

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: 17277

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

Issue Date: 3/3/2020



Test Information

Test Method: LM-41-14
Report Number: 17277
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-A-UNV-EBT2-U
Description: OPEN HIGH BAY LUMINAIRE WITH DOORFRAME AND ACRYLIC LENS
NARROW REFLECTOR, NARROW DISTRIBUTION, NO UPLIGHT
Light Source: -
SIX 54 WATT T5HO - 4400 LUMENS EA
Ballast/Driver: -

Summary

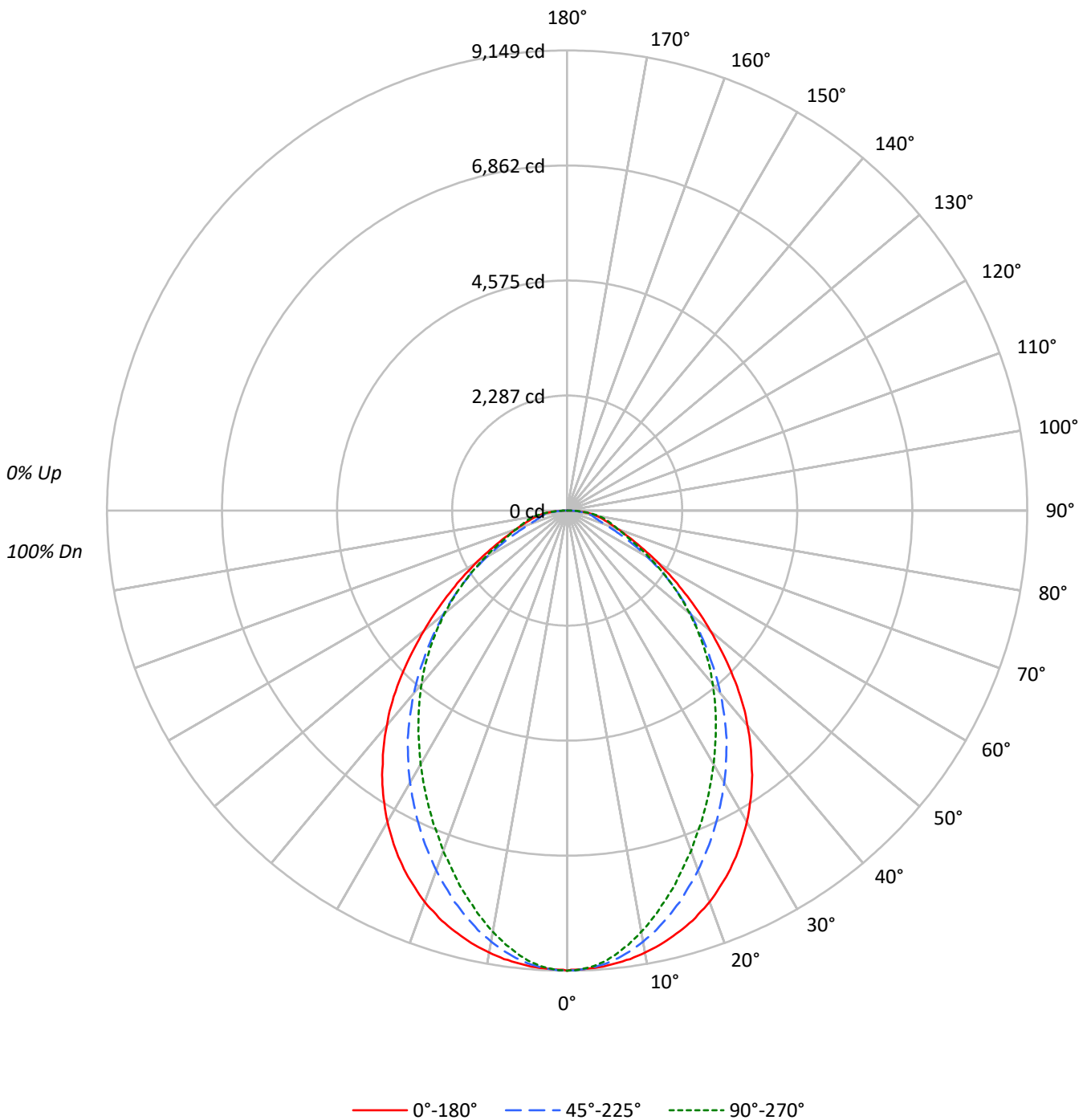
Lumens per Lamp: 4400 (6 lamps)
Luminaire Lumens: 17872.0 lumens
Efficiency: 67.7%
Efficacy: 59.4 lumens/watt
Spacing Criteria (0/90/45): 1.17 / 0.99 / 1.15
Luminous Opening: Rectangular (W 1.59' x L: 3.96' x H: 0')
CIE Type: Direct

