

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: P392510

Luminaire Tested: **MWL-2-22-23-UNV-L840-EDD**

Issue Date: 12/2/2019

**Test Information**

Test Method: LM-79-08  
Report Number: P392510  
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-2-22-23-UNV-L840-EDD  
Description: MWL 2FT MEDICAL LED FIXTURE  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

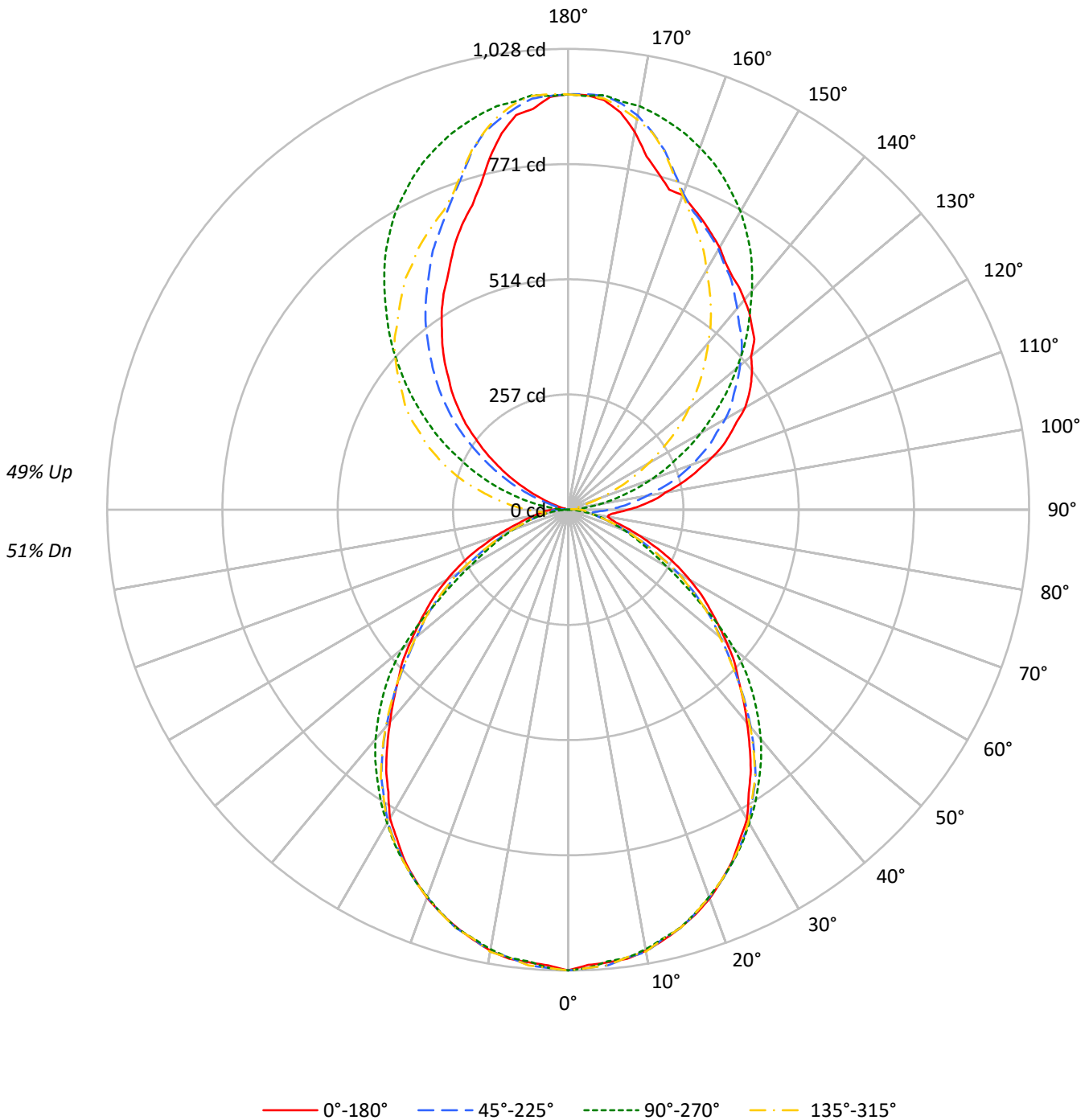
Lumens per Lamp: N/A  
Luminaire Lumens: 4547.9 lumens  
Efficiency: N/A  
Efficacy: 102.7 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25  
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')  
CIE Type: General Diffuse

