

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: P990748

Luminaire Tested: **ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-3000K**

Issue Date: 5/13/2025

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P990748
 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-3000K
 Description: 3IN ROUND ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE WHITE TRIM 30° Tilt
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT
 Ballast/Driver: -

Summary

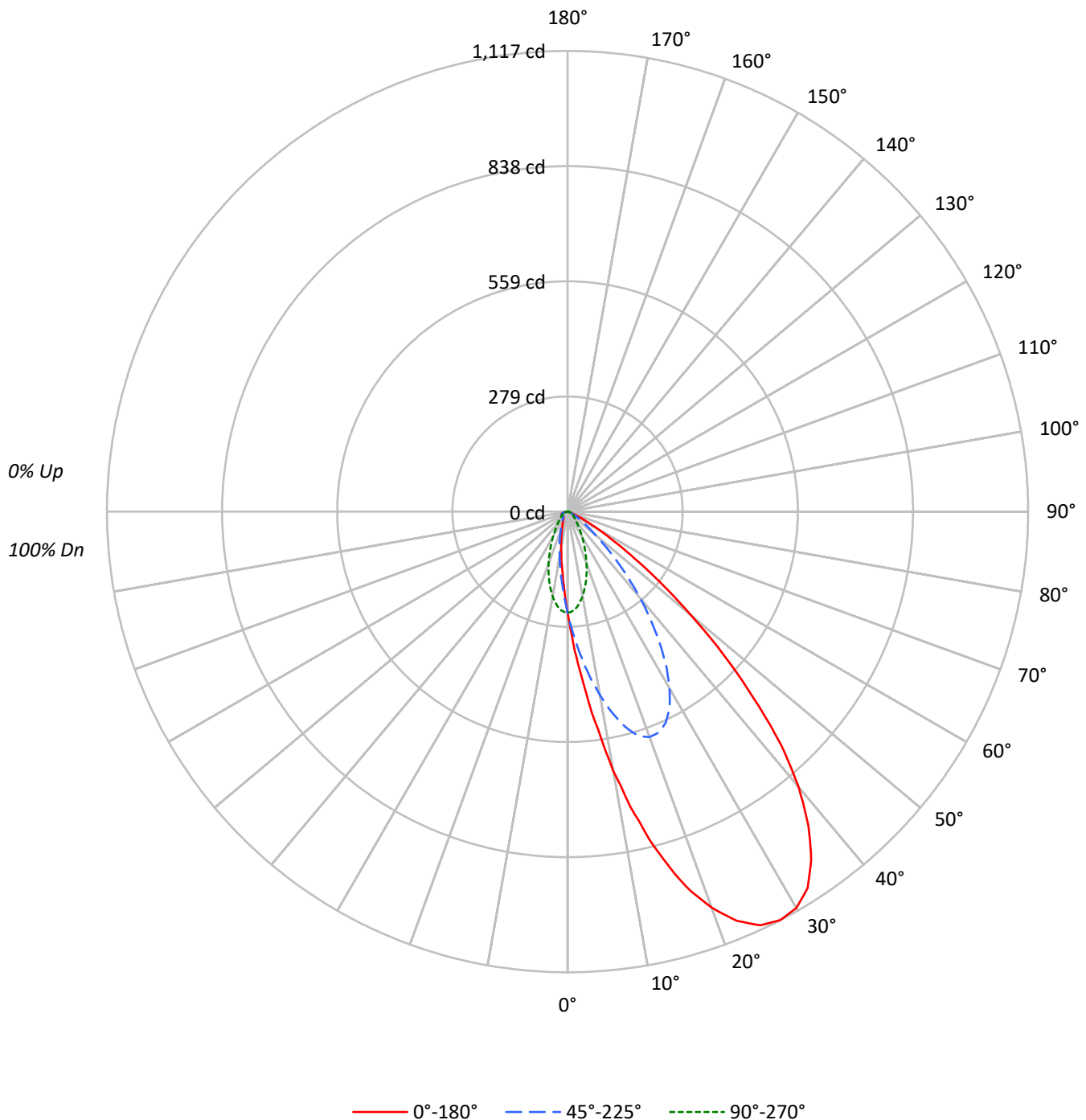
Lumens per Lamp: N/A
 Luminaire Lumens: 586.1 lumens
 Efficiency: N/A
 Efficacy: 60.4 lumens/watt
 Spacing Criteria (0/90/45): 1.97 / 0.68 / 1.21
 Luminous Opening: Circular (Dia: 0.25' x H: 0')
 CIE Type: Direct

