

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: P601243

Luminaire Tested: **ML408LSAWW95FS1E - TIR4D25AWW - TL45R6G\_ TL46S6G\_ 5000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601243  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML408LSAWW95FS1E - TIR4D25AWW - TL45R6G\_ TL46S6G\_ 5000K  
 Description: RETROFIT, 25D WW OPTIC, LINEAR SPREAD LENS TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 95CRI / 5000K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 802.5 lumens  
 Efficiency: N/A  
 Efficacy: 77.9 lumens/watt  
 Spacing Criteria (0/90/45): 1.21 / 0.78 / 1  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

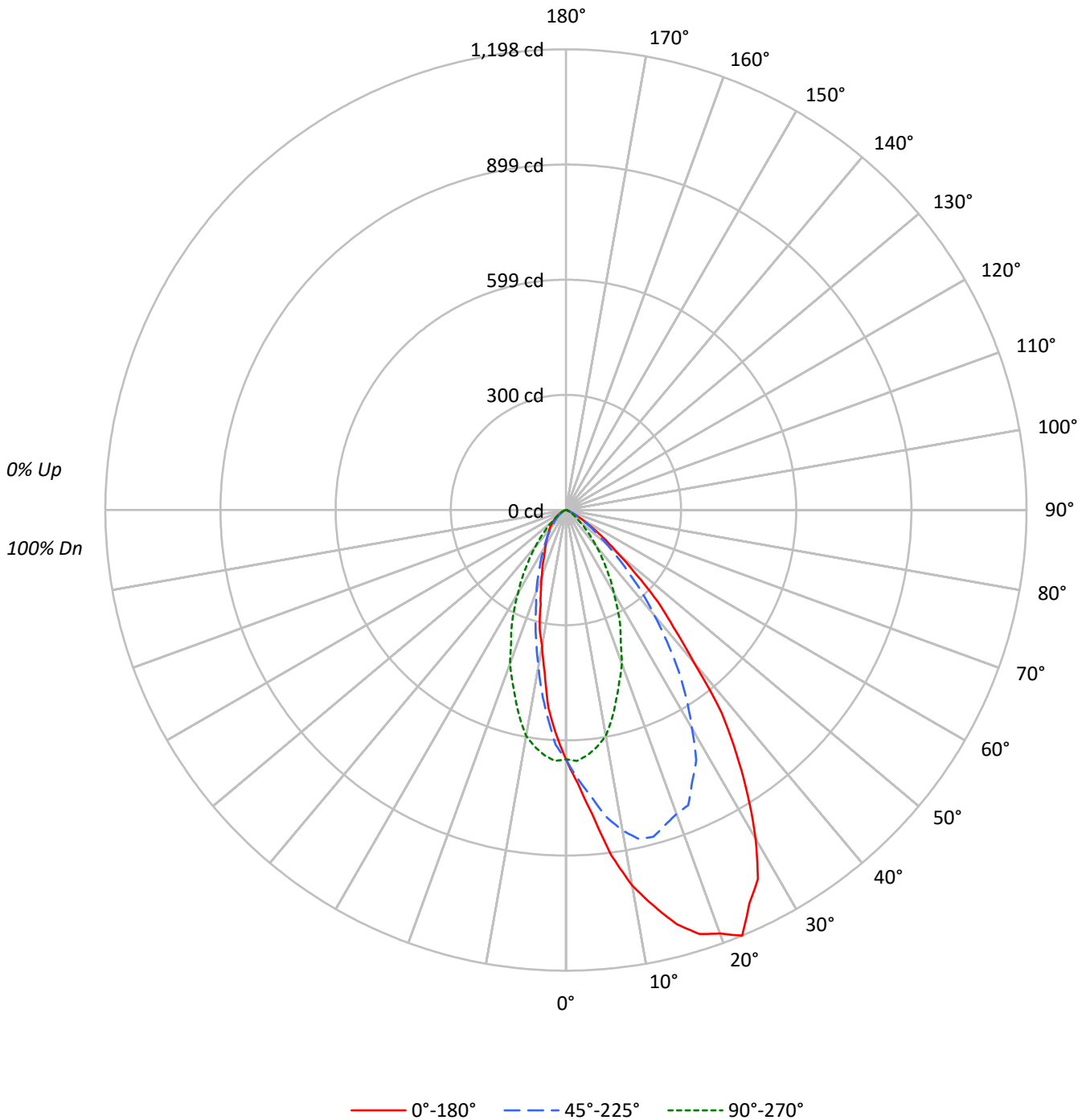
Input Watts (W): 10.3  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



