

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: P990749

Luminaire Tested: **ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-3500K**

Issue Date: 5/13/2025

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P990749
 Test Lab: Cooper Lighting Solutions
 Issue Date: 5/13/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-3500K
 Description: 3IN ROUND ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE WHITE TRIM 30° Tilt
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT
 Ballast/Driver: -

Summary

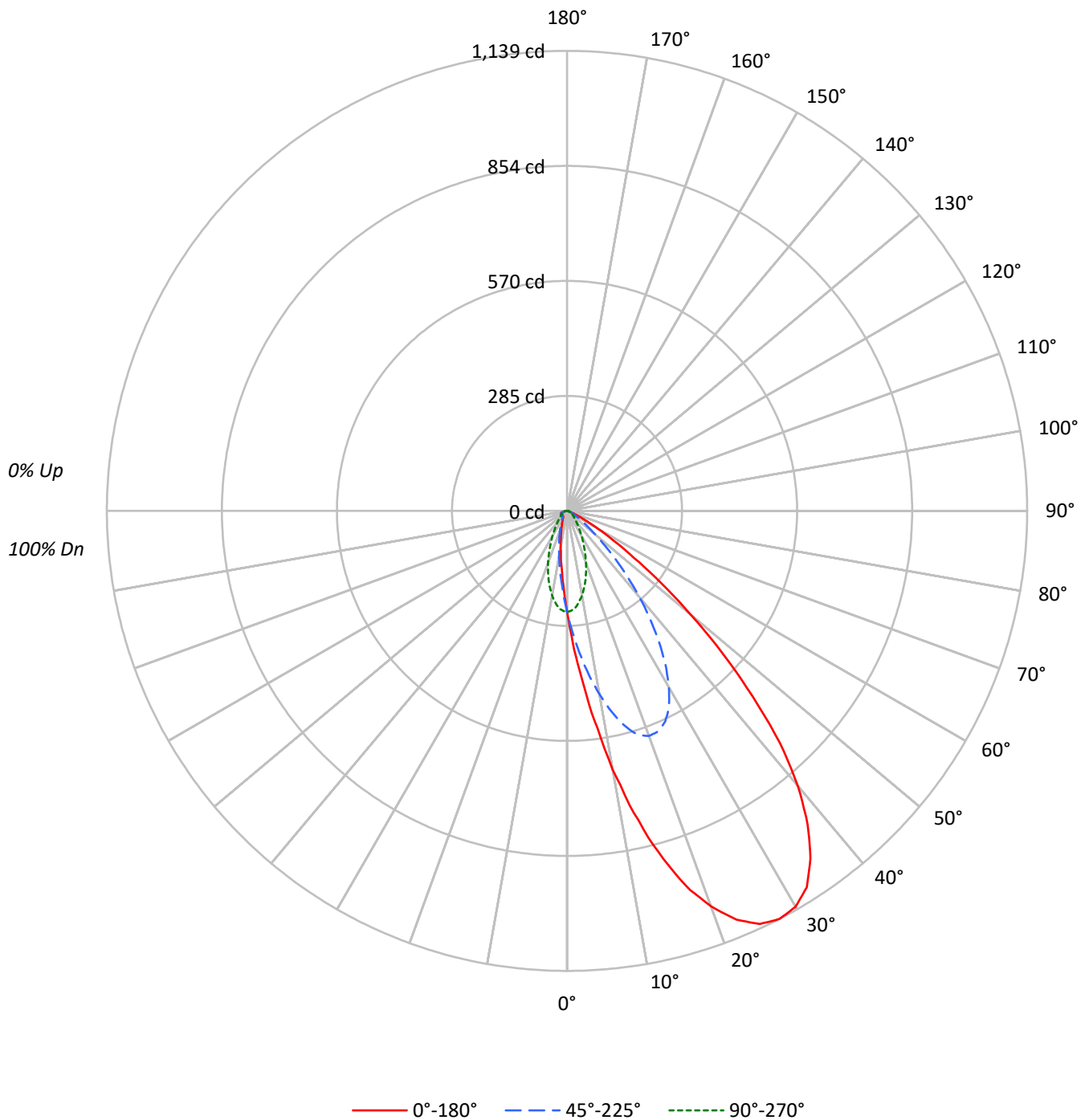
Lumens per Lamp: N/A
 Luminaire Lumens: 597.7 lumens
 Efficiency: N/A
 Efficacy: 61.6 lumens/watt
 Spacing Criteria (0/90/45): 1.97 / 0.68 / 1.21
 Luminous Opening: Circular (Dia: 0.25' x H: 0')
 CIE Type: Direct

