

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: P192469

Luminaire Tested: **4WSL-LD2-65-UPL8-UNV-L830-CD1-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P192469
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-LD2-65-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

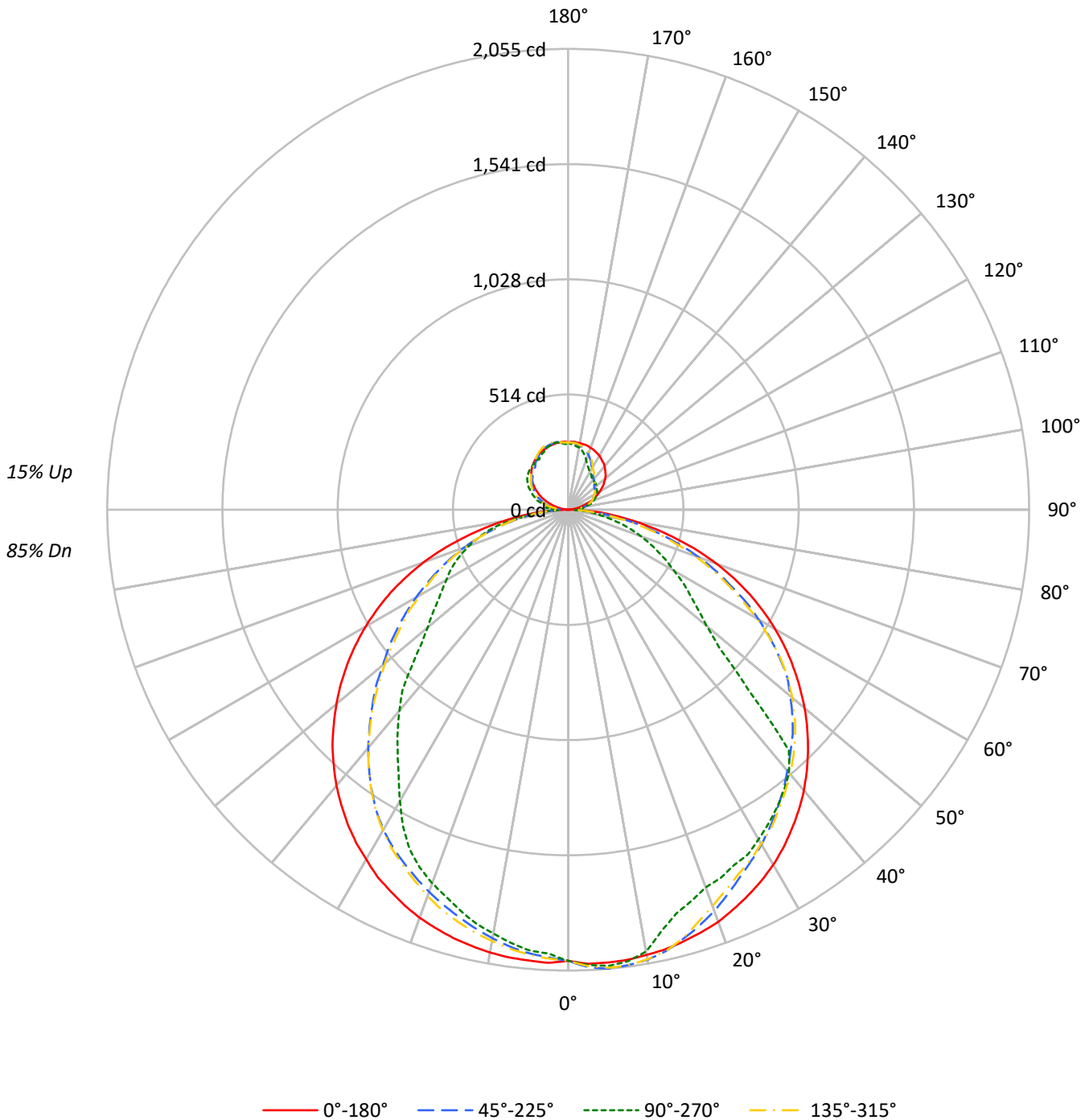
Lumens per Lamp: N/A
Luminaire Lumens: 6673.0 lumens
Efficiency: N/A
Efficacy: 107.8 lumens/watt
Spacing Criteria (0/90/45): 1.34 / 1.19 / 1.36
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')
CIE Type: Semi-Direct