Input Watts (W): 44.3  
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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### 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	84	84	84	70	70	70	57	57	57	51
1	98	94	90	87	91	87	84	81	74	72	70	62	60	59	51	50	49	44
2	90	83	77	72	83	77	72	67	65	62	58	55	52	50	45	44	42	37
3	82	73	66	60	76	68	62	57	58	53	50	49	46	43	41	38	36	32
4	75	65	57	51	70	60	54	48	52	47	43	44	40	37	37	34	31	28
5	69	58	50	44	64	54	47	42	47	41	37	40	36	32	33	30	28	25
6	64	52	44	39	59	49	42	36	42	37	32	36	32	28	30	27	25	22
7	59	47	39	34	55	44	37	32	38	33	29	33	29	25	28	24	22	19
8	55	43	35	30	51	40	33	29	35	30	26	30	26	23	26	22	20	17
9	51	39	32	27	48	37	30	26	32	27	23	28	24	20	24	20	18	16
10	48	36	29	24	44	34	27	23	30	24	21	26	22	19	22	19	16	14

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°	270°
0°	13273	13273	13273	13273
5°	12907	12056	12907	12056
10°	12637	11101	12637	11101
15°	12233	10180	12208	10180
20°	11792	9257	11766	9257
25°	11239	8433	11214	8433
30°	10614	7636	10579	7636
35°	9765	6869	9737	6869
40°	8907	6127	8870	6127
45°	8117	5328	8088	5328
50°	7420	4434	7389	4434
55°	6687	3292	6665	3292
60°	5934	2392	5923	2392
65°	5070	1791	5070	1791
70°	4066	1323	4083	1323
75°	3097	935	3153	935
80°	3059	576	2632	576
85°	4366	247	2503	247



