

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: P392474

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

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392474  
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-2-13-13-UNV-L840-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2646.1 lumens  
Efficiency: N/A  
Efficacy: 111.2 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: General Diffuse

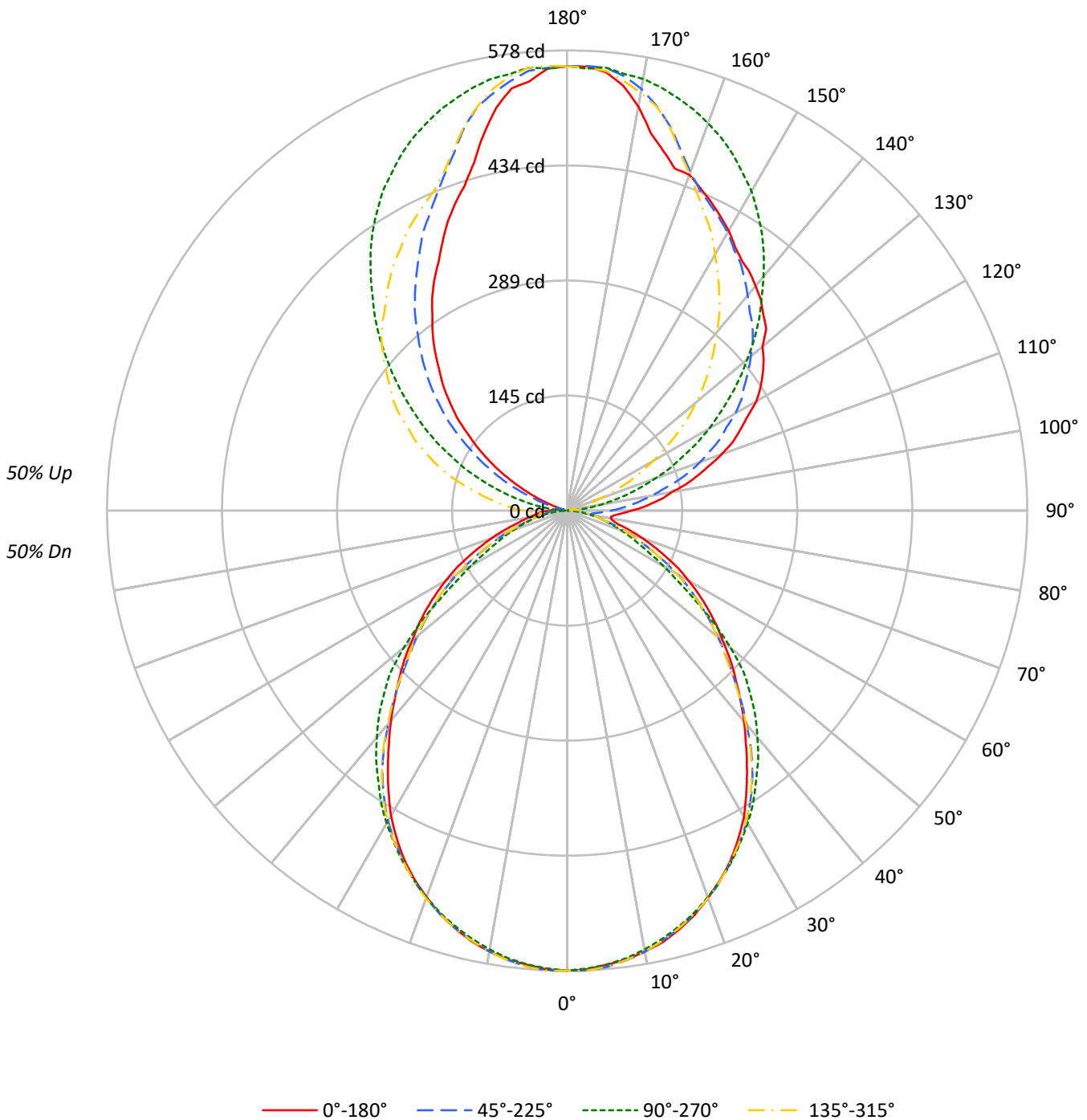
Input Watts (W): 23.8  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	98	94	90	86	90	87	83	80	73	71	69	61	59	58	50	48	47	42
2	89	82	76	71	82	76	71	67	65	61	57	54	51	49	44	42	41	36
3	82	73	65	60	75	67	61	56	57	53	49	48	45	42	39	37	35	31
4	75	65	57	51	69	60	53	48	51	46	42	43	39	36	36	33	30	27
5	69	58	50	44	64	54	47	41	46	41	36	39	35	32	32	29	27	24
6	64	52	44	38	59	48	41	36	42	36	32	35	31	28	29	26	24	21
7	59	47	39	34	54	44	37	32	38	32	28	32	28	25	27	24	21	19
8	55	43	35	30	51	40	33	28	35	29	25	29	25	22	25	22	19	17
9	51	39	32	27	47	36	30	25	32	26	23	27	23	20	23	20	17	15
10	48	36	29	24	44	34	27	23	29	24	20	25	21	18	21	18	16	14

