

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: P990747

Luminaire Tested: **ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-2700K**

Issue Date: 5/13/2025

Tested By:

Approved By:



Cooper Lighting Solutions laboratories have been accredited by National Voluntary Laboratory Accreditation Program (NVLAP) that it adheres to the requirements of ISO/IEC 17025:2005 and appropriate IESNA test methods. This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government. Results contained in this report are valid for luminaire sample tested, as supplied by requestor. Information related to the luminaire tested has been supplied by requestor and can affect the validity of the test results. Report shall not be reproduced except in full without approval of Cooper Lighting Solutions Lighting Laboratory. Test performed at address noted above.

Test Information

Test Method: LM-79-08
 Report Number: P990747
 Test Lab: Cooper Lighting Solutions
 Issue Date: 5/13/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-2700K
 Description: 3IN ROUND ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR, MATTE WHITE TRIM 30° Tilt
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 2700K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 573.6 lumens
 Efficiency: N/A
 Efficacy: 59.1 lumens/watt
 Spacing Criteria (0/90/45): 1.97 / 0.68 / 1.21
 Luminous Opening: Circular (Dia: 0.25' x H: 0')
 CIE Type: Direct

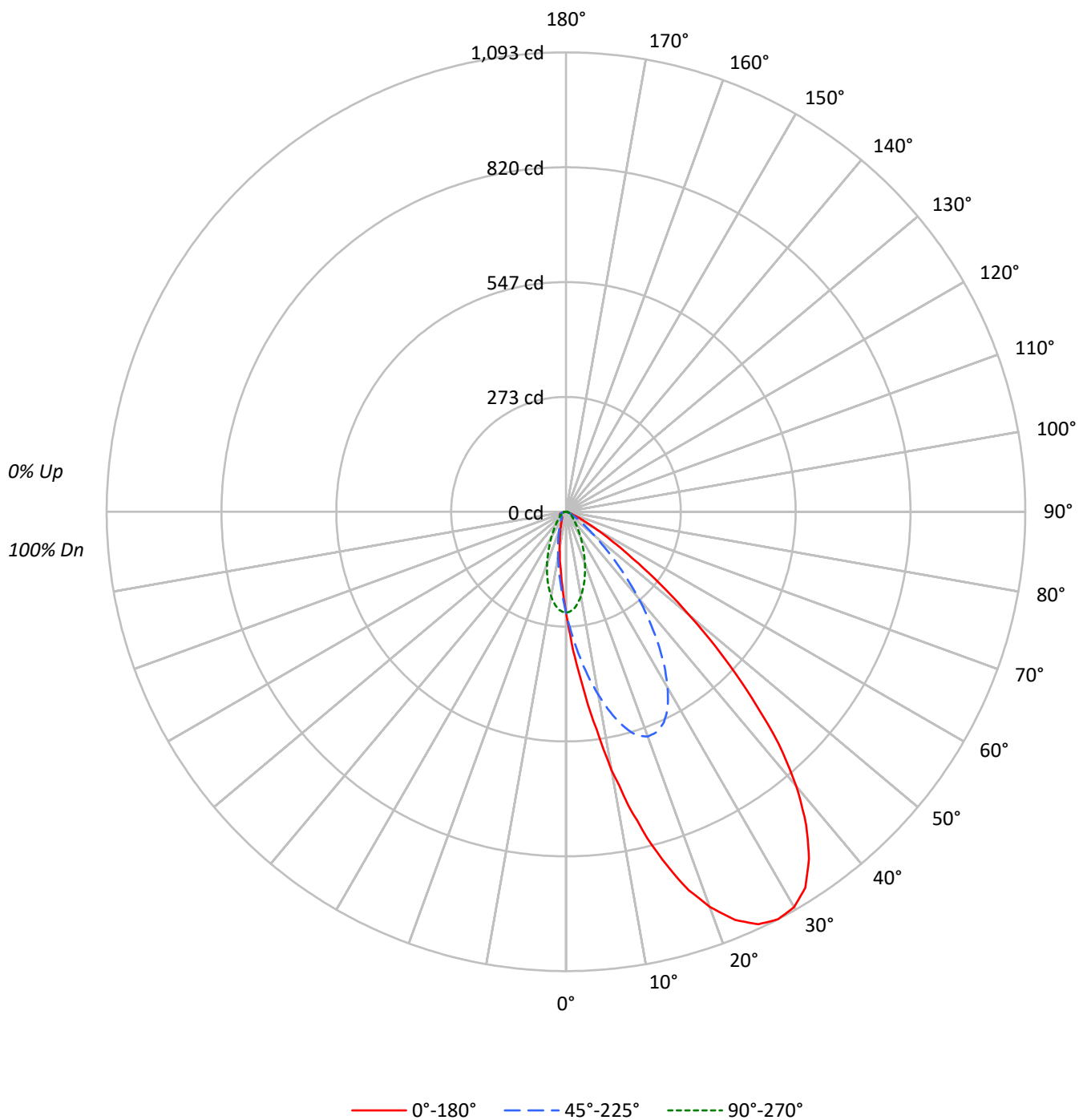
Input Watts (W): 9.7
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	GONIO 1 IN0055	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
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50
RCR																	
0	119	119	119	119	116	116	116	116	111	111	111		106	106	106		102
1	112	108	105	102	109	106	103	101	102	100	97		98	96	94		95
2	104	98	93	88	102	96	91	87	93	89	85		90	86	84		87
3	97	89	83	77	95	87	82	77	85	80	76		82	78	74		80
4	90	81	74	68	88	80	73	68	77	72	67		75	70	66		73
5	84	74	66	61	82	73	66	61	71	65	60		69	64	59		67
6	79	68	60	55	77	67	60	54	65	59	54		63	58	54		62
7	74	62	55	49	72	61	54	49	60	54	49		59	53	49		57
8	69	57	50	45	68	57	50	45	55	49	44		54	48	44		53
9	65	53	46	41	63	52	45	41	51	45	41		50	45	40		49
10	61	49	42	37	60	49	42	37	48	42	37		47	41	37		46

