

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: P392493

Luminaire Tested: **MWL-2-18-23-UNV-L930-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392493
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-L930-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

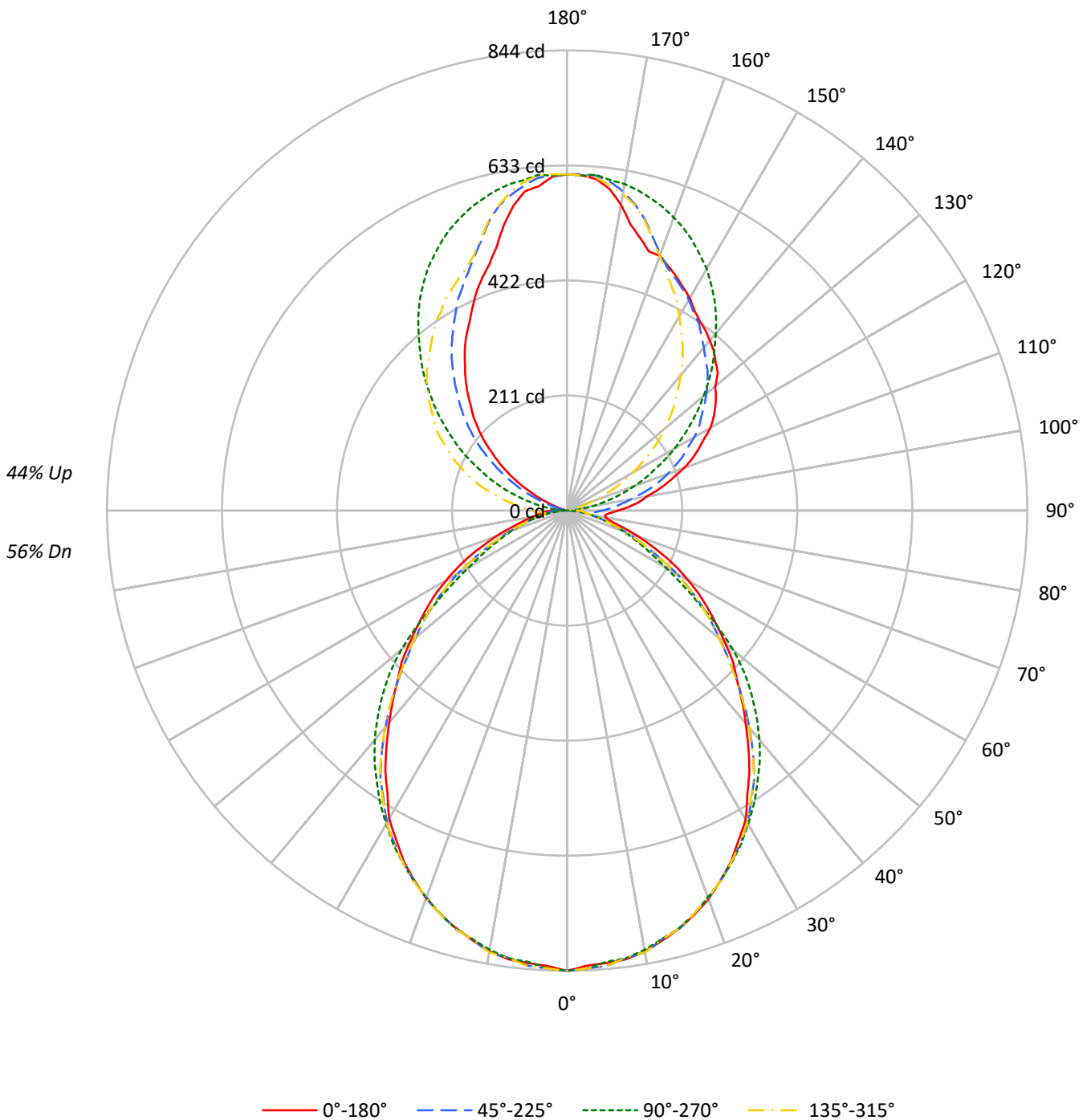
Lumens per Lamp: N/A
Luminaire Lumens: 3389.9 lumens
Efficiency: N/A
Efficacy: 85.4 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: General Diffuse

