

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-L940-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-L940-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2410.9 lumens
Efficiency: N/A
Efficacy: 100.3 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

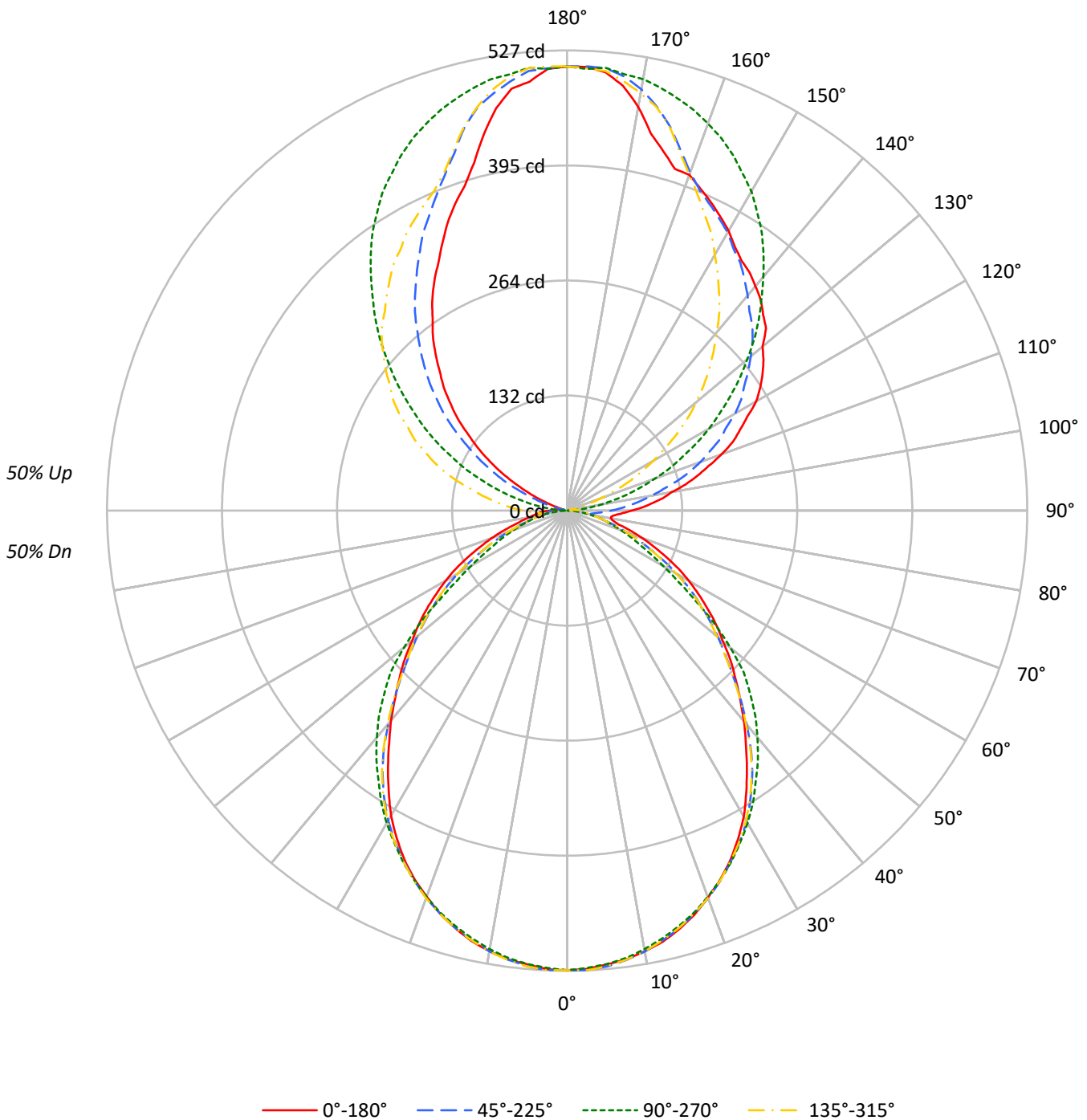
Input Watts (W): 24.038
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P392474

