

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: P382172

Luminaire Tested: **MWL-2-22-23-UNV-L830-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P382172  
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-2-22-23-UNV-L830-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

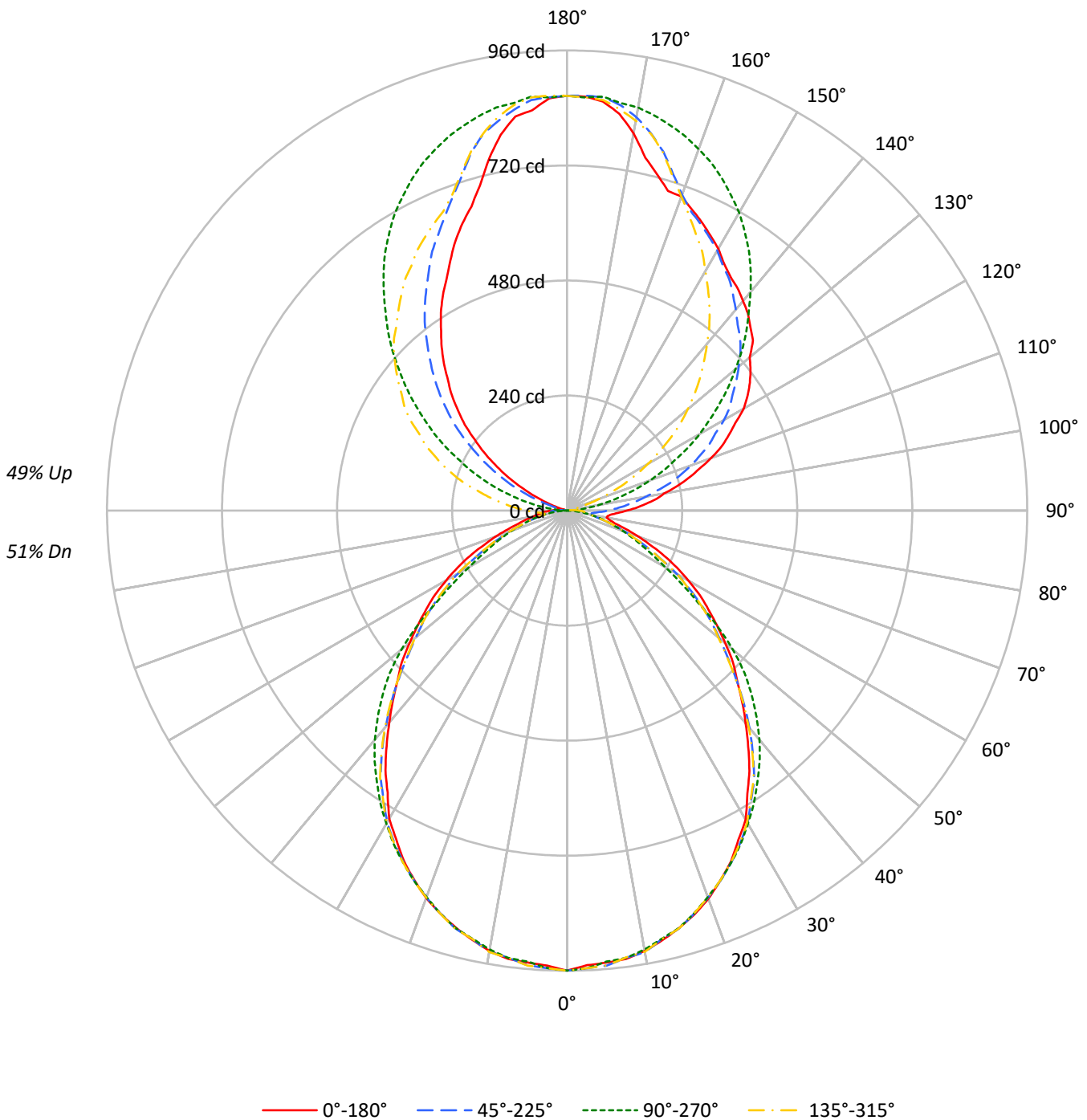
Lumens per Lamp: N/A  
Luminaire Lumens: 4247.0 lumens  
Efficiency: N/A  
Efficacy: 95.9 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')  
CIE Type: General Diffuse

