

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: P382268

Luminaire Tested: **MWL-2-28-13-UNV-L830-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P382268
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-L830-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

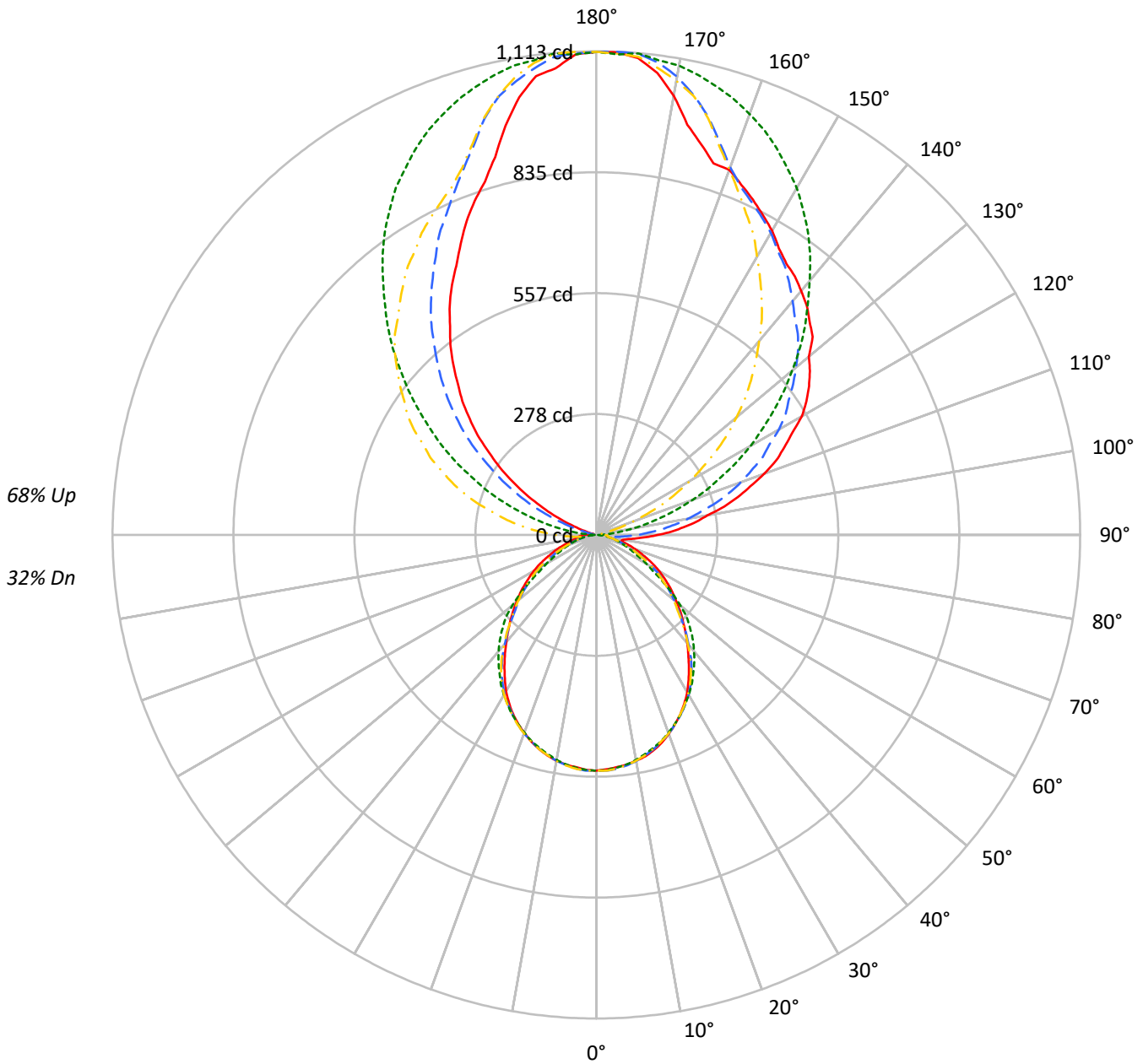
Lumens per Lamp: N/A
Luminaire Lumens: 3891.0 lumens
Efficiency: N/A
Efficacy: 87.0 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Indirect

