

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: P601300

Luminaire Tested: **ML410LSNFL9FS1E - TIR4D25NFL - TL41R\_ TL42S\_ 3000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601300  
 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\_ 3000K  
 Description: RETROFIT, 25D OPTIC, OPEN TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 3000K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 1055.9 lumens  
 Efficiency: N/A  
 Efficacy: 81.9 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

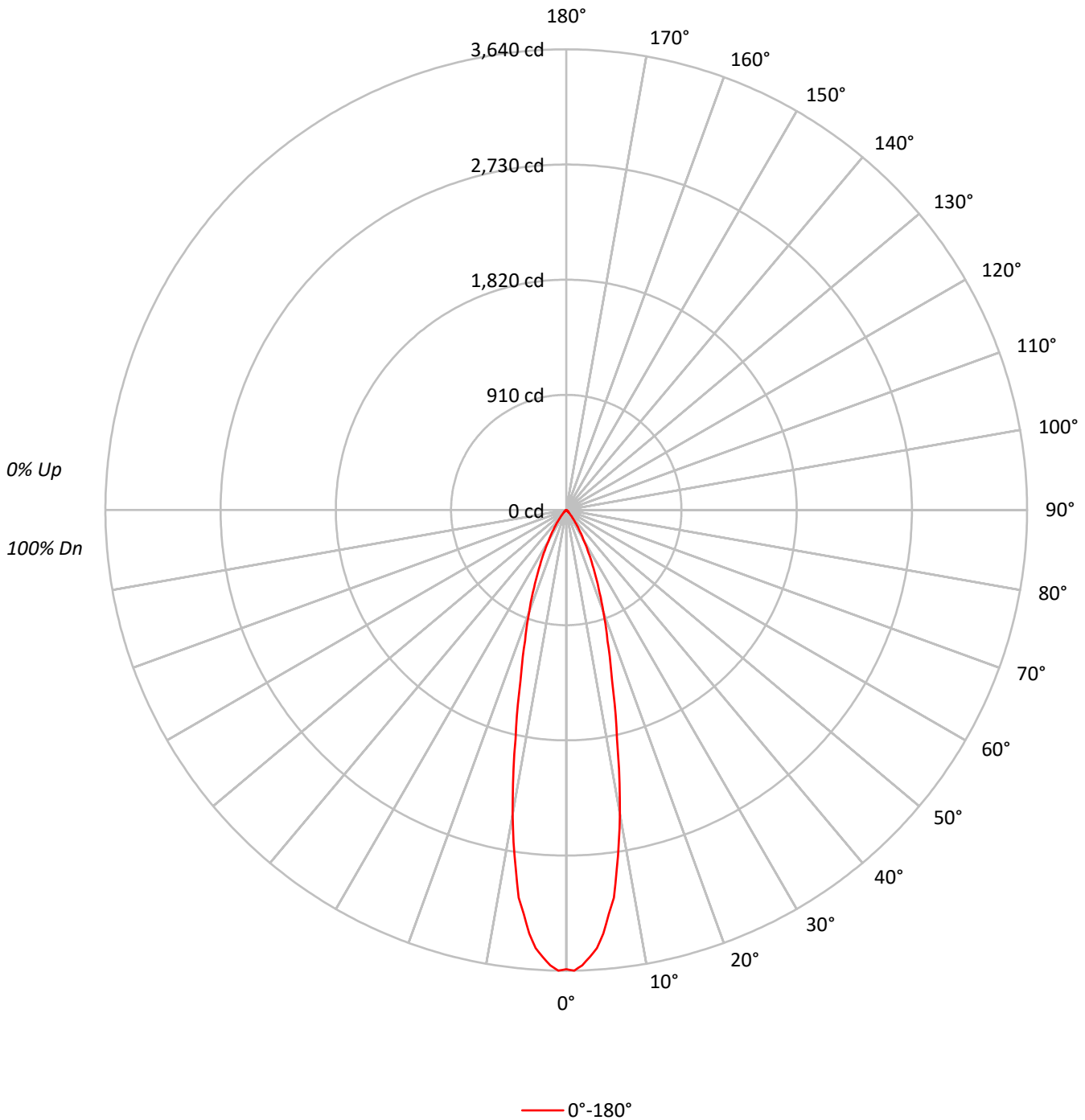
Input Watts (W): 12.9  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



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°	1145535
5°	1064270
10°	782460
15°	456390
20°	287982
25°	177306
30°	101247
35°	54719
40°	25901
45°	12907
50°	7414
55°	3474
60°	1560
65°	957
70°	1182
75°	0
80°	0
85°	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	290.9	27.5
10°-20°	401.3	38.0
20°-30°	237.7	22.5
30°-40°	93.0	8.8
40°-50°	24.8	2.4
50°-60°	6.4	0.6
60°-70°	1.7	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°	929.9	88.1
0°-40°	1022.8	96.9
0°-60°	1054.0	99.8
0°-90°	1055.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1055.9	100.0

**CANDELA DISTRIBUTION:**

	0°	Flux
0°	3628	
5°	3358	291
15°	1396	401
25°	509	238
35°	142	93
45°	29	25
55°	6	6
65°	1	2
75°	0	0
85°	0	0
90°	0	

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**CANDELA DISTRIBUTION (FULL):**

0°	
0°	3627.8
1°	3640.3
2°	3600.2
3°	3537.3
4°	3470.7
5°	3357.6
6°	3210.6
7°	3086.2
8°	2867.6
9°	2656.5
10°	2440.3
12.5°	1853.5
15°	1396.1
17.5°	1083.2
20°	857.0
22.5°	664.8
25°	508.9
27.5°	380.8
30°	277.7
32.5°	202.3
35°	142.0
37.5°	94.2
40°	62.8
42.5°	41.4
45°	28.9
47.5°	21.4
50°	15.1
52.5°	10.1
55°	6.3
57.5°	3.8
60°	2.5
62.5°	2.5
65°	1.3
67.5°	1.3
70°	1.3
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)