

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: P392494

Luminaire Tested: **MWL-2-18-23-UNV-L835-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392494
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-2-18-23-UNV-L835-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3987.0 lumens
Efficiency: N/A
Efficacy: 101.5 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

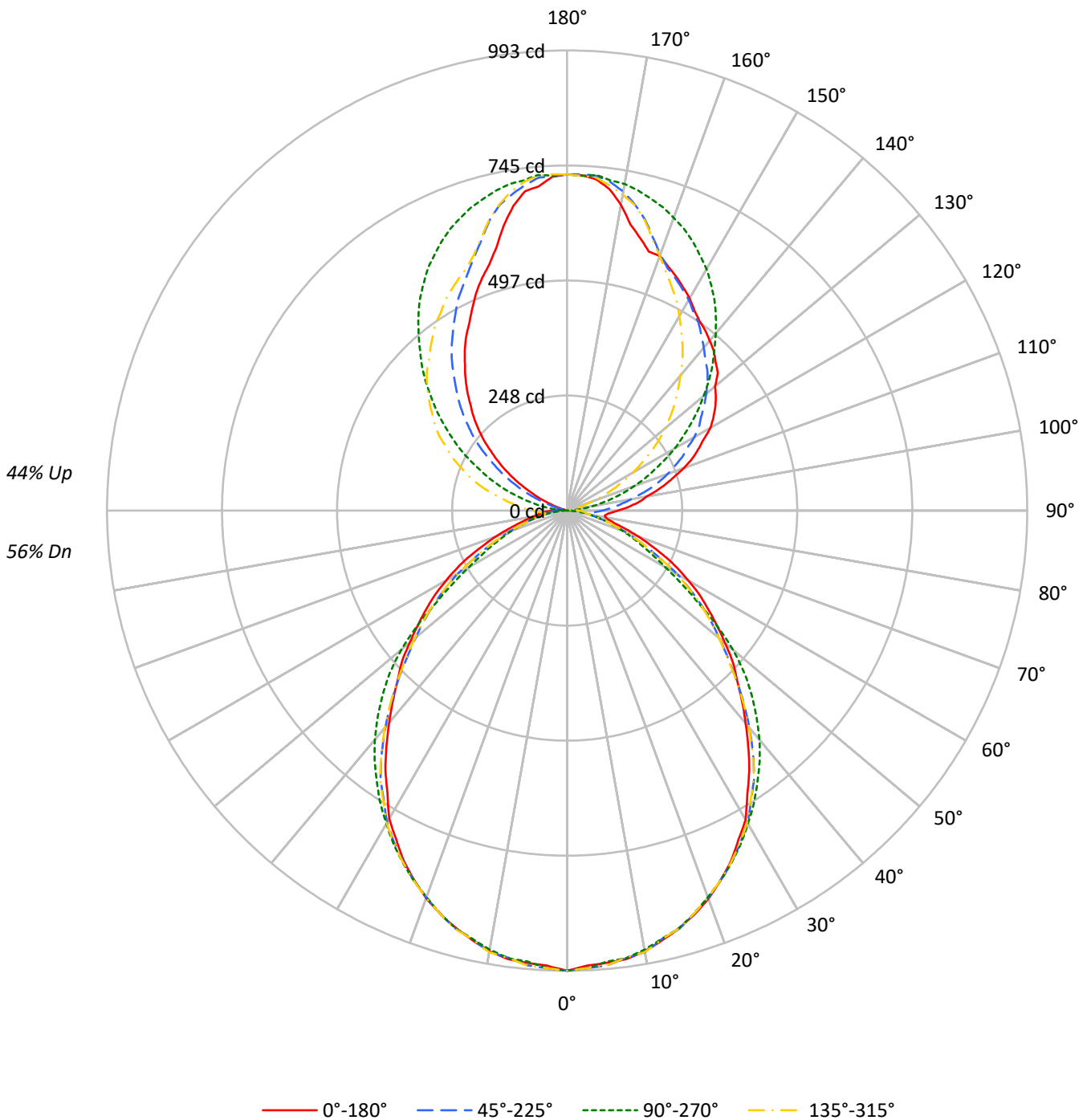
Input Watts (W): 39.3
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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CATALOG NUMBER: MWL-2-18-23-UNV-L835-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	109	109	109	109	101	101	101	101	87	87	87	74	74	74	62	62	62	56
1	100	95	91	88	92	89	86	83	77	74	72	66	64	62	55	54	53	48
2	91	84	78	73	85	78	73	69	68	64	60	58	55	53	49	47	45	41
3	83	74	67	61	77	69	63	58	60	55	51	52	48	45	44	41	39	35
4	77	66	58	52	71	62	55	50	54	48	44	47	42	39	40	37	34	31
5	70	59	51	45	65	55	48	43	48	43	38	42	38	34	36	33	30	27
6	65	53	45	39	60	50	43	37	44	38	34	38	34	30	33	29	27	24
7	60	48	40	35	56	45	38	33	40	34	30	35	30	27	30	27	24	21
8	56	44	36	31	52	41	34	29	36	31	27	32	27	24	28	24	21	19
9	52	40	33	28	49	38	31	26	34	28	24	29	25	22	26	22	19	17
10	49	37	30	25	46	35	28	24	31	26	22	27	23	20	24	20	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	12825	12825	12825	12825
5°	12475	11647	12475	11647
10°	12212	10725	12212	10725
15°	11817	9838	11798	9838
20°	11389	8947	11370	8947
25°	10856	8150	10836	8150
30°	10251	7380	10223	7380
35°	9430	6638	9410	6638
40°	8601	5919	8571	5919
45°	7838	5146	7816	5146
50°	7164	4283	7139	4283
55°	6455	3180	6439	3180
60°	5729	2310	5720	2310
65°	4895	1730	4895	1730
70°	3927	1278	3939	1278
75°	2990	903	3029	903
80°	2847	555	2513	555
85°	3791	236	2332	236



