

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: P990929

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDSL-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: P990929
 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-3500K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR,
 METALLIC SILVER TRIM
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT
 Ballast/Driver: -

Summary

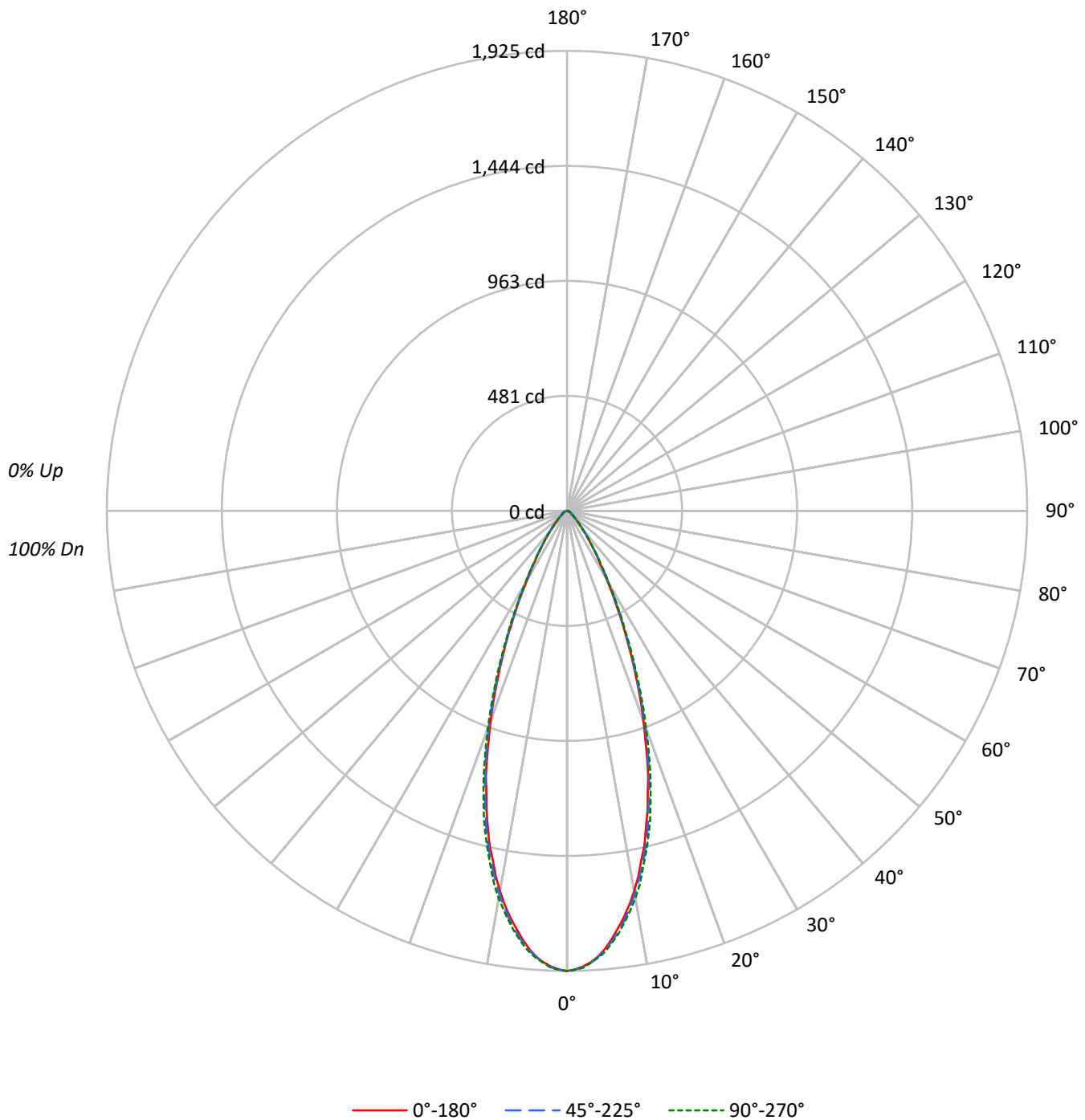
Lumens per Lamp: N/A
 Luminaire Lumens: 1032.7 lumens
 Efficiency: N/A
 Efficacy: 79.4 lumens/watt
 Spacing Criteria (0/90/45): 0.64 / 0.65 / 0.64
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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	88	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°	186524	186524	186524
5°	178718	179116	179914
10°	158966	160186	161907
15°	130320	131775	134463
20°	96330	98134	99618
25°	63493	64487	65705
30°	37496	38995	39219
35°	22446	23049	23168
40°	13430	14088	13430
45°	8480	8905	8330
50°	5441	6059	5591
55°	4003	4695	4189
60°	3391	3991	3604
65°	3301	3782	3553
70°	2917	3512	2917
75°	1946	3107	1946
80°	558	1172	558
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	169.0	16.4
10°-20°	360.6	34.9
20°-30°	279.0	27.0
30°-40°	126.6	12.3
40°-50°	51.1	5.0
50°-60°	24.1	2.3
60°-70°	15.3	1.5
70°-80°	6.8	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°	808.6	78.3
0°-40°	935.3	90.6
0°-60°	1010.5	97.8
0°-90°	1032.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1032.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1925	1925	1925	1925	1925	
5°	1838	1842	1842	1847	1850	168
15°	1299	1305	1314	1334	1341	355
25°	594	598	603	605	615	274
35°	190	191	195	196	196	123
45°	62	63	65	63	61	50
55°	24	26	28	26	25	22
