

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: P392525

Luminaire Tested: **MWL-2-28-23-UNV-L840-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392525
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-L840-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

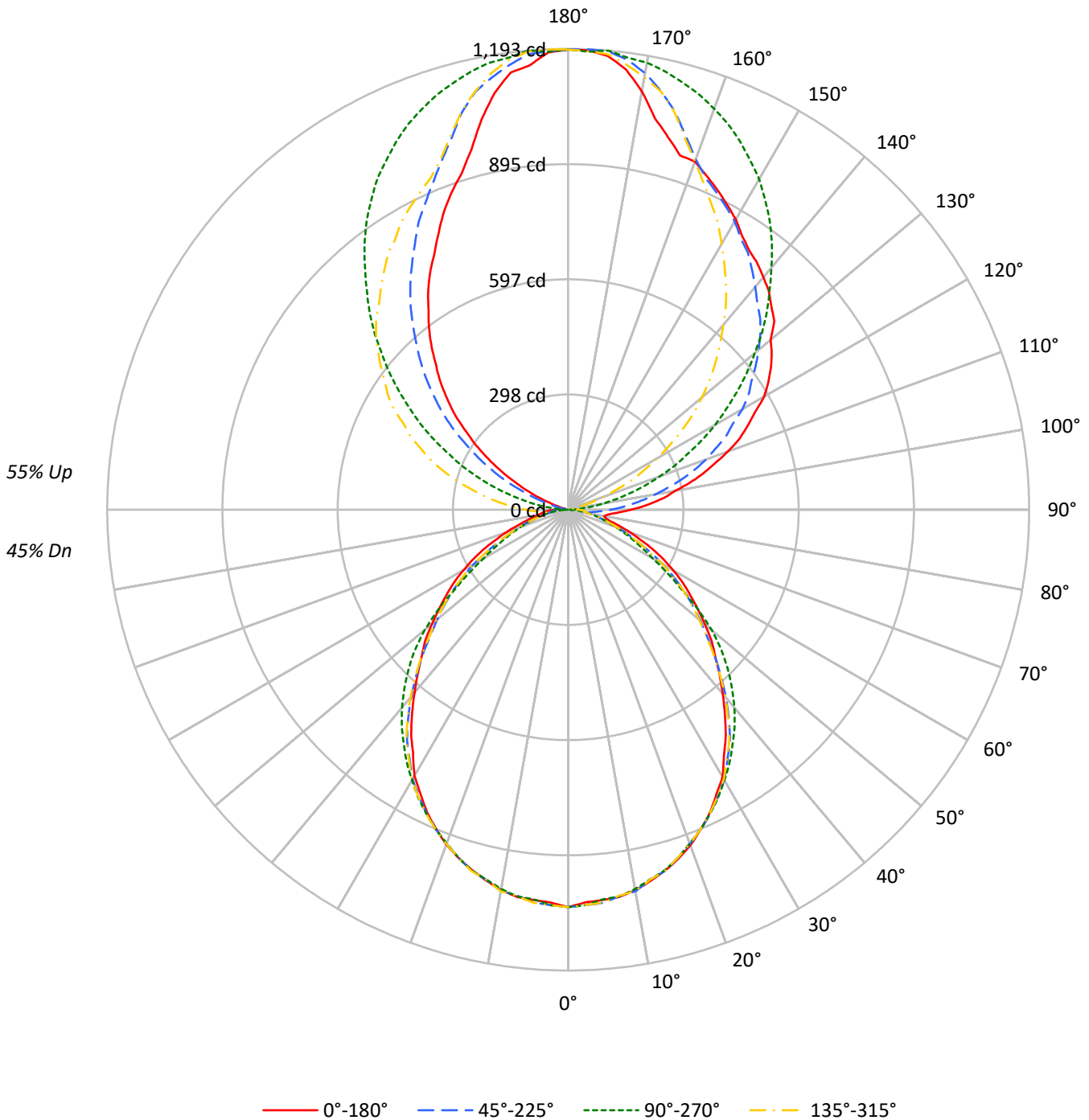
Lumens per Lamp: N/A
Luminaire Lumens: 5183.8 lumens
Efficiency: N/A
Efficacy: 93.4 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

