

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: P392504

Luminaire Tested: **MWL-2-22-13-UNV-L840-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392504
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-2-22-13-UNV-L840-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

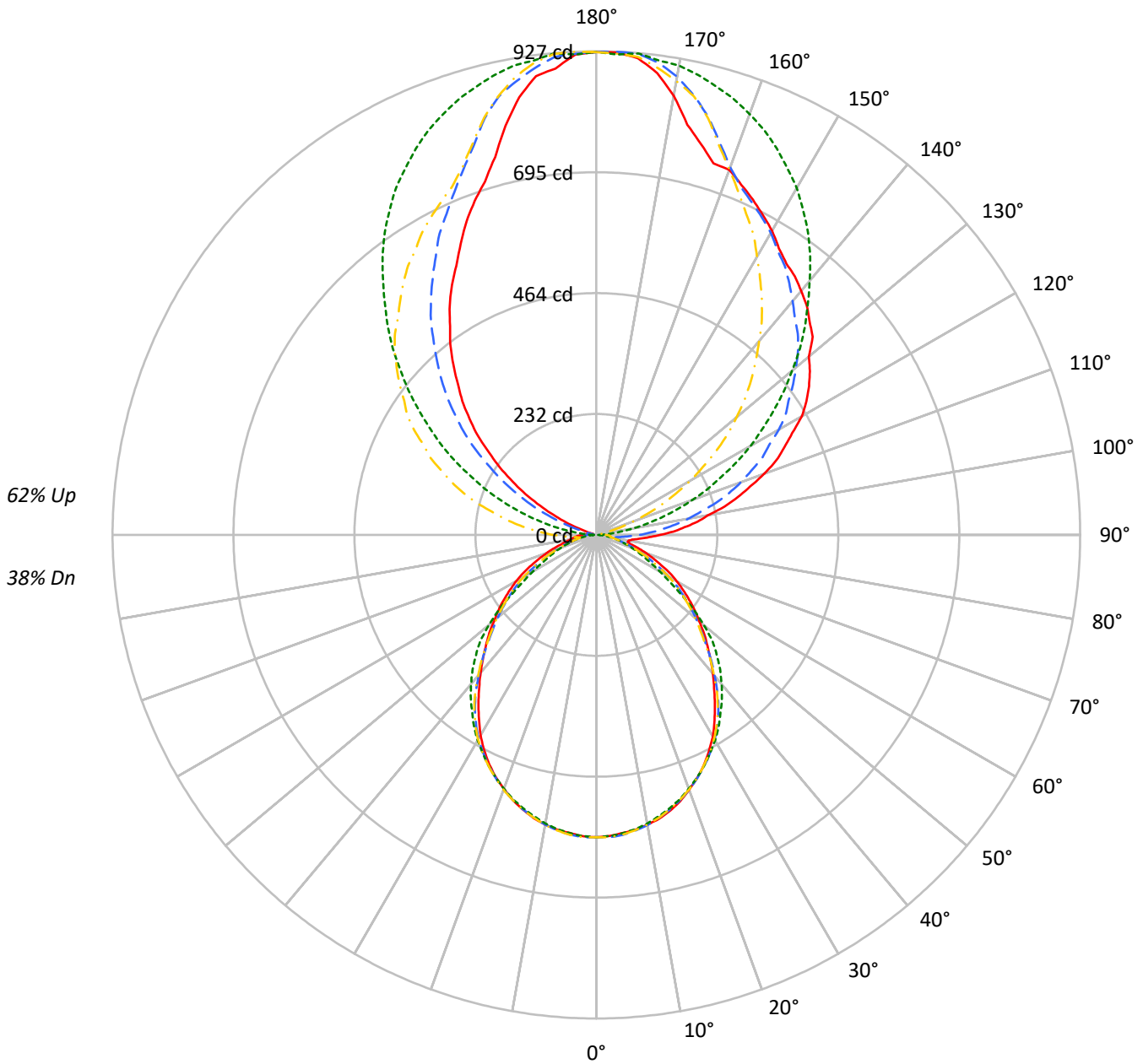
Lumens per Lamp: N/A
Luminaire Lumens: 3530.0 lumens
Efficiency: N/A
Efficacy: 105.4 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Indirect

