

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: P392512

Luminaire Tested: **MWL-2-22-31-UNV-L835-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392512
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-2-22-31-UNV-L835-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

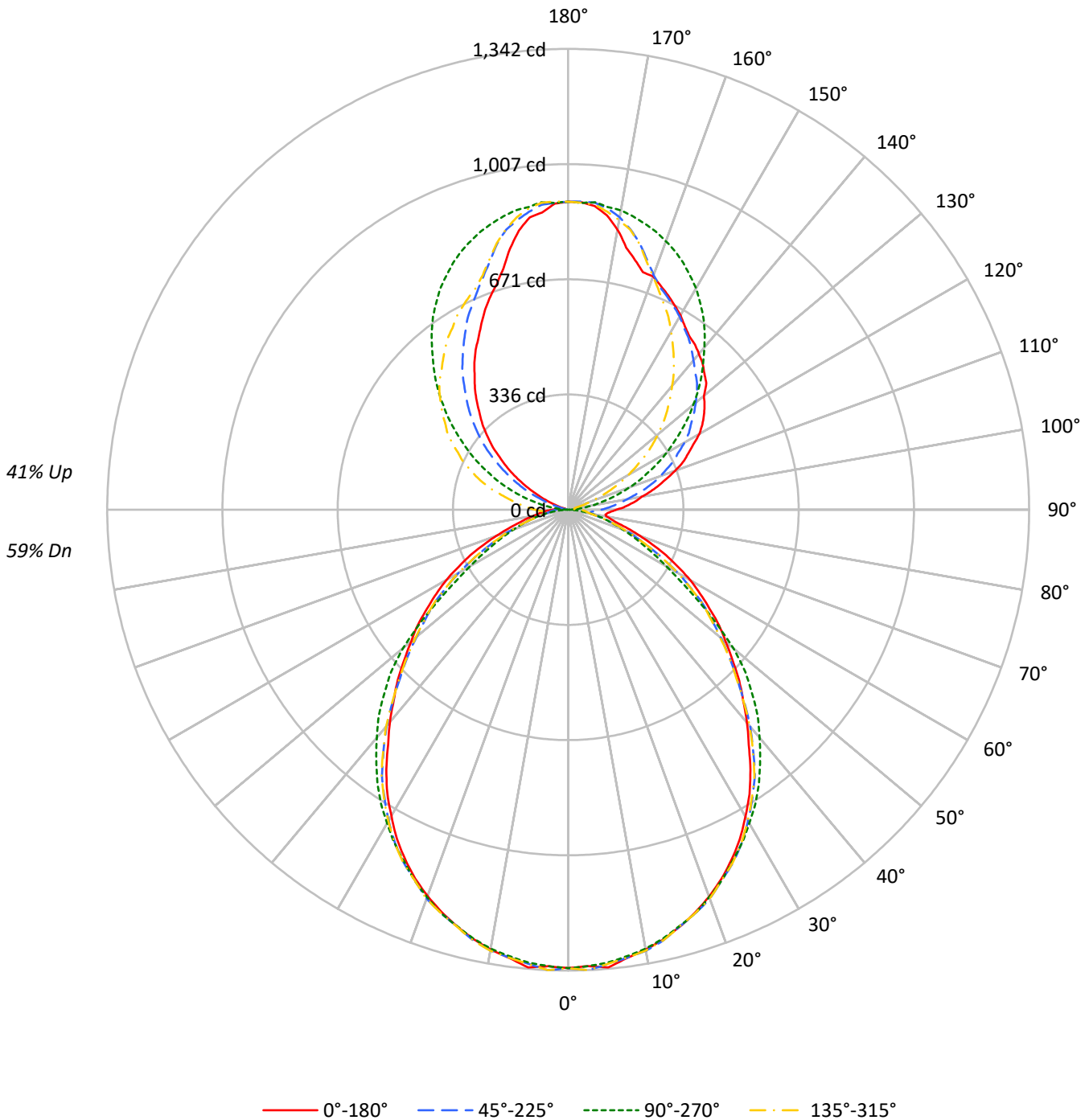
Lumens per Lamp: N/A
Luminaire Lumens: 5189.0 lumens
Efficiency: N/A
Efficacy: 95.4 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 54.4
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	0
RCR																		
0	109	109	109	109	102	102	102	102	88	88	88	76	76	76	64	64	64	59
1	100	96	92	89	93	90	86	83	78	75	73	67	65	64	57	56	55	50
2	91	84	78	73	85	79	74	69	69	65	61	59	56	54	51	49	47	43
3	84	74	67	62	78	70	63	58	61	56	52	53	49	46	45	43	40	37
4	77	66	58	53	72	62	55	50	55	49	45	48	43	40	41	38	35	32
5	71	59	51	45	66	56	49	43	49	43	39	43	38	35	37	34	31	28
6	65	53	45	40	61	50	43	38	44	39	34	39	34	31	34	30	27	25
7	61	48	40	35	56	46	39	33	40	35	30	36	31	27	31	27	25	22
8	56	44	36	31	53	42	35	30	37	31	27	33	28	25	29	25	22	20
9	53	40	33	28	49	38	31	27	34	28	24	30	26	22	26	23	20	18
10	49	37	30	25	46	35	29	24	31	26	22	28	23	20	25	21	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	17244	17244	17244	17244
5°	17037	15786	17037	15786
10°	16453	14476	16453	14476
15°	15920	13230	15895	13230
20°	15319	12099	15294	12099
25°	14611	10983	14588	10983
30°	13740	9972	13705	9972
35°	12729	8982	12703	8982
40°	11624	7946	11588	7946
45°	10641	6918	10612	6918
50°	9635	5750	9604	5750
55°	8716	4269	8693	4269
60°	7795	3118	7783	3118
65°	6640	2315	6640	2315
70°	5325	1718	5342	1718
75°	4108	1200	4161	1200
80°	3846	763	3437	763
85°	5027	320	3226	320



