

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: 168P126

Luminaire Tested: **FMS12CR-232-120-80/86**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: 168P126  
Test Lab:  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: FMS12CR-232-120-80/86  
Description: FAIL-SAFE 1 X 4 Fail-Safe FMS Series with a .125 Prismatic Acrylic  
and .250 Clear Polycarbonate Lens  
Light Source: Two - FO32/35K - 2800 Lumens ea. - 32 Watts ea.  
Ballast/Driver: Motorola M2-IN-T8-GP-D-120 Electronic - L.O.B.F. = 88.6

**Summary**

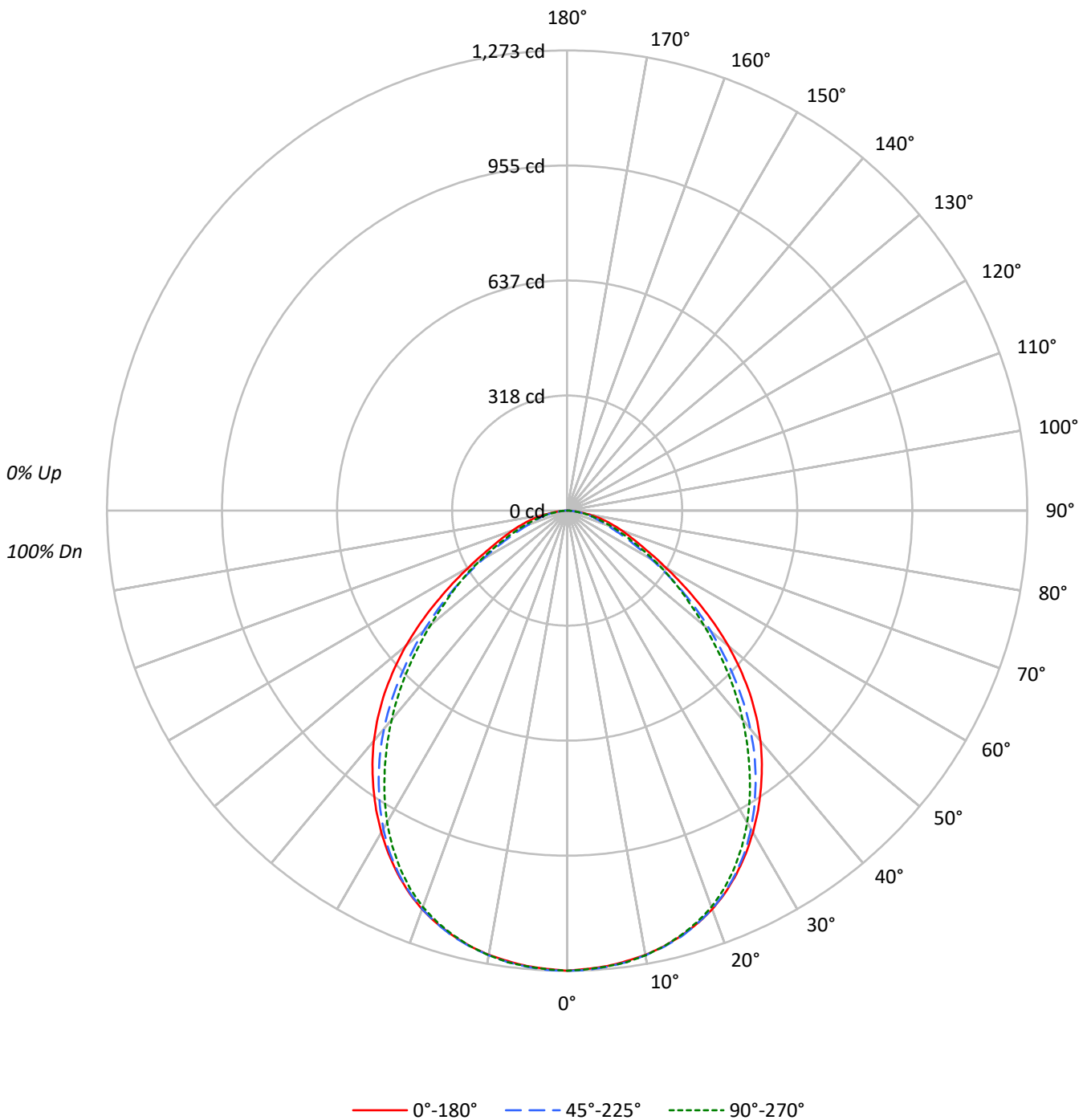
Lumens per Lamp: 2800 (2 lamps)  
Luminaire Lumens: 2715.1 lumens  
Efficiency: 48.5%  
Efficacy: 46.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.17 / 1.24  
Luminous Opening: Rectangular (W 0.58' x L: 3.74' x H: 0')  
CIE Type: Direct