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



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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	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°	53768	53768	53768
5°	89742	51728	31719
10°	141970	46403	19795
15°	194621	39206	12531
20°	238441	31479	8587
25°	267741	23977	6170
30°	280980	17851	4912
35°	275723	13411	4363
40°	249496	10248	4380
45°	197416	7908	5055
50°	133488	6959	5561
55°	75773	6232	6652
60°	38550	5833	7631
65°	17486	5811	8457
70°	7886	5898	9168
75°	3474	5168	9489
80°	3915	5177	7703
85°	7799	7799	10315

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	25.3	4.3
10°-20°	87.9	15.0
20°-30°	143.9	24.5
30°-40°	152.9	26.1
40°-50°	104.6	17.8
50°-60°	43.8	7.5
60°-70°	17.0	2.9
70°-80°	7.4	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°	257.1	43.9
0°-40°	410.0	70.0
0°-60°	558.3	95.3
0°-90°	586.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	586.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	245	245	245	245	245	
5°	408	345	235	166	144	46
15°	857	540	173	74	55	246
25°	1107	564	99	35	26	506
35°	1030	389	50	19	16	635
45°	637	168	26	15	16	488
55°	198	48	16	16	17	190
65°	34	14	11	15	16	39
75°	4	5	6	9	11	6
85°	3	3	3	4	4	3
90°	0	0	0	0	0	

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CATALOG NUMBER: ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-3000K

