

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: P192519

Luminaire Tested: **4WSL-LD2-70-UPL15-UNV-L840-CD1-U**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P192519  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P28105)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: 4WSL-LD2-70-UPL15-UNV-L840-CD1-U  
Description: 4FT Linear Wavestream System, 15% Uplight, L840  
Light Source: (238) 4000K CCT, 80 CRI LEDS  
EL236N0119D840  
Ballast/Driver: OSRAM  
OT85W1202772A0DIML

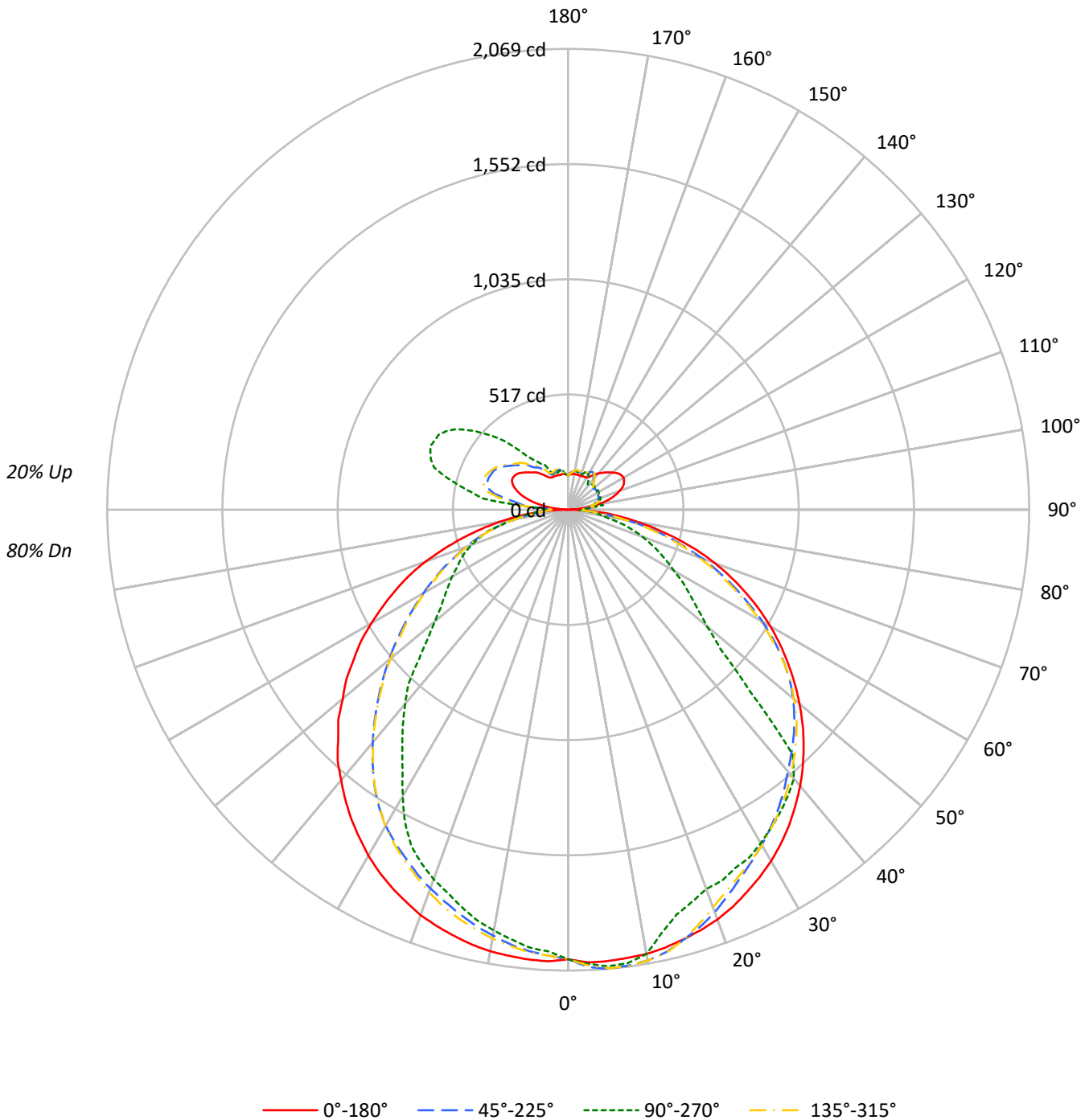
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7142.0 lumens  
Efficiency: N/A  
Efficacy: 104.0 lumens/watt  
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35  
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')  
CIE Type: Semi-Direct  
  
