

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: P392523

Luminaire Tested: **MWL-2-28-23-UNV-L930-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392523
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-2-28-23-UNV-L930-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

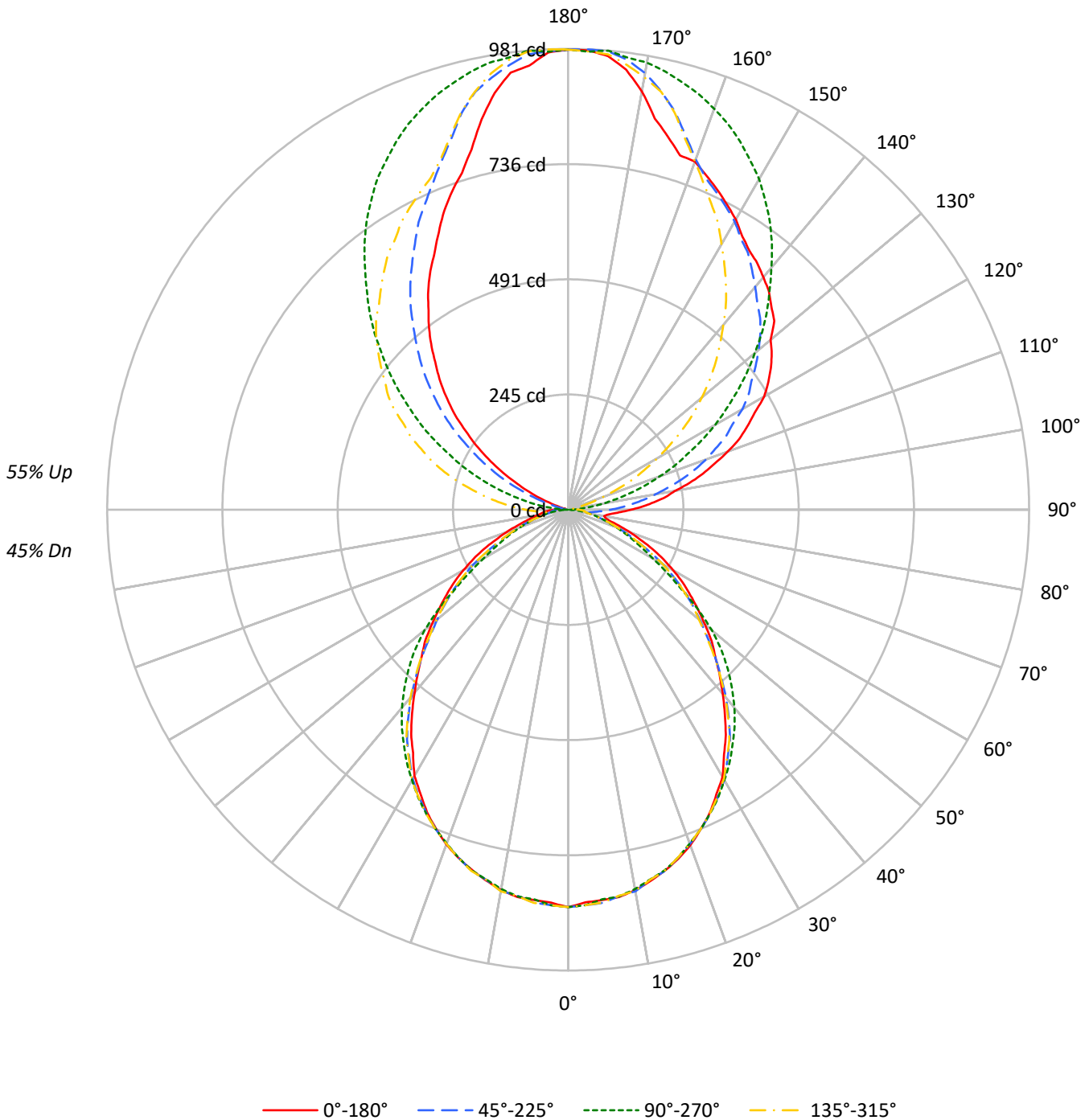
Lumens per Lamp: N/A
Luminaire Lumens: 4262.5 lumens
Efficiency: N/A
Efficacy: 76.0 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 56.055
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	0
RCR																		
0	106	106	106	106	97	97	97	97	81	81	81	66	66	66	52	52	52	45
1	97	93	89	85	89	85	82	79	71	69	67	58	56	55	46	45	44	38
2	89	81	75	70	81	75	70	65	63	59	56	51	49	46	41	39	38	33
3	81	72	65	59	74	66	60	55	56	51	47	46	42	40	37	34	32	28
4	74	64	56	50	68	59	52	47	50	45	41	41	37	34	33	30	28	25
5	68	57	49	43	62	53	46	41	44	39	35	37	33	30	30	27	25	22
6	63	51	43	38	58	47	40	35	40	35	31	33	29	26	27	24	22	19
7	58	46	38	33	53	43	36	31	36	31	27	31	26	23	25	22	20	17
8	54	42	34	29	50	39	32	28	33	28	24	28	24	21	23	20	18	15
9	50	38	31	26	46	36	29	25	31	25	22	26	22	19	21	18	16	14
10	47	35	28	23	43	33	26	22	28	23	20	24	20	17	20	17	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	10929	10929	10929	10929
5°	10621	9928	10621	9928
10°	10403	9140	10403	9140
15°	10077	8379	10050	8379
20°	9713	7619	9686	7619
25°	9258	6941	9231	6941
30°	8744	6285	8707	6285
35°	8045	5655	8016	5655
40°	7340	5044	7300	5044
45°	6688	4388	6656	4388
50°	6114	3652	6082	3652
55°	5512	2711	5488	2711
60°	4892	1971	4877	1971
65°	4179	1476	4179	1476
70°	3353	1091	3367	1091
75°	2555	770	2614	770
80°	2653	475	2206	475
85°	4146	204	2174	204



