Subject: Re: Measurement signal types
Posted by Constantine on Mon, 28 Jan 2008 02:34:36 GMT
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WOW! Thanks Keith that post is printing right now. It's one to keep for reference. Thanks for taking the time to spell that out in such detail!

Let me see if I understand the high points.

1. Sine and swept sine are best for signal to noise but can't reject reflections. Good to use outdoors I imagine.
2. Pulsed sine gates the signal as it comes back so room reflections can be somewhat mitigated.
3. Noise is good for high frequency testing but not as good for low frequency testing.
4. MLS is theoretically the same as noise but has a slightly higher crest factor so it may expose nonlinearities more than noise. MLS uses a series of varying-width square waves going from +V to -V.
5. Chirp is better for bass, good for treble but may stress a tweeter.
6. TDS is basically the same as chirp. They use a sine wave that starts at low frequency and progresses upward over a period of time. TDS is a chirp signal receiver that can be built as a physical circuit, or implemented as an algorithm.

I have a couple more questions, if you would be so kind to explain.

I am unclear about the differences between swept sine, chirp and TDS. Is the difference that a swept sine measurement uses filters to track the signal and lock on but chirp and TDS measure the signal as a single burst? I am thinking the swept sine is really a series of individual set frequencies one after the other but chirp is a fast moving sweep that is treated as a burst. Is that it?

You said chirp and TDS use "quadrature signal paths and time delays, a matched filter is created such that the signal being generated is time matched to the signal coming back from the system." Are they looking for a difference between what they expect and what they get from the microphone? There is a reference signal and what comes back is compared? Is that how it works?

You said "It is much easier, and common, to compare the response using an pair of FFT's." How does this work? Can you explain the process for an interested amateur?

C