

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: P990924

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-35°-1000LM-3500K**

Issue Date: 5/13/2025

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P990924
 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-3500K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE WHITE TRIM 35° Tilt
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT
 Ballast/Driver: -

Summary

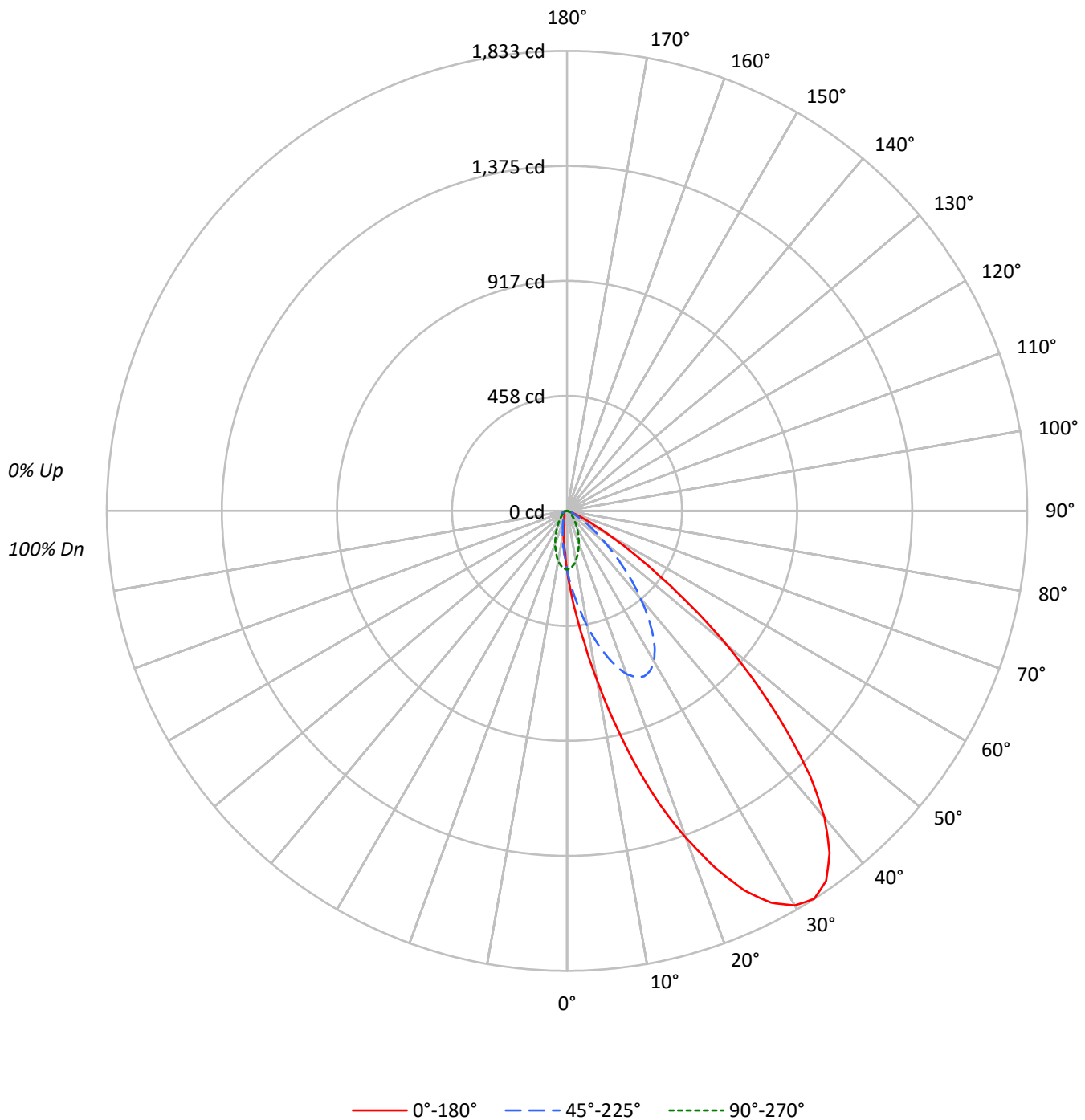
Lumens per Lamp: N/A
 Luminaire Lumens: 908.5 lumens
 Efficiency: N/A
 Efficacy: 69.9 lumens/watt
 Spacing Criteria (0/90/45): 2.36 / 0.72 / 1.42
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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°	22688	22688	22688
5°	40036	21773	12739
10°	67196	19890	7614
15°	104315	17080	4864
20°	142969	14258	3402
25°	178239	11362	2533
30°	203041	9005	2192
35°	212826	7072	2070
40°	201745	5615	2213
45°	168938	4384	2398
50°	125030	3738	2954
55°	74416	3479	3479
60°	38789	3604	4204
65°	16550	3553	4493
70°	6146	3229	4957
75°	1535	2321	5390
80°	0	1172	4630
85°	0	2334	3446

