

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: P392519

Luminaire Tested: **MWL-2-28-13-UNV-L940-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392519
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-L940-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

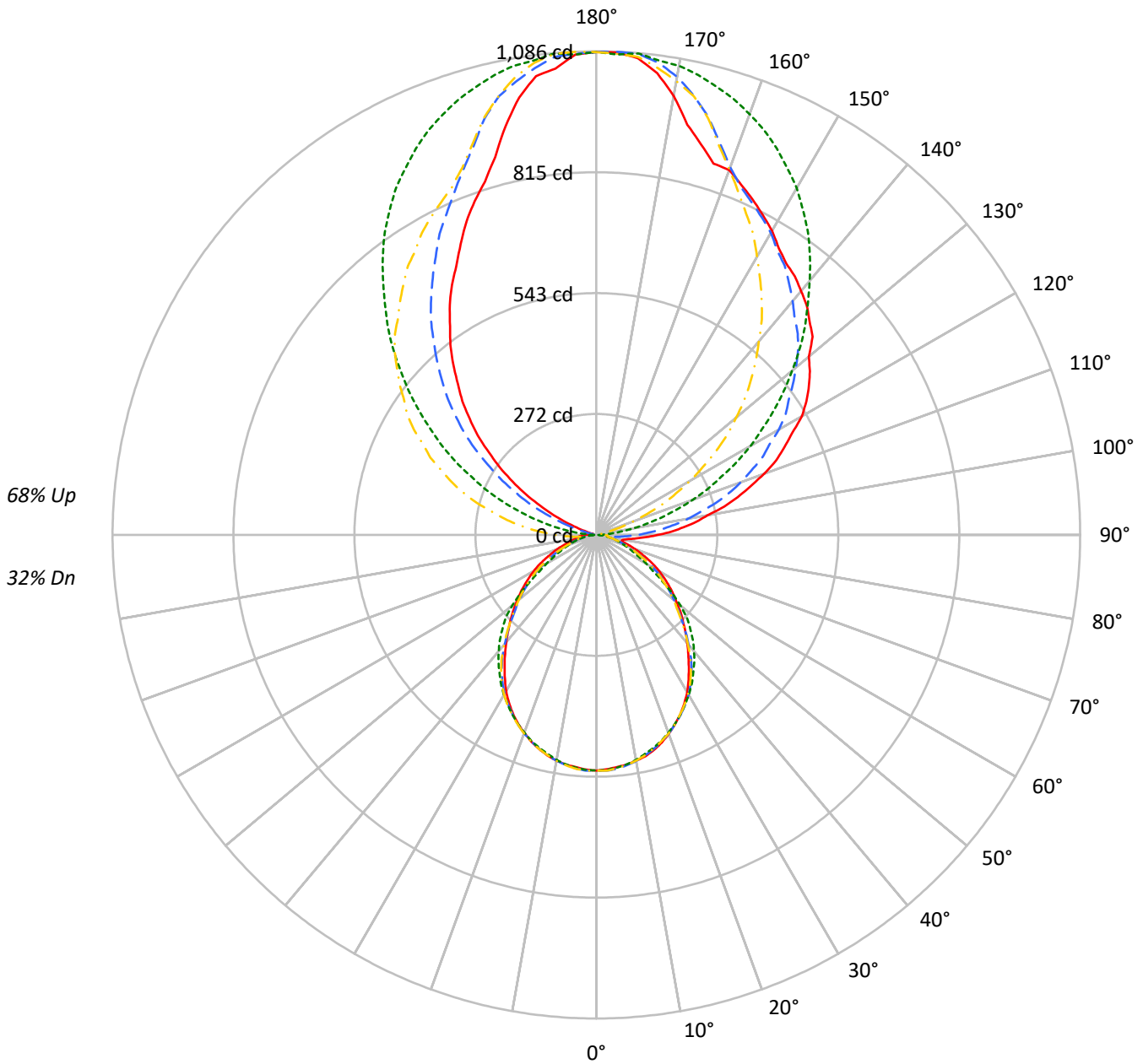
Lumens per Lamp: N/A
Luminaire Lumens: 3795.6 lumens
Efficiency: N/A
Efficacy: 84.1 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Indirect

