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ROKSAN TR-5 S2
loudspeakers



AUDIOLAB M-ONE
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MEASUREMENT



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turntable **EXCLUSIVE!**

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7 PAGES OF LETTERS - THE BEST WINS A PAIR OF QUAD S2 LOUDSPEAKERS! (UK ONLY)



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Hi-Fi World October 2016



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OUR VERDICT



Chord Shawline Analogue
Hi-Fi Choice July 2016

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Paul Rigby, Jon Myles, Martin Pipe



Is it LP that is enjoying a revival, or analogue audio in general? As hi-fi shows spin by – Rocky Mountain Audio Fest Denver and Indulgence Show London in the last two weeks – there's still no shortage of analogue around, open-reel tape decks being the latest direction of interest. I hope this lasts because there is a need for an all-analogue recording device I believe, not because I am anti-digital, but because digital needs a standard against which it can be compared to keep it on course. High-speed

master tapes are that standard. They are something we can all believe in – including a digitally obsessed music business that is now starting to see old analogue as a way forward – and also make a profit. You can't e-mail an LP to a mate or hand it away free on Pirate Bay.

Roll out turntables then! And that is exactly what Luxman have done with the PD-171A I review on p11. With new LPs rolling into our offices at a nice steady rate there was no shortage of quality vinyl to enjoy on it. And what a sound.

As demand for Home Cinema weakens, stunted by impenetrable complexity and loudspeakers everywhere, Japanese receiver manufacturers are turning to an interesting variant, the 2.1 receiver – stereo with a subwoofer. Check out Yamaha's latest all-in-one on p18, reviewed by Martin Pipe. With both streaming and a phono stage it covers it all – at a very low price. It's nice to see entry-products like this.

"Vot's wrong with digital?" the music business may well ask, unaware of deep intrinsic problems. Meanwhile the hi-fi business ploughs on with its protests about sound quality and its willingness to experiment, given voice by forums where some insist old digital woz better than new digital. I don't agree – but equally it's always best to listen and that's what we did with Schiit's fascinating Modi Multibit DAC, reviewed on p60 by Jon Myles. Measurement makes clear why Multibit was dropped, but what about the sound? Do the forums have a point?

As all-analogue audio gets under way again, and digital continues its inevitable march on, we are seeing more product variety than ever – and more challenging argument. I hope you enjoy reading about it all in this issue.

Noel Keywood
Editor



hi-fi world

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verdicts

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

amongst the best
extremely capable
worth auditioning
unremarkable
flawed
keenly priced

testing (see www.hi-fiworld.co.uk for full explanations of all our tests)

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 Clio-based computer

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

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



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Hi-Fi World measurement

Two products in this month's issue, under test.

The products we review are tested first to ensure they work properly and meet their manufacturer's specification. Our measurements also look at factors that affect sound quality, like frequency response, distortion and dynamic range, as well as those that affect compatibility, such as output level, output power etc. These tests are complex and can only be made using a professional audio analyser, calibrated to international ISO standards to ensure accuracy – we use the excellent Rohde&Schwarz UPV.

Loudspeakers and headphones require acoustic analysis. For this we use the well known Clio test system from Audiomatica, Italy to provide reference standard acoustic measurements, within a very large 6000 cu ft test room. You can be sure our loudspeaker reviews, covering the full audio band from 20Hz to 20kHz, are accurate as a result.

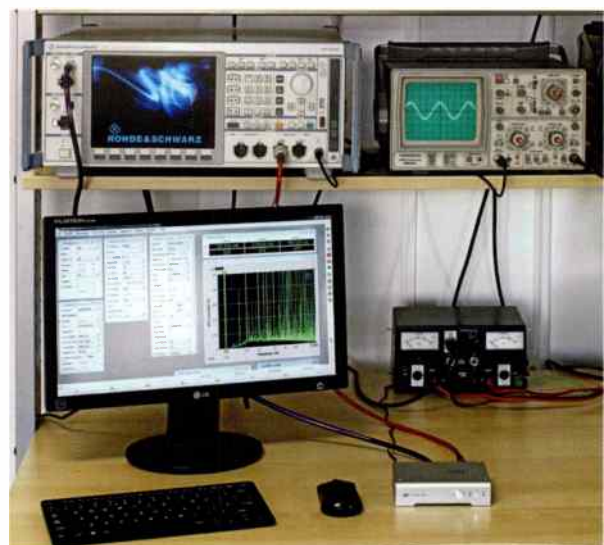


The Luxman PD-171A turntable being measured for speed accuracy and stability (wow and flutter), using a Kenwood FL-180A W&F meter and DIN 45 545 test disc. The disc has to be carefully centred by visually inspecting the arm, tracking a locked outer groove. Eccentricity is reduced to visual zero – around 0.1mm offset.

The FM demodulated output of the Kenwood is fed to a Hewlett Packard HP3561A spectrum analyser capable of working down to 0.1Hz, in order to inspect the behaviour of the primary wow component at 0.55Hz (i.e. 33rpm). This is affected by platter and bearing eccentricities, as well as bearing shaft precession.

Measuring the Shiit Modi Multibit DAC using our Rohde&Schwarz UPV spectrum analyser . Distortion is measured at -60dB with both CD and hi-res digital test signals generated by the UPV – here fed in optically using a glass QED Reference optical quartz TOSLINK cable.

The UPV also measures frequency response using wide band noise signals and the critical Dynamic Range parameter too. For this measurement to offer a valid result the analyser must have definitively quiet, ultra low distortion input stages, only possible from Rohde&Schwarz in-house designed ADC and input circuits.



email:news@hi-fiworld.co.uk

news

NAIM'S NEW UNITI RANGE

Naim has unveiled a complete revamp of its award-winning Uniti range of music streamers and players. The current models are being replaced by four new units – all featuring a totally revised design, improved components and internal layout, plus additional features.

The Salisbury-based company says the latest models are not merely an upgrade but a complete root-and-branch revision, with around £3.8 million having been spent designing the latest Uniti range from the ground up.

First to hit the market will be the £1650 Uniti Core, a CD ripper/storage solution which can store up to 100,000 tracks for playback through a network-connected player. Interestingly, the Core includes a user-accessible slide-out tray for the hard disk so buyers can select their own make and size of HD.

The similarly-sized Uniti Atom (they are both half-width components) is a fully-featured streaming music player equipped with a 40 Watts per channel Class AB amplifier and will retail at £1600.

The £2999 Uniti Star adds a CD drive and boosts the amplification to 70 Watts. CDs can also

be ripped to a USB-connected storage device or SD card.

At the top of the line is the audiophile £3800 Uniti Nova with upgraded components as well as a beefier 80 Watts per channel output.

The Atom, Star and Nova all incorporate Naim's top-mounted illuminated volume/input control – which first featured on their flagship Statement amplifier before trickling down to Mu-so and Mu-so Qb all-in-one systems – as well as full-colour 5" LCD screens on the fascia for displaying album artwork and details. A new system remote is included while Naim's custom app (iOS and Android) can also be used.

Standard features across the three players include Google Cast, Apple AirPlay, Bluetooth aptX, UPnP streaming, vTuner internet radio plus both Tidal and Spotify Connect integration.

The Uniti Core and Atom are due to go on sale in November with the Star and Nova available early next year.

For more information visit Naim's website at www.naimaudio.com.



Uniti Core



Uniti Atom



Uniti Nova



Uniti Star

RELOOP TURN 3 TURNTABLE

Those familiar with Reloop will know about their DJ and Professional Audio credentials. The TURN 3, spanning 450 x 138.7 x 352mm including the dust cover and weighing in at 7kg, is aimed at audiophiles.

A belt-drive record player with MDF construction and anti-vibration feet, the turntable arrives with a gloss black plinth, housing a DC motor, connected to the acoustically-treated aluminium die-cast platter via a drive belt that loops around the main platter's inner-ring. The 233mm tonearm was specially designed for TURN 3, while an Ortofon 2M Red MM cartridge comes fitted. A detachable headshell makes for easy cartridge changing.

A three-point speed control is resident on top of the plinth. The controller allows for switching between 33, 45 and 78rpm speeds. The turntable is internally grounded, finished with gold-plated connectors and supplied with a set of RCA leads and can be connected to a standard LINE or AUX input on an amplifier, or it can be upgraded with the use of an external phono stage. A USB output (16bit/48kHz) enables connection to a computer. Price for the TURN 3 is £350.

For more information go to www.henleydesigns.co.uk or call 01235 511 166



CHORD CLEARWAY

The Chord Company has expanded the Clearway range with the new Clearway Analogue interconnect.

Featuring the ARAY conductor technology, which is hand-built at Chord's Wiltshire headquarters, the cable is priced at £100 for a 1m pair.

The cable features high-purity oxygen-free copper, FEP insulation and higher density foil to enhance the shielding.

Clearway Analogue is fitted with the Chord VEE 3 direct-silver-plated RCA plug and is also available terminated with DIN and XLR connectors.

To learn more call 01980 625700 or click on www.chord.co.uk



SOUND FIDELITY

Details of this new product are relatively sparse but what we do know is that the 10W F-I speakers, offering 88dB sensitivity, are small in stature at 31.5 x 19 x 28.5cm.

A Fountek mid/bass unit spanning 145mm sits underneath a 19mm tweeter from SEAS.

The finish is a selling point for the company who cover it, not in leather, but in "eco leather". Apparently the so-called leather can be ordered in various colours (black and beige for now). Price is €920.

Click www.soundfidelity.it or call +39 3393922158 for more information.

YELLO FROM RUSS ANDREWS

Russ Andrews is celebrating its 30th anniversary by releasing an updated version of one of its most successful products from the past three decades. The Russ Andrews YelloPower mains cable shares its name with a cable that sold in its thousands when first introduced in the 1990s.

The updated and newly implemented YelloPower is manufactured using eight individually insulated pure copper Kimber Kable conductors, arranged in the Kimber weave configuration. Included are 13awg (2.62mm²) cores for live and neutral insulation is employed for low impedance. The finished off with a 13A Russ Andrews fuse, black and UK three pin plugs. Prices are £60 for 1m, £75 for 1.5m and £90 for 2m.

Visit www.russandrews.com or call 01539 797300 for further information.



and PVC UK-built cable is Tecflex sleeving and IEC

DAMSON AUDIO

Damson Audio has released the S-Series Home Audio Entertainment System including the S-Bar (Soundbar) + S-Woofer (Subwoofer) and the S-Cube (portable Bluetooth speaker).

Plug and play, you can control the entire home system centrally via the S-Bar or connect different devices to each speaker via Bluetooth.

The S-Bar + S-Woofer features include a six-driver, wireless compact soundbar, offering USB Type C charging and Aux In, Coaxial, HDMI and Bluetooth connections off 58W of power while connecting to up to eight speakers wirelessly.

The S-Cube includes a five-driver, 18W configuration with integrated subwoofer, USB Type C charging, Bluetooth/NFC, Aux In, eight hour Lithium Ion battery and connects to up to eight speakers wirelessly.

For more information about Damson Audio, visit the website at www.damsonaudio.com.



CARDAS AUDIO'S CLEAR BEYOND

Cardas Audio has announced its latest entry into its range of Clear cables, the Clear Beyond interconnect.

Accompanying the existing Clear Beyond Speaker Cable and Power Cord, Clear Beyond interconnect is Cardas Audio's flagship. Constructed of ultra-pure Cardas copper, each strand is insulated from the others with an enamel coating. Arranged in a star-quad geometry and suspended by carbon impregnated air-tubes, the conductor core is double-shielded using a proprietary combination of both plated and bare copper and includes a pair of Litz drain wires.

The Clear Beyond interconnect uses Matched Propagation technology, in which the propagation rate of the copper strands is matched to that of the dielectric, resulting in an outside diameter of 13mm. Prices start from £3,750 for a 1 metre set. To learn more call 020 8948 4153 or go to www.audiodfreaks.co.uk.

McINTOSH LUXURY HEADPHONE AMP

The new MHA150 is handcrafted in McIntosh's Binghamton (NY) factory and uses a second-generation DAC, capable of supporting DSD and DXD files.

Containing McIntosh's proprietary Autoformer technology, it has been adapted to produce three headphone impedance ranges, so that any connected headphone can be supported while additional outputs allow the connection of compact loudspeakers. Support is also offered for smartphones, tablets and laptops via USB. Two additional digital connections are available. An add-on streamer the McIntosh MB50 can be purchased separately.

For DSD and DXD files, the MHA150's USB input accepts PCM signals up to 32bit/384kHz and supports DSD64, DSD128 and DSD256 along with DXD 352.8kHz and DXD 384kHz. For connecting digital devices, optical and coaxial inputs are included, along with the USB and MCT inputs (for McIntosh SACD players); two analogue inputs are also available.

For more information, call 01202 911886 or click on www.jordanacoustics.co.uk



HP 1030 TV HEADPHONES

One For All has created the HP1030 TV headphones that arrive with Voice Clear Technology emphasising speech whilst dimming background noise and enhancing the voice spectrum.

The One For All HP 1030 (priced at £49.99) are wireless TV headphones with a range up to 100m. They use 40mm drivers and extra-large, over-the-ear cushioned ear-cups, reducing sound leakage and providing isolation from intruding background noise.

The on-cap control buttons allow you to adjust volume directly on the headphones. They arrive with a charging station and "fast rechargeable" batteries of three hours with listening time at twelve hours.

You can even connect multiple wireless TV headphones simultaneously to the same network to watch or listen with someone else in the household, whilst not disturbing anyone else.

To learn more click on www.oneforall.com.



RUARK R4-30

Family-owned, British firm Ruark Audio has unveiled its new R4-30 – a limited edition incarnation of its R4 integrated music system.

The R4-30's enclosure has been subtly accentuated with 'aero' curves and a new satin titanium finish. It also features a commemorative 30th anniversary plaque machined and etched from polished stainless steel.

Comprising an enhanced multi-format CD player, aptX enabled Bluetooth receiver, DAB/DAB+/FM tuners, USB playback port and auxiliary inputs united with a 2.1 amplifier/speaker system, it also includes an organic light-emitting diode (OLED) display.

Ruark's latest RotoDial controller has now been integrated into the design, allowing users to manage functions directly from the R4 or via Ruark's dedicated infrared custom remote. Customers can also connect their TV to R4 via the optical digital input.

Including switchable auxiliary inputs, a digital optical input, integrated active subwoofer, adjustable treble and bass settings, stereo headphone output, dimensions of 140 x 440 x 250mm and a weight of 7kg, the R4-30 is priced at £680.

Click on www.ruarkaudio.com or call 01702 601410 for more information.



MOJO CABLE ACCESSORY PACK & ADD-ON MODULE

Chord Electronics has launched a Cable Accessory Pack for the Mojo DAC/headphone amp, that includes cables, adaptors and a USB adaptor block.

The new USB adaptor block module attaches directly to the Mojo's inputs as an extension of the device and a hollow recess houses the bulky end of Apple's Lightning-to-USB cable and Android-type cables.

The additional length the USB adaptor module brings to Mojo allows plus-size smartphones to align more suitably with the device when strapped together while Chord-branded rubber band straps are provided in the pack. The module also contains an internal circuit board which extends the Micro USB charging port when the adaptor block is in use and retains visibility of the battery indicator light.

The Cable Accessory Pack case sells for £59.99.

To learn more, call 01622 721444 or click on www.chordelectronics.co.uk



Bowers & Wilkins

Designed for listening

The new CM Series loudspeakers are undoubtedly beautiful, capable of gracing any room with their clean lines and high-quality finishes. But as with all Bowers & Wilkins loudspeakers form must follow function, and thanks to our Decoupled Double Domes and tweeter-on-top technology you won't believe how beautiful your music can sound.

bowers-wilkins.com

Decoupled Double Dome tweeter

Luxury Luxman



The new PD-171A turntable from Luxman looks good, sounds sublime and is a joy to operate, says Noel Keywood.

Once owned a Luxman PD 300 vacuum deck, an extraordinary turntable that sucked LPs down onto the platter. Held firm, they sounded better – until they started becoming noisy that is. Whether this was due to dirt being forced into the grooves or bubbles in the vinyl bursting I never found out – there was much speculation over this peculiar phenomenon.

Unsurprisingly Luxman abandoned that idea a long time ago, but the newly updated PD-171 – now a PD-171A – reminded me of their

intriguing disc spinner of yesteryear. It is similarly a two-speed, belt drive turntable of impeccable build quality, having the same lustrous finish of the great 1970s classics.

As solid as the PD 300 was, however, it wasn't the weight of the latest PD-171A that comes in at a whopping 25.4kgs. One reason for the weight is the use of a vibration damped structure with 15mm thick machined aluminium top plate. Once in place it sits with the firm certainty that nothing is going to move it, making for a satisfying user experience. There's no suspension

system, as with my Garrard 401, so this beastie must be mounted on a very strong shelf or table unaffected by floor-bounce. A beautifully made clear acrylic cover protects against dust and provides some measure of sound deadening; it moves on hinges so you do not have to lift it off. A turntable as large as this takes up space of course, needing a 14in deep shelf as minimum.

The operating buttons move with slick precision, as always on Lux products, and speed change is simply a matter of pressing 33rpm or 45rpm buttons as you might

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10 products of the year and most wanted components
in just 2 years by preserving relative phase relationships in a signal



"If you're looking for a major jump in your system's performance, I'd suggest buying a pair of these instead of considering a hardware upgrade. Before you write this advice off to cable delusion, expectation bias, or the recent Mercury retrograde phase, please take note: I have never said this in TONE's 11-year history"

Jeff Dorgay, Tone Audio

"Well, I have just stumbled upon a speaker cable that I'm very tempted to put in a class of its own"

Mono & Stereo



"Tellurium Q have surpassed themselves here. It is often said that all cables colour the sound of a system to some extent, but the Silver Diamonds do it to a lesser extent than any other product I've heard so far."

John Myles, HiFi World

The effect of phase distortion can be likened to smearing a beautiful picture or looking at it through frosted glass. All signal cables do this to some degree and the better you tackle the engineering challenges to combat phase distortion the more natural the sound you get.



== TQ ==



A calibrated counterweight applies downforce and a rotary dial sets outward bias.

hope at the price – no faffing around with belts here. Each speed can be adjusted individually, using front mounted rotary controls. To help in this process Luxmn fit an internally illuminated stroboscope that shines at markings on the platter. Unfortunately, it wasn't very bright and in a room filled with sunlight I could barely see what the markings were doing through the small viewing window. At lower light levels the display was dull but visible; the markings become stationary when speed is set correctly. Although usable the Lux display wasn't as eye catching as either my Garrard or a Technics Direct Drive – slightly disappointing as these things visually enliven a turntable. You do get a cueing light, however.

Inside the plinth lies a newly developed high torque a.c.

synchronous motor fed by an electronic supply that, Lux say, uses a power amplifier to feed frequency adjustable a.c. power to the motor. The frequency generator uses a stable clock as a reference, with a 32bit 'microphone' embedded – I suspect the Japanese-to-English translator means 'microprocessor' here! The motor needs high torque to start the enormously heavy 5kgs platter and even then the PD-171A is not overly fast to start, taking a second or two to come up to speed. Mains power is fed in via an IEC socket on the rear; there is no external supply, so nothing lurking on the floor or poking out of the wall.

The arm follows classic 1970s Japanese design principles, although some may argue most of these were originally devised by SME on the 3009 of the 1960s. It is S shaped, has a detachable headshell and calibrated rotary counterweight. Arms of old like this would ring like a tubular



A d.c. servo motor with single step pulley drives a belt that loops around the outside edge of the platter.

is 4gms-12gms, which covers most. A heavier counterweight is available, but there are very few cartridges around weighing more than 12gms. Bias is set by turning a calibrated dial.



Two speeds, independent speed adjusters and stroboscope markings, visible through a small window. Speed is adjusted so the markings appear stationary.

bell and the headshell connector and headshell platform were often less than rigid but there's a lot you can do to eliminate such simple weaknesses and Lux have taken appropriate measures in the PD-171A, dampening the arm tube to stop it ringing and using a rigid headshell platform to suppress high frequency vibrations.

Why a removable headshell? It is to aid cartridge changing, as well as making fitment easier. It's almost essential if you want to play 78s, as some do, but this raises the fact that the PD-171A has no 78 speed, unlike Technics SL-1200GAE and McIntosh MT-5 turntables I have reviewed recently. But then the fastidious may still want to use a pure mono cartridge with a larger stylus to play early 33rpm LPs and 45rpm singles and this the PD-171A does make simple.

The arm's cartridge weight range

SOUND QUALITY

I fitted an Ortofon Cadenza Bronze moving coil (MC) cartridge to the PD-171A and connected it into our Icon Audio PS3 valve phono stage, with volume control. It fed Quad QMP mono blocks, or alternatively an Icon Audio Stereo 30 SE valve amplifier, feeding Martin Logan ESL-X hybrid electrostatic loudspeakers.

Turntables reveal their signature slowly – and it is both subtle but deep, framing the basic sonic nature of what you hear. Having spent much time recently with both a Tilmestech EVOke Technics SL-1200GAE Direct Drive of all metal construction, and a Macintosh MT-5 belt drive that conversely relies on a massive acrylic platter, I was intrigued to hear the Luxman PD-171A fall somewhere between them.

I was impressed, even beguiled by this turntable's properties. It is one



We used an Ortofon Cadenza Bronze MC cartridge for review purposes.



GRAND PIANO CRAFT

Grand Musicality

PianoCraft arrives, crowned with the name "Grand". A CD player, amplifier, and speakers with the same finish as a real piano inherit the Yamaha High-Fidelity concept, and play beautiful music that takes you beyond ordinary listening.



MCR-N870/D

musicCast

Wireless Music System

FM / DAB+ App AirPlay Bluetooth Wi-Fi ECOmode High Res Audio

MCR-N670/D



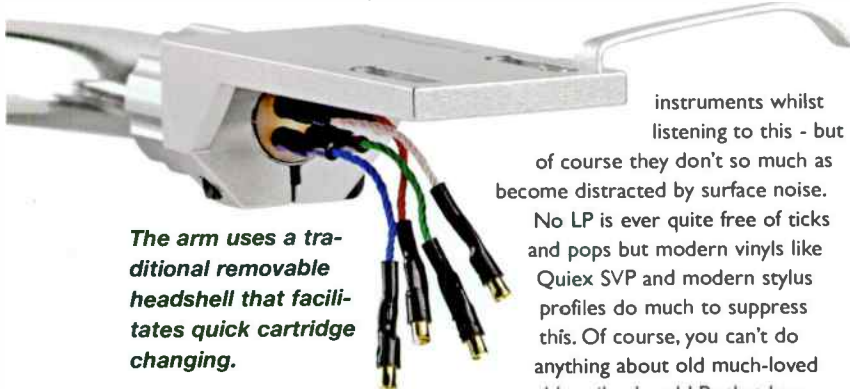
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World Radio History

sweet sounding turntable with a light and airy midband, solid dynamics that make for a punchy sound – but not over-done – and superb soundstage depth. It didn't have the extraordinary rifle-bolt timing of the Technics nor the darker palette of McIntosh, but hovered somewhere between them.

Spinning Dire Straits 'Ride Across The River' from Brothers In Arms revealed a clean background

from 2L of Norway. Here the Luxman shone. It was this LP that confirmed its character, Marianne Thorsen's violin coming over as sweet natured, lush with detail and vibrant in nature. There was superb resolution of tonal colour here, the timbral properties of the violin – and indeed that of the backing strings – being obvious. I wondered why anyone would ever criticise LP for its rendering of classical



The arm uses a traditional removable headshell that facilitates quick cartridge changing.

made for fine dynamic contrasts, giving hand drums a good sense of body and strength, making them jump out of the mix. The bass line was supple but well-defined in its dynamics, the catchy reggae timing made clear by a strong grip on tempo. Cicada chirps slowly emerged in the background, nicely teased out by the 171A's excellent retrieval of detail. My notes talk of a CD-like patina but a smoother and more revealing nature than silver disc.

The synthesised drum beats of Scissor Sisters' 'Comfortably Numb' were metronomically timed: powerful and insistent. There wasn't quite the grip of a Direct Drive, but not everyone needs this. What the Luxman had is a tad more dynamic punch and stage depth. It was sort-of like listening to a fabo CD player, the one you dream about getting rather than the one you actually get!

Which brings me to Mozart violin concertos on a 180gm LP



A large brass bodied main bearing supports the platter.

instruments whilst listening to this - but of course they don't so much as become distracted by surface noise. No LP is ever quite free of ticks and pops but modern vinyls like Quiex SVP and modern stylus profiles do much to suppress this. Of course, you can't do anything about old much-loved and heavily played LPs that have become noisy but quality classical LPs such as those from 2L are in another league and offer superb sound with classical. The Luxman showed me just how good it can get. I was deeply impressed by what it achieved here and think anyone would be.



The Luxman arm bolts onto the turntable and is removable. A version without arm is available.

CONCLUSION

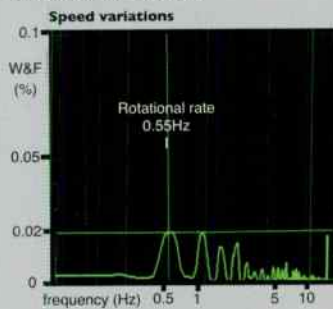
The upgraded PD-171A come across as a honey to listen to; I could not fault it. It has airy and spacious presentation that especially suited Icon Audio's SE valve amplifier driving Martin Logan electrostatics. What I heard was utter refinement from this vinyl spinner. It was easy to use and in Luxman tradition is a solidly made and finely finished work of art. Only the barely visible stroboscope was a disappointment but I'm not sure that's too much of an issue.

MEASURED PERFORMANCE

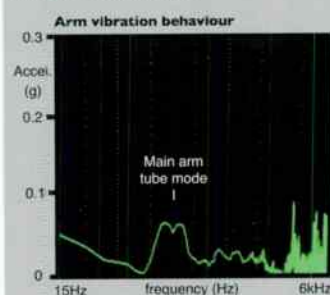
With the stroboscope set by eye, the PD-171A rotated accurately at exactly 33.3rpm and held speed with an interesting degree of stability for a belt drive; it performed more like a Direct Drive in this respect.

However, there was, all the same,

SPEED STABILITY



ARM VIBRATION



a bit more wow at 0.55Hz (basic rotational rate) than Direct Drive our analysis shows, in the small peak at this frequency, with a measured value of 0.12% unweighted – low for belt drive.

There was – very surprisingly for a heavy platter – some flutter, the W&F meter recording a value of 0.1% against 0.06% expected. It can be seen as a sharp spike at far right in our Speed Stability analysis.

All the same, the total, DIN weighted Wow&Flutter figure was 0.08% – a good result for a belt drive.

The arm had a main arm tube mode at 300Hz, a high value that indicates a stiff structure, and it is well damped too, the resonant peak being relatively small. Vibration in the headshell was well suppressed, making it relatively quiet – quieter than most.

The PD-171A measured well being speed accurate as well as speed stable, except for a small amount of flutter. The arm is both stiff and well damped. **NK**

Speed error	0%
Wow	0.12%
Flutter	0.1%
Total W&F weighted	0.08%

LUXMAN PD-171A
£4,995



OUTSTANDING - amongst the best.

VERDICT

A superbly built and finished belt-drive turntable with an airy and open sound. Easy to set up and use too. Lovely.

FOR

- sound quality
- ease of use
- appearance

AGAINST

- dim stroboscope
- very heavy
- no 78rpm

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**TANNOY'S SUPERB ECLIPSE
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GREAT GIVEAWAY!**

"The flagship model of the range is the Eclipse 3, just £299. And that is low, very low for a company known for quality loudspeakers, such as the Westminster Royal GR we reviewed in our November 2015 issue, that costs a mere £27,950!

No doubt that by current market norms £299 for a three-driver floorstanding loudspeaker measuring 37.8" x 10.6" x 10.9" (H/W/D) puts it firmly at the budget end of the market. All the same, the Eclipse 3s are exceptionally well presented for their price – coming in a handsome black oak finish with silver detailing around the drive units adding a touch of class to

the fascia.

Those drivers are arranged in a D'Appolito configuration with the tweeter placed centrally between the two mid/bass units. All have been designed especially for the Eclipse range with the tweeter using a 28mm woven polyester dome diaphragm coated with a layer of nitro-urethane damping. This coating is said to move the break-up frequency much further outside the human range of hearing, leading to a smoother and less fatiguing sound.

The new 127mm Eclipse mid/bass driver cone is constructed from a light, stiff multi-fibre enriched paper pulp with a nitrile rubber surround, large ferrite-magnet motor and Tannoy's advanced cooling design which the company says gives high efficiency and power handling."

For a chance to win this great prize, just answer the four easy questions at right. Send your entries on a postcard only, by 7th December 2016, to:

**December 2016 Competition,
Hi-Fi World magazine,
Studio 204,
Buspace Studio,
Conlan Street,
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London W10 5AP**

QUESTIONS

[1] What finish is used?

- [a] black coal
- [b] dark birch
- [c] black oak
- [d] London smoke

[2] The driver arrangement is –

- [a] planar
- [b] D'Appolito
- [c] dual-concentric
- [d] co-axial

[3] The tweeter uses –

- [a] aluminium
- [b] titanium
- [c] wrought iron
- [d] woven polyester

[4] The surround is –

- [a] nitro cellulose
- [b] PVC
- [c] folded paper
- [d] nitrile rubber

Here's your chance to win the superb Tannoy Eclipse 3 loudspeakers we reviewed June 2016 issue. Read the review excerpt below and answer the questions.

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**SEPTEMBER 2016 WINNER: NAIM MU-SO SPEAKER SYSTEM
Mr S M Costa of Bolton**

Power to the people!



Yamaha's affordable R-N602 receiver combines a potent amplifier and digital trickery galore. Martin Pipe listens in.

Onkyo, whose TX-8150 we enthusiastically-reviewed last month, isn't the only manufacturer of multi-channel AV gear to take much of its extensive functionality and build it into network-aware stereo receivers.

There's also Yamaha, arguably of greater influence. The R-N602 featured here may be more affordable than the Onkyo – you don't get a DAB-capable tuner. Its 'conventional' radio source caters for good ol'

analogue FM (with stereo and RDS, natch') and AM, but – as with the TX-8150 – there's an Internet radio function available too.

On top of that, Yamaha's own 'MusicCast' software provides support for today's streaming alternatives to radio – subscription services like Spotify, Napster and Juke! It will also pull music from AirPlay and DLNA servers, Bluetooth devices and, courtesy of a socket conveniently-located on the front-panel, USB storage media and

iPods/iPhones.

