

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: P392480

Luminaire Tested: **MWL-2-13-23-UNV-L940-EDD**

Issue Date: 12/2/2019

Test Information

Test Method: LM-79-08
Report Number: P392480
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-L940-EDD
Description: MWL 2FT MEDICAL LED FIXTURE
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

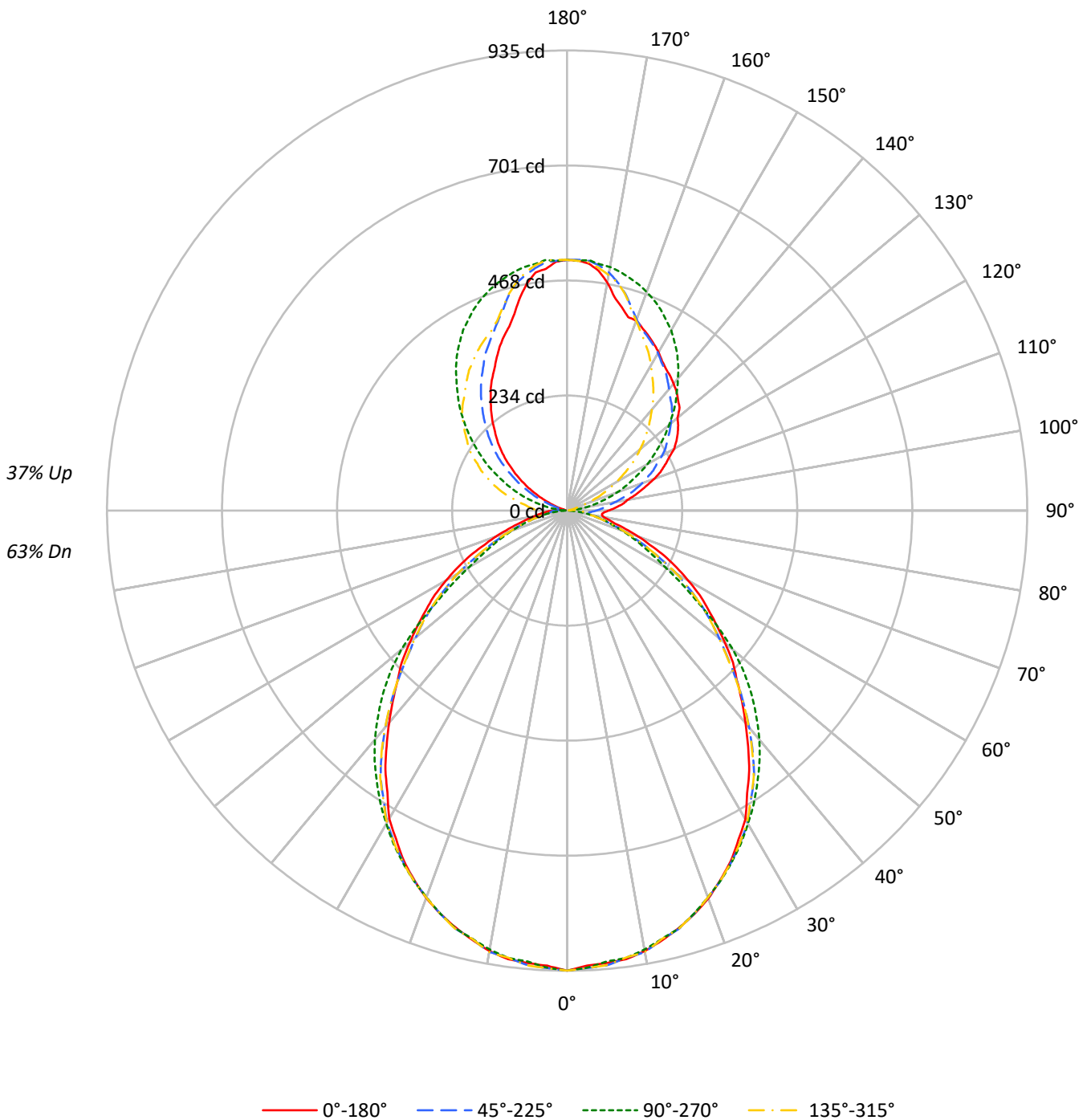
Lumens per Lamp: N/A
Luminaire Lumens: 3338.3 lumens
Efficiency: N/A
Efficacy: 95.5 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.18 / 1.25
Luminous Opening: Rectangular w/ Sides (W: 0.42' x L: 2' x H: 0.42')
CIE Type: Semi-Direct

