

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: P392473

Luminaire Tested: **MWL-2-13-13-UNV-L935-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392473  
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-L935-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

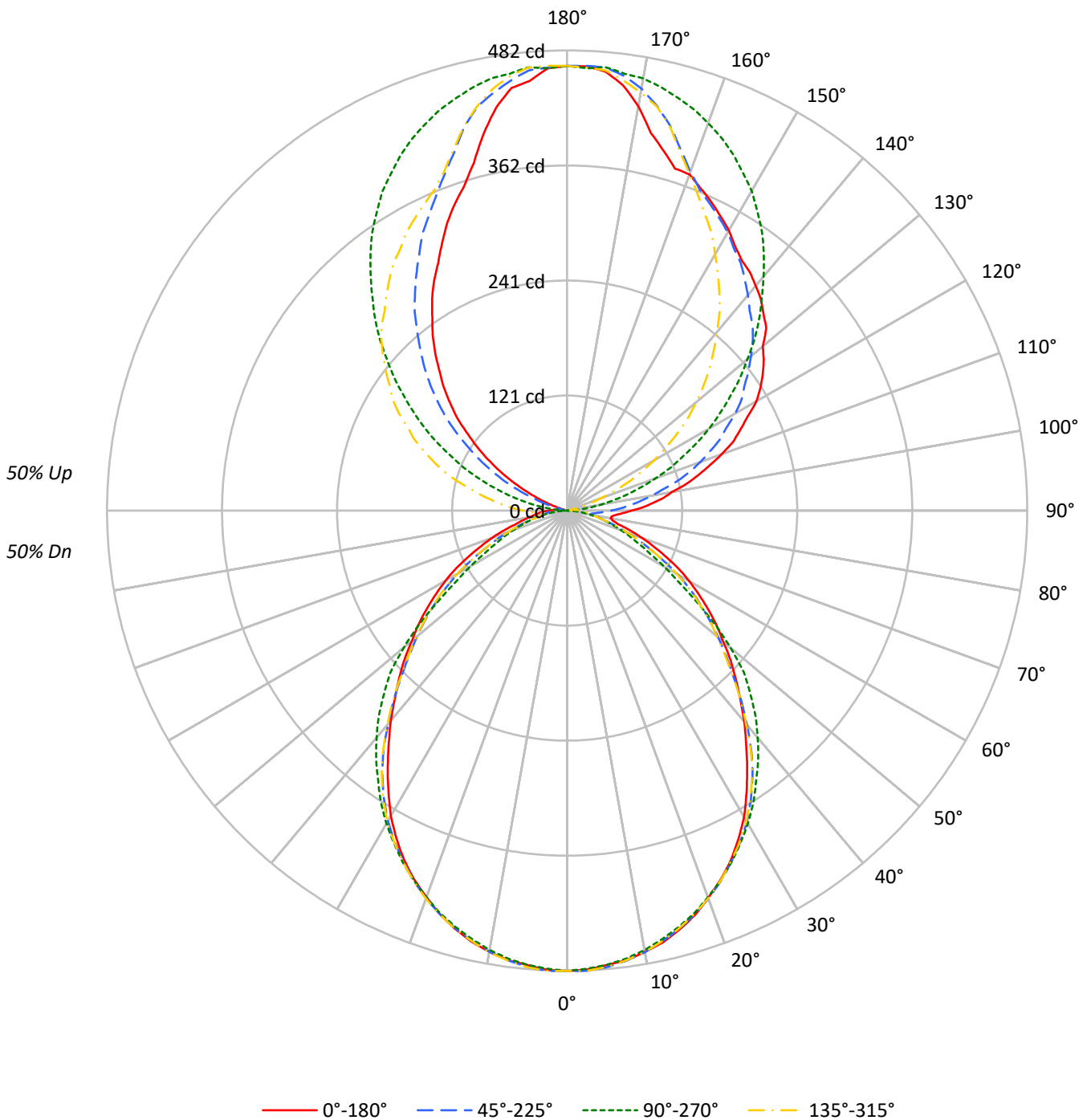
Lumens per Lamp: N/A  
Luminaire Lumens: 2208.2 lumens  
Efficiency: N/A  
Efficacy: 91.9 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')  
CIE Type: General Diffuse

