

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: 17276

Luminaire Tested: **HBE-654T5-N-UNV-EBT2-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-41-14
Report Number: 17276
Test Lab: LUMINAIRE TESTING LABORATORY, INC.
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: HBE-654T5-N-UNV-EBT2-U
Description: OPEN HIGH BAY LUMINAIRE WITH SIDE ENCLOSURES AND SPECULAR REFLECTOR, NARROW DISTRIBUTION, NO UPLIGHT
Light Source: -
SIX 54 WATT T5HO - 4400 LUMENS EA
Ballast/Driver: -

Summary

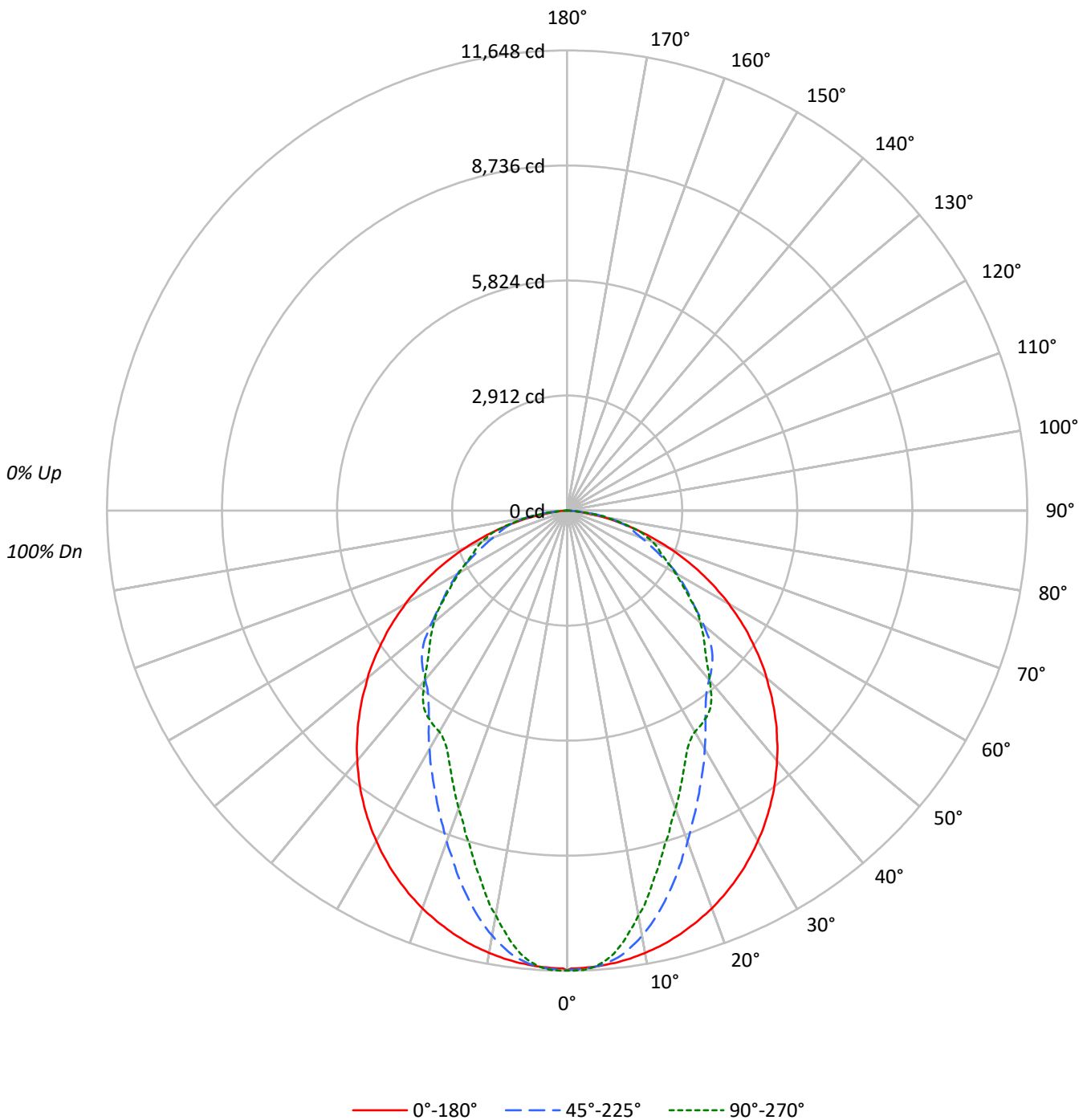
Lumens per Lamp: 4400 (6 lamps)
Luminaire Lumens: 24684.4 lumens
Efficiency: 93.5%
Efficacy: 70.2 lumens/watt
Spacing Criteria (0/90/45): 1.24 / 0.85 / 1.08
Luminous Opening: Rectangular (W 1.59' x L: 3.96' x H: 0')
CIE Type: Direct

