

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: METALUX

Report Number: P188904

Luminaire Tested: **Altus 140, 14,000, Wide Distribution, 90-277VAC**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P188904
Test Lab: Cree Inc. - Durham Technology Center
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: Altus 140, 14,000, Wide Distribution, 90-277VAC
Description: With Octagonal Plastic Optics Array Lens

Light Source: -
Ballast/Driver: -

Summary

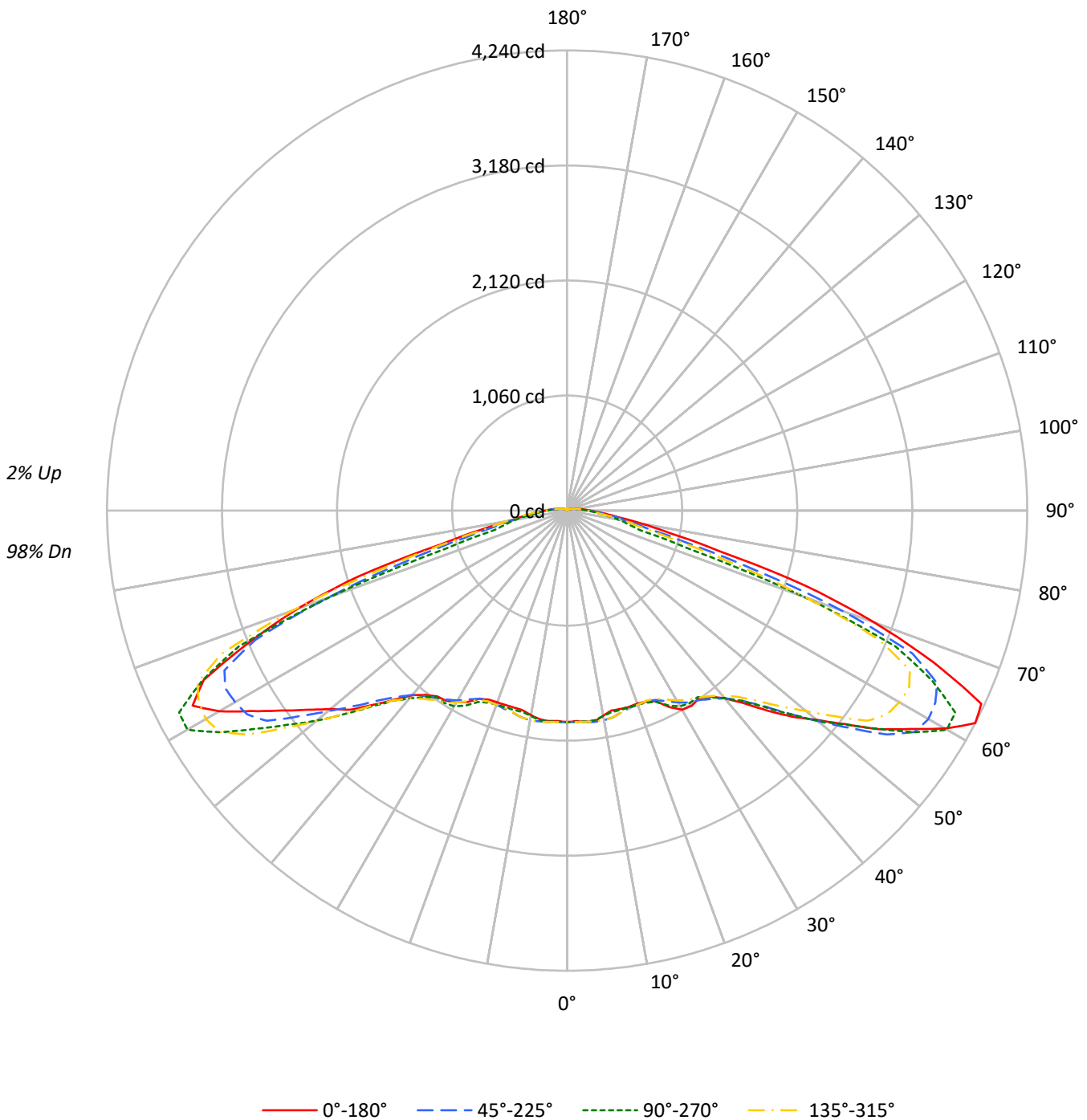
Lumens per Lamp: N/A
Luminaire Lumens: 13630.3 lumens
Efficiency: N/A
Efficacy: 105.0 lumens/watt
Spacing Criteria (0/90/45): 1.78 / 1.78 / 2.39
Luminous Opening: Rectangular w/ Sides (W: 0.58' x L: 0.58' x H: 0.08')
CIE Type: Direct

