

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: P601183

Luminaire Tested: **ML406AWWD2W1E - TIR4D25AWW - TL43R2G\_ TL44S2G\_ 2700K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601183  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML406AWWD2W1E - TIR4D25AWW - TL43R2G\_ TL44S2G\_ 2700K  
 Description: RETROFIT, 25D WW OPTIC, DIFFUSE CLEAR LENS TRIM  
 Light Source: (1) SELECTABLE LUMEN LED D2W / 2700K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 453.1 lumens  
 Efficiency: N/A  
 Efficacy: 54.6 lumens/watt  
 Spacing Criteria (0/90/45): 1.33 / 0.62 / 0.83  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

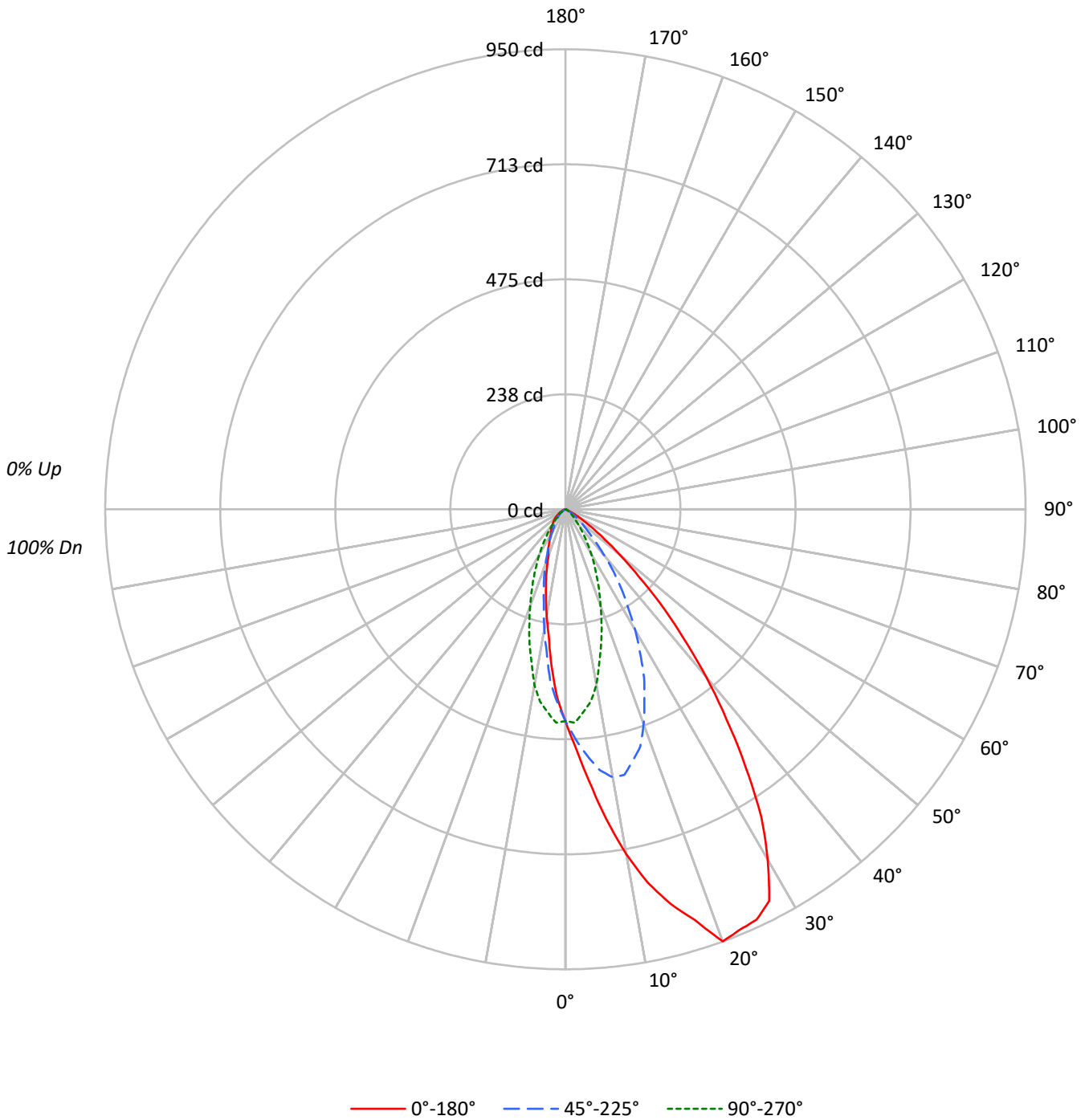
Input Watts (W): 8.3  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



Meas			
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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	113	110	107	105	110	108	105	103	104	102	100	100	98	97	97	95	94	92
2	107	101	97	93	104	100	96	92	96	93	90	93	91	88	91	88	86	85
3	101	94	88	84	99	92	87	83	89	85	82	87	83	80	85	82	79	78
4	95	87	81	76	93	85	80	75	83	78	75	81	77	74	79	76	73	71
5	89	80	74	69	88	79	73	69	78	72	68	76	71	68	74	70	67	65
6	84	75	68	64	83	74	68	63	72	67	63	71	66	62	70	65	62	60
7	80	70	63	59	78	69	63	58	68	62	58	66	62	58	65	61	57	56
8	76	65	59	54	74	65	58	54	64	58	54	62	57	54	61	57	53	52
9	72	61	55	51	70	61	55	50	60	54	50	59	54	50	58	53	50	48
10	68	58	51	47	67	57	51	47	56	51	47	55	50	47	55	50	47	45

