

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: P392497

Luminaire Tested: **MWL-2-18-31-UNV-L935-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392497
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-L935-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4122.9 lumens
Efficiency: N/A
Efficacy: 82.6 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

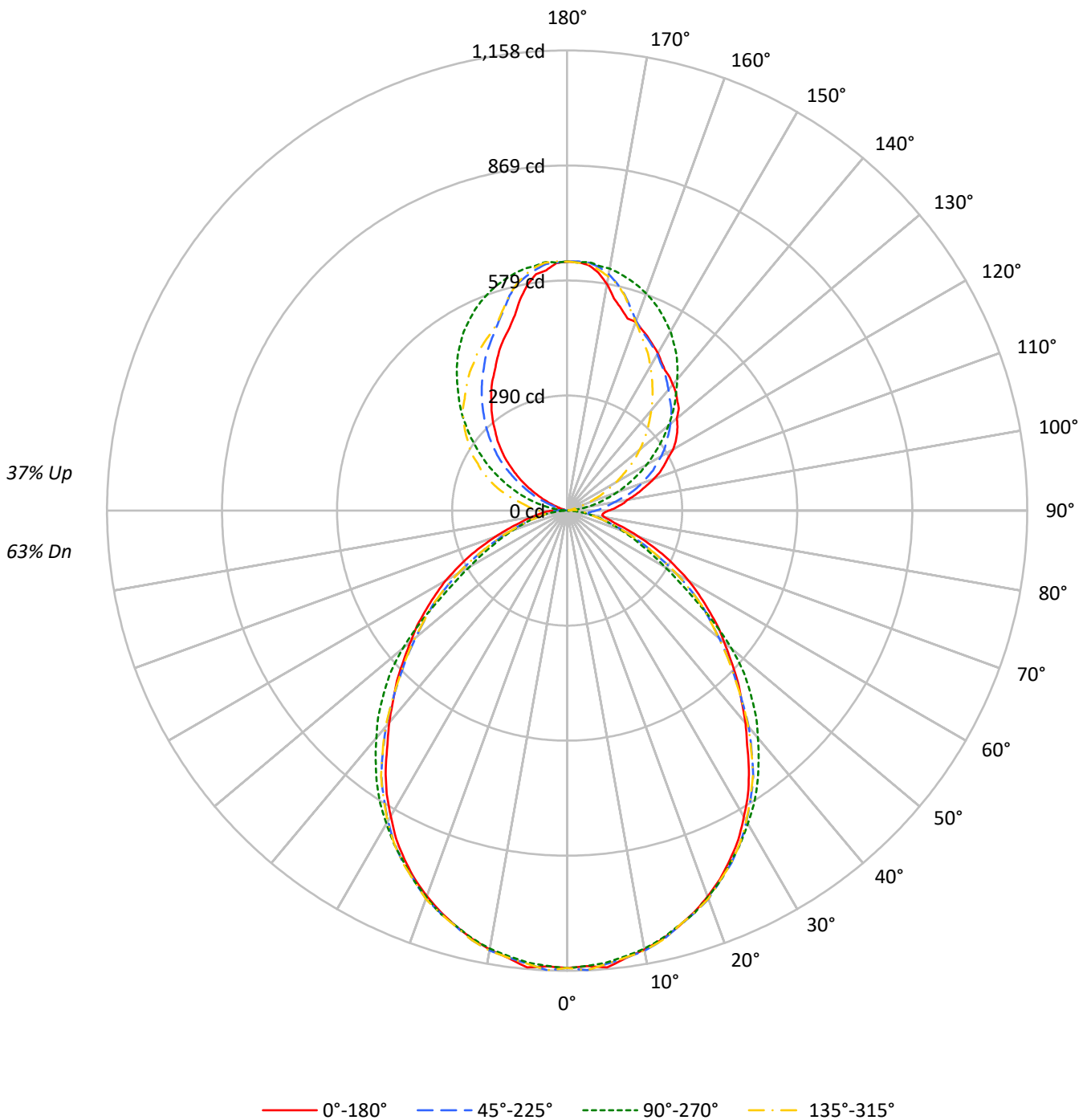
Input Watts (W): 49.894
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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CATALOG NUMBER: MWL-2-18-31-UNV-L935-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	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°	14870	14870	14870	14870
5°	14695	13611	14695	13611
10°	14190	12482	14190	12482
15°	13725	11410	13709	11410
20°	13207	10436	13190	10436
25°	12596	9473	12580	9473
30°	11844	8601	11821	8601
35°	10973	7747	10955	7747
40°	10021	6852	9995	6852
45°	9173	5964	9152	5964
50°	8303	4958	8282	4958
55°	7510	3680	7496	3680
60°	6718	2687	6709	2687
65°	5723	1996	5723	1996
70°	4590	1481	4602	1481
75°	3540	1034	3577	1034
80°	3226	656	2936	656
85°	3962	274	2709	274



