

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: P382184

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

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P382184
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-L830-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

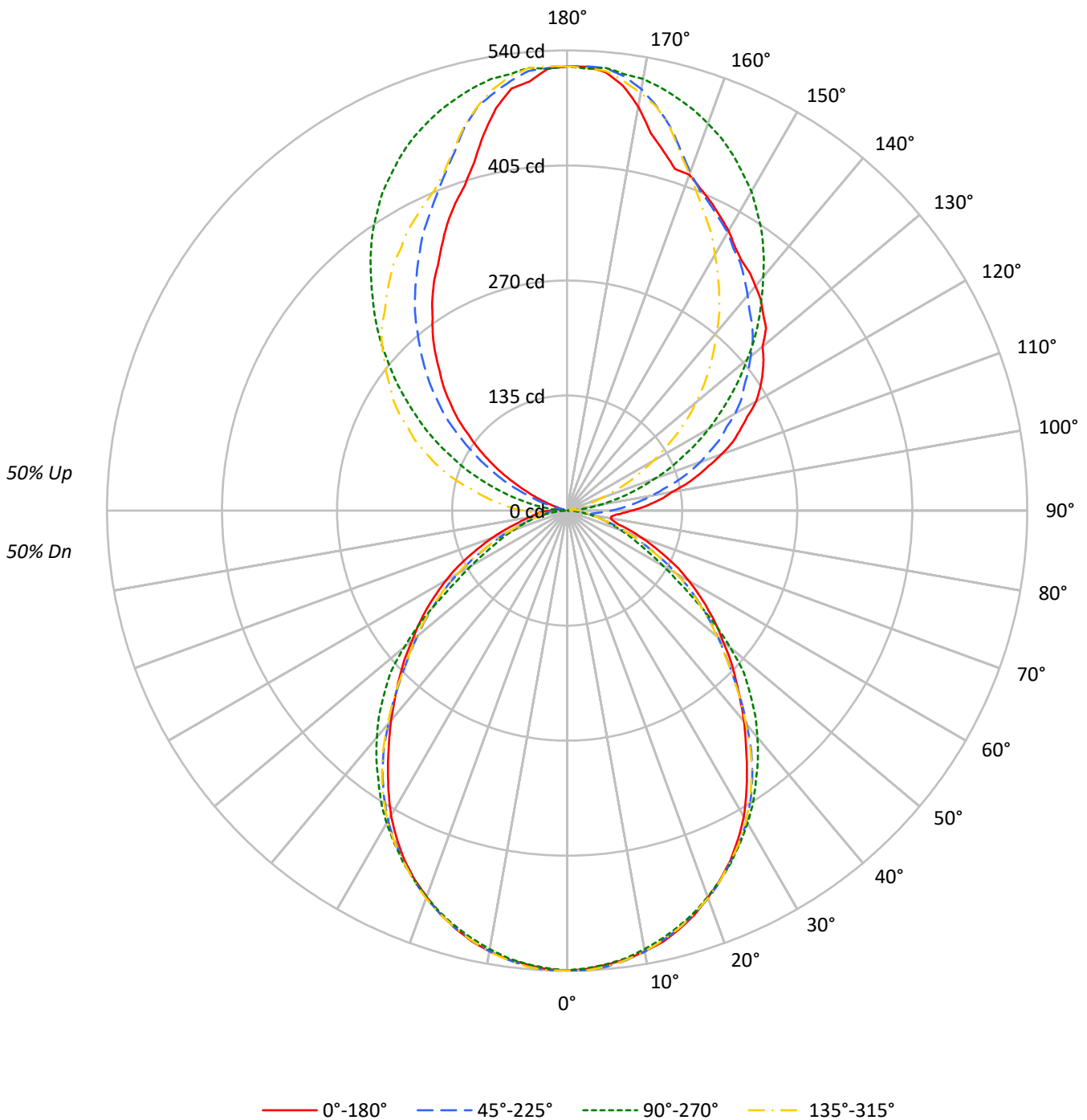
Lumens per Lamp: N/A
Luminaire Lumens: 2471.0 lumens
Efficiency: N/A
Efficacy: 103.8 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 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°	6970	6970	6970	6970
5°	6809	6370	6809	6370
10°	6644	5828	6644	5828
15°	6440	5328	6426	5328
20°	6174	4861	6161	4861
25°	5886	4425	5871	4425
30°	5522	4005	5502	4005
35°	5060	3582	5045	3582
40°	4634	3185	4613	3185
45°	4227	2772	4210	2772
50°	3839	2291	3822	2291
55°	3501	1699	3488	1699
60°	3130	1238	3123	1238
65°	2687	906	2687	906
70°	2238	675	2248	675
75°	1752	486	1783	486
80°	1770	307	1534	307
85°	2507	126	1460	126



