

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: P709112

Luminaire Tested: **4APN-24L830-X-UNV**

Issue Date: 09/12/2023



Test Information

Test Method: LM-79-08
Report Number: P709112
Test Lab: INNOVATION CENTER(G2)
Issue Date: 09/12/2023
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: 4APN-24L830-X-UNV
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient Light
Light Source: 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

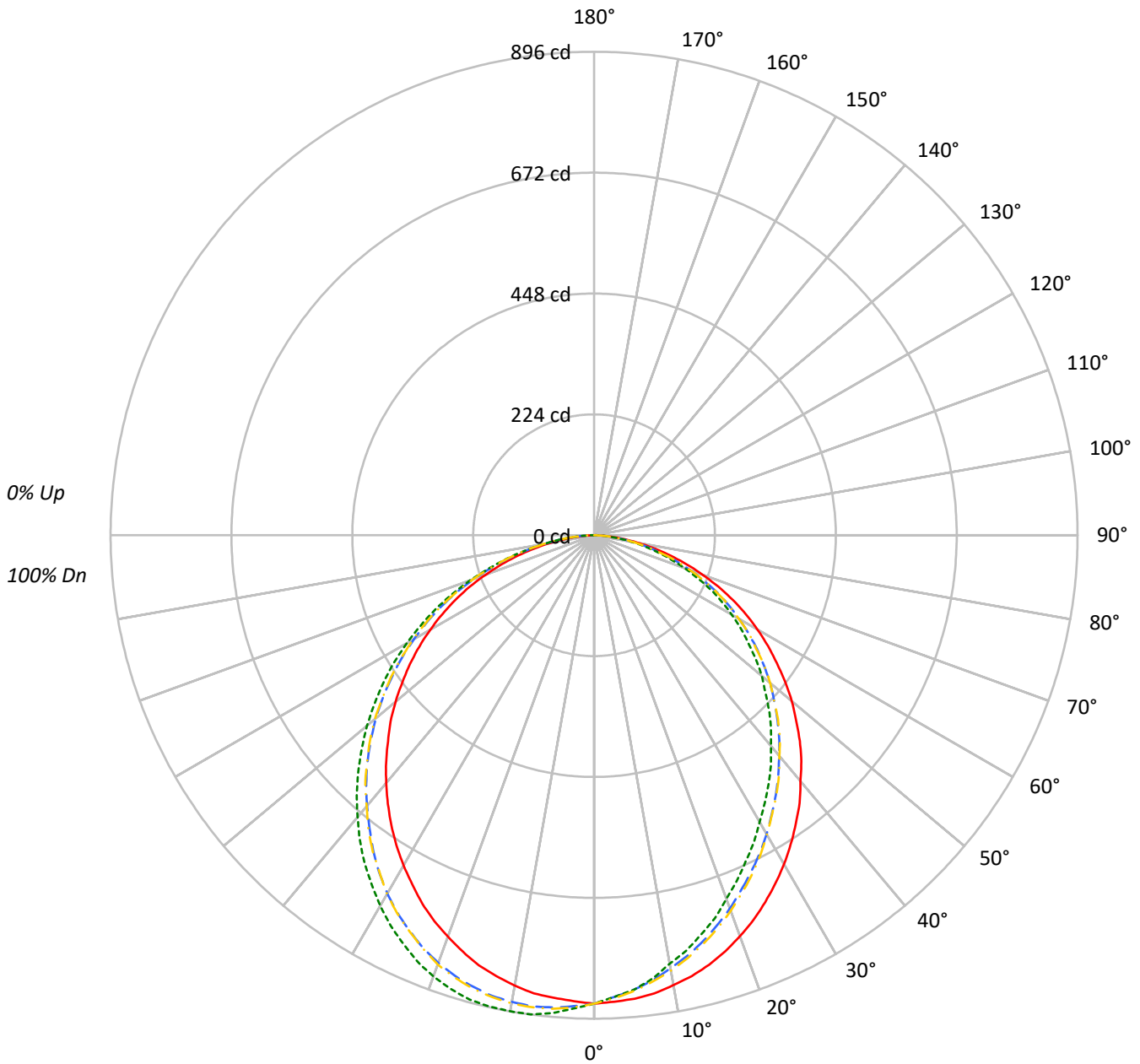
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2328.4 lumens
Efficiency: N/A
Efficacy: 83.5 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.21 / 1.33
Luminous Opening: Rectangular (W 0.29' x L: 4' x H: 0')
CIE Type: Direct

