

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: 17275

Luminaire Tested: **HBE-454-N-UNV-EBT1-U**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-41-14  
Report Number: 17275  
Test Lab: LUMINAIRE TESTING LABORATORY, INC.  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: HBE-454-N-UNV-EBT1-U  
Description: OPEN HIGH BAY LUMINAIRE WITH SIDE ENCLOSURES AND SPECULAR REFLECTOR, NARROW DISTRIBUTION, NO UPLIGHT  
Light Source: -  
FOUR 54 WATT T5HO - 4400 LUMENS EA  
Ballast/Driver: -

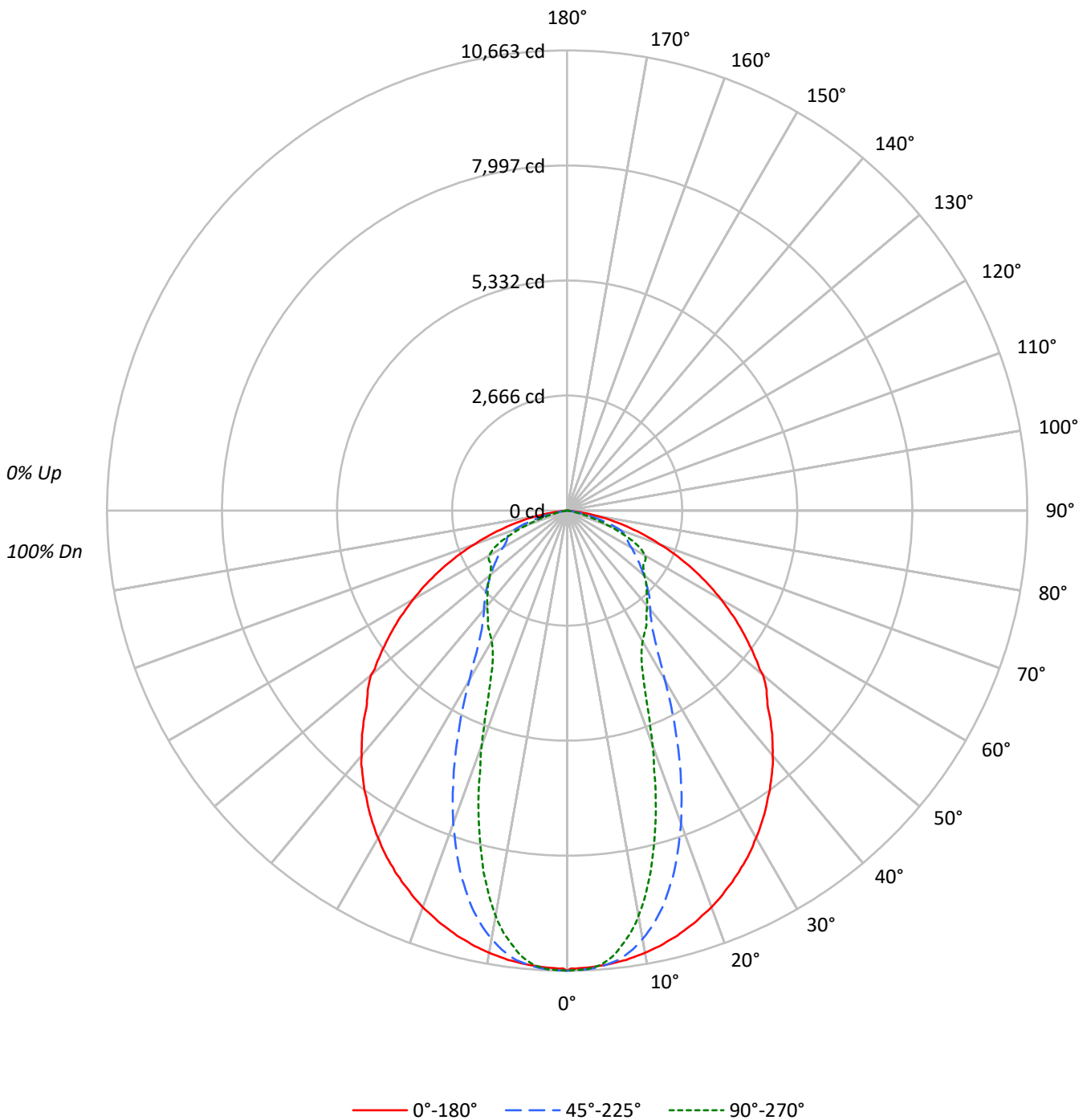
**Summary**

Lumens per Lamp: 4400 (4 lamps)  
Luminaire Lumens: 16890.4 lumens  
Efficiency: 96.0%  
Efficacy: 72.6 lumens/watt  
Spacing Criteria (0/90/45): 1.22 / 0.68 / 0.85  
Luminous Opening: Rectangular (W 1.62' x L: 4.01' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 232.8  
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

