

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: P601174

Luminaire Tested: **ML406AWW9FS1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 4000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P601174
 Test Lab: COOPER LIGHTING SOLUTIONS
 Issue Date: 7/29/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML406AWW9FS1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 4000K
 Description: RETROFIT, 25D WW OPTIC, DIFFUSE CLEAR LENS TRIM
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 4000K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 611.7 lumens
 Efficiency: N/A
 Efficacy: 73.7 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

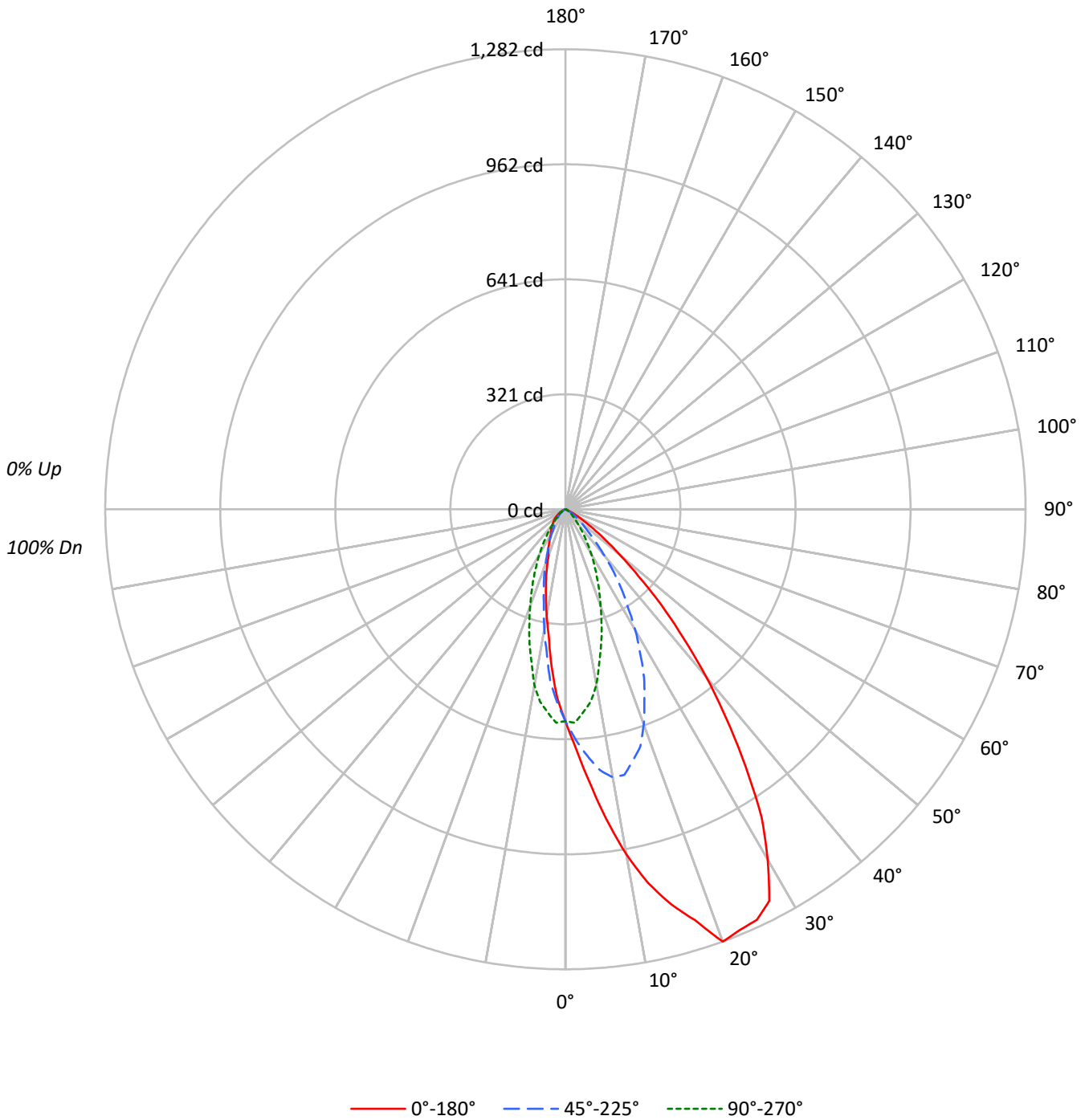
Input Watts (W): 8.3
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



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	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°	186365	186365	186365
5°	241057	180040	139150
10°	313037	159388	95966
15°	372736	126218	68454
20°	430791	95970	46204
25°	439656	72225	37942
30°	411103	52468	29680
35°	337178	35464	26521
40°	251567	23125	23125
45°	169559	15585	20318
50°	99231	11446	17685
55°	52409	8148	13983
60°	25388	4673	10673
65°	10311	3138	7098
70°	4893	1939	3878
75°	2562	1342	0
80°	2000	2000	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	54.8	9.0
10°-20°	141.9	23.2
20°-30°	173.8	28.4
30°-40°	136.2	22.3
40°-50°	70.2	11.5
50°-60°	26.6	4.4
60°-70°	6.8	1.1
70°-80°	1.4	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°	370.4	60.6
0°-40°	506.6	82.8
0°-60°	603.4	98.6
0°-90°	611.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	611.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	590	590	590	590	590	
5°	760	689	568	481	439	79
15°	1140	726	386	232	209	326
25°	1262	518	207	108	109	573
35°	875	275	92	51	69	543
45°	380	95	35	28	46	295
55°	95	30	15	13	25	92
65°	14	5	4	4	10	17
75°	2	1	1	1	0	3
85°	0	0	0	0	0	0
90°	0	0	0	0	0	

