

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: P192499

Luminaire Tested: **4WSL-LD2-45-UPL15-UNV-L840-CD1-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P192499
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-L840-CD1-U
Description: 4FT Linear Wavestream System, 15% Uplight, L840
Light Source: (238) 4000K CCT, 80 CRI LEDS
EL236N0119D840
Ballast/Driver: OSRAM
OT50W

Summary

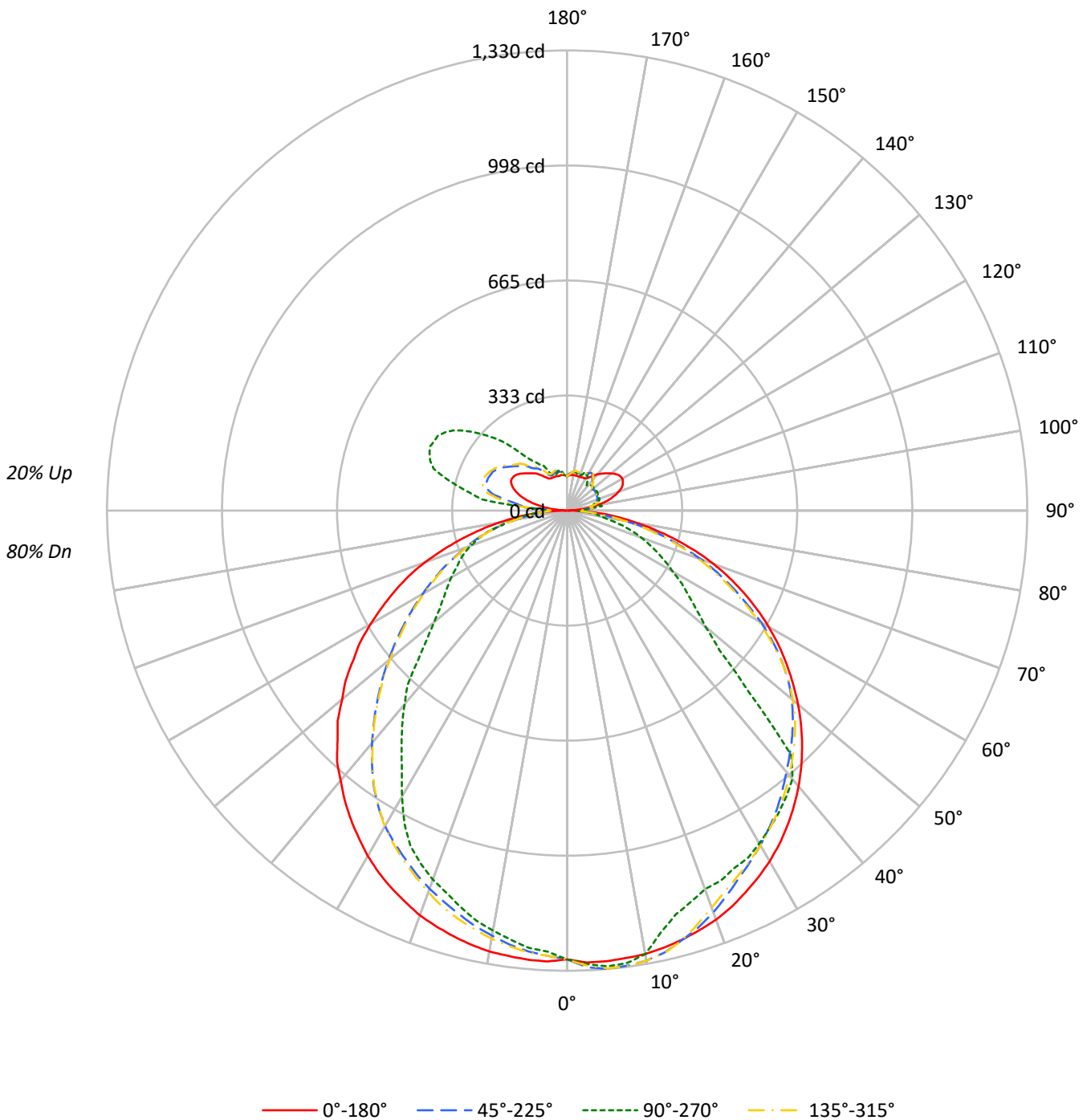
Lumens per Lamp: N/A
Luminaire Lumens: 4590.0 lumens
Efficiency: N/A
Efficacy: 115.0 lumens/watt
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')
CIE Type: Semi-Direct