Input Watts (W): 61.9
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°	11397	11397	11397	11397
5°	11527	11613	11478	11220
10°	11598	11511	11536	11040
15°	11686	10928	11598	10864
20°	11791	10804	11674	10687
25°	11862	10933	11727	10448
30°	11963	11103	11780	9807
35°	12022	11217	11843	9162
40°	12091	11326	11884	8650
45°	12115	9112	11907	7904
50°	12131	7081	11884	7214
55°	12105	6552	11871	7000
60°	12081	6175	11812	7102
65°	11953	5920	11695	7449
70°	11631	5708	11346	7778
75°	10892	5376	10561	8204
80°	9908	4920	9487	7801
85°	9659	5324	8678	7001



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	191.2	2.9
10°-20°	543.1	8.1
20°-30°	822.1	12.3
30°-40°	992.7	14.9
40°-50°	1013.5	15.2
50°-60°	886.1	13.3
60°-70°	686.8	10.3
70°-80°	412.9	6.2
80°-90°	127.5	1.9
90°-100°	53.7	0.8
100°-110°	102.8	1.5
110°-120°	139.6	2.1
120°-130°	158.7	2.4
130°-140°	161.0	2.4
140°-150°	148.2	2.2
150°-160°	122.2	1.8
160°-170°	82.2	1.2
170°-180°	28.6	0.4
0°-30°	1556.5	23.3
0°-40°	2549.2	38.2
0°-60°	4448.9	66.7
0°-90°	5676.1	85.1
90°-120°	296.1	4.4
90°-150°	763.9	11.4
90°-180°	997.0	14.9
0°-180°	6673.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2012	2012	2012	2012	2012	
5°	2027	2042	2018	1973	2027	193
15°	1992	1863	1977	1852	1992	563
25°	1898	1749	1876	1672	1898	876
35°	1738	1622	1712	1325	1738	1088
45°	1512	1137	1486	986	1512	1166
55°	1226	663	1202	709	1226	1095
65°	892	442	872	556	892	880
75°	498	246	482	375	498	528
85°	149	82	134	108	149	150
90°	2	45	2	52	2	10
95°	13	62	13	99	13	16
105°	69	106	67	134	69	74
115°	134	136	131	181	134	132
125°	192	155	187	222	192	170
135°	235	170	233	246	235	181
145°	265	181	263	261	265	166
155°	286	211	284	276	286	132
165°	299	263	297	299	299	84
175°	304	289	304	297	304	29
180°	299	299	299	299	299	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2011.8	2011.8	2011.8	2011.8	2011.8	2011.8	2011.8	2011.8	2011.8	2011.8	2011.8
2.5°	2026.9	2016.1	2042.0	2046.3	2031.2	2035.5	2037.7	2014.0	2022.6	1990.3	1998.9
5°	2026.9	2024.7	2054.9	2050.6	2042.0	2044.1	2050.6	2022.6	2018.3	1979.5	1986.0
7.5°	2024.7	2029.1	2048.4	2044.1	2031.2	2037.7	2048.4	2026.9	2014.0	1968.7	1966.6
10°	2016.1	2022.6	2037.7	2024.7	2001.0	2011.8	2035.5	2022.6	2005.4	1951.5	1940.7
12.5°	2007.5	2011.8	2016.1	1962.3	1923.5	1949.4	2016.1	2011.8	1992.4	1932.1	1912.7
15°	1992.4	1998.9	1981.7	1904.1	1863.2	1889.0	1977.4	1994.6	1977.4	1904.1	1880.4
17.5°	1975.2	1981.7	1945.0	1858.9	1828.7	1841.7	1927.8	1973.0	1958.0	1878.3	1848.1
20°	1955.8	1962.3	1904.1	1811.5	1792.1	1802.9	1880.4	1949.4	1936.4	1848.1	1813.7
22.5°	1927.8	1938.6	1856.7	1779.2	1777.0	1777.0	1835.2	1921.4	1908.4	1811.5	1774.9