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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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°	13290	13290	13290	13290
5°	12917	12074	12917	12074
10°	12651	11115	12651	11115
15°	12255	10190	12222	10190
20°	11813	9265	11780	9265
25°	11258	8441	11226	8441
30°	10634	7644	10590	7644
35°	9783	6876	9748	6876
40°	8926	6135	8877	6135
45°	8133	5336	8095	5336
50°	7437	4441	7397	4441
55°	6703	3297	6673	3297
60°	5949	2397	5932	2397
65°	5081	1795	5081	1795
70°	4076	1327	4095	1327
75°	3108	937	3178	937
80°	3229	578	2683	578
85°	5041	248	2643	248



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	96.7	1.9
10°-20°	272.2	5.3
20°-30°	399.4	7.7
30°-40°	453.1	8.7
40°-50°	422.7	8.2
50°-60°	330.6	6.4
60°-70°	205.2	4.0
70°-80°	99.9	1.9
80°-90°	61.9	1.2
90°-100°	94.2	1.8
100°-110°	183.3	3.5
110°-120°	316.4	6.1
120°-130°	430.3	8.3
130°-140°	490.6	9.5
140°-150°	489.6	9.4
150°-160°	426.3	8.2
160°-170°	299.8	5.8
170°-180°	111.6	2.2
0°-30°	768.3	14.8
0°-40°	1221.4	23.6
0°-60°	1974.7	38.1
0°-90°	2341.7	45.2
90°-120°	593.9	11.5
90°-150°	2004.4	38.7
90°-180°	2842.0	54.8
0°-180°	5183.8	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1029	1029	1029	1029	1029	
5°	1014	1013	1014	1013	1014	96
15°	968	966	965	966	968	273
25°	867	868	864	868	867	398
35°	711	741	708	741	711	444
45°	538	584	536	584	538	417
55°	386	356	384	356	386	346
65°	240	185	240	185	240	238
75°	111	89	113	89	111	126
85°	115	21	60	21	115	90
90°	162	1	36	1	162	90
95°	223	34	24	34	223	195
105°	361	167	7	167	361	380
115°	512	340	118	340	512	507
125°	640	534	291	534	640	572
135°	744	728	468	728	744	574
145°	818	910	630	910	818	515
155°	914	1052	793	1052	914	421
165°	999	1145	966	1145	999	283
175°	1179	1193	1154	1193	1179	110
180°	1191	1191	1191	1191	1191	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1028.9	1028.9	1028.9	1028.9	1028.9	1028.9	1028.9	1028.9	1028.9	1028.9	1028.9
2.5°	1017.4	1029.0	1024.7	1024.6	1024.6	1023.7	1024.7	1029.0	1018.2	1029.0	1024.7
5°	1014.4	1023.0	1021.7	1020.7	1012.7	1020.7	1020.9	1023.0	1014.4	1023.0	1020.9
7.5°	1011.2	1015.9	1008.9	1011.7	1009.7	1010.9	1008.0	1015.0	1011.2	1015.0	1008.0
10°	1000.0	1001.9	1002.9	997.9	996.9	997.0	1002.0	1000.2	1000.0	1000.2	1002.0
12.5°	984.7	985.9	981.0	984.0	980.2	984.0	981.0	984.2	983.0	984.2	981.0
15°	967.6	971.9	968.0	965.0	966.2	964.2	967.2	970.2	965.0	970.2	967.2
17.5°	947.6	948.9	945.0	944.2	944.2	944.2	944.2	948.0	945.0	948.0	944.2
