

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: P392498

Luminaire Tested: **MWL-2-18-31-UNV-L940-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392498
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-2-18-31-UNV-L940-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

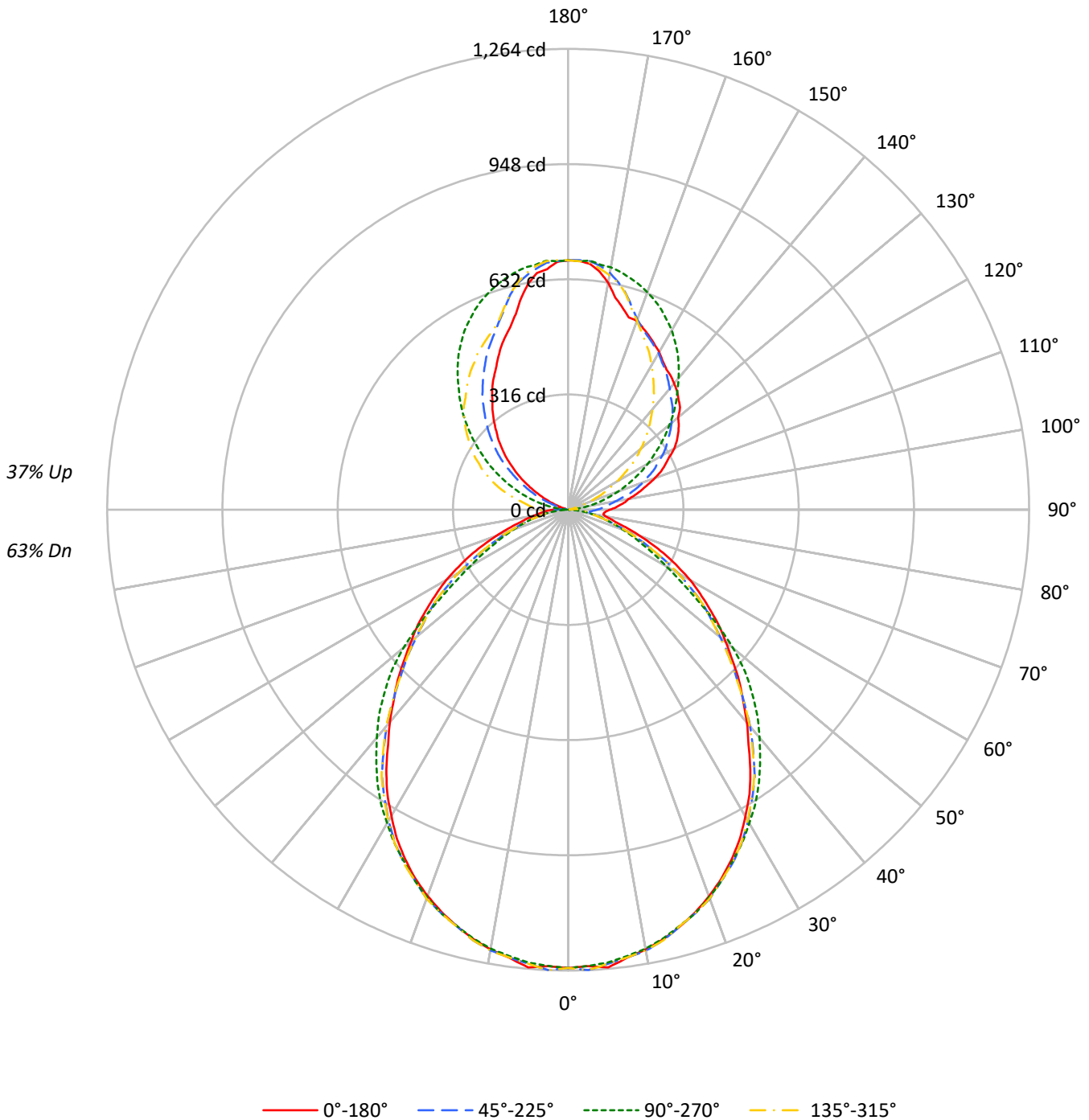
Lumens per Lamp: N/A
Luminaire Lumens: 4501.9 lumens
Efficiency: N/A
Efficacy: 90.2 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Direct

