

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: P392519

Luminaire Tested: **MWL-2-28-13-UNV-L840-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392519
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-2-28-13-UNV-L840-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

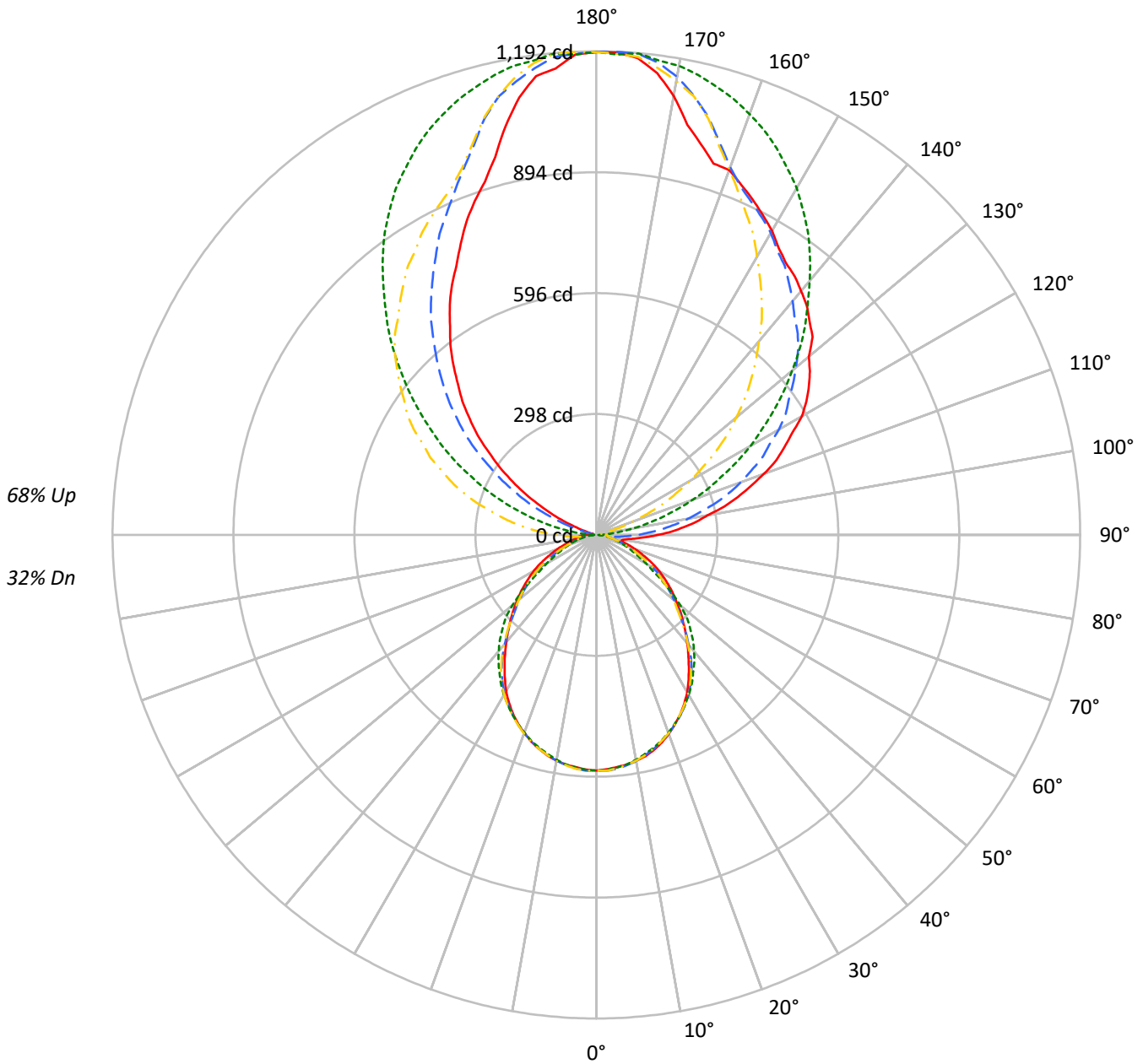
Lumens per Lamp: N/A
Luminaire Lumens: 4166.0 lumens
Efficiency: N/A
Efficacy: 93.2 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Indirect

Input Watts (W): 44.7
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: P392519
CATALOG NUMBER: MWL-2-28-13-UNV-L840-EDD

