Passive USB conditioner/RF filter
Made by: Audioquest, California
Supplied by: Audioquest UK
Telephone: 01249 848 873
Web: www.audioquest.com
Price: £39

AUDIO FILE

AudioQuest JitterBug

hi-fi news OUTSTANDING PRODUCT

How do you fancy improving the sound of your USB-connected DAC for just £39? Interested? Then you should check out AudioQuest's new JitterBug USB noise filter
Review: **John Bamford** Lab: **Paul Miller**

In 2012 AudioQuest caused quite a buzz with its diminutive £215 DragonFly, a miniature DAC/headphone amp squeezed into a USB dongle, designed in collaboration with Wavelength Audio's Gordon Rankin and incorporating his Streamlength asynchronous USB protocol. Then the company scored a direct bullseye when it followed up with the DragonFly v1.2 [*HFN* Mar '14]. This not only offered improved sound quality thanks to power supply tweaks and a shortened signal path between its ESS Sabre DAC chip and the analogue output, but was also bargain-priced at just £129.

This year AudioQuest has a new 'widget' commanding worldwide attention from budget-conscious audio enthusiasts playing music from their computers: the £39 JitterBug. It's another USB (Type A) dongle, a little smaller than the DragonFly, this time with a Type A socket at the other end.

ABOVE: Equipped with a USB Type A socket on one end and a USB Type A plug on the other, the JitterBug inserts between the USB port on your computer and the cable leading to a USB DAC

PLUG 'N' PLAY

As it's an obvious partner for the DragonFly, you plug the JitterBug into a USB socket on your laptop (say), and the DragonFly into the end of the JitterBug. Simple. However, AudioQuest says it's not designed only for DragonFly owners, rather that the JitterBug will improve the performance of *any* USB-connected DAC.

In fact the company goes further than this, claiming it's an essential 'tweak' to benefit pretty much all computer audio set-ups. You might put JitterBugs almost anywhere you see a USB slot in a home network that's carrying audio to a hi-fi system. Using a NAS drive? If your NAS has a vacant USB expansion port then simply 'plugging it' with a JitterBug should improve subjective sound quality by 'reducing electromagnetic and radio frequency interference', says the company.

So what exactly is it? While its name might imply that it re-clocks the audio stream to lower jitter, it's a purely passive device designed to filter out 'nasties' by reducing the amount of electrical noise generated by the source (*ie*, the computer) travelling along a USB cable. It's a line conditioner for the 5V DC USB voltage bus (VBUS), and a signal filter for the USB data line. AudioQuest says 'it also attenuates the entire signal to remove parasitic resonances, while also reducing (or in some cases completely eliminating) packet errors within the data stream'.

Computer audiophiles will be well aware of specialist firms offering dual lead USB cables which separate power from data. Many listeners swear by them. But you won't find one for £39! Anyway the JitterBug approaches the fraught issue of a computer's inherently hostile environment from a different angle – by attempting to reduce noise generated by the USB bus at its source. If you simply push data from a computer to a USB DAC, AudioQuest suggests further improvement should be noticeable when using a second JitterBug in parallel (not series) on the same USB bus.

IT STARTED WITH CABLES

The history of Californian-based AudioQuest dates back to 1980 when founder Bill Low – who had worked in the hi-fi industry as a sales representative and run a hi-fi dealership – became seriously involved in 'the sound' of cables, making bespoke interconnects and speaker cables to sell in his store. The rest, as they say, is history. AudioQuest today is one of the specialist hi-fi scene's preeminent cable manufacturers, shipping to some 60 countries around the globe. Its Irvine headquarters has approaching 50,000ft² of warehouse space, with further distribution bases in The Netherlands and Hong Kong supplying retailers in Europe and Asia. The firm makes every type of cable imaginable for analogue and digital AV applications, was an early supplier of specialist USB and Ethernet cables for computer audiophiles, and has grown to become a tech company designing hardware – with its DragonFly, JitterBug, and NightHawk headphones.

A QUIET NIGHT IN

Needless to say everybody's mileage is going to vary, since some DACs use the incoming USB's 5V DC power while many do not. If I'd hoped it might improve the performance of the little DragonFly v1.2 that lives in my laptop bag, I certainly wasn't disappointed. In fact I was completely blown away – there's no other way to say it. The sound was subjectively so much tidier and better focused that I feared I was losing my faculties… and found myself praying that editor PM would be able to measure objectively that in fact I wasn't [he did, of course – see Lab Report].

I almost fell off the sofa when hearing how the JitterBug improved the clarity and focus of John Martyn's soulful reworking of Portishead's 'Glory Box' from his 1998 collection of covers, *The Church With One Bell* [Independiente ISOM 3CD]. Where his voice had sounded smeared, hazy and lazy now the vocals popped into focus, occupying a distinct space in the soundstage, with enhanced clarity and diction.