TEST NUMBER: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-U

### Luminous Intensity Polar Plot





TEST NUMBER: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-U

**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	50	30	10	0	
RCR																						
0	114	114	114	114	112	112	112	112	107	107	107	102	102	102	98	98	98	96				
1	106	102	98	95	103	100	96	93	96	93	91	92	90	88	89	87	85	83				
2	97	90	84	80	95	89	83	79	85	81	77	82	78	75	79	76	73	72				
3	90	81	74	68	87	79	73	67	76	71	66	74	69	65	71	67	64	62				
4	83	72	65	59	81	71	64	59	69	63	58	67	61	57	65	60	56	54				
5	77	66	58	52	75	65	57	52	63	56	51	61	55	51	59	54	50	48				
6	72	60	52	46	70	59	52	46	57	51	46	56	50	45	54	49	45	43				
7	67	55	47	42	65	54	47	42	53	46	41	51	46	41	50	45	41	39				
8	63	51	43	38	61	50	43	38	49	42	38	48	42	37	47	41	37	36				
9	59	47	40	35	58	46	39	35	45	39	35	44	39	34	44	38	34	33				
10	56	44	37	32	54	43	37	32	42	36	32	42	36	32	41	35	32	30				

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

	0°	45°	90°
0°	17614	17614	17614
5°	17515	17512	17371
10°	17454	16901	15987
15°	17339	15555	13383
20°	17197	13569	10176
25°	16972	11094	7558
30°	16711	8652	6674
35°	16362	7042	6467
40°	15976	6454	6204
45°	15458	6209	6081
50°	15239	5941	6003
55°	14428	5771	6218
60°	13644	5692	6888
65°	12578	6023	6574
70°	11060	6283	4946
75°	9267	4717	3000
80°	6250	2397	1094
85°	2672	569	720



TEST NUMBER: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-U

**ZONAL LUMENS:**

**CANDELA DISTRIBUTION:**

Zone	Lumens	% Fixture	% Lamp		0°	22.5°	45°	67.5°	90°	Flux
0°-10°	991.6	5.9	5.6	0°	10663	10663	10663	10663	10663	
10°-20°	2522.4	14.9	14.3	5°	10563	10628	10561	10528	10476	###
20°-30°	2978.7	17.6	16.9	15°	10139	10008	9096	8204	7826	2860
30°-40°	2922.3	17.3	16.6	25°	9312	8487	6087	4514	4147	4289
40°-50°	2638.4	15.6	15.0	35°	8114	6266	3492	3236	3207	5079
50°-60°	2205.0	13.1	12.5	45°	6617	3737	2658	2617	2603	5131
60°-70°	1720.3	10.2	9.8	55°	5010	2109	2004	2085	2159	4477
70°-80°	807.6	4.8	4.6	65°	3218	1331	1541	1726	1682	3179
80°-90°	104.0	0.6	0.6	75°	1452	768	739	523	470	1539
90°-100°	0.0	0.0	0.0	85°	141	81	30	35	38	223
100°-110°	0.0	0.0	0.0	90°	0	0	0	0	0	3
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°	6492.8	38.4	36.9	165°	0	0	0	0	0	0
0°-40°	9415.1	55.7	53.5	175°	0	0	0	0	0	0
0°-60°	14258.6	84.4	81.0	180°	0	0	0	0	0	0
0°-90°	16890.4	100.0	96.0							
90°-120°	0.0	0.0	0.0							
90°-150°	0.0	0.0	0.0							
90°-180°	0.0	0.0	0.0							
0°-180°	16890.4	100.0	96.0							