Input Watts (W): 351.8
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	111	111	111	111	109	109	109	109	104	104	104	99	99	99	95	95	95	94
1	102	98	94	90	99	96	92	89	92	89	86	88	86	83	85	83	81	79
2	93	86	79	74	91	84	78	73	80	76	72	77	73	70	75	71	68	66
3	85	76	68	62	83	74	67	62	71	65	61	69	64	60	66	62	58	56
4	78	67	59	53	76	66	59	53	64	57	52	62	56	51	60	55	51	49
5	72	60	52	46	70	59	52	46	57	51	45	56	50	45	54	49	45	43
6	67	55	47	41	65	54	46	41	52	45	40	51	45	40	49	44	40	38
7	62	50	42	36	61	49	42	36	48	41	36	46	40	36	45	40	35	34
8	58	46	38	33	57	45	38	33	44	37	32	43	37	32	42	36	32	30
9	54	42	35	30	53	42	34	30	41	34	29	40	34	29	39	33	29	27
10	51	39	32	27	50	39	32	27	38	31	27	37	31	27	36	31	27	25

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	19859	19859	19859
5°	19752	19687	19553
10°	19696	18923	18017
15°	19601	17643	16132
20°	19452	16181	14577
25°	19262	14868	13270
30°	19033	13731	12740
35°	18749	12724	13011
40°	18399	12443	12514
45°	17990	12544	11907
50°	17499	11971	11684
55°	16883	11291	11148
60°	16119	10940	10776
65°	15054	10266	10722
70°	13558	9922	11433
75°	11444	10507	11470
80°	8626	10356	10179
85°	4404	7165	5364



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ZONAL LUMENS:

CANDELA DISTRIBUTION:

Zone	Lumens	% Fixture	% Lamp		0°	22.5°	45°	67.5°	90°	Flux
0°-10°	1079.4	4.4	4.1	0°	11640	11640	11640	11640	11640	
10°-20°	2827.8	11.5	10.7	5°	11533	11580	11495	11455	11417	###
20°-30°	3815.0	15.5	14.5	15°	11097	10861	9989	9360	9133	3129
30°-40°	4275.8	17.3	16.2	25°	10232	9340	7898	7251	7049	4714
40°-50°	4225.1	17.1	16.0	35°	9002	7424	6109	6177	6247	5629
50°-60°	3624.3	14.7	13.7	45°	7456	5519	5199	4989	4935	5749
60°-70°	2732.8	11.1	10.4	55°	5676	3861	3796	3800	3748	5073
70°-80°	1674.0	6.8	6.3	65°	3729	2643	2543	2613	2656	3690
80°-90°	429.8	1.7	1.6	75°	1736	1336	1594	1741	1740	1854
90°-100°	0.3	0.0	0.0	85°	225	396	366	284	274	322
100°-110°	0.0	0.0	0.0	90°	2	10	12	7	3	5
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°	7722.2	31.3	29.3	165°	0	0	0	0	0	0
0°-40°	11998.1	48.6	45.4	175°	0	0	0	0	0	0
0°-60°	19847.5	80.4	75.2	180°	0	0	0	0	0	0
0°-90°	24684.2	100.0	93.5							
90°-120°	0.3	0.0	0.0							
90°-150°	0.3	0.0	0.0							
90°-180°	0.0	0.0	0.0							
0°-180°	24684.4	100.0	93.5							



