

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: P990930

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDSL-1000LM-4000K**

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: P990930
 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-4000K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, METALLIC SILVER TRIM
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
 Ballast/Driver: -

Summary

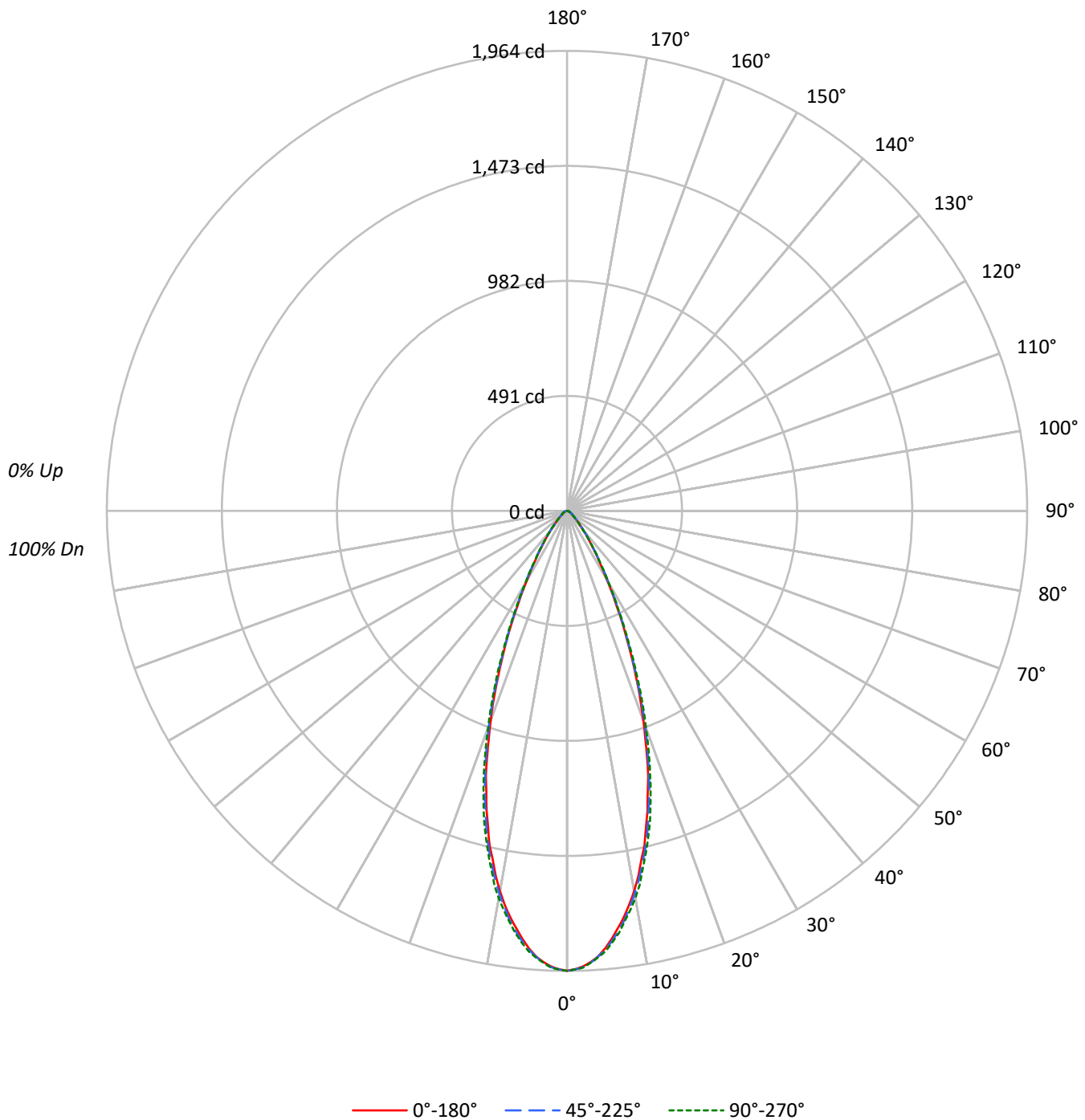
Lumens per Lamp: N/A
 Luminaire Lumens: 1053.3 lumens
 Efficiency: N/A
 Efficacy: 81.0 lumens/watt
 Spacing Criteria (0/90/45): 0.64 / 0.65 / 0.64
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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°	190234	190234	190234
5°	182267	182676	183502
10°	162133	163373	165134
15°	132918	134392	137140
20°	98237	100082	101608
25°	64754	65770	67009
30°	38234	39767	40002
35°	22884	23511	23629
40°	13696	14366	13696
45°	8645	9083	8508
50°	5546	6179	5712
55°	4087	4797	4256
60°	3468	4069	3662
65°	3370	3851	3622
70°	2974	3569	2974
75°	1984	3144	1984
80°	614	1172	614
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	172.4	16.4
10°-20°	367.8	34.9
20°-30°	284.5	27.0
30°-40°	129.2	12.3
40°-50°	52.1	4.9
50°-60°	24.6	2.3
60°-70°	15.6	1.5
70°-80°	7.0	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°	824.7	78.3
0°-40°	953.9	90.6
0°-60°	1030.6	97.8
0°-90°	1053.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1053.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1964	1964	1964	1964	1964	
5°	1874	1878	1878	1884	1887	171
15°	1325	1330	1340	1360	1367	362
25°	606	610	615	617	627	279
35°	194	195	199	200	200	126
45°	63	64	66	64	62	51
55°	24	26	28	26	25	23
