

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: P601294

Luminaire Tested: **ML410LSFL9FS1E - TIR4D40FL - TL43R2G_ TL44S2G_ 2700K**

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: P601294
 Test Lab: COOPER LIGHTING SOLUTIONS
 Issue Date: 7/29/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML410LSFL9FS1E - TIR4D40FL - TL43R2G_ TL44S2G_ 2700K
 Description: RETROFIT, 40D OPTIC, DIFFUSE CLEAR LENS TRIM
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 2700K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 1084.4 lumens
 Efficiency: N/A
 Efficacy: 90.4 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

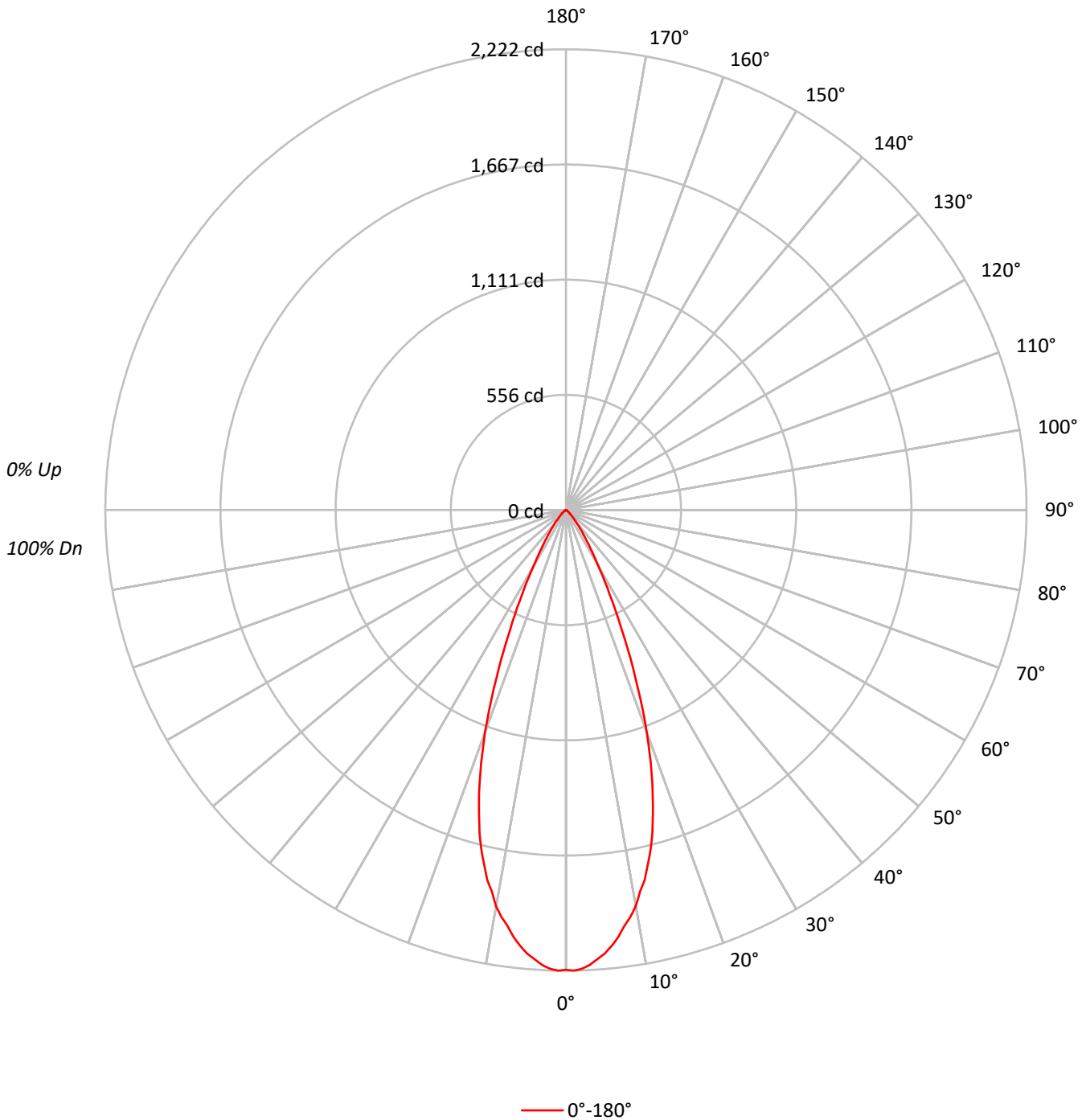
Input Watts (W): 12
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



