

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-L835-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-L835-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

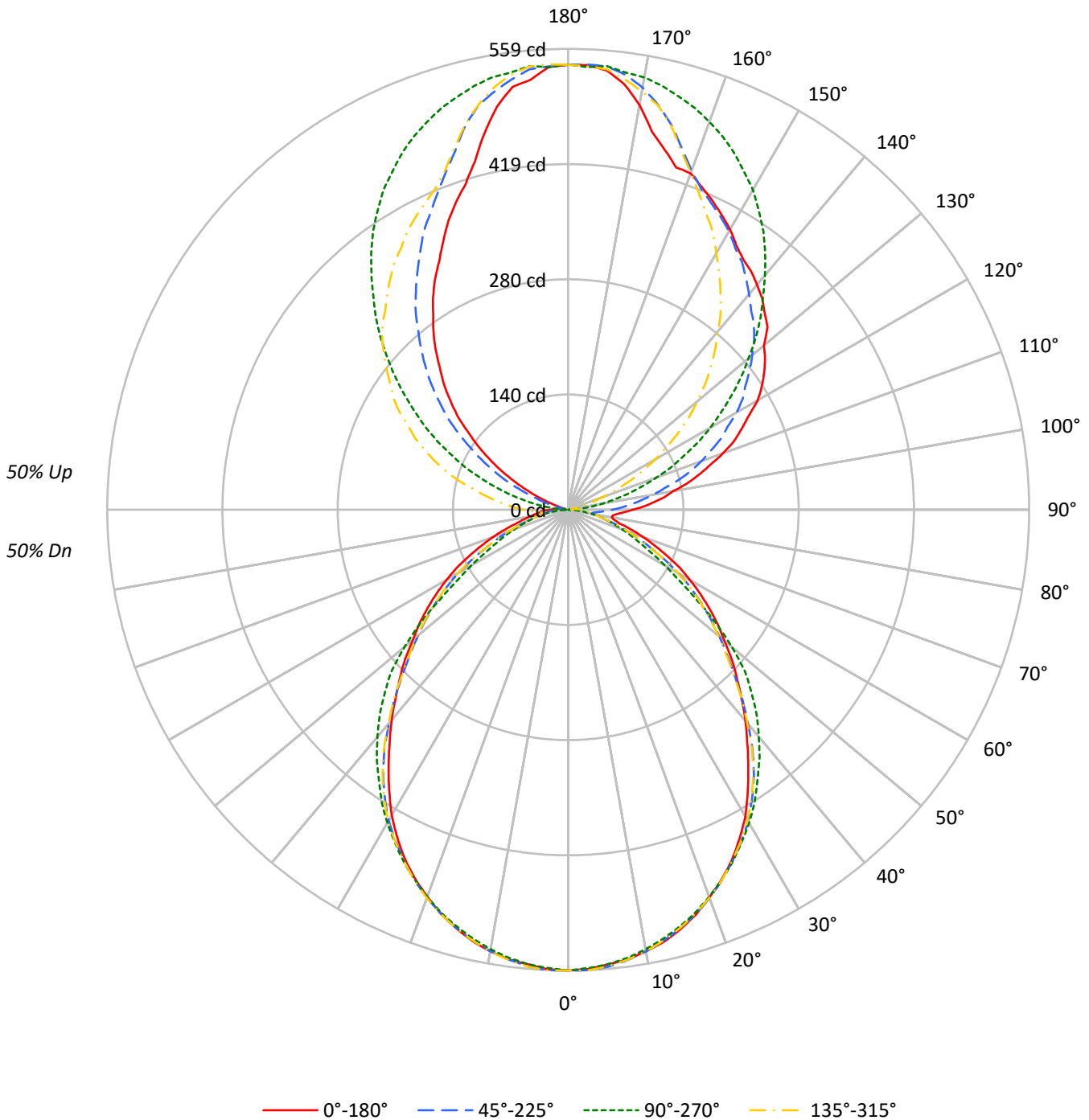
Lumens per Lamp: N/A
Luminaire Lumens: 2559.0 lumens
Efficiency: N/A
Efficacy: 107.5 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

