

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: P990750

Luminaire Tested: **ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-4000K**

Issue Date: 5/13/2025

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P990750
 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-4000K
 Description: 3IN ROUND ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE WHITE TRIM 30° Tilt
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
 Ballast/Driver: -

Summary

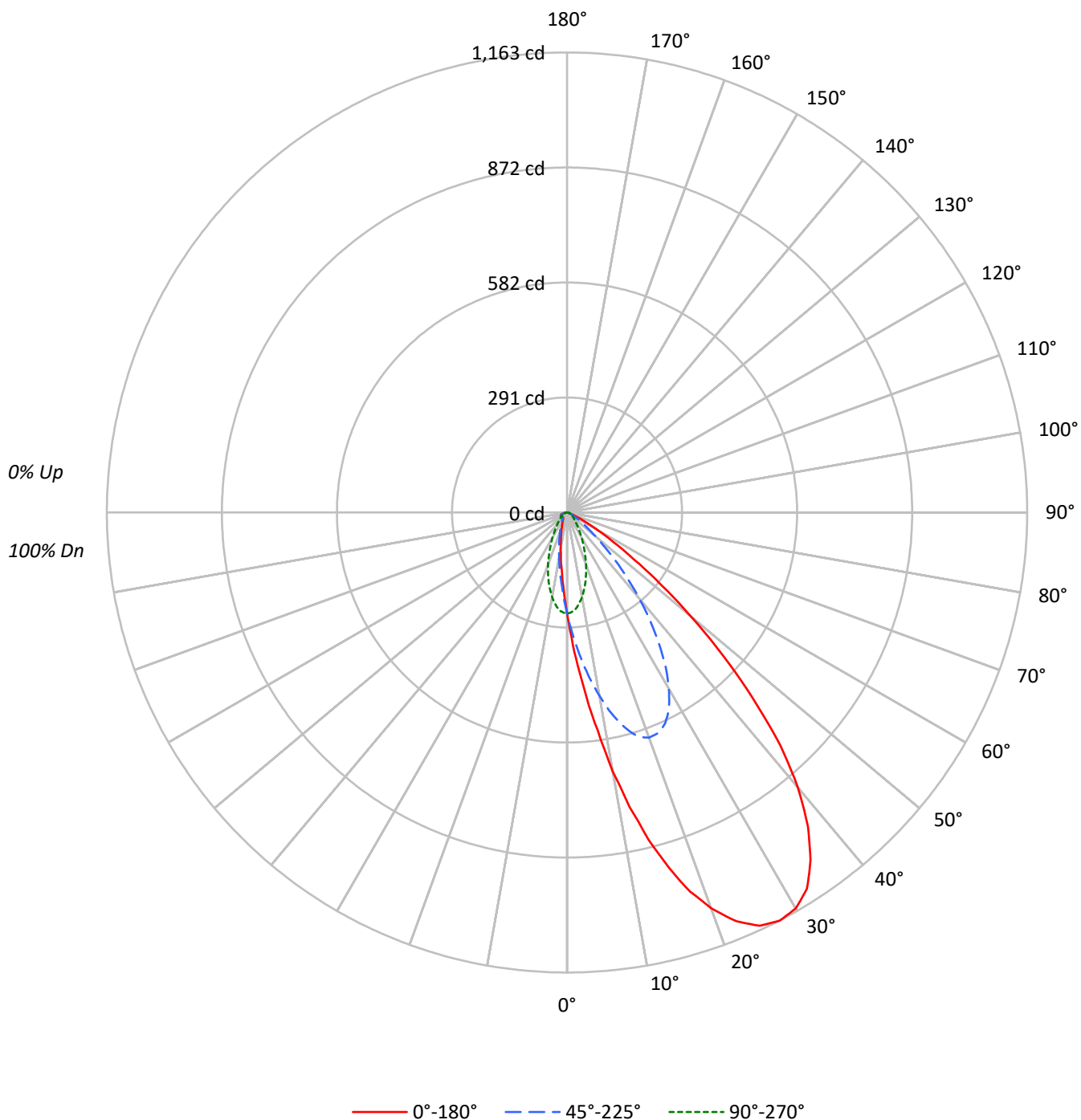
Lumens per Lamp: N/A
 Luminaire Lumens: 610.5 lumens
 Efficiency: N/A
 Efficacy: 62.9 lumens/watt
 Spacing Criteria (0/90/45): 1.97 / 0.68 / 1.21
 Luminous Opening: Circular (Dia: 0.25' x H: 0')
 CIE Type: Direct

