

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: METALUX

Report Number: P30647

Luminaire Tested: **HBE-647T5-N-UNV-EBT2**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-41-14  
Report Number: P30647  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: HBE-647T5-N-UNV-EBT2  
Description: METALUX F-BAY HBE SERIES, ENCLOSED OPEN BODY FLUORESCENT WITH METAL SIDE RAILS, NARROW DISTRIBUTION SPECULAR ALUMINUM REFLECTOR, WITH NO UPLIGHT  
Light Source: (6) BIPIN T5 LINEAR FLUORESCENT LAMP 4100K - 4285 LUMENS EA  
GE F54T5-47W 841-ECO 47W  
Ballast/Driver: GE ELECTRONIC BALLAST  
GE 454MVPS90E, GE 254MVPS90E

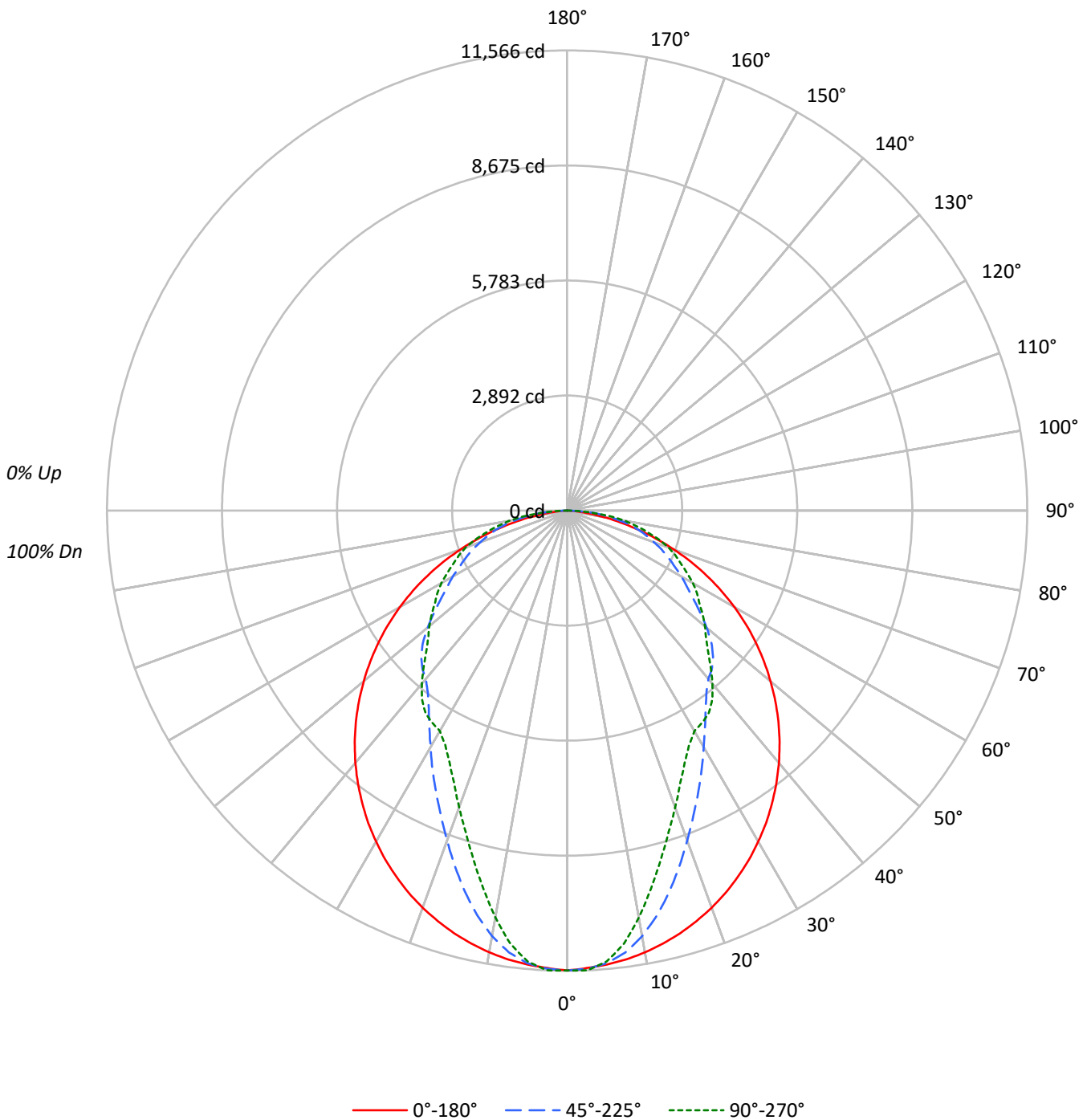
**Summary**

Lumens per Lamp: 4285 (6 lamps)  
Luminaire Lumens: 25390.3 lumens  
Efficiency: 98.8%  
Efficacy: 82.0 lumens/watt  
Spacing Criteria (0/90/45): 1.24 / 0.84 / 1.08  
Luminous Opening: Rectangular (W 1.63' x L: 4.04' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 309.8  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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	118	118	118	118	115	115	115	115	110	110	110	105	105	105	101	101	101	99
1	107	102	98	94	105	100	96	93	96	93	90	92	89	87	89	86	84	82
2	98	89	83	77	95	88	81	76	84	79	74	81	76	73	78	74	71	69
3	89	79	71	64	87	77	70	64	74	68	63	72	66	62	69	64	60	58
4	82	70	61	55	80	69	61	54	66	59	54	64	58	53	62	57	52	50
5	75	63	54	48	73	62	53	47	60	52	47	58	51	46	56	50	46	44
6	70	57	48	42	68	56	48	42	54	47	41	52	46	41	51	45	41	38
7	65	52	43	37	63	51	43	37	49	42	37	48	41	37	47	41	36	34
8	61	47	39	33	59	47	39	33	45	38	33	44	38	33	43	37	33	31
9	57	44	36	30	55	43	35	30	42	35	30	41	34	30	40	34	30	28
10	53	40	33	28	52	40	33	28	39	32	27	38	32	27	37	31	27	25

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

	0°	45°	90°
0°	18940	18940	18940
5°	18838	18784	18715
10°	18755	18069	17274
15°	18650	16825	15408
20°	18520	15387	13840
25°	18360	14097	12635
30°	18175	12984	12102
35°	17959	12129	12411
40°	17709	11817	12150
45°	17399	12016	11599
50°	17011	11666	11524
55°	16536	11060	11583
60°	15912	10876	11954
65°	15023	10902	12231
70°	13653	11104	12982
75°	11654	11724	13205
80°	8709	11851	13823
85°	4455	11768	11636



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**ZONAL LUMENS:**

