

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: P192517

Luminaire Tested: **4WSL-LD2-70-UPL15-UNV-L830-CD1-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P192517
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-L830-CD1-U
Description: 4FT Linear Wavestream System, 15% Uplight, L830
Light Source: (238) 3000K CCT, 80 CRI LEDS
EL236N0119D830
Ballast/Driver: OSRAM
OT85W1202772A0DIML

Summary

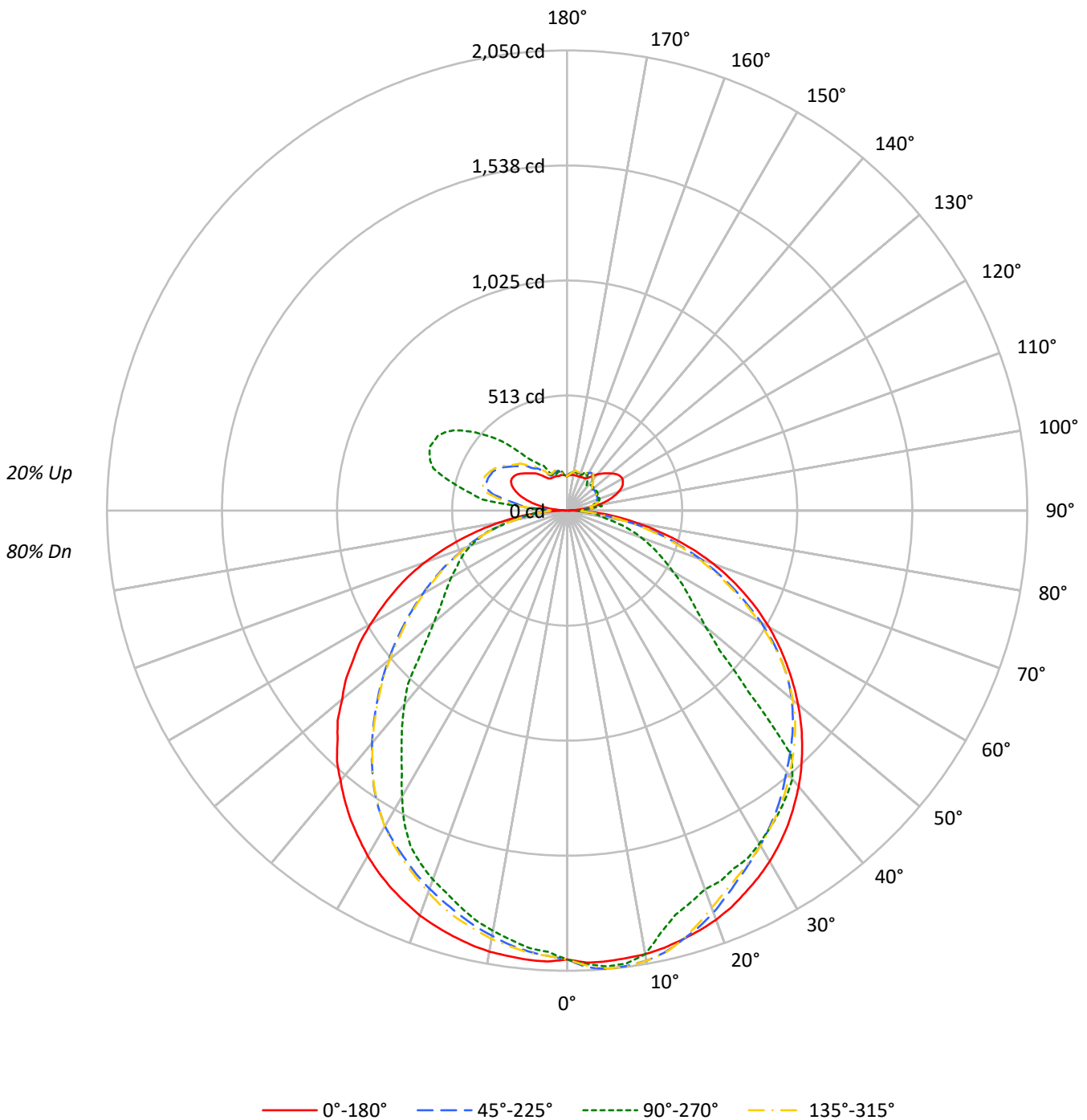
Lumens per Lamp: N/A
Luminaire Lumens: 7077.0 lumens
Efficiency: N/A
Efficacy: 103.0 lumens/watt
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')
CIE Type: Semi-Direct

