

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: P392524

Luminaire Tested: **MWL-2-28-23-UNV-L835-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392524
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-L835-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5013.0 lumens
Efficiency: N/A
Efficacy: 90.3 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

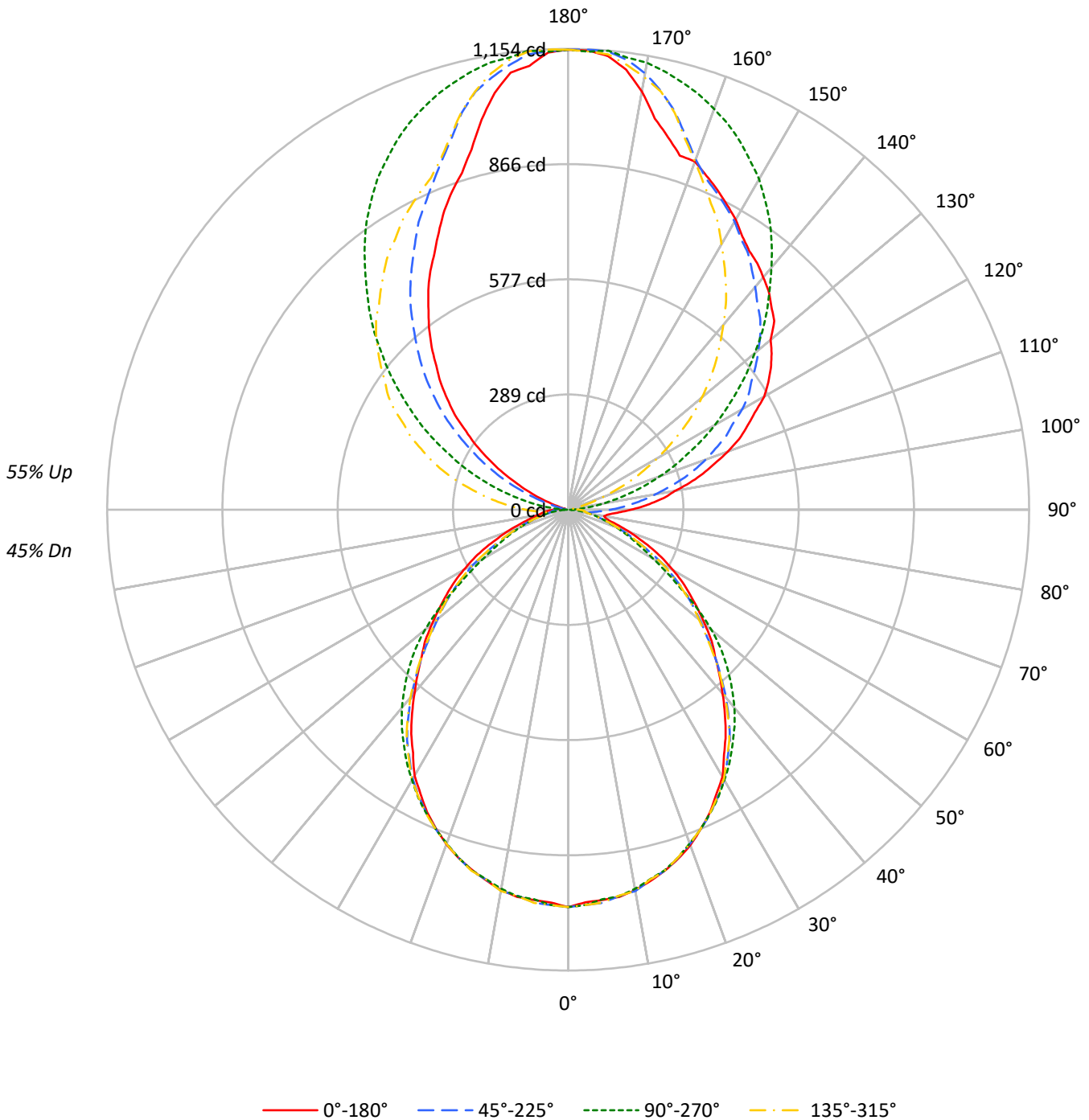
Input Watts (W): 55.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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CATALOG NUMBER: MWL-2-28-23-UNV-L835-EDD

