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APRIL 2009

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Regular readers won't have missed the fact that *Hi-Fi World* is a friend of the vinyl LP - and two channel stereo and analogue in general. With this in mind, it might surprise some that this month we're running a group test on surround sound AV receivers! Well, just as we didn't jump on the AV bandwagon a few years back, keen to chase where the market was going, so we don't mind taking a close look at the latest in multichannel digital, when the world it seems is moving back to

stereo...

Of course, we've always been a supporter of two channel hi-fi, simply because it *works* - as anyone who's heard Kingsound's Prince II electrostatics [p10] will attest, you can get a massive, panoramic soundstage from stereo. But you can also get very nice noises from the latest Blu-ray discs too, as our AV group test [p15] shows.

The trick is to find the right receiver for you, and then as Noel Keyword sagely points out in his '4 on the Floor' feature [p26], don't complicate things by trying to run it in 5.1 mode. Most British listening rooms are barely big enough to get the best from two speakers, so six will create more problems than they solve. Eliminating the centre channel and the .1 bass channel, to run just four matched hi-fi speakers, can sound superb.

The good news is that Blu-ray is able to carry far higher quality audio than DVD ever could, and there's a range of new formats like Dolby TrueHD and DTS HD-Master Audio to bring it to us. Watching high quality live concert discs with 'high resolution' soundtracks is a special experience, as is simply playing stereo or surround sound digital at a resolution that CD users could only dream of - providing it's done properly, of course!

As an 'AV skeptic' I don't think Blu-ray is a universal panacea, but it's certainly taking me more into sound and vision, as the format is capable of super audio and video quality. This is something that plain vanilla DVD, with its heavy compression, simply can't do. The sort of immersive, hypnotic musical experience that was dreamed of (but never truly realised) back in the nineteen seventies with Quadraphonic, at last becomes possible.

Now, when are Sony going to release 'Dark Side of the Moon' on Blu-ray?
David Price, editor



testing

To ensure the utmost accuracy in our product reviews, *Hi-Fi World* has extremely comprehensive in-house test facilities, and our test equipment - from big names like Rohde & Schwarz and Hewlett Packard - is amongst the most advanced in the world.

Loudspeakers are measured using a calibrated Bruel & Kjaer microphone feeding a Clio-based computer

analyser, using pulsed and gated sinewaves, in a large room to eliminate the room's influence. Pickup arm vibration is measured with a Bruel & Kjaer accelerometer.

No other UK hi-fi magazine has in-house testing, and none has access to such advanced tests across all types of equipment. That's why you can depend on *Hi-Fi World* reviews.



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verdicts

- ● ● ● ● OUTSTANDING
- ● ● ● EXCELLENT
- ● ● GOOD
- ● ● ● MEDIOCRE
- ● POOR
- £ VALUE

- simply the best
- extremely capable
- worth auditioning
- unremarkable
- seriously flawed
- keenly priced

ELECTRONIC MAGAZINE

Go to our website www.hifiworld.co.uk to buy an electronic version of this magazine, individual issues or a subscription. At present we do not offer back issues, but hope to soon.

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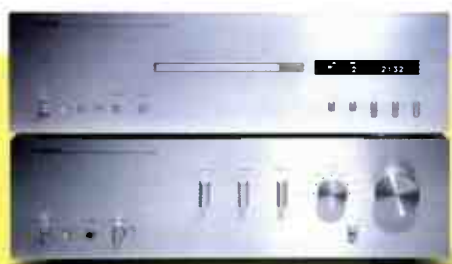
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*On stage and at home,
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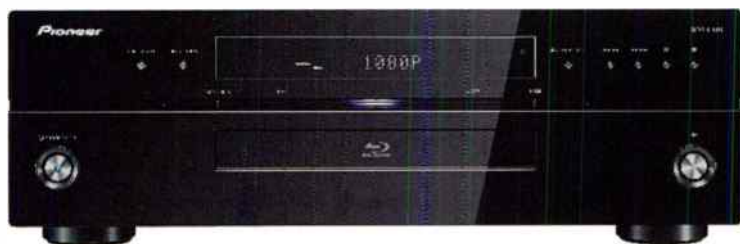


HOT STUFF

Radiance is a new loudspeaker that blends leading-edge audio technologies, UK-tuning and opulent aesthetic design, says Acoustic Energy. Three years in the making, the four strong range sports "radical new technologies" and AE's signature alloy drive units. Slim cabinets with extensively braced parabolic curved walls (to reduce standing waves) are used, reflex-loaded to maximise bass output. The floor standing variants (Radiance Two and Three) feature separate internal enclosures with individual port tuning for bass and midrange. AE's signature alloy cone drivers with twin-wound aluminium voice coils are used. The Radiance ring-radiator tweeter assembly is a new unit using special flux stabiliser rings to significantly reduce motor distortion, and sports a unique waveguide that creates a calculated diffraction pattern that dramatically widens HF dispersion, the company says. Prices range from £599 per pair for the AE Radiance One to £1,499 for the floorstanding Radiance Threes. A sub and a centre channel speaker is also available. For more information, click on www.acoustic-energy.co.uk or call +44(0)1285 654 432.

BEACON BLU

Pioneer's new BDP-LX91 is the company's flagship Blu-ray Disc player. The player features unique technologies and is built with advanced components including a Pioneer-Renesas jointly developed core processor chipset. The newly developed 16bit video engine is said to provide impeccable video decoding, I/P conversion, video scaling and video adjustments. The new machine offers 7.1 channel Dolby TrueHD and DTS-HD Master Audio decoding, and bitstream output; there's a dedicated power supply for the analogue audio board, eight Wolfson Audio DACs (one for each channel) and custom-made capacitors. Dual HDMI outputs allow separate audio and video signal transfer over dedicated HDMI terminals. The BDP-LX91 is the first Pioneer Blu-ray player to go through rigorous tuning at Sir George Martin's Air Studios, with many hours of listening tests, adjustments and modifications by Pioneer engineers. The machine has been certified 'Air Monitor' status, indicated by the application of the Air logo on the front fascia of the player. Exceptional build quality is claimed for it, with an aluminium chassis and ultra-rigid steel bottom plate, plus rugged TAOC insulators to dampen external vibration. For more information, visit www.pioneer.co.uk or call 0870 600 1539.



XT-RA B&WS

B&W is back with a new XT floorstanding speaker, crafted from aluminium and offering an attractive blend of audio excellence and contemporary styling, the company says. The XT8 package is designed to act as either a highly polished stereo pair or the front left and right speakers of a Home Theatre system. It sports an aluminium-dome Nautilus Tapering Tube tweeter, which is mounted outside the main cabinet to eliminate time smearing, and a woven Kevlar driver for midrange and Fixed Suspension Transducer technology, which helps to enhance definition, it is said. Two five-inch paper/Kevlar bass drivers handle bass duties. While the outgoing XT Series was only available in black, there's now a natural aluminium finish available for the new XT range. For more details call +44(0)1903 221 500 or visit www.bowers-wilkins.com.

TRUE TYPE!

NAD Electronics has announced a new 'Classic Series' hi-fi stereo preamplifier and power amplifier combination, the C165BEE and C275BEE. The 'Classic Series' is said to be a highly affordable range of new products with the features and performance of far costlier components. The new £600 C165BEE Stereo Preamplifier, which also shares a lineage with the NAD Masters Series M3 Integrated Amplifier, features an MC/MM input with three-position resistance and capacitance loading for phono cartridges, an upgraded headphone amplifier and a heavy gauge steel chassis. It draws less than 1



NAD C165BEE

Watt in standby mode, says NAD. The matching £750 C275BEE Stereo Power Amplifier delivers 150 Watts per channel and is bridgeable to 400W with the new matching NAD C375BEE Power Amplifier. A THD and IM distortion level of 0.005 percent reveals more musical detail, it is claimed. Other features include Automated Turn-On (ATO) Logic, and an eco-friendly power draw of less than 1 Watt in standby mode. For more details, call +44(0) 1279 501111 or click on <http://nadelectronics.com>.

NAD C275BEE



M-PEOPLE

Meridian's new i80P iPod dock is said to offer iPod connectivity with almost any audio system with analogue interconnects. Engineered and built at the company's UK headquarters, the i80P is said to "elevate your humble iPod or iPhone to new musical heights". The i80P employs proprietary analogue circuitry to deliver high performance from an iPod, and the pair of phono sockets on the rear of the i80P allows connection to almost any sound system, and also charges your iPod. Price is £195, available now. For more information, click on www.meridian-audio.com.



ROAD WARS!

UK specialist manufacturer Avid will be holding several 'live' events throughout 2009. One event is to be held at their manufacturing facility, and will give people the opportunity to visit the factory, see how Avid turntables are made and listen in the demonstration room. This is in the Huntingdon area; those able to travel are welcome, says Avid captain Conrad Mas. Alternatively, there are eight events planned around the UK, mostly at dealer premises. Dates and venues are to be confirmed, but the first event will be held in Norwich on Wednesday 28th February at Audioworkshop. For more details, click on www.avidhifi.co.uk/new.htm.

BIG HEAD

"The first serious headphone of the 21st century" is how the new Sennheiser HD800 is described by its maker. The £1,000 *tour-de-force* is hand made in Germany, and sports a radical new 56mm 'RING Driver' developed exclusively for this headphone. It is made out of stainless steel and aerospace-grade plastics, with Japanese Alcantara earpads and detachable silver-plated, low-oxygen copper cables. A claimed 6 to 51,000Hz frequency response and "vanishingly low" 0.02% distortion complete an impressive package. For more details, call +44(0)1494 551 551 or click on www.sennheiser.co.uk.

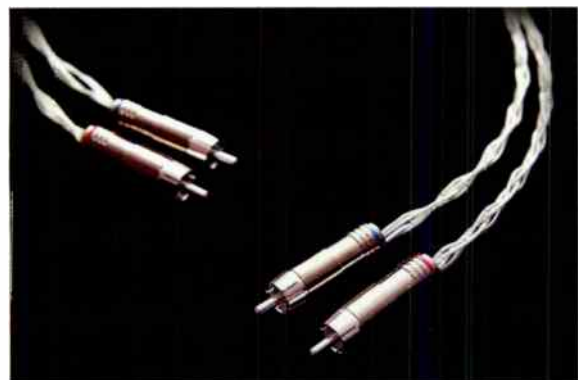


MAD CAP!

Not your average pair of loudspeakers, these! MyAudioDesign's Royal Salute is described as "the most fascinating high-end loudspeaker ever made in British hi-fi history after the B&W Nautilus". The speakers are said to "advocate the original idea, emotion, passion and depictive expressions of the performer(s) and composers", no less! The handcrafted cabinets are made from MAD's proprietary DRC compound, whilst "the finest components in the world such as the ATC Midrange dome, the 'Nipple' like supersonic tweeter and custom designer bass driver" are used. Royal Salute is available in any colour you like, and comes in both passive and active (800W RMS) versions. Prices range from £6,500 to £8,999. For more details click on www.madengland.com or call +44(0)207 839 8880.

NEWS EGG-STRA!

Eclipse's new £1,700 TD510 'Floor' Time Domain Loud Speakers are now on sale in the UK, following in the footsteps of the larger £4,000+ floorstanding Eclipse TD712z. The new TD510 Floor delivers unparalleled clarity and signal accuracy in a more affordable format, Eclipse says, giving "very low colouration and acoustic interference when placed on a cabinet, furniture or wall shelf". The egg-shaped mineral-loaded resin cabinet of the TD510 provides the most rigid form known to nature, while all unnecessary energy is earthed through the internal zinc-alloy structure to the D6 stand and through that to the floor. The use of the 10cm single driver avoids the time and phase distortion associated crossover circuitry and multiple drive units – a single full-range drive unit gives "a useable frequency response" of 45Hz–20kHz (at -10dB). For more information, call +44(0)20 7938 4499 or click on www.eclipse-td.net.



SILVER SERVICE

Pure silver audiophile interconnect cables have traditionally been the preserve of the ultra high end, often selling for £500 or more per pair, so it's interesting to hear about these Artisan Silver Cables, which cost £149 per metre. Silver is the world's most conductive metal, and in this case is sheathed in deliberately slightly loose-fitting Teflon, so that the conductors are partly surrounded by air, which is widely agreed to be one of the finest-sounding dielectric materials, the company says. They add in heavily silver-plated connectors, silver-rich solder and noise rejecting Litz-weave construction to give ultra-pure and sweet sounding cables. The cables can be ordered direct from www.artisansilvercables.com.



SNEAK PEEK

Here's a taster for Arcam's forthcoming new Blu-ray player, said to be named "FMJ XXXX" by our spy. This is one of the very first Blu-Ray players to emerge from a British hi-fi marque, and was developed from the ground-up by "the world's only specialist manufacturer with the capability to do so", the company insider says. Said to have "performance that leaves Japanese high-end players in the dust", it should be in an interesting design. It is due to be unveiled at the Bristol Show, at the end of February...



METAL WORK

Clearer Audio's new Copper-line Alpha Shield Speaker Cable costs a wallet-friendly £5 per metre (or £9.50 bi-wire), with termination costing from £25 to £50. The new entry level cable draws from shielding systems used in its pricier products, said to be effective across the whole Electro Magnetic Interference (EMI) spectrum protecting the internal audio signal. The Copper-line Alpha Shield uses multistrand 5N Ultra High Purity Oxygen Free Copper (99.9997%) conductors, and twisted geometry is used to help reduce any Radio Frequency Interference (RFI) that is already on the signal line. Polyethylene dielectric is employed, being one of the best insulators available offering an open and natural sound. Finally, the Copper-line Alpha Shield is terminated with new low-mass gold-plated copper alloy banana plugs, and termination is carried out by hand in-house using a crimping and soldering technique providing the best electro-mechanical connection. The same high content 5.5% silver solder as used in our higher-end cables is also present. The result is "a highly detailed and insightful sound", the company says. For more information, click on www.cleareraudio.com.



SPOTTED:

Christmas 2008 in Beijing, and Editor DP makes an impromptu appearance on Chinese TV as a football pundit, of all things. He never did find out how they translated, "well, it's a game of two halves isn't it, Gary?"

Air Apparent

Standing nearly six foot tall, Kingsound's Prince II is one electrostatic loudspeaker that makes a serious impact. Noel Keywood listens in...

Big electrostatics are rare birds, both in the UK and abroad. They are statements of the loudspeaker art - vast in scale, visually imposing and defined in form and function by their unusual transducer technology. They're rare too - right now Quad ESL-2905 and Martin Logan CLX are the only equivalents in this country - so when I saw the considerably less expensive £2,995 Kingsound Prince IIs I was keen to find how they contribute to this esoteric way of reproducing music...

Engineered properly, electrostatic loudspeakers are a fantastic listening experience, but can be a tricky domestic proposition. Why would you want to buy a loudspeaker that stands no less than 175cm (5ft 9in) tall? The answer is to get electrostatic levels of purity right down into the low bass region, and I can assure you that electrostatic bass is truly a different and intriguing experience. By covering the full audio range, these speakers avoid the conventional bass cabinet that smaller hybrid electrostatics employ. These are a mixed blessing, as they bring box bass to the sound - not nice - and they rarely integrate well; it's usually quite obvious that a boomy box is labouring to produce wallowy bass, whilst above it a super light mylar film panel is as active as a gnat on Viagra.

So the Prince II is a thoroughbred electrostatic, designed without compromise, but for many reasons a loudspeaker this size needs a large room. It needs one if it is to work properly acoustically, and it also needs one to avoid dominating the domestic landscape. Around 20ft long or more is ideal, available where a partition wall between two small rooms has been removed perhaps, to give 10ft x 24ft? At just 53cm (22in) wide the Prince IIs won't intrude if stood close to or against a side wall, a beneficial position for an open panel dipole such as this, Peter Walker, founder of Quad, noted.

This is a push-pull electrostatic, like Quads but unlike the smaller Martin Logan panels that are single-sided because they do



not handle large bass excursions. In a push-pull, the mylar film is sandwiched by perforated stators to give linear operation even at high excursions. You might like to know that the Prince IIs produced around twenty times less bass distortion than a conventional loudspeaker under test, so their linearity is real, not hypothetical. They really do produce pure bass, I found.

What Kings Audio have done is combine a narrow vertical treble panel with a wider bass panel, placing them side by side in a module. The narrowness of the treble panel smoothes high frequency output, free from the cancellations and beaming that afflicts wide panels. The pairing forms an easy-to-manufacture module, Kings Audio say, important where precision assembly is necessary. Each Prince II loudspeaker comprises seven modules stacked vertically. As a result each loudspeaker has a narrow electrostatic treble panel 8cms wide and effectively 153cm high on its inside edge - they come in handed pairs. On the outside is a large 30cm wide and 153cm high bass panel.

This is a clever way of structuring an electrostatic and in practice I found it gave some fascinating characteristics. Unlike highly directional Martin Logan panels in particular, the Prince IIs are almost non-directional. Sound balance hardly changes wherever you are in front of them, from lying on the floor (yes, I tried it!) to sitting to standing, to walking around the room. Even more surprising was they pull off the same acoustic trick as big NXT panels; that is, they do not get louder as you walk toward them. And that was a little eerie!

All this was apparent in my lounge, in our office listening room and confirmed by our measuring microphone, which I could place almost anywhere and get a very similar result. The Prince IIs are one of very few loudspeakers I have encountered able to do this. In effect they seem to drive so much of the room in terms of area (solid radiation angle) that the room just gives up and says "oh, what the heck". It becomes totally dominated by the loudspeaker, which seems almost bizarre to someone like me used to thinking about loudspeaker and room interaction in a certain way. The Prince II rolls over the issue entirely, saying "this is what I do and this is what you'll get". Which can't be bad when what you get is so well worked out. The full audio range is covered, from 40Hz right up to 20kHz, by those electrostatic panels.

One of the scarier features of

early Quad ESL-57s and their Braun derivatives, was their delightful tendency to choose the gentlest musical moment, at the end of a peaceful late night listening session to suddenly arc over with a flash and a piercing crack! At which point the cat hits the ceiling, followed by its owner. Electrostatics work at thousands of

"the Kingsound Prince II wasn't anything other than beautiful to hear..."

volts internally and when things go wrong the outcome can be dramatic, and traumatic because a complex service is required. To prevent this, Kings Audio, like Martin Logan, make much of special protective stator coatings. Whether they also use secondary protection diodes like Quads I do not know. I pumped 32V into my review loudspeakers and there was not a spark anywhere, but things were starting to sound mushy due to amplifier overload, my Quad II-eighties only managing 26V or so undistorted into the 17 Ohm load of the Prince IIs.

Yes, the Prince IIs are a bizarre load for any amplifier, 400 Ohms maximum and 6 Ohms minimum, and they are grossly insensitive. Although Kings Audio quote 84dB and 8 Ohms, we measured 73dB and 16 Ohms! Our in-house Anatek A-50R amplifier overloaded and cut out before I could get any sound pressure from these loudspeakers, and my own 28 Watt 300B amplifier was similarly unable to cope. They need at least 30V of voltage swing, so a 100 Watt amplifier represents the bare minimum and around 200 Watts is more like it. This conflicts with my preference for valve (tube) amplifiers. The impressive Electrocompaniet AW600 Nemo monoblocks I reviewed in our February 2009 issue would have been ideal but Electrocompaniet had sent Pickfords to collect them to correct Norway's trade deficit. Quad's lovely II-eighties were suitable and drove the Prince IIs loud, if not very loud even when flat out. In a nutshell, the Prince IIs are grossly insensitive and a difficult load so a high power / high quality amplifier is needed to drive them. The

Prince II demands a big room and an amplifier to match, unfortunately.

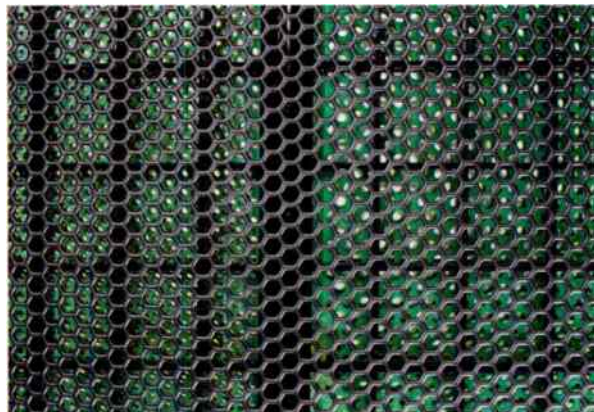
Like all electrostatics, these need mains power to produce a high voltage charge on the plates. A low voltage 'wall wart' power supply delivers 12V at low current to each loudspeaker, lighting a blue LED at rear. Bi-wiring is possible, meaning

the high frequency panel is electrically separate from the woofer panel so bi-amping is also possible. A perforated steel grille at front and rear protects the drive modules, and wooden side strips add a neat touch. Each loudspeaker weighs 21kgs and is solidly built, sitting on a small pedestal with adjustable spiked feet.

SOUND QUALITY

Airy and ethereal are two words that come to mind to summarise a typical good electrostatic, with a natural purity that transcends ordinary box loudspeakers – and those words apply to the Prince IIs. But where the Martin Logans are brightly balanced and quite fast, and Quads neutral, the Prince IIs are definitely easy going. No matter how they are angled or where you sit, the balance of these electrostatics is mild mannered and creamy smooth, but as our measurements show this has nothing to do with lacking treble.

I heard the wonderful delicacy of electrostatic treble in a short but delicate little arpeggio on acoustic guitar behind Jackie Leven singing 'Shadow in My Eye'. The quick succession of notes from plectrum on gut strings was just a background detail, but its presence was supported with beautiful clarity behind Leven's deep Celtic tones. Both the twang of the strings and wooden body of the guitar were lucidly conveyed with a natural ease against a silent background.



A perforated steel mesh protects the driver modules...

Electrostatics reveal low level delicacy like no other and the Prince II wasn't anything other than beautiful to hear in this respect – revealing, but without artifice. Although ribbon tweeters measure better, I prefer an electrostatic in the end, for the Prince II conveyed the finest delicacies and details, from tinkling bells to the finest background whispers with a deliciously easy and unforced

"the bass was strong, and had a lovely resonant quality..."

naturalness of tone that reminds me how contrived and, relatively speaking, leaden conventional loudspeakers sound in comparison. Of course, one reason is that there is no time delayed information coming out of a box, no boof, echo or other extraneous noise, and this alone accounts for the remarkable absence of colour.

Another peculiarity of electrostatics is that they tend to pull the production of a track apart, so I heard how various instruments had been layered into Gabrielle's 'Rise' and I was constantly aware of production techniques, even the grumpy bass and crude mixing of old 1970s reggae albums! But a sharply timed and produced track like Heaven Seventeen's 'Lady Ice and Mr Hex' shimmered with slickness; the different strands cut in and out with razor-sharp timing, devoid of overhang or slur, and certainly free of the hard edge that comes from metal cones, and even aluminium ribbons. The fast pace and tight timing of this track was beautifully revealed.

Colour is everything in conventional loudspeakers, defining their character, and nothing in electrostatics, especially so with the Prince IIs because being full range their uncoloured neutrality extends right across the audio band and affects - or doesn't affect? - all instruments, from bass guitar right up the delicate bells, not forgetting vocals in between. That allowed the textural qualities of instruments – the brassiness of horns, the woodiness of flutes – to come over very clearly, seemingly expanding textural contrasts.

Whilst the Prince IIs have even and smooth yet extended treble, their midband was simply dry and clear. Jackie Leven's vocals had just enough chestiness to be acceptable, but only just it seemed to me. But as box loudspeakers euphonically reinforce deep male vocals with their own resonance I felt the Prince IIs were analytically correct. They lack euphonic addition and can come

over as drier and less fulsome as a result, however. Again, the word 'analysis' comes into the picture here, which you cannot get away from with thoroughbreds like these. And it wasn't always flattering. Groove noise fizzed sharply at the start of my older LPs and even with new Quiex SV-P pressings surface roar was obvious the moment the stylus hit the groove. However, LP's fuller sound worked

better with these loudspeakers, I felt. Occasional distortions had me wondering whether amplifier overload might be occurring so I constantly monitored signal level and the distortions were in the recording or pressing (with LP). The Prince IIs reveal everything, surface noise, distortion and all...

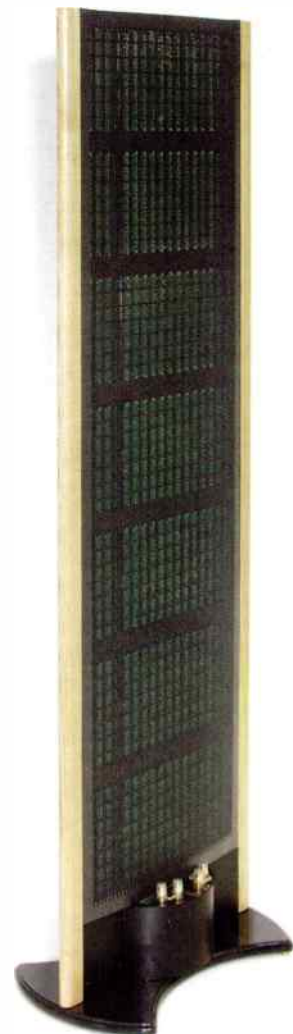
Whilst 24/96 DVD-As sounded detailed their balance was dry and not especially alluring, and piano in Rachmaninov's Piano Concerto No2 on SACD, played by Lang Lang, lacked body and warmth. Yet with a well produced LP like Phil Collins 'Hello, I Must Be Going' tracks like 'I Don't Care Anymore' sounded superb, drums rolling across the soundstage strongly, the lightest background hand drum standing out clearly even though well back in the mix. That electrostatics have no distortion or colouration I could believe in such moments; the Prince IIs could sustain the independence of the finest details amongst powerful front vocals and instruments.

And then there's their imaging. Think celestial: a massive sound stage reaching right across the room, vocals coming slightly from above. The Prince IIs also have good image stability as the head is moved.

Dynamically, these loudspeakers were mild, even though deep bass was strong and had a lovely resonant quality that in particular gave drums a punchy presence completely free from boxiness. There was no bass heaviness, by the way, in spite of what our frequency response measurements suggested, something that is difficult to explain, but I can't help suspect there's so much surface area on the lightweight film that acoustic damping is much greater than usual, giving a tight, pure quality that also carries with it bass detail; even Interstellar Reggae Drive sounded dry and composed.

Playing music at modest volume meant swinging 5V-20V across the 'speaker, and winding up to a high 30V increased loudness little.

Perhaps that's because power increased just 3dB or so, but I also wondered whether some protection, like secondary diodes, might have been coming into play. I would have needed a good 40V or so to test this, meaning an amplifier rated at 200W into 8 Ohms, which wasn't available, so I cannot vouch for just how loud the Prince IIs can go and whether they might have seemed more dynamically forceful if more watts had been available. What I did notice was that both a Marantz and Moon amplifier able to swing 30V sounded brighter in balance than the Quad II-eightys and I suspect this is due to the large change in the loudspeaker's output impedance interacting with the Quad's output impedance. The Prince IIs drop from 45 Ohms at 200Hz to 10 Ohms at 2kHz and on the end of a valve amplifier with 1 Ohm output impedance (i.e. D.F. of 8) causes an -0.6dB response drop at high frequencies, just enough to give a subtly darker balance than a transistor amplifier with its lower output impedance. All the same, I stayed with the Quads, preferring their easy fluidity and sense of depth.



Solid-state amplifiers sound stark through electrostatics, if harder edged and with more forceful dynamics through the Prince IIs. Amplifier choice would come down to personal preferences with a loudspeaker such as this, but solid-state watts would be much cheaper and more domestically acceptable, because 200 Watt valve amps are vast affairs!

CONCLUSION

The Prince IIs are a very pure realisation of the electrostatic principle, cleverly wrought. They sound like they are too: dry and balanced, deeply analytical, breathtakingly clear and free from colour. Recording studios need a loudspeaker like this for monitoring methinks. Anyone with a room big enough to house them, and pockets deep enough to buy a suitable amplifier can be assured that the Prince IIs are a stunning loudspeaker, quite other worldly in what they do.



ELECTROSTATICS - MEASURABLY BETTER

The wonderful sound of electrostatics is a part of hi-fi folklore. Ultra low colouration and distortion are commonly quoted. Well, here are our measurements of colouration and distortion for the Prince II and guess what - they are ultra low! The pretty colour graph shows sound decaying from top to bottom, bass at left, treble at right, level being depicted by colour. Basically, the quicker the decay into black - think of it as inky dark silence - the better. And the Prince II has the fastest decay we have ever measured. Often, the blue runs all the way down, but not here; the Prince II falls silent just as it should.

There was almost no bass distortion compared to box loudspeakers either, with just 0.2% at 40% against 2% or so from a box, thus proving that electrostatics are demonstrably better!

MEASURED PERFORMANCE

A big electrostatic like this radiates from a very large panel area and drives a room differently. Room placement barely affected the Prince II and it drove so much forward volume our measuring microphone gave identical frequency response from 10cm to 2 metres away, there was so much distributed forward energy. However, our low 7ft ceiling inserted a dip into frequency response around 160Hz unless the mic was placed close to the floor (high pressure point), so the dip is a room effect, but valid as our mic height was at seated head height. Higher ceilings will insert a dip of lesser amplitude lower down in frequency.

Frequency response shows the usual short sharp undulation in output due to interference effects across a panel radiator. The balance for the Prince II is largely even up to 20kHz however, and that's how it sounded with pink noise under test: silky smooth and even. Output rises to produce a large bass peak at 50Hz and this will strengthen bass, but without box boom. Drums in particular will be emphasised by this.

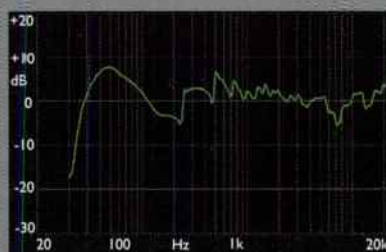
Sensitivity was absurdly low at just 73dB from one nominal watt (2.84V) of input (Kings Audio quote 84dB). In truth that's because far less than a Watt was being consumed, impedance measuring a high 17 Ohms overall. Variation with frequency was massive, from 400 Ohms at 25Hz, down to 16 Ohms DCR at 0Hz and 2.5 Ohms at 20kHz. This makes the Prince II very reactive and a difficult load, demanding a high power amplifier of at least 100 Watts.

As expected from an electrostatic the 200mS decay spectrum was unusually clean, suggesting very low colouration. Also, distortion was less than 1% above 30Hz, falling to lower than 0.2% above 60Hz, much lower than box loudspeakers.

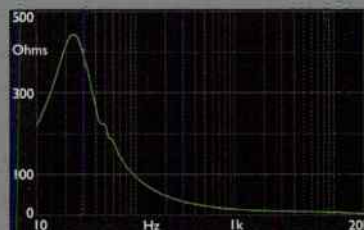
The Prince II is a classically well engineered electrostatic. It drives a huge forward area to give a very even sound at any listening position, even far away. It is room independent except for the height mode, but it needs a

large room that resonates below its own resonance, meaning at least 18 foot or more being preferable, to achieve best bass. It also needs a very powerful amplifier (high voltage swing) that can drive heavy reactance and has sufficiently high intrinsic quality to suit such a low colouration, low distortion and high resolution reproducer. NK

FREQUENCY RESPONSE



IMPEDANCE



VERDICT ●●●●●

Beautifully crafted electrostatic with many unique properties and an exceptional sound at the price, but tough to drive and hard to get to work in a room.

KINGSOUND PRINCE II

£2,995

+44 (0)116 2440593

www.iconaudio.co.uk

FOR

- lucidly clear
- delicately detailed
- uncoloured bass

AGAINST

- very tricky to drive
- imposing physical size
- sorry, large rooms only!

Nothing added. Nothing subtracted.



Piotr Tomaszewski - Piazzale Degli Uffizi, Florence - Sunday afternoon

Music is a reflection of life.
A never-ending dance between your joys
and sorrows, ups and downs and that all
consuming can't-live-without-each-other love.
Music is our reality.

Nothing added. Nothing subtracted.



IN ADMIRATION OF MUSIC

www.dali.dk

World Radio History



TX-SR876 for example. These decode compressed streams like DTS HD Master Audio and Dolby TrueHD, add all sorts of weird Hall and Stadium effects, turn stereo into surround-sound (Dolby ProLogic IIx, DTS Neo 6), synthesise sound for Back loudspeakers in 7.1 from the discrete signal fed to the Surrounds in 5.1, and so on. There's almost no limit to what can be done by writing it into code for the DSPs.

This processing does not automatically mean the signal is being degraded. In essence an AV receiver accepts digital signals, processes them digitally, then converts them to analogue for subsequent amplification. Analogue sources can be sent to digital through an ADC, processed then converted back to analogue form, but this isn't wise unless you want surround-sound from LP (no, you don't!). To avoid quality degradation from such digital conversions it is usual to route analogue from LP and VHF tuner, for example, around the processors, sending it direct to the power amplifiers with a Direct or Pure Direct function that they all have. So an AV receiver, in spite of its

Multi Choice

Noel Keywood tries four serious surround sound receivers...

humongous complexity, configures to become like a stereo amplifier when Direct mode is selected.

There's a suspicion that AV receivers do everything badly, but our measurements show it isn't the case. High quality AV receivers such as those reviewed here, are purposed to do a great job with audio. Their digital-to-audio convertors are high quality types and so can sound dramatic when reproducing high quality digital such as Carlos Santana in 24/96 PCM from DVD-A, Nine Inch Nails in Dolby TrueHD from Blu-ray or Beethoven's Pastorale symphony from SACD. It doesn't matter what you want to play, from whatever source, AV receivers like those tested here can handle it...

As well as massive digital processing power, AV receivers also tote spectacular audio power, close to 2,000 Watts total with some models here. This is unlikely to be usable in most homes; 100 Watts per channel is sufficient. Most surround-sound mixes put little power into the rear loudspeakers. Only some Rock albums recorded in surround-sound feature instruments in the rear channels playing as loud as the fronts and five channels pumping out 500 Watts total is quite enough; 2,000 is insanity. A multichannel system with good loudspeakers will go loud very cleanly, as each loudspeaker is relatively unstressed.

If you cannot accommodate more than two loudspeakers or do not wish to, you do not have to. Bi-amping uses four channels, leaving two to feed another room. I use various configurations including full 7.1, but find 4 channel satisfactory for music, with no Centre at front. There's plenty of flexibility built in, allowing these receivers do a lot well, in whatever way you wish.

Besmired by the madness that is Home Cinema, where the power of explosions and dinosaur footsteps are all important, AV receivers have a bad reputation amongst audiophiles. In truth, they can do a very good job with music. A key point to remember is they are jacks of all trades, able to play LP and CD, as well as DVD-A and SACD, plus of course DVD and Blu-ray. Offering good sound quality they can be entertaining, especially if like me you enjoy music videos. Seen like this their Home Cinema functionality becomes a side issue, and that's how I approached the four reviewed here...

AV receivers are intimidating, that's for sure. There are so many facilities that can stretch patience, while set up is an extraordinary process - almost an act of worship at the shrine of AV madness! At the heart of all this is heavy duty digital processing. Onkyo claiming to use three Texas Instruments Aureus 32 bit DSP chips onboard their



YAMAHA RX-V1900 £820

The RX-V1900 is a 7.1 receiver producing 256 Watts per channel, our measurements show, if you run 4 Ohm loudspeakers, which most are these days, so it has plenty of power. Yamaha rate the RX-V1900 at 130 Watts into 8 Ohms, so it reads to be less powerful than it will be in use.

Audiophiles will be interested to know that the two Back channels can be assigned to bi-amp the front Left and Right loudspeakers for better quality, and that if desired the Centre loudspeaker can be switched off. This is a common option nowadays and selecting it routes centre channel information equally to Left and Right loudspeakers to enable phantom centre images, as in normal stereo. The benefit of this is elimination of the often mediocre quality and poorly positioned surround-sound Centre loudspeaker that puts singers close to the floor. The front channels cannot be bridged to double power, as with the Onkyo.

Even though the handbook makes no mention of it (a royalties issue?), the RX-V1900 decodes DSD code from SACD. The front panel display lights up DSD when fed DSD data via an HDMI link and measured performance was good, SACD quality being well maintained. To do this you would need the likes of an Oppo DV-980H DVD player (£200 or so), which outputs native DSD via HDMI and which I used for tests.

The handbook also lists a 'Sophisticated FM/AM tuner' as a feature, but says nothing about the

Phono input that caters for Moving Magnet cartridges and allows the Yamaha to match the Onkyo for the attentions of all those who might want to indulge in a little LP replay. A Pure Direct mode allows all processing to be bypassed and its displays shut off for this sort of quality analogue work, or Straight can be selected, leaving displays on.

