

Does the *i* Have it?

NAIM HAS REDESIGNED AND REPLACED ITS POPULAR CD5i CD PLAYER, ITALICISING THE *i*. CHRIS BRYANT GETS UP CLOSE TO THE NEW CD5*i*



We've all become accustomed to the Far East manufacturing formula. By combining advances in technology with low labour costs, a plethora of electronics gadgets from digital music players to plasma televisions seem to get better, cheaper, and more versatile on a monthly basis. In contrast, things made in Western Europe tend to become more expensive as technology moves on.

However, in specialist hi-fi advancing technology doesn't necessarily convert into better sound, and mass-produced audiophile quality products are rare. Mass production doesn't seem to lend itself to something as intangible as good quality sound. Good electronic designers can produce excellent consumer products like televisions, computers and such, because the relevant design criteria can be easily understood. However, when it comes to genuine hi-fi the process requires more than just good electronic engineering: it requires individuals who know what good sound is, and can manipulate the electronics and build to create it.

Although many audio enthusiasts still appear to live in an analogue world, many manufacturers would prefer to make digital products more or less to order which can offer great specifications at a low price. Unfortunately, this is also often a recipe for bad sound. Luckily a few companies in the world (including a number in the UK)

manage to create products that satisfy those who demand something better. Naim Audio's design department, for example, has managed to satisfy continuing demand for its particular interpretation of good sound in the home, and has almost uniquely managed to produce a series of CD players worth listening to.

The *CD5i* has been around a while, and was reviewed as part of a group in *HIFICRITIC Vol11/No1*. Naim products have never been exactly cheap, but happily this £875 *CD5i* successor is no more expensive than its predecessor. So has anything been compromised to fit the price? Sitting at the bottom end of the Naim price hierarchy, the *5i* seems to be aimed at customers who want a decent level of performance without the need to think about how to extract the last ounce of detail or dynamics. Although a 5-pin DIN socket still resides alongside a pair of phono sockets, for Naim system compatibility, it will also fit comfortably amongst components from other manufacturers.

There's no compromise on build or finish here, which to my eyes is impossible to tell apart from the company's more expensive products. The casework is constructed from die-cast zinc and extruded aluminum, and is claimed to offer exceptional rigidity and immunity from the effects of external vibration. It shares the proprietary front-loading glass-reinforced drawer mechanism and

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transport suspension with the *CDX2* (£3,150), and has the same control software as some very expensive players. The disc drive is a Philips-sourced *VAM1202/12*, which is suspension-mounted in the resonance-controlling drawer. Naim claims that this, together with its low inertia magnetic disc clamp, reduces the workload on the driver servo mechanisms, and therefore enhances performance.

The first glimpse inside makes you wonder where everything has been hidden. A good size toroidal transformer with separate taps for digital and analogue feeds a fairly small board located at the back containing the individual digital and analogue power supplies. Relay muting and a discrete surface-mount output buffer follow a high frequency filter designed around a high specification Texas Instruments IC dual op-amp. The supply capacitors are generous, and selected parts are used throughout. A couple of ribbon cables connect this board to the transport and display sections. The transport housing contains all the digital circuitry, including the Philips *CD10* digital servo, very low jitter clock and the DAC, on a new 4-layer board.

One of the main changes between the new and the old is the switch from a Philips *UDA1330* 20-bit DAC to a Wolfson *WM8706* with up to 24-bit resolution. Naim claims that the choice of DAC is nowhere near as important as the execution of the circuitry around it, and that carefully designed grounding and low impedance supplies will dominate the sound quality. Judging by the performance of most current sub-£1000 CD players I've come across, I strongly believe that this contention has still to be proved (see Box). In my experience the *UDA1330* used in the older model could deliver surprisingly good sound quality. And even though it was never in the top league as far as DACs are concerned, it was good enough for sub-£1000 players.