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	125.9	2.4
10°-20°	354.3	6.8
20°-30°	519.4	10.0
30°-40°	589.2	11.4
40°-50°	549.7	10.6
50°-60°	431.2	8.3
60°-70°	269.1	5.2
70°-80°	130.2	2.5
80°-90°	69.0	1.3
90°-100°	78.6	1.5
100°-110°	138.9	2.7
110°-120°	238.8	4.6
120°-130°	324.5	6.3
130°-140°	370.0	7.1
140°-150°	369.0	7.1
150°-160°	321.3	6.2
160°-170°	225.8	4.4
170°-180°	84.1	1.6
0°-30°	999.6	19.3
0°-40°	1588.8	30.6
0°-60°	2569.8	49.5
0°-90°	3038.2	58.6
90°-120°	456.2	8.8
90°-150°	1519.7	29.3
90°-180°	2151.0	41.5
0°-180°	5189.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1335	1335	1335	1335	1335	
5°	1338	1324	1338	1324	1338	126
15°	1257	1254	1255	1254	1257	354
25°	1125	1130	1123	1130	1125	517
35°	925	968	923	968	925	577
45°	704	757	702	757	704	542
55°	502	460	501	460	502	451
65°	314	238	314	238	314	310
75°	146	114	148	114	146	165
85°	115	27	74	27	115	93
90°	140	2	45	2	140	78
95°	180	26	30	26	180	155
105°	273	126	6	126	273	289
115°	385	257	89	257	385	382
125°	483	402	220	402	483	431
135°	561	549	353	549	561	433
145°	616	686	475	686	616	388
155°	689	793	598	793	689	318
165°	752	862	728	862	752	213
175°	888	899	869	899	888	83
180°	897	897	897	897	897	



