

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: P392540

Luminaire Tested: **MWL-2-35-23-UNV-L840-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392540  
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-2-35-23-UNV-L840-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

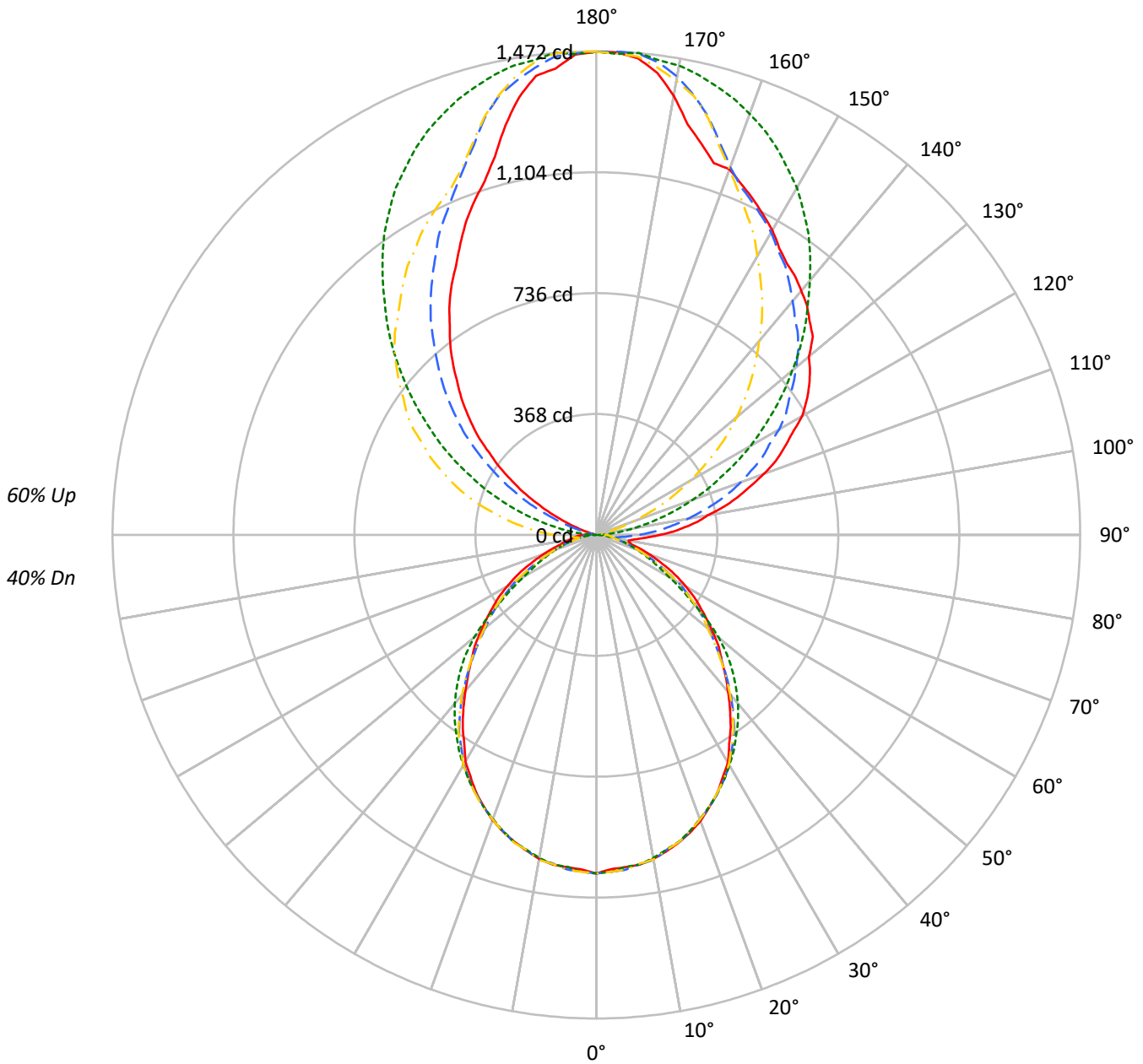
Lumens per Lamp: N/A  
Luminaire Lumens: 5855.9 lumens  
Efficiency: N/A  
Efficacy: 90.2 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')  
CIE Type: General Diffuse