Input Watts (W): 45.147
Input Voltage (V): NR
Input Current (A_{in}): 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: P392519
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Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - - - 90°-270° - - - 135°-315°



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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	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°	6837	6837	6837	6837
5°	6664	6254	6664	6254
10°	6513	5719	6513	5719
15°	6330	5219	6301	5219
20°	6072	4760	6042	4760
25°	5784	4334	5755	4334
30°	5431	3923	5391	3923
35°	4976	3510	4944	3510
40°	4563	3125	4518	3125
45°	4160	2723	4126	2723
50°	3785	2251	3748	2251
55°	3450	1668	3424	1668
60°	3085	1219	3070	1219
65°	2647	891	2647	891
70°	2202	667	2222	667
75°	1732	479	1797	479
80°	2104	303	1606	303
85°	3914	129	1731	129



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	49.8	1.3
10°-20°	140.0	3.7
20°-30°	204.8	5.4
30°-40°	231.4	6.1
40°-50°	215.2	5.7
50°-60°	169.2	4.5
60°-70°	107.4	2.8
70°-80°	54.2	1.4
80°-90°	42.5	1.1
90°-100°	81.7	2.2
100°-110°	166.5	4.4
110°-120°	288.0	7.6
120°-130°	391.3	10.3
130°-140°	446.3	11.8
140°-150°	445.2	11.7
150°-160°	387.7	10.2
160°-170°	272.8	7.2
170°-180°	101.6	2.7
0°-30°	394.7	10.4
0°-40°	626.1	16.5
0°-60°	1010.4	26.6
0°-90°	1214.5	32.0
90°-120°	536.2	14.1
90°-150°	1819.0	47.9
90°-180°	2581.0	68.0
0°-180°	3795.6	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	529	529	529	529	529	
5°	523	524	523	524	523	50
15°	500	495	498	495	500	141
25°	445	446	443	446	445	204
35°	362	378	359	378	362	226
45°	275	298	273	298	275	213
55°	199	180	197	180	199	178
65°	125	92	125	92	125	125
75°	62	45	64	45	62	72
85°	89	11	40	11	89	68
90°	138	1	23	1	138	76
95°	196	31	14	31	196	172
105°	329	151	6	151	329	346
115°	465	310	107	310	465	462
125°	582	485	264	485	582	520
135°	677	662	425	662	677	522
145°	743	828	572	828	743	469
155°	831	958	720	958	831	383
165°	908	1042	878	1042	908	258
175°	1074	1085	1051	1085	1074	100
180°	1084	1084	1084	1084	1084	



