

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: P85086

Luminaire Tested: **EL405835-TL409WW**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P85086  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (P21178)  
Test Lab: INNOVATION CENTER P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: EL405835-TL409WW  
Description: HALO 4 INCH RECESSED WALL WASH WITH WHITE ROUND TRIM, HAZE REFLECTOR, SPECULAR KICKER AND SOFT FOCUS LENS. ---ABSOLUTE PHOTOMETRY IS BASED ON CALIBRATION FACTORS CREATED USING A 500 WATT, NIST TRACEABLE, OMNI-DIRECTIONAL LAB LUMEN STANDARD IN THE GONIOPHOTOMETER WITH TEST DISTANCE OF 28.75 FEET----  
Light Source: (1) SMT LED 3500K  
(1) 221 14 WATTS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: 605 (1 lamp)  
Luminaire Lumens: 604.7 lumens  
Efficiency: 99.9%  
Efficacy: 44.1 lumens/watt  
Spacing Criteria (0/90/45): 1.23 / 1.26 / 1.25  
Luminous Opening: Vertical Cylinder (Dia: 0.33' x H: 0.1')  
CIE Type: Direct

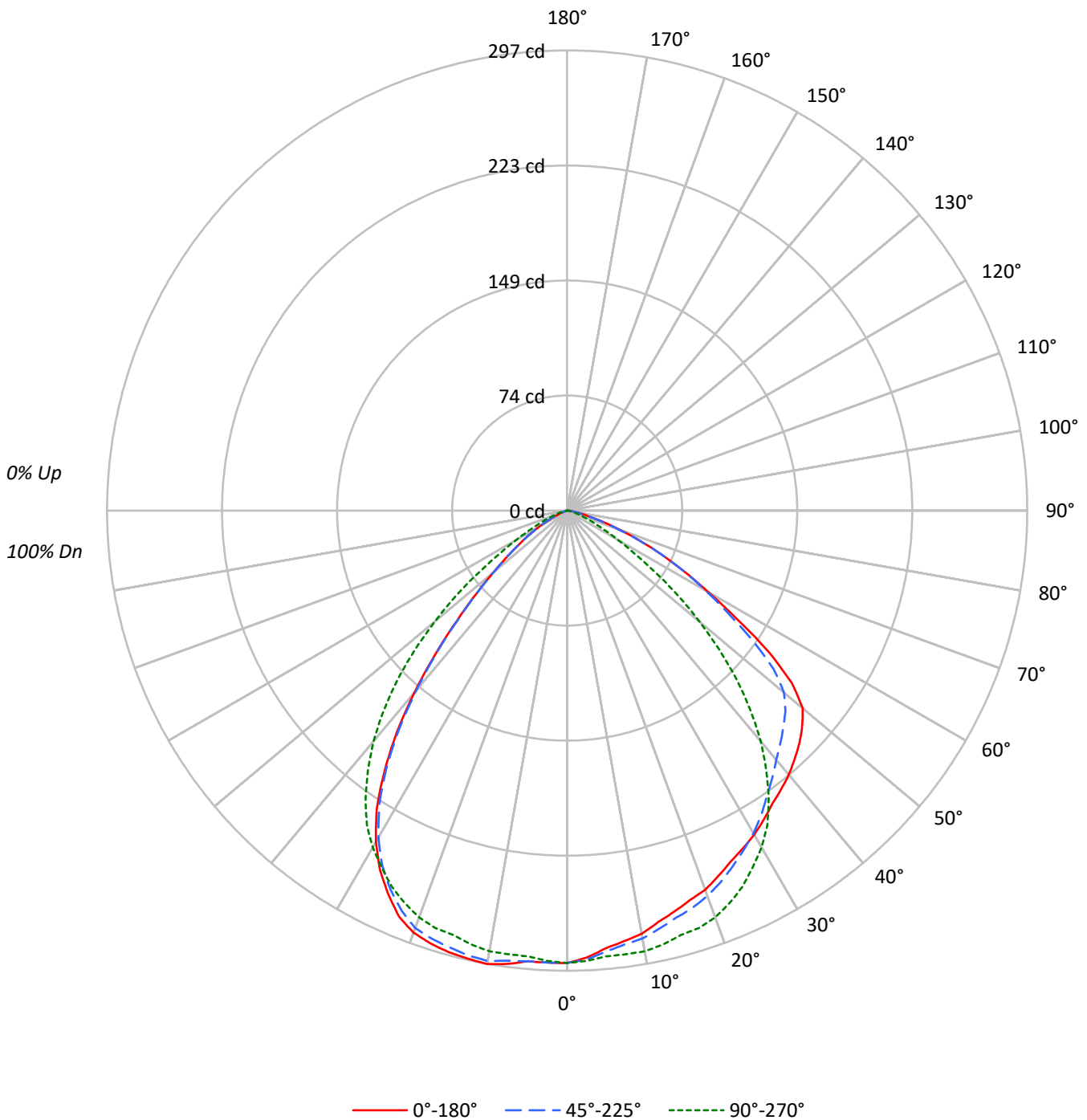
Input Watts (W): 13.7  
Input Voltage (V): NR  
Input Current (Ain): 0.12026  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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			
1	111	107	104	101	109	105	102	100	101	99	96	97	95	94	94	92	91	89					89			
2	103	96	91	86	101	95	89	85	91	87	83	88	84	81	85	82	80	78					78			
3	95	86	80	74	93	85	79	74	82	77	72	80	75	71	77	73	70	68					68			
4	88	78	70	65	86	77	70	64	74	68	63	72	67	63	70	66	62	60					60			
5	82	71	63	57	80	70	62	57	68	61	56	66	60	55	64	59	55	53					53			
6	76	64	56	51	74	63	56	50	62	55	50	60	54	50	59	53	49	47					47			
7	71	59	51	45	69	58	50	45	56	50	45	55	49	45	54	48	44	42					42			
8	66	54	46	41	65	53	46	41	52	45	41	51	45	40	50	44	40	38					38			
9	62	50	42	37	61	49	42	37	48	41	37	47	41	37	46	41	36	35					35			
10	58	46	39	34	57	46	39	34	45	38	34	44	38	34	43	37	33	32					32			

