

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: METALUX

Report Number: P192491

Luminaire Tested: **4WSL-LD2-35-UPL15-UNV-L840-CD1-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P192491
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P28105)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 4WSL-LD2-35-UPL15-UNV-L840-CD1-U
Description: 4FT Linear Wavestream System, 15% Uplight, L840
Light Source: (238) 4000K CCT, 80 CRI LEDS
EL236N0119D840
Ballast/Driver: OSRAM
OT30W

Summary

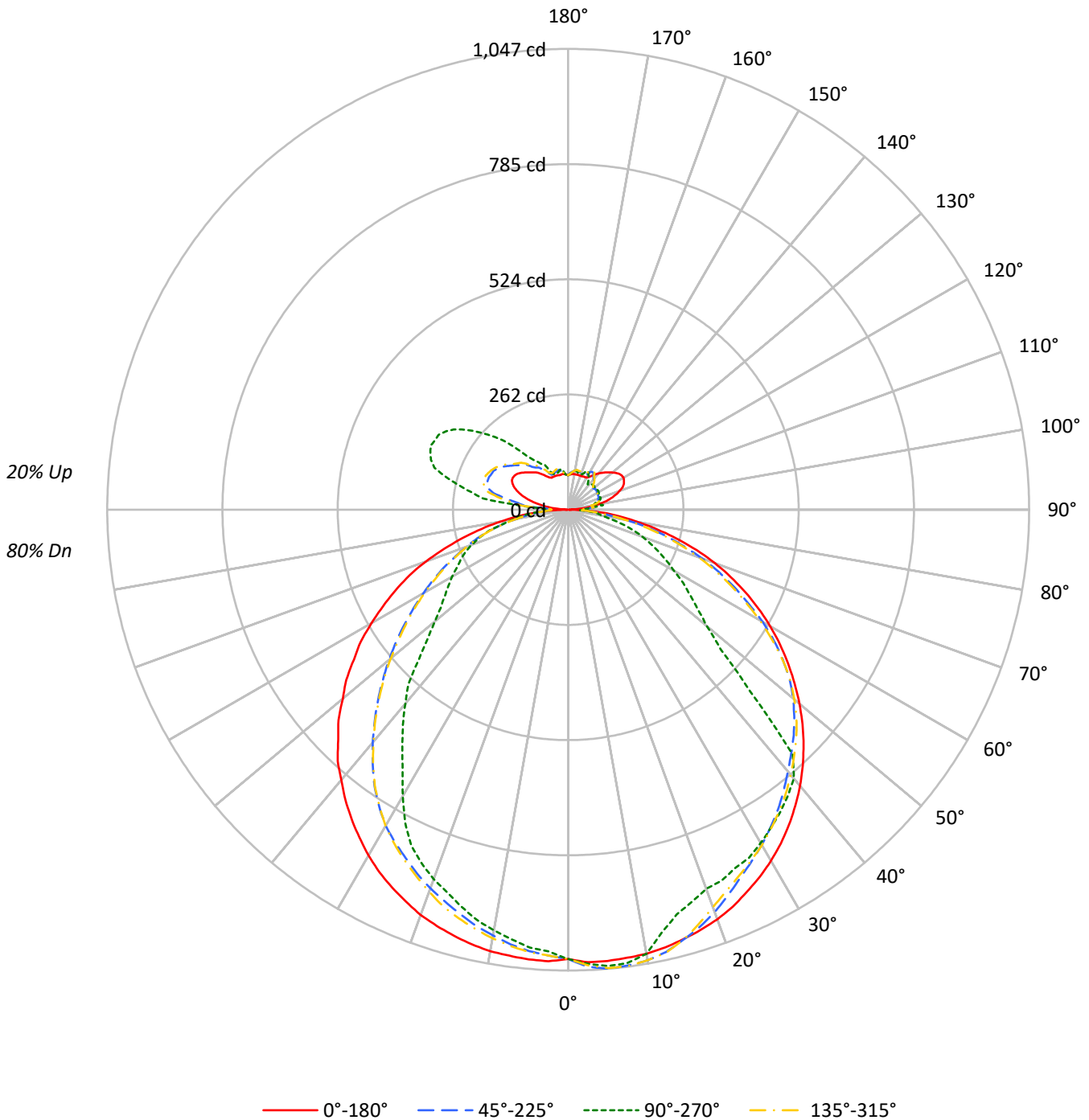
Lumens per Lamp: N/A
Luminaire Lumens: 3613.0 lumens
Efficiency: N/A
Efficacy: 118.1 lumens/watt
Spacing Criteria (0/90/45): 1.32 / 1.19 / 1.35
Luminous Opening: Rectangular (W 0.5' x L: 3.8' x H: 0')
CIE Type: Semi-Direct

