

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: P392511

Luminaire Tested: **MWL-2-22-31-UNV-L930-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392511  
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-L930-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

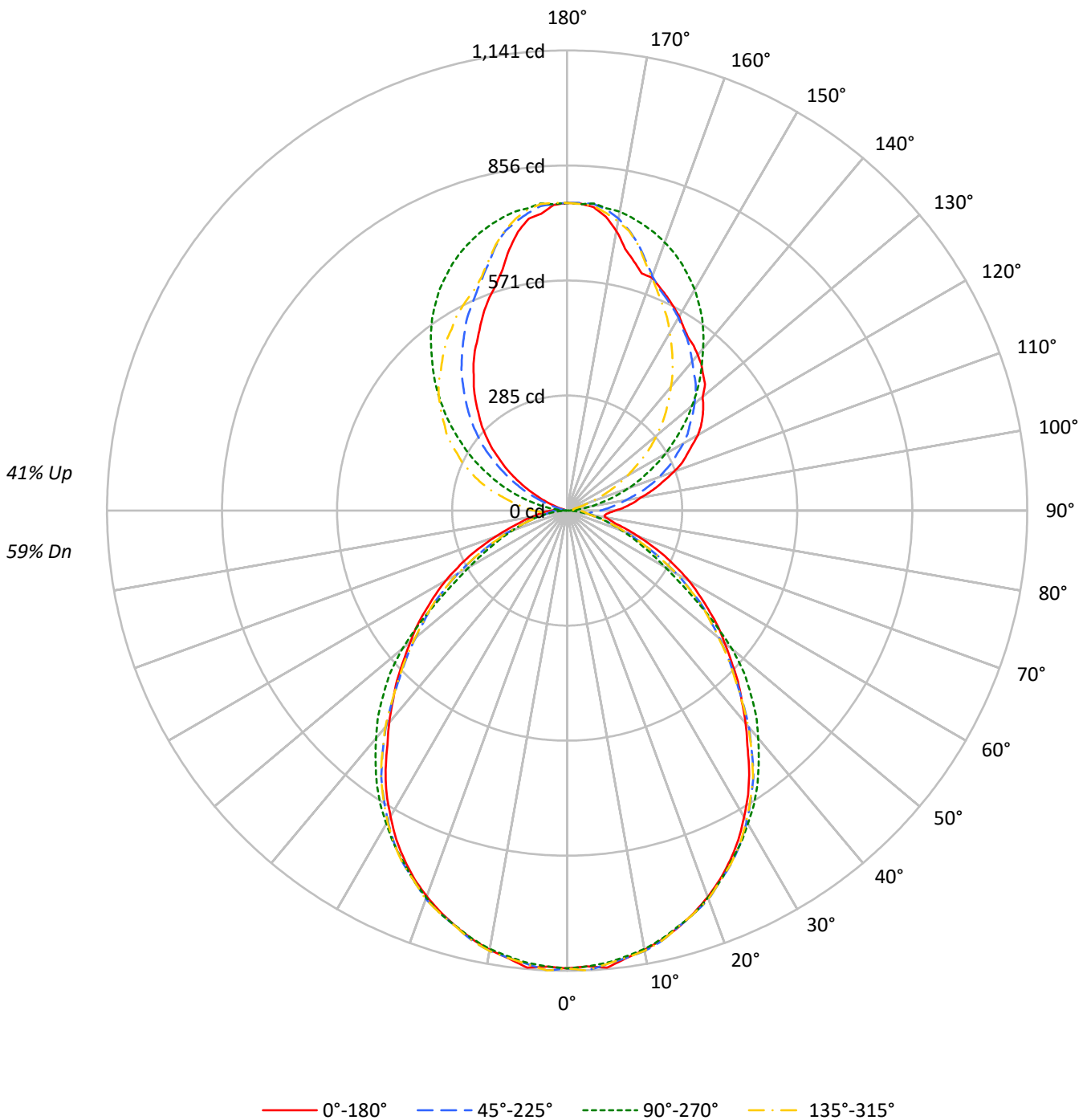
Lumens per Lamp: N/A  
Luminaire Lumens: 4412.2 lumens  
Efficiency: N/A  
Efficacy: 80.3 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')  
CIE Type: General Diffuse