Input Watts (W): 300.9
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	75	75	75	72	72	72	69	69	69	68
1	74	72	69	67	73	70	68	66	67	65	63	65	63	62	62	61	60	58
2	69	63	59	56	67	62	58	55	60	57	54	58	55	53	56	54	52	50
3	63	57	52	48	62	56	51	47	54	50	46	52	48	46	50	47	45	44
4	58	51	45	41	57	50	45	41	48	44	41	47	43	40	45	42	39	38
5	54	46	40	36	53	45	40	36	44	39	36	43	39	35	41	38	35	34
6	50	42	36	32	49	41	36	32	40	35	32	39	35	32	38	34	31	30
7	47	38	33	29	46	38	33	29	37	32	29	36	32	28	35	31	28	27
8	44	35	30	26	43	35	30	26	34	29	26	33	29	26	32	28	26	24
9	41	33	27	24	40	32	27	24	31	27	24	31	26	23	30	26	23	22
10	39	30	25	22	38	30	25	22	29	25	22	29	24	22	28	24	21	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	15609	15609	15609
5°	15556	15472	15376
10°	15460	15076	14727
15°	15293	14494	13910
20°	15035	13820	13080
25°	14619	13070	12244
30°	14072	12301	11489
35°	13363	11501	10741
40°	12414	10563	10031
45°	11261	9538	9275
50°	9868	8541	8456
55°	8474	7526	7517
60°	7186	6299	6534
65°	6051	4994	5688
70°	5362	4041	5338
75°	5208	3896	5629
80°	5757	4588	6376
85°	6519	5305	6910



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ZONAL LUMENS:

CANDELA DISTRIBUTION:

Zone	Lumens	% Fixture	% Lamp		0°	22.5°	45°	67.5°	90°	Flux
0°-10°	852.1	4.8	3.2	0°	9149	9149	9149	9149	9149	
10°-20°	2316.1	13.0	8.8	5°	9083	9082	9034	9005	8978	862
20°-30°	3236.6	18.1	12.3	15°	8658	8521	8206	7975	7875	2439
30°-40°	3521.5	19.7	13.3	25°	7766	7464	6943	6615	6504	3571
40°-50°	3151.9	17.6	11.9	35°	6416	6045	5522	5236	5157	3995
50°-60°	2316.4	13.0	8.8	45°	4667	4337	3953	3811	3844	3589
60°-70°	1374.3	7.7	5.2	55°	2849	2641	2530	2487	2527	2564
70°-80°	776.7	4.3	2.9	65°	1499	1362	1237	1402	1409	1513
80°-90°	323.2	1.8	1.2	75°	790	702	591	787	854	853
90°-100°	3.1	0.0	0.0	85°	333	288	271	333	353	322
100°-110°	0.0	0.0	0.0	90°	18	26	34	53	51	26
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°	6404.8	35.8	24.3	165°	0	0	0	0	0	0
0°-40°	9926.4	55.5	37.6	175°	0	0	0	0	0	0
0°-60°	15394.6	86.1	58.3	180°	0	0	0	0	0	0
0°-90°	17868.9	100.0	67.7							
90°-120°	3.1	0.0	0.0							
90°-150°	3.1	0.0	0.0							
90°-180°	3.0	0.0	0.0							
0°-180°	17872.0	100.0	67.7							



