

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: P30099

Luminaire Tested: **CRF-24-354T5-UNV-IK12**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P30099
Test Lab: METALUX RESEARCH LABS
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: CRF-24-354T5-UNV-IK12
Description: [FAILSAFE TRISEAL CRF SERIES 2x4 3L T5
Light Source: (3) DOUBLE ENDED T5 4 FOOT HIGH OUTPUT LINEAR FLUORESCENT LAMPS
F54W T5 54 WATTS
Ballast/Driver: ADVANCE CENTIUM
ICN-4S54

Summary

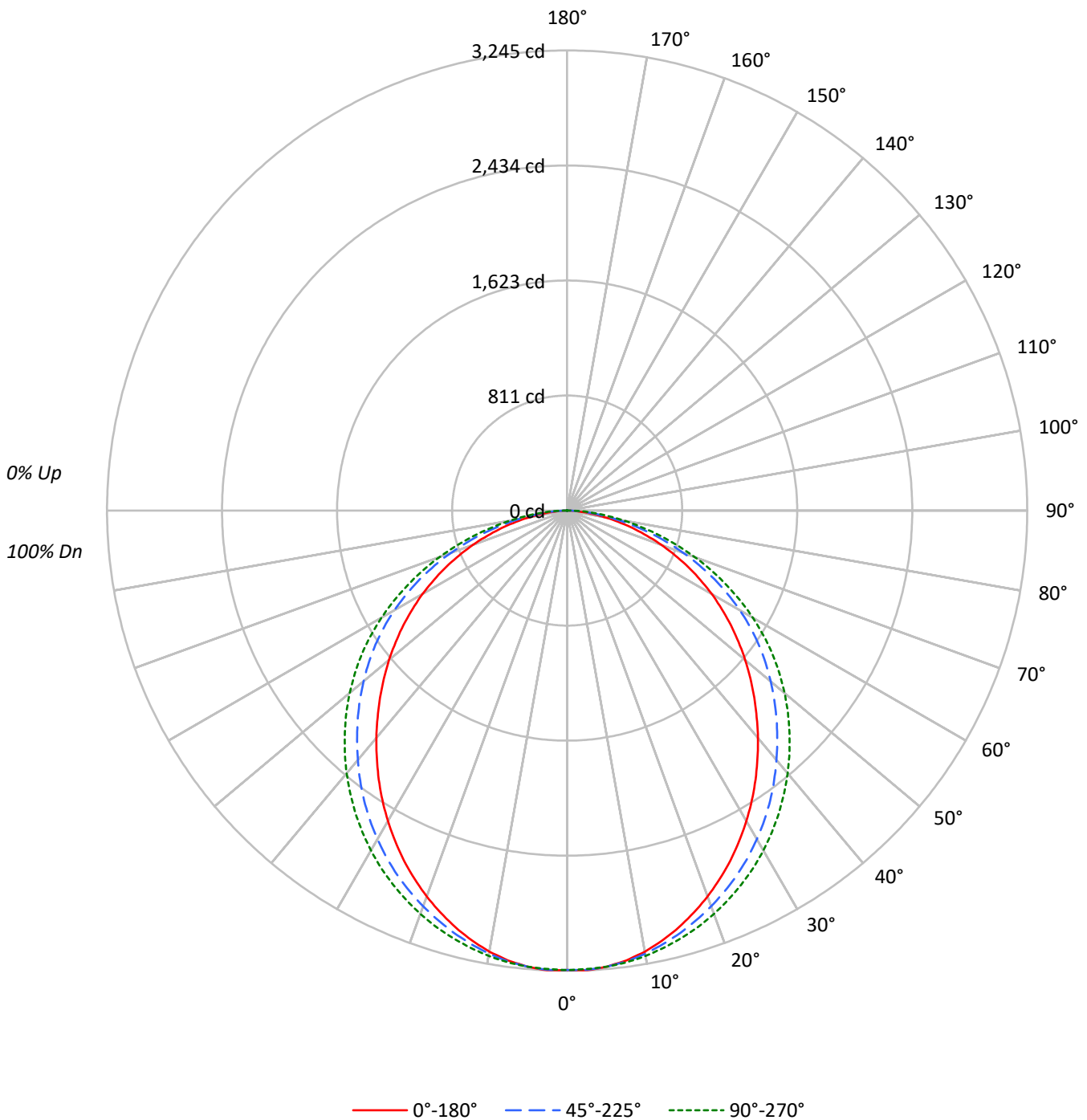
Lumens per Lamp: 4400 (3 lamps)
Luminaire Lumens: 8977.7 lumens
Efficiency: 68.0%
Efficacy: 53.8 lumens/watt
Spacing Criteria (0/90/45): 1.17 / 1.27 / 1.35
Luminous Opening: Rectangular (W 1.75' x L: 3.75' x H: 0')
CIE Type: Direct