CATALOG NUMBER: MWL-2-13-13-UNV-L940-EDD

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°	6799	6799	6799	6799
5°	6643	6215	6643	6215
10°	6482	5686	6482	5686
15°	6283	5198	6271	5198
20°	6024	4744	6011	4744
25°	5743	4318	5729	4318
30°	5388	3908	5369	3908
35°	4937	3495	4922	3495
40°	4522	3107	4501	3107
45°	4124	2704	4107	2704
50°	3746	2235	3728	2235
55°	3416	1658	3403	1658
60°	3054	1207	3047	1207
65°	2622	884	2622	884
70°	2183	659	2193	659
75°	1710	475	1741	475
80°	1729	299	1497	299
85°	2450	124	1424	124



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	49.6	2.1
10°-20°	139.3	5.8
20°-30°	203.8	8.5
30°-40°	230.0	9.5
40°-50°	213.8	8.9
50°-60°	167.9	7.0
60°-70°	106.4	4.4
70°-80°	53.0	2.2
80°-90°	31.4	1.3
90°-100°	42.3	1.8
100°-110°	78.5	3.3
110°-120°	135.4	5.6
120°-130°	183.8	7.6
130°-140°	209.5	8.7
140°-150°	208.9	8.7
150°-160°	181.9	7.5
160°-170°	127.9	5.3
170°-180°	47.7	2.0
0°-30°	392.7	16.3
0°-40°	622.7	25.8
0°-60°	1004.3	41.7
0°-90°	1195.1	49.6
90°-120°	256.1	10.6
90°-150°	858.3	35.6
90°-180°	1216.0	50.4
0°-180°	2410.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	526	526	526	526	526	
5°	522	521	522	521	522	50
15°	496	493	495	493	496	140
25°	442	444	441	444	442	203
35°	359	377	358	377	359	225
45°	273	296	272	296	273	211
55°	197	179	196	179	197	176
65°	124	91	124	91	124	124
75°	61	45	62	45	61	69
85°	56	10	32	10	56	45
90°	74	0	20	0	74	41
95°	98	14	13	14	98	85
105°	154	71	4	71	154	163
115°	218	146	50	146	218	217
125°	273	228	124	228	273	244
135°	318	311	200	311	318	245
145°	349	389	269	389	349	220
155°	390	449	338	449	390	180
165°	426	489	412	489	426	121
175°	504	509	493	509	504	47
180°	508	508	508	508	508	



