

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: P392479

Luminaire Tested: **MWL-2-13-23-UNV-L935-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392479
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-2-13-23-UNV-L935-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

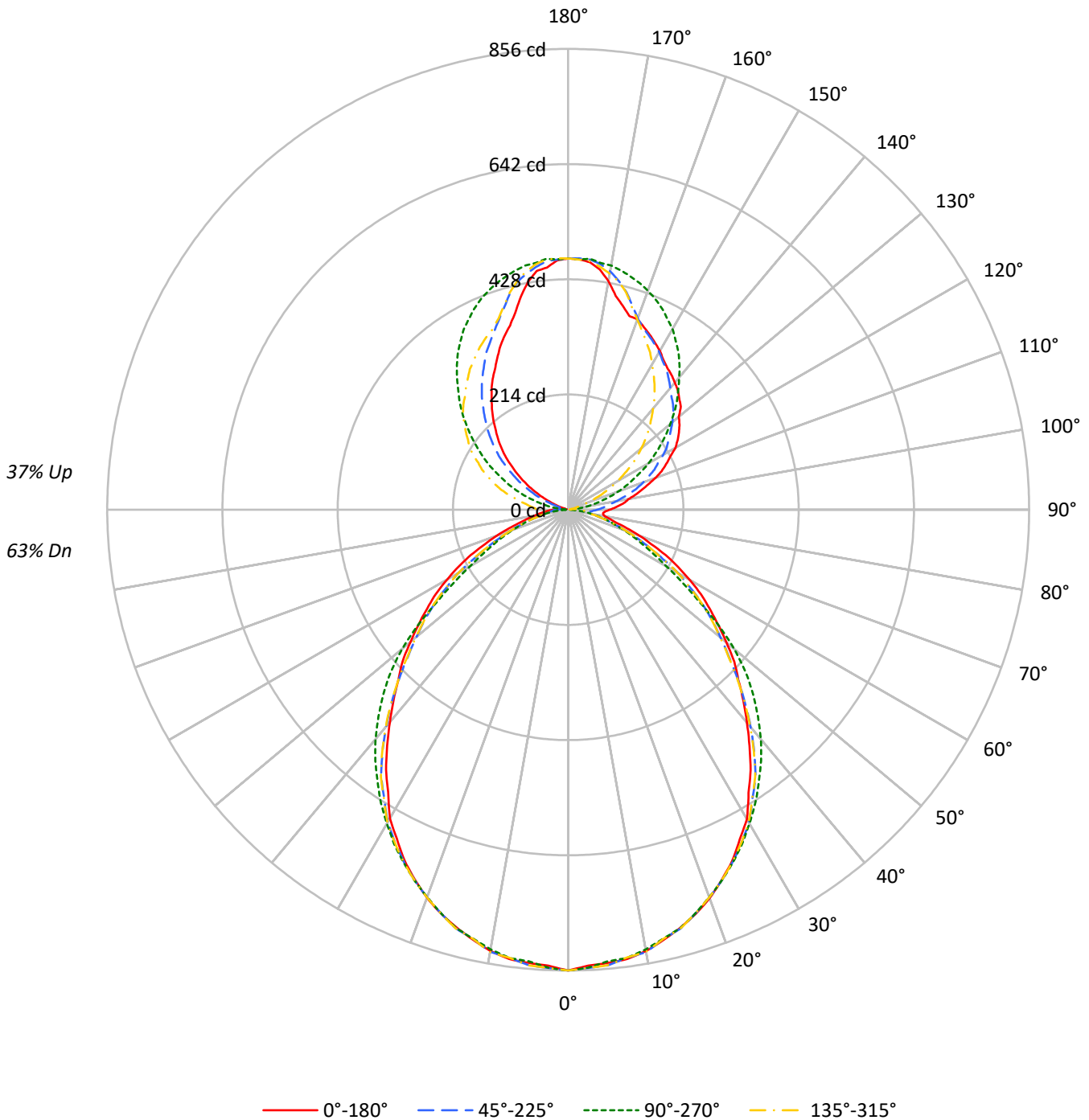
Lumens per Lamp: N/A
Luminaire Lumens: 3057.2 lumens
Efficiency: N/A
Efficacy: 87.5 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Direct