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: P192499

CATALOG NUMBER: 4WSL-LD2-45-UPL15-UNV-L840-CD1-U

Luminous Intensity Polar Plot





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CATALOG NUMBER: 4WSL-LD2-45-UPL15-UNV-L840-CD1-U

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°	7348	7348	7348	7348
5°	7435	7520	7409	7215
10°	7486	7486	7444	7092
15°	7528	7091	7467	6961
20°	7585	7020	7505	6841
25°	7614	7130	7520	6692
30°	7656	7266	7539	6244
35°	7682	7374	7538	5767
40°	7697	7489	7532	5407
45°	7695	5953	7516	4867
50°	7677	4594	7481	4423
55°	7648	4235	7456	4295
60°	7625	3999	7424	4387
65°	7564	3873	7366	4591
70°	7449	3773	7252	4908
75°	7105	3585	6877	5214
80°	6655	3256	6460	5197
85°	6676	4258	6195	6195



TEST NUMBER: P192499

CATALOG NUMBER: 4WSL-LD2-45-UPL15-UNV-L840-CD1-U

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	123.4	2.7
10°-20°	350.3	7.6
20°-30°	529.3	11.5
30°-40°	637.0	13.9
40°-50°	647.9	14.1
50°-60°	563.9	12.3
60°-70°	439.9	9.6
70°-80°	271.9	5.9
80°-90°	95.7	2.1
90°-100°	90.1	2.0
100°-110°	174.4	3.8
110°-120°	190.8	4.2
120°-130°	167.3	3.6
130°-140°	125.4	2.7
140°-150°	85.8	1.9
150°-160°	54.6	1.2
160°-170°	31.9	0.7
170°-180°	10.3	0.2
0°-30°	1003.0	21.9
0°-40°	1640.1	35.7
0°-60°	2851.8	62.1
0°-90°	3659.3	79.7
90°-120°	455.3	9.9
90°-150°	833.8	18.2
90°-180°	931.0	20.3
0°-180°	4590.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1297	1297	1297	1297	1297	
5°	1307	1322	1303	1269	1307	125
15°	1284	1209	1273	1187	1284	363
25°	1218	1141	1203	1071	1218	562
35°	1111	1066	1090	834	1111	695
45°	960	743	938	608	960	741
55°	774	429	755	435	774	692
65°	564	289	550	342	564	558
75°	325	164	314	238	325	344
85°	103	66	95	95	103	102
90°	2	42	2	66	2	8
95°	40	68	31	137	40	42
105°	128	85	124	365	128	133
115°	177	97	177	438	177	174
125°	180	101	180	404	180	160
135°	152	101	152	295	152	118
145°	119	101	122	176	119	76
155°	106	122	104	121	106	49
165°	104	110	103	112	104	30
175°	103	107	103	104	103	10
180°	100	100	100	100	100	