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

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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	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°	11329	11329	11329	11329
5°	11464	11594	11424	11124
10°	11543	11543	11477	10936
15°	11607	10934	11513	10732
20°	11696	10824	11571	10547
25°	11739	10993	11596	10318
30°	11804	11204	11624	9627
35°	11845	11368	11623	8892
40°	11868	11546	11614	8337
45°	11864	9178	11588	7505
50°	11837	7082	11533	6819
55°	11791	6531	11497	6622
60°	11758	6165	11446	6763
65°	11664	5971	11357	7078
70°	11484	5819	11181	7568
75°	10955	5527	10603	8040
80°	10260	5018	9960	8016
85°	10296	6565	9549	9549



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	190.3	2.7
10°-20°	540.1	7.6
20°-30°	816.1	11.5
30°-40°	982.2	13.9
40°-50°	998.9	14.1
50°-60°	869.4	12.3
60°-70°	678.2	9.6
70°-80°	419.3	5.9
80°-90°	147.5	2.1
90°-100°	138.9	2.0
100°-110°	268.9	3.8
110°-120°	294.2	4.2
120°-130°	258.0	3.6
130°-140°	193.3	2.7
140°-150°	132.3	1.9
150°-160°	84.3	1.2
160°-170°	49.3	0.7
170°-180°	15.9	0.2
0°-30°	1546.5	21.9
0°-40°	2528.7	35.7
0°-60°	4397.0	62.1
0°-90°	5642.1	79.7
90°-120°	702.0	9.9
90°-150°	1285.5	18.2
90°-180°	1435.0	20.3
0°-180°	7077.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2000	2000	2000	2000	2000	
5°	2016	2039	2009	1956	2016	192
15°	1979	1864	1963	1830	1979	559
25°	1878	1759	1855	1651	1878	867
35°	1713	1644	1681	1286	1713	1071
45°	1481	1146	1446	937	1481	1142
55°	1194	661	1164	670	1194	1068
65°	870	445	847	528	870	860
75°	500	252	484	367	500	530
85°	158	101	147	147	158	158
90°	2	64	2	101	2	12
95°	62	106	48	211	62	64
105°	197	131	191	562	197	206
115°	273	149	273	675	273	268
125°	278	156	278	622	278	247
135°	234	156	234	455	234	182
145°	184	156	188	271	184	117
155°	163	188	161	186	163	75
165°	161	170	158	172	161	46
175°	158	165	158	161	158	15
180°	154	154	154	154	154	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1999.7	1999.7	1999.7	1999.7	1999.7	1999.7	1999.7	1999.7	1999.7	1999.7	1999.7
2.5°	2015.8	2006.6	2036.4	2038.7	2022.6	2029.5	2029.5	2004.3	2011.2	1981.3	1985.9
5°	2015.8	2018.1	2050.2	2047.9	2038.7	2041.0	2047.9	2015.8	2008.9	1967.5	1972.1
7.5°	2011.2	2022.6	2045.6	2043.3	2034.1	2036.4	2047.9	2020.4	2002.0	1953.8	1951.5
10°	2006.6	2018.1	2036.4	2024.9	2006.6	2013.5	2036.4	2018.1	1995.1	1937.7	1923.9
12.5°	1995.1	2006.6	2015.8	1958.4	1926.2	1953.8	2018.1	2006.6	1981.3	1914.7	1896.4
15°	1979.0	1992.8	1981.3	1901.0	1864.2	1889.5	1981.3	1990.5	1963.0	1884.9	1861.9
17.5°	1960.7	1976.7	1946.9	1857.3	1829.8	1841.3	1933.1	1969.8	1942.3	1855.1	1827.5
20°	1940.0	1958.4	1905.6	1811.4	1795.4	1804.5	1882.6	1946.9	1919.3	1822.9	1793.1
