ISCE

The Institute of Sound and
Communications Engineers

Engineering Note 33.1

Free and low-cost software

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Free and low-cost software

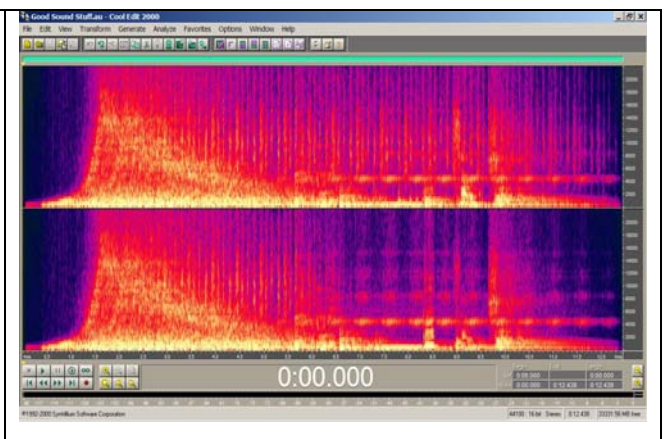## Audio analysis programs

Cool Edit 2000

This was originally issued by Syntrillium, then bought by Adobe and converted to Adobe Audition at a much higher price. The original is still available and works on Windows up to XP at least (and probably works under the XP emulator in Windows 7). It has, in my opinion, a much better user interface than Audacity, and the two programs have somewhat different features, both being very powerful if you need, but also pretty simple to drive if you don't.

You can zoom in on millisecond-long details of a signal waveform, or look at however long a signal your computer has memory for.

One feature that can be very useful is a spectrogram (called 'voiceprint' in newspapers) display. Unlike a band spectrum display, it will show narrow-band frequency components well below the average level of the signal.
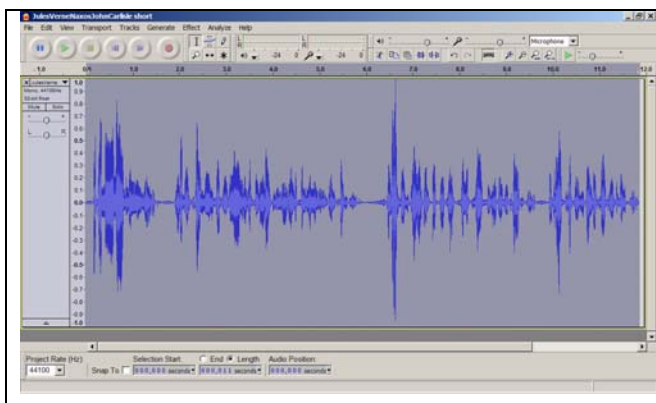

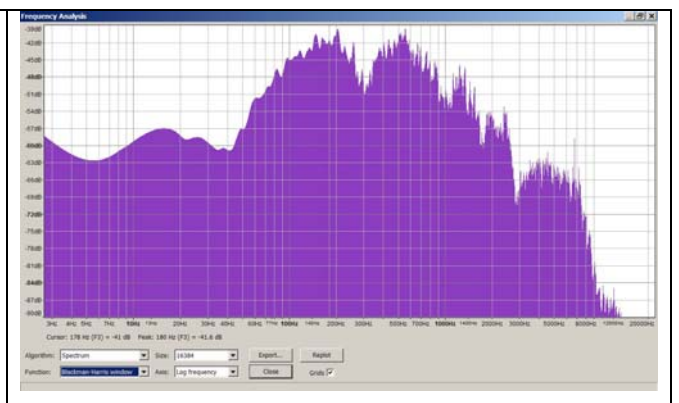| Cool Edit waveform display | Cool Edit spectrogram display |

Audacity

This is a freeware (GNU) program which is still maintained. There are usually a current stable version and a Beta available. Windows Vista and Windows 7 are supported, also Mac and Linux.

It will do many clever analysis things that Cool Edit doesn't, such as a cepstrum display and auto-correlations.
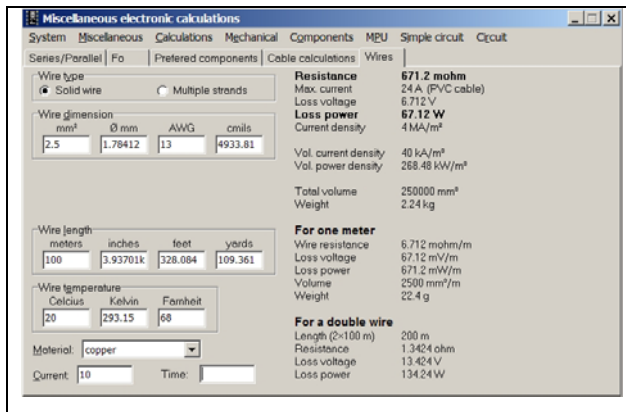

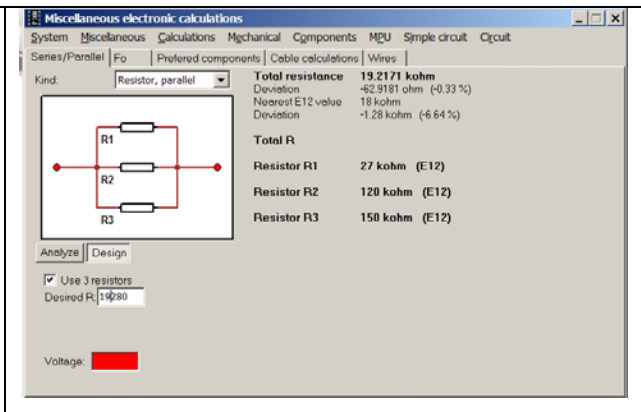| Audacity waveform display | Audacity spectrum display |

Misc El

This is a free program that does many physics and engineering calculations. Most useful for sound system work are the Wires calculator and the R/C/L component calculators.