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	108.6	2.6
10°-20°	305.5	7.4
20°-30°	447.9	10.9
30°-40°	508.1	12.3
40°-50°	474.0	11.5
50°-60°	371.8	9.0
60°-70°	232.0	5.6
70°-80°	112.0	2.7
80°-90°	56.7	1.4
90°-100°	57.7	1.4
100°-110°	97.3	2.4
110°-120°	167.0	4.1
120°-130°	226.8	5.5
130°-140°	258.6	6.3
140°-150°	257.9	6.3
150°-160°	224.5	5.4
160°-170°	157.8	3.8
170°-180°	58.7	1.4
0°-30°	862.0	20.9
0°-40°	1370.1	33.2
0°-60°	2215.9	53.7
0°-90°	2616.6	63.5
90°-120°	322.0	7.8
90°-150°	1065.3	25.8
90°-180°	1506.0	36.5
0°-180°	4122.9	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1151	1151	1151	1151	1151	
5°	1154	1142	1154	1142	1154	109
15°	1084	1082	1082	1082	1084	305
25°	970	975	968	975	970	446
35°	797	835	796	835	797	497
45°	607	653	605	653	607	467
55°	433	397	432	397	433	388
65°	271	205	271	205	271	268
75°	126	98	127	98	126	141
85°	90	23	62	23	90	75
90°	104	1	38	1	104	58
95°	130	19	26	19	130	112
105°	191	88	5	88	191	202
115°	269	180	63	180	269	267
125°	338	281	154	281	338	301
135°	392	383	247	383	392	302
145°	430	479	332	479	430	271
155°	481	554	418	554	481	222
165°	526	602	509	602	526	149
175°	620	628	607	628	620	58
180°	627	627	627	627	627	



