

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: P392477

Luminaire Tested: **MWL-2-13-17-UNV-L940-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392477
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-2-13-17-UNV-L940-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2820.0 lumens
Efficiency: N/A
Efficacy: 98.0 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: General Diffuse

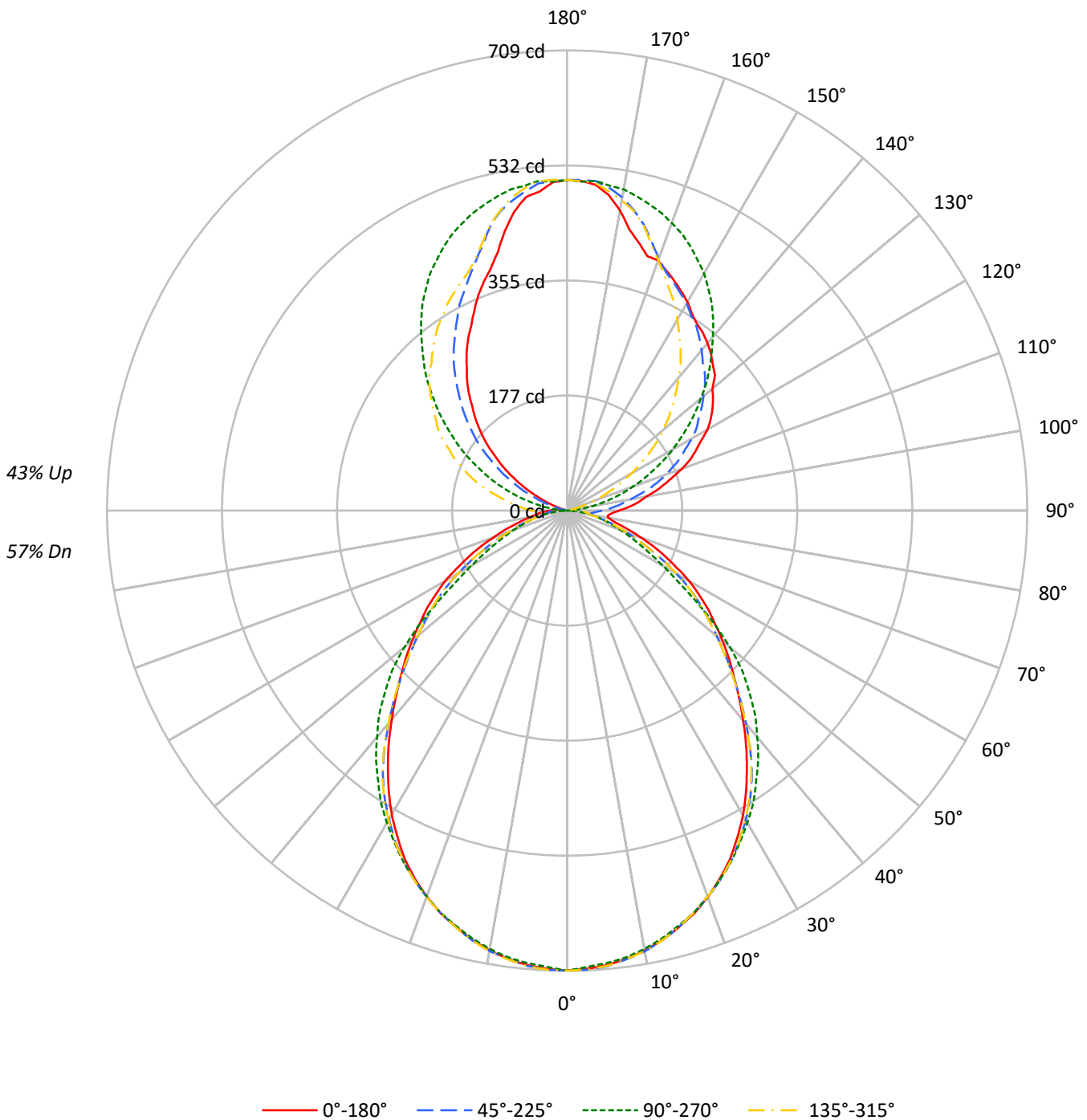
Input Watts (W): 28.785
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P392477

