

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: P601189

Luminaire Tested: **ML406FL9FS1E - TIR4D40FL - TL41R\_ TL42S\_ 3500K**

Issue Date: 7/29/2022

Tested By:

Approved By:



Cooper Lighting Solutions laboratories have been accredited by National Voluntary Laboratory Accreditation Program (NVLAP) that it adheres to the requirements of ISO/IEC 17025:2005 and appropriate IESNA test methods. This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government. Results contained in this report are valid for luminaire sample tested, as supplied by requestor. Information related to the luminaire tested has been supplied by requestor and can affect the validity of the test results. Report shall not be reproduced except in full without approval of Cooper Lighting Solutions Lighting Laboratory. Test performed at address noted above.

**Test Information**

Test Method: LM-79-08  
 Report Number: P601189  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML406FL9FS1E - TIR4D40FL - TL41R\_ TL42S\_ 3500K  
 Description: RETROFIT, 40D OPTIC, OPEN TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 3500K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 886.3 lumens  
 Efficiency: N/A  
 Efficacy: 106.8 lumens/watt  
 Spacing Criteria (0/90/45): 0.67 / 0.67 / 0.63  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

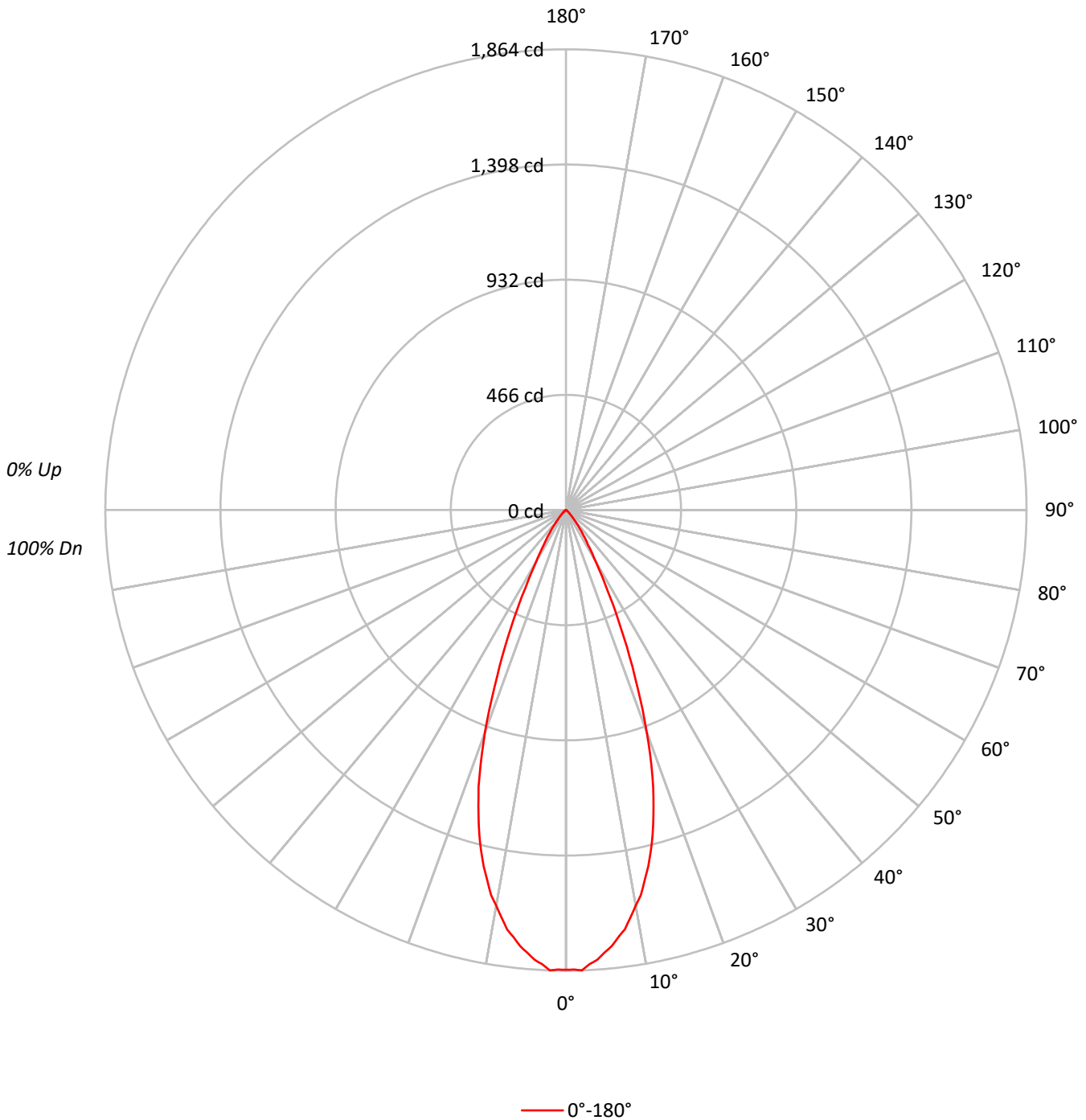
Input Watts (W): 8.3  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