TEST NUMBER: P392497

CATALOG NUMBER: MWL-2-18-31-UNV-L935-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1151.2	1151.2	1151.2	1151.2	1151.2	1151.2	1151.2	1151.2	1151.2	1151.2	1151.2
2.5°	1147.4	1154.1	1157.5	1146.3	1147.1	1145.8	1157.5	1154.1	1147.8	1154.1	1157.5
5°	1154.0	1145.8	1145.0	1144.1	1141.6	1144.1	1144.6	1145.8	1154.0	1145.8	1144.6
7.5°	1135.3	1140.4	1134.5	1133.2	1130.7	1132.9	1134.1	1140.0	1135.3	1140.0	1134.1
10°	1121.6	1125.4	1124.5	1118.7	1119.5	1118.2	1124.1	1124.4	1121.6	1124.4	1124.1
12.5°	1104.9	1107.9	1107.4	1100.7	1102.8	1100.7	1107.4	1106.9	1104.1	1106.9	1107.4
15°	1083.7	1083.6	1083.2	1080.7	1081.9	1080.2	1082.7	1082.7	1082.4	1082.7	1082.7
17.5°	1060.3	1062.7	1062.4	1062.7	1062.7	1062.7	1061.9	1062.4	1059.0	1062.4	1061.9
20°	1033.7	1038.2	1039.8	1035.1	1035.6	1034.7	1039.4	1037.3	1032.3	1037.3	1039.4
22.5°	1004.0	1004.8	1007.3	1001.0	1008.0	1000.5	1006.8	1004.0	1003.1	1004.0	1006.8
25°	969.7	970.6	978.5	975.1	974.6	974.6	977.6	969.2	968.4	969.2	977.6
27.5°	933.1	933.1	943.5	940.6	944.6	940.0	942.5	931.7	931.7	931.7	942.5
30°	889.6	897.2	903.0	915.1	909.6	914.2	901.6	895.8	887.9	895.8	901.6
32.5°	847.1	851.3	859.6	868.3	875.0	867.5	858.2	849.5	845.3	849.5	858.2
35°	797.4	797.4	816.6	832.5	835.3	831.1	815.3	796.1	796.1	796.1	815.3
37.5°	744.1	745.7	762.4	786.6	791.5	785.2	761.1	744.3	742.7	744.3	761.1
40°	698.2	694.8	710.7	741.9	747.3	741.1	708.9	693.1	696.4	693.1	708.9
42.5°	649.8	644.8	652.7	691.1	703.9	690.1	651.3	643.0	648.0	643.0	651.3
45°	606.8	596.8	598.4	634.3	653.0	633.4	596.7	595.4	605.4	595.4	596.7
47.5°	559.2	555.9	549.2	572.9	602.9	572.4	547.4	554.6	557.9	554.6	547.4
50°	515.8	509.1	499.1	518.7	540.8	517.8	497.4	507.4	514.5	507.4	497.4
52.5°	477.4	471.6	452.8	464.4	469.0	463.6	451.5	469.8	476.1	469.8	451.5
55°	432.7	431.9	412.7	407.3	396.8	406.4	411.4	430.7	431.9	430.7	411.4
57.5°	392.7	391.0	363.5	353.9	334.3	353.0	362.2	389.8	391.8	389.8	362.2
60°	353.9	348.0	318.0	294.2	284.2	293.8	317.1	347.2	353.4	347.2	317.1
62.5°	310.5	307.1	270.4	245.0	242.9	244.5	269.6	306.3	310.0	306.3	269.6
65°	270.9	258.4	227.5	204.1	205.4	203.6	227.0	257.9	270.9	257.9	227.0
67.5°	228.3	215.8	189.1	167.8	174.5	167.8	188.6	215.4	228.3	215.4	188.6
70°	191.1	174.5	154.5	136.9	147.0	136.9	154.5	174.9	191.6	174.9	154.5
72.5°	157.0	139.4	124.4	111.9	120.5	111.4	124.4	139.9	157.8	139.9	124.4
75°	126.1	110.2	96.4	89.7	98.0	89.7	96.9	110.6	127.4	110.6	96.9
77.5°	109.6	91.1	73.0	69.6	79.6	69.6	73.5	89.7	107.8	89.7	73.5
80°	94.6	82.2	57.6	52.1	58.8	52.1	56.9	75.2	86.1	75.2	56.9
82.5°	89.3	81.1	53.8	37.1	40.5	37.1	48.5	65.2	72.5	65.2	48.5
85°	90.4	85.2	55.1	29.3	23.0	28.5	42.4	58.2	61.8	58.2	42.4
87.5°	95.4	94.1	62.0	29.3	6.6	23.0	36.9	51.7	50.0	51.7	36.9
90°	104.3	104.2	72.1	31.8	1.3	15.1	28.5	41.9	38.1	41.9	28.5
92.5°	118.7	116.0	83.5	38.1	7.9	7.6	23.0	34.3	32.2	34.3	23.0
95°	130.1	127.5	95.8	46.8	18.6	2.6	16.4	25.1	25.5	25.1	16.4
97.5°	143.7	139.9	106.1	62.6	32.2	6.1	8.5	18.5	20.1	18.5	8.5
100°	153.4	150.4	120.9	81.6	49.0	15.4	3.9	11.8	14.3	11.8	3.9
102.5°	172.8	165.0	139.0	99.8	67.0	28.2	7.4	6.0	8.5	6.0	7.4
105°	190.6	184.4	160.6	118.6	87.8	45.4	18.0	6.9	4.7	6.9	18.0
107.5°	209.5	205.1	180.9	138.1	109.9	65.2	33.9	18.0	11.8	18.0	33.9
110°	231.6	226.3	199.8	157.6	132.8	86.5	51.1	32.1	25.0	32.1	51.1



