

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: P601186

Luminaire Tested: **ML406AWWD2W1E - TIR4D25AWW - TL45R6G\_ TL46S6G\_ 3000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601186  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML406AWWD2W1E - TIR4D25AWW - TL45R6G\_ TL46S6G\_ 3000K  
 Description: RETROFIT, 25D WW OPTIC, LINEAR SPREAD LENS TRIM  
 Light Source: (1) SELECTABLE LUMEN LED D2W / 3000K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 507.4 lumens  
 Efficiency: N/A  
 Efficacy: 61.1 lumens/watt  
 Spacing Criteria (0/90/45): 1.21 / 0.78 / 1  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

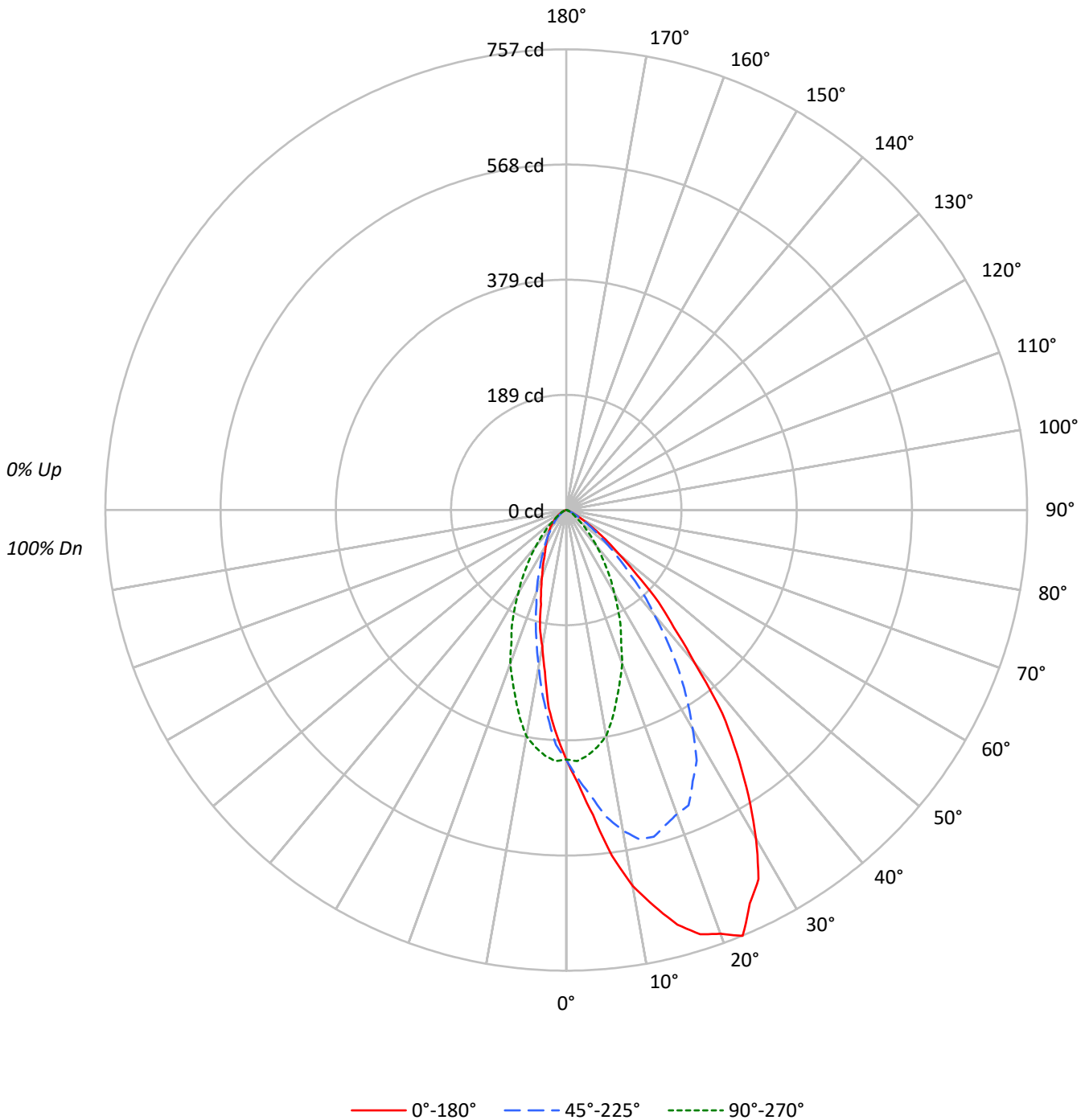
Input Watts (W): 8.3  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



