

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: P392518

Luminaire Tested: **MWL-2-28-13-UNV-L835-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392518
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-2-28-13-UNV-L835-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

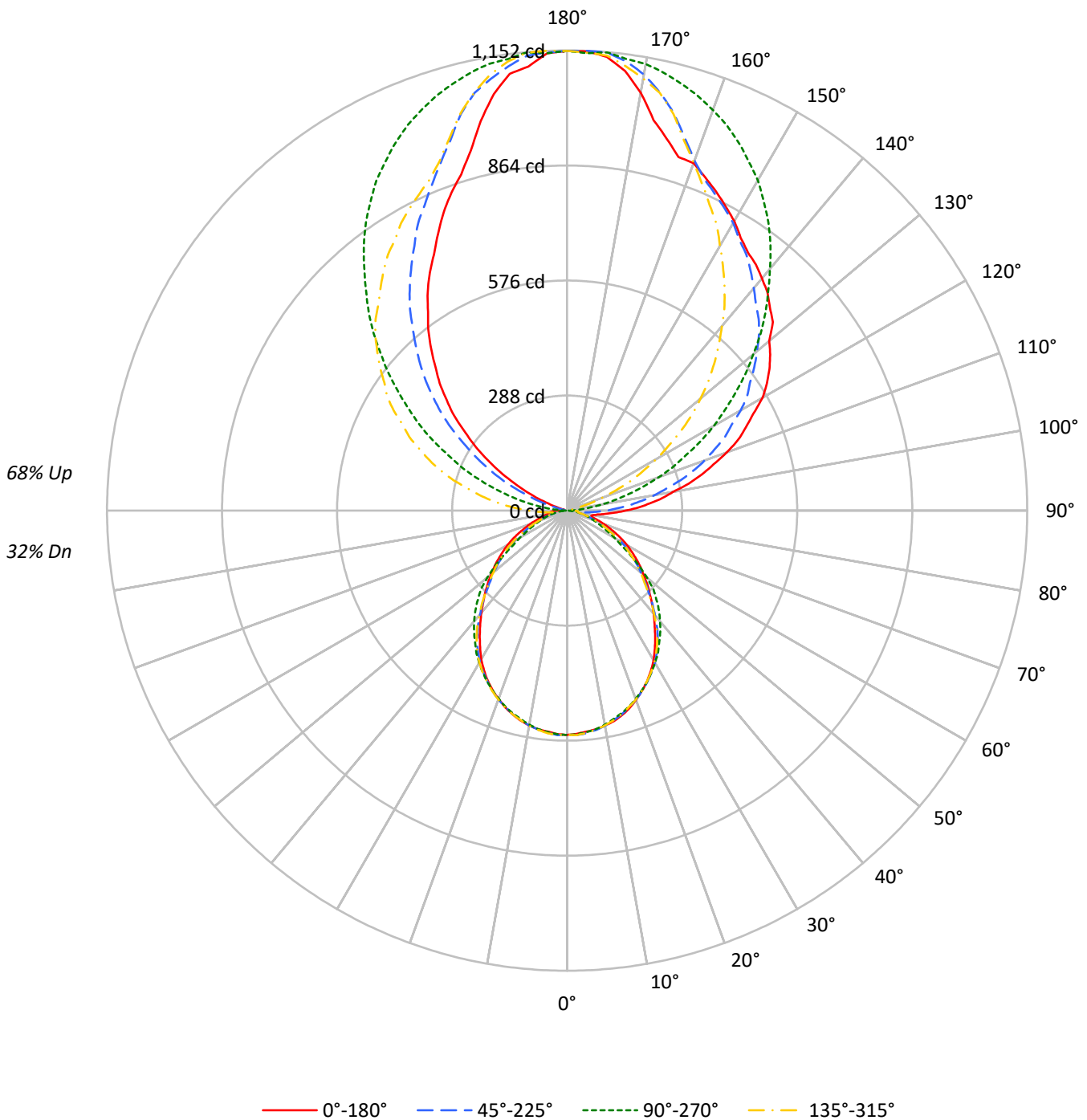
Lumens per Lamp: N/A
Luminaire Lumens: 4028.0 lumens
Efficiency: N/A
Efficacy: 90.1 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Indirect

