

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: P392502

Luminaire Tested: **MWL-2-22-13-UNV-L930-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392502
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-2-22-13-UNV-L930-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

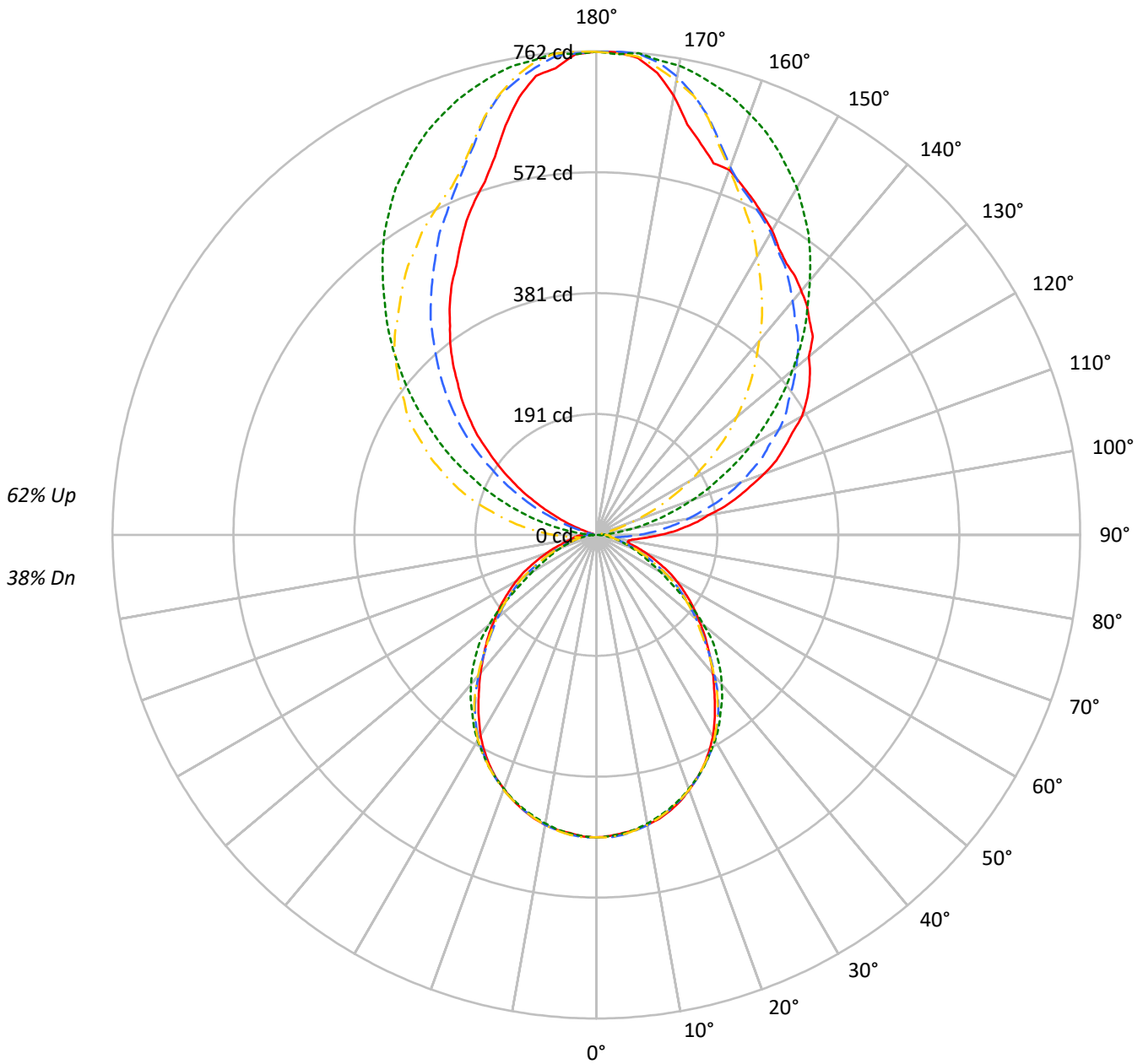
Lumens per Lamp: N/A
Luminaire Lumens: 2903.0 lumens
Efficiency: N/A
Efficacy: 85.8 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 1.17 / 1.24
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Indirect

