

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: BALLABS TEST NO. 9333.0

Luminaire Tested: **FMW-2/232-120-80/87-EB81**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: BALLABS TEST NO. 9333.0  
Test Lab:  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: FMW-2/232-120-80/87-EB81  
Description: 4/32W T8 LAMP 4'WALL MOUNT LUMINAIRE w/WHITE BODY  
Light Source: -  
F32T8/735/RS  
Ballast/Driver: MAGNETEK BALLAST #B432I120RH

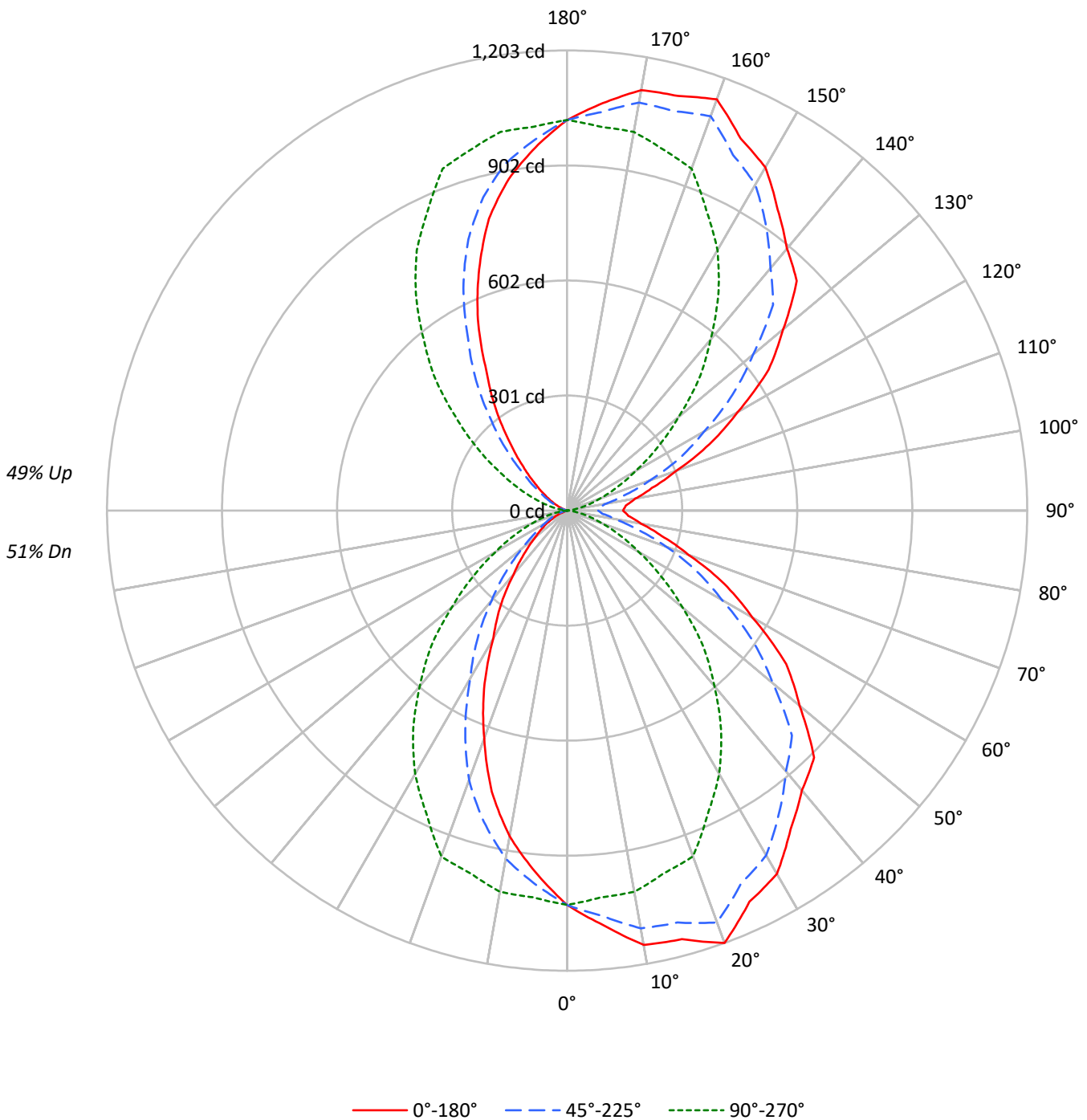
**Summary**

Lumens per Lamp: 2850 (4 lamps)  
Luminaire Lumens: 4414.2 lumens  
Efficiency: 38.7%  
Efficacy: 43.3 lumens/watt  
Spacing Criteria (0/90/45): 1.09 / 1.16 / 1.23  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 0.27' x H: 0.12')  
CIE Type: General Diffuse

Input Watts (W): 102  
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	50	30	10	0	
RCR																						
0	42	42	42	42	38	38	38	38	33	33	33	27	27	27	22	22	22	22	22	22	20	
1	38	36	35	34	35	34	32	31	29	28	27	24	23	23	20	19	19	20	19	19	17	
2	35	32	30	28	32	30	28	26	25	24	23	21	20	19	18	17	16	18	17	16	14	
3	32	28	26	23	29	26	24	22	23	21	19	19	18	17	16	15	14	16	15	14	12	
4	29	25	22	20	27	23	21	19	20	18	17	17	16	14	14	13	12	14	13	12	11	
5	27	23	19	17	25	21	18	16	18	16	14	15	14	13	13	12	11	13	12	11	10	
6	25	20	17	15	23	19	16	14	16	14	13	14	12	11	12	11	10	12	11	10	8	
7	23	18	15	13	21	17	14	13	15	13	11	13	11	10	11	10	9	11	10	9	8	
8	21	17	14	12	20	16	13	11	14	12	10	12	10	9	10	9	8	10	9	8	7	
9	20	15	12	11	18	14	12	10	13	10	9	11	9	8	9	8	7	9	8	7	6	
10	19	14	11	9	17	13	11	9	12	10	8	10	8	7	9	7	6	9	7	6	6	

