

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: P392480

Luminaire Tested: **MWL-2-13-23-UNV-L840-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392480  
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-2-13-23-UNV-L840-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

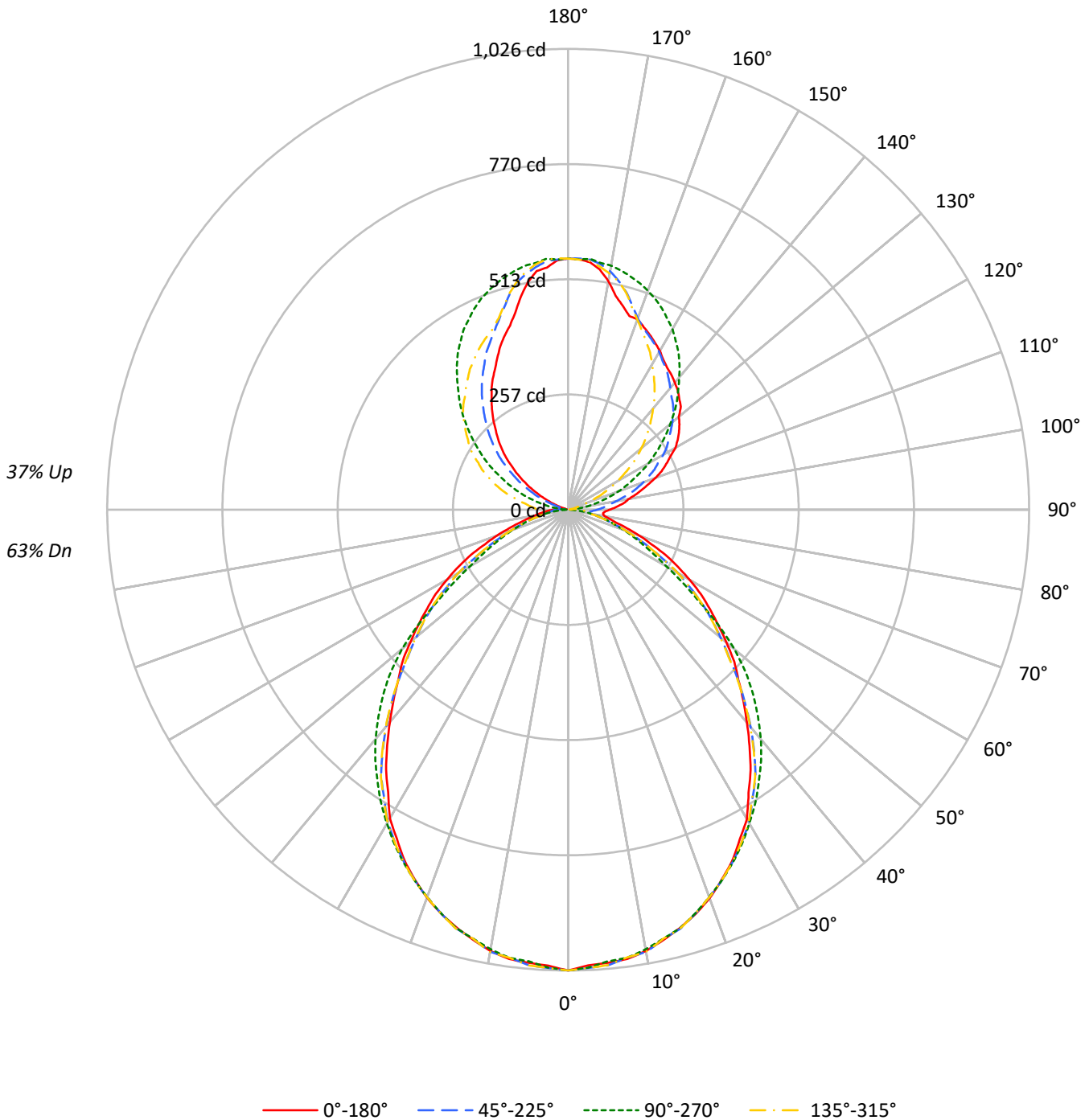
Lumens per Lamp: N/A  
Luminaire Lumens: 3664.0 lumens  
Efficiency: N/A  
Efficacy: 105.9 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')  
CIE Type: Semi-Direct