Input Watts (W): 34.946
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			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	103	103	103	103	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	33	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	22	20	18

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	11055	11055	11055	11055
5°	10760	10040	10760	10040
10°	10530	9246	10530	9246
15°	10183	8484	10170	8484
20°	9814	7716	9801	7716
25°	9357	7028	9342	7028
30°	8834	6365	8816	6365
35°	8127	5723	8113	5723
40°	7412	5103	7392	5103
45°	6753	4435	6739	4435
50°	6170	3692	6156	3692
55°	5561	2741	5549	2741
60°	4936	1990	4928	1990
65°	4217	1490	4217	1490
70°	3382	1100	3391	1100
75°	2572	778	2600	778
80°	2349	478	2138	478
85°	2862	203	1929	203



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	80.5	2.6
10°-20°	226.5	7.4
20°-30°	332.3	10.9
30°-40°	376.8	12.3
40°-50°	351.4	11.5
50°-60°	274.7	9.0
60°-70°	170.3	5.6
70°-80°	82.3	2.7
80°-90°	41.5	1.4
90°-100°	42.5	1.4
100°-110°	72.3	2.4
110°-120°	124.2	4.1
120°-130°	169.0	5.5
130°-140°	192.5	6.3
140°-150°	192.1	6.3
150°-160°	167.2	5.5
160°-170°	117.5	3.8
170°-180°	43.7	1.4
0°-30°	639.2	20.9
0°-40°	1016.0	33.2
0°-60°	1642.1	53.7
0°-90°	1936.2	63.3
90°-120°	239.1	7.8
90°-150°	792.7	25.9
90°-180°	1121.0	36.7
0°-180°	3057.2	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	856	856	856	856	856	
5°	845	842	845	842	845	80
15°	804	804	803	804	804	227
25°	720	723	719	723	720	331
35°	591	617	590	617	591	368
45°	447	486	446	486	447	346
55°	320	296	320	296	320	287
65°	200	153	200	153	200	197
75°	92	74	93	74	92	103
85°	65	17	44	17	65	54
90°	77	0	27	0	77	42
95°	96	13	19	13	96	83
105°	142	66	3	66	142	150
115°	201	133	47	133	201	199
125°	251	209	115	209	251	224
135°	292	285	184	285	292	225
145°	321	357	248	357	321	202
155°	358	412	311	412	358	165
165°	392	448	379	448	392	111
175°	461	468	452	468	461	43
180°	466	466	466	466	466	



