

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: P192465

Luminaire Tested: **4WSL-LD2-60-UPL8-UNV-L830-CD1-U**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P192465  
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-LD2-60-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  
OT50W

**Summary**

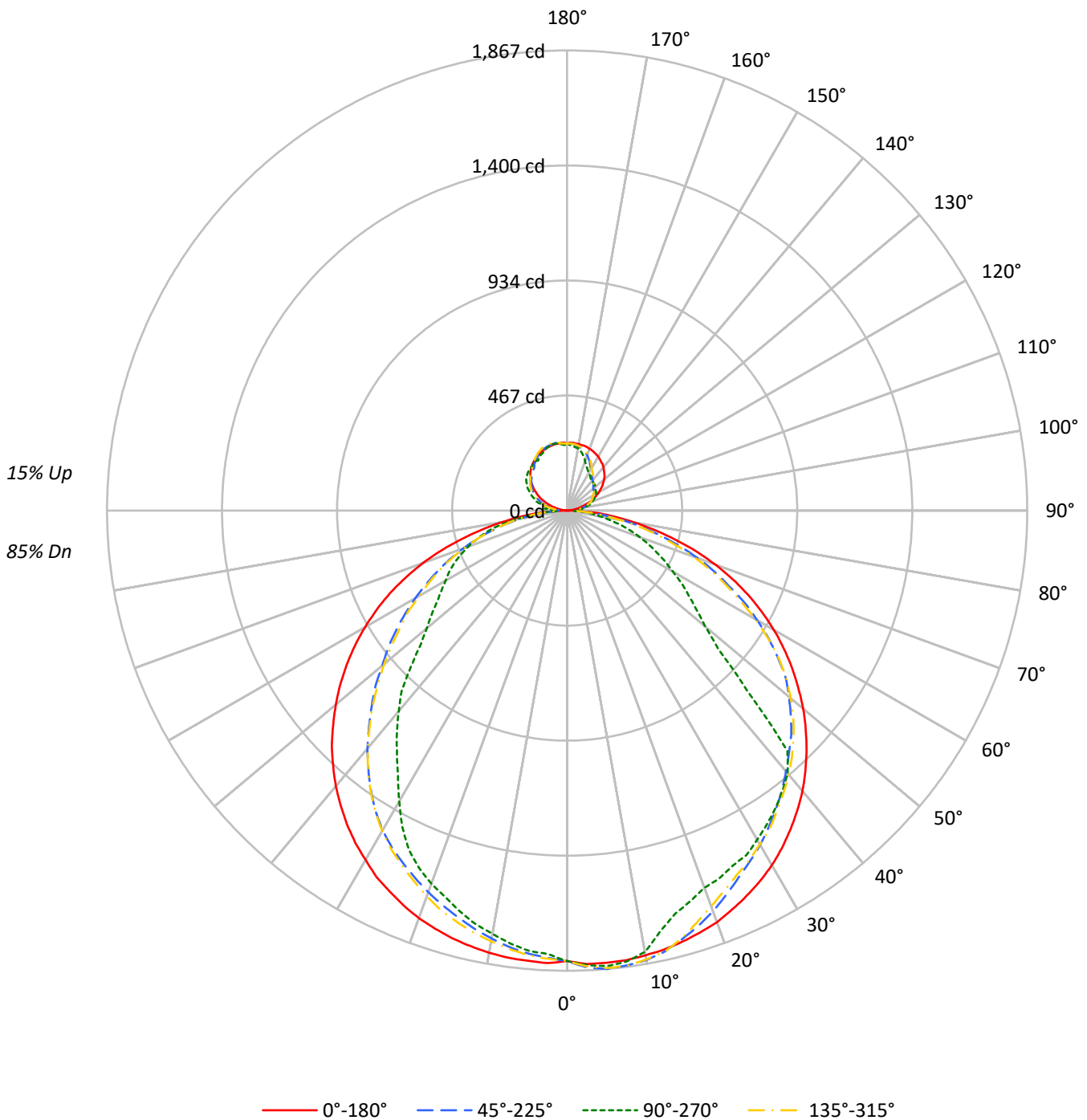
Lumens per Lamp: N/A  
Luminaire Lumens: 6063.0 lumens  
Efficiency: N/A  
Efficacy: 107.9 lumens/watt  
Spacing Criteria (0/90/45): 1.34 / 1.19 / 1.36  
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')  
CIE Type: Semi-Direct

Input Watts (W): 56.2  
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: P192465