CATALOG NUMBER: MWL-2-13-17-UNV-L940-EDD

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	109	109	109	109	101	101	101	101	87	87	87	74	74	74	62	62	62	57
1	100	95	91	88	93	89	86	83	77	74	72	66	64	62	56	54	53	48
2	91	84	78	73	85	78	73	69	68	64	60	58	55	53	49	47	46	41
3	83	74	67	61	77	69	63	58	60	55	51	52	48	45	44	42	39	35
4	77	66	58	52	71	62	55	49	54	49	44	47	42	39	40	37	34	31
5	70	59	51	45	65	55	48	43	48	43	38	42	38	34	36	33	30	27
6	65	53	45	39	60	50	43	37	44	38	34	38	34	30	33	29	27	24
7	60	48	40	35	56	45	38	33	40	34	30	35	30	27	30	27	24	21
8	56	44	36	31	52	41	34	29	37	31	27	32	27	24	28	24	22	19
9	52	40	33	28	49	38	31	26	34	28	24	30	25	22	26	22	20	17
10	49	37	30	25	46	35	28	24	31	26	22	27	23	20	24	20	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	9153	9153	9153	9153
5°	8951	8344	8951	8344
10°	8707	7647	8707	7647
15°	8417	6985	8405	6985
20°	8095	6377	8083	6377
25°	7706	5805	7691	5805
30°	7219	5251	7199	5251
35°	6642	4710	6627	4710
40°	6052	4177	6031	4177
45°	5501	3628	5485	3628
50°	5037	3004	5019	3004
55°	4601	2224	4589	2224
60°	4127	1613	4119	1613
65°	3507	1194	3507	1194
70°	2885	889	2892	889
75°	2322	629	2353	629
80°	2192	410	1964	410
85°	2888	178	1863	178



TEST NUMBER: P392477

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	66.6	2.4
10°-20°	187.1	6.6
20°-30°	273.7	9.7
30°-40°	308.9	11.0
40°-50°	286.7	10.2
50°-60°	225.2	8.0
60°-70°	142.3	5.0
70°-80°	70.8	2.5
80°-90°	38.8	1.4
90°-100°	44.9	1.6
100°-110°	78.9	2.8
110°-120°	135.4	4.8
120°-130°	183.8	6.5
130°-140°	209.5	7.4
140°-150°	209.3	7.4
150°-160°	182.3	6.5
160°-170°	128.1	4.5
170°-180°	47.7	1.7
0°-30°	527.5	18.7
0°-40°	836.3	29.7
0°-60°	1348.2	47.8
0°-90°	1600.1	56.7
90°-120°	259.2	9.2
90°-150°	861.8	30.6
90°-180°	1220.0	43.3
0°-180°	2820.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	709	709	709	709	709	
5°	703	700	703	700	703	67
15°	665	662	664	662	665	187
25°	593	597	592	597	593	272
35°	483	508	482	508	483	302
45°	364	397	363	397	364	282
55°	265	240	264	240	265	237
65°	166	123	166	123	166	165
75°	83	60	84	60	83	91
85°	66	15	42	15	66	54
90°	80	0	26	0	80	44
95°	103	14	18	14	103	88
105°	154	72	4	72	154	164
115°	218	146	50	146	218	217
125°	273	228	124	228	273	244
135°	318	311	200	311	318	245
145°	350	389	270	389	350	220
155°	391	449	339	449	391	180
165°	427	489	413	489	427	121
175°	504	510	493	510	504	47
180°	509	509	509	509	509	