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	245.2	245.2	245.2	245.2	245.2	245.2	245.2	245.2	245.2	245.2	245.2
1°	272.8	274.9	269.8	268.7	266.7	263.6	258.5	256.5	251.4	246.3	244.2
2°	301.4	303.5	299.4	296.3	291.2	283.0	274.9	266.7	257.5	248.3	243.2
3°	338.2	333.1	332.1	324.9	315.7	302.5	288.1	275.9	261.6	248.3	241.1
4°	370.9	368.9	363.8	355.6	339.2	323.9	304.5	286.1	266.7	247.3	239.1
5°	407.7	408.7	398.5	384.2	365.8	345.4	318.8	294.3	268.7	246.3	235.0
6°	448.6	443.5	436.3	422.0	397.5	366.8	335.1	302.5	271.8	244.2	230.9
7°	494.5	487.4	478.2	456.7	427.1	388.3	349.5	310.6	273.8	241.1	225.8
8°	533.4	535.4	523.2	492.5	457.8	409.7	362.7	315.7	274.9	238.1	219.7
9°	584.5	581.4	565.1	529.3	488.4	430.2	376.0	321.9	275.9	234.0	214.6
10°	637.6	627.4	606.9	566.1	515.0	450.6	388.3	326.0	273.8	227.9	208.4
11°	677.4	679.5	655.0	605.9	544.6	471.0	399.5	330.0	271.8	222.8	202.3
12°	731.6	725.5	696.9	644.7	573.2	490.5	407.7	333.1	268.7	217.6	194.1
13°	770.4	768.4	739.8	680.5	600.8	507.8	416.9	333.1	264.6	209.5	188.0
14°	818.5	811.3	779.6	715.3	625.3	524.2	423.0	333.1	258.5	202.3	179.8
15°	857.3	852.2	815.4	748.0	649.9	539.5	429.2	332.1	253.4	195.2	172.7
16°	896.1	890.0	854.2	777.6	672.3	552.8	432.2	329.0	248.3	188.0	164.5
17°	933.9	922.7	883.8	804.1	693.8	564.0	434.3	324.9	242.2	179.8	157.4
18°	967.6	957.4	915.5	828.7	710.1	572.2	435.3	320.8	235.0	172.7	149.2
19°	993.2	986.0	939.0	847.1	724.4	577.3	434.3	314.7	226.8	164.5	142.0
20°	1021.8	1011.6	963.5	866.5	736.7	581.4	432.2	308.6	219.7	157.4	134.9
22.5°	1073.9	1065.7	1006.5	899.2	752.0	579.4	416.9	287.1	196.2	136.9	115.5
25°	1106.6	1095.4	1030.0	911.4	749.0	564.0	392.4	261.6	172.7	118.5	99.1
27.5°	1116.8	1103.5	1035.1	903.3	728.5	536.4	359.7	231.9	150.2	101.2	83.8
30°	1109.7	1096.4	1020.8	875.7	694.8	494.5	322.9	201.3	128.7	84.8	70.5
32.5°	1083.1	1068.8	986.0	834.8	648.8	445.5	277.9	171.7	108.3	71.5	59.3
35°	1030.0	1017.7	931.9	778.6	588.6	389.3	238.1	144.1	90.9	60.3	50.1
37.5°	959.5	946.2	860.3	706.1	516.0	332.1	197.2	118.5	74.6	50.1	41.9
40°	871.6	859.3	776.6	622.3	439.4	273.8	160.4	96.0	61.3	41.9	35.8
42.5°	765.3	755.1	674.4	524.2	360.7	217.6	127.7	77.7	50.1	35.8	30.7
45°	636.6	623.3	547.7	417.9	282.0	167.6	99.1	62.3	40.9	29.6	25.5
47.5°	512.9	497.6	432.2	319.8	210.5	124.7	75.6	49.0	34.7	25.5	23.5
50°	391.3	378.1	321.9	235.0	150.2	90.9	57.2	38.8	28.6	22.5	20.4
52.5°	287.1	276.9	231.9	167.6	107.3	65.4	42.9	30.7	23.5	19.4	18.4
55°	198.2	192.1	160.4	114.4	73.6	48.0	32.7	24.5	19.4	17.4	16.3
57.5°	133.9	129.8	108.3	78.7	52.1	34.7	24.5	19.4	16.3	15.3	15.3
60°	87.9	83.8	70.5	52.1	35.8	25.5	19.4	16.3	14.3	14.3	13.3
62.5°	54.2	54.2	46.0	35.8	25.5	19.4	15.3	13.3	12.3	12.3	12.3
65°	33.7	32.7	29.6	23.5	17.4	14.3	12.3	11.2	11.2	11.2	11.2
67.5°	20.4	20.4	18.4	15.3	13.3	11.2	10.2	9.2	9.2	10.2	10.2
70°	12.3	12.3	11.2	10.2	9.2	8.2	8.2	8.2	8.2	8.2	9.2
72.5°	7.2	7.2	7.2	6.1	6.1	6.1	6.1	6.1	6.1	7.2	7.2
75°	4.1	4.1	4.1	4.1	4.1	5.1	4.1	5.1	5.1	6.1	6.1
77.5°	3.1	3.1	3.1	3.1	3.1	4.1	4.1	4.1	4.1	5.1	5.1
80°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	4.1	4.1	4.1	4.1