Input Watts (W): 68.7  
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: P192519

CATALOG NUMBER: 4WSL-LD2-70-UPL15-UNV-L840-CD1-U

### Luminous Intensity Polar Plot





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CATALOG NUMBER: 4WSL-LD2-70-UPL15-UNV-L840-CD1-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	0
RCR																		
0	114	114	114	114	109	109	109	109	100	100	100	91	91	91	83	83	83	80
1	104	99	95	91	99	95	91	88	87	84	81	80	77	75	73	71	70	66
2	94	86	80	74	90	83	77	72	76	71	67	70	66	62	64	61	58	55
3	86	76	68	62	82	73	66	60	67	61	56	61	57	53	56	53	49	46
4	79	67	59	52	75	64	57	51	59	53	48	55	49	45	50	46	42	40
5	72	60	51	45	69	58	50	44	53	46	41	49	43	39	45	41	37	34
6	67	54	45	39	64	52	44	38	48	41	36	44	39	34	41	36	32	30
7	62	49	40	34	59	47	39	33	44	37	32	40	35	30	38	33	29	26
8	58	44	36	30	55	43	35	30	40	33	28	37	31	27	34	29	26	24
9	54	41	33	27	51	39	32	27	37	30	26	34	28	24	32	27	23	21
10	50	37	30	25	48	36	29	24	34	27	23	32	26	22	30	25	21	19

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

	0°	90°	180°	270°
0°	11433	11433	11433	11433
5°	11569	11700	11529	11226
10°	11649	11649	11582	11036
15°	11714	11035	11619	10830
20°	11803	10923	11678	10644
25°	11847	11094	11702	10413
30°	11913	11307	11731	9716
35°	11954	11473	11729	8973
40°	11977	11651	11720	8413
45°	11973	9263	11695	7574
50°	11946	7147	11640	6882
55°	11900	6591	11603	6682
60°	11866	6222	11551	6825
65°	11771	6026	11461	7144
70°	11590	5872	11283	7638
75°	11056	5579	10701	8114
80°	10355	5063	10055	8088
85°	10394	6624	9640	9640



TEST NUMBER: P192519

CATALOG NUMBER: 4WSL-LD2-70-UPL15-UNV-L840-CD1-U

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	192.0	2.7
10°-20°	545.0	7.6
20°-30°	823.6	11.5
30°-40°	991.2	13.9
40°-50°	1008.1	14.1
50°-60°	877.4	12.3
60°-70°	684.4	9.6
70°-80°	423.1	5.9
80°-90°	148.9	2.1
90°-100°	140.2	2.0
100°-110°	271.4	3.8
110°-120°	296.9	4.2
120°-130°	260.3	3.6
130°-140°	195.0	2.7
140°-150°	133.5	1.9
150°-160°	85.0	1.2
160°-170°	49.7	0.7
170°-180°	16.0	0.2
0°-30°	1560.7	21.9
0°-40°	2551.9	35.7
0°-60°	4437.4	62.1
0°-90°	5693.9	79.7
90°-120°	708.5	9.9
90°-150°	1297.4	18.2
90°-180°	1448.0	20.3
0°-180°	7142.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2018	2018	2018	2018	2018	
5°	2034	2057	2027	1974	2034	194
15°	1997	1881	1981	1847	1997	565
25°	1895	1775	1872	1666	1895	875
35°	1728	1659	1696	1298	1728	1081
45°	1494	1156	1460	945	1494	1153
55°	1205	667	1175	676	1205	1078
65°	878	450	855	533	878	868
75°	505	255	489	371	505	535
85°	160	102	148	148	160	159
90°	2	65	2	102	2	12
95°	63	107	49	213	63	65
105°	199	132	192	568	199	208
115°	276	151	276	681	276	270
125°	280	158	280	628	280	249
135°	236	158	236	459	236	184
145°	185	158	190	273	185	118
155°	164	190	162	188	164	76
165°	162	172	160	174	162	46
175°	160	167	160	162	160	15
180°	155	155	155	155	155	