Input Watts (W): 27.9
Input Voltage (V): 120
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



— 0°-180° - - 45°-225° - · - · 90°-270° - · - · 135°-315°



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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	50	30	10	0
RCR																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	102	102	102	100
1	109	104	100	96	106	102	98	95	98	94	92	94	91	89	90	88	86	86	86	86	84
2	99	91	84	78	96	89	83	77	85	80	76	82	78	74	79	76	72	72	72	72	70
3	90	80	72	65	88	78	71	65	75	69	64	73	67	62	70	65	61	61	61	61	59
4	83	71	62	55	81	70	61	55	67	60	54	65	59	54	63	57	53	53	53	53	51
5	76	63	54	48	74	62	54	48	60	53	47	58	52	47	56	51	46	46	46	46	44
6	70	57	48	42	68	56	48	42	54	47	41	53	46	41	51	45	41	41	41	41	38
7	65	52	43	37	64	51	43	37	49	42	37	48	41	36	47	41	36	36	36	36	34
8	61	47	39	33	59	47	39	33	45	38	33	44	37	33	43	37	32	32	32	32	30
9	57	43	35	30	55	43	35	30	42	35	30	41	34	29	40	34	29	29	29	29	27
10	53	40	32	27	52	40	32	27	39	32	27	38	31	27	37	31	27	27	27	27	25

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	8010	8010	8010	8010
5°	7986	7831	7968	8232
10°	7931	7554	7940	8391
15°	7871	7317	7880	8509
20°	7762	7039	7772	8543
25°	7638	6779	7669	8508
30°	7502	6539	7522	8443
35°	7345	6349	7378	8352
40°	7167	6139	7216	8209
45°	7035	5984	7048	8060
50°	6865	5822	6893	7880
55°	6651	5607	6698	7661
60°	6451	5436	6469	7394
65°	6196	5209	6196	7075
70°	5775	4821	5749	6596
75°	5251	4377	5180	5917
80°	4537	3756	4383	5063
85°	3536	2805	3324	4160