Input Watts (W): 9.7
 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



TEST NUMBER: P990749

CATALOG NUMBER: ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-3500K

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	112	108	105	102	109	106	103	101	102	100	97		98	96	94		95
2	104	98	93	88	102	96	91	87	93	89	85		90	86	84		87
3	97	89	83	77	95	87	82	77	85	80	76		82	78	74		80
4	90	81	74	68	88	80	73	68	77	72	67		75	70	66		73
5	84	74	66	61	82	73	66	61	71	65	60		69	64	59		67
6	79	68	60	55	77	67	60	54	65	59	54		63	58	54		62
7	74	62	55	49	72	61	54	49	60	54	49		59	53	49		57
8	69	57	50	45	68	57	50	45	55	49	44		54	48	44		53
9	65	53	46	41	63	52	45	41	51	45	41		50	45	40		49
10	61	49	42	37	60	49	42	37	48	42	37		47	41	37		46

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	54842	54842	54842
5°	91525	52762	32335
10°	144776	47338	20196
15°	198480	39978	12781
20°	243154	32086	8751
25°	273040	24461	6315
30°	286525	18205	5013
35°	281184	13679	4470
40°	254420	10448	4466
45°	201323	8094	5179
50°	136149	7096	5697
55°	77302	6384	6767
60°	39295	5921	7763
65°	17849	5967	8665
70°	8014	6027	9361
75°	3558	5338	9743
80°	3915	5304	7956
85°	7799	7799	10567

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	25.8	4.3
10°-20°	89.7	15.0
20°-30°	146.7	24.5
30°-40°	155.9	26.1
40°-50°	106.7	17.8
50°-60°	44.6	7.5
60°-70°	17.4	2.9
70°-80°	7.5	1.3
80°-90°	3.4	0.6
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°	262.2	43.9
0°-40°	418.1	70.0
0°-60°	569.4	95.3
0°-90°	597.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	597.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	250	250	250	250	250	
5°	416	352	240	169	147	47
15°	874	550	176	75	56	251
25°	1128	575	101	35	26	516
35°	1050	397	51	20	17	648
45°	649	171	26	16	17	497
55°	202	49	17	17	18	194
65°	34	15	12	16	17	40
75°	4	5	6	9	12	6
85°	3	3	3	4	4	3
90°	0	0	0	0	0	