TEST NUMBER: P192519

CATALOG NUMBER: 4WSL-LD2-70-UPL15-UNV-L840-CD1-U

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2018.1	2018.1	2018.1	2018.1	2018.1	2018.1	2018.1	2018.1	2018.1	2018.1	2018.1
2.5°	2034.3	2025.0	2055.1	2057.4	2041.2	2048.2	2048.2	2022.7	2029.6	1999.5	2004.2
5°	2034.3	2036.6	2069.0	2066.7	2057.4	2059.8	2066.7	2034.3	2027.3	1985.6	1990.3
7.5°	2029.6	2041.2	2064.4	2062.1	2052.8	2055.1	2066.7	2038.9	2020.4	1971.7	1969.4
10°	2025.0	2036.6	2055.1	2043.5	2025.0	2032.0	2055.1	2036.6	2013.4	1955.5	1941.6
12.5°	2013.4	2025.0	2034.3	1976.4	1943.9	1971.7	2036.6	2025.0	1999.5	1932.3	1913.8
15°	1997.2	2011.1	1999.5	1918.4	1881.4	1906.8	1999.5	2008.8	1981.0	1902.2	1879.0
17.5°	1978.7	1994.9	1964.8	1874.4	1846.6	1858.2	1950.9	1987.9	1960.1	1872.1	1844.3
20°	1957.8	1976.4	1923.1	1828.1	1811.8	1821.1	1899.9	1964.8	1937.0	1839.7	1809.5
22.5°	1930.0	1950.9	1874.4	1795.6	1802.6	1795.6	1853.6	1934.6	1904.5	1804.9	1770.1
25°	1895.3	1918.4	1825.7	1767.8	1774.8	1772.5	1814.2	1895.3	1872.1	1763.2	1726.1
27.5°	1860.5	1883.7	1781.7	1749.3	1760.9	1747.0	1777.1	1853.6	1835.0	1719.2	1684.4
30°	1821.1	1846.6	1737.7	1716.9	1728.4	1719.2	1740.0	1811.8	1793.3	1672.8	1638.1
32.5°	1777.1	1802.6	1691.4	1677.5	1693.7	1682.1	1696.0	1765.5	1744.7	1621.9	1580.2
35°	1728.4	1753.9	1642.7	1642.7	1658.9	1645.0	1652.0	1719.2	1696.0	1570.9	1515.3
37.5°	1675.1	1703.0	1589.4	1601.0	1619.5	1605.6	1605.6	1670.5	1642.7	1515.3	1441.1
40°	1619.5	1649.7	1533.8	1559.3	1575.5	1559.3	1554.7	1619.5	1584.8	1459.7	1364.7
42.5°	1559.3	1591.7	1482.8	1513.0	1492.1	1513.0	1501.4	1566.3	1531.5	1399.4	1285.9
45°	1494.4	1536.1	1431.9	1413.3	1156.2	1399.4	1448.1	1510.6	1459.7	1341.5	1207.1
47.5°	1427.2	1471.3	1376.3	1241.9	929.1	1228.0	1390.2	1450.4	1399.4	1279.0	1128.4