Input Watts (W): 44.7
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



TEST NUMBER: P392518
CATALOG NUMBER: MWL-2-28-13-UNV-L835-EDD

Luminous Intensity Polar Plot





TEST NUMBER: P392518

CATALOG NUMBER: MWL-2-28-13-UNV-L835-EDD

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	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	50	30	10	0														
RCR																																						
0	103	103	103	103	93	93	93	93	73	73	73	56	56	56	40	40	40	32																				
1	94	90	86	82	84	81	78	75	64	62	60	49	48	46	35	34	33	27																				
2	86	78	73	68	77	71	66	62	56	53	50	43	41	39	31	30	28	23																				
3	78	69	62	57	70	62	57	52	50	46	42	38	36	33	28	26	25	20																				
4	72	61	54	48	64	55	49	44	45	40	36	34	31	29	25	23	21	17																				
5	66	55	47	41	59	49	43	38	40	35	31	31	28	25	23	20	19	15																				
6	60	49	41	36	54	44	38	33	36	31	27	28	24	22	21	18	17	13																				
7	56	44	36	31	50	40	33	29	33	28	24	25	22	19	19	16	15	12																				
8	52	40	33	27	47	36	30	25	30	25	21	23	20	17	17	15	13	11																				
9	48	36	29	24	43	33	27	23	27	22	19	21	18	15	16	14	12	10																				
10	45	33	26	22	40	30	24	20	25	20	17	20	16	14	15	13	11	9																				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	7255	7255	7255	7255
5°	7072	6636	7072	6636
10°	6911	6069	6911	6069
15°	6718	5539	6686	5539
20°	6443	5051	6411	5051
25°	6138	4599	6107	4599
30°	5763	4163	5721	4163
35°	5281	3725	5247	3725
40°	4841	3317	4795	3317
45°	4414	2890	4378	2890
50°	4016	2388	3976	2388
55°	3662	1771	3633	1771
60°	3275	1294	3258	1294
65°	2808	947	2808	947
70°	2339	708	2356	708
75°	1839	508	1906	508
80°	2233	321	1705	321
85°	4155	136	1836	136



TEST NUMBER: P392518

CATALOG NUMBER: MWL-2-28-13-UNV-L835-EDD

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	52.9	1.3
10°-20°	148.6	3.7
20°-30°	217.4	5.4
30°-40°	245.6	6.1
40°-50°	228.3	5.7
50°-60°	179.5	4.5
60°-70°	114.0	2.8
70°-80°	57.5	1.4
80°-90°	45.1	1.1
90°-100°	86.7	2.2
100°-110°	176.7	4.4
110°-120°	305.6	7.6
120°-130°	415.2	10.3
130°-140°	473.6	11.8
140°-150°	472.5	11.7
150°-160°	411.5	10.2
160°-170°	289.5	7.2
170°-180°	107.8	2.7
0°-30°	418.8	10.4
0°-40°	664.4	16.5
0°-60°	1072.3	26.6
0°-90°	1288.8	32.0
90°-120°	569.0	14.1
90°-150°	1930.4	47.9
90°-180°	2739.0	68.0
0°-180°	4028.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	562	562	562	562	562	
5°	555	557	555	557	555	53
15°	530	525	528	525	530	149
25°	472	473	470	473	472	217
35°	384	402	381	402	384	240
45°	292	316	290	316	292	226
55°	211	191	209	191	211	189
65°	133	97	133	97	133	133
75°	66	48	68	48	66	76
85°	95	11	42	11	95	72
90°	146	1	24	1	146	81
95°	208	32	15	32	208	183
105°	349	160	7	160	349	367
115°	494	329	113	329	494	490
125°	618	515	281	515	618	552
135°	718	703	451	703	718	554
145°	789	879	608	879	789	497
155°	882	1016	764	1016	882	407
165°	964	1106	932	1106	964	273
175°	1140	1152	1116	1152	1140	106
180°	1151	1151	1151	1151	1151	