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°	12072	12072	12072	12072
5°	11748	10963	11748	10963
10°	11496	10096	11496	10096
15°	11118	9263	11105	9263
20°	10716	8425	10703	8425
25°	10217	7675	10202	7675
30°	9646	6949	9626	6949
35°	8874	6249	8859	6249
40°	8092	5572	8070	5572
45°	7374	4843	7358	4843
50°	6739	4031	6721	4031
55°	6073	2993	6059	2993
60°	5389	2173	5382	2173
65°	4603	1628	4603	1628
70°	3694	1201	3704	1201
75°	2808	849	2839	849
80°	2568	522	2336	522
85°	3125	222	2104	222



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	87.9	2.6
10°-20°	247.3	7.4
20°-30°	362.8	10.9
30°-40°	411.4	12.3
40°-50°	383.7	11.5
50°-60°	299.9	9.0
60°-70°	185.9	5.6
70°-80°	89.9	2.7
80°-90°	45.3	1.4
90°-100°	46.4	1.4
100°-110°	79.0	2.4
110°-120°	135.7	4.1
120°-130°	184.6	5.5
130°-140°	210.2	6.3
140°-150°	209.7	6.3
150°-160°	182.5	5.5
160°-170°	128.3	3.8
170°-180°	47.7	1.4
0°-30°	698.0	20.9
0°-40°	1109.4	33.2
0°-60°	1793.1	53.7
0°-90°	2114.2	63.3
90°-120°	261.1	7.8
90°-150°	865.5	25.9
90°-180°	1224.0	36.7
0°-180°	3338.3	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	935	935	935	935	935	
5°	923	920	923	920	923	88
15°	878	878	877	878	878	247
25°	786	790	785	790	786	361
35°	645	674	644	674	645	402
45°	488	530	487	530	488	378
55°	350	323	349	323	350	314
65°	218	168	218	168	218	215
75°	100	80	101	80	100	112
85°	71	19	48	19	71	59
90°	84	0	30	0	84	46
95°	105	14	20	14	105	90
105°	154	72	4	72	154	164
115°	219	146	51	146	219	217
125°	274	229	125	229	274	245
135°	318	312	201	312	318	246
145°	351	390	270	390	351	221
155°	392	450	340	450	392	181
165°	428	490	414	490	428	121
175°	504	511	493	511	504	47
180°	509	509	509	509	509	