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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	250.1	250.1	250.1	250.1	250.1	250.1	250.1	250.1	250.1	250.1	250.1
1°	278.2	280.3	275.1	274.1	272.0	268.8	263.6	261.5	256.3	251.1	249.0
2°	307.4	309.5	305.3	302.2	297.0	288.6	280.3	272.0	262.6	253.2	248.0
3°	344.9	339.7	338.7	331.4	322.0	308.4	293.9	281.3	266.8	253.2	245.9
4°	378.3	376.2	371.0	362.6	346.0	330.3	310.5	291.8	272.0	252.2	243.8
5°	415.8	416.8	406.4	391.8	373.0	352.2	325.1	300.1	274.1	251.1	239.7
6°	457.4	452.2	444.9	430.4	405.3	374.1	341.8	308.4	277.2	249.0	235.5
7°	504.3	497.0	487.7	465.8	435.6	396.0	356.4	316.8	279.3	245.9	230.3
8°	543.9	546.0	533.5	502.3	466.8	417.9	369.9	322.0	280.3	242.8	224.0
9°	596.0	592.9	576.2	539.8	498.1	438.7	383.5	328.2	281.3	238.6	218.8
10°	650.2	639.8	619.0	577.3	525.2	459.5	396.0	332.4	279.3	232.4	212.6
11°	690.9	692.9	667.9	617.9	555.4	480.4	407.4	336.6	277.2	227.2	206.3
12°	746.1	739.8	710.7	657.5	584.6	500.2	415.8	339.7	274.1	222.0	198.0
13°	785.7	783.6	754.4	694.0	612.7	517.9	425.1	339.7	269.9	213.6	191.7
14°	834.7	827.4	795.1	729.4	637.7	534.6	431.4	339.7	263.6	206.3	183.4
15°	874.3	869.0	831.5	762.8	662.7	550.2	437.6	338.7	258.4	199.0	176.1
16°	913.9	907.6	871.1	793.0	685.7	563.7	440.8	335.5	253.2	191.7	167.8
17°	952.4	940.9	901.3	820.1	707.5	575.2	442.9	331.4	247.0	183.4	160.5
18°	986.8	976.4	933.7	845.1	724.2	583.5	443.9	327.2	239.7	176.1	152.1
19°	1012.8	1005.6	957.6	863.8	738.8	588.7	442.9	320.9	231.3	167.8	144.8
20°	1042.0	1031.6	982.6	883.6	751.3	592.9	440.8	314.7	224.0	160.5	137.5
22.5°	1095.2	1086.8	1026.4	917.0	766.9	590.8	425.1	292.8	200.1	139.6	117.7
25°	1128.5	1117.0	1050.4	929.5	763.8	575.2	400.1	266.8	176.1	120.9	101.1
27.5°	1138.9	1125.4	1055.6	921.1	743.0	547.1	366.8	236.5	153.2	103.2	85.4
30°	1131.6	1118.1	1041.0	893.0	708.6	504.3	329.3	205.3	131.3	86.5	71.9
32.5°	1104.5	1090.0	1005.6	851.3	661.7	454.3	283.4	175.1	110.5	72.9	60.4
35°	1050.4	1037.9	950.3	794.0	600.2	397.0	242.8	146.9	92.7	61.5	51.1
37.5°	978.5	964.9	877.4	720.0	526.2	338.7	201.1	120.9	76.1	51.1	42.7
40°	888.8	876.3	791.9	634.6	448.1	279.3	163.6	98.0	62.5	42.7	36.5
42.5°	780.5	770.1	687.7	534.6	367.8	222.0	130.3	79.2	51.1	36.5	31.3
45°	649.2	635.6	558.5	426.2	287.6	170.9	101.1	63.6	41.7	30.2	26.1
47.5°	523.1	507.5	440.8	326.2	214.7	127.1	77.1	50.0	35.4	26.1	24.0
50°	399.1	385.5	328.2	239.7	153.2	92.7	58.4	39.6	29.2	22.9	20.8
52.5°	292.8	282.4	236.5	170.9	109.4	66.7	43.8	31.3	24.0	19.8	18.8
55°	202.2	195.9	163.6	116.7	75.0	49.0	33.3	25.0	19.8	17.7	16.7
57.5°	136.5	132.3	110.5	80.2	53.1	35.4	25.0	19.8	16.7	15.6	15.6
60°	89.6	85.4	71.9	53.1	36.5	26.1	19.8	16.7	14.6	14.6	13.5
62.5°	55.2	55.2	46.9	36.5	26.1	19.8	15.6	13.5	12.5	12.5	12.5
65°	34.4	33.3	30.2	24.0	17.7	14.6	12.5	11.5	11.5	11.5	11.5
67.5°	20.8	20.8	18.8	15.6	13.5	11.5	10.4	9.4	9.4	10.4	10.4
70°	12.5	12.5	11.5	10.4	9.4	8.3	8.3	8.3	8.3	8.3	9.4
72.5°	7.3	7.3	7.3	6.3	6.3	6.3	6.3	6.3	6.3	7.3	7.3
75°	4.2	4.2	4.2	4.2	4.2	5.2	4.2	5.2	5.2	6.3	6.3
77.5°	3.1	3.1	3.1	3.1	3.1	4.2	4.2	4.2	4.2	5.2	5.2
80°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	4.2	4.2	4.2	4.2

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CATALOG NUMBER: ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-3500K

CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
82.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	4.2	4.2	4.2
85°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
87.5°	2.1	2.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
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):