CATALOG NUMBER: 4WSL-LD2-60-UPL8-UNV-L830-CD1-U

### Luminous Intensity Polar Plot





TEST NUMBER: P192465

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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20				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°	10355	10355	10355	10355
5°	10473	10551	10429	10195
10°	10538	10459	10481	10031
15°	10618	9929	10537	9871
20°	10713	9817	10607	9711
25°	10778	9933	10655	9493
30°	10870	10089	10703	8910
35°	10923	10192	10761	8324
40°	10985	10291	10797	7859
45°	11007	8279	10819	7181
50°	11022	6434	10797	6555
55°	10999	5954	10787	6360
60°	10977	5610	10732	6453
65°	10861	5378	10625	6768
70°	10568	5186	10309	7066
75°	9896	4883	9596	7453
80°	9001	4470	8619	7086
85°	8775	4836	7885	6364



TEST NUMBER: P192465

CATALOG NUMBER: 4WSL-LD2-60-UPL8-UNV-L830-CD1-U

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	173.8	2.9
10°-20°	493.4	8.1
20°-30°	747.0	12.3
30°-40°	902.0	14.9
40°-50°	920.9	15.2
50°-60°	805.1	13.3
60°-70°	624.0	10.3
70°-80°	375.2	6.2
80°-90°	115.8	1.9
90°-100°	48.8	0.8
100°-110°	93.4	1.5
110°-120°	126.8	2.1
120°-130°	144.2	2.4
130°-140°	146.3	2.4
140°-150°	134.6	2.2
150°-160°	111.1	1.8
160°-170°	74.7	1.2
170°-180°	26.0	0.4
0°-30°	1414.2	23.3
0°-40°	2316.2	38.2
0°-60°	4042.2	66.7
0°-90°	5157.2	85.1
90°-120°	269.0	4.4
90°-150°	694.1	11.4
90°-180°	906.0	14.9
0°-180°	6063.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1828	1828	1828	1828	1828	
5°	1842	1855	1834	1793	1842	175
15°	1810	1693	1797	1683	1810	512
25°	1724	1589	1705	1519	1724	796
35°	1579	1474	1556	1204	1579	989
45°	1374	1033	1350	896	1374	1060
55°	1114	603	1092	644	1114	995
65°	810	401	793	505	810	800
75°	452	223	438	340	452	480
85°	135	74	121	98	135	136
90°	2	41	2	47	2	9
95°	12	57	12	90	12	15
105°	63	96	61	121	63	67
115°	121	123	119	164	121	120
125°	174	141	170	202	174	155
135°	213	155	211	223	213	165
145°	241	164	239	237	241	151
155°	260	192	258	250	260	120
165°	272	239	270	272	272	77
175°	276	262	276	270	276	26
180°	272	272	272	272	272	