Input Watts (W): 33.835
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



— 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	104	104	104	104	94	94	94	94	76	76	76	60	60	60	45	45	45	38
1	95	91	87	84	86	83	79	76	67	65	63	53	51	50	40	39	38	32
2	87	80	74	69	78	72	67	63	59	55	52	47	44	42	35	34	32	27
3	79	70	63	58	72	64	58	53	52	48	44	41	38	36	31	29	28	23
4	73	62	55	49	66	57	50	45	47	42	38	37	34	31	28	26	24	20
5	67	56	48	42	60	51	44	39	42	37	33	33	30	27	26	23	21	18
6	61	50	42	36	56	46	39	34	38	33	29	30	27	24	23	21	19	16
7	57	45	37	32	51	41	34	30	34	29	25	28	24	21	21	19	17	14
8	53	41	33	28	48	37	31	26	31	26	22	25	21	19	20	17	15	13
9	49	37	30	25	45	34	28	23	29	24	20	23	20	17	18	16	14	11
10	46	34	27	22	42	31	25	21	26	21	18	21	18	15	17	14	12	10

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	6156	6156	6156	6156
5°	6007	5630	6007	5630
10°	5868	5149	5868	5149
15°	5697	4704	5675	4704
20°	5463	4289	5442	4289
25°	5204	3905	5184	3905
30°	4885	3535	4857	3535
35°	4476	3162	4454	3162
40°	4103	2815	4072	2815
45°	3740	2451	3717	2451
50°	3400	2025	3376	2025
55°	3101	1502	3082	1502
60°	2773	1097	2762	1097
65°	2381	802	2381	802
70°	1981	599	1994	599
75°	1555	431	1600	431
80°	1759	272	1408	272
85°	2976	114	1446	114



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	44.9	1.5
10°-20°	126.1	4.3
20°-30°	184.5	6.4
30°-40°	208.3	7.2
40°-50°	193.7	6.7
50°-60°	152.2	5.2
60°-70°	96.6	3.3
70°-80°	48.5	1.7
80°-90°	34.2	1.2
90°-100°	58.8	2.0
100°-110°	117.0	4.0
110°-120°	202.3	7.0
120°-130°	274.8	9.5
130°-140°	313.4	10.8
140°-150°	312.6	10.8
150°-160°	272.2	9.4
160°-170°	191.5	6.6
170°-180°	71.3	2.5
0°-30°	355.5	12.2
0°-40°	563.8	19.4
0°-60°	909.7	31.3
0°-90°	1088.9	37.5
90°-120°	378.2	13.0
90°-150°	1279.0	44.1
90°-180°	1814.0	62.5
0°-180°	2903.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	477	477	477	477	477	
5°	472	472	472	472	472	45
15°	450	446	448	446	450	127
25°	401	402	399	402	401	184
35°	325	341	324	341	325	204
45°	247	268	246	268	247	191
55°	179	162	178	162	179	160
65°	113	82	113	82	113	112
75°	55	41	57	41	55	64
85°	68	10	33	10	68	52
90°	100	1	19	1	100	55
95°	140	22	12	22	140	123
105°	231	106	5	106	231	243
115°	327	218	75	218	327	324
125°	409	341	186	341	409	365
135°	475	465	299	465	475	367
145°	522	582	402	582	522	329
155°	583	672	506	672	583	269
165°	638	732	616	732	638	181
175°	754	762	738	762	754	70
180°	761	761	761	761	761	



