

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: P392513

Luminaire Tested: **MWL-2-22-31-UNV-L940-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392513  
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-2-22-31-UNV-L940-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

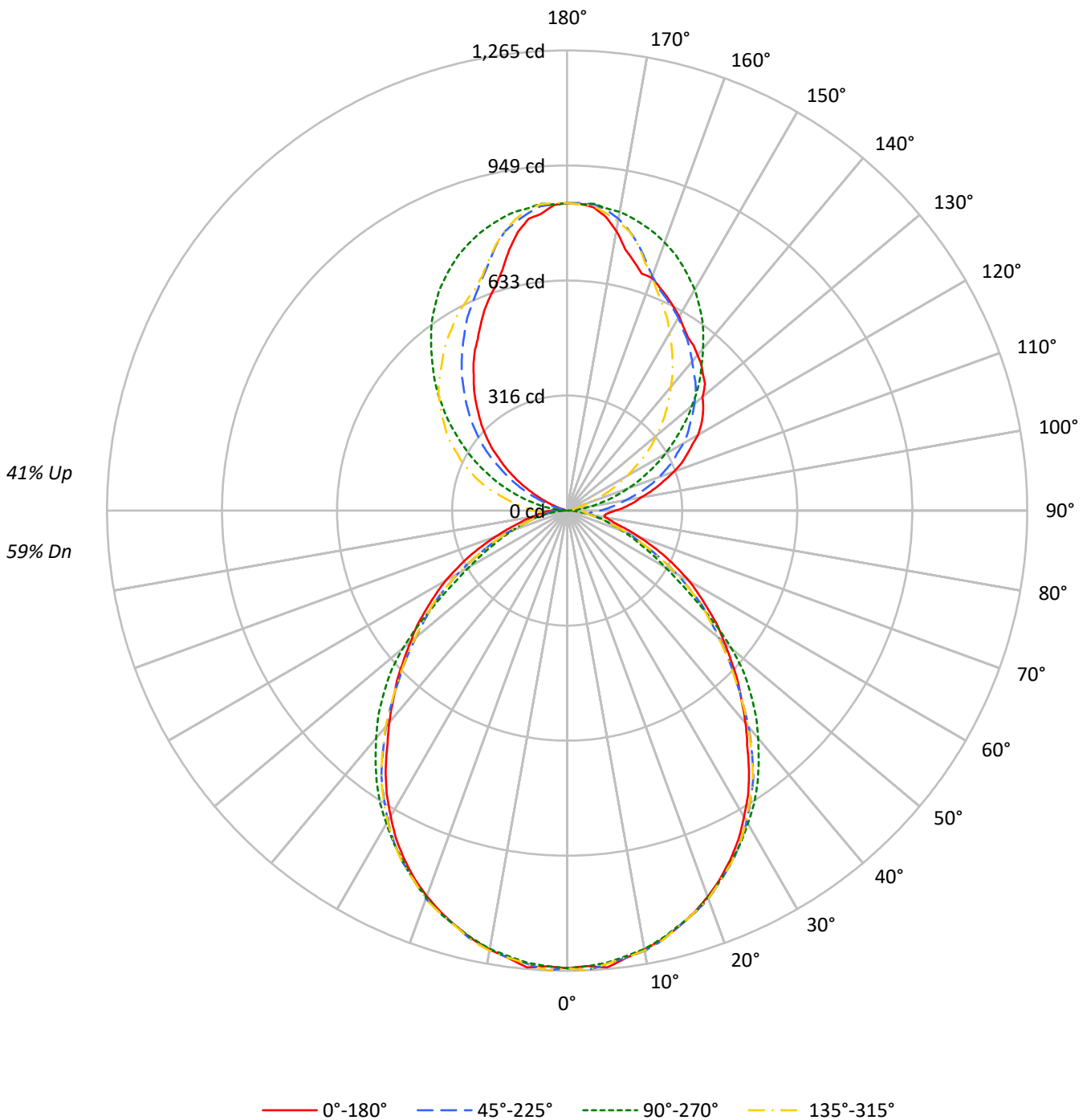
Lumens per Lamp: N/A  
Luminaire Lumens: 4889.1 lumens  
Efficiency: N/A  
Efficacy: 89.0 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')  
CIE Type: General Diffuse

