

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: P382163

Luminaire Tested: **MWL-2-22-13-UNV-L830-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P382163
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-L830-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

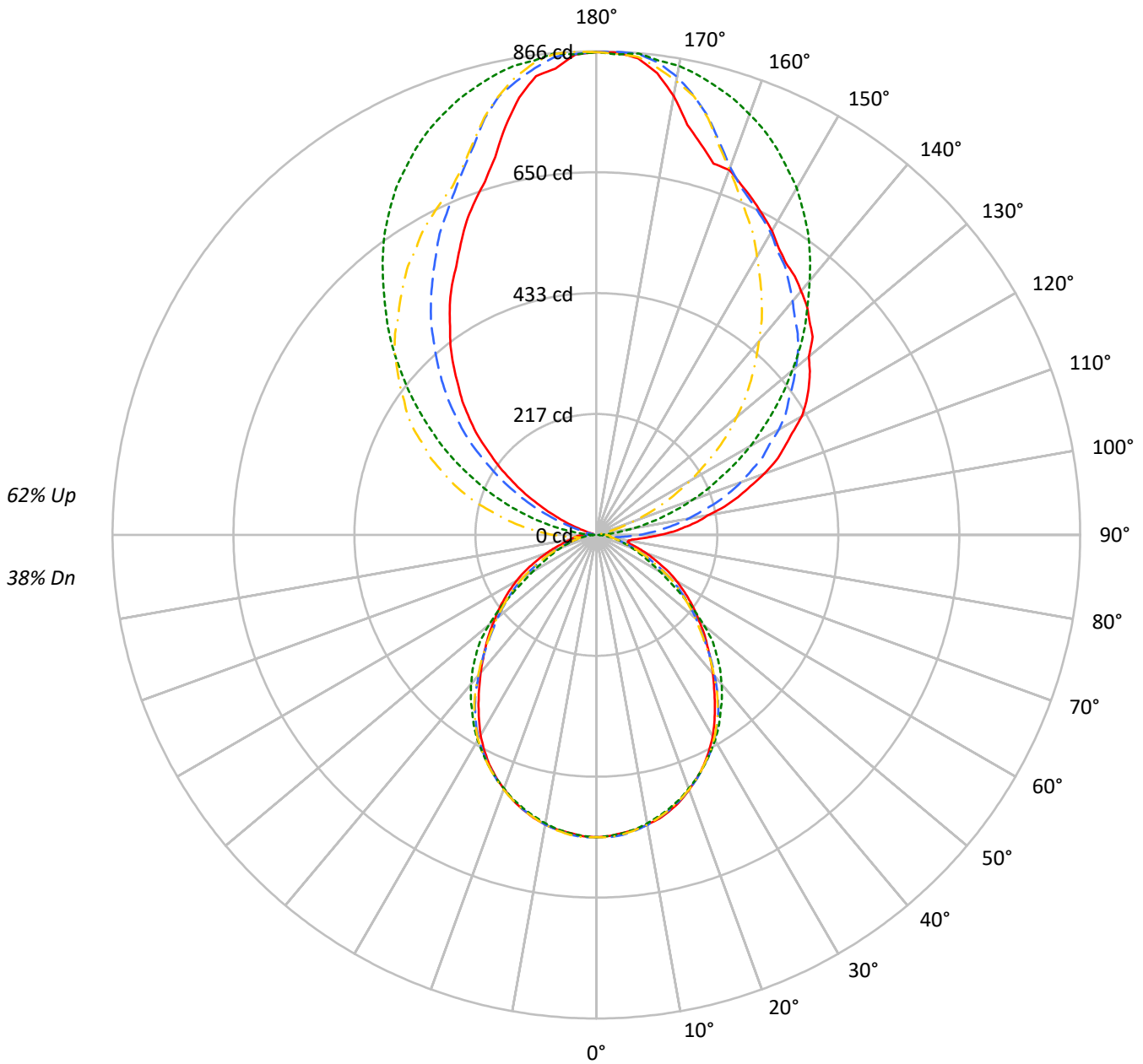
Lumens per Lamp: N/A
Luminaire Lumens: 3297.0 lumens
Efficiency: N/A
Efficacy: 98.4 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Indirect

