

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: FAIL-SAFE

Report Number: P392482

Luminaire Tested: **MWL-2-13-31-UNV-L835-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392482
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1910-565-25 &
Test Lab: INNOVATION CENTER
Issue Date: 12/2/2019
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: MWL-2-13-31-UNV-L835-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

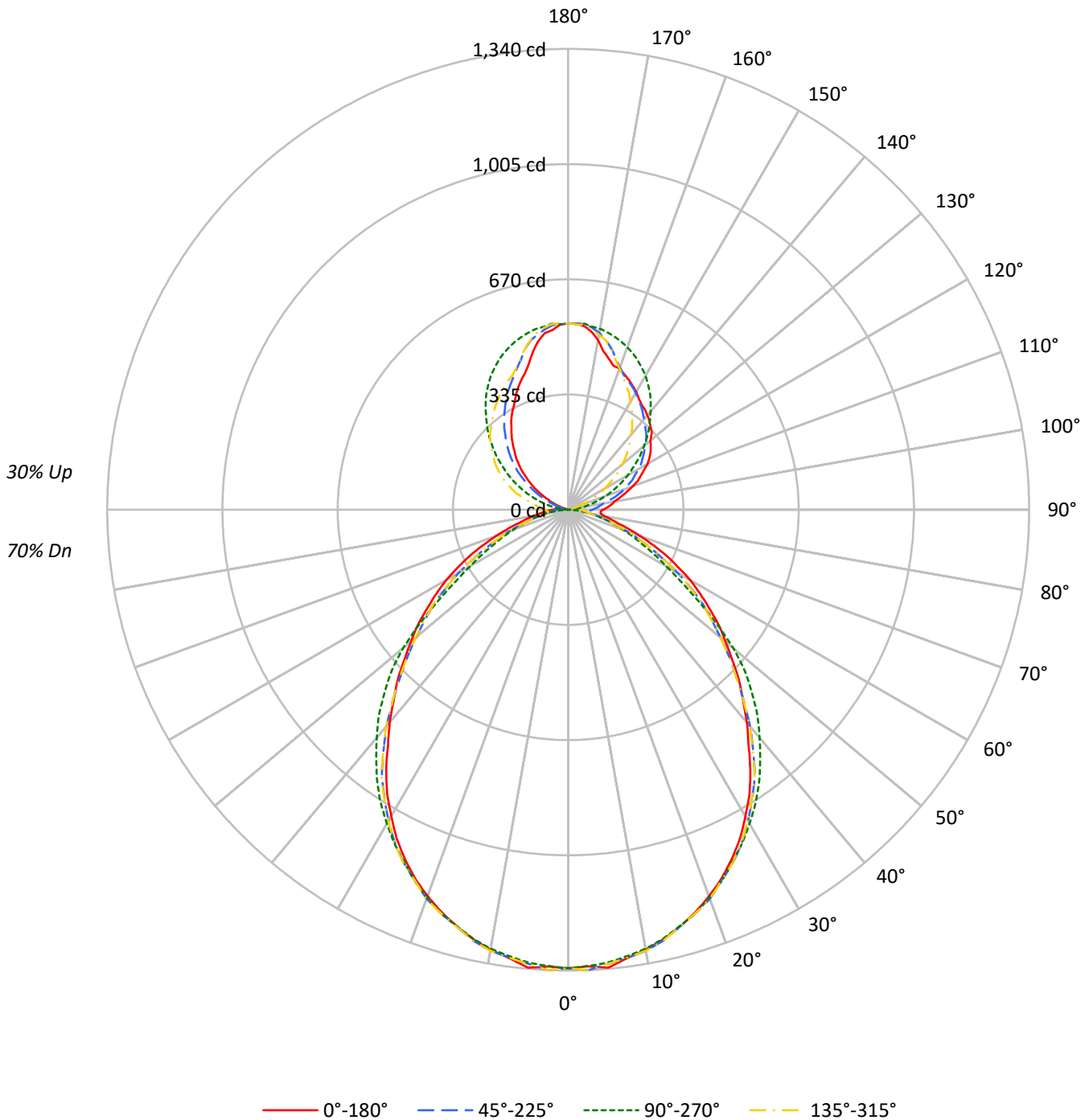
Lumens per Lamp: N/A
Luminaire Lumens: 4334.0 lumens
Efficiency: N/A
Efficacy: 97.0 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Direct

