



All this and Mojo 2

THE SECOND-GENERATION VERSION OF THE POCKET CHORD ELECTRONICS DAC/HEADPHONE AMP MAY BE BOTH SMALL AND COMPETITIVELY PRICED, BUT IT'S ALSO A VERY SERIOUS HI-FI COMPONENT IN MINIATURE. IT HAS AN EVEN GREATER APPEAL THAN THE ORIGINAL, EXTENDING WAY BEYOND MUSIC ON THE MOVE

One of those 'time flies when you're having fun' moments came to me when I realised that it's getting on for seven years since the launch of the Mojo, the groundbreaking Chord Electronics pocket DAC/headphone amplifier. That description was fully justified as the details of the unit were unveiled at a launch event atop The Shard in London: this compact device not only used the company's celebrated FPGA-based digital conversion, as found across its range, but it was also handbuilt in the UK to the same standards as Chord's other components, right down to the 'machined from solid' aluminium casework.

Powered by an internal rechargeable battery, it was aimed firmly at those playing music on their smartphones, company supremo John Franks sharing at the launch the numbers of such handheld devices in use, and gleefully looking forward to number of Mojos Chord could sell if it managed to attract just a tiny fraction of such users. Indeed, it was the expectation of such sales that encouraged Chord to not just invest in making the Mojo, but also build it the way it did, rather than following the outsourced route favoured by so many devices aimed at the same kind of user.

Selling at £399, the Mojo not only lived up to its original brief, but exceeded it: it was – and still is – a very fine product of its kind, whether used as a mobile device or a desktop unit, between a computer and an amplifier, where it stands up very well against many more recent, and more expensive, rivals. And with the addition of the partnering Poly, launched in 2017 as a clip-on player module able to stream from a network via Wi-Fi or play up to 2TB of

music stored on MicroSD cards, the Mojo turned into not just an adjunct to a smartphone or computer, but a complete music playback system

Yes, there were some fits and starts, notably with the Gofigure app, designed to set up and operate the Poly's streaming capability, which was – to put it charitably – somewhat flaky in its initial iteration, and has only fairly recently become much more usable in its v1.5.3 version after some fettling, but the Poly/Mojo concept has obviously been successful for Chord to the extent that it's now been replicated further up the company's range with the addition of the 2go streaming module. This is essentially a grown-up Poly, for use clipped onto the Hugo 2 'transportable' DAC/headphone amp or with the 2yu digital output module as a network bridge for a wide range of DACs, both Chord and beyond.

Now there's a new version of the Mojo, unsurprisingly designated Mojo 2, selling for just £50 more than the original and rapidly described by more than one industry wag of my acquaintance

as 'a Mojo with more balls'. Why? Well, its main distinguishing feature, apart from the additional digit etched into its cool black anodised casework and a USB-C data port alongside the existing digital input provision, is the presence of an extra 'polychromatic polycarbonate control sphere', as Chord calls them, bringing the total to four of the company's signature controls, which light in different colours according to their operation.

Fitting that extra one in has meant reducing their size, with two smaller spheres for volume, and even tinier ones for power and menu access – of which more later – as the dimensions of old and new Mojo are more or less the same, the new model being just a millimetre or two larger all round at 83x62x23mm, and weighing just 5g more at 185g. It's just as pocketable as before, and yes – it's still fully compatible with the clip-on Poly, with Chord also offering leather cases for the Mojo 2 alone, or the Mojo 2/Poly combination.

More than meets the eye

However, while the outward appearance is of nothing more than a mild cosmetic refresh, there's a lot more to the Mojo 2 than just an extra control and a further port. This is truly a case of all the action being under the skin, with developments to both the digital-to-analogue conversion and the operation of the onboard battery power supply.

As already mentioned, like the original Mojo the new model uses a version of the company's in-house-developed DAC technology, able to handle PCM-based music formats up to 768kHz/32bit, and DSD to DSD256, with the power button changing colour to indicate the incoming datastream format, and implemented in software on a processor device rather than in the off-the-shelf DAC chips used in just about every other converter on the market.

In the Mojo 2 this now has an enhanced version of the Watts Transient Aligned filter, with an increased number of taps for greater accuracy, running on 40 DSP cores. In addition, there's an improved noise-shaper designed to deliver less noise and a greater sense of depth, while refinements to the actual digital conversion target lower distortion and better rejection of out-of-band noise. The design is also now DC-coupled, with a digital DC servo, with the elimination of coupling capacitors this allow also promising greater transparency.

That's a lot of digital technology for a little pocket device, but the Mojo 2 goes further – and here we come to that extra control sphere: it's there to support the Chord's Ultra High Definition Digital Signal Processing, described as the world's first fully transparent, lossless system of its kind. This uses a 104-bit custom DSP core running at 705/768 kHz, plus extensive noise-shaping, and allows the Mojo 2

to deliver an extensive user-adjustable equalisation system, an increased two-stage volume adjustment range, and also a crossfeed function, designed to give a more speaker-like experience when using headphones by allowing a degree of 'bleed' between left and right channels.

Digging a little deeper into that equaliser, it offers 18 steps of adjustment, covering +/-9dB, for each of four frequency bands: lower bass (20Hz), bass (125Hz shelf), lower treble (3kHz shelf) and high treble (20KHz). However, using this facility will take a bit of familiarisation: as the Mojo 2 has no graphical display, operation is a matter of following the colour changes of the menu 'ball', which is the right-most one when viewing the Mojo from above – i.e. with the product name the right way up. Press this ball twice and you enter the equalisation mode, a red colour indicating you are in lower bass mode, after which you can use the middle two spheres, usually operating volume up/down, to adjust the cut or boost in this band, these balls changing colour to indicate each 1dB step. Then press the menu button again, and it changes colour as it cycles through the other bands – yellow for mid-bass, green for lower treble and blue for upper treble – so you can again adjust the effect for each band with the volume controls.

