

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: P382277

Luminaire Tested: **MWL-2-28-23-UNV-L830-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P382277
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-2-28-23-UNV-L830-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4841.0 lumens
Efficiency: N/A
Efficacy: 87.2 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: General Diffuse

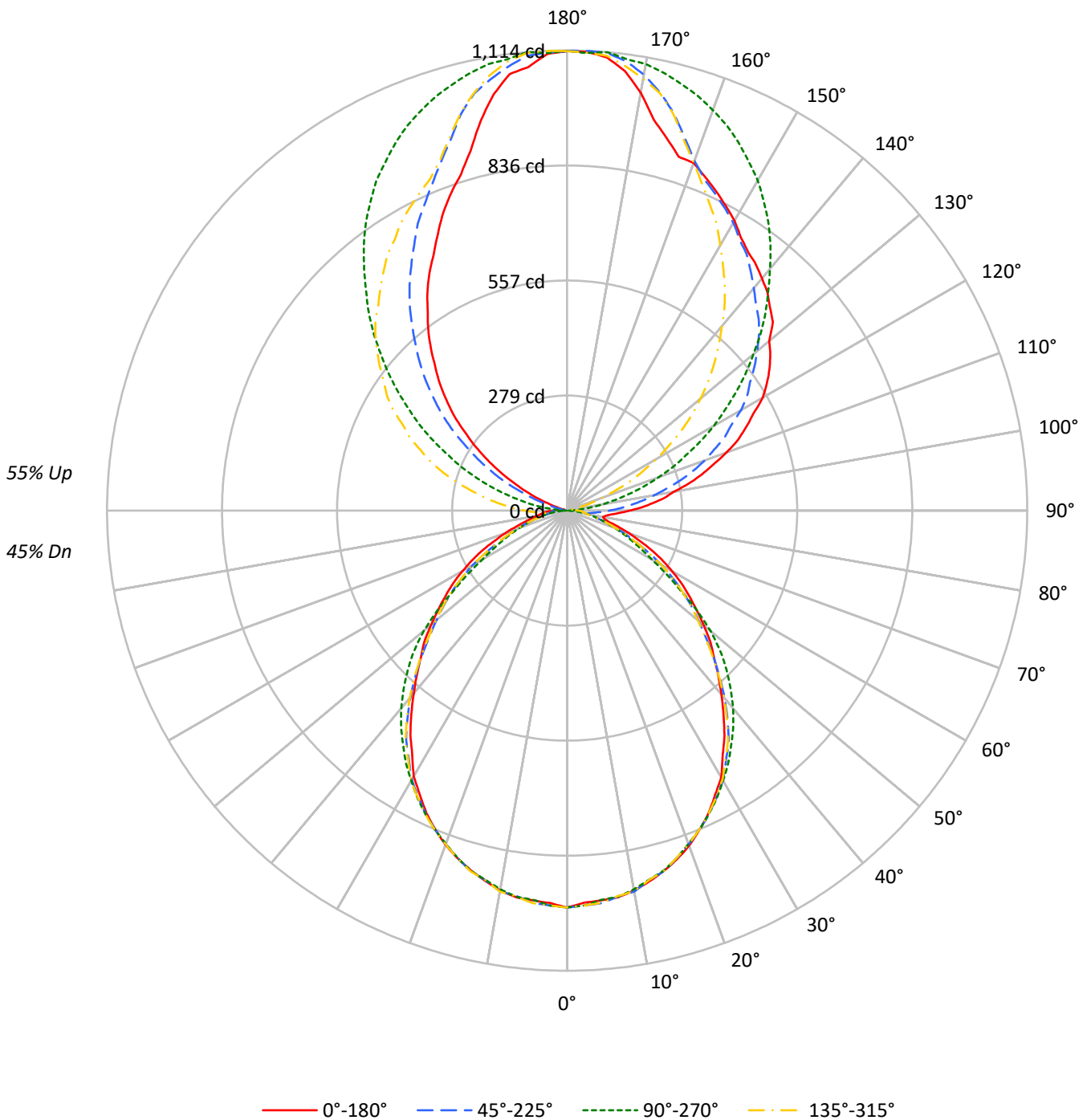
Input Watts (W): 55.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	50	30	10	0	
RCR																						
0	106	106	106	106	97	97	97	97	81	81	81	66	66	66	52	52	52	45				
1	97	93	89	85	89	85	82	79	71	69	67	58	56	55	46	45	44	38				
2	89	81	75	70	81	75	70	65	63	59	56	51	49	46	41	39	38	33				
3	81	72	65	59	74	66	60	55	56	51	47	46	42	40	37	34	32	28				
4	74	64	56	50	68	59	52	47	50	45	41	41	37	34	33	30	28	25				
5	68	57	49	43	62	53	46	41	44	39	35	37	33	30	30	27	25	22				
6	63	51	43	38	58	47	40	35	40	35	31	33	29	26	27	24	22	19				
7	58	46	38	33	53	43	36	31	36	31	27	31	26	23	25	22	20	17				
8	54	42	34	29	50	39	32	28	33	28	24	28	24	21	23	20	18	15				
9	50	38	31	26	46	36	29	25	31	25	22	26	22	19	21	18	16	14				
10	47	35	28	23	43	33	26	22	28	23	20	24	20	17	20	17	15	13				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	12412	12412	12412	12412
5°	12063	11275	12063	11275
10°	11815	10381	11815	10381
15°	11444	9516	11414	9516
20°	11032	8653	11001	8653
25°	10514	7883	10483	7883
30°	9931	7138	9889	7138
35°	9136	6422	9103	6422
40°	8336	5729	8290	5729
45°	7595	4983	7560	4983
50°	6945	4148	6908	4148
55°	6260	3079	6232	3079
60°	5556	2238	5539	2238
65°	4745	1677	4745	1677
70°	3807	1240	3824	1240
75°	2903	874	2968	874
80°	3014	540	2506	540
85°	4707	231	2468	231



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	90.3	1.9
10°-20°	254.2	5.3
20°-30°	373.0	7.7
30°-40°	423.2	8.7
40°-50°	394.8	8.2
50°-60°	308.7	6.4
60°-70°	191.6	4.0
70°-80°	93.3	1.9
80°-90°	57.8	1.2
90°-100°	88.0	1.8
100°-110°	171.2	3.5
110°-120°	295.5	6.1
120°-130°	401.9	8.3
130°-140°	458.2	9.5
140°-150°	457.2	9.4
150°-160°	398.1	8.2
160°-170°	279.9	5.8
170°-180°	104.2	2.2
0°-30°	717.5	14.8
0°-40°	1140.6	23.6
0°-60°	1844.1	38.1
0°-90°	2186.8	45.2
90°-120°	554.6	11.5
90°-150°	1871.9	38.7
90°-180°	2654.0	54.8