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	9149	9149	9149	9149	9149
0.5°	9131	9148	9141	9158	9141
1°	9132	9149	9143	9155	9138
1.5°	9125	9143	9132	9144	9130
2°	9124	9138	9125	9135	9116
2.5°	9118	9132	9117	9121	9102
3°	9112	9122	9105	9104	9086
3.5°	9109	9117	9089	9086	9064
4°	9098	9105	9069	9061	9035
4.5°	9093	9095	9053	9033	9006
5°	9083	9082	9034	9005	8978
5.5°	9067	9064	9005	8970	8935
6°	9056	9046	8979	8937	8901
6.5°	9044	9031	8956	8901	8852
7°	9030	9014	8926	8858	8806
7.5°	9014	8988	8889	8812	8761
8°	9005	8974	8859	8776	8721
8.5°	8981	8948	8817	8723	8663
9°	8962	8924	8780	8665	8613
9.5°	8946	8896	8743	8620	8561
10°	8924	8869	8702	8570	8501
10.5°	8901	8839	8658	8518	8447
11°	8878	8810	8616	8466	8388
11.5°	8856	8778	8571	8407	8323
12°	8831	8747	8526	8349	8264
12.5°	8804	8710	8470	8291	8207
13°	8774	8678	8419	8229	8136
13.5°	8748	8636	8368	8169	8066
14°	8719	8596	8320	8105	8006
14.5°	8687	8560	8264	8041	7943
15°	8658	8521	8206	7975	7875
15.5°	8623	8475	8150	7918	7817
16°	8592	8434	8102	7856	7756
16.5°	8557	8394	8049	7789	7677
17°	8527	8348	7976	7721	7600
17.5°	8491	8294	7909	7641	7533
18°	8439	8246	7852	7571	7460
18.5°	8399	8203	7797	7503	7393
19°	8366	8157	7735	7443	7324
19.5°	8325	8108	7676	7379	7269
20°	8281	8057	7612	7315	7204
20.5°	8233	7998	7549	7240	7127
21°	8188	7935	7482	7171	7051
21.5°	8137	7882	7412	7099	6980
22°	8085	7825	7347	7030	6912



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

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
22.5°	8035	7768	7284	6958	6847
23°	7987	7711	7220	6891	6785
23.5°	7936	7649	7150	6823	6714
24°	7882	7589	7079	6754	6641
24.5°	7830	7531	7015	6686	6576
25°	7766	7464	6943	6615	6504
25.5°	7712	7405	6877	6547	6434
26°	7657	7341	6808	6480	6367
26.5°	7593	7275	6737	6408	6300
27°	7533	7210	6664	6340	6230
27.5°	7473	7142	6596	6271	6162
28°	7407	7073	6527	6200	6094
28.5°	7342	7002	6460	6131	6024
29°	7280	6939	6381	6061	5955
29.5°	7212	6868	6315	5990	5887
30°	7143	6797	6244	5924	5832
30.5°	7077	6727	6179	5857	5754
31°	7006	6657	6103	5790	5687
31.5°	6938	6581	6036	5727	5620
32°	6862	6501	5952	5651	5552
32.5°	6789	6426	5876	5573	5481
33°	6719	6355	5810	5512	5414
33.5°	6638	6274	5737	5446	5350
34°	6568	6201	5666	5377	5289
34.5°	6486	6116	5591	5299	5220
35°	6416	6045	5522	5236	5157
35.5°	6325	5964	5443	5165	5085
36°	6239	5883	5364	5100	5026
36.5°	6158	5798	5286	5026	4959
37°	6086	5716	5213	4953	4896
37.5°	6003	5638	5132	4878	4829
38°	5919	5557	5050	4813	4765
38.5°	5840	5470	4972	4741	4695
39°	5762	5391	4900	4675	4634
39.5°	5664	5306	4825	4599	4574
40°	5574	5222	4743	4531	4504
40.5°	5495	5133	4659	4457	4443
41°	5413	5052	4584	4393	4376
41.5°	5328	4972	4506	4315	4311
42°	5231	4875	4421	4243	4250
42.5°	5136	4788	4341	4172	4184
43°	5056	4695	4264	4104	4114
43.5°	4955	4612	4184	4028	4046
44°	4861	4524	4102	3952	3976
44.5°	4768	4430	4026	3885	3907



