

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: P382235

Luminaire Tested: **MWL-2-35-23-UNV-L830-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P382235
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-2-35-23-UNV-L830-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

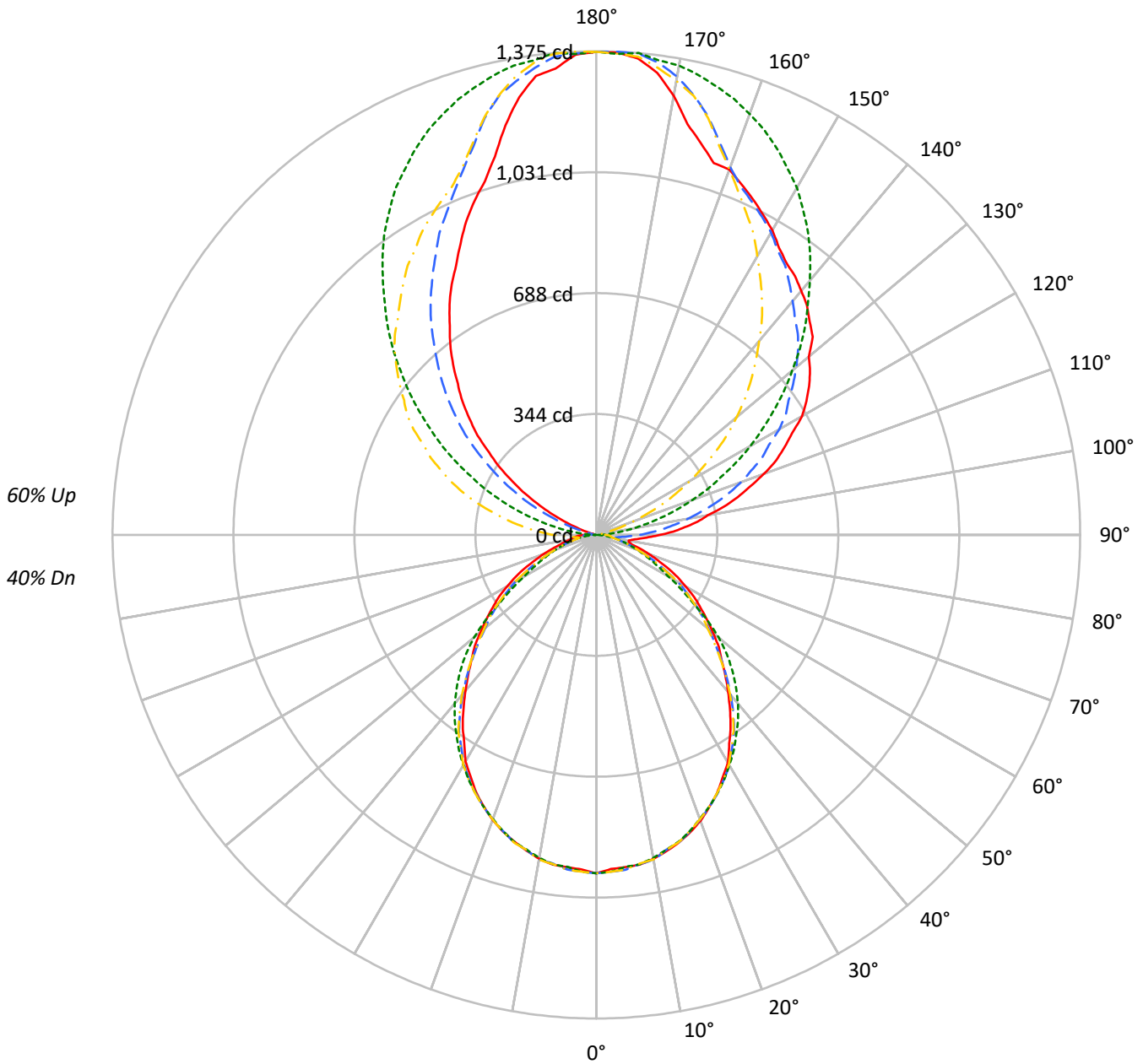
Lumens per Lamp: N/A
Luminaire Lumens: 5469.0 lumens
Efficiency: N/A
Efficacy: 84.3 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 64.9
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