Input Watts (W): 64.9  
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



TEST NUMBER: P392540  
CATALOG NUMBER: MWL-2-35-23-UNV-L840-EDD

### Luminous Intensity Polar Plot



— 0°-180°    - - 45°-225°    - - - 90°-270°    - - - 135°-315°



TEST NUMBER: P392540

CATALOG NUMBER: MWL-2-35-23-UNV-L840-EDD

**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	105	105	105	105	95	95	95	95	78	78	78	62	62	62	47	47	47	40
1	96	92	88	84	87	83	80	77	68	66	64	55	53	52	42	41	40	34
2	87	80	74	69	79	73	68	64	60	57	54	48	46	44	37	36	34	29
3	80	71	64	58	73	65	59	54	53	49	45	43	40	37	33	31	29	25
4	73	63	55	49	66	58	51	46	48	43	39	38	35	32	30	28	26	22
5	67	56	48	42	61	51	45	39	43	38	34	35	31	28	27	25	23	19
6	62	50	42	37	56	46	39	34	39	33	29	31	28	25	25	22	20	17
7	57	45	38	32	52	42	35	30	35	30	26	29	25	22	23	20	18	15
8	53	41	34	29	48	38	31	27	32	27	23	26	22	20	21	18	16	14
9	50	38	30	25	45	35	28	24	29	24	21	24	20	18	19	16	14	12
10	46	35	27	23	42	32	26	21	27	22	19	22	19	16	18	15	13	11

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°	270°
0°	13308	13308	13308	13308
5°	12927	12093	12927	12093
10°	12666	11131	12666	11131
15°	12276	10201	12237	10201
20°	11835	9273	11796	9273
25°	11279	8448	11239	8448
30°	10655	7652	10600	7652
35°	9802	6883	9759	6883
40°	8946	6145	8886	6145
45°	8151	5345	8104	5345
50°	7457	4448	7407	4448
55°	6720	3303	6684	3303
60°	5965	2403	5944	2403
65°	5093	1799	5093	1799
70°	4085	1331	4109	1331
75°	3119	939	3206	939
80°	3410	580	2738	580
85°	5751	250	2792	250



TEST NUMBER: P392540

CATALOG NUMBER: MWL-2-35-23-UNV-L840-EDD

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	96.8	1.7
10°-20°	272.5	4.7
20°-30°	399.9	6.8
30°-40°	453.8	7.7
40°-50°	423.4	7.2
50°-60°	331.2	5.7
60°-70°	205.7	3.5
70°-80°	100.5	1.7
80°-90°	67.3	1.1
90°-100°	113.3	1.9
100°-110°	226.1	3.9
110°-120°	390.4	6.7
120°-130°	531.0	9.1
130°-140°	605.5	10.3
140°-150°	604.2	10.3
150°-160°	526.2	9.0
160°-170°	370.0	6.3
170°-180°	137.8	2.4
0°-30°	769.3	13.1
0°-40°	1223.1	20.9
0°-60°	1977.7	33.8
0°-90°	2351.2	40.2
90°-120°	729.8	12.5
90°-150°	2470.6	42.2
90°-180°	3505.0	59.9
0°-180°	5855.9	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1030	1030	1030	1030	1030	
5°	1015	1014	1015	1014	1015	97
15°	969	967	966	967	969	273
25°	868	869	865	869	868	399
35°	712	742	709	742	712	444
45°	539	585	536	585	539	418
55°	387	356	385	356	387	347
65°	241	185	241	185	241	238
75°	111	89	114	89	111	128
85°	131	21	64	21	131	101
90°	193	1	37	1	193	107
95°	270	42	24	42	270	237
105°	446	206	8	206	446	469
115°	631	420	145	420	631	626
125°	790	658	359	658	790	706
135°	918	898	577	898	918	709
145°	1009	1124	778	1124	1009	636
155°	1128	1299	978	1299	1128	520
165°	1233	1413	1192	1413	1233	350
175°	1456	1472	1425	1472	1456	136
180°	1470	1470	1470	1470	1470	



