

## Ayre Acoustics QB-9 Asynchronous USB DAC Review

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Published on 10-11-2009 08:31 PM



The Ayre Acoustics QB-9 asynchronous USB DAC is currently one of the hottest products around. Everyone is listening to it or talking about it. In fact I did both at the Computer Audiophile Symposium in June at Fantasy Studios. My first impression of the QB-9 was so good that I asked Ayre's Steve Silberman about using the DAC in one of the very high-end systems at the Symposium. I assured Steve that the rest of the system would be completely capable of faithfully reproducing the analog output

from the QB-9. Thus, the QB-9 was connected to a Mac Mini, a nice preamp and pair of amps, and Magico v3 loudspeakers. Based on the Symposium attendees' reactions to the sound and my countless hours of listening to the DAC in several different systems I completely understand why the Ayre Acoustics QB-9 asynchronous USB DAC has everyone talking. The reason this DAC is so hot is because it's so good.

### Hit The Ground Running

At CES 2009 Ayre Acoustics introduced the QB-9 to the world. Ever since that show the DAC has continued to gain in popularity. This gain in popularity can be tough to accomplish. Some manufacturers introduce products at CES and talk about them, and talk about them, and talk about them, building incredible hype. This often backfires as there is a huge hype-hurdle to jump when the product is finally released. Everyone expects everything from such an over-hyped product. Ayre on the other hand bet on the QB-9's performance and let it speak for itself. The DAC was setup in a fully functional system at CES where people were free to tap the touch screen of a Mac Mini to select music they wanted to hear. Nothing generates great press like a great performing product and the CES demo got the ball rolling for Ayre's QB-9. Since CES there hasn't been much talk from Ayre itself but there's been a groundswell of Internet chatter and talk amongst those in the industry. I can't count the number of times I've been asked, "Have you heard the new Ayre DAC yet?" Since this DAC is only being reviewed by a few writers in 2009, I took the question seriously and assumed the person hadn't heard the QB-9. After listening to the QB-9 for a lengthy period of time I started to ask others in the industry, "Have you heard the new Ayre DAC yet?" However, when I asked people if they'd heard the DAC it was more of a statement than a question. I knew what the QB-9 was capable of and I likely tipped my hand by the way I spoke. Either way I communicated my positive thoughts about the QB-9.

### Differentiation Is In The Details



The Ayre Acoustics QB-9 is unlike most USB DACs on the market today. It's one of only a handful of USB DACs using asynchronous transfer mode and it's a solid state design. In a recent article here on Computer Audiophile titled [Asynchronicity](#) I delved into the differences between USB transfer modes used by USB DACs. The following information from that article should be helpful for readers unfamiliar with the concepts of Adaptive and Asynchronous

USB transfer modes.

"The main thing to keep in mind when reading about adaptive and asynchronous USB modes is clocking. Clocking is extremely important with digital audio. Many digital audio experts agree that keeping the clock as close to the DAC as possible, or using a master clock for all digital components is the way to achieve the most accurate sound. In consumer high-end audio as well as professional audio clocking is a major concern and very often external master clocks are used to achieve the best sound.

Asynchronous USB DACs are few and far between. Currently Ayre, Wavelength, and dCS are the major manufacturers with asynchronous products on the market. In my opinion the reason for this lack of async DACs is simply because it's very difficult to implement this technology. There is a specific skill set required to implement asynchronous USB and it's not common place in high-end audio. Implementing async USB requires a manufacturer to write its own software for the TAS1020 chip and invest thousands of hours on this part of the

DAC alone. The limited number of manufacturers who've decided to take on this task instead of going with a plug n' play chip are doing it because they think the performance gains far outweigh the development pain. Asynchronous USB essentially turns the computer into a slave device as opposed to adaptive USB which does the opposite. Thus, an asynchronous USB DAC has total control over the timing of the audio. One very important feature of asynchronous USB mode is bidirectional communication between the computer and the DAC. The computer sends audio and the DAC sends commands or instructions for the computer to follow. For example the computer's clock becomes less accurate over a given period of time and can send too much data too quickly and fill up the buffer. Asynchronous DACs will instruct the computer to slow down, thus avoiding any negative effects of a full, or empty, buffer which can manifest itself into audible dropouts and pops or clicks. According to Wavelength Audio the tail is no longer wagging the dog when using asynchronous USB mode. Plus all of this is done without additional device drivers or software installation."