Input Watts (W): 24.038  
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°	6228	6228	6228	6228
5°	6084	5693	6084	5693
10°	5937	5209	5937	5209
15°	5755	4762	5744	4762
20°	5518	4344	5506	4344
25°	5260	3955	5247	3955
30°	4935	3580	4917	3580
35°	4522	3202	4508	3202
40°	4142	2847	4123	2847
45°	3776	2477	3763	2477
50°	3430	2047	3414	2047
55°	3129	1518	3117	1518
60°	2798	1106	2791	1106
65°	2400	810	2400	810
70°	2001	604	2008	604
75°	1564	435	1595	435
80°	1582	273	1371	273
85°	2244	113	1306	113



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	45.4	2.1
10°-20°	127.6	5.8
20°-30°	186.6	8.5
30°-40°	210.6	9.5
40°-50°	195.8	8.9
50°-60°	153.8	7.0
60°-70°	97.5	4.4
70°-80°	48.5	2.2
80°-90°	28.7	1.3
90°-100°	38.7	1.8
100°-110°	71.9	3.3
110°-120°	124.0	5.6
120°-130°	168.3	7.6
130°-140°	191.9	8.7
140°-150°	191.3	8.7
150°-160°	166.6	7.5
160°-170°	117.2	5.3
170°-180°	43.6	2.0
0°-30°	359.7	16.3
0°-40°	570.3	25.8
0°-60°	919.9	41.7
0°-90°	1094.6	49.6
90°-120°	234.6	10.6
90°-150°	786.1	35.6
90°-180°	1114.0	50.4
0°-180°	2208.2	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	482	482	482	482	482	
5°	478	478	478	478	478	45
15°	454	452	454	452	454	128
25°	405	407	404	407	405	186
35°	329	345	328	345	329	206
45°	250	271	249	271	250	193
55°	180	164	180	164	180	161
65°	114	83	114	83	114	113
75°	56	41	57	41	56	63
85°	51	10	30	10	51	41
90°	68	0	18	0	68	37
95°	90	13	12	13	90	78
105°	142	65	3	65	142	150
115°	200	133	46	133	200	199
125°	250	209	114	209	250	224
135°	291	285	183	285	291	224
145°	319	356	246	356	319	201
155°	357	412	310	412	357	165
165°	390	448	377	448	390	111
175°	462	466	452	466	462	43
180°	466	466	466	466	466	