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	79.5	1.9
10°-20°	223.8	5.3
20°-30°	328.4	7.7
30°-40°	372.6	8.7
40°-50°	347.6	8.2
50°-60°	271.8	6.4
60°-70°	168.7	4.0
70°-80°	82.1	1.9
80°-90°	50.9	1.2
90°-100°	77.5	1.8
100°-110°	150.7	3.5
110°-120°	260.1	6.1
120°-130°	353.9	8.3
130°-140°	403.4	9.5
140°-150°	402.5	9.4
150°-160°	350.5	8.2
160°-170°	246.5	5.8
170°-180°	91.8	2.2
0°-30°	631.7	14.8
0°-40°	1004.3	23.6
0°-60°	1623.7	38.1
0°-90°	1925.5	45.2
90°-120°	488.3	11.5
90°-150°	1648.2	38.7
90°-180°	2337.0	54.8
0°-180°	4262.5	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	846	846	846	846	846	
5°	834	833	834	833	834	79
15°	796	794	794	794	796	224
25°	713	714	711	714	713	327
35°	585	610	582	610	585	365
45°	442	480	440	480	442	343
55°	318	292	316	292	318	285
65°	198	152	198	152	198	195
75°	91	73	93	73	91	104
85°	95	17	50	17	95	74
90°	133	1	30	1	133	74
95°	183	28	19	28	183	160
105°	297	137	6	137	297	313
115°	421	280	97	280	421	417
125°	526	439	240	439	526	470
135°	612	598	385	598	612	472
145°	672	748	518	748	672	424
155°	751	865	652	865	751	347
165°	821	941	794	941	821	233
175°	970	981	949	981	970	90
180°	979	979	979	979	979	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	846.1	846.1	846.1	846.1	846.1	846.1	846.1	846.1	846.1	846.1	846.1
2.5°	836.6	846.1	842.6	842.5	842.5	841.8	842.6	846.1	837.3	846.1	842.6
5°	834.1	841.1	840.1	839.3	832.7	839.3	839.5	841.1	834.1	841.1	839.5
7.5°	831.5	835.3	829.6	831.9	830.2	831.2	828.8	834.6	831.5	834.6	828.8
10°	822.3	823.8	824.7	820.5	819.7	819.8	823.9	822.4	822.3	822.4	823.9
12.5°	809.7	810.7	806.6	809.1	806.0	809.1	806.6	809.3	808.3	809.3	806.6
15°	795.6	799.1	796.0	793.5	794.5	792.8	795.3	797.7	793.5	797.7	795.3
17.5°	779.2	780.2	777.0	776.4	776.4	776.4	776.4	779.5	777.0	779.5	776.4
20°	760.2	760.3	757.3	755.8	756.0	755.2	756.6	759.0	758.1	759.0	756.6
22.5°	736.5	740.6	736.7	738.6	736.3	737.9	736.1	739.2	735.1	739.2	736.1
25°	712.7	715.1	714.4	717.2	714.1	716.6	713.0	713.0	710.6	713.0	713.0
27.5°	683.1	686.3	689.8	692.3	691.0	691.7	688.4	684.3	681.0	684.3	688.4
30°	656.8	655.1	664.2	665.9	664.7	664.5	662.0	653.1	654.0	653.1	662.0
