

£650-£850 CD PLAYERS

We take a spin with five silver disc machines – each with an ‘audiophile’ rap

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LAB TESTS & INSIDE SHOTS BY PAUL MILLER

The humble CD player might have been around over 25 years but it hasn’t reached an era of commodity-priced perfection just yet. Judging by the five models assembled here, the CD player middle market is alive and well and offers a level of genetic diversity Darwin would be proud of.

Clearly your £650 to £850 buys you a solidly constructed beast. There isn’t a flimsy panel or tin-thin cabinet between them and the terminals all pass muster both in solidity and lustrous gold-plated finish. Most industrial of the designs is the Roksan Kandy. While not wanting to be appear ageist, both its case and the gizzards are well overdue a bus pass. Much of the workings are grafted from an early Caspian CD and the black chassis and fascia with contrasting cap screws has a rather ‘garage-workshop’ feel. Its slightly foggy tube display gives me waves of nostalgia – reminding me of my first Philips CD304 player back in 1985.

OK, the Roksan is the cheapest player here but £650 really ought to get you a bespoke remote, rather

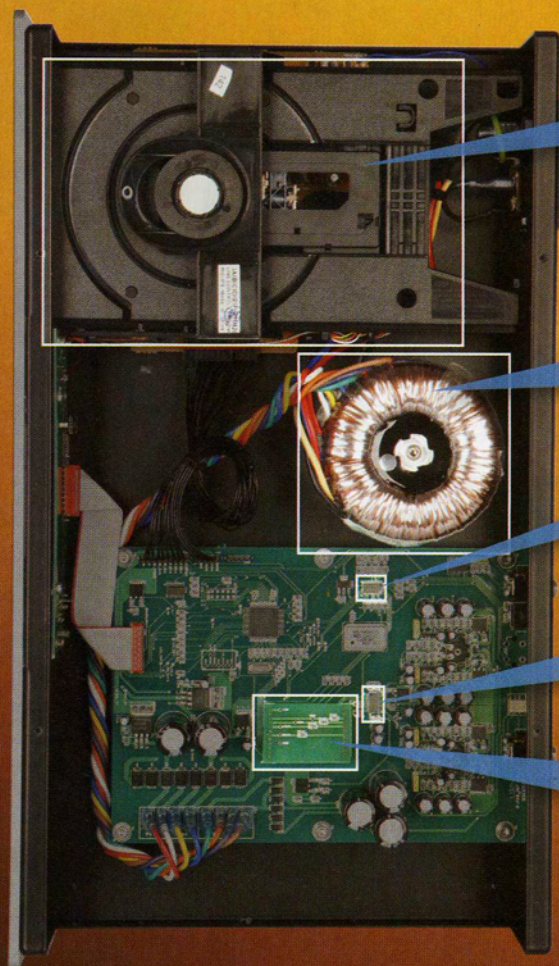
‘Its blazing green “my first digital watch” display sears out of the darkness’

than the off-the-shelf unit supplied, and something generally designed this century. On the upside, the Kandy is joyously simple to use, answers to helm controls instantly and is fitted with a Type 1 (balanced) AES/EBU output over an XLR port for future upgrade with a suitably equipped DAC.

The other all-black machine here manages to pull off an uber-trendy and modern appearance despite looking pretty much like every other Naim product since time began. The CD5*i* (an italic ‘i’ on the fascia distinguishes

Cairn Tornado

The French fancy of our group comes from Gallic audio brand Cairn – established in 1994 but yet to become a household name in the UK or US. The Tornado is a stripped-down version of the well respected Fog 3 CD player and, despite a range-naming protocol based on dubious weather conditions, the large blue display and clean fascia are rather pleasant to behold. Less than chic however, the remote is functional but not particularly petit or beau and the CD drawer rumbles in and out like an asthmatic Citroen 2CV. Internally the Tornado can be user-upgraded with an add-on 24-bit/192Hz upsampling board, likely to be available in the UK later this year.



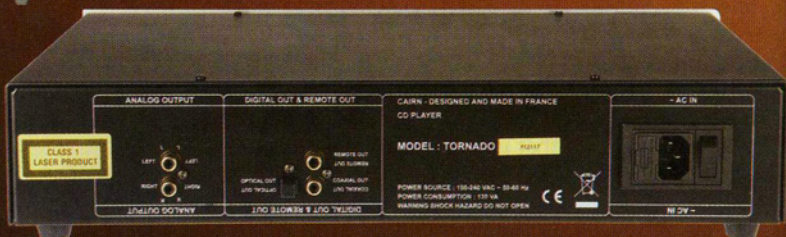
Philips VAM1202 linear-tracking CD transport mechanism

This substantial 120VA toroidal transformer is larger than that fitted to some integrated amplifiers

Data is transmitted from transport to motherboard as S/PDIF, as evidenced by this CS8416 input receiver

One of the smallest ICs on the board is the most significant – Crystal’s CS4398 24-bit/192kHz DAC with built-in digital volume control

This ‘blank’ PCB bridges two header connectors that would support plug-in digital filter/upsampling cards in costlier versions of the player using the same motherboard



it from last year’s CD5*i*!) is slim, sleek, solid and so matt black that its blazing green ‘my first digital watch’ display sears out of the darkness. It’s an interesting mix of the CDX2’s disc mechanism, the replay and control software from the CDS3 and all-new (to Naim at least) Wolfson WM8706 DAC.