TEST NUMBER: P392519

CATALOG NUMBER: MWL-2-28-13-UNV-L940-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	529.3	529.3	529.3	529.3	529.3	529.3	529.3	529.3	529.3	529.3	529.3
2.5°	527.0	528.4	530.0	529.0	528.1	528.2	530.0	528.4	527.7	528.4	530.0
5°	523.3	525.7	527.3	525.4	524.5	525.4	526.5	525.7	523.3	525.7	526.5
7.5°	520.4	522.0	522.0	520.9	520.0	520.1	521.1	521.1	520.4	521.1	521.1
10°	514.8	515.6	515.6	514.7	512.9	513.9	514.8	514.0	514.8	514.0	514.8
12.5°	509.0	508.3	506.6	505.7	504.0	505.7	506.6	506.8	507.5	506.8	506.6
15°	499.8	498.3	497.5	497.5	494.9	496.7	496.7	496.7	497.5	496.7	496.7
17.5°	488.9	487.3	486.5	485.8	484.9	485.8	485.8	486.5	486.5	486.5	485.8
20°	475.2	475.3	474.7	473.0	472.3	472.3	474.0	473.8	472.9	473.8	474.0
22.5°	460.7	460.7	461.0	461.2	459.6	460.5	460.3	459.2	459.2	459.2	460.3
25°	445.3	445.3	446.3	446.6	445.9	445.9	444.8	443.0	443.0	443.0	444.8
27.5°	427.0	427.9	430.9	431.9	430.4	431.1	429.3	425.7	424.8	425.7	429.3
30°	407.9	409.7	414.3	416.3	414.9	414.7	412.0	407.4	404.9	407.4	412.0
32.5°	385.1	387.9	394.2	399.0	398.3	397.4	392.0	384.8	382.1	384.8	392.0
35°	361.6	364.3	372.5	379.8	378.5	377.6	370.3	362.1	359.3	362.1	370.3
37.5°	338.8	339.7	348.9	359.8	361.0	357.5	346.6	337.5	336.6	337.5	346.6
40°	317.9	316.1	322.4	338.0	340.9	336.6	319.3	313.0	314.8	313.0	319.3
42.5°	296.0	293.3	297.0	314.3	320.9	312.9	294.7	290.2	292.9	290.2	294.7
45°	275.2	272.4	271.5	288.8	298.1	287.4	268.5	270.1	272.9	270.1	268.5
47.5°	256.0	251.5	248.7	261.7	276.2	260.9	245.7	249.2	253.7	249.2	245.7
50°	235.1	233.2	227.8	235.2	245.5	233.7	224.8	230.2	232.8	230.2	224.8
52.5°	217.8	215.0	207.0	210.6	214.5	209.1	204.7	212.0	215.5	212.0	204.7
55°	198.8	197.0	187.0	186.2	179.9	184.7	184.7	194.7	197.3	194.7	184.7
57.5°	180.6	178.8	167.8	160.7	150.8	159.2	165.5	176.5	179.0	176.5	165.5
60°	162.5	160.7	147.1	136.2	128.9	135.5	145.5	159.2	161.7	159.2	145.5
62.5°	145.2	141.6	126.1	112.5	108.1	111.8	124.5	140.0	144.4	140.0	124.5
65°	125.3	120.7	106.1	94.3	91.7	93.6	105.4	120.0	125.3	120.0	105.4
67.5°	108.0	101.6	89.7	78.1	79.0	78.1	89.0	100.9	108.0	100.9	89.0
70°	91.7	83.5	72.6	64.4	66.2	64.4	72.6	84.3	92.5	84.3	72.6
72.5°	76.3	67.1	58.9	52.6	54.5	51.8	58.9	67.9	77.8	67.9	58.9
75°	61.7	54.4	45.4	41.7	45.4	41.7	46.2	55.1	64.0	55.1	46.2
77.5°	57.8	47.4	35.4	32.6	36.3	32.6	36.2	45.1	54.7	45.1	36.2
80°	61.7	50.8	29.5	25.3	27.2	25.3	28.0	38.6	47.1	38.6	28.0
82.5°	71.9	62.2	34.2	18.0	19.0	18.0	25.0	34.6	42.7	34.6	25.0
85°	89.3	81.5	48.3	15.9	10.8	14.3	26.1	34.9	39.5	34.9	26.1
87.5°	112.2	106.3	67.7	24.6	2.7	13.8	24.1	32.7	33.3	32.7	24.1
90°	137.6	131.7	92.6	37.9	0.7	8.8	16.8	23.7	22.7	23.7	16.8
92.5°	168.6	161.2	118.2	58.0	12.3	5.2	13.2	19.5	18.4	19.5	13.2
95°	195.7	192.1	147.5	79.7	30.6	3.1	9.6	14.3	14.1	14.3	9.6
97.5°	226.7	221.9	177.6	107.2	54.4	9.2	8.2	11.3	12.2	11.3	8.2
100°	252.9	251.3	209.3	140.2	83.5	25.3	6.3	10.7	11.6	10.7	6.3
102.5°	293.8	283.8	239.8	171.7	114.9	47.5	11.5	7.9	8.8	7.9	11.5
105°	328.8	318.1	277.3	204.5	151.0	77.4	29.9	10.1	6.3	10.1	29.9
107.5°	361.8	354.1	312.0	238.3	189.2	111.9	56.9	29.2	18.5	29.2	56.9
110°	400.1	390.9	344.9	272.9	229.1	149.5	86.7	53.8	41.5	53.8	86.7



