

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: P601184

Luminaire Tested: **ML406AWWD2W1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 3000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



Cooper Lighting Solutions laboratories have been accredited by National Voluntary Laboratory Accreditation Program (NVLAP) that it adheres to the requirements of ISO/IEC 17025:2005 and appropriate IESNA test methods. This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government. Results contained in this report are valid for luminaire sample tested, as supplied by requestor. Information related to the luminaire tested has been supplied by requestor and can affect the validity of the test results. Report shall not be reproduced except in full without approval of Cooper Lighting Solutions Lighting Laboratory. Test performed at address noted above.

Test Information

Test Method: LM-79-08
 Report Number: P601184
 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_ 3000K
 Description: RETROFIT, 25D WW OPTIC, DIFFUSE CLEAR LENS TRIM
 Light Source: (1) SELECTABLE LUMEN LED D2W / 3000K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 481.6 lumens
 Efficiency: N/A
 Efficacy: 58.0 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

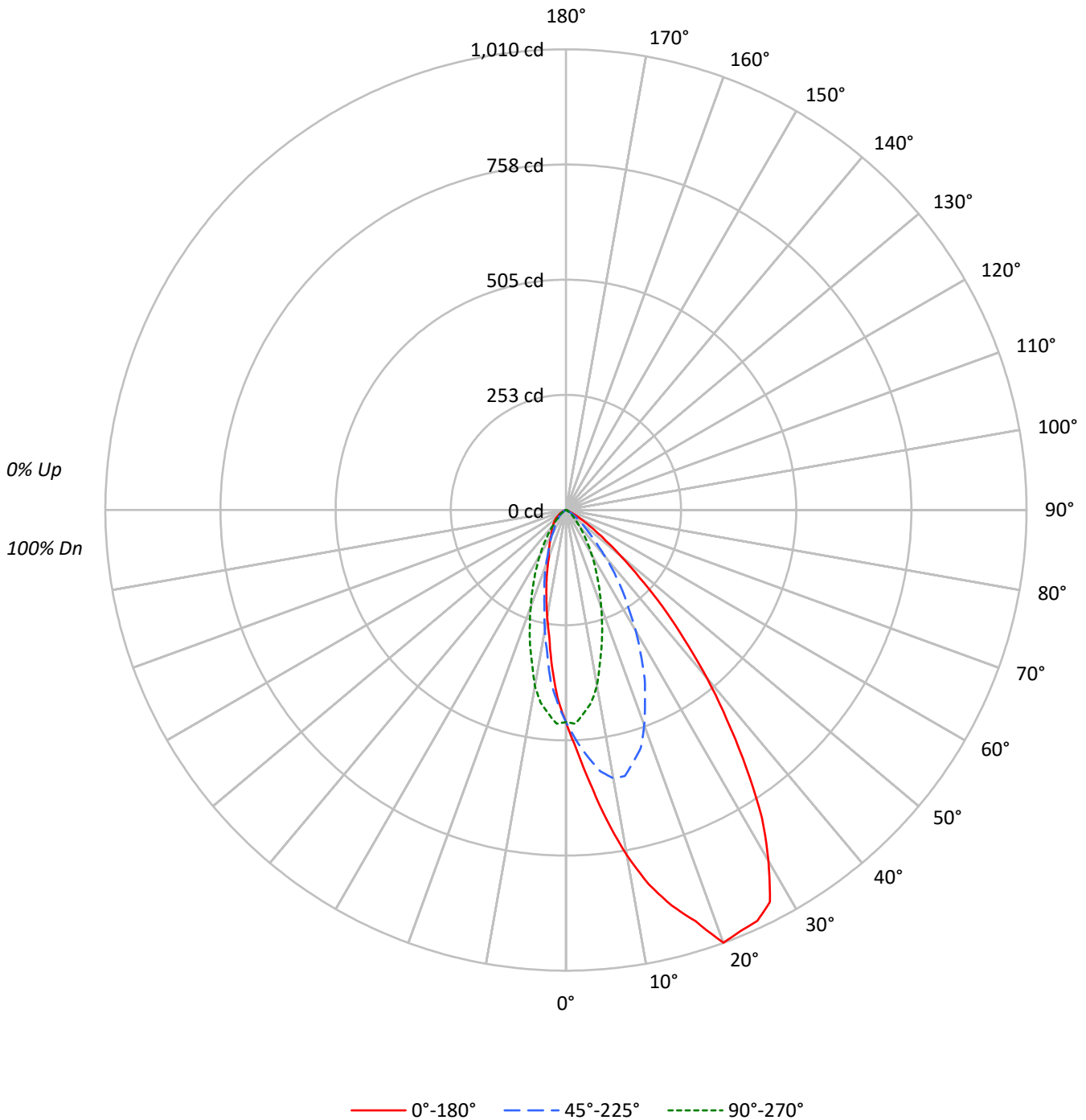
Input Watts (W): 8.3
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



Meas		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

TEST NUMBER: P601184
CATALOG NUMBER: ML406AWWD2W1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 3000K

Luminous Intensity Polar Plot



TEST NUMBER: P601184

CATALOG NUMBER: ML406AWWD2W1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 3000K

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°	146768	146768	146768
5°	189834	141781	109577
10°	246505	125529	75574
15°	293527	99379	53906
20°	339223	75573	36392
25°	346213	56860	29893
30°	323741	41311	23372
35°	265517	27947	20854
40°	198104	18178	18178
45°	133521	12280	15987
50°	78157	8990	13902
55°	41289	6441	11010
60°	20020	3663	8399
65°	8069	2466	5604
70°	3878	1570	3047
75°	2074	976	0
80°	1455	1455	0
85°	0	0	0