TEST NUMBER: P192465

CATALOG NUMBER: 4WSL-LD2-60-UPL8-UNV-L830-CD1-U

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1827.9	1827.9	1827.9	1827.9	1827.9	1827.9	1827.9	1827.9	1827.9	1827.9	1827.9
2.5°	1841.6	1831.8	1855.3	1859.2	1845.5	1849.4	1851.4	1829.9	1837.7	1808.3	1816.2
5°	1841.6	1839.7	1867.1	1863.1	1855.3	1857.3	1863.1	1837.7	1833.8	1798.6	1804.4
7.5°	1839.7	1843.6	1861.2	1857.3	1845.5	1851.4	1861.2	1841.6	1829.9	1788.8	1786.8
10°	1831.8	1837.7	1851.4	1839.7	1818.1	1827.9	1849.4	1837.7	1822.0	1773.1	1763.3
12.5°	1824.0	1827.9	1831.8	1782.9	1747.7	1771.2	1831.8	1827.9	1810.3	1755.5	1737.9
15°	1810.3	1816.2	1800.5	1730.1	1692.9	1716.4	1796.6	1812.3	1796.6	1730.1	1708.5
17.5°	1794.6	1800.5	1767.2	1689.0	1661.6	1673.3	1751.6	1792.7	1779.0	1706.6	1679.2
20°	1777.0	1782.9	1730.1	1645.9	1628.3	1638.1	1708.5	1771.2	1759.4	1679.2	1647.9
22.5°	1751.6	1761.4	1687.0	1616.5	1614.6	1614.6	1667.4	1745.7	1734.0	1645.9	1612.6
25°	1724.2	1734.0	1643.9	1589.1	1589.1	1589.1	1630.2	1712.4	1704.6	1610.7	1577.4
27.5°	1694.8	1704.6	1604.8	1569.6	1575.4	1565.7	1598.9	1675.3	1675.3	1575.4	1540.2
30°	1661.6	1671.3	1565.7	1538.3	1542.2	1538.3	1563.7	1636.1	1636.1	1534.3	1497.2
32.5°	1622.4	1632.2	1522.6	1501.1	1508.9	1505.0	1530.4	1597.0	1598.9	1491.3	1446.3
35°	1579.4	1591.1	1477.6	1465.9	1473.7	1467.8	1485.4	1555.9	1555.9	1444.3	1387.6
37.5°	1534.3	1546.1	1430.6	1426.7	1434.5	1428.7	1442.4	1512.8	1508.9	1395.4	1324.9
40°	1485.4	1499.1	1381.7	1381.7	1391.5	1387.6	1399.3	1467.8	1460.0	1346.5	1260.4
42.5°	1430.6	1448.2	1332.8	1334.7	1323.0	1338.6	1350.4	1420.8	1405.2	1291.7	1189.9
45°	1373.9	1395.4	1285.8	1250.6	1033.3	1236.9	1299.5	1373.9	1350.4	1236.9	1121.4
47.5°	1313.2	1340.6	1231.0	1101.8	831.8	1084.2	1244.7	1315.2	1287.8	1178.2	1054.9
50°	1250.6	1281.9	1174.2	974.6	730.0	955.1	1184.0	1256.4	1225.1	1117.5	978.5
52.5°	1182.1	1217.3	1119.4	863.1	661.5	845.5	1121.4	1199.7	1160.5	1052.9	915.9
55°	1113.6	1150.8	1045.1	767.2	602.8	751.5	1049.0	1127.3	1092.1	986.4	847.4
57.5°	1043.1	1080.3	970.7	683.0	551.9	667.4	966.8	1060.7	1021.6	917.9	778.9
60°	968.8	1005.9	890.5	606.7	495.1	595.0	882.6	986.4	947.2	847.4	712.4
62.5°	890.5	927.7	814.1	536.2	448.2	526.5	790.7	914.0	870.9	773.0	643.9
65°	810.2	837.6	724.1	469.7	401.2	461.9	708.5	823.9	792.6	694.8	579.3
67.5°	726.1	753.5	645.8	411.0	356.2	403.2	628.2	743.7	708.5	618.4	514.7
70°	638.0	661.5	563.6	354.2	313.1	348.4	544.1	653.7	622.4	538.2	446.2
72.5°	548.0	569.5	475.6	301.4	268.1	297.5	456.0	563.6	532.3	454.0	383.6
75°	452.1	473.6	393.4	248.5	223.1	244.6	375.8	467.7	438.4	373.8	319.0
77.5°	362.1	387.5	311.2	195.7	178.1	191.8	295.5	377.7	348.4	299.4	256.4
80°	275.9	297.5	230.9	148.7	137.0	146.8	215.3	287.7	264.2	230.9	199.6
82.5°	199.6	211.4	158.5	109.6	103.7	107.6	146.8	203.5	191.8	166.4	146.8
85°	135.0	133.1	97.9	76.3	74.4	76.3	88.1	123.3	121.3	111.6	93.9
87.5°	56.8	52.8	45.0	31.3	27.4	29.4	35.2	47.0	45.0	47.0	45.0
90°	2.0	19.6	31.3	39.1	41.1	39.1	31.3	19.6	2.0	21.5	35.2
92.5°	3.9	25.4	37.2	43.1	47.0	43.1	35.2	25.4	3.9	33.3	35.2
95°	11.7	35.2	43.1	52.8	56.8	52.8	43.1	33.3	11.7	29.4	52.8
97.5°	23.5	45.0	50.9	58.7	60.7	56.8	48.9	45.0	21.5	52.8	54.8
100°	35.2	56.8	66.5	66.5	68.5	66.5	64.6	54.8	33.3	58.7	66.5
102.5°	48.9	64.6	76.3	82.2	82.2	82.2	76.3	64.6	45.0	72.4	92.0
105°	62.6	70.5	84.2	92.0	95.9	92.0	84.2	72.4	60.7	84.2	97.9
107.5°	78.3	76.3	92.0	99.8	103.7	99.8	92.0	78.3	74.4	93.9	109.6
110°	93.9	84.2	99.8	107.6	109.6	107.6	99.8	84.2	90.0	105.7	121.3



