

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: P192525

Luminaire Tested: **4WSL-LD2-80-UPL15-UNV-L830-CD1-U**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P192525  
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-LD2-80-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  
OT85W1202772A0DIML

**Summary**

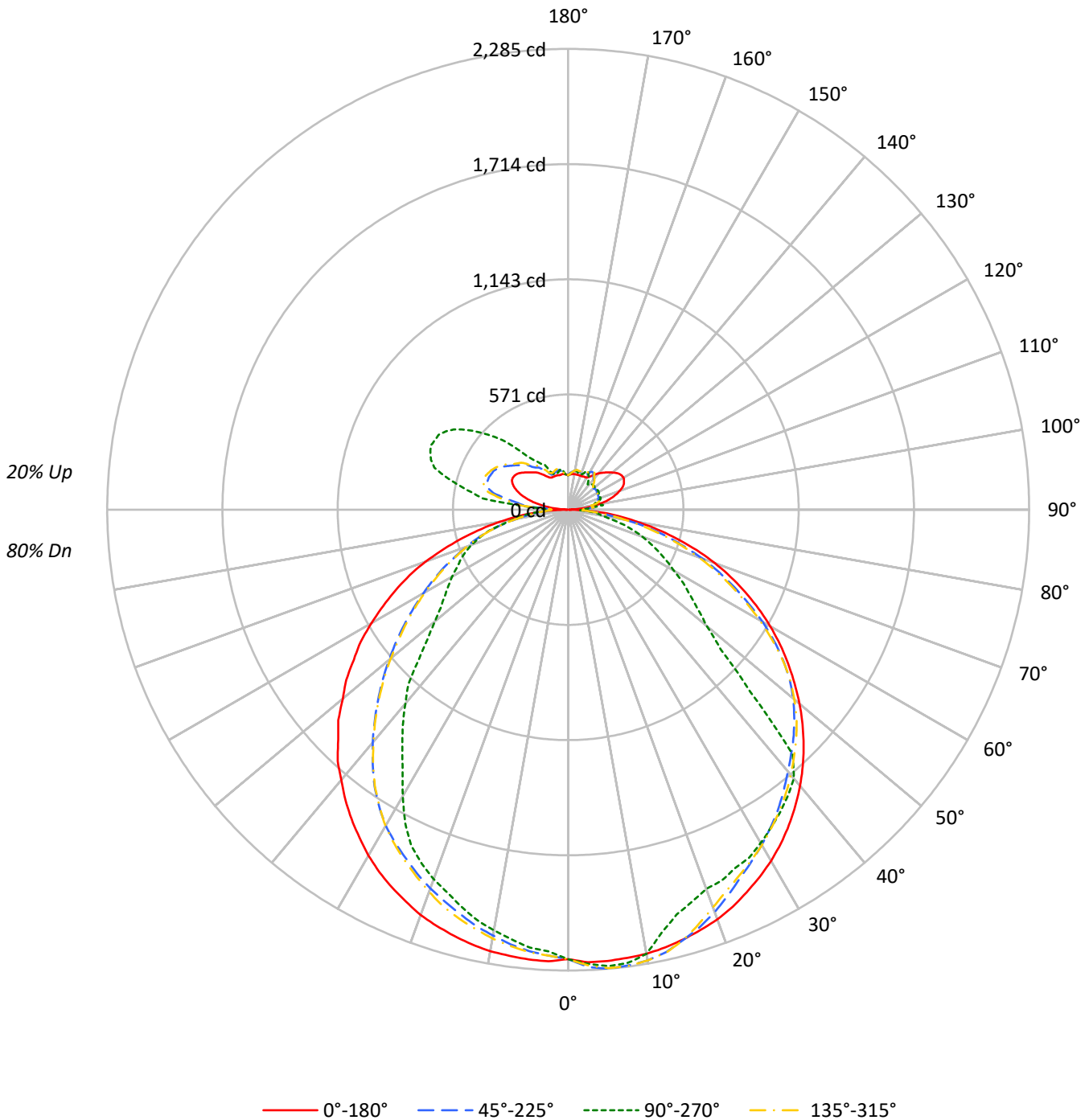
Lumens per Lamp: N/A  
Luminaire Lumens: 7886.0 lumens  
Efficiency: N/A  
Efficacy: 103.8 lumens/watt  
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35  
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')  
CIE Type: Semi-Direct

