	8	6	5	6
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°	1966.1	1966.1	1966.1	1966.1	1966.1
1°	1958.7	1962.9	1961.9	1959.8	1964.0
2°	1951.4	1951.4	1951.4	1950.3	1956.6
3°	1929.2	1936.6	1934.5	1933.5	1939.8
4°	1908.2	1909.3	1911.4	1911.4	1914.5
5°	1876.6	1881.9	1884.0	1884.0	1892.4
6°	1846.1	1845.0	1849.3	1851.4	1856.6
7°	1802.9	1805.1	1807.2	1815.6	1819.8
8°	1753.5	1757.7	1767.2	1771.4	1777.7
9°	1707.2	1708.2	1718.7	1721.9	1730.3
10°	1650.3	1654.5	1661.9	1674.5	1677.7
11°	1592.4	1595.6	1604.0	1614.5	1623.0
12°	1525.1	1535.6	1546.1	1556.7	1567.2
13°	1470.4	1471.4	1476.7	1495.6	1506.1
14°	1401.9	1406.2	1416.7	1425.1	1439.8
15°	1332.5	1335.6	1347.2	1364.1	1370.4
16°	1254.6	1264.1	1277.7	1286.2	1300.9
17°	1185.1	1188.3	1204.1	1211.4	1216.7
18°	1113.6	1113.6	1124.1	1134.6	1143.0
19°	1031.5	1039.9	1047.2	1058.8	1064.1
20°	962.0	966.2	971.5	982.0	990.4
22.5°	783.1	779.9	786.2	793.6	797.8
25°	611.5	611.5	617.8	617.8	627.3
27.5°	459.9	464.2	470.5	470.5	474.7
30°	349.4	350.5	355.7	356.8	356.8
32.5°	254.7	261.0	266.3	266.3	264.2
35°	191.6	193.7	198.9	198.9	198.9
37.5°	143.1	145.2	149.5	147.4	144.2
40°	107.4	108.4	113.7	110.5	108.4
42.5°	81.0	82.1	85.3	83.1	80.0
45°	62.1	63.2	65.3	63.2	60.0
47.5°	47.4	48.4	50.5	48.4	46.3
50°	36.8	37.9	41.0	37.9	35.8
52.5°	28.4	30.5	32.6	30.5	28.4
55°	23.2	25.3	27.4	25.3	24.2
57.5°	20.0	21.1	23.2	22.1	21.1
60°	17.9	17.9	20.0	18.9	17.9
62.5°	15.8	15.8	17.9	16.8	15.8
65°	13.7	14.7	15.8	14.7	14.7
67.5°	11.6	12.6	13.7	13.7	12.6
70°	9.5	10.5	12.6	11.6	10.5
72.5°	8.4	8.4	10.5	9.5	8.4
75°	5.3	6.3	8.4	6.3	5.3
77.5°	2.1	4.2	5.3	3.2	3.2
80°	1.1	1.1	2.1	1.1	1.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
82.5°	0.0	1.1	1.1	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)