See the graphs attached to this review for an indication of the effects of this system, but bear in mind that you'll basically be adjusting the effect by ear, which can make it all a little bit laborious: I wouldn't even try to adjust these settings 'on the fly' for different recordings – best perhaps to set them up for the most acceptable sound with the headphones with which you're going to be using the Mojo 2, or to suit the rest of the system if using it at line level into an external amplifier, and leave it at that. The – rather small – user manual supplied with the Chord offers guidance in this respect.

Crossfeed, too

The menu ball also offers access to the crossfeed function, as found in some of the company's pricier DACs – press once and it turns blue, then use the volume up control again to cycle through the four stages of 'bleed', from off to maximum – and the brightness of the control spheres, set using the volume down control in menu blue mode. Still with me? Well, if you get lost in either equalisation or crossfeed adjustment – which I'm fairly confident you will! – pressing volume up and down together when in these setting modes will revert the Chord to 'flat' and crossfeed off.

Fortunately the two-stage volume adjustment is automatic: as the level is raised using the appropriate button the menu button, unlit when the Mojo 2 is in low volume mode, will illuminate white as it enters

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Specifications

Chord Mojo 2

Type Portable DAC/headphone amplifier

Inputs Coaxial digital on 3.5mm socket, optical, USB-C and Micro-USB

Outputs Two 3.5mm stereo

File formats handled PCM up to 768kHz/32bit, DSD to DSD256

Accessories supplied USB-A-to-USB-C cable

Dimensions 8.3x6.2x2.3cm

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the high volume range. But Chord has removed the line-level mode offered by the original Mojo, simply because ‘we had a few cases of customers inadvertently activating it when switching Mojo on. We have decided to remove it and make it a user-conscious event now, so by manually having to increase the volume, it’s easier to understand/remember it has been done.’ However, the unit will remember the last volume setting when turned off and then on again, meaning you don’t have to keep resetting your preferred level.

Power options

Despite the presence of a USB-C input in addition to the old model’s micro USB data input – plus optical, and electrical 3.5mm digital ins –, Chord has retained the separate micro USB power/charging port to maintain compatibility with the Poly, and avoided USB-C charging as it feels ‘would cause unwanted noise. Secondly, USB fast charging causes unavoidable damage to lithium cells, which would affect the longevity of the internal battery.’

What it has done is introduce a new FPGA-controlled charging system, which brings faster charging, a 75% reduction in power loss when charging for cooler operation – the original Mojo ran warm, and could get very hot when on charge, but this new one is much more of a cool customer – and a 9% increase in battery life, meaning the Mojo 2 will run for more than eight hours between charges. In addition, the ‘Intelligent Desktop Mode’ has been improved with better battery isolation and changes to the power supply design, so the new model can be left connected to the USB power source without affecting the sound quality.

The original model sounded more detailed on battery, meaning one had to develop a charge/disconnect/listen/charge routine; this one can be charged while you listen, or used while connected to a plug-top charger, all the while maintaining full performance.

The original Mojo was very impressive for a tiny device – this new one is ridiculously so. There’s more of all the qualities that set the original Mojo apart from the pack, including exceptional levels of detail, and a powerful, tight and seemingly effortless delivery, even at very high levels of the kind one should avoid enduring long-term if you really want to keep listening for life. By comparison, the Mojo 2 sounds gutsier and more extended in the bass, and cleaner; switching back, the 2015 model sounds just a little lush and bloomy, whereas the new one is all about grip and drive, bringing the listener closer to the music.

Sharper relief

In other words, the new Mojo has all the warmth and richness of its predecessor, but it’s a just a bit more natural, and better focused in the service of the music. I’ve had an original as part of my desktop audio arsenal since the launch, but swapping in the Mojo 2 – both with a direct connection to the Mac on which I’m writing this review, and with the Poly attached to stream music – just brings almost any music into sharper relief, giving listener more to hear and enjoy. It sounds like a much more powerful drive across a wide range of headphones – even with little in-ear designs – and the levels of detail it can bring, from the thump of timpani to the reediness of a clarinet or the electronic granularity of a guitar pick-up, is nothing short of revelatory.

The same goes for the way the Mojo 2 keeps its cool – in every sense of the term – when working hard: there’s no changing of sound as levels are advanced, and everyone from rockers to those who like their symphonies at front-row levels will find they’re not even approaching the upper limits of its capabilities, so cleanly does it play loud. What’s more, having been disappointed with the artificiality of the crossfeed functions on some DACs I’ve tried, I found the Chord’s, used in its subtlest setting, did a good job of dispelling that ‘inside the head’ you can get with some headphone models, opening up a much more convincing sense of the music happening before, rather than within.

I’m usually a bit cynical when it comes to MkII models, often finding them to be little more than an incremental improvement and, in some cases, a matter of ‘different rather than better’, but that’s not the case with the Mojo 2, which betters its tiny ancestor in just about every respect of its performance. Just for once, I have to say that if you have an original, and you like it, you really should consider the step up to the new one, and recycling your old faithful to an appreciative friend or family member – I think you’re going to love the Mojo 2 that much. And if you’ve never heard a Mojo in action? Well, start here, and be amazed.

The effects of the Mojo 2’s DSP equalisation: red indicates the low bass adjustment, yellow mid-bass, green lower treble and blue upper treble