TEST NUMBER: P601184
 CATALOG NUMBER: ML406AWWD2W1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 3000K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	43.2	9.0
10°-20°	111.7	23.2
20°-30°	136.8	28.4
30°-40°	107.2	22.3
40°-50°	55.3	11.5
50°-60°	21.0	4.4
60°-70°	5.4	1.1
70°-80°	1.1	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°	291.7	60.6
0°-40°	398.9	82.8
0°-60°	475.2	98.7
0°-90°	481.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	481.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	465	465	465	465	465	
5°	599	542	447	379	346	62
15°	898	571	304	182	165	256
25°	994	408	163	85	86	451
35°	689	217	72	40	54	427
45°	299	75	28	22	36	233
55°	75	23	12	10	20	73
65°	11	4	3	3	8	13
75°	2	1	1	1	0	2
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

TEST NUMBER: P601184

CATALOG NUMBER: ML406AWWD2W1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 3000K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	464.8	464.8	464.8	464.8	464.8	464.8	464.8	464.8	464.8	464.8	464.8
2.5°	523.9	521.4	534.7	515.6	503.1	519.7	504.7	487.3	468.9	438.1	422.3
5°	598.9	600.5	603.0	597.2	594.7	593.0	542.2	494.7	447.3	400.6	379.0
7.5°	684.6	668.8	678.8	656.3	660.5	648.8	577.2	487.3	425.6	365.6	314.8
10°	768.8	751.3	759.6	738.8	733.8	723.8	597.2	467.3	391.5	310.7	267.4
12.5°	840.4	832.9	824.6	796.3	786.3	758.8	597.2	440.6	343.2	268.2	218.2
15°	897.9	890.4	881.2	844.6	813.7	789.6	571.4	403.1	304.0	229.9	182.4
17.5°	945.3	916.2	917.0	864.6	837.9	806.3	546.4	364.8	263.2	192.4	154.9
20°	1009.5	956.2	947.0	891.2	841.2	806.3	502.2	323.2	224.9	162.4	127.4
22.5°	999.5	952.0	962.8	880.4	827.1	812.9	453.1	279.0	193.2	136.6	102.4
25°	993.7	959.5	941.2	852.9	788.8	743.8	408.1	244.0	163.2	112.4	85.0
27.5°	968.7	917.0	889.5	800.4	729.6	693.0	354.8	206.6	136.6	89.1	71.6
30°	887.9	850.4	821.2	728.0	653.0	618.0	307.3	171.6	113.3	73.3	56.6
32.5°	800.4	767.9	723.0	646.3	560.5	526.4	254.9	146.6	92.5	58.3	47.5
35°	688.8	662.2	619.7	542.2	459.8	444.8	216.6	117.4	72.5	46.6	40.0
37.5°	580.5	557.2	513.9	443.9	379.8	358.1	174.9	94.1	58.3	38.3	34.1
40°	480.6	453.1	424.8	356.5	304.0	280.7	134.1	73.3	44.1	30.8	29.2
42.5°	382.3	365.6	334.8	284.9	233.2	218.2	99.9	55.0	35.0	25.8	25.0
45°	299.0	281.5	252.4	219.1	175.7	164.1	75.0	42.5	27.5	20.8	21.7
47.5°	218.2	209.9	190.7	162.4	134.1	120.8	56.6	33.3	21.7	17.5	18.3
50°	159.1	150.8	141.6	115.8	93.3	90.0	42.5	25.8	18.3	14.2	15.0
52.5°	109.9	109.1	99.1	82.5	68.3	62.5	32.5	20.0	15.0	11.7	12.5
55°	75.0	74.1	67.5	57.5	48.3	44.1	23.3	15.0	11.7	9.2	10.0
57.5°	48.3	49.1	45.0	39.1	31.7	29.2	15.8	10.8	8.3	6.7	7.5
60°	31.7	31.7	27.5	25.0	20.0	18.3	10.8	7.5	5.8	5.0	5.8
62.5°	19.2	20.0	17.5	14.2	12.5	10.8	6.7	5.0	4.2	3.3	4.2
65°	10.8	11.7	10.0	8.3	7.5	6.7	4.2	3.3	3.3	2.5	3.3
67.5°	6.7	6.7	5.8	5.0	4.2	4.2	2.5	2.5	2.5	2.5	2.5
70°	4.2	4.2	3.3	3.3	2.5	2.5	1.7	2.5	1.7	1.7	1.7
72.5°	2.5	2.5	1.7	1.7	1.7	1.7	1.7	1.7	1.7	0.8	0.8
75°	1.7	1.7	1.7	1.7	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

TEST NUMBER: P601184
 CATALOG NUMBER: ML406AWWD2W1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 3000K

CANDELA DISTRIBUTION (continued):

	157.5°	180°
0°	464.8	464.8
2.5°	412.3	414.0
5°	355.7	345.7
7.5°	295.7	279.9
10°	239.0	235.7
12.5°	201.6	197.4
15°	169.1	164.9
17.5°	141.6	134.1
20°	118.3	108.3
22.5°	98.3	99.1
25°	84.1	85.8
27.5°	72.5	74.1
30°	60.8	64.1
32.5°	55.0	60.0
35°	47.5	54.1
37.5°	42.5	49.1
40°	37.5	44.1
42.5°	33.3	40.0
45°	29.2	35.8
47.5°	25.8	32.5
50°	21.7	28.3
52.5°	18.3	24.2
55°	15.0	20.0
57.5°	12.5	16.7
60°	10.0	13.3
62.5°	7.5	10.0
65°	5.0	7.5
67.5°	3.3	5.0
70°	2.5	3.3
72.5°	0.8	1.7
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)