Input Watts (W): 76  
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: P192525

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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°	12624	12624	12624	12624
5°	12774	12919	12730	12396
10°	12863	12863	12789	12186
15°	12934	12184	12829	11959
20°	13033	12061	12894	11753
25°	13081	12250	12921	11498
30°	13154	12485	12953	10728
35°	13199	12668	12952	9908
40°	13225	12865	12941	9289
45°	13220	10228	12913	8363
50°	13190	7892	12852	7598
55°	13139	7277	12811	7378
60°	13103	6870	12755	7537
65°	12998	6653	12654	7888
70°	12797	6483	12458	8433
75°	12207	6159	11816	8959
80°	11435	5592	11102	8929
85°	11473	7319	10641	10641



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	212.1	2.7
10°-20°	601.8	7.6
20°-30°	909.4	11.5
30°-40°	1094.5	13.9
40°-50°	1113.1	14.1
50°-60°	968.8	12.3
60°-70°	755.7	9.6
70°-80°	467.2	5.9
80°-90°	164.4	2.1
90°-100°	154.8	2.0
100°-110°	299.6	3.8
110°-120°	327.9	4.2
120°-130°	287.4	3.6
130°-140°	215.4	2.7
140°-150°	147.4	1.9
150°-160°	93.9	1.2
160°-170°	54.9	0.7
170°-180°	17.7	0.2
0°-30°	1723.3	21.9
0°-40°	2817.7	35.7
0°-60°	4899.7	62.1
0°-90°	6287.0	79.7
90°-120°	782.3	9.9
90°-150°	1432.5	18.2
90°-180°	1599.0	20.3
0°-180°	7886.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2228	2228	2228	2228	2228	
5°	2246	2272	2238	2180	2246	214
15°	2205	2077	2187	2039	2205	623
25°	2093	1960	2067	1839	2093	966
35°	1908	1832	1873	1433	1908	1194
45°	1650	1277	1612	1044	1650	1273
55°	1330	737	1297	747	1330	1190
65°	970	496	944	588	970	958
75°	558	281	540	409	558	591
85°	176	113	164	164	176	176
90°	3	72	3	113	3	13
95°	69	118	54	235	69	72
105°	220	146	212	627	220	229
115°	304	166	304	752	304	298
125°	310	174	310	693	310	275
135°	261	174	261	506	261	203
145°	205	174	210	302	205	130
155°	182	210	179	207	182	84
165°	179	189	176	192	179	51
175°	176	184	176	179	176	17
180°	171	171	171	171	171	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	2228.3	2228.3	2228.3	2228.3	2228.3	2228.3	2228.3	2228.3	2228.3	2228.3	2228.3
2.5°	2246.2	2236.0	2269.2	2271.8	2253.9	2261.5	2261.5	2233.4	2241.1	2207.8	2212.9
5°	2246.2	2248.7	2284.6	2282.0	2271.8	2274.3	2282.0	2246.2	2238.5	2192.5	2197.6
7.5°	2241.1	2253.9	2279.4	2276.9	2266.7	2269.2	2282.0	2251.3	2230.8	2177.1	2174.6
10°	2236.0	2248.7	2269.2	2256.4	2236.0	2243.6	2269.2	2248.7	2223.2	2159.2	2143.9
12.5°	2223.2	2236.0	2246.2	2182.2	2146.4	2177.1	2248.7	2236.0	2207.8	2133.6	2113.2
15°	2205.3	2220.6	2207.8	2118.3	2077.3	2105.5	2207.8	2218.0	2187.3	2100.4	2074.8
17.5°	2184.8	2202.7	2169.4	2069.7	2039.0	2051.8	2154.1	2195.0	2164.3	2067.1	2036.4
20°	2161.8	2182.2	2123.4	2018.5	2000.6	2010.8	2097.8	2169.4	2138.7	2031.3	1998.0