Input Watts (W): 30.6
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	114	114	114	114	109	109	109	109	100	100	100	91	91	91	83	83	83	80
1	104	99	95	91	99	95	91	88	87	84	81	80	77	75	73	71	70	66
2	94	86	80	74	90	83	77	72	76	71	67	70	66	62	64	61	58	55
3	86	76	68	62	82	73	66	60	67	61	56	61	57	53	56	53	49	46
4	79	67	59	52	75	64	57	51	59	53	48	55	49	45	50	46	42	40
5	72	60	51	45	69	58	50	44	53	46	41	49	43	39	45	41	37	34
6	67	54	45	39	64	52	44	38	48	41	36	44	39	34	41	36	32	30
7	62	49	40	34	59	47	39	33	44	37	32	40	35	30	38	33	29	26
8	58	44	36	30	55	43	35	30	40	33	28	37	31	27	34	29	26	24
9	54	41	33	27	51	39	32	27	37	30	26	34	28	24	32	27	23	21
10	50	37	30	25	48	36	29	24	34	27	23	32	26	22	30	25	21	19

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	5784	5784	5784	5784
5°	5852	5919	5832	5679
10°	5893	5893	5860	5583
15°	5925	5582	5877	5479
20°	5971	5526	5908	5384
25°	5993	5612	5920	5268
30°	6027	5720	5935	4915
35°	6047	5804	5934	4540
40°	6059	5894	5929	4256
45°	6057	4686	5916	3831
50°	6043	3615	5888	3481
55°	6020	3334	5870	3381
60°	6003	3148	5843	3452
65°	5955	3048	5798	3614
70°	5864	2970	5708	3863
75°	5593	2821	5413	4104
80°	5240	2561	5086	4091
85°	5259	3354	4875	4875