Measurements

There can be no doubt that this Wolfson DAC is extremely linear, delivering perfect accuracy down to -100dB using dithered test tones and close-to-perfect channel balance. The spectrogram of the -70dB dithered tone shows this clearly through the absence of harmonic distortion artefacts. Full level distortion was commendably low at all frequencies and intermodulation distortion even lower at -97dB, with no visible in-band products from the 19kHz and 20kHz full level tones above -100dB (see graph). While not up with the very best, the signal-to-noise ratio was more than adequate. Output level measures very close to the standard from a fairly low 22ohm output impedance, so there won't be any problem driving cables or virtually any pre-amp

input impedance. The frequency response was typically Naim-like with some very mild treble droop, -0.73dB at 20kHz (see graph). Channel separation was very good in the bass and midrange but fell to 64dB at 20kHz – perfectly acceptable but slightly below average for a CD player. The only slight disappointment was that the error correction only managed a 0.5mm gap before the error became an audible 'click'. The 'jitter' spectrogram signifies a precision clock and low jitter levels, and no unwanted or unexpected spurious artefacts of any significance were noted over a 100kHz measurement bandwidth.

Checking the measurements against the outgoing *CD5i*, I generally noted little change of significance, and certainly nothing to suggest that there was likely to be a noticeable change in sound.

Sound Quality

Naim was kind enough to provide a sample of the previous model so that direct comparisons could be made. I ran the players in various systems, including Creek *Evolution* and *SUPERNAIT* (using both DIN and phono connections) integrated amplifiers; Wharfedale *Diamond 9.1* and Epos *ES22* speakers; Naim and van den Hul cables. Despite the designers' attempts to minimise the effects of external vibration on the player, I found that both benefited considerably from a decent support; I used both Mana and Finite Elemente tables.

With the introduction of the Koetsu *Red T*, I've been listening to much vinyl recently, and enjoying the some of the best sounds I have ever heard. I therefore had to adjust my expectations in order to assess the differences between sub-£1000 CD players. Some mental adjustments were necessary to cope with the more artificial 'digital' sound that lacks comparable timing and dynamic impetus, and at first listen much of the subtlety, low level detail and micro dynamic structure seemed diminished.

The earlier *CD5i* wasn't the top performer in our group test last year, so it came as something of a surprise that I felt much more positively disposed to it in the current system when using a *SUPERNAIT*. While in my opinion it's not quite up to the stronger multi-bit players of the early 90s, or the Creek *Classic* for that matter, it still managed to deliver a realistic voice with reasonable vocal intonations, good perspectives, and a bass that provided some insight into both structure and pitch. This level of performance sets it apart from many mass produced but not dissimilarly priced CD players of Far Eastern origin. I think my more positive attitude to the performance was brought about by using the *SUPERNAIT* amplifier than any other reason (see MC review, this issue).



The *CD5i* (new model) is not just subtly different, but for me quite obviously so. Female voices sound thinner, more forward, and lighter in presentation; vocals don't fill out into the lower registers properly; and grand piano could take on more of a honky-tonk character. Although there is no doubt about who's performing (some CD players can be so bad this can become a talking point), it lacks some of the detail and tonal shading that can clearly define a performer or a particular performance. There's also a hint of vocal 'lispiness', but the treble itself is never objectionable or grainy – it's just not as explicit or precise as anticipated.

Turning off the display definitely improved the sound quality by delivering noticeably better definition. The bass sounded less solid and structured than the earlier *5i*; denser and less agile too. Stage width and depth are also less well defined, though height and some degree of perspective can be quite well portrayed. This player's ability to create realistic broad images is not a strong point, and such were essentially restricted to the space between the loudspeakers.

The lack of detail and edge definition across the whole audio spectrum, coupled with a general lack of

dynamics, doesn't pull you into the music like the best of the competition. Timing is less structured, intricate rhythms are less obvious, so the music simply doesn't flow in the same way. Persevering through several evening sessions, I tried to adjust to what quality was available, and found I could start to enjoy undemanding music a little. But on returning to the earlier *5i*, immediately realised that much that I valued was absent. The new *5i* achieved a disappointing sound quality score of '11'. I was sufficiently concerned to obtain a second sample, and although this gave a slightly better account of itself, it showed very similar character.

Conclusions

It's a difficult world for hi-fi manufacturers these days. The current generation of DACs might have a great measured specifications, but they don't necessarily reproduce music as well as earlier technologies with less impressive measured performance. '24-bit' DACs generally have excellent linearity, a low noise floor, and the ability to draw very low power off low voltage supplies makes them very useful in some applications, but musically I feel they all gravitate towards blandness. So,

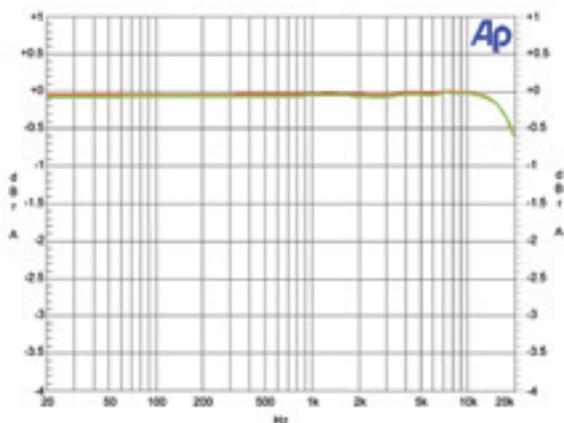


when Naim says it believes the choice of DAC in a near budget CD player is not that critical, on current evidence I feel such a claim is still unproven.

