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SEPTEMBER 2008 UK £3.80

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Why is it that, as soon as a technology becomes obsolete, it suddenly comes good?

There's a long and annoying history of this in hi-fi. From valve amps to vinyl, as soon as the world waves goodbye to a particular format, products are launched that finally unlock its true potential!

Now it's happening again with Compact Disc. No sooner has news reached us that downloads are fast replacing

CD singles, than we're seeing a slew of stunning sounding silver disc spinners taking the little aluminium Frisbee to new heights. In the past few months we've seen several superb mid-priced machines – from AstinTrew's AT3500 and Rega's Saturn to Prima Luna's ProLogue 8 – that push the format forward at the price thanks to excellent engineering and now, in this issue of *Hi-Fi World*, there's not one but two more major new products...

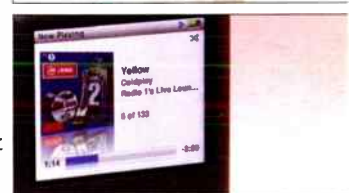
First is Cyrus's CD 8 Servo Evolution (p10) – a brand new slot-loading £1,100 machine with a bespoke, custom-designed transport mechanism that cost hundreds of thousands of pounds to design. The result is that it reads the digits off the disc better than anything anywhere near the price and sounds superb to boot. Second is Chord's QBD76 DAC (p34) – a landmark digital to analogue convertor that sounds like no other. The fact that it's Bluetooth compatible would be big news for any other DAC, but it's a trivial detail point on what I think is the world's best way to play CD right now.

What a shame these didn't arrive fifteen years ago, when most people's experience of Compact Disc was being assaulted by nasty, earache-inducing noise; it's only now that a technologically defunct disc is getting really good.

Still, I didn't let the alleged 'death of vinyl' stop me from enjoying my several thousand-strong record collection in the past few years, so don't let downloads put you off these new digital delectations. The great thing is that in today's hi-fi world, there seems to be so much more room for everyone and everything.

Enjoy the new issue!

David Price, editor



testing

To ensure the upmost 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 Clío-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.hi-fiworld.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.

Distributed by Seymour Distribution Ltd 86 Newman Street London, W1T 3EX Tel: +44 (0) 20 7396 8000 Printed by St.Ives, Plymouth Tel: +44 (0) 1752 345 411
Our Agents in Malaysia Millennium Hi-Fi & AV Simon Chang Showroom & office, 500-1-3 First Floor Wisma Indah (Shen Court), Jalan Tun Razak 50400 Kuala Lumpur, Malaysia
Tel: 603 9283 8171 Fax: 603 9281 3762 e-mail: info@millennium-audio.com

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hi-fi world

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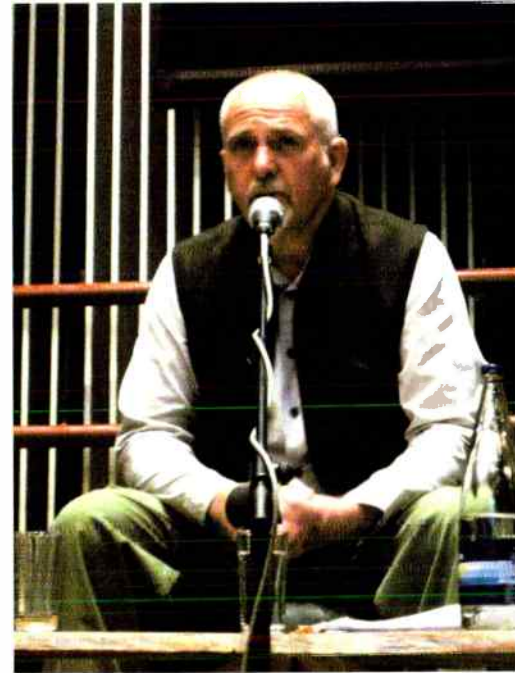
news

CLUB CLASS

A sultry summer's evening saw Peter Gabriel launching the new B&W Music Club, in partnership with his Real World Studios, based just outside Bath. Described as an online community for audiophiles and music fans, it offers exclusive monthly albums to its members, specially recorded at Real World Studios and downloadable in the Apple Lossless file format to provide CD-quality sound. For a small annual or six-monthly subscription fee, Music Club will offer one specially commissioned album each month, recorded in dedicated live sessions at Real World Studios in Bath. Albums will be available to download for one month only and are provided without Digital Rights Management (DRM) to enable use across a variety of playback media.

The music offered on Music Club will span many different genres and styles from new and established artists from all across the world. Impressively, just two months after the live sessions are first offered to Music Club members, B&W returns the rights for the albums to the artists. The idea is that by providing free studio time, mixing sessions and eventually returning the rights to artists, Music Club will provide an opportunity for new bands, as well as offering more well-known artists a chance to experiment or collaborate on interesting side projects. Peter Gabriel said, "this collaboration with B&W is unique as far as I know and it's going to allow a lot of interesting projects to happen. For artists, Music Club is a dream proposition because they get some great time in the studio, access to really good recording facilities and can experiment without being committed to anything or anyone beyond a month with B&W."

Membership of Music Club costs £23.95 for six months, or £33.95 for a year. Based on a yearly membership, this means that Music Club members receive 12 albums for less than £3 per album. B&W will also offer free trial memberships via its website. Each download will be supplied DRM-free in lossless format, at around half the file size of a CD recording and will include printable colour sleeve artwork to enable members to create CD albums from the downloaded files. For more information click on www.bowers-wilkins.com/sos.



MAKING MOVIES

'The Edge Of Love', a new romantic drama movie gives a rare glimpse of a vintage Tannoy ribbon microphone. Directed by award winning filmmaker John Maybury (whose work includes the music video for Sinéad O'Connor's 'Nothing Compares 2 U'), it stars Keira Knightley as late nineteenth thirties cabaret singer Vera Phillips in the real-life story of legendary Welsh poet, Dylan Thomas. In one scene Knightley is shown singing into a bronze-finished Tannoy ribbon mic, produced from 1939 until well after the war. For more information, see:

www.capitolfilms.com/Film/Edge_Of_Love_The.



REFERENCE STANDARD

It's always a big moment when KEF brings out the latest Reference Series range, and now the speakers have finally hit the shops. Available in a selection of striking furniture-quality finishes, including High-Gloss American Walnut, Piano Black, Satin Sycamore and High-Gloss Cherry, the three high-gloss variants are finished with multiple layers of lacquer, each one polished to a mirror finish by hand before applying the next one. The result is a rich, deep, shine that surpasses that of most luxury cars, says KEF. "The KEF philosophy is not just about Uni-Q, ACE or any of our other technologies – it is the pursuit of natural sound reproduction through intelligent engineering", says Dr. Andrew Watson, KEF's Senior Acoustics Engineer. The new KEF Reference Series includes the classic bookshelf Model 201/2, the elegant floorstanding Models 203/2 and 205/2 and the top-of-the-range Model 207/2. There are also two newly developed centre-channel speakers, Models 202/2c and 204/2c; and a unique 3-way dipole surround speaker, Model 206/2DS. Two outstanding sub-woofers, Model 208 and – the ultimate sub – Model 209 complete the range. For more details, click on www.kef.com.





HD PHONES

Philips says its new SHE9850 in-ear headphones have "High Definition transducers with professional grade acoustic performance". The drivers' armatures, magnets, drive rods and diaphragms have all been specially selected for greater sensitivity and better linearity. The components have been mounted in a premium grade metal housing which helps to shield the transducer elements from vibration. Further noise isolation is provided by the tight sealing foam sleeves which are made from a slow recovery material as a comfortable alternative to the usual rubber ear caps. The user compresses the sleeves before insertion in the ear and the slow-recovery foam then expands to create a secure and tight fit, says Philips. A high-quality metal carry case is supplied for headphone storage. Price is £89.99. For more information, click on www.phillips.co.uk/onlyfeelthemusic.

ANTI MATTER

The cure to your platter woes is here, according to Origin Live, who say their new £49 platter mat is the most effective universal design around. Said to be a significant breakthrough, the manufacturer claims a significant increase in clarity and articulation, deeper bass, superior instrumental separation and greater overall musicality. The result of over twenty five years of research - including experimentation with countless platter mats including from felt, fibreglass, cork, graphite, carbon fibre, acrylic, PVC, MDF, aluminium and steel laminates - this mat is said to be more consistent across a wider range of turntables than any of the above materials. It's only 1.5mm thick, which is well within the ability of most tonearm height adjusters, and the material mix remains top secret, as you might expect! Look out for an exclusive review in *Hi-Fi World* next month. Meanwhile, for more information, call +44 (0)2380 578877 or click on www.originlive.com.



BLU TIME

Late 2008 is when Onkyo says it will ship its first Blu-Ray player, which will work with the company's 'High-Definition' A/V Receivers to realise the full potential of the new medium, including full HDMI processing of 1080p video and decoding of Dolby TrueHD and DTS-HD Master Audio surround sound formats. For more information, call +44 (0)1494 681515 or click on www.onkyo.co.uk.

SHINE ON

Sanwa's curiously entitled new CD-REIAT is the latest must-have gadget for CD (and DVD) fans from Japan. Outside, it looks curiously similar to an early nineties 'Discman' CD portable, but pop open the lid and you see clever cleaner brushes. Said to remove dust, fingerprints, and oily spots from disc surfaces, it should help with disc skipping and loading problems. It also forms a protective layer on the disc to prevent future corruption without grinding it. Weighing about 300g, it's powered by an AC adapter. Cleaning kit refills are available, and the cost is around £40 when it arrives in Europe soon.



ONE LOVE

The new DNM Stereo Solid Core Interconnect is said to "build on the original award-winning Mono Solid Core interconnect cable, introduced in 1984". It boasts "major advances in design and production techniques since that time" - the classic DNM spaced-pair design is retained, but the magnetic performance has been further optimised and careful balancing of capacitance and inductance improves the sound quality of the cable and of any amplifier connected to it. The new interconnect cable is semi-transparent with four high purity oxygen-free copper conductors sheathed in colour coded insulation. Measuring 15mm wide and 1.5mm thick, the small size contains a dual pair, carrying two channels in the ribbon. UK retail price is £22 per stereo metre. For more information click on www.dnm.co.uk/cables.html or call +44 (0) 1480 457989. Look out for a review soon!

SPOTTED:

Hi-fi industry insiders will be astonished to learn that the UK's most child-averse man has, ermm, had a baby! After a lifetime spent complaining about noisy kids in restaurants, Robert Follis (hi-fi public relations man extraordinaire) and Angela Kirby produced this little beauty (no, not the iPhone) at St. Mary's Hospital in Paddington at 3.58am on June 10th, weight 7 pounds 5 1/2 ounces (the baby, not Rob). We wish mum, dad and baby Tom all the best from *Hi-Fi World*.



PRIMA EXTRA

Prima Luna have introduced two new optional op-amp upgrade boards for the player for their superb ProLogue 8, reviewed in the July 2008 issue of *Hi-Fi World*. These can be purchased with the player or added later, "providing a nice little upgrade path", says the company. The more expensive of the two boards - the Super I/V Board Plus - retails for a very reasonable £139. For more details, see www.absolutesounds.com.

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EXTREME SORT

Acoustic Energy's new Extreme 8 loudspeaker is "capable of producing hi-fidelity audio whatever the weather". It is fully water resistant and capable of withstanding dust, dirt, humidity, and severe temperature changes. The two-way sealed enclosure is crafted from reinforced structural polymer, and paintable grilles to allow accurate decor matching to keep the neighbours happy. An innovative mounting bracket makes installation simple. The speaker uses a 160mm version of AE's signature high-power alloy cone and a 25mm dome tweeter, tuned to accentuate the presence band to best overcome background noise, wind-roar and traffic sounds. Vital statistics are 390x260x260mm and 7kg each, and they cost £449.99 per pair. Click on www.acoustic-energy.co.uk.

SOLAR FLARE

Described as "the world's first solar-powered digital radio", Roberts' new £79.95 solarDAB's solar panels and rechargeable batteries provide up to 27 hours of listening when not near sunlight. The solar, battery or mains powered device has a white backlit LCD display, soft touch rubberised controls and an AC adaptor. There's a choice of five colours (white, black, red, green and pink). For enquiries call +44(0)1709 571722 or visit www.robertsradio.co.uk.



EIGHTH WONDER

Marantz AV8003 networking preamplifier/processor and MM8003 eight channel power amplifier (£1,999.99/£1,299.99) are described as "the perfect playmate for Blu-Ray players". Said to provide every one of today's most advanced audio and video processing technologies, it sports Dolby TrueHD and DTS-HD Master Audio decoding, plus HDMI 1.3a connectivity (four in, two out). The design can also, via its built-in digital media player, stream music and movie content via a home network, whether it be on a PC or NAS drive. The MM8003 power amplifier delivers a humongous 1.2kW across its eight channels (150W per channel). For more information, click on www.marantz.com.



UP ON THE HILL

Ferguson Hill's stunning FH001 horn loudspeaker runs a full range drive unit from 150Hz-20kHz with no crossover, so requires a sub bass unit below 150Hz. Said to "reproduce music with a high level of clarity, detail and dynamics", with 100dB sensitivity claimed they're highly efficient and will go loud with just 5 Watts. The stands are a welded stainless steel construction, satin polished, with internal damping, integral spikes, supplied with floor protector discs. The horns are made from toughened 8mm thick, precision moulded cast acrylic. The support ring and phase plug are precision machined from aluminium alloy and have a protective anodised finish. The drive unit is a modified Lowther DX3 full range driver. They require a subwoofer from 150 Hz down, with level control, ideally taking the signal from the preamp stage. Vital statistics are 1650x92x72m and 27kg. Price for these translucent towers is £9,950. See www.fergusonhill.co.uk.



SPOTTED:

June saw Naim Audio's 'Summer Sounds' road show arrive in St. Albans with Tom Tom Audio hosting. Along for the ride, via vintage racing Bentleys, hi-fi aficionados were treated to Naim's new HDX digital source and outstanding SuperLine phonostage fed by the equally sublime Naim Aro-fitted DPS turntable from Germany. Pictured are Tom Tom's James Almey, Naim's Doug Graham and DPS' Willi 'Jack' Bauer enjoying themselves. For more information click onto www.naim-audio.com or tomtomaudio.com – oh, and thanks to James for help in preparing last month's Naim tuner olde worlde!

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like FM radio compared to the AM of the hapless transport it's being compared to... But not so here – this being the first time I've heard a modern £1,000 CD player used as a transport come anywhere close. Indeed, it was actually very close, with the Cyrus having a surprisingly strong and effortless bass, tremendous midband detail and a sweet and subtle treble. Best of all was the way the Cyrus strung all the musical information together, in almost as musically convincing a way as the Sony (costing some five times as much in real terms).

Bassheads' 'Is There Anybody



Out There', a pounding slice of early nineties techno, showed the CD 8 SE to have great power and focus. Leading edges of the bass notes were strongly delineated, and showed excellent dynamic articulation – quite different to the limp-wristed sound of many sub £1,000 CD players in transport mode. Switching to the Sony added a smidgen more low end clout and a fraction more space across the midband, but it was a surprisingly close-run thing. Likewise, the first sixteen bars of New Order's 'Vanishing Point' showed the little Brit in a very good light; the upper midband was a touch better lit, but it was dripping with detail and timed superbly, highlighting the interplay between the snare and hi-hat better even than the Sony. At the price, the Cyrus turned in an exceptional result as a transport, proving their Servo Evolution project is more than hyperbole.

Switching back to the CD 8 SE as a player, I next compared it to the Stello CD-T100/DA100 Signature I reviewed last month. This is a cracking £1,500 combination, pretty much class of the field, so the Cyrus had an uphill struggle. Staying with the New Order track, I could hear subtle but distinct differences - the Cyrus proved a slightly more lyrical performer, able to take the same collection of notes and string it into a musical performance better.

The most obvious example of this was Peter Hooke's bass guitar line, playing right up high on the fretboard, which seemed more in tune with the song's groove via the

Cyrus. It was fractionally colder and more mechanical via the Stello. On the other hand, the Stello provided a slightly better detailed soundscape – everything was crisply and tidily rendered in pinpoint precision, with hi-hats snapping into focus.

Moving to Isaac Hayes' 'Branded' saw the Cyrus again come over as the more musical of the two, making it easy to pigeonhole the Stello as more 'hi-fi' sounding. There was a better sense of the recorded acoustic, with a fractionally wider and more dimensional soundstage, inside which things seemed a little more organic. The great man's voice was

beautifully carried by both machines, but again there was a scintilla more 'feel' to the Brit machine – Hayes seemed more tangibly 'in the room', whereas the Stello combo was more interested in deconstructing this excellent mid nineties recording. That's not to say I didn't enjoy the Stello – both players are magnificent, and I can see many preferring the forensic mastery of the CDT100/DA100 over the fractionally warmer and more romantic CD 8 SE.

Moving to Herbie Hancock's 1968 BlueNote classic, 'Speak Like a Child', and the flugelhorn and bass trombone sounded altogether more realistic through the Cyrus. Again, there was a sense of a slightly more spacious recorded acoustic, and better depth perspective – instruments hung in space in a more unconstrained way. By comparison, the Stello positioned them more rigidly in the mix, but somehow seemed to constrain by so doing. Cymbals were a little less atmospheric via the Cyrus; there's a sense that the midband

is ever so slightly more prevalent, at the expense of frequency extremes.

The Stello, by comparison, made them more finessed and delicate sounding, but slightly brighter too. Double bass was superb via both machines, but had a fractionally more fluid feel via the CD 8 SE.

CONCLUSION

The new Cyrus CD 8 SE impressed me – not just for what it does, but also why it does it. Which is to say that it's no happy accident that Cyrus has wrung such great sound from a £1,100 CD spinner – it's down to a serious injection of time and money on their part, all for the right reasons. The Servo Evolution mechanism is more than a gimmick – its sonic rewards are for all to hear. So much so that it means Cyrus has gone from having a fine player at the price (in the old CD 8x) to one of the very best under £1,500. For those wanting a superb mid-price silver disc spinner then you've just found it, whilst audiophiles looking for a tasty new transport must surely seek out the new CD XT for three hundred pounds less.

REFERENCE SYSTEM:
 Stello CD-T100/SA100 Signature transport/DAC
 Sony CDP-R1 CD transport
 Sugden IA4 integrated amplifier
 Monitor Audio PL100 loudspeakers

VERDICT ●●●●●
 Serious engineering adds up to superb sound – a landmark product for Cyrus.

CYRUS CD 8 SE £1,100
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 www.cyrus.co.uk

- FOR**
- detailed, lyrical sound
 - fine bass articulation
 - transport engineering
 - design, build
 - PSX-R upgradeability
- AGAINST**
- nothing at the price

MEASURED PERFORMANCE

Frequency response of the CD 8 SE shows a very slight lift up toward high frequencies our analysis shows, an unusual trait. This is likely to help give the Cyrus a light balance, plus good delivery of detail. Reaching down to 2Hz at the low end of the scale means that its bandwidth is wide.	Distortion (%)	0.0004
	0dB	0.0005
	-6dB	0.19
	-60dB	2.4
	-80dB	
Distortion levels were low throughout the player's dynamic range, measuring 0.0005% at -6dB down to a low 0.19% at -60dB, so the Cyrus is linear. However, the IEC A weighted EIAJ Dynamic Range value was a little off the best, measuring 110dB when 112dB is possible.	Separation (1kHz)	125dB
Output level from the analogue outputs was quite normal, measuring 2.2V, and jitter from the digital output was low, if not quite as low as some other similarly priced rivals. The result was a measured 300pS with a -70dB tone, whilst random jitter hovered around 10pS over much of the audio band frequency range, rising a little below 100Hz.	Noise (IEC A)	-104dB
	Dynamic range	110dB
	Output	2.2V

FREQUENCY RESPONSE

DISTORTION

THD 23456789	Input RMS	Frequency
CH1 0.1900356 %	-59.96 dB	1.00006 kHz
CH2 OFF	OFF	OFF

Frequency response (-1dB)
 CD 2Hz - 21.2kHz

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Road Thrill

Summer's here, and the chances are you'll be leaving your beloved hi-fi at home for a week or two as you hop off on holiday. With this in mind, Steve Green looks at four cheap ways of taking your music on the move, whilst David Price is your travel guide...



HEADGEAR – what to listen with:

SENNHEISER MX560 (£20) Superb earbud type headphones with a very smooth and detailed sound; a dramatic improvement on any of the phones bundled with the portables in this test...



SENNHEISER PX100 (£30) Brilliant half-size foldable portable open back headphones with a lovely sophisticated sound – good enough to use as a serious hi-fi phone in their own right. Active noise cancelling PXC-250 version is excellent at cutting out ambient drones on long flights, but not a patch on the PX100 sonically.



SENNHEISER HD650 (£250) Truly top notch sound, possibly overkill for even the best sounding portable here, and will really benefit from a portable headphone amp to drive them. Still, if you must have the best way to listen to your music on the move, and run high bitrate or uncompressed files, this is the about the cheapest solution.



Back in the old days, going on holiday meant putting your mania for music in suspended animation. Given that Linn LPI 2s didn't travel well as hand luggage, nor did the system and the records needed either, mobile audiophiles were pretty much stuck. The arrival of the Sony Walkman Professional in the mid eighties was a landmark moment for those into music on the move, as they taped their favourite vinyl and CDs onto the best metal cassettes money could buy, and headed off on holiday – but even then a Walkie Pro and twenty tapes was bulky enough to have your other half asking you if you really had to bring it with you!

The nineties saw the advent of CD portables and then MiniDisc, but even then a sizeable amount of music took up enough room for another pair of her shoes. The advent of the digital music portable, or 'MP3 player' promised an end to the audiophile's travel woes, but when we looked at the very first Diamond Multimedia Rio PMP300 back in 1999, it was soon evident that the 32MB it had to store MP3s wasn't quite enough! Indeed, it has taken the best part of a decade for the breed to grow up, and now you can buy a 4GB machine for just a quarter of the Rio's original ticket price. What's more, it sounds a damn sight better too...

Nowadays the choice is wide – bewildering even – so we decided to round up the cream of the crop. This supertest shows that for around

£100 you can get yourself a very respectable sounding machine that will hold several hundred songs and is small enough to be invisible to those who disapprove of our manic music proclivities. None of them quite have the sonics of the that classic Walkie Pro, but if you run high bitrate compressed files (256kbps or above) in the AAC format (where possible, otherwise WMA), plus a decent pair of headphones [see HEADGEAR] then you'll really be able to enjoy your trip. DP

POWER BOX

If you're obsessing about headphones and simply must run a full on, full size pair of hi-fi cans, then you'll need one of these. Graham Slee Products' £179 Voyager is a superb sounding portable headphone amplifier. Running on batteries (where it gives about fifty hours) and connected up by a Chord iChord interconnect, it gives a cracking sound – so good that you may find it hard ever to listen without it. An interesting niche product that a few headphone fanatics (such as yours truly) will find compelling. [Contact: Hi Audio on 08450 525259, www.hiaudio.co.uk]



SANDISK SANSA FUZE 4GB	£64	p16
COWON iAUDIO D2 4GB	£99	p17
APPLE IPOD NANO 4GB	£99	p18
SONY NWZ-A826 4GB	£120	p19



SANDISK SANS FUZE £64

(BMP) files so that they could be viewed on the player. Unfortunately, the conversion software had its problems, because it occasionally selected the incorrect aspect ratio when converting video, and it sometimes cropped the sides off photos. The image quality of photos didn't suffer as much as video files did from the Sansa's comparatively low resolution, although it varied according to the content of the photo.

The Sansa Fuze supported the MP3, WMA, WMA protected, WAV and the Audible (audio book) audio formats. Album artwork was displayed for the track that was being played, which was a feature that all of the players provided. The Sansa Fuze includes an FM radio with 40 presets, which provided reasonably good sound quality on stations with a strong signal, although the tuner itself wasn't very sensitive. FM stations could be recorded to the player's memory, as could voice via a built-in microphone. The memory size could be expanded up to 8GB via the MicroSD/SDHC memory card slot on the side of the player, and USB 2.0 was supported for fast file transfer. Battery life was identical to that provided by the nano, with 24 hours of music and 5 hours of video playback on a single battery charge, and the Sansa supported the Windows, Mac and Linux operating systems.

SOUND QUALITY

The Sansa Fuze's sonics made up to some extent for some of its drawbacks, as it delivered a highly energetic sound, with a good soundstage and a strong bass. The Sansa's dynamic sound benefited both the better quality tracks and those that hadn't been so well produced, although things weren't all plain sailing, because the energetic sound sometimes overstepped the mark and the audio became bright as a result. The brighter than neutral nature of the Sansa's sound also made the other players sound more mature and refined in comparison. Overall, the Sansa Fuze is a very good value-for-money player, because it's easy to use and for the price the sound quality is very impressive. However, it's a bit out of its depth against the other units in this group test, which could be described as being heavyweights of the MP3 player market.

This is SanDisk's latest MP3 player, available with flash memory sizes of 2 and 4GB, and it comes in four different colours. The player was the second smallest in the group test, measuring in at 7.8cm tall by 4.8cm wide, and its chunky body felt very solidly built. The Sansa Fuze has some striking similarities to the iPod nano: it's a similar size and shape, and it uses a scroll-wheel for navigation. Then again, you can't blame a manufacturer for copying features from a device that's as impressive as the nano, and the Sansa Fuze is very easy to use, which is due in no small part to its use of the scroll-wheel. Having said that, the Sansa Fuze's user-interface is but a pale imitation of the nano's. The Sansa's scroll-wheel actually rotates, whereas the nano's is touch and motion-sensitive like a laptop's touch-pad, and the Sansa's wheel simply has a cheaper feel to it. The nano's display was also characterised by its super high pixel density, which rendered text superbly

well, whereas the Sansa Fuze's display had the lowest pixel density out of all of the players, which resulted in text being rendered poorly, as it had a fuzzy and blocky appearance.

This situation arises as the Sansa Fuze was the only player in the group test not to use a 320x240 pixel QVGA display, rather it uses the much lower resolution QCIF+ format, which consists of 220x176 pixels. As a result of this lower resolution, the picture quality of video files was significantly lower than on the other players. In terms of video support, the Sansa Fuze could play low-resolution MPEG-4 SP (Simple Profile) video files, although SanDisk has developed a software application called the Sansa Media Converter, which allowed conversion of MPEG-2, MPEG-4 SP and H.264 video files to the format required for playback on the Sansa. The SanDisk was also the only player not to support JPEG files, and the media conversion software had to be called upon to convert JPEGs to bitmap

VERDICT ●●●

Fine value for money, but a level below the others here.

**SANDISK SANS
FUZE 4GB** £64
SanDisk Corporation
+ 44(0)20 7566 0160
www.sandisk.com/sansa/

FOR
- value
- decent sonics

AGAINST
- low resolution display
- user interface

COWON iAUDIO D2 £99

MP3 player specialist Cowon jumped onto the bandwagon at an early stage, and since then has managed to build up a loyal online fan base due to its reputation for building quality players. The iAudio D2 is one of Cowon's latest crop of flash-based players, and is available with either 2, 4, 8 or 16GB of memory. The iAudio D2 was by far the bulkiest device here, as it was between two to three times as thick as the other players. In return for its larger frame, the iAudio D2 did have the largest screen-size of 2.5", and was the most feature-packed too.

The D2's screen was its standout feature – at least on paper – as it was touch-operated. Cowon provided a mini stylus for use with the touch-screen, but most of the time I resorted to using a fingertip, as I'd imagine most people would, simply because the stylus wasn't to hand. The Cowon was admittedly significantly easier to control when I used the stylus, but even when I did use it the navigation was far too slow and fiddly for my liking. The icons and menu items that had to be clicked were very small, and there was very little margin for error in where you clicked. The menu structure was unintuitive as well.

Worst of all, however, was that to perform an action, such as to play a different file, it required lots of clicks on the screen which, combined with the fact that the touch-screen was already fiddly to use, made operating the Cowon painfully slow. Touch-screens may be all the rage at the moment due to the iPhone using one, but Cowon would do well to remember that they're supposed to make operating devices easier, not more difficult...

Like on the Sony and the iPod Nano, the Cowon's screen consisted of a 320x240 pixel array (QVGA format), and the small white text on pale blue background was easily readable despite the relatively low contrast level. The default background wallpaper could be changed to one of your own JPEG images though, if you don't fancy the pale blue background. It supported the MPEG-4 SP (Simple Profile) and WMV video formats, and picture quality was excellent. The video quality was usually on a par with that on the iPod when both were playing decent quality

video files, and it outperformed the Sony, due to the Cowon's picture having a higher contrast ratio. The image quality of photos was also very impressive. One drawback when it came to playing video, though, was that the picture's aspect ratio couldn't be changed, so viewing 4:3 material didn't use the full screen.

The D2 supported the MP3, WMA and WMA protected, OGG and WAV audio formats, plus it was the only player on the group test that supported the popular FLAC lossless codec, and it supported the lesser-known Monkey's Audio lossless format as well. The D2 came with an FM radio built-in as standard, which performed adequately. The 4GB and 8GB models are also available with DAB, which costs an extra £40 on top of the price for the non-DAB versions.

The Cowon provides 52 hours of music and 10 hours of video playback on a single battery charge, which were the highest battery life figures out of all the players on the group test. Additional features

included an SD/MMC memory card expansion slot, recording of voice or FM, direct audio encoding, and video files could be output to a TV set. The D2 supports the Windows, Mac and Linux operating systems.

SOUND QUALITY

The Cowon was exceptionally good in the sonics department, as it delivered a highly dynamic sound, with instruments and vocals having very good levels of detail. Due to its big and energetic sound it brought instruments and vocals to life more than the other players were able to. The soundstage was also very impressive, with instruments being well separated, and there was better coherence between instruments than on the other players. Overall, the Cowon simply delivered music that was more engaging to listen to than on the other players. Unfortunately however, the excellent audio quality was let down by the poor touch-screen-based user-interface, which spoiled an otherwise excellent product.



VERDICT ●●●●

Super audio and fine video quality, but its touch-screen lets down what is otherwise an excellent product.

COWON iAUDIO D2 4GB £99

Cowon Systems Inc.

+44 (0)131 273 4387

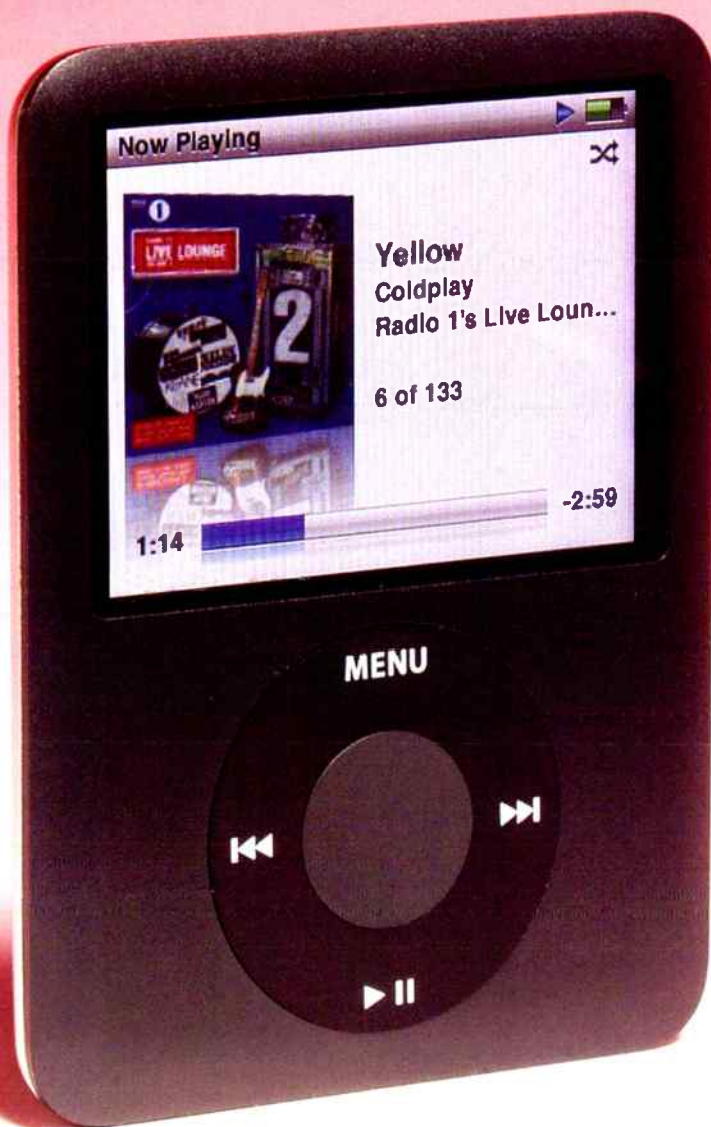
advancedmp3players.co.uk

FOR

- excellent sound quality
- strong video

AGAINST

- fiddly touch-screen
- bulky design



APPLE IPOD NANO £99

nano had the sharpest picture when playing video or displaying photos, and the picture quality was highly impressive. However, for viewing longer programmes, it should be said that the players with the larger screen sizes would be significantly easier to watch than the nano's 2" screen! In terms of media formats, the nano supported MP3, AAC and protected AAC (from the iTunes Store), Audible (talking books format), Apple Lossless, AIFF, and WAV audio; and the nano could play H.264 and the MPEG-4 SP (Simple Profile) video files. The photo viewer could display JPEG image files.

One drawback compared to the Cowon D2 and the Sansa Fuze was that Apple hasn't integrated an FM tuner yet. Another issue that some people wouldn't be very keen on is that, rather than allowing files to be dragged and dropped onto a removable disk that appears in Windows Explorer (or equivalent), which all of the other players allow, files have to be loaded onto the nano via iTunes. Using iTunes does have its compensations though, such as that new files in the iTunes library are automatically uploaded onto the iPod when it's plugged into the USB socket for battery charging. One final issue is that the Linux operating system isn't supported. The nano provides 24 hours of music and 5 hours of video playback on a single battery charge and like all of the players in the group test, it supports USB 2.0 for fast file transfer.

SOUND QUALITY

Sonically a bit of a mixed bag, on the large majority of tracks, the nano was a joy to listen to, as it delivered a clean and refined sound, which was neither too bright nor too bassy. On some tracks however, it tended to lack that little bit of bite that's required to deliver high levels of precision and detail to really bring the music to life, and the soundstage was sometimes lacking a little in energy and definition. Tracks that the nano delivered very well tended to be those that had been well produced, but the flip side of this was that the less well-produced tracks, which do need that bit of a kick to lift them, didn't receive one. It's a shame that the sound quality lets the nano down a little, because in all other respects it is an exceptional product.

Despite only being released in 2005, the latest version of the iPod nano is now the third generation of Apple's best selling mini MP3 player, and changes made for the latest version include a full redesign of the casing and video support. The nano also lived up to its name as, measuring just 6.9cm tall by 5.2cm wide, it was easily the smallest of the players in the group test, and its wafer-thin 6mm thickness made it perfect for slipping into a jeans pocket. Build quality was also superb, as the anodised aluminium front and polished stainless steel back gave it a reassuringly solid feel.

The iPod's legendary user-interface needs little introduction, but it should still be said that the nano was the easiest to use of the MP3 players in the group test by some margin. It's really Apple's attention to detail that sets the nano's user interface apart from the rest. The

iPod's scrollwheel is the best method invented to date for scrolling through long lists; the high resolution display rendered the text immaculately, which made the menus very easy to read; and the menu structure is so simple that even the most hardened technophobe should be able to get the hang of it in minutes. The nano's interface also included some smaller touches that the other manufacturers overlooked, such as intelligent backlighting. Another nice feature was that album artwork, photos and video screenshots were displayed next to the menus, which greatly enhanced the interface's overall appearance.

The nano's display also had by far the highest pixel density out of the players in the group test. The nano, the Cowon and the Sony all used the QVGA screen resolution, which consists of 320x240 pixels, but the nano squeezed these pixels into a 2" screen, whereas the Cowon and the Sony had 2.5" and 2.4" screens respectively. As a result, the

VERDICT

Undeniably a marvel of product engineering, but the audio quality lets the side down.

APPLE IPOD NANO 4GB £99

Apple Computer

+44(0)845 600 1683

www.apple.com/uk/

FOR

- superb user interface
- video quality
- build

AGAINST

- patchy sonics

SONY NWZ-A826

£120

The NWZ-A800 series is Sony's latest generation of Walkman MP3 players, which consists of the NWZ-A826 tested here with 4GB of flash, and the 8GB NWZ-A828. Standing 9.3cm in height, the Walkman was significantly taller than the other players in the group test, which was due to Sony placing the large 2.4" display longways instead of breadthways. The display itself was very attractive, with nicely rendered text as a result of the display having the second-highest pixel density after the nano's screen, and the use of high contrast white text on a black background was also highly visually appealing in its own right. The Sony was very easy to use, as files could be located quickly via the four-way navigation button, and the menu structure was very simple to understand. I have to say that I still preferred the scrollwheel-based navigation on the Sansa Fuze and especially on the iPod nano, though.

One of the main selling points of the NWZ-A800 series of 'Walkmen' is its Bluetooth stereo audio connectivity (using the A2DP Bluetooth audio profile), and Sony has bundled a free pair of Bluetooth headphones along with the Walkman. Setting up the Bluetooth connection between the Walkman and the headphones was a piece of cake, as there was a dedicated Bluetooth button on the side of the player, which automatically set up the connection between them. However, the headphones themselves provided such shocking audio quality that I only managed to listen for approximately 1.386 seconds before I couldn't bear it any longer! As well as Bluetooth audio, the Sony supports the MP3, AAC (but not protected AAC from the iTunes store), WMA, WMA protected and the WAV audio formats.

The Sony supported the same H.264 and MPEG-4 SP video formats that the nano did. However, whereas the nano was quite flexible in terms of what files it would play, the Sony refused to play files that had a higher resolution than 320x240 pixels. On files it did play though, picture quality was very good, especially when using items that had been encoded in the H.264 format. The Sony's picture didn't have as high a contrast ratio as the Cowon or the nano, though, and those two players pipped the Sony in terms of picture quality as a result.



The reason why the display had been placed longways instead of breadthways became evident when watching video as well, because the orientation of the picture could be rotated so that video and photos could be viewed with the player on its side to take full advantage of its large display. The operation of the buttons also followed the orientation being used, so for example pressing down what appears to be the right-hand button always fast-forwarded the video. The Sony also resized programmes that were using a 4:3 aspect ratio so that they filled the screen, whereas the Cowon wasted a large portion of the screen displaying black bars around the picture. The Sony's battery life was second only to the Cowon, as it provides around 35 hours on a single charge when playing audio, and between 8 to 10 hours when playing video. The Sony supports the Windows, Mac and Linux operating systems. Similar to the case with the iPod nano, the

Sony doesn't include an FM tuner or support voice recording, whereas the Cowon and the Sansa each offer both of these features.

SOUND QUALITY

The Sony provided excellent sound quality, as it delivered a very energetic and precise sound, without becoming too clinical. The soundstage was also very impressive, as instruments were well separated and they were delivered with impressive levels of detail. The Cowon also had an energetic sound, but whereas it sounded punchy and bassy, the Sony was lighter and a little brighter in comparison. This led to it being very impressive in terms of adding life to tracks that hadn't been very well produced, some of which sounded quite flat or gravelly on the other players. Overall then, the Sony is an excellent all-round MP3 player as it performs strongly in all areas, and it has no significant weaknesses to speak of.

VERDICT ●●●●●

With strong performance across all areas, this is an excellent way to play music on the move.

SONY NWZ-A826 4GB £120

Sony Europe

+44 (0)8705 111 999

www.sony.co.uk

FOR

- excellent sound quality
- good video quality
- attractive user-interface

AGAINST

- video file support



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Two things struck me whilst testing these four devices: firstly, how great the best MP3 players can sound; and secondly, how good value-for-money the breed has become over the last two to three years – video support only used to be included on expensive top-of-the-range MP3 players, but it has now become standard on all but the cheapest devices. And most surprising of all was how good quality the video can be on the kind of easily affordable players that are included in this group test. Still, this being *Hi-Fi World* we were most concerned with audio playback, build quality and usability, and with this in mind here are the rankings in reverse order...

At the bottom of the pile is the SanDisk Sansa Fuze. There can be no argument that the Sansa Fuze is great value-for-money, because it's significantly cheaper than the other players, yet it provides sound quality that was broadly comparable. The Sansa Fuze's low resolution display was where it really fell down against its rivals, though, because it simply wasn't in the same league as the other players in terms of how good the user-interface looked, or how good the picture quality on video was. It's also important to note that it wasn't screwed together especially well – too much cheap plastic was used both on the front panel and the control buttons. It was an aesthetic copy of the iPod nano, but this didn't extend to the latter's use of aluminium in its fascia or its sublime ergonomics. It actually sounds as good as the little Apple, but in other respects should be regarded as the poor man's Pod.

Next came the Cowon iAudio D2. It might surprise you to see the MP3 player with the best sound quality and arguably the best picture ranked third out of four. Ultimately though, these devices have to be used, and the usability aspect really is more important on an MP3 player than it is on any other kind of audio device you could care to mention, because people store a large number of tracks on MP3 players, so a key consideration is how quickly and easily these tracks can be located. Unfortunately though, the Cowon's touch-screen is simply a major hindrance to the whole process, so for that reason alone I can't recommend people to buy one, hence it coming last out of the better quality players. I'm sure one of the other current crop of Cowon's better quality MP3 players would sound just as good as the iAudio D2, though, so for people who're after

an MP3 player with very good audio quality, they could do worse than to audition a different Cowon player to this one. The D2 is a classic case of the misuse of clever technology, and a glaring contrast to Apple's implementation of a touchscreen on the superb (to use) iPod touch.