The swing-out CD tray is designed to give the whole CD loading affair a ‘more analogue experience’ rather than claiming any nebulous performance enhancement, and it certainly gives the Naim character. I just feel it would have been much cooler if it had been motorised rather than manual and un-damped. The CD is supported in the tray with a small, low-mass magnetic puck that snaps solidly into place on the CD. I discovered this is an essential part of the CD mechanism required to to play a disc in the CD5*i* – shortly after I lost it. ☞

ABOVE: Standard, unbalanced (RCA) analogue outputs are joined by optical and coaxial digital outputs and a wired (RCA) remote socket on the Cairn Tornado



AUDIO FILE

Cairn Tornado
£850
Tel: 01422 372110
www.icairn.fr

Cambridge Audio Azur 840C
£750
Tel: 020 7940 2200
www.cambridgeaudio.com

Creek Audio Classic
£850
Tel: 01442 260146
www.creekaudio.com

Naim CD5i
£850
Tel: 01722 426600
www.naimaudio.com

Roksan Kandy MkIII
£650
Tel: 020 8900 6801
www.roksan.co.uk

The Naim's stark black and white remote is not really in keeping with the quality of the player, but Naim ensures there are plenty of reasons to buy into the brand. The player defaults to DIN output for connection to a Naim preamplifier although, after some button acrobatics, can output to phono RCAs as well. However, unlike costlier Naim separates, the CD5i player cannot be upgraded with one of the company's external power supplies. Otherwise, the CD5i is the most organic and involving player to use by a fair margin – and the most frustrating: the segment display showing only track time during playback and not track number.

The Cairn Tornado's display is equally eclectic, being a highly informative but rather unusual blue-backlit reversed-out LCD dot matrix. Set in a central circular recess it looks sumptuous against the minimalist matt-silver fascia – so clearly the industrial designer was at lunch when someone bolted the case together with protruding cross-head screws from B&Q. Moreover, the control buttons have a rather flimsy metallic feel and the CD drawer on our sample sounded as if it was comprehensively lubricated with dry sand. Around the

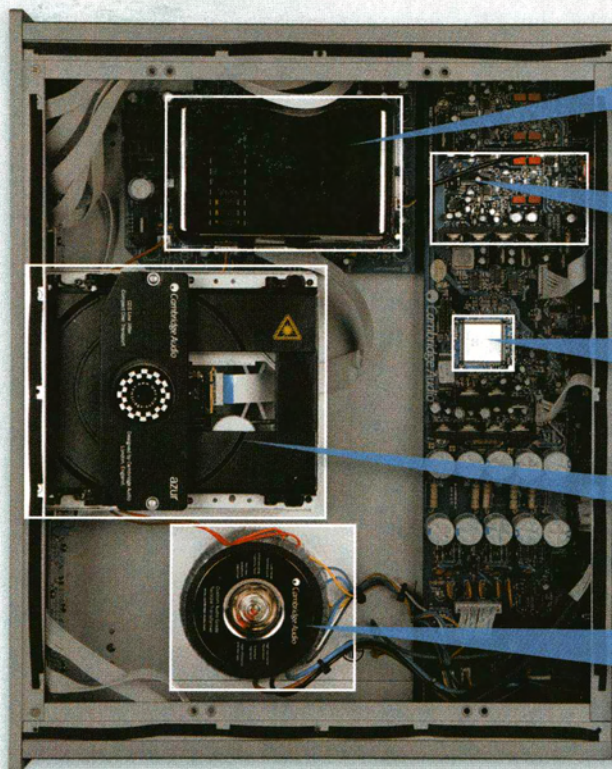
'The Azur ices the cake with multiple coaxial and optical digital inputs'

back of its small footprint case are twin digital outputs and a coaxial connection for a system remote control.

PARLEY-VOUS, EH?

The Tornado package is complete with a fairly standard R remote and a manual that skips between French and English by the sentence. In use, the operation is reasonably straightforward but there are plenty of traits that take some getting used to, not the least of which is an open/close button that you have to press and hold in order to eject a disc. I believe this is called 'caractère' in its native France, which translates to 'pain-in-the-arse' here in Sussex.

