



HighNumbers

With state-of-the-art upampling technology, Cambridge Audio's brand new 840C CD player promises to polish rough-and-ready sixteen bit into something altogether more finessed. Does it deliver? David Price decides...

Cambridge Audio have been busy. Until recently, they only offered a very worthy range of budget separates, namely the 540 and 640 amplifiers and CD players, which offered great sound per pound for under E 600. Well, it's a long way from there to here. At E 1399 the new 840C is well and truly entering midfi territory and finding itself up against a range of worthy competitors, from Audiolab's 8000 CD to Naim's CD5i.

Taking Azur upmarket is risky. Any good marketing man will tell you it's easier to go the other way quite frankly, and so the 840C has to really make an impression, in sight and in sound. But, it's not a bad looking machine. It's big and built chunky. Ringing less when you rap it with your knuckles. The thick 7mm aluminium front panel is nice, as are the extruded side panels. The display is wonderfully informative, with all sorts of legends scattered around it, but it lacks clarity and does look a bit over the top, like Japanese players of the late eighties.

This machine has been a long time

in the making. Journalists have been aware of its existence for over a year now, and the original press release is dated "January 2006"! There's a lot inside to get right, and indeed the 840C embraces a raft of proprietary technologies including ATF (*Adaptive Time Filtering*), asynchronous upsampling technology, developed in conjunction with Anagram Technologies of Switzerland). This

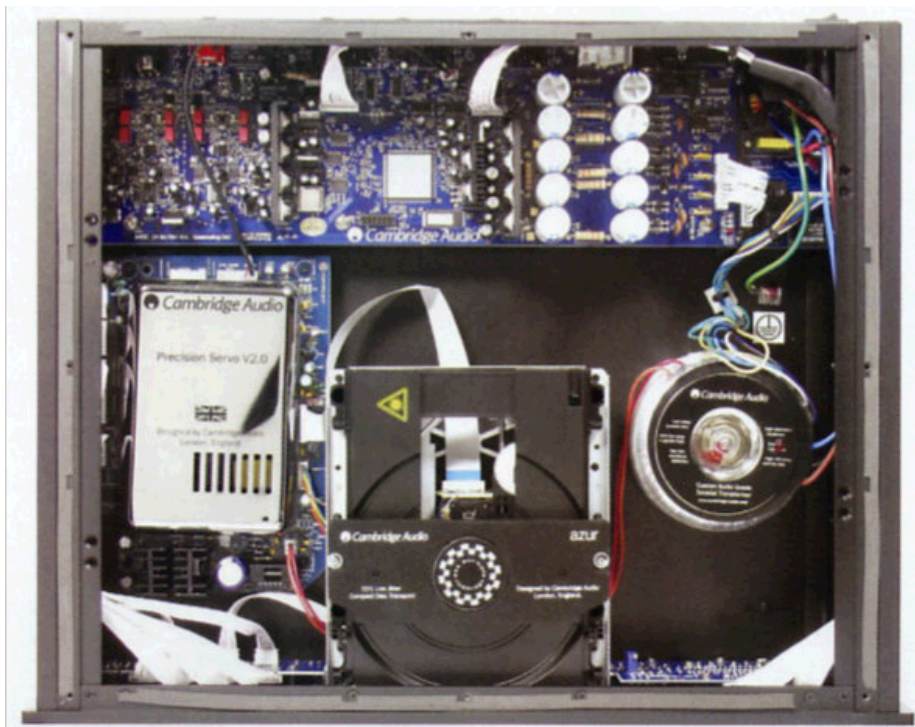
smoother and more linear conversion back to analogue, with none of the upper midband and high end distortions associated with stock 16/44. We've found upsampling does work, sort of, although as always it's down to the implementation as much as the theory.

Of course, upsampling isn't unique, but a 384kHz sampling frequency is unusual, and

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system intelligently interpolates 16bit/44.1kHz CD data to 24bit/384kHz data, through the use of a 32-bit Analog Devices Black Fin DSP (digital signal processor). The idea is that if the original sixteen bit data is 'guesstimated' up to 24/384 it can be processed in its entirety by the two 24bit/384kHz DACs; (also from Analog Devices) in dual differential formation, which duly gives the benefit of a much

Cambridge Audio says that unlike other products based on standard sample rate converters, which effectively just draw a straight line "between the dots", the 840C employs a process that involves "a proprietary polynomial curve fitting algorithm which ensures that the interpolated data smoothly fits between the original data points", no less! It isn't really for us to comment on respective data



- REFERENCE SYSTEM**
- Audiolab 8000C CD player
 - Marantz SA-7001KI Signature SACD player
 - MF Audio Passive Magnetic Preamp (copper)
 - World Audio Design K5881 (modified) power amp
 - Quad 989 loudspeakers
 - Black Rhodium interconnects/cables

way it makes music. It has real confidence in assuredness, yet its iron punch is delivered through a velvet glove. As previously stated, its tonal footprint is slightly warm and silky, but it's not excessively sugary. **Indeed, put against the Audiolab, the 840C sounds far more natural.** The 8000CD is so tonally stark it is almost glassy across the upper-midband -icy even. **The 840C heats things up a notch or two, making for a far more listenable 'Technicolor' sound.**

Arguably its greatest attribute is the vast soundstage it conjures up, with huge horizons left and right.

The Audiolab sounds constraint by comparison, with all elements of the mix hemmed in to the centre of the speakers. **Air's 'All I need' showed showed the Cambridge to be a little less detailed and distinctive, but the warmer fuller sound allied to some lovely lilting rhythms actually made the machine appear the more musical of the two.** Rhythmically, the Audiolab is metronomic -its timing on hi hats, for example, is tremendously clear cut, but a little robotic.

