

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: P192497

Luminaire Tested: **4WSL-LD2-45-UPL15-UNV-L830-CD1-U**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P192497  
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-LD2-45-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**

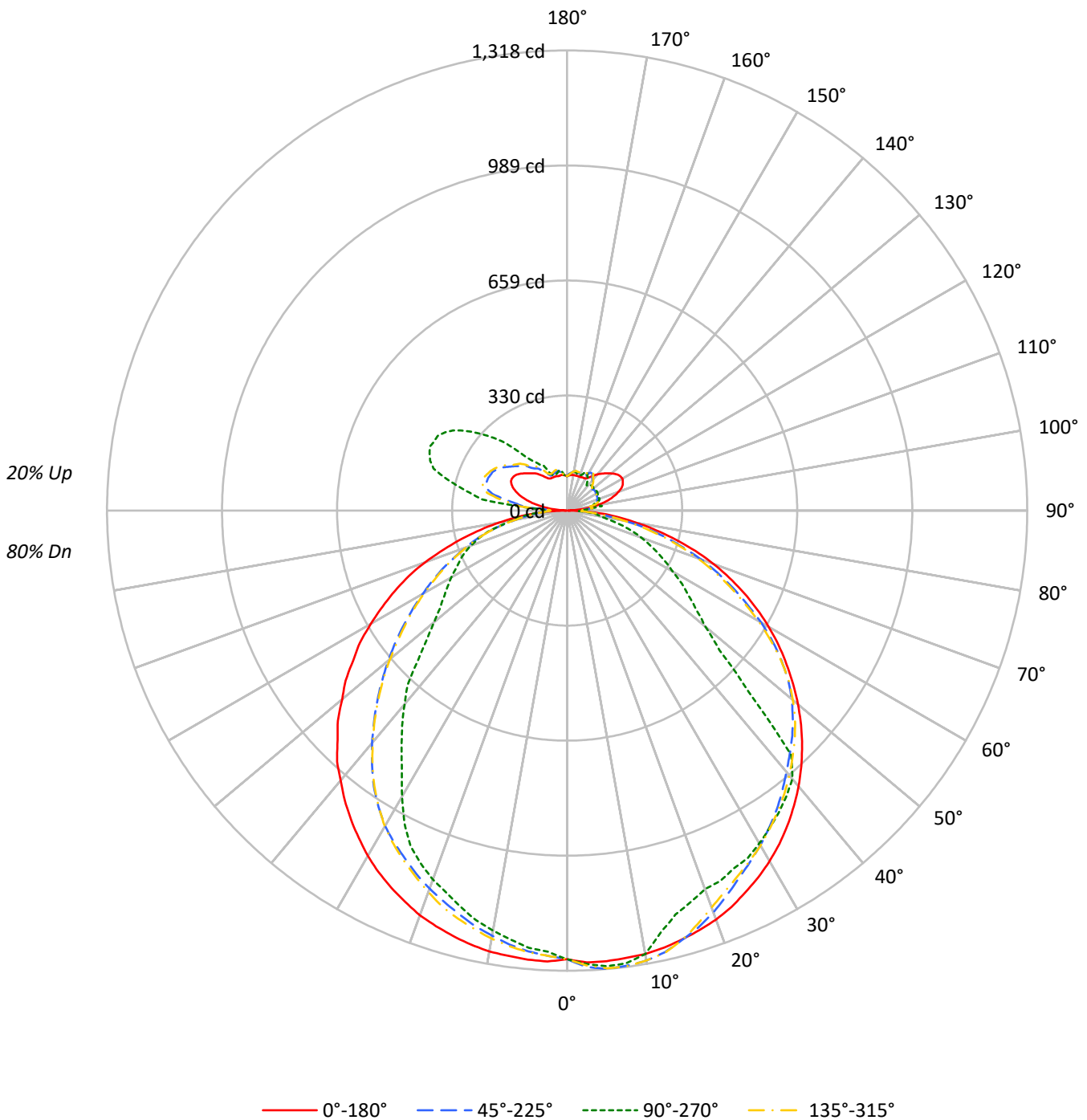
Lumens per Lamp: N/A  
Luminaire Lumens: 4548.0 lumens  
Efficiency: N/A  
Efficacy: 114.0 lumens/watt  
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35  
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')  
CIE Type: Semi-Direct