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	97.2	2.7
10°-20°	275.7	7.6
20°-30°	416.7	11.5
30°-40°	501.4	13.9
40°-50°	510.0	14.1
50°-60°	443.9	12.3
60°-70°	346.2	9.6
70°-80°	214.0	5.9
80°-90°	75.3	2.1
90°-100°	70.9	2.0
100°-110°	137.3	3.8
110°-120°	150.2	4.2
120°-130°	131.7	3.6
130°-140°	98.7	2.7
140°-150°	67.6	1.9
150°-160°	43.0	1.2
160°-170°	25.1	0.7
170°-180°	8.1	0.2
0°-30°	789.5	21.9
0°-40°	1291.0	35.7
0°-60°	2244.8	62.1
0°-90°	2880.4	79.7
90°-120°	358.4	9.9
90°-150°	656.3	18.2
90°-180°	733.0	20.3
0°-180°	3613.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1021	1021	1021	1021	1021	
5°	1029	1041	1026	999	1029	98
15°	1010	952	1002	934	1010	286
25°	959	898	947	843	959	443
35°	874	839	858	656	874	547
45°	756	585	738	478	756	583
55°	610	338	594	342	610	545
65°	444	227	432	270	444	439
75°	256	129	247	188	256	271
85°	81	52	75	75	81	81
90°	1	33	1	52	1	6
95°	32	54	25	108	32	33
105°	101	67	97	287	101	105
115°	140	76	140	345	140	137
125°	142	80	142	318	142	126
135°	120	80	120	232	120	93
145°	94	80	96	138	94	60
155°	83	96	82	95	83	38
165°	82	87	81	88	82	23
175°	81	84	81	82	81	8
180°	78	78	78	78	78	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9
2.5°	1029.1	1024.4	1039.6	1040.8	1032.6	1036.1	1036.1	1023.2	1026.8	1011.5	1013.9
5°	1029.1	1030.3	1046.7	1045.5	1040.8	1042.0	1045.5	1029.1	1025.6	1004.5	1006.8
7.5°	1026.8	1032.6	1044.3	1043.2	1038.5	1039.6	1045.5	1031.4	1022.1	997.5	996.3
10°	1024.4	1030.3	1039.6	1033.8	1024.4	1027.9	1039.6	1030.3	1018.6	989.2	982.2
12.5°	1018.6	1024.4	1029.1	999.8	983.4	997.5	1030.3	1024.4	1011.5	977.5	968.2
15°	1010.3	1017.4	1011.5	970.5	951.7	964.6	1011.5	1016.2	1002.1	962.3	950.6
17.5°	1001.0	1009.2	993.9	948.2	934.2	940.0	986.9	1005.7	991.6	947.1	933.0
20°	990.4	999.8	972.8	924.8	916.6	921.3	961.1	993.9	979.9	930.6	915.4
22.5°	976.4	986.9	948.2	908.4	911.9	908.4	937.7	978.7	963.5	913.1	895.5
25°	958.8	970.5	923.6	894.3	897.8	896.7	917.8	958.8	947.1	892.0	873.2
27.5°	941.2	952.9	901.3	884.9	890.8	883.8	899.0	937.7	928.3	869.7	852.1
30°	921.3	934.2	879.1	868.5	874.4	869.7	880.2	916.6	907.2	846.3	828.7
32.5°	899.0	911.9	855.6	848.6	856.8	850.9	858.0	893.1	882.6	820.5	799.4
35°	874.4	887.3	831.0	831.0	839.2	832.2	835.7	869.7	858.0	794.7	766.6
37.5°	847.4	861.5	804.1	809.9	819.3	812.3	812.3	845.1	831.0	766.6	729.0
40°	819.3	834.5	775.9	788.8	797.0	788.8	786.5	819.3	801.7	738.4	690.4
42.5°	788.8	805.2	750.1	765.4	754.8	765.4	759.5	792.3	774.8	707.9	650.5
45°	756.0	777.1	724.4	715.0	584.9	707.9	732.6	764.2	738.4	678.6	610.7
47.5°	722.0	744.3	696.2	628.2	470.0	621.2	703.3	733.7	707.9	647.0	570.8
50°	685.7	711.5	666.9	553.2	410.2	546.2	670.4	702.1	668.1	613.0	531.0
52.5°	648.2	676.3	634.1	488.8	370.4	481.7	635.3	668.1	635.3	576.7	492.3
55°	609.5	638.8	595.4	429.0	337.6	427.8	594.3	631.8	594.3	540.3	453.6
57.5°	570.8	603.6	554.4	385.6	309.4	379.8	548.5	594.3	559.1	502.8	416.1
60°	529.8	560.3	509.9	338.7	277.8	337.6	502.8	555.6	515.7	464.2	379.8
62.5°	487.6	521.6	461.8	297.7	252.0	296.5	453.6	512.2	473.5	424.3	344.6
65°	444.2	477.0	416.1	264.9	227.4	262.5	407.9	467.7	432.5	384.4	311.8
67.5°	399.7	430.2	370.4	233.2	202.8	230.9	361.0	420.8	390.3	343.4	276.6
70°	354.0	382.1	323.5	202.8	179.3	201.6	315.3	372.7	344.6	301.2	245.0
72.5°	305.9	331.7	274.3	173.5	154.7	172.3	267.2	323.5	294.2	256.7	216.8
75°	255.5	280.1	228.6	144.2	128.9	143.0	221.5	270.8	247.3	215.7	184.0
77.5°	207.5	232.1	181.7	111.3	98.5	109.0	173.5	221.5	201.6	174.6	150.0
80°	160.6	180.5	133.6	83.2	78.5	83.2	130.1	170.0	155.9	137.1	117.2
82.5°	118.4	130.1	90.3	68.0	68.0	68.0	87.9	120.7	114.9	102.0	89.1
85°	80.9	80.9	60.9	51.6	51.6	51.6	59.8	71.5	75.0	68.0	68.0
87.5°	34.0	35.2	31.6	28.1	27.0	28.1	30.5	29.3	29.3	32.8	41.0
90°	1.2	15.2	25.8	31.6	32.8	30.5	23.4	14.1	1.2	19.9	36.3
92.5°	8.2	32.8	30.5	39.9	41.0	37.5	31.6	25.8	4.7	36.3	38.7
95°	31.6	38.7	59.8	60.9	53.9	51.6	58.6	36.3	24.6	49.2	98.5
97.5°	50.4	58.6	53.9	70.3	79.7	70.3	56.3	56.3	46.9	76.2	114.9
100°	69.2	62.1	55.1	60.9	70.3	62.1	52.7	62.1	65.6	89.1	140.7
102.5°	86.7	69.2	69.2	59.8	60.9	58.6	66.8	68.0	82.0	100.8	173.5
105°	100.8	71.5	72.7	68.0	66.8	68.0	72.7	72.7	97.3	111.3	188.7
107.5°	113.7	73.8	71.5	75.0	76.2	75.0	71.5	73.8	111.3	118.4	192.2
110°	124.2	75.0	72.7	75.0	78.5	75.0	72.7	76.2	123.1	125.4	194.6