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: P392511  
CATALOG NUMBER: MWL-2-22-31-UNV-L930-EDD

### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	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	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	92	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°	14662	14662	14662	14662
5°	14486	13423	14486	13423
10°	13990	12308	13990	12308
15°	13537	11249	13516	11249
20°	13025	10288	13006	10288
25°	12424	9340	12403	9340
30°	11683	8479	11653	8479
35°	10824	7637	10801	7637
40°	9885	6757	9853	6757
45°	9048	5883	9024	5883
50°	8191	4889	8166	4889
55°	7411	3630	7392	3630
60°	6627	2651	6618	2651
65°	5645	1968	5645	1968
70°	4527	1460	4542	1460
75°	3493	1021	3540	1021
80°	3273	648	2922	648
85°	4278	272	2744	272



TEST NUMBER: P392511

CATALOG NUMBER: MWL-2-22-31-UNV-L930-EDD

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	107.1	2.4
10°-20°	301.2	6.8
20°-30°	441.7	10.0
30°-40°	501.0	11.4
40°-50°	467.4	10.6
50°-60°	366.7	8.3
60°-70°	228.8	5.2
70°-80°	110.7	2.5
80°-90°	58.7	1.3
90°-100°	66.8	1.5
100°-110°	118.1	2.7
110°-120°	203.1	4.6
120°-130°	275.9	6.3
130°-140°	314.6	7.1
140°-150°	313.7	7.1
150°-160°	273.2	6.2
160°-170°	192.0	4.4
170°-180°	71.5	1.6
0°-30°	850.0	19.3
0°-40°	1351.0	30.6
0°-60°	2185.1	49.5
0°-90°	2583.4	58.6
90°-120°	387.9	8.8
90°-150°	1292.2	29.3
90°-180°	1829.0	41.5
0°-180°	4412.2	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1135	1135	1135	1135	1135	
5°	1138	1126	1138	1126	1138	107
15°	1069	1067	1067	1067	1069	301
25°	956	961	955	961	956	440
35°	787	824	785	824	787	491
45°	598	644	597	644	598	461
55°	427	391	426	391	427	383
65°	267	202	267	202	267	264
75°	124	97	126	97	124	140
85°	98	23	63	23	98	80
90°	119	1	38	1	119	66
95°	153	22	25	22	153	132
105°	232	107	6	107	232	245
115°	328	218	76	218	328	325
125°	411	342	187	342	411	367
135°	477	466	300	466	477	368
145°	524	583	404	583	524	330
155°	586	674	508	674	586	270
165°	640	733	619	733	640	182
175°	755	764	739	764	755	70
180°	763	763	763	763	763	