TEST NUMBER: P392477

CATALOG NUMBER: MWL-2-13-17-UNV-L940-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	708.6	708.6	708.6	708.6	708.6	708.6	708.6	708.6	708.6	708.6	708.6
2.5°	706.6	707.3	708.0	705.6	703.7	705.3	708.0	707.3	706.9	707.3	708.0
5°	702.9	703.6	704.4	701.6	699.8	701.6	704.0	703.6	702.9	703.6	704.0
7.5°	696.9	697.6	697.6	696.2	694.3	695.8	697.3	697.3	696.9	697.3	697.3
10°	688.2	689.4	689.4	687.6	685.8	687.2	689.1	688.7	688.2	688.7	689.1
12.5°	677.9	678.5	678.1	676.3	675.0	676.3	678.1	677.8	677.2	677.8	678.1
15°	664.6	664.8	664.5	663.6	662.3	663.2	664.1	664.1	663.6	664.1	664.1
17.5°	650.9	650.3	649.9	650.4	649.5	650.4	649.5	649.9	649.9	649.9	649.5
20°	633.6	634.2	633.5	634.0	632.8	633.7	633.1	633.5	632.6	633.5	633.1
22.5°	614.2	615.1	616.2	615.8	615.4	615.4	615.8	614.4	613.4	614.4	615.8
25°	593.2	594.1	596.5	596.7	597.2	596.3	595.8	593.0	592.1	593.0	595.8
27.5°	567.7	571.4	574.6	576.1	576.3	575.7	573.9	570.3	566.6	570.3	573.9
30°	542.2	544.9	550.4	555.5	555.3	554.8	549.3	543.8	540.7	543.8	549.3
32.5°	513.0	516.7	524.9	531.8	533.8	531.1	523.8	515.2	511.6	515.2	523.8
35°	482.7	484.5	496.3	505.4	507.9	504.3	495.2	483.4	481.6	483.4	495.2
37.5°	452.6	451.7	463.6	480.0	483.8	478.9	462.5	450.6	451.5	450.6	462.5
40°	421.7	419.8	428.9	450.4	455.6	449.7	427.5	418.4	420.2	418.4	427.5
42.5°	392.5	390.7	394.9	419.5	429.1	418.7	393.8	389.2	391.0	389.2	393.8
45°	363.9	361.2	362.1	383.9	397.2	383.2	360.6	360.1	362.8	360.1	360.6
47.5°	338.4	333.8	331.1	347.1	366.3	346.8	329.6	332.7	337.3	332.7	329.6
50°	312.9	308.3	301.0	312.5	327.6	311.8	299.6	306.9	311.8	306.9	299.6
52.5°	287.4	284.6	274.2	279.7	284.8	279.0	273.1	283.2	286.3	283.2	273.1
55°	265.1	261.5	248.7	246.5	239.8	245.8	247.6	260.4	264.4	260.4	247.6
57.5°	240.5	238.7	223.2	212.8	200.6	212.1	222.1	237.6	239.8	237.6	222.1
60°	217.4	212.8	194.6	179.7	170.6	179.3	193.9	212.1	217.0	212.1	193.9
62.5°	190.1	187.3	167.3	148.7	144.7	148.3	166.5	186.6	189.7	186.6	166.5
65°	166.0	160.5	140.5	124.1	122.8	123.7	140.1	160.2	166.0	160.2	140.1
67.5°	143.2	134.1	116.8	102.8	103.7	102.8	116.4	133.7	143.2	133.7	116.4
70°	120.1	110.1	96.4	84.6	88.2	84.6	96.4	110.4	120.4	110.4	96.4
72.5°	100.9	89.1	78.2	69.1	72.3	68.7	78.2	89.5	101.7	89.5	78.2
75°	82.7	70.9	61.4	55.0	59.6	55.0	61.8	71.2	83.8	71.2	61.8
77.5°	71.0	59.6	46.8	44.1	47.7	44.1	47.2	58.5	69.6	58.5	47.2
80°	64.3	54.6	37.0	33.2	36.8	33.2	36.3	48.8	57.6	48.8	36.3
82.5°	63.0	56.0	35.8	23.1	25.0	23.1	31.5	43.2	49.3	43.2	31.5
85°	65.9	60.5	39.2	18.8	14.9	18.0	28.7	38.5	42.5	38.5	28.7
87.5°	71.5	69.2	45.0	20.5	3.6	15.5	24.5	34.7	34.5	34.7	24.5
90°	80.1	79.2	54.3	24.4	0.4	10.8	18.8	28.6	26.2	28.6	18.8
92.5°	91.3	89.7	64.9	30.1	5.7	5.3	15.7	23.3	21.0	23.3	15.7
95°	102.6	101.3	75.7	38.3	14.4	2.4	11.1	18.0	17.5	18.0	11.1
97.5°	113.8	112.0	86.0	50.3	25.5	4.3	6.7	13.3	13.3	13.3	6.7
100°	123.3	122.0	98.6	65.7	39.1	11.8	3.5	9.3	10.2	9.3	3.5
102.5°	140.0	133.9	113.2	80.5	53.8	22.2	6.3	4.7	6.6	4.7	6.3
105°	154.5	149.5	130.8	96.8	71.6	37.2	14.9	5.2	3.5	5.2	14.9
107.5°	170.0	166.4	146.7	112.5	89.6	53.3	27.2	14.2	9.2	14.2	27.2
110°	188.0	183.6	162.1	128.4	108.2	70.5	41.1	25.7	20.0	25.7	41.1