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°	6992	6992	6992	6992
5°	6822	6394	6822	6394
10°	6663	5848	6663	5848
15°	6469	5342	6445	5342
20°	6204	4872	6180	4872
25°	5910	4435	5888	4435
30°	5548	4015	5516	4015
35°	5085	3591	5059	3591
40°	4660	3197	4624	3197
45°	4248	2784	4222	2784
50°	3862	2300	3835	2300
55°	3523	1706	3501	1706
60°	3149	1245	3138	1245
65°	2704	911	2704	911
70°	2250	680	2265	680
75°	1766	489	1817	489
80°	1998	309	1599	309
85°	3379	130	1644	130



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	51.0	1.5
10°-20°	143.2	4.3
20°-30°	209.5	6.4
30°-40°	236.6	7.2
40°-50°	220.0	6.7
50°-60°	172.9	5.2
60°-70°	109.7	3.3
70°-80°	55.0	1.7
80°-90°	38.8	1.2
90°-100°	66.8	2.0
100°-110°	132.9	4.0
110°-120°	229.8	7.0
120°-130°	312.1	9.5
130°-140°	355.9	10.8
140°-150°	355.0	10.8
150°-160°	309.2	9.4
160°-170°	217.5	6.6
170°-180°	81.0	2.5
0°-30°	403.7	12.2
0°-40°	640.3	19.4
0°-60°	1033.2	31.3
0°-90°	1236.7	37.5
90°-120°	429.5	13.0
90°-150°	1452.6	44.1
90°-180°	2060.0	62.5
0°-180°	3297.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	541	541	541	541	541	
5°	536	536	536	536	536	51
15°	511	506	509	506	511	144
25°	455	456	453	456	455	209
35°	370	387	368	387	370	231
45°	281	305	279	305	281	217
55°	203	184	202	184	203	182
65°	128	94	128	94	128	128
75°	63	46	65	46	63	72
85°	77	11	38	11	77	59
90°	114	1	22	1	114	63
95°	159	24	14	24	159	139
105°	262	120	5	120	262	276
115°	371	247	85	247	371	368
125°	464	387	211	387	464	415
135°	540	528	339	528	540	417
145°	593	660	456	660	593	374
155°	662	764	574	764	662	306
165°	724	831	700	831	724	205
175°	857	865	838	865	857	80
180°	864	864	864	864	864	



