

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: P192516

Luminaire Tested: **4WSL-LD2-65-UPL15-UNV-L850-CD1-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P192516
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-LD2-65-UPL15-UNV-L850-CD1-U
Description: 4FT Linear Wavestream System, 15% Uplight, L850
Light Source: (238) 5000K CCT, 80 CRI LEDS
EL236N0119D850
Ballast/Driver: OSRAM
OT85W1202772A0DIML

Summary

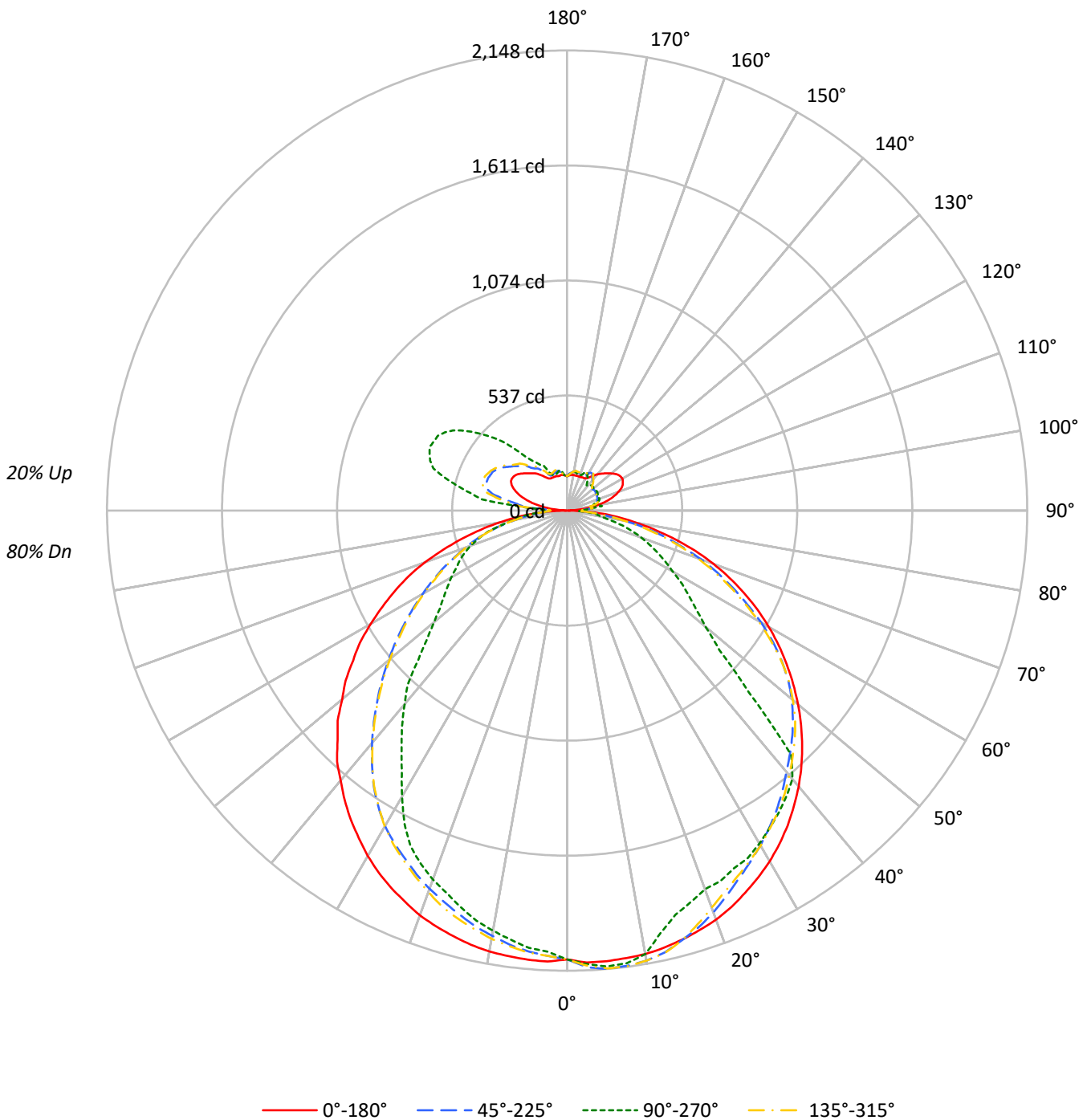
Lumens per Lamp: N/A
Luminaire Lumens: 7414.0 lumens
Efficiency: N/A
Efficacy: 119.8 lumens/watt
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')
CIE Type: Semi-Direct