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	96.6	2.1
10°-20°	271.9	6.0
20°-30°	398.9	8.8
30°-40°	452.5	9.9
40°-50°	422.1	9.3
50°-60°	330.0	7.3
60°-70°	204.7	4.5
70°-80°	99.4	2.2
80°-90°	56.8	1.2
90°-100°	76.1	1.7
100°-110°	142.9	3.1
110°-120°	246.3	5.4
120°-130°	335.0	7.4
130°-140°	381.9	8.4
140°-150°	381.0	8.4
150°-160°	331.8	7.3
160°-170°	233.2	5.1
170°-180°	86.9	1.9
0°-30°	767.4	16.9
0°-40°	1219.8	26.8
0°-60°	1971.9	43.4
0°-90°	2332.8	51.3
90°-120°	465.3	10.2
90°-150°	1563.2	34.4
90°-180°	2215.0	48.7
0°-180°	4547.9	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1028	1028	1028	1028	1028	
5°	1014	1011	1014	1011	1014	96
15°	966	965	964	965	966	272
25°	865	868	863	868	865	397
35°	710	741	708	741	710	443
45°	537	583	535	583	537	416
55°	385	355	384	355	385	345
65°	240	184	240	184	240	237
75°	110	89	112	89	110	125
85°	100	21	57	21	100	80
90°	133	1	35	1	133	73
95°	178	26	23	26	178	155
105°	281	130	6	130	281	296
115°	398	264	92	264	398	395
125°	498	415	227	415	498	445
135°	579	566	364	566	579	447
145°	637	708	491	708	637	401
155°	711	819	617	819	711	328
165°	777	891	752	891	777	220
175°	917	928	898	928	917	86
180°	927	927	927	927	927	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1027.6	1027.6	1027.6	1027.6	1027.6	1027.6	1027.6	1027.6	1027.6	1027.6	1027.6
2.5°	1016.6	1027.9	1023.2	1022.9	1022.9	1022.2	1023.2	1027.9	1017.3	1027.9	1023.2
5°	1013.6	1021.9	1020.2	1019.2	1011.2	1019.2	1019.6	1021.9	1013.6	1021.9	1019.6
7.5°	1010.3	1014.6	1007.6	1010.2	1008.2	1009.6	1006.9	1013.9	1010.3	1013.9	1006.9
10°	998.9	1000.6	1001.6	996.6	995.6	995.9	1000.9	999.3	998.9	999.3	1000.9
12.5°	983.2	984.6	979.9	982.9	979.3	982.9	979.9	983.3	981.9	983.3	979.9
15°	965.9	970.6	966.9	963.9	965.3	963.3	966.3	969.3	963.9	969.3	966.3
17.5°	945.9	947.6	943.9	943.3	943.3	943.3	943.3	946.9	943.9	946.9	943.3
20°	922.9	923.2	919.9	918.3	918.6	917.6	919.3	921.9	920.9	921.9	919.3
22.5°	894.2	899.2	894.9	897.3	894.6	896.6	894.3	897.9	892.9	897.9	894.3
25°	865.2	868.2	867.6	871.3	867.6	870.6	866.3	866.3	863.3	866.3	866.3
27.5°	829.2	833.2	837.6	840.9	839.6	840.3	836.3	831.3	827.3	831.3	836.3
30°	797.2	795.2	806.2	808.6	807.6	807.3	804.3	793.3	794.6	793.3	804.3
32.5°	749.2	755.2	765.2	776.6	776.3	775.3	763.3	752.6	746.6	752.6	763.3
35°	709.6	713.6	728.6	741.6	740.6	739.6	726.6	711.6	707.6	711.6	726.6
37.5°	664.6	665.6	681.6	703.6	706.3	701.6	679.6	663.6	662.6	663.6	679.6
40°	620.6	619.6	633.6	658.9	668.3	657.6	631.0	617.0	618.0	617.0	631.0
42.5°	578.6	574.6	583.9	616.9	626.3	615.6	582.0	572.0	576.0	572.0	582.0
45°	536.9	531.9	534.9	564.9	583.3	563.6	532.3	530.0	535.0	530.0	532.3
47.5°	502.9	489.9	486.9	512.3	537.3	511.6	484.3	488.0	501.0	488.0	484.3
50°	460.9	453.9	443.9	462.3	483.6	461.0	441.3	451.3	459.0	451.3	441.3
52.5°	421.9	418.9	404.3	412.3	421.6	411.0	402.3	416.3	420.0	416.3	402.3
55°	385.3	380.3	364.3	361.6	355.0	360.3	362.3	378.3	384.0	378.3	362.3
57.5°	351.3	344.3	322.3	313.6	302.0	312.3	320.3	342.3	350.0	342.3	320.3
60°	312.6	306.6	283.6	262.0	253.0	261.3	282.3	305.3	312.0	305.3	282.3
62.5°	276.6	266.6	238.6	218.0	215.3	217.3	237.3	265.3	276.0	265.3	237.3
65°	240.0	225.0	201.0	181.0	184.3	180.3	200.3	224.3	240.0	224.3	200.3
67.5°	201.0	188.0	167.0	148.3	156.3	148.3	166.3	187.3	201.0	187.3	166.3
70°	169.3	153.3	136.3	122.3	131.3	122.3	136.3	154.0	170.0	154.0	136.3
72.5°	137.3	123.3	109.3	100.3	106.7	99.7	109.3	124.0	138.6	124.0	109.3
75°	110.3	97.3	85.7	78.7	88.7	78.7	86.3	98.0	112.3	98.0	86.3
77.5°	96.5	80.9	64.7	62.7	70.7	62.7	65.3	79.0	93.9	79.0	65.3
80°	89.7	77.1	51.6	46.7	51.7	46.7	50.3	66.6	77.2	66.6	50.3
82.5°	91.3	81.5	51.5	33.7	36.7	33.7	43.6	57.9	66.5	57.9	43.6
85°	99.6	93.1	58.8	26.6	20.7	25.3	39.9	53.2	57.1	53.2	39.9
87.5°	114.2	111.3	72.8	30.4	5.0	21.3	35.5	48.5	46.8	48.5	35.5
90°	132.7	130.1	91.4	38.2	0.7	13.3	26.6	37.9	34.6	37.9	26.6
92.5°	156.4	151.6	110.5	51.4	10.5	6.3	21.0	30.6	28.3	30.6	21.0
95°	177.9	174.0	131.7	69.0	26.2	3.6	14.0	22.3	23.0	22.3	14.0
97.5°	201.7	196.4	153.4	92.5	47.4	8.8	8.9	16.6	18.6	16.6	8.9
100°	220.2	216.6	178.9	120.7	72.3	22.6	5.6	11.2	14.2	11.2	5.6
102.5°	251.5	242.6	205.7	147.5	99.1	41.5	10.8	7.2	8.2	7.2	10.8
105°	280.9	271.7	237.7	175.6	129.8	67.0	26.5	8.8	5.6	8.8	26.5
107.5°	309.0	302.5	266.5	204.4	162.5	96.5	48.7	25.2	16.0	25.2	48.7
110°	341.7	333.8	294.6	233.1	196.5	127.9	74.2	46.1	35.7	46.1	74.2