50°	1355.4	1406.4	1318.3	1093.6	810.9	1079.7	1325.3	1387.8	1320.7	1211.8	1049.6
52.5°	1281.3	1336.9	1253.5	966.2	732.2	952.3	1255.8	1320.7	1255.8	1139.9	973.1
55°	1204.8	1262.7	1177.0	848.0	667.3	845.7	1174.7	1248.8	1174.7	1068.1	896.7
57.5°	1128.4	1193.2	1095.9	762.3	611.7	750.7	1084.3	1174.7	1105.2	994.0	822.5
60°	1047.3	1107.5	1007.9	669.6	549.1	667.3	994.0	1098.2	1019.5	917.5	750.7
62.5°	963.8	1031.0	912.9	588.5	498.1	586.2	896.7	1012.5	936.0	838.7	681.2
65°	878.1	943.0	822.5	523.6	449.5	519.0	806.3	924.5	855.0	760.0	616.3
67.5°	790.1	850.3	732.2	461.1	400.8	456.4	713.6	831.8	771.5	678.9	546.8
70°	699.7	755.3	639.5	400.8	354.5	398.5	623.3	736.8	681.2	595.5	484.2
72.5°	604.7	655.7	542.2	342.9	305.8	340.6	528.3	639.5	581.6	507.4	428.6
75°	505.1	553.7	451.8	285.0	254.9	282.7	437.9	535.2	488.9	426.3	363.8
77.5°	410.1	458.8	359.1	220.1	194.6	215.5	342.9	437.9	398.5	345.2	296.6
80°	317.4	356.8	264.1	164.5	155.2	164.5	257.2	336.0	308.2	271.1	231.7
82.5°	234.0	257.2	178.4	134.4	134.4	134.4	173.8	238.6	227.1	201.6	176.1
85°	159.9	159.9	120.5	101.9	101.9	101.9	118.2	141.3	148.3	134.4	134.4
87.5°	67.2	69.5	62.6	55.6	53.3	55.6	60.2	57.9	57.9	64.9	81.1
90°	2.3	30.1	51.0	62.6	64.9	60.2	46.3	27.8	2.3	39.4	71.8
92.5°	16.2	64.9	60.2	78.8	81.1	74.1	62.6	51.0	9.3	71.8	76.5
95°	62.6	76.5	118.2	120.5	106.6	101.9	115.8	71.8	48.7	97.3	194.6
97.5°	99.6	115.8	106.6	139.0	157.6	139.0	111.2	111.2	92.7	150.6	227.1
100°	136.7	122.8	108.9	120.5	139.0	122.8	104.3	122.8	129.7	176.1	278.0
102.5°	171.5	136.7	136.7	118.2	120.5	115.8	132.1	134.4	162.2	199.3	342.9
105°	199.3	141.3	143.7	134.4	132.1	134.4	143.7	143.7	192.3	220.1	373.0
107.5°	224.7	146.0	141.3	148.3	150.6	148.3	141.3	146.0	220.1	234.0	380.0
110°	245.6	148.3	143.7	148.3	155.2	148.3	143.7	150.6	243.3	247.9	384.6



