

Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: HALO

Report Number: P645618

Luminaire Tested: LCR412WW9FSE020-12W-3000K

Issue Date: 3/14/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P645618  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-759-29)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/14/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: LCR412WW9FSE020-12W-3000K  
Description: LCR 4 Wall Wash  
Light Source: 3000K CCT, 93 CRI LEDS  
Ballast/Driver: -

**Summary**

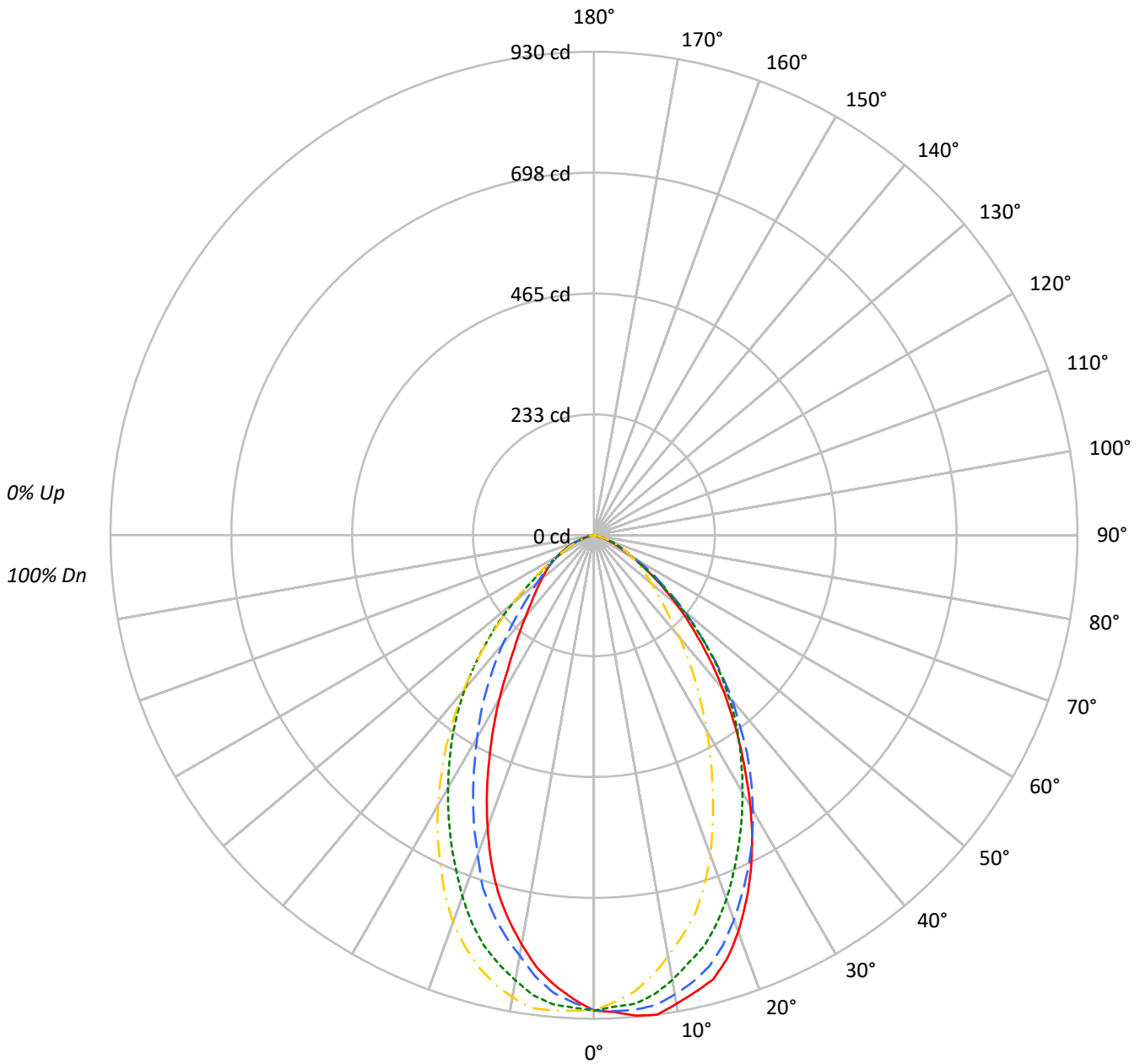
Lumens per Lamp: N/A  
Luminaire Lumens: 1255.0 lumens  
Efficiency: N/A  
Efficacy: 103.7 lumens/watt  
Spacing Criteria (0/90/45): 0.91 / 0.98 / 1.01  
Luminous Opening: Circular (Dia: 0.33' x H: 0')  
CIE Type: Direct

Input Watts (W): 12.1  
Input Voltage (V): 120  
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: 24 FT



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### Luminous Intensity Polar Plot