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	93.3	2.3
10°-20°	262.7	6.6
20°-30°	385.4	9.7
30°-40°	437.1	11.0
40°-50°	407.7	10.2
50°-60°	318.7	8.0
60°-70°	197.7	5.0
70°-80°	95.8	2.4
80°-90°	51.7	1.3
90°-100°	61.9	1.6
100°-110°	112.1	2.8
110°-120°	192.9	4.8
120°-130°	262.4	6.6
130°-140°	299.0	7.5
140°-150°	298.3	7.5
150°-160°	259.7	6.5
160°-170°	182.6	4.6
170°-180°	68.0	1.7
0°-30°	741.4	18.6
0°-40°	1178.6	29.6
0°-60°	1905.0	47.8
0°-90°	2250.1	56.4
90°-120°	366.8	9.2
90°-150°	1226.6	30.8
90°-180°	1737.0	43.6
0°-180°	3987.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	993	993	993	993	993	
5°	980	977	980	977	980	93
15°	933	933	932	933	933	263
25°	836	838	834	838	836	384
35°	685	716	684	716	685	428
45°	518	563	517	563	518	402
55°	372	343	371	343	372	333
65°	232	178	232	178	232	229
75°	106	86	108	86	106	120
85°	86	20	53	20	86	70
90°	109	0	33	0	109	61
95°	143	20	22	20	143	124
105°	220	102	4	102	220	232
115°	312	207	72	207	312	309
125°	390	325	178	325	390	348
135°	453	443	285	443	453	350
145°	499	554	384	554	499	314
155°	557	641	483	641	557	257
165°	609	697	589	697	609	173
175°	718	727	702	727	718	67
180°	725	725	725	725	725	



