

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: P990921

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-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: P990921
 Test Lab: Cooper Lighting Solutions
 Issue Date: 5/13/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-1000LM-5000K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE WHITE TRIM
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 5000K CCT
 Ballast/Driver: -

Summary

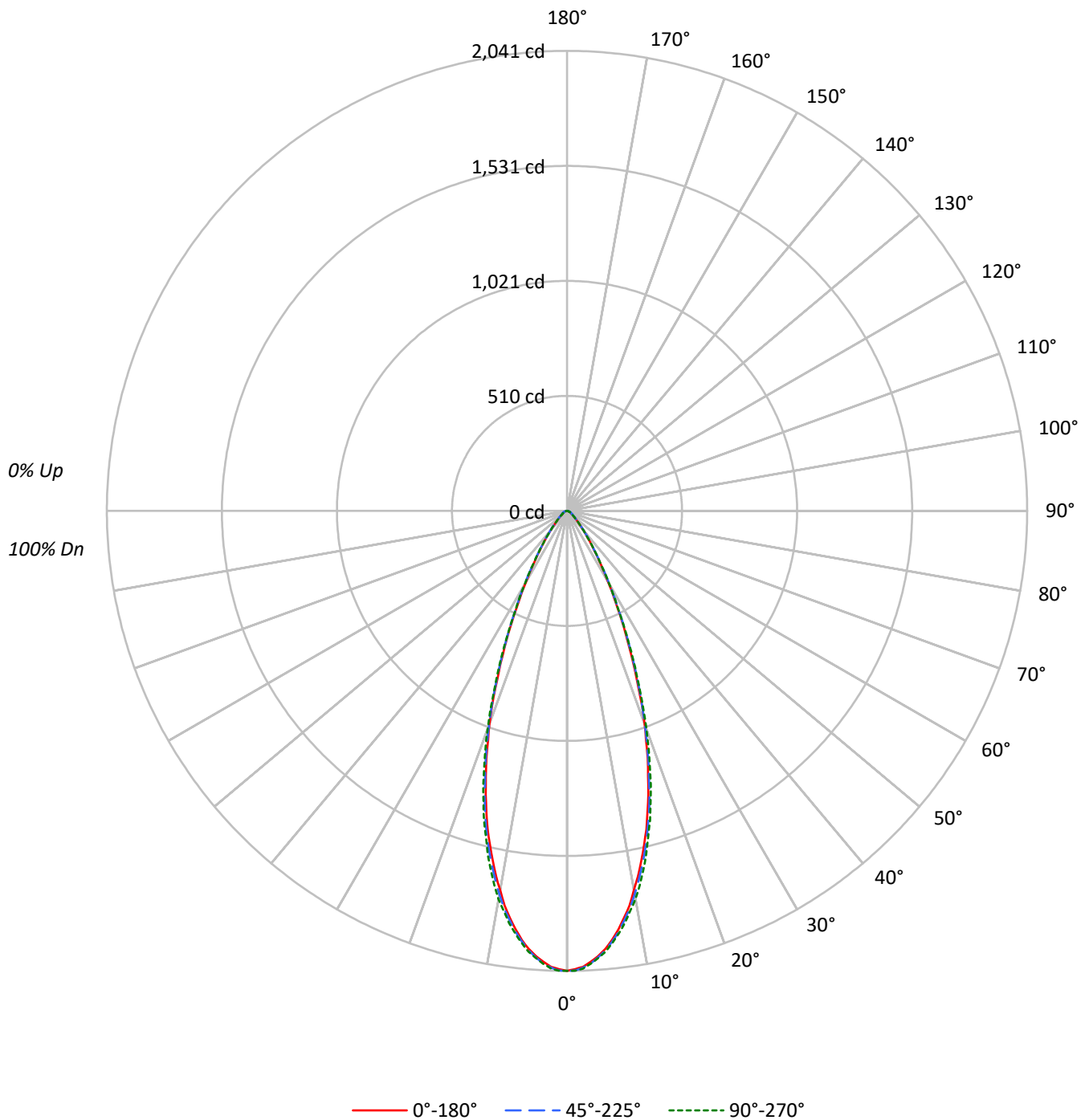
Lumens per Lamp: N/A
 Luminaire Lumens: 1100.7 lumens
 Efficiency: N/A
 Efficacy: 84.7 lumens/watt
 Spacing Criteria (0/90/45): 0.64 / 0.65 / 0.65
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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

TEST NUMBER: P990921
CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-1000LM-5000K

