

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: P382205

Luminaire Tested: **MWL-2-18-13-UNV-L830-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P382205  
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-2-18-13-UNV-L830-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

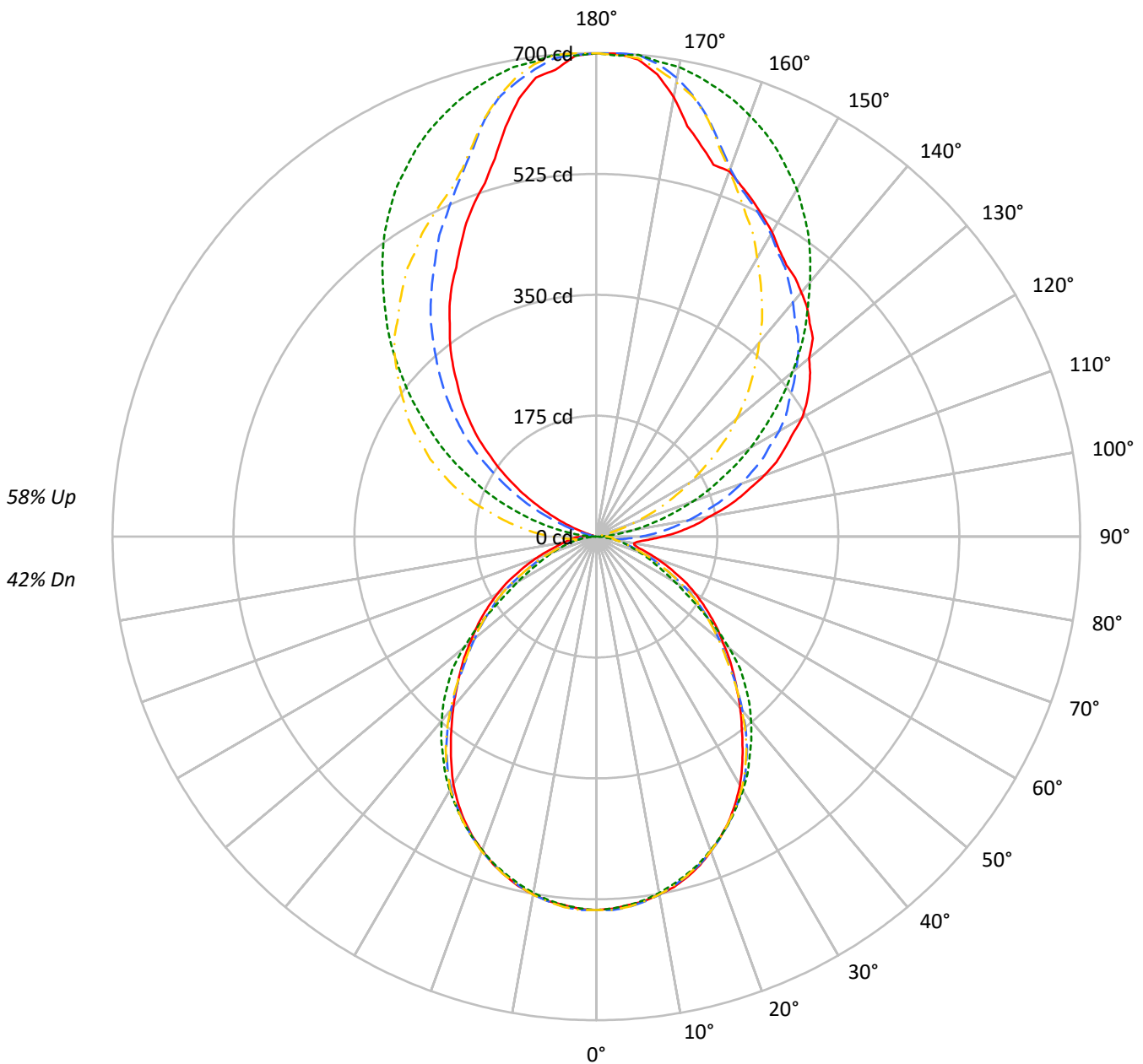
Lumens per Lamp: N/A  
Luminaire Lumens: 2900.0 lumens  
Efficiency: N/A  
Efficacy: 101.8 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')  
CIE Type: General Diffuse

