

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: P123743

Luminaire Tested: **EL406935-TLS408TBZBB**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P123743  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P13994)  
Test Lab: INNOVATION CENTER-P1  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: EL406935-TLS408TBZBB  
Description: HALO 4-INCH RECESSED LED DOWNLIGHT  
SQUARE BLACK BAFFLE, SOLITE® LENS AND TUSCAN BRONZE RING  
Light Source: (1)SURFACE MOUNT LED, 3500K CCT, 90CRI  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 700.0 lumens  
Efficiency: N/A  
Efficacy: 53.8 lumens/watt  
Spacing Criteria (0/90/45): 0.68 / 0.68 / 0.71  
Luminous Opening: Rectangular (W 0.21' x L: 0.21' x H: 0')  
CIE Type: Direct

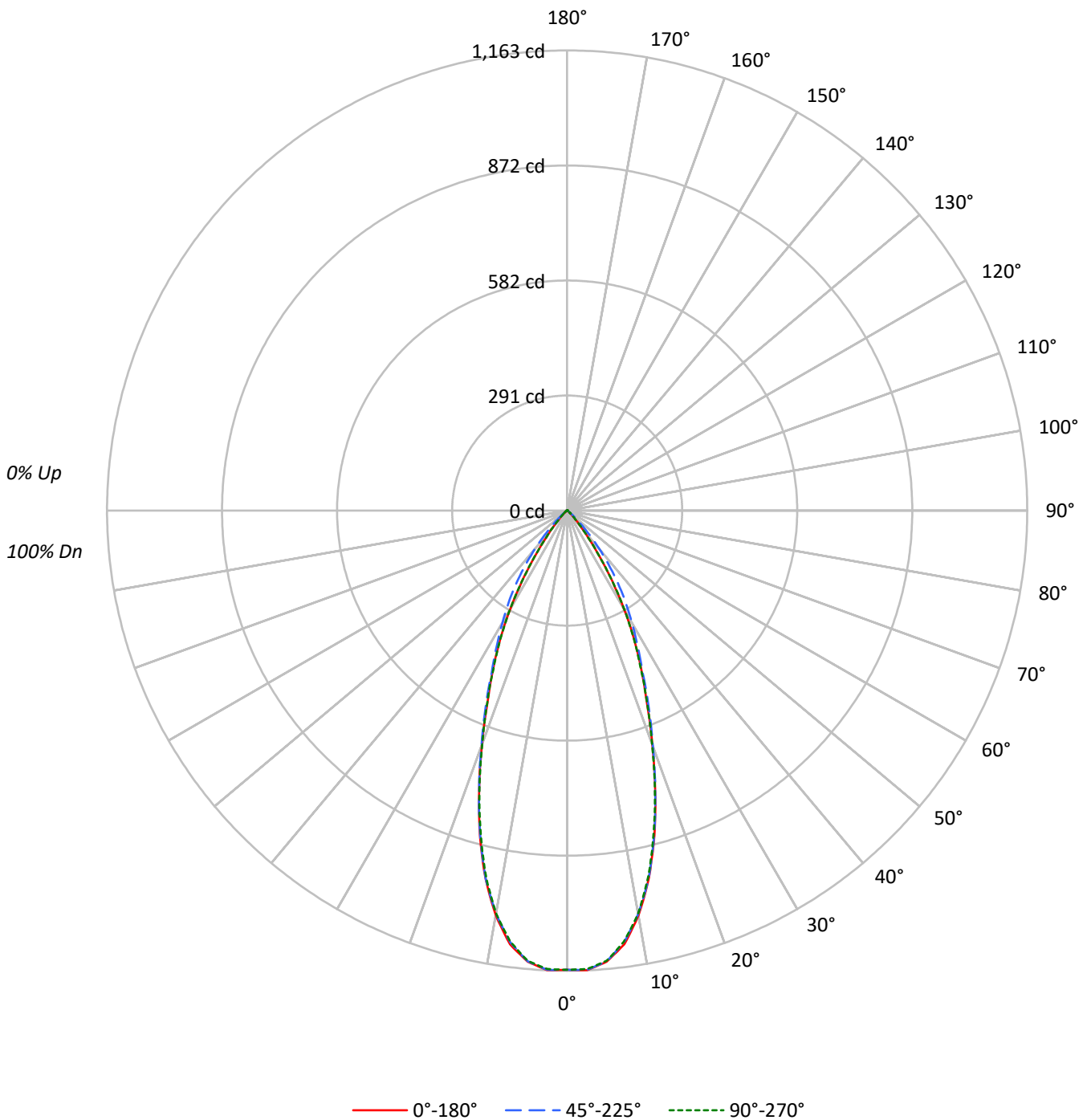
Input Watts (W): 13  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	109	107	111	109	107	105	105	103	102		101	100	99		98	97	96	94
2	109	104	100	97	107	102	99	96	99	96	94		96	94	92		94	92	90	89
3	104	98	93	89	102	96	92	89	94	90	87		91	88	86		89	87	85	83
4	99	92	87	83	97	91	86	82	89	85	81		87	83	81		85	82	80	78
5	95	87	81	77	93	86	81	77	84	80	76		82	79	76		81	78	75	74
6	90	82	76	73	89	81	76	72	80	75	72		78	74	71		77	74	71	70
7	86	78	72	68	85	77	72	68	76	71	68		75	70	67		74	70	67	66
8	83	74	68	64	81	73	68	64	72	67	64		71	67	64		70	66	64	62
9	79	70	65	61	78	70	64	61	69	64	61		68	64	60		67	63	60	59
10	76	67	61	58	75	66	61	58	66	61	58		65	61	58		64	60	57	56