Input Watts (W): 44.3  
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	50	30	10	0		
RCR																										
0	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57	51	51	51	51	51	51	51		
1	98	94	90	87	91	87	84	81	74	72	70	62	60	59	51	50	49	44	44	44	44	44	44	44		
2	90	83	77	72	83	77	72	67	65	62	58	55	52	50	45	44	42	37	37	37	37	37	37	37		
3	82	73	66	60	76	68	62	57	58	53	50	49	46	43	41	38	36	32	32	32	32	32	32	32		
4	75	65	57	51	70	60	54	48	52	47	43	44	40	37	37	34	31	28	28	28	28	28	28	28		
5	69	58	50	44	64	54	47	42	47	41	37	40	36	32	33	30	28	25	25	25	25	25	25	25		
6	64	52	44	39	59	49	42	36	42	37	32	36	32	28	30	27	25	22	22	22	22	22	22	22		
7	59	47	39	34	55	44	37	32	38	33	29	33	29	25	28	24	22	19	19	19	19	19	19	19		
8	55	43	35	30	51	40	33	29	35	30	26	30	26	23	26	22	20	17	17	17	17	17	17	17		
9	51	39	32	27	48	37	30	26	32	27	23	28	24	20	24	20	18	16	16	16	16	16	16	16		
10	48	36	29	24	44	34	27	23	30	24	21	26	22	19	22	19	16	14	14	14	14	14	14	14		

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

	0°	90°	180°	270°
0°	12395	12395	12395	12395
5°	12053	11259	12053	11259
10°	11801	10366	11801	10366
15°	11424	9507	11400	9507
20°	11011	8645	10988	8645
25°	10496	7875	10473	7875
30°	9912	7131	9879	7131
35°	9119	6414	9093	6414
40°	8317	5722	8283	5722
45°	7580	4975	7553	4975
50°	6929	4140	6900	4140
55°	6245	3074	6224	3074
60°	5541	2234	5532	2234
65°	4734	1673	4734	1673
70°	3797	1236	3814	1236
75°	2892	873	2945	873
80°	2857	539	2458	539
85°	4076	230	2336	230



