

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: P392479

Luminaire Tested: **MWL-2-13-23-UNV-L835-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392479
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-2-13-23-UNV-L835-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3543.0 lumens
Efficiency: N/A
Efficacy: 102.4 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: Semi-Direct

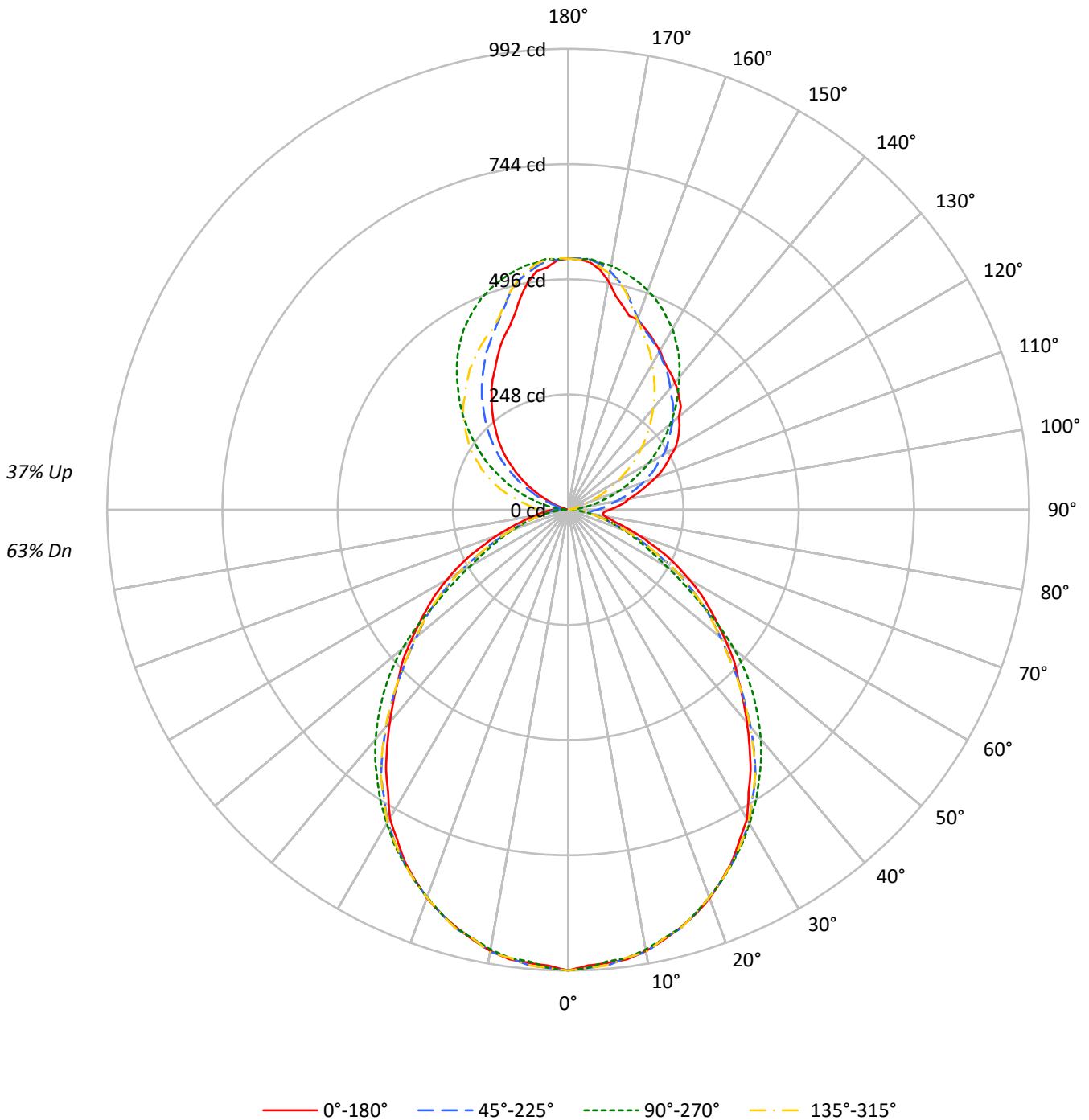
Input Watts (W): 34.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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CATALOG NUMBER: MWL-2-13-23-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	110	110	110	110	103	103	103	103	91	91	91	79	79	79	68	68	68	63
1	101	97	93	90	95	91	88	85	80	78	75	70	68	67	61	60	59	54
2	93	85	79	74	87	80	75	70	71	67	63	62	59	57	54	52	50	46
3	85	75	68	62	79	71	65	60	63	58	54	56	52	49	49	46	43	40
4	78	67	59	53	73	63	56	51	56	51	46	50	46	42	44	41	38	35
5	72	60	52	46	67	57	50	44	51	45	40	45	40	37	40	36	33	30
6	66	54	46	40	62	51	44	39	46	40	36	41	36	33	36	32	30	27
7	61	49	41	36	58	47	39	34	42	36	32	37	33	29	33	29	26	24
8	57	45	37	32	54	43	36	31	38	33	28	34	30	26	31	27	24	22
9	53	41	34	29	50	39	32	28	35	30	26	32	27	24	28	24	22	20
10	50	38	31	26	47	36	29	25	33	27	23	29	25	21	26	22	20	18

