

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: P990912

Luminaire Tested: **ML4ALSFL9FS1E-TIR4D40FL-TL4SDMB-1000LM-2700K**

Issue Date: 5/13/2025

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P990912
 Test Lab: Cooper Lighting Solutions
 Issue Date: 5/13/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML4ALSFL9FS1E-TIR4D40FL-TL4SDMB-1000LM-2700K
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE BLACK TRIM
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 2700K CCT
 Ballast/Driver: -

Summary

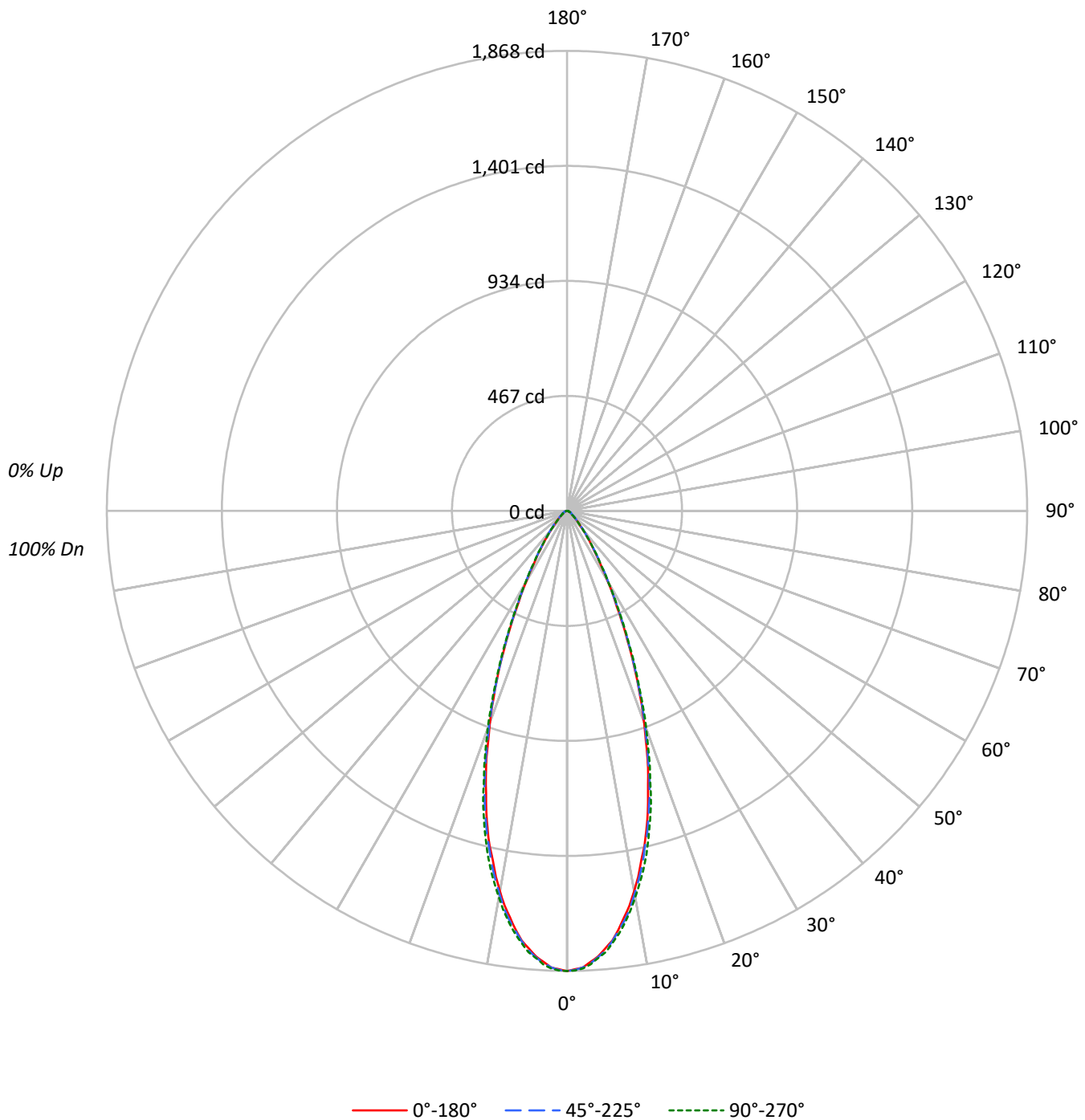
Lumens per Lamp: N/A
 Luminaire Lumens: 999.4 lumens
 Efficiency: N/A
 Efficacy: 76.9 lumens/watt
 Spacing Criteria (0/90/45): 0.64 / 0.65 / 0.64
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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	114	111	109	106	111	109	107	105	105	103	102		101	100	98		98
2	108	104	100	97	106	102	98	95	99	96	93		96	93	91		93
3	103	97	92	89	101	96	91	88	93	90	87		91	88	85		89
4	99	91	86	82	97	90	85	82	88	84	81		86	83	80		84
5	94	86	81	77	93	85	80	76	84	79	76		82	78	75		80
6	90	82	76	72	89	81	76	72	79	75	71		78	74	71		77
7	86	78	72	68	85	77	72	68	76	71	67		74	70	67		73
8	83	74	68	64	81	73	68	64	72	67	64		71	67	64		70
9	79	70	65	61	78	70	65	61	69	64	61		68	64	61		67
10	76	67	62	58	75	67	62	58	66	61	58		65	61	58		65