0°-180°	4841.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	961	961	961	961	961	
5°	947	946	947	946	947	90
15°	904	902	901	902	904	255
25°	809	811	807	811	809	372
35°	664	692	662	692	664	414
45°	502	546	500	546	502	390
55°	361	332	359	332	361	323
65°	225	172	225	172	225	222
75°	103	83	106	83	103	118
85°	107	19	56	19	107	84
90°	151	1	34	1	151	84
95°	208	31	22	31	208	182
105°	337	156	6	156	337	355
115°	478	317	110	317	478	474
125°	598	498	272	498	598	534
135°	694	680	437	680	694	536
145°	764	850	589	850	764	481
155°	853	983	740	983	853	394
165°	933	1069	902	1069	933	265
175°	1101	1114	1078	1114	1101	103
180°	1112	1112	1112	1112	1112	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	960.9	960.9	960.9	960.9	960.9	960.9	960.9	960.9	960.9	960.9	960.9
2.5°	950.1	960.9	956.9	956.8	956.8	956.0	956.9	960.9	950.9	960.9	956.9
5°	947.3	955.3	954.1	953.2	945.7	953.2	953.4	955.3	947.3	955.3	953.4
7.5°	944.3	948.7	942.2	944.8	942.9	944.0	941.3	947.9	944.3	947.9	941.3
10°	933.9	935.6	936.6	931.9	931.0	931.1	935.7	934.0	933.9	934.0	935.7
12.5°	919.6	920.7	916.1	918.9	915.4	918.9	916.1	919.1	918.0	919.1	916.1
15°	903.6	907.6	904.0	901.2	902.3	900.4	903.2	906.0	901.2	906.0	903.2
17.5°	884.9	886.1	882.5	881.8	881.8	881.8	881.8	885.3	882.5	885.3	881.8
20°	863.4	863.5	860.1	858.4	858.6	857.7	859.3	862.0	861.0	862.0	859.3
22.5°	836.5	841.1	836.7	838.8	836.2	838.0	836.0	839.5	834.9	839.5	836.0
25°	809.4	812.2	811.4	814.5	811.0	813.8	809.8	809.8	807.0	809.8	809.8
27.5°	775.8	779.5	783.4	786.3	784.8	785.6	781.8	777.2	773.4	777.2	781.8
30°	745.9	744.0	754.3	756.3	754.9	754.7	751.9	741.7	742.8	741.7	751.9
32.5°	701.1	706.7	716.0	726.5	725.8	724.9	713.7	703.6	698.0	703.6	713.7
35°	663.9	667.6	681.6	693.8	692.4	691.4	679.3	665.3	661.5	665.3	679.3
37.5°	621.9	622.8	637.7	658.3	660.4	655.9	635.4	620.5	619.5	620.5	635.4
40°	580.8	579.8	592.9	616.3	624.9	614.9	589.7	576.7	577.6	576.7	589.7
42.5°	541.5	537.8	546.3	577.1	585.7	575.6	544.0	534.6	538.4	534.6	544.0
45°	502.4	497.7	500.6	528.6	545.6	527.1	497.5	495.4	500.1	495.4	497.5
47.5°	470.7	458.5	455.7	479.3	502.6	478.5	452.6	456.2	468.3	456.2	452.6
50°	431.4	424.9	415.6	432.6	452.4	431.0	412.5	421.8	429.1	421.8	412.5
52.5°	395.0	392.2	378.4	385.9	394.5	384.3	376.1	389.1	392.7	389.1	376.1
55°	360.7	356.0	341.0	338.4	332.0	336.8	338.7	353.7	359.1	353.7	338.7