Luminous Intensity Polar Plot



TEST NUMBER: P990921

CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-1000LM-5000K

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	108	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	88	101	96	91	88	93	89	86		91	88	85		88
4	98	91	86	82	97	90	85	81	88	84	81		86	82	80		84
5	94	86	81	76	92	85	80	76	83	79	75		82	78	75		80
6	90	81	76	72	88	81	75	72	79	75	71		78	74	71		77
7	86	77	72	68	85	77	71	68	75	71	67		74	70	67		73
8	82	73	68	64	81	73	68	64	72	67	64		71	67	63		70
9	79	70	65	61	78	70	64	61	69	64	61		68	63	60		67
10	76	67	61	58	75	66	61	58	66	61	58		65	61	58		64

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	197694	197694	197694
5°	189736	190164	190903
10°	168055	169993	172039
15°	138454	140540	142626
20°	103897	104124	106258
25°	67886	68816	69639
30°	40472	41814	41814
35°	23653	24563	24563
40°	14518	14923	14518
45°	8987	9590	8987
50°	5923	6586	5923
55°	4425	5168	4425
60°	3817	4456	4030
65°	3507	4011	3759
70°	3399	4022	3399
75°	2470	3668	2470
80°	614	1841	614
85°	0	0	0

TEST NUMBER: P990921

CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-1000LM-5000K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	179.3	16.3
10°-20°	382.8	34.8
20°-30°	297.1	27.0
30°-40°	135.0	12.3
40°-50°	54.9	5.0
50°-60°	26.2	2.4
60°-70°	16.7	1.5
70°-80°	8.1	0.7
80°-90°	0.6	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°	859.2	78.1
0°-40°	994.3	90.3
0°-60°	1075.4	97.7
0°-90°	1100.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1100.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2041	2041	2041	2041	2041	
5°	1951	1947	1956	1958	1963	179
15°	1380	1384	1401	1414	1422	378
25°	635	637	644	646	652	293
35°	200	202	208	209	208	132
45°	66	68	70	68	66	53
55°	26	27	31	28	26	24
65°	15	16	18	18	16	16
75°	7	8	10	8	7	7
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P990921

CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-1000LM-5000K

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2040.7	2040.7	2040.7	2040.7	2040.7
1°	2033.1	2034.2	2039.6	2037.4	2040.7
2°	2024.3	2024.3	2027.6	2026.5	2032.0
3°	2003.5	2005.7	2010.1	2007.9	2012.3
4°	1979.5	1980.6	1986.1	1985.0	1988.2
5°	1951.1	1946.7	1955.5	1957.6	1963.1
6°	1913.9	1915.0	1920.5	1922.7	1927.0
7°	1870.2	1872.4	1880.0	1882.2	1887.7
8°	1822.1	1824.3	1831.9	1841.8	1846.2
9°	1772.9	1772.9	1784.9	1792.6	1795.9
10°	1708.4	1717.2	1728.1	1740.1	1748.9
11°	1650.5	1656.0	1668.0	1680.0	1692.0
12°	1586.0	1591.5	1604.6	1619.9	1627.5
13°	1519.3	1525.9	1541.2	1551.0	1563.1
14°	1454.8	1459.2	1472.3	1484.4	1487.6
15°	1380.5	1383.8	1401.3	1414.4	1422.1
16°	1308.4	1309.5	1325.9	1336.8	1345.5
17°	1229.7	1236.2	1243.9	1260.3	1270.1
18°	1158.6	1157.5	1170.7	1182.7	1189.2
19°	1074.5	1082.1	1089.8	1102.9	1110.5
20°	1007.8	1004.5	1010.0	1022.0	1030.7
22.5°	807.8	812.1	818.7	825.2	827.4
25°	635.1	637.2	643.8	646.0	651.5
27.5°	484.2	488.6	494.1	490.8	494.1
30°	361.8	364.0	373.8	372.7	373.8
32.5°	268.9	273.3	277.6	277.6	278.7
35°	200.0	202.2	207.7	208.8	207.7
37.5°	150.8	153.0	158.5	156.3	153.0
40°	114.8	114.8	118.0	118.0	114.8
42.5°	86.4	87.4	90.7	89.6	86.4
45°	65.6	67.8	70.0	67.8	65.6
47.5°	50.3	52.5	54.7	52.5	50.3
50°	39.3	41.5	43.7	41.5	39.3
52.5°	31.7	33.9	36.1	33.9	31.7
55°	26.2	27.3	30.6	28.4	26.2
57.5°	21.9	24.0	26.2	24.0	23.0
60°	19.7	20.8	23.0	20.8	20.8
62.5°	17.5	18.6	19.7	18.6	17.5
65°	15.3	16.4	17.5	17.5	16.4
67.5°	14.2	14.2	16.4	15.3	14.2
70°	12.0	12.0	14.2	13.1	12.0
72.5°	9.8	9.8	12.0	10.9	8.7
75°	6.6	7.7	9.8	7.7	6.6
77.5°	3.3	4.4	6.6	4.4	3.3
80°	1.1	2.2	3.3	2.2	1.1

TEST NUMBER: P990921

CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-1000LM-5000K

CANDELA DISTRIBUTION (continued):

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