Codecs supported include MP3, AAC, WAV, ALAC, AIFF, FLAC – and fine sounding DSD.

At the heart of the R-N602 lurks a TI/Burr-Brown DSD1791 DAC that natively-supports DSD64, as well as PCM all the way to 24/192. Conventional sources are well-served. You get four digital inputs for CD transports and set-top boxes, two of which are optical.

For analogue Yamaha has provided an MM phono stage to play

LP, plus four line inputs. Two of these are accompanied by outputs.

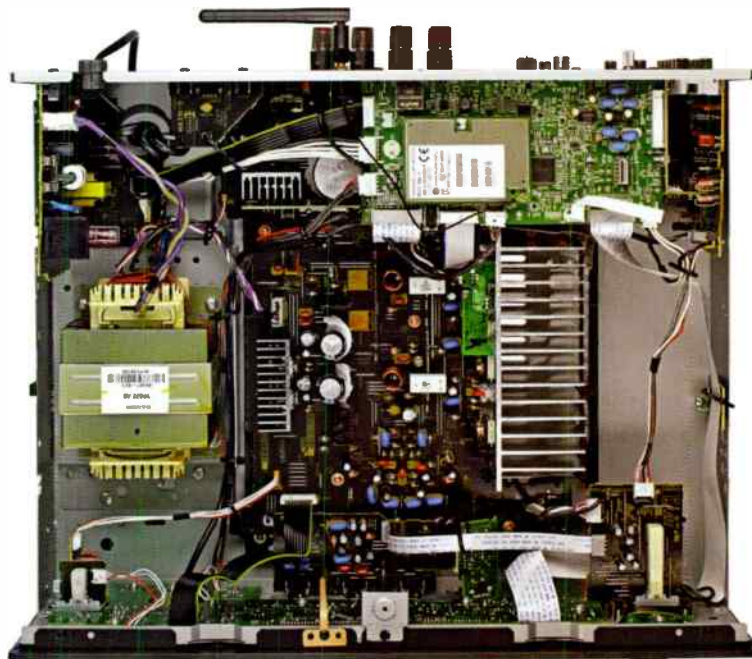
A welcome feature is that storable 'input trim' can be applied to each of the sources; you can avoid unpleasant 'jumps' in volume. The R-N602 offers 80 Watts per channel, so goes loud. A 'pure direct' function bypasses much processing, for better sound.

In addition to the usual bass and treble is a continuously-variable 'loudness' control, which modifies the frequency response so that the deficiencies of human hearing at low listening levels can be compensated for. Terminals for two independently-switchable pairs of speakers are offered for multi-room or bi-wiring.

Wi-fi (2.4GHz) is included as an alternative to wired Ethernet connectivity. Through measures like this, the R-N602 is easy enough to set up; however, your Internet radio stations must be preset externally via a 'vTuner' website. This may sound like a lot of hassle but it's better than wading through stations with a front-panel display that contains less information than a computer or tablet screen is capable of showing. At the time of writing, vTuner listed 36,834 radio stations and 7,477 podcasts! The stations are transferred via the Internet to 'bookmarks' on the R-N602 for speedy access.

A brilliant MusicCast app, available for Android and iOS devices, makes selecting music from servers and USB devices much easier than picking them from lists via the Yamaha's own display and remote (which, as far as they can go, are fine). MusicCast also allows you to stream music from your smart device via Wi-Fi rather than Bluetooth, thereby avoiding the need for recompression – whilst possibly extending your 'range' too. The app also caters for volume changes, source-switching and 'favourites' selection. Multiple MusicCast components can be served by the same app, for 'whole-house' AV systems.

I discovered that the chip responsible for digital inputs within the R-N602 (a TI Burr-Brown PCM9211) includes an analogue-to-digital converter. How is this being used? A search through the manual reveals that the Bluetooth interface works in 'both directions'; in other words, it's not restricted to the mere streaming of music from smartphones, tablets and the like. You can also route analogue sources – as well as digital ones – to a Bluetooth



Quite a busy interior, but Yamaha has sensibly kept the area around the power amplifier clear to avoid heat-related problems. Most of the R-N602's 'clever stuff' is done in the circuit board that can be seen in the top right of the picture. Note too the large mains transformer.

device (like a soundbar or wireless headphones). This feature, which is called 'audio send', doesn't however benefit from independent input selection.

Unfortunately, it refused to work outright with a Roth soundbar. And although I was more successful with Sennheiser PX360 Bluetooth headphones, the audio was too quiet and broke up frequently. I had rather more luck with the R-N602's power-saving 'auto-standby' mode, its line-level subwoofer output and a sleep timer that will shut down the receiver after a user-definable period – great if you'll be installing the receiver in a bedroom. There's also a headphone socket that, as per convention, mutes the speakers as soon as something's plugged into it.

So, this is a unit packed with lots of useful functionality. But how does it fare sonically?

SOUND QUALITY

Most of my listening took place with the same equipment I partnered with the TX-8150. This comprised Rogers GS5 floor-standers, a Panasonic DVD player, a network (connected, in this case, via Ethernet) and an external aerial – essential for getting the best from FM radio. I also hooked up a Cambridge S80 subwoofer. For digital playback, you don't really need much else thanks to the comprehensive streaming features built into the R-N602. For analogue playback, I relied on a vintage quartz-locked Kenwood

turntable equipped with Shure MM cartridge.

Considering the modest nature of this player I was pleased with the presentation of LPs. The tonal balance was natural and, although resolving power was limited compared to that of audiophile-level gear, playback was enjoyable and certainly represents a worthwhile introduction to the format. Synergy's 'Electronic Realizations For Rock Orchestra' (Sire, 1975) painted a rich tapestry of electronic sounds, and its stereo imaging was not compromised by the R-N602.

Still on analogue, the FM tuner performed very well with BBC Radios 3 and 4. Sensitivity was enough to keep noise at bay and live concert material was reproduced with space and poise. With talks and plays, participants occupied a definite position within the stereo image; furthermore, vocal sibilance was kept at bay.

But it's the music that we're most interested in. On the whole, the network streaming worked very well with FLACs and DSDs alike. Although it sounded very open and detailed, I could sense a slight 'edge' to the vocals of Garrett Brennan's 'Alta Powder Day' a 'stripped-back' DSD64 recording that also features acoustic



The supplied handset works well enough, and it will operate a connected iPod or iPhone. However, the MusicCast app propels the R-N602's user interface into another league. It makes music selection so much easier, and enables the receiver to be controlled from any room within Wi-Fi range.

- Sensitivity: 87 dB
- Nom. impedance: 4 ohms
- 6.5" long throw bass driver, tuned to 28 Hz, running without crossover.
- 4" custom-made paper cone bass-midrange driver, 1st order low pass filter, no high pass filter, apple tree phase plug, maple wood cone mounted to magnet.
- 3" widebender, 1st order high pass filter, unique electromechanical parallel resonator installed.
- Internal wiring orientation optimised silk-wrapped high frequency stranded litz.
- WBT NextGen binding posts.
- Rear ambient tweeter.

Standard Edition £5526

SE Edition £8047

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W8 *loudspeaker*



*"Given the construction of the speaker it might not be too surprising to discover that it handles stringed instruments in a way that makes most rivals sound like a bedside radio, but its performance with voices is such that it gets you wondering if Boenicke has also found a way to equip the W8 with lungs..." Ed Sealey, *HIFI Choice**



Left to right: Walnut, Ash, Oak, Cherry.



'pure direct' mode. The tone controls can be useful for some recordings, but they do audibly colour the sound and must be seen as a compromise.

CONCLUSION

For its low, low price the Yamaha R-N602 is an impressive performer. It

combines a very wide range of features with a good, solid sound, especially pleasing when it comes to analogue sources. Here's a great way to enter the world of modern digital – in all its technological glory – whilst still being able to play old analogue LP.

Although network playback is no slouch, I've heard better; one cannot however complain given the modest outlay asked. Icing the cake is MusicCast.

In all then here's an easy to use stereo receiver, plus a subwoofer if you so wish, without all the cables and boxes demanded by surround-sound. Excellent.

There's not much you can't plug into the R-N602! Of the four analogue audio inputs, one is intended for turntables equipped with a MM (or high-output MC) cart and two are also associated with outputs for recording (they're not alas genuine tape loops).

guitar, slide guitar and harmonica. The same track, played on a Chord Hugo TT DAC connected to one of the R-N602's line-level inputs, rewarded me with more insight and eliminated any grittiness.

But we're talking about a DAC that sells for more money than three R-N602s, so a comparison is a little unfair. That the Yamaha amplifiers

can reveal a palpable difference is testimony to their design.

Standard digital (PCM) tracks and losslessly compressed FLACs fared better. Kraftwerk's 'Tour de France Soundtracks' drew me in with its fast-paced rhythms and synth textures. When I switched to Bluetooth, though, that slight hardness returned. I should point out that all listening was in

MEASURED PERFORMANCE

Yamaha's R-N602 stereo receiver produced 112 Watts into 8 Ohms under test, and 182 Watts into 4 Ohms. This is enough to drive any loudspeaker to very high volume, even in a large room. Distortion levels were low at all powers and frequencies, reaching a maximum of 0.02% at 10kHz, (1W into 4 Ohms), as our analysis shows. This is low, the analysis showing classic crossover distortion, but kept well under control.

All analogue inputs had very wide bandwidth, measuring -1dB at 76kHz, whilst also reaching right down below 4Hz. Sensitivity was high, 0.2mV being needed for full output so these inputs will accept yesteryear tuners, cassette decks etc., as well as low gain external phono stages.

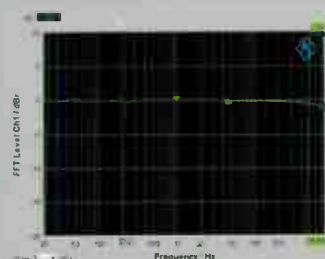
Both optical and electrical S/PDIF digital inputs accepted sample rates up to 192kHz, frequency response measuring flat to 53kHz, with a slow roll-off up to the theoretical limit of 96kHz, a good result. Unfortunately, the DAC used by Yamaha wasn't especially linear, producing 0.2% distortion at -60dB with hi-res (24bit) and 0.3% with CD, where 0.02% and 0.2% are expected. Dynamic range was as a result mediocre at 109dB.

The Phono stage (MM) measured well, having normal sensitivity of 4mV for full output, flat frequency response across the audio band and low noise of -80dB. Overload was a very high 72mV – more than enough.

Yamaha fit a good VHF tuner having flat frequency response to 10kHz (-1dB) before roll-off to the 19kHz pilot tone filter notch. Pilot tone rejection was high at -42dB and distortion low too, measuring 0.13% at 50% modulation. With low noise of -67dB providing a signal of 0.7mV (p.d. across 75 Ohms) is available from the aerial, the tuner will sound relatively quiet and mush free, as well as tonally accurate.

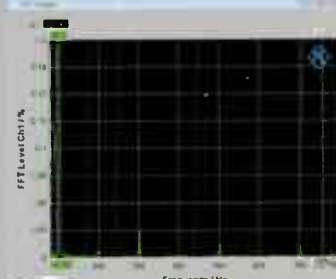
The R-N602 measured very well in

FREQUENCY RESPONSE



DISTORTION

IN	0.0342 %	2.0432 V	10.000 kHz
OFF	OFF	OFF	OFF



most areas. However, it has a weak spot – high distortion and low dynamic range via its digital inputs, whether playing CD or hi-res. This let down an otherwise very good performance all round. NK

Power	112W
Frequency response (Direct)	
4Hz-76kHz	
Separation	88dB
Noise (A/D, Direct)	-92/-101dB
Distortion	0.02%
Sensitivity	200mV
Damping factor	28

DIGITAL	
Frequency response (-1dB)	
10Hz-53kHz (24/96)	
Separation	98dB
Noise	-107dB
Dynamic range (EIAJ)	109dB
Distortion (-60dB, 24bit)	0.2%

VHF TUNER	
Frequency response	20Hz-10kHz
Stereo separation	54dB
Distortion (50% mod.)	0.13%
Hiss (CCIR)	-67dB
Signal for minimum hiss	0.7mV
Sensitivity (stereo)	32µV

PHONO	
Frequency response	10Hz-20kHz
Stereo separation	68dB
Distortion (50% mod.)	0.05%
Hiss	-82dB
Sensitivity	4mV
Overload	72mV

YAMAHA R-N602, £350
 **EXCELLENT - extremely capable.**

VALUE - keenly priced.

VERDICT
 Versatile in terms of connectivity, the R-N602 is a good all-rounder. Great value too.

FOR
 - strong connectivity makes the R-N602 versatile.
 - MusicCast app makes it all easy to use.
 - a clean and dynamic sound, especially from analogue sources.

AGAINST
 - bluetooth transmission erratic.
 - a little hardness from digital occasionally evident
 - no genuine tape loops.

Yamaha
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icon Audio



NEW ST 30se Single Ended KT150 Amplifier

HI-FI WORLD said:

ICON AUDIO
ST30SE £1999.95



OUTSTANDING - amongst the best.

VERDICT

Combines all the benefits of single-ended valve operation with a healthy dose of power for a superb listening experience.

FOR

- power
- clean, open sound
- detail
- easy operation

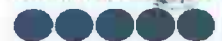
AGAINST

- nothing at the price

Read the full review Nov '16 Ed

Awarded 5 gobes in:

HI-FI WORLD



Preamp section very good. The meter that being 100% UL, it all values positive position. The low frequency response remains down to 10Hz before being some really, but small hump being due to feedback time constants. The ST30se will not round out or warm, it is flat across the audio band and even beyond.

The ST30se produces high power as pure SEs go. It has unusually wide bandwidth too, so will not have a warm aged timbre. A clean and pure, but richly felt sound is likely. NK Head Keyboard Editor Hi-Fi World

Power	28W
Frequency response	5Hz-50kHz
Separation	83dB
Noise	95dB
Distortion	0.2%
Damping factor	6
Sensitivity (L/M)	800 / 400mV

Innovative Designs From Icon Audio

designed by David Shaw

Beautifully Simple
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 Tung Sol KT150

A Versatile Affordable SE Solution!

For those not familiar with the term, "Single Ended" (SE) is the original design of valve amplifiers in its simplest form using only one power valve per channel, used long before Push-Pull designs were developed using two valves per channel. Single Ended enables the production of a very simple amplifier with 100% "Class A" performance. When SE is refined using modern design and audiophile components audio presentation is possible which has no equal in terms of smoothness and listening quality and is very easy to listen to, without the "listening fatigue" so prevalent amongst solid state designs. But as reviewers have found to their delight the ST30se is no slouch at speed or lacking in bass weight. True "high end"!

Historically the Achilles heel of SE designs has been very low power, which is inadequate for modern speakers when existing popular valves are used. Big transmitter valves may be used, along with big price tags to match. Hence higher power SE amplifiers have not previously been practical for many hi fi enthusiasts.

The recent introduction of the new Tung Sol KT150 valve (a larger relative of the popular KT88) has enabled the design of an SE amplifier of twice the power previously possible in this class (KT88). The Icon Audio ST30se is breaking new grounds in terms of power and quality. Designed especially with orchestral, jazz and acoustical fans in mind. 28 watts is ample power for any moderately efficient speakers, providing a very good volume in all but the largest rooms.

Optimised for both Triode as well as UL operation, you effectively get two amplifiers in one, 18 Watts being ample for most situations when higher volumes are not required. Good sensitivity from the built in "passive" pre amp ensures good results from virtually any type of input. The ST30se offers absolute listening quality through simplicity of design and pure "Class A" operation. This is achieved by using careful design, high quality construction and our unique transformers designed and manufactured "in house". The all-important high definition drive circuit for the KT150 output valve is achieved by using the venerable 6SN7 valves.

The "easy bias" meter enables simple checking that the KT150 is at optimum performance, the meter also gives an approximate indication of the output power. Remote control is also included for the precise control of the volume level from your armchair.

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Roksan's new TR-5 S2 standmount takes an already excellent design and makes it even better, says Jon Myles.

Rocking Roksans

Think Roksan and you immediately picture electronics such as amplifiers and CD players plus a series of well-regarded turntables, tone-arms and cartridges.

That, after all, is what the company has built its reputation around since it was launched just over 30 years ago in North West London.

However, it has also enjoyed considerable success with loudspeakers - not least the TR-5 standmount which was introduced in 2009 and featured what, at the time, was a fairly unusual combination of a single mid/bass driver allied to a ribbon tweeter.

Nowadays the configuration is not so rare with the likes of Quad, Castle, Monitor Audio and Sweden's XTZ and Dali producing similarly equipped models.

So 11 years on from its launch Roksan decided to revisit the TR-5 design to see if it could improve the performance - hence the new TR-5 S2.

Priced at £995, on the outside it looks exactly the same as its predecessor. This is down to the fact that it has similar dimensions - 370mm x 190mm x 280mm (HxVxD) - and uses the same drivers.

There's the ribbon tweeter enclosed in its own wave guide above

a doped paper unit. The latter looks small for the size of the cabinet but Roksan says there's a good reason for this.

Ribbon tweeters typically have a higher crossover point than a conventional dome unit which can reach lower frequencies. Roksan aim to overcome this problem by keeping the bass driver (relatively) small at 130mm with a 100mm cone so it is light and agile enough to be able to reach further up the frequency range for better integration.

Inside, the crossover has been completely redesigned with large low-impedance air core voice coils on a new double-sided PCB. Cabinet internals have also been re-designed

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Information

Developer: audio web publishing ltd
Category: Entertainment
Updated: 7 Dec 2014
Version: 1.0
Size: 9 MB
Rating: Rated 4+
Family Sharing: Yes
Compatibility: Requires iOS 5.0 or later. Compatible with iPhone, iPad, and iPod touch.
Language: English

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and now feature a high-absorption internal damping material to eliminate unwanted resonances or standing waves.

The rear panel has bi-wireable gold-plated 'speaker terminals' situated above a large(ish) reflex port aimed at increasing bass response (see Measured Performance for further details).

Finished in a handsome lacquered Piano Black with a Roksan badge on the top and weighing in at 8kg per 'speaker' the TR-5 S2s certainly look classy and the fit and finish fully justifies the price.

SOUND QUALITY

The original TR-5 drew much praise for its treble performance but was criticised in some quarters for being a little light in the bass.

That's certainly not an accusation you could level at this new model. Hooked up to the excellent Audiolab M-One (see review elsewhere this issue), as well as a pair of the more powerful Quad QMP monoblocks, I was immediately struck at just how much low-level energy the Roksans could convey.

On Aaron Copland's 'Fanfare For The Common Man' the opening kettle drums reverberated with palpable power – enough to hit me in the chest with the volume turned up. And when the french horns, trumpets and trombones came in I got a clear indication of just where they are placed in the orchestra and within the soundstage.

On the subject of soundstage, a little experimentation is recommended to bring the best out of the Roksans – they appreciate some care and attention. Being rearported they need a decent distance from a back wall otherwise that bass can lose definition, while toeing them in helps solidify the stereo image – I found around 10 degrees worked best but this will vary depending on the room. Positioned well, though, they really start to reward no matter what you are playing.

Listening to the jazz-punk hybrid that is Polar Bear's 'Held On The Tips Of Fingers' saw the Roksans in their element. Parts of this album charge along but these 'speakers' have pace aplenty so never failed to keep up with the frenetic musicianship. Sebastian Rochford's drums were a particular joy – tight, punchy and possessing real bounce.

There is a degree of warmth to the midrange but this is compensated

for by the openness and clarity of the ribbon tweeter which does a great job of releasing top-end detail – so it shines on well-recorded female vocals. Listening to Sinead O'Connor's 'Nothing Compares 2 U' the crystalline quality of her voice was enough to send a shiver down my spine. It's an effect conventional dome tweeters rarely come close to.

If there's any caveat to be made it's that while bass is good, the Roksans don't quite convey the lower octaves with the same authority as some similarly-priced floorstanders so fans of bass-heavy dance or dub music might find them a little wanting. However, they make up for this with the quality of the treble and overall rounded sound.

Overall, then, the new Roksan TR-5 S2 is an extremely polished performer that does an excellent job of drawing you into the music no matter what sort of music you are playing. It's a worthy successor to what was already an excellent loudspeaker.



The use of a ribbon tweeter gives the Roksan's deliciously open and clear treble.

CONCLUSION

There's little not to like about the new Roksan TR-5. It has better bass than you'd expect from the cabinet size while the ribbon tweeter gives higher frequencies delightful air and openness. Add in quality construction allied to classy looks and it is a must-hear in the sub-£1000 standmount category.

MEASURED PERFORMANCE

Frequency response of the TR-5 S2, shown in our analysis here, runs flat and reasonably even across the audio band. It's closeness to the 0dB datum makes it more accurate than most others, whilst deviations of 2dB above and below are small and rarely bettered. All this suggests an accurate tonal balance (horizontality) and relatively low colouration (lack of deviation), since an uneven response (deviation) is produced by local resonances that colour the sound.

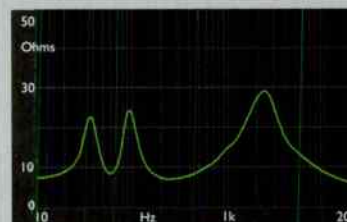
The crossover point to the ribbon is visible at 3.5kHz, and above this

FREQUENCY RESPONSE

Green - driver output
Red - port output



IMPEDANCE



frequency the ribbon tweeter trends upwards. A characteristic like this slightly softens the midband but ensures obvious but not excessive treble. With no crossover suckout and good treble amplitude, the TR-5 S2 will sound detailed and forward, not bright but obvious up top.

Sensitivity measured 87dB from one nominal Watt (2.8V) of input, a normal figure. It means the Roksans will go loud with a few Watts – and 60 Watts is about all that is needed for loud volume in large rooms.

Overall impedance was high at 10 Ohms, so the TR-5 S2s draw little current and are a light amplifier load. Our impedance analysis shows this in a trace that stays above 8 Ohms.

The port is tuned to 60Hz – quite high – and gives strong output. With large area it produces good acoustic power and will influence bass appreciably. Since bass output falls fast below 60Hz a sine wave response – not shown here – reveals, the TR-5 S2 is not bass heavy nor does it produce subsonics. It is designed to work best close to a rear wall where it will sound lively and fast.

The TR-5 S2 will sound detailed, obvious in treble but neither sharp nor bright, and bass will sound fast and lively, but not heavy. Amplifiers of 60 Watts or so will be plenty enough to go very loud. **NK**

ROKSAN TR-5 S2 £995



OUTSTANDING - amongst the best.

VERDICT

An excellent standmount loudspeaker that allies tight, punchy bass with the clarity and openness of a ribbon tweeter. An impressive performer.

FOR

- superb treble
- punchy bass
- excellent integration

AGAINST

- some might want more bass

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Mail



Visit our website at www.hi-fiworld.co.uk or send your emails to letters@hi-fiworld.co.uk. Letter of the month wins a pair of QUAD S2 loudspeakers.

Answers by: NK - Noel Keywood; JM - Jon Myles; PR - Paul Rigby; MP - Martin Pipe.



QUAD S2 LOUDSPEAKERS

CHOICES OF COLOUR: **BLACK OR MAHOGANY**

For more advice see Letters from earlier issues at www.hi-fiworld.co.uk/letters

A pair of QUAD S2 loudspeakers are on their way to Jon of Sheffield, Letter of the Month winner in our November 2016 issue.

Letter of the Month



Technics SL-1210 Mk2 Direct Drive turntable fitted with Rega RB-310 arm, sitting on a Sound Supports arm plate – seen a rear right. "Nothing short of a revelation" says Ashley Garbett.

NEW ARM

Recently I wrote in asking about arm board adaptors for Technic SL-1210 Mk2 decks. You replied with some suggestions, one of which was Sound Supports Ltd, so I purchased their conversion plate (£40 posted) and set about fitting it. Fitting was very easy – all that is needed is a Pozidrive screw

driver and some patience; it took just under an hour.

Once fitted and the cartridge (Dynavector DV20x) was set up and aligned it was time to try it out. I could not believe my ears: was I listening to someone else's very expensive system? Where had all the treble and bass, and sounds that I had never heard before,

come from?

Nothing short of a revelation, changed my listening to another level !!
Ashley Garbett

Hi Ashley. Glad it all worked out well – and thanks for the pictures. Your turntable looks wonderful. We use a similar set-up in-house, supplied by

Timestep (www.soundhifi.com), but with SME309 arm and uprated linear external power supply. The SL-1210 Mk2 was recently replaced by the Technics SL-1200G readers should note. **NK**

ALL CHANGE

Your review of the McIntosh MT5 turntable produced an incredible fact – that a £7495 turntable can't (out of the box) spin its turntable at a perfectly correct speed, and has to be tuned with a special record and frequency meter; but even then it may drift!

Compare this to Martin Pipe's piece on the Ferguson radiogram. As soon as I saw this the nostalgia part of my little brain switched into overdrive, reminding me of my old mono valve radiogram from the fifties or sixties (brand unknown, but the auto-changer could stack fifteen singles; good job the 7"s themselves had gripping radial ridges around the edge of the label to prevent slippage!) and the simple design these devices had. Not too complicated, just a two or three-band radio and a three speed deck, mixed up with an aura of being an actual piece of furniture instead of some technological metal-boxed intrusion into the living room/lounge. Yes, they even have a flat top where you could put plates and drinks when hosting a party!

So, which device is the more practical - ignoring hi-fi requirements such as sound quality, not ripping your LPs to shreds with the high tracking weight, and even the added (sound-enhancing?) hum – for the home?

In some ways the Ferguson still could be made a good case for, despite its age etc. Plus it will play 78s (with a special stylus fitted as standard), with their short playing time, something modern half-speed-cut 45rpm 2-or-3 LP per album with their one or two tracks per side modern releases (e.g. the Peter Gabriel reissues) seem to be harking back to. It won't be worth sitting down and getting comfortable to listen, because in a minute or two you'll be standing up again turning the disc over. Good exercise for couch potatoes like me but surely not conducive to a nice lying-back-and-relaxing listening session...

As an aside, my Sony PS-HX500 hasn't been used in more than a month, and its lid has now become a home for two watches, a little pile of singles, a couple of bags of dog treats, my anti-static record-cleaning brush, and my bedside clock. My LPs and 12" singles are stored in carrier bags

(vertically, not too tightly packed; I do know how to store LPs) both in my bedroom and downstairs in the front room.

I listen to 24/96 music (and CD rips) via my FiiO X3/Q-DAC/Fidelio X2s and am perfectly happy; even my mono LP of Sgt Pepper (played once, to rip it at 24/96) now sits downstairs in the lounge, almost as a coffee table show-off book, while my box set of Pink Floyd's Division Bell (2xLP and other discs, all never played - I use the downloaded 24/96 files thanks to the

be made using a strobe disc. They are inexpensive, and available from Pro-Ject, Clearaudio, Audio Technica and others for £25 or so. **NK**

Hi John. I, for one, do not think you are deluded. Playing high-resolution players through a good DAC like the Audiolab is an excellent way to listen to music. There seems to be a continuing perception that because digital audio players like the FiiO are small and portable they are not 'hi-fi'. Nothing could be further from the



A Ferguson radiogram. "As soon as I saw this the nostalgia part of my little brain switched into overdrive" says John Malcolm.

code in the box, or enjoy 5.1 from the Blu-ray) and my also, still unplayed, brand new, Dark Side Of The Moon LP do the same (again Immersion Set's 5.1 Blu-ray is more popular).

Yes, I know I'm in a minority, maybe deluded (or even deranged), but that's what works for me.

Yours sincerely

John Malcolm

Hi John. Because of the expense of the MT-5 it was reviewed critically; few are going to run in a turntable for a week, measuring speed drift over that period, meaning such matters are never discussed. In real life turntables behave in a complex fashion as they run in and settle down and most change speed slightly – it's just that no one notices.

The only turntables that don't change speed one jot are quartz-crystal referenced Direct Drives that work in phase-lock against a highly stable reference oscillator. Direct Drives lacking phase lock against a reference drift like all else, as do servo-feedback d.c. motors. So this is a common if little appreciated phenomenon and the MT-5 managed well enough, and it has speed adjusters so tweaks can

truth – a set-up like yours will easily be made using a strobe disc. They are inexpensive, and available from Pro-Ject, Clearaudio, Audio Technica and others for £25 or so. **JM**

BLACK ART

The matching of speakers and amplification feature regularly in your mail section and was certainly my biggest headache. To satisfy musical preference and room size I had to go well over budget for stand-mount speakers easy to drive.

I've read that speaker design is something of a black art and am beginning to think it may have an ethical aspect. In the development and testing of a new model do speaker manufacturers work with/to a specific amplifier performance/type/class? Or to a typical/notional amplifier? Whatever, can we find out exactly what they work to? If so, it would save a lot of time, trouble and expense.

And finally, other than Aesthetix, do you know of phono stages with gain for low output m/c's, a vol. control and balanced connections?

Yours sincerely,

**Chris Purcell
Bedford**



B&W 685 is a large stand-mounter with a 165mm diameter bass unit; it is spec'd at 87dB sensitivity. The B&W 686 is a small stand mounter with 130mm bass unit and lower 85dB sensitivity so it won't sound so loud from the same power input. These are common values that most dynamic box loudspeakers share; there is little variance between makes and models.

Hi Chris. I think you may have been worrying unduly. Loudspeakers can be a "black art" in so far as what constitutes a good one is always up for debate. Designers/manufacturers promote their own view on rightness with fervour, when often it is a quite limited outlook. It may appear to be a black art as a result, but in truth loudspeaker design is computerised and far from it.

All loudspeaker designers use powerful solid-state amplifiers for drive, with a few exceptions like AudioNote I suspect, who rightfully don't allow transistors in through the front door! But this does not affect

the ability of a loudspeaker to fill a room with sound. The sensitivity specification of a loudspeaker documents its ability to do this and it is something we measure in all loudspeakers under review. I will go over the subject of sensitivity quickly.

Firstly – and very simply – ability to go loud from little power is – in 99% of loudspeakers – related to box size. A big standmounter will play louder than a small standmounter, for any particular volume control setting on an amplifier. Moreover, if it has bigger/more drive units, as is likely, then it will also play louder before strain sets in. I'll put some figures on this.