TEST NUMBER: P392479

CATALOG NUMBER: MWL-2-13-23-UNV-L935-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	855.9	855.9	855.9	855.9	855.9	855.9	855.9	855.9	855.9	855.9	855.9
2.5°	847.5	856.4	852.1	851.5	851.5	851.3	852.1	856.4	847.7	856.4	852.1
5°	845.0	851.4	849.6	848.7	842.1	848.7	849.3	851.4	845.0	851.4	849.3
7.5°	841.9	845.0	839.3	841.2	839.6	840.9	838.9	844.8	841.9	844.8	838.9
10°	832.3	833.4	834.3	830.0	829.2	829.8	833.9	832.7	832.3	832.7	833.9
12.5°	818.7	820.0	816.4	818.9	816.0	818.9	816.4	819.4	818.0	819.4	816.4
15°	804.0	808.4	805.5	803.0	804.4	802.7	805.2	807.7	803.0	807.7	805.2
17.5°	787.2	789.2	786.4	786.0	786.0	786.0	786.0	788.9	786.4	788.9	786.0
20°	768.1	768.7	766.3	765.1	765.7	764.8	766.0	768.0	767.1	768.0	766.0
22.5°	744.4	748.7	745.5	747.6	745.6	747.3	745.1	748.0	743.8	748.0	745.1
25°	720.3	722.8	722.4	726.0	723.1	725.6	721.7	721.7	719.2	721.7	721.7
27.5°	690.2	693.5	697.4	700.4	699.7	700.1	696.7	692.6	689.2	692.6	696.7
30°	663.5	661.8	671.0	673.2	673.1	672.5	670.0	660.8	662.2	660.8	670.0
32.5°	623.4	628.5	636.8	646.5	646.7	645.8	635.8	627.2	622.2	627.2	635.8
35°	590.6	593.9	606.4	617.3	617.1	616.3	605.4	592.9	589.6	592.9	605.4
37.5°	553.0	553.9	567.2	585.6	588.2	584.6	566.2	552.9	552.0	552.9	566.2
40°	516.4	515.5	527.1	548.5	556.6	547.9	525.9	514.1	515.0	514.1	525.9
42.5°	481.2	478.0	486.0	513.5	521.5	512.8	484.9	476.6	479.9	476.6	484.9
45°	446.7	442.6	445.1	470.1	485.6	469.4	443.7	441.5	445.8	441.5	443.7
47.5°	418.3	407.5	405.0	426.4	447.2	426.0	403.7	406.5	417.4	406.5	403.7
50°	383.3	377.5	369.1	384.7	402.7	384.0	367.8	376.1	382.4	376.1	367.8
52.5°	350.8	348.3	336.3	342.9	350.9	342.3	335.2	347.0	349.8	347.0	335.2
55°	320.4	316.3	302.9	300.9	295.5	300.2	301.9	315.2	319.7	315.2	301.9
57.5°	292.0	286.2	267.8	260.9	251.4	260.2	266.8	285.2	291.4	285.2	266.8
60°	260.0	255.0	235.8	218.0	210.5	217.6	235.1	254.3	259.6	254.3	235.1
62.5°	230.0	221.6	198.3	181.2	179.2	180.9	197.6	221.0	229.6	221.0	197.6
65°	199.6	187.1	167.1	150.3	153.3	150.1	166.7	186.7	199.6	186.7	166.7
67.5°	167.1	156.2	138.7	123.3	130.0	123.3	138.3	155.8	167.1	155.8	138.3
70°	140.8	127.5	113.3	101.6	109.2	101.6	113.3	127.8	141.2	127.8	113.3
72.5°	114.2	102.4	90.8	83.3	88.8	82.9	90.8	102.8	114.9	102.8	90.8
75°	91.6	80.8	71.3	65.4	73.8	65.4	71.6	81.1	92.6	81.1	71.6
77.5°	78.4	66.3	53.8	52.0	58.8	52.0	54.1	65.2	77.1	65.2	54.1
80°	68.9	60.0	42.2	38.7	42.9	38.7	41.6	54.7	62.7	54.7	41.6
82.5°	65.1	58.8	39.4	27.9	30.4	27.9	35.6	47.0	52.6	47.0	35.6
85°	65.3	62.0	40.9	21.4	17.0	20.7	31.3	41.9	44.0	41.9	31.3
87.5°	69.6	69.2	46.3	21.3	4.1	16.7	27.4	37.6	35.8	37.6	27.4
90°	76.7	76.7	53.9	23.2	0.3	10.7	21.4	30.4	27.4	30.4	21.4
92.5°	87.0	85.5	61.9	27.5	5.3	4.8	16.8	24.7	22.5	24.7	16.8
95°	96.5	94.5	70.2	35.0	13.2	2.2	11.0	18.2	18.6	18.2	11.0
97.5°	106.7	103.4	78.8	46.9	24.2	4.7	6.2	13.0	14.7	13.0	6.2
100°	113.7	110.9	90.3	61.0	36.7	11.6	3.2	7.7	10.2	7.7	3.2
102.5°	127.5	122.6	103.7	74.6	50.1	21.2	5.8	4.3	5.2	4.3	5.8
105°	141.5	136.9	119.9	88.6	65.6	34.1	13.7	4.7	3.2	4.7	13.7
107.5°	155.7	152.4	134.4	103.0	82.1	48.8	24.9	13.0	8.5	13.0	24.9
110°	172.1	168.1	148.4	117.5	99.1	64.5	37.6	23.6	18.3	23.6	37.6