TEST NUMBER: P392502

CATALOG NUMBER: MWL-2-22-13-UNV-L930-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	476.6	476.6	476.6	476.6	476.6	476.6	476.6	476.6	476.6	476.6	476.6
2.5°	475.0	476.1	477.1	476.1	475.3	475.5	477.1	476.1	475.6	476.1	477.1
5°	471.7	473.6	474.7	473.0	472.2	473.0	474.1	473.6	471.7	473.6	474.1
7.5°	469.0	470.1	470.1	469.0	468.1	468.4	469.5	469.5	469.0	469.5	469.5
10°	463.8	464.3	464.3	463.5	461.8	462.9	463.8	463.2	463.8	463.2	463.8
12.5°	458.2	457.8	456.4	455.5	454.2	455.5	456.4	456.6	457.2	456.6	456.4
15°	449.8	448.7	448.1	448.1	446.0	447.6	447.6	447.6	448.1	447.6	447.6
17.5°	439.9	438.8	438.2	437.8	436.9	437.8	437.8	438.2	438.2	438.2	437.8
20°	427.6	427.8	427.6	426.3	425.6	425.6	427.0	426.7	425.9	426.7	427.0
22.5°	414.6	414.6	415.2	415.5	414.2	415.0	414.7	413.6	413.6	413.6	414.7
25°	400.6	400.6	401.8	402.4	401.8	401.8	400.7	399.1	399.1	399.1	400.7
27.5°	384.3	385.0	387.9	388.9	387.9	388.4	386.8	383.5	382.7	383.5	386.8
30°	366.9	368.6	372.7	374.7	373.9	373.6	371.1	367.0	364.8	367.0	371.1
32.5°	346.4	348.9	354.6	359.1	358.8	358.0	353.1	346.7	344.3	346.7	353.1
35°	325.3	327.8	335.2	341.8	340.9	340.1	333.5	326.1	323.7	326.1	333.5
37.5°	304.7	305.6	313.8	323.7	325.1	322.0	312.1	303.9	303.2	303.9	312.1
40°	285.9	284.2	289.9	304.2	307.0	303.2	287.8	282.1	283.7	282.1	287.8
42.5°	266.1	263.6	267.2	282.8	288.9	281.8	265.6	261.5	264.0	261.5	265.6
45°	247.4	245.0	244.2	259.7	268.4	258.7	242.0	243.5	245.9	243.5	242.0
47.5°	230.2	226.1	223.6	235.4	248.6	234.8	221.4	224.5	228.6	224.5	221.4
50°	211.2	209.6	204.7	211.6	220.9	210.5	202.5	207.4	209.7	207.4	202.5
52.5°	195.6	193.2	186.1	189.4	192.9	188.3	184.5	191.1	194.1	191.1	184.5
55°	178.7	177.1	168.0	167.5	162.0	166.3	166.3	175.4	177.6	175.4	166.3
57.5°	162.3	160.6	150.7	144.4	135.7	143.3	149.1	158.9	161.2	158.9	149.1
60°	146.1	144.4	132.1	122.6	116.0	121.9	131.0	143.3	145.5	143.3	131.0
62.5°	130.4	127.1	113.1	101.2	97.3	100.6	112.1	126.1	130.0	126.1	112.1
65°	112.7	108.6	95.4	84.7	82.5	84.1	94.8	107.9	112.7	107.9	94.8
67.5°	97.0	91.3	80.6	70.2	71.0	70.2	80.0	90.7	97.0	90.7	80.0
70°	82.5	75.1	65.2	57.8	59.4	57.8	65.2	75.6	83.0	75.6	65.2
72.5°	68.5	60.3	52.9	47.1	49.1	46.7	52.9	60.8	69.6	60.8	52.9
75°	55.4	48.8	40.9	37.6	40.9	37.6	41.4	49.3	57.0	49.3	41.4
77.5°	50.5	41.8	31.8	29.3	32.7	29.3	32.3	40.3	48.4	40.3	32.3
80°	51.6	42.9	26.0	22.8	24.4	22.8	24.9	34.3	41.3	34.3	24.9
82.5°	57.0	49.7	28.4	16.2	17.0	16.2	21.8	30.4	36.6	30.4	21.8
85°	67.9	62.6	37.7	13.6	9.6	12.6	22.1	29.8	33.0	29.8	22.1
87.5°	83.2	79.2	50.8	19.3	2.5	11.8	20.2	27.6	27.8	27.6	20.2
90°	100.1	96.3	67.8	28.1	0.6	7.7	14.4	20.5	19.4	20.5	14.4
92.5°	121.2	116.5	85.1	41.5	8.6	4.4	11.5	16.9	15.8	16.9	11.5
95°	139.7	137.4	105.0	55.9	21.6	2.1	8.2	12.6	12.3	12.6	8.2
97.5°	161.0	157.4	125.3	75.3	38.1	6.4	6.5	9.5	10.4	9.5	6.5
100°	178.7	177.3	147.1	98.4	58.6	17.8	4.6	8.4	9.2	8.4	4.6
102.5°	206.8	199.5	168.4	120.5	80.7	33.3	8.1	5.9	6.8	5.9	8.1
105°	231.0	223.5	194.7	143.6	105.9	54.2	21.0	7.2	4.6	7.2	21.0
107.5°	254.1	248.7	219.2	167.3	132.8	78.5	40.1	20.7	13.1	20.7	40.1
110°	281.0	274.5	242.3	191.7	160.8	105.2	61.0	37.9	29.3	37.9	61.0



