

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: P990923

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-35°-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: P990923
 Test Lab: Cooper Lighting Solutions
 Issue Date: 5/13/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-35°-1000LM-3000K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE WHITE TRIM 35° Tilt
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT
 Ballast/Driver: -

Summary

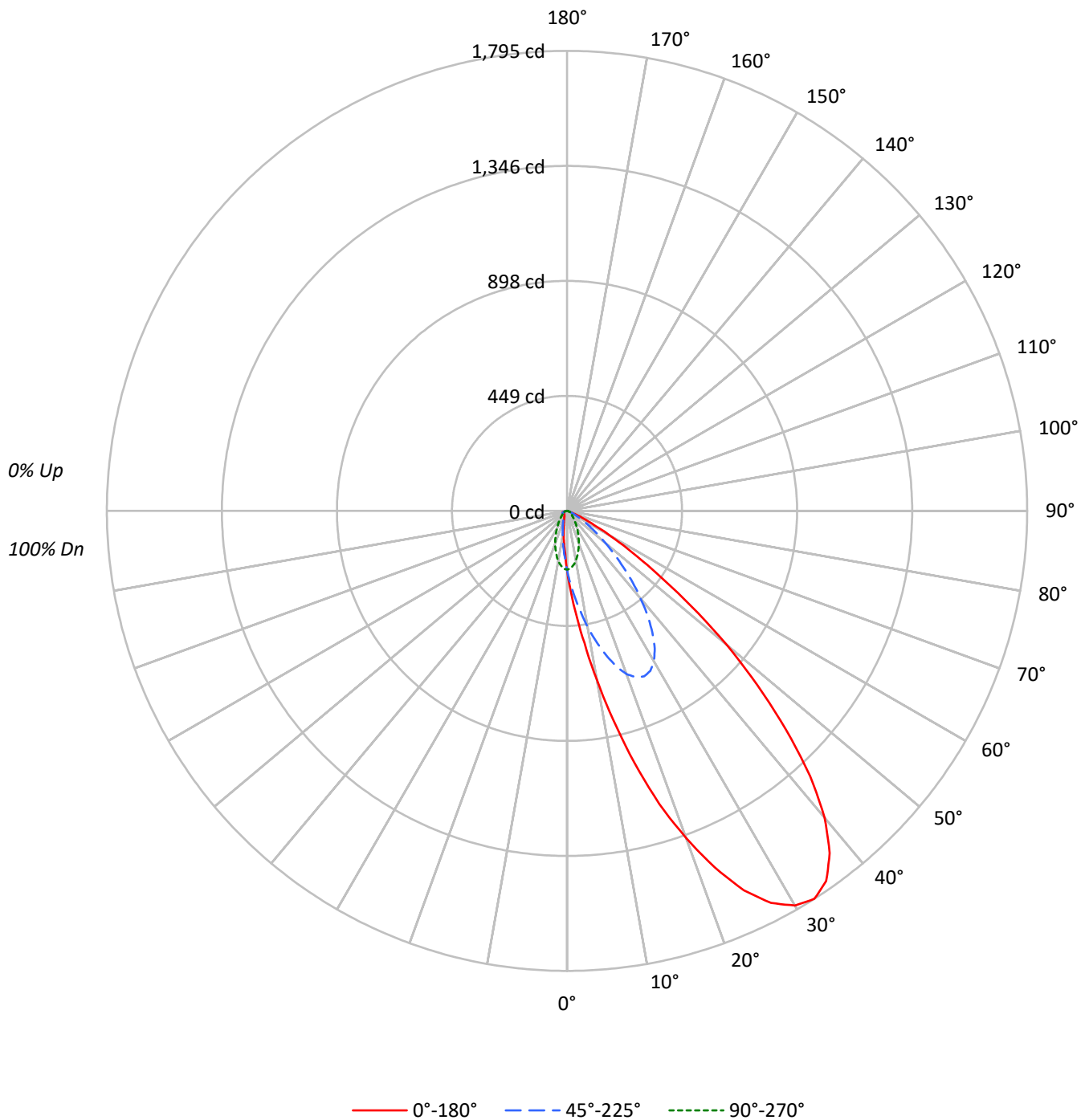
Lumens per Lamp: N/A
 Luminaire Lumens: 889.9 lumens
 Efficiency: N/A
 Efficacy: 68.5 lumens/watt
 Spacing Criteria (0/90/45): 2.36 / 0.72 / 1.42
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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	111	108	105	102	109	106	103	100	102	99	97		98	96	94		94
2	104	97	92	87	101	95	90	86	92	88	84		89	85	82		86
3	96	87	81	75	94	86	80	75	83	78	73		80	76	72		78
4	89	79	71	66	87	77	71	65	75	69	64		73	68	64		71
5	82	71	63	58	80	70	63	57	68	62	57		66	61	56		64
6	76	65	57	51	75	64	56	51	62	55	50		60	54	50		59
7	71	59	51	45	69	58	51	45	57	50	45		55	49	45		54
8	66	54	46	41	65	53	46	41	52	45	40		51	45	40		50
9	62	49	42	37	60	49	41	36	48	41	36		47	41	36		46
10	58	45	38	33	57	45	38	33	44	37	33		43	37	33		42