Input Watts (W): 33.5
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



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



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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	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	50	30	10	50	30	10	0														
RCR																																						
0	104	104	104	104	94	94	94	94	76	76	76	60	60	60	45	45	45	38																				
1	95	91	87	84	86	83	79	76	67	65	63	53	51	50	40	39	38	32																				
2	87	80	74	69	78	72	67	63	59	55	52	47	44	42	35	34	32	27																				
3	79	70	63	58	72	64	58	53	52	48	44	41	38	36	31	29	28	23																				
4	73	62	55	49	66	57	50	45	47	42	38	37	34	31	28	26	24	20																				
5	67	56	48	42	60	51	44	39	42	37	33	33	30	27	26	23	21	18																				
6	61	50	42	36	56	46	39	34	38	33	29	30	27	24	23	21	19	16																				
7	57	45	37	32	51	41	34	30	34	29	25	28	24	21	21	19	17	14																				
8	53	41	33	28	48	37	31	26	31	26	22	25	21	19	20	17	15	13																				
9	49	37	30	25	45	34	28	23	29	24	20	23	20	17	18	16	14	11																				
10	46	34	27	22	42	31	25	21	26	21	18	21	18	15	17	14	12	10																				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	7487	7487	7487	7487
5°	7304	6846	7304	6846
10°	7134	6262	7134	6262
15°	6927	5719	6901	5719
20°	6643	5216	6617	5216
25°	6329	4749	6304	4749
30°	5940	4299	5906	4299
35°	5444	3845	5416	3845
40°	4989	3423	4952	3423
45°	4549	2980	4520	2980
50°	4136	2463	4105	2463
55°	3771	1827	3749	1827
60°	3371	1333	3360	1333
65°	2894	975	2894	975
70°	2409	729	2426	729
75°	1890	524	1946	524
80°	2138	331	1712	331
85°	3620	139	1758	139



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	54.6	1.5
10°-20°	153.4	4.3
20°-30°	224.3	6.4
30°-40°	253.3	7.2
40°-50°	235.5	6.7
50°-60°	185.1	5.2
60°-70°	117.5	3.3
70°-80°	58.9	1.7
80°-90°	41.5	1.2
90°-100°	71.5	2.0
100°-110°	142.3	4.0
110°-120°	246.0	7.0
120°-130°	334.1	9.5
130°-140°	381.1	10.8
140°-150°	380.1	10.8
150°-160°	331.0	9.4
160°-170°	232.9	6.6
170°-180°	86.7	2.5
0°-30°	432.3	12.2
0°-40°	685.6	19.4
0°-60°	1106.2	31.3
0°-90°	1324.1	37.5
90°-120°	459.9	13.0
90°-150°	1555.2	44.1
90°-180°	2206.0	62.5
0°-180°	3530.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	580	580	580	580	580	
5°	574	574	574	574	574	54
15°	547	542	545	542	547	154
25°	487	489	485	489	487	224
35°	396	415	394	415	396	248
45°	301	326	299	326	301	233
55°	217	197	216	197	217	194
65°	137	100	137	100	137	137
75°	67	50	69	50	67	77
85°	83	12	40	12	83	64
90°	122	1	24	1	122	67
95°	170	26	15	26	170	149
105°	281	129	6	129	281	296
115°	397	264	91	264	397	394
125°	497	414	226	414	497	444
135°	578	565	363	565	578	446
145°	635	707	489	707	635	400
155°	709	818	615	818	709	327
165°	775	890	750	890	775	220
175°	917	926	898	926	917	85
180°	926	926	926	926	926	