TEST NUMBER: P392474

CATALOG NUMBER: MWL-2-13-13-UNV-L940-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	526.4	526.4	526.4	526.4	526.4	526.4	526.4	526.4	526.4	526.4	526.4
2.5°	525.3	526.1	526.8	525.2	524.3	525.0	526.8	526.1	525.7	526.1	526.8
5°	521.7	523.3	524.1	522.2	521.3	522.2	523.7	523.3	521.7	523.3	523.7
7.5°	518.4	519.1	519.1	517.7	516.8	517.3	518.8	518.8	518.4	518.8	518.8
10°	512.4	512.8	512.8	511.9	510.0	511.5	512.4	512.0	512.4	512.0	512.4
12.5°	505.8	505.5	504.2	503.3	502.0	503.3	504.2	504.7	505.1	504.7	504.2
15°	496.1	495.5	495.1	495.1	492.9	494.7	494.7	494.7	495.1	494.7	494.7
17.5°	485.2	484.5	484.2	483.8	482.9	483.8	483.8	484.2	484.2	484.2	483.8
20°	471.5	472.1	472.3	471.0	470.7	470.7	471.9	471.4	470.5	471.4	471.9
22.5°	457.6	457.6	458.6	459.2	457.9	458.8	458.3	456.8	456.8	456.8	458.3
25°	442.1	442.1	443.5	444.6	444.3	444.3	442.8	441.0	441.0	441.0	442.8
27.5°	423.8	424.8	428.0	429.5	428.8	429.1	427.3	423.7	422.8	423.7	427.3
30°	404.7	406.5	411.1	413.5	413.3	412.7	410.0	405.4	403.3	405.4	410.0
32.5°	381.9	384.7	391.0	396.1	396.3	395.4	390.0	383.2	380.5	383.2	390.0
35°	358.8	361.5	369.7	377.0	376.8	375.9	368.6	360.4	357.7	360.4	368.6
37.5°	336.0	336.9	346.0	357.0	359.0	355.9	344.9	335.8	334.9	335.8	344.9
40°	315.1	313.2	319.6	335.6	338.9	334.9	318.2	311.8	313.6	311.8	318.2
42.5°	293.2	290.5	294.6	312.0	318.9	311.2	293.6	289.0	291.7	289.0	293.6
45°	272.8	270.1	269.1	286.4	296.1	285.7	267.7	269.0	271.7	269.0	267.7
47.5°	253.7	249.1	246.4	259.7	274.2	259.3	244.9	248.0	252.6	248.0	244.9
50°	232.7	230.9	225.4	233.2	243.8	232.5	223.9	229.4	231.6	229.4	223.9
52.5°	215.4	212.7	205.0	208.6	212.8	207.9	203.9	211.2	214.3	211.2	203.9
55°	196.8	195.0	185.0	184.6	178.8	183.9	183.9	193.9	196.1	193.9	183.9
57.5°	178.6	176.8	165.8	159.1	149.6	158.3	164.7	175.7	177.8	175.7	164.7
60°	160.9	159.1	145.4	135.0	127.7	134.7	144.7	158.3	160.5	158.3	144.7
62.5°	143.6	139.9	124.5	111.3	107.3	111.0	123.7	139.2	143.2	139.2	123.7
65°	124.1	119.5	105.0	93.1	90.9	92.7	104.6	119.2	124.1	119.2	104.6
67.5°	106.8	100.4	88.6	77.3	78.2	77.3	88.2	100.0	106.8	100.0	88.2
70°	90.9	82.7	71.8	63.6	65.4	63.6	71.8	83.1	91.3	83.1	71.8
72.5°	75.4	66.3	58.1	51.8	54.1	51.4	58.1	66.7	76.2	66.7	58.1
75°	60.9	53.6	45.0	41.4	45.0	41.4	45.4	53.9	62.0	53.9	45.4
77.5°	53.7	45.0	35.0	32.3	35.9	32.3	35.4	43.9	52.3	43.9	35.4
80°	50.7	42.7	27.9	25.0	26.8	25.0	27.2	37.0	43.9	37.0	27.2
82.5°	51.1	45.1	27.6	17.7	18.6	17.7	23.3	32.3	37.4	32.3	23.3
85°	55.9	52.3	32.8	14.2	10.4	13.5	22.3	30.3	32.5	30.3	22.3
87.5°	64.2	61.9	40.5	16.9	2.7	11.8	20.0	27.4	27.2	27.4	20.0
90°	73.7	71.9	50.7	21.7	0.4	8.0	15.1	21.3	19.9	21.3	15.1
92.5°	86.7	84.3	61.2	29.2	5.7	4.4	12.0	17.9	16.4	17.9	12.0
95°	98.0	96.8	73.0	37.4	14.4	1.5	8.4	13.5	12.9	13.5	8.4
97.5°	111.1	108.3	85.1	50.3	25.5	4.3	5.8	9.7	10.6	9.7	5.8
100°	121.4	120.2	98.6	65.7	39.1	11.8	3.5	7.5	8.4	7.5	3.5
102.5°	139.1	133.9	112.3	80.5	53.8	22.2	5.4	4.7	5.6	4.7	5.4
105°	154.5	149.5	129.9	95.8	70.7	36.3	14.0	5.2	3.5	5.2	14.0
107.5°	170.0	166.4	146.7	111.6	88.7	52.4	27.2	14.2	9.2	14.2	27.2
110°	188.0	183.6	162.1	128.4	107.3	70.5	41.1	25.7	20.0	25.7	41.1



