Author

Topic: How good is the iPhone's audio? (Read 12844 times)

FaberAST

Administrator
Sr. Member

Posts: 257

How good is the iPhone's audio?
« **on:** July 12, 2008, 02:05:54 PM »

The question has been raised, particularly in light of an article that suggested that the iPhone's audio hardware was inadequate to use in testing audio systems.

Below are plots of measurements made of the (original) iPhone. These are direct measurements (not post-processed recordings) made of the iPhone with Electroacoustics Toolbox and an Edirol FA-101 interface, using SignalScope's play through feature (on iPhone). The sample rate of the iPhone and the Edirol interface was set to 48 kHz. These measurements include the response of the iPhone's input and output hardware (via the headset connector). Neither the output nor the input hardware, by itself, should be any worse than any of these measurements.

The large amount of delay is due to the fact that the signal is getting buffered inside the iPhone as it gets passed from the input to the output. (For what it's worth, lower audio throughput latency is possible with the iPhone, but at the expense of higher CPU load).

The square wave plot is a direct capture of two square waves being generated simultaneously by SignalSuite on the iPhone.

Here are the plots:

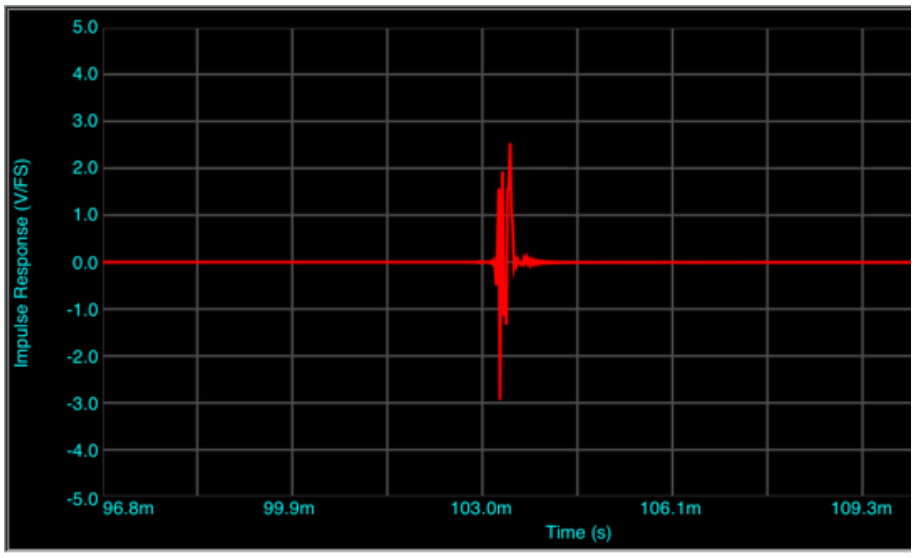

Figure 1. Impulse response.

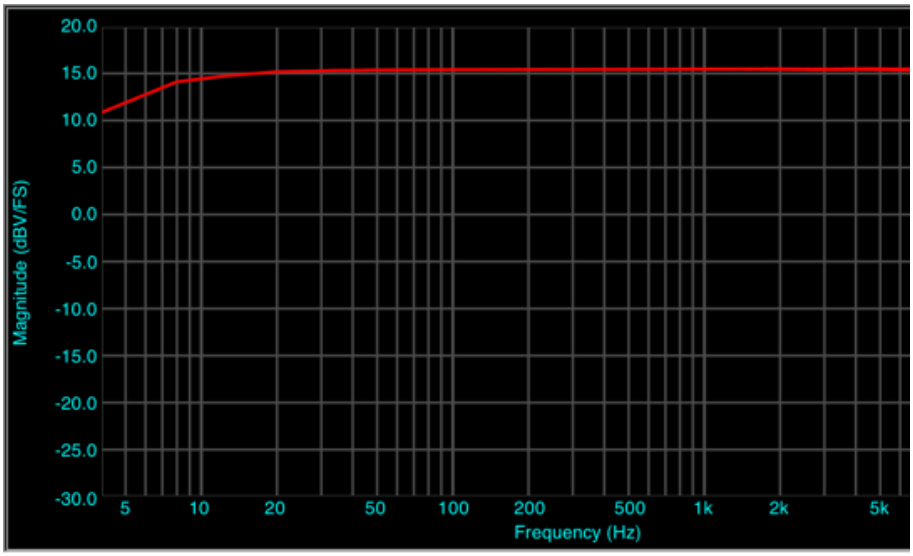

Figure 2. Frequency Response Magnitude.

