

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: P990769

Luminaire Tested: **ML3ALSFL9FS1E-TIR4D40FL-TL3SDMW-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: P990769
 Test Lab: Cooper Lighting Solutions
 Issue Date: 5/13/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML3ALSFL9FS1E-TIR4D40FL-TL3SDMW-30°-750LM-3500K
 Description: 3IN SQUARE 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: 687.0 lumens
 Efficiency: N/A
 Efficacy: 70.8 lumens/watt
 Spacing Criteria (0/90/45): 2.1 / 0.69 / 1.32
 Luminous Opening: Rectangular (W 0.25' x L: 0.25' x H: 0')
 CIE Type: Direct

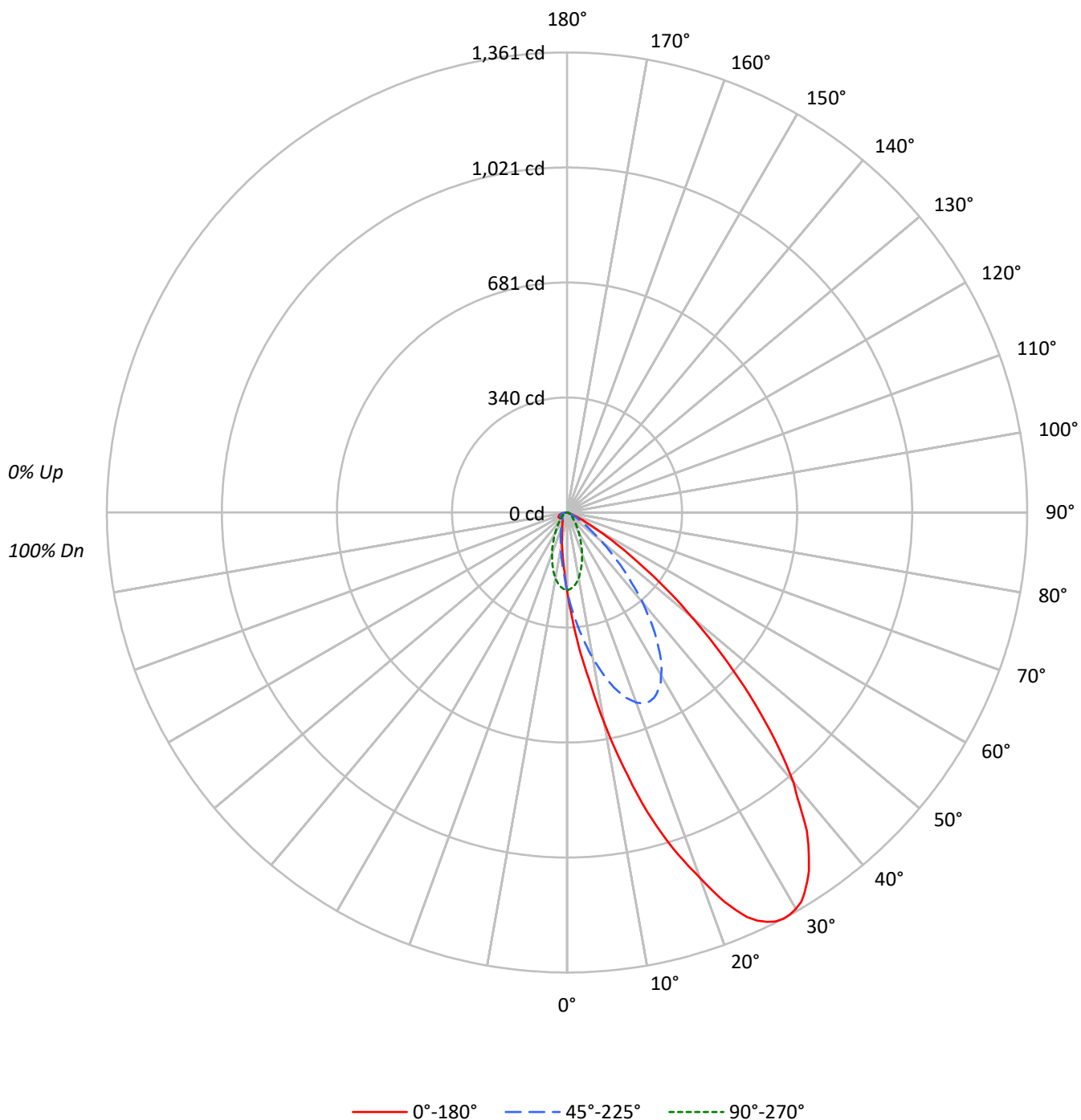
Input Watts (W): 9.7
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT

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	100	102	99	97		98	96	94		94
2	104	98	92	88	102	96	91	87	92	88	85		89	86	83		86
3	97	88	82	76	94	87	81	76	84	79	75		81	77	73		79
4	90	80	73	67	88	79	72	67	76	71	66		74	69	65		72
5	83	73	65	60	82	72	65	59	70	63	59		68	62	58		66
6	78	66	59	53	76	65	58	53	64	57	52		62	56	52		61
7	72	61	53	48	71	60	53	48	58	52	47		57	51	47		56
8	68	56	48	43	66	55	48	43	54	47	43		53	47	42		52
9	63	51	44	39	62	51	44	39	50	43	39		49	43	39		48
10	60	48	40	36	58	47	40	36	46	40	35		45	39	35		44

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	39749	39749	39749
5°	68530	38051	23460
10°	110261	34574	15145
15°	163464	29348	10092
20°	210932	23698	7441
25°	253211	18471	5891
30°	269244	13821	5091
35°	262176	10554	4941
40°	234241	7936	5283
45°	185836	6235	5992
50°	129411	5144	7154
55°	76056	4504	8347
60°	37923	4409	9576
65°	16097	3912	10881
70°	5388	3777	12387
75°	732	2861	13508
80°	0	2083	14877
85°	0	2174	12647

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	24.2	3.5
10°-20°	90.2	13.1
20°-30°	164.3	23.9
30°-40°	185.1	26.9
40°-50°	132.1	19.2
50°-60°	58.1	8.5
60°-70°	21.1	3.1
70°-80°	9.1	1.3
80°-90°	2.7	0.4
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°	278.7	40.6
0°-40°	463.8	67.5
0°-60°	654.0	95.2
0°-90°	687.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	687.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	231	231	231	231	231	
5°	396	329	220	155	136	45
15°	917	535	165	73	57	264
25°	1332	606	97	37	31	606
35°	1247	464	50	25	24	769
45°	763	230	26	21	25	585
55°	253	70	15	22	28	241
65°	40	17	10	21	27	46
75°	1	3	4	14	20	3
85°	0	1	1	4	6	0
90°	0	0	0	0	0	