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: P990750

CATALOG NUMBER: ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-4000K

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°	56026	56026	56026
5°	93484	53885	33040
10°	147893	48340	20619
15°	202725	40840	13053
20°	248382	32786	8937
25°	278895	24969	6436
30°	292678	18585	5115
35°	287207	13974	4551
40°	259887	10677	4580
45°	205634	8249	5272
50°	139083	7266	5799
55°	78946	6499	6920
60°	40128	6052	7938
65°	18212	6071	8821
70°	8207	6155	9553
75°	3643	5422	9913
80°	4041	5430	8082
85°	8051	8051	10819

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	26.4	4.3
10°-20°	91.6	15.0
20°-30°	149.8	24.5
30°-40°	159.3	26.1
40°-50°	108.9	17.8
50°-60°	45.6	7.5
60°-70°	17.7	2.9
70°-80°	7.7	1.3
80°-90°	3.5	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°	267.8	43.9
0°-40°	427.1	69.9
0°-60°	581.6	95.3
0°-90°	610.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	610.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	256	256	256	256	256	
5°	425	360	245	172	150	48
15°	893	562	180	77	58	257
25°	1153	588	103	36	27	527
35°	1073	406	52	20	17	662
45°	663	175	27	16	17	508
55°	206	50	17	17	18	198
65°	35	15	12	16	17	40
75°	4	5	6	10	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°	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5
1°	284.2	286.3	281.0	279.9	277.8	274.6	269.3	267.2	261.8	256.5	254.4
2°	314.0	316.1	311.9	308.7	303.3	294.8	286.3	277.8	268.2	258.6	253.3
3°	352.3	347.0	345.9	338.5	328.9	315.1	300.2	287.4	272.5	258.6	251.2
4°	386.4	384.2	378.9	370.4	353.4	337.4	317.2	298.0	277.8	257.6	249.1
5°	424.7	425.8	415.1	400.2	381.0	359.8	332.1	306.5	279.9	256.5	244.8
6°	467.3	461.9	454.5	439.6	414.0	382.1	349.1	315.1	283.1	254.4	240.6
7°	515.2	507.7	498.1	475.8	444.9	404.5	364.0	323.6	285.3	251.2	235.2
8°	555.6	557.7	545.0	513.0	476.8	426.8	377.9	328.9	286.3	248.0	228.8
9°	608.8	605.6	588.6	551.4	508.8	448.1	391.7	335.3	287.4	243.7	223.5
10°	664.2	653.5	632.2	589.7	536.4	469.4	404.5	339.5	285.3	237.4	217.1
11°	705.7	707.8	682.3	631.2	567.3	490.7	416.2	343.8	283.1	232.0	210.7
12°	762.1	755.7	725.9	671.6	597.1	510.9	424.7	347.0	279.9	226.7	202.2