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°	7218	7218	7218	7218
5°	7051	6598	7051	6598
10°	6881	6037	6881	6037
15°	6670	5518	6656	5518
20°	6395	5035	6381	5035
25°	6095	4583	6081	4583
30°	5719	4148	5698	4148
35°	5240	3710	5225	3710
40°	4799	3299	4778	3299
45°	4377	2871	4360	2871
50°	3976	2373	3957	2373
55°	3626	1759	3612	1759
60°	3242	1282	3235	1282
65°	2782	938	2782	938
70°	2318	699	2327	699
75°	1814	504	1847	504
80°	1834	317	1589	317
85°	2599	131	1512	131



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	52.6	2.1
10°-20°	147.9	5.8
20°-30°	216.3	8.5
30°-40°	244.1	9.5
40°-50°	226.9	8.9
50°-60°	178.2	7.0
60°-70°	113.0	4.4
70°-80°	56.2	2.2
80°-90°	33.3	1.3
90°-100°	44.8	1.8
100°-110°	83.3	3.3
110°-120°	143.7	5.6
120°-130°	195.1	7.6
130°-140°	222.4	8.7
140°-150°	221.7	8.7
150°-160°	193.1	7.5
160°-170°	135.8	5.3
170°-180°	50.6	2.0
0°-30°	416.8	16.3
0°-40°	660.9	25.8
0°-60°	1066.0	41.7
0°-90°	1268.6	49.6
90°-120°	271.9	10.6
90°-150°	911.0	35.6
90°-180°	1290.0	50.4
0°-180°	2559.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	559	559	559	559	559	
5°	554	553	554	553	554	53
15°	527	523	526	523	527	148
25°	469	472	468	472	469	215
35°	381	400	380	400	381	238
45°	290	314	288	314	290	224
55°	209	190	208	190	209	187
65°	132	96	132	96	132	131
75°	65	48	66	48	65	73
85°	59	11	34	11	59	48
90°	78	0	21	0	78	43
95°	104	15	14	15	104	91
105°	164	75	4	75	164	173
115°	232	154	54	154	232	230
125°	290	242	132	242	290	259
135°	337	330	212	330	337	260
145°	370	412	285	412	370	233
155°	414	477	359	477	414	191
165°	452	519	437	519	452	128
175°	535	540	523	540	535	50
180°	540	540	540	540	540	