TEST NUMBER: P392502

CATALOG NUMBER: MWL-2-22-13-UNV-L930-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	306.9	302.0	263.8	216.4	190.6	133.1	86.8	59.4	51.4	59.4	86.8
115°	326.8	324.0	288.5	239.6	217.5	164.8	115.3	84.7	75.0	84.7	115.3
117.5°	347.7	347.1	306.9	263.3	249.8	193.4	141.7	110.0	99.8	110.0	141.7
120°	374.0	369.7	332.0	287.0	280.4	223.5	170.7	139.0	128.8	139.0	170.7
122.5°	392.4	389.6	353.6	309.5	309.5	254.1	198.7	167.0	156.3	167.0	198.7
125°	409.0	407.9	369.7	332.0	340.8	282.6	229.9	197.6	185.8	197.6	229.9
127.5°	424.0	425.6	390.7	356.9	372.5	311.7	260.5	225.1	212.6	225.1	260.5
130°	436.9	442.4	410.6	379.4	402.6	343.3	288.0	252.4	244.4	252.4	288.0
132.5°	462.3	459.0	431.0	402.6	434.8	372.5	317.1	279.9	270.8	279.9	317.1
135°	475.2	476.3	448.8	422.5	464.9	401.5	344.5	307.9	298.8	307.9	344.5
137.5°	490.7	487.5	462.8	446.6	492.8	429.4	371.3	337.5	323.0	337.5	371.3
140°	502.0	501.4	481.0	468.2	523.0	456.8	398.8	364.4	350.9	364.4	398.8
142.5°	513.9	517.1	499.3	491.8	553.1	485.9	428.4	390.7	377.8	390.7	428.4
145°	521.9	528.8	517.6	521.3	581.6	518.2	454.2	415.9	401.9	415.9	454.2
147.5°	535.3	544.5	531.1	542.4	606.3	546.6	480.0	442.4	429.9	442.4	480.0
150°	553.7	558.0	549.9	571.4	631.6	578.4	506.4	467.6	455.3	467.6	506.4
152.5°	568.2	573.6	564.4	603.1	651.5	607.4	535.3	492.4	477.8	492.4	535.3
155°	583.2	585.4	578.9	633.8	672.4	636.0	558.5	519.8	505.8	519.8	558.5
157.5°	597.2	601.5	594.0	656.9	690.8	660.7	584.9	547.2	534.8	547.2	584.9
160°	612.3	612.3	616.5	683.8	705.8	682.1	612.8	577.3	560.1	577.3	612.8
162.5°	613.9	624.1	647.2	702.6	720.3	701.0	642.9	598.8	583.7	598.8	642.9
165°	637.5	646.7	681.7	719.3	731.7	717.7	680.0	634.3	616.5	634.3	680.0
167.5°	662.2	681.7	709.6	738.1	742.3	733.2	708.5	676.8	660.7	676.8	708.5
170°	702.6	719.3	733.2	745.1	751.0	745.6	726.2	710.7	700.4	710.7	726.2
172.5°	734.3	745.1	750.5	758.0	754.2	752.0	742.3	734.9	729.5	734.9	742.3
175°	754.2	756.4	761.2	758.6	761.8	755.8	756.4	760.1	738.1	760.1	756.4
177.5°	761.2	765.0	762.2	757.5	758.0	756.9	759.1	761.2	758.0	761.2	759.1
180°	761.2	761.2	761.2	761.2	761.2	761.2	761.2	761.2	761.2	761.2	761.2