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	100	100	100	100
1	114	112	110	108	112	110	108	106	106	104	103	102	101	100	99	98	97	95	95	95	95
2	109	105	102	99	107	104	100	98	100	98	95	97	95	93	95	93	92	90	90	90	90
3	105	99	95	92	103	98	94	91	95	92	89	93	90	88	91	89	87	85	85	85	85
4	101	94	89	86	99	93	89	85	91	87	84	89	86	83	87	85	82	81	81	81	81
5	97	89	84	81	95	88	84	80	87	83	80	85	82	79	84	81	78	77	77	77	77
6	93	85	80	76	91	84	79	76	83	79	75	82	78	75	80	77	75	73	73	73	73
7	89	81	76	72	88	80	76	72	79	75	72	78	74	71	77	74	71	70	70	70	70
8	86	77	72	69	85	77	72	69	76	72	68	75	71	68	74	71	68	67	67	67	67
9	82	74	69	66	81	74	69	66	73	68	65	72	68	65	71	68	65	64	64	64	64
10	79	71	66	63	78	71	66	63	70	66	63	69	65	62	69	65	62	61	61	61	61

AVERAGE LUMINANCE (cd/sqm):

	0°
0°	700367
5°	680854
10°	622323
15°	526414
20°	383478
25°	222215
30°	114015
35°	59749
40°	32234
45°	17148
50°	10120
55°	5285
60°	2589
65°	2017
70°	1293
75°	0
80°	0
85°	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	198.1	18.3
10°-20°	436.8	40.3
20°-30°	300.4	27.7
30°-40°	104.2	9.6
40°-50°	32.3	3.0
50°-60°	9.7	0.9
60°-70°	2.4	0.2
70°-80°	0.5	0.1
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°	935.3	86.2
0°-40°	1039.5	95.9
0°-60°	1081.5	99.7
0°-90°	1084.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1084.4	100.0

CANDELA DISTRIBUTION:

	0°	Flux
0°	2218	
5°	2148	198
15°	1610	437
25°	638	300
35°	155	104
45°	38	32
55°	10	10
65°	3	2
75°	0	1
85°	0	0
90°	0	

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CANDELA DISTRIBUTION (FULL):

	0°
0°	2218.0
1°	2222.1
2°	2213.9
3°	2197.4
4°	2171.4
5°	2148.0
6°	2113.7
7°	2074.0
8°	2026.0
9°	1987.5
10°	1940.9
11°	1875.1
12°	1824.3
13°	1755.7
14°	1687.2
15°	1610.3
17.5°	1388.1
20°	1141.2
22.5°	876.5
25°	637.8
27.5°	452.7
30°	312.7
32.5°	219.5
35°	155.0
37.5°	111.1
40°	78.2
42.5°	54.9
45°	38.4
47.5°	27.4
50°	20.6
52.5°	15.1
55°	9.6
57.5°	6.9
60°	4.1
62.5°	2.7
65°	2.7
67.5°	1.4
70°	1.4
72.5°	1.4
75°	0.0
77.5°	0.0
80°	0.0
82.5°	0.0
85°	0.0
87.5°	0.0

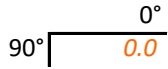
Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269


NVLAP Lab Code: 200050-0



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CANDELA DISTRIBUTION (continued):



(END OF REPORT)