Luminous Intensity Polar Plot



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



TEST NUMBER: P392519

CATALOG NUMBER: MWL-2-28-13-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	103	103	103	103	93	93	93	93	73	73	73	56	56	56	40	40	40	32
1	94	90	86	82	84	81	78	75	64	62	60	49	48	46	35	34	33	27
2	86	78	73	68	77	71	66	62	56	53	50	43	41	39	31	30	28	23
3	78	69	62	57	70	62	57	52	50	46	42	38	36	33	28	26	25	20
4	72	61	54	48	64	55	49	44	45	40	36	34	31	29	25	23	21	17
5	66	55	47	41	59	49	43	38	40	35	31	31	28	25	23	20	19	15
6	60	49	41	36	54	44	38	33	36	31	27	28	24	22	21	18	17	13
7	56	44	36	31	50	40	33	29	33	28	24	25	22	19	19	16	15	12
8	52	40	33	27	47	36	30	25	30	25	21	23	20	17	17	15	13	11
9	48	36	29	24	43	33	27	23	27	22	19	21	18	15	16	14	12	10
10	45	33	26	22	40	30	24	20	25	20	17	20	16	14	15	13	11	9

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	7503	7503	7503	7503
5°	7314	6864	7314	6864
10°	7148	6276	7148	6276
15°	6948	5729	6915	5729
20°	6664	5224	6631	5224
25°	6348	4757	6316	4757
30°	5960	4306	5917	4306
35°	5462	3853	5427	3853
40°	5008	3431	4959	3431
45°	4565	2988	4528	2988
50°	4153	2470	4113	2470
55°	3787	1832	3758	1832
60°	3387	1338	3370	1338
65°	2905	979	2905	979
70°	2419	733	2438	733
75°	1901	525	1971	525
80°	2308	332	1763	332
85°	4295	141	1898	141



TEST NUMBER: P392519

CATALOG NUMBER: MWL-2-28-13-UNV-L840-EDD

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	54.7	1.3
10°-20°	153.7	3.7
20°-30°	224.8	5.4
30°-40°	254.0	6.1
40°-50°	236.2	5.7
50°-60°	185.7	4.5
60°-70°	117.9	2.8
70°-80°	59.4	1.4
80°-90°	46.6	1.1
90°-100°	89.6	2.2
100°-110°	182.7	4.4
110°-120°	316.1	7.6
120°-130°	429.5	10.3
130°-140°	489.9	11.8
140°-150°	488.7	11.7
150°-160°	425.6	10.2
160°-170°	299.4	7.2
170°-180°	111.5	2.7
0°-30°	433.2	10.4
0°-40°	687.2	16.5
0°-60°	1109.0	26.6
0°-90°	1333.0	32.0
90°-120°	588.5	14.1
90°-150°	1996.5	47.9
90°-180°	2833.0	68.0
0°-180°	4166.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	581	581	581	581	581	
5°	574	576	574	576	574	55
15°	549	543	546	543	549	154
25°	489	489	486	489	489	224
35°	397	415	394	415	397	248
45°	302	327	300	327	302	234
55°	218	198	216	198	218	195
65°	138	101	138	101	138	137
75°	68	50	70	50	68	79
85°	98	12	43	12	98	74
90°	151	1	25	1	151	84
95°	215	34	16	34	215	189
105°	361	166	7	166	361	380
115°	511	340	117	340	511	507
125°	639	532	290	532	639	571
135°	743	727	467	727	743	573
145°	816	909	628	909	816	514
155°	912	1051	791	1051	912	421
165°	997	1144	964	1144	997	283
175°	1179	1191	1154	1191	1179	110
180°	1190	1190	1190	1190	1190	