— 0°-180°    - - 45°-225°    - · - 90°-270°    - · - 135°-315°



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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	102	102	102	100
1	112	108	105	102	109	106	103	101	102	100	97	98	96	95	95	93	92	95	93	92	90
2	104	98	93	89	102	96	92	88	93	89	86	90	87	84	87	84	82	87	84	82	80
3	97	89	83	78	95	88	82	77	85	80	76	82	78	74	80	76	73	80	76	73	71
4	91	81	74	69	89	80	73	68	78	72	68	75	71	67	73	69	66	73	69	66	64
5	85	74	67	62	83	73	66	61	71	65	61	70	64	60	68	63	60	68	63	60	58
6	79	68	61	56	78	68	61	55	66	60	55	64	59	55	63	58	54	63	58	54	52
7	74	63	56	51	73	62	55	50	61	55	50	60	54	50	58	53	50	58	53	50	48
8	70	59	51	46	69	58	51	46	57	50	46	56	50	46	55	49	46	55	49	46	44
9	66	55	47	43	65	54	47	43	53	47	42	52	46	42	51	46	42	51	46	42	40
10	62	51	44	39	61	50	44	39	50	43	39	49	43	39	48	43	39	48	43	39	37

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

	0°	90°	180°	270°
0°	112763	112763	112763	112763
5°	114840	112017	107547	112141
10°	114627	108791	100111	108916
15°	112986	104494	90920	104379
20°	106545	97816	78508	97068
25°	97160	89538	64864	88504
30°	85727	81397	51915	79916
35°	73482	73331	40310	71479
40°	61911	64809	32863	62056
45°	50500	54651	28154	51005
50°	39894	42255	25138	38801
55°	30214	30408	22859	27354
60°	21314	21536	20377	19439
65°	14972	16636	17191	14972
70°	10603	12658	12658	11973
75°	5862	7673	8149	7673
80°	5398	6038	6748	6748
85°	3963	5378	6652	6652