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	113	110	107	104	110	107	105	103	103	101	99	100	98	96	96	95	94	96	95	94	92
2	106	100	96	92	104	99	95	91	95	92	89	92	90	87	90	87	85	90	87	85	83
3	100	92	87	82	98	91	86	81	88	84	80	86	82	79	83	80	78	83	80	78	76
4	94	85	79	74	92	84	78	73	82	76	72	79	75	72	78	74	71	78	74	71	69
5	88	78	72	67	86	77	71	67	76	70	66	74	69	65	72	68	65	72	68	65	63
6	83	73	66	61	81	72	65	61	70	65	60	69	64	60	67	63	59	67	63	59	58
7	78	68	61	56	77	67	60	56	65	60	55	64	59	55	63	58	55	63	58	55	53
8	74	63	56	52	72	62	56	51	61	55	51	60	55	51	59	54	51	59	54	51	49
9	70	59	52	48	68	58	52	48	57	52	47	56	51	47	55	51	47	55	51	47	46
10	66	55	49	44	65	55	48	44	54	48	44	53	48	44	52	47	44	52	47	44	42

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

	0°	90°	180°
0°	129432	129432	129432
5°	159405	128310	103681
10°	200879	120944	72752
15°	230566	104904	52468
20°	248998	90325	38811
25°	248555	73723	29545
30°	227337	57390	24210
35°	188345	43752	20083
40°	135244	32028	17683
45°	95832	21926	14602
50°	56247	14050	12035
55°	33747	9579	9579
60°	18062	7073	7073
65°	9937	5380	4558
70°	5632	3785	2862
75°	2440	2440	0
80°	1818	1818	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	38.8	7.7
10°-20°	105.7	20.8
20°-30°	138.1	27.2
30°-40°	118.4	23.3
40°-50°	67.7	13.4
50°-60°	27.7	5.5
60°-70°	8.9	1.7
70°-80°	1.9	0.4
80°-90°	0.2	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°	282.6	55.7
0°-40°	401.1	79.0
0°-60°	496.5	97.8
0°-90°	507.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	507.4	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	410	410	410	410	410	
5°	503	472	405	342	327	52
15°	705	556	321	193	160	199
25°	713	492	212	101	85	327
35°	489	323	114	53	52	302
45°	215	146	49	27	33	163
55°	61	50	17	12	17	58
65°	13	11	7	5	6	14
75°	2	2	2	1	0	3
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	409.9	409.9	409.9	409.9	409.9	409.9	409.9	409.9	409.9	409.9	409.9
2.5°	449.7	458.9	455.9	461.0	459.9	450.7	441.5	427.2	412.9	404.8	386.4
5°	502.9	514.1	522.3	516.2	513.1	505.9	472.2	440.5	404.8	369.0	342.4
7.5°	572.4	569.3	578.5	560.1	561.1	558.1	509.0	447.7	392.5	340.4	302.5
10°	626.5	617.3	626.5	620.4	608.2	593.8	534.6	444.6	377.2	311.7	260.6
12.5°	666.4	678.7	678.7	664.4	652.1	635.7	554.0	442.6	350.6	277.0	224.9
15°	705.3	709.3	702.2	690.9	678.7	644.9	556.0	429.3	320.9	243.3	193.2