TEST NUMBER: P392512

CATALOG NUMBER: MWL-2-22-31-UNV-L835-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1335.0	1335.0	1335.0	1335.0	1335.0	1335.0	1335.0	1335.0	1335.0	1335.0	1335.0
2.5°	1330.2	1338.2	1342.4	1329.5	1330.5	1328.8	1342.4	1338.2	1330.9	1338.2	1342.4
5°	1337.9	1328.5	1327.9	1326.9	1324.0	1326.9	1327.3	1328.5	1337.9	1328.5	1327.3
7.5°	1316.4	1322.4	1315.7	1314.3	1311.4	1313.7	1315.0	1321.8	1316.4	1321.8	1315.0
10°	1300.5	1305.0	1304.1	1297.3	1298.3	1296.6	1303.4	1303.8	1300.5	1303.8	1303.4
12.5°	1281.4	1284.7	1284.1	1276.3	1278.6	1276.3	1284.1	1283.5	1280.2	1283.5	1284.1
15°	1257.0	1256.7	1256.0	1253.1	1254.5	1252.5	1255.4	1255.4	1255.0	1255.4	1255.4
17.5°	1229.9	1232.5	1231.8	1232.2	1232.2	1232.2	1231.3	1231.8	1228.0	1231.8	1231.3
20°	1199.0	1204.1	1205.7	1200.3	1200.6	1199.6	1205.2	1202.8	1197.0	1202.8	1205.2
22.5°	1164.4	1165.4	1168.0	1160.7	1168.7	1160.0	1167.4	1164.2	1163.2	1164.2	1167.4
25°	1124.8	1125.8	1134.9	1130.7	1130.0	1130.0	1133.6	1123.9	1123.0	1123.9	1133.6
27.5°	1082.2	1082.2	1094.2	1090.7	1095.2	1090.1	1093.0	1080.4	1080.4	1080.4	1093.0
30°	1032.0	1040.7	1047.4	1061.4	1054.6	1060.1	1045.6	1038.8	1029.4	1038.8	1045.6
32.5°	982.6	987.5	997.2	1007.2	1014.7	1006.0	995.3	985.0	980.1	985.0	995.3
35°	925.0	925.0	947.3	965.6	968.5	963.7	945.3	923.1	923.1	923.1	945.3
37.5°	863.1	865.1	884.4	912.4	918.0	910.5	882.5	863.1	861.2	863.1	882.5
40°	809.9	806.1	824.4	860.5	866.7	859.3	821.9	803.6	807.4	803.6	821.9
42.5°	753.9	748.1	757.1	801.5	816.4	800.3	755.2	745.5	751.3	745.5	755.2
45°	703.9	692.3	694.2	735.8	757.4	734.5	691.7	690.4	702.0	690.4	691.7
47.5°	648.7	644.9	637.1	664.6	699.4	663.9	634.6	643.0	646.9	643.0	634.6
50°	598.5	590.7	579.1	601.8	627.2	600.5	576.6	588.2	596.6	588.2	576.6
52.5°	554.0	547.2	525.4	538.9	544.0	537.6	523.4	544.7	552.1	544.7	523.4
55°	502.2	501.2	478.9	472.5	460.3	471.2	477.0	499.3	500.9	499.3	477.0
57.5°	455.7	453.8	421.9	410.6	387.8	409.3	420.0	451.9	454.5	451.9	420.0
60°	410.6	403.8	369.0	341.3	329.7	340.7	367.7	402.6	410.0	402.6	367.7
62.5°	360.3	356.4	313.9	284.3	281.7	283.6	312.6	355.2	359.7	355.2	312.6
65°	314.3	299.8	264.0	236.9	238.2	236.2	263.3	299.1	314.3	299.1	263.3
67.5°	265.0	250.4	219.5	194.7	202.4	194.7	218.8	249.8	265.0	249.8	218.8
70°	221.7	202.4	179.2	158.9	170.5	158.9	179.2	203.1	222.4	203.1	179.2
72.5°	182.1	161.8	144.4	129.9	139.9	129.3	144.4	162.5	183.3	162.5	144.4
75°	146.3	127.9	111.9	104.1	113.8	104.1	112.5	128.6	148.2	128.6	112.5
77.5°	128.1	106.3	84.8	80.9	92.5	80.9	85.4	104.4	125.6	104.4	85.4
80°	112.8	97.8	67.3	60.6	68.4	60.6	66.0	87.6	100.8	87.6	66.0
82.5°	109.6	99.1	64.3	43.2	47.1	43.2	56.7	76.3	85.6	76.3	56.7
85°	114.7	107.4	68.5	34.4	26.8	33.2	50.2	68.8	73.6	68.8	50.2
87.5°	124.9	122.1	80.1	36.2	7.7	27.4	44.0	61.4	59.8	61.4	44.0
90°	139.9	138.4	96.1	41.8	1.6	17.7	33.5	49.2	45.1	49.2	33.5
92.5°	161.9	157.2	113.6	52.6	11.1	9.0	27.1	40.2	38.0	40.2	27.1
95°	179.8	176.0	133.2	66.7	26.3	3.5	19.3	29.3	30.0	29.3	19.3
97.5°	200.8	195.7	150.3	89.4	45.8	8.5	10.5	21.9	23.8	21.9	10.5
100°	216.8	213.3	173.0	116.7	69.9	21.9	5.4	14.7	17.6	14.7	5.4
102.5°	246.1	235.6	198.9	142.6	95.8	40.1	10.4	7.9	10.8	7.9	10.4
105°	272.6	263.7	229.9	169.8	125.5	64.8	25.6	9.5	6.4	9.5	25.6
107.5°	299.8	293.5	258.7	197.7	157.1	93.3	48.1	25.3	16.4	25.3	48.1
110°	331.4	323.7	285.8	225.4	190.0	123.7	72.7	45.5	35.5	45.5	72.7



