

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: P192515

Luminaire Tested: **4WSL-LD2-65-UPL15-UNV-L840-CD1-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P192515
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-L840-CD1-U
Description: 4FT Linear Wavestream System, 15% Uplight, L840
Light Source: (238) 4000K CCT, 80 CRI LEDS
EL236N0119D840
Ballast/Driver: OSRAM
OT85W1202772A0DIML

Summary

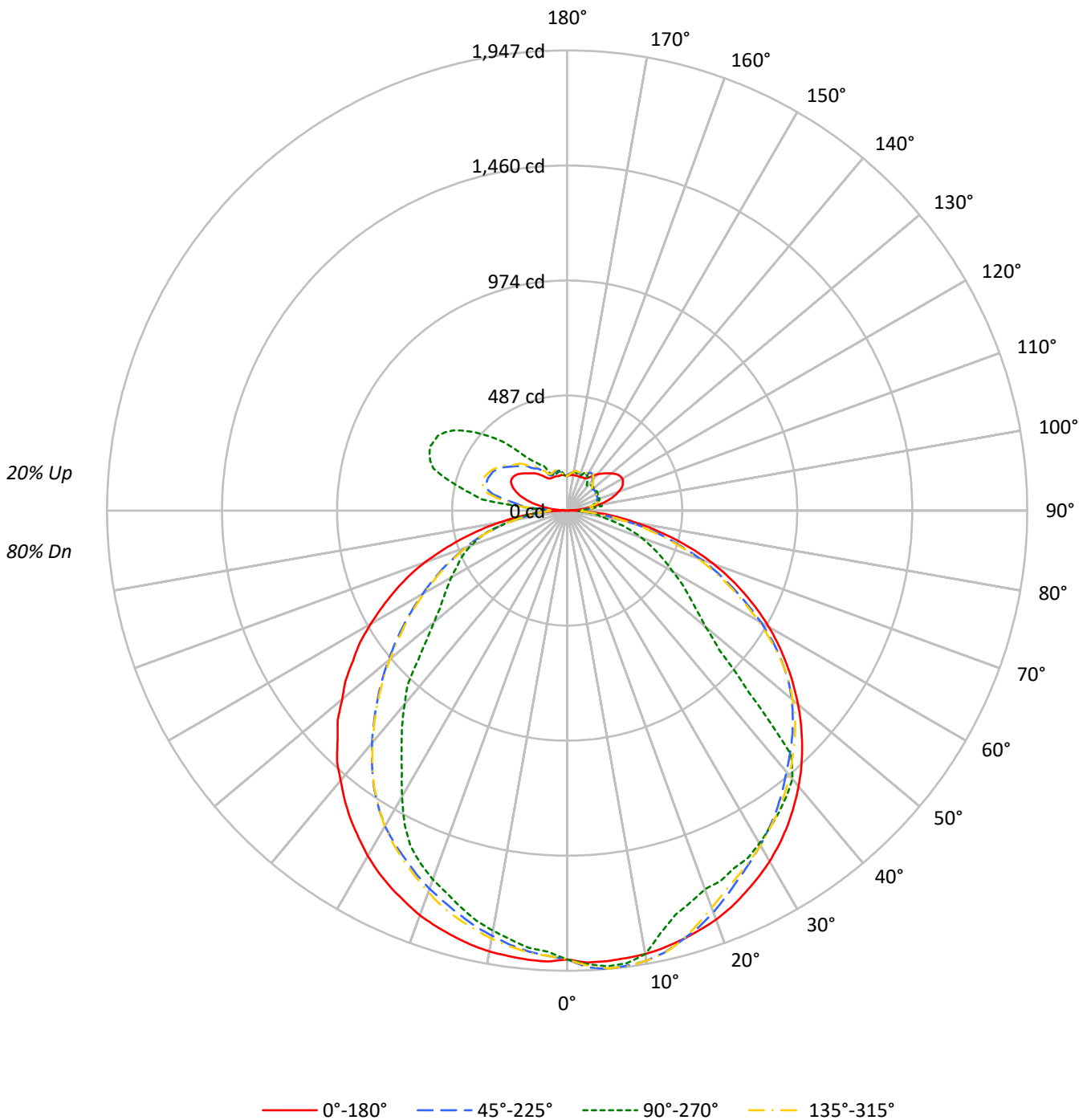
Lumens per Lamp: N/A
Luminaire Lumens: 6720.0 lumens
Efficiency: N/A
Efficacy: 108.6 lumens/watt
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')
CIE Type: Semi-Direct

