

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: P192509

Luminaire Tested: **4WSL-LD2-60-UPL15-UNV-L830-CD1-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P192509
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-LD2-60-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
OT50W

Summary

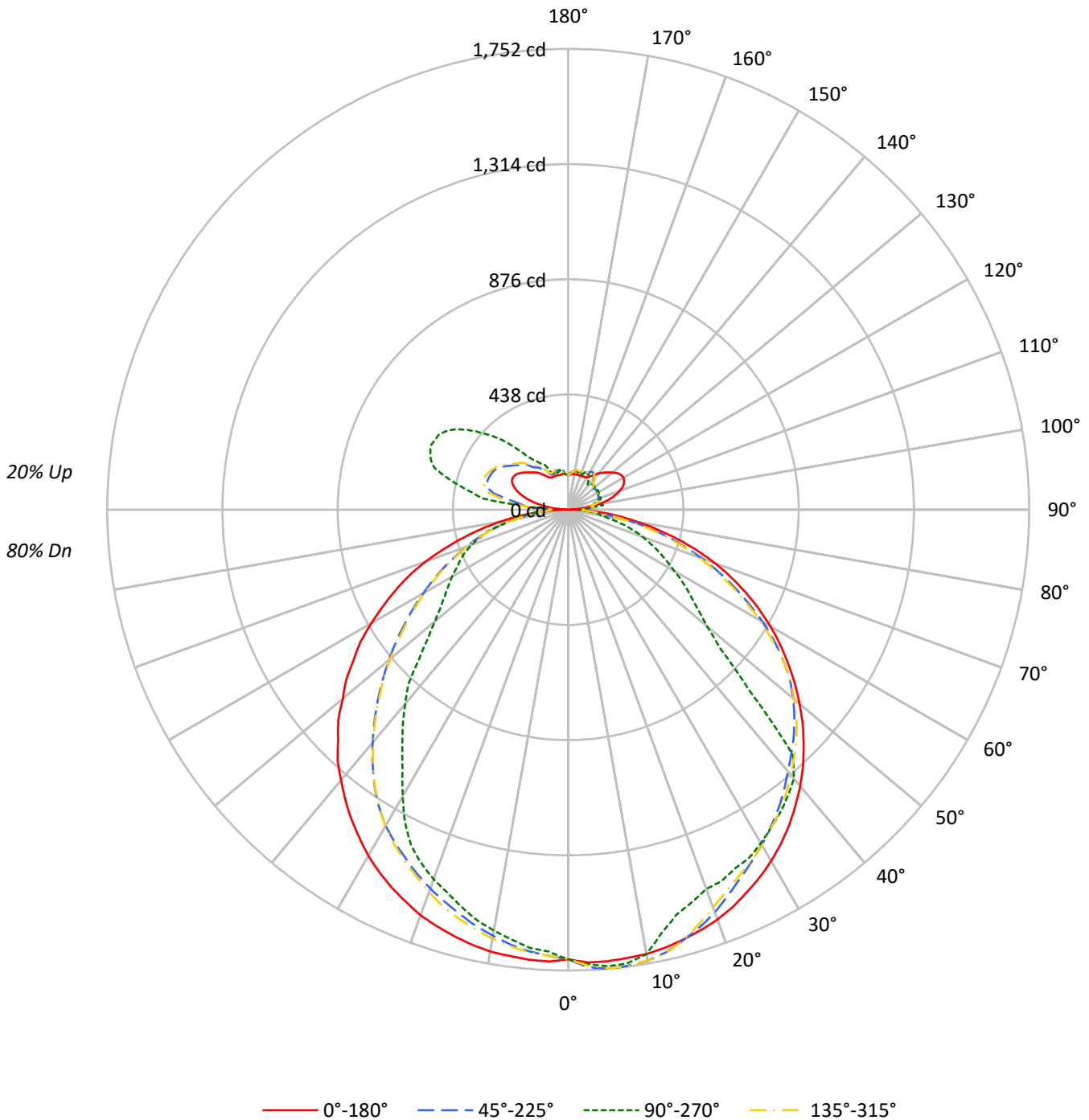
Lumens per Lamp: N/A
Luminaire Lumens: 6049.0 lumens
Efficiency: N/A
Efficacy: 107.6 lumens/watt
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')
CIE Type: Semi-Direct