TEST NUMBER: P392494

CATALOG NUMBER: MWL-2-18-23-UNV-L835-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	992.9	992.9	992.9	992.9	992.9	992.9	992.9	992.9	992.9	992.9	992.9
2.5°	982.6	993.3	988.5	988.1	988.1	987.5	988.5	993.3	983.1	993.3	988.5
5°	979.7	987.5	985.6	984.6	976.9	984.6	985.1	987.5	979.7	987.5	985.1
7.5°	976.3	980.3	973.5	975.9	974.0	975.5	973.0	979.8	976.3	979.8	973.0
10°	965.3	966.7	967.7	962.9	961.9	962.4	967.2	965.7	965.3	965.7	967.2
12.5°	949.8	951.3	946.9	949.8	946.3	949.8	946.9	950.2	948.9	950.2	946.9
15°	933.0	937.7	934.4	931.5	932.8	930.9	933.8	936.7	931.5	936.7	933.8
17.5°	913.7	915.5	912.1	911.5	911.5	911.5	911.5	915.0	912.1	915.0	911.5
20°	891.4	891.8	888.9	887.4	887.8	886.9	888.3	890.8	889.9	890.8	888.3
22.5°	863.8	868.6	864.7	867.0	864.6	866.6	864.1	867.6	862.8	867.6	864.1
25°	835.7	838.6	838.1	841.9	838.5	841.4	837.1	837.1	834.2	837.1	837.1
27.5°	800.9	804.8	809.1	812.5	811.4	811.9	808.1	803.2	799.4	803.2	808.1
30°	770.0	768.0	778.7	781.1	780.5	780.0	777.1	766.5	767.9	766.5	777.1
32.5°	723.5	729.3	739.0	750.1	750.0	749.1	737.5	727.3	721.5	727.3	737.5
35°	685.3	689.2	703.7	716.3	715.7	714.7	702.2	687.7	683.8	687.7	702.2
37.5°	641.8	642.8	658.3	679.5	682.3	678.0	656.7	641.2	640.3	641.2	656.7
40°	599.3	598.3	611.8	636.5	645.6	635.4	609.8	596.3	597.2	596.3	609.8
42.5°	558.7	554.8	564.0	595.9	605.0	594.8	562.4	552.8	556.6	552.8	562.4
45°	518.5	513.7	516.6	545.6	563.4	544.5	514.6	512.1	517.0	512.1	514.6
47.5°	485.6	473.1	470.2	494.7	518.9	494.3	468.1	471.5	484.1	471.5	468.1
50°	445.0	438.3	428.6	446.4	467.2	445.4	426.6	436.2	443.5	436.2	426.6
52.5°	407.3	404.4	390.3	398.0	407.2	397.1	388.8	402.4	405.8	402.4	388.8
55°	371.9	367.1	351.6	349.2	342.9	348.2	350.2	365.6	371.0	365.6	350.2
57.5°	339.0	332.3	311.0	302.8	291.7	301.8	309.5	330.8	338.1	330.8	309.5
60°	301.8	296.0	273.8	253.0	244.3	252.5	272.8	295.0	301.3	295.0	272.8
62.5°	267.0	257.3	230.3	210.4	208.0	209.9	229.3	256.4	266.5	256.4	229.3
65°	231.7	217.2	194.0	174.6	178.0	174.2	193.5	216.7	231.7	216.7	193.5
67.5°	194.0	181.4	161.1	143.2	151.0	143.2	160.6	180.9	194.0	180.9	160.6
70°	163.5	148.1	131.6	118.1	126.8	118.1	131.6	148.5	164.0	148.5	131.6
72.5°	132.6	119.0	105.5	96.8	103.0	96.2	105.5	119.5	133.5	119.5	105.5
75°	106.5	93.9	82.7	75.9	85.6	75.9	83.3	94.4	107.9	94.4	83.3
77.5°	92.2	77.6	62.4	60.4	68.2	60.4	63.0	76.0	90.1	76.0	63.0
80°	83.5	72.1	49.4	45.0	49.8	45.0	48.4	63.9	73.7	63.9	48.4
82.5°	82.2	73.7	47.9	32.4	35.3	32.4	41.7	55.3	62.8	55.3	41.7
85°	86.5	81.3	52.3	25.2	19.8	24.3	37.5	50.1	53.2	50.1	37.5
87.5°	96.1	94.5	62.3	27.2	4.8	19.9	33.2	45.4	43.4	45.4	33.2
90°	109.3	108.1	75.9	32.1	0.5	12.7	25.2	36.0	32.6	36.0	25.2
92.5°	127.0	123.8	90.0	41.2	8.2	5.9	19.9	29.1	26.7	29.1	19.9
95°	143.0	140.0	105.2	54.2	20.5	3.0	13.2	21.4	21.9	21.4	13.2
97.5°	160.7	156.3	121.0	72.6	37.3	7.1	7.9	15.6	17.5	15.6	7.9
100°	174.0	170.5	140.1	94.6	56.8	17.9	4.5	9.9	12.8	9.9	4.5
102.5°	197.3	190.2	161.1	115.6	77.7	32.7	8.6	6.0	7.0	6.0	8.6
105°	219.9	212.7	186.2	137.5	101.7	52.6	20.9	7.1	4.5	7.1	20.9
107.5°	241.9	236.7	208.7	160.0	127.4	75.6	38.3	19.9	12.8	19.9	38.3
110°	267.5	261.3	230.6	182.6	154.0	100.2	58.2	36.3	28.0	36.3	58.2