22.5°	1912.4	1933.1	1857.3	1779.3	1786.2	1779.3	1836.7	1917.0	1887.2	1788.5	1754.0
25°	1878.0	1901.0	1809.1	1751.7	1758.6	1756.3	1797.7	1878.0	1855.1	1747.1	1710.4
27.5°	1843.6	1866.5	1765.5	1733.4	1744.8	1731.1	1760.9	1836.7	1818.3	1703.5	1669.1
30°	1804.5	1829.8	1721.9	1701.2	1712.7	1703.5	1724.2	1795.4	1777.0	1657.6	1623.2
32.5°	1760.9	1786.2	1676.0	1662.2	1678.3	1666.8	1680.6	1749.4	1728.8	1607.1	1565.8
35°	1712.7	1738.0	1627.8	1627.8	1643.8	1630.1	1636.9	1703.5	1680.6	1556.6	1501.5
37.5°	1659.9	1687.5	1575.0	1586.4	1604.8	1591.0	1591.0	1655.3	1627.8	1501.5	1428.0
40°	1604.8	1634.6	1519.9	1545.1	1561.2	1545.1	1540.5	1604.8	1570.4	1446.4	1352.3
42.5°	1545.1	1577.3	1469.3	1499.2	1478.5	1499.2	1487.7	1552.0	1517.6	1386.7	1274.2
45°	1480.8	1522.2	1418.8	1400.5	1145.6	1386.7	1434.9	1496.9	1446.4	1329.3	1196.1
47.5°	1414.2	1457.9	1363.7	1230.6	920.6	1216.8	1377.5	1437.2	1386.7	1267.3	1118.1
50°	1343.1	1393.6	1306.3	1083.6	803.5	1069.9	1313.2	1375.2	1308.6	1200.7	1040.0
52.5°	1269.6	1324.7	1242.1	957.4	725.5	943.6	1244.4	1308.6	1244.4	1129.6	964.3
55°	1193.8	1251.2	1166.3	840.3	661.2	838.0	1164.0	1237.5	1164.0	1058.4	888.5
57.5°	1118.1	1182.4	1085.9	755.3	606.1	743.9	1074.5	1164.0	1095.1	984.9	815.0
60°	1037.7	1097.4	998.7	663.5	544.1	661.2	984.9	1088.2	1010.2	909.2	743.9
62.5°	955.1	1021.7	904.6	583.1	493.6	580.9	888.5	1003.3	927.5	831.1	675.0
65°	870.1	934.4	815.0	518.9	445.4	514.3	799.0	916.0	847.2	753.0	610.7
67.5°	782.9	842.6	725.5	456.9	397.2	452.3	707.1	824.2	764.5	672.7	541.8
70°	693.3	748.4	633.7	397.2	351.3	394.9	617.6	730.1	675.0	590.0	479.8
72.5°	599.2	649.7	537.2	339.8	303.1	337.5	523.5	633.7	576.3	502.8	424.7
75°	500.5	548.7	447.7	282.4	252.5	280.1	433.9	530.3	484.4	422.4	360.4
77.5°	406.4	454.6	355.9	218.1	192.9	213.5	339.8	433.9	394.9	342.1	293.9
80°	314.5	353.6	261.7	163.0	153.8	163.0	254.8	332.9	305.3	268.6	229.6
82.5°	231.9	254.8	176.8	133.2	133.2	133.2	172.2	236.5	225.0	199.7	174.5
85°	158.4	158.4	119.4	101.0	101.0	101.0	117.1	140.0	146.9	133.2	133.2
87.5°	66.6	68.9	62.0	55.1	52.8	55.1	59.7	57.4	57.4	64.3	80.4
90°	2.3	29.8	50.5	62.0	64.3	59.7	45.9	27.6	2.3	39.0	71.2
92.5°	16.1	64.3	59.7	78.1	80.4	73.5	62.0	50.5	9.2	71.2	75.8
95°	62.0	75.8	117.1	119.4	105.6	101.0	114.8	71.2	48.2	96.4	192.9
97.5°	98.7	114.8	105.6	137.8	156.1	137.8	110.2	110.2	91.8	149.2	225.0
100°	135.5	121.7	107.9	119.4	137.8	121.7	103.3	121.7	128.6	174.5	275.5
102.5°	169.9	135.5	135.5	117.1	119.4	114.8	130.9	133.2	160.7	197.4	339.8
105°	197.4	140.0	142.3	133.2	130.9	133.2	142.3	142.3	190.6	218.1	369.6
107.5°	222.7	144.6	140.0	146.9	149.2	146.9	140.0	144.6	218.1	231.9	376.5
110°	243.4	146.9	142.3	146.9	153.8	146.9	142.3	149.2	241.1	245.7	381.1



