

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: P990884

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D25NFL-TL4SDMW-1000LM-3500K**

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: P990884
 Test Lab: Cooper Lighting Solutions
 Issue Date: 5/13/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML4ALSFL9FS1E-TIR4D25NFL-TL4SDMW-1000LM-3500K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 25D TIR, MATTE WHITE TRIM
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT
 Ballast/Driver: -

Summary

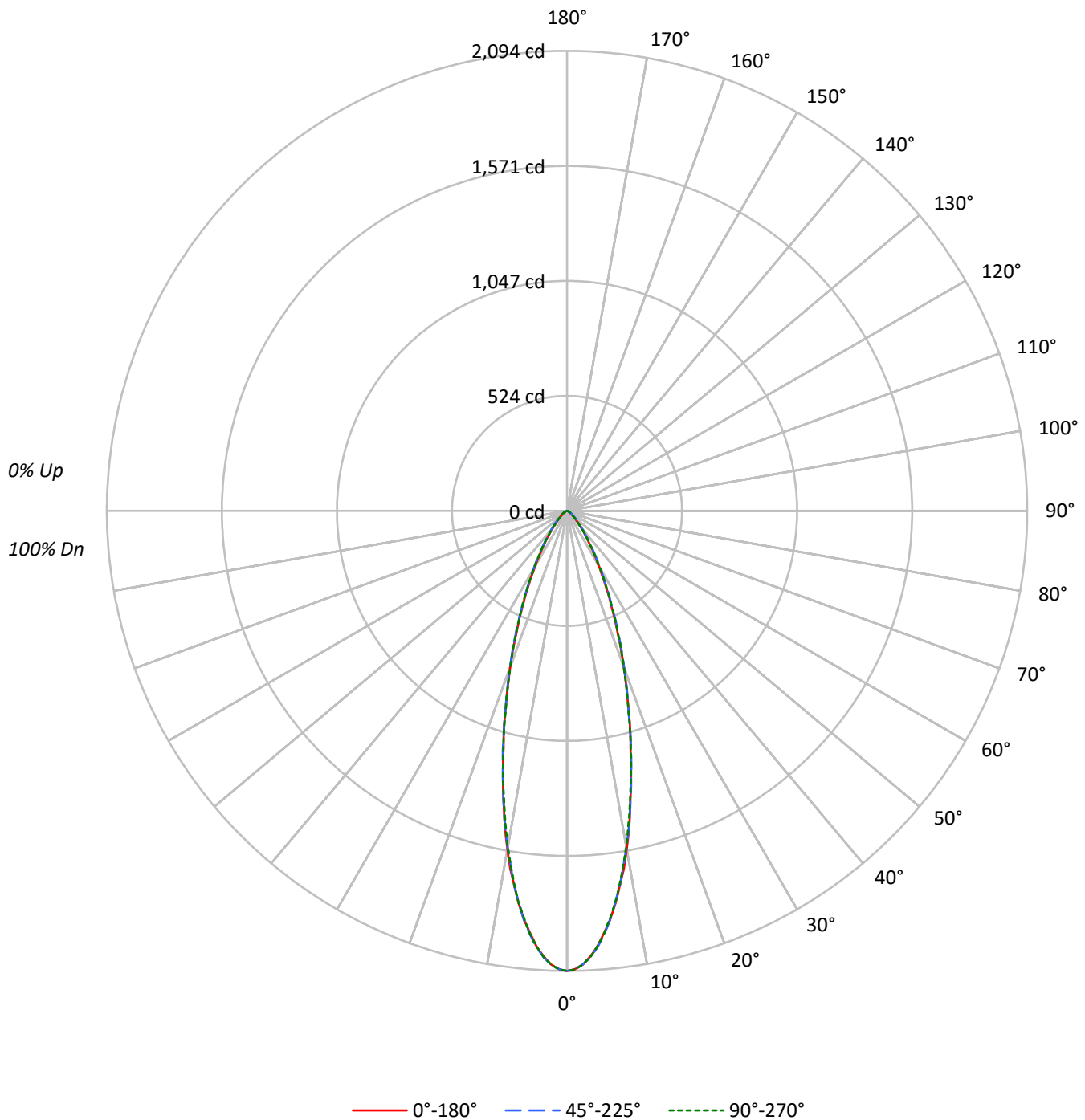
Lumens per Lamp: N/A
 Luminaire Lumens: 916.5 lumens
 Efficiency: N/A
 Efficacy: 70.5 lumens/watt
 Spacing Criteria (0/90/45): 0.52 / 0.52 / 0.57
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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	101		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	86	82	88	84	81		86	83	80		84
5	94	86	81	77	93	85	80	77	84	79	76		82	78	75		81
6	90	82	76	72	89	81	76	72	80	75	72		78	74	71		77
7	86	78	72	68	85	77	72	68	76	71	68		75	71	67		74
8	83	74	69	65	82	73	68	65	72	68	64		71	67	64		71
9	80	71	65	62	78	70	65	62	69	65	61		68	64	61		68
10	76	68	62	59	76	67	62	59	66	62	59		66	61	58		65