TEST NUMBER: P392502

CATALOG NUMBER: MWL-2-22-13-UNV-L930-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	476.6	476.6	476.6	476.6	476.6	476.6
2.5°	475.5	475.3	476.1	477.1	476.1	475.0
5°	473.0	472.2	473.0	474.7	473.6	471.7
7.5°	468.4	468.1	469.0	470.1	470.1	469.0
10°	462.9	461.8	463.5	464.3	464.3	463.8
12.5°	455.5	454.2	455.5	456.4	457.8	458.2
15°	447.6	446.0	448.1	448.1	448.7	449.8
17.5°	437.8	436.9	437.8	438.2	438.8	439.9
20°	425.6	425.6	426.3	427.6	427.8	427.6
22.5°	415.0	414.2	415.5	415.2	414.6	414.6
25°	401.8	401.8	402.4	401.8	400.6	400.6
27.5°	388.4	387.9	388.9	387.9	385.0	384.3
30°	373.6	373.9	374.7	372.7	368.6	366.9
32.5°	358.0	358.8	359.1	354.6	348.9	346.4
35°	340.1	340.9	341.8	335.2	327.8	325.3
37.5°	322.0	325.1	323.7	313.8	305.6	304.7
40°	303.2	307.0	304.2	289.9	284.2	285.9
42.5°	281.8	288.9	282.8	267.2	263.6	266.1
45°	258.7	268.4	259.7	244.2	245.0	247.4
47.5°	234.8	248.6	235.4	223.6	226.1	230.2
50°	210.5	220.9	211.6	204.7	209.6	211.2
52.5°	188.3	192.9	189.4	186.1	193.2	195.6
55°	166.3	162.0	167.5	168.0	177.1	178.7
57.5°	143.3	135.7	144.4	150.7	160.6	162.3
60°	121.9	116.0	122.6	132.1	144.4	146.1
62.5°	100.6	97.3	101.2	113.1	127.1	130.4
65°	84.1	82.5	84.7	95.4	108.6	112.7
67.5°	70.2	71.0	70.2	80.6	91.3	97.0
70°	57.8	59.4	57.8	65.2	75.1	82.5
72.5°	46.7	49.1	47.1	52.9	60.3	68.5
75°	37.6	40.9	37.6	40.9	48.8	55.4
77.5°	29.3	32.7	29.3	31.8	41.8	50.5
80°	22.8	24.4	22.8	26.0	42.9	51.6
82.5°	16.2	17.0	16.2	28.4	49.7	57.0
85°	12.6	9.6	13.6	37.7	62.6	67.9
87.5°	11.8	2.5	19.3	50.8	79.2	83.2
90°	7.7	0.6	28.1	67.8	96.3	100.1
92.5°	4.4	8.6	41.5	85.1	116.5	121.2
95°	2.1	21.6	55.9	105.0	137.4	139.7
97.5°	6.4	38.1	75.3	125.3	157.4	161.0
100°	17.8	58.6	98.4	147.1	177.3	178.7
102.5°	33.3	80.7	120.5	168.4	199.5	206.8
105°	54.2	105.9	143.6	194.7	223.5	231.0
107.5°	78.5	132.8	167.3	219.2	248.7	254.1
110°	105.2	160.8	191.7	242.3	274.5	281.0



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	133.1	190.6	216.4	263.8	302.0	306.9
115°	164.8	217.5	239.6	288.5	324.0	326.8
117.5°	193.4	249.8	263.3	306.9	347.1	347.7
120°	223.5	280.4	287.0	332.0	369.7	374.0
122.5°	254.1	309.5	309.5	353.6	389.6	392.4
125°	282.6	340.8	332.0	369.7	407.9	409.0
127.5°	311.7	372.5	356.9	390.7	425.6	424.0
130°	343.3	402.6	379.4	410.6	442.4	436.9
132.5°	372.5	434.8	402.6	431.0	459.0	462.3
135°	401.5	464.9	422.5	448.8	476.3	475.2
137.5°	429.4	492.8	446.6	462.8	487.5	490.7
140°	456.8	523.0	468.2	481.0	501.4	502.0
142.5°	485.9	553.1	491.8	499.3	517.1	513.9
145°	518.2	581.6	521.3	517.6	528.8	521.9
147.5°	546.6	606.3	542.4	531.1	544.5	535.3
150°	578.4	631.6	571.4	549.9	558.0	553.7
152.5°	607.4	651.5	603.1	564.4	573.6	568.2
155°	636.0	672.4	633.8	578.9	585.4	583.2
157.5°	660.7	690.8	656.9	594.0	601.5	597.2
160°	682.1	705.8	683.8	616.5	612.3	612.3
162.5°	701.0	720.3	702.6	647.2	624.1	613.9
165°	717.7	731.7	719.3	681.7	646.7	637.5
167.5°	733.2	742.3	738.1	709.6	681.7	662.2
170°	745.6	751.0	745.1	733.2	719.3	702.6
172.5°	752.0	754.2	758.0	750.5	745.1	734.3
175°	755.8	761.8	758.6	761.2	756.4	754.2
177.5°	756.9	758.0	757.5	762.2	765.0	761.2
180°	761.2	761.2	761.2	761.2	761.2	761.2

(END OF REPORT)