20°	924.6	924.7	921.0	919.2	919.4	918.4	920.2	923.0	922.0	923.0	920.2
22.5°	895.7	900.7	896.0	898.2	895.4	897.4	895.2	899.0	894.0	899.0	895.2
25°	866.7	869.7	868.9	872.2	868.4	871.4	867.2	867.2	864.2	867.2	867.2
27.5°	830.7	834.7	838.9	842.0	840.4	841.2	837.2	832.2	828.2	832.2	837.2
30°	798.7	796.7	807.7	809.9	808.4	808.2	805.2	794.2	795.4	794.2	805.2
32.5°	750.7	756.7	766.7	777.9	777.2	776.2	764.2	753.4	747.4	753.4	764.2
35°	710.9	714.9	729.9	742.9	741.4	740.4	727.4	712.4	708.4	712.4	727.4
37.5°	665.9	666.9	682.9	704.9	707.2	702.4	680.4	664.4	663.4	664.4	680.4
40°	621.9	620.9	634.9	660.0	669.2	658.4	631.5	617.5	618.5	617.5	631.5
42.5°	579.9	575.9	585.0	618.0	627.2	616.4	582.5	572.5	576.5	572.5	582.5
45°	538.0	533.0	536.0	566.0	584.2	564.4	532.7	530.5	535.5	530.5	532.7
47.5°	504.0	491.0	488.0	513.2	538.2	512.4	484.7	488.5	501.5	488.5	484.7
50°	462.0	455.0	445.0	463.2	484.4	461.5	441.7	451.7	459.5	451.7	441.7
52.5°	423.0	420.0	405.2	413.2	422.4	411.5	402.7	416.7	420.5	416.7	402.7
55°	386.2	381.2	365.2	362.4	355.5	360.7	362.7	378.7	384.5	378.7	362.7
57.5°	352.2	345.2	323.2	314.4	302.5	312.7	320.7	342.7	350.5	342.7	320.7
60°	313.4	307.4	284.4	262.5	253.5	261.7	282.7	305.7	312.5	305.7	282.7
62.5°	277.4	267.4	239.4	218.5	215.7	217.7	237.7	265.7	276.5	265.7	237.7
65°	240.5	225.5	201.5	181.5	184.7	180.7	200.7	224.7	240.5	224.7	200.7
67.5°	201.5	188.5	167.5	148.7	156.7	148.7	166.7	187.7	201.5	187.7	166.7
70°	169.7	153.7	136.7	122.7	131.7	122.7	136.7	154.5	170.5	154.5	136.7
72.5°	137.7	123.7	109.7	100.7	106.8	99.8	109.7	124.5	139.4	124.5	109.7
75°	110.7	97.7	85.8	78.8	88.8	78.8	86.7	98.5	113.2	98.5	86.7
77.5°	98.4	82.0	64.8	62.8	70.8	62.8	65.7	79.5	95.0	79.5	65.7
80°	94.7	80.8	52.4	46.8	51.8	46.8	50.7	67.4	78.7	67.4	50.7
82.5°	100.9	89.3	54.5	33.8	36.8	33.8	44.4	59.0	68.9	59.0	44.4
85°	115.0	106.5	66.0	27.4	20.8	25.7	41.6	55.3	60.3	55.3	41.6
87.5°	136.2	131.7	85.3	34.0	5.0	22.2	37.4	50.9	49.6	50.9	37.4
90°	162.0	157.6	110.6	45.6	0.8	13.7	27.4	39.0	35.9	39.0	27.4
92.5°	194.0	186.9	136.7	64.7	13.5	6.7	21.5	31.4	29.2	31.4	21.5
95°	222.8	217.8	165.9	88.5	33.6	4.4	14.5	22.7	23.5	22.7	14.5
97.5°	254.8	248.6	195.9	118.7	60.7	11.1	10.0	17.4	19.4	17.4	10.0
100°	280.6	276.8	229.7	154.9	92.7	28.8	6.9	12.7	15.7	12.7	6.9
102.5°	322.5	311.5	264.2	189.4	127.1	53.1	13.6	8.7	9.7	8.7	13.6
105°	360.9	349.1	305.4	225.5	166.7	85.9	33.8	11.1	6.9	11.1	33.8
107.5°	397.1	388.7	342.4	262.5	208.7	123.8	62.4	32.1	20.3	32.1	62.4
110°	439.1	429.0	378.6	299.5	252.4	164.1	95.2	59.0	45.6	59.0	95.2