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	0
RCR																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	100	100	100
1	113	110	107	104	110	107	105	103	103	101	99	100	98	96	96	95	94	92	92	92	92
2	106	100	96	92	104	99	95	91	95	92	89	92	90	87	90	87	85	83	83	83	83
3	100	92	87	82	98	91	86	81	88	84	80	86	82	79	83	80	78	76	76	76	76
4	94	85	79	74	92	84	78	73	82	76	72	79	75	72	78	74	71	69	69	69	69
5	88	78	72	67	86	77	71	67	76	70	66	74	69	65	72	68	65	63	63	63	63
6	83	73	66	61	81	72	65	61	70	65	60	69	64	60	67	63	59	58	58	58	58
7	78	68	61	56	77	67	60	56	65	60	55	64	59	55	63	58	55	53	53	53	53
8	74	63	56	52	72	62	56	51	61	55	51	60	55	51	59	54	51	49	49	49	49
9	70	59	52	48	68	58	52	48	57	52	47	56	51	47	55	51	47	46	46	46	46
10	66	55	49	44	65	55	48	44	54	48	44	53	48	44	52	47	44	42	42	42	42

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

	0°	90°	180°
0°	204679	204679	204679
5°	252119	202925	163969
10°	317751	191260	115076
15°	364629	165937	82968
20°	393828	142880	61393
25°	393144	116577	46756
30°	359546	90789	38321
35°	297859	69155	31763
40°	213892	50660	27989
45°	151607	34653	23087
50°	88964	22253	19060
55°	53400	15139	15139
60°	28608	11241	11241
65°	15690	8443	7247
70°	8955	6001	4432
75°	3904	3904	0
80°	2909	2909	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	61.4	7.7
10°-20°	167.1	20.8
20°-30°	218.5	27.2
30°-40°	187.3	23.3
40°-50°	107.1	13.4
50°-60°	43.8	5.5
60°-70°	14.0	1.7
70°-80°	3.0	0.4
80°-90°	0.3	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
<b>0°-30°</b>	<b>447.0</b>	<b>55.7</b>
<b>0°-40°</b>	<b>634.3</b>	<b>79.0</b>
<b>0°-60°</b>	<b>785.3</b>	<b>97.8</b>
<b>0°-90°</b>	<b>802.5</b>	<b>100.0</b>
90°-120°	0.0	0.0
90°-150°	0.0	0.0
<b>90°-180°</b>	<b>0.0</b>	<b>0.0</b>
<b>0°-180°</b>	<b>802.5</b>	<b>100.0</b>

