

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: P392513

Luminaire Tested: **MWL-2-22-31-UNV-L840-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392513
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-L840-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

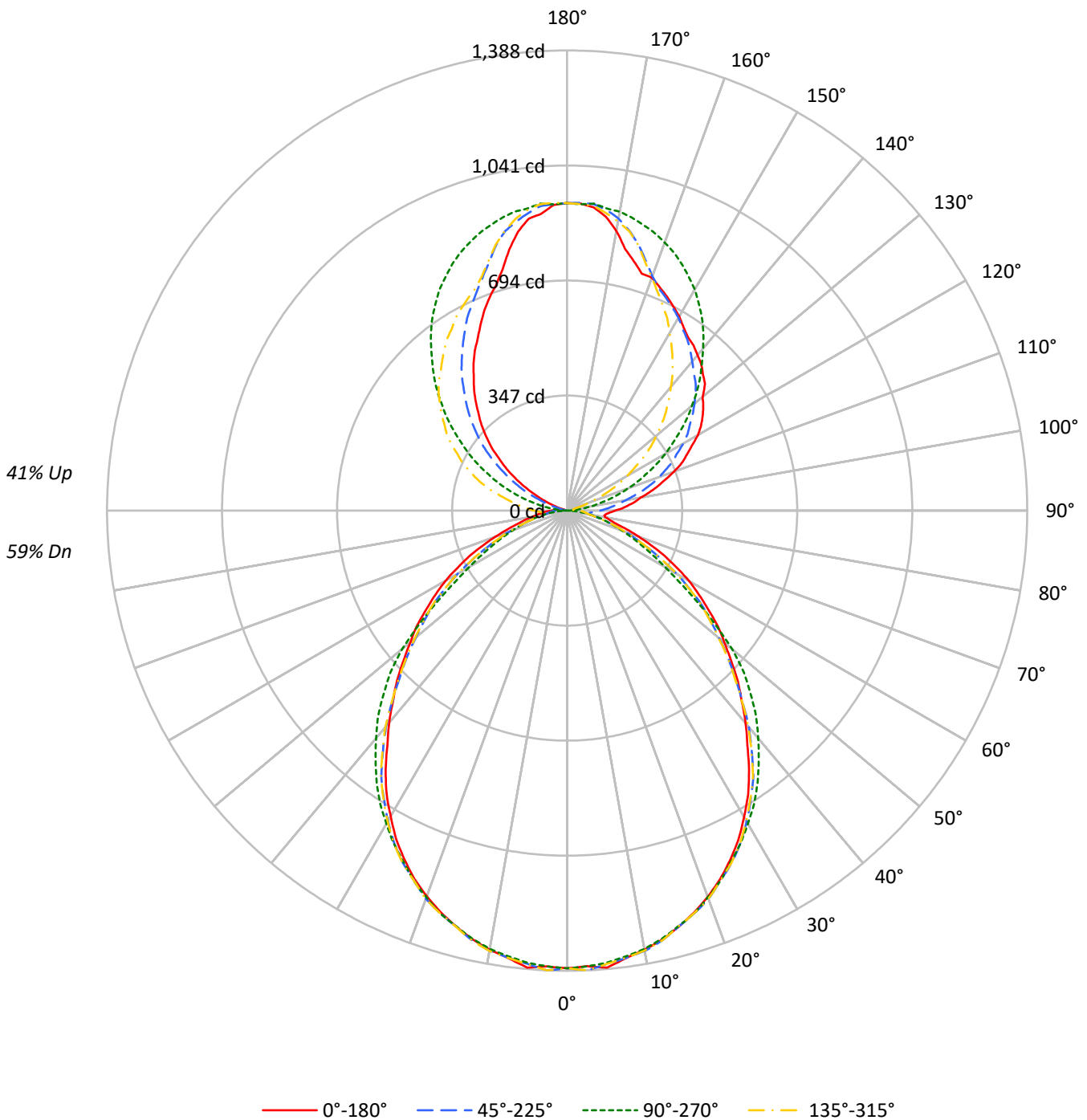
Lumens per Lamp: N/A
Luminaire Lumens: 5366.2 lumens
Efficiency: N/A
Efficacy: 98.6 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