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	12812	12812	12812	12812
5°	12469	11636	12469	11636
10°	12202	10715	12202	10715
15°	11800	9831	11786	9831
20°	11373	8942	11359	8942
25°	10843	8145	10827	8145
30°	10237	7375	10217	7375
35°	9418	6633	9403	6633
40°	8589	5914	8566	5914
45°	7826	5140	7810	5140
50°	7151	4279	7133	4279
55°	6444	3176	6430	3176
60°	5720	2306	5712	2306
65°	4886	1727	4886	1727
70°	3920	1275	3929	1275
75°	2982	902	3013	902
80°	2724	554	2479	554
85°	3318	235	2235	235



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	93.2	2.6
10°-20°	262.5	7.4
20°-30°	385.1	10.9
30°-40°	436.7	12.3
40°-50°	407.2	11.5
50°-60°	318.3	9.0
60°-70°	197.3	5.6
70°-80°	95.4	2.7
80°-90°	48.1	1.4
90°-100°	49.2	1.4
100°-110°	83.8	2.4
110°-120°	144.0	4.1
120°-130°	195.9	5.5
130°-140°	223.1	6.3
140°-150°	222.6	6.3
150°-160°	193.7	5.5
160°-170°	136.1	3.8
170°-180°	50.7	1.4
0°-30°	740.8	20.9
0°-40°	1177.5	33.2
0°-60°	1903.0	53.7
0°-90°	2243.9	63.3
90°-120°	277.1	7.8
90°-150°	918.6	25.9
90°-180°	1299.0	36.7
0°-180°	3543.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	992	992	992	992	992	
5°	979	976	979	976	979	93
15°	932	932	931	932	932	263
25°	835	838	834	838	835	383
35°	684	715	683	715	684	427
45°	518	563	517	563	518	401
55°	371	342	370	342	371	333
65°	231	178	231	178	231	228
75°	106	86	107	86	106	119
85°	76	20	51	20	76	63
90°	89	0	32	0	89	49
95°	112	15	22	15	112	96
105°	164	76	4	76	164	174
115°	233	154	54	154	233	231
125°	291	243	133	243	291	260
135°	338	331	213	331	338	261
145°	372	413	287	413	372	234
155°	416	478	361	478	416	192
165°	454	520	439	520	454	129
175°	535	542	523	542	535	50
180°	541	541	541	541	541	