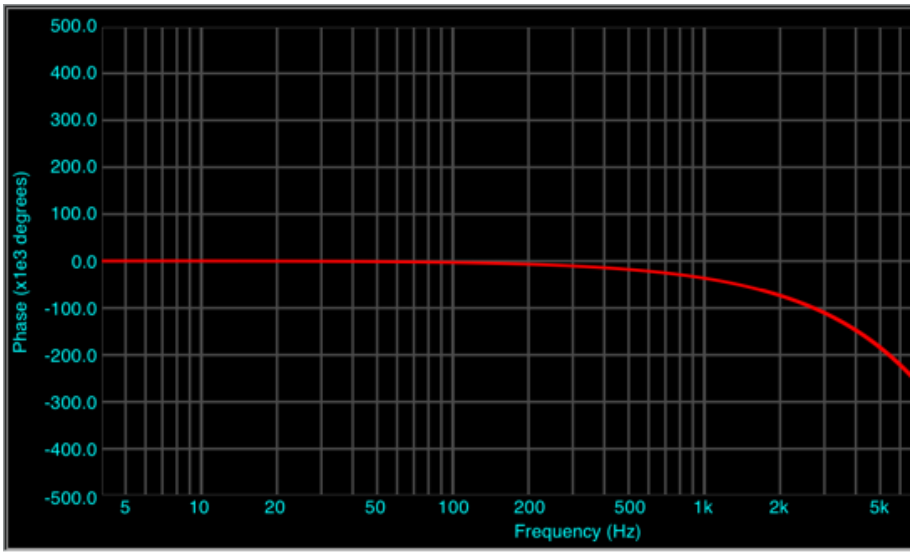

Figure 3. Frequency Response Phase. The phase drops off rapidly because of the large latency of the measured iPhone setup.

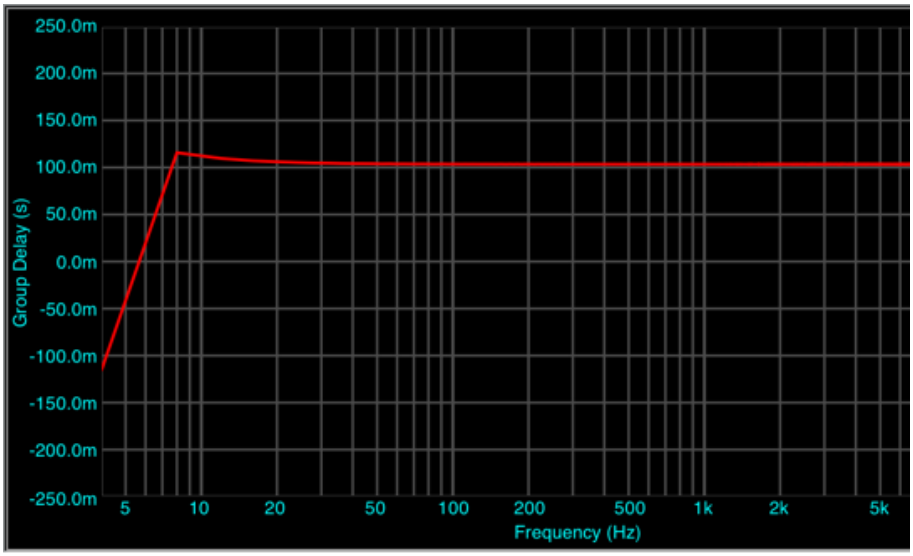

Figure 4. Group Delay. The delay is nearly constant with respect to frequency.

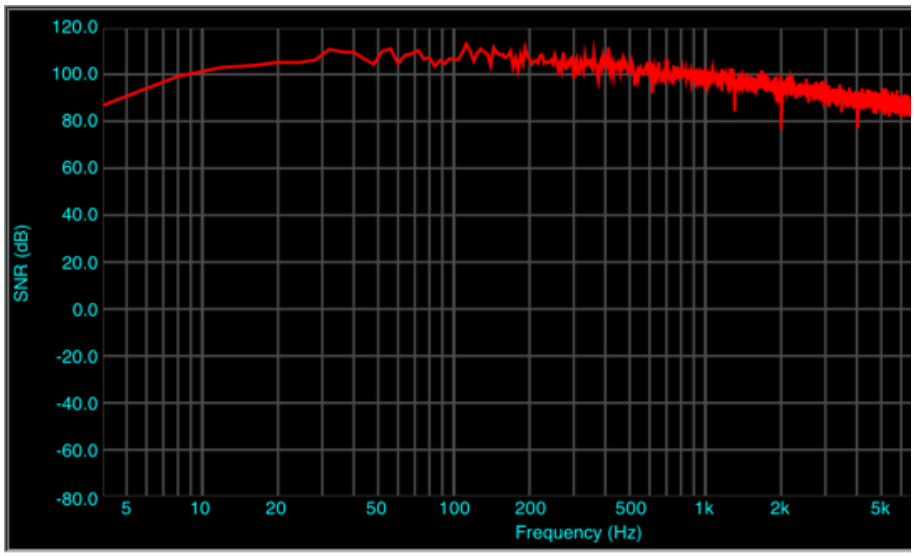

Figure 5. Signal to Noise Ratio.