TEST NUMBER: P392477

CATALOG NUMBER: MWL-2-13-17-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	205.2	201.9	176.5	144.9	127.6	89.2	58.3	40.0	34.6	40.0	58.3
115°	218.5	216.7	193.0	160.3	145.6	110.4	77.4	56.9	50.5	56.9	77.4
117.5°	232.4	232.1	205.2	176.1	167.1	129.5	94.9	73.8	67.0	73.8	94.9
120°	250.0	247.2	222.0	191.9	187.6	149.5	114.3	93.2	86.4	93.2	114.3
122.5°	262.2	260.5	236.4	207.0	207.0	170.0	133.0	111.8	104.7	111.8	133.0
125°	273.3	272.7	247.2	222.0	227.8	189.1	153.8	132.3	124.4	132.3	153.8
127.5°	283.4	284.5	261.1	238.5	249.0	208.4	174.3	150.6	142.3	150.6	174.3
130°	292.0	295.7	274.4	253.7	269.0	229.6	192.6	168.9	163.5	168.9	192.6
132.5°	308.9	306.8	288.1	269.0	290.6	249.0	212.0	187.2	181.1	187.2	212.0
135°	317.5	318.2	299.9	282.3	310.7	268.3	230.3	205.9	199.8	205.9	230.3
137.5°	327.9	325.8	309.2	298.5	329.4	287.0	248.3	225.6	215.9	225.6	248.3
140°	336.4	336.0	322.3	312.9	349.5	305.3	267.5	244.4	235.5	244.4	267.5
142.5°	344.3	346.4	334.6	328.6	369.5	324.7	287.2	262.0	253.5	262.0	287.2
145°	349.7	354.3	346.8	349.3	388.6	347.1	304.4	279.0	269.6	279.0	304.4
147.5°	358.6	364.7	355.8	363.3	405.1	366.2	321.7	296.6	288.3	296.6	321.7
150°	370.8	373.7	368.4	382.7	422.0	387.4	339.3	313.4	305.1	313.4	339.3
152.5°	380.6	384.1	378.0	403.9	435.2	406.7	358.6	329.9	320.3	329.9	358.6
155°	390.6	392.0	387.7	424.3	449.3	425.8	374.1	348.2	338.9	348.2	374.1
157.5°	399.9	402.8	397.8	439.8	461.5	442.2	391.7	366.5	358.2	366.5	391.7
160°	410.0	410.0	412.8	456.8	471.5	455.7	410.4	386.7	375.2	386.7	410.4
162.5°	411.1	417.8	433.3	469.4	481.2	468.3	430.4	401.0	391.0	401.0	430.4
165°	426.9	433.0	456.3	480.5	488.7	479.4	455.2	424.7	412.8	424.7	455.2
167.5°	443.3	456.3	474.0	493.0	495.8	489.8	473.3	453.1	442.2	453.1	473.3
170°	469.4	481.4	489.8	498.6	502.5	498.9	485.2	475.7	467.9	475.7	485.2
172.5°	490.5	497.6	501.2	507.1	504.7	503.2	495.8	490.9	487.3	490.9	495.8
175°	503.7	505.2	509.3	507.5	509.7	505.8	506.1	507.7	493.0	507.7	506.1
177.5°	508.4	510.9	510.0	506.8	507.1	506.5	507.8	508.4	506.2	508.4	507.8
180°	509.3	509.3	509.3	509.3	509.3	509.3	509.3	509.3	509.3	509.3	509.3