Input Watts (W): 28.5  
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				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	96	96	96	96	79	79	79	64	64	64	49	49	49	42
1	96	92	88	85	88	84	81	78	70	67	65	56	55	53	44	43	42	36
2	88	81	75	70	80	74	69	65	61	58	54	50	47	45	39	37	36	31
3	80	71	64	58	73	65	59	54	54	50	46	44	41	38	35	33	31	26
4	74	63	56	50	67	58	51	46	48	44	40	40	36	33	31	29	27	23
5	68	56	49	43	62	52	45	40	43	38	34	36	32	29	28	26	24	20
6	62	51	43	37	57	47	40	35	39	34	30	32	28	25	26	23	21	18
7	58	46	38	33	53	42	35	31	36	30	27	29	25	23	24	21	19	16
8	54	42	34	29	49	38	32	27	33	27	24	27	23	20	22	19	17	14
9	50	38	31	26	46	35	29	24	30	25	21	25	21	18	20	17	15	13
10	47	35	28	23	43	32	26	22	27	23	19	23	19	16	19	16	14	12

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

	0°	90°	180°	270°
0°	6981	6981	6981	6981
5°	6816	6384	6816	6384
10°	6655	5839	6655	5839
15°	6457	5334	6438	5334
20°	6190	4868	6171	4868
25°	5899	4431	5879	4431
30°	5536	4010	5509	4010
35°	5072	3587	5052	3587
40°	4647	3191	4619	3191
45°	4239	2777	4216	2777
50°	3852	2296	3828	2296
55°	3511	1703	3495	1703
60°	3140	1242	3130	1242
65°	2696	909	2696	909
70°	2246	678	2258	678
75°	1760	487	1800	487
80°	1889	308	1568	308
85°	2963	128	1556	128



