

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: P392478

Luminaire Tested: **MWL-2-13-23-UNV-L930-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392478
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-L930-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

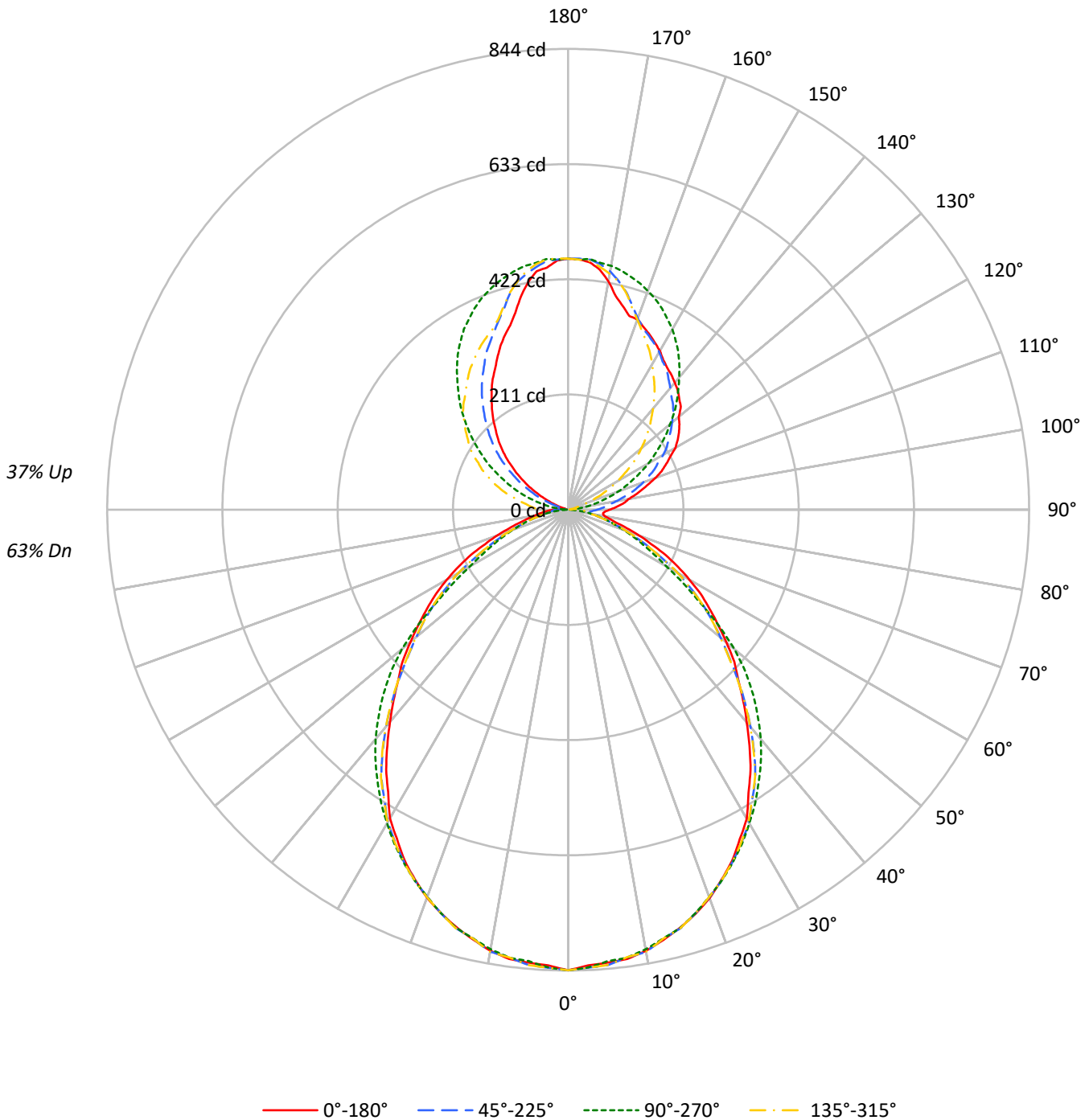
Lumens per Lamp: N/A
Luminaire Lumens: 3013.1 lumens
Efficiency: N/A
Efficacy: 86.2 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Direct

Input Watts (W): 34.946
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	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°	10895	10895	10895	10895
5°	10604	9895	10604	9895
10°	10377	9113	10377	9113
15°	10036	8360	10023	8360
20°	9672	7605	9661	7605
25°	9222	6927	9209	6927
30°	8706	6272	8688	6272
35°	8009	5641	7995	5641
40°	7303	5029	7284	5029
45°	6655	4371	6641	4371
50°	6082	3638	6066	3638
55°	5479	2702	5469	2702
60°	4864	1961	4858	1961
65°	4155	1470	4155	1470
70°	3336	1084	3341	1084
75°	2535	767	2563	767
80°	2315	472	2107	472
85°	2823	200	1898	200



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	79.3	2.6
10°-20°	223.2	7.4
20°-30°	327.5	10.9
30°-40°	371.4	12.3
40°-50°	346.3	11.5
50°-60°	270.7	9.0
60°-70°	167.8	5.6
70°-80°	81.1	2.7
80°-90°	40.9	1.4
90°-100°	41.9	1.4
100°-110°	71.3	2.4
110°-120°	122.5	4.1
120°-130°	166.6	5.5
130°-140°	189.7	6.3
140°-150°	189.3	6.3
150°-160°	164.8	5.5
160°-170°	115.8	3.8
170°-180°	43.1	1.4
0°-30°	630.0	20.9
0°-40°	1001.4	33.2
0°-60°	1618.4	53.7
0°-90°	1908.2	63.3
90°-120°	235.6	7.8
90°-150°	781.2	25.9
90°-180°	1105.0	36.7
0°-180°	3013.1	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	844	844	844	844	844	
5°	833	830	833	830	833	79
15°	792	793	791	793	792	223
25°	710	713	709	713	710	326
35°	582	608	581	608	582	363
45°	440	479	439	479	440	341
55°	316	291	315	291	316	283
65°	197	151	197	151	197	194
75°	90	73	91	73	90	101
85°	64	17	43	17	64	54
90°	76	0	27	0	76	42
95°	95	13	18	13	95	81
105°	140	65	3	65	140	148
115°	198	131	46	131	198	196
125°	248	206	113	206	248	221
135°	287	281	181	281	287	222
145°	316	352	244	352	316	199
155°	353	406	307	406	353	163