TEST NUMBER: P392504

CATALOG NUMBER: MWL-2-22-13-UNV-L840-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	579.6	579.6	579.6	579.6	579.6	579.6	579.6	579.6	579.6	579.6	579.6
2.5°	577.6	578.9	580.2	578.9	577.9	578.2	580.2	578.9	578.3	578.9	580.2
5°	573.6	575.9	577.2	575.2	574.2	575.2	576.6	575.9	573.6	575.9	576.6
7.5°	570.3	571.6	571.6	570.2	569.2	569.6	570.9	570.9	570.3	570.9	570.9
10°	563.9	564.6	564.6	563.6	561.6	562.9	563.9	563.3	563.9	563.3	563.9
12.5°	557.2	556.6	554.9	553.9	552.3	553.9	554.9	555.3	555.9	555.3	554.9
15°	546.9	545.6	544.9	544.9	542.3	544.3	544.3	544.3	544.9	544.3	544.3
17.5°	534.9	533.6	532.9	532.3	531.3	532.3	532.3	532.9	532.9	532.9	532.3
20°	519.9	520.2	519.9	518.3	517.6	517.6	519.3	518.9	517.9	518.9	519.3
22.5°	504.2	504.2	504.9	505.3	503.6	504.6	504.3	502.9	502.9	502.9	504.3
25°	487.2	487.2	488.6	489.3	488.6	488.6	487.3	485.3	485.3	485.3	487.3
27.5°	467.2	468.2	471.6	472.9	471.6	472.3	470.3	466.3	465.3	466.3	470.3
30°	446.2	448.2	453.2	455.6	454.6	454.3	451.3	446.3	443.6	446.3	451.3
32.5°	421.2	424.2	431.2	436.6	436.3	435.3	429.3	421.6	418.6	421.6	429.3
35°	395.6	398.6	407.6	415.6	414.6	413.6	405.6	396.6	393.6	396.6	405.6
37.5°	370.6	371.6	381.6	393.6	395.3	391.6	379.6	369.6	368.6	369.6	379.6
40°	347.6	345.6	352.6	369.9	373.3	368.6	350.0	343.0	345.0	343.0	350.0
42.5°	323.6	320.6	324.9	343.9	351.3	342.6	323.0	318.0	321.0	318.0	323.0
45°	300.9	297.9	296.9	315.9	326.3	314.6	294.3	296.0	299.0	296.0	294.3
47.5°	279.9	274.9	271.9	286.3	302.3	285.6	269.3	273.0	278.0	273.0	269.3
50°	256.9	254.9	248.9	257.3	268.6	256.0	246.3	252.3	255.0	252.3	246.3
52.5°	237.9	234.9	226.3	230.3	234.6	229.0	224.3	232.3	236.0	232.3	224.3
55°	217.3	215.3	204.3	203.6	197.0	202.3	202.3	213.3	216.0	213.3	202.3
57.5°	197.3	195.3	183.3	175.6	165.0	174.3	181.3	193.3	196.0	193.3	181.3
60°	177.6	175.6	160.6	149.0	141.0	148.3	159.3	174.3	177.0	174.3	159.3
62.5°	158.6	154.6	137.6	123.0	118.3	122.3	136.3	153.3	158.0	153.3	136.3
65°	137.0	132.0	116.0	103.0	100.3	102.3	115.3	131.3	137.0	131.3	115.3
67.5°	118.0	111.0	98.0	85.3	86.3	85.3	97.3	110.3	118.0	110.3	97.3
70°	100.3	91.3	79.3	70.3	72.3	70.3	79.3	92.0	101.0	92.0	79.3
72.5°	83.3	73.3	64.3	57.3	59.7	56.7	64.3	74.0	84.6	74.0	64.3
75°	67.3	59.3	49.7	45.7	49.7	45.7	50.3	60.0	69.3	60.0	50.3
77.5°	61.5	50.9	38.7	35.7	39.7	35.7	39.3	49.0	58.9	49.0	39.3
80°	62.7	52.1	31.6	27.7	29.7	27.7	30.3	41.6	50.2	41.6	30.3
82.5°	69.3	60.5	34.5	19.7	20.7	19.7	26.6	36.9	44.5	36.9	26.6
85°	82.6	76.1	45.8	16.6	11.7	15.3	26.9	36.2	40.1	36.2	26.9
87.5°	101.2	96.3	61.8	23.4	3.0	14.3	24.5	33.5	33.8	33.5	24.5
90°	121.7	117.1	82.4	34.2	0.7	9.3	17.6	24.9	23.6	24.9	17.6
92.5°	147.4	141.6	103.5	50.4	10.5	5.3	14.0	20.6	19.3	20.6	14.0
95°	169.9	167.0	127.7	68.0	26.2	2.6	10.0	15.3	15.0	15.3	10.0
97.5°	195.7	191.4	152.4	91.5	46.4	7.8	7.9	11.6	12.6	11.6	7.9
100°	217.2	215.6	178.9	119.7	71.3	21.6	5.6	10.2	11.2	10.2	5.6
102.5°	251.5	242.6	204.7	146.5	98.1	40.5	9.8	7.2	8.2	7.2	9.8
105°	280.9	271.7	236.7	174.6	128.8	66.0	25.5	8.8	5.6	8.8	25.5
107.5°	309.0	302.5	266.5	203.4	161.5	95.5	48.7	25.2	16.0	25.2	48.7
110°	341.7	333.8	294.6	233.1	195.5	127.9	74.2	46.1	35.7	46.1	74.2



