

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: P990922

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDMW-35°-1000LM-2700K**

Issue Date: 5/13/2025

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P990922
 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-2700K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE WHITE TRIM 35° Tilt
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 2700K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 880.6 lumens
 Efficiency: N/A
 Efficacy: 67.7 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

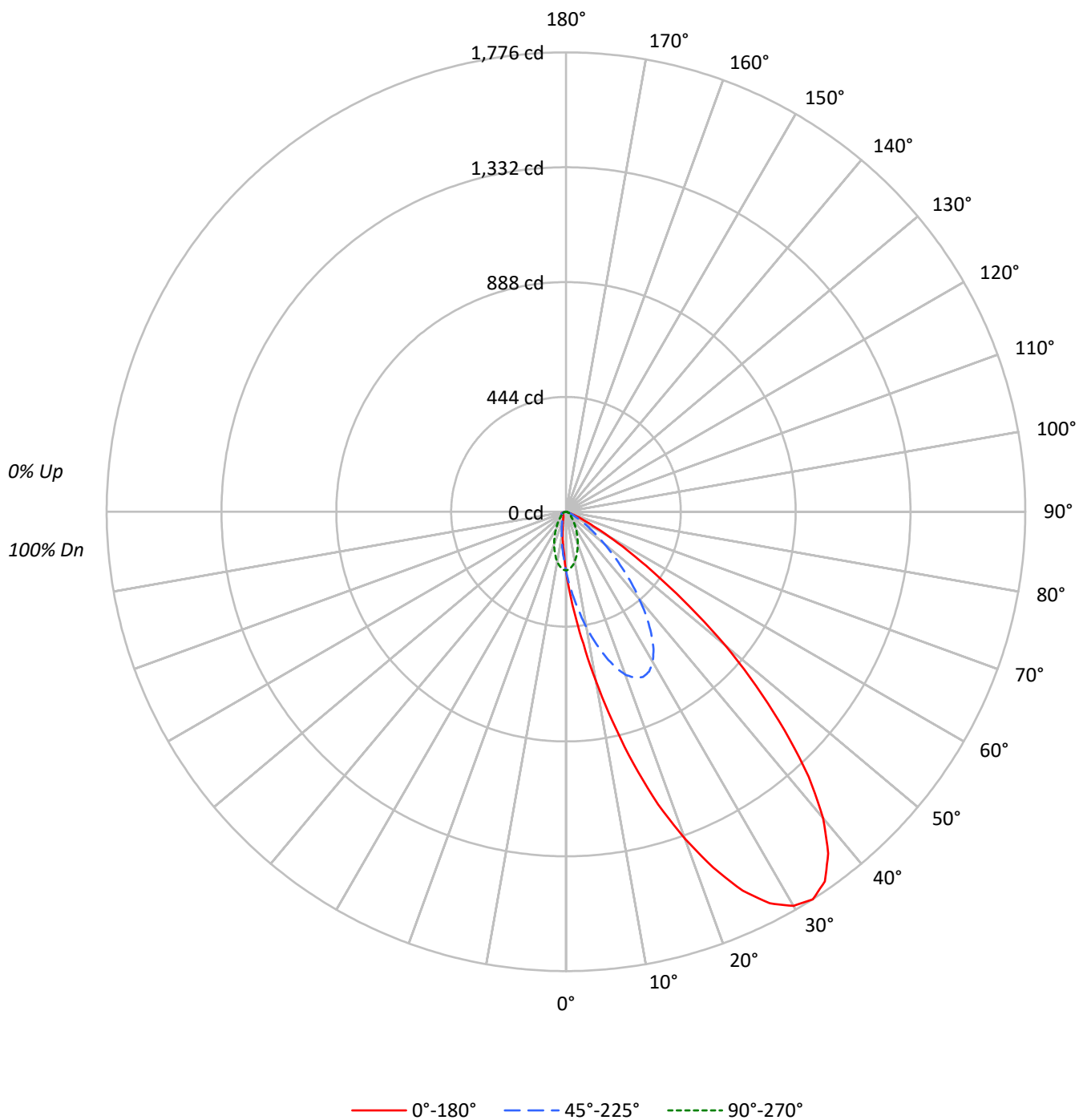
Input Watts (W): 13
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT

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°	21991	21991	21991
5°	38811	21102	12350
10°	65131	19280	7378
15°	101115	16548	4714
20°	138587	13814	3299
25°	172767	11010	2458
30°	196799	8725	2125
35°	206286	6859	2010
40°	195548	5438	2150
45°	163745	4247	2329
50°	121187	3617	2864
55°	72136	3378	3378
60°	37588	3488	4069
65°	16046	3438	4355
70°	5948	3116	4815
75°	1497	2246	5240
80°	0	1116	4463
85°	0	2223	3335