Meas		Calibration Due Date	
Instrument	Identificatio		
Photometer	GONIO 1 11111111	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			0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	102	102	102	100
1	114	112	110	108	112	110	108	106	106	104	103	102	101	100	99	98	97	97	97	97	95
2	110	106	102	99	108	104	101	98	101	98	96	98	96	94	95	93	92	92	92	92	90
3	105	100	96	92	103	98	95	91	96	93	90	94	91	89	91	89	87	87	87	87	86
4	101	95	90	86	99	94	89	86	92	88	85	90	87	84	88	85	83	83	83	83	82
5	97	90	85	81	96	89	85	81	87	83	80	86	82	80	84	81	79	79	79	79	78
6	93	86	81	77	92	85	80	77	84	79	76	82	79	76	81	78	75	75	75	75	74
7	90	82	77	73	89	81	77	73	80	76	73	79	75	72	78	75	72	72	72	72	71
8	86	78	73	70	85	78	73	70	77	73	69	76	72	69	75	72	69	69	69	69	68
9	83	75	70	67	82	75	70	67	74	69	66	73	69	66	72	69	66	66	66	66	65
10	80	72	67	64	79	72	67	64	71	67	64	70	66	63	70	66	63	63	63	63	62

**AVERAGE LUMINANCE (cd/sqm):**

	0°
0°	587513
5°	569566
10°	521291
15°	443609
20°	321715
25°	183263
30°	87179
35°	45486
40°	22795
45°	10896
50°	6288
55°	2918
60°	695
65°	822
70°	0
75°	0
80°	0
85°	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	166.3	18.8
10°-20°	368.3	41.6
20°-30°	245.7	27.7
30°-40°	78.7	8.9
40°-50°	21.4	2.4
50°-60°	5.3	0.6
60°-70°	0.7	0.1
70°-80°	0.0	0.0
80°-90°	0.0	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°	780.3	88.0
0°-40°	859.0	96.9
0°-60°	885.6	99.9
0°-90°	886.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	886.3	100.0

**CANDELA DISTRIBUTION:**

	0°	Flux
0°	1861	
5°	1797	166
15°	1357	368
25°	526	246
35°	118	79
45°	24	21
55°	5	5
65°	1	1
75°	0	0
85°	0	0
90°	0	

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**CANDELA DISTRIBUTION (FULL):**

0°	
0°	1860.6
1°	1859.6
2°	1863.8
3°	1839.4
4°	1824.5
5°	1796.9
6°	1774.6
7°	1740.6
8°	1712.9
9°	1668.3
10°	1625.8
11°	1587.6
12°	1531.2
13°	1479.2
14°	1420.7
15°	1357.0
17.5°	1175.3
20°	957.4
22.5°	726.8
25°	526.0
27.5°	357.0
30°	239.1
32.5°	165.8
35°	118.0
37.5°	83.9
40°	55.3
42.5°	36.1
45°	24.4
47.5°	18.1
50°	12.8
52.5°	8.5
55°	5.3
57.5°	3.2
60°	1.1
62.5°	1.1
65°	1.1
67.5°	0.0
70°	0.0
72.5°	0.0
75°	0.0
77.5°	0.0
80°	0.0
82.5°	0.0
85°	0.0
87.5°	0.0

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

  
NVLAP Lab Code: 200050-0



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CANDELA DISTRIBUTION (continued):

90° |  $\frac{0^\circ}{0.0}$

(END OF REPORT)