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

	0°	90°	180°
0°	36017	36017	36017
5°	33979	34602	34985
10°	32540	33889	34875
15°	31022	32852	34185
20°	30020	32198	33408
25°	28869	30936	31549
30°	28181	29290	28800
35°	27443	26944	24450
40°	27143	23692	18693
45°	26772	19615	12723
50°	26175	14677	8176
55°	22068	9643	5260
60°	15589	5612	3118
65°	10781	3209	1348
70°	6282	1672	563
75°	2888	825	216
80°	1189	471	0
85°	554	290	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture	% Lamp
0°-10°	27.5	4.6	4.6
10°-20°	79.9	13.2	13.2
20°-30°	120.9	20.0	20.0
30°-40°	135.7	22.4	22.4
40°-50°	117.5	19.4	19.4
50°-60°	78.9	13.1	13.0
60°-70°	34.7	5.7	5.7
70°-80°	8.3	1.4	1.4
80°-90°	1.1	0.2	0.2
90°-100°	0.0	0.0	0.0
100°-110°	0.0	0.0	0.0
110°-120°	0.0	0.0	0.0
120°-130°	0.0	0.0	0.0
130°-140°	0.0	0.0	0.0
140°-150°	0.0	0.0	0.0
150°-160°	0.0	0.0	0.0
160°-170°	0.0	0.0	0.0
170°-180°	0.0	0.0	0.0
0°-30°	228.4	37.8	37.7
0°-40°	364.0	60.2	60.2
0°-60°	560.5	92.7	92.7
0°-90°	604.7	100.0	99.9
90°-120°	0.0	0.0	0.0
90°-150°	0.0	0.0	0.0
90°-180°	0.0	0.0	0.0
0°-180°	604.7	100.0	99.9