Input Watts (W): 49.894
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	0
RCR																		
0	110	110	110	110	104	104	104	104	91	91	91	79	79	79	68	68	68	63
1	101	97	93	90	95	91	88	85	80	78	75	70	68	67	61	60	59	54
2	93	85	79	74	87	80	75	70	71	67	63	62	59	57	54	52	50	46
3	85	75	68	62	79	71	65	60	63	58	54	56	52	49	49	46	43	40
4	78	67	59	53	73	63	56	51	56	51	46	50	46	42	44	41	38	35
5	72	60	52	46	67	57	50	44	51	45	40	45	40	37	40	36	33	30
6	66	54	46	40	62	51	44	39	46	40	36	41	36	33	36	32	30	27
7	61	49	41	36	58	47	39	34	42	36	32	37	33	29	33	29	26	24
8	57	45	37	32	54	43	36	31	38	32	28	34	30	26	31	27	24	22
9	53	41	34	29	50	39	32	28	35	30	26	32	27	24	28	24	22	20
10	50	38	31	26	47	36	29	25	33	27	23	29	25	21	26	23	20	18

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	16236	16236	16236	16236
5°	16046	14863	16046	14863
10°	15494	13630	15494	13630
15°	14987	12458	14969	12458
20°	14421	11396	14402	11396
25°	13755	10345	13736	10345
30°	12933	9391	12907	9391
35°	11982	8459	11962	8459
40°	10941	7481	10914	7481
45°	10017	6512	9994	6512
50°	9066	5414	9044	5414
55°	8201	4019	8185	4019
60°	7335	2934	7326	2934
65°	6247	2179	6247	2179
70°	5013	1616	5025	1616
75°	3866	1130	3903	1130
80°	3519	716	3205	716
85°	4330	299	2954	299



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	118.6	2.6
10°-20°	333.6	7.4
20°-30°	489.1	10.9
30°-40°	554.8	12.3
40°-50°	517.6	11.5
50°-60°	405.9	9.0
60°-70°	253.3	5.6
70°-80°	122.4	2.7
80°-90°	61.9	1.4
90°-100°	63.0	1.4
100°-110°	106.2	2.4
110°-120°	182.4	4.1
120°-130°	247.7	5.5
130°-140°	282.4	6.3
140°-150°	281.6	6.3
150°-160°	245.1	5.4
160°-170°	172.3	3.8
170°-180°	64.1	1.4
0°-30°	941.3	20.9
0°-40°	1496.0	33.2
0°-60°	2419.5	53.7
0°-90°	2857.1	63.5
90°-120°	351.6	7.8
90°-150°	1163.3	25.8
90°-180°	1645.0	36.5
0°-180°	4501.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1257	1257	1257	1257	1257	
5°	1260	1247	1260	1247	1260	119
15°	1183	1181	1182	1181	1183	333
25°	1059	1064	1057	1064	1059	487
35°	871	912	869	912	871	543
45°	663	713	661	713	663	510
55°	472	433	472	433	472	424
65°	296	224	296	224	296	292
75°	138	107	139	107	138	154
85°	99	25	67	25	99	82
90°	114	1	42	1	114	63
95°	142	20	28	20	142	122
105°	208	96	5	96	208	221
115°	294	196	68	196	294	292
125°	368	306	169	306	368	329
135°	428	419	270	419	428	330
145°	470	523	362	523	470	296
155°	526	605	456	605	526	242
165°	574	658	556	658	574	163
175°	677	686	663	686	677	63
180°	684	684	684	684	684	