TEST NUMBER: P392480

CATALOG NUMBER: MWL-2-13-23-UNV-L940-EDD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	934.6	934.6	934.6	934.6	934.6	934.6	934.6	934.6	934.6	934.6	934.6
2.5°	925.3	935.2	930.4	929.8	929.8	929.5	930.4	935.2	925.7	935.2	930.4
5°	922.6	929.7	927.7	926.8	919.5	926.8	927.3	929.7	922.6	929.7	927.3
7.5°	919.3	922.8	916.4	918.6	916.7	918.2	916.0	922.4	919.3	922.4	916.0
10°	908.7	910.0	910.9	906.4	905.5	906.0	910.6	909.3	908.7	909.3	910.6
12.5°	894.0	895.4	891.4	894.2	891.1	894.2	891.4	894.7	893.2	894.7	891.4
15°	877.8	882.7	879.6	876.8	878.3	876.5	879.2	881.9	876.8	881.9	879.2
17.5°	859.6	861.7	858.6	858.3	858.3	858.3	858.3	861.4	858.6	861.4	858.3
20°	838.7	839.3	836.8	835.5	836.0	835.1	836.4	838.6	837.7	838.6	836.4
22.5°	812.9	817.4	814.0	816.3	814.2	816.0	813.6	816.7	812.2	816.7	813.6
25°	786.5	789.2	788.8	792.7	789.6	792.3	788.1	788.1	785.4	788.1	788.1
27.5°	753.7	757.3	761.5	764.8	764.0	764.4	760.8	756.2	752.6	756.2	760.8
30°	724.5	722.7	732.7	735.1	734.9	734.3	731.6	721.6	723.0	721.6	731.6
32.5°	680.8	686.2	695.4	705.9	706.1	705.2	694.3	684.8	679.3	684.8	694.3
35°	644.9	648.5	662.2	674.0	673.8	672.9	661.1	647.4	643.8	647.4	661.1
37.5°	603.9	604.8	619.4	639.4	642.3	638.3	618.3	603.7	602.8	603.7	618.3
40°	563.8	562.9	575.6	599.0	607.7	598.2	574.2	561.4	562.3	561.4	574.2
42.5°	525.5	521.9	530.6	560.7	569.4	560.0	529.5	520.4	524.1	520.4	529.5
45°	487.8	483.2	486.0	513.3	530.3	512.6	484.5	482.2	486.7	482.2	484.5
47.5°	456.8	445.0	442.2	465.6	488.3	465.2	440.8	443.9	455.7	443.9	440.8
50°	418.6	412.2	403.1	420.0	439.7	419.3	401.6	410.7	417.5	410.7	401.6
52.5°	383.0	380.3	367.2	374.5	383.2	373.7	366.1	378.8	381.9	378.8	366.1
55°	349.9	345.3	330.7	328.5	322.7	327.8	329.6	344.2	349.1	344.2	329.6
57.5°	318.9	312.5	292.5	284.8	274.4	284.1	291.4	311.4	318.2	311.4	291.4
60°	283.9	278.4	257.5	238.0	229.8	237.6	256.7	277.7	283.5	277.7	256.7
62.5°	251.1	242.0	216.5	197.9	195.7	197.5	215.7	241.3	250.7	241.3	215.7
65°	217.9	204.3	182.4	164.2	167.5	163.8	182.0	203.9	217.9	203.9	182.0
67.5°	182.4	170.6	151.4	134.7	141.9	134.7	151.1	170.2	182.4	170.2	151.1
70°	153.8	139.2	123.7	111.0	119.2	111.0	123.7	139.6	154.2	139.6	123.7
72.5°	124.6	111.9	99.1	90.9	96.9	90.6	99.1	112.2	125.4	112.2	99.1
75°	100.0	88.2	77.8	71.4	80.5	71.4	78.2	88.6	101.1	88.6	78.2
77.5°	85.6	72.3	58.7	56.9	64.1	56.9	59.0	71.2	84.2	71.2	59.0
80°	75.3	65.5	46.1	42.3	46.8	42.3	45.4	59.8	68.5	59.8	45.4
82.5°	71.2	64.2	43.1	30.4	33.2	30.4	38.8	51.4	57.5	51.4	38.8
85°	71.3	67.8	44.6	23.3	18.6	22.6	34.2	45.8	48.0	45.8	34.2
87.5°	76.1	75.5	50.5	23.2	4.6	18.2	30.0	41.1	39.1	41.1	30.0
90°	83.7	83.7	58.9	25.3	0.4	11.7	23.3	33.2	29.9	33.2	23.3
92.5°	94.9	93.4	67.6	30.1	5.7	5.3	18.4	27.0	24.6	27.0	18.4
95°	105.3	103.1	76.6	38.3	14.4	2.4	12.0	19.9	20.2	19.9	12.0
97.5°	116.5	112.9	86.0	51.2	26.4	5.2	6.7	14.2	16.0	14.2	6.7
100°	124.2	121.1	98.6	66.6	40.0	12.8	3.5	8.4	11.1	8.4	3.5
102.5°	139.1	133.9	113.2	81.4	54.8	23.1	6.3	4.7	5.6	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