TEST NUMBER: P392473

CATALOG NUMBER: MWL-2-13-13-UNV-L935-EDD

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	482.2	482.2	482.2	482.2	482.2	482.2	482.2	482.2	482.2	482.2	482.2
2.5°	481.2	481.8	482.5	481.1	480.2	480.8	482.5	481.8	481.5	481.8	482.5
5°	477.8	479.3	480.0	478.3	477.5	478.3	479.7	479.3	477.8	479.3	479.7
7.5°	474.9	475.5	475.5	474.2	473.3	473.8	475.1	475.1	474.9	475.1	475.1
10°	469.3	469.7	469.7	468.8	467.2	468.5	469.3	469.0	469.3	469.0	469.3
12.5°	463.3	462.9	461.8	461.0	459.8	461.0	461.8	462.3	462.6	462.3	461.8
15°	454.4	453.8	453.5	453.5	451.5	453.1	453.1	453.1	453.5	453.1	453.1
17.5°	444.4	443.8	443.4	443.1	442.2	443.1	443.1	443.4	443.4	443.4	443.1
20°	431.9	432.4	432.6	431.4	431.1	431.1	432.2	431.8	430.9	431.8	432.2
22.5°	419.1	419.1	420.1	420.6	419.4	420.2	419.7	418.4	418.4	418.4	419.7
25°	404.9	404.9	406.3	407.2	406.9	406.9	405.6	403.9	403.9	403.9	405.6
27.5°	388.2	389.0	392.0	393.4	392.7	393.1	391.4	388.0	387.2	388.0	391.4
30°	370.7	372.3	376.5	378.7	378.6	378.0	375.5	371.3	369.3	371.3	375.5
32.5°	349.8	352.3	358.2	362.8	363.0	362.2	357.2	350.9	348.4	350.9	357.2
35°	328.6	331.1	338.6	345.3	345.2	344.3	337.7	330.1	327.6	330.1	337.7
37.5°	307.8	308.6	316.9	327.0	328.8	325.9	315.9	307.6	306.8	307.6	315.9
40°	288.6	286.9	292.7	307.5	310.5	306.8	291.4	285.5	287.3	285.5	291.4
42.5°	268.5	266.0	269.9	285.7	292.1	285.1	268.9	264.7	267.2	264.7	268.9
45°	249.8	247.3	246.5	262.3	271.2	261.7	245.1	246.4	248.9	246.4	245.1
47.5°	232.3	228.2	225.6	237.8	251.2	237.5	224.3	227.1	231.3	227.1	224.3
50°	213.1	211.5	206.5	213.7	223.3	213.0	205.1	210.1	212.1	210.1	205.1
52.5°	197.3	194.8	187.8	191.1	194.9	190.4	186.7	193.5	196.3	193.5	186.7
55°	180.3	178.6	169.4	169.0	163.7	168.4	168.4	177.6	179.6	177.6	168.4
57.5°	163.5	161.9	151.9	145.7	137.0	145.1	150.8	160.9	162.9	160.9	150.8
60°	147.4	145.7	133.1	123.7	117.0	123.3	132.5	145.1	147.0	145.1	132.5
62.5°	131.5	128.1	114.0	102.0	98.3	101.6	113.3	127.5	131.2	127.5	113.3
65°	113.6	109.5	96.1	85.3	83.3	84.9	95.8	109.2	113.6	109.2	95.8
67.5°	97.8	92.0	81.1	70.8	71.6	70.8	80.8	91.6	97.8	91.6	80.8
70°	83.3	75.8	65.8	58.2	59.9	58.2	65.8	76.1	83.6	76.1	65.8
72.5°	69.1	60.7	53.2	47.4	49.5	47.0	53.2	61.1	69.7	61.1	53.2
75°	55.7	49.1	41.2	37.9	41.2	37.9	41.6	49.4	56.8	49.4	41.6
77.5°	49.2	41.2	32.0	29.5	32.9	29.5	32.4	40.2	47.9	40.2	32.4
80°	46.4	39.2	25.5	22.9	24.5	22.9	24.9	33.9	40.2	33.9	24.9
82.5°	46.9	41.3	25.3	16.2	17.0	16.2	21.4	29.5	34.3	29.5	21.4
85°	51.2	47.9	30.0	13.0	9.5	12.3	20.5	27.8	29.8	27.8	20.5
87.5°	58.8	56.7	37.0	15.4	2.5	10.9	18.3	25.1	24.9	25.1	18.3
90°	67.5	65.8	46.4	19.8	0.3	7.3	13.9	19.5	18.2	19.5	13.9
92.5°	79.5	77.2	56.1	26.7	5.3	4.0	11.0	16.4	15.0	16.4	11.0
95°	89.8	88.6	66.9	34.2	13.2	1.3	7.7	12.3	11.8	12.3	7.7
97.5°	101.7	99.2	77.9	46.1	23.4	3.9	5.3	8.9	9.7	8.9	5.3
100°	111.2	110.1	90.3	60.1	35.8	10.9	3.2	6.8	7.7	6.8	3.2
102.5°	127.5	122.7	102.9	73.7	49.4	20.4	4.9	4.3	5.2	4.3	4.9
105°	141.5	136.9	119.0	87.8	64.7	33.2	12.9	4.7	3.2	4.7	12.9
107.5°	155.8	152.4	134.4	102.3	81.2	48.0	24.9	13.0	8.5	13.0	24.9
110°	172.1	168.2	148.4	117.6	98.3	64.6	37.6	23.6	18.3	23.6	37.6