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CATALOG NUMBER: 4WSL-LD2-70-UPL15-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°	261.7	149.2	146.9	144.6	151.5	144.6	146.9	153.8	259.4	252.5	381.1
115°	273.2	151.5	146.9	146.9	149.2	146.9	149.2	156.1	273.2	254.8	376.5
117.5°	280.1	156.1	149.2	151.5	153.8	151.5	149.2	160.7	282.4	264.0	374.2
120°	284.7	172.2	149.2	153.8	156.1	153.8	149.2	174.5	284.7	268.6	365.0
122.5°	282.4	179.1	151.5	153.8	158.4	153.8	151.5	181.4	282.4	266.3	353.6
125°	277.8	186.0	151.5	151.5	156.1	153.8	153.8	186.0	277.8	261.7	337.5
127.5°	268.6	202.0	151.5	153.8	153.8	153.8	153.8	199.7	268.6	264.0	321.4
130°	257.1	213.5	146.9	156.1	153.8	158.4	151.5	213.5	257.1	257.1	307.6
132.5°	245.7	218.1	146.9	156.1	156.1	158.4	149.2	218.1	245.7	248.0	293.9
135°	234.2	222.7	156.1	153.8	156.1	156.1	158.4	222.7	234.2	238.8	284.7
137.5°	222.7	225.0	167.6	146.9	153.8	149.2	172.2	225.0	225.0	225.0	270.9
140°	211.2	222.7	176.8	142.3	144.6	146.9	181.4	225.0	215.8	218.1	248.0
142.5°	197.4	215.8	183.7	153.8	142.3	158.4	188.3	222.7	202.0	211.2	236.5
145°	183.7	208.9	197.4	169.9	156.1	176.8	204.3	215.8	188.3	206.6	229.6
147.5°	172.2	197.4	199.7	179.1	172.2	186.0	206.6	206.6	174.5	197.4	213.5
150°	165.3	186.0	192.9	186.0	179.1	195.1	202.0	190.6	165.3	190.6	199.7
152.5°	163.0	176.8	176.8	195.1	192.9	204.3	186.0	181.4	160.7	183.7	181.4
155°	163.0	174.5	169.9	179.1	188.3	188.3	176.8	176.8	160.7	183.7	172.2
157.5°	160.7	176.8	169.9	167.6	172.2	176.8	176.8	179.1	160.7	179.1	172.2
160°	160.7	179.1	172.2	165.3	167.6	174.5	179.1	179.1	160.7	179.1	174.5
162.5°	160.7	174.5	174.5	167.6	167.6	176.8	179.1	176.8	160.7	174.5	179.1
165°	160.7	174.5	176.8	172.2	169.9	181.4	179.1	172.2	158.4	172.2	181.4
167.5°	160.7	169.9	179.1	174.5	174.5	181.4	181.4	169.9	158.4	165.3	181.4
170°	160.7	167.6	176.8	174.5	176.8	183.7	176.8	167.6	160.7	163.0	174.5
172.5°	160.7	163.0	172.2	174.5	174.5	179.1	172.2	163.0	160.7	158.4	167.6
175°	158.4	163.0	167.6	167.6	165.3	172.2	165.3	160.7	158.4	156.1	160.7
177.5°	156.1	158.4	163.0	163.0	158.4	163.0	158.4	156.1	156.1	153.8	158.4
180°	153.8	153.8	153.8	153.8	153.8	153.8	153.8	153.8	153.8	153.8	153.8



