

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: P382175

Luminaire Tested: **MWL-2-22-31-UNV-L830-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P382175
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-L830-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

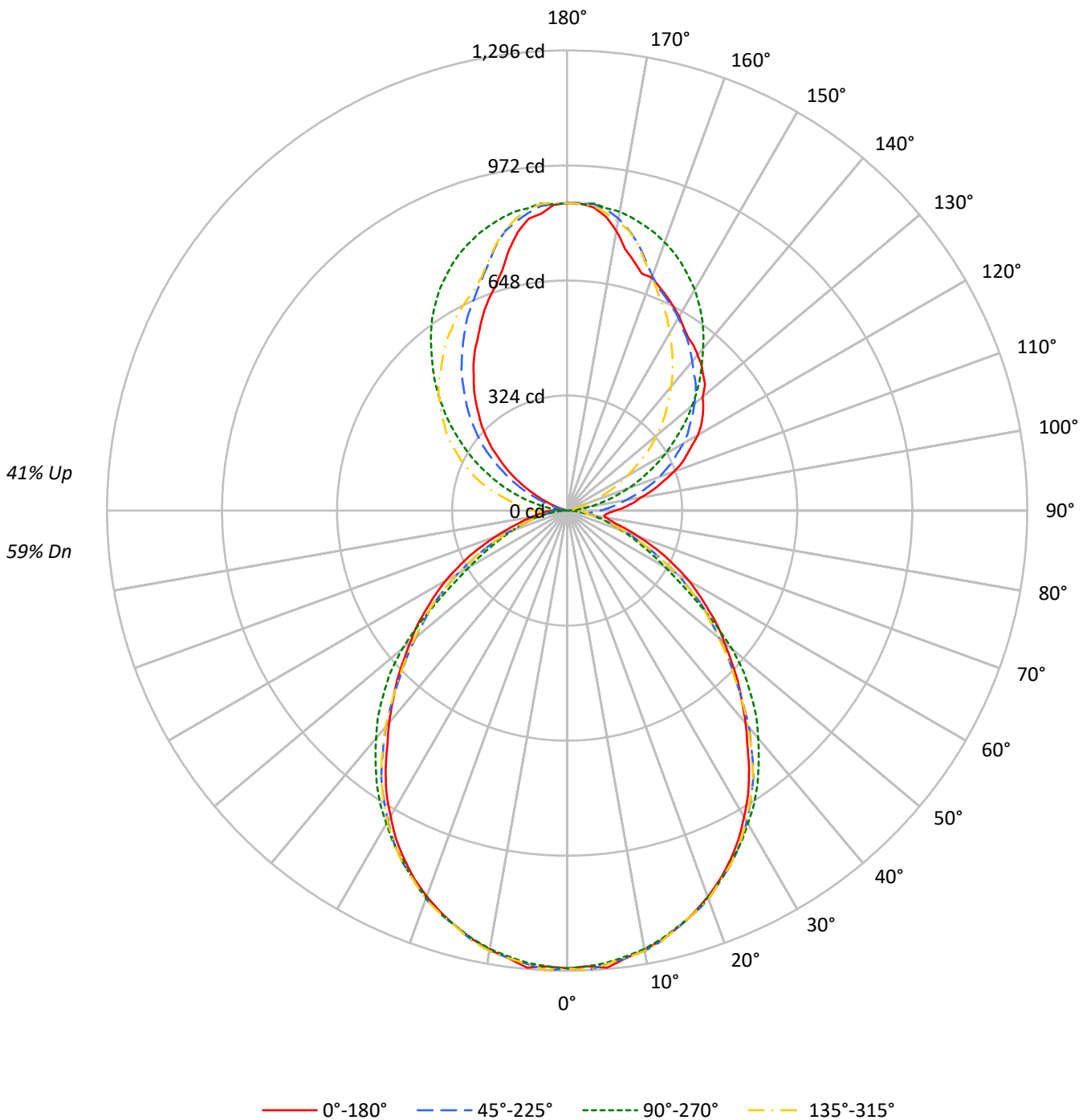
Lumens per Lamp: N/A
Luminaire Lumens: 5011.0 lumens
Efficiency: N/A
Efficacy: 92.1 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