Ayre Acoustics currently licenses the Streamlength Asynchronous USB code from Wavelength Audio. Even though Ayre and Wavelength share the same Streamlength Asynchronous USB code in their USB DACs most other design elements differ quite a bit. The most obvious difference is the QB-9's solid state design. However, The QB-9 is **not** just a solid state version of a Wavelength DAC. Wavelength uses custom filters on the new Sabre32 board and its Wolfson parts use different filters than the typical sharp units found in most DACs. Ayre uses its Minimum Phase digital filter. The MP filter used in the QB-9 is the result of extensive research by Ayre into improving compromises with pre and post ringing in typical digital filters. Typical "Brickwall" filters have about ten cycles of pre and post ringing.

To help readers understand a bit about this ringing concept here is my layman's cheat-sheet.

A pre-ring results in audible pre-echos  
A post-ring results in audible post-echos

Pre and post echos are audible sounds that surround an actual event like an invigorating transient. Pre-echo >> Transient >> Post-echo. A live performance has no such thing as pre and post echos such as those involved in analog to digital conversion. An easy way to think of this pre and post ringing concept involves the Super Bowl. There is a pre-game show (pre-echo), the actual game (musical transient), and a post game show (post-echo). If one only wants to watch the actual game, the pre and post game shows should be eliminated. Brickwall filters can't eliminate the pre and post game shows. They force one to watch the pre game, game, and post game. Watching all three certainly detracts from the actual event if that's all one wants. Listening to an audio track one certainly doesn't want to hear pre-echoes and post-echoes in addition to the wonderful transients that are supposed to be reproduced. If the goal is to recreate a musical event in one's home then we must use components that drastically reduce these echos. The Ayre MP filter is somewhat equivalent to watching only the Super Bowl game and a small snippet of the post game show. Instead of ten cycles of pre-ringing and ten cycles of post-ringing, the MP filter has zero pre and only one cycle of post-ringing. To my ears this sounds like a highlight reel where only the best of the best is heard.

In addition to the MP filter the QB-9 has fully balanced discrete circuitry and what's called the Ayre Conditioner. The Ayre Conditioner is a non-ferrous RF power line filter developed in-house at Ayre. A huge benefit of using a built-in RF power line filter is that the listener is virtually guaranteed this filter improves the sound. Ayre is not going to add features to its own product that decrease fidelity. The same cannot be said of external RF power line filters or conditioners. Third party filters or conditioners can make wonderful improvements in one's sound system, but the products must be designed to work with many different components on the market. Finding a power product that is a perfect match for one specific component can be difficult. Finding a power product that is a perfect match for all of one's components is even tougher. Thus, the value of the built-in Ayre Conditioner RFI power line filter should not be underestimated.

One other factor in the QB-9's increasing popularity is that this DAC is getting more and more mainstream dealers interested in computer based audio. Ayre has been a well known brand for over seventeen years. It has a wide dealer network penetrating many different markets. Ayre is a Blue-chip company. When it releases products people can expect a very high level of quality and support. Thus, I've received emails from Ayre dealers about music servers and Ayre customers saying their dealer is really trying to get into computer based audio and has the QB-9 on display in a very good system. These are all very positive things in my opinion and have not only contributed to the QB-9's popularity, but the industry as a whole.

## System Integration & Listening

I've listened to the Ayre QB-9 in more than a few systems since I received the review sample. Not only have I tried it with a plethora of components here in my listening room, I brought it with me to a colleague's studio in Northern California. There I listened to the QB-9 through an MSB and TAD based system. I really like the sound of TAD loudspeakers and the QB-9 made the listening session a great experience. The most impressed I've been with the QB-9 was at the inaugural Computer Audiophile Symposium at Fantasy Studios in June, 2009. The complete system was as follows.

Magico V3 speakers, Ayre QB9 Asynchronous USB DAC with WireWorld prototype USB cable to a Mac Mini, WireWorld Silver Eclipse 6 Single-ended, (RCA), from the Ayre QB9 to Mbl 6010D preamp, WireWorld Silver Eclipse 6 balanced interconnect from preamp to Mbl 9007 mono power amps, Wireworld Silver Eclipse 6 speaker wire to the Magico V3 speakers. All power cords in this system were Wireworld Silver Electra Power 2 meter. External music was stored on a Thecus N7700 NAS drive with Seagate ES hard drives.

The goals of this system were great sound, ease of use, and great aesthetics. Many people can't or don't want to put a large Mac Pro desktop computer with a Lynx card in their living room or listening room. Thus the QB-9 / Mac Mini combination was a no-brainer. It's simple to use, sounds great, and looks great.