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

	0°	90°	180°	270°
0°	7463	7463	7463	7463
5°	7291	6822	7291	6822
10°	7115	6242	7115	6242
15°	6896	5706	6882	5706
20°	6612	5206	6598	5206
25°	6303	4739	6287	4739
30°	5914	4289	5893	4289
35°	5419	3836	5403	3836
40°	4963	3411	4940	3411
45°	4526	2968	4508	2968
50°	4111	2453	4092	2453
55°	3749	1820	3735	1820
60°	3352	1326	3345	1326
65°	2877	970	2877	970
70°	2397	724	2407	724
75°	1876	521	1909	521
80°	1896	328	1643	328
85°	2687	136	1565	136



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	54.4	2.1
10°-20°	152.9	5.8
20°-30°	223.7	8.5
30°-40°	252.4	9.5
40°-50°	234.6	8.9
50°-60°	184.3	7.0
60°-70°	116.8	4.4
70°-80°	58.2	2.2
80°-90°	34.5	1.3
90°-100°	46.4	1.8
100°-110°	86.1	3.3
110°-120°	148.6	5.6
120°-130°	201.7	7.6
130°-140°	229.9	8.7
140°-150°	229.3	8.7
150°-160°	199.6	7.5
160°-170°	140.4	5.3
170°-180°	52.3	2.0
0°-30°	431.0	16.3
0°-40°	683.4	25.8
0°-60°	1102.3	41.7
0°-90°	1311.7	49.6
90°-120°	281.1	10.6
90°-150°	942.0	35.6
90°-180°	1334.0	50.4
0°-180°	2646.1	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	578	578	578	578	578	
5°	573	572	573	572	573	54
15°	544	541	543	541	544	153
25°	485	488	484	488	485	223
35°	394	414	393	414	394	246
45°	299	325	298	325	299	231
55°	216	196	215	196	216	193
65°	136	100	136	100	136	136
75°	67	49	68	49	67	76
85°	61	11	36	11	61	49
90°	81	0	22	0	81	45
95°	108	16	14	16	108	94
105°	170	78	4	78	170	179
115°	240	160	55	160	240	238
125°	300	250	136	250	300	268
135°	348	341	219	341	348	269
145°	383	426	295	426	383	241
155°	428	493	371	493	428	197
165°	468	536	452	536	468	133
175°	553	558	541	558	553	52
180°	558	558	558	558	558	



