

Chord QuteHD (£990)

There's no hotter area of competition at the moment than in standalone DACs. At its three-figure price and with DSD capability, Chord's new QuteHD turns up the heat
Review: **Keith Howard** Lab: **Paul Miller**

As we have had cause to observe many times over the past few years in *HFN*, the outboard DAC is enjoying an Indian Summer. A decade ago new examples were as rare as rocking-horse droppings, today there are more than you can shake a riding-crop at. And it isn't just that computer audio has performed the kiss of life on a product category that seemed to have expired. As it is now the most vibrant area of high quality sound reproduction, it is driving ongoing evolution.

Not very long ago the forward-looking audiophile wishing to future-proof his or her purchase would have been more than content to have a DAC equipped with an asynchronous USB interface capable of operating at up to 24/192. Today that is looking like a minimum specification, it becoming increasingly desirable to have a DAC capable of double-quad-rate sampling frequencies, *ie*, 352.8kHz and 384kHz, and of native replay of DSD files using the DoP (DSD over PCM) USB interface.

There aren't many DXD (Digital eXtreme Definition) 24-bit/352.8kHz music files available but there are some. There aren't that many DSD files available either, but the number of online sources is steadily increasing, while a subset of audiophiles – probably a very small subset – are able to rip their SACD collections to hard disk using a hacked PlayStation 3.

COVERS ALL BASES

If you're not losing much sleep over these developments, fair enough – they could hardly be called mainstream. But if you fancy a DAC that has these bases covered, the new Chordette QuteHD from Chord Electronics will twitch your antennae. It can play DSD files in conjunction with a suitably capable computer audio player like J River Media Center, is 384kHz ready, and as a bonus will play at up to 192kHz

RIGHT: Proprietary WTA digital filtering and Pulse Array DAC technology from Robert Watts endow the QuteHD with a performance that belies its small size and sub-£1000 price tag

sampling rate via Toslink – which I'm pretty sure is a first. Factor in its sub-£1000 price tag and you can appreciate why it is certain to create a stir.

Technical features of the QuteHD have been spun-off from the costlier QBD76HD [*HFN*, Sep '11], and the aesthetic design – while it no longer has the shock of the new – is still unmistakably Chord, particularly when the Chordette Rack is used to stack more than one product from the range.

SHREWD COST SAVINGS

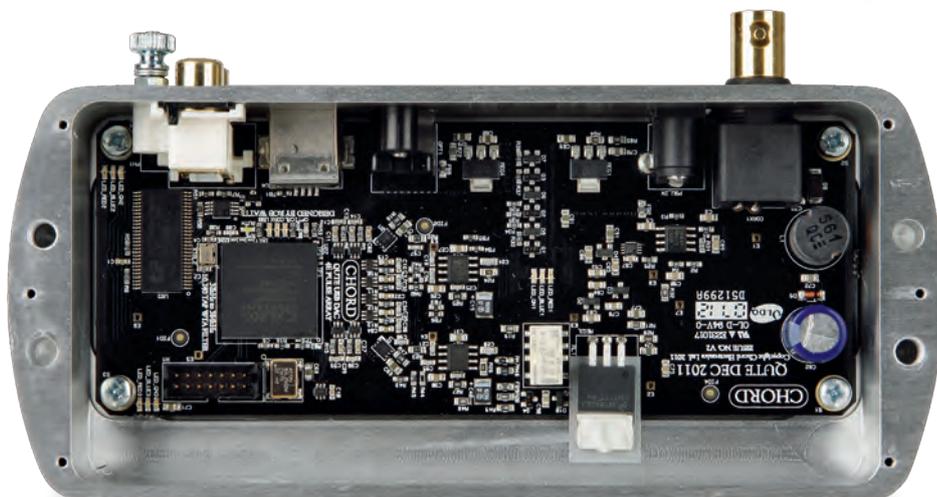
A glance at father and son shows some of the ways in which Chord has made the QuteHD a chunk cheaper than the QBD76HD. For a start, it's much smaller and lighter. Back panel area has reduced in consequence and it is adorned with fewer input and output options. Absent are the AES/EBU balanced digital inputs of the QBD76HD; so too are the balanced analogue outputs. The word clock input has gone too, and there are now only single S/PDIF inputs via BNC and Toslink, plus the USB input. A 12V plug-top power supply provides juice via the usual coaxial power socket, and – unusually – an earthing post is provided for linking the chassis ground to other components.