By far most of my listening was done here in my listening room. The winning combination I settled on for the

most critical listening was the QB-9 connected to an Ayre AX-7e Integrated Amp, with Verity Audio loudspeakers. My Mac Pro desktop running OS X Leopard and later Snow Leopard with iTunes & Amarra was used for much of my listening as it's my current go-to computer for most listening.

The Ayre QB-9 is incredibly simple to use. It has one USB input and both balanced XLR and single ended RCA analog outputs. There's no rocket science involved when making the physical connections from computer and to preamp. Using Mac OS X the software setup is just as easy. In the Audio MIDI Setup application the QB-9 needs to be selected as the output device. A couple clicks and configuration is complete and bit transparent music is ready to flow into the listening room.



The sound of the Ayre QB-9 was just as I expected from an Ayre component at this level in the Ayre line-up, it was great. Most of the music I listen to does not hit the extreme ends of the [frequency chart](#). I don't listen to test disks for fun that's for sure. Thus the Ayre performed stellar 99.9% of the time. Remember, there is no such thing as an Ayre Acoustics all-out-assault DAC for \$2500. There are bound to be some design compromises to hit this price point. The only faults of the QB-9 are the extreme highs lacked ultimate separation and resolution and the very bottom end frequencies were a tad smeared in my system and in my dedicated listening room. Everything in between was stellar. At \$2500 the QB-9 is a great DAC. Music has a wonderful flow to it when played through the QB-9. I was not straining at all to hear the fine details of the new Beatles remasters. The Ayre QB-9 brought the music to me in all its glorious detail. Switching from the 16/44.1 Beatles

collection to some 24/88.2 and 96k material delivered an even more pleasing experience. The QB-9 changes sample rates on-the-fly instantly. Users will hear no gap in playback like some DACs that take their time switching from sample rate to sample rate. Since recommending the Stone Temple Pilots DVD-A album Core to some of the Computer Audiophile readers, I've been listening to it quite a bit. I've ripped the files to 24/96 WAVs then converted them to AIFF via the Max application so I can add metadata and album art to the files in iTunes. This album sounded awesome through the QB-9. I know some of the more traditional audiophiles may be jumping out of their skin right now asking (the following should be read out loud in a [Thurston Howell, III](#) voice) "How he can judge the quality of components with such abrasive Rock and Roll?" When one is intimately familiar with certain albums it is simple to evaluate components with this material and the differences in sound are identifiable immediately. Continuing my Rock and Roll high resolution road, I ripped Neil Young's Greatest Hits DVD to 24/96 WAV files and followed the same conversion process to AIFF. Again, the sound was great, listening was easy, and I didn't even have to think about the components in my system. There was no offensive sounds coming from anywhere. The QB-9 and AX-7e combination is extremely musical and very transparent. One thing I have really noticed about this asynchronous USB device is the way the music just flows to the listener. There is no leaning on the edge of the chair to hear the music or straining to hear the opening and closing of microphone channels before and after certain vocal recordings. It's all there and all served right to the listener. During my listening sessions I listened to a fair amount of acoustic Jack Johnson albums. Again, the music was right in the QB-9's wheelhouse. Jack's guitar sounded so real, almost like Jack was in the room sitting behind one of the Verity loudspeakers. This was some of the best sounding acoustic guitar I've heard in my system in recent memory. Flowing, accurate, and easy is a good description for listening to music through the Ayre QB-9.

Readers of Computer Audiophile know that my listening room as recently become the land of Asynchronicity. I have so many asynchronous USB products here that it's difficult to get excited about some of the good adaptive USB products currently on the market. During the review period I compared the QB-9 to the Wavelength Cosecant, Wavelength Proton, and dCS U-Clock asynchronous USB to S/PDIF converter connected to my Alpha DAC and the dCS Paganini DAC. Listening to The Beatles remastered Mono box set via the QB-9 and the Wavelength Cosecant was a very telling experience. I wish everyone who was considering these two DACs could listen to this material via each DAC side by side. In the simplest terms, if you like tubes you'll prefer the Cosecant. If you prefer solid state components the QB-9 will be the instant hands down winner. I will say the Cosecant's warmth made the Mono box set sound as close to vinyl as I've ever heard in any system. But, is that accurate or just what some listeners prefer? I have no idea, that's for each listener to decide. A major difference between the dCS combinations I used and the QB-9 DAC was soundstage, and of course tens of thousands of dollars. The dCS and Alpha DAC had a very deep transparent soundstage, and much larger price tag, that the QB-9 just couldn't match. There was no hearing all the way to the back of the hall during an orchestral performance with the QB-9, but one can't have it all without paying for it.