13°	802.5	800.4	770.6	708.9	625.9	529.0	434.3	347.0	275.7	218.2	195.8
14°	852.6	845.1	812.1	745.1	651.4	546.0	440.7	347.0	269.3	210.7	187.3
15°	893.0	887.7	849.4	779.1	676.9	562.0	447.0	345.9	264.0	203.3	179.9
16°	933.5	927.1	889.8	810.0	700.4	575.8	450.2	342.7	258.6	195.8	171.4
17°	972.8	961.1	920.7	837.7	722.7	587.5	452.4	338.5	252.3	187.3	163.9
18°	1008.0	997.3	953.7	863.2	739.7	596.1	453.4	334.2	244.8	179.9	155.4
19°	1034.6	1027.1	978.2	882.4	754.6	601.4	452.4	327.8	236.3	171.4	147.9
20°	1064.4	1053.7	1003.7	902.6	767.4	605.6	450.2	321.4	228.8	163.9	140.5
22.5°	1118.7	1110.2	1048.4	936.7	783.4	603.5	434.3	299.1	204.4	142.6	120.3
25°	1152.7	1141.0	1072.9	949.4	780.2	587.5	408.7	272.5	179.9	123.5	103.2
27.5°	1163.4	1149.5	1078.2	940.9	758.9	558.8	374.7	241.6	156.5	105.4	87.3
30°	1155.9	1142.1	1063.3	912.2	723.8	515.2	336.3	209.7	134.1	88.3	73.4
32.5°	1128.2	1113.3	1027.1	869.6	675.9	464.1	289.5	178.8	112.8	74.5	61.7
35°	1072.9	1060.1	970.7	811.1	613.1	405.5	248.0	150.1	94.7	62.8	52.2
37.5°	999.5	985.6	896.2	735.5	537.5	345.9	205.4	123.5	77.7	52.2	43.6
40°	907.9	895.1	808.9	648.2	457.7	285.3	167.1	100.1	63.9	43.6	37.3
42.5°	797.2	786.6	702.5	546.0	375.7	226.7	133.0	80.9	52.2	37.3	31.9
45°	663.1	649.3	570.5	435.3	293.8	174.6	103.2	64.9	42.6	30.9	26.6
47.5°	534.3	518.4	450.2	333.2	219.3	129.9	78.8	51.1	36.2	26.6	24.5
50°	407.7	393.8	335.3	244.8	156.5	94.7	59.6	40.4	29.8	23.4	21.3
52.5°	299.1	288.4	241.6	174.6	111.8	68.1	44.7	31.9	24.5	20.2	19.2
55°	206.5	200.1	167.1	119.2	76.6	50.0	34.1	25.5	20.2	18.1	17.0
57.5°	139.4	135.2	112.8	82.0	54.3	36.2	25.5	20.2	17.0	16.0	16.0
60°	91.5	87.3	73.4	54.3	37.3	26.6	20.2	17.0	14.9	14.9	13.8
62.5°	56.4	56.4	47.9	37.3	26.6	20.2	16.0	13.8	12.8	12.8	12.8
65°	35.1	34.1	30.9	24.5	18.1	14.9	12.8	11.7	11.7	11.7	11.7
67.5°	21.3	21.3	19.2	16.0	13.8	11.7	10.6	9.6	9.6	10.6	10.6
70°	12.8	12.8	11.7	10.6	9.6	8.5	8.5	8.5	8.5	8.5	9.6
72.5°	7.5	7.5	7.5	6.4	6.4	6.4	6.4	6.4	6.4	7.5	7.5
75°	4.3	4.3	4.3	4.3	4.3	5.3	4.3	5.3	5.3	6.4	6.4
77.5°	3.2	3.2	3.2	3.2	3.2	4.3	4.3	4.3	4.3	5.3	5.3
80°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4.3	4.3	4.3	4.3