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



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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				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°	7009	7009	7009	7009
5°	6832	6411	6832	6411
10°	6676	5862	6676	5862
15°	6490	5350	6459	5350
20°	6225	4880	6193	4880
25°	5929	4443	5899	4443
30°	5568	4021	5526	4021
35°	5101	3598	5070	3598
40°	4677	3204	4632	3204
45°	4265	2791	4228	2791
50°	3880	2307	3841	2307
55°	3537	1711	3509	1711
60°	3163	1250	3147	1250
65°	2712	915	2712	915
70°	2260	684	2277	684
75°	1774	490	1842	490
80°	2155	310	1647	310
85°	4010	131	1771	131



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	51.1	1.3
10°-20°	143.5	3.7
20°-30°	210.0	5.4
30°-40°	237.2	6.1
40°-50°	220.6	5.7
50°-60°	173.4	4.5
60°-70°	110.2	2.8
70°-80°	55.5	1.4
80°-90°	43.5	1.1
90°-100°	83.7	2.2
100°-110°	170.7	4.4
110°-120°	295.3	7.6
120°-130°	401.1	10.3
130°-140°	457.5	11.8
140°-150°	456.4	11.7
150°-160°	397.5	10.2
160°-170°	279.6	7.2
170°-180°	104.2	2.7
0°-30°	404.6	10.4
0°-40°	641.8	16.5
0°-60°	1035.8	26.6
0°-90°	1245.0	32.0
90°-120°	549.7	14.1
90°-150°	1864.7	47.9
90°-180°	2646.0	68.0
0°-180°	3891.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	543	543	543	543	543	
5°	536	538	536	538	536	51
15°	512	507	510	507	512	144
25°	456	457	454	457	456	210
35°	371	388	368	388	371	232
45°	282	306	280	306	282	218
55°	204	184	202	184	204	182
65°	128	94	128	94	128	128
75°	63	46	66	46	63	74
85°	92	11	40	11	92	69
90°	141	1	23	1	141	78
95°	201	31	14	31	201	177
105°	337	155	6	155	337	355
115°	477	318	109	318	477	473
125°	597	497	271	497	597	533
135°	694	679	436	679	694	535
145°	762	849	587	849	762	480
155°	852	982	738	982	852	393
165°	931	1068	900	1068	931	264
175°	1101	1112	1078	1112	1101	103
180°	1112	1112	1112	1112	1112	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	542.6	542.6	542.6	542.6	542.6	542.6	542.6	542.6	542.6	542.6	542.6
2.5°	540.2	541.7	543.3	542.3	541.3	541.4	543.3	541.7	541.0	541.7	543.3
5°	536.5	538.9	540.5	538.6	537.7	538.6	539.8	538.9	536.5	538.9	539.8
7.5°	533.5	535.1	535.1	534.0	533.0	533.2	534.2	534.2	533.5	534.2	534.2
10°	527.7	528.5	528.5	527.6	525.7	526.8	527.7	527.0	527.7	527.0	527.7
12.5°	521.8	521.1	519.3	518.4	516.7	518.4	519.3	519.5	520.2	519.5	519.3
15°	512.4	510.8	510.0	510.0	507.3	509.2	509.2	509.2	510.0	509.2	509.2
17.5°	501.2	499.6	498.8	498.0	497.1	498.0	498.0	498.8	498.8	498.8	498.0