Runner up is the iPod nano. The reason why I've ranked the nano ahead of the Cowon is simply because the nano is the exact opposite of the Cowon: the nano has such an amazing graphical interface that it turns the act of locating a track on an MP3 player from being a chore into an enjoyable experience, whereas if I never had to click the Cowon's touch-screen ever again it would be too soon! And let's not forget iTunes – which makes the most of the iPod (as you'd expect) with its seamless integration, podcast handling and general brilliance as a music manager.

Thumbs up also to both the nano's and iTunes' use of the AAC codec – the best sounding compressed format and better than MP3 by far. Video was very well implemented on the nano, as the picture was nice and bright but it still had a good contrast

"with today's feature-packed MP3 players, you're buying an overall package, and in that respect the Sony is a worthy winner..."

ratio. Unfortunately, even running high bitrate AAC the audio on the nano lets the product down as a whole, though. The quality was good overall, but just sounds a bit dowdy sometimes – it lacks that extra something that's required to let the music really shine. So hopefully when the inevitable fourth generation of the iPod nano is being designed, Mr. Jobs will upgrade the digital-to-analogue converter chip and/or the analogue output stage, so that the audio can match the rest of the product in terms of excellence. It's such a shame, as this is the only blot on an otherwise utterly immaculate copybook.

Congratulations then to Sony. Although it might seem as if they've won this group test by default due to the failings of the Cowon and the nano in certain departments, this shouldn't detract from the fact that the Sony is actually an excellent all-round MP3 player. It also shows how well the Walkman is progressing – a

few years ago the Japanese giant was miles behind the rest, with clunky expensive gadgets running ATRAC 3 that had to be transcoded. Now, you can even plug it in to a Mac via USB and drag and drop AAC files recorded in iTunes to it, and the Sony will play them superbly – so it really is a much more universal product now. Indeed, its sonics are a treat – unlike the nano the Sony's energy, resolution and dynamics really let the music's flavour flood out. It was the only player that made the most of the audio on all the tracks it played, whereas some of the other players sounded great on some tracks but mediocre on others. The Sony also had an attractive display, and it was very easy to use. When taken as a whole, video was also well implemented too. With today's feature-packed MP3 players, you're buying an overall package, and in that respect, the Sony is an excellent product and a worthy winner of this group test.



New Gold Dream

Seemingly from nowhere, Leben's CS300X valve integrated goes straight to the top of David Price's hi-fi wish list...



Say "made in Japan" and you automatically think of massive corporate consumer electronics companies – the Sonys and Matsushitas of this world. What few realise however is that, precisely because the Japanese domestic hi-fi market is so big, there's room to support a very healthy group of specialist manufacturers, doing very different products to your average Yamaha A/V receiver...

This is made all the more interesting by the Japanese cultural phenomenon known as *otaku*. It's a powerful word in their language, denoting a subset of people who are absolutely obsessed with their hobby. Funnily enough, the phenomenon is something we have here in the UK too (the *Hi-Fi World* team please take a bow!) but there's no word in our lingo apart from 'enthusiast', which seems awfully lame by comparison.

The Leben Hi-Fi Stereo Company is the dictionary definition of an *otaku* brand in Japan. Small, massively specialist and way off on a tangent compared to almost all others, this company is as special as the likes of Ikeda or Koetsu. Its products live in a bubble that's as divorced from the mainstream as Morgan cars are from General Motors. They're hand built in small numbers, the UK importer sells out all he can get practically by word of mouth, and basically you have to ask nicely to even be considered for the privilege!

On the slightly eccentric website, Taku Hyodo (founder, designer and owner) is modestly described as being, "ranked as one of the best eight tube audio design engineers in Japan", no less! The reason for this is that he is ex-Luxman. Lux is another company with a massive reputation for audiophile greatness in Japan, and home of a nifty tube amplifier or two. His bio also notes that he's a talented musician and previously a professional guitarist. And Leben, just in case you were wondering, means 'alive' in German...

He left Luxman aged thirty, back in 1979 and started his own Kouri Denki Company, producing electronic

CS600 preamp.

The £2,400 CS300X Limited tested here is a special version of the regular £1,600 CS300 – itself a 12 Watt integrated amplifier using EL84 tubes in a simple point-to-point wired, self-biasing push-pull circuit, with in-house made transformers, presented in a delightfully retro case with wooden side panels. The Limited Edition is basically a cost-no-object build of the stock amp with rare new old stock Mullard EL84s fitted. When it's sold out, you'll have to look on the second-hand market or go for the stock CS300!

If you're expecting massive high end Denon-style design, forget it

"it lets the music jump right out at you, like a puppy set free in the park..."

components and parts. This led to Hyodo-san bringing out his first commercial product in 1991, the KFH Triode 33 (using 3C33 tubes) and then the Leben RS-35a (with 6L6GCs) in 1995, then the RS-28c preamplifier (running E288CCs) in 1998. These are all cult products, so much so that there's actually a fanclub in Japan (the Leben Audio Lovers' Club)! Now, the company is making some more affordable designs, such as the CS-250 and CS660P power amps, CS-300 integrated and

– at 360x140x270mm the CS300 is quite small, reminding me of a Leak Stereo 70. This is not to say it is light – at 10kg it feels like a gold ingot. The build is exquisite – clearly hand made and not mass produced, its finish is still impeccable and the golden anodised fascia switches move with Swiss watch precision. Those chunky control knobs bespeak its Japanese roots – reminding me of ancient seventies Rotel receivers – but the rest of its switchgear is electronics parts catalogue stuff,



albeit of unimpeachable quality, while the Canadian white ash wooden side panels are superb.

There are couple of unusual fittings on the fascia – a two-stage bass boost (+3dB and +5dB under 100Hz) and a headphone socket (wired directly from the output transformers). A small 'Operation' lamp comes on about twenty seconds after switch on, when the valves are warmed up. Round the back are high quality gold plated phono sockets for five inputs, an IEC mains input and four pairs of speaker binding posts, very nice affairs which take thin bare wire, spades and banana plugs. Then there's a speaker impedance selector switch with four, six, or eight ohms settings.

Inside, it's a veritable sight for sore eyes. The gold painted chassis is visible and of superb finish – reminding me of a pristine Leak TL12 – and on it sits four EL84s (NOS Mullards fitted to the CS300X) and two General Electric 5751 (which Leben describes as "a premium version of the 12AX7A, again special for the CS300X). The associated transformers all have Leben engraved on them, and the chunky internal wiring is immaculately done. Top passive components are fitted, including precision industrial grade resistors, Sanyo 'OS Condensor' and ELNA Silmic capacitors, 4W high power cathode resistors and Toshiba 3TH41 damping diodes. This little amp runs fairly warm, but not as hot as you might expect.

SOUND QUALITY

It's hard to review the Leben using standard criteria, simply because it's so non-standard. Just as you can't criticise a racing bike for its limited off-road capability, so the CS300X can't be admonished for its very modest output power and lack of the sort of crash-bang-wallop you'd get from a Naim NAP500 power amplifier. Rather, this amplifier writes its own rule book. Of course, it's not immune to the laws of physics, so it can only drive high sensitivity loudspeakers, and the more the better. In my room I got perfectly acceptable levels from my reference Monitor Audio PL100s (quoted sensitivity 88dB), but for more oomph I moved to my pair of classic Mission 752s (91dB) in my largish listening room, where it sounded relatively unstressed.

Indeed, perhaps the word 'unfettered' is more accurate, because when you listen to this little box it makes music bounce out of the speakers in a tremendously jaunty and carefree way. It's an exceptionally spontaneous performer, making it sound like all the musicians in the studio really wanted to be there, and were bubbling with enthusiasm about the music when they laid down the track. It's a fascinating contrast to – for example – the very fine Rotel RB1092 power with its 586W per channel. For all its massive power, this makes music sound controlled, studied, ordered and kept on a

leash. The Leben however, with a piffing 8W or so [see MEASURED PERFORMANCE] actually sounds more powerful in one respect, as it lets the music jump right out at you like a puppy set free in the park.

Such a joyous, upbeat sound is the defining characteristic of the CS300, but not its only standout trait. Another thing that instantly hit me when playing the acoustic jazz funk of Freez's 'Caribbean Winter' was its superb tonal palette. No, I don't mean vast amounts of rosy, sepia-tinted colouration, I mean the ability to accurately convey what an instrument sounds like; just when it starts and stops and how loud it goes. It certainly doesn't have the icy clear tonality of something like a Sugden A21SE – it is definitely on the warm and smooth side – but neither does it make every instrument sound universally soft and fluffy. As such, pianos have rich resonances, brass has rasp and cymbals have an eerie metallic sheen. This is remarkable, inasmuch as the Leben does it so well that going back to a transistor amp, or even most valve amplifiers, makes the music suddenly sound a lot more one dimensional...

Steely Dan's 'Midnight Cruiser' was more of the same – a lovely, breezy romp through a melancholic jazz-rock classic. Given this little amp's modest power, I'd expected soft dynamics and a generally sat-upon sound, but at twelve o'clock on the 40-step volume control, there

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was still plenty in the tank. Snares and kick drums punched confidently out of the mix, with truly surprising speed. True, you couldn't hear the first millisecond of every transient as you can with some transistor amplifiers – rather, the Leben's fleetness of foot came from the effortless way it seemed to go from quiet to loud (and back). Rather

"the Leben proffered a vast, wide soundstage".

than etching the leading edges of the notes on your cranium, it handled dynamic swings like they were its vocation in life.

Again, the result was a wonderfully organic and natural sound, Donald Fagen's voice dripping with texture and his phrasing oozing emotion. Behind this was Steely Dan's characteristically ultra-tight backing band, sounding like they were doing the greatest take of their studio career. It all sounded so fast, so immersive and so musical that I wanted to keep listening all night.

There's more to sound than just exuberance though – Kate Bush's 'Aerial' was rendered in a captivatingly subtle way. Those famous chilly vocals of hers gained a fraction of welcome warmth, and once again seemed to be 'let out' for the day. Her gentle phrasing was enchanting to hear, and the way she intoned her vocals was quite special – moving to the Sugden IA4 Class A solid-state integrated (which I adore) saw an altogether more dispassionate sound – almost like she was reading the words from a sheet rather than singing them with her eyes closed, lost in the music. The spaciousness of this modern production was a joy too – the Leben proffered a vast, wide soundstage that made the speakers fade away in my room. It was decently deep too, although there's little sense of being able to hear right back to the end of the hall in classical pieces, as you can with super-accurate transistor designs.

A Deutsche Grammophon

pressing of Vivaldi's 'Four Seasons' (Karajan, Berlin Philharmonic) again was a revelation, the strings of soloist Michel Schwalbe ringing with harmonics where normally what I hear is more like a monochrome photocopy of the same. There was tremendous space to the recording, yet it was highly immediate at the same time. If there was a criticism

here, it was a slight lack of body to the cellos, which didn't have the physical presence I'd have wished for. "Now I get it", thought I, as I turned up the bass boost to +3dB, and lo and behold the orchestral sound suddenly acquired real scale. In my system though, I thought it was too much; I'd have preferred 1dB; so heaven knows who's going to use the +5dB booster.

Moving on to rock music confirmed this; Suede's 'Animal Nitrate' was a little light down south for my tastes (although admittedly so is the original recording). The Leben diving into the music, giving its customary gleeful performance, investing the song with a great sense of urgency and momentum, not to mention energy from its turn-on-a-sixpence dynamics, but bass weight came there none (well, very little). It's a tad warm in the upper bass, making up for its perceived lack of low frequency clout, but when you hear a really low bass note it's simply not the Leben's highest priority. This isn't to say that it's slow

– quite the reverse; this amp bounds up and down at the low end like a spring; it's just that you're never going to get furniture moving physicality from it.

CONCLUSION

As I've said, you have to look at (and indeed listen to) the Leben CS300X Ltd. on its own terms. This done, it's an utterly exceptional integrated amplifier that betters virtually everything else I've heard. I simply can't think of anything with such an unfettered, open and musical nature – and one that renders the natural tonality of acoustic instruments so naturally. But in buying in to this amplifier, you have to realise it is not going to drive a pair of stiff speakers of mean sensitivity – and nor will it make relatively easy loads sound like a high end public address system. If you listen at modest levels and go for a big heart ahead of a fat bottom, then this could be for you. I am genuinely impressed by Leben – the superlative build, quaint but loveable styling and purity of purpose isn't something you see from many manufacturers, Japanese or otherwise.

VERDICT ●●●●●
 Unique, quirky and inimitable integrated that offers musicality and timbre that's almost impossible to find anywhere else.

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 - beautiful timbre
 - uniquely characterful
 - styling, build, finish
- AGAINST**
- speaker matching issues

REFERENCE SYSTEM
 Marantz CD63KI DP CD player
 Sugden IA4 integrated amplifier
 Monitor Audio PL100 loudspeakers
 Mission 752 loudspeakers

MEASURED PERFORMANCE

The Leben CS300X produces 8 Watts per channel (1% THD), somewhat less than the 15 Watts quoted, at least when using the usual sine wave test method. Since it uses Mullard EL84s in push-pull this is about right. Output was the same into 8 and 4 Ohm loads so the 4 Ohm tap is efficiently coupled. Output overload was slow, indicative of low feedback, and Damping Factor also low at 1.5, again suggesting low feedback. Ideally, the Leben needs to be used with sensitive floorstanding loudspeakers that in themselves are well damped (acoustically and magnetically).

Frequency response was wide, displaying bass roll down below 20Hz and a slight lift up to +1dB at 32kHz. As there was just +0.3dB lift at 20kHz the Leben is unlikely to sound bright, but it certainly won't have a warm nature.

Distortion levels were reasonable, 0.12% being measured on 1 Watt at 1kHz - a gentle test. At frequency extremes of 40Hz and 10kHz this rose to 0.4% or so, but it was second and third harmonic only, which only adds a little muddle at worst. The output transformers handled bass well, producing 0.6% distortion close to full

output.

The CS300X is no power house but is likely to give a very easy and amenable valve sound, quite unlike solid-state amplifiers, into suitable loudspeakers. NK

Power	8 Watts
CD/tuner/aux.	
Frequency response	17Hz - 42kHz
Separation	68dB
Noise	-76dB
Distortion	0.46%
Sensitivity	400mV
Damping factor	1.5

DISTORTION

THD 23456789	Input RMS	Frequency
CH1 0.4539925 %	1.0512 W	9.9917 kHz
CH2 OFF	OFF	OFF

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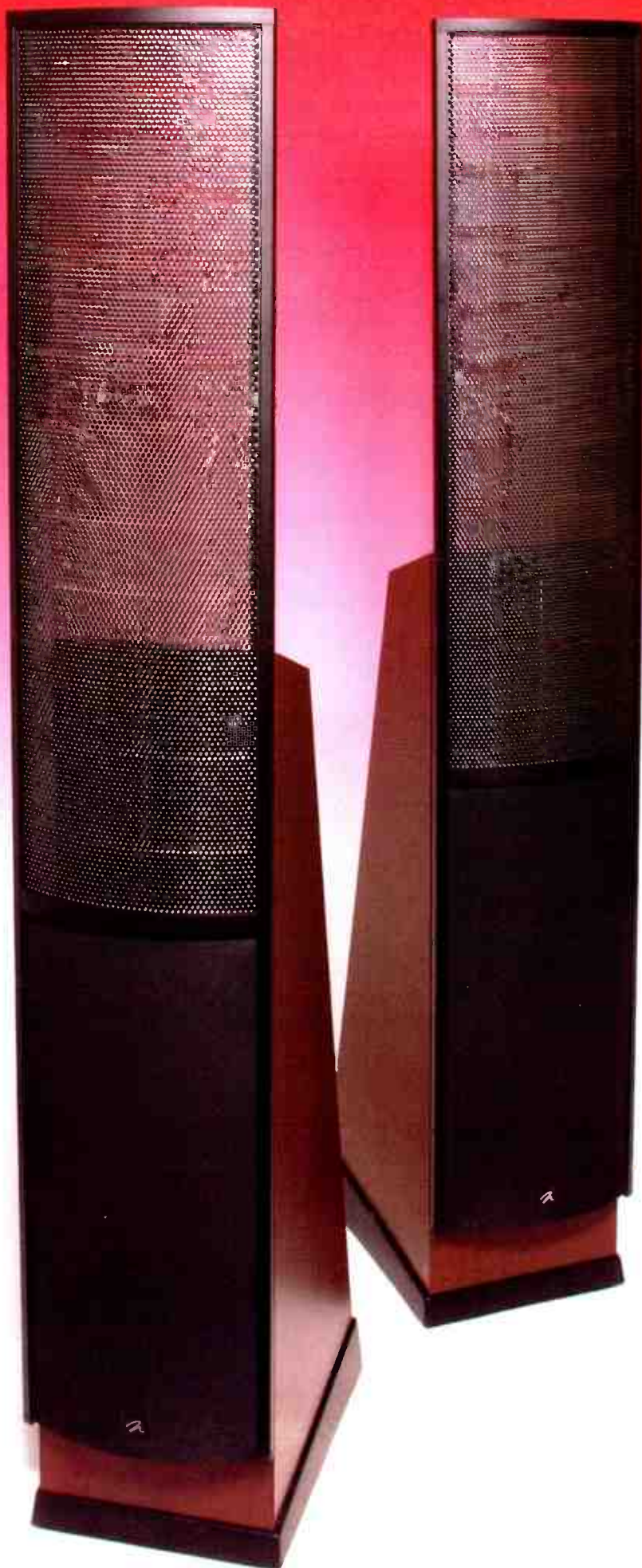
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Clean Fun!

A sophisticated active electrostatic loudspeaker for just £2,390, Noel Keywood found MartinLogan's Purity a most enjoyable listen...

My Quad ESL-63 electrostatic loudspeakers departed this planet long ago, life in the review lane having taken its toll. Also, truth be told, they needed a bigger room - so I could get in as well! A 17x14ft urban lounge isn't enough for big Quads sitting atop Celestion SL6000 subwoofers. I'm a diehard electrostatic fan though, a condition I developed after owning Braun electrostatics, so I was happy to review MartinLogan's new Purity. It comprises an electrostatic panel atop a pair of conventional woofers, both driven by a 200 Watt internal amplifier. This is a loudspeaker that would fit my lounge and it's probably just as well they never made it there as it's likely they never would have made it back! I ended up listening to the Purities at *Hi-Fi World* towers, in a 28ft square room easily able to accommodate them.

Measuring 135cms high but only 24.5cms wide and 37cms deep, the Purities are compact as electrostatics go. That's because the open panel you can see at the top reaches down to 450Hz and does not handle bass, where longer wavelengths demand a bigger panel. Below this frequency they cross over to an active bass unit, where the amplifier is housed in the cabinet. That means each loudspeaker needs mains power, but then electrostatics always do.

It also means that loudspeaker cables are not needed; we ran signal cables from a Creek OBH22 passive preamplifier, fed by a Yamaha CD-S2000 CD/SACD player, a near perfect drive system for a loudspeaker like this as the smooth sophistication of SACD could be enjoyed on electrostatics, something that gets a big thumbs up from me. This is real high fidelity at relatively affordable prices, since the Purities cost £2,390, an unusually low price for any electrostatic, let alone one with its own amplifier.

MartinLogan also fit loudspeaker inputs, allowing them to be connected into a system as it stands. However, contrary to comments I saw on the 'net, these do not give direct connection to the drive units, but attenuate the input down to suit the internal amplifier that then feeds both drivers through a passive crossover on its output, MartinLogan in the U.S.A. told us.

The Purities were designed to be sensitive enough to run from an iPod, generating a high 95dB SPL from



Beneath the bass cabinet grille lie two 6 inch bass units, working in parallel and driven by an inbuilt 200W amplifier.

just 100mV in (CD players produce twenty times more than this). Indeed, importer Absolute Sounds is even offering them as part of a high end iPod based system - the ElectroKID [see box]. The internal amplifier drives two bass units in a reflex enclosure with a rear port. A three position switch gives bass boost, bass cut or flat options.

At 22.3kgs (51lbs) each, the Puritys are weighty. We set them up as supplied for running in, where the panel is angled backwards. Within 2ft of the walls bass had to be set to -3dB (cut) to achieve reasonable balance and the panel sounded smooth but dull, due to lack of treble. Electrostatic panels that radiate over a broad area suffer destructive interference that results in hot spots and, standing up slowly, it was apparent that these panels sounded most balanced listened to on-axis, not from below. Their base can be unscrewed and swivelled around to bring them upright and this made a big difference. They were then angled in progressively and were best listened to one-third off axis, as the handbook suggests.

Moving the Puritys away from the walls then gave better bass balance and quality, allowing the bass switch to be set to flat. I then stood some absorptive panels a few feet behind the open panels to soak up rear radiation, a trick I used with my Quads. Electrostatics always need fine tuning like this so there's nothing unusual here.

Optional spikes provide an extra measure of adjustment. The lower

cabinets have an artificial veneer which isn't especially lovely, but that was no surprise considering price and what's on offer.

SOUND QUALITY

The Puritys exhibit all the strengths of electrostatics in spades, if some of their weaknesses too. They set up a fabulously wide sound stage, in the plane of the loudspeakers, that has ethereal height and on which images have a hard-etched outline. This gave a full scale canvas on which the choir and soloists of the Berliner Philharmonica filled the end of the room singing Beethoven's *Missa Solemnis*, towering in an arc before me as if I had a seat at the concert hall.

Also lifted to a seat with the gods was Hugh Cornwell, singing 'Always the Sun', as sustained organ chords whirled around slightly below and an opening drum roll from *Jet Black* dived from hard left to far right with breathtaking clarity. The Puritys' huge sound stage worked as well with the *Stranglers* as it did with a choir and here the *MartinLogans* took me back to my days with *Quad ESL63s* and their celestial imaging. With rock recordings, where images are placed with pan pot precision in the final edit, positioning was perfectly revealed in an explicit manner conventional loudspeakers can only mimic.

Accompanying vocals in Spanish appeared just over Toni Braxton's right shoulder as she sang 'Spanish Guitar'. Her voice had a liquid clarity that you only get from a film-like electrostatic panel, completely free from colour and also the deadness of the image that comes from lost subtleties, absorbed by the heavy materials in conventional cones. The Puritys made clearly apparent how hard Toni Braxton was working at her vocal intonation, with their breathtaking portrayal of her voice, that hung clearly in front of me. I could easily make out echo from the studio microphone too.

Spinning Amy Winehouse's 'You Know I'm No Good' had kick drum sounding large and solid, centre stage. Ride cymbals were picked out with pinpoint precision and had real bite, but there was some spitch behind their delivery. Ms. Winehouse sang with a clarity that was unrivalled by conventional loudspeakers: the

Puritys again showing their masterful way with vocals.

Electrostatics not only image and reproduce vocals well, they give fantastic results at low levels, due to lack of mass and stiction. This was very obvious in the chiming purity of each key of Lang Lang's piano as he worked with restraint through the quieter parts of Rachmaninov's *Piano Concerto No.2*. Often I find myself gently increasing volume on the remote control to better discern pianissimos, but each note sprang clearly from a perfectly silent back drop (because there's no reflected energy), causing me to hold my breath so as not to disturb the perfection of the playing and its delivery into the room from the Puritys. As strings of the orchestra

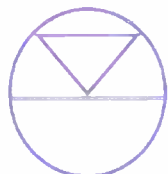
"these loudspeakers played The Eagles in glorious technicolour, and I loved what they did..."

interjected, gently swelling in a broad swathe across the room, although there was superb differentiation between instruments, equally there was also a little coarseness, the same effect that brought a 'spitch' to sibilance I believe.

Whilst this was also evident with the vigorous strings that embellish the *Overture of Wagner's Reinzi*,

The rear panel carries loudspeaker and line inputs. Both feed a 200W internal amplifier, so it's best to use the line input. A switch provides bass flat, boost and cut options.





Stepping beyond CD....and even vinyl.... LINN Digital Stream Players (DS)

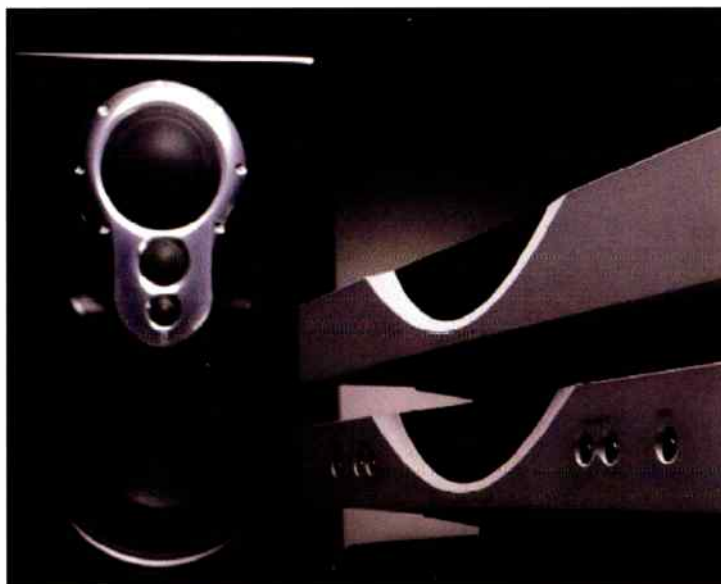
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- 1976, Isobarik DMS/PMS loudspeaker
- 1991, First CD Player & DAC converter - Karik/Numerik
- 1999, Sondek CD12 4D Transcription compact disc player
- 1999 Klimax SOLO Power Amps, 500W, RMS into 4 ohms
- 2003, Unidisk multi-format disc players
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Between the two perforated steel stator panels, front and back, lies a very fine, clear plastic film, a bit like Clingfilm. In MartinLogan's words it is a "low-mass PET (polyethylene terephthalate) diaphragm on which there is a thin-film conductive coating". The large holes in the stators "expose more of the diaphragm surface, dramatically expanding effective radiating area without increasing panel size, while spacers help maintain their stiffness without impairing the signature transparent look of MartinLogan electrostats".

It takes thousands of volts of audio on the stators to produce electrostatic forces strong enough to drive the light diaphragm backward and forward, achieved by using a step-up transformer. MartinLogan apply an insulator coating to the steel stators to make them safe. This removes much of the obstruction to sound transmission presented by electrostatic stators and protective covers.

What's special about electrostatics? The diaphragm is super light and driven over its entire surface, so it can follow musical subtleties better than a heavy cone. There is no box too; the rear wave is "lost" into the room. The result is a super clear and highly insightful sound free from colouration. Electrostatics have very low distortion too, but they tend to beam sound to a sweet spot.

did. I did suspect that the Puritys would go so loud, and then not much louder, but it was loud enough for me.

CONCLUSION

MartinLogan's Purity active electrostatics are a rare, and for many fantastic, experience. Of course they're not perfect, but you can say that of any loudspeaker. But what they do is show how cone drivers in boxes can produce a dull, bleak, slow and contrived sound. One listen the sparkling clarity, glorious sound staging and immersive low level dynamics and detail of these electrostatics will make you depressed with your existing boxes! Factor in their small footprint and room friendliness and you have a very special active loudspeaker.

There's little at the price to match these loudspeakers, I feel - they're a glorious experience, so much so that they have me hankering for much more. There's nothing to match a good electrostatic and £2,390 in this instance offers a unique experience, one well worth listening closely to.

ELECTROKID

MartinLogan's UK distributor Absolute Sounds is offering the superb Krell KID high end iPod dock with a pair of MartinLogan Purity floorstanding electrostatic loudspeakers as the ElectroKID system for £3,740. See www.absolutesounds.com.

horns rang out with a lovely metallic blare, whilst kettle drums rolled ominously. All in all, this was another thoroughly enjoyable performance, especially during the quieter episodes as strings hum excitedly like busy bees, something the Puritys capture beautifully.

But I do play Rock, and its heavier forms (ahem!) exposed some of the loudspeaker's weaker areas. Whilst bass was strong and deep it wasn't especially lithe or expressive, although I can't say this worried me too much in view of all else the loudspeakers did well.

Cymbals, tambourines and sometimes steel string guitar sounded a little hard and edgy. The Eagles 'Somebody' opened so forcefully, with a glittering display from guitars and vividly explicit enunciation in the choral line that I hardly noticed the powerful kick drum was perhaps a little lacking attack. You cannot listen to the Puritys away from the hot spot, where bass disconnects from all else (because the bass bin is a

monopole and the panel a dipole), and I am not so wedded to bass quality that all else is subservient. In a nutshell, the Puritys played the Eagles in technicolour and I loved what they

MEASURED PERFORMANCE

Frequency response of loudspeakers like these depends very much upon microphone position. The result published here is quite complementary, being what you get at the one-third off-axis position with the bass units well away from walls. Generally, over many sensible positions (i.e. not from below) we measured a wide midrange plateau in output of +3dB or so, that will push vocals and instruments forward. Above 1.5kHz the electrostatic panel runs up to 20kHz, our analysis shows, listened to perpendicularly to the centre, one third off axis.

The bass unit runs down to 26Hz (-3dB) or so, which is very low, but then it is an active system and so can be 'forced' downward using equalisation. The port contributes quite substantially to output, the red trace shows.

Sensitivity is very high, quoted as 95dB SPL (loud) at 1 metre from 100mV input, which is what a battery driven MP3 player will produce.

The Purity is a very wide range loudspeaker. Its electrostatic panel runs from 450Hz up to and past 20kHz our measurements show. The bass unit goes deep. Results varied substantially with microphone position and, at low frequencies, room position - rather more so than a Quad ESL-63 for example. In use placement, orientation and listening position will substantially affect results. NK

FREQUENCY RESPONSE



Green - driver output
Red - port output

VERDICT

A dramatic sound possessing the airy lucidity of a good electrostatic allied to the bass weight of a box loudspeaker.

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FOR

- transparent midband
- panoramic imaging
- low level dynamics

AGAINST

- position-sensitive
- spitch with sibilance
- soft bass

Levelling Up



Musical Fidelity's new A1 Fully Balanced Preamp is one of the company's most interesting modern machines, says David Price...

For those younger readers who might think the preamplifier you see before you is strikingly modern looking and utterly fresh in its design, I am sorry to say it is not. As we audiophile veterans remember, back in the mid nineteen eighties, a young company called Musical Fidelity launched a peachy little full Class A integrated that looked very, very similar to what we have here – aside from the A1 FBP's backlit LC display and control buttons, of course. So there you go; we have further proof – as if we needed it – that we live in a post-modern world where the old comes back as the new!

I for one have absolutely no hang

"it's great on leading edges of notes, showing dizzying speed..."

ups about borrowing from the past for aesthetic inspiration. Anyway, I think many people confuse new design with good design, but they're not the same. The bulbous, pumped up shape of many modern cars shows that just because something is new doesn't make it right. Musical Fidelity's eighties products were radically different looking – and had

sound to match their styling.

You could say that the new A1 Fully Balanced Preamp (£1,499) is 'affordable high end', just as the original A1 integrated was. The company says it is designed to work with its 550K and 750K Superchargers (more of which next month), but also fills a useful gap in my recommended preamplifier upgrade path between the likes of Creek's OBH-22 passive at £299 and Music First Audio's Silver Passive Preamplifier at nigh on nine times that. Both are great products, but there's a yawning chasm between the two – is the A1 FBP good enough to fill it?

Well, it's generously specified, boasting a number of inputs including

two fully balanced ones. It also has a proper MM/MC phono stage, a tape monitor, a USB input (meaning it has an internal DAC), a home theatre bypass, plus balanced and single-ended outputs. There's also a power feed from its external four-stage choke-filtered power supply. The circuit topology is such that it – as the name suggests – works fully

balanced throughout, as opposed to some so-called 'balanced' designs that are actually single-ended preamps with a balanced input and balanced output...

It is a nice bit of kit to look at, and is certainly well made – both boxes (preamp and power supply) conferring all the solidity of the original eighties integrated. However, I am not quite so convinced about the control buttons, which might feel fiddly to some users, while the volume control is a little drastic – one short prod sends it rocketing up! Still, these quirks don't spoil the user experience, and certainly this reviewer liked the very sturdy and cleanly labelled back panel, making switching interconnects easy. It also has tiny switches round the back, toggling between home theatre bypass mode and the standard auxiliary input, and between moving coil and moving magnet cartridge options.

SOUND QUALITY

Given that it's such a versatile beast, I ended up using the A1 FBP with a number of different sources and amplifiers, although I can confirm that running balanced yields considerably better sonics, so this is where I ended up – a Stello CD-T100/DA100 Signature providing a balanced output

into the Musical Fidelity preamp, which I then ran to my reference NuForce Ref9SE monoblocks, again balanced. I swapped the A1 FBP with my reference MF Audio Silver Passive Pre (at nearly twice the price, lest we forget) to gauge the Musical Fidelity's sound.

This is a very open sounding device – even by the standards of my reference £2,500 preamplifier. I was quite surprised by its transparency and general lack of character. Indeed, if you can ascribe any particular 'nature' to it, it's rhythmic 'get up and go', which on many similarly priced rivals has already got up and gone! Effectively then, we have a light, open and spacious sounding device with a propulsive musical sound.

Hero's 'Give In' was first on the CD player, and showed high levels of detail. It set up a very wide recorded acoustic in my front room, with a good deal of depth behind the speakers too. Strings were vividly etched, the Musical Fidelity showing fine instrumental timbre. Indeed, this preamp managed to be both light and bright in the upper mid and treble and strong in the bass. I found myself enjoying the crisply etched hi-hat cymbals and the sparkling harmonics of the violins, and at the same time being impressed by a strong and expressive bass line.

Indeed the A1 FBP demonstrated a vice-like grip on the low frequencies without stifling the emotion out of them. Soul II Soul's 'Keep on Moving' was a case in point – as the whole track is driven by the looped synthesised bass line which pushes the groove. The Musical Fidelity held on tight, showing impressive speed and articulation even compared to my reference MF Audio Passive, which by contrast appeared to slow the bass line ever so slightly. This prowess with timing was evident right up the audio band – as the sequenced hi hat loops showed. Again, the Musical Fidelity snapped them into focus, whereas they seemed just a touch diffuse and vague via the considerably more expensive reference.

Switching to some electronic pop in the shape of the Pet Shop Boys' 'I'm Not Scared', and this preamp showed just how clean and detailed it is, throwing vast amounts of information out at me but stringing it together adeptly all the same. It really is great on leading edges of notes, capturing the attack of snare drums with dizzying speed yet managing to cohere it together musically.

A spot of Herbie Hancock, in the shape of 'I Have a Dream', showcased the Musical Fidelity's

SECOND THOUGHTS

Hmmm, £1,500 preamp with built-in MM/MC phono stage? This I couldn't resist... Setting up the A1 FBP in the Hi-Fi World listening room showed that the dynamic and grippy nature that David noted carries across into the phono stages as well, and Musical Fidelity have done a great job in keeping the character of the unit consistent across these inputs.

Both the MM and MC stages are solid performers, nicely musical and very well focused, in image terms, across the centre of the soundstage. Lead vocals stepped smartly into the listening area, instruments were vivid and large-scale and the A1 FBP endowed drum kits with a delightfully solid 'thwack' to each strike. Comparing the two, I would say the MC input is a little more spacious and effusive across the upper midband, but both stages are highly competent and a welcome addition to an already excellent unit. AS

open soundstaging and natural musicality. By contrast, the MF Audio was a little darker and deeper, giving a fractionally less explicit but more subtle tonality to acoustic instruments. It didn't push images out into the room with quite the same precision, but hung things back a little better and was fractionally wider overall. Interestingly though,

and self-effacing products, but you have to pay a lot more and even then they're not comprehensively better, as my comparisons show. With this in mind it's a hearty recommendation for this as an excellent do-it-all 'affordable high end' preamplifier – and it just shows you that strikingly styled, retro looking hi-fi needn't be all show and no go.



the Musical Fidelity did make the reference sound a little imprecise and slow – the bass guitar playing was markedly more animated via the A1 FBP. There was also a greater sense of air through the new preamp, which will suit some systems but not others (had I been using my reference NS1000Ms I suspect the MF Audio Passive would have been a better synergistic match).

CONCLUSION

On price grounds alone, I hadn't expected the Musical Fidelity A1 FBP to do as well as it did. But I have to say that I was genuinely surprised by how capable it was – especially in balanced mode. It has a strong and grippy sound, but with plenty of passion and poise – plus a fine tonality and excellent dynamics. In absolute terms of course there are slightly more subtle

VERDICT

Excellent sonics plus fine connectivity win this striking looking preamplifier a recommendation.

MUSICAL FIDELITY A1 FBP £1,499
Musical Fidelity
+44(0)20 8900 2866.
www.musicalfidelity.com

FOR

- fluid but focused sound
- airy, spacious treble
- propulsive bass
- retro styling

AGAINST

- fiddly buttons

MEASURED PERFORMANCE

Through the line level inputs, the Musical Fidelity FBP has a wide frequency bandwidth of 2Hz - 80kHz and offers a gain of x4.3; figures which were consistent across all possible permutations of Balanced and Unbalanced inputs and outputs. As a result the FBP should turn in a consistent performance no matter how you choose to connect it. Distortion was good at 0.007% and noise low at -73dB.

Equalisation accuracy of the phono stages was good with both MM and MC, the preamp showing a slight fall in its 75uS characteristic, so it will exhibit a trifle less upper midrange sheen than others, where there is commonly a small lift. The Musical Fidelity's characteristic will suit modern cartridges though, which are becoming ever more bright and forward in their sound.

A gain of around x300 is normally expected for Moving Magnet cartridges (x100 for the MM stage and x3 for the preamp). Gain measured out at x420 so it was usefully higher than expected and overload ceilings satisfactory. Input noise levels were much as expected too, 0.23uV for MM and 0.07uV for MC, the latter being low enough for high quality, low output designs.

All in all, the FBP is a versatile preamplifier that measures well and should be capable of a fine performance. AS

CD/tuner/aux.	
Frequency response	2Hz - 80kHz
Separation	74dB
Noise	-73dB
Distortion	0.007%
Gain	x4.3
Overload	>6V in/9.3V out
Disc (MM)	
Frequency response	10Hz - 30kHz
Separation	68dB
Noise (e.i.n.)	0.23uV
Distortion	0.006%
Gain	x420
Overload	22mV in /9.3V out
Disc (MC)	
Frequency response	15Hz - 30kHz
Separation	66dB
Noise (e.i.n.)	0.07uV
Distortion	0.008%
Gain	x2860
Overload	3mV in /9.3V out

DISTORTION





Chord's brand new QBD76 is a DAC with a difference, says David Price, and it's not just the wireless Bluetooth functionality...

Radio Active

There's not normally an awful lot to get excited about when reviewing a hi-fi digital to analogue convertor. Generally they have a proprietary chipset, bought off the shelf from the likes of Burr Brown or Wolfson, a selection of digital inputs on the back and maybe even switchable upsampling to make life especially interesting. You plug it in, it sounds good (or bad), and errm, that's it!

This is not the case with Chord's new QBD76. There's so much in here that I suspect this magazine will be talking about it long after the ink has dried on the September issue. The reason for this is two-fold. Firstly, it has a unique bespoke DAC chip; a development of the one used in Chord's own superb DAC64, of which we are huge fans. Secondly, it introduces a completely new concept (for hi-fi DACs) – that of wireless Bluetooth transmission from a mobile phone. [see TOOTH WISDOM].

The QBD76 is essentially a 'mark II' version of the DAC64, doing things that chip architecture didn't easily permit seven years ago at the time of the original Chord's introduction.

Thanks to a new generation field programmable gate array (FPGA) device (the Xilinx Spartan 3) which has no less than 1.25 million gates, a massive amount of functionality can be 'imprinted' on a single chip. Custom coded by Chord, it handles the switching of S/PDIF inputs, all digital S/PDIF decoding, digital Phase Locked Loop, the RAM buffer controller, the Watts Transient Aligned filter and the fifth generation Pulse Array DAC. This forms the heart of the QBD76, and is its single most defining characteristic because it takes control of the sound quality away from OEM chip manufacturers and puts it in the hands of Chord.

The changes are myriad, but suffice to say the new 5th generation Pulse Array DAC has had a lot of work, particularly on the noise shaper architecture with the aim of reducing noise (it now has 8th order noise shaping, and 2608 times oversampling and digital filtering). A new digital Phase Locked Loop has been developed using a highly accurate 115MHz clock. Data-related jitter is completely removed from the source, says Chord, and you're

left with just random master clock jitter of less than 3pS cycle to cycle [see MEASURED PERFORMANCE]. As before, it features a switchable RAM buffer, which was left on for this review.

The unit itself is about as exotic as it is possible to make a digital to analogue convertor look and feel. It retains the DAC64's 338x60x145mm dimensions and hewn-from-solid feel (and 7kg weight), but adds a few more flourishes. As before, the large glass aperture showcases the circuitry inside (which lights up in red), but there's a second, smaller 'looking glass' showing a simple alphanumeric red LED display. This works in conjunction with the buttons on the top to give source selection, RAM buffer (off, minimum and maximum) and phase. Round the back, along with the very obvious Bluetooth aerial are a pair of balanced audio outputs and a pair of RCA phono outs, plus two coaxial and optical digital inputs, an AES XLR in and a USB input.

SOUND QUALITY

In short, this is the very best DAC I've heard to date. As regular readers

will know, this is pretty much what we thought about its predecessor, the DAC64. But that doesn't mean that the QBD76 is simply a lightly 'reheated' version of the original, because it sounds superlative in a markedly different way...

Importantly, it loses the original's distinctively warm and romantic quality. This is mostly down to the fact that the former was a little rolled off in the treble, whereas the QBD76 is not. This is its greatest defining characteristic – a massively focused and natural sounding top end. To that, however, you can add the midband and bass – because this new DAC is like twiddling the lens of a manual SLR camera just a touch, and watching everything snap into dramatic focus. On top of this, all the lovely, unfettered, organic musicality is still there to behold.