The VHF FM tuner has a Radio Data System so programme type (e.g. traffic news, weather etc) can be selected, whereupon text data identifying station and programme are displayed. There are 40 station memories, available for FM and AM stations. As always, an external aerial is needed, but the tuner is a good one, as Yamaha claim, so it is worth taking seriously.

"there was no hint of sharpness; the Yamaha comes over as smooth and svelte..."

The rear panel carries arrays of digital inputs: four HDMI inputs, three electrical S/PDIF phono sockets and four optical S/PDIF connectors, plus one on the front panel. There are two HDMI outputs for TVs/monitors and two optical S/PDIFs for recording purposes.

On the video side, the Yamaha accepts S-Video, Composite, Component signals and, as usual, the front panel input for camcorders is an old analogue S-Video connection, where HDMI is commonly used

nowadays. There is a USB socket here for playing music files or hooking up a music player. A Yamaha iPod dock can be connected at the rear. There is no 3.5mm jack input on the front, but two phono socket inputs that can be used with an 3.5mm to phono adaptor lead. An unusual manual tone control is sited behind the drop down flap on the front panel too.

Video upscaling is provided from DVD to High Definition, from Composite, S-Video and Component inputs, and HDMI to digital HDMI output. Be aware that many modern DVD players upscale to Hi Def., as do inexpensive Blu-ray players, all of which play DVDs, like the £200 or less BD-P1500 from Samsung.

Yamaha fit an automatic loudspeaker sensing/tuning system

that uses an external microphone. It uses a seven band parametric equaliser in which gain and Q are adjusted. The lowest band is usefully at 32Hz, one octave below Onkyo's 64Hz lowest adjustment frequency. The Yamaha can be manually adjusted too, so there is more leeway to correct problems in larger rooms, as 32Hz corresponds to the lowest mode of a 17ft long room, against Onkyo's 12ft room limit. AV receivers have the potential to correct room modes using their onboard

processors but being aimed at the AV market this possibility hasn't really been recognised as yet. Yamaha's loudspeaker tuning in the TX-RV1900 is better than most, and should be able to smooth things out in most rooms. There is also a graphic equaliser, lowest frequency 64Hz.

From Blu-ray and DVD the receiver also decodes Dolby TrueHD and DTS HD Master Audio soundtracks on Blu-ray discs as well as the complete slew of lower definition formats such as Dolby Digital Plus. Each channel has a 24/192 digital to analogue convertor so PCM digital code up to this rate can be converted, from DVD or Blu-ray discs.

SOUND QUALITY

The Yamaha handled Benjamin Britten's 'Playful Pizzicato' by the

Trondheim Soloists in 24/192 PCM, Dolby TrueHD and DTS Master Audio adeptly. This high resolution Blu-ray music disc has extraordinary dynamics behind plucked strings, plus intense internal detailing to bowed strings, and the RX-V1900 played it all well, Dolby TrueHD sounding least dry and with the broadest tonal palette. There was no hint of sharpness; the Yamaha comes over as smooth and svelte.

Moving on to a John Meyer's 24/96 Blu-ray, 'Where The Light Is', the opening Kick drum in Vultures had considerable subsonic weight and this feature of the amplifier popped up often. B.B. King's 'Three O'Clock Blues' on a 24/96 DVD-A having a weight behind kick drum that was settee moving.

With Rachmaninov's Piano Concerto No2 on SACD Lang

Lang's piano had lovely tonal colour and the sheer civility of the sound will certainly appeal to classical music lovers. I wasn't quite convinced that orchestral strings were as well separated as possible however, and there seemed to be a small element of muddle or smear in the midband. The Yamaha is a real smoothie, but it isn't as insightful as some.

The phono stage was silent and silky in its presentation, but with limited low end push playing Amy Winehouse's 'You Know I'm No Good'. Similarly, VHF radio sounded tidy and clean, if a little reticent in its low frequency delivery, lacking body as a result.

The Yamaha worked well in all areas and has a seamless delivery that is untiring - it's a surround sound smoothie.

VERDICT ●●●●£

Easy to use and easy on the ear, with no weaknesses, the Yamaha is relaxing and suits Classical very well.

YAMAHA RX-V1900 £820
 Yamaha Electronics UK
 +44(0)1923 233166
 www.yamaha-uk.com

- FOR**
- compact dimensions
 - smooth sound
 - good midrange colour

- AGAINST**
- restrained dynamics
 - slight muddle
 - small display legends



Vertically stacked loudspeaker terminals, not colour coded, but able to accept 4mm plugs as well as bare wires. HDMI inputs and outputs are vertically aligned at far left.

MEASURED PERFORMANCE

The RX-V1900 delivers 136 Watts into 8 Ohms and 256 Watts into 4 Ohms, so it is powerful with today's low impedance speakers. Input sensitivity (CD) is very high at 160mV and distortion very low at 0.014% at 10kHz. So the amp section is powerful and distortion-free.

The tuner measured well, with low distortion and a frequency response with just a bit of bass (+0.75dB) and treble (+0.4dB) emphasis, subtle enough to be enhancing, without overt annoyance. A pilot tone filter imposes a decent 15kHz upper response limit. Hiss was lowish at -68dB. VHF sound quality should be very good, both clean and lively.

With digital inputs the Yamaha gave very good results from CD (16bit/44.1kHz PCM) and from 24bit/96kHz on DVD and Blu-ray, distortion measuring a low 0.1% at -60dB and bandwidth to a satisfactory 36kHz. However, it didn't like 24bit/192kHz PCM much, distortion measuring a poor 0.7% at -60dB - worse than CD at 0.21%. At present 24/192 recordings are rare, so this won't have much impact. Although the handbook doesn't mention DSD code from SACD, the Yamaha converted it with 0.1% distortion at -60dB, a fine result, and bandwidth to 36kHz - a fair result.

The phono input measured neatly, with accurate equalisation, low noise, adequate sensitivity and good overload.

The RX-V1900 produces a nice set of

results all round, not including 24/192 PCM code. NK

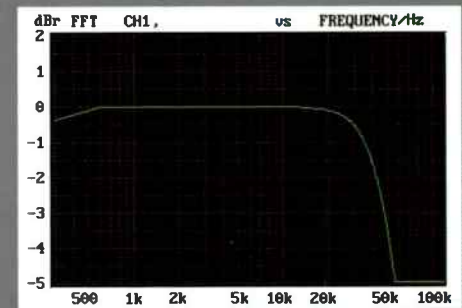
Power	136 Watts
Frequency response (A/D, Direct)	2Hz-23/100kHz
Separation	87dB
Noise (Straight, Pure Direct)	-78, -90dB
Distortion	0.014%
Sensitivity	160mV
Damping factor	46

CD	
Frequency response	10Hz-21kHz
Separation	109dB
Noise	-106dB
Distortion (-60dB)	0.21%

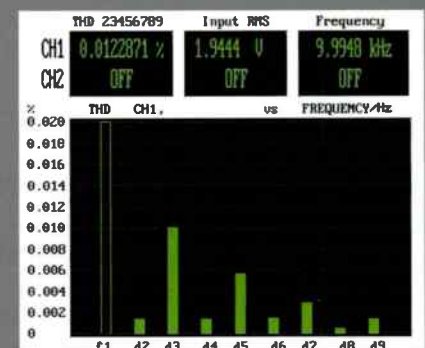
Disc (LP)	
Frequency response	14Hz-99kHz
Separation	67dB
Noise	-79dB
Distortion	0.02%
Sensitivity	4mV
Overload	60mV

VHF TUNER	
Frequency response	10Hz-15kHz
Stereo separation	35dB
Distortion (50% mod.)	0.1%
Hiss (CCIR)	-68dB
Signal for minimum hiss	1.2mV
Sensitivity (stereo)	60µV

FREQUENCY RESPONSE, 24/192



AMPLIFIER DISTORTION





NAD T755 £880

The NAD T755 is a weighty 18kgs and has a purposeful looking dark grey fascia with typically NAD functional styling. Unfortunately, although the T755 is powerful and contains some comparatively recent gizmos like Audyssey loudspeaker tuning, it is lacking a lot else...

Where other manufacturers have had to bite the bullet and install costly licensed technologies from Dolby and DTS in order to interface with Blu-ray players, the T755 remains without them. Its HDMI inputs are pass throughs; the T755 is unable to process audio from HDMI, a limitation that will, I suspect, count it out in the eyes of most consumers - rightly or wrongly. Its rivals here all process from HDMI, allowing them to connect up using a single HDMI lead carrying high definition audio as well as video.

Digital audio is piped into the T755 via S/PDIF only, electrical or optical. Whilst S/PDIF can carry 24/192 stereo into the T755 from video and audio DVDs (i.e. DVD-A) and the T755 plays it, our measurements showed there was no performance benefit to be had. The receiver's internal convertors are poor and are unable to exploit high definition PCM audio. A bandwidth limit of 24kHz suggests internal downconversion of 96kHz and 192kHz sample rate PCM to 48kHz before conversion to analogue, although NAD claim to fit 24/192 DACs on all channels.

Blu-ray players can of course be

connected by S/PDIF but the T755 only accepts Dolby Digital and DTS compressed streams, including DTS 24/96; Dolby TrueHD and DTS HD Master Audio are off the menu as they need an HDMI connection. SACD cannot be handled via S/PDIF, the CD layer will be played. The only solution is to connect up multichannel players using the T755's single 7.1 channel analogue input, using phono-to-phono cables, an outdated method.

Although the receiver has a 7.1 analogue input set, and the handbook refers to Back loudspeakers and 7.1 channel use, it is a five channel

"the NAD is best suited to big-hearted rock, where its bass power alone will impress..."

receiver. The handbook does not make this clear anywhere, only alluding on page 20 to the need to connect up an external stereo power amplifier to preamp output Surr-B sockets if full 7.1 operation is wanted. The loudspeaker set up menus flag Back loudspeakers so the onboard DSP has been programmed to accept them, explaining the unusual situation where 7.1 inputs and preamp outputs exist, but the necessary power amps are missing!

There is good justification for not using Surround Back loudspeakers; they carry only information synthesised from the Surround channels, fill in the rear rather than

add to fidelity and introduce more cabling. All the same, since the T755 costs a hefty £900 and is missing HDMI audio too, this hardly improves its apparent value.

In a similar manner the T755 is DAB capable, but needs an external DAB module which must be purchased separately for around £120.

NAD's onscreen set up menus look crude against competitors, and their *modus operandi* differ too, but they are usable. Loudspeaker distance, level and size can be set, but response equalisation is not applied during

Audyssey tuning; the T755 lacks the 7/9 band graphic equaliser of its rivals. It does have conventional bass and treble controls though.

On the video side analogue video can be input through Composite, S-Video and Component inputs, and there are equivalent outputs for TVs or monitors. Conversion between these formats is provided. There are three HDMI inputs and one output, so video sources can be switched through.

The front panel houses an array of inputs, optical digital, audio, Composite and S-Video, plus a mic input for Audyssey mic and headphone output.

SOUND QUALITY

The T755 offers NAD's trademark sound, which is characterised by conspicuously powerful bass that runs deep, making the T755 sound eye-poppingly muscular. The big bass line at the start of Toy Matinee's 'Last Plane Out' in 24/96 PCM on DVD-A rolled through the room like a carpet of thunder. Guitar strings were hard edged but vocals clear enough in outline, if not fleshed out by insightful detail. Spinning Rock of various types I got much the same result, thunderous bass lines and explosively powerful drumming that shook the room, a reasonably tactile midband providing the music mix stayed simple, and rather cold, obvious treble. This was more attention grabbing than subtle, the T755 lacking the sophistication of NAD's excellent C315BEE hi-fi amplifier.

Spinning classical showed the big NAD couldn't establish the instrumental separation of the Marantz, making for a relatively crude representation of the orchestra in Holst's 'Jupiter', from the Planets. Kettle drum was confidently identified, but violins were edgy and none too refined; there wasn't so much detail available within violins playing the central theme either. The T755 isn't really purposed for classical I felt, being better suited to big hearted Rock, where its bass power alone will impress and satisfy many listeners. This is a thunder and lightning job!

VHF/FM radio displayed a similar balance, with a large, warm hearted sound characterised by strong bass and obvious treble. I did pick up a faint background drone from the hum identified by measurement, during

short silences in the banter between Terry Wogan and a listener who had just won a DAB radio [gosh - Steve Green will be jealous! Ed.]. Those listening to Radio 3 or Classics FM over a period may well pick up on the tuner's hum problem after a while, noticing that a faint drone is always there. Listening to classical music via our VHF/FM test signal generator clearly revealed the problem.

The big T755 will suit those uninterested in Blu-ray and the promise of high resolution digital. It is suitable for CD and DVD, but unable to resolve anything better even though it can play 24/192. With hum a problem on VHF radio it trails rivals woefully. In a way, I can see what NAD were trying to do, with a no frills, big sounding, music-friendly surround receiver, but they've missed a trick here.



The NAD has a multipin input socket for connection of a DAB tuner module, seen near top left. Loudspeaker terminals lack colour coding, as do surround input and output sockets, but accept 4mm plugs. HDMI inputs are pass throughs.

VERDICT ●●
 Lacking HDMI audio, the T755 is unable to exploit Blu-ray sound and is outdated. Hum in the tuner was unacceptable, and sound below par.

NAD T755 £880
 Armour Home Electronics
 +44(0) 1279 501111
 www.nadelectronics.com

- FOR**
- massive bass drive
 - powerful sound
 - simple to use
- AGAINST**
- lack of refinement
 - hum drone from tuner
 - no hi-def audio decode
 - no phono stage
 - no HDMI audio
 - 5.1, not 7.1 channels!

MEASURED PERFORMANCE

The T775 produces 128 Watts into 8 Ohms and a healthy 210 Watts into 4 Ohms per channel, so it has plenty of power. However, this is a 5 channel receiver so total power is less than its seven channels rivals in this group. This isn't especially consequential however, because with most music the front speakers do all the work. Both hum and noise were high, measuring -72dB IEC A weighted through the processor and -76dB in Bypass mode, poor figures below modern day hi-fi products.

Distortion levels were respectably low, even at high frequencies, so the T755 amplifiers should sound smooth enough. In processor Bypass mode their bandwidth extended to 34kHz. Via the input ADC bandwidth was a restricted 23Hz-19kHz with CD, so best to use Bypass for analogue inputs.

The VHF tuner suffered the same hum problem mentioned earlier, returning an unacceptably poor -53dB (IEC A weighted) noise figure as a result. Hum harmonics from 100Hz to 500Hz were the problem. Frequency response was flat so tonal balance will be accurate.

Like the Marantz SR6003, the NAD's DAC converters were noisy and produced distortion. With CD Dynamic Range was a poor at -100dB (110dB is normal) and distortion at -60dB measured 0.7%, against an expected 0.2%. Figures were worse with 24bit signals,

above 1%. NAD claim to use 24/192 PCM DACs, but whilst the T755 processed 24/96 and 24/192 PCM code via S/PDIF, bandwidth was restricted to a low 24kHz, so no benefit accrues.

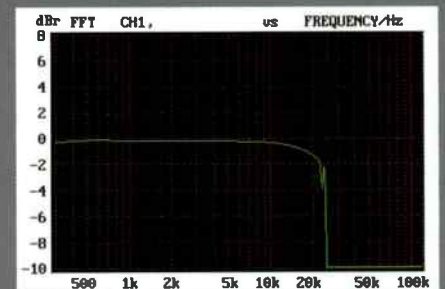
The T755 measured poorly by hi-fi standards and by current receiver standards. NK

Power	128 Watts
Frequency response (ADC, Direct)	10Hz-19/34kHz
Separation	77dB
Noise (A/D, Direct)	-72, -76dB
Distortion	0.08%
Sensitivity	250mV
Damping factor	33

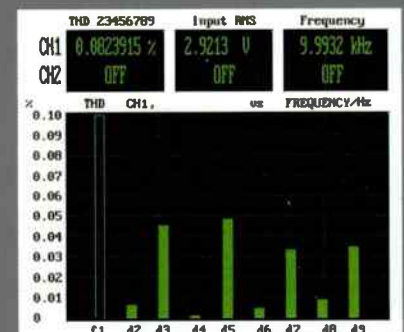
CD	
Frequency response	18Hz-19kHz
Separation	76dB
Noise	-99dB
Distortion (-60dB)	0.7%

VHF TUNER	
Frequency response	14Hz-15kHz
Stereo separation	50dB
Distortion (50% mod.)	0.18%
Hiss (CCIR)	-53dB
Signal for minimum hiss	220uV
Sensitivity (stereo)	75µV

FREQUENCY RESPONSE, 24/192



AMPLIFIER DISTORTION





ONKYO TX-SR876 £950

The big TX-SR876 is a simpler version of the TX-NR906 reviewed in last month's issue, lacking its networking function, so it cannot play computer files or receive internet radio. The 876 can, however, still play SACD, when fed its DSD code from a suitable DVD/SACD player like the Oppo DV-980H with an HDMI link, so it may appeal to anyone with a SACD collection that is gathering dust since Sony lost interest in the format. You get full surround-sound of course and, by selecting DSD direct, full SACD performance through dedicated DSD convertors without prior conversion to PCM, Onkyo assured us when specifically questioned on this issue.

Backward compatibility includes the ability to play LP too, since Onkyo include a Moving Magnet phono stage, and quite surprisingly for a Japanese receiver, it actually works rather well. Like most receivers a Pure Audio mode is fitted and best selected for high quality analogue pass through such as this.

As the TX-SR876 has 24/192 digital-to-analogue convertors, it can handle PCM digital up to 24/192, so will play CD, DVD and even DVD-A with a suitable player attached. Again, the Oppo DV-980H DVD player suits. As there are four assignable HDMI inputs a Blu-ray player can be connected alongside a DVD player, and as both optical (2) and electrical (3) S/PDIF inputs are also fitted CD transports and suchlike can be hooked up also. Measurement

confirmed top CD quality is achieved, with very low distortion and smooth, wide frequency response. This was the case with DVD-A and SACD too: the Onkyo provides lower distortion than CD and wider bandwidth for better sound quality.

Like most modern receivers the 876 is classified as 7.1, meaning it has seven amplifiers onboard and can feed a powered subwoofer. This is for surround-sound with four rear

memories are available between them and the VHF section can be tuned by entering station frequency directly. There's a mono button that lifts noise muting so weak stations can be obtained, and also a Radio Data System that displays text information and can sort stations by type, including weather and traffic. An external aerial will be needed for proper results, connected by a female coaxial plug.

"a focused and detailed sound, characterised by an easy-on-the-ear midband, innocuous treble and a generous bass..."

'speakers and three fronts, a home cinema arrangement. For audio use a simpler and more convenient alternative can be configured, comprising two front speakers and two rears (leaving one channel unused). The fronts can be bi-amped for better quality or bridged for more power, so audiophiles have plenty of options. And even without bridging, this receiver delivers no less than 290 Watts per channel into 4 Ohm loudspeakers, so it isn't short of muscle. Bridge the fronts and you get around 500 Watts per channel! Just bear in mind that few loudspeakers can handle such power though..

Also fitted as standard is a decent VHF/FM tuner, plus AM medium wave section. Forty preset stations

Like most current AV receivers the TX-SR876 can handle all DVD and Blu-ray formats, including Dolby TrueHD and DTS HD Master Audio sound tracks. An onboard HQV-Reon processor will upscale DVD video to full high definition 1080p via HDMI. Component video can also be upscaled, so the Onkyo can accept older formats and upscale them to a modern high definition TV connected via HDMI. Also accepted are Composite and S-Video inputs as usual, including an Aux input on the front panel for audio and camcorders, but only old S-Video. High def camcorders with an HDMI digital output like Canon's HV30 must be connected at rear.

There are multichannel (7.1)

preamp outputs and inputs, so old analogue connected SACD players can be hooked up. Tone controls and a 7 band graphic equaliser are available. An automatic Audyssey loudspeaker tuning system is fitted to detect loudspeakers connected, their distance for time compensation and their balance for equalisation. The results can be viewed and manually tweaked. It is usually best to do this.

The TX-SR876 might not look too pretty but it is well built and as easy to use as any AV receiver. Onkyo provide a neat set of colour tags for the loudspeaker leads that simplify connection and the rear terminals thankfully accept 4mm plugs as well as bare wires.

SOUND QUALITY

Providing Pure Audio is selected the TX-SR876 gives a focused and

detailed sound, characterised as usual for Onkyo by an easy on the ear midband, innocuous treble that was quite svelte by solid-state standards and a generous bass that was obvious. As bass guitar kicked in at the start of 'I Got You to See Me Through', from Eleanor McEvoy's Yola album on SACD, it sounded a little inflated and plummy, but with a weight that will satisfy many ears, as it gives a welcome impression of scale. There was no harshness from CD, nor any top end glare. I was impressed by 24/96 code on DVD-A of Toy Matinee's 'Last Plane Out', that the Onkyo handled fluently, coming over as fast and sharply defined, but without the harsh clatter that it often induces. Guitars cut out of the mix, vocals were clear as a bell and treble had a nice light air with no hint of tizz, unusual for high rate PCM. Bass was

large and a little grumbly though.

LP came over well, from our Ortofon 2M Black cartridge, sounding every bit as good as the digital sources, except with slightly leaner bass than I am used to. It was still a creditable performance though, with an easy clarity and good focus, surprising from a giant AV receiver.

The Onkyo's generous bass gave 'Whole Lotta Love' a firm underpinning when Bonham got going, and cymbals had a sonorous ring to them, listening to Radio 2 on VHF/FM. With plentiful bass, sweet treble and fine clarity this really is a good tuner section, in line with quality elsewhere.

The big Onkyo always possessed an easy clarity and good focus, plus generous bass. It provides great quality from all sources and impressed me in every area. It's a very tough act for its rivals to follow.

Horizontally aligned loud-speaker sockets are colour coded, Fronts red/white, Centre green, Surrounds grey/blue, Backs brown/buff and Onkyo supply colour coded labels for the leads to simplify hook up, avoiding channel connection error. HDMI inputs and outputs are at top, and SIPDIFs at left.



VERDICT ●●●●●
Great quality all round, and wonderful sound too. A really well worked out package that will delight.

ONKYO TX-SR876 £950
Onkyo UK
+44(0) 1494 681515
www.onkyo.co.uk

- FOR**
- generous bass
 - excellent in every area
 - good LP sound quality
 - excellent with SACD
- AGAINST**
- unlovely appearance
 - big and heavy

MEASURED PERFORMANCE

The TX-SR876 delivers a massive 170 Watts into 8 Ohms and 290 Watts in 4 Ohms. As most loudspeakers have 4 Ohm bass units this is what you can expect, which over seven channels amounts to 2kW, the SR876 has massive power capacity. Distortion levels were very low at 0.013% into 4 Ohms at 10kHz and 0.016% at -1dB below full output. With Pure Direct selected to cut out the ADCs, bandwidth extends to 100kHz (-1dB). The amp section measures very well and should sound smooth and big hearted.

The VHF tuner was flat to 12kHz before a 19kHz pilot tone filter rolls output down, so will have an even tonal balance. Distortion was low at 0.1% at 50% and just 0.15% at 100% mod. via L+R on stereo. With full quieting at 850uV (p.d.) from the aerial and a good if not wonderful -66dB hiss level above this threshold, the tuner is a good one.

Fed a digital signal from CD (16bit/44.1kHz) through the optical input, frequency response was flat to 21kHz and distortion low at 0.22% - good figures. Via HDMI 24/192 PCM from DVD & Blu-ray extended bandwidth to 40kHz (-1dB) and lowered distortion to 0.15% at -60dB, again good figures, if not the best. DSD code from SACD managed 43kHz (-1dB) and 0.12% distortion at -60dB, with DSD direct selected in the setup menu. This improves slightly on PCM, as it should.

The TX-SR876 measures very well in

all areas, and is exceptional in some. It is well honed in every aspect of performance, measurement shows. NK

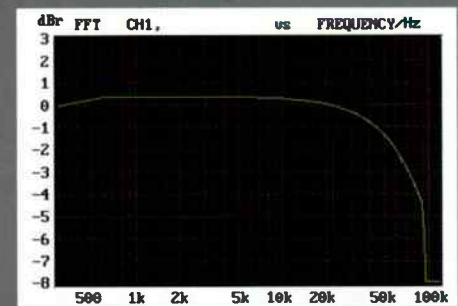
Power 170 Watts
Frequency response (A/D, Direct) 2Hz-23/100kHz
Separation 84dB
Noise (A/D, Direct) -90, -100dB
Distortion 0.013%
Sensitivity 300mV
Damping factor 42

CD
Frequency response 2Hz-21kHz
Separation 89dB
Noise -101dB
Distortion (-60dB) 0.22%

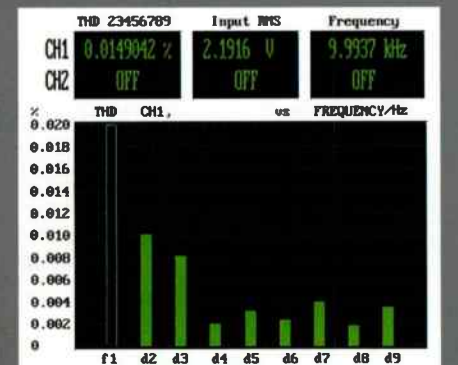
Disc (LP)
Frequency response 8Hz-25kHz
Separation 68dB
Noise -77dB
Distortion 0.02%
Sensitivity 3.3mV
Overload 100mV

VHF TUNER
Frequency response 10Hz-12kHz
Stereo separation 51dB
Distortion (50% mod.) 0.1%
Hiss (CCIR) -66dB
Signal for minimum hiss 600uV
Sensitivity (stereo) 48µV

FREQUENCY RESPONSE, 24/192



AMPLIFIER DISTORTION



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1688 Signature

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World Radio History

Be afraid - AV may be communicable from receivers to humans, much like BSE is from cows. Well, that's what I started to believe at the end of this group test when I thought I may be going mad as SACD played perfectly through the Marantz SR6003 one minute, reverting to the rear channels playing through the front loudspeakers the next, then finally falling mute and not playing at all! Difficult at the best of times, they're a frustrating box of tricks to handle when they start playing up like this, following no logical pattern as some form of madness seemingly sets in somewhere.

In such cases, go to the last page of the handbook and look for the bit where they admit that if it all goes pear-shaped, press this button, along with that button, offer up a prayer to the god of Digital Signal Processing – and you may get lucky. I didn't with the Marantz: its fault was persistent. It would not recognise SACD after playing PCM from CD, for example, unless I first played our two channel Yola SACD, whereupon it would recognise the DSD stream and lock on correctly and then play other SACDs!

So is the SR6003 a duffer? Our sample *may* have had a firmware fault, for the other side to the coin is that out of choice, on the basis of sound quality, I use a Marantz SR8002 at home and have never suffered such a problem when feeding it DSD over an HDMI connection from an Oppo DV-980H DVD player. The SR8002 acts as my AV benchmark and suffers the heavy usage only a reviewer metes out - being used in all modes, plugged and unplugged repeatedly and overloaded to cut out when the Oppo occasionally squirts through switching transients whilst volume is up. And it still works brilliantly.

By an easily perceivable margin the SR6003's amplifiers were the best of the group in this test. Cohesive in a way the others were not, drums sat on the same stage as the other instruments it seemed, where this was questionable through the other three models. The Marantz had superior midrange dynamics and insight, was detailed and finely timed at low frequencies so the thwack of a stick against drum skin was concise and beautifully conveyed. I would rate the SR6003 amplifiers ahead of many of those in independent hi-fi amplifiers and have no criticism to make in this area.

Both CD and higher rate PCM

(24/96 and 24/192) from Blu-ray and DVD-A sounded very good through the SR6003, much of this being down to the amplifiers. Bearing in mind few people will be expecting to play digital SACD code through their receiver, most users would never encounter the peculiar difficulties I grappled with. As such, in strict sonic grounds, this is the winner and by a clear margin in my view. I really enjoyed listening to the SR6003 and both visually and operationally it was

brightness, only hardening up a little in the upper midrange at times. With a peculiar ability to push out strong subsonics, the Yamaha struck me as ideal for classical music and very good for Rock also, if a little less viscerally engaging than the Marantz or Onkyo.

I'm sorry to say that NAD's T755 trails behind the others of the group by a long margin. Lacking audio processing from an HDMI link, it cannot process DTS HD Master Audio or Dolby TrueHD sound

"despite what the snobs would have you believe, AV receivers are not all bad, and on hi res source material can be downright impressive..."

superb, bar that one foible.

Close on its heels is the vast, quirk-free and easy on the ear Onkyo TX-SR876, complete with phono stage. Onkyo are AV market leaders in the U.K. for good reason. Their receivers do work incredibly well and I thought the TX-SR876 was impressive in every area. Its bass may be a little heavy and detached, and the midband less grippingly revealing than the Marantz, but it has a sweet air about it and plenty of bass oomph to underpin musical proceedings. LP played very well and the VHF tuner was delightful. So, the Onkyo is a class

tracks from Blu-ray and is purposed for DVD, being coupled digitally via outdated S/PDIF. Sound quality wasn't impressive and a drone from hum harmonics through the tuner was inexcusable. Frankly, I wouldn't expect this from NAD - especially as the company is very strong with hi-fi stereo amplifiers and tuners.

So, be warned that AV can drive you mad. But on the edges of madness lies pleasure, gained when you have a fine AV receiver that works properly. If you're an audiophile with a serious love of music DVDs, for example, you'd be



product that gets the best from all formats and will delight. On balance, it has to be the best package of the group.

I was happy with Yamaha's RX-V1900 as it offers an easy alternative to the others at a bargain price. It lacks sharp treble or any form of

wrong to dismiss products such as this outright. Despite what the snobs would have you believe, they're not all bad, and on hi res source material some can be downright impressive in both stereo and surround modes. The quality is variable though - so as ever try before you buy!

4 on the Floor

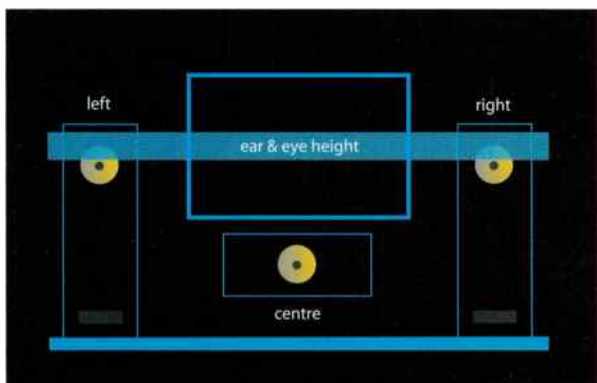
Forget 5.1 channel and all the problems it creates - just change down a gear to 4.0 to enjoy serious surround-sound, says Noel Keywood...

To most people, having four loudspeakers behind the settee and three in front is conspicuous madness, and AV receivers are its standard bearers. This is Home Cinema though; AV receivers also handle all forms of audio well – and you don't need seven loudspeakers. In this feature I will look briefly at the issues, and why AV receivers can make a lot of sense for those who enjoy music, from Rock to Classical, on LP through to Blu-ray. Only an AV receiver can handle them all, as well as movies of course.

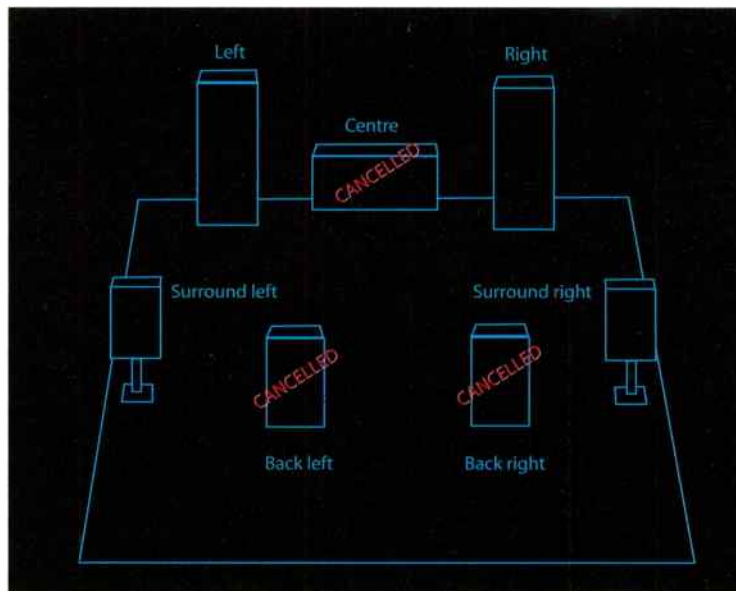
NUMBER OF CHANNELS

Home Cinema was conceived to support DVD, whose soundtrack comprised five audio channels and one low frequency effects channel, mimicking the arrangement used in cinemas. At front lie Left and Right loudspeakers in a normal stereo pair, and between them lies a Centre loudspeaker, originally to lock dialogue centrally under the screen and close to the image for those in the cinema audience sitting at far left and right. At the rear in domestic 5.1, lie Left and Right Surround loudspeakers.

A specs. war has pushed the channel count to 7.1, the extra two channels feeding Back loudspeakers. The signal to them is synthesised from the Surround loudspeakers, because 7.1 recordings do not commonly exist, nor are they likely



The Centre loudspeaker problem: it must go under the TV, putting vocals, drums and instruments close to the floor...



For audio use, a surround-sound system needs just four loudspeakers; backs and centre are not strictly necessary...

to. The Backs just fill in the rear sound field, but they still demand extra power amplifiers and cables of course.

Seven loudspeakers and a subwoofer for explosions are unnecessary for music quite frankly - and also completely domestically unacceptable to most people, especially in crowded Britain. Manufacturers are aware of this so most receivers can be reconfigured in their set-up menus to alternative arrangements. The most common is to reallocate the Back channels to second room use, or to bi-amping front Left and Right loudspeakers. This can only be done with bi-wirable loudspeakers though, where it brings about a small improvement in quality.

In most homes, the only position for the Centre loudspeaker is below the TV – but this is a *bad* position for high quality music reproduction, channeling lead singers, drums and centrally placed instruments through a small loudspeaker close to the floor. It may be okay for cinema dialogue of course, but it certainly isn't for music. Worse, it commonly produces centre channel dominance, or Mono, which is an unfortunate contradiction to what surround-sound is meant to be about!

The simple, convenient solution to this is *not* to use a Centre loudspeaker, switching off the Centre channel in the set up menu. This directs the Centre signal to Left and Right channels equally, resulting in normal stereo with its phantom centre image.

Eliminating Back and Centre loudspeakers, and making the rear surround speakers small full range hi-fi jobbies, like Q Acoustics' 1020iis (£120) for example, results in a surround-sound system that is little more intrusive or costly than a stereo system. Cabling can be the biggest headache, as a door may be in the way to one of the rear 'speakers, forcing a longer run around the other side of the room. A Quadraphonic system like this handles video soundtrack well.

In a system using full range hi-fi loudspeakers, for music a subwoofer becomes completely unnecessary. Specifying the Front and Surround loudspeakers as Full Range in the receiver's set-up menu, and subwoofer as Off eliminates bass management, putting all frequencies, including lows, through the four loudspeakers. You will lose some subsonics from film soundtracks, so dinosaurs will develop a lighter step,

	SPEAKER	SIZE
THX SPKR	:	NO
SUB W	:	NO
FRONT	:	LARGE
CENTER	:	NO
SURR.	:	LARGE
SURR. B	:	NO
SURR. B SIZE	:	***
LPF/HPF	:	80Hz
BASS MIX	:	***

Just say NO in the Speaker Size menu to get 4 channels!

but does this matter when listening to your Sex Pistols CDs? There is usually little of consequence in the LFE channel of music discs; what to put there is an artistic decision made by the surround-sound mixing engineer, and indeed LFE is often ignored.

FORMATS

This is where surround-sound falls into a horrible tangle of obscure technologies, from DTS HD Master Audio through to THX Neural surround-sound. They can be split up into simply understood functional groups though, in each of which you will find Dolby, DTS and THX with competing systems.

One group "compresses" digital music down to consume less storage space, and run at a slower data rate, because of DVD's limitations. Dolby Digital surround-sound was most popular, but DTS arose on the promise of better sound quality than Dolby, which gave rather insipid dynamics. Confusing here is the concept of 24/96 high resolution compressed streams such as DTS 24/96, and recent Dolby Digital Plus which uses more sophisticated compression algorithm. These offer better sound quality without taking up too much disc space.