The Cairn's nemesis is Creek's Classic CD player. This slim beast is similarly bedecked with a silver fascia and



Screened under this mirrored can is the Cambridge 'Precision Servo v2.0' CD servo

Separate PSU regulation, DAC (the AD1955) and surface-mount Burr-Brown op-amps for each of the dual-mono channels (left side highlighted)

The heart of the machine – an asynchronous 24-bit/384kHz upsampling DSP supplied by Anagram Technologies

Cambridge Audio's own 'Low Jitter' CD 1 linear-tracking transport mechanism made to its specification in the Far East

Another customised part – a low noise toroidal transformer – feeds a substantial power supply with independent regulation for the transport, digital and final analogue stages



round buttons but that is where all similarities end. The Creek offers a very retro look and not only is the name and design Classic, but the internals are stock components tried and tested for almost as long as the Roksan's insides. Classic also means no fancy features such as swingy-drawers or designer displays but you do get Creek's standard remote. I may have mocked this colourful, concave beast in the past but I am actually growing to like the design and you can't fault its colour-coded logic.

Which brings us to the Cambridge Azur 840C. The style is head-on with the Cairn, the build is as solid as the Roksan, the fit and finish are right up there with the Naim and the features list outshines all of the rest put together. I had to triple-check the £750 price tag having discovered that this is the biggest, heaviest player and fully loaded with an enormous power supply and a raft of cutting edge technology.

Not only does this machine sport full dual-differential architecture, it offers Anagram Technologies ATF (Adaptive Time Filter) technology which upsamples the data from the disc to a whopping 24-bit/384kHz (and several steps along the way) with the help of Analog Devices' 32-bit Black Fin DSP engine. The signal is then fed to Analog Devices' high-end AD1955 DACs, also used in the frighteningly expensive Teac/Esoteric X-01D2, before being output to both fully balanced XLR and single-ended RCA analogue connections. Blimey!

The feel is lush, the buttons are solid and positive and the display is the neatest, most informative here. ➔

ABOVE: The only CD player in this group to offer both single-ended (RCA) and balanced (XLR) analogue outputs. Further versatility is offered by the two selectable digital inputs, allowing other digital sources to benefit from the 840C's upsampling DAC technology

Cambridge Audio 840C

Cambridge Audio is going through what I describe as a Skoda-phase at present. With every new product you get first-class design, top-notch engineering and high-quality components – beneath a badge that stops it costing twice or thrice the price. The Azur 840C takes this to a new zenith, essentially giving a Porsche-specification player a Skoda badge and a VW price ticket. Put a household hi-fi brand on that case and you would be looking at a player, I would guess, in the £2000+ region. Like Skoda's evolution I can see Cambridge going from budget-brand to very well respected specialist in the very near future. Buy an 840C now before the company realises this and puts the price up.



And just when you thought CD player features don't get much better than this, the Azur ices the cake with multiple coaxial and optical digital inputs so your other digital devices can benefit from the upsampling and sexy DACs too. If the slim, metal-topped remote is a cherry on the top of this package, then the control bus port, RS232 connection and IR emitter for multi-room flexibility are the cream, chocolate sprinkles and *jus* made from raspberries squeezed over a virgin's thigh.

Cambridge has gone absolutely bonkers with the 840C for just £750. If I were the Kandy, CD5i, Classic or Tornado at this point, I would probably pack myself back in the box and ship myself home. Of course, things are never that cut-and-dried...

LOTS OF 'PROMISE'

Wheeling out Beverly Craven for such special occasions – and who wouldn't – the Roksan immediately took a shine to the smooth vocal style and lazy beat of her eponymous first album. The Kandy neatly encapsulates the breathy sensuality of the CD and presents it in an easy-going way that is hard to dislike. It is rich, robust and fulsome at the expense of a little midrange clarity.

The same easygoing nature is true of the Naim, which offers a considerably more silky and relaxed stance from CD playback than I am used to from the brand. Of the two, the Naim edges ahead in imaging and sheer space

'The Tornado produced a focused, poignant and dramatic rendition'

in the soundstage with this CD, but neither sounds as alive as the Creek. The Classic CD pushes the vocal much further out into the room and the very top has real sparkle. The trade-off is a rather congested mid-bass and a soft but tangible blurring of instruments.

The Beverly Craven disc spent a considerably amount of time in the Cairn Tornado, due to what I can only describe as 'variable results'. On the opening track 'Promise Me' it sounded rather flat and lacklustre, despite having seemingly excellent top-end extension. Subsequent tracks fared much better with the vocal

Creek Classic

Hemel Hempstead's most famous audio brand devised the Classic range of components to embody contemporary style and traditional values – or perhaps use up some parts that were approaching their best-before date? The Classic CD player is an evolution of the company's old CD50mk2 and can trace its ancestry back to the original CD50, which dates back to the Neolithic era. But like the equally venerable Roksan, the Creek Classic CD player has experience and substance on its side, including the lush fascia, solid buttons and basic but eminently functional display. The weight and feel of the player is right on the money and Creek's odd, slightly concave, handset is growing on me too.