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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°	361.7	356.0	311.2	255.5	224.1	157.5	103.1	70.9	61.4	70.9	103.1
115°	385.1	382.0	340.2	282.6	256.7	194.8	136.6	100.6	89.2	100.6	136.6
117.5°	409.8	409.1	361.7	310.5	294.7	228.3	167.6	130.3	118.3	130.3	167.6
120°	440.8	435.7	391.4	338.3	330.7	263.7	201.7	164.5	152.4	164.5	201.7
122.5°	463.3	459.1	416.8	364.8	364.8	299.8	234.6	197.4	185.7	197.4	234.6
125°	482.8	481.6	436.7	391.4	401.6	333.3	272.3	234.3	220.4	234.3	272.3
127.5°	500.5	502.4	461.3	421.5	439.9	368.4	308.3	266.6	252.0	266.6	308.3
130°	515.7	522.1	484.7	448.1	475.3	405.6	340.6	298.8	289.3	298.8	340.6
132.5°	545.5	541.6	508.7	475.3	513.2	439.9	374.7	331.1	320.4	331.1	374.7
135°	560.7	561.9	529.6	498.7	548.6	474.0	407.0	364.0	353.2	364.0	407.0
137.5°	578.9	575.2	546.1	527.1	581.4	506.9	438.5	398.8	381.7	398.8	438.5
140°	592.2	591.6	567.5	552.4	616.9	539.1	470.8	430.3	414.5	430.3	470.8
142.5°	606.1	610.0	589.1	580.2	652.3	573.2	505.6	461.3	446.2	461.3	505.6
145°	615.6	624.8	610.6	615.0	685.8	611.2	536.0	492.0	474.6	492.0	536.0
147.5°	632.4	643.1	627.4	639.7	714.9	644.7	567.2	523.0	508.4	523.0	567.2
150°	653.9	659.0	649.4	673.8	744.6	682.0	598.3	552.7	538.2	552.7	598.3
152.5°	671.0	677.3	666.5	711.1	768.0	716.1	632.4	581.8	564.7	581.8	632.4
155°	688.7	691.2	683.7	747.2	792.6	749.7	659.6	614.0	597.6	614.0	659.6
157.5°	705.1	710.2	700.4	774.4	814.2	778.8	689.7	646.3	631.7	646.3	689.7
160°	722.8	722.8	726.9	806.0	831.9	804.0	722.5	681.7	661.5	681.7	722.5
162.5°	724.8	736.7	762.9	828.1	848.9	826.2	757.9	707.1	689.3	707.1	757.9
165°	752.5	762.4	803.5	847.7	862.3	845.8	801.5	747.8	727.8	747.8	801.5
167.5°	781.6	803.5	836.3	869.8	874.8	864.1	835.1	797.8	779.8	797.8	835.1
170°	828.1	847.7	864.1	878.0	885.0	878.7	855.9	837.6	825.5	837.6	855.9
172.5°	864.4	878.0	884.4	893.2	888.8	886.2	874.8	866.0	858.8	866.0	874.8
175°	887.8	891.4	897.0	894.8	898.6	891.7	891.4	895.7	868.8	895.7	891.4
177.5°	896.0	900.5	898.2	893.6	894.2	892.9	894.5	896.0	892.2	896.0	894.5
180°	897.0	897.0	897.0	897.0	897.0	897.0	897.0	897.0	897.0	897.0	897.0