Input Watts (W): 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	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°	11868	11868	11868	11868
5°	12009	12146	11968	11654
10°	12093	12093	12024	11456
15°	12160	11454	12061	11243
20°	12253	11340	12122	11049
25°	12298	11517	12148	10810
30°	12367	11738	12178	10085
35°	12409	11910	12176	9315
40°	12433	12095	12166	8733
45°	12429	9616	12140	7862
50°	12401	7419	12083	7143
55°	12353	6842	12044	6937
60°	12317	6458	11991	7085
65°	12220	6255	11897	7416
70°	12032	6096	11712	7928
75°	11476	5792	11109	8423
80°	10750	5256	10437	8398
85°	10790	6877	10004	10004



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	199.4	2.7
10°-20°	565.8	7.6
20°-30°	855.0	11.5
30°-40°	1029.0	13.9
40°-50°	1046.5	14.1
50°-60°	910.8	12.3
60°-70°	710.5	9.6
70°-80°	439.2	5.9
80°-90°	154.5	2.1
90°-100°	145.5	2.0
100°-110°	281.7	3.8
110°-120°	308.2	4.2
120°-130°	270.2	3.6
130°-140°	202.5	2.7
140°-150°	138.6	1.9
150°-160°	88.3	1.2
160°-170°	51.6	0.7
170°-180°	16.6	0.2
0°-30°	1620.1	21.9
0°-40°	2649.1	35.7
0°-60°	4606.4	62.1
0°-90°	5910.7	79.7
90°-120°	735.4	9.9
90°-150°	1346.8	18.2
90°-180°	1503.0	20.3
0°-180°	7414.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2095	2095	2095	2095	2095	
5°	2112	2136	2104	2049	2112	201
15°	2073	1953	2056	1917	2073	586
25°	1967	1842	1943	1729	1967	908
35°	1794	1722	1761	1347	1794	1123
45°	1551	1200	1515	981	1551	1197
55°	1251	693	1219	702	1251	1119
65°	912	467	888	553	912	901
75°	524	265	508	385	524	555
85°	166	106	154	154	166	166
90°	2	67	2	106	2	13
95°	65	111	50	221	65	67
105°	207	137	200	589	207	216
115°	286	156	286	707	286	280
125°	291	164	291	652	291	259
135°	245	164	245	476	245	191
145°	192	164	197	284	192	123
155°	171	197	168	195	171	79
165°	168	178	166	180	168	48
175°	166	173	166	168	166	16
180°	161	161	161	161	161	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2094.9	2094.9	2094.9	2094.9	2094.9	2094.9	2094.9	2094.9	2094.9	2094.9	2094.9
2.5°	2111.7	2102.1	2133.4	2135.8	2119.0	2126.2	2126.2	2099.7	2106.9	2075.7	2080.5
5°	2111.7	2114.2	2147.8	2145.4	2135.8	2138.2	2145.4	2111.7	2104.5	2061.2	2066.1
7.5°	2106.9	2119.0	2143.0	2140.6	2131.0	2133.4	2145.4	2116.6	2097.3	2046.8	2044.4
10°	2102.1	2114.2	2133.4	2121.4	2102.1	2109.3	2133.4	2114.2	2090.1	2030.0	2015.5
12.5°	2090.1	2102.1	2111.7	2051.6	2017.9	2046.8	2114.2	2102.1	2075.7	2005.9	1986.7
15°	2073.3	2087.7	2075.7	1991.5	1953.0	1979.5	2075.7	2085.3	2056.4	1974.7	1950.6
17.5°	2054.0	2070.9	2039.6	1945.8	1916.9	1929.0	2025.2	2063.6	2034.8	1943.4	1914.5
20°	2032.4	2051.6	1996.3	1897.7	1880.9	1890.5	1972.2	2039.6	2010.7	1909.7	1878.4
22.5°	2003.5	2025.2	1945.8	1864.0	1871.2	1864.0	1924.1	2008.3	1977.1	1873.6	1837.6