TEST NUMBER: P392518

CATALOG NUMBER: MWL-2-28-13-UNV-L835-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	561.7	561.7	561.7	561.7	561.7	561.7	561.7	561.7	561.7	561.7	561.7
2.5°	559.2	560.8	562.4	561.4	560.4	560.5	562.4	560.8	560.0	560.8	562.4
5°	555.4	557.9	559.5	557.6	556.6	557.6	558.8	557.9	555.4	557.9	558.8
7.5°	552.3	553.9	553.9	552.8	551.8	552.0	553.1	553.1	552.3	553.1	553.1
10°	546.3	547.2	547.2	546.2	544.3	545.3	546.3	545.5	546.3	545.5	546.3
12.5°	540.2	539.4	537.6	536.6	534.9	536.6	537.6	537.8	538.6	537.8	537.6
15°	530.4	528.8	527.9	527.9	525.2	527.1	527.1	527.1	527.9	527.1	527.1
17.5°	518.8	517.2	516.3	515.5	514.6	515.5	515.5	516.3	516.3	516.3	515.5
20°	504.3	504.4	503.7	502.0	501.2	501.2	503.0	502.8	501.8	502.8	503.0
22.5°	489.0	489.0	489.2	489.4	487.7	488.7	488.5	487.3	487.3	487.3	488.5
25°	472.5	472.5	473.7	474.0	473.2	473.2	472.0	470.1	470.1	470.1	472.0
27.5°	453.2	454.1	457.2	458.3	456.8	457.5	455.6	451.7	450.8	451.7	455.6
30°	432.9	434.8	439.6	441.8	440.3	440.1	437.2	432.4	429.7	432.4	437.2
32.5°	408.7	411.6	418.4	423.4	422.7	421.8	416.0	408.4	405.5	408.4	416.0
35°	383.8	386.7	395.4	403.1	401.6	400.7	392.9	384.2	381.3	384.2	392.9
37.5°	359.6	360.6	370.2	381.8	383.1	379.4	367.8	358.1	357.2	358.1	367.8
40°	337.3	335.4	342.2	358.7	361.8	357.2	338.9	332.1	334.1	332.1	338.9
42.5°	314.1	311.2	315.2	333.6	340.5	332.0	312.8	308.0	310.9	308.0	312.8
45°	292.0	289.1	288.1	306.5	316.4	305.0	284.9	286.7	289.6	286.7	284.9
47.5°	271.7	266.9	264.0	277.7	293.2	276.9	260.8	264.4	269.3	264.4	260.8
50°	249.5	247.5	241.7	249.6	260.5	248.0	238.5	244.3	247.0	244.3	238.5
52.5°	231.1	228.2	219.7	223.5	227.6	221.9	217.3	225.0	228.7	225.0	217.3
55°	211.0	209.0	198.4	197.6	191.0	196.0	196.0	206.6	209.3	206.6	196.0
57.5°	191.6	189.7	178.1	170.6	160.0	168.9	175.7	187.3	190.0	187.3	175.7
60°	172.5	170.6	156.1	144.5	136.8	143.8	154.4	168.9	171.6	168.9	154.4
62.5°	154.1	150.3	133.8	119.4	114.8	118.6	132.2	148.6	153.3	148.6	132.2
65°	132.9	128.1	112.6	100.1	97.4	99.3	111.9	127.3	132.9	127.3	111.9
67.5°	114.6	107.8	95.2	82.9	83.8	82.9	94.5	107.0	114.6	107.0	94.5
70°	97.4	88.7	77.1	68.4	70.3	68.4	77.1	89.4	98.1	89.4	77.1
72.5°	80.9	71.3	62.6	55.8	57.8	54.9	62.6	72.0	82.6	72.0	62.6
75°	65.5	57.7	48.2	44.3	48.2	44.3	49.0	58.5	67.9	58.5	49.0
77.5°	61.3	50.3	37.5	34.6	38.5	34.6	38.4	47.9	58.0	47.9	38.4
80°	65.5	54.0	31.3	26.9	28.8	26.9	29.7	41.0	50.0	41.0	29.7
82.5°	76.3	66.0	36.3	19.1	20.1	19.1	26.5	36.7	45.3	36.7	26.5
85°	94.8	86.5	51.2	16.8	11.4	15.2	27.7	37.0	41.9	37.0	27.7
87.5°	119.1	112.8	71.8	26.1	2.9	14.7	25.5	34.7	35.4	34.7	25.5
90°	146.0	139.8	98.2	40.2	0.8	9.4	17.8	25.1	24.1	25.1	17.8
92.5°	178.9	171.0	125.4	61.6	13.1	5.5	14.0	20.7	19.5	20.7	14.0
95°	207.7	203.8	156.5	84.6	32.5	3.3	10.2	15.2	15.0	15.2	10.2
97.5°	240.6	235.5	188.4	113.8	57.7	9.8	8.7	12.0	13.0	12.0	8.7
100°	268.4	266.7	222.1	148.8	88.7	26.9	6.7	11.3	12.3	11.3	6.7
102.5°	311.8	301.2	254.5	182.2	121.9	50.4	12.2	8.4	9.4	8.4	12.2
105°	348.9	337.5	294.3	217.1	160.2	82.1	31.7	10.7	6.7	10.7	31.7
107.5°	383.9	375.8	331.1	252.8	200.8	118.7	60.3	31.0	19.6	31.0	60.3
110°	424.6	414.8	366.1	289.6	243.1	158.7	92.0	57.0	44.1	57.0	92.0



