

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: P990926

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-35°-1000LM-5000K**

Issue Date: 5/13/2025

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P990926
 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-5000K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE WHITE TRIM 35° Tilt
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 5000K CCT
 Ballast/Driver: -

Summary

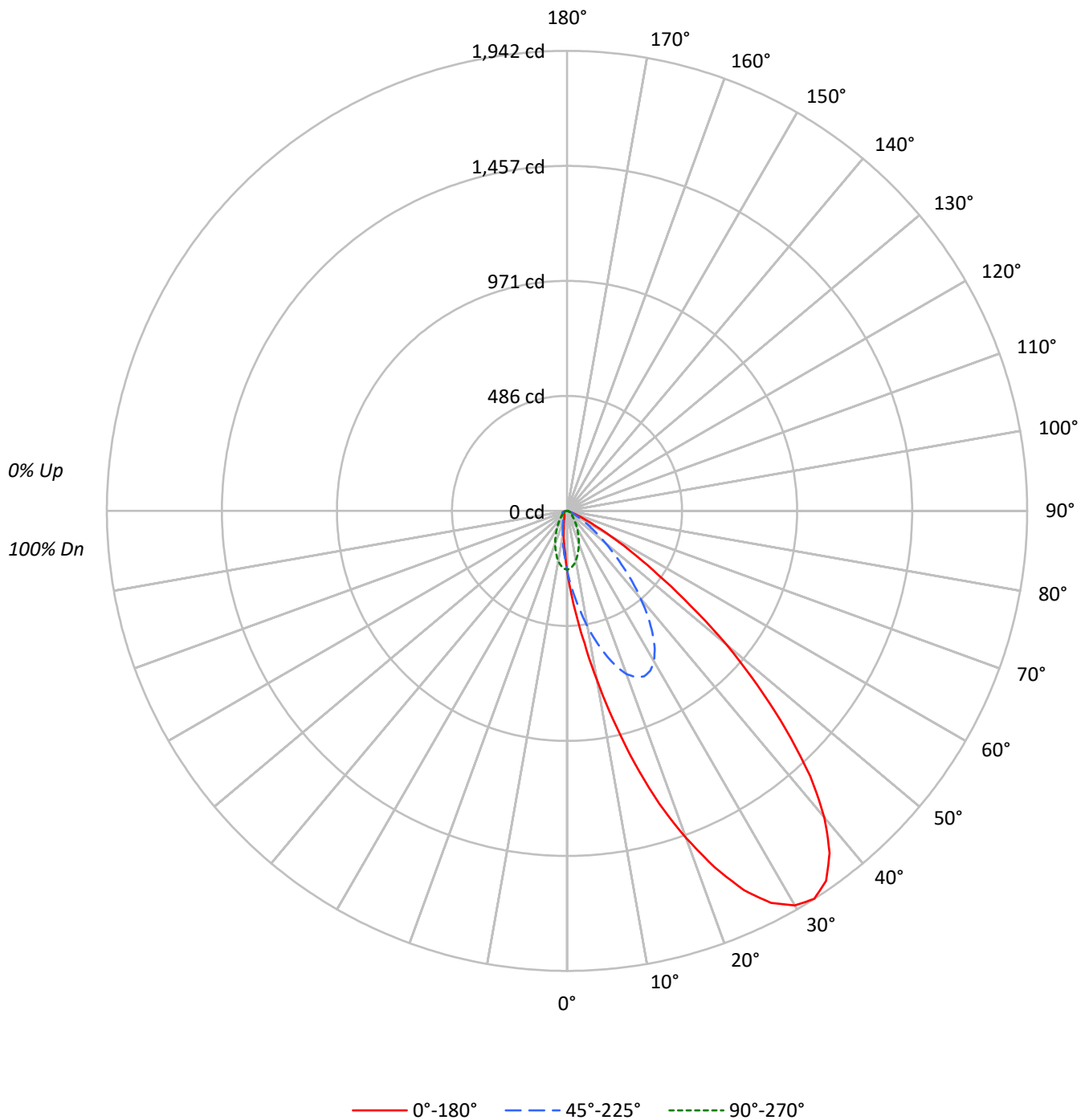
Lumens per Lamp: N/A
 Luminaire Lumens: 962.6 lumens
 Efficiency: N/A
 Efficacy: 74.0 lumens/watt
 Spacing Criteria (0/90/45): 2.36 / 0.72 / 1.42
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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°	24044	24044	24044
5°	42418	23067	13498
10°	71190	21081	8066
15°	110523	18093	5155
20°	151474	15103	3608
25°	188843	12036	2683
30°	215111	9542	2327
35°	225480	7498	2200
40°	213733	5944	2352
45°	178980	4644	2548
50°	132475	3949	3135
55°	78841	3699	3699
60°	41095	3817	4456
65°	17536	3759	4768
70°	6515	3399	5268
75°	1647	2470	5727
80°	0	1227	4854
85°	0	2445	3668

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	26.4	2.7
10°-20°	105.6	11.0
20°-30°	210.8	21.9
30°-40°	266.7	27.7
40°-50°	212.6	22.1
50°-60°	97.4	10.1
60°-70°	31.2	3.2
70°-80°	9.9	1.0
80°-90°	2.1	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°	342.8	35.6
0°-40°	609.4	63.3
0°-60°	919.4	95.5
0°-90°	962.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	962.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	248	248	248	248	248	
5°	436	361	237	163	139	50
15°	1102	628	180	70	51	323
25°	1767	771	113	34	25	811
35°	1907	628	63	21	19	1171
45°	1306	334	34	19	19	998
55°	467	124	22	20	22	441
65°	76	33	16	20	21	90
75°	4	8	7	12	15	8
85°	0	1	2	3	3	0
90°	0	0	0	0	0	