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	90.2	2.1
10°-20°	253.9	6.0
20°-30°	372.5	8.8
30°-40°	422.5	9.9
40°-50°	394.1	9.3
50°-60°	308.2	7.3
60°-70°	191.2	4.5
70°-80°	92.8	2.2
80°-90°	53.1	1.2
90°-100°	71.1	1.7
100°-110°	133.4	3.1
110°-120°	230.0	5.4
120°-130°	312.9	7.4
130°-140°	356.6	8.4
140°-150°	355.8	8.4
150°-160°	309.8	7.3
160°-170°	217.8	5.1
170°-180°	81.1	1.9
0°-30°	716.6	16.9
0°-40°	1139.1	26.8
0°-60°	1841.4	43.4
0°-90°	2178.5	51.3
90°-120°	434.5	10.2
90°-150°	1459.8	34.4
90°-180°	2068.0	48.7
0°-180°	4247.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	960	960	960	960	960	
5°	946	944	946	944	946	90
15°	902	901	900	901	902	254
25°	808	810	806	810	808	371
35°	663	692	661	692	663	413
45°	501	545	500	545	501	389
55°	360	332	359	332	360	322
65°	224	172	224	172	224	221
75°	103	83	105	83	103	117
85°	93	19	53	19	93	75
90°	124	1	32	1	124	69
95°	166	24	22	24	166	144
105°	262	121	5	121	262	277
115°	372	247	86	247	372	369
125°	465	388	212	388	465	416
135°	540	529	340	529	540	417
145°	594	661	458	661	594	375
155°	664	764	576	764	664	306
165°	726	832	702	832	726	206
175°	856	867	838	867	856	80
180°	865	865	865	865	865	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	959.6	959.6	959.6	959.6	959.6	959.6	959.6	959.6	959.6	959.6	959.6
2.5°	949.3	959.9	955.5	955.2	955.2	954.6	955.5	959.9	950.0	959.9	955.5
5°	946.5	954.3	952.7	951.8	944.3	951.8	952.1	954.3	946.5	954.3	952.1
7.5°	943.5	947.5	940.9	943.4	941.5	942.8	940.3	946.8	943.5	946.8	940.3
10°	932.8	934.4	935.3	930.7	929.7	930.0	934.7	933.2	932.8	933.2	934.7
12.5°	918.1	919.5	915.1	917.9	914.5	917.9	915.1	918.2	916.9	918.2	915.1
15°	902.0	906.4	902.9	900.1	901.4	899.6	902.4	905.2	900.1	905.2	902.4
17.5°	883.3	884.9	881.4	880.9	880.9	880.9	880.9	884.2	881.4	884.2	880.9
20°	861.8	862.1	859.0	857.5	857.8	856.9	858.5	860.9	860.0	860.9	858.5
22.5°	835.0	839.7	835.7	837.9	835.4	837.3	835.1	838.5	833.8	838.5	835.1
25°	808.0	810.8	810.2	813.7	810.2	813.0	809.0	809.0	806.2	809.0	809.0
27.5°	774.3	778.1	782.2	785.3	784.0	784.7	781.0	776.3	772.6	776.3	781.0
30°	744.5	742.6	752.9	755.1	754.2	753.9	751.1	740.8	742.0	740.8	751.1
32.5°	699.6	705.2	714.6	725.2	724.9	724.0	712.8	702.8	697.2	702.8	712.8
35°	662.7	666.4	680.4	692.5	691.6	690.7	678.5	664.5	660.8	664.5	678.5
37.5°	620.6	621.6	636.5	657.0	659.6	655.2	634.6	619.7	618.8	619.7	634.6
40°	579.5	578.6	591.7	615.3	624.1	614.1	589.3	576.2	577.1	576.2	589.3
42.5°	540.3	536.6	545.3	576.1	584.9	574.9	543.5	534.2	537.9	534.2	543.5
45°	501.4	496.7	499.5	527.5	544.7	526.3	497.1	494.9	499.6	494.9	497.1
47.5°	469.6	457.5	454.7	478.4	501.8	477.8	452.3	455.7	467.9	455.7	452.3
50°	430.4	423.9	414.5	431.7	451.6	430.5	412.1	421.4	428.6	421.4	412.1
52.5°	394.0	391.2	377.6	385.0	393.7	383.8	375.7	388.8	392.2	388.8	375.7
55°	359.8	355.1	340.2	337.7	331.5	336.5	338.3	353.3	358.6	353.3	338.3
57.5°	328.1	321.5	301.0	292.9	282.0	291.6	299.1	319.7	326.8	319.7	299.1
60°	291.9	286.3	264.8	244.7	236.3	244.0	263.6	285.1	291.4	285.1	263.6
62.5°	258.3	249.0	222.8	203.6	201.1	202.9	221.6	247.7	257.7	247.7	221.6
65°	224.1	210.1	187.7	169.0	172.1	168.4	187.0	209.5	224.1	209.5	187.0
67.5°	187.7	175.6	156.0	138.5	146.0	138.5	155.3	174.9	187.7	174.9	155.3
70°	158.1	143.2	127.3	114.2	122.6	114.2	127.3	143.8	158.8	143.8	127.3
72.5°	128.2	115.1	102.1	93.7	99.6	93.1	102.1	115.8	129.4	115.8	102.1
75°	103.0	90.9	80.0	73.5	82.8	73.5	80.6	91.5	104.9	91.5	80.6
77.5°	90.1	75.5	60.4	58.6	66.0	58.6	61.0	73.8	87.7	73.8	61.0
80°	83.8	72.0	48.2	43.6	48.3	43.6	47.0	62.2	72.1	62.2	47.0
82.5°	85.3	76.1	48.1	31.5	34.3	31.5	40.7	54.1	62.1	54.1	40.7
85°	93.0	86.9	54.9	24.8	19.3	23.6	37.3	49.7	53.3	49.7	37.3
87.5°	106.6	103.9	68.0	28.4	4.7	19.9	33.2	45.3	43.7	45.3	33.2
90°	123.9	121.5	85.4	35.7	0.7	12.4	24.8	35.4	32.3	35.4	24.8
92.5°	146.1	141.6	103.2	48.0	9.8	5.9	19.6	28.6	26.4	28.6	19.6
95°	166.1	162.5	123.0	64.4	24.5	3.4	13.1	20.8	21.5	20.8	13.1
97.5°	188.4	183.4	143.3	86.4	44.3	8.2	8.3	15.5	17.4	15.5	8.3
100°	205.6	202.3	167.1	112.7	67.5	21.1	5.2	10.5	13.3	10.5	5.2
102.5°	234.9	226.5	192.1	137.7	92.5	38.8	10.1	6.7	7.7	6.7	10.1
105°	262.3	253.7	222.0	164.0	121.2	62.6	24.7	8.2	5.2	8.2	24.7
107.5°	288.6	282.5	248.9	190.9	151.7	90.1	45.5	23.5	14.9	23.5	45.5
110°	319.1	311.7	275.1	217.7	183.5	119.4	69.3	43.0	33.3	43.0	69.3