165°	386	442	373	442	386	110
175°	455	461	445	461	455	42
180°	460	460	460	460	460	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	843.5	843.5	843.5	843.5	843.5	843.5	843.5	843.5	843.5	843.5	843.5
2.5°	835.2	844.0	839.7	839.2	839.2	838.9	839.7	844.0	835.5	844.0	839.7
5°	832.7	839.1	837.3	836.5	829.9	836.5	837.0	839.1	832.7	839.1	837.0
7.5°	829.8	832.9	827.1	829.1	827.4	828.7	826.8	832.5	829.8	832.5	826.8
10°	820.2	821.3	822.2	818.1	817.3	817.7	821.9	820.7	820.2	820.7	821.9
12.5°	806.9	808.2	804.6	807.1	804.2	807.1	804.6	807.5	806.2	807.5	804.6
15°	792.4	796.7	793.9	791.4	792.7	791.1	793.6	796.1	791.4	796.1	793.6
17.5°	775.9	777.7	775.0	774.7	774.7	774.7	774.7	777.5	775.0	777.5	774.7
20°	757.0	757.6	755.2	754.1	754.6	753.8	754.9	756.9	756.1	756.9	754.9
22.5°	733.7	737.8	734.7	736.8	734.9	736.5	734.3	737.2	733.0	737.2	734.3
25°	709.9	712.3	712.0	715.4	712.7	715.1	711.4	711.4	708.9	711.4	711.4
27.5°	680.3	683.5	687.3	690.3	689.6	690.0	686.6	682.6	679.2	682.6	686.6
30°	653.9	652.3	661.3	663.5	663.3	662.8	660.4	651.3	652.6	651.3	660.4
32.5°	614.4	619.3	627.6	637.1	637.3	636.5	626.7	618.1	613.2	618.1	626.7
35°	582.0	585.4	597.7	608.3	608.2	607.4	596.7	584.4	581.0	584.4	596.7
37.5°	545.0	545.9	559.0	577.1	579.7	576.1	558.1	544.9	544.1	544.9	558.1
40°	508.8	508.0	519.6	540.6	548.5	539.9	518.3	506.7	507.5	506.7	518.3
42.5°	474.3	471.1	478.9	506.1	513.9	505.4	477.9	469.7	473.0	469.7	477.9
45°	440.2	436.2	438.7	463.3	478.6	462.6	437.3	435.1	439.3	435.1	437.3
47.5°	412.3	401.6	399.1	420.2	440.8	419.9	397.8	400.6	411.4	400.6	397.8
50°	377.8	372.0	363.8	379.1	396.8	378.4	362.5	370.7	376.8	370.7	362.5
52.5°	345.7	343.2	331.4	338.0	345.9	337.3	330.5	341.9	344.7	341.9	330.5
55°	315.7	311.7	298.5	296.6	291.3	295.8	297.5	310.6	315.1	310.6	297.5
57.5°	287.8	282.0	264.0	257.1	247.7	256.4	263.0	281.1	287.1	281.1	263.0
60°	256.2	251.3	232.4	214.8	207.4	214.5	231.7	250.7	255.9	250.7	231.7
62.5°	226.6	218.5	195.4	178.7	176.6	178.3	194.8	217.7	226.3	217.7	194.8
65°	196.7	184.4	164.7	148.2	151.2	147.8	164.3	184.0	196.7	184.0	164.3