32.5°	617.3	622.2	630.4	639.7	639.1	638.3	628.4	619.5	614.6	619.5	628.4
35°	584.6	587.8	600.1	610.9	609.7	608.8	598.1	585.8	582.5	585.8	598.1
37.5°	547.6	548.4	561.5	579.6	581.5	577.5	559.5	546.4	545.5	546.4	559.5
40°	511.4	510.5	522.0	542.7	550.2	541.4	519.2	507.8	508.6	507.8	519.2
42.5°	476.8	473.5	481.0	508.1	515.7	506.8	479.0	470.7	474.1	470.7	479.0
45°	442.4	438.2	440.8	465.4	480.4	464.1	438.0	436.2	440.3	436.2	438.0
47.5°	414.5	403.7	401.2	422.0	442.5	421.3	398.5	401.7	412.3	401.7	398.5
50°	379.8	374.1	365.9	380.9	398.3	379.5	363.2	371.4	377.8	371.4	363.2
52.5°	347.8	345.3	333.2	339.8	347.4	338.4	331.2	342.6	345.8	342.6	331.2
55°	317.6	313.5	300.3	298.0	292.3	296.6	298.2	311.4	316.2	311.4	298.2
57.5°	289.6	283.9	265.7	258.5	248.7	257.1	263.7	281.8	288.2	281.8	263.7
60°	257.7	252.8	233.9	215.8	208.4	215.2	232.5	251.4	256.9	251.4	232.5
62.5°	228.1	219.9	196.9	179.6	177.3	179.0	195.5	218.5	227.3	218.5	195.5
65°	197.8	185.4	165.7	149.2	151.9	148.5	165.0	184.7	197.8	184.7	165.0
67.5°	165.7	155.0	137.7	122.3	128.8	122.3	137.1	154.4	165.7	154.4	137.1
70°	139.6	126.4	112.4	100.9	108.3	100.9	112.4	127.1	140.2	127.1	112.4
72.5°	113.2	101.7	90.2	82.8	87.8	82.1	90.2	102.4	114.6	102.4	90.2
75°	91.0	80.3	70.5	64.8	73.0	64.8	71.3	81.0	93.1	81.0	71.3
77.5°	80.9	67.4	53.3	51.6	58.2	51.6	54.1	65.3	78.1	65.3	54.1
80°	77.8	66.5	43.1	38.5	42.6	38.5	41.6	55.4	64.7	55.4	41.6
82.5°	82.9	73.4	44.8	27.8	30.3	27.8	36.5	48.5	56.6	48.5	36.5
85°	94.6	87.6	54.2	22.5	17.1	21.1	34.2	45.4	49.6	45.4	34.2
87.5°	112.0	108.3	70.2	28.0	4.1	18.2	30.7	41.8	40.8	41.8	30.7
90°	133.2	129.6	91.0	37.5	0.6	11.3	22.5	32.1	29.5	32.1	22.5
92.5°	159.5	153.6	112.4	53.2	11.1	5.5	17.7	25.8	24.0	25.8	17.7
95°	183.2	179.1	136.4	72.7	27.6	3.6	11.9	18.7	19.3	18.7	11.9
97.5°	209.5	204.5	161.0	97.6	49.9	9.2	8.2	14.3	15.9	14.3	8.2
100°	230.7	227.6	188.9	127.4	76.3	23.7	5.6	10.5	12.9	10.5	5.6
102.5°	265.2	256.1	217.2	155.8	104.5	43.7	11.2	7.1	8.0	7.1	11.2
105°	296.7	287.0	251.1	185.4	137.1	70.6	27.8	9.2	5.6	9.2	27.8
107.5°	326.5	319.6	281.6	215.8	171.6	101.8	51.3	26.4	16.7	26.4	51.3
110°	361.1	352.7	311.3	246.3	207.5	134.9	78.3	48.5	37.5	48.5	78.3