Input Watts (W): 58  
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

TEST NUMBER: 168P126

CATALOG NUMBER: FMS12CR-232-120-80/86

### Luminous Intensity Polar Plot





TEST NUMBER: 168P126

CATALOG NUMBER: FMS12CR-232-120-80/86

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	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	58	58	58	58	56	56	56	56	54	54	54	52	52	52	49	49	49	48	48	48	48	48	48	48														
1	54	52	50	48	52	51	49	47	48	47	46	47	46	45	45	44	43	42	42	42	42	42	42	42														
2	49	46	43	41	48	45	42	40	43	41	39	42	40	38	40	39	38	37	37	37	37	37	37	37														
3	46	41	38	35	44	40	37	34	39	36	34	38	35	33	36	34	33	32	32	32	32	32	32	32														
4	42	37	33	30	41	36	33	30	35	32	30	34	31	29	33	31	29	28	28	28	28	28	28	28														
5	39	33	29	26	38	33	29	26	32	29	26	31	28	26	30	28	25	25	25	25	25	25	25	25														
6	36	30	26	23	35	30	26	23	29	26	23	28	25	23	27	25	23	22	22	22	22	22	22	22														
7	34	28	24	21	33	27	24	21	27	23	21	26	23	21	25	23	20	20	20	20	20	20	20	20														
8	31	25	22	19	31	25	21	19	24	21	19	24	21	19	23	21	19	18	18	18	18	18	18	18														
9	29	23	20	17	29	23	20	17	23	19	17	22	19	17	22	19	17	16	16	16	16	16	16	16														
10	28	22	18	16	27	21	18	16	21	18	16	21	18	15	20	17	15	15	15	15	15	15	15	15														

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

	0°	45°	90°
0°	6317	6317	6317
5°	6301	6311	6306
10°	6288	6293	6293
15°	6257	6267	6247
20°	6199	6194	6162
25°	6072	6056	5984
30°	5890	5827	5707
35°	5664	5506	5331
40°	5389	5104	4891
45°	5011	4589	4386
50°	4493	3999	3806
55°	3824	3357	3296
60°	3116	2670	2789
65°	2595	2078	2301
70°	2307	1654	1930
75°	2109	1495	1649
80°	1686	1343	1343
85°	911	854	911



TEST NUMBER: 168P126

CATALOG NUMBER: FMS12CR-232-120-80/86

**ZONAL LUMENS:**

**CANDELA DISTRIBUTION:**

Zone	Lumens	% Fixture	% Lamp		0°	22.5°	45°	67.5°	90°	Flux
0°-10°	120.4	4.4	2.1	0°	1273	1273	1273	1273	1273	
10°-20°	343.5	12.7	6.1	5°	1265	1266	1267	1270	1266	120
20°-30°	507.1	18.7	9.1	15°	1218	1218	1220	1220	1216	343
30°-40°	566.7	20.9	10.1	25°	1109	1110	1106	1099	1093	510
40°-50°	507.4	18.7	9.1	35°	935	928	909	889	880	584
50°-60°	357.1	13.2	6.4	45°	714	686	654	629	625	548
60°-70°	197.7	7.3	3.5	55°	442	420	388	373	381	396
70°-80°	94.2	3.5	1.7	65°	221	209	177	185	196	224
80°-90°	21.0	0.8	0.4	75°	110	95	78	83	86	115
90°-100°	0.0	0.0	0.0	85°	16	16	15	16	16	22
100°-110°	0.0	0.0	0.0	90°	0	0	0	0	0	1
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°	971.0	35.8	17.3	165°	0	0	0	0	0	0
0°-40°	1537.7	56.6	27.5	175°	0	0	0	0	0	0
0°-60°	2402.2	88.5	42.9	180°	0	0	0	0	0	0
<b>0°-90°</b>	<b>2715.1</b>	<b>100.0</b>	<b>48.5</b>							
90°-120°	0.0	0.0	0.0							
90°-150°	0.0	0.0	0.0							
<b>90°-180°</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>							
0°-180°	2715.1	100.0	48.5							



TEST NUMBER: 168P126

CATALOG NUMBER: FMS12CR-232-120-80/86

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1273	1273	1273	1273	1273
2.5°	1269	1270	1272	1274	1270
5°	1265	1266	1267	1270	1266
7.5°	1257	1258	1260	1263	1260
10°	1248	1248	1249	1252	1249
12.5°	1235	1235	1236	1238	1235
15°	1218	1218	1220	1220	1216
17.5°	1198	1198	1198	1198	1194
20°	1174	1174	1173	1171	1167
22.5°	1144	1145	1142	1139	1133
25°	1109	1110	1106	1099	1093
27.5°	1070	1071	1065	1055	1047
30°	1028	1026	1017	1004	996
32.5°	983	979	965	949	940
35°	935	928	909	889	880
37.5°	885	874	851	828	819
40°	832	815	788	765	755
42.5°	775	752	723	698	691
45°	714	686	654	629	625
47.5°	649	618	585	559	558
50°	582	551	518	494	493
52.5°	512	484	453	433	433
55°	442	420	388	373	381
57.5°	375	358	326	316	331
60°	314	302	269	266	281
62.5°	263	252	219	222	235
65°	221	209	177	185	196
67.5°	188	175	142	154	163
70°	159	146	114	127	133
72.5°	134	120	94	104	108
75°	110	95	78	83	86
77.5°	85	71	63	63	66
80°	59	50	47	45	47
82.5°	35	32	29	28	30
85°	16	16	15	16	16
87.5°	4	6	7	8	9
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



TEST NUMBER: 168P126

CATALOG NUMBER: FMS12CR-232-120-80/86

**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)