Input Watts (W): 166.9
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	81	81	81	81	79	79	79	79	76	76	76		72	72	72		69	69	69	68
1	74	71	68	65	72	69	66	64	66	64	62		64	62	60		61	60	58	57
2	67	62	57	53	65	60	56	52	58	54	51		56	53	50		54	51	49	47
3	61	54	48	44	60	53	48	44	51	46	43		49	45	42		47	44	41	40
4	56	48	42	37	54	47	41	37	45	40	36		44	39	36		42	38	35	34
5	52	43	37	32	50	42	36	32	41	35	32		39	35	31		38	34	31	29
6	48	38	32	28	46	38	32	28	37	31	28		35	31	27		34	30	27	26
7	44	35	29	25	43	34	29	25	33	28	24		32	28	24		31	27	24	23
8	41	32	26	22	40	31	26	22	30	25	22		30	25	22		29	25	22	20
9	38	29	24	20	37	29	23	20	28	23	20		27	23	20		27	22	19	18
10	36	27	22	18	35	27	21	18	26	21	18		25	21	18		25	21	18	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	5314	5314	5314
5°	5315	5316	5316
10°	5260	5285	5311
15°	5167	5235	5298
20°	5055	5184	5284
25°	4928	5131	5263
30°	4788	5068	5242
35°	4637	4998	5212
40°	4481	4918	5179
45°	4328	4846	5143
50°	4182	4782	5106
55°	4032	4718	5059
60°	3864	4616	4963
65°	3660	4448	4805
70°	3386	4187	4589
75°	3036	3790	4259
80°	2531	3249	3835
85°	1863	2597	3444



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ZONAL LUMENS:

CANDELA DISTRIBUTION:

Zone	Lumens	% Fixture	% Lamp		0°	22.5°	45°	67.5°	90°	Flux
0°-10°	306.3	3.4	2.3	0°	3240	3240	3240	3240	3240	
10°-20°	869.0	9.7	6.6	5°	3228	3224	3229	3228	3229	306
20°-30°	1301.0	14.5	9.9	15°	3043	3051	3083	3109	3120	857
30°-40°	1548.7	17.3	11.7	25°	2723	2754	2835	2891	2908	1253
40°-50°	1593.5	17.7	12.1	35°	2316	2367	2496	2582	2603	1448
50°-60°	1448.1	16.1	11.0	45°	1866	1936	2089	2193	2217	1440
60°-70°	1109.1	12.4	8.4	55°	1410	1491	1650	1756	1769	1260
70°-80°	626.4	7.0	4.7	65°	943	1016	1146	1237	1238	932
80°-90°	169.9	1.9	1.3	75°	479	523	598	666	672	508
90°-100°	2.9	0.0	0.0	85°	99	115	138	172	183	117
100°-110°	0.5	0.0	0.0	90°	7	9	15	28	34	8
110°-120°	0.3	0.0	0.0	95°	1	1	0	0	0	1
120°-130°	0.6	0.0	0.0	105°	1	1	1	0	0	1
130°-140°	0.4	0.0	0.0	115°	1	0	0	0	0	1
140°-150°	0.5	0.0	0.0	125°	1	1	1	1	1	1
150°-160°	0.4	0.0	0.0	135°	0	1	0	0	0	1
160°-170°	0.2	0.0	0.0	145°	2	1	1	0	0	1
170°-180°	0.1	0.0	0.0	155°	1	1	1	0	0	1
0°-30°	2476.4	27.6	18.8	165°	1	1	1	0	0	0
0°-40°	4025.0	44.8	30.5	175°	1	1	1	0	0	0
0°-60°	7066.6	78.7	53.5	180°	1	1	1	1	1	
0°-90°	8972.0	99.9	68.0							
90°-120°	3.7	0.0	0.0							
90°-150°	5.1	0.1	0.0							
90°-180°	6.0	0.1	0.0							
0°-180°	8977.7	100.0	68.0							