Input Watts (W): 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			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°	10757	10757	10757	10757
5°	10885	11009	10848	10563
10°	10961	10961	10898	10384
15°	11022	10382	10932	10191
20°	11106	10278	10987	10015
25°	11147	10438	11011	9798
30°	11209	10639	11038	9141
35°	11247	10795	11036	8443
40°	11269	10963	11027	7916
45°	11265	8715	11003	7127
50°	11240	6725	10952	6475
55°	11197	6202	10917	6288
60°	11165	5854	10868	6422
65°	11075	5669	10783	6721
70°	10906	5524	10616	7185
75°	10402	5249	10069	7635
80°	9745	4766	9458	7611
85°	9776	6234	9068	9068



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	180.7	2.7
10°-20°	512.8	7.6
20°-30°	774.9	11.5
30°-40°	932.7	13.9
40°-50°	948.5	14.1
50°-60°	825.6	12.3
60°-70°	644.0	9.6
70°-80°	398.1	5.9
80°-90°	140.1	2.1
90°-100°	131.9	2.0
100°-110°	255.3	3.8
110°-120°	279.4	4.2
120°-130°	244.9	3.6
130°-140°	183.5	2.7
140°-150°	125.6	1.9
150°-160°	80.0	1.2
160°-170°	46.8	0.7
170°-180°	15.1	0.2
0°-30°	1468.5	21.9
0°-40°	2401.1	35.7
0°-60°	4175.2	62.1
0°-90°	5357.4	79.7
90°-120°	666.6	9.9
90°-150°	1220.7	18.2
90°-180°	1363.0	20.3
0°-180°	6720.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1899	1899	1899	1899	1899	
5°	1914	1936	1908	1857	1914	182
15°	1879	1770	1864	1738	1879	531
25°	1783	1670	1762	1567	1783	823
35°	1626	1561	1596	1221	1626	1017
45°	1406	1088	1373	890	1406	1085
55°	1134	628	1105	637	1134	1014
65°	826	423	804	501	826	816
75°	475	240	460	349	475	503
85°	150	96	140	140	150	150
90°	2	61	2	96	2	11
95°	59	100	46	201	59	61
105°	188	124	181	534	188	195
115°	259	142	259	641	259	254
125°	264	148	264	591	264	234
135°	222	148	222	432	222	173
145°	174	148	179	257	174	111
155°	155	179	153	177	155	71
165°	153	161	150	164	153	43
175°	150	157	150	153	150	14
180°	146	146	146	146	146	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1898.8	1898.8	1898.8	1898.8	1898.8	1898.8	1898.8	1898.8	1898.8	1898.8	1898.8
2.5°	1914.1	1905.4	1933.7	1935.9	1920.6	1927.2	1927.2	1903.2	1909.7	1881.4	1885.7
5°	1914.1	1916.3	1946.8	1944.6	1935.9	1938.1	1944.6	1914.1	1907.5	1868.3	1872.7
7.5°	1909.7	1920.6	1942.4	1940.2	1931.5	1933.7	1944.6	1918.4	1901.0	1855.2	1853.0
10°	1905.4	1916.3	1933.7	1922.8	1905.4	1911.9	1933.7	1916.3	1894.5	1840.0	1826.9
12.5°	1894.5	1905.4	1914.1	1859.6	1829.1	1855.2	1916.3	1905.4	1881.4	1818.2	1800.7
15°	1879.2	1892.3	1881.4	1805.1	1770.2	1794.2	1881.4	1890.1	1863.9	1789.8	1768.0
17.5°	1861.8	1877.0	1848.7	1763.7	1737.5	1748.4	1835.6	1870.5	1844.3	1761.5	1735.3
20°	1842.1	1859.6	1809.4	1720.1	1704.8	1713.5	1787.6	1848.7	1822.5	1731.0	1702.6
22.5°	1816.0	1835.6	1763.7	1689.5	1696.1	1689.5	1744.0	1820.3	1792.0	1698.3	1665.6