22.5°	2131.1	2154.1	2069.7	1982.7	1990.4	1982.7	2046.6	2136.2	2102.9	1992.9	1954.5
25°	2092.7	2118.3	2015.9	1952.0	1959.7	1957.1	2003.2	2092.7	2067.1	1946.9	1905.9
27.5°	2054.3	2079.9	1967.3	1931.5	1944.3	1929.0	1962.2	2046.6	2026.2	1898.3	1859.9
30°	2010.8	2039.0	1918.7	1895.7	1908.5	1898.3	1921.3	2000.6	1980.1	1847.1	1808.7
32.5°	1962.2	1990.4	1867.6	1852.2	1870.1	1857.3	1872.7	1949.4	1926.4	1790.8	1744.8
35°	1908.5	1936.6	1813.8	1813.8	1831.7	1816.4	1824.1	1898.3	1872.7	1734.5	1673.1
37.5°	1849.7	1880.4	1755.0	1767.8	1788.3	1772.9	1772.9	1844.5	1813.8	1673.1	1591.3
40°	1788.3	1821.5	1693.6	1721.7	1739.6	1721.7	1716.6	1788.3	1749.9	1611.7	1506.8
42.5°	1721.7	1757.6	1637.3	1670.6	1647.5	1670.6	1657.8	1729.4	1691.0	1545.2	1419.9
45°	1650.1	1696.2	1581.0	1560.6	1276.6	1545.2	1598.9	1668.0	1611.7	1481.3	1332.9
47.5°	1575.9	1624.5	1519.6	1371.3	1025.9	1355.9	1535.0	1601.5	1545.2	1412.2	1245.9
50°	1496.6	1552.9	1455.7	1207.5	895.4	1192.2	1463.3	1532.4	1458.2	1338.0	1158.9
52.5°	1414.7	1476.1	1384.0	1066.8	808.4	1051.5	1386.6	1458.2	1386.6	1258.7	1074.5
55°	1330.3	1394.3	1299.6	936.3	736.8	933.8	1297.1	1378.9	1297.1	1179.4	990.1
57.5°	1245.9	1317.5	1210.1	841.7	675.4	828.9	1197.3	1297.1	1220.3	1097.5	908.2
60°	1156.4	1222.9	1112.9	739.3	606.3	736.8	1097.5	1212.6	1125.7	1013.1	828.9
62.5°	1064.3	1138.4	1008.0	649.8	550.0	647.3	990.1	1118.0	1033.6	926.1	752.1
65°	969.6	1041.2	908.2	578.2	496.3	573.1	890.3	1020.8	944.0	839.1	680.5
67.5°	872.4	938.9	808.4	509.1	442.6	504.0	788.0	918.4	851.9	749.6	603.8
70°	772.6	834.0	706.1	442.6	391.4	440.0	688.2	813.5	752.1	657.5	534.7
72.5°	667.7	724.0	598.6	378.6	337.7	376.1	583.3	706.1	642.1	560.3	473.3
75°	557.7	611.4	498.9	314.7	281.4	312.1	483.5	591.0	539.8	470.7	401.7
77.5°	452.8	506.5	396.5	243.0	214.9	237.9	378.6	483.5	440.0	381.2	327.5
80°	350.5	394.0	291.6	181.6	171.4	181.6	284.0	371.0	340.3	299.3	255.8
82.5°	258.4	284.0	197.0	148.4	148.4	148.4	191.9	263.5	250.7	222.6	194.4
85°	176.5	176.5	133.0	112.6	112.6	112.6	130.5	156.1	163.7	148.4	148.4
87.5°	74.2	76.7	69.1	61.4	58.8	61.4	66.5	64.0	64.0	71.6	89.5
90°	2.6	33.3	56.3	69.1	71.6	66.5	51.2	30.7	2.6	43.5	79.3
92.5°	17.9	71.6	66.5	87.0	89.5	81.9	69.1	56.3	10.2	79.3	84.4
95°	69.1	84.4	130.5	133.0	117.7	112.6	127.9	79.3	53.7	107.4	214.9
97.5°	110.0	127.9	117.7	153.5	174.0	153.5	122.8	122.8	102.3	166.3	250.7
100°	150.9	135.6	120.2	133.0	153.5	135.6	115.1	135.6	143.3	194.4	307.0
102.5°	189.3	150.9	150.9	130.5	133.0	127.9	145.8	148.4	179.1	220.0	378.6
105°	220.0	156.1	158.6	148.4	145.8	148.4	158.6	158.6	212.3	243.0	411.9
107.5°	248.2	161.2	156.1	163.7	166.3	163.7	156.1	161.2	243.0	258.4	419.6
110°	271.2	163.7	158.6	163.7	171.4	163.7	158.6	166.3	268.6	273.7	424.7