Also simplified is the user interface. In fact there isn't one, the QuteHD being entirely bereft of buttons or other switches.

There is no RAM buffer selector, output phase selector or digital input selector as on the QBD76HD – instead the QuteHD automatically detects which digital input is active. No display of the active input is provided but there is indication of the incoming sampling rate via the trademark Chord porthole, which in addition to providing glimpses of the circuitry within, acts as a lens for differently coloured LEDs that light according to sampling frequency.

Cleverly, the colours are arranged to imitate the rainbow – red is 44.1kHz, orange 48kHz, yellow 88.2kHz, green 96kHz, light blue 176.4kHz and dark blue 192kHz – which helps in memorising them. DSD via USB shines a lighter blue than 176.4kHz with an added dose of red. What happens when the QuteHD is fed a 352.8 or 384kHz signal I can't tell you because these are only supported via S/PDIF and I'm hardly alone in not yet having an S/PDIF source compatible with this heady sampling rate. I'll be intrigued, one day, to experience it.

Internally, the principal features of note are the use of Robert Watts' third-generation WTA (Watts Transient Aligned) digital filter, which has no fewer than 10,240 taps (coefficients) and is claimed to give 'much better bass definition, a better sense of timing and rhythm, and a much more accurate and precise soundstage',





LEFT: Sampling rate is indicated by which 'rainbow' colour appears in the QuteHD porthole: red (44.1kHz); orange (48kHz); yellow (88.2kHz); green (96kHz); light blue (176.4kHz) and dark blue (192kHz)

and the fitment of a simplified version of Watts' Pulse Array DAC. The latter is able to handle DSD data natively from the DoP USB interface, without conversion to PCM.

Questions, questions: the QuteHD poses quite a few that relate to extracting the very best sound from it. Given the option, should you prefer the USB or S/PDIF interface? If the latter, should you use coaxial or optical? (Chord seems to favour the latter, the press release saying that its lower RF noise results in 'lower noise-floor modulation and smoother sound'.) And what about the DSD over USB capability: does it represent another step forward in sound quality?

FIRST CLEAR PREFERENCE...

Addressing these questions in the order I've just posed them, I began by comparing USB to coaxial S/PDIF, the latter derived from a TC Electronic Digital Konnekt 32x FireWire audio interface – a marvellous device,

'Dynamic and tonal shadings were clearer via S/PDIF'

sadly discontinued. Files were played using J River Media Center v17 running under Windows XP on my previous-generation Mac mini. It's reasonable to suppose that asynchronous USB must be better, given that it obviates the clock recovery issue with S/PDIF. But take a gander at the Ed's Lab Report: the QuteHD's jitter is vanishingly low via S/PDIF – even lower than

via USB – and S/PDIF also provides a lower noise floor. So USB's superiority is far from assured.

Indeed, I quickly formed a preference for the S/PDIF option, which lacked a slight but pervading greyness that

characterised the USB alternative. The 24/96 version of The Rolling Stones' 'Honky Tonk Women', for instance, had a frisson of testosterone about it via S/PDIF that the too-polite, overly smooth-sounding USB alternative couldn't match. And it wasn't only on rough-edged 24-bit/88.2kHz historic rock that this difference manifested

itself. Mozart's famous Clarinet Quintet could hardly be more different musical fare, yet the fine Tony Faulkner recording of Musical Fidelity's Antony Michaelson playing the piece was deft and luminous over S/PDIF in a way that fundamentally eluded the USB interface.

This means that the shoot-out between the QuteHD's coaxial and optical S/PDIF interfaces is no sideshow, but the main event for those who want to squeeze the utmost in sound quality from it. Historically I'm no fan of Toslink but given that Chord appears to favour it I set aside all previous experience and listened to coaxial and optical back-to-back to choose a winner. I don't have a Toslink source capable of quad-rate operation, so the comparison was necessarily restricted to 96kHz maximum sampling rate.

