

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: P192481

Luminaire Tested: **4WSL-LD2-80-UPL8-UNV-L830-CD1-U**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P192481  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P28106)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: 4WSL-LD2-80-UPL8-UNV-L830-CD1-U  
Description: 4FT Linear Wavestream System, 8% Uplight, L830  
Light Source: (238) 3000K CCT, 80 CRI LEDS  
EL236N0119D830  
Ballast/Driver: OSRAM  
OT85W1202772A0DIML

**Summary**

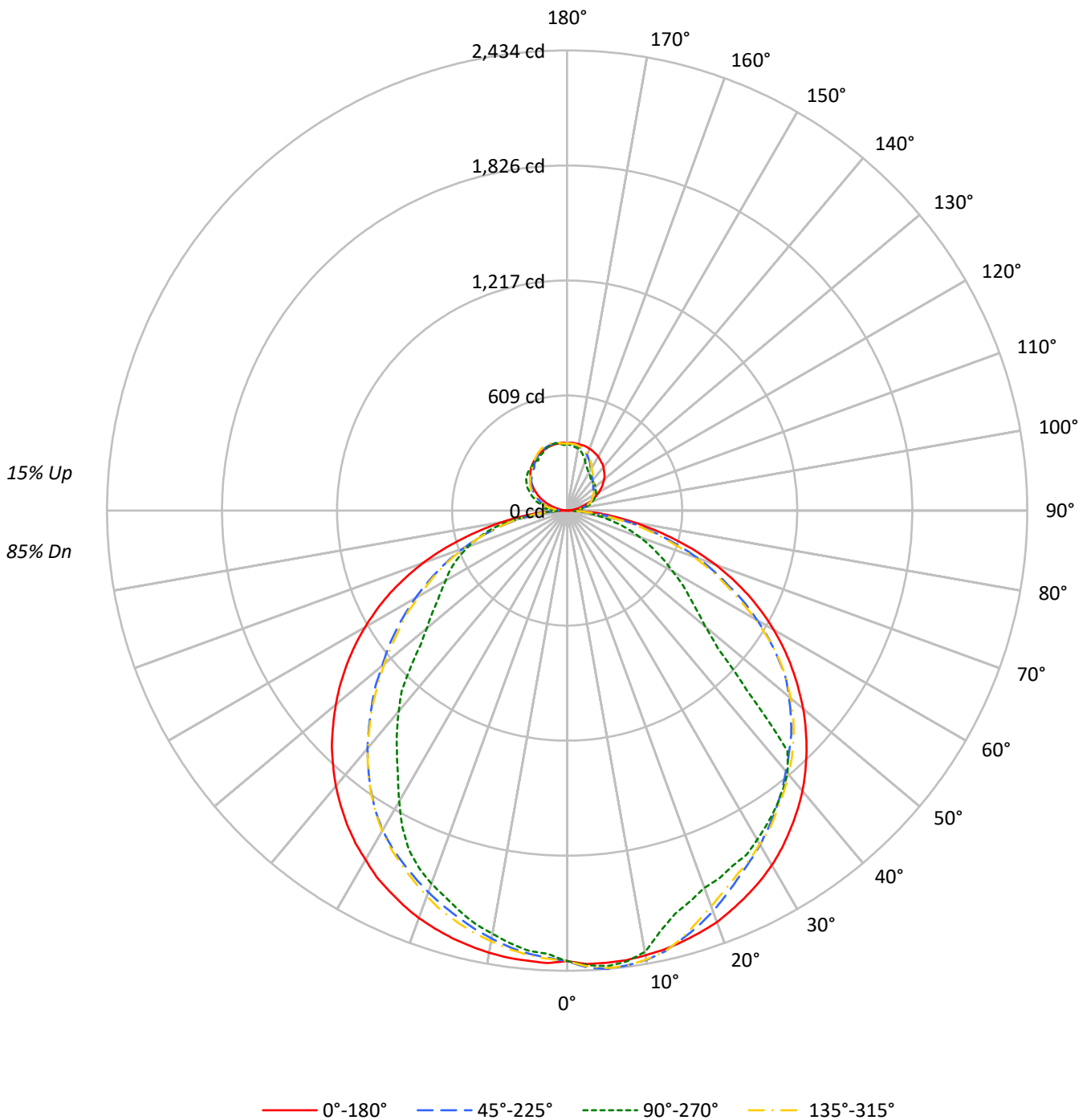
Lumens per Lamp: N/A  
Luminaire Lumens: 7904.0 lumens  
Efficiency: N/A  
Efficacy: 104.0 lumens/watt  
Spacing Criteria (0/90/45): 1.34 / 1.19 / 1.36  
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')  
CIE Type: Semi-Direct

