

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: P20011

Luminaire Tested: **HBI-654T5-N-UNV-EHT2-UPL-U**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-41-14  
Report Number: P20011  
Test Lab: PTC RESEARCH  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: HBI-654T5-N-UNV-EHT2-UPL-U  
Description: [ HBI SERIES, FULL BODY STEEL HOUSING, WITH SIX T5HO LAMPS  
NARROW DISTRIBUTION SPECULAR REFLECTOR WITH UPLIGHT  
Light Source: SIX T5 HIGH OUTPUT LINEAR FLUORESCENT LAMPS, F54T5 54W - 4400 LUMENS EA  
Ballast/Driver: -

**Summary**

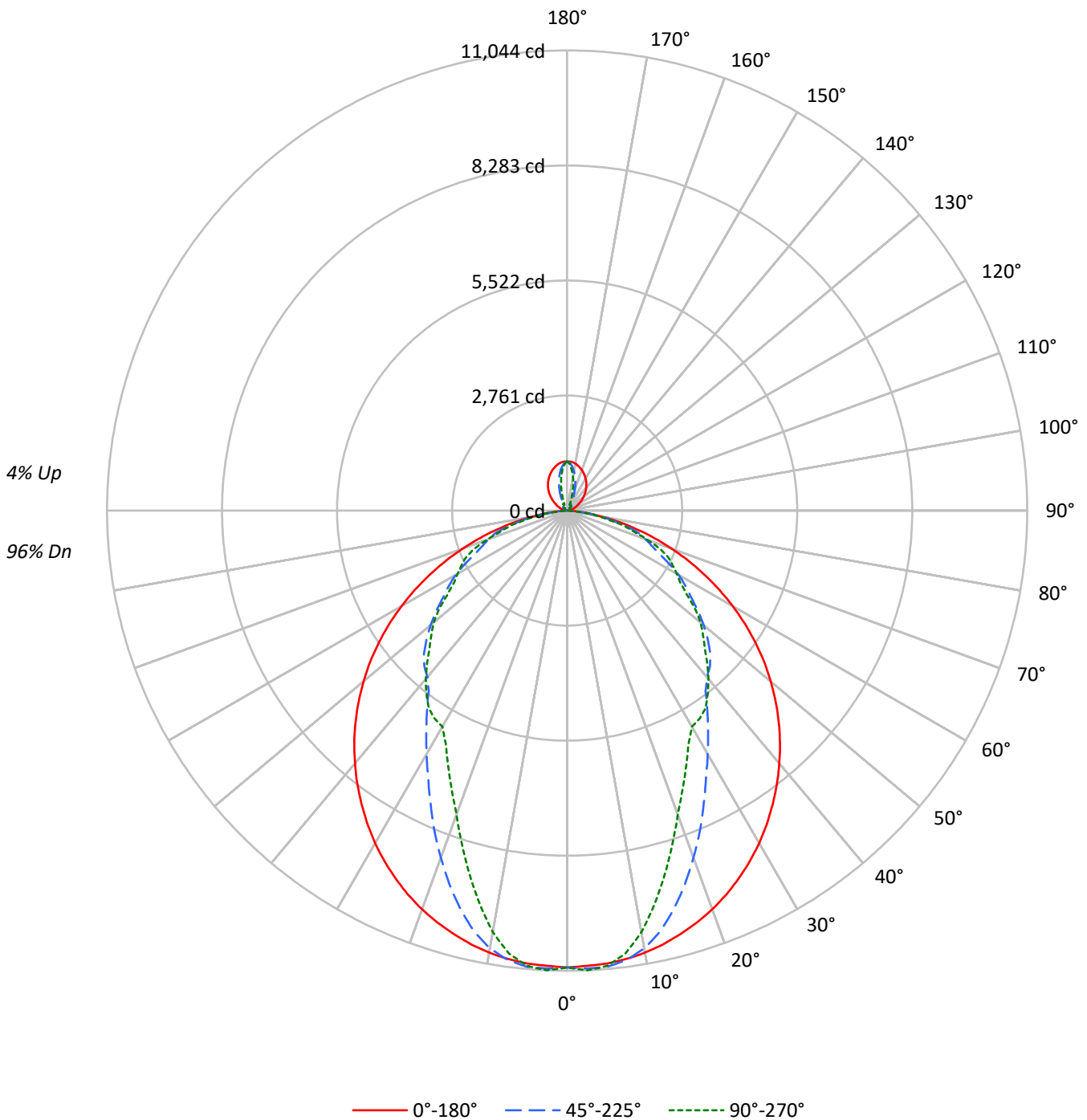
Lumens per Lamp: 4400 (6 lamps)  
Luminaire Lumens: 24661.9 lumens  
Efficiency: 93.4%  
Efficacy: 72.3 lumens/watt  
Spacing Criteria (0/90/45): 1.25 / 0.86 / 1.08  
Luminous Opening: Rectangular (W 1.19' x L: 3.9' x H: 0')  
CIE Type: Direct