Not a CD mechanism but a Hitachi DV9951 DVD ATAPI ROM drive with an IDE link to the motherboard, itself bearing the legend for one of Creek's 2004 vintage CD50mk2 players...

A Xilinx Spartan processor decodes and converts raw data from the ATAPI drive to I²S for the DAC and S/PDIF for the two digital outputs

Creek has chosen a Crystal CS4396 24-bit/192kHz DAC – 9 years old but still matching the performance of far newer solutions

Two separate frame-style mains transformers, the furthest feeding the CD/DVD drive PSU and the nearest supplying the processor/DAC mainboard



projecting well into free space and a solid deep bass beat that underpinned the track nicely. The mid-bass and midrange was just a little too hard, and despite the good forward imaging, the Tornado's soundstage was simply not very wide with this CD. Confused? Me too.

With the Cambridge Azur 840C, this first official test-disc simply confirmed what a week's casual listening had already suggested: that this is something very special indeed. In short, its sound was lighter, more sprightly and considerably more natural in balance than all the others here. Within this airy mix it managed to encapsulate the sensual essence of Craven's voice with absolute grace and backed it up with an ultra-tight and tuneful bass beat. While the Creek and Cairn did a good job of getting Craven's voice out of the speakers, only the Azur 840C allowed her to snuggle up beside me on the sofa and breath every song into my ear. (Just don't tell the wife.)

TRYING VIVALDI

Vivaldi is always the equivalent of a cold shower for me, so the Chesky recording of Vivaldi's Flute Concerto in D was called in to cool things down. It didn't – because the Azur's bass is just fantastic. It seems to plumb depths fathoms below the rest of the pack here and holds the entire low-frequency spectrum together with a focus that no CD player at this price has any right to achieve. The snap to deep bass notes and the decay that rings with power through my sofa's structure without any hint of bloom or overhang is straight out of the high-end school of hi-fi systems.

And the Azur's top end is almost as impressive. It has a lively pace and a natural edge to instruments that throws the soundstage wide and leaves most of the

ABOVE: Simplicity rules the Classic as Creek offers all that the purist might need – stereo analogue (RCA) and coaxial/optical digital outputs

orchestra in and around your listening room. It can be deliciously delicate and detailed when required, possess the most inky of silent backgrounds and can pick up the blood and thunder of a rising crescendo without breaking into a sweat. Compared to the best CD players under £2000, Cambridge's Azur does lose a hint of top-end clarity and transparency with the Flute Concerto. But individual components still possess separation above and beyond any other player here and the key flute still sounded just as tangible.

TORNADO'S COMEBACK

The flute did not, however, sound quite as truly believable and realistic as the Cairn's interpretation of this instrument. In a dramatic comeback from the jaws of musical defeat, the Tornado produced a focused, poignant and vivid rendition of the track with clarity through the midrange that let the orchestra really breathe. The top end has excellent extension with very little grain and the bass is fast and suitably weighty. It also resolved a very quiet background rumble on this disc that only the Azur hinted at and the others missed completely. The Tornado in no way offered a relaxed or

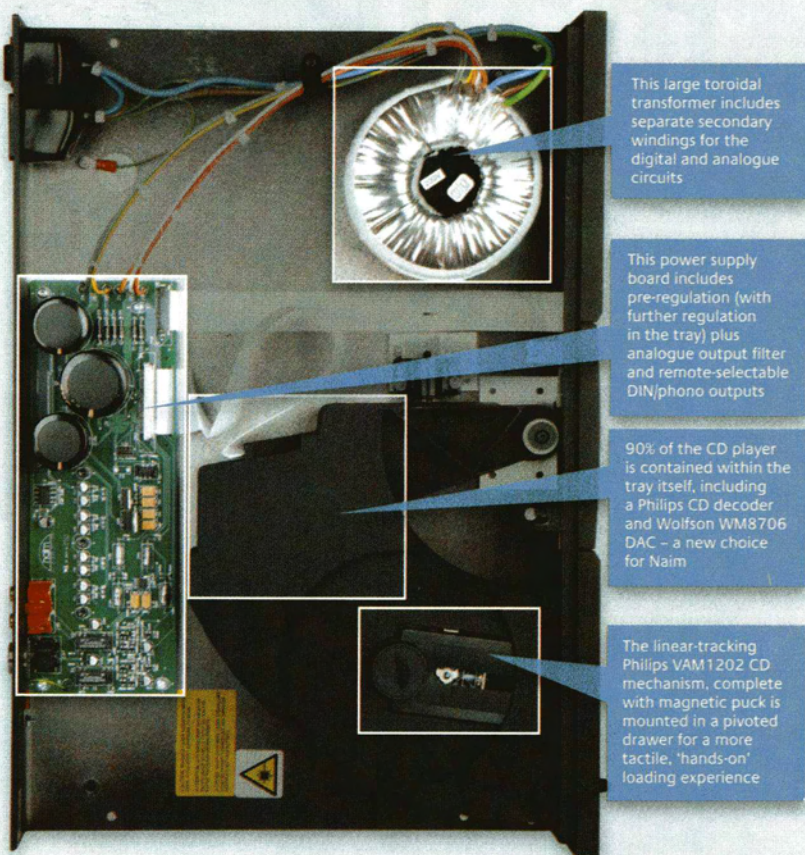
'The Naim CD5i's smooth balance nicely tames the bright Gogol Bordello CD'