Input Watts (W): 34.6  
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	110	110	110	110	103	103	103	103	91	91	91	79	79	79	68	68	68	63				
1	101	97	93	90	95	91	88	85	80	78	75	70	68	67	61	60	59	54				
2	93	85	79	74	87	80	75	70	71	67	63	62	59	57	54	52	50	46				
3	85	75	68	62	79	71	65	60	63	58	54	56	52	49	49	46	43	40				
4	78	67	59	53	73	63	56	51	56	51	46	50	46	42	44	41	38	35				
5	72	60	52	46	67	57	50	44	51	45	40	45	40	37	40	36	33	30				
6	66	54	46	40	62	51	44	39	46	40	36	41	36	33	36	32	30	27				
7	61	49	41	36	58	47	39	34	42	36	32	37	33	29	33	29	26	24				
8	57	45	37	32	54	43	36	31	38	33	28	34	30	26	31	27	24	22				
9	53	41	34	29	50	39	32	28	35	30	26	32	27	24	28	24	22	20				
10	50	38	31	26	47	36	29	25	33	27	23	29	25	21	26	22	20	18				

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

	0°	90°	180°	270°
0°	13250	13250	13250	13250
5°	12894	12033	12894	12033
10°	12618	11081	12618	11081
15°	12203	10167	12189	10167
20°	11761	9247	11747	9247
25°	11213	8423	11197	8423
30°	10587	7627	10566	7627
35°	9740	6859	9723	6859
40°	8881	6115	8858	6115
45°	8094	5316	8076	5316
50°	7395	4425	7376	4425
55°	6665	3285	6651	3285
60°	5915	2385	5908	2385
65°	5053	1786	5053	1786
70°	4054	1318	4064	1318
75°	3083	932	3116	932
80°	2816	573	2564	573
85°	3432	243	2310	243