TEST NUMBER: P392540

CATALOG NUMBER: MWL-2-35-23-UNV-L840-EDD

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1030.3	1030.3	1030.3	1030.3	1030.3	1030.3	1030.3	1030.3	1030.3	1030.3	1030.3
2.5°	1018.2	1030.2	1026.3	1026.3	1026.3	1025.3	1026.3	1030.2	1019.2	1030.2	1026.3
5°	1015.2	1024.2	1023.3	1022.3	1014.3	1022.3	1022.3	1024.2	1015.2	1024.2	1022.3
7.5°	1012.2	1017.3	1010.3	1013.3	1011.3	1012.3	1009.2	1016.2	1012.2	1016.2	1009.2
10°	1001.2	1003.3	1004.3	999.3	998.3	998.2	1003.2	1001.2	1001.2	1001.2	1003.2
12.5°	986.3	987.3	982.2	985.2	981.2	985.2	982.2	985.2	984.2	985.2	982.2
15°	969.3	973.3	969.2	966.2	967.2	965.2	968.2	971.2	966.2	971.2	968.2
17.5°	949.3	950.3	946.2	945.2	945.2	945.2	945.2	949.2	946.2	949.2	945.2
20°	926.3	926.3	922.2	920.2	920.2	919.2	921.2	924.2	923.2	924.2	921.2
22.5°	897.3	902.3	897.2	899.2	896.2	898.2	896.2	900.2	895.2	900.2	896.2
25°	868.3	871.3	870.3	873.2	869.2	872.2	868.2	868.2	865.2	868.2	868.2
27.5°	832.3	836.3	840.3	843.2	841.2	842.2	838.2	833.2	829.2	833.2	838.2
30°	800.3	798.3	809.3	811.3	809.2	809.2	806.2	795.2	796.2	795.2	806.2
32.5°	752.3	758.3	768.3	779.3	778.2	777.2	765.2	754.2	748.2	754.2	765.2
35°	712.3	716.3	731.3	744.3	742.2	741.2	728.2	713.2	709.2	713.2	728.2
37.5°	667.3	668.3	684.3	706.3	708.2	703.2	681.2	665.2	664.2	665.2	681.2
40°	623.3	622.3	636.3	661.2	670.2	659.2	632.1	618.1	619.1	618.1	632.1
42.5°	581.3	577.3	586.2	619.2	628.2	617.2	583.1	573.1	577.1	573.1	583.1
45°	539.2	534.2	537.2	567.2	585.2	565.2	533.1	531.1	536.1	531.1	533.1
47.5°	505.2	492.2	489.2	514.2	539.2	513.2	485.1	489.1	502.1	489.1	485.1
50°	463.2	456.2	446.2	464.2	485.2	462.1	442.1	452.1	460.1	452.1	442.1
52.5°	424.2	421.2	406.2	414.2	423.2	412.1	403.1	417.1	421.1	417.1	403.1
55°	387.2	382.2	366.2	363.2	356.1	361.1	363.1	379.1	385.1	379.1	363.1
57.5°	353.2	346.2	324.2	315.2	303.1	313.1	321.1	343.1	351.1	343.1	321.1
60°	314.2	308.2	285.2	263.1	254.1	262.1	283.1	306.1	313.1	306.1	283.1
62.5°	278.2	268.2	240.2	219.1	216.1	218.1	238.1	266.1	277.1	266.1	238.1
65°	241.1	226.1	202.1	182.1	185.1	181.1	201.1	225.1	241.1	225.1	201.1
67.5°	202.1	189.1	168.1	149.1	157.1	149.1	167.1	188.1	202.1	188.1	167.1
70°	170.1	154.1	137.1	123.1	132.1	123.1	137.1	155.1	171.1	155.1	137.1
72.5°	138.1	124.1	110.1	101.1	107.0	100.0	110.1	125.1	140.2	125.1	110.1
75°	111.1	98.1	86.0	79.0	89.0	79.0	87.1	99.1	114.2	99.1	87.1
77.5°	100.4	83.2	65.0	63.0	71.0	63.0	66.1	80.1	96.2	80.1	66.1
80°	100.0	84.8	53.2	47.0	52.0	47.0	51.1	68.2	80.3	68.2	51.1
82.5°	111.0	97.6	57.6	34.0	37.0	34.0	45.2	60.2	71.5	60.2	45.2
85°	131.2	120.8	73.5	28.2	21.0	26.1	43.3	57.4	63.7	57.4	43.3
87.5°	159.5	153.2	98.6	37.7	5.0	23.2	39.4	53.5	52.6	53.5	39.4
90°	193.0	186.7	131.0	53.5	1.0	14.1	28.2	40.2	37.3	40.2	28.2
92.5°	233.7	224.3	164.4	78.7	16.6	7.1	22.1	32.2	30.2	32.2	22.1
95°	270.2	264.0	202.0	109.0	41.5	5.2	15.1	23.1	24.1	23.1	15.1
97.5°	310.9	303.7	240.7	146.4	74.7	13.5	11.2	18.2	20.2	18.2	11.2
100°	344.4	340.4	283.5	191.0	114.2	35.3	8.3	14.3	17.3	14.3	8.3
102.5°	397.6	384.2	326.1	233.6	156.8	65.4	16.6	10.3	11.3	10.3	16.6
105°	445.5	430.9	376.9	278.3	205.6	105.9	41.5	13.5	8.3	13.5	41.5
107.5°	490.1	479.7	422.6	324.0	257.5	152.6	76.8	39.4	24.9	39.4	76.8
110°	542.1	529.6	467.3	369.7	311.5	202.5	117.3	72.7	56.0	72.7	117.3