Input Watts (W): 39.693
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	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°	10903	10903	10903	10903
5°	10607	9903	10607	9903
10°	10383	9120	10383	9120
15°	10046	8365	10030	8365
20°	9684	7608	9667	7608
25°	9231	6929	9213	6929
30°	8716	6275	8692	6275
35°	8019	5643	8001	5643
40°	7313	5033	7288	5033
45°	6665	4375	6644	4375
50°	6091	3642	6069	3642
55°	5488	2703	5474	2703
60°	4871	1964	4864	1964
65°	4162	1472	4162	1472
70°	3339	1086	3351	1086
75°	2541	767	2575	767
80°	2421	473	2138	473
85°	3222	200	1986	200



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	79.4	2.3
10°-20°	223.4	6.6
20°-30°	327.7	9.7
30°-40°	371.7	11.0
40°-50°	346.7	10.2
50°-60°	271.0	8.0
60°-70°	168.1	5.0
70°-80°	81.4	2.4
80°-90°	43.9	1.3
90°-100°	52.6	1.6
100°-110°	95.3	2.8
110°-120°	164.0	4.8
120°-130°	223.1	6.6
130°-140°	254.2	7.5
140°-150°	253.7	7.5
150°-160°	220.8	6.5
160°-170°	155.2	4.6
170°-180°	57.8	1.7
0°-30°	630.4	18.6
0°-40°	1002.1	29.6
0°-60°	1619.7	47.8
0°-90°	1913.1	56.4
90°-120°	311.9	9.2
90°-150°	1042.9	30.8
90°-180°	1477.0	43.6
0°-180°	3389.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	844	844	844	844	844	
5°	833	831	833	831	833	79
15°	793	793	792	793	793	224
25°	711	713	709	713	711	326
35°	583	608	581	608	583	364
45°	441	479	440	479	441	342
55°	316	292	315	292	316	283
65°	197	151	197	151	197	194
75°	90	73	92	73	90	102
85°	74	17	45	17	74	60
90°	93	0	28	0	93	51
95°	122	17	19	17	122	105
105°	187	86	4	86	187	197
115°	265	176	62	176	265	263
125°	332	276	151	276	332	296
135°	385	377	243	377	385	297
145°	424	471	327	471	424	267
155°	474	545	411	545	474	218
165°	517	593	500	593	517	147
175°	610	618	597	618	610	57
180°	617	617	617	617	617	