Input Watts (W): 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

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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°	9683	9683	9683	9683
5°	9798	9910	9765	9508
10°	9866	9866	9810	9347
15°	9921	9345	9840	9173
20°	9997	9252	9890	9015
25°	10034	9396	9911	8819
30°	10090	9576	9936	8229
35°	10124	9718	9934	7600
40°	10144	9868	9927	7125
45°	10141	7845	9905	6414
50°	10118	6053	9858	5828
55°	10078	5582	9827	5660
60°	10050	5270	9783	5781
65°	9969	5103	9707	6050
70°	9816	4973	9556	6468
75°	9364	4726	9064	6873
80°	8770	4290	8515	6851
85°	8801	5610	8164	8164



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	162.7	2.7
10°-20°	461.6	7.6
20°-30°	697.6	11.5
30°-40°	839.5	13.9
40°-50°	853.8	14.1
50°-60°	743.1	12.3
60°-70°	579.7	9.6
70°-80°	358.4	5.9
80°-90°	126.1	2.1
90°-100°	118.7	2.0
100°-110°	229.8	3.8
110°-120°	251.5	4.2
120°-130°	220.5	3.6
130°-140°	165.2	2.7
140°-150°	113.1	1.9
150°-160°	72.0	1.2
160°-170°	42.1	0.7
170°-180°	13.6	0.2
0°-30°	1321.8	21.9
0°-40°	2161.4	35.7
0°-60°	3758.3	62.1
0°-90°	4822.5	79.7
90°-120°	600.0	9.9
90°-150°	1098.8	18.2
90°-180°	1227.0	20.3
0°-180°	6049.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1709	1709	1709	1709	1709	
5°	1723	1743	1717	1672	1723	164
15°	1692	1593	1678	1564	1692	478
25°	1605	1503	1586	1411	1605	741
35°	1464	1405	1436	1099	1464	916
45°	1266	979	1236	801	1266	976
55°	1020	565	995	573	1020	913
65°	744	381	724	451	744	735
75°	428	216	414	314	428	453
85°	135	86	126	126	135	135
90°	2	55	2	86	2	10
95°	53	90	41	180	53	55
105°	169	112	163	481	169	176
115°	234	128	234	577	234	229
125°	237	133	237	532	237	211
135°	200	133	200	388	200	155
145°	157	133	161	232	157	100
155°	139	161	137	159	139	64
165°	137	145	135	147	137	39
175°	135	141	135	137	135	13
180°	132	132	132	132	132	