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

	0°	90°	180°
0°	10455	10455	10455
5°	10645	10303	9285
10°	10979	10362	8237
15°	10838	10211	7110
20°	11115	10262	5858
25°	10387	9613	4733
30°	10143	9140	3569
35°	9525	8500	2835
40°	9114	7722	2071
45°	8960	7004	1541
50°	8072	5973	1099
55°	7450	5072	821
60°	6313	4151	552
65°	5464	3391	362
70°	4407	2617	0
75°	3671	1996	0
80°	3165	1286	0
85°	2986	597	0



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**ZONAL LUMENS:**

**CANDELA DISTRIBUTION:**

Zone	Lumens	% Fixture	% Lamp		0°	45°	90°	135°	180°	Flux
0°-10°	97.3	2.2	0.9	0°	1031	1031	1031	1031	1031	
10°-20°	276.7	6.3	2.4	5°	1088	1064	1015	979	949	105
20°-30°	394.9	8.9	3.5	15°	1160	1115	981	842	761	332
30°-40°	429.9	9.7	3.8	25°	1128	1076	872	630	514	526
40°-50°	400.9	9.1	3.5	35°	1018	966	702	408	303	641
50°-60°	309.4	7.0	2.7	45°	913	831	504	226	157	691
60°-70°	201.1	4.6	1.8	55°	699	592	300	101	77	615
70°-80°	106.3	2.4	0.9	65°	453	372	151	46	30	446
80°-90°	54.3	1.2	0.5	75°	255	188	57	12	0	275
90°-100°	48.3	1.1	0.4	85°	161	92	7	0	0	140
100°-110°	90.5	2.1	0.8	90°	146	81	0	0	0	83
110°-120°	176.7	4.0	1.6	95°	154	80	5	0	0	135
120°-130°	281.7	6.4	2.5	105°	230	154	51	4	0	249
130°-140°	376.5	8.5	3.3	115°	410	324	143	36	22	405
140°-150°	414.5	9.4	3.6	125°	643	528	289	94	71	568
150°-160°	386.1	8.7	3.4	135°	849	761	488	224	162	643
160°-170°	272.7	6.2	2.4	145°	960	907	689	415	325	603
170°-180°	96.2	2.2	0.8	155°	1073	1026	863	642	552	499
0°-30°	769.0	17.4	6.7	165°	1122	1081	976	848	790	320
0°-40°	1198.8	27.2	10.5	175°	1069	1046	1007	973	953	103
0°-60°	1909.2	43.3	16.7	180°	1021	1021	1021	1021	1021	
0°-90°	2270.8	51.4	19.9							
90°-120°	315.6	7.2	2.8							
90°-150°	1388.4	31.5	12.2							
90°-180°	2143.0	48.5	18.8							
0°-180°	4414.2	100.0	38.7							



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°
0°	1031	1031	1031	1031	1031	1031	1031	1031	1031
5°	1088	1080	1064	1043	1015	1004	979	959	949
10°	1153	1137	1109	1070	1012	977	924	885	865
15°	1160	1146	1115	1064	981	921	842	789	761
20°	1203	1188	1146	1074	962	862	750	671	634
25°	1128	1116	1076	1007	872	757	630	547	514
30°	1097	1084	1041	958	795	653	507	424	386
35°	1018	1007	966	872	702	552	408	331	303
40°	955	938	890	788	599	436	307	241	217
45°	913	890	831	715	504	341	226	172	157
50°	793	769	702	584	393	244	151	119	108
55°	699	670	592	472	300	167	101	84	77
60°	560	536	467	361	216	108	68	56	49
65°	453	431	372	273	151	71	46	35	30
70°	337	327	275	189	96	42	26	21	0
75°	255	244	188	126	57	22	12	0	0
80°	196	185	127	80	26	9	0	0	0
85°	161	147	92	47	7	0	0	0	0
90°	146	133	81	33	0	0	0	0	0
95°	154	130	80	35	5	0	0	0	0
100°	181	160	102	63	22	7	0	0	0
105°	230	214	154	105	51	16	4	0	0
110°	303	287	230	157	89	36	18	14	0
115°	410	383	324	231	143	61	36	25	22
120°	515	480	413	313	206	98	60	47	43
125°	643	606	528	413	289	155	94	77	71
130°	737	706	634	518	379	231	147	116	108
135°	849	823	761	647	488	328	224	175	162
140°	894	875	827	731	583	424	309	248	233
145°	960	948	907	821	689	539	415	345	325
150°	1036	1024	984	906	786	642	518	446	422
155°	1073	1060	1026	962	863	744	642	574	552
160°	1144	1132	1097	1035	951	845	755	701	672
165°	1122	1109	1081	1033	976	908	848	807	790
170°	1116	1108	1083	1048	1005	960	922	894	880
175°	1069	1060	1046	1025	1007	993	973	959	953
180°	1021	1021	1021	1021	1021	1021	1021	1021	1021

(END OF REPORT)