Input Watts (W): 341  
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	110	110	110	110	107	107	107	107	101	101	101		96	96	96		92	92	92	89
1	101	97	93	90	98	94	91	88	90	87	84		85	83	81		81	80	78	76
2	92	85	79	74	90	83	77	73	79	74	70		75	72	68		72	69	66	64
3	85	75	68	62	82	73	67	61	70	64	60		67	62	58		64	60	57	54
4	78	67	59	53	75	65	58	53	63	56	51		60	55	50		58	53	49	47
5	72	60	52	46	70	59	51	46	56	50	45		54	49	44		52	47	43	41
6	66	54	46	41	64	53	46	40	51	45	40		49	43	39		48	42	38	36
7	62	50	42	36	60	49	41	36	47	40	35		45	39	35		44	38	34	32
8	58	45	38	33	56	45	37	32	43	37	32		42	36	31		40	35	31	29
9	54	42	34	29	52	41	34	29	40	33	29		39	33	29		37	32	28	27
10	51	39	32	27	49	38	31	27	37	31	26		36	30	26		35	30	26	24

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

	0°	45°	90°
0°	25514	25514	25514
5°	25483	25670	25623
10°	25450	25204	24268
15°	25345	23844	21797
20°	25216	21947	19219
25°	25015	19914	17349
30°	24765	18119	16090
35°	24430	16644	16446
40°	24064	15842	16031
45°	23642	15998	15360
50°	23097	15485	15145
55°	22371	14737	14185
60°	21368	14393	14118
65°	20001	13296	14826
70°	18129	13571	13966
75°	15552	13305	12747
80°	11764	11094	9714
85°	5953	7315	2803



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**ZONAL LUMENS:**

**CANDELA DISTRIBUTION:**

Zone	Lumens	% Fixture	% Lamp		0°	22.5°	45°	67.5°	90°	Flux
0°-10°	1035.4	4.2	3.9	0°	10966	10966	10966	10966	10966	
10°-20°	2765.6	11.2	10.5	5°	10911	10956	10991	10991	10971	###
20°-30°	3713.2	15.1	14.1	15°	10522	10487	9899	9293	9049	2970
30°-40°	4103.9	16.6	15.5	25°	9744	9216	7757	6992	6758	4490
40°-50°	4047.6	16.4	15.3	35°	8601	7389	5860	5741	5790	5381
50°-60°	3483.0	14.1	13.2	45°	7185	5455	4862	4744	4668	5538
60°-70°	2616.3	10.6	9.9	55°	5515	3806	3633	3596	3497	4923
70°-80°	1477.5	6.0	5.6	65°	3633	2497	2415	2616	2693	3593
80°-90°	322.0	1.3	1.2	75°	1730	1261	1480	1396	1418	1838
90°-100°	21.9	0.1	0.1	85°	223	276	274	136	105	327
100°-110°	40.1	0.2	0.2	90°	10	12	15	14	12	12
110°-120°	67.2	0.3	0.3	95°	22	19	21	18	15	30
120°-130°	102.2	0.4	0.4	105°	116	29	34	33	29	126
130°-140°	149.6	0.6	0.6	115°	254	54	46	50	46	251
140°-150°	189.4	0.8	0.7	125°	416	106	65	62	56	373
150°-160°	208.6	0.8	0.8	135°	615	178	142	103	75	474
160°-170°	217.1	0.9	0.8	145°	801	406	143	180	176	500
170°-180°	101.4	0.4	0.4	155°	964	695	341	181	151	443
0°-30°	7514.2	30.5	28.5	165°	1094	962	758	608	541	308
0°-40°	11618.1	47.1	44.0	175°	1174	1155	1105	1066	1046	111
0°-60°	19148.7	77.6	72.5	180°	1180	1180	1180	1180	1180	
0°-90°	23564.5	95.6	89.3							
90°-120°	129.2	0.5	0.5							
90°-150°	570.4	2.3	2.2							
90°-180°	1097.0	4.4	4.2							
0°-180°	24661.9	100.0	93.4							