Input Watts (W): 76  
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	115	115	115	115	111	111	111	111	103	103	103	95	95	95	88	88	88	85
1	105	101	96	92	101	97	93	90	90	87	84	83	81	79	78	76	74	71
2	96	88	81	75	92	84	78	73	78	73	69	73	69	65	68	65	62	59
3	87	77	69	62	83	74	67	61	69	63	58	64	59	55	60	56	52	50
4	80	68	59	53	76	66	58	52	61	55	49	57	52	47	53	49	45	42
5	73	61	52	45	70	59	51	44	55	48	43	51	45	41	48	43	39	37
6	68	55	46	40	65	53	45	39	50	43	37	47	40	36	44	38	34	32
7	63	49	41	35	60	48	40	34	45	38	33	42	36	32	40	35	31	28
8	58	45	37	31	56	44	36	30	41	34	29	39	33	28	37	31	27	25
9	54	41	33	28	52	40	33	27	38	31	26	36	30	26	34	29	25	23
10	51	38	30	25	49	37	30	25	35	28	24	33	27	23	31	26	22	21

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

	0°	90°	180°	270°
0°	13500	13500	13500	13500
5°	13653	13755	13595	13290
10°	13738	13635	13664	13077
15°	13842	12944	13737	12869
20°	13966	12797	13828	12659
25°	14050	12950	13891	12375
30°	14170	13152	13953	11616
35°	14239	13287	14028	10852
40°	14321	13415	14076	10246
45°	14349	10793	14104	9362
50°	14369	8387	14076	8545
55°	14338	7761	14061	8291
60°	14309	7314	13991	8412
65°	14160	7011	13851	8823
70°	13776	6761	13438	9213
75°	12901	6367	12509	9716
80°	11735	5827	11236	9239
85°	11440	6305	10283	8294