20°	487.2	487.3	486.6	484.9	484.2	484.2	485.9	485.7	484.7	485.7	485.9
22.5°	472.3	472.3	472.6	472.8	471.1	472.0	471.9	470.7	470.7	470.7	471.9
25°	456.4	456.4	457.6	457.8	457.1	457.1	456.0	454.1	454.1	454.1	456.0
27.5°	437.8	438.7	441.7	442.7	441.2	442.0	440.1	436.4	435.4	436.4	440.1
30°	418.2	420.0	424.7	426.7	425.3	425.2	422.4	417.7	415.1	417.7	422.4
32.5°	394.8	397.6	404.1	409.0	408.3	407.4	401.8	394.5	391.7	394.5	401.8
35°	370.7	373.5	381.9	389.4	388.0	387.0	379.6	371.2	368.4	371.2	379.6
37.5°	347.4	348.3	357.6	368.8	370.0	366.5	355.3	346.0	345.0	346.0	355.3
40°	325.9	324.0	330.5	346.5	349.5	345.0	327.4	320.8	322.7	320.8	327.4
42.5°	303.5	300.7	304.5	322.2	329.0	320.7	302.1	297.5	300.3	297.5	302.1
45°	282.1	279.3	278.3	296.1	305.6	294.6	275.2	276.9	279.7	276.9	275.2
47.5°	262.5	257.8	255.0	268.2	283.2	267.5	251.9	255.4	260.1	255.4	251.9
50°	241.0	239.1	233.5	241.2	251.6	239.6	230.4	236.0	238.6	236.0	230.4
52.5°	223.2	220.4	212.2	215.9	219.9	214.4	209.9	217.3	220.9	217.3	209.9
55°	203.8	201.9	191.7	190.9	184.5	189.3	189.3	199.6	202.2	199.6	189.3
57.5°	185.1	183.3	172.0	164.8	154.6	163.2	169.7	180.9	183.5	180.9	169.7
60°	166.6	164.8	150.7	139.6	132.2	138.9	149.2	163.2	165.8	163.2	149.2
62.5°	148.9	145.1	129.3	115.3	110.9	114.6	127.7	143.6	148.0	143.6	127.7
65°	128.4	123.8	108.8	96.7	94.1	95.9	108.1	123.0	128.4	123.0	108.1
67.5°	110.7	104.1	92.0	80.0	81.0	80.0	91.3	103.4	110.7	103.4	91.3
70°	94.1	85.6	74.4	66.0	67.9	66.0	74.4	86.4	94.8	86.4	74.4
72.5°	78.2	68.8	60.4	53.9	55.9	53.1	60.4	69.6	79.8	69.6	60.4
75°	63.2	55.8	46.5	42.8	46.5	42.8	47.4	56.5	65.6	56.5	47.4
77.5°	59.2	48.6	36.2	33.4	37.2	33.4	37.1	46.2	56.0	46.2	37.1
80°	63.2	52.1	30.3	26.0	27.8	26.0	28.7	39.6	48.3	39.6	28.7
82.5°	73.7	63.8	35.0	18.5	19.4	18.5	25.6	35.5	43.8	35.5	25.6
85°	91.5	83.6	49.5	16.3	11.0	14.7	26.7	35.8	40.4	35.8	26.7
87.5°	115.1	109.0	69.4	25.2	2.8	14.2	24.7	33.5	34.2	33.5	24.7
90°	141.0	135.1	94.9	38.9	0.7	9.1	17.2	24.3	23.3	24.3	17.2
92.5°	172.8	165.2	121.1	59.5	12.6	5.3	13.5	20.0	18.9	20.0	13.5
95°	200.6	196.9	151.2	81.7	31.4	3.2	9.8	14.7	14.5	14.7	9.8
97.5°	232.4	227.5	182.0	109.9	55.8	9.4	8.4	11.6	12.5	11.6	8.4
100°	259.3	257.6	214.5	143.7	85.6	26.0	6.4	10.9	11.9	10.9	6.4
102.5°	301.2	290.9	245.8	176.0	117.8	48.7	11.8	8.1	9.1	8.1	11.8
105°	337.1	326.1	284.3	209.7	154.8	79.3	30.6	10.4	6.4	10.4	30.6
107.5°	370.9	363.0	319.8	244.2	194.0	114.7	58.3	30.0	19.0	30.0	58.3
110°	410.1	400.7	353.6	279.7	234.8	153.3	88.9	55.1	42.6	55.1	88.9