Input Watts (W): 129.8
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	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	110	110	110	105	105	105	100	100	100	100	98							
1	106	100	94	90	103	97	92	88	92	88	85	88	85	82	84	81	79	76								
2	93	83	75	68	90	81	73	67	77	70	65	73	68	63	70	65	61	59								
3	83	70	60	52	80	68	59	52	65	57	50	62	55	49	59	53	48	45								
4	74	60	49	41	72	58	49	41	55	47	40	53	45	39	50	44	38	36								
5	67	52	41	34	65	51	41	33	48	39	33	46	38	32	43	37	31	29								
6	61	46	35	28	59	44	35	27	42	34	27	40	32	27	38	31	26	24								
7	56	40	30	23	54	40	30	23	38	29	23	36	28	22	34	27	22	20								
8	52	36	27	20	50	35	26	20	34	26	20	32	25	19	31	24	19	17								
9	48	33	24	17	46	32	23	17	31	23	17	29	22	17	28	22	17	15								
10	45	30	21	15	43	29	21	15	28	20	15	27	20	15	26	19	15	13								

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	62350	62350	62350	62350
5°	62007	61912	61791	61912
10°	60879	60955	60733	60955
15°	60460	60722	60019	60722
20°	61351	61627	60959	61627
25°	64297	64512	63424	64512
30°	72489	71223	69793	71223
35°	75321	74712	74395	74712
40°	84412	84495	83042	84495
45°	103559	101503	100684	101503
50°	128156	128721	121487	128721
55°	163612	163365	149654	163365
60°	207433	208611	191069	208611
65°	246005	216948	215814	216948
70°	203986	157330	179332	157330
75°	119077	56200	98045	56200
80°	72931	50444	54765	50444
85°	51666	41037	43487	41037