Our loudspeaker measurements show around 84dB Sound Pressure Level (loud) is delivered from just one Watt by a typical modern small stand-mounter, 86dB by a large standmounter and 88-90dB (very loud) by a floorstander; look at the specs of B&W's 600 Series loudspeakers as an example. The consistency between different brands of loudspeakers comes from the fact that they are all designed much the same way these days.

The only small warning I'll insert here is that if two loudspeakers of the same size differ in sensitivity, don't automatically assume the most sensitive one is best. Sensitivity is largely decided by bass output; speakers with under-damped and excessive (boomy) bass can measure 2dB or so higher in sensitivity than a better damped design, with tight sounding bass. Again, only a demo will tell, but boom boxes are often cheap too, so be aware of this.

Also, some manufacturer's sensitivity measurements can be up to +2dB higher than ours and are unduly optimistic.

If you have a big room and want to play very loud, then again you will need a big loudspeaker – it's as simple as that. The reasons are, bigger drive units have better power handling (thermal capacity) and more drive units (e.g. twin bass units) absorb more power before burning out or crashing against their end-stops.

You say you "went over budget for standmounters easy to drive". Unfortunately, as most standmounters are of the same sensitivity, delivering around 86dB sound pressure from one Watt, I suspect you suffered unduly here! It's a pity you did not state make or model in your e-mail, or your budget. Hopefully, you got the right sound in the end, all the same.

Balanced phono stages are on offer from Musical Fidelity, Aqvox (<http://www.aqvox.de/phono.html>) and Clearaudio, the Clearaudio Balance + having a volume control. There is a difference between balanced output, which is simple and cheap to fit, and balanced input that is more esoteric and demands a turntable re-wire. **NK**

SPLIT STREAM

I've just come across your very informative article 'Streaming Audio by Jim Roberts' online and wonder if it is at all possible to offer me some individual advice, please?

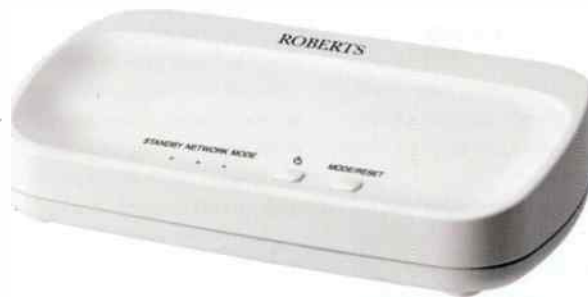
I have a 5 year old Buffalo LinkStation NAS, DLNA certified, on



The Aqvox 2Ci phono stage (top) has balanced inputs as well as outputs, as does the Clearaudio Balance + that also comes with volume control. A balanced input eliminates hum and RF noise but needs an arm re-wire.

A balanced output is simpler, providing better connection between phono-stage and amplifier – useful when they are far apart.





Stream files through a Roberts RS1 multi-room adaptor that is DLNA compliant.

which I have stored some of my CDs as MP3 files via Windows Media Player. I did not knowingly use tags, but assume WMP did it for me. Would this be the case? I did, where possible, obtain album info and tracklists online, and music is stored by Artist in a Media file on the NAS and laptop, with separate backup too.

I have a 9 year old, therefore non-wifi, Bose wave radio CD player upon which I would like to play my music wirelessly from the NAS. The quality from the CD player is OK for my needs, and the unit has Aux In phono type sockets. I need advice on what equipment I need to be able to do this, if you are able to advise, please. I have an Android smartphone.

It appears that the Roberts RS1 wireless multiroom adaptor may do the job, but it does not state that it is DLNA certified. There are a number of other units available, again I have not found one which states it is DLNA certified.

I also would like to stream music directly to my 1980's Technics hi-fi separates system in another room. Is there a single unit that would allow me to stream to both units, or would I need two separate ones? The problem is that the separates are upstairs

and the Bose is downstairs, so how to connect to a single unit!!!! Also the separates are housed in a room which is virtually radio-screened due to foil-lined plasterboard used in its construction!

I would be very grateful if you could answer these queries.

Yours faithfully

Peter Brownlow

Hi Peter, I can see what you are trying to achieve and yes, it is perfectly possible – except you are going to need two streaming boxes as they need to be wired into your existing Bose and Technics components.

Luckily the Roberts RS1 multiroom adaptor would suit your needs as it is DLNA compliant so will happily pull music files from your Buffalo LinkStation and can be controlled from your Android phone via Roberts's free UNDOK app. You'll need one for the Bose and another for the Technics connected via an appropriate cable from the RS1's line out.

Both wireless and wired ethernet connection are available and it may be the latter would have to be used in the upstairs room if there is no

reliable wi-fi signal available.

The Roberts will also allow you to access internet radio as well as Spotify, if you so desire.

In terms of tags, if you have a fairly up-to-date version of Windows Media Player and ticked the correct settings then artist/track/album information should have been imported directly. The only way to check this is to open a file in WMP to see.

One word of caution, though. If you have stored your music as MP3s you are going to find sound quality will not match that from standard CDs. I'd recommend re-ripping your silver discs as WAV files to get the best from streaming via the Roberts RS1. **JM**

DAPs

I currently run a Naim UnitiQute 2 into a Naim NAP100 power amplifier driving Leema Xen 2 speakers. Speaker cables are Tellurium Q Black. The source is an iPod classic with music in AIFF via the Naim front USB port.

Just a quick query (if there is such a thing). I want to know if a good DAP such as the Pioneer xdp-100r or Questyle qp1r could replace my UnitiQute 2 by using the variable analogue output straight into the power amp or am I better off with an integrated?

I would need to sell the Qute to finance a DAP but, if the DAC etc in the DAP is not at least the equal to the Naim then I would not bother. I ask because I would like to have a portable device that can do both.

I listen to my music in a near-field domain approx 3-4 ft. I don't use the Qute for streaming or radio so a bit of a waste.

Kind regards

Gary Armit



Connect up a FiiO X3 portable (at left) digitally to a Naim UnitiQute 2, we suggest.

Hi Gary. Yes, you can drive any power amplifier from any portable digital audio player (DAP) – and you will get very good sound quality. However, DAPs are fiendishly clever devices that use all sorts of internal trickery, like voltage converters, to compensate for low battery volts, and their analogue line and volume controlled headphone outputs don't have the dynamic qualities of mains driven equipment as a result.

It's best to use a DAP as a digital source, feeding it into an external DAC/amplifier like the UnitiQute 2, via digital connection. I would suggest you keep your Naim and get an inexpensive DAP like the FiiO X3 to experiment. You can connect it into the Naim digitally, or connect its headphone output direct into

audio files might be subject to an audio compromise if stored on inadequate media. I undertook some empirical testing in this context, to understand whether the better quality 'faster' cards were audibly different from the same files played on lower cost branded MicroSD media.

To my astonishment, there was indeed an audible difference in perceived quality. Played from the faster 'premium' card, an identical file (copied from a computer hard disc to both cards) sounded more coherent in the lower frequencies with a greater depth and solidity to the sound. High frequencies were harder to differentiate, but mid-frequencies certainly sounded smoother, a little richer and more coherent.

Repeating the test with different

Micro SD card slot

Supports the largest current cards (currently 128GB)
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High-speed microSD cards give a better result than slower ones, says Mark Douglas. So shop around for best sound quality.

the NAP100 power amplifier, and decide for yourself whether analogue connection is sonically acceptable.

The X3 acts as a portable digital source – and at a low price of £160 or so won't break the bank I suspect. The Pioneer and Questyle players are complex and more expensive portables that won't offer convincingly better results in the way you wish to use them, through a hi-fi – especially if you use digital connection that bypasses their headphone amps. **NK**

ON THE CARDS

Audiophiles often claim that there is a difference between brands of blank media, for example CDs. Does the same hold true for Micro SD cards as used in many portable digital audio players? If so, even the best high-resolution

files produced the same result every time. Consequently, I had to conclude that, yes, it is worth buying premium, faster cards for use in portable audio players, the question is, why exactly is this?

I can only imagine that this is a product of the ability of the operating system on the device to read in the file and feed it into the DAC and other modules in a timely fashion. How, for example, is the file buffered and clocked precisely into the audio circuitry? Will a slower card hinder the precision with which a given device can undertake this task? Will different operating systems vary in their ability to read, buffer and deliver the data stream into the following circuitry? Is additional error correction being triggered via slower cards? Perhaps such factors would be worth taking into consideration when

reviewing such devices.

Might this also go some way to explaining why devices featuring the same DAC may actually sound quite different? For those purchasing high-end portable devices, it would certainly seem worth experimenting with blank media.

Another factor might be the integrity of the digital file when written to lower quality media, for example, is it bit by bit accurate or are compromises introduced?

For those ripping files from their favourite CDs, the manner in which this is undertaken may also have a bearing on ultimate sound quality. Whether, for example, it is worth running the CD drive at a slower speed. What error correction is being applied and, of course, what programme is being used to undertake the task.

In conclusion, having purchased one of the fascinating high-quality portable devices now available, it would seem that the audiophile still has scope for some tweaking and experimentation in order to squeeze that final degree of fidelity from it.

Best regards,

Mark Douglas

DEMO MUSIC

When I first showed interest in hi-fi over 30 years ago I used to go to hi-fi shops regularly. These were the times when you'd return home with bags of brochures and freebies that were handed out frequently.

I can remember being impressed by the sounds I was hearing; the clarity and the scale was very impressive. We used to bring along records and recordings we had made on cassette and were allowed to listen to them. Mostly though, the music being played, although well recorded, was not something I would choose to listen to at home. I even bought some of these records to use for demos myself.

However, some time ago I realised that this was pointless as they didn't relate to most of the music I was enjoying at home. Where were all the raw hip-hop sounds I was listening to? Or the often badly recorded roots reggae sounds of this time. I was also listening to a lot of House, Garage, Jazz Funk and Soul music too.

Then a new hi-fi shop opened up nearby; it was RPM of Battersea. I built up quite a friendship with the owners there and would just pop in for a listen to any new records I'd bought. They didn't mind me having a listen to any music I had with me when the shop was quiet and would encourage me to turn it up! As I worked at a bike shop at the

time, I would service their bicycles for them in return. Oh, how I missed those days!

Recently I've started taking my nephew with me to some shows. He always enjoyed listening to me playing music at home so I thought he'd enjoy the experience. "Can you really hear the difference, Uncle?" Come and hear for yourself was my reply.

In short he left open-mouthed as he'd never heard anything like it in his life. He was very, very impressed and kept talking about it for months, only pausing to ask when the next one is! Now I had him hooked. He wanted to go again next year but bring some of 'our' music to play to see what these systems are really made of!

We weren't able to play any of the records I'd brought but luckily my nephew brought some CDs with him. We looked at each other as the music played and could stare at each other as we heard things previously denied to us. It didn't share the same grand scale of other demos we heard but who cares; this was the music we enjoyed and we were glad to hear it being reproduced so clearly.

The main thrust of this letter is that I miss feeling 'comfortable' playing some of the music I enjoy when I visit a shop nowadays. The same is true of hi-fi shows. There are more turntables now than I can remember from previous shows. However, it appears playing one's own records is looked at with scepticism and disdain.

In summary, I'd for once just like to go to a show or a hi-fi shop and hear the odd demonstration of someone



Classic show demo music was very well chosen by Dali for their CD demo discs. When measured these impressive sounding tracks have very wide dynamic range we found. Then there's the Pink Floyd's 'Dark Side of the Moon'.

playing music that isn't quite so 'safe' and predictable; whether well recorded or not!

Regards

Ifield Jones

Yes, there are industry favourites that get recycled at shows time and again. Once it was 'Dark Side of the Moon', now it is commonly Hugh Masekela's 'Stimella'. There is a reason: both have conspicuous dynamic range, alternating from quiet to very loud, unlike most music that runs only loud, the idea of contrast as effect in itself being lost on composers and producers alike. They are valid hi-fi demonstrators, even if hackneyed after a while.

But as you say, we all want to hear what we know and enjoy – and what we can also judge in fidelity terms. Trouble is, some want Ray McVay, others the Ramones. It sends those demo-ing the equipment barking mad.

This is strictly a human problem so keep taking your LPs and CDs with you, and also a box of earplugs for those that – er – don't share your tastes.

I completely sympathise with you and can (and do!) torture people too, but having stood in a room for days on end at shows demo-ing hi-fi I know the other side of the coin. Dolly Parton at full blast? I'm outta the window. **NK**

NEW STYLUS VS NEW CARTRIDGE

My dilemma is this; I've been using a Goldring 1042 for the last while and I really like it – but should I change it?

History: The previous two styli were 1012GXs which again I loved but I felt the 1042 was an improvement. However, upon reading your 1012/1042



Chord Dave recognises the digital signal fed in and automatically accommodates it. Future digital systems will take this further to become completely autonomous in their sensing.

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Whole Nuther Thing
Welcome To The Weekend and "Music Without Boundaries"... A Whole Nuther Thing is my weekly Radio Program on KSBF FM 88.5 and Online at <http://www.kfbr.org/webcast.html> each Saturday from 3-8 PM PDT. This website is an archive for my program, contained on this website are past broadcasts comprised of Three Hour Episodes. In order to maintain sound quality of these broadcasts I've had to limit the posted archive to approximately 3 years of audio files. If there is a particular show's audio no longer available please contact me by e-mail and I will make it available for download. To paraphrase Duke Ellington, "There are only 2 types of Music, Good Music and Bad Music". I personally prefer the former and that's what you'll hear each and every Saturday afternoon or evening depending on where you live. My program airs on Saturday afternoons at 3 PM PDT and features music presented in a truly "Free Form" manner meaning you will hear anything from Classical to Reggae and everything in between but hand crafted to flow seamlessly. Usually during the 5-8 PM segment I feature a selected artist and play those tunes typically ignored by Terrestrial and even Satellite Radio stations. Whole Nuther Thing is also rebroadcast on one of the Premiere Internet Radio Stations in the world, Radio That Doesn't Suck.com twice on Mondays 6AM PDT and again at 12 Noon at www.rtds.ca

Podcast	Duration	Date
Whole Nuther Thing October 15, 2016	4:28:05	10/16/16
Whole Nuther Thing October 8, 2016	2:57:07	10/08/16
Whole Nuther Thing October 1, 2016	2:58:54	10/02/16
Whole Nuther Thing September 24, 2016	3:00:26	09/25/16
Whole Nuther Thing September 17, 2016	2:57:20	09/18/16

"Bob Goodman concentrates on the 60s and plays a lot of rarely heard stuff. Well worth a listen" says Ross Jones.

review and revisiting Mr. Bolton's review from April 2012 of the 1022 (& 1042) I wonder whether I should return to the 1012 or change completely to the Hana EL (Feb 2016) or something else.

I'm using a Linn Axis with Linn Basik Plus arm through a Trichord Dino into a Cyrus 8vs outputting via Kimber 8TC cables into XTZ 99.25 (and sometimes my old B&W DM620s).

Musically, I play rock (progressive to classic to hard), pop, electronica, jazz – but crucially never classical. This is the part that I picked up on in both reviews, that the 1042 is better suited to classical and the 1012/1022 for rock.

Likewise, with the EL I noted the musical engagement and bass comments. My Dino will handle all types of cartridge inputs. I like a holistic, musical sound and am not interested in forensic detail if it loses the soul.

And on another matter...After what seems like years in the wilderness it's lovely to see a vinyl revival, and although I was never a fan of CD I do find the DAC and digital products of the moment to be very interesting also. Albeit rather technical and occasionally baffling.

I bought a Q-DAC and love its sound by the way. I'm finding your technical articles really helpful also. My worry is that for the average person using CD or MP3 downloads, is that it is good enough and crucially easy to use, sound quality aside. To get higher sound

quality, even if it is desired, there needs to be a single standard to be adopted by the majority.

I have probably ripped my CDs three times now as memory capacities have increased and become more affordable. I bought the HF Player by Onkyo on my iPhone 5s to experiment with different file types. I do like DSD files and 24 bit files, but dislike 16 bit and low rate MP3 type files. iTunes 256kbps AAC is fine and convenient for out and about though. But which standard to pick going forward? And is it even available at the moment?

A minefield, I think you'll agree. I'm not expecting an answer to this section. Its just my Hi-Fi existential angst.

Anyway thanks for a great and thought provoking magazine,
Best regards,
Paul Grele
Reigate, Surrey

Hi Paul. The Goldring 1042 is smoother and more detailed up top than the 1012 – and lovely by any standard but especially at the price. The 1012 is a tad firmer and punchier. I lived with both of them – and loved them!

Your system deserves a top-quality moving magnet cartridge and that is – by a good margin – an Ortofon 2M Black. For me it has it all, including soul by being so

coherent; only bass is not prominent. All the same I think it is your best choice. Most people that buy this cartridge are suitably impressed.

Thanks for your views on digital – they echo ours. DSD sounds lovely – open and spacious – against digital as we know it (PCM). After long exposure to hi-res (24bit) files I now – like you – commonly hear distortion in CD.

As for MP3 – forget it, except on the move. Although as you note, high rate AAC does sound very acceptable; it isn't offensive.

The future is arriving now with regard to compatibility. Modern digital systems are able to recognise incoming signals of all types and process them accordingly. Chord Electronic's DAVE is an example of this.

Intelligent digital systems are the way ahead; we do not have to stay with rigidly

specified formats as in the past, 'Red Book' CD being a prime example.

So don't worry about having to pick a format. Products are appearing right now that eliminate this vexatious issue. Better, there is generally a drive to make digital more user friendly and less challenging, so we can all expect better from digital in the future. OK, we are not quite there yet; Chord DACs are beyond the understanding of digital box stuffers, but companies at the digital forefront, like Texas Instruments, ESS, Crystal Semi and Ashei Kasei will surely be delivering better in the near future. **NK**

ON AIR

Having read Paul Rigby's article in the October 2016 magazine re 60s music, I was wondering whether he has listened to Bob Goodman's radio show. It's on KSBF in the USA on Sat at 3pm (Pacific Time). He concentrates on the 60's and plays a lot of rarely heard stuff. Well worth a listen. His shows are published as an archive on Podomatic.

Regards

Ross Jones

Thanks Ross. That's a new one on me but, having investigated www.podomatic.com and finding Bob's slot, there were no episodes to listen to, I'm afraid. **PR**

Small Is Beautiful

Jon Myles tries out Final Audio Design's new F7200 in-ear monitors and finds that when it comes to 'phones some of the best things really do come in small packages.

Final Audio Design is renowned for making one of the biggest headphones available in the shape of its Sonorous X model. They're made of stainless steel embellished with gold leaf and look like they should be clamped on the head of a Premier League footballer as they step off the team coach.

Mind you, at £3500 a pair you'd probably want something approaching a footballer's salary to afford them.

However, as if to prove they can turn their hand to anything, the designers at Final's headquarters in Kawasaki, Japan, have now gone in exactly the opposite direction with the £389.99 F7200 in-ear monitor – which is the smallest and lightest set of headphones I've ever come across.

To put it in context the stainless steel housing is 1.5cm long, has a diameter of just 5.5mm and weighs a mere 2g. Final says the small dimensions are intended to allow the 'phone to sit closer to the user's eardrums for a more realistic, vivid soundstage.

Inside that housing is one of the company's trademark full-range balanced armature drivers which are used across Final's in-ear range.

A range of eartips is supplied to allow individuals to achieve the perfect fit in their ear canals. They come with a detachable 1.2 metre braided cable featuring silver-plated oxygen free copper which can be worn either straight down or over the ear with the supplied earhooks.

And while they may be small, the standard of fit, finish and presentation is exemplary in true Final Audio tradition. The supplied carry case, for

example, is one of the best I've seen, with a circular section to wind the cable around, to prevent it tangling, plus a separate pocket for storing the eartips.

SOUND QUALITY

There's a distinctive house sound to all Final Audio's in-ear 'phones – a natural, open presentation with no artificial enhancement of the bass or treble regions.

The F7200s don't stray too far from this, although there is a slight lift in the upper midrange – no bad thing as it serves to enhance detail.

If their size makes you think these in-ears could be a little short of punch, then think again. Playing New Order's 'Bizarre Love Triangle' there was plenty of drive to the bass and good definition. Gillian Gilbert's keyboards had good tonality while the electronic studio effects that underpin the track were distinctly picked out.

In the treble there was plenty of detail but an innate smoothness; John Coltrane's saxophone on the classic 'Giant Steps' never sounded searing, instead eminently lifelike.

Soundstaging was also impressive. I initially feared the diminutive nature of the F7200s might compress the music but not a bit of it. There was excellent separation between

instruments on even the densest of tracks. The single balanced armature driver also gives seamless integration between bass, mid and treble.

Listening to Nick Cave and Kylie Minogue's duet on 'Where The Wild Roses Grow' I was struck at just how right the Final Audio's sounded – the contrast between Cave's growling vocals and Kylie's sweet tones pitched perfectly with the backing violins, viola and cello, well delineated in their own space.

Yes, the F7200s may be small but their sound is anything but.

CONCLUSION

These Final Audios may have an unusual design but it's one that's entirely justified on sonic grounds. They are naturally clear and open but able to deliver real punch when the music demands.



**FINAL AUDIO
DESIGN F7200**
£389.99



OUTSTANDING - amongst the best.

VERDICT

Small and light but with a sound that's in inverse proportion to their size. This is an earphone that punches well above its weight.

FOR

- build quality
- natural, open sound
- accurate tonality
- good bass

AGAINST

- nothing

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Rocky Mountain Audio Fest, Denver, 2016



Noel Keywood heads to the mile-high city of Denver to take in America's latest hi-fi products at the Rocky Mountain Audio Fest.

180gm vinyl LPs as fast as possible; the re-birth of the LP is universal. So there was no shortage of turntables on display, as well as quality re-issue LPs, such as a Stevie Ray Vaughan double album I purchased for my son – who was alarmed to see they span at 45rpm! High-speed LPs offer fantastic sound quality, even if they do hold few tracks. It reminded me that the USA invests in its musical heritage – the Library Of Congress held a 7 day event on musical archiving at the same time – and this show reflected the USA's deep interest in audio quality.

The Rocky Mountain Audio Fest has grown over the years to become one of the USA's largest audio shows. Run by the Colorado Audio Society since 2004, this year it occupied all eleven floors of the Denver Marriott Tech Centre hotel. I flew in to take a look.

Wherever you go in Denver, the Rocky Mountains are in the distance – snow covered when I was there. Denver sits on a wide open plain at 5000ft, with clean crisp air, whilst far away the mountains rise to 10000ft. It's a lovely area.

The US audio market is a world apart, fed by US manufacturers who hardly need bother to export. As a result, US shows carry products not seen anywhere else and some are technologically challenging. At this show, for example, I came across a valve amplifier from Linear Tube Audio, the ZOTL40, that has no

output transformers and better sound than all others as a result, they claim.

After reading its US patent and perusing the circuit diagram, I did not understand it at all! This is a radically different valve amplifier, designed and built in the USA – and sold there too. See more below.

America is digging out its old analogue master tapes and re-pressing LPs onto quality



Last-minute preparations before the enthusiastic hordes descend on the Rocky Mountain Audio Fest.



The first room I visited on the 11th floor housed an impressive collection of professional open-reel tape decks, obsolete models renovated to meet growing demand Kim Anderson (CFO) of J-Corder told me. This re-built Technics RS-1500 carried an \$11,800 price tag. They offer repair and renovation services - see www.j-corder.com of Gig Harbour, Seattle.

A deeply different 40 Watt valve amplifier, the ZOTL40 from Linear Tube Audio (www.lineartubeaudio.com, Washington, DC). It has no output transformers as such, instead placing the audio signal onto a 250kHz carrier then using FET switching rectifiers to feed loudspeakers. They claim wider bandwidth, less distortion and no tube bloom. At heart lies a novel switching rectifier circuit from David Berning, description and circuit at http://www.davidberning.com/images/patent5612646/DavidBerning_ZOTL_Patent5612646.pdf. Amazing - and rarely seen outside the USA.



In the hotel lobby VK Music of California (<http://www.vkmusic.ca>) were showing a range of kits and parts, including this new Elekit amplifier, the TU-8340 PP, from Japan (www.elekit.co.jp). I was attracted by the use of a high quality double C Core mains transformer - at centre rear. It is flanked by neat output transformers and uses KT150 tubes to give 50 Watts in Ultralinear mode. Price is quoted as \$1125 (see <http://www.audioasylum.com/forums/elekit/messages/611.html>).



PS Audio (www.psaudio.com) had BHK300 Signature power amplifiers attached to the remarkable Scaena (<http://www.scaena.com>, Florida) vertical line array loudspeakers, price \$125,000 a pair. On the inside edge of each front array of 15 drivers lie ribbon tweeters, running top to bottom. In the background lie three 18in sub-woofers per channel, no less. Bass was tight and completely free of cabinet boom - impressive.



The Sanders Model 10 hybrid electrostatic loudspeaker, from Sanders Sound Systems of Conifer, Colorado. These see-through electrostatics sounded wonderfully clean and clear and bass was firm and strong. They are sold as a system including DSP crossover and Sanders Magtech amplifier for \$17,000.



The Eddie loudspeaker from Evoke (<http://evokespeakers.com>). It uses a planar magnetic midrange unit, a flat ribbon tweeter and a 7in bass unit specially designed to match into the midrange unit. Looks good but a price of \$3990 per pair may damp sales.



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Turntables

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Clearaudio Concept



HI-FI WORLD
VERDICT 





The Airforce III turntable from TechDAS of Japan (www.tech-das.jp). It's a 33/45rpm belt drive, with an air bearing and vacuum hold down of LP too – a clamp mechanism used by Luxman of Japan long ago. The AirForce II has a silent external air pump, they say. For an environment that needs “a larger howling margin” an air insulation table is available. The Airforce III is imported to the UK by Absolute Sounds (www.absolutesounds.com).



Not the Rogers Brits know, but Rogers High Fidelity of Warwick, New York, founded by Roger Gibbon. They manufacture a wide range of valve amplifiers including the attractive EHF200 shown here. See <http://rogershighfidelity.com>. Power is a claimed 112 Watts peak output power, per channel; expect 50-60 Watts rms from KT150s in push-pull though.



The VAC room sounded nice to me, using Harbeth Monitor 40.2 domestic monitor loudspeakers (£11,250) driven by VAC Signature 200 iQ tube power amplifiers (www.vac-amps.com, Sarasota, Florida). Clean, clear and very punchy, this system was refined.



A direct coupled valve headphone amplifier in prototype form, I was told by Cavalli. Apparently, the headphones are connected between valve anodes, using an auto-balancing and protection circuit to ensure nothing naughty can happen (www.cavalliaudio.com).



The massive Precision Sound Array from VOS loudspeakers filled a hotel room in every sense of the word. Each subwoofer column carries four 12in bass units and two of them shook the room when I was there. Hand built in Aurora, Colorado, delivery is limited to the USA, so you won't be spending \$135,000 on them! See <http://www.vosloudspeakers.com>.

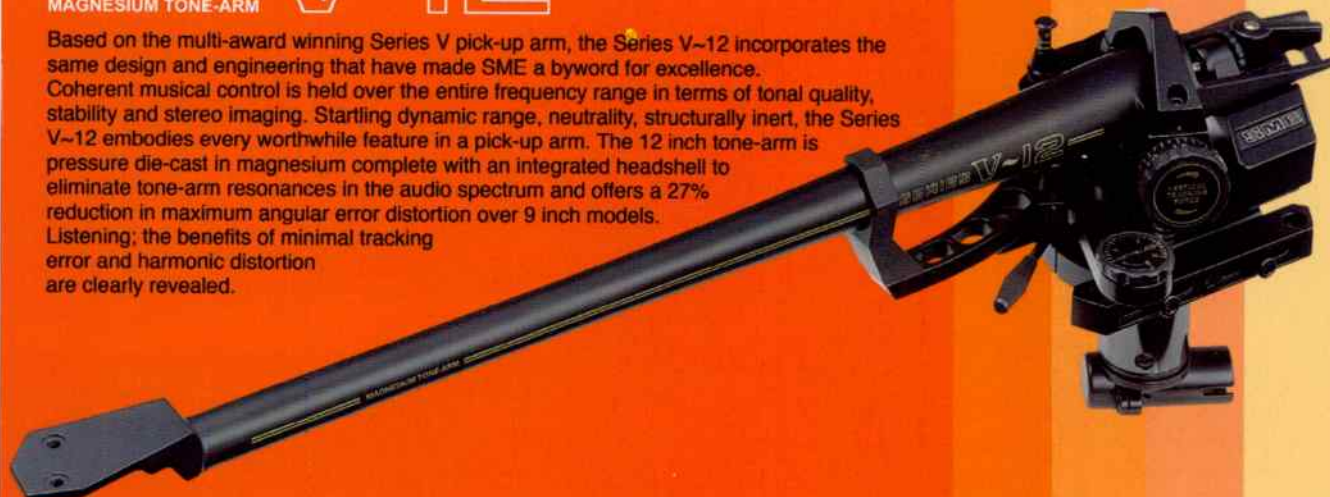


Raven Audio of Trinity, Texas, were showing a wide range of beautifully crafted tube amplifiers including their new Mk2 Monoblock amplifiers shown here. They were driving Legacy Audio V loudspeakers - <http://legacyaudio.com>, Springfield, Illinois.

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All in the family

Martin Pipe tries Fostex TH-610 headphones for size.

Fostex has launched the TH-610, a more affordable version of its flagship TH-900 Mk2. It is a full-sized circumaural design, for maximum rejection of ambient noise, and costs £569.

It still has 50mm drive units, although the flux density of each driver's neodymium magnet is lower and it's not quite as sensitive at 98dB/mW. Fostex's 'bio-dyna' diaphragm still features, fashioned from bio-cellulose fibre, the properties of which include low density and a high Young's modulus. Fostex claims it's better than the plastic film typically used in headphone drive units, offering "high-resolution reproduction".

The 375-gram TH-900 Mk2's 'protein leather' earcups have given way to a "low-repulsion cushion material in quality artificial leather for comfortable fitting". Gone too are the exotic Urushi-lacquered Japanese cherry-birch housings. TH-610 owners must instead make do with wood-grained housings fashioned from matte-finished black walnut. But fear not; they still look gorgeous. Another benefit is that the beautifully-made 'Hi-FC' cables are detachable, courtesy of robust proprietary plugs.