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	52627	52627	52627
5°	87827	50627	31037
10°	138942	45423	19372
15°	190466	38366	12259
20°	233354	30803	8401
25°	262031	23469	6049
30°	274979	17471	4811
35°	269834	13117	4283
40°	244172	10019	4294
45°	193198	7753	4962
50°	130657	6823	5458
55°	74167	6117	6499
60°	37716	5701	7456
65°	17122	5707	8302
70°	7694	5770	8976
75°	3389	5083	9320
80°	3788	5051	7577
85°	7548	7548	10064

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	24.8	4.3
10°-20°	86.0	15.0
20°-30°	140.8	24.5
30°-40°	149.6	26.1
40°-50°	102.3	17.8
50°-60°	42.8	7.5
60°-70°	16.7	2.9
70°-80°	7.2	1.3
80°-90°	3.3	0.6
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°	251.6	43.9
0°-40°	401.2	70.0
0°-60°	546.4	95.3
0°-90°	573.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	573.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	240	240	240	240	240	
5°	399	338	230	162	141	45
15°	839	528	169	72	54	241
25°	1083	552	97	34	25	495
35°	1008	381	49	19	16	622
45°	623	164	25	15	16	477
55°	194	47	16	16	17	186
65°	33	14	11	15	16	38
75°	4	5	6	9	11	6
85°	3	3	3	4	4	3
90°	0	0	0	0	0	

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CATALOG NUMBER: ML3ALSFL9FS1E-TIR4D40FL-TL3RDMW-30°-750LM-2700K

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	240	240	240	240	240	240	240	240	240	240	240
1°	267	269	264	263	261	258	253	251	246	241	239
2°	295	297	293	290	285	277	269	261	252	243	238
3°	331	326	325	318	309	296	282	270	256	243	236
4°	363	361	356	348	332	317	298	280	261	242	234
5°	399	400	390	376	358	338	312	288	263	241	230
6°	439	434	427	413	389	359	328	296	266	239	226
7°	484	477	468	447	418	380	342	304	268	236	221
8°	522	524	512	482	448	401	355	309	269	233	215
9°	572	569	553	518	478	421	368	315	270	229	210
10°	624	614	594	554	504	441	380	319	268	223	204
11°	663	665	641	593	533	461	391	323	266	218	198
12°	716	710	682	631	561	480	399	326	263	213	190
13°	754	752	724	666	588	497	408	326	259	205	184
14°	801	794	763	700	612	513	414	326	253	198	176
15°	839	834	798	732	636	528	420	325	248	191	169
16°	877	871	836	761	658	541	423	322	243	184	161
17°	914	903	865	787	679	552	425	318	237	176	154
18°	947	937	896	811	695	560	426	314	230	169	146
19°	972	965	919	829	709	565	425	308	222	161	139
20°	1000	990	943	848	721	569	423	302	215	154	132
22.5°	1051	1043	985	880	736	567	408	281	192	134	113
25°	1083	1072	1008	892	733	552	384	256	169	116	97
27.5°	1093	1080	1013	884	713	525	352	227	147	99	82
30°	1086	1073	999	857	680	484	316	197	126	83	69
32.5°	1060	1046	965	817	635	436	272	168	106	70	58
35°	1008	996	912	762	576	381	233	141	89	59	49
37.5°	939	926	842	691	505	325	193	116	73	49	41
40°	853	841	760	609	430	268	157	94	60	41	35
42.5°	749	739	660	513	353	213	125	76	49	35	30
45°	623	610	536	409	276	164	97	61	40	29	25
47.5°	502	487	423	313	206	122	74	48	34	25	23
50°	383	370	315	230	147	89	56	38	28	22	20
52.5°	281	271	227	164	105	64	42	30	23	19	18
55°	194	188	157	112	72	47	32	24	19	17	16
57.5°	131	127	106	77	51	34	24	19	16	15	15
60°	86	82	69	51	35	25	19	16	14	14	13
62.5°	53	53	45	35	25	19	15	13	12	12	12
65°	33	32	29	23	17	14	12	11	11	11	11
67.5°	20	20	18	15	13	11	10	9	9	10	10
70°	12	12	11	10	9	8	8	8	8	8	9
72.5°	7	7	7	6	6	6	6	6	6	7	7
75°	4	4	4	4	4	5	4	5	5	6	6
77.5°	3	3	3	3	3	4	4	4	4	5	5
80°	3	3	3	3	3	3	3	4	4	4	4