TEST NUMBER: P392479

CATALOG NUMBER: MWL-2-13-23-UNV-L835-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	991.9	991.9	991.9	991.9	991.9	991.9	991.9	991.9	991.9	991.9	991.9
2.5°	982.1	992.5	987.5	986.8	986.8	986.5	987.5	992.5	982.4	992.5	987.5
5°	979.2	986.7	984.6	983.6	975.9	983.6	984.2	986.7	979.2	986.7	984.2
7.5°	975.7	979.3	972.6	974.9	973.0	974.5	972.2	979.0	975.7	979.0	972.2
10°	964.5	965.8	966.8	961.9	961.0	961.6	966.4	965.0	964.5	965.0	966.4
12.5°	948.8	950.3	946.1	949.0	945.7	949.0	946.1	949.6	948.0	949.6	946.1
15°	931.7	936.8	933.5	930.6	932.2	930.2	933.1	936.0	930.6	936.0	933.1
17.5°	912.3	914.6	911.3	910.9	910.9	910.9	910.9	914.2	911.3	914.2	910.9
20°	890.1	890.8	888.1	886.7	887.3	886.3	887.7	890.0	889.0	890.0	887.7
22.5°	862.7	867.6	863.9	866.4	864.1	866.0	863.5	866.8	862.0	866.8	863.5
25°	834.7	837.6	837.2	841.3	838.0	840.9	836.4	836.4	833.5	836.4	836.4
27.5°	799.9	803.7	808.2	811.7	810.9	811.3	807.4	802.6	798.7	802.6	807.4
30°	768.9	767.0	777.6	780.2	780.0	779.4	776.5	765.8	767.4	765.8	776.5
32.5°	722.5	728.3	738.0	749.2	749.4	748.4	736.8	726.8	721.0	726.8	736.8
35°	684.4	688.3	702.8	715.4	715.2	714.2	701.6	687.1	683.3	687.1	701.6
37.5°	640.9	641.9	657.3	678.6	681.7	677.5	656.2	640.7	639.7	640.7	656.2
40°	598.4	597.4	610.9	635.7	645.0	634.9	609.4	595.8	596.8	595.8	609.4
42.5°	557.7	553.9	563.2	595.1	604.4	594.3	562.0	552.3	556.2	552.3	562.0
45°	517.7	512.9	515.8	544.8	562.8	544.0	514.2	511.7	516.6	511.7	514.2
47.5°	484.8	472.3	469.4	494.1	518.3	493.7	467.8	471.1	483.7	471.1	467.8
50°	444.2	437.5	427.8	445.8	466.7	445.0	426.2	435.9	443.1	435.9	426.2
52.5°	406.5	403.6	389.7	397.4	406.7	396.7	388.5	402.1	405.4	402.1	388.5
55°	371.3	366.5	351.0	348.7	342.5	347.9	349.9	365.3	370.5	365.3	349.9
57.5°	338.4	331.7	310.4	302.3	291.3	301.5	309.2	330.5	337.7	330.5	309.2
60°	301.3	295.5	273.3	252.6	243.9	252.2	272.5	294.7	300.9	294.7	272.5
62.5°	266.5	256.8	229.8	210.0	207.7	209.6	229.0	256.1	266.1	256.1	229.0
65°	231.3	216.8	193.6	174.2	177.7	173.9	193.2	216.4	231.3	216.4	193.2
67.5°	193.6	181.0	160.7	142.9	150.7	142.9	160.3	180.6	193.6	180.6	160.3
70°	163.2	147.8	131.3	117.8	126.5	117.8	131.3	148.1	163.6	148.1	131.3
72.5°	132.3	118.7	105.2	96.5	102.9	96.1	105.2	119.1	133.1	119.1	105.2
75°	106.2	93.6	82.6	75.8	85.5	75.8	83.0	94.0	107.3	94.0	83.0
77.5°	90.8	76.8	62.3	60.3	68.1	60.3	62.7	75.6	89.3	75.6	62.7
80°	79.9	69.5	48.9	44.9	49.7	44.9	48.2	63.4	72.7	63.4	48.2
82.5°	75.5	68.2	45.7	32.3	35.2	32.3	41.2	54.5	61.0	54.5	41.2
85°	75.7	71.9	47.4	24.8	19.7	24.0	36.3	48.6	51.0	48.6	36.3
87.5°	80.7	80.2	53.6	24.7	4.8	19.3	31.8	43.6	41.5	43.6	31.8
90°	88.9	88.9	62.5	26.9	0.4	12.4	24.8	35.2	31.7	35.2	24.8
92.5°	100.8	99.1	71.7	31.9	6.1	5.6	19.5	28.6	26.1	28.6	19.5
95°	111.8	109.5	81.3	40.6	15.3	2.5	12.8	21.1	21.5	21.1	12.8
97.5°	123.7	119.8	91.3	54.3	28.0	5.5	7.2	15.1	17.0	15.1	7.2
100°	131.8	128.5	104.6	70.7	42.5	13.5	3.7	8.9	11.8	8.9	3.7
102.5°	147.7	142.1	120.2	86.4	58.1	24.6	6.7	5.0	6.0	5.0	6.7
105°	164.0	158.7	138.9	102.7	76.0	39.5	15.9	5.5	3.7	5.5	15.9
107.5°	180.4	176.6	155.7	119.4	95.1	56.6	28.8	15.1	9.8	15.1	28.8
110°	199.5	194.8	172.0	136.2	114.9	74.8	43.6	27.3	21.2	27.3	43.6



