

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: P192523

Luminaire Tested: **4WSL-LD2-75-UPL15-UNV-L840-CD1-U**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P192523  
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-LD2-75-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**

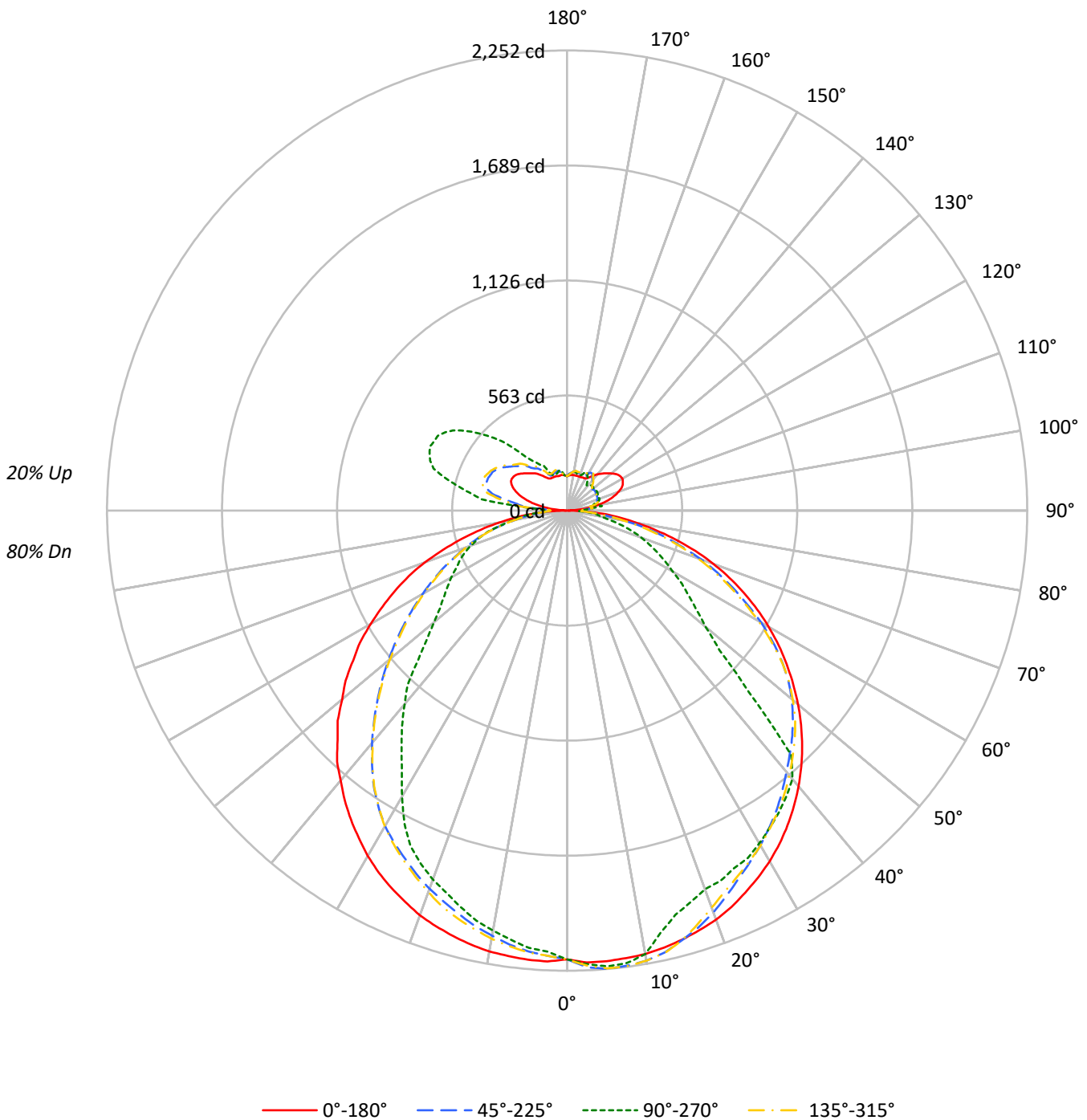
Lumens per Lamp: N/A  
Luminaire Lumens: 7772.0 lumens  
Efficiency: N/A  
Efficacy: 105.2 lumens/watt  
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35  
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')  
CIE Type: Semi-Direct