TEST NUMBER: P392497

CATALOG NUMBER: MWL-2-18-31-UNV-L935-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	252.8	248.9	217.5	178.6	156.6	110.2	72.2	49.8	43.1	49.8	72.2
115°	269.1	266.9	237.8	197.7	179.6	136.3	95.7	70.5	62.6	70.5	95.7
117.5°	286.4	285.9	252.8	217.0	206.0	159.7	117.4	91.3	82.8	91.3	117.4
120°	308.0	304.5	273.5	236.4	231.2	184.4	141.1	115.0	106.7	115.0	141.1
122.5°	323.8	320.7	291.2	255.0	255.0	209.5	164.1	138.0	130.1	138.0	164.1
125°	337.5	336.6	305.3	273.5	280.6	233.0	190.5	164.0	154.4	164.0	190.5
127.5°	349.9	351.2	322.5	294.7	307.5	257.6	215.7	186.6	176.4	186.6	215.7
130°	360.4	364.9	338.9	313.2	332.2	283.6	238.2	209.1	202.4	209.1	238.2
132.5°	381.1	378.6	355.6	332.2	358.7	307.5	262.0	231.5	224.0	231.5	262.0
135°	391.8	392.7	370.2	348.5	383.4	331.4	284.5	254.5	247.0	254.5	284.5
137.5°	404.6	401.9	381.7	368.4	406.3	354.3	306.6	278.8	266.8	278.8	306.6
140°	413.8	413.4	396.7	386.1	431.0	376.8	329.1	300.9	289.8	300.9	329.1
142.5°	423.5	426.2	411.6	405.5	455.8	400.6	353.4	322.5	311.9	322.5	353.4
145°	430.2	436.7	426.6	429.7	479.2	427.1	374.6	344.1	331.8	344.1	374.6
147.5°	442.1	449.6	438.4	447.0	499.4	450.5	396.6	365.7	355.5	365.7	396.6
150°	457.1	460.6	454.0	470.8	520.2	476.5	418.2	386.4	376.3	386.4	418.2
152.5°	468.9	473.4	465.9	496.8	536.6	500.4	442.1	406.8	394.9	406.8	442.1
155°	481.3	483.1	477.8	522.0	553.8	523.8	461.0	429.2	417.8	429.2	461.0
157.5°	492.8	496.3	489.3	541.0	568.7	544.1	481.8	451.7	441.6	451.7	481.8
160°	505.1	505.1	507.9	563.0	581.2	561.7	504.8	476.4	462.3	476.4	504.8
162.5°	506.5	514.9	533.0	578.5	593.0	577.2	529.5	494.1	481.8	494.1	529.5
165°	525.9	532.6	561.3	592.2	602.3	590.8	559.9	522.4	508.8	522.4	559.9
167.5°	546.2	561.3	584.3	607.7	611.1	603.6	583.3	557.3	544.8	557.3	583.3
170°	578.5	592.2	603.6	613.3	618.2	613.8	597.9	585.0	576.8	585.0	597.9
172.5°	603.7	613.3	617.8	624.0	620.9	619.0	611.1	605.0	599.7	605.0	611.1
175°	620.1	622.7	626.6	625.3	627.9	623.0	622.7	625.7	606.8	625.7	622.7
177.5°	625.7	628.8	627.5	624.3	624.8	623.9	624.8	625.7	623.1	625.7	624.8
180°	626.6	626.6	626.6	626.6	626.6	626.6	626.6	626.6	626.6	626.6	626.6