Input Watts (W): 39.9  
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

TEST NUMBER: P192497

CATALOG NUMBER: 4WSL-LD2-45-UPL15-UNV-L830-CD1-U

### Luminous Intensity Polar Plot





TEST NUMBER: P192497

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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°	7280	7280	7280	7280
5°	7367	7451	7342	7149
10°	7418	7418	7375	7027
15°	7459	7026	7399	6897
20°	7516	6956	7437	6778
25°	7544	7065	7452	6631
30°	7586	7200	7471	6186
35°	7612	7306	7469	5714
40°	7627	7420	7463	5357
45°	7624	5898	7447	4823
50°	7607	4551	7412	4382
55°	7578	4197	7388	4255
60°	7556	3962	7356	4346
65°	7496	3837	7298	4548
70°	7381	3738	7185	4863
75°	7039	3553	6814	5168
80°	6593	3227	6401	5151
85°	6617	4219	6136	6136



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	122.3	2.7
10°-20°	347.1	7.6
20°-30°	524.5	11.5
30°-40°	631.2	13.9
40°-50°	641.9	14.1
50°-60°	558.7	12.3
60°-70°	435.9	9.6
70°-80°	269.4	5.9
80°-90°	94.8	2.1
90°-100°	89.3	2.0
100°-110°	172.8	3.8
110°-120°	189.1	4.2
120°-130°	165.8	3.6
130°-140°	124.2	2.7
140°-150°	85.0	1.9
150°-160°	54.1	1.2
160°-170°	31.7	0.7
170°-180°	10.2	0.2
0°-30°	993.8	21.9
0°-40°	1625.0	35.7
0°-60°	2825.7	62.1
0°-90°	3625.8	79.7
90°-120°	451.2	9.9
90°-150°	826.2	18.2
90°-180°	922.0	20.3
0°-180°	4548.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1285	1285	1285	1285	1285	
5°	1295	1310	1291	1257	1295	123
15°	1272	1198	1262	1176	1272	360
25°	1207	1130	1192	1061	1207	557
35°	1101	1056	1080	826	1101	689
45°	952	736	930	602	952	734
55°	767	425	748	431	767	686
65°	559	286	544	339	559	553
75°	322	162	311	236	322	341
85°	102	65	94	94	102	102
90°	2	41	2	65	2	8
95°	40	68	31	136	40	41
105°	127	84	122	362	127	132
115°	176	96	176	434	176	172
125°	178	100	178	400	178	159
135°	150	100	150	292	150	117
145°	118	100	121	174	118	75
155°	105	121	103	120	105	48
165°	103	109	102	111	103	29
175°	102	106	102	103	102	10
180°	99	99	99	99	99	