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	22223	22223	22223
5°	39219	21326	12486
10°	65819	19487	7456
15°	102178	16729	4764
20°	140041	13959	3330
25°	174594	11127	2480
30°	198880	8815	2148
35°	208462	6930	2034
40°	197609	5501	2175
45°	165472	4288	2356
50°	122468	3662	2894
55°	72896	3412	3412
60°	37995	3526	4108
65°	16229	3484	4401
70°	6005	3144	4872
75°	1497	2283	5315
80°	0	1116	4519
85°	0	2223	3335

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	24.4	2.7
10°-20°	97.6	11.0
20°-30°	194.9	21.9
30°-40°	246.6	27.7
40°-50°	196.5	22.1
50°-60°	90.0	10.1
60°-70°	28.9	3.2
70°-80°	9.1	1.0
80°-90°	1.9	0.2
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°	316.9	35.6
0°-40°	563.5	63.3
0°-60°	850.0	95.5
0°-90°	889.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	889.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	229	229	229	229	229	
5°	403	334	219	151	128	47
15°	1019	580	167	65	48	298
25°	1633	713	104	31	23	750
35°	1763	580	59	19	17	1083
45°	1208	309	31	17	17	923
55°	432	114	20	18	20	408
65°	71	30	15	18	19	84
75°	4	7	6	11	14	7
85°	0	1	2	3	3	0
90°	0	0	0	0	0	