TEST NUMBER: P192499

CATALOG NUMBER: 4WSL-LD2-45-UPL15-UNV-L840-CD1-U

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1297.0	1297.0	1297.0	1297.0	1297.0	1297.0	1297.0	1297.0	1297.0	1297.0	1297.0
2.5°	1307.4	1301.4	1320.8	1322.3	1311.8	1316.3	1316.3	1299.9	1304.4	1285.0	1288.0
5°	1307.4	1308.9	1329.7	1328.2	1322.3	1323.8	1328.2	1307.4	1302.9	1276.1	1279.1
7.5°	1304.4	1311.8	1326.7	1325.3	1319.3	1320.8	1328.2	1310.4	1298.4	1267.2	1265.7
10°	1301.4	1308.9	1320.8	1313.3	1301.4	1305.9	1320.8	1308.9	1294.0	1256.8	1247.8
12.5°	1294.0	1301.4	1307.4	1270.2	1249.3	1267.2	1308.9	1301.4	1285.0	1241.9	1230.0
15°	1283.6	1292.5	1285.0	1232.9	1209.1	1225.5	1285.0	1291.0	1273.1	1222.5	1207.6
17.5°	1271.6	1282.1	1262.7	1204.6	1186.8	1194.2	1253.8	1277.6	1259.7	1203.1	1185.3
20°	1258.2	1270.2	1235.9	1174.9	1164.4	1170.4	1221.0	1262.7	1244.8	1182.3	1162.9
22.5°	1240.4	1253.8	1204.6	1154.0	1158.5	1154.0	1191.2	1243.4	1224.0	1160.0	1137.6
25°	1218.0	1232.9	1173.4	1136.1	1140.6	1139.1	1165.9	1218.0	1203.1	1133.2	1109.3
27.5°	1195.7	1210.6	1145.1	1124.2	1131.7	1122.7	1142.1	1191.2	1179.3	1104.9	1082.5
30°	1170.4	1186.8	1116.8	1103.4	1110.8	1104.9	1118.3	1164.4	1152.5	1075.1	1052.8
32.5°	1142.1	1158.5	1087.0	1078.1	1088.5	1081.0	1090.0	1134.7	1121.3	1042.3	1015.5
35°	1110.8	1127.2	1055.7	1055.7	1066.2	1057.2	1061.7	1104.9	1090.0	1009.6	973.8
37.5°	1076.6	1094.4	1021.5	1028.9	1040.8	1031.9	1031.9	1073.6	1055.7	973.8	926.2
40°	1040.8	1060.2	985.7	1002.1	1012.6	1002.1	999.1	1040.8	1018.5	938.1	877.0
42.5°	1002.1	1023.0	953.0	972.3	958.9	972.3	964.9	1006.6	984.3	899.4	826.4
45°	960.4	987.2	920.2	908.3	743.0	899.4	930.7	970.9	938.1	862.2	775.8
47.5°	917.3	945.5	884.5	798.1	597.1	789.2	893.4	932.1	899.4	822.0	725.2
50°	871.1	903.9	847.3	702.8	521.2	693.9	851.7	891.9	848.8	778.8	674.5
52.5°	823.4	859.2	805.6	620.9	470.5	612.0	807.1	848.8	807.1	732.6	625.4
55°	774.3	811.5	756.4	545.0	428.8	543.5	754.9	802.6	754.9	686.4	576.3
57.5°	725.2	766.9	704.3	489.9	393.1	482.5	696.9	754.9	710.3	638.8	528.6
60°	673.0	711.8	647.7	430.3	352.9	428.8	638.8	705.8	655.2	589.7	482.5
62.5°	619.4	662.6	586.7	378.2	320.1	376.7	576.3	650.7	601.6	539.0	437.8
65°	564.3	606.0	528.6	336.5	288.9	333.5	518.2	594.1	549.5	488.4	396.1
67.5°	507.8	546.5	470.5	296.3	257.6	293.3	458.6	534.6	495.9	436.3	351.4
70°	449.7	485.4	411.0	257.6	227.8	256.1	400.6	473.5	437.8	382.7	311.2
72.5°	388.6	421.4	348.4	220.4	196.6	218.9	339.5	411.0	373.8	326.1	275.5
75°	324.6	355.9	290.4	183.2	163.8	181.7	281.4	344.0	314.2	274.0	233.8
77.5°	263.6	294.8	230.8	141.5	125.1	138.5	220.4	281.4	256.1	221.9	190.6
80°	204.0	229.3	169.8	105.7	99.8	105.7	165.3	215.9	198.0	174.2	148.9
82.5°	150.4	165.3	114.7	86.4	86.4	86.4	111.7	153.4	145.9	129.5	113.2
85°	102.7	102.7	77.4	65.5	65.5	65.5	75.9	90.8	95.3	86.4	86.4
87.5°	43.2	44.7	40.2	35.7	34.2	35.7	38.7	37.2	37.2	41.7	52.1
90°	1.5	19.4	32.8	40.2	41.7	38.7	29.8	17.9	1.5	25.3	46.2
92.5°	10.4	41.7	38.7	50.6	52.1	47.6	40.2	32.8	6.0	46.2	49.1
95°	40.2	49.1	75.9	77.4	68.5	65.5	74.5	46.2	31.3	62.5	125.1
97.5°	64.0	74.5	68.5	89.3	101.3	89.3	71.5	71.5	59.6	96.8	145.9
100°	87.9	78.9	70.0	77.4	89.3	78.9	67.0	78.9	83.4	113.2	178.7
102.5°	110.2	87.9	87.9	75.9	77.4	74.5	84.9	86.4	104.2	128.1	220.4
105°	128.1	90.8	92.3	86.4	84.9	86.4	92.3	92.3	123.6	141.5	239.7
107.5°	144.4	93.8	90.8	95.3	96.8	95.3	90.8	93.8	141.5	150.4	244.2
110°	157.8	95.3	92.3	95.3	99.8	95.3	92.3	96.8	156.3	159.3	247.2