57.5°	328.9	322.4	301.8	293.6	282.5	292.0	299.5	320.0	327.3	320.0	299.5
60°	292.7	287.1	265.6	245.1	236.7	244.4	264.0	285.5	291.8	285.5	264.0
62.5°	259.1	249.7	223.6	204.0	201.4	203.3	222.0	248.1	258.2	248.1	222.0
65°	224.6	210.6	188.2	169.5	172.5	168.7	187.4	209.8	224.6	209.8	187.4
67.5°	188.2	176.0	156.4	138.9	146.3	138.9	155.7	175.3	188.2	175.3	155.7
70°	158.5	143.5	127.7	114.6	123.0	114.6	127.7	144.3	159.2	144.3	127.7
72.5°	128.6	115.5	102.4	94.0	99.7	93.2	102.4	116.3	130.2	116.3	102.4
75°	103.4	91.2	80.1	73.6	82.9	73.6	81.0	92.0	105.7	92.0	81.0
77.5°	91.9	76.6	60.5	58.6	66.1	58.6	61.4	74.2	88.7	74.2	61.4
80°	88.4	75.5	48.9	43.7	48.4	43.7	47.3	62.9	73.5	62.9	47.3
82.5°	94.2	83.4	50.9	31.6	34.4	31.6	41.5	55.1	64.3	55.1	41.5
85°	107.4	99.5	61.6	25.6	19.4	24.0	38.8	51.6	56.3	51.6	38.8
87.5°	127.2	123.0	79.7	31.8	4.7	20.7	34.9	47.5	46.3	47.5	34.9
90°	151.3	147.2	103.3	42.6	0.7	12.8	25.6	36.4	33.5	36.4	25.6
92.5°	181.2	174.5	127.7	60.4	12.6	6.3	20.1	29.3	27.3	29.3	20.1
95°	208.1	203.4	154.9	82.6	31.4	4.1	13.5	21.2	21.9	21.2	13.5
97.5°	237.9	232.2	182.9	110.8	56.7	10.4	9.3	16.2	18.1	16.2	9.3
100°	262.0	258.5	214.5	144.7	86.6	26.9	6.4	11.9	14.7	11.9	6.4
102.5°	301.2	290.9	246.7	176.9	118.7	49.6	12.7	8.1	9.1	8.1	12.7
105°	337.0	326.0	285.2	210.6	155.7	80.2	31.6	10.4	6.4	10.4	31.6
107.5°	370.8	363.0	319.8	245.1	194.9	115.6	58.3	30.0	19.0	30.0	58.3
110°	410.1	400.6	353.6	279.7	235.7	153.2	88.9	55.1	42.6	55.1	88.9



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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°	447.8	440.7	384.9	315.8	278.1	194.2	126.5	86.6	74.7	86.6	126.5
115°	477.8	472.9	421.1	349.6	317.4	240.5	168.2	123.5	110.2	123.5	168.2
117.5°	508.4	507.6	447.8	384.2	364.5	282.0	206.7	161.3	146.3	161.3	206.7
120°	546.9	540.6	485.6	419.7	410.2	326.9	250.0	203.7	188.7	203.7	250.0
122.5°	573.6	569.7	517.0	452.6	452.6	371.8	290.9	244.5	228.8	244.5	290.9
125°	598.0	596.4	540.6	485.6	498.2	413.3	336.4	289.3	272.0	289.3	336.4
127.5°	619.9	622.2	571.2	521.7	544.5	455.8	381.2	329.4	311.3	329.4	381.2
130°	638.8	646.6	600.3	554.7	588.5	502.1	421.2	369.3	357.6	369.3	421.2
132.5°	675.6	671.0	630.1	588.5	635.6	544.5	463.7	409.4	396.1	409.4	463.7
135°	694.5	696.1	656.0	617.6	679.6	586.9	503.6	450.3	437.0	450.3	503.6