TEST NUMBER: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-U

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	10663	10663	10663	10663	10663
0.5°	10611	10691	10659	10672	10657
1°	10615	10686	10656	10667	10649
1.5°	10609	10686	10650	10663	10647
2°	10604	10680	10646	10653	10638
2.5°	10601	10677	10640	10646	10635
3°	10594	10669	10627	10631	10613
3.5°	10589	10660	10615	10614	10594
4°	10576	10649	10601	10593	10567
4.5°	10570	10643	10583	10558	10527
5°	10563	10628	10561	10528	10476
5.5°	10549	10615	10535	10481	10426
6°	10537	10599	10506	10426	10360
6.5°	10525	10582	10478	10365	10278
7°	10511	10564	10435	10293	10182
7.5°	10500	10546	10387	10217	10092
8°	10478	10525	10336	10120	9999
8.5°	10460	10501	10279	10025	9909
9°	10443	10477	10219	9923	9784
9.5°	10427	10451	10150	9820	9671
10°	10406	10422	10076	9703	9531
10.5°	10382	10390	10004	9584	9395
11°	10360	10361	9923	9462	9250
11.5°	10337	10327	9840	9331	9100
12°	10317	10290	9752	9184	8928
12.5°	10289	10249	9651	9033	8755
13°	10255	10208	9555	8879	8602
13.5°	10228	10158	9460	8728	8403
14°	10202	10108	9346	8557	8214
14.5°	10178	10059	9217	8392	8029
15°	10139	10008	9096	8204	7826
15.5°	10109	9955	8970	8025	7636
16°	10069	9893	8859	7844	7443
16.5°	10038	9836	8725	7670	7238
17°	10008	9777	8590	7494	7025
17.5°	9973	9715	8449	7304	6820
18°	9929	9650	8299	7079	6597
18.5°	9888	9577	8160	6863	6351
19°	9853	9510	8005	6668	6172
19.5°	9819	9432	7857	6500	5998
20°	9783	9362	7719	6304	5789
20.5°	9740	9280	7560	6125	5605
21°	9692	9197	7393	5900	5380
21.5°	9651	9121	7233	5708	5204
22°	9605	9037	7079	5521	5007



TEST NUMBER: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-U

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
22.5°	9551	8953	6897	5330	4831
23°	9504	8863	6747	5140	4674
23.5°	9461	8773	6591	4981	4524
24°	9415	8677	6422	4813	4390
24.5°	9359	8589	6254	4659	4264
25°	9312	8487	6087	4514	4147
25.5°	9265	8400	5931	4372	4035
26°	9203	8298	5757	4245	3944
26.5°	9158	8192	5596	4133	3864
27°	9103	8090	5443	4034	3801
27.5°	9054	7984	5286	3940	3732
28°	8996	7882	5125	3859	3667
28.5°	8942	7777	4969	3782	3624
29°	8880	7665	4814	3701	3580
29.5°	8814	7553	4672	3645	3538
30°	8761	7447	4536	3595	3499
30.5°	8704	7340	4407	3547	3460
31°	8639	7226	4282	3506	3428
31.5°	8576	7112	4159	3465	3401
32°	8516	6987	4035	3424	3372
32.5°	8449	6865	3919	3384	3343
33°	8388	6746	3821	3352	3314
33.5°	8323	6636	3736	3322	3292
34°	8254	6504	3649	3292	3265
34.5°	8186	6395	3567	3265	3240
35°	8114	6266	3492	3236	3207
35.5°	8057	6138	3422	3208	3167
36°	7992	6010	3361	3178	3127
36.5°	7917	5885	3308	3148	3091
37°	7848	5765	3255	3114	3055
37.5°	7776	5623	3205	3079	3021
38°	7712	5496	3154	3044	2996
38.5°	7636	5382	3108	3009	2965
39°	7578	5257	3068	2974	2938
39.5°	7499	5127	3029	2943	2910
40°	7409	4984	2993	2914	2877
40.5°	7335	4862	2964	2887	2854
41°	7253	4736	2931	2869	2825
41.5°	7181	4621	2894	2833	2798
42°	7107	4491	2863	2796	2767
42.5°	7034	4360	2833	2773	2742
43°	6941	4233	2802	2744	2712
43.5°	6863	4116	2770	2715	2688
44°	6795	3987	2737	2705	2656
44.5°	6709	3862	2700	2658	2628