TEST NUMBER: P392519

CATALOG NUMBER: MWL-2-28-13-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	436.9	429.9	375.6	308.1	271.3	189.4	123.5	84.5	72.9	84.5	123.5
115°	465.2	461.4	410.8	341.1	309.7	234.6	164.1	120.4	106.6	120.4	164.1
117.5°	495.1	494.4	436.9	374.8	355.6	275.2	201.6	156.4	141.9	156.4	201.6
120°	532.6	526.5	472.9	408.5	399.3	318.1	243.0	197.8	183.2	197.8	243.0
122.5°	558.7	554.9	503.5	440.7	440.7	361.8	282.9	237.6	222.3	237.6	282.9
125°	582.5	580.9	526.5	472.9	485.2	402.3	327.3	281.3	264.5	281.3	327.3
127.5°	603.9	606.2	556.4	508.1	530.4	443.8	371.0	320.4	302.8	320.4	371.0
130°	622.3	629.9	584.7	540.3	573.3	489.0	410.0	359.4	347.9	359.4	410.0
132.5°	658.3	653.7	613.8	573.3	619.2	530.4	451.5	398.5	385.5	398.5	451.5
135°	676.7	678.2	639.1	601.6	662.1	571.7	490.4	438.4	425.4	438.4	490.4
137.5°	698.9	694.3	659.0	636.0	701.9	611.5	528.8	480.5	459.8	480.5	528.8
140°	714.9	714.2	685.1	666.7	744.8	650.6	567.9	518.9	499.6	518.9	567.9
142.5°	731.8	736.4	711.1	700.5	787.7	692.0	610.0	556.4	538.0	556.4	610.0
145°	743.3	753.3	737.2	742.5	828.4	738.0	646.8	592.4	572.4	592.4	646.8
147.5°	762.5	775.5	756.3	772.4	863.6	778.5	683.6	629.9	612.4	629.9	683.6
150°	788.6	794.7	783.2	813.8	899.6	823.7	721.1	665.9	648.3	665.9	721.1
152.5°	809.2	816.9	803.9	859.0	928.0	865.2	762.5	701.2	680.5	701.2	762.5
155°	830.6	833.7	824.5	902.7	957.8	905.7	795.4	740.3	720.3	740.3	795.4
157.5°	850.6	856.7	846.0	935.6	983.9	941.0	832.9	779.4	761.7	779.4	832.9
160°	872.0	872.0	878.1	974.0	1005.3	971.6	872.8	822.3	797.8	822.3	872.8
162.5°	874.3	888.9	921.9	1000.8	1026.0	998.5	915.7	852.9	831.5	852.9	915.7
165°	908.0	921.0	970.9	1024.5	1042.1	1022.2	968.6	903.4	878.1	903.4	968.6
167.5°	943.3	970.9	1010.7	1051.3	1057.4	1044.4	1009.1	963.9	941.0	963.9	1009.1
170°	1000.8	1024.5	1044.4	1061.2	1069.7	1062.1	1034.5	1012.2	997.7	1012.2	1034.5
172.5°	1045.9	1061.2	1068.9	1079.7	1074.3	1071.3	1057.4	1046.8	1039.0	1046.8	1057.4
175°	1074.3	1077.4	1084.3	1080.5	1085.0	1076.6	1077.4	1082.8	1051.3	1082.8	1077.4
177.5°	1084.3	1089.6	1085.8	1078.9	1079.7	1078.1	1081.2	1084.3	1079.7	1084.3	1081.2
180°	1084.3	1084.3	1084.3	1084.3	1084.3	1084.3	1084.3	1084.3	1084.3	1084.3	1084.3