It was a closer run thing than I anticipated but my established preference for the wired alternative was repeated. It had a vitality to its sound that the optical interface couldn't match. On the sparkling rendition of Mozart's March K189 by the Scottish Chamber Orchestra on Linn Records CKD 287 (CD layer), for instance, the dynamic range seemed a little wider and the acoustic of Greyfriars Kirk slightly better resolved – so imbuing the performance with its hallmark panache.

It was a similar story when I tried the very different *Poetspeak* by Fred Simon [Naim 24-bit/96kHz download], a lyrical, laid-back piece for jazz trio. This recording can easily sound smooth to the point of blandness if there's a shortfall in resolving power, and that's the trajectory it took via the Toslink connection. Via the coaxial alternative the tonal and dynamic shadings were clearer, uncovering nuances that the optical connection glossed over. And not just hi-fi nuances, either: *musical* nuances that made for more addictive listening. ➤

DSD IN PRACTICE

Playing DSD files via J River Media Center and the QuteHD proved to be just as straightforward as playing PCM files. But you need to ensure that you use the correct version of JRMC – it must be v17.0.106 or later (check in Help>About Media Center, where the version number is displayed in the dialog's title bar) – and that it is set up correctly. First, in Player>Playback Options...>Audio Output ensure that the Output mode is set either to Kernel Streaming or WASAPI Event-style. If you are using Windows XP then only the former option will appear in the list. Then switch to the Video menu via the left pane and in General Video Settings>Bitstreaming select Custom, and then check the box labelled 'DSD over PCM (DoP)'. It is also advisable to ensure in the Output Format section of DSP Studio that all resampling is disabled – ie, that 'No change' appears alongside each sampling frequency. Once these settings are saved you should find that DSD files play correctly. When comparing DSD files to PCM equivalents, take careful note of the source. Some PCM files are decimated from DSD originals; in other cases, both DSD and PCM files are derived from DXD (24-bit/352.8kHz) masters.

OUTBOARD DAC



ABOVE: Keen pricing and lack of real estate on the small back panel mean that the balanced digital inputs and balanced analogue outputs of the QBD76HD are deleted, as is a word clock input. Coax, Toslink or USB input is selected automatically

So what about DSD over USB? This is my second exposure to a DAC that has this capability and, moreover, replays DSD natively, without decimation to PCM. In both instances I have to say I've been less than impressed with the results. The comparison is much easier to make than it might otherwise be, thanks to 2L Records which has various DXD-derived PCM and DSD files available for free download from its website, www.2l.no. I chose two of these for the comparison: the opening *Maestoso* from Beethoven's Piano Sonata No 32 and the *Presto* from Haydn's String Quartet in D, Op.76, the PCM files in both cases being 24-bit/96kHz.

ANOTHER PREFERENCE

Alternating between the DSD and PCM files, it didn't take long for me to form a marked preference for the PCM versions. Just as SACD itself so often does, the DSD files sounded softened, with blunted dynamics and a clouding of detail. I suppose you could argue that DSD sounded more 'analogue' but only if that description is used pejoratively: meaning a sound that's soft-focus and squashed. In the PCM version the percussive dynamics and complex harmonic interactions of a concert grand were significantly more in evidence in the Beethoven, while the chamber music item was just more sparky and alive, with the interplay between the different instruments more tellingly rendered.

That noted, the DSD capability is a useful one to have. To summarise all this: the QuteHD sounds best playing PCM recordings via its coaxial S/PDIF interface. And when I say 'best', I mean very fine indeed.

The more I listened just for pleasure, the more the QuteHD surprised me. You don't need to use modern recordings to appreciate this, in fact the way the QuteHD washed and brushed up favourite old recordings was one of its most attractive assets. Whether it was Peggy Lee singing 'Fever', Malcolm Sargent and the LSO performing *Peter and the Wolf* or Uriah Heep coming over all quiet for a few minutes in 'Come Away Melinda', the QuteHD dug deep to make them all sound reinvigorated.