Input Watts (W): 73.9  
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°	12441	12441	12441	12441
5°	12589	12732	12546	12217
10°	12676	12676	12604	12010
15°	12747	12008	12643	11786
20°	12844	11887	12708	11583
25°	12892	12072	12734	11332
30°	12964	12304	12766	10573
35°	13008	12485	12764	9765
40°	13034	12679	12754	9156
45°	13030	10080	12726	8242
50°	13000	7778	12667	7489
55°	12950	7172	12626	7271
60°	12912	6771	12570	7427
65°	12810	6556	12472	7774
70°	12612	6390	12279	8310
75°	12030	6070	11645	8830
80°	11269	5510	10939	8802
85°	11310	7209	10491	10491



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	209.0	2.7
10°-20°	593.1	7.6
20°-30°	896.3	11.5
30°-40°	1078.7	13.9
40°-50°	1097.0	14.1
50°-60°	954.8	12.3
60°-70°	744.8	9.6
70°-80°	460.4	5.9
80°-90°	162.0	2.1
90°-100°	152.5	2.0
100°-110°	295.3	3.8
110°-120°	323.1	4.2
120°-130°	283.3	3.6
130°-140°	212.2	2.7
140°-150°	145.3	1.9
150°-160°	92.5	1.2
160°-170°	54.1	0.7
170°-180°	17.4	0.2
0°-30°	1698.3	21.9
0°-40°	2777.0	35.7
0°-60°	4828.8	62.1
0°-90°	6196.1	79.7
90°-120°	771.0	9.9
90°-150°	1411.8	18.2
90°-180°	1576.0	20.3
0°-180°	7772.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2196	2196	2196	2196	2196	
5°	2214	2239	2206	2148	2214	211
15°	2173	2047	2156	2010	2173	614
25°	2062	1931	2037	1813	2062	952
35°	1881	1805	1846	1412	1881	1177
45°	1626	1258	1588	1029	1626	1254
55°	1311	726	1278	736	1311	1173
65°	956	489	930	580	956	944
75°	550	277	532	403	550	582
85°	174	111	161	161	174	174
90°	2	71	2	111	2	13
95°	68	116	53	232	68	71
105°	217	144	209	618	217	226
115°	300	164	300	741	300	294
125°	305	171	305	683	305	271
135°	257	171	257	499	257	200
145°	202	171	207	298	202	129
155°	179	207	176	204	179	83
165°	176	187	174	189	176	50
175°	174	182	174	176	174	17
180°	169	169	169	169	169	