TEST NUMBER: P392511

CATALOG NUMBER: MWL-2-22-31-UNV-L930-EDD

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1
2.5°	1131.1	1137.9	1141.4	1130.5	1131.3	1129.9	1141.4	1137.9	1131.6	1137.9	1141.4
5°	1137.6	1129.7	1129.1	1128.3	1125.8	1128.3	1128.6	1129.7	1137.6	1129.7	1128.6
7.5°	1119.3	1124.5	1118.7	1117.5	1115.1	1117.1	1118.1	1123.9	1119.3	1123.9	1118.1
10°	1105.8	1109.7	1108.8	1103.1	1103.9	1102.5	1108.3	1108.6	1105.8	1108.6	1108.3
12.5°	1089.6	1092.4	1091.8	1085.2	1087.2	1085.2	1091.8	1091.3	1088.6	1091.3	1091.8
15°	1068.8	1068.6	1068.0	1065.5	1066.6	1065.1	1067.5	1067.5	1067.2	1067.5	1067.5
17.5°	1045.8	1048.0	1047.4	1047.8	1047.8	1047.8	1046.9	1047.4	1044.1	1047.4	1046.9
20°	1019.4	1023.8	1025.3	1020.6	1020.9	1020.1	1024.7	1022.8	1017.9	1022.8	1024.7
22.5°	990.1	990.9	993.2	987.0	993.7	986.3	992.7	989.9	989.1	989.9	992.7
25°	956.4	957.2	964.9	961.4	960.9	960.9	963.9	955.7	954.8	955.7	963.9
27.5°	920.2	920.2	930.4	927.3	931.2	926.9	929.4	918.6	918.6	918.6	929.4
30°	877.5	884.9	890.6	902.5	896.7	901.4	889.0	883.3	875.3	883.3	889.0
32.5°	835.5	839.6	847.8	856.5	862.7	855.3	846.3	837.5	833.4	837.5	846.3
35°	786.6	786.6	805.5	821.1	823.5	819.4	803.8	784.9	784.9	784.9	803.8
37.5°	733.9	735.6	752.0	775.8	780.6	774.2	750.4	733.9	732.3	733.9	750.4
40°	688.7	685.4	701.1	731.7	737.0	730.6	698.9	683.3	686.5	683.3	698.9
42.5°	641.0	636.1	643.7	681.5	694.2	680.5	642.1	634.0	638.9	634.0	642.1
45°	598.5	588.6	590.3	625.6	644.1	624.5	588.2	587.0	596.9	587.0	588.2
47.5°	551.6	548.4	541.8	565.1	594.7	564.6	539.7	546.8	550.0	546.8	539.7
50°	508.8	502.3	492.5	511.7	533.3	510.6	490.3	500.1	507.3	500.1	490.3
52.5°	471.1	465.3	446.7	458.2	462.6	457.2	445.1	463.1	469.5	463.1	445.1
55°	427.0	426.2	407.2	401.8	391.4	400.6	405.6	424.5	425.9	424.5	405.6
57.5°	387.5	385.8	358.7	349.1	329.7	348.1	357.1	384.3	386.5	384.3	357.1
60°	349.1	343.4	313.7	290.2	280.4	289.7	312.7	342.3	348.6	342.3	312.7
62.5°	306.3	303.1	266.9	241.7	239.5	241.2	265.8	302.0	305.9	302.0	265.8
65°	267.2	254.9	224.4	201.5	202.5	200.8	223.9	254.3	267.2	254.3	223.9
67.5°	225.3	213.0	186.7	165.5	172.0	165.5	186.0	212.4	225.3	212.4	186.0
70°	188.5	172.0	152.3	135.1	144.9	135.1	152.3	172.7	189.1	172.7	152.3
72.5°	154.8	137.5	122.7	110.4	119.0	110.0	122.7	138.2	155.9	138.2	122.7
75°	124.4	108.7	95.1	88.6	96.8	88.6	95.6	109.4	126.1	109.4	95.6
77.5°	108.9	90.3	72.1	68.9	78.7	68.9	72.6	88.8	106.8	88.8	72.6
80°	96.0	83.1	57.2	51.6	58.1	51.6	56.2	74.5	85.7	74.5	56.2
82.5°	93.2	84.3	54.7	36.7	40.1	36.7	48.2	64.9	72.7	64.9	48.2
85°	97.6	91.3	58.2	29.2	22.8	28.2	42.7	58.6	62.6	58.6	42.7
87.5°	106.2	103.8	68.1	30.7	6.6	23.2	37.4	52.2	50.8	52.2	37.4
90°	119.0	117.6	81.7	35.5	1.4	15.1	28.4	41.8	38.3	41.8	28.4
92.5°	137.6	133.7	96.6	44.7	9.4	7.7	23.0	34.2	32.3	34.2	23.0
95°	152.9	149.7	113.2	56.7	22.4	3.0	16.5	24.9	25.4	24.9	16.5
97.5°	170.8	166.4	127.8	76.1	39.0	7.2	9.0	18.6	20.3	18.6	9.0
100°	184.4	181.4	147.1	99.2	59.4	18.6	4.6	12.5	15.0	12.5	4.6
102.5°	209.3	200.3	169.1	121.2	81.4	34.2	8.9	6.8	9.2	6.8	8.9
105°	231.7	224.3	195.5	144.4	106.7	55.1	21.7	8.1	5.5	8.1	21.7
107.5°	254.9	249.5	219.9	168.1	133.6	79.3	40.9	21.6	14.0	21.6	40.9
110°	281.8	275.2	243.0	191.7	161.6	105.1	61.8	38.7	30.2	38.7	61.8