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	250.1	250.1	250.1	250.1	250.1	250.1	250.1	250.1	250.1	250.1
1°	245.9	242.8	237.6	234.5	232.4	228.2	228.2	223.0	224.0	224.0
2°	243.8	235.5	228.2	220.9	214.7	208.4	207.4	205.3	203.2	203.2
3°	238.6	227.2	215.7	206.3	199.0	191.7	188.6	183.4	182.4	180.3
4°	235.5	218.8	205.3	193.8	182.4	176.1	171.9	166.7	164.6	164.6
5°	229.2	210.5	193.8	181.3	168.8	161.5	155.3	151.1	148.0	146.9
6°	223.0	202.2	184.4	168.8	157.3	148.0	141.7	136.5	134.4	133.4
7°	216.7	192.8	174.0	157.3	144.8	134.4	128.2	124.0	121.9	123.0
8°	209.4	183.4	162.6	145.9	132.3	124.0	115.7	111.5	109.4	110.5
9°	203.2	175.1	153.2	136.5	123.0	113.6	106.3	102.1	100.0	99.0
10°	194.9	165.7	142.8	126.1	113.6	103.2	96.9	91.7	90.7	90.7
11°	187.6	156.3	133.4	116.7	104.2	93.8	88.6	84.4	82.3	82.3
12°	180.3	150.1	126.1	108.4	95.9	87.5	81.3	77.1	75.0	74.0
13°	170.9	140.7	116.7	101.1	87.5	79.2	74.0	69.8	67.7	67.7
14°	162.6	133.4	109.4	92.7	81.3	72.9	67.7	63.6	61.5	61.5
15°	155.3	125.0	102.1	86.5	75.0	67.7	61.5	58.4	56.3	56.3
16°	149.0	117.7	95.9	80.2	68.8	61.5	56.3	53.1	52.1	51.1
17°	139.6	109.4	88.6	74.0	63.6	56.3	52.1	47.9	47.9	47.9
18°	132.3	103.2	82.3	68.8	58.4	52.1	47.9	44.8	43.8	43.8
19°	125.0	96.9	77.1	63.6	54.2	47.9	43.8	41.7	40.6	39.6
20°	117.7	90.7	71.9	58.4	50.0	44.8	40.6	38.6	37.5	37.5
22.5°	101.1	76.1	59.4	49.0	40.6	36.5	33.3	32.3	31.3	30.2
25°	86.5	63.6	50.0	40.6	35.4	31.3	28.1	27.1	26.1	26.1
27.5°	71.9	53.1	41.7	34.4	29.2	26.1	24.0	22.9	22.9	22.9
30°	61.5	45.8	35.4	29.2	26.1	22.9	21.9	20.8	19.8	19.8
32.5°	51.1	38.6	30.2	26.1	21.9	20.8	18.8	18.8	17.7	17.7
35°	43.8	33.3	27.1	22.9	19.8	18.8	17.7	16.7	16.7	16.7
37.5°	36.5	28.1	22.9	19.8	17.7	16.7	16.7	16.7	15.6	15.6
40°	31.3	25.0	20.8	18.8	17.7	16.7	16.7	15.6	15.6	15.6
42.5°	27.1	21.9	18.8	17.7	16.7	16.7	15.6	15.6	15.6	15.6
45°	24.0	19.8	17.7	16.7	15.6	15.6	15.6	15.6	15.6	16.7
47.5°	21.9	18.8	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7
50°	19.8	17.7	16.7	15.6	16.7	16.7	16.7	16.7	16.7	16.7
52.5°	17.7	16.7	15.6	15.6	16.7	16.7	16.7	17.7	17.7	17.7
55°	16.7	15.6	15.6	15.6	16.7	16.7	17.7	17.7	17.7	17.7
57.5°	15.6	15.6	15.6	15.6	16.7	17.7	17.7	17.7	17.7	17.7
60°	13.5	14.6	14.6	15.6	16.7	16.7	17.7	17.7	17.7	17.7
62.5°	13.5	13.5	14.6	15.6	16.7	16.7	16.7	17.7	17.7	17.7
65°	11.5	12.5	13.5	14.6	15.6	15.6	16.7	16.7	16.7	16.7
67.5°	10.4	11.5	12.5	13.5	14.6	14.6	15.6	15.6	15.6	15.6
70°	9.4	10.4	11.5	12.5	13.5	13.5	14.6	14.6	14.6	14.6
72.5°	7.3	8.3	9.4	10.4	11.5	11.5	12.5	12.5	12.5	13.5
75°	6.3	7.3	7.3	8.3	9.4	9.4	10.4	10.4	10.4	11.5
77.5°	5.2	5.2	6.3	6.3	7.3	7.3	8.3	8.3	8.3	8.3
80°	4.2	4.2	4.2	5.2	5.2	5.2	5.2	6.3	5.2	6.3

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CANDELA DISTRIBUTION (continued):

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
82.5°	4.2	4.2	4.2	4.2	4.2	4.2	5.2	5.2	5.2	5.2
85°	3.1	3.1	4.2	3.1	4.2	4.2	4.2	4.2	4.2	4.2
87.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)