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°	16652	16652	16652	16652
5°	16452	15245	16452	15245
10°	15889	13979	15889	13979
15°	15374	12776	15350	12776
20°	14793	11684	14770	11684
25°	14110	10607	14086	10607
30°	13268	9630	13235	9630
35°	12293	8674	12267	8674
40°	11227	7674	11191	7674
45°	10275	6681	10248	6681
50°	9303	5553	9276	5553
55°	8416	4122	8395	4122
60°	7527	3011	7516	3011
65°	6412	2236	6412	2236
70°	5142	1659	5159	1659
75°	3967	1159	4021	1159
80°	3717	736	3318	736
85°	4856	309	3116	309



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	121.6	2.4
10°-20°	342.1	6.8
20°-30°	501.6	10.0
30°-40°	569.0	11.4
40°-50°	530.9	10.6
50°-60°	416.4	8.3
60°-70°	259.9	5.2
70°-80°	125.8	2.5
80°-90°	66.6	1.3
90°-100°	75.9	1.5
100°-110°	134.1	2.7
110°-120°	230.6	4.6
120°-130°	313.3	6.3
130°-140°	357.3	7.1
140°-150°	356.3	7.1
150°-160°	310.2	6.2
160°-170°	218.1	4.4
170°-180°	81.2	1.6
0°-30°	965.3	19.3
0°-40°	1534.3	30.6
0°-60°	2481.7	49.5
0°-90°	2934.0	58.6
90°-120°	440.6	8.8
90°-150°	1467.6	29.3
90°-180°	2077.0	41.4
0°-180°	5011.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1289	1289	1289	1289	1289	
5°	1292	1279	1292	1279	1292	122
15°	1214	1211	1212	1211	1214	342
25°	1086	1091	1084	1091	1086	499
35°	893	935	891	935	893	557
45°	680	732	678	732	680	523
55°	485	444	484	444	485	435
65°	304	230	304	230	304	300
75°	141	110	143	110	141	159
85°	111	26	71	26	111	90
90°	135	2	44	2	135	75
95°	174	25	29	25	174	150
105°	263	121	6	121	263	279
115°	372	248	86	248	372	369
125°	466	388	213	388	466	416
135°	541	530	341	530	541	418
145°	594	662	458	662	594	375
155°	665	765	577	765	665	307
165°	727	833	703	833	727	206
175°	857	868	839	868	857	80
180°	866	866	866	866	866	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1289.2	1289.2	1289.2	1289.2	1289.2	1289.2	1289.2	1289.2	1289.2	1289.2	1289.2
2.5°	1284.6	1292.3	1296.3	1283.9	1284.8	1283.2	1296.3	1292.3	1285.2	1292.3	1296.3
5°	1292.0	1283.0	1282.3	1281.4	1278.6	1281.4	1281.8	1283.0	1292.0	1283.0	1281.8
7.5°	1271.2	1277.1	1270.5	1269.2	1266.4	1268.7	1269.9	1276.4	1271.2	1276.4	1269.9
10°	1255.9	1260.3	1259.3	1252.8	1253.7	1252.1	1258.7	1259.1	1255.9	1259.1	1258.7
12.5°	1237.5	1240.7	1240.0	1232.5	1234.8	1232.5	1240.0	1239.4	1236.3	1239.4	1240.0
15°	1213.9	1213.6	1212.9	1210.1	1211.4	1209.6	1212.4	1212.4	1212.0	1212.4	1212.4
17.5°	1187.7	1190.2	1189.6	1190.0	1190.0	1190.0	1189.0	1189.6	1185.8	1189.6	1189.0
20°	1157.8	1162.8	1164.4	1159.1	1159.4	1158.5	1163.8	1161.6	1156.0	1161.6	1163.8