TEST NUMBER: P392473

CATALOG NUMBER: MWL-2-13-13-UNV-L835-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	558.8	558.8	558.8	558.8	558.8	558.8	558.8	558.8	558.8	558.8	558.8
2.5°	557.6	558.4	559.2	557.5	556.5	557.2	559.2	558.4	558.0	558.4	559.2
5°	553.7	555.5	556.3	554.3	553.4	554.3	555.9	555.5	553.7	555.5	555.9
7.5°	550.3	551.0	551.0	549.5	548.5	549.1	550.6	550.6	550.3	550.6	550.6
10°	543.9	544.3	544.3	543.3	541.4	542.9	543.9	543.5	543.9	543.5	543.9
12.5°	536.9	536.5	535.2	534.2	532.9	534.2	535.2	535.8	536.1	535.8	535.2
15°	526.6	525.9	525.5	525.5	523.2	525.1	525.1	525.1	525.5	525.1	525.1
17.5°	515.0	514.3	513.9	513.5	512.5	513.5	513.5	513.9	513.9	513.9	513.5
20°	500.5	501.1	501.3	500.0	499.6	499.6	500.9	500.4	499.4	500.4	500.9
22.5°	485.7	485.7	486.8	487.4	486.0	487.0	486.4	484.9	484.9	484.9	486.4
25°	469.2	469.2	470.8	471.9	471.5	471.5	470.0	468.1	468.1	468.1	470.0
27.5°	449.9	450.8	454.3	455.9	455.1	455.5	453.6	449.7	448.7	449.7	453.6
30°	429.6	431.5	436.3	438.9	438.7	438.1	435.2	430.3	428.0	430.3	435.2
32.5°	405.4	408.3	415.1	420.5	420.7	419.7	413.9	406.7	403.8	406.7	413.9
35°	380.8	383.7	392.4	400.2	400.0	399.0	391.3	382.6	379.7	382.6	391.3
37.5°	356.7	357.6	367.3	378.9	381.0	377.7	366.1	356.5	355.5	356.5	366.1
40°	334.4	332.5	339.2	356.3	359.8	355.5	337.7	330.9	332.9	330.9	337.7
42.5°	311.2	308.3	312.8	331.1	338.5	330.4	311.6	306.8	309.7	306.8	311.6
45°	289.5	286.6	285.7	304.0	314.3	303.3	284.1	285.5	288.4	285.5	284.1
47.5°	269.2	264.4	261.5	275.6	291.1	275.2	259.9	263.2	268.1	263.2	259.9
50°	247.0	245.1	239.3	247.6	258.8	246.8	237.7	243.5	245.8	243.5	237.7
52.5°	228.6	225.7	217.6	221.5	225.9	220.7	216.4	224.2	227.5	224.2	216.4
55°	208.9	207.0	196.3	195.9	189.7	195.2	195.2	205.8	208.1	205.8	195.2
57.5°	189.5	187.6	176.0	168.9	158.8	168.1	174.8	186.5	188.8	186.5	174.8
60°	170.8	168.9	154.3	143.3	135.6	142.9	153.6	168.1	170.4	168.1	153.6
62.5°	152.4	148.5	132.1	118.2	113.9	117.8	131.3	147.8	152.0	147.8	131.3
65°	131.7	126.9	111.4	98.8	96.5	98.4	111.0	126.5	131.7	126.5	111.0
67.5°	113.3	106.6	94.0	82.0	83.0	82.0	93.6	106.2	113.3	106.2	93.6
70°	96.5	87.8	76.2	67.5	69.4	67.5	76.2	88.2	96.9	88.2	76.2
72.5°	80.1	70.4	61.7	54.9	57.4	54.5	61.7	70.8	80.8	70.8	61.7
75°	64.6	56.9	47.8	43.9	47.8	43.9	48.2	57.3	65.8	57.3	48.2
77.5°	57.0	47.8	37.1	34.2	38.1	34.2	37.5	46.6	55.5	46.6	37.5
80°	53.8	45.4	29.6	26.5	28.4	26.5	28.8	39.3	46.6	39.3	28.8
82.5°	54.3	47.9	29.3	18.8	19.7	18.8	24.8	34.2	39.7	34.2	24.8
85°	59.3	55.5	34.8	15.1	11.0	14.3	23.7	32.2	34.5	32.2	23.7
87.5°	68.2	65.7	42.9	17.9	2.9	12.6	21.2	29.1	28.9	29.1	21.2
90°	78.2	76.3	53.8	23.0	0.4	8.5	16.1	22.6	21.1	22.6	16.1
92.5°	92.1	89.5	65.0	30.9	6.1	4.6	12.8	19.0	17.4	19.0	12.8
95°	104.1	102.7	77.5	39.6	15.3	1.5	8.9	14.3	13.7	14.3	8.9
97.5°	117.9	115.0	90.3	53.4	27.1	4.5	6.2	10.3	11.2	10.3	6.2
100°	128.9	127.6	104.6	69.7	41.5	12.6	3.7	7.9	8.9	7.9	3.7
102.5°	147.7	142.2	119.2	85.4	57.2	23.6	5.7	5.0	6.0	5.0	5.7
105°	164.0	158.7	137.9	101.7	75.0	38.5	14.9	5.5	3.7	5.5	14.9
107.5°	180.5	176.6	155.7	118.5	94.1	55.6	28.8	15.1	9.8	15.1	28.8
110°	199.5	194.9	172.0	136.3	113.9	74.9	43.6	27.3	21.2	27.3	43.6