65°	14	14	16	16	16	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°	1925.4	1925.4	1925.4	1925.4	1925.4
1°	1919.2	1920.3	1920.3	1921.3	1920.3
2°	1907.9	1911.0	1911.0	1912.0	1913.1
3°	1891.4	1893.5	1894.5	1897.6	1894.5
4°	1868.7	1869.7	1870.8	1874.9	1873.9
5°	1837.8	1841.9	1841.9	1847.1	1850.1
6°	1799.6	1808.9	1808.9	1816.1	1816.1
7°	1757.3	1765.6	1770.7	1775.9	1780.0
8°	1715.0	1723.3	1728.5	1731.5	1735.7
9°	1667.6	1671.7	1677.9	1687.2	1692.4
10°	1616.0	1621.2	1628.4	1637.7	1645.9
11°	1559.3	1566.5	1573.8	1583.0	1593.4
12°	1493.3	1504.7	1513.9	1528.4	1528.4
13°	1438.7	1438.7	1453.1	1466.5	1467.5
14°	1366.5	1373.7	1389.2	1398.4	1405.7
15°	1299.4	1304.6	1313.9	1333.5	1340.7
16°	1224.1	1234.5	1247.9	1265.4	1267.5
17°	1161.2	1165.4	1173.6	1188.1	1194.2
18°	1082.9	1088.0	1099.4	1113.8	1120.0
19°	1004.5	1013.8	1026.1	1038.5	1043.7
20°	934.4	945.7	951.9	961.2	966.3
22.5°	755.9	762.1	768.3	779.7	783.8
25°	594.0	598.2	603.3	605.4	614.7
27.5°	452.7	453.8	462.0	467.2	467.2
30°	335.2	342.4	348.6	349.6	350.6
32.5°	249.6	255.8	258.9	263.0	259.9
35°	189.8	190.8	194.9	195.9	195.9
37.5°	142.3	142.3	148.5	147.5	144.4
40°	106.2	107.3	111.4	110.3	106.2
42.5°	80.4	81.5	84.6	82.5	80.4
45°	61.9	62.9	65.0	62.9	60.8
47.5°	47.4	48.5	50.5	49.5	46.4
50°	36.1	38.2	40.2	39.2	37.1
52.5°	28.9	30.9	33.0	30.9	29.9
55°	23.7	25.8	27.8	25.8	24.8
57.5°	20.6	21.7	23.7	22.7	21.7
60°	17.5	18.6	20.6	19.6	18.6
62.5°	15.5	16.5	18.6	17.5	16.5
65°	14.4	14.4	16.5	15.5	15.5
67.5°	12.4	13.4	14.4	14.4	13.4
70°	10.3	11.3	12.4	12.4	10.3
72.5°	8.3	9.3	10.3	9.3	8.3
75°	5.2	6.2	8.3	6.2	5.2
77.5°	2.1	3.1	5.2	4.1	3.1
80°	1.0	1.0	2.1	1.0	1.0

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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)