TEST NUMBER: P392511

CATALOG NUMBER: MWL-2-22-31-UNV-L930-EDD

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	307.6	302.7	264.6	217.2	190.6	133.9	87.6	60.2	52.2	60.2	87.6
115°	327.5	324.8	289.2	240.4	218.3	165.6	116.1	85.5	75.8	85.5	116.1
117.5°	348.4	347.9	307.6	264.0	250.6	194.2	142.5	110.8	100.6	110.8	142.5
120°	374.7	370.5	332.8	287.7	281.2	224.3	171.5	139.8	129.6	139.8	171.5
122.5°	393.9	390.4	354.4	310.2	310.2	254.9	199.4	167.8	157.9	167.8	199.4
125°	410.6	409.4	371.3	332.8	341.5	283.4	231.6	199.3	187.4	199.3	231.6
127.5°	425.5	427.2	392.3	358.4	374.0	313.3	262.1	226.7	214.3	226.7	262.1
130°	438.5	443.9	412.2	381.0	404.1	344.9	289.6	254.0	246.0	254.0	289.6
132.5°	463.8	460.5	432.6	404.1	436.4	374.0	318.7	281.5	272.4	281.5	318.7
135°	476.7	477.8	450.3	424.0	466.5	403.1	346.0	309.5	300.3	309.5	346.0
137.5°	492.3	489.0	464.3	448.2	494.4	431.0	372.9	339.1	324.6	339.1	372.9
140°	503.6	503.0	482.6	469.7	524.6	458.4	400.4	365.8	352.5	365.8	400.4
142.5°	515.4	518.6	500.9	493.3	554.6	487.4	429.9	392.3	379.4	392.3	429.9
145°	523.5	531.2	519.1	522.9	583.2	519.8	455.7	418.3	403.5	418.3	455.7
147.5°	537.7	546.9	533.5	543.9	607.9	548.2	482.3	444.7	432.3	444.7	482.3
150°	555.9	560.4	552.2	572.9	633.1	579.9	508.7	470.0	457.7	470.0	508.7
152.5°	570.6	575.8	566.8	604.6	653.0	609.0	537.7	494.8	480.1	494.8	537.7
155°	585.6	587.7	581.3	635.4	673.9	637.5	560.9	522.1	508.1	522.1	560.9
157.5°	599.5	603.8	595.6	658.4	692.3	662.2	586.4	549.6	537.2	549.6	586.4
160°	614.6	614.6	618.0	685.3	707.4	683.7	614.3	579.6	562.5	579.6	614.3
162.5°	616.3	626.5	648.8	704.1	721.8	702.5	644.4	601.2	586.1	601.2	644.4
165°	639.9	648.2	683.2	720.8	733.2	719.2	681.5	635.8	618.9	635.8	681.5
167.5°	664.6	683.2	711.2	739.6	743.8	734.8	710.0	678.3	663.0	678.3	710.0
170°	704.1	720.8	734.8	746.6	752.5	747.2	727.7	712.2	701.9	712.2	727.7
172.5°	735.0	746.6	752.0	759.5	755.7	753.5	743.8	736.4	730.2	736.4	743.8
175°	754.9	757.9	762.7	760.8	764.1	758.2	757.9	761.6	738.7	761.6	757.9
177.5°	761.9	765.7	763.7	759.8	760.3	759.3	760.6	761.9	758.6	761.9	760.6
180°	762.7	762.7	762.7	762.7	762.7	762.7	762.7	762.7	762.7	762.7	762.7