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3240	3240	3240	3240	3240
2.5°	3245	3240	3241	3237	3236
5°	3228	3224	3229	3228	3229
7.5°	3199	3197	3206	3210	3213
10°	3158	3159	3173	3183	3189
12.5°	3105	3109	3131	3149	3157
15°	3043	3051	3083	3109	3120
17.5°	2972	2986	3029	3063	3077
20°	2896	2915	2970	3012	3027
22.5°	2812	2837	2905	2954	2970
25°	2723	2754	2835	2891	2908
27.5°	2627	2665	2759	2824	2842
30°	2528	2569	2676	2749	2768
32.5°	2424	2471	2589	2669	2688
35°	2316	2367	2496	2582	2603
37.5°	2205	2261	2398	2489	2513
40°	2093	2154	2297	2389	2419
42.5°	1979	2044	2193	2293	2320
45°	1866	1936	2089	2193	2217
47.5°	1753	1826	1983	2089	2112
50°	1639	1715	1874	1983	2001
52.5°	1524	1604	1764	1872	1887
55°	1410	1491	1650	1756	1769
57.5°	1293	1376	1531	1635	1643
60°	1178	1259	1407	1508	1513
62.5°	1059	1139	1278	1374	1378
65°	943	1016	1146	1237	1238
67.5°	823	892	1010	1096	1099
70°	706	769	873	953	957
72.5°	590	644	734	809	814
75°	479	523	598	666	672
77.5°	370	406	467	527	534
80°	268	296	344	396	406
82.5°	178	199	234	276	288
85°	99	115	138	172	183
87.5°	40	49	63	87	96
90°	7	9	15	28	34
92.5°	1	0	0	1	2
95°	1	1	0	0	0
97.5°	1	0	0	0	0
100°	1	1	1	0	0
102.5°	1	1	1	0	0
105°	1	1	1	0	0
107.5°	1	0	0	0	0
110°	1	0	1	0	0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1	1	1	0	0
115°	1	0	0	0	0
117.5°	1	0	0	0	0
120°	1	0	0	0	0
122.5°	1	1	1	1	0
125°	1	1	1	1	1
127.5°	1	1	0	0	0
130°	1	1	1	0	0
132.5°	1	1	1	0	0
135°	0	1	0	0	0
137.5°	1	1	0	0	0
140°	1	1	1	0	0
142.5°	1	1	1	0	0
145°	2	1	1	0	0
147.5°	1	1	1	1	0
150°	2	1	1	1	0
152.5°	2	1	1	0	0
155°	1	1	1	0	0
157.5°	1	1	1	1	0
160°	1	1	1	0	0
162.5°	2	1	1	0	0
165°	1	1	1	0	0
167.5°	1	1	1	0	0
170°	1	1	1	1	0
172.5°	1	1	1	1	0
175°	1	1	1	0	0
177.5°	1	1	1	0	0
180°	1	1	1	1	1

(END OF REPORT)