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	82.0	3.5
10°-20°	232.8	10.0
20°-30°	346.1	14.9
30°-40°	407.9	17.5
40°-50°	415.4	17.8
50°-60°	370.0	15.9
60°-70°	278.8	12.0
70°-80°	155.0	6.7
80°-90°	40.3	1.7
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	661.0	28.4
0°-40°	1068.9	45.9
0°-60°	1854.3	79.6
0°-90°	2328.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2328.4	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	868	868	868	868	868	
5°	862	846	860	889	862	82
15°	824	766	825	891	824	232
25°	750	666	753	836	750	346
35°	652	564	655	742	652	408
45°	539	459	540	618	539	415
55°	414	349	416	476	414	370
65°	284	239	284	324	284	280
75°	147	123	145	166	147	157
85°	33	26	31	39	33	40
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
0°	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2
2.5°	865.2	865.2	866.2	862.3	857.4	855.4	854.4	853.4	855.4	856.4	855.4
5°	862.3	860.3	858.4	853.4	847.5	843.6	841.7	840.7	842.6	845.6	842.6
7.5°	856.4	852.5	848.5	841.7	834.8	828.9	825.9	824.0	825.9	828.9	826.9
10°	846.6	841.7	835.8	827.9	818.1	811.2	808.3	805.3	806.3	806.3	806.3
12.5°	836.7	829.9	823.0	813.2	802.4	794.5	789.6	785.7	787.6	788.6	788.6
15°	824.0	815.1	805.3	794.5	783.7	774.9	769.0	765.1	766.0	766.0	767.0
17.5°	808.3	798.4	788.6	775.9	763.1	753.3	746.4	741.5	743.4	744.4	745.4
20°	790.6	779.8	769.0	755.2	741.5	730.7	723.8	717.9	716.9	716.9	717.9
22.5°	771.9	760.1	747.4	732.6	717.9	706.1	699.3	693.4	692.4	692.4	693.4
25°	750.3	737.6	724.8	710.1	694.3	682.6	673.7	667.8	666.8	665.9	667.8
27.5°	727.7	715.0	702.2	687.5	670.8	659.0	650.1	644.3	642.3	641.3	643.3
30°	704.2	689.4	675.7	660.0	645.2	633.5	624.6	617.7	615.8	613.8	615.8
32.5°	678.6	663.9	649.2	633.5	618.7	606.9	598.1	591.2	589.3	588.3	590.2
35°	652.1	637.4	623.6	607.9	593.2	581.4	572.6	566.7	564.7	563.7	564.7
37.5°	625.6	610.9	597.1	581.4	566.7	554.9	546.0	540.2	539.2	538.2	539.2
40°	595.1	582.4	568.6	553.9	539.2	527.4	520.5	513.6	511.7	509.7	512.7
42.5°	568.6	555.9	542.1	528.4	513.6	501.9	494.0	488.1	486.1	485.2	486.1
45°	539.2	525.4	511.7	498.9	485.2	474.4	466.5	460.6	459.6	458.6	459.6
47.5°	507.7	496.0	484.2	471.4	457.7	446.9	440.0	434.1	432.1	430.2	432.1
50°	478.3	466.5	454.7	442.9	430.2	420.3	413.5	407.6	406.6	405.6	406.6
52.5°	446.9	435.1	424.3	412.5	401.7	391.9	385.0	380.1	379.1	378.1	379.1
55°	413.5	403.6	393.8	384.0	373.2	364.4	358.5	352.6	350.6	348.6	350.6
57.5°	382.0	373.2	363.4	353.6	343.7	335.9	330.0	325.1	324.1	323.1	324.1
60°	349.6	341.8	332.9	324.1	314.3	306.4	301.5	297.6	295.6	294.6	295.6
62.5°	317.2	309.4	302.5	293.6	284.8	278.9	274.0	270.1	268.1	267.1	268.1
65°	283.8	277.0	270.1	262.2	255.3	249.5	244.5	240.6	239.6	238.6	238.6
67.5°	249.5	243.6	237.7	230.8	222.9	217.0	212.1	209.2	208.2	207.2	208.2
70°	214.1	209.2	203.3	197.4	191.5	186.6	183.7	180.7	179.7	178.7	178.7
72.5°	180.7	176.8	171.9	167.0	162.0	157.1	154.2	152.2	151.2	150.3	150.3
75°	147.3	143.4	140.4	136.5	131.6	128.7	125.7	123.7	122.8	122.8	122.8
77.5°	115.9	112.9	110.0	106.1	103.1	100.2	98.2	97.2	96.2	96.2	96.2
80°	85.4	83.5	81.5	79.5	76.6	73.7	72.7	71.7	70.7	70.7	70.7
82.5°	57.9	57.0	55.0	53.0	51.1	50.1	49.1	48.1	48.1	48.1	48.1
85°	33.4	32.4	31.4	30.4	29.5	29.5	28.5	27.5	26.5	26.5	26.5