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

	0°	45°	90°
0°	287830	287830	287830
5°	284922	284648	284374
10°	261699	260616	260339
15°	218520	218237	216877
20°	165925	167324	165635
25°	121140	123493	120565
30°	82474	93556	83075
35°	43930	67665	44565
40°	18453	40694	18453
45°	7155	18834	7541
50°	3318	7446	3318
55°	2335	3243	2335
60°	1042	2133	1587
65°	0	0	0
70°	0	0	0
75°	0	0	0
80°	0	1571	1571
85°	3130	0	5976



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	105.7	15.1
10°-20°	233.2	33.3
20°-30°	207.2	29.6
30°-40°	115.2	16.5
40°-50°	29.8	4.3
50°-60°	6.4	0.9
60°-70°	1.4	0.2
70°-80°	0.4	0.1
80°-90°	0.7	0.1
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°	546.2	78.0
0°-40°	661.4	94.5
0°-60°	697.5	99.6
0°-90°	700.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	700.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1161	1161	1161	1161	1161	
5°	1144	1146	1143	1144	1142	106
15°	851	850	850	849	845	233
25°	443	448	451	447	441	203
35°	145	178	224	179	147	95
45°	20	28	54	30	22	19
55°	5	6	8	6	5	5
65°	0	0	0	0	0	1
75°	0	0	0	0	0	1
85°	1	1	0	0	2	1
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1160.6	1160.6	1160.6	1160.6	1160.6	1160.6	1160.6	1160.6	1160.6	1160.6	1160.6
2.5°	1162.7	1163.8	1162.7	1163.8	1163.8	1162.7	1162.7	1162.7	1162.7	1161.7	1163.8
5°	1144.5	1144.5	1145.5	1146.6	1147.7	1144.5	1144.5	1145.5	1144.5	1143.4	1144.5
7.5°	1105.8	1105.8	1102.6	1104.7	1103.6	1103.6	1102.6	1102.6	1101.5	1100.4	1101.5
10°	1039.2	1040.2	1039.2	1039.2	1038.1	1038.1	1037.0	1037.0	1037.0	1034.9	1037.0
12.5°	953.2	954.3	953.2	953.2	950.0	950.0	951.0	950.0	952.1	952.1	950.0
15°	851.1	851.1	850.0	851.1	850.0	849.0	850.0	850.0	850.0	850.0	850.0
17.5°	740.4	740.4	740.4	740.4	739.3	740.4	740.4	740.4	741.5	740.4	743.6
20°	628.7	629.7	628.7	631.9	631.9	631.9	633.0	634.0	634.0	634.0	636.2
22.5°	526.6	528.7	528.7	530.9	530.9	533.0	533.0	535.2	537.3	538.4	537.3
25°	442.7	442.7	442.7	444.9	446.0	449.2	448.1	449.2	450.3	451.3	452.4
27.5°	366.4	367.5	369.7	374.0	378.3	380.4	382.6	383.6	384.7	384.7	386.9
30°	288.0	290.1	293.4	302.0	310.6	315.9	322.4	326.7	327.8	326.7	328.8
32.5°	212.8	216.0	220.3	228.9	238.6	249.3	260.1	269.7	274.0	275.1	275.1
35°	145.1	148.3	151.5	160.1	170.9	185.9	197.7	208.5	219.2	223.5	220.3
37.5°	93.5	94.6	98.9	106.4	116.1	129.0	142.9	156.9	168.7	171.9	169.8
40°	57.0	59.1	60.2	64.5	73.1	82.7	96.7	109.6	120.4	125.7	122.5
42.5°	33.3	35.5	36.5	40.8	44.1	51.6	59.1	72.0	80.6	84.9	82.7
45°	20.4	21.5	21.5	23.6	25.8	31.2	36.5	44.1	48.4	53.7	52.7
47.5°	14.0	15.0	16.1	16.1	17.2	20.4	23.6	30.1	31.2	33.3	32.2
50°	8.6	9.7	9.7	10.7	10.7	12.9	14.0	17.2	18.3	19.3	19.3