laidback presentation with this classical piece, but you certainly wouldn't nod off through the second passage.

By contrast the Naim's interpretation was warmer, richer and all together more chilled. The flute was woodier and more resonant, the bass expansive, and the focus on the lead instruments appealing if a little recessed in the mix compared to the Cairn. While there does not seem to be an urgency or raw energy to the CD5i sound, it produces a very cohesive and integrated performance that, in complete opposite to the Cairn, is more about the end result than the individual components involved in getting there. Even after I had played several parts of this work on the Naim, way beyond my normal Vivaldi-tolerance threshold, I

Naim CD5i

While the change from a normal lower case 'i' suffix on last year's CD5 to an italicised one on this model might be subtle, the changes are far from slight. The CD5i is now based around Wolfson DACs rather than the Burr-Brown devices Naim has used for several years. The reason, says the press release, is that in listening tests the Wolfson device delivered better performance – although this is followed by a caveat stating that the choice of DACs is not that critical in a budget CD player. Interestingly Arcam is a stalwart supporter of Wolfson DACs, which may explain the smoother and more Arcam-like sound than that which we are used to from a Naim player. One final note: the CD5i cannot be upgraded with one of Naim's outboard power supplies.



This large toroidal transformer includes separate secondary windings for the digital and analogue circuits

This power supply board includes pre-regulation (with further regulation in the tray) plus analogue output filter and remote-selectable DIN/phono outputs

90% of the CD player is contained within the tray itself, including a Philips CD decoder and Wolfson WM8706 DAC – a new choice for Naim

The linear-tracking Philips VAM1202 CD mechanism, complete with magnetic puck is mounted in a pivoted drawer for a more tactile, 'hands-on' loading experience



could not help being sucked into the music as sure as a Siren's call. Comparing the Cairn and Naim with classical music, never have I heard two wildly different presentations of a CD and I liked both with equal measure.

If the Naim hadn't already bagged the award for most robust classical music player, the Roksan would be lifting the trophy with its sheer scale and 'Last Night of the Proms'-sized power-bass. While the quantity of low frequency sound from the Kandy out-guns even the Cambridge there is not the range or separation across the scale of the Azur nor the tightness of the Cairn. It too possesses some of the Naim's addictive, musical character but doesn't get your foot tapping or head bobbing, even with works you don't really like, in quite such a convincing and comprehensive manner.

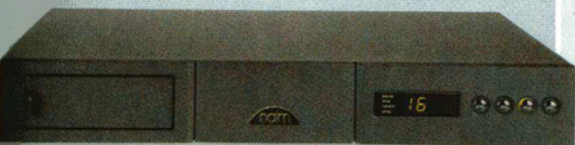
BORDELLO FARE

The very same is true of the Creek. Its bass is nearly as meaty as the Kandy but it suffers more thickening in the upper-bass which shuts down the soundstage and seems to muddy the midband. I can't help but compare the sound to an old (1998) Arcam Alpha 9 CD player I had in a spare room until fairly recently. A rich and fruity top and bottom but with a certain amount of 'middle-range spread' that stops it from really shining. Still, both the Roksan and Creek made for an easy listen when it came to the Vivaldi.

So enough of that, and out with AC/DC's remastered *Back In Black* CD and Gogol Bordello's *Gypsy Punks*: ➔

hi-finews
HIGHLY
COMMENDED

ABOVE: Naim's traditional 5-pin DIN socket is joined by a more conventional pair of stereo (RCA) analogue outputs. This player has no digital outputs



Underdog World Strike. Both discs are fast and furious and have a balance that boosts both LF and HF sufficient to trip up any underdog CD player.

At first I thought Brian Johnson's howling vocals on the title track from *Back in Black* might prove the undoing of the Azur's clean sheet thus far. In fact, there was no screeching or hard and splashy treble as the 840C offered a far smoother and better balanced sound than expected, and all without losing any of its alacrity or super-detailed bass. Nevertheless, its lighter stance is still no panacea for hard-core rock fans and after listening to the other machines here you get the impression the Azur isn't really at home with the roughest of recordings.