Most space consuming of all is basic uncompressed PCM (Pulse Code Modulation) digital code, but it gives best audio quality (ignoring SACD). But native PCM runs at a very high data rate, no less than 27Mbps to carry Blu-ray's top spec of 6 channels running at 24/192. One hour of this demands 12GB of storage, half of a single sided Blu-ray disc! AV receivers can play this from HDMI linked Blu-ray players and a few music-only discs already exist (see Grammy Award winning Norwegian Music label www.2l.no).

When hours of video must be stored as well, Dolby have come up with TrueHD and DTS with HD Master Audio. Both losslessly pack PCM to roughly halve storage space and data rate. So when you see either logo on a Blu-ray disc, what you are getting is top quality uncompressed digital. Nowadays, 24/96 is quite common and it gives better sound than CD.

Another group of technologies are schemes to derive surround-sound from stereo. These allow CD and TV to give surround-sound. Some CDs respond well to this, and often TV (but not LP). Dolby ProLogicII and DTS Neo6 are two such schemes.

Finally, there are a whole slew of effects such as Stadium, Church, Night Club and what have you, best ignored if you're an audiophile!

AV receivers purposed for quality audio replay must have all proprietary signal processing technologies onboard if they are to play everything - namely LP, CD, DVD, DVD-A and Blu-ray. Most receivers have a VHF/FM and Medium Wave AM tuner on board too. The Onkyo TX-NR906 I reviewed last month can also play computer files through a network connection, and receive internet radio.

A major point to note is that at present, only AV receivers are equipped to play high resolution digital audio, of 24bit resolution at 96kHz and 192kHz sample rates. This alone means they can deliver impressive sound quality.

Now that DVD-A and SACD are redundant formats, only Blu-ray is left to carry high definition digital audio, but as yet Blu-ray Profile 3 audio discs, playable without TV menu navigation, do not exist. However, the catalogue of music concerts on Blu-ray with high resolution digital

Solemn Hour' a trailer for Within Temptation's Black Symphony Blu-ray).

How do you play Blu-ray discs alongside CDs, video DVDs, audio DVD-As and SACDs through an AV receiver? At present only by using a Swedish Oppo player, the excellent DV-980H that I use, available direct from Oppo by mail order, or from www.crtprojectors.co.uk, price less than £200. This plays everything except Blu-ray discs, so a Blu-ray player is also necessary, like the inexpensive but very good Samsung BD-P1500, piled high and sold cheap for £155 in HMV. Both operate effectively as HDMI connected transports. AV receivers commonly have 2-4 remote control switchable HDMI inputs to cope with two players.

Most Blu-ray players cannot play either DVD-A or SACD, but Denon will release their high-end DVD-A/UD Blu-ray transport so equipped in March 09 and Oppo will also release a Blu-ray player in March that can spin all silver discs, then one player will do it all.

The S/PDIF digital output of older DVD players will output CD and Dolby Digital (i.e. compressed) surround-sound, but often nothing else. Newer DVD players like the Oppo DV-980H output 24/96 and 24/192 stereo (but not surround-sound) via S/PDIF, but as these players come with HDMI outputs

"centre channel dominance, or Mono, is an unfortunate contradiction to what surround-sound is meant to be!"

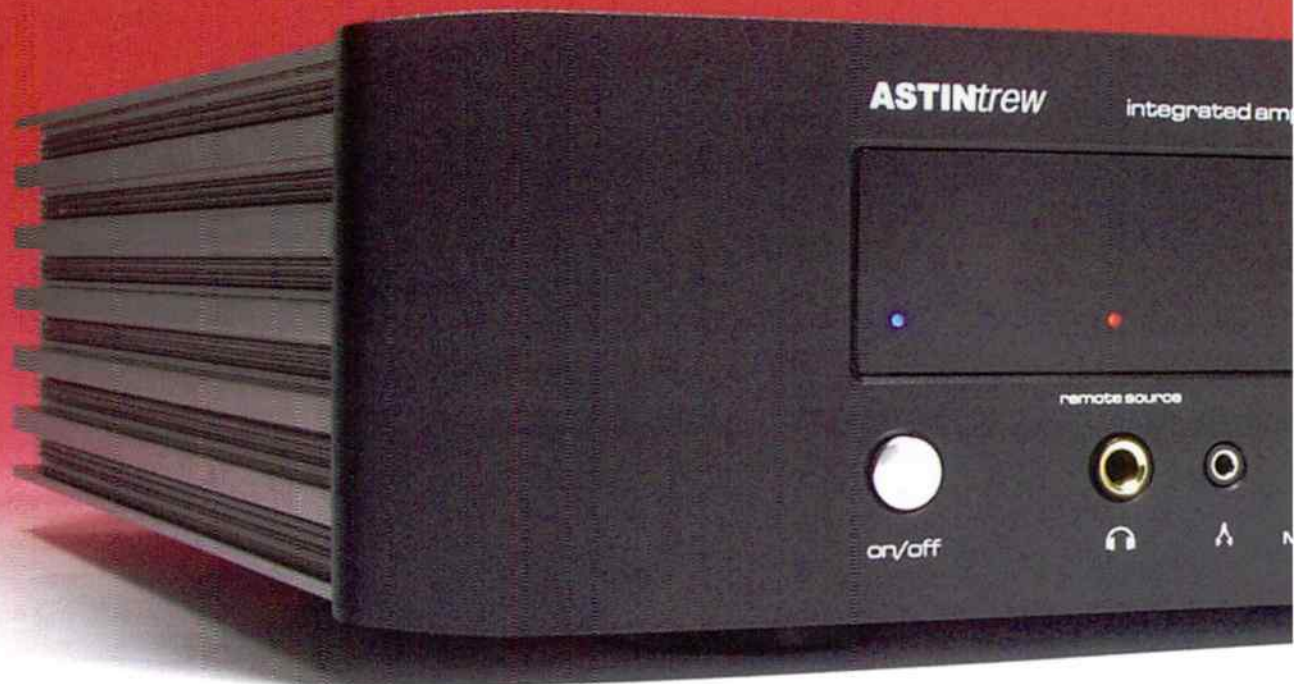
audio, often in high quality 24/96 PCM code, is expanding, and this includes Classical works. To see what's available go to www.blu-ray.com and select Genre: Music, at screen left. There are 400 titles, including much Classical. Rock isn't so well represented, but what does exist can be quite impressive. Excerpts occasionally make their way onto YouTube, where they can be previewed for free (check out 'Our

that replace S/PDIF, this is best used.

With so much processing onboard and the need to appeal to audiophiles to widen their popularity, AV receivers have become complex and fiddly to use. Once set up though, with a little practice they can be mastered and have a lot to offer any music lover, because sound quality nowadays is very good - especially if you stick to four loudspeakers on the floor!



Oppo DV-980H DVD player also plays CD, SACD and DVD-A...



Trew Faith

Having established a bridgehead in the affordable audiophile market with its popular At3500 CD player, Astin Trew is hoping the matching At2000 integrated amplifier will emulate its success. David Price listens in...

It's not every day that a mainstream specialist hi-fi brand launches in the UK, but so it was that in 2005 we witnessed the birth of Astin Trew – the brainchild of Michael Osborne. With UK design and Chinese manufacturing, the new company very much followed the paradigm of mid-noughties specialist audio - although this is surely now being tested with rising labour rates in China and a falling pound, of course.

Still, these are but two of the many hurdles Michael has doubtless faced making his dream become reality – and so far he has done well considering the stiffness of the competition and the fact that specialist two channel hi-fi wasn't exactly flavour of the month, even just a few years back (remember the AV boom? Ask your father where he was at the time!).

The At3500 CD player arrived like a thunderbolt from the sky, surprising yours truly by no small degree. Whereas there had been a trend for silver disc spinners to get ever cleaner and more forensic sounding, the new Astin Trew put on

a pair of flared jeans, a belt with a big snake buckle and a Lou Reed T-shirt on its way back to the seventies. It was like the eighties had never happened – no forensic analytical digital here – rather we got what is without doubt the warmest, fullest and most euphonic sounding silver disc spinner under £1,500 (or more). It didn't quite pass master on the low frequency front, but the way it strung together the big musical picture was (and is) exceptional.

With this in mind, the £1,349 At2000 integrated has much to live up to. Astin Trew say that they, "pay particular attention to the correct tonality of instruments and tangible sound stage - a sound stage that sits between and behind the speakers, rather than in front". No mere PR puff this, as it describes two of the key characteristics of the aforementioned CD player well. To translate this to the amplifier domain, the company has chosen to develop its hybrid MOSFET (single pair, 'horizontal' type, as they sound better and are more robust, it's claimed) power amplifier design stage, first used in the At5000 power

amplifier. It incorporates a solid-state Class 'A' biased preamplifier stage, in combination with a ladder resistor network volume control.

Power supplies are critical to achieve a good sound, and the company has paid those of the At2000 serious attention, opting to use Never Connected power supply designs for several years, and so we find the latest generation employed here. In this case, it supplies power to the preamplifier, all balanced signal circuitry, headphone amplifier and combining sub-bass buffer amp. A high quality XLR balanced input is offered as standard, with "specialist studio quality balanced signal op-amps" fitted (the circuit being developed by Bill Whitlock of Jensen Transformers) and powered by Never Connected supplies. The result is that via good quality balanced cables,





Astin Trew says the amp will drive very long lengths of cable for multi-room use.

Indeed, the At2000 integrated amplifier is not an out and out minimalist design – there's a range of facilities, all controllable via a high quality metal remote control or the front panel. A switched input to use the At2000 power amplifiers from an outside volume controlled source is fitted, allowing incorporation into A/V surround sound set-ups, and there's a buffered mono output for active sub bass. There are two front panel headphone sockets (6.3mm and 3.5mm), and a 3.5mm 'MP3' input. Switchable mute and an alphanumeric display complete the picture.

Stylistically, I do find the '2000 something of a mixed bag – especially placed beside that paragon of aesthetic purity, the Naim Nait XS. The black front panel sits awkwardly with the silver casework (so I'd suggest getting the silver front panel version), and the exposed screw heads on the top of the case begin to look cheap when sitting next to rivals from Naim, Cyrus and Sugden. Likewise, the switchgear does the job okay but is less than pleasant to use, and the display is visually unimpressive. None of these were major considerations with cheaper Astin Trew products, but at nearly £1,400 they're in a different market sector, with higher standards of ergonomics and visual presentation...

SOUND QUALITY

It would have surprised me if this had been a spry and over analytical device – because that is not the way this company's products are voiced. And so it is with the At2000

"a big hearted and expansive performer, with a gently musical nature..."

integrated; this amplifier errs – just – on the warm side of neutral, sounding in some respects eerily similar to the CD player despite it being a completely different type of component.

Badly Drawn Boy's 'About a Boy' original sound track is about as good as a modern vinyl pressing gets – beautifully open and three dimensional with a truly varied tonal palette and lightning-fast transients, it represents the state of this decade's LP mastering art as far as I am concerned (and the music's great too). It's always a great test of an amplifier, to hear just how much (or little) this massive recording is compressed and sullied by whatever is entrusted to play it. Well, it certainly spotlighted the Astin Trew's nature very quickly – and I am pleased to say that it is a generally benign one.

Here we have a big hearted and expansive performer, with a gently musical nature. Rather like a unipivot tonearm, I found the At2000 not beyond reproach, but what it did do well, it did very well indeed. Musicality is the key here; those big plaintive piano parts flowing through the first side of this disc were carried with all their power and emotional purchase intact. Likewise, this amplifier proved more than able to express Damon Gough's

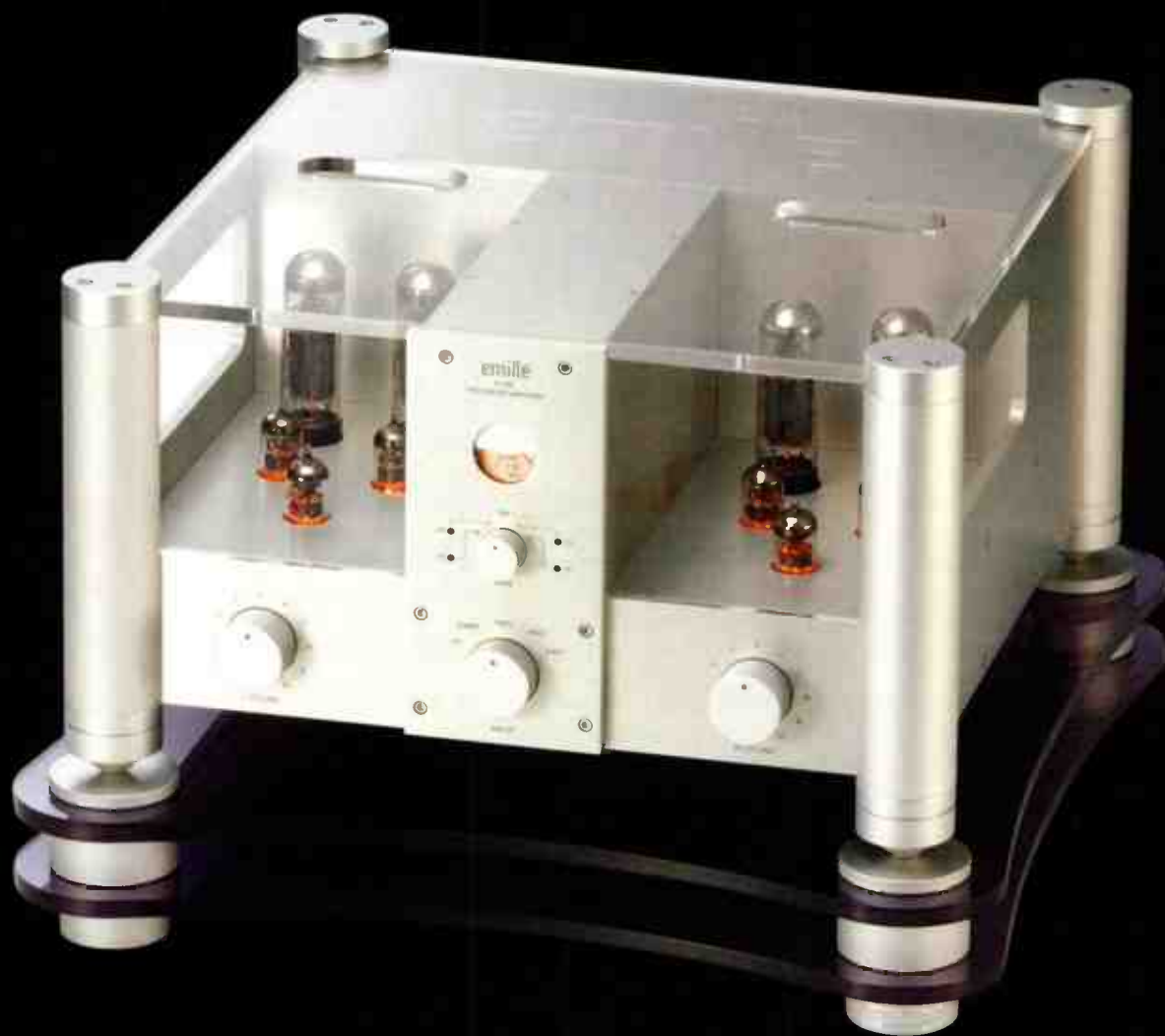
intricate guitar work, capturing both the leading edge of his beloved steel string classical guitar and a good deal of the instrument's body too, with real skill. Best of all was the way all this was strung together.

The David Ball-produced lost epic that is World of Twist's 'Quality Street' is another brilliantly recorded modern album, with a swaggering, stadium sound and true audiophile recording quality. 'The Lights' proved an excellent showcase for the At2000's big, beguiling sound – the amp giving a commanding rendition of singer the late Tony Ogden's superb vocals. Although this amplifier doesn't quite have the speed of Naim's new Nait XS, it showed that it could really pick up its skirts and run with



emillé

just for your musical bliss



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E-mail: info@emillelabs.com Web: www.emillelabs.com

suitably expansive recordings. Here we had a good degree of subtle detail, quietly but convincingly bristling forth from the Astin Trew. By comparison, the Naim would spell things out just a little more clearly for you, giving a more detailed and grippy sound, but lacking the laid back ease of the Astin Trew at the same time.

ZZ Top's 'Legs' showed this amplifier's emotional commitment – again constructing a capacious soundstage and a generous bass sound (courtesy of those old analogue synthesisers and plain old bass guitar). Tonally, it has a decently wide palette at its disposal, but there's definitely a degree of colouration. Switch to Sugden's A21a S2 for example (£1,267) and you notice there's an obvious haze across the upper midband of the At2000 that simply isn't there with the Class

little imprecise and veiled – strangely akin to the At3500 – although still pleasantly silky. The hi hat work on 'Lasana's Priestess' confirmed this, although I moved to Alphonse Mouzon's 'By All Means' to get a further gauge – as this Donald Byrd recording isn't the best in out-and-out audiophile terms, great as the music may be. Sure enough, Mouzon's stickwork on this 1980 jazz-funk classic (featuring Herbie Hancock, Hubert Laws, Michael Brecker and Freddie Hubbard) was enjoyably expressive but not rendered as delicately as the rival Sugden. Still, I found the track most enjoyable, the At2000 showing off its nicely fluid and bouncy bass to good effect, along with its barrel-chested physical presence – something the Sugden could not quite emulate.

CONCLUSION



A Sugden. Likewise, Naim's Nait XS also has some distinctive colouration, but it's almost velvety and a little more agreeable than the slight 'fug' across the Astin Trew's upper mid. Still, every amplifier at this price (and beyond) is blessed (or afflicted, depending on your point of view) with some sort of colouration and the upside is that – unlike the glassy clear Sugden – it never pushes the system into brightness.

Donald Byrd's 'Lasana's Priestess' from his classic early seventies BlueNote waxing 'Streetslady' was fun through the Astin Trew. Whilst it can't muster the clarity of the Sugden, it can push out considerably higher levels and an altogether more muscular bass. I was also again impressed with how it proffered a particularly wide soundstage; there was some degree of flattening of the depth perspective, so some of the far-back instruments moved a little forward to greet me, but this never changed to stridency. Rather, there was a sense that the Astin Trew shifts the recording's wares up to the front of the shop window so to speak, placing everything on full view and nicely on display.

One disappointment was the treble quality, which lacked the filigree detail and atmosphere of the Sugden A21a. Instead, it sounded a

A fine amplifier this, but I wasn't quite as convinced by it as I have been by the At3500 CD player. Funnily enough they share a good deal in common, from a fairly warm bass (although the CD player is definitely the stand-out in this respect) to an expansive if slightly two-dimensional soundstage and a silky if rather summary treble performance.

But the problem for the At2000 is its price rivals – the Naim Nait XS and Sugden A21a S2, both of which are brilliant and distinctively different from one another. The Astin Trew is neither, and not quite a good enough working compromise either. The At3500 CD player is very special, doing a 'party piece' that no other rival can do at the price (or near it), but the At2000 doesn't stand out from the crowd in the same way. Probably the closest to it in nature is Leema's Stream integrated (£1,169.56) which has a fractionally narrower soundstage,

PRO PLUS
AstinTrew offers an optional package of selected component upgrades to the At2000 for an additional £196, bringing the retail price up to of £1,575. The 'plus' upgraded amplifier will be supplied with its own 'At2000plus' manufacturers certificate and discrete identification badge on the rear face.

REFERENCE SYSTEM
Sony TT-S8000/Origin Live Silver/Ortofon Rohman turntable
Icon Audio PS3 phono stage
Sugden A21a S2 integrated amplifier
Yamaha NS1000M loudspeakers
Mission 752 loudspeakers

yet is considerably less opaque across the midband than the At and more sumptuous in the bass.

Of course, it's vital to get the right amplifier for your system, so I'd still recommend an audition, especially if you have the At3500 CD spinner (with which I suspect

it will be a particularly synergistic combination), but it's fair to say that competition is very strong at this price point and the stock

At2000 really has its work cut out. Interestingly however, Astin Trew have just announced a 'plus' package of choice passive component mods for under £200; this could really push their mid-price amplifier out in front, so watch this space for a review soon.

VERDICT ●●●£
Big hearted, musically satisfying performer but lacks clarity, precision and punch of key rivals.

ASTIN TREW
AT2000 £1,349.60
Air Audio Ltd.
+44 (0)1491 629 629
www.airaudio.co.uk

- FOR**
- easy, beguiling musicality
 - capacious soundstage
 - features and flexibility
- AGAINST**
- opaque upper midband
 - unatmospheric treble
 - styling, finish, feel
 - very stiff competition

MEASURED PERFORMANCE

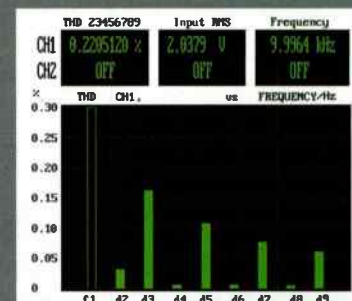
The At2000 output MOSFETs deliver 66 Watts into 8 Ohms and 90 Watts into 4 Ohms, modest amounts but still enough for very high volume with today's high sensitivity loudspeakers. The At2000 has very distinctive distortion characteristics, with strong second harmonic at low frequencies and odd order harmonics at high frequencies, with a steadily declining structure our analysis shows. Distortion levels were high at high output, around 0.3%, but this was mainly innocuous sounding second harmonic. I suspect lowish levels of feedback have been applied. Damping factor was a reasonable 39.

Bandwidth was unusually wide, reaching 227kHz no less (-1dB), a lot different to Naim's bandwidth limited 20kHz figure for example. Low frequency output extended down to 12Hz.

The At2000 is an unusually engineered amplifier; it even uses valves in a regulated power supply. It works well and will likely have a distinctive sound. NK

Power	66watts
CD/tuner/aux.	
Frequency response	12Hz-227kHz
Separation	82dB
Noise	-99dB
Distortion	0.12%
Sensitivity	300mV
Damping factor	39

DISTORTION



C'est Chic

Adam Smith enjoys the sleek sound and cool looks of YBA's YC201 CD spinner...

The relationship between the British and the French has not *always* been completely harmonious, and for that we have to thank various assorted historical events.

Still, this is all water under the bridge now, and so it puzzles me why we don't have more Gallic hi-fi brands on sale here, just twenty two miles away from their country of manufacture. Aside from the likes of Focal JM Labs and Micromega, hardly any French hi-fi has ever made it across the English Channel.

This is a shame as, in engineering terms at least, whilst it's true that Continental designs can have their 'quirks', some of the lateral thinking applied to solve troublesome problems has been truly inspired in the past, as any classic Citroen fan will know. However, it appears things are finally changing, as Cabasse have announced that they will be exhibiting at the Bristol Sound and Vision Show this year, and I have been spending the last few weeks in the company of YBA's latest CD player, the YC201.

YBA are named after the initials of their founder, Yves Bernard André, and the company was founded in 1981. Their aim has been to gain the ultimate in sound quality but above all to faithfully reproduce the emotion in the music played, they say. As Yves-Bernard himself admits, "technology is not an end in itself. The pleasure found in listening must be our only guide". As a result, YBA state that all of their equipment follows four main goals, namely musical quality, durability, purity and evolutionary ability.

Currently, YBA make four main ranges of equipment, which they refer to as their 'instruments'; the Signature, Passion and Design ranges, and it is from the latter that the YC201 hails, alongside a stereo amplifier and tuner,

DVD player home theatre processor and multichannel power amp, and a Music Server.

Personally, I feel the Design range is aptly named, as the YC201 is stunning in the flesh, with the design's minimalist look apparently "inspired by the famous architect Ludwig Mies Van der Rohe". The brushed aluminium finish is mostly black, with a sculpted silver band around the bottom and you have to hunt for any sign that the thing is actually fixed together with screws. Build quality is superb and the whole thing feels solid and sturdy. Even more encouragingly, the remote handset is not an afterthought, but a chunk of veritable metal loveliness, arriving in its own little presentation box. Frankly, the whole experience is only spoiled when you open the disc tray, and a flimsy plastic item that looks like it came straight out of a PC wheezes and groans its way out to greet you - doh!

In typically mysterious Gallic fashion, the front panel switches are unlabelled, only gaining idents when the unit is powered up and the big, clear display above is active - then the appropriate legend appears above each control. The nine buttons cover play, pause, stop, open/close, track skip and search and repeat and it takes a little getting used to the symbols and layout, but it's quite a fun learning experience all the same.

The YC201 offers digital and analogue outputs, both through phono sockets, plus a trigger socket and RS232 interface for control by an external driver. Internally, the machine has 24/192 upsampling ability and an "UltraLow Jitter" design ethos utilising a high-performance Wolfson WAM8740 DAC. Unusually, the YC201 outputs only 1.35V rather than the CD standard 2V, which may be something to watch out for if you run a low-gain amplifier setup. Finally, the YC201 weighs in at 15kg and measures 130x390x390mm so it is narrow but deep. This is something else to consider, as its depth meant it only just perched on my rack.

SOUND QUALITY

Well, there *had* to be a quirk didn't there? I soon found it; namely some loud distortion when I returned to 'play' mode after fast searching through a track, which made me utter a rather surprised "sacre bleu!" Fortunately this appeared to be an anomaly that did not return after the player was thoroughly warmed up and I was greatly relieved, as I would have wanted nothing to spoil the rather lovely performance the YC201 turned in. This is quite a different sounding player to many on the market, certainly at its relatively modest price level. If you head for it looking for razor sharp transients, sizzling treble and visceral punch by the bucket load, then it may not be for you. However if you effectively want a roaring log fire of a CD player, where the listening experience is akin to relaxing in a hot bath whilst a willing lovely massages your temples [I say, steady on Adam old boy, we're not in France now! *Ed.*], then this is exactly what you've been looking for.

Do not get the impression that the YBA is a soft, wallowy and soggy performer, as it isn't. What it is though, is a CD spinner that turns in a fluid, effortless and, above all, emotive performance: one that is very unusual at the price. Most striking is across the midband, where the YC201 serves up plenty of detail, timbre and fluidity but seemingly without the glacial forthrightness that can often plague CD.

Lead singers were spotlighted beautifully centre-stage by the YBA, surrounding them with instruments, although it did lack the pinpoint precision of placement that one or two other players at the price point have. However, what this meant was that there was a lovely swathe of music before me, with the lead action standing well clear. A perfect example was one of Within Temptation's





VERDICT ●●●●●

Warmth, insight and a sense of unruffled ease make the YC-201 an endearing musical performer.

YBA YC201 £890
YBA
 ☎ +33(0)160 12 51 00
 www.ybadesign.com

- FOR**
- styling and ergonomics
 - engaging warmth
 - fine upper bass detail
 - central image solidity

- AGAINST**
- soggy low bass
 - nasty disc drawer

quieter moments, namely the track 'Never Ending Story' from the 'Mother Earth' album. Here Sharon den Adel sang right in front of me, with her backing piano's notes shimmeringly vivid – I could easily hear the hammer strikes from the instrument as each one fell on its associated string.

This departure from the conventional CD sound continued at the extremities of the spectrum as well. At the top, the YBA is very well detailed, but it is smoother, more effusive and rather less stark than most of the competition. On the odd occasion this did mean that a hard cymbal strike was ever so slightly muted, but generally it added a further sense of involvement and languid fluidity to proceedings, and certainly never came within a country mile of sounding harsh. When a high hat was struck, or a triangle tapped delicately at the back of an orchestra, the YBA had no trouble in picking out the event, but it equally never took the opportunity to assault the ears – something that can all too often be a feature of less couth designs.

Down at the southern end, this player also offers bass weight and low end solidity that is very rare at the price. Unfortunately this did not come without a small penalty and I felt that the YBA could occasionally be a little too thunderous, especially when synth bass lines were involved, making these become a little indistinct at times. As an example, the processed bass notes from Mono's 'Life in Mono' went massively deep, but lacked the control and tautness that I am used to from this track.

Equally, the deeper notes from David Crosby's 'Hero' seemed to come out in distinct events – slipping the same CD into my reference Marantz CD94 revealed a proper tune at the bottom end, rather than a series of individual notes, which was what the YC201 seemed to suggest was present.

On the whole however, electric and acoustic bass lines were confident and generally nicely rhythmical; the YC201's fine upper bass resolution capturing the essence of bass instruments very well and more than able to carry a tune. Harry Connick Jr's '(If Only I Could) Whisper Your Name' boogied along very nicely indeed, the YBA making light work of the bass guitar that underpins the track. Equally my traditional bass clarity and tunefulness test, namely the intro to Simply Red's 'Sad Old Red' went into the YBA's drawer and the result was one of the best renditions I have heard.

CONCLUSION

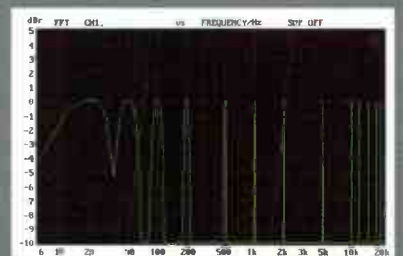
The YBA YC-201 is an unusual Compact Disc player, for sure. It forgoes the traditional qualities of CD slightly, by not being quite as hard, fast and precise as most other players and this could have

easily resulted in a dull and sluggish result. Fortunately, YBA's impressive engineering clearly extends beyond the stylish casework to ensure that it does not, and the YC201 is one of the most emotive, engaging and musically satisfying players I can think of in the sub-£1,000 bracket. Perhaps the Gallic technological invasion of these shores has finally begun – and like fine wine and French cuisine, it is a life-affirming thing.

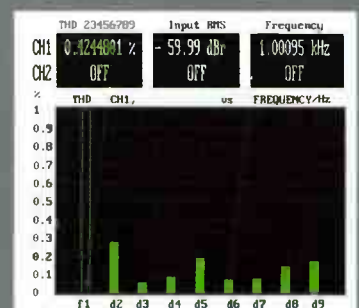
MEASURED PERFORMANCE

Frequency response of the YC201 measured absolutely flat from 2Hz up to 21kHz, our analysis shows. The player would not play our usual Denon test disc providing a convolved impulse response, so our analysis shows a more conventional fixed tone sequence. Distortion levels were low at higher levels but deteriorated as level decreased, a poor 0.42% distortion result at -60dB causing EIAJ Dynamic Range to come in at just 104dB, 8dB down on the best.	Separation (1kHz)	100dB
	Noise (IEC A)	-104dB
	Dynamic range	104dB
	Output	1.35V

FREQUENCY RESPONSE



DISTORTION



Separation figures were normal enough, as was noise. However, output was peculiarly low at 1.35V, meeting YBA's spec. – but this is way below Philips standard of 2V.

The digital output was not providing a signal the analyser could lock on to.

The YC201 was a little unusual in some areas and seemed disc sensitive but its upsampling may result in a decent basic sound quality. NK

The YC201 was a little unusual in some areas and seemed disc sensitive but its upsampling may result in a decent basic sound quality. NK

Frequency response (-1dB) 2Hz-21kHz	
Distortion (%)	
0dB	0.02
-6dB	0.009
-60dB	0.42
-80dB	3.2



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HiFi-World, July 2008

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 Naim CD5 CD player
 Quad ESL-57 (One Thing modified) loudspeakers
 Spondor S3/5R loudspeakers
 Chord Anthem 2 interconnects
 Chord Epic Twin loudspeaker cables
 Atacama HMS 1 loudspeaker stands
 Atacama Equinox XLPro SE rack

button on the A-S700 amplifier saw the overall quality of the presentation improve again, along with a distinct broadening of the soundstage whilst retaining separation. Pressing the amp's Pure Direct button cut out all of the excess noise on the amp, this time. From this point onwards, I left all of the buttons depressed!

Moving to the cultured tones of Carol Kidd's new album, 'Dreamsville', and the modern reinterpretation of the classic 'A Nightingale Sang In Berkeley Square', I could still discern a touch of brightness across the upper midband and treble, but this combined with sharp transients to make for a very crisply etched and propulsive rendition of the track. Despite the bass fractionally lacking control and possessing a little more 'bloom' than it strictly should have, the acoustic guitar was well documented. Stereo imaging was reasonable – if not pin-sharp - but here the Yamaha's treble performance was a joy, bringing attractively atmospheric reverb tails to cymbal strikes.

The Yamahas' success in the upper registers carried onto Black Dog's 'Parallel' from the album of the same name. A particularly pleasing performance, the Yamahas showed that they were more comfortable with the digital bass frequencies of this classic electronica piece than the organic complications of the double bass. Indeed, the wonderful instrumental separation that spread over

the impressive sound stage gave the album a rare sense of grandeur.

Of the two Yamaha units, I felt the CD-S700 to be the less neutral. It is the one that adds the bright tonality to the combo, whilst the A-S700 is actually quite smooth and rich sounding with a strong bass. For example, moving to a more expensive Naim CD5 CD player revealed the CD-S700 to be a little less controlled in the bass, and less accomplished at conveying timbral information from that difficult Carol Kidd track.

Whilst I tried this budget amp with my reference One Thing Audio modded Quad ESL57s, I didn't feel it was a particularly synergistic combination. The Quads told me a little too much about the CD source. However, I found the system suited the Spondor S3/5R standmounters [*Hi-Fi World*, December 2008] to a tee.

With a T&A G10 turntable, SME M2-9 arm and Audio Technica AT110E driving it. I found LP a pleasant experience, if not a spectacular one. The Yamaha was nothing if not civilised and balanced and, whilst it couldn't

compete with the reference Trichord Dino phono stage for dynamics and detail, it proved a capable and worthy feature at the price.

Similarly, a USB memory stick loaded with MP3 and WMA files proved rewarding, music sounding clear and spacious.

CONCLUSION

A nice pair, as the saying goes, and one that offers fine build, particularly attractive styling and decent sound for the money. Competition is tough at this price point of course, thanks to the likes of NAD, Cambridge Audio and now Arcam, but I feel these Yamahas are more than able to hold their ground.

The amplifier is the stronger of the two, but the pair work very well together and proved particularly accomplished partners for my reference Spondor S3/5R loudspeakers. Not quite impressive as a full size Yamaha grand piano admittedly, but an awful lot more affordable and almost as much fun to play.



VERDICT ●●●●
 Sleek, well made budget CD player with an enjoyably musical sound.

YAMAHA CD-S700 £399.95
 Yamaha
 ☎ +44 (0)1908 366700
 www.yamaha-uk.com

FOR
 - detail
 - musicality
 - build

AGAINST
 - well lit upper mid & treble

VERDICT ●●●●£
 Accomplished sounding, superb looking and well hewn do-it-all entry level amplifier.

YAMAHA AS-700 £499.95
 Yamaha
 ☎ +44 (0)1908 366700
 yamaha-uk.com

FOR
 - retro looks
 - clarity
 - dynamics

AGAINST
 - nothing at the price

MEASURED PERFORMANCE

YAMAHA CD-S700 CD player

Frequency response shows an unusual roll up at high frequencies, our analysis shows, measuring +0.1dB at 20kHz, small but 0.5dB or so more than most players, so the CD-S700 will sound bright and forceful in its treble. Otherwise, tonal balance is deadly accurate.

Distortion figures were normal enough all the way down its dynamic range and EIAJ Dynamic Range value of 110dB was good. Jitter was low at 10pS random across the audio band, and 80pS programme related on a -60dB, 1kHz tone

The CD-S700 will have strong treble but otherwise measures well. NK

Frequency response	3Hz-21.2kHz
Distortion	
0dB	0.001
-6dB	0.005
-60dB	0.224
-80dB	4.6
Separation (1kHz)	101dB
Noise (IEC A)	-127dB
Dynamic range	110dB
Output	2.15VA

YAMAHA A-S700 amplifier

The Yamaha produces 136 Watts into an 8 Ohm load and a healthy 225 Watts into 4 Ohms,

levels adequate to drive any loudspeaker to very high volume.

Distortion levels were low with little sign of the higher harmonics associated with crossover distortion and the coarseness associated with it our analysis at 1 Watt, 10kHz, shows.

The tone controls are interesting. Bass peaks and cuts below 200Hz only, so it truly affects only bass and not lower midrange. The treble control provides wide plateau lift and cut at low settings to alter tonal balance.

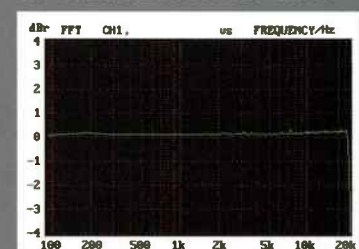
The phono stage was accurately equalised, but there is no warp filter so full gain applies right down to 7Hz, where warps exists, and cone flap will occur with warped records. Hiss was very low at -84dB and sensitivity normal at 4mV. So the phono stage measures well.