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CATALOG NUMBER: MWL-2-13-13-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	217.8	214.3	187.3	153.8	135.5	94.7	61.9	42.5	36.7	42.5	61.9
115°	231.9	230.0	204.8	170.1	154.5	117.2	82.1	60.4	53.6	60.4	82.1
117.5°	246.7	246.3	217.8	186.9	177.4	137.4	100.8	78.3	71.1	78.3	100.8
120°	265.4	262.4	235.7	203.7	199.1	158.7	121.4	98.9	91.7	98.9	121.4
122.5°	278.3	276.5	251.0	219.7	219.7	180.5	141.2	118.7	111.1	118.7	141.2
125°	290.1	289.4	262.4	235.7	241.8	200.7	163.2	140.4	132.0	140.4	163.2
127.5°	300.9	302.0	277.2	253.2	264.3	221.2	185.0	159.9	151.1	159.9	185.0
130°	309.9	313.8	291.3	269.2	285.6	243.7	204.4	179.3	173.6	179.3	204.4
132.5°	327.8	325.6	305.8	285.6	308.5	264.3	225.0	198.7	192.3	198.7	225.0
135°	337.0	337.8	318.4	299.7	329.8	284.8	244.5	218.6	212.1	218.6	244.5
137.5°	348.0	345.8	328.2	316.8	349.6	304.6	263.5	239.4	229.2	239.4	263.5
140°	356.1	355.7	341.2	332.1	371.0	324.1	283.0	258.5	249.0	258.5	283.0
142.5°	364.5	366.7	354.1	348.8	392.2	344.7	303.9	277.2	268.1	277.2	303.9
145°	370.2	375.1	367.1	369.8	412.5	367.5	322.1	295.1	285.2	295.1	322.1
147.5°	379.7	386.2	376.7	384.7	430.0	387.7	340.5	313.8	305.0	313.8	340.5
150°	392.6	395.7	390.0	405.2	447.9	410.2	359.2	331.7	322.9	331.7	359.2
152.5°	403.0	406.7	400.3	427.7	462.0	430.7	379.7	349.2	339.0	349.2	379.7
155°	413.6	415.2	410.5	449.4	476.9	450.9	396.1	368.6	358.8	368.6	396.1
157.5°	423.5	426.6	421.3	465.8	489.8	468.4	414.8	388.1	379.3	388.1	414.8
160°	434.2	434.2	437.2	484.9	500.5	483.7	434.6	409.5	397.3	409.5	434.6
162.5°	435.4	442.5	459.0	498.2	510.8	497.1	455.9	424.6	414.0	424.6	455.9
165°	452.1	458.6	483.3	510.0	518.7	508.9	482.2	449.8	437.2	449.8	482.2
167.5°	469.6	483.3	503.2	523.4	526.4	519.9	502.4	480.0	468.4	480.0	502.4
170°	498.2	510.0	519.9	528.3	532.5	528.7	515.0	503.9	496.7	503.9	515.0
172.5°	520.7	528.3	532.1	537.4	534.8	533.2	526.4	521.1	517.3	521.1	526.4
175°	534.8	536.3	539.7	537.8	540.1	536.0	536.3	538.9	523.4	538.9	536.3
177.5°	539.7	542.4	540.5	537.1	537.4	536.7	538.2	539.7	537.4	539.7	538.2
180°	539.7	539.7	539.7	539.7	539.7	539.7	539.7	539.7	539.7	539.7	539.7