25°	1967.4	1991.5	1895.3	1835.2	1842.4	1840.0	1883.3	1967.4	1943.4	1830.3	1791.9
27.5°	1931.4	1955.4	1849.6	1815.9	1827.9	1813.5	1844.8	1924.1	1904.9	1784.6	1748.6
30°	1890.5	1916.9	1803.9	1782.2	1794.3	1784.6	1806.3	1880.9	1861.6	1736.5	1700.5
32.5°	1844.8	1871.2	1755.8	1741.4	1758.2	1746.2	1760.6	1832.7	1811.1	1683.6	1640.3
35°	1794.3	1820.7	1705.3	1705.3	1722.1	1707.7	1714.9	1784.6	1760.6	1630.7	1573.0
37.5°	1738.9	1767.8	1650.0	1662.0	1681.2	1666.8	1666.8	1734.1	1705.3	1573.0	1496.0
40°	1681.2	1712.5	1592.2	1618.7	1635.5	1618.7	1613.9	1681.2	1645.1	1515.3	1416.7
42.5°	1618.7	1652.4	1539.3	1570.6	1548.9	1570.6	1558.6	1625.9	1589.8	1452.7	1334.9
45°	1551.3	1594.6	1486.4	1467.2	1200.2	1452.7	1503.2	1568.2	1515.3	1392.6	1253.1
47.5°	1481.6	1527.3	1428.7	1289.2	964.5	1274.7	1443.1	1505.6	1452.7	1327.7	1171.3
50°	1407.0	1459.9	1368.5	1135.2	841.8	1120.8	1375.8	1440.7	1371.0	1257.9	1089.5
52.5°	1330.1	1387.8	1301.2	1003.0	760.0	988.5	1303.6	1371.0	1303.6	1183.3	1010.2
55°	1250.7	1310.8	1221.8	880.3	692.7	877.9	1219.4	1296.4	1219.4	1108.8	930.8
57.5°	1171.3	1238.7	1137.7	791.3	635.0	779.3	1125.6	1219.4	1147.3	1031.8	853.8
60°	1087.1	1149.7	1046.3	695.1	570.0	692.7	1031.8	1140.1	1058.3	952.5	779.3
62.5°	1000.6	1070.3	947.6	610.9	517.1	608.5	930.8	1051.1	971.7	870.7	707.1
65°	911.6	978.9	853.8	543.6	466.6	538.8	837.0	959.7	887.5	788.9	639.8
67.5°	820.2	882.7	760.0	478.6	416.1	473.8	740.8	863.5	800.9	704.7	567.6
70°	726.4	784.1	663.8	416.1	368.0	413.7	647.0	764.8	707.1	618.1	502.7
72.5°	627.8	680.7	562.8	356.0	317.5	353.6	548.4	663.8	603.7	526.7	445.0
75°	524.3	574.8	469.0	295.8	264.6	293.4	454.6	555.6	507.5	442.6	377.6
77.5°	425.7	476.2	372.8	228.5	202.0	223.7	356.0	454.6	413.7	358.4	307.9
80°	329.5	370.4	274.2	170.8	161.1	170.8	267.0	348.8	319.9	281.4	240.5
82.5°	242.9	267.0	185.2	139.5	139.5	139.5	180.4	247.7	235.7	209.3	182.8
85°	166.0	166.0	125.1	105.8	105.8	105.8	122.7	146.7	153.9	139.5	139.5
87.5°	69.8	72.2	64.9	57.7	55.3	57.7	62.5	60.1	60.1	67.3	84.2
90°	2.4	31.3	52.9	64.9	67.3	62.5	48.1	28.9	2.4	40.9	74.6
92.5°	16.8	67.3	62.5	81.8	84.2	77.0	64.9	52.9	9.6	74.6	79.4
95°	64.9	79.4	122.7	125.1	110.6	105.8	120.3	74.6	50.5	101.0	202.0
97.5°	103.4	120.3	110.6	144.3	163.6	144.3	115.4	115.4	96.2	156.3	235.7
100°	141.9	127.5	113.0	125.1	144.3	127.5	108.2	127.5	134.7	182.8	288.6
102.5°	178.0	141.9	141.9	122.7	125.1	120.3	137.1	139.5	168.4	206.8	356.0
105°	206.8	146.7	149.1	139.5	137.1	139.5	149.1	149.1	199.6	228.5	387.2
107.5°	233.3	151.5	146.7	153.9	156.3	153.9	146.7	151.5	228.5	242.9	394.4
110°	254.9	153.9	149.1	153.9	161.1	153.9	149.1	156.3	252.5	257.4	399.3



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CATALOG NUMBER: 4WSL-LD2-65-UPL15-UNV-L850-CD1-U