— 0°-180° - - 45°-225° ··· 90°-270° - · 135°-315°



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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	105	105	105	105	95	95	95	95	78	78	78	62	62	62	47	47	47	40
1	96	92	88	84	87	83	80	77	68	66	64	55	53	52	42	41	40	34
2	87	80	74	69	79	73	68	64	60	57	54	48	46	44	37	36	34	29
3	80	71	64	58	73	65	59	54	53	49	45	43	40	37	33	31	29	25
4	73	63	55	49	66	58	51	46	48	43	39	38	35	32	30	28	26	22
5	67	56	48	42	61	51	45	39	43	38	34	35	31	28	27	25	23	19
6	62	50	42	37	56	46	39	34	39	33	29	31	28	25	25	22	20	17
7	57	45	38	32	52	42	35	30	35	30	26	29	25	22	23	20	18	15
8	53	41	34	29	48	38	31	27	32	27	23	26	22	20	21	18	16	14
9	50	38	30	25	45	35	28	24	29	24	21	24	20	18	19	16	14	12
10	46	35	27	23	42	32	26	21	27	22	19	22	19	16	18	15	13	11

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	12428	12428	12428	12428
5°	12073	11295	12073	11295
10°	11830	10395	11830	10395
15°	11466	9527	11429	9527
20°	11053	8661	11016	8661
25°	10534	7890	10496	7890
30°	9951	7146	9900	7146
35°	9154	6429	9114	6429
40°	8355	5738	8299	5738
45°	7613	4991	7569	4991
50°	6964	4154	6917	4154
55°	6276	3085	6243	3085
60°	5570	2244	5551	2244
65°	4757	1681	4757	1681
70°	3816	1244	3838	1244
75°	2914	876	2996	876
80°	3185	542	2557	542
85°	5369	234	2608	234



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	90.4	1.7
10°-20°	254.5	4.7
20°-30°	373.5	6.8
30°-40°	423.8	7.7
40°-50°	395.4	7.2
50°-60°	309.3	5.7
60°-70°	192.1	3.5
70°-80°	93.8	1.7
80°-90°	62.8	1.1
90°-100°	105.9	1.9
100°-110°	211.1	3.9
110°-120°	364.6	6.7
120°-130°	496.0	9.1
130°-140°	565.5	10.3
140°-150°	564.3	10.3
150°-160°	491.4	9.0
160°-170°	345.6	6.3
170°-180°	128.7	2.4
0°-30°	718.4	13.1
0°-40°	1142.3	20.9
0°-60°	1847.1	33.8
0°-90°	2195.9	40.2
90°-120°	681.6	12.5
90°-150°	2307.4	42.2
90°-180°	3273.0	59.8
0°-180°	5469.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	962	962	962	962	962	
5°	948	947	948	947	948	90
15°	905	903	902	903	905	255
25°	811	812	808	812	811	372
35°	665	693	662	693	665	415
45°	504	546	501	546	504	391
55°	362	333	360	333	362	324
65°	225	173	225	173	225	222
75°	104	83	107	83	104	119
85°	122	20	60	20	122	95
90°	180	1	35	1	180	100
95°	252	39	22	39	252	221
105°	416	192	8	192	416	438
115°	590	392	136	392	590	585
125°	738	615	336	615	738	659
135°	857	839	539	839	857	662
145°	943	1049	726	1049	943	594
155°	1053	1213	914	1213	1053	486
165°	1151	1320	1113	1320	1151	327
175°	1360	1375	1331	1375	1360	127
180°	1373	1373	1373	1373	1373	