Although you can dissect different aspects of the QBD76's performance and single them out for particular praise, it's the breath-taking combination of its many strengths that makes it remarkable. For example, Pet Shop Boys' 'Left to My Own Devices', a fairly flat and mechanical experience on CD (but not LP) became a totally engrossing listen through the new Chord, massive in scale and expressive like nothing else digital I've heard. The sheer speed of the song was stunning, the bassline strong and physical yet bouncing up and down like it was on rubber springs. Above this, I found a vast midband bubbling over with detail in front of me. For the first time with the CD, I could hear vocal overdubs, the rasp of the brass and a wondrously silky yet sharp hi-hat sound.

Even with relatively hard and unforgiving recordings, the new Chord just flies. 'There Is a Light That Never Goes Out' from The Smiths wasn't presented in as romantic a light as the old DAC64 did, taking me much closer to the sound of the mixing desk, but still the music flooded out. Morrissey's distinctive vocals achieved a striking, haunting quality – almost quite ethereal – whereas most DACs reduce them to a nasal whine. Every strand of the song was there for me to hear, practically on a plate, whereas I'm used to having to try harder to listen for those backing strings, for example.

Rhythmically it's a riot, shown perfectly by the strains of Herbie Hancock's 'I Have a Dream'; an acoustic jazz number with very subtle rhythms. Suddenly the song sounded alive and believable, more so than any other DAC I've heard. Aside from its brilliance at all the hi-fi stuff (i.e.

TOOTH WISDOM

Advanced Audio Distribution Profile (A2DP) is a subset of Bluetooth, designed to send high quality stereo or mono audio from one device to another. Although designed ostensibly for streaming audio from a mobile phone to a wireless headset, Chord have harnessed it to work with their new QBD76 DAC and Chordette Gem Bluetooth music player. The system works well on the QBD76, locking on to a new Nokia A2DP-compatible phone and playing AAC files in a stable, fuss free way once the usual Bluetooth 'handshaking' has taken place (it initially requires you to enter a code before it recognises the Chord as a Bluetooth device). Of course, this isn't the primary function of Chord's new flagship DAC – but it's a handy one that adds a new dimension to an already highly versatile machine. And for those specifically interested in Bluetooth music playback, then they have the new Chordette Gem (£399), more of which next month. The Chords already support a very wide range of mobile phones, PDAs and personal computers – a three page long list of compatible phones is supplied, including most of the latest Nokias and Blackberrys – and I suspect this will grow in length dramatically over the coming months and years.

dynamics, detail, image precision), this DAC simply doesn't let the side down rhythmically, unlike every other 16/44 digital source. It makes jazz truly listenable on CD, which is surely a first!

The same could be said for classical music, a Deutsche Grammophon disc of Vivaldi's 'Four Seasons' (The English Concert/Simon Standage) sounding vivid with detail

able to scratch the surface. But, even on first acquaintance, it's obvious that Chord's new QBD76 is in a gang of one at the moment – so striking is its clear, focused and musically articulate sound. As for its Bluetooth functionality, laudable as this feature may be, right now it's something of a sideshow. Don't let it distract you from the fact that this is a landmark digital device.

"this is the very best DAC I've heard to date."

but wonderfully natural too. The focus of the Chord was there in full effect, each instrument located in the vast, three-dimensional recorded acoustic like it was nailed down, and dripping with shimmering harmonics. There's still a slight residual upper midband hardness to CD, and this was apparent on violins, but it's about as natural as I think I'll ever hear 'legacy 16bit' get. Best of all, it detracted from the performance not one jot, the whole orchestra sounding breathtakingly powerful and animated – by contrast most other hi-fi DACs sound like they've been popping Mogadon.

CONCLUSION

There will be a lot more discussion of this new digital to analogue convertor in these pages in the months to come, as we've only just been

VERDICT ●●●●●

Dramatically musical yet devastatingly revealing sound makes this unique product the definitive digital to analogue convertor right now.

CHORD QBD76 £3,000
Chord Electronics
 ☎ +44(0)1622 721444
 www.chordelectronics.co.uk

- FOR**
- stark focus
 - infectious musicality
 - unfettered dynamics
 - design flair
 - engineering, build

- AGAINST**
- Bluetooth appeal?

MEASURED PERFORMANCE

Frequency response measured ruler flat to 20kHz without visible filter influence. The clean and stable time domain pulse shape resulted in perfect analyser triggering, a side issue of the filters, but interesting. Switching our digital analyser to 48kHz sampling moved bandwidth out to 22kHz. The low end limit was 3Hz.

Distortion levels were low right through the dynamic range of CD, especially at -60dB, where a figure of 0.18%, seen in our analysis, was exceptional. All the same, because of harmonic distribution the EIAJ Dynamic Range value was normal enough at 110dB.

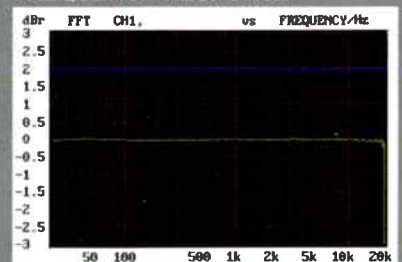
There was just about no measurable difference between balanced (XLR socket) and unbalanced (phono socket) outputs, except that the former gives double the output of the former, a massive 5.7V in all. The XLRs in particular are suitable for long lines.

The new QBD76 doesn't have its predecessor's high frequency roll off, but then it relies on far more advanced digital circuitry, Chord say. The point of the QBD, and the DAC64 before it, is to maintain time domain waveform shape through Watts Transient Aligned filters and this the QBD76 did, whilst showing far greater bandwidth than the venerable and much admired DAC64. NK

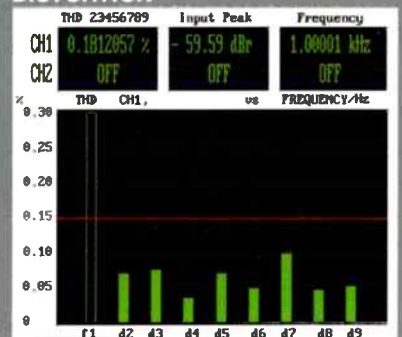
Frequency response (-1dB)
 CD 3Hz - 20.1kHz

Distortion (%)	0.0008
0dB	0.0007
-6dB	0.18
-60dB	4.7
-80dB	
Separation (1kHz)	125dB
Noise (IEC A)	-123dB
Dynamic range	110dB
Output	2.86/5.7V

FREQUENCY RESPONSE



DISTORTION





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Linn Ex Dem List

Source	Price	Condition	Colours available
Linn CD12 CD Player	£6000	Used	Silver
Unidisk 1.1 Universal Player	£4500	Ex Dem	Black & Silver
Unidisk 2.1 Universal Player	£2500	Used	Black & Silver
Unidisk SC	£2250	Ex Dem	Black & Silver
Karik CD Player	£350	Used	Black
Numerik DA Converter	£400	Used	Black
Control			
Kisto AV Processor	£5000	Ex Dem	Black
Kinos AV Processor	£3750	Ex Dem	Black
Kairn Pre Amplifier	£400	Used	Black
Playback			
Klimax Solo Power Amplifiers	£4950	Ex Dem	Silver
Klimax Solo Power Amplifiers	£4000	Used	Silver
Chakra 5100 Power Amplifier	£1400	Ex Dem	Black & Silver
Chakra 2100 Power Amplifier	£1000	Ex Dem	Black
2250 Power Amplifier	£900	Used	Silver
LK140 Power Amplifier	£400	Used	Black
LK85 Power Amplifier	£400	Used	Black
Komri Loudspeakers	£14000	Used	Maple
Linn Kellik Loudspeakers	£1800	Used	Maple
Artikulat 350A Loudspeakers	£15000	Ex Dem	Rosenut (Immaculate)
Artikulat 350P Loudspeakers	£8000	Ex Dem	Rosenut
Artikulat 345 Subwoofer	£2600	Ex Dem	High gloss Cherry
Artikulat 340A Loudspeaker	£6000	Ex Dem	High gloss Cherry
Artikulat 320A Loudspeakers	£9000	Ex Dem	High gloss Cherry
Akurate 242 Loudspeakers	£4000	Ex Dem	Rosenut
Akurate 212 Loudspeakers	£2500	Ex Dem	Maple
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Electric Music

Steven Green switches on to Terratec's new Noxon iRadio – a combined Wi-Fi Internet radio and media player...

Terratec's Noxon iRadio does indeed look like a radio but, despite those unassuming looks, it does quite a lot more, keeping a trick or two from view!

In addition to its internet radio functionality – giving you access to over 11,000 stations, it's also a Wi-Fi media player in the same way as a Roku Soundbridge, so you can stream your music through it anywhere in the house. It even comes with the option of an integrated iPod docking station, although this adds about £110 to the price tag.

As with all such products, providing you've got a working 802.11 wireless network in your home, you'll find setting it up simple – it merely consists of pressing 'OK' a couple of times on the remote control followed by entering your wireless network password – the device supports the WEP and WPA/WPA2 security formats.

The iRadio sports a large and very attractive white-on-blue background display, which has a much higher resolution than portable radio displays usually have, and this made text very easy to read when viewing the display from side-on. The display was quite difficult to read when viewed from above, however, although you rarely need to do this, because the buttons on the front-panel only allow you to tune into five preset stations or control playback on the media player – navigating through menus and lists of stations requires the use of the remote control. This is a limitation, but in practice it wasn't a major issue.

One grumble was that, when I switched it on, the radio didn't automatically start playing the station I was last listening to, although Terratec could sort this out in a future firmware release. The iRadio was very easy and intuitive to use via the remote control, though, and

the display could show six lines of text, which made navigation and scrolling through lists easier than on devices with two-line displays.

After registering the radio on the vTuner website, which holds the database of over 11,000 Internet stations the iRadio can receive, I was able to select stations to be included in the My Favourites folder on the radio itself. The website also allows you to enter your own podcasts which then become accessible on the radio, and podcasts begin playing immediately rather than having to wait for the whole file to be downloaded.

There were a couple of issues with the BBC's radio streams. The WMA live streams for Radios 1 – 4 were only played back at 32kbps instead of 64kbps, and the iRadio doesn't support Real Player, so the BBC's Listen Again on-demand streams weren't available. However, Terratec told me that they're planning on adding support for the BBC's Listen Again streams, hopefully this year if all goes according to plan, and they're currently working on fixing the problem with the live streams.

The iRadio supports the MP3, WMA, AAC/AAC+, Ogg and WMA Protected audio formats, as well as the M3U and PLS playlist formats. The media player side of the device only works with UPnP music servers installed on your computer, and they determine which audio formats are actually playable on the media player. I used the UPnP server included in Windows Media Player 11, which worked well but doesn't support AAC/AAC+ or Ogg, whereas the TwonkyMusic UPnP server that was supplied on the CD does support them, but it sometimes made the iRadio run slowly. The iRadio also

works with UPnP servers installed on Mac and Linux machines.

The iRadio had no problems with Wi-Fi reception in my flat, and it was quick at both tuning into Internet stations and cueing up audio files on the media player.

Terratec is best known for being a manufacturer of computer sound cards, and they've used their audio experience to good effect, because the iRadio is the best-sounding single-speaker portable radio I've reviewed to date. Most portable radios that can playback high bit rate MP3 files – such as via an SD card or over a Wi-Fi network – still provide a significantly constricted sound. The iRadio, on the other hand, provides a far more expansive and vivid sound than the norm, with higher levels of precision and detail than portable radios typically deliver. The top end was exceptionally good. The bass could distort a little at high volume levels, though, but the iRadio can go very loud indeed due to its use of a 5W speaker, and backing the volume off a little sorted this issue out.

Summing up, the issues with the BBC's streams should be sorted out this year by Terratec releasing a firmware upgrade, and the usability issues aren't a major concern. As a result, I don't think these things should detract from the fact that in all other respects the iRadio is a superb Wi-Fi radio, which will allow people to make the most of the audio quality of both music stored on their computers and of Internet radio. Heartily recommended as a way in to a wonderful wireless world.



VERDICT ●●●●●

With excellent sound at a very reasonable price, it outperforms many considerably more expensive designs.

TERRATEC NOXON

iRADIO £120

TerraTec Electronic

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FOR

- sound quality
- attractive display
- usability via remote

AGAINST

- usability via front panel
- issues with BBC streams



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CLEARER AUDIO SILVER-LINE OPTIMUS REFERENCE INTERCONNECT £500/0.5M

Having been impressed with Clearer Audio interconnects over the years – finding them to offer high end performance and mid-fi prices, we couldn't resist trying the company's own flagship wire. With its lavish silver-plated nylon braiding, the Silver-line Optimus Reference Interconnect looks and feels exotic. Indeed, it's hand made as a pseudo quad-balanced design running 99.9999% silver conductors insulated in low-loss foamed polyethylene. Clearer Audio says it is, "not technically a true multi-strand cable nor a solid-core cable - it is in fact both, as there are several solid conductors arranged in a spiral multi-strand configuration". This interconnect runs four cores of MSS Super-Pure Silver conductors

with a total of twelve per core. It is shielded using the company's six layer Star Shielding Technique with all layers being grounded via the Parallel Earthing System – this is claimed to be effective across the whole EMI spectrum with an attenuation of over 130dB. The cable is also fitted with the company's Super Suppressor ferrite rings which attenuate RFI on the cable line, and termination is by Eichmann Silver Bullet RCAs or Neutrik X-Series XLRs. Finally, the Interconnect is fully burnt in on the Audiopharma Pro 2.5 Cable Cooker. The standard half metre version costs £500, or £725 for the 0.75m and £912 for the full 100cm; additional 0.25m lengths cost £187. Expensive stuff, but Clearer Audio do say that, including burn in, it takes sixty hours to build!

It's always hard to assess what, for most people, are unrealistically expensive interconnects, and very hard to recommend them on value for money terms, but these can still be given an enthusiastic thumbs up

if cost is no object and you have a system great enough to unlock its abilities. Compared to its closest rival – Chord Company's Indigo (£832/m) – the Clearer Audio is an altogether smoother and darker sounding wire. Whereas the Indigo majors on dizzying amounts of detail and a stark, explicit presentation that leaves you breathless with its energy and life, the Silver-line is a deeper and more velvety listen. Although possessing less conspicuous detail, close listening confirms it's all there – along with inky-black silences and vast background atmosphere – just not served up with quite the same vigour. Instead, this cable has an uncannily natural, unforced presentation that lets the components in your system do their thing, unfettered and uninterrupted. It's wrong to say this cable sounds 'superb', as it doesn't really sound much at all – being amazingly self effacing. I'd recommend it heartily to those with high end systems that sound a tad too brightly lit and mechanical for their tastes – this would be the perfect palliative.

DP

[Contact: Clearer Audio
+44(0)1702 534981
www.cleareraudio.com]

soundbites

VERBATIM SMART DISK 250GB PORTABLE HDD £75 APPROX.

Computer hard disk drives (HDDs) are today's equivalent of magnetic tape. Whereas music used to be stored on long runs of Mylar-backed ferric oxide whizzing past tape heads, now it's on little magnetic platters spinning around at silly speeds – something IBM would never have imagined when they invented hard disks for their accounting computer back in 1956! Still, this state of affairs won't remain so forever, as solid-state drives begin to make their commercial mark in computers such as Apple's MacBook Air. Right now though, in the autumn of the hard disk's life, the breed has never been better – they are cheap, offer (relatively speaking) masses of storage and very reliably too. With this in mind, external HDDs such as this are perfect for storing digital music, either just plugged into your notebook via its USB2 socket or as

a Network Attached Storage (NAS) device in your home network, feeding your Linn Kivor DS (or suchlike) with all your favourite tunes.

This is ideal for such applications, being fully Plug'n'Play compatible. As soon as it's hooked up your Mac or PC will 'see' it and allocate it a drive letter, then – hey presto – you have access to 250GB (232GB formatted capacity) of storage. This runs out at approximately 8,000 songs in Apple Lossless, or put another way, 360 uncompressed CDs worth of music. The drive inside is a high quality item - a Samsung HM250J Spinpoint M5, which is a 5400RPM SATA-150 drive with an 8MB buffer. Although not as fast as pricier designs, it's perfectly swift enough for most uses. For example, copying 260MB of MP3 files from a PC to the Verbatim took 16 seconds, whereas in the other direction it was half that. The highly compact 85x135x25mm unit itself looks smart in its matt silver plastic



housing and at 150g is very light. As you would expect from a Spinpoint drive, it's fairly quiet in operation and blinks blue LEDs on both sides to signal it is working. It comes bundled with Nero's 'Back it Up 2 Essentials' (see www.nero.com/enu/backitup2.html) software. All in all, a great way to store music and a lot less fuss than a vault full of Ampex 456! DP

[Contact: www.verbatim-europe.com]

Sum Total

Adam Smith finds that Kudos Audio's C20 adds up to a great floorstanding loudspeaker at the price...



It's funny how, in life, the old saying that "the whole is more than the sum of the parts" can be so true (my brother-in-law and I were having this very discussion about Angelina Jolie only last weekend but that's probably for another time . . .) After all, consider taking a competent but unspectacular saloon car engine and installing it into a solid but basic chassis, and adding utilitarian but functional bodywork. Doesn't sound particularly inspiring does it? But that's exactly what Maurice and Spencer Wilks did in 1948 and the result was the Land Rover.

The same can be said of some hi-fi components. Most of us have experienced items like the 1980s Goodmans Maxims, Wharfedale Diamonds, the original NAD 3020, Cambridge Audio's DACMagic DAC and even the current Usher S-S20 loudspeakers - outwardly simple items superbly implemented that sound far better than expected as a result. Conversely, as we all know from trying to match systems, taking two good elements and putting them together does not always guarantee a resounding success.

These were exactly the thoughts I was having as I unpacked the Kudos Cardea C20s when they arrived in the office. But I hear you crying, "what the heck has this got to do with them?" Simple really - last July I tested the Kudos C2s - the C20's cheaper brothers, and these remain one of my favourite pairs of loudspeakers at around the £2,000 price point. I followed this with a listen to the C10 standmounters in February of this year and these offered even better treble from their SEAS Crescendo tweeter but a slight lack of 'body' from their smaller cabinet. Consequently, the question has been playing at the back of my mind for a while as to whether the C20s could combine the best of both worlds, or would they not gel? Are they the Land Rover of loudspeakers? There was only one way to find out...

To briefly recap, the C20s have the same cabinet and main bass/mid drive unit as the C2s. This latter item is a SEAS Prestige item, with a 7in (180mm) coated paper cone. The SEAS Crescendo tweeter to which it is mated is one of the most expensive tweeters on the market, packing a great deal of technology in beneath its unassuming faceplate. A 29mm soft dome design, the unit uses a 26mm diameter voice coil in an 'underhung' configuration. This means that the voice coil winding

height is shorter than the magnetic gap in which the coil sits and, in the case of the Crescendo, results in a 1.5mm winding length sat in a 2.5mm long gap. Combined with the tweeter's maximum travel of 1mm peak to peak, this ensures the voice coil never moves out of the region in which the magnetic gap's behaviour is still linear; thus reducing distortion.

Further back, the Crescendo uses what SEAS call a 'Hexadym' magnet system, using six Neodymium magnets to provide "efficient ventilation and damping of cavities behind the dome, surround and voice coil". Finally, the tweeter has a notable horn loading to it, with the central part of the horn made from chrome plated precision machined brass.

The C20s are available in Cherry, Walnut, Sycamore and Rosenut real wood veneers and their fit and finish is impeccable; it would shame some loudspeakers at twice the price that I have encountered. Small, neat grilles are provided that attach to the driver screws magnetically and two pairs of binding posts at the rear permit bi-wiring or bi-amping - unlike the previous C2 and C10 review samples. Kudos now supply linking bars for these. Vital statistics are 925x200x270mm (HxWxD).

SOUND QUALITY

Like their smaller siblings, the Kudos C20s definitely have a forward and generally bright tonal balance. A rising response lifts the upper mid and treble to ensure that 'dull' is not a word in their vocabulary. However, all those of you thinking of the word 'harsh' and ready to turn the page, hold on, as there's not an ounce of harshness to the C20s' performance.

That SEAS Crescendo tweeter means that not a single thing escapes the C20s, no matter what music you are playing. Fine background minutiae suddenly become more noticeable than you have ever heard them, instruments gain real feeling and lead vocalists are stunningly insightful, stepping smartly out of the soundstage to stand proudly clear of the backing track. Add to this a massive sense of space to the mid and top end that stretches out between, behind and beyond the cabinets and you have the recipe for a truly enthralling listen.

Most impressive is the way in which the C20s add in the sort of transient response and attack that makes you realise that many other loudspeakers cannot come close when you hear it. The weekend before this review, I attended an open air performance by a travelling

theatre company in our village and happened to find myself sat at the front, right beside the drumkit that they used for sound effects. Hearing a real, unamplified drum kit at such close quarters made me realise how poorly some loudspeakers reproduce such items, but drum strikes were snappy and lifelike, and cymbals were almost alarmingly realistic through the Kudos units - every last metallic shimmer from percussion comes through loud and clear with these loudspeakers.

It's not all top and no bottom, however. The bass end of the C20s mates perfectly to the rest of the frequency range resulting in a taut, detailed, fast and punchy delivery. Any sluggishness in the low end would be ruthlessly exposed by the swift transient response of the tweeter and Kudos have done a superb job of making sure that the whole integrates perfectly. Bass guitars came through as taut and focused; the intro to Simply Red's 'Sad Old Red' was just about as good as I have ever heard it - bass guitar was tight and emotive, and the hand movements up and down the fret were easy to discern. Additionally, the backing hi-hat had a crispness and sense of solidity that I have only heard before in the ADAM Tensor Gammas, at £12,500!

CONCLUSION

As I had hoped, the addition of the Kudos C10's tweeter to the already highly capable C2s lifts the C20s' performance even higher and makes absolutely everything you care to throw at them a truly captivating experience.

My only word of caution would be with regard to partnering - a bright or hard sounding amplifier is likely to give a pretty relentless result, so a more sophisticated amplifier is definitely the order of the day. Our Anatek A50R was just about on the right side of fine, but the Quad II-Eighty/Creek OBH22 combo was perfect, and really showed these

loudspeakers at their best. If you value detail, atmospherics and sheer musical involvement above all, these may well be the designs you have been waiting for.

Just like the Land Rover I mentioned earlier, I can see many people becoming instant fans of the Kudos C20s because what they do so well, few loudspeakers at the price can match. Even better, they won't leak oil over your driveway...

REFERENCE SYSTEM
 Avid Diva II/Jelco SA250-ST turntable
 Ortofon Rondo Bronze cartridge
 Whest Two phonostage
 Anatek A50R amplifier
 Creek OBH22/Quad II-Eighty pre/power amp



VERDICT ●●●●●
 Crisply detailed performers with jaw-dropping transient abilities. A beautiful package at the price.

KUDOS CARDEA C20 £2,950
 Kudos Audio
 ☎ +44(0)845 458 6698
 www.kudosaudio.com

- FOR**
- level of detail
 - rhythmicality
 - taut transients
 - build quality

- AGAINST**
- partner carefully

MEASURED PERFORMANCE

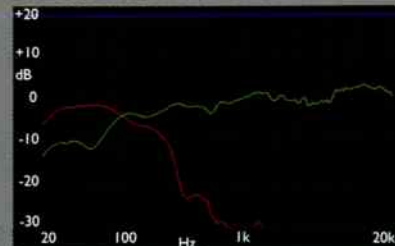
The Kudos Cardea C20s, like their cheaper C2 brethren, have a gently rising response with frequency, but this is smooth across their bandwidth and contains no nasty peaks or dips. As a result, the C20s will have a balance that tends towards brightness, but the high quality tweeter should mean that this is not accompanied by any harshness.

At the low end, the bass driver rolls down below around 80Hz, before handing over to the port, which is tuned to around 35Hz but has a broad output spectrum thanks to its down-firing position. Consequently, the C20s should have good low end weight but without any obvious port noise, particularly as this has a clean output with no unwanted artefacts at higher frequencies.

Interestingly, the C20s have a high average measured impedance of 10.5 Ohms, barely dropping below 8 Ohms at any frequency. This is relatively uncommon these days, as most designs use four Ohm bass drivers, but the C20s are a genuine 8 ohm design and should be a nice, easy drive for any amplifier. Lower impedances are often used to boost sensitivity, but the C20s were also fine on this score,

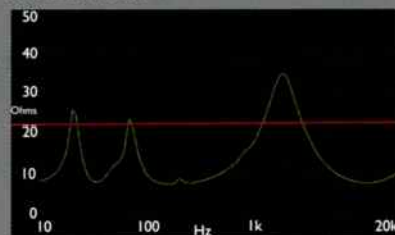
turning in a respectable figure of 87dB. Consequently, at least 40 Watts from a matching amplifier would be wise but the C20s are not current-hungry and so will not require a musclebound powerhouse for optimum performance. AS

FREQUENCY RESPONSE



Green - driver output
 Red - port output

IMPEDANCE





Hot Tuner

Unison Research's brand new Unico R analogue tuner actually uses valves, Noel Keywood was amazed to find!

Keen radio listeners aren't given a lot of thought these days. Tuners, whilst uniformly good, are rarely honed to have a particular sound, especially one evocative of the past. But the Unico R from Unison Research has been crafted to echo old sureties: it enjoys glowing valves and a sound that's clear and relaxing. It even takes thirty seconds to warm up, so you can't just 'switch on the transistor' for music! A little patience is required, and a little more if you want to hear the Unico R at its best, because this takes ten

minutes, the handbook warns... provided for all those that like to spin a tuning knob - and it has a lovely silky feel to it - Unison Research fit twenty memories for VHF/FM and a further twenty for Medium wave. In PRESET mode the Unico steps through the presets, to provide fast and accurate selection of pre-tuned stations, from the comfort of the armchair as remote control is provided - definitely a useful modern convenience.

The Unico R is well built and weighty at 8.5kgs, so it feels rock-solid when buttons are pressed or the large tuning knob twirled.

"the new Unison Research Unico R has a magic all of its own..."

minutes, the handbook warns...

It might sound intensely retro, but at the same time this is a 'hybrid' VHF/FM tuner, as Unison Research call it, a modern design that's essentially solid-state, accompanied by a balanced valve audio output stage. Being a synthesiser tuner it tunes in accurate 50kHz steps across the VHF/FM band from 87.50MHz to 108.00MHz. It can be stepped manually or set to scan automatically. There is a Medium Wave AM section too, that tunes in 9kHz steps.

Although manual tuning is

The sizeable chassis (450mm wide, 340mm deep, 95mm high) conceals a small rocker switch that nestles just behind the fascia, on the left side panel. Press this and power comes on; the central liquid crystal display lights up a pale yellow and explains a worrisome silence: the valves are warming up! After thirty seconds are counted down numerically the Unico R springs into life at the last tuned station.

A horizontal bar across the display acts as a signal strength meter, but sadly it is uncalibrated

and Unison Research say nothing in the owners manual about what value it may have and how to use it. Measurement showed it needs to be nearly full right, or maximum, before a condition known as 'full quieting' (lowest noise and best rejection of interference) is reached. This should be explained in the handbook.

Complicating the issue slightly is that the bar display will not reach its indicated maximum no matter how much signal is applied; maximum is about 90% of full scale, aligned just beneath the 'z' of Hz. As long as the bar approaches or reaches this point the aerial is adequate. However, tests showed the Unico R is insensitive and needs a lot of signal to manage this, so a very good outdoor aerial is required for best results.

As well as signal strength the display panel shows station frequency or, if RDS (Radio Data System) is selected, station name, in big letters easily legible from a distance. Also fitted are tune accuracy and stereo indicators. I manually tune to my local station frequencies to avoid accidentally picking up distant transmitters, easy to do with Radio 2 and 3 in London if you use a large outdoor aerial able to pull in distant transmitters. The signal strength meter can however, sort out this little difficulty by showing which signal is strongest - another use for it.

The rear panel carries an F connector for the VHF aerial, so an adaptor (not supplied) will be needed for an old style coaxial plug. The AM aerial connector is a pair of wire spring clips, as usual. Audio outputs are via phono sockets (unbalanced) or XLR connectors (balanced), fed from a pair of ECC82 double triode valves.

SOUND QUALITY

I ran the Unico R alongside our resident all-valve Leak Troughline tuner, supplied by GT Audio, to see how close it could get to the best radio I've yet heard. I also used a Hitachi FT-5500MkII, mainly to check signal conditions, and the rather good VHF/FM tuner in a Marantz SR8002 receiver as a modern benchmark.

Like many of the tuners in our group test last month the Unico R had a forward and detailed midband that brought clarity to presenters like Eddie Nestor and Kath Melandri presenting Radio London's 'Drivetime' programme, making for great intelligibility as they spoke and took phone calls. The Troughline clearly revealed the differing textures of male and female voice however, that the Unico was less adroit at resolving. The Troughline made me jump on occasions when Kath Melandri shouted into the mic., because of its extraordinary resolution of dynamics. It even had caller's phones sounding varied! The Unico R didn't match the reference here, but certainly had a more spacious presentation than most all-transistor tuners.

I noticed some interesting low frequency bumps and thumps from the Radio 2 studio when listening to Terry Wogan in the morning. The Unico R conveyed ambient cues like this and sounded atmospheric, but generally its low frequency output was lighter than the warm, fulsome sound of the Marantz tuner. All the same, its bass runs deep and stays tight, providing a muscular underpinning to Timbaland's 'Apologize' on Heart radio, for example.

The tuner's treble roll off [see MEASURED PERFORMANCE] suppressed sibilance (as did the warm sounding Marantz) that the Troughline made clear, as Steve Philips speedily read out the evening's traffic delays on BBC Radio London. The Unico R doesn't sound obviously warm, in spite of its gentle treble roll off, so much as smooth and easy in its upper treble.

The Troughline gave a compelling delivery of Paul Jones presenting his Blues and Soul favourites on Radio 2,

vivid harmonica playing from Hazmat Modine's 'Last Fox Train' taking my breath away (check out www.hazmat-modine.com and YouTube), whilst the Unico R was less emotive. I felt.

But whilst the Troughline was fine with Radio 2, it had trouble holding onto stations further up the band, Virgin Radio, Classic FM and Heart all slipping from its grasp as darkness descended, due to poor selectivity. The new Unico R suffered no such problems with major stations. It did however struggle to capture weak Greek Radio (from North London, not Greece!) at 103.3MHz without interference from more powerful Invicta on an adjacent channel at 103.1MHz. Even the Hitachi struggled with this task, but the Marantz tuner managed it easily, due to superior sensitivity and selectivity. So the Unico R isn't suited to really demanding

reception requirements, but its alternate channel selectivity is high enough to get all major stations I found, from my outdoor array which pulls in a huge number of VHF/FM stations.

The Unico R offers a lightly spacious and highly detailed sound that's really impressive by general standards. However, it has competition from the exceptionally talented Creek Evolution RDS at £285 and the Rotel RT-06 with DAB at £399 - both considerably cheaper.

The picture changes a little if you can take advantage of its balanced valve output stage by using an amplifier with balanced inputs. I used a Yamaha A-S2000 with Chord cables

to compare unbalanced phono to balanced XLR. Through the latter the Unico R sounded tidier, with more low frequency push to help bring bass lines up in the mix - this is certainly how the Unico R should be used. I found it revealing but still short on soul compared to the classic Leak - but then so is every other modern tuner!

CONCLUSION

With a nice and slick sound, beautiful build and classy styling, the new Unison Research Unico R has magic all of its own, although you do have to pay for it at £950. Overall though, I feel the Creek Evolution RDS is a stronger design at one third of the price. Good then, and worth auditioning if you want a light and airy delivery from a nicely crafted product, but it faces stiff competition.



VERDICT ●●●●
Detailed, spacious sound allied to beautiful build and finish, but faces stiff competition.

UNISON RESEARCH
UNICO R £950
UKD
+44 (0)1753 652669
www.unisonresearch.com

- FOR**
- airy, insightful sound
 - remote control
 - signal strength meter
 - balanced output
- AGAINST**
- prominent upper midband
 - insensitive

MEASURED PERFORMANCE

Being a 'valve' tuner - well, solid-state with valve output stage - potential buyers may expect a warm sound from the Unico R, and this has been attempted. Treble rolls off gently above 3kHz our analysis shows, measuring -1dB down at 7kHz and -5dB at 15kHz, somewhat more than usual for a hi-fi VHF/FM tuner, that commonly measure flat to 14kHz or thereabouts. A pilot tone filter removes all rubbish at and above 19kHz.

Stereo separation was satisfactory across the audio band and distortion low at around 0.16% at 50% modulation. At full modulation levels leapt up, especially on full Left and Right signals, but as it was second harmonic this is no great problem. There might be a hint of muddle on sustained loud music.

Hiss was satisfactorily low at -72dB (IEC A weighted) on stereo, much like other modern tuners, but sensitivity was peculiarly poor all round. The Unico R needed 4mV to reach full quieting where most tuners today need less than 1mV. It would take a take a big aerial to supply 4mV, or a nearby transmitter. It isn't an acceptable 'full quieting' value. IHF 50dB sensitivity values were commensurately poor, at 240uV for stereo and 30uV for mono. Interestingly, the uncalibrated signal strength display reaches maximum exactly at full quieting (i.e. 4mV p.d. in), although this isn't quite full right on the bar.

The Unico R has been engineered for an easy sound, although this doesn't mean dull or lacking detail. It is unusually insensitive, so will need a good outdoor

Frequency response	18Hz - 7kHz
Stereo separation	35dB
Distortion (50% mod.)	0.16%
Hiss (CCIR)	-72dB
Signal for minimum hiss	3.8mV
Sensitivity mono	30uV
stereo	240uV
Signal strength meter:	max at 4mV

aerial. NK

FREQUENCY RESPONSE

DISTORTION

THD 23456789	Input RMS	Frequency
CH1 0.1646385 %	0.2789 V	0.99495 kHz
CH2 OFF	OFF	OFF



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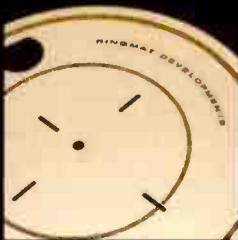
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**WIN A PRIMA LUNA
PROLOGUE 8 CD PLAYER
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MONTH'S GREAT GIVEAWAY!**

Hi-Fi World gives you the chance to win one of our favourite sub-£2,000 CD players - in the shape of Prima Luna's superb new ProLogue Eight! Here's what David Price said about it in the July 2008 issue...

"Although measurable by sophisticated electronic equipment, the most accurate gauge of jitter is the human ear, which hears it as tonal hardness and lack of clarity. What's needed is the best possible clock - and PrimaLuna's ProLogue Eight is the first production CD player to come fitted with the 'SuperTubeClock', which uses a low-noise mini-triode vacuum tube. For once we found the manufacturer's claims matched our findings, with this machine turning in the lowest ever jitter we have ever measured. That's

not the only tube in the player, because the ProLogue Eight sports more glass bottles than the perfume counter at your local House of Fraser. In addition to the single clock valve, there's a dual mono zero-feedback analogue output stage using one 12AX7 and one 12AU7 per channel, plus a vacuum tube rectified power supply incorporating eleven separate power supply regulation circuits. Custom designed isolation transformers separate the analogue and digital devices for decreased signal degradation and improved sonics and there's also a decent sprinkling of high quality resistors and polypropylene coupling capacitors fitted. In-between the specially clocked transport and the tube output stage lies the latest Burr Brown PCM1792 DAC with SRC4192 upsampling circuit.

Striking sounding, the PrimaLuna seemed obviously less coloured than my reference. The ProLogue Eight renders the midband with

breath-taking accuracy. It's like you've just given your camera's shutter release button first pressure, and it's suddenly snapped everything into exact focus. Kate Bush's 'Moving' showed this in no uncertain terms. The PrimaLuna locked down the recorded acoustic, letting me hear the four walls of her vocal booth, the exact location of each instrument and the sound of fingers against bass guitar strings. More startling however was the way the song timed; it snapped the musicians' rhythms together, letting me hear how they were 'playing off' one another. The space between the notes became far more marked, the song sounding more broody and evocative. A fascinating new entry to the £1,500 silver disc spinner market, the PrimaLuna ProLogue Eight brings vanishingly low jitter to the game, and its associated clarity and rhythmic ease. This is one of the most 'analogue' sounding digital disc players I've heard, in the way the different elements of the mix seem to live and breathe by themselves.

If you'd like to win this superb bit of kit then all you have to do is answer the following four easy questions. Send your entries by 31st August on a postcard to:
**September 2008 Competition,
Hi-Fi World magazine, Unit G4,
Argo House, The Park Business
Centre, Kilburn Park Road,
London NW6 5LF.**

QUESTIONS

[1] What does the 'supertube-clock' use?
[a] a low noise mini triode vacuum tube
[b] a pair of old boots and a piece of string
[c] a pile of classic Madness seven inchers
[d] a wedge of cheesecake and some blueberry pie

[2] What tubes are in the analogue output stage?
[a] 12AX7s and 12AU7s
[b] 300Bs and KT88s
[c] 845s and ECC82s
[d] EL34s and K5881s

[3] What digital to analogue converter chip is used?
[a] Burr Brown PCM1792
[b] Philips SAA7350
[c] Philips TDA1541
[d] Analogue Devices AD9736

[4] How did David Price describe its jitter levels?
[a] "vanishingly low"
[b] "not bad"
[c] "wicked"
[d] "quite good, actually"

September Competition
Hi-Fi World Magazine
Unit G4 Argo House
The Park Business Centre
Kilburn Park Rd.
London NW6 5LF

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- MULTIPLE ENTRIES WILL BE AUTOMATICALLY DISQUALIFIED
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entries will be accepted on a postcard only

**JUNE 2008 RAYSONIC CD PLAYER WINNER:
Mr. Mouali of , London**



Amphon's Argon2 Anniversary is a quintessentially neutral but enjoyable Scandinavian standmounting loudspeaker, says David Price...

Classical Gas

Being colourless, odourless and non-toxic, Argon is a neutral and benign gas – which I suppose are precisely the qualities you want in a loudspeaker, especially a relatively affordable one such as this £1,199.99 standmounter from Amphon. Unlike the gas though, this Argon (mark 2) was not discovered in Scotland in 1894, but designed in Finland in 2008. All their models look striking, are beautifully finished and show real design flair. Still, they need to be to succeed in this country's crowded loudspeaker market – where anonymous boxes disappear into obscurity seconds after their launch...

The standard Argon2 is a sturdily built (11kg) small-to-medium sized (380x310x190mm) two-way standmounter with a 25mm SEAS

titanium dome tweeter, and 165mm SEAS aluminium membraned mid/bass driver. The cabinet is notable for its unusual waveguide for the tweeter, the idea being to control its room dispersion characteristics more accurately than letting it just stick out of the baffle. Also, it moves the point source of the tweeter dome level with the dust cap of the mid/bass unit, effectively time-aligning it.

The Anniversary model reviewed here adds a flourish or two. There's the option of matt off-white paint finish as well as the stock Finnish Birch, plus Black and Cherry.

The tweeter becomes titanium membraned, instead of the stock aluminium one, coming straight from the parts bin of the high end Amphon Krypton2. Accordingly, the crossover has been tweaked for a smoother response. The rear

terminals have been changed to gold-plated WBTs, single wired only.

SOUND QUALITY

I was most interested to hear the Amphions, being the first speaker from this mysterious manufacturer I've tried. My enthusiasm was rewarded with what is quite an inert sound – as the Argon2s duly lived up to their Greek appellation and proved fairly free from the normal nasties I expect from a box at this price. Although they present a fairly stiff electrical load [see MEASURED PERFORMANCE], I was heartened to find out that my reference Sugden IA4 Class A integrated could drive them. (Love it as I do, this isn't the world's most load-insensitive transistor powerhouse). So, aspirated by both vinyl and CD sources, battle commenced with the Amphions atop

16" Apollo speaker stands, single wired via Black Rhodium Tango cable.

These are medium sized standmounters – considerably bigger than Wharfedale Diamonds, for example, but not up into Linn Sara territory either. As such, I'd expected a decent bass and that's what I got. Supertramp's 'Child of Vision' showed them capable of a clean and 'insistent' low frequency performance, one that didn't push the limits of either the driver or cabinet. As such, even at highish listening levels, the Argons stayed in control and relatively unstressed – there was little sense of a small box wheezing through its port trying to keep up with things. Bass guitar lines were nicely tight, although lacked the on-off nature of the £1,500 ATC SCM-19 – remember, the latter are closed box (infinite baffle) and give bass that switches on and off like a light emitting diode. Still, the Amphions took the bull by the horns and turned in a firm and fluid performance.

Compared to Quadral's super little Picos I reviewed last month, the Amphions were a revelation in the bass. Low notes had body and slam, and the ability to communicate their relative dynamics; the slightly smaller Picos sat on crescendos somewhat, delivering a less emotive sound as a result. Double bass on Miles Davis's 'So What' from 'Kind of Blue' was obviously more realistic, these speakers catching the instrument's timbre more fully, and giving a more easy, out-of-the-box feel to Paul Chambers' finger work. There was virtually no associated cabinet boom when the speakers were taken 30cm out from the back wall of my lounge, slightly toed in – meaning that they're good 'real world' designs that should work in your average (smallish) UK listening room.

No less pleasing was the way in which the bass integrated with the midband: there was little sense of two very different drivers having to work together. Again, the Amphions score over many price rivals here – with a clean and smooth transition. The icy vocals of Kate Bush's 'Sensual World' showed a tiny 'light spot', where the tweeter does signpost its presence, although there was nothing more than a subtle emphasis on her distinctive tones, with no glare. Overall, the Argons simply unlocked the music, taking me into the (highly) sensual world of this twenty year old classic song without dwelling on the nastiness of its late eighties digital recording format. These little white boxes sounded clean in an eminently Scandinavian way.