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	202877	202877	202877
5°	187509	188209	188014
10°	153870	152955	152759
15°	112097	113030	112408
20°	77814	78454	77598
25°	51029	51917	52023
30°	31948	33917	33335
35°	20117	21701	20732
40°	12646	13822	12646
45°	8056	9042	7905
50°	5290	6209	5290
55°	3834	4695	4003
60°	3197	3798	3391
65°	2842	3301	3072
70°	2634	3201	2634
75°	1946	2695	1946
80°	1172	1172	558
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	172.3	18.8
10°-20°	309.3	33.7
20°-30°	225.6	24.6
30°-40°	115.0	12.6
40°-50°	50.2	5.5
50°-60°	23.4	2.6
60°-70°	13.7	1.5
70°-80°	6.5	0.7
80°-90°	0.5	0.1
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°	707.2	77.2
0°-40°	822.2	89.7
0°-60°	895.8	97.7
0°-90°	916.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	916.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2094	2094	2094	2094	2094	
5°	1928	1936	1935	1931	1933	172
15°	1118	1126	1127	1123	1121	309
25°	477	482	486	487	487	222
35°	170	175	184	182	175	110
45°	59	62	66	62	58	48
55°	23	25	28	25	24	21
65°	12	13	14	14	13	12
75°	5	6	7	6	5	6
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2094.2	2094.2	2094.2	2094.2	2094.2
1°	2087.0	2084.9	2087.0	2087.0	2088.0
2°	2066.4	2064.3	2065.4	2064.3	2066.4
3°	2030.3	2032.4	2035.5	2033.4	2033.4
4°	1987.0	1992.1	1990.1	1987.0	1987.0
5°	1928.2	1936.5	1935.4	1931.3	1933.4
6°	1871.5	1873.6	1873.6	1868.4	1864.3
7°	1801.4	1801.4	1796.2	1801.4	1800.4
8°	1724.1	1730.2	1724.1	1723.0	1718.9
9°	1649.8	1644.7	1637.4	1638.5	1633.3
10°	1564.2	1559.1	1554.9	1556.0	1552.9
11°	1478.6	1467.3	1474.5	1468.3	1462.1
12°	1380.7	1380.7	1382.7	1373.5	1373.5
13°	1293.0	1293.0	1293.0	1286.9	1286.9
14°	1203.3	1207.5	1207.5	1205.4	1204.4
15°	1117.7	1126.0	1127.0	1122.9	1120.8
16°	1042.5	1048.7	1043.5	1037.3	1041.4
17°	965.1	970.3	962.0	963.1	956.9
18°	887.8	893.0	891.9	889.9	887.8
19°	819.8	824.9	825.9	818.7	817.7
20°	754.8	758.9	761.0	756.9	752.7
22.5°	602.2	610.4	613.5	607.3	608.4
25°	477.4	481.5	485.7	486.7	486.7
27.5°	375.3	376.4	386.7	386.7	381.5
30°	285.6	292.8	303.2	303.2	298.0
32.5°	222.7	226.8	236.1	236.1	231.0
35°	170.1	175.3	183.5	181.5	175.3
37.5°	131.0	134.0	140.2	139.2	134.0
40°	100.0	104.1	109.3	106.2	100.0
42.5°	77.3	80.4	85.6	80.4	75.3
45°	58.8	61.9	66.0	61.9	57.7
47.5°	45.4	48.5	52.6	48.5	44.3
50°	35.1	38.2	41.2	38.2	35.1
52.5°	27.8	29.9	34.0	30.9	28.9
55°	22.7	24.7	27.8	24.7	23.7
57.5°	18.6	20.6	22.7	21.7	19.6
60°	16.5	17.5	19.6	18.6	17.5
62.5°	14.4	15.5	16.5	15.5	14.4
65°	12.4	13.4	14.4	14.4	13.4
67.5°	10.3	11.3	13.4	12.4	11.3
70°	9.3	10.3	11.3	10.3	9.3
72.5°	7.2	8.2	9.3	8.2	7.2
75°	5.2	6.2	7.2	6.2	5.2
77.5°	3.1	4.1	5.2	4.1	3.1
80°	2.1	2.1	2.1	2.1	1.0

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CANDELA DISTRIBUTION (continued):

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