The A-S700 turns in a neat set of test figures and has no weaknesses. NK

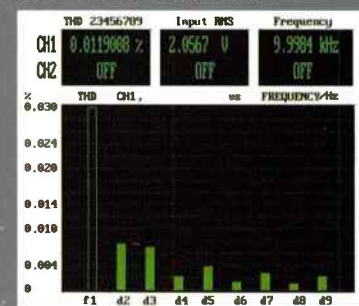
Power	136watts
Frequency response	2Hz-100kHz
Separation	60dB
Noise	-108dB
Distortion	0.01%
Sensitivity	220mV
Damping factor	54
Disc	
Frequency response	7Hz-60kHz

Separation	56dB
Noise	-84dB
Distortion	0.016%
Sensitivity	4mV
Overload	135mV

CD FREQUENCY RESPONSE



AMPLIFIER DISTORTION



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Reference Series

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- Balance, Mono, Equalisation defeat and Phase invert
- Balanced/single-ended analogue outputs
- Tape, USB, SPDIF and Headphone outputs

When used with Leema power amplifiers such as Altair or Hydra, Pyxis may be set to provide a fixed high-level output, enabling volume control at the power amplifier using LIPS.

This provides maximum resolution, dynamics and enhanced low-level detail at all listening levels.

Offering the ultimate in no-limits audio amplification, Altair monoblocks are *the* reference for high-end stereo and multi-channel audiophile applications.

Presentation is highly-refined and delicate even though massive power is on hand to ensure dynamics stay true to the most demanding recordings.

As with all Leema amplifiers, Altair takes absolute control of the loudspeakers to achieve a level of realism and musicality previously unheard.

The design uses a fully balanced 'bridge' topology to give minimum distortion and maximum headroom. Each amplifier offers two sets of WBT™ Next Gen™ gold-over-copper binding posts for bi-wiring.

Altair is fully LIPS™ compliant using Leema's new LIPS2 system and may be controlled from Pyxis or home automation systems. For installers, remote trigger facilities are available.



Altair specifications

Response	: 10Hz-100KHz +0.0/-3dB
Power 8 ohms	: 550 watts RMS
Power 4 ohms	: 1000 watts RMS
Power 2 ohms	: 1800 watts RMS (Short term)
Current 20mS	: > +/- 100 Amps
THD 1kHz	: <0.005% (200 watts 4 ohms)
Residual noise	: -96dB ("A" weighted)
SNR	: 135dB
Damping factor	: >250
Dims in mm	: 440 x 390 x 335 (w)x(h)x(d)
Weight	: 45kg each



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Plus Point

From the company that brought you the world's first DAB tuner a decade ago, meet the Arcam T32, the world's first DAB+ hi-fi separate. Steve Green tunes in...

Arcam has a long history with DAB, as it produced the world's first ever Digital Radio tuner, the Alpha 10, which celebrated its tenth anniversary last autumn. Now Arcam has managed another DAB first, because the T32 is the world's first DAB+ hi-fi design. However, because of the disappointing progress that DAB+ sales have made since the new standard was unveiled two years ago, which has mainly been due to the portable radio manufacturers' reluctance to switch their existing models over to support DAB+, we're still at least a couple of years away from seeing the first full-time DAB+ stations being launched in the UK, which rather dampens the impact of this world-first, really...

At least owners of the Arcam T32 won't have to worry about their tuner being made obsolete when DAB+ does begin to take over, though. And T32 owners living within a few miles of the Leicester Square DAB transmitter in London could actually sneak a listen to DAB+ today if they're lucky, because there's actually a DAB+ test transmission going out from there at the moment, although how long it'll be transmitting for is anyone's guess!

Digital is all well and good (at least if sonics aren't your priority), but FM still provides superior listenability compared to DAB, and so I was pleased to hear that Arcam has returned to implementing FM using analogue components, after it had provided FM using software-defined radio on its DT91 tuner, which didn't quite live up to the company's

usual high standards in sound quality terms. On the digital side, rather than jumping ship to Frontier-Silicon, which produces around 75% of all the DAB modules sold in DAB receivers in the UK, Arcam has stayed faithful to Radioscape, and the T32 uses the company's RS223 DAB/DAB+ receiver module, which means that in total the new tuner supports the DAB/DAB+ (Band III and L-band), FM with RDS and the AM radio formats.

Digital to analogue conversion on the T32 was handled by Wolfson's 8740, which is the same DAC chip that Arcam uses in its respected DVD players. The analogue output circuitry uses Burr Brown OPA2134 op-amps, and the tuner uses separate power supplies for the digital and analogue sections. All circuitry is fed from a toroidal power transformer and multiple low-noise regulated DC power supplies, and components are mounted on double-sided fibreglass PCBs.

Out of the box, the T32 was robustly built. On the front panel, the

to allow the attachment of Arcam's rDock or rLead, which are Arcam's iPod dock and iPod interface cable set, respectively, but which have to be purchased separately. The T32 is available in either black or silver.

Arcam supplies a 'universal' remote control with the T32, which can control up to eight devices altogether. Although there were a lot more buttons on the remote control than were needed to operate the tuner, it was still easy to operate the tuner via the remote, as the buttons were well laid out, and the remote was well built and well-balanced, so it sat comfortably in the hand. Entering stations into the preset slots via the remote control was a piece of cake, as the tuner helpfully incremented the preset number to the next unfilled slot. Each preset could either store a DAB, FM or AM station, which I find to be more sensible than using separate preset lists for each of the radio formats, as it avoids having to first switch to the right band followed by scrolling through the list of preset

"put simply, the Arcam T32 is the best DAB/FM tuner I have heard to date..."

controls were similar to those found on most DAB/FM tuners, consisting of the ubiquitous rotary tuning knob, along with preset buttons, and buttons to control the display, to bring up the menu and to select items from lists. The wide two-line display was excellent, as the bright green text could easily be read both from a distance and from a wide angle. The tuner also includes an interface

stations.

The tuner was highly responsive to button presses on the remote control, and lists could be scrolled through rapidly by keeping a finger pressed down on one of the remote control's arrow keys. Operation of the radio side of the tuner was intuitive, although navigation on the rDock could have mimicked that of the iPod a little better, as navigation

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always started out from the main menu after tracks had finished playing, which is different to how the iPod does things. All the information you would expect to find on a DAB tuner was available, such as scrolling text, the bit rate, the type of content that a station plays, and it also used a very effective bar graph to display the signal strength on both DAB and AM. On FM, the station name was displayed for stations supporting RDS, along with the frequency.

The rear of the unit housed an on/off switch and power socket, along with the standard Belling and F-type connectors for the FM and DAB

performance on FM was sensational. One of the most striking things about the T32's performance was that once it had locked onto a signal, the tuner managed to squeeze out an incredible amount of detail, and its performance was amongst the best I've ever come across in this regard. This led to the tuner delivering the higher quality FM stations with wonderful definition, and the stereo imaging was superb too.

Another special thing was the Arcam's level of refinement, which combined with the tuner's naturally balanced delivery to give the sound its own unique character. In my

delivered the likes of Radios 4, 5 and 7 very well indeed. It also added more energy and detail to the sound of music stations than other DAB tuners have been able to, although straight A/B comparisons with the same stations on FM still showed how superior analogue is in terms of quality. Regarding the issue with the dynamic range compression on Radio 3 FM, this seems to be largely down to personal taste, but I personally prefer the fact that FM at least delivers the sound that's fed into the system (the compression is applied before reaching FM transmission) accurately, whereas DAB does not. This is in no way excusing the BBC for applying compression on R3 FM, though, especially in the evenings...

Although Arcam's 'rDock' iPod dock has to be purchased separately, using it with the T32 acting as a playback device certainly delivered excellent quality via Apple Lossless, so I feel it would be a worthwhile purchase for T32 owners who also have an iPod.

CONCLUSION

Put simply, the Arcam T32 is the best DAB/FM tuner I've heard to date, and the fact that it also supports DAB+ and has an interface that supports Arcam's own iPod dock are icing on the cake. A superb product, and one that deserves to succeed both today and tomorrow.

aerials respectively, plus a connector for an AM loop aerial. Two pairs of phono audio output connectors were provided rather than the typical single pair; and there were a pair of phono auxiliary inputs and an RS232 connector, which are both used when connecting the rDock iPod dock or the rLead to the tuner. Finally, although we can't receive this in the UK, there was also a connector for 'Sirius Radio', which is the American satellite digital radio system, because the T32 has been designed to work either with DAB/DAB+ or with Sirius, and the appropriate receiver module is fitted depending on where the tuner is purchased.

In terms of reception quality, Noel's measurements showing that the Arcam was only mediocre in terms of sensitivity were borne out in practice. This means that the tuner wouldn't have problems receiving FM stations that have a medium or high signal strength using the supplied wire aerial, but I would echo Noel's advice that to get the best out of the tuner it should be fed by an outdoor aerial. This advice applies generally to all tuners, but it is especially relevant for higher quality tuners such as this. Reception quality on DAB was very good though, as I didn't hear any bubbling mud on any of the multiplexes I can receive. AM reception and sound quality were also relatively good, although with almost all AM stations also being transmitting on DAB, AM is rather superfluous nowadays.

SOUND QUALITY

Arcam's move back to using analogue components to implement FM has certainly paid dividends, because its

experience, although tuners in the £200 to £400 price bracket have all been impressively precise, it is this added personality to the sound that sets the more expensive tuners apart from the rest of the crowd. My personal favourite in terms of the character of its sound was the Creek T50, which is the same price as the Arcam, but the Creek is analogue-only, unfortunately, and most people expect DAB to be included nowadays.

This new tuner was also a class apart in its delivery of the more mediocre-sounding FM stations, which some rivals can struggle with, especially when the quality of the sound being broadcast by the station hasn't been particularly well engineered. However, due to its ability to squeeze so much detail out of the signal, the Arcam gave these stations a huge lift, and transformed the quality of some stations that lesser tuners did little to improve.

The Arcam's performance on DAB was also one of if not the best I've experienced to date. The low bitrates used by DAB stations hugely favours the speech stations – because speech is far easier to encode than music – and the Arcam



VERDICT ●●●●●

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FOR

- superb DAB and FM sound
- DAB+ support
- handy iPod dock interface
- design, build, finish

AGAINST

- FM sensitivity

MEASURED PERFORMANCE

Frequency response of the VHF tuner is flat to 15kHz, above which a pilot tone notch filter at 19kHz cuts output rapidly. The filter is accurately terminated to give a smooth treble characteristic free from peaking so the T32 will have a natural sound balance as a result. Stereo separation was a useful 40dB and hiss very low at -71dB. However, for the latter to be achieved a signal of 850uV (p.d.) or more from the aerial is needed, low as VHF tuners go but still requiring an outdoor aerial in most circumstances. The T32 returned very low levels of distortion, just 0.035% at 50% modulation, with a stereo transmission - an unusually low figure suggesting a very linear demodulator. Sensitivity was mediocre, 75uV being needed for 50dB hiss level on stereo, again suggesting a good aerial is needed. Output was high at 1.5V.

The T32's VHF tuner measures well all round as far as sound quality is concerned. It should give good results in use. NK

Frequency response	6Hz-15kHz
Stereo separation	40dB
Distortion (50% mod.)	0.035%
Hiss (CCIR)	-71dB
Signal for minimum hiss	850mV

Sensitivity
mono 6µV
stereo 75µV
signal strength meter: none

FREQUENCY RESPONSE

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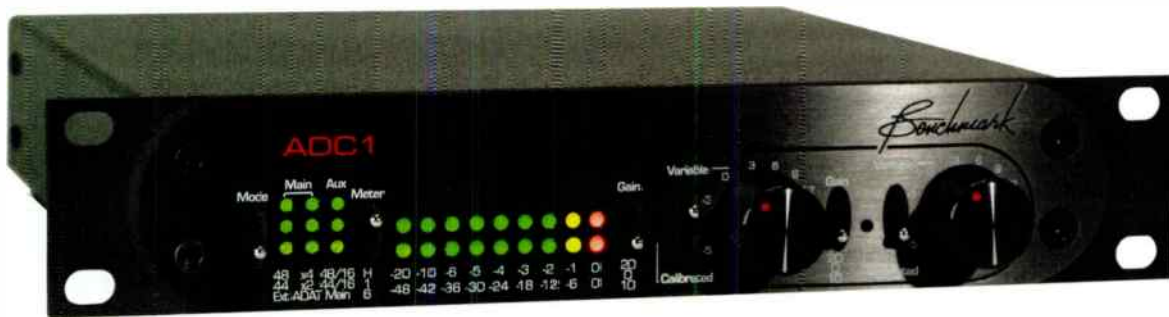
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Drop Top

It's already common for archive digital recordings of vinyl to be done at 24bit, 96kHz resolution, but the Benchmark ADC1 USB has the promise of making 24/192 needle-drops an easy reality. Patrick Cleasby listens in...

Several years ago I started playing with top quality analogue to digital conversion – at the time primarily as a means of capturing SACD and HDCD for iTunes/iPod purposes. The then state-of-the-art was the 24/96 M-Audio Delta 1010 PCI card with external convertor unit, but as we have moved to higher performance laptops and USB 2.0 connections, so the 24bit, 192kHz-capable Benchmark ADC1 USB presents itself as a very neat solution for those wanting to digitise music...

My main areas of archiving interest are now stereo SACD and vinyl, because HDCD can now be turned into 24bit FLAC using dbpoweramp software with the HDCD.exe plugin, and just about any DVD Audio can now be filleted by DVDA Explorer for its PCM riches, both stereo and surround! Still, the main use of an analogue to digital convertor such as this will surely be transcribing your vinyl collection for playback on a networked music player (such as a Linn DS) or a portable (iPod, perchance?) or even spinning CDs for the car. Given that the Benchmark now costs £1,300 (thanks to the Pound's recent drop), it has to be very good to justify the outlay – no matter how many LPs you've got to digitise!

Depressingly, a quick read of the manual reveals that further

expenditure is necessary to get its 24/192 digital bitstream into your computer, as USB functionality tops out at 24/96 resolution! So unless you contrive a further pro link in the chain to record the ADAT or AES/EBU 24/192 output into the computer, you're still stuck at 24/96.

The main leap up for me, in moving to Benchmark territory, is that where once I needed phono to 1/4" jack leads, now I needed phono to XLR leads – and as for any other inputs (other than external clocking) that's your lot!

Outputs are more varied – with that desirable 24/192 AES/EBU output via both coaxial BNC and Balanced XLR for the high end or studio minded, S/PDIF (and ADAT) over optical, and the all important Type B (Printer type) USB connection for the computer hook up, thankfully driverless for both PC and Mac. There is also a secondary coaxial output simultaneously capable of variable (i.e. lower) resolutions – i.e. for pro musicians' safety CD_R copy-type uses.

My recording machine of choice is the trusty MacBook Air, and as a Final Cut Studio user I have the benefit of the excellent Soundtrack Pro application for recording. Other Mac users would do well to investigate the 24bit capabilities of the new Garageband '09 (Garageband '08, while 24bit, insists on flipping your Audio/Midi settings to a default of 24/44.1, so be vigilant!), or you can always try and bully the free Audacity application into

dealing with 24/96 (although export options are less iTunes friendly). Appropriate PC solutions would include WaveLab, Audition and the like...

The Benchmark ADC1 USB is simple to use – the forbidding array of LEDs is easily decoded using the manual, and a few flicks of the mode button puts the device into 24/96 mode. Red lights warn of digital clipping, but I found a zero gain setting with the line level gain set at 20dB gave me a good signal with enough headroom.

For testing I elected to record the SACD of Depeche Mode's 'Exciter', the penumbral tones of which were ideal to sample the delicacy and soundstaging the Benchmark was reputedly capable of capturing. And so it proved, with the ADC1 recording levels of detail and separation which the likes of the E-Mu 0202 are simply not capable of matching. It proved a smooth, subtle and detailed performer, bringing superlative levels of musicality at its top 24/192 setting.

I would say that this Benchmark analogue to digital convertor is every bit as desirable as the DAC1 USB previously reviewed by DP, but they do make a pricey pair don't they? That said, Benchmark really does what it says on the tin – the acme of digital conversion should be the brand of choice for the discerning digital music enthusiast. But is a Rolls Royce solution really worth more than ten times an entry level one in converters? That depends on how seriously you take your digital recording, and how much cash you have to spare in these turbulent times.



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Letter of the Month

SHOUT TO THE TOP!

Dear David,

Thank you once again for a fine publication, and I would like to refer to your 'Opinion' article on page 89 of October 2008's Hi-Fi World. For me personally the format situation has been a war, and is still a war, because quite simply Dr. Digital is trying his very hardest to wipe out any other formats – that's why we see a small cheap record player advertised for sale trying to get people to download onto MP3, iPod, etc. The digital brigade would love to see all things analogue disappear overnight. Let's take the BBC radio and the push for DAB, and in this so-called free enterprise, free market, where are the people pushing analogue radio, etc.?

Most of the people who download music onto MP3 don't care about real hi-fi, rather they care about their home, cars, etc. They love the best things in life, but when it comes to audio the mainstream media pushes things that are only average. At hi-fi shows, I see many hi-fi anoraks like me, but the thing is that most of them now are becoming middle aged – or older. We have no new blood, or very few coming through – and we could have. The recession could easily kill off many a fine audio company, and this worries me somewhat as I'd hate to see good manufacturers go under because people don't keep up with the times.

I'd say 95% of the population of the UK have never heard a great separates audio system, 90% don't know what a Linn LP12 or Michell Orbe is, and it's not because of poor advertising, it's because the advertising of downloading music, MP3, iPods are in their faces everywhere - every high street has four or five shops at least, whereas most towns cities have only one or two top class audio shops, so it



Should the hi-fi business be doing more demos like this where we demo'd Tannoy Westminster Royal SEs and B&W 801Ds?

is hard for them to compete.

What we need to do is take quality audio to the customers, and actually show them how good the other stuff is. I'm trying to organise a small all vinyl show near Weston-Super-Mare (Hutton), this is not in competition with you or your magazine, etc., but I do believe unless we do something it's going to die and it could do so very fast now that we have another recession upon us. There are many schools and universities throughout the UK and I'd say nearly 100% of the pupils and students talk of MP3 but almost none know what a Linn LP12 is - let alone any of the other stuff. I say go to the schools and colleges and universities and show them what you have, do a music demonstration!

Here is a question for you all out there singing the praises of digital – has digital been able to stop this recession from happening?

Jeremy Simon Ridsdill

Well there's a question – if digital's so great, how come it hasn't stopped the recession? Answer that and stay in fashion, all you digiphiles! What

an excellent letter, Jeremy, even if I think you lost me a bit with your last sentence. All the same, you're spot on about what's happening to hi-fi. I look at it like this – if the supermarkets have been able to enthuse a nation that (when I was growing up in the nineteen seventies) thought enjoying fine 'cuisine' was about as effeminate as Liberace in purple hot pants, then how come the hi-fi industry hasn't been able to 'turn' the general public to the joys of fine sounding music? To any seventies child, the idea that our TV diet (if you pardon the pun) thirty years later would be comprised of food programmes presented by cheeky mockney celebrity chefs and eccentric public schoolboy chicken campaigners, would be preposterous. Yet so it is – Britain is now a nation of foodies. However, hi-fi it seems has gone the other way; we were very receptive to the delights of fine hi-fi three decades ago (so much so that it was the third largest purchase after a house and a car), but now it's about number ninety nine in people's



DP found this modern shopping mall in Shanghai with its entire top floor packed with hi-fi dealers, selling mostly British brands! Why can't we do the same in this country, he asks?



priorities, behind – you said it – the dreaded iPod...

I think your 'live show' idea is a good one. Actually, listening to music is a communal experience, and surely this translates to hi-fi? Hi-Fi World is a keen supporter of shows, and we're always out and about, and are never surprised by the power of a good demonstration – it is enjoyable for all the family. Likewise, many friends who visit my house – almost all of which have no interest in hi-fi – always come out thrilled if I play them one of their favourite pieces of music on my system. I'm not saying my system is that special or even that expensive, but it's a well set-up and effective device that lets the music come through in a gripping way. Most people like or love music, and all it takes is a good dem to 'plant the seed'. The question is then – how?

Having spent last Christmas in Shanghai, I was fascinated to see that many Chinese shopping centres have hi-fi floors. One particular place I visited had some ten different hi-fi dealers next to one another, all toting very common British brands (B&W, Mission, Cambridge Audio) in open

plan style, so people could just walk in for a dem – and they did...

The hard thing about selling hi-fi is not getting people to understand it, it's getting them to know it's there at all – basically they don't know what's possible until they've tried it, and then it sells itself. The trouble is, the geography of our city centres in the UK is such that it's stuffed with chain stores and we don't have many serious hi-fi chains in this country. You have to go back as far as 1985, with the demise of Laskys, to the root of this problem. Suddenly there wasn't a place in every high street where ordinary 'civilian' folk could amble in, sit down and have a listen anymore. And that was a disaster for the UK hi-fi industry, and in a way it has never recovered.

I think as an industry, we need to sit down and do some serious thinking about this together, or there will be Sony Centres, Panasonic Centres and Apple Stores in our new malls, but no hi-fi shops and a whole generation of kids will grow up not even knowing the possibility of hearing music like it was intended to be even exists.

Possibly, we need big 'all-in-one' boutiques in prime shopping centre retail spots, populated by several dealers (or their representatives) working together. I really think that something quite radical like this is now the order of the day – or everyone will be going to the Apple Store to buy £200 iPod boomboxes, and calling it "hi-fi".

Your live show idea is also a key component, and I feel manufacturers could be a lot more active in sponsoring and/or organising these things. Linn and Naim – to their enormous credit – have been very proactive in this respect and it has made them stronger as a result. Interestingly, UK turntable specialist Avid is now doing a similar sort of thing [see news, p8]; we wish them well. **DP**

SPEAKING OF WHICH

In the mid nineteen seventies, when the annual hi-fi fest was conveniently staged in Harrogate, I spent entire weekends looking and listening to manufacturers' demonstrations. I thought that the best dem by far was in the Tannoy room, when Westminster Royals were being driven (by an unknown but very small amplifier). I returned to hear and feel them playing, and subsequently bought a pair of Tannoy 12 inch Dual Concentrics which I am still using as my main speakers.

In your October group test of speakers you write that Dynaudio have "domestic" and "professional" transducers, you write of KEF "Reference" models and you write elsewhere of "studio monitors", so presumably the terms "loudspeakers" and "transducers" are interchangeable and the meaning is the same. The "reference" is the top-of-the-range model and the "monitor" is also a loudspeaker but usually to be found only in a studio, so it's "professional". It would be interesting if Hi-Fi World reviewed some of the "professional" loudspeakers that could also be used domestically.

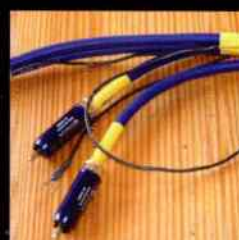
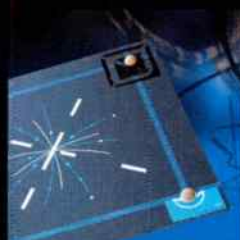
Paul Metson

Loudspeakers are a type of transducer, which is to say they transfer one form of energy (electrical) into another (mechanical). Of course, pickup cartridges and microphones are transducers too, but effectively work the other way around. The term "professional" refers to a product being made for the pro audio market, namely recording studios and suchlike. However, it is much misused by manufacturers wishing to confer exalted status upon their products which are basically consumer oriented. Ask any musician whether

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of connector (on both interconnects and speaker cable) will also affect the ultimate performance of a cable.

This reply hardly scratches the surface of a subject that had fascinated me for almost twenty years.

With best regards.

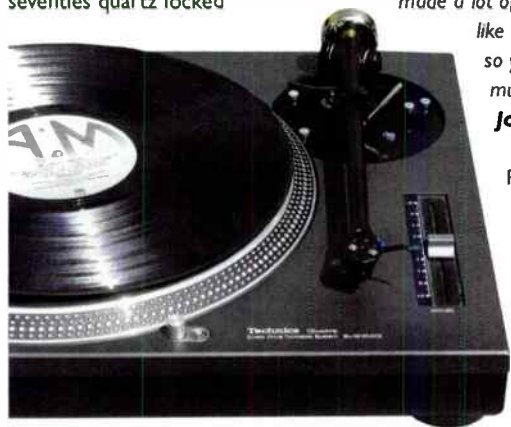
NIGEL FINN, TECHNICAL DIRECTOR, CHORD CO.

MOD RIGHT?

My current vinyl comes via a Technics SLQ3 turntable, Cambridge Audio Azur 640P phono stage, Technics A900/2 amplifier and Castle Windsor floorstanding loudspeakers. Cables include Chord Crimson and QED Silver Anniversary Bi-Wire, and I'm using a Rega Bias 2 cartridge as I've heard an Ortofon 2M red would be too high for the arm VTA. Having read what can be achieved with a SL1200 as regards modification, I was wondering if the same could be applied to my SLQ3? On the whole I'm pleased with this set up but some guidance will be appreciated.

Dick Coulthard

Hi Dick – in a word, no. Just because the SL1200 is highly upgradeable, it does not automatically follow that all Technics decks are. Indeed, in this respect, the SL1200 is a one-off. The Q3 was a good late nineteen seventies quartz locked



Just because it's a Technics doesn't mean it's automatically as good as the mighty SL1200...

direct drive deck, and no more. It was a semi-automatic design, with a medium mass S-shaped tonearm and a fairly insubstantial plastic plinth. The SL1200 by contrast is a massy affair built from a rubber baseboard and stocky aluminium chassis/top plate, with a detachable arm. As you've found, the stock Technics EPC207C phono cartridge can be usefully upgraded, but aside from getting the SoundDeadSteel Isoplatmat there's not a lot you can do to your Q3 except enjoy it. It's a fine deck for the price and for its day, but nothing special I'm afraid. **DP**

PIVOTAL MOMENT

Hi David and Adam - in your September issue you advised me to mount a Roksan Nima on my Technics. This piece of advice was spot-on! The soundstage is huge, mid and treble are glorious and the bass, although a little less tight and hard hitting than with the Origin Live Silver, is generous and very atmospheric. So it's an unalloyed success!

**Jan Grinaert
Belgium**

Hi Jan – our pleasure! A unipivot arm on a Technics SL1200 is about as esoteric as you can get for an 'affordable' turntable – you don't see many like that. **DP**

DISC SLIPPAGE

Although not of the dinosaur persuasion, I love my vinyl collection and would like to transfer it onto Compact Disc. My question is, what would be the best CD recorder on the market that I can purchase to do the job? I have about £500 to spend but could stretch to a bit more if needed. My system is as follows: Michell Gyro SE with DC motor and NC power supply, Tecno arm, Dynavector DV20X cart, Sonneteer Sedley phono stage, Sugden A21a (1990s vintage) amplifier, Castle Eden loudspeakers, Nakamichi DR2 tape deck and Cabletalk interconnects. Although I have made a lot of wonderful tapes, I would like to try recording on to CD, so your advice would be very much appreciated.

Johnson Philips

Right now, there are precious few CD recorders still available to buy new – our preference would be the Sony RCD-W100 at around £250 which although not perfect works well and is helped by its Super Bit Mapping facility when recording from its analogue inputs.

Alternatively, if you wanted a used, but more high end machine then Yamaha's CDR-HD1500 was a fine machine – but make sure you buy a good one that's had only light use. **DP**

SLIPPING DISCS

I have an old Denon DCD 820 CD player which is giving a lot of trouble reading Compact Discs. For example it will read PC recorded various discs of low quality (Maxell, Princo, some sorts of Verbatim), but half of the time it will not read original discs - mostly Blue Note albums. Should I simply change the laser

Roksan's Nima unipivot arm – real balance for a Technics SL1200.



or is there some kind of adjustment for the whole mechanism mechanically? Is it possible to upgrade it in some way other than a Cambridge DACMagic, like changing output op-amps?

**Nikola
Serbia**

Hmmm... tricky one, that. Firstly, it's obviously your laser that's playing up. Try taking the case off the player (with the power switched OFF), and cleaning the laser with isopropyl alcohol and a cotton bud. If this doesn't work – and you'd be surprised by how many times it does – then you're due a new laser. Fortunately, the Sony KSS-210A laser pick up that your Denon uses is still readily available – do a Google search and you'll find a number of places selling it for around £70. Get your local Denon authorised service centre to fit (it's not really a DIY job unless you've got all the calibration equipment) and hey presto, you're back in business! After this, a new Cambridge Audio DACMagic would be a brilliant upgrade for around £200. **DP**



Nikola's ailing Denon CD player very probably needs one of these – a new laser pick up!

V-FETISH

I have just started reading your magazine after a break of a couple of years during which none of my book sellers were carrying it. It's good to read you again. There are too few interesting audio magazines here in the USA!

I'd like to add some comments on the Sony V-FET amp David Price mentions in his column in the January

enjoy yourself



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2009 issue and comment on aperiodic bass loading as used in Noel Keywood's WD25A speaker.

First a bit of trivia about the Sony TAS650 amp. It was advertised at 50 Watts a side but it never measured anywhere that low in any review I read. It was always rated about 80W a side. Sony often seemed to do something like this when introducing a new technology, overbuild the first examples. Witness the SACD 1 player which couldn't possibly have been produced commercially for its selling price. You only had to look at what was inside it and how it was constructed.

Secondly I found David's comment, 'which to my ears are about as close to the thermionic tube that solid state has ever come' especially interesting. I had a good friend who did a great deal of interesting and unique work in all aspects of audio who explained some things to me about the Sony power V-FETs. He said that unlike other solid state devices power V-FETs are triodes. And the Sony devices are not only triodes but very good ones with curves like a 2A3 tube, one of the best triode output tubes. And unlike a tube they were available as complementary pairs. Think of it. If they had stayed around we might have had high power, solid-state amps that sounded like a good 2A3 amplifier. What have we lost? We'll never know. And the power MOSFETs that seemed to replace the power V-FETs were not triodes and nothing like those short lived V-FETs...

I'm fairly familiar with the aperiodic loading used in the WD25A speaker, the old Dynaco A25, the IMF Super Compact, the Ferrograph speaker from the 1970s, etc. And I always seem to see aperiodic defined as non-resonant. I don't see how that's true. The impedance curve shows a rise at the same point a woofer would show in a closed box. I understand that this loading does lower the amplitude of the peak making it less resonant and resulting in a lower system Q and thus better bass damping, but the resonance rise in the impedance curve is still ultimately there. I'd love to hear some comments from Noel on this.

The only bass loading I know of that shows no impedance rise and thus could be called non-resonant is one that I first saw in some 1970s McIntosh designs and later in a few other designs such as the Nearfield Acoustics Pipedreams. This format uses a woofer in a very small, closed box along with a powerful, dedicated amplifier. The box is so small the resonance is very high and the woofer is crossed over below the resonant point. Of course the bass is now rolling off at 12 dB/octave. But equalisation is built into the system to compensate for this and to hold up the response to a point the designer

chooses. A nice feature of this concept is that a woofer in a box below resonance is very tightly dynamically damped and just wants to stop so control is totally electronic in the hands of the woofer so bass overhang can be extremely low. Another nice feature of this format is that the woofer transfer function can be completely defined by the equalization curve chosen by the designer. Indeed he can design multiple transfer functions with a selector switch allowing the user to pick the system Q that most pleases him.

**Allen Edelstein
New Jersey, USA**

Thanks for the observations, Allen. I think you're spot on about V-FETs; what a shame the MOSFETs reared their (comparatively) ugly heads when they did and change the course of electronics history. Before everyone goes bonkers chasing V-FET amplifiers like the Sony, I should point out that the V-FET packs are no longer available – meaning when they go, and they will, the amp will be fit for the dustbin only. However, if you do come across one, they're a fascinating listen – and very valve like as solid-state goes; most full Class A amplifiers using conventional power transistors sound like running a rusty nail up and down a pane of glass, by comparison! **DP**

Sorry to say this Allen, but I can't agree. FETs of any persuasion do not sound like valves (tubes) in my experience, and electronically equalised loudspeakers are an equally



Vertical Field Effect Transistors - the Holy Grail of solid-state?

insensitive appreciation of what is important.

On solid-state devices of all sorts I strongly suspect high current density results in colouration, and the colouration is related both to the conductor and the dielectric – as in cables. Tubes work at very low current densities, have no dielectric and also possess secondary emission; they are vastly different to solid-state devices. These differences best fit with my measurements and listening experiences.

Measurement suggests transfer function does not fully explain sound quality differences; solid-state amps can produce predominantly second harmonic distortion but they still do not sound like valve amps, although they will often sound smooth. And valve amps often possess all sorts of odd order distortion but they still sound like valve amps, if somewhat ropey ones. What I hardly dare say is transistor amps of all sorts are coloured, their flat and undynamic nature (I'm not talking about big bass grunt, but midband and treble dynamics) is gruesomely consistent I find, relating only weakly to most measurable properties. Of course, anyone who has done any "tube rolling" will know that tubes are coloured too, but in a different way. Big subject this, and time to stop!

Similarly, loudspeakers can be 'forced' electronically to do all sorts of extraordinary things and, listening to such loudspeakers, I'm always struck by the fact that that is the way they sound too – electronically under the cosh!

Why? Well, let's take that old chestnut of an idea, equalising the bass unit in a small cabinet to produce earthquake frequencies. Loudspeaker engineers immediately get involved with cone excursion, distortion and the things they know about and can, to some extent, successfully tackle. They don't consider issues like box return from rear radiated energy, impossible to contain in a small cabinet, especially at the very frequencies trying to be attained – and very audible I find.

If a system doesn't want to do something, then don't try forcing it I believe.

On impedance curves, if I understand it correctly Transmission Lines should, in theory at least, give a flat impedance characteristic, even if they rarely do in practice. There are other ways of achieving this, such as stagger tuned twin bass chambers.

Being in the USA you won't hear the wails of despair issuing from Huntingdon, from the designer (not me) of the World Design WD25A loudspeaker. So, over to Peter Comeau. **NK**

Well, aperiodic means exactly that, 'without period' or 'non resonant'. So Aperiodic designs will always be described as non-resonant. How far this actually is true in practice is down to the design.

So the so-called aperiodic designs from IMF and Ferrograph were based around the work that Bailey instituted for a 'non-resonant' loudspeaker system in the classic

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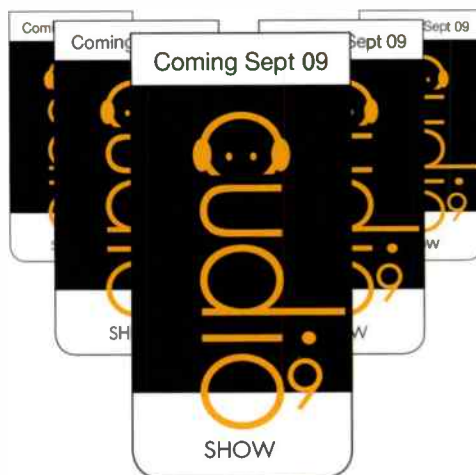
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World Radio History



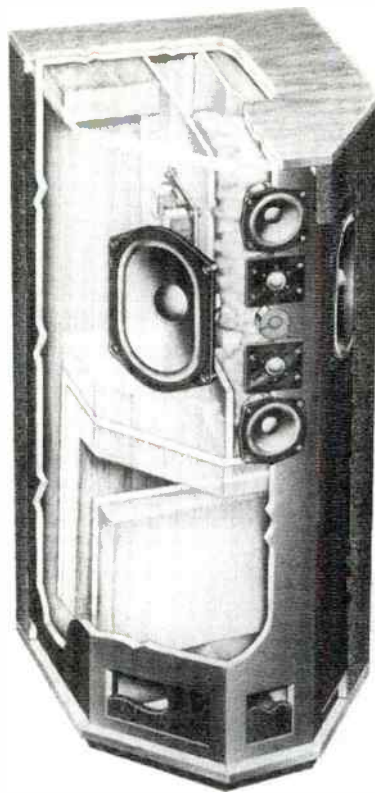
Wireless World article that, many years later, led to the Transmission Line concept. Bailey used the 'non resonant' description because of the impulse tests that he carried out using high intensity sparks on his prototype speakers. With these he was able to show that a driver loaded into a long, heavily damped, line would enable the driver to behave without overhang.

And this, I believe, is the fluid test. Only if you look at the impulse response of the speaker can you see whether it is aperiodic. In my own experiments I've found that the damped line system which found its way into commercial speakers, like the IMFs, was not truly aperiodic. This occurs largely because the behaviour of these speakers is closer to a damped reflex port, basically because the designers wanted more bass than the aperiodic design normally gives. Similarly most commercial Transmission Line speakers behave more like extended port reflex speakers and don't exhibit aperiodic behaviour.

