

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: P990931

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDSL-1000LM-5000K**

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: P990931
 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-5000K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR,
 METALLIC SILVER TRIM
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 5000K CCT
 Ballast/Driver: -

Summary

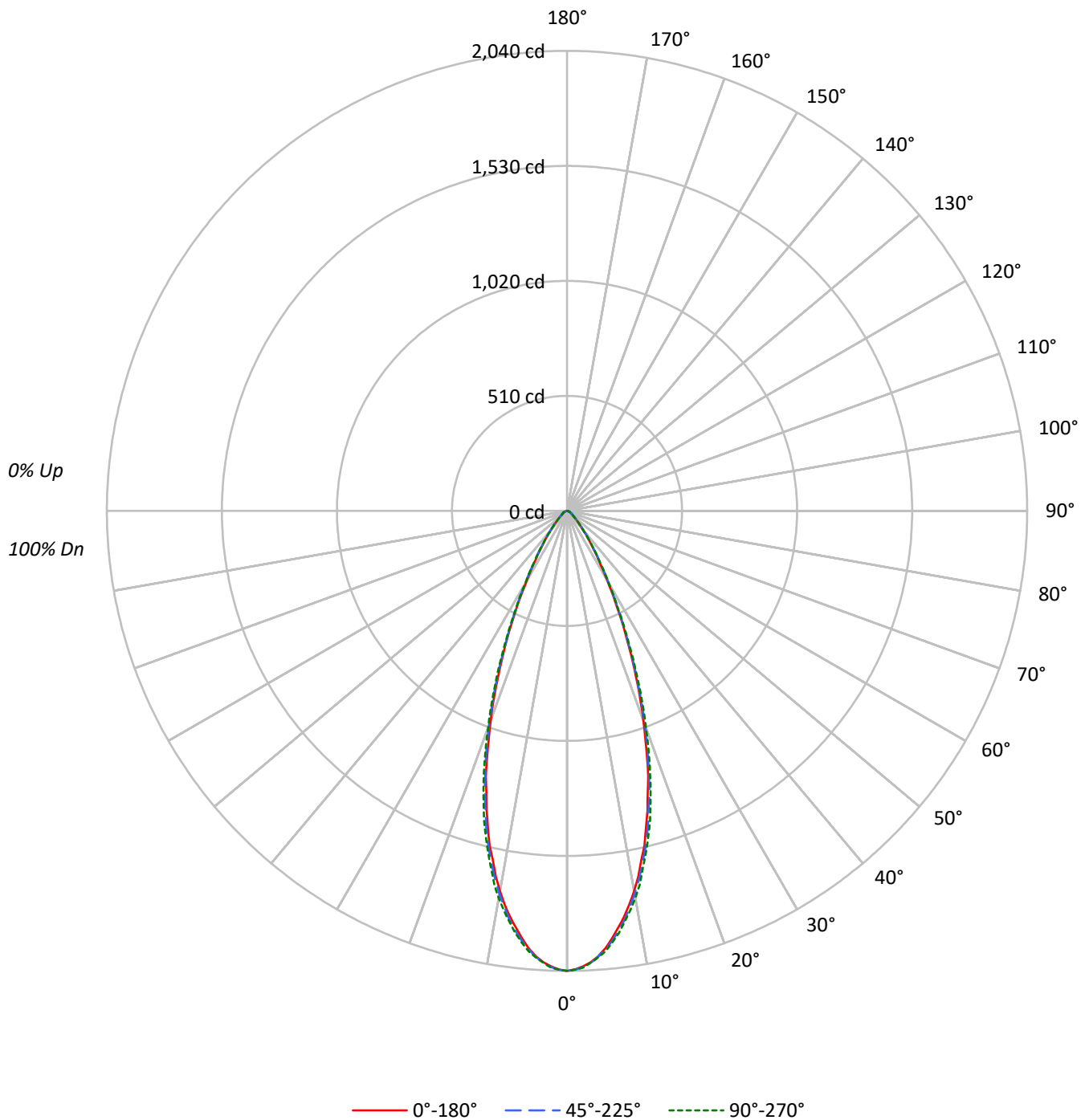
Lumens per Lamp: N/A
 Luminaire Lumens: 1094.1 lumens
 Efficiency: N/A
 Efficacy: 84.2 lumens/watt
 Spacing Criteria (0/90/45): 0.64 / 0.65 / 0.64
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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	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°	197616	197616	197616
5°	189347	189765	190621
10°	168419	169718	171537
15°	138073	139608	142456
20°	102051	103969	105546
25°	67277	68324	69607
30°	39722	41311	41557
35°	23771	24421	24551
40°	14227	14923	14227
45°	8987	9426	8837
50°	5757	6420	5923
55°	4239	4982	4425
60°	3604	4243	3817
65°	3507	4011	3759
70°	3087	3711	3087
75°	2059	3256	2059
80°	614	1227	614
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	179.1	16.4
10°-20°	382.0	34.9
20°-30°	295.6	27.0
30°-40°	134.2	12.3
40°-50°	54.2	5.0
50°-60°	25.5	2.3
60°-70°	16.2	1.5
70°-80°	7.2	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°	856.7	78.3
0°-40°	990.9	90.6
0°-60°	1070.5	97.8
0°-90°	1094.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1094.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2040	2040	2040	2040	2040	
5°	1947	1951	1951	1957	1960	178
15°	1377	1382	1392	1413	1420	376
25°	629	634	639	641	651	290
35°	201	202	206	208	208	131
45°	66	67	69	67	64	53
55°	25	27	30	27	26	24