TEST NUMBER: P392474

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

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	577.8	577.8	577.8	577.8	577.8	577.8	577.8	577.8	577.8	577.8	577.8
2.5°	576.6	577.4	578.2	576.5	575.5	576.2	578.2	577.4	577.0	577.4	578.2
5°	572.6	574.4	575.2	573.2	572.2	573.2	574.8	574.4	572.6	574.4	574.8
7.5°	569.0	569.8	569.8	568.2	567.2	567.8	569.4	569.4	569.0	569.4	569.4
10°	562.4	562.8	562.8	561.8	559.8	561.4	562.4	562.0	562.4	562.0	562.4
12.5°	555.2	554.8	553.4	552.4	551.0	552.4	553.4	554.0	554.4	554.0	553.4
15°	544.5	543.8	543.4	543.4	541.0	543.0	543.0	543.0	543.4	543.0	543.0
17.5°	532.5	531.8	531.4	531.0	530.0	531.0	531.0	531.4	531.4	531.4	531.0
20°	517.5	518.2	518.4	517.0	516.6	516.6	518.0	517.4	516.4	517.4	518.0
22.5°	502.2	502.2	503.4	504.0	502.6	503.6	503.0	501.4	501.4	501.4	503.0
25°	485.2	485.2	486.8	488.0	487.6	487.6	486.0	484.0	484.0	484.0	486.0
27.5°	465.2	466.2	469.8	471.4	470.6	471.0	469.0	465.0	464.0	465.0	469.0
30°	444.2	446.2	451.2	453.8	453.6	453.0	450.0	445.0	442.6	445.0	450.0
32.5°	419.2	422.2	429.2	434.8	435.0	434.0	428.0	420.6	417.6	420.6	428.0
35°	393.8	396.8	405.8	413.8	413.6	412.6	404.6	395.6	392.6	395.6	404.6
37.5°	368.8	369.8	379.8	391.8	394.0	390.6	378.6	368.6	367.6	368.6	378.6
40°	345.8	343.8	350.8	368.4	372.0	367.6	349.2	342.2	344.2	342.2	349.2
42.5°	321.8	318.8	323.4	342.4	350.0	341.6	322.2	317.2	320.2	317.2	322.2
45°	299.4	296.4	295.4	314.4	325.0	313.6	293.8	295.2	298.2	295.2	293.8
47.5°	278.4	273.4	270.4	285.0	301.0	284.6	268.8	272.2	277.2	272.2	268.8
50°	255.4	253.4	247.4	256.0	267.6	255.2	245.8	251.8	254.2	251.8	245.8
52.5°	236.4	233.4	225.0	229.0	233.6	228.2	223.8	231.8	235.2	231.8	223.8
55°	216.0	214.0	203.0	202.6	196.2	201.8	201.8	212.8	215.2	212.8	201.8
57.5°	196.0	194.0	182.0	174.6	164.2	173.8	180.8	192.8	195.2	192.8	180.8
60°	176.6	174.6	159.6	148.2	140.2	147.8	158.8	173.8	176.2	173.8	158.8
62.5°	157.6	153.6	136.6	122.2	117.8	121.8	135.8	152.8	157.2	152.8	135.8
65°	136.2	131.2	115.2	102.2	99.8	101.8	114.8	130.8	136.2	130.8	114.8
67.5°	117.2	110.2	97.2	84.8	85.8	84.8	96.8	109.8	117.2	109.8	96.8
70°	99.8	90.8	78.8	69.8	71.8	69.8	78.8	91.2	100.2	91.2	78.8
72.5°	82.8	72.8	63.8	56.8	59.4	56.4	63.8	73.2	83.6	73.2	63.8
75°	66.8	58.8	49.4	45.4	49.4	45.4	49.8	59.2	68.0	59.2	49.8
77.5°	58.9	49.4	38.4	35.4	39.4	35.4	38.8	48.2	57.4	48.2	38.8
80°	55.6	46.9	30.6	27.4	29.4	27.4	29.8	40.6	48.2	40.6	29.8
82.5°	56.1	49.5	30.3	19.4	20.4	19.4	25.6	35.4	41.1	35.4	25.6
85°	61.3	57.4	36.0	15.6	11.4	14.8	24.5	33.3	35.7	33.3	24.5
87.5°	70.5	67.9	44.4	18.5	3.0	13.0	21.9	30.1	29.9	30.1	21.9
90°	80.9	78.9	55.6	23.8	0.4	8.8	16.6	23.4	21.8	23.4	16.6
92.5°	95.2	92.5	67.2	32.0	6.3	4.8	13.2	19.6	18.0	19.6	13.2
95°	107.6	106.2	80.1	41.0	15.8	1.6	9.2	14.8	14.2	14.8	9.2
97.5°	121.9	118.9	93.4	55.2	28.0	4.7	6.4	10.6	11.6	10.6	6.4
100°	133.3	131.9	108.2	72.1	42.9	13.0	3.8	8.2	9.2	8.2	3.8
102.5°	152.7	147.0	123.3	88.3	59.1	24.4	5.9	5.2	6.2	5.2	5.9
105°	169.6	164.1	142.6	105.2	77.6	39.8	15.4	5.7	3.8	5.7	15.4
107.5°	186.6	182.6	161.0	122.5	97.3	57.5	29.8	15.6	10.1	15.6	29.8
110°	206.3	201.5	177.9	140.9	117.8	77.4	45.1	28.2	21.9	28.2	45.1