Input Watts (W): 54.944  
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: P392513  
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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	109	109	109	109	102	102	102	102	88	88	88	76	76	76	64	64	64	59
1	100	96	92	89	93	90	86	83	78	75	73	67	65	64	57	56	55	50
2	91	84	78	73	85	79	74	69	69	65	61	59	56	54	51	49	47	43
3	84	74	67	62	78	70	63	58	61	56	52	53	49	46	45	43	40	37
4	77	66	58	53	72	62	55	50	55	49	45	48	43	40	41	38	35	32
5	71	59	51	45	66	56	49	43	49	43	39	43	38	35	37	34	31	28
6	65	53	45	40	61	50	43	38	44	39	34	39	34	31	34	30	27	25
7	61	48	40	35	56	46	39	33	40	35	30	36	31	27	31	27	25	22
8	56	44	36	31	53	42	35	30	37	31	27	33	28	25	29	25	22	20
9	53	40	33	28	49	38	31	27	34	28	24	30	26	22	26	23	20	18
10	49	37	30	25	46	35	29	24	31	26	22	28	23	20	25	21	18	16

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°	270°
0°	16248	16248	16248	16248
5°	16052	14874	16052	14874
10°	15502	13639	15502	13639
15°	15000	12466	14977	12466
20°	14434	11400	14411	11400
25°	13767	10349	13745	10349
30°	12945	9395	12914	9395
35°	11994	8464	11968	8464
40°	10952	7487	10919	7487
45°	10026	6519	10000	6519
50°	9078	5418	9049	5418
55°	8211	4022	8190	4022
60°	7345	2938	7333	2938
65°	6255	2181	6255	2181
70°	5017	1618	5034	1618
75°	3869	1131	3922	1131
80°	3625	718	3236	718
85°	4738	300	3037	300



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	118.6	2.4
10°-20°	333.8	6.8
20°-30°	489.4	10.0
30°-40°	555.2	11.4
40°-50°	518.0	10.6
50°-60°	406.3	8.3
60°-70°	253.6	5.2
70°-80°	122.7	2.5
80°-90°	65.0	1.3
90°-100°	74.0	1.5
100°-110°	130.8	2.7
110°-120°	225.0	4.6
120°-130°	305.7	6.3
130°-140°	348.6	7.1
140°-150°	347.6	7.1
150°-160°	302.7	6.2
160°-170°	212.8	4.4
170°-180°	79.2	1.6
0°-30°	941.9	19.3
0°-40°	1497.0	30.6
0°-60°	2421.3	49.5
0°-90°	2862.6	58.6
90°-120°	429.9	8.8
90°-150°	1431.9	29.3
90°-180°	2027.0	41.5
0°-180°	4889.1	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1258	1258	1258	1258	1258	
5°	1261	1248	1261	1248	1261	119
15°	1184	1182	1182	1182	1184	334
25°	1060	1065	1058	1065	1060	487
35°	872	913	870	913	872	544
45°	663	714	662	714	663	511
55°	473	434	472	434	473	425
65°	296	224	296	224	296	292
75°	138	107	140	107	138	155
85°	108	25	69	25	108	88
90°	132	2	42	2	132	73
95°	169	25	28	25	169	146
105°	257	118	6	118	257	272
115°	363	242	84	242	363	360
125°	455	378	208	378	455	406
135°	528	517	333	517	528	408
145°	580	646	447	646	580	366
155°	649	747	563	747	649	299
165°	709	812	686	812	709	201
175°	836	847	819	847	836	78
180°	845	845	845	845	845	