TEST NUMBER: P392493

CATALOG NUMBER: MWL-2-18-23-UNV-L930-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	844.1	844.1	844.1	844.1	844.1	844.1	844.1	844.1	844.1	844.1	844.1
2.5°	835.4	844.6	840.4	840.2	840.2	839.6	840.4	844.6	835.9	844.6	840.4
5°	833.0	839.6	838.0	837.2	830.6	837.2	837.6	839.6	833.0	839.6	837.6
7.5°	830.1	833.5	827.8	829.8	828.1	829.3	827.3	833.0	830.1	833.0	827.3
10°	820.7	821.9	822.8	818.7	817.9	818.2	822.4	821.1	820.7	821.1	822.4
12.5°	807.6	808.8	805.1	807.6	804.6	807.6	805.1	807.9	806.8	807.9	805.1
15°	793.2	797.3	794.4	791.9	793.2	791.5	793.9	796.4	791.9	796.4	793.9
17.5°	776.9	778.4	775.5	775.0	775.0	775.0	775.0	778.0	775.5	778.0	775.0
20°	757.9	758.3	755.8	754.5	754.9	754.1	755.3	757.4	756.6	757.4	755.3
22.5°	734.4	738.5	735.2	737.2	735.1	736.8	734.8	737.7	733.5	737.7	734.8
25°	710.6	713.0	712.6	715.8	712.9	715.4	711.7	711.7	709.2	711.7	711.7
27.5°	681.0	684.2	687.9	690.8	690.0	690.3	687.1	682.9	679.7	682.9	687.1
30°	654.7	653.0	662.0	664.1	663.6	663.2	660.7	651.7	652.9	651.7	660.7
32.5°	615.2	620.1	628.3	637.8	637.7	636.9	627.0	618.4	613.4	618.4	627.0
35°	582.7	586.0	598.3	609.0	608.5	607.7	597.0	584.7	581.4	584.7	597.0
37.5°	545.7	546.5	559.6	577.8	580.2	576.5	558.3	545.2	544.4	545.2	558.3
40°	509.5	508.7	520.2	541.2	548.9	540.3	518.5	507.0	507.8	507.0	518.5
42.5°	475.0	471.7	479.5	506.6	514.4	505.8	478.2	470.0	473.3	470.0	478.2
45°	440.9	436.7	439.2	463.9	479.0	463.0	437.5	435.4	439.5	435.4	437.5
47.5°	413.0	402.2	399.7	420.6	441.2	420.3	398.1	400.9	411.6	400.9	398.1
50°	378.4	372.6	364.4	379.5	397.2	378.7	362.7	370.9	377.0	370.9	362.7
52.5°	346.3	343.8	331.9	338.5	346.2	337.6	330.6	342.2	345.0	342.2	330.6
55°	316.2	312.1	298.9	296.9	291.5	296.1	297.7	310.9	315.4	310.9	297.7
57.5°	288.3	282.6	264.4	257.5	247.9	256.6	263.2	281.3	287.5	281.3	263.2
60°	256.6	251.6	232.8	215.1	207.7	214.7	231.9	250.9	256.2	250.9	231.9
62.5°	227.0	218.8	195.7	178.9	176.9	178.5	194.9	218.0	226.6	218.0	194.9
65°	197.0	184.6	164.9	148.5	151.4	148.1	164.6	184.3	197.0	184.3	164.6
67.5°	164.9	154.3	137.0	121.8	128.4	121.8	136.6	153.8	164.9	153.8	136.6
70°	139.0	125.9	111.9	100.4	107.8	100.4	111.9	126.3	139.5	126.3	111.9
72.5°	112.7	101.3	89.7	82.3	87.6	81.8	89.7	101.6	113.6	101.6	89.7
75°	90.5	79.9	70.3	64.5	72.7	64.5	70.8	80.2	91.7	80.2	70.8
77.5°	78.4	65.9	53.0	51.4	57.9	51.4	53.5	64.6	76.6	64.6	53.5
80°	71.0	61.4	42.0	38.2	42.4	38.2	41.2	54.3	62.7	54.3	41.2
82.5°	69.9	62.7	40.7	27.6	30.0	27.6	35.4	47.0	53.4	47.0	35.4
85°	73.5	69.1	44.5	21.5	16.8	20.6	31.9	42.6	45.3	42.6	31.9
87.5°	81.7	80.3	52.9	23.1	4.1	16.9	28.2	38.6	36.9	38.6	28.2
90°	92.9	91.9	64.5	27.3	0.4	10.7	21.5	30.6	27.7	30.6	21.5
92.5°	107.9	105.2	76.5	35.0	7.0	5.0	16.9	24.7	22.7	24.7	16.9
95°	121.6	119.0	89.5	46.1	17.4	2.6	11.2	18.1	18.6	18.1	11.2
97.5°	136.7	132.9	102.8	61.7	31.7	6.0	6.8	13.2	14.9	13.2	6.8
100°	147.9	144.9	119.1	80.4	48.3	15.2	3.9	8.4	10.8	8.4	3.9
102.5°	167.7	161.7	137.0	98.3	66.0	27.8	7.3	5.1	5.9	5.1	7.3
105°	186.9	180.9	158.3	116.9	86.5	44.7	17.8	6.0	3.9	6.0	17.8
107.5°	205.6	201.3	177.4	136.0	108.3	64.3	32.6	16.9	10.8	16.9	32.6
110°	227.4	222.2	196.1	155.2	130.9	85.1	49.5	30.8	23.9	30.8	49.5