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	96.4	2.6
10°-20°	271.5	7.4
20°-30°	398.2	10.9
30°-40°	451.6	12.3
40°-50°	421.2	11.5
50°-60°	329.2	9.0
60°-70°	204.1	5.6
70°-80°	98.6	2.7
80°-90°	49.7	1.4
90°-100°	50.9	1.4
100°-110°	86.7	2.4
110°-120°	148.9	4.1
120°-130°	202.6	5.5
130°-140°	230.7	6.3
140°-150°	230.2	6.3
150°-160°	200.4	5.5
160°-170°	140.8	3.8
170°-180°	52.4	1.4
0°-30°	766.1	20.9
0°-40°	1217.7	33.2
0°-60°	1968.0	53.7
0°-90°	2320.5	63.3
90°-120°	286.5	7.8
90°-150°	950.0	25.9
90°-180°	1344.0	36.7
0°-180°	3664.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1026	1026	1026	1026	1026	
5°	1013	1009	1013	1009	1013	96
15°	964	964	962	964	964	272
25°	863	867	862	867	863	396
35°	708	740	707	740	708	442
45°	535	582	534	582	535	415
55°	384	354	383	354	384	344
65°	239	184	239	184	239	236
75°	110	88	111	88	110	123
85°	78	20	53	20	78	65
90°	92	0	33	0	92	51
95°	116	16	22	16	116	99
105°	170	79	4	79	170	180
115°	241	160	56	160	241	239
125°	301	251	138	251	301	269
135°	350	342	220	342	350	270
145°	385	428	297	428	385	242
155°	430	494	373	494	430	198
165°	470	537	454	537	470	133
175°	553	560	541	560	553	52
180°	559	559	559	559	559	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1025.8	1025.8	1025.8	1025.8	1025.8	1025.8	1025.8	1025.8	1025.8	1025.8	1025.8
2.5°	1015.6	1026.4	1021.2	1020.5	1020.5	1020.2	1021.2	1026.4	1016.0	1026.4	1021.2
5°	1012.6	1020.4	1018.2	1017.2	1009.2	1017.2	1017.8	1020.4	1012.6	1020.4	1017.8
7.5°	1009.0	1012.8	1005.8	1008.2	1006.2	1007.8	1005.4	1012.4	1009.0	1012.4	1005.4
10°	997.4	998.8	999.8	994.8	993.8	994.4	999.4	998.0	997.4	998.0	999.4
12.5°	981.2	982.8	978.4	981.4	978.0	981.4	978.4	982.0	980.4	982.0	978.4
15°	963.5	968.8	965.4	962.4	964.0	962.0	965.0	968.0	962.4	968.0	965.0
17.5°	943.5	945.8	942.4	942.0	942.0	942.0	942.0	945.4	942.4	945.4	942.0
20°	920.5	921.2	918.4	917.0	917.6	916.6	918.0	920.4	919.4	920.4	918.0
22.5°	892.2	897.2	893.4	896.0	893.6	895.6	893.0	896.4	891.4	896.4	893.0
25°	863.2	866.2	865.8	870.0	866.6	869.6	865.0	865.0	862.0	865.0	865.0
27.5°	827.2	831.2	835.8	839.4	838.6	839.0	835.0	830.0	826.0	830.0	835.0
30°	795.2	793.2	804.2	806.8	806.6	806.0	803.0	792.0	793.6	792.0	803.0
32.5°	747.2	753.2	763.2	774.8	775.0	774.0	762.0	751.6	745.6	751.6	762.0
35°	707.8	711.8	726.8	739.8	739.6	738.6	725.6	710.6	706.6	710.6	725.6
37.5°	662.8	663.8	679.8	701.8	705.0	700.6	678.6	662.6	661.6	662.6	678.6
40°	618.8	617.8	631.8	657.4	667.0	656.6	630.2	616.2	617.2	616.2	630.2
42.5°	576.8	572.8	582.4	615.4	625.0	614.6	581.2	571.2	575.2	571.2	581.2
45°	535.4	530.4	533.4	563.4	582.0	562.6	531.8	529.2	534.2	529.2	531.8
47.5°	501.4	488.4	485.4	511.0	536.0	510.6	483.8	487.2	500.2	487.2	483.8
50°	459.4	452.4	442.4	461.0	482.6	460.2	440.8	450.8	458.2	450.8	440.8
52.5°	420.4	417.4	403.0	411.0	420.6	410.2	401.8	415.8	419.2	415.8	401.8
55°	384.0	379.0	363.0	360.6	354.2	359.8	361.8	377.8	383.2	377.8	361.8
57.5°	350.0	343.0	321.0	312.6	301.2	311.8	319.8	341.8	349.2	341.8	319.8
60°	311.6	305.6	282.6	261.2	252.2	260.8	281.8	304.8	311.2	304.8	281.8
62.5°	275.6	265.6	237.6	217.2	214.8	216.8	236.8	264.8	275.2	264.8	236.8
65°	239.2	224.2	200.2	180.2	183.8	179.8	199.8	223.8	239.2	223.8	199.8
67.5°	200.2	187.2	166.2	147.8	155.8	147.8	165.8	186.8	200.2	186.8	165.8
70°	168.8	152.8	135.8	121.8	130.8	121.8	135.8	153.2	169.2	153.2	135.8
72.5°	136.8	122.8	108.8	99.8	106.4	99.4	108.8	123.2	137.6	123.2	108.8
75°	109.8	96.8	85.4	78.4	88.4	78.4	85.8	97.2	111.0	97.2	85.8
77.5°	93.9	79.4	64.4	62.4	70.4	62.4	64.8	78.2	92.4	78.2	64.8
80°	82.6	71.9	50.6	46.4	51.4	46.4	49.8	65.6	75.2	65.6	49.8
82.5°	78.1	70.5	47.3	33.4	36.4	33.4	42.6	56.4	63.1	56.4	42.6
85°	78.3	74.4	49.0	25.6	20.4	24.8	37.5	50.3	52.7	50.3	37.5
87.5°	83.5	82.9	55.4	25.5	5.0	20.0	32.9	45.1	42.9	45.1	32.9
90°	91.9	91.9	64.6	27.8	0.4	12.8	25.6	36.4	32.8	36.4	25.6
92.5°	104.2	102.5	74.2	33.0	6.3	5.8	20.2	29.6	27.0	29.6	20.2
95°	115.6	113.2	84.1	42.0	15.8	2.6	13.2	21.8	22.2	21.8	13.2
97.5°	127.9	123.9	94.4	56.2	29.0	5.7	7.4	15.6	17.6	15.6	7.4
100°	136.3	132.9	108.2	73.1	43.9	14.0	3.8	9.2	12.2	9.2	3.8
102.5°	152.7	147.0	124.3	89.3	60.1	25.4	6.9	5.2	6.2	5.2	6.9
105°	169.6	164.1	143.6	106.2	78.6	40.8	16.4	5.7	3.8	5.7	16.4
107.5°	186.6	182.6	161.0	123.5	98.3	58.5	29.8	15.6	10.1	15.6	29.8
110°	206.3	201.5	177.9	140.9	118.8	77.4	45.1	28.2	21.9	28.2	45.1