TEST NUMBER: P392511

CATALOG NUMBER: MWL-2-22-31-UNV-L930-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1
2.5°	1129.9	1131.3	1130.5	1141.4	1137.9	1131.1
5°	1128.3	1125.8	1128.3	1129.1	1129.7	1137.6
7.5°	1117.1	1115.1	1117.5	1118.7	1124.5	1119.3
10°	1102.5	1103.9	1103.1	1108.8	1109.7	1105.8
12.5°	1085.2	1087.2	1085.2	1091.8	1092.4	1089.6
15°	1065.1	1066.6	1065.5	1068.0	1068.6	1068.8
17.5°	1047.8	1047.8	1047.8	1047.4	1048.0	1045.8
20°	1020.1	1020.9	1020.6	1025.3	1023.8	1019.4
22.5°	986.3	993.7	987.0	993.2	990.9	990.1
25°	960.9	960.9	961.4	964.9	957.2	956.4
27.5°	926.9	931.2	927.3	930.4	920.2	920.2
30°	901.4	896.7	902.5	890.6	884.9	877.5
32.5°	855.3	862.7	856.5	847.8	839.6	835.5
35°	819.4	823.5	821.1	805.5	786.6	786.6
37.5°	774.2	780.6	775.8	752.0	735.6	733.9
40°	730.6	737.0	731.7	701.1	685.4	688.7
42.5°	680.5	694.2	681.5	643.7	636.1	641.0
45°	624.5	644.1	625.6	590.3	588.6	598.5
47.5°	564.6	594.7	565.1	541.8	548.4	551.6
50°	510.6	533.3	511.7	492.5	502.3	508.8
52.5°	457.2	462.6	458.2	446.7	465.3	471.1
55°	400.6	391.4	401.8	407.2	426.2	427.0
57.5°	348.1	329.7	349.1	358.7	385.8	387.5
60°	289.7	280.4	290.2	313.7	343.4	349.1
62.5°	241.2	239.5	241.7	266.9	303.1	306.3
65°	200.8	202.5	201.5	224.4	254.9	267.2
67.5°	165.5	172.0	165.5	186.7	213.0	225.3
70°	135.1	144.9	135.1	152.3	172.0	188.5
72.5°	110.0	119.0	110.4	122.7	137.5	154.8
75°	88.6	96.8	88.6	95.1	108.7	124.4
77.5°	68.9	78.7	68.9	72.1	90.3	108.9
80°	51.6	58.1	51.6	57.2	83.1	96.0
82.5°	36.7	40.1	36.7	54.7	84.3	93.2
85°	28.2	22.8	29.2	58.2	91.3	97.6
87.5°	23.2	6.6	30.7	68.1	103.8	106.2
90°	15.1	1.4	35.5	81.7	117.6	119.0
92.5°	7.7	9.4	44.7	96.6	133.7	137.6
95°	3.0	22.4	56.7	113.2	149.7	152.9
97.5°	7.2	39.0	76.1	127.8	166.4	170.8
100°	18.6	59.4	99.2	147.1	181.4	184.4
102.5°	34.2	81.4	121.2	169.1	200.3	209.3
105°	55.1	106.7	144.4	195.5	224.3	231.7
107.5°	79.3	133.6	168.1	219.9	249.5	254.9
110°	105.1	161.6	191.7	243.0	275.2	281.8





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	133.9	190.6	217.2	264.6	302.7	307.6
115°	165.6	218.3	240.4	289.2	324.8	327.5
117.5°	194.2	250.6	264.0	307.6	347.9	348.4
120°	224.3	281.2	287.7	332.8	370.5	374.7
122.5°	254.9	310.2	310.2	354.4	390.4	393.9
125°	283.4	341.5	332.8	371.3	409.4	410.6
127.5°	313.3	374.0	358.4	392.3	427.2	425.5
130°	344.9	404.1	381.0	412.2	443.9	438.5
132.5°	374.0	436.4	404.1	432.6	460.5	463.8
135°	403.1	466.5	424.0	450.3	477.8	476.7
137.5°	431.0	494.4	448.2	464.3	489.0	492.3
140°	458.4	524.6	469.7	482.6	503.0	503.6
142.5°	487.4	554.6	493.3	500.9	518.6	515.4
145°	519.8	583.2	522.9	519.1	531.2	523.5
147.5°	548.2	607.9	543.9	533.5	546.9	537.7
150°	579.9	633.1	572.9	552.2	560.4	555.9
152.5°	609.0	653.0	604.6	566.8	575.8	570.6
155°	637.5	673.9	635.4	581.3	587.7	585.6
157.5°	662.2	692.3	658.4	595.6	603.8	599.5
160°	683.7	707.4	685.3	618.0	614.6	614.6
162.5°	702.5	721.8	704.1	648.8	626.5	616.3
165°	719.2	733.2	720.8	683.2	648.2	639.9
167.5°	734.8	743.8	739.6	711.2	683.2	664.6
170°	747.2	752.5	746.6	734.8	720.8	704.1
172.5°	753.5	755.7	759.5	752.0	746.6	735.0
175°	758.2	764.1	760.8	762.7	757.9	754.9
177.5°	759.3	760.3	759.8	763.7	765.7	761.9
180°	762.7	762.7	762.7	762.7	762.7	762.7

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