TEST NUMBER: P192509

CATALOG NUMBER: 4WSL-LD2-60-UPL15-UNV-L830-CD1-U

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1709.2	1709.2	1709.2	1709.2	1709.2	1709.2	1709.2	1709.2	1709.2	1709.2	1709.2
2.5°	1723.0	1715.1	1740.6	1742.6	1728.8	1734.7	1734.7	1713.1	1719.0	1693.5	1697.4
5°	1723.0	1724.9	1752.4	1750.4	1742.6	1744.5	1750.4	1723.0	1717.1	1681.7	1685.7
7.5°	1719.0	1728.8	1748.5	1746.5	1738.7	1740.6	1750.4	1726.9	1711.2	1670.0	1668.0
10°	1715.1	1724.9	1740.6	1730.8	1715.1	1721.0	1740.6	1724.9	1705.3	1656.2	1644.5
12.5°	1705.3	1715.1	1723.0	1673.9	1646.4	1670.0	1724.9	1715.1	1693.5	1636.6	1620.9
15°	1691.6	1703.3	1693.5	1624.8	1593.4	1615.0	1693.5	1701.4	1677.8	1611.1	1591.5
17.5°	1675.9	1689.6	1664.1	1587.5	1564.0	1573.8	1652.3	1683.7	1660.2	1585.6	1562.0
20°	1658.2	1673.9	1628.8	1548.3	1534.6	1542.4	1609.1	1664.1	1640.5	1558.1	1532.6
22.5°	1634.6	1652.3	1587.5	1520.8	1526.7	1520.8	1569.9	1638.6	1613.1	1528.7	1499.2
25°	1605.2	1624.8	1546.3	1497.3	1503.2	1501.2	1536.5	1605.2	1585.6	1493.4	1462.0
27.5°	1575.8	1595.4	1509.1	1481.6	1491.4	1479.6	1505.1	1569.9	1554.2	1456.1	1426.6
30°	1542.4	1564.0	1471.8	1454.1	1463.9	1456.1	1473.7	1534.6	1518.9	1416.8	1387.4
32.5°	1505.1	1526.7	1432.5	1420.7	1434.5	1424.7	1436.4	1495.3	1477.7	1373.7	1338.3
35°	1463.9	1485.5	1391.3	1391.3	1405.1	1393.3	1399.2	1456.1	1436.4	1330.5	1283.4
37.5°	1418.8	1442.3	1346.2	1356.0	1371.7	1359.9	1359.9	1414.9	1391.3	1283.4	1220.6
40°	1371.7	1397.2	1299.1	1320.7	1334.4	1320.7	1316.7	1371.7	1342.3	1236.3	1155.8
42.5°	1320.7	1348.1	1255.9	1281.4	1263.8	1281.4	1271.6	1326.6	1297.1	1185.3	1089.1
45°	1265.7	1301.0	1212.7	1197.0	979.2	1185.3	1226.5	1279.5	1236.3	1136.2	1022.4
47.5°	1208.8	1246.1	1165.6	1051.8	786.9	1040.1	1177.4	1228.4	1185.3	1083.2	955.7
50°	1148.0	1191.2	1116.6	926.2	686.8	914.5	1122.5	1175.5	1118.5	1026.3	888.9
52.5°	1085.2	1132.3	1061.6	818.3	620.1	806.5	1063.6	1118.5	1063.6	965.5	824.2
55°	1020.4	1069.5	996.9	718.2	565.2	716.3	994.9	1057.7	994.9	904.6	759.4
57.5°	955.7	1010.6	928.2	645.6	518.1	635.8	918.4	994.9	936.0	841.9	696.6
60°	887.0	938.0	853.6	567.1	465.1	565.2	841.9	930.2	863.4	777.1	635.8
62.5°	816.3	873.3	773.2	498.4	421.9	496.5	759.4	857.6	792.8	710.4	576.9
65°	743.7	798.7	696.6	443.5	380.7	439.6	682.9	783.0	724.1	643.7	522.0
67.5°	669.2	720.2	620.1	390.5	339.5	386.6	604.4	704.5	653.5	575.0	463.1
70°	592.6	639.7	541.6	339.5	300.2	337.5	527.9	624.0	576.9	504.3	410.1
72.5°	512.2	555.3	459.2	290.4	259.0	288.5	447.4	541.6	492.6	429.8	363.0
75°	427.8	469.0	382.7	241.4	215.9	239.4	370.9	453.3	414.1	361.1	308.1
77.5°	347.3	388.5	304.2	186.4	164.8	182.5	290.4	370.9	337.5	292.4	251.2
80°	268.8	302.2	223.7	139.3	131.5	139.3	217.8	284.5	261.0	229.6	196.2
82.5°	198.2	217.8	151.1	113.8	113.8	113.8	147.2	202.1	192.3	170.7	149.1
85°	135.4	135.4	102.0	86.3	86.3	86.3	100.1	119.7	125.6	113.8	113.8
87.5°	56.9	58.9	53.0	47.1	45.1	47.1	51.0	49.1	49.1	54.9	68.7
90°	2.0	25.5	43.2	53.0	54.9	51.0	39.2	23.5	2.0	33.4	60.8
92.5°	13.7	54.9	51.0	66.7	68.7	62.8	53.0	43.2	7.8	60.8	64.8
95°	53.0	64.8	100.1	102.0	90.3	86.3	98.1	60.8	41.2	82.4	164.8
97.5°	84.4	98.1	90.3	117.7	133.4	117.7	94.2	94.2	78.5	127.6	192.3
100°	115.8	104.0	92.2	102.0	117.7	104.0	88.3	104.0	109.9	149.1	235.5
102.5°	145.2	115.8	115.8	100.1	102.0	98.1	111.9	113.8	137.4	168.8	290.4
105°	168.8	119.7	121.7	113.8	111.9	113.8	121.7	121.7	162.9	186.4	315.9
107.5°	190.3	123.6	119.7	125.6	127.6	125.6	119.7	123.6	186.4	198.2	321.8
110°	208.0	125.6	121.7	125.6	131.5	125.6	121.7	127.6	206.0	210.0	325.8