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	24.1	2.7
10°-20°	96.6	11.0
20°-30°	192.9	21.9
30°-40°	244.0	27.7
40°-50°	194.5	22.1
50°-60°	89.1	10.1
60°-70°	28.5	3.2
70°-80°	9.0	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°	313.6	35.6
0°-40°	557.6	63.3
0°-60°	841.1	95.5
0°-90°	880.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	880.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	227	227	227	227	227	
5°	399	330	217	149	127	46
15°	1008	574	165	64	47	295
25°	1616	705	103	31	23	742
35°	1744	574	58	19	17	1071
45°	1195	306	31	17	17	913
55°	427	113	20	18	20	403
65°	70	30	15	18	19	83
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-2700K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	227.0	227.0	227.0	227.0	227.0	227.0	227.0	227.0	227.0	227.0	227.0
2.5°	303.1	303.1	300.1	299.1	294.1	295.1	278.1	250.0	224.0	199.0	182.0
5°	399.1	393.1	390.1	389.1	378.1	377.1	330.1	270.1	217.0	176.0	149.0
7.5°	514.1	514.1	504.1	500.1	481.1	479.1	387.1	288.1	208.0	154.0	121.0
10°	662.1	661.1	655.1	637.1	612.1	597.1	453.1	300.1	196.0	133.0	97.0
12.5°	827.2	825.2	815.2	790.1	752.1	736.1	514.1	307.1	181.0	114.0	79.0
15°	1008.2	1009.2	985.2	951.2	902.2	877.2	574.1	308.1	165.0	96.0	64.0
17.5°	1186.2	1179.2	1147.2	1105.2	1047.2	1018.2	628.1	304.1	149.0	82.0	53.0
20°	1344.3	1340.2	1304.2	1257.2	1176.2	1142.2	670.1	294.1	134.0	69.0	44.0
22.5°	1489.3	1481.3	1444.3	1381.3	1298.2	1253.2	695.1	278.1	118.0	59.0	37.0
25°	1616.3	1596.3	1556.3	1483.3	1387.3	1335.2	705.1	259.0	103.0	50.0	31.0
27.5°	1706.3	1688.3	1636.3	1558.3	1450.3	1391.3	696.1	236.0	89.0	43.0	27.0
30°	1759.3	1741.3	1685.3	1600.3	1482.3	1417.3	671.1	213.0	78.0	37.0	24.0
32.5°	1776.3	1756.3	1699.3	1605.3	1481.3	1412.3	630.1	187.0	67.0	32.0	21.0
35°	1744.3	1726.3	1666.3	1570.3	1441.3	1370.3	574.1	162.0	58.0	28.0	19.0
37.5°	1665.3	1648.3	1589.3	1497.3	1370.3	1300.2	512.1	138.0	49.0	25.0	18.0
40°	1546.3	1530.3	1475.3	1381.3	1262.2	1199.2	442.1	117.0	43.0	23.0	18.0
42.5°	1389.3	1366.3	1322.2	1243.2	1132.2	1064.2	376.1	97.0	36.0	21.0	17.0
45°	1195.2	1186.2	1139.2	1068.2	965.2	908.2	306.1	80.0	31.0	19.0	17.0
47.5°	997.2	983.2	949.2	887.2	793.1	742.1	247.0	65.0	28.0	18.0	17.0
50°	804.1	780.1	749.1	693.1	620.1	571.1	194.0	53.0	24.0	18.0	17.0
52.5°	601.1	589.1	555.1	517.1	459.1	418.1	150.0	43.0	22.0	18.0	18.0
55°	427.1	422.1	399.1	365.1	321.1	297.1	113.0	35.0	20.0	18.0	18.0
57.5°	295.1	293.1	269.1	243.0	215.0	200.0	83.0	29.0	18.0	17.0	19.0
60°	194.0	189.0	178.0	160.0	141.0	131.0	59.0	24.0	18.0	17.0	19.0
62.5°	119.0	115.0	108.0	101.0	89.0	83.0	42.0	21.0	16.0	16.0	18.0
65°	70.0	69.0	65.0	60.0	55.0	53.0	30.0	18.0	15.0	15.0	18.0
67.5°	41.0	39.0	38.0	36.0	33.0	32.0	22.0	15.0	13.0	14.0	17.0
70°	21.0	21.0	21.0	20.0	20.0	19.0	16.0	12.0	11.0	13.0	15.0
72.5°	11.0	10.0	10.0	10.0	10.0	11.0	11.0	9.0	8.0	10.0	13.0
75°	4.0	4.0	4.0	5.0	5.0	5.0	7.0	6.0	6.0	8.0	11.0
77.5°	1.0	1.0	1.0	1.0	1.0	2.0	4.0	3.0	4.0	6.0	9.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0	2.0	4.0	6.0
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°	227.0	227.0
2.5°	171.0	166.0
5°	132.0	127.0
7.5°	102.0	97.0
10°	80.0	75.0
12.5°	63.0	58.0
15°	50.0	47.0
17.5°	41.0	38.0
20°	34.0	32.0
22.5°	29.0	27.0
25°	25.0	23.0
27.5°	22.0	21.0
30°	20.0	19.0
32.5°	18.0	18.0
35°	17.0	17.0
37.5°	17.0	17.0
40°	17.0	17.0
42.5°	17.0	17.0
45°	17.0	17.0
47.5°	18.0	18.0
50°	18.0	19.0
52.5°	19.0	20.0
55°	20.0	20.0
57.5°	20.0	20.0
60°	20.0	21.0
62.5°	20.0	20.0
65°	19.0	19.0
67.5°	18.0	19.0
70°	17.0	17.0
72.5°	15.0	15.0
75°	14.0	14.0
77.5°	11.0	12.0
80°	8.0	8.0
82.5°	6.0	6.0
85°	3.0	3.0
87.5°	2.0	1.0
90°	0.0	0.0

(END OF REPORT)