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	50.8	2.1
10°-20°	142.8	5.8
20°-30°	208.9	8.5
30°-40°	235.7	9.5
40°-50°	219.1	8.9
50°-60°	172.1	7.0
60°-70°	109.1	4.4
70°-80°	54.3	2.2
80°-90°	32.2	1.3
90°-100°	43.3	1.8
100°-110°	80.4	3.3
110°-120°	138.8	5.6
120°-130°	188.3	7.6
130°-140°	214.7	8.7
140°-150°	214.1	8.7
150°-160°	186.4	7.5
160°-170°	131.1	5.3
170°-180°	48.8	2.0
0°-30°	402.5	16.3
0°-40°	638.2	25.8
0°-60°	1029.3	41.7
0°-90°	1224.9	49.6
90°-120°	262.5	10.6
90°-150°	879.7	35.6
90°-180°	1246.0	50.4
0°-180°	2471.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	540	540	540	540	540	
5°	535	534	535	534	535	51
15°	508	505	507	505	508	143
25°	453	455	452	455	453	208
35°	368	386	367	386	368	230
45°	280	304	278	304	280	216
55°	202	183	201	183	202	180
65°	127	93	127	93	127	127
75°	62	46	64	46	62	71
85°	57	11	33	11	57	46
90°	76	0	20	0	76	42
95°	100	15	13	15	100	87
105°	158	72	4	72	158	167
115°	224	149	52	149	224	222
125°	280	234	128	234	280	250
135°	325	318	205	318	325	251
145°	358	398	275	398	358	225
155°	399	460	346	460	399	184
165°	437	501	422	501	437	124
175°	516	522	505	522	516	48
180°	521	521	521	521	521	