TEST NUMBER: P392513

CATALOG NUMBER: MWL-2-22-31-UNV-L940-EDD

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1257.9	1257.9	1257.9	1257.9	1257.9	1257.9	1257.9	1257.9	1257.9	1257.9	1257.9
2.5°	1253.3	1260.9	1264.8	1252.7	1253.6	1252.0	1264.8	1260.9	1253.9	1260.9	1264.8
5°	1260.6	1251.8	1251.1	1250.2	1247.5	1250.2	1250.6	1251.8	1260.6	1251.8	1250.6
7.5°	1240.3	1246.0	1239.6	1238.4	1235.6	1237.8	1239.0	1245.4	1240.3	1245.4	1239.0
10°	1225.3	1229.6	1228.7	1222.3	1223.2	1221.7	1228.1	1228.4	1225.3	1228.4	1228.1
12.5°	1207.4	1210.5	1209.8	1202.6	1204.7	1202.6	1209.8	1209.3	1206.2	1209.3	1209.8
15°	1184.3	1184.1	1183.4	1180.7	1182.0	1180.1	1182.9	1182.9	1182.5	1182.9	1182.9
17.5°	1158.8	1161.3	1160.7	1161.0	1161.0	1161.0	1160.1	1160.7	1157.0	1160.7	1160.1
20°	1129.7	1134.5	1136.1	1130.9	1131.2	1130.3	1135.5	1133.3	1127.9	1133.3	1135.5
22.5°	1097.1	1098.1	1100.5	1093.6	1101.2	1093.0	1100.0	1096.9	1096.0	1096.9	1100.0
25°	1059.8	1060.7	1069.3	1065.3	1064.7	1064.7	1068.1	1059.0	1058.1	1059.0	1068.1
27.5°	1019.7	1019.7	1031.0	1027.6	1031.9	1027.1	1029.8	1018.0	1018.0	1018.0	1029.8
30°	972.3	980.5	986.9	1000.0	993.6	998.8	985.2	978.8	970.0	978.8	985.2
32.5°	925.9	930.4	939.5	949.0	956.0	947.8	937.8	928.0	923.5	928.0	937.8
35°	871.6	871.6	892.5	909.8	912.6	908.0	890.7	869.7	869.7	869.7	890.7
37.5°	813.2	815.1	833.3	859.7	864.9	857.9	831.5	813.2	811.4	813.2	831.5
40°	763.1	759.5	776.8	810.8	816.6	809.6	774.4	757.1	760.8	757.1	774.4
42.5°	710.3	704.8	713.3	755.2	769.2	754.0	711.6	702.5	707.9	702.5	711.6
45°	663.2	652.3	654.1	693.3	713.7	692.1	651.7	650.5	661.5	650.5	651.7
47.5°	611.3	607.6	600.3	626.2	659.0	625.6	598.0	605.9	609.5	605.9	598.0
50°	563.9	556.6	545.7	567.0	590.9	565.8	543.3	554.2	562.1	554.2	543.3
52.5°	522.0	515.6	495.0	507.8	512.6	506.6	493.2	513.2	520.2	513.2	493.2
55°	473.1	472.2	451.3	445.2	433.7	444.0	449.4	470.4	471.9	470.4	449.4
57.5°	429.4	427.6	397.5	386.9	365.4	385.7	395.7	425.8	428.2	425.8	395.7
60°	386.9	380.5	347.7	321.6	310.7	321.0	346.5	379.3	386.3	379.3	346.5
62.5°	339.5	335.8	295.7	267.9	265.4	267.2	294.6	334.6	338.9	334.6	294.6
65°	296.1	282.4	248.7	223.2	224.4	222.6	248.1	281.8	296.1	281.8	248.1
67.5°	249.6	236.0	206.8	183.4	190.7	183.4	206.2	235.3	249.6	235.3	206.2
70°	208.9	190.7	168.8	149.7	160.6	149.7	168.8	191.3	209.6	191.3	168.8
72.5°	171.6	152.4	136.0	122.4	131.8	121.8	136.0	153.1	172.7	153.1	136.0
75°	137.8	120.5	105.4	98.1	107.2	98.1	106.0	121.2	139.7	121.2	106.0
77.5°	120.7	100.1	79.9	76.3	87.2	76.3	80.5	98.4	118.4	98.4	80.5
80°	106.3	92.1	63.4	57.1	64.4	57.1	62.2	82.5	94.9	82.5	62.2
82.5°	103.2	93.4	60.6	40.7	44.4	40.7	53.4	71.9	80.6	71.9	53.4
85°	108.1	101.2	64.5	32.4	25.2	31.3	47.3	64.9	69.3	64.9	47.3
87.5°	117.7	115.1	75.4	34.1	7.3	25.8	41.5	57.9	56.3	57.9	41.5
90°	131.8	130.4	90.6	39.4	1.5	16.7	31.5	46.4	42.5	46.4	31.5
92.5°	152.5	148.1	107.1	49.6	10.5	8.5	25.5	37.9	35.8	37.9	25.5
95°	169.4	165.8	125.5	62.9	24.8	3.3	18.2	27.6	28.2	27.6	18.2
97.5°	189.2	184.4	141.6	84.3	43.2	8.0	9.9	20.6	22.4	20.6	9.9
100°	204.3	201.0	163.0	110.0	65.9	20.6	5.1	13.8	16.6	13.8	5.1
102.5°	231.9	221.9	187.4	134.4	90.3	37.8	9.8	7.5	10.2	7.5	9.8
105°	256.8	248.5	216.6	160.0	118.3	61.0	24.1	8.9	6.0	8.9	24.1
107.5°	282.4	276.5	243.7	186.2	148.1	87.9	45.3	23.9	15.5	23.9	45.3
110°	312.2	305.0	269.3	212.4	179.0	116.5	68.5	42.9	33.4	42.9	68.5