AZUR ALLURE

Not so the Naim, Roksan or Creek, which all fight it out toe-to-toe for top rock honours. The Naim's smooth balance nicely tames the bright Gogol Bordello CD and cuts straight to the heart of this frantic, foot-tapping, musical mayhem. Even writing-up my notes two days later brings a smile to my face recalling the Naim's full-throttle presentation of 'Not a Crime' and I find

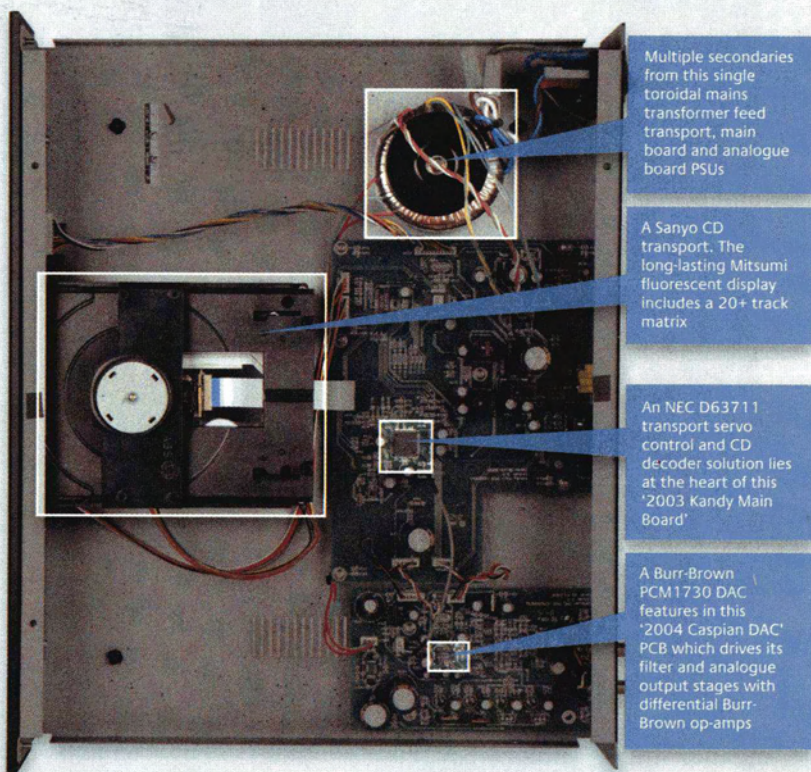
'The Tornado too gets into the rhythm enough to make any listener boogie along'

myself singing along as I type. The balance is infectious, potent and really benefits from enthusiastic use of the volume control. At these higher levels, where I personally find most amplifiers and speakers are at their best, the aggressive edge of the violin is amply raw and detailed without searing your ears. Even without the very top-end resolution of the Cambridge, the Naim gets two thumbs up for really cutting to the chase.

Both the Roksan and Creek are a little harsher overall but more than make up for this with bass to scramble your spleen at rock-sized volume levels. While not as deep or anything like as detailed as the Cambridge, the Kandy heaps on the low frequency fun in spades and has the speed through the mid and top end to

Roksan Kandy III

Despite its venerable years the Kandy still feels one of the most solidly turned-out units here. OK, the remote is an off-the-shelf special, the fascia is dated and the case looks like it has been hand made by someone who learnt the art of metalwork in a shipyard. The yellow rear panel lettering would have been retro in the 1980s - but the Kandy just feels so right in use. The controls are beautifully weighted, the display is as simple as they get; it always does what you expect and the CD loading drawer is the smoothest and most purposeful here by a fair margin. Maybe they really don't build 'em like they used to.



Multiple secondaries from this single toroidal mains transformer feed transport, main board and analogue board PSUs

A Sanyo CD transport. The long-lasting Mitsumi fluorescent display includes a 20+ track matrix

An NEC D63711 transport servo control and CD decoder solution lies at the heart of this '2003 Kandy Main Board'

A Burr-Brown PCM1730 DAC features in this '2004 Caspian DAC' PCB which drives its filter and analogue output stages with differential Burr-Brown op-amps



carry it off without sounding sluggish or fat. It simply lapped up the AC/DC disc, romping from one high-energy hairy-testicled track to the next with true rock and roll pedigree. The Creek ran close behind, again with excellent pace and scale to the bass that will have you duck-walking along with Angus Young like the best of them. Its raw edge just let the top end of vocals and cymbal crashes spill over into sibilance and hash at higher volumes which let its overall performance slip down the rankings.

