

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: P601237

Luminaire Tested: **ML408LSAWW95FS1E - 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: P601237
 Test Lab: COOPER LIGHTING SOLUTIONS
 Issue Date: 7/29/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML408LSAWW95FS1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 4000K
 Description: RETROFIT, 25D WW OPTIC, DIFFUSE CLEAR LENS TRIM
 Light Source: (1) SELECTABLE LUMEN LED 95CRI / 4000K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 728.9 lumens
 Efficiency: N/A
 Efficacy: 70.8 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

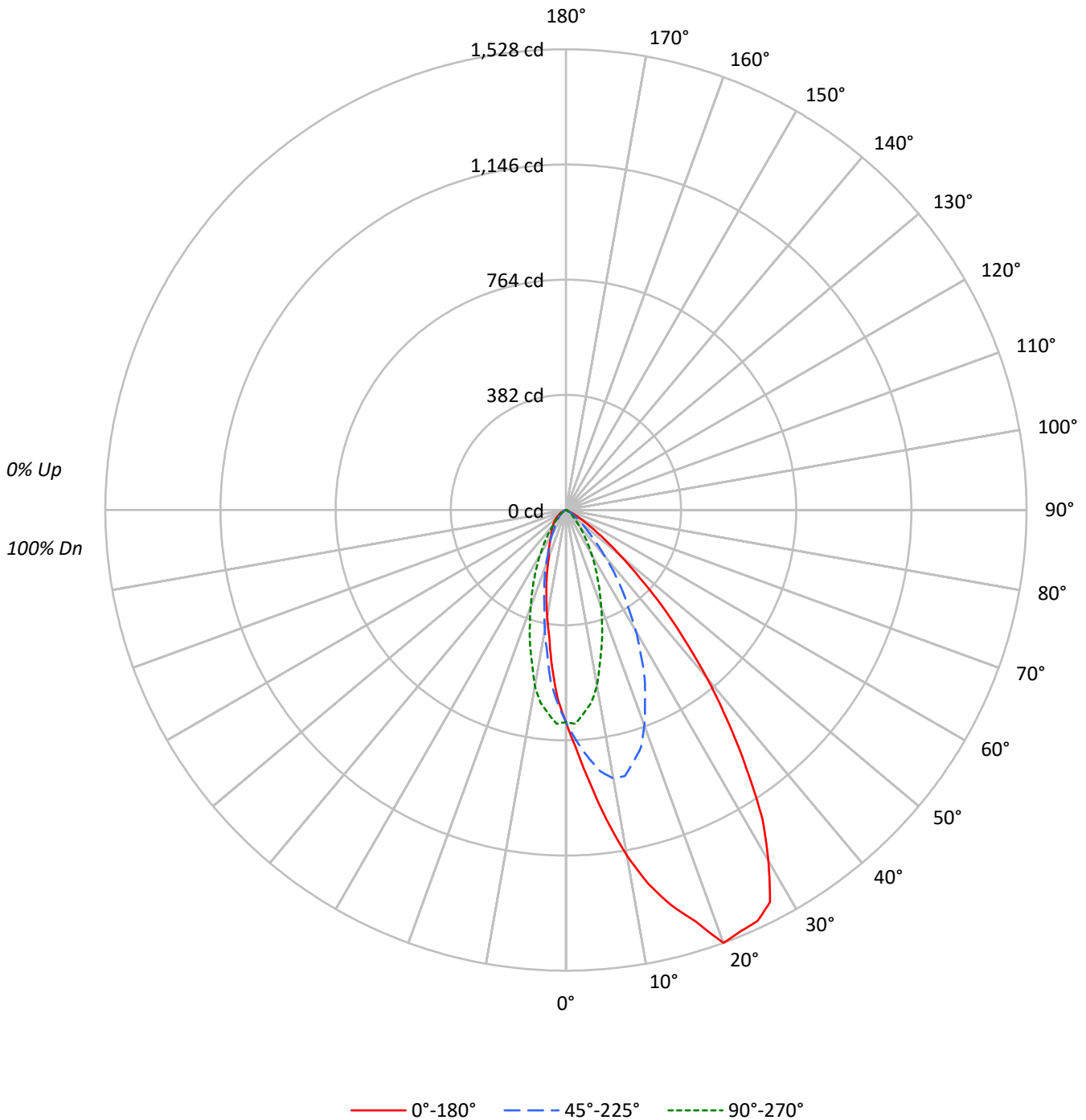
Input Watts (W): 10.3
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