TEST NUMBER: P382163

CATALOG NUMBER: MWL-2-22-13-UNV-L830-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	541.3	541.3	541.3	541.3	541.3	541.3	541.3	541.3	541.3	541.3	541.3
2.5°	539.5	540.7	541.9	540.7	539.8	540.0	541.9	540.7	540.1	540.7	541.9
5°	535.7	537.9	539.1	537.2	536.3	537.2	538.5	537.9	535.7	537.9	538.5
7.5°	532.7	533.9	533.9	532.6	531.6	532.0	533.2	533.2	532.7	533.2	533.2
10°	526.7	527.3	527.3	526.4	524.5	525.7	526.7	526.1	526.7	526.1	526.7
12.5°	520.4	519.9	518.3	517.3	515.8	517.3	518.3	518.6	519.2	518.6	518.3
15°	510.8	509.6	508.9	508.9	506.5	508.4	508.4	508.4	508.9	508.4	508.4
17.5°	499.6	498.4	497.7	497.2	496.2	497.2	497.2	497.7	497.7	497.7	497.2
20°	485.6	485.9	485.6	484.1	483.4	483.4	485.0	484.6	483.7	484.6	485.0
22.5°	470.9	470.9	471.6	471.9	470.4	471.3	471.0	469.7	469.7	469.7	471.0
25°	455.0	455.0	456.3	457.0	456.3	456.3	455.1	453.3	453.3	453.3	455.1
27.5°	436.4	437.3	440.5	441.7	440.5	441.1	439.3	435.5	434.6	435.5	439.3
30°	416.7	418.6	423.3	425.5	424.6	424.3	421.5	416.8	414.3	416.8	421.5
32.5°	393.4	396.2	402.7	407.8	407.5	406.6	401.0	393.8	391.0	393.8	401.0
35°	369.5	372.3	380.7	388.2	387.2	386.3	378.8	370.4	367.6	370.4	378.8
37.5°	346.1	347.1	356.4	367.6	369.2	365.7	354.5	345.2	344.3	345.2	354.5
40°	324.7	322.8	329.3	345.5	348.7	344.3	326.9	320.4	322.2	320.4	326.9
42.5°	302.2	299.4	303.5	321.2	328.1	320.0	301.7	297.0	299.8	297.0	301.7
45°	281.0	278.2	277.3	295.0	304.8	293.8	274.9	276.5	279.3	276.5	274.9
47.5°	261.4	256.8	254.0	267.4	282.3	266.7	251.5	255.0	259.6	255.0	251.5
50°	239.9	238.1	232.5	240.3	250.9	239.1	230.0	235.6	238.2	235.6	230.0
52.5°	222.2	219.4	211.4	215.1	219.1	213.9	209.5	217.0	220.4	217.0	209.5
55°	203.0	201.1	190.8	190.2	184.0	188.9	188.9	199.2	201.7	199.2	188.9
57.5°	184.3	182.4	171.2	164.0	154.1	162.8	169.3	180.5	183.1	180.5	169.3
60°	165.9	164.0	150.0	139.2	131.7	138.5	148.8	162.8	165.3	162.8	148.8
62.5°	148.1	144.4	128.5	114.9	110.5	114.2	127.3	143.2	147.6	143.2	127.3
65°	128.0	123.3	108.3	96.2	93.7	95.5	107.7	122.6	128.0	122.6	107.7
67.5°	110.2	103.7	91.5	79.7	80.6	79.7	90.9	103.0	110.2	103.0	90.9
70°	93.7	85.3	74.1	65.7	67.5	65.7	74.1	85.9	94.3	85.9	74.1
72.5°	77.8	68.5	60.1	53.5	55.8	53.0	60.1	69.1	79.0	69.1	60.1
75°	62.9	55.4	46.4	42.7	46.4	42.7	47.0	56.0	64.7	56.0	47.0
77.5°	57.4	47.5	36.1	33.3	37.1	33.3	36.7	45.8	55.0	45.8	36.7
80°	58.6	48.7	29.5	25.9	27.7	25.9	28.3	38.9	46.9	38.9	28.3
82.5°	64.7	56.5	32.2	18.4	19.3	18.4	24.8	34.5	41.6	34.5	24.8
85°	77.1	71.1	42.8	15.5	10.9	14.3	25.1	33.8	37.5	33.8	25.1
87.5°	94.5	89.9	57.7	21.9	2.8	13.4	22.9	31.3	31.6	31.3	22.9
90°	113.7	109.4	77.0	31.9	0.7	8.7	16.4	23.3	22.0	23.3	16.4
92.5°	137.7	132.3	96.7	47.1	9.8	5.0	13.1	19.2	18.0	19.2	13.1
95°	158.7	156.0	119.3	63.5	24.5	2.4	9.3	14.3	14.0	14.3	9.3
97.5°	182.8	178.8	142.3	85.5	43.3	7.3	7.4	10.8	11.8	10.8	7.4
100°	202.9	201.4	167.1	111.8	66.6	20.2	5.2	9.5	10.5	9.5	5.2
102.5°	234.9	226.6	191.2	136.8	91.6	37.8	9.2	6.7	7.7	6.7	9.2
105°	262.4	253.8	221.1	163.1	120.3	61.6	23.8	8.2	5.2	8.2	23.8
107.5°	288.6	282.5	248.9	190.0	150.8	89.2	45.5	23.5	14.9	23.5	45.5
110°	319.1	311.8	275.2	217.7	182.6	119.5	69.3	43.1	33.3	43.1	69.3