65°	15	15	18	16	16	15
75°	6	7	9	7	6	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°	2039.9	2039.9	2039.9	2039.9	2039.9
1°	2033.4	2034.5	2034.5	2035.6	2034.5
2°	2021.4	2024.6	2024.6	2025.7	2026.8
3°	2003.9	2006.1	2007.1	2010.4	2007.1
4°	1979.8	1980.9	1982.0	1986.4	1985.3
5°	1947.1	1951.4	1951.4	1956.9	1960.2
6°	1906.6	1916.5	1916.5	1924.1	1924.1
7°	1861.8	1870.6	1876.0	1881.5	1885.9
8°	1817.0	1825.8	1831.2	1834.5	1838.9
9°	1766.8	1771.1	1777.7	1787.5	1793.0
10°	1712.1	1717.6	1725.3	1735.1	1743.8
11°	1652.0	1659.7	1667.3	1677.2	1688.1
12°	1582.1	1594.1	1604.0	1619.3	1619.3
13°	1524.2	1524.2	1539.5	1553.7	1554.8
14°	1447.7	1455.4	1471.8	1481.6	1489.2
15°	1376.7	1382.2	1392.0	1412.8	1420.4
16°	1296.9	1307.9	1322.1	1340.6	1342.8
17°	1230.3	1234.7	1243.4	1258.7	1265.3
18°	1147.3	1152.7	1164.7	1180.0	1186.6
19°	1064.2	1074.0	1087.2	1100.3	1105.7
20°	989.9	1001.9	1008.5	1018.3	1023.8
22.5°	800.9	807.4	814.0	826.0	830.4
25°	629.4	633.7	639.2	641.4	651.2
27.5°	479.7	480.8	489.5	495.0	495.0
30°	355.1	362.8	369.3	370.4	371.5
32.5°	264.4	271.0	274.2	278.6	275.3
35°	201.0	202.1	206.5	207.6	207.6
37.5°	150.8	150.8	157.3	156.2	153.0
40°	112.5	113.6	118.0	116.9	112.5
42.5°	85.2	86.3	89.6	87.4	85.2
45°	65.6	66.7	68.8	66.7	64.5
47.5°	50.3	51.4	53.5	52.4	49.2
50°	38.2	40.4	42.6	41.5	39.3
52.5°	30.6	32.8	35.0	32.8	31.7
55°	25.1	27.3	29.5	27.3	26.2
57.5°	21.9	22.9	25.1	24.0	22.9
60°	18.6	19.7	21.9	20.8	19.7
62.5°	16.4	17.5	19.7	18.6	17.5
65°	15.3	15.3	17.5	16.4	16.4
67.5°	13.1	14.2	15.3	15.3	14.2
70°	10.9	12.0	13.1	13.1	10.9
72.5°	8.7	9.8	10.9	9.8	8.7
75°	5.5	6.6	8.7	6.6	5.5
77.5°	2.2	3.3	5.5	4.4	3.3
80°	1.1	1.1	2.2	1.1	1.1

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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)