TEST NUMBER: P392498

CATALOG NUMBER: MWL-2-18-31-UNV-L940-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1257.0	1257.0	1257.0	1257.0	1257.0	1257.0	1257.0	1257.0	1257.0	1257.0	1257.0
2.5°	1252.9	1260.2	1263.9	1251.7	1252.6	1251.1	1263.9	1260.2	1253.3	1260.2	1263.9
5°	1260.1	1251.1	1250.2	1249.3	1246.6	1249.3	1249.8	1251.1	1260.1	1251.1	1249.8
7.5°	1239.6	1245.2	1238.8	1237.5	1234.7	1237.0	1238.4	1244.7	1239.6	1244.7	1238.4
10°	1224.7	1228.8	1227.9	1221.5	1222.4	1221.1	1227.4	1227.8	1224.7	1227.8	1227.4
12.5°	1206.5	1209.7	1209.2	1201.9	1204.1	1201.9	1209.2	1208.7	1205.6	1208.7	1209.2
15°	1183.3	1183.2	1182.8	1180.1	1181.3	1179.5	1182.2	1182.2	1181.9	1182.2	1182.2
17.5°	1157.8	1160.5	1160.0	1160.4	1160.4	1160.4	1159.5	1160.0	1156.4	1160.0	1159.5
20°	1128.7	1133.6	1135.4	1130.3	1130.8	1129.9	1134.9	1132.7	1127.2	1132.7	1134.9
22.5°	1096.2	1097.1	1099.9	1093.0	1100.7	1092.5	1099.3	1096.2	1095.3	1096.2	1099.3
25°	1058.9	1059.8	1068.4	1064.7	1064.3	1064.3	1067.4	1058.3	1057.4	1058.3	1067.4
27.5°	1018.8	1018.8	1030.2	1027.0	1031.5	1026.4	1029.2	1017.3	1017.3	1017.3	1029.2
30°	971.4	979.6	986.0	999.2	993.2	998.2	984.5	978.2	969.5	978.2	984.5
32.5°	924.9	929.5	938.6	948.2	955.4	947.2	937.2	927.6	923.0	927.6	937.2
35°	870.7	870.7	891.7	909.0	912.1	907.5	890.2	869.3	869.3	869.3	890.2
37.5°	812.4	814.3	832.5	858.9	864.3	857.4	831.0	812.8	811.0	812.8	831.0
40°	762.3	758.7	776.0	810.2	816.0	809.1	774.1	756.8	760.4	756.8	774.1
42.5°	709.5	704.0	712.7	754.6	768.6	753.6	711.2	702.1	707.6	702.1	711.2
45°	662.6	651.6	653.4	692.6	713.0	691.6	651.5	650.2	661.1	650.2	651.5
47.5°	610.6	607.0	599.7	625.6	658.4	625.1	597.8	605.5	609.2	605.5	597.8
50°	563.2	556.0	545.0	566.3	590.5	565.4	543.1	554.0	561.8	554.0	543.1
52.5°	521.3	515.0	494.4	507.1	512.1	506.2	493.0	513.0	519.9	513.0	493.0
55°	472.5	471.6	450.6	444.7	433.3	443.8	449.3	470.2	471.6	470.2	449.3
57.5°	428.8	426.9	396.9	386.4	365.0	385.5	395.5	425.6	427.9	425.6	395.5
60°	386.4	380.0	347.2	321.3	310.3	320.8	346.3	379.1	385.9	379.1	346.3
62.5°	339.0	335.4	295.3	267.5	265.2	267.0	294.4	334.5	338.6	334.5	294.4
65°	295.7	282.1	248.4	222.9	224.2	222.4	247.9	281.6	295.7	281.6	247.9
67.5°	249.3	235.6	206.5	183.2	190.5	183.2	206.0	235.2	249.3	235.2	206.0
70°	208.7	190.5	168.6	149.5	160.4	149.5	168.6	191.0	209.2	191.0	168.6
72.5°	171.4	152.2	135.8	122.2	131.7	121.6	135.8	152.7	172.3	152.7	135.8
75°	137.7	120.4	105.2	97.9	107.1	97.9	105.8	120.8	139.0	120.8	105.8
77.5°	119.6	99.5	79.7	76.1	87.0	76.1	80.3	98.0	117.7	98.0	80.3
80°	103.2	89.8	63.0	56.9	64.2	56.9	62.0	82.1	94.0	82.1	62.0
82.5°	97.5	88.6	58.8	40.5	44.2	40.5	52.9	71.2	79.2	71.2	52.9
85°	98.8	93.0	60.2	32.0	25.1	31.1	46.3	63.6	67.4	63.6	46.3
87.5°	104.2	102.7	67.8	32.0	7.3	25.1	40.4	56.4	54.6	56.4	40.4
90°	113.9	113.7	78.8	34.8	1.4	16.5	31.1	45.7	41.6	45.7	31.1
92.5°	129.6	126.6	91.2	41.5	8.7	8.3	25.1	37.4	35.2	37.4	25.1
95°	142.0	139.2	104.6	51.0	20.2	2.8	17.9	27.4	27.9	27.4	17.9
97.5°	156.9	152.7	115.8	68.4	35.2	6.7	9.3	20.1	22.0	20.1	9.3
100°	167.6	164.3	132.0	89.1	53.5	16.9	4.3	12.9	15.7	12.9	4.3
102.5°	188.6	180.1	151.8	108.9	73.2	30.8	8.1	6.6	9.3	6.6	8.1
105°	208.1	201.4	175.4	129.6	95.8	49.6	19.7	7.6	5.2	7.6	19.7
107.5°	228.8	223.9	197.5	150.8	120.0	71.2	37.0	19.7	12.9	19.7	37.0
110°	252.9	247.1	218.2	172.0	145.0	94.4	55.8	35.1	27.3	35.1	55.8