TEST NUMBER: P392474

CATALOG NUMBER: MWL-2-13-13-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	205.2	201.9	176.5	144.9	127.6	89.2	58.3	40.0	34.6	40.0	58.3
115°	218.5	216.7	193.0	160.3	145.6	110.4	77.4	56.9	50.5	56.9	77.4
117.5°	232.4	232.1	205.2	176.1	167.1	129.5	94.9	73.8	67.0	73.8	94.9
120°	250.0	247.2	222.0	191.9	187.6	149.5	114.3	93.2	86.4	93.2	114.3
122.5°	262.2	260.5	236.4	207.0	207.0	170.0	133.0	111.8	104.7	111.8	133.0
125°	273.3	272.7	247.2	222.0	227.8	189.1	153.8	132.3	124.4	132.3	153.8
127.5°	283.4	284.5	261.1	238.5	249.0	208.4	174.3	150.6	142.3	150.6	174.3
130°	292.0	295.7	274.4	253.7	269.0	229.6	192.6	168.9	163.5	168.9	192.6
132.5°	308.9	306.8	288.1	269.0	290.6	249.0	212.0	187.2	181.1	187.2	212.0
135°	317.5	318.2	299.9	282.3	310.7	268.3	230.3	205.9	199.8	205.9	230.3
137.5°	327.9	325.8	309.2	298.5	329.4	287.0	248.3	225.6	215.9	225.6	248.3
140°	335.5	335.1	321.4	312.9	349.5	305.3	266.6	243.5	234.6	243.5	266.6
142.5°	343.4	345.5	333.6	328.6	369.5	324.7	286.3	261.1	252.6	261.1	286.3
145°	348.8	353.4	345.9	348.4	388.6	346.2	303.5	278.1	268.7	278.1	303.5
147.5°	357.7	363.8	354.9	362.4	405.1	365.3	320.8	295.7	287.4	295.7	320.8
150°	369.9	372.8	367.4	381.8	422.0	386.5	338.4	312.5	304.2	312.5	338.4
152.5°	379.7	383.2	377.1	403.0	435.2	405.8	357.7	329.0	319.3	329.0	357.7
155°	389.7	391.1	386.8	423.4	449.3	424.8	373.2	347.3	338.0	347.3	373.2
157.5°	399.0	401.9	396.9	438.9	461.5	441.3	390.8	365.6	357.3	365.6	390.8
160°	409.1	409.1	411.9	456.8	471.5	455.7	409.4	385.8	374.3	385.8	409.4
162.5°	410.2	416.9	432.4	469.4	481.2	468.3	429.5	400.1	390.0	400.1	429.5
165°	425.9	432.0	455.4	480.5	488.7	479.4	454.3	423.8	411.9	423.8	454.3
167.5°	442.4	455.4	474.0	493.1	495.9	489.8	473.3	452.2	441.3	452.2	473.3
170°	469.4	480.5	489.8	497.7	501.7	498.1	485.2	474.8	467.9	474.8	485.2
172.5°	490.5	497.7	501.3	506.3	503.8	502.4	495.9	490.9	487.3	490.9	495.9
175°	503.8	505.3	508.5	506.7	508.8	504.9	505.3	507.8	493.1	507.8	505.3
177.5°	508.5	511.0	509.2	506.0	506.3	505.7	507.0	508.5	506.3	508.5	507.0
180°	508.5	508.5	508.5	508.5	508.5	508.5	508.5	508.5	508.5	508.5	508.5