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	133.6	76.2	75.0	73.8	77.4	73.8	75.0	78.5	132.4	128.9	194.6
115°	139.5	77.4	75.0	75.0	76.2	75.0	76.2	79.7	139.5	130.1	192.2
117.5°	143.0	79.7	76.2	77.4	78.5	77.4	76.2	82.0	144.2	134.8	191.1
120°	145.3	87.9	76.2	78.5	79.7	78.5	76.2	89.1	145.3	137.1	186.4
122.5°	144.2	91.4	77.4	78.5	80.9	78.5	77.4	92.6	144.2	136.0	180.5
125°	141.8	94.9	77.4	77.4	79.7	78.5	78.5	94.9	141.8	133.6	172.3
127.5°	137.1	103.1	77.4	78.5	78.5	78.5	78.5	102.0	137.1	134.8	164.1
130°	131.3	109.0	75.0	79.7	78.5	80.9	77.4	109.0	131.3	131.3	157.1
132.5°	125.4	111.3	75.0	79.7	79.7	80.9	76.2	111.3	125.4	126.6	150.0
135°	119.6	113.7	79.7	78.5	79.7	79.7	80.9	113.7	119.6	121.9	145.3
137.5°	113.7	114.9	85.6	75.0	78.5	76.2	87.9	114.9	114.9	114.9	138.3
140°	107.8	113.7	90.3	72.7	73.8	75.0	92.6	114.9	110.2	111.3	126.6
142.5°	100.8	110.2	93.8	78.5	72.7	80.9	96.1	113.7	103.1	107.8	120.7
145°	93.8	106.7	100.8	86.7	79.7	90.3	104.3	110.2	96.1	105.5	117.2
147.5°	87.9	100.8	102.0	91.4	87.9	94.9	105.5	105.5	89.1	100.8	109.0
150°	84.4	94.9	98.5	94.9	91.4	99.6	103.1	97.3	84.4	97.3	102.0
152.5°	83.2	90.3	90.3	99.6	98.5	104.3	94.9	92.6	82.0	93.8	92.6
155°	83.2	89.1	86.7	91.4	96.1	96.1	90.3	90.3	82.0	93.8	87.9
157.5°	82.0	90.3	86.7	85.6	87.9	90.3	90.3	91.4	82.0	91.4	87.9
160°	82.0	91.4	87.9	84.4	85.6	89.1	91.4	91.4	82.0	91.4	89.1
162.5°	82.0	89.1	89.1	85.6	85.6	90.3	91.4	90.3	82.0	89.1	91.4
165°	82.0	89.1	90.3	87.9	86.7	92.6	91.4	87.9	80.9	87.9	92.6
167.5°	82.0	86.7	91.4	89.1	89.1	92.6	92.6	86.7	80.9	84.4	92.6
170°	82.0	85.6	90.3	89.1	90.3	93.8	90.3	85.6	82.0	83.2	89.1
172.5°	82.0	83.2	87.9	89.1	89.1	91.4	87.9	83.2	82.0	80.9	85.6
175°	80.9	83.2	85.6	85.6	84.4	87.9	84.4	82.0	80.9	79.7	82.0
177.5°	79.7	80.9	83.2	83.2	80.9	83.2	80.9	79.7	79.7	78.5	80.9
180°	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5	78.5