One of the reasons for this,

I think, is the implementation of the tweeter. Thanks no doubt to its interesting front baffle mounting arrangement, it certainly sounds 'in phase' with the mid/bass driver, making the two drive units appear to be acting largely as one. Fine clarity and an expansive soundstage are the benefits it bestows, shown to great effect when I spun up Madonna's 'Frozen'. This startling William Orbit production sounded very expansive, in a sense that one gets from a dual concentric design. The Amphions dissolved into my listening room, imaging way out of their boxes and placing instruments with precision.

Hi hats sounded crisp and fast, timing really well with the rest of speaker, giving a brisk and insistent sound to the Argons that married well with that snappy bass driver. I found it a good tweeter, but it was less detailed than the ribbon type fitted to Quadral's Pico, giving a slightly dry feel to Genesis's 'Mad Man Moon' from 'Trick of the Tail'. Cymbals were delicate and well etched with scant evidence of harshness, but still I felt they were losing some of the 'breathing space' you get on a classic analogue recording such as this, via LP. Still, the Argon2 Anniversary hides its tracks well, and produced a detailed and musical sound – showing how an all-analogue recording/ source can really sing.

Classical music brought out the best in these speakers – the opening part of 'L'amoroso' from Vivaldi's 'Four Seasons' (The English Concert/ Simon Standage) was suitably melancholic, the Argons displaying a light, even touch. As the music built in intensity, they showed grace under pressure, giving excellent timbre to cellos and violins alike – without a hint of 'wiriness'. They displayed fine dynamics and a strong sense of pace too; although attack transients weren't super-fast, the leading edges of notes were crisply carried and it made for a snappy yet self-effacing sound.

"unstressed yet engaging across all types of music..."

CONCLUSION

Whilst there are other loudspeakers at the price that excel more in some particular respect, I can think of few that offer such a well rounded and pleasing package. The Amphion Argon2 Anniversary is an unerringly even handed, easy going and pleasingly musical loudspeaker that doesn't write its presence large on the music, or on your listening room for that matter. It has real ability from the bottom of the frequency spectrum to the top, and an unstressed yet engaging demeanour that makes it a pleasure across all types of music. Interestingly, their nature is such that the only time this modest looking, medium sized standmounters took my breath away was when I tried to find a product that would comprehensively outclass them – when I realised you'd need to spend twice as much on a pair of Monitor Audio PL100s!

REFERENCE SYSTEM
 Marantz CD63KI DP CD player
 Sugden IA4 integrated amplifier
 Monitor Audio PL100 loudspeakers
 Quadral Pico loudspeakers

VERDICT ●●●●●
 Startling looks maybe, but these speakers sound smooth, sweet and self-effacing – making for an excellent, if unusual, package at the price.

AMPHION ARGON2 ANNIVERSARY £1,199.99
 Kore UK Ltd.
 ☎ +44(0)1623 517000
 www.amphion.fi

FOR
 - confident and unstressed
 - even, expansive midband
 - overall musicality
 - styling, build, finish

AGAINST
 - unatmospheric treble

MEASURED PERFORMANCE

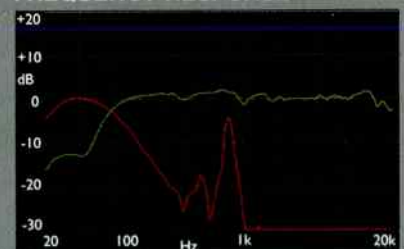
The Amphion Argon 2 loudspeakers have a very flat response across their full bandwidth with only a very small glitch of 2dB or so at 1kHz and a gentle rolling down of the treble output above 15kHz to deviate from this. The former is likely to be mostly inaudible, although it may add a little 'edge' to some vocals and the latter may well rob a little top end sparkle. That said, though, the Argon2s should be well balanced and offer an even-handed presentation.

At the low end, the main driver extension rolls off below around 80Hz and the port is tuned to 40Hz, so the Amphions should have good low end weight for their size. There is some port output in the 800Hz region but as the port is tucked away on the rear of the cabinet, this should not be intrusive.

Electrically, the Argon2s have a rather alarming inductive rise to over 50 Ohms at 2kHz, which some amplifiers may not be particularly impressed with. Equally, the bass driver and port impedance peaks are higher than most, but the upside of this is that the resulting average measured impedance is high, at 10.9 Ohms, dipping to a minimum of 7 Ohms. As a result, the Amphions are

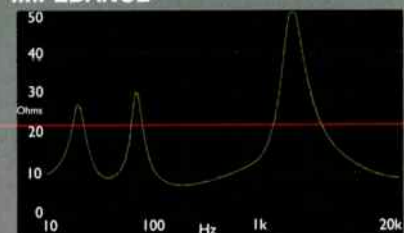
an undemanding load in current terms, and will work on an 8 Ohm output tap. Sensitivity as a result was not as high as is seen on some lower impedance designs, at 84dB, so around 50-60W from the amplifier would be wise. AS

FREQUENCY RESPONSE



Green - driver output
 Red - port output

IMPEDANCE





Does spending twice as much cash double the sonic dividend? Adam Smith compares and contrasts two fine CD players from Leema and Moon, the latter double the other's price...

Going Up

It is always interesting to hear feedback from dealers and distributors as to the state of the hi-fi market. Obviously we know of the situation regarding seasonal highs and lows, whereby sales tend to drop in the summer as everyone's gone to the beach or, more likely, are stood beside their barbecue in the garden, under an umbrella hoping that the rain will stop. Either way, with more expenditure on travel, suncream and Aberdeen Angus quarterpounders, the hi-fi budget always drops at this time of year and a bit of a quiet time occurs...

However, the most interesting aspect of the marketplace is how the sales of items at different price levels change. It is true that the budget end of the spectrum ticks along fairly healthily most of the time and one might think that it is the top end of the market that suffers when the money dries up, but this is not the

case. It is actually the mid-price band that suffers the most, because it is an aspirational area to the more impecunious, those who have to cut back when the going gets tough. The top end of the market attracts people insulated from everyday money problems.

Many manufacturers spend a surprising amount of time, thought and budget on the mid-price items; more than you might think because they want people to trade up to products with fewer cost related performance constraints. As a result, we wondered just how much extra performance can be obtained by a jump from the lower end of the midprice CD player rung up to the top, particularly in the light of recent letters from readers with concerns over the relationship between equipment price and performance.

Representing the more reachable end, we have the new Leema Stream. This matches the Pulse amplifier to

form Leema's entry level system and costs £1,095. For this you get a very neatly styled and very well built box with a grand total of two controls on the front panel - an off/standby button and Leema's 'L-Drive' knob. Leema state that this is "a radical new control device" that "removes clutter from the front panel whilst offering rapid track selection". Frankly it's so unusual I've given it its own boxout - see p49! Equally minimalist are the remote control (twelve buttons, only eight of those for the CD functions) and the display, whose miserly two digits make a Naim CDSi look positively over-endowed with its four. I can't help feel this is a step too far in minimalism but then I also sat there pondering that more digits would ruin the styling. It's a tricky one...

Under the bonnet, the Stream is more feature-packed, containing Leema's LIPS control system that allows intelligent interface with other



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Andrew Harrison - June 2008



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get me wrong, it isn't dull, far from it; it just does not quite grip on an emotional level like the Leema.

Illustrating this perfectly was a CD single of Perez 'Prez' Prado and his orchestra performing Guaglione from the famous Guinness "Anticipation" advert. The Moon made the best of the old recording and bounced along with it very well indeed, pulling each individual instrument out well. Popping the same disc into the Leema made things ever so slightly less focused in detail terms but really grabbed the tune by the scruff of the neck and positively bounced along with it. Crucially, it was the Leema that got my feet tapping!

"take hi-fi separates on their own terms, rather than simply dismissing them on price..."

CONCLUSION

These two CD players show just how interesting the mid-price hi-fi market is, as both are very fine designs that turn in impressive performances. In terms of those prices, though, the Moon Equinox RS does indeed gain an extra level of sophistication and insight over the cheaper Leema and also offers more features (but then, it really couldn't fail to...).

However, the Leema Stream scores

in terms of sheer brio, atmosphere and musicality and is certainly not half the player that the Moon is, even if it is half the price. If you can afford the Moon, it should definitely be high on your audition list, but beware of discounting the Leema because "it's too cheap". This test shows that you should take hi-fi separates on their own terms (and importantly, how they integrate with the rest of your system), rather than simply dismissing them on price.

MEASURED PERFORMANCE

The Leema Stream's frequency response extends smoothly up to 21.5kHz and remains nicely flat to this point. Combined with a flat bass response down to 2Hz this should make for a good, even tonality throughout the frequency range.

Distortion levels at higher programme levels were very low, with a figure of 0.006% at -30dB compared to an expected value of around 0.02%. This did increase more as level reduced, however, reaching 4.3% at -80dB; a little higher than some, so the Leema may not be quite as smooth as some competitors.

EIAJ dynamic range was 106dB as a result of this - not quite up with the best players in this price range but an acceptable result all the same.

Analogue output levels were 2.4V, slightly higher than the normal 2V and random jitter from the digital output was low at around 6ps. All in all the Leema measures well, if slightly short of the best in one or two areas. It should turn in a nicely consistent performance.

AS

Frequency response (-1dB) CD	2Hz - 21.5kHz
Distortion CD	
0dB	0.001%
-6dB	0.002%
-60dB	0.23%
-80dB	4.3%
Separation (1kHz)	85dB
Noise (IEC A)	-103dB
Dynamic range	108dB
Output	2.4V

FREQUENCY RESPONSE

DISTORTION

THD	23456789	Input RMS	59.27 dB	Frequency	0.99996 kHz
CH1	0.2357312 %	CH2	OFF		

VERDICT ●●●●£
 Infectiously musical, peppy and dynamic performer. Operational quirks take a bit of acclimatisation, but turn out to be rather neat!

LEEMA STREAM £1,095
 Leema Acoustics
 ☎ +44(0)1938 811900
www.leema-acoustics.com

- FOR**
- dynamics
 - rhythmicity
 - atmospheric nature
 - minimalist styling
 - L-Drive, when used to it!
- AGAINST**
- slight treble spitch

MEASURED PERFORMANCE

The Moon Equinox RS CD player has a flat frequency response from 2Hz to 21kHz; a slight drop is visible in the graph at the low end but this only drops by around 0.5dB at 20Hz so the player will not sound obviously bass light.

Distortion levels were low across the full range of test signals, even down to the -80dB level, so the player should offer a fine and smooth sound at all times. The EIAJ dynamic range figure was good as a result of these figures, coming in at 105dB which is fine, although still a little short of the very best players which can reach 112dB. Noise levels were low at -102dB.

The analogue output level from the Equinox RS was bang on the standard CD specification at 2V and it gave a random jitter figure of 8ps from the digital output.

The Moon Equinox RS measures well and should turn in a well balanced performance with no sense of harshness.

AS

Frequency response (-1dB) CD	2Hz - 21kHz
Distortion CD	
0dB	0.002%
-6dB	0.002%
-60dB	0.18%
-80dB	2.5%
Separation (1kHz)	83dB
Noise (IEC A)	-102dB
Dynamic range	109dB
Output	2V
Jitter	8ps

FREQUENCY RESPONSE

DISTORTION

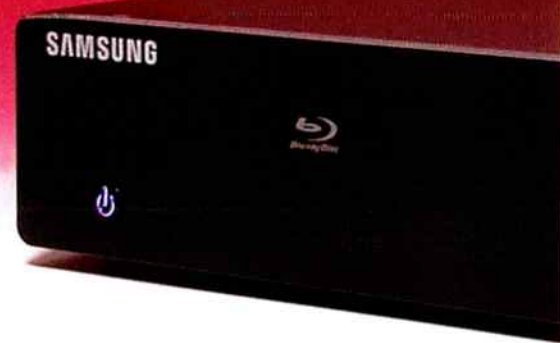
THD	23456789	Input RMS	60.74 dB	Frequency	0.99998 kHz
CH1	0.1820545 %	CH2	OFF		

VERDICT ●●●●
 Debonair and urbane performer, the Moon adds a level of sophistication to CD replay missing in so many others.

MOON EQUINOX RS £2,250
 Redline Distribution
 ☎ +44(0)131 555 3922
www.red-line.co.uk

- FOR**
- sweet and detailed treble
 - fine bass alacrity
 - precise imagery
 - build quality
- AGAINST**
- slightly cerebral sound

Blu Mood



Unassuming Samsung's new BDP-1500 may be, but it's also a fine Blu-ray player nonetheless, says Noel Keywood...

Samsung products come cheap, but technically they're running the socks off rivals, explaining why Samsung has become a manufacturing giant. We've been hassling them for their new BD-P1500 Blu-ray player for months and are pleased to get it for review. Now boasting an Audiophile mode, does it deliver better digital audio than the outgoing '1400, I wanted to know?

I was expecting the BD-P1500 to be a more sophisticated version of my '1400, but Samsung have changed course with this player. Mechanically, it is a simplified version of the 1000, 1200 and 1400 that went before, pared right down I suspect to meet arduous Blu-ray performance criteria whilst selling at a stunningly low price of £230.

When I dropped in a CD and pressed Play I realised how far sacrifice has gone - there's no track number display! I had to switch on the TV to see this. The casework has been pared down to the very simplest possible mechanical assembly and the rear panel has been shorn of most socketry. Stereo audio output sockets accompany a Composite video output (low quality analogue video) and three Component outputs (high quality analogue video).

There's no S-Video or Scart, nor a coaxial digital audio output, just an optical one. Of course, there's an HDMI output that carries high definition digital audio and video and is now the de facto standard for the future. Finally an RJ45 socket is fitted for internet connection (marked LAN, or Local Area Network, meaning your home network) to allow software upgrade, and either a CD or USB flash drive can also be used for Firmware upgrade. Go

to www.samsung.com/uk/support/download/ for an owners manual and more information on upgrading.

Our measurements showed the humble analogue stereo audio outputs of this player deliver a full analogue bandwidth of 45kHz from 96kHz sample rate digital. In other words, play a DVD or Blu-ray with high quality 24/96 digital and you get the much of the benefit via the stereo outputs, albeit with surround-sound folded down into stereo. It's a thorough way of doing things, characteristic of Samsung and impressive for such a cheap player. This is good news for anyone wanting to connect the analogue audio into a stereo hi-fi.

Where the outgoing BD-P1400 had analogue 5.1 surround-sound output, the BD-P1500 subtly but cleverly rearranges all this. Analogue surround-sound connection isn't

"CD sound quality was well balanced"

available. Instead, this player can be set to decode internally to PCM then re-encode to DTS (i.e. compress) so that digital audio can be piped out through the optical digital connector. This is an ingenious scheme that allows the player to connect digitally to older receivers lacking an HDMI input and pass through Blu-ray high quality digital formats like Dolby TrueHD. It's an alternative - sort of - to analogue connection. Downsampling from 96kHz to 48kHz is provided for compatibility with receivers lacking 96kHz onboard processing.

I noticed with a sense of satisfaction that Samsung now use the term "Audiophile" in their audio set-up menu. Selecting Audiophile mode effectively turns the player into a transport, piping out digital audio unprocessed to a receiver, which

will need an HDMI 1.3 input and full onboard processing, including DTS Master Audio. Lacking this, the BD-P1500 can be set to turn DTS HD (but not Master Audio) and Dolby TrueHD to PCM before sending it to the receiver.

Video wise, the BD-P1500 upsamples DVDs to High Definition format, as do all Blu-ray players. It plays all Blu-ray video, plus AVCHD from a HD camcorder. Tests with our Silicon Optix Blu-ray disc showed fields being dropped when set to 1080p output, but full resolution when set to 1080i and the TV (Samsung M8) left to de-interlace. Then the BD-P1500 gives silky smooth (low noise) and highly detailed pictures - stable and free of jaggies. DVD upsampling was also very good, Silicon Optix and Burosch test discs showed, with no

weaknesses. Picture quality was as good as it gets from DVD and Blu-ray, if over emphasised for visual impact, with shadows too dark and colours over saturated. There are no picture adjustments, and the player needs at least one setting that provides a more natural look, I feel.

Connected to the internet, there's no sign the player has been given an IP address from a DHCP server, and little way of knowing whether a connection has been established. I thought it hadn't until I spotted the player, unidentified, on my internet router's client list. You must search for its MAC address, declared in the Network menu. A software/firmware update to 080623.01.XEF took thirty minutes over the internet connection, a fast 20Mbps link from cable, so the files are big, but it was problem-free.

The BD-P1500 starts and responds faster than the outgoing 1400, firing up in less than ten seconds and getting a menu up from drawer close in twenty seconds, although not heavy Java menus, from 'Resident Evil: Extinction' or





'Spiderman', which can take one minute or more. The underside of the player gets very hot, so ventilation is important and it must not be stacked on a receiver.

SOUND QUALITY

CD sound quality was well balanced through the analogue outputs. Angelique Kidjo's 'Agolo' kicked off with plenty of low end power behind its striding bass line and percussion had vibrant life, whilst vocals were clear and intelligible. Switching to the optical digital output (S/PDIF) brought about a clear improvement, tidying and focussing the sound, but then that's to be expected because digital-to-analogue conversion was then being carried out in a £1,300 Marantz SR-8002 receiver. Switching again to HDMI brought no obvious difference; I slightly preferred S/PDIF, likely because of lower jitter, but both were crisp and clear. So this is a decent CD player from its analogue outputs, if not ground breaking. All the same I was impressed by the wide open, dynamic sound of 24bit/96kHz digital through these outputs from the Chris Botti Live Blu-ray, where the audience spread out in a wide arc around the front speakers. There was a lovely sense of ambience and drums had both speed and power, more so than the compressed digital version the player can send through S/PDIF when set to re-encode.

Putting the BD-P1500 into Audiophile mode had 'Nine Inch Nails' rearranging my furniture with hard punching Dolby TrueHD (packed PCM). This is where Blu-ray gets impressive and the BD-P1500 delivers. Drums have both power and fierce impact, whilst cymbal strikes - sometimes

from the rear speakers - fired from the loudspeakers like bullets. Well recorded PCM certainly has impact...

Selecting Bitstream in the Audio menu sent Nine Inch Nails and Elton John's New York concert out via the optical link in surround-sound, but it was less exciting, DTS compression making things diffuse. This is a nice

idea, but it's only for compatibility with old receivers.

CONCLUSION

All in all the BD-P1500 does a fine job at a low price. It's a technological *tour de force* contrived to deliver audiophile sound, and a great buy if you want easy Blu-ray today.

MEASURED PERFORMANCE

The audio outputs that accompany Composite Video deliver full CD spec. sound, even if their labelling makes this look doubtful. CD bandwidth reached 21.1kHz and our analysis shows an unusually flat response characteristic.

DVD-Video PCM soundtrack played properly, with 16bit/48kHz reaching 23kHz and 24bit/96kHz reaching 45kHz from the analogue outputs. It gave a digital audio output via optical S/PDIF too, at 48kHz sampling rate, so Samsung don't cut any corners.

Distortion levels (16bit) were higher than a good CD player, but not by any great margin. At -60dB the usual 0.24% or thereabouts for a hi-fi player measured 0.33% from the BD-P1500, no disaster by any means. Better, signals down to -80dB were resolved well, including a dithered tone where distortion was just 1.8%. Results were no better with 24bit however, but a -100dB signal was resolved. An EIAJ Dynamic Range value of 105dB for CD does however truly reflect the player's budget status. Output measured a correct 2V.

The optical digital output gave full CD quality, with bandwidth to 21kHz (i.e. no downsampling to 32kHz) and the residual distortion expected of 16bit code. Jitter was low at around 8pS above 100Hz, but below 100Hz it rose rapidly to 180pS at 40Hz, a performance worse than the BD-P1400.

With surround-sound via the stereo audio outputs, rear Surround channels were simply folded into the respective fronts and LFE ignored.

The BD-P1500 is well engineered all round. It cuts no corners and has no significant weaknesses. CD replay via the analogue outputs doesn't match

dedicated audio players, but it isn't too bad either. The BD-P1500 measures very well. NK

Frequency response (-1dB)

CD	3Hz - 21.1kHz
DVD-V	3Hz - 23kHz/3Hz - 45kHz

Distortion (%)

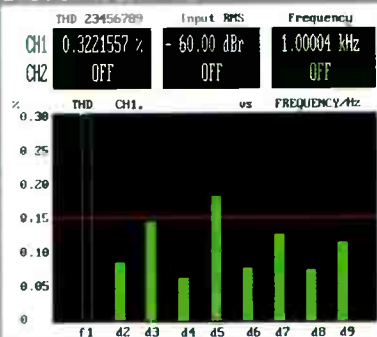
0dB	0.0006
-6dB	0.0009
-30dB	0.005
-60dB	0.33
-80dB	3.8

Separation (1kHz)	120dB
Noise (IEC A)	-110dB
Dynamic range	105dB
Output	2.0V

FREQUENCY RESPONSE - CD



DISTORTION - CD



VERDICT

Excellent, entry level Blu-ray player serving up top quality pictures and fine sound.

SAMSUNG BD-P1500 £230

Samsung UK

+44(0)845 7267864

www.samsung.com/uk

FOR

- inexpensive
- excellent sound quality
- short response times

AGAINST

- no DTS MA decode
- oversaturated colours
- no internet confirmation

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SOURCE COMPONENTS																	
Arcam	CD192 CD player	sil	xd	900	765	Meridian	G02 balanced pre-amp	sil	xd	1750	1499	Meridian	DSP5200HC digital active centre speaker	bk	NB	3200	2719
Arcam	CD36 CD player	sil	xd	1450	1229	Meridian	G51 receiver	bk	xd	1995	1699	Monitor Audio	Gold Reference centre speaker	bk	xd	500	349
Arcam	CD73 CD player	sil	NB	450	389	Meridian	G55 5ch power amp	sil	xd	2695	2399	Monitor Audio	Radius 270 loudspeakers	gloss blk	xd	500	399
Arcam	CD73 CD player	bk	xd	450	389	Meridian	G68J surround controller	bk	xd	2695	2399	Pro Ac	D25 loudspeakers	yew	xd	3575	2199
Arcam	DV27a DVD-A player	sil	xd	1900	1149	Meridian	G91A - DVD system (FM)	sil	xd	3895	3499	Revel	B15 subwoofer	bk	NB	2000	1699
Cyrus	CD6S CD player	Quartz	NB	650	499	Meridian	G98DH - DVD Audio transport	bk	xd	3350	2949	Revel	Ultima Gem speakers inc stands	bk/sil	xd	8200	6499
Cyrus	CD8X CD player	Quartz	xd	1000	699	Micromega	Tempo 1 integrated amp	bk	xd	750	449	Ruark	Prologue II loudspeakers	ch	xd	1250	750
cyrus	CD XT CD transport	sil	opened	800	699	NAD	C352 integrated amp	bk	opened	350	249	Ruark	Vita 5.1 speaker package	ch	x/d	1695	1199
Denon	DVD2930 DVD player	sil	xd	650	549	Naim	NAC 282 pre amp	xd	xd	3350	2849	Spendor	S3e compact loudspeakers	rose	xd	849	729
Denon	DVD3930 DVD player	sil	xd	1100	949	Naim	NAP 250 power amp	xd	xd	2675	2279	Tannoy	TD8 floorstanding loudspeakers	ch	xd	4000	1999
Denon	DVD-A1XVA DVD player	sil	s/h	2800	1499	Parasound	A21 THX Ultra2 power amp	sil	xd	1700	1359	CABLES					
Marantz	CD80 CD player	bk	s/h	299	299	Parasound	A52 THX certified power amp	sil	xd	1500	1199	Audio Truth	Forest - speaker cable 5m biwire pair	xd	750	399	
Meridian	G08 CD player	sil	xd	2250	1899	Parasound	C2 pre amp	sil	xd	3000	2399	Chord	Chorus balanced - 4m pair	s/h	700	349	
Naim	CD5i (not italic) CD player	bk	xd	850	719	Parasound	JC-1 monoblocs (pair)	sil	xd	5000	3999	Chord	Chorus 0.5 RCA-RCA	s/h	180	129	
Pioneer	DV 868AVI DVD player	sil	xd	949	599	Primare	SPA21 AV receiver	sil	xd	1999	1699	Chord	Chorus 0.6m RCA-RCA	s/h	200	139	
Pioneer	DV-LX50 DVD player	bk	NB	450	399	TAG	AV30 7.1 AV processor	bk	S/H	1999	599	Chord	Chorus 1.5m RCA-RCA	s/h	300	199	
Pioneer	DVR-LX70 DVD recorder	bk	NB	900	809	Yamaha	DSP-E492 processor	bk	S/H	330	49	Chord	Chorus 1.5m RCA-RCA	s/h	300	199	
Primare	T20 analogue tuner	bk	xd	500	199	yamaha	RX-V1000RDS AV receiver	bk	s/h	1000	499	Chord	Silver Siren 2m RCA-RCA	s/h	100	59	
Pure	701 DAB tuner	sil	xd	160	119	yamaha	RX-V4300RDS AV receiver	bk	xd	450	149	Chord	Component cable 10m	s/h	200	120	
Rotel	RT-02 analogue tuner	sil	xd	280	219	STEREO AND MULTICHANNEL AMPLIFICATION						Chord	Component cable BNC-RCA 1m	s/h	115	59	
Samsung	BDP1000 Blu-Ray	sil	xd	600	299	B&W	CDM-CNT centre speaker	ch	S/H	400	299	Chord	Component cable BNC-BNC 1m	s/h	130	69	
Sony	RDR-VX420 DVD-R/VCR	sil	NB	300	199	B&W	CDM-SNT surround speaker	Rose	xd	750	399	Chord	iChord 2m	s/h	70	39	
Unison Res.	Unico hybrid CD player	sil	S/H	1500	999	B&W	CDM-Cse centre speaker	bk	S/H	350	199	Chord	iChord 1.5m	s/h	65	35	
STEREO AND MULTICHANNEL AMPLIFICATION																	
Arcam	A32 integrated amp	bk	xd	1300	1100	B&W	DM602S3 loudspeakers	Sor	xd	300	229	Chord	Prodac 2m RCA-RCA	s/h	110	69	
Arcam	A90 integrated amp	bk	xd	900	765	B&W	DS6 THX dipole surrounds	white	S/H	400	199	Chord	Prodac 1m RCA-RCA	s/h	80	49	
Arcam	AV8 AV processor	sil	S/H	3150	1799	B&W	P6 floorstanding loudspeakers	rose	S/H	1000	499	Chord	Odyssey 4 bi-amp speaker cable	6m	s/h	540	299
Arcam	AVR300 AV receiver	sil	xd	1299	999	Dynaudio	Focus 110 loudspeakers	ch	xd	850	769	Chord	Odyssey 4 bi-wire speaker cable 2 x BFA-2 x 4mm 2m	s/h	210	139	
Arcam	P1 monoblocs (pr)	sil	xd	2400	1799	Dynaudio	Focus 140 loudspeakers	ch	xd	1150	1029	Chord	Classic IEC power cable 2.5m	s/h	39		
Classe	CAP101 integrated amp	sil	xd	1495	999	KEF	iQ8DS dipole surround speakers	bk	opened	400	349	Kimber	Red Dawn II speaker cable - 3m pair 2 spades - 2.4mm	xd	695	599	
Cyrus	6vs integrated amplifier	sil	xd	650	499	KEF	Q9C centre speaker	bk	x/d	250	99	Nordost	Genesis single wire speaker cable - 12m pair	s/h	800	349	
Cyrus	Pre X pre amp	sil	xd	1000	399	KEF	Q7 loudspeakers	map	S/H	800	499	QED	Supernova optical 2m	s/h	150	99	
Denon	AVR2805 AV receiver	bk	S/H	700	399	KEF	iQ8DS dipole surround speakers	ch	xd	400	349	QED	AVR-1 II DVD receiver	bk	NB	600	529
Denon	AVR3802 AV receiver	bk	S/H	800	399	KEF	XQ1 loudspeakers inc stands	map/sil	S/H	950	699	Meridian	F80	sil	xd	1495	1349
Denon	PMA500AE integrated amp	bk	xd	200	169	Linn	Komponent 106G centre speaker	graphite	xd	375	249	Sim2	HT200	S/H	5000	499	
Denon	AVC-A1XVA AV amplifier	sil	s/h	£4,800	£2,499	Linn	Ninka loudspeakers	map	xd	1275	999	MISCELLANEOUS					
Linn	AV5103 AV processor	sil	xd	3250	1349	M&K	K17 satellite speaker	ti	xd	350	279	Audica	AVR-1 II DVD receiver	bk	NB	600	529
Linn	AV5125 5ch power amp	sil	xd	1800	1399	Meridian	DSP5000 active speakers (mkll spec)	ch	xd	2200	1399	Meridian	F80	sil	xd	1495	1349
Linn	Kolektor pre amp	bk	xd	500	349	Meridian	DSP5000C active centre speaker (mkll spec)	ch	xd	2200	1399	Meridian	F80	sil	xd	1495	1349
Linn	Majik 6100 6ch power amp	bk	xd	2420	2059	Meridian	DSP3100 active loudspeakers	bk	NB	2595	2199	Meridian	F80	sil	xd	1495	1349
Linn	Majik amplifier + Sneaky	bk	xd	950	399	Meridian	DSP5200 active loudspeakers	bk	xd	6150	5229	Meridian	F80	sil	xd	1495	1349

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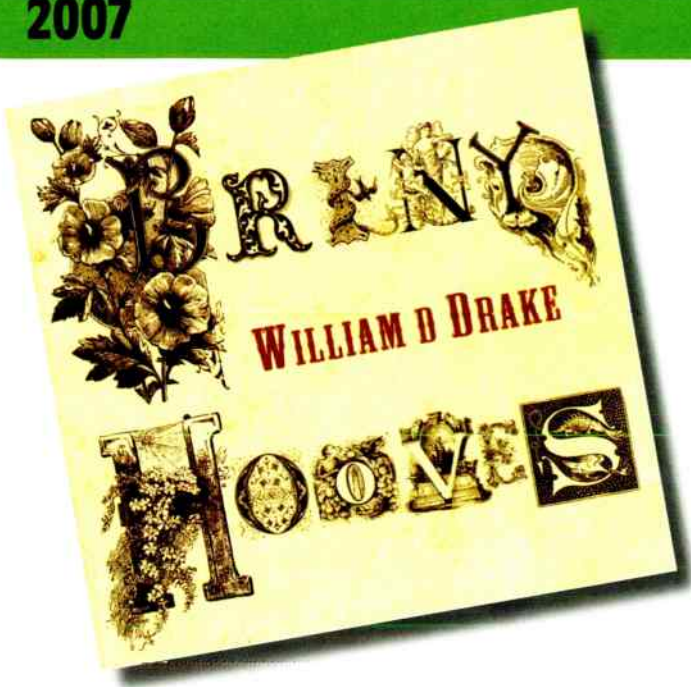
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WILLIAM D. DRAKE

BRINY HOOVES

2007



"earnest yet uplifting in a unique way, Drake's song writing pushes boundaries..."

In modern times, the greatest power invested in musicians is technology. Punk spawned a splintered revolution that reached into many areas and futures. One of which ultimately led to artists being able to record their own music. The result was that musicians were given freedom to record and to disseminate their works – initially via cassette, then CD-R and now over the Internet. This has meant that many more artists can produce albums and gig off the back of them.

Such a democratisation of musical output has meant that there is much more music out there than can ever be heard by a national public, so the downside is that talented musicians can fall through the cracks without receiving their due. And so it is with William D. Drake...

A highly experienced artist, Drake has a strong, 'hardcore' following through his work with the cult band The Cardiacs – who took performance art to a different level back in the nineteen eighties – plus other bands including The Sea Nymphs, Nervous and Wood. Right now though, he's currently part of that other productive musical world, the 'self-published' solo artist.

Lack of major label record company backing means you won't have seen 'Briny Hooves' advertised on the back pages of Q magazine, which means thinking music buyers may well not have heard Drake's

interesting sound. I'm sure he's already been compared to both Julian Cope and Peter Hammill, so I won't fall into such a reductive trap – suffice to say his vocal sound is earnest yet uplifting in a unique way. His song writing is boundary pushing, as this CD on sheBear Records shows...

"I got a band together, Bob Leith, drummer from The Cardiacs, the bass player, Dean Gainsborough Watkin from Nervous - I collected together my favourite musicians," Drake told me. "This album was a real turning point. It was the first time that I'd been able to do exactly what I wanted. There was no time constraint on it."

The reason being that Drake had asked sound engineer, Darryl Anthony, to create the album with him. Anthony's fee was spent on a new Apple Mac which was subsequently used within the recording process that took its own sweet time to complete. Part of the recording for the album was done in Anthony's bedroom. As Drake put it, "He put a batch of old mattresses in there – a Stonehenge of mattresses – which were positioned in a square, acting as a control for both vocals and trumpet. The entire recording process was very acoustic and organic, even though we used the Mac in the chain. We did a lot of remixes for this album."

In fact, this remixing went on for so long, Anthony had, by this time, begun working in a profes-

sional recording studio. One of the most significant items present in the studio that was of great use for the final remix was an old analogue Studer mixing desk which had come direct from the Berlin Philharmonic Orchestra.

"Actually, we were mixing one of the tracks on the album, 'The Seashell Song', with this desk and we realised that it sounded miles better than any other track. That was partly because of the quality of the equipment being superior to what we had used before, but also because it was analogue. So we decided to remix the other tracks. The Studer gave the piano, for example, a syrup-like, golden tone. It was wonderful."

This 'tone' was always an unconscious aim. Whilst the music and the songs were of primarily concern, Drake did listen for an analogue sound. "This was enhanced by our use of a valve preamplifier, which we always worked through," said Drake. As such, Drake one day hopes to produce 'Briny Hooves' on vinyl. As yet, he hasn't because, "I can't afford it," he declared. "It will, though, it'll sound so much better on vinyl..."

It's a beautifully crafted album of mature, powerful and moody pop songs – and as yet a largely undiscovered gem. Although it may not be falling off the shelves at your local Zavvi, it's still very well worth reaching out for. To read more, click on www.williamddrake.com. You'll be glad you did. **PR**

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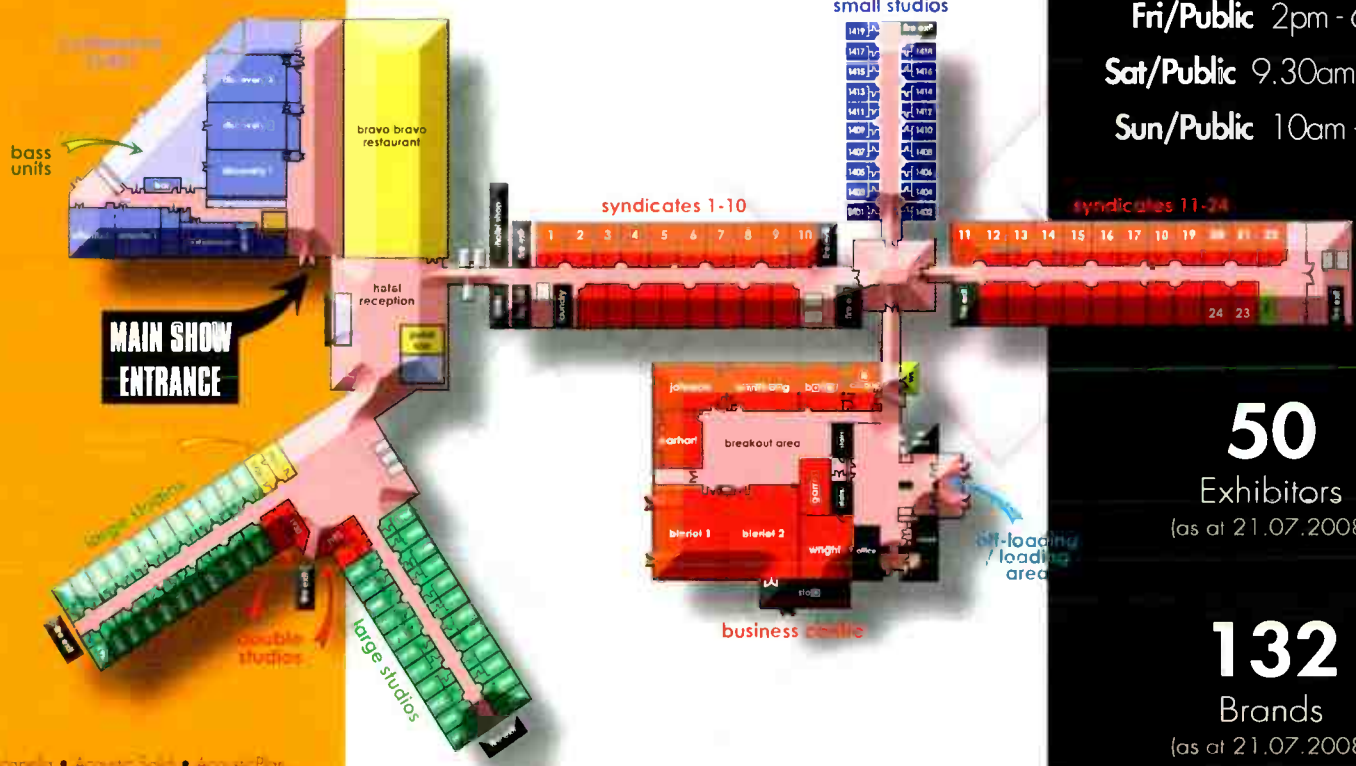
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The vertigo-inducing measurement chamber, called 'The Cube'.

modules for each design, generating the active crossovers and fine-tuning the limiter systems that protect the small drivers at high excursions where they are required.

Geoff was thrown in at the deep end when he joined Bang & Olufsen in 2002 as his first job was to tune B&O's first in-car system for the Audi A8. A trip out in the main development vehicle revealed that his hard work has paid off, as the sound quality was like nothing else I have ever heard in a car. Most striking was the inbuilt compensation for road noise - unlike the rather crude speed related volume increase applied by my own car's stereo, the B&O method is much more complex involving measurement microphones located inside the cabin to measure ambient noise and adjust the signal accordingly. The result is that, at speed, the volume does not appear to have increased at all, but you suddenly realise that you can still hear everything with absolute clarity. Sadly Geoff informed me that such a system won't really fit into my old Ford Scorpio very easily - damn!

Aiding B&O's acoustic design process are two important features in the Struer plant, the first of which is 'The Cube'. When it comes to

loudspeaker design, measurement is vital, and the usual favourite for such an endeavour is an anechoic chamber. The problem is that these take up a huge amount of room and are costly to design and implement, even if the room

is available. Failing that, an MLS type of measurement can be used in virtually any location, with the proviso that effective measurement signal gating is required to ensure that it is only the main signal that is received, and not the reflections from nearby surfaces.

B&O have combined the two types to interesting effect, however, making use of MLS measurements in a room that measures no less than 12m square (that's around 40 feet in each direction in proper units!) which certainly makes removing those reflections a lot easier. Loudspeakers are loaded onto a crane assembly that can be electrically moved towards a small balcony in one corner and then motored back out to sit right in the centre of the room for measurement. The crane can carry up to 120kg and can also orientate the unit under test through a full 360 degrees in all axes for power measurements - something that B&O carry out on all their designs. Nothing quite prepares you for walking out onto the balcony in the corner from the measurement lab, however - the room is huge and empty and apparently the sunken section at the bottom has proved useful in the past for small concerts, or entertaining large numbers!

The second important aspect of the Acoustic design process in Struer is the listening panel. This is a collection of twelve individuals from within the company who are selected for their fine and consistent hearing. The individuals can come from anywhere within the organisation - from factory floor to director, and can be summoned at any time during the day to evaluate a new design, rating it from one to ten over a 100 point scale. Consistency is vital - each member of the panel is regularly checked and if scoring a design as 8.2 on Monday morning, each member is expected to be able to score that same item with the same music within 2 points on a Friday afternoon. If they cannot, they are politely asked to leave the panel... Listening is carried out in a purpose-built room, heavily acoustically treated and featuring acoustically transparent screens that are used to disguise the items playing. The engineers are also careful to hide the boxes of any rivals' equipment used for benchmarking in order to eliminate any preconceptions before listening.

A similar setup of room and viewing panel exists for video products, the evaluation room for these being very high tech, with the ability to generate all sorts of natural and synthesised light sources in all directions in order to fully test the automatic adaptive contrast circuits within the televisions. On demonstration here was the new BeoVision 4 65" plasma, featuring a miniature camera that automatically pops out from the screen surround every 120 hours or so, to recalibrate

the blue balance of the picture - the blue colour of plasma sets fades much faster than the red or green and this is the first set to automatically compensate for this during its life. Finally, for those of you who think that Blu-ray is as good as it gets in picture terms, I can confirm that the difference between such a picture, and a raw RGB signal played side by side on two identical sets is still quite depressing...

The next stop on the tour was one of the most interesting for me, whilst also being the most alarming! Down in the bowels of the Engineering division is what is referred to as the 'Torture Chamber' and it is here that B&O carry out stress testing of their products like no other manufacturer I know of.

Here, all of the company's products are subjected to high temperatures, low temperatures,



The viewing room, where video products are put through their paces.

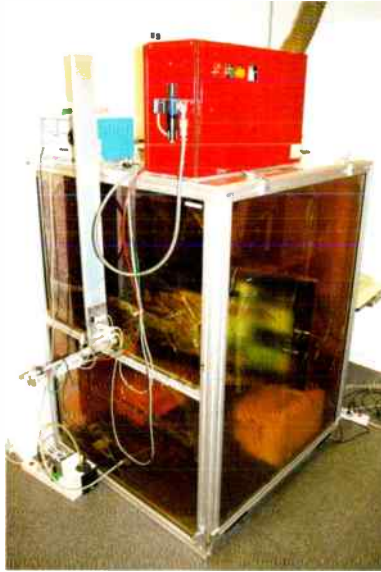
extremes of vibration and drop tests from the height of half a metre or so to ensure they survive even the most arduous shipping conditions. Watching a 40" LCD in its box be dropped right in front of me made me jump, I can assure you. In addition, remote controls are thrown around, knocked off tables and smeared in a huge variety of polishes, cleaning products and even hand creams, to ensure that they continue to work and that no lettering comes off, even under the harshest of abuse in the home.