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CATALOG NUMBER: MWL-2-18-23-UNV-L930-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	248.3	244.3	213.5	175.2	154.4	107.8	70.4	48.3	41.6	48.3	70.4
115°	265.2	262.2	233.5	194.0	176.1	133.5	93.5	68.7	61.6	68.7	93.5
117.5°	282.2	281.7	248.3	213.0	202.2	156.6	114.8	90.0	81.6	90.0	114.8
120°	303.5	300.0	269.5	233.0	227.9	181.7	139.0	113.4	105.1	113.4	139.0
122.5°	318.3	316.1	287.0	251.3	251.3	206.5	161.7	136.0	127.3	136.0	161.7
125°	331.8	330.9	300.0	269.5	276.5	229.5	186.9	160.9	151.3	160.9	186.9
127.5°	343.9	345.2	317.0	289.6	302.2	253.0	211.8	183.1	173.0	183.1	211.8
130°	354.4	358.7	333.1	307.8	326.5	278.7	233.9	205.2	198.6	205.2	233.9
132.5°	374.7	372.2	349.6	326.5	352.6	302.2	257.4	227.3	219.9	227.3	257.4
135°	385.2	386.1	363.9	342.6	377.0	325.7	279.6	250.0	242.6	250.0	279.6
137.5°	397.9	395.3	375.3	362.1	399.6	348.3	301.2	273.9	262.1	273.9	301.2
140°	407.0	406.6	390.1	379.6	424.0	370.5	323.5	295.7	284.8	295.7	323.5
142.5°	416.6	419.2	404.8	398.7	448.3	393.9	347.4	317.0	306.5	317.0	347.4
145°	424.0	429.5	420.4	422.6	471.4	420.1	369.1	338.3	326.9	338.3	369.1
147.5°	434.8	442.2	431.3	440.4	491.3	443.9	390.0	359.6	349.6	359.6	390.0
150°	449.6	453.0	446.6	463.1	511.8	468.8	411.3	379.9	370.0	379.9	411.3
152.5°	461.3	465.6	458.2	488.8	527.9	492.3	434.8	400.0	388.2	400.0	434.8
155°	473.5	475.2	470.0	513.6	544.9	515.3	453.5	422.1	410.8	422.1	453.5
157.5°	484.8	488.2	481.4	532.3	559.6	535.3	473.9	444.3	434.4	444.3	473.9
160°	497.0	497.0	499.7	554.0	571.9	552.7	496.6	468.7	454.8	468.7	496.6
162.5°	498.3	506.6	524.4	569.2	583.5	567.9	521.0	486.1	473.9	486.1	521.0
165°	517.4	524.0	552.2	582.7	592.7	581.4	550.9	513.9	500.5	513.9	550.9
167.5°	537.4	552.2	574.9	597.9	601.4	594.0	574.0	548.4	536.0	548.4	574.0
170°	569.2	582.7	594.0	603.6	608.3	604.0	588.4	575.8	567.5	575.8	588.4
172.5°	594.9	603.6	608.0	614.1	611.0	609.2	601.4	595.3	590.9	595.3	601.4
175°	610.2	612.7	616.6	615.3	617.9	613.1	612.7	615.7	597.1	615.7	612.7
177.5°	615.7	619.6	617.5	614.3	614.9	614.0	614.9	616.6	613.2	616.6	614.9
180°	616.6	616.6	616.6	616.6	616.6	616.6	616.6	616.6	616.6	616.6	616.6