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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	4.1	4.1	4.1
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°	2.0	2.0	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°	245.2	245.2	245.2	245.2	245.2	245.2	245.2	245.2	245.2	245.2
1°	241.1	238.1	233.0	229.9	227.9	223.8	223.8	218.7	219.7	219.7
2°	239.1	230.9	223.8	216.6	210.5	204.4	203.3	201.3	199.2	199.2
3°	234.0	222.8	211.5	202.3	195.2	188.0	184.9	179.8	178.8	176.8
4°	230.9	214.6	201.3	190.1	178.8	172.7	168.6	163.5	161.4	161.4
5°	224.8	206.4	190.1	177.8	165.5	158.4	152.2	148.2	145.1	144.1
6°	218.7	198.2	180.9	165.5	154.3	145.1	139.0	133.9	131.8	130.8
7°	212.5	189.0	170.6	154.3	142.0	131.8	125.7	121.6	119.5	120.6
8°	205.4	179.8	159.4	143.1	129.8	121.6	113.4	109.3	107.3	108.3
9°	199.2	171.7	150.2	133.9	120.6	111.4	104.2	100.1	98.1	97.1
10°	191.1	162.5	140.0	123.6	111.4	101.2	95.0	89.9	88.9	88.9
11°	183.9	153.3	130.8	114.4	102.2	92.0	86.9	82.8	80.7	80.7
12°	176.8	147.1	123.6	106.3	94.0	85.8	79.7	75.6	73.6	72.5
13°	167.6	137.9	114.4	99.1	85.8	77.7	72.5	68.5	66.4	66.4
14°	159.4	130.8	107.3	90.9	79.7	71.5	66.4	62.3	60.3	60.3
15°	152.2	122.6	100.1	84.8	73.6	66.4	60.3	57.2	55.2	55.2
16°	146.1	115.5	94.0	78.7	67.4	60.3	55.2	52.1	51.1	50.1
17°	136.9	107.3	86.9	72.5	62.3	55.2	51.1	47.0	47.0	47.0
18°	129.8	101.2	80.7	67.4	57.2	51.1	47.0	43.9	42.9	42.9
19°	122.6	95.0	75.6	62.3	53.1	47.0	42.9	40.9	39.8	38.8
20°	115.5	88.9	70.5	57.2	49.0	43.9	39.8	37.8	36.8	36.8
22.5°	99.1	74.6	58.2	48.0	39.8	35.8	32.7	31.7	30.7	29.6
25°	84.8	62.3	49.0	39.8	34.7	30.7	27.6	26.6	25.5	25.5
27.5°	70.5	52.1	40.9	33.7	28.6	25.5	23.5	22.5	22.5	22.5
30°	60.3	45.0	34.7	28.6	25.5	22.5	21.5	20.4	19.4	19.4
32.5°	50.1	37.8	29.6	25.5	21.5	20.4	18.4	18.4	17.4	17.4
35°	42.9	32.7	26.6	22.5	19.4	18.4	17.4	16.3	16.3	16.3
37.5°	35.8	27.6	22.5	19.4	17.4	16.3	16.3	16.3	15.3	15.3
40°	30.7	24.5	20.4	18.4	17.4	16.3	16.3	15.3	15.3	15.3
42.5°	26.6	21.5	18.4	17.4	16.3	16.3	15.3	15.3	15.3	15.3
45°	23.5	19.4	17.4	16.3	15.3	15.3	15.3	15.3	15.3	16.3
47.5°	21.5	18.4	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3
50°	19.4	17.4	16.3	15.3	16.3	16.3	16.3	16.3	16.3	16.3
52.5°	17.4	16.3	15.3	15.3	16.3	16.3	16.3	17.4	17.4	17.4
55°	16.3	15.3	15.3	15.3	16.3	16.3	17.4	17.4	17.4	17.4
57.5°	15.3	15.3	15.3	15.3	16.3	17.4	17.4	17.4	17.4	17.4
60°	13.3	14.3	14.3	15.3	16.3	16.3	17.4	17.4	17.4	17.4
62.5°	13.3	13.3	14.3	15.3	16.3	16.3	16.3	17.4	17.4	17.4
65°	11.2	12.3	13.3	14.3	15.3	15.3	16.3	16.3	16.3	16.3
67.5°	10.2	11.2	12.3	13.3	14.3	14.3	15.3	15.3	15.3	15.3
70°	9.2	10.2	11.2	12.3	13.3	13.3	14.3	14.3	14.3	14.3
72.5°	7.2	8.2	9.2	10.2	11.2	11.2	12.3	12.3	12.3	13.3
75°	6.1	7.2	7.2	8.2	9.2	9.2	10.2	10.2	10.2	11.2
77.5°	5.1	5.1	6.1	6.1	7.2	7.2	8.2	8.2	8.2	8.2
80°	4.1	4.1	4.1	5.1	5.1	5.1	5.1	6.1	5.1	6.1

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CANDELA DISTRIBUTION (continued):

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
82.5°	4.1	4.1	4.1	4.1	4.1	4.1	5.1	5.1	5.1	5.1
85°	3.1	3.1	4.1	3.1	4.1	4.1	4.1	4.1	4.1	4.1
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)