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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°	394.3	388.0	338.9	278.1	244.9	171.0	111.4	76.3	65.8	76.3	111.4
115°	420.7	416.4	370.8	307.8	279.5	211.8	148.1	108.7	97.0	108.7	148.1
117.5°	447.6	446.9	394.3	338.3	320.9	248.3	182.0	142.0	128.8	142.0	182.0
120°	481.5	476.0	427.6	369.5	361.2	287.8	220.1	179.4	166.2	179.4	220.1
122.5°	505.1	501.6	455.2	398.5	398.5	327.4	256.1	215.3	201.5	215.3	256.1
125°	526.5	525.1	476.0	427.6	438.7	363.9	296.2	254.7	239.5	254.7	296.2
127.5°	545.8	547.8	502.9	459.4	479.4	401.3	335.6	290.0	274.1	290.0	335.6
130°	562.5	569.3	528.6	488.4	518.2	442.1	370.9	325.2	314.9	325.2	370.9
132.5°	594.9	590.8	554.8	518.2	559.6	479.4	408.3	360.5	348.8	360.5	408.3
135°	611.5	612.9	577.6	543.8	598.4	516.8	443.4	396.5	384.8	396.5	443.4
137.5°	631.6	627.4	595.6	574.9	634.3	552.7	478.0	434.5	415.9	434.5	478.0
140°	646.0	645.4	619.1	602.5	673.1	588.0	513.3	469.1	451.8	469.1	513.3
142.5°	661.3	665.5	642.6	633.0	711.8	625.3	551.4	502.9	486.4	502.9	551.4
145°	672.4	681.5	667.0	670.9	748.4	666.9	585.4	536.3	518.3	536.3	585.4
147.5°	689.8	701.6	684.2	698.8	780.2	704.3	618.6	570.1	554.3	570.1	618.6
150°	713.3	718.8	708.5	735.3	812.7	744.2	652.5	602.6	586.8	602.6	652.5
152.5°	732.0	738.9	727.1	776.1	838.3	781.6	689.8	634.5	615.8	634.5	689.8
155°	751.3	754.1	745.8	815.5	865.3	818.2	719.5	669.7	651.7	669.7	719.5
157.5°	769.3	774.8	764.3	845.2	888.8	850.0	752.6	705.0	689.1	705.0	752.6
160°	788.7	788.7	793.3	879.8	908.1	877.7	788.6	743.8	721.7	743.8	788.6
162.5°	790.7	803.8	832.8	904.0	926.8	902.0	827.3	771.4	752.0	771.4	827.3
165°	821.2	832.1	877.1	925.5	941.3	923.3	875.0	816.2	794.1	816.2	875.0
167.5°	852.9	877.1	913.0	949.6	955.2	943.4	911.6	870.8	850.9	870.8	911.6
170°	904.0	925.5	943.4	958.6	966.3	959.3	934.4	914.4	901.2	914.4	934.4
172.5°	944.8	958.6	965.5	975.2	970.4	967.7	955.2	945.5	938.5	945.5	955.2
175°	969.5	973.1	979.4	976.7	980.9	973.2	973.1	978.0	948.8	978.0	973.1
177.5°	978.6	984.1	980.7	975.3	976.0	974.6	976.6	979.4	974.4	979.4	976.6
180°	979.4	979.4	979.4	979.4	979.4	979.4	979.4	979.4	979.4	979.4	979.4