Supplied is a generous 3m-metre cable, terminated in a chunky 6.3mm plug. Fine for home gear, but difficult if you want to play your personal through the TH-610s. I did try a 6.3mm-to-3.5mm adaptor with a Sony Walkman Professional and a Cowon D20, but although it worked I was less than happy with the structural integrity of this

arrangement. A 'trailing' adaptor would be a better bet. On the 'plus' side Fostex offers a balanced upgrade, with a 4-pin XLR plug. Intended for use with the TH-900 Mk2, it's rather expensive at £250. Thankfully, distributor SCV offers a 'trade-in' service for £50; send in the standard cable, and you'll get a balanced one in return.

It may be significantly cheaper than the TH-900 Mk2 but £569 is still a lot of wedge for a pair of headphones. Let's start with the practicalities. They're comfortable to wear and can be adjusted for a good fit, certainly if you're sitting upright rather than lying down. And a good fit is essential if you're to get the best bass response the TH-610s can offer. In this state, isolation is excellent and so there's less to get between the music and you. Furthermore, I didn't have any problems wearing them over long periods of time.

Initially, I tried the TH-610s with a Fostex HP-A4BL DAC/headphone amplifier. This was driven optically by a Cambridge CXN streamer, playing lossless CD rips. The HP-A4BL supports balanced 'phones, and courtesy of the necessary cable I was able to try both forms of connectivity. There's certainly more drive available in balanced mode; I found myself having to turn down the volume. I then switched to the more familiar Chord Hugo TT, which only caters for regular (i.e. 'unbalanced') headphones.

SOUND QUALITY

Soundwise, the TH-610s have much to recommend them. Presentation

nudges towards the treble rather than the bass; the low-end offered is certainly articulate and can plunge satisfyingly deep. Presentation is spacious, crisp and detailed, enabling me to get to the heart of a sophisticated recording like Al Stewart's 1973 exquisitely-crafted 'Past, Present and Future'. Electronic percussion, like that prominent throughout Kraftwerk's 'Tour de France Soundtracks' is finely-etched and evenly-paced. That moderately-forward treble can on occasions lead to a trace of sibilance, as some of the choral contributions to Previn's recording of Carl Orff's 'Carmina Burana' demonstrated. The TH-610s fared well with other manifestations of the human voice; speech material like Radio 4 broadcasts has a commendably-natural balance with no untoward 'plumminess'.

CONCLUSION

The best I can say about these headphones is that I found myself engrossed in the music for hours at a time, listening fatigue never rearing its ugly head.

Definitely worth a listen.



**FOSTEX
TH-610, £569**



OUTSTANDING - amongst the best.

VERDICT

Comfortable to wear, distinctive in appearance and oozing class these headphones deliver an involving and intricate sound. They can be upgraded to balanced operation.

FDR

- crisp and detailed presentation with effortless timing
- balanced upgrade and replacement earpads available
- superb build quality

AGAINST

- slight treble emphasis
- 3.5mm connections ignored

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Great bass response and upper midrange detail allied to clarity makes this a must-hear at its price-point.



CLEARAUDIO INNOVATION £6400
Expensive, but offers great results from a finely honed and beautifully finished belt drive turntable, with servo control from the platter to keep a grip on tempo like few others. Can be fitted with a Clearaudio tangential arm, or any conventional design. Awesome.



INSPIRE MONARCH £4,350
A rebuilt from the ground up Technics Direct Drive, having blistering pace and dynamics allied with smoothness, sophistication and purity of tone. A true reference.



LINN LP12SE £3,600
The UK's most iconic turntable, the legendary Sondek goes from strength to strength. New Keel sub-chassis and Radical DC motor add precision and grip to one of the world's most musical disc spinners. Expensive though.

MICHELL GYRO DEC £1700
Wonderful styling coupled with great build and finish make this turntable a delight for friends and family. It has an attractive clear acrylic dust cover, and you can mount just about any arm. A current design standard.



PRO-JECT ESSENTIAL DIGITAL £300
A budget turntable that turns in a great analogue performance, but also has a hi-res digital output. Send 24/96 across your lounge via optical cable to a DAC and get great audio quality. Or record LP to your laptop.



REGA RP3 £550
The first of the super-quality Regas, little compromised by price and featuring Rega's outstanding RB303 tonearm, suitable for MM and MC cartridges. A standard at the price point.

TIMESTEP EVO £2100
The famous Technics SL-1210 MkII Direct Drive but with improved plinth, isolation, main bearing and power supply, plus an SME arm (add £1500). DD convenience, rock steady pitch and fab sound at a great price. Our in-house reference.



TONEARMS

ORIGIN LIVE ENCOUNTER MK3C £1,745
Origin Live combines carbon fibre and ebony to marvellous effect in its new 12-inch arm. Creamy and rich in presentation, the Encounter delves deep into the mix for a satisfying listen.

HADCOCK GH-242 EXPORT £810
Consummately musical, lyrical sounding tonearm, but needs the right turntable.

ORIGIN LIVE ONYX £450
Easy, smooth, creamy nature that reminds you why you're listening to vinyl in the first place. Essential audition at the price.



REGA RB303 £300
A one piece tapered casting makes this arm's structure almost unrivalled. Great dynamics and superb imaging, for MM and MC. Reference quality for peanuts.

SME 312S £1,600
Twelve inch magnesium alloy tapered arm tube plus SME V bearings. An insightful yet smooth and relaxed sound. Superlative build completes the package. Our Editor's steed.



SME 309 £1500
A one-piece tapered 9in arm finished like a camera and slick to use. Superlative SME quality and sound at affordable price.

SME V £3000
Offers rapid fire timing and a sense of precision, plus rock solid dynamics. Top dollar for deep pockets.

CARTRIDGES

AUDIO TECHNICA AT-OC9 MLIII MC £420
A fine sounding MC with strong bass and super fine treble from a great stylus – yet inexpensive.



AUDIO TECHNICA AT-F3/III MC £150
Great value entry level moving coil with detail and grip you just can't get from similarly priced moving magnets.

BENZ MICRO ACE SL MC £595
Smooth, lucid and full-bodied, award-winning, hand-made cartridge from Switzerland.

BENZ MICRO WOOD SL MC E945
Highly finessed Swiss moving coil that plays music with riflebolt precision.

DENON DL-103 £180
A popular and much loved budget MC with big bass, smooth treble and deep sound stage. Fantastic value.



LYRA TITAN I MC £3,500
Breathtaking speed and dynamics from LP, helped by diamond coated, boron rod cantilever.



ORTOFON 2M MONO SE MM £80
A mono cartridge purposed for The Beatles in Mono microgroove LPs. Fitted with a top quality Shibata tip. Fab for the four.



ORTOFON 2M BLACK MM £400
As good as it gets from MM. Fabulous detail and insight from a Shibata stylus, good bass and excellent tracking.

ORTOFON CADENZA BRONZE MC £1,400
A mid-price MC with a slightly livelier presentation than the super smooth Cadenza Black. High-end sound at midband price – great value.



ORTOFON CADENZA BLACK MC £1,800
Ultra smooth and dimensional moving coil with bass and punch aplenty. Lovely stylus.

ORTOFON A95 MC £3,750
Fast and extremely detailed, this is an MC cartridge that sets standards.

REGA CARBON MM £35
Budget price for a competent cartridge with a fairly unflappable nature. Ideal for beginners.



GOLDRING 1012GX MM £250
A glorious sounding cartridge with solid bass and strong dynamic punch, plus excellent treble from its Fritz Geiger stylus. Fun and affordable.



SHURE M97XE £80
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Long-established cartridge from Holland with an open and dynamic sound.

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Clean, concise sound from MM and MC cartridges at a very low price. A real bargain.

ICON AUDIO PS3 MKII £1,200
All valve MM phono stage with MC transformer option, graced by big, spacious and relaxed sound.



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LEEMA ACOUSTICS ELEMENTS ULTRA £1,199
Smooth and detailed sound with the ability to accommodate most modern cartridges. Exceptional value for money.



PRO-JECT TUBE BOX DS £425
Compact MM and MC phonostage with valve output circuit and a big sound.



QUAD QC24P £995
MM and MC, oodles of gain, a volume control – and valves! Looks superb and sounds even better: smooth, atmospheric and big bass.

TIMESTEP T-01MC £995
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PREAMPLIFIERS

ICON AUDIO LA-4 MKIII £1,300
Uses early 6SN7 triodes for liquid sound. Has plenty of gain and a remote control into the bargain.



MF AUDIO CLASSIC SILVER £4,500
One of the best preamplifiers we've heard at any price, this transformer-coupled marvel does very little wrong. It's powerful, clean and open, yet delicate. Its sound is unmatched at or near the price.

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ARIAND PRO845SE £1,499
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Power house sound with enormous pace and punch from traditional U.S. muscle master Audio Research. Breathtaking, but expensive.



CAMBRIDGE AUDIO AZUR 651A £350
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CREEK EVOLUTION 100A £1,500
Superb build and smooth confident sound make this powerful amplifier a benchmark.



CYRUS 8DAC £1,400
Trademark shoebox-sized Cyrus integrated now offering 88Watts per channel, plus DAC. Svelte delivery from a dainty case that fits in anywhere – and isn't Class D!

EXPOSURE 1010 £495
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ICON AUDIO STEREO 60 MKIII £1,700
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NAIM NA1T 5SI £925
Naim's fabled entry-level integrated amplifier is updated to si status. Oemos Naim's superbly muscular sound at entry level.

SUGDEN A21SE £2,480
Class A amp with fantastic sound quality producing hard, sculpted images, deep detail and tight bass. Just don't expect disco-like sound levels!



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AUDIO RESEARCH VS175 £7,498
Powerful, fast valve sound that makes everything else look weak at times. Needs careful matching but well worth the effort.

AUDIO RESEARCH VS115 £5,000
Oodles of power with enormous punch. Rafael Todes said it provided "shock and awe" while retaining incredible smoothness and texture.

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With 120W from big 845 valves right down to low frequencies, this power amplifier has massive dynamics and bass swing, yet is easy on the ear.



ICON AUDIO MB81 £10,000
Big Russian transmitter valves deliver 200W from these massive monoblock amplifiers. Frightening in every sense.

MCINTOSH MC-152 £4,995
Stunningly insightful sound with enormous bass punch from a uniquely designed transistor amp. Amazing audio, a league up, if expensive.



QUAD ELITE QMP MONOBLOCKS £2400 PR
The proverbial iron fist in a velvet glove. Plenty of power but delivered with an assured and confident nature. Smooth on top and easy on the ear but can rock out when needed.

QUAD II-EIGHTY MONOBLOCKS £6,000 PR
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B&W 803 D3 £12,500
B&W's updated statement floorstanders deliver depth and definition with breathtaking speed and authority, aided by a diamond coated tweeter. Expensive – but enormously impressive.

CASTLE AVON V £1,600
A big floorstander at a modest price that suits the average room. Refined ribbon treble and deep bass give it a great delivery.



EMINENT TECHNOLOGY LFT-8B £2,500
Excellent U.S. planar magnetic loudspeaker at bargain price. Utterly superb - a must hear.

EPOS K2 £1,000
A fun sound that is tidy all round and very engaging, with solid bass. Music as you hope it to be.

FOCAL ARIA 926 £1,400
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Matches Martin Logan's XStat electrostatic panel to a powerful subwoofer to provide extended, powerful bass. Dramatic sonic purity. Awesome – all but unmatched.



MARTIN LOGAN ELECTROMOTION £2,500
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QUADRAL ORKAN VIII AKTIVS £6,200
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Q ACOUSTICS 2050I £480
A large floorstander at a budget price. Offers high sensitivity and big sound and has very few flaws for the price.

SPENDOR SP100 R2 £6,495
Retro looks but a sound that's hard to match. Sendor's 12" bass unit provides massive low-end grunt with a room-filling sound.



SPENDOR A3 £1,300
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TANNOY DEFINITION DC10 TI £6,000
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TANNOY KENSINGTON £9,950
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ACOUSTIC ENERGY NEO 1 V2 £225
Civilised sounding speaker with fast and tuneful bass.

ACOUSTIC ENERGY AE1 CLASSIC £845
Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made.



ELAC BS243 £1,000
More transparent and spacious than they've a right to be at this price, these refined mid-price standmounters represent top value.



WHARFEDALE DENTON £500
A beguiling mixture of retro looks with modern, high-technology drive units. The Denton has an easy-going, big-hearted sound with a touch of trad warmth that should appeal to many.



OPPO HA-2 £250
Remarkable performance and sound from ESS Sabre32 DAC in a slim portable package.



EMINENT TECHNOLOGY LFT-16A £1,200
U.S. planar magnetic bookshelf loudspeaker with unrivalled mid-band and treble. Hear it before all else.

WHARFEDALE DIAMOND 220 £200
Builds on the success of previous Diamond ranges with better bass, more detail and a greater sense of scale.



KEF LS50 £800
Supremely musical mini-monitors which sound much bigger than they look.



MARTIN LOGAN MOTION 35 £1,300
Folded Air-Motion tweeter gives a taste of Martin Logan's electrostatic sound in a standmount. Different from the standard mini-monitor and all the better for it.



PMC TWENTY.21 £1,575
Transmission line loaded standmount with a big box sound from a compact cabinet. Punches well above its weight.



Q ACOUSTICS 2020i £165
Great little bargain-priced stand-mounts with a friendly, fun yet surprisingly refined sound. Hard to better for a pair of starter loudspeakers.

HEADPHONE AMPLIFIERS
CREEK OBH11 £150
Designed specifically for low to medium impedance (30 Ohm – 300 Ohm) headphones the little Creek has a marvelously well-judged sound.

CHORD MOJO £399
Class leading portable DAC and headphone amp with ability beyond all else. Big, open spacious sound.



EPIPHANY EHP-02 £99
PP3 battery-powered portable gives great sound quality at an almost giveaway price. Happy with the output from an iPod or CD player, the little epiphany is a true bargain.



ICON AUDIO HP8 MKII £650
The HP8 MKII valve-based headphone amplifier brings the spacious sound of valves to headphones. And it matches 'em all.



FIDELITY AUDIO HPA 100 £350
Great little headphone amplifier with a lively yet refined and open sound.

MUSIC FIRST PHONE BOX £276
Brings a big stage, plenty of detail and rich, deep colours to the sonic spectrum.



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AUDIOLAB 8200CDQ £949
Inspired CD player and DAC with price-performance ratio like no other. Capable of matching designs costing much more.



CANOR CD2+ £3,100
Musically coherent and tuneful valve-driven CD player from Slovakia. Lovely liquid sound.



CAMBRIDGE AUDIO AZUR 651C £410
Snappy modern presentation from this budget CD player. Cracking audiophile entry point for any digital fan.

CHORD RED REFERENCE MKII £16,000
A unique and massive engineering exercise that could well be the best CD player available. Chord's Pulse Array DAC technology produces a musical experience like few others. A true reference player.



ESOTERIC K-03 £9,495
Superb high-end silver disc spinner that is beyond criticism. Devoid of its own character but has a flawless presentation.



EXPOSURE 101 £395
Detailed player with fine sense of timing should be an automatic entry on any demo list at this price.

ELECTROCOMPANET EMP-1/S £4,650
Epic in scale, lavish in tone and exuberant in its musicality - this is a memorable SACD spinner. Quirky in operation and modest in finish, though.



OPPO BDP-105D £1200
Universal player and DAC that makes CD and Blu-ray (+DVD) sound deep, spacious and full bodied. Reference quality that's affordable.



REGA APOLLO-R £550
Rega comes up with a fine CD player again. Tremendous detail and an easy, unforced sound at all times. Few bells and whistles but made up for by its superb sonic ability.

ROKSAN KANDY K2 £900
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CAMBRIDGE AUDIO AZUR 651T £299
Value-packed AM/FM/DAB and DAB+ ready tuner. Precise and detailed with excellent resolution of spoken word.



CREEK DESTINY 2 £550
Creek's tuner expertise shines through in the Destiny 2. This AM/FM receiver is wonderfully three-dimensional and smooth.



MAGNUM DYNALAB MD-90T £1,900
Exceptionally able, but commensurately priced, audiophile tuner that cannot fail to charm.



DACS

AUDIOLAB M-DAC £600
Excellent sound from ESS Sabre32 DAC and impressive flexibility with a unique range of filter options make this a stand-out product. Low price is the icing on the cake.



AUDIOLAB Q-DAC £250
Stripped-down version of Audiolab's M-DAC loses some features but retains much of the sound, making it a veritable bargain.

ANTELOPE ZODIAC GOLD/VOLTIKUS £3,095
DAC/preamp/power supply combination majors on detail but has a remarkable un-digital sound. One of the best at its price.



CHORD 2QUTE HD £990
Superb build quality and exceptional sound from this compact unit. Boasts the ability to handle DSD direct via USB and has an exceptional soundstage. One of the best DACs you can buy.



DCS DEBUSSY £8,000
DCS's bespoke 'Ring DAC' circuit gives a beautifully-fluid, almost analogue sound that encourages long listening sessions. Not cheap but worth every penny.

NORTHERN FIDELITY DAC £650
Packed full of features, including Bluetooth and USB, this ESS Sabre32 equipped DAC offers crisp, insightful sound at low price.



METRUM OCTAVE £729
Unique two-box digital-to-analogue convertor with great sound at a great price. Cuts upper treble, though.

NAIM DAC £2,400
Superb high-end digital convertor with a probing, punchy and forensically-detailed sound.



TEAC UD-501 £699
Feature-packed DAC with benefit of DSD playback. Superb sound means little to touch it at the price.



RESONESSENCE INVICTA MIRUS £4,499
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Chord's proprietary DAC circuit shines in their top-of-the-range streamer. Hear-through clarity with a sound rich in detail, dynamics and soundstage.



CAMBRIDGE AUDIO NP30 £399
Budget offering from Cambridge offers a great introduction to network streaming.

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ENTOTEM PLATO £2999.00
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BLACK RHODIUM TWIST £71/3M

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MAINS CABLES R US NO.27 £95

Offers a sprightly pace with a precise nature. Fast performance enhance frequencies and beautifully etched detail.



CHORD SIGNATURE REFERENCE £900

Majors on timing, detail and openness. Capable of getting the best from most systems and a recommended upgrade.



TELLURIUM Q BLACK 280/3M

A deep, dark, velvety performer that's nevertheless highly musical, it represents excellent value as mid-price cables go.

TELLURIUM Q SILVER DIAMOND £804/M

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AUDEZE LCD-3 £1,725

A planar magnetic 'phone that offers monitor quality. Strong sound with silky, dark quality that others struggle to match.



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Beautifully presented headphones from the loudspeaker specialists. Feed them a good quality source signal and they reward with excellent sound.

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Wonderful little budget over-ear portable 'phones with a clean, clear sound to beat the best of the rest at the price.



NOBLE K10 INC. FITTING £1,279

Custom fit in-ear phones with 10 drivers deliver a sound that is out of this world. Personal and perfect.



OPPO PM-1 £950

Planar magnetic phones with a warm, easy but big bodied sound that draws you in. Need a lot of drive, but deliver superb bass.



SENNHEISER HD700 £599

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Roksan's K3 Series of hi-fi electronics put sound quality first. But more than just sounding great, they're also effortlessly simple to use and come in a design that anyone would be proud to put at the centre of their music system.

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Laserdisc finally finds its niche

Martin Pipe continues his examination of the Laserdisc format, which was being accepted by movie buffs and the quality-conscious by the late 1980s.

In the beginning, the laser-read videodisc was primarily a Philips story. By the mid-1980s, though, another firm was making a significant contribution to the format – Japanese hi-fi giant Pioneer, manufacturer of the two players that illustrate these articles.

In 1984, Pioneer launched the first unit with a sled-mounted semiconductor laser of the sort that all CD players have – this helped to reduce manufacturing costs. Pioneer also did much to establish the 'Laserdisc' brand, even setting up software companies (Pioneer LDCE in Europe) to distribute material in the format.

Pioneer also popularised Laserdisc for karaoke ('LaserKaraoke'), the 'singalong' entertainment that had become wildly-popular in pubs and bars



Its freedom from wear, excellent picture/sound quality and speedy access to specific tracks made Laserdisc a 'no-brainer' for karaoke – the 'singalong' entertainment that spread virally from Japanese bars to the rest of the world during the late 1980s. Pioneer sold the idea as 'LaserKaraoke'. Here we see The McCoy's mid-1960s US hit 'Hang on Sloopy' in karaoke form.

beyond its Japanese origins by the late 1980s. The players had microphone inputs and mixers, and sometimes digital-processing devices like pitch-shifters too. The karaoke discs featured specially-created video content and scrolling lyrics to accompany the backing tracks.

Pioneer also introduced its £25,000 Pioneer VDR-V1000 laserdisc recorder for professional use, and adapted Laserdisc to the Japanese MUSE HDTV format, selling clever machines able to play both sides of a disc without having to spit it out first; players like the UK-model CLD-2950 had a laser that could perform a literal 'U-turn' internally!

In the late 1980s, Pioneer controversially started selling to European AV enthusiasts players that were capable of handling not only 'official' PAL titles but also NTSC releases of the sort available to American and

Japanese consumers. The first of these machines was the 1989-vintage CLD-1450, which sold surprisingly well.

Why? In the US – where over 2 million players were then in circulation – the choice of software was much wider, so a market for imported discs to the UK sprung up. Even as far back as 1984, the roster of American software approached a thousand titles. An NTSC-compatible player could play all these – and the thousands of titles released over the intervening five years.

An additional draw was that you often got to see films ahead of their UK



In the late 1980s, Philips attempted to relaunch Laserdiscs – now with added CD-quality soundtracks – as 'CD Video'. You could buy various musical selections in 5in. ('clip'), 8in. ('EP') and conventional 12in. form.

home-video release date; the expense associated with imported discs was to some a price worth paying; for me, one of the joys of visiting the States in the 1990s was an opportunity to buy the latest NTSC laserdiscs in shopping malls.

Minority niches were well-served too; fans of anime – and a slew of music releases in their highest-quality form (among them The Cars' Heartbeat City, Prince's



Pioneer's VDR-V1000 'LaserRecorder' would have set you back £25,000. The rewritable discs needed for the VDR-V1000 cost a whopping £800 apiece!



We may take high-definition broadcast TV, Blu-Ray and streaming for granted today. But HDTV goes back much further than that – the 1125-line MUSE ‘Hi-Vision’ format was delivering HDTV to well-heeled Japanese consumers in the late 1980s.

The Undertaker and Kate Bush Live at the Hammersmith Odeon) that were only ever sold in Japan – were in seventh heaven!

Circuitry in the Pioneer players transcoded NTSC into a ‘pseudo-PAL’ signal that most modern TVs could handle; companies like Oxford-based Videotec sprang up to modify the players to deliver a ‘pure’ NTSC output of better quality, for the benefit of those with multi-standard monitors. By this time, Laserdisc players were starting to lose their UHF modulators that fed a TV’s aerial socket; TVs worth their salt often had a Scart socket that accepted composite video.

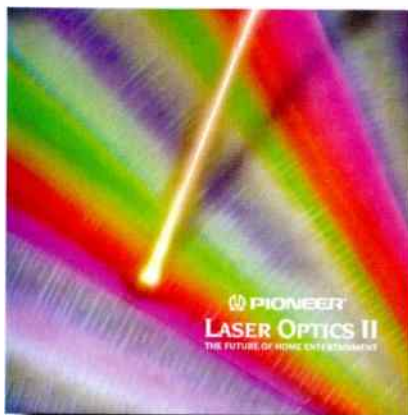
Laserdisc also gained a following elsewhere in Asia and some other regions around the world; the format stood up better to high temperatures and humidity than videotape.

They may have taken sales away from Pioneer’s own LDCE arm but players capable of handling all discs helped to establish Laserdisc as a key component of the fledging home-cinema industry in the UK, and elsewhere in Europe. None of the official US-market players would spin PAL discs, which was a bit of a shame if you wanted to send Laserdiscs of PAL material (BBC Enterprises’ Blackadder and Fawlty Towers titles, for example) to Stateside fans of British TV. They would have needed to import PAL-model players, as well as obtain PAL-

capable displays. In today’s globalised era, multistandard AV sources and displays compatible with NTSC and PAL are the rule rather than the exception. But as late as the mid-1990s, things were very different...

Perhaps most importantly of all, though, Pioneer was instrumental in applying a CD quality (16-bit, 44.1kHz) linear PCM soundtrack to NTSC Laserdiscs in 1985 – these players would also spin CDs, often with dedicated ‘mini’ disc trays that extended from the main laserdisc one that dominated the front panels of players.

It helped that both formats are read by lasers of the same 780nm (near-infrared) wavelength. All of the multi-standard machines sold by Pioneer in Europe were of this CD-compatible type by the late 1980s. To be fair, the existing analogue FM soundtracks were surprisingly effective, being far superior to what domestic videocassette formats were capable of. In promotional material for Pioneer, the inimitable Ray Charles explained that the ‘stereo’ of the ‘video turntable that works with a laser beam’ was ‘as good as anything’



To sell Laserdisc ‘in-store’, Pioneer produced a series of demos for dealers. These would often be played continuously during opening hours, to grab the attention of potential buyers.

he had heard on his home system. And the linear edgetracks of home videotape formats were indeed terrible in comparison, suffering as they did from hiss, wow and flutter, squashed dynamics and a restricted frequency response.

Analogue Laserdisc even scored over the then-new hi-fi audio systems for VHS and Betamax, as you didn’t get the audible compander ‘breathing’ that detracted from



The interior of the Pioneer CLD-2950, an upmarket Laserdisc player from the mid-1990s, is dominated by a mechanism capable of handling LP-sized discs – in addition to CDs, which can be loaded by means of a small ‘sub-tray’.

some programme sources (even something as innocuous as speech). This is interesting, as both tape and disc systems relied on the use of subcarriers that were inserted into spare spectrum. No wonder that Pioneer promoted Laserdisc as ‘video for those who really care about audio’.

Note that companding noise-reduction for analogue soundtracks, the CX system originally developed by CBS for vinyl LPs, was tacked onto laserdisc to combat the noise that was inherent in the system; this could be heard as a ‘hiss’ during quiet passages. Compatible hardware enabled you to engage the 14dB of potential noise-reduction when playing discs bearing the ‘CX’ logo. Non-CX players yielded a ‘thinner’ sound; this could be addressed, certainly in the US, with one of the aftermarket CX noise-reduction units marketed for a while.

A less obvious reason for using CX was to facilitate lowering the levels of the FM audio subcarriers with no audible effect. It was done to prevent them from interfering with



In the mid-1980s, Pioneer was aggressively-marketing Laserdisc in the US – this still is from a 1984 in-store promotional disc. Using artists like Devo and Ray Charles, the presentation described how Laserdisc was superior to then-dominant home videotape.

the chroma (colour) information, something that could result in visual patterning.

Such concerns were, however, made redundant with the subsequent introduction of CD-quality digital audio. Some NTSC-format PCM discs also had FM soundtracks, for backwards-compatibility or features like directors' commentaries. Although it was occasionally audible, CX's companding was much less 'severe' than the dbx-based system specified for VHS, and so less 'pumping' was evident. Relatively-few CX-encoded titles were released, although higher-end players included the CX decoding circuitry well into Laserdisc's digital-audio phase. Both analogue and digital stereo soundtracks could carry matrix-encoded Dolby Stereo information, a fact not lost on AV buffs who had kitted out their home cinemas with surround gear.

Digital was the 'buzzword' of the 1980s, and it even encouraged Philips to have another stab at the format – which it called 'CD Video' or CDV – in 1987. By this time, a means of squeezing LPCM audio onto PAL-format discs had been found; owing to a lack of available spectrum, though, PAL discs had either analogue or digital audio – not both. It's quite interesting to note that although the DVD format supports uncompressed LPCM, the vast majority of releases have lossily-compressed Dolby Digital soundtracks (typically 192kbps for stereo and 384kbps for 5.1 surround)! Laserdisc will thus potentially sound better; having

said that, the analogue-to-digital converters and digital processing techniques employed by software companies have come a long way in the past twenty or thirty years...

In addition to standard 12in. Laserdiscs you could buy, 5in. 'clip' discs combined a short (less than five minutes duration) pop promo video with digital sound, together with up to 20 minutes of additional audio-

only material. Only the latter could be accessed by a regular CD player. Interestingly, Philips and Pioneer both sold CD Video players with 5in. trays; they looked just like CD players.

This type of machine was of course incompatible with 12in. discs – and, for that matter, a third type of disc with an 8in. diameter. Intended for 'extra play' material like pop video compilations and concert highlights, this could run for a maximum of twenty minutes. CD Video, like so many bright Philips ideas, came to nought.

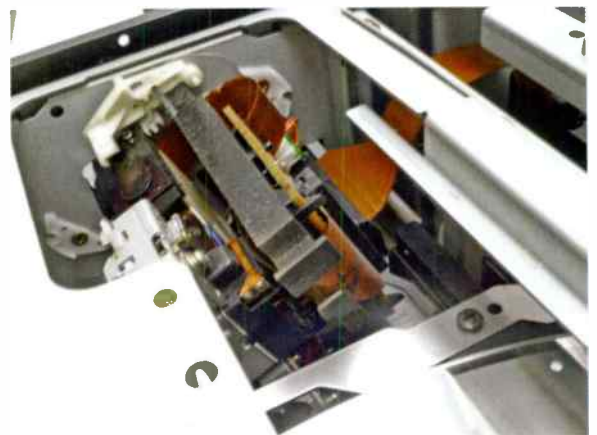
The Philips machines, unlike the aforementioned Pioneer competition, were strictly PAL-only; this reduced their appeal to enthusiasts. It didn't help that when Philips tried to push its MPEG-1 precursor to DVD in 1993, it used the confusing name 'Video CD'...

Pop promos and live music (both rock and classical) were well-served. You could now see as well as hear the artists at work; classical performances resembled BBC Proms coverage, while rock concerts were bought by those who attended the tours as well as the fans who couldn't make it.

Home cinema, rather than music, proved to be the biggest market for Laserdisc, though; the format was most eagerly accepted by film fans. The picture trounced what VHS could offer, and the frame counter and noiseless trick-play of CAV-mode discs were eagerly-embraced. Specialist firms like Criterion sold lovingly-prepared and lavish releases of important movies, complete

with extensive special features (a development that was go mass-market with the advent of DVD) and – where possible - letterbox widescreen presentation. Wasteful in terms of screen 'real estate' admittedly (the era's TVs had a 4:3 aspect ratio) but you got to see the movie as its director intended.

And if you think box-sets are something new, think again! In the 1990s you could buy collections of the Star Trek movies, early Disney compilations, the original Star Wars trilogy, Connery-era James Bond, The Godfather series, Back To The Future (accompanied by its two sequels) and complete operas. Sometimes, a specific movie (Toy Story, Aliens, Fantasia, Citizen Kane, Schindler's List, The Wizard of Oz, Jurassic Park...) would be given the VIP box-set treatment.



