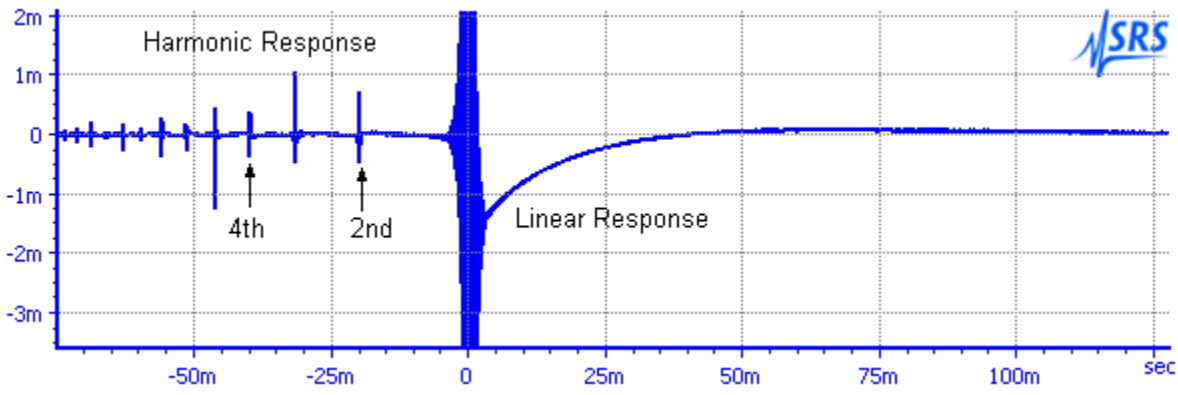
What's up with SR1?

7/12/10

After a lot of hard work coding and at the test bench, I'm pleased to announce the release of version 1.2 of the SR1 Audio Analyzer. We've listened closely to the suggestions you've given us and we've tried to incorporate as many of them as we could into the new release. We've added major features, like impulse response measurements, and made lots of small improvements, like being able to increment or decrement a specific digit of a parameter using the knob. All in all, we think version 1.2 brings a new level of functionality, convenience, and stability to the SR1 platform.

Impulse Response Measurements

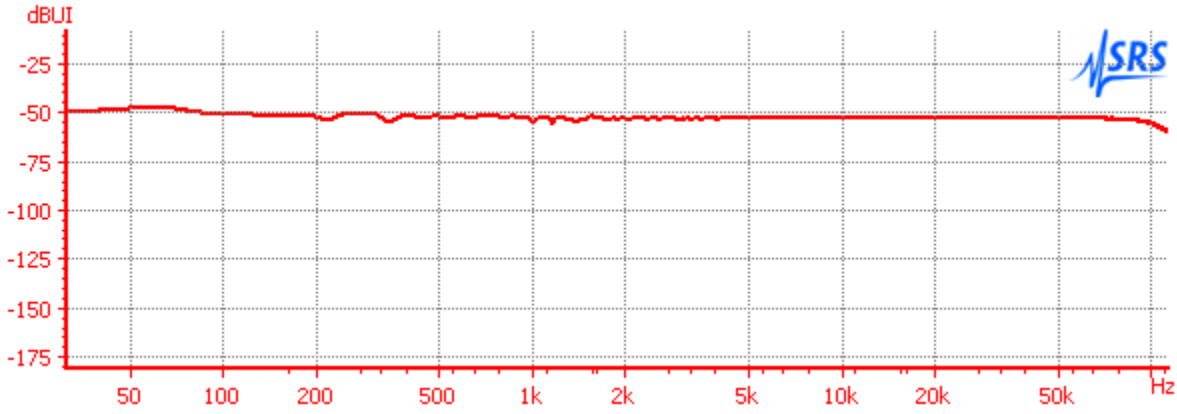
The newest version of SR1 includes a complete set of impulse response measurements including impulse response, quasi-anechoic frequency response, and energy-time curve. Because SR1 contains a full *dual-channel* FFT analyzer SR1 isn't limited to using a MLS (maximum length sequences) as a stimulus for making impulse response measurements, we can make these measurements with virtually any broadband source. But in the new version we've included the MLS waveform in the analog and digital generators for comparison purposes. Müller and Massarani published a classic paper a decade ago ("Transfer-Function Measurement with Sweeps," *J. Audio Eng. Soc., Vol. 49, No. 6, June 2001*) where they convincingly showed the advantages of making transfer function and impulse response measurements with swept signals. More recently Kite ("Measurement of audio equipment with log-swept sine chirps", *Presented at the 117th AES Convention, October 2004*) has highlighted the unique ability of log-swept sine chirps to temporally separate the response due to the nonlinear part of a device's transfer function. So we've also included the log-swept chirp as a new waveform as well. Just to show you what I mean, here's a measurement we made of a consumer stereo amplifier using the log-swept chirp clearly showing the pre-arrival of the harmonic distortion components.



These harmonic responses can be gated out before transforming back to the frequency domain for a better picture of the linear transfer function

Jitter Chirp

One thing we've always noticed about jitter measurements is that they're slow. You've got to sweep the jitter frequency, wait for devices to lock and settle— it all takes time. A while ago, while we were seeing how fast and convenient the FFT chirp source made frequency response measurements, we realized we could do the same thing for jitter: provide a jitter source that had equal power in each FFT bin allowing jitter effects over a wide frequency range to be measured simultaneously. So SR1 v1.2 includes a unique jitter chirp source.



The graph above shows the FFT of the jitter chirp: flat jitter from below 50 Hz all the way to 100 kHz.

Display Improvements

In v1.2 we've added a cursor peak finder to allow the cursor to quickly move left and right from peak to peak. We've optimized a new set of trace colors for both the black and white background graphs, and finally we've added a new feature to the trace calculator which allows you to instantly create an arbitrary waveform file from any graph trace.

User Interface Improvements

Sometimes it's the little things that make all the difference. We've gotten a lot of suggestions about improvements to the user interface and have implemented many of them including….

1. Keyboard Shortcuts: A full set of keyboard shortcuts have been implemented for common operations including emergency generator shutoff, auto-referencing the analyzers, and opening commonly used panels.
2. Knob Behavior: You can now set the knob to increment or decrement at the digit the cursor is set on.
3. Automation Commands for Forms: A complete new set of automation commands has been added to allow opening, closing, and moving panels anywhere on the page tabs.
4. Full Precision Parameter View: Hovering the mouse over any parameter now brings up a hint showing the full double-precision value of that parameter.

SR1 version 1.2 is just the beginning. We're committed to making SR1 the best value in audio testing available anywhere. We're currently working on bit error rate testing for the digital audio interface, latency measurements, improved analog performance, and many other areas. Please email me with comments, criticisms and suggestions—we want to hear them all.

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