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CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-35°-1000LM-3000K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	229.4	229.4	229.4	229.4	229.4	229.4	229.4	229.4	229.4	229.4	229.4
2.5°	306.3	306.3	303.2	302.2	297.2	298.2	281.0	252.7	226.4	201.1	184.0
5°	403.3	397.2	394.2	393.2	382.1	381.1	333.5	272.9	219.3	177.9	150.6
7.5°	519.5	519.5	509.4	505.4	486.2	484.1	391.2	291.1	210.2	155.7	122.3
10°	669.1	668.1	662.0	643.8	618.6	603.4	457.9	303.2	198.1	134.4	98.0
12.5°	835.9	833.9	823.8	798.5	760.1	743.9	519.5	310.3	182.9	115.2	79.8
15°	1018.8	1019.8	995.6	961.2	911.7	886.4	580.2	311.3	166.8	97.0	64.7
17.5°	1198.7	1191.7	1159.3	1116.9	1058.3	1028.9	634.8	307.3	150.6	82.9	53.6
20°	1358.4	1354.4	1318.0	1270.5	1188.6	1154.3	677.2	297.2	135.4	69.7	44.5
22.5°	1505.0	1496.9	1459.5	1395.8	1312.0	1266.5	702.5	281.0	119.3	59.6	37.4
25°	1633.4	1613.2	1572.7	1498.9	1401.9	1349.4	712.6	261.8	104.1	50.5	31.3
27.5°	1724.3	1706.1	1653.6	1574.7	1465.6	1406.0	703.5	238.5	90.0	43.5	27.3
30°	1777.9	1759.7	1703.1	1617.2	1497.9	1432.2	678.2	215.3	78.8	37.4	24.3
32.5°	1795.1	1774.9	1717.3	1622.3	1496.9	1427.2	636.8	189.0	67.7	32.3	21.2
35°	1762.7	1744.6	1683.9	1586.9	1456.5	1384.7	580.2	163.7	58.6	28.3	19.2
37.5°	1682.9	1665.7	1606.1	1513.1	1384.7	1314.0	517.5	139.5	49.5	25.3	18.2
40°	1562.6	1546.4	1490.9	1395.8	1275.6	1211.9	446.8	118.3	43.5	23.2	18.2
42.5°	1403.9	1380.7	1336.2	1256.4	1144.2	1075.4	380.0	98.0	36.4	21.2	17.2
45°	1207.8	1198.7	1151.2	1079.5	975.4	917.8	309.3	80.9	31.3	19.2	17.2
47.5°	1007.7	993.6	959.2	896.5	801.5	750.0	249.7	65.7	28.3	18.2	17.2
50°	812.6	788.4	757.1	700.4	626.7	577.1	196.1	53.6	24.3	18.2	17.2
52.5°	607.5	595.3	561.0	522.6	463.9	422.5	151.6	43.5	22.2	18.2	18.2
55°	431.6	426.5	403.3	368.9	324.5	300.2	114.2	35.4	20.2	18.2	18.2
57.5°	298.2	296.1	271.9	245.6	217.3	202.1	83.9	29.3	18.2	17.2	19.2
60°	196.1	191.0	179.9	161.7	142.5	132.4	59.6	24.3	18.2	17.2	19.2
62.5°	120.3	116.2	109.2	102.1	90.0	83.9	42.5	21.2	16.2	16.2	18.2
65°	70.8	69.7	65.7	60.6	55.6	53.6	30.3	18.2	15.2	15.2	18.2
67.5°	41.4	39.4	38.4	36.4	33.4	32.3	22.2	15.2	13.1	14.2	17.2
70°	21.2	21.2	21.2	20.2	20.2	19.2	16.2	12.1	11.1	13.1	15.2
72.5°	11.1	10.1	10.1	10.1	10.1	11.1	11.1	9.1	8.1	10.1	13.1
75°	4.0	4.0	4.0	5.1	5.1	5.1	7.1	6.1	6.1	8.1	11.1
77.5°	1.0	1.0	1.0	1.0	1.0	2.0	4.0	3.0	4.0	6.1	9.1
80°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0	2.0	4.0	6.1
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0	2.0	3.0	4.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.0	2.0	3.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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CANDELA DISTRIBUTION (continued):

	157.5°	180°
0°	229.4	229.4
2.5°	172.8	167.8
5°	133.4	128.4
7.5°	103.1	98.0
10°	80.9	75.8
12.5°	63.7	58.6
15°	50.5	47.5
17.5°	41.4	38.4
20°	34.4	32.3
22.5°	29.3	27.3
25°	25.3	23.2
27.5°	22.2	21.2
30°	20.2	19.2
32.5°	18.2	18.2
35°	17.2	17.2
37.5°	17.2	17.2
40°	17.2	17.2
42.5°	17.2	17.2
45°	17.2	17.2
47.5°	18.2	18.2
50°	18.2	19.2
52.5°	19.2	20.2
55°	20.2	20.2
57.5°	20.2	20.2
60°	20.2	21.2
62.5°	20.2	20.2
65°	19.2	19.2
67.5°	18.2	19.2
70°	17.2	17.2
72.5°	15.2	15.2
75°	14.2	14.2
77.5°	11.1	12.1
80°	8.1	8.1
82.5°	6.1	6.1
85°	3.0	3.0
87.5°	2.0	1.0
90°	0.0	0.0

(END OF REPORT)