Is it even better sounding than the M2Tech assembly I so enjoyed recently [*HFN*, May '12]? Without having the two side by side, I can only say with certainty that they are in the same ballpark and should both be heard by anyone looking for a DAC at around £1k that sounds as if it should cost a great deal more. On Chord's website the blurb on the QuteHD page begins: 'This, we believe, is a world-beater...'. It's not a fanciful claim. ☺

HI-FI NEWS VERDICT

Chord has set the cat among the pigeons with this affordable but capable and fine-sounding DAC. Trimming the fixtures and fittings back to a minimum and concentrating the budget where it matters most has produced a DAC that will meet most audiophiles' needs while delighting them with sound that belies the keen price. England's football team may be naff, but its hi-fi sector is still world-class.

Sound Quality: 85%



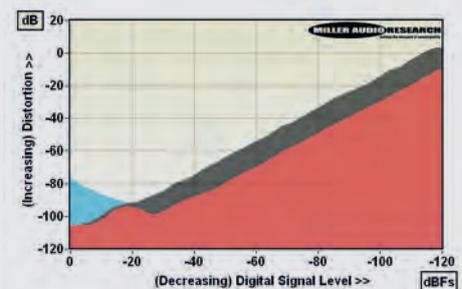
LAB REPORT

CHORD CHORDETTE QUTEHD (£990)

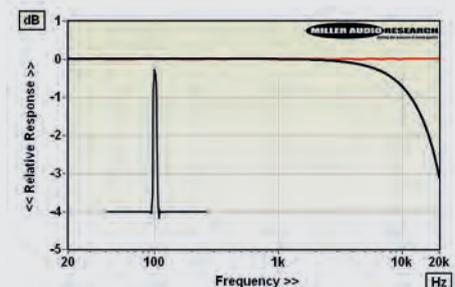
Robert Watts' WTA interpolating filter and Pulse Array DAC technology has evolved over the years and is largely responsible for the very fine performance realised here. Via S/PDIF, it enjoys a high 3V maximum output, a low 65ohm source impedance, wide 111dB A-wtd S/N ratio and impressively low 0.0007% distortion through its midrange [red/black traces, Graph 1]. At high frequencies the analogue stage is slightly 'stressed' [blue trace, Graph 1] and so distortion is higher at peak output (0.017%, 20kHz) than at lower levels (0.002%, 20kHz/-20dBfs).

Jitter is exquisitely low at <10psec for all sample rates from 44.1kHz-192kHz via S/PDIF and only slightly higher at 135psec via USB thanks to a series of ± 750 Hz sidebands. In practice its USB performance is identical to that via S/PDIF except for its S/N which falls back to a '16-bit' 96dB. We've reported this before, as the QuteHD allegedly uses the same Italian-sourced USB PC drivers implemented by the North Star Essensio and M2Tech DACs [see *HFN* July '11, May and June '12].

The responses are exceptionally flat (within ± 0.01 dB) with 44.1/48kHz media, dropping by just -0.3dB/45kHz and -4.5dB/90kHz with 96kHz and 192kHz files, respectively. Using an impulse to measure response [black trace, Graph 2] reveals Watts' 'protection' of his IP: impulse data is detected and passed directly out, preventing engineers from extracting his proprietary filter coefficients from the recovered time domain data! Readers can download full QC Suite test reports detailing the Chord QuteHD DAC's S/PDIF and USB performance by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Distortion vs. 24-bit/48kHz digital signal level over a 120dB dynamic range. S/PDIF input (1kHz, red) and USB input (1kHz, black; 20kHz, blue)



ABOVE: Frequency response, 20Hz-20kHz, with steady-state data (red trace). The filter allows impulses (black trace) to pass through unprocessed

HI-FI NEWS SPECIFICATIONS

Maximum Output Level (Balanced)	3.03Vrms at 65ohm
A-wtd S/N Ratio (S/PDIF / USB)	111.2dB / 95.6dB
Distortion (1kHz, 0dBfs/-30dBfs)	0.00070% / 0.00096%
Dist. & Noise (20kHz, 0dBfs/-30dBfs)	0.0165% / 0.0042%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0dB to -0.0dB/-0.3dB/-4.5dB
Digital jitter (48kHz/96kHz/USB)	10psec / 6psec / 135psec
Resolution @ -100dB	± 0.2 dB
Power consumption	6W
Dimensions (WHD)	160x40x70mm