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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°	225.2	221.6	193.7	159.0	140.1	97.9	64.0	43.9	38.0	43.9	64.0
115°	239.8	237.8	211.8	175.9	159.8	121.2	84.9	62.5	55.4	62.5	84.9
117.5°	255.1	254.7	225.2	193.3	183.4	142.1	104.2	81.0	73.5	81.0	104.2
120°	274.4	271.3	243.7	210.6	205.9	164.1	125.5	102.3	94.8	102.3	125.5
122.5°	287.8	285.9	259.5	227.2	227.2	186.6	146.0	122.7	114.9	122.7	146.0
125°	300.0	299.3	271.3	243.7	250.0	207.5	168.8	145.2	136.5	145.2	168.8
127.5°	311.1	312.3	286.6	261.8	273.3	228.7	191.3	165.3	156.2	165.3	191.3
130°	320.5	324.5	301.2	278.4	295.3	252.0	211.4	185.4	179.5	185.4	211.4
132.5°	339.0	336.7	316.2	295.3	319.0	273.3	232.7	205.5	198.8	205.5	232.7
135°	348.5	349.3	329.2	309.9	341.0	294.5	252.8	226.0	219.3	226.0	252.8
137.5°	359.9	357.6	339.4	327.6	361.5	315.0	272.5	247.6	237.0	247.6	272.5
140°	368.2	367.8	352.8	343.4	383.6	335.1	292.6	267.3	257.5	267.3	292.6
142.5°	376.9	379.2	366.2	360.7	405.6	356.4	314.2	286.6	277.2	286.6	314.2
145°	382.8	387.9	379.6	382.4	426.5	380.0	333.1	305.2	294.9	305.2	333.1
147.5°	392.6	399.3	389.5	397.8	444.6	400.9	352.1	324.5	315.4	324.5	352.1
150°	406.0	409.2	403.3	419.0	463.2	424.2	371.4	343.0	333.9	343.0	371.4
152.5°	416.7	420.6	413.9	442.3	477.7	445.4	392.6	361.1	350.5	361.1	392.6
155°	427.7	429.3	424.5	464.7	493.1	466.3	409.6	381.2	371.0	381.2	409.6
157.5°	437.9	441.1	435.6	481.7	506.5	484.4	428.9	401.3	392.2	401.3	428.9
160°	449.0	449.0	452.1	501.4	517.5	500.2	449.4	423.4	410.8	423.4	449.4
162.5°	450.2	457.6	474.6	515.2	528.2	514.0	471.4	439.1	428.1	439.1	471.4
165°	467.5	474.2	499.8	527.4	536.4	526.2	498.6	465.1	452.1	465.1	498.6
167.5°	485.6	499.8	520.3	541.2	544.3	537.6	519.5	496.3	484.4	496.3	519.5
170°	515.2	527.4	537.6	546.3	550.6	546.7	532.5	521.1	513.6	521.1	532.5
172.5°	538.4	546.3	550.2	555.7	553.0	551.4	544.3	538.8	534.9	538.8	544.3
175°	553.0	554.6	558.1	556.1	558.5	554.2	554.6	557.3	541.2	557.3	554.6
177.5°	558.1	560.9	558.9	555.4	555.7	555.0	556.5	558.1	555.7	558.1	556.5
180°	558.1	558.1	558.1	558.1	558.1	558.1	558.1	558.1	558.1	558.1	558.1