TEST NUMBER: P392498

CATALOG NUMBER: MWL-2-18-31-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	276.1	271.7	237.5	195.1	171.0	120.4	78.9	54.4	47.1	54.4	78.9
115°	293.8	291.5	259.7	215.8	196.1	148.8	104.5	77.0	68.3	77.0	104.5
117.5°	312.7	312.1	276.1	237.0	225.0	174.4	128.1	99.7	90.5	99.7	128.1
120°	336.3	332.5	298.7	258.2	252.5	201.4	154.1	125.6	116.5	125.6	154.1
122.5°	353.6	350.2	318.0	278.4	278.4	228.8	179.2	150.7	142.0	150.7	179.2
125°	368.5	367.5	333.4	298.7	306.4	254.4	208.0	179.1	168.6	179.1	208.0
127.5°	382.0	383.5	352.1	321.8	335.7	281.3	235.5	203.7	192.6	203.7	235.5
130°	393.6	398.4	370.0	342.0	362.7	309.7	260.1	228.3	221.0	228.3	260.1
132.5°	416.2	413.4	388.3	362.7	391.7	335.7	286.1	252.8	244.6	252.8	286.1
135°	427.8	428.8	404.2	380.6	418.7	361.8	310.7	277.9	269.7	277.9	310.7
137.5°	441.8	438.9	416.7	402.3	443.7	386.9	334.7	304.4	291.4	304.4	334.7
140°	451.9	451.5	433.1	421.6	470.7	411.5	359.3	328.5	316.4	328.5	359.3
142.5°	462.5	465.4	449.4	442.7	497.6	437.4	385.9	352.1	340.6	352.1	385.9
145°	469.8	476.9	465.8	469.2	523.2	466.4	409.0	375.7	362.3	375.7	409.0
147.5°	482.7	490.9	478.8	488.1	545.4	491.9	433.0	399.3	388.2	399.3	433.0
150°	499.1	502.9	495.7	514.0	568.1	520.3	456.6	421.9	410.9	421.9	456.6
152.5°	512.0	516.9	508.7	542.5	585.8	546.4	482.7	444.2	431.1	444.2	482.7
155°	525.6	527.5	521.7	570.0	604.7	571.9	503.4	468.7	456.2	468.7	503.4
157.5°	538.1	541.9	534.3	590.7	621.0	594.0	526.1	493.3	482.2	493.3	526.1
160°	551.6	551.6	554.6	614.8	634.6	613.4	551.2	520.2	504.8	520.2	551.2
162.5°	553.0	562.2	582.0	631.7	647.5	630.2	578.2	539.6	526.1	539.6	578.2
165°	574.3	581.6	612.9	646.6	657.6	645.1	611.4	570.4	555.5	570.4	611.4
167.5°	596.4	612.9	638.0	663.5	667.3	659.1	637.0	608.5	594.9	608.5	637.0
170°	631.7	646.6	659.1	669.7	675.0	670.2	652.9	638.9	629.8	638.9	652.9
172.5°	659.2	669.7	674.6	681.3	677.9	675.9	667.3	660.5	654.8	660.5	667.3
175°	677.0	679.9	684.1	682.7	685.6	680.3	679.9	683.2	662.6	683.2	679.9
177.5°	683.2	686.6	685.1	681.7	682.2	681.2	682.2	683.2	680.4	683.2	682.2
180°	684.1	684.1	684.1	684.1	684.1	684.1	684.1	684.1	684.1	684.1	684.1