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
45°	4667	4337	3953	3811	3844
45.5°	4570	4254	3875	3740	3781
46°	4477	4166	3798	3670	3708
46.5°	4386	4077	3719	3599	3637
47°	4283	3983	3646	3531	3573
47.5°	4186	3899	3570	3460	3515
48°	4088	3812	3494	3388	3445
48.5°	3992	3721	3420	3320	3361
49°	3895	3636	3350	3254	3304
49.5°	3810	3550	3281	3189	3244
50°	3718	3466	3218	3127	3186
50.5°	3631	3380	3147	3064	3106
51°	3542	3298	3073	2999	3038
51.5°	3458	3221	3011	2933	2979
52°	3365	3129	2946	2871	2919
52.5°	3276	3048	2871	2806	2851
53°	3188	2961	2807	2738	2783
53.5°	3096	2878	2738	2673	2725
54°	3024	2798	2671	2612	2653
54.5°	2940	2721	2595	2550	2584
55°	2849	2641	2530	2487	2527
55.5°	2774	2561	2460	2422	2461
56°	2691	2489	2388	2362	2390
56.5°	2624	2417	2318	2304	2342
57°	2537	2339	2253	2243	2278
57.5°	2461	2267	2183	2179	2213
58°	2393	2190	2112	2115	2145
58.5°	2317	2120	2041	2058	2089
59°	2238	2052	1973	2005	2029
59.5°	2170	1990	1909	1951	1972
60°	2106	1927	1846	1897	1915
60.5°	2038	1863	1782	1837	1860
61°	1972	1802	1715	1786	1806
61.5°	1914	1739	1649	1736	1751
62°	1841	1677	1581	1676	1700
62.5°	1779	1622	1520	1626	1649
63°	1722	1562	1461	1579	1593
63.5°	1659	1507	1399	1535	1547
64°	1603	1458	1348	1490	1502
64.5°	1548	1404	1292	1441	1454
65°	1499	1362	1237	1402	1409
65.5°	1447	1309	1182	1360	1367
66°	1399	1263	1132	1319	1330
66.5°	1351	1219	1084	1280	1291
67°	1307	1177	1038	1244	1257



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
67.5°	1265	1138	996	1211	1221
68°	1227	1100	951	1174	1191
68.5°	1189	1065	915	1143	1159
69°	1153	1027	877	1113	1131
69.5°	1116	992	841	1080	1100
70°	1075	962	810	1049	1070
70.5°	1049	931	775	1019	1046
71°	1012	898	747	994	1023
71.5°	982	875	722	964	1000
72°	945	849	696	937	978
72.5°	920	821	674	912	957
73°	892	797	656	889	936
73.5°	867	775	639	861	915
74°	841	747	619	837	896
74.5°	818	723	604	813	876
75°	790	702	591	787	854
75.5°	769	677	574	763	835
76°	748	656	562	743	816
76.5°	729	638	551	720	799
77°	710	613	540	698	782
77.5°	688	590	527	679	763
78°	673	572	517	655	739
78.5°	655	551	506	633	719
79°	631	527	494	612	698
79.5°	609	507	482	592	674
80°	586	488	467	572	649
80.5°	564	467	453	551	621
81°	543	448	438	529	598
81.5°	520	430	421	507	574
82°	492	410	402	486	542
82.5°	467	388	383	463	512
83°	439	370	362	437	476
83.5°	414	350	340	414	449
84°	385	331	319	392	418
84.5°	360	310	296	364	386
85°	333	288	271	333	353
85.5°	304	265	245	302	316
86°	272	241	220	273	282
86.5°	239	216	190	243	245
87°	209	187	165	208	214
87.5°	177	158	139	174	180
88°	140	129	114	146	146
88.5°	108	99	88	119	120
89°	70	70	66	94	95
89.5°	38	45	50	73	68



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
90°	18	26	34	53	51
90.5°	9	12	20	34	34
91°	3	4	9	19	22
91.5°	1	1	2	8	11
92°	0	0	0	2	3
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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CATALOG NUMBER: HBE-654T5-N-A-UNV-EBT2-U

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: 17277

CATALOG NUMBER: HBE-654T5-N-A-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: 17277

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

CANDELA DISTRIBUTION (continued):

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

(END OF REPORT)