67.5°	164.7	153.9	136.7	121.5	128.1	121.5	136.3	153.6	164.7	153.6	136.3
70°	138.9	125.6	111.6	100.2	107.6	100.2	111.6	126.0	139.1	126.0	111.6
72.5°	112.5	101.0	89.5	82.1	87.5	81.7	89.5	101.3	113.1	101.3	89.5
75°	90.3	79.6	70.3	64.5	72.7	64.5	70.5	79.9	91.3	79.9	70.5
77.5°	77.2	65.3	52.9	51.3	57.8	51.3	53.3	64.3	76.0	64.3	53.3
80°	67.9	59.2	41.6	38.1	42.3	38.1	40.9	54.0	61.8	54.0	40.9
82.5°	64.2	57.9	38.9	27.5	29.9	27.5	35.0	46.4	51.9	46.4	35.0
85°	64.4	61.2	40.3	21.0	16.8	20.4	30.8	41.4	43.3	41.4	30.8
87.5°	68.7	68.2	45.5	21.0	4.1	16.5	27.0	37.1	35.3	37.1	27.0
90°	75.5	75.5	53.1	22.9	0.4	10.6	21.0	29.9	26.9	29.9	21.0
92.5°	85.7	84.3	61.0	27.1	5.2	4.8	16.6	24.3	22.2	24.3	16.6
95°	95.1	93.1	69.1	34.5	13.0	2.1	10.8	18.0	18.2	18.0	10.8
97.5°	105.2	101.9	77.7	46.2	23.9	4.7	6.1	12.9	14.4	12.9	6.1
100°	112.1	109.3	89.0	60.1	36.1	11.5	3.1	7.6	10.0	7.6	3.1
102.5°	125.6	120.9	102.2	73.4	49.4	20.9	5.6	4.3	5.1	4.3	5.6
105°	139.5	135.0	118.1	87.3	64.6	33.5	13.5	4.7	3.1	4.7	13.5
107.5°	153.5	150.1	132.4	101.5	80.8	48.1	24.5	12.9	8.3	12.9	24.5
110°	169.7	165.7	146.3	115.9	97.7	63.7	37.1	23.2	18.1	23.2	37.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	185.2	182.3	159.3	130.8	115.2	80.5	52.7	36.1	31.3	36.1	52.7
115°	198.0	195.6	174.2	144.7	131.4	99.7	69.8	51.4	46.4	51.4	69.8
117.5°	210.6	210.3	185.2	158.9	150.8	116.8	85.7	67.4	61.3	67.4	85.7
120°	226.5	223.9	201.2	174.0	170.1	135.8	104.0	85.0	78.8	85.0	104.0
122.5°	237.5	235.9	214.2	187.6	187.6	154.3	120.9	101.7	95.3	101.7	120.9
125°	247.5	247.0	223.9	201.2	206.4	171.4	139.6	120.2	113.1	120.2	139.6
127.5°	256.7	257.6	236.5	216.1	225.6	188.9	158.1	136.7	129.3	136.7	158.1
130°	264.4	267.7	248.5	229.7	243.6	208.1	174.7	153.3	148.5	153.3	174.7
132.5°	279.6	277.7	260.8	243.6	263.2	225.6	192.2	169.8	164.3	169.8	192.2
135°	287.4	288.1	271.5	255.7	281.2	243.0	208.7	186.7	181.1	186.7	208.7
137.5°	296.8	294.9	279.9	270.2	298.1	259.8	224.9	204.5	195.7	204.5	224.9
140°	303.6	303.2	290.9	283.3	316.3	276.4	241.4	220.7	212.6	220.7	241.4
142.5°	310.7	312.7	301.9	297.4	334.3	293.9	259.2	236.5	228.8	236.5	259.2
145°	316.5	320.6	313.8	315.3	351.6	313.3	275.6	252.6	244.2	252.6	275.6