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	186.2	1.4
10°-20°	541.2	4.0
20°-30°	911.5	6.7
30°-40°	1358.0	10.0
40°-50°	2011.4	14.8
50°-60°	3099.1	22.7
60°-70°	3530.1	25.9
70°-80°	1315.4	9.7
80°-90°	377.6	2.8
90°-100°	151.0	1.1
100°-110°	70.2	0.5
110°-120°	37.7	0.3
120°-130°	20.8	0.2
130°-140°	11.2	0.1
140°-150°	5.8	0.0
150°-160°	2.6	0.0
160°-170°	0.6	0.0
170°-180°	0.0	0.0
0°-30°	1638.9	12.0
0°-40°	2996.9	22.0
0°-60°	8107.3	59.5
0°-90°	13330.5	97.8
90°-120°	258.9	1.9
90°-150°	296.7	2.2
90°-180°	300.0	2.2
0°-180°	13630.3	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1949	1949	1949	1949	1949	
5°	1954	1951	1947	1951	1954	186
15°	1893	1901	1879	1901	1893	537
25°	1938	1945	1912	1945	1938	916
35°	2114	2097	2088	2097	2114	1351
45°	2604	2552	2532	2552	2604	2030
55°	3511	3505	3211	3505	3511	3148
65°	4210	3713	3694	3713	4210	3869
75°	1459	689	1201	689	1459	1736
85°	363	288	305	288	363	364
90°	215	185	203	185	215	120
95°	137	123	134	123	137	103
105°	60	63	63	63	60	66
115°	33	36	36	36	33	34
125°	19	21	22	21	19	18
135°	11	13	12	13	11	9
145°	7	8	8	8	7	4
155°	4	5	5	5	4	2
165°	2	2	2	2	2	1
175°	0	0	0	0	0	0
180°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1948.6	1948.6	1948.6	1948.6	1948.6	1948.6	1948.6	1948.6	1948.6	1948.6	1948.6
2.5°	1941.8	1946.7	1950.9	1951.8	1947.1	1950.0	1950.4	1947.3	1940.6	1947.3	1950.4
5°	1953.8	1955.7	1955.8	1956.5	1950.8	1950.5	1955.1	1954.0	1947.0	1954.0	1955.1
7.5°	1955.6	1959.1	1964.0	1957.3	1947.9	1950.0	1958.6	1952.5	1939.8	1952.5	1958.6
10°	1919.3	1937.0	1961.0	1945.1	1921.7	1936.9	1961.8	1938.3	1914.7	1938.3	1961.8
12.5°	1886.0	1905.0	1951.1	1925.1	1901.3	1918.6	1950.8	1908.7	1885.5	1908.7	1950.8
15°	1892.6	1895.3	1924.6	1915.2	1900.8	1905.7	1928.5	1889.9	1878.8	1889.9	1928.5
17.5°	1895.9	1891.2	1907.5	1910.2	1899.4	1903.8	1915.8	1888.5	1879.6	1888.5	1915.8
20°	1892.2	1894.5	1903.6	1914.6	1900.7	1904.5	1903.5	1901.3	1880.1	1901.3	1903.5
22.5°	1904.3	1910.3	1903.5	1930.4	1915.2	1923.3	1897.3	1916.9	1886.4	1916.9	1897.3
25°	1938.3	1950.1	1925.0	1952.9	1944.8	1959.7	1911.5	1946.5	1912.0	1946.5	1911.5
27.5°	2040.5	2040.9	1981.0	2028.7	2025.4	2039.3	1961.1	2013.1	1987.5	2013.1	1961.1
30°	2118.2	2139.8	2040.4	2109.6	2081.2	2108.3	2018.9	2075.3	2039.4	2075.3	2018.9
32.5°	2133.8	2195.9	2097.4	2154.4	2102.1	2139.8	2065.2	2114.5	2077.1	2114.5	2065.2
35°	2114.5	2205.0	2130.3	2169.9	2097.4	2154.6	2103.0	2146.9	2088.5	2146.9	2103.0
37.5°	2161.8	2256.0	2186.6	2224.9	2165.5	2205.2	2155.4	2206.3	2140.4	2206.3	2155.4
40°	2254.8	2345.8	2256.5	2318.2	2257.0	2287.8	2218.0	2289.1	2218.2	2289.1	2218.0
42.5°	2403.7	2467.3	2373.4	2418.8	2376.1	2390.5	2327.0	2407.0	2364.4	2407.0	2327.0
45°	2604.2	2644.9	2539.7	2561.7	2552.5	2540.1	2476.4	2562.9	2531.9	2562.9	2476.4
47.5°	2809.4	2886.0	2767.4	2782.8	2771.4	2743.0	2668.3	2761.0	2715.6	2761.0	2668.3
50°	2997.7	3130.1	3015.2	3054.1	3010.9	2965.3	2872.6	2943.6	2841.7	2943.6	2872.6
52.5°	3233.4	3361.9	3291.4	3334.3	3240.1	3187.6	3111.6	3116.5	3012.7	3116.5	3111.6
55°	3510.6	3608.9	3596.9	3563.3	3505.3	3402.7	3377.6	3329.8	3211.1	3329.8	3377.6
57.5°	3743.6	3828.2	3796.1	3774.6	3800.3	3631.6	3495.0	3518.2	3439.0	3518.2	3495.0
60°	4015.8	4026.5	3842.6	3955.1	4038.6	3797.6	3532.1	3683.2	3699.0	3683.2	3532.1
62.5°	4240.3	4149.8	3826.4	4041.9	4031.4	3878.7	3550.4	3783.2	3891.5	3783.2	3550.4
65°	4210.3	4050.8	3757.6	3940.1	3713.0	3736.9	3484.5	3664.5	3693.6	3664.5	3484.5
67.5°	3655.4	3580.6	3442.4	3547.5	3274.9	3326.9	3109.2	3072.4	3168.8	3072.4	3109.2
70°	3006.7	2644.4	2697.1	2954.1	2319.0	2644.3	2347.1	2141.2	2643.3	2141.2	2347.1
72.5°	2306.0	1611.0	1795.2	2027.5	1185.0	1803.6	1558.7	1230.3	2015.3	1230.3	1558.7
75°	1459.0	889.2	1120.4	1329.2	688.6	1169.0	988.2	729.5	1201.3	729.5	988.2
77.5°	979.3	649.4	753.8	915.9	572.8	831.5	672.3	579.5	807.7	579.5	672.3
80°	705.4	535.8	571.4	686.0	487.9	610.0	515.1	479.7	529.7	479.7	515.1
82.5°	485.2	430.5	453.8	509.9	382.2	451.3	394.8	368.9	410.0	368.9	394.8
85°	362.6	321.4	345.4	373.0	288.0	326.1	292.4	283.4	305.2	283.4	292.4
87.5°	271.5	247.4	261.8	288.0	230.4	264.8	239.5	231.8	249.8	231.8	239.5
90°	215.3	196.0	208.1	228.9	184.8	212.2	193.6	188.2	202.8	188.2	193.6
92.5°	171.6	157.8	167.6	183.7	151.0	172.6	159.3	155.2	165.5	155.2	159.3
95°	137.1	128.7	135.6	147.2	123.2	139.4	130.7	127.6	134.4	127.6	130.7
97.5°	109.4	105.5	109.9	118.5	101.6	113.8	107.7	105.4	109.4	105.4	107.7
100°	87.9	87.2	89.7	96.3	85.3	93.9	89.4	88.2	89.8	88.2	89.4
102.5°	72.1	73.8	75.1	79.7	73.2	78.5	75.4	75.0	74.3	75.0	75.4
105°	60.2	63.6	63.4	67.4	63.4	66.9	64.7	64.3	62.7	64.3	64.7
107.5°	51.1	55.4	54.8	57.7	54.9	58.0	55.9	55.8	54.5	55.8	55.9
110°	44.2	48.6	47.5	49.7	47.7	50.8	48.4	48.4	47.7	48.4	48.4