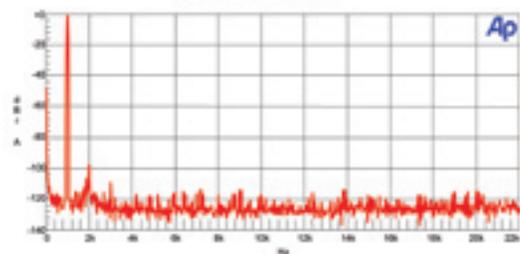
In my opinion a good DAC is still necessary to get a good sound, especially now that those commonly made are so integrated. If good sound quality doesn't come out of that piece of silicon, there's very little that good grounding or circuit design can do to recover it. You can optimise what is available, but often these days that just doesn't seem to be enough.

The way things are going, the end of the older type of musically dynamic multi-bit DAC is nigh, and with it much of the ability to make musically interesting CD players. For those of us who really like music, and know what it takes to make it interesting, it looks like we may have to revert to vinyl.

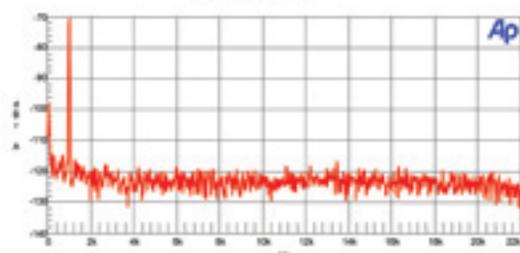
Naim CD5i Frequency Response



Naim CD5i 1kHz 0dB 1kHz



Naim CD5i 70dB 1kHz



CD PLAYER TEST RESULTS

Make Naim	Date: 14/11/06		
Model CD5i	Ser. No. 237056		
Distortion, THD inc noise	20Hz	1kHz	20kHz
0db	-90.0 dB	-90.6 dB	-90 dB
Channel separation 0dB	84 dB	84 dB	82 dB
Frequency response	0 dB	ref 0 dB	-0.84 dB
Channel Balance ref. 0dB L ch	0 dB		
Intermodulation Distortion			
19kHz/20kHz 1:1 0 dB output	-95 dB		
1kHz diff tone -10 dB op	-101 dB		
Signal to noise ratio ref. 0dB	101dB "A" wtd	98dB CCIR 1k	95dB unwt'd
Linearity ref 0dB			
-70.31dB			-71 dB
-80.7dB			-82 dB
-90.31dB			-92.5 dB
-100dB			-101.7 dB
Maximum output level			
100k Ohm load	1.94 V SE		
Output impedance	Ohms		
DC offset	Left 0 mV	Right 0 mV	
Surface gap concealment (PV31 1mm)	0.5 mm		
Size (W x H x D)	432mm	70 mm	30.5 mm
Price UK	£875		

THE TROUBLE WITH DACs

To my mind there has been a general and continuing downward shift in the sound quality extracted from DACs over the past 20 years. DACs are produced by semiconductor manufacturers and require large volumes to make the operation economic. As most of these will find their way into cheap products, there is little incentive to create good sounding components.

The DACs available for the hi-fi designer will also be found in computer sound cards, personal digital stereos, telephones and televisions. As a result many modern examples have lost their audiophile verve, as the semiconductor manufacturers prefer to make cheaper and lower power devices better adapted to their principal, high volume customers' needs.

These mass produced low-bit converters do deliver excellent measured performance, but often seem unable to deliver the goods when real high fidelity sound reproduction is required. The really good audio DACs in my opinion are all multi-bit types. Alas few are now in production, and those few are expensive, which means you only find them in high-priced players. One or two build custom discrete DACs; others are using old stock from spares bins. Clever electronics means you can just about get away with the low-bit DACs in less costly CD players, but it's still hard work.