25°	1897.7	1908.4	1809.3	1749.0	1749.0	1749.0	1794.3	1884.7	1876.1	1772.7	1736.1
27.5°	1865.3	1876.1	1766.3	1727.5	1734.0	1723.2	1759.8	1843.8	1843.8	1734.0	1695.2
30°	1828.7	1839.5	1723.2	1693.0	1697.3	1693.0	1721.0	1800.7	1800.7	1688.7	1647.8
32.5°	1785.7	1796.4	1675.8	1652.1	1660.7	1656.4	1684.4	1757.6	1759.8	1641.3	1591.8
35°	1738.3	1751.2	1626.3	1613.3	1621.9	1615.5	1634.9	1712.4	1712.4	1589.6	1527.2
37.5°	1688.7	1701.6	1574.6	1570.3	1578.9	1572.4	1587.5	1665.0	1660.7	1535.8	1458.2
40°	1634.9	1649.9	1520.7	1520.7	1531.5	1527.2	1540.1	1615.5	1606.9	1481.9	1387.2
42.5°	1574.6	1593.9	1466.9	1469.0	1456.1	1473.3	1486.2	1563.8	1546.6	1421.6	1309.6
45°	1512.1	1535.8	1415.2	1376.4	1137.3	1361.3	1430.2	1512.1	1486.2	1361.3	1234.2
47.5°	1445.3	1475.5	1354.9	1212.7	915.4	1193.3	1369.9	1447.5	1417.3	1296.7	1161.0
50°	1376.4	1410.9	1292.4	1072.7	803.4	1051.1	1303.2	1382.9	1348.4	1229.9	1077.0
52.5°	1301.0	1339.8	1232.1	949.9	728.0	930.5	1234.2	1320.4	1277.3	1158.8	1008.1
55°	1225.6	1266.5	1150.2	844.4	663.4	827.1	1154.5	1240.7	1201.9	1085.6	932.7
57.5°	1148.1	1189.0	1068.4	751.7	607.4	734.5	1064.1	1167.5	1124.4	1010.2	857.3
60°	1066.2	1107.1	980.1	667.7	545.0	654.8	971.4	1085.6	1042.5	932.7	784.0
62.5°	980.1	1021.0	896.1	590.2	493.3	579.4	870.2	1005.9	958.5	850.8	708.7
65°	891.7	921.9	797.0	517.0	441.6	508.3	779.7	906.8	872.4	764.7	637.6
67.5°	799.1	829.3	710.8	452.3	392.0	443.7	691.4	818.5	779.7	680.7	566.5
70°	702.2	728.0	620.3	389.9	344.6	383.4	598.8	719.4	685.0	592.3	491.1
72.5°	603.1	626.8	523.4	331.7	295.1	327.4	501.9	620.3	585.9	499.7	422.2
75°	497.6	521.3	433.0	273.6	245.6	269.2	413.6	514.8	482.5	411.4	351.1
77.5°	398.5	426.5	342.5	215.4	196.0	211.1	325.3	415.7	383.4	329.6	282.2
80°	303.7	327.4	254.2	163.7	150.8	161.5	236.9	316.6	290.8	254.2	219.7
82.5°	219.7	232.6	174.5	120.6	114.2	118.5	161.5	224.0	211.1	183.1	161.5
85°	148.6	146.5	107.7	84.0	81.9	84.0	96.9	135.7	133.5	122.8	103.4
87.5°	62.5	58.2	49.5	34.5	30.2	32.3	38.8	51.7	49.5	51.7	49.5
90°	2.2	21.5	34.5	43.1	45.2	43.1	34.5	21.5	2.2	23.7	38.8
92.5°	4.3	28.0	40.9	47.4	51.7	47.4	38.8	28.0	4.3	36.6	38.8
95°	12.9	38.8	47.4	58.2	62.5	58.2	47.4	36.6	12.9	32.3	58.2
97.5°	25.8	49.5	56.0	64.6	66.8	62.5	53.8	49.5	23.7	58.2	60.3
100°	38.8	62.5	73.2	73.2	75.4	73.2	71.1	60.3	36.6	64.6	73.2
102.5°	53.8	71.1	84.0	90.5	90.5	90.5	84.0	71.1	49.5	79.7	101.2
105°	68.9	77.5	92.6	101.2	105.5	101.2	92.6	79.7	66.8	92.6	107.7
107.5°	86.2	84.0	101.2	109.9	114.2	109.9	101.2	86.2	81.9	103.4	120.6
110°	103.4	92.6	109.9	118.5	120.6	118.5	109.9	92.6	99.1	116.3	133.5