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CATALOG NUMBER: 4WSL-LD2-60-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°	223.7	127.6	125.6	123.6	129.5	123.6	125.6	131.5	221.7	215.9	325.8
115°	233.5	129.5	125.6	125.6	127.6	125.6	127.6	133.4	233.5	217.8	321.8
117.5°	239.4	133.4	127.6	129.5	131.5	129.5	127.6	137.4	241.4	225.7	319.9
120°	243.3	147.2	127.6	131.5	133.4	131.5	127.6	149.1	243.3	229.6	312.0
122.5°	241.4	153.1	129.5	131.5	135.4	131.5	129.5	155.0	241.4	227.6	302.2
125°	237.4	159.0	129.5	129.5	133.4	131.5	131.5	159.0	237.4	223.7	288.5
127.5°	229.6	172.7	129.5	131.5	131.5	131.5	131.5	170.7	229.6	225.7	274.7
130°	219.8	182.5	125.6	133.4	131.5	135.4	129.5	182.5	219.8	219.8	263.0
132.5°	210.0	186.4	125.6	133.4	133.4	135.4	127.6	186.4	210.0	211.9	251.2
135°	200.2	190.3	133.4	131.5	133.4	133.4	135.4	190.3	200.2	204.1	243.3
137.5°	190.3	192.3	143.3	125.6	131.5	127.6	147.2	192.3	192.3	192.3	231.6
140°	180.5	190.3	151.1	121.7	123.6	125.6	155.0	192.3	184.5	186.4	211.9
142.5°	168.8	184.5	157.0	131.5	121.7	135.4	160.9	190.3	172.7	180.5	202.1
145°	157.0	178.6	168.8	145.2	133.4	151.1	174.7	184.5	160.9	176.6	196.2
147.5°	147.2	168.8	170.7	153.1	147.2	159.0	176.6	176.6	149.1	168.8	182.5
150°	141.3	159.0	164.8	159.0	153.1	166.8	172.7	162.9	141.3	162.9	170.7
152.5°	139.3	151.1	151.1	166.8	164.8	174.7	159.0	155.0	137.4	157.0	155.0
155°	139.3	149.1	145.2	153.1	160.9	160.9	151.1	151.1	137.4	157.0	147.2
157.5°	137.4	151.1	145.2	143.3	147.2	151.1	151.1	153.1	137.4	153.1	147.2
160°	137.4	153.1	147.2	141.3	143.3	149.1	153.1	153.1	137.4	153.1	149.1
162.5°	137.4	149.1	149.1	143.3	143.3	151.1	153.1	151.1	137.4	149.1	153.1
165°	137.4	149.1	151.1	147.2	145.2	155.0	153.1	147.2	135.4	147.2	155.0
167.5°	137.4	145.2	153.1	149.1	149.1	155.0	155.0	145.2	135.4	141.3	155.0
170°	137.4	143.3	151.1	149.1	151.1	157.0	151.1	143.3	137.4	139.3	149.1
172.5°	137.4	139.3	147.2	149.1	149.1	153.1	147.2	139.3	137.4	135.4	143.3
175°	135.4	139.3	143.3	143.3	141.3	147.2	141.3	137.4	135.4	133.4	137.4
177.5°	133.4	135.4	139.3	139.3	135.4	139.3	135.4	133.4	133.4	131.5	135.4
180°	131.5	131.5	131.5	131.5	131.5	131.5	131.5	131.5	131.5	131.5	131.5