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	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°	12852	12852	12852	12852
5°	12492	11676	12492	11676
10°	12234	10749	12234	10749
15°	11851	9855	11819	9855
20°	11424	8960	11392	8960
25°	10887	8163	10856	8163
30°	10283	7392	10241	7392
35°	9461	6650	9428	6650
40°	8632	5933	8584	5933
45°	7866	5160	7829	5160
50°	7193	4294	7154	4294
55°	6482	3189	6453	3189
60°	5754	2318	5737	2318
65°	4914	1736	4914	1736
70°	3941	1284	3961	1284
75°	3007	906	3074	906
80°	3123	559	2595	559
85°	4874	240	2555	240



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	93.5	1.9
10°-20°	263.2	5.3
20°-30°	386.2	7.7
30°-40°	438.2	8.7
40°-50°	408.8	8.2
50°-60°	319.7	6.4
60°-70°	198.4	4.0
70°-80°	96.6	1.9
80°-90°	59.9	1.2
90°-100°	91.1	1.8
100°-110°	177.3	3.5
110°-120°	305.9	6.1
120°-130°	416.2	8.3
130°-140°	474.5	9.5
140°-150°	473.4	9.4
150°-160°	412.2	8.2
160°-170°	289.9	5.8
170°-180°	108.0	2.2
0°-30°	743.0	14.8
0°-40°	1181.2	23.6
0°-60°	1909.6	38.1
0°-90°	2264.6	45.2
90°-120°	574.3	11.5
90°-150°	1938.4	38.7
90°-180°	2748.0	54.8
0°-180°	5013.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	995	995	995	995	995	
5°	981	979	981	979	981	93
15°	936	934	933	934	936	264
25°	838	840	836	840	838	385
35°	688	717	685	717	688	429
45°	520	565	518	565	520	404
55°	374	344	372	344	374	335
65°	233	179	233	179	233	230
75°	107	86	110	86	107	122
85°	111	20	58	20	111	87
90°	157	1	35	1	157	87
95°	216	32	23	32	216	188
105°	349	161	7	161	349	368
115°	495	329	114	329	495	491
125°	619	516	282	516	619	553
135°	719	704	452	704	719	555
145°	791	880	610	880	791	498
155°	884	1018	766	1018	884	408
165°	966	1107	934	1107	966	274
175°	1140	1154	1116	1154	1140	106
180°	1152	1152	1152	1152	1152	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	995.0	995.0	995.0	995.0	995.0	995.0	995.0	995.0	995.0	995.0	995.0
2.5°	983.9	995.1	990.9	990.8	990.8	990.0	990.9	995.1	984.6	995.1	990.9
5°	981.0	989.3	988.0	987.1	979.3	987.1	987.3	989.3	981.0	989.3	987.3
7.5°	977.9	982.4	975.6	978.4	976.4	977.6	974.8	981.5	977.9	981.5	974.8
10°	967.0	968.9	969.8	965.0	964.0	964.1	969.0	967.2	967.0	967.2	969.0
12.5°	952.2	953.4	948.7	951.6	947.9	951.6	948.7	951.8	950.6	951.8	948.7
15°	935.7	939.9	936.1	933.2	934.4	932.4	935.3	938.2	933.2	938.2	935.3
17.5°	916.4	917.6	913.9	913.1	913.1	913.1	913.1	916.8	913.9	916.8	913.1
20°	894.1	894.2	890.6	888.9	889.1	888.1	889.9	892.6	891.6	892.6	889.9