147.5°	324.5	330.0	321.9	328.8	366.5	331.3	291.2	268.5	261.0	268.5	291.2
150°	335.6	338.1	333.3	345.4	381.7	349.6	307.0	283.7	276.2	283.7	307.0
152.5°	344.3	347.5	342.0	364.5	393.7	367.1	324.5	298.6	289.9	298.6	324.5
155°	353.3	354.7	350.7	382.9	406.4	384.3	338.5	315.1	306.8	315.1	338.5
157.5°	361.7	364.4	359.1	396.9	417.4	399.1	353.5	331.7	324.2	331.7	353.5
160°	370.9	370.9	372.6	413.1	426.4	412.2	370.4	349.8	339.4	349.8	370.4
162.5°	371.8	377.9	391.1	424.5	435.1	423.5	388.5	362.8	353.7	362.8	388.5
165°	386.1	390.8	411.8	434.5	441.9	433.6	410.8	383.3	373.4	383.3	410.8
167.5°	401.0	411.8	428.7	445.9	448.4	442.9	428.0	409.0	400.0	409.0	428.0
170°	424.5	434.5	442.9	450.0	453.6	450.4	438.8	429.3	423.2	429.3	438.8
172.5°	443.6	450.0	453.3	457.8	455.6	454.2	448.4	443.9	440.7	443.9	448.4
175°	454.8	456.9	459.8	458.9	460.9	457.4	456.9	459.1	445.1	459.1	456.9
177.5°	458.9	462.1	460.4	458.4	458.7	458.0	458.5	459.8	457.0	459.8	458.5
180°	459.8	459.8	459.8	459.8	459.8	459.8	459.8	459.8	459.8	459.8	459.8



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CATALOG NUMBER: MWL-2-13-23-UNV-L930-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	843.5	843.5	843.5	843.5	843.5	843.5
2.5°	838.9	839.2	839.2	839.7	844.0	835.2
5°	836.5	829.9	836.5	837.3	839.1	832.7
7.5°	828.7	827.4	829.1	827.1	832.9	829.8
10°	817.7	817.3	818.1	822.2	821.3	820.2
12.5°	807.1	804.2	807.1	804.6	808.2	806.9
15°	791.1	792.7	791.4	793.9	796.7	792.4
17.5°	774.7	774.7	774.7	775.0	777.7	775.9
20°	753.8	754.6	754.1	755.2	757.6	757.0
22.5°	736.5	734.9	736.8	734.7	737.8	733.7
25°	715.1	712.7	715.4	712.0	712.3	709.9
27.5°	690.0	689.6	690.3	687.3	683.5	680.3
30°	662.8	663.3	663.5	661.3	652.3	653.9
32.5°	636.5	637.3	637.1	627.6	619.3	614.4
35°	607.4	608.2	608.3	597.7	585.4	582.0
37.5°	576.1	579.7	577.1	559.0	545.9	545.0
40°	539.9	548.5	540.6	519.6	508.0	508.8
42.5°	505.4	513.9	506.1	478.9	471.1	474.3
45°	462.6	478.6	463.3	438.7	436.2	440.2
47.5°	419.9	440.8	420.2	399.1	401.6	412.3
50°	378.4	396.8	379.1	363.8	372.0	377.8
52.5°	337.3	345.9	338.0	331.4	343.2	345.7