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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°	340.8	335.5	293.2	240.7	211.2	148.4	97.1	66.8	57.9	66.8	97.1
115°	362.9	359.9	320.5	266.3	241.9	183.5	128.7	94.8	84.0	94.8	128.7
117.5°	386.1	385.5	340.8	292.6	277.7	215.1	157.9	122.7	111.4	122.7	157.9
120°	415.3	410.5	368.8	318.8	311.6	248.5	190.1	155.0	143.6	155.0	190.1
122.5°	436.5	432.6	392.7	343.8	343.8	282.4	221.0	186.0	174.9	186.0	221.0
125°	454.9	453.7	411.5	368.8	378.4	314.1	256.6	220.8	207.6	220.8	256.6
127.5°	471.6	473.4	434.7	397.1	414.5	347.1	290.5	251.2	237.4	251.2	290.5
130°	485.9	491.9	456.7	422.2	447.8	382.2	320.9	281.5	272.6	281.5	320.9
132.5°	514.0	510.3	479.3	447.8	483.5	414.5	353.1	312.0	301.8	312.0	353.1
135°	528.3	529.4	499.0	469.9	516.9	446.6	383.5	342.9	332.8	342.9	383.5
137.5°	545.5	541.9	514.5	496.6	547.8	477.6	413.2	375.7	359.6	375.7	413.2
140°	558.0	557.4	534.7	520.5	581.3	507.9	443.6	405.4	390.6	405.4	443.6
142.5°	571.1	574.7	555.0	546.7	614.6	540.1	476.4	434.7	420.4	434.7	476.4
145°	580.0	588.7	575.3	579.5	646.2	575.9	505.0	463.6	447.2	463.6	505.0
147.5°	595.9	606.0	591.1	602.7	673.6	607.4	534.5	492.8	479.1	492.8	534.5
150°	616.1	620.9	611.9	634.9	701.5	642.6	563.7	520.8	507.1	520.8	563.7
152.5°	632.2	638.1	628.0	670.0	723.6	674.8	595.9	548.2	532.1	548.2	595.9
155°	648.9	651.3	644.1	704.0	746.8	706.4	621.5	578.5	563.1	578.5	621.5
157.5°	664.4	669.1	659.9	729.6	767.1	733.8	649.8	609.0	595.2	609.0	649.8
160°	681.0	681.0	684.9	759.4	783.8	757.6	680.8	642.3	623.3	642.3	680.8
162.5°	682.9	694.2	718.9	780.3	799.9	778.4	714.1	666.2	649.4	666.2	714.1
165°	709.0	718.3	757.0	798.7	812.4	796.9	755.2	704.6	685.8	704.6	755.2
167.5°	736.4	757.0	788.0	819.5	824.3	814.2	786.8	751.7	734.7	751.7	786.8
170°	780.3	798.7	814.2	827.3	833.8	827.9	806.4	789.2	777.8	789.2	806.4
172.5°	814.4	827.3	833.3	841.6	837.4	835.0	824.3	816.0	809.1	816.0	824.3
175°	836.5	839.9	845.1	843.1	846.7	840.1	839.9	844.0	818.6	844.0	839.9
177.5°	844.2	848.4	846.3	841.9	842.5	841.3	842.8	844.2	840.7	844.2	842.8
180°	845.1	845.1	845.1	845.1	845.1	845.1	845.1	845.1	845.1	845.1	845.1