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CATALOG NUMBER: ML406AWW9FS1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 4000K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	590.2	590.2	590.2	590.2	590.2	590.2	590.2	590.2	590.2	590.2	590.2
2.5°	665.3	662.1	679.1	654.7	638.9	660.0	641.0	618.8	595.5	556.4	536.3
5°	760.5	762.6	765.8	758.4	755.2	753.1	688.6	628.3	568.0	508.8	481.3
7.5°	869.4	849.4	862.0	833.5	838.8	824.0	733.0	618.8	540.5	464.3	399.8
10°	976.3	954.1	964.6	938.2	931.9	919.2	758.4	593.4	497.1	394.5	339.5
12.5°	1067.2	1057.7	1047.1	1011.2	998.5	963.6	758.4	559.5	435.8	340.6	277.1
15°	1140.2	1130.7	1119.1	1072.5	1033.4	1002.7	725.6	511.9	386.1	291.9	231.6
17.5°	1200.5	1163.5	1164.6	1097.9	1064.1	1023.9	693.9	463.3	334.2	244.3	196.7
20°	1282.0	1214.3	1202.6	1131.8	1068.3	1023.9	637.8	410.4	285.6	206.3	161.8
22.5°	1269.3	1209.0	1222.7	1118.0	1050.3	1032.3	575.4	354.3	245.4	173.5	130.1
25°	1261.9	1218.5	1195.2	1083.1	1001.7	944.5	518.3	309.9	207.3	142.8	107.9
27.5°	1230.1	1164.6	1129.6	1016.5	926.6	880.0	450.6	262.3	173.5	113.2	91.0
30°	1127.5	1079.9	1042.9	924.4	829.3	784.8	390.3	217.9	143.9	93.1	71.9
32.5°	1016.5	975.2	918.1	820.8	711.8	668.5	323.7	186.2	117.4	74.0	60.3
35°	874.7	840.9	786.9	688.6	583.9	564.8	275.0	149.1	92.0	59.2	50.8
37.5°	737.2	707.6	652.6	563.8	482.3	454.8	222.1	119.5	74.0	48.7	43.4
40°	610.3	575.4	539.4	452.7	386.1	356.5	170.3	93.1	56.1	39.1	37.0
42.5°	485.5	464.3	425.2	361.7	296.2	277.1	126.9	69.8	44.4	32.8	31.7
45°	379.7	357.5	320.5	278.2	223.2	208.4	95.2	53.9	34.9	26.4	27.5
47.5°	277.1	266.5	242.2	206.3	170.3	153.4	71.9	42.3	27.5	22.2	23.3
50°	202.0	191.4	179.8	147.0	118.5	114.2	53.9	32.8	23.3	18.0	19.0
52.5°	139.6	138.6	125.9	104.7	86.7	79.3	41.3	25.4	19.0	14.8	15.9
55°	95.2	94.1	85.7	73.0	61.3	56.1	29.6	19.0	14.8	11.6	12.7
57.5°	61.3	62.4	57.1	49.7	40.2	37.0	20.1	13.8	10.6	8.5	9.5
60°	40.2	40.2	34.9	31.7	25.4	23.3	13.8	9.5	7.4	6.3	7.4
62.5°	24.3	25.4	22.2	18.0	15.9	13.8	8.5	6.3	5.3	4.2	5.3
65°	13.8	14.8	12.7	10.6	9.5	8.5	5.3	4.2	4.2	3.2	4.2
67.5°	8.5	8.5	7.4	6.3	5.3	5.3	3.2	3.2	3.2	3.2	3.2
70°	5.3	5.3	4.2	4.2	3.2	3.2	2.1	3.2	2.1	2.1	2.1
72.5°	3.2	3.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.1	1.1
75°	2.1	2.1	2.1	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
77.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
80°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	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°	590.2	590.2
2.5°	523.6	525.7
5°	451.6	439.0
7.5°	375.5	355.4
10°	303.6	299.3
12.5°	256.0	250.7
15°	214.7	209.4
17.5°	179.8	170.3
20°	150.2	137.5
22.5°	124.8	125.9
25°	106.8	108.9
27.5°	92.0	94.1
30°	77.2	81.4
32.5°	69.8	76.2
35°	60.3	68.8
37.5°	53.9	62.4
40°	47.6	56.1
42.5°	42.3	50.8
45°	37.0	45.5
47.5°	32.8	41.3
50°	27.5	36.0
52.5°	23.3	30.7
55°	19.0	25.4
57.5°	15.9	21.2
60°	12.7	16.9
62.5°	9.5	12.7
65°	6.3	9.5
67.5°	4.2	6.3
70°	3.2	4.2
72.5°	1.1	2.1
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)