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	447.9	440.8	385.0	315.9	278.1	194.2	126.6	86.6	74.7	86.6	126.6
115°	476.9	473.0	421.1	349.7	317.5	240.5	168.2	123.5	109.3	123.5	168.2
117.5°	507.5	506.8	447.9	384.2	364.5	282.1	206.7	160.4	145.4	160.4	206.7
120°	546.0	539.8	484.7	418.8	409.4	326.1	249.1	202.8	187.8	202.8	249.1
122.5°	572.7	568.8	516.1	451.8	451.8	370.9	290.0	243.6	227.9	243.6	290.0
125°	597.1	595.5	539.8	484.7	497.4	412.5	335.5	288.4	271.1	288.4	335.5
127.5°	619.1	621.4	570.4	520.9	543.7	454.9	380.3	328.5	310.4	328.5	380.3
130°	637.9	645.8	599.4	553.9	587.7	501.3	420.3	368.5	356.7	368.5	420.3
132.5°	674.8	670.1	629.2	587.7	634.7	543.7	462.8	408.5	395.2	408.5	462.8
135°	693.7	695.3	655.2	616.7	678.7	586.1	502.8	449.4	436.1	449.4	502.8
137.5°	716.5	711.7	675.6	652.0	719.6	626.9	542.1	492.6	471.4	492.6	542.1
140°	732.9	732.2	702.3	683.5	763.5	667.0	582.2	531.9	512.2	531.9	582.2
142.5°	750.2	754.9	729.0	718.1	807.5	709.4	625.3	570.4	551.5	570.4	625.3
145°	762.0	772.2	755.7	761.2	849.2	756.5	663.0	607.3	586.8	607.3	663.0
147.5°	781.7	795.0	775.3	791.8	885.3	798.1	700.8	645.8	627.7	645.8	700.8
150°	808.4	814.6	802.9	834.2	922.2	844.4	739.3	682.7	664.6	682.7	739.3
152.5°	829.6	837.4	824.1	880.6	951.3	886.9	781.7	718.8	697.6	718.8	781.7
155°	851.5	854.7	845.3	925.4	981.9	928.5	815.4	758.9	738.4	758.9	815.4
157.5°	872.0	878.2	867.2	959.1	1008.6	964.6	853.9	798.9	780.8	798.9	853.9
160°	893.9	893.9	900.2	998.4	1030.6	996.0	894.8	842.9	817.8	842.9	894.8
162.5°	896.3	911.2	945.0	1025.9	1051.8	1023.6	938.8	874.3	852.4	874.3	938.8
165°	930.8	944.2	995.3	1050.3	1068.3	1047.9	992.9	926.2	900.2	926.2	992.9
167.5°	967.0	995.3	1036.1	1077.7	1084.0	1070.6	1034.5	988.2	964.6	988.2	1034.5
170°	1025.9	1050.3	1070.6	1087.9	1096.6	1088.8	1060.5	1037.7	1022.7	1037.7	1060.5
172.5°	1072.2	1087.9	1095.8	1106.8	1101.3	1098.2	1084.0	1073.1	1065.1	1073.1	1084.0
175°	1101.3	1104.5	1111.5	1107.6	1112.3	1103.6	1104.5	1110.0	1077.7	1110.0	1104.5
177.5°	1111.5	1117.0	1113.0	1106.0	1106.8	1105.2	1108.4	1111.5	1106.8	1111.5	1108.4
180°	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5