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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°	291.6	166.3	163.7	161.2	168.8	161.2	163.7	171.4	289.1	281.4	424.7
115°	304.4	168.8	163.7	163.7	166.3	163.7	166.3	174.0	304.4	284.0	419.6
117.5°	312.1	174.0	166.3	168.8	171.4	168.8	166.3	179.1	314.7	294.2	417.0
120°	317.2	191.9	166.3	171.4	174.0	171.4	166.3	194.4	317.2	299.3	406.8
122.5°	314.7	199.5	168.8	171.4	176.5	171.4	168.8	202.1	314.7	296.8	394.0
125°	309.6	207.2	168.8	168.8	174.0	171.4	171.4	207.2	309.6	291.6	376.1
127.5°	299.3	225.1	168.8	171.4	171.4	171.4	171.4	222.6	299.3	294.2	358.2
130°	286.5	237.9	163.7	174.0	171.4	176.5	168.8	237.9	286.5	286.5	342.8
132.5°	273.7	243.0	163.7	174.0	174.0	176.5	166.3	243.0	273.7	276.3	327.5
135°	260.9	248.2	174.0	171.4	174.0	174.0	176.5	248.2	260.9	266.1	317.2
137.5°	248.2	250.7	186.8	163.7	171.4	166.3	191.9	250.7	250.7	250.7	301.9
140°	235.4	248.2	197.0	158.6	161.2	163.7	202.1	250.7	240.5	243.0	276.3
142.5°	220.0	240.5	204.7	171.4	158.6	176.5	209.8	248.2	225.1	235.4	263.5
145°	204.7	232.8	220.0	189.3	174.0	197.0	227.7	240.5	209.8	230.2	255.8
147.5°	191.9	220.0	222.6	199.5	191.9	207.2	230.2	230.2	194.4	220.0	237.9
150°	184.2	207.2	214.9	207.2	199.5	217.5	225.1	212.3	184.2	212.3	222.6
152.5°	181.6	197.0	197.0	217.5	214.9	227.7	207.2	202.1	179.1	204.7	202.1
155°	181.6	194.4	189.3	199.5	209.8	209.8	197.0	197.0	179.1	204.7	191.9
157.5°	179.1	197.0	189.3	186.8	191.9	197.0	197.0	199.5	179.1	199.5	191.9
160°	179.1	199.5	191.9	184.2	186.8	194.4	199.5	199.5	179.1	199.5	194.4
162.5°	179.1	194.4	194.4	186.8	186.8	197.0	199.5	197.0	179.1	194.4	199.5
165°	179.1	194.4	197.0	191.9	189.3	202.1	199.5	191.9	176.5	191.9	202.1
167.5°	179.1	189.3	199.5	194.4	194.4	202.1	202.1	189.3	176.5	184.2	202.1
170°	179.1	186.8	197.0	194.4	197.0	204.7	197.0	186.8	179.1	181.6	194.4
172.5°	179.1	181.6	191.9	194.4	194.4	199.5	191.9	181.6	179.1	176.5	186.8
175°	176.5	181.6	186.8	186.8	184.2	191.9	184.2	179.1	176.5	174.0	179.1
177.5°	174.0	176.5	181.6	181.6	176.5	181.6	176.5	174.0	174.0	171.4	176.5
180°	171.4	171.4	171.4	171.4	171.4	171.4	171.4	171.4	171.4	171.4	171.4