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1709.2	1709.2	1709.2	1709.2	1709.2	1709.2
2.5°	1695.5	1681.7	1685.7	1697.4	1695.5	1723.0
5°	1677.8	1671.9	1671.9	1689.6	1687.6	1723.0
7.5°	1658.2	1648.4	1654.3	1673.9	1679.8	1719.0
10°	1632.7	1624.8	1626.8	1656.2	1666.0	1715.1
12.5°	1607.2	1599.3	1605.2	1632.7	1646.4	1705.3
15°	1577.7	1564.0	1579.7	1609.1	1626.8	1691.6
17.5°	1542.4	1526.7	1542.4	1581.7	1603.2	1675.9
20°	1511.0	1495.3	1505.1	1546.3	1575.8	1658.2
22.5°	1475.7	1456.1	1463.9	1509.1	1546.3	1634.6
25°	1436.4	1410.9	1422.7	1471.8	1513.0	1605.2
27.5°	1385.4	1342.3	1371.7	1432.5	1471.8	1575.8
30°	1314.8	1257.9	1305.0	1389.4	1434.5	1542.4
32.5°	1232.4	1171.5	1222.6	1336.4	1391.3	1505.1
35°	1151.9	1098.9	1146.0	1281.4	1348.1	1463.9
37.5°	1081.3	1032.2	1075.4	1218.6	1301.0	1418.8
40°	1008.7	963.5	1006.7	1151.9	1253.9	1371.7
42.5°	941.9	898.8	940.0	1085.2	1202.9	1320.7
45°	871.3	800.6	867.4	1016.5	1148.0	1265.7
47.5°	796.7	722.1	790.8	949.8	1093.0	1208.8
50°	728.0	661.3	724.1	881.1	1034.2	1148.0
52.5°	667.2	610.3	665.2	812.4	973.3	1085.2
55°	610.3	573.0	612.3	749.6	916.4	1020.4
57.5°	565.2	539.6	567.1	688.8	853.6	955.7
60°	525.9	510.2	527.9	628.0	786.9	887.0
62.5°	482.7	476.9	482.7	569.1	722.1	816.3
65°	445.5	451.3	445.5	516.1	653.5	743.7
67.5°	410.1	423.9	412.1	459.2	584.8	669.2
70°	370.9	390.5	372.8	408.2	514.1	592.6
72.5°	329.7	353.2	329.7	359.1	439.6	512.2
75°	286.5	314.0	288.5	306.1	368.9	427.8
77.5°	239.4	257.1	243.3	249.2	300.2	347.3
80°	190.3	210.0	192.3	196.2	237.4	268.8
82.5°	159.0	172.7	160.9	149.1	176.6	198.2
85°	117.7	125.6	121.7	115.8	121.7	135.4
87.5°	72.6	76.5	72.6	72.6	62.8	56.9
90°	80.5	86.3	80.5	62.8	35.3	2.0
92.5°	82.4	90.3	82.4	68.7	66.7	13.7
95°	184.5	180.5	196.2	178.6	102.0	53.0
97.5°	286.5	327.7	296.3	213.9	137.4	84.4
100°	329.7	368.9	343.4	266.9	157.0	115.8
102.5°	380.7	423.9	396.4	312.0	176.6	145.2
105°	443.5	480.8	457.2	329.7	194.3	168.8
107.5°	476.9	533.8	486.7	337.5	206.0	190.3
110°	494.5	555.3	510.2	339.5	215.9	208.0



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	508.3	567.1	520.0	339.5	219.8	223.7
115°	508.3	576.9	520.0	333.6	225.7	233.5
117.5°	508.3	571.0	520.0	327.7	233.5	239.4
120°	490.6	569.1	506.3	319.9	235.5	243.3
122.5°	476.9	553.4	486.7	310.1	235.5	241.4
125°	451.3	531.8	463.1	298.3	231.6	237.4
127.5°	423.9	500.4	433.7	284.5	233.5	229.6
130°	398.4	465.1	404.2	270.8	225.7	219.8
132.5°	365.0	425.8	370.9	261.0	217.8	210.0
135°	333.6	388.5	341.5	253.1	208.0	200.2
137.5°	300.2	349.3	308.1	237.4	198.2	190.3
140°	261.0	300.2	268.8	219.8	192.3	180.5
142.5°	235.5	257.1	243.3	211.9	184.5	168.8
145°	219.8	231.6	225.7	204.1	180.5	157.0
147.5°	204.1	215.9	210.0	188.4	170.7	147.2
150°	198.2	198.2	206.0	174.7	164.8	141.3
152.5°	176.6	192.3	184.5	159.0	160.9	139.3
155°	151.1	159.0	159.0	153.1	160.9	139.3
157.5°	141.3	147.2	149.1	153.1	157.0	137.4
160°	141.3	143.3	149.1	155.0	155.0	137.4
162.5°	145.2	143.3	153.1	159.0	151.1	137.4
165°	149.1	147.2	157.0	160.9	147.2	137.4
167.5°	153.1	153.1	160.9	159.0	143.3	137.4
170°	153.1	157.0	160.9	153.1	141.3	137.4
172.5°	147.2	149.1	153.1	143.3	135.4	137.4
175°	139.3	137.4	143.3	137.4	135.4	135.4
177.5°	135.4	129.5	135.4	133.4	131.5	133.4
180°	131.5	131.5	131.5	131.5	131.5	131.5

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