25°	1783.3	1805.1	1717.9	1663.4	1669.9	1667.7	1707.0	1783.3	1761.5	1659.0	1624.1
27.5°	1750.6	1772.4	1676.5	1645.9	1656.8	1643.8	1672.1	1744.0	1726.6	1617.6	1584.9
30°	1713.5	1737.5	1635.0	1615.4	1626.3	1617.6	1637.2	1704.8	1687.4	1574.0	1541.3
32.5°	1672.1	1696.1	1591.4	1578.3	1593.6	1582.7	1595.8	1661.2	1641.6	1526.0	1486.8
35°	1626.3	1650.3	1545.6	1545.6	1560.9	1547.8	1554.4	1617.6	1595.8	1478.1	1425.7
37.5°	1576.2	1602.3	1495.5	1506.4	1523.8	1510.8	1510.8	1571.8	1545.6	1425.7	1356.0
40°	1523.8	1552.2	1443.2	1467.2	1482.4	1467.2	1462.8	1523.8	1491.1	1373.4	1284.0
42.5°	1467.2	1497.7	1395.2	1423.6	1403.9	1423.6	1412.7	1473.7	1441.0	1316.7	1209.9
45°	1406.1	1445.4	1347.3	1329.8	1087.8	1316.7	1362.5	1421.4	1373.4	1262.2	1135.8
47.5°	1342.9	1384.3	1294.9	1168.5	874.2	1155.4	1308.0	1364.7	1316.7	1203.4	1061.7
50°	1275.3	1323.3	1240.4	1029.0	763.0	1015.9	1247.0	1305.8	1242.6	1140.2	987.6
52.5°	1205.6	1257.9	1179.4	909.1	688.9	896.0	1181.6	1242.6	1181.6	1072.6	915.6
55°	1133.6	1188.1	1107.5	797.9	627.9	795.7	1105.3	1175.0	1105.3	1005.0	843.7
57.5°	1061.7	1122.7	1031.2	717.2	575.5	706.3	1020.3	1105.3	1039.9	935.2	773.9
60°	985.4	1042.1	948.3	630.0	516.7	627.9	935.2	1033.3	959.2	863.3	706.3
62.5°	906.9	970.1	858.9	553.7	468.7	551.6	843.7	952.7	880.7	789.2	640.9
65°	826.2	887.3	773.9	492.7	422.9	488.3	758.7	869.8	804.4	715.1	579.9
67.5°	743.4	800.1	688.9	433.8	377.1	429.5	671.5	782.6	726.0	638.8	514.5
70°	658.4	710.7	601.7	377.1	333.5	375.0	586.4	693.3	640.9	560.3	455.6
72.5°	569.0	617.0	510.1	322.6	287.8	320.5	497.0	601.7	547.2	477.4	403.3
75°	475.2	521.0	425.1	268.1	239.8	266.0	412.0	503.6	460.0	401.1	342.3
77.5°	385.9	431.6	337.9	207.1	183.1	202.7	322.6	412.0	375.0	324.8	279.0
80°	298.7	335.7	248.5	154.8	146.1	154.8	242.0	316.1	289.9	255.1	218.0
82.5°	220.2	242.0	167.9	126.4	126.4	126.4	163.5	224.5	213.6	189.7	165.7
85°	150.4	150.4	113.4	95.9	95.9	95.9	111.2	133.0	139.5	126.4	126.4
87.5°	63.2	65.4	58.9	52.3	50.1	52.3	56.7	54.5	54.5	61.0	76.3
90°	2.2	28.3	48.0	58.9	61.0	56.7	43.6	26.2	2.2	37.1	67.6
92.5°	15.3	61.0	56.7	74.1	76.3	69.8	58.9	48.0	8.7	67.6	71.9
95°	58.9	71.9	111.2	113.4	100.3	95.9	109.0	67.6	45.8	91.6	183.1
97.5°	93.7	109.0	100.3	130.8	148.2	130.8	104.6	104.6	87.2	141.7	213.6
100°	128.6	115.5	102.5	113.4	130.8	115.5	98.1	115.5	122.1	165.7	261.6
102.5°	161.3	128.6	128.6	111.2	113.4	109.0	124.3	126.4	152.6	187.5	322.6
105°	187.5	133.0	135.2	126.4	124.3	126.4	135.2	135.2	180.9	207.1	351.0
107.5°	211.5	137.3	133.0	139.5	141.7	139.5	133.0	137.3	207.1	220.2	357.5
110°	231.1	139.5	135.2	139.5	146.1	139.5	135.2	141.7	228.9	233.3	361.9