Finally, one of the most disgusting sights I have ever seen was the smoking machine - here, televisions have a continuous stream of cigarette smoke blown at them for a period of days to weeks, to ensure that the seals around their screens do not allow any of this to penetrate the internals. I am willing to bet that there are very few smokers in the factory and, if there are, sticking their heads into this machine would be an instant cure!

Naturally, there are the couple of oddities around. One is a picture of a television that was accidentally left



The listening room, where audio evaluations are carried out by the listening panel.



The smoking machine for TV testing. The box is clear Perspex and it is lined with clear polythene that is replaced every few weeks. The brown colour visible comes from the cigarettes and the liner in there was about a week old when I visited. Pass the sick bucket!

in the freezer over a weekend but the photograph on the wall shows it working, albeit with the picture under a thick layer of ice. Even better is the MX series television sat in the laboratory that suffered a similar fate, but in an oven - its plastic casing has melted completely and it looks very sorry for itself. Impressively, though, it still works...

The next stop in the main factory was the real jewel in the Bang & Olufsen crown - the aluminium processing plant. This is something that B&O are immensely proud of and something that they will not consider moving either out of house,



If you leave your TV in the oven for too long, it will look a bit like this. Mind you, if B&O made it, it'll probably still work...

or out of Struer. The interior of the factory has to be seen to be believed - this is the first industrial site I have ever visited that was so sparkling - you really could eat your dinner off the floor! Here, aluminium is cut, shaped, polished, anodised, trimmed and, in the case of colours other than the natural silver, stripped and anodised again - a cut surface would be a different colour to that of the main finish

which, even though it would not be visible to the end user, is not acceptable to B&O Quality Control. Everywhere you look is machinery and raw parts for B&O items, as well as a few other surprising items made for third parties. Apparently, these manufacturers have required something a little bit special to finish off their products and turned to Bang & Olufsen, with their aluminium processing expertise, to make it for them. Quality standards are extremely stringent and some of the finished parts look like works of modern art - very impressive.

The final stop of the tour was to the newly opened Museum, located in the centre of Struer, with its huge collection of Bang & Olufsen items housed in a brand new building that could pass for a modern art gallery. Talking to Ronny Kaas Mortensen, who sourced pretty much everything that sits in the museum, he explained that they now have a collection of around three thousand items, dating back to the very first product, the 'Eliminator' from 1925. Around three hundred are on display at any one time, with the plan being to rotate these every six to nine months so that everything gets an airing. Ronny was a fascinating guide to the museum, with a story for each product. At the end he asked if I would like to go round again as he had a different tale for each one ready if I was interested!

All in all, I could not help but be impressed by what I had seen in Struer. Most companies are enthusiastic about what they do, but at Bang & Olufsen the company, its products and the ethos behind their design and construction is so much more. As an example, employees who work for the company for over twenty five years get their photograph placed on a special series of noticeboards in one of the factory canteens - at my rough guess, there are presently around nine hundred pictures on there. I was also fascinated to see that, when you walk into any shop, bar or restaurant in Struer and the surrounding area, the incidental music is supplied by B&O equipment.

My room at the Best Western Hotel in nearby Holstebro contained a BeoCom 4 telephone plus

BeoVision 1 television with Beo4 remote handset, and the pub attached to the hotel had entertainment provided by three pairs of wall-mounted BeoLab

3s. Equally, at Billund Airport, the television relaying the news in the cafe was a BeoVision 5 - £13,000 worth! Stephanie Doyle, of B&O UK, said that the situation is pretty much the same all across Denmark - B&O is a way of life in the country and, despite the cost of the products (they are no cheaper over there), most people would not even consider anything else.

All in all, this proved to be a fascinating trip and visits can be arranged through Struer's Tourist



Inside the newly opened B&O museum in the centre of Struer...

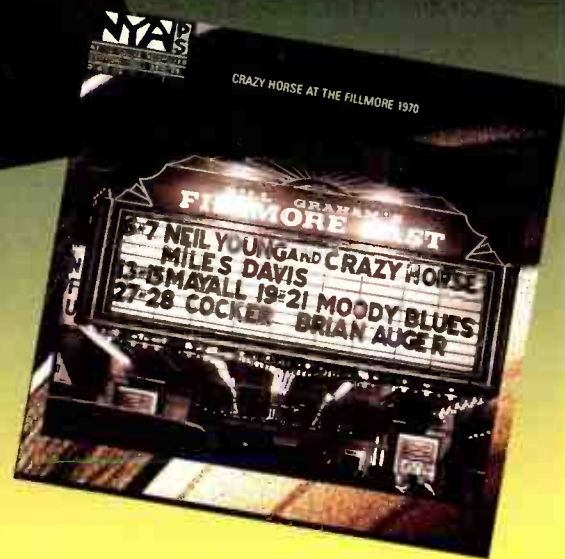
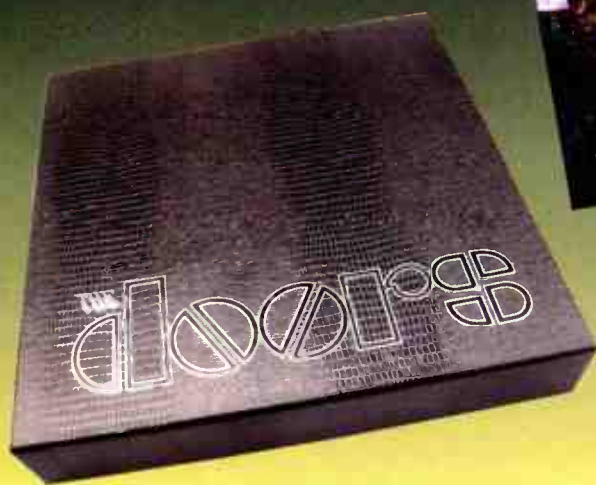


The number of employees who have worked for B&O for more than 25 years is astounding, and still growing.

Bureau (see www.visitstruer.dk) along with events organised by independent enthusiast groups like BeoWorld (www.beoworld.org), so almost anyone can go and see the company in action. My advice would be to give it a go if you are still in any doubt about whether Bang & Olufsen's products are "all show and no go". The level of design and craftsmanship put into each item is staggering, and the passion of their employees is impressive, as was the weather - when I visited at least! And yes, it was raining again when I landed back at Heathrow...



There's no escaping B&O in Denmark - not even in your hotel room!



THE DOORS
Vinyl Box
Rhino

A luxurious box set, this collection consists of seven 180gm HQ LPs, consisting of all six of The Doors' studio releases in stereo with, in addition, a mono version of their debut album. The entire set has been remastered and supervised by Jac Holzman, founder of Elektra Records and production supervisor for The Doors, and Bruce Botnick, The Doors' engineer/co-producer/mixer for all six studio albums. The set was mastered by the much vaunted Steve Hoffman. As far as the packaging is concerned, all albums are presented as exact replicas of the original releases, including all the artwork, packaging, inner sleeves and mixes. The albums are contained in a very sturdy, thick cardboard box with an outer sleeve, fashioned in a fake crocodile skin effect.

There has been much discussion of this set's sonics on the Internet, most of which I totally disagree with. Firstly, this box set has been created from a set of DVD-A masters, not the original master tapes. Reportedly, it's a direction that Jac Holzman wanted to follow. Why? There may have been a perceived notion that the final mastering would be processed quicker and in a more efficient manner with digital sources. I personally think it was a bad decision. That's not to say that the final sound of the box set is

poor – far from it. However, with the original masters, it could have been better. Compared to Steve Hoffman's earlier DCC attempt at a Doors reissue, apparently created from the original masters, the new box set is relatively neutral and flat with a reduced volume offering more scope for dynamics. Not quite the ultimate collection on the market therefore, but it's certainly the best sounding.

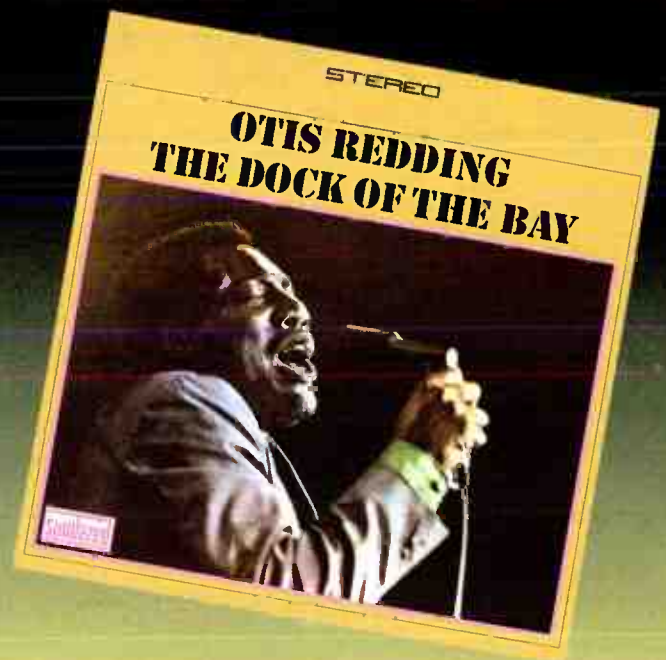
NEIL YOUNG
Living With War "In The Beginning"
NEIL YOUNG & CRAZY HORSE
Live At The Fillmore East March 6 & 7, 1970
Classic Records

Both these albums are reviewed together because they are so similar in their *raison d'être*. That is, they are both old - and new at the same time. The Fillmore is Young's first venture in his long awaited archive series. Much of this gig has already been bootlegged, it has to be said, and it also looks like there's a few tracks missing from those bootlegs too. However, the sound quality of this release is excellent. So, we're talking swings and roundabouts. The 'War' release is more intriguing. This is almost a director's cut of the previously released 'Living With War' album, stripped of the choirs and other ephemera. It's designed to do two things: keep the political issues discussed on the album in the front of

Young's fan's minds and the media, as well as supply that message in a more concentrated form.

I don't know what it is with Classic Records and Neil Young but, whenever the company releases his works, the records have an extra 'something', that smacks of love and attention. Both are superbly packaged in quality card stock, both are presented as gatefolds and both records are, unusually for Classic, contained in simple plastic bags instead of the paper-based inner sleeves. The Fillmore release has an image, in the gatefold's centre, of the band in action, pasted alongside a newspaper cut-out of a review of the entire evening's entertainment that not only featured Young but Miles Davis and Steve Miller too. You also receive a credits pull-out.

For 'War', the design is more elaborate with a sheet overlaying the front of the original gatefold cover with the word 'RAW' stamped over the title - and, by gum, this 'pre-mix' certainly is that! Inside, you also receive a large fourteen page lyric booklet. Both records sound great but I have to report that both have been created before the latest Classic Records technology advancements have been fully implemented. For example, both records do not have the new-style groove guard. However, this takes nothing away from both records which are superb productions and highly recommended to all Young aficionados.



SANTANA
Caravanserai
Speakers Corner/Columbia

Santana are the most well known exponent of Latin-oriented rock music. Anyone who has seen the wonderful coverage from the Woodstock festival in 1969 cannot fail to be impressed by the group's energy and skill, and this particular release is one of Santana's early classics. Released in 1972, this album blends the group's trademark Latin rhythms along with rock and even elements of jazz to keep the listener always on their toes. You never really know what to expect with this release and that's part of the joy of the project which is always looking for ways and means to push and break musical boundaries. As such, you may listen to it and be distinctly underwhelmed. However, don't be deceived - this is a classic 'grower'...

The album is a typical Speakers Corner production in that it appears to be a duplicate of the original. There are no clues that this is a product of 2008; no bar codes, no Speakers Corner logos or copyright notices, no credits pertaining to the reissue. As the original was in 1972 - so is the reissue in 2008. As such, the package is a little treasure. The album has been mastered by the German-based Pallas to their usual high standards. The 180gm vinyl runs quiet which allows the music to breathe. Also, the mastering, from original master tapes,

has produced a wonderful separation of the many instruments that appear on each track. This is a great test record for any new hi-fi component, to see if it can successfully identify the guitar, bass, drums, organ, piano, congas, bongos, timbales and other associated percussion. The mastering gives you every opportunity however, separating each successfully, making each track somewhat of an adventure. Highly recommended.

OTIS REDDING
The Dock Of The Bay
Sundazed/Volt

This is both a joyous and tragic album. Redding was one of the most influential and powerful ambassadors of soul during the sixties. His performances were always played 'to the max'. Like his contemporary, James Brown, Redding physically sweated over his performance, unravelling his emotions in front of the audience, dragging them into the song with him. His big and bold arrangements only enhanced the almost theatrical production he gave to soul and the trademark Stax sound - within which he was so reliable. Mainly because his performances were always consistently good.

That's why this album is joyous. The tragedy revolves around the fact that the album was his last. Redding was to die at the criminally early age of twenty six just when he was about to break into the charts with the title

track - in fact, the single was released posthumously. This last single also appeared to see an important turning point in his approach to his artistry which was rapidly maturing. The phrase 'if only' is more sadly applied to Redding than most.

The album, released in 1968, is a hotch-potch of singles and b-sides that cover the previous three years of Redding's career. Selected by Booker T. & the MGs' own Steve Cropper, who co-wrote 'The Dock Of The Bay', the album only goes to confirm how significant 'Bay' was to Redding's developing talent because there's nothing else on this album that sounds like it. Nevertheless, this is still an album all Redding and soul fans should own, featuring highlights such as 'Don't Mess With Cupid', 'I Love You More Than Words Can Say' and 'Ole Man Trouble'.

The mastering is of both high quality and contentious. It has obviously been processed with care and attention to detail, producing a wonderfully clear, open sound. It's contentious because Sundazed appear to have retained the original compression that gives the production its trademark sixties sound. You will either love or hate this approach. To some ears, the album will have a harsh, oppressive, almost digital playback. To others, it will offer truly authentic sound, successfully duplicating and reflecting a sixties production. You pay your money...

David Price welcomes Osamu Ikeda to the pantheon of audiophile greats, telling the story of his most popular product – the legendary Fidelity Research FR-64fx tonearm...



Hi, Fidelity!

When the former factory manager of Japanese tonearm specialist Grace decided to start his own business, he probably didn't imagine that his name would become a legend in high end audiophile vinyl circles, but it did. It was in 1964, at the age of thirty five, that Osamu Ikeda formed Fidelity Research Kabushiki Kaisha. By the mid nineteen seventies his company was making truly world-class tonearms and pickup cartridges which could only have come from his own fair hand. Unlike so many other designers of the day, Ikeda was no copyist, taking out several international patents and finessing his designs like few others. Indeed, so respected was he in Japan that his products were even used by the Imperial Family.

The late nineteen seventies were the glory days for Fidelity Research, the era being regarded by many as the high watermark for vinyl hardware (if not software!). Ikeda was in the right place at the right time with a wide range of superbly built and interestingly engineered pickup arms

and cartridges. The FR-60 series of tonearms was surely his strongest product, being a superlative device at a time when there was a paucity of competition.

Lest we forget, the international mid-seventies vinyl scene had been defined by its dalliance with 'ultra low mass' design. Hi-fi magazines championed the use of Shure V15 cartridges, tracking at ever lighter forces (i.e. down to 0.75g), in the name of less 'record wear', and subsonic resonance control. An entire generation of tonearms had been built to track them, the cheerleader of which was SME's Series III. Launched in 1980, it was built as a carrier of high compliance moving magnet cartridges.

In Japan however, the 'ultra low mass' fashion never caught on to the same degree. The country's audiophiles had (and still do have) an enduring love affair with the tank-like Ortofon SPU moving coil, meaning that higher mass tonearms never went away. Factor in a host of superb Japanese MC cartridge makers from Supex to Signet, and there was real demand for a beefy, 'battleship'

tonearm such as the Fidelity Research FR-64S.

High mass arms have their downsides, but one unalloyed plus is their strength. With thick metal arm tubes, the counterweights necessary to balance them and chunky bearing arrays tough enough to take all this weight, they are robust carriers of high mass moving coils where the likes of the SME III would have balked at the challenge. Whereas the latter's effective mass was 5.0g, the FR-64S weighed a suspended subchassis-bending 35g!

A beautifully screwed together stainless steel tubed pickup, this arm found itself in many broadcast studios, often sitting right next to a Technics SP10, tracking a cartridge that would make your average DJ-spec Stanton 500A look lightweight. But surely the high watermark of the high mass Japanese battleship arms was the twelve inch (301mm) FR-66S version, with forty percent less tracking error. Still, even the nine inch FR-64S was far too heavy for most applications – its effective mass making it suitable for cartridges with a compliance of around 5-10cu, of which there were

"so respected is Ikeda in Japan that his products are used by the Imperial Family..."



very few (and none made by Fidelity Research themselves, even!).

With this in mind, the FR-64fx was introduced in 1981 as a 'real world' high mass pickup, with a dynamically balanced design similar to the S but with a much lower 20g effective mass. In designing the 64fx, Ikeda took the opportunity to tweak it for the (then) new generation of high performance moving-coil cartridges with higher tracking ability, giving it higher rigidity and sensitivity. This meant the conventional bearing assembly was changed to radial ball bearings.

Deep-oxidised matt black aluminium for the armtube gave extra stiffness, with revised geometry for optimum low distortion tracking, by increasing the offset angle by approximately two degrees. The universal arm/headshell interlocking was improved by the use of a stronger connector and stiffer headshell, finely tooled to achieve a superb fit, while silver internal wiring was fitted. The bias compensator was redesigned as a thread linked, weighted unit, and the counterweight was modified with an improved locking system. As per the

FR-64S, the 64fx came in a longer version – the FR-66fx.

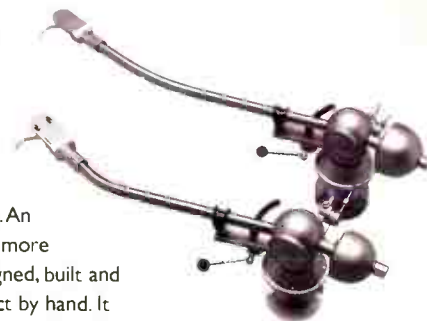
Selling for £270 in the UK in 1982 (£17 more than a Linn Ittok) and ¥69,000 in Japan, the lighter, stronger armtube and headshell allied to the heavy construction of the arm base and pillar made for a very strong, stable pickup arm with vanishingly low friction. Indeed, in this respect it measured much better than rival Dynavector and Grace products from Japan with only Sumiko's MDC800 able to compete (at £800)! Sonically the FR-64fx is still one of the best pivoting tonearms around, characterised by its very open, unstressed and relaxed sound, conspicuously uncoloured and neutral in tone.

Great as the Fidelity Research tonearms were, the company suffered at the meteoric rise of digital audio in the early eighties. Ikeda's strongest market (his home market of Japan) was particularly prone to the all-conquering Compact Disc; hitherto high end turntables, arms and cartridges were (literally) dumped by many audiophiles who believed that digital was the future of high end. This, plus chronic difficulties with Japanese

labour unions, resulted in the sad end of the company in 1985.

Still, the great man came back with Ikeda Sound Laboratories Company. An altogether smaller and more specialist affair, he designed, built and inspected every product by hand. It was a chance for yet more innovation, not least the world's first MC cartridge without a cantilever, the Ikeda 9. The new IT345 and IT407 tonearms were launched in autumn 2006; coming in twelve and sixteen inch versions respectively, the former is the spiritual successor to the classic FR-66fx.

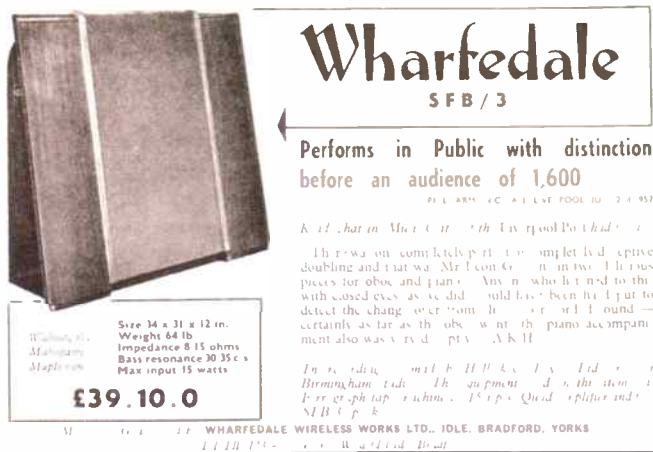
Lyra's Jonathon Carr adds a postscript, "Ikeda is still alive and active today, but he is getting quite old. Clearly something needs to be done to keep his designs alive after Ikeda himself passes on. But I am sure this will happen. He has bequeathed the rights to continue manufacturing the arms to the present subcontractor, so this will remain open. Lyra may also choose to help out. It would be a shame to see those great designs disappear".



Spiritual successors to the FR-64fx - the new Ikeda IT345 and IT407.

Designing

Part 19 - Analysis of a classic Open Baffle Design - the Wharfedale SFB/3



Wharfedale
SFB/3

Performs in Public with distinction before an audience of 1,600

Size 34 x 31 x 12 in.
Weight 64 lb.
Impedance 8-15 ohms
Bass resonance 30-35 c/s
Max input 15 watts

£39.10.0

WHARFEDALE WIRELESS WORKS LTD., IDLE, BRADFORD, YORKS.

Early Wireless World advertisement for the Wharfedale SFB/3

My analysis of Open Baffle designs was interrupted by the sudden acquisition of a loudspeaker that I have been longing to lay my hands on for the past 35 years! That speaker is the one whose picture I featured on the Open Baffle design page in this magazine, namely the Wharfedale SFB/3. So why the wait for 35 years?

As a budding speaker designer in the '70s I devoured every article and book I could find that expounded the art of speaker design. But it was the books by Gilbert Briggs, the founder of Wharfedale, that captured my interest most.

Mr. Briggs had a way of writing that was both humorous and

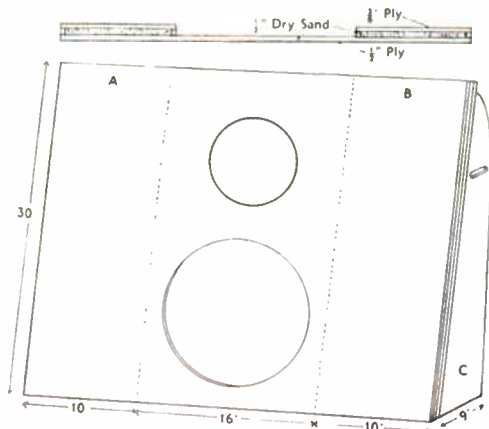


FIG. 12/15. Sand-filled baffle for home construction to take two closely-coupled units, with tweeter at the rear if required. Sections A and B are sand-filled.

Construction note for SFB/3 concept

informative and, as well as possessing a keen ear for high quality sound reproduction, produced books which became the epitome of DIY manuals throughout the '50s and '60s. In fact I'm just checking my copy of the seminal work 'Loudspeakers - The Why & How of Good Reproduction' now and find, to my astonishment, that the first edition was dated May 1948.

These books, besides teaching the reader in the gentlest possible way about how loudspeakers operated both in fundamental terms and also in practical

situations, served as a vehicle for the sales of Wharfedale drive units, though Gilbert Briggs was always generous enough to show the attributes of other commercial designs if, like Peter Walker's original QUAD Electrostatic, they were of notable interest.

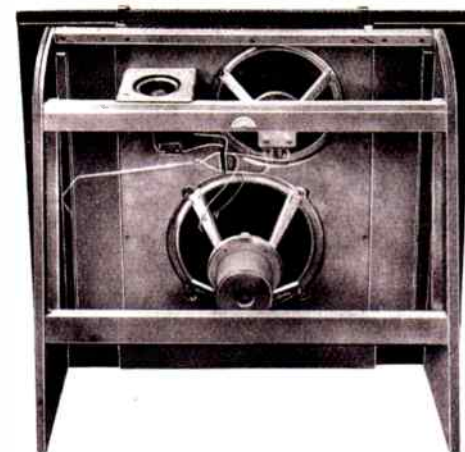
Of particular interest to me was the companion volume to 'Loudspeakers' entitled 'Cabinet Handbook' which elucidated all the ways that you could put drive units to use. As well as details on the various methods of loading drive units, namely closed box, reflex, acoustic labyrinth and line source, were outline plans for enclosures to which the DIY fanatic could fit Wharfedale drive units.

One of these caught my fancy, largely because it was so different to anything I could buy in the shops in the '70s. It was a plan for a fairly compact baffle, much the same size as the original QUAD Electrostatic, that stood 30 inches tall and 36 inches wide. Drive unit complement was a 12 inch and 10 inch bass and bass-midrange mounted close to one another to improve "mutual radiation impedance" and an upward firing 3 inch cone treble

mounted behind the baffle. The other innovation of this speaker was the

inventive control of panel resonance by using sand filling in the side panels of the baffle. The illustration of the plans shows this more clearly and you can get an idea of the driver layout from a photograph reproduced from Briggs' 'A to Z in Audio' published in 1960.

As far as I can ascertain, the concept for the SFB/3 (Sand Filled Baffle/3 drive units) came about because it was more compact than the large corner enclosures that Briggs favoured for his high performance designs but, when stood near a corner or alongside a side



Rear photograph of SFB/3 'unclothed'. Note the 3 inch upward firing treble unit on its own baffle.

wall, achieved a similar output of bass power, though not necessarily extension.

Even so, a test by Ralph West, a known ESL devotee, in Hi-Fi News November 1956 described the SFB/3 as sounding 'less like a loudspeaker than anything previously listened to'. As for bass he commented 'bass was surprisingly good without any bass lift, in fact, it took quite a time to decide whether or not to use a little' and 'experiment showed it would handle enough power at 35 c.p.s. to give a really loud pure tone...'

In cosmetic terms a single SFB/3 was preferable in many rooms to a purpose built brick corner enclosure (see photo of comparable designs of the '60s) and many were bought

Loudspeakers



Fig. 10 11. Speaker Tests in Lab, measuring 18' x 13'.

- A 3 speaker brick assembly.
- B 4 speaker mobile model.
- C 3 speaker baffles.
- D Coaxial 12 inch 5 cu. ft. reflex cabinet.
- E 8 Column speaker.
- F As E, but concrete.

A pair of SFB/3 take pride of place in a listening test amongst comparable Wharfedale models. In the '50s and '60s large loudspeakers were common amongst audio enthusiasts.

as mono speakers. The later growth in popularity of stereo reproduction which, despite being introduced in the '50s didn't really catch on until the proliferation of stereo discs in the early '60s, saw many users add a second speaker to their first.

So, when buying QUAD Electrostatics, for example, one often finds the 'pair' are actually of different ages. Such is the case with this pair of SFB/3s. They are subtly different in manufacturing details indicating that a second speaker was added to the first to implement stereo in the home.

Now what was thought of as a 'compact' loudspeaker in the early '60s, especially as a single unit in a room, is now considered unduly large and obstructive in a room. Actually it was having to house two such speakers in a living room to enable stereo reproduction that marked the death knell of large speaker reproduction. By the mid '60s smaller, compact closed box speakers were all the rage and, in my view, things have just got worse ever since!

But enough of the history. The point is how do these venerable

Wharfedale designs stand up today and, more to the point, what do they tell us about open baffle performance and reproduction in a real room?

The description of how the SFB/3 is designed to work in a typical room location is covered in Briggs' 'Loudspeakers - Fifth Edition' in the 'Baffles' chapter. Drive unit complement is a 12 inch bass unit specially designed for the SFB/3, a 10 inch 'Bronze' bass-midrange and the ubiquitous Wharfedale Super 3 (3 inch) cone treble unit.

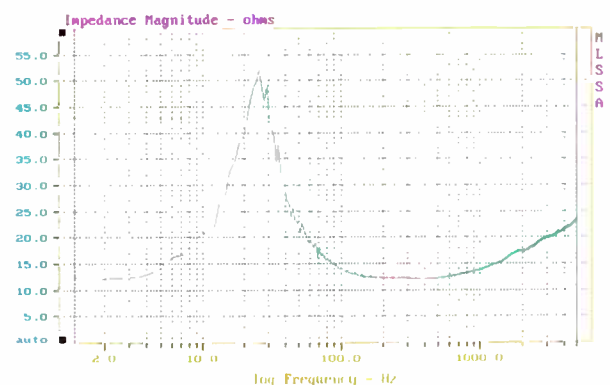
Peculiarly, the 12 inch and 10 inch units are connected in parallel with no crossover, relying on their natural roll-off in each case, whilst the Super 3 is placed on an upward facing sub baffle behind the main one ostensibly firing at the ceiling. With dipole arrangement of bass-midrange and vertical dispersion of the treble unit the speaker was described in the Wharfedale advert as 'Omni-directional'. The only crossover component is a 4 uF capacitor in series with the treble unit. Later a series rheostat was added to provide adjustable HF output.

The whole arrangement is one that Ralph West called 'retrograde', meaning that mounting a drive unit on an open baffle is how speakers were first designed – boxes came later. But, he is at pains to point out, early 'bass' reproducers had a fundamental resonance in the 100Hz area and very limited excursion. For the SFB/3 Briggs had designed a 12 inch unit with 30Hz resonance and a long throw suspension and magnet gap for good linearity when driven hard.

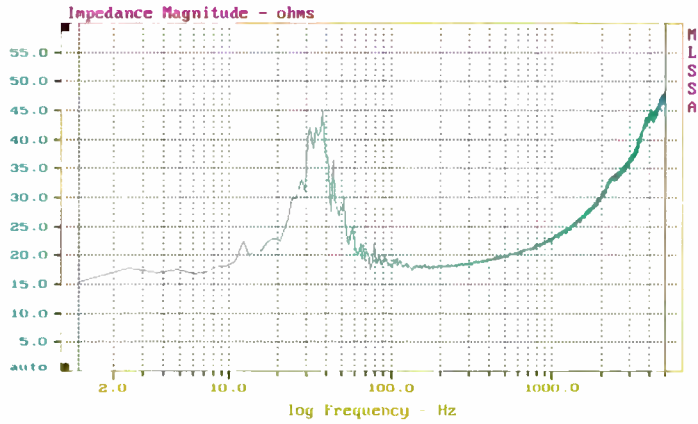
This allowed the listener to apply judicious bass lift (+2 on a Quad preamplifier bass control) without overpowering the bass unit. In addition the 10 inch unit on the same baffle, in close proximity to the 12 inch unit, provided both a means of sharing the power handling and spreading the resonance through what Briggs called 'mutual coupling'. This also increases the radiation resistance, resulting in an improvement in efficiency at low frequencies.

You can see how this 'mutual coupling' works by viewing the impedance graphs. First the graph of the bass unit measured alone showing its fundamental resonance. Originally the unit was fitted with a foam surround, an innovation at the time which improved the mating of cone and surround and reduced edge reflections for a cleaner 'top' end. Unfortunately foam surrounds have a tendency to disintegrate over a period of several decades of use and the units in my samples have expertly applied felt surrounds as replacements.

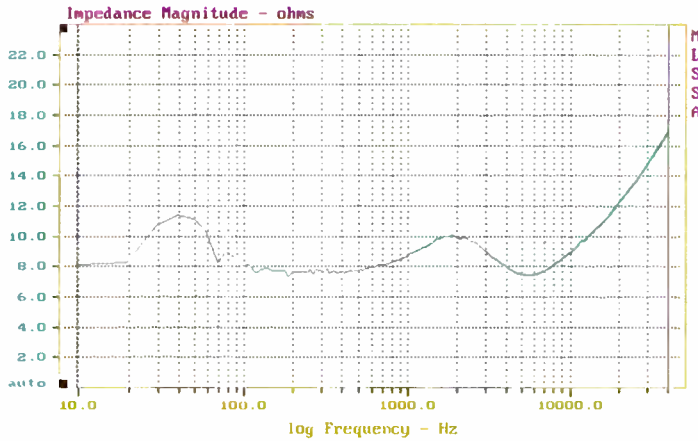
Fundamental resonance with these slightly heavier surrounds has



Impedance of SFB/3 bass unit



Impedance of SFB/3 10 inch 'mid' unit. Note the 'interference' caused by the reaction to the mutual coupling with the nearby bass unit.



Overall impedance of SFB/3. The spread of fundamental resonance from the bass and mid units in parallel and mutual coupling on the same baffle effectively damps the LF peak.

reduced to 26Hz indicating a high mass cone and highly compliant inner suspension. The massive Alnico magnet achieves a high sensitivity of 94dB with an impedance of around 12 Ohms. This is a remarkable unit by any standards and would be regarded as of astonishing quality were it being produced today.

When we look at driving the Wharfedale 10 inch Bronze on its own we see not only a higher fundamental resonance but also that this impedance trace is distorted because, of course, it is also exciting the 12 inch unit in close proximity. This is evidence of the 'mutual coupling' Briggs talked about.

Turning to the graph of overall impedance you can see that the fundamental resonance of both units is both spread and damped, resulting in the claimed 'Bass Resonance 30/35 c/s' described in the SFB/3 advertisement.

At first sight the response graph, taken anechoically, does not look promising. A steady fall from 225Hz, where the half wavelength equals the baffle's minimum 30 inch dimension, continues to decline at 6dB per octave below 150Hz where

both baffle dimensions fail to reflect the drive units' output. Note that the treble unit is not measured on the forward axis where the microphone only picks up the direct output of the bass units.

But how does this translate when the SFB/3 is used in the listening room? For a start the output of the 12 inch unit is considerably reinforced by its close proximity to the floor. This restores much of the output down to 150Hz as only the larger baffle dimension now causes the step down in response below this frequency.

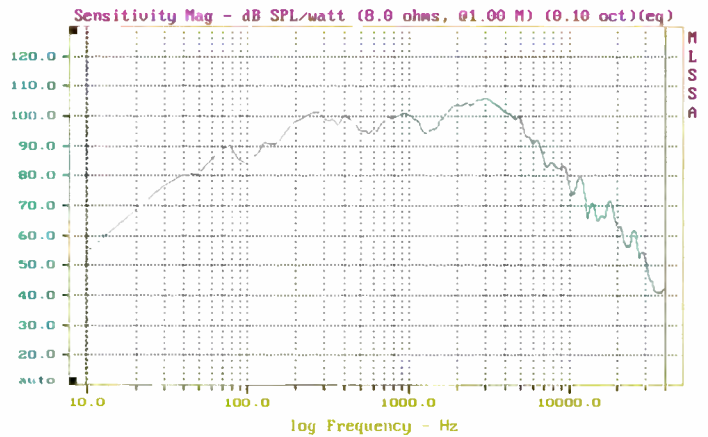
Briggs' preferred placement was part way down the room and up against the side wall, which increased the apparent baffle width as well as causing an improvement in bass output by coupling better to the room gain. Interestingly this position is identical to that recommended for many dipole speakers including full range electrostatics (though not often adhered to in modern homes!).

Out towards the middle of the room, which is where I suspect many owners would

now try to place a pair of SFB/3s, the bass is undoubtedly lightweight and the midrange far too forward in nature. Across a corner the bass becomes thunderously deep and 'fat' thanks to the multiplication of reflecting surfaces and corresponding strong coupling to all room modes (maximum room gain) but loses all its articulation too.

To obtain the performance that Briggs expects, the ideal position is, indeed, about a metre or less from the corner and butted up against a side wall, angled towards the listener. This angle proves important as it reduces the effects of reflections from the rear of the drive units and the side wall by spreading the minor standing waves over a wide range.

In the next article I'll continue experimenting with different room positions for this combination and our proposed bass units for our own project. Certainly Briggs' advocacy for a pair of dissimilar drive units sharing the low frequency load is an eye opener and the resulting damped resonance (a low Q coupling) flies in the face of the current advice which, it has to be said, seems to be based on 'free standing' baffles rather than ones that utilise room gain to its utmost advantage.



Forward response of SFB/3. Note that this is primarily the output of the two bass/midrange units as the treble output is not picked up by the measuring microphone under anechoic conditions. Average sensitivity = 97dB!

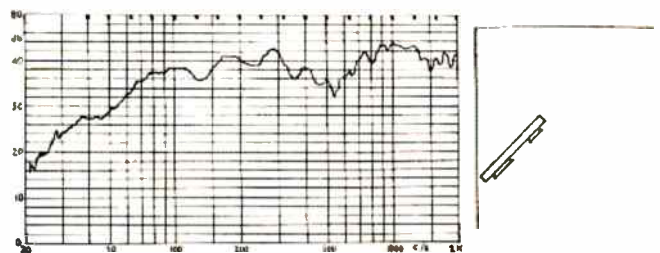


Fig. 17/9. Open-air response curve of two speakers (12" and 10") baffle mounted as in Fig. 17/1A. Mic. 3' on axis (average).

Experimental baffle positioning, and corresponding LF response, from Briggs' 'Loudspeakers - Fifth Edition' chapter on baffles.

WD25T v2 - the Sequel



World Designs' new WD25T v2s arrive at Hi-Fi World - Noel Keywood wields the measurement microphone and Adam Smith wields his ears...

With the WD25T v2s installed in the listening room at World Towers and suitably warmed up, I see no point in beating about the bush, so if you were intending to skip ahead to the last paragraph, I shall say straightaway that these are the best loudspeakers bearing the World Designs badge that I have heard to date, and that's saying something as the previous models were certainly no slouches!

Where the WD25T v2s really score over their original predecessors, for me, is in terms of the sheer realism that they impart onto music. The loudspeakers themselves simply disappear leaving you with a room full of instruments playing directly in front of, and slightly above, you. It is almost as if you're sat in the stalls looking up at the stage of a live concert, the result is that vivid.

The ever so slight dryness of tonality that I sometimes felt the original WD25Ts possessed is gone, and in its place is an even-handed neutrality that seems to impart no unwanted character onto the music at all – what you hear is exactly what you are meant to hear. The midrange is emotive and fluid, and the top end sweet and possessed of impressive clarity, but without falling into the realms of the harshness and spit that can sometimes accompany a design where the high frequency output has simply been lifted in order to gain insight.

I have no doubt that this neutrality is largely down to the new ARCENA cabinet material, that removes any vestiges of cabinet

bloom that conventional materials can tend to impart on the sound. Another nice side-effect of this is that the WD25T v2's bass is superb, and integrates beautifully with the mid and treble.

Unlike many modern loudspeakers, the WD25T v2s are optimised to work close to a wall and this makes them an incredibly room-friendly (and spouse-friendly!) proposition. As a result, initial listening may lead listeners to believe that the loudspeaker is a little bass shy but this is most definitely not so. Simply, the cabinet is not singing along, and there is no poorly tuned port adding any unwanted effects. What you are left with at the bass end is detail, a solid sure-footedness and a surprisingly healthy extension, that picked out the lowest notes of my Jazzanova test track with ease – something that surprisingly few floorstanders manage.

All in all, the WD25T v2s are highly impressive loudspeakers, blessed with an effortless nature, thanks to that nice big main drive unit, and magnificent levels of neutrality and atmosphere, thanks to the new cabinets and

redesigned crossovers.

Even with the price approaching £1,000 for a fully built and tested pair, the WD25T v2s are astounding value for money and I can think of no other loudspeaker at the price that offers their addictive mix of grace, pace and neutrality. Highly recommended.

WORLD DESIGNS WD25T v2
BASIC KIT £479
PLUS CABINET KIT £914
FULLY BUILT/TESTED £1148
 World Designs
 ☎ +44(0)1832 293320
 www.world-designs.co.uk

MEASURED PERFORMANCE

Designed to be used close to a wall, you can see our gated sine wave frequency response trace shows bass output slowly rolling down below 150Hz. Moving the loudspeaker close to a wall and measuring with pink noise clearly shows how the low frequency output comes up, reaching down to 40Hz. The WD25T goes low then, but works with the room to stay flat and well damped, in effect. This is a nicely judged piece of design that will give better bass control and quality than usual, without sacrificing deep bass.

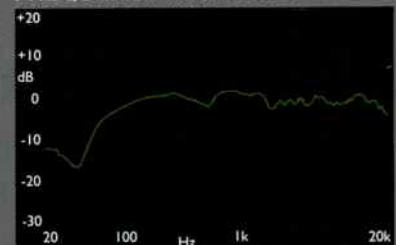
The overall response balance is flat, but there is strictly no high frequency emphasis, unlike most modern loudspeakers. Furthermore, the tweeter has been pulled down slightly at its crossover with the bass unit to keep total radiated sound power into the room similar, to better integrate the two, this working a best into a room lightly damped at higher frequencies, which most are. So WD25T v2 is very accurate, exhibiting better balance across the audio band than most commercial loudspeakers, which these days come with raised treble so as to shine in a showroom demo.

Sensitivity measured 87dB from one nominal watt of input, which is good if not exceptional, the loudspeaker needing around 40 Watts or more ideally. The impedance characteristic

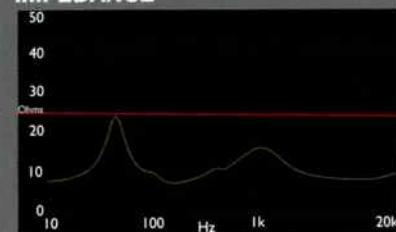
is smooth and unreactive, the single bass peak from the closed cabinet being well damped. Overall impedance measured out at 10 Ohms, with 8 Ohms a minimum, so this is strictly an 8 Ohm load as far as valve amps are concerned.

WD25T v2 is wideband and deadily accurate. It is also well integrated and well damped in the bass. So this is loudspeaker that others will struggle to match for accuracy. NK

FREQUENCY RESPONSE



IMPEDANCE



"digital is not a universal panacea by any means..."



adam smith

The alarming news that was doing the rounds on the radio regarding Freeview recently set me thinking. In case you hadn't heard about this, the story is that the head bods at Freeview decided to introduce a new type of transmitter signal that was not compatible with several types of Freeview box in use, including models from Daewoo, Labgear and Triax. The result is that users with Freeview boxes from these manufacturers are now left with blank television screens and Freeview box-styled paperweights. Of more concern is that the change-over is planned to continue in both Scotland as well as other parts of the country and by the end of it, it is estimated that around 200,000 people will be affected. Most of them will have to buy new set top boxes but those who have televisions with integrated digital tuners will need new sets.