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	11640	11640	11640	11640	11640
0.5°	11589	11649	11623	11656	11648
1°	11588	11648	11621	11654	11646
1.5°	11585	11643	11614	11648	11642
2°	11583	11642	11608	11638	11636
2.5°	11576	11636	11599	11625	11617
3°	11570	11627	11585	11603	11593
3.5°	11563	11619	11569	11581	11563
4°	11556	11608	11550	11546	11520
4.5°	11544	11594	11525	11503	11469
5°	11533	11580	11495	11455	11417
5.5°	11522	11565	11460	11396	11352
6°	11513	11549	11424	11331	11278
6.5°	11499	11527	11380	11264	11187
7°	11481	11506	11336	11172	11095
7.5°	11468	11482	11278	11087	10996
8°	11451	11457	11212	11005	10876
8.5°	11429	11425	11140	10902	10752
9°	11408	11396	11075	10791	10647
9.5°	11390	11363	11005	10687	10527
10°	11369	11330	10923	10567	10400
10.5°	11346	11294	10850	10458	10307
11°	11323	11259	10763	10343	10201
11.5°	11297	11218	10677	10215	10054
12°	11276	11171	10586	10103	9927
12.5°	11246	11124	10494	9986	9790
13°	11220	11072	10400	9868	9651
13.5°	11190	11017	10303	9746	9514
14°	11152	10966	10199	9621	9402
14.5°	11123	10911	10088	9487	9277
15°	11097	10861	9989	9360	9133
15.5°	11057	10800	9888	9231	9020
16°	11019	10733	9783	9119	8884
16.5°	10985	10671	9676	9015	8758
17°	10952	10612	9570	8895	8671
17.5°	10916	10534	9448	8764	8572
18°	10871	10456	9349	8652	8431
18.5°	10832	10392	9218	8537	8312
19°	10798	10325	9126	8426	8211
19.5°	10755	10257	9026	8345	8121
20°	10714	10173	8912	8248	8029
20.5°	10674	10094	8807	8140	7928
21°	10621	10020	8694	8031	7829
21.5°	10575	9941	8587	7927	7732
22°	10537	9857	8489	7831	7629



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
22.5°	10486	9770	8386	7723	7521
23°	10433	9689	8291	7641	7436
23.5°	10384	9605	8191	7550	7338
24°	10338	9517	8091	7448	7234
24.5°	10286	9432	7985	7359	7142
25°	10232	9340	7898	7251	7049
25.5°	10179	9248	7795	7159	6965
26°	10129	9159	7705	7067	6881
26.5°	10073	9070	7616	6977	6802
27°	10012	8972	7518	6892	6731
27.5°	9956	8881	7430	6808	6669
28°	9901	8784	7333	6726	6610
28.5°	9841	8690	7252	6654	6570
29°	9782	8594	7155	6582	6525
29.5°	9719	8501	7056	6519	6491
30°	9661	8395	6970	6463	6467
30.5°	9597	8305	6880	6418	6449
31°	9537	8214	6793	6378	6432
31.5°	9477	8118	6700	6345	6417
32°	9411	8016	6615	6315	6396
32.5°	9341	7910	6519	6290	6376
33°	9278	7811	6428	6270	6348
33.5°	9211	7720	6346	6248	6326
34°	9141	7626	6266	6228	6306
34.5°	9072	7519	6185	6201	6274
35°	9002	7424	6109	6177	6247
35.5°	8934	7324	6040	6150	6206
36°	8864	7231	5973	6121	6171
36.5°	8791	7132	5911	6091	6118
37°	8719	7033	5851	6063	6059
37.5°	8646	6925	5791	6026	5998
38°	8571	6839	5744	5981	5931
38.5°	8489	6742	5701	5935	5849
39°	8415	6646	5663	5891	5772
39.5°	8348	6549	5631	5840	5702
40°	8261	6453	5587	5765	5619
40.5°	8187	6367	5553	5688	5544
41°	8116	6273	5522	5608	5471
41.5°	8038	6178	5489	5531	5391
42°	7956	6085	5452	5453	5313
42.5°	7865	5993	5416	5370	5241
43°	7782	5895	5376	5288	5170
43.5°	7709	5804	5332	5213	5105
44°	7636	5714	5294	5142	5049
44.5°	7545	5614	5247	5068	4989



