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## A4 waveform scopes and some tips

Posted by anselmi - 2013/01/27 03:10

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since day 1 I found the A4 very different sounding to other analog synths I own and owned

with wide open filters the oscillators got a very characteristic flavor that vary from octave to octave

I specially found the saw wave got thinner and "grainy" at the lower range, and the triangle became somewhat "saturated"

this characteristic sound (kinda "nasal") could be taken as a good thing if you like it, but some users could miss a more "rounded" sound, similar to the classic analog synths we all know and love like a roland SH or a moog one.

So I attached a scope program to see if there is some evidence that support what I hear and also see if I can get close to the round bass tones of this classic synths

This is what I found when looking at the saw wave:

<http://s14.postimage.org/8vxlsnb41/saw.png>

Downward octaves are represented by the number in each picture

At the left of the white line you can see a series of waveforms that not just change their period according with the played octave but also they change their shape

From 1 to 5 you can see how the initially more symmetrical saw change into a spike-like one, making it sound more thin at the lower octaves

Curiously, in octaves 6 the saw splits into 2 peaks that become very separated in octave 7...this adds even more "grain" and less "cream" to the bass end of this waveform

At the right of the white line you can see a direct comparison between the shapes of octave 2 and 5. I stretched octave 2's waveform to fit the wavelength of octave 5 in order to make them the same pitch and just see the change in shape. Beyond the picture's line distortion when stretching it, it's evident that the waveform shrinks to the left, making it more asymmetrical and spike-like, thus thinner sounding

As weird as it could be the MnM's saw wave (in the supersaw machine) is very similar in shape as you can see at the top of this column in green

Last column shows a little trick that I found to make the A4 saw more symmetrical and full-sounded in the low register: at the top you can see the saw in octave 4, below it you got the same but with filter overdrive = 20...you can see how the wave is becoming thicker (and you can hear it for sure) and at the lower figure you can see a much more classic saw wave when you rise filter 1 resonance to 74 and lower the overdrive to 12, with the cutoff wide open

Then you can use the LP mode of filter 2 to classic filtering...OK, you lost 1 filter but anyway most classic monosynths just got a lonely LPF.

Try this new "oscillator" sound and you can get much closer to an old roland synth...you can add the sub oscillator to make it fuller sounding.

BTW, in this kind of sounds when you're looking for just one oscillator and one square sub (typical Roland stuff) it's better to set your wave in, say, oscillator 1 and then use oscillator 2 for the square sub oscillator (with no main wave in this one) so this way you can set the sub oscillator's level

Now for the triangle wave, you got a similar behavior in the fact that the waveshape change with the octaves

<http://s13.postimage.org/5ne1zm587/tri.png>

At the higher ones (1) it's a triangle but the low octaves shows a heavy distortion of the shape, like as a kind of "windowing" is happening. I found this is kinda nice sounding though and also that if you rise the pwm parameter to 25 you can get another saw-like waveform that increase the sonic palette of the A4

Now try it yourself and tell me if you can got the same kind of round and deep classic bass tones I did with this settings:)

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## Re:A4 waveform scopes and some tips

Posted by Fuseball - 2013/01/27 04:11

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Excellent research there! Great use of the first filter to effectively waveshape the saw.

It's stuff like this that keeps nudging me towards getting the A4 sooner rather than later. :)

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## Re:A4 waveform scopes and some tips

Posted by lukemathewsutton - 2013/01/27 07:13

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I quite like the variation in shapes across octaves. A bit like an acoustic instrument; only a bit of course :)

This is good stuff! I'm definitely going to exploit your technique with the overdrive. Thanks!

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## Re:A4 waveform scopes and some tips

Posted by busygirl - 2013/01/27 07:14

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Very nice input ! And here comes heavy bass lines, THANKS !!!

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## Re:A4 waveform scopes and some tips

Posted by LIVESEQ - 2013/01/27 07:27

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Great science. I am loving the overdrive. Now I know why. B)

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## Re:A4 waveform scopes and some tips

Posted by maelstrom - 2013/01/27 07:52

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one sound just got the name anselmi-baSS....

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## Re:A4 waveform scopes and some tips

Posted by udenjoe - 2013/01/27 23:59

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Thanks for sharing. I've always wanted a scope.

Now if elektron came out with a scope....

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## Re:A4 waveform scopes and some tips

Posted by heckadecimal - 2013/01/28 00:17

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Nice work, Anselmi. I'll try it out tonight.

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## Re:A4 waveform scopes and some tips

Posted by anselmi - 2013/01/28 09:53

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I'm happy you like it guys...for me this is a way of getting the A4 into another sonic territory

Make this big basses and post back!

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## Re:A4 waveform scopes and some tips

Posted by johhny - 2013/02/01 07:29

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Thanks. Very useful info!

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## Re:A4 waveform scopes and some tips

Posted by takadoun - 2013/02/06 09:05

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Thanks man for this great job !

I tried to see it by myself, to tweak my sounds a little bit, but I can't get this "double" thing you have with the lower octaves of the saw waveform...

This is the lowest C on my A4, with basic "init" saw sound :

And I can't find any note/octave with the thing you posted... how weird.  
I double checked many times ;)

But I agree with everything else you wrote !

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## Re:A4 waveform scopes and some tips

Posted by takadoun - 2013/02/06 09:12

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Sorry, problem uploading the image file for previous post, and I can't edit my post any longer to put the file, so here it is :

[http://elektron-users.com/images/fbfiles/images/A4\\_saw.jpg](http://elektron-users.com/images/fbfiles/images/A4_saw.jpg)

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## Re:A4 waveform scopes and some tips

Posted by anselmi - 2013/02/09 22:17

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takadoun wrote:

Thanks man for this great job !

I tried to see it by myself, to tweak my sounds a little bit, but I can't get this "double" thing you have with the lower octaves of the saw waveform...

This is the lowest C on my A4, with basic "init" saw sound :

And I can't find any note/octave with the thing you posted... how weird.  
I double checked many times ;)

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But I agree with everything else you wrote !

mmmm...this makes me think about mine needs callibration:dry:

I double checked it and found the same beahaviour of double-peaked saw...I think maybe it's just a bit of the "pwm" offset in the low notes

it doesn't bother me too much but maybe I'm loosing some different sound in the bass register

thanks for the info!

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## Re:A4 waveform scopes and some tips

Posted by anselmi - 2013/02/09 22:55

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maelstrom wrote:

one sound just got the name anselmi-baSS....

tribute library! at last! I know I deserve it!:P

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## Re:A4 waveform scopes and some tips

Posted by dtunez - 2013/05/22 23:43

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Thanks for posting your research!

I luckily found this post.

Make this big basses and post back!

Is anybody willing to share some patches?

I got my a4 new and I'm curious what others did with this info...

Bigups daniel

<http://soundcloud.com/dtunez>

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