

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: P601311

Luminaire Tested: **ML410LSWFL9FS1E - TIR4D55WFL - TL41R\_ TL42S\_ 3500K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601311  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML410LSWFL9FS1E - TIR4D55WFL - TL41R\_ TL42S\_ 3500K  
 Description: RETROFIT, 55D OPTIC, OPEN TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 3500K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 1229.6 lumens  
 Efficiency: N/A  
 Efficacy: 102.5 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.91 / 0.84  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

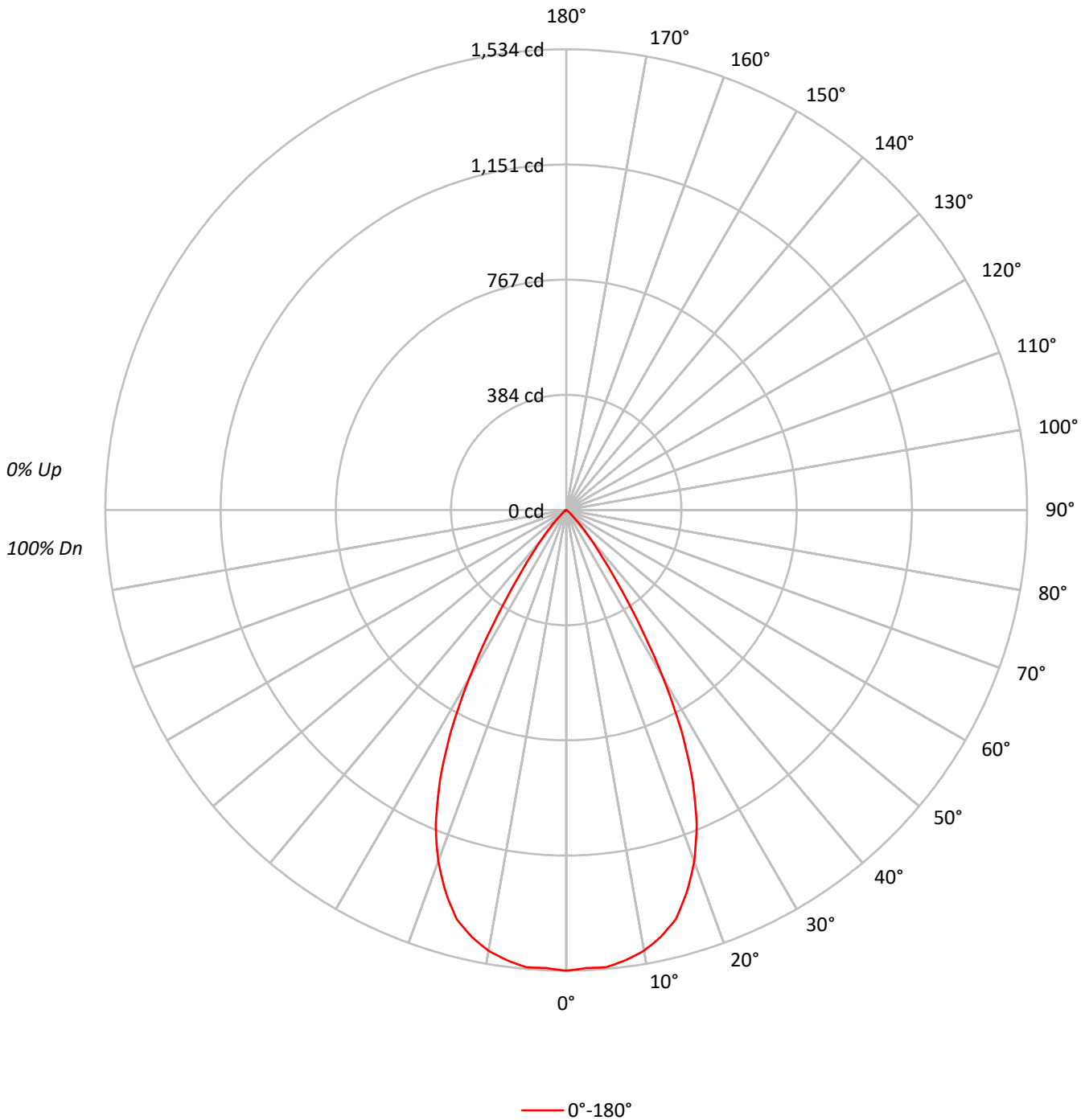
Input Watts (W): 12  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



Meas			
Instrument	Identificatio		Calibration Due Date
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	111	109	107	111	109	107	105	105	103	102	101	100	99	98	97	96	94	94	94	94
2	109	104	100	97	106	102	99	96	99	96	94	96	94	92	93	92	90	88	88	88	88
3	104	98	93	89	102	96	92	88	94	90	87	91	88	86	89	86	84	83	83	83	83
4	99	92	86	82	97	91	86	82	88	84	81	86	83	80	85	82	79	78	78	78	78
5	94	86	81	77	93	85	80	76	84	79	76	82	78	75	80	77	74	73	73	73	73
6	90	81	76	72	88	81	75	71	79	74	71	78	74	71	76	73	70	69	69	69	69
7	86	77	71	67	84	76	71	67	75	70	67	74	70	66	73	69	66	65	65	65	65
8	82	73	67	63	81	72	67	63	71	66	63	70	66	63	69	65	62	61	61	61	61
9	78	69	63	60	77	69	63	60	68	63	59	67	62	59	66	62	59	58	58	58	58
10	75	66	60	56	74	65	60	56	64	59	56	64	59	56	63	59	56	55	55	55	55

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

	0°
0°	484321
5°	484332
10°	477780
15°	460968
20°	418593
25°	346806
30°	235067
35°	114988
40°	51566
45°	18845
50°	7860
55°	3193
60°	947
65°	0
70°	0
75°	0
80°	0
85°	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	144.5	11.8
10°-20°	391.0	31.8
20°-30°	443.9	36.1
30°-40°	202.9	16.5
40°-50°	40.7	3.3
50°-60°	6.1	0.5
60°-70°	0.5	0.0
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
<b>0°-30°</b>	<b>979.4</b>	<b>79.7</b>
<b>0°-40°</b>	<b>1182.3</b>	<b>96.2</b>
<b>0°-60°</b>	<b>1229.0</b>	<b>100.0</b>
<b>0°-90°</b>	<b>1229.6</b>	<b>100.0</b>
90°-120°	0.0	0.0
90°-150°	0.0	0.0
<b>90°-180°</b>	<b>0.0</b>	<b>0.0</b>
<b>0°-180°</b>	<b>1229.6</b>	<b>100.0</b>

**CANDELA DISTRIBUTION:**

	0°	Flux
0°	1534	
5°	1528	144
15°	1410	391
25°	995	444
35°	298	203
45°	42	41
55°	6	6
65°	0	1
75°	0	0
85°	0	0
90°	0	

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**CANDELA DISTRIBUTION (FULL):**

	0°
0°	1533.8
2.5°	1526.5
5°	1528.0
7.5°	1512.0
10°	1490.1
12.5°	1455.2
15°	1410.1
17.5°	1334.4
20°	1245.7
22.5°	1135.1
25°	995.4
27.5°	830.9
30°	644.7
32.5°	454.0
35°	298.3
37.5°	195.0
40°	125.1
42.5°	78.6
45°	42.2
47.5°	24.7
50°	16.0
52.5°	10.2
55°	5.8
57.5°	2.9
60°	1.5
62.5°	1.5
65°	0.0
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
90°	0.0

(END OF REPORT)