Frankly, I think this is an appalling state of affairs and smacks of the poor organisation and "we know better" attitude that is creeping into so much of our lives at the moment, nowhere more so than the home entertainment industry and, frankly, I am rather tired of being forced down a particular road because of someone who thinks they know best.

For me, the classic example of this is the plasma and LCD television market. The increasing popularity of huge screens does call for this technology, but no-one ever claimed they gave the last word in clarity and picture quality. The Cathode Ray Tube is gradually being phased out in the smaller sizes as well and, judging by the number of sets I have peered at, slimness and style are playing second fiddle to picture quality.

I use a 32 inch CRT-based television and am still waiting to find a 32 inch LCD or Plasma that

can match it for picture quality. Of course, HD is the thing now (until something better comes along - rumour is it's not far off!), which my good old set will not reproduce but I can't help thinking that the whole HD scenario has been necessary purely to bring a digital picture on a big screen up to the quality level of a strong analogue signal on a good CRT set. In my old house I lived very close to the transmitter and, despite buying a Freeview box that was praised for its excellent picture quality, the strong analogue signal absolutely wiped the floor with it - the digital picture was crisp but it looked over-emphasised in colour terms and two dimensional in depth terms, when compared to the far more natural and atmospheric analogue picture (hmm, shades of CD and vinyl here)...

As a side thought, I bought my television second-hand from a dealer dedicated to the manufacturer and when I visited to collect it, several similar models were in the showroom but switched off, whereas they had all been playing on my previous visit a few weeks earlier. When I mentioned this, the dealer told me that they had discovered that, if they left them on, they had a tendency not to sell any of the company's new LCD or plasma sets, as the pictures were not as good; hardly a resounding affirmation of the new technology.

I also feel that a certain amount of blame for our modern woes can be laid at the door of Dr. Digital. Now I am not a diehard digital-phobic by any means but cannot help but feel that it has been touted as the answer to some problems that we didn't actually have in the first place. Some might consider it surprising that I would site the likes of MP3s and digital music as one of the more successful results of digitalisation as it is perfect for the market in which

it has been adopted most enthusiastically - that of portable audio. The forerunner of this was the Compact Cassette and only a fairly small bunch of enthusiasts ever attempted to make this into a proper high fidelity music format; exactly the same as is being done with compressed digital today - perhaps the Naim HDX will become the spiritual successor to the Nakamichi CR-7E; only time will tell.

No, to my mind, the strengths of MP3 and the like are exactly like that of the good old cassette - music sharing and bringing the product to a wider audience. I'm sure most of us have copied albums for our friends or have made compilation tapes for the car/walkman without worrying unduly about the sound quality, and the iPod and its ilk are bringing this bang up to date in a very successful way.

However, digital is not a universal panacea by any means and I rather resent being told that it is by those who supposedly know best. The most prime example of this is, as our very own Steve Green keeps reminding us, the DAB radio format that is being rammed down our throats. I am thoroughly sick of listening to radio presenters banging on about how their show is coming to us in "crystal clear digital quality" when I can barely make out what they are saying thanks to the intensely annoying 'bubbling mud' effect that comes and goes throughout the day even in our central London office.

DAB simply does not work on the train either, so my daily commute relies on good old VHF/FM and, at home in the Hampshire countryside I still have no DAB radio. Why? Well, entering my postcode into the www.getdabdigitalradio.com website *still* tells me that "We're sorry, there are no digital radio stations available in your area at the moment". If this is progress in a shiny new digital world, I'm not impressed. ●

"The present is a far more interesting time for hi-fi than ten or twenty years ago..."



david price

One of the most fascinating things about this job is watching, from an excellent vantage point, the tortured relationship between consumer electronics manufacturers and the buying public.

I don't know if you've ever given it much thought, but products don't just fall from the sky like fruit from trees. Think of the most prosaic and dull Freeview box, for example, and that is the result of a number of decisions by several companies over a year or more. With this in mind, new consumer technology packages, like iPods for example, take an awful lot of planning and design, with very little or no certainty that they'll succeed, save a 'hunch' from the manufacturer...

For evidence of this, you need only look at the glorious failures like eight track cartridges and Elcaset. Then there was the curious case of the Compact Cassette, which failed miserably at its original intended use as a dictation medium, but accidentally became a massive hit as a music carrier. How so? Well it certainly wasn't down to its inventors Philips, who did only passable players - instead they can thank one Akio Morita over at Sony in Japan, who invented the Walkman...

You can imagine how consumer electronics must 'writhe' and 'wriggle', as their products are launched out into the marketplace, and are greeted by mass collective indifference or find them being used in different ways to how they'd originally intended!

Surely the joker in the audio format pack is MP3, though. Motion Picture Experts Group 1 Audio Layer-3, to give it its full name, is the one format that emphatically did *not* come from a giant consumer electronics manufacturer, and yet the most successful. It's a testament

to it - and the newer compressed digital music formats that it spawned (such as AAC) - that this is the way that much of the music buying world now chooses to consume its music. So wide has been its success that it's encroached right into high end hi-fi, with the likes of Chord's QDB76 DAC now able to play it - and wirelessly at that!

Think about it - this issue, we are reviewing both a group of cheap £100 music portables and one of the best high end hi-fi digital to analogue converters, and both extremes of the hi-fi evolutionary scale play compressed music files. Historically, there are only two other formats that ever achieved such versatility and omnipotence - vinyl LP and Compact Cassette.

The fun thing is that we're still working out quite how to use MP3. It's about a decade since the format hit the big wide world (although it had lived as an arcane computer file format for a little while before), and the sense of possibilities seem no less great now than then. One minute it's a really nice music portable like Sony's NWZ-A826, the next it's the Chord DAC, then it's an iPhone, and then a network music player like Linn's superb new Sneaky DS - a £995 box with Wi-Fi, preamp and power amp built-in that's effectively a self-contained, plug and play wireless hi-fi system (more of which next month)! The only limit with this new format (and its cousins) is the imagination of its users.

The present is a far more interesting time for hi-fi than ten or twenty years ago. There's a sense that no one is quite sure where 'digital media' is going to go, and that anything is possible. Regular readers will know that I'm not a massive digital fan, but, with these new file formats, I feel there's never been a greater justification for exploring the

alternatives to analogue.

The other big plus is that, back in eighties when Compact Disc was in the ascendant, there was a concerted attempt by both the hardware and software manufacturers to render the vinyl LP extinct. There was no sense that retailers were saying, "We like to sell you vinyl and CDs"; instead it felt like "You must have CD and be glad of it". We were all told that 16bit PCM was best for us, and that was that. Now that digital has migrated off discs into a highly versatile and extensible form, we can use what suits us - and run it alongside analogue should we wish.

I do hope that SACD and DVD-Audio come back, reborn as digital file formats rather than optical discs with clunky interfaces and the need to buy special players. I particularly liked SACD, and would relish the chance to download this, but even 24/96 is astonishingly good compared to CD - as downloads from Linn Records and Naim Label's websites show.

These days, my vinyl system is bigger and better than ever - as is my record collection. But I'm developing a 'digital backbone' of music on my computer, stored in two iTunes libraries (320kbps AAC and Apple Lossless concurrently), which is increasingly being used - both for music streamed around the house and taken out and about on my Sony NWZ-A818 'Walkman' (the model immediately prior to this month's group test winner).

Digital always had the capacity to give music listeners (and buyers) tremendous flexibility, but it's only now we're beginning to see it. And true to form - as consumer electronics goes - it was all down to an obscure computer file format that the music hardware makers, for a long time at least, did their uppermost to ignore! ●

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"the Digital Radio Working Group recommends that FM should be switched off by 2020..."



steven green

The Digital Radio Working Group (DRWG) - the taskforce set up by the government last year to look into why Digital Radio sales were so low, and what measures could be taken to improve the situation - has published an interim report in which it recommends that FM should be switched off by 2020. One thing that the DRWG's report failed to mention was DAB's poor audio quality, so clearly they want to sweep this issue under the carpet. However, I'll return to this issue at a later date (because I couldn't do the subject justice here) as well as outlining some of the main points that were made in the DRWG's report...

One of the DRWG's main conclusions was that one of the main obstacles that will stand in the way of FM being switched off is the very poor take-up of DAB in cars. They estimated that only around one out of every two hundred of the 34 million cars and commercial vehicles in the UK - around 150,000 in total - currently have a DAB car stereo. And unfortunately for the broadcasters, the motor industry told the DRWG that they wouldn't consider including DAB in new cars as standard until there's a common European digital radio standard, and even then it would take "at least six years" from them agreeing to include DAB as standard to cars actually rolling off the production line with DAB inside them.

Six years! In that case, they can kiss goodbye to switching off FM by 2020. There were 2.4 million cars sold in the UK last year, so probably fewer than half of all cars would have DAB by 2020 if they only started fitting them as standard in 2014, and the radio industry would simply

be committing suicide if they just switched the FM signal off leaving millions of people unable to listen to radio on their car stereo.

To deliver the common European digital radio standard that car manufacturers want, the DRWG has recommended that all digital radio receivers - not just car stereos - should support DAB, DAB+ and DMB-A (DMB-Audio, which is virtually identical to DAB+), because a number of European countries are planning on using DAB+ in the near future, and France has chosen to use DMB-A. This is obviously good news as far as the UK migrating to DAB+ is concerned. However, as has become customary for the DAB industry, the DRWG report tried to downplay the DAB+ issue, not least because with them also recommending that all receivers should support DAB+, it would have led to more speculation about the future of DAB if they hadn't downplayed it.

In reality, the commercial radio groups will be chomping at the bit to use the new standard once several million DAB+ receivers have been sold, because it will allow them to launch new stations and the transmission costs are far lower - the DRWG also flagged DAB's high transmission costs as being a major problem. The economics could favour using DAB+ to launch new stations in as little as two years from now, but I'd imagine they'd wait for about three years before launching stations to let the dust settle. If there are no DAB+ stations transmitting in the UK in four years' time though, I will eat my DAB radio!

Having said that, the migration of all DAB stations over to using DAB+ will take a long time to complete, and it's now clear that the audio quality

of digital radio will be higher via the Internet than it is now or will be in future via DAB and DAB+ respectively. For example, the quality of the BBC's live and on-demand Internet radio streams will be higher than on DAB once a number of quality improvements have been completed by early September; and within the next two to three years the BBC's live radio streams should be widely available via Internet multicast at higher quality than we're ever likely to receive via DAB+. So there's really no point in waiting around for DAB+ to happen, at least where home listening is concerned...

However, although the DRWG acknowledged the importance of the Internet going forward, they recommended that DAB should be the main platform for digital radio, and that DAB should be heavily promoted. So we can look forward to seeing lots more BBC TV ad campaigns for DAB in future - joy! Another main recommendation was that DAB's coverage should be improved, and that the BBC's national DAB multiplex should be extended to cover greater than the 90% population coverage that the BBC has already committed to providing.

The main thing I'll take away from the DRWG report, though, is how on earth it took them until now to figure out that DAB take-up in cars is the crucial issue that will ultimately determine when FM can be switched off? The decision was taken to design DAB+ almost three years ago now, so they could have approached the car industry with their plans to design a common European standard then to get the ball rolling. But they didn't. So I'm afraid they will only have themselves to blame if FM is still transmitting in 2025. ●

Walrus

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"the fact that an LP can be magnetised in the first place is pretty startling..."



paul rigby

One of the more contentious issues relating to the technology advances announced by Classic Records in this issue's second part of the Black Art feature [see p92] is the idea of demagnetising your vinyl. The fact that a plastic record can be magnetised in the first place is pretty startling, but it's true. The material that gives a record its colour, carbon black, contains metallic trace elements that create a weak magnetic field and degrade sound when they roar past your sensitive cartridge's magnets at 33.3rpm or 45rpm. Testing Classic Records' Clarity series, which removes the Carbon Black entirely and improves sound quality through the eradication of this magnetic influence, impressed me so much that I felt that I had to investigate further...

During my research for the Black Art feature I was made aware of a select number of gadgets that purport to address the magnetisation problem. Some of which are designed for both vinyl and CD (which also suffers from this problem, but for different reasons). One immediately hove into view. 'The Talisman', from US-based Walker Audio is priced at £200 (www.audiophilecandy.com). A 4.5" bar magnet, it's coated in thin plastic with a felt covering on its base. However, it's pretty powerful so, if you do grab one, keep it well away from your electronics!

To demagnetise a vinyl record, you place the disc on a flat surface. It is preferable to use a rotating turntable or, even better, a cleaning machine (the latter, of course, doesn't feature that sensitive cartridge). While the record rotates in a clockwise direction, you move the Talisman in an anti-clockwise direction on the left-hand side of the record, for six

rotations, keeping the Talisman an inch or so from the surface. To process a CD, I placed the stationary CD on a table and moved the Talisman, anti-clockwise over the CD – again for six rotations.

Before and after testing was startling and strongly resembled the effect heard when listening to Classic Records' Clarity series. Before, the sound 'bled' around the soundstage, giving an almost 'cloudy' effect. After processing, the music was pin-sharp and instruments were better placed around the sound stage. This was the effect for both vinyl and CD. I would recommend treating each disc, every time before play as the beneficial effects wear off eventually.

Despite not purporting to change the magnetisation of the CD, Merigo Audio's 'Signature 3-D Stabilizer' provided a similar result with less hassle. Basically, a CD-sized disc constructed from carbon fibre and Kevlar with strategically placed triangle shapes cut around it, you place the disc on top of your CD before play. The result is similarly gratifying, giving the same amount of focus and sound stage improvements but, in addition, there is some tightening of bass and separation improvements. It is priced at £125 (www.audiophilecandy.com).

Back to demagnetisation and the Bedini 'Ultra Clarifier Quadri Beam'. This rather flimsily constructed plastic box is designed to demagnetise CDs only and comes in varying flavours from a cheaper, single beam, hand-held version (£60), to a dual-beam version (£125) and the box under test, the top-of-the-range quad-beam priced at £225 (sales@virtuososound.com). To process a CD you open the transparent lid, place your CD on the central spindle and press a big red button. The CD is revolved at high

speed, then the motor cuts out after a minute or so.

The result? Impressive. And I don't use this word lightly. Running a Naim CD5, via a Naim NAC112/NAP 150 pre/power through a pair of One-Thing Quad ESL-57s, I initially tested Mixmaster Morris' classic 'Global Chillage' album. The focus of the Talisman was there, yes, as was the improvements in sound stage. However, the Bedini went so much further. Every aspect of musical reproduction was improved: separation of instruments was striking, the sound stage was vastly extended, bass was lifted. My hi-fi stopped trying so hard. There was also a definite analogue quality about the presentation.

The Bedini is also a boon to poorly mastered CDs, especially those which have suffered from damaging Peak Limiting. The Sugababes' 'Angels With Dirty Faces' is a good example of a bad master. Ordinarily, this CD sounds harsh with excessive sibilance. After treating it with the Bedini, you could still hear the wretched mastering problems. However, the CD became listenable. The analogue effect calmed the general screeching whilst the excellent instrumental and vocal separation meant that, instead of hearing a painful, metallic lump of harshness the brain was able to accept the good and bad elements of the music, one step at a time, giving a much more even and acceptable effect all around.

Bottom line? I'm totally won over. Now, before I listen to a vinyl record I don't just clean it, I also treat it with The Talisman, and before I play a CD I treat it with the Bedini. If your funds won't stretch, however, the Merigo also comes highly recommended for CD play. ●

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.

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PROJECT RPMI 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.

PROJECT 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 SE 2005 £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-15S1 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 'record 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...

TONEARMS

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.

NAIMARO 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 DV10X5 2003 £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 MCs

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' B 1999 £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" C 2004 £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 WINDFELD 2008 £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 USB 2007 £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.

ELECTROCOMPANIET**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 CDPI MK2 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-XF32.

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 no-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 PS1.2 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 MC1 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.

ELECTROCOMPANIET**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 SE 2000 £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 S6 2002 £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 A2ISE 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

Unfailingly 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-AX861SE 2007 £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 PRE 2003 £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 underpowered.



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 £3,230PR
 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 I 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 AEI CLASSIC £845
 Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made.

SPENDOR S3/S5E 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-MI 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 RW45I 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 I 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 OBi 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 MI 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

MONITORAUDIO IDECK 2006 £200
Fine design, impressive flexibility and a lucidly musical sound make the iDeck the current iPod dock champion.

ISOTEK GIIVISION 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 WIRFS 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 TUNER 2006 £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

The combination of SA-7S1 disc player, SC-7S2 preamp and MA-9S2 monoblocks delivers a truly jaw-dropping performance. Start saving now...

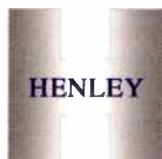
The all-new M-series from ROKSAN



High performance hi-fi separates
that will make your heart sing



To find out more about the M-Series of high performance hi-fi separates
from Roksan, and where you can buy them
visit: www.henleydesigns.co.uk



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ROKSAN CENTRES OF EXCELLENCE

Midland Hi-Fi Studio, *Wolverhampton* • Audio Merchants, *Glasgow* • Audio Republic Ltd., *Headingley, Leeds* • HG Rapkin, *Northampton* • Hi Fi Sound, *Darlington*
Home Media, *Maidstone* • Kronos Hi Fi, *Dungannon* • Merlin Music, *Melrose* • Music Unlimited, *Leverton, Boston* • Sevenoaks Sound & Vision, *Yeovil*
Sevenoaks Sound & Vision, *Southgate* • Sevenoaks Sound & Vision, *Holborn* • Technosound Systems Ltd., *Dunstable*
Unilet Sound & Vision, *New Malden* • Videotech, *Huddersfield* • Zouch Audio, *Asby-De-La-Zouch*

"very fine tuning of cartridge and arm geometry - to obsessive degrees - does affect sound..."



noel keywood

As news of Dr. Feickert's amazing Adjust+ system for pickup cartridge alignment permeates the internet, a lot of people can justifiably say "I told you so"! It proves conclusively that very fine tuning of cartridge and arm geometry – to almost obsessive degrees of accuracy – does affect sound quality for good technical reasons. I thought I knew a thing or two about vinyl and all its geometries, but this extraordinary system has taken me by surprise. A lot of what it does I barely understand.

Happily, when I asked Dr. Feickert for enlightenment, he promised to tell me more at the forthcoming London Sound & Vision Show, at Heathrow's Park Inn hotel. He'll be flying over from Germany and giving lectures on how the system works. I'll be there of course, since we are exhibiting at the Show (see www.chestergroup.org for details), taking place September 19th-21st. And I'm allocating a budget in my head to ply him with any sort of beverage he might fancy to wheedle as much info as possible from him!

Some really dedicated tweekers, a breed found on the internet forums, insist that fine adjustment of arm height makes a really big difference. Whatever you adjust on an arm will bring about measurable changes in performance, and arm height alters Vertical Tracking Angle and distortion levels, so I accept what they are saying, but to date I have treated the need for extreme accuracy with some scepticism.

Records are supposedly cut at 22 degrees so this is the ideal VTA value. Also, most cartridges have a VTA closer to 30 degrees, our measurements show, to give them good surface clearance. The higher quality Ortofonos commonly run very close to the disc surface,

as anyone who once used the low riding, smooth sounding VMS20E will remember. The new model Ortofon 2M Black is their current top of the range Moving Magnet design and, following Ortofon tradition, is a precision device with a VTA of exactly 22 degrees, our German DIN 45 S42 test disc, fetchingly entitled Spurwinkel-Mes-Shallplatte (trace angle measuring disc), tells us!

To date that's all I have known about the effects of VTA: it affects distortion figures. However, Dr. Feickert identifies an entirely different result: it affects phase too. Apparently, when arm height is correct, phase angle as read by the Adjust+ measuring system will be 90 degrees at the crossing point of the Left and Right channel traces. I achieved this perfect condition with the Ortofon 2M Black, as you can see on p98 if you look closely at the phase graph for it (top). It took a lot of fine arm height adjustment to get this right. Even the smallest movement introduced a relatively large phase error, so all the internet forum twitter about the need for super fine arm height adjustment appears to be based on substantiable fact. I'm shocked!

I'm also a little baffled at present as to why 90 degrees is a magic value. How both arm height and headshell tilt introduce significant phase changes in each channel against what appears to be mono reference cut is also a mystery. However, I noticed with some satisfaction that Dr. Feickert was surprised we managed to get a theoretically perfect result, but then that's because we have the ability to measure Vertical Tracking Angle. As a result, we can identify the few cartridges available possessing a 22 degree VTA and therefore able to meet the 90 degree criterion without needing an arm height that is impractical. This is because with

a 9in arm the arm pillar must be moved a large 4mm to make one degree of difference at the headshell, so to correct the usual error of 8 degrees or more, the pillar would have to be moved down 32mm. This is out of the question, since if it is moved down just a few millimetres the cartridge body will start to rub against the disc surface.

So you cannot get perfect results unless you start off with a cartridge possessing a VTA of 22 degrees in the first place. These are not only rare, but few other than this magazine are able to identify such a beast because our now unavailable German DIN 45 S42 test disc is the only one I know of – and I think *Hi-Fi World* has most – that possesses a VTA test. It is joined now of course by the Adjust+ disc, although this measures VTA only indirectly, displaying it as phase angle.

What the Adjust+ system shows then, is that to get a particular set of phase relationships from a cartridge absolutely right, you must first have a cartridge with a VTA of 22 degrees, then you must adjust headshell tilt and arm height to perfection. Whether LPs you buy will then match is another argument, as they may be cut with a differing cutter tilt angle, but we did find that our LPs all seemed to benefit.

The 2M Black sounded dramatically better focused and more intensely detailed after my long adjustment session. The system certainly has its challenges, as it's computer based, demands a good soundcard and then a lot of application in order to get a result. However, the result in itself is quite outside anything I have ever come across before and seems to be conveying information about LP replay hitherto little known or discussed. Extraordinary then – and worthy of any internet twitter it might generate! ●

vinyl section

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SEPTEMBER 2008

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GUITAR HEROES RETURN

Two legendary guitar heroes have re-released albums on vinyl via the German outfit, SPV. The first is Led Zeppelin man Jimmy Page, who recently teamed up with the Black Crowes to produce 'Live At The Greek'. Recorded in October 1999, this 3LP collection features fourteen Led Zep covers from the twenty tracks and, to be honest, some of them are superior to the originals. Both Page and the Crowes perform at their very best.

'Blackmore's Night' on the other hand, features Richie Blackmore, ex-Deep Purple plus songwriter and vocalist Candice Night. With 'Secret Voyage', the pair produce a combination of rock, folk and a take on old renaissance music. It's quite an eclectic mixture but highly entertaining. Both albums are presented in gatefolds and both are well mastered.



ECLECTIC SOUNDS



Direct from Spain's Wah! Wah! record label (www.wah-wahsupersonic.com) come three eclectic releases - ideal if you occupy the leftfield of the musical firmament. Take the startling The Free Pop Electronic Concept's 'A New Exciting Experience'. Originally, released on Portugal's Palette label and created by Antonia and Fernando Lameirinhas, this is a mixture of sunshine/soft pop, 'cutting edge' (for 1965) electronica, psychedelia and jazz. It's a loungecore gem.

Next, mixing jazz with R&B is The Dave Davani Four's 'Fused', blending jazz with soul via a wicked Hammond organ sound. This LP was originally released in 1965 on Parlophone, featuring covers plus a few originals. Highly recommended to Hammond fans!

Finally, UK folks fans should note Hunt & Turner's 'Magic Landscape', mastered by the increasingly well respected GZ in the Czech Republic. This 1972 release features quality songs and simple, yet effective, arrangements.

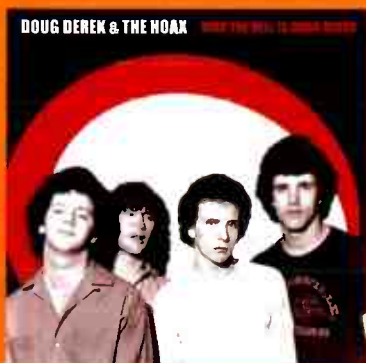


STRANGE ROCK FROM RUNE GRAMMAFON

Featuring a mixture of both electric and analogue instruments, Rune Grammafön focuses on that uniquely Scandinavian avant-garde approach to music. The label has released three interesting LPs from three exploratory groups. Elephant9's 'Dodovoodoo' combines a fusion of prog rock with jazz – mixing superb musicianship and complex rhythms with more considered, experimental pieces that use space to the full.

The Scorch Trio's 'Brolt' also takes rock as its foundation but adds an almost psychedelic, whacked out, go-where-the-music-takes-you approach to their art.

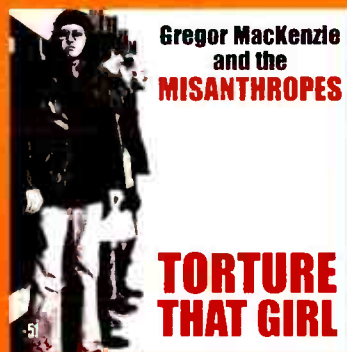
Finally, Motorpsycho's 'Little Lucid Moments' is a very attractive release of just 500, mastered on splatter coloured vinyl. It mixes full-on indie rock with ethereal moments and experimental pieces that wouldn't appear strange in a Frank Zappa album.



BRIT ROCK RARITIES

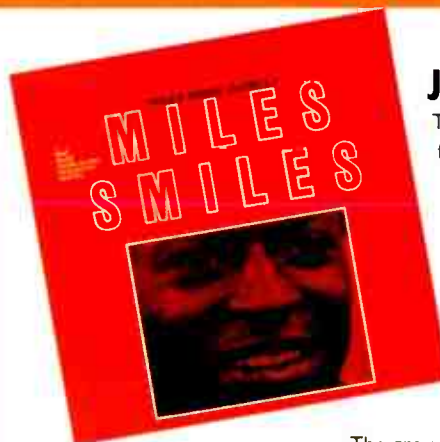
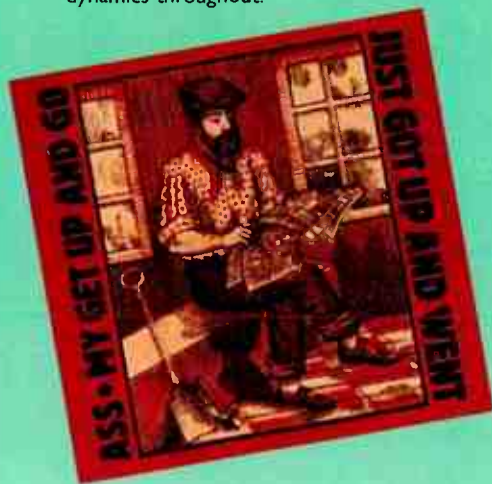
Direct from the Italian label Rave Up (www.raveuprecords.com), we have three rare, rock/pop, re-releases. Doug Derek & The Hoax's grammatically dodgy, 'Who The Hell Is Doug Derek' is a re-release of an album "that never was", from almost thirty year old songs. Created from the water-damaged masters (the label's done a good job because the album sounds perfectly

fine on that score), this power pop album features hooks aplenty. Iron Virgin's self-titled album takes a Scottish glam rock outfit from 1974 and features their singles: 'Jet' (a Wings cover) and 'Rebels Rule', plus unreleased tracks. Imagine an incarnation of The Sweet and you've got Iron Virgin. Finally, Gregor MacKenzie And The Misanthropes' 'Torture That Girl' sounds like your typical punk band: slurred, indistinct lyrics, hard edged guitar and flailing drums – ah, yes, it all comes back to me now... This anthology features 24 tracks including some unreleased ones.



STATIC CARAVAN? MY ASS!

Ass, for it is he, has released a new album on Static Caravan (www.staticcaravan.org) in glorious purple vinyl. Called, deep breath, 'My Get Up And Go Just Got Up And Went', this is a superb piece of acoustic guitar playing that will be of great interest to fans of either John Fahey or Leo Kottke. It's a superbly mic'd recording too, providing some great deep bass sounds from the body of the guitar and offering top notch dynamics throughout.



JAZZ COUSINS

Two classic LPs have been re-released from the German-based Speakers Corner records. The first, 'Miles Smiles', is a classic Miles Davis release. The legendary trumpet player's 1966 album saw the Quintet (featuring Tony Williams, Ron Carter, Herbie Hancock and Wayne Shorter) all getting into their stride after their debut, 1965, 'ESP', release.

The group were tight, innovative and wholly adventurous. This is an excellent version, recommended to any aficionado.

The Mahavishnu Orchestra's 'The Inner Mounting Flame' saw another Davis collaborator, John McLaughlin, achieve a classic debut. A model of high energy, that was a true reflection of what the genre could and should be, and the album set the fusion standard for many years.



Armed Force

Scheu Analog's unusual Cantus tonearm makes a strong impression on Adam Smith...

The good old arm tube and what it brings to the record playing party (or doesn't) has been the subject of many a debate over the years. The unit itself is often referred to as the "tonearm" which dates back to the days of acoustic reproduction and 78s, when the big chunky arm that bridged the gap between the sound box and the horn did indeed impart its own tone onto the sound. Had there been internet forums in the nineteen twenties, I'm sure there would have been protracted arguments over the relative merits of tapered, straight, curved, brass, and steel tubes and what to stuff/line/coat them with, so the modern arm with its theories regarding bearings, tube material, etc., are just a natural evolution!

Interestingly though, few manufacturers have ever moved away from the central tube idea. Variations have come and gone, such as wooden arms from Grace, Garrard, Tonearm Audio (see *Hi-Fi World* April 2008), and even Scheu Analog themselves, with their flagship Tacco arm, but generally the tube reigns king.

Of course, things have evolved, with the tubes themselves made of exotic materials and featuring all manner of exciting drilling, damping and general fettling in order to obtain that holy grail of a neutral performance that minimises the inherently resonant nature of such an item. However, why not just dispense with the tube altogether? Scheu Analog have done just this!

Their new Cantus is a clever design that bears more than a passing resemblance to the original flat NAD 5120's arm from the early 1980s, but is quite a different beast. The arm itself isn't a tube at all, but a flat piece of acrylic which Scheu claim "reduces resonances to an absolute minimum, creating an unbelievably energetic but still 'relaxed' sound". The idea of making the whole arm and headshell combo from a single piece of material is not new, but to make this plastic and carefully machined is definitely a break from the norm.

Also relatively uncommon around this price point is the fact that the arm is a unipivot; as far as I know the only competition is the Roksan Nima, so the Cantus is in good company. Available in 9 and 12 inch variants and black or clear finishes, the Cantus is not difficult to set up, as everything is easily accessible and can be clearly seen. Tracking force is applied by a simple weight that is slid backwards and forwards in a machined slot (a stylus balance is required) and can also be rotated horizontally to set lateral balance correctly. Interestingly, no bias

"across the top end the Cantus is remarkably clean and detailed, without a hint of sibilance..."

compensation is fitted as Scheu claim it is not required. The instructions provided are basic but tell you all you need to know, except what the 45mm diameter rubber belt/washer in the box is for - I never did find out...

Fit and finish of the Cantus is superb, as we have come to expect from Scheu Analog, and belies the £760 retail price. My only real niggles are the lack of an armrest - which I generally view as highly desirable, especially given the rather wobbly nature of a unipivot - and why doesn't the balance weight have the lovely bright chrome finish of the other metal parts?

SOUND QUALITY

So far, every unipivot arm that I have encountered has been blessed with a lovely sense of air and spatiality when compared to a conventional pivoted design, and the Cantus is no different in this respect. The soundstage really does stretch far and wide beyond the loudspeakers and between its extremes is positively packed with fine levels of well sorted detail. Across the top end the Cantus is remarkably clean and detailed, without the slightest hint of sibilance or 'spitch', and it maintains this performance across the entire side of the record, thanks to its twelve inch length giving lower tracking distortion.

Midband detail was equally impressive, the Scheu pulling lead instruments well to the fore of the performance and placing backing aspects precisely where they should be around this. Lead vocal performances were vivid and strong, stretching out into the listening room in a highly convincing and impressive manner. Van Morrison sounded suitably gruff on his 'Enlightenment' album, and the emotion of Kurt Cobain's 'Nirvana:Unplugged in New York' performance was quite striking, especially when coupled to the atmosphere with which the Cantus endowed the whole concert.

The Cantus definitely strikes a quite forward balance, however, which is something that should be borne in mind when matching cartridges. Sounds4Enjoyment provided a Scheu Analog MC Scheu for the review, which is a fine Benz Micro-sourced design, but I felt that this combo was too hard and forceful across the upper midband, especially with electronica such as OMD's 'Forever Live and Die'. The

rather smoother Ortofon Rondo Bronze was a much better match in this respect, and really showed the Cantus off to the best of its abilities.

The one area in which I have sometimes felt it necessary to be a little forgiving when it comes to unipivots is in their bass performance, which can sometimes lack the focus and depth of a conventionally pivoted design. It was here however that the Cantus played its trump card, as it has one of the tightest and most detailed bass performances you are likely to find, south of the likes of the £1,300 Audio Origami PU7.

Combined with the Black Diamond turntable which is itself no slouch down the bottom, the result was a setup that simply floored pretty much anything else I have heard at the price when it came to sheer bass grunt and pace. I would quite easily place the deck in the SME10A category in this respect and even within shouting distance of my Garrard 301, which is about as high a level of praise that I can offer!

Bass lines started and stopped with alacrity, and the detail that the Cantus pulled from the grooves at the low end was nothing short of astounding. The bass guitar from The Blue Nile's 'Tinseltown in the Rain' provided a positively granite-solid foundation for the track to build on and the Cantus hung the backing percussive effects outside the loudspeakers most convincingly. Briefly swapping back to our Pioneer PLC-590/SME M2-10 combo added a lovely dose of SME top end sweetness to alleviate that slight upper mid hardness that still lurked somewhat, but shrank the soundstage and pushed the bass guitar back into the mix.

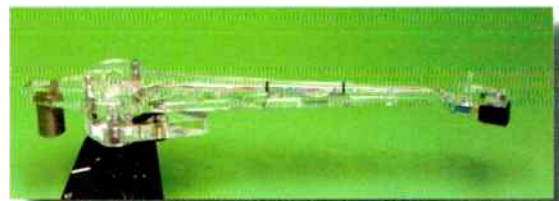
REFERENCE SYSTEM

- Scheu Analog Black Diamond turntable
- Scheu Analog MC Scheu/Ortofon Rondo Bronze cartridges
- Emille Labs KPE-2AS phono stage
- Creek OBH22 preamplifier
- Quad II-eighty power amplifiers
- Spendor S8e loudspeakers

Grateful thanks to Dave Barker of Sounds4Enjoyment [+44(0)23 9271 7628, www.sounds4enjoyment.com] for supplying our review Cantus!

CONCLUSION

The Scheu Analog Cantus 12 is a highly impressive arm design that departs from the conventions of such devices to deliver an impressive result. As mentioned, it requires a cartridge with a rather smoother nature to achieve a really well balanced result but the clarity, dynamics and sheer low end agility that it offers are rare at the price.



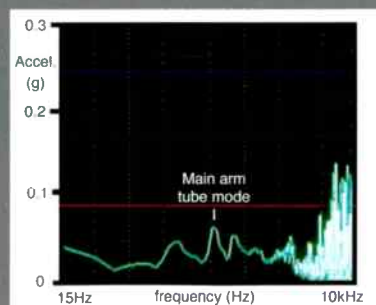
MEASURED PERFORMANCE

Just as its appearance is quite different to all other arms, so the Scheu Analog Cantus measures unusually as well. Thanks to its skeletal structure the main arm modes are well distributed, as there is no main 'tube' as such to resonate. The largest of the resonant peaks is at 550Hz, corresponding nicely to the half wavelength of a twelve inch item, but it does not reach 0.1g in magnitude so the arm structure is very well behaved.

Equally good is the headshell itself, the design of which is more related to other arms and shows the usual pattern of closely crowded peaks. However, once again, these peaks are at a lower level than we are used to seeing, most likely due to the headshell being much thicker than usual and thus better damped.

All in all the Scheu Analog Cantus turns in one of the best measurements we have seen under the accelerometer so far at Hi-Fi World. It is highly likely to be a neutral and accomplished performer without too much of a sonic signature of its own. AS.

ARM VIBRATION



VERDICT ●●●●£

Sounds as different as it looks - superb detailing, dynamics and ambience make for a thrilling listen.

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- FOR**
- bass detail
 - spatiality and atmosphere
 - dynamic alacrity
 - top end clarity
 - design

- AGAINST**
- slight upper mid hardness
 - no arm rest!

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Heavy Metal

Using ultra stiff boron, Nagaoka's new top of the range MP-500 aims to fight it out with the best. Adam Smith takes a ringside seat...

The Nagaoka MP-500 sits at the top of Nagaoka's new range of MM cartridges and incorporates a number of changes compared to the more affordable MP-150 that Noel reviewed back in our June 2008 issue. Most noticeable to the eye is a gold finish which isn't necessarily any less visually challenging than the MP-150's green hue! Secondly, Nagaoka see fit to secure the removable stylus assembly to the cartridge body with a hex bolt, a la Linn K18, which is a fine idea, securing the two items together nicely.

Under the skin there are changes as well. The MP-500 sports a tapered boron cantilever and a Line Contact diamond stylus, compared to the MP-150's aluminium and elliptical items. These should bode well for secure tracking and good detail extraction from the bottom of those precious grooves. Cartridge mass is up slightly, to 8g, but this is not high and will suit virtually any arm.

SOUND QUALITY

It may be somewhat tricky to drop the stylus where you want it, thanks to the chunky body, but the results are well worth obtaining when you do. The MP-500 brings a sense of balance and detail to the sound that is relatively unusual to find at this price point, let alone from an MM. Initially, the MP-500 offered a wide soundstage, spreading images well laterally but in a rather diffuse manner. However, tilting the headshell by a couple of degrees as determined by the Adjust+ system (see p97) narrowed the image somewhat but snapped everything into focus.

Instruments were insightful, clearly defined, and well layered from the front to the back of the soundstage, and singers gained useful stability in the centre of the image. In addition, bass was fulsome, solid and blessed with fine pace.

Overall, the MP-500 is a detailed and smooth performer. It has more

of a thoughtful and relaxed nature to its performance than the more ebullient Ortofon 2M Black and this makes it a highly enjoyable listen, but does occasionally take the edge off transients, such as the drum strikes in The Blue Nile's 'A Walk Across the Rooftops'.

CONCLUSION

The Nagaoka MP-500 is a very couch-sounding and highly capable MM cartridge. A little more laid back than its obvious rival, the Ortofon 2M Black, it nevertheless turns in a highly accomplished performance for the price. Add in fine tracking abilities and easy alignment thanks to the chunky body, and you have a very worthy contender at the price.



MEASURED PERFORMANCE

Frequency response of the MP-500 measures ruler-flat right across the audio band, from 20Hz up to 15kHz, with just a small lift thereafter. This will be difficult to detect audibly.

On inner grooves tracing losses result in some -5dB loss at high frequencies, due to the stylus minor radius being unable to fully read short mechanical wavelengths. This is a bit more than most of today's line contact shapes but it is still acceptable, the cartridge maintaining good overall balance from outside to inside grooves - and a deadily accurate tonal balance of course.

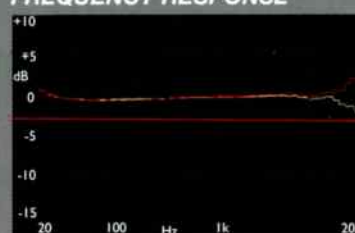
Tracking was good, if not quite up with the best, top torture tracks inducing mistracking. There should be no problem here in use.

Lateral distortion was low at 0.5%, but vertical high at 5.6%, due to excessive Vertical Tracking Angle of 30 degrees. Luckily this is mostly second harmonic, but it may detract from Left and Right image cleanliness. Output was on the low side at 3.8mV at 5cms/sec rms against the huge 8.6mV of an Ortofon 2M Black.

The MP-500 measures very well, except for inaccurate VTA. Its super flat frequency response will give an almost reference standard result. NK

Tracking force	1.8gms
Weight	8gms
Vertical tracking angle	30degrees
Frequency response	20Hz - 18kHz
Channel separation	29dB
Tracking ability (300Hz)	
lateral	85µm
vertical	45µm
lateral (1kHz)	20cms/sec.
Distortion (45µm)	
lateral	0.5%
vertical	5.6%
Output (5cms/sec rms)	3.8mV

FREQUENCY RESPONSE



VERDICT

Accomplished and well balanced high end magnetic cartridge with a smooth and detailed sound.

NAGAOKA MP-500 £350

Musonic

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www.musonic.co.uk

FOR

- tonally balanced
- finely detailed
- stable tracking
- easy to set up

AGAINST

- slight softness
- stylus hard to see

Black Art

In the second of his two-part audiophile vinyl feature, Paul Rigby looks at the work of...

CLASSIC RECORDS

(remember the sound...)

Most records are produced using 120gm vinyl and a teardrop shaped groove guard at the outer edge - but not all. Specialists like US-based Classic Records do things slightly differently in a bid to deliver a superior sounding product. It has approached the process from different angles, the first being the initial step in the vinyl chain, when the vinyl pellets are created, cut from the extrusion, as described last month. If the cutter is not overly sharp, bits will be sheared from the extrusion. When the pellets are melted for pressing, the 'bits' will melt first, then crystallise. "This dust can be a source of low level noise," explained Classic Records' CEO, Michael Hobson, "hence, if you play a blank disc, you can hear the sound of the vinyl. We have now invested in a de-duster to remove that noise."