The Cambridge provided slightly more laid back, yet more lilting. Indeed, in a strange way, it is rather akin to the legendary Linn LP12 turntable in the way it sounds; sumptuous and smooth yet never less that behuiling in the way it gets into the groove. By comparison, the Audiolab had a narrower soundstage and sounded more 'transitory, - tighter; tauter; more explicitly detailed with sharper attack gradients. Yet it was less euphonic, tonally grey **and didn't seduce like the Cambridge.**

My Japanese pressing of Al Jarreau's 'Summertime' was another fascinating listen. The Cambridge loved this exquisitely recorded and pressed silver disc and served up a

interpolation algorithms -its success (or otherwise) will out in the listening. Each Analogue Devices AD1955 DAC handles a single stereo channel, operating fully in differential mode. Fully differential *ant-aliasing* filters based on Besell linear phase topology follow these.

Around the back, there are more sockets than you'd see in an average CD player. Both unbalanced RCA and balanced XLR outputs are fitted (the latter a nice touch, and two digital inputs are also provided which allow the upsampling and playback of other sources via the Azur 840C. In addition, a digital output can allow bit-for-bit data or upsampled data at 48, 96 or 192 kHz to be recorded by a suitable device, or indeed connection to an external DAC. There's also a Control Bus In/Out, an IR emitter in connection and an RS232 port are provided for easy multi-room connectivity.

In look, in feel and in features then, the new 840C is a nice, big, mid-price machine. It scores highly on features (we love the DAC inputs), well on build and reasonably on styling. The remote control is the stock Cambridge Audio fare, which, I'm happy to say is superb, as anyone who ever used one will know. In the hotly contested middle

market, it more or less pushes all the right buttons here, but how it sounds is really what's going to make it sink or swim...

SOUND QUALITY

Right now, there are several very competitive mid-price designs around, the two most mainstream being the aforementioned Audiolab 8000CD and the Marantz SA7001 KI signature. The former errs towards a clean, trim, analytical sound in the extreme, and sports fanatic timing. The latter is an altogether warmer and more mellifluous proposition, soft in the bass but smooth and on the sweet side of neutral.

The Cambridge Audio 840 fits itself sitting neatly between the two. It is fractionally on the warm side, but not quite as much as the Marantz, but is looser than the Audiolab. It is better defined in the midband and treble than the Marantz but not quite as incisive as the Audiolab. Some ears may find both 8000CD and SA7001KI Signature too polarised (i.e. hard and soft respectively) in some ways, **whereas the 840C offers -in a sense- the best of both worlds.**

Going back to basics, the Cambridge is a very big hearted and expansive sounding machine, with real physical presence in the



VERDICT

Sumptuous, musical sound, fine build and a welter of facilities make this a superb mid-priced machine.

FOR

- Silky, liquid sound
- Excellent feature set
- DAC functionality

AGAINST

- Cluttered display

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beautifully wide soundstage which my reference Quad's made sound something akin to a smokey jazz club. It showcased this player's sublime tonality - it is truly believable. You could really get into the texture of each instrument (it's quite valve-like in this respect), and there was a lovely tonality to the mute trumpet, which sounded raspy but real. The player conveyed the real sense of atmosphere in the piece, and also the effortless but technically brilliant playing of the session musicians. Treble was clean and open, the bass full but tight. Switching back to the Audiolab showed how the Cambridge was losing just a trace of treble extension, and slowing attack transients down fractionally. In all respects, the 840C made its rival sound glassy and shut in.

Running the gamut of my expanding CD collection forced me to conclude that this is an extremely capable silver disc spinner - at the price, I think there is little to touch. It is hard to fault, and I think any legitimate criticisms can be excused at this price point. For example, the Eera DLI reviewed last month at approximately three times the price added better depth, dimensionally and an uncanny 'seamlessness' to the sound (something more common with vinyl), but the Cambridge still wasn't disgraced in any way. Conversely, Naim's CD5x adds a bit of bass grip and more explicit dynamic accenting, but really isn't particularly more engaging a listen - so "liquid" is the Cambridge's rhythmic nature.

CONCLUSION

One of the best sounding sub E 1500 designs, the Cambridge Audio 840C has a lot going for it, and the solid build, crisp modern styling, excellent remote and state-of-the-art upsampling DAC functionality hardly make it a less attractive buying proposition. A truly special machine that's thoroughly recommended.

MEASURED PERFORMANCE

The Azur 840C was distinctive in many areas, signalling that inside it is different. Frequency response via a convolved impulse analysis clearly shows an unusually sharp high frequency filter cut off, giving deep attenuation to *aliasing* components. The in-band response is unusually flat from 2Hz all the way up to 20.8kHz, except for a small +0.25dB plateau lift below 100Hz or so. Whilst this isn't enough to give perceptible bass lift, it is enough to ensure the 840C will not sound light or lean; I would expect a solid bass end delivery. There was no difference between balanced and unbalanced outputs.

Distortion levels were as low as I have ever measured; this is an ultra low distortion player. Not surprisingly it has a very wide EIAJ dynamic range value of 112dB. Balanced output was marginally better, managing 0.00015% at 0dB (full output) for example

There was some programme-related jitter on the digital output, measuring 40pS at low frequencies. Better is possible nowadays.

The Azur 840C measured exceptionally well on its analogue

outputs, looking different from the herd.

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Distortion (unbalanced)	
0dB	0.0002%
-6dB	0.0003%
-60dB	0.004%
-80dB	4.2%
-80dB dithered	1.4%
Freq. resp.	4.4 Hz-77 kHz
Separation	128dB
Noise (IEC A)	-113dB
Distortion	0.02%
Dynamic range	112dB
Output (Bal.)	2.16V (3.75V)