22.5°	1124.5	1125.4	1128.0	1120.9	1128.6	1120.2	1127.4	1124.2	1123.3	1124.2	1127.4
25°	1086.2	1087.1	1095.9	1091.9	1091.3	1091.3	1094.7	1085.4	1084.4	1085.4	1094.7
27.5°	1045.1	1045.1	1056.7	1053.2	1057.6	1052.7	1055.5	1043.3	1043.3	1043.3	1055.5
30°	996.6	1005.0	1011.5	1025.0	1018.4	1023.7	1009.7	1003.2	994.1	1003.2	1009.7
32.5°	948.9	953.6	962.9	972.7	979.8	971.4	961.2	951.2	946.5	951.2	961.2
35°	893.3	893.3	914.8	932.5	935.3	930.6	912.9	891.4	891.4	891.4	912.9
37.5°	833.5	835.4	854.1	881.1	886.5	879.3	852.2	833.5	831.7	833.5	852.2
40°	782.2	778.4	796.2	831.0	837.0	829.8	793.7	776.0	779.7	776.0	793.7
42.5°	728.0	722.4	731.1	774.0	788.4	772.8	729.3	720.0	725.6	720.0	729.3
45°	679.7	668.5	670.4	710.5	731.5	709.3	668.0	666.7	677.9	666.7	668.0
47.5°	626.5	622.8	615.3	641.8	675.4	641.2	612.9	621.0	624.7	621.0	612.9
50°	577.9	570.5	559.3	581.1	605.7	579.9	556.8	568.0	576.2	568.0	556.8
52.5°	535.0	528.4	507.3	520.4	525.4	519.2	505.5	526.0	533.2	526.0	505.5
55°	484.9	484.0	462.5	456.3	444.5	455.0	460.6	482.1	483.7	482.1	460.6
57.5°	440.1	438.2	407.4	396.5	374.5	395.3	405.6	436.4	438.9	436.4	405.6
60°	396.5	390.0	356.3	329.6	318.4	329.0	355.1	388.7	395.9	388.7	355.1
62.5°	347.9	344.2	303.1	274.5	272.0	273.9	301.9	343.0	347.4	343.0	301.9
65°	303.5	289.5	254.9	228.8	230.0	228.1	254.3	288.8	303.5	288.8	254.3
67.5°	255.9	241.9	212.0	188.0	195.4	188.0	211.3	241.2	255.9	241.2	211.3
70°	214.1	195.4	173.0	153.4	164.6	153.4	173.0	196.1	214.8	196.1	173.0
72.5°	175.8	156.2	139.4	125.4	135.1	124.9	139.4	156.9	177.1	156.9	139.4
75°	141.3	123.5	108.0	100.6	109.9	100.6	108.6	124.2	143.2	124.2	108.6
77.5°	123.7	102.6	81.9	78.2	89.4	78.2	82.5	100.9	121.3	100.9	82.5
80°	109.0	94.4	65.0	58.6	66.0	58.6	63.8	84.6	97.3	84.6	63.8
82.5°	105.8	95.7	62.1	41.7	45.5	41.7	54.7	73.7	82.6	73.7	54.7
85°	110.8	103.7	66.1	33.2	25.9	32.0	48.5	66.5	71.1	66.5	48.5
87.5°	120.6	117.9	77.3	34.9	7.5	26.4	42.5	59.3	57.7	59.3	42.5
90°	135.1	133.6	92.8	40.3	1.6	17.1	32.3	47.5	43.5	47.5	32.3
92.5°	156.3	151.8	109.7	50.8	10.7	8.7	26.1	38.8	36.7	38.8	26.1
95°	173.6	170.0	128.6	64.4	25.4	3.4	18.7	28.3	28.9	28.3	18.7
97.5°	194.0	189.0	145.1	86.4	44.3	8.2	10.2	21.1	23.0	21.1	10.2
100°	209.4	206.0	167.1	112.7	67.5	21.1	5.2	14.2	17.0	14.2	5.2
102.5°	237.7	227.5	192.1	137.7	92.5	38.8	10.1	7.7	10.5	7.7	10.1
105°	263.2	254.7	222.0	164.0	121.2	62.6	24.7	9.2	6.2	9.2	24.7
107.5°	289.5	283.4	249.8	190.9	151.7	90.1	46.4	24.5	15.9	24.5	46.4
110°	320.0	312.6	276.0	217.7	183.5	119.4	70.2	44.0	34.3	44.0	70.2