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°	17833	17833	17833	17833
5°	17619	16325	17619	16325
10°	17015	14970	17015	14970
15°	16464	13682	16438	13682
20°	15842	12512	15816	12512
25°	15110	11358	15085	11358
30°	14208	10312	14174	10312
35°	13164	9289	13136	9289
40°	12022	8218	11984	8218
45°	11004	7154	10975	7154
50°	9963	5947	9932	5947
55°	9013	4415	8990	4415
60°	8060	3224	8049	3224
65°	6866	2394	6866	2394
70°	5507	1777	5524	1777
75°	4248	1241	4304	1241
80°	3979	788	3553	788
85°	5198	330	3335	330



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	130.2	2.4
10°-20°	366.4	6.8
20°-30°	537.2	10.0
30°-40°	609.3	11.4
40°-50°	568.5	10.6
50°-60°	446.0	8.3
60°-70°	278.3	5.2
70°-80°	134.7	2.5
80°-90°	71.4	1.3
90°-100°	81.3	1.5
100°-110°	143.6	2.7
110°-120°	247.0	4.6
120°-130°	335.5	6.3
130°-140°	382.6	7.1
140°-150°	381.6	7.1
150°-160°	332.2	6.2
160°-170°	233.5	4.4
170°-180°	86.9	1.6
0°-30°	1033.8	19.3
0°-40°	1643.1	30.6
0°-60°	2657.6	49.5
0°-90°	3141.9	58.6
90°-120°	471.8	8.8
90°-150°	1571.6	29.3
90°-180°	2224.0	41.4
0°-180°	5366.2	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1381	1381	1381	1381	1381	
5°	1384	1369	1384	1369	1384	130
15°	1300	1297	1298	1297	1300	366
25°	1163	1169	1161	1169	1163	535
35°	957	1002	955	1002	957	597
45°	728	783	726	783	728	560
55°	519	476	518	476	519	466
65°	325	246	325	246	325	321
75°	151	118	153	118	151	170
85°	119	28	76	28	119	97
90°	145	2	47	2	145	80
95°	186	27	31	27	186	160
105°	282	130	7	130	282	298
115°	398	266	92	266	398	395
125°	499	415	228	415	499	446
135°	580	567	365	567	580	448
145°	637	709	491	709	637	402
155°	712	820	618	820	712	328
165°	778	892	753	892	778	221
175°	918	929	898	929	918	86
180°	928	928	928	928	928	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1380.6	1380.6	1380.6	1380.6	1380.6	1380.6	1380.6	1380.6	1380.6	1380.6	1380.6
2.5°	1375.6	1383.9	1388.2	1374.9	1375.9	1374.2	1388.2	1383.9	1376.3	1383.9	1388.2
5°	1383.6	1373.9	1373.2	1372.2	1369.2	1372.2	1372.6	1373.9	1383.6	1373.9	1372.6
7.5°	1361.3	1367.6	1360.6	1359.2	1356.2	1358.6	1359.9	1366.9	1361.3	1366.9	1359.9
10°	1344.9	1349.6	1348.6	1341.6	1342.6	1340.9	1347.9	1348.3	1344.9	1348.3	1347.9
12.5°	1325.2	1328.6	1327.9	1319.9	1322.3	1319.9	1327.9	1327.3	1323.9	1327.3	1327.9
15°	1299.9	1299.6	1298.9	1295.9	1297.3	1295.3	1298.3	1298.3	1297.9	1298.3	1298.3
17.5°	1271.9	1274.6	1273.9	1274.3	1274.3	1274.3	1273.3	1273.9	1269.9	1273.9	1273.3
20°	1239.9	1245.2	1246.9	1241.3	1241.6	1240.6	1246.3	1243.9	1237.9	1243.9	1246.3