22.5°	866.2	871.0	866.5	868.6	865.9	867.8	865.7	869.4	864.5	869.4	865.7
25°	838.1	841.0	840.3	843.5	839.8	842.7	838.6	838.6	835.7	838.6	838.6
27.5°	803.3	807.2	811.3	814.3	812.7	813.5	809.6	804.8	800.9	804.8	809.6
30°	772.4	770.4	781.1	783.2	781.8	781.6	778.7	768.0	769.2	768.0	778.7
32.5°	726.0	731.8	741.4	752.3	751.6	750.6	739.0	728.6	722.8	728.6	739.0
35°	687.5	691.3	705.8	718.4	717.0	716.0	703.4	688.9	685.1	688.9	703.4
37.5°	644.0	644.9	660.4	681.7	683.9	679.3	658.0	642.5	641.5	642.5	658.0
40°	601.4	600.4	614.0	638.2	647.1	636.7	610.7	597.1	598.1	597.1	610.7
42.5°	560.8	556.9	565.7	597.6	606.5	596.1	563.3	553.6	557.5	553.6	563.3
45°	520.3	515.4	518.3	547.3	564.9	545.8	515.1	513.0	517.9	513.0	515.1
47.5°	487.4	474.8	471.9	496.3	520.5	495.5	468.7	472.4	485.0	472.4	468.7
50°	446.8	440.0	430.3	447.9	468.4	446.3	427.1	436.8	444.4	436.8	427.1
52.5°	409.1	406.2	391.8	399.6	408.5	397.9	389.4	403.0	406.6	403.0	389.4
55°	373.5	368.6	353.2	350.5	343.8	348.8	350.7	366.2	371.8	366.2	350.7
57.5°	340.6	333.8	312.5	304.0	292.5	302.4	310.1	331.4	338.9	331.4	310.1
60°	303.1	297.3	275.0	253.8	245.1	253.1	273.4	295.6	302.2	295.6	273.4
62.5°	268.3	258.6	231.5	211.3	208.6	210.5	229.9	256.9	267.4	256.9	229.9
65°	232.6	218.1	194.9	175.5	178.6	174.7	194.1	217.3	232.6	217.3	194.1
67.5°	194.9	182.3	162.0	143.8	151.5	143.8	161.2	181.5	194.9	181.5	161.2
70°	164.1	148.6	132.2	118.7	127.4	118.7	132.2	149.4	164.9	149.4	132.2
72.5°	133.2	119.6	106.1	97.4	103.3	96.5	106.1	120.4	134.8	120.4	106.1
75°	107.1	94.5	83.0	76.2	85.9	76.2	83.8	95.3	109.5	95.3	83.8
77.5°	95.2	79.3	62.7	60.7	68.5	60.7	63.5	76.9	91.9	76.9	63.5
80°	91.6	78.1	50.7	45.3	50.1	45.3	49.0	65.2	76.1	65.2	49.0
82.5°	97.6	86.4	52.7	32.7	35.6	32.7	42.9	57.1	66.6	57.1	42.9
85°	111.2	103.0	63.8	26.5	20.1	24.9	40.2	53.5	58.3	53.5	40.2
87.5°	131.7	127.4	82.5	32.9	4.8	21.5	36.2	49.2	48.0	49.2	36.2
90°	156.7	152.4	107.0	44.1	0.8	13.2	26.5	37.7	34.7	37.7	26.5
92.5°	187.6	180.7	132.2	62.6	13.1	6.5	20.8	30.4	28.2	30.4	20.8
95°	215.5	210.6	160.4	85.6	32.5	4.3	14.0	22.0	22.7	22.0	14.0
97.5°	246.4	240.4	189.4	114.8	58.7	10.7	9.7	16.8	18.8	16.8	9.7
100°	271.4	267.7	222.1	149.8	89.6	27.9	6.7	12.3	15.2	12.3	6.7
102.5°	311.9	301.2	255.5	183.2	122.9	51.3	13.2	8.4	9.4	8.4	13.2
105°	349.0	337.6	295.3	218.1	161.2	83.1	32.7	10.7	6.7	10.7	32.7
107.5°	384.0	375.9	331.1	253.8	201.8	119.7	60.3	31.0	19.6	31.0	60.3
110°	424.6	414.9	366.1	289.6	244.1	158.7	92.1	57.1	44.1	57.1	92.1