TEST NUMBER: P192523

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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2196.1	2196.1	2196.1	2196.1	2196.1	2196.1	2196.1	2196.1	2196.1	2196.1	2196.1
2.5°	2213.7	2203.6	2236.4	2238.9	2221.3	2228.8	2228.8	2201.1	2208.7	2175.9	2180.9
5°	2213.7	2216.2	2251.5	2249.0	2238.9	2241.5	2249.0	2213.7	2206.2	2160.8	2165.8
7.5°	2208.7	2221.3	2246.5	2244.0	2233.9	2236.4	2249.0	2218.8	2198.6	2145.6	2143.1
10°	2203.6	2216.2	2236.4	2223.8	2203.6	2211.2	2236.4	2216.2	2191.0	2128.0	2112.9
12.5°	2191.0	2203.6	2213.7	2150.7	2115.4	2145.6	2216.2	2203.6	2175.9	2102.8	2082.6
15°	2173.4	2188.5	2175.9	2087.7	2047.3	2075.0	2175.9	2186.0	2155.7	2070.0	2044.8
17.5°	2153.2	2170.9	2138.1	2039.7	2009.5	2022.1	2123.0	2163.3	2133.0	2037.2	2007.0
20°	2130.5	2150.7	2092.7	1989.3	1971.7	1981.8	2067.5	2138.1	2107.8	2001.9	1969.2
22.5°	2100.3	2123.0	2039.7	1954.0	1961.6	1954.0	2017.1	2105.3	2072.5	1964.1	1926.3
25°	2062.4	2087.7	1986.8	1923.8	1931.3	1928.8	1974.2	2062.4	2037.2	1918.7	1878.4
27.5°	2024.6	2049.8	1938.9	1903.6	1916.2	1901.1	1933.9	2017.1	1996.9	1870.8	1833.0
30°	1981.8	2009.5	1891.0	1868.3	1880.9	1870.8	1893.5	1971.7	1951.5	1820.4	1782.6
32.5°	1933.9	1961.6	1840.6	1825.4	1843.1	1830.5	1845.6	1921.2	1898.6	1764.9	1719.5
35°	1880.9	1908.6	1787.6	1787.6	1805.3	1790.1	1797.7	1870.8	1845.6	1709.5	1648.9
37.5°	1822.9	1853.2	1729.6	1742.2	1762.4	1747.3	1747.3	1817.9	1787.6	1648.9	1568.3
40°	1762.4	1795.2	1669.1	1696.8	1714.5	1696.8	1691.8	1762.4	1724.6	1588.4	1485.1
42.5°	1696.8	1732.1	1613.6	1646.4	1623.7	1646.4	1633.8	1704.4	1666.6	1522.9	1399.3
45°	1626.3	1671.6	1558.2	1538.0	1258.1	1522.9	1575.8	1643.9	1588.4	1459.8	1313.6
47.5°	1553.1	1601.0	1497.7	1351.4	1011.0	1336.3	1512.8	1578.3	1522.9	1391.8	1227.9
50°	1475.0	1530.4	1434.6	1190.1	882.5	1174.9	1442.2	1510.3	1437.2	1318.7	1142.2
52.5°	1394.3	1454.8	1364.0	1051.4	796.7	1036.3	1366.6	1437.2	1366.6	1240.5	1059.0
55°	1311.1	1374.1	1280.8	922.8	726.1	920.3	1278.3	1359.0	1278.3	1162.3	975.8
57.5°	1227.9	1298.5	1192.6	829.5	665.6	816.9	1180.0	1278.3	1202.7	1081.6	895.1
60°	1139.6	1205.2	1096.8	728.7	597.6	726.1	1081.6	1195.1	1109.4	998.4	816.9
62.5°	1048.9	1122.0	993.4	640.4	542.1	637.9	975.8	1101.8	1018.6	912.7	741.3
65°	955.6	1026.2	895.1	569.8	489.1	564.8	877.4	1006.0	930.4	827.0	670.7
67.5°	859.8	925.3	796.7	501.7	436.2	496.7	776.6	905.2	839.6	738.7	595.0
70°	761.4	822.0	695.9	436.2	385.8	433.7	678.2	801.8	741.3	648.0	527.0
72.5°	658.1	713.5	590.0	373.2	332.8	370.6	574.9	695.9	632.9	552.2	466.4
75°	549.6	602.6	491.7	310.1	277.3	307.6	476.5	582.4	532.0	463.9	395.8
77.5°	446.3	499.2	390.8	239.5	211.8	234.5	373.2	476.5	433.7	375.7	322.7
80°	345.4	388.3	287.4	179.0	168.9	179.0	279.9	365.6	335.3	295.0	252.1
82.5°	254.7	279.9	194.1	146.2	146.2	146.2	189.1	259.7	247.1	219.4	191.6
85°	174.0	174.0	131.1	110.9	110.9	110.9	128.6	153.8	161.4	146.2	146.2
87.5°	73.1	75.6	68.1	60.5	58.0	60.5	65.6	63.0	63.0	70.6	88.2
90°	2.5	32.8	55.5	68.1	70.6	65.6	50.4	30.3	2.5	42.9	78.2
92.5°	17.6	70.6	65.6	85.7	88.2	80.7	68.1	55.5	10.1	78.2	83.2
95°	68.1	83.2	128.6	131.1	116.0	110.9	126.1	78.2	52.9	105.9	211.8
97.5°	108.4	126.1	116.0	151.3	171.4	151.3	121.0	121.0	100.9	163.9	247.1
100°	148.8	133.6	118.5	131.1	151.3	133.6	113.5	133.6	141.2	191.6	302.6
102.5°	186.6	148.8	148.8	128.6	131.1	126.1	143.7	146.2	176.5	216.8	373.2
105°	216.8	153.8	156.3	146.2	143.7	146.2	156.3	156.3	209.3	239.5	405.9
107.5°	244.6	158.8	153.8	161.4	163.9	161.4	153.8	158.8	239.5	254.7	413.5
110°	267.3	161.4	156.3	161.4	168.9	161.4	156.3	163.9	264.7	269.8	418.5