TEST NUMBER: P392513

CATALOG NUMBER: MWL-2-22-31-UNV-L940-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1257.9	1257.9	1257.9	1257.9	1257.9	1257.9
2.5°	1252.0	1253.6	1252.7	1264.8	1260.9	1253.3
5°	1250.2	1247.5	1250.2	1251.1	1251.8	1260.6
7.5°	1237.8	1235.6	1238.4	1239.6	1246.0	1240.3
10°	1221.7	1223.2	1222.3	1228.7	1229.6	1225.3
12.5°	1202.6	1204.7	1202.6	1209.8	1210.5	1207.4
15°	1180.1	1182.0	1180.7	1183.4	1184.1	1184.3
17.5°	1161.0	1161.0	1161.0	1160.7	1161.3	1158.8
20°	1130.3	1131.2	1130.9	1136.1	1134.5	1129.7
22.5°	1093.0	1101.2	1093.6	1100.5	1098.1	1097.1
25°	1064.7	1064.7	1065.3	1069.3	1060.7	1059.8
27.5°	1027.1	1031.9	1027.6	1031.0	1019.7	1019.7
30°	998.8	993.6	1000.0	986.9	980.5	972.3
32.5°	947.8	956.0	949.0	939.5	930.4	925.9
35°	908.0	912.6	909.8	892.5	871.6	871.6
37.5°	857.9	864.9	859.7	833.3	815.1	813.2
40°	809.6	816.6	810.8	776.8	759.5	763.1
42.5°	754.0	769.2	755.2	713.3	704.8	710.3
45°	692.1	713.7	693.3	654.1	652.3	663.2
47.5°	625.6	659.0	626.2	600.3	607.6	611.3
50°	565.8	590.9	567.0	545.7	556.6	563.9
52.5°	506.6	512.6	507.8	495.0	515.6	522.0
55°	444.0	433.7	445.2	451.3	472.2	473.1
57.5°	385.7	365.4	386.9	397.5	427.6	429.4
60°	321.0	310.7	321.6	347.7	380.5	386.9
62.5°	267.2	265.4	267.9	295.7	335.8	339.5
65°	222.6	224.4	223.2	248.7	282.4	296.1
67.5°	183.4	190.7	183.4	206.8	236.0	249.6
70°	149.7	160.6	149.7	168.8	190.7	208.9
72.5°	121.8	131.8	122.4	136.0	152.4	171.6
75°	98.1	107.2	98.1	105.4	120.5	137.8
77.5°	76.3	87.2	76.3	79.9	100.1	120.7
80°	57.1	64.4	57.1	63.4	92.1	106.3
82.5°	40.7	44.4	40.7	60.6	93.4	103.2
85°	31.3	25.2	32.4	64.5	101.2	108.1
87.5°	25.8	7.3	34.1	75.4	115.1	117.7
90°	16.7	1.5	39.4	90.6	130.4	131.8
92.5°	8.5	10.5	49.6	107.1	148.1	152.5
95°	3.3	24.8	62.9	125.5	165.8	169.4
97.5°	8.0	43.2	84.3	141.6	184.4	189.2
100°	20.6	65.9	110.0	163.0	201.0	204.3
102.5°	37.8	90.3	134.4	187.4	221.9	231.9
105°	61.0	118.3	160.0	216.6	248.5	256.8
107.5°	87.9	148.1	186.2	243.7	276.5	282.4
110°	116.5	179.0	212.4	269.3	305.0	312.2





TEST NUMBER: P392513

CATALOG NUMBER: MWL-2-22-31-UNV-L940-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	148.4	211.2	240.7	293.2	335.5	340.8
115°	183.5	241.9	266.3	320.5	359.9	362.9
117.5°	215.1	277.7	292.6	340.8	385.5	386.1
120°	248.5	311.6	318.8	368.8	410.5	415.3
122.5°	282.4	343.8	343.8	392.7	432.6	436.5
125°	314.1	378.4	368.8	411.5	453.7	454.9
127.5°	347.1	414.5	397.1	434.7	473.4	471.6
130°	382.2	447.8	422.2	456.7	491.9	485.9
132.5°	414.5	483.5	447.8	479.3	510.3	514.0
135°	446.6	516.9	469.9	499.0	529.4	528.3
137.5°	477.6	547.8	496.6	514.5	541.9	545.5
140°	507.9	581.3	520.5	534.7	557.4	558.0
142.5°	540.1	614.6	546.7	555.0	574.7	571.1
145°	575.9	646.2	579.5	575.3	588.7	580.0
147.5°	607.4	673.6	602.7	591.1	606.0	595.9
150°	642.6	701.5	634.9	611.9	620.9	616.1
152.5°	674.8	723.6	670.0	628.0	638.1	632.2
155°	706.4	746.8	704.0	644.1	651.3	648.9
157.5°	733.8	767.1	729.6	659.9	669.1	664.4
160°	757.6	783.8	759.4	684.9	681.0	681.0
162.5°	778.4	799.9	780.3	718.9	694.2	682.9
165°	796.9	812.4	798.7	757.0	718.3	709.0
167.5°	814.2	824.3	819.5	788.0	757.0	736.4
170°	827.9	833.8	827.3	814.2	798.7	780.3
172.5°	835.0	837.4	841.6	833.3	827.3	814.4
175°	840.1	846.7	843.1	845.1	839.9	836.5
177.5°	841.3	842.5	841.9	846.3	848.4	844.2
180°	845.1	845.1	845.1	845.1	845.1	845.1

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