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	181012	181012	181012
5°	173437	174118	174896
10°	154283	155365	156841
15°	127011	128415	130621
20°	94258	95185	97041
25°	62125	62766	63728
30°	37149	37821	37932
35°	21536	22364	22364
40°	12899	13658	13026
45°	8083	8494	7809
50°	5275	5878	5124
55°	3716	4391	3885
60°	3294	3681	3294
65°	2980	3438	3209
70°	2549	3399	2832
75°	1871	2994	1871
80°	558	1116	558
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	164.1	16.4
10°-20°	350.1	35.0
20°-30°	270.8	27.1
30°-40°	122.4	12.2
40°-50°	48.7	4.9
50°-60°	22.5	2.2
60°-70°	14.0	1.4
70°-80°	6.5	0.6
80°-90°	0.3	0.0
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°	785.1	78.6
0°-40°	907.5	90.8
0°-60°	978.7	97.9
0°-90°	999.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	999.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1868	1868	1868	1868	1868	
5°	1784	1788	1790	1790	1798	163
15°	1266	1269	1280	1296	1302	346
25°	581	581	587	587	596	268
35°	182	184	189	189	189	119
45°	59	60	62	60	57	48
55°	22	24	26	24	23	21
65°	13	14	15	14	14	13
75°	5	6	8	6	5	5
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1868.5	1868.5	1868.5	1868.5	1868.5
1°	1861.5	1865.5	1864.5	1862.5	1866.5
2°	1854.5	1854.5	1854.5	1853.5	1859.5
3°	1833.5	1840.5	1838.5	1837.5	1843.5
4°	1813.5	1814.5	1816.5	1816.5	1819.5
5°	1783.5	1788.5	1790.5	1790.5	1798.5
6°	1754.5	1753.5	1757.5	1759.5	1764.5
7°	1713.5	1715.5	1717.5	1725.5	1729.5
8°	1666.5	1670.5	1679.5	1683.5	1689.5
9°	1622.5	1623.5	1633.5	1636.5	1644.5
10°	1568.4	1572.4	1579.4	1591.4	1594.4
11°	1513.4	1516.4	1524.4	1534.4	1542.4
12°	1449.4	1459.4	1469.4	1479.4	1489.4
13°	1397.4	1398.4	1403.4	1421.4	1431.4
14°	1332.4	1336.4	1346.4	1354.4	1368.4
15°	1266.4	1269.4	1280.4	1296.4	1302.4
16°	1192.3	1201.3	1214.3	1222.3	1236.3
17°	1126.3	1129.3	1144.3	1151.3	1156.3
18°	1058.3	1058.3	1068.3	1078.3	1086.3
19°	980.3	988.3	995.3	1006.3	1011.3
20°	914.3	918.3	923.3	933.3	941.3
22.5°	744.2	741.2	747.2	754.2	758.2
25°	581.2	581.2	587.2	587.2	596.2
27.5°	437.1	441.1	447.1	447.1	451.1
30°	332.1	333.1	338.1	339.1	339.1
32.5°	242.1	248.1	253.1	253.1	251.1
35°	182.1	184.1	189.1	189.1	189.1
37.5°	136.0	138.0	142.0	140.0	137.0
40°	102.0	103.0	108.0	105.0	103.0
42.5°	77.0	78.0	81.0	79.0	76.0
45°	59.0	60.0	62.0	60.0	57.0
47.5°	45.0	46.0	48.0	46.0	44.0
50°	35.0	36.0	39.0	36.0	34.0
52.5°	27.0	29.0	31.0	29.0	27.0
55°	22.0	24.0	26.0	24.0	23.0
57.5°	19.0	20.0	22.0	21.0	20.0
60°	17.0	17.0	19.0	18.0	17.0
62.5°	15.0	15.0	17.0	16.0	15.0
65°	13.0	14.0	15.0	14.0	14.0
67.5°	11.0	12.0	13.0	13.0	12.0
70°	9.0	10.0	12.0	11.0	10.0
72.5°	8.0	8.0	10.0	9.0	8.0
75°	5.0	6.0	8.0	6.0	5.0
77.5°	2.0	4.0	5.0	3.0	3.0
80°	1.0	1.0	2.0	1.0	1.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
82.5°	0.0	1.0	1.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)