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CATALOG NUMBER: 4WSL-LD2-60-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°	107.6	90.0	107.6	115.5	117.4	115.5	107.6	92.0	103.7	113.5	133.1
115°	121.3	95.9	111.6	121.3	123.3	121.3	111.6	97.9	119.4	123.3	142.9
117.5°	135.0	103.7	115.5	127.2	129.2	127.2	117.4	105.7	133.1	135.0	152.7
120°	148.7	113.5	121.3	131.1	135.0	133.1	121.3	115.5	144.8	144.8	160.5
122.5°	160.5	121.3	127.2	135.0	139.0	135.0	127.2	125.3	158.5	154.6	170.3
125°	174.2	129.2	131.1	139.0	140.9	139.0	133.1	131.1	170.3	162.4	176.1
127.5°	184.0	139.0	135.0	142.9	144.8	142.9	137.0	140.9	182.0	178.1	182.0
130°	195.7	148.7	139.0	146.8	148.7	148.7	139.0	152.7	191.8	189.8	189.8
132.5°	205.5	158.5	142.9	150.7	152.7	152.7	144.8	160.5	201.6	199.6	195.7
135°	213.3	172.2	150.7	150.7	154.6	154.6	152.7	174.2	211.4	209.4	205.5
137.5°	221.1	184.0	156.6	152.7	154.6	154.6	160.5	185.9	219.2	219.2	211.4
140°	229.0	195.7	160.5	156.6	156.6	160.5	166.4	197.7	227.0	227.0	213.3
142.5°	236.8	205.5	166.4	162.4	158.5	166.4	172.2	209.4	232.9	234.8	219.2
145°	240.7	215.3	174.2	168.3	164.4	174.2	182.0	219.2	238.8	242.7	230.9
147.5°	246.6	225.1	184.0	172.2	172.2	178.1	189.8	227.0	244.6	248.5	236.8
150°	252.5	232.9	191.8	178.1	174.2	184.0	197.7	234.8	250.5	254.4	244.6
152.5°	256.4	240.7	203.5	185.9	182.0	193.8	211.4	240.7	254.4	258.3	252.5
155°	260.3	246.6	217.2	193.8	191.8	201.6	223.1	246.6	258.3	262.2	258.3
157.5°	264.2	252.5	227.0	205.5	197.7	213.3	232.9	254.4	262.2	266.2	264.2
160°	266.2	256.4	238.8	217.2	213.3	227.0	242.7	256.4	264.2	270.1	268.1
162.5°	270.1	260.3	246.6	230.9	227.0	238.8	250.5	262.2	268.1	272.0	272.0
165°	272.0	264.2	254.4	242.7	238.8	250.5	256.4	266.2	270.1	272.0	274.0
167.5°	272.0	268.1	260.3	250.5	248.5	258.3	264.2	270.1	272.0	272.0	275.9
170°	274.0	270.1	264.2	258.3	256.4	264.2	266.2	272.0	274.0	272.0	277.9
172.5°	274.0	272.0	268.1	262.2	258.3	268.1	270.1	272.0	274.0	272.0	275.9
175°	275.9	272.0	272.0	268.1	262.2	272.0	272.0	272.0	275.9	272.0	274.0
177.5°	275.9	272.0	272.0	270.1	266.2	272.0	272.0	272.0	275.9	272.0	274.0
180°	272.0	272.0	272.0	272.0	272.0	272.0	272.0	272.0	272.0	272.0	272.0



