

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: P601302

Luminaire Tested: **ML410LSNFL9FS1E - TIR4D25NFL - TL41R\_ TL42S\_ 4000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601302  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML410LSNFL9FS1E - TIR4D25NFL - TL41R\_ TL42S\_ 4000K  
 Description: RETROFIT, 25D OPTIC, OPEN TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 4000K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 1216.5 lumens  
 Efficiency: N/A  
 Efficacy: 101.4 lumens/watt  
 Spacing Criteria (0/90/45): 0.43 / 0.43 / 0.46  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

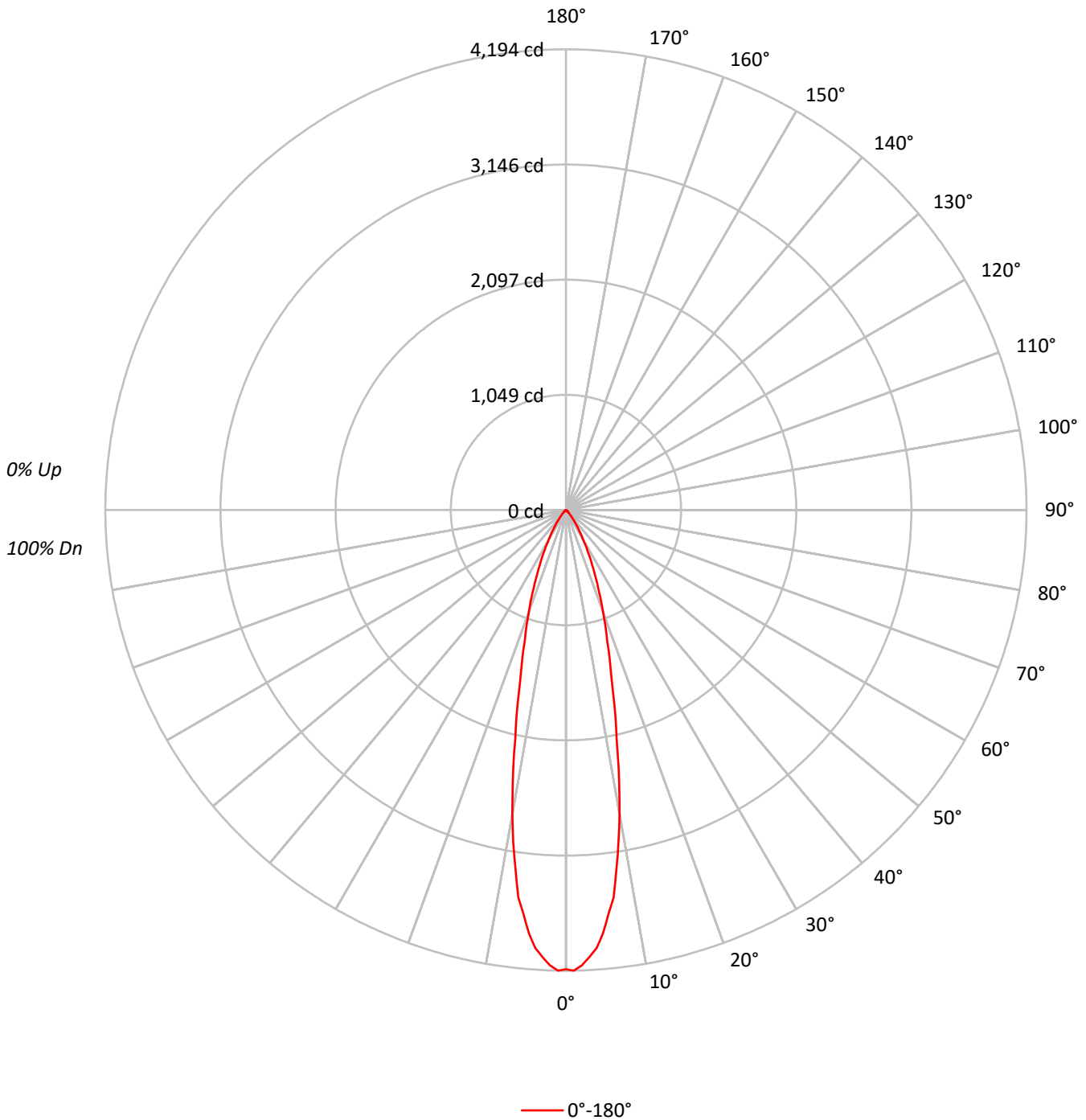
Input Watts (W): 12  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	115	112	110	108	112	110	108	107	106	105	103	102	101	100	99	98	97	96
2	110	106	103	100	108	105	102	99	101	99	97	98	97	95	96	94	93	91
3	106	101	97	94	104	100	96	93	97	94	91	95	92	90	93	90	89	87
4	102	96	92	88	101	95	91	88	93	90	87	91	88	86	89	87	85	84
5	98	92	87	84	97	91	87	83	89	86	83	88	84	82	86	84	81	80
6	95	88	83	80	94	87	83	80	86	82	79	85	81	79	83	80	78	77
7	92	84	80	76	91	84	79	76	83	79	76	82	78	75	81	77	75	74
8	89	81	76	73	88	81	76	73	80	76	73	79	75	72	78	75	72	71
9	86	78	74	70	85	78	73	70	77	73	70	76	72	70	75	72	70	69
10	83	75	71	68	82	75	71	68	74	70	68	74	70	67	73	70	67	66

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

	0°
0°	1319772
5°	1226140
10°	901469
15°	525793
20°	331763
25°	204272
30°	116640
35°	63064
40°	29843
45°	14870
50°	8548
55°	3964
60°	1831
65°	1046
70°	1293
75°	0
80°	0
85°	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	335.1	27.5
10°-20°	462.3	38.0
20°-30°	273.9	22.5
30°-40°	107.1	8.8
40°-50°	28.6	2.4
50°-60°	7.3	0.6
60°-70°	1.9	0.2
70°-80°	0.2	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°	1071.3	88.1
0°-40°	1178.4	96.9
0°-60°	1214.4	99.8
0°-90°	1216.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1216.5	100.0

**CANDELA DISTRIBUTION:**

	0°	Flux
0°	4180	
5°	3868	335
15°	1608	462
25°	586	274
35°	164	107
45°	33	29
55°	7	7
65°	1	2
75°	0	0
85°	0	0
90°	0	

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**CANDELA DISTRIBUTION (FULL):**

0°	
0°	4179.6
1°	4194.1
2°	4147.7
3°	4075.3
4°	3998.6
5°	3868.3
6°	3698.9
7°	3555.6
8°	3303.7
9°	3060.5
10°	2811.5
12.5°	2135.4
15°	1608.4
17.5°	1247.9
20°	987.3
22.5°	765.8
25°	586.3
27.5°	438.7
30°	319.9
32.5°	233.1
35°	163.6
37.5°	108.6
40°	72.4
42.5°	47.8
45°	33.3
47.5°	24.6
50°	17.4
52.5°	11.6
55°	7.2
57.5°	4.3
60°	2.9
62.5°	2.9
65°	1.4
67.5°	1.4
70°	1.4
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)