Input Watts (W): 44.7
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	50	30	10	0	
RCR																						
0	112	112	112	112	106	106	106	106	94	94	94	84	84	84	74	74	74	74	74	74	70	
1	103	98	95	91	97	93	90	87	84	81	79	75	73	71	66	65	64	64	64	64	60	
2	94	87	81	75	89	82	77	72	74	70	66	66	63	60	59	57	55	55	55	55	51	
3	86	77	69	64	81	73	66	61	66	61	56	59	55	52	53	50	47	47	47	47	44	
4	79	68	60	54	75	65	58	52	59	53	49	53	49	45	48	44	41	41	41	41	38	
5	73	61	53	47	69	58	51	46	53	47	42	48	43	39	43	39	36	36	36	36	33	
6	67	55	47	41	64	53	45	40	48	42	37	44	39	35	39	35	32	32	32	32	30	
7	63	50	42	37	59	48	41	35	44	38	33	40	35	31	36	32	29	29	29	29	26	
8	58	46	38	33	55	44	37	32	40	34	30	37	32	28	33	29	26	26	26	26	24	
9	54	42	34	29	52	40	33	28	37	31	27	34	29	25	31	27	24	24	24	24	22	
10	51	39	31	27	48	37	30	26	34	28	24	31	26	23	29	25	21	21	21	21	20	

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	17221	17221	17221	17221
5°	17024	15762	17024	15762
10°	16434	14455	16434	14455
15°	15890	13216	15876	13216
20°	15289	12089	15275	12089
25°	14585	10973	14570	10973
30°	13713	9962	13692	9962
35°	12704	8973	12689	8973
40°	11598	7934	11577	7934
45°	10619	6906	10600	6906
50°	9610	5741	9591	5741
55°	8693	4262	8680	4262
60°	7776	3110	7768	3110
65°	6623	2310	6623	2310
70°	5313	1713	5322	1713
75°	4094	1197	4127	1197
80°	3614	759	3369	759
85°	4124	316	3037	316



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	125.7	2.9
10°-20°	353.8	8.2
20°-30°	518.8	12.0
30°-40°	588.3	13.6
40°-50°	548.8	12.7
50°-60°	430.4	9.9
60°-70°	268.5	6.2
70°-80°	129.5	3.0
80°-90°	62.2	1.4
90°-100°	54.2	1.3
100°-110°	84.5	2.0
110°-120°	144.6	3.3
120°-130°	196.4	4.5
130°-140°	223.8	5.2
140°-150°	223.1	5.1
150°-160°	194.2	4.5
160°-170°	136.4	3.1
170°-180°	50.8	1.2
0°-30°	998.3	23.0
0°-40°	1586.7	36.6
0°-60°	2565.9	59.2
0°-90°	3026.0	69.8
90°-120°	283.4	6.5
90°-150°	926.6	21.4
90°-180°	1308.0	30.2
0°-180°	4334.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1333	1333	1333	1333	1333	
5°	1337	1322	1337	1322	1337	126
15°	1255	1253	1254	1253	1255	354
25°	1123	1129	1122	1129	1123	516
35°	923	968	922	968	923	576
45°	702	756	701	756	702	541
55°	501	460	500	460	501	449
65°	314	238	314	238	314	310
75°	146	114	147	114	146	163
85°	94	26	69	26	94	79
90°	100	1	43	1	100	56
95°	120	16	29	16	120	101
105°	165	76	5	76	165	176
115°	233	156	54	156	233	231
125°	292	243	134	243	292	261
135°	339	332	214	332	339	262
145°	372	414	287	414	372	235
155°	416	479	362	479	416	192
165°	455	521	440	521	455	129
175°	536	543	524	543	536	50
180°	542	542	542	542	542	