TEST NUMBER: P382235

CATALOG NUMBER: MWL-2-35-23-UNV-L830-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	962.2	962.2	962.2	962.2	962.2	962.2	962.2	962.2	962.2	962.2	962.2
2.5°	950.9	962.1	958.5	958.5	958.5	957.6	958.5	962.1	951.9	962.1	958.5
5°	948.1	956.5	955.7	954.8	947.3	954.8	954.8	956.5	948.1	956.5	954.8
7.5°	945.3	950.1	943.6	946.4	944.5	945.4	942.5	949.1	945.3	949.1	942.5
10°	935.1	937.0	937.9	933.3	932.3	932.3	936.9	935.1	935.1	935.1	936.9
12.5°	921.1	922.1	917.3	920.1	916.4	920.1	917.3	920.1	919.2	920.1	917.3
15°	905.3	909.0	905.2	902.4	903.3	901.4	904.2	907.0	902.4	907.0	904.2
17.5°	886.6	887.5	883.7	882.8	882.8	882.8	882.8	886.5	883.7	886.5	882.8
20°	865.1	865.1	861.3	859.4	859.4	858.5	860.3	863.1	862.2	863.1	860.3
22.5°	838.0	842.7	837.9	839.8	837.0	838.9	837.0	840.7	836.1	840.7	837.0
25°	810.9	813.7	812.8	815.5	811.8	814.6	810.8	810.8	808.0	810.8	810.8
27.5°	777.3	781.0	784.8	787.5	785.6	786.6	782.8	778.2	774.4	778.2	782.8
30°	747.4	745.6	755.8	757.7	755.7	755.7	752.9	742.7	743.6	742.7	752.9
32.5°	702.6	708.2	717.5	727.8	726.8	725.9	714.6	704.4	698.8	704.4	714.6
35°	665.2	669.0	683.0	695.1	693.2	692.2	680.1	666.1	662.3	666.1	680.1
37.5°	623.2	624.1	639.1	659.6	661.4	656.7	636.2	621.3	620.3	621.3	636.2
40°	582.1	581.2	594.3	617.5	625.9	615.6	590.3	577.3	578.2	577.3	590.3
42.5°	542.9	539.2	547.5	578.3	586.7	576.4	544.6	535.2	539.0	535.2	544.6
45°	503.6	498.9	501.7	529.7	546.5	527.9	497.9	496.0	500.7	496.0	497.9
47.5°	471.8	459.7	456.9	480.2	503.6	479.3	453.1	456.8	468.9	456.8	453.1
50°	432.6	426.1	416.7	433.5	453.1	431.6	412.9	422.2	429.7	422.2	412.9
52.5°	396.2	393.4	379.4	386.8	395.2	384.9	376.5	389.5	393.3	389.5	376.5
55°	361.6	356.9	342.0	339.2	332.6	337.2	339.1	354.1	359.7	354.1	339.1
57.5°	329.9	323.3	302.8	294.4	283.1	292.4	299.9	320.4	327.9	320.4	299.9
60°	293.4	287.8	266.4	245.7	237.3	244.8	264.4	285.9	292.4	285.9	264.4
62.5°	259.8	250.5	224.3	204.6	201.8	203.7	222.4	248.5	258.8	248.5	222.4
65°	225.2	211.2	188.7	170.1	172.9	169.1	187.8	210.2	225.2	210.2	187.8
67.5°	188.7	176.6	157.0	139.2	146.7	139.2	156.1	175.7	188.7	175.7	156.1
70°	158.9	143.9	128.0	115.0	123.4	115.0	128.0	144.9	159.8	144.9	128.0
72.5°	129.0	115.9	102.8	94.4	99.9	93.4	102.8	116.8	130.9	116.8	102.8
75°	103.8	91.6	80.3	73.8	83.1	73.8	81.3	92.6	106.7	92.6	81.3
77.5°	93.8	77.7	60.7	58.8	66.3	58.8	61.7	74.8	89.8	74.8	61.7
80°	93.4	79.2	49.7	43.9	48.6	43.9	47.7	63.7	75.0	63.7	47.7
82.5°	103.7	91.2	53.8	31.8	34.6	31.8	42.2	56.2	66.8	56.2	42.2
85°	122.5	112.8	68.6	26.3	19.6	24.4	40.4	53.6	59.5	53.6	40.4
87.5°	149.0	143.1	92.1	35.2	4.7	21.7	36.8	50.0	49.1	50.0	36.8
90°	180.2	174.4	122.3	50.0	0.9	13.2	26.3	37.5	34.8	37.5	26.3
92.5°	218.3	209.5	153.5	73.5	15.5	6.6	20.6	30.1	28.2	30.1	20.6
95°	252.3	246.6	188.7	101.8	38.8	4.9	14.1	21.6	22.5	21.6	14.1
97.5°	290.4	283.6	224.8	136.7	69.8	12.6	10.5	17.0	18.9	17.0	10.5
100°	321.6	317.9	264.8	178.4	106.7	33.0	7.8	13.4	16.2	13.4	7.8
102.5°	371.3	358.8	304.6	218.2	146.4	61.1	15.5	9.6	10.6	9.6	15.5
105°	416.1	402.4	352.0	259.9	192.0	98.9	38.8	12.6	7.8	12.6	38.8
107.5°	457.7	448.0	394.7	302.6	240.5	142.5	71.7	36.8	23.3	36.8	71.7
110°	506.3	494.6	436.4	345.3	290.9	189.1	109.6	67.9	52.3	67.9	109.6