TEST NUMBER: P392477

CATALOG NUMBER: MWL-2-13-17-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	708.6	708.6	708.6	708.6	708.6	708.6
2.5°	705.3	703.7	705.6	708.0	707.3	706.6
5°	701.6	699.8	701.6	704.4	703.6	702.9
7.5°	695.8	694.3	696.2	697.6	697.6	696.9
10°	687.2	685.8	687.6	689.4	689.4	688.2
12.5°	676.3	675.0	676.3	678.1	678.5	677.9
15°	663.2	662.3	663.6	664.5	664.8	664.6
17.5°	650.4	649.5	650.4	649.9	650.3	650.9
20°	633.7	632.8	634.0	633.5	634.2	633.6
22.5°	615.4	615.4	615.8	616.2	615.1	614.2
25°	596.3	597.2	596.7	596.5	594.1	593.2
27.5°	575.7	576.3	576.1	574.6	571.4	567.7
30°	554.8	555.3	555.5	550.4	544.9	542.2
32.5°	531.1	533.8	531.8	524.9	516.7	513.0
35°	504.3	507.9	505.4	496.3	484.5	482.7
37.5°	478.9	483.8	480.0	463.6	451.7	452.6
40°	449.7	455.6	450.4	428.9	419.8	421.7
42.5°	418.7	429.1	419.5	394.9	390.7	392.5
45°	383.2	397.2	383.9	362.1	361.2	363.9
47.5°	346.8	366.3	347.1	331.1	333.8	338.4
50°	311.8	327.6	312.5	301.0	308.3	312.9
52.5°	279.0	284.8	279.7	274.2	284.6	287.4
55°	245.8	239.8	246.5	248.7	261.5	265.1
57.5°	212.1	200.6	212.8	223.2	238.7	240.5
60°	179.3	170.6	179.7	194.6	212.8	217.4
62.5°	148.3	144.7	148.7	167.3	187.3	190.1
65°	123.7	122.8	124.1	140.5	160.5	166.0
67.5°	102.8	103.7	102.8	116.8	134.1	143.2
70°	84.6	88.2	84.6	96.4	110.1	120.1
72.5°	68.7	72.3	69.1	78.2	89.1	100.9
75°	55.0	59.6	55.0	61.4	70.9	82.7
77.5°	44.1	47.7	44.1	46.8	59.6	71.0
80°	33.2	36.8	33.2	37.0	54.6	64.3
82.5°	23.1	25.0	23.1	35.8	56.0	63.0
85°	18.0	14.9	18.8	39.2	60.5	65.9
87.5°	15.5	3.6	20.5	45.0	69.2	71.5
90°	10.8	0.4	24.4	54.3	79.2	80.1
92.5°	5.3	5.7	30.1	64.9	89.7	91.3
95°	2.4	14.4	38.3	75.7	101.3	102.6
97.5°	4.3	25.5	50.3	86.0	112.0	113.8
100°	11.8	39.1	65.7	98.6	122.0	123.3
102.5°	22.2	53.8	80.5	113.2	133.9	140.0
105°	37.2	71.6	96.8	130.8	149.5	154.5
107.5°	53.3	89.6	112.5	146.7	166.4	170.0
110°	70.5	108.2	128.4	162.1	183.6	188.0



TEST NUMBER: P392477

CATALOG NUMBER: MWL-2-13-17-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	89.2	127.6	144.9	176.5	201.9	205.2
115°	110.4	145.6	160.3	193.0	216.7	218.5
117.5°	129.5	167.1	176.1	205.2	232.1	232.4
120°	149.5	187.6	191.9	222.0	247.2	250.0
122.5°	170.0	207.0	207.0	236.4	260.5	262.2
125°	189.1	227.8	222.0	247.2	272.7	273.3
127.5°	208.4	249.0	238.5	261.1	284.5	283.4
130°	229.6	269.0	253.7	274.4	295.7	292.0
132.5°	249.0	290.6	269.0	288.1	306.8	308.9
135°	268.3	310.7	282.3	299.9	318.2	317.5
137.5°	287.0	329.4	298.5	309.2	325.8	327.9
140°	305.3	349.5	312.9	322.3	336.0	336.4
142.5°	324.7	369.5	328.6	334.6	346.4	344.3
145°	347.1	388.6	349.3	346.8	354.3	349.7
147.5°	366.2	405.1	363.3	355.8	364.7	358.6
150°	387.4	422.0	382.7	368.4	373.7	370.8
152.5°	406.7	435.2	403.9	378.0	384.1	380.6
155°	425.8	449.3	424.3	387.7	392.0	390.6
157.5°	442.2	461.5	439.8	397.8	402.8	399.9
160°	455.7	471.5	456.8	412.8	410.0	410.0
162.5°	468.3	481.2	469.4	433.3	417.8	411.1
165°	479.4	488.7	480.5	456.3	433.0	426.9
167.5°	489.8	495.8	493.0	474.0	456.3	443.3
170°	498.9	502.5	498.6	489.8	481.4	469.4
172.5°	503.2	504.7	507.1	501.2	497.6	490.5
175°	505.8	509.7	507.5	509.3	505.2	503.7
177.5°	506.5	507.1	506.8	510.0	510.9	508.4
180°	509.3	509.3	509.3	509.3	509.3	509.3

(END OF REPORT)