TEST NUMBER: P382163

CATALOG NUMBER: MWL-2-22-13-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	348.5	343.0	299.6	245.8	216.5	151.2	98.6	67.5	58.4	67.5	98.6
115°	371.1	368.0	327.6	272.1	247.0	187.2	131.0	96.2	85.2	96.2	131.0
117.5°	394.9	394.2	348.5	299.0	283.7	219.6	160.9	124.9	113.3	124.9	160.9
120°	424.8	419.9	377.1	325.9	318.5	253.8	193.9	157.9	146.3	157.9	193.9
122.5°	445.6	442.5	401.6	351.5	351.5	288.6	225.7	189.7	177.5	189.7	225.7
125°	464.5	463.3	419.9	377.1	387.0	321.0	261.1	224.4	211.0	224.4	261.1
127.5°	481.6	483.4	443.7	405.3	423.0	354.0	295.9	255.6	241.5	255.6	295.9
130°	496.2	502.4	466.3	430.9	457.2	389.9	327.1	286.7	277.6	286.7	327.1
132.5°	525.0	521.3	489.5	457.2	493.8	423.0	360.1	317.9	307.6	317.9	360.1
135°	539.7	540.9	509.7	479.8	528.0	456.0	391.2	349.7	339.3	349.7	391.2
137.5°	557.3	553.7	525.6	507.2	559.7	487.7	421.7	383.3	366.8	383.3	421.7
140°	570.1	569.5	546.3	531.7	594.0	518.8	452.9	413.8	398.5	413.8	452.9
142.5°	583.6	587.3	567.1	558.5	628.2	551.8	486.5	443.7	429.1	443.7	486.5
145°	592.7	600.6	587.9	592.1	660.5	588.5	515.8	472.4	456.5	472.4	515.8
147.5°	608.0	618.4	603.2	616.0	688.6	620.8	545.1	502.4	488.3	502.4	545.1
150°	628.8	633.7	624.5	648.9	717.3	656.9	575.1	531.1	517.1	531.1	575.1
152.5°	645.3	651.4	641.0	685.0	739.9	689.8	608.0	559.2	542.6	559.2	608.0
155°	662.4	664.8	657.5	719.8	763.7	722.3	634.3	590.3	574.4	590.3	634.3
157.5°	678.3	683.1	674.6	746.1	784.5	750.4	664.3	621.5	607.4	621.5	664.3
160°	695.4	695.4	700.2	776.6	801.6	774.7	696.0	655.7	636.1	655.7	696.0
162.5°	697.2	708.8	735.0	798.0	818.1	796.1	730.2	680.1	662.9	680.1	730.2
165°	724.0	734.5	774.2	816.9	831.0	815.1	772.3	720.4	700.2	720.4	772.3
167.5°	752.1	774.2	805.9	838.3	843.1	832.7	804.7	768.7	750.4	768.7	804.7
170°	798.0	816.9	832.7	846.2	852.9	846.8	824.8	807.2	795.5	807.2	824.8
172.5°	834.0	846.2	852.4	860.9	856.6	854.1	843.1	834.6	828.5	834.6	843.1
175°	856.6	859.1	864.5	861.5	865.2	858.4	859.1	863.3	838.3	863.3	859.1
177.5°	864.5	868.8	865.7	860.3	860.9	859.6	862.1	864.5	860.9	864.5	862.1
180°	864.5	864.5	864.5	864.5	864.5	864.5	864.5	864.5	864.5	864.5	864.5



