

Laminar Streamer - A World First

A brief history of Jitter reduction

Throughout the years since the early 80's, the quest for ever higher digital audio playback performance can be narrowed down to achievements of ever lower Jitter timing errors at the DAC chip.

Digital audio playback solutions can be classified into two categories: optical disc (CDs, DVDs, SACs) and solid state (computer audio). Generally speaking, the former has to its advantage the simplicity of operating system and, often, a single clock system for formation of the digital audio stream before conversion. The latter is usually based on modified forms of complex operating systems such as Linux, Windows, or MAC OS, adding functionality such as color screen animation, on-the-fly file format conversion, and network connectivity.

Disc playback machines

Disc playback has given birth to a plethora of exotic transports boasting different solutions to address micro-vibrations of the optical reading system: precision ruby bearings, belt drive systems, thick plexiglass structures, ultraviolet diode systems, heavy structures of steel, etc. Regardless of these solutions, audiophiles continued to further increase playback quality by modifying the discs themselves, by using sprays, wipes, black and green markers, lathing machines, high lumen stroboscope conditioners, demagnetizing devices, ceramic ball ion blasting devices, and many types of stickers and pads. Regardless of how painstakingly the optical disc drive mechanisms were over-engineered, and regardless at what high cost, this bottleneck of performance in the optical realm remained and was not solved.

Enter computer audio, and circumvent the optics problem altogether

In digital audio streams, the timing is the only qualitative factor, and the easiest to pollute because it is so fragile. Contrary to popular belief, high speed number-crunching has absolutely no influence on Jitter content. Radio interference and vibration, however, have an enormous influence. Computers contain multiple radio frequency clocks and high speed processors, contaminating the circuitry with noise which inter-modulates with the pristine audio sampling rate timing. Mouse, keyboard, USB, Firewire, infra-red sensors, disc drives, video, ethernet, wi-fi and data storage synchronization software all compete with the CPU for processing time. The key here is timing.

Computer operating systems require many services, all of which compete for processing time according to what are termed priorities. Audiophiles have found that the more services disengaged, the better the resulting audio stream. Complex operating systems stripped of many services have been re-branded as audiophile playback machines, yet they remain susceptible to viruses and other typically complicated configuration issues, including memory latency allocation issues.

Perfection in timing

In computers, there are really many clocks, and at some level they all interfere with one another due to radio frequency interactions and through the power supplies. This atmosphere is not purpose built for real-time streaming events. It is made for high speed calculation and robust error checking. Today one can flawlessly copy an entire album of music in only a few minutes, so data accuracy is not at all an issue in any computer. Timing accuracy is our only realm of concern as audiophiles, and the PC environment is not suited for ultimately low Jitter in the audio data stream. The bottleneck of complexity remains.

Simplicity is the answer

LessLoss is introducing the Laminar Streamer direct drive SD card player to address all of the above issues and to provide a pristine digital playback environment which alone can guarantee the vanishingly low Jitter content we strive for as audiophile perfectionists.

What makes the Laminar Streamer unique and new?

The Laminar Streamer solves the problem of digital audio harshness by using only a single clock for both the operating system and for the formation of the pristine digital audio stream. Although the device plays .wav and .aiff files off of SD cards, LessLoss did not incorporate the use of Windows, MAC OS, or Linux for its operating system. Instead, from ground up, a dedicated audiophile operating system was built and streamlined for the specialized task of serving the topmost quality data stream without introducing Jitter timing errors. This, regardless of sampling rate differences.

How is that unique and new? What does "Direct Drive" mean?

Unlike any other computer audio playback system, the Laminar Streamer's operating system runs synchronously at the very audio sampling rate. The very same high quality audio clock used for the formation of the audio data stream runs the whole system. Thus, a new level of quality is achieved in digital playback, previously unattainable because the OS clock and the audio clock have always been two different things. All of the internal intricacies of clock synchronization, buffering, and jitter reduction have now been solved at their very source, a world first for digital audio file playback!

Learn more: www.LessLoss.com