TEST NUMBER: P392519

CATALOG NUMBER: MWL-2-28-13-UNV-L840-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	580.9	580.9	580.9	580.9	580.9	580.9	580.9	580.9	580.9	580.9	580.9
2.5°	578.4	580.0	581.7	580.6	579.6	579.7	581.7	580.0	579.2	580.0	581.7
5°	574.4	577.0	578.7	576.7	575.7	576.7	577.9	577.0	574.4	577.0	577.9
7.5°	571.2	572.9	572.9	571.7	570.7	570.9	572.0	572.0	571.2	572.0	572.0
10°	565.0	565.9	565.9	564.9	562.9	564.0	565.0	564.2	565.0	564.2	565.0
12.5°	558.7	557.9	556.0	555.0	553.2	555.0	556.0	556.2	557.0	556.2	556.0
15°	548.6	546.9	546.0	546.0	543.2	545.2	545.2	545.2	546.0	545.2	545.2
17.5°	536.6	534.9	534.0	533.2	532.2	533.2	533.2	534.0	534.0	534.0	533.2
20°	521.6	521.7	521.0	519.2	518.4	518.4	520.2	520.0	519.0	520.0	520.2
22.5°	505.7	505.7	506.0	506.2	504.4	505.4	505.2	504.0	504.0	504.0	505.2
25°	488.7	488.7	489.9	490.2	489.4	489.4	488.2	486.2	486.2	486.2	488.2
27.5°	468.7	469.7	472.9	474.0	472.4	473.2	471.2	467.2	466.2	467.2	471.2
30°	447.7	449.7	454.7	456.9	455.4	455.2	452.2	447.2	444.4	447.2	452.2
32.5°	422.7	425.7	432.7	437.9	437.2	436.2	430.2	422.4	419.4	422.4	430.2
35°	396.9	399.9	408.9	416.9	415.4	414.4	406.4	397.4	394.4	397.4	406.4
37.5°	371.9	372.9	382.9	394.9	396.2	392.4	380.4	370.4	369.4	370.4	380.4
40°	348.9	346.9	353.9	371.0	374.2	369.4	350.5	343.5	345.5	343.5	350.5
42.5°	324.9	321.9	326.0	345.0	352.2	343.4	323.5	318.5	321.5	318.5	323.5
45°	302.0	299.0	298.0	317.0	327.2	315.4	294.7	296.5	299.5	296.5	294.7
47.5°	281.0	276.0	273.0	287.2	303.2	286.4	269.7	273.5	278.5	273.5	269.7
50°	258.0	256.0	250.0	258.2	269.4	256.5	246.7	252.7	255.5	252.7	246.7
52.5°	239.0	236.0	227.2	231.2	235.4	229.5	224.7	232.7	236.5	232.7	224.7
55°	218.2	216.2	205.2	204.4	197.5	202.7	202.7	213.7	216.5	213.7	202.7
57.5°	198.2	196.2	184.2	176.4	165.5	174.7	181.7	193.7	196.5	193.7	181.7
60°	178.4	176.4	161.4	149.5	141.5	148.7	159.7	174.7	177.5	174.7	159.7
62.5°	159.4	155.4	138.4	123.5	118.7	122.7	136.7	153.7	158.5	153.7	136.7
65°	137.5	132.5	116.5	103.5	100.7	102.7	115.7	131.7	137.5	131.7	115.7
67.5°	118.5	111.5	98.5	85.7	86.7	85.7	97.7	110.7	118.5	110.7	97.7
70°	100.7	91.7	79.7	70.7	72.7	70.7	79.7	92.5	101.5	92.5	79.7
72.5°	83.7	73.7	64.7	57.7	59.8	56.8	64.7	74.5	85.4	74.5	64.7
75°	67.7	59.7	49.8	45.8	49.8	45.8	50.7	60.5	70.2	60.5	50.7
77.5°	63.4	52.0	38.8	35.8	39.8	35.8	39.7	49.5	60.0	49.5	39.7
80°	67.7	55.8	32.4	27.8	29.8	27.8	30.7	42.4	51.7	42.4	30.7
82.5°	78.9	68.3	37.5	19.8	20.8	19.8	27.4	38.0	46.9	38.0	27.4
85°	98.0	89.5	53.0	17.4	11.8	15.7	28.6	38.3	43.3	38.3	28.6
87.5°	123.2	116.7	74.3	27.0	3.0	15.2	26.4	35.9	36.6	35.9	26.4
90°	151.0	144.6	101.6	41.6	0.8	9.7	18.4	26.0	24.9	26.0	18.4
92.5°	185.0	176.9	129.7	63.7	13.5	5.7	14.5	21.4	20.2	21.4	14.5
95°	214.8	210.8	161.9	87.5	33.6	3.4	10.5	15.7	15.5	15.7	10.5
97.5°	248.8	243.6	194.9	117.7	59.7	10.1	9.0	12.4	13.4	12.4	9.0
100°	277.6	275.8	229.7	153.9	91.7	27.8	6.9	11.7	12.7	11.7	6.9
102.5°	322.5	311.5	263.2	188.4	126.1	52.1	12.6	8.7	9.7	8.7	12.6
105°	360.9	349.1	304.4	224.5	165.7	84.9	32.8	11.1	6.9	11.1	32.8
107.5°	397.1	388.7	342.4	261.5	207.7	122.8	62.4	32.1	20.3	32.1	62.4
110°	439.1	429.0	378.6	299.5	251.4	164.1	95.2	59.0	45.6	59.0	95.2