The Cairn concluded the listening as it started, with mixed results. The harsh AC/DC disc threw it completely, pushing the top end into splashy chaos within the first few bars. At high volume it is borderline unlistenable with this forward-sounding CD although, a week on, I didn't find too many recordings that pushed the Tornado overboard to quite such an extent. Conversely the still bright Gogol track came across with heaps of raw energy, ultra-fast bass and fantastic top-end bite without the acerbic edge. The timing is as good as the Naim with this genre of music and it too gets into the rhythm enough to make any listener boogie along.

Clearly, with any genre of music the Azur 840C's high-fidelity performance is in a class of its own. But while my head would be saving up for the Cambridge my heart would be pawing the silverware to buy the musical Naim or even the energetic Cairn. The only mystery that remains of this CD group test is quite how Cambridge can sell the stupendous Azur 840C for just £750. Oh, and where the Naim's CD puck went. ☺

ABOVE: Unusually, while Roksan offers standard, unbalanced (RCA) analogue outputs, there's a choice of unbalanced S/PDIF coaxial and optical digital outputs alongside a balanced (XLR) AES/EBU connection



CD PLAYER VERDICT

In resolution, detail and neutrality the Cambridge Azur 840C wipes the floor with the rest of the bunch. The way it extracts information from the disc and presents it without bias or congestion is up there with players costing two or three times its ticket price. It's an obvious choice for those with a high-resolution disc collection.

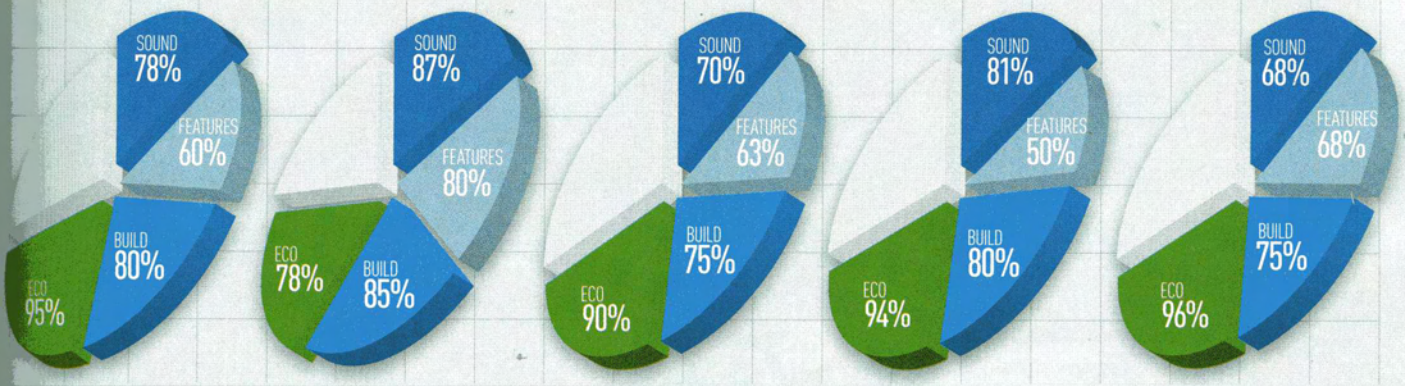
Neither the Naim nor the Cairn gets close to its neutrality or spacious imaging

but the Naim is addictively funky. You can't fault the aesthetic design and its ability to get into the groove with any genre wholly excuses its lack of ultimate top-end sparkle.

The Cairn is a true wild card capable of moments of utter epiphany or object horror pretty much depending on the material. Certainly a try-before-you-buy sort of player but it came up smelling of roses with most of my CD collection.

Both the Creek and Roksan sound a little past their sell-by dates but you have just got to admire their focused approach. The Creek will have you playing air-guitar to everything, even if it's not the last word in subtlety or detail. The Roksan has a more mellifluous sound but equally cerebral approach to bass and timing. But top honours remain with the fabulously built Cambridge Azur 840C. ☺

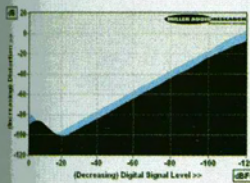
CAIRN TORNADO CAMBRIDGE AZUR 840C CREEK CLASSIC NAIM CD5i ROKSAN KANDY III



CAIRN TORNADO

While not directly benefitting from the proprietary technology of Cairn's costlier players, the Tornado remains distinctive. Distortion is higher than anticipated over the top 10-20dB of its dynamic range [see graph, below] but these dominant 2nd and 3rd harmonics are not only 'analogue' rather than 'digital' in origin but are also remarkably consistent at ~0.01% right across the audioband – no bad thing. The A-wtd S/N ratio is perfectly adequate for 16-bit CD at 104dB but local noise increases around high frequency signals, masking any jitter sidebands. Once again, this may be no bad thing from a listening standpoint. PM