However the Dynaco A25, and our own WD25 designs based around this principle, are very, very close to being truly aperiodic. What the impedance curve shows is that there is still a mass/spring effect at work due to the mass of the cone, the compliance of its suspension and the compliance (springiness) of the air in the enclosure. What matters is that this is critically damped to the point where, yes, the mass/spring effect still aids the bass unit motor in doing less work at this frequency - so bass response is maintained - but that overhang is kept to an absolute minimum.

In the factory test of the Dynaco A25 an impulse test was used to define the resistance of the aperiodic port for minimum overhang for each batch of bass units. With modern methods of manufacture we no longer need to modify the defined resistance as the bass units are very consistent from batch to batch and we use a porous foam of precision manufacture for the aperiodic port resistance. The result is a very lucid, controlled, but still powerful bass performance, as any listener to the WD25 speakers will attest.

What you are describing, with the sub LF driver/large amplifier/small box system, is a goal which is unnecessarily over-the-top in engineering terms. In other words 'like cracking a walnut with a sledge-hammer'. Although it seems to be an interesting exercise to drive a



The enormous TDL Reference Standard transmission line loud-speaker, from 1994. Transmission lines often "don't exhibit aperiodic behaviour." says Peter Comeau.

bass unit below resonance with ever increasing amplifier power, this brings its own set of problems. First of all the drive unit is being exercised well beyond its linear area of motion as the cone excursions below resonance become enormous in order to produce any sound output at all. Secondly what is the amplifier doing when asked to drive, and control, the back EMF derived from a driver with such a high cone inertia? I think you would find that the audible distortion generated by such a device, when subjected to music signals, would be many factors higher than a bass drive unit in a large, critically damped, closed box driven normally.

These technical exercises are good for the 'wow' factor at exhibitions but have little place in the domestic hi-fi system unless space really is at a premium.

In my view it is about time we got over this unrealistic quest for zero distortion, maximum power, nil resonance and ever smaller containers for music playing equipment and looked again at ways of reproducing music in the home that sound realistic and emotionally involving. There is absolutely no point in chasing 'perfect' measurements if all they do is realise equipment that makes music soulless and uninviting to listen to. That doesn't mean that

we shouldn't still strive for the 'state of the art', just reassess what the 'art' really is all about. **PC**

THANKS SPORT!

The December issue of 'Hi-Fi World' has just arrived in Australia. I browsed the contents in the shop and decided to buy it when I saw the information on Martin Bastin. I read the letters section in detail when I returned home and realised that the information you had provided was in response to my email enquiry, which you published! This was an unexpected surprise! Thanks very much for your words of advice and encouragement in relation to my 401 and SME V. I'll give Dr Bastin a call. Keep up the good work with the magazine. It's a great read. In recent years, your monthly reviews and recommendations have played no small part in my hi-fi purchases, which have become very worthwhile and enjoyable investments. These include restored Quad ESL-57s, Quad 2905s, a McIntosh 275 valve amp and DNM solid core cables.

John Thompson

Thanks John. As you say, the right products are investments, going up in price rather than down and your Quad ESL-57s must be one good example. The trick is to spot the classics and buy before everyone else does, so driving the price up! **NK**

RUBBER SOUL

I read with interest Adam Smith's article on old turntables and his comments on belt replacement. There are a few methods that I have used in the past to make belts for old turntables that might be of interest.

A new belt can be made for a Revolver, or any turntable which has a round belt, from a length of round rubber that can be bought from most hardware stores and auto shops. It comes in various diameters, is generally used to make rubber O-rings and seals and is sold by the metre. From the same shop you can also buy the special glue, but super glue can be used (my dad is still using a Revolver with a belt I made with super glue several years ago).

I recently also made a flat type belt for an old friend who wanted to play a few records but didn't want to spend the money on a new belt. In this case I used a length of the rubber which goes round the inside of the rim of a wheel of a bicycle to prevent the spokes from damaging the inner tube. Firstly I marked the rubber and carefully cut out, using sharp scissors, a strip of the correct width, but I cut the ends to length with a craft knife as it cuts more square. Then I glued the ends together end to end (not overlapping), with a good quality super glue. When making a

belt it is important that the cut rubber ends are cut perfectly square and that the ends are lined up perfectly when gluing. Also, not too much glue should be used as it sets hard and excess bulging out of the joint will make a noise as the belt rotates.

For toothed belts the drive belt from an old scanner can be used if you are lucky enough to find one that has the required tooth spacing. Also various tooth belts are used in video, DVD and CD player repair, so with a bit of searching you should be able to find the tooth spacing you need.

A good tip for lining up the ends for gluing any belt is to use a PVC cutting board to lean on, as the glue does not stick easily to it. Then apply a really small amount of glue to one cut end of your belt making sure the glue is even across the joint. Now place the belt onto the board and gently slide the ends until they touch together. Hold like this for a couple of minutes then carefully lift away from the board. The ends should now be joined, but do not be tempted to use the belt for a couple of hours as the glue needs to set really well for a long lived belt. If your belt is made with care, in this manner they can work surprisingly well and last a very long time.

Anon

A-OKAY!

Nice write up on the Jelco SA750D (HFW Feb 2009) Adam old fella, I still owe you a cold beer. I had been eagerly awaiting your verdict on this tonearm with the view of purchasing one to put on my modded Tek 1210, rightly thinking that £375 plus cost of a cable would be value item of the year. But shock, horror and where's me bottle of hooch, on going to Sound Hi-Fi's web site I saw that the cost is now £449 for the arm plus an additional £95 for an arm cable making the whole caboodle cost £544. Okay, I know you can do your sums as well, but this no longer makes the Jelco top of the shopping list within this price list do you not think? A phone chat with Jill Cawley (nice girl) confirmed that the raised price in Nippon/Brit exchange rates had brought about this hike in price... thoughts of the old image whereby a product gets a good glowing report in a Mag, and dealer thinks 'lets put up the price now', did fleetingly cross my mind but lets be sensibly charitable and switch one's thoughts back to economic gloom and the erm, 'poor', exchange rate...

Dear David - in response to a reader's letter - counselled that a good Ittok was possibly better if in good finish and fettle. This galvanised me, as far as I can be galvanised, to contact the Viking Scot, Johnny7 of Audio Origami and enquire about rejuvenating my

old Black Ittok II just lying there in its box doing FA. Well, the blackTok will be rejuvenated by AO for far less than what a Jelco would cost me and will look at least different on my Tek 1210. Give a guess and let me know what it would/ could sound like with a 1042 boted in? The black Ittok was supposedly made by Linn in Scotland so my arm would be making a home visit of sorts!

My Linn LP12 has had a complete rebuild incorporating a little known subchassis supermod called 'The Sole' from Analog Innovation. This is a well engineered super bonded aluminium/ MDF laminate and has really done wonders for the venerable LP12. You should look into this one, lads, seeing as you don't walk the walk that the other hi-fi mags of the realm do - I guess that's why I buy your mag and not nourishing food. My Linn will be fettle (lovely word lads) with my Ekos Mk I with a rewire and rebuild from AO J7 once again after Johnny sorts out a Linn dealer's ham-fisted grub screw fitting to the arm pillar. Needless to say, I now shy away from dealers and think that finding a good one is like finding a billiard ball with hair. My Ekos will become an AOKos causing the SE version to look over its shoulder, methinks. Got to go now as I have vinyl to clean, music to listen to, and wine to drink. Happy 2009 all!

Ron Edley

Happy new year to you too - and all our other readers! I'd just like to take this opportunity to do a bit of housekeeping and state the bleedin' obvious, which is that - as Ron points out - the Pound has fallen off a cliff in the past two months, thanks to the international money markets not believing our lovely Chancellor when he said, "Britain is

£1,000 and I've just checked on the internet and it's £1,300 - so please get your prices right", to desist. This is because it takes up to six weeks for the mag to get to press - not six nanoseconds it takes on the net - and as we can all see, events are moving apace! **DP**

PRE-VIOUS EXPERIENCE

Hi, I read with interest your replies to the letter on the Creek OBH-22 pre-amp in the February 2009 issue. David Price remarks that, 'you'll have to spend over £1,000 to seriously better it'. Yes, I can understand that, but might it be correct to say that that is what people would expect? A three-or-four times cost increase should give a 'serious' improvement. Or, am I misinterpreting something?

Meanwhile, is there an equivalent, on both price and quality, power amp (preferably passive) to partner with the Creek? I am close to an upgrade and have been considering a pre/power combination. I have about £1,000 to spend and will be keeping my Mission Freedom 5s for another couple of years. Is a power amp essential? In the second reply, Noel Keywood remarks, 'I prefer passive or valve - and nothing in-between!'

Bert Halliday

There are many good, or even great products, in the hi-fi firmament, but generally you find that they're priced just about right for what they do. Generally speaking, manufacturers aren't (all) stupid and they take a very clear view about how their kit performs relative to others, and then price accordingly. Sometimes however, you come across stuff that is just that little bit too good for the amount of money charged for



Jelco arm - not the price it was a few months ago, but what price tomorrow?

uniquely well placed" to get through the recession... So, the result is that all imports have suddenly got considerably more expensive, very quickly. So guys, please don't have a go at importers - they're hurting as a result of this. I'd also ask the various incredibly helpful souls who've been emailing or calling in with words to the effect of, "in the January issue you said a doobrey whatsit cost

it, and the Creek is such a product. It's not the best preamp in the world of course, or anywhere near it, but I don't think you can get similar performance for its £300 (approx) selling price - you'll have spend upwards of £1,000 to really improve on it all round. It sounds dry, clean, open and detailed, with an unobtrusive and natural character. Upgrade to something like the



Creek OBH-22 "just that little bit too good for the amount of money charged for it," says David.

NuForce P8 (£845) and you'll get more bass, and more commanding and vibrant presentation and extra treble air and space, but it's not three times better, despite being nearly three times the price! Obviously, you'd expect the NuForce to be better, but my point was that with most hi-fi products, spending fifteen to twenty percent more will bring obvious rewards, whereas the Creek requires you to spend dramatically more than this before you get a comprehensive all round improvement.

As for obvious partners, the Rotel RB-1092 is a giant killer. For £1,595 you get 2x584W RMS, which is enough to drive anything, along with a tremendous sense of music ease and a smooth, velvety tonality. It's a Class D power amplifier, which is not to everyone's taste, but one of the most listenable of the breed all the same, and again the point is that it does so much – offering a tidy, detailed, unassuming yet engaging sound with seemingly limitless power and no fear of tricky speaker loads or big rooms – for so little money. In the olden days, when Noel was tearing around London on two wheels instead of the four permanently driven ones of his latest Land Rover, you'd have had to pay many thousands of pounds

for something with 'Krell' written on the front panel to get such power! **DP**

COMPUTER WORLD

Let me start by saying how much I enjoy your magazine – it is informative and unbiased unlike some other hi

fi magazines we know but don't love, so keep up the good work! Okay, here goes my dilemma. I want to buy an MP3 player - I know the model I want to buy, so no arguments there, it's the new Cowon S9! I also want to play FLAC/lossless audio music files through my hi-fi system. I am also thinking of buying a Benchmark Media DAC USB so I can download music and play uncompressed files by plugging in the Cowon into the USB DAC. I want to know if I will be wasting my time here? I would prefer not to buy another PC if possible.

Lately I have been disappointed with my Copland CD player and reading into all this lossless audio stuff has my brain fried. I want to know if this will be a genuine improvement on CD sound. Buying a new CD player at present seems a little stupid as the music industry is on its knees and people are not buying CDs anymore. The other thing I considered was buy a Bel CantoChord DAC and be done with it. Look forward to hearing your advice!

Raymond Deasy

Hmmm... well you seem both very sure about what you want to do, but not entirely sure about why you've chosen this particular route, Raymond. Obviously, you can play FLAC files from any existing computer, either wirelessly via something like a Roku Soundbridge or via a USB equipped DAC like the Benchmark – you don't need to buy an MP3 player as a source component if you don't want to. Moreover, the Cowon only has 8GB of memory (at the time of writing), which isn't an awful lot of

uncompressed music, I'm afraid. My feeling is that you should run your FLAC files from a computer and use the Cowon for portable duties. By all means invest in a Benchmark DAC I USB; it's one of the best DACs of its type at the price – although good results can be had from the Cambridge Audio DACMagic at a quarter of the price. For ultimate fidelity, and with unlimited cash, you should be looking at the Chord QBD76 however – it's £3,000 but probably the last digital converter you'd ever need to buy. It would provide a massive improvement over your Copland CD player. You could of course use the Copland as a transport, so you could retain your CD source if you wish. **DP**

NEEDLE TALK

My system comprises a Pink Triangle Export GT1 turntable, used with an Achromat and an RB300 arm that has been upgraded with the Incognito rewire and a Michell counterweight. This is fed through a Project SE phono stage to the Alchemist Forseti integrated amp. My speakers are Rega R3s and my cables are Black Rhodium Jive speaker wire and Tara Labs interconnects. The room I use is 25ft square with solid wood floors (on concrete).

I also have a Cambridge Audio CD4SE, a Technics tape deck and a Denon tuner which get occasional use. Listening tastes vary, ranging from rock to acoustic and folk, but recently I prefer a more relaxed and bassy sound. I've been using a Grado Gold for some years which initially I loved for the warmth and depth, but now feel it's a tad comfy for my system with too much bloom and sometimes fails to excite me. That said, my previous cartridge was an Audio Technica ATOC9 (mk I) which I found amazingly insightful on some material but brash and irritating on others...

So I'm wondering what I should replace the Grado with, or should I persevere with the Audio Technica? I know

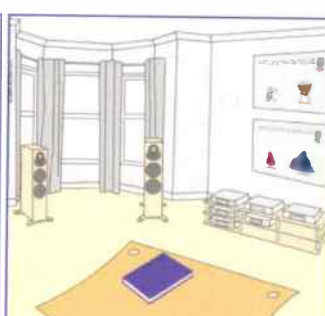
The listening experience at house of linn is so good - demonstrations last for hours....



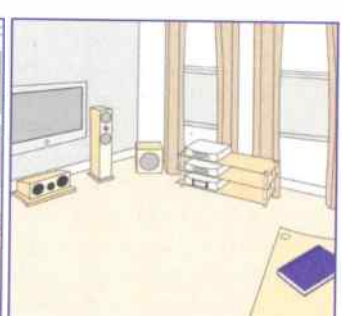
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you chaps are big fans of this cartridge, is the mk II more of an all rounder than the mark I? My local dealer has suggested I try the Ortofon Samba as somewhere in the middle, are there any others you'd recommend up to £200?

My other concern is that my phono stage sits between my amp and turntable on the same shelf (although all units are isolated via their own slabs of marble, spiked feet and Sorbothane feet) and I am concerned that an MC may pick up hum due to the proximity of the amp (the Alchemist has twin toroidal transformers inside and delivers 100w RMS) at idle according to the manual. So if I went for an MC cartridge such as the Ortofon or the Audio Technica, would these be more prone to hum/interference?

Lastly, I know you also are in favour of using step up transformers for MCs and I came across an old Ortofon STM-72 step-up transformer, would I be better using this in the short term or using the MC input on my phono stage?

Andrew Simpson

It's true that the latest ML version of the OC-9 is a little more smooth than the earlier eighties incarnation of this cartridge, but it's still not the world's most mellow performer. The trouble is, for £200 you're not going to get much – if anything – in the way of moving coil cartridges at all, especially now the AT has gone up in price due to the parlous state of the pound. Actually, I'd suggest the Goldring G1042 – it's an old fave at this magazine and is, if anything, bassy and full sounding; much more so than the AT-OC9. Being a moving magnet, it should also allay your fears about hum pick up.

Step-up transformers can be superb, but it's all down to the quality of the windings; the old Ortofon design you mention is only so-so; it will be better than budget solid-state moving coil stages, but a good valve phono stage will have better transformers and sound considerably superior. **DP**

SINGAPORE FLING – SECOND TIME AROUND

I'm in a quandary - what to do? My amplification is valve based, with self built preamp and power amplifiers. The preamp is Aikido (6SN7) cct with a moving magnet circuit based on the Marantz 5, with valve and choke/regulated HT supplies. Power amplifiers are either monoblock 6550 PP affairs with transformer phase split/6N7 driver/ GZ37 valves, or a 6V6 single ended UCC85 driver, EZ81 and choke HT with MOSFET Source follower regulator. I have Monitor Audio GR20 loudspeakers, and the whole lot is fed by a Cyrus CDB SE



Cyrus CD-8SE "brings silver disc real close to the vinyl".

PSX-R (a real upgrade – there was an instant difference over my old CD8X which I traded in). The Cyrus CD player brings silver disc real close to the vinyl sound, which has more than anything prompted me to change my cartridge, as I find I like to listen to the new CD player more now than the old one. My turntable is a Technics SL1200 MK5 with Origin Live Silver Tonearm and Ortofon 2M Red cartridge.

There's a big choice of cartridges

but yours truly got his wires crossed and didn't answer the question properly - so here goes again! The problem is that there isn't exactly a wealth of superb moving coil cartridges on your budget – normally we'd recommend you spend at least twice that much on the likes of a Lyra Dorian or Ortofon Kontrapunkt B. However, if the Singapore dollar has held up better than the British Pound, then you could be in luck,



Not a picture of a pickup cartridge - but Singapore at night.

where I live in Singapore. I go to the Adelphi shopping centre here, which is the place for audiophiles, but each shop says what's best based on his stock! So I'd like your independent advice – do I go for a more expensive Ortofon MM or try a high output MC? I am prepared to pay about £300. What would I gain with a high output MC on my system? I read the reviews and listen in shops but most of them turn the nose up when Technics are mentioned - how could it possibly be any good! So all in all what do you recommend based on experience, I suppose really I'm looking for more insight and something to grip me and draw me into the music.

Anon.

Singapore

Eagle eyed readers will note that we first published this letter last month,

as the Audio Technica AT-OC9 ML II could be within your reach. This works very well with the OL Silver tonearm, and gives a massively detailed, highly engaging and very dynamic sound. Thankfully though, the latest ML II incarnation is more mellow than the blood-and-guts original eighties version, so you should find it's just about smooth enough for your upfront sounding SL1200. Indeed I imagine that together, it would be a highly effective package – and certainly as entertaining as your new Cyrus CD front end. Also, don't forget to upgrade the platter mat to the SoundDeadSteel Isoplatmat, for under £100 – this works a treat on the Technics, bringing a smoother and more lyrical presentation, with even better bass than standard.

DP



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ARCAM AV

AVR300	black	£1,300.00	D v. good	£395.00
Arcam FMJ DV139 upscaling dvd/cd	Black	£1,850.00	D & new boxed	£995.00
Arcam AVR 280	Silver	£1,250.00	D good	£395.00
Arcam FMJ AVP9 Processor	black	£3,750.00	D good	£1,895.00
Arcam FMJ P7 power amp	black	£2,900.00	D good	£1,795.00
Arcam AVP700 processor	silver	£1,450.00	D v good	£895.00
Arcam P1000 7 channel amp	silver	£1,700.00	D v good	£995.00
Arcam DV135 dvd/cd	silver	£900.00	D v good	£295.00

CYRUS

CD BX (silver)	Silver	£1,000.00	D v.good	£499.00
CD XT (Silver)	Silver	£800.00	D v.good	£399.00
Discmaster B.(silver)	Silver	£800.00	D v.good	£399.00

AV COMPONENTS & MISCELLANEOUS

Audio Research SP16 pre amp	Silver	£2,249.00	D v.good	£1,395.00
Audio Research VS 55 valve power amp	Silver	£2,499.00	D good some marks	£1,595.00
Krell Showcase Processor	Silver	£4,495.00	D good	£2,495.00
Krell Showcase 5 channel power amp	Silver	£4,999.00	D good	£2,995.00
Krell Showcase DVD	Silver	£3,698.00	D good	£1,995.00
Martin Logan Summit electrostatic speakers	cherry	£9,500.00	D v.good	£5,895.00
Denon AVR2106 Receiver	Silver	£450.00	D. Good	£200.00
Denon AVR2807 Receiver	Silver	£799.00	D. Good	£479.00
Denon AVR 2106 Reciever	Silver	£450.00	D. Good	£259.00
Denon S-301 AV system	Silver	£1,250.00	new boxed	£789.00
Denon S-101 AV system	Silver	£850.00	D. Good	£495.00
Denon DVD 2910 dvd with hdmi/scaling	black	£600.00	D. Good	£249.00
Pioneer LX01 AV system inc spks, hd recorder	black	£1,699.00	D.vgc almost unused	£995.00
Pioneer LX 70 Blu-Ray		£995.00	D. Good	£395.00
Pioneer DV868 DV hdmi		£795.00	new boxed	£295.00
Acoustic Energy Aelite 3 speakers	cherry	£749.00	dem good, some marks	£299.00
Acoustic Energy AE120 floor standing speakers	black	£450.00	dem good	£150.00
Acoustic AE73DS		£350.00	new boxed	£229.00
Monitor Audio S5 light oak	light oak	£450.00	dem good	£200.00
Mission 773 floor standing spks	light oak		dem good some marks	£150.00
Mission 78 DS rear effects dipole spks	blk/Lwood		dem good	£100.00

D = EX Demo

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Tweak Preview

As the credit crunch deepens, there's never been a better time to tweak your existing hi-fi rather than buy brand new. With that in mind, Musical Fidelity have come up with an interesting scheme, which David Price explains...

The science (pseudo or otherwise) of carefully modifying existing hi-fi components is not a new idea, and indeed regular readers will know that it's something very close to our hearts here at *Hi-Fi World*, and has been since this magazine's inception, way back in 1990. As such, we've devoted large amounts of page space to everything from tuning World Audio Design valve amplifiers with 'designer label' passive componentry to valve rolling – the mysterious process of substituting one brand of tube with another of exactly the same type (if not the same vintage) in a bid to improve sonics. Likewise, we've also tried modified CD clocks from Trichord, Audiocom and Njoe Tjoeb, and even the great Marantz CD63 KI DP which involved a ground-up audiophile rebuild of a classic budget Marantz CD player. Factor in features on everything from turntable tweaking to getting the best from the ubiquitous Technics SL1200, and you could say that it's something of a passion of this magazine!

With this in mind, I was intrigued by a phone call I got from Antony Michaelson at the end of October, when he announced he was starting a "factory rebuild" scheme of his amplifiers. The idea started, he told me, as he noticed an increasing number of his amplifiers being

returned for repairs which had been "tweaked". Actually he didn't quite use this phrase, choosing instead to use the present continuous tense of a four letter word and then the adjective "wrecked" instead... Mr Michaelson believes trenchantly, it seems, that a lot of DIY hobbyists and/or tweakers who charge money for their services don't know what they are doing, and can often ruin the amplifier and/or make it electrically unstable and/or downright dangerous. With this in mind, he told me, "seeing as we know our amplifiers better than anybody, we thought we would offer a blueprinting service for virtually all of our products, past and present".

Whereas some tweakers choose to reel out a shopping list of individual passive components which are inserted, with designer names such as Black Gate, Schottky, etc., Musical Fidelity aren't going this way. Instead, just as a racing engine builder would disassemble an engine and meticulously rebuild it to much finer tolerances, and where appropriate use better components (but only where appropriate, rather than just for the sake of it), so MF are offering this service to owners of their products. He emphasises that, rather than just getting a long list of designer componentry thrown in on a wing and a prayer, his service

is a ground-up, holistic (for the want of a better term) "blueprinting" of the original design. It's not a case of wholesale changes to the architecture or componentry of the amplifier, it's a case of time-consuming realignment to much finer electrical tolerances than would normally be possible in mass production conditions.

The price for this service is £399 (including carriage), and the claim is that it will provide dramatically better sound to almost any of Musical Fidelity's 'legacy' range of products [see box]. At the time of writing, there is also a plan to offer this to MF CD players too – along with the fitting of superior clocks – and even an official Musical Fidelity factory rebuild service of the pre-1997 Audiolab 8000a amplifier. Antony is a big fan, telling me that Audiolab is "the only rival brand that I rate, ever", and confided to me that, "when we first saw this amplifier, we pulled it apart and wondered how they could make any money from it – so good was the design and so decent were the components – and we came to the conclusion that they couldn't". The service also extends to the Audiolab 8000C and 8000P models too.

All well and good then, but what of the specifics? Well, your £399 buys you a complete strip down of your amplifier, and then a rebuild

innovative scandinavian loudspeakers



Ranger model



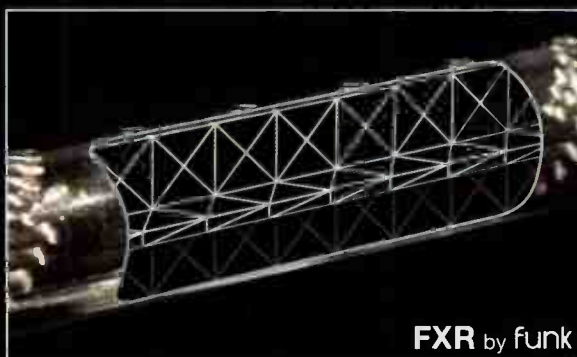
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which involves matching the output transistors, sometimes swapping them around or replacing them when necessary. A copper "belly band" is then placed around the power supply, including capacitors and mains transformer and the volume control motor. The toroidal transformer is then rotated to give the lowest noise, and together these mods significantly reduce mains hum into the amplifier. At the same time, some power supply capacitors are bypassed (if possible) and all internal coupling caps and path capacitors are replaced using polyester or polycarbonate where appropriate. The amplifier's internal loudspeaker cabling is then replaced with LC Oxygen-Free Copper type and the output choke inductor windings are redone, winding them manually to get them exactly right for the particular amplifier in question.

Then there's the socketry, which is cleaned up (obvious, but it makes a big sonic difference), and the amplifier's bias is "precision-set". Some op-amps are replaced with "professional spec types" and "we may replace some of resistors in the final stage of the power amplifier if we can see signs of thermal changing", he tells me. This is another key point – he says that some amplifiers come back to the factory having been "caned", run at near maximum output level for long periods and this can over the long term have deleterious effects, which this tuning process then eliminates. The amplifier is then soak-tested on the bench for two weeks, after which it is "measured from top to bottom". If it passes muster, it is issued with a certificate. Before the testing, the strip-and-rebuild process takes over two hours. He tells me, "we go to a lot of trouble".

ON AIR

All well and good, but we thought we'd put the hyperbole aside and try the £399 upgrade package for ourselves. Fortunately I happened to have an old 2006 vintage Musical Fidelity X-150 integrated amplifier languishing in a corner and this was duly sent back to meet its maker. As promised, it was just over two weeks until it returned, whereupon it was duly powered up and warmed through. The prognosis has been generally good on my unit, although one channel was slightly "off spec", which is not surprising because the last time I used it, it had received a particularly 'vigorous' warming through at the hands of an Augustus Pablo LP and some B&W 801D loudspeakers on fully paid up party

duty. The poor little 70W RMS per channel Musical Fidelity kept things together rather better than my ceiling, which developed a two metre long hairline crack in the plaster where it met the top of one of the room's sidewalls, and my ears were never quite the same again (pardon?!)

Lest we forget, the X-150 was an excellent little half size integrated, purposefully designed with a beautifully finned black painted alloy casing acting as heatsink. A dual mono design, it sports two line level inputs in addition to a phono stage, an ALPS volume pot, and pre-out sockets for bi-amping. My original review called it, "deceptively capable", noting its "smidgeon of warmth and weight", plus a propensity to be "just a tad warm and full in the bass". I concluded that it serves up a sound "big, expansive, three dimensional, warm, smooth and extended in the treble". For £799, I had no complaints, although in absolute terms I felt the Nait 5i had the legs on it in terms of control and grip, whereas the Sugden A21a was an altogether more transparent and open sounding device – albeit with considerably less power, of course.

The tweaked X-150 was quite a surprise in two ways; first it showed how much better it was over the original in many ways, and second it represented a very stiff challenge to any new £1,200 integrated. The improvement wasn't subtle; it's true to say that stone cold and not run-in, it sounded better than the original ever did no matter how well warmed through it was allowed to get. The difference was clear as the nose on your face – a dramatically cleaner and more transparent midband being the headline. It felt like the noise floor had dropped considerably, and instead of listening to a warm and slightly mushy transistor design, I was now hearing a very open sounding amplifier with a considerably more dimensional sound. Whilst the original's expansive soundstage was there for all to hear, inside this instrument were far more accurately located, left to right and front to back.

I also noticed quite a change in the bass; gone was the big but soft character, and in its place an altogether more regimented, grippy performance, faster on its feet and more dynamically expressive. The spaces between the notes were more apparent, the leading edges more explicit. I also noticed an

improvement in general tunefulness, making the amplifier more natural and organic sounding. It's true to say that the tweaking didn't change the amplifier's original character fundamentally – that expansive, capacious sound that I liked was still there in all its glory, but it now felt far less artificial.

The improvement in focus didn't in any way lessen the musical enjoyment, which had been a fear of mine as sometimes tuning electronics can give you more of one good thing and less of another. Up top, the treble was considerably smoother, almost making the newly tweaked



X-150 sounding 'dull', although this was due to a lack of unpleasant grain rather than a fundamental change in tonality. It had a cleaner feel to it, with less ringing and a greater sense of air which again added to the sense of a natural musical event.

CONCLUSION

There are myriad ways to tune or tweak an integrated amplifier such as this, and I don't doubt for a minute that those with the requisite electronics skills will also be able to effect a great change. However, what Musical Fidelity offer is an integrated package with a clearly defined *modus operandi* designed to give of its very best, whilst keeping it in relatively standard trim. As such, the unit's reliability will be enhanced and its longevity assured. I think it's an excellent idea, and the amount of sonic improvement offered for a flat rate of £399 is a considerable one.

Obviously, I cannot speak for every other individual Musical Fidelity product – or indeed the forthcoming Audiolab 8000 package – but certainly the improvement garnered by this upgrade would be worth the expenditure, especially if you consider the cost to sell your existing amplifier and then upgrade to another as good as this. So, if money's too tight to mention, then consider giving your existing amplifier an employment extension!

SERVICING SHEET

"most MF CD players"

A1, A100, B200

Preamp 3

MA 50

P140, P150

B1

XA-1, XA-2, XA100, XA-100

A3, A3.2, A308, A1000

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Tnvista range

kW range

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The One Show

Can a low-cost bookshelf speaker offering a single drive unit deliver the all round musical goods?

Paul Rigby investigates...

If you're a fan of big multiple driver loudspeakers, best turn the page now! The John Blue JB4 sports single 'full range' drive units that cover the entire audio band on their own.

Of course, this is an unconventional route to tread in today's hi-fi world, and has its pros and cons. On the positive side, full range speakers don't need crossovers, which can cause more problems than they solve if not perfectly executed – not least colouration and phase gremlins. The downside is the limited performance at frequency extremes. The devil is in the detail, of course. No speaker design is necessarily right or wrong – it's all about the best working compromise.

The JB4 arrives in cherry livery with a hand-polished satin sheen, and the cabinet size, of bookshelf dimensions, measures 292mm high, 188mm wide and an expansive 264mm deep. The front of the cabinet carries a very slim, wide front port which has been designed to enhance bass. The four inch, full range driver comes complete with a resin cast waveguide and anti-fungus treated paper 'whizzer' cone (a supplementary inner cone attached to the voice coil but without suspension) and is of John Blue design.

The published 30W power handling figure isn't exactly going to impress your average 'Metal Hammer' reader. Instead, the JB4s are designed for lowish output valve amplifiers, thanks to high quoted 89dB sensitivity [see MEASURED PERFORMANCE].

SOUND QUALITY

As one might expect from 'point source' full range drivers with no crossovers to jiggle the phase, stereo

imaging proved excellent, throwing out a soundstage very securely between the speakers.

While the JB4s bit on the Sugarbabes' album as you might bite into a lemon (you wince due to the mastering's peak limiting-induced brightness), the speakers did provide a calculated exposition of the entire midrange, whilst managing to calm the recording's loutish treble extremes. This had a positive and negative effect on the performance, especially when compared to the horn-loaded, equally sensitive Amphion Prio 510s (£900) I had on hand for reference. On the down side, the controlled treble did mark the JB4s as a little less exciting than the Amphions and even a touch slower whilst, on the plus side, the JB4s offered considerably more midrange detail. For example, a steady percussive synth beat was masked by the Amphion's bright treble but brilliantly highlighted by the JB4s. Also, whilst bass definition and fullness couldn't compete with the Spendor S3/5R (£725), which offer Tardis-like bass extension for such a small design, the JB4s held their own, presenting a tight upper bass and a greater extension than the more expensive

Amphions – impressive at the price.

Spinning Can's excellent eighties master of 'Yoo Doo Right' from 'Monster Movie' (Mute), I was impressed by the JB4s' tonal accuracy, tracking as it did Jaki Liebezeit's varied drum kit with alacrity. The sound stage on this well mastered disc was very orderly. Fresh and well behaved, it felt like a group of cleaners had invaded the stage, tidied up the furniture, hoovered the floor, washed the dishes and dusted the corners free of cobwebs.

Still, I found that it was only when playing Carol Kidd's jazz vocal piece, 'Dreamsville' (Linn) that the JB4s really relaxed. Their elevated midrange easily tracked both acoustic guitar, piano and drum rim shots. Whilst the JB4s didn't have the same high degree of transparency and sheer sparkle as the Amphions, the JB4s did exhibit an uncluttered musicality and a sense of ease. There's no indication of a forensic aural examination taking place here, despite that excellent midrange detail, yet the JB4s kindly supplied enough information to give the Kidd vocals both nuance and subtlety.





On to vinyl, and Yes's 'Yours Is No Disgrace' foxed these speakers due to that track's dependency on bass to provide both rhythm and mood. The JB4s were a little lost, trying to locate the lower bass resonances that flowed all over the ditty from the drums to the unique bass lines of Chris Squire to the heavy, rich vibrations from the Hammond organ. As such, the progress of the track's dynamic build-up was hampered, whilst the bass guitar - which provided suspense during quieter moments - seemed absent without leave. The Spondors barged their way to the fore here, and showed the JB4s how it was done, offering both power and depth coupled with verve from the organ that brought some sense to that instrument's performance. The JB4s did however provide an incisive midrange, following each complex 'prog' construction with ease. When facing the Amphions, the JB4s also offered a richer portrayal of the vocals.

Kate Bush's innovative 'Aerial' album through the JB4s exhibited sweetness and

calmness throughout. The JB4s even scored a point off my reference Quad ESL-57s picking up a nuanced introductory beat that had the Quads flailing to pinpoint. In fact, the JB4s loved Bush's voice with its blend of delicate delivery and inner power that were just grist to the JB4 mill.

CONCLUSION

The John Blue JB4 speakers are pleasant to listen to - and that's not damning a fine pair of speakers with faint praise. In fact, to elaborate, what the JB4s do brilliantly is construct an easy synchronicity between each element of the frequency spectrum, which surely has to be down to their crossoverless single driver design. This meant that music played through the JB4s never felt strained or forced, and as such they are perfect for jazz and classical fans who love a sweet sound. Of course, the design philosophy has its downsides too, so don't go expecting them to give a PA-like rendition of Metallica's 'Enter Sandman'. A fine, quirky and interesting loudspeaker for valve amplifier inclined, easy listeners.

REFERENCE SYSTEM

Avid Acutus/SME IV/Benz Glider turntable
Icon PS3 phono stage
Naim CD5 CD player
Aesthetix Calypso preamplifier
Icon Audio MB845 monoblocks
Quad ESL-57 (One Thing modified) loudspeakers

VERDICT

Quirky design delivers a finely musical midband and bags of charm overall.

JOHN BLUE JB4 £654

John Blue

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FOR

- beguiling presentation
- detailed midrange
- fine soundstaging
- finish

AGAINST

- lacks bass muscle
- nebulous treble

MEASURED PERFORMANCE

The small single drive unit has a parasitic centre dome instead of a dust cap that radiates high frequencies (it is not a fixed phase plug). These things usually give very uneven output to 20kHz and correspondingly ragged sounding treble, but the JB4 MkII drive unit works quite well in this area our third-octave analysis (not shown) indicates, with flat treble to 20kHz. Our published sine wave response shows resonant peaks and troughs but an even trend, so the JB4 MkII will have extended treble but it will likely sound a little spiky. The loudspeaker's midband is very prominent and low frequency output rolls away, some peaking around 60Hz suggesting it will excite small rooms well if placed against a rear wall. Facilitating this is a front port that peaks at 55Hz to augment bass. Unfortunately, this port also outputs box noise, seen as red peaks, at quite a high level, likely to add boxy colouration. However, counterbalancing this were short (10ms) and long (200ms) spectral decays that were cleaner than most loudspeakers, so the small drive unit is likely to give strikingly clear vocals at least, with strong intelligibility. Distortion was also low at less than 0.2% above 200Hz, a low 2% at 55Hz and a fair 5% at 40Hz - good for a small loudspeaker working hard. However, the port isn't so clean, measuring 9% around 55Hz.