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CATALOG NUMBER: MWL-2-13-23-UNV-L935-EDD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	187.9	184.9	161.6	132.6	116.9	81.7	53.4	36.7	31.7	36.7	53.4
115°	200.9	198.4	176.7	146.8	133.3	101.1	70.8	52.1	47.0	52.1	70.8
117.5°	213.7	213.4	187.9	161.3	153.0	118.6	87.0	68.4	62.1	68.4	87.0
120°	229.8	227.2	204.2	176.5	172.7	137.7	105.5	86.2	79.9	86.2	105.5
122.5°	241.0	239.4	217.4	190.4	190.4	156.5	122.6	103.2	96.7	103.2	122.6
125°	251.2	250.6	227.2	204.2	209.4	174.0	141.7	122.0	114.8	122.0	141.7
127.5°	260.4	261.5	240.0	219.3	228.8	191.7	160.4	138.8	131.2	138.8	160.4
130°	268.3	271.6	252.1	233.2	247.2	211.1	177.2	155.5	150.6	155.5	177.2
132.5°	283.7	281.7	264.7	247.2	267.0	228.8	195.0	172.3	166.7	172.3	195.0
135°	291.7	292.3	275.5	259.4	285.4	246.5	211.8	189.4	183.8	189.4	211.8
137.5°	301.2	299.3	284.1	274.1	302.4	263.7	228.2	207.4	198.6	207.4	228.2
140°	308.1	307.7	295.2	287.3	320.9	280.4	245.0	223.8	215.7	223.8	245.0
142.5°	315.3	317.2	306.4	301.8	339.3	298.2	263.0	240.0	232.1	240.0	263.0
145°	321.1	325.3	318.4	319.9	356.7	317.9	279.6	256.4	247.7	256.4	279.6
147.5°	329.3	334.8	326.7	333.6	371.8	336.2	295.5	272.4	264.8	272.4	295.5
150°	340.4	343.1	338.2	350.4	387.4	354.8	311.6	287.9	280.3	287.9	311.6
152.5°	349.4	352.6	347.1	369.9	399.4	372.5	329.3	303.0	294.2	303.0	329.3
155°	358.5	359.9	355.9	388.6	412.3	389.9	343.4	319.7	311.2	319.7	343.4
157.5°	367.1	369.8	364.3	402.8	423.4	405.0	358.7	336.5	328.9	336.5	358.7
160°	376.3	376.3	378.0	419.2	432.7	418.2	375.8	354.9	344.5	354.9	375.8
162.5°	377.3	383.5	396.8	430.8	441.5	429.7	394.2	368.0	358.9	368.0	394.2
165°	391.8	396.5	417.9	440.9	448.4	439.9	416.9	388.9	378.9	388.9	416.9
167.5°	406.9	417.9	435.0	452.4	455.0	449.4	434.3	415.0	405.8	415.0	434.3
170°	430.8	440.9	449.4	456.6	460.3	457.0	445.2	435.7	429.4	435.7	445.2
172.5°	450.1	456.6	459.9	464.5	462.3	461.0	455.0	450.4	447.2	450.4	455.0
175°	461.4	463.5	466.5	465.7	467.7	464.1	463.5	465.9	451.6	465.9	463.5
177.5°	465.7	468.8	467.2	465.1	465.4	464.8	465.2	466.5	463.6	466.5	465.2
180°	466.5	466.5	466.5	466.5	466.5	466.5	466.5	466.5	466.5	466.5	466.5