TEST NUMBER: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-U

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
45°	6617	3737	2658	2617	2603
45.5°	6523	3622	2621	2593	2576
46°	6455	3514	2584	2572	2555
46.5°	6397	3403	2546	2539	2531
47°	6331	3295	2510	2505	2507
47.5°	6273	3189	2473	2478	2481
48°	6218	3093	2439	2450	2456
48.5°	6148	2996	2406	2419	2426
49°	6075	2903	2373	2391	2396
49.5°	6005	2816	2342	2369	2364
50°	5930	2732	2312	2345	2336
50.5°	5786	2659	2282	2310	2317
51°	5704	2581	2250	2280	2290
51.5°	5625	2506	2218	2252	2271
52°	5530	2440	2186	2222	2251
52.5°	5443	2377	2154	2197	2234
53°	5365	2316	2122	2168	2214
53.5°	5263	2259	2089	2144	2194
54°	5185	2208	2061	2122	2179
54.5°	5096	2158	2028	2102	2165
55°	5010	2109	2004	2085	2159
55.5°	4925	2060	1973	2063	2150
56°	4836	2017	1946	2048	2150
56.5°	4747	1971	1917	2032	2149
57°	4665	1931	1886	2023	2150
57.5°	4579	1893	1857	2015	2149
58°	4471	1853	1822	2008	2140
58.5°	4387	1814	1797	2006	2136
59°	4298	1775	1772	2004	2122
59.5°	4210	1742	1749	2001	2106
60°	4130	1709	1723	1996	2085
60.5°	4042	1672	1694	1984	2060
61°	3940	1632	1667	1968	2027
61.5°	3860	1588	1642	1952	1994
62°	3769	1550	1624	1928	1967
62.5°	3676	1509	1599	1897	1930
63°	3586	1472	1581	1868	1892
63.5°	3492	1433	1567	1837	1849
64°	3405	1397	1559	1802	1794
64.5°	3310	1364	1549	1769	1741
65°	3218	1331	1541	1726	1682
65.5°	3123	1297	1529	1674	1618
66°	3034	1263	1517	1622	1556
66.5°	2940	1230	1505	1562	1490
67°	2848	1200	1493	1505	1416





TEST NUMBER: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-U

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
67.5°	2759	1165	1468	1437	1355
68°	2659	1134	1437	1372	1284
68.5°	2570	1100	1406	1314	1229
69°	2482	1071	1373	1248	1165
69.5°	2385	1040	1340	1180	1088
70°	2290	1006	1301	1117	1024
70.5°	2206	977	1256	1055	960
71°	2137	953	1206	999	901
71.5°	2033	927	1149	930	844
72°	1957	906	1097	865	783
72.5°	1874	881	1037	805	724
73°	1780	849	973	744	660
73.5°	1702	829	920	685	605
74°	1594	803	856	627	555
74.5°	1531	782	803	569	512
75°	1452	768	739	523	470
75.5°	1364	752	684	479	427
76°	1284	729	624	438	389
76.5°	1202	712	570	397	347
77°	1128	693	515	354	308
77.5°	1065	673	463	312	271
78°	982	644	414	276	233
78.5°	906	614	369	241	198
79°	833	576	330	205	168
79.5°	726	527	289	174	142
80°	657	482	252	147	115
80.5°	603	439	217	121	97
81°	543	392	183	98	81
81.5°	463	343	150	79	66
82°	411	296	124	64	55
82.5°	354	252	95	52	48
83°	304	208	76	44	43
83.5°	255	167	60	40	39
84°	214	135	45	37	39
84.5°	179	109	35	36	39
85°	141	81	30	35	38
85.5°	109	57	29	36	38
86°	79	39	28	35	38
86.5°	59	28	27	35	37
87°	42	19	27	33	35
87.5°	27	15	25	31	32
88°	15	14	22	28	30
88.5°	10	12	19	27	29
89°	6	8	16	23	26
89.5°	3	5	9	11	14



TEST NUMBER: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-U

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
90°	0	0	0	0	0
90.5°	0	0	0	0	0
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



TEST NUMBER: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-U

**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



TEST NUMBER: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-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: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-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: 17275

CATALOG NUMBER: HBE-454-N-UNV-EBT1-U

**CANDELA DISTRIBUTION (continued):**

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

(END OF REPORT)