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CATALOG NUMBER: MWL-2-18-23-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	292.0	287.4	251.1	206.1	181.5	126.8	82.8	56.8	49.0	56.8	82.8
115°	311.9	308.4	274.6	228.1	207.1	157.0	110.0	80.7	72.5	80.7	110.0
117.5°	331.9	331.3	292.0	250.6	237.8	184.1	135.0	105.8	96.0	105.8	135.0
120°	356.9	352.9	317.0	274.1	268.0	213.7	163.5	133.4	123.7	133.4	163.5
122.5°	374.3	371.7	337.5	295.5	295.5	242.8	190.2	159.9	149.8	159.9	190.2
125°	390.2	389.1	352.9	317.0	325.2	270.0	219.8	189.2	177.9	189.2	219.8
127.5°	404.5	406.1	372.8	340.6	355.4	297.6	249.0	215.3	203.5	215.3	249.0
130°	416.8	421.9	391.7	362.1	384.0	327.7	275.1	241.4	233.6	241.4	275.1
132.5°	440.8	437.8	411.2	384.0	414.8	355.4	302.7	267.4	258.7	267.4	302.7
135°	453.1	454.1	428.0	403.0	443.4	383.0	328.8	294.0	285.3	294.0	328.8
137.5°	467.9	464.9	441.4	426.0	470.0	409.6	354.3	322.1	308.3	322.1	354.3
140°	478.7	478.2	458.8	446.5	498.6	435.7	380.4	347.7	334.9	347.7	380.4
142.5°	489.9	493.0	476.1	468.9	527.2	463.3	408.6	372.8	360.5	372.8	408.6
145°	498.6	505.2	494.4	497.1	554.4	494.1	434.1	397.8	384.5	397.8	434.1
147.5°	511.4	520.1	507.2	518.0	577.9	522.1	458.7	422.9	411.1	422.9	458.7
150°	528.8	532.8	525.2	544.6	602.0	551.3	483.7	446.9	435.2	446.9	483.7
152.5°	542.5	547.6	538.9	574.8	620.8	579.0	511.4	470.5	456.6	470.5	511.4
155°	556.9	558.9	552.8	604.0	640.9	606.0	533.3	496.5	483.2	496.5	533.3
157.5°	570.2	574.2	566.1	626.0	658.2	629.5	557.4	522.6	510.9	522.6	557.4
160°	584.5	584.5	587.7	651.6	672.6	650.0	584.1	551.2	534.9	551.2	584.1
162.5°	586.0	595.8	616.8	669.5	686.3	667.9	612.7	571.7	557.4	571.7	612.7
165°	608.6	616.3	649.6	685.3	697.0	683.8	648.0	604.5	588.6	604.5	648.0
167.5°	632.1	649.6	676.2	703.2	707.3	698.6	675.1	644.9	630.5	644.9	675.1
170°	669.5	685.3	698.6	709.9	715.5	710.4	692.0	677.1	667.4	677.1	692.0
172.5°	699.7	709.9	715.0	722.2	718.6	716.5	707.3	700.1	695.0	700.1	707.3
175°	717.6	720.6	725.2	723.6	726.7	721.1	720.6	724.2	702.3	724.2	720.6
177.5°	724.2	728.8	726.2	722.6	723.2	722.1	723.2	725.2	721.2	725.2	723.2
180°	725.2	725.2	725.2	725.2	725.2	725.2	725.2	725.2	725.2	725.2	725.2