55°	295.8	291.3	296.6	298.5	311.7	315.7
57.5°	256.4	247.7	257.1	264.0	282.0	287.8
60°	214.5	207.4	214.8	232.4	251.3	256.2
62.5°	178.3	176.6	178.7	195.4	218.5	226.6
65°	147.8	151.2	148.2	164.7	184.4	196.7
67.5°	121.5	128.1	121.5	136.7	153.9	164.7
70°	100.2	107.6	100.2	111.6	125.6	138.9
72.5°	81.7	87.5	82.1	89.5	101.0	112.5
75°	64.5	72.7	64.5	70.3	79.6	90.3
77.5°	51.3	57.8	51.3	52.9	65.3	77.2
80°	38.1	42.3	38.1	41.6	59.2	67.9
82.5°	27.5	29.9	27.5	38.9	57.9	64.2
85°	20.4	16.8	21.0	40.3	61.2	64.4
87.5°	16.5	4.1	21.0	45.5	68.2	68.7
90°	10.6	0.4	22.9	53.1	75.5	75.5
92.5°	4.8	5.2	27.1	61.0	84.3	85.7
95°	2.1	13.0	34.5	69.1	93.1	95.1
97.5°	4.7	23.9	46.2	77.7	101.9	105.2
100°	11.5	36.1	60.1	89.0	109.3	112.1
102.5°	20.9	49.4	73.4	102.2	120.9	125.6
105°	33.5	64.6	87.3	118.1	135.0	139.5
107.5°	48.1	80.8	101.5	132.4	150.1	153.5
110°	63.7	97.7	115.9	146.3	165.7	169.7



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	80.5	115.2	130.8	159.3	182.3	185.2
115°	99.7	131.4	144.7	174.2	195.6	198.0
117.5°	116.8	150.8	158.9	185.2	210.3	210.6
120°	135.8	170.1	174.0	201.2	223.9	226.5
122.5°	154.3	187.6	187.6	214.2	235.9	237.5
125°	171.4	206.4	201.2	223.9	247.0	247.5
127.5°	188.9	225.6	216.1	236.5	257.6	256.7
130°	208.1	243.6	229.7	248.5	267.7	264.4
132.5°	225.6	263.2	243.6	260.8	277.7	279.6
135°	243.0	281.2	255.7	271.5	288.1	287.4
137.5°	259.8	298.1	270.2	279.9	294.9	296.8
140°	276.4	316.3	283.3	290.9	303.2	303.6
142.5°	293.9	334.3	297.4	301.9	312.7	310.7
145°	313.3	351.6	315.3	313.8	320.6	316.5
147.5°	331.3	366.5	328.8	321.9	330.0	324.5
150°	349.6	381.7	345.4	333.3	338.1	335.6
152.5°	367.1	393.7	364.5	342.0	347.5	344.3
155°	384.3	406.4	382.9	350.7	354.7	353.3
157.5°	399.1	417.4	396.9	359.1	364.4	361.7
160°	412.2	426.4	413.1	372.6	370.9	370.9
162.5°	423.5	435.1	424.5	391.1	377.9	371.8
165°	433.6	441.9	434.5	411.8	390.8	386.1
167.5°	442.9	448.4	445.9	428.7	411.8	401.0
170°	450.4	453.6	450.0	442.9	434.5	424.5
172.5°	454.2	455.6	457.8	453.3	450.0	443.6
175°	457.4	460.9	458.9	459.8	456.9	454.8
177.5°	458.0	458.7	458.4	460.4	462.1	458.9
180°	459.8	459.8	459.8	459.8	459.8	459.8

(END OF REPORT)