52.5°	6.4	8.6	8.6	8.6	10.7	9.7	10.7	10.7	12.9	11.8	12.9
55°	5.4	5.4	4.3	6.4	5.4	6.4	6.4	6.4	8.6	7.5	8.6
57.5°	5.4	4.3	3.2	4.3	3.2	4.3	6.4	3.2	5.4	5.4	5.4
60°	2.1	3.2	2.1	4.3	2.1	4.3	2.1	3.2	3.2	4.3	4.3
62.5°	2.1	3.2	2.1	4.3	3.2	2.1	2.1	2.1	2.1	2.1	3.2
65°	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1
67.5°	1.1	1.1	1.1	1.1	1.1	0.0	1.1	1.1	1.1	1.1	2.1
70°	0.0	1.1	1.1	2.1	1.1	1.1	0.0	1.1	2.1	0.0	1.1
72.5°	1.1	1.1	0.0	1.1	1.1	0.0	0.0	0.0	0.0	1.1	0.0
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
77.5°	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1
80°	0.0	1.1	0.0	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
82.5°	1.1	1.1	0.0	1.1	1.1	1.1	0.0	1.1	0.0	1.1	1.1
85°	1.1	1.1	0.0	1.1	1.1	1.1	1.1	1.1	0.0	0.0	1.1
87.5°	2.1	1.1	0.0	0.0	0.0	1.1	0.0	1.1	1.1	1.1	1.1
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):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1160.6	1160.6	1160.6	1160.6	1160.6	1160.6	1160.6	1160.6
2.5°	1160.6	1160.6	1160.6	1161.7	1161.7	1161.7	1163.8	1159.5
5°	1142.3	1142.3	1143.4	1144.5	1144.5	1143.4	1145.5	1142.3
7.5°	1101.5	1100.4	1100.4	1103.6	1100.4	1099.3	1100.4	1099.3
10°	1034.9	1035.9	1034.9	1034.9	1034.9	1034.9	1035.9	1033.8
12.5°	948.9	950.0	948.9	948.9	948.9	947.8	950.0	947.8
15°	849.0	849.0	849.0	849.0	847.9	847.9	850.0	844.7
17.5°	741.5	740.4	741.5	741.5	740.4	739.3	739.3	737.2
20°	634.0	633.0	630.8	630.8	630.8	629.7	629.7	627.6
22.5°	535.2	533.0	535.2	531.9	529.8	528.7	528.7	528.7
25°	450.3	448.1	447.0	447.0	443.8	442.7	444.9	440.6
27.5°	383.6	382.6	381.5	377.2	376.1	370.7	367.5	364.3
30°	326.7	323.5	314.9	309.5	299.8	294.4	289.1	290.1
32.5°	268.7	260.1	250.4	238.6	227.8	221.4	217.1	212.8
35°	209.6	197.7	187.0	171.9	161.2	152.6	147.2	147.2
37.5°	158.0	144.0	130.0	117.1	106.4	99.9	95.6	93.5
40°	110.7	96.7	83.8	73.1	65.6	61.3	59.1	57.0
42.5°	75.2	61.3	51.6	45.1	40.8	37.6	36.5	34.4
45°	46.2	38.7	32.2	26.9	24.7	23.6	23.6	21.5
47.5°	29.0	24.7	22.6	19.3	17.2	15.0	15.0	15.0
50°	17.2	15.0	12.9	11.8	10.7	9.7	10.7	8.6
52.5°	10.7	9.7	9.7	8.6	7.5	8.6	7.5	11.8
55°	7.5	6.4	6.4	5.4	6.4	5.4	6.4	5.4
57.5°	4.3	3.2	6.4	3.2	4.3	3.2	4.3	2.1
60°	4.3	3.2	2.1	3.2	2.1	3.2	4.3	3.2
62.5°	1.1	2.1	2.1	3.2	3.2	2.1	2.1	3.2
65°	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0
67.5°	0.0	0.0	1.1	1.1	0.0	1.1	1.1	0.0
70°	0.0	1.1	0.0	0.0	0.0	0.0	1.1	0.0
72.5°	0.0	0.0	0.0	1.1	0.0	0.0	1.1	1.1
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	1.1	1.1	1.1	0.0	1.1	1.1	1.1	1.1
82.5°	0.0	0.0	0.0	0.0	0.0	1.1	1.1	0.0
85°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	2.1
87.5°	1.1	0.0	1.1	1.1	0.0	1.1	1.1	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)