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CATALOG NUMBER: MWL-2-22-31-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	349.3	343.8	300.5	246.7	216.5	152.1	99.5	68.4	59.3	68.4	99.5
115°	371.9	368.9	328.5	273.0	247.9	188.1	131.9	97.1	86.1	97.1	131.9
117.5°	395.7	395.1	349.3	299.8	284.6	220.5	161.8	125.8	114.2	125.8	161.8
120°	425.6	420.8	378.0	326.7	319.4	254.7	194.8	158.8	147.2	158.8	194.8
122.5°	447.4	443.4	402.5	352.3	352.3	289.5	226.5	190.6	179.3	190.6	226.5
125°	466.3	465.0	421.7	378.0	387.8	321.9	263.0	226.3	212.8	226.3	263.0
127.5°	483.3	485.2	445.5	407.0	424.8	355.8	297.7	257.5	243.4	257.5	297.7
130°	498.0	504.2	468.1	432.7	459.0	391.7	328.9	288.5	279.4	288.5	328.9
132.5°	526.8	523.0	491.3	459.0	495.6	424.8	361.9	319.7	309.4	319.7	361.9
135°	541.4	542.6	511.4	481.6	529.8	457.8	393.0	351.5	341.1	351.5	393.0
137.5°	559.1	555.4	527.3	509.0	561.5	489.5	423.5	385.1	368.6	385.1	423.5
140°	571.9	571.3	548.1	533.5	595.8	520.6	454.7	415.5	400.3	415.5	454.7
142.5°	585.3	589.0	568.9	560.3	629.9	553.6	488.3	445.5	430.9	445.5	488.3
145°	594.5	603.3	589.6	593.9	662.3	590.3	517.6	475.1	458.3	475.1	517.6
147.5°	610.7	621.1	605.9	617.7	690.4	622.6	547.8	505.1	491.0	505.1	547.8
150°	631.4	636.4	627.1	650.7	719.0	658.6	577.7	533.8	519.8	533.8	577.7
152.5°	648.0	654.0	643.7	686.7	741.6	691.6	610.7	561.9	545.3	561.9	610.7
155°	665.1	667.5	660.2	721.6	765.4	724.0	637.0	593.0	577.1	593.0	637.0
157.5°	680.9	685.8	676.4	747.8	786.3	752.1	666.0	624.2	610.1	624.2	666.0
160°	698.0	698.0	701.9	778.3	803.4	776.5	697.7	658.3	638.8	658.3	697.7
162.5°	699.9	711.5	736.8	799.7	819.8	797.8	731.9	682.8	665.6	682.8	731.9
165°	726.7	736.2	775.9	818.6	832.7	816.8	774.0	722.1	702.9	722.1	774.0
167.5°	754.8	775.9	807.7	840.0	844.8	834.5	806.4	770.4	753.0	770.4	806.4
170°	799.7	818.6	834.5	847.9	854.6	848.6	826.5	808.9	797.2	808.9	826.5
172.5°	834.7	847.9	854.1	862.6	858.3	855.8	844.8	836.3	829.3	836.3	844.8
175°	857.3	860.8	866.2	864.1	867.8	861.1	860.8	865.0	839.0	865.0	860.8
177.5°	865.3	869.6	867.4	862.9	863.5	862.3	863.8	865.3	861.6	865.3	863.8
180°	866.2	866.2	866.2	866.2	866.2	866.2	866.2	866.2	866.2	866.2	866.2