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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°	287.4	163.9	161.4	158.8	166.4	158.8	161.4	168.9	284.9	277.3	418.5
115°	300.0	166.4	161.4	161.4	163.9	161.4	163.9	171.4	300.0	279.9	413.5
117.5°	307.6	171.4	163.9	166.4	168.9	166.4	163.9	176.5	310.1	290.0	411.0
120°	312.6	189.1	163.9	168.9	171.4	168.9	163.9	191.6	312.6	295.0	400.9
122.5°	310.1	196.7	166.4	168.9	174.0	168.9	166.4	199.2	310.1	292.5	388.3
125°	305.1	204.2	166.4	166.4	171.4	168.9	168.9	204.2	305.1	287.4	370.6
127.5°	295.0	221.9	166.4	168.9	168.9	168.9	168.9	219.4	295.0	290.0	353.0
130°	282.4	234.5	161.4	171.4	168.9	174.0	166.4	234.5	282.4	282.4	337.9
132.5°	269.8	239.5	161.4	171.4	171.4	174.0	163.9	239.5	269.8	272.3	322.7
135°	257.2	244.6	171.4	168.9	171.4	171.4	174.0	244.6	257.2	262.2	312.6
137.5°	244.6	247.1	184.1	161.4	168.9	163.9	189.1	247.1	247.1	247.1	297.5
140°	232.0	244.6	194.1	156.3	158.8	161.4	199.2	247.1	237.0	239.5	272.3
142.5°	216.8	237.0	201.7	168.9	156.3	174.0	206.7	244.6	221.9	232.0	259.7
145°	201.7	229.4	216.8	186.6	171.4	194.1	224.4	237.0	206.7	226.9	252.1
147.5°	189.1	216.8	219.4	196.7	189.1	204.2	226.9	226.9	191.6	216.8	234.5
150°	181.5	204.2	211.8	204.2	196.7	214.3	221.9	209.3	181.5	209.3	219.4
152.5°	179.0	194.1	194.1	214.3	211.8	224.4	204.2	199.2	176.5	201.7	199.2
155°	179.0	191.6	186.6	196.7	206.7	206.7	194.1	194.1	176.5	201.7	189.1
157.5°	176.5	194.1	186.6	184.1	189.1	194.1	194.1	196.7	176.5	196.7	189.1
160°	176.5	196.7	189.1	181.5	184.1	191.6	196.7	196.7	176.5	196.7	191.6
162.5°	176.5	191.6	191.6	184.1	184.1	194.1	196.7	194.1	176.5	191.6	196.7
165°	176.5	191.6	194.1	189.1	186.6	199.2	196.7	189.1	174.0	189.1	199.2
167.5°	176.5	186.6	196.7	191.6	191.6	199.2	199.2	186.6	174.0	181.5	199.2
170°	176.5	184.1	194.1	191.6	194.1	201.7	194.1	184.1	176.5	179.0	191.6
172.5°	176.5	179.0	189.1	191.6	191.6	196.7	189.1	179.0	176.5	174.0	184.1
175°	174.0	179.0	184.1	184.1	181.5	189.1	181.5	176.5	174.0	171.4	176.5
177.5°	171.4	174.0	179.0	179.0	174.0	179.0	174.0	171.4	171.4	168.9	174.0
180°	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2196.1	2196.1	2196.1	2196.1	2196.1	2196.1
2.5°	2178.4	2160.8	2165.8	2180.9	2178.4	2213.7
5°	2155.7	2148.2	2148.2	2170.9	2168.3	2213.7
7.5°	2130.5	2117.9	2125.5	2150.7	2158.3	2208.7
10°	2097.7	2087.7	2090.2	2128.0	2140.6	2203.6
12.5°	2065.0	2054.9	2062.4	2097.7	2115.4	2191.0
15°	2027.1	2009.5	2029.7	2067.5	2090.2	2173.4
17.5°	1981.8	1961.6	1981.8	2032.2	2059.9	2153.2
20°	1941.4	1921.2	1933.9	1986.8	2024.6	2130.5
22.5°	1896.0	1870.8	1880.9	1938.9	1986.8	2100.3
25°	1845.6	1812.8	1828.0	1891.0	1943.9	2062.4
27.5°	1780.1	1724.6	1762.4	1840.6	1891.0	2024.6
30°	1689.3	1616.2	1676.7	1785.1	1843.1	1981.8
32.5°	1583.4	1505.2	1570.8	1717.0	1787.6	1933.9
35°	1480.0	1411.9	1472.5	1646.4	1732.1	1880.9
37.5°	1389.2	1326.2	1381.7	1565.7	1671.6	1822.9
40°	1296.0	1238.0	1293.4	1480.0	1611.1	1762.4
42.5°	1210.2	1154.8	1207.7	1394.3	1545.6	1696.8
45°	1119.5	1028.7	1114.4	1306.0	1475.0	1626.3
47.5°	1023.7	927.8	1016.1	1220.3	1404.4	1553.1
50°	935.4	849.7	930.4	1132.1	1328.7	1475.0
52.5°	857.2	784.1	854.7	1043.8	1250.6	1394.3
55°	784.1	736.2	786.7	963.1	1177.5	1311.1
57.5°	726.1	693.4	728.7	885.0	1096.8	1227.9
60°	675.7	655.5	678.2	806.8	1011.0	1139.6
62.5°	620.2	612.7	620.2	731.2	927.8	1048.9
65°	572.3	579.9	572.3	663.1	839.6	955.6
67.5°	527.0	544.6	529.5	590.0	751.4	859.8
70°	476.5	501.7	479.1	524.4	660.6	761.4
72.5°	423.6	453.8	423.6	461.4	564.8	658.1
75°	368.1	403.4	370.6	393.3	474.0	549.6
77.5°	307.6	330.3	312.6	320.2	385.8	446.3
80°	244.6	269.8	247.1	252.1	305.1	345.4
82.5°	204.2	221.9	206.7	191.6	226.9	254.7
85°	151.3	161.4	156.3	148.8	156.3	174.0
87.5°	93.3	98.3	93.3	93.3	80.7	73.1
90°	103.4	110.9	103.4	80.7	45.4	2.5
92.5°	105.9	116.0	105.9	88.2	85.7	17.6
95°	237.0	232.0	252.1	229.4	131.1	68.1
97.5°	368.1	421.1	380.7	274.8	176.5	108.4
100°	423.6	474.0	441.2	342.9	201.7	148.8
102.5°	489.1	544.6	509.3	400.9	226.9	186.6
105°	569.8	617.7	587.5	423.6	249.6	216.8
107.5°	612.7	685.8	625.3	433.7	264.7	244.6
110°	635.4	713.5	655.5	436.2	277.3	267.3