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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°	479.5	471.9	412.2	338.2	297.8	207.9	135.5	92.7	80.0	92.7	135.5
115°	511.6	506.4	450.9	374.4	339.9	257.5	180.1	132.2	118.0	132.2	180.1
117.5°	544.4	543.6	479.5	411.4	390.3	302.0	221.3	172.7	156.7	172.7	221.3
120°	585.6	578.9	520.0	449.4	439.3	350.1	267.7	218.1	202.1	218.1	267.7
122.5°	614.2	610.0	553.6	484.7	484.7	398.1	311.5	261.8	245.0	261.8	311.5
125°	640.3	638.6	578.9	520.0	533.5	442.6	360.2	309.8	291.3	309.8	360.2
127.5°	663.8	666.3	611.7	558.7	583.1	488.1	408.2	352.7	333.3	352.7	408.2
130°	684.0	692.4	642.8	594.0	630.2	537.7	451.0	395.5	382.9	395.5	451.0
132.5°	723.5	718.5	674.7	630.2	680.6	583.1	496.5	438.4	424.1	438.4	496.5
135°	743.7	745.4	702.5	661.3	727.7	628.5	539.3	482.2	467.9	482.2	539.3
137.5°	768.1	763.0	724.3	699.1	771.4	672.2	581.4	528.4	505.7	528.4	581.4
140°	785.7	784.9	752.9	732.8	818.5	715.1	624.3	570.5	549.4	570.5	624.3
142.5°	804.2	809.3	781.5	769.8	865.6	760.5	670.5	611.7	591.5	611.7	670.5
145°	817.8	828.8	811.1	816.0	910.2	811.0	711.9	652.2	630.3	652.2	711.9
147.5°	838.9	853.2	832.1	849.8	948.9	856.5	752.3	693.4	674.1	693.4	752.3
150°	867.5	874.2	861.6	894.2	988.4	905.1	793.5	732.9	713.6	732.9	793.5
152.5°	890.2	898.6	884.3	943.8	1019.5	950.6	838.9	771.6	748.9	771.6	838.9
155°	913.7	917.1	907.0	991.8	1052.3	995.1	875.0	814.5	792.6	814.5	875.0
157.5°	935.6	942.3	929.5	1027.9	1080.9	1033.8	915.2	857.4	838.0	857.4	915.2
160°	959.1	959.1	964.8	1070.0	1104.4	1067.4	959.0	904.5	877.6	904.5	959.0
162.5°	961.6	977.6	1012.8	1099.4	1127.1	1096.9	1006.1	938.1	914.6	938.1	1006.1
165°	998.6	1011.9	1066.6	1125.5	1144.8	1122.9	1064.1	992.6	965.8	992.6	1064.1
167.5°	1037.3	1066.6	1110.3	1154.9	1161.6	1147.3	1108.6	1059.0	1034.8	1059.0	1108.6
170°	1099.4	1125.5	1147.3	1165.8	1175.1	1166.7	1136.4	1112.0	1096.0	1112.0	1136.4
172.5°	1149.0	1165.8	1174.2	1186.0	1180.1	1176.8	1161.6	1149.9	1141.4	1149.9	1161.6
175°	1179.1	1183.5	1191.1	1187.9	1192.9	1183.6	1183.5	1189.4	1153.9	1189.4	1183.5
177.5°	1190.1	1196.9	1192.7	1186.2	1187.0	1185.3	1187.7	1191.1	1185.0	1191.1	1187.7
180°	1191.1	1191.1	1191.1	1191.1	1191.1	1191.1	1191.1	1191.1	1191.1	1191.1	1191.1