TEST NUMBER: P192497

CATALOG NUMBER: 4WSL-LD2-45-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°	1285.1	1285.1	1285.1	1285.1	1285.1	1285.1	1285.1	1285.1	1285.1	1285.1	1285.1
2.5°	1295.4	1289.5	1308.7	1310.2	1299.8	1304.3	1304.3	1288.0	1292.5	1273.3	1276.2
5°	1295.4	1296.9	1317.6	1316.1	1310.2	1311.6	1316.1	1295.4	1291.0	1264.4	1267.4
7.5°	1292.5	1299.8	1314.6	1313.1	1307.2	1308.7	1316.1	1298.4	1286.6	1255.6	1254.1
10°	1289.5	1296.9	1308.7	1301.3	1289.5	1293.9	1308.7	1296.9	1282.1	1245.3	1236.4
12.5°	1282.1	1289.5	1295.4	1258.5	1237.9	1255.6	1296.9	1289.5	1273.3	1230.5	1218.7
15°	1271.8	1280.7	1273.3	1221.6	1198.0	1214.3	1273.3	1279.2	1261.5	1211.3	1196.6
17.5°	1260.0	1270.3	1251.2	1193.6	1175.9	1183.3	1242.3	1265.9	1248.2	1192.1	1174.4
20°	1246.7	1258.5	1224.6	1164.1	1153.8	1159.7	1209.8	1251.2	1233.5	1171.5	1152.3
22.5°	1229.0	1242.3	1193.6	1143.5	1147.9	1143.5	1180.3	1232.0	1212.8	1149.4	1127.2
25°	1206.9	1221.6	1162.6	1125.7	1130.2	1128.7	1155.3	1206.9	1192.1	1122.8	1099.2
27.5°	1184.8	1199.5	1134.6	1113.9	1121.3	1112.5	1131.6	1180.3	1168.5	1094.8	1072.6
30°	1159.7	1175.9	1106.6	1093.3	1100.7	1094.8	1108.0	1153.8	1142.0	1065.3	1043.1
32.5°	1131.6	1147.9	1077.1	1068.2	1078.5	1071.2	1080.0	1124.3	1111.0	1032.8	1006.2
35°	1100.7	1116.9	1046.1	1046.1	1056.4	1047.5	1052.0	1094.8	1080.0	1000.3	964.9
37.5°	1066.7	1084.4	1012.1	1019.5	1031.3	1022.5	1022.5	1063.8	1046.1	964.9	917.7
40°	1031.3	1050.5	976.7	993.0	1003.3	993.0	990.0	1031.3	1009.2	929.5	869.0
42.5°	993.0	1013.6	944.3	963.4	950.2	963.4	956.1	997.4	975.3	891.2	818.9
45°	951.6	978.2	911.8	900.0	736.2	891.2	922.1	962.0	929.5	854.3	768.7
47.5°	908.9	936.9	876.4	790.8	591.6	782.0	885.3	923.6	891.2	814.4	718.5
50°	863.1	895.6	839.5	696.4	516.4	687.5	843.9	883.8	841.0	771.6	668.4
52.5°	815.9	851.3	798.2	615.3	466.2	606.4	799.7	841.0	799.7	725.9	619.7
55°	767.2	804.1	749.5	540.0	424.9	538.5	748.0	795.3	748.0	680.2	571.0
57.5°	718.5	759.8	697.9	485.4	389.5	478.0	690.5	748.0	703.8	633.0	523.8
60°	666.9	705.3	641.8	426.4	349.7	424.9	633.0	699.3	649.2	584.3	478.0
62.5°	613.8	656.6	581.3	374.8	317.2	373.3	571.0	644.8	596.1	534.1	433.8
65°	559.2	600.5	523.8	333.4	286.2	330.5	513.4	588.7	544.4	483.9	392.5
67.5°	503.1	541.5	466.2	293.6	255.2	290.7	454.4	529.7	491.3	432.3	348.2
70°	445.6	481.0	407.2	255.2	225.7	253.8	396.9	469.2	433.8	379.2	308.4
72.5°	385.1	417.5	345.2	218.4	194.8	216.9	336.4	407.2	370.3	323.1	273.0
75°	321.6	352.6	287.7	181.5	162.3	180.0	278.9	340.8	311.3	271.5	231.6
77.5°	261.1	292.1	228.7	140.2	123.9	137.2	218.4	278.9	253.8	219.8	188.9
80°	202.1	227.2	168.2	104.8	98.9	104.8	163.8	213.9	196.2	172.6	147.5
82.5°	149.0	163.8	113.6	85.6	85.6	85.6	110.7	152.0	144.6	128.4	112.1
85°	101.8	101.8	76.7	64.9	64.9	64.9	75.2	90.0	94.4	85.6	85.6
87.5°	42.8	44.3	39.8	35.4	33.9	35.4	38.4	36.9	36.9	41.3	51.6
90°	1.5	19.2	32.5	39.8	41.3	38.4	29.5	17.7	1.5	25.1	45.7
92.5°	10.3	41.3	38.4	50.2	51.6	47.2	39.8	32.5	5.9	45.7	48.7
95°	39.8	48.7	75.2	76.7	67.9	64.9	73.8	45.7	31.0	62.0	123.9
97.5°	63.4	73.8	67.9	88.5	100.3	88.5	70.8	70.8	59.0	95.9	144.6
100°	87.0	78.2	69.3	76.7	88.5	78.2	66.4	78.2	82.6	112.1	177.1
102.5°	109.2	87.0	87.0	75.2	76.7	73.8	84.1	85.6	103.3	126.9	218.4
105°	126.9	90.0	91.5	85.6	84.1	85.6	91.5	91.5	122.5	140.2	237.5
107.5°	143.1	93.0	90.0	94.4	95.9	94.4	90.0	93.0	140.2	149.0	242.0
110°	156.4	94.4	91.5	94.4	98.9	94.4	91.5	95.9	154.9	157.9	244.9