Sensitivity was almost absurdly high at 89dB, but the small cone seemed close to its mechanical limits

with just one Watt fed in (2.84V of pink noise). With a 7 Ohm impedance the suggestion is the JB4 MkII should be used with a low power valve amplifier, best able also to cope with its reactance at low frequencies, although the load is largely resistive above 200Hz.

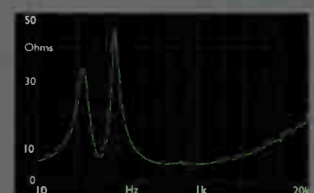
The JB4 MkII is an interesting design. Whilst not fundamentally accurate, it is nevertheless very strong in many areas. I suspect it will sing as a wallstander in a small room, driven by a high quality low power valve amplifier. NK

FREQUENCY RESPONSE



Green - driver output
Red - port output

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Designing Loudspeakers

PT 24

Transmission Line or Non-Resonant Aperiodic? Peter Comeau investigates...

In our letters section this month is a question regarding the concept of Aperiodic designs which I felt required a little more examination than I was able to give in a short paragraph reply.

While waiting for further developments on the open baffle front (apologies for the delay) I'm not sitting idly by, so this treatise can form the start of the next speaker design series project – the thorny subject of Transmission Lines.

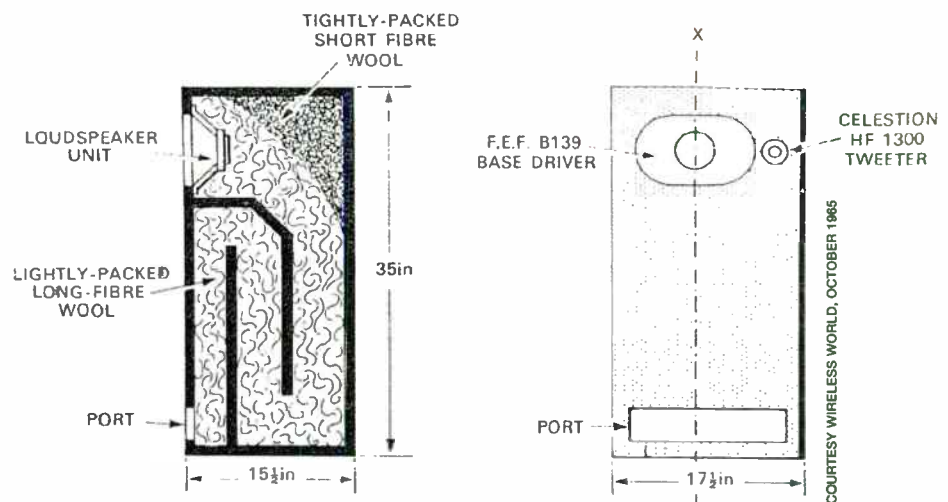
Now I know, from past experience, that Transmission Lines are the darling of many a speaker constructor, and more than one has torn his hair out trying to get the design right! So here goes on my own view of TLs, Aperiodics and everything in between.

If I say 'let's start with the Aperiodic design' you may wonder what this has to do with Transmission Lines? The answer lies in the basis of the TL concept and its history as outlined in Bailey's original *Wireless World* article.

There were actually two *Wireless World* articles on Bailey's concept and, not surprisingly, the first one which predates the 'Transmission Line' article by seven years has been largely ignored.

The 'Non-Resonant Loudspeaker' design originally published by Bailey in *Wireless World*, October 1965, drew on work originally investigated in the 1930s and then called the 'Acoustic Labyrinth'. The concept is simple – load the rear of the drive unit with an absorbent line so that the acoustic energy from the rear of the cone is absorbed without reflection.

Such an enclosure would be the ideal as far as the 'disappearing' enclosure is concerned and has found



The one that started it all – original Bailey Non-Resonant Loudspeaker Enclosure Design.

its way into the B&W Nautilus, to name but one famous design based on this principle. The B&W Nautilus is a true acoustic transmission line, not an acoustic labyrinth as such but a curved, tapering, absorbent filled line aimed to absorb a drive unit's rear sound without reflection.

But look at most TLs and you'll find a 'port' or opening in the line at its end. Bailey's experiments showed that, with the line closed, bass response was 'weak' and the drive unit was working very hard at low frequencies. By opening the line with a 'port' the bass response was 'improved to become approximately flat' and 'cone excursion was greatly reduced' around the 30 – 50 Hz area.

In a correctly loaded line the bass unit is mass/resistance loaded over almost its entire range of operation. Without the usual transition to stiffness loading we can concur that the system is non-resonant or aperiodic over its working range. Only at very low frequencies does the mass of the air in the pipe couple to the compliance of the

drive unit cone to give a fundamental resonance.

'NON-RESONANT OR APERIODIC'

The title 'Non-Resonant Loudspeaker' came about because of the results that Bailey confirmed when testing his 'transmission line' with a spark impulse. To investigate the absorption of the line he vaporised a copper wire with a high voltage capacitor discharge and captured, with a suitably placed microphone, the sound reflections from the line.

These reflections were found to be minimal, compared with the same test applied to a bass reflex cabinet which showed considerable resonances for more than 5mS after the initial impulse. Bailey therefore called his line 'non-resonant'.

At this stage the experimental speaker utilised a 'F.E.F. B139 Base Driver' (sic) and a Celestion HF1300 tweeter; (clearly the type setter at WW had neither heard of KEF nor of Bass)!

WD Phono3S Valve Phonoamplifier Kit

"The real star of the show for me, however, is the Phono3 as it is particularly astonishing in its abilities, especially at its modest price."

Passive RIAA EQ

Based around a triple gain stage of ECC83 valves, this phono preamplifier utilises passive RIAA equalisation (zero feedback) for the finest sonic performance from any turntable. A separate power supply removes all sources of hum and noise from the Phono3S case for optimum clarity of sound.

MM and MC inputs

WDPhono3S offers you two inputs, selected on the front panel, for MM and MC cartridges. MC inputs feature high performance step-up transformers for the lowest noise, clearest output from any cartridge. Each input has individual impedance matching to obtain the best sound from the cartridge of your choice. In addition you can select the subsonic filter characteristic to give the optimum results from your turntable, arm and cartridge.



Kits come complete with pictorial instructions for easy assembly.

WDPhono3S kit	£399
WDPSU3 power supply	£229
WDPhono3S and PSU3 built and tested	£853

WDPRE3 Valve Preamplifier kit

"So there we have it, a pre-amplifier capable of driving any load and maintaining its linearity no matter what cables or partnering equipment you prefer to use."

The Active Preamp principle

This 5 input line level preamp is essentially an SE triode power amplifier in concept. WDPRE3 uses an ECC82 double triode arranged as input voltage amplifier and power output amplifier stages, the latter driving oversize 20:1 output transformers.

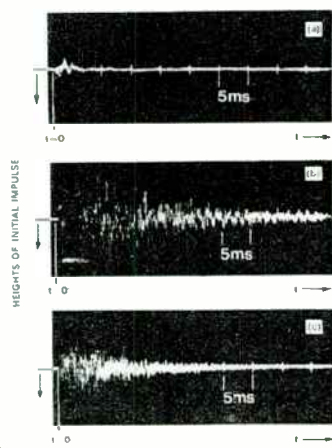
Active vs Passive

Many enthusiasts assume that a 'passive' control unit (essentially just a volume control and switching system in a box) is the ideal 'preamplifier'. However this assumption takes no account of the interface between the source and the power amplifier, let alone the effects of partnering cables. The WDPRE3 effectively isolates the source from the power amplifier and provides the correct terminating impedance to optimise the musical performance.



WDPRE3 requires the WDPSU3 power supply (shown above)

WDPRE3 kit	£369
WDPRE3 XL kit	£399
WDPRE3 Built and tested	£495



Impulse tests of a) damped non-resonant line, b) undamped reflex and c) damped reflex loudspeakers from *Wireless World*, October 1965

The second article, published in *Wireless World*, May 1972, was titled 'The Transmission-Line Loudspeaker Enclosure' and bows to the increasing interest in this type of design. It is this article that helped put the 'Transmission Line loudspeaker' firmly on the map.

Here the bass reinforcement effect of having the line open is explored more fully. The explanation is given that 'good absorption' is difficult to achieve if the line is 'less than one-quarter wave length of the sound in free space'. With this design of line length the sound emitted from the 'port' 'will not start to cancel the radiation from the front of the cone until the effective pipe length is less than one-sixth of a wavelength'.

What Bailey was describing, but didn't enunciate, was the 'quarter-wave pipe' principle. A quarter-wave pipe will reinforce the output of the driver as the output of the open

end of the pipe is nearly in phase with the drive unit (the phase shift reaches 90 degrees at the quarter-wave frequency). At the quarter-wave frequency itself the air in the pipe is doing most of the work, the driver diaphragm only having to move by a small displacement to produce considerable output.

Left unlagged a 'quarter-wave' pipe will resonate at all the harmonics of the pipe's fundamental resonance causing a clearly audible series of harmonic colourations right up to the seventh harmonic. For a pipe tuned to 30Hz you can therefore expect humps and dips, and corresponding audible resonances, to 210Hz.

Filling the pipe with absorbent material reduces these harmonic resonances but also reduces the efficiency of the 'quarter-wave' output. Clearly, then, the designer has the choice of making the line entirely non-resonant and having a smooth but gradually falling bass response, or allowing the line to resonate at its quarter-wave frequency and absorb the harmonics as best as possible, giving a flatter bass response with just a few humps and bumps.

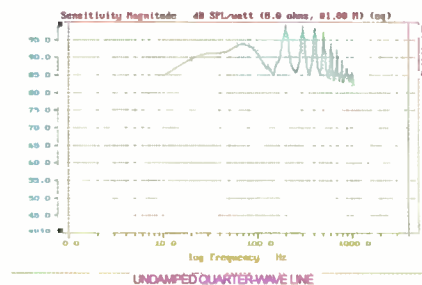
'TRANSMISSION LINE' OR 'REFLEX'

What also seems to have been largely forgotten in TL history is that Bailey and Radford patented the 'Non-Resonant Transmission Line' and that Radford Audio produced several loudspeaker designs using the absorbent line principle. In the Radford examples I've been able to investigate the line is carefully loaded with teased out long-hair wool. Usually the midrange unit is also loaded by the line to help with absorbing its rear output too, though also subjecting the midrange cone to some extra displacement by air pressure in the line from the bass unit.

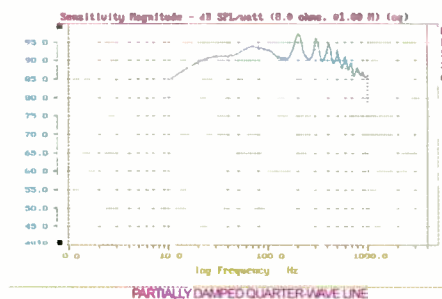
That the output of the bass unit from this damped line gradually sloped down below 100Hz was accommodated by placing the speakers closer to the rear wall and on the floor thus improving the polar power response of the speaker in the room at low frequencies.

The story of the Transmission Line loudspeaker then developed, first with the introduction of the IMF Monitor range, later to become TDL, and the Cambridge Audio R50 while, currently, the TL principle is being kept alive by companies such as PMC.

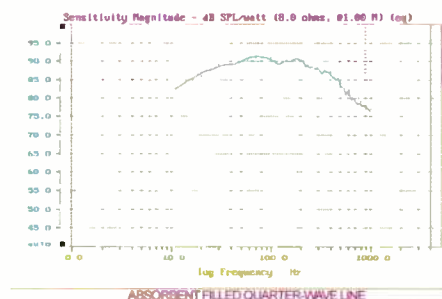
Investigating the construction of many of the commercial designs there is one factor which seems common to most of them. Looking



Graph of harmonic resonances measured at the exit of a quarter-wave pipe with no damping. Pipe resonances are clearly audible up to the seventh harmonic. (Note: this is not a graph of speaker frequency response but just the output of the pipe itself through the end 'port').



Effect of adding foam lining to a quarter-wave pipe. Pipe resonances are subdued but not eliminated. Low bass efficiency remains high.

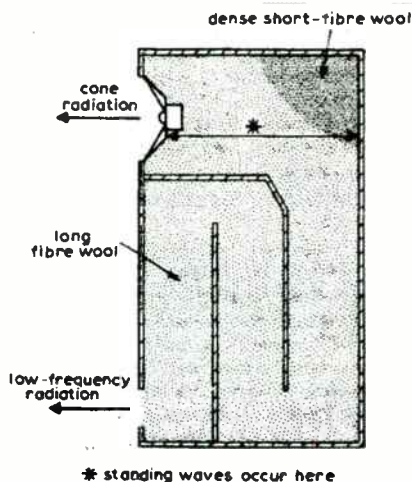


Effect of stuffing quarter-wave pipe with long hair wool absorbent. Resonances are ironed out but note that the output of the line at low frequencies has dropped by 3dB.

at the absorbent filling of the line one typically encounters the use of a lining of dimpled foam. This does not fill the line in the way that long hair wool does but, instead, adds absorption along the walls of the line.

In this way the line is left open and unhindered along its length. I believe that this aids the efficiency of the quarter-wave resonance such that the output from the line is at a higher acoustic level than if the line was filled with long hair wool. Certainly the listening evidence suggests that the IMF TLS designs and their counterparts sounded very full in the 30 – 50Hz region and, perhaps, a little weak through the 100Hz area.

As IMF's designer John Wright progressed with the TL designs at TDL he eventually ended up with a lower cost compromise design called 'RTL' or 'Reflex Transmission



Packing densities of wool absorbent for the Bailey Non-Resonant Loudspeaker, courtesy *Wireless World*, May 1972

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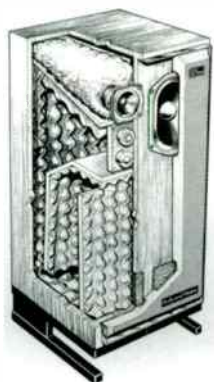
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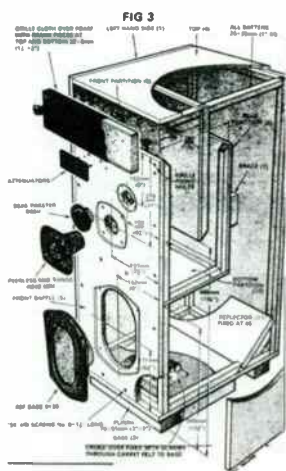
COURTESY OF IMF ELECTRONICS BROCHURE



Cutaway showing interior dimpled foam lining of IMF Transmission Line.

Line'. This was more honest in its design concept in that the line now becomes an extended reflex port.

I say 'honest' because, along the way, a number of so-called TLs or Acoustic Labyrinth designs crop up that clearly are not true 'Transmission Lines' in the Bailey sense. I cite the SMC AL range and similar commercial examples which,



Sectional diagram of Chris Rogers Pro9-TL showing tapering line.

if you look at their behaviour, are simply reflex loudspeakers where the tube behind the reflex port is replaced by a line, albeit lined with foam to absorb harmonic resonances.

Then there are the oddities like the Ferrograph S1 and B&W DM2a which have short 'eighth-wave' lines which are filled with damping material. Again these 'lines' behave in a similar way to extended reflex ports which are then resistively loaded with the aim of reducing resonance and approaching an aperiodic performance.

By contrast we have the DIY approach which veers towards the Bailey Non-Resonant TL concept epitomised by two seminal designs, the Hi-Fi Answers Transmission Line Monitor Speaker and the Hi-Fi For Pleasure Pro-9TL, both by Chris Rogers. In addition the Hi-Fi News Daline – a 'Decoupled Anti-Resonant Line Loudspeaker' by Robert Fris showed how a small cone could

utilise the line to extend and add power to the bass response.

All of these DIY designs use a line stuffed with absorbent, Chris Rogers being bent on the 'complete' absorption' principle actually describing that 'a very slight rumble may be heard from the mouth of the duct at very low frequencies; but this is of such a small extent that it can be forgotten'.

BOOM, WOOF OR RUMBLE

So which is correct – which TL concept yields the best results?

Well, it all depends on whether you want your speaker to boom, woof or rumble. I don't think there's any doubt that a shortened line, foam lined or otherwise, will just act as a reflex port. All you have to do is inspect the impedance curve to see the sharp 'Q' of the system resonance to see how the speaker behaves.

There's something to be said for this type of 'Reflex Transmission Line'. It generally gives less 'chuffing' than a typical port due to its lower air velocity and resistive lining of the 'port'. But you can expect it to boom, in the nicest possible way, as all reflex speakers do.

So what about the commercial TLs, like the IMFs and those that follow similar principles? For whatever reason, whether publicity driven or otherwise, the IMFs outsold the Radford offerings by a considerable margin. Could it be that the buying public preferred the trouser-flapping 'woof' offered by these underdamped lines?

Having attended demonstrations

of IMFs, and watching people's reactions, there's little doubt that the gut thumping bass produced from pipe organ reproduction is intensely exciting. What I always find disappointing, though, is the thin upper bass region that accompanies this type of performance. Of course these types of TLs have their adherents, but I'd rather have bass that told me how the performer was playing the instrument rather than just hearing a blast of air from the line around its quarter-wave frequency.

Which brings us back to the home constructed TLs designed according to the Bailey Non-Resonant Line principles. These produce a subterranean rumble (Bailey refers glibly 'windows being easily rattled at 30Hz') when called upon to do so by extended bass frequencies in the music but otherwise seem to do little to excite the TL lovers.

In fact you might just wonder where that big box is keeping all that bass potential apparently hidden. That is until you start living with this type of design. Then you might just discover that even, articulate, well balanced and extended bass is exactly what a high fidelity loudspeaker should be producing. Which is why, in future articles, you'll find me exploring the Non-Resonant or Aperiodic Transmission Line principle for my next design!

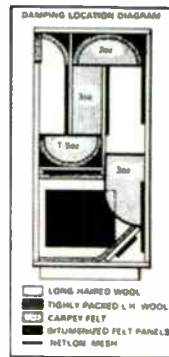
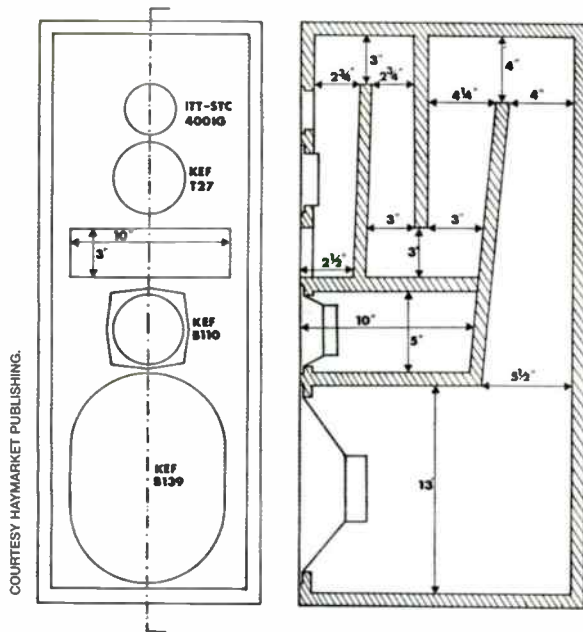


Diagram showing placement of tightly packed and loosely packed areas of Long Hair Wool throughout the Pro9-TL line.



Internal arrangement of the enclosure

Chris Rogers Hi-Fi Answers Transmission Line Monitor Speaker construction showing folded line exiting above the midrange enclosure.



WORLD STANDARDS

These are the best products we've heard that are currently on sale in the UK, complete with the date they were originally launched and their current retail prices.

TURNTABLES

PRO-JECT RPM1 GENIE 2007 £125

An absolute masterpiece of 'if you don't need it, don't include it' engineering. What's left is superbly made and turns in a staggeringly good performance, regardless of the low price.

REGA P1 2008 £189

Rega undercut their own P2 with this new entry-level deck. Easy to set up and fine sound quality

REGA P3 2000 £298

Great affordable audiophile deck with fine bundled tonearm. Tweakable, and responds well to careful siting on a Base platform.

TECHNICS SL1200/II 1973 £395

Slick build makes it a respectable performer, although the cheapo arm limits it - fit a Rega RB250 and it's suddenly a serious mid-price machine.

MICHELL TECNODEC 2003 £575

Superb introduction to Michell turntables on a budget. Top quality build and elegant design make it the class of the mid-price field.

PRO-JECT X PACK 2005 £650

Decently musical sound, fine build and blistering value for money turntable, arm and MC cartridge package.



ROKSAN RADIUS 5 2003 £750

Fantastic value allied to intelligent, interesting and 'out of the box' design makes for a wonderful entry-level superdeck. Open and musical sound is more inviting than Michell TecnoDec rival, and the bundled Nima Unipivot arm is a superstar.

OL AURORA MKII 2007 £750

Seminal 'entry level high end' deck showing obsessive attention to detail. The result is an extremely wide open and natural sounding machine.

FUNK FIRM VECTOR 2006 £760

Innovative attempt to produce the best sounding turntable at the price; highly musically enjoyable.



MICHELL GYRODEC SE2005 £970

Design classic with superlative build and finish. Sound is beautifully smooth, expansive and effortless but lacks bass grip compared to some rivals now.

MARANTZ TT-1551 2005 £999

This, the most musical sub-£1,000 turntable package, includes a fine tonearm and MM cartridge; plug and play vinyl at its best.

ACOUSTIC SIGNATURE CHALLENGER 2006 £1,269

Heavyweight turntable in more ways than one; massive sharply focused soundstage allied to vast dynamic range makes it outstanding at the price.

VPI SCOUT/9" JMW ARM 2006 £1,295

With a massive, solid and focused soundstage, superb transients and excellent musicality, this turntable is exemplary at the price.

PROJECT RPM 10 2006 £1,500

Brilliant 'fit and forget' deck that gives everything it plays a clean, warm, enjoyable sound - but not quite as effective in absolute terms as some price rivals.

REVOLVER REPLAY 2007 £1,500

Revolver spring back into the vinyl market like they've never been away, with a stylish and solidly built LP spinner. Welcome back!

SCHEU ANALOG BLACK DIAMOND 2007 £1,500

Stylish and highly capable turntable with seriously impressive bass. Comes with tweaked RB250 and high output Benz Micro MC cartridge as a package - superb value for money.

CLEARAUDIO SOLUTION/ SATISFY 2006 £1,650

Wonderfully big, powerful and enthusiastic sound is tempered by a little over exuberance on occasions. Super value, with a great upgrade path.

THORENS TD2030 2006 £1,895

Excellent design and a supplied Rega RB300 make this a highly capable vinyl spinner. Blue tint to the Perspex base is rather pretty, too!

MICHELL ORBE SE 2002 £1,916

Ultimate evolution of the Gyro adds massy acrylic platter and two-stage isolation. Fantastically capable all rounder with commanding, powerful, detailed sound that gets the best from almost any arm and cartridge



LINN LP12SE 1973 £3,510

New Keel subchassis is not cheap but brings the LP12 firmly into the 21st Century, with pace, dynamics and low end grunt.

SME MODEL 10A 1995 £4,556

Exquisitely engineered deck and SMEV tonearm combo that's an extremely accomplished performer with classical music.

CLEARAUDIO REFERENCE 2003 £4,000

The company's best value vinyl spinner; good enough to get the best from almost any tonearm and cartridge combination. Brilliantly open and neutral sound; superlative pitch stability; stunning build and styling - Michell Orbe does most of this at half the price, however.

ACOUSTIC SOLID ONE 2007 £4,000

Huge turntable, both in terms of sheer mass and sonic dynamics. Fit up to three arms and enjoy, just don't damage your back moving it...

AVID VOLVERE SEQUEL 2007 £4,600

Stylish and very well built vinyl spinner that measures well and sound spectacularly neutral and vivid.

SIMON YORKE S9 2002 £4,995

Magnificently designed and built 'recorder player' that has musical abilities few can match. The arm is particularly impressive, despite its apparent simplicity

McINTOSH MT10 2008 £8,995

It's big, expensive, controversially styled and glows more than some might consider necessary! Fortunately it's also an astonishingly good performer...

TO NEARMS

REGA RB250 1984 £112

This is capable far beyond its price point, with a tight, lean and detailed sound. Responds well to counterweight modification, rewiring and general tweaking.

MICHELL TECNOARM A2003 £399

John Michell's brilliant reworking of the Rega RB250 theme, using blasting and drilling techniques usually seen in motorsport! The result is the best sounding arm at £400, and as good as some at four times the price.



ORIGIN LIVE SILVER 2006 £599

This expertly fettled Rega boasts a superbly even, transparent and tuneful sound. Gives away only a small degree of finesse and dimensionality to top arms.

HADCOCK 242 SE 2000 £649

Latest of a long line of unipivots, with added mass, revised geometry and better finish. Musical like no others at the price.

SME 309 1989 £767

Mid-range SME comes complete with cost-cut aluminium armtube and detachable headshell. Tight, neutral sound with good tonality, but lacks the IV's pace and precision.

SME SERIES IV 1988 £1,127

Offers nine tenths of the SME V's magic at just over half price. Exquisitely built and finished, and a design classic. Faces stiff competition these days, but lovely nevertheless.

AUDIO ORIGAMI PU7 2007 £1,300

HFV's best tonearm of 2007 is a derivative of the classic Syrinx PU3 updated to spectacular effect. Hand made to order, with any mass, length and colour you care for. Fit, finish and sound truly impressive.

NAIM ARO 1987 £1,425

Charismatic unipivot is poor at frequency extremes but sublime in the midband; truly emotive and insightful.

ORIGIN LIVE ILLUSTRIOUS 2002 £1,570

A modern superarm with battleship build. Extremely strong, even and open sound in the mould of the late, lamented Zeta, plus fine tonal colouring. Exquisite.

**HELIUS OMEGA 2008 £1,595**

Stylish and solid lump of arm with fabulous build quality, that turns in a dynamic and weighty performance.

SME SERIES V 1987 £1,614

The so-called Best Pickup Arm in the World isn't quite, but comes pretty close. Vice-like bass with incredible weight, ultra clear midband and treble. Does everything except beguile the listener.

LINN EKOS 1987 £1,700

Subtle mods over the years, including revised bearings and the recent new wiring has kept it a serious contender in the superarm stakes. Lacks the SME's slam, the OL's clarity or the ARO's emotion, but has a feisty musicality all of its own.

GRAHAM PHANTOM 2006 £2,495

Sonically stunning arm with magnificent bass dexterity and soudstaging. Build quality almost up to SME standards, which is saying something...

TRI-PLANAR PRECISION 2006 £3,600

Stunning build, exquisite design and surely the most naturally musical and lucid sound around makes this a remarkable pickup arm.

CARTRIDGES**AUDIO TECHNICA AT-110E 1984 £29**

Great starter cartridge that's refined, detailed and musical beyond its price.

ORTOFON 2M RED/BLUE 2007 £60/£120

The first new budget MM designs for many years, Ortofon's 2M Red and Blue are high resolution designs that are an engaging listen

**GOLDRING G1042 1994 £135**

One of the best MMs going, with sweet and extended treble and punchy, muscular bass.

ORTOFON SAMBA/SALSA 2006 £150/£200

Fine cartridges that offer that MC magic at an affordable price. Samba is more dynamic and forward, Salsa rather smoother but both are great performers and track well.

DENON DL103R 2006 £200

Awkward to get working properly with a poor mounting arrangement, yet it rewards with a musical performance that makes similar priced cartridges sound cold.

DYNAVECTOR DV10X52003 £250

A distant descendent of the classic Ultimo 10X, this has warmth and sweetness in spades, allied to a punchy bass. Beats G1042 comfortably.

AUDIO TECHNICA AT-OC9MLII 2007 £270

New and improved stylus and cantilever plus serious price reduction equals stunning dynamics and clarity. A real bargain

ORTOFON 2M BLACK 2007 £350

Staggeringly good high-end MM that uses a stylus from the MC Jubilee and easily rivals similarly-priced MMs

DYNAVECTOR DV20X-H2003 £395

The best modern budget MC combines deliciously sweet sound with fantastic get-up-and-go. High output version works a treat with valve phono stages too.

**LYRA DORIAN 2007 £495**

Incisive and musical, the Dorian is one of the most revealing cartridges at the price.

ORTOFON KONTRA' B1999 £720

Surprisingly articulate performer by Ortofon standards. All the brand's usual polish and detail allied to real vim. Loves making music!

**ORTOFON RONDO BRONZE 2005 £500**

Excellent mid-price moving coil with real rhythmic alacrity and a decent deal of finesse.

ZYX R-100H 2005 £625

Exceptionally tight sounding and detailed cartridge with the musical skills to match, this is up with the very best at the price, with a presentation all of its own.

BENZ MICRO GLIDER L2 2008 £650

Crisp, clean and detailed MC; particularly impressive at both ends of the frequency spectrum

TRANSFIGURATION AXIA 2007 £890

Musically adept and highly resolute cartridge with impressive tracking abilities. Top end lift means careful matching required, however..

ORTOFON KONTRA" C2004 £1,000

The most secure tracking MC we've heard; its super clean, fast, detailed and neutral sonics make it a brilliant partner to warmer sounding turntables.

ORTOFON MC WINDFELD2008 £1,799

Ortofon's new flagship MC is a sophisticated and alluring performer that takes the vinyl experience to a new level.

KOETSU RED K SIG 2007 £2,399

The new K Signature adds a hefty dose of insight and finesse to the already impressive Red and the results are fabulous

DIGITAL DISC PLAYERS**CAMBRIDGE AUDIO 640C V2 2006 £250**

Superb entry level CD player; crisp, composed, musical sound plus fine build and ergonomics.

MARANTZ CD6002 2008 £299

Revealing and open budget CD spinner, once the menus have been navigated to set the player up optimally!

REGA APOLLO 2006 £498

Highly rhythmic and beguiling performer, although lacks some warmth of tone. Superb ergonomics and design

RUSS ANDREWS DAC-1 USB 2007 £599

Not just a USB gadget, but a truly accomplished upgrade DAC that makes the best of CDs, MP3s and digital radio

CAMBRIDGE AUDIO 640H 2005 £599.95

Fine sonics and decent build make this our favourite affordable HD music server.

MARANTZ SA7001KI SIG2006 £600

Brilliant CD/2ch SACD spinner with a big, sweet, analogue-like sound - CD is totally competitive at the price with the best dedicated machines..

AUDIOLAB 8000CD 2006 £650

Ultra clean and transparent sound with amazing detail retrieval; just a tad bright and analytical for some, though.

SHANLING CDT-80 2005 £650

Very impressive mid-price machine with a big, sumptuous, expansive sound - better still when tubes are changed.

**CAMBRIDGE AZUR 840C 2006 £800**

Well built CD player with a silky, yet detailed sound and a whole host of useful facilities. Excellent value for money.

NAIM CDSi 2008 £850

Naim's new italic 'i' variant improves even further on the original, offering superb performance in a very well built package.

EASTERN ELECTRIC MINIMAX CD 2005 £925

Highly accomplished tube-equipped all rounder with a clean, open and musically lucid sound; superb value.



CYRUS CD81 2005 £1,000

Highly incisive, engaging, grippy and dynamic sound, but needs careful matching to smooth ancillaries. Optional PSX-R adds bass and dimensionality.

BENCHMARK DAC-1 USB2007£999

Pro-biased DAC with useful range of inputs and impressive headphone outputs, too. Save £250 if you don't need the USB-equipped version.

ELECTROCOMPANIE**PC-1 2008 £1,034**

Tidy and polished-sounding CD spinner with strong bass and an assured sense of confidence

EXPOSURE 3010 2003 £1,200

One of the most 'analogue' CD players, second only to the Shanling. Wonderfully beguiling balance leaves you looking for the tube output stage.

REGA SATURN 2007 £1,298

Wacky looks surround a highly accomplished CD spinner that marries a smooth midband to excellent bass grip.

EDGAR CD-1 2007 £1,350

Quirky Slovakian CD spinner with all-valve output and a truly spine-tingling performance.

STELLO DP-200 2004 £1,495

Brilliant do-it-all upsampling DAC preamp with headphone output and phono in. One of the best digital to analogue converters around, allied to mind-boggling flexibility.

MARANTZ DV9600 2006 £1,500

Impressively accomplished universal disc player, that performs superbly on CD, SACD, DVD Audio and DVD Video

RAYSONIC CD128 2007 £1,599

Spaceship styling and fine build around a highly competent mid-priced CD spinner means a feast for the senses.

CHORD DAC64 2005 £1,995

Bespoke architecture gives a truly uniquely musical sound that's beguilingly musical in nature, if a tad tonally dry. Superb build and aesthetics too!

SHANLING SCD-T2000 2007 £2,250

Updated version of original SCD-T200C standardises upgrades optional on the older model and adds a few more tweaks for good measure. The result is a stylish player that works superbly with both CD and SACD

TUBE TECHNOLOGY**FUSION 64 2006 £2,200**

Unique digital and analogue audio engineering makes for an exceptional CD player that, on some programme material, is peerless.

**NORTH STAR MODEL 192 TRANSPORT/EXTREMO DAC 2006 £2,918**

Superbly finessed and loquacious sound allied to excellent build and finish make for a brilliant value high end buy.

ACCUSTIC ARTS CDP1MK2 2007 £3,985

Styling not to everyone's taste but build quality is impeccable and the performance is stunningly musical.

NAIM CDX2-XPS2 2003 £4,950

A fine high end machine, but add an XPS2 and it becomes one of the most charismatically engaging 16bit machines we've ever heard. Plays music with such passion!

LINN UNIDISK 1.1 2004 £6,500

Surely the ultimate universal DVD player; superb in every department, but its CD playback shines brightest considering it's not a bespoke Red Book machine.

NAIM CDS3 2003 £7,050

The most polished Naim CD to date; tremendously capable and musical, but lacks the Rottweiler quality of the cheaper CDX2-XPS2.

ACCUSTIC ARTS DRIVE 1 MK2/TUBE DAC 2 2007 £7,980

Superbly built high end CD transport and DAC combo that shows just what the format can be capable of.

ESOTERIC X-01 2005 £8,995

Breathtaking feat of digital audio engineering, and surely the best sounding combination CD/SACD spinner money can buy.

NAIM CD555/555PS 2006 £14,000

Very probably the best CD player yet made - certainly the most expensive; a digital *tour de force*.

**DIGITAL RECORDERS****SONY RCD-W3 2002 £250**

Usual superb Sony ergonomics make for non-nonsense budget buy. Fine direct digital copies, but analogue input poor. Middling sonics, but there's a digital output!

YAMAHA CDR-HD1300E2002 £600

HD means MD-style ease of editing, but compromises recording quality ever-so slightly. Add decent CD replay and it's a fine all rounder nonetheless - top value.

**PHONOSTAGES****PROJECT PHONOBOX LE2004 £99**

Great little box that improves on most bundled phono stages found in budget integrated amplifiers, adding detail and definition and a measure of smoothness too.

TRICHORD DINO 2002 £299

Great all rounder with switchable MM/MC. Fast, fluid and smooth like no others at the price.

JOLIDA JD9 2006 £400

Hybrid tube/solid state phono stage with a good range of adjustability. Excellent value for money and a fine, dynamic sound.

GRAHAM SLEE ERA GOLD V 2004 £460

Wonderfully warm, open and musical nature makes this an essential audition for those wanting a top value mid-price phono stage.

LEHMANN BLACK CUBE SE2006 £495

Clean, smooth and even right across the frequency range, this phono stage represents super value for money.

PURESOUND P10 2007 £400

Guy Sargeant's new MM phono stage is an absolute belter. Simple but very effective.

AQVOX PHONO 2 CI 2006 £598

Brilliantly versatile yet affordable phono stage with a beguiling sound, but careful matching essential. Balanced operation of real benefit.

ICON AUDIO PSI.2 2007 £599

Excellent value valve phono stage with good range of facilities and fine imaging abilities.

CLEARAUDIO SYMPHONO+ 2006 £809

Superb high resolution phono stage with a tight, grippy and engagingly musical sound.

ANATEK MCI 2007 £850

A spectacularly good MC phono stage that offers valve-like insight, underpinned by seriously impressive bass.