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	50.9	1.8
10°-20°	143.0	4.9
20°-30°	209.2	7.2
30°-40°	236.2	8.1
40°-50°	219.5	7.6
50°-60°	172.5	5.9
60°-70°	109.4	3.8
70°-80°	54.7	1.9
80°-90°	35.6	1.2
90°-100°	55.5	1.9
100°-110°	107.7	3.7
110°-120°	186.1	6.4
120°-130°	252.6	8.7
130°-140°	288.1	9.9
140°-150°	287.3	9.9
150°-160°	250.2	8.6
160°-170°	176.0	6.1
170°-180°	65.6	2.3
0°-30°	403.1	13.9
0°-40°	639.3	22.0
0°-60°	1031.3	35.6
0°-90°	1231.1	42.5
90°-120°	349.3	12.0
90°-150°	1177.2	40.6
90°-180°	1669.0	57.6
0°-180°	2900.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	540	540	540	540	540	
5°	535	535	535	535	535	51
15°	510	506	508	506	510	143
25°	454	456	453	456	454	208
35°	369	387	367	387	369	231
45°	280	304	279	304	280	217
55°	202	184	201	184	202	181
65°	128	94	128	94	128	127
75°	63	46	64	46	63	72
85°	68	11	36	11	68	53
90°	95	0	21	0	95	53
95°	131	20	14	20	131	114
105°	212	97	4	97	212	224
115°	300	200	69	200	300	298
125°	376	313	171	313	376	336
135°	437	427	275	427	437	337
145°	480	534	370	534	480	302
155°	536	618	465	618	536	247
165°	586	672	567	672	586	166
175°	693	700	678	700	693	65
180°	700	700	700	700	700	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	540.5	540.5	540.5	540.5	540.5	540.5	540.5	540.5	540.5	540.5	540.5
2.5°	539.0	540.0	541.0	539.6	538.7	539.1	541.0	540.0	539.5	540.0	541.0
5°	535.3	537.2	538.2	536.3	535.4	536.3	537.7	537.2	535.3	537.2	537.7
7.5°	532.0	533.0	533.0	531.6	530.7	531.1	532.6	532.6	532.0	532.6	532.6
10°	526.0	526.5	526.5	525.5	523.7	525.1	526.0	525.5	526.0	525.5	526.0
12.5°	519.5	519.0	517.6	516.7	515.2	516.7	517.6	518.0	518.5	518.0	517.6
15°	509.8	508.7	508.3	508.3	505.8	507.7	507.7	507.7	508.3	507.7	507.7
17.5°	498.6	497.5	497.1	496.5	495.6	496.5	496.5	497.1	497.1	497.1	496.5
20°	484.5	484.9	484.9	483.4	483.0	483.0	484.4	484.0	483.0	484.0	484.4
22.5°	470.0	470.0	470.9	471.3	469.9	470.8	470.3	469.0	469.0	469.0	470.3
25°	454.1	454.1	455.5	456.3	455.9	455.9	454.5	452.6	452.6	452.6	454.5
27.5°	435.4	436.4	439.6	441.0	440.0	440.5	438.6	434.9	433.9	434.9	438.6
30°	415.8	417.7	422.3	424.7	424.1	423.6	420.8	416.2	413.8	416.2	420.8
32.5°	392.5	395.3	401.8	406.9	406.8	405.9	400.3	393.3	390.5	393.3	400.3
35°	368.6	371.4	379.8	387.3	386.8	385.8	378.4	369.9	367.1	369.9	378.4
37.5°	345.3	346.2	355.6	366.8	368.5	365.3	354.1	344.7	343.8	344.7	354.1
40°	323.8	321.9	328.5	344.8	348.0	343.8	326.5	320.0	321.8	320.0	326.5
42.5°	301.4	298.6	302.8	320.5	327.5	319.5	301.3	296.6	299.4	296.6	301.3
45°	280.4	277.6	276.6	294.4	304.1	293.4	274.7	276.1	278.9	276.1	274.7
47.5°	260.8	256.1	253.3	266.7	281.7	266.3	251.3	254.6	259.3	254.6	251.3
50°	239.3	237.4	231.8	239.7	250.4	238.7	229.9	235.5	237.8	235.5	229.9
52.5°	221.5	218.7	210.7	214.4	218.6	213.5	209.3	216.8	220.0	216.8	209.3
55°	202.3	200.4	190.2	189.7	183.6	188.8	188.8	199.0	201.4	199.0	188.8
57.5°	183.6	181.8	170.5	163.5	153.7	162.6	169.1	180.3	182.7	180.3	169.1
60°	165.4	163.5	149.5	138.8	131.3	138.3	148.6	162.6	164.9	162.6	148.6
62.5°	147.7	143.9	128.0	114.5	110.3	114.0	127.1	143.0	147.2	143.0	127.1
65°	127.6	122.9	108.0	95.8	93.5	95.4	107.5	122.4	127.6	122.4	107.5
67.5°	109.8	103.3	91.2	79.5	80.4	79.5	90.7	102.8	109.8	102.8	90.7
70°	93.5	85.1	73.9	65.5	67.3	65.5	73.9	85.6	94.0	85.6	73.9
72.5°	77.6	68.3	59.9	53.3	55.6	52.8	59.9	68.7	78.5	68.7	59.9
75°	62.7	55.2	46.2	42.5	46.2	42.5	46.8	55.7	64.1	55.7	46.8
77.5°	56.3	46.9	36.0	33.2	36.9	33.2	36.5	45.4	54.4	45.4	36.5
80°	55.4	46.3	29.0	25.7	27.6	25.7	28.1	38.4	46.0	38.4	28.1
82.5°	58.8	51.6	30.4	18.2	19.1	18.2	24.4	33.8	40.1	33.8	24.4
85°	67.6	62.7	38.4	15.0	10.7	14.1	24.1	32.5	35.5	32.5	24.1
87.5°	80.7	77.2	49.9	19.7	2.8	12.7	21.8	29.8	29.8	29.8	21.8
90°	95.3	92.3	64.9	27.3	0.5	8.5	16.0	22.6	21.2	22.6	16.0
92.5°	114.2	110.2	80.4	38.9	7.9	4.8	12.7	18.8	17.4	18.8	12.7
95°	130.7	128.7	97.9	51.4	19.8	2.0	9.0	14.1	13.6	14.1	9.0
97.5°	149.6	146.3	115.9	69.2	35.1	5.9	6.7	10.4	11.3	10.4	6.7
100°	165.2	163.7	135.3	90.4	53.9	16.3	4.4	8.6	9.5	8.6	4.4
102.5°	190.5	183.7	154.7	110.7	74.1	30.6	7.4	5.8	6.7	5.8	7.4
105°	212.4	205.5	178.9	131.9	97.3	49.9	19.2	6.8	4.4	6.8	19.2
107.5°	233.6	228.6	201.6	153.6	122.1	72.1	37.0	19.2	12.3	19.2	37.0
110°	258.3	252.4	222.8	176.3	147.8	96.8	56.2	35.0	27.1	35.0	56.2