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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°	373.1	367.2	320.8	263.2	231.8	161.9	105.6	72.3	62.5	72.3	105.6
115°	398.3	394.0	350.8	291.3	264.5	200.4	140.3	103.0	92.2	103.0	140.3
117.5°	423.8	423.1	373.1	320.1	303.8	235.1	172.3	134.7	122.3	134.7	172.3
120°	455.8	450.6	404.8	349.9	342.0	272.7	208.6	170.1	157.6	170.1	208.6
122.5°	478.1	474.8	431.0	377.3	377.3	310.0	242.6	204.1	191.0	204.1	242.6
125°	498.3	497.0	450.6	404.8	415.3	344.7	280.6	241.3	226.9	241.3	280.6
127.5°	516.6	518.6	476.1	434.9	453.9	380.0	317.8	274.7	259.6	274.7	317.8
130°	532.3	538.9	500.3	462.4	490.5	418.5	351.2	308.0	298.2	308.0	351.2
132.5°	563.1	559.1	525.1	490.5	529.7	453.9	386.5	341.4	330.3	341.4	386.5
135°	578.8	580.1	546.7	514.7	566.3	489.2	419.9	375.4	364.3	375.4	419.9
137.5°	597.7	593.8	563.7	544.1	600.3	523.2	452.5	411.4	393.7	411.4	452.5
140°	611.4	610.8	585.9	570.3	637.0	556.5	485.9	444.0	427.7	444.0	485.9
142.5°	625.8	629.8	608.2	599.0	673.6	591.8	521.9	476.1	460.4	476.1	521.9
145°	636.6	645.1	631.4	635.0	708.2	631.1	554.3	507.8	490.8	507.8	554.3
147.5°	653.0	664.1	647.8	661.5	738.3	666.7	585.6	539.9	524.8	539.9	585.6
150°	675.2	680.5	670.6	695.8	769.0	704.3	617.7	570.6	555.6	570.6	617.7
152.5°	692.9	699.4	688.3	734.4	793.2	739.6	653.0	600.7	583.0	600.7	653.0
155°	711.2	713.8	706.0	771.7	818.7	774.3	681.1	634.0	617.0	634.0	681.1
157.5°	728.2	733.4	723.3	799.8	841.0	804.4	712.2	667.4	652.3	667.4	712.2
160°	746.5	746.5	750.7	832.5	859.3	830.5	746.2	704.0	683.1	704.0	746.2
162.5°	748.5	760.9	788.0	855.4	876.9	853.4	782.8	730.2	711.8	730.2	782.8
165°	777.2	787.4	829.9	875.6	890.7	873.7	827.9	772.3	751.7	772.3	827.9
167.5°	807.3	829.9	863.9	898.5	903.7	892.6	862.6	824.0	805.4	824.0	862.6
170°	855.4	875.6	892.6	907.0	914.2	907.7	884.1	865.2	852.7	865.2	884.1
172.5°	893.9	907.0	913.6	922.7	918.1	915.5	903.7	894.6	888.1	894.6	903.7
175°	917.1	920.8	926.6	924.4	928.3	921.1	920.8	925.3	897.5	925.3	920.8
177.5°	925.6	931.2	927.9	923.1	923.7	922.4	924.0	926.6	921.7	926.6	924.0
180°	926.6	926.6	926.6	926.6	926.6	926.6	926.6	926.6	926.6	926.6	926.6