17.5°	730.8	731.8	728.8	718.5	701.2	680.7	542.7	417.0	293.3	216.7	162.5
20°	741.0	732.8	731.8	713.4	698.1	679.7	531.5	387.4	268.8	185.0	141.1
22.5°	757.4	738.0	738.0	719.6	687.9	684.8	525.4	353.6	235.1	158.4	120.6
25°	713.4	710.4	716.5	690.9	666.4	661.3	491.6	328.1	211.6	137.0	101.2
27.5°	683.8	675.6	667.4	651.1	627.6	615.3	464.0	295.4	184.0	114.5	85.9
30°	623.5	623.5	613.3	605.1	573.4	564.2	415.0	264.7	157.4	98.1	71.5
32.5°	557.0	547.8	548.9	539.7	520.2	513.1	369.0	231.0	135.9	79.7	62.3
35°	488.6	478.3	473.2	466.1	463.0	440.5	323.0	199.3	113.5	69.5	53.1
37.5°	421.1	410.9	406.8	395.6	379.2	374.1	272.9	165.6	95.1	57.2	44.0
40°	328.1	328.1	327.1	314.8	309.7	306.6	225.9	138.0	77.7	46.0	37.8
42.5°	261.7	264.7	262.7	257.6	246.3	244.3	188.1	112.4	63.4	38.8	31.7
45°	214.6	205.4	203.4	202.4	196.2	195.2	146.2	88.9	49.1	31.7	26.6
47.5°	157.4	156.4	158.4	153.3	146.2	152.3	115.5	67.5	38.8	25.6	22.5
50°	114.5	116.5	116.5	111.4	109.4	111.4	88.9	51.1	28.6	20.4	19.4
52.5°	85.9	84.8	83.8	84.8	83.8	83.8	66.4	37.8	22.5	16.4	15.3
55°	61.3	61.3	60.3	62.3	63.4	61.3	50.1	27.6	17.4	13.3	12.3
57.5°	42.9	42.9	40.9	42.9	42.9	45.0	35.8	20.4	14.3	10.2	10.2
60°	28.6	28.6	28.6	29.6	30.7	30.7	24.5	14.3	11.2	8.2	8.2
62.5°	19.4	19.4	19.4	20.4	20.4	22.5	17.4	11.2	9.2	7.2	6.1
65°	13.3	13.3	13.3	13.3	14.3	14.3	11.2	8.2	7.2	6.1	5.1
67.5°	8.2	9.2	8.2	9.2	9.2	9.2	7.2	6.1	5.1	4.1	3.1
70°	6.1	6.1	6.1	6.1	6.1	6.1	5.1	5.1	4.1	3.1	2.0
72.5°	4.1	4.1	4.1	4.1	4.1	4.1	3.1	3.1	3.1	2.0	2.0
75°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0
77.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
80°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0
82.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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**CANDELA DISTRIBUTION (continued):**

	157.5°	180°
0°	409.9	409.9
2.5°	376.1	369.0
5°	318.9	327.1
7.5°	278.0	267.8
10°	233.0	226.9
12.5°	202.4	199.3
15°	167.6	160.5
17.5°	144.1	137.0
20°	120.6	115.5
22.5°	103.2	100.2
25°	88.9	84.8
27.5°	76.7	74.6
30°	66.4	66.4
32.5°	57.2	59.3
35°	51.1	52.1
37.5°	44.0	46.0
40°	40.9	42.9
42.5°	34.8	38.8
45°	29.6	32.7
47.5°	25.6	28.6
50°	21.5	24.5
52.5°	19.4	21.5
55°	16.4	17.4
57.5°	13.3	14.3
60°	10.2	11.2
62.5°	8.2	9.2
65°	6.1	6.1
67.5°	4.1	5.1
70°	2.0	3.1
72.5°	1.0	1.0
75°	1.0	0.0
77.5°	0.0	0.0
80°	0.0	0.0
82.5°	0.0	0.0
85°	0.0	0.0
87.5°	0.0	0.0
90°	0.0	0.0

(END OF REPORT)