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	292	292	292	292	292	
5°	284	286	289	292	292	27
15°	268	272	284	292	295	76
25°	250	253	268	270	273	116
35°	231	225	227	204	206	145
45°	212	197	155	100	101	164
55°	159	146	69	38	38	139
65°	67	67	20	10	8	67
75°	15	14	4	1	1	18
85°	2	2	1	0	0	2
90°	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°	292.0	292.0	292.0	292.0	292.0	292.0	292.0	292.0	292.0
2.5°	288.8	288.8	289.9	289.9	290.9	290.9	292.0	292.0	292.0
5°	283.6	283.6	285.7	286.7	288.8	289.9	292.0	292.0	292.0
7.5°	280.4	281.5	282.5	285.7	288.8	290.9	293.0	294.1	295.1
10°	277.3	278.3	280.4	284.6	288.8	292.0	295.1	296.2	297.2
12.5°	272.0	273.1	276.2	281.5	286.7	290.9	294.1	296.2	296.2
15°	267.8	268.9	272.0	278.3	283.6	288.8	292.0	294.1	295.1
17.5°	263.6	264.7	268.9	275.2	282.5	286.7	289.9	292.0	293.0
20°	260.5	261.5	264.7	272.0	279.4	283.6	286.7	288.8	289.9
22.5°	255.2	256.3	259.4	266.8	274.1	277.3	279.4	281.5	283.6
25°	249.9	249.9	253.1	260.5	267.8	269.9	269.9	272.0	273.1
27.5°	245.7	244.7	246.8	253.1	259.4	259.4	258.4	260.5	261.5
30°	241.5	239.4	240.5	246.8	251.0	246.8	243.6	245.7	246.8
32.5°	236.3	234.2	233.1	238.4	240.5	231.0	225.8	226.8	228.9
35°	231.0	227.9	224.7	228.9	226.8	212.1	203.7	204.8	205.8
37.5°	226.8	221.6	217.4	218.4	211.1	189.0	178.5	178.5	180.6
40°	222.6	216.3	210.0	207.9	194.3	164.9	151.2	152.3	153.3
42.5°	217.4	211.1	203.7	196.4	175.4	140.7	125.0	125.0	126.0
45°	212.1	205.8	197.4	183.8	155.4	116.6	99.8	99.8	100.8
47.5°	205.8	200.6	191.1	171.2	133.4	94.5	78.8	78.8	79.8
50°	198.5	193.2	182.7	157.5	111.3	75.6	62.0	62.0	62.0
52.5°	182.7	177.5	168.0	140.7	90.3	58.8	48.3	48.3	48.3
55°	158.6	154.4	146.0	118.7	69.3	45.2	37.8	36.8	37.8
57.5°	129.2	127.1	122.9	97.7	51.5	33.6	28.4	28.4	28.4
60°	105.0	104.0	102.9	80.9	37.8	24.2	21.0	20.0	21.0
62.5°	85.1	85.1	85.1	67.2	27.3	16.8	14.7	13.7	13.7
65°	67.2	67.2	67.2	52.5	20.0	10.5	9.5	8.4	8.4
67.5°	50.4	50.4	50.4	38.9	13.7	6.3	5.3	5.3	5.3
70°	35.7	35.7	34.7	27.3	9.5	4.2	3.2	3.2	3.2
72.5°	24.2	24.2	23.1	16.8	6.3	2.1	2.1	2.1	1.1
75°	14.7	14.7	13.7	10.5	4.2	1.1	1.1	1.1	1.1
77.5°	9.5	9.5	8.4	6.3	2.1	1.1	0.0	0.0	0.0
80°	5.3	5.3	5.3	3.2	2.1	1.1	0.0	0.0	0.0
82.5°	3.2	3.2	3.2	2.1	1.1	0.0	0.0	0.0	0.0
85°	2.1	2.1	2.1	1.1	1.1	0.0	0.0	0.0	0.0
87.5°	1.1	1.1	1.1	1.1	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)