137.5°	717.3	712.5	676.4	652.9	720.4	627.7	542.9	493.5	472.3	493.5	542.9
140°	733.7	733.0	703.1	684.3	764.4	667.8	583.0	532.8	513.1	532.8	583.0
142.5°	751.0	755.8	729.8	718.9	808.4	710.2	626.2	571.2	552.4	571.2	626.2
145°	763.7	774.0	757.5	762.0	850.0	757.4	664.8	609.1	588.6	609.1	664.8
147.5°	783.4	796.8	777.1	793.6	886.1	799.9	702.5	647.5	629.5	647.5	702.5
150°	810.1	816.4	804.6	835.1	923.0	845.2	741.0	684.4	666.4	684.4	741.0
152.5°	831.3	839.2	825.8	881.4	952.1	887.7	783.4	720.6	699.4	720.6	783.4
155°	853.3	856.4	847.0	926.2	982.7	929.3	817.1	760.6	740.2	760.6	817.1
157.5°	873.7	880.0	868.0	959.9	1009.4	965.4	854.7	800.7	782.6	800.7	854.7
160°	895.7	895.7	901.0	999.2	1031.4	996.8	895.6	844.7	819.6	844.7	895.6
162.5°	898.0	912.9	945.8	1026.7	1052.6	1024.4	939.6	876.1	854.1	876.1	939.6
165°	932.6	945.0	996.1	1051.1	1069.1	1048.6	993.7	927.0	901.9	927.0	993.7
167.5°	968.7	996.1	1036.9	1078.5	1084.8	1071.4	1035.3	989.0	966.4	989.0	1035.3
170°	1026.7	1051.1	1071.4	1088.7	1097.4	1089.5	1061.2	1038.5	1023.5	1038.5	1061.2
172.5°	1073.0	1088.7	1096.5	1107.6	1102.1	1099.0	1084.8	1073.8	1065.9	1073.8	1084.8
175°	1101.1	1105.2	1112.3	1109.3	1114.0	1105.3	1105.2	1110.7	1077.6	1110.7	1105.2
177.5°	1111.4	1117.7	1113.8	1107.7	1108.5	1106.9	1109.1	1112.3	1106.6	1112.3	1109.1
180°	1112.3	1112.3	1112.3	1112.3	1112.3	1112.3	1112.3	1112.3	1112.3	1112.3	1112.3



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CATALOG NUMBER: MWL-2-28-23-UNV-L830-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	960.9	960.9	960.9	960.9	960.9	960.9
2.5°	956.0	956.8	956.8	956.9	960.9	950.1
5°	953.2	945.7	953.2	954.1	955.3	947.3
7.5°	944.0	942.9	944.8	942.2	948.7	944.3
10°	931.1	931.0	931.9	936.6	935.6	933.9
12.5°	918.9	915.4	918.9	916.1	920.7	919.6
15°	900.4	902.3	901.2	904.0	907.6	903.6
17.5°	881.8	881.8	881.8	882.5	886.1	884.9
20°	857.7	858.6	858.4	860.1	863.5	863.4
22.5°	838.0	836.2	838.8	836.7	841.1	836.5
25°	813.8	811.0	814.5	811.4	812.2	809.4
27.5°	785.6	784.8	786.3	783.4	779.5	775.8
30°	754.7	754.9	756.3	754.3	744.0	745.9
32.5°	724.9	725.8	726.5	716.0	706.7	701.1
35°	691.4	692.4	693.8	681.6	667.6	663.9
37.5°	655.9	660.4	658.3	637.7	622.8	621.9
40°	614.9	624.9	616.3	592.9	579.8	580.8
42.5°	575.6	585.7	577.1	546.3	537.8	541.5
45°	527.1	545.6	528.6	500.6	497.7	502.4