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1999.7	1999.7	1999.7	1999.7	1999.7	1999.7
2.5°	1983.6	1967.5	1972.1	1985.9	1983.6	2015.8
5°	1963.0	1956.1	1956.1	1976.7	1974.4	2015.8
7.5°	1940.0	1928.5	1935.4	1958.4	1965.3	2011.2
10°	1910.2	1901.0	1903.3	1937.7	1949.2	2006.6
12.5°	1880.3	1871.1	1878.0	1910.2	1926.2	1995.1
15°	1845.9	1829.8	1848.2	1882.6	1903.3	1979.0
17.5°	1804.5	1786.2	1804.5	1850.5	1875.7	1960.7
20°	1767.8	1749.4	1760.9	1809.1	1843.6	1940.0
22.5°	1726.5	1703.5	1712.7	1765.5	1809.1	1912.4
25°	1680.6	1650.7	1664.5	1721.9	1770.1	1878.0
27.5°	1620.9	1570.4	1604.8	1676.0	1721.9	1843.6
30°	1538.2	1471.6	1526.7	1625.5	1678.3	1804.5
32.5°	1441.8	1370.6	1430.3	1563.5	1627.8	1760.9
35°	1347.7	1285.7	1340.8	1499.2	1577.3	1712.7
37.5°	1265.0	1207.6	1258.1	1425.7	1522.2	1659.9
40°	1180.1	1127.3	1177.8	1347.7	1467.1	1604.8
42.5°	1102.0	1051.5	1099.7	1269.6	1407.4	1545.1
45°	1019.4	936.7	1014.8	1189.3	1343.1	1480.8
47.5°	932.1	844.9	925.2	1111.2	1278.8	1414.2
50°	851.8	773.7	847.2	1030.8	1209.9	1343.1
52.5°	780.6	714.0	778.3	950.5	1138.7	1269.6
55°	714.0	670.4	716.3	877.0	1072.2	1193.8
57.5°	661.2	631.4	663.5	805.8	998.7	1118.1
60°	615.3	596.9	617.6	734.7	920.6	1037.7
62.5°	564.8	557.9	564.8	665.8	844.9	955.1
65°	521.2	528.0	521.2	603.8	764.5	870.1
67.5°	479.8	495.9	482.1	537.2	684.2	782.9
70°	433.9	456.9	436.2	477.5	601.5	693.3
72.5°	385.7	413.3	385.7	420.1	514.3	599.2
75°	335.2	367.3	337.5	358.2	431.6	500.5
77.5°	280.1	300.8	284.7	291.6	351.3	406.4
80°	222.7	245.7	225.0	229.6	277.8	314.5
82.5°	186.0	202.0	188.3	174.5	206.6	231.9
85°	137.8	146.9	142.3	135.5	142.3	158.4
87.5°	84.9	89.5	84.9	84.9	73.5	66.6
90°	94.1	101.0	94.1	73.5	41.3	2.3
92.5°	96.4	105.6	96.4	80.4	78.1	16.1
95°	215.8	211.2	229.6	208.9	119.4	62.0
97.5°	335.2	383.4	346.7	250.2	160.7	98.7
100°	385.7	431.6	401.8	312.2	183.7	135.5
102.5°	445.4	495.9	463.8	365.0	206.6	169.9
105°	518.9	562.5	534.9	385.7	227.3	197.4
107.5°	557.9	624.5	569.4	394.9	241.1	222.7
110°	578.6	649.7	596.9	397.2	252.5	243.4



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	594.6	663.5	608.4	397.2	257.1	261.7
115°	594.6	675.0	608.4	390.3	264.0	273.2
117.5°	594.6	668.1	608.4	383.4	273.2	280.1
120°	574.0	665.8	592.3	374.2	275.5	284.7
122.5°	557.9	647.4	569.4	362.7	275.5	282.4
125°	528.0	622.2	541.8	349.0	270.9	277.8
127.5°	495.9	585.4	507.4	332.9	273.2	268.6
130°	466.1	544.1	472.9	316.8	264.0	257.1
132.5°	427.0	498.2	433.9	305.3	254.8	245.7
135°	390.3	454.6	399.5	296.2	243.4	234.2
137.5°	351.3	408.7	360.4	277.8	231.9	222.7
140°	305.3	351.3	314.5	257.1	225.0	211.2
142.5°	275.5	300.8	284.7	248.0	215.8	197.4
145°	257.1	270.9	264.0	238.8	211.2	183.7
147.5°	238.8	252.5	245.7	220.4	199.7	172.2
150°	231.9	231.9	241.1	204.3	192.9	165.3
152.5°	206.6	225.0	215.8	186.0	188.3	163.0
155°	176.8	186.0	186.0	179.1	188.3	163.0
157.5°	165.3	172.2	174.5	179.1	183.7	160.7
160°	165.3	167.6	174.5	181.4	181.4	160.7
162.5°	169.9	167.6	179.1	186.0	176.8	160.7
165°	174.5	172.2	183.7	188.3	172.2	160.7
167.5°	179.1	179.1	188.3	186.0	167.6	160.7
170°	179.1	183.7	188.3	179.1	165.3	160.7
172.5°	172.2	174.5	179.1	167.6	158.4	160.7
175°	163.0	160.7	167.6	160.7	158.4	158.4
177.5°	158.4	151.5	158.4	156.1	153.8	156.1
180°	153.8	153.8	153.8	153.8	153.8	153.8

(END OF REPORT)