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CATALOG NUMBER: MWL-2-35-23-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	552.8	544.1	475.2	389.8	343.3	239.6	156.2	106.7	92.1	106.7	156.2
115°	589.6	583.8	519.8	431.6	391.8	296.7	207.5	152.2	135.7	152.2	207.5
117.5°	627.4	626.5	552.8	474.3	450.0	348.2	255.1	198.7	180.3	198.7	255.1
120°	675.0	667.2	599.3	517.9	506.2	403.4	308.4	251.1	232.7	251.1	308.4
122.5°	707.9	703.1	638.2	558.6	558.6	458.7	358.8	301.6	282.1	301.6	358.8
125°	738.0	736.0	667.2	599.3	614.8	510.1	415.0	356.9	335.5	356.9	415.0
127.5°	765.2	768.1	705.0	643.9	672.1	562.5	470.3	406.4	384.0	406.4	470.3
130°	788.4	798.1	740.9	684.7	726.4	619.7	519.8	455.8	441.2	455.8	519.8
132.5°	834.0	828.2	777.8	726.4	784.6	672.1	572.1	505.3	488.7	505.3	572.1
135°	857.3	859.2	809.8	762.3	838.9	724.5	621.6	555.7	539.2	555.7	621.6
137.5°	885.5	879.6	835.0	805.9	889.3	774.9	670.1	609.0	582.9	609.0	670.1
140°	905.8	904.8	868.0	844.7	943.6	824.4	719.6	657.5	633.3	657.5	719.6
142.5°	927.1	933.0	901.0	887.4	997.9	876.7	772.9	705.0	681.8	705.0	772.9
145°	942.6	955.2	934.9	940.7	1049.4	934.9	820.5	751.5	726.3	751.5	820.5
147.5°	966.9	983.3	959.1	979.5	1094.0	987.3	867.0	799.1	776.8	799.1	867.0
150°	999.9	1007.6	993.0	1031.0	1139.6	1043.6	914.5	844.6	822.3	844.6	914.5
152.5°	1026.0	1035.7	1019.3	1088.1	1175.4	1095.9	966.9	889.3	863.1	889.3	966.9
155°	1053.2	1057.1	1045.4	1143.4	1213.3	1147.3	1008.6	938.8	913.6	938.8	1008.6
157.5°	1078.4	1086.2	1071.7	1185.2	1246.2	1191.9	1055.2	988.2	965.9	988.2	1055.2
160°	1105.6	1105.6	1112.4	1233.6	1273.4	1230.7	1105.6	1042.5	1011.4	1042.5	1105.6
162.5°	1108.5	1126.9	1167.7	1267.5	1299.6	1264.6	1159.9	1081.3	1054.1	1081.3	1159.9
165°	1151.2	1166.7	1229.7	1297.6	1319.9	1294.7	1226.8	1144.4	1113.3	1144.4	1226.8
167.5°	1195.8	1229.7	1280.1	1331.6	1339.4	1322.8	1278.3	1221.0	1192.8	1221.0	1278.3
170°	1267.5	1297.6	1322.8	1344.2	1354.9	1345.1	1310.2	1282.1	1263.7	1282.1	1310.2
172.5°	1324.8	1344.2	1353.9	1367.5	1360.6	1356.8	1339.4	1325.8	1316.1	1325.8	1339.4
175°	1359.7	1364.6	1373.3	1369.4	1375.2	1364.6	1364.6	1371.4	1330.7	1371.4	1364.6
177.5°	1372.3	1380.1	1375.2	1367.5	1368.4	1366.4	1369.4	1373.3	1366.5	1373.3	1369.4
180°	1373.3	1373.3	1373.3	1373.3	1373.3	1373.3	1373.3	1373.3	1373.3	1373.3	1373.3