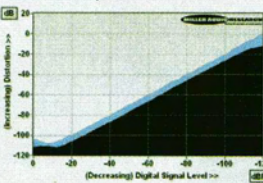
Graph below: Distortion vs Digital Signal Level (black trace = 1kHz; blue trace = 20kHz)



CAMBRIDGE AZUR 840C

This high-value, feature and engineering-packed player delivers a technical performance to match. Output is a high 4.4V from the balanced XLR terminals, supporting a wide 112.5dB A-wtd S/N ratio and fabulously low 0.0004% distortion through bass and midrange, only increasing to 0.0007% at the high frequency extremes. Jitter is at the limit of measurement with 16-bit CD data (~120psec) while the digital filter used within Analog Devices' DAC delivers both a massive >128dB rejection of stopband images together with a state-of-the-art suppression of ultrasonic noise. Frankly, the Azur 840C should sell at twice the price! PM

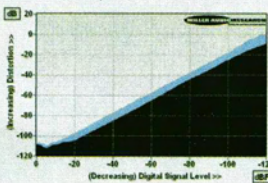
Graph below: Distortion vs Digital Signal Level (black trace = 1kHz; blue trace = 20kHz)



CREEK CLASSIC

Take the key components of Creek's CD50mk2 and arrange them inside its 'Classic' case and you have the measure of this latest CD player. The choice of Crystal's tried-and-tested CS4396 DAC ensures a good 112dB rejection of digital images and very low 125psec jitter coupled with an impressive ±0.3dB resolution over a full 100dB dynamic range. Creek's dual op-amp output buffering and filtering is a slightly less sophisticated version of that in the Destiny CD player [HFN, April '06], so while its stereo separation is weaker, distortion remains fabulously low at 0.0003-0.0004% right across the audioband at its peak 2.1V output level. PM

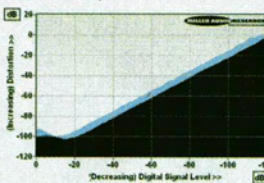
Graph below: Distortion vs Digital Signal Level (black trace = 1kHz; blue trace = 20kHz)



NAIM CD5i

While this player bears all the hallmarks of earlier Naim CD players, including the minimal display and embedded Philips CD transport, its performance is now at least partially influenced by a change of DAC supplier. While Arcam and others have used Wolfson DACs for many years, this is Naim's first effort, reflected in the low 120psec jitter and consistent ~0.002% distortion over the top 20dB of its dynamic range [see graph, below]. The clock error is still higher than average at +210ppm but this has nothing to do with the DAC, unlike the weaker ~40dB rejection of digital images which comes courtesy of Wolfson's inbuilt oversampling filter. PM

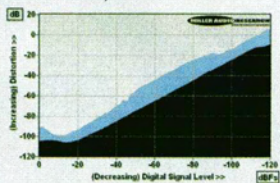
Graph below: Distortion vs Digital Signal Level (black trace = 1kHz; blue trace = 20kHz)



ROKSAN KANDY MkIII

This latest iteration of the Kandy CD player benefits from the enhanced analogue performance of a Caspian DAC board, itself equipped with the tried-and-tested PCM1730 converter from Burr-Brown. The slightly irregular distortion versus digital level profile [blue trace, graph below] is entirely indicative of this DAC! The wide 107.5dB A-wtd S/N ratio is more than sufficient for 16-bit CD and the 120psec jitter is as low as measurements will permit. Distortion is slightly different on left and right channels (0.001% vs. 0.00055%, left vs. right) at the peak 2.05V output, but settles at lower outputs. The response is flat to within -0.2dB/20kHz. PM

Graph below: Distortion vs Digital Signal Level (black trace = 1kHz; blue trace = 20kHz)



TEST PARAMETERS / MODEL	CAIRN TORNADO	CAMBRIDGE 840C	CREEK CLASSIC	NAIM CD5i	ROKSAN KANDY mkIII
Maximum Output Level	2.1Vrms	4.37Vrms (balanced outputs)	2.1Vrms	2.04Vrms	2.05Vrms
A-wtd S/N Ratio	104.2dB	112.5dB	107.8dB	100.0dB	107.5dB
Distortion 1kHz (0dBfs/-30dBfs)	0.011% / 0.0045%	0.0004% / 0.0038%	0.0003% / 0.004%	0.0016% / 0.005%	0.0006% / 0.004%
Distortion 20kHz (0dBfs)	0.011%	0.0007%	0.0004%	0.003%	0.003%
Digital Jitter	120psec	120psec	125psec	121psec	120psec
Resolution @ -100dBfs	±0.6dB	±0.4dB	±0.3dB	±0.4dB	±0.5dB
Stereo separation (20Hz-20kHz)	>96dB	>101dB	>62dB	>65dB	>84dB