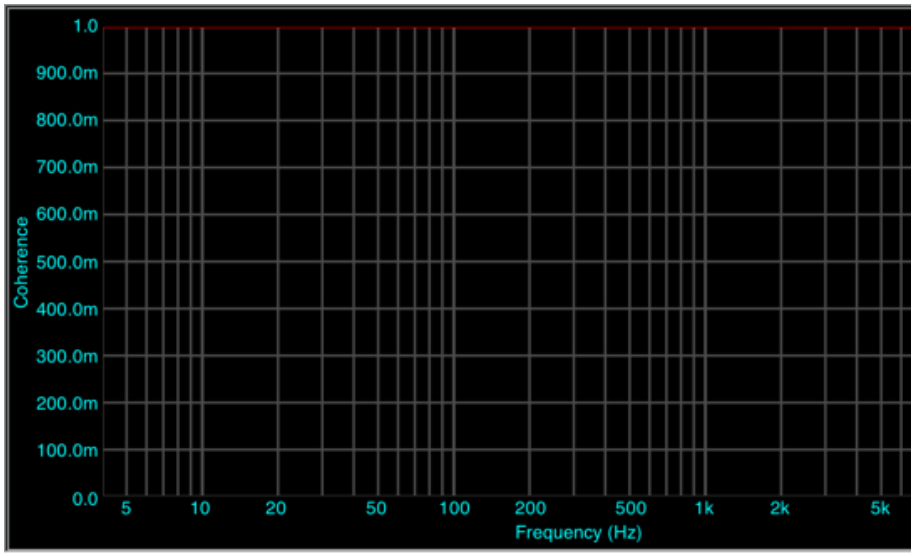

Figure 6. Coherence. The coherence was measured simultaneously with all the other measurements, above, and indicates that the measurements are all valid. (A coherence of exactly 1 would result from measuring a perfectly linear, time-invariant, noise free device.)

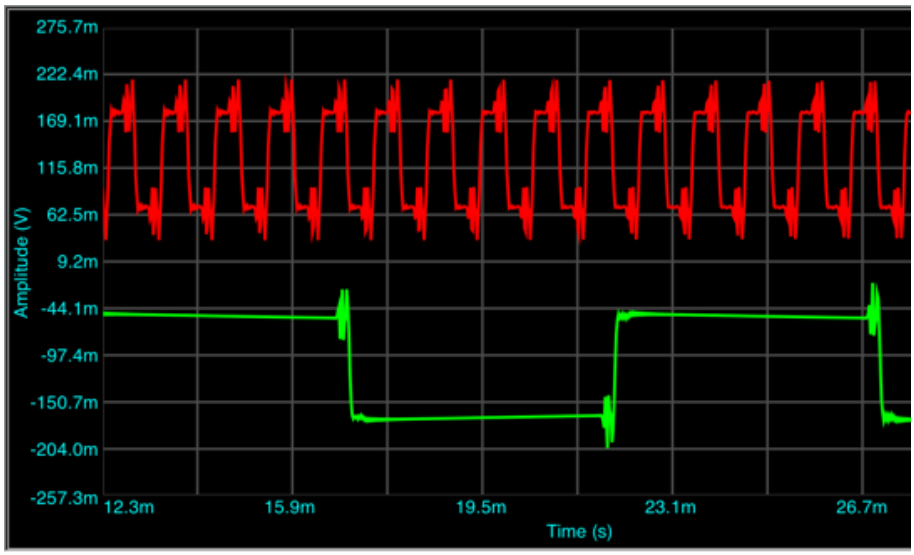

Figure 6. 1 kHz and 100 Hz square waves. These square waves were produced simultaneously on the two headphone channels by SignalSuite, running on the iPhone.

Additional efforts to quantify the response of the iPhone's audio hardware are underway...

« *Last Edit: July 28, 2008, 10:39:56 AM by FaberAST* »

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xuancongwen
Newbie
Posts: 1

Re: How good is the iPhone's audio?
« **Reply #1 on:** October 21, 2008, 06:17:38 PM »

Hi FaberAST. I was wondering if it is possible for me to reproduce the plots you have made in this post at

http://notafruit2.wordpress.com

It's a fledgling blog that I've started, and I was actually trying to find some frequency response information on the iPhone hardware, and I found your forum posting on the subject. I would like to reproduce the plots and draw some conclusions as they relate to my own reason for knowing the audio hardware specifics of the iPhone.

Please let me know when you have the time if you could email me at

xuancongwen@gmail.com

Thank you very much for your time!

-Sam

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