> 'I almost fell off the sofa when first hearing the JitterBug's effect'

Playing the lovely analogue recording of Shelby Lynne's *Just A Little Lovin'* album [Lost Highway 0602517448254] also demonstrated the JitterBug's efficacy. Again, the sound appeared more open and better ordered, and never had I heard the print-through of the analogue master tape so clearly resolved during the quiet opening moments of the sumptuously delicious title track.

TRANSFORMATIONS

So much for hearing it transform the sound of my 'mobile' laptop PC and DragonFly v1.2 rig hooked up to my Levinson No383 and Townshend Galahad speakers; what really floored me was observing how it also improved the performance of my living room set-up of Mac mini and T+A DAC 8 [*HFN* Oct '12].

Time and again I found it made music sound more natural, more believable. It's easy to relax and enjoy one's system when playing beautifully balanced recordings. However, where the JitterBug scored time and time again – and what impressed me the most – was in the manner in which it appeared to clean up less-than-stellar recordings, seemingly removing any fatiguing 'sizzle' or hash.

It worked wonders on Pharrell Williams' 'Happy' from 2014's *G I R L* [Columbia 88843 05507 2] which, more's the pity, is a typically compressed and dynamically squashed example of what is otherwise a wonderful slice of 'perfect pop'. While it didn't transform 'Happy', it certainly helped ameliorate the cacophony and tidied it up.

Similarly when revisiting some classic Holland-Dozier-Holland songs from 1968 – the title track from Diana Ross & The Supremes' *Reflections* [Motown/Universal Japan SHM-CD, UICY-75226] – the sound was altogether cleaner and better defined. What a bargain upgrade!

ABOVE: The JitterBug is a purely passive device (drawing no power from the USB hub) but provides transformer-isolation and RF filtering of both the 5V USB 'VBUS' and its differential data lines. Two JitterBugs may be used in parallel if necessary

HI-FI NEWS VERDICT

Considering the modest £39 asking price, it's impossible not to be impressed by the sonic improvement offered by the JitterBug between a computer and DAC. Heck, I spent that much last weekend on a takeaway curry for the family. The curry's long gone; the JitterBug remains in my computer rig – and it's staying put! Indeed, I'm looking forward to hearing what happens when I 'double up' with another one.

Sound Quality: 90%

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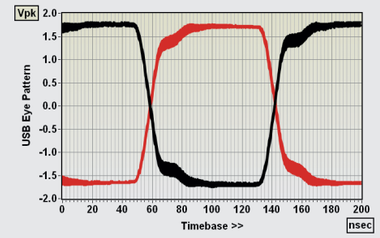
LAB REPORT

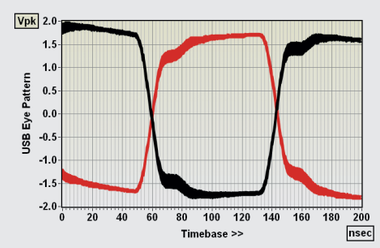
AUDIOQUEST JITTERBUG

While the 'dual filtering' of both VBUS and differential USB datalines is intended to remove spurious RF, particularly from the latter, any such LPF will necessarily influence the response and waveshape of the data signal. This I was able to measure via the same rig described for our USB cable group tests [*HFN* Jul '13 and Jul '14]. The eye-pattern for a standard 2m length USB cable is shown below [Graph 1] where the 21.96nsec risetime is very close to the acceptable USB limit and the Vp-p was measured at 3.48438V. With the JitterBug added between PC USB output and cable, there's a clear modification to the received data waveshape [Graph 2] but the risetime has improved to 14.77nsec while the Vp-p is now 3.59375V.

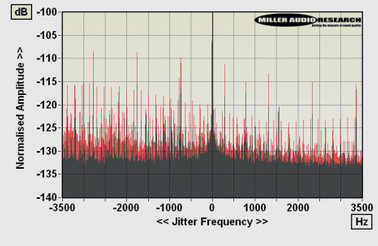
Deterministic jitter, on the edges, looks broadly unchanged whether the JitterBug is present or not, but the real proof of the digital pudding is only revealed when the filter is used with a hub-powered DAC. AudioQuest's own DragonFly v1.2 is the obvious choice [*HFN* Mar '14] and used with a legacy PC USB port it delivers a perfectly acceptable 223psec jitter. This is already a very good result for a plug-in DAC but both noise and jitter (165psec) are clearly further improved with the JitterBug *in situ* [see black trace, Graph 2]. **PM**



ABOVE: USB eye-pattern via 2m of legacy USB cable without AudioQuest JitterBug



ABOVE: USB eye-pattern via 2m of legacy USB cable with AudioQuest JitterBug



ABOVE: 48kHz/24-bit jitter spectra from AudioQuest DragonFly v1.2 via legacy PC USB 2.0 output (without JitterBug, red; with JitterBug, black)

HI-FI NEWS SPECIFICATIONS

USB Risetime (without/with JB)	22.0nsec / 14.8nsec
Digital jitter (without/with JB)	223psec / 165psec
Dimensions (WHD)	19x13x50mm