TEST NUMBER: P392518

CATALOG NUMBER: MWL-2-28-13-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	463.6	456.3	398.5	327.0	287.9	201.0	131.0	89.6	77.4	89.6	131.0
115°	493.7	489.6	436.0	362.0	328.6	249.0	174.1	127.8	113.1	127.8	174.1
117.5°	525.4	524.6	463.6	397.8	377.4	292.0	214.0	166.0	150.5	166.0	214.0
120°	565.2	558.8	501.8	433.5	423.8	337.5	257.9	209.9	194.4	209.9	257.9
122.5°	592.9	588.8	534.3	467.7	467.7	383.9	300.2	252.2	235.9	252.2	300.2
125°	618.1	616.5	558.8	501.8	514.9	427.0	347.3	298.6	280.7	298.6	347.3
127.5°	640.8	643.3	590.5	539.2	562.8	471.0	393.7	340.1	321.3	340.1	393.7
130°	660.4	668.5	620.5	573.4	608.4	518.9	435.1	381.4	369.3	381.4	435.1
132.5°	698.6	693.7	651.4	608.4	657.1	562.8	479.1	422.9	409.1	422.9	479.1
135°	718.1	719.7	678.3	638.4	702.6	606.7	520.5	465.3	451.4	465.3	520.5
137.5°	741.7	736.8	699.3	675.0	744.9	649.0	561.2	509.9	488.0	509.9	561.2
140°	758.7	757.9	727.0	707.6	790.4	690.5	602.7	550.6	530.2	550.6	602.7
142.5°	776.6	781.5	754.7	743.3	836.0	734.3	647.3	590.5	570.9	590.5	647.3
145°	788.8	799.4	782.3	788.0	879.1	783.2	686.4	628.7	607.5	628.7	686.4
147.5°	809.2	823.0	802.6	819.7	916.5	826.2	725.5	668.5	649.8	668.5	725.5
150°	836.8	843.3	831.1	863.6	954.7	874.2	765.3	706.7	688.0	706.7	765.3
152.5°	858.8	866.9	853.1	911.6	984.8	918.2	809.2	744.1	722.2	744.1	809.2
155°	881.5	884.8	875.0	958.0	1016.5	961.2	844.1	785.6	764.4	785.6	844.1
157.5°	902.7	909.2	897.8	992.9	1044.1	998.6	883.9	827.1	808.3	827.1	883.9
160°	925.4	925.4	931.9	1033.6	1066.9	1031.1	926.3	872.6	846.6	872.6	926.3
162.5°	927.8	943.3	978.3	1062.0	1088.8	1059.6	971.8	905.1	882.4	905.1	971.8
165°	963.6	977.4	1030.3	1087.3	1105.9	1084.7	1027.9	958.8	931.9	958.8	1027.9
167.5°	1001.0	1030.3	1072.6	1115.7	1122.2	1108.3	1070.9	1023.0	998.6	1023.0	1070.9
170°	1062.0	1087.3	1108.3	1126.2	1135.2	1127.1	1097.8	1074.2	1058.7	1074.2	1097.8
172.5°	1110.0	1126.2	1134.3	1145.8	1140.1	1136.9	1122.2	1110.9	1102.6	1110.9	1122.2
175°	1140.1	1143.3	1150.7	1146.6	1151.5	1142.5	1143.3	1149.0	1115.7	1149.0	1143.3
177.5°	1150.7	1156.3	1152.2	1145.0	1145.8	1144.1	1147.4	1150.7	1145.8	1150.7	1147.4
180°	1150.7	1150.7	1150.7	1150.7	1150.7	1150.7	1150.7	1150.7	1150.7	1150.7	1150.7