TEST NUMBER: P392519

CATALOG NUMBER: MWL-2-28-13-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	529.3	529.3	529.3	529.3	529.3	529.3
2.5°	528.2	528.1	529.0	530.0	528.4	527.0
5°	525.4	524.5	525.4	527.3	525.7	523.3
7.5°	520.1	520.0	520.9	522.0	522.0	520.4
10°	513.9	512.9	514.7	515.6	515.6	514.8
12.5°	505.7	504.0	505.7	506.6	508.3	509.0
15°	496.7	494.9	497.5	497.5	498.3	499.8
17.5°	485.8	484.9	485.8	486.5	487.3	488.9
20°	472.3	472.3	473.0	474.7	475.3	475.2
22.5°	460.5	459.6	461.2	461.0	460.7	460.7
25°	445.9	445.9	446.6	446.3	445.3	445.3
27.5°	431.1	430.4	431.9	430.9	427.9	427.0
30°	414.7	414.9	416.3	414.3	409.7	407.9
32.5°	397.4	398.3	399.0	394.2	387.9	385.1
35°	377.6	378.5	379.8	372.5	364.3	361.6
37.5°	357.5	361.0	359.8	348.9	339.7	338.8
40°	336.6	340.9	338.0	322.4	316.1	317.9
42.5°	312.9	320.9	314.3	297.0	293.3	296.0
45°	287.4	298.1	288.8	271.5	272.4	275.2
47.5°	260.9	276.2	261.7	248.7	251.5	256.0
50°	233.7	245.5	235.2	227.8	233.2	235.1
52.5°	209.1	214.5	210.6	207.0	215.0	217.8
55°	184.7	179.9	186.2	187.0	197.0	198.8
57.5°	159.2	150.8	160.7	167.8	178.8	180.6
60°	135.5	128.9	136.2	147.1	160.7	162.5
62.5°	111.8	108.1	112.5	126.1	141.6	145.2
65°	93.6	91.7	94.3	106.1	120.7	125.3
67.5°	78.1	79.0	78.1	89.7	101.6	108.0
70°	64.4	66.2	64.4	72.6	83.5	91.7
72.5°	51.8	54.5	52.6	58.9	67.1	76.3
75°	41.7	45.4	41.7	45.4	54.4	61.7
77.5°	32.6	36.3	32.6	35.4	47.4	57.8
80°	25.3	27.2	25.3	29.5	50.8	61.7
82.5°	18.0	19.0	18.0	34.2	62.2	71.9
85°	14.3	10.8	15.9	48.3	81.5	89.3
87.5°	13.8	2.7	24.6	67.7	106.3	112.2
90°	8.8	0.7	37.9	92.6	131.7	137.6
92.5°	5.2	12.3	58.0	118.2	161.2	168.6
95°	3.1	30.6	79.7	147.5	192.1	195.7
97.5°	9.2	54.4	107.2	177.6	221.9	226.7
100°	25.3	83.5	140.2	209.3	251.3	252.9
102.5°	47.5	114.9	171.7	239.8	283.8	293.8
105°	77.4	151.0	204.5	277.3	318.1	328.8
107.5°	111.9	189.2	238.3	312.0	354.1	361.8
110°	149.5	229.1	272.9	344.9	390.9	400.1



TEST NUMBER: P392519

CATALOG NUMBER: MWL-2-28-13-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	189.4	271.3	308.1	375.6	429.9	436.9
115°	234.6	309.7	341.1	410.8	461.4	465.2
117.5°	275.2	355.6	374.8	436.9	494.4	495.1
120°	318.1	399.3	408.5	472.9	526.5	532.6
122.5°	361.8	440.7	440.7	503.5	554.9	558.7
125°	402.3	485.2	472.9	526.5	580.9	582.5
127.5°	443.8	530.4	508.1	556.4	606.2	603.9
130°	489.0	573.3	540.3	584.7	629.9	622.3
132.5°	530.4	619.2	573.3	613.8	653.7	658.3
135°	571.7	662.1	601.6	639.1	678.2	676.7
137.5°	611.5	701.9	636.0	659.0	694.3	698.9
140°	650.6	744.8	666.7	685.1	714.2	714.9
142.5°	692.0	787.7	700.5	711.1	736.4	731.8
145°	738.0	828.4	742.5	737.2	753.3	743.3
147.5°	778.5	863.6	772.4	756.3	775.5	762.5
150°	823.7	899.6	813.8	783.2	794.7	788.6
152.5°	865.2	928.0	859.0	803.9	816.9	809.2
155°	905.7	957.8	902.7	824.5	833.7	830.6
157.5°	941.0	983.9	935.6	846.0	856.7	850.6
160°	971.6	1005.3	974.0	878.1	872.0	872.0
162.5°	998.5	1026.0	1000.8	921.9	888.9	874.3
165°	1022.2	1042.1	1024.5	970.9	921.0	908.0
167.5°	1044.4	1057.4	1051.3	1010.7	970.9	943.3
170°	1062.1	1069.7	1061.2	1044.4	1024.5	1000.8
172.5°	1071.3	1074.3	1079.7	1068.9	1061.2	1045.9
175°	1076.6	1085.0	1080.5	1084.3	1077.4	1074.3
177.5°	1078.1	1079.7	1078.9	1085.8	1089.6	1084.3
180°	1084.3	1084.3	1084.3	1084.3	1084.3	1084.3

(END OF REPORT)