Unlike CD, the laserdisc is a two-side medium. This enabled a 90-minute movie to fit onto a single disc. However, half way through you had to flip the disc over. Pioneer applied different thinking to players like its CLD-2950. At the end of the first side, the laser 'swings round' so that it faces the second side.

Frequently accompanied by specially-produced booklets, these expensive efforts resembled LP box sets - and all that implies when it comes to cherishable (and collectable) artifacts. Some were produced exclusively for the Japanese or US markets - another reason for the popularity of NTSC-compatible players...

Next month: We conclude this short series with a look at how digital surround sound was squeezed in, the DVD threat, Laserdisc's legacy and an appraisal of the format's performance.



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RESEARCH

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One to rule them all



Audiolab has combined its award-winning DAC and amplifier technology in a single compact case for the new M-One. Jon Myles likes the result.

How do you get a quart into a pint pot? That seems to be the challenge the engineers at Audiolab set themselves when designing the new M-One. This unit packs a pre/power amplifier, aptX Bluetooth receiver, high-quality DAC plus a headphone output - all into a case measuring just 11cm x 25cm x 29cm (H/W/D).

Style-wise it looks exactly the same as Audiolab's flagship M-DAC+ standalone digital-to-analogue converter, with rotary controls at left and right for selecting input and volume, flanking a blue-lit OLED display panel at centre.

In spite of its small size the M-One has a 40 Watt per channel class A/B amplifier - not a Class D! - with a toroidal transformer and low noise linear power supply - not a cheap

and noisy switch mode type.

Digital-to-analogue conversion comes courtesy of ESS Technology's new two-channel ESS9018K2M chip, the so-called little brother of the eight-channel ESS9018 used in the M-Dac+. The M-One can still process PCM audio data up to 32-bit/384kHz via USB as well as DSD64, DSD128 and DSD256 files.

There are two asynchronous USB inputs - a Type B socket for PC/Mac connectivity and a Type A socket (useful for Apple iOS device docking and playback). Both USB inputs are compatible with PCM data up to 32-bit/384kHz as well as DSD64/128/256.

Alongside these are optical and co-axial digital inputs, supporting PCM files up to 32-bit/192kHz, as well as two RCA phonos for analogue sources. Additionally, there's

Bluetooth connectivity with aptX for those whose devices support it.

To complete this impressive feature set the M-One - like other DACs in the Audiolab range - features a range of user-selectable digital filters to tailor the sound to individual taste. There are four settings for DSD files while for PCM the M-DAC+'s seven settings has been trimmed to a more manageable three - Sharp Roll-Off, Slow Roll-off and Minimum Phase.

On the whole I preferred the Minimum Phase setting for its clarity and overall body as well as natural warmth. But it's worth checking all three to hear the difference - especially on various genres of music.

Build quality and style is typical Audiolab - solid and functional without being too flashy. Ease of use is put above pointless frippery.

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AC/HFP/79



One pair of loudspeaker output terminals, but plenty of digital inputs sockets, plus a Bluetooth aerial so music can be sent direct from phone or portable player, providing they are Bluetooth equipped.

The price for all this? A reasonable £799.95 which seems pretty reasonable considering you are getting an ESS-equipped DAC, pre-amp and amplifier in one compact package.

SOUND QUALITY

An output of 40 Watts per channel may not sound that powerful nowadays - but in essence it's enough to drive any reasonably-efficient loudspeakers to decent levels.

And so it proved with the M-One connected to a pair of Roksan's new ribbon tweeter-equipped TR-5 S2 standmount loudspeakers (see review in this issue).

The Roksans can be quite revealing in the treble but are nicely balanced and so provide a good test of the Audiolab's abilities.

And it quickly impressed me with its authoritative sound. The ES9018K2M may not have quite the resolution of the ES9018 but it gives very little away to its more powerful sibling.

Playing Lady Gaga's 'Monster' using an Oppo BDP-105D as the CD transport, the vocals were rich and vibrant. Bass lines were also well-defined, with plenty of power. The M-One took a firm grip on the Roksan's drive units – there was no sense of overhang or bloat in the lower registers.

A smooth mid-band brought out all the subtle phrasing of Jacques Brel's vocals on 'Ne Me Quitte Pas', giving an emotional performance – the Audiolab lets you know all about what lies behind a song.

Moving on to higher resolution material with The Clash's 'Jimmy Jazz' (24/96) the M-One showed it has the resolving power to make the most of those extra hi-res bits and bandwidth. The background jazz club effects at

the start of the track were distinctly picked out, while Mick Jones' guitar sounded crisp and spry.

This unit isn't perhaps as open and detailed as the more expensive M-DAC+ - but it costs less and brings a 40 Watt amplifier to the party. And the amplifier is easily

capable of driving loudspeakers to room-filling levels without strain, I found in use.

Listening to the San Francisco Symphony's DSD64 recording of 'Mahler's No 1' I could crank volume to neighbour-bothering levels on the crescendos without the music hardening or losing focus.

Partner the Audiolab M-One with a good mid-priced pair of loudspeakers and you'll have a fine hi-fi system for less than £1500 - which in today's market has to be something of a bargain.

CONCLUSION

The M-One is a great addition to Audiolab's already successful M-DAC range. An impressive DAC section combines with a great amplifier boasting both digital and analogue inputs for a superb-sounding all-in-one package. Just add 'speakers and you're away.

MEASURED PERFORMANCE

The amplifier produced 50 Watts into 8 Ohms and 72 Watts into 4 Ohms under test, enough to go very loud with any loudspeaker, in any room.

Frequency response was wide and distortion low. The distortion result of 0.14% at high frequencies is worse than some but it was primarily innocuous second harmonic and the harmonic structure did not change with level – an important attribute. Damping factor was fine at 38, since anything above 20 is swamped by outside cable and

crossover resistances.

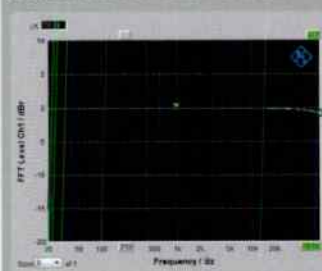
The digital section offers 115dB Dynamic Range through all digital inputs, including USB. This is a normal mid-range value in quality terms, but well above CD at 102dB. Distortion was low at 0.22% for CD and 0.036% for hi-res, both good results.

With 24/192 digital, frequency response extended to 56kHz before rolling off to the upper theoretical limit of 96kHz, our analysis shows.

Usefully, the optical input worked all the way up to 192kHz sample rate, unlike many optical inputs using cheap TOSLINK input receivers, so Astell&Kern hi-res portable players will work.

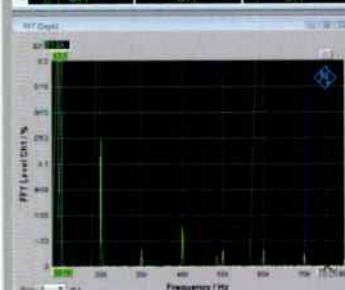
The M-ONE measured well in all areas. It has a power amplifier that works very well, and a digital section with no weaknesses. **NK**

FREQUENCY RESPONSE



IMPEDANCE

THD @ 8	Load (Ohm)	Frequency
0.1413 %	1,980.7 V	10,000 kHz
OFF	OFF	OFF



Power	50W
Frequency response (Direct)	91dB
3Hz-80kHz	
Separation	98dB
Noise (A/D, Direct)	-101dB
Distortion	0.14%
Sensitivity	300mV
Damping factor	38

DIGITAL	
Frequency response	(-1dB)
10Hz-56kHz	(24/192)
Separation	98dB
Noise	-113dB
Dynamic range (EIAJ)	115dB
Distortion CD / hi-res (-60dB)	0.22 / 0.04%

AUDIOLAB M-ONE
£799.95



OUTSTANDING - amongst the best.

VALUE - keenly priced.

VERDICT

A great all-in-one package with a beguiling sound and an impressive range of features. Has the potential to form the heart of a beautiful-sounding system.

FOR

- small size
- smooth sound
- digital filters
- build quality

AGAINST

- nothing at the price

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Modi Multibit

California-based Schiit bring multibit converter technology to their budget Modi DAC. Jon Myles hears the difference.

Distinctive name, distinctive products. When it comes to designing audio equipment there's no doubt that American manufacturer Schiit certainly has its own individual way of going about things.

While most manufacturers of standalone DACs use delta-sigma technology these days, Schiit has championed the multibit route - which harks back to the early days of CD.

However, look around the internet audio websites and you'll find a great deal of people who believe good multibit DACs are inherently more musical.

The reason is simple, according to Schiit which says "Multibit DACs differ from the vast majority of DACs in that they use true 16-20 bit D/A converters that can reproduce the exact level of every digital audio sample. Most DACs use inexpensive delta-sigma technology with a bit depth of only 1-5 bits to approximate the level of every digital audio sample, based on the values of the samples that precede

and follow it." (For a full explanation of the difference between the two approaches see Noel Keywood's detailed feature on page 63).

The first of Schiit's multibit range was the top-of-the-line and improbably named Yggdrasil - which costs over £2000 - and then came the (slightly easier to pronounce) Gungnir at around half that price.

Now, though, the company has brought the technology down to a new price-point in the shape of the Modi Multibit - available for €279 on its European website.

Manufactured in California, it's a compact unit measuring 3.5cm x 13cm x 9cm (H/W/D) with a solid metal case and a rugged feel.

On the back there's a power input, a toggle-style on/off switch, two RCA outputs for connecting to a pre-amp/amplifier plus three digital inputs - USB B, co-axial and Toslink. All three can handle file sizes up to 24bit/192kHz - the usual caveat about the varying reliability of some USB cables and transmitters applies.

The fascia features a simple push button to select the input with three LEDs indicating

which one is in use. Inside, the Modi is built around an Analog Devices AD5547 multibit DAC with Schiit's proprietary closed-form digital filter running on an Analog Devices SHARC DSP processor.

USB connection via a Mac or Linux computer is plug-and-play while Windows users will need to download the free driver from the Schiit website.

All told it's a simple, easy-to-use unit that takes up little space. The only obvious downsides are the lack of DSD capability and no headphone output - but Schiit does make its own range of matching headphone amplifiers for this purpose.

SOUND QUALITY

The Modi Multibit's sonic signature is intriguingly different to most DACs that pass through Hi-Fi World's listening room. It's a measured performer with a clean, almost glacial element to its presentation.

Fed a variety of standard Red Book and high-resolution files from my Apple MacBook Air and feeding a Naim SuperNait 2 driving a pair of Spondor A5 loudspeakers there was



a definite poise and precision to the sound.

On Pierre Bensusan's live retrospective 'Encore' collection there's a definite zing to the leading edges of notes from his acoustic guitar. When Bensusan moves into one his more athletic fretboard flurries the Schiit keeps time perfectly, retaining excellent pitch.

Moving onto something a little more dense and complex with Bjork's 'Black River' from her 'Vulnicura' album (24/96) from a FiiO X5 via the Toslink connection (using QED's excellent Reference Optical Quartz which employs glass fibres instead of the acrylic ones used in many cheaper cables) and the Modi shone a bright light on the various instruments.

This track builds slowly and ends in some thunderous bass, which the Schiit portrayed with decent power. There wasn't quite the visceral power you'll get from some more expensive DACs, and this curtailed some of the drama inherent in the recording.

Compared to the organic, almost analogue-like flow of something like Audiolab's £799 M-DAC+ with its ESS Sabre convertor the Modi is brighter and more clinical-sounding. It also lacks the former's outright dynamic range. However, it costs significantly less than the Audiolab and some people may actually prefer this sort of presentation.

At around £250 (depending on exchange rates) for a well-built,



Internally the Modi uses a single Schiit-designed PCB board with the circuit built around an Analog Devices AD5547 multibit chip.

simple DAC that provides something different to the majority of its competitors then the Schiit Modi Multibit is definitely worth auditioning. You might just find it's exactly what you need.

into a much more affordable price category. It has a distinctive sound which majors on precision and timing with instruments brightly-lit. It won't be to everyone's tastes but if you like what it does then at the price it makes a powerful case for itself.

CONCLUSION

Multibit DACs are few and far between and usually more expensive than their delta-sigma counterparts. The Modi Multibit brings the technology



The rear of the Modi has digital co-axial, Toslink and USB-B inputs plus RCA analogue out sockets. A toggle switch turns the unit on and off.

MEASURED PERFORMANCE

The Schiit uses an AD5547 multi-bit DAC, an early arrangement superseded by delta-sigma DACs, devised by Philips to reduce distortion. Unsurprisingly then, the Schiit produces distortion – a lot by today's standards. We measured 1.4% at -60dB from both 16bit (CD) and 24bit (hi-res), where common values are 0.2% and 0.02% respectively. In effect then hi-res is reduced to poorer-than-CD quality, these figures being a return to the beginning of CD performance wise.

Dynamic Range sums noise and distortion to give an overall performance figure, so increased distortion results in lower dynamic range: the Schiit measured 96dB. This is well below CD that nowadays comes in at 102dB, and massively below hi-res that will typically measure 115dB from a budget DAC.

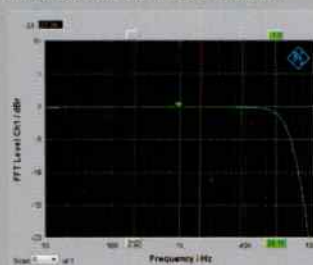
Frequency response was unaffected by multi-bit operation, the unit accepting 192kHz sample rate data via electrical

and USB inputs, and surprisingly through optical too, where many DACs manage 96kHz maximum. The upper frequency limit (-1dB) was 28kHz, with a slow roll off above this point to the 96kHz theoretical upper limit. Output measured a standard 2V and is not adjustable.

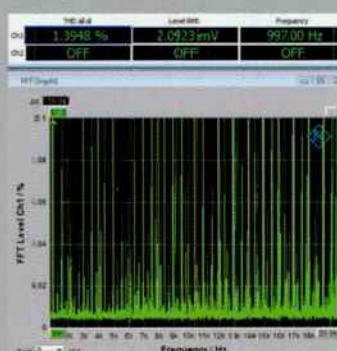
Measurement shows the Schiit Modi Multibit produces digital distortion in large quantities. Dynamic range measures 6dB worse than CD and 16dB worse than hi-res through a budget DAC. Obviously, this is poor but the product is aimed at those who want early CD sound, warts'n'all. **NK**

Frequency response (-1dB)	4Hz-28kHz
Distortion -60dB	1.4%
Separation (1kHz)	89dB
Noise (IEC A)	-94dB
Dynamic range	96dB
Output	2V

FREQUENCY RESPONSE



DISTORTION



SCHIIT MODI MULTIBIT £279



EXCELLENT - extremely capable.

VERDICT

A multibit DAC at a good price that offers something a little different.

FOR

- good detail
- instrumental separation
- compact
- build

AGAINST

- slightly bright
- no DSD

www.schiit.eu.com

Multibit DACs

Noel Keywood looks at the technology behind multibit DACs – and considers whether they have any advantages over their delta-sigma successors.

I was intrigued to see the press release for the Schiit Modi Multibit DAC and felt we should review it straight away. It's a multibit DAC and – as expected – it produces a lot of distortion. So you might think my interest a bit bizarre, even perverse since we normally rate low distortion as better than high distortion in line with the rest of the world. And why would Schiit want to introduce a DAC that was quantifiably awful? Have we all gone nuts?

The answer to that is – possibly. If you spend any time on internet forums you'll see assertions that old CD players using multibit DACs sounded faster, punchier and more exciting than modern ones. Having used – or should I say suffered – old CD players I don't exactly agree with this, it sounds nuts to me yet at the same time when Philips came up with the first low distortion delta-sigma filter chips, the SAA72X0 series, this form of conversion sounded a tad lethargic and un-engaging whilst undeniably smooth.

Have we all become accustomed to this sound, one that can be bettered? And was my suffering not down to the simple DAC chips used in early players but horrible digital recordings stuffed full of distortion generated by crude analogue-to-digital converters used in recording studios? Possibly!

As if to cast further doubt on any apparently sane analysis of these issues, MSB of the USA (California) market a range of advanced architecture multibit "ladder" DACs priced from £6k to £70k

(www.msbtech.com) and publish figures proving they achieve higher resolution than all else on the market, notably top delta-sigma designs, including the ESS ES9018 that we and others rate so highly.

What Schiit (California) have done is brought multibit to the masses by building a convertor based on an Analog Devices AD5547 16bit DAC chip. It originally appeared in their more expensive (\$2300) Yggdrasil DAC. Now they've come up with the uber-budget Modi Multibit, so we can all get to hear what multibit has to offer (or not).

In principle at least, it is functionally primitive, but others knowledgeable in such matters argue that in truth the smoother sounding delta-sigma designs that took over from early multibits have deeper, if less obvious problems. This all gets very technical, based on the structure of a bit word, but I can see such complex and erratic behaviour when measuring DACs with our Rohde & Schwarz UPV audio analyser so it isn't blarney.

Just like DACs of yore, the Modi Multibit suffers distortion, our measurements show. And quite a lot of it at 1.4%. That's way above what is normally considered acceptable – meaning inaudible – in hi-fi. It is also far above the 0.22% expected from CD. The question is then: can we hear this distortion (at -60dB) and does its influence on the sound outweigh

any benefits accrued by primitive but functionally pure conversion behaviour? Do you get a clearer and rhythmically snappier sound that is viscerally more engaging from a multibit or do you end up under the sofa?

Digital is a very complex place to be nowadays. In the 1980s it was simply "perfect" – a simplistic and absurd claim. Our understanding is more extensive and nuanced these days but it is not simple: there are too many variables. When we listen to a CD, what are we listening to?

I return to my point made at the beginning that if the source is producing rubbish, then no end of subsequent care and attention can rectify the damage.



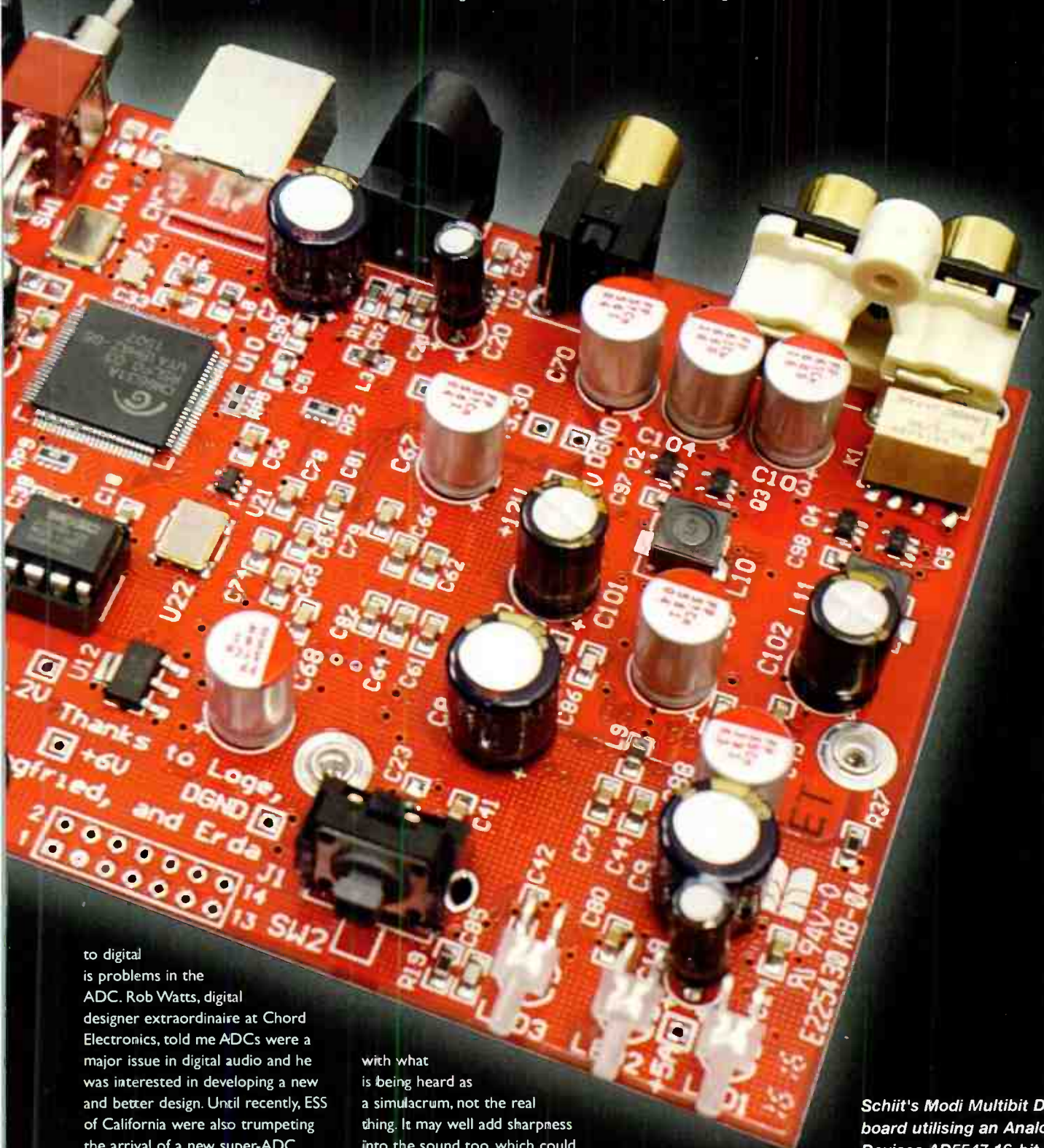
This swings the spotlight onto the start of the digital chain, the Analogue-to-Digital convertor, or ADC. If it screws the sound, then nothing can be done to improve it.

It turns out that converting analogue to digital is very difficult to do well, suggesting what we hear when we listen

turning analogue to digital is where degradation sets in, more so than in the replay process.

All of which is to lay the ground for how it might be best to view the Modi Multibit. Distortion of 1.4% is high and I believe will be audible over long term listening, as subliminal discomfort, fatigue or dissociation

the replay chain. In which case a high distortion player like this one, playing a clean modern recording, may well be subjectively more acceptable than expected – and perhaps 'interesting' shall I say. There may well be more air and space, better rhythmic properties and tighter timing, as many claim. Only listening can tell.



to digital is problems in the ADC. Rob Watts, digital designer extraordinaire at Chord Electronics, told me ADCs were a major issue in digital audio and he was interested in developing a new and better design. Until recently, ESS of California were also trumpeting the arrival of a new super-ADC designed to cure all digital ills – but they have fallen silent on this, with no mention now made on their website. I can't help but get the feeling that

with what is being heard as a simulacrum, not the real thing. It may well add sharpness into the sound too, which could subjectively improve timing. But the distortion of early digital and even on quite recent CDs is likely to be generated in the recording studio, not

Schiit's Modi Multibit DAC board utilising an Analog Devices AD5547 16-bit chip. But does it sound better than its delta-sigma counterparts?



ECLECTION

**Eclection
Esoteric**

An intriguing album from 1968 that is infused with the culture of the time and especially its music. This might be a prog folk album but, from the first few notes of the first track 'In Her Mind' you think, 'Ah, the Beatles'. There are regular chordal connections and arrangement insertions here that reflect The Beatles. I'm not inferring rip-off, more like a melodic tone.

Next is the lead vocal. Wheel in the Moody Blues, because it has a distinct Justin Hayward aspect to it, both in terms of the delivery but also nuances and inflections.

Probably more than any influence, though, is the Californian aspect of the songs. There's a distinctly laid-back hippy feel to this one. You could imagine any of the Woodstock attendees humming these songs as they stepped over stoned bodies and dodged suspicious public loos.

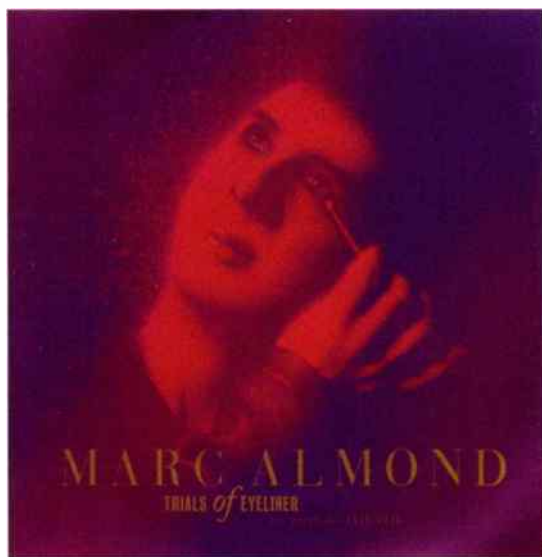
The sometimes baroque nature

of the arrangements gives the album a distinctly period feel.

A major facet of the vocal style is co-singer Kerrilee Male who would fit easily into the folk outfit The Seekers. Her 'correct', rather straight-backed, articulate singing lends a real folk edge to the music that really wants to be The Byrds. Male provides a certain folkie tension to the prog-like flavours of the instrumentalists, though that gives the album an attractive air that resembles Tudor Lodge.

The mastering displayed a broad soundstage with a fairly low volume that allows your hi-fi to dig out the necessary detail. Instrumental separation was admirable which helped the comparatively complex arrangements to be heard in all their glory.

Also look out for other Esoteric releases this month, including How We Live's 'Dry Land' (1987), featuring Marillion's Steve Hogarth, and Colosseum's 'Live' (1971) featuring a bonus second CD of released material.



MARC ALMOND

**Trials Of Eyeliner
UMC**

A ten-CD collection, ranging from 1979 to 2016, this collection has been created, in conjunction with Almond himself, as a definitive overview of the man's career. There are 189 tracks stuffed onto these discs with Neal X, Almond's long-standing writing partner/musical director (and former Sigue Sigue Sputnik guitarist), being personally involved in the mastering of the same.

Being ten discs wide, there is room to play around with the content a tad. Hence, the set is divided into three sections. 'History' takes up four of the discs, including seventy-two of Almond's own favourite album tracks and B-sides.

After that is the section known as 'Singles' which spans three discs. These follow the Soft Cell, Marc with The Mambas and Willing Sinners and solo singles.

That leaves three more discs

which will be the core of fan interest because they have been titled 'Gems'. So what you have here are fan-only releases, one-off collaborations, soundtrack contributions and, more importantly, eighteen previously unreleased tracks that have been sourced from Almond's own collection.

The entire collection is contained in two, six-page gatefolds and you also receive a book spanning sixty-four pages featuring many intriguing photographs.

Mastering quality was variable. I assumed that the sources had a big part to play in this but there appeared to have been little effort to correct such issues. The hit single 'Tainted Love', for example was terribly compressed. Even the archival material suffered from compression issues, creating bright and harsh upper mids with brittle bass. In audiophile terms, this is a missed opportunity but the artistic content remains excellent.

I am aware of a Yardbirds BBC CD release that appeared in the late nineties – somewhere around 1997, I think. It was distributed by Warners and spanned around twenty-six tracks. This one ranges over two entire CDs and covers a tremendous forty tracks - although some of them are interviews with the band.

For example, one is taken from the beginning of 1966 with DJ Brian Matthews on his Saturday Club where the band supplied their New Year resolutions. There's the usual cheery stuff in there – "I won't eat so much and I'll make better records for the folks", from a chirpy, smiling Keith Relf. Very sweet.

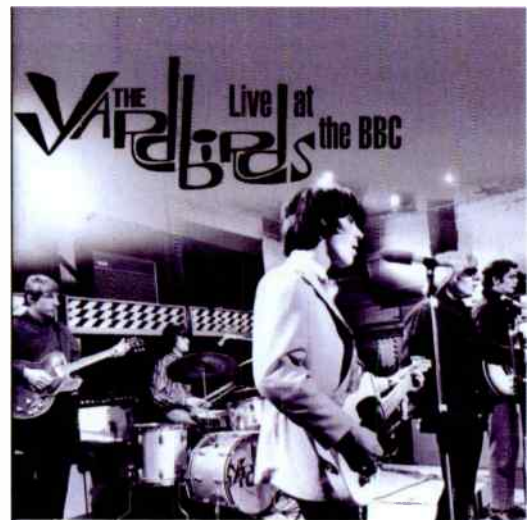
So it progresses until we get to the dark side of Jeff Beck who announces "I shan't alter at all. My resolution is to keep on the way I am at the moment."

"What a splendid fellow" replied Matthews, slightly uncertainly.

Covering material from 1965 to 1968, the great thing about any BBC session – and these in particular – is that they were live and featured unique performances. Those performances were also featured on the programmes 'Saturday Swings' and 'A Whole Scene Going'.

In audiophile terms, the playback was understandably strident with a restricted midrange performance. Matters improved somewhat as the track recordings moved through the sixties' decade. The attraction of these tracks is not for its potential audiophile performance, though. These are archival treasures.

Also from Repertoire this month is The Chambers Brothers' 'Love, Peace And Happiness' (1969) featuring a half studio/half live release. The live material is the strongest. Also look out for native American outfit Redbone's 1970 self-titled pop/rock album outing, who formed on the suggestion of Jimi Hendrix.



YARDBIRDS

Live At The BBC
Repertoire

This is a compilation and, all things being equal, I hate compilations. When I used to work

in the computer games industry in the eighties and nineties we used to generally term compilations as 'shovelware'. They cost nothing to make, featured nothing new and was an excuse to print money from dead stock. Money for old rope, in fact.

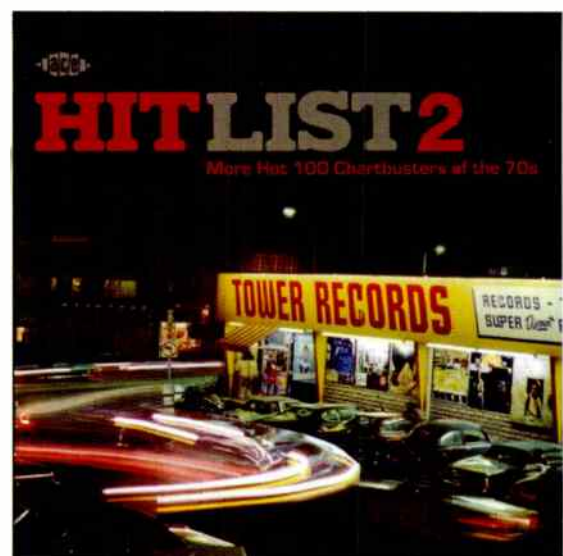
This single CD that features twenty-four tracks is a bit different. What you've got here is a selection of American AM - that's AM - radio Top 40 hits from the seventies. In many ways this compilation is also the last hurrah for a hardware standard because FM radio was becoming ever more popular and dominant, leaving AM radio for talk radio, sports commentaries and the like only.