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	226.5	2.9
10°-20°	643.3	8.1
20°-30°	973.8	12.3
30°-40°	1175.9	14.9
40°-50°	1200.5	15.2
50°-60°	1049.6	13.3
60°-70°	813.5	10.3
70°-80°	489.1	6.2
80°-90°	151.0	1.9
90°-100°	63.7	0.8
100°-110°	121.7	1.5
110°-120°	165.3	2.1
120°-130°	188.0	2.4
130°-140°	190.7	2.4
140°-150°	175.5	2.2
150°-160°	144.8	1.8
160°-170°	97.4	1.2
170°-180°	33.8	0.4
0°-30°	1843.6	23.3
0°-40°	3019.5	38.2
0°-60°	5269.6	66.7
0°-90°	6723.2	85.1
90°-120°	350.7	4.4
90°-150°	904.8	11.4
90°-180°	1181.0	14.9
0°-180°	7904.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2383	2383	2383	2383	2383	
5°	2401	2419	2391	2337	2401	229
15°	2360	2207	2342	2194	2360	667
25°	2248	2072	2222	1980	2248	1037
35°	2059	1921	2028	1569	2059	1289
45°	1791	1347	1760	1168	1791	1381
55°	1452	786	1424	839	1452	1298
65°	1056	523	1033	658	1056	1042
75°	589	291	572	444	589	625
85°	176	97	158	128	176	178
90°	3	54	3	61	3	12
95°	15	74	15	117	15	19
105°	82	125	79	158	82	87
115°	158	161	156	214	158	157
125°	227	184	222	263	227	201
135°	278	202	276	291	278	215
145°	314	214	311	309	314	197
155°	339	250	337	327	339	157
165°	355	311	352	355	355	100
175°	360	342	360	352	360	34
180°	355	355	355	355	355	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2382.9	2382.9	2382.9	2382.9	2382.9	2382.9	2382.9	2382.9	2382.9	2382.9	2382.9
2.5°	2400.8	2388.1	2418.7	2423.8	2405.9	2411.0	2413.6	2385.5	2395.7	2357.4	2367.6
5°	2400.8	2398.3	2434.0	2428.9	2418.7	2421.2	2428.9	2395.7	2390.6	2344.7	2352.3
7.5°	2398.3	2403.4	2426.3	2421.2	2405.9	2413.6	2426.3	2400.8	2385.5	2331.9	2329.4
10°	2388.1	2395.7	2413.6	2398.3	2370.2	2382.9	2411.0	2395.7	2375.3	2311.5	2298.8
12.5°	2377.8	2382.9	2388.1	2324.3	2278.3	2309.0	2388.1	2382.9	2360.0	2288.5	2265.6
15°	2360.0	2367.6	2347.2	2255.4	2206.9	2237.5	2342.1	2362.5	2342.1	2255.4	2227.3
17.5°	2339.6	2347.2	2303.9	2201.8	2166.1	2181.4	2283.4	2337.0	2319.2	2224.8	2189.0
20°	2316.6	2324.3	2255.4	2145.7	2122.7	2135.5	2227.3	2309.0	2293.7	2189.0	2148.2
22.5°	2283.4	2296.2	2199.3	2107.4	2104.9	2104.9	2173.7	2275.8	2260.5	2145.7	2102.3
25°	2247.7	2260.5	2143.1	2071.7	2071.7	2071.7	2125.3	2232.4	2222.2	2099.7	2056.4
27.5°	2209.5	2222.2	2092.1	2046.2	2053.8	2041.1	2084.4	2183.9	2183.9	2053.8	2007.9
30°	2166.1	2178.8	2041.1	2005.4	2010.5	2005.4	2038.5	2132.9	2132.9	2000.2	1951.8