TEST NUMBER: P392498

CATALOG NUMBER: MWL-2-18-31-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1257.0	1257.0	1257.0	1257.0	1257.0	1257.0
2.5°	1251.1	1252.6	1251.7	1263.9	1260.2	1252.9
5°	1249.3	1246.6	1249.3	1250.2	1251.1	1260.1
7.5°	1237.0	1234.7	1237.5	1238.8	1245.2	1239.6
10°	1221.1	1222.4	1221.5	1227.9	1228.8	1224.7
12.5°	1201.9	1204.1	1201.9	1209.2	1209.7	1206.5
15°	1179.5	1181.3	1180.1	1182.8	1183.2	1183.3
17.5°	1160.4	1160.4	1160.4	1160.0	1160.5	1157.8
20°	1129.9	1130.8	1130.3	1135.4	1133.6	1128.7
22.5°	1092.5	1100.7	1093.0	1099.9	1097.1	1096.2
25°	1064.3	1064.3	1064.7	1068.4	1059.8	1058.9
27.5°	1026.4	1031.5	1027.0	1030.2	1018.8	1018.8
30°	998.2	993.2	999.2	986.0	979.6	971.4
32.5°	947.2	955.4	948.2	938.6	929.5	924.9
35°	907.5	912.1	909.0	891.7	870.7	870.7
37.5°	857.4	864.3	858.9	832.5	814.3	812.4
40°	809.1	816.0	810.2	776.0	758.7	762.3
42.5°	753.6	768.6	754.6	712.7	704.0	709.5
45°	691.6	713.0	692.6	653.4	651.6	662.6
47.5°	625.1	658.4	625.6	599.7	607.0	610.6
50°	565.4	590.5	566.3	545.0	556.0	563.2
52.5°	506.2	512.1	507.1	494.4	515.0	521.3
55°	443.8	433.3	444.7	450.6	471.6	472.5
57.5°	385.5	365.0	386.4	396.9	426.9	428.8
60°	320.8	310.3	321.3	347.2	380.0	386.4
62.5°	267.0	265.2	267.5	295.3	335.4	339.0
65°	222.4	224.2	222.9	248.4	282.1	295.7
67.5°	183.2	190.5	183.2	206.5	235.6	249.3
70°	149.5	160.4	149.5	168.6	190.5	208.7
72.5°	121.6	131.7	122.2	135.8	152.2	171.4
75°	97.9	107.1	97.9	105.2	120.4	137.7
77.5°	76.1	87.0	76.1	79.7	99.5	119.6
80°	56.9	64.2	56.9	63.0	89.8	103.2
82.5°	40.5	44.2	40.5	58.8	88.6	97.5
85°	31.1	25.1	32.0	60.2	93.0	98.8
87.5°	25.1	7.3	32.0	67.8	102.7	104.2
90°	16.5	1.4	34.8	78.8	113.7	113.9
92.5°	8.3	8.7	41.5	91.2	126.6	129.6
95°	2.8	20.2	51.0	104.6	139.2	142.0
97.5°	6.7	35.2	68.4	115.8	152.7	156.9
100°	16.9	53.5	89.1	132.0	164.3	167.6
102.5°	30.8	73.2	108.9	151.8	180.1	188.6
105°	49.6	95.8	129.6	175.4	201.4	208.1
107.5°	71.2	120.0	150.8	197.5	223.9	228.8
110°	94.4	145.0	172.0	218.2	247.1	252.9



TEST NUMBER: P392498

CATALOG NUMBER: MWL-2-18-31-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	120.4	171.0	195.1	237.5	271.7	276.1
115°	148.8	196.1	215.8	259.7	291.5	293.8
117.5°	174.4	225.0	237.0	276.1	312.1	312.7
120°	201.4	252.5	258.2	298.7	332.5	336.3
122.5°	228.8	278.4	278.4	318.0	350.2	353.6
125°	254.4	306.4	298.7	333.4	367.5	368.5
127.5°	281.3	335.7	321.8	352.1	383.5	382.0
130°	309.7	362.7	342.0	370.0	398.4	393.6
132.5°	335.7	391.7	362.7	388.3	413.4	416.2
135°	361.8	418.7	380.6	404.2	428.8	427.8
137.5°	386.9	443.7	402.3	416.7	438.9	441.8
140°	411.5	470.7	421.6	433.1	451.5	451.9
142.5°	437.4	497.6	442.7	449.4	465.4	462.5
145°	466.4	523.2	469.2	465.8	476.9	469.8
147.5°	491.9	545.4	488.1	478.8	490.9	482.7
150°	520.3	568.1	514.0	495.7	502.9	499.1
152.5°	546.4	585.8	542.5	508.7	516.9	512.0
155°	571.9	604.7	570.0	521.7	527.5	525.6
157.5°	594.0	621.0	590.7	534.3	541.9	538.1
160°	613.4	634.6	614.8	554.6	551.6	551.6
162.5°	630.2	647.5	631.7	582.0	562.2	553.0
165°	645.1	657.6	646.6	612.9	581.6	574.3
167.5°	659.1	667.3	663.5	638.0	612.9	596.4
170°	670.2	675.0	669.7	659.1	646.6	631.7
172.5°	675.9	677.9	681.3	674.6	669.7	659.2
175°	680.3	685.6	682.7	684.1	679.9	677.0
177.5°	681.2	682.2	681.7	685.1	686.6	683.2
180°	684.1	684.1	684.1	684.1	684.1	684.1

(END OF REPORT)