Between 1970 and 1976, though, AM still reigned and was mostly aimed towards car drivers and portable radio listeners (in parks, beaches and so on). This was also

a delicate time for the DJ. He was soon to be subsumed by the dreaded playlist. Here, he still had the power to create a hit – or push the B-side – while regional DJs could create a regional hit before that song broke nationally.

There are many stone cold classics here that you tend not to see on compilations nowadays: Ace's 'How Long', Dobie Gray's 'Drift Away', Joe Walsh's 'Rocky Mountain Way' and Bo Donaldson & The Heywoods' 'Who Do You Think You Are'. But there are also plenty of forgotten favourites including The Hollies' 'Long Cool Woman', Alice Cooper's 'Teenage Lament '74' and Dave Loggins' 'Please Come To Boston'.

Audiophile's will be pleased to hear a great sense of clarity from this silver disc, plus a wide and informative soundstage. Delicate cymbal taps on the left channel during Ace's 'How Long' was one of many highlights of a fine sound.



HIT LIST 2

More Hot 100 Chartbusters of
the 70s
Ace

NOVAFIDELITY



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World Radio History

"Manufacturing in Britain isn't a bed of roses but it is potentially more attractive"



Noel Keywood

I found something troubling me about the unusual – even bizarre – refurbishment of a loudspeaker cabinet manufacturing plant in the UK, courtesy of Phil Swift, M.D. of Spondor.

Why would anyone want to do that, I wondered? Sounds very risky, since I know from my own experiences with World Audio Design that loudspeaker cabinet manufacture in the UK is on its last legs, decimated by cheap production in the Far East.

OK, this doesn't sound like a subject that will wake the dead – but please bear with me. It isn't about building boxes, the bit that was troubling me, so much as about what is going on out there – globally.

Recently I've been told by Chord Electronics, IAG and now Spondor (Phil Swift) that manufacturing is returning to the UK. Then, just the other day, the New York Times ran an apposite article: 'Is China Stealing Jobs?' that provided some interesting background data.

On cheap manufacture we "are screaming about yesterday's problems" their report said. "Local governments in Shenzhen, a coastal trading hub that abuts Hong Kong, and other industrial centers, have steadily increased the mandated minimum wage to improve the welfare of working families. Wages for Chinese factory workers now average \$424 – 29% more than three years ago. The costs of manufacturing in China's major export-producing zone were now almost the same as in the United States".

But it isn't a one-way issue. China is also an unusual and important market for UK hi-fi; what China wants, Britain needs to be able to provide. Peter Comeau, Head of Acoustics, International Audio Group, China, recently updated me on this. He

spends most of his time in Shenzhen. "It isn't good enough to design products in Britain then build them in China" he told me, "the Chinese want products built in Britain. This is what sells in China". Accordingly, IAG are slowly swinging emphasis back to an all-UK product, even though product quality in China is overseen by fastidious UK engineers who've worked to Formula 1 race standards and impose rigorous quality control in the Shenzhen factory, I have seen for myself. This is fine for Brits, but not fine for Chinese: they want authenticity – the whole package. There's an expectation it will be Bentley-good (yeah, OK, we know who now makes Bentley!).

Having sweated and suffered with UK sub-contractors whilst running World Audio Design, my view on UK quality is – er – a somewhat jaded one. All the same, quality matters, both to us in the UK but even more to Chinese – and Britain can support industry and jobs by maintaining such high standards.

Unfortunately, loudspeaker cabinets are very expensive to make in the UK: think £80 each for small quantities. This is enormous, way above any other unit cost. Unsurprising then that cabinet manufacturers here have dwindled to zero, replaced by Far East manufacturers where both wood and labour are – or were – cheaper.

This isn't all good news for UK hi-fi loudspeaker manufacturers who buy-in cabinets, as most do. Sourcing them from the Far East to be competitive – especially in the budget market – brings problems. High volume plants spit out cabinets in quick batches. If anything goes wrong – as it often does – there is no chance to rectify the problem except with expensive manual after-work.

Quality isn't an overriding concern, workers aren't especially skilled and communications are commonly erratic.

Manufacturing in Britain isn't a bed of roses, I know, but it is potentially more attractive, providing quality is high and consistent – and price economically viable.

This is where Phil Swift has stepped in, taking over a UK cabinet plant and re-equipping it to become more efficient to consistently meet high-quality standards. We'll be looking more closely at it soon.

This is not an investment I would dare make, nor a job I would especially relish, which is why I was 'troubled' by it. But the plant is now flat out manufacturing high-quality cabinets for a host of UK loudspeaker brands, Phil recently told me. 'He who dares wins', comes to mind here!

As the only UK cabinet plant it's got advantage. Yet as Phil pointed out (being a pragmatic business man) they are happy to produce cabinets for rivals. Ironically, 'rivals' are likely happy to have someone in charge that understands hi-fi loudspeaker cabinet manufacturing. Fastidious quality is paramount Phil told me, especially in veneering and finish.

So it is possible to manufacture in Britain – and it is even necessary if you wish to sell to the Far East. To do so requires modern automation to keep cost down and quality up, a point the New York Times did not make, but Chord Electronics did make to me when talking about manufacture of their Mojo DAC in the UK.

Automation allows the UK to swing back into contention by eliminating reliance on cheap labour. Manufacturing, it seems, is returning to the UK because of this. In this tale, quality is the key – and that's what hi-fi is all about. ●

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"Every time I walk down my High Street I'll pass groups of young girls who are all singing away"



Paul Rigby

"It is really hard sometimes for women in music. It's like a boys' club that we just can't get in to. I tried for so long, I just really wanted to be taken seriously as a musician...for my intelligence more than my body. You don't always feel like, when you're working, that people believe that you have musical background, that you understand what you're doing, because you're a female".

The above wasn't quoted from a struggling female singer who tried and failed to make it in the business during the mid-fifties. It was recorded only several months ago by one of the richest and most powerful female singers working in the world, today: a certain Lady Gaga.

Now, if she has had troubles...

Being a woman in the music business is tough. Back in the fifties and sixties? When women's rights were non-existent? When male chauvinism was the norm? When women were patronised and largely ignored? Only the most determined and the most canny women made it to the top or even went the distance then. Too many didn't get that far.

It's sad too, because I find that women – and I'm talking very generally here – are more likely to want to sing and perform in public and do so with confidence. Women, being free of that hamstrung testosterone, macho, 'need to look cool and act cool' thing that men have are more likely to be open and, well, innocent about their musical performance.

Maybe it's where I live, but just about every time I walk down my High Street to fetch a bottle of milk I'll pass two or three groups of young girls who are all singing away, often musically on the nail,

sometimes with excellent harmonisation.

I've had friends of mine whose young daughters copy complex dance routines from their pop favourites and then perform those same routines in front of family members, word perfect too.

Gloria Jones, a member of the fifties West Coast girl group The Dreamers (the forerunner of The Blossoms, check out The Dreamers' 'They Sing Like Angels' on Ace) confirmed the sheer bliss of singing that many girls had – and have.

"We loved singing together", she said. "So much, in fact, that we sang on the public buses all the time. We would get on one end and sing 'till we got to the other. We got so wrapped up in our singing we wouldn't know to go home except to see how dark it was out the window".

Sandra Jackson, a member of the Goodees girl group, who were once referred to as the white Supremes, echoed that joy.

"We sang all the time. We sang in the hallway at school. We'd sing in the bathroom. We'd sing at each other's houses. All we wanted to do is have a good time and sing. We had no training".

You can hear the group's remarkable performances on 'Condition Red! The Complete Goodees' on Ace.

This innocence and raw talent could be exploited and manipulated if the girls were not aware and protected, though.

Take The Teen Queens (see The Teen Queens' 'Eddie My Love' on Ace). Two sisters, Rose and Betty Collins, who had signed a record contract at the age of fourteen and sixteen respectively. Neither could handle the pressure, while money mysteriously flowed everywhere but their pockets.

Drugs would follow. Both women would be dead by the late sixties as a result of a combination of drugs and drink.

Even if a girl group was doing well, the girls themselves often felt restricted and treated with a sense of condescension. The labels themselves may well have thought they were doing 'the right thing' or merely responding to the social mores of the time.

The Goodees' Jackson, for example, remembers signing up with the Stax label, but that they couldn't go anywhere without a chaperone...a certain Eddie Braddock, the husband of Jerry Lee Lewis' sister.

"What we did was just get him drunk" said Jackson. "Then do what we wanted to do. We would leave him drunk then just go, which was not hard to do".

Not all girl groups became stars but many girls developed steady and eventful careers. Take the best girl group from the Merseybeat era, The Liverbirds (hear them on The Liverbirds' 'From Merseyside to Hamburg' via Big Beat) who, following in the steps of The Beatles, went down a storm in Hamburg in the early sixties (where they were known as the 'Weiblichen Beatles' or 'Feminine Beatles').

They found gigs hard to come by upon arrival back in England but had a good recording career in Germany, toured in Switzerland and Denmark, appeared on German TV and on film and, later, the individual members did everything from record promotion at major record labels to appearing in a covers band in Iran!

So, at that time, faced with such barriers, why did they put themselves through it?

Well, the clue can be found above. The sheer joy and love of singing is the main reason. And – hey, anything the boys can do, eh? ●



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“Unregulated ticket resale websites are out of control”



Jon Myles

Ticket reselling websites – good or bad? Yes, it's something of a black and white question, but it's one worth considering if you regularly go to live music events, especially those that are likely to sell out quickly.

On the one hand, they allow those who have missed out on a ticket the chance to attend the concert. On the other, they are increasingly being exploited by touts who Hoover up those same tickets and then sell them on at inflated prices.

The issue was thrown into stark relief by iconic rock band Pixies when it was revealed tickets for their current UK tour were being offered for significantly more than double their face value of £32.50. In fact, a number for the band's appearance at London's O2 Brixton Academy appeared on-line for as much as £800.

That is, by anyone's standards, a large amount of money to spend on a single concert.

However, I have to admit I recently used a reselling site to dispose of a ticket bought back in January for a sporting event I could no longer attend. The ticket cost me £40 and was sold for £60. Not a huge profit in monetary terms but still a 50 per cent mark-up on the original price.

This was, of course, the original rationale behind the likes of reselling sites such as Viagogo, StubHub et al – people who had bought tickets to concerts they could no longer get to could dispose of them to other fans on-line with minimum fuss.

However there's an increasing concern that organised touts are now exploiting the sites to fleece music fans. It is not uncommon for concerts to sell-out in a matter of minutes, only for three or four hundred tickets to appear on a secondary ticket website less than an hour later.

Take the Stone Roses sold-out show at Wembley Stadium next year. One website alone already has some 1032 tickets available to buy at various prices – all above face value. It takes a leap of the imagination to believe that this many people have purchased tickets for the June date and already found they cannot make it.

The suspicion is that touts are using sophisticated computer programmes to harvest large quantities of tickets as soon as they go on sale on-line and then selling them on at vastly inflated prices. It's estimated the market is now worth some £1 billion a year.

It's a concern that has already been recognised by the government which commissioned a report by Warwick University's Professor Mike Waterson into the secondary ticketing market.

He proposed a licensing system for touts and harsher penalties for firms that flout consumer rights law governing ticket sales. As yet, though, there has been no action with the Department for Culture, Media and Sport merely saying a response to Professor Waterson's recommendation will be published “in due course”.

So in the meantime the practice continues – the latest being the example of American band Green Day whose UK tour sold out in minutes yet saw £39.50 tickets appear on-line at prices of up to £400.

Free marketeers would undoubtedly say it is simply a matter of supply and demand and if fans are willing to pay the price then why should anyone bother?

But an increasing number of music industry figures are becoming increasingly concerned that the practice is pricing many fans out of the concert scene. They voiced their worries at a recent summit in London where agents, promoters and artists

came together to discuss how it could be ensured tickets went directly to fans rather than be traded purely for profit on the secondary sites.

Those attending included Professor Waterson who admitted he was growing concerned over the lack of government action over his own review.

He said “I'm concerned that it will be pushed into the long grass. I do intend to raise the issue if I don't get a response. I haven't had one”.

In the meantime some bands are taking matters into their own hands by trying to ensure tickets for shows go directly to fans.

A few, such as Massive Attack and One Direction, have released tickets through Twickets – an on-line service that allows fans to list and buy tickets at face value. Buyers can add a maximum of 15 per cent to cover original booking fees etc. but cannot charge more than was originally paid.

Plus campaign group FanFair Alliance has been launched to unite members of the music and creative community against industrial-scale on-line ticket touting. It was founded by four music managers whose clients include Mumford & Sons, Keane, PJ Harvey, Nick Cave And The Bad Seeds, One Direction, Laura Marling and Alison Moyet.

One of them, Adam Tudhope, the manager of Mumford & Sons, said “Unregulated ticket resale websites are out of control. While we wait for government to act, it is essential that music businesses develop ticketing strategies that aim to disrupt the touts and help fans”.

Let's hope these initiatives help to curb the practice of tickets being scooped up by touts and sold on at rip-off prices – but what would be even more pleasing would be to see the government get involved and take some real action to protect consumers. ●

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"It remains to see what Brexit means for our hi-fi industry"



Martin Pipe

One of the great things about hi-fi journalism is that you get to meet industry insiders. I recently got the chance to talk to Graham Boswell and Ian Dennis from Prism Sound, the first audiophile product of which was the revealing and well thought-out Callia DAC/headphone amplifier (reviewed *Hi-Fi World* November 2016). Until Callia, Prism Sound's core business was the manufacturing of expensive audio-converters and measurement equipment for professional studio use. But after it surfaced that some of Prism's converters were selling to audiophiles, Callia was conceived

Prism Sound co-founder Graham has been an audiophile from an early age; he told me that, as a student, he built his own "modified horn-loaded" speakers and refined a Connoisseur BDI belt-drive turntable by coming up with a solid base "that wouldn't resonate and generate LF feedback" when he "played stuff loud". I can recall him telling me his 'table, equipped with SME 3009 S2 arm and Ortofon cartridge, still works and remains in use. He assures me that he retains a "sentimental attachment to the thing", which "weighs a ton!"

When we met, the UK's decision to leave the EU was still fresh in everyone's minds. It remains to see what Brexit means for our hi-fi industry – the plunging pound will inevitably mean significant price increases, at least in the short-term. The effect on imported gear is obvious but remember that British-made kit contains imported components and materials.

Graham, who admitted that he agonised over 20 minutes in the voting booth weighing up the pros and cons, sees Brexit as an opportunity. It could in his view

stimulate British industry into creating wealth through 'adding value', which he sees as "the measure of one's endeavour...turning raw materials into something useful. We've got to re-learn how to do that".

Technology director Ian Dennis explained to me the work involved in bringing the cost of Prism Sound's technology down to affordable levels. The clocking system of the professional converters, for example, relied on components (notably voltage-controlled lithium-tantalate crystal oscillators) that were simply too expensive for a consumer product. And so he came up with a new hybrid analogue/digital design that combines economy with stability. The actual DAC section, meanwhile, ingeniously-combines Prism Sound's own DSP with the 'back-end' of a ready-made DAC chip.

Ian also mused about DSD's beginnings. The early ADC and DAC chips had a test-mode, intended for factory testing, where you could get the data out of the ADC before it was turned into PCM. "And it sounded a lot better, as we no longer had limitations in the digital decimation and interpolation filters of the day!" It transpired that "what we should be doing is storing the audio in this (1-bit) form".

He then made a controversial revelation about hi-res downloads: "Examining long word-length or DSD recordings that you can download – we make test equipment, and so we can look at their spectrum and dynamic range – and many I've heard have come off 16-bit masters. They're upsampled or DSD'd, but you can tell. But you do come across stuff – 2x DSDs and hi-Fs PCM – that spectrum analysis reveals has all of that bandwidth".

Ian also addresses an issue

discussed in a past column. Why use high sampling rates (96kHz or more versus 44.1kHz, equating to theoretical audio-bandwidths of 48kHz and 22.05kHz respectively), when no audio source can take advantage of it?

It's all to do with what is termed the 'transition band' – essentially the 'steepness' of the area between the wanted audio ('passband') and rejected spectrum ('stopband'). "Getting from flat to nowhere within 10% of your useful bandwidth gives you a huge mathematical problem in the filter. And so the thing about going to 96kHz is that you've gone from 20kHz to 48kHz. Instead of it being 10%, it's now more than half and that means the maths going on in the filter is massively-eased".

Finally, some ancient digital audio. At the last Audiojumble, founder John Howes gave me an Aiwa HD-S1 personal DAT machine that he had found on his travels. Dating back 25 years, this was the smallest (95x38x147mm, 610g) such machine of its time. Inside it has a separate plug-in ADC unit with a Technics MASH converter; the DAC was Philips Bitstream. It was powered by sealed lead-acid batteries, both of which were useless.

So I rigged up an external power-pack from six AA NiMH cells...and it worked! That something so complex still functions after more than a quarter-century says much about the excellence of the era's Japanese gear. I then tried making some field-recordings.

I was surprised by the stability of image and detail that could be captured, although the high-end was rather aggressive. But to audiophiles familiar with the pitch-instability and drooping upper-treble of cassettes, the HD-S1 must have been revelatory. ●



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Get a Fair deal

Martin Pipe brings us his report of the twice-yearly Tonbridge Audiojumble.

Audiojumbles are a magnet for audio enthusiasts from all over the world; they came from - to name a few - China, France, the Netherlands, Russia and the US. But naturally, most attendees are British. There was much to see and buy at the October 2016 show; it's amazing how many rare items turn up. I picked up a couple of massively-built BE NAB cart machines, used by radio stations to play 'jingles' and ad 'spots' in the pre-digital era. They were need of attention, parts being missing, but the low price was irresistible; this sort of gear rarely turns up outside of specialist auctions, and Audiojumble-type events.

If you want a good chance of getting such interesting items, I advise spending £12 on a 9.30am-entry 'early bird' ticket (there's also a £6 option that gains you entry at 10.30). Running of the Audiojumble may have passed from founder John Howes to his children - who did a fine job - but the great man was still busy, socialising with old friends and stallholders. I caught



him behind a pair of Decca Kelly speakers, which he was trying to wire up for demonstration purposes. Unfortunately, the Kellys' 'inverted DIN plug' terminals got the 'better of him. He used the opportunity to kindly pass my way a little Aiwa personal DAT machine that he had found among some newly-acquired

gear - you can read about this fascinating piece of late-1980s digital-audio technology (which, it turns out, still worked!) in my column.

DAT machines of the non-portable kind were also dotted around the show; most were used professionally, rather than in the home. Cassette decks of all shapes and sizes were also much in evidence. But for the reel-to-reel enthusiast, it would have been seventh heaven. I don't think I've seen so many of these machines in one place (previous Audiojumbles excepted). Revox, Akai, Uher, Nagra, Brenell and Sony were just a few of the marques on offer; represented were all sorts of quarter-inch stereo machine ranging from compact quarter-track homedecks to professional half-track giants able to take 10.5m spools. Plenty of new and used tape, too; for me the fun is buying a spool of tape oblivious to whatever has been recorded on it! A magnetic lucky-dip, if you will...

I'm only surprised that interest in reel-to-reel as a hi-fi medium is not greater. It can sound truly magnificent; remember that many of the recordings on your LPs would have started life on analogue tape. Even today, some musicians and



Twice a year, enthusiasts and traders flock to the Angel Leisure Centre in Tonbridge to buy, sell and chat about vintage audio equipment both domestic and professional, electronic components (including valves), test gear and music in all conceivable formats. This is the main hall, but there's a second, smaller space with refreshments and more stalls. In addition, 'satellite' rooms host a demo or two - a chance to have a sit down and relax! It all adds up to an excellent day out.

bands are rediscovering the medium's potential.

But for now, audiophile interest in analogue is being focused on vinyl. Audiojumble served that niche very well too, with numerous turntables, tonearms and cartridges to choose from. You may be paying close to £1,000 for a 12in. SME arm today, but if you only want a budget deck you could have walked away with a Dual, Pioneer or Garrard for less than the price of a round. And to play on it? Countless records, both used and new, covering tastes ranging from baroque to hard rock. Yes, something for everyone!

The next Audiojumble takes place on Sunday 19th February 2017 at the Angel Leisure Centre, Tonbridge, Kent TN9 1SF. www.audiojumble.co.uk Hope to see you there!



This is a 'naked' Roksan Attessa CD player. The distinctive Attessa, which sold for £2k or so twenty years ago, is still highly-regarded today. This one eventually went for less than £100, to someone not averse to a bit of 'metal-bashing'. Look closely, though, and you'll note that inside the Attessa is basically a Japanese player with refined power supply, DACs and analogue circuitry.



There were plenty of bargains. Here we have a Pioneer PL300, a quartz-locked direct-drive turntable from the late 1970s. It's semi-automatic, the arm returning to its rest at the end of a side. Sure, this 'table isn't in the same league as the same firm's PLC-590. But it eventually parted company with its owner for a mere tenner (thanks to a small crack in the lid). A Shure M75EJ cart (with elliptical stylus) was thrown in, and it all worked! Discovering vinyl need not be expensive...



One of the older items at the show, this 1937-vintage Voigt Corner Horn wasn't actually for sale. It was tucked away in a demo room, driven by one of John Howes' modified Quad II valve amps. Although enormous, its corner positioning means the Voigt isn't particularly obtrusive. This speaker gave a warm and full-bodied sound that, despite a restricted top-end, still manages to give a good account of the music. One can only imagine its effect on the pre-war audio enthusiast.



CD recorders appeared in the late 1990s. This 'dual-transport' Philips CDR770 was more advanced than most. It can record from analogue and digital sources, and supports both rewritable and 'one-time' recordable media. Those wanting CDs for the car might have been tempted to part with the £40 asked here.



A 1970s 'music centre', containing turntable, receiver and cassette deck in one convenient unit. This ITT MC22 was in very good condition. Its top-loading cassette deck featured Dolby and chrome tape compatibility, while its turntable was equipped with a budget Audio-Technica MM cart. A steal for £20 (or near offer).



In 1979, Sony's TPS-L2 personal stereo cassette player started a listening revolution. Features like the twin headphone sockets and 'hot-line' microphone would disappear, but this was the first Walkman. What you see here is a later sample, sporting the iconic logo absent from the first samples. It's in 'as new' condition, complete with carrying case, and thus highly-collectable. Thus the £150 price...



Classic 1960s British amplification, in the form of the Rogers Cadet Mk. III integrated. Inside it's all tubes; to each channel, a pair of ECL86s working in push-pull delivered ten watts or so. Sensitive speakers are therefore not a bad idea! It can work with magnetic cartridges, and also boasts tape and tuner inputs. The Cadet III may be over fifty years old, but it still looks good! This fine specimen, which had been overhauled, was going for £280. An excellent introduction to the 'tube sound'...

I came across all sorts of recording artefacts, among them 2in. 24-track studio tapes and



quarter-inch masters. But here's something I haven't seen here before - a metal 'mother' disc, used in the production of vinyl records. You can tell it is a mother, rather than one of the metal stampers subsequently formed from it, because it has a 'positive' image - the message in the run-out groove can be read without a mirror (theoretically, it can be played too!). Judging by the track pattern, this is the mother of a 12in. single.

Before tape recording became de rigueur in the early 1950s, there was wire recording - the history of which goes all the way back to Valdemar Poulsen's 1898 invention. The reels of fine steel wire employed



gave longer running times than the simple disc recorders of the time; furthermore, the wire can be erased and reused. Fidelity was alas rather low. Wire recorders for home use were sold in small quantities, the format gaining wider acceptance as a dictation tool. As there's no tape to melt, it was also used in flight recorders and aerospace for many years. £75 was being asked for this London-built Wirek domestic model.

Nytech's affordable CTA252 receiver has FM presets, two headphone sockets, slider controls and an innate musicality that led some to



call it a 'poor man's Naim'. Although it sold well, the CTA252 was jam-packed with electronics and not particularly easy to repair. Nytech has been revived by one of its ex-engineers. Spares (and much else besides) are available from <http://www.nytechaudioshop.co.uk>. These units were being offered for £100 (left) and £75 (right).

Quarter-track tapes, running at 7.5 inches per second; as with an LP, you flip the tape over to enjoy the second side (also available were quad reels, in which all four tracks played in one direction). A nice collection here, starting at a very fair £5 a shot. Sound quality, the seller assured me, is 'as good as vinyl - but without the pops'.



We do not sell these products. It is for your information only.

WORLD CLASSICS

Here is our list of the great and good from audio's glorious past, products that have earned their place in hi-fi history. You'll also see some oddities which aren't classic as such, but are great used buys. The year of introduction is given, alongside the original UK launch price.

TURNTABLES

EAT FORTE 2009 £12,500
Lavishly finished two box, two motor turntable with gorgeous Ikeda 407 tonearm bundled. Exceptionally stable and unfussy performer with a relaxed but highly enjoyable gait.



FUNK FIRM VECTOR II 2009 £860
Innovative engineering gives a nimble, pacey and musical sound that's one of the best at the price.

REGA P2 2008 £300
Excellent value for money engineering, easy set up and fine sound.

MCINTOSH MT10 2008 £8,995
Big, expensive, controversially styled and glows more than some might consider necessary, but an astonishingly good performer.

REGA P3-24 2008 £405
Seminal affordable audiophile deck with fine bundled tonearm. Tweakable, and really sings with optional £150 outboard power supply.

ACOUSTIC SOLID ONE 2007 £4,050
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 high end vinyl spinner with industrial strength build quality and a sound to match. Sound is edge-of-the-seat stuff.

MICHELL GYRODEC SE 2005 £1,115
Design icon with superlative build. Sound is beautifully smooth, effortless and exceptionally expensive.

MARANTZ TT-15S1 2005 £1,299
Cracking all in one deck/arm/cartridge combination, this must surely be the best sound/plug and play package at this price point.

MICHELL TECNODEC 2003 £579
Superb introduction to Michell turntables - on a budget. Top quality build and elegant design mean it's still the class of the mid-price field.



MICHELL ORBE 1995 £2,500
The top Michell disc spinner remains a superbly capable all rounder with powerful, spacious sound that's delicate and beguiling.

SME MODEL 10A 1995 £4,700
Exquisitely engineered deck and SME V tonearm combo that's an extremely accomplished performer with classical music.

LINN AXIS 1987 £253
Cut-price version of the Sondek with LVX arm. Elegant and decently performing package. Later version with Akito tonearm better.

TECHNICS SL-P1200 1987 £800
CD version of the Technics SL-1200 turntable. Massively built to withstand the rigours of 'pr' use and laden with facilities - a great eighties icon.

ROKSAN XERXES 1984 £550
Super tight and clean sound, with excellent transients. Less musical than the Sondek, but more neutral. Sagging plinth top-plates make them a dubious used buy.

DUAL CS505 1982 £75
Simple high quality engineering and a respectable low mass tonearm made for a brilliant budget buy. Polished, smooth and slightly bland sound.

MICHELL GYRODEC 1981 £599
Thanks to its stunning visuals, this bold design wasn't accorded the respect it deserved. Clean, solid and architectural sound.

TOWNSHEND ROCK 1979 £ N/A
Novel machine has extremely clean and fluid sound. Substantially modified through the years, and capable of superb results even today.

MARANTZ TT1000 1978 £ N/A
Beautiful seventies high end belt drive with sweet and clean sound. Rare in Europe, but big in Japan.



REGA PLANAR 3 1978 £79
Brilliantly simple but clean and musical performer, complete with Acos-derived S-shaped tonearm. 1983 saw the arrival of the RB300, which added detail at the expense of warmth. Superb budget buy.

SONY PS-B80 1978 £800
First outing for Sony's impressive 'Biotracer' electronic tonearm. Built like a tank with a clean and tidy sound, albeit lacking involvement. Scarcily complicated and with no spares support - buy with caution!

TRIO LO-7D 1978 £600
The best 'all-in-one' turntable package ever made. Clean, powerful and three-dimensional sound, ultimately limited by the tonearm.

ADC ACCUTRAC 4000 1976 £300
Bonkers 1970s direct drive that uses an infra red beam to allow track selection and programming. More of a visual and operational delight than a sonic stunner.

PIONEER PLC-590 1976 £600
Sturdy and competent motor unit that performs well with a wide range of tonearms. Check very thoroughly before buying due to electronic complexity and use of some now-obsolete ICs.

PIONEER PL12D 1973 £36
When vinyl was the leading source, this bought new standards of noise performance and stability to the class, plus a low friction S-shaped tonearm. Later PL112D was off the pace compared to rivals.



TECHNICS SP10 1973 £400
Seminal Japanese engineering. Sonics depend on plinths, but a well mounted SP10/II will give any modern a hard time, especially in respect of bass power and midband accuracy.

LINN SONDEK LP12 1973 £86
For many, the Brit superdeck; constant mods meant that early ones sound warmer and more lyrical than modern versions. Recent 'SE' mods have brought it into the 21st century, albeit at a price.

ARISTON RD11S 1972 £94
Modern evolution of Thorens' original belt drive paradigm, Scotland's original super-deck was warm and musical, albeit soft. Still capable of fine results today.

GOLDRING Lenco GL75 1970 £15.65
Simple, well engineered motor unit with soft, sweet sound and reasonable tonearm. Good spares and servicing support even today.

GARRARD 301/401 1953 £19
Tremendously strong and articulate with only a veiled treble to let it down.



THORENS TD124 1959 £ N/A
The template for virtually every 1970s 'superdeck', this iconic design was the only real competition for Garrard's 301. It was sweeter and more lyrical, yet lighter and less impactful in the bass

TONEARMS

REGA RB251 2009 £136
Capable way past its price point, the new 3-point mount version of the classic RB250 serves up a taut and detailed sound. A little lean for some tastes, but responds well to rewiring and counter-weight modification.

HELIUS OMEGA 2008 £1,595
Stylish and solid lump of arm with fabulous build quality, that turns in a dynamic and weighty performance.

AUDIO ORIGAMI PU7 2007 £1,300
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.



GRAHAM PHANTOM 2006 £3,160
Sonically stunning arm with magnificent bass dexterity and soundstaging. Build quality up to SME standards, which is really saying something!

TRI-PLANAR PRECISION 2006 £3,600
Immaculate build, exquisite design and one of the most naturally musical and lucid sounds around.