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CATALOG NUMBER: MWL-2-13-23-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	217.8	214.3	187.3	153.7	135.5	94.7	61.9	42.5	36.7	42.5	61.9
115°	232.8	229.9	204.8	170.1	154.5	117.2	82.1	60.4	54.5	60.4	82.1
117.5°	247.6	247.3	217.8	186.9	177.3	137.4	100.8	79.3	72.0	79.3	100.8
120°	266.3	263.3	236.6	204.6	200.1	159.6	122.3	99.9	92.6	99.9	122.3
122.5°	279.3	277.4	251.9	220.7	220.7	181.4	142.1	119.6	112.1	119.6	142.1
125°	291.1	290.4	263.3	236.6	242.7	201.6	164.2	141.4	133.0	141.4	164.2
127.5°	301.8	303.0	278.1	254.1	265.2	222.1	185.9	160.8	152.0	160.8	185.9
130°	310.9	314.7	292.2	270.2	286.5	244.6	205.4	180.2	174.5	180.2	205.4
132.5°	328.8	326.5	306.7	286.5	309.4	265.2	226.0	199.7	193.2	199.7	226.0
135°	338.0	338.7	319.3	300.6	330.7	285.7	245.4	219.5	213.0	219.5	245.4
137.5°	349.0	346.8	329.2	317.7	350.5	305.6	264.5	240.4	230.1	240.4	264.5
140°	357.0	356.6	342.1	333.0	371.9	325.0	283.9	259.4	250.0	259.4	283.9
142.5°	365.4	367.6	355.1	349.8	393.2	345.6	304.8	278.1	269.0	278.1	304.8
145°	372.1	377.0	369.0	370.7	413.4	368.4	324.0	297.1	287.1	297.1	324.0
147.5°	381.6	388.0	378.6	386.6	430.9	389.6	342.4	315.7	306.9	315.7	342.4
150°	394.5	397.6	391.9	406.1	448.9	411.2	361.1	333.6	324.8	333.6	361.1
152.5°	404.9	408.6	402.2	428.7	462.9	431.7	381.6	351.1	340.9	351.1	381.6
155°	415.5	417.1	412.4	450.3	477.8	451.9	398.0	370.5	360.7	370.5	398.0
157.5°	425.4	428.5	422.2	466.8	490.7	469.4	415.7	390.0	381.2	390.0	415.7
160°	436.1	436.1	438.1	485.8	501.4	484.6	435.5	411.3	399.2	411.3	435.5
162.5°	437.3	444.4	459.9	499.2	511.7	498.0	456.8	426.5	415.9	426.5	456.8
165°	454.0	459.5	484.3	510.9	519.7	509.8	483.1	450.7	439.1	450.7	483.1
167.5°	471.5	484.3	504.1	524.3	527.3	520.8	503.3	480.9	470.3	480.9	503.3
170°	499.2	510.9	520.8	529.2	533.4	529.6	515.9	504.9	497.6	504.9	515.9
172.5°	521.6	529.2	533.0	538.3	535.7	534.2	527.3	522.0	518.2	522.0	527.3
175°	534.7	537.2	540.6	539.7	542.0	537.8	537.2	539.9	523.3	539.9	537.2
177.5°	539.7	543.3	541.4	539.0	539.3	538.6	539.1	540.6	537.3	540.6	539.1
180°	540.6	540.6	540.6	540.6	540.6	540.6	540.6	540.6	540.6	540.6	540.6