32.5°	2115.1	2127.8	1984.9	1956.9	1967.1	1962.0	1995.1	2081.9	2084.4	1944.1	1885.4
35°	2058.9	2074.2	1926.3	1911.0	1921.2	1913.5	1936.5	2028.3	2028.3	1882.9	1808.9
37.5°	2000.2	2015.6	1865.0	1859.9	1870.1	1862.5	1880.3	1972.2	1967.1	1819.1	1727.3
40°	1936.5	1954.3	1801.2	1801.2	1814.0	1808.9	1824.2	1913.5	1903.3	1755.3	1643.1
42.5°	1865.0	1888.0	1737.5	1740.0	1724.7	1745.1	1760.4	1852.3	1831.9	1683.9	1551.2
45°	1791.0	1819.1	1676.2	1630.3	1347.1	1612.4	1694.1	1791.0	1760.4	1612.4	1461.9
47.5°	1711.9	1747.7	1604.8	1436.4	1084.3	1413.4	1622.6	1714.5	1678.8	1535.9	1375.2
50°	1630.3	1671.1	1530.8	1270.6	951.6	1245.1	1543.6	1638.0	1597.1	1456.8	1275.7
52.5°	1541.0	1586.9	1459.4	1125.1	862.4	1102.2	1461.9	1564.0	1512.9	1372.6	1194.0
55°	1451.7	1500.2	1362.4	1000.1	785.8	979.7	1367.5	1469.6	1423.6	1285.9	1104.7
57.5°	1359.9	1408.3	1265.5	890.4	719.5	870.0	1260.4	1382.8	1331.8	1196.6	1015.4
60°	1262.9	1311.4	1160.9	790.9	645.5	775.6	1150.7	1285.9	1234.8	1104.7	928.7
62.5°	1160.9	1209.3	1061.4	699.1	584.3	686.3	1030.7	1191.5	1135.3	1007.8	839.4
65°	1056.3	1092.0	944.0	612.3	523.0	602.1	923.6	1074.1	1033.3	905.7	755.2
67.5°	946.5	982.3	841.9	535.8	464.3	525.6	819.0	969.5	923.6	806.2	671.0
70°	831.7	862.4	734.8	461.8	408.2	454.1	709.3	852.1	811.3	701.6	581.7
72.5°	714.4	742.4	620.0	392.9	349.5	387.8	594.5	734.8	694.0	591.9	500.1
75°	589.4	617.4	512.8	324.0	290.9	318.9	489.9	609.8	571.5	487.3	415.9
77.5°	472.0	505.2	405.7	255.1	232.2	250.0	385.3	492.4	454.1	390.4	334.2
80°	359.7	387.8	301.1	193.9	178.6	191.4	280.6	375.0	344.4	301.1	260.2
82.5°	260.2	275.5	206.7	142.9	135.2	140.3	191.4	265.3	250.0	216.9	191.4
85°	176.0	173.5	127.6	99.5	97.0	99.5	114.8	160.7	158.2	145.4	122.5
87.5°	74.0	68.9	58.7	40.8	35.7	38.3	45.9	61.2	58.7	61.2	58.7
90°	2.6	25.5	40.8	51.0	53.6	51.0	40.8	25.5	2.6	28.1	45.9
92.5°	5.1	33.2	48.5	56.1	61.2	56.1	45.9	33.2	5.1	43.4	45.9
95°	15.3	45.9	56.1	68.9	74.0	68.9	56.1	43.4	15.3	38.3	68.9
97.5°	30.6	58.7	66.3	76.5	79.1	74.0	63.8	58.7	28.1	68.9	71.4
100°	45.9	74.0	86.7	86.7	89.3	86.7	84.2	71.4	43.4	76.5	86.7
102.5°	63.8	84.2	99.5	107.2	107.2	107.2	99.5	84.2	58.7	94.4	119.9
105°	81.6	91.8	109.7	119.9	125.0	119.9	109.7	94.4	79.1	109.7	127.6
107.5°	102.1	99.5	119.9	130.1	135.2	130.1	119.9	102.1	97.0	122.5	142.9
110°	122.5	109.7	130.1	140.3	142.9	140.3	130.1	109.7	117.4	137.8	158.2