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CATALOG NUMBER: MWL-2-22-13-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	373.1	367.2	320.8	263.2	231.8	161.9	105.6	72.3	62.5	72.3	105.6
115°	397.3	394.0	350.8	291.3	264.5	200.4	140.3	103.0	91.2	103.0	140.3
117.5°	422.8	422.1	373.1	320.1	303.8	235.1	172.3	133.7	121.3	133.7	172.3
120°	454.8	449.6	403.8	348.9	341.0	271.7	207.6	169.1	156.6	169.1	207.6
122.5°	477.1	473.8	430.0	376.3	376.3	309.0	241.6	203.1	190.0	203.1	241.6
125°	497.3	496.0	449.6	403.8	414.3	343.7	279.6	240.3	225.9	240.3	279.6
127.5°	515.6	517.6	475.1	433.9	452.9	379.0	316.8	273.7	258.6	273.7	316.8
130°	531.3	537.9	499.3	461.4	489.5	417.5	350.2	307.0	297.2	307.0	350.2
132.5°	562.1	558.1	524.1	489.5	528.7	452.9	385.5	340.4	329.3	340.4	385.5
135°	577.8	579.1	545.7	513.7	565.3	488.2	418.9	374.4	363.3	374.4	418.9
137.5°	596.7	592.8	562.7	543.1	599.3	522.2	451.5	410.4	392.7	410.4	451.5
140°	610.4	609.8	584.9	569.3	636.0	555.5	484.9	443.0	426.7	443.0	484.9
142.5°	624.8	628.8	607.2	598.0	672.6	590.8	520.9	475.1	459.4	475.1	520.9
145°	634.6	643.1	629.4	634.0	707.2	630.1	552.3	505.8	488.8	505.8	552.3
147.5°	651.0	662.1	645.8	659.5	737.3	664.7	583.6	537.9	522.8	537.9	583.6
150°	673.2	678.5	668.6	694.8	768.0	703.3	615.7	568.6	553.6	568.6	615.7
152.5°	690.9	697.4	686.3	733.4	792.2	738.6	651.0	598.7	581.0	598.7	651.0
155°	709.2	711.8	704.0	770.7	817.7	773.3	679.1	632.0	615.0	632.0	679.1
157.5°	726.2	731.4	722.3	798.8	840.0	803.4	711.2	665.4	650.3	665.4	711.2
160°	744.5	744.5	749.7	831.5	858.3	829.5	745.2	702.0	681.1	702.0	745.2
162.5°	746.5	758.9	787.0	854.4	875.9	852.4	781.8	728.2	709.8	728.2	781.8
165°	775.2	786.4	828.9	874.6	889.7	872.7	826.9	771.3	749.7	771.3	826.9
167.5°	805.3	828.9	862.9	897.5	902.7	891.6	861.6	823.0	803.4	823.0	861.6
170°	854.4	874.6	891.6	906.0	913.2	906.7	883.1	864.2	851.7	864.2	883.1
172.5°	892.9	906.0	912.6	921.7	917.1	914.5	902.7	893.6	887.1	893.6	902.7
175°	917.1	919.8	925.6	922.4	926.3	919.1	919.8	924.3	897.5	924.3	919.8
177.5°	925.6	930.2	926.9	921.1	921.7	920.4	923.0	925.6	921.7	925.6	923.0
180°	925.6	925.6	925.6	925.6	925.6	925.6	925.6	925.6	925.6	925.6	925.6