TEST NUMBER: P392540

CATALOG NUMBER: MWL-2-35-23-UNV-L840-EDD

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	591.9	582.6	508.8	417.4	367.6	256.5	167.2	114.2	98.6	114.2	167.2
115°	631.3	625.1	556.6	462.1	419.5	317.7	222.2	163.0	145.3	163.0	222.2
117.5°	671.8	670.8	591.9	507.8	481.8	372.8	273.1	212.8	193.1	212.8	273.1
120°	722.7	714.4	641.7	554.5	542.0	431.9	330.2	268.9	249.2	268.9	330.2
122.5°	758.0	752.8	683.3	598.1	598.1	491.1	384.2	322.9	302.1	322.9	384.2
125°	790.2	788.1	714.4	641.7	658.3	546.2	444.4	382.1	359.2	382.1	444.4
127.5°	819.3	822.4	754.9	689.5	719.6	602.3	503.6	435.1	411.2	435.1	503.6
130°	844.2	854.6	793.3	733.1	777.8	663.5	556.6	488.0	472.4	488.0	556.6
132.5°	893.0	886.8	832.8	777.8	840.1	719.6	612.6	541.0	523.3	541.0	612.6
135°	918.0	920.0	867.1	816.2	898.2	775.7	665.6	595.0	577.3	595.0	665.6
137.5°	948.1	941.8	894.1	862.9	952.2	829.7	717.5	652.1	624.1	652.1	717.5
140°	969.9	968.8	929.4	904.5	1010.4	882.7	770.5	704.0	678.1	704.0	770.5
142.5°	992.7	999.0	964.7	950.2	1068.5	938.7	827.6	754.9	730.0	754.9	827.6
145°	1009.3	1022.8	1001.0	1007.3	1123.6	1001.0	878.5	804.7	777.7	804.7	878.5
147.5°	1035.3	1052.9	1027.0	1048.8	1171.4	1057.1	928.3	855.6	831.7	855.6	928.3
150°	1070.6	1078.9	1063.3	1103.9	1220.2	1117.4	979.2	904.4	880.5	904.4	979.2
152.5°	1098.6	1109.0	1091.4	1165.1	1258.6	1173.4	1035.3	952.2	924.2	952.2	1035.3
155°	1127.7	1131.9	1119.4	1224.3	1299.1	1228.5	1079.9	1005.2	978.2	1005.2	1079.9
157.5°	1154.7	1163.0	1147.5	1269.0	1334.4	1276.2	1129.8	1058.1	1034.2	1058.1	1129.8
160°	1183.8	1183.8	1191.1	1320.9	1363.5	1317.8	1183.8	1116.3	1083.0	1116.3	1183.8
162.5°	1186.9	1206.6	1250.3	1357.2	1391.5	1354.1	1242.0	1157.8	1128.7	1157.8	1242.0
165°	1232.6	1249.2	1316.7	1389.4	1413.3	1386.3	1313.6	1225.4	1192.1	1225.4	1313.6
167.5°	1280.4	1316.7	1370.7	1425.8	1434.1	1416.4	1368.7	1307.4	1277.2	1307.4	1368.7
170°	1357.2	1389.4	1416.4	1439.3	1450.7	1440.3	1402.9	1372.8	1353.1	1372.8	1402.9
172.5°	1418.5	1439.3	1449.7	1464.2	1456.9	1452.8	1434.1	1419.6	1409.2	1419.6	1434.1
175°	1455.9	1461.1	1470.4	1466.3	1472.5	1461.1	1461.1	1468.4	1424.8	1468.4	1461.1