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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°	225.2	221.6	193.7	159.0	140.1	97.9	64.0	43.9	38.0	43.9	64.0
115°	240.8	237.8	211.8	175.9	159.8	121.2	84.9	62.5	56.4	62.5	84.9
117.5°	256.1	255.7	225.2	193.3	183.4	142.1	104.2	82.0	74.5	82.0	104.2
120°	275.4	272.3	244.7	211.6	206.9	165.1	126.5	103.3	95.8	103.3	126.5
122.5°	288.8	286.9	260.5	228.2	228.2	187.6	147.0	123.7	115.9	123.7	147.0
125°	301.0	300.3	272.3	244.7	251.0	208.5	169.8	146.2	137.5	146.2	169.8
127.5°	312.1	313.3	287.6	262.8	274.3	229.7	192.3	166.3	157.2	166.3	192.3
130°	321.5	325.5	302.2	279.4	296.3	253.0	212.4	186.4	180.5	186.4	212.4
132.5°	340.0	337.7	317.2	296.3	320.0	274.3	233.7	206.5	199.8	206.5	233.7
135°	349.5	350.3	330.2	310.9	342.0	295.5	253.8	227.0	220.3	227.0	253.8
137.5°	360.9	358.6	340.4	328.6	362.5	316.0	273.5	248.6	238.0	248.6	273.5
140°	369.2	368.8	353.8	344.4	384.6	336.1	293.6	268.3	258.5	268.3	293.6
142.5°	377.9	380.2	367.2	361.7	406.6	357.4	315.2	287.6	278.2	287.6	315.2
145°	384.8	389.9	381.6	383.4	427.5	381.0	335.1	307.2	296.9	307.2	335.1
147.5°	394.6	401.3	391.5	399.8	445.6	402.9	354.1	326.5	317.4	326.5	354.1
150°	408.0	411.2	405.3	420.0	464.2	425.2	373.4	345.0	335.9	345.0	373.4
152.5°	418.7	422.6	415.9	443.3	478.7	446.4	394.6	363.1	352.5	363.1	394.6
155°	429.7	431.3	426.5	465.7	494.1	467.3	411.6	383.2	373.0	383.2	411.6
157.5°	439.9	443.1	436.6	482.7	507.5	485.4	429.9	403.3	394.2	403.3	429.9
160°	451.0	451.0	453.1	502.4	518.5	501.2	450.4	425.4	412.8	425.4	450.4
162.5°	452.2	459.6	475.6	516.2	529.2	515.0	472.4	441.1	430.1	441.1	472.4
165°	469.5	475.2	500.8	528.4	537.4	527.2	499.6	466.1	454.1	466.1	499.6
167.5°	487.6	500.8	521.3	542.2	545.3	538.6	520.5	497.3	486.4	497.3	520.5
170°	516.2	528.4	538.6	547.3	551.6	547.7	533.5	522.1	514.6	522.1	533.5
172.5°	539.4	547.3	551.2	556.7	554.0	552.4	545.3	539.8	535.9	539.8	545.3
175°	553.0	555.6	559.1	558.1	560.5	556.2	555.6	558.3	541.2	558.3	555.6
177.5°	558.1	561.9	559.9	557.4	557.7	557.0	557.5	559.1	555.7	559.1	557.5
180°	559.1	559.1	559.1	559.1	559.1	559.1	559.1	559.1	559.1	559.1	559.1