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CATALOG NUMBER: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-35°-1000LM-5000K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	248.2	248.2	248.2	248.2	248.2	248.2	248.2	248.2	248.2	248.2	248.2
2.5°	331.3	331.3	328.0	326.9	321.4	322.5	303.9	273.3	244.9	217.6	199.0
5°	436.2	429.6	426.4	425.3	413.2	412.2	360.8	295.2	237.2	192.4	162.9
7.5°	561.9	561.9	551.0	546.6	525.8	523.7	423.1	314.9	227.4	168.4	132.3
10°	723.7	722.6	716.1	696.4	669.1	652.7	495.2	328.0	214.3	145.4	106.0
12.5°	904.1	901.9	891.0	863.7	822.1	804.6	561.9	335.6	197.9	124.6	86.4
15°	1102.0	1103.1	1076.8	1039.7	986.1	958.8	627.5	336.7	180.4	105.0	70.0
17.5°	1296.6	1288.9	1253.9	1208.0	1144.6	1112.9	686.6	332.3	162.9	89.6	57.9
20°	1469.3	1464.9	1425.6	1374.2	1285.6	1248.5	732.5	321.4	146.5	75.4	48.1
22.5°	1627.8	1619.1	1578.6	1509.8	1419.0	1369.8	759.8	303.9	129.0	64.5	40.4
25°	1766.7	1744.8	1701.1	1621.3	1516.3	1459.5	770.7	283.1	112.6	54.7	33.9
27.5°	1865.1	1845.4	1788.5	1703.3	1585.2	1520.7	760.9	258.0	97.3	47.0	29.5
30°	1923.0	1903.3	1842.1	1749.2	1620.2	1549.1	733.6	232.9	85.3	40.4	26.2
32.5°	1941.6	1919.7	1857.4	1754.6	1619.1	1543.7	688.7	204.4	73.2	35.0	23.0
35°	1906.6	1886.9	1821.3	1716.4	1575.4	1497.7	627.5	177.1	63.4	30.6	20.8
37.5°	1820.2	1801.7	1737.2	1636.6	1497.7	1421.2	559.7	150.9	53.6	27.3	19.7
40°	1690.1	1672.7	1612.5	1509.8	1379.7	1310.8	483.2	127.9	47.0	25.1	19.7
42.5°	1518.5	1493.4	1445.3	1358.9	1237.5	1163.2	411.1	106.0	39.4	23.0	18.6
45°	1306.4	1296.6	1245.2	1167.6	1055.0	992.7	334.5	87.5	33.9	20.8	18.6
47.5°	1090.0	1074.7	1037.5	969.7	866.9	811.2	270.0	71.1	30.6	19.7	18.6
50°	879.0	852.7	818.8	757.6	677.8	624.2	212.1	57.9	26.2	19.7	18.6
52.5°	657.0	643.9	606.7	565.2	501.8	457.0	164.0	47.0	24.1	19.7	19.7
55°	466.8	461.3	436.2	399.0	350.9	324.7	123.5	38.3	21.9	19.7	19.7
57.5°	322.5	320.3	294.1	265.7	235.0	218.6	90.7	31.7	19.7	18.6	20.8
60°	212.1	206.6	194.6	174.9	154.1	143.2	64.5	26.2	19.7	18.6	20.8
62.5°	130.1	125.7	118.1	110.4	97.3	90.7	45.9	23.0	17.5	17.5	19.7
65°	76.5	75.4	71.1	65.6	60.1	57.9	32.8	19.7	16.4	16.4	19.7
67.5°	44.8	42.6	41.5	39.4	36.1	35.0	24.1	16.4	14.2	15.3	18.6
70°	23.0	23.0	23.0	21.9	21.9	20.8	17.5	13.1	12.0	14.2	16.4
72.5°	12.0	10.9	10.9	10.9	10.9	12.0	12.0	9.8	8.7	10.9	14.2
75°	4.4	4.4	4.4	5.5	5.5	5.5	7.7	6.6	6.6	8.7	12.0
77.5°	1.1	1.1	1.1	1.1	1.1	2.2	4.4	3.3	4.4	6.6	9.8
80°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.2	2.2	4.4	6.6
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.2	2.2	3.3	4.4
85°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	2.2	2.2	3.3
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1
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°	248.2	248.2
2.5°	186.9	181.5
5°	144.3	138.8
7.5°	111.5	106.0
10°	87.5	82.0
12.5°	68.9	63.4
15°	54.7	51.4
17.5°	44.8	41.5
20°	37.2	35.0
22.5°	31.7	29.5
25°	27.3	25.1
27.5°	24.1	23.0
30°	21.9	20.8
32.5°	19.7	19.7
35°	18.6	18.6
37.5°	18.6	18.6
40°	18.6	18.6
42.5°	18.6	18.6
45°	18.6	18.6
47.5°	19.7	19.7
50°	19.7	20.8
52.5°	20.8	21.9
55°	21.9	21.9
57.5°	21.9	21.9
60°	21.9	23.0
62.5°	21.9	21.9
65°	20.8	20.8
67.5°	19.7	20.8
70°	18.6	18.6
72.5°	16.4	16.4
75°	15.3	15.3
77.5°	12.0	13.1
80°	8.7	8.7
82.5°	6.6	6.6
85°	3.3	3.3
87.5°	2.2	1.1
90°	0.0	0.0

(END OF REPORT)