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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
82.5°	3	3	3	3	3	3	3	3	4	4	4
85°	3	3	3	3	3	3	3	3	3	3	3
87.5°	2	2	3	3	3	3	3	3	3	3	3
90°	0	0	0	0	0	0	0	0	0	0	0

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CANDELA DISTRIBUTION (continued):

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	240	240	240	240	240	240	240	240	240	240
1°	236	233	228	225	223	219	219	214	215	215
2°	234	226	219	212	206	200	199	197	195	195
3°	229	218	207	198	191	184	181	176	175	173
4°	226	210	197	186	175	169	165	160	158	158
5°	220	202	186	174	162	155	149	145	142	141
6°	214	194	177	162	151	142	136	131	129	128
7°	208	185	167	151	139	129	123	119	117	118
8°	201	176	156	140	127	119	111	107	105	106
9°	195	168	147	131	118	109	102	98	96	95
10°	187	159	137	121	109	99	93	88	87	87
11°	180	150	128	112	100	90	85	81	79	79
12°	173	144	121	104	92	84	78	74	72	71
13°	164	135	112	97	84	76	71	67	65	65
14°	156	128	105	89	78	70	65	61	59	59
15°	149	120	98	83	72	65	59	56	54	54
16°	143	113	92	77	66	59	54	51	50	49
17°	134	105	85	71	61	54	50	46	46	46
18°	127	99	79	66	56	50	46	43	42	42
19°	120	93	74	61	52	46	42	40	39	38
20°	113	87	69	56	48	43	39	37	36	36
22.5°	97	73	57	47	39	35	32	31	30	29
25°	83	61	48	39	34	30	27	26	25	25
27.5°	69	51	40	33	28	25	23	22	22	22
30°	59	44	34	28	25	22	21	20	19	19
32.5°	49	37	29	25	21	20	18	18	17	17
35°	42	32	26	22	19	18	17	16	16	16
37.5°	35	27	22	19	17	16	16	16	15	15
40°	30	24	20	18	17	16	16	15	15	15
42.5°	26	21	18	17	16	16	15	15	15	15
45°	23	19	17	16	15	15	15	15	15	16
47.5°	21	18	16	16	16	16	16	16	16	16
50°	19	17	16	15	16	16	16	16	16	16
52.5°	17	16	15	15	16	16	16	17	17	17
55°	16	15	15	15	16	16	17	17	17	17
57.5°	15	15	15	15	16	17	17	17	17	17
60°	13	14	14	15	16	16	17	17	17	17
62.5°	13	13	14	15	16	16	16	17	17	17
65°	11	12	13	14	15	15	16	16	16	16
67.5°	10	11	12	13	14	14	15	15	15	15
70°	9	10	11	12	13	13	14	14	14	14
72.5°	7	8	9	10	11	11	12	12	12	13
75°	6	7	7	8	9	9	10	10	10	11
77.5°	5	5	6	6	7	7	8	8	8	8
80°	4	4	4	5	5	5	5	6	5	6

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CANDELA DISTRIBUTION (continued):

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
82.5°	4	4	4	4	4	4	5	5	5	5
85°	3	3	4	3	4	4	4	4	4	4
87.5°	3	3	3	3	3	3	3	3	3	3
90°	0	0	0	0	0	0	0	0	0	0

(END OF REPORT)