TEST NUMBER: P392497

CATALOG NUMBER: MWL-2-18-31-UNV-L935-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1151.2	1151.2	1151.2	1151.2	1151.2	1151.2
2.5°	1145.8	1147.1	1146.3	1157.5	1154.1	1147.4
5°	1144.1	1141.6	1144.1	1145.0	1145.8	1154.0
7.5°	1132.9	1130.7	1133.2	1134.5	1140.4	1135.3
10°	1118.2	1119.5	1118.7	1124.5	1125.4	1121.6
12.5°	1100.7	1102.8	1100.7	1107.4	1107.9	1104.9
15°	1080.2	1081.9	1080.7	1083.2	1083.6	1083.7
17.5°	1062.7	1062.7	1062.7	1062.4	1062.7	1060.3
20°	1034.7	1035.6	1035.1	1039.8	1038.2	1033.7
22.5°	1000.5	1008.0	1001.0	1007.3	1004.8	1004.0
25°	974.6	974.6	975.1	978.5	970.6	969.7
27.5°	940.0	944.6	940.6	943.5	933.1	933.1
30°	914.2	909.6	915.1	903.0	897.2	889.6
32.5°	867.5	875.0	868.3	859.6	851.3	847.1
35°	831.1	835.3	832.5	816.6	797.4	797.4
37.5°	785.2	791.5	786.6	762.4	745.7	744.1
40°	741.1	747.3	741.9	710.7	694.8	698.2
42.5°	690.1	703.9	691.1	652.7	644.8	649.8
45°	633.4	653.0	634.3	598.4	596.8	606.8
47.5°	572.4	602.9	572.9	549.2	555.9	559.2
50°	517.8	540.8	518.7	499.1	509.1	515.8
52.5°	463.6	469.0	464.4	452.8	471.6	477.4
55°	406.4	396.8	407.3	412.7	431.9	432.7
57.5°	353.0	334.3	353.9	363.5	391.0	392.7
60°	293.8	284.2	294.2	318.0	348.0	353.9
62.5°	244.5	242.9	245.0	270.4	307.1	310.5
65°	203.6	205.4	204.1	227.5	258.4	270.9
67.5°	167.8	174.5	167.8	189.1	215.8	228.3
70°	136.9	147.0	136.9	154.5	174.5	191.1
72.5°	111.4	120.5	111.9	124.4	139.4	157.0
75°	89.7	98.0	89.7	96.4	110.2	126.1
77.5°	69.6	79.6	69.6	73.0	91.1	109.6
80°	52.1	58.8	52.1	57.6	82.2	94.6
82.5°	37.1	40.5	37.1	53.8	81.1	89.3
85°	28.5	23.0	29.3	55.1	85.2	90.4
87.5°	23.0	6.6	29.3	62.0	94.1	95.4
90°	15.1	1.3	31.8	72.1	104.2	104.3
92.5°	7.6	7.9	38.1	83.5	116.0	118.7
95°	2.6	18.6	46.8	95.8	127.5	130.1
97.5°	6.1	32.2	62.6	106.1	139.9	143.7
100°	15.4	49.0	81.6	120.9	150.4	153.4
102.5°	28.2	67.0	99.8	139.0	165.0	172.8
105°	45.4	87.8	118.6	160.6	184.4	190.6
107.5°	65.2	109.9	138.1	180.9	205.1	209.5
110°	86.5	132.8	157.6	199.8	226.3	231.6



TEST NUMBER: P392497

CATALOG NUMBER: MWL-2-18-31-UNV-L935-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	110.2	156.6	178.6	217.5	248.9	252.8
115°	136.3	179.6	197.7	237.8	266.9	269.1
117.5°	159.7	206.0	217.0	252.8	285.9	286.4
120°	184.4	231.2	236.4	273.5	304.5	308.0
122.5°	209.5	255.0	255.0	291.2	320.7	323.8
125°	233.0	280.6	273.5	305.3	336.6	337.5
127.5°	257.6	307.5	294.7	322.5	351.2	349.9
130°	283.6	332.2	313.2	338.9	364.9	360.4
132.5°	307.5	358.7	332.2	355.6	378.6	381.1
135°	331.4	383.4	348.5	370.2	392.7	391.8
137.5°	354.3	406.3	368.4	381.7	401.9	404.6
140°	376.8	431.0	386.1	396.7	413.4	413.8
142.5°	400.6	455.8	405.5	411.6	426.2	423.5
145°	427.1	479.2	429.7	426.6	436.7	430.2
147.5°	450.5	499.4	447.0	438.4	449.6	442.1
150°	476.5	520.2	470.8	454.0	460.6	457.1
152.5°	500.4	536.6	496.8	465.9	473.4	468.9
155°	523.8	553.8	522.0	477.8	483.1	481.3
157.5°	544.1	568.7	541.0	489.3	496.3	492.8
160°	561.7	581.2	563.0	507.9	505.1	505.1
162.5°	577.2	593.0	578.5	533.0	514.9	506.5
165°	590.8	602.3	592.2	561.3	532.6	525.9
167.5°	603.6	611.1	607.7	584.3	561.3	546.2
170°	613.8	618.2	613.3	603.6	592.2	578.5
172.5°	619.0	620.9	624.0	617.8	613.3	603.7
175°	623.0	627.9	625.3	626.6	622.7	620.1
177.5°	623.9	624.8	624.3	627.5	628.8	625.7
180°	626.6	626.6	626.6	626.6	626.6	626.6

(END OF REPORT)