Ther are far too many things that Misc EL will do to list here. Try it -it's free!
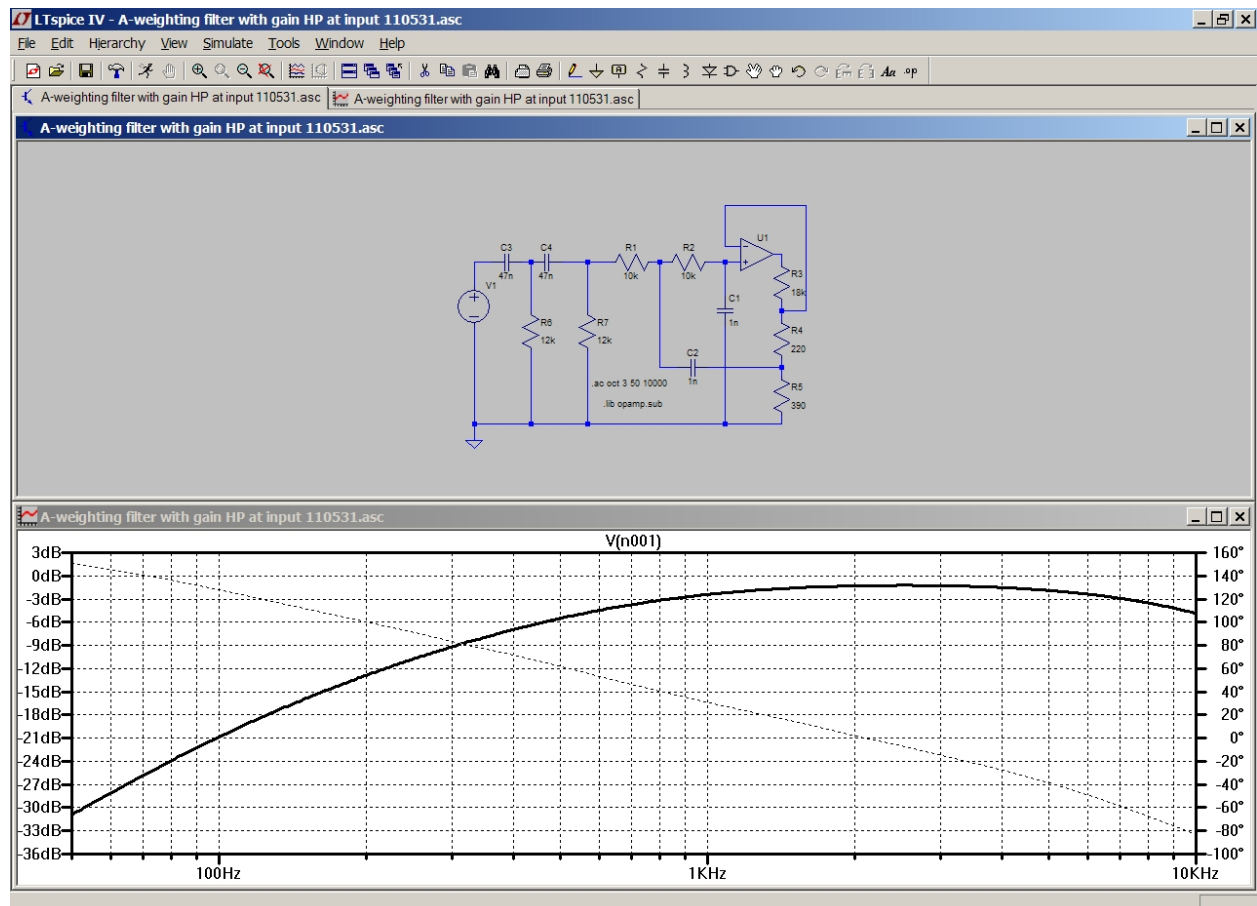
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Misc EL Wires calculation

Misc EL parallel resistors calculation

LTspice

LTspice is a **free** circuit simulator program. If I said Misc EL had too many features to list, that applies a hundred-fold to LTspice. It is made available free by Linear Technology as promotional tool, but it is by no means restricted to using LT parts. There is a very active support group on Yahoo, at: LTspice@yahoogroups.com, and a web site: http://tech.groups.yahoo.com/group/LTspice/ with a huge archive of working simulations, tutorials etc..

Here is an example of a pretty accurate A-weighting filter with gain, designed for yet another low-cost AFILS field strength meter.

Irfanview

This is a low-cost graphics program (free for non-commercial use). It is very fast to load and it does quote a number of things; not as many, of course as a program like Photoshop or Paint Shop Pro. But it's much easier to drive and one very useful feature is that you can copy a screen-grab into it, very easily crop it to show just the parts you want and then save it in any one of a number of graphics formats. There is no need to give an example, because **all the graphics in this Engineering Note** were processed that way

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URLs of the featured software

CoolEdit 2000: http://www.oldapps.com/CoolEdit.php?old_cooledit=1

Be careful that the page layout doesn't trick you into downloading the Adobe product.

Audacity: http://audacity.sourceforge.net/

MiscEl: www.miscel.dk

LTspice: www.linear.com

Irfanview: www.irfanview.com