Meas		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	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°	222109	222109	222109
5°	287271	214558	165808
10°	373060	189945	114371
15°	444197	150409	81595
20°	513353	114351	55075
25°	523936	86092	45223
30°	489932	62495	35404
35°	401822	42287	31571
40°	299795	27535	27535
45°	202068	18577	24204
50°	118291	13607	21074
55°	62429	9689	16681
60°	30250	5557	12757
65°	12253	3736	8443
70°	5816	2308	4616
75°	3050	1586	0
80°	2364	2364	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	65.3	9.0
10°-20°	169.1	23.2
20°-30°	207.1	28.4
30°-40°	162.3	22.3
40°-50°	83.6	11.5
50°-60°	31.7	4.4
60°-70°	8.1	1.1
70°-80°	1.6	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°	441.5	60.6
0°-40°	603.7	82.8
0°-60°	719.1	98.7
0°-90°	728.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	728.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	703	703	703	703	703	
5°	906	821	677	574	523	95
15°	1359	865	460	276	250	388
25°	1504	618	247	129	130	683
35°	1042	328	110	60	82	647
45°	452	113	42	33	54	352
55°	113	35	18	15	30	110
65°	16	6	5	5	11	20
75°	2	1	1	1	0	3
85°	0	0	0	0	0	0
90°	0	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°	703.4	703.4	703.4	703.4	703.4	703.4	703.4	703.4	703.4	703.4	703.4
2.5°	792.9	789.1	809.3	780.3	761.4	786.6	763.9	737.4	709.7	663.0	639.1
5°	906.3	908.8	912.6	903.8	900.0	897.5	820.6	748.7	676.9	606.3	573.5
7.5°	1036.1	1012.2	1027.3	993.3	999.6	981.9	873.5	737.4	644.1	553.4	476.5
10°	1163.5	1137.0	1149.6	1118.1	1110.5	1095.4	903.8	707.2	592.4	470.2	404.6
12.5°	1271.9	1260.5	1247.9	1205.1	1189.9	1148.3	903.8	666.8	519.3	405.9	330.3
15°	1358.8	1347.5	1333.6	1278.2	1231.5	1195.0	864.7	610.1	460.1	347.9	276.1
17.5°	1430.7	1386.6	1387.8	1308.4	1268.1	1220.2	826.9	552.1	398.3	291.2	234.5
20°	1527.7	1447.1	1433.2	1348.8	1273.1	1220.2	760.1	489.1	340.3	245.8	192.9
22.5°	1512.6	1440.8	1457.2	1332.4	1251.7	1230.3	685.7	422.3	292.4	206.7	155.0
25°	1503.8	1452.1	1424.4	1290.8	1193.7	1125.6	617.7	369.3	247.1	170.2	128.6
27.5°	1466.0	1387.8	1346.2	1211.4	1104.2	1048.8	537.0	312.6	206.7	134.9	108.4
30°	1343.7	1287.0	1242.9	1101.7	988.2	935.3	465.1	259.7	171.4	110.9	85.7
32.5°	1211.4	1162.2	1094.1	978.2	848.3	796.6	385.7	221.9	139.9	88.2	71.8
35°	1042.4	1002.1	937.8	820.6	695.8	673.1	327.7	177.7	109.7	70.6	60.5
37.5°	878.6	843.3	777.7	671.9	574.8	542.0	264.7	142.4	88.2	58.0	51.7
40°	727.3	685.7	642.9	539.5	460.1	424.8	202.9	110.9	66.8	46.6	44.1
42.5°	578.6	553.4	506.7	431.1	352.9	330.3	151.3	83.2	52.9	39.1	37.8
45°	452.5	426.1	381.9	331.5	266.0	248.3	113.4	64.3	41.6	31.5	32.8
47.5°	330.3	317.7	288.7	245.8	202.9	182.8	85.7	50.4	32.8	26.5	27.7
50°	240.8	228.2	214.3	175.2	141.2	136.1	64.3	39.1	27.7	21.4	22.7
52.5°	166.4	165.1	150.0	124.8	103.4	94.5	49.2	30.3	22.7	17.6	18.9
55°	113.4	112.2	102.1	87.0	73.1	66.8	35.3	22.7	17.6	13.9	15.1
57.5°	73.1	74.4	68.1	59.2	47.9	44.1	23.9	16.4	12.6	10.1	11.3
60°	47.9	47.9	41.6	37.8	30.3	27.7	16.4	11.3	8.8	7.6	8.8
62.5°	29.0	30.3	26.5	21.4	18.9	16.4	10.1	7.6	6.3	5.0	6.3
65°	16.4	17.6	15.1	12.6	11.3	10.1	6.3	5.0	5.0	3.8	5.0
67.5°	10.1	10.1	8.8	7.6	6.3	6.3	3.8	3.8	3.8	3.8	3.8
70°	6.3	6.3	5.0	5.0	3.8	3.8	2.5	3.8	2.5	2.5	2.5
72.5°	3.8	3.8	2.5	2.5	2.5	2.5	2.5	2.5	2.5	1.3	1.3
75°	2.5	2.5	2.5	2.5	1.3	1.3	1.3	1.3	1.3	1.3	1.3
77.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.0
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	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°	703.4	703.4
2.5°	624.0	626.5
5°	538.2	523.1
7.5°	447.5	423.5
10°	361.8	356.7
12.5°	305.0	298.7
15°	255.9	249.6
17.5°	214.3	202.9
20°	179.0	163.9
22.5°	148.7	150.0
25°	127.3	129.8
27.5°	109.7	112.2
30°	92.0	97.1
32.5°	83.2	90.8
35°	71.8	81.9
37.5°	64.3	74.4
40°	56.7	66.8
42.5°	50.4	60.5
45°	44.1	54.2
47.5°	39.1	49.2
50°	32.8	42.9
52.5°	27.7	36.6
55°	22.7	30.3
57.5°	18.9	25.2
60°	15.1	20.2
62.5°	11.3	15.1
65°	7.6	11.3
67.5°	5.0	7.6
70°	3.8	5.0
72.5°	1.3	2.5
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)