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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
82.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4.3	4.3	4.3
85°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
87.5°	2.1	2.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
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°	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5
1°	251.2	248.0	242.7	239.5	237.4	233.1	233.1	227.8	228.8	228.8
2°	249.1	240.6	233.1	225.6	219.3	212.9	211.8	209.7	207.6	207.6
3°	243.7	232.0	220.3	210.7	203.3	195.8	192.7	187.3	186.3	184.1
4°	240.6	223.5	209.7	198.0	186.3	179.9	175.6	170.3	168.2	168.2
5°	234.2	215.0	198.0	185.2	172.4	165.0	158.6	154.3	151.1	150.1
6°	227.8	206.5	188.4	172.4	160.7	151.1	144.8	139.4	137.3	136.2
7°	221.4	196.9	177.8	160.7	147.9	137.3	130.9	126.7	124.5	125.6
8°	213.9	187.3	166.0	149.0	135.2	126.7	118.1	113.9	111.8	112.8
9°	207.6	178.8	156.5	139.4	125.6	116.0	108.6	104.3	102.2	101.1
10°	199.0	169.2	145.8	128.8	116.0	105.4	99.0	93.7	92.6	92.6
11°	191.6	159.7	136.2	119.2	106.4	95.8	90.5	86.2	84.1	84.1
12°	184.1	153.3	128.8	110.7	97.9	89.4	83.0	78.8	76.6	75.6
13°	174.6	143.7	119.2	103.2	89.4	80.9	75.6	71.3	69.2	69.2
14°	166.0	136.2	111.8	94.7	83.0	74.5	69.2	64.9	62.8	62.8
15°	158.6	127.7	104.3	88.3	76.6	69.2	62.8	59.6	57.5	57.5
16°	152.2	120.3	97.9	82.0	70.2	62.8	57.5	54.3	53.2	52.2
17°	142.6	111.8	90.5	75.6	64.9	57.5	53.2	49.0	49.0	49.0
18°	135.2	105.4	84.1	70.2	59.6	53.2	49.0	45.8	44.7	44.7
19°	127.7	99.0	78.8	64.9	55.3	49.0	44.7	42.6	41.5	40.4
20°	120.3	92.6	73.4	59.6	51.1	45.8	41.5	39.4	38.3	38.3
22.5°	103.2	77.7	60.7	50.0	41.5	37.3	34.1	33.0	31.9	30.9
25°	88.3	64.9	51.1	41.5	36.2	31.9	28.7	27.7	26.6	26.6
27.5°	73.4	54.3	42.6	35.1	29.8	26.6	24.5	23.4	23.4	23.4
30°	62.8	46.8	36.2	29.8	26.6	23.4	22.4	21.3	20.2	20.2
32.5°	52.2	39.4	30.9	26.6	22.4	21.3	19.2	19.2	18.1	18.1
35°	44.7	34.1	27.7	23.4	20.2	19.2	18.1	17.0	17.0	17.0
37.5°	37.3	28.7	23.4	20.2	18.1	17.0	17.0	17.0	16.0	16.0
40°	31.9	25.5	21.3	19.2	18.1	17.0	17.0	16.0	16.0	16.0
42.5°	27.7	22.4	19.2	18.1	17.0	17.0	16.0	16.0	16.0	16.0
45°	24.5	20.2	18.1	17.0	16.0	16.0	16.0	16.0	16.0	17.0
47.5°	22.4	19.2	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
50°	20.2	18.1	17.0	16.0	17.0	17.0	17.0	17.0	17.0	17.0
52.5°	18.1	17.0	16.0	16.0	17.0	17.0	17.0	18.1	18.1	18.1
55°	17.0	16.0	16.0	16.0	17.0	17.0	18.1	18.1	18.1	18.1
57.5°	16.0	16.0	16.0	16.0	17.0	18.1	18.1	18.1	18.1	18.1
60°	13.8	14.9	14.9	16.0	17.0	17.0	18.1	18.1	18.1	18.1
62.5°	13.8	13.8	14.9	16.0	17.0	17.0	17.0	18.1	18.1	18.1
65°	11.7	12.8	13.8	14.9	16.0	16.0	17.0	17.0	17.0	17.0
67.5°	10.6	11.7	12.8	13.8	14.9	14.9	16.0	16.0	16.0	16.0
70°	9.6	10.6	11.7	12.8	13.8	13.8	14.9	14.9	14.9	14.9
72.5°	7.5	8.5	9.6	10.6	11.7	11.7	12.8	12.8	12.8	13.8
75°	6.4	7.5	7.5	8.5	9.6	9.6	10.6	10.6	10.6	11.7
77.5°	5.3	5.3	6.4	6.4	7.5	7.5	8.5	8.5	8.5	8.5
80°	4.3	4.3	4.3	5.3	5.3	5.3	5.3	6.4	5.3	6.4

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CANDELA DISTRIBUTION (continued):

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
82.5°	4.3	4.3	4.3	4.3	4.3	4.3	5.3	5.3	5.3	5.3
85°	3.2	3.2	4.3	3.2	4.3	4.3	4.3	4.3	4.3	4.3
87.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)