TEST NUMBER: P392519

CATALOG NUMBER: MWL-2-28-13-UNV-L840-EDD

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°	510.6	506.4	450.9	374.4	339.9	257.5	180.1	132.2	117.0	132.2	180.1
117.5°	543.4	542.6	479.5	411.4	390.3	302.0	221.3	171.7	155.7	171.7	221.3
120°	584.6	577.9	519.0	448.4	438.3	349.1	266.7	217.1	201.1	217.1	266.7
122.5°	613.2	609.0	552.6	483.7	483.7	397.1	310.5	260.8	244.0	260.8	310.5
125°	639.3	637.6	577.9	519.0	532.5	441.6	359.2	308.8	290.3	308.8	359.2
127.5°	662.8	665.3	610.7	557.7	582.1	487.1	407.2	351.7	332.3	351.7	407.2
130°	683.0	691.4	641.8	593.0	629.2	536.7	450.0	394.5	381.9	394.5	450.0
132.5°	722.5	717.5	673.7	629.2	679.6	582.1	495.5	437.4	423.1	437.4	495.5
135°	742.7	744.4	701.5	660.3	726.7	627.5	538.3	481.2	466.9	481.2	538.3
137.5°	767.1	762.0	723.3	698.1	770.4	671.2	580.4	527.4	504.7	527.4	580.4
140°	784.7	783.9	751.9	731.8	817.5	714.1	623.3	569.5	548.4	569.5	623.3
142.5°	803.2	808.3	780.5	768.8	864.6	759.5	669.5	610.7	590.5	610.7	669.5
145°	815.8	826.8	809.1	815.0	909.2	810.0	709.9	650.2	628.3	650.2	709.9
147.5°	836.9	851.2	830.1	847.8	947.9	854.5	750.3	691.4	672.1	691.4	750.3
150°	865.5	872.2	859.6	893.2	987.4	904.1	791.5	730.9	711.6	730.9	791.5
152.5°	888.2	896.6	882.3	942.8	1018.5	949.6	836.9	769.6	746.9	769.6	836.9
155°	911.7	915.1	905.0	990.8	1051.3	994.1	873.0	812.5	790.6	812.5	873.0
157.5°	933.6	940.3	928.5	1026.9	1079.9	1032.8	914.2	855.4	836.0	855.4	914.2
160°	957.1	957.1	963.8	1069.0	1103.4	1066.4	958.0	902.5	875.6	902.5	958.0
162.5°	959.6	975.6	1011.8	1098.4	1126.1	1095.9	1005.1	936.1	912.6	936.1	1005.1
165°	996.6	1010.9	1065.6	1124.5	1143.8	1121.9	1063.1	991.6	963.8	991.6	1063.1
167.5°	1035.3	1065.6	1109.3	1153.9	1160.6	1146.3	1107.6	1058.0	1032.8	1058.0	1107.6
170°	1098.4	1124.5	1146.3	1164.8	1174.1	1165.7	1135.4	1111.0	1095.0	1111.0	1135.4
172.5°	1148.0	1164.8	1173.2	1185.0	1179.1	1175.8	1160.6	1148.9	1140.4	1148.9	1160.6
175°	1179.1	1182.5	1190.1	1185.9	1190.9	1181.6	1182.5	1188.4	1153.9	1188.4	1182.5
177.5°	1190.1	1195.9	1191.7	1184.2	1185.0	1183.3	1186.7	1190.1	1185.0	1190.1	1186.7
180°	1190.1	1190.1	1190.1	1190.1	1190.1	1190.1	1190.1	1190.1	1190.1	1190.1	1190.1