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°

Vertical Angle: 45°

Luminance: 57128 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	84.8	6.8
10°-20°	224.9	17.9
20°-30°	285.7	22.8
30°-40°	266.8	21.3
40°-50°	198.0	15.8
50°-60°	115.7	9.2
60°-70°	55.8	4.4
70°-80°	19.0	1.5
80°-90°	4.3	0.3
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°	595.4	47.4
0°-40°	862.1	68.7
0°-60°	1175.8	93.7
0°-90°	1255.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1255.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	914	914	914	914	914	
5°	928	905	869	906	928	88
15°	885	818	712	817	885	247
25°	714	658	477	650	714	326
35°	488	487	268	475	488	305
45°	290	313	161	292	290	225
55°	140	141	106	127	140	127
65°	51	57	59	51	51	53
75°	12	16	17	16	12	16
85°	3	4	5	5	3	3
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°	202.5°	225°
0°	914.2	914.2	914.2	914.2	914.2	914.2	914.2	914.2	914.2	914.2	914.2
2.5°	918.0	918.0	916.1	912.3	907.6	903.8	899.0	893.3	893.3	895.2	900.0
5°	927.5	922.7	916.1	911.4	904.7	894.3	881.9	872.4	868.6	873.4	883.8
7.5°	930.3	922.7	911.4	900.9	890.5	872.4	855.3	843.0	839.2	844.9	857.2
10°	915.2	908.5	897.1	881.0	868.6	843.0	822.1	806.0	799.3	806.0	821.2
12.5°	900.0	891.4	880.0	858.2	842.1	811.7	787.9	767.1	757.6	769.0	788.9
15°	884.8	873.4	858.2	836.4	818.3	782.2	752.8	722.4	712.0	724.3	751.9
17.5°	853.4	846.8	825.9	806.0	784.1	744.3	706.3	675.0	657.9	673.1	711.0
20°	811.7	806.9	787.0	766.1	745.2	701.6	655.0	610.4	598.1	617.1	653.1
22.5°	764.2	760.4	745.2	724.3	701.6	650.3	597.1	548.7	538.3	558.2	602.8
25°	713.9	711.0	703.5	680.7	657.9	607.6	540.2	488.9	476.6	498.4	549.7
27.5°	658.8	661.7	658.8	639.8	615.2	560.1	486.1	436.7	418.7	443.3	497.4
30°	601.9	610.4	611.4	592.4	571.5	513.6	433.8	375.0	364.5	391.1	449.0
32.5°	543.0	557.3	563.0	548.7	528.8	467.1	383.5	325.6	309.5	339.9	404.4
35°	488.0	503.1	513.6	506.9	487.0	421.5	338.0	281.0	267.7	294.3	357.9
37.5°	434.8	450.9	460.4	463.3	446.2	377.8	295.2	245.9	234.5	253.5	314.2
40°	384.5	399.7	413.0	420.6	402.5	332.3	255.4	214.5	204.1	217.4	271.5
42.5°	336.1	348.4	364.5	375.0	358.8	287.6	217.4	189.9	180.4	189.9	232.6
45°	289.5	299.0	314.2	327.5	313.3	244.9	188.0	168.0	161.4	167.1	195.6
47.5°	247.8	255.4	267.7	283.8	267.7	204.1	164.2	151.9	145.2	149.0	166.1
50°	207.9	213.6	228.8	238.3	220.2	170.9	144.3	135.8	131.0	132.9	143.3
52.5°	172.8	177.5	186.1	194.6	177.5	142.4	127.2	121.5	118.7	119.6	123.4
55°	140.5	145.2	152.8	156.6	141.4	119.6	112.0	108.2	106.3	106.3	107.3
57.5°	112.0	116.8	124.4	122.5	110.1	101.6	97.8	95.9	94.0	94.0	93.0
60°	86.4	91.1	94.9	94.9	87.3	84.5	84.5	83.5	82.6	81.6	79.7
62.5°	66.5	69.3	74.0	72.1	70.3	71.2	71.2	71.2	70.3	69.3	68.4
65°	51.3	53.2	55.1	57.0	57.0	58.9	59.8	58.9	58.9	57.9	57.0
67.5°	38.9	41.8	42.7	44.6	45.6	48.4	47.5	46.5	46.5	46.5	46.5
70°	29.4	30.4	33.2	34.2	35.1	38.0	37.0	35.1	35.1	36.1	37.0
72.5°	20.9	20.9	22.8	24.7	25.6	26.6	26.6	25.6	26.6	26.6	26.6
75°	12.3	13.3	14.2	15.2	16.1	16.1	16.1	16.1	17.1	17.1	17.1
77.5°	9.5	9.5	10.4	11.4	11.4	12.3	12.3	12.3	13.3	13.3	13.3
80°	7.6	7.6	7.6	8.5	8.5	9.5	9.5	9.5	9.5	9.5	9.5
82.5°	4.7	4.7	5.7	5.7	5.7	6.6	6.6	6.6	6.6	6.6	7.6
85°	2.8	2.8	3.8	3.8	3.8	3.8	3.8	4.7	4.7	4.7	4.7
87.5°	0.9	0.9	0.9	0.9	0.9	1.9	1.9	1.9	1.9	1.9	1.9
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):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	914.2	914.2	914.2	914.2	914.2	914.2
2.5°	906.6	909.5	912.3	915.2	917.1	918.0
5°	896.2	905.7	912.3	918.0	925.6	927.5
7.5°	879.1	892.4	901.9	917.1	926.5	930.3
10°	849.6	869.6	883.8	902.8	912.3	915.2
12.5°	819.3	844.9	862.9	883.8	894.3	900.0
15°	786.0	817.4	835.4	859.1	878.1	884.8
17.5°	748.1	781.3	802.2	827.8	848.7	853.4
20°	702.5	739.5	762.3	791.7	808.8	811.7
22.5°	655.0	694.0	716.7	748.1	759.5	764.2
25°	609.5	650.3	671.2	698.7	709.1	713.9
27.5°	564.8	605.7	627.5	651.2	654.1	658.8
30°	518.3	561.1	581.9	600.0	599.0	601.9
32.5°	473.7	517.4	530.7	545.9	541.1	543.0
35°	429.1	474.7	485.1	495.5	487.0	488.0
37.5°	385.4	431.0	436.7	441.4	433.8	434.8
40°	342.7	385.4	392.1	391.1	383.5	384.5
42.5°	298.1	340.8	343.7	339.9	333.2	336.1
45°	251.6	292.4	293.3	289.5	285.7	289.5
47.5°	208.9	250.6	247.8	244.0	243.0	247.8
50°	172.8	202.2	201.3	202.2	203.2	207.9
52.5°	141.4	160.4	162.3	165.2	167.1	172.8
55°	115.8	127.2	129.1	132.9	135.8	140.5
57.5°	94.9	101.6	103.5	104.4	107.3	112.0
60°	78.8	78.8	77.8	80.7	82.6	86.4
62.5°	65.5	64.6	62.7	62.7	63.6	66.5
65°	55.1	51.3	50.3	49.4	49.4	51.3
67.5°	44.6	41.8	39.9	38.9	38.9	38.9
70°	35.1	33.2	31.3	29.4	28.5	29.4
72.5°	25.6	23.7	22.8	20.9	20.9	20.9
75°	17.1	16.1	15.2	13.3	13.3	12.3
77.5°	12.3	12.3	11.4	10.4	9.5	9.5
80°	9.5	9.5	8.5	7.6	7.6	7.6
82.5°	6.6	6.6	6.6	5.7	4.7	4.7
85°	4.7	4.7	3.8	3.8	2.8	2.8
87.5°	1.9	1.9	1.9	1.9	1.9	0.9
90°	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)