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CATALOG NUMBER: MWL-2-28-23-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	463.7	456.3	398.6	327.1	288.0	201.0	131.0	89.6	77.4	89.6	131.0
115°	494.7	489.7	436.0	362.1	328.7	249.0	174.2	127.8	114.1	127.8	174.2
117.5°	526.5	525.7	463.7	397.8	377.4	292.0	214.0	167.0	151.5	167.0	214.0
120°	566.3	559.8	502.9	434.6	424.8	338.6	258.9	210.9	195.4	210.9	258.9
122.5°	594.0	589.9	535.4	468.7	468.7	385.0	301.2	253.2	236.9	253.2	301.2
125°	619.2	617.6	559.8	502.9	515.9	428.0	348.3	299.6	281.7	299.6	348.3
127.5°	641.9	644.3	591.5	540.3	563.9	472.0	394.7	341.1	322.3	341.1	394.7
130°	661.5	669.6	621.6	574.4	609.4	520.0	436.1	382.5	370.3	382.5	436.1
132.5°	699.7	694.8	652.5	609.4	658.2	563.9	480.1	424.0	410.1	424.0	480.1
135°	719.2	720.8	679.3	639.5	703.7	607.8	521.5	466.3	452.5	466.3	521.5
137.5°	742.8	737.9	700.4	676.1	746.0	650.0	562.2	511.0	489.0	511.0	562.2
140°	759.8	759.0	728.1	708.6	791.5	691.5	603.7	551.7	531.3	551.7	603.7
142.5°	777.7	782.6	755.7	744.4	837.1	735.4	648.4	591.5	572.0	591.5	648.4
145°	790.8	801.5	784.4	789.1	880.2	784.3	688.4	630.7	609.5	630.7	688.4
147.5°	811.3	825.1	804.7	821.8	917.6	828.3	727.5	670.5	651.9	670.5	727.5
150°	838.9	845.4	833.2	864.7	955.8	875.3	767.3	708.7	690.1	708.7	767.3
152.5°	860.9	869.0	855.2	912.7	985.9	919.3	811.3	746.2	724.2	746.2	811.3
155°	883.6	886.9	877.1	959.1	1017.6	962.3	846.2	787.7	766.5	787.7	846.2
157.5°	904.8	911.2	898.9	994.0	1045.3	999.7	885.0	829.1	810.4	829.1	885.0
160°	927.5	927.5	933.0	1034.7	1068.0	1032.2	927.4	874.7	848.7	874.7	927.4
162.5°	929.9	945.4	979.4	1063.2	1090.0	1060.7	972.9	907.2	884.5	907.2	972.9
165°	965.7	978.6	1031.4	1088.4	1107.1	1085.9	1029.0	959.9	934.0	959.9	1029.0
167.5°	1003.1	1031.4	1073.7	1116.8	1123.3	1109.5	1072.1	1024.1	1000.7	1024.1	1072.1
170°	1063.2	1088.4	1109.5	1127.4	1136.4	1128.2	1098.9	1075.4	1059.9	1075.4	1098.9
172.5°	1111.1	1127.4	1135.5	1146.9	1141.2	1138.0	1123.3	1112.0	1103.8	1112.0	1123.3
175°	1140.2	1144.5	1151.8	1148.8	1153.6	1144.6	1144.5	1150.2	1115.9	1150.2	1144.5
177.5°	1150.9	1157.5	1153.4	1147.1	1147.9	1146.2	1148.6	1151.8	1145.9	1151.8	1148.6
180°	1151.8	1151.8	1151.8	1151.8	1151.8	1151.8	1151.8	1151.8	1151.8	1151.8	1151.8