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
45°	7456	5519	5199	4989	4935
45.5°	7370	5431	5145	4915	4877
46°	7291	5350	5095	4853	4831
46.5°	7207	5247	5038	4787	4773
47°	7114	5158	4976	4732	4730
47.5°	7032	5068	4905	4675	4681
48°	6944	4971	4832	4612	4620
48.5°	6846	4880	4748	4556	4564
49°	6753	4787	4666	4505	4509
49.5°	6674	4705	4587	4451	4454
50°	6593	4616	4510	4400	4402
50.5°	6515	4530	4428	4347	4346
51°	6420	4448	4351	4290	4297
51.5°	6325	4367	4273	4233	4234
52°	6234	4285	4196	4175	4164
52.5°	6145	4205	4119	4117	4100
53°	6057	4129	4045	4055	4030
53.5°	5952	4054	3977	3995	3958
54°	5858	3983	3916	3929	3880
54.5°	5770	3919	3850	3864	3809
55°	5676	3861	3796	3800	3748
55.5°	5584	3796	3735	3723	3678
56°	5500	3737	3680	3652	3617
56.5°	5402	3683	3621	3581	3554
57°	5302	3628	3565	3513	3497
57.5°	5209	3570	3506	3448	3440
58°	5114	3520	3445	3377	3376
58.5°	5013	3467	3385	3316	3321
59°	4916	3414	3325	3260	3265
59.5°	4813	3354	3267	3205	3216
60°	4724	3300	3206	3145	3158
60.5°	4647	3249	3147	3096	3110
61°	4540	3187	3088	3039	3055
61.5°	4431	3126	3019	2981	2998
62°	4331	3066	2949	2928	2950
62.5°	4239	3003	2873	2880	2896
63°	4141	2935	2794	2821	2846
63.5°	4030	2867	2731	2771	2788
64°	3930	2791	2661	2723	2743
64.5°	3828	2720	2600	2662	2697
65°	3729	2643	2543	2613	2656
65.5°	3631	2566	2484	2564	2616
66°	3534	2487	2424	2515	2583
66.5°	3436	2406	2368	2474	2547
67°	3331	2327	2309	2431	2518