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CATALOG NUMBER: Altus 140, 14,000, Wide Distribution, 90-277VAC

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	38.0	42.8	41.8	43.5	41.7	44.6	42.4	42.4	41.7	42.4	42.4
115°	33.2	37.8	36.9	38.4	36.4	39.3	37.5	37.1	36.4	37.1	37.5
117.5°	29.1	33.2	32.6	34.0	32.2	34.9	33.4	32.8	32.1	32.8	33.4
120°	25.3	29.1	28.9	30.2	28.0	31.1	29.9	28.8	28.9	28.8	29.9
122.5°	21.8	25.7	25.8	26.6	24.5	27.7	26.6	25.5	25.3	25.5	26.6
125°	19.2	22.8	23.0	23.7	21.4	24.6	23.8	22.5	22.2	22.5	23.8
127.5°	17.0	20.3	20.5	21.1	18.6	21.9	21.6	20.2	16.4	20.2	21.6
130°	14.8	18.1	18.4	18.7	16.4	19.5	19.6	18.1	14.6	18.1	19.6
132.5°	13.1	16.1	16.6	16.7	14.3	17.4	17.5	16.2	12.9	16.2	17.5
135°	11.3	14.3	14.9	14.9	12.6	15.4	15.8	14.6	11.6	14.6	15.8
137.5°	10.1	12.8	13.4	13.1	11.1	13.7	14.2	13.1	10.3	13.1	14.2
140°	9.1	11.4	11.9	11.7	9.9	12.2	13.0	11.9	9.4	11.9	13.0
142.5°	7.8	10.0	10.7	10.4	8.8	11.0	11.7	10.7	8.4	10.7	11.7
145°	6.7	8.8	9.6	9.4	7.7	9.7	10.4	9.7	7.6	9.7	10.4
147.5°	5.9	7.8	8.6	8.3	6.8	8.6	9.4	8.6	6.9	8.6	9.4
150°	5.4	7.1	7.9	7.4	6.1	7.6	8.4	7.8	6.3	7.8	8.4
152.5°	4.8	6.2	6.8	6.6	5.4	6.6	7.5	6.8	5.5	6.8	7.5
155°	4.5	5.3	6.1	5.8	4.8	5.8	6.6	6.0	5.0	6.0	6.6
157.5°	3.8	4.5	5.3	4.8	4.2	4.5	5.6	4.9	4.4	4.9	5.6
160°	3.2	3.3	4.4	3.8	3.4	3.3	4.7	3.8	3.8	3.8	4.7
162.5°	2.6	2.5	3.7	2.6	2.6	2.2	3.7	2.7	3.1	2.7	3.7
165°	2.0	1.8	2.5	1.6	1.6	1.2	1.9	1.7	2.2	1.7	1.9
167.5°	1.3	0.9	0.2	0.3	0.7	0.1	0.0	0.9	1.4	0.9	0.0
170°	0.5	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CATALOG NUMBER: Altus 140, 14,000, Wide Distribution, 90-277VAC