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CATALOG NUMBER: 4WSL-LD2-65-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°	118.5	99.1	118.5	127.1	129.2	127.1	118.5	101.2	114.2	124.9	146.5
115°	133.5	105.5	122.8	133.5	135.7	133.5	122.8	107.7	131.4	135.7	157.2
117.5°	148.6	114.2	127.1	140.0	142.2	140.0	129.2	116.3	146.5	148.6	168.0
120°	163.7	124.9	133.5	144.3	148.6	146.5	133.5	127.1	159.4	159.4	176.6
122.5°	176.6	133.5	140.0	148.6	152.9	148.6	140.0	137.9	174.5	170.2	187.4
125°	191.7	142.2	144.3	152.9	155.1	152.9	146.5	144.3	187.4	178.8	193.9
127.5°	202.5	152.9	148.6	157.2	159.4	157.2	150.8	155.1	200.3	196.0	200.3
130°	215.4	163.7	152.9	161.5	163.7	163.7	152.9	168.0	211.1	208.9	208.9
132.5°	226.2	174.5	157.2	165.9	168.0	168.0	159.4	176.6	221.9	219.7	215.4
135°	234.8	189.6	165.9	165.9	170.2	170.2	168.0	191.7	232.6	230.5	226.2
137.5°	243.4	202.5	172.3	168.0	170.2	170.2	176.6	204.6	241.2	241.2	232.6
140°	252.0	215.4	176.6	172.3	172.3	176.6	183.1	217.6	249.9	249.9	234.8
142.5°	260.6	226.2	183.1	178.8	174.5	183.1	189.6	230.5	256.3	258.5	241.2
145°	264.9	236.9	191.7	185.2	180.9	191.7	200.3	241.2	262.8	267.1	254.2
147.5°	271.4	247.7	202.5	189.6	189.6	196.0	208.9	249.9	269.2	273.6	260.6
150°	277.9	256.3	211.1	196.0	191.7	202.5	217.6	258.5	275.7	280.0	269.2
152.5°	282.2	264.9	224.0	204.6	200.3	213.2	232.6	264.9	280.0	284.3	277.9
155°	286.5	271.4	239.1	213.2	211.1	221.9	245.6	271.4	284.3	288.6	284.3
157.5°	290.8	277.9	249.9	226.2	217.6	234.8	256.3	280.0	288.6	292.9	290.8
160°	292.9	282.2	262.8	239.1	234.8	249.9	267.1	282.2	290.8	297.2	295.1
162.5°	297.2	286.5	271.4	254.2	249.9	262.8	275.7	288.6	295.1	299.4	299.4
165°	299.4	290.8	280.0	267.1	262.8	275.7	282.2	292.9	297.2	299.4	301.6
167.5°	299.4	295.1	286.5	275.7	273.6	284.3	290.8	297.2	299.4	299.4	303.7
170°	301.6	297.2	290.8	284.3	282.2	290.8	292.9	299.4	301.6	299.4	305.9
172.5°	301.6	299.4	295.1	288.6	284.3	295.1	297.2	299.4	301.6	299.4	303.7
175°	303.7	299.4	299.4	295.1	288.6	299.4	299.4	299.4	303.7	299.4	301.6
177.5°	303.7	299.4	299.4	297.2	292.9	299.4	299.4	299.4	303.7	299.4	301.6
180°	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4



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CATALOG NUMBER: 4WSL-LD2-65-UPL8-UNV-L830-CD1-U