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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°	282.1	277.6	242.6	199.0	175.3	122.4	79.9	54.8	47.4	54.8	79.9
115°	300.3	297.8	265.2	220.3	200.1	151.6	106.2	78.0	69.1	78.0	106.2
117.5°	319.6	319.0	282.1	242.0	229.7	177.8	130.4	101.2	91.8	101.2	130.4
120°	343.8	339.9	305.2	263.8	257.9	205.5	157.0	127.9	118.5	127.9	157.0
122.5°	360.6	358.1	325.0	284.5	284.5	233.6	182.8	153.5	143.7	153.5	182.8
125°	375.9	374.9	339.9	305.2	313.2	259.8	211.4	181.8	170.9	181.8	211.4
127.5°	389.7	391.2	359.1	328.0	342.3	286.4	239.6	207.0	195.6	207.0	239.6
130°	401.6	406.6	377.4	348.7	369.9	315.6	264.8	232.2	224.7	232.2	264.8
132.5°	424.8	421.9	396.2	369.9	399.6	342.3	291.4	257.3	248.9	257.3	291.4
135°	436.6	437.7	412.4	388.3	427.3	369.0	316.6	283.0	274.6	283.0	316.6
137.5°	451.0	448.0	425.3	410.5	453.0	394.7	341.3	310.2	296.8	310.2	341.3
140°	461.4	460.9	442.1	430.3	480.6	419.9	366.5	334.9	322.5	334.9	366.5
142.5°	472.2	475.2	458.9	451.9	508.3	446.5	393.7	359.1	347.3	359.1	393.7
145°	479.7	486.0	475.7	479.1	534.5	476.2	417.4	382.4	369.5	382.4	417.4
147.5°	492.0	500.4	488.0	498.5	557.2	502.4	441.1	406.6	395.2	406.6	441.1
150°	508.8	512.8	505.4	525.1	580.5	531.5	465.3	429.7	418.4	429.7	465.3
152.5°	522.1	527.0	518.6	554.2	598.7	558.2	492.0	452.5	439.2	452.5	492.0
155°	536.0	538.0	532.0	582.4	618.0	584.4	513.2	477.6	464.8	477.6	513.2
157.5°	548.8	552.7	545.8	603.6	634.7	607.1	537.4	502.9	491.5	502.9	537.4
160°	562.6	562.6	566.6	628.4	648.6	626.9	563.2	530.5	514.7	530.5	563.2
162.5°	564.1	573.6	594.8	645.7	661.9	644.2	590.8	550.3	536.5	550.3	590.8
165°	585.9	594.3	626.4	661.0	672.3	659.5	624.9	582.9	566.6	582.9	624.9
167.5°	608.6	626.4	652.1	678.2	682.2	673.8	651.1	621.9	607.1	621.9	651.1
170°	645.7	661.0	673.8	684.7	690.1	685.2	667.4	653.0	643.7	653.0	667.4
172.5°	674.8	684.7	689.6	696.6	693.1	691.0	682.2	675.3	670.3	675.3	682.2
175°	693.1	695.1	699.5	697.0	700.0	694.6	695.1	698.5	678.2	698.5	695.1
177.5°	699.5	702.9	700.5	696.0	696.6	695.5	697.5	699.5	696.6	699.5	697.5
180°	699.5	699.5	699.5	699.5	699.5	699.5	699.5	699.5	699.5	699.5	699.5