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	2228.3	2228.3	2228.3	2228.3	2228.3	2228.3
2.5°	2210.4	2192.5	2197.6	2212.9	2210.4	2246.2
5°	2187.3	2179.7	2179.7	2202.7	2200.1	2246.2
7.5°	2161.8	2149.0	2156.6	2182.2	2189.9	2241.1
10°	2128.5	2118.3	2120.8	2159.2	2172.0	2236.0
12.5°	2095.3	2085.0	2092.7	2128.5	2146.4	2223.2
15°	2056.9	2039.0	2059.4	2097.8	2120.8	2205.3
17.5°	2010.8	1990.4	2010.8	2062.0	2090.1	2184.8
20°	1969.9	1949.4	1962.2	2015.9	2054.3	2161.8
22.5°	1923.8	1898.3	1908.5	1967.3	2015.9	2131.1
25°	1872.7	1839.4	1854.8	1918.7	1972.5	2092.7
27.5°	1806.2	1749.9	1788.3	1867.6	1918.7	2054.3
30°	1714.1	1639.9	1701.3	1811.3	1870.1	2010.8
32.5°	1606.6	1527.3	1593.8	1742.2	1813.8	1962.2
35°	1501.7	1432.6	1494.0	1670.6	1757.6	1908.5
37.5°	1409.6	1345.7	1402.0	1588.7	1696.2	1849.7
40°	1315.0	1256.1	1312.4	1501.7	1634.8	1788.3
42.5°	1228.0	1171.7	1225.4	1414.7	1568.2	1721.7
45°	1135.9	1043.8	1130.8	1325.2	1496.6	1650.1
47.5°	1038.7	941.5	1031.0	1238.2	1425.0	1575.9
50°	949.1	862.1	944.0	1148.7	1348.2	1496.6
52.5°	869.8	795.6	867.3	1059.1	1268.9	1414.7
55°	795.6	747.0	798.2	977.3	1194.7	1330.3
57.5°	736.8	703.5	739.3	898.0	1112.9	1245.9
60°	685.6	665.2	688.2	818.7	1025.9	1156.4
62.5°	629.3	621.7	629.3	741.9	941.5	1064.3
65°	580.7	588.4	580.7	672.8	851.9	969.6
67.5°	534.7	552.6	537.2	598.6	762.4	872.4
70°	483.5	509.1	486.1	532.1	670.3	772.6
72.5°	429.8	460.5	429.8	468.2	573.1	667.7
75°	373.5	409.3	376.1	399.1	481.0	557.7
77.5°	312.1	335.1	317.2	324.9	391.4	452.8
80°	248.2	273.7	250.7	255.8	309.6	350.5
82.5°	207.2	225.1	209.8	194.4	230.2	258.4
85°	153.5	163.7	158.6	150.9	158.6	176.5
87.5°	94.7	99.8	94.7	94.7	81.9	74.2
90°	104.9	112.6	104.9	81.9	46.0	2.6
92.5°	107.4	117.7	107.4	89.5	87.0	17.9
95°	240.5	235.4	255.8	232.8	133.0	69.1
97.5°	373.5	427.2	386.3	278.9	179.1	110.0
100°	429.8	481.0	447.7	347.9	204.7	150.9
102.5°	496.3	552.6	516.8	406.8	230.2	189.3
105°	578.2	626.8	596.1	429.8	253.3	220.0
107.5°	621.7	695.9	634.5	440.0	268.6	248.2
110°	644.7	724.0	665.2	442.6	281.4	271.2





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	662.6	739.3	678.0	442.6	286.5	291.6
115°	662.6	752.1	678.0	434.9	294.2	304.4
117.5°	662.6	744.5	678.0	427.2	304.4	312.1
120°	639.6	741.9	660.0	417.0	307.0	317.2
122.5°	621.7	721.4	634.5	404.2	307.0	314.7
125°	588.4	693.3	603.8	388.9	301.9	309.6
127.5°	552.6	652.4	565.4	371.0	304.4	299.3
130°	519.3	606.3	527.0	353.0	294.2	286.5
132.5°	475.8	555.2	483.5	340.3	284.0	273.7
135°	434.9	506.5	445.1	330.0	271.2	260.9
137.5°	391.4	455.4	401.7	309.6	258.4	248.2
140°	340.3	391.4	350.5	286.5	250.7	235.4
142.5°	307.0	335.1	317.2	276.3	240.5	220.0
145°	286.5	301.9	294.2	266.1	235.4	204.7
147.5°	266.1	281.4	273.7	245.6	222.6	191.9
150°	258.4	258.4	268.6	227.7	214.9	184.2
152.5°	230.2	250.7	240.5	207.2	209.8	181.6
155°	197.0	207.2	207.2	199.5	209.8	181.6
157.5°	184.2	191.9	194.4	199.5	204.7	179.1
160°	184.2	186.8	194.4	202.1	202.1	179.1
162.5°	189.3	186.8	199.5	207.2	197.0	179.1
165°	194.4	191.9	204.7	209.8	191.9	179.1
167.5°	199.5	199.5	209.8	207.2	186.8	179.1
170°	199.5	204.7	209.8	199.5	184.2	179.1
172.5°	191.9	194.4	199.5	186.8	176.5	179.1
175°	181.6	179.1	186.8	179.1	176.5	176.5
177.5°	176.5	168.8	176.5	174.0	171.4	174.0
180°	171.4	171.4	171.4	171.4	171.4	171.4

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