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1948.6	1948.6	1948.6	1948.6	1948.6	1948.6
2.5°	1950.0	1947.1	1951.8	1950.9	1946.7	1941.8
5°	1950.5	1950.8	1956.5	1955.8	1955.7	1953.8
7.5°	1950.0	1947.9	1957.3	1964.0	1959.1	1955.6
10°	1936.9	1921.7	1945.1	1961.0	1937.0	1919.3
12.5°	1918.6	1901.3	1925.1	1951.1	1905.0	1886.0
15°	1905.7	1900.8	1915.2	1924.6	1895.3	1892.6
17.5°	1903.8	1899.4	1910.2	1907.5	1891.2	1895.9
20°	1904.5	1900.7	1914.6	1903.6	1894.5	1892.2
22.5°	1923.3	1915.2	1930.4	1903.5	1910.3	1904.3
25°	1959.7	1944.8	1952.9	1925.0	1950.1	1938.3
27.5°	2039.3	2025.4	2028.7	1981.0	2040.9	2040.5
30°	2108.3	2081.2	2109.6	2040.4	2139.8	2118.2
32.5°	2139.8	2102.1	2154.4	2097.4	2195.9	2133.8
35°	2154.6	2097.4	2169.9	2130.3	2205.0	2114.5
37.5°	2205.2	2165.5	2224.9	2186.6	2256.0	2161.8
40°	2287.8	2257.0	2318.2	2256.5	2345.8	2254.8
42.5°	2390.5	2376.1	2418.8	2373.4	2467.3	2403.7
45°	2540.1	2552.5	2561.7	2539.7	2644.9	2604.2
47.5°	2743.0	2771.4	2782.8	2767.4	2886.0	2809.4
50°	2965.3	3010.9	3054.1	3015.2	3130.1	2997.7
52.5°	3187.6	3240.1	3334.3	3291.4	3361.9	3233.4
55°	3402.7	3505.3	3563.3	3596.9	3608.9	3510.6
57.5°	3631.6	3800.3	3774.6	3796.1	3828.2	3743.6
60°	3797.6	4038.6	3955.1	3842.6	4026.5	4015.8
62.5°	3878.7	4031.4	4041.9	3826.4	4149.8	4240.3
65°	3736.9	3713.0	3940.1	3757.6	4050.8	4210.3
67.5°	3326.9	3274.9	3547.5	3442.4	3580.6	3655.4
70°	2644.3	2319.0	2954.1	2697.1	2644.4	3006.7
72.5°	1803.6	1185.0	2027.5	1795.2	1611.0	2306.0
75°	1169.0	688.6	1329.2	1120.4	889.2	1459.0
77.5°	831.5	572.8	915.9	753.8	649.4	979.3
80°	610.0	487.9	686.0	571.4	535.8	705.4
82.5°	451.3	382.2	509.9	453.8	430.5	485.2
85°	326.1	288.0	373.0	345.4	321.4	362.6
87.5°	264.8	230.4	288.0	261.8	247.4	271.5
90°	212.2	184.8	228.9	208.1	196.0	215.3
92.5°	172.6	151.0	183.7	167.6	157.8	171.6
95°	139.4	123.2	147.2	135.6	128.7	137.1
97.5°	113.8	101.6	118.5	109.9	105.5	109.4
100°	93.9	85.3	96.3	89.7	87.2	87.9
102.5°	78.5	73.2	79.7	75.1	73.8	72.1
105°	66.9	63.4	67.4	63.4	63.6	60.2
107.5°	58.0	54.9	57.7	54.8	55.4	51.1
110°	50.8	47.7	49.7	47.5	48.6	44.2



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	44.6	41.7	43.5	41.8	42.8	38.0
115°	39.3	36.4	38.4	36.9	37.8	33.2
117.5°	34.9	32.2	34.0	32.6	33.2	29.1
120°	31.1	28.0	30.2	28.9	29.1	25.3
122.5°	27.7	24.5	26.6	25.8	25.7	21.8
125°	24.6	21.4	23.7	23.0	22.8	19.2
127.5°	21.9	18.6	21.1	20.5	20.3	17.0
130°	19.5	16.4	18.7	18.4	18.1	14.8
132.5°	17.4	14.3	16.7	16.6	16.1	13.1
135°	15.4	12.6	14.9	14.9	14.3	11.3
137.5°	13.7	11.1	13.1	13.4	12.8	10.1
140°	12.2	9.9	11.7	11.9	11.4	9.1
142.5°	11.0	8.8	10.4	10.7	10.0	7.8
145°	9.7	7.7	9.4	9.6	8.8	6.7
147.5°	8.6	6.8	8.3	8.6	7.8	5.9
150°	7.6	6.1	7.4	7.9	7.1	5.4
152.5°	6.6	5.4	6.6	6.8	6.2	4.8
155°	5.8	4.8	5.8	6.1	5.3	4.5
157.5°	4.5	4.2	4.8	5.3	4.5	3.8
160°	3.3	3.4	3.8	4.4	3.3	3.2
162.5°	2.2	2.6	2.6	3.7	2.5	2.6
165°	1.2	1.6	1.6	2.5	1.8	2.0
167.5°	0.1	0.7	0.3	0.2	0.9	1.3
170°	0.0	0.3	0.0	0.0	0.1	0.5
172.5°	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)