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9
2.5°	1012.7	1004.5	1006.8	1013.9	1012.7	1029.1
5°	1002.1	998.6	998.6	1009.2	1008.0	1029.1
7.5°	990.4	984.6	988.1	999.8	1003.3	1026.8
10°	975.2	970.5	971.7	989.2	995.1	1024.4
12.5°	959.9	955.3	958.8	975.2	983.4	1018.6
15°	942.4	934.2	943.5	961.1	971.7	1010.3
17.5°	921.3	911.9	921.3	944.7	957.6	1001.0
20°	902.5	893.1	899.0	923.6	941.2	990.4
22.5°	881.4	869.7	874.4	901.3	923.6	976.4
25°	858.0	842.7	849.8	879.1	903.7	958.8
27.5°	827.5	801.7	819.3	855.6	879.1	941.2
30°	785.3	751.3	779.4	829.8	856.8	921.3
32.5°	736.1	699.7	730.2	798.2	831.0	899.0
35°	688.0	656.4	684.5	765.4	805.2	874.4
37.5°	645.8	616.5	642.3	727.9	777.1	847.4
40°	602.5	575.5	601.3	688.0	749.0	819.3
42.5°	562.6	536.8	561.4	648.2	718.5	788.8
45°	520.4	478.2	518.1	607.1	685.7	756.0
47.5°	475.9	431.3	472.4	567.3	652.9	722.0
50°	434.8	395.0	432.5	526.3	617.7	685.7
52.5°	398.5	364.5	397.3	485.2	581.4	648.2
55°	364.5	342.3	365.7	447.7	547.4	609.5
57.5°	337.6	322.3	338.7	411.4	509.9	570.8
60°	314.1	304.7	315.3	375.1	470.0	529.8
62.5°	288.3	284.8	288.3	339.9	431.3	487.6
65°	266.1	269.6	266.1	308.3	390.3	444.2
67.5°	245.0	253.2	246.1	274.3	349.3	399.7
70°	221.5	233.2	222.7	243.8	307.1	354.0
72.5°	196.9	211.0	196.9	214.5	262.5	305.9
75°	171.1	187.5	172.3	182.8	220.4	255.5
77.5°	143.0	153.5	145.3	148.9	179.3	207.5
80°	113.7	125.4	114.9	117.2	141.8	160.6
82.5°	94.9	103.1	96.1	89.1	105.5	118.4
85°	70.3	75.0	72.7	69.2	72.7	80.9
87.5°	43.4	45.7	43.4	43.4	37.5	34.0
90°	48.1	51.6	48.1	37.5	21.1	1.2
92.5°	49.2	53.9	49.2	41.0	39.9	8.2
95°	110.2	107.8	117.2	106.7	60.9	31.6
97.5°	171.1	195.7	177.0	127.8	82.0	50.4
100°	196.9	220.4	205.1	159.4	93.8	69.2
102.5°	227.4	253.2	236.8	186.4	105.5	86.7
105°	264.9	287.2	273.1	196.9	116.0	100.8
107.5°	284.8	318.8	290.7	201.6	123.1	113.7
110°	295.4	331.7	304.7	202.8	128.9	124.2



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	303.6	338.7	310.6	202.8	131.3	133.6
115°	303.6	344.6	310.6	199.3	134.8	139.5
117.5°	303.6	341.1	310.6	195.7	139.5	143.0
120°	293.0	339.9	302.4	191.1	140.7	145.3
122.5°	284.8	330.5	290.7	185.2	140.7	144.2
125°	269.6	317.6	276.6	178.2	138.3	141.8
127.5°	253.2	298.9	259.0	170.0	139.5	137.1
130°	237.9	277.8	241.5	161.7	134.8	131.3
132.5°	218.0	254.3	221.5	155.9	130.1	125.4
135°	199.3	232.1	203.9	151.2	124.2	119.6
137.5°	179.3	208.6	184.0	141.8	118.4	113.7
140°	155.9	179.3	160.6	131.3	114.9	107.8
142.5°	140.7	153.5	145.3	126.6	110.2	100.8
145°	131.3	138.3	134.8	121.9	107.8	93.8
147.5°	121.9	128.9	125.4	112.5	102.0	87.9
150°	118.4	118.4	123.1	104.3	98.5	84.4
152.5°	105.5	114.9	110.2	94.9	96.1	83.2
155°	90.3	94.9	94.9	91.4	96.1	83.2
157.5°	84.4	87.9	89.1	91.4	93.8	82.0
160°	84.4	85.6	89.1	92.6	92.6	82.0
162.5°	86.7	85.6	91.4	94.9	90.3	82.0
165°	89.1	87.9	93.8	96.1	87.9	82.0
167.5°	91.4	91.4	96.1	94.9	85.6	82.0
170°	91.4	93.8	96.1	91.4	84.4	82.0
172.5°	87.9	89.1	91.4	85.6	80.9	82.0
175°	83.2	82.0	85.6	82.0	80.9	80.9
177.5°	80.9	77.4	80.9	79.7	78.5	79.7
180°	78.5	78.5	78.5	78.5	78.5	78.5

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