

# Multitest Portable USB-DAC's

*from mediocrity to Studio Quality!*



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# Multitest Portable USB DACs

*Now that the headphone jacks on some smartphones are missing, the portable headphone DACs have become even more relevant than they already were. But laptop users looking for a good headphone sound will also find that there is more profit to be gained from buying a good USB DAC (DA converter) than just buying expensive headphones. It's in the combination of the two.*

*I was also looking for a good portable DAC, so that I could assess mixes on the go or on location, check masters, perform editing work and possibly even do some mastering work. In addition to the demands on sound quality, the DAC also had to be practical. In other words: small, with a sturdy construction, plug-and-play, powered via the USB connection or battery, compatible with multiple devices and supporting a wide range of headphones. The USB-DACs I have listened to in this article are often able to be used in multiple situations: in combination with a laptop, tablet, smartphone or even with a media player. If they also end up being as small as a USB stick and have a fair price to it, the choice is made, but there is more to it.*



# Well considered...

In order to be able to give a good and considered judgment, I have performed all listening tests several times and over several periods. Every time I used another pair of headphones as a reference. The first I used is a Philips Fidelio X2, an open headset sold around 250 euros, similar to the Sennheiser HD650, but in my opinion a little less colouring and even more critical. With an impedance of 30 Ohm, the Philips Fidelio X2 is easy to control by all tested DACs. The B&W P7, closed headphone and for 400 euros a great all-rounder. The Focal Utopia served as a fancy alternative, a 4000 euro headphone. The last tests I did, I used the most critical and fantastic in-ears I have ever heard: the 64Audio A18/U18. With these in-ears I could really determine what a portable DAC can add or blur to the sound they present.

I gave the DACs a mark on 3 dimensions. First of all the coloration of the sound and sound quality, regardless of the possibilities or the price. I have

therefore often compared the DACs with each other and with more expensive DACs in the studio. If the DAC doesn't sound much better than the headphone output on my MacBook Pro, it doesn't make much sense to use one. Secondly, I have given a mark based on all possibilities: which sample frequency is supported, DSD or MQA support, can it be used with an Android or iOS smartphone, is there a volume button and so on. Finally, I reviewed these two criteria with regard to the price. For example, the Zorloo ZuperDAC gets 8 points for its sound, but when you consider the price of \$ 75 and support of sampling frequencies up to 192 kHz, it gets 9 points. All together the ZuperDAC reaches 8.2 points.

You can find all the options and additional information in the enclosed [spreadsheet 1a, 1b en 1c](#). To give the reviews some strength, following are reviews on the sound of each DAC. They are ordered by final score, with the average retail price mentioned.



# Apple Lightning Adapter

Not a serious option for use with a laptop, but for a comparison with the DACs that can be connected to an iPhone. You wouldn't think so, but this small plug does have a DAC chip on board (and even an ADC). Too bad the code on the chip doesn't say what brand it's from. For 9 euros it is convenient to install one on your headphones as a standard. The sound is comparable with the audio from an iPhone 6, but a bit more cluttered, more noise, a hump in the low and a little shrill high. Add occasional distortions and you get exactly what you do not pay for.



# AudioQuest Dragonfly Black

AudioQuest was very successful in 2012 with the introduction of the Dragonfly and later version 1.2 (which is still available). Now, they offer an extension to Black and Red, both with a different ESS DAC chip. What stands out for both is the high output level, which I had to bring down in software (in Vox even to 7%). A useful feature is that the colours in the logo indicate the sample rate. Too bad it stops at 96 kHz, while the chips can actually handle 192 kHz. I would just skip the Black, it does not have a lot of punch and seems a bit 'off' in terms of timing, i.e., a wider stereo image than it should be. The low end was a bit too wobbly and in the end, it all resulted in a headache.



# AudioQuest Dragonfly Red

The Red is another story: what a detail! You wonder if it is not too empathic and colourful, but it has a nicely balanced low end, goes well deep and still has the right amount of high frequencies, although for some it might be a bit metallic. To my taste, it sounds a bit too pushy and restless, but there are tribes that swear by the Red. I think it is mainly the combination with the right headphone, one that is not so transparent and a bit slow. So, combined with a B&W P9 for example.



# Apogee Groove

Apogee is a brand that is more focused on the professional audio industry. This first trip into the hi-fi market is a good one. The Groove uses an eight-channel DAC chip, the ESS SABRE 9006-A. Four of these channels are linked per output channel, resulting in a high dynamic range with a low noise floor. You can hear the result of that, because everything is played with an authority that I am used to by the more expensive headphone amplifiers. You can also use a headphone with high impedance with the Apogee. For some listeners it might be a bit too 'round' at the bottom of the frequency spectrum, or it lacks a bit of body in the mid frequencies and is occasionally a bit too sharp. Perhaps not very sophisticated, but very workable.



# Meridian Explorer2

The Meridian plays MQA files in addition to PCM and since there is a separate line level output (although with a 3.5 mm connection), it is also a good option to use in the living room. The sound is very open and beautifully stable, voices are nicely tightly centred. You can really pinpoint instruments in the sound stage and the stereo image is very even. It might not be very tight in the low end, the sound is a bit "round" and it does not go very deep in the lows, it still is an easy listening experience. A musical DAC, nothing more, nothing less.





# Cyrus Soundkey

The Cyrus Soundkey, like the AudioQuest Dragonfly Red, has quite a bit of output power and easily controls the more expensive headphones. It has a firm and full sound and therefore pushes a bit, but is still nicely transparent. A bit restless and sharp around 4kHz maybe. A comparison with the more expensive Mojo is pushing it a bit too much, but the aforementioned DACs from AudioQuest, the Meridian Explorer and Apogee Groove are not. In fact, the Soundkey fits perfectly in that list at home, something you would not expect for its price tag of € 149. Beautiful placement in the sound stage, too bad that it only supports PCM up to 96 kHz.