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

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	539.6	539.6	539.6	539.6	539.6	539.6	539.6	539.6	539.6	539.6	539.6
2.5°	538.4	539.2	539.9	538.3	537.4	538.1	539.9	539.2	538.8	539.2	539.9
5°	534.7	536.4	537.1	535.3	534.3	535.3	536.8	536.4	534.7	536.4	536.8
7.5°	531.3	532.1	532.1	530.6	529.7	530.2	531.7	531.7	531.3	531.7	531.7
10°	525.2	525.6	525.6	524.6	522.7	524.2	525.2	524.8	525.2	524.8	525.2
12.5°	518.5	518.1	516.8	515.8	514.5	515.8	516.8	517.3	517.7	517.3	516.8
15°	508.5	507.8	507.4	507.4	505.2	507.1	507.1	507.1	507.4	507.1	507.1
17.5°	497.3	496.6	496.2	495.9	494.9	495.9	495.9	496.2	496.2	496.2	495.9
20°	483.2	483.9	484.1	482.8	482.4	482.4	483.7	483.2	482.2	483.2	483.7
22.5°	469.0	469.0	470.1	470.6	469.3	470.3	469.7	468.2	468.2	468.2	469.7
25°	453.1	453.1	454.6	455.7	455.3	455.3	453.8	452.0	452.0	452.0	453.8
27.5°	434.4	435.3	438.7	440.2	439.5	439.8	438.0	434.2	433.3	434.2	438.0
30°	414.8	416.7	421.3	423.8	423.6	423.0	420.2	415.5	413.3	415.5	420.2
32.5°	391.5	394.3	400.8	406.0	406.2	405.3	399.7	392.8	390.0	392.8	399.7
35°	367.7	370.5	378.9	386.4	386.2	385.3	377.8	369.4	366.6	369.4	377.8
37.5°	344.4	345.3	354.7	365.9	367.9	364.7	353.5	344.2	343.3	344.2	353.5
40°	322.9	321.0	327.6	344.0	347.4	343.3	326.1	319.6	321.4	319.6	326.1
42.5°	300.5	297.7	302.0	319.7	326.8	319.0	300.9	296.2	299.0	296.2	300.9
45°	279.6	276.8	275.8	293.6	303.5	292.8	274.4	275.7	278.5	275.7	274.4
47.5°	260.0	255.3	252.5	266.1	281.1	265.8	251.0	254.2	258.9	254.2	251.0
50°	238.5	236.6	231.0	239.1	249.9	238.3	229.5	235.1	237.4	235.1	229.5
52.5°	220.8	218.0	210.1	213.8	218.1	213.1	209.0	216.5	219.6	216.5	209.0
55°	201.7	199.8	189.6	189.2	183.2	188.4	188.4	198.7	201.0	198.7	188.4
57.5°	183.0	181.2	170.0	163.0	153.3	162.3	168.8	180.0	182.3	180.0	168.8
60°	164.9	163.0	149.0	138.4	130.9	138.0	148.3	162.3	164.5	162.3	148.3
62.5°	147.2	143.4	127.6	114.1	110.0	113.7	126.8	142.7	146.8	142.7	126.8
65°	127.2	122.5	107.6	95.4	93.2	95.1	107.2	122.1	127.2	122.1	107.2
67.5°	109.4	102.9	90.8	79.2	80.1	79.2	90.4	102.5	109.4	102.5	90.4
70°	93.2	84.8	73.6	65.2	67.0	65.2	73.6	85.2	93.6	85.2	73.6
72.5°	77.3	68.0	59.6	53.0	55.5	52.7	59.6	68.4	78.1	68.4	59.6
75°	62.4	54.9	46.1	42.4	46.1	42.4	46.5	55.3	63.5	55.3	46.5
77.5°	55.0	46.1	35.9	33.1	36.8	33.1	36.2	45.0	53.6	45.0	36.2
80°	51.9	43.8	28.6	25.6	27.5	25.6	27.8	37.9	45.0	37.9	27.8
82.5°	52.4	46.2	28.3	18.1	19.0	18.1	23.9	33.1	38.4	33.1	23.9
85°	57.2	53.6	33.6	14.6	10.6	13.8	22.9	31.1	33.3	31.1	22.9
87.5°	65.8	63.4	41.5	17.3	2.8	12.1	20.5	28.1	27.9	28.1	20.5
90°	75.5	73.7	51.9	22.2	0.4	8.2	15.5	21.9	20.4	21.9	15.5
92.5°	88.9	86.4	62.8	29.9	5.9	4.5	12.3	18.3	16.8	18.3	12.3
95°	100.5	99.2	74.8	38.3	14.8	1.5	8.6	13.8	13.3	13.8	8.6
97.5°	113.8	111.0	87.2	51.5	26.1	4.4	6.0	9.9	10.8	9.9	6.0
100°	124.5	123.2	101.0	67.3	40.1	12.1	3.5	7.7	8.6	7.7	3.5
102.5°	142.6	137.3	115.1	82.5	55.2	22.8	5.5	4.9	5.8	4.9	5.5
105°	158.4	153.2	133.2	98.2	72.5	37.2	14.4	5.3	3.5	5.3	14.4
107.5°	174.2	170.5	150.3	114.4	90.9	53.7	27.8	14.6	9.4	14.6	27.8
110°	192.6	188.2	166.1	131.6	110.0	72.3	42.1	26.3	20.5	26.3	42.1