177.5°	1469.4	1477.7	1472.5	1464.2	1465.2	1463.1	1466.3	1470.4	1463.2	1470.4	1466.3
180°	1470.4	1470.4	1470.4	1470.4	1470.4	1470.4	1470.4	1470.4	1470.4	1470.4	1470.4



TEST NUMBER: P392540

CATALOG NUMBER: MWL-2-35-23-UNV-L840-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1030.3	1030.3	1030.3	1030.3	1030.3	1030.3
2.5°	1025.3	1026.3	1026.3	1026.3	1030.2	1018.2
5°	1022.3	1014.3	1022.3	1023.3	1024.2	1015.2
7.5°	1012.3	1011.3	1013.3	1010.3	1017.3	1012.2
10°	998.2	998.3	999.3	1004.3	1003.3	1001.2
12.5°	985.2	981.2	985.2	982.2	987.3	986.3
15°	965.2	967.2	966.2	969.2	973.3	969.3
17.5°	945.2	945.2	945.2	946.2	950.3	949.3
20°	919.2	920.2	920.2	922.2	926.3	926.3
22.5°	898.2	896.2	899.2	897.2	902.3	897.3
25°	872.2	869.2	873.2	870.3	871.3	868.3
27.5°	842.2	841.2	843.2	840.3	836.3	832.3
30°	809.2	809.2	811.3	809.3	798.3	800.3
32.5°	777.2	778.2	779.3	768.3	758.3	752.3
35°	741.2	742.2	744.3	731.3	716.3	712.3
37.5°	703.2	708.2	706.3	684.3	668.3	667.3
40°	659.2	670.2	661.2	636.3	622.3	623.3
42.5°	617.2	628.2	619.2	586.2	577.3	581.3
45°	565.2	585.2	567.2	537.2	534.2	539.2
47.5°	513.2	539.2	514.2	489.2	492.2	505.2
50°	462.1	485.2	464.2	446.2	456.2	463.2
52.5°	412.1	423.2	414.2	406.2	421.2	424.2
55°	361.1	356.1	363.2	366.2	382.2	387.2
57.5°	313.1	303.1	315.2	324.2	346.2	353.2
60°	262.1	254.1	263.1	285.2	308.2	314.2
62.5°	218.1	216.1	219.1	240.2	268.2	278.2
65°	181.1	185.1	182.1	202.1	226.1	241.1
67.5°	149.1	157.1	149.1	168.1	189.1	202.1
70°	123.1	132.1	123.1	137.1	154.1	170.1
72.5°	100.0	107.0	101.1	110.1	124.1	138.1
75°	79.0	89.0	79.0	86.0	98.1	111.1
77.5°	63.0	71.0	63.0	65.0	83.2	100.4
80°	47.0	52.0	47.0	53.2	84.8	100.0
82.5°	34.0	37.0	34.0	57.6	97.6	111.0
85°	26.1	21.0	28.2	73.5	120.8	131.2
87.5°	23.2	5.0	37.7	98.6	153.2	159.5
90°	14.1	1.0	53.5	131.0	186.7	193.0
92.5°	7.1	16.6	78.7	164.4	224.3	233.7
95°	5.2	41.5	109.0	202.0	264.0	270.2
97.5°	13.5	74.7	146.4	240.7	303.7	310.9
100°	35.3	114.2	191.0	283.5	340.4	344.4
102.5°	65.4	156.8	233.6	326.1	384.2	397.6
105°	105.9	205.6	278.3	376.9	430.9	445.5
107.5°	152.6	257.5	324.0	422.6	479.7	490.1
110°	202.5	311.5	369.7	467.3	529.6	542.1