**CANDELA DISTRIBUTION:**

Zone	Lumens	% Fixture	% Lamp		0°	22.5°	45°	67.5°	90°	Flux
0°-10°	1071.1	4.2	4.2	0°	11560	11560	11560	11560	11560	
10°-20°	2802.0	11.0	10.9	5°	11454	11459	11421	11350	11379	###
20°-30°	3772.8	14.9	14.7	15°	10995	10735	9919	9259	9084	3102
30°-40°	4239.0	16.7	16.5	25°	10156	9232	7798	7123	6989	4681
40°-50°	4239.8	16.7	16.5	35°	8979	7342	6064	6099	6205	5617
50°-60°	3745.1	14.8	14.6	45°	7509	5486	5186	5057	5006	5790
60°-70°	2993.2	11.8	11.6	55°	5789	3886	3872	3973	4055	5171
70°-80°	1914.4	7.5	7.4	65°	3875	2713	2812	3073	3155	3824
80°-90°	609.6	2.4	2.4	75°	1841	1416	1852	2028	2086	1957
90°-100°	3.4	0.0	0.0	85°	237	462	626	626	619	343
100°-110°	0.0	0.0	0.0	90°	2	21	31	30	34	7
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°	7645.8	30.1	29.7	165°	0	0	0	0	0	0
0°-40°	11884.8	46.8	46.2	175°	0	0	0	0	0	0
0°-60°	19869.7	78.3	77.3	180°	0	0	0	0	0	0
0°-90°	25386.9	100.0	98.7							
90°-120°	3.4	0.0	0.0							
90°-150°	3.4	0.0	0.0							
90°-180°	3.0	0.0	0.0							
0°-180°	25390.3	100.0	98.8							



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	11560	11560	11560	11560	11560
2.5°	11508	11521	11528	11520	11566
5°	11454	11459	11421	11350	11379
7.5°	11378	11352	11201	11002	10975
10°	11273	11194	10861	10484	10383
12.5°	11146	10992	10425	9888	9729
15°	10995	10735	9919	9259	9084
17.5°	10818	10426	9376	8648	8477
20°	10622	10070	8825	8102	7938
22.5°	10403	9665	8291	7594	7422
25°	10156	9232	7798	7123	6989
27.5°	9894	8779	7328	6721	6640
30°	9607	8303	6863	6393	6397
32.5°	9308	7826	6444	6186	6321
35°	8979	7342	6064	6099	6205
37.5°	8640	6860	5751	5954	5993
40°	8280	6398	5525	5729	5681
42.5°	7905	5942	5387	5417	5336
45°	7509	5486	5186	5057	5006
47.5°	7100	5043	4921	4720	4732
50°	6674	4626	4577	4442	4521
52.5°	6237	4237	4216	4218	4294
55°	5789	3886	3872	3973	4055
57.5°	5332	3607	3574	3746	3872
60°	4856	3348	3319	3548	3648
62.5°	4368	3048	3046	3310	3396
65°	3875	2713	2812	3073	3155
67.5°	3365	2324	2574	2836	2945
70°	2850	1983	2318	2615	2710
72.5°	2336	1684	2082	2349	2412
75°	1841	1416	1852	2028	2086
77.5°	1364	1185	1562	1710	1766
80°	923	953	1256	1411	1465
82.5°	540	733	970	1079	1093
85°	237	462	626	626	619
87.5°	47	207	219	211	211
90°	2	21	31	30	34
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)