22.5°	1204.2	1205.2	1207.9	1200.3	1208.6	1199.6	1207.3	1203.9	1202.9	1203.9	1207.3
25°	1163.2	1164.2	1173.6	1169.3	1168.6	1168.6	1172.3	1162.3	1161.3	1162.3	1172.3
27.5°	1119.2	1119.2	1131.6	1127.9	1132.6	1127.3	1130.3	1117.3	1117.3	1117.3	1130.3
30°	1067.2	1076.2	1083.2	1097.6	1090.6	1096.3	1081.3	1074.3	1064.6	1074.3	1081.3
32.5°	1016.2	1021.2	1031.2	1041.6	1049.3	1040.3	1029.3	1018.6	1013.6	1018.6	1029.3
35°	956.6	956.6	979.6	998.6	1001.6	996.6	977.6	954.6	954.6	954.6	977.6
37.5°	892.6	894.6	914.6	943.6	949.3	941.6	912.6	892.6	890.6	892.6	912.6
40°	837.6	833.6	852.6	889.9	896.3	888.6	850.0	831.0	835.0	831.0	850.0
42.5°	779.6	773.6	782.9	828.9	844.3	827.6	781.0	771.0	777.0	771.0	781.0
45°	727.9	715.9	717.9	760.9	783.3	759.6	715.3	714.0	726.0	714.0	715.3
47.5°	670.9	666.9	658.9	687.3	723.3	686.6	656.3	665.0	669.0	665.0	656.3
50°	618.9	610.9	598.9	622.3	648.6	621.0	596.3	608.3	617.0	608.3	596.3
52.5°	572.9	565.9	543.3	557.3	562.6	556.0	541.3	563.3	571.0	563.3	541.3
55°	519.3	518.3	495.3	488.6	476.0	487.3	493.3	516.3	518.0	516.3	493.3
57.5°	471.3	469.3	436.3	424.6	401.0	423.3	434.3	467.3	470.0	467.3	434.3
60°	424.6	417.6	381.6	353.0	341.0	352.3	380.3	416.3	424.0	416.3	380.3
62.5°	372.6	368.6	324.6	294.0	291.3	293.3	323.3	367.3	372.0	367.3	323.3
65°	325.0	310.0	273.0	245.0	246.3	244.3	272.3	309.3	325.0	309.3	272.3
67.5°	274.0	259.0	227.0	201.3	209.3	201.3	226.3	258.3	274.0	258.3	226.3
70°	229.3	209.3	185.3	164.3	176.3	164.3	185.3	210.0	230.0	210.0	185.3
72.5°	188.3	167.3	149.3	134.3	144.7	133.7	149.3	168.0	189.6	168.0	149.3
75°	151.3	132.3	115.7	107.7	117.7	107.7	116.3	133.0	153.3	133.0	116.3
77.5°	132.5	109.9	87.7	83.7	95.7	83.7	88.3	108.0	129.9	108.0	88.3
80°	116.7	101.1	69.6	62.7	70.7	62.7	68.3	90.6	104.2	90.6	68.3
82.5°	113.3	102.5	66.5	44.7	48.7	44.7	58.6	78.9	88.5	78.9	58.6
85°	118.6	111.1	70.8	35.6	27.7	34.3	51.9	71.2	76.1	71.2	51.9
87.5°	129.2	126.3	82.8	37.4	8.0	28.3	45.5	63.5	61.8	63.5	45.5
90°	144.7	143.1	99.4	43.2	1.7	18.3	34.6	50.9	46.6	50.9	34.6
92.5°	167.4	162.6	117.5	54.4	11.5	9.3	28.0	41.6	39.3	41.6	28.0
95°	185.9	182.0	137.7	69.0	27.2	3.6	20.0	30.3	31.0	30.3	20.0
97.5°	207.7	202.4	155.4	92.5	47.4	8.8	10.9	22.6	24.6	22.6	10.9
100°	224.2	220.6	178.9	120.7	72.3	22.6	5.6	15.2	18.2	15.2	5.6
102.5°	254.5	243.6	205.7	147.5	99.1	41.5	10.8	8.2	11.2	8.2	10.8
105°	281.9	272.7	237.7	175.6	129.8	67.0	26.5	9.8	6.6	9.8	26.5
107.5°	310.0	303.5	267.5	204.4	162.5	96.5	49.7	26.2	17.0	26.2	49.7
110°	342.7	334.8	295.6	233.1	196.5	127.9	75.2	47.1	36.7	47.1	75.2