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

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	210.3	206.9	180.9	148.5	130.8	91.4	59.8	41.0	35.5	41.0	59.8
115°	223.9	222.1	197.8	164.3	149.2	113.2	79.3	58.4	51.7	58.4	79.3
117.5°	238.2	237.8	210.3	180.5	171.3	132.7	97.3	75.6	68.6	75.6	97.3
120°	256.2	253.3	227.6	196.7	192.3	153.2	117.2	95.5	88.5	95.5	117.2
122.5°	268.8	267.0	242.3	212.2	212.2	174.2	136.3	114.6	107.3	114.6	136.3
125°	280.1	279.5	253.3	227.6	233.5	193.8	157.6	135.6	127.5	135.6	157.6
127.5°	290.5	291.6	267.6	244.5	255.2	213.6	178.6	154.4	145.9	154.4	178.6
130°	299.3	303.0	281.3	260.0	275.8	235.3	197.4	173.1	167.6	173.1	197.4
132.5°	316.6	314.4	295.3	275.8	297.9	255.2	217.3	191.9	185.6	191.9	217.3
135°	325.4	326.2	307.4	289.4	318.4	275.0	236.1	211.0	204.8	211.0	236.1
137.5°	336.1	333.9	316.9	305.9	337.6	294.2	254.5	231.2	221.3	231.2	254.5
140°	343.8	343.5	329.4	320.7	358.2	312.9	273.2	249.6	240.5	249.6	273.2
142.5°	352.0	354.1	342.0	336.8	378.8	332.8	293.4	267.6	258.9	267.6	293.4
145°	357.5	362.2	354.5	357.1	398.3	354.8	311.1	285.0	275.4	285.0	311.1
147.5°	366.6	372.9	363.7	371.5	415.2	374.4	328.8	303.0	294.5	303.0	328.8
150°	379.1	382.1	376.6	391.3	432.5	396.1	346.8	320.3	311.8	320.3	346.8
152.5°	389.1	392.8	386.5	413.0	446.1	415.9	366.6	337.2	327.3	337.2	366.6
155°	399.4	400.9	396.4	433.9	460.5	435.4	382.5	356.0	346.4	356.0	382.5
157.5°	408.9	411.9	406.8	449.8	473.0	452.3	400.5	374.7	366.2	374.7	400.5
160°	419.3	419.3	422.2	468.2	483.2	467.1	419.7	395.4	383.6	395.4	419.7
162.5°	420.4	427.3	443.2	481.1	493.2	480.0	440.2	410.0	399.8	410.0	440.2
165°	436.6	442.8	466.7	492.5	500.9	491.4	465.6	434.3	422.2	434.3	465.6
167.5°	453.5	466.7	485.9	505.4	508.3	502.0	485.1	463.5	452.3	463.5	485.1
170°	481.1	492.5	502.0	510.1	514.2	510.5	497.3	486.6	479.6	486.6	497.3
172.5°	502.8	510.1	513.8	518.9	516.4	514.9	508.3	503.1	499.5	503.1	508.3
175°	516.4	517.9	521.2	519.3	521.5	517.5	517.9	520.4	505.4	520.4	517.9
177.5°	521.2	523.8	521.9	518.6	518.9	518.3	519.7	521.2	518.9	521.2	519.7
180°	521.2	521.2	521.2	521.2	521.2	521.2	521.2	521.2	521.2	521.2	521.2