EASTERN ELECTRIC MINIMAX PHONO 2006 £1,099

A stunning phono stage with superb clarity and impeccable dynamics, allied to the atmosphere of valves. Can hold its own with even more expensive designs. A veritable bargain.

**LINN LINTO 2000 £900**

A musical and incisive performer, with more speed than the Delphini at the expense of detail and tonal colour.

QUAD QC24P 2007 £995

Dynamic performer that can be used on its own as a complete phono-level preamp.

TRICHORD DIABLO + NCPSU 2006 £1,198

Highly musical performer, this is one of the best phono stages at or near the price, but lacks the polish of the rival Whest.

AMPLIFIERS**NAD C315BEE 2007 £180**

A tough and highly polished budget amplifier with NAD's typically useful loudspeaker driving abilities

MARANTZ PM6002 2008 £299

Revealing budget amp with fine phono stage and tight, rhythmical bass.

ONKYO A-9755 2006 £700

Beautifully built, usefully versatile and truly enjoyable sonics make this another great affordable audiophile product from Onkyo.

NAIM NAIT 5i 2007 £725

The italic 'i' version remains one of the most musically competent and dynamically engaging integrated amps at the price.

CAMBRIDGE 840A V2 2007 £750

Version 2 addresses version 1's weaknesses to turn in a mightily accomplished performance, offering power, finesse and detail.

JUNGSON JA-88D 2006 £899

Stunning value for money Class A monster integrated; extreme power and clarity at a puzzlingly low price.



SUGDEN A21A S2 2007 £1,299

More power and greater transparency improve even further on the already impressive A21a to give truly impressive results

AUDIO NOTE OTO SE 2000 £1,199

This baby tuber is beautifully sweet and creamy, but lacks solid-state's clarity, detail and incision. Low, low power means speaker choice critical.

SHANLING STP-80 2007 £1,199

Well built and surprisingly muscular valve integrated. Engagingly musical.

CREEK DESTINY AMPLIFIER 2006 £1,200

Superb build, useful power plus a deep full bodied sound make this an excellent mid-price buy.

ELECTROCOMPANET PI-2 2008 £1,430

Powerful integrated with seriously solid bass and impressive dynamic abilities. Superbly musical.

ANATEK A50R 2007 £1,600

Simple integrated amplifier with spectacular bass grip and effortless dynamics.

**AUDIO NOTE SORO SE2000 £1,699**

Wonderfully out-of-the-box sounding tube middleweight is all about sweetness and fluidity. Limited power and loose bass, but little the worse for it.

UNISON RESEARCH S62002 £1,625

Tremendously musical and lithe sound with real finesse and subtlety too. Very slightly upper mid forward encourages careful partnering with ancillaries (Revolver R45s are ideal), but overall fantastic value for money.

**MOON I-3RS 2008 £1,890**

Grippy and clean performer with fine sound-staging and build quality.

SUGDEN A21SE 2005 £1,995

Brilliantly musical hear-through sound makes this one of the best transistor amplifiers ever made, but be prepared to match carefully.

RED WINE AUDIO SIGNATURE 70 2007 £1,995

Battery powered, single input Class D mono integrateds that work superbly well. Sound most un-digital!

COPLAND CSA29 2006 £1,998

Unfilingly svelte, sophisticated and smooth - both to listen to and look at - this is a truly desirable high end integrated.

NAIM SUPERNAIT 2007 £2,350

A technological and sonic tour de force from Naim that combines impressive functionality and connectivity with superb sound quality.

VINCENT SA-TI/SP-T100 2006 £2,300

Impressively built and stylish pre/power combo that take any kind of music and make the best of it

LUXMAN L-550A 2007 £2,800

Monster Class A integrated with powerful and revealing sound and a whole host of useful features, including a highly competent MM/MC phono stage

AUDIO RESEARCH VS155 2003 £2,895

The Naim NAP250's tubular alter ego; oodles of power allied to a strong bass and smooth open midband makes this a brilliant all round amplifier. Lacks the subtlety and finesse of the low powered single-ended brigade but makes up for it with sheer brio.

LEEMA TUCANA 2007 £2,995

Leema's success story continues with this integrated amp that combines power, detail and great musicality in a solidly built package

**SUGDEN IA4 2007 £3,499**

A goodly amount of Class A power and a breathtakingly fast and musical sound make this a high-end integrated to be reckoned with.

NAIM NAC282/NAP200 2004 £4,000

Wonderfully taut bass, lightning midband and incisive treble makes for an enthralling listen; this cracking combination looks great and is superb value too.

AV AMPLIFIERS**MARANTZ SR6001 2007 £700**

Superbly built A/V receiver with a huge feature count and fine sound quality, even in two channel.

YAMAHA DSP-AX861SE2007 £700

Highly capable A/V amplifier with mind-boggling array of surround sound options. Even has a decent MM phono stage!

ARCAM AVR350 2006 £1,500

Superbly accomplished do-it-all AV receiver package, with an uncommonly, warm, natural and musical sound. A winner goes from strength to strength.

DENON AVR-4308 2007 £2,000

Huge behemoth festooned with facilities and sockets, plus two remotes! Fortunately it's a brilliantly flexible and powerful performer.

NAIM AV2/NAP 150/NAPV 175 2002 £4,190

Brilliant audiophile multichannel pre-power amplifier combo; not as good with music as a two-channel Naim set-up at the same price, obviously, but surprisingly close. Elegant control layout plus a strong, clean and brilliantly engaging sound make this a serious crossover product. Ultimately lacks power compared to similarly priced Arcam gear, but is more musically involving.

HEADPHONE AMPLIFIERS**CHANNEL ISLANDS VHP-1/ VAC-1 £390**

A truly exceptional headphone output stage; the best at the price and an essential audition.

MUSICAL FIDELITY**X-CANS V3 2003 £249**

Mr. Michaelson's best headphone amplifier to date, with an extremely open and explicitly detailed sound plus serious bass wallop and the ability to drive any phones to very high levels. Errs towards brightness with some headphones, so match carefully and use smooth cables.

SUGDEN HEADMASTER 2003 £600

Unusual combined preamplifier and headphone amplifier; this boasts a surprisingly smooth and open sound.

PREAMPLIFIERS**CREEK OBH-12 2000 £220**

Brilliant value budget passive, giving little away in sonics to far more expensive designs. Connectivity and build aren't great, but what do you expect at this price?

**MF AUDIO PASSIVE PRE2003 £1,500**

Novel and effective pre with switchable gain via a transformer, and balanced operation. Open and incisive sound, yet makes most active rivals sound edgy by comparison. Silver version at the twice the price adds eerie transparency, and is superlative.

**MODWRIGHT SWL9.0SE £2,000**

Captivating sound quality that will transform your system. Build quality is equally impressive and value top-notch. Highly recommended

NUFORCE P-9 2007 £2,200

Impressive two box preamp with superb resolution and an engaging sound.

MELODY PURE BLACK 101D 2007 £3,295

One of the best preamplifiers we have ever heard. Takes the clarity and openness we expect from valves and adds a staggering level of grip and detail. Stunning.

POWER AMPLIFIERS**ROKSAN KANDY LIII 2008 £600**

Fine budget power amp that punches well above its weight and can embarrass more expensive designs.

QUAD 909 2001 £900

The latest current-dumper has a smooth and expansive character with enough wallop to drive most loads. Not the most musical, but super value all the same. Lovely build, finish and Quad's legendary service are nice.

NAIM NAP150 2002 £795

Driven by a decent source and a NAC112, this gives highly enjoyable results - providing you like the Naim sound! Taut, fast and feisty despite its relative lack of power.

SUGDEN MUSIC MASTER 2003 £1,300

Quintessential Class A Sugden sound is not warm as many expect, but extremely neutral and open with real tonal colour. By comparison, tubes sound bloated and standard solid-state hazy and brittle. Superb when partnered with efficient loudspeakers like Revolver R45s, but many will find it under-powered.

**NUFORCE REFERENCE 9SE** £1,550

Brilliant value for money monoblocks with massive power and super-clean, three dimensional sound.

**ROTEL RB1092** 2007 £1,595

Hugely powerful digital amp with neutral midrange and a wonderfully spacious treble

CHANNEL ISLANDS AUDIO D100 2005 £1,595

Clean and musical Class D monoblock power amplifiers in a neat, small package.

SILK GLOWMASTER KT88 2007 £1,699

KT88 based power amplifier offers dramatic clarity and excellent bass heft.

**QUAD II-40** 2005 £3,230 PR

Brilliant modern tube monoblock power amplifiers with plenty of power, wonderfully liquid and open midband and spacious, airy treble. One of the best tube power amp combos ever.

GRAAF GM20 OTL 2003 £3,300

Awesome output transformer-less valve power amp gives dazzling speed and incision, with an ethereal soundstaging and delicious filigree detail. Tremendous punch belies its humble 20W power rating. Factor in one of the most exquisite finishes this side of an Aston Martin and it's very hard to say no...

LOUDSPEAKERS**ACOUSTIC ENERGY NEO 1** 2007 £199

Tidy and well balanced standmounters with pleasing clarity and detail.

B&W 686 2007 £279

B&W's new baby standmounters offer a sophisticated and mature performance that belies both their dimensions and price tag.

USHER S-520 2006 £320

Astonishingly capable budget standmounters that offer detail and dynamics well beyond their price and dimensions

**MORDAUNT SHORT AVANT 914i** 2007 £300

Another pair of storming budget floorstanders from Mordaunt Short. Detailed, punchy and crisp.

MORDAUNT SHORT AVANT 906i 2006 £350

Dynamic and impressive floorstanders with excellent insight and a lively nature.

REVOLVER RW16 2004 £400

Outstanding standmounter with tonal accuracy and speed that totally belies its price; good sensitivity for a small box makes it great with valve amps too. A budget audiophile classic.

LEEMA XERO 2007 £650

Superb mini-monitors that belie their modest price tag with a bold and finessed performance

ACOUSTIC ENERGY AE1 CLASSIC £845

Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made.

SPENDOR S3/5E 2004 £950

A natural successor to the BBC LS3/5a, whose impressive neutrality, imaging and evenhandedness makes this a superior, if less charismatic, loudspeaker.

WHARFEDALE OPUS 2-M1 2007 £999

Large standmounters with impressive mid-range dome and fine integration across the frequency range.

RRR FS100 2007 £1,055

Mind-boggling amount of loudspeaker for the money. Big and sturdily built with serious bass and awesome soundstage scale. A real bargain.

YAMAHA SOAVO 2 2007 £1,200

Just as capable as their floorstanding brethren, the Soavo 2s have an assured sense of sophistication and poise.

REVOLVER RW451 2006 £1,199

Very musical floorstander that's clear, concise and truthful, whilst being exceptionally amplifier friendly - a dreamboat for valves.

ONE THING AUDIO ESL572007 £1,450

One Thing Audio's modifications keep the good old ESL57 at the very top of its game

KIBRI NAIMA 2007 £1,550

Unusual-looking omnidirectional loudspeakers with an absolutely captivating performance. Huge soundstage and bags of clarity - brilliant!

USHER BE-718 2007 £1,600

Beryllium tweeters work superbly, allied to a fast and punchy bass driver. The result is subtle, smooth and emotive.

SPENDOR S8E £1,895

Generously large, silky smooth delivery, this dynamic sounding floorstander is an excellent all rounder.

**NAIM ALLAE** 2002 £1,990

Taut and grippy like few others, this speaker majors on transient speed. Surprisingly smooth for a Naim box, with nicely etched treble. As always, tonally dry.

MONITOR AUDIO GS60 £2,000

Brilliant modern rock loudspeaker with a fantastically lithe and engaging sound, but partner carefully with a warm front end.

PINSH 2.1 2006 £2,000

Wonderfully neutral and self-effacing with Redoubtable low frequency articulation allied to the superlative hear-through clarity of the Pinsh ribbon tweeter makes for an extremely accomplished all round floorstander

YAMAHA SOAVO 1 2006 £2,000

Musical and transparent floorstanders with impressive dynamics and cohesion. Fine build and finish.

**ISOPHON GALILEO** 2007 £2,100

Big standmounters that really grip the music and offer quite startling dynamics and bass agility. Tricky to drive, however.

MONITOR AUDIO PL100 2008 £2,300

The MA boys pull out all the stops for their flagship 'Platinum' series standmounter with stunning results.

MARTIN LOGAN CLARITY 2003 £2,895

Supremely transparent and open, if dynamically limited, with middling bass punch, but that's not the point - that deliciously fluid and intricate midband wins great respect.

PMC OB11 2008 £2,950

Cleverly updated floorstanders give scale and solidity in slim and well finished package.

MOWGAN AUDIO MABON 2007 £3,995

Massively capable loudspeakers that offer dynamics, scale and clarity in an elegantly simple package. Wide range of finishes, too.

B&O BEOLAB 9 2007 £5000

Technically impressive and visually striking loudspeakers with sound quality that more than matches their looks.

ARS AURES M1 2006 £5,995

Sublime build and finish allied to an insightful, assured and even-handed musical performance makes these an essential high end audition.

QUAD ESL-2905 2006 £5,995

The old 989 with all the bugs taken out, this gives a brilliantly neutral and open sound like only a top electrostatic can; still not a natural rock loudspeaker, though.

REVOLVER CYGNIS 2006 £5,999

Revolver pull out all the stops and show what they can do with this magnificent flagship loudspeaker. A superb monitor that is like a mini B&W 801D in many ways.

B&W 801D 2006 £10,500

In many respects, the ultimate studio monitor; dazzling clarity and speed with commanding scale and dynamics.



ISOPHON CASSIANO 2007 £12,900
Drive units featuring exotic materials allied to superlative build quality result in an immensely capable loudspeaker. Not an easy load to drive, however.

ACCESSORIES

MONITOR AUDIO IDECK2006 £200
Fine design, impressive flexibility and a lucidly musical sound make the iDeck the current iPod dock champion.

ISOTEK GII VISION 2006 £550

A genuinely effective and surprisingly cost effective upgrade, but results could vary so a home dem of the power conditioner is recommended.

**TOWNSHEND MAXIMUM****2003 £800**

Classy ribbon supertweeter with flexible level settings and cool styling - you'll be amazed at the difference it makes, especially with Quad electrostatics.

HEADPHONES**SENNHEISER MX-550 2005 £19**

Our unqualified recommendation for those seeking a serious sounding pair of in-ear phones. Smooth, detailed and musical.

SENNHEISER PX-100 2002 £29

Cracking pair of lightweight, open back cans ideal for personals, but good enough for real hi-fi use. Superb build allied to a smooth and engaging performance make them the spiritual successor to the HD400s.

**GOLDRING DR150 2006 £70**

Excellent build and fine sound makes these budget cans superlative value for money.

SENNHEISER HD-590 1998 £199

The company's best real-world cans to date. Open and smooth with plenty of detail. Brightly lit midband makes them an ideal partner for a valve headphone amp.

SENNHEISER HD-650 2004 £250

Not the best headphone in the world, but a superb all round reference all the same. Very crisp, detailed and even sound allied to superlative build and fine comfort makes all most people will ever want. Cable upgrade yields great results.

STAX SR-007T OMEGA**II/SRM-007T 2006 £2,890**

Simply the best headphones we've ever heard at any price, these sweetly translucent electrostatic earspeakers are like no other headphone, or loudspeaker for that matter...

INTERCONNECTS**TECHLINK WIRES XS 2007 £20**

Highly accomplished interconnects at an absurdly low price. Stunning value for money.

WIREWORLD OASIS 5 2003 £99/M

Excellent mid-price design with a very neutral, silky and self-effacing sound. Superb value for money.

CHORD COMPANY**CHAMELEON 2 £90/M**

One of our favourites, these are musical performers with a smooth yet open sound.

**DNM RESON 2002 £40/M**

Neutral and transparent - a steal!

VDH ULTIMATE**THE FIRST 2004 £260/0.6M**

Carbon interconnects that help you forget the electronics and concentrate on the music. Miraculous transparency. Tight and tuneful bass mixed with air and space results in a cracking cable for the money.

**TCI CONSTRICTOR****13A-6 BLOCK 2003 £120**

Top quality 'affordable' mains outlet block, with fine build and good sonics. Well worth the extra over standard high street specials, which sound coarse and two-dimensional by comparison.

TUNERS**DENON TU-1500AE 2006 £120**

Excellent entry level analogue tuner; slick sonics and fine feature count makes it a bargain.

**CAMBRIDGE AUDIO 640T 2005 £250**

Sweet sounding digital/analogue hybrid with fine build and finish at the price.

MARANTZ ST-7001 2006 £299

Stunning performance on FM (at the price) coupled with its ability to get the most from DAB broadcasts makes this the best affordable tuner.

YAMAHA TX-761 2007 £350

Sets the standard for FM performance at the price and is no slouch on DAB either.

ARCAM DT91 2005 £450

The very best DAB tuner around, with fine sonics and styling to match; FM is less impressive though.

CREEK CLASSIC TUNER2006 £550

No tuner offers better sound per pound; wonderfully three dimensional and smooth from bottom to top.

MYRYAD MXT-2000 2005 £800

Truly sumptuous sound and excellent build is all most will ever need in a tuner; superb.

MAGNUM DYNALAB**MD-100T 2006 £1,895**

One of the best ways to hear FM that we know; superbly open and musical sound in a quirky but characterful package.

**SYSTEMS****YAMAHA CRX-M170 2007 £200**

One heck of a lot of quality performance on DAB, CD and FM for £200! Optional matching £120 NX-E300 loudspeakers aren't too shabby either.

TEAC DR-H300DAB 2008 £329

Nicely built and styled mini with fine performance on all sources that even plays DVDs!

NAD C-715DAB 2008 £429

Small, neat looks cover a truly capable system that shows just what a compact design can achieve.

ARCAM SOLO MINI 2008 £650

Half the size and two-thirds the price of a full-sized Solo, the Mini gives very little away in terms of performance to its bigger brother.

ARCAM SOLO 2005 £995

Excellent all-in-one system, with a warm, smooth and balanced sound to match the features and style.

LINN CLASSIK 2002 £995

The best one-box stereo system money can buy; superbly musical sound beats equivalently priced separates.

MERIDIAN F80 2007 £1,500

Fantastically built and versatile DVD/CD/DAB/FM/AM unit, designed in conjunction with Ferrari. Ignore nay-sayers who sneer that it isn't a 'proper' hi-fi product; most see sense when they listen to it...

**AURA NOTE MUSIC CENTRE 2007 £1,500**

Lovely shiny CD/tuner/amplifier with fine sound quality and dynamic abilities.

SHANLING MC-30 2007 £500

Quite possibly the cutest all-in-one around with fine performance from the CD player, tuner and MP3 player input. Very low power, though.

LINN CLASSIK MOVIE 2007 £2,250

Superbly built all-in-one that offers excellent sound across all formats and is surprisingly easy to use.

MARANTZ 'LEGEND' 2007 £22,000

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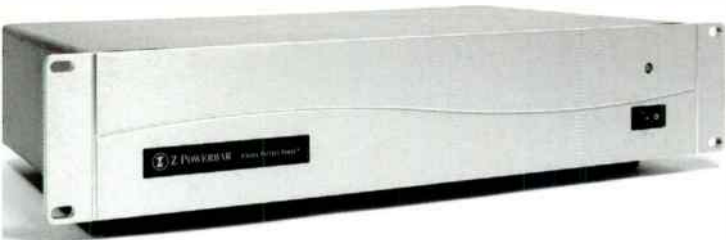
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MIT Z-POWERBAR MAINS CONDITIONER £1,600

As most audiophiles know, the importance of a good mains supply can never be underestimated. After all, many turntable motors run on a synchronous AC signal derived from the mains, and amplifiers directly use the signal to generate the Watts that power loudspeakers. Consequently, any noise or rubbish coming up the mains lead will have a direct effect on what passes down the loudspeaker cables, and the result is unlikely to be beneficial. Having been converted to the benefits of mains conditioning by my review of the Advance Electronics ASR250 unit I reviewed back in 2007, and which has remained in my system ever since, I was intrigued to know just what a difference another unit,

costing over four times the cost of my Advance Electronics unit, would bring...

The MIT Z-Powerbar boasts six mains outlet sockets that will run a total of 1,800W. One is permanently live, four are switched and one incorporates additional isolation, designed specifically for digital equipment. All these sockets share the same technology internally however, namely "multiple patented, parallel tuned filters operating over the widest bandwidth, engineered to remove noise from your AC power line" according to MIT. This means that the Z-Powerbar works slightly differently to my own unit, by stabilising, filtering and optimising the incoming signal using a parallel circuit configuration, rather than the more common series type.

Plugged in and warmed up, I was pleased to note that the MIT is

absolutely silent, unlike my ASR250, from which a slight transformer hum can be heard on occasion. When the music played, the MIT convincingly leapt ahead of the cheaper unit, things being more effortless and unstressed, as if the amplifier was working less hard to achieve the same results. The dynamic headroom appeared to have increased, and everything I played grew in both stature and authority. In the midband, singers and instruments were more vivid within the soundstage, bass lines gained better focus and I was strongly reminded of my recent times with the Roksan Kandy K2 amplifier, as its uncanny background silences suddenly appeared to have been effectively transplanted into my own setup. Overall, I was quite taken aback at the changes the Z-Powerbar made to my system, as the unit is very effective at what it does. Cheap it certainly isn't however, so this is recommended for high end systems, of course. **AS**

[Contact: Audiobility; +44(0)870 777 2991, www.audiobilityuk.net]

soundbites

SENNHEISER IE8 £249.99

The top in a new range of 'in ear monitors' (also comprising the IE6 at £119.99 and the £169.99 IE7), Sennheiser describe the IE8s as, "very high quality and accurate ear-canal headphones". They also take the in-ear headphone breed to a landmark high price point – giving audiophiles-on-the-move something new to aspire to, and rivals from Shure and Audio Technica something new to worry about!

They are single driver designs; Sennheiser are insistent that these give superior results to multi-way designs by circumventing the associated phase and distortion problems that crossovers bring. One neodymium transducer per side does the job, and this brings efficiency benefits. Effective in-ear isolation comes from a range of different types and sizes of ear-adapter, double flanged to offer better fit, giving 26dB (20dB with the IE6 and IE7) of attenuation, Sennheiser claims. As you'd expect from this company's top model, build is impeccable; we particularly liked the weighty metal

body. Each headphone is equipped with a metal case, small cleaning tool and a cable clip.

Although not the lightest in-ear phones ever made, that extra weight isn't an issue, as it is still a matter of grammes. What's more important on a product such as this is the fit achievable with the supplied ear adaptors. This can be variable with in-ear phones, but was excellent on these high end Sennheisers – an encouraging sign as it will make or break the sound quality on the move. It's no fun having to keep poking the things back in again all the time, and this is ultimately why many people give up on in-ear phones completely.

Sonically, the IE8s are superb – but they do sound like Sennheisers, which means an ultra clean, precise and detailed sound that some won't find especially relaxing to listen to. Treble extension was exceptional, the IE8s giving a beautifully atmospheric hi hat sound from my freshly rebuilt Sony Walkman Pro cassette machine, and sledgehammer bass that needs to be heard to be believed. Between the two frequency extremes was an

incredibly clear and lucid midband with enormous amounts of detail and a very neutral tonality.

Be warned though, these are so neutral that your iPod will sound quite poor through them; the Sennheiser IE8s simply tell you what's going on with the source and the recording like no other in-ear phones, and in the case of the iPod that means quite a harsh and unlovely sound. **DP**

[Contact: +44 (0)1494 551 551, www.sennheiser.co.uk]



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luxman L550a



solidtech rack of silence stand



porsche design p9123



lyra skala



stax SR-007 omega system 2

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"I think the BBC wants to limit live and on-demand bitrates because they don't want to outclass DAB..."



steven green

After a seven-month delay, the BBC has finally begun testing its live Internet radio streams at higher quality, and both the test live streams and the BBC's on-demand radio streams are now using the AAC/AAC+ audio codec.

For both the live and on-demand streams, the BBC is using 96kbps AAC+ for all of its national stereo stations, and it is using 64kbps AAC+ for Radio 5, as it's only in mono. However, according to the BBC there was a mistake, because Radio 3 was meant to use 128kbps AAC, but at the time of writing the BBC hasn't had a chance to correct this yet because the new streams were only launched last night. The important thing though, is that all of the BBC's live and on-demand Internet radio streams are, or will be, at higher quality than on DAB. The only 'national' station that hasn't started using AAC+ yet is the World Service, but it too will start using AAC+ within the next few months as well...

To put the level of audio quality into context, listening tests have shown that AAC/AAC+ is twice as efficient as the MP2 codec that's used on DAB. So for example, Radio 3 will be using 128 kbps AAC for its Internet streams, and that provides the same level of quality as 256kbps MP2. As Radio 3 only uses 192kbps MP2 on DAB, the Internet streams will provide higher quality.

The improvement in quality is more dramatic for the other stereo stations though, because they use 128kbps MP2 on DAB, which provides poor audio quality, but with 96kbps AAC+ providing equivalent quality to 192 kbps MP2, that provides a big jump in quality

relative to what they're available at on DAB. In addition, the Internet streams for Radio 4, Radio 7 and the Asian Network are permanently in stereo, whereas these stations either occasionally (Radio 4) or permanently broadcast in mono on DAB.

The new AAC+ on-demand radio streams are already available to everyone, but the live test streams are only currently available to BBC iPlayer Labs testers, so if you'd like to listen to the test live streams, you have to visit www.bbc.co.uk/iplayer/labs and click on the pink button near the top of the page that says, "I want to be a Labs tester". Be aware, though, that because they are test streams they won't necessarily be using the bitrates or even the codecs mentioned above!

However, although it is obviously welcome news that the Beeb is providing its Internet radio streams at higher quality than on DAB, the BBC actually reduced the bitrate levels they're using for the on-demand radio streams when they switched from using MP3 to AAC/AAC+, and I totally disagree that they needed to do this.

The BBC originally said that they were doing this because AAC/AAC+ is more efficient than MP3, so reducing the bitrate levels wouldn't lead to a reduction in audio quality. But looking at it from an alternative perspective, they have effectively reduced the audio quality relative to what it would have been if they had only switched to using AAC/AAC+ and left the bitrate levels unchanged!

The BBC also tried to justify this by saying that lower rate streams are more reliable, but I suggested that if they used a large buffer size for the on-demand streams they could make

those streams very robust. But the BBC ignored my advice, didn't even increase the buffer size, and reduced the bitrate levels anyway.

The only other reason why the BBC would want to reduce the bitrates of the on-demand streams would be to save bandwidth. However, the iPlayer TV streams were already consuming eight times as much bandwidth as the radio streams by last August. Furthermore, HD streams are going to be launched on the iPlayer this year that will use a bitrate of 4Mbps, which is around forty times higher than the bitrate used for the radio streams!

The BBC also wants to allow people to watch iPlayer TV streams on their TV sets, which Anthony Rose, who is in charge of the BBC iPlayer, said could lead to the bandwidth required increasing ten-fold over the next year or two. So they obviously don't need to save what is a very small amount of bandwidth in comparison to what the iPlayer TV streams are using now, let alone what they will be using over the next year or two.

In my opinion, the BBC wants to limit the bitrate levels they're using on both the live and on-demand Internet streams, because if they used the same rates with AAC as they were using with MP3, the quality would completely outclass that provided by DAB. We will see over the next few months whether this is true or not, because there is no legitimate reason to limit the bitrate levels, so if they do continue to do this, I would say that it would prove once and for all that the BBC is biased against the Internet radio streams because they're biased towards DAB. ●

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"a big electrostatic is near the end-place in audio, but needs a place the size of a castle to work..."



noel keywood

I still dream of owning a castle that sits atop a distant crag, far from civilisation. With neighbours many hours away I'd have time to flee any mob of malcontented citizens out to disconnect the Tannoy Westminster Royal SEs that I'd use to the fullness of their abilities. As Tannoy also make foghorns I'm not sure distance would do much to lower the sound pressures assailing local hamlets and felling nearby sheep, but as this castle is remote I'd have time to leg it on my scooter with the Westminsters held on the back by elastic straps before the mob appeared.

A difficulty would come in selecting which loudspeakers to leg it with, however. Because with big rooms, solid walls and likely great acoustics aided by magnificent wall hangings, the Tannoys would occupy only one of the castle's many rooms, perhaps the main banqueting hall, where roast sheep would head up the menu. In other rooms would sit at least one pair of electrostatics like the Kingsound Prince IIs reviewed this month. This isn't to rule out either Quad 2905s or Martin Logan CLXs which may do an equally good job, but a big electrostatic would have to have its own place in my castle, because whilst Tannoys are all about scale, electrostatics are about analysis - and what analysis!

Heating the castle would be no problem because it isn't wise to run either loudspeaker from anything other than a valve amp. Admittedly, with Westminster Royals you don't need much of an amp: a 19Watt single-ended would do and would probably be my first choice. A peculiar difficulty I ran into when using Yorkminsters was that they consumed almost no power and Westminsters need even less than no power, a difficult proposition. A few Watts generated by a waterwheel in

the castle's basement would likely be enough, only occasional peaks needing the headroom that something like 19W or so would provide...

Running at a few Watts means you end up listening to the 'dirty' crossover region of an amplifier and solid-state amplifiers show their limitations if you use them like this. They're great if you want a bit of welly from a small package at a reasonable price, as most people do, or seem to think they do, but Westminster Royal SEs are best driven by something of greater refinement and it's safest to opt for an amplifier that lacks crossover distortion altogether, meaning a Single-Ended design. Done properly, SEs are sheer heaven but, with an output transformer of enormous weight to withstand DC magnetisation, only a castle built on the firmest of granite foundations, like a rocky crag, will do.

Clay soil, like that somewhere beneath me at this very minute, part of the London basin, goes wibbly wobbly very quickly and isn't where you want to be if you have any serious desire to own a top quality hi-fi system. As it took four of us to manhandle Westminster Royal SEs into position at the Manchester Show in 2007 when we chose to demonstrate them, total system weight is prodigious, so London isn't the best place to position them. Argyllshire comes to mind perhaps - it sounds right - or even the solid granite of Dartmoor.

The warmest room in the castle would be the one housing the big electrostatics. Well, if they were Prince IIs. As I note in the review these need massive amounts of power and a suitable valve amplifier will be enormous, with lines of output tubes running in parallel push-pull pairs. Audio Research come to mind, as they make devices akin to

thermionic power stations, but then they leave it when I see I will be listening to banks of 6550s! Nicer sounding tubes exist. A good valve amp able to swing 40V or more, equivalent to 200 Watts, will have to be shipped into my castle, on a large cart hauled by lines of oxen in this dream...

Whilst the Westminster Royals will disturb hamlets for miles around, the Prince IIs will bring me something less physical and more ethereal, arranging a heavenly rainbow of sound across the end of a large room, sufficient to accommodate a choir of angels. The Prince IIs have the purity to do this convincingly; I don't want my angels tied down to the earthly constraints of a wooden box.

This is in the ante chamber, where I would go when all the riotous rollicking in the main banqueting hall, driven by the Tannoys, becomes too much to bear. It's a place of thought and reflection, of beauty and charm, of the emotions that music can inspire. Because electrostatic loudspeakers of massive ability, like the Prince IIs, in the right environment, deliver music in a way that is spell binding. You know why you started out wanting better sound quality in the first place when you hear them, because a big electrostatic is somewhere near the end-place in audio, but to work it also needs a place the size of a castle.

The sheep are safe and the hamlets can sleep peacefully because this is only a dream. And good loudspeakers and amplifiers are a dream to most too, as it is so difficult to accommodate them. Who lives in a castle after all? But I know I'd love to be able to sink into a world where music could sound so good and carry me away. Some of the biggest and most esoteric loudspeakers, like the amazing Prince IIs in this issue, get close to managing this. ●

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"I love attending hi-fi shows, and have done since I was a child of fourteen..."



adam smith

The double thud of something interesting falling on my doormat this week heralded the arrival of a season to which I greatly look forward each year.

And no, this wasn't a letter from a friendly cuckoo announcing the arrival of spring – far from it, judging by the snow outside the door – but the first press packs that mean the hi-fi show season has begun...

Actually, the show season had already begun at the end of January with the Northern Sound and Vision Show in Manchester, but sadly I was unable to attend. At the time I was actually on holiday with my wife on a winter 'Bodycare' spa break, but I can assure you that, whilst I was laid back with invigorating patches over my eyes, being massaged to within an inch of my life and pondering which of the evening's main courses to go for, I was secretly pining for the corridors of the Manchester Radisson Airport Hotel, honest...

The press packs that arrived for me were actually for my two favourite shows – the Bristol Sound and Vision Show and the daddy of them all, the Munich High End Show. Both were very informative but I have to say, the Germans did trump the Bristolians in this case, including in their small box (not envelope!) bus and train timetables and maps, a restaurant guide leaflet and a complete and comprehensive guide to the city of Munich. The Bristol pack was smaller but no less informative, although I couldn't help smiling at the disclaimer below the list of local restaurants saying, "we accept no responsibility for the quality of the food at any of these establishments"!

I love attending hi-fi shows, and have done since I was a child of around fourteen, attending my first one. There is always an excellent

atmosphere at such events I find, and as an enthusiast it was always nice to meet the faces behind my favourite manufacturers and indeed magazines. Now I'm on the other side of the fence and I thoroughly enjoy chatting to readers and receiving their feedback, so do remember to say hello if you pass me in a corridor, heading to the next listening session [or bar – Ed.].

It seems that there are a good many people who feel like me and treat shows as an enjoyable day out. Manufacturers and magazines alike put on demonstrations and set up special displays to attract the punters and it seems that the least we can do is get into their rooms and enjoy them. Of course there will be sounds that we don't like, equipment that doesn't gel for one reason or another, and maybe even the occasionally acerbic designer who doesn't take kindly to close questioning (mentioning no names!) but this is all part and parcel of the whole experience...

The trouble is, there are a hardcore few who have nothing but disdain for such events. They view the whole experience as a waste of time, saying that you cannot possibly obtain a decent sound in such a grotty location as a hotel room, that manufacturers are wasting their time and don't know how to match systems properly, and that the music they play is simply dreadful. Consequently, they would rather stay at home, possibly logging onto their preferred hi-fi forum to have a whinge about the whole thing.

I have to say, as a regular on more than one of such forums, such people are definitely in a minority and most participants are far more open minded, but they still lurk, popping their virtual head above the parapet now and then to have a rant. One or two people have even been provoked

to say to them – do you think you could do better?

Well, it looks like the time has come to find out, as my second show of the season, the weekend after Bristol, is going to be a little different. Last year, the owners of Hi-Fi Wigwam forum were approached by Chester Group, well known for their London, Manchester and Scotland hi-fi shows, to ask if the members of the forum would be interested in putting on a show of their own. Naturally we all said yes and the upshot is that, on Sunday March 1 at Scalford Hall in Leicestershire, around fifty 'Wammers' including yours truly, will be setting our systems up in those 'dreadful' rooms and inviting the general public in to see if we're all doing it better!

It's going to be quite a departure and whilst there is the slimmest chance it could be a failure, I personally think and hope that it's going to be a resounding success. Because we will all be using our own systems, there will be equipment old and new, budget and expensive, exotic and commonplace – and all in between. The Wigwam is a friendly place and I'm looking forward to putting some faces to names and having a chat with everyone, plus hearing feedback from show attendees as to what they think of it all – it's going to be an interesting experience.

So, as the show season gets into its swing, do give coming along a thought. Failing that, I look forward to seeing many of the regulars at Bristol, and indeed at the London High Fidelity Show at the Park Inn, Heathrow at the end of March. Finally, if you're not currently a show-goer, why not give one of them a go? Come along with an open mind and be prepared to enjoy it – who knows, you soon could be a regular too! ●

vinyl section

contents

APRIL 2009

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TOWNSHEND ROCK R7 100

Adam Smith auditions this fascinating new flavour of Rock turntable.

A.N.T AUDIO KORA 3T LTD. 105

David Price is seduced by the mid-price, minimalist, solid-state phono stage.

NEW TESTAMENT 109

Paul Rigby samples Genesis's superb '1970-1975' box set release...

DUNLOP SYSTEMDEK 112

Tony Bolton remembers this long lost classic British superdeck.

news

A CORNUCOPIA

Groundhog fans rejoice! Sundazed has released an excellent album by the classic British blues-rock band. 'Blues Obituary' (1969) is where vocals are kept to a minimum and Tony McPhee's unique take on blues interpretation showed how this wholly underrated group had a more distinctive style than their contemporaries.

Simon and Garfunkel's 'Bookends' features in this special edition, a full colour poster plus classic tracks such as 'Mrs Robinson', and 'America'.