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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°	168.2	95.9	94.4	93.0	97.4	93.0	94.4	98.9	166.7	162.3	244.9
115°	175.6	97.4	94.4	94.4	95.9	94.4	95.9	100.3	175.6	163.8	242.0
117.5°	180.0	100.3	95.9	97.4	98.9	97.4	95.9	103.3	181.5	169.7	240.5
120°	183.0	110.7	95.9	98.9	100.3	98.9	95.9	112.1	183.0	172.6	234.6
122.5°	181.5	115.1	97.4	98.9	101.8	98.9	97.4	116.6	181.5	171.1	227.2
125°	178.5	119.5	97.4	97.4	100.3	98.9	98.9	119.5	178.5	168.2	216.9
127.5°	172.6	129.8	97.4	98.9	98.9	98.9	98.9	128.4	172.6	169.7	206.6
130°	165.2	137.2	94.4	100.3	98.9	101.8	97.4	137.2	165.2	165.2	197.7
132.5°	157.9	140.2	94.4	100.3	100.3	101.8	95.9	140.2	157.9	159.3	188.9
135°	150.5	143.1	100.3	98.9	100.3	100.3	101.8	143.1	150.5	153.4	183.0
137.5°	143.1	144.6	107.7	94.4	98.9	95.9	110.7	144.6	144.6	144.6	174.1
140°	135.7	143.1	113.6	91.5	93.0	94.4	116.6	144.6	138.7	140.2	159.3
142.5°	126.9	138.7	118.0	98.9	91.5	101.8	121.0	143.1	129.8	135.7	152.0
145°	118.0	134.3	126.9	109.2	100.3	113.6	131.3	138.7	121.0	132.8	147.5
147.5°	110.7	126.9	128.4	115.1	110.7	119.5	132.8	132.8	112.1	126.9	137.2
150°	106.2	119.5	123.9	119.5	115.1	125.4	129.8	122.5	106.2	122.5	128.4
152.5°	104.8	113.6	113.6	125.4	123.9	131.3	119.5	116.6	103.3	118.0	116.6
155°	104.8	112.1	109.2	115.1	121.0	121.0	113.6	113.6	103.3	118.0	110.7
157.5°	103.3	113.6	109.2	107.7	110.7	113.6	113.6	115.1	103.3	115.1	110.7
160°	103.3	115.1	110.7	106.2	107.7	112.1	115.1	115.1	103.3	115.1	112.1
162.5°	103.3	112.1	112.1	107.7	107.7	113.6	115.1	113.6	103.3	112.1	115.1
165°	103.3	112.1	113.6	110.7	109.2	116.6	115.1	110.7	101.8	110.7	116.6
167.5°	103.3	109.2	115.1	112.1	112.1	116.6	116.6	109.2	101.8	106.2	116.6
170°	103.3	107.7	113.6	112.1	113.6	118.0	113.6	107.7	103.3	104.8	112.1
172.5°	103.3	104.8	110.7	112.1	112.1	115.1	110.7	104.8	103.3	101.8	107.7
175°	101.8	104.8	107.7	107.7	106.2	110.7	106.2	103.3	101.8	100.3	103.3
177.5°	100.3	101.8	104.8	104.8	101.8	104.8	101.8	100.3	100.3	98.9	101.8
180°	98.9	98.9	98.9	98.9	98.9	98.9	98.9	98.9	98.9	98.9	98.9