TEST NUMBER: P392482

CATALOG NUMBER: MWL-2-13-31-UNV-L835-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1333.2	1333.2	1333.2	1333.2	1333.2	1333.2	1333.2	1333.2	1333.2	1333.2	1333.2
2.5°	1329.1	1336.7	1340.3	1327.1	1328.1	1326.8	1340.3	1336.7	1329.5	1336.7	1340.3
5°	1336.9	1327.0	1325.8	1324.9	1322.0	1324.9	1325.5	1327.0	1336.9	1327.0	1325.5
7.5°	1315.0	1320.6	1313.8	1312.3	1309.4	1311.9	1313.5	1320.2	1315.0	1320.2	1313.5
10°	1299.0	1303.2	1302.2	1295.5	1296.4	1295.1	1301.9	1302.4	1299.0	1302.4	1301.9
12.5°	1279.4	1282.9	1282.5	1274.8	1277.3	1274.8	1282.5	1282.1	1278.7	1282.1	1282.5
15°	1254.6	1254.9	1254.5	1251.6	1253.1	1251.2	1254.1	1254.1	1253.5	1254.1	1254.1
17.5°	1227.5	1230.7	1230.3	1230.9	1230.9	1230.9	1229.9	1230.3	1226.4	1230.3	1229.9
20°	1196.6	1202.1	1204.2	1199.0	1199.6	1198.6	1203.8	1201.3	1195.5	1201.3	1203.8
22.5°	1162.4	1163.4	1166.5	1159.3	1167.6	1158.9	1166.1	1162.6	1161.7	1162.6	1166.1
25°	1122.8	1123.8	1133.0	1129.4	1129.0	1129.0	1132.3	1122.6	1121.6	1122.6	1132.3
27.5°	1080.2	1080.2	1092.4	1089.1	1094.2	1088.7	1091.6	1079.1	1079.1	1079.1	1091.6
30°	1030.0	1038.7	1045.4	1059.5	1053.6	1058.8	1044.3	1037.5	1028.4	1037.5	1044.3
32.5°	980.6	985.5	995.2	1005.4	1013.3	1004.6	994.0	983.9	979.1	983.9	994.0
35°	923.2	923.2	945.5	963.8	967.5	962.7	944.3	922.1	922.1	922.1	944.3
37.5°	861.3	863.3	882.6	910.6	916.6	909.5	881.4	862.1	860.2	862.1	881.4
40°	808.1	804.3	822.7	859.0	865.4	858.2	821.1	802.7	806.6	802.7	821.1
42.5°	752.1	746.3	755.5	800.0	815.1	799.3	754.4	744.7	750.5	744.7	754.4
45°	702.4	690.8	692.7	734.3	756.1	733.5	691.2	689.6	701.2	689.6	691.2
47.5°	647.3	643.4	635.7	663.3	698.1	662.9	634.1	642.2	646.1	642.2	634.1
50°	597.0	589.2	577.6	600.5	626.2	599.7	576.1	587.7	595.8	587.7	576.1
52.5°	552.5	545.7	524.1	537.6	543.0	536.8	522.9	544.2	551.3	544.2	522.9
55°	500.9	499.9	477.7	471.5	459.5	470.7	476.5	498.7	500.1	498.7	476.5
57.5°	454.5	452.5	420.6	409.6	387.0	408.8	419.4	451.4	453.7	451.4	419.4
60°	409.6	402.8	368.0	340.5	328.9	340.2	367.2	402.0	409.2	402.0	367.2
62.5°	359.3	355.4	312.9	283.5	281.2	283.1	312.1	354.7	358.9	354.7	312.1
65°	313.5	299.0	263.2	236.1	237.7	235.7	262.8	298.6	313.5	298.6	262.8
67.5°	264.2	249.7	218.7	194.2	201.9	194.2	218.3	249.3	264.2	249.3	218.3
70°	221.2	201.9	178.7	158.4	170.0	158.4	178.7	202.3	221.6	202.3	178.7
72.5°	181.6	161.3	143.9	129.4	139.6	129.0	143.9	161.7	182.4	161.7	143.9
75°	145.8	127.4	111.6	103.8	113.5	103.8	112.0	127.8	147.0	127.8	112.0
77.5°	125.6	104.8	84.5	80.6	92.2	80.6	84.9	103.7	124.2	103.7	84.9
80°	106.0	92.7	66.3	60.3	68.1	60.3	65.6	86.6	98.8	86.6	65.6
82.5°	96.8	88.5	60.2	42.9	46.8	42.9	55.7	74.8	82.3	74.8	55.7
85°	94.1	89.3	59.0	33.5	26.5	32.7	47.9	66.0	69.3	66.0	47.9
87.5°	95.2	94.7	63.2	31.4	7.7	26.1	41.5	58.1	56.0	58.1	41.5
90°	100.5	101.4	70.2	31.7	1.4	17.2	32.5	47.8	43.3	47.8	32.5
92.5°	111.4	109.7	78.5	34.8	7.1	8.5	26.3	39.3	36.7	39.3	26.3
95°	119.5	117.2	87.1	40.6	16.2	2.5	18.6	28.8	29.2	28.8	18.6
97.5°	129.5	125.6	93.2	54.3	28.0	5.5	9.1	20.9	22.8	20.9	9.1
100°	135.7	132.4	104.6	70.7	42.4	13.5	3.7	12.8	15.7	12.8	3.7
102.5°	150.5	143.1	120.2	86.3	58.1	24.6	6.7	6.0	8.9	6.0	6.7
105°	165.0	159.6	138.8	102.7	76.0	39.5	15.9	6.5	4.6	6.5	15.9
107.5°	181.4	177.5	156.6	119.4	95.0	56.6	29.8	16.1	10.7	16.1	29.8
110°	200.4	195.8	173.0	136.2	114.9	74.8	44.6	28.2	22.1	28.2	44.6