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	248.5	141.7	139.5	137.3	143.9	137.3	139.5	146.1	246.3	239.8	361.9
115°	259.4	143.9	139.5	139.5	141.7	139.5	141.7	148.2	259.4	242.0	357.5
117.5°	266.0	148.2	141.7	143.9	146.1	143.9	141.7	152.6	268.1	250.7	355.3
120°	270.3	163.5	141.7	146.1	148.2	146.1	141.7	165.7	270.3	255.1	346.6
122.5°	268.1	170.0	143.9	146.1	150.4	146.1	143.9	172.2	268.1	252.9	335.7
125°	263.8	176.6	143.9	143.9	148.2	146.1	146.1	176.6	263.8	248.5	320.5
127.5°	255.1	191.8	143.9	146.1	146.1	146.1	146.1	189.7	255.1	250.7	305.2
130°	244.2	202.7	139.5	148.2	146.1	150.4	143.9	202.7	244.2	244.2	292.1
132.5°	233.3	207.1	139.5	148.2	148.2	150.4	141.7	207.1	233.3	235.4	279.0
135°	222.4	211.5	148.2	146.1	148.2	148.2	150.4	211.5	222.4	226.7	270.3
137.5°	211.5	213.6	159.1	139.5	146.1	141.7	163.5	213.6	213.6	213.6	257.2
140°	200.6	211.5	167.9	135.2	137.3	139.5	172.2	213.6	204.9	207.1	235.4
142.5°	187.5	204.9	174.4	146.1	135.2	150.4	178.8	211.5	191.8	200.6	224.5
145°	174.4	198.4	187.5	161.3	148.2	167.9	194.0	204.9	178.8	196.2	218.0
147.5°	163.5	187.5	189.7	170.0	163.5	176.6	196.2	196.2	165.7	187.5	202.7
150°	157.0	176.6	183.1	176.6	170.0	185.3	191.8	180.9	157.0	180.9	189.7
152.5°	154.8	167.9	167.9	185.3	183.1	194.0	176.6	172.2	152.6	174.4	172.2
155°	154.8	165.7	161.3	170.0	178.8	178.8	167.9	167.9	152.6	174.4	163.5
157.5°	152.6	167.9	161.3	159.1	163.5	167.9	167.9	170.0	152.6	170.0	163.5
160°	152.6	170.0	163.5	157.0	159.1	165.7	170.0	170.0	152.6	170.0	165.7
162.5°	152.6	165.7	165.7	159.1	159.1	167.9	170.0	167.9	152.6	165.7	170.0
165°	152.6	165.7	167.9	163.5	161.3	172.2	170.0	163.5	150.4	163.5	172.2
167.5°	152.6	161.3	170.0	165.7	165.7	172.2	172.2	161.3	150.4	157.0	172.2
170°	152.6	159.1	167.9	165.7	167.9	174.4	167.9	159.1	152.6	154.8	165.7
172.5°	152.6	154.8	163.5	165.7	165.7	170.0	163.5	154.8	152.6	150.4	159.1
175°	150.4	154.8	159.1	159.1	157.0	163.5	157.0	152.6	150.4	148.2	152.6
177.5°	148.2	150.4	154.8	154.8	150.4	154.8	150.4	148.2	148.2	146.1	150.4
180°	146.1	146.1	146.1	146.1	146.1	146.1	146.1	146.1	146.1	146.1	146.1