TEST NUMBER: P990769

CATALOG NUMBER: ML3ALSFL9FS1E-TIR4D40FL-TL3SDMW-30°-750LM-3500K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0°	230.8	230.8	230.8	230.8	230.8	230.8	230.8	230.8	230.8	230.8	230.8
2.5°	301.3	303.5	302.4	300.3	294.9	278.9	253.3	226.5	204.1	185.9	177.4
5°	396.4	391.1	387.9	384.7	378.3	329.1	271.4	220.1	181.7	154.9	141.1
7.5°	496.9	501.2	494.8	487.3	471.2	382.6	286.4	210.5	159.2	128.2	112.2
10°	630.5	628.3	621.9	609.1	576.0	437.1	297.1	197.7	137.8	106.9	89.8
12.5°	770.5	764.0	754.4	733.1	686.0	488.3	300.3	181.7	117.5	86.6	72.7
15°	916.8	905.1	882.7	857.0	795.0	535.4	298.1	164.6	101.5	72.7	59.8
17.5°	1041.9	1034.4	1012.0	978.8	900.8	573.8	289.6	146.4	85.5	60.9	50.2
20°	1150.9	1151.9	1120.9	1082.5	987.4	598.4	275.7	129.3	72.7	51.3	42.7
21°	1197.9	1194.7	1164.8	1119.9	1018.4	603.8	269.3	122.9	67.3	48.1	40.6
22°	1241.7	1232.1	1202.2	1151.9	1046.1	609.1	260.7	116.5	63.0	44.9	38.5
23°	1277.0	1265.2	1234.2	1181.9	1068.6	610.2	253.3	110.1	58.8	41.7	36.3
24°	1310.1	1293.0	1263.1	1209.6	1090.0	609.1	243.6	102.6	55.6	39.5	34.2
25°	1332.5	1318.6	1284.4	1231.0	1104.9	605.9	234.0	97.2	52.4	37.4	32.1
26°	1347.5	1337.9	1299.4	1244.9	1117.7	600.5	224.4	90.8	49.2	35.3	31.0
27°	1358.2	1349.6	1311.2	1253.5	1125.2	592.0	214.8	85.5	45.9	33.1	29.9
28°	1361.4	1352.8	1314.4	1255.6	1126.3	584.5	205.2	80.1	42.7	32.1	28.9
29°	1360.3	1350.7	1312.2	1249.2	1122.0	571.7	194.5	74.8	40.6	31.0	27.8
30°	1353.9	1343.2	1304.7	1237.4	1112.4	556.7	184.9	69.5	38.5	28.9	26.7
31°	1344.3	1331.5	1293.0	1224.6	1098.5	542.8	175.2	66.3	36.3	27.8	25.6
32°	1326.1	1313.3	1272.7	1205.4	1077.1	525.7	164.6	60.9	34.2	26.7	24.6
33°	1303.7	1291.9	1248.1	1185.1	1055.8	506.5	154.9	57.7	32.1	25.6	24.6
34°	1279.1	1265.2	1221.4	1158.3	1029.1	484.1	145.3	53.4	31.0	24.6	24.6
35°	1247.0	1235.3	1191.5	1130.6	1002.3	463.8	135.7	50.2	28.9	24.6	23.5
36°	1215.0	1199.0	1158.3	1095.3	967.1	442.4	126.1	47.0	27.8	23.5	23.5
37°	1178.7	1158.3	1122.0	1061.1	933.9	420.0	117.5	43.8	26.7	23.5	23.5
38°	1128.4	1116.7	1079.3	1018.4	895.5	393.2	110.1	40.6	25.6	22.4	23.5
39°	1081.4	1070.7	1035.5	973.5	849.5	369.7	101.5	37.4	24.6	22.4	23.5
40°	1041.9	1028.0	992.7	927.5	806.8	347.3	94.0	35.3	23.5	22.4	23.5
42.5°	907.2	895.5	862.4	803.6	689.2	284.2	75.9	29.9	21.4	21.4	22.4
45°	763.0	756.6	721.3	668.9	568.5	229.7	62.0	25.6	20.3	21.4	23.5
47.5°	618.7	611.2	580.2	540.7	447.7	177.4	49.2	22.4	19.2	21.4	24.6
50°	483.0	472.3	450.9	412.5	335.5	134.6	38.5	19.2	18.2	21.4	24.6
52.5°	365.5	354.8	336.6	300.3	241.5	97.2	29.9	17.1	18.2	21.4	25.6
55°	253.3	252.2	235.1	212.6	165.6	70.5	23.5	15.0	17.1	22.4	26.7
57.5°	173.1	169.9	158.2	142.1	113.3	48.1	18.2	13.9	17.1	22.4	26.7
60°	110.1	110.1	101.5	91.9	73.7	33.1	15.0	12.8	17.1	22.4	26.7
62.5°	67.3	65.2	62.0	56.6	47.0	23.5	11.8	10.7	16.0	21.4	26.7
65°	39.5	37.4	36.3	33.1	28.9	17.1	9.6	9.6	15.0	21.4	25.6
67.5°	21.4	20.3	20.3	19.2	17.1	11.8	7.5	8.5	13.9	20.3	24.6
70°	10.7	10.7	10.7	10.7	9.6	8.5	6.4	7.5	12.8	19.2	23.5
72.5°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	10.7	17.1	21.4
75°	1.1	2.1	2.1	2.1	2.1	3.2	3.2	4.3	8.5	13.9	19.2
77.5°	1.1	1.1	1.1	1.1	1.1	2.1	2.1	3.2	6.4	11.8	17.1
80°	0.0	0.0	0.0	0.0	0.0	1.1	2.1	2.1	5.3	8.5	13.9

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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
82.5°	0.0	0.0	0.0	0.0	0.0	1.1	1.1	2.1	3.2	6.4	9.6
85°	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	2.1	4.3	6.4
87.5°	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	2.1	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):

	180°
0°	230.8
2.5°	173.1
5°	135.7
7.5°	107.9
10°	86.6
12.5°	69.5
15°	56.6
17.5°	48.1
20°	40.6
21°	38.5
22°	36.3
23°	34.2
24°	33.1
25°	31.0
26°	29.9
27°	28.9
28°	27.8
29°	26.7
30°	25.6
31°	25.6
32°	24.6
33°	24.6
34°	24.6
35°	23.5
36°	23.5
37°	23.5
38°	23.5
39°	23.5
40°	23.5
42.5°	23.5
45°	24.6
47.5°	25.6
50°	26.7
52.5°	26.7
55°	27.8
57.5°	27.8
60°	27.8
62.5°	27.8
65°	26.7
67.5°	25.6
70°	24.6
72.5°	22.4
75°	20.3
77.5°	18.2
80°	15.0

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



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CANDELA DISTRIBUTION (continued):

	180°
82.5°	10.7
85°	6.4
87.5°	3.2
90°	0.0

(END OF REPORT)