TEST NUMBER: P392523

CATALOG NUMBER: MWL-2-28-23-UNV-L930-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	846.1	846.1	846.1	846.1	846.1	846.1
2.5°	841.8	842.5	842.5	842.6	846.1	836.6
5°	839.3	832.7	839.3	840.1	841.1	834.1
7.5°	831.2	830.2	831.9	829.6	835.3	831.5
10°	819.8	819.7	820.5	824.7	823.8	822.3
12.5°	809.1	806.0	809.1	806.6	810.7	809.7
15°	792.8	794.5	793.5	796.0	799.1	795.6
17.5°	776.4	776.4	776.4	777.0	780.2	779.2
20°	755.2	756.0	755.8	757.3	760.3	760.2
22.5°	737.9	736.3	738.6	736.7	740.6	736.5
25°	716.6	714.1	717.2	714.4	715.1	712.7
27.5°	691.7	691.0	692.3	689.8	686.3	683.1
30°	664.5	664.7	665.9	664.2	655.1	656.8
32.5°	638.3	639.1	639.7	630.4	622.2	617.3
35°	608.8	609.7	610.9	600.1	587.8	584.6
37.5°	577.5	581.5	579.6	561.5	548.4	547.6
40°	541.4	550.2	542.7	522.0	510.5	511.4
42.5°	506.8	515.7	508.1	481.0	473.5	476.8
45°	464.1	480.4	465.4	440.8	438.2	442.4
47.5°	421.3	442.5	422.0	401.2	403.7	414.5
50°	379.5	398.3	380.9	365.9	374.1	379.8
52.5°	338.4	347.4	339.8	333.2	345.3	347.8
55°	296.6	292.3	298.0	300.3	313.5	317.6
57.5°	257.1	248.7	258.5	265.7	283.9	289.6
60°	215.2	208.4	215.8	233.9	252.8	257.7
62.5°	179.0	177.3	179.6	196.9	219.9	228.1
65°	148.5	151.9	149.2	165.7	185.4	197.8
67.5°	122.3	128.8	122.3	137.7	155.0	165.7
70°	100.9	108.3	100.9	112.4	126.4	139.6
72.5°	82.1	87.8	82.8	90.2	101.7	113.2
75°	64.8	73.0	64.8	70.5	80.3	91.0
77.5°	51.6	58.2	51.6	53.3	67.4	80.9
80°	38.5	42.6	38.5	43.1	66.5	77.8
82.5°	27.8	30.3	27.8	44.8	73.4	82.9
85°	21.1	17.1	22.5	54.2	87.6	94.6
87.5°	18.2	4.1	28.0	70.2	108.3	112.0
90°	11.3	0.6	37.5	91.0	129.6	133.2
92.5°	5.5	11.1	53.2	112.4	153.6	159.5
95°	3.6	27.6	72.7	136.4	179.1	183.2
97.5°	9.2	49.9	97.6	161.0	204.5	209.5
100°	23.7	76.3	127.4	188.9	227.6	230.7
102.5°	43.7	104.5	155.8	217.2	256.1	265.2
105°	70.6	137.1	185.4	251.1	287.0	296.7
107.5°	101.8	171.6	215.8	281.6	319.6	326.5
110°	134.9	207.5	246.3	311.3	352.7	361.1



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CATALOG NUMBER: MWL-2-28-23-UNV-L930-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	171.0	244.9	278.1	338.9	388.0	394.3
115°	211.8	279.5	307.8	370.8	416.4	420.7
117.5°	248.3	320.9	338.3	394.3	446.9	447.6
120°	287.8	361.2	369.5	427.6	476.0	481.5
122.5°	327.4	398.5	398.5	455.2	501.6	505.1
125°	363.9	438.7	427.6	476.0	525.1	526.5
127.5°	401.3	479.4	459.4	502.9	547.8	545.8
130°	442.1	518.2	488.4	528.6	569.3	562.5
132.5°	479.4	559.6	518.2	554.8	590.8	594.9
135°	516.8	598.4	543.8	577.6	612.9	611.5
137.5°	552.7	634.3	574.9	595.6	627.4	631.6
140°	588.0	673.1	602.5	619.1	645.4	646.0
142.5°	625.3	711.8	633.0	642.6	665.5	661.3
145°	666.9	748.4	670.9	667.0	681.5	672.4
147.5°	704.3	780.2	698.8	684.2	701.6	689.8
150°	744.2	812.7	735.3	708.5	718.8	713.3
152.5°	781.6	838.3	776.1	727.1	738.9	732.0
155°	818.2	865.3	815.5	745.8	754.1	751.3
157.5°	850.0	888.8	845.2	764.3	774.8	769.3
160°	877.7	908.1	879.8	793.3	788.7	788.7
162.5°	902.0	926.8	904.0	832.8	803.8	790.7
165°	923.3	941.3	925.5	877.1	832.1	821.2
167.5°	943.4	955.2	949.6	913.0	877.1	852.9
170°	959.3	966.3	958.6	943.4	925.5	904.0
172.5°	967.7	970.4	975.2	965.5	958.6	944.8
175°	973.2	980.9	976.7	979.4	973.1	969.5
177.5°	974.6	976.0	975.3	980.7	984.1	978.6
180°	979.4	979.4	979.4	979.4	979.4	979.4

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