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

	0°	90°	180°
0°	138053	138053	138053
5°	178582	133382	103079
10°	231884	118090	71085
15°	276136	93495	50703
20°	319094	71104	34241
25°	325692	53516	28117
30°	304562	38868	21986
35°	249790	26290	19621
40°	186357	17106	17106
45°	125617	11566	15049
50°	73539	8449	13067
55°	38812	6056	10350
60°	18820	3473	7894
65°	7621	2316	5305
70°	3601	1477	2862
75°	1952	976	0
80°	1455	1455	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	40.6	9.0
10°-20°	105.1	23.2
20°-30°	128.7	28.4
30°-40°	100.9	22.3
40°-50°	52.0	11.5
50°-60°	19.7	4.4
60°-70°	5.0	1.1
70°-80°	1.0	0.2
80°-90°	0.1	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°	274.4	60.6
0°-40°	375.3	82.8
0°-60°	447.0	98.6
0°-90°	453.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	453.1	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	437	437	437	437	437	
5°	563	510	421	356	325	59
15°	845	538	286	172	155	241
25°	935	384	154	80	81	424
35°	648	204	68	38	51	402
45°	281	70	26	20	34	219
55°	70	22	11	9	19	68
65°	10	4	3	3	7	13
75°	2	1	1	1	0	2
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°	437.2	437.2	437.2	437.2	437.2	437.2	437.2	437.2	437.2	437.2	437.2
2.5°	492.8	490.5	503.0	485.0	473.3	488.9	474.8	458.4	441.1	412.1	397.3
5°	563.4	564.9	567.3	561.8	559.4	557.9	510.1	465.4	420.8	376.9	356.5
7.5°	644.1	629.2	638.6	617.4	621.3	610.4	543.0	458.4	400.4	344.0	296.2
10°	723.2	706.8	714.6	695.0	690.3	680.9	561.8	439.6	368.3	292.3	251.5
12.5°	790.6	783.5	775.7	749.1	739.7	713.8	561.8	414.5	322.8	252.3	205.3
15°	844.7	837.6	829.0	794.5	765.5	742.8	537.5	379.2	286.0	216.3	171.6
17.5°	889.3	861.9	862.7	813.3	788.2	758.5	514.0	343.2	247.6	181.0	145.7
20°	949.6	899.5	890.9	838.4	791.4	758.5	472.5	304.0	211.6	152.8	119.9
22.5°	940.2	895.6	905.8	828.2	778.1	764.7	426.2	262.5	181.8	128.5	96.4
25°	934.8	902.6	885.4	802.3	742.0	699.7	383.9	229.6	153.6	105.8	79.9
27.5°	911.3	862.7	836.8	753.0	686.4	651.9	333.8	194.3	128.5	83.8	67.4
30°	835.3	800.0	772.6	684.8	614.3	581.4	289.1	161.4	106.6	69.0	53.3
32.5°	753.0	722.4	680.1	608.0	527.3	495.2	239.8	137.9	87.0	54.8	44.7
35°	648.0	622.9	583.0	510.1	432.5	418.4	203.7	110.5	68.2	43.9	37.6
37.5°	546.1	524.2	483.4	417.6	357.3	336.9	164.5	88.5	54.8	36.0	32.1
40°	452.1	426.2	399.6	335.4	286.0	264.1	126.1	69.0	41.5	29.0	27.4
42.5°	359.6	344.0	315.0	268.0	219.4	205.3	94.0	51.7	32.9	24.3	23.5
45°	281.3	264.8	237.4	206.1	165.3	154.4	70.5	40.0	25.9	19.6	20.4
47.5°	205.3	197.5	179.4	152.8	126.1	113.6	53.3	31.3	20.4	16.5	17.2
50°	149.7	141.8	133.2	108.9	87.8	84.6	40.0	24.3	17.2	13.3	14.1
52.5°	103.4	102.6	93.2	77.6	64.3	58.8	30.6	18.8	14.1	11.0	11.8
55°	70.5	69.7	63.5	54.1	45.4	41.5	21.9	14.1	11.0	8.6	9.4
57.5°	45.4	46.2	42.3	36.8	29.8	27.4	14.9	10.2	7.8	6.3	7.1
60°	29.8	29.8	25.9	23.5	18.8	17.2	10.2	7.1	5.5	4.7	5.5
62.5°	18.0	18.8	16.5	13.3	11.8	10.2	6.3	4.7	3.9	3.1	3.9
65°	10.2	11.0	9.4	7.8	7.1	6.3	3.9	3.1	3.1	2.4	3.1
67.5°	6.3	6.3	5.5	4.7	3.9	3.9	2.4	2.4	2.4	2.4	2.4
70°	3.9	3.9	3.1	3.1	2.4	2.4	1.6	2.4	1.6	1.6	1.6
72.5°	2.4	2.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8
75°	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8
77.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0
80°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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°	437.2	437.2
2.5°	387.9	389.4
5°	334.6	325.2
7.5°	278.2	263.3
10°	224.9	221.7
12.5°	189.6	185.7
15°	159.1	155.1
17.5°	133.2	126.1
20°	111.3	101.9
22.5°	92.5	93.2
25°	79.1	80.7
27.5°	68.2	69.7
30°	57.2	60.3
32.5°	51.7	56.4
35°	44.7	50.9
37.5°	40.0	46.2
40°	35.3	41.5
42.5°	31.3	37.6
45°	27.4	33.7
47.5°	24.3	30.6
50°	20.4	26.6
52.5°	17.2	22.7
55°	14.1	18.8
57.5°	11.8	15.7
60°	9.4	12.5
62.5°	7.1	9.4
65°	4.7	7.1
67.5°	3.1	4.7
70°	2.4	3.1
72.5°	0.8	1.6
75°	0.0	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)