# Cambridge DacMagic XS

Cambridge uses the somewhat older ESS ES9023, not suitable for low power consumption and mobile applications (i.e., no smartphone support) and is often found in the more expensive DACs or media players. A chip that for the most part does the work of the DacMagic XS. And that's something you will notice: a detailed sound with little coloration, soft high tones, tasty punch, friendly, but still with enough spunk. The low end is deep and tight at the same time. I shows a bit of colouring in the mid tones, which results in a somewhat dry and woolly sound. But at this pricetag, the format and nice volume buttons, certainly a good bargain.



# NuPrime uDSD

The NuPrime uDSD seems to be almost a copy of the NuForce uDac5. Not surprising, since Jason Lim, one of the founders of NuForce, was involved. As you can hear, a lot has been improved, because everything sounds nice and balanced. The low end goes deep, but still under control. Fast, but not restless. Nice open top end and the details are clearly audible. It is also long listenable (not unimportant). The timing is a bit less and centred voices sometimes sound too wide. The construction is a lot bigger and heavier than the NuForce uDAC5, but beautifully executed with many connectivity options and a lot of formats that are supported (DSD and PCM up to 384 kHz).



# Zorloo ZuperDAC

Newcomer Zorloo may only be known to people who keep track of all hi-fi crowdfunding campaigns. The ZuperDAC has indeed emerged from such a campaign. A small stick that can be used with smartphones and laptops. De Zorloo makes remarkable use of the ESS ES9018, resulting in a beautiful signal-to-noise ratio of 115dB and a distortion of 0.0003%. Almost equal to that of the Chord Mojo. If you listen to the Zorloo, you can only draw one conclusion: this makes sense. Nice tight low end, very dynamic, responsive and everything is reproduced with such an ease. It does need a sensitive headset. It doesn't handle the more expensive, high impedance headphones that well. It supports PCM up to 192 kHz and works with iPhone and Android. Considering the price, you immediately understand the final score.



# Encore mDSD

The Encore mDSD is a bit the counterpart of the Cambridge DacMagic XS, but in the Encore the newer ESS ES9010 chip is used. This chip supports DSD and PCM up to 384 kHz. The 9010 chip itself should really be used with a good amplifier part and luckily that's the case with the mDSD. A nicely balanced, open sound with a nice top end. A great DAC for a low price. Works with iPhone as well as with Android and if you want to use a better DAC at home, the optical output of the mDSD can always be of service.



# Chord Mojo

Chord is the only company that does not use ready-to-use DAC chips from ESS, Wolfson or Burr Brown, but programs them in a field-programmable gate array (FPGA). And not without results! Compared to the other DACs, the Chord Mojo stands head and shoulders above them all. The sound is so much larger and wider than what I've heard, that I started to doubt my settings. But they were right. The stereo image may be a bit too wide, and you could say it lacks a little punch. The depth and transparency is, however, unrivalled. The construction of the Chord Mojo is sturdy, compact and scores high on the wanna-have scale. The buttons are small transparent balls that change colour if you select a different sampling frequency or sound level. If I have to mention one disadvantage, it is that the battery must always be charged, even if you connect it to a laptop. The charging is done via a separate USB connection. Smart to separate power and audio, but not practical. And well, its price tag gets the score down a bit.



# iFi nano iDSD Black Label

The iFi DAC was not included in my first listening test. The distributor of iFi at the time, did not think it necessary to participate in the comparison. Fortunately, the new distributor, avalanche audio import was enthusiastic and sent this nano iDSD Black Label. Fortunately, because it is the DAC that surprised me the most. On all fronts. First the sound. It is at the level of the Chord Mojo, but the approach is slightly different. It's a little less hi-fi, but a bit more detailed, a bit more punchy, and it sounds even more open. Probably because it's more up-to-date, but it does not feel overdone. If there is one DAC that can play any existing format, it's this one: PCM and DXD up to 384 kHz, DSD up to 12.2 MHz and MQA. A feature that I did not encounter on any other DAC is the choice between two different aliasing filters. These filters are so decisive for DA conversion, but also very personal. Fantastic that you can make this choice yourself. The special IEM output for very sensitive in-ears is the ultimate match for my 18-driver 64Audio A18. In terms of sound, it was a neck to neck with the Chord Mojo, but my own preference goes to the iFi nano iDSD Black Label. Furthermore, because of its price, supported audio formats and practical possibilities, this is undoubtedly the overall winner.



# Conclusion

After a multi-test you always expect a clear winner and a best buy. If I had to pick, the Zorloo ZuperDAC and the Encore mDSD are definitely best buys. The clear winner is the iFi nano iDSD Black Label, and I think it will stay at the top of my list for a while. In addition to two different headphone outputs, there is also a line output so that it can really be used in any situation. Maybe you did not notice, but except for the Apple Audio Adapter, no DAC scored really bad. So no wrong choices here. But why would you go for mediocre when you can have studio quality in your pocket for just a few bucks?





# Extra Information

For more information about the portable USB DACs, please click on one of the links below:

[Apple Lightning Adapter](#)

[AudioQuest Dragonfly Black](#)

[AudioQuest Dragonfly Red](#)

[Apogee Groove](#)

[Meridian Explorer2](#)

[Cyrus Soundkey](#)

[Cambridge DacMagic XS](#)

[NuPrime uDSD](#)

[Zorloo ZuperDAC](#)

[Encore mDSD](#)

[Chord Mojo](#)

[iFi nano iDSD Black Label](#)

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