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CATALOG NUMBER: MWL-2-22-31-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	374.1	368.2	321.8	264.2	231.8	162.9	106.6	73.3	63.5	73.3	106.6
115°	398.3	395.0	351.8	292.3	265.5	201.4	141.3	104.0	92.2	104.0	141.3
117.5°	423.8	423.1	374.1	321.1	304.8	236.1	173.3	134.7	122.3	134.7	173.3
120°	455.8	450.6	404.8	349.9	342.0	272.7	208.6	170.1	157.6	170.1	208.6
122.5°	479.1	474.8	431.0	377.3	377.3	310.0	242.6	204.1	192.0	204.1	242.6
125°	499.3	498.0	451.6	404.8	415.3	344.7	281.6	242.3	227.9	242.3	281.6
127.5°	517.6	519.6	477.1	435.9	454.9	381.0	318.8	275.7	260.6	275.7	318.8
130°	533.3	539.9	501.3	463.4	491.5	419.5	352.2	309.0	299.2	309.0	352.2
132.5°	564.1	560.1	526.1	491.5	530.7	454.9	387.5	342.4	331.3	342.4	387.5
135°	579.8	581.1	547.7	515.7	567.3	490.2	420.9	376.4	365.3	376.4	420.9
137.5°	598.7	594.8	564.7	545.1	601.3	524.2	453.5	412.4	394.7	412.4	453.5
140°	612.4	611.8	586.9	571.3	638.0	557.5	486.9	445.0	428.7	445.0	486.9
142.5°	626.8	630.8	609.2	600.0	674.6	592.8	522.9	477.1	461.4	477.1	522.9
145°	636.6	646.1	631.4	636.0	709.2	632.1	554.3	508.8	490.8	508.8	554.3
147.5°	654.0	665.1	648.8	661.5	739.3	666.7	586.6	540.9	525.8	540.9	586.6
150°	676.2	681.5	671.6	696.8	770.0	705.3	618.7	571.6	556.6	571.6	618.7
152.5°	693.9	700.4	689.3	735.4	794.2	740.6	654.0	601.7	584.0	601.7	654.0
155°	712.2	714.8	707.0	772.7	819.7	775.3	682.1	635.0	618.0	635.0	682.1
157.5°	729.2	734.4	724.3	800.8	842.0	805.4	713.2	668.4	653.3	668.4	713.2
160°	747.5	747.5	751.7	833.5	860.3	831.5	747.2	705.0	684.1	705.0	747.2
162.5°	749.5	761.9	789.0	856.4	877.9	854.4	783.8	731.2	712.8	731.2	783.8
165°	778.2	788.4	830.9	876.6	891.7	874.7	828.9	773.3	752.7	773.3	828.9
167.5°	808.3	830.9	864.9	899.5	904.7	893.6	863.6	825.0	806.4	825.0	863.6
170°	856.4	876.6	893.6	908.0	915.2	908.7	885.1	866.2	853.7	866.2	885.1
172.5°	893.9	908.0	914.6	923.7	919.1	916.5	904.7	895.6	888.1	895.6	904.7
175°	918.1	921.8	927.6	925.4	929.3	922.1	921.8	926.3	898.5	926.3	921.8
177.5°	926.6	931.2	928.9	924.1	924.7	923.4	925.0	926.6	922.7	926.6	925.0
180°	927.6	927.6	927.6	927.6	927.6	927.6	927.6	927.6	927.6	927.6	927.6