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	653.0	728.7	668.1	436.2	282.4	287.4
115°	653.0	741.3	668.1	428.6	290.0	300.0
117.5°	653.0	733.7	668.1	421.1	300.0	307.6
120°	630.3	731.2	650.5	411.0	302.6	312.6
122.5°	612.7	711.0	625.3	398.4	302.6	310.1
125°	579.9	683.3	595.0	383.2	297.5	305.1
127.5°	544.6	642.9	557.2	365.6	300.0	295.0
130°	511.8	597.6	519.4	347.9	290.0	282.4
132.5°	469.0	547.1	476.5	335.3	279.9	269.8
135°	428.6	499.2	438.7	325.3	267.3	257.2
137.5°	385.8	448.8	395.8	305.1	254.7	244.6
140°	335.3	385.8	345.4	282.4	247.1	232.0
142.5°	302.6	330.3	312.6	272.3	237.0	216.8
145°	282.4	297.5	290.0	262.2	232.0	201.7
147.5°	262.2	277.3	269.8	242.0	219.4	189.1
150°	254.7	254.7	264.7	224.4	211.8	181.5
152.5°	226.9	247.1	237.0	204.2	206.7	179.0
155°	194.1	204.2	204.2	196.7	206.7	179.0
157.5°	181.5	189.1	191.6	196.7	201.7	176.5
160°	181.5	184.1	191.6	199.2	199.2	176.5
162.5°	186.6	184.1	196.7	204.2	194.1	176.5
165°	191.6	189.1	201.7	206.7	189.1	176.5
167.5°	196.7	196.7	206.7	204.2	184.1	176.5
170°	196.7	201.7	206.7	196.7	181.5	176.5
172.5°	189.1	191.6	196.7	184.1	174.0	176.5
175°	179.0	176.5	184.1	176.5	174.0	174.0
177.5°	174.0	166.4	174.0	171.4	168.9	171.4
180°	168.9	168.9	168.9	168.9	168.9	168.9

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