

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO

Report Number: P277705

Luminaire Tested: **ML4D09\_D2WE - TIR45FL40 - TL45R6GMWBB - TL46S6GMWBB**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P277705  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1808-893-10)  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: ML4D09\_D2WE - TIR45FL40 - TL45R6GMWBB - TL46S6GMWBB  
Description: ML4 900LM 3000K, D2W, 40° FL OPTIC, WITH SQUARE ASYMM WW, LINEAR SPREAD LENS, MATTE WHITE FLANGE, BLACK LENS FRAME  
Light Source: (1) HIGH LUMEN LED 90CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 532.3 lumens  
Efficiency: N/A  
Efficacy: 44.4 lumens/watt  
Spacing Criteria (0/90/45): 0.58 / 0.68 / 0.66  
Luminous Opening: Rectangular (W 0.17' x L: 0.17' x H: 0')  
CIE Type: Direct

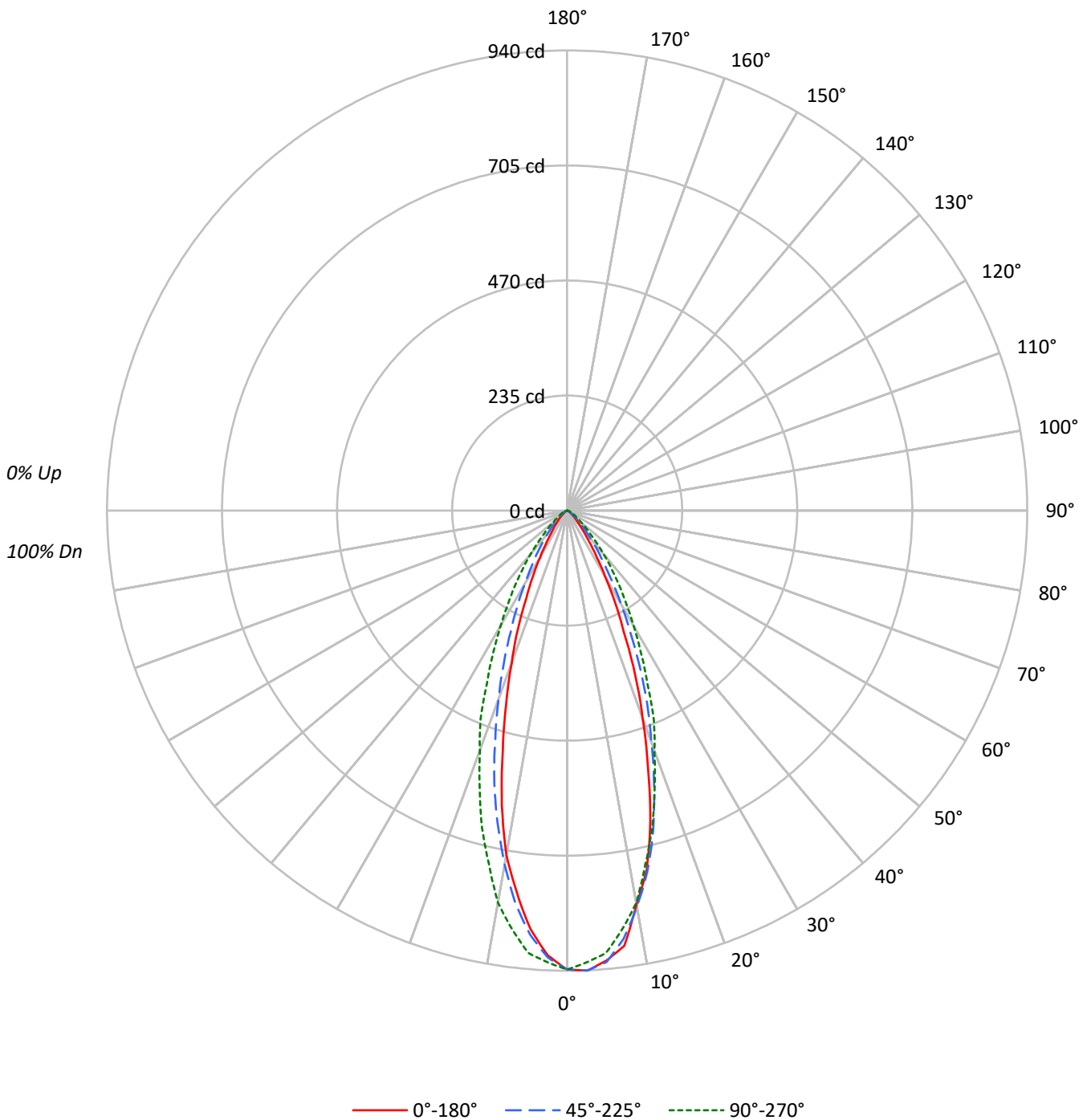
Input Watts (W): 12  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	114	111	108	106	111	109	107	105	105	103	101	101	100	98	98	97	96	94
2	108	103	99	96	106	102	98	95	98	96	93	96	93	91	93	91	89	87
3	103	97	92	88	101	95	91	87	93	89	86	90	87	85	88	85	83	82
4	98	91	85	81	96	90	85	81	87	83	80	85	82	79	84	81	78	77
5	93	85	80	76	92	84	79	75	83	78	75	81	77	74	80	76	73	72
6	89	81	75	71	88	80	74	70	78	74	70	77	73	70	76	72	69	68
7	85	76	70	66	84	76	70	66	74	69	66	73	69	66	72	68	65	64
8	81	72	67	63	80	72	66	63	71	66	62	70	65	62	69	65	62	60
9	78	69	63	59	77	68	63	59	67	62	59	66	62	59	66	62	59	57
10	75	65	60	56	74	65	60	56	64	59	56	64	59	56	63	59	56	55