TEST NUMBER: P382184

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

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	539.6	539.6	539.6	539.6	539.6	539.6
2.5°	538.1	537.4	538.3	539.9	539.2	538.4
5°	535.3	534.3	535.3	537.1	536.4	534.7
7.5°	530.2	529.7	530.6	532.1	532.1	531.3
10°	524.2	522.7	524.6	525.6	525.6	525.2
12.5°	515.8	514.5	515.8	516.8	518.1	518.5
15°	507.1	505.2	507.4	507.4	507.8	508.5
17.5°	495.9	494.9	495.9	496.2	496.6	497.3
20°	482.4	482.4	482.8	484.1	483.9	483.2
22.5°	470.3	469.3	470.6	470.1	469.0	469.0
25°	455.3	455.3	455.7	454.6	453.1	453.1
27.5°	439.8	439.5	440.2	438.7	435.3	434.4
30°	423.0	423.6	423.8	421.3	416.7	414.8
32.5°	405.3	406.2	406.0	400.8	394.3	391.5
35°	385.3	386.2	386.4	378.9	370.5	367.7
37.5°	364.7	367.9	365.9	354.7	345.3	344.4
40°	343.3	347.4	344.0	327.6	321.0	322.9
42.5°	319.0	326.8	319.7	302.0	297.7	300.5
45°	292.8	303.5	293.6	275.8	276.8	279.6
47.5°	265.8	281.1	266.1	252.5	255.3	260.0
50°	238.3	249.9	239.1	231.0	236.6	238.5
52.5°	213.1	218.1	213.8	210.1	218.0	220.8
55°	188.4	183.2	189.2	189.6	199.8	201.7
57.5°	162.3	153.3	163.0	170.0	181.2	183.0
60°	138.0	130.9	138.4	149.0	163.0	164.9
62.5°	113.7	110.0	114.1	127.6	143.4	147.2
65°	95.1	93.2	95.4	107.6	122.5	127.2
67.5°	79.2	80.1	79.2	90.8	102.9	109.4
70°	65.2	67.0	65.2	73.6	84.8	93.2
72.5°	52.7	55.5	53.0	59.6	68.0	77.3
75°	42.4	46.1	42.4	46.1	54.9	62.4
77.5°	33.1	36.8	33.1	35.9	46.1	55.0
80°	25.6	27.5	25.6	28.6	43.8	51.9
82.5°	18.1	19.0	18.1	28.3	46.2	52.4
85°	13.8	10.6	14.6	33.6	53.6	57.2
87.5°	12.1	2.8	17.3	41.5	63.4	65.8
90°	8.2	0.4	22.2	51.9	73.7	75.5
92.5°	4.5	5.9	29.9	62.8	86.4	88.9
95°	1.5	14.8	38.3	74.8	99.2	100.5
97.5°	4.4	26.1	51.5	87.2	111.0	113.8
100°	12.1	40.1	67.3	101.0	123.2	124.5
102.5°	22.8	55.2	82.5	115.1	137.3	142.6
105°	37.2	72.5	98.2	133.2	153.2	158.4
107.5°	53.7	90.9	114.4	150.3	170.5	174.2
110°	72.3	110.0	131.6	166.1	188.2	192.6



TEST NUMBER: P382184

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

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	91.4	130.8	148.5	180.9	206.9	210.3
115°	113.2	149.2	164.3	197.8	222.1	223.9
117.5°	132.7	171.3	180.5	210.3	237.8	238.2
120°	153.2	192.3	196.7	227.6	253.3	256.2
122.5°	174.2	212.2	212.2	242.3	267.0	268.8
125°	193.8	233.5	227.6	253.3	279.5	280.1
127.5°	213.6	255.2	244.5	267.6	291.6	290.5
130°	235.3	275.8	260.0	281.3	303.0	299.3
132.5°	255.2	297.9	275.8	295.3	314.4	316.6
135°	275.0	318.4	289.4	307.4	326.2	325.4
137.5°	294.2	337.6	305.9	316.9	333.9	336.1
140°	312.9	358.2	320.7	329.4	343.5	343.8
142.5°	332.8	378.8	336.8	342.0	354.1	352.0
145°	354.8	398.3	357.1	354.5	362.2	357.5
147.5°	374.4	415.2	371.5	363.7	372.9	366.6
150°	396.1	432.5	391.3	376.6	382.1	379.1
152.5°	415.9	446.1	413.0	386.5	392.8	389.1
155°	435.4	460.5	433.9	396.4	400.9	399.4
157.5°	452.3	473.0	449.8	406.8	411.9	408.9
160°	467.1	483.2	468.2	422.2	419.3	419.3
162.5°	480.0	493.2	481.1	443.2	427.3	420.4
165°	491.4	500.9	492.5	466.7	442.8	436.6
167.5°	502.0	508.3	505.4	485.9	466.7	453.5
170°	510.5	514.2	510.1	502.0	492.5	481.1
172.5°	514.9	516.4	518.9	513.8	510.1	502.8
175°	517.5	521.5	519.3	521.2	517.9	516.4
177.5°	518.3	518.9	518.6	521.9	523.8	521.2
180°	521.2	521.2	521.2	521.2	521.2	521.2

(END OF REPORT)