TEST NUMBER: P392524

CATALOG NUMBER: MWL-2-28-23-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	995.0	995.0	995.0	995.0	995.0	995.0
2.5°	990.0	990.8	990.8	990.9	995.1	983.9
5°	987.1	979.3	987.1	988.0	989.3	981.0
7.5°	977.6	976.4	978.4	975.6	982.4	977.9
10°	964.1	964.0	965.0	969.8	968.9	967.0
12.5°	951.6	947.9	951.6	948.7	953.4	952.2
15°	932.4	934.4	933.2	936.1	939.9	935.7
17.5°	913.1	913.1	913.1	913.9	917.6	916.4
20°	888.1	889.1	888.9	890.6	894.2	894.1
22.5°	867.8	865.9	868.6	866.5	871.0	866.2
25°	842.7	839.8	843.5	840.3	841.0	838.1
27.5°	813.5	812.7	814.3	811.3	807.2	803.3
30°	781.6	781.8	783.2	781.1	770.4	772.4
32.5°	750.6	751.6	752.3	741.4	731.8	726.0
35°	716.0	717.0	718.4	705.8	691.3	687.5
37.5°	679.3	683.9	681.7	660.4	644.9	644.0
40°	636.7	647.1	638.2	614.0	600.4	601.4
42.5°	596.1	606.5	597.6	565.7	556.9	560.8
45°	545.8	564.9	547.3	518.3	515.4	520.3
47.5°	495.5	520.5	496.3	471.9	474.8	487.4
50°	446.3	468.4	447.9	430.3	440.0	446.8
52.5°	397.9	408.5	399.6	391.8	406.2	409.1
55°	348.8	343.8	350.5	353.2	368.6	373.5
57.5°	302.4	292.5	304.0	312.5	333.8	340.6
60°	253.1	245.1	253.8	275.0	297.3	303.1
62.5°	210.5	208.6	211.3	231.5	258.6	268.3
65°	174.7	178.6	175.5	194.9	218.1	232.6
67.5°	143.8	151.5	143.8	162.0	182.3	194.9
70°	118.7	127.4	118.7	132.2	148.6	164.1
72.5°	96.5	103.3	97.4	106.1	119.6	133.2
75°	76.2	85.9	76.2	83.0	94.5	107.1
77.5°	60.7	68.5	60.7	62.7	79.3	95.2
80°	45.3	50.1	45.3	50.7	78.1	91.6
82.5°	32.7	35.6	32.7	52.7	86.4	97.6
85°	24.9	20.1	26.5	63.8	103.0	111.2
87.5°	21.5	4.8	32.9	82.5	127.4	131.7
90°	13.2	0.8	44.1	107.0	152.4	156.7
92.5°	6.5	13.1	62.6	132.2	180.7	187.6
95°	4.3	32.5	85.6	160.4	210.6	215.5
97.5°	10.7	58.7	114.8	189.4	240.4	246.4
100°	27.9	89.6	149.8	222.1	267.7	271.4
102.5°	51.3	122.9	183.2	255.5	301.2	311.9
105°	83.1	161.2	218.1	295.3	337.6	349.0
107.5°	119.7	201.8	253.8	331.1	375.9	384.0
110°	158.7	244.1	289.6	366.1	414.9	424.6



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	201.0	288.0	327.1	398.6	456.3	463.7
115°	249.0	328.7	362.1	436.0	489.7	494.7
117.5°	292.0	377.4	397.8	463.7	525.7	526.5
120°	338.6	424.8	434.6	502.9	559.8	566.3
122.5°	385.0	468.7	468.7	535.4	589.9	594.0
125°	428.0	515.9	502.9	559.8	617.6	619.2
127.5°	472.0	563.9	540.3	591.5	644.3	641.9
130°	520.0	609.4	574.4	621.6	669.6	661.5
132.5°	563.9	658.2	609.4	652.5	694.8	699.7
135°	607.8	703.7	639.5	679.3	720.8	719.2
137.5°	650.0	746.0	676.1	700.4	737.9	742.8
140°	691.5	791.5	708.6	728.1	759.0	759.8
142.5°	735.4	837.1	744.4	755.7	782.6	777.7
145°	784.3	880.2	789.1	784.4	801.5	790.8
147.5°	828.3	917.6	821.8	804.7	825.1	811.3
150°	875.3	955.8	864.7	833.2	845.4	838.9
152.5°	919.3	985.9	912.7	855.2	869.0	860.9
155°	962.3	1017.6	959.1	877.1	886.9	883.6
157.5°	999.7	1045.3	994.0	898.9	911.2	904.8
160°	1032.2	1068.0	1034.7	933.0	927.5	927.5
162.5°	1060.7	1090.0	1063.2	979.4	945.4	929.9
165°	1085.9	1107.1	1088.4	1031.4	978.6	965.7
167.5°	1109.5	1123.3	1116.8	1073.7	1031.4	1003.1
170°	1128.2	1136.4	1127.4	1109.5	1088.4	1063.2
172.5°	1138.0	1141.2	1146.9	1135.5	1127.4	1111.1
175°	1144.6	1153.6	1148.8	1151.8	1144.5	1140.2
177.5°	1146.2	1147.9	1147.1	1153.4	1157.5	1150.9
180°	1151.8	1151.8	1151.8	1151.8	1151.8	1151.8

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