

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: FAIL-SAFE

Report Number: 168P188

Luminaire Tested: **FMS24LP-N-454-80/86**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: 168P188
Test Lab:
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: FMS24LP-N-454-80/86
Description: FAIL-SAFE FMS SERIES LUMINAIRE
Light Source: FOUR - F54T5/841 HO - 4400 LUMENS EA. - 54 WATTS EA.
Ballast/Driver: TWO - ADVANCE ICN-2S54

Summary

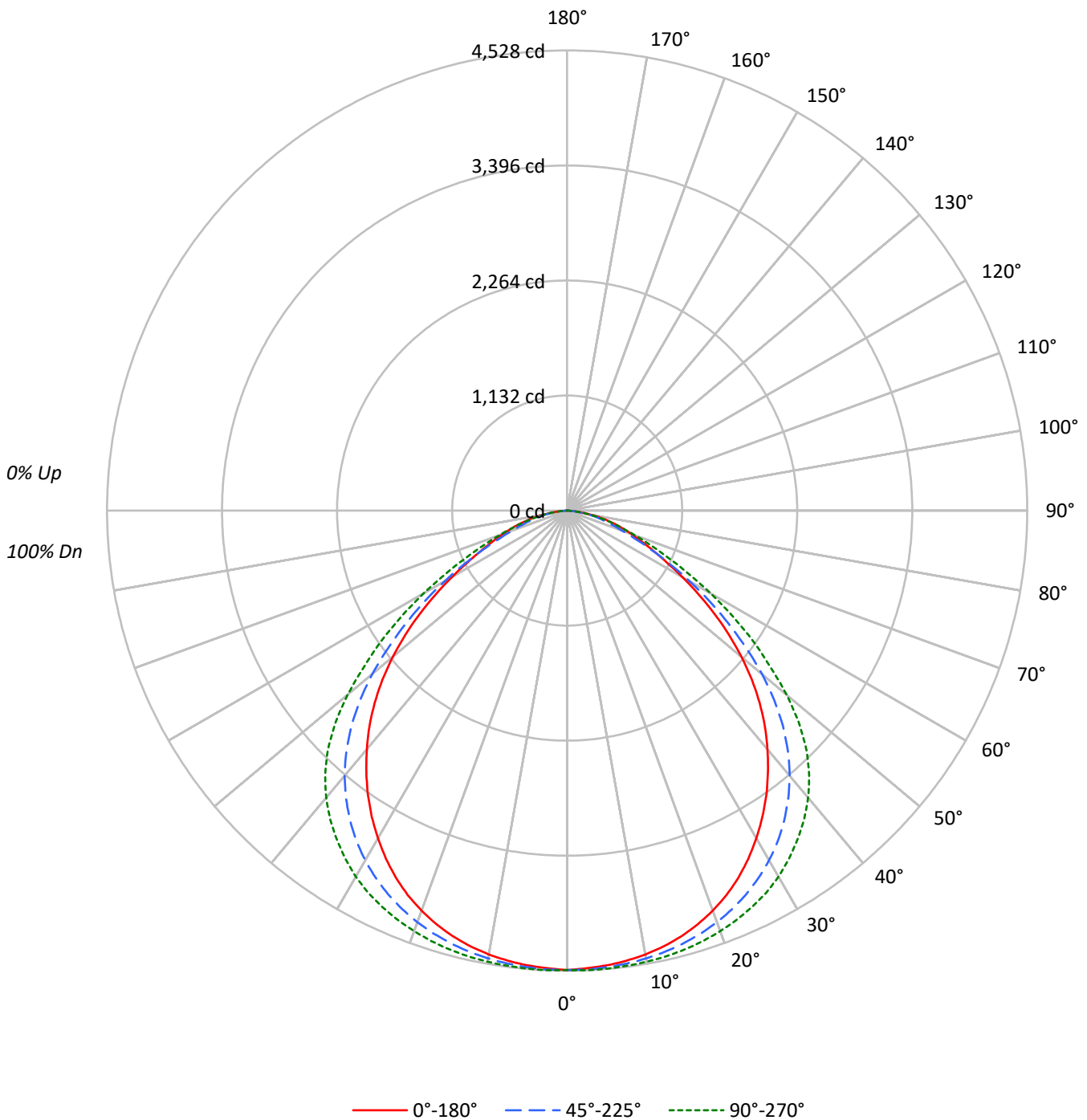
Lumens per Lamp: 4400 (4 lamps)
Luminaire Lumens: 11459.3 lumens
Efficiency: 65.1%
Efficacy: 50.7 lumens/watt
Spacing Criteria (0/90/45): 1.22 / 1.36 / 1.38
Luminous Opening: Rectangular (W 1.54' x L: 3.69' x H: 0')
CIE Type: Direct

Input Watts (W): 226
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	78	78	78	78	76	76	76	76	72	72	72		69	69	69		66	66	66	65
1	72	69	66	64	70	67	65	63	65	63	61		62	61	59		60	59	58	56
2	66	61	57	54	64	60	56	53	57	54	52		55	53	51		53	51	49	48
3	60	54	49	45	59	53	49	45	51	47	44		49	46	43		48	45	43	41
4	56	48	43	39	54	47	42	39	46	41	38		44	41	38		43	40	37	36
5	51	43	38	34	50	43	37	34	41	37	33		40	36	33		39	35	33	31
6	47	39	34	30	46	39	33	30	37	33	29		36	32	29		35	32	29	28
7	44	36	30	26	43	35	30	26	34	29	26		33	29	26		32	29	26	24
8	41	33	27	24	40	32	27	23	31	27	23		30	26	23		30	26	23	22
9	38	30	25	21	37	30	25	21	29	24	21		28	24	21		27	24	21	20
10	36	28	23	19	35	27	22	19	27	22	19		26	22	19		25	22	19	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	8564	8564	8564
5°	8541	8577	8602
10°	8530	8607	8671
15°	8507	8648	8768
20°	8446	8688	8877
25°	8333	8709	8995
30°	8143	8692	9099
35°	7901	8611	9139
40°	7584	8424	9122
45°	7176	8047	8923
50°	6601	7373	8307
55°	5835	6397	7351
60°	4951	5281	6175
65°	4182	4101	4908
70°	3700	3179	3916
75°	3337	2701	3184
80°	2673	2247	2454
85°	1456	1326	1369