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1025.8	1025.8	1025.8	1025.8	1025.8	1025.8
2.5°	1020.2	1020.5	1020.5	1021.2	1026.4	1015.6
5°	1017.2	1009.2	1017.2	1018.2	1020.4	1012.6
7.5°	1007.8	1006.2	1008.2	1005.8	1012.8	1009.0
10°	994.4	993.8	994.8	999.8	998.8	997.4
12.5°	981.4	978.0	981.4	978.4	982.8	981.2
15°	962.0	964.0	962.4	965.4	968.8	963.5
17.5°	942.0	942.0	942.0	942.4	945.8	943.5
20°	916.6	917.6	917.0	918.4	921.2	920.5
22.5°	895.6	893.6	896.0	893.4	897.2	892.2
25°	869.6	866.6	870.0	865.8	866.2	863.2
27.5°	839.0	838.6	839.4	835.8	831.2	827.2
30°	806.0	806.6	806.8	804.2	793.2	795.2
32.5°	774.0	775.0	774.8	763.2	753.2	747.2
35°	738.6	739.6	739.8	726.8	711.8	707.8
37.5°	700.6	705.0	701.8	679.8	663.8	662.8
40°	656.6	667.0	657.4	631.8	617.8	618.8
42.5°	614.6	625.0	615.4	582.4	572.8	576.8
45°	562.6	582.0	563.4	533.4	530.4	535.4
47.5°	510.6	536.0	511.0	485.4	488.4	501.4
50°	460.2	482.6	461.0	442.4	452.4	459.4
52.5°	410.2	420.6	411.0	403.0	417.4	420.4
55°	359.8	354.2	360.6	363.0	379.0	384.0
57.5°	311.8	301.2	312.6	321.0	343.0	350.0
60°	260.8	252.2	261.2	282.6	305.6	311.6
62.5°	216.8	214.8	217.2	237.6	265.6	275.6
65°	179.8	183.8	180.2	200.2	224.2	239.2
67.5°	147.8	155.8	147.8	166.2	187.2	200.2
70°	121.8	130.8	121.8	135.8	152.8	168.8
72.5°	99.4	106.4	99.8	108.8	122.8	136.8
75°	78.4	88.4	78.4	85.4	96.8	109.8
77.5°	62.4	70.4	62.4	64.4	79.4	93.9
80°	46.4	51.4	46.4	50.6	71.9	82.6
82.5°	33.4	36.4	33.4	47.3	70.5	78.1
85°	24.8	20.4	25.6	49.0	74.4	78.3
87.5°	20.0	5.0	25.5	55.4	82.9	83.5
90°	12.8	0.4	27.8	64.6	91.9	91.9
92.5°	5.8	6.3	33.0	74.2	102.5	104.2
95°	2.6	15.8	42.0	84.1	113.2	115.6
97.5°	5.7	29.0	56.2	94.4	123.9	127.9
100°	14.0	43.9	73.1	108.2	132.9	136.3
102.5°	25.4	60.1	89.3	124.3	147.0	152.7
105°	40.8	78.6	106.2	143.6	164.1	169.6
107.5°	58.5	98.3	123.5	161.0	182.6	186.6
110°	77.4	118.8	140.9	177.9	201.5	206.3





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	97.9	140.1	159.0	193.7	221.6	225.2
115°	121.2	159.8	175.9	211.8	237.8	240.8
117.5°	142.1	183.4	193.3	225.2	255.7	256.1
120°	165.1	206.9	211.6	244.7	272.3	275.4
122.5°	187.6	228.2	228.2	260.5	286.9	288.8
125°	208.5	251.0	244.7	272.3	300.3	301.0
127.5°	229.7	274.3	262.8	287.6	313.3	312.1
130°	253.0	296.3	279.4	302.2	325.5	321.5
132.5°	274.3	320.0	296.3	317.2	337.7	340.0
135°	295.5	342.0	310.9	330.2	350.3	349.5
137.5°	316.0	362.5	328.6	340.4	358.6	360.9
140°	336.1	384.6	344.4	353.8	368.8	369.2
142.5°	357.4	406.6	361.7	367.2	380.2	377.9
145°	381.0	427.5	383.4	381.6	389.9	384.8
147.5°	402.9	445.6	399.8	391.5	401.3	394.6
150°	425.2	464.2	420.0	405.3	411.2	408.0
152.5°	446.4	478.7	443.3	415.9	422.6	418.7
155°	467.3	494.1	465.7	426.5	431.3	429.7
157.5°	485.4	507.5	482.7	436.6	443.1	439.9
160°	501.2	518.5	502.4	453.1	451.0	451.0
162.5°	515.0	529.2	516.2	475.6	459.6	452.2
165°	527.2	537.4	528.4	500.8	475.2	469.5
167.5°	538.6	545.3	542.2	521.3	500.8	487.6
170°	547.7	551.6	547.3	538.6	528.4	516.2
172.5°	552.4	554.0	556.7	551.2	547.3	539.4
175°	556.2	560.5	558.1	559.1	555.6	553.0
177.5°	557.0	557.7	557.4	559.9	561.9	558.1
180°	559.1	559.1	559.1	559.1	559.1	559.1

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