TEST NUMBER: P392473

CATALOG NUMBER: MWL-2-13-13-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	558.8	558.8	558.8	558.8	558.8	558.8
2.5°	557.2	556.5	557.5	559.2	558.4	557.6
5°	554.3	553.4	554.3	556.3	555.5	553.7
7.5°	549.1	548.5	549.5	551.0	551.0	550.3
10°	542.9	541.4	543.3	544.3	544.3	543.9
12.5°	534.2	532.9	534.2	535.2	536.5	536.9
15°	525.1	523.2	525.5	525.5	525.9	526.6
17.5°	513.5	512.5	513.5	513.9	514.3	515.0
20°	499.6	499.6	500.0	501.3	501.1	500.5
22.5°	487.0	486.0	487.4	486.8	485.7	485.7
25°	471.5	471.5	471.9	470.8	469.2	469.2
27.5°	455.5	455.1	455.9	454.3	450.8	449.9
30°	438.1	438.7	438.9	436.3	431.5	429.6
32.5°	419.7	420.7	420.5	415.1	408.3	405.4
35°	399.0	400.0	400.2	392.4	383.7	380.8
37.5°	377.7	381.0	378.9	367.3	357.6	356.7
40°	355.5	359.8	356.3	339.2	332.5	334.4
42.5°	330.4	338.5	331.1	312.8	308.3	311.2
45°	303.3	314.3	304.0	285.7	286.6	289.5
47.5°	275.2	291.1	275.6	261.5	264.4	269.2
50°	246.8	258.8	247.6	239.3	245.1	247.0
52.5°	220.7	225.9	221.5	217.6	225.7	228.6
55°	195.2	189.7	195.9	196.3	207.0	208.9
57.5°	168.1	158.8	168.9	176.0	187.6	189.5
60°	142.9	135.6	143.3	154.3	168.9	170.8
62.5°	117.8	113.9	118.2	132.1	148.5	152.4
65°	98.4	96.5	98.8	111.4	126.9	131.7
67.5°	82.0	83.0	82.0	94.0	106.6	113.3
70°	67.5	69.4	67.5	76.2	87.8	96.5
72.5°	54.5	57.4	54.9	61.7	70.4	80.1
75°	43.9	47.8	43.9	47.8	56.9	64.6
77.5°	34.2	38.1	34.2	37.1	47.8	57.0
80°	26.5	28.4	26.5	29.6	45.4	53.8
82.5°	18.8	19.7	18.8	29.3	47.9	54.3
85°	14.3	11.0	15.1	34.8	55.5	59.3
87.5°	12.6	2.9	17.9	42.9	65.7	68.2
90°	8.5	0.4	23.0	53.8	76.3	78.2
92.5°	4.6	6.1	30.9	65.0	89.5	92.1
95°	1.5	15.3	39.6	77.5	102.7	104.1
97.5°	4.5	27.1	53.4	90.3	115.0	117.9
100°	12.6	41.5	69.7	104.6	127.6	128.9
102.5°	23.6	57.2	85.4	119.2	142.2	147.7
105°	38.5	75.0	101.7	137.9	158.7	164.0
107.5°	55.6	94.1	118.5	155.7	176.6	180.5
110°	74.9	113.9	136.3	172.0	194.9	199.5



TEST NUMBER: P392473

CATALOG NUMBER: MWL-2-13-13-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	94.7	135.5	153.8	187.3	214.3	217.8
115°	117.2	154.5	170.1	204.8	230.0	231.9
117.5°	137.4	177.4	186.9	217.8	246.3	246.7
120°	158.7	199.1	203.7	235.7	262.4	265.4
122.5°	180.5	219.7	219.7	251.0	276.5	278.3
125°	200.7	241.8	235.7	262.4	289.4	290.1
127.5°	221.2	264.3	253.2	277.2	302.0	300.9
130°	243.7	285.6	269.2	291.3	313.8	309.9
132.5°	264.3	308.5	285.6	305.8	325.6	327.8
135°	284.8	329.8	299.7	318.4	337.8	337.0
137.5°	304.6	349.6	316.8	328.2	345.8	348.0
140°	324.1	371.0	332.1	341.2	355.7	356.1
142.5°	344.7	392.2	348.8	354.1	366.7	364.5
145°	367.5	412.5	369.8	367.1	375.1	370.2
147.5°	387.7	430.0	384.7	376.7	386.2	379.7
150°	410.2	447.9	405.2	390.0	395.7	392.6
152.5°	430.7	462.0	427.7	400.3	406.7	403.0
155°	450.9	476.9	449.4	410.5	415.2	413.6
157.5°	468.4	489.8	465.8	421.3	426.6	423.5
160°	483.7	500.5	484.9	437.2	434.2	434.2
162.5°	497.1	510.8	498.2	459.0	442.5	435.4
165°	508.9	518.7	510.0	483.3	458.6	452.1
167.5°	519.9	526.4	523.4	503.2	483.3	469.6
170°	528.7	532.5	528.3	519.9	510.0	498.2
172.5°	533.2	534.8	537.4	532.1	528.3	520.7
175°	536.0	540.1	537.8	539.7	536.3	534.8
177.5°	536.7	537.4	537.1	540.5	542.4	539.7
180°	539.7	539.7	539.7	539.7	539.7	539.7

(END OF REPORT)