TEST NUMBER: P392479

CATALOG NUMBER: MWL-2-13-23-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	991.9	991.9	991.9	991.9	991.9	991.9
2.5°	986.5	986.8	986.8	987.5	992.5	982.1
5°	983.6	975.9	983.6	984.6	986.7	979.2
7.5°	974.5	973.0	974.9	972.6	979.3	975.7
10°	961.6	961.0	961.9	966.8	965.8	964.5
12.5°	949.0	945.7	949.0	946.1	950.3	948.8
15°	930.2	932.2	930.6	933.5	936.8	931.7
17.5°	910.9	910.9	910.9	911.3	914.6	912.3
20°	886.3	887.3	886.7	888.1	890.8	890.1
22.5°	866.0	864.1	866.4	863.9	867.6	862.7
25°	840.9	838.0	841.3	837.2	837.6	834.7
27.5°	811.3	810.9	811.7	808.2	803.7	799.9
30°	779.4	780.0	780.2	777.6	767.0	768.9
32.5°	748.4	749.4	749.2	738.0	728.3	722.5
35°	714.2	715.2	715.4	702.8	688.3	684.4
37.5°	677.5	681.7	678.6	657.3	641.9	640.9
40°	634.9	645.0	635.7	610.9	597.4	598.4
42.5°	594.3	604.4	595.1	563.2	553.9	557.7
45°	544.0	562.8	544.8	515.8	512.9	517.7
47.5°	493.7	518.3	494.1	469.4	472.3	484.8
50°	445.0	466.7	445.8	427.8	437.5	444.2
52.5°	396.7	406.7	397.4	389.7	403.6	406.5
55°	347.9	342.5	348.7	351.0	366.5	371.3
57.5°	301.5	291.3	302.3	310.4	331.7	338.4
60°	252.2	243.9	252.6	273.3	295.5	301.3
62.5°	209.6	207.7	210.0	229.8	256.8	266.5
65°	173.9	177.7	174.2	193.6	216.8	231.3
67.5°	142.9	150.7	142.9	160.7	181.0	193.6
70°	117.8	126.5	117.8	131.3	147.8	163.2
72.5°	96.1	102.9	96.5	105.2	118.7	132.3
75°	75.8	85.5	75.8	82.6	93.6	106.2
77.5°	60.3	68.1	60.3	62.3	76.8	90.8
80°	44.9	49.7	44.9	48.9	69.5	79.9
82.5°	32.3	35.2	32.3	45.7	68.2	75.5
85°	24.0	19.7	24.8	47.4	71.9	75.7
87.5°	19.3	4.8	24.7	53.6	80.2	80.7
90°	12.4	0.4	26.9	62.5	88.9	88.9
92.5°	5.6	6.1	31.9	71.7	99.1	100.8
95°	2.5	15.3	40.6	81.3	109.5	111.8
97.5°	5.5	28.0	54.3	91.3	119.8	123.7
100°	13.5	42.5	70.7	104.6	128.5	131.8
102.5°	24.6	58.1	86.4	120.2	142.1	147.7
105°	39.5	76.0	102.7	138.9	158.7	164.0
107.5°	56.6	95.1	119.4	155.7	176.6	180.4
110°	74.8	114.9	136.2	172.0	194.8	199.5



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	94.7	135.5	153.7	187.3	214.3	217.8
115°	117.2	154.5	170.1	204.8	229.9	232.8
117.5°	137.4	177.3	186.9	217.8	247.3	247.6
120°	159.6	200.1	204.6	236.6	263.3	266.3
122.5°	181.4	220.7	220.7	251.9	277.4	279.3
125°	201.6	242.7	236.6	263.3	290.4	291.1
127.5°	222.1	265.2	254.1	278.1	303.0	301.8
130°	244.6	286.5	270.2	292.2	314.7	310.9
132.5°	265.2	309.4	286.5	306.7	326.5	328.8
135°	285.7	330.7	300.6	319.3	338.7	338.0
137.5°	305.6	350.5	317.7	329.2	346.8	349.0
140°	325.0	371.9	333.0	342.1	356.6	357.0
142.5°	345.6	393.2	349.8	355.1	367.6	365.4
145°	368.4	413.4	370.7	369.0	377.0	372.1
147.5°	389.6	430.9	386.6	378.6	388.0	381.6
150°	411.2	448.9	406.1	391.9	397.6	394.5
152.5°	431.7	462.9	428.7	402.2	408.6	404.9
155°	451.9	477.8	450.3	412.4	417.1	415.5
157.5°	469.4	490.7	466.8	422.2	428.5	425.4
160°	484.6	501.4	485.8	438.1	436.1	436.1
162.5°	498.0	511.7	499.2	459.9	444.4	437.3
165°	509.8	519.7	510.9	484.3	459.5	454.0
167.5°	520.8	527.3	524.3	504.1	484.3	471.5
170°	529.6	533.4	529.2	520.8	510.9	499.2
172.5°	534.2	535.7	538.3	533.0	529.2	521.6
175°	537.8	542.0	539.7	540.6	537.2	534.7
177.5°	538.6	539.3	539.0	541.4	543.3	539.7
180°	540.6	540.6	540.6	540.6	540.6	540.6

(END OF REPORT)