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1028.9	1028.9	1028.9	1028.9	1028.9	1028.9
2.5°	1023.7	1024.6	1024.6	1024.7	1029.0	1017.4
5°	1020.7	1012.7	1020.7	1021.7	1023.0	1014.4
7.5°	1010.9	1009.7	1011.7	1008.9	1015.9	1011.2
10°	997.0	996.9	997.9	1002.9	1001.9	1000.0
12.5°	984.0	980.2	984.0	981.0	985.9	984.7
15°	964.2	966.2	965.0	968.0	971.9	967.6
17.5°	944.2	944.2	944.2	945.0	948.9	947.6
20°	918.4	919.4	919.2	921.0	924.7	924.6
22.5°	897.4	895.4	898.2	896.0	900.7	895.7
25°	871.4	868.4	872.2	868.9	869.7	866.7
27.5°	841.2	840.4	842.0	838.9	834.7	830.7
30°	808.2	808.4	809.9	807.7	796.7	798.7
32.5°	776.2	777.2	777.9	766.7	756.7	750.7
35°	740.4	741.4	742.9	729.9	714.9	710.9
37.5°	702.4	707.2	704.9	682.9	666.9	665.9
40°	658.4	669.2	660.0	634.9	620.9	621.9
42.5°	616.4	627.2	618.0	585.0	575.9	579.9
45°	564.4	584.2	566.0	536.0	533.0	538.0
47.5°	512.4	538.2	513.2	488.0	491.0	504.0
50°	461.5	484.4	463.2	445.0	455.0	462.0
52.5°	411.5	422.4	413.2	405.2	420.0	423.0
55°	360.7	355.5	362.4	365.2	381.2	386.2
57.5°	312.7	302.5	314.4	323.2	345.2	352.2
60°	261.7	253.5	262.5	284.4	307.4	313.4
62.5°	217.7	215.7	218.5	239.4	267.4	277.4
65°	180.7	184.7	181.5	201.5	225.5	240.5
67.5°	148.7	156.7	148.7	167.5	188.5	201.5
70°	122.7	131.7	122.7	136.7	153.7	169.7
72.5°	99.8	106.8	100.7	109.7	123.7	137.7
75°	78.8	88.8	78.8	85.8	97.7	110.7
77.5°	62.8	70.8	62.8	64.8	82.0	98.4
80°	46.8	51.8	46.8	52.4	80.8	94.7
82.5°	33.8	36.8	33.8	54.5	89.3	100.9
85°	25.7	20.8	27.4	66.0	106.5	115.0
87.5°	22.2	5.0	34.0	85.3	131.7	136.2
90°	13.7	0.8	45.6	110.6	157.6	162.0
92.5°	6.7	13.5	64.7	136.7	186.9	194.0
95°	4.4	33.6	88.5	165.9	217.8	222.8
97.5°	11.1	60.7	118.7	195.9	248.6	254.8
100°	28.8	92.7	154.9	229.7	276.8	280.6
102.5°	53.1	127.1	189.4	264.2	311.5	322.5
105°	85.9	166.7	225.5	305.4	349.1	360.9
107.5°	123.8	208.7	262.5	342.4	388.7	397.1
110°	164.1	252.4	299.5	378.6	429.0	439.1



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	207.9	297.8	338.2	412.2	471.9	479.5
115°	257.5	339.9	374.4	450.9	506.4	511.6
117.5°	302.0	390.3	411.4	479.5	543.6	544.4
120°	350.1	439.3	449.4	520.0	578.9	585.6
122.5°	398.1	484.7	484.7	553.6	610.0	614.2
125°	442.6	533.5	520.0	578.9	638.6	640.3
127.5°	488.1	583.1	558.7	611.7	666.3	663.8
130°	537.7	630.2	594.0	642.8	692.4	684.0
132.5°	583.1	680.6	630.2	674.7	718.5	723.5
135°	628.5	727.7	661.3	702.5	745.4	743.7
137.5°	672.2	771.4	699.1	724.3	763.0	768.1
140°	715.1	818.5	732.8	752.9	784.9	785.7
142.5°	760.5	865.6	769.8	781.5	809.3	804.2
145°	811.0	910.2	816.0	811.1	828.8	817.8
147.5°	856.5	948.9	849.8	832.1	853.2	838.9
150°	905.1	988.4	894.2	861.6	874.2	867.5
152.5°	950.6	1019.5	943.8	884.3	898.6	890.2
155°	995.1	1052.3	991.8	907.0	917.1	913.7
157.5°	1033.8	1080.9	1027.9	929.5	942.3	935.6
160°	1067.4	1104.4	1070.0	964.8	959.1	959.1
162.5°	1096.9	1127.1	1099.4	1012.8	977.6	961.6
165°	1122.9	1144.8	1125.5	1066.6	1011.9	998.6
167.5°	1147.3	1161.6	1154.9	1110.3	1066.6	1037.3
170°	1166.7	1175.1	1165.8	1147.3	1125.5	1099.4
172.5°	1176.8	1180.1	1186.0	1174.2	1165.8	1149.0
175°	1183.6	1192.9	1187.9	1191.1	1183.5	1179.1
177.5°	1185.3	1187.0	1186.2	1192.7	1196.9	1190.1
180°	1191.1	1191.1	1191.1	1191.1	1191.1	1191.1

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