Two other products readers are likely considering when researching the \$2500 Ayre QB-9 DAC are the Bryston BDA-1 and the Benchmark DAC1 HDR. The Benchmark DAC1 HDR is a wonderful component that can be considered a jack of all trades. It has a remote control, volume control, analog input, several digital inputs, and a headphone amplifier all in one chassis. In addition to these features the DAC1 HDR uses an adaptive USB implementation developed with CEntrance. Some readers could use the aforementioned data to make a purchasing decision already. If you want all the extra features, and circuitry, the DAC1 HDR is your component. On-the-other-hand the QB-9 is at a big sonic advantage with its asynchronous USB implementation and the fact that it does one thing and one thing only. It receives digital data via its USB input and converts it to analog audio. Comparing the sound of the DAC1 HDR to the sound of the Ayre QB-9 is a pretty simple task. The DAC1

HDR has the CEntrance adaptive USB "house sound" and the DAC1 HDR is extremely tight, a little edgy, lacks the decay of the best DACs, and can be a tad fatiguing during long listening sessions if the listener isn't used to its presentation. The Ayre QB-9 sounds vastly different just as I described earlier in the review. The music flows unhindered right to the listeners ears with a sense of rightness that the adaptive USB DACs just don't have yet. Not only is the QB-9's asynchronous USB implementation and advantage, but the analog output stage in the QB-9 is very strong. Comparing the QB-9 to the Bryston BDA-1 via memory only I sense that the BDA-1 lacked a little something in its analog output stage. I remember saying the sound of the BDA-1 wasn't all that different between its numerous digital inputs. I tend to think this has to do a little with homogenization of the sounds all traversing through the same analog output stage in addition to other internal circuitry. The Bryston BDA-1 is a really good DAC, but I favor the Ayre QB-9's sound in my system.

### Thousands of Miles and Hundreds of Hours Later

The QB-9 asynchronous USB DAC is Ayre's first entry into the USB DAC market. Based on performance Ayre has hit a home run on its first plate appearance. Asynchronous USB is currently the technology to beat in the USB DAC arena. Ayre made a very wise decision to release a product when the time and technology was right. Ayre did not go down the adaptive USB path just to release a product and sell units in a down economy. Again you're not going to get Ayre's all-out assault for \$2500, but you will get a DAC that is incredibly pleasing and accurate. A sense of ease emanates from the QB-9. This translates into wonderfully relaxing listening sessions where one can forget about the components and get lost in the music without even trying. I hope listeners have a couple hours to spare each time they sit down to listen via the QB-9. Time flies when Sonny Rollins is whaling on his tenor sax or Beck is weaving a unique story with his lyrics and great sounding instruments. Thanks to Ayre for contributing to my musical enjoyment over the last few months and congratulations for making the Computer Audiophile Suggest Hardware (CASH) list with the QB-9 asynchronous USB DAC.

Associated Equipment: Mac Pro, Lynx AES16e card, Kimber USB cable v1 & v2, Benchmark DAC1 PRE & HDR, Kimber Select cable, Verity Audio Fidelio loudspeakers, McIntosh tube amplification, Virtual Dynamics power cables, Richard Gray's Power Company cables, dCS Paganini DAC, dCS U-Clock, Devilsound DAC v2, Berkeley Audio Design Alpha DAC, Wavelength Audio Proton & Cosecant, Ayre AX-7e Integrated Amp, Windows XP "Music Server for a Song."



Mac Pro detailed specs:

Model Name: Mac Pro  
Model Identifier: MacPro3,1  
Processor Name: Quad-Core Intel Xeon  
Processor Speed: 2.8 GHz  
Number Of Processors: 2  
Total Number Of Cores: 8  
L2 Cache (per processor): 12 MB  
Memory: 10 GB  
Bus Speed: 1.6 GHz  
Boot ROM Version: MP31.006C.B05  
SMC Version (system): 1.25f4  
System Version: Mac OS X 10.6.1 (10B504)  
Kernel Version: Darwin 10.0.0  
Boot Volume: Macintosh HD  
Boot Mode: Normal  
Computer Name: Mac Pro Music Server  
User Name: Chris Connaker (Chris)  
Secure Virtual Memory: Not Enabled  
64-bit Kernel and Extensions: No  
Solid State Hard Drive - MemoRight GT Series 2.5 64GB  
SATA SLC SSD  
Gigabit Ethernet direct connection to Thecus N5200B  
Pro NAS  
Digital I/O - Lynx AES16e w/ custom HD26 to XLR

AES/EBU cable

Software - iTunes with Amarra from Sonic Studio