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	274.2	156.3	153.9	151.5	158.7	151.5	153.9	161.1	271.8	264.6	399.3
115°	286.2	158.7	153.9	153.9	156.3	153.9	156.3	163.6	286.2	267.0	394.4
117.5°	293.4	163.6	156.3	158.7	161.1	158.7	156.3	168.4	295.8	276.6	392.0
120°	298.2	180.4	156.3	161.1	163.6	161.1	156.3	182.8	298.2	281.4	382.4
122.5°	295.8	187.6	158.7	161.1	166.0	161.1	158.7	190.0	295.8	279.0	370.4
125°	291.0	194.8	158.7	158.7	163.6	161.1	161.1	194.8	291.0	274.2	353.6
127.5°	281.4	211.7	158.7	161.1	161.1	161.1	161.1	209.3	281.4	276.6	336.7
130°	269.4	223.7	153.9	163.6	161.1	166.0	158.7	223.7	269.4	269.4	322.3
132.5°	257.4	228.5	153.9	163.6	163.6	166.0	156.3	228.5	257.4	259.8	307.9
135°	245.3	233.3	163.6	161.1	163.6	163.6	166.0	233.3	245.3	250.1	298.2
137.5°	233.3	235.7	175.6	153.9	161.1	156.3	180.4	235.7	235.7	235.7	283.8
140°	221.3	233.3	185.2	149.1	151.5	153.9	190.0	235.7	226.1	228.5	259.8
142.5°	206.8	226.1	192.4	161.1	149.1	166.0	197.2	233.3	211.7	221.3	247.7
145°	192.4	218.9	206.8	178.0	163.6	185.2	214.1	226.1	197.2	216.5	240.5
147.5°	180.4	206.8	209.3	187.6	180.4	194.8	216.5	216.5	182.8	206.8	223.7
150°	173.2	194.8	202.0	194.8	187.6	204.4	211.7	199.6	173.2	199.6	209.3
152.5°	170.8	185.2	185.2	204.4	202.0	214.1	194.8	190.0	168.4	192.4	190.0
155°	170.8	182.8	178.0	187.6	197.2	197.2	185.2	185.2	168.4	192.4	180.4
157.5°	168.4	185.2	178.0	175.6	180.4	185.2	185.2	187.6	168.4	187.6	180.4
160°	168.4	187.6	180.4	173.2	175.6	182.8	187.6	187.6	168.4	187.6	182.8
162.5°	168.4	182.8	182.8	175.6	175.6	185.2	187.6	185.2	168.4	182.8	187.6
165°	168.4	182.8	185.2	180.4	178.0	190.0	187.6	180.4	166.0	180.4	190.0
167.5°	168.4	178.0	187.6	182.8	182.8	190.0	190.0	178.0	166.0	173.2	190.0
170°	168.4	175.6	185.2	182.8	185.2	192.4	185.2	175.6	168.4	170.8	182.8
172.5°	168.4	170.8	180.4	182.8	182.8	187.6	180.4	170.8	168.4	166.0	175.6
175°	166.0	170.8	175.6	175.6	173.2	180.4	173.2	168.4	166.0	163.6	168.4
177.5°	163.6	166.0	170.8	170.8	166.0	170.8	166.0	163.6	163.6	161.1	166.0
180°	161.1	161.1	161.1	161.1	161.1	161.1	161.1	161.1	161.1	161.1	161.1