TEST NUMBER: P192499

CATALOG NUMBER: 4WSL-LD2-45-UPL15-UNV-L840-CD1-U

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	169.8	96.8	95.3	93.8	98.3	93.8	95.3	99.8	168.3	163.8	247.2
115°	177.2	98.3	95.3	95.3	96.8	95.3	96.8	101.3	177.2	165.3	244.2
117.5°	181.7	101.3	96.8	98.3	99.8	98.3	96.8	104.2	183.2	171.2	242.7
120°	184.6	111.7	96.8	99.8	101.3	99.8	96.8	113.2	184.6	174.2	236.8
122.5°	183.2	116.1	98.3	99.8	102.7	99.8	98.3	117.6	183.2	172.7	229.3
125°	180.2	120.6	98.3	98.3	101.3	99.8	99.8	120.6	180.2	169.8	218.9
127.5°	174.2	131.0	98.3	99.8	99.8	99.8	99.8	129.5	174.2	171.2	208.5
130°	166.8	138.5	95.3	101.3	99.8	102.7	98.3	138.5	166.8	166.8	199.5
132.5°	159.3	141.5	95.3	101.3	101.3	102.7	96.8	141.5	159.3	160.8	190.6
135°	151.9	144.4	101.3	99.8	101.3	101.3	102.7	144.4	151.9	154.9	184.6
137.5°	144.4	145.9	108.7	95.3	99.8	96.8	111.7	145.9	145.9	145.9	175.7
140°	137.0	144.4	114.7	92.3	93.8	95.3	117.6	145.9	140.0	141.5	160.8
142.5°	128.1	140.0	119.1	99.8	92.3	102.7	122.1	144.4	131.0	137.0	153.4
145°	119.1	135.5	128.1	110.2	101.3	114.7	132.5	140.0	122.1	134.0	148.9
147.5°	111.7	128.1	129.5	116.1	111.7	120.6	134.0	134.0	113.2	128.1	138.5
150°	107.2	120.6	125.1	120.6	116.1	126.6	131.0	123.6	107.2	123.6	129.5
152.5°	105.7	114.7	114.7	126.6	125.1	132.5	120.6	117.6	104.2	119.1	117.6
155°	105.7	113.2	110.2	116.1	122.1	122.1	114.7	114.7	104.2	119.1	111.7
157.5°	104.2	114.7	110.2	108.7	111.7	114.7	114.7	116.1	104.2	116.1	111.7
160°	104.2	116.1	111.7	107.2	108.7	113.2	116.1	116.1	104.2	116.1	113.2
162.5°	104.2	113.2	113.2	108.7	108.7	114.7	116.1	114.7	104.2	113.2	116.1
165°	104.2	113.2	114.7	111.7	110.2	117.6	116.1	111.7	102.7	111.7	117.6
167.5°	104.2	110.2	116.1	113.2	113.2	117.6	117.6	110.2	102.7	107.2	117.6
170°	104.2	108.7	114.7	113.2	114.7	119.1	114.7	108.7	104.2	105.7	113.2
172.5°	104.2	105.7	111.7	113.2	113.2	116.1	111.7	105.7	104.2	102.7	108.7
175°	102.7	105.7	108.7	108.7	107.2	111.7	107.2	104.2	102.7	101.3	104.2
177.5°	101.3	102.7	105.7	105.7	102.7	105.7	102.7	101.3	101.3	99.8	102.7
180°	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8