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1380.6	1380.6	1380.6	1380.6	1380.6	1380.6
2.5°	1374.2	1375.9	1374.9	1388.2	1383.9	1375.6
5°	1372.2	1369.2	1372.2	1373.2	1373.9	1383.6
7.5°	1358.6	1356.2	1359.2	1360.6	1367.6	1361.3
10°	1340.9	1342.6	1341.6	1348.6	1349.6	1344.9
12.5°	1319.9	1322.3	1319.9	1327.9	1328.6	1325.2
15°	1295.3	1297.3	1295.9	1298.9	1299.6	1299.9
17.5°	1274.3	1274.3	1274.3	1273.9	1274.6	1271.9
20°	1240.6	1241.6	1241.3	1246.9	1245.2	1239.9
22.5°	1199.6	1208.6	1200.3	1207.9	1205.2	1204.2
25°	1168.6	1168.6	1169.3	1173.6	1164.2	1163.2
27.5°	1127.3	1132.6	1127.9	1131.6	1119.2	1119.2
30°	1096.3	1090.6	1097.6	1083.2	1076.2	1067.2
32.5°	1040.3	1049.3	1041.6	1031.2	1021.2	1016.2
35°	996.6	1001.6	998.6	979.6	956.6	956.6
37.5°	941.6	949.3	943.6	914.6	894.6	892.6
40°	888.6	896.3	889.9	852.6	833.6	837.6
42.5°	827.6	844.3	828.9	782.9	773.6	779.6
45°	759.6	783.3	760.9	717.9	715.9	727.9
47.5°	686.6	723.3	687.3	658.9	666.9	670.9
50°	621.0	648.6	622.3	598.9	610.9	618.9
52.5°	556.0	562.6	557.3	543.3	565.9	572.9
55°	487.3	476.0	488.6	495.3	518.3	519.3
57.5°	423.3	401.0	424.6	436.3	469.3	471.3
60°	352.3	341.0	353.0	381.6	417.6	424.6
62.5°	293.3	291.3	294.0	324.6	368.6	372.6
65°	244.3	246.3	245.0	273.0	310.0	325.0
67.5°	201.3	209.3	201.3	227.0	259.0	274.0
70°	164.3	176.3	164.3	185.3	209.3	229.3
72.5°	133.7	144.7	134.3	149.3	167.3	188.3
75°	107.7	117.7	107.7	115.7	132.3	151.3
77.5°	83.7	95.7	83.7	87.7	109.9	132.5
80°	62.7	70.7	62.7	69.6	101.1	116.7
82.5°	44.7	48.7	44.7	66.5	102.5	113.3
85°	34.3	27.7	35.6	70.8	111.1	118.6
87.5°	28.3	8.0	37.4	82.8	126.3	129.2
90°	18.3	1.7	43.2	99.4	143.1	144.7
92.5°	9.3	11.5	54.4	117.5	162.6	167.4
95°	3.6	27.2	69.0	137.7	182.0	185.9
97.5°	8.8	47.4	92.5	155.4	202.4	207.7
100°	22.6	72.3	120.7	178.9	220.6	224.2
102.5°	41.5	99.1	147.5	205.7	243.6	254.5
105°	67.0	129.8	175.6	237.7	272.7	281.9
107.5°	96.5	162.5	204.4	267.5	303.5	310.0
110°	127.9	196.5	233.1	295.6	334.8	342.7



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	162.9	231.8	264.2	321.8	368.2	374.1
115°	201.4	265.5	292.3	351.8	395.0	398.3
117.5°	236.1	304.8	321.1	374.1	423.1	423.8
120°	272.7	342.0	349.9	404.8	450.6	455.8
122.5°	310.0	377.3	377.3	431.0	474.8	479.1
125°	344.7	415.3	404.8	451.6	498.0	499.3
127.5°	381.0	454.9	435.9	477.1	519.6	517.6
130°	419.5	491.5	463.4	501.3	539.9	533.3
132.5°	454.9	530.7	491.5	526.1	560.1	564.1
135°	490.2	567.3	515.7	547.7	581.1	579.8
137.5°	524.2	601.3	545.1	564.7	594.8	598.7
140°	557.5	638.0	571.3	586.9	611.8	612.4
142.5°	592.8	674.6	600.0	609.2	630.8	626.8
145°	632.1	709.2	636.0	631.4	646.1	636.6
147.5°	666.7	739.3	661.5	648.8	665.1	654.0
150°	705.3	770.0	696.8	671.6	681.5	676.2
152.5°	740.6	794.2	735.4	689.3	700.4	693.9
155°	775.3	819.7	772.7	707.0	714.8	712.2
157.5°	805.4	842.0	800.8	724.3	734.4	729.2
160°	831.5	860.3	833.5	751.7	747.5	747.5
162.5°	854.4	877.9	856.4	789.0	761.9	749.5
165°	874.7	891.7	876.6	830.9	788.4	778.2
167.5°	893.6	904.7	899.5	864.9	830.9	808.3
170°	908.7	915.2	908.0	893.6	876.6	856.4
172.5°	916.5	919.1	923.7	914.6	908.0	893.9
175°	922.1	929.3	925.4	927.6	921.8	918.1
177.5°	923.4	924.7	924.1	928.9	931.2	926.6
180°	927.6	927.6	927.6	927.6	927.6	927.6

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