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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°	348.4	342.9	299.6	245.8	216.5	151.2	98.6	67.5	58.4	67.5	98.6
115°	371.9	367.9	327.6	272.0	247.0	187.1	131.0	96.2	86.1	96.2	131.0
117.5°	395.8	395.1	348.4	298.9	283.7	219.5	160.9	125.8	114.2	125.8	160.9
120°	425.6	420.8	378.0	326.7	319.4	254.7	194.8	158.8	147.2	158.8	194.8
122.5°	446.5	443.4	402.5	352.3	352.3	289.5	226.5	190.6	178.4	190.6	226.5
125°	465.3	464.1	420.8	378.0	387.8	321.9	262.0	225.3	211.9	225.3	262.0
127.5°	482.4	484.3	444.6	406.1	423.9	354.9	296.8	256.5	242.4	256.5	296.8
130°	497.1	503.2	467.2	431.8	458.0	390.8	328.0	287.6	278.5	287.6	328.0
132.5°	525.8	522.1	490.4	458.0	494.7	423.9	360.9	318.8	308.4	318.8	360.9
135°	540.5	541.7	510.5	480.6	528.8	456.8	392.1	350.6	340.2	350.6	392.1
137.5°	558.2	554.5	526.4	508.1	560.6	488.6	422.6	384.2	367.7	384.2	422.6
140°	570.9	570.4	547.1	532.6	594.9	519.7	453.8	414.6	399.4	414.6	453.8
142.5°	584.4	588.1	568.0	559.4	629.0	552.6	487.4	444.6	429.9	444.6	487.4
145°	594.5	602.4	589.6	593.0	661.3	589.3	517.6	474.2	458.3	474.2	517.6
147.5°	609.8	620.2	604.9	617.7	689.5	622.6	546.9	504.2	490.1	504.2	546.9
150°	630.5	635.5	626.2	649.8	718.1	657.7	576.8	532.8	518.8	532.8	576.8
152.5°	647.1	653.1	642.8	685.8	740.7	690.7	609.8	561.0	544.4	561.0	609.8
155°	664.1	666.6	659.3	720.6	764.5	723.1	636.0	592.1	576.2	592.1	636.0
157.5°	680.0	684.9	675.4	746.9	785.4	751.2	665.1	623.2	609.1	623.2	665.1
160°	697.1	697.1	701.0	777.4	802.4	775.6	696.8	657.4	637.9	657.4	696.8
162.5°	699.0	710.6	735.9	798.8	818.9	796.9	731.0	681.9	664.7	681.9	731.0
165°	725.8	735.3	775.0	817.7	831.8	815.9	773.1	721.2	702.0	721.2	773.1
167.5°	753.9	775.0	806.7	839.1	843.9	833.5	805.5	769.5	752.1	769.5	805.5
170°	798.8	817.7	833.5	847.0	853.7	847.6	825.6	808.0	796.3	808.0	825.6
172.5°	834.8	847.0	853.2	861.7	857.4	854.9	843.9	835.4	829.3	835.4	843.9
175°	856.4	859.9	865.3	863.2	866.9	860.2	859.9	864.1	838.1	864.1	859.9
177.5°	864.4	869.6	866.5	862.0	862.6	861.4	862.9	865.3	860.7	865.3	862.9
180°	865.3	865.3	865.3	865.3	865.3	865.3	865.3	865.3	865.3	865.3	865.3