TEST NUMBER: P392473

CATALOG NUMBER: MWL-2-13-13-UNV-L935-EDD

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	187.9	184.9	161.6	132.7	116.9	81.7	53.4	36.7	31.7	36.7	53.4
115°	200.1	198.5	176.7	146.8	133.3	101.1	70.8	52.1	46.3	52.1	70.8
117.5°	212.9	212.5	187.9	161.3	153.1	118.6	87.0	67.6	61.4	67.6	87.0
120°	229.0	226.4	203.4	175.8	171.8	136.9	104.8	85.3	79.1	85.3	104.8
122.5°	240.1	238.6	216.6	189.6	189.6	155.8	121.8	102.4	95.9	102.4	121.8
125°	250.3	249.7	226.4	203.4	208.6	173.2	140.8	121.2	113.9	121.2	140.8
127.5°	259.6	260.6	239.2	218.5	228.1	190.9	159.6	138.0	130.4	138.0	159.6
130°	267.4	270.8	251.4	232.3	246.4	210.3	176.4	154.7	149.8	154.7	176.4
132.5°	282.9	281.0	263.9	246.4	266.2	228.1	194.2	171.5	165.9	171.5	194.2
135°	290.8	291.5	274.7	258.6	284.6	245.8	211.0	188.6	183.0	188.6	211.0
137.5°	300.3	298.4	283.2	273.4	301.7	262.8	227.4	206.6	197.8	206.6	227.4
140°	307.3	306.9	294.4	286.6	320.1	279.7	244.2	223.1	214.9	223.1	244.2
142.5°	314.5	316.4	305.6	301.0	338.4	297.4	262.2	239.2	231.3	239.2	262.2
145°	319.4	323.7	316.8	319.1	355.9	317.1	277.9	254.6	246.1	254.6	277.9
147.5°	327.6	333.3	325.1	332.0	371.0	334.5	293.8	270.8	263.2	270.8	293.8
150°	338.8	341.4	336.5	349.6	386.5	354.0	310.0	286.2	278.6	286.2	310.0
152.5°	347.7	350.9	345.4	369.1	398.7	371.7	327.6	301.3	292.5	301.3	327.6
155°	356.9	358.3	354.2	387.8	411.5	389.1	341.8	318.1	309.6	318.1	341.8
157.5°	365.4	368.1	363.5	401.9	422.6	404.2	357.9	334.9	327.3	334.9	357.9
160°	374.7	374.7	377.3	418.4	431.9	417.4	375.0	353.4	342.8	353.4	375.0
162.5°	375.7	381.8	396.1	429.9	440.8	428.9	393.4	366.4	357.2	366.4	393.4
165°	390.1	395.7	417.0	440.1	447.6	439.1	416.1	388.1	377.3	388.1	416.1
167.5°	405.2	417.0	434.2	451.6	454.2	448.6	433.5	414.2	404.2	414.2	433.5
170°	429.9	440.1	448.6	455.9	459.5	456.2	444.4	434.8	428.6	434.8	444.4
172.5°	449.3	455.9	459.1	463.7	461.5	460.1	454.2	449.7	446.4	449.7	454.2
175°	461.5	462.8	465.7	464.1	466.1	462.5	462.8	465.0	451.6	465.0	462.8
177.5°	465.7	468.0	466.4	463.5	463.7	463.1	464.4	465.7	463.7	465.7	464.4
180°	465.7	465.7	465.7	465.7	465.7	465.7	465.7	465.7	465.7	465.7	465.7