TEST NUMBER: P392474

CATALOG NUMBER: MWL-2-13-13-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	526.4	526.4	526.4	526.4	526.4	526.4
2.5°	525.0	524.3	525.2	526.8	526.1	525.3
5°	522.2	521.3	522.2	524.1	523.3	521.7
7.5°	517.3	516.8	517.7	519.1	519.1	518.4
10°	511.5	510.0	511.9	512.8	512.8	512.4
12.5°	503.3	502.0	503.3	504.2	505.5	505.8
15°	494.7	492.9	495.1	495.1	495.5	496.1
17.5°	483.8	482.9	483.8	484.2	484.5	485.2
20°	470.7	470.7	471.0	472.3	472.1	471.5
22.5°	458.8	457.9	459.2	458.6	457.6	457.6
25°	444.3	444.3	444.6	443.5	442.1	442.1
27.5°	429.1	428.8	429.5	428.0	424.8	423.8
30°	412.7	413.3	413.5	411.1	406.5	404.7
32.5°	395.4	396.3	396.1	391.0	384.7	381.9
35°	375.9	376.8	377.0	369.7	361.5	358.8
37.5°	355.9	359.0	357.0	346.0	336.9	336.0
40°	334.9	338.9	335.6	319.6	313.2	315.1
42.5°	311.2	318.9	312.0	294.6	290.5	293.2
45°	285.7	296.1	286.4	269.1	270.1	272.8
47.5°	259.3	274.2	259.7	246.4	249.1	253.7
50°	232.5	243.8	233.2	225.4	230.9	232.7
52.5°	207.9	212.8	208.6	205.0	212.7	215.4
55°	183.9	178.8	184.6	185.0	195.0	196.8
57.5°	158.3	149.6	159.1	165.8	176.8	178.6
60°	134.7	127.7	135.0	145.4	159.1	160.9
62.5°	111.0	107.3	111.3	124.5	139.9	143.6
65°	92.7	90.9	93.1	105.0	119.5	124.1
67.5°	77.3	78.2	77.3	88.6	100.4	106.8
70°	63.6	65.4	63.6	71.8	82.7	90.9
72.5°	51.4	54.1	51.8	58.1	66.3	75.4
75°	41.4	45.0	41.4	45.0	53.6	60.9
77.5°	32.3	35.9	32.3	35.0	45.0	53.7
80°	25.0	26.8	25.0	27.9	42.7	50.7
82.5°	17.7	18.6	17.7	27.6	45.1	51.1
85°	13.5	10.4	14.2	32.8	52.3	55.9
87.5°	11.8	2.7	16.9	40.5	61.9	64.2
90°	8.0	0.4	21.7	50.7	71.9	73.7
92.5°	4.4	5.7	29.2	61.2	84.3	86.7
95°	1.5	14.4	37.4	73.0	96.8	98.0
97.5°	4.3	25.5	50.3	85.1	108.3	111.1
100°	11.8	39.1	65.7	98.6	120.2	121.4
102.5°	22.2	53.8	80.5	112.3	133.9	139.1
105°	36.3	70.7	95.8	129.9	149.5	154.5
107.5°	52.4	88.7	111.6	146.7	166.4	170.0
110°	70.5	107.3	128.4	162.1	183.6	188.0



TEST NUMBER: P392474

CATALOG NUMBER: MWL-2-13-13-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	89.2	127.6	144.9	176.5	201.9	205.2
115°	110.4	145.6	160.3	193.0	216.7	218.5
117.5°	129.5	167.1	176.1	205.2	232.1	232.4
120°	149.5	187.6	191.9	222.0	247.2	250.0
122.5°	170.0	207.0	207.0	236.4	260.5	262.2
125°	189.1	227.8	222.0	247.2	272.7	273.3
127.5°	208.4	249.0	238.5	261.1	284.5	283.4
130°	229.6	269.0	253.7	274.4	295.7	292.0
132.5°	249.0	290.6	269.0	288.1	306.8	308.9
135°	268.3	310.7	282.3	299.9	318.2	317.5
137.5°	287.0	329.4	298.5	309.2	325.8	327.9
140°	305.3	349.5	312.9	321.4	335.1	335.5
142.5°	324.7	369.5	328.6	333.6	345.5	343.4
145°	346.2	388.6	348.4	345.9	353.4	348.8
147.5°	365.3	405.1	362.4	354.9	363.8	357.7
150°	386.5	422.0	381.8	367.4	372.8	369.9
152.5°	405.8	435.2	403.0	377.1	383.2	379.7
155°	424.8	449.3	423.4	386.8	391.1	389.7
157.5°	441.3	461.5	438.9	396.9	401.9	399.0
160°	455.7	471.5	456.8	411.9	409.1	409.1
162.5°	468.3	481.2	469.4	432.4	416.9	410.2
165°	479.4	488.7	480.5	455.4	432.0	425.9
167.5°	489.8	495.9	493.1	474.0	455.4	442.4
170°	498.1	501.7	497.7	489.8	480.5	469.4
172.5°	502.4	503.8	506.3	501.3	497.7	490.5
175°	504.9	508.8	506.7	508.5	505.3	503.8
177.5°	505.7	506.3	506.0	509.2	511.0	508.5
180°	508.5	508.5	508.5	508.5	508.5	508.5

(END OF REPORT)