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1827.9	1827.9	1827.9	1827.9	1827.9	1827.9
2.5°	1814.2	1800.5	1804.4	1820.1	1814.2	1841.6
5°	1800.5	1792.7	1792.7	1810.3	1808.3	1841.6
7.5°	1779.0	1771.2	1775.1	1794.6	1798.6	1839.7
10°	1753.5	1743.8	1747.7	1775.1	1784.9	1831.8
12.5°	1726.1	1718.3	1722.2	1753.5	1767.2	1824.0
15°	1694.8	1683.1	1694.8	1728.1	1745.7	1810.3
17.5°	1659.6	1643.9	1657.6	1700.7	1722.2	1794.6
20°	1624.4	1610.7	1618.5	1665.5	1696.8	1777.0
22.5°	1589.1	1569.6	1577.4	1626.3	1665.5	1751.6
25°	1548.0	1518.7	1534.3	1587.2	1632.2	1724.2
27.5°	1493.3	1448.2	1481.5	1548.0	1593.1	1694.8
30°	1420.8	1362.1	1411.1	1501.1	1552.0	1661.6
32.5°	1340.6	1278.0	1332.8	1448.2	1508.9	1622.4
35°	1260.4	1203.6	1252.5	1389.5	1463.9	1579.4
37.5°	1184.0	1135.1	1180.1	1326.9	1416.9	1534.3
40°	1111.6	1062.7	1109.7	1258.4	1366.0	1485.4
42.5°	1039.2	994.2	1039.2	1186.0	1313.2	1430.6
45°	966.8	896.3	962.9	1115.5	1256.4	1373.9
47.5°	888.5	806.3	882.6	1039.2	1195.8	1313.2
50°	814.1	743.7	810.2	968.8	1133.1	1250.6
52.5°	749.6	692.8	745.6	896.3	1068.6	1182.1
55°	688.9	643.9	688.9	825.9	1000.1	1113.6
57.5°	634.1	604.7	636.1	765.2	929.6	1043.1
60°	587.1	569.5	589.1	690.8	859.2	968.8
62.5°	542.1	540.2	544.1	632.1	784.8	890.5
65°	495.1	504.9	495.1	569.5	710.4	810.2
67.5°	448.2	467.7	452.1	506.9	630.2	726.1
70°	405.1	426.6	405.1	442.3	549.9	638.0
72.5°	356.2	383.6	356.2	381.6	465.8	548.0
75°	309.2	340.5	311.2	319.0	385.5	452.1
77.5°	258.3	287.7	264.2	258.3	311.2	362.1
80°	205.5	217.2	205.5	203.5	240.7	275.9
82.5°	142.9	152.7	142.9	148.7	176.1	199.6
85°	93.9	97.9	93.9	95.9	117.4	135.0
87.5°	39.1	39.1	39.1	48.9	52.8	56.8
90°	43.1	47.0	43.1	35.2	21.5	2.0
92.5°	45.0	48.9	45.0	39.1	25.4	3.9
95°	80.2	90.0	76.3	48.9	41.1	11.7
97.5°	64.6	70.5	66.5	56.8	50.9	23.5
100°	76.3	82.2	76.3	80.2	62.6	35.2
102.5°	90.0	93.9	92.0	93.9	76.3	48.9
105°	117.4	121.3	117.4	101.8	88.1	62.6
107.5°	125.3	135.0	127.2	113.5	99.8	78.3
110°	135.0	142.9	137.0	125.3	109.6	93.9





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	144.8	154.6	148.7	139.0	117.4	107.6
115°	156.6	164.4	160.5	148.7	129.2	121.3
117.5°	168.3	174.2	170.3	156.6	140.9	135.0
120°	178.1	185.9	182.0	166.4	150.7	148.7
122.5°	185.9	193.8	189.8	176.1	160.5	160.5
125°	193.8	201.6	197.7	184.0	168.3	174.2
127.5°	199.6	209.4	205.5	189.8	185.9	184.0
130°	207.5	213.3	211.4	195.7	195.7	195.7
132.5°	211.4	219.2	215.3	203.5	207.5	205.5
135°	213.3	223.1	219.2	213.3	217.2	213.3
137.5°	217.2	225.1	223.1	219.2	227.0	221.1
140°	223.1	227.0	229.0	223.1	234.8	229.0
142.5°	229.0	230.9	234.8	229.0	242.7	236.8
145°	232.9	236.8	240.7	240.7	248.5	240.7
147.5°	232.9	238.8	238.8	244.6	256.4	246.6
150°	238.8	234.8	246.6	252.5	260.3	252.5
152.5°	246.6	244.6	254.4	260.3	264.2	256.4
155°	248.5	250.5	256.4	266.2	268.1	260.3
157.5°	256.4	254.4	264.2	272.0	272.0	264.2
160°	262.2	262.2	272.0	275.9	274.0	266.2
162.5°	268.1	268.1	277.9	277.9	275.9	270.1
165°	272.0	272.0	281.8	279.9	275.9	272.0
167.5°	274.0	275.9	283.8	281.8	275.9	272.0
170°	275.9	275.9	283.8	279.9	275.9	274.0
172.5°	275.9	274.0	281.8	277.9	274.0	274.0
175°	274.0	270.1	277.9	274.0	274.0	275.9
177.5°	272.0	266.2	272.0	272.0	274.0	275.9
180°	272.0	272.0	272.0	272.0	272.0	272.0

(END OF REPORT)