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
67.5°	3227	2252	2252	2395	2483
68°	3126	2182	2201	2366	2454
68.5°	3028	2114	2150	2331	2423
69°	2927	2049	2095	2296	2381
69.5°	2822	1982	2041	2258	2337
70°	2718	1920	1989	2224	2292
70.5°	2629	1867	1943	2182	2247
71°	2518	1807	1902	2143	2210
71.5°	2405	1747	1857	2091	2153
72°	2315	1689	1814	2049	2106
72.5°	2215	1631	1780	2007	2058
73°	2124	1567	1742	1954	2008
73.5°	2034	1512	1713	1909	1954
74°	1934	1457	1676	1857	1886
74.5°	1834	1392	1638	1806	1809
75°	1736	1336	1594	1741	1740
75.5°	1642	1272	1554	1665	1671
76°	1555	1217	1509	1593	1595
76.5°	1473	1157	1459	1527	1527
77°	1380	1118	1409	1463	1450
77.5°	1290	1066	1358	1386	1377
78°	1196	1019	1307	1317	1302
78.5°	1119	974	1253	1252	1240
79°	1031	930	1188	1180	1160
79.5°	962	894	1119	1113	1098
80°	878	849	1054	1041	1036
80.5°	802	816	1000	979	975
81°	728	782	935	915	917
81.5°	659	738	862	863	843
82°	592	696	795	797	739
82.5°	506	649	724	698	646
83°	447	605	670	604	551
83.5°	390	552	609	511	460
84°	332	504	535	416	380
84.5°	277	449	446	347	320
85°	225	396	366	284	274
85.5°	180	337	286	236	229
86°	142	285	229	196	190
86.5°	104	237	180	160	152
87°	76	186	142	132	132
87.5°	50	132	111	116	121
88°	30	92	92	104	107
88.5°	17	62	75	87	89
89°	11	39	55	64	67
89.5°	4	22	31	30	30



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
90°	2	10	12	7	3
90.5°	1	1	1	1	1
91°	0	0	0	0	0
91.5°	0	0	0	0	0
92°	0	0	0	0	0
92.5°	0	0	0	0	0
93°	0	0	0	0	0
93.5°	0	0	0	0	0
94°	0	0	0	0	0
94.5°	0	0	0	0	0
95°	0	0	0	0	0
95.5°	0	0	0	0	0
96°	0	0	0	0	0
96.5°	0	0	0	0	0
97°	0	0	0	0	0
97.5°	0	0	0	0	0
98°	0	0	0	0	0
98.5°	0	0	0	0	0
99°	0	0	0	0	0
99.5°	0	0	0	0	0
100°	0	0	0	0	0
100.5°	0	0	0	0	0
101°	0	0	0	0	0
101.5°	0	0	0	0	0
102°	0	0	0	0	0
102.5°	0	0	0	0	0
103°	0	0	0	0	0
103.5°	0	0	0	0	0
104°	0	0	0	0	0
104.5°	0	0	0	0	0
105°	0	0	0	0	0
105.5°	0	0	0	0	0
106°	0	0	0	0	0
106.5°	0	0	0	0	0
107°	0	0	0	0	0
107.5°	0	0	0	0	0
108°	0	0	0	0	0
108.5°	0	0	0	0	0
109°	0	0	0	0	0
109.5°	0	0	0	0	0
110°	0	0	0	0	0
110.5°	0	0	0	0	0
111°	0	0	0	0	0
111.5°	0	0	0	0	0
112°	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
113°	0	0	0	0	0
113.5°	0	0	0	0	0
114°	0	0	0	0	0
114.5°	0	0	0	0	0
115°	0	0	0	0	0
115.5°	0	0	0	0	0
116°	0	0	0	0	0
116.5°	0	0	0	0	0
117°	0	0	0	0	0
117.5°	0	0	0	0	0
118°	0	0	0	0	0
118.5°	0	0	0	0	0
119°	0	0	0	0	0
119.5°	0	0	0	0	0
120°	0	0	0	0	0
120.5°	0	0	0	0	0
121°	0	0	0	0	0
121.5°	0	0	0	0	0
122°	0	0	0	0	0
122.5°	0	0	0	0	0
123°	0	0	0	0	0
123.5°	0	0	0	0	0
124°	0	0	0	0	0
124.5°	0	0	0	0	0
125°	0	0	0	0	0
125.5°	0	0	0	0	0
126°	0	0	0	0	0
126.5°	0	0	0	0	0
127°	0	0	0	0	0
127.5°	0	0	0	0	0
128°	0	0	0	0	0
128.5°	0	0	0	0	0
129°	0	0	0	0	0
129.5°	0	0	0	0	0
130°	0	0	0	0	0
130.5°	0	0	0	0	0
131°	0	0	0	0	0
131.5°	0	0	0	0	0
132°	0	0	0	0	0
132.5°	0	0	0	0	0
133°	0	0	0	0	0
133.5°	0	0	0	0	0
134°	0	0	0	0	0
134.5°	0	0	0	0	0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
135°	0	0	0	0	0
135.5°	0	0	0	0	0
136°	0	0	0	0	0
136.5°	0	0	0	0	0
137°	0	0	0	0	0
137.5°	0	0	0	0	0
138°	0	0	0	0	0
138.5°	0	0	0	0	0
139°	0	0	0	0	0
139.5°	0	0	0	0	0
140°	0	0	0	0	0
140.5°	0	0	0	0	0
141°	0	0	0	0	0
141.5°	0	0	0	0	0
142°	0	0	0	0	0
142.5°	0	0	0	0	0
143°	0	0	0	0	0
143.5°	0	0	0	0	0
144°	0	0	0	0	0
144.5°	0	0	0	0	0
145°	0	0	0	0	0
145.5°	0	0	0	0	0
146°	0	0	0	0	0
146.5°	0	0	0	0	0
147°	0	0	0	0	0
147.5°	0	0	0	0	0
148°	0	0	0	0	0
148.5°	0	0	0	0	0
149°	0	0	0	0	0
149.5°	0	0	0	0	0
150°	0	0	0	0	0
150.5°	0	0	0	0	0
151°	0	0	0	0	0
151.5°	0	0	0	0	0
152°	0	0	0	0	0
152.5°	0	0	0	0	0
153°	0	0	0	0	0
153.5°	0	0	0	0	0
154°	0	0	0	0	0
154.5°	0	0	0	0	0
155°	0	0	0	0	0
155.5°	0	0	0	0	0
156°	0	0	0	0	0
156.5°	0	0	0	0	0
157°	0	0	0	0	0