TEST NUMBER: P392473

CATALOG NUMBER: MWL-2-13-13-UNV-L935-EDD

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	482.2	482.2	482.2	482.2	482.2	482.2
2.5°	480.8	480.2	481.1	482.5	481.8	481.2
5°	478.3	477.5	478.3	480.0	479.3	477.8
7.5°	473.8	473.3	474.2	475.5	475.5	474.9
10°	468.5	467.2	468.8	469.7	469.7	469.3
12.5°	461.0	459.8	461.0	461.8	462.9	463.3
15°	453.1	451.5	453.5	453.5	453.8	454.4
17.5°	443.1	442.2	443.1	443.4	443.8	444.4
20°	431.1	431.1	431.4	432.6	432.4	431.9
22.5°	420.2	419.4	420.6	420.1	419.1	419.1
25°	406.9	406.9	407.2	406.3	404.9	404.9
27.5°	393.1	392.7	393.4	392.0	389.0	388.2
30°	378.0	378.6	378.7	376.5	372.3	370.7
32.5°	362.2	363.0	362.8	358.2	352.3	349.8
35°	344.3	345.2	345.3	338.6	331.1	328.6
37.5°	325.9	328.8	327.0	316.9	308.6	307.8
40°	306.8	310.5	307.5	292.7	286.9	288.6
42.5°	285.1	292.1	285.7	269.9	266.0	268.5
45°	261.7	271.2	262.3	246.5	247.3	249.8
47.5°	237.5	251.2	237.8	225.6	228.2	232.3
50°	213.0	223.3	213.7	206.5	211.5	213.1
52.5°	190.4	194.9	191.1	187.8	194.8	197.3
55°	168.4	163.7	169.0	169.4	178.6	180.3
57.5°	145.1	137.0	145.7	151.9	161.9	163.5
60°	123.3	117.0	123.7	133.1	145.7	147.4
62.5°	101.6	98.3	102.0	114.0	128.1	131.5
65°	84.9	83.3	85.3	96.1	109.5	113.6
67.5°	70.8	71.6	70.8	81.1	92.0	97.8
70°	58.2	59.9	58.2	65.8	75.8	83.3
72.5°	47.0	49.5	47.4	53.2	60.7	69.1
75°	37.9	41.2	37.9	41.2	49.1	55.7
77.5°	29.5	32.9	29.5	32.0	41.2	49.2
80°	22.9	24.5	22.9	25.5	39.2	46.4
82.5°	16.2	17.0	16.2	25.3	41.3	46.9
85°	12.3	9.5	13.0	30.0	47.9	51.2
87.5°	10.9	2.5	15.4	37.0	56.7	58.8
90°	7.3	0.3	19.8	46.4	65.8	67.5
92.5°	4.0	5.3	26.7	56.1	77.2	79.5
95°	1.3	13.2	34.2	66.9	88.6	89.8
97.5°	3.9	23.4	46.1	77.9	99.2	101.7
100°	10.9	35.8	60.1	90.3	110.1	111.2
102.5°	20.4	49.4	73.7	102.9	122.7	127.5
105°	33.2	64.7	87.8	119.0	136.9	141.5
107.5°	48.0	81.2	102.3	134.4	152.4	155.8
110°	64.6	98.3	117.6	148.4	168.2	172.1





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	81.7	116.9	132.7	161.6	184.9	187.9
115°	101.1	133.3	146.8	176.7	198.5	200.1
117.5°	118.6	153.1	161.3	187.9	212.5	212.9
120°	136.9	171.8	175.8	203.4	226.4	229.0
122.5°	155.8	189.6	189.6	216.6	238.6	240.1
125°	173.2	208.6	203.4	226.4	249.7	250.3
127.5°	190.9	228.1	218.5	239.2	260.6	259.6
130°	210.3	246.4	232.3	251.4	270.8	267.4
132.5°	228.1	266.2	246.4	263.9	281.0	282.9
135°	245.8	284.6	258.6	274.7	291.5	290.8
137.5°	262.8	301.7	273.4	283.2	298.4	300.3
140°	279.7	320.1	286.6	294.4	306.9	307.3
142.5°	297.4	338.4	301.0	305.6	316.4	314.5
145°	317.1	355.9	319.1	316.8	323.7	319.4
147.5°	334.5	371.0	332.0	325.1	333.3	327.6
150°	354.0	386.5	349.6	336.5	341.4	338.8
152.5°	371.7	398.7	369.1	345.4	350.9	347.7
155°	389.1	411.5	387.8	354.2	358.3	356.9
157.5°	404.2	422.6	401.9	363.5	368.1	365.4
160°	417.4	431.9	418.4	377.3	374.7	374.7
162.5°	428.9	440.8	429.9	396.1	381.8	375.7
165°	439.1	447.6	440.1	417.0	395.7	390.1
167.5°	448.6	454.2	451.6	434.2	417.0	405.2
170°	456.2	459.5	455.9	448.6	440.1	429.9
172.5°	460.1	461.5	463.7	459.1	455.9	449.3
175°	462.5	466.1	464.1	465.7	462.8	461.5
177.5°	463.1	463.7	463.5	466.4	468.0	465.7
180°	465.7	465.7	465.7	465.7	465.7	465.7

(END OF REPORT)