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	959.6	959.6	959.6	959.6	959.6	959.6
2.5°	954.6	955.2	955.2	955.5	959.9	949.3
5°	951.8	944.3	951.8	952.7	954.3	946.5
7.5°	942.8	941.5	943.4	940.9	947.5	943.5
10°	930.0	929.7	930.7	935.3	934.4	932.8
12.5°	917.9	914.5	917.9	915.1	919.5	918.1
15°	899.6	901.4	900.1	902.9	906.4	902.0
17.5°	880.9	880.9	880.9	881.4	884.9	883.3
20°	856.9	857.8	857.5	859.0	862.1	861.8
22.5°	837.3	835.4	837.9	835.7	839.7	835.0
25°	813.0	810.2	813.7	810.2	810.8	808.0
27.5°	784.7	784.0	785.3	782.2	778.1	774.3
30°	753.9	754.2	755.1	752.9	742.6	744.5
32.5°	724.0	724.9	725.2	714.6	705.2	699.6
35°	690.7	691.6	692.5	680.4	666.4	662.7
37.5°	655.2	659.6	657.0	636.5	621.6	620.6
40°	614.1	624.1	615.3	591.7	578.6	579.5
42.5°	574.9	584.9	576.1	545.3	536.6	540.3
45°	526.3	544.7	527.5	499.5	496.7	501.4
47.5°	477.8	501.8	478.4	454.7	457.5	469.6
50°	430.5	451.6	431.7	414.5	423.9	430.4
52.5°	383.8	393.7	385.0	377.6	391.2	394.0
55°	336.5	331.5	337.7	340.2	355.1	359.8
57.5°	291.6	282.0	292.9	301.0	321.5	328.1
60°	244.0	236.3	244.7	264.8	286.3	291.9
62.5°	202.9	201.1	203.6	222.8	249.0	258.3
65°	168.4	172.1	169.0	187.7	210.1	224.1
67.5°	138.5	146.0	138.5	156.0	175.6	187.7
70°	114.2	122.6	114.2	127.3	143.2	158.1
72.5°	93.1	99.6	93.7	102.1	115.1	128.2
75°	73.5	82.8	73.5	80.0	90.9	103.0
77.5°	58.6	66.0	58.6	60.4	75.5	90.1
80°	43.6	48.3	43.6	48.2	72.0	83.8
82.5°	31.5	34.3	31.5	48.1	76.1	85.3
85°	23.6	19.3	24.8	54.9	86.9	93.0
87.5°	19.9	4.7	28.4	68.0	103.9	106.6
90°	12.4	0.7	35.7	85.4	121.5	123.9
92.5°	5.9	9.8	48.0	103.2	141.6	146.1
95°	3.4	24.5	64.4	123.0	162.5	166.1
97.5°	8.2	44.3	86.4	143.3	183.4	188.4
100°	21.1	67.5	112.7	167.1	202.3	205.6
102.5°	38.8	92.5	137.7	192.1	226.5	234.9
105°	62.6	121.2	164.0	222.0	253.7	262.3
107.5°	90.1	151.7	190.9	248.9	282.5	288.6
110°	119.4	183.5	217.7	275.1	311.7	319.1





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	151.2	216.5	245.8	299.6	342.9	348.4
115°	187.1	247.0	272.0	327.6	367.9	371.9
117.5°	219.5	283.7	298.9	348.4	395.1	395.8
120°	254.7	319.4	326.7	378.0	420.8	425.6
122.5°	289.5	352.3	352.3	402.5	443.4	446.5
125°	321.9	387.8	378.0	420.8	464.1	465.3
127.5°	354.9	423.9	406.1	444.6	484.3	482.4
130°	390.8	458.0	431.8	467.2	503.2	497.1
132.5°	423.9	494.7	458.0	490.4	522.1	525.8
135°	456.8	528.8	480.6	510.5	541.7	540.5
137.5°	488.6	560.6	508.1	526.4	554.5	558.2
140°	519.7	594.9	532.6	547.1	570.4	570.9
142.5°	552.6	629.0	559.4	568.0	588.1	584.4
145°	589.3	661.3	593.0	589.6	602.4	594.5
147.5°	622.6	689.5	617.7	604.9	620.2	609.8
150°	657.7	718.1	649.8	626.2	635.5	630.5
152.5°	690.7	740.7	685.8	642.8	653.1	647.1
155°	723.1	764.5	720.6	659.3	666.6	664.1
157.5°	751.2	785.4	746.9	675.4	684.9	680.0
160°	775.6	802.4	777.4	701.0	697.1	697.1
162.5°	796.9	818.9	798.8	735.9	710.6	699.0
165°	815.9	831.8	817.7	775.0	735.3	725.8
167.5°	833.5	843.9	839.1	806.7	775.0	753.9
170°	847.6	853.7	847.0	833.5	817.7	798.8
172.5°	854.9	857.4	861.7	853.2	847.0	834.8
175°	860.2	866.9	863.2	865.3	859.9	856.4
177.5°	861.4	862.6	862.0	866.5	869.6	864.4
180°	865.3	865.3	865.3	865.3	865.3	865.3

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