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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°	218.7	215.2	188.3	154.7	135.5	95.6	62.8	43.4	37.7	43.4	62.8
115°	232.8	230.9	205.8	171.0	155.5	118.2	83.1	61.4	54.5	61.4	83.1
117.5°	247.6	247.2	218.7	187.9	178.3	138.4	101.7	79.3	72.0	79.3	101.7
120°	266.3	263.3	236.6	204.6	200.1	159.6	122.3	99.9	92.6	99.9	122.3
122.5°	280.2	277.4	251.9	220.7	220.7	181.4	142.1	119.6	113.0	119.6	142.1
125°	292.0	291.3	264.3	236.6	242.7	201.6	165.1	142.3	133.9	142.3	165.1
127.5°	302.7	303.9	279.1	255.1	266.2	223.1	186.9	161.8	153.0	161.8	186.9
130°	311.8	315.7	293.2	271.1	287.5	245.6	206.3	181.2	175.5	181.2	206.3
132.5°	329.7	327.5	307.7	287.5	310.4	266.2	226.9	200.6	194.2	200.6	226.9
135°	338.9	339.7	320.2	301.6	331.7	286.7	246.4	220.5	214.0	220.5	246.4
137.5°	349.9	347.7	330.1	318.7	351.5	306.5	265.4	241.3	231.1	241.3	265.4
140°	358.0	357.6	343.1	334.0	372.8	325.9	284.9	260.4	250.9	260.4	284.9
142.5°	366.4	368.6	356.0	350.7	394.1	346.5	305.7	279.1	270.0	279.1	305.7
145°	372.1	378.0	369.0	371.7	414.3	369.4	324.0	298.0	287.1	298.0	324.0
147.5°	382.5	389.0	379.5	386.6	431.8	389.6	343.4	316.7	307.9	316.7	343.4
150°	395.5	398.6	392.9	407.1	449.8	412.1	362.0	334.6	325.8	334.6	362.0
152.5°	405.8	409.6	403.1	429.6	463.8	432.6	382.5	352.1	341.8	352.1	382.5
155°	416.5	418.0	413.4	451.3	478.7	452.8	399.0	371.5	361.6	371.5	399.0
157.5°	426.3	429.4	423.1	467.7	491.7	470.3	416.6	390.9	382.1	390.9	416.6
160°	437.0	437.0	439.1	486.7	502.3	485.6	436.5	412.3	400.1	412.3	436.5
162.5°	438.2	445.4	460.8	500.1	512.7	498.9	457.7	427.5	416.8	427.5	457.7
165°	454.9	460.4	485.2	511.9	520.6	510.7	484.0	451.6	440.0	451.6	484.0
167.5°	472.4	485.2	505.0	525.2	528.2	521.7	504.2	481.8	471.3	481.8	504.2
170°	500.1	511.9	521.7	530.2	534.3	530.5	516.8	505.8	498.5	505.8	516.8
172.5°	521.6	530.2	533.9	539.2	536.6	535.1	528.2	522.9	518.2	522.9	528.2
175°	535.7	538.2	541.6	540.6	542.9	538.8	538.2	540.8	524.3	540.8	538.2
177.5°	540.6	543.3	542.3	539.9	540.2	539.5	540.0	540.6	538.3	540.6	540.0
180°	541.6	541.6	541.6	541.6	541.6	541.6	541.6	541.6	541.6	541.6	541.6