TEST NUMBER: P392493

CATALOG NUMBER: MWL-2-18-23-UNV-L930-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	844.1	844.1	844.1	844.1	844.1	844.1
2.5°	839.6	840.2	840.2	840.4	844.6	835.4
5°	837.2	830.6	837.2	838.0	839.6	833.0
7.5°	829.3	828.1	829.8	827.8	833.5	830.1
10°	818.2	817.9	818.7	822.8	821.9	820.7
12.5°	807.6	804.6	807.6	805.1	808.8	807.6
15°	791.5	793.2	791.9	794.4	797.3	793.2
17.5°	775.0	775.0	775.0	775.5	778.4	776.9
20°	754.1	754.9	754.5	755.8	758.3	757.9
22.5°	736.8	735.1	737.2	735.2	738.5	734.4
25°	715.4	712.9	715.8	712.6	713.0	710.6
27.5°	690.3	690.0	690.8	687.9	684.2	681.0
30°	663.2	663.6	664.1	662.0	653.0	654.7
32.5°	636.9	637.7	637.8	628.3	620.1	615.2
35°	607.7	608.5	609.0	598.3	586.0	582.7
37.5°	576.5	580.2	577.8	559.6	546.5	545.7
40°	540.3	548.9	541.2	520.2	508.7	509.5
42.5°	505.8	514.4	506.6	479.5	471.7	475.0
45°	463.0	479.0	463.9	439.2	436.7	440.9
47.5°	420.3	441.2	420.6	399.7	402.2	413.0
50°	378.7	397.2	379.5	364.4	372.6	378.4
52.5°	337.6	346.2	338.5	331.9	343.8	346.3
55°	296.1	291.5	296.9	298.9	312.1	316.2
57.5°	256.6	247.9	257.5	264.4	282.6	288.3
60°	214.7	207.7	215.1	232.8	251.6	256.6
62.5°	178.5	176.9	178.9	195.7	218.8	227.0
65°	148.1	151.4	148.5	164.9	184.6	197.0
67.5°	121.8	128.4	121.8	137.0	154.3	164.9
70°	100.4	107.8	100.4	111.9	125.9	139.0
72.5°	81.8	87.6	82.3	89.7	101.3	112.7
75°	64.5	72.7	64.5	70.3	79.9	90.5
77.5°	51.4	57.9	51.4	53.0	65.9	78.4
80°	38.2	42.4	38.2	42.0	61.4	71.0
82.5°	27.6	30.0	27.6	40.7	62.7	69.9
85°	20.6	16.8	21.5	44.5	69.1	73.5
87.5°	16.9	4.1	23.1	52.9	80.3	81.7
90°	10.7	0.4	27.3	64.5	91.9	92.9
92.5°	5.0	7.0	35.0	76.5	105.2	107.9
95°	2.6	17.4	46.1	89.5	119.0	121.6
97.5°	6.0	31.7	61.7	102.8	132.9	136.7
100°	15.2	48.3	80.4	119.1	144.9	147.9
102.5°	27.8	66.0	98.3	137.0	161.7	167.7
105°	44.7	86.5	116.9	158.3	180.9	186.9
107.5°	64.3	108.3	136.0	177.4	201.3	205.6
110°	85.1	130.9	155.2	196.1	222.2	227.4



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	107.8	154.4	175.2	213.5	244.3	248.3
115°	133.5	176.1	194.0	233.5	262.2	265.2
117.5°	156.6	202.2	213.0	248.3	281.7	282.2
120°	181.7	227.9	233.0	269.5	300.0	303.5
122.5°	206.5	251.3	251.3	287.0	316.1	318.3
125°	229.5	276.5	269.5	300.0	330.9	331.8
127.5°	253.0	302.2	289.6	317.0	345.2	343.9
130°	278.7	326.5	307.8	333.1	358.7	354.4
132.5°	302.2	352.6	326.5	349.6	372.2	374.7
135°	325.7	377.0	342.6	363.9	386.1	385.2
137.5°	348.3	399.6	362.1	375.3	395.3	397.9
140°	370.5	424.0	379.6	390.1	406.6	407.0
142.5°	393.9	448.3	398.7	404.8	419.2	416.6
145°	420.1	471.4	422.6	420.4	429.5	424.0
147.5°	443.9	491.3	440.4	431.3	442.2	434.8
150°	468.8	511.8	463.1	446.6	453.0	449.6
152.5°	492.3	527.9	488.8	458.2	465.6	461.3
155°	515.3	544.9	513.6	470.0	475.2	473.5
157.5°	535.3	559.6	532.3	481.4	488.2	484.8
160°	552.7	571.9	554.0	499.7	497.0	497.0
162.5°	567.9	583.5	569.2	524.4	506.6	498.3
165°	581.4	592.7	582.7	552.2	524.0	517.4
167.5°	594.0	601.4	597.9	574.9	552.2	537.4
170°	604.0	608.3	603.6	594.0	582.7	569.2
172.5°	609.2	611.0	614.1	608.0	603.6	594.9
175°	613.1	617.9	615.3	616.6	612.7	610.2
177.5°	614.0	614.9	614.3	617.5	619.6	615.7
180°	616.6	616.6	616.6	616.6	616.6	616.6

(END OF REPORT)