TEST NUMBER: P392494

CATALOG NUMBER: MWL-2-18-23-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	992.9	992.9	992.9	992.9	992.9	992.9
2.5°	987.5	988.1	988.1	988.5	993.3	982.6
5°	984.6	976.9	984.6	985.6	987.5	979.7
7.5°	975.5	974.0	975.9	973.5	980.3	976.3
10°	962.4	961.9	962.9	967.7	966.7	965.3
12.5°	949.8	946.3	949.8	946.9	951.3	949.8
15°	930.9	932.8	931.5	934.4	937.7	933.0
17.5°	911.5	911.5	911.5	912.1	915.5	913.7
20°	886.9	887.8	887.4	888.9	891.8	891.4
22.5°	866.6	864.6	867.0	864.7	868.6	863.8
25°	841.4	838.5	841.9	838.1	838.6	835.7
27.5°	811.9	811.4	812.5	809.1	804.8	800.9
30°	780.0	780.5	781.1	778.7	768.0	770.0
32.5°	749.1	750.0	750.1	739.0	729.3	723.5
35°	714.7	715.7	716.3	703.7	689.2	685.3
37.5°	678.0	682.3	679.5	658.3	642.8	641.8
40°	635.4	645.6	636.5	611.8	598.3	599.3
42.5°	594.8	605.0	595.9	564.0	554.8	558.7
45°	544.5	563.4	545.6	516.6	513.7	518.5
47.5°	494.3	518.9	494.7	470.2	473.1	485.6
50°	445.4	467.2	446.4	428.6	438.3	445.0
52.5°	397.1	407.2	398.0	390.3	404.4	407.3
55°	348.2	342.9	349.2	351.6	367.1	371.9
57.5°	301.8	291.7	302.8	311.0	332.3	339.0
60°	252.5	244.3	253.0	273.8	296.0	301.8
62.5°	209.9	208.0	210.4	230.3	257.3	267.0
65°	174.2	178.0	174.6	194.0	217.2	231.7
67.5°	143.2	151.0	143.2	161.1	181.4	194.0
70°	118.1	126.8	118.1	131.6	148.1	163.5
72.5°	96.2	103.0	96.8	105.5	119.0	132.6
75°	75.9	85.6	75.9	82.7	93.9	106.5
77.5°	60.4	68.2	60.4	62.4	77.6	92.2
80°	45.0	49.8	45.0	49.4	72.1	83.5
82.5°	32.4	35.3	32.4	47.9	73.7	82.2
85°	24.3	19.8	25.2	52.3	81.3	86.5
87.5°	19.9	4.8	27.2	62.3	94.5	96.1
90°	12.7	0.5	32.1	75.9	108.1	109.3
92.5°	5.9	8.2	41.2	90.0	123.8	127.0
95°	3.0	20.5	54.2	105.2	140.0	143.0
97.5°	7.1	37.3	72.6	121.0	156.3	160.7
100°	17.9	56.8	94.6	140.1	170.5	174.0
102.5°	32.7	77.7	115.6	161.1	190.2	197.3
105°	52.6	101.7	137.5	186.2	212.7	219.9
107.5°	75.6	127.4	160.0	208.7	236.7	241.9
110°	100.2	154.0	182.6	230.6	261.3	267.5



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CATALOG NUMBER: MWL-2-18-23-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	126.8	181.5	206.1	251.1	287.4	292.0
115°	157.0	207.1	228.1	274.6	308.4	311.9
117.5°	184.1	237.8	250.6	292.0	331.3	331.9
120°	213.7	268.0	274.1	317.0	352.9	356.9
122.5°	242.8	295.5	295.5	337.5	371.7	374.3
125°	270.0	325.2	317.0	352.9	389.1	390.2
127.5°	297.6	355.4	340.6	372.8	406.1	404.5
130°	327.7	384.0	362.1	391.7	421.9	416.8
132.5°	355.4	414.8	384.0	411.2	437.8	440.8
135°	383.0	443.4	403.0	428.0	454.1	453.1
137.5°	409.6	470.0	426.0	441.4	464.9	467.9
140°	435.7	498.6	446.5	458.8	478.2	478.7
142.5°	463.3	527.2	468.9	476.1	493.0	489.9
145°	494.1	554.4	497.1	494.4	505.2	498.6
147.5°	522.1	577.9	518.0	507.2	520.1	511.4
150°	551.3	602.0	544.6	525.2	532.8	528.8
152.5°	579.0	620.8	574.8	538.9	547.6	542.5
155°	606.0	640.9	604.0	552.8	558.9	556.9
157.5°	629.5	658.2	626.0	566.1	574.2	570.2
160°	650.0	672.6	651.6	587.7	584.5	584.5
162.5°	667.9	686.3	669.5	616.8	595.8	586.0
165°	683.8	697.0	685.3	649.6	616.3	608.6
167.5°	698.6	707.3	703.2	676.2	649.6	632.1
170°	710.4	715.5	709.9	698.6	685.3	669.5
172.5°	716.5	718.6	722.2	715.0	709.9	699.7
175°	721.1	726.7	723.6	725.2	720.6	717.6
177.5°	722.1	723.2	722.6	726.2	728.8	724.2
180°	725.2	725.2	725.2	725.2	725.2	725.2

(END OF REPORT)