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CATALOG NUMBER: MWL-2-13-23-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°	219.4	216.7	193.0	160.3	145.6	110.4	77.4	56.9	51.4	56.9	77.4
117.5°	233.3	233.0	205.2	176.1	167.1	129.5	94.9	74.7	67.9	74.7	94.9
120°	250.9	248.1	222.9	192.8	188.5	150.4	115.3	94.1	87.3	94.1	115.3
122.5°	263.1	261.4	237.3	207.9	207.9	170.9	133.9	112.7	105.6	112.7	133.9
125°	274.2	273.6	248.1	222.9	228.7	190.0	154.7	133.2	125.3	133.2	154.7
127.5°	284.4	285.4	262.0	239.4	249.9	209.3	175.2	151.5	143.2	151.5	175.2
130°	292.9	296.6	275.3	254.6	270.0	230.5	193.5	169.8	164.5	169.8	193.5
132.5°	309.8	307.7	289.0	270.0	291.6	249.9	212.9	188.1	182.0	188.1	212.9
135°	318.4	319.2	300.8	283.3	311.6	269.2	231.2	206.8	200.7	206.8	231.2
137.5°	328.8	326.7	310.1	299.4	330.3	287.9	249.2	226.5	216.8	226.5	249.2
140°	336.4	336.0	322.3	313.8	350.4	306.2	267.5	244.4	235.5	244.4	267.5
142.5°	344.3	346.4	334.6	329.5	370.5	325.6	287.2	262.0	253.5	262.0	287.2
145°	350.6	355.2	347.7	349.3	389.5	347.1	305.3	279.9	270.5	279.9	305.3
147.5°	359.5	365.6	356.7	364.3	406.0	367.1	322.6	297.5	289.2	297.5	322.6
150°	371.7	374.6	369.3	382.7	422.9	387.4	340.2	314.3	306.0	314.3	340.2
152.5°	381.5	385.0	378.9	403.9	436.1	406.7	359.5	330.8	321.2	330.8	359.5
155°	391.5	393.0	388.6	424.3	450.2	425.8	375.0	349.1	339.8	349.1	375.0
157.5°	400.8	403.7	397.8	439.8	462.4	442.2	391.7	367.4	359.2	367.4	391.7
160°	410.9	410.9	412.8	457.7	472.4	456.6	410.4	387.6	376.1	387.6	410.4
162.5°	412.0	418.7	433.3	470.3	482.2	469.2	430.4	401.9	391.9	401.9	430.4
165°	427.8	433.0	456.3	481.4	489.6	480.3	455.2	424.7	413.7	424.7	455.2
167.5°	444.3	456.3	475.0	494.0	496.8	490.7	474.2	453.1	443.2	453.1	474.2
170°	470.3	481.4	490.7	498.6	502.6	499.0	486.1	475.7	468.9	475.7	486.1
172.5°	491.4	498.6	502.2	507.2	504.7	503.3	496.8	491.8	488.3	491.8	496.8
175°	503.8	506.2	509.4	508.5	510.7	506.8	506.2	508.7	493.1	508.7	506.2
177.5°	508.5	511.9	510.1	507.8	508.1	507.5	507.9	509.4	506.3	509.4	507.9
180°	509.4	509.4	509.4	509.4	509.4	509.4	509.4	509.4	509.4	509.4	509.4