TEST NUMBER: P392504

CATALOG NUMBER: MWL-2-22-13-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	579.6	579.6	579.6	579.6	579.6	579.6
2.5°	578.2	577.9	578.9	580.2	578.9	577.6
5°	575.2	574.2	575.2	577.2	575.9	573.6
7.5°	569.6	569.2	570.2	571.6	571.6	570.3
10°	562.9	561.6	563.6	564.6	564.6	563.9
12.5°	553.9	552.3	553.9	554.9	556.6	557.2
15°	544.3	542.3	544.9	544.9	545.6	546.9
17.5°	532.3	531.3	532.3	532.9	533.6	534.9
20°	517.6	517.6	518.3	519.9	520.2	519.9
22.5°	504.6	503.6	505.3	504.9	504.2	504.2
25°	488.6	488.6	489.3	488.6	487.2	487.2
27.5°	472.3	471.6	472.9	471.6	468.2	467.2
30°	454.3	454.6	455.6	453.2	448.2	446.2
32.5°	435.3	436.3	436.6	431.2	424.2	421.2
35°	413.6	414.6	415.6	407.6	398.6	395.6
37.5°	391.6	395.3	393.6	381.6	371.6	370.6
40°	368.6	373.3	369.9	352.6	345.6	347.6
42.5°	342.6	351.3	343.9	324.9	320.6	323.6
45°	314.6	326.3	315.9	296.9	297.9	300.9
47.5°	285.6	302.3	286.3	271.9	274.9	279.9
50°	256.0	268.6	257.3	248.9	254.9	256.9
52.5°	229.0	234.6	230.3	226.3	234.9	237.9
55°	202.3	197.0	203.6	204.3	215.3	217.3
57.5°	174.3	165.0	175.6	183.3	195.3	197.3
60°	148.3	141.0	149.0	160.6	175.6	177.6
62.5°	122.3	118.3	123.0	137.6	154.6	158.6
65°	102.3	100.3	103.0	116.0	132.0	137.0
67.5°	85.3	86.3	85.3	98.0	111.0	118.0
70°	70.3	72.3	70.3	79.3	91.3	100.3
72.5°	56.7	59.7	57.3	64.3	73.3	83.3
75°	45.7	49.7	45.7	49.7	59.3	67.3
77.5°	35.7	39.7	35.7	38.7	50.9	61.5
80°	27.7	29.7	27.7	31.6	52.1	62.7
82.5°	19.7	20.7	19.7	34.5	60.5	69.3
85°	15.3	11.7	16.6	45.8	76.1	82.6
87.5°	14.3	3.0	23.4	61.8	96.3	101.2
90°	9.3	0.7	34.2	82.4	117.1	121.7
92.5°	5.3	10.5	50.4	103.5	141.6	147.4
95°	2.6	26.2	68.0	127.7	167.0	169.9
97.5°	7.8	46.4	91.5	152.4	191.4	195.7
100°	21.6	71.3	119.7	178.9	215.6	217.2
102.5°	40.5	98.1	146.5	204.7	242.6	251.5
105°	66.0	128.8	174.6	236.7	271.7	280.9
107.5°	95.5	161.5	203.4	266.5	302.5	309.0
110°	127.9	195.5	233.1	294.6	333.8	341.7



TEST NUMBER: P392504

CATALOG NUMBER: MWL-2-22-13-UNV-L840-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	161.9	231.8	263.2	320.8	367.2	373.1
115°	200.4	264.5	291.3	350.8	394.0	397.3
117.5°	235.1	303.8	320.1	373.1	422.1	422.8
120°	271.7	341.0	348.9	403.8	449.6	454.8
122.5°	309.0	376.3	376.3	430.0	473.8	477.1
125°	343.7	414.3	403.8	449.6	496.0	497.3
127.5°	379.0	452.9	433.9	475.1	517.6	515.6
130°	417.5	489.5	461.4	499.3	537.9	531.3
132.5°	452.9	528.7	489.5	524.1	558.1	562.1
135°	488.2	565.3	513.7	545.7	579.1	577.8
137.5°	522.2	599.3	543.1	562.7	592.8	596.7
140°	555.5	636.0	569.3	584.9	609.8	610.4
142.5°	590.8	672.6	598.0	607.2	628.8	624.8
145°	630.1	707.2	634.0	629.4	643.1	634.6
147.5°	664.7	737.3	659.5	645.8	662.1	651.0
150°	703.3	768.0	694.8	668.6	678.5	673.2
152.5°	738.6	792.2	733.4	686.3	697.4	690.9
155°	773.3	817.7	770.7	704.0	711.8	709.2
157.5°	803.4	840.0	798.8	722.3	731.4	726.2
160°	829.5	858.3	831.5	749.7	744.5	744.5
162.5°	852.4	875.9	854.4	787.0	758.9	746.5
165°	872.7	889.7	874.6	828.9	786.4	775.2
167.5°	891.6	902.7	897.5	862.9	828.9	805.3
170°	906.7	913.2	906.0	891.6	874.6	854.4
172.5°	914.5	917.1	921.7	912.6	906.0	892.9
175°	919.1	926.3	922.4	925.6	919.8	917.1
177.5°	920.4	921.7	921.1	926.9	930.2	925.6
180°	925.6	925.6	925.6	925.6	925.6	925.6

(END OF REPORT)