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CATALOG NUMBER: MWL-2-22-31-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1289.2	1289.2	1289.2	1289.2	1289.2	1289.2
2.5°	1283.2	1284.8	1283.9	1296.3	1292.3	1284.6
5°	1281.4	1278.6	1281.4	1282.3	1283.0	1292.0
7.5°	1268.7	1266.4	1269.2	1270.5	1277.1	1271.2
10°	1252.1	1253.7	1252.8	1259.3	1260.3	1255.9
12.5°	1232.5	1234.8	1232.5	1240.0	1240.7	1237.5
15°	1209.6	1211.4	1210.1	1212.9	1213.6	1213.9
17.5°	1190.0	1190.0	1190.0	1189.6	1190.2	1187.7
20°	1158.5	1159.4	1159.1	1164.4	1162.8	1157.8
22.5°	1120.2	1128.6	1120.9	1128.0	1125.4	1124.5
25°	1091.3	1091.3	1091.9	1095.9	1087.1	1086.2
27.5°	1052.7	1057.6	1053.2	1056.7	1045.1	1045.1
30°	1023.7	1018.4	1025.0	1011.5	1005.0	996.6
32.5°	971.4	979.8	972.7	962.9	953.6	948.9
35°	930.6	935.3	932.5	914.8	893.3	893.3
37.5°	879.3	886.5	881.1	854.1	835.4	833.5
40°	829.8	837.0	831.0	796.2	778.4	782.2
42.5°	772.8	788.4	774.0	731.1	722.4	728.0
45°	709.3	731.5	710.5	670.4	668.5	679.7
47.5°	641.2	675.4	641.8	615.3	622.8	626.5
50°	579.9	605.7	581.1	559.3	570.5	577.9
52.5°	519.2	525.4	520.4	507.3	528.4	535.0
55°	455.0	444.5	456.3	462.5	484.0	484.9
57.5°	395.3	374.5	396.5	407.4	438.2	440.1
60°	329.0	318.4	329.6	356.3	390.0	396.5
62.5°	273.9	272.0	274.5	303.1	344.2	347.9
65°	228.1	230.0	228.8	254.9	289.5	303.5
67.5°	188.0	195.4	188.0	212.0	241.9	255.9
70°	153.4	164.6	153.4	173.0	195.4	214.1
72.5°	124.9	135.1	125.4	139.4	156.2	175.8
75°	100.6	109.9	100.6	108.0	123.5	141.3
77.5°	78.2	89.4	78.2	81.9	102.6	123.7
80°	58.6	66.0	58.6	65.0	94.4	109.0
82.5°	41.7	45.5	41.7	62.1	95.7	105.8
85°	32.0	25.9	33.2	66.1	103.7	110.8
87.5°	26.4	7.5	34.9	77.3	117.9	120.6
90°	17.1	1.6	40.3	92.8	133.6	135.1
92.5°	8.7	10.7	50.8	109.7	151.8	156.3
95°	3.4	25.4	64.4	128.6	170.0	173.6
97.5°	8.2	44.3	86.4	145.1	189.0	194.0
100°	21.1	67.5	112.7	167.1	206.0	209.4
102.5°	38.8	92.5	137.7	192.1	227.5	237.7
105°	62.6	121.2	164.0	222.0	254.7	263.2
107.5°	90.1	151.7	190.9	249.8	283.4	289.5
110°	119.4	183.5	217.7	276.0	312.6	320.0



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	152.1	216.5	246.7	300.5	343.8	349.3
115°	188.1	247.9	273.0	328.5	368.9	371.9
117.5°	220.5	284.6	299.8	349.3	395.1	395.7
120°	254.7	319.4	326.7	378.0	420.8	425.6
122.5°	289.5	352.3	352.3	402.5	443.4	447.4
125°	321.9	387.8	378.0	421.7	465.0	466.3
127.5°	355.8	424.8	407.0	445.5	485.2	483.3
130°	391.7	459.0	432.7	468.1	504.2	498.0
132.5°	424.8	495.6	459.0	491.3	523.0	526.8
135°	457.8	529.8	481.6	511.4	542.6	541.4
137.5°	489.5	561.5	509.0	527.3	555.4	559.1
140°	520.6	595.8	533.5	548.1	571.3	571.9
142.5°	553.6	629.9	560.3	568.9	589.0	585.3
145°	590.3	662.3	593.9	589.6	603.3	594.5
147.5°	622.6	690.4	617.7	605.9	621.1	610.7
150°	658.6	719.0	650.7	627.1	636.4	631.4
152.5°	691.6	741.6	686.7	643.7	654.0	648.0
155°	724.0	765.4	721.6	660.2	667.5	665.1
157.5°	752.1	786.3	747.8	676.4	685.8	680.9
160°	776.5	803.4	778.3	701.9	698.0	698.0
162.5°	797.8	819.8	799.7	736.8	711.5	699.9
165°	816.8	832.7	818.6	775.9	736.2	726.7
167.5°	834.5	844.8	840.0	807.7	775.9	754.8
170°	848.6	854.6	847.9	834.5	818.6	799.7
172.5°	855.8	858.3	862.6	854.1	847.9	834.7
175°	861.1	867.8	864.1	866.2	860.8	857.3
177.5°	862.3	863.5	862.9	867.4	869.6	865.3
180°	866.2	866.2	866.2	866.2	866.2	866.2

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