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1898.8	1898.8	1898.8	1898.8	1898.8	1898.8
2.5°	1883.6	1868.3	1872.7	1885.7	1883.6	1914.1
5°	1863.9	1857.4	1857.4	1877.0	1874.8	1914.1
7.5°	1842.1	1831.2	1837.8	1859.6	1866.1	1909.7
10°	1813.8	1805.1	1807.3	1840.0	1850.9	1905.4
12.5°	1785.5	1776.7	1783.3	1813.8	1829.1	1894.5
15°	1752.8	1737.5	1754.9	1787.6	1807.3	1879.2
17.5°	1713.5	1696.1	1713.5	1757.1	1781.1	1861.8
20°	1678.6	1661.2	1672.1	1717.9	1750.6	1842.1
22.5°	1639.4	1617.6	1626.3	1676.5	1717.9	1816.0
25°	1595.8	1567.4	1580.5	1635.0	1680.8	1783.3
27.5°	1539.1	1491.1	1523.8	1591.4	1635.0	1750.6
30°	1460.6	1397.4	1449.7	1543.5	1593.6	1713.5
32.5°	1369.1	1301.5	1358.2	1484.6	1545.6	1672.1
35°	1279.7	1220.8	1273.1	1423.6	1497.7	1626.3
37.5°	1201.2	1146.7	1194.7	1353.8	1445.4	1576.2
40°	1120.5	1070.4	1118.4	1279.7	1393.0	1523.8
42.5°	1046.4	998.5	1044.2	1205.6	1336.4	1467.2
45°	967.9	889.5	963.6	1129.3	1275.3	1406.1
47.5°	885.1	802.3	878.6	1055.1	1214.3	1342.9
50°	808.8	734.7	804.4	978.8	1148.9	1275.3
52.5°	741.2	678.0	739.0	902.5	1081.3	1205.6
55°	678.0	636.6	680.2	832.8	1018.1	1133.6
57.5°	627.9	599.5	630.0	765.2	948.3	1061.7
60°	584.3	566.8	586.4	697.6	874.2	985.4
62.5°	536.3	529.7	536.3	632.2	802.3	906.9
65°	494.9	501.4	494.9	573.4	726.0	826.2
67.5°	455.6	470.9	457.8	510.1	649.7	743.4
70°	412.0	433.8	414.2	453.4	571.2	658.4
72.5°	366.2	392.4	366.2	398.9	488.3	569.0
75°	318.3	348.8	320.5	340.1	409.8	475.2
77.5°	266.0	285.6	270.3	276.9	333.5	385.9
80°	211.5	233.3	213.6	218.0	263.8	298.7
82.5°	176.6	191.8	178.8	165.7	196.2	220.2
85°	130.8	139.5	135.2	128.6	135.2	150.4
87.5°	80.7	85.0	80.7	80.7	69.8	63.2
90°	89.4	95.9	89.4	69.8	39.2	2.2
92.5°	91.6	100.3	91.6	76.3	74.1	15.3
95°	204.9	200.6	218.0	198.4	113.4	58.9
97.5°	318.3	364.1	329.2	237.6	152.6	93.7
100°	366.2	409.8	381.5	296.5	174.4	128.6
102.5°	422.9	470.9	440.4	346.6	196.2	161.3
105°	492.7	534.1	507.9	366.2	215.8	187.5
107.5°	529.7	593.0	540.6	375.0	228.9	211.5
110°	549.4	617.0	566.8	377.1	239.8	231.1



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	564.6	630.0	577.7	377.1	244.2	248.5
115°	564.6	640.9	577.7	370.6	250.7	259.4
117.5°	564.6	634.4	577.7	364.1	259.4	266.0
120°	545.0	632.2	562.5	355.3	261.6	270.3
122.5°	529.7	614.8	540.6	344.4	261.6	268.1
125°	501.4	590.8	514.5	331.4	257.2	263.8
127.5°	470.9	555.9	481.8	316.1	259.4	255.1
130°	442.5	516.7	449.1	300.8	250.7	244.2
132.5°	405.5	473.1	412.0	289.9	242.0	233.3
135°	370.6	431.6	379.3	281.2	231.1	222.4
137.5°	333.5	388.0	342.3	263.8	220.2	211.5
140°	289.9	333.5	298.7	244.2	213.6	200.6
142.5°	261.6	285.6	270.3	235.4	204.9	187.5
145°	244.2	257.2	250.7	226.7	200.6	174.4
147.5°	226.7	239.8	233.3	209.3	189.7	163.5
150°	220.2	220.2	228.9	194.0	183.1	157.0
152.5°	196.2	213.6	204.9	176.6	178.8	154.8
155°	167.9	176.6	176.6	170.0	178.8	154.8
157.5°	157.0	163.5	165.7	170.0	174.4	152.6
160°	157.0	159.1	165.7	172.2	172.2	152.6
162.5°	161.3	159.1	170.0	176.6	167.9	152.6
165°	165.7	163.5	174.4	178.8	163.5	152.6
167.5°	170.0	170.0	178.8	176.6	159.1	152.6
170°	170.0	174.4	178.8	170.0	157.0	152.6
172.5°	163.5	165.7	170.0	159.1	150.4	152.6
175°	154.8	152.6	159.1	152.6	150.4	150.4
177.5°	150.4	143.9	150.4	148.2	146.1	148.2
180°	146.1	146.1	146.1	146.1	146.1	146.1

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