47.5°	478.5	502.6	479.3	455.7	458.5	470.7
50°	431.0	452.4	432.6	415.6	424.9	431.4
52.5°	384.3	394.5	385.9	378.4	392.2	395.0
55°	336.8	332.0	338.4	341.0	356.0	360.7
57.5°	292.0	282.5	293.6	301.8	322.4	328.9
60°	244.4	236.7	245.1	265.6	287.1	292.7
62.5°	203.3	201.4	204.0	223.6	249.7	259.1
65°	168.7	172.5	169.5	188.2	210.6	224.6
67.5°	138.9	146.3	138.9	156.4	176.0	188.2
70°	114.6	123.0	114.6	127.7	143.5	158.5
72.5°	93.2	99.7	94.0	102.4	115.5	128.6
75°	73.6	82.9	73.6	80.1	91.2	103.4
77.5°	58.6	66.1	58.6	60.5	76.6	91.9
80°	43.7	48.4	43.7	48.9	75.5	88.4
82.5°	31.6	34.4	31.6	50.9	83.4	94.2
85°	24.0	19.4	25.6	61.6	99.5	107.4
87.5°	20.7	4.7	31.8	79.7	123.0	127.2
90°	12.8	0.7	42.6	103.3	147.2	151.3
92.5°	6.3	12.6	60.4	127.7	174.5	181.2
95°	4.1	31.4	82.6	154.9	203.4	208.1
97.5°	10.4	56.7	110.8	182.9	232.2	237.9
100°	26.9	86.6	144.7	214.5	258.5	262.0
102.5°	49.6	118.7	176.9	246.7	290.9	301.2
105°	80.2	155.7	210.6	285.2	326.0	337.0
107.5°	115.6	194.9	245.1	319.8	363.0	370.8
110°	153.2	235.7	279.7	353.6	400.6	410.1



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	194.2	278.1	315.8	384.9	440.7	447.8
115°	240.5	317.4	349.6	421.1	472.9	477.8
117.5°	282.0	364.5	384.2	447.8	507.6	508.4
120°	326.9	410.2	419.7	485.6	540.6	546.9
122.5°	371.8	452.6	452.6	517.0	569.7	573.6
125°	413.3	498.2	485.6	540.6	596.4	598.0
127.5°	455.8	544.5	521.7	571.2	622.2	619.9
130°	502.1	588.5	554.7	600.3	646.6	638.8
132.5°	544.5	635.6	588.5	630.1	671.0	675.6
135°	586.9	679.6	617.6	656.0	696.1	694.5
137.5°	627.7	720.4	652.9	676.4	712.5	717.3
140°	667.8	764.4	684.3	703.1	733.0	733.7
142.5°	710.2	808.4	718.9	729.8	755.8	751.0
145°	757.4	850.0	762.0	757.5	774.0	763.7
147.5°	799.9	886.1	793.6	777.1	796.8	783.4
150°	845.2	923.0	835.1	804.6	816.4	810.1
152.5°	887.7	952.1	881.4	825.8	839.2	831.3
155°	929.3	982.7	926.2	847.0	856.4	853.3
157.5°	965.4	1009.4	959.9	868.0	880.0	873.7
160°	996.8	1031.4	999.2	901.0	895.7	895.7
162.5°	1024.4	1052.6	1026.7	945.8	912.9	898.0
165°	1048.6	1069.1	1051.1	996.1	945.0	932.6
167.5°	1071.4	1084.8	1078.5	1036.9	996.1	968.7
170°	1089.5	1097.4	1088.7	1071.4	1051.1	1026.7
172.5°	1099.0	1102.1	1107.6	1096.5	1088.7	1073.0
175°	1105.3	1114.0	1109.3	1112.3	1105.2	1101.1
177.5°	1106.9	1108.5	1107.7	1113.8	1117.7	1111.4
180°	1112.3	1112.3	1112.3	1112.3	1112.3	1112.3

(END OF REPORT)