TEST NUMBER: P192481

CATALOG NUMBER: 4WSL-LD2-80-UPL8-UNV-L830-CD1-U

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	140.3	117.4	140.3	150.5	153.1	150.5	140.3	119.9	135.2	148.0	173.5
115°	158.2	125.0	145.4	158.2	160.7	158.2	145.4	127.6	155.6	160.7	186.2
117.5°	176.0	135.2	150.5	165.8	168.4	165.8	153.1	137.8	173.5	176.0	199.0
120°	193.9	148.0	158.2	170.9	176.0	173.5	158.2	150.5	188.8	188.8	209.2
122.5°	209.2	158.2	165.8	176.0	181.1	176.0	165.8	163.3	206.7	201.6	222.0
125°	227.1	168.4	170.9	181.1	183.7	181.1	173.5	170.9	222.0	211.8	229.6
127.5°	239.8	181.1	176.0	186.2	188.8	186.2	178.6	183.7	237.3	232.2	237.3
130°	255.1	193.9	181.1	191.4	193.9	193.9	181.1	199.0	250.0	247.5	247.5
132.5°	267.9	206.7	186.2	196.5	199.0	199.0	188.8	209.2	262.8	260.2	255.1
135°	278.1	224.5	196.5	196.5	201.6	201.6	199.0	227.1	275.5	273.0	267.9
137.5°	288.3	239.8	204.1	199.0	201.6	201.6	209.2	242.4	285.7	285.7	275.5
140°	298.5	255.1	209.2	204.1	204.1	209.2	216.9	257.7	296.0	296.0	278.1
142.5°	308.7	267.9	216.9	211.8	206.7	216.9	224.5	273.0	303.6	306.2	285.7
145°	313.8	280.6	227.1	219.4	214.3	227.1	237.3	285.7	311.3	316.4	301.1
147.5°	321.5	293.4	239.8	224.5	224.5	232.2	247.5	296.0	318.9	324.0	308.7
150°	329.1	303.6	250.0	232.2	227.1	239.8	257.7	306.2	326.6	331.7	318.9
152.5°	334.2	313.8	265.3	242.4	237.3	252.6	275.5	313.8	331.7	336.8	329.1
155°	339.3	321.5	283.2	252.6	250.0	262.8	290.9	321.5	336.8	341.9	336.8
157.5°	344.4	329.1	296.0	267.9	257.7	278.1	303.6	331.7	341.9	347.0	344.4
160°	347.0	334.2	311.3	283.2	278.1	296.0	316.4	334.2	344.4	352.1	349.5
162.5°	352.1	339.3	321.5	301.1	296.0	311.3	326.6	341.9	349.5	354.6	354.6
165°	354.6	344.4	331.7	316.4	311.3	326.6	334.2	347.0	352.1	354.6	357.2
167.5°	354.6	349.5	339.3	326.6	324.0	336.8	344.4	352.1	354.6	354.6	359.7
170°	357.2	352.1	344.4	336.8	334.2	344.4	347.0	354.6	357.2	354.6	362.3
172.5°	357.2	354.6	349.5	341.9	336.8	349.5	352.1	354.6	357.2	354.6	359.7
175°	359.7	354.6	354.6	349.5	341.9	354.6	354.6	354.6	359.7	354.6	357.2
177.5°	359.7	354.6	354.6	352.1	347.0	354.6	354.6	354.6	359.7	354.6	357.2
180°	354.6	354.6	354.6	354.6	354.6	354.6	354.6	354.6	354.6	354.6	354.6