TEST NUMBER: P392479

CATALOG NUMBER: MWL-2-13-23-UNV-L935-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	855.9	855.9	855.9	855.9	855.9	855.9
2.5°	851.3	851.5	851.5	852.1	856.4	847.5
5°	848.7	842.1	848.7	849.6	851.4	845.0
7.5°	840.9	839.6	841.2	839.3	845.0	841.9
10°	829.8	829.2	830.0	834.3	833.4	832.3
12.5°	818.9	816.0	818.9	816.4	820.0	818.7
15°	802.7	804.4	803.0	805.5	808.4	804.0
17.5°	786.0	786.0	786.0	786.4	789.2	787.2
20°	764.8	765.7	765.1	766.3	768.7	768.1
22.5°	747.3	745.6	747.6	745.5	748.7	744.4
25°	725.6	723.1	726.0	722.4	722.8	720.3
27.5°	700.1	699.7	700.4	697.4	693.5	690.2
30°	672.5	673.1	673.2	671.0	661.8	663.5
32.5°	645.8	646.7	646.5	636.8	628.5	623.4
35°	616.3	617.1	617.3	606.4	593.9	590.6
37.5°	584.6	588.2	585.6	567.2	553.9	553.0
40°	547.9	556.6	548.5	527.1	515.5	516.4
42.5°	512.8	521.5	513.5	486.0	478.0	481.2
45°	469.4	485.6	470.1	445.1	442.6	446.7
47.5°	426.0	447.2	426.4	405.0	407.5	418.3
50°	384.0	402.7	384.7	369.1	377.5	383.3
52.5°	342.3	350.9	342.9	336.3	348.3	350.8
55°	300.2	295.5	300.9	302.9	316.3	320.4
57.5°	260.2	251.4	260.9	267.8	286.2	292.0
60°	217.6	210.5	218.0	235.8	255.0	260.0
62.5°	180.9	179.2	181.2	198.3	221.6	230.0
65°	150.1	153.3	150.3	167.1	187.1	199.6
67.5°	123.3	130.0	123.3	138.7	156.2	167.1
70°	101.6	109.2	101.6	113.3	127.5	140.8
72.5°	82.9	88.8	83.3	90.8	102.4	114.2
75°	65.4	73.8	65.4	71.3	80.8	91.6
77.5°	52.0	58.8	52.0	53.8	66.3	78.4
80°	38.7	42.9	38.7	42.2	60.0	68.9
82.5°	27.9	30.4	27.9	39.4	58.8	65.1
85°	20.7	17.0	21.4	40.9	62.0	65.3
87.5°	16.7	4.1	21.3	46.3	69.2	69.6
90°	10.7	0.3	23.2	53.9	76.7	76.7
92.5°	4.8	5.3	27.5	61.9	85.5	87.0
95°	2.2	13.2	35.0	70.2	94.5	96.5
97.5°	4.7	24.2	46.9	78.8	103.4	106.7
100°	11.6	36.7	61.0	90.3	110.9	113.7
102.5°	21.2	50.1	74.6	103.7	122.6	127.5
105°	34.1	65.6	88.6	119.9	136.9	141.5
107.5°	48.8	82.1	103.0	134.4	152.4	155.7
110°	64.5	99.1	117.5	148.4	168.1	172.1



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	81.7	116.9	132.6	161.6	184.9	187.9
115°	101.1	133.3	146.8	176.7	198.4	200.9
117.5°	118.6	153.0	161.3	187.9	213.4	213.7
120°	137.7	172.7	176.5	204.2	227.2	229.8
122.5°	156.5	190.4	190.4	217.4	239.4	241.0
125°	174.0	209.4	204.2	227.2	250.6	251.2
127.5°	191.7	228.8	219.3	240.0	261.5	260.4
130°	211.1	247.2	233.2	252.1	271.6	268.3
132.5°	228.8	267.0	247.2	264.7	281.7	283.7
135°	246.5	285.4	259.4	275.5	292.3	291.7
137.5°	263.7	302.4	274.1	284.1	299.3	301.2
140°	280.4	320.9	287.3	295.2	307.7	308.1
142.5°	298.2	339.3	301.8	306.4	317.2	315.3
145°	317.9	356.7	319.9	318.4	325.3	321.1
147.5°	336.2	371.8	333.6	326.7	334.8	329.3
150°	354.8	387.4	350.4	338.2	343.1	340.4
152.5°	372.5	399.4	369.9	347.1	352.6	349.4
155°	389.9	412.3	388.6	355.9	359.9	358.5
157.5°	405.0	423.4	402.8	364.3	369.8	367.1
160°	418.2	432.7	419.2	378.0	376.3	376.3
162.5°	429.7	441.5	430.8	396.8	383.5	377.3
165°	439.9	448.4	440.9	417.9	396.5	391.8
167.5°	449.4	455.0	452.4	435.0	417.9	406.9
170°	457.0	460.3	456.6	449.4	440.9	430.8
172.5°	461.0	462.3	464.5	459.9	456.6	450.1
175°	464.1	467.7	465.7	466.5	463.5	461.4
177.5°	464.8	465.4	465.1	467.2	468.8	465.7
180°	466.5	466.5	466.5	466.5	466.5	466.5

(END OF REPORT)