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	24.9	2.7
10°-20°	99.6	11.0
20°-30°	199.0	21.9
30°-40°	251.7	27.7
40°-50°	200.6	22.1
50°-60°	91.9	10.1
60°-70°	29.5	3.2
70°-80°	9.3	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°	323.5	35.6
0°-40°	575.2	63.3
0°-60°	867.8	95.5
0°-90°	908.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	908.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	234	234	234	234	234	
5°	412	340	224	154	131	47
15°	1040	592	170	66	48	305
25°	1668	728	106	32	24	766
35°	1800	592	60	20	18	1105
45°	1233	316	32	18	18	942
55°	441	117	21	19	21	416
65°	72	31	16	19	20	85
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-3500K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	234.2	234.2	234.2	234.2	234.2	234.2	234.2	234.2	234.2	234.2	234.2
2.5°	312.7	312.7	309.6	308.5	303.4	304.4	286.9	258.0	231.1	205.3	187.8
5°	411.7	405.5	402.4	401.4	390.0	389.0	340.5	278.6	223.9	181.6	153.7
7.5°	530.4	530.4	520.1	515.9	496.3	494.3	399.3	297.2	214.6	158.9	124.9
10°	683.1	682.1	675.9	657.3	631.5	616.0	467.4	309.6	202.2	137.2	100.1
12.5°	853.4	851.3	841.0	815.2	776.0	759.5	530.4	316.8	186.8	117.6	81.5
15°	1040.1	1041.2	1016.4	981.3	930.8	905.0	592.3	317.8	170.3	99.1	66.0
17.5°	1223.8	1216.6	1183.6	1140.2	1080.4	1050.4	648.0	313.7	153.7	84.6	54.7
20°	1386.8	1382.7	1345.6	1297.1	1213.5	1178.4	691.4	303.4	138.3	71.2	45.4
22.5°	1536.5	1528.2	1490.0	1425.0	1339.4	1292.9	717.2	286.9	121.8	60.9	38.2
25°	1667.5	1646.9	1605.6	1530.3	1431.2	1377.6	727.5	267.3	106.3	51.6	32.0
27.5°	1760.4	1741.8	1688.1	1607.7	1496.2	1435.3	718.2	243.5	91.8	44.4	27.9
30°	1815.1	1796.5	1738.7	1651.0	1529.2	1462.2	692.4	219.8	80.5	38.2	24.8
32.5°	1832.6	1812.0	1753.2	1656.2	1528.2	1457.0	650.1	193.0	69.1	33.0	21.7
35°	1799.6	1781.0	1719.1	1620.0	1486.9	1413.7	592.3	167.2	59.8	28.9	19.6
37.5°	1718.1	1700.5	1639.7	1544.7	1413.7	1341.4	528.3	142.4	50.6	25.8	18.6
40°	1595.3	1578.8	1522.0	1425.0	1302.2	1237.2	456.1	120.7	44.4	23.7	18.6
42.5°	1433.3	1409.5	1364.1	1282.6	1168.1	1097.9	388.0	100.1	37.1	21.7	17.5
45°	1233.1	1223.8	1175.3	1102.0	995.8	936.9	315.8	82.6	32.0	19.6	17.5
47.5°	1028.8	1014.3	979.3	915.3	818.3	765.7	254.9	67.1	28.9	18.6	17.5
50°	829.6	804.9	772.9	715.1	639.8	589.2	200.2	54.7	24.8	18.6	17.5
52.5°	620.2	607.8	572.7	533.5	473.6	431.3	154.8	44.4	22.7	18.6	18.6
55°	440.6	435.5	411.7	376.6	331.2	306.5	116.6	36.1	20.6	18.6	18.6
57.5°	304.4	302.3	277.6	250.7	221.9	206.4	85.6	29.9	18.6	17.5	19.6
60°	200.2	195.0	183.7	165.1	145.5	135.2	60.9	24.8	18.6	17.5	19.6
62.5°	122.8	118.7	111.4	104.2	91.8	85.6	43.3	21.7	16.5	16.5	18.6
65°	72.2	71.2	67.1	61.9	56.8	54.7	31.0	18.6	15.5	15.5	18.6
67.5°	42.3	40.2	39.2	37.1	34.1	33.0	22.7	15.5	13.4	14.4	17.5
70°	21.7	21.7	21.7	20.6	20.6	19.6	16.5	12.4	11.4	13.4	15.5
72.5°	11.4	10.3	10.3	10.3	10.3	11.4	11.4	9.3	8.3	10.3	13.4
75°	4.1	4.1	4.1	5.2	5.2	5.2	7.2	6.2	6.2	8.3	11.4
77.5°	1.0	1.0	1.0	1.0	1.0	2.1	4.1	3.1	4.1	6.2	9.3
80°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.1	2.1	4.1	6.2
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.1	2.1	3.1	4.1
85°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.1	2.1	3.1
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°	234.2	234.2
2.5°	176.5	171.3
5°	136.2	131.0
7.5°	105.3	100.1
10°	82.6	77.4
12.5°	65.0	59.8
15°	51.6	48.5
17.5°	42.3	39.2
20°	35.1	33.0
22.5°	29.9	27.9
25°	25.8	23.7
27.5°	22.7	21.7
30°	20.6	19.6
32.5°	18.6	18.6
35°	17.5	17.5
37.5°	17.5	17.5
40°	17.5	17.5
42.5°	17.5	17.5
45°	17.5	17.5
47.5°	18.6	18.6
50°	18.6	19.6
52.5°	19.6	20.6
55°	20.6	20.6
57.5°	20.6	20.6
60°	20.6	21.7
62.5°	20.6	20.6
65°	19.6	19.6
67.5°	18.6	19.6
70°	17.5	17.5
72.5°	15.5	15.5
75°	14.4	14.4
77.5°	11.4	12.4
80°	8.3	8.3
82.5°	6.2	6.2
85°	3.1	3.1
87.5°	2.1	1.0
90°	0.0	0.0

(END OF REPORT)