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1333.2	1333.2	1333.2	1333.2	1333.2	1333.2
2.5°	1326.8	1328.1	1327.1	1340.3	1336.7	1329.1
5°	1324.9	1322.0	1324.9	1325.8	1327.0	1336.9
7.5°	1311.9	1309.4	1312.3	1313.8	1320.6	1315.0
10°	1295.1	1296.4	1295.5	1302.2	1303.2	1299.0
12.5°	1274.8	1277.3	1274.8	1282.5	1282.9	1279.4
15°	1251.2	1253.1	1251.6	1254.5	1254.9	1254.6
17.5°	1230.9	1230.9	1230.9	1230.3	1230.7	1227.5
20°	1198.6	1199.6	1199.0	1204.2	1202.1	1196.6
22.5°	1158.9	1167.6	1159.3	1166.5	1163.4	1162.4
25°	1129.0	1129.0	1129.4	1133.0	1123.8	1122.8
27.5°	1088.7	1094.2	1089.1	1092.4	1080.2	1080.2
30°	1058.8	1053.6	1059.5	1045.4	1038.7	1030.0
32.5°	1004.6	1013.3	1005.4	995.2	985.5	980.6
35°	962.7	967.5	963.8	945.5	923.2	923.2
37.5°	909.5	916.6	910.6	882.6	863.3	861.3
40°	858.2	865.4	859.0	822.7	804.3	808.1
42.5°	799.3	815.1	800.0	755.5	746.3	752.1
45°	733.5	756.1	734.3	692.7	690.8	702.4
47.5°	662.9	698.1	663.3	635.7	643.4	647.3
50°	599.7	626.2	600.5	577.6	589.2	597.0
52.5°	536.8	543.0	537.6	524.1	545.7	552.5
55°	470.7	459.5	471.5	477.7	499.9	500.9
57.5°	408.8	387.0	409.6	420.6	452.5	454.5
60°	340.2	328.9	340.5	368.0	402.8	409.6
62.5°	283.1	281.2	283.5	312.9	355.4	359.3
65°	235.7	237.7	236.1	263.2	299.0	313.5
67.5°	194.2	201.9	194.2	218.7	249.7	264.2
70°	158.4	170.0	158.4	178.7	201.9	221.2
72.5°	129.0	139.6	129.4	143.9	161.3	181.6
75°	103.8	113.5	103.8	111.6	127.4	145.8
77.5°	80.6	92.2	80.6	84.5	104.8	125.6
80°	60.3	68.1	60.3	66.3	92.7	106.0
82.5°	42.9	46.8	42.9	60.2	88.5	96.8
85°	32.7	26.5	33.5	59.0	89.3	94.1
87.5°	26.1	7.7	31.4	63.2	94.7	95.2
90°	17.2	1.4	31.7	70.2	101.4	100.5
92.5°	8.5	7.1	34.8	78.5	109.7	111.4
95°	2.5	16.2	40.6	87.1	117.2	119.5
97.5°	5.5	28.0	54.3	93.2	125.6	129.5
100°	13.5	42.4	70.7	104.6	132.4	135.7
102.5°	24.6	58.1	86.3	120.2	143.1	150.5
105°	39.5	76.0	102.7	138.8	159.6	165.0
107.5°	56.6	95.0	119.4	156.6	177.5	181.4
110°	74.8	114.9	136.2	173.0	195.8	200.4



TEST NUMBER: P392482

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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	95.6	135.5	154.7	188.3	215.2	218.7
115°	118.2	155.5	171.0	205.8	230.9	232.8
117.5°	138.4	178.3	187.9	218.7	247.2	247.6
120°	159.6	200.1	204.6	236.6	263.3	266.3
122.5°	181.4	220.7	220.7	251.9	277.4	280.2
125°	201.6	242.7	236.6	264.3	291.3	292.0
127.5°	223.1	266.2	255.1	279.1	303.9	302.7
130°	245.6	287.5	271.1	293.2	315.7	311.8
132.5°	266.2	310.4	287.5	307.7	327.5	329.7
135°	286.7	331.7	301.6	320.2	339.7	338.9
137.5°	306.5	351.5	318.7	330.1	347.7	349.9
140°	325.9	372.8	334.0	343.1	357.6	358.0
142.5°	346.5	394.1	350.7	356.0	368.6	366.4
145°	369.4	414.3	371.7	369.0	378.0	372.1
147.5°	389.6	431.8	386.6	379.5	389.0	382.5
150°	412.1	449.8	407.1	392.9	398.6	395.5
152.5°	432.6	463.8	429.6	403.1	409.6	405.8
155°	452.8	478.7	451.3	413.4	418.0	416.5
157.5°	470.3	491.7	467.7	423.1	429.4	426.3
160°	485.6	502.3	486.7	439.1	437.0	437.0
162.5°	498.9	512.7	500.1	460.8	445.4	438.2
165°	510.7	520.6	511.9	485.2	460.4	454.9
167.5°	521.7	528.2	525.2	505.0	485.2	472.4
170°	530.5	534.3	530.2	521.7	511.9	500.1
172.5°	535.1	536.6	539.2	533.9	530.2	521.6
175°	538.8	542.9	540.6	541.6	538.2	535.7
177.5°	539.5	540.2	539.9	542.3	543.3	540.6
180°	541.6	541.6	541.6	541.6	541.6	541.6

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