TEST NUMBER: P382235

CATALOG NUMBER: MWL-2-35-23-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	962.2	962.2	962.2	962.2	962.2	962.2
2.5°	957.6	958.5	958.5	958.5	962.1	950.9
5°	954.8	947.3	954.8	955.7	956.5	948.1
7.5°	945.4	944.5	946.4	943.6	950.1	945.3
10°	932.3	932.3	933.3	937.9	937.0	935.1
12.5°	920.1	916.4	920.1	917.3	922.1	921.1
15°	901.4	903.3	902.4	905.2	909.0	905.3
17.5°	882.8	882.8	882.8	883.7	887.5	886.6
20°	858.5	859.4	859.4	861.3	865.1	865.1
22.5°	838.9	837.0	839.8	837.9	842.7	838.0
25°	814.6	811.8	815.5	812.8	813.7	810.9
27.5°	786.6	785.6	787.5	784.8	781.0	777.3
30°	755.7	755.7	757.7	755.8	745.6	747.4
32.5°	725.9	726.8	727.8	717.5	708.2	702.6
35°	692.2	693.2	695.1	683.0	669.0	665.2
37.5°	656.7	661.4	659.6	639.1	624.1	623.2
40°	615.6	625.9	617.5	594.3	581.2	582.1
42.5°	576.4	586.7	578.3	547.5	539.2	542.9
45°	527.9	546.5	529.7	501.7	498.9	503.6
47.5°	479.3	503.6	480.2	456.9	459.7	471.8
50°	431.6	453.1	433.5	416.7	426.1	432.6
52.5°	384.9	395.2	386.8	379.4	393.4	396.2
55°	337.2	332.6	339.2	342.0	356.9	361.6
57.5°	292.4	283.1	294.4	302.8	323.3	329.9
60°	244.8	237.3	245.7	266.4	287.8	293.4
62.5°	203.7	201.8	204.6	224.3	250.5	259.8
65°	169.1	172.9	170.1	188.7	211.2	225.2
67.5°	139.2	146.7	139.2	157.0	176.6	188.7
70°	115.0	123.4	115.0	128.0	143.9	158.9
72.5°	93.4	99.9	94.4	102.8	115.9	129.0
75°	73.8	83.1	73.8	80.3	91.6	103.8
77.5°	58.8	66.3	58.8	60.7	77.7	93.8
80°	43.9	48.6	43.9	49.7	79.2	93.4
82.5°	31.8	34.6	31.8	53.8	91.2	103.7
85°	24.4	19.6	26.3	68.6	112.8	122.5
87.5°	21.7	4.7	35.2	92.1	143.1	149.0
90°	13.2	0.9	50.0	122.3	174.4	180.2
92.5°	6.6	15.5	73.5	153.5	209.5	218.3
95°	4.9	38.8	101.8	188.7	246.6	252.3
97.5°	12.6	69.8	136.7	224.8	283.6	290.4
100°	33.0	106.7	178.4	264.8	317.9	321.6
102.5°	61.1	146.4	218.2	304.6	358.8	371.3
105°	98.9	192.0	259.9	352.0	402.4	416.1
107.5°	142.5	240.5	302.6	394.7	448.0	457.7
110°	189.1	290.9	345.3	436.4	494.6	506.3



TEST NUMBER: P382235

CATALOG NUMBER: MWL-2-35-23-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	239.6	343.3	389.8	475.2	544.1	552.8
115°	296.7	391.8	431.6	519.8	583.8	589.6
117.5°	348.2	450.0	474.3	552.8	626.5	627.4
120°	403.4	506.2	517.9	599.3	667.2	675.0
122.5°	458.7	558.6	558.6	638.2	703.1	707.9
125°	510.1	614.8	599.3	667.2	736.0	738.0
127.5°	562.5	672.1	643.9	705.0	768.1	765.2
130°	619.7	726.4	684.7	740.9	798.1	788.4
132.5°	672.1	784.6	726.4	777.8	828.2	834.0
135°	724.5	838.9	762.3	809.8	859.2	857.3
137.5°	774.9	889.3	805.9	835.0	879.6	885.5
140°	824.4	943.6	844.7	868.0	904.8	905.8
142.5°	876.7	997.9	887.4	901.0	933.0	927.1
145°	934.9	1049.4	940.7	934.9	955.2	942.6
147.5°	987.3	1094.0	979.5	959.1	983.3	966.9
150°	1043.6	1139.6	1031.0	993.0	1007.6	999.9
152.5°	1095.9	1175.4	1088.1	1019.3	1035.7	1026.0
155°	1147.3	1213.3	1143.4	1045.4	1057.1	1053.2
157.5°	1191.9	1246.2	1185.2	1071.7	1086.2	1078.4
160°	1230.7	1273.4	1233.6	1112.4	1105.6	1105.6
162.5°	1264.6	1299.6	1267.5	1167.7	1126.9	1108.5
165°	1294.7	1319.9	1297.6	1229.7	1166.7	1151.2
167.5°	1322.8	1339.4	1331.6	1280.1	1229.7	1195.8
170°	1345.1	1354.9	1344.2	1322.8	1297.6	1267.5
172.5°	1356.8	1360.6	1367.5	1353.9	1344.2	1324.8
175°	1364.6	1375.2	1369.4	1373.3	1364.6	1359.7
177.5°	1366.4	1368.4	1367.5	1375.2	1380.1	1372.3
180°	1373.3	1373.3	1373.3	1373.3	1373.3	1373.3

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