87.5°	13.7	13.7	13.7	12.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	110°	120°	130°	140°	150°	160°	170°	180°	190°	200°	210°
0°	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2
2.5°	853.4	855.4	857.4	860.3	863.3	866.2	865.2	864.2	868.2	873.1	874.1
5°	840.7	842.6	845.6	850.5	855.4	859.3	860.3	860.3	868.2	875.0	877.0
7.5°	825.0	827.9	831.8	836.7	843.6	849.5	852.5	856.4	864.2	873.1	877.0
10°	805.3	810.2	816.1	823.0	829.9	836.7	842.6	847.5	857.4	867.2	873.1
12.5°	787.6	792.5	798.4	806.3	815.1	824.0	829.9	836.7	848.5	860.3	867.2
15°	768.0	772.9	779.8	787.6	797.5	807.3	816.1	825.0	836.7	849.5	857.4
17.5°	746.4	751.3	758.2	768.0	778.8	789.6	799.4	809.2	823.0	836.7	845.6
20°	719.9	726.7	735.6	745.4	758.2	770.9	780.8	791.6	806.3	821.0	830.9
22.5°	694.3	701.2	711.0	722.8	736.6	750.3	762.1	773.9	789.6	804.3	815.1
25°	669.8	677.6	687.5	699.3	712.0	725.8	739.5	753.3	769.0	784.7	795.5
27.5°	645.2	652.1	661.9	673.7	688.4	702.2	715.9	729.7	746.4	763.1	774.9
30°	617.7	625.6	634.4	646.2	661.9	677.6	691.4	706.1	722.8	739.5	751.3
32.5°	592.2	599.1	607.9	619.7	635.4	651.1	665.9	681.6	697.3	714.0	725.8
35°	566.7	573.5	582.4	594.2	609.9	625.6	640.3	655.1	670.8	686.5	698.3
37.5°	541.1	548.0	556.8	568.6	583.4	599.1	612.8	627.6	643.3	659.0	669.8
40°	514.6	521.5	528.4	540.2	554.9	570.6	584.3	599.1	614.8	630.5	641.3
42.5°	488.1	495.0	503.8	515.6	529.3	543.1	556.8	570.6	585.3	600.1	610.9
45°	461.6	467.5	476.3	487.1	500.9	513.6	527.4	540.2	554.9	568.6	579.4
47.5°	434.1	440.0	446.9	457.7	471.4	485.2	498.9	511.7	524.4	538.2	548.0
50°	407.6	413.5	421.3	431.1	443.9	456.7	468.5	480.2	493.0	505.8	514.6
52.5°	380.1	386.0	392.8	402.7	413.5	425.2	436.0	447.8	459.6	471.4	480.2
55°	352.6	356.5	362.4	371.2	383.0	394.8	405.6	416.4	427.2	437.0	445.9
57.5°	325.1	330.0	336.9	344.7	354.5	364.4	374.2	384.0	393.8	403.6	411.5
60°	297.6	301.5	306.4	313.3	323.1	331.9	341.8	350.6	359.4	368.3	375.2
62.5°	269.1	273.0	277.9	284.8	292.7	300.5	309.4	317.2	325.1	332.9	339.8
65°	239.6	243.6	248.5	254.4	261.2	268.1	276.0	283.8	289.7	295.6	302.5
67.5°	209.2	213.1	218.0	222.9	228.8	235.7	242.6	249.5	255.3	261.2	266.1
70°	179.7	182.7	187.6	191.5	196.4	201.3	207.2	213.1	217.0	222.0	227.8
72.5°	151.2	154.2	158.1	162.0	165.0	168.9	174.8	179.7	184.6	190.5	193.5
75°	123.7	125.7	128.7	131.6	134.5	137.5	141.4	145.3	149.3	152.2	156.2
77.5°	96.2	98.2	101.2	103.1	105.1	107.0	110.0	112.9	115.9	117.9	121.8
80°	70.7	72.7	74.6	76.6	78.6	80.5	81.5	82.5	86.4	89.4	91.3
82.5°	48.1	49.1	50.1	52.1	53.0	54.0	55.0	55.0	57.0	58.9	61.9
85°	27.5	28.5	29.5	29.5	29.5	29.5	30.4	31.4	32.4	34.4	36.3
87.5°	10.8	10.8	11.8	11.8	11.8	11.8	11.8	11.8	12.8	14.7	15.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	220°	230°	240°	250°	260°	270°	280°	290°	300°	310°	320°
0°	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2	868.2
2.5°	873.1	874.1	876.0	877.0	878.0	878.0	879.0	880.0	878.0	876.0	875.0
5°	878.0	879.0	881.9	884.9	886.8	888.8	887.8	886.8	884.9	881.9	880.0
7.5°	879.0	881.9	884.9	888.8	891.7	895.7	893.7	891.7	887.8	883.9	880.9
10°	876.0	880.0	884.9	889.8	892.7	895.7	893.7	891.7	887.8	882.9	879.0
12.5°	872.1	877.0	882.9	887.8	890.8	894.7	891.7	888.8	883.9	879.0	874.1
15°	863.3	869.2	876.0	881.9	886.8	890.8	887.8	885.8	880.0	873.1	866.2