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ZONAL LUMENS:

CANDELA DISTRIBUTION:

Zone	Lumens	% Fixture	% Lamp		0°	22.5°	45°	67.5°	90°	Flux
0°-10°	429.3	3.7	2.4	0°	4521	4521	4521	4521	4521	
10°-20°	1244.7	10.9	7.1	5°	4492	4498	4511	4519	4524	427
20°-30°	1914.5	16.7	10.9	15°	4338	4360	4410	4452	4471	1223
30°-40°	2313.2	20.2	13.1	25°	3987	4046	4167	4266	4304	1834
40°-50°	2300.0	20.1	13.1	35°	3417	3519	3724	3888	3952	2133
50°-60°	1745.4	15.2	9.9	45°	2679	2776	3004	3218	3331	2059
60°-70°	982.8	8.6	5.6	55°	1767	1773	1937	2090	2226	1579
70°-80°	441.8	3.9	2.5	65°	933	947	915	1008	1095	943
80°-90°	87.7	0.8	0.5	75°	456	422	369	413	435	481
90°-100°	0.0	0.0	0.0	85°	67	65	61	60	63	94
100°-110°	0.0	0.0	0.0	90°	0	0	0	0	0	2
110°-120°	0.0	0.0	0.0	95°	0	0	0	0	0	0
120°-130°	0.0	0.0	0.0	105°	0	0	0	0	0	0
130°-140°	0.0	0.0	0.0	115°	0	0	0	0	0	0
140°-150°	0.0	0.0	0.0	125°	0	0	0	0	0	0
150°-160°	0.0	0.0	0.0	135°	0	0	0	0	0	0
160°-170°	0.0	0.0	0.0	145°	0	0	0	0	0	0
170°-180°	0.0	0.0	0.0	155°	0	0	0	0	0	0
0°-30°	3588.4	31.3	20.4	165°	0	0	0	0	0	0
0°-40°	5901.6	51.5	33.5	175°	0	0	0	0	0	0
0°-60°	9947.0	86.8	56.5	180°	0	0	0	0	0	0
0°-90°	11459.3	100.0	65.1							
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°	11459.3	100.0	65.1							



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4521	4521	4521	4521	4521
2.5°	4507	4511	4520	4524	4528
5°	4492	4498	4511	4519	4524
7.5°	4468	4478	4496	4510	4517
10°	4435	4448	4475	4497	4508
12.5°	4392	4408	4447	4478	4494
15°	4338	4360	4410	4452	4471
17.5°	4270	4301	4365	4417	4442
20°	4190	4229	4310	4375	4404
22.5°	4096	4145	4244	4324	4359
25°	3987	4046	4167	4266	4304
27.5°	3861	3931	4077	4196	4240
30°	3723	3802	3974	4112	4160
32.5°	3576	3665	3858	4009	4063
35°	3417	3519	3724	3888	3952
37.5°	3247	3361	3574	3752	3830
40°	3067	3185	3407	3599	3689
42.5°	2881	2990	3218	3422	3525
45°	2679	2776	3004	3218	3331
47.5°	2467	2546	2766	2980	3094
50°	2240	2299	2502	2705	2819
52.5°	2006	2035	2220	2403	2514
55°	1767	1773	1937	2090	2226
57.5°	1531	1537	1662	1790	1926
60°	1307	1322	1394	1504	1630
62.5°	1105	1125	1140	1240	1347
65°	933	947	915	1008	1095
67.5°	791	795	725	815	885
70°	668	659	574	656	707
72.5°	561	535	459	526	559
75°	456	422	369	413	435
77.5°	351	318	288	308	326
80°	245	221	206	212	225
82.5°	148	135	127	127	136
85°	67	65	61	60	63
87.5°	17	18	18	18	18
90°	0	0	0	0	0
92.5°	0	0	0	0	0
95°	0	0	0	0	0
97.5°	0	0	0	0	0
100°	0	0	0	0	0
102.5°	0	0	0	0	0
105°	0	0	0	0	0
107.5°	0	0	0	0	0
110°	0	0	0	0	0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	0	0	0	0	0
115°	0	0	0	0	0
117.5°	0	0	0	0	0
120°	0	0	0	0	0
122.5°	0	0	0	0	0
125°	0	0	0	0	0
127.5°	0	0	0	0	0
130°	0	0	0	0	0
132.5°	0	0	0	0	0
135°	0	0	0	0	0
137.5°	0	0	0	0	0
140°	0	0	0	0	0
142.5°	0	0	0	0	0
145°	0	0	0	0	0
147.5°	0	0	0	0	0
150°	0	0	0	0	0
152.5°	0	0	0	0	0
155°	0	0	0	0	0
157.5°	0	0	0	0	0
160°	0	0	0	0	0
162.5°	0	0	0	0	0
165°	0	0	0	0	0
167.5°	0	0	0	0	0
170°	0	0	0	0	0
172.5°	0	0	0	0	0
175°	0	0	0	0	0
177.5°	0	0	0	0	0
180°	0	0	0	0	0

(END OF REPORT)