TEST NUMBER: P382163

CATALOG NUMBER: MWL-2-22-13-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	541.3	541.3	541.3	541.3	541.3	541.3
2.5°	540.0	539.8	540.7	541.9	540.7	539.5
5°	537.2	536.3	537.2	539.1	537.9	535.7
7.5°	532.0	531.6	532.6	533.9	533.9	532.7
10°	525.7	524.5	526.4	527.3	527.3	526.7
12.5°	517.3	515.8	517.3	518.3	519.9	520.4
15°	508.4	506.5	508.9	508.9	509.6	510.8
17.5°	497.2	496.2	497.2	497.7	498.4	499.6
20°	483.4	483.4	484.1	485.6	485.9	485.6
22.5°	471.3	470.4	471.9	471.6	470.9	470.9
25°	456.3	456.3	457.0	456.3	455.0	455.0
27.5°	441.1	440.5	441.7	440.5	437.3	436.4
30°	424.3	424.6	425.5	423.3	418.6	416.7
32.5°	406.6	407.5	407.8	402.7	396.2	393.4
35°	386.3	387.2	388.2	380.7	372.3	369.5
37.5°	365.7	369.2	367.6	356.4	347.1	346.1
40°	344.3	348.7	345.5	329.3	322.8	324.7
42.5°	320.0	328.1	321.2	303.5	299.4	302.2
45°	293.8	304.8	295.0	277.3	278.2	281.0
47.5°	266.7	282.3	267.4	254.0	256.8	261.4
50°	239.1	250.9	240.3	232.5	238.1	239.9
52.5°	213.9	219.1	215.1	211.4	219.4	222.2
55°	188.9	184.0	190.2	190.8	201.1	203.0
57.5°	162.8	154.1	164.0	171.2	182.4	184.3
60°	138.5	131.7	139.2	150.0	164.0	165.9
62.5°	114.2	110.5	114.9	128.5	144.4	148.1
65°	95.5	93.7	96.2	108.3	123.3	128.0
67.5°	79.7	80.6	79.7	91.5	103.7	110.2
70°	65.7	67.5	65.7	74.1	85.3	93.7
72.5°	53.0	55.8	53.5	60.1	68.5	77.8
75°	42.7	46.4	42.7	46.4	55.4	62.9
77.5°	33.3	37.1	33.3	36.1	47.5	57.4
80°	25.9	27.7	25.9	29.5	48.7	58.6
82.5°	18.4	19.3	18.4	32.2	56.5	64.7
85°	14.3	10.9	15.5	42.8	71.1	77.1
87.5°	13.4	2.8	21.9	57.7	89.9	94.5
90°	8.7	0.7	31.9	77.0	109.4	113.7
92.5°	5.0	9.8	47.1	96.7	132.3	137.7
95°	2.4	24.5	63.5	119.3	156.0	158.7
97.5°	7.3	43.3	85.5	142.3	178.8	182.8
100°	20.2	66.6	111.8	167.1	201.4	202.9
102.5°	37.8	91.6	136.8	191.2	226.6	234.9
105°	61.6	120.3	163.1	221.1	253.8	262.4
107.5°	89.2	150.8	190.0	248.9	282.5	288.6
110°	119.5	182.6	217.7	275.2	311.8	319.1



TEST NUMBER: P382163

CATALOG NUMBER: MWL-2-22-13-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	151.2	216.5	245.8	299.6	343.0	348.5
115°	187.2	247.0	272.1	327.6	368.0	371.1
117.5°	219.6	283.7	299.0	348.5	394.2	394.9
120°	253.8	318.5	325.9	377.1	419.9	424.8
122.5°	288.6	351.5	351.5	401.6	442.5	445.6
125°	321.0	387.0	377.1	419.9	463.3	464.5
127.5°	354.0	423.0	405.3	443.7	483.4	481.6
130°	389.9	457.2	430.9	466.3	502.4	496.2
132.5°	423.0	493.8	457.2	489.5	521.3	525.0
135°	456.0	528.0	479.8	509.7	540.9	539.7
137.5°	487.7	559.7	507.2	525.6	553.7	557.3
140°	518.8	594.0	531.7	546.3	569.5	570.1
142.5°	551.8	628.2	558.5	567.1	587.3	583.6
145°	588.5	660.5	592.1	587.9	600.6	592.7
147.5°	620.8	688.6	616.0	603.2	618.4	608.0
150°	656.9	717.3	648.9	624.5	633.7	628.8
152.5°	689.8	739.9	685.0	641.0	651.4	645.3
155°	722.3	763.7	719.8	657.5	664.8	662.4
157.5°	750.4	784.5	746.1	674.6	683.1	678.3
160°	774.7	801.6	776.6	700.2	695.4	695.4
162.5°	796.1	818.1	798.0	735.0	708.8	697.2
165°	815.1	831.0	816.9	774.2	734.5	724.0
167.5°	832.7	843.1	838.3	805.9	774.2	752.1
170°	846.8	852.9	846.2	832.7	816.9	798.0
172.5°	854.1	856.6	860.9	852.4	846.2	834.0
175°	858.4	865.2	861.5	864.5	859.1	856.6
177.5°	859.6	860.9	860.3	865.7	868.8	864.5
180°	864.5	864.5	864.5	864.5	864.5	864.5

(END OF REPORT)