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

	0°	90°	180°
0°	363281	363281	363281
5°	358834	352999	333900
10°	321235	320054	281100
15°	263287	269305	203914
20°	186061	214968	136576
25°	117194	165551	84272
30°	68951	121303	49264
35°	38317	86615	27910
40°	22257	58223	17199
45°	13700	36168	11508
50°	8440	22305	7837
55°	5405	14863	6080
60°	3875	11625	4650
65°	2751	9169	2751
70°	2266	6798	2266
75°	2994	4492	0
80°	2232	0	0
85°	0	0	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	82.2	15.4
10°-20°	172.1	32.3
20°-30°	143.9	27.0
30°-40°	78.6	14.8
40°-50°	34.0	6.4
50°-60°	13.6	2.5
60°-70°	6.1	1.2
70°-80°	1.8	0.3
80°-90°	0.0	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°	398.2	74.8
0°-40°	476.8	89.6
0°-60°	524.3	98.5
0°-90°	532.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	532.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	938	938	938	938	938	
5°	922	926	908	869	858	85
15°	656	678	671	575	508	178
25°	274	349	387	273	197	129
35°	81	128	183	108	59	54
45°	25	42	66	37	21	20
55°	8	13	22	14	9	8
65°	3	5	10	6	3	3
75°	2	2	3	1	0	2
85°	0	0	0	0	0	0
90°	0	0	0	0	0	0



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°
0°	937.5	937.5	937.5	937.5	937.5	937.5	937.5	937.5	937.5
2.5°	940.5	941.5	940.5	937.5	923.5	918.5	913.5	926.5	909.5
5°	922.5	917.5	925.5	918.5	907.5	901.5	869.4	867.4	858.4
7.5°	896.5	888.5	882.5	881.5	862.4	838.4	809.4	793.4	787.4
10°	816.4	819.4	821.4	829.4	813.4	783.4	734.4	719.4	714.4
12.5°	751.4	742.4	756.4	757.4	739.4	709.4	655.3	620.3	616.3
15°	656.3	647.3	678.3	688.4	671.3	635.3	575.3	532.3	508.3
17.5°	549.3	560.3	591.3	611.3	594.3	558.3	488.3	439.2	415.2
20°	451.2	458.2	503.3	533.3	521.3	477.2	409.2	360.2	331.2
22.5°	363.2	374.2	427.2	456.2	463.2	408.2	338.2	282.1	264.1
25°	274.1	297.2	349.2	387.2	387.2	345.2	273.1	217.1	197.1
27.5°	212.1	227.1	278.1	323.2	326.2	288.1	220.1	166.1	152.1
30°	154.1	173.1	219.1	266.1	271.1	236.1	173.1	127.1	110.1
32.5°	113.1	128.1	169.1	214.1	223.1	191.1	135.1	94.0	82.0
35°	81.0	92.0	128.1	173.1	183.1	155.1	108.1	71.0	59.0
37.5°	59.0	68.0	100.1	136.1	147.1	120.1	82.0	54.0	44.0
40°	44.0	50.0	74.0	104.1	115.1	95.0	63.0	40.0	34.0
42.5°	33.0	37.0	56.0	81.0	88.0	74.0	48.0	31.0	26.0
45°	25.0	28.0	42.0	61.0	66.0	56.0	37.0	24.0	21.0
47.5°	19.0	21.0	31.0	46.0	51.0	43.0	29.0	19.0	16.0
50°	14.0	16.0	23.0	34.0	37.0	32.0	23.0	15.0	13.0
52.5°	11.0	12.0	18.0	25.0	28.0	25.0	18.0	12.0	11.0
55°	8.0	9.0	13.0	18.0	22.0	20.0	14.0	10.0	9.0
57.5°	6.0	7.0	10.0	14.0	18.0	16.0	11.0	8.0	7.0
60°	5.0	6.0	8.0	11.0	15.0	14.0	9.0	7.0	6.0
62.5°	4.0	5.0	6.0	9.0	12.0	11.0	8.0	5.0	4.0
65°	3.0	4.0	5.0	7.0	10.0	9.0	6.0	4.0	3.0
67.5°	3.0	3.0	4.0	6.0	8.0	7.0	5.0	3.0	2.0
70°	2.0	2.0	3.0	4.0	6.0	6.0	4.0	2.0	2.0
72.5°	2.0	2.0	2.0	3.0	4.0	4.0	2.0	1.0	1.0
75°	2.0	1.0	2.0	2.0	3.0	2.0	1.0	1.0	0.0
77.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0
80°	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	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
87.5°	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

(END OF REPORT)