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2382.9	2382.9	2382.9	2382.9	2382.9	2382.9
2.5°	2365.1	2347.2	2352.3	2372.7	2365.1	2400.8
5°	2347.2	2337.0	2337.0	2360.0	2357.4	2400.8
7.5°	2319.2	2309.0	2314.1	2339.6	2344.7	2398.3
10°	2286.0	2273.2	2278.3	2314.1	2326.8	2388.1
12.5°	2250.3	2240.1	2245.2	2286.0	2303.9	2377.8
15°	2209.5	2194.1	2209.5	2252.8	2275.8	2360.0
17.5°	2163.5	2143.1	2161.0	2217.1	2245.2	2339.6
20°	2117.6	2099.7	2110.0	2171.2	2212.0	2316.6
22.5°	2071.7	2046.2	2056.4	2120.2	2171.2	2283.4
25°	2018.1	1979.8	2000.2	2069.1	2127.8	2247.7
27.5°	1946.7	1888.0	1931.4	2018.1	2076.8	2209.5
30°	1852.3	1775.7	1839.5	1956.9	2023.2	2166.1
32.5°	1747.7	1666.0	1737.5	1888.0	1967.1	2115.1
35°	1643.1	1569.1	1632.9	1811.4	1908.4	2058.9
37.5°	1543.6	1479.8	1538.5	1729.8	1847.2	2000.2
40°	1449.2	1385.4	1446.6	1640.5	1780.8	1936.5
42.5°	1354.8	1296.1	1354.8	1546.1	1711.9	1865.0
45°	1260.4	1168.5	1255.3	1454.3	1638.0	1791.0
47.5°	1158.3	1051.2	1150.7	1354.8	1558.9	1711.9
50°	1061.4	969.5	1056.3	1262.9	1477.2	1630.3
52.5°	977.2	903.2	972.1	1168.5	1393.0	1541.0
55°	898.1	839.4	898.1	1076.7	1303.7	1451.7
57.5°	826.6	788.4	829.2	997.6	1211.9	1359.9
60°	765.4	742.4	768.0	900.6	1120.0	1262.9
62.5°	706.7	704.2	709.3	824.1	1023.1	1160.9
65°	645.5	658.2	645.5	742.4	926.1	1056.3
67.5°	584.3	609.8	589.4	660.8	821.5	946.5
70°	528.1	556.2	528.1	576.6	716.9	831.7
72.5°	464.3	500.1	464.3	497.5	607.2	714.4
75°	403.1	443.9	405.7	415.9	502.6	589.4
77.5°	336.8	375.0	344.4	336.8	405.7	472.0
80°	267.9	283.2	267.9	265.3	313.8	359.7
82.5°	186.2	199.0	186.2	193.9	229.6	260.2
85°	122.5	127.6	122.5	125.0	153.1	176.0
87.5°	51.0	51.0	51.0	63.8	68.9	74.0
90°	56.1	61.2	56.1	45.9	28.1	2.6
92.5°	58.7	63.8	58.7	51.0	33.2	5.1
95°	104.6	117.4	99.5	63.8	53.6	15.3
97.5°	84.2	91.8	86.7	74.0	66.3	30.6
100°	99.5	107.2	99.5	104.6	81.6	45.9
102.5°	117.4	122.5	119.9	122.5	99.5	63.8
105°	153.1	158.2	153.1	132.7	114.8	81.6
107.5°	163.3	176.0	165.8	148.0	130.1	102.1
110°	176.0	186.2	178.6	163.3	142.9	122.5





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	188.8	201.6	193.9	181.1	153.1	140.3
115°	204.1	214.3	209.2	193.9	168.4	158.2
117.5°	219.4	227.1	222.0	204.1	183.7	176.0
120°	232.2	242.4	237.3	216.9	196.5	193.9
122.5°	242.4	252.6	247.5	229.6	209.2	209.2
125°	252.6	262.8	257.7	239.8	219.4	227.1
127.5°	260.2	273.0	267.9	247.5	242.4	239.8
130°	270.4	278.1	275.5	255.1	255.1	255.1
132.5°	275.5	285.7	280.6	265.3	270.4	267.9
135°	278.1	290.9	285.7	278.1	283.2	278.1
137.5°	283.2	293.4	290.9	285.7	296.0	288.3
140°	290.9	296.0	298.5	290.9	306.2	298.5
142.5°	298.5	301.1	306.2	298.5	316.4	308.7
145°	303.6	308.7	313.8	313.8	324.0	313.8
147.5°	303.6	311.3	311.3	318.9	334.2	321.5
150°	311.3	306.2	321.5	329.1	339.3	329.1
152.5°	321.5	318.9	331.7	339.3	344.4	334.2
155°	324.0	326.6	334.2	347.0	349.5	339.3
157.5°	334.2	331.7	344.4	354.6	354.6	344.4
160°	341.9	341.9	354.6	359.7	357.2	347.0
162.5°	349.5	349.5	362.3	362.3	359.7	352.1
165°	354.6	354.6	367.4	364.8	359.7	354.6
167.5°	357.2	359.7	369.9	367.4	359.7	354.6
170°	359.7	359.7	369.9	364.8	359.7	357.2
172.5°	359.7	357.2	367.4	362.3	357.2	357.2
175°	357.2	352.1	362.3	357.2	357.2	359.7
177.5°	354.6	347.0	354.6	354.6	357.2	359.7
180°	354.6	354.6	354.6	354.6	354.6	354.6

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