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2011.8	2011.8	2011.8	2011.8	2011.8	2011.8
2.5°	1996.7	1981.7	1986.0	2003.2	1996.7	2026.9
5°	1981.7	1973.0	1973.0	1992.4	1990.3	2026.9
7.5°	1958.0	1949.4	1953.7	1975.2	1979.5	2024.7
10°	1930.0	1919.2	1923.5	1953.7	1964.4	2016.1
12.5°	1899.8	1891.2	1895.5	1930.0	1945.0	2007.5
15°	1865.3	1852.4	1865.3	1902.0	1921.4	1992.4
17.5°	1826.6	1809.3	1824.4	1871.8	1895.5	1975.2
20°	1787.8	1772.7	1781.3	1833.0	1867.5	1955.8
22.5°	1749.0	1727.5	1736.1	1790.0	1833.0	1927.8
25°	1703.8	1671.5	1688.7	1746.9	1796.4	1897.7
27.5°	1643.5	1593.9	1630.6	1703.8	1753.3	1865.3
30°	1563.8	1499.2	1553.0	1652.1	1708.1	1828.7
32.5°	1475.5	1406.5	1466.9	1593.9	1660.7	1785.7
35°	1387.2	1324.7	1378.5	1529.3	1611.2	1738.3
37.5°	1303.2	1249.3	1298.9	1460.4	1559.5	1688.7
40°	1223.5	1169.6	1221.3	1385.0	1503.5	1634.9
42.5°	1143.8	1094.2	1143.8	1305.3	1445.3	1574.6
45°	1064.1	986.5	1059.8	1227.8	1382.9	1512.1
47.5°	977.9	887.4	971.4	1143.8	1316.1	1445.3
50°	896.1	818.5	891.7	1066.2	1247.2	1376.4
52.5°	825.0	762.5	820.7	986.5	1176.1	1301.0
55°	758.2	708.7	758.2	909.0	1100.7	1225.6
57.5°	697.9	665.6	700.0	842.2	1023.1	1148.1
60°	646.2	626.8	648.3	760.4	945.6	1066.2
62.5°	596.7	594.5	598.8	695.7	863.7	980.1
65°	545.0	555.7	545.0	626.8	781.9	891.7
67.5°	493.3	514.8	497.6	557.9	693.6	799.1
70°	445.9	469.6	445.9	486.8	605.3	702.2
72.5°	392.0	422.2	392.0	420.0	512.6	603.1
75°	340.3	374.8	342.5	351.1	424.3	497.6
77.5°	284.3	316.6	290.8	284.3	342.5	398.5
80°	226.2	239.1	226.2	224.0	264.9	303.7
82.5°	157.2	168.0	157.2	163.7	193.9	219.7
85°	103.4	107.7	103.4	105.5	129.2	148.6
87.5°	43.1	43.1	43.1	53.8	58.2	62.5
90°	47.4	51.7	47.4	38.8	23.7	2.2
92.5°	49.5	53.8	49.5	43.1	28.0	4.3
95°	88.3	99.1	84.0	53.8	45.2	12.9
97.5°	71.1	77.5	73.2	62.5	56.0	25.8
100°	84.0	90.5	84.0	88.3	68.9	38.8
102.5°	99.1	103.4	101.2	103.4	84.0	53.8
105°	129.2	133.5	129.2	112.0	96.9	68.9
107.5°	137.9	148.6	140.0	124.9	109.9	86.2
110°	148.6	157.2	150.8	137.9	120.6	103.4



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	159.4	170.2	163.7	152.9	129.2	118.5
115°	172.3	180.9	176.6	163.7	142.2	133.5
117.5°	185.2	191.7	187.4	172.3	155.1	148.6
120°	196.0	204.6	200.3	183.1	165.9	163.7
122.5°	204.6	213.2	208.9	193.9	176.6	176.6
125°	213.2	221.9	217.6	202.5	185.2	191.7
127.5°	219.7	230.5	226.2	208.9	204.6	202.5
130°	228.3	234.8	232.6	215.4	215.4	215.4
132.5°	232.6	241.2	236.9	224.0	228.3	226.2
135°	234.8	245.6	241.2	234.8	239.1	234.8
137.5°	239.1	247.7	245.6	241.2	249.9	243.4
140°	245.6	249.9	252.0	245.6	258.5	252.0
142.5°	252.0	254.2	258.5	252.0	267.1	260.6
145°	256.3	260.6	264.9	264.9	273.6	264.9
147.5°	256.3	262.8	262.8	269.2	282.2	271.4
150°	262.8	258.5	271.4	277.9	286.5	277.9
152.5°	271.4	269.2	280.0	286.5	290.8	282.2
155°	273.6	275.7	282.2	292.9	295.1	286.5
157.5°	282.2	280.0	290.8	299.4	299.4	290.8
160°	288.6	288.6	299.4	303.7	301.6	292.9
162.5°	295.1	295.1	305.9	305.9	303.7	297.2
165°	299.4	299.4	310.2	308.0	303.7	299.4
167.5°	301.6	303.7	312.3	310.2	303.7	299.4
170°	303.7	303.7	312.3	308.0	303.7	301.6
172.5°	303.7	301.6	310.2	305.9	301.6	301.6
175°	301.6	297.2	305.9	301.6	301.6	303.7
177.5°	299.4	292.9	299.4	299.4	301.6	303.7
180°	299.4	299.4	299.4	299.4	299.4	299.4

(END OF REPORT)