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	648	648	648	648	648	
5°	795	747	640	542	517	82
15°	1115	879	508	306	254	315
25°	1128	778	335	160	134	516
35°	773	511	179	84	82	477
45°	340	231	78	42	52	258
55°	97	79	28	19	28	92
65°	21	18	11	8	10	23
75°	3	3	3	2	0	4
85°	0	0	0	0	0	1
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°	648.2	648.2	648.2	648.2	648.2	648.2	648.2	648.2	648.2	648.2	648.2
2.5°	711.3	725.8	721.0	729.1	727.5	712.9	698.4	675.7	653.1	640.2	611.1
5°	795.4	813.1	826.1	816.4	811.5	800.2	746.9	696.7	640.2	583.6	541.6
7.5°	905.3	900.4	915.0	885.9	887.5	882.6	805.1	708.1	620.8	538.3	478.5
10°	991.0	976.4	991.0	981.3	961.9	939.2	845.5	703.2	596.5	493.1	412.2
12.5°	1054.0	1073.4	1073.4	1050.8	1031.4	1005.5	876.2	700.0	554.5	438.1	355.6
15°	1115.4	1121.9	1110.6	1092.8	1073.4	1020.1	879.4	679.0	507.6	384.7	305.5
17.5°	1155.8	1157.5	1152.6	1136.5	1109.0	1076.6	858.4	659.6	464.0	342.7	257.0
20°	1172.0	1159.1	1157.5	1128.4	1104.1	1075.0	840.6	612.7	425.2	292.6	223.1
22.5°	1197.9	1167.2	1167.2	1138.1	1088.0	1083.1	830.9	559.3	371.8	250.6	190.8
25°	1128.4	1123.5	1133.2	1092.8	1054.0	1045.9	777.6	518.9	334.6	216.6	160.0
27.5°	1081.5	1068.6	1055.6	1029.8	992.6	973.2	733.9	467.2	291.0	181.1	135.8
30°	986.1	986.1	969.9	957.0	906.9	892.3	656.3	418.7	249.0	155.2	113.2
32.5°	881.0	866.5	868.1	853.6	822.8	811.5	583.6	365.3	215.0	126.1	98.6
35°	772.7	756.6	748.5	737.2	732.3	696.7	510.8	315.2	179.4	109.9	84.1
37.5°	666.0	649.9	643.4	625.6	599.7	591.7	431.6	261.9	150.3	90.5	69.5
40°	518.9	518.9	517.3	497.9	489.8	485.0	357.3	218.2	122.9	72.7	59.8
42.5°	413.8	418.7	415.5	407.4	389.6	386.4	297.4	177.8	100.2	61.4	50.1
45°	339.5	324.9	321.7	320.1	310.4	308.8	231.2	140.6	77.6	50.1	42.0
47.5°	249.0	247.3	250.6	242.5	231.2	240.9	182.7	106.7	61.4	40.4	35.6
50°	181.1	184.3	184.3	176.2	173.0	176.2	140.6	80.8	45.3	32.3	30.7
52.5°	135.8	134.2	132.6	134.2	132.6	132.6	105.1	59.8	35.6	25.9	24.2
55°	97.0	97.0	95.4	98.6	100.2	97.0	79.2	43.6	27.5	21.0	19.4
57.5°	67.9	67.9	64.7	67.9	67.9	71.1	56.6	32.3	22.6	16.2	16.2
60°	45.3	45.3	45.3	46.9	48.5	48.5	38.8	22.6	17.8	12.9	12.9
62.5°	30.7	30.7	30.7	32.3	32.3	35.6	27.5	17.8	14.5	11.3	9.7
65°	21.0	21.0	21.0	21.0	22.6	22.6	17.8	12.9	11.3	9.7	8.1
67.5°	12.9	14.5	12.9	14.5	14.5	14.5	11.3	9.7	8.1	6.5	4.8
70°	9.7	9.7	9.7	9.7	9.7	9.7	8.1	8.1	6.5	4.8	3.2
72.5°	6.5	6.5	6.5	6.5	6.5	6.5	4.8	4.8	4.8	3.2	3.2
75°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	1.6	1.6
77.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.0
80°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.0	0.0
82.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	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°	648.2	648.2
2.5°	594.9	583.6
5°	504.4	517.3
7.5°	439.7	423.5
10°	368.6	358.9
12.5°	320.1	315.2
15°	265.1	253.8
17.5°	227.9	216.6
20°	190.8	182.7
22.5°	<b>163.3</b>	<b>158.4</b>
25°	140.6	134.2
27.5°	121.2	118.0
30°	105.1	105.1
32.5°	90.5	93.8
35°	80.8	82.4
37.5°	69.5	72.7
40°	64.7	67.9
42.5°	55.0	61.4
45°	46.9	51.7
47.5°	40.4	45.3
50°	33.9	38.8
52.5°	30.7	33.9
55°	25.9	27.5
57.5°	21.0	22.6
60°	16.2	17.8
62.5°	12.9	14.5
65°	9.7	9.7
67.5°	6.5	8.1
70°	3.2	4.8
72.5°	1.6	1.6
75°	1.6	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)