MICHELL TECNOARM A 2003 £442
Clever reworking of the Rega theme, using blasting, drilling and rewiring!

SME 309 1989 £767
Mid-price 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.

NAIM ARO 1987 £1,425
Charismatic unipivot is poor at frequency extremes but sublime in the midband; truly emotive and insightful.

SME SERIES V 1987 £2,390
Vice-like bass with incredible weight, ultra clear midband and treble astound, although some don't like its matter of factness!

NAIM ARO 1986 £875
Truly endearing and charismatic performer - wonderfully engaging mid-band makes up for softened frequency extremes.



ALPHASON HR100S 1981 £150
First class arm, practically up to present-day standards. Buy carefully, though, as there is no service available now. Totally under priced when new, exceptional.

SME SERIES III 1979 £113
Clever variable mass design complete with Titanium Nitride tube tried to be all things to all men, and failed. Charming nonetheless, with a warm and inoffensive sound.

TECHNICS EPA-501 1979 £ N/A
Popular partner for late seventies Technics motor units. Nice build and Titanium Nitride tube can't compensate for middling sound.

LINN ITTOK LVII 1978 £253
Japanese design to Linn specs made for a muscular, rhythmic sound with real dynamics. The final LVIII version worth seeking out.

AUDIO TECHNICA AT 1120 1978 £75
Fine finish can't compensate for this ultra low mass arm's limited sonics - a good starter arm if you've only got a few quid to spend.

HADCOCK GH228 1976 £46
Evergreen unipivot with lovely sweet, fluid sound. Excellent service backup.

ACOS LUSTRE GST-1 1975 £46
The archetypal S-shaped seventies arm; good, propulsive and involving sound in its day, but ragged and undynamic now.

SME 3009 1959 £18
Once state of the art, but long since bettered. Musical enough, but weak at frequency extremes and veiled in the midband. Legendary serviceability and stunning build has made it a cult, used prices unjustifiably high.

PHONO STAGES

CREEK OBH-8 SE 1996 £180
Punchy, rhythmic character with oodles of detail makes this a great budget audiophile classic. Partner with a Goldring G1042 for an unbeatable budget combination.

MICHELL ISO 1988 £ N/A
This Tom Evans-designed black box started the trend for high performance offboard phono stages. Charismatic, musical and punchy - if lacking in finesse.



LINN LINNK 1984 £149
Naim-designed MC phono stage built to partner the original Naim NAIT - yes, really! Fine sound, although off the pace these days.

INTEGRATED AMPLIFIERS

NAIM NAIT XS 2009 £1,250
With much of the sound of the Supemait at half the price, this is powerful, articulate and smooth beyond class expectations.

MUSICAL FIDELITY PRIMO 2009 £7,900
Seriously expensive, but one listen explains why. Wonderfully exuberant sound that can only come from a top quality tube design.

SUGDEN A21A S2 2008 £1,469
Crystalline clarity, dizzying speed and forensic detailing. Power limited so needs sensitive speakers.

CREEK OBH-22 2008 £350
Brilliant value budget passive, with remote control, mute and input switching, plus an easy, a neutral sound.

CAMBRIDGE 840A V2 2007 £750
Version 2 addresses version 1's weaknesses to turn in a mightily accomplished performance, offering power, finesse and detail.

SUGDEN IA4 2007 £3,650
Goodly amount of Class A power, icy clarity and a breathtakingly fast, musical sound make this one of the very best super-integrateds.

NUFORCE P-9 2007 £2,200
Impressive two box preamp with superb resolution and an engaging sound.

MELODY PURE BLACK 101D 2007 £3,295
The clarity and openness of valves plus firm grip and fine detail make this a preamplifier masterclass.

AUDIOLAB 8000S 2006 £400
In another life, this sold for three times the price, making it a stand-out bargain now. Very clean, powerful and tidy sound.

MCINTOSH MA6800 1995 £3735
Effortlessly sweet, strong and powerful with seminal styling to match.

DELTEC 1987 £1900
Fast, dry and with excellent transients, this first DPA integrated is the real deal for eighties obsessives. Ridiculously punchy 80W per channel from a tiny, half-size box. Radical, cool and more than a little strange.

EXPOSURE VII/VIII 1985 £625
Seminal pre-power, offering most of what Naim amps did with just that little bit extra smoothness. Lean, punchy and musical.



AUDIOLAB 8000A 1985 £495
Smooth integrated with clean MM/MC phono stage and huge feature count. Extremely reliable, too. Post '93 versions a top used buy.

VTL MINIMAL/50W MONOBLOCK 1985 £1,300
Rugged, professional build and finish allied to a lively and punchy sound (albeit with limited power) make them an excellent used buy.

MUSICAL FIDELITY A1 1985 £350
Beguiling Class A integrated with exquisite styling. Questionable reliability.

MISSION CYRUS 2 1984 £299
Classic 1980s minimalism combines arresting styling with clean, open, lively sound. Further upgradeable with PSX power supply.



NAIM NAIT 1984 £350
Superb rhythms and dynamics make it truly musical, but tonally monochromatic. Fine phono stage, very low power.

CREEK CAS4040 1983 £150
More musical than any budget amp before it; CAS4140 loses tone controls, gains grip

MYST TMA3 1983 £300
Madcap eighties minimalism, but a strong and tight performer all the same.

ROTEL RA-820BX 1983 £139
Lively and clean budget integrated that arguably started the move to minimalism.

NAD 3020 1979 £69
Brilliantly smooth, sweet and punchy at the price and even has a better phono stage than you'd expect. The archetypal budget super-amp.

ROGERS A75 1978 £220
Lots of sensible facilities, a goodly power output and nice sound in one box. The later A75II and A100 versions offered improved sonics and were seriously sweet.

A&R A60 1977 £115
Sweet and musical feature-packed integrated; the Audiolab 8000A remains a classic.



SUGDEN C51/P51 1976 £130
Soft sounding early Sugden combo with a plethora of facilities and filters. A sweet and endearing performer but lacking in power and poor load driving ability.

SUGDEN A21 1969 £ N/A
Class A transistor integrated with an eminently likeable smoothness and musicality. Limited inputs via DIN sockets.

ROGERS CADET III 1965 £34
Sweet sounding valve integrated, uses ECL86 output valves, even has a half useable phono stage, sweet, warm a good introduction to valves

CHAPMAN 305 1960 £40
Smooth pre/power combo with a sweet and open sound. Not quite up to Leak/Quad standards but considerably cheaper secondhand.

POWER AMPLIFIERS

ELECTROCOMPANET NEMO 2009 £4,995 (EACH)

Norwegian power station as cool as a glacier tonally, yet impresses with sheer physicality and fleetness of foot. 600W per channel.

NUFORCE REFERENCE 9SE V2 2006 £1,750
Brilliant value for money monoblocks with massive power and super-clean, three dimensional sound.

QUAD II-80 2005 £6,000 PER PAIR

Quad's best ever power amplifier. Dramatic performer with silky but dark tonality, blistering dynamics, serious power and compellingly musical sound.



QUAD 909 2001 £900
Current-dumper has a smooth and expansive character with enough wallop to drive most loads. Not the most musical, but superb value all the same.

NAIM NAP 500 2000 £17,950
Flagship amplifier will drive just about any speaker with ease. Factor in the company's trademark pace, rhythm and timing and it all adds up to one effortlessly musical package.

MARANTZ MODEL 9 1997 £8000
Authentic reproduction monoblocks still more than cut the sonic mustard. Highly expensive and highly sought after.

MICHELL ALECTO 1997 £1989
Crisp, clean and beautifully controlled with gorgeous styling. Partnered with the £1650 Orca this sounds delicious!



MUSICAL FIDELITY XA200 1996 £1000
200W of sweet smooth transistor stomp in a grooved tube! Under-rated oddity.

PIONEER M-73 1988 £1,200
Monster stomp from this seminal Japanese power amplifier, complete with switchable Class A and Class B operation. Clean, open and assured sounding, albeit a tad behind the pace on high speed dance music. Rosewood side cheeks and black brushed aluminium completes the experience.

KRELL KMA100 II 1987 £5,750
Monoblock version of the giant KSA-100 is one of the seminal 80s transistor power amplifiers. Massive wallop allied to clean and open Class A sound makes this one of the best amplifiers of its type.

RADFORD STA25 RENAISSANCE 1986 £977

This reworking of Radford's original late sixties design was possessed of a wonderfully rich, old school valve sound with enough power (25W) and lots of subtlety.

QUAD 405 1978 £115

The first of the current dumpers is a capable design with smooth, effortless power and a decently musical sound. 606 and 707 continue the theme with greater detail and incision.

HH ELECTRONICS TPA-50D AMPLIFIERS 1973 £110

Simple design with easily available components, solid build quality and fine sound make for a surprisingly overlooked bargain

LECSO AP1 1973 £ N/A
Madcap cylindrical styling alluded to its 'tower of power' pretensions, but it wasn't. Poor build, but decently clean sounding when working.

QUAD 303 1968 £55
Bullet proof build, but woolly sound. Off the pace, but endearing nonetheless. Some pipe smoking slipper wearers swear by them!

LEAK STEREO 20 1958 £31
Excellent workaday classic valve amplifier with decent power and drive. Surprisingly modern sounding if rebuilt sympathetically. Irrepressibly musical and fluid.



LEAK STEREO 60 1958 £N/A
Leak's biggest valve power amp offers 35 Watts per channel and more low end welly than the smaller Stereo 20. Despite concerns over reliability rarity value means high price.

QUAD II 1952 £22
The all-time classic valve amplifier, with a deliciously fluid and lyrical voice. In other respects though, it sounds hopelessly dated. Low power and hard to partner properly



LEAK POINT ONE, TL10, TL12.1, TL12 PLUS 1949 £28
Early classics that are getting expensive. Overhauling is de rigueur before use, using original parts if possible. Surprisingly crisp and musical. Deeply impressive in fine fettle.

PRE AMPLIFIERS

AUDIOLAB 8000C 1991 £499
Tonally grey but fine phono input and great facilities make it an excellent general purpose tool.



CROFT MICRO 1986 £150
Budget valve pre-amp with exceptionally transparent performance.

CONRAD JOHNSON MOTIV MC-8 1986 £2,500
Minimalist FET-based preamplifier is brilliantly neutral and smooth with a spry, light balance in the mould of Sugden. Something of a curio, but worthwhile nonetheless.

AUDIO RESEARCH SP-8 1982 £1,400
Beautifully designed and built high end tube pre-amplifier with deliciously sweet and smooth sound. Not the last word in incision or grip.

LINN LK-1 1986 £499
A brave attempt to bring remote controlled user-friendliness to hair-shirt audiophile hi-fi. Didn't quite work, but not bad for under £100.

NAIM NAC 32.5 1978 £ N/A
Classic high end pre. Brilliantly fast and incisive sound that's a joy with vinyl but a tad forward for digital.

LECSO AC-1 1973 £ N/A
Amazing styling courtesy of Allan Boothroyd can't disguise its rather cloudy sound, but a design classic nonetheless.

QUAD 33 1968 £43
Better than the 22, but Quad's first tranny pre isn't outstanding. Responds well to tweaking/ rebuilding though...



LEAK POINT ONE STEREO 1958 £ N/A
Good for their time, but way off the pace these days. Use of EF86 pentode valve for high gain rules out ultra performance. Not the highest-fi!

QUAD 22 1958 £25
The partner to the much vaunted Quad II mono-blocks - cloudy and vague sound means it's for anacrophiles only.

LOUDSPEAKERS

WHARFEDALE DIAMOND 10.3 2010 £290
Great small standmounters for audiophiles on a budget; dry punchy sound with impressive sound-staging at the price.



YAMAHA SOAVO 1.1 2009 £3,000
Musical, transparent with impressive dynamics and cohesion. Excellent build and finish.

USHER BE-10 2009 £10,500
Clever high end moving coil design with immense speed and dizzying clarity allied to epic punch. Needs the best ancillaries to fly, though...



SPENDOR A5 2009 £1,695
Multi-talented floorstanders with generous scale and punch and Spendor's classic mid-range detail. Deliver a sound that thoroughly engages whatever you care to play.

MONITOR AUDIO PL100 2008 £2,300
The flagship 'Platinum' series standmounter has a lovely warm and delicate sound with superlative treble.



MARTIN LOGAN SOURCE 2008 £1,600
Brilliant entry level electrostatics, giving a taste of loudspeaker esoterica for the price of most moving coil boxes. Tremendous clarity, evenness and delicacy, although not the world's most powerful sound.

PMC OB11 2008 £2,950
Cleverly updated floorstanders give scale and solidity in slim and well finished package.

ISOPHON GALILEO 2007 £2,100
Big standmounters that really grip the music and offer quite startling dynamics and grip.

ONE THING AUDIO ESL57 2007 £1,450
One Thing Audio's modifications keep the good old ESL57 at the very top of the game.

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&W BEOLAB 9 2007 £5,000
Technically impressive and visually striking loudspeakers with sound quality that more than matches their looks.



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.

B&W 686 2007 £299
Baby standmounters offer a sophisticated and mature performance that belies both their dimensions and price tag.

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.

B&W 801D 2006 £10,500
In many respects, the ultimate studio monitor; dazzling clarity and speed with commanding scale and dynamics.



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.

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.

USHER S-520 2006 £350
Astonishingly capable budget standmounters that offer detail and dynamics well beyond their price and dimensions.

ACOUSTIC ENERGY AE1 CLASSIC 2006 £845
Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made.



MISSION X-SPACE 1999 £499
The first mass production sub and sat system using NXT panels is a sure-fire future classic - not flawless, but a tantalisingly unboxy sound nevertheless!

MISSION 752 1995 £495
Cracking Henry Azima-designed floorstanders combined HDA drive units and metal dome tweeters with surprisingly warm results. Benign load characteristics makes them great for valves.

TANNOY WESTMINSTER 1985 £4500
Folded horn monsters which sound good if you have the space. Not the last word in tautness but can drive large rooms and image like few others.



CELESTION SL6 1984 £350
Smallish two way design complete with aluminium dome tweeter and plastic mid-bass unit set the blueprint for nineteen eighties loudspeakers. Very open and clean sounding, albeit course at high frequencies and limp in the bass. Speakers would never be the same again...

HEYBROOK HB1 1982 £130
Peter Comeau-designed standmounters with an amazingly lyrical yet decently refined sound. Good enough to partner with very high end ancillaries, yet great with budget kit too. A classic



QUAD ESL63 1980 £1200
An update of the ESL57, with stiffer cabinets. Until the 989, the best of the Quad electrostatics.

MISSION 770 1980 £375
Back in its day, it was an innovative product and one of the first of the polypropylene designs. Warm, smooth, clean and powerful sound,

ACOUSTIC RESEARCH AR18S 1978 £125
Yank designed, British built loudspeaker became a budget staple for many rock fans, thanks to the great speed from the paper drivers, although finesse was most definitely not their forte...

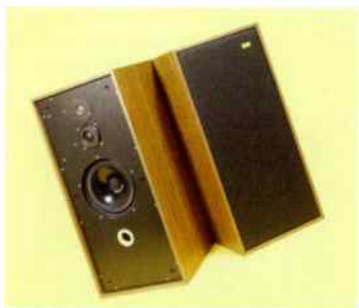
YAMAHA NS1000 1977 £532
High tech Beryllium midband and tweeter domes and brutish 12" woofers in massive sealed mirror image cabs equals stunning transients, speed and wallop allied to superb transparency and ultra low distortion. Partner carefully!



JR 149 1977 £120
Cylindrical speaker was ignored for decades but now back in fashion! Based on classic KEF T27/B110 combo as seen in the BBC LS3/5a. Doesn't play loud, needs a powerful transistor amplifier, but has clarity and imaging,

KEF R105 1977 £785
Three way Bextrene-based floorstander gave a truly wideband listen and massive (500W) power handling. A very neutral, spacious and polite sounding design, but rhythmically well off the pace.

SPENDOR BC1 1976 £240
 Celestion HF1300 tweeter meets bespoke Spendor Bextrene mid-bass unit. The result is a beautifully warm yet focussed sound. A little bass bloom necessitates careful low-stand mounting.



IMF TLS80 1976 £550
 Warm and powerful 1970s behemoth with transmission loading and a mixture of KEF and Celestion drive units. Impressively physical wideband sound but rhythms not a forte.

HH ELECTRONICS TPA-50D AMPLIFIERS 1973 £110
 Simple design with easily available components, solid build quality and fine sound make for a surprisingly overlooked bargain. Not exactly stylish, however.

BBC LS3/5A 1972 £88
 Extremely low colouration design is amazing in some respects – articulation, stage depth, clarity – and useless in others (both frequency extremes). Came in wide variety of guises from various manufacturers building it under licence.

LEAK SANDWICH 1961 £39 EACH
 Warm sounding infinite baffle that, with a reasonably powerful amplifier can sound quite satisfying.

QUAD ESL57 1956 £45 EACH
 Wonderfully open and neutral sound puts box loudspeakers to shame. Properly serviced they give superb midband performance, although frequency extremes less impressive. Ideally, use in stacked pairs or with subwoofers and supertweeters.

SYSTEMS

MERIDIAN SOOLOOS 2.1 2010 £6,990
 Crisp styling, bright, colourful touchscreen, plus excellent search facilities. This is one hard disk music system with a difference. Best partnered to Meridian active loudspeakers.



NAIM UNITIQUE 2010 £995
 Great little half width one-box system with truly impressive sound allied to a wealth of source options.

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.

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. Just listen.

SHANLING MC-30 2007 £650
 Quite possibly the cutest all-in-one around with fine performance from the CD player, tuner and MP3 player input. Very low power, though.



AURA NOTE PREMIER 2007 £1,500
 Lovely shiny CD/tuner/amplifier with fine sound quality and dynamic abilities.



MARANTZ 'LEGEND' 2007 £22,000
 The combination of SA-7S1 disc player, SC-7S2 preamp and MA-9S2 monoblocks delivers jaw-dropping performance.

ARCAM SOLO NEO 2006 £1,100
 Excellent all-in-one system, with a warm, smooth and balanced sound to match the features and style.

PEACHTREE AUDIO IDECCO £1,000
 Excellent sounding iPod dock, impressive DAC and fine amplifier section make this an excellent one box style system.



TUNERS

ARCAM FMJ T32 2009 £600
 Excellent hybrid FM/DAB+ tuner with a smooth, engaging sound. Factor in its fine build and it's a super value package.



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.

MYRYAD MXT4000 2005 £1,000
 Sumptuous sound and top-notch build quality make for a tempting AM/FM package. Warm and richly detailed on good-quality music broadcasts.

NAIM NAT03 1993 £595
 The warm, atmospheric sound is further proof of Naim's proficiency with tuners.

CREEK CAS3140 1985 £199
 Excellent detail, separation and dynamics - brilliantly musical at the price. T40 continued the theme...

QUAD FM4 1983 £240
 Supreme ergonomics allied to a pleasingly lyrical sound with plenty of sweetness and detail made this one of the best tuners around upon its launch.



NAD 4040 1979 £79
 Tremendously smooth and natural sound allied to low prices and good availability make this budget analogue esoterica.

MARANTZ ST-8 1978 £353
 Marantz's finest radio moment. Warm, organic sound plus an oscilloscope for checking the signal strength and multipath.

YAMAHA CT7000 1977 £444
 Combines sleek ergonomics, high sensitivity and an explicit, detailed sound.

SONY ST-5950 1977 £222
 One of the first Dolby FM-equipped tuners, a format that came to nought. Still, it was Sony's most expensive tuner to date, and boasted good sound quality with brilliant ergonomics.



ROGERS T75 1977 £125
 Superb mid-price British audiophile design, complete with understated black fascia. Smooth and sweet with fine dimensionality.

SANSUI TU-9900 1976 £300
 A flagship Japanese tuner. It boasts superlative RF performance and an extremely smooth and lucid sound.



TECHNICS ST-8080 1976 £180
 Superb FM stage makes for a clean and smooth listen.

REVOX B760 1975 £520
 The Revox offers superlative measured performance although the sound isn't quite as staggering as the numbers. Fine nonetheless, and surely the most durable tuner here?

SEQUERRA MODEL 1 1973 £1300
 Possibly the ultimate FM tuner. Massive in terms of technology, size and features dedicated to extracting every ounce of performance from radio, including impressive multi-purpose oscilloscope display.

LEAK TROUGHLINE 1956 £25
 Series I an interesting ornament but limited to 88-100MHz only. II and III are arguably the best-sounding tuners ever. Adaptation for stereo easy via phono multiplex socket. Deliciously lucid with true dimensionality.

HEADPHONE AMPLIFIERS

GRAHAM SLEE NDVD 2009 £255
Dynamic headphone amplifier with a great sense of timing. Crisp, clear treble and warm midrange gives an involving sound.



MUSICAL FIDELITY X-CAN V8 2008 £350
Open and explicitly detailed sound plus serious bass wallop. A great partner for most mid-to-high end headphones.

CD PLAYER/RECORDERS

MUSICAL FIDELITY TRIVISTA 2002 £4000
When playing SACDs, the sweetest, most lucid and lyrical digital disc spinner we've heard. Old school stereo, pure DSD design. CD sound is up in the £1000 class, too! Future classic.

MARANTZ SA-1 2000 £5,000
The greatest argument for SACD. This sublime Ken Ishiwata design is utterly musically convincing with both CD and SACD, beating most audiophile CD spinners hands down.



SONY MDS-JE555ES 2000 £900
The best sounding MD deck ever, thanks to awesome build and heroic ATRAC-DSP Type R coding.

PIONEER PDR-555RW 1999 £480
For a moment, this was the CD recorder to have. Clean and detailed.

MARANTZ DR-17 1999 £1100
Probably the best sounding CD recorder made; built like a brick with a true audiophile sound and HDCD compatibility.



CAMBRIDGE AUDID CD4SE 1998 £200
A touch soft in the treble and tonally light, but outstanding in every other respect.

SONY TCD-8 DATMAN 1996 £599
Super clean sound makes this an amazing portable, but fragile.

LINN KARIK III 1995 £1775
The final Karik was a gem. Superb transport gives a brilliantly tight, grippy dynamic sound, albeit tonally dry.

NAIM CDS 1990 £ N/A
Classic Philips 16x4 chipset with serious attention to power supplies equals grin-inducing sonics.

MARANTZ CD73 1983 £700
A riot of gold brushed aluminium and LEDs, this distinctive machine squeezed every last ounce from its 14x4 DAC -super musical



MERIDIAN 207 1988 £995
Beautifully-built two-box with pre-amp stage. Very musical although not as refined as modern Bitstream gear. No digital output.

SONY CDP-R1/DAS-R1 1987 £3,000
Sony's first two boxer was right first time. Tonally lean, but probably the most detailed and architectural sounding machine of the eighties.

CAMBRIDGE AUDID CD1 1986 £1500
Inspired Stan Curtis redesign of Philips CD104, complete with switchable digital filter. Lean but tight and musical performer.



MERIDIAN MCD 1984 £600
The first British 'audiophile' machine was a sweeter, more detailed Philips CD100. 14x4 never sounded so good, until the MCD Pro arrived a year later.

SONY CDP-701ES 1984 £890
Sony's first bespoke audiophile machine used a 16x2 DAC to provide a clinically incisive sound; supreme build quality allied to the pure unadulterated luxury of a paperbook-sized remote control.

YAMAHA CD-X1 1983 £340
Nicely built 16x2 machine with a very sharp and detailed sound; sometimes too much so. Excellent ergonomics, unlike almost every other rival of the time.

SONY CDP-101 1982 £800
The first Japanese CD spinner was powerful and involving. Brilliant transport more than compensated for 16x2 DAC, and you even got remote control!



ANALOGUE RECORDERS

AIWA XD-009 1989 £600
Aiwa's Nak beater didn't, but it wasn't half bad nonetheless. Massive spec even included a 16x4 DAC!

NAKAMICHI CR-7E 1987 £800
The very best sounding Nakamichi ever - but lacks the visual drama of a Dragon.



SONY WM-D6C 1985 £290
Single capstan transport on a par with a Swiss watch, single rec/replay head better than most Naks. Result: sublime.

PIONEER CTF-950 1978 £400
Not up to modern standards sonically, but a great symbol of the cassette deck art nonetheless.

YAMAHA TC-800GL 1977 £179
Early classic with ski-slope styling. Middling sonics by modern standards, but cool nonetheless!

SONY TC-377 1972 £N/A
A competitor to the Akai 4000D open reel machine, the Sony offered better sound quality and is still no slouch by modern standards

REVDX A77 1968 £145
The first domestic open reel that the pros used at home. Superbly made, but sonically off the pace these days.

COMPACT DISC TRANSPORTS

ESOTERIC PD 1997 £8,000
The best CD drive bar none. Brilliantly incisive, ridiculously over engineered.

TEAC VRDS-T1 1994 £600
Warm and expansive sound made this a mid price hit. Well built, with a slick mech.

KENWOOD 9010 1986 £600
The first discrete Jap transport was beautifully done and responds well to re-clocking.

DACs

DCS ELGAR 1997 £8500
Extremely open and natural performer, albeit extremely pricey - superb.

DPA LITTLE BIT 3 1996 £299
Rich, clean, rhythmic and punchy sound transforms budget CD players.

CAMBRIDGE AUDID DAC MAGIC 1995 £99
Good value upgrade for budget CD players with extensive facilities and detailed sonics.

PINK TRIANGLE DACAPD 1993 £ N/A
Exquisite; the warmest and most lyrical 16bit digital audio we have ever heard.

QED DIGIT 1991 £90
Budget bitstream performer with tweaks aplenty. Positron PSU upgrade makes it smooth, but now past it.

CABLES

MISSING LINK CRYD REFERENCE 2008 £495/0.5M
High end' interconnects, with deliciously smooth, open and subtle sound without a hint of edge.

TECHLINK WIRES XS 2007 £20
Highly accomplished interconnects at an absurdly low price. Stunning value for money.

VDH ULTIMATE THE FIRST 2004 £250
Carbon interconnects that help you forget the electronics and concentrate on the music. Miraculous transparency. Tight and tuneful bass mixed with air and space.



WIREDWRLD DASIS 5 2003 £99/M
Excellent mid-price design with a very neutral, silky and self-effacing sound. Superb value for money.

TCI CONSTRICTDR 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.

vinyl section

contents

DECEMBER 2016

www.hi-fiworld.co.uk**THE ROLLING STONES BOX SET 87**

Paul Rigby takes an extended listen to the remastered Rolling Stones mono box set and talks to the people behind the project.

WOODEN BULL DISC MAT/HARMONIC RESOLUTION CLAMP 93

Paul Rigby and Jon Myles check-out two new devices aimed at maximising your vinyl replay.

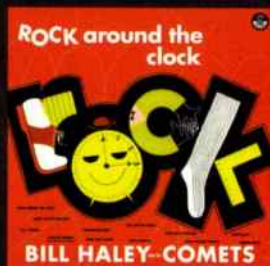
"THE BEEB BEEB SEEB"

...as referred to by 'Goon' Peter Sellers but there's nothing goonish about Gearbox's 'Unpopular Music: Late Junction Sessions' (www.gearboxrecords.com), a double album of music from the popular BBC Radio 3 radio programme from the likes of Seb Rochford, Simon Fisher Turner and John Paul Jones & Erland.

Also look out for 'BBC Radiophonic Workshop - 21 Years' (*Silva Screen*; www.silvascreen.com) featuring forty-five tracks from Delia Derbyshire, Dick Mills, Roger Limb and Paddy Kingsland amongst others covering everything from 'The Secret War' to 'Quatermass And the Pit'.



news

**VINYL LOVERS**

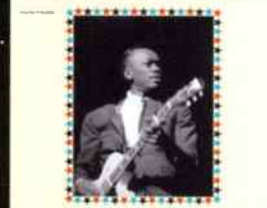
Five new releases from this audiophile label begin with Elvis Presley's 'Elvis' Golden Records Volume 1', (1958) rock'n'roll's first greatest hits album, as Presley entered the army. This LP set the standard.

'Rock Around The Clock' (1956) or the 'Shake Rattle & Roll' EP with four songs from 1955. Some of the most thrilling music around in 1956.

Chuck Berry's second LP 'One Dozen Berrys' (1958) was an 'influence recipe' of the Berry career: blues via 'Blue Feeling', the country sound of 'Maybelline' and so on. Includes hits such as 'Sweet Little Sixteen'.

From 1960, The Ventures' 'Walk Don't Run' was a rush job but brilliant, nevertheless (the busy band couldn't even wait to be photographed, notice the stand-ins on the sleeve). One of the early uses of stereo in rock.

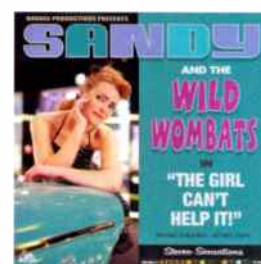
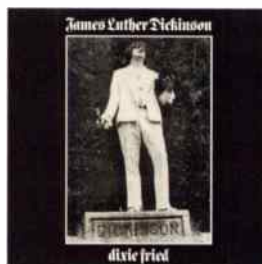
Finally, look out for John Lee Hooker's 'The Folk Lore of John Lee Hooker' (1961) that combines twelve tracks of acoustic and electric tunes like 'Tupelo' and 'The Hobo' (recorded at the Newport Folk Festival in 1960).

THE FOLK LORE OF JOHN LEE HOOKER**BEAR FAMILY TRIO**

Three LPs from Bear Family start with country-soul man, Jim Ford's previously unreleased 'Allergic To Love: The Later Recordings' featuring Sly Stone. Funky, earnest and energetic.

Producer, James Luther Dickinson's 'Dixie Fried' (1972) combines boogie, blues, soul and country and features the Atlantic label's house band to boot, plus Dr John. A cult gem.

Also look out for Sandy And The Wild Wombats' 'The Girl Can't Help It!' (2015), a rare slice of German rockabilly.





SPEAKERS CORNER

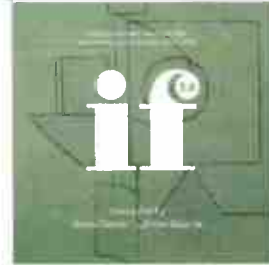
Latest releases from this German audiophile outfit (<http://www.speakerscornerrecords.com>) includes Cuban percussionist Mongo Santamaria's 'Stone Soul' (1969), translating pop hits of the day into Latin soul jazz. He does it with energy, blood and thunder... and plenty of soul.