TEST NUMBER: P392519

CATALOG NUMBER: MWL-2-28-13-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	580.9	580.9	580.9	580.9	580.9	580.9
2.5°	579.7	579.6	580.6	581.7	580.0	578.4
5°	576.7	575.7	576.7	578.7	577.0	574.4
7.5°	570.9	570.7	571.7	572.9	572.9	571.2
10°	564.0	562.9	564.9	565.9	565.9	565.0
12.5°	555.0	553.2	555.0	556.0	557.9	558.7
15°	545.2	543.2	546.0	546.0	546.9	548.6
17.5°	533.2	532.2	533.2	534.0	534.9	536.6
20°	518.4	518.4	519.2	521.0	521.7	521.6
22.5°	505.4	504.4	506.2	506.0	505.7	505.7
25°	489.4	489.4	490.2	489.9	488.7	488.7
27.5°	473.2	472.4	474.0	472.9	469.7	468.7
30°	455.2	455.4	456.9	454.7	449.7	447.7
32.5°	436.2	437.2	437.9	432.7	425.7	422.7
35°	414.4	415.4	416.9	408.9	399.9	396.9
37.5°	392.4	396.2	394.9	382.9	372.9	371.9
40°	369.4	374.2	371.0	353.9	346.9	348.9
42.5°	343.4	352.2	345.0	326.0	321.9	324.9
45°	315.4	327.2	317.0	298.0	299.0	302.0
47.5°	286.4	303.2	287.2	273.0	276.0	281.0
50°	256.5	269.4	258.2	250.0	256.0	258.0
52.5°	229.5	235.4	231.2	227.2	236.0	239.0
55°	202.7	197.5	204.4	205.2	216.2	218.2
57.5°	174.7	165.5	176.4	184.2	196.2	198.2
60°	148.7	141.5	149.5	161.4	176.4	178.4
62.5°	122.7	118.7	123.5	138.4	155.4	159.4
65°	102.7	100.7	103.5	116.5	132.5	137.5
67.5°	85.7	86.7	85.7	98.5	111.5	118.5
70°	70.7	72.7	70.7	79.7	91.7	100.7
72.5°	56.8	59.8	57.7	64.7	73.7	83.7
75°	45.8	49.8	45.8	49.8	59.7	67.7
77.5°	35.8	39.8	35.8	38.8	52.0	63.4
80°	27.8	29.8	27.8	32.4	55.8	67.7
82.5°	19.8	20.8	19.8	37.5	68.3	78.9
85°	15.7	11.8	17.4	53.0	89.5	98.0
87.5°	15.2	3.0	27.0	74.3	116.7	123.2
90°	9.7	0.8	41.6	101.6	144.6	151.0
92.5°	5.7	13.5	63.7	129.7	176.9	185.0
95°	3.4	33.6	87.5	161.9	210.8	214.8
97.5°	10.1	59.7	117.7	194.9	243.6	248.8
100°	27.8	91.7	153.9	229.7	275.8	277.6
102.5°	52.1	126.1	188.4	263.2	311.5	322.5
105°	84.9	165.7	224.5	304.4	349.1	360.9
107.5°	122.8	207.7	261.5	342.4	388.7	397.1
110°	164.1	251.4	299.5	378.6	429.0	439.1



TEST NUMBER: P392519

CATALOG NUMBER: MWL-2-28-13-UNV-L840-EDD

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	510.6
117.5°	302.0	390.3	411.4	479.5	542.6	543.4
120°	349.1	438.3	448.4	519.0	577.9	584.6
122.5°	397.1	483.7	483.7	552.6	609.0	613.2
125°	441.6	532.5	519.0	577.9	637.6	639.3
127.5°	487.1	582.1	557.7	610.7	665.3	662.8
130°	536.7	629.2	593.0	641.8	691.4	683.0
132.5°	582.1	679.6	629.2	673.7	717.5	722.5
135°	627.5	726.7	660.3	701.5	744.4	742.7
137.5°	671.2	770.4	698.1	723.3	762.0	767.1
140°	714.1	817.5	731.8	751.9	783.9	784.7
142.5°	759.5	864.6	768.8	780.5	808.3	803.2
145°	810.0	909.2	815.0	809.1	826.8	815.8
147.5°	854.5	947.9	847.8	830.1	851.2	836.9
150°	904.1	987.4	893.2	859.6	872.2	865.5
152.5°	949.6	1018.5	942.8	882.3	896.6	888.2
155°	994.1	1051.3	990.8	905.0	915.1	911.7
157.5°	1032.8	1079.9	1026.9	928.5	940.3	933.6
160°	1066.4	1103.4	1069.0	963.8	957.1	957.1
162.5°	1095.9	1126.1	1098.4	1011.8	975.6	959.6
165°	1121.9	1143.8	1124.5	1065.6	1010.9	996.6
167.5°	1146.3	1160.6	1153.9	1109.3	1065.6	1035.3
170°	1165.7	1174.1	1164.8	1146.3	1124.5	1098.4
172.5°	1175.8	1179.1	1185.0	1173.2	1164.8	1148.0
175°	1181.6	1190.9	1185.9	1190.1	1182.5	1179.1
177.5°	1183.3	1185.0	1184.2	1191.7	1195.9	1190.1
180°	1190.1	1190.1	1190.1	1190.1	1190.1	1190.1

(END OF REPORT)