65°	15	15	17	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°	1963.7	1963.7	1963.7	1963.7	1963.7
1°	1957.4	1958.5	1958.5	1959.5	1958.5
2°	1945.9	1949.0	1949.0	1950.1	1951.1
3°	1929.0	1931.1	1932.2	1935.3	1932.2
4°	1905.9	1906.9	1908.0	1912.2	1911.2
5°	1874.3	1878.5	1878.5	1883.8	1887.0
6°	1835.4	1844.9	1844.9	1852.3	1852.3
7°	1792.3	1800.7	1806.0	1811.2	1815.4
8°	1749.2	1757.6	1762.8	1766.0	1770.2
9°	1700.8	1705.0	1711.3	1720.8	1726.0
10°	1648.2	1653.5	1660.8	1670.3	1678.7
11°	1590.3	1597.7	1605.1	1614.5	1625.1
12°	1523.0	1534.6	1544.1	1558.8	1558.8
13°	1467.3	1467.3	1482.0	1495.7	1496.7
14°	1393.7	1401.0	1416.8	1426.3	1433.6
15°	1325.3	1330.5	1340.0	1360.0	1367.4
16°	1248.5	1259.0	1272.7	1290.6	1292.7
17°	1184.3	1188.6	1197.0	1211.7	1218.0
18°	1104.4	1109.7	1121.2	1136.0	1142.3
19°	1024.5	1033.9	1046.6	1059.2	1064.4
20°	952.9	964.5	970.8	980.3	985.6
22.5°	771.0	777.3	783.6	795.2	799.4
25°	605.8	610.1	615.3	617.4	626.9
27.5°	461.7	462.8	471.2	476.5	476.5
30°	341.8	349.2	355.5	356.6	357.6
32.5°	254.5	260.9	264.0	268.2	265.1
35°	193.5	194.6	198.8	199.8	199.8
37.5°	145.2	145.2	151.5	150.4	147.3
40°	108.3	109.4	113.6	112.5	108.3
42.5°	82.0	83.1	86.2	84.1	82.0
45°	63.1	64.2	66.3	64.2	62.1
47.5°	48.4	49.4	51.5	50.5	47.3
50°	36.8	38.9	41.0	40.0	37.9
52.5°	29.5	31.6	33.7	31.6	30.5
55°	24.2	26.3	28.4	26.3	25.2
57.5°	21.0	22.1	24.2	23.1	22.1
60°	17.9	18.9	21.0	20.0	18.9
62.5°	15.8	16.8	18.9	17.9	16.8
65°	14.7	14.7	16.8	15.8	15.8
67.5°	12.6	13.7	14.7	14.7	13.7
70°	10.5	11.6	12.6	12.6	10.5
72.5°	8.4	9.5	10.5	9.5	8.4
75°	5.3	6.3	8.4	6.3	5.3
77.5°	2.1	3.2	5.3	4.2	3.2
80°	1.1	1.1	2.1	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)