TEST NUMBER: P382268

CATALOG NUMBER: MWL-2-28-13-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	542.6	542.6	542.6	542.6	542.6	542.6
2.5°	541.4	541.3	542.3	543.3	541.7	540.2
5°	538.6	537.7	538.6	540.5	538.9	536.5
7.5°	533.2	533.0	534.0	535.1	535.1	533.5
10°	526.8	525.7	527.6	528.5	528.5	527.7
12.5°	518.4	516.7	518.4	519.3	521.1	521.8
15°	509.2	507.3	510.0	510.0	510.8	512.4
17.5°	498.0	497.1	498.0	498.8	499.6	501.2
20°	484.2	484.2	484.9	486.6	487.3	487.2
22.5°	472.0	471.1	472.8	472.6	472.3	472.3
25°	457.1	457.1	457.8	457.6	456.4	456.4
27.5°	442.0	441.2	442.7	441.7	438.7	437.8
30°	425.2	425.3	426.7	424.7	420.0	418.2
32.5°	407.4	408.3	409.0	404.1	397.6	394.8
35°	387.0	388.0	389.4	381.9	373.5	370.7
37.5°	366.5	370.0	368.8	357.6	348.3	347.4
40°	345.0	349.5	346.5	330.5	324.0	325.9
42.5°	320.7	329.0	322.2	304.5	300.7	303.5
45°	294.6	305.6	296.1	278.3	279.3	282.1
47.5°	267.5	283.2	268.2	255.0	257.8	262.5
50°	239.6	251.6	241.2	233.5	239.1	241.0
52.5°	214.4	219.9	215.9	212.2	220.4	223.2
55°	189.3	184.5	190.9	191.7	201.9	203.8
57.5°	163.2	154.6	164.8	172.0	183.3	185.1
60°	138.9	132.2	139.6	150.7	164.8	166.6
62.5°	114.6	110.9	115.3	129.3	145.1	148.9
65°	95.9	94.1	96.7	108.8	123.8	128.4
67.5°	80.0	81.0	80.0	92.0	104.1	110.7
70°	66.0	67.9	66.0	74.4	85.6	94.1
72.5°	53.1	55.9	53.9	60.4	68.8	78.2
75°	42.8	46.5	42.8	46.5	55.8	63.2
77.5°	33.4	37.2	33.4	36.2	48.6	59.2
80°	26.0	27.8	26.0	30.3	52.1	63.2
82.5°	18.5	19.4	18.5	35.0	63.8	73.7
85°	14.7	11.0	16.3	49.5	83.6	91.5
87.5°	14.2	2.8	25.2	69.4	109.0	115.1
90°	9.1	0.7	38.9	94.9	135.1	141.0
92.5°	5.3	12.6	59.5	121.1	165.2	172.8
95°	3.2	31.4	81.7	151.2	196.9	200.6
97.5°	9.4	55.8	109.9	182.0	227.5	232.4
100°	26.0	85.6	143.7	214.5	257.6	259.3
102.5°	48.7	117.8	176.0	245.8	290.9	301.2
105°	79.3	154.8	209.7	284.3	326.1	337.1
107.5°	114.7	194.0	244.2	319.8	363.0	370.9
110°	153.3	234.8	279.7	353.6	400.7	410.1



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	194.2	278.1	315.9	385.0	440.8	447.9
115°	240.5	317.5	349.7	421.1	473.0	476.9
117.5°	282.1	364.5	384.2	447.9	506.8	507.5
120°	326.1	409.4	418.8	484.7	539.8	546.0
122.5°	370.9	451.8	451.8	516.1	568.8	572.7
125°	412.5	497.4	484.7	539.8	595.5	597.1
127.5°	454.9	543.7	520.9	570.4	621.4	619.1
130°	501.3	587.7	553.9	599.4	645.8	637.9
132.5°	543.7	634.7	587.7	629.2	670.1	674.8
135°	586.1	678.7	616.7	655.2	695.3	693.7
137.5°	626.9	719.6	652.0	675.6	711.7	716.5
140°	667.0	763.5	683.5	702.3	732.2	732.9
142.5°	709.4	807.5	718.1	729.0	754.9	750.2
145°	756.5	849.2	761.2	755.7	772.2	762.0
147.5°	798.1	885.3	791.8	775.3	795.0	781.7
150°	844.4	922.2	834.2	802.9	814.6	808.4
152.5°	886.9	951.3	880.6	824.1	837.4	829.6
155°	928.5	981.9	925.4	845.3	854.7	851.5
157.5°	964.6	1008.6	959.1	867.2	878.2	872.0
160°	996.0	1030.6	998.4	900.2	893.9	893.9
162.5°	1023.6	1051.8	1025.9	945.0	911.2	896.3
165°	1047.9	1068.3	1050.3	995.3	944.2	930.8
167.5°	1070.6	1084.0	1077.7	1036.1	995.3	967.0
170°	1088.8	1096.6	1087.9	1070.6	1050.3	1025.9
172.5°	1098.2	1101.3	1106.8	1095.8	1087.9	1072.2
175°	1103.6	1112.3	1107.6	1111.5	1104.5	1101.3
177.5°	1105.2	1106.8	1106.0	1113.0	1117.0	1111.5
180°	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5

(END OF REPORT)