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

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	577.8	577.8	577.8	577.8	577.8	577.8
2.5°	576.2	575.5	576.5	578.2	577.4	576.6
5°	573.2	572.2	573.2	575.2	574.4	572.6
7.5°	567.8	567.2	568.2	569.8	569.8	569.0
10°	561.4	559.8	561.8	562.8	562.8	562.4
12.5°	552.4	551.0	552.4	553.4	554.8	555.2
15°	543.0	541.0	543.4	543.4	543.8	544.5
17.5°	531.0	530.0	531.0	531.4	531.8	532.5
20°	516.6	516.6	517.0	518.4	518.2	517.5
22.5°	503.6	502.6	504.0	503.4	502.2	502.2
25°	487.6	487.6	488.0	486.8	485.2	485.2
27.5°	471.0	470.6	471.4	469.8	466.2	465.2
30°	453.0	453.6	453.8	451.2	446.2	444.2
32.5°	434.0	435.0	434.8	429.2	422.2	419.2
35°	412.6	413.6	413.8	405.8	396.8	393.8
37.5°	390.6	394.0	391.8	379.8	369.8	368.8
40°	367.6	372.0	368.4	350.8	343.8	345.8
42.5°	341.6	350.0	342.4	323.4	318.8	321.8
45°	313.6	325.0	314.4	295.4	296.4	299.4
47.5°	284.6	301.0	285.0	270.4	273.4	278.4
50°	255.2	267.6	256.0	247.4	253.4	255.4
52.5°	228.2	233.6	229.0	225.0	233.4	236.4
55°	201.8	196.2	202.6	203.0	214.0	216.0
57.5°	173.8	164.2	174.6	182.0	194.0	196.0
60°	147.8	140.2	148.2	159.6	174.6	176.6
62.5°	121.8	117.8	122.2	136.6	153.6	157.6
65°	101.8	99.8	102.2	115.2	131.2	136.2
67.5°	84.8	85.8	84.8	97.2	110.2	117.2
70°	69.8	71.8	69.8	78.8	90.8	99.8
72.5°	56.4	59.4	56.8	63.8	72.8	82.8
75°	45.4	49.4	45.4	49.4	58.8	66.8
77.5°	35.4	39.4	35.4	38.4	49.4	58.9
80°	27.4	29.4	27.4	30.6	46.9	55.6
82.5°	19.4	20.4	19.4	30.3	49.5	56.1
85°	14.8	11.4	15.6	36.0	57.4	61.3
87.5°	13.0	3.0	18.5	44.4	67.9	70.5
90°	8.8	0.4	23.8	55.6	78.9	80.9
92.5°	4.8	6.3	32.0	67.2	92.5	95.2
95°	1.6	15.8	41.0	80.1	106.2	107.6
97.5°	4.7	28.0	55.2	93.4	118.9	121.9
100°	13.0	42.9	72.1	108.2	131.9	133.3
102.5°	24.4	59.1	88.3	123.3	147.0	152.7
105°	39.8	77.6	105.2	142.6	164.1	169.6
107.5°	57.5	97.3	122.5	161.0	182.6	186.6
110°	77.4	117.8	140.9	177.9	201.5	206.3





TEST NUMBER: P392474

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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	97.9	140.1	159.0	193.7	221.6	225.2
115°	121.2	159.8	175.9	211.8	237.8	239.8
117.5°	142.1	183.4	193.3	225.2	254.7	255.1
120°	164.1	205.9	210.6	243.7	271.3	274.4
122.5°	186.6	227.2	227.2	259.5	285.9	287.8
125°	207.5	250.0	243.7	271.3	299.3	300.0
127.5°	228.7	273.3	261.8	286.6	312.3	311.1
130°	252.0	295.3	278.4	301.2	324.5	320.5
132.5°	273.3	319.0	295.3	316.2	336.7	339.0
135°	294.5	341.0	309.9	329.2	349.3	348.5
137.5°	315.0	361.5	327.6	339.4	357.6	359.9
140°	335.1	383.6	343.4	352.8	367.8	368.2
142.5°	356.4	405.6	360.7	366.2	379.2	376.9
145°	380.0	426.5	382.4	379.6	387.9	382.8
147.5°	400.9	444.6	397.8	389.5	399.3	392.6
150°	424.2	463.2	419.0	403.3	409.2	406.0
152.5°	445.4	477.7	442.3	413.9	420.6	416.7
155°	466.3	493.1	464.7	424.5	429.3	427.7
157.5°	484.4	506.5	481.7	435.6	441.1	437.9
160°	500.2	517.5	501.4	452.1	449.0	449.0
162.5°	514.0	528.2	515.2	474.6	457.6	450.2
165°	526.2	536.4	527.4	499.8	474.2	467.5
167.5°	537.6	544.3	541.2	520.3	499.8	485.6
170°	546.7	550.6	546.3	537.6	527.4	515.2
172.5°	551.4	553.0	555.7	550.2	546.3	538.4
175°	554.2	558.5	556.1	558.1	554.6	553.0
177.5°	555.0	555.7	555.4	558.9	560.9	558.1
180°	558.1	558.1	558.1	558.1	558.1	558.1

(END OF REPORT)