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1285.1	1285.1	1285.1	1285.1	1285.1	1285.1
2.5°	1274.8	1264.4	1267.4	1276.2	1274.8	1295.4
5°	1261.5	1257.1	1257.1	1270.3	1268.9	1295.4
7.5°	1246.7	1239.4	1243.8	1258.5	1263.0	1292.5
10°	1227.5	1221.6	1223.1	1245.3	1252.6	1289.5
12.5°	1208.4	1202.5	1206.9	1227.5	1237.9	1282.1
15°	1186.2	1175.9	1187.7	1209.8	1223.1	1271.8
17.5°	1159.7	1147.9	1159.7	1189.2	1205.4	1260.0
20°	1136.1	1124.3	1131.6	1162.6	1184.8	1246.7
22.5°	1109.5	1094.8	1100.7	1134.6	1162.6	1229.0
25°	1080.0	1060.8	1069.7	1106.6	1137.5	1206.9
27.5°	1041.6	1009.2	1031.3	1077.1	1106.6	1184.8
30°	988.5	945.7	981.2	1044.6	1078.5	1159.7
32.5°	926.6	880.8	919.2	1004.8	1046.1	1131.6
35°	866.1	826.2	861.6	963.4	1013.6	1100.7
37.5°	813.0	776.1	808.5	916.2	978.2	1066.7
40°	758.4	724.4	756.9	866.1	942.8	1031.3
42.5°	708.2	675.7	706.7	815.9	904.4	993.0
45°	655.1	602.0	652.1	764.3	863.1	951.6
47.5°	599.0	543.0	594.6	714.1	821.8	908.9
50°	547.4	497.2	544.4	662.5	777.5	863.1
52.5°	501.6	458.9	500.2	610.8	731.8	815.9
55°	458.9	430.8	460.3	563.6	689.0	767.2
57.5°	424.9	405.7	426.4	517.9	641.8	718.5
60°	395.4	383.6	396.9	472.1	591.6	666.9
62.5°	363.0	358.5	363.0	427.9	543.0	613.8
65°	334.9	339.3	334.9	388.0	491.3	559.2
67.5°	308.4	318.7	309.8	345.2	439.7	503.1
70°	278.9	293.6	280.3	306.9	386.6	445.6
72.5°	247.9	265.6	247.9	270.0	330.5	385.1
75°	215.4	236.1	216.9	230.2	277.4	321.6
77.5°	180.0	193.3	183.0	187.4	225.7	261.1
80°	143.1	157.9	144.6	147.5	178.5	202.1
82.5°	119.5	129.8	121.0	112.1	132.8	149.0
85°	88.5	94.4	91.5	87.0	91.5	101.8
87.5°	54.6	57.5	54.6	54.6	47.2	42.8
90°	60.5	64.9	60.5	47.2	26.6	1.5
92.5°	62.0	67.9	62.0	51.6	50.2	10.3
95°	138.7	135.7	147.5	134.3	76.7	39.8
97.5°	215.4	246.4	222.8	160.8	103.3	63.4
100°	247.9	277.4	258.2	200.7	118.0	87.0
102.5°	286.2	318.7	298.0	234.6	132.8	109.2
105°	333.4	361.5	343.8	247.9	146.1	126.9
107.5°	358.5	401.3	365.9	253.8	154.9	143.1
110°	371.8	417.5	383.6	255.2	162.3	156.4





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	382.1	426.4	391.0	255.2	165.2	168.2
115°	382.1	433.8	391.0	250.8	169.7	175.6
117.5°	382.1	429.3	391.0	246.4	175.6	180.0
120°	368.9	427.9	380.7	240.5	177.1	183.0
122.5°	358.5	416.1	365.9	233.1	177.1	181.5
125°	339.3	399.8	348.2	224.3	174.1	178.5
127.5°	318.7	376.2	326.1	213.9	175.6	172.6
130°	299.5	349.7	303.9	203.6	169.7	165.2
132.5°	274.4	320.2	278.9	196.2	163.8	157.9
135°	250.8	292.1	256.7	190.3	156.4	150.5
137.5°	225.7	262.6	231.6	178.5	149.0	143.1
140°	196.2	225.7	202.1	165.2	144.6	135.7
142.5°	177.1	193.3	183.0	159.3	138.7	126.9
145°	165.2	174.1	169.7	153.4	135.7	118.0
147.5°	153.4	162.3	157.9	141.6	128.4	110.7
150°	149.0	149.0	154.9	131.3	123.9	106.2
152.5°	132.8	144.6	138.7	119.5	121.0	104.8
155°	113.6	119.5	119.5	115.1	121.0	104.8
157.5°	106.2	110.7	112.1	115.1	118.0	103.3
160°	106.2	107.7	112.1	116.6	116.6	103.3
162.5°	109.2	107.7	115.1	119.5	113.6	103.3
165°	112.1	110.7	118.0	121.0	110.7	103.3
167.5°	115.1	115.1	121.0	119.5	107.7	103.3
170°	115.1	118.0	121.0	115.1	106.2	103.3
172.5°	110.7	112.1	115.1	107.7	101.8	103.3
175°	104.8	103.3	107.7	103.3	101.8	101.8
177.5°	101.8	97.4	101.8	100.3	98.9	100.3
180°	98.9	98.9	98.9	98.9	98.9	98.9

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