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CATALOG NUMBER: MWL-2-18-13-UNV-L830-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	540.5	540.5	540.5	540.5	540.5	540.5
2.5°	539.1	538.7	539.6	541.0	540.0	539.0
5°	536.3	535.4	536.3	538.2	537.2	535.3
7.5°	531.1	530.7	531.6	533.0	533.0	532.0
10°	525.1	523.7	525.5	526.5	526.5	526.0
12.5°	516.7	515.2	516.7	517.6	519.0	519.5
15°	507.7	505.8	508.3	508.3	508.7	509.8
17.5°	496.5	495.6	496.5	497.1	497.5	498.6
20°	483.0	483.0	483.4	484.9	484.9	484.5
22.5°	470.8	469.9	471.3	470.9	470.0	470.0
25°	455.9	455.9	456.3	455.5	454.1	454.1
27.5°	440.5	440.0	441.0	439.6	436.4	435.4
30°	423.6	424.1	424.7	422.3	417.7	415.8
32.5°	405.9	406.8	406.9	401.8	395.3	392.5
35°	385.8	386.8	387.3	379.8	371.4	368.6
37.5°	365.3	368.5	366.8	355.6	346.2	345.3
40°	343.8	348.0	344.8	328.5	321.9	323.8
42.5°	319.5	327.5	320.5	302.8	298.6	301.4
45°	293.4	304.1	294.4	276.6	277.6	280.4
47.5°	266.3	281.7	266.7	253.3	256.1	260.8
50°	238.7	250.4	239.7	231.8	237.4	239.3
52.5°	213.5	218.6	214.4	210.7	218.7	221.5
55°	188.8	183.6	189.7	190.2	200.4	202.3
57.5°	162.6	153.7	163.5	170.5	181.8	183.6
60°	138.3	131.3	138.8	149.5	163.5	165.4
62.5°	114.0	110.3	114.5	128.0	143.9	147.7
65°	95.4	93.5	95.8	108.0	122.9	127.6
67.5°	79.5	80.4	79.5	91.2	103.3	109.8
70°	65.5	67.3	65.5	73.9	85.1	93.5
72.5°	52.8	55.6	53.3	59.9	68.3	77.6
75°	42.5	46.2	42.5	46.2	55.2	62.7
77.5°	33.2	36.9	33.2	36.0	46.9	56.3
80°	25.7	27.6	25.7	29.0	46.3	55.4
82.5°	18.2	19.1	18.2	30.4	51.6	58.8
85°	14.1	10.7	15.0	38.4	62.7	67.6
87.5°	12.7	2.8	19.7	49.9	77.2	80.7
90°	8.5	0.5	27.3	64.9	92.3	95.3
92.5°	4.8	7.9	38.9	80.4	110.2	114.2
95°	2.0	19.8	51.4	97.9	128.7	130.7
97.5°	5.9	35.1	69.2	115.9	146.3	149.6
100°	16.3	53.9	90.4	135.3	163.7	165.2
102.5°	30.6	74.1	110.7	154.7	183.7	190.5
105°	49.9	97.3	131.9	178.9	205.5	212.4
107.5°	72.1	122.1	153.6	201.6	228.6	233.6
110°	96.8	147.8	176.3	222.8	252.4	258.3





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	122.4	175.3	199.0	242.6	277.6	282.1
115°	151.6	200.1	220.3	265.2	297.8	300.3
117.5°	177.8	229.7	242.0	282.1	319.0	319.6
120°	205.5	257.9	263.8	305.2	339.9	343.8
122.5°	233.6	284.5	284.5	325.0	358.1	360.6
125°	259.8	313.2	305.2	339.9	374.9	375.9
127.5°	286.4	342.3	328.0	359.1	391.2	389.7
130°	315.6	369.9	348.7	377.4	406.6	401.6
132.5°	342.3	399.6	369.9	396.2	421.9	424.8
135°	369.0	427.3	388.3	412.4	437.7	436.6
137.5°	394.7	453.0	410.5	425.3	448.0	451.0
140°	419.9	480.6	430.3	442.1	460.9	461.4
142.5°	446.5	508.3	451.9	458.9	475.2	472.2
145°	476.2	534.5	479.1	475.7	486.0	479.7
147.5°	502.4	557.2	498.5	488.0	500.4	492.0
150°	531.5	580.5	525.1	505.4	512.8	508.8
152.5°	558.2	598.7	554.2	518.6	527.0	522.1
155°	584.4	618.0	582.4	532.0	538.0	536.0
157.5°	607.1	634.7	603.6	545.8	552.7	548.8
160°	626.9	648.6	628.4	566.6	562.6	562.6
162.5°	644.2	661.9	645.7	594.8	573.6	564.1
165°	659.5	672.3	661.0	626.4	594.3	585.9
167.5°	673.8	682.2	678.2	652.1	626.4	608.6
170°	685.2	690.1	684.7	673.8	661.0	645.7
172.5°	691.0	693.1	696.6	689.6	684.7	674.8
175°	694.6	700.0	697.0	699.5	695.1	693.1
177.5°	695.5	696.6	696.0	700.5	702.9	699.5
180°	699.5	699.5	699.5	699.5	699.5	699.5

(END OF REPORT)