TEST NUMBER: P392480

CATALOG NUMBER: MWL-2-13-23-UNV-L940-EDD

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	934.6	934.6	934.6	934.6	934.6	934.6
2.5°	929.5	929.8	929.8	930.4	935.2	925.3
5°	926.8	919.5	926.8	927.7	929.7	922.6
7.5°	918.2	916.7	918.6	916.4	922.8	919.3
10°	906.0	905.5	906.4	910.9	910.0	908.7
12.5°	894.2	891.1	894.2	891.4	895.4	894.0
15°	876.5	878.3	876.8	879.6	882.7	877.8
17.5°	858.3	858.3	858.3	858.6	861.7	859.6
20°	835.1	836.0	835.5	836.8	839.3	838.7
22.5°	816.0	814.2	816.3	814.0	817.4	812.9
25°	792.3	789.6	792.7	788.8	789.2	786.5
27.5°	764.4	764.0	764.8	761.5	757.3	753.7
30°	734.3	734.9	735.1	732.7	722.7	724.5
32.5°	705.2	706.1	705.9	695.4	686.2	680.8
35°	672.9	673.8	674.0	662.2	648.5	644.9
37.5°	638.3	642.3	639.4	619.4	604.8	603.9
40°	598.2	607.7	599.0	575.6	562.9	563.8
42.5°	560.0	569.4	560.7	530.6	521.9	525.5
45°	512.6	530.3	513.3	486.0	483.2	487.8
47.5°	465.2	488.3	465.6	442.2	445.0	456.8
50°	419.3	439.7	420.0	403.1	412.2	418.6
52.5°	373.7	383.2	374.5	367.2	380.3	383.0
55°	327.8	322.7	328.5	330.7	345.3	349.9
57.5°	284.1	274.4	284.8	292.5	312.5	318.9
60°	237.6	229.8	238.0	257.5	278.4	283.9
62.5°	197.5	195.7	197.9	216.5	242.0	251.1
65°	163.8	167.5	164.2	182.4	204.3	217.9
67.5°	134.7	141.9	134.7	151.4	170.6	182.4
70°	111.0	119.2	111.0	123.7	139.2	153.8
72.5°	90.6	96.9	90.9	99.1	111.9	124.6
75°	71.4	80.5	71.4	77.8	88.2	100.0
77.5°	56.9	64.1	56.9	58.7	72.3	85.6
80°	42.3	46.8	42.3	46.1	65.5	75.3
82.5°	30.4	33.2	30.4	43.1	64.2	71.2
85°	22.6	18.6	23.3	44.6	67.8	71.3
87.5°	18.2	4.6	23.2	50.5	75.5	76.1
90°	11.7	0.4	25.3	58.9	83.7	83.7
92.5°	5.3	5.7	30.1	67.6	93.4	94.9
95°	2.4	14.4	38.3	76.6	103.1	105.3
97.5°	5.2	26.4	51.2	86.0	112.9	116.5
100°	12.8	40.0	66.6	98.6	121.1	124.2
102.5°	23.1	54.8	81.4	113.2	133.9	139.1
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



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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	219.4
117.5°	129.5	167.1	176.1	205.2	233.0	233.3
120°	150.4	188.5	192.8	222.9	248.1	250.9
122.5°	170.9	207.9	207.9	237.3	261.4	263.1
125°	190.0	228.7	222.9	248.1	273.6	274.2
127.5°	209.3	249.9	239.4	262.0	285.4	284.4
130°	230.5	270.0	254.6	275.3	296.6	292.9
132.5°	249.9	291.6	270.0	289.0	307.7	309.8
135°	269.2	311.6	283.3	300.8	319.2	318.4
137.5°	287.9	330.3	299.4	310.1	326.7	328.8
140°	306.2	350.4	313.8	322.3	336.0	336.4
142.5°	325.6	370.5	329.5	334.6	346.4	344.3
145°	347.1	389.5	349.3	347.7	355.2	350.6
147.5°	367.1	406.0	364.3	356.7	365.6	359.5
150°	387.4	422.9	382.7	369.3	374.6	371.7
152.5°	406.7	436.1	403.9	378.9	385.0	381.5
155°	425.8	450.2	424.3	388.6	393.0	391.5
157.5°	442.2	462.4	439.8	397.8	403.7	400.8
160°	456.6	472.4	457.7	412.8	410.9	410.9
162.5°	469.2	482.2	470.3	433.3	418.7	412.0
165°	480.3	489.6	481.4	456.3	433.0	427.8
167.5°	490.7	496.8	494.0	475.0	456.3	444.3
170°	499.0	502.6	498.6	490.7	481.4	470.3
172.5°	503.3	504.7	507.2	502.2	498.6	491.4
175°	506.8	510.7	508.5	509.4	506.2	503.8
177.5°	507.5	508.1	507.8	510.1	511.9	508.5
180°	509.4	509.4	509.4	509.4	509.4	509.4

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