TEST NUMBER: 17276

CATALOG NUMBER: HBE-654T5-N-UNV-EBT2-U

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
157.5°	0	0	0	0	0
158°	0	0	0	0	0
158.5°	0	0	0	0	0
159°	0	0	0	0	0
159.5°	0	0	0	0	0
160°	0	0	0	0	0
160.5°	0	0	0	0	0
161°	0	0	0	0	0
161.5°	0	0	0	0	0
162°	0	0	0	0	0
162.5°	0	0	0	0	0
163°	0	0	0	0	0
163.5°	0	0	0	0	0
164°	0	0	0	0	0
164.5°	0	0	0	0	0
165°	0	0	0	0	0
165.5°	0	0	0	0	0
166°	0	0	0	0	0
166.5°	0	0	0	0	0
167°	0	0	0	0	0
167.5°	0	0	0	0	0
168°	0	0	0	0	0
168.5°	0	0	0	0	0
169°	0	0	0	0	0
169.5°	0	0	0	0	0
170°	0	0	0	0	0
170.5°	0	0	0	0	0
171°	0	0	0	0	0
171.5°	0	0	0	0	0
172°	0	0	0	0	0
172.5°	0	0	0	0	0
173°	0	0	0	0	0
173.5°	0	0	0	0	0
174°	0	0	0	0	0
174.5°	0	0	0	0	0
175°	0	0	0	0	0
175.5°	0	0	0	0	0
176°	0	0	0	0	0
176.5°	0	0	0	0	0
177°	0	0	0	0	0
177.5°	0	0	0	0	0
178°	0	0	0	0	0
178.5°	0	0	0	0	0
179°	0	0	0	0	0
179.5°	0	0	0	0	0



TEST NUMBER: 17276

CATALOG NUMBER: HBE-654T5-N-UNV-EBT2-U

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
180°	0	0	0	0	0

(END OF REPORT)