

Re: 24 bit ADC testing

Source: <http://sci.tech-archive.net/Archive/sci.electronics.basics/2004-07/0741.html>

From: Bob Masta (NoSpam_at_daqarta.com)

Date: 07/18/04

Date: Sun, 18 Jul 2004 13:52:06 GMT

On Sat, 17 Jul 2004 20:05:42 GMT, "colin"
<no.spam.for.me@ntlworld.com> wrote:

>
>*sure there is limits like you mention, but wouldnt the same errors aply just*
>*as much to a sinewave generator too if not more so ?*
>
>*to push the limits a bit further you could i gues use vaccum dielectric*
>*capacitors to get best linearity and you could bootstrap the transistors to*
>*reduce their voltage dependant capacitance efect, thermal drift would be not*
>*be too much of a problem over one cycle, and over many cycles could be seen*
>*in the output as drift rather than non linearity, or you could even ovenise*
>*it. im sure something else would then get in the way, but theres usualy a*
>*way of getting round them otherwise no one would of built an adc that could*
>*be acurate to 24 bits in the first place.*
>

The virtue of a sinewave is that you can generate a very good one quite easily using a Wien bridge, or a state-variable approach. Then you can apply as many stages of filtering as needed to get the desired purity. The last stage(s) could be purely passive to remove any residual active distortion products. There is a temptation to do everything in as few stages as possible with really high-Q stages, but this can backfire since any component drift will detune things so your oscialltor and filter stages are no longer at the same frequency... and once you are off-peak of the high-Q filter, you don't have much of a filter any more.

For a good starting sine wave, consider a 16-bit sound card and a signal generator program like my (free) DaqGen.

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