TEST NUMBER: P392540

CATALOG NUMBER: MWL-2-35-23-UNV-L840-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	256.5	367.6	417.4	508.8	582.6	591.9
115°	317.7	419.5	462.1	556.6	625.1	631.3
117.5°	372.8	481.8	507.8	591.9	670.8	671.8
120°	431.9	542.0	554.5	641.7	714.4	722.7
122.5°	491.1	598.1	598.1	683.3	752.8	758.0
125°	546.2	658.3	641.7	714.4	788.1	790.2
127.5°	602.3	719.6	689.5	754.9	822.4	819.3
130°	663.5	777.8	733.1	793.3	854.6	844.2
132.5°	719.6	840.1	777.8	832.8	886.8	893.0
135°	775.7	898.2	816.2	867.1	920.0	918.0
137.5°	829.7	952.2	862.9	894.1	941.8	948.1
140°	882.7	1010.4	904.5	929.4	968.8	969.9
142.5°	938.7	1068.5	950.2	964.7	999.0	992.7
145°	1001.0	1123.6	1007.3	1001.0	1022.8	1009.3
147.5°	1057.1	1171.4	1048.8	1027.0	1052.9	1035.3
150°	1117.4	1220.2	1103.9	1063.3	1078.9	1070.6
152.5°	1173.4	1258.6	1165.1	1091.4	1109.0	1098.6
155°	1228.5	1299.1	1224.3	1119.4	1131.9	1127.7
157.5°	1276.2	1334.4	1269.0	1147.5	1163.0	1154.7
160°	1317.8	1363.5	1320.9	1191.1	1183.8	1183.8
162.5°	1354.1	1391.5	1357.2	1250.3	1206.6	1186.9
165°	1386.3	1413.3	1389.4	1316.7	1249.2	1232.6
167.5°	1416.4	1434.1	1425.8	1370.7	1316.7	1280.4
170°	1440.3	1450.7	1439.3	1416.4	1389.4	1357.2
172.5°	1452.8	1456.9	1464.2	1449.7	1439.3	1418.5
175°	1461.1	1472.5	1466.3	1470.4	1461.1	1455.9
177.5°	1463.1	1465.2	1464.2	1472.5	1477.7	1469.4
180°	1470.4	1470.4	1470.4	1470.4	1470.4	1470.4

(END OF REPORT)