TEST NUMBER: P192519

CATALOG NUMBER: 4WSL-LD2-70-UPL15-UNV-L840-CD1-U

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	264.1	150.6	148.3	146.0	152.9	146.0	148.3	155.2	261.8	254.9	384.6
115°	275.7	152.9	148.3	148.3	150.6	148.3	150.6	157.6	275.7	257.2	380.0
117.5°	282.7	157.6	150.6	152.9	155.2	152.9	150.6	162.2	285.0	266.4	377.7
120°	287.3	173.8	150.6	155.2	157.6	155.2	150.6	176.1	287.3	271.1	368.4
122.5°	285.0	180.7	152.9	155.2	159.9	155.2	152.9	183.0	285.0	268.8	356.8
125°	280.3	187.7	152.9	152.9	157.6	155.2	155.2	187.7	280.3	264.1	340.6
127.5°	271.1	203.9	152.9	155.2	155.2	155.2	155.2	201.6	271.1	266.4	324.4
130°	259.5	215.5	148.3	157.6	155.2	159.9	152.9	215.5	259.5	259.5	310.5
132.5°	247.9	220.1	148.3	157.6	157.6	159.9	150.6	220.1	247.9	250.2	296.6
135°	236.3	224.7	157.6	155.2	157.6	157.6	159.9	224.7	236.3	241.0	287.3
137.5°	224.7	227.1	169.1	148.3	155.2	150.6	173.8	227.1	227.1	227.1	273.4
140°	213.2	224.7	178.4	143.7	146.0	148.3	183.0	227.1	217.8	220.1	250.2
142.5°	199.3	217.8	185.4	155.2	143.7	159.9	190.0	224.7	203.9	213.2	238.6
145°	185.4	210.8	199.3	171.5	157.6	178.4	206.2	217.8	190.0	208.5	231.7
147.5°	173.8	199.3	201.6	180.7	173.8	187.7	208.5	208.5	176.1	199.3	215.5
150°	166.8	187.7	194.6	187.7	180.7	196.9	203.9	192.3	166.8	192.3	201.6
152.5°	164.5	178.4	178.4	196.9	194.6	206.2	187.7	183.0	162.2	185.4	183.0
155°	164.5	176.1	171.5	180.7	190.0	190.0	178.4	178.4	162.2	185.4	173.8
157.5°	162.2	178.4	171.5	169.1	173.8	178.4	178.4	180.7	162.2	180.7	173.8
160°	162.2	180.7	173.8	166.8	169.1	176.1	180.7	180.7	162.2	180.7	176.1
162.5°	162.2	176.1	176.1	169.1	169.1	178.4	180.7	178.4	162.2	176.1	180.7
165°	162.2	176.1	178.4	173.8	171.5	183.0	180.7	173.8	159.9	173.8	183.0
167.5°	162.2	171.5	180.7	176.1	176.1	183.0	183.0	171.5	159.9	166.8	183.0
170°	162.2	169.1	178.4	176.1	178.4	185.4	178.4	169.1	162.2	164.5	176.1
172.5°	162.2	164.5	173.8	176.1	176.1	180.7	173.8	164.5	162.2	159.9	169.1
175°	159.9	164.5	169.1	169.1	166.8	173.8	166.8	162.2	159.9	157.6	162.2
177.5°	157.6	159.9	164.5	164.5	159.9	164.5	159.9	157.6	157.6	155.2	159.9
180°	155.2	155.2	155.2	155.2	155.2	155.2	155.2	155.2	155.2	155.2	155.2