Fans of sunshine pop - that happy, bouncy sixties sound - should check out The Millennium's 'Begin' (1968). A classic of its time, it's an innovative concept piece of baroque psych.

Also look out for Simon and Garfunkel's folk-rock 'Parsley, Sage, Rosemary And Thyme' (1966), Link Wray's wild guitar forays in 'White Lightning: Lost Cadence Sessions '58' (1958), 'The Blue Marble' sunshine pop by Sagittarius, plus The Rockets' pre-Neil Young's-Crazy-Horse self titled 1968 album and Groundhog's blues rock 'Scratching The Surface' (1968).

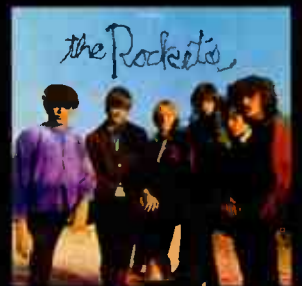


IT'S A PLEASURE

UK-based Pure Pleasure has three new releases covering both blues and jazz. Lonnie Johnson's Portraits In Blues shows why Johnson is a blues guitar legend.

George Fatsis' 'Cool Cat Blues' blends his jazz tones over contemporary fare such as Van Morrison's 'Moondance' and the standard, 'Georgia On My Mind'.

Finally Smiley Lewis' 'I Hear You Knocking' features a compilation of his best material including his first national hit, 'The Bell Are Ringing'.



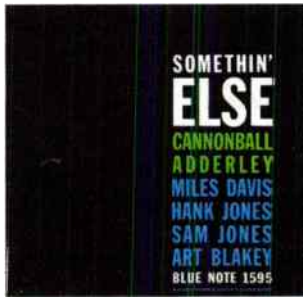
THE CLASH

A previously unreleased Clash concert, the October 13th, 1982 date at Shea Stadium, New York City, has now found its way to vinyl: restored, remastered and resplendent on 180gm vinyl.



I CAN HEAR CLEARLY

Produced via Classic Records' superb Clarity process that features an advanced flat vinyl profile, a new groove guard, semi-automatic pressing to improve the sound and clear vinyl that removes the magnetic carbon black from the records, this issue of Cannonball Adderly's 'Somethin' Else' is the best version of the record ever produced. Especially so as the recording has been issued on four 45-rpm, discs and placed in a heavyweight and sturdy, pizza-style box with a paper-band that tops the whole package off nicely. Luxury indeed!



LET'S ROCK

Two new vinyl issues from SPV will be of interest to rock fans. The first, Saxon's 'Into The Labyrinth', marks the band's 31st anniversary with a classic Saxon sound that plugs right into the band's roots and is pleasantly consistent. Kreator's 'Hordes Of Chaos' presents another intense display of growling thrash metal with razor-like guitars and brisk, to say the least, tempos.

MAMMA WOULD LOVE IT

Direct from Italian shores are a range of imports covering jazz and soundtracks. 'Diggin' With The Miles Davis Sextet' (Doxy) features Sonny Rollins, Jackie McLean, Walter Bishop, Tommy Potter and Art Blakely from an October 1951 session that shows unmistakable Charlie Parker resonances. Also from Doxy is the 'Miles Davis Quartet', taken from two sessions from May 19th 1953 and March 10th, 1954 and featuring Charlie Mingus, John Lewis, Max Roach and Percy Heath. It mixes haunting and blue mood jazz. Starring the unlikely triumvirate of Stacey Keach, Pia Zadora and Orson Wells, Ennio Morricone's 'Butterfly' soundtrack has emerged from Dagored. No matter what you might think of the film, the soundtrack is a cracker with typical Morricone noises: subtlety and nuance.



I SEE NO SHIPS

Recently released via Navigator Records is Bellowhead's 'Matachin', a quirky release mixing strings and brass giving a folk/big band sound.

Also, Joan As Police Woman's 'To Survive' features the former Antony and the Johnsons violinist Joan Wasser and a dark, yet mature, singer-songwriter release. Emotions are revealed but Joan's not into chest beating.

'Before The Ruin' is a collaborative affair from Kris Drever, John McCusker and Roddy Woomble. Also featuring the CD album in the same pack, this contemporary folk release also features Radiohead's Phil Selway and Teenage Fanclub's Francis MacDonald.

Dean Owens' 'Whiskey Hearts' also includes the full CD album. The ex-Felons front man mixes Scottish singer-song writing with Nashville.



DAMAGED GOODS

Ex-Thee Headcoatees vocalist Holly Golightly, has recently released her latest album on Damaged Goods. Called 'Dirt Don't Hurt', this is the second release to feature the collaboration with the Brokeoffs (actually one chap on his own, Lawyer Dave) presenting an entertaining Americana mix. Also released is Graham Day and the Gaolers' 'Triple Distilled', who drop a veritable and compelling bomb of British contemporary garage, in the original sense, plus loud and raunchy guitar...





Rock On!

Adam Smith auditions Townshend Audio's new affordable turntable – the Rock R7...

No one should be surprised to find out that a number of manufacturers, traditionally occupying the high end sector of the market, are currently designing more affordable versions of their products, in a bid to maintain sales during these awkward economic times. Townshend has been one of the first off the mark in this respect, with what you see before you here – the £999 Rock 7.

Of course, it's not the first time Townshend have offered a cheaper high end deck, as some will remember the Avalon of the late eighties, but the new Rock 7 is certainly the first affordable

Townshend vinyl spinner for a while.

The new 7 is very well finished and an incredibly sturdily made turntable, of skeletal design. The base sits on three of Townshend's 'bellows' springs, which are a conventional spring encased in a rubber sheath, with a tiny air hole at the base. This means that the deck is sprung and can move to counteract any low frequency vibrational events, as the air inside the case is free to move in and out of the hole, but any sudden movements are arrested as the hole becomes resistive to the sudden attempted rush of air. It's a clever system and it works. On the left-hand side of the main base is an outrigger from which a

substantial weight hangs, and this can be loosened and positioned in order to balance and level the chassis, once the arm is mounted. Townshend also supply an additional weight for this, in case your chosen arm is especially massive.

The motor is a freestanding Rega-sourced unit, driving a small, white high density Polyethylene subplatter on which sits the main platter, made from the same material. Those of you who saw early prototypes of the deck last year will recall they had black platters, but Max found that these offered inferior sonic performance and marked very easily, so he has stuck with the white material as used on



the Rock V. The bearing on which this rotates is a one-piece precision-ground steel shaft with a hardened bottom-end resting on a steel ball; all lubricated with synthetic oil. This sits in the bottom of a brass bearing sleeve which is fixed to the main chassis. The bearing shaft extends through the subplatter and the main platter, emerging at the top to form the spindle. This is also threaded to accept a Townshend clamp; an optional extra for around £90.

Naturally, a Rock wouldn't be a Rock without a damping trough, and this is available as an optional extra complete with mounting hardware and add-on paddles for your arm, for £499. Other peripheries available

include an improved and more powerful motor allied to a 'Merlin II' power supply for £1,200, and a plinth base and lid combo which had yet to be finalised at the time of writing, but Townshend expect it to retail for 'a couple of hundred pounds'.

Arm-wise, the deck can be supplied with armboards machined to Rega, Linn and SME cut-outs, or anything else that the owner desires, to special order. As per its bigger brother, set up is a little time consuming but the concise instructions help to explain each step, combined with clear photographs to guide you along the way. All in all, it took me around an hour and a half to get the deck up and running,

complete with trough and paddle attached to the end of my Audio Technica AT1130 arm.

SOUND QUALITY

Digressing to the big Rock V for a moment, this is a deck which provides a master class in control across the frequency range. The trough, platter material and suspension system have all



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TEAC'S GROUNDBREAKING NEW REFERENCE SERIES 380 SYSTEM

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been carefully chosen to ensure that there are no sonic overhangs anywhere, and a great deal of thought has gone into minimising resonances inherent in a vinyl replay system. Anticipating a family sound, I cued up the Rock 7 and found it to make many other turntables at its price point sound vague, overblown and inaccurate. Whilst it does not plumb bass depths like a direct drive or idler deck, it has an undeniable authority and firm sense of control running through every track you play on it. An early nineties copy of The Blessing's 'Highway 5' on twelve inch single had me almost holding my breath as my ears tried to keep up with the pace set by the Rock 7; so much so that I actually popped a strobe disc onto the platter to make sure that it was not running fast. This reassured me that the 7 was spot-on in speed terms, and so I was left to simply enjoy what it was doing.

Going back to The Blessing, the track's snare drum strikes were as swift and agile, and the bass guitar as vivid, as I have ever heard. As I explored various other records I came to the conclusion that the upper bass tautness and level of detail is a real area of strength. If you want to hear exactly what your favourite bassist is up to, then I suggest you invest in one of these, as the way it brought previously reluctant bass lines beautifully to the fore was downright staggering at times. But this was not accompanied by an overblown lower bass – something that can all too often be used as a ruse to make listeners think their low end is truly capable. Quite the opposite in fact, and I would say that the deck (like its bigger brother) is actually very slightly curtailed at the very bottom end, but without ever sounding lightweight.

Through the midband, the Townshend showed composure and control. Vocalists hung between the loudspeakers very well, not

branching out into the room especially, but never becoming lost in the mix. As mentioned, Max Townshend is a great exponent of

"the Rock 7 makes many rival turntables sound vague, overblown and inaccurate..."

reducing unwanted resonances in the playing system and one casual listener who happened to be in the house as the Rock 7 was playing said he thought it sounded 'flat'. Listening closely I can see what he meant, but as I moved through my record collection I came to the conclusion that what he was actually hearing was the lack of artificial enhancement that some players can add. Studio atmospherics were there to be heard, and a live orchestral event stretched off into the distance a good way, but the Rock 7 never felt like it was hitting that horrible staple of the old ghetto blaster – the 'stereo wide' button.

Another comment the same friend made was just how clean the top end was, and this we were in agreement on. The Rock 7 is as sweet, flowing and detailed as you could wish for across the top end and not a thing escapes its attention. Once again, though, it adds a lovely sense of composure and control to proceedings – a cymbal sounds exactly like it should and as Rush's Neil Peart worked his way around his extensive collection of said items I could hear the difference in every one, loud and clear.

So far then, so good. The £1,499 trough-equipped Rock 7 is a fine performer and distinguishes itself well, although it is up against stiff competition. Would it all fall apart if I removed £499-worth of trough? Well, no, and in fact I felt that the Rock 7 actually

made even *more* sense as a £1,000 deck, despite some subtle sonic changes. Most prominent was across the midband, where the soundstage gained a pleasant sense of warmth and pulled images out of the speakers a little better than before. Nanci Griffith's 'Late Night Grande Hotel' was the first track I chose to spin with the deck in both guises and with the trough taken out of play, Nanci's vocals were just that touch more emotive and atmospheric. Whether this was those evil resonances sneaking back into play I am not sure, but suffice it to say I actually preferred the deck *sans* trough in this respect.

Where things took a turn for the worse slightly was at the bottom

end. Interestingly, the deck seemed to have found a few extra Hertz, but suddenly those fantastically vivid bass lines had a veil thrown over them slightly. Still very good, and still clear of most of the competition, but this bass was found lagging behind the silicon-damped version of the Rock 7.

CONCLUSION

Another fine turntable from Townshend then, and I can see many long-standing Rock enthusiasts welcoming it with open arms. My only slight reservation is its attempt to be two decks at once. On the one hand it's a worthy £1,000 contender, but while adding the £499 trough certainly tidies everything up in the bass magnificently, somehow some of its enjoyable lilt is masked. Whilst the full-blown Rock V is likely to find itself inserted into a highly sensitive and revealing high end system which will balance this out, further down the price range I wonder if some people will, like my friend, find the trough-equipped 7 a little over-controlled. As always, personal audition is the key, and overall I was highly impressed by the performance – it is a precise, detailed and above all musically rewarding companion. That, as they say, is what it's all about.

REFERENCE SYSTEM

Whest PS30R phono stage
Naim SuperNait amplifier
Ferrograph S1 loudspeakers (modified)

VERDICT ●●●● £

The Rock receives a budget cut without sacrificing its innate strengths. Detail, tautness and clean musicality make for an impressive listening experience.

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AGAINST

- a little introvert at times
- strong competition

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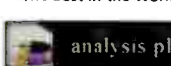
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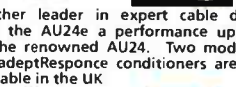
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There is a welcome, comparatively recent, trend that has seen the release of new, luxurious, vinyl box sets, presenting the black plastic fan with high production values in both mastering and packaging that ooze care and attention. These modern classics have hit the ground running. The Doors' recently released discography in a box, via Elektra, offered fans the best available Doors mix currently on the market whilst the Bee Gees' 'The Studio Albums: 1968-1968' set new standards for both detail and mastering quality, for example...

Now, as a welcome follow-up to the CD box set of the same name, the vinyl version of Genesis' '1970-1975' has been released as a five album box set and is, without doubt, set to become a future classic. Arriving in a sturdy, thick slip case, each album (i.e. 'Trespass', 'Nursery Cryme', 'Foxtrot', 'Selling England By The Pound' and 'The Lamb Lies Down On Broadway') arrives in their original packaging as thick, card sleeves. Genesis fans will be happy to see that both 'Trespass' and 'Nursery Cryme' feature the old pink scrolled Charisma label while the other albums feature the customary Mad Hatter label and 'The Lamb...' has custom-made labels for each B-side. I was intrigued to notice that, on the cover, the 'frame' of 'Selling...' is a more greenish hue, compared to my original which is yellow-ish. Apparently, the first pressings featured the green tinge!

Each stage of the production process has received due care and attention, right down to plastic coated inners to prevent any physical

scratching. It is a shame that 'Lamb...' retains card inners, as per the original release. Surely, a plastic-coated inner, inner, as it were, could have been supplied?

As for the vinyl itself, it weighs in at a stocky 200gm per disc whilst the music has been half-speed mastered at Metropolis, cut by one of the world's experts in the process, Miles Showell along with Crispin Murray. Anyone unsure of this fact needs only to gaze upon the run-off of each album. There, clearly etched is a 'M' logo with 'Miles' adjacent and the words 'The Paradigm 1/2 Speed Process' underneath.

That care and attention has been observed right down the line, even before the mastering took place, as Showell explained. "It is important to have a well maintained and calibrated machine for the source, for example. We cannot understate this as it is imperative that the bass response of the analogue machine is as uncompromised as is technically possible. The entire signal path has been optimised for low frequency amplitude and phase linearity and extension."

You may have to pay a pretty penny for this set but, you can be sure that half-speed mastering is not only the best way to place music upon a vinyl platter, it is the most expensive. Largely because of the investment in equipment to do the cutting in the first place but also because the process is time consuming...

"The cost to cut the master lacquers half speed is approximately

three times that of cutting 'real time'," advised Showell. "However this is of course a one-off cost and when divided by the production run is largely insignificant. We also strongly advise our clients to get their records pressed at a good plant on high grade, preferably classical grade, vinyl."

Even if you have – and are very happy with – the original albums, playing the original mixes, you should buy this box set. Mainly because it uses alternative mixes, handled by both Nick Davis and the band itself.

In producing the new mix the original master has been well implemented, is effective and is very informative. It is, of course, impossible to produce a straight A-B comparison between the new vinyl master and the originals because they are in effect different records. In addition, not everyone is going to like the new mix, either, it has to be said. As Davis himself admitted, "I think if you change something some people will always be unhappy."

Yet, think of the new remix as offering you a different viewpoint to that original music – imagine that you're sitting in a different part of the auditorium. As such, you will be surprised and delighted to hear new details bubbling up from the original master tapes, despite the fact that nothing new has actually been added to the masters themselves. I believe the new mix is valid, worthwhile and definitely worth a place in your collection. Well mastered, well packaged, this is worthy entry into the Genesis canon. Boxing clever, you might say! **PR**



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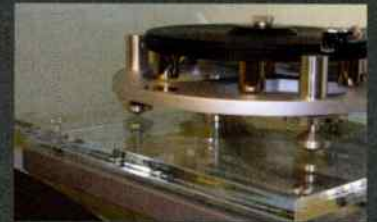
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THETA PRO GEN III DAC CLASS & BALANCED OPTIONS
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PIONEER CLD 2950 CD/D PLAYER
EINSTEIN 'THE CD PLAYER'
MERIDIAN 200T TRANSPORT
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PERPETUAL TECH P3A 24/96 UPSAMPLING DAC
MODWRIGHT SIGNATURE-2 (SUPERB)
AUDIO ALCHEMY DDE V.III HDCC DAC
AUDIO ALCHEMY DDE V1.2 HDCC DAC
AUDIO ALCHEMY DDE V1.1 HDCC DAC
MSB LINK DAC-II 24/96 MODULE
AUDIO ALCHEMY DDE V1 DAC & PSU
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UNISON RESEARCH UNICO (£1750) NEW MECH
MICROMEGA CLASSIC SOLO XLR/RCA (NEW MECH)
ARCAM CD 82
DENON 2800 MKII GOLD (HDCC)
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PROCEED /POT-1 TRANS & DAC BALANCED/SE 20 BIT
RESOLUTION AUDIO CESCIUM TRANSPORT(RARE)
THETA CARMEN CD/DVD TRANSPORT
THETA DATA II TRANSPORT (SILVER) AES/RCA ETC
THETA DATA TRANSPORT (BLACK NO REM.)

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CONRAD JOHNSON PF-1 PRE AMP+ PHONO STAGE
CONRAD JOHNSON PFR REMOTE PRE (£3K?)
CONRAD JOHNSON MF 2500A POWER AMP
CLASSE CP-60 REMOTE 2 BOX PRE AMP
MARANTZ PM7200 INTEGRATED AMP
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H-CAT P-12A PRE AMP (£2500?)
KRELL KMA-100 MONOBLOCS (ABSOLUTE CLASSICS 3 YEARS USE)
PASS LABS ALEPH P PRE AMP
PASS LAB ALEPH O MONOBLOCS
PLINIUS SA-201 (RETAIL £4.5K?)
PLINIUS SB-300 (£5K+ NOW)
ROTEL RB-870BX STEREO/MONO AMP
ADVANTAGE I200 INTEGRATED AMP
ROKSAN S-1 PRE AMP NO PSU

VALVE AMPS

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AUDIO RESEARCH SP-9 C/W PHONO STAGE (RARE BLACK)

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CELESTION F-80 FLOORSTANDERS
QUAO 989 ELECTROSTATICS
B&W 804 MATRIX EXCELLENT LOUOSPEAKERS
THEIL CS 2.2 LOUOSPEAKERS
CELESTION A-2 SANTOS R/WOOD (£15/1600?)
A.L.F. JORDAN NOTE 5 FLOORSTANDERS (£2500)
CURA CA-30 FLOORSTANDERS (MAPLE)
PROAC STUDIO 150
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ATC 20SL & TARGET R2 STANDS
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MUSIC FIRST SILVER CABLE 1 METRE RCA(£600?)
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XLO SIGNATURE TYPE 1 1 RCA
AUDIOQUEST DIAMOND 0.8 METRE
BLACK RHODIUM CONCERTO 1 METRE RCA(£180)
XLO PRO 1METRE AND 0.5 METRE RCA (SIX OFF)
BLACK RHODIUM SYMPHONY 1 METRE RCA
QUANTITY OF ITALIAN ART AUDIO CABLE 3 INTERCONNECTS 1M/1.5M/2M
AND 4 LENGTHS OF 3 METRE LOUDSPEAKER CABLE

LOUDSPEAKER CABLE

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QED XT-400 4 METRE PAIR AIR LOC TERMINATED
NORDSTO SPL 3 M ETRE BI-WIRE (£3000?)
BLACK RHODIUM POLAR NINJA DCT +++ (£1500)
XLO REF 2.5 METRE PAIR
AUDIOQUEST MIDDNIGHT-3 APPROX 5 METRE PAIR BI-WIRE
DPA BLACK SLINK (£100 PER M.) 4.5 METRE PAIR WBT LOCKING PLUGS
SONORAM PLATEAU 4 METRE+ PAIR (HI END USA HEAVY COPPER CABLE)
MIT MH-750 BI WIRE 3 METRE PAIR
TRANSPARENT SUPER BI CABLE 10 FT PAIR
RENAISSANCE SILVER SIG. 3 METRE PAIR (£1300)
PS AUDIO X-STREAM 3 METRE PAIR (VERY HEAVY!)
DIAMOND HI SILVER 3 METRE PAIR
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BLACK RHODIUM S-300 BI WIRE 9 METRE BI WIRE PAIR(£400)
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SOUNDSTYLE ST-100
SOUNDSTYLE LOUDSPEAKER STANDS
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MAINS CABLES/BLOCKS/CONDITIONERS ETC

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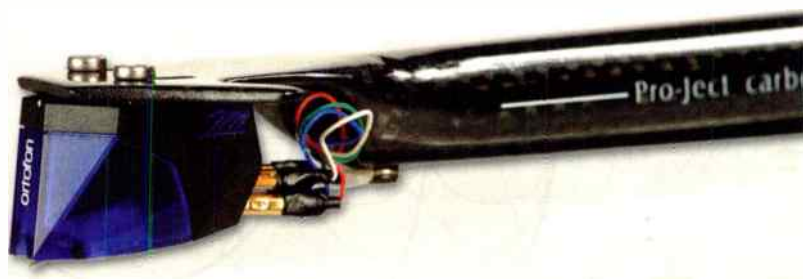
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47 Labs Flatfish MKII Transport S/H	3020	1550
47 Labs Progression DAC x-demo	2270	1299
47 Labs PiTracer Transport x-demo	18000	9999
Denon A1 XVA Universal Player S/H	2500	1099
dCS Verdi SACD/CD Transport S/H	9500	1999
dCS Purcell non fire wire Upsampler S/H	4000	599
dCS Delius DAC IEE 1394 x-demo	6499	2499
Krell evolution 505 cd/sacd xdemo	8598	6875
Krell Showcase DVD x-demo	3698	2575
Naim Audio nVi Home Theatre in box x-demo	3500	2099
Orpheus Zero CD Player S/H	4600	1699
Orelle CD100EVO S/H	1500	695
Sugden CD21 MK2 x-demo	1299	899
Sugden CD21SE x-demo	1599	1099
Theta Pro Basic II DAC with Oscom/Balanced S/H	2990	599
Tube Technology Fulcrum DAC64 S/H	2400	999
Tube Technology Fulcrum Transport S/H	1850	779

Analogue

Benz Micro Ref II Silver MC Cartridge S/H	1500	499
Clearaudio Smart Phono mm/MC S/H	265	195
Koetsu MCR-1 Transformer S/H	2666	1399
Mc Cormack Micro Drive Phono Stage S/H	650	229
Phonomena BPS Battery supply for phono BINB	650	249
Phonomena Phono stage MM/MC BINB	650	249
Plinius Koru MM/MC Phono stage S/H	1750	999
RS LABS RS1 uni pivot tonearm x-demo	825	599
Roksan Xerxes SE Power Supply	1100	879
Roksan Xerxes Standard Power Supply	800	640

Preamplifiers

Audio Research SP17 stereo preamplifier x-demo	2749	2199
DartZeel NBH-18s World class preamplifier with phono x-demo	16000	11500
ECS Preamplifier S/H	5000	3299
Krell KAV250P Preamplifier S/H	N/A	745
Krell KRC3 Series II Remote Controlled Preamplifier S/H	2998	1295
Mark Levinson NO28 with High Phono S/H	N/A	1295
Roksan L1 Preamp (requires PSU) S/H	2299	795
Spectral DMC 15s Preamplifier Shaa GenII S/H	4700	2499

Amplifiers

47 laboratory 25 Gain Card x-demo	1260	799
47 Laboratory Power Humpty x-demo	1425	799
47 Laboratory Shigaraki Integrated x-demo	1500	1199
Audio Research VM220 Valve mono Amplifiers x-demo	9000	6999
Audio Research VS115 stereo power amplifier x-demo	4988	3995
Bel Canto Evo 2 Gen II Amplifier S/H	2350	1099
Bel Canto Evo 200.2 S/H	2399	599
DartZeel NHB-108 Stereo Power amplifier X-demo	12000	8750
Jadis CA30 valve mono x-demo	2250	1399
Krell Evo402 Black x-demo	12900	8999
Krell evolution 302 300w stereo power amplifier x-demo	8950	7160
Mark Levinson No29 Power amplifier S/H	N/A	1295
McCormack DNA125 Power Amplifiers BNIB	2195	1499
Pathos Inpol 2 x-demo	5650	4499

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47Lab Lens Cherry x-demo	1000	600
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Living Voice Avatar OBXR2 Cherry x-demo	4400	2999
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Martin Logan Vista D cherry x-demo	3490	2750
Martin Logan Purity Active x-demo	2490	1899
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ProAc Response D15 Ebony x-demo	2215	1665
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KEF SPEAKERS Units. Two B200 units, two T27 units. Unused. £40. Tel: 01384 392 258 (West Midlands)

CYRUS 6VS2 amplifier, new with box. Mint condition. Was £620. Sale for £340. Phone David on 020 8656 3930 (Croydon, Surrey)

THORENS TD 280 Mk4 turntable £85. Pioneer A400X amplifier £75. Castle Durham 3 speakers £175 & Dynaudio Audience 42 speakers £300. (unused). Boxed. Tel: 07900 866 232 (Yorkshire)

MERIDIAN 504 tuner. Nice condition, no box, £400 including delivery. Tel: 0191 417 1669 after 6pm

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ARCAM DELTA 170 CD Player transporter and DAC Blackbox. CD loading tray needs attention. Email david.haworth@stca.co.uk or Tel. High Wycombe 01494 538725

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CREDIT CRUNCH Sale:
SME 20/2A (including Series V Arm) less than 3 months old, as new condition. Sensible offers invited - Phone 07710482475

TEAC / ESOTERIC DV-50 black dvd player good condition £2.500p phone 01708-709431 or paul.gilligan1@ntlworld.com

QUAD 67 CD Player & remote 306 Power Amp 66 Pre Amp and rack. One owner from new all in vgc. Offers for whole or part 01929 472167 (Dorchester)

NAIM 112 preamp mint/boxed £265, Naim Arriva floorstanding loudspeakers 2005 cherry finish vgc £475. Chord Chorus 2 interconnects RCA 0.5m. mint £109 pr. Odyssey 2 speaker cables 4m. mint £89 pr. martind.home@btinternet.com

WHARFEDALE DIAMOND bookshelf speakers black ash £30 High Wycombe 01494 538725

PAIR QUAD II monoblocs modified by Croft £400 Pair Quad ESL57s bronze, late models £400. All in good working order. 01923 237769 Watford

WANTED FAULTY or non working Quad 44 preamps. Quad 33 preamp or boards. scrap Quad fm4 tuner. decoder panel for Quad fm2 tuner Contact Mike 01758 613790.

ROTEL CD Player inc remote £60. Excellent condition. Telephone Bill, Tiverton, Devon, 01884-829597

TECHNICS SL-150 direct drive turntable SME 3009 series 2 fixed headshell. Shure M97HE cartridge £225 SME FDD 200 and syringe of silicone fluid £55 01949 850623 Elton Notts

TRANSFIGURATION SPIRIT Mk3 Cartridge 18 months old Approx 200 hours in SME V tonearm. Excellent/as new condition. In original box/ Instructions. £400. (New £995). Email pad45@o2.co.uk. Phone 07903 379880.

CYRUS PSX-R (black) fully regulated power supply for sale. Use it to upgrade most Cyrus CD players and amplifiers. Eight years old, excellent condition, boxed. £240. Tel: Peter 0116 2249282 (Leicester)

INAUGURAL AI Audio Event. Stalls selling vintage and modern hi-fi equipment at The Settlement, Nevells Road, Letchworth, Herts on Sunday June 21st 2009 from 10am - 4pm. Admission 10am/£10 12noon/£5. Contact Vaughan Warren 07725029954

MISSION 737 £30 Monitor Audio Bronze I £50 Rega ARA £75. All excellent condition. Boxed. Buyer to collect. Please phone Steve (01865) 559737 (Oxford)

QUAD 77 HI-FI SYSTEM cd player, pre-amp, power amp and remote control all in excellent condition and boxed £450 ono 07775798041 email mw.gm.robinson@googlemail.com

ROGUE AUDIO 66 preamp £200, Croft Apparition OTL amplifier £200, Arcam Delta 250 transport with Tricord Clock £75. HI-Fi World KLS3 Gold speakers £200, contact Tim 07976 723709

KEF REFERENCE 103/2 speakers (Wilmslow Audio kit built) with stands, High Wycombe, Bucks, Telephone 07854 525226

2 x 0.5 METER STEREO RCA AudioQuest Quartz x 3 interconnects - £40 incl. P&P (Retail £100 each). 1 x 1 meter stereo RCA QED Qunex 3 interconnect - £17 incl. P&P (Retail £35 to £50). 2 x 1.85 meters of Chord Odyssey 2 Installation speaker cable - £20. incl. P&P (Retail £58.46 cheapest). Philips DTR200 DVB Freeview box £8 plus P&P. Sony VTXD800U DVB Freeview box £30 plus P&P. 1 pair Sennheiser 'Street' Earclip headphones (brand new) - £5 plus P&P. 1 x 4 meters of Kimber 4TC speaker cable (brand new) - £65 incl. P&P (Retail ca. £105). Premium P&P costs more. PayPal often incurs £1 to £3 extra per item. Cheque/Internet banking welcome (no fees). Not trading, just upgrading. klugheit.123@gmail.com

LINN CLASSIC K, for sale, Black, mint. C/W box, remote, power cord, speaker plugs ECT. Perfect condition, owned from new. Priced to sell. £400. Rochdale 01706 521863. ell-tell@ntlworld.com.

HEED ENVOY floor standing omni directional speakers cherry veneer finish new £3150.00 Sale £1450.00. Mitchell Gyro Se With Rega Rb300 Arm. Both items are in excellent condition. 0208 658 2490 Mobile 07956 584363

MUSICAL FIDELITY A5 CD Player, Mint Condition, Boxed with Manual & Remote, (£1500.00) new, Bargain at £695.00 Tel: 01732 220664

WANTED HIFI World HD83 headphone amplifier phone Stuart 01840 212387

VINTAGE YAMAHA NS 590 ex £450, vintage Spondor SA1 LS3/5A beater £375. Marantz CD10 two spare lasers £350 SME 3009S3 boxed £220 07999784728

AUDIO NOTE Kit One 300B SET power amp £750 Audio Note ANV i/c £145 Edison 12 (HFA12) £350 Snell K's £195 Huygen K4 Stands £195 Both £345 Well Tempered Classic £1695 0113 2559475

BENCHMARK DAC pre. 3 months old. (Silver) Superb. £750. Tel: 01752 773 369

CLASSIC CONTACTS

When a classic goes 'poof' your troubles have just started, but there may be a good ending. Replacing failing parts can improve the sound, so here is a short listing of all those companies who specialise in getting a classic up and running again after its deposited a small ring of soot on your ceiling!

GT AUDIO
(Graham Tricker, Bucks)
Leak Troughline specialists. Also Quad and most classic tuners, radios and amplifiers restored, repaired.
Tel: 01895 833099
Mob: 07960 962579
www.gtaudio.com

TECHNICAL AND GENERAL
(East Sussex)
Turntable parts - wide range of spares and accessories, plus arms and cartridges.
Tel: 01892 654534

CARTRIDGE MAN
(Len Gregory, London)
Specialist cartridge re-tipping service and repairs. High quality special cartridges.
Tel: 020 8688 6565
Email: thecartridgeman@talktalk.net
www.thecartridgeman.com

AUDIOLAB
(Phil Pimblott, Leeds)
Renovation, repair and restoration. Specialist in valve hi-fi, radio transmitters, cinema amps, kit building.
Tel: 0113 244 0378
www.audiolabs.co.uk

QUAD ELECTROACOUSTICS
(Cams)
Quad's service department, able to repair almost all Quad products, from the very first.
Tel: 0845 4580011
www.quad-hifi.co.uk

ARKLESS ELECTRONICS
(Northumberland)
Specialist in repairs, restoration and modifications to all amplifiers, valve or solid state, ancient and modern.
Tel: 01670 829891
Email: arklesselectronics@btinternet.com

SOWTER TRANSFORMERS
(Brian Sowter, Ipswich)
Large range of audio transformers for valve amps, cartridges, line drive, interstage plus all associated services.
Tel: 01473 252794
www.sowter.co.uk

WEMBLEY LOUDSPEAKER
(Paul MacCallam, London)
Comprehensive loudspeaker servicing.
Tel: 020 8 743 4567
Email: paul@wembleyloudspeaker.co.uk
www.wembleyloudspeaker.com

EXPERT STYLUS COMPANY
(Wyndham Hodgson, Surrey)
Stylus replacement service for all types of cartridge. Including precise profiling for 78s
Tel: 01372 276604
Email: w.hodgson@btclick.com

ONE THING
(Coventry) Specialist in electrostatic panel manufacture and repair. Can refurbish ESL 57s and 63s as well as Leak Troughlines and Quad IIs.
Email: one.thing@ntlworld.com
www.onethingaudio.com

CLASSIC NAKAMICHI
(Paul Wilkins, Worthing, West Sussex). Restore, Repair & Service Nakamichi Cassette Decks.
Tel: 01903 695695
Email: paul@bowersandwilkins.co.uk
www.bowersandwilkins.co.uk

HADEN BOARDMAN
Repair, service & modifications; classic & modern. Collection available. Redundant / faulty equipment purchased, selected new equipment available.
Tel 01942 790600
www.audioclassics.co.uk

Dr MARTIN BASTIN
(Shropshire) Garrard 301/401 restoration, renovation and service. Special plinths; rumble cures, etc.
Tel: 01584 823446

D.K. LOUDSPEAKER SERVICE
(Dave Smith, Hornchurch, Essex)
Re-cone of hi-fi loudspeakers, high quality loudspeaker systems, P.A., power loudspeakers.
Tel/Fax: 01708 447 344

LOCKWOOD AUDIO
(London)
Tannoy loudspeaker parts, restoration and repair. Also Epos and TDL loudspeakers.
Tel: 020 8 864 8008
www.lockwoodaudio.co.uk

LORICRAFT AUDIO
(Terry O'Sullivan, Bucks)
Garrard 301/401 and their own 501 repair, spares and service. Tel: 01488 72267
www.garrard501.com

REVOX
(Brian Reeves, Cheshire)
Revox tape recorder spares, service and repair. Accessories also available.
Tel: 0161 499 2349
Email: brian@revoxservice.co.uk
www.revox.freeuk.com

CLASSIQUE SOUNDS
(Paul Greenfield, Leicester)
ESL-57s restored, rebuilt, fully renovated or improved. Leak, Quad valves amps etc.
Tel: 0845 123 5137/
Mob: 0116 2835821
Email: classique_sounds@yahoo.co.uk
www.flashbacksales.co.uk/classique

OCTAVE AUDIO WOODWORKING
(Bristol)
Unit 2, 16 Midland Street, St Phillips, Bristol.
Tel: 0117 925 6015
www.octave-aw.co.uk

NEXT MONTH

As the green shoots pop their little heads up above the soil, proving that spring has finally sprung, the new hi-fi season blossoms with a wealth of new products. May's Hi-Fi World leads with EAT's new high end Forte turntable, with a tonearm courtesy of IKEDA (Fidelity Research) no less, but we've a garden full of goodies from Acoustic Energy's Model One speakers to the Moon Audio i3.3 integrated amplifier. Factor in pages of your letters, extensive news, views and reviews and it's a veritable bumper issue! Here's just some of what we hope to bring you:



AUDIO RESEARCH DAC7 DIGITAL TO ANALOGUE CONVERTOR
ACOUSTIC ENERGY MODEL ONE LOUDSPEAKERS
B&O BEOSOUND 5 NETWORK MUSIC SYSTEM
AIRSOUND ORBITSOUND SPEAKER SYSTEM
MOON AUDIO i3.3 INTEGRATED AMPLIFIER
SONY WALKMAN ANNIVERSARY FEATURE
TEAC REFERENCE 380 MICRO SYSTEM
ORIGIN LIVE CONQUEROR TONEARM
PHILIPS NP1100 NETWORK PLAYER
CYRUS CD-XT SE CD TRANSPORT
OLDE WORLDE: MARANTZ CD94
MARANTZ SA8003 AV RECEIVER
GRIMM EXTERNAL CD CLOCK
EPOS ELS8 LOUDSPEAKERS
DR FEICHERT TURNTABLE
[pictured] EAT FORTE TURNTABLE

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