17.5°	852.5	860.3	867.2	874.1	878.0	881.9	880.0	878.0	871.1	863.3	855.4
20°	839.7	847.5	854.4	861.3	866.2	870.1	867.2	864.2	857.4	850.5	842.6
22.5°	824.0	831.8	839.7	846.6	851.5	855.4	851.5	846.6	839.7	832.8	825.0
25°	804.3	813.2	822.0	828.9	831.8	835.8	831.8	827.9	821.0	814.2	805.3
27.5°	784.7	793.5	802.4	809.2	812.2	816.1	812.2	808.3	801.4	794.5	785.7
30°	762.1	770.9	779.8	786.7	789.6	792.5	788.6	784.7	778.8	771.9	763.1
32.5°	736.6	745.4	752.3	759.2	763.1	767.0	763.1	760.1	753.3	744.4	735.6
35°	709.1	717.9	726.7	733.6	737.6	741.5	736.6	731.7	725.8	718.9	711.0
37.5°	678.6	688.4	698.3	706.1	709.1	713.0	709.1	704.2	698.3	691.4	682.6
40°	650.1	659.0	667.8	675.7	678.6	681.6	677.6	673.7	666.8	660.0	651.1
42.5°	620.7	629.5	637.4	644.3	647.2	651.1	647.2	642.3	637.4	631.5	623.6
45°	589.3	598.1	605.0	611.8	614.8	617.7	613.8	608.9	604.0	599.1	591.2
47.5°	556.8	564.7	571.6	578.5	580.4	583.4	579.4	576.5	571.6	566.7	559.8
50°	523.5	531.3	538.2	544.1	546.0	549.0	545.1	541.1	537.2	533.3	527.4
52.5°	489.1	496.0	502.8	508.7	510.7	512.7	508.7	504.8	500.9	496.9	491.0
55°	453.7	460.6	467.5	472.4	474.4	476.3	472.4	469.4	465.5	462.6	456.7
57.5°	418.4	425.2	431.1	436.0	438.0	440.0	436.0	432.1	429.2	426.2	421.3
60°	382.0	388.9	393.8	397.7	399.7	400.7	396.8	393.8	391.9	389.9	385.0
62.5°	346.7	351.6	356.5	359.4	361.4	362.4	359.4	357.5	355.5	353.6	349.6
65°	309.4	315.3	319.2	322.1	323.1	324.1	321.1	319.2	317.2	315.3	312.3
67.5°	272.0	277.0	279.9	282.8	283.8	283.8	283.8	282.8	280.9	277.9	275.0
70°	234.7	238.6	241.6	243.6	244.5	244.5	242.6	240.6	240.6	239.6	237.7
72.5°	196.4	199.4	201.3	203.3	203.3	203.3	203.3	204.3	203.3	201.3	198.4
75°	160.1	163.0	165.0	166.0	166.0	166.0	166.0	167.0	166.0	165.0	163.0
77.5°	125.7	127.7	128.7	129.6	129.6	129.6	130.6	131.6	130.6	129.6	128.7
80°	93.3	94.3	95.3	96.2	95.3	95.3	96.2	98.2	97.2	96.2	95.3
82.5°	63.8	64.8	65.8	65.8	66.8	67.8	67.8	67.8	67.8	66.8	65.8
85°	38.3	39.3	39.3	39.3	39.3	39.3	40.3	41.2	41.2	40.3	40.3
87.5°	17.7	18.7	17.7	16.7	15.7	15.7	17.7	19.6	19.6	18.7	18.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	330°	340°	350°	360°
0°	868.2	868.2	868.2	868.2
2.5°	876.0	875.0	870.1	865.2
5°	879.0	876.0	869.2	862.3
7.5°	879.0	875.0	865.2	856.4
10°	874.1	868.2	857.4	846.6
12.5°	868.2	861.3	848.5	836.7
15°	859.3	851.5	837.7	824.0
17.5°	846.6	836.7	823.0	808.3
20°	833.8	823.0	806.3	790.6
22.5°	816.1	806.3	788.6	771.9
25°	796.5	785.7	768.0	750.3
27.5°	775.9	763.1	745.4	727.7
30°	752.3	739.5	721.8	704.2
32.5°	726.7	715.0	697.3	678.6
35°	701.2	688.4	670.8	652.1
37.5°	672.7	660.9	643.3	625.6
40°	642.3	630.5	612.8	595.1
42.5°	613.8	603.0	585.3	568.6
45°	582.4	571.6	554.9	539.2
47.5°	550.0	539.2	523.5	507.7
50°	518.5	507.7	493.0	478.3
52.5°	483.2	474.4	460.6	446.9
55°	448.8	440.0	426.2	413.5
57.5°	414.4	406.6	393.8	382.0
60°	378.1	370.2	360.4	349.6
62.5°	343.7	336.9	327.0	317.2
65°	307.4	301.5	292.7	283.8
67.5°	270.1	265.2	257.3	249.5
70°	232.8	226.9	221.0	214.1
72.5°	195.4	192.5	186.6	180.7
75°	160.1	157.1	152.2	147.3
77.5°	126.7	123.7	119.8	115.9
80°	93.3	91.3	88.4	85.4
82.5°	64.8	62.9	60.9	57.9
85°	39.3	37.3	35.4	33.4
87.5°	17.7	16.7	14.7	13.7
90°	0.0	0.0	0.0	0.0

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