TEST NUMBER: P392518

CATALOG NUMBER: MWL-2-28-13-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	561.7	561.7	561.7	561.7	561.7	561.7
2.5°	560.5	560.4	561.4	562.4	560.8	559.2
5°	557.6	556.6	557.6	559.5	557.9	555.4
7.5°	552.0	551.8	552.8	553.9	553.9	552.3
10°	545.3	544.3	546.2	547.2	547.2	546.3
12.5°	536.6	534.9	536.6	537.6	539.4	540.2
15°	527.1	525.2	527.9	527.9	528.8	530.4
17.5°	515.5	514.6	515.5	516.3	517.2	518.8
20°	501.2	501.2	502.0	503.7	504.4	504.3
22.5°	488.7	487.7	489.4	489.2	489.0	489.0
25°	473.2	473.2	474.0	473.7	472.5	472.5
27.5°	457.5	456.8	458.3	457.2	454.1	453.2
30°	440.1	440.3	441.8	439.6	434.8	432.9
32.5°	421.8	422.7	423.4	418.4	411.6	408.7
35°	400.7	401.6	403.1	395.4	386.7	383.8
37.5°	379.4	383.1	381.8	370.2	360.6	359.6
40°	357.2	361.8	358.7	342.2	335.4	337.3
42.5°	332.0	340.5	333.6	315.2	311.2	314.1
45°	305.0	316.4	306.5	288.1	289.1	292.0
47.5°	276.9	293.2	277.7	264.0	266.9	271.7
50°	248.0	260.5	249.6	241.7	247.5	249.5
52.5°	221.9	227.6	223.5	219.7	228.2	231.1
55°	196.0	191.0	197.6	198.4	209.0	211.0
57.5°	168.9	160.0	170.6	178.1	189.7	191.6
60°	143.8	136.8	144.5	156.1	170.6	172.5
62.5°	118.6	114.8	119.4	133.8	150.3	154.1
65°	99.3	97.4	100.1	112.6	128.1	132.9
67.5°	82.9	83.8	82.9	95.2	107.8	114.6
70°	68.4	70.3	68.4	77.1	88.7	97.4
72.5°	54.9	57.8	55.8	62.6	71.3	80.9
75°	44.3	48.2	44.3	48.2	57.7	65.5
77.5°	34.6	38.5	34.6	37.5	50.3	61.3
80°	26.9	28.8	26.9	31.3	54.0	65.5
82.5°	19.1	20.1	19.1	36.3	66.0	76.3
85°	15.2	11.4	16.8	51.2	86.5	94.8
87.5°	14.7	2.9	26.1	71.8	112.8	119.1
90°	9.4	0.8	40.2	98.2	139.8	146.0
92.5°	5.5	13.1	61.6	125.4	171.0	178.9
95°	3.3	32.5	84.6	156.5	203.8	207.7
97.5°	9.8	57.7	113.8	188.4	235.5	240.6
100°	26.9	88.7	148.8	222.1	266.7	268.4
102.5°	50.4	121.9	182.2	254.5	301.2	311.8
105°	82.1	160.2	217.1	294.3	337.5	348.9
107.5°	118.7	200.8	252.8	331.1	375.8	383.9
110°	158.7	243.1	289.6	366.1	414.8	424.6



TEST NUMBER: P392518

CATALOG NUMBER: MWL-2-28-13-UNV-L835-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	201.0	287.9	327.0	398.5	456.3	463.6
115°	249.0	328.6	362.0	436.0	489.6	493.7
117.5°	292.0	377.4	397.8	463.6	524.6	525.4
120°	337.5	423.8	433.5	501.8	558.8	565.2
122.5°	383.9	467.7	467.7	534.3	588.8	592.9
125°	427.0	514.9	501.8	558.8	616.5	618.1
127.5°	471.0	562.8	539.2	590.5	643.3	640.8
130°	518.9	608.4	573.4	620.5	668.5	660.4
132.5°	562.8	657.1	608.4	651.4	693.7	698.6
135°	606.7	702.6	638.4	678.3	719.7	718.1
137.5°	649.0	744.9	675.0	699.3	736.8	741.7
140°	690.5	790.4	707.6	727.0	757.9	758.7
142.5°	734.3	836.0	743.3	754.7	781.5	776.6
145°	783.2	879.1	788.0	782.3	799.4	788.8
147.5°	826.2	916.5	819.7	802.6	823.0	809.2
150°	874.2	954.7	863.6	831.1	843.3	836.8
152.5°	918.2	984.8	911.6	853.1	866.9	858.8
155°	961.2	1016.5	958.0	875.0	884.8	881.5
157.5°	998.6	1044.1	992.9	897.8	909.2	902.7
160°	1031.1	1066.9	1033.6	931.9	925.4	925.4
162.5°	1059.6	1088.8	1062.0	978.3	943.3	927.8
165°	1084.7	1105.9	1087.3	1030.3	977.4	963.6
167.5°	1108.3	1122.2	1115.7	1072.6	1030.3	1001.0
170°	1127.1	1135.2	1126.2	1108.3	1087.3	1062.0
172.5°	1136.9	1140.1	1145.8	1134.3	1126.2	1110.0
175°	1142.5	1151.5	1146.6	1150.7	1143.3	1140.1
177.5°	1144.1	1145.8	1145.0	1152.2	1156.3	1150.7
180°	1150.7	1150.7	1150.7	1150.7	1150.7	1150.7

(END OF REPORT)