TEST NUMBER: P192519

CATALOG NUMBER: 4WSL-LD2-70-UPL15-UNV-L840-CD1-U

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2018.1	2018.1	2018.1	2018.1	2018.1	2018.1
2.5°	2001.8	1985.6	1990.3	2004.2	2001.8	2034.3
5°	1981.0	1974.0	1974.0	1994.9	1992.6	2034.3
7.5°	1957.8	1946.2	1953.2	1976.4	1983.3	2029.6
10°	1927.7	1918.4	1920.7	1955.5	1967.1	2025.0
12.5°	1897.6	1888.3	1895.3	1927.7	1943.9	2013.4
15°	1862.8	1846.6	1865.1	1899.9	1920.7	1997.2
17.5°	1821.1	1802.6	1821.1	1867.5	1892.9	1978.7
20°	1784.0	1765.5	1777.1	1825.7	1860.5	1957.8
22.5°	1742.3	1719.2	1728.4	1781.7	1825.7	1930.0
25°	1696.0	1665.9	1679.8	1737.7	1786.4	1895.3
27.5°	1635.8	1584.8	1619.5	1691.4	1737.7	1860.5
30°	1552.4	1485.2	1540.8	1640.4	1693.7	1821.1
32.5°	1455.0	1383.2	1443.5	1577.8	1642.7	1777.1
35°	1360.0	1297.5	1353.1	1513.0	1591.7	1728.4
37.5°	1276.6	1218.7	1269.7	1438.8	1536.1	1675.1
40°	1190.9	1137.6	1188.6	1360.0	1480.5	1619.5
42.5°	1112.1	1061.2	1109.8	1281.3	1420.3	1559.3
45°	1028.7	945.3	1024.1	1200.2	1355.4	1494.4
47.5°	940.7	852.6	933.7	1121.4	1290.5	1427.2
50°	859.6	780.8	855.0	1040.3	1221.0	1355.4
52.5°	787.8	720.6	785.4	959.2	1149.2	1281.3
55°	720.6	676.5	722.9	885.1	1082.0	1204.8
57.5°	667.3	637.2	669.6	813.2	1007.9	1128.4
60°	620.9	602.4	623.3	741.4	929.1	1047.3
62.5°	570.0	563.0	570.0	671.9	852.6	963.8
65°	525.9	532.9	525.9	609.4	771.5	878.1
67.5°	484.2	500.5	486.6	542.2	690.4	790.1
70°	437.9	461.1	440.2	481.9	607.0	699.7
72.5°	389.2	417.0	389.2	424.0	519.0	604.7
75°	338.3	370.7	340.6	361.4	435.6	505.1
77.5°	282.7	303.5	287.3	294.3	354.5	410.1
80°	224.7	247.9	227.1	231.7	280.3	317.4
82.5°	187.7	203.9	190.0	176.1	208.5	234.0
85°	139.0	148.3	143.7	136.7	143.7	159.9
87.5°	85.7	90.4	85.7	85.7	74.1	67.2
90°	95.0	101.9	95.0	74.1	41.7	2.3
92.5°	97.3	106.6	97.3	81.1	78.8	16.2
95°	217.8	213.2	231.7	210.8	120.5	62.6
97.5°	338.3	386.9	349.9	252.5	162.2	99.6
100°	389.2	435.6	405.5	315.1	185.4	136.7
102.5°	449.5	500.5	468.0	368.4	208.5	171.5
105°	523.6	567.7	539.8	389.2	229.4	199.3
107.5°	563.0	630.2	574.6	398.5	243.3	224.7
110°	583.9	655.7	602.4	400.8	254.9	245.6





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	600.1	669.6	614.0	400.8	259.5	264.1
115°	600.1	681.2	614.0	393.9	266.4	275.7
117.5°	600.1	674.2	614.0	386.9	275.7	282.7
120°	579.2	671.9	597.8	377.7	278.0	287.3
122.5°	563.0	653.4	574.6	366.1	278.0	285.0
125°	532.9	627.9	546.8	352.2	273.4	280.3
127.5°	500.5	590.8	512.0	336.0	275.7	271.1
130°	470.3	549.1	477.3	319.7	266.4	259.5
132.5°	431.0	502.8	437.9	308.2	257.2	247.9
135°	393.9	458.8	403.1	298.9	245.6	236.3
137.5°	354.5	412.4	363.8	280.3	234.0	224.7
140°	308.2	354.5	317.4	259.5	227.1	213.2
142.5°	278.0	303.5	287.3	250.2	217.8	199.3
145°	259.5	273.4	266.4	241.0	213.2	185.4
147.5°	241.0	254.9	247.9	222.4	201.6	173.8
150°	234.0	234.0	243.3	206.2	194.6	166.8
152.5°	208.5	227.1	217.8	187.7	190.0	164.5
155°	178.4	187.7	187.7	180.7	190.0	164.5
157.5°	166.8	173.8	176.1	180.7	185.4	162.2
160°	166.8	169.1	176.1	183.0	183.0	162.2
162.5°	171.5	169.1	180.7	187.7	178.4	162.2
165°	176.1	173.8	185.4	190.0	173.8	162.2
167.5°	180.7	180.7	190.0	187.7	169.1	162.2
170°	180.7	185.4	190.0	180.7	166.8	162.2
172.5°	173.8	176.1	180.7	169.1	159.9	162.2
175°	164.5	162.2	169.1	162.2	159.9	159.9
177.5°	159.9	152.9	159.9	157.6	155.2	157.6
180°	155.2	155.2	155.2	155.2	155.2	155.2

(END OF REPORT)