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2094.9	2094.9	2094.9	2094.9	2094.9	2094.9
2.5°	2078.1	2061.2	2066.1	2080.5	2078.1	2111.7
5°	2056.4	2049.2	2049.2	2070.9	2068.5	2111.7
7.5°	2032.4	2020.4	2027.6	2051.6	2058.8	2106.9
10°	2001.1	1991.5	1993.9	2030.0	2042.0	2102.1
12.5°	1969.8	1960.2	1967.4	2001.1	2017.9	2090.1
15°	1933.8	1916.9	1936.2	1972.2	1993.9	2073.3
17.5°	1890.5	1871.2	1890.5	1938.6	1965.0	2054.0
20°	1852.0	1832.7	1844.8	1895.3	1931.4	2032.4
22.5°	1808.7	1784.6	1794.3	1849.6	1895.3	2003.5
25°	1760.6	1729.3	1743.8	1803.9	1854.4	1967.4
27.5°	1698.1	1645.1	1681.2	1755.8	1803.9	1931.4
30°	1611.5	1541.7	1599.4	1702.9	1758.2	1890.5
32.5°	1510.5	1435.9	1498.4	1637.9	1705.3	1844.8
35°	1411.8	1346.9	1404.6	1570.6	1652.4	1794.3
37.5°	1325.3	1265.1	1318.0	1493.6	1594.6	1738.9
40°	1236.3	1180.9	1233.9	1411.8	1536.9	1681.2
42.5°	1154.5	1101.6	1152.1	1330.1	1474.4	1618.7
45°	1067.9	981.3	1063.1	1245.9	1407.0	1551.3
47.5°	976.5	885.1	969.3	1164.1	1339.7	1481.6
50°	892.3	810.5	887.5	1079.9	1267.5	1407.0
52.5°	817.8	748.0	815.4	995.7	1193.0	1330.1
55°	748.0	702.3	750.4	918.8	1123.2	1250.7
57.5°	692.7	661.4	695.1	844.2	1046.3	1171.3
60°	644.6	625.3	647.0	769.7	964.5	1087.1
62.5°	591.7	584.5	591.7	697.5	885.1	1000.6
65°	546.0	553.2	546.0	632.6	800.9	911.6
67.5°	502.7	519.5	505.1	562.8	716.7	820.2
70°	454.6	478.6	457.0	500.3	630.2	726.4
72.5°	404.1	432.9	404.1	440.1	538.8	627.8
75°	351.2	384.8	353.6	375.2	452.2	524.3
77.5°	293.4	315.1	298.2	305.5	368.0	425.7
80°	233.3	257.4	235.7	240.5	291.0	329.5
82.5°	194.8	211.7	197.2	182.8	216.5	242.9
85°	144.3	153.9	149.1	141.9	149.1	166.0
87.5°	89.0	93.8	89.0	89.0	77.0	69.8
90°	98.6	105.8	98.6	77.0	43.3	2.4
92.5°	101.0	110.6	101.0	84.2	81.8	16.8
95°	226.1	221.3	240.5	218.9	125.1	64.9
97.5°	351.2	401.7	363.2	262.2	168.4	103.4
100°	404.1	452.2	420.9	327.1	192.4	141.9
102.5°	466.6	519.5	485.8	382.4	216.5	178.0
105°	543.6	589.3	560.4	404.1	238.1	206.8
107.5°	584.5	654.2	596.5	413.7	252.5	233.3
110°	606.1	680.7	625.3	416.1	264.6	254.9



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	622.9	695.1	637.4	416.1	269.4	274.2
115°	622.9	707.1	637.4	408.9	276.6	286.2
117.5°	622.9	699.9	637.4	401.7	286.2	293.4
120°	601.3	697.5	620.5	392.0	288.6	298.2
122.5°	584.5	678.3	596.5	380.0	288.6	295.8
125°	553.2	651.8	567.6	365.6	283.8	291.0
127.5°	519.5	613.3	531.5	348.8	286.2	281.4
130°	488.3	570.0	495.5	331.9	276.6	269.4
132.5°	447.4	521.9	454.6	319.9	267.0	257.4
135°	408.9	476.2	418.5	310.3	254.9	245.3
137.5°	368.0	428.1	377.6	291.0	242.9	233.3
140°	319.9	368.0	329.5	269.4	235.7	221.3
142.5°	288.6	315.1	298.2	259.8	226.1	206.8
145°	269.4	283.8	276.6	250.1	221.3	192.4
147.5°	250.1	264.6	257.4	230.9	209.3	180.4
150°	242.9	242.9	252.5	214.1	202.0	173.2
152.5°	216.5	235.7	226.1	194.8	197.2	170.8
155°	185.2	194.8	194.8	187.6	197.2	170.8
157.5°	173.2	180.4	182.8	187.6	192.4	168.4
160°	173.2	175.6	182.8	190.0	190.0	168.4
162.5°	178.0	175.6	187.6	194.8	185.2	168.4
165°	182.8	180.4	192.4	197.2	180.4	168.4
167.5°	187.6	187.6	197.2	194.8	175.6	168.4
170°	187.6	192.4	197.2	187.6	173.2	168.4
172.5°	180.4	182.8	187.6	175.6	166.0	168.4
175°	170.8	168.4	175.6	168.4	166.0	166.0
177.5°	166.0	158.7	166.0	163.6	161.1	163.6
180°	161.1	161.1	161.1	161.1	161.1	161.1

(END OF REPORT)