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	10966	10966	10966	10966	10966	10966	10966	10966	10966	10966	10966
2.5°	10936	10942	10955	10954	10979	11001	11020	11045	11045	11044	11044
5°	10911	10919	10948	10958	10980	10991	10991	10995	10980	10971	10971
7.5°	10856	10868	10911	10916	10911	10881	10835	10798	10750	10720	10720
10°	10772	10790	10839	10818	10763	10668	10549	10439	10335	10277	10272
12.5°	10660	10684	10730	10665	10535	10340	10115	9922	9775	9689	9682
15°	10522	10550	10581	10456	10221	9899	9584	9338	9157	9059	9049
17.5°	10363	10396	10403	10197	9826	9399	9018	8734	8522	8405	8395
20°	10184	10221	10189	9876	9373	8864	8439	8106	7879	7775	7762
22.5°	9977	10016	9937	9496	8884	8320	7838	7528	7342	7248	7237
25°	9744	9784	9648	9072	8376	7757	7309	7037	6856	6766	6758
27.5°	9491	9533	9322	8615	7851	7220	6838	6574	6400	6314	6306
30°	9218	9253	8962	8135	7307	6744	6386	6134	6007	5990	5989
32.5°	8919	8950	8565	7644	6795	6294	5949	5822	5880	5917	5920
35°	8601	8628	8138	7139	6328	5860	5627	5728	5780	5790	5790
37.5°	8273	8289	7687	6619	5887	5459	5518	5589	5567	5546	5545
40°	7923	7931	7220	6117	5456	5216	5406	5375	5296	5279	5278
42.5°	7562	7556	6737	5642	5044	5073	5160	5095	5011	4981	4976
45°	7185	7164	6245	5192	4718	4862	4824	4762	4689	4670	4668
47.5°	6787	6753	5737	4759	4520	4578	4510	4431	4415	4423	4423
50°	6381	6323	5224	4335	4315	4278	4183	4171	4184	4185	4184
52.5°	5958	5875	4711	3955	4042	3956	3907	3928	3902	3872	3865
55°	5515	5406	4216	3669	3731	3633	3658	3617	3535	3502	3497
57.5°	5060	4921	3736	3434	3409	3367	3354	3250	3212	3220	3221
60°	4592	4425	3281	3156	3075	3093	2986	2962	3002	3030	3034
62.5°	4116	3919	2850	2835	2790	2749	2696	2769	2822	2854	2857
65°	3633	3405	2477	2504	2507	2415	2495	2602	2656	2690	2693
67.5°	3150	2893	2163	2173	2167	2187	2313	2426	2440	2430	2425
70°	2665	2385	1878	1889	1853	1995	2132	2117	2082	2059	2053
72.5°	2188	1898	1570	1581	1636	1809	1801	1741	1699	1679	1672
75°	1730	1440	1256	1263	1443	1480	1426	1392	1408	1418	1418
77.5°	1288	1028	973	1046	1160	1109	1138	1118	1055	1024	1017
80°	878	690	703	841	808	828	760	717	719	726	725
82.5°	517	419	487	533	526	479	520	559	556	532	526
85°	223	215	287	273	286	274	206	144	113	106	105
87.5°	51	69	85	84	64	68	70	70	68	67	67
90°	10	10	11	13	14	15	16	15	13	12	12
92.5°	17	17	17	16	15	15	15	14	13	12	11
95°	22	17	18	19	20	21	21	18	17	16	15
97.5°	41	23	22	24	26	28	28	26	25	24	23
100°	75	33	24	26	27	29	30	29	29	27	27
102.5°	83	39	27	27	31	31	33	32	31	29	29
105°	116	56	28	29	31	34	33	33	32	30	29
107.5°	150	84	41	33	35	38	40	36	34	32	32
110°	184	115	53	42	36	41	43	44	40	35	34



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
112.5°	219	149	60	41	39	43	46	45	46	45	45
115°	254	186	64	50	49	46	50	51	48	46	46
117.5°	288	222	66	69	59	49	52	54	55	53	53
120°	324	259	73	82	53	60	54	55	53	54	54
122.5°	368	303	92	92	73	73	60	57	56	55	55
125°	416	352	124	100	97	65	81	63	58	56	56
127.5°	466	404	166	102	111	85	79	84	68	62	61
130°	516	455	214	101	120	112	78	84	90	87	86
132.5°	565	507	268	106	130	131	107	78	80	88	88
135°	615	559	326	129	132	142	136	109	85	76	75
137.5°	664	612	387	167	130	151	152	143	123	110	108
140°	710	663	448	218	127	155	160	160	154	147	146
142.5°	757	714	511	281	141	150	171	170	169	168	167
145°	801	763	573	350	180	143	168	181	178	178	176
147.5°	845	811	636	426	240	150	159	178	187	188	187
150°	885	855	696	501	313	188	152	166	176	180	178
152.5°	925	899	756	578	396	255	177	157	162	163	161
155°	964	942	815	655	488	341	241	187	164	154	151
157.5°	1000	982	872	731	582	440	334	262	219	196	191
160°	1033	1019	926	804	674	548	443	367	317	286	281
162.5°	1064	1053	977	874	763	654	562	489	437	405	401
165°	1094	1086	1026	941	850	758	680	619	573	545	541
167.5°	1120	1115	1071	1005	932	858	794	746	708	686	682
170°	1144	1141	1112	1062	1009	951	902	866	836	818	817
172.5°	1163	1162	1144	1114	1077	1035	999	975	954	942	940
175°	1174	1175	1165	1152	1133	1105	1083	1069	1055	1048	1046
177.5°	1180	1182	1179	1175	1171	1157	1149	1145	1138	1137	1136
180°	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180

(END OF REPORT)