Next, Classic addressed the profile of the vinyl record, finding that if measured with a micrometer, your basic stereo record is not flat. The nature of the pressing produces a record with a U-shaped valley cross-

Preparing the stamper for press set-up at Classic...



Mike Oldfield's 'Tubular Bells' has been re-pressed by Classic Records.

section. According to Hobson, "the grooves near the groove guard and the first inch and a half of the play area are all canted outwards, they're not perpendicular. The centre is pretty perpendicular. When you go towards the lead out, the grooves are canted towards the centre of

(pressed by JVC in Japan in the nineteen seventies) in half and measuring it - he found the answer. "It's flat," revealed Hobson, "and it has a groove guard! The flatness is why they sound so good." But that groove guard is non-conventional in shape - which stops that

"vinyl is capable of superb sound - it has infinite resolution, unlike digital..."

the record. You have physical groove distortion."

Hence, information retrieval is not consistent. The principal culprit for the valley profile is the groove guard and the effect it has on the vinyl flow during pressing. So Classic removed it, which helped to create a perfectly flat record and improved sound. The Super Vinyl Profile was born. Job done? Not quite. During pressing, because of the lack of a groove guard, Classic began to experience non-fill and dishing problems on stereo releases.

After cutting one of Mobile Fidelity's legendary UHQ vinyls

'valley' cross-section. Hence, Classic now utilise a variant of the JVC groove guard to perfect completely flat records that, says Hobson, fill properly and press consistently well.

Classic has also moved all its pressing from automatic to the more labour-intensive semi-automatic process. "This system doesn't press based on time," said Hobson. "The human operator releases a pressed record when a set temperature is reached. This is how they used to do it in the nineteen fifties and this is how we're doing it now. More importantly, you can hear the difference. Being able to determine at



Constant checks ensure that the records come out in perfect condition.



Records are jacketed at the Classic Warehouse.

what point the squeezed vinyl starts and how long it's squeezed based on temperature, rather than time, has an impact on how the PVC moulds and that has an effect on how it sounds."

Finally, Classic took a look at the Carbon Black in all vinyl and discovered that it's magnetic. "There are trace metals featuring a random

magnetic structure. Play a record and place a magnet near to the cartridge, and you get a distortion. After all, a cartridge is an electro-magnetic generator. Imagine that cartridge again and those vinyl-based magnetised trace metals running closely past it at 33 or 45rpm. There's going to be a disruption of the signal."

The awareness of vinyl's magnetic properties is why there are a small, but growing band of demagnetisation gadgets currently occupying the market. Furutech has a turntable-shaped demagnetiser on sale now for around £1,000 whilst Hi-Fi For Sale (www.hififorsale.com) sell the more manual Talisman system for around £200 from Walker Audio [see Paul's column on p75 - Ed.]

Classic has now removed

the carbon black for a new, limited edition 'Clarity Pressing' 45rpm series featuring tinted clear vinyl. It's a controversial measure. "People will flip, they'll say we're completely mad but we're going to let people listen and hear the difference," said Hobson. Stock vinyl is capable of superb sound – it has infinite resolution, unlike digital – but quality varies due to the different processes taken in the production

process. Classic Records is an exemplar of best practice.



Each record is carefully inspected before shipment.

PROOF OF THE PUDDING...

I compared a selection of 'new technology' Classic productions to standard issues. These included Semi-Automatic pressed records, clear 'Clarity' pressings and the new flat profile/new groove guard pressings. Here are my findings...

THE WHO 'LIVE AT LEEDS'
(Normal Profile/Automatic Pressing vs Flat Profile/Semi-Automatic Pressing)

The Flat Profile/Semi-Automatic pressing was louder, exhibiting more detail. Also lower bass notes lifted, enhancing their detail.



JETHRO TULL 'AQUALUNG'
(Flat Profile/Automatic Pressing vs Flat Profile/Semi-Automatic Pressing)

The Semi/Flat combination provided a fuller, richer sound over all areas of the music.



THE WHO 'LIVE AT LEEDS'
(Clear Vinyl/Semi-Automatic Pressing vs Black Vinyl/Semi-Automatic)

The clear vinyl was sharper, like looking at a picture through the camera lens and pressing the auto-focus button.

All in all, each technology improvement produced a measurable, and actually sometimes startling, improvement to the sound quality.

CLASSIC RECORDS – 600 AND COUNTING

Founded in January 1994 by Michael Hobson, Classic Records has now released in excess of 600 titles covering artists such as Led Zeppelin, Peter Gabriel, The Who, Jimi Hendrix, Miles Davis and John Coltrane as well as labels including Blue Note, RCA, Living Stereo Classical and Mercury Living Presence Classical. CEO Michael Hobson declared that, "my intention is to make the best sounding music products by pursuing advances in every aspect of and the finest materials for use in the production process".





Adam Smith listens to Emille Labs' beautifully turned out KPE-2AS phono stage...

Liberty Belle

I often find it interesting to note how some hi-fi manufacturers come by their names and, in particular, how this tends to differ depending on where the company are located in the world. Consider for a moment, the Western firms, whose monikers tend to be either simply related to the names of the founder(s) or chosen to reflect some technical or design aspect of the equipment they make.

Move over to the Far East, however, and things tend to take a more romantic turn. I remember

made things more interesting than just having to deal with 'China Voice Coils' or suchlike...

In hi-fi terms it is no different - we have the Opera Audio Company (Consonance) who, errm, name their products after operas, and a brief surf through the internet reveals a whole host of other OEM companies with Hope, Sunrise and other inspirational leanings! It is no different in Korea either, it would seem, and when Kwangwoo Electronics decided that the time was right, in 1991, to name their new dedicated hi-fi division,

The finished item weighs 18.9 tons, is ten feet high and seven feet in diameter and currently hangs in the National Museum of Gyeongju. It also apparently continues to mystify metallurgists to this day as it has no blowholes as a result of its manufacture. The bell was designed to be heard evenly in all directions and its note lingers for over three minutes when struck, the sound intended to "free the masses from worldly troubles and distress".

As this is exactly what a good hi-fi system does, I would say that Emille have chosen their name well and, with distribution now secure thanks to Angelsound Audio, that includes the British multitudes too. Emille's range currently comprises preamplifiers, power amplifiers and integrated amps; the latter including the KI-120 monoblock integrated, an unusual configuration and one that will keep you fit running backwards and forwards adjusting volume knobs

"it turns LP records into a truly immersive musical experience..."

only too well from my days of liaising with Chinese suppliers whilst at Goodmans Loudspeakers, there were several companies with a 'Lucky' or 'Shining' in their name and this

they looked to a slice of Korean history for inspiration.

Emille Labs was the result; named after the Emille bell that was cast in 771AD in honour of King Seongdeok.

if you place them next to each loudspeaker...

The newest item in the range however, is the KPE-2AS phono stage, a two box design that separates the power supply from the main circuitry. Two inputs are provided, one for MM and one for MC cartridges and these are selectable from a front panel switch, with two MC settings - 'MC LOW' providing a 50 Ohm load, and 'MC HIGH' offering 300 Ohms. Also on the front panel is a six position gain control that permits the unit's output to be optimised to your amplifier for minimal volume twiddling between different sources.

The circuitry of the KPE-2AS comprises a passive RIAA stage with high quality step-up transformers for the MC input. Valve complement is a pair of ECC82s and a single ECC83. Each unit weighs 3kg and measures 150mm wide and 250mm deep, with the PSU coming in at 90mm high and the main unit 115mm or so thanks to the protruding valves.

Finally, mention must be made of the packaging which, sadly, missed out on the 'Globies' issue by a few weeks! Each unit is wrapped in an embroidered bag and contained in a solid "wooden treasure chest with fish key lock" which is absolutely delightful and should shield the contents from even the most enthusiastic abuse.

SOUND QUALITY

After only a relatively short listening period, I recognised the KPE-2AS as one of those deceptive products that you listen to briefly and think "very nice" but the more you listen, the more you realise a comment like this is doing the unit a grave disservice. The key aspect here of the KPE-2AS's performance is its impressive neutrality and the even-handedness with which it approaches music making. The Emille has a sweet and open nature that allows the music to shine through perfectly without artificially boosting or subduing it in any way.

Across the top end the KPE-2AS has the sort of treble that you only find in a well designed product, usually valve aspirated, meaning that it is clean, sweet, open and detailed. Musical action swooped around the room as the action moved from player to player and the Emille not only filled the listening space with ease but appeared to think that the room was becoming a little too crowded at times and seemingly knocked the wall down to put one or two percussionists outside into the rain...

Each instrument was an object

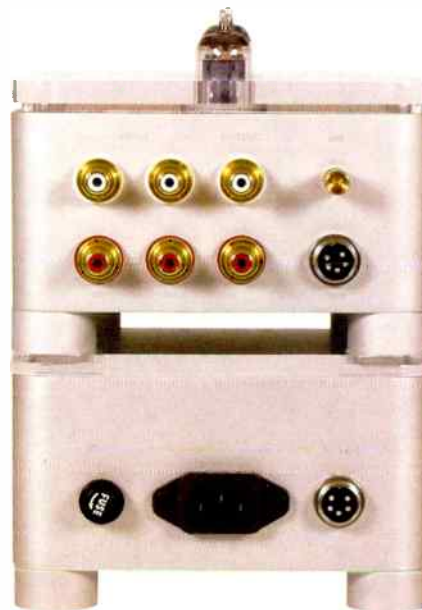
lesson in realism, strings sounding lifelike, drum skins vivid and vocalists hanging in the space between the loudspeakers with almost eerie realism. Spinning Katherine Williams' 'Fell Down Fast' from the 'Little Black Numbers' album with my eyes closed, I could have sworn she was right in front of me, with guitar to the right and cello just behind to the left - I was almost reluctant to open them again and shatter the illusion.

The slight bass lift [see MEASURED PERFORMANCE] adds authority to the low end and really brings bass details out expertly. Playing Dire Straits' 'Telegraph Road' through our Eastern Electric MiniMax was highly enjoyable, but the bass line was a little lost in the background thanks to the unit's low end rolloff, and the action could jumble ever so slightly when Mark Knopfler and the boys turned the wick up a bit. Switching back to the Emille and everything was ordered once more but still highly musical and emotive. Additionally, the bass line was now firmly in place and carrying the track with fine ability.

Switching between MM and MC revealed stunning results for each, the only chief difference I noted being a very slight softening of the upper treble on MM; never sounding dull the KPE-2AS reproduced gentle hi-hats immaculately, but lost a faint hint of impact compared to the MiniMax when it came to a hard cymbal strike.

CONCLUSION

As we have said before many times on these pages, a superlative phono stage is a thing of great joy and frankly the Emille Labs KPE-2AS is one of the finest designs I have heard. Essentially neutral of character, its sound may lack that initial showroom 'wow factor' but the more you listen, the more you realise just how 'right' it sounds. Even more



interestingly, when you go back to an old friend, in our case the MiniMax, you realise that the KPE-2AS acts the gentleman and ever so politely points out where room for improvement can be found that you did not previously realise existed.

Of course, at this price it should be superlative - so stiff is the competition from the likes of Whest Audio and Naim (to mention but two) - but that doesn't detract from its achievement. As for it "free(ing) the masses from worldly troubles and distress", well maybe the KPE-2AS isn't going to solve knife crime in one fell swoop, but it does turn LP records into a truly immersive musical experience.

VERDICT ●●●●●
The sort of phono stage that vinyl was made for, beautifully built and comprehensively musical, ambient and detailed.

EMILLE LABS
KPE-2AS £2,990
Angelsound Audio
+44(0)1923 352479
www.angelsoundaudio.co.uk

- FOR**
- neutrality
 - huge soundstaging
 - low end detail
 - effortless musicality
- AGAINST**
- slight MM treble softness

MEASURED PERFORMANCE

Our frequency response analysis shows a distinct bump at low frequencies, caused by raised gain in this region. It amounts to a +1dB lift around 150Hz and is caused by a small error in the 318uS L.F. time constant. This affected the MM and MC inputs equally, meaning both MM and MC cartridges will sound a little warmer and fuller than usual, seeming to have more body. As modern cartridges have increasingly raised upper midbands and are becoming quite forward, this isn't necessarily a bad thing.

Distortion levels were very low as valves go, as were noise levels. This is a quiet stage and will suit low output MCs. It has plenty of gain for them, measuring a high x1900, so 1mV in will give nearly 2V out. Gain when set to maximum on MM is a low-ish x120. Like many valve phono stages this one can push out a huge output of 43V, allowing vast input overload figures.

Two input impedances are available for MC: 50 Ohms (Low) and 300 Ohms High) and these should cover the vast majority of users' requirements.

The Emille Labs KPE-2AS measures well in all areas. It isn't as accurate as most due to a small amount of low frequency lift, but this may well suit modern cartridges. NK

Frequency response (-1dB)	
MM	10Hz - 90kHz
MC	18Hz - 100kHz
MM / MC Separation	67dB
Noise (e.i.n.)	1uV/0.07uV
Distortion	0.0005/0.001%
Gain	x120/x1900
Input Overload	354mV/23mV
Output Overload	43V

FREQUENCY RESPONSE - MC

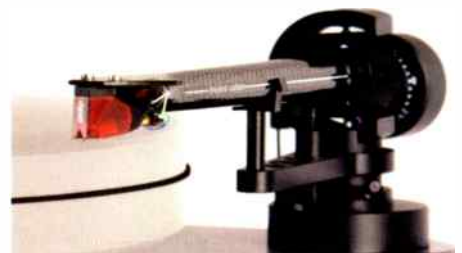


When it comes to Vinyl,
you need the best

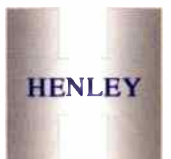


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Right Angle

Modern technology comes to the aid of the LP with Dr. Feickert Analogue's Adjust+, a way of adjusting the vertical alignment of your cartridge for better sound. Noel Keywood whisks a sample out of Germany...

Here's a pickup cartridge alignment gadget for vinylistas that's both bold and extraordinary. It's bold because it uses powerful computer processing to reveal some of the less seemly aspects of pickup cartridge behaviour, things you may not want to know. Extraordinary because no one has ever offered anything like it before, mainly because some arcane problems must be overcome.

We stumbled upon the system at this year's Munich High-End show and I thought the scheme bordered on nuts. But since cartridge measurement is something of a speciality for me I was drawn to it like a moth to a flame and Dr. Feickert was gently relieved of a sample whilst we bombarded him with questions. If you love LP and want to fine tune your turntable to a degree previously impossible, this gadget, priced at Euros249 directly from Adjust+, is likely for you.

At heart, the Adjust+ alignment system enables owners to perfectly set the vertical alignment of their pickup cartridge. The easiest way to understand this is by looking at the diagram. When you install a cartridge the usual advice is to ensure it is upright, perpendicular to the record's surface. If you own an SME arm the headshell can be rotated one way or the other to achieve this. If you own a Rega arm no such adjustment is possible, so Adjust+ can only be used to see whether the alignment set is ideal.

The basic proposition made by Dr. Feickert is that setting your cartridge to be perfectly vertical may not be ideal. The Adjust+ measurement method is able to show the ideal setting, using a novel measurement scheme. I am deliberately not explaining this in any technical detail because it can become complicated very quickly, with lots of arcane talk about

modulation axes and such like, all of which will mean little to the average sane human being. It was an important and much-discussed issue in the hi-fi firmament a long time ago when LP reigned supreme - the late 1970s to be precise. It remains important today, perhaps more so as cartridges have been refined and are considerably more expensive, with more being expected of them. At heart though, the LP and pickup cartridge remain quite a simple electromechanical system within which there's room for considerable variability that demands accurate adjustment if the system is to be optimised. Unfortunately, to do it properly requires specialised test equipment and that's what you get, in effect, with Adjust+.

What I walked away with at the Munich Show was a test LP and software CD, as well as a 5 metre long stereo signal lead terminated in a 3.5mm stereo jack at one end and phono plugs at the other, plus a small spirit level. It was the test LP that surprised and intrigued me when I saw it. Accurate test LPs are difficult to produce and very rare beasts. Most were dreadfully inaccurate and completely misleading. However, Shure, CBS Labs, JVC and the German DIN (originally, Deutsche Industrie-Normen) Standards Organisation produced usable discs and we assessed the Adjust+ disc against them. The system is only as accurate as this LP, and if it is wrong then you will misalign your system, not align it. The CD carries software for PC (Mac using a virtual machine or Bootcamp), and the signal lead is for connection of the hi-fi to the computer. The basic methodology is to play test signals on the LP and analyse them on the computer, adjusting the pickup cartridge for best results.

The LP and the software between them possess a suite of tests, not just alignment of cartridge



verticality, or Horizontal Tracking Angle (HTA, as Adjust+ terms it). However, HTA is the main test and the one that stands out as novel against what has gone before. I will look at the entire system in this review, its accuracy and its potential application. There is a Pro version that adds additional measurement functionality.

SET UP

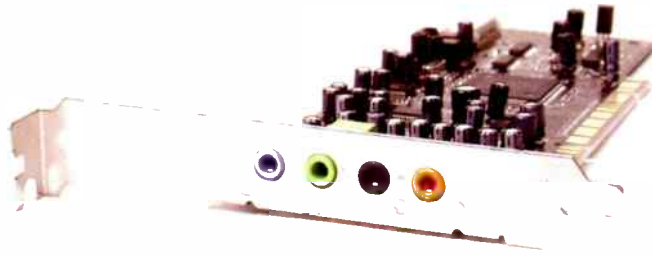
To run Adjust+ software you need a PC running Windows XP or Vista. It must have a sound card and Adjust+

ADJUST+ Test Record

- Fig. A
1. Sweep 3150 Hz @ 20 dB (speed wobbles & flutter)
 2. 1 kHz @ 0 dB (L/R) - HTA - cross talk
 3. Stereo left, right, mono left, right stereo
 4. a) Pink noise @ 20 dB stereo left, right
b) 1 kHz @ 20 dB stereo left, right
c) Sweep 1-40 Hz stereo (resonance)
d) Sweep 1-40 Hz vertical (resonance)
- Seite A
1. Simulation 3150 Hz @ 20 dB (Drehzahl-Gleichheit)
 2. 1 kHz @ 0 dB (L/R) - HTA - Lautsprecheranpassung
 3. Sweep 20 Hz, 20 kHz @ 20 dB, Rechteck
 4. a) Pink Noise @ 20 dB Stereo, Links, Rechts
b) 1 kHz @ 20 dB Stereo, Links, Rechts
c) Sweep 1-40 Hz Stereo (Resonanz)
d) Sweep 1-40 Hz vertikal (Resonanz)
- Seite B
1. Sweep 20 Hz, 20 kHz @ 20 dB, Stereo (Frequenzgang)
 2. Sweep 20 Hz, 20 kHz @ 20 dB, Rechteck
 3. Sweep 20 Hz, 20 kHz @ 20 dB, Stereo, 0 dB ver.
 4. Simulation 3150 Hz @ 20 dB, Stereo (Drehzahl-Gleichheit)
 5. Stereo 1 kHz, vertikal
 6. Bursts 1.5 kHz @ 0 dB, Links, Rechts, Stereo
 7. Bursts 1 kHz @ 0 dB, Links, Rechts, Stereo
 8. Bursts 10 kHz @ 20 dB, Links, Rechts, Stereo
 9. Simulation 3150 Hz @ 20 dB, 1.1, Stereo
 10. Simulation 30 000 Hz @ 0 dB, vertikal
 11. Simulation 30 000 Hz @ 0 dB, vertikal
 12. Leinwandtest Lautsprecher



The Adjust+ system comprises a special test LP cut in Germany, software CD, spirit level and long signal cable.



The Creative Soundblaster Audigy card we used. It has a 24/96 input ADC, works with XP and Vista and suited Adjust+.

I recommend it runs "HD Audio with 24bit/96kHz sample rate". See their website www.adjustplus.de, where you can also download a user manual to inspect System Requirements in detail. Beware that traditionally it has been common for sound cards to be rated by digital-to-analogue output conversion and the input analogue-to-digital convertor is often of lower resolution than the advertised spec. Adjust say a 24/96 input ADC is needed for best results. This will give very wide dynamic range and a bandwidth comfortably greater than the 20kHz limit of the analogue test LP. Specifically for this review I bought a budget Creative Sound Blaster Audigy SE, costing

very low volume, being aware that grossly overloading the computer card by accident from this output may blow its input stages. Also, valve phono stages may have a high output impedance, in which case a short connecting lead of 200pF max. should be used to the computer if frequency response is to be unaffected. The Audigy overloaded at 2.2V in and the Trichord Diablo overloaded it on the test bench until set to lowest gain. The programme needs just 5MB of disc space and occupies 40MB of memory, so it is small.

I suffered initial registration difficulties, but these were overcome and Adjust+ are changing the system. I downloaded Version 1.02 to update the CD. Once validated, Adjust+ does not need an internet connection to run.

MEASUREMENT

To quantify Horizontal Tracking Angle the programme measures channel crosstalk and phase, as well as amplitude, and plots the values on a graph. To begin this process Adjust suggest the headshell should first be tilted +2.5degrees (i.e. anti-clockwise) away from vertical, measuring angle with a spirit level supplied, placed on the headshell. A set of measurements are made at this tilt, then it is progressively rotated through vertical, half a degree at a time, all the way to +2.5 degrees, a measurement being made at each half degree point. This gives eleven sets of measurements, sufficient for the programme to draw a neat set of graphs. One shows how crosstalk values change, another how phase changes. This should be sufficient to show the optimum headshell angle, where phase difference is close to zero and crosstalk balanced. I was impressed by the slick interaction of computer with LP, but manually it's quite a procedure, one dedicated vinylistas will love but others may find daunting, especially when it comes to interpreting the results. The results can be saved, converted to PDF, or printed.

The spirit level supplied has lines

on it, but no values and setting to half a degree resolution had me peering at it intently through a magnifying glass (an improved alternative is now available for Euro25). The handbook says the second line represents 2 degrees, so each line is one degree. Getting angle set accurately was difficult but it became easier with practice. All the same, on an SME312 and M2-10 tight fitting headshell collars made setting 0.5 degrees difficult and time consuming. I defaulted to 1 degree for most measurements. Limits of 3 degrees or more are needed within Adjust+ as 2.5 degrees is too little.

I ran five cartridges through the HTA test, a Nagaoka MP-500, Goldring 1012GX and 1042, a Denon DL-103 and an Ortofon 2M Black. The picture of a cartridge popped up to prompt me to enter the headshell angle, as set with the spirit level, and the light/dark blue boxes down the right of the screen show this value and the results obtained for it. You can see both phase and crosstalk, the latter being crosstalk from Left to Right channel and Right to Left channel, made by putting a signal in one channel and measuring the other. You don't have to peruse and understand all this, however, because by selecting a graphing function you can get two graphs that tell you at what angle the headshell should be set for best sound quality.

Well, that's the general idea but after two days of test work it became apparent that results were being complicated by cartridge characteristics and that the Ortofon was a precision device best used as a demonstrator of what Adjust+ can do. Look at the screen results

The spirit level is placed on the headshell to enable precise angular adjustment.

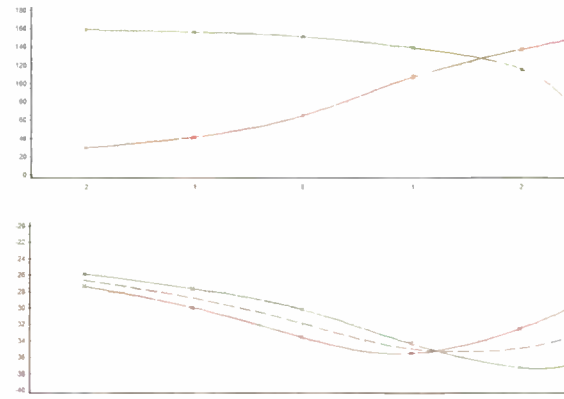
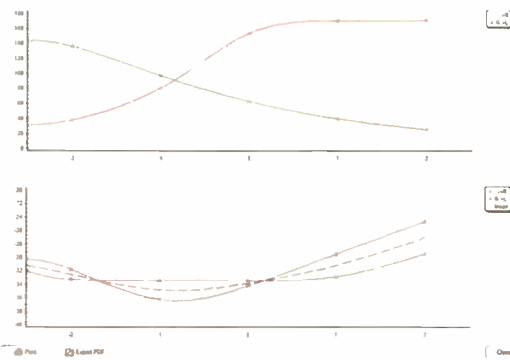
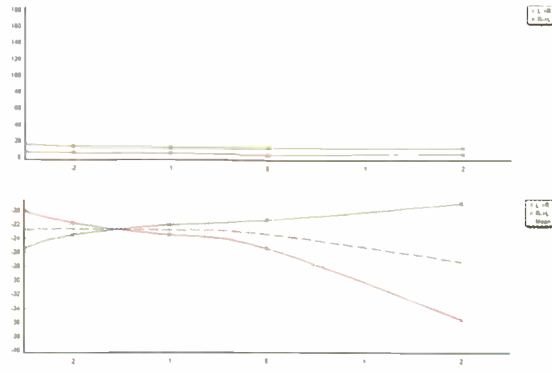
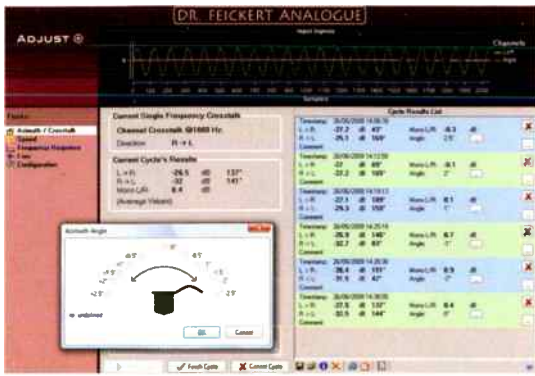


The spirit level has markings at 1 degree intervals - this item plays a crucial role...

£40 on London's Tottenham Court Road. It was fitted to a test mule PC based on an Asus P5W Deluxe motherboard running Aero-free Vista Home Basic, on an Intel 6550 processor accompanied by 2GB of memory.

The Audigy was problem-free with Vista, as claimed, and Adjust+ worked flawlessly with both, using the Blue 3.5mm jack line input and the supplied signal lead. Thin leads like the one supplied are capacitive though, this one measuring out at 800pF. As this equals 10kOhm reactance at 20kHz the cable will appreciably roll off treble if fed by a phono stage of output impedance higher than 2kOhm or so, something to be aware of when measuring frequency response. This factor does not affect HTA measurement though.

The signal cable's phono plugs can be plugged into Record Out sockets of an amplifier fitted with a phono stage, into Preamp Out sockets if they exist, or directly into the output of an external phono stage. It would be possible to use loudspeaker outputs, but only with



At top is the results screen showing crosstalk and phase values, as well as headshell angle data entry. Below are results for Ortofon 2M Black with optimised VTA.

The Goldring 1012GX produced no phase information (top), but the crosstalk graph (below) identifies ideal headshell angle as -1.5 degrees. Below are phase and crosstalk for a Denon DL-103, identifying +1.5 degrees as ideal.

and graphs for the 2M Black above and you can see the red and green phase plots intersect at -0.8 degrees (i.e. 0.8 degrees away from vertical, clockwise). The crosstalk graphs correlate. Shure's TTR-109 crosstalk test disc confirmed this assessment as correct, so the Adjust+ test LP is accurately cut. Note also that the phase graphs intersect at 90 degrees, as they should if Vertical Tracking Angle (VTA) is correct, Adjust+ say. After setting headshell angle to -0.8 degrees I spent time adjusting the SME's arm pillar height to get this figure to 90 degrees. Simple visual alignment gave me 140 degrees, so Adjust fine tunes VTA with enormous resolution. Note, however, that the Ortofon 2M Black is rare amongst MMs for possessing correct basic VTA of 22 degrees. As the 2M Black is our favourite MM by quite a large margin it was optimised and used for listening tests.

Results from Goldring and Nagaoka cartridges lacked clear phase information, so they would have to be set using crosstalk graphs only. Adjust+ acknowledged this problem but the reason isn't clear at present, we were told.

LISTENING TESTS

Getting the 2M Black perfectly aligned for HTA and VTA had an

"I doubt I've ever heard a top quality cartridge so accurately aligned, and the result moved LP up yet another notch..."

extraordinary impact on sound quality. It brought images into a very hard focus, and gave them considerably more body and presence on the sound stage. Singing 'Did I Hurt You?', from the album Yola, Eleanor McEvoy's voice moved toward me, coming very close. The 2M's stylus seemed to be pulling out much more information and assembling it into a tightly ordered, coherent image that teemed with life and detail. Guitar strings also become focused and taut, taking on an almost lacerative quality, they were so close and vivid in presentation. It was very dramatic to hear and made me gasp, quite frankly.

I doubt that I've ever heard a top quality cartridge so accurately aligned and the result moved LP up yet another notch in what it can do. I went through a wide selection of LPs, because cutting angles and modulation axes vary, but the improvements held to a greater or lesser extent. The sound stage became focused and tidied, images took on firmness and body, and drums and percussion became sharper edged in the time domain

and harder hitting. A wealth of fine detail was revealed too.

In all, I spent over a week setting up and assessing Adjust+. I started out sceptical but ended up convinced by it. The software is very well written, making sophisticated and accurate measurements; the test LP is a masterpiece of accurate cutting that improves upon most from the past, the measurement methodology is unique and eye opening, and the final result is a stunning improvement in sound quality. This is a dream come true for vinylistas, but be prepared for a lot of work to get the best from it! At present also, we found Goldring 1012GX and 1042 cartridges didn't respond ideally, nor did a Nagaoka MP-500. Adjust+ suggested results were more consistent with moving coil cartridges, so it looks as if Adjust+ is best for more serious setups.

NEXT MONTH:
Measuring frequency response, turntable speed and arm LF resonance.

VERDICT ●●●●●
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 - many measurements
- AGAINST**
- complex
 - time consuming
 - some cartridges unsuitable

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KEF iQ3 LOUDSPEAKERS

Letter of the Month

WELL ARMED 1

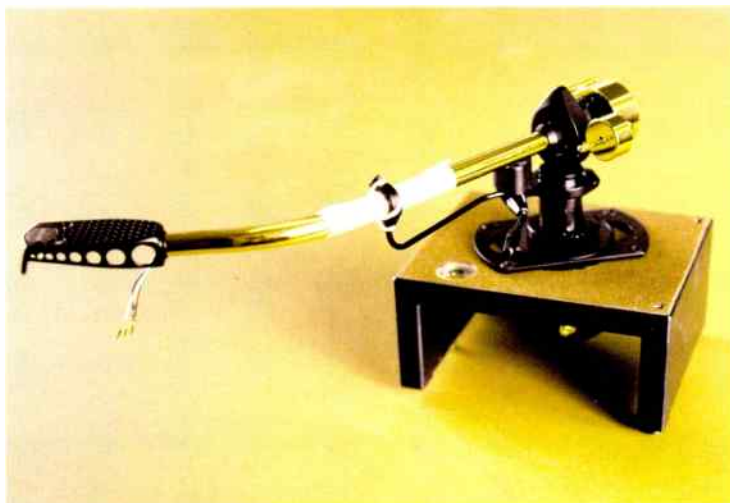
Well done for not just concentrating on high end equipment. As much as lesser mortals like me enjoy reading about £60k systems, even if I could afford one my wife would find herself at the very least on a GBH charge.

I have had a long interest in all things vinyl but since purchasing an elderly but perfectly serviceable Linn LP12 sporting an SME 3009 tonearm I've been disappointed. The ancillaries are reasonable with a Goldring 1042 cartridge, Lehmann Black Box phono amp, Cyrus Pre and Power amps all linked up with reasonable cabling.

Even after a service and rewire of the tonearm, stripping the deck, re-oiling the bearing and getting it bouncing beautifully, and adding an Origin Live motor and speed controller I still found myself unwittingly playing CDs in preference to vinyl. It was difficult to put my finger on what the problem was but the sound was constrained with little real bass along with a limited soundstage and a generally harsh sound making it tiring to listen to - something I knew vinyl shouldn't be.

Not wanting to relegate my fairly extensive vinyl collection to a dusty corner or, worse still, the attic, I decided drastic measures had to be taken. Looking at the system as a whole the weak link had to be the tonearm and regardless of the truly beautiful engineering of the SME, I decided it had to go.

The obvious replacement would have been the Michell Tecnoarm or Rega based Origin Live, due to their cost and regular rave reviews but, looking for something different, the Roksan Nima caught my eye. It appeared to be a simple and well engineered design, not unattractive and considerably cheaper than the Rega based arms, so the Nima it was. After a simple fitting and setting up procedure I nervously cued up the cartridge hoping



Is the SME3009 seen above a Golden Oldie? Jason Walker replaced it with a Roksan Nima, below, and thinks not.



that my vinyl blues would be a thing of the past. Well, I really needn't have worried. The contrast between the old and new arms was as extreme as night and day. The sound was controlled, the timing tight, the bass punchy and there was no sign of harshness. All in all my system was singing and the CDs and television took a definite back seat.

What have I learnt about this little episode? Well, there is normally an answer to your hi-fi woes and it needn't

cost the earth. Added to this, as great as the SME was in its day, either due to degrading connections or design it isn't up there with even modestly priced modern arms. Will the Nima be as sought after in thirty years time as the SME is today? I doubt it, but for now it'll do very nicely thank you.

Jason Walker

As lovely as it was - and much admired in its time - SME's 3009

was designed for low mass, coupled with adequate structural strength - prime concerns at the time when people laughed at the notion that arms or turntables "had a sound". In vibrational terms it was less than successful and your findings echo ours. Not all Golden Oldies are really that golden. All the same, it was quite a good match for the Shure V15 cartridge, which also dominated the popularity charts at the time - and Kevin Wood finds it also suits the later V15 VxMR - see the following letter.

We find arms have quite distinctive sounds, related to their vibrational behaviour, which we measure with a miniature Bruel & Kjaer accelerometer. Adam is a great fan of the Nima, as he is of the SME M2-10 we use. I favour the rigid grip on dynamics and the wide low frequency sound stage of the Rega RB300 and its variants. So there's even leeway for subjective preferences. Vinyl can sound flat and lifeless if a poor arm is used, or a knackered cartridge! Happily, a Rega RB300 (£190) or Roksan Nima (£425) do not cost the earth and will do justice to even expensive cartridges, giving a great sound from vinyl. **NK**

It always amazes me the prices that the old 3009 series arms fetch secondhand. They are nice - as is any SME - but are way off the pace sonically, both compared to affordable modern arms (Origin Live Silver, Michell Tecnoarm) and also to SME's own modern arms. I think a lot of the 3009's appeal is retro appeal; it's nice to have one just for the sake of having it! I think you made a good choice with the Nima too. As Naim's ARO shows, the LP12 really sings with unipivots, and the Nima is an excellent entry level design - a poor man's 'ARO' (and I don't mean that in a negative way, quite the reverse). Make sure you keep your LP12 perfectly balanced and on a light, unresonant table - I'm finding Quadraspire work very well - and keep the belt and rim of the inner platter spotlessly clean (Isopropyl alcohol diluted in distilled water is ideal for this) and you'll get even better results. **DP**

WELL ARMED 2

Inspired by your glowing praise for the SL-1200 I bought one second-hand, fitted it with an Isoplatmat and sited it on Foculpods. I successively installed an old SME 3009 III, a Rega 250 with the Origin Live structural modification and an Origin Live Silver. The cartridges were a Shure V15VxMR (with a ME97 stylus)

and a Goldring 1042.

With the Rega and the Silver the bass was impressively tight and propulsive. Overall the sound was detailed and exciting, but a little relentless to my taste. With the SME the midband was gorgeous, but the sound was sadly lacking in the treble and the bass. So my question is: would a SME M2-9 be the solution? Does it give a stronger rendition of the frequency extremes, without sacrificing the silky midband of its older sibling? Is it available on the second hand market? Until now I've never come across one.

Jan Grinaert

Yes and no. The SME M2-9, like the M2-10 we use a great deal here at *Hi-Fi World*, is a lovely thing in many ways and a big sonic improvement over an older SME. It has a delightful midrange and a beautifully sweet and detailed top end that makes most other arms at the price sound hard or grainy. Where it does tend to fall down however is at the low end, where it lacks a certain amount of impact and can be rather soft. It is actually best partnered by a deck like the SL1200, which will add back some of the missing impact, but it still won't have the low end grunt of the Rega derivatives. They do occasionally crop up second-hand but not often and, thanks to SME's legendary build quality, they hold their value well, so don't expect a bargain if you do find one...

Finally, I was going to heartily endorse the Roksan Nima, but it would appear that reader Jason Walker ("WELL ARMED 1") got there before me! I keep looking at my own, standard, SL1210 and feeling the day approaching when I can no longer stop myself from fiddling with it. When that day comes, the first thing that will be going onto it is a Nima. As to Jason's question regarding the collectability of the Nima in thirty years' time, if there's any justice it certainly ought to be. **AS**

Hmmm - interesting. Just about the only thing the old SME 3009 had going for it was a nice fluid midband (I find both its bass and treble light and loose), and of course this is the classic 'fault line' of the Rega RB300-based arms which are far more explicit, and some say to the point of sounding mechanical. Having done a A-B comparison between the old SME 3009S2 and a very early M2-9 several years back - on a Michell GyroDec admittedly, and not the Technics - I found the latter was a

smoother, more open and slightly tighter version of the original 3009. So the short answer to the question is that the M2-9 would take you a lot closer to where you want to be going - however, as Adam says, the Nima will too and it's cheaper! **DP**

TWO TIMING

About two years ago I took the decision to sell my old turntable set up in favour of a Garrard 401. The old unit was a Thorens 160 with a Mission 774 and a Music Maker 3. Having set up the Garrard 401 with an SME 3009 I found that the Music Maker 3 suddenly didn't sound anything like as good as it had previously and elected to buy a Shure V15 VxMR which sounded superb. However I was loathed to get rid of my Music Maker 3 and so ended up buying another turntable unit and having



Shure's V15VxMR - a better match for an SME 3009 than a Music Maker III

tracked down a Mission 774 arm on eBay went about having a solid Sapele plinth made into which I fitted the Garrard but aligning the arm from the back of the deck rather than the side, it seemed to provide a better alignment when using the protractor. The back of the plinth had phono sockets installed which gives me greater flexibility on interconnects and back came the superb sound with the Music Maker.

The problem I have now is that I want to use both decks, since some things sound better on one or the other, but I only have one phono input into my Musical Fidelity kW 500. Is there a switching unit available on the market that will enable me to have both decks connected so that I haven't got to disconnect one or the other each time I want to change over, which is a real fag? Or is there a circuit diagram that I could use to make something up?

And one point of interest - I have now swapped all my mains leads for solid silver and have discovered that it virtually eliminates any differences between speaker cables, although I'm not sure why, and we are comparing Transparent, Audioquest and Chord all of which, until now, have had their own

idiosyncrasies. Hope you can assist on the technical question.

Kevin Wood

A solution is to buy an external phono stage and plug it into one of the unequalised inputs, like AUX. You then just switch input from PHONO to AUX. **NK**

Yes, because switching the low level output from the cartridge is sonically very risky - so best go for a good basic phonostage like Trichord's Dino, or put up with the cable swapping!

DP

THE WRONG PRICE!

My current system consists of a Thorens TD160 Super with a rewired and Audio Origami'd Rega RB300 and SRM tech acrylic mat and clamp. This incorporates a Red Gum plinth and has substantial structural improvements to the subchassis. This is fed into an Allan Wright valve preamp/phono stage which is followed by a 15 Watt pure Class A kit amp with dual mono regulated power supply. These power a pair of Coral full range speakers in spherical concrete enclosures. My digital source is a Yamaha CDX-1110, a classic Japanese battleship player weighing in at 14 kilos and bought at the local op shop for \$30 Aus (about a tenner in GBP!).

Your articles on hot rodded Technics SL1200 turntables have been interesting, particularly as I have a Technics SP10MkII awaiting surgery. Any chance of an article on this classic deck?

One thing that has always bugged me about all hi-fi publications is the music used to evaluate components. Invariably it is a selection of Jurassic classical/jazz with Dire Straits or Pink Floyd thrown in to show how 'modern' the reviewer is. Can you imagine a teenager checking out the high end gear and thinking, "Nice! Maybe this hi-fi stuff is okay?" They would then read on about how great it made music recorded fifty years before they were born sound!

In this area Channa Vithana is really kicking ass. The guy evaluates components listening to Slayer and can speak with authority about Dave Lombardo's drumming! This is what our hobby needs - a link to modern day software. Still, well done on a top magazine that even my audio veteran father enjoys, despite describing David Price as "merely a boy who's played with a lot of audio toys!"

Ben North

Ha ha, thanks Ben - and as I'm now the wrong side of forty, I'll take your dad's description of me as a compliment! Reviewer's music - what a great issue you raise. Nobody's summed it up better than that great

late eighties house classic from The Reynolds Girls ("not 'arf, great mate", etc.)... "No heavy metal/rock and roll/ we don't want them back/I'd rather jack - than Fleetwood Mac". How's that for a hi-fi reviewer knowing music made after 'Wish You Were Here'? Impressed, are you not? **DP**

Fleetwood Mac? I'm sure I've heard of them. In fact, I think I might even have one of their albums tucked in amongst my James Last, Ray Conniff and Val Doonican... **AS**

I put on Wolfmother the other day Ben, but it was too geriatric, so I went back to The Saints. **NK**

TURNING TO TECHNICS

Hi guys, I must say I've been reading 'Hi-Fi World' for many years now, great mag, well done to all of you. I have the recent March 2008 edition magazine. Can I ask you about the review on

Well, Peter, I can confirm that the Technics is more than capable as a hi-fi turntable, even in standard form. I have owned mine for around eight years now and was always telling anyone who mentioned it that it was indeed a fine-sounding unit, in the same way that I kept telling everyone around eighteen years ago that the Garrard 301 was brilliant. If only people would listen when I start ranting, instead of sitting there with eyes glazed over... But I digress!