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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1027.6	1027.6	1027.6	1027.6	1027.6	1027.6
2.5°	1022.2	1022.9	1022.9	1023.2	1027.9	1016.6
5°	1019.2	1011.2	1019.2	1020.2	1021.9	1013.6
7.5°	1009.6	1008.2	1010.2	1007.6	1014.6	1010.3
10°	995.9	995.6	996.6	1001.6	1000.6	998.9
12.5°	982.9	979.3	982.9	979.9	984.6	983.2
15°	963.3	965.3	963.9	966.9	970.6	965.9
17.5°	943.3	943.3	943.3	943.9	947.6	945.9
20°	917.6	918.6	918.3	919.9	923.2	922.9
22.5°	896.6	894.6	897.3	894.9	899.2	894.2
25°	870.6	867.6	871.3	867.6	868.2	865.2
27.5°	840.3	839.6	840.9	837.6	833.2	829.2
30°	807.3	807.6	808.6	806.2	795.2	797.2
32.5°	775.3	776.3	776.6	765.2	755.2	749.2
35°	739.6	740.6	741.6	728.6	713.6	709.6
37.5°	701.6	706.3	703.6	681.6	665.6	664.6
40°	657.6	668.3	658.9	633.6	619.6	620.6
42.5°	615.6	626.3	616.9	583.9	574.6	578.6
45°	563.6	583.3	564.9	534.9	531.9	536.9
47.5°	511.6	537.3	512.3	486.9	489.9	502.9
50°	461.0	483.6	462.3	443.9	453.9	460.9
52.5°	411.0	421.6	412.3	404.3	418.9	421.9
55°	360.3	355.0	361.6	364.3	380.3	385.3
57.5°	312.3	302.0	313.6	322.3	344.3	351.3
60°	261.3	253.0	262.0	283.6	306.6	312.6
62.5°	217.3	215.3	218.0	238.6	266.6	276.6
65°	180.3	184.3	181.0	201.0	225.0	240.0
67.5°	148.3	156.3	148.3	167.0	188.0	201.0
70°	122.3	131.3	122.3	136.3	153.3	169.3
72.5°	99.7	106.7	100.3	109.3	123.3	137.3
75°	78.7	88.7	78.7	85.7	97.3	110.3
77.5°	62.7	70.7	62.7	64.7	80.9	96.5
80°	46.7	51.7	46.7	51.6	77.1	89.7
82.5°	33.7	36.7	33.7	51.5	81.5	91.3
85°	25.3	20.7	26.6	58.8	93.1	99.6
87.5°	21.3	5.0	30.4	72.8	111.3	114.2
90°	13.3	0.7	38.2	91.4	130.1	132.7
92.5°	6.3	10.5	51.4	110.5	151.6	156.4
95°	3.6	26.2	69.0	131.7	174.0	177.9
97.5°	8.8	47.4	92.5	153.4	196.4	201.7
100°	22.6	72.3	120.7	178.9	216.6	220.2
102.5°	41.5	99.1	147.5	205.7	242.6	251.5
105°	67.0	129.8	175.6	237.7	271.7	280.9
107.5°	96.5	162.5	204.4	266.5	302.5	309.0
110°	127.9	196.5	233.1	294.6	333.8	341.7





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	161.9	231.8	263.2	320.8	367.2	373.1
115°	200.4	264.5	291.3	350.8	394.0	398.3
117.5°	235.1	303.8	320.1	373.1	423.1	423.8
120°	272.7	342.0	349.9	404.8	450.6	455.8
122.5°	310.0	377.3	377.3	431.0	474.8	478.1
125°	344.7	415.3	404.8	450.6	497.0	498.3
127.5°	380.0	453.9	434.9	476.1	518.6	516.6
130°	418.5	490.5	462.4	500.3	538.9	532.3
132.5°	453.9	529.7	490.5	525.1	559.1	563.1
135°	489.2	566.3	514.7	546.7	580.1	578.8
137.5°	523.2	600.3	544.1	563.7	593.8	597.7
140°	556.5	637.0	570.3	585.9	610.8	611.4
142.5°	591.8	673.6	599.0	608.2	629.8	625.8
145°	631.1	708.2	635.0	631.4	645.1	636.6
147.5°	666.7	738.3	661.5	647.8	664.1	653.0
150°	704.3	769.0	695.8	670.6	680.5	675.2
152.5°	739.6	793.2	734.4	688.3	699.4	692.9
155°	774.3	818.7	771.7	706.0	713.8	711.2
157.5°	804.4	841.0	799.8	723.3	733.4	728.2
160°	830.5	859.3	832.5	750.7	746.5	746.5
162.5°	853.4	876.9	855.4	788.0	760.9	748.5
165°	873.7	890.7	875.6	829.9	787.4	777.2
167.5°	892.6	903.7	898.5	863.9	829.9	807.3
170°	907.7	914.2	907.0	892.6	875.6	855.4
172.5°	915.5	918.1	922.7	913.6	907.0	893.9
175°	921.1	928.3	924.4	926.6	920.8	917.1
177.5°	922.4	923.7	923.1	927.9	931.2	925.6
180°	926.6	926.6	926.6	926.6	926.6	926.6

(END OF REPORT)