Also look out for Chet Atkins' 'In Hollywood'. That means 'in a Hollywood Studio' and is not an LP of film ditties. Lush and sumptuous arrangements with delicate guitar picking with occasional orchestral swells.

NINJA TUNES

Two from this adventurous label (ninjatune.net) includes 'If Music Presents You Need This: Eastern European Music Sounds (1970-1986)' including Wojciech Karolak's 'Discopus Nr.1' who offers a jazz/disco melange and Polski Jazz Ensemble's 'Song For Ewa', an exploratory jazz circus with a sax frenzy.

Also look out for Iranian, Ash Koosha's 'Aka!' contorted sonic experiments that reflect speed drum'n'bass with avant-garde techno and blips, but always with an intertwining melody. A man with an Aphex Twin mentality.



PURE PLEASURE

Two classics from UK audiophile outfit Pure Pleasure (www.purepleasurerecords.com). Sarah Vaughan's 'After Hours' (1962) offers only guitar and bass as back-up, offering ballads of refinement and intimacy.

Dinah Washington's 'Back to the Blues' (1963) and back to her jazz/blues roots. Washington is on form while her backing band are totally in sync. A top cut.

MAX ROMEO

Romeo has released 'Horror Zone' on Nu Roots as a new sequel to his classic 'War Ina Babylon' and features Lee Scratch Perry. The LP was recorded using studio equipment packed with kit from the fifties to the seventies and was recorded and mixed in analogue. A second disc, a 'dub' version of the album, is also included.



...AND FINALLY

One EskimO's 'Faster Than Turtles' ([ECC100](http://ECC100.com); www.ecc100.co.uk) offers quirky Embrace-esque, restrained rock while offering a huge amount of melodic potential.

Charles Wilp's space age, erotic, sensual pop, 'Fotogrefiert Bunny' ([Wah Wah](http://WahWah.com); www.wah-wahsupersonic.com), with flagrant energetic sprinklings of hedonistic lounge jazz. Includes two bonus tracks and a bonus 7" single.

From the same label is Jou Cogra's 'Hammond Explosion'. This Spanish jazz Hammond organ player issued a range of releases between 1971-1976 on private pressings with funkier psychedelic vibes. It's a freak out and no mistake.

UK doom metal merchants, Paradise Lost has released a picture disc version of 1992's 'Shades of God', their best LP to date. Especially as singing replaced grunting. Always a good thing, I find.

Retro soul Spanish band, The Excitements' 'Breaking the Rule' offers authenticity and dynamic vocals with a gospel-powered, unrefined, raw suite of musical values.

Manchester-based downtempo/electronica trio, Marconi Union's ninth album, 'Ghost Stations' ([Just Music](http://JustMusic.com); justmusic.co.uk) contains four extended tracks of relaxing, uplifting, ambient solitude...with added beats and jazz inflections.

Martin Longstaff is the man behind The Lake Poets and this 2LP debut includes a 'Live At The Minster' record. Longstaff's high-pitched vocalisations belies a worldly wise outlook but adds a supreme musicality while his acoustic guitar chopping playing style has a John Martyn feel.



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Esoteric C03/A03, pre/power ex demo boxed	used 8999	Michell Focus One with Linn Basik LV	used 299	Le ConToure Mobile 160, excellent boxed, REDUCED	used 1399
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Levinson 331 Power Amplifier boxed	used 1999	Rega RP3/Elys 2, white boxed, just a few months old	used 399	Martin Logan CLS Anniversary, cherry	used 2999
Linn Akurate 4200, Dynamik PSU, boxed	used 2499	Rega RP6/Exact boxed, near mint	dem 699	Monitor Audio GR60, vgc+	used 599
McIntosh C2300 Preamp, near mint boxed, spare valves	used 3249	Rega Planar 2, RB250, AT95e vgc	used 199	PMC Twenty 22, nr mint boxed	used 1199
McIntosh MC275 Power Amp, near mint boxed	used 299	SME 3009 excellent boxed	used 349	PMC Fact 8, excellent boxed	used 3249
Meridian 501 preamplifier, excellent	used 299	SME 3009 improved, vgc+	used 199	Proac D20r, excellent boxed, ex dealer demo	dem 1899
Micromega IA100, great integrated, boxed REDUCED	dem 449	SME V12, nr mint boxed	used 2249	Quad 25L Classic ex dealer demo boxed	used 999
Ming Da MC55 5 channel Valve Power amp	used 1199	SME 20/3 with V tonearm excellent boxed	used 499	Rega RS3, black excellent boxed	used 399
Mitchell and Johnson SAP-201V, near mint	used 169	Systemdek IXE c/w Linn Basik Plus	used 349	REL T5 Subwoofer boxed	used 299
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NAIM NAC82, excellent boxed	used 899	VDH Condor M/C cartridge as new boxed, REDUCED	new 1899	Sonus Faber Elipsa, superb boxed, REDUCED	used 5699
NAIM NAP250 upgraded DR later 2012, nr mint boxed	used 2499	Whest Audio 30RDT Phono stage, vgc+	used 1599	Sonus Faber Electa Amator 2, superb	used 1749
NAIM NAC72 with phono boards	used 399	Digital		Sonus Faber Olympia 1 & stands near mint	used 2899
NAIM NAP250/2, 2014 model, nr mint boxed	dem 2499	Accuphase DP67, excellent boxed	used 1999	Spendor A5, vgc boxed	used 749
NAIM NAP250 Olive excellent boxed 1998	used 899	Arcam CDS27, nr mint boxed	dem 499	Spendor A6, vgc boxed	used 899
NAIM NAP200, 2005 excellent boxed	used 899	Audionet Ari V2 CD, fair condition	used 799	Totem Mite in black, ex dealer demo REDUCED	dem 399
NAIM NAP200, 2008 excellent boxed	used 999	Cambridge Audio Sonata NP30 Streamer	used 169	Totem Stifaf, near mint boxed	new 999
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		Musical Fidelity A30BCR CD, excellent boxed	used 649		
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		Musical Fidelity Trivista 21 DAC	used 599		
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		NAIM N172XS Streamer/Preamp with radio module	used 1330		
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		Prima Luna Prologue 8, ex demo boxed, REDUCED	dem 1199		
		Project Streambox DS, excellent boxed	dem 399		
		Rego Apollo R, excellent boxed	used 399		
		Rego DAC, excellent rare in satin silver	used 349		
		Rego Saturn R, our demo unit nr mint	dem 999		
		Rego Apollo R, excellent REDUCED	used 399		
		Roksan K3 CD, nr mint boxed	used 849		
		Sonsui WLD201 Streamer, mint boxed REDUCED	used 119		
		Sony XA20ES CD, due in	used 899		
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		Whest Audio DAP9	used 299		

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The Rolling Stones In Mono

Compiled from intensive detective work, Paul Rigby looks at The Rolling Stones in Mono vinyl box set, talks to Chief Audio Engineer Teri Landi and undertakes an exhaustive sound test of the new set.



It's arguably the most important Rolling Stones release in decades. For the first time ever, all mono studio recordings released by The Rolling Stones in the 1960s (between 1963 to 1969, to be exact) are available in one collected LP box set utilising the earliest generation sources currently available.

They are also available in a 15 CD box set, as well as in 24bit hi-res at 96kHz and 192kHz sample rates and – get this – as a DSD download.

The collection contains 186 tracks, fifty-six of which have never before been heard in mono since CD was born.

Arriving with a 48-page book, mastered by the Queen discography box set supremo Bob Ludwig at Gateway Mastering, then cut at Abbey Road studios, this box set is limited to 1,000 copies worldwide.

The featured albums include: 'The Rolling Stones' (UK, 1964), '12 X 5' (1964), 'The Rolling Stones No.2' (UK, 1965), 'The Rolling Stones Now!' (1965), 'Out of Our Heads' (US, 1965), 'Out of Our Heads' (UK, 1965), 'December's Children (And Everybody's)' (1965), 'Aftermath' (UK, 1966), 'Aftermath' (US, 1966), 'Between the Buttons' (UK, 1967), 'Flowers' (1967), 'Their Satanic Majesties Request' (1967), 'Beggars

Banquet' (1968), 'Let it Bleed' (1969) and 'Stray Cats' (a new collection of single A & B sides plus EP tracks).

I chatted to Teri Landi, ABKCO's Grammy award-winning Chief Audio Engineer, who oversaw the entire project in the USA and asked her about the condition of the master tapes that were used as part of the creation of the box set.

"They're generally in excellent shape" said Landi. "Which is pretty amazing for fifty-year-old material. The type of tape featured does have a good reputation for holding up well. There were actually two types used at the time. There was a thin-mil acetate-type tape plus a Mylar



The ABKCO studio that performed the initial tape transfer.

polyester type, spread over many different types of tape stock. They hold up but they are very thin so there can be issues”.

Problems were encountered such as oxide shedding and tape slippage but these issues only occurred on one or two occasions, being relatively minor in terms of the entire project.

During the tape transfer, Landi aligned the tape heads depending on where the original tape sources were recorded. It’s important to align the tape replay heads correctly to match the head azimuth it was recorded at, in order to extract 100% of the information. If you play a tape with the wrong alignment, recorded information will be lost. In this case, there were three standards involved.

“Generally, the Stones stuff has the NAB alignment (USA) but some have the CCIR (UK) and NARBT (UK)” said Landi. “The latter wasn’t utilised for very long but occurs around some of the earlier recordings. You can change the alignment directly using a set of tones as a guide. MRL (Magnetic Reference Laboratories) produced

actual alignment tapes for use with the CCIR alignment standard. With NARBT, I thankfully founds these

those with the reference tape in order to do it correctly. You hear differences both in the high and low ends”.

To maximise sound quality, it was important to source first-generation tapes or as high a generation sources as possible for the ultimate mastering.

The Stones were recording their albums at Regent Sound in England, Chess in the USA and then RCA in Hollywood. “So you had different rooms, different echo chambers, different engineers and so on. There’s going to be a difference in the sound. The person who had the task to cut the album, in the end, may have felt that the tapes had so many differences between them that they wanted to do EQ changes to give the listener a smoother transition from song to song. Once the EQ was completed, the engineer would print the results on another tape”.



Clockwise from top left: ‘12 X 5’ (1964), ‘The Rolling Stones’ (UK, 1964), ‘The Rolling Stones Now!’ (1965); ‘Out of Our Heads’ (US, 1965).

tones on the tape itself”.

To confuse things further, the British studios sometimes used the American NAB standard. Most likely because the UK studio knew that the tape would be sent to the USA for processing. Landi sometimes transferred tapes both ways if the alignment standard was not stated, just in case. During the tape transfer the alignment was changed with a small screwdriver on the side of the tape heads. “You have pots inside on the electronics. You can align using

So that engineer would complete the EQ changes, print the results to a tape and then compile those tracks together (imagine creating your own cassette mix tape, it’s a little bit like that). This is the cutting master – the master tape used to create the final vinyl record. What you end up with, though, is vinyl from second-generation sources.

“The task, then, was to source the first-generation tapes for this project” said Landi. “The first generation recording may (or may



Olympic Studio 1 EQ modules.



'Out of Our Heads' (UK, 1965), 'December's Children (And Everybody's)' (1965), 'Aftermath' (UK, 1966), 'Aftermath' (US, 1966)

not) be on the cutting master, it might be further up the chain on a complex album master or elsewhere.

To complicate matters, because you are also looking at UK and USA versions of the same album, one of them may have the first-generation masters while the other will certainly not. For 'Out of Our Heads', for example, the first-generation masters were largely present on the US version: the US version did appear before the UK version. Hence, the UK master had lower generation copies on its LP".

The hard detective work involved finding those first-generation recordings. Sometimes they were

found on that cutting master, sometimes they were not, sometimes they were sitting on a completely different reel. This was the case for seven tracks from 'December's Children'. "So, when you pick up a tape reel, you have to ask yourself, "What am I holding here?" You know by listening" said Landi. "First-generation recordings are obvious when you listen to them. So there's a real puzzle here. You have to figure out what all the pieces of puzzle are. Sometimes they are not in the most obvious of places. I tracked them all down too".

Once the master tapes were used to transfer the music, that

music was then converted to DSD 2.8kHz for mastering. Why not PCM? "DSD most closely mirrors analogue in the digital world" said Landi. "We really wanted to master in DSD, 24bit/192kHz just wasn't close enough."

Quite a change then from the recent Queen 24bit/96kHz digital masters and a bit of a shock from The Beatles' masters that were transferred to 24bit/44.1kHz!

"DSD has come a long way in terms of tools" said Landi. "Bob [Ludwig] uses the Pyramix system that accommodates DSD and PCM. That has sophisticated editing tools



Ampex 351 reel-to-reel tape recorder.

in there. This is true DSD, incidentally, there is no inter-PCM conversion involved here".

The reason that digital mastering is preferable to just transferring the tape itself onto vinyl is because you have to correct many small (and larger) faults that have developed on the tape over the years, as well as basic issues such as multiple tape alignments. Digital mastering can isolate and pin-point rogue frequencies and small errors.

Try doing the same on an analogue tape and not only will your error (hopefully) be fixed, but that same 'fix' will affect a wide frequency band, causing other problems. Hence, digital mastering was essential.

SOUND TESTS

The sound testing utilised my reference hi-fi system with the addition of two Zero, mono



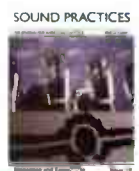
The Aria Class A electronics (created by the late Mike Sptiz) served as a necessary upgrade to the attached and refurbished Ampex tape recorder.

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'Between the Buttons' (UK, 1967), 'Flowers' (1967) and 'Satanic Majesties Request' (1967).

cartridges from Miyajima: a Zero with a 1mil tip for older mono pressings and a Zero with a 0.7mil tip for newer pressings.

In terms of test software, I used original mono pressings of 'The Rolling Stones' (1964) and 'No.2' (1965), 'Out of Our Heads' (1965) and 'Aftermath' (1966). For further comparative purposes, I also used relatively modern, mid-80s, pressings of 'The Rolling Stones' and 'No.2'.

To begin, I installed the 0.7mil Zero and concentrated upon those mid-80s pressings compared to the new box set.

Playing the 80s reissues first and the languid, cocky and wholly confident Slim Harpo song 'I'm a King Bee'. I was immediately reminded just how good mono can be, played via the correct cartridge. Jagger's voice exuded texture and power. His rasping aggression was carelessly thrown at me with the devastation of a hand grenade, drums were crisp while the lead guitar was incisive and nasty.

Even so, the new box set issue completely blew it away and there were numerous reasons for that. Partly they were down to the quality of the remastering but also a testament of Teri Landi's insistence of sourcing first or best-quality early generation recordings. Hence, the sound stage on the new issue was wider, fuller and more mature in its presentation. What has been eradicated was a rather annoying 'compression' element that hung off the vocal and especially the lead guitar. When Jagger sang about his King Bee, he demanded a few "stinging" guitar moments which prompted high-pitched guitar playing. On the 80s reissue, these moments were actually ear-piercingly bright. On the new issue, they were informative and full of detail.

I then moved to the original pressings and found (after preliminary sound tests) that all of them were mastered with wide, 1mil, mono grooves, which demanded a change of cartridge for a proper A-B

comparison.

With 'Aftermath' and 'High And Dry', I was impressed with the low volume cut of the original source and the dynamic reach that it offered but the new issue improved upon it in a number of ways. In general terms, the new issues sounded polished while each instrument was enhanced, receiving extra focus and precision. The bass was full with a deep reach that provided new-found strength to the lower frequencies while plucked

guitar strings had a more resonant twang and the rhythm of cymbal repetition sounded tonally more correct instead of sounding a little like a synth-derived sample.

To finish, I played 'Talkin' 'Bout You' from 'Out of Our Heads'. Despite the excellence of the original cut, the new issue did offer extra mass in the lower frequency range, which was significant, adding a grounding to the track that transformed the piece, there was more drive and excitement engendered by the new version. In terms of compressive effects, these were eased by the new issue, allowing Jagger's delivery to be more emotive and effective.

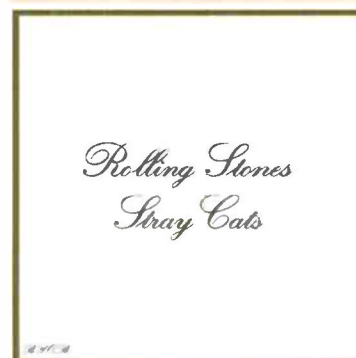
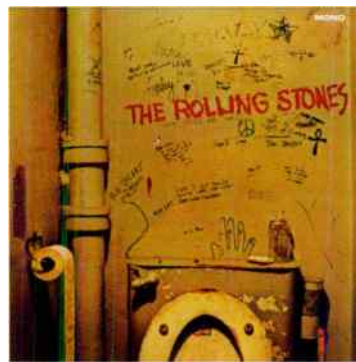
CONCLUSION

A number of conclusions could be drawn from this fascinating sound test. It confirmed just how good the original cuts were, especially when played with the proper equipment.

Next, it wasn't at all surprising that the eighties reissues sounded vastly inferior to both the original issues and the new boxed set: if you can, avoid any and all vinyl reissues except for this new boxed set.

Lastly, the new box set's releases reflect incredible care and attention and sheer hard work. No other reason could be found for the superb sound quality that each of the new box set's albums produced.

Although I have offered detailed reflections on a selection of the new LPs, I did briefly listen to them all and can confirm the magnificence of this box set as a collection of audiophile music. Both Teri Landi and Bob Ludwig should be congratulated on their research and diligence, especially in terms of sourcing first-generation (or as early as possible) sources. If you want to hear The Rolling Stones in mono (and you should, I prefer these mono versions to the stereo versions), then this box set is the first port of call because it features the best rendition of the Stones in mono, new or old. The rear of this box set suggests that the featured music is "revelatory". Amen to that.



'Beggars Banquet' (1968), 'Let it Bleed' (1969) and 'Stray Cats' (a new collection of single A & B sides plus EP tracks).

WITH THANKS...

...to Timestep Distribution for supplying the Miyajima cartridges (www.timestep-distribution.co.uk; Tel 01803 833366) ...and Jim at Back To Mono for supplying the original vinyl pressings (email: backtomonorecords@yahoo.co.uk; Tel 01522 537988)

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Wooden Bull designer John O'Regan says the mat is designed to create a surface which provides a firm grip between the

platter and record and so reduce surface noise on playback.

Slotted onto my resident Rega RP6 turntable there was an obvious improvement to the sound. The walking bass lines of Charles Mingus on 'Mingus Ah Um' had a heftier feel to them while the Rega Exact cartridge seemed to be extracting

extra detail from the upper registers.

Playing the 180gm vinyl pressing of Eleanor McEvoy's 'Yola' there was no doubt the Wooden Bull mat brings more solidity to the sound.

McEvoy's voice had more sparkle to it, the guitar a natural timbre and verve and overall cohesion is improved.

Going back to the RP6 without the Wooden Bull mat and the effect was obvious. Now everything sounded a little bit thinner and less realistic – proving that adding it was having an obvious beneficial effect on the sound of the turntable.

As ever with mats such as these, a lot will depend on your turntable and what you are looking for.

However, it worked for me and at just €55 via the company's website (www.woodenbull.com) this mat is well worth trying out. **JM**

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SOUNDBITES

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I began my sound tests with female vocal-fronted jazz and Patti Page's 'No Moon At All', placing the ADL on top of my Original Live Sovereign turntable which, up until now, has positively hated any clamps/weights.

Not the HRS, it seems and I can see why. The ADL doesn't rely on pressure or sheer weight to do its work. The HRS is all about noise absorption – and it showed.

Firstly, the xylophone was hit so hard and was so forward within the mix that it positively barked within the upper midrange. Each xylophone

strike was a pointy finger in the ear.

Adding the ADL, focused the performance from this secondary percussive instrument bringing more detail and a sense of clarity.

The Page vocal delivery previously was also slightly out of control during crescendos. The ADL added precision and focus which, in turn, increased space and air allowing more detail to be accessed while Page seemed to calm and relax into her performance, enhancing her emotive response.

I then moved to a high energy Steven 'Porcupine Tree' Wilson title track from 'The Raven That Refused to Sing And Other Stories'. The effect here was even more accentuated. Vocals were tight, clear and focused, the soundstage enhanced while the blooming lead guitar was now



controlled. The reduced noise emphasised cymbal strikes while bass was tightened up and, in some cases, seemingly emerged from hiding.

Overall, sound improvements were impressive indeed. To such an extent that, from now on, I won't be able to play vinyl records without an ADL attached. **PR**

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WANTED CROFT 25 pre/7 power amp or the integrated seriously considered. Most importantly must be in first class condition, good price paid for the right example. Tel 01934 521621 Email: Stemar2@me.com

DO ANY of the hi fi community have for sale the blue paperback book hi fi choice no12 turntables and tonearms. Issue. Please phone Keith 07919061178. keijab@googlemail.com

MUSICAL FIDELITY A3.2 RDS tuner £175 Absolutely spotless, remote, original box. Kept covered and clean. Beautiful. Mike (Cheshire) Email: imeldayates@hotmail.com Tel: 07500804700

2 X 6 metres of Naim Nac 4 speaker cable fully terminated. £50 that equates to £4 a metre without termination. Stemar2@me.com Tel 01934 521621

WANTED FAULTY or non working Quad 44 preamp, later model preferred. Cash paid. Contact Mike 01758 613790.

MOVE TO smaller listening room forces sale of my beloved Martin Logan Accent i loudspeakers. Owned from new and in excellent condition, only £1100. For more info and pictures, contact: davidsupercat@googlemail.com

NEAT MOTIVE 1 Floorstander Loudspeakers Cherrywood veneer excellent speakers, excellent sound can dem, £600 ovno. London 07957384795 Evan.

LINN TRIKAN Centre Speaker for sale. Looks wonderful in cherry finish. £150 plus postage. Telephone 01768 870214.

NAIM NAP140 Power amp in classic Olive style. It comes from a child and pet free home and has had little use since I upgraded to the 180. Complete with original packaging. Pristine condition. Asking £350 plus P+P. Telephone 01768 870214

CLASSIC NAIM Tuner NAT101 complete with SNAPS power supply. Excellent condition giving superb performance. Serviced by Naim, receipts available. Recently checked by local Naim Dealer. Complete with Naim Boxes. £525+PP. Tel: 01768 870214.

MUSICAL FIDELITY M61 amplifier plus B&W 685 S2 speakers mint condition with all packaging happy to demonstrate will split pictures on request rrp £3000 - £1500. Tel: 01902 884694 Email: jukey39@yahoo.co.uk

MONARCHY AUDIO SM70Pro Class A Zero Feedback Power Amplifier £250 JBL Studio 530 Standmount Speakers £250 Monarchy Audio DIP Combo Upsampler Re Clocker £125 Original Packaging Everything. Tel: 01847 892081.

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LFD GRAIN Free Signature Bi-Wire Speaker Cable x 2 metres, cost £550 for sale £225.00 o.n.o., plus LFD Balanced Interconnect XLR cost £160 for sale £75.00 o.n.o. Both £250. Tel 01634 842874. Email: p.evans11@live.co.uk

A.N.T.AUDIO Amber 3T SE Plus Headphone amplifier. Linear power supply. Less than 50 hours use. £200. Free postage. Tel: 07717752288. Email: captain_b99@yahoo.co.uk

NAKAMICHI CASSETTE Deck 2. £60. Denon TU260L Tuner. £20. Audioquest Type 4 Speaker cable, 2 approx 3 metre lengths in bi-wire configuration. £40. Collection Only. 01502 565406 landline 07788821996 mobile

EXPOSURE XI £300, Exposure IX £350, Exposure IV Dual £350 Rega P3/RB300 £225, Mission 753 Freedoms £150. Target Audio Rack 5 tier £50, Arcam Alpha 8SE CD 3150. Collection only. 01502 565406

HI-FI WORLD magazines. Volumes 12-23, March 2002 to February 2014 inclusive. Offers as no idea as to price. Buyer collects as heavy. email: davidwarnold@hotmail.co.uk (Bromley)

GARRARD 401 with Rega RB300 and Goldring 1042, great sound and condition, £1400. Power supply for DIY Class A amps (JLH 1969/1996 etc), £300. Call 0207 499 8729



JANUARY 2017 AWARDS ISSUE

PEIGA CLASSIC 60.2 LOUDSPEAKERS

This Swiss company is known for its Linear Drive Ribbon, coaxial ribbon and Air Motion Transformer tweeters. Peiga has refined ribbon driver technology over nearly three decades, they say, as well as perfecting the methods and elaborate tooling required to build them in its Swiss factory. But they haven't been available in the UK. All that is changing, as Peiga take on UK dealers to demo their products.

We'll be measuring and carefully assessing their Classic 60.2 loudspeaker in our January 2017 issue to see whether reality matches the myth.

Also, we hope to bring you –

AURALIC AERIES

AUDIOVECTOR QR3 SPEAKER

LEHMANN LINEAR HEADPHONE AMP

RELOOP HIFI TURN 3 TURNTABLE

LONGDOG AUDIO QUARTZ MAINS POWER GENERATOR

MCRU NO.5 POWER CABLE

IMPULSE WIRELESS BLUETOOTH EARPHONES

FOSTEX HPA 4BL DAC/HEADPHONE AMP

...and much more.

This is a selection of what we hope to bring you, not a complete list. We regret that due to a wide range of issues, such as failure under review, we cannot guarantee that all products listed above will appear.

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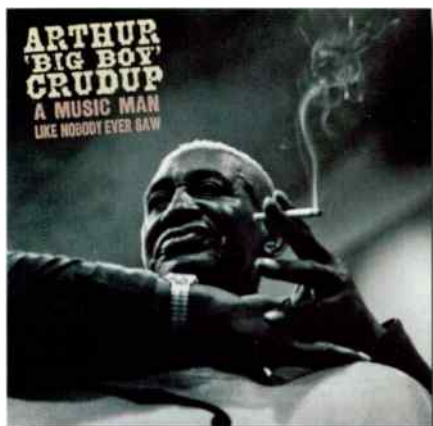
JANUARY 2017 - 7TH NOVEMBER

FEBRUARY 2017 - 5TH DECEMBER

ARTHUR "BIG BOY" CRUDUP

A MUSIC MAN LIKE NOBODY EVER SAW

BEAR FAMILY



"Crudup's legend resides in individual songs and the influence that he extended to other artists"

"Down in Tupelo, Mississippi, I used to hear old Arthur Crudup bang his box the way I do now and I said, if I ever got to the place I could feel all old Arthur felt, I'd be a music man like nobody saw".

That was Elvis Presley, speaking of his affection and respect for one of the most significant bluesmen of all time. Certainly, if Presley had not cut Crudup's own 'That's All Right' at the first session for Sam Philips' Sun Records then we may never have seen that first Elvis single at all. History could very well have changed right there and then.

How significant was Arthur "Big Boy" Crudup to Presley? Elvis made sure as soon as he had signed to RCA in 1956 that he grabbed two additional Crudup songs to record: 'So Glad You're Mine' and 'My Baby Left Me'. Crudup never experienced the riches that should have followed, though. They flowed in the direction of a certain Lester Melrose, Crudup's own A&R man who published Crudup's music through his own Wabash Music company. After the completion of each recording session, Melrose would dismiss Crudup with a small fee as payment but no more. This lack of luck was a feature of the Crudup career.

As Crudup expert and key contributor to this new, luxurious box set Bill Dahl explained, "After his recording sessions ended, manual labour and bootlegging booze was basically Arthur's humble lot in life until he was past 60, when he finally managed to crack the college circuit and eventually do some major league shows as Bonnie Raitt's opening act".

A late signing to Bob Koester's Delmark record label saw Crudup release two albums which were well received and brought him some much needed funds. Bad luck stepped in again, though, as industry man, manager and friend Dick Waterman was "on the verge of seeing some of those long-elusive royalties when the veteran bluesman died after suffering a stroke in 1974".

To celebrate the man's work German audiophile label Bear Family has released a large format, 5-CD boxed set (the first box set to be released on the man, incidentally) spanning

124 tracks, that also includes a beautiful 68-page hardcover book, packed with outstanding photographs, that would be a recommended purchase in its own right.

The set covers Crudup's complete recordings from 1941-1962 and includes the original versions of 'Rock Me Mamma', 'That's All Right', 'My Baby Left Me', 'Mean Ol' Frisco' and 'So Glad You're Mine'. In audiophile terms, the music itself appears to have been sourced from original master tapes and acetates but I would surmise that a degree of disc dubbing has been involved too. The studio sources can be recognised by the numerous tracks that are headed by studio engineer introductions for each take.

There is a measure of compression on the music, even within these tape-sourced copies, that is most noticeable during vocal crescendos but it is never a major issue. Partly because studios were purposely compressing music to be able to successfully emerge from the relatively primitive radios and record players of the time, partly because of that 'time and a place' scenario that evokes such nostalgia and partly because we should be grateful that much of this material has made the box set in any shape at all.

That said, there is much to admire here, especially from the tape sources. Bear Family has done a good job to convey the space within the studio set-up. If you are fortunate to listen to this set on a high-quality hi-fi chain then you will be able to hear the relative distances between Crudup, the drums, bass and so on. There is a real feeling that you have been parachuted into a creative space.

In this month's Classic Cuts, Crudup's legend clearly resides within individual songs as opposed to being contained within one specific album. It also resides within the man himself and the influence that he extended to other artists because it wasn't just Elvis Presley who fell under the Crudup spell. Luminaries as diverse as Creedence Clearwater Revival to Rod Stewart to Elton John all felt the need to comment upon the great man's passing. His music, of course, will always be with us. As Dahl commented "If Arthur "Big Boy" wasn't the father of rock and roll, he sure did eyewitness its birth". **PR**



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First launched in 2012, the dCS Vivaldi CD/SACD Transport, Upsampler, Master Clock and matching DAC represent the very best digital audio components that this legendary company can make. Already supreme in its field, it is Absolute Sounds' unequivocal belief that the dCS Vivaldi system has been elevated to new heights thanks to its Version 2.0 upgrades.

Joining the four-box Vivaldi is the revised Rossini system, which comprises a Rossini

Player - either as a standalone DAC or including a high-performance CD transport - and the Rossini Master Clock. The company also makes the Debussy DAC, specifically designed for computer audio use.

The numbers are in. Four dCS Vivaldi components, making up the dCS "Stack", plus the Version 2.0 upgrades really do equal new maths. Your nearest Absolute Sounds or dCS retailer will help you discover just how good digital audio can be ... no kidding!



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