TEST NUMBER: P192499

CATALOG NUMBER: 4WSL-LD2-45-UPL15-UNV-L840-CD1-U

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1297.0	1297.0	1297.0	1297.0	1297.0	1297.0
2.5°	1286.5	1276.1	1279.1	1288.0	1286.5	1307.4
5°	1273.1	1268.7	1268.7	1282.1	1280.6	1307.4
7.5°	1258.2	1250.8	1255.3	1270.2	1274.6	1304.4
10°	1238.9	1232.9	1234.4	1256.8	1264.2	1301.4
12.5°	1219.5	1213.6	1218.0	1238.9	1249.3	1294.0
15°	1197.2	1186.8	1198.7	1221.0	1234.4	1283.6
17.5°	1170.4	1158.5	1170.4	1200.2	1216.6	1271.6
20°	1146.6	1134.7	1142.1	1173.4	1195.7	1258.2
22.5°	1119.8	1104.9	1110.8	1145.1	1173.4	1240.4
25°	1090.0	1070.6	1079.6	1116.8	1148.1	1218.0
27.5°	1051.3	1018.5	1040.8	1087.0	1116.8	1195.7
30°	997.7	954.5	990.2	1054.2	1088.5	1170.4
32.5°	935.1	889.0	927.7	1014.0	1055.7	1142.1
35°	874.1	833.9	869.6	972.3	1023.0	1110.8
37.5°	820.5	783.2	816.0	924.7	987.2	1076.6
40°	765.4	731.1	763.9	874.1	951.5	1040.8
42.5°	714.7	682.0	713.3	823.4	912.8	1002.1
45°	661.1	607.5	658.2	771.3	871.1	960.4
47.5°	604.6	548.0	600.1	720.7	829.4	917.3
50°	552.4	501.8	549.5	668.6	784.7	871.1
52.5°	506.3	463.1	504.8	616.5	738.6	823.4
55°	463.1	434.8	464.6	568.8	695.4	774.3
57.5°	428.8	409.5	430.3	522.7	647.7	725.2
60°	399.1	387.2	400.6	476.5	597.1	673.0
62.5°	366.3	361.8	366.3	431.8	548.0	619.4
65°	338.0	342.5	338.0	391.6	495.9	564.3
67.5°	311.2	321.6	312.7	348.4	443.7	507.8
70°	281.4	296.3	282.9	309.7	390.1	449.7
72.5°	250.2	268.0	250.2	272.5	333.5	388.6
75°	217.4	238.2	218.9	232.3	279.9	324.6
77.5°	181.7	195.1	184.6	189.1	227.8	263.6
80°	144.4	159.3	145.9	148.9	180.2	204.0
82.5°	120.6	131.0	122.1	113.2	134.0	150.4
85°	89.3	95.3	92.3	87.9	92.3	102.7
87.5°	55.1	58.1	55.1	55.1	47.6	43.2
90°	61.1	65.5	61.1	47.6	26.8	1.5
92.5°	62.5	68.5	62.5	52.1	50.6	10.4
95°	140.0	137.0	148.9	135.5	77.4	40.2
97.5°	217.4	248.7	224.8	162.3	104.2	64.0
100°	250.2	279.9	260.6	202.5	119.1	87.9
102.5°	288.9	321.6	300.8	236.8	134.0	110.2
105°	336.5	364.8	346.9	250.2	147.4	128.1
107.5°	361.8	405.0	369.3	256.1	156.3	144.4
110°	375.2	421.4	387.2	257.6	163.8	157.8



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	385.7	430.3	394.6	257.6	166.8	169.8
115°	385.7	437.8	394.6	253.1	171.2	177.2
117.5°	385.7	433.3	394.6	248.7	177.2	181.7
120°	372.3	431.8	384.2	242.7	178.7	184.6
122.5°	361.8	419.9	369.3	235.3	178.7	183.2
125°	342.5	403.5	351.4	226.3	175.7	180.2
127.5°	321.6	379.7	329.1	215.9	177.2	174.2
130°	302.3	352.9	306.7	205.5	171.2	166.8
132.5°	277.0	323.1	281.4	198.0	165.3	159.3
135°	253.1	294.8	259.1	192.1	157.8	151.9
137.5°	227.8	265.1	233.8	180.2	150.4	144.4
140°	198.0	227.8	204.0	166.8	145.9	137.0
142.5°	178.7	195.1	184.6	160.8	140.0	128.1
145°	166.8	175.7	171.2	154.9	137.0	119.1
147.5°	154.9	163.8	159.3	142.9	129.5	111.7
150°	150.4	150.4	156.3	132.5	125.1	107.2
152.5°	134.0	145.9	140.0	120.6	122.1	105.7
155°	114.7	120.6	120.6	116.1	122.1	105.7
157.5°	107.2	111.7	113.2	116.1	119.1	104.2
160°	107.2	108.7	113.2	117.6	117.6	104.2
162.5°	110.2	108.7	116.1	120.6	114.7	104.2
165°	113.2	111.7	119.1	122.1	111.7	104.2
167.5°	116.1	116.1	122.1	120.6	108.7	104.2
170°	116.1	119.1	122.1	116.1	107.2	104.2
172.5°	111.7	113.2	116.1	108.7	102.7	104.2
175°	105.7	104.2	108.7	104.2	102.7	102.7
177.5°	102.7	98.3	102.7	101.3	99.8	101.3
180°	99.8	99.8	99.8	99.8	99.8	99.8

(END OF REPORT)