If you're just looking for a basic, easy to use, easy to set up and fuss-free deck to listen to some vinyl, then it's a great starting point. If it comes fitted with a rubber mat, ditch it and fit a Funk Firm Achromat, remove the rubber washer between headshell and arm and fit something of the calibre of an Ortofon 2M Blue or Goldring 1042 to it. Obviously you'll be needing a phono stage and



Technics SL1200 - a good Direct Drive turntable when a decent arm is fitted, like the Rega RB250 seen here.

the Technics SL1200 MkII turntable please? I have not owned a turntable in well over twenty years (I'm forty seven myself), I now have a passion to buy a turntable soon, and after reading his review on the Technics turntable it has made me want to buy one again!

Is the Technics SL1210 MkII a good enough turntable front source to use as a serious front end? It will not be used for mixing or night club use, etc., just solely home hi-fi. My hi-fi system is as follows; Audio Synthesis DAX-Decade (Blackgate upgrade) preamp, Magneplanar 0.6 speakers, PrimaLuna Prologue 7 valve mono-blocks (70 Watts), Magnum Dynalab 106T valve tuner, Teac VRDS-105E. Best wishes and keep up the good work!

Peter McCullough.

so, to get you going, you can do much worse than a Cambridge Audio Azur 640P - the results may surprise you!

However, your system is pretty high-end, and the handy thing about the SL1200 is that you can start fettling it in order to bring it upmarket a bit, as David's article back in our September 2007 issue showed. His tweaked SL1200 is a mightily impressive sounding deck thanks to the Audio Origami'd Rega arm and Lyra cartridge and some modifications along these lines (although personally I'd start with a Roksan Nima arm instead) allied to an Anatek MCI phono stage will see off some pretty hot competition - it all depends on how much you want to spend. **AS**



TASCAM CD-01UPro CD player, in Rack Mount form for studios, and with the balanced digital XLR outputs.

SOURCE SEARCH

I am an avid reader of your magazine but this is the first time I am actually mailing you guys for some professional advice! My current set up includes a Rega Planar 25 turntable, Lehmann Audio Black Cube phono stage, Benchmark Audio DAC1, Musical Fidelity A3.2cr power amp, Harman Kardon A/V receiver used as preamp, Harman Kardon DVD player used as a disc spinner, Dali Suite 2.5 floor standing speakers.

I am in the market to upgrade to a decent (but not too expensive) CD player to be used as a disc spinner and a valve amplifier. My choices for the

civilised delivery.

The Shanling MC30 and Musical Fidelity A3.2cr would work well together if you want to mix valves with solid-state, which can work quite well. Also, the Vincent SV-236 hybrid amplifier, available in Australia for AU\$3000 (£1,500) is a real cracker that we loved and can thoroughly recommend. **NK**

I think you should start with the best possible CD player - which counts the Shanling MC30 out, an excellent package though it is. When system building, no amount of clever valve/solid-state hybrids down the chain



Cyrus CD8 SE CD player - "as good as it gets for around £1,000 right now." says Editor David Price.

CD player are the TASCAM CD-01UPro with the balanced digital XLR outputs - this is a preferred option as it retails for \$895AU, Cyrus CD8X and the Rega Apollo.

For the valve amplifier, I was thinking of the Cayinn A88T, which retails for around \$2,000AU (and some reviews indicate that this unit shines when used as a power amp). My listening room is square-ish, with window furnishings, with solid timber floors and is around 20' X 22'. I listen to mainly jazz and western classical (both vocal and instrumental) and also Indian classical (both vocal and instrumental) on CD and vinyl.

I am also contemplating the Shanling MC30 as a CD player and using its pre outs to feed the power in on the M.F.A3.2cr. Any thoughts?

Amod Pradhan.

The Tascam we don't know, because it is a rack mounting item aimed at studios, possessing pitch change and such like. It may look nice, but it is quite different from the considerably more expensive Cyrus and Rega players, both of which possess a very

can make up for an inferior source. With this in mind, I would strongly urge you to consider the new Cyrus CD 8SE which is about as good as it gets for around £1,000 right now. It has brilliant timing, masses of detail and it's all put together so musically. An observation, rather than a criticism of it, is that it isn't tonally 'lush' - if you want this then the AstinTrew AT3500 is the one, especially with NOS Mullards in the output stage, or suchlike. **DP**

SONY SAVED!

Thank you for the helpful answer you gave to my previous turntable question (Hi-Fi World March 2008). eBay and the opportunities it affords being what they are, I have just had a Sony TTS3000, PUA286 and ADC QLM30mkIII combination delivered by an enthusiastic young (twenty five year old) collector. The arm is in obvious need of a thorough service, but sounds rather good with what I think no-one would call a high-end cartridge.

Now for the question - how can I know whether it would take a fixed geometry headshell and cartridge like an Ortofon SPU? And what other sort of cartridge would suit this arm once Johnnie has had a look at it? My cartridge budget is about £200-£500.

Adam was right - vinyl can be addictive - who knows where I will put the next twenty seven in this flat? Wait till the wife gets home from her mountain holiday and sees it lurking on the sideboard!!

Nigel Briggs

P.S. - Any suggestions for a twin turntable phono stage below £1,000 that would not be shamed by my Linto and/or Stageline N/Hi-Cap?

Now, that's a rather nice piece of machinery you've stumbled on there, Nigel - I approve wholeheartedly! As you say, the loving attentions of Audio Origami on the arm are a wise first step and then you can look for a cartridge. Regarding the SPU, there will be no adjustment on the arm for aligning this beast as standard. If you really, really want to go this route, then your best bet is to drill the turntable plinth out to accept an SME cutout (with the slot centred on the current mounting position) and then buy a Slatdeck Universal arm mount to fit your PUA286 back on - this will then allow you alignment room to set up the SPU correctly.

However, if I were you, I'd buy the Sony arm a Sumiko HS-12 headshell from Stone Audio and fit



Spacious sound with the kick of a Kangaroo - the hybrid Vincent SV-236 amplifier, perfect in Australia.



Sony TTS3000 Direct Drive turntable with PUA286 arm. Is it the start of a collection to rival Adam's for reader Nigel Briggs?!

it with an Ortofon 2M Black or MC Salsa. As far as a twin input phono stage under £1,000 goes, some do indeed have two sets of input sockets, but one is for MM and one for MC. The only two that have two independently configurable inputs that spring to mind are the Lehmann Black Cube Twin at £670 and the Audiolab 8000PPA at £550. Either that or you could buy a second single-input unit and connect it to a spare line level input on your amp, in which case, go for the £650 Whest Two.

As to how to deal with partners' reactions to new purchases, stand in front of the mirror, affect your best innocent face and repeat until

it comes naturally: "New? That thing, dear? Nooo, I've had it for ages"! **AS**

POWER HOUSE

Following advice received in these pages I have made a few serious changes to my system over the past few years that have, without doubt, improved my system quite substantially. I now have a couple of problems as a result of my latest upgrade. My current system comprises a Teac T1 transport (with Trichord Clock 4 and power supply upgrades), Musical Fidelity Tri-Vista 21 DAC, NAD C160 preamp, Rotel RB1092 power amp and Linn Kaber speakers. Cables are Linn K400 speaker (behind cavity wall so not easy to change!), QED silver digital cable and IXOS Ixotica

interconnects (not sure which Ixotica, it's purple and was cheap at Richer Sounds about eight years ago). The rack is a five-tier Sound Organisation type. My room is about 11' x 20' and the system is set up to fire across rather than down. My musical tastes tend towards middle of the road rock, some Zeppelin, Floyd and the dreaded Celine Dion and Michael Bolton when the wife's about. I do like to turn the wick up when listening.

The Rotel power amplifier has replaced a couple of bridged NAD C270 powers that I used to use to get the Kabers to perform anything like I wanted them to, I demo'd it with my speakers but not with my NAD pre or cables, etc. During the demo I found that it easily drove the Kabers and seemed more refined and in control than the NADs did and a good opportunity (at £750) to get in some better amplification than the NADs. Unfortunately due to ongoing home improvements I've not yet been able to set up my system since having the Rotel but am now only a month or so from my long awaited relaunch when I can connect everything up, enjoy and annoy the wife again!

Now, the queries I have are the following. Firstly, is the NAD preamp now a serious weak link or is it good enough? If not, then what should I be looking for?

Secondly, during the demo of the Rotel I also heard it played loudly through some different speakers and was seriously concerned about what limitations the Kabers may be placing on my system when pushed to higher volumes (always my only real criticism of them), so should I look for something better, newer and larger that let the Rotel do it's stuff? I have read good things about the Monitor Audio ranges



Audiolab 8000PPA - a useful phono stage with two inputs

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



HOUSE OF LINN

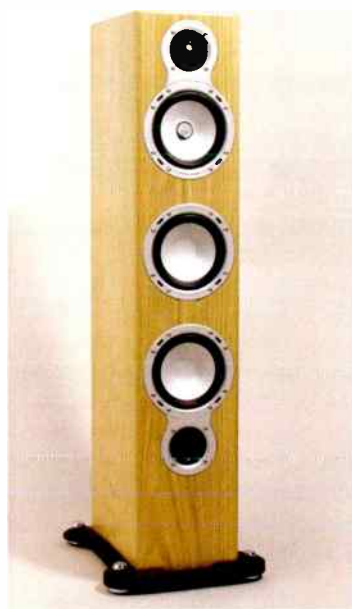
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maybe GRIGS20 or 30 (or maybe even the cheaper RS8?) and always get tempted when I read about the Yamaha NS1000Ms. What is there that could retain the detail and clarity of the Kabers but would take a bit more punishment with the volume higher?

With regards to preamplifier or speaker upgrades, I would much prefer to go down the second-hand route and look for better value for money rather than new. Lastly, where the hell should I be with cables? It's always been a grey area for me, and I must be honest and say that I've never been terribly impressed with cable upgrades or changes so would appreciate some guidance here.

Dave Mayer



Loud Rockers - Monitor Audio GS60 loudspeakers.

If you've never heard any major changes from cables then don't worry - I must confess to being rather wary about the whole cable situation myself. I recently listened to a manufacturer's £150 interconnects, which were a fine improvement over the £70 types I usually use - all well and good. However, I then went to a set of their £900 top end types and there was, again, an improvement, but more subtle this time. Ultimately I felt that the £150 ones were worth the money but that, if I happened to have another £750 sitting in my bank account, I'd get a damn sight bigger improvement from a cartridge upgrade. As we always say, trust your ears - if you don't think the change in sound is worth the money, then buy some more music/beer instead! And the effect of beer consumption on the sound of your system is a whole different kettle of fish...

In terms of gutsy loud loudspeakers, Monitor Audio are

usually a good bet here and the GS20s are fine units if you like your rock music loud. Why not go one further up the range and opt for the runners-up for the Hi-Fi World 'Loudspeaker of the Year' award in 2006 - the GS60s? These are fabulously dynamic beasts and love nothing more than a good blast of rock.

Do also consider the RRR FS100s, though, as we found these went ridiculously loud with little power, thanks to their 93dB sensitivity. On the end of your 500W Rotel amp, I imagine it'll be your ears giving up long before anything else.

Regarding the NAD preamp, it's a pretty good item but can be bettered. It's difficult to know what to recommend without an idea of your budget, however. **AS**

I think the basic Creek OBH-22 passive is a good place to start with preamplifiers. We've found it to be something of a giant-killer at £299, and as good as many £1,000 products in many ways. As a preamp your NAD C160 isn't half bad, so switching to the Creek will be less of an improvement than with many integrateds, but you'll still find real improvements in detail, grip and general transparency. This is a good starting point, after which you can begin to consider altogether more esoteric stuff - come back to us for guidance here.

Even with the Creek preamp, you'll have a really decent amplification combo with the Rotel. You should make the best of its prodigious power and partner it with speakers that like a bit of a tickle, and as Adam says, the Monitor Audio GS60s would be ideal. You'll find yourself with a really powerful, grippy and dynamic system that's smooth and svelte too, making it ideal for the sort of sophisticated rock you like (as opposed to Slayer, so beloved of Channa Vithana and Ben North!).

As for cables, you're going to have to start thinking about them to tune your system. It's less a case of good and bad here, and more about the changes that individual designs make to specific systems. However, given that most systems are a tad hard and bright (as are many modern recordings), I find Black Rhodium Opera DCT (£269/m) very amenable to smoothing things out without sacrificing any musicality. Further up the price range, Clearer Audio Silverline Optimus (£455/m) adds tremendous clarity and space, but is about as far as you should go with your system now. **DP**



A cracking little passive pre-amp, the Creek OBH-22 - with remote control, no less.

GAIN STRAIN

I have recently changed my system from a Linn/Naim set up. This is now a Townshend Rock/Excalibur/Dynavector DV20X turntable, Sugden Bijou Phonomaster phono stage, Audio Research SP9 MkIII preamplifier and Series 1 Quicksilver Monoblocks, all playing into Celestion A3s.

Whilst all the above sounds rather good I find the listening levels very low, and basically I am cranking up the SP9 (virtually full tilt) in order to get a decent listening level, I am not sure why this is; the monoblocks aren't exactly low powered and give 60 Watts per channel?

My Naim Hi-Cap/140/72 combination was deafening at about 9-10 o'clock setting, and the 140 only had an extra 10W. Am I doing something wrong or is there something wrong in my set up? Please help me as I am at my wit's end.

Ewan Scatt

It could be several things. Firstly, is your Dynavector the high or low output version of the cartridge (DV20X-H or DV20X-L)? If it's the low output version and you're running it in to the Sugden's moving magnet input, Bob's your uncle. Otherwise, it sounds like a mismatch between the Audio Research SP9 and the Quicksilvers. This would be odd, but still you need to check with the manufacturers - ask them if the output/input sensitivity is matched. However, don't be fooled by volume controls - different manufacturers design their preamps (or integrateds) differently, so some give most of their volume at the lower end of the dial (conferring a sense of power in the user), whilst others are more linear and you really have to swing the volume knob across to get power out. 10 Watts will be neither here nor there in terms of perceived volume, so don't be fooled by output power specs either! **DP**

WIDER VIEW

I have just been going through the May issue and noticed the news item about the Denon Blu-ray player on p8. I was therefore wondering - will all

these new Blu-ray players play the old type ("normal" resolution) DVDs as well as Blu-ray discs? If so, will they up-scale them to 1080? How about the play back of SACD and DVD-Audio? Furthermore, does this mean that the universal player (like the Denon DV-3910) is gone for good?

Fred Scheutz

All Blu-ray players play video DVDs, upscaling their picture to full High Definition of 1920x1080 so you can watch on an HDTV. As is so often said, you don't get a real high definition picture because no new information is available, but in practice if you take a good modern film on DVD and upscale it, it won't look too much worse than the true high definition Blu-ray.



If you want to play DVD-A and SACD discs the Oppo DV-980H DVD player will do the job, via an A/V receiver.

I have yet to come across a Blu-ray player that plays either DVD Audio discs or SACDs. The forthcoming Denon Blu-ray transport will not play either I have been told, which is a shame. Universal players are a thing of the past, it seems... **NK**

POWER GAME

My current system comprises a Trichord-tweaked Sony CD player with upgraded op-amps and power supply, an Arcam Alpha 10/9P combo bi-amping BKS electrostatic hybrids - lovely Danish speakers. I also have a Fostex D5 DAT machine for radio recording, etc. The Arcam is getting elderly and struggles a bit with the power demands of the electrostatics, so I was debating investing in an AVI lab series amplifier: do you think this would be a worthwhile upgrade?

As regards the source, I was contemplating the Russ Andrews or Benchmark DACs as I have other digital sources such as Sonos music server and some elderly 300 disc multichangers which I use to provide music for the kitchen, outdoors and dining room. Do you think this would give me better sound than investing in an Astin Trew which I have heard and seems super?

Alan Feerick

I wouldn't have thought that the Arcam should struggle with your BKS loudspeakers, as ribbons are usually a fairly benign load and, judging by their current models at least, seem

to have a decent sensitivity. However if you need more grunt than the Arcam combo can provide then the AVIs would be a bit of a sidestep as they only produce around 20W more than your Arcams. If you need a bit more beef I would suggest going to the likes of the Rotel RB-1092 which kicks out over 500W and should keep you and more than a few of your neighbours entertained...

The Russ Andrews or Benchmark DACs will make a worthwhile upgrade to your digital sources and are well worth investigating. **AS**

It's hard to say how well your Sonos, or Sony CD changer, would respond to the company of - for example - the Russ Andrews DAC 1 USB. Certainly, with a good transport,

this little wonder DAC comes very close - you'll find it a more detailed, finessed and polished performer than the AstinTrew, but a little less emotionally intense and dramatic. **DP**

MOD SQUAD

I've been following your mid-priced CD player reviews, namely the units from AstinTrew, Rega, Edgar and Raysonic, and have been thoroughly enjoying the quality of writing. As a result, I am at the start of a complete, albeit in stages, replacement of an aged hi-fi set up.



Russ Andrews DAC 1 USB up-samples and gives a clean sound. It's a good way to upgrade a CD player.

Down here in Australia, for whatever reason (it's not sourced from Europe?), the Raysonic is considerably more affordable. And then I came across this advertised USA upgrade on Audiogon for the Raysonic CD128:

"LEVEL 1 - This is done to single ended part of the machine only:

a) We add one pair of premium

"machined" VAMPIRE "direct gold plated over copper body" Teflon insulated RCA female jacks on the output (replace cheap stamped jack modules).

b) Eleven BLACK-GATE STD and FK grade PS caps, NX grade DAC PS Caps, and N grade output coupling capacitors.

c) Two RIKEN OHM ? and one watt "signal path" 1% carbon comp. resistors (gold-plated leads).

d) Two AUDIO-NOTE Tantalum film resistors.

e) Two KIWAME 2-watt carbon film resistors.

f) Eight CREE 1A 600V high-voltage SiC Schottky rectifying diodes installed in the power supply.

g) We replace the stock I-V op amps with world's best - Burr-Brown OPA-627 in a special dual DIP module - 2 pcs. total. One for the I-V and one for the output buffer.

h) We add Four 4.7uf MUNDORF M-Cap metallised polypropylene coupling caps.

i) We add Four 0.01uf with REL-CAP TFT Teflon film and tin foil bypass coupling caps.

j) Four large EAR compliant Sorbothane feet.

k) WBT high silver content (4%) solder used throughout.

l) One sheet of SOUNDCOAT chassis damping material cut & applied where applicable, to control chassis resonances.

m) Four pieces of DH LABS 99.999% pure solid-core long-grained silver output signal wires, with foamed Teflon tape wrap dielectric.

n) 6 hours labour.

I made a local enquiry and got this response: "So far we haven't made any upgrades to the Raysonic units but it certainly wouldn't be much different to the other upgrades we do. Our standard

upgrades can include Mundorf or Auricap capacitors, master clock, diodes and op-amps. We can also add internal deadening, better RCA sockets, silver wire, etc. but often some of the items these upgrades do seem a little out of kilter so to speak.

The clock makes the biggest difference to any upgrade, so doing that and some caps and op-amps will



Raysonic CD128 - made in China, less expensive in Australia and modded in the U.S.A. Leaving us confused in the U.K.

get you a large gain in performance. Anything else after that is icing on the cake and the level of the rest of your system must be taken into account. The cost does depend on what you exactly want done, a clock for example is over \$400, our recommended op-amps AD825 are \$40 - per module."

Burson Audio, who are local to me in Melbourne, make highly regarded clocks for much less than these suggested costs. I've also been considering trying their preamp and soon-to-be-released power amp. My question is the obvious one: is this CD mod upgrade path worth pursuing in an effort to achieve higher sonic quality value-wise? Also, is this potentially an area you could delve into for an article?
Jim Gleeson

Hmmm... well it's hard for me to comment on specifics here Jim, for obvious reasons. I can tell you that the experience I had with Audiocom - who did a similar round of mods to my old Sony CDP-X33ES - was dramatic. About £500 worth of tweaks turned it into a machine that would live with anything under £2,000 or more. However, I cannot comment about Burson; what they do may be better or worse. Assuming they know their stuff (why don't you ask them to put you in touch with a few customers of theirs?), then it's a great way to get big gains on a limited budget - as long as your CD player and/or laser has got plenty of life left in it. By the way, we have another Audiocom feature coming soon - this time, I've let them loose on a classic high end Sony machine!
DP

Reducing digital jitter improves sound quality considerably I've found, reducing messiness, making for a harder sense of timing a bringing out bass dynamics. This is why clock upgrades can have a big impact upon the sound. However, the upgrade list you provide for the Raysonic CD128

is extensive and, I suspect, expensive.

Both Meridian and Chord Electronics now use technically advanced ways of processing digital signals and, for what you may end up paying for these tweaks, I recommend you listen to the new Chord QBD76 DAC reviewed in this issue. I have spent a few hours with it and, like DAC64 it replaces, find it an amazing step up from what has gone before. In a nutshell, Chord use a complex Watts Transient Aligned Filter, that they build using a Field Programmable Gate Array, to implement more sophisticated digital processing than has gone before. The new DAC is less warm than DAC64, but has real depth perspectives and a peculiar 3D solidity to images that is far removed from the flat letterbox of sound between the loudspeakers that comes from current approaches, and 'tune ups' that can only go so far, because digital isn't as amenable as analogue in this respect. **NK**

SPLIT OPINION

I read your article in the June edition of *Hi-Fi World* on bi-wiring, bi-amping of loudspeakers and from my previous reading on the subject of bi-wiring, the sound advantage offered by bi-wiring arises from splitting the negative side of the connection to the amplifier.

Most, if not all, crossover boards within loudspeakers have common negative tracks for both treble and mid/bass units. Having a separate negative connection back to the amplifier prevents the treble and mid/bass units interacting with each other via the common negative connection. It is this splitting which produces the increased clarity and detail that bi-wiring offers.

I tried this on a pair of B&W DM 100s some years ago by cutting the common negative track on the crossover board and adding another negative terminal. This produced the same sort of improvements that full bi-wiring produces. I also replaced the tweeter with a metal dome type and installed

internal panel damping which improved things further, making a very detailed and atmospheric loudspeaker. There was commercial design doing exactly the same but I cannot remember now who this was.

Peter Graves

The negative split is the visible mechanical side of bi-wiring. I was highlighting the fact that when this is done differing electrical currents then flow in each section. Sceptics often believe that bi-wiring cannot work because each arm is commoned at the amplifier, so it sees the same voltage. It doesn't however, see the same current so any current related effects will likely be lessened. **NK**

SPEAKER TWEAKER

I own and enjoy a pair of Usher S-520 loudspeakers and was pleased to see in your February 2008 issue that you were able to endorse my choice. But ever since reading your report I have been intrigued by Noel's suggestion that he would "break out the soldering iron and pull the tweeter down a bit". Could you elaborate on this modification please?
Thank you.

Brian Bradshaw

I was thinking aloud Brian. The S-520 is a lovely sounding small loudspeaker, but it's treble is a little scratchy and measurement shows a peaky tweeter. It's usually easy to cure this sort of thing, with a notch filter or just a parallel capacitor or series inductor to roll things down a bit. Unfortunately, our Editor was seen heading down the M4 some time ago with two pairs in his boot, no less! They haven't reappeared in the office since. When they do - I'll probably have to trade a valve phono stage



Last seen heading down the M4 at high speed - two pairs of Usher S-520s.

- then I'll switch the iron on and see what I can do. **NK**

Okay Noel - I'll bring 'em back! Well, I'll bring one pair back - as I need the others for "reference" purposes!
Doh! **DP**



Protrusions around front baffle will cause reflections

FEELING GRAVITY'S PULL

In his review of the Audio Pro Mondial M1 loudspeakers in the May '08 issue, David Price states that, "lovely as these mini monitors are, not even they can get around the laws of physics". Indeed they won't, as they will be substantially compromised by the amount of diffraction from the cabinet sides extending in front of the plane of the baffle, and this is clearly evident from the ripples shown in the mid to high frequencies in the Frequency Response plot.

It is a credit to the drivers and otherwise structural integrity of the cabinet that the speakers sound as good as DP has heard, and leaves one to wonder how extraordinary they might sound if a low diffraction front had been used, such as Mission use even at this price-point. Manufacturers too often do not get the best possible from their chosen components, and in this case priority given to the user convenience of a push-in grille - what a waste of potential!

Adam Smith states that the port is tuned to "around 80Hz". If the correct Impedance plot has been published the port/cabinet is tuned a little above 110Hz, and 80Hz is the frequency where the bass driver and port outputs are in opposing acoustic polarities - 180 degrees phase difference between their outputs. If a front exiting port I would expect very little actual 80Hz output, but perhaps the rear exiting port changes this in some way.

I have been wondering for quite a while how Hi-Fi World test equipment works. Does your device analyse the spectrum of the pick-up microphone's output for each frequency (or frequency band) of the input signal, or does it merely measure the output level? If it measures only signal level, then I suggest that shown as an 85Hz-90Hz peak in port output may be predominately 2nd harmonic distortion, along with some 3rd harmonic. Though if your device does analyse the output signal's spectrum and it is the Fundamental frequencies predominantly, then I am quite puzzled by this!

I have not measured any loudspeakers with rear exit ports, however all low to medium power bass driver front ported speakers I have measured, and particularly those with small diameter ports, have had audibly dominant 2nd and 3rd harmonic distortions at frequencies below the port/cabinet tuned frequency.

What I do is sweep a low distortion sine wave down in frequency from about 120Hz at moderate audible volume level and listen for changes in timbre. Apart from audible effects of any cabinet wall resonances, and their harmonics, the wanted output of the loudspeaker usually sounds like a continual lowering of the fundamental frequency till around the region of the port/cabinet tuning - the Fb. This frequency is usually audibly obvious as the timbre changes at least a little owing to the substantially reduced cone movement at Fb. If driven to higher output here, port noise becomes audibly obvious. Returning to moderate signal drive and sweeping lower in frequency soon the timbre audibly lightens. This is when the 2nd harmonic is becoming predominant. With further lowering of the input signal's pitch soon no fundamental is audible, and usually the timbre changes again to somewhat coarser as the 3rd harmonic increases in level.

Try this with the ported loudspeakers you test. The audible results correlate with what one hears when auditioning with music that has not had its low frequencies high-pass filtered - which unfortunately most popular music styles' recordings have had done in the Mixing or Mastering stages, leaving little below about 100Hz, though this varies from around 80Hz to as high as 120Hz from different recordings. Some of these recordings have had a boost applied to the octave above to give the psychoacoustic impression of significant bass response when listened to via mini sound systems and portables, etc. Spectrum analyse some of the recordings you regularly use and publish the results. This can be of use to readers.

There are genuinely low frequency content recordings and there are superficially low frequency content recordings. Some people have never been shown the difference and do not understand why a favourably reviewed loudspeaker does not sound so good in its bass range with the music they play (other than room modes' effects and different speaker locations in the room cause).

Alan Barnes

Yes, the port damps the cone at around 110Hz the impedance curve suggests, seen as the centre of the dip between the peaks, and not at 80Hz where there is an acoustic output peak. Adam was, however, making reference to the port's acoustic contribution which can be seen to peak in output at 80Hz.

Ridges will reflect sound and don't help imaging. I talked about how flat front baffles with rounded edges gave better stereo imaging on p108 of the August 2008 issue. But other factors come into play too, small loudspeakers usually having a very nice midband because of their small, light cones. Those ridges won't help, but then this little loudspeaker isn't a balls out reference design.

We use the common and popular Clio based measurement system for loudspeakers, seen on p3. Like all modern analysers this system uses a modern computer to process data taken from a convolution, so the information shown is spectral. We start with simple, reliable third-octave pink noise, then run an MLS, then gated sine wave, which is convolved to improve the signal-to-noise ratio. Our plots do not scale port output to main output though.

It is on our agenda to look at distortion, but this isn't an easy property to measure with the degree of accuracy and certainty our measurements must have, because they must correlate well with what manufacturers like KEF, for example, measure - or we would very quickly hear about it!

Most CD recordings reach down to 40Hz, approximately the lowest note played on bass guitar, and it is common for them to have lifted energy around the 80Hz region to improve 'speed'. I have yet to measure a disc that stops at 100Hz: it would have little audible bass. Some CDs reach below 40Hz, the heartbeats on 'Dark Side of the Moon' comprising pulses at 25Hz, for example. What exists on discs is interesting, which is why we often take a peek at it, but this is a little technical for most readers and not of great concern I suspect.

NK



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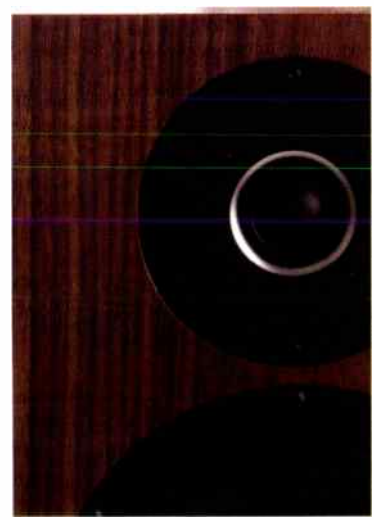
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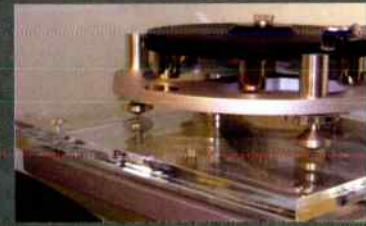
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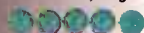
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Vinyl and CD



I have recently been referring to the excellent value AVI ADM9 active speakers (Feb. Issue, Page 122), and they are great value. At the other extreme however I must refer to the most superb sound I have heard for some time off vinyl, using the SME 10A + Ortofon Rondo Bronze through the Graham Slee Elevator EXP/Gram Amp-1 Bridge, the Electrocompaniet 4.8 pre-amp/ 220 Power Amp via Abbey Road cables into the superb Nola Viper Reference Speakers. The record was a Teldec disc of 'Big Band' music, and having just been to see the 'Nelson Riddle Orchestra' live, it was clear just how 'live' the system sounded. Alright, it's not a cheap system, but it is considerably cheaper than a number of systems recently heard at the 'Bristol Show', which sounded awful. I constantly wonder what's going on when exhibitors seem incapable of producing a half decent sound using great music. If you really want to hear what can be achieved just give us a call, and come and listen. (I've used a photo of the Electrocompaniet EMC-1UP CD player, as the amplification doesn't photo as well, but again well worth hearing if CD is your thing!)

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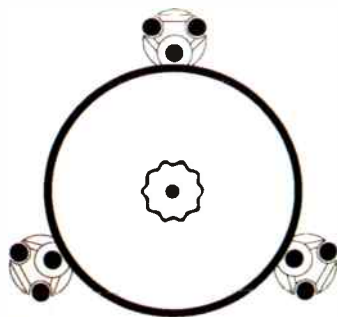


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402, £30. Atacama speaker
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QUAD 303, 33, FM3, instructions, leads, including 'free' 33 for spares/repair. £240. Leak Troughline III tuner, £80. Leak Stereofetic tuner £40. NAD 4155 tuner, boxed, instructions, £50. Tel: 07956 438044 (Bromley, Kent)

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WANTED: ONE (or pair) Meridian 105 power amplifier. Tel: 01540 651 453

TURNTABLES, ELECTRONIC belt drive 78, 45, 33, Grace 707 tonearm. ADC XLM cartridge. NAD 5120, NAD arm, NAD 8200 cartridge. £50 each. Collect. Tel: 01753 586660 (Datchet)

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QUAD 303 serviced 1998 £90. Quad QII choke £40. Watts Dust Bug £10. Tel: 01344 776 445 (Berks)

AUDION SILVER Night 300B valves push pull monoblock together with Michell Iso Hera power supply. Total cost £2500. One owner, accept £1000. Tel: 020 763 5702 after 7pm

PROAC D15 Response loudspeakers. Very good condition. £600. Tel: 0753 0581717

ICON AUDIO MC34-A valve amplifier. Full Icon KT88 upgrade 40wpc Feb 08. Black chrome gold finish. Excellent sound and condition. Bargain £300. Tel: 0116 284 9087 (Leicester area)

UNISON RESEARCH Hybrid valve system: Unico Secondo 120W/CH integrated amplifier with phono inputs £995. (£1560 new). Unico CD player £950 (£1450 new). Unico 'R' FM/RDS/AM tuner £550 (£950 new). All mint c/w with boxes. Tel: 023 8073 8935

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ORELLE SP200 Power/SC200 Preamp. Original boxes. Little used. Active & passive outs. MC/MM input boards still boxed. 100 watts/channel. £500. Will Part-Ex quality turntable. m@mik3h.plus.com

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MARANTZ CD65 II Special Edition CD player, classic model, mint condition, £80. Yamaha Surround Sound 5.1 starter system, RX-V350 AV Receiver, NS-PI00 speakers and subwoofer, new, sealed boxes, £140. 020-8366-2647

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726628. (Berkshire).

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!

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

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

AUDIOLAB
(Phil Pimblott, Leeds)
Renovation, repair and
restoration. Specialist in valve
hi-fi, radio transmitters, cinema
amps, kit building.
Tel: 0113 244 0378
www.audiolab_labs.co.uk

QUAD ELECTROACOUSTICS
(Cambs)
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: arkless.electronics@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: whodgson@btclick.com

Dr MARTIN BASTIN
(Shropshire)
Garrard 301/401 restoration,
renovation and service. Special
plinth; rumble cures, etc.
Tel: 01584 823446

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

D.K. LOUDSPEAKER SERVICE
(Dave Smith,
Hornchurch, Essex)
Re-coning 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

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

OCTAVE AUDIO
WOODWORKING
(Bristol)
Unit 2, 16 Midland Street, St
Phillips, Bristol.
Tel: 0117 925 6015
www.octave-aw.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

CARTRIDGE MAN
(Len Gregory, London)
Specialist cartridge re-tipping
service and repairs. High quality
special cartridges.
Tel: 020 8 688 6565
www.listen.tothecartridgeman

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








www.choice-hifi.com

tel: 020 8392 1959 mob: 07768 720456

info@choice-hifi.com

NEXT MONTH

Whether you're back in Blighty after your long hot summer holidays, or sneaking away for a bargain priced city break, there's no better companion than September's copy of your trusty Hi-Fi World! There's the usual mad mix of old and new, from Chord's Chordette Bluetooth music player to a comprehensive feature on Rogers' classic LS3/5a BBC mini monitors – with a review of the newest incarnation. There's a special feature on Funk Firm's Linn LP12 modifications, an in-depth review of Naim's HDX 24/96 digital music server, and a scoop review of Exposure's stunning new MCX high end system [pictured]. Here's just some of what we hope to bring you:

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THE ROGERS LS3/5A STORY

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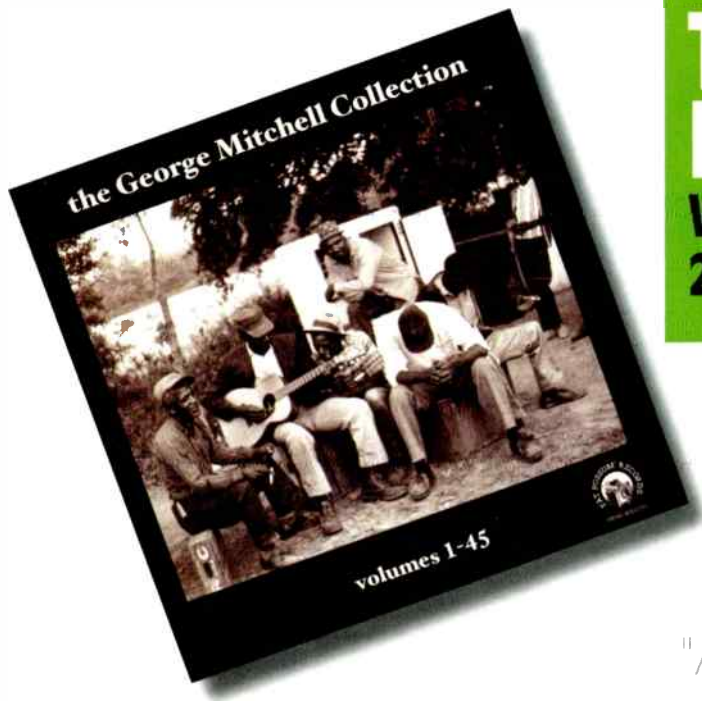
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THE GEORGE MITCHELL COLLECTION

VOLUMES 1-45

2008

"Anyone interested in blues needs this - it is music from the source..."

The George Mitchell Collection, published by US-based Fat Possum Records (www.fatpossum.com), is an invaluable selection of unique field recordings recorded and archived by Mitchell and sung by an array of blues singers during the period from 1962 to the early eighties. They range from the legendary figures such as R.L. Burnside and Big Joe Williams to the relatively obscure performers such as Cecil Barfield and William "Do-Boy" Diamond.

Diamond, for example, was recorded in 1967, in Canton, Mississippi on his "boss man's" farm. He told Mitchell that playing blues was, "the onliest thing that pacified me. Make me feel uplifted and such a thing as that. Don't be feeling drowsy and dead, drowsified." One of Diamond's favourite subjects within his songs was women, "cause I like 'em". Which is fair enough but almost got him into trouble. His great voice used to attract the ladies who would end up sitting on his lap, much to the chagrin of their attendant boyfriends and husbands. Diamond, at one point, even gave up singing because he was afraid he'd be shot by the same!

Tracking down Diamond and the other forty-four artists that form the content of this limited edition box set (only 300 exist) was a work of love. The journey began after Mitchell, still in High School, read 'The Country Blues' book by Sam Charters which detailed many of the then little known blues artists. Most of the included artists were from Memphis Tennessee. So Mitchell, talking from his home in the USA, told *Hi-Fi World* that, "I

thought, 'Well, that's where most of the music is, let's go!' I managed to track down Will Shade, head of The Memphis Jug Band, big during the twenties and thirties. When I met him, I'd never been anywhere so impoverished. An old, two-story apartment in the back end of an alley. Someone took us to him. We approached the apartment and heard music behind the door."

They eventually heard him play, on his one-string oil can bass, with friends at the local Peabody Hotel. Mitchell spent a few days with the musicians. It was at this point that Mitchell decided to record the music he was hearing so he returned to his school and, "borrowed the Math teacher's Norelco tape recorder (a German design)." This was 1961 and Mitchell was just eighteen years old.

From this, Mitchell thought that, "Well, if there's people in Memphis, maybe there's people in Georgia. So I started asking around and found a couple of old timers. I recorded them and then I asked them about other people."

So the journey continued, around the country for the next twenty years. The reaction that Mitchell received from the black community was interesting. After all, here was a young white kid, toting a reel-to-reel tape recorder turning up in a sixties black community, asking lots of questions, "I always got good reactions, though," said Mitchell. "They were always pleased that there was somebody that was interested in them because it wasn't happenin'! They were all

anxious to play and to cooperate and to do it right there and then, in their house. The good ones were all passionate about their music." In fact, if Mitchell ever received a negative reaction it was from white neighbours who would suspiciously ask why he would even want to enter the black neighbourhood.

Mitchell's library of recordings was eventually bought by a short-lived record label called Cello Records. "They saved them," explained Fat Possum's Bruce Watson, Head of Licensing. "The tapes had previously just been lying around in boxes around George's house. Each of George's originals were transferred to 2-track, half-inch tape. We received the tapes in that format. What prompted the box set was that a lot of the recorded guys only sang three or four songs. You couldn't release a whole CD on them."

Initially therefore, these songs were published on a limited 7" series. Now however, Fat Possum has collected the songs on a seven CD box set, each with between twenty and twenty-nine tracks on each, complete with an informative 46-page booklet. The recordings may have been cleaned up a little but what you hear on these CDs is largely the untouched original George Mitchell archives in all their rawness, with that measure of spontaneity and passion that comes from the impromptu nature of the recordings. Anyone interested in blues music needs to have this set - it is music from the source.

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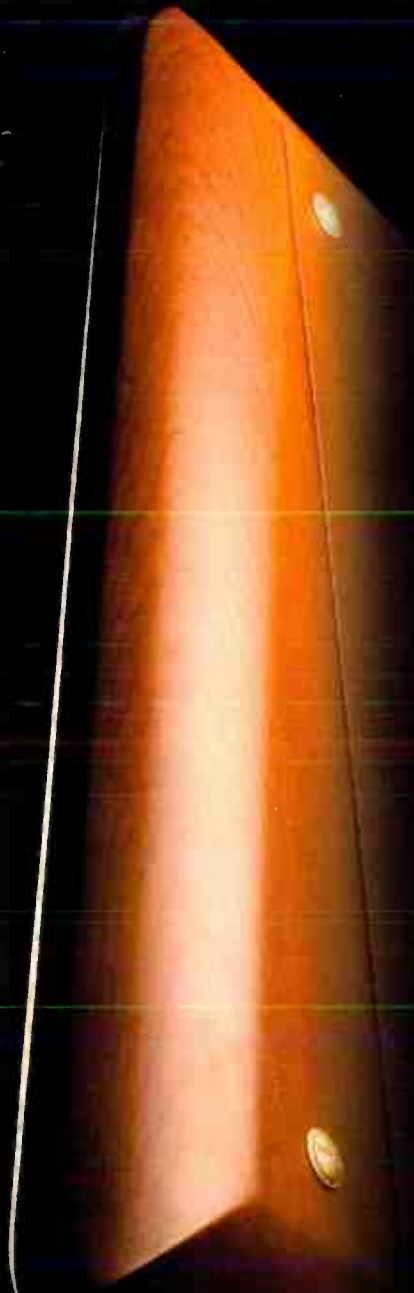
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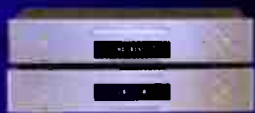


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