TEST NUMBER: P392512

CATALOG NUMBER: MWL-2-22-31-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1335.0	1335.0	1335.0	1335.0	1335.0	1335.0
2.5°	1328.8	1330.5	1329.5	1342.4	1338.2	1330.2
5°	1326.9	1324.0	1326.9	1327.9	1328.5	1337.9
7.5°	1313.7	1311.4	1314.3	1315.7	1322.4	1316.4
10°	1296.6	1298.3	1297.3	1304.1	1305.0	1300.5
12.5°	1276.3	1278.6	1276.3	1284.1	1284.7	1281.4
15°	1252.5	1254.5	1253.1	1256.0	1256.7	1257.0
17.5°	1232.2	1232.2	1232.2	1231.8	1232.5	1229.9
20°	1199.6	1200.6	1200.3	1205.7	1204.1	1199.0
22.5°	1160.0	1168.7	1160.7	1168.0	1165.4	1164.4
25°	1130.0	1130.0	1130.7	1134.9	1125.8	1124.8
27.5°	1090.1	1095.2	1090.7	1094.2	1082.2	1082.2
30°	1060.1	1054.6	1061.4	1047.4	1040.7	1032.0
32.5°	1006.0	1014.7	1007.2	997.2	987.5	982.6
35°	963.7	968.5	965.6	947.3	925.0	925.0
37.5°	910.5	918.0	912.4	884.4	865.1	863.1
40°	859.3	866.7	860.5	824.4	806.1	809.9
42.5°	800.3	816.4	801.5	757.1	748.1	753.9
45°	734.5	757.4	735.8	694.2	692.3	703.9
47.5°	663.9	699.4	664.6	637.1	644.9	648.7
50°	600.5	627.2	601.8	579.1	590.7	598.5
52.5°	537.6	544.0	538.9	525.4	547.2	554.0
55°	471.2	460.3	472.5	478.9	501.2	502.2
57.5°	409.3	387.8	410.6	421.9	453.8	455.7
60°	340.7	329.7	341.3	369.0	403.8	410.6
62.5°	283.6	281.7	284.3	313.9	356.4	360.3
65°	236.2	238.2	236.9	264.0	299.8	314.3
67.5°	194.7	202.4	194.7	219.5	250.4	265.0
70°	158.9	170.5	158.9	179.2	202.4	221.7
72.5°	129.3	139.9	129.9	144.4	161.8	182.1
75°	104.1	113.8	104.1	111.9	127.9	146.3
77.5°	80.9	92.5	80.9	84.8	106.3	128.1
80°	60.6	68.4	60.6	67.3	97.8	112.8
82.5°	43.2	47.1	43.2	64.3	99.1	109.6
85°	33.2	26.8	34.4	68.5	107.4	114.7
87.5°	27.4	7.7	36.2	80.1	122.1	124.9
90°	17.7	1.6	41.8	96.1	138.4	139.9
92.5°	9.0	11.1	52.6	113.6	157.2	161.9
95°	3.5	26.3	66.7	133.2	176.0	179.8
97.5°	8.5	45.8	89.4	150.3	195.7	200.8
100°	21.9	69.9	116.7	173.0	213.3	216.8
102.5°	40.1	95.8	142.6	198.9	235.6	246.1
105°	64.8	125.5	169.8	229.9	263.7	272.6
107.5°	93.3	157.1	197.7	258.7	293.5	299.8
110°	123.7	190.0	225.4	285.8	323.7	331.4



TEST NUMBER: P392512

CATALOG NUMBER: MWL-2-22-31-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	157.5	224.1	255.5	311.2	356.0	361.7
115°	194.8	256.7	282.6	340.2	382.0	385.1
117.5°	228.3	294.7	310.5	361.7	409.1	409.8
120°	263.7	330.7	338.3	391.4	435.7	440.8
122.5°	299.8	364.8	364.8	416.8	459.1	463.3
125°	333.3	401.6	391.4	436.7	481.6	482.8
127.5°	368.4	439.9	421.5	461.3	502.4	500.5
130°	405.6	475.3	448.1	484.7	522.1	515.7
132.5°	439.9	513.2	475.3	508.7	541.6	545.5
135°	474.0	548.6	498.7	529.6	561.9	560.7
137.5°	506.9	581.4	527.1	546.1	575.2	578.9
140°	539.1	616.9	552.4	567.5	591.6	592.2
142.5°	573.2	652.3	580.2	589.1	610.0	606.1
145°	611.2	685.8	615.0	610.6	624.8	615.6
147.5°	644.7	714.9	639.7	627.4	643.1	632.4
150°	682.0	744.6	673.8	649.4	659.0	653.9
152.5°	716.1	768.0	711.1	666.5	677.3	671.0
155°	749.7	792.6	747.2	683.7	691.2	688.7
157.5°	778.8	814.2	774.4	700.4	710.2	705.1
160°	804.0	831.9	806.0	726.9	722.8	722.8
162.5°	826.2	848.9	828.1	762.9	736.7	724.8
165°	845.8	862.3	847.7	803.5	762.4	752.5
167.5°	864.1	874.8	869.8	836.3	803.5	781.6
170°	878.7	885.0	878.0	864.1	847.7	828.1
172.5°	886.2	888.8	